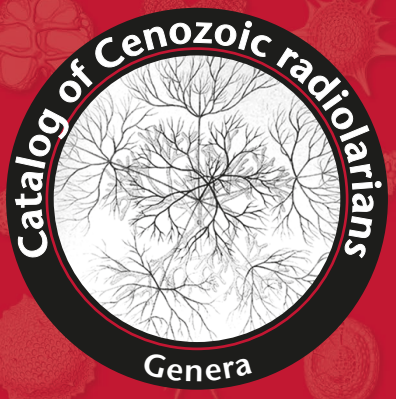
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Catalogue of Cenozoic radiolarian genera (Class Polycystinea)



Luis O'DOGHERTY, Jean-Pierre CAULET, Paulian DUMITRICA & Noritoshi SUZUKI

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Catalogue of Cenozoic radiolarian genera (Class Polycystinea)

Luis O'DOGHERTY
Instituto Universitario de Investigación Marina (INMAR)
Facultad de Ciencias del Mar, Universidad de Cádiz
11510 Puerto Real (Spain)
luis.odogherty@uca.es

Jean-Pierre CAULET
242 rue de la Fure, F-38850 Charavines (France)
jean.caulet@free.fr

Paulian DUMITRICA
Institute of Earth Sciences, Université de Lausanne, Géopolis,
1015 Lausanne (Switzerland)
paulian.dumitrica@unil.ch

Noritoshi SUZUKI
Department of Earth Science,
Graduate School of Science, Tohoku University,
6-3 Aoba Aramaki, Aoba-ku
Sendai City, Miyagi 980-8578 (Japan)
noritoshi.suzuki.d3@tohoku.ac.jp

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"The further my investigations proceeded
the more immeasurable seemed the range of forms,
like the boundless firmament of stars"

Haeckel (1887), Preface for the *HMS Challenger* Report

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KEY WORDS
Radiolaria,
Cenozoic,
taxonomic revision,
type species,
biostratigraphy,
lectotypifications,
neotypifications,
new names.

ABSTRACT
This catalogue provides the most complete and revised work of Cenozoic genera as of December 2019. It is the result of four exhausting years of collaborative work. The first radiolarian genus was described in 1834 by Meyen, so this revision covers 185 years of research on polycystine radiolarians. Additionally, it concludes a pharaonic research project on the taxonomy of all described genera of radiolarians that started fifteen years ago. The main objective was to provide radiolarian researchers with a modern and revised version of the Campbell's work accessible to everyone in an open access journal. This catalogue

is organized as a series of plates displaying the images of the type species consisting of all available images of the name-bearing type for the generic names in the Cenozoic Era. This catalogue encompasses extensive information in a very limited space. There are a total of 1683 revised genera. All valid genera provided appear with a diagnosis and an additional support image which is included to ensure the identification of the genus. This catalogue is somewhat different from previous issues on this thematic series. For this reason, it is recommended that the reader refer to the "guide for the users" for a comprehensible reading of the catalogue and to understand the taxonomic acts adopted in this revision. At the end of the plates, the reader will find a set of synthetic figures that display the most important result of this revision project, a result of 409 valid genera. Since numerous taxa of Christian Gottfried Ehrenberg and Ernst Haeckel had no fixed holotype, 207 lectotypes and 7 paralectotype were chosen and designated here from the series of syntypes. 11 neotypes were also designated for taxa that did not have syntypes.

RESUMÉ

Catalogue des genres de radiolaires du Cénozoïque (Classe des Polycystinea).

Ce catalogue fournit la révision la plus complète des travaux sur les genres de Radiolaires cénozoïques parus jusqu'en décembre 2019. Il est le fruit de quatre années exhaustives d'un travail en collaboration. Le premier genre de Radiolaires a été décrit par Meyen en 1834, et cette révision est donc basée sur 185 années de recherche sur les radiolaires polycystines. De plus, il clôture un effort de recherche proprement « pharaonique » sur la taxonomie de tous les genres de Radiolaires décrits, commencé il y a 15 ans. Son objectif principal est de fournir aux chercheurs intéressés par les Radiolaires une version moderne et révisée du Traité de Campbell, accessible à chacun dans un journal en « open access ». Ce catalogue est organisé en une série d'illustrations des images d'espèces type, c'est-à-dire de toutes les images disponibles pour les types de genres du Cénozoïque. Il condense une information complète dans un espace limité. Il renferme un total de 1683 genres révisés. Pour tous les genres valides sont incluses une diagnose, et une image « support » qui renforce l'identification du genre. Ce catalogue est présenté différemment des précédents catalogues publiés sur la même thématique. Pour cette raison, le lecteur est prié de se référer au « Guide des utilisateurs » pour une lecture facilitée du catalogue et une bonne compréhension de la démarche taxonomique adoptée pour cette révision. À la fin des illustrations, le lecteur trouvera un ensemble de figures de synthèse qui mettent en valeur les résultats les plus importants de cette révision : un résumé des 409 genres valides. Comme de nombreux taxons de Christian Gottfried Ehrenberg et Ernst Haeckel étaient dépourvus des types fixés originellement dans leurs publications, 207 lectotypes et 7 paralectotypes ont été choisis et désignés dans cette publication à partir de leurs séries de syntypes. 11 néotypes ont par ailleurs été désignés pour les taxons qui n'avaient pas de syntypes.

MOTS CLÉS
Radiolaires,
Cénozoïque,
révision taxonomique,
espèce type,
biostratigraphie,
lectotypifications,
néotypifications,
noms nouveaux.

INTRODUCTION

On the centenary of the death of Ernst Haeckel (August 9th, 1919, Jena) we completed the revision of all polycystine radiolarian genera, a project started in December 2005. The earliest and most extensive taxonomic classification of radiolarians was published by Haeckel after a decade of continuous work. The rich material collected by the *H.M.S. Challenger* during the 1873-1876 period was the starting point for a proliferation of new genera and species, settling on the basis of an artificial systematic system that, in turn, depends on the geometry of the shell. Nearly seventy years had passed up since the first revision of Haeckel's systematics, when in 1954 Arthur S. Campbell published his revision of Radiolaria in the "Treatise of Invertebrate Paleontology" (Part D, Protista 3). He grouped radiolarians in four "suborders": Acantharia, Phaeodaria, Spumellaria (that included Collodaria) and Nassellaria. In accordance with the most recent classification of the Phylum Rhizaria (Burki & Keeling 2014; Keeling & Burki 2019) the Acantharia and Phaeodaria are excluded from the group of radiolarians (chiefly Polycystinea). Campbell's revision was completed just before the International Zoological Congress meeting at Copenhagen in 1953, during which new important decisions embracing modification of the code of 1905, were adopted under the name of "Règles internationales de la Nomenclature zoologique". In actuality Campbell said in the introduction to the Treatise that "*the taxonomic treatment given is conservative, for only essential changes have been introduced and revision of genera has been limited. Mainly, the changes are those needed to bring designations of Radiolaria into line with provisions of the International Rules of Zoological Nomenclature and decisions of the International Zoological Congress meeting at Copenhagen in 1953*". Campbell, in a blind and mechanical way, designated the type species for all genera described by Haeckel. Without any reason he systematically designated the first species listed after the heading of a genus (or subgenus) as the type species, regardless of whether or not the species had an illustration. Campbell's action resulted in the subsequent designation of 916 genera (458 Spumellaria, 19 Entactinaria, 370 Nassellaria and 55 Collodaria) among

which, 295 correspond to genera whose type species were never figured. The rapid work of Campbell made many genera unrecognizable or completely changed the meaning of Haeckel's genera (see detailed criticisms in Deflandre 1960; Riedel 1971; Lombari & Lazarus 1988). However, this taxonomic chaos, created in an obstinate legalistic way, has remained untouchable due to the rule of the first reviser (Art. 24.2). Placing Campbell's nomenclatorial acts in the Official Index of Rejected Works in Zoology was proposed (De Wever *et al.* 2001) but without success.

Due to the aforementioned reasons and because, inexplicably, some of these genera without illustrated types were frequently utilized, a completely new revision of Campbell's Treatise was considered a priority. The long stratigraphic history of polycystine radiolarians reports the astonishing number of approximately 2900 generic names. For this reason, the leadership of the Genera Revision Project, belonging to the International Association of Radiolarists (InterRad), thought that the only way to complete this long-term project was to split the revision process and assign the task to the three formal Working Groups of InterRad in accordance to the three corresponding stratigraphic Eras of the Phanerozoic. Thanks to the unconditional support of Patrick De Wever and the Muséum national d'Histoire naturelle, Paris, they found published three special thematic volumes in one of the scientific journals of the Muséum: *Geodiversitas*.

The first monograph was presented for the Mesozoic during the 12th InterRad Congress in Nanjing, China (O'Dogherty *et al.* 2009b). The second revision, devoted to the Paleozoic Era, was presented during the last meeting in the 15th InterRad in Niigata, Japan (Danelian *et al.* 2017; Caridroit *et al.* 2017; Noble *et al.* 2017). The Cenozoic revision will be presented at the next InterRad meeting in Ljubljana, Slovenia.

The present catalogue is a complete revision of the Cenozoic polycystine genera. The Cenozoic genera is in some way equivalent Haeckel's and Ehrenberg's genera, as they are the authors of 1308 genera on a total of 1683 proposed names for the Cenozoic. Without a doubt, Haeckel is the major contributor to this amount.

Ernst Haeckel in his "Report on the Radiolaria collected by *H.M.S. Challenger*" described 3508 radiolarian species, 2775 of them corresponding to polycystine Radiolaria. Approximately, 2000 were described from deep-sea sediments and about 700 species were described from living plankton (see Aita *et al.* 2009, to see a detailed report on the status of these collections). However, the exact number of species described as new species in his monograph is somewhat controversial. As a rule, Haeckel inserts the classical abbreviation "n. sp." after each newly described species. Thus, the counting of these new Haeckel taxa comes to 2557 new species of polycystine radiolarian out of a total of 3458. Nevertheless, Haeckel created some ambiguities because he inserted his own name after other previously described species (from Bütschli, Ehrenberg, Müller, among others) when he reassigned those species to one of his new subgenera (see for instance page 474 of his monograph; there are, however, hundreds of examples; see a detailed report in Deflandre-Rigaud 1969). He only keeps the name of the original author if the species was previously assigned to a genus that was not of his authorship (see as example page 499 of his monograph). This revision reports a total of 794 new polycystine genera described by Haeckel in his monograph of 1887 (Haeckel 1887). To this number should be added the new genera described in his other publications: Haeckel 1861a (6), 1861b (10), 1862 (21), 1870 (1), 1879a (9), 1882 (386). The total amount of new polycystine genera described by Haeckel is 1225. Haeckel's contribution to the Cenozoic accounts for 78% of all described genera.

Haeckel in his report on Radiolaria in the "Challenger Scientific Results", volume 18 (1887) cited the "*Prodromus Systematis Radiolarium*" referring to his 1882 publication (see the bibliographic section of 1887 (Haeckel 1887: 252-254). As mentioned by Haeckel, in 1882 he published a sketch of a classification of the Radiolaria on the basis of the study of the Challenger Collection, and distinguishes in his "*Conspectus ordinum*» (Haeckel 1882: 421) 2 subclasses and 7 orders, and in the "*Prodromus Systematis Radiolarium*» (Haeckel 1882: 423-472) 24 families with 630 genera, among which are more than 2000 new species. Actually, the "*Prodromus Systematis Radiolarium*" 1882 is an intended (or a previous) title of his 1882 publication; such words did not appear in the title, but as a heading in the text (Haeckel 1882: 423).

Throughout the text, Haeckel in 1887 also referred to "Haeckel 1881, Manuscript" in the list of synonymies for many species. This "Manuscript" should correspond to the "unpublished and preliminary list of species accompanied the "*Prodormus*"; however, the inventory of new species never was published; it was just a draft of his 1887's report as inferred from the introduction (Haeckel 1882: 419; [...] the full systematic description of the new forms will appear soon over the next few years, they are all lithographed and printed. Up to now are fifty done. Thirty others are in lithographic work and the drawings for forty other plates -made entirely with the Camera Lucida- will get in due course.)

Without a doubt, the great success of Haeckel's monographs was the pictorial support made by Adolf Giltsch, a renowned artist and talented lithographer, probably one of the best scientific illustrators of his epoch. Any radiolarist who compares Giltsch's lithographies with his own photograph (specially SEM pictures) will be astonished by the realism and perfection of his tracing. Giltsch not only made the lithographs, but also produced nearly all the drawings of Challenger's monograph by using a *camera lucida*. The great appreciation towards Giltsch is expressed in the former's obituary, published by Haeckel in 1911 (Mediamatic 2019). Haeckel felt very indebted to his friend and emphasized the quality of Giltsch's oeuvre while also laying focus on the illustrator's background knowledge which, according to Haeckel, was the reason for achieving his masterpieces:

Als ernster Beobachter war er vor allem darauf bedacht, die äußere Gestalt und die innere Struktur des beobachteten Gegenstandes nach allen Richtungen soweit möglich zu ergründen und darauf erst mit allen Hilfsmitteln der modernen Technik seine möglichst vollkommene Wiedergabe auf Papier oder Stein auszuführen.

[*As a serious observer, he was above all concerned with exploring the outer shape and the inner structure of the observed object in all directions as far as possible and only then to reproduce it as perfectly as possible on paper or stone with all the tools of modern technology*].

Despite the wonderful plates produced by Giltsch, the worse problem on Haeckel's monograph is the case of non-illustrated species. Up to 1622 new species were described without illustration or reference to any known publication (out of this, 373 were type species). This means that by 1887, Haeckel had only illustrated 935 of the 2557 new genera.

Since the original type materials used by Haeckel in 1887 for the description of new radiolarian species were not deposited in any museum or were left in his private collections (now preserved as the Haeckel-Haus), the only available set of slides were examined by the "Joint Haeckel-Ehrenberg project" (Tanimura & Aita 2009). The re-examination of the original Challenger plankton slides has been essential in designating neotypes; however, the limits of this collection has only allowed for the recognition of 9 neotypes corresponding to type species described in other Haeckel's publications and only 4 from 1887 (see Aita *et al.* 2009; Sakai *et al.* 2009). One of us (NS) has examined the Haeckel and Ehrenberg collections to search for unpublished name-bearing types or their illustrations in London, Berlin and Jena (see a detailed report in Tanimura & Aita 2009). Although never published, the conclusion is that no alternative material exists for the designation of type specimens and hence, genera without illustrated types should be abandoned. In the Ehrenberg's collection, specimens were found mounted on slides. Their images were not been published due to the lack of precise references relative to the repository collection. In the case of Haeckel's collection, a detailed status report is found in Aita *et al.* (2009).

SOURCE OF DATA AND DISCUSSION

The source used for compiling the most complete list of Cenozoic genera was built using three personal databases from the authors of this revision in 2011, a few months prior to the InterRad meeting held in Cadiz (Spain). This list contained nearly 1600 generic names. This amount represents more than the sum of the previous two catalogues; a daunting challenge that would require more effort and time than previous monographs, not only due to the magnitude of the task, but primarily the complexity of the taxonomy. Haeckel's report on the Radiolaria collected by the *H.M.S. Challenger* during the Years 1873-1876 is a set of three, somewhat bug and cumbersome volumes, too difficult to handle in a continuous way; however, David C. Bossard (August, 2001) prepared an exceptional digital resource that is available online in the Kurt Stüber's online library. This digital support has been an efficient tool in the everyday work of this long revision.

The kernel of this work dates back to the year 1972 when Foreman and Riedel started to publish a «Catalogue of Polycystine Radiolaria, Series 1 (1834-1900)». This pioneering work was issued in loose-leaf format by the Cushman Foundation and the American Museum of Natural History. The Foreman and Riedel's catalogue was created in a long effort to provide an easy and comprehensive review of the radiolarian publications of the 19th century. These were previously difficult to obtain and understand in laboratory libraries. The publications were written in many different languages, including Latin. This effort was necessary in order to facilitate the recognition of Cenozoic species by different researchers for age determinations of the sediments recovered during the deep-sea coring expeditions of the Deep Sea Drilling Program. Only the first two volumes were published. They included reproductions and translations of radiolarian publications for the period 1834 Meyen to 1862 Bury. This incomplete publication was based on a large set of species fiches made for most of the 19th century radiolarian publications at S.I.O. Most of these inedita fiches were lately used by Cathy Nigrini when she began to build the RadWorld/RadGen databases. This digital media (maintained since 2003 by Jean-Pierre Caulet) has been an invaluable support to every stage of our work.

A preliminary discussion of this list was undertaken during, 3 working days, the week before the InterRad meeting in March 2012. A second preliminary meeting was held at Villefranche-sur-mer (13-18 November, 2012), during which we updated and homogenized the preliminary list and also discussed the Entactinaria and Collodaria. However, we also realized that the complexity of the data would require a new reformulation of the catalogue, and in particular how the data would be justified. This meant that more explanatory notes and support images would be necessary to understand and to solve the systematics of the Cenozoic radiolarians.

Unfortunately, for personal reasons we could not meet for an extended period. Nonetheless, each one of us was working on and updating his personal databases during this time. A grant received by one of us in April of 2016 (NS) resuscitated and accelerated the project. Soon after, the project leader prepared the first draft which would be discussed during the first Paris meeting of the Cenozoic Genera-WG (14-18 November 2016). To prepare this meeting, an initial kickoff meeting was held at Charavines (France) at the residence of one of us (JC), one month earlier (4-10 October). During the first Paris meeting, held at the National Museum of Natural History, we exclusively focused on monocyrtid and dicyrtid nassellarians. The enormous number of the genera on the list and the lack of experience in Cenozoic taxonomy of the project leader required a one-week stage in Charavines with the senior authors (16-22 January 2017) to prepare the material that would be discussed in the second Paris meeting (2-9 December 2017). The first prototype of the new template that would be adopted for the catalogue was presented during this meeting. We focused on actinommid spumellarians (sphaerellarians). During this meeting we decided it was mandatory to acquire a species list with images and synonyms to revise the species composition of every genus; justifying the stratigraphic range and hence the composition of the families. This objective was beyond our

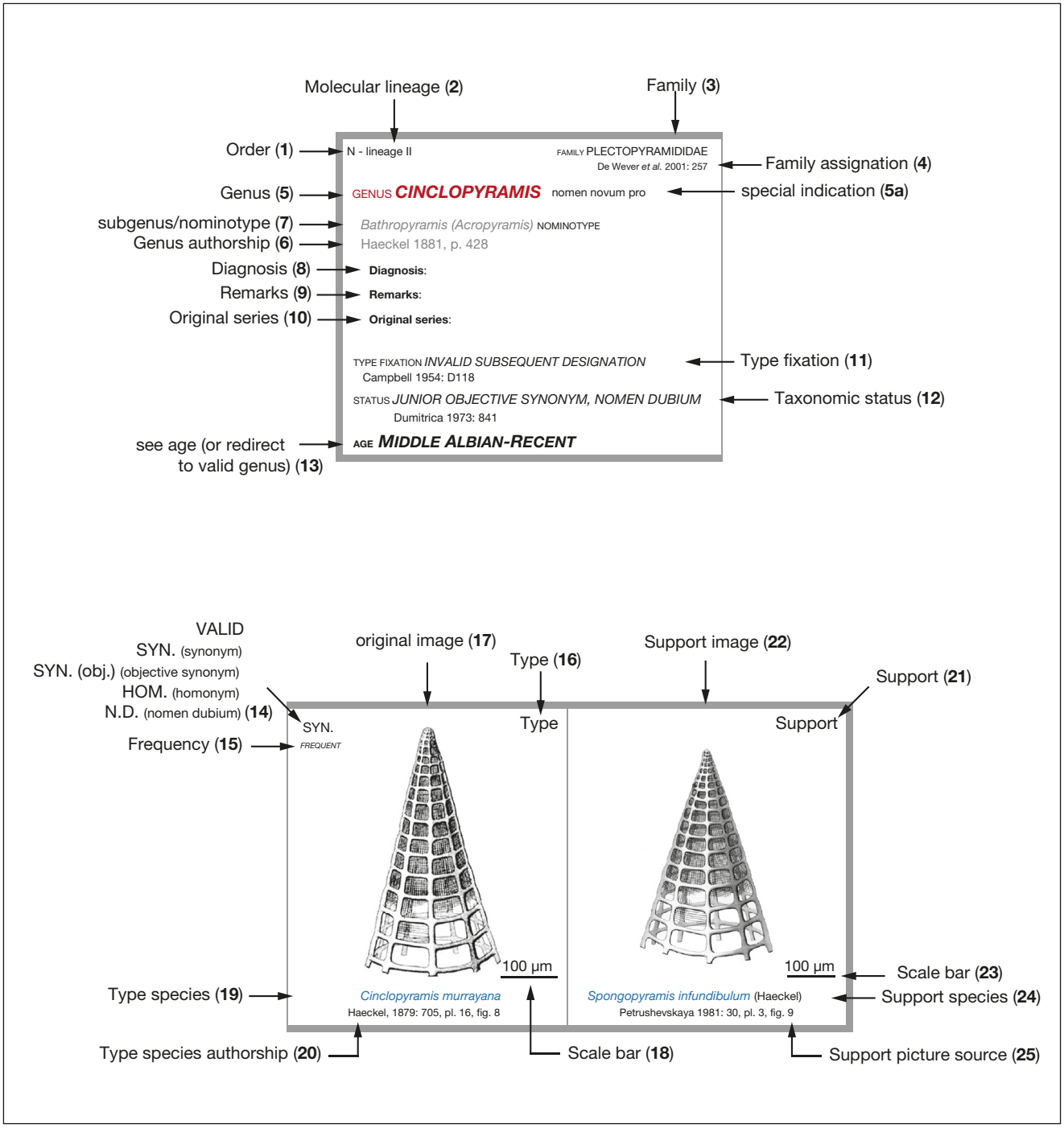


FIG. 1. — Key captions for images and taxonomy in the catalogue of Cenozoic genera. See the "Guide for the users" for a detailed explanation of items 1 to 25. Note: The text on this figure is fictional and it serves only to illustrate all possible fields in this catalogue.

initial conception of the catalogue and the huge dimension which it entailed, constituted another project in itself. For this reason, a second stage in Charavines (15-21 April 2018) was required to prepare this database of species images, synonymies and stratigraphic ages (see appendices). The database, constructed after the RadGen database (Nigrini & Caulet started in 1990) and Suzuki's personal database, was done in a simple spreadsheet, in which small PNG images could be included.

During the third meeting of the Cenozoic Genera-WG held at Charavines (29 July-7 August 2018), this database was an efficient tool to discuss again the entire generic list. At this point, it was possible limit search results by family, genera or species group, with the particularity that the illustration of all Cenozoic species and their synonyms were also integrated in the database.

After the summer meeting, a final stage in Charavines (20-28 October, 2018) allowed us to revise and update the

modifications adopted during the third meeting and also prepare a preliminary version of the catalogue. For this draft, we used the same template as for the Mesozoic and Paleozoic meetings which was a simple template that did not include support images grouped by families. The draft was sent for review and the corrections were received by the end of the year. In February 2019, once all corrections were included, the project leader sent a preliminary version using the final template presented in this book and provided some support images. During this stage of the project, we divided the catalogue into three parts and we completed the diagnoses as well as the support images; many corrections were also introduced. From March to July 2019, numerous, exhaustive (sometimes endless) discussions were done by email.

A second version of the catalogue was ready in August 2019. However, a vigorous exchange of discussions in order to reach a consensus (especially in spumellarians) delayed the final version into early December.

GUIDE FOR THE USERS

The reader will find a set of plates that includes explanations, illustrations of types and support images for all the nominal genera erected upon a known species. The proposed names for genera not associated with any known assigned species (74 *nomina nuda*) are listed at the end of the plates.

Nearly four hundred plates are presented in this work. Each plate displays four genera. In total, 1598 genera were examined on these plates.

Sorting and arrangement of taxa

The sequential arrangement of genera in this publication is quite different from previous catalogues (O'Dogherty *et al.* 2009b; Danelian *et al.* 2017). When this project started, fifteen years ago, we followed the systematics proposed in the most recent and available revision at the time, the so-called "black book" (due to its very black cover) of De Wever *et al.* (2001). Over the past years, molecular analyses on living radiolarians (Biard *et al.* 2015; Sandín *et al.* 2019) have offered a break in the paradigm of the classical Cenozoic systematics. The "new" systematics developed since the 1960's is exclusively based on morphological characters, with an important specific role attributed to the initial spicule and the different mechanisms of shell growth. Among the components of the microzooplankton the radiolarians are a unique rarity having a continuous stratigraphic record back to the earliest Paleozoic. Not all marine fossil groups have equivalent representatives in living plankton as do the radiolarians. For this reason, we have the opportunity to integrate a brand-new perspective in the classical systematics of the group. The combination of both approaches, paleontological (based on morphology) and molecular (based on DNA sequenced analyses) have allowed for the refinement of the concept of the families presented in this revision as well as their classification within major clades.

Hence, the genera are presented by order, then grouped by molecular lineages and distributed by families according to their position in the molecular phylogenetic tree. Inside the family, the genera are alphabetically sorted, as much as possible; nonetheless a few exceptions occur. This might be the case of some homonymous names. Finally, the arrangement within the same genus is as follows: the valid name, the junior synonyms and those *nomina dubia* close to the genus or related by inference after the support image. At the very end, 26 genera erroneously described as Polycystinea are listed; their correct classification is also indicated.

As explained in the introduction, the systematics developed by Haeckel created hundreds of subgenera. Many of these subgenera are unfruitful because Campbell's nomenclatorial acts automatically designated the first subgenus listed in the subheading of the genus as the nominotypical subgenus (regardless of the fact that Haeckel never quoted the subgenus name in any of his species). In turn, the subgenus automatically became the type of the genus and, hence, the objective synonym of the genus (see item 7 below). For the cases in which two subgenera are objective synonyms, we place both genera together; meaning that the alphabetic order is occasionally somewhat shambled within the genus group. The purpose of this is to not to lose the original assignation settled on by Haeckel's monography (1887).

Plate division and captions

The plates are divided in 12 equal-size squares or boxes. In this tessellation, each row corresponds to a single genus (four per plate). Three distinct columns are laid out to give a maximum amount of information in a very reduced space. From left to right (Fig. 1), these columns enclose: A) basic information of the genera; B) illustration of the type species; and C) a support image. A description of the contents included in these boxes is detailed as follows; the number of different items corresponds to those in Figure 1.

A. Basic information (left box)

This box is filled with a gray pattern background if the genus is considered to be valid; this will enable facilitate the identification of valid taxa across the pages for the reader.

1. Order

Located in the left upper corner, a single upper-case letter indicates the order. Four orders are recognized in the Cenozoic and living plankton: Spumellaria (S), Entactinaria (E), Nassellaria (N) and Collodaria (C). The order Entactinaria, which constituted the Lineage III, is kept as valid. However, it is interposed between Spumellaria according to the molecular trees (Sandín 2019; Sandín *et al.* 2021).

2. Lineages

These lineages correspond to the major division determined by the recently published molecular analyses and available data (Biard *et al.* 2015; Krabberød *et al.* 2011; Sandín *et al.* 2019, 2021; Nakamura *et al.* 2020). They represent major aggregations above the family group, not equivalent to superfamilies, but higher, nonetheless. Each order has several lineages indicated by a sequential number in roman characters; for this reason, there is a hyphen between order abbreviation and lineages.

TABLE 1. — Synthesis of possible combinations leading to a positive selection of the support image; only the nomina dubia and positive cases are indicated.

						$(f_t=f_s)$ type species = support image (same species)			$(f_t\neq f_t)$ type species ≠ support image (different species)				
					NO support	support image			support image				
	Type figure	Support figure	Frequency	Originally included species		only the type species was figured	only the type species clearly belongs	all species belong & are figured	originally assigned species	senior subjective synonym	junior subjective synonym	subsequently assigned species	a similar species cited by Haeckel
A	Unfigured	Unfigured	0	1	*n. dubia*								
				2	*n. dubia*								
				3	*n. dubia*								
B	Unfigured	Figured	0	1					*n. dubia*				
				2					*n. dubia*				
				>3					*n. dubia*				
C	Figured	Unfigured	unique	1	*n. dubia*								
				2		*n. dubia*	*n. dubia*						
				>3		*n. dubia*	*n. dubia*						
D	Figured	Figured	unique	1		observed						observed	observed
			very rare			observed						observed	
			rare			observed						observed	
			frequent			observed					observed	observed	
			unique	2		observed	observed	observed	observed		observed	observed	
			very rare			observed	observed	observed	observed				
			rare			observed	observed	observed	observed	observed	observed	observed	
			frequent			observed	observed	observed	observed				
			unique	>3		observed	observed	observed	observed	observed	observed		
			very rare			observed	observed	observed					
			rare			observed	observed	observed	observed	observed		observed	
			frequent			observed	observed	observed					

3. Family
The family name occurs in upper-case, in the upper right-hand corner. Sometimes, the name is preceded by a question mark if there are uncertainties in the assignation of the genus. As explained in the introduction, some family names might look "unusual" when compared to the family names that were frequently reported in the literature of the past thirty years. However, these are the names that should be used in years to come. Unfortunately, many of the classical names used for Cenozoic families are based on *nomina dubia* that, according to the ICZN, are unavailable names at any considered rank in the taxonomic classification (see Suzuki *et al.* 2021). For the reader's convenience, a correspondence of current family names and past (classical) names is presented (see Table 2 and Suzuki *et al.* 2021).

The genera of doubtful affinity (*nomina dubia*) are always presented at the end of all valid and synonymous names that are included in the same family group. As such, following the ICZN rules and guidelines, these genera cannot be classified into a specific family. Nevertheless, they have been placed at the end in order to simplify comparisons with the available members of the group (valid and synonyms). Also included are genera that, even without any illustration, were described by Haeckel as belonging to the family.

4. Family assignation
Just below the family name, a reference indicates who first assigned the genus to the present family (this should not be misconstrued as the authorship of the family). This is only shown for valid genera. Sometimes, the assignation does not directly correspond to the valid name of the genus, but is rather one of its synonyms. Nonetheless, the assignation is always, and only, indicated for valid cases. The page number corresponds to that in which the originally included genera are listed or indicated (in the case of the genus type), or the page in which the subsequent assignations of the genus were reported.

5. Genus name
According to ICZN Art. 32, the original names have been corrected if necessary. This item is an active hyperlink to RadGen (http://www.polycystinea.org) redirecting externally to a database conceived and maintained since 2003 by Jean-Pierre Caulet. An indication may appear (5A), if the genus is: 1) a premature name; 2) an incorrect subsequent spelling, or 3) it is *nomen novum* that replaces a previous case of homonymy.

6. Genus authorship
Name and year of publication with indication of the first page where the name is described.

7. Subgenus or nominotype (nominotypical subgenus)
This line is only filled if the genus was originally described as a subgenus. At the beginning of this project, that is, when the first catalogue of Mesozoic genera started, the working group avoided the usage of subgenera, quite uncommon in the Mesozoic and Paleozoic but extensively employed by Haeckel in the two big monographs of 1862 and 1887 (818 subgenera).

During the 19th and at the very beginning of the 20th Century, the usage of this subdivision was very common and frequently used by authors like, Bütschli, Dreyer, Ehrenberg, Enriques, Huxley, Meyen, Müller, Stöhr and Zittel (only 53 subgenera). In modern times this trend rarely appears and is infrequently used (only 18 subgenera), mostly by Clark & Campbell 1942, 1945; Riedel & Sanfilippo 1970; Sanfilippo & Riedel 1970; Foreman 1973; Tan & Tchang 1976; Sanfilippo 1990; Sanfilippo & Caulet 1998; and Sanfilippo & Riedel 1992.

In zoological nomenclature (see ICZN Art. 44), when a genus is split into subgenera the originally described population is retained as the "nominotypical subgenus" or "nominate subgenus", which explains the repetition of the genus name. However, Haeckel did not include a name that had the same name as the genus, under the list of subgenera, in his monograph of 1887. Furthermore, he never designated the nominal genus himself. The choice used by Haeckel was a simple sequential number (starting from 1) for the assemblage of species included into a same genus. Commonly, the genus is split by subgenus subheading with a short definition for the subgenus. In addition, all originally included species in the same genus heading had an identical name to that of the genus. Thus, Haeckel never used the classical trinomial combination (with the subgenus in brackets).

The word subgenus or nominotype (the species-bearing the nominotypical subgenus) is indicated when both correspond, particularly in most of Haeckel's cases due to the nominotypical subgenus being the junior objective synonym of the genus. There are obviously some exceptions because Haeckel also employed some of the genera proposed by his contemporary colleague, Ehrenberg. The cause for such inconsistency is Campbell's (1954) systematic designation of the first subgenus, listed by Haeckel, into the same generic group as the nominotypical subgenus despite the non-correspondence between the name of the genus and the name of the nominal subgenus. An example depicting this is appears when Haeckel numbered each genus entry with a sequential number throughout his monograph, and for the subgenus, only included a number starting from 1; i.e. Genus 222. *Stylochlamydium*, Subgenus 1. *Stylochlamys,* Subgenus 2. *Stylochlamyum* (see Haeckel 1887: 514-515). In a modern typography it would appear as *Stylochlamydium* (*Stylochlamydium*), *Stylochlamydium* (*Stylochlamys*) and *Stylochlamydium* (*Stylochlamyum*). According to the rules of nomenclature, the nominotypical subgenus should be *Stylochlamydium* (*Stylochlamydium*). However, Campbell's subsequent designation made *Stylochlamydium* (*Stylochlamys*) the nominotypical subgenus and hence it automatically became the junior objective synonym of the genus. This represents one of the major confusions introduced by the Campbell's revision, which could be partially attributed to the inherent inconsistency of Haeckel's systematics. For this reason and following Art. 67.1.1. of ICZN, the nominal genus and its nominotypical subgenus have the same type species.

8. Diagnosis
A brief diagnosis is only given for the genera considered valid in this revision. The diagnosis was based on the original description and illustrated type-series. More detailed and objective information can be found through RadGen database. By clicking on the genus name, the reader will be redirected to an external server.

9. Remarks
Under this item, a variety of information might be retrieved. It basically contains: a) information on the availability of published images for the type illustration or support species; b) a frequency report of subsequent positive identifications and illustrations of the type species after the first illustration; c) an explanation of complex taxonomic issues; d) taxonomic reasons for the selection of the illustrated image for support; e) redirections to new replacement names (in homonyms), nominotypical subgenus, etc.

10. Original series
This item corresponds to the originally included species at the time of the generic definition. The star preceding the genus name indicates that the original type has never been illustrated and it is not stored in any known institution or collection. In some cases, this list might also help the reader to understand how the support image was selected, typically when the name-bearing type of the nominal genus is lost, was never illustrated or is no longer available.

11. Type fixation
The *International Rules on Zoological Nomenclature* were first proposed in 1895 in Leiden during the 3rd International Congress for Zoology and officially published in 1905. Because more than 4/5 of genera were erected before the accordance of any international guidelines on nomenclature, there only exist extremely rare cases of genera whose types were fixed in the original publication previous to the first rules of 1905. For this reason, the first reviser (Campbell 1954) subsequently fixed the majority of Haeckel's genera (and those of his contemporaries), with the aforementioned dreadful reasoning.

In summary, under this item we indicate the type of fixation, either fixed in the original publication (original designation, monotypy and absolute tautonomy) or unfixed (subsequent designation, abbreviated "SD"). The reference to the authorship and page of publication is also presented. Nevertheless, a few taxa were unfixed or had wrongly fixed types. For these cases, and for the sake of taxonomic stability, they have been subsequently fixed in this publication.

12. Status
This item shows the agreement reached in the revision. They may be considered: valid, valid pro (for replaced name), objectively invalid (junior objective synonym, junior homonyms), subjectively invalid (junior subjective synonym, *nomen dubium*) and unavailable names (*nomen nudum*, *nomen oblitum*, invalid nomenclatorial act). For those cases of taxa considered as subjectively invalid, we briefly explain (under the line below) the reasons for this action (applied mostly to *nomina dubia* designated herein) or we indicate the authorship of such resolution (for synonymies).

It is also quite common to find some inadvertent errors in Haeckel's monograph. Although in 1887, Haeckel recurrently refers back to his *Prodromus* (Haeckel 1882), for some cases there is no mention of some generic names in that reference or any later reference. Also, in many places of the Challenger's report, Haeckel corrected the (probably typographic error) "at" by the Latin grapheme "ae", however such emendation is unjustified according to the provisions of ICZN Art. 33a. Other inadvertent errors (or unjustified emendations of previously published names) correspond to the transposition of two letters (i.e. *Pylospyris* by *Polyspyris*). A very detailed report of all inadvertent errors can be found in Deflandre-Rigaud (1969).

13. Bottom line
Three possibilities can be found in this section: a) see (redirecting to the valid taxa or to the senior objective synonym); b) age (the stratigraphic interval resulting from the revision of assigned species, see this volume); and c) the field is empty because the considered taxa are *nomina dubia* or are considered invalid actions and cannot be redirected to any known taxa for comparisons.

Sometimes, the age interval is given between square brackets. This is because the age given by the author is highly questionable. This might be due to labelling problems or sometimes to the type of sediment sampled. Some deep-sea bottom sediments collected during the *H.M.S. Challenger* expedition (from 2000-4000 fathoms; 1 fathom = 1.83 meter) correspond to red pelagic clays, with extremely low rates of sedimentation. For this reason, some deep-sea bottom samples obtained from dredging or sounding at these sites may contain a big mélange of ages, ranging from Late Miocene to Eocene or even the Cretaceous.

B. Type species (middle box)
14. Status acronym
It corresponds to the same information given under item 12. The acronym on the taxonomic status is repeated in the upper left corner in order to quickly identify the genus validness.

15. Frequency
Just below the preceding item is indicated how often the type species has been found. Four categories are presented: unique (the only available figure is that of the type species), very rare (a single image has been reported after the type species), rare (less than four images have been illustrated in whole) and frequent (well documented, more than four images available after first illustration).

16. Type
In the right upper corner, the word TYPE is indicated to highlight the importance of the illustration (the name-bearing type of the genus).

TABLE 2. — Equivalence between "classical family names" and current family after this revision (see Suzuki *et al.* 2021). An active hyperlink under the family name redirect to a pdf file holding all the genera revised and belonging to the family (see explanations for the supplements), and general results of valid and not valid genera after this revision. Haeckel's valid genera for each family is indicated between square brackets.

Order	Lineage	Clade	Superfamily	Family (according to ICZN)	Classical name	valid (409)	syn.(615)	n.d.(394)	inv.(38)	hom.(6)	n.n.(4)	n.o.(1)
SPUMELLARIA	I	A	HEXACROMYOIDEA	HEXACARYIDAE	CUBOSPHAERIDAE	6 [5]	5	3	1	–	–	–
		B		HEXACROMYIDAE		4 [2]	5	19	–	–	–	–
		C		HOLLANDOSPHAERIDAE		3	–	3	–	2	–	–
		D	SPONGOSPHAEROIDEA	SPONGOSPHAERIDAE		3	2	1	–	–	–	–
		E1	LITHOCYCLIOIDEA	ASTRACTURIDAE		3 [1]	14	1	2	–	–	–
				LITHOCYCLIIDAE	COCCODISCIDAE	9 [7]	24	11	–	–	1	–
				PANARTIDAE	ARTISCINIDAE	3 [2]	22	37	1	–	–	–
				PHACODISCIDAE		2 [1]	10	3	1	–	–	–
		E2	SPONGODISCOIDEA	SPONGODISCIDAE		3 [1]	4	3	–	–	–	–
		E3		EUCHITONIIDAE		7 [5]	40	6	1	–	–	–
		unknown		SPONGOBRACHIIDAE		3 [3]	2	–	–	–	–	–
	II	F1	CLADOCOCCOIDEA	ETHMOSPHAERIDAE	LIOSPHAERIDAE	5 [4]	5	11	–	–	–	–
		F2		CLADOCOCCIDAE	ASTROSPHAERIDAE	6 [3]	16	14	–	–	–	–
ENTACTINARIA	III	G	RHIZOSPHAEROIDEA	RHIZOSPHAERIDAE		4 [3]	3	2	–	–	–	–
		H	CENTROCUBOIDEA	CENTROCUBIDAE		2 [2]	2	1	–	–	–	–
		I		EXCENTROCONCHIDAE		3	1	–	–	–	–	–
				QUINQUECAPSULARIIDAE		1	–	–	–	–	–	–
		E		SPONGODRYMIDAE		5 [3]	1	8	1	–	–	–
		unknown	CENTROLONCHOIDEA	CENTROLONCHIDAE		3	–	2	–	–	–	–
			HELIOSATURNALOIDEA	AXOPRUNIDAE		2 [1]	3	5	–	–	–	–
				SATURNULIDAE	SATURNALIDAE	2 [1]	1	3	–	–	–	–
	unknown		THALASSOTHAMNOIDEA	THALASSOTHAMNIDAE		2	–	–	–	–	–	–
SPUMELLARIA	IV	J1-J2	TREMATODISCOIDEA	TREMATODISCIDAE	PORODISCIDAE	4 [2]	17	7	–	–	–	–
		K	HALIOMMOIDEA	ACTINOMMIDAE	CENOSPHAERIDAE	7 [4]	11	8	1	–	1	1
				HALIOMMIDAE		6 [4]	8	5	1	–	–	–
				HELIODISCIDAE		6 [3]	8	7	1	–	–	–
		unknown	LITHELIOIDEA	CONOCARYOMMIDAE		1	1	–	–	–	–	–
		L1		LITHELIIDAE		4 [2]	8	3	1	–	–	–
				PHASELIFORMIDAE		1	–	–	–	–	–	–
				PYRAMISPONGIIDAE		1	1	–	–	–	–	–
				SPONGURIDAE		1 [1]	4	7	–	–	–	–
		L2	SPONGOPYLOIDEA	SPONGOPYLIDAE		4	1	1	–	–	–	–
				PRUNOPYLIDAE		2	–	2	–	–	–	–
				CRISTALLOSPHAERIDAE		2	1	–	–	–	–	–
		M1	PHORTICIOIDEA	AMPHITHOLIDAE	THOLONIIDAE	1 [1]	18	14	1	–	–	–
		M2		CIRCODISCIDAE		5	1	–	–	–	–	–
				CRYPTOLARNACIIDAE		5	–	1	–	–	–	–
				HISTIASTRIDAE		4 [2]	7	1	–	–	–	–
				PHORTICIIDAE	LARNACILLIDAE	4 [2]	2	10	–	–	–	–
		M2	LARCOSPIROIDEA	DIPYLISSIDAE		1	–	–	–	–	–	–
				LARCOSPIRIDAE		4 [4]	10	7	–	–	1	–
				PALAEOTETRAPYLIDAE		1	–	–	–	–	–	–
		M3		PYLODISCIDAE		2 [1]	6	2	–	–	–	–
		M4		ZONARIIDAE	PYLONIIDAE	3 [2]	15	12	1	–	–	–
	unknown		–	PATULIBRACCHIIDAE		3	1	–	–	–	–	–
			PSEUDOAULOPHACOIDEA	PSEUDOAULOPHACIDAE		1	–	–	–	–	–	–
			–	SUTTONIIDAE		3	–	–	–	–	–	–
			–	ENTAPIIDAE		1	–	–	–	–	–	–
			STYLOSPHAEROIDEA	STYLATRACTIDAE		9 [9]	21	23	2	–	–	–
			–	STYLOSPHAERIDAE		4 [3]	4	3	–	–	–	–
			–	TUBOSPHAERIDAE		4 [3]	1	2	–	–	–	–
		incertae placement		INCERTAE FAMILIAE		3	–	–	–	–	–	–

Table 2. — Continuation.

Order	Lineage	Clade	Superfamily	Family (according to ICZN)	Classical name	valid (409)	syn.(615)	n.d.(394)	inv.(38)	hom.(6)	n.n.(4)	n.o.(1)
NASSELLARIA	I	A	Amphipyndacoidea	Amphipyndacidae		1	3	–	–	–	–	–
			Archaeodictyomitroidea	Archaeodictyomitridae		1	3	–	–	–	–	–
			Eucyrtidioidea	Eucyrtidiidae		14 [8]	22	7	2	–	–	–
				Lithostrobidae		1	2	–	–	–	–	–
				Xitomitridae	Stichomitridae	2		–	–	–	–	–
	II	B	Plectopyramidoidea	Plectopyramididae	Acropyramididae	6 [4]	10	9	3	1	–	–
				Lampromitridae ?		2 [1]	2	–	1	–	–	–
				incertae familiae		1	–	–	–	–	–	–
		C	Carpocanioidea	Carpocaniidae		5 [2]	7	4	–	–	–	–
				Diacanthocapsidae		1	1	–	–	–	–	–
		D	Artostrobioidea	Artostrobiidae		11 [6]	11	3	1	–	–	–
				Rhopalosyringiidae		5 [1]	2	1	–	–	–	–
		E	Acanthodesmioidea	Acanthodesmiidae		9 [6]	28	18	2		–	–
				Cephalospyrididae	Triospyrididae	18 [16]	29	22	7	1	–	–
				Paradictyidae	Nephrospyridinae	4 [3]	10	1	–	–	–	–
				Stephaniidae		1	3	–	–	–	–	–
	III	X	Archipilioidea	Archipiliidae		1 [1]	1	1	–	–	–	–
				Theophormidiidae		3 [2]	1	2	1	–	–	–
		F	Theopilioidea	Anthocyrtididae		3 [1]	9	–	–	–	–	–
				Theopiliidae		2 [2]	4	2	–	–	–	–
			Stichopilioidea	Stichopiliidae		4 [3]	2	–	–	–	–	–
		G	Plagiacanthoidea	Ceratocyrtidae		7 [2]	2	–	–	1	–	–
				Dictyocryphalidae		3 [2]	2	3	–	–	–	–
				Dimelissidae		7 [3]	7	11	1	–	–	–
				Phaenocalpididae	Clathromitridae	10 [7]	3	4	–	–	–	–
				Plagiacanthidae		10 [4]	11	10	1	–	–	–
				Pseudodictyophimidae	Lophophaenidae	6	1	3	–	1	–	–
				Tripodiscidae		3 [2]	3	–	–	–	–	–
				Ximolzasidae		3	1	–	–	–	–	–
			Pylobotrydoidea	Pylobotrydidae	Botryocyrtidae	9 [2]	10	10	–	–	–	–
	IV	H	Cycladophoroidea Sethoperoidea	Cycladophoridae		2	3	–	–	–	–	–
				Sethoperidae		6 [5]	9	3	1	–	–	–
		I	Lithochytridoidea	Bekomidae		4 [1]	–	2	–	–	–	–
				Lithochytrididae	Lychnocaniidae	6 [1]	14	2	1	–	–	–
		J	Pterocorythoidea	Lophocyrtiidae		7 [2]	3	–	–	–	–	–
				Pterocorythidae		15 [11]	33	5	–	–	–	–
				Theocotylidae		5 [3]	5	–	1	–	–	–
				Theoperidae	Rhopalocanidae	5 [4]	9	2	1	–	–	–
		unknown		incertae familiae		1	–	–	–	–	–	–
COLLODARIA	solitary		Sphaerozoidea	Collophidiidae		1 [1]	–	1	–	–	–	–
				Collosphaeridae		8 [4]	25	3	–	–	–	–
				Sphaerozoidae	Collozoidae	4 [3]	10	2	–	–	1	–
	colonial		Thalassicolloidea	Thalassicollidae		6 [5]	2	5	–	–	–	–
				Thalassosphaeridae		3 [3]	1	7	–	–	–	–
	unknown		Oroscenoidea	Oroscenidae		5 [2]	5	3	–	–	–	–

17. Original image

The specimen illustrated corresponds to the name-bearing type for most cases, that is, the holotype or lectotype. We have only illustrated a paratype in very few cases because the image provided was better than that of the holotype.

All permissions granted for reproduction of the images are gratefully acknowledged and are explicitly listed at the end. However, the majority of the literature devoted to Cenozoic types date back to the 19th and beginning of 20th century. This literature is freely accessible thanks to the Biodiversity Heritage Library consortium, which has developed tools and services that facilitate greater access and interoperability to taxonomic data. The BHL indexes the taxonomic names throughout the collection, allowing researchers to locate publications about specific taxa. The Digital Object Identifier (DOI) are specifically attributed to these old publications in the reference list,

to ensure that everyone has access to the information needed for further investigations.

A total of 395 genera were erected with descriptions but their types were never figured or stored in any know institution. In the absence of any figure, an advertisement (unfigured species) is indicated.

18. Scale
The images have been scanned and reproduced at the highest resolution for each name-bearing type. These are accompanied by a scale bar made post-measurement, indicated in the original publication.

19. Type species
The original Linnaean or binomial combination is given, and only corrected, if necessary according to ICZN Art. 32.

20. Authorship
The date of publication and authorship are given in full. Due to space limitation, if the species corresponds to three or more joint authors, we follow the recommendation 51C of ICZN; after which the citation of the name of the authors is expressed by the term «*et al.*». Nonetheless, all authors of the name are cited within the bibliographic reference.

The first page for the original description is given and followed by the reference to the plate and figure(s) only illustrated herein (obviously, the type series of the species would include in some cases more illustrations).

C. Support image (right box)
In the Mesozoic catalogue of genera (O'Dogherty *et al.* 2009b), a set of 37 support figures were included at the end of the plates to help identify genera considered as valid in the revision. This is because the original illustrations were insufficiently diagnostic. However, a striking difference between Mesozoic and Cenozoic genera is that in the former, their types species were already fixed and figured. When this project started, it was clear that the use of a similar template to present the catalogue would not be possible, since the taxonomy of Cenozoic genera is more complicated and, in most cases, incomprehensible without a support image. For this reason, we included support figures as often as possible. The preferences followed in selecting the images are different depending on whether the type species were figured or not (more in item 22).

In the introduction of the International Code of Zoological Nomenclature (ICZN), it is stated that new taxa must only be based on «name-bearing types». In the case of the unfigured types of Haeckel, they are treated herein as *nomina dubia* because their name-bearing types are unidentifiable and consequently unavailable. For this reason, it may be impossible to determine whether a specimen belongs to that group, and thus it is impossible to apply this taxon for the genus level or at higher taxonomic categories. The reproductions of support photos here are not necessarily diagnostic at the generic level but serve to support the taxonomic decisions proposed herein.

In this respect, the "Rules of Copenhagen" (Hemming 1957) were more precise than the current ICZN code (see p. 62, Art. 25, «Recommendations» 112: an unfigured species should not be designated or selected as the type species of a genus).

Haeckel's illustrations were extremely well reproduced with a *camera lucida*. Nowadays, the most common method in modern research of Cenozoic radiolarians is observation and photography using transmitted light microscopy. Plankton and soft oceanic sediments are mounted in microscope slides, partly because it is a rapid technique, but mainly because it allows for the correct identification of taxa by studying their internal structure. As much as possible, transmitted light images are favored for support images over SEM pictures, although the latter do show the wonderful nature that fascinated and inspired Haeckel's work.

Some support images are captured with Nomarski Differential Contrast Image; this system takes advantage of differences in the light refraction of different parts of the transparent specimens and makes them visible during microscopic evaluation. This technique is very useful for the study of radiolarians because some internal elements are more distinct, especially in spumellarians with multiple concentric shells.

21. Support (or type)
In the upper right corner, the word SUPPORT clearly expresses that the image is just a reference to reinforce the taxonomic decisions adopted for the genus. Sometimes, the word TYPE may occur in its stead; this is occasionally because the support illustration corresponds to a lectotype. Some lectotypes and paralectotypes have been fixed herein and are adequately signaled.

22. Support image
This may be the most difficult item to explain. As such, a sketch is presented in Table 1. We have four basic and possible permutations: A) type unfigured and support unavailable; B) type unfigured, but support available; C) type figured and support unavailable; and D) type and support figured.

For the two first cases (A and B), they are automatically considered *nomina dubia*. This is for two principal reasons, on the one hand, there is not guarantee that Haeckel's description fits with the name-bearing specimen. On the other, the group of species assigned originally to Haeckel's genus (or subgenus) is frequently very heterogeneous and consequently the genus name may refer to several different genera.

We have also subdivided these categories into subgroups based on: 1) the frequency (the number of times that the type species has been illustrated; see item 15); and 2) the size of the original series (the number of originally included species). For the latter, only three groups have been considered: 1) only a single species (monotypic genus); 2) two species; and 3) three or more species that were originally included.

Finally, we prioritized and considered the potential relevance of the image supporting the genus concept. Obviously, the priority was to display the same species in the boxes for the type and support images, but this occasionally failed due to the possible combination showed in Table 1.

The rules followed in selecting the support images, when the type was figured, were set according to the priority sequence:

1) If the type illustration is clear enough, the best specimen from topotypic material is selected (sometimes, it corresponds to sediments from other *H.M.S. Challenger* sites).

2) If the type illustration is ambiguous but could be clearer with the aid of topotypic material, hence, topotypic images are provide as often as possible.

3) If it is nearly impossible to identify the genus without the knowledge of the internal structure, any photos displaying internal structure is prioritized (i.e. flat-shaped morphologies, spongy radiolarians).

4) If nothing was photographed after the first illustration of the type, the priority is to search for topotypic material as far as possible.

Nonetheless, if the search for the support image in the topotypical material fails, then the priority is: a subsequent illustration of the type species; a junior or senior subjective synonym of the type species; a subsequently included species; one of the originally assigned species; or a similar species cited in the description of the type species by Haeckel.

In summary, the choice in selecting the support image depends on a) the four basic permutations, b) the frequency and size of the original series, and c) the relevance of the available image ensuring the correct identification of the genus. The possible combinations retained in this revision are marked in Table 1.

Since numerous taxa of Christian Gottfried Ehrenberg and Ernst Haeckel had no fixed holotype, as much as possible, we have selected herein lectotypes from the series of syntypes; 207 lectotypes and 7 paralectotype were chosen from the series of syntypes. In addition, 11 neotypes were also designated for taxa that did not have syntypes.

23. Scale

See no. 18.

24. Species name

The name of the support image might be identical to that of the type species (same as in item 19), or slightly different if, a subsequent publication transferred the species into a different genus (in these cases the author's name is quoted between brackets). Conversely, in some cases, as explained in item 22, the support species name might be completely different from the type species (by eliminating possibilities). If this is the case, the illustration may correspond to: 1) a junior or senior synonym; 2) a subsequently included species; or 3) a species mentioned by Haeckel in the description of the genus. For all these cases the author (or authors) are inserted after the species name. Finally, the author's name of the support species does not occur if the image corresponds to one of the species originally included in the genus. In these cases, we quote the author's name underneath.

25. Support picture source

See also no. 20. For previously unpublished material, the sampling locality, the age of the specimen and the owner of the collection are indicated. In regard to the *H.M.S. Challenger* stations, the ages are given below.

Challenger Station 157; Indian Ocean (diatom ooze, surface sediments, probably Quaternary)

Challenger Station 224; Equatorial Pacific Ocean (globigerina ooze, surface sediments, Quaternary)

Challenger Station 225; Indian Ocean (radiolarian ooze, surface sediments, mixed fauna from Late Oligocene to Quaternary; at least RN3-RN5, RP20b)

Challenger Station 244; North Pacific (red clay, surface sediments, presumably Quaternary)

Challenger Station 253; North Pacific (red clay, surface sediments, presumably Quaternary)

Challenger Station 255; Equatorial Pacific (red clay, surface sediments; mixed fauna from Late Oligocene to Quaternary)

Challenger Station 265; Equatorial Pacific (red clay, surface sediments; mixed fauna from Late Oligocene to Quaternary; at least PR12, RP15, RP17-19, RP20b)

Challenger Station 266; Equatorial Pacific (radiolarian ooze, surface sediments; mixed fauna at least RP12-14; highly fragmented specimens)

Challenger Station 267; Equatorial Pacific (radiolarian ooze, surface sediments; mixed fauna at least RP 11-RP20a; not enough number of specimens)

Challenger Station 268; Equatorial Pacific (radiolarian ooze, surface sediments; mixed fauna from Late Oligocene to Quaternary, at least RP12-13, RP17-18, RP20b, RP20c, RN4)

Challenger Station 269; Equatorial Pacific (radiolarian ooze, surface sediments; Middle-Late Eocene ? to Quaternary; highly fragmented specimens)

Challenger Station 270; Equatorial Pacific (globigerina ooze, surface sediments; mixed fauna from Miocene to Quaternary; highly fragmented specimens)

Challenger Station 271; Equatorial Pacific (globigerina ooze, surface sediments; mixed fauna, at least RN15-RN17)

Challenger Station 272; Equatorial Pacific (radiolarian ooze, surface sediments; mixed fauna, at least RP7?, RP13-14, RP15, RP17, RP19, RN22a-RN22b; only very few Quaternary specimens)

FINAL CONSIDERATION

The sole purpose of this catalog was to provide the most complete revision of Cenozoic genera up until December 2019. This third catalogue represents the closing of an ambitious research project, led under the auspice of the International Association of Radiolarists (InterRad), on the taxonomic revision of all genera of polycystine radiolarians. The main goal was to provide the research community with a modern and revised version of the Campbell's work, accessible to everyone in the published media: *Geodiversitas* (https://sciencepress.mnhn.fr/en/periodiques/geodiversitas), a diamond open access journal.

The huge information given in 401 plates is itself an obstacle, making researchers unable to see the wood for the trees. For this reason, a synthesis of 409 valid genera is given in Appendix 5, at the end of the plates.

A brief summary on the taxonomic status of all Cenozoic Polycystinea genera described by 2020 is found in Table 2.

SUPPLEMENTS

A significant aspect of this revision is the age assigned for each valid genus, reported either from the stratigraphic record or from the plankton (see Source of data and discussion). In order to justify the ages documented in this catalogue, two main appendices are available as supplementary files: one for the family-group and another for genus-group. they are the body of data that has allowed development of this revision project.

The family-group files (Appendix 1) is just a binding of those pdf files of genera belonging to a same family. The reader can quickly navigate visually, or jump to a particular genus, by clicking on the bookmarks in the left navigation pane. The Appendix 1 contains 97 family files which are downloadable either from the *Geodiversitas* site as a single zip file or individually by hyperlinks in Table 2 (they are marked to cause the target PDF document to open in a new window).

The Appendix 2 (the genus-group files) includes all those species considered as valid into a same genus with a selected references list showing only reliable subjective synonyms. The stratigraphic occurrences assigned in the original publications are also documented. However, for doubtful occurrences, mainly related to mixed assemblages from highly condensed or reworked sediments, the age is shown in square brackets (the reader is referred to Aita *et al.* (2009) for a detailed review on the age of Challenger's samples studied by Ernst Haeckel). Even though, a subjective evaluation of each species with respect to its taxonomic status (junior/senior synonyms) is beyond the scope of this revision. For this reason, these appendices do not show the synonyms among the whole species assigned into a same genus. A question mark before the genus name in the bookmarks indicates that the genera is questionably assigned in the family.

The group of species whose types can be regarded as inexistent, that is having only a description or diagnosis but lacking a name-bearing specimen, are not included in the aforementioned appendices. However, those species regarded as *nomina dubia* and *nomina nuda* are included in Appendix 3; similarly, those taxa erroneously described as Polycystinea are found in Appendix 4. The Appendix 5 is a synthesis of valid Cenozoic genera. The Appendix 6 (p. 738-1138) corresponds to the whole catalog of Cenozoic genera. The Appendix 7 (p. 1139-1258) is a taxonomic index of Cenozoic Polycystinea radiolarians, while the Appendix 8 (p. 1159) lists the 76 genera without any known described species. At last, the Appendix 9 (p. 1160-1184) is an alphabetic index of Cenozoic Polycystinea radiolarian genera.

Abbreviations and colors for the appendices

Order

The order is indicated in the Bates numbering prefix:

C-	Collodaria;
E-	Entactinaria;
N-	Nassellaria;
S-	Spumellaria.

Availability

Indicated only for unavailable name-bearing specimens (homonyms, *nomina nuda*, *nomen dubium* without figured type, invalid names, etc.).

Status (current genus)

Current assignation of the species according to this revision;

Image

Thumbnail of the name-bearing specimen;

Figure (F)

1: original illustration; **0**: unfigured;

Description (D)

1: original description; **0**: no description.

Name-bearing specimens typology

(F), = S	species with figured type and description in the same publication;
Sø	species having only a description or diagnosis but lacking at all a name-bearing specimen (no illustration or reference to a repository); the type can be regarded as inexistent;
Sf	type figured shortly afterward the early first description of the species;
Sn	a new replacement name for a type that is a junior homonym;
Su	early first publication of the species name before the publication of the type;
Sd	a later formal description of a previously figured specimen;
Sp	is a premature name to be regarded as *nomen nudum,* but being described and figured later on).

Synonymy (SYN)

syn	2nd or 3rd species name citation having only figure or description;
pre	premature name; first citation of the name;
Q	citation queried originally (cf. aff. or in open nomenclature).

Original combination

Original binomial citation of the species with correction of wrongly spelled names.

Authorship

Name, year and page number for the species citation.

Age

Chronostratigraphic occurrence assigned in the original publication.

Text colors

black	first species description;
blue	*nomen nudum* (synonyms or premature names);
green	junior synonyms;
red	taxa wrongly described as Polycystinea.

Background colors

red	available species whose name-bearing specimen is the type of a valid genus;
green	available species (in order to keep the objectiveness of this inventory, the synonymy relationship among the available species names are not indicated);
blue	*nomen nudum* species;
light green	species whose name-bearing specimen is a junior synonym of the current assigned genus (status);

light yellow	indicate the type-bearing specimen for those genera that were early first described without illustration of their types;
light red	*nomen dubium*;
light blue	*nomen dubium* related by inference.

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Illustrations of holotypes and other specimens in previous works have been reproduced from original publications. We are thankful for permissions granted by the following journals/institutions:
– *Acta Adriatica*;
– *Acta Oceanographica Taiwanica*;
– *Acta Palaeontologica Polonica*;
– *Acta Palaeontologica Romaniae*;
– *Archives du Muséum national d'Histoire naturelle, Paris*;
– *Biological Memoirs, Lucknow, India, International Publishers*;
– *Boletín de la real Sociedad española de Historia natural*;
– *Bulletin of the geological Survey of Japan*;
– *Bulletin of the Mizunami Fossil Museum, Mizunami, Japan*;
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– *Marine Biology, Berlin, New York, Springer-Verlag*;
– *Marine Geology, Elsevier, The Netherlands*;
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EPILOGUE

A longtime ago, when I was still younger and my memory was clearer than today, I never imagined the vast and endless ocean in which we set out for. I remember the fear when, sitting beside Patrick, he considered a review project of all described radiolarian Polycystinea genera. We never imagined the difficulties of such an endeavour, and the long duration: a journey of fifteen long years.

After submitting the manuscript, a rare disease definitely snuck up on me; I didn't initially realise how serious this change to my health would be. I cannot even do the things I usually enjoyed and loved (even now, typing these lines). We sprinted through 2019 in order to have a new published catalogue for the Slovenia InterRad meeting. However, out of nowhere, a terrible virus spread all over the world forever changing our way of life, leaving behind an uncountable number of broken histories and a dramatic loss of human life.

Other chapters were planned for this special issue, but unfortunately they must remain on the desk because there was no energy for more than that. For this reason, I would like to close with two of Goethe's short poems. They were composed at least as early as 1795, clearly intended to oppose fear and stillness. The representation of Nature they present is so unusual, but extraordinarily evocative of the philosophical thinking of the early Romantic period; but, also superbly mirror the desolate landscapes of still villages, without "nighthawks" on the streets. The oceanic views given by Goethe is a masterful piece of contradictions. In one hand, the absolute peace of the motionless sea provokes fear and anxiety; on the other, the joy, the light at the end of this long, dark tunnel, as the mist disappear and the wind kicks up. The scientific storm in developing a rapid solution had set a new standard for vaccine development. Hope, it will be also a new standard of solidarity of free access to every human been; at least, this was the altruistic spirit propelling this enterprise since its beginning.

Quiet Sea
Deep quiet rules the waters;
motionless, the sea reposes,
and the boatsman looks about with alarm
at the smooth surfaces about him.
No wind comes from any direction!
A deathly, terrible quiet!
In the vast expanse
not one wave stirs.

Fortunate Voyage
The mist is torn away,
The heavens turn bright,
And Aeolus unfastens
The bonds of fear.
There, the winds rustle,
the boatsman stirs.
Quickly! Quickly!
The waves rise up again.
The distant view draws close,
Land ho, I call!

Johann Wolfgang Goethe,
"*Meeresstille und Glückliche Fahrt*" (1795)

REFERENCES

ABELMANN A. 1990. — Oligocene to Middle Miocene radiolarian stratigraphy of southern high latitudes from Leg 113, sites 689, and 690, Maud Rise, *in* BAKER P. F., KENNETT J. P. *et al.* (eds), *Proceedings of the Ocean Drilling Program, Scientific Results*. Vol. 113. College Station, TX (Ocean Drilling Program): 675-708. https://doi.org/10.2973/odp.proc.sr.113.200.1990

AGASSIZ L. 1845. — *Nomenclator zoologicus: continens nomina systematica generum animalium tam viventium quam fossilium, secundum ordinem alphabeticum disposita, adjectis auctoribus, libris, in quibus reperiuntur, anno editionis, etymologia et familiis, ad quas pertinent.* Jent & Gassmann,1842-1846, 393 p. https://doi.org/10.5962/bhl.title.49761

AITA Y., SUZUKI N., OGANE K., SAKAI T., LAZARUS D., YOUNG J. & TANIMURA Y. 2009. — Haeckel Radiolaria Collection and the *H.M.S. Challenger* Plankton Collection, *in* TANIMURA Y. & AITA Y. (eds), *Joint Haeckel and Ehrenberg Project: Reexamination of the Haeckel and Ehrenberg Microfossil Collections as a Historical and Scientific Legacy*. Vol. 40. National Museum of Nature and Science Monographs: 35-45. https://www.kahaku.go.jp/research/db/botany/ehrenberg/pdf/35-46.pdf; https://www.kahaku.go.jp/research/db/botany/ehrenberg/pdf/P-2.pdf

ALLMAN F. R. S. 1864. — On the construction and limitation of genera among the Hydroida. *The Annals and Magazine of Natural History; Zoology, Botany, and Geology*, 3rd Series 13: 345-380. https://www.biodiversitylibrary.org/page/26482629

ALVIRA-MARTÍN M. P. 1971. — Los Radiolarios fosiles en yacimientos de Moronitas españolas. *Boletín de la real Sociedad española de Historia natural. Sección Geológica* 69 (3): 215-230.

ALVIRA-MARTÍN M. P. 1972a. — Sobre Spumellaridos y Nassellaridos españoles. *Boletín de la real Sociedad española de Historia natural. Sección Geológica* 70 (4): 199-213.

ALVIRA-MARTÍN M. P. 1972b. — Los Radiolarios fósiles en yacimientos de Moronitas españolas (primera parte). *Estudios Geológicos* 28: 13-44.

ALVIRA-MARTÍN M. P. & ALONSO J. 1971. — Primera contribución al estudio de algunas estructuras de Radiolarios. *Estudios Geológicos* 27 (2): 167-169.

ALVIRA-MARTÍN M. P. & ALONSO J. J. 1972. — Contribución al estudio algunos Radiolarios fósiles españoles. *Boletín de la real Sociedad española de Historia natural (Geol.)* 70 (3): 127-138.

ANDERSON O. R. & BOTFIELD M. 1983. — Biochemical and fine structure evidence for cellular specialization in a large spumellarian radiolarian *Thalassicolla nucleata*. *Marine Biology* 72 (3): 235-241. https://doi.org/10.1007/BF00396828

ANDERSON O. R., HEMLEBEN C., SPINDLER M. & LINDSEY J. L. 1986. — A comparative analysis of the morphogenesis and morphometric diversity of mature skeletons of living *Didymocyrtis tetrathalamus tetrathalamus* and *Hexalonche amphisiphon*. *Marine Micropaleontology* 11 (1-3): 203-215. https://doi.org/10.1016/0377-8398(86)90015-0

ANDERSON O. R. & SWANBERG N. 2017. — *Spongostaurina* Nom. Nov., a replacement name for *Spongostaurus* Swanberg, Anderson & Bennett, 1985 (Protista: Rhizaria). *Marine Micropaleontology* 135: 56. https://doi.org/10.1016/j.marmicro.2017.08.001

ANDERSON O. R. & SWANBERG N. R. 1981. — Skeletal morphogenesis in some living collosphaerid Radiolaria. *Marine Micropaleontology* 6 (4): 385-396. https://doi.org/10.1016/0377-8398(81)90008-6

BAILEY J. W. 1856. — Notice of microscopic forms found in the soundings of the Sea of Kamtschatka – with a plate. *American Journal of Science and Arts, Series 2,* 22 (64): 1-6. https://www.biodiversitylibrary.org/page/46660104

BAUMGARTNER P. O., O'DOGHERTY L., GORIČAN Š., DUMITRICA-JUD R., DUMITRICA P., PILLEVUIT A., URQUHART E., MATSUOKA A., DANELIAN T., BARTOLINI A., CARTER E. S., DE WEVER P., KITO N., MARCUCCI M. & STEIGER T. 1995. — Radiolarian catalogue and systematics of Middle Jurassic to Early Cretaceous Tethyan genera and species, *in* BAUMGARTNER P. O., O'DOGHERTY L., GORICAN S., URQUHART E., PILLEVUIT A. & DE WEVER P. (eds), *Mémoires de Géologie (Lausanne)*. Vol. 23. Lausanne: 37-685.

BECK H. 1837. — *Index molluscorum praesentis aevi musei principis augustissimi Christiani Frederici*. Hafniae, Copenhagen. 124 p. https://doi.org/10.5962/bhl.title.46251

BEEBE W. 1932. — A new deep-sea fish. *Bulletin of the New York Zoological Society* 35 (5): 175-177.

BENSON R. N. 1966. — *Recent Radiolaria from the Gulf of California* [Ph.D. Thesis]: Minnesota University, 577 p.

BENSON R. N. 1983. — Quaternary radiolarians from the mouth of the Gulf of California, Deep Sea Drilling Project Leg 65, *in* LEWIS B. T. R., ROBINSON P. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 65. U.S. Government Printing Office, Washington, D.C.: 491-523. https://doi.org/10.2973/dsdp.proc.65.123.1983

BERNHAUER M. 1903. — Beitrag zur Staphylinidenfauna von Ostindien und den Sundainseln. *Stettiner Entomologische Zeitung* 64: 21-36.

BERTOLINI F. 1937. — Sulla classificazione dei Radiolari, 12ème Congrès international de Zoologie tenu à Lisbonne du 15 au 21 Septembre 1935. Comptes Rendus. Vol. 2. Arquivos do Museu Bocage, Lisbon: 1265-1275.

BIARD T., PILLET L., DECELLE J., POIRIER C., SUZUKI N. & NOT F. 2015. — Towards an Integrative Morpho-molecular Classification of the Collodaria (Polycystinea, Radiolaria). *Protist* 166 (3): 374-388. https://doi.org/10.1016/j.protis.2015.05.002

BJØRKLUND K. R. 1973. — Radiolarians from the surface sediment in Lindaspollene, western Norway. *Sarsia* 53: 71-75. https://doi.org/10.1080/00364827.1973.10411248

BJØRKLUND K. R. 1976a. — Radiolaria from the Norwegian Sea, Leg 38 of the Deep Sea Drilling Project, *in* TALWANI M., UDINTSEV G. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 38. U.S. Government Printing Office, Washington, D.C.: 1101-1168. https://doi.org/10.2973/dsdp.proc.38.131.1976

BJØRKLUND K. R. 1976b. — *Actinomma haysi*, n.sp., its Holocene distribution and size variation in Atlantic Ocean sediments. *Micropaleontology* 23 (1): 114-126. https://doi.org/10.2307/1485311

BJØRKLUND K. R. & DE RUITER R. 1987. — Radiolarian preservation in eastern Mediterranean anoxic sediments, *in* VAN HINTE J. E., CITA M. B. & VAN DER WEIJDEN C. H. (eds), *Marine Geology*. Vol. 75. Elsevier, Amsterdam, The Netherlands: 271-281. https://doi.org/10.1016/0025-3227(87)90109-5

BJØRKLUND K. R., DUMITRICA P., DOLVEN J. K. & SWANBERG N. R. 2008. — *Joergensenium rotatile* n. gen., n. sp. (Entactinaria, Radiolaria): its distribution in west Norwegian fjords. *Micropaleontology* 53 (6): 457-468. https://doi.org/10.2113/gsmicropal.53.6.457

BJØRKLUND K. R., ITAKI T. & DOLVEN J. K. 2014. — Per Theodor Cleve: a short résumé and his radiolarian results from the Swedish Expedition to Spitsbergen in 1898. *Journal of Micropalaeontology* 33 (1): 59-93. https://doi.org/10.1144/jmpaleo2012-024

BLANCHARD R., MAEHRENTHAL F. VON & STILES C. W. 1905. — *Règles internationales de la nomenclature zoologique adoptées par les Congrès internationaux de Zoologie*. International Rules of Zoological Nomenclature. Internationale Regeln der Zoologischen Nomenklatur. F.R. de Rudeval, Paris. 57 p.

BLUEFORD J. R. 1982. — Miocene actinommid Radiolaria from the Equatorial Pacific. *Micropaleontology* 28 (2): 189-213. https://doi.org/10.2307/1485230

BOLTOVSKOY D. 1987. — Sedimentary record of radiolarian biogeography in the equatorial to Antarctic western Pacific Ocean. *Micropaleontology* 33 (3): 267-281. https://www.jstor.org/stable/1485643

BOLTOVSKOY D. & JANKILEVICH S. S. 1985. — Radiolarian distribution in east equatorial Pacific plankton. *Oceanologica Acta* 8 (1): 101-123. https://archimer.ifremer.fr/doc/00112/22296/

BORISENKO N. N. 1958. — Paleocene Radiolaria of Western Kubanj. *Transactions of the All Union Oil and Gas Scientific Research Insitute (VNII), Krasnodarsk Branch* 17: 81-100 [in Russian].

BOSSARD D. C. 2001. — *Biolib.de – Report on the Radiolaria collected by* H.M.S. Challenger *by Ernst Haeckel* [online] Available

at: http://www.biolib.de/haeckel/challenger/index.htm [Accessed 24 Feb. 2021].
Bragin N. Y., Tekin U. K. & Özçelik Y. 2002. — Middle Jurassic radiolarians from the Akgöl Formation, central Pontids, northern Turkey. *Neues Jahrbuch für Geologie und Paläontologie, Monatshefte* 10: 609-628. https://doi.org/10.1127/njgpm/2002/2002/609
Brandt K. 1882. — Untersuchungen an Radiolarian. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1881): 388-404. https://www.biodiversitylibrary.org/page/39003473
Brandt K. 1885. — Die koloniebildenden Radiolarien (Spherozoeen) des Golfes von Neapel und der angrenzenden Meeresabschnitte. *Monographie Fauna Flora Golfes Neapel* 13: 1-276. https://doi.org/10.5962/bhl.title.37846
Brandt K. 1902. — Beiträge zur Kenntnis der Colliden (1 & 2). *Archiv für Protistenkunde* 1 (1): 59-88.
Brandt K. 1905. — Zur Systematik der koloniebildenden Radiolarien. *Zoologische Jahrbücher, Jena* 21: 311-352. https://www.biodiversitylibrary.org/page/14201876
Brandt R. 1935. — Die Mikropalaeontologie des Heiligenhafener, Kieseltones (Ober-Eozan) Radiolarien; Systematik, *in* Wetzel E. O. (ed.), *Jahresbericht des Niedersachsischen geologischen Vereins*. Vol. 27. Hannover, Germany: 48-59.
Brullé G. A. 1834. — *Histoire naturelle des Insectes*. Volume 4, Coléoptères I. Paris 479 p. https://www.biodiversitylibrary.org/page/9380114
Burchardt E. 1900. — Beiträge zur Kenntnis des *Amphioxus lanceolatus* nebst einem ausfuhrlichen Verzeichnis der bisher über *Amphioxus* veroffentlichten Arbeiten. *Jenaische Zeitschrift für Naturwissenschaft* 34: 719-832. https://www.biodiversitylibrary.org/page/11877765
Burki F. & Keeling P. J. 2014. — Rhizaria. *Current Biology* 24 (3):103-107. https://doi.org/10.1016/j.cub.2013.12.025
Burma B. H. 1959. — On the status of *Theocampe* Haeckel, and certain similar genera. *Micropaleontology* 5 (3): 325-330. https://www.jstor.org/stable/1484423
Burridge A. K., Bjørklund K. R., Kruglikova S. B. & Hammer Ø. 2014. — Inter- and intraspecific morphological variation of four-shelled *Actinomma* taxa (Radiolaria) in polar and subpolar regions. *Marine Micropaleontology* 110: 50-71. https://doi.org/10.1016/j.marmicro.2013.10.004
Bury P. S. 1862. — *Polycystins, Figures of Remarkable Forms & c., in the Barbados Chalk Deposit, (Chiefly Collected by Dr. Davy, and Notice in a Lecture to the Agricultural Society of Barbados, in July, 1846)*. W. Weldon, London, United Kingdom, 8 p. https://doi.org/10.5962/bhl.title.9437
Bütschli O. 1882a. — III. Unterabtheilung (Unterklasse). Radiolaria, *in* Bronn H. G. (ed.), *Dr. H.G. Bronn's Klassen und Ordnungen des Thier-Reichs, wissenschaftlich dargestellt in Wort und Bild. Protozoa. I. Abteilung: Sarkodina und Sporozoa*. Vol. 1. C.F. Winter'sche Verlagshandlung, Leipzig und Heidelberg: 332-478. https://doi.org/10.5962/bhl.title.14134
Bütschli O. 1882b. — Beiträge zur Kenntnis der Radiolarienskelette, insbesondere der Cyrtida. *Zeitschrift für Wissenschaftliche Zoologie* 36: 485-540. https://www.biodiversitylibrary.org/page/45332114
Cachon J. & Cachon M. 1969. — Révision systématique des Nassellaires Plectoidea à propos de la description d'un nouveau représentant, *Plectagonidium deflandrei* nov. gen. nov. sp. *Archiv für Protistenkunde* 111: 236-251.
Cachon J. & Cachon M. 1970. — Organisation de l'axoplaste et des axopodes des radiolaires Nassellaires, transitions entre des systèmes microfibrillaire, microtubulaire et microprismatique, *in* Septième congrès international de microscopie électronique, Grenoble. Société française de Microscopie électronique, Paris, France: 395-396.
Cachon J. & Cachon M. 1972. — Les modalités du dépôt de la silice chez les Radiolaires. *Archiv für Protistenkunde* 114 (1-2): 1-13.
Cachon J. & Cachon M. 1977. — Le système axopodial des Collodaires (Radiolaires Polycystines) II. *Thalassolampe margarodes* Haeckel. *Archiv für Protistenkunde* 119: 401-406.
Cachon J. & Cachon M. 1985. — 2. Class Polycystinea, *in* Lee J. J., Hutner S. H. & Bovee E. C. (eds), *An Illustrated Guide to the Protozoa*. Society of Protozoologists, Lawrence Kansas: 283-295.
Cachon J. & Cachon-Enjumet M. 1970. — Étude cytologique du Radiolaire *Centrocolla astroides* nov. gen. nov. sp., à caractères de Collodaire et de Sphaerellaire, *in* First Symposium on Siliceous Microplankton, Rome.
Campbell A. S. 1951. — New genera and subgenera of Radiolaria. *Journal of Paleontology* 25 (4): 527-530. https://www.jstor.org/stable/1299751
Campbell A. S. 1953. — A new radiolarian genus. *Journal of Paleontology* 27 (2): 296. https://www.jstor.org/stable/1300062
Campbell A. S. 1954. — Radiolaria, *in* Moore R. C. (ed.), *Treatise on Invertebrate Paleontology*. Vol. Part. D, Protista 3. Geological Society of America and University of Kansas Press, Lawrence/Kansas: 11-195.
Campbell A. S. & Clark B. L. 1944a. — Radiolaria from Upper Cretaceous of Middle California. *Geological Society of America, special Papers* 57: 1-61. https://doi.org/10.1130/SPE57
Campbell A. S. & Clark B. L. 1944b. — Miocene radiolarian faunas from southern California. *Geological Society of America, special Papers* 51: 1-76. https://doi.org/10.1130/SPE51
Caridroit M., Danelian T., Noble P. & Aitchison J. C. 2017. — Catalogue of Paleozoic radiolarian genera. *Geodiversitas* 39 (3): 345-645. https://doi.org/10.5252/g2017n3a3. http://geodiversitas.com/39/3
Carnevale P. 1908. — Radiolarie e silicoflagellati di Bergonzano (Reggio Emilia). *Memorie del Reale Istituto veneto di Scienze, Lettre ed Arti* 28 (3): 1-46.
Carter F. B. 1896a. — Radiolaria: a new genus from Barbados. *American Monthly Microscopical Journal* 17: 96-97. https://www.biodiversitylibrary.org/page/16257289
Carter F. B. 1896b. — Radiolaria: a new genus and new species. *American Monthly Microscopical Journal* 17: 163-164. https://www.biodiversitylibrary.org/page/16257360
Caulet J. P. 1974. — Les Radiolaires des boues superficielles de la Mediterranee (The Radiolaria of the surficial sediments of the Mediterranean Sea). *Bulletin du Muséum national d'Histoire naturelle, Paris, 3ème Série* 249: 217-288. https://www.biodiversitylibrary.org/page/55495121
Caulet J. P. 1979. — Les dépôts à radiolaires d'âge pliocène supérieur à pléistocène dans l'océan Indien central : nouvelle zonation biostratigraphique. *Mémoires du Muséum national d'Histoire naturelle de Paris* 43: 119-141. https://www.biodiversitylibrary.org/page/58401440
Caulet J. P. 1991. — Radiolarians from the Kerguelen Plateau, Leg 119, *in* Barron J., Larsen B. *et al.* (eds), *Proceedings of the Ocean Drilling Program, Scientific Results*. Vol. 119. College Station, TX (Ocean Drilling Program): 513-546. https://doi.org/10.2973/odp.proc.sr.119.137.1991
Caulet J. P. & Nigrini C. 1988. — The genus *Pterocorys* (Radiolaria) from the tropical late Neogene of the Indian and Pacific Oceans. *Micropaleontology* 34 (3): 217-235. https://doi.org/10.2307/1485753
Cavalier-Smith T. 1999. — Principles of protein and lipid targeting in secondary symbiogenesis: euglenoid, dinoflagellate, and sporozoan plastid origins and the eukaryote family tree. *Journal of Eukaryotic Microbiology* 46 (4): 347-366. https://doi.org/10.1111/j.1550-7408.1999.tb04614.x
Cavalier-Smith T. 2002. — The phagotrophic origin of eukaryotes and phylogenetic classification of Protozoa. *International Journal of Systematic and Evolutionary Microbiology* 52 (2): 297-354. https://doi.org/10.1099/00207713-52-2-297
Cavalier-Smith T., Chao E. E. & Lewis R. 2018. — Multigene phylogeny and cell evolution of chromist infrakingdom Rhizaria: contrasting cell organisation of sister phyla Cercozoa and Retaria. *Protoplasma* 255 (5): 1517-1574. https://doi.org/10.1007/s00709-018-1241-1

CHAUDOIR M. DE 1854. — Mémoire sur la Famille des Carabiques. *Bulletin de la Société impériale des Naturalistes de Moscou* 21: 3-134. https://www.biodiversitylibrary.org/page/40074080
CHEDIYA D. M. 1959. — *Obzor Sistematiki Radiolyarii*, Tadzhikskii Gosudarstvennyi Universitet, Stalingrad, 330 p. and corrigenda [in Russian].
CHEN M. & TAN Z. 1989. — Description of a new genus and 12 new species of Radiolaria in sediments from the South China Sea. *Tropic Oceanology* 8 (1): 1-9 [in Chinese].
CHEN M. & TAN Z. 1996. — *Radiolaria from Surface Sediments of the Central and Northern South China Sea*. Scene Publishing House, Beijing, 271 p. [in Chinese].
CHEN M., ZHANG Q. & ZHANG L. 2017. — *Radiolaria in the Sediments from the Northwest Pacific and its marginal seas*. Scientific Publishing, Beijing, 1-279 p. [in Chinese].
CHEN P. H. 1975. — Antarctic Radiolaria, *in* HAYES D. E., FRAKES L. A. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 28. U.S. Government Printing Office, Washington, D.C.: 437-513. https://doi.org/10.2973/dsdp.proc.28.111.1975
CHEN W. 1987. — Some new species of radiolaria from surface sediments of the East China Sea and the South China Sea. *Chinese Journal of Oceanology and Limnology* 5 (3): 222-227. https://doi.org/10.1007/BF02843986
CLAPARÈDE E. 1855. — Über die Lebenserscheinungen und insbesondere Bewegungserscheinungen der Acanthometren. *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Konigl. Preuss.Akademie der Wissenschaften zu Berlin.*: 674-676. https://www.biodiversitylibrary.org/page/11070868
CLAPARÈDE E. & LACHMANN J. 1858. — Echinocystida, *Etudes sur les Infusoires et les Rhizopodes*. Vol. 1: 431-434 and 458-463. https://doi.org/10.5962/bhl.title.29753
CLARK B. L. & CAMPBELL A. S. 1942. — Eocene radiolarian faunas from the Monte Diablo area, California. *Geological Society of America, special Papers* 39: 1-112. https://doi.org/10.1130/SPE39
CLARK B. L. & CAMPBELL A. S. 1945. — Radiolaria from the Kreyenhagen Formation near Los Banos, California. *Geological Society of America, Memoir* 101: i-vii, 1-66. https://doi.org/10.1130/MEM10
CLEVE P. T. 1899. — Plankton collected by the Swedish expedition to Spitzbergen in 1898. *Kongliga svenska Vetenskaps Akademiens Handlingar* 32 (3): 1-51. https://www.biodiversitylibrary.org/page/34228851
CLEVE P. T. 1901. — Plankton from the Indian Ocean and the Maylay Archipelago. *Kongliga svenska Vetenskaps Akademiens Handlingar* 35 (5): 1-58. https://www.biodiversitylibrary.org/page/34435011
CORTESE G. & BJØRKLUND K. R. 1999. — Radiolarians from the cyclic Messinian diatomites of Falconara (Sicily, Italy). *Geodiversitas* 21 (4): 596-624.
DANELIAN T., CARIDROIT M., NOBLE P. & AITCHISON J. C. (eds) 2017. — Catalogue of Paleozoic radiolarian genera/*Catalogue des radiolaires paléozoïques*. *Geodiversitas* 39 (3), arts 10-15. http://geodiversitas.com/39/3
D'ORBIGNY A. 1852. — Cours élémentaire de paléontologie et de géologie stratigraphiques. Vol. 2. Victor Masson, Paris, 392 p. https://doi.org/10.5962/bhl.title.154975
DE WEVER P., DUMITRICA P., CAULET J. P., NIGRINI, C. & CARIDROIT M. 2001. — *Radiolarians in the Sedimentary Record*. CRC Press, Amsterdam, 533 p. https://doi.org/10.1201/9781482283181
DEFLANDRE G. 1953. — Radiolaires fossiles, *in* GRASSÉ P. P. (ed.), *Traité de Zoologie*. Vol. 1. Masson, Paris: 389-436.
DEFLANDRE G. 1960. — À propos du développement des recherches sur les Radiolaires fossiles. *Revue de Micropaléontologie* 2 (4): 212-218.
DEFLANDRE G. 1964. — Sur le sens du développement, centrifuge ou centripète, des éléments de la coque des Radiolaires Sphaerellaires. *Comptes Rendus hebdomadaires des Séances de l'Academie des Sciences (Paris), Série D: Sciences naturelles* 259 (13): 2117-2119. https://gallica.bnf.fr/ark:/12148/bpt6k40149/f448.image
DEFLANDRE G. 1972. — *Nothotripodiscinus* nov. gen., radiolaire (?) aberrant a squelette creux, d'une vase du Pacifique tropical, type d'une famille nouvelle, Nothotripodiscinidae, de position systematique incertaine. *Comptes Rendus hebdomadaires des Séances de l'Academie des Sciences (Paris), Série D: Sciences naturelles* 275 (2): 229-232. https://gallica.bnf.fr/ark:/12148/bpt6k57786873/f261.image
DEFLANDRE G. 1973. — Observations et remarques sur les Radiolaires Sphaerellaires du Paléozoïque, à propos d'une nouvelle espèce, viséenne, du genre *Foremaniella* Defl., parfait intermédiaire entre les Périaxoplastidies et les Pylentonémidés. *Comptes Rendus hebdomadaires des Séances de l'Academie des Sciences (Paris), Série D: Sciences naturelles* 276 (2): 1147-1151. https://gallica.bnf.fr/ark:/12148/bpt6k5803214k/f1307.image
DEFLANDRE-RIGAUD M. 1969. — Remarques sur la nomenclature des Radiolaires. I. Haeckel 1887 et le « *Challenger* ». *Bulletin du Muséum national d'Histoire naturelle, Paris, 2ème Série* 40: 1071-1092. https://www.biodiversitylibrary.org/page/55344262
DINKELMAN M. G. 1973. — Radiolarian stratigraphy: Leg 16, Deep Sea Drilling Project, *in* VAN ANDEL T. H., HEATH G. R. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 16. U.S. Government Printing Office, Washington, D.C.: 747-813. https://doi.org/10.2973/dsdp.proc.16.128.1973
DOGIEL V. A. & RESHETNYAK V. V. 1952. — Material on radiolarians of the northwestern part of the Pacific Ocean. *Research of the Far Eastern Seas of the USSR* 3 (1): 5-36 [in Russian].
DOLVEN J. K., BJØRKLUND K. R. & ITAKI T. 2014. — Jørgensen's polycystine radiolarian slide collection and new species. *Journal of Micropalaeontology* 33 (1): 21-58. https://doi.org/10.1144/jmpaleo2012-027
DREYER F. 1889. — Die Pylombildungen in vergleichend-anatomischer und entwicklungsgeschichtlicher Beziehung bei Radiolarien und bei Protisten uberhaupt. *Jenaische Zeitschrift für Naturwissenschaft* 23: 77-214. https://www.biodiversitylibrary.org/page/11964620
DREYER F. 1890. — Die Tripoli von Caltanisetta (Steinbruch Gessolungo) auf Sizilien. *Jenaische Zeitschrift für Naturwissenschaft* 24: 471-548. https://www.biodiversitylibrary.org/page/11879509
DUMITRICA P. 1973. — Cretaceous and Quaternary Radiolaria in deep sea sediments from the northeast Atlantic Ocean and Mediterranean Sea, *in* RYAN W. B. F., HSÜ K. J. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 13. U.S. Government Printing Office, Washington, D.C.: 829-901. https://doi.org/10.2973/dsdp.proc.13.134-1.1973
DUMITRICA P. 1978. — Badenian Radiolaria from central Paratethys, *in* BRESTENSKA E. (ed.), *Chronostratigraphie und Neostratotypen; Miozaen der Zentralen Paratethys*. Vol. 6. VEDA, Verlag der Slowakischen Akademie der Wissenschaften, Bratislava, Czechoslovakia: 231-261.
DUMITRICA P. 1983a. — Systematics and evolution of the genus *Suttonium* Schaaf (Radiolaria). *Revue de Micropaléontologie* 26 (1): 36-47.
DUMITRICA P. 1983b. — Evolution of Mesozoic and Cenozoic Centrocubidae (Radiolaria). *Revue de Micropaléontologie* 25 (4): 221-230.
DUMITRICA P. 1984. — Systematics of Sphaerellarian radiolarian, *in* PETRUSHEVSKAYA M. G. & STEPANJANTS S. D. (eds), *Morphology, Ecology and Evolution of Radiolarians. Material from the IV Symposium of European Radiolarists EURORAD IV*. Akademiya Nauk SSSR, Zoological Institute, Leningrad, USSR: 91-102 [in Russian].
DUMITRICA P. 1985. — Internal morphology of the Saturnalidae (Radiolaria); systematic and phylogenetic consequences. *Revue de Micropaléontologie* 28 (3): 181-196.
DUMITRICA P. 1988. — New families and subfamilies of Pyloniacea (Radiolaria). *Revue de Micropaléontologie* 31 (3): 178-195.
DUMITRICA P. 1989. — Internal skeletal structures of the superfamily Pyloniacea (Radiolaria), a basis of a new systematics. *Revista española de Micropaleontología* 21 (2): 207-264.
DUMITRICA P. 1991. — Cenozoic Pyloniacea (Radiolaria) with a five-gated microsphere. *Revue de Micropaléontologie* 34 (1): 35-56.
DUMITRICA P. 2001. — On the status of the radiolarian genera *Gonosphaera* Jorgensen and *Excentroconcha* mast. *Revue de Micropaléontologie* 44 (3): 191-198. https://doi.org/10.1016/S0035-1598(01)90164-3

DUMITRICA P. 2004. — New Mesozoic and early Cenozoic spicular Nassellaria and Nassellaria-like Radiolaria. *Revue de Micropaléontologie* 47 (4): 193-224. https://doi.org/10.1016/j.revmic.2004.10.002
DUMITRICA P. 2013. — *Cleveiplegma* nov. gen., a new generic name for the radiolarian species *Rhizoplegma boreale* (Cleve, 1899). *Revue de Micropaléontologie* 56 (1): 21-25. https://doi.org/10.1016/j.revmic.2013.01.001
DUMITRICA P. 2014a. — On the status of the radiolarian genera *Lonchosphaera* Popofsky, 1908 and *Arachnostylus* Hollande and Enjumet, 1960. *Acta Palaeontologica Romaniae* 9 (2): 57-64.
DUMITRICA P. 2014b. — *Tanochenia* nov. gen., a new generic name for the radiolarian species *Stylotrochus asteros* Tan & Chen, 1999. *Revue de Micropaléontologie* 57 (3): 93-96. https://doi.org/10.1016/j.revmic.2014.08.001
DUMITRICA P. 2017. — Contribution to the knowledge of the Entactinaria radiolarian family Rhizosphaeridae Haeckel and description of some new genera and species. *Revue de Micropaléontologie* 60 (4): 469-491. https://doi.org/10.1016/j.revmic.2017.06.002
DUMITRICA P. 2019. — Cenozoic spumellarian Radiolaria with eccentric microsphere. *Acta Palaeontologica Romaniae* 15 (1): 39-60. https://doi.org/10.35463/j.apr.2019.01.03
DUMITRICA P. 2020. — Some new or newly interpreted Cenozoic larnacillid radiolarian taxa. *Revue de Micropaléontologie* 66: 100405 (100401-100439). https://doi.org/10.1016/j.revmic.2019.100405
DUMITRICA P. 2021. — On the status of the radiolarian genus Spongoliva Haeckel, 1887 and the description of the genus Spongolivella n. gen. *Revue de Micropaléontologie* 70: 100477. https://doi.org/10.1016/j.revmic.2020.100477
DUMITRICA P., GHETA N. & POPESCU G. 1975. — Date noi cu privire la biostratigrafia si corelarea miocenului mediu din aria Carpatica. *Dari de Seama ale Sedintelor, Institutul de Geologie si Geofizica, Bucaresti* 61: 65-84.
DZINORIDZE R. N., JOUSE A. P., KOROLEVA-GOLIKOVA G. S., KOZLOVA G. E., NAGAEVA G. S., PETRUSHEVSKAYA M. G. & STRELNIKOVA N. I. 1976. — Diatom and radiolarian Cenozoic stratigraphy, Norwegian Basin; DSDP Leg 38, *in* WHITE S. M., SUPKO P. R., NATLAND J., GARDNER J. & HERRING J. (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. Supplement to Volumes 38, 39, 40 and 41. U.S. Government Printing Office, Washington, D.C.: 289-427. https://doi.org/10.2973/dsdp.proc.38394041s.119.1978
EHRENBERG C. G. 1839a. — Über die Bildung der Kreidefelsen und des Kreidemergels durch unsichtbare Organismen. *Abhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1838): 59-147. https://www.biodiversitylibrary.org/page/29017435
EHRENBERG C. G. 1839b. — Über noch jetzt zahlreich lebende Thierarten der Kreidebildung und den Organismus der Polythalmien. *Abhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1838): 81-174. https://www.biodiversitylibrary.org/page/29139219
EHRENBERG C. G. 1840. — Hierauf 274 Blatter von ihm selbst ausgefuhrter Zeichnungen von eben so vielen Arten in dem 1838 erschienenen grosseren Infusorienwerke noch nicht abgebildeter Infusorien vor, und über die auffallend rasche Entwicklung dieser Kenntnisse. *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1839): 197-219. https://www.biodiversitylibrary.org/page/11051497
EHRENBERG C. G. 1843. — Verbreitung und Einflufs des mikorskopischen Lebenes in Süd- und Nord-Amerika. *Abhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1841): 291-446. https://archive.org/details/b22474833
EHRENBERG C. G. 1844a. — Über 2 neue Lager von Gebirgsmassen aus Infusorien als Meeres-Absatz in Nord-Amerika und eine Vergleichung derselben mit den organischen Kreide-Gebilden in Europa und Afrika. *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1844): 57-97. https://www.biodiversitylibrary.org/page/11052757
EHRENBERG C. G. 1844b. — Einige vorlaufige Resultate seiner Untersuchungen der ihm von der Sudpolreise des Captain Ross, so wie von den Herren Schayerund Darwin zugekommenen Materialien über das Verhalten des kleinsten Lebens in den Oceanen und den grossten bisher zuganglichen Tiefen des Weltmeeres. *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1844): 182-207. https://www.biodiversitylibrary.org/page/11052882
EHRENBERG C. G. 1844c. — Über die kleinsten Lebensformen im Quellenlande des Euphrats und Araxes, so wie über eine an neuen Formen sehr reiche marine Tripelbildung von den Bermuda-Inseln. *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1844): 253-275. https://www.biodiversitylibrary.org/page/11052953
EHRENBERG C. G. 1845. — Neue Untersuchungen über das kleinste Leben als geologisches Moment. *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin*: 53-88. https://www.biodiversitylibrary.org/page/11055327
EHRENBERG C. G. 1846. — Über eine halibiolithische, von Herrn R. Schomburgk entdeckte, vorherrschend aus mikroskopischen Polycystinen gebildete, Gebirgsmasse von Barbados. *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin*: 382-385. https://www.biodiversitylibrary.org/page/11056086
EHRENBERG C. G. 1847. — Über die mikroskopischen kieselschaligen Polycystinen als mächtige Gebirgsmasse von Barbados und über das Verhältniss deraus mehr als 300 neuen Arten bestehenden ganz eigenthumlichen Formengruppe jener Felsmasse zu den jetzt lebenden Thieren und zur Kreidebildung Eine neue Anregung zur Erforschung des Erdlebens. *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin*: 40-60. https://www.biodiversitylibrary.org/page/11226274
EHRENBERG C. G. 1854a. — *Mikrogeologie. Das Erden und Felsen schaffende Wirken des unsichtbar kleinen selbstständigen Lebens auf der Erde*. Verlag von Leopold Voss, Leipzig, xxviii + 374 p., Atlas, 331 p. Fortsetzung (1856), 1888p. +1851 p. errata p. https://www.biodiversitylibrary.org/page/50812856
EHRENBERG C. G. 1854b. — Über das organischen Leben des Meeresgrundes in bis 10,800 und 12,000 Fuss Tiefe. *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin*: 54-75. https://www.biodiversitylibrary.org/page/11067950
EHRENBERG C. G. 1854c. — Die systematische Charakteristik der neuen mikroskopischen Organismen des tiefen atlantischen Oceans. *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin*: 236-250. https://www.biodiversitylibrary.org/page/11068134
EHRENBERG C. G. 1856. — Über 2 neue sudamerikanische Gebirgsmassen aus mikroskopischen Organismen, eine aus Meeresorganismen in Chile und eine als mitgefritteten Susswasserorganismen gemischten vulkanischen essbaren Tuff aus Honduras in Centro-Amerika. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin*: 425-431. https://www.biodiversitylibrary.org/page/11069079
EHRENBERG C. G. 1858. — Las über die organischen Lebensformen in unerwartet grossen Tiefen des Mittelmeeres. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1857): 538-571. https://www.biodiversitylibrary.org/page/11071564
EHRENBERG C. G. 1859. — Kurze Characteristik der 9 neuen Genera und der 105 neuen Species des agaischen Meeres und des Tiefgrundes des Mittel-Meeres. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1858): 10-40. https://www.biodiversitylibrary.org/page/11071706
EHRENBERG C. G. 1861a. — Über die organischen und unorganischen Mischungsverhaltnisse des Meeresgrundes in 19,800 Fuss Tiefe nach Lieut. Brookes Messung. *Monatsberichte der Königlich*

Preussischen Akademie der Wissenschaften zu Berlin (1860): 765-774. https://www.biodiversitylibrary.org/page/36276016

EHRENBERG C. G. 1861b. — Über den Tiefgrund des stillen Oceans zwischen Californien und den Sandwich-Inseln aus bis 15600' Tiefe nach Lieutenant Brooke. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1860): 819-833. https://www.biodiversitylibrary.org/page/36276074

EHRENBERG C. G. 1862a. — Beitrag zur Übersicht der Elemente des tiefen Meeresgrundes im Mexikanischen Golfstrome bei Florida. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1861): 222-240. https://www.biodiversitylibrary.org/page/36281689

EHRENBERG C. G. 1862b. — Über die Tiefgrund-Verhältnisse des Oceans am Eingange der Davisstrasse und bei Island. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1861): 275-315. https://www.biodiversitylibrary.org/page/36281746

EHRENBERG C. G. 1873a. — Mikrogeologische Studien über das kleinste Leben der Meeres-Tiefgrunde aller Zonen und dessen geologischen Einfluss. *Abhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1872): 131-399. https://www.biodiversitylibrary.org/page/30337528

EHRENBERG C. G. 1873b. — Mikrogeologische Studien als Zusammenfassung seiner Beobachtungen des kleinsten Lebens der Meeres-Tiefgrunde aller Zonen und dessen geologischen Einfluss. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1872): 265-322. https://www.biodiversitylibrary.org/page/35721195

EHRENBERG C. G. 1874a. — Das unsichtbar wirkende Leben der Nordpolarzone am Lande und in den Meerestiefgrunden bei 300 mal verstarkter Sehkraft, nach Materialien der Germania erlautert, *Die zweite deutsche Nordpolarfahrt in den Jahren 1869 und 1870*. Vol. 2. F. A. Brockhaus, Leipzig, Germany: 437-467. https://www.biodiversitylibrary.org/page/13186573

EHRENBERG C. G. 1874b. — Grössere Felsproben des Polycystinen-Mergels von Barbados mit weiteren Erläuterungen. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1873): 213-263. https://www.biodiversitylibrary.org/page/35983332

EHRENBERG C. G. 1876. — Fortsetzung der mikrogeologischen Studien als Gesammt-Uebersichtder mikroskopischen Paläontologie gleichartig analysirter Gebirgsarten der Erde, mit specieller Rücksicht auf den Polycystinen-Mergel von Barbados. *Abhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1875): 1-225. https://www.biodiversitylibrary.org/page/30148696

EICHWALD C. E., VON. 1860. — *Lethaea Rossica, ou, Paléontologie de la Russie. Volume 1*.Stuttgart, E. Schweizerbart. 1657 p. https://doi.org/10.5962/bhl.title.52391

EMPSON-MORIN K. 1981. — Campanian Radiolaria from DSDP Site 313, Mid-Pacific Mountains. *Micropaleontology* 27 (3): 249-292. https://doi.org/10.2307/1485238

EMPSON-MORIN K. 1982. — Reexamination of the late Cretaceous radiolarian genus *Amphipyndax* Foreman. *Journal of Paleontology* 56 (2): 507-519. https://www.jstor.org/stable/1304479

ENRIQUES P. 1919. — Ricerche sui Radiolari Coloniali. *Memorie del Reale Comitato Talassografico Italiano* 71 (1): 1-177.

ENRIQUES P. 1932. — Saggio di una classificazione dei Radiolari. *Archivio zoologico italiano Napoli, Torino* 16: 978-994.

FOREMAN H. P. 1968. — Upper Maestrichtian Radiolaria of California. *Special Papers in Palaeontology* 3: 1-82.

FOREMAN H. P. 1973. — Radiolaria of Leg 10 with systematics and ranges for the families Amphipyndacidae, Artostrobiidae and Theoperidae, *in* WORZEL J. L., BRYANT W. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 10. U.S. Government Printing Office, Washington, D.C.: 407-474. https://doi.org/10.2973/dsdp.proc.10.118.1973

FOREMAN H. P. & RIEDEL W. R. 1972. — *Catalogue of Polycystine Radiolaria, Series 1 (1834-1900)*. American Museum of Natural History, Special Publication, New York, USA, (Meyen 1834-Bury 1862), Part 1 (Acanthodesmia- Haliomma) & Part 2 (Haliphormis-Gen. et sp. indet.).

FRENGUELLI J. 1940. — Consideraciones sobre los silicoflagelados fósiles. *Revista del Museo de La Plata, Sección Geología* 2: 37-112.

FRIEND J. K. & RIEDEL W. R. 1967. — Cenozoic orosphaerid radiolarians from tropical Pacific sediments. *Micropaleontology* 13 (2): 217-232. https://doi.org/10.2307/1484672

FRIZZELL D. L. & MIDDOUR E. S. 1951. — Paleocene Radiolaria from southeastern Missouri. *Bulletin of Missouri School of Mines and Metallurgy* 77: 1-41.

FUJIOKA S. 1990. — *Illustrations of the Plankton of the Kuroshio-Waters – Plankton in Anami-Oshima Island Coastal Waters*. Nagasaki Publication and culture Association Nagasaki, 170 p.

FUNAKAWA S. 1994. — Plagiacanthidae (Radiolaria) from the Upper Miocene of eastern Hokkaido, Japan. *Transactions and Proceedings of the palaeontological Society of Japan, new Series* 174: 458-483. https://doi.org/10.14825/prpsj1951.1994.174_458

FUNAKAWA S. 1995. — Lophophaeninae (Radiolaria) from the Upper Oligocene to Lower Miocene and Intrageneric Variation in their Internal Skeletal Structures. *Journal of Geosciences, Osaka City University* 38: 13-59.

FUNAKAWA S. 2000. — Internal skeletal structures of the Cenozoic genera *Gondwanaria, Lipmanella* and *Lithomelissa* (Plagiacanthidae, Nassellaria) and their taxonomy. *Micropaleontology* 46 (2): 97-121. https://doi.org/10.2113/46.2.97

FUNAKAWA S. & NISHI H. 2005. — Late middle Eocene to late Oligocene radiolarian biostratigraphy in the Southern Ocean (Maud Rise, ODP Leg 113, Site 689). *Marine Micropaleontology* 54 (3-4): 213-247. https://doi.org/10.1016/j.marmicro.2004.12.002

GARG R. & JAIN K. P. 1978. — Polycystine radiolaria from phosphatic nodules of the Uttatur Formation, south India. (Part - 1): Nassellaria. *Biological Memoirs* 3 (2): 131-175.

GLADENKOV Y. B., BARINOV K. B., BASILIAN A. E., BORDUNOV S. I., BRATSEVA G. M., ZYRYANOV Y. V., KURALENKO N. P., VITUKHIN D. I., ORESHKINA T. V., GANZEI S. S., KIYASHKO S. I. & TRUBIKHIN V. M. 1992. — *Detailed Division of the Neogene of Kamchatka*. Russian Academy of Sciences, Moscow, Transactions, 204 p.

GÖKE G. 1986. — 150 Jahre Radiolarienforschung. 2. Johannes Müller und Ernst Haeckel. *Mikrokosmos* 75 (2): 140-148.

GOLL R. M. 1968. — Classification and phylogeny of Cenozoic Trissocyclidae (Radiolaria) in the Pacific and Caribbean Basins. Part I. *Journal of Paleontology* 42 (6): 1409-1432. https://www.jstor.org/stable/1302291

GOLL R. M. 1969. — Classification and phylogeny of Cenozoic Trissocyclidae (Radiolaria) in the Pacific and Caribbean basins. Part II. *Journal of Paleontology* 43 (2): 322-339. https://www.jstor.org/stable/1302314

GOLL R. M. 1972a. — Leg 9 Synthesis, Radiolaria, *in* HAYS J. D., COOK H.-E., JENKINS D. G. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 9. U.S. Government Printing Office, Washington, D.C.: 947-1058. https://doi.org/10.2973/dsdp.proc.9.124.1972

GOLL R. M. 1972b. — Systematics of eight *Tholospyris* taxa (Trissocyclidae, Radiolaria). *Micropaleontology* 18 (4): 443-475. https://doi.org/10.2307/1485050

GOLL R. M. 1976. — Morphological intergradation between modern populations of *Lophospyris* and *Phormospyris* (Trissocyclidae, Radiolaria). *Micropaleontology* 22 (4): 379-418. https://doi.org/10.2307/1485172

GOLL R. M. 1979. — The Neogene evolution of *Zygocircus*, *Neosemantis* and *Callimitra*: their bearing on nassellarian classification. A revision of the Plagiacanthoidea. *Micropaleontology* 25 (4): 365-396. https://doi.org/10.2307/1485428

GOLL R. M. 1980. — Pliocene-Pleistocene Radiolaria from the East Pacific Rise and the Galapagos spreading center, Deep Sea Drilling Project Leg 54, *in* ROSENDAHL B. R., HEKINIAN R. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 54. U.S. Government Printing Office, Washington, D.C.: 425-454. https://doi.org/10.2973/dsdp.proc.54.116.1980

GOLL R. M. & BJØRKLUND K. R. 1974. — Radiolaria in surface sediments of the South Atlantic. *Micropaleontology* 20 (1): 38-75. https://www.jstor.org/stable/1485099

GOLL R. M. & BJØRKLUND K. R. 1985. — *Nephrospyris knutheieri* sp. n., an extant trissocyclid radiolarian (Polycystinae: Nassellarida) from the Norwegian Greenland Sea. *Sarsia* 70 (2-3): 103-118. https://doi.org/10.1080/00364827.1985.10420623

GOLL R. M. & BJØRKLUND K. R. 1989. — A new radiolarian biostratigraphy for the Neogene of the Norwegian Sea: ODP Leg 104, *in* ELDHOLM O., THIEDE J., TAYLOR E. *et al.* (eds), *Proceedings of the Ocean Drilling Program, Scientific Results*. Vol. 104. College Station, TX (Ocean Drilling Program): 697-737. https://doi.org/10.2973/odp.proc.sr.104.205.1989

GORBUNOV V. S. 1979. — *Radiolaria of the Middle and Upper Eocene of the Dnieper-Donets Basin*. Izd. Nauk. Dumka., Kiev, 164 p. [in Russian]

GRAY J. E. 1833-1834. — *Illustrations of Indian Zoology; Chiefly Selected from the Collection of Major-General Hardwicke*. Treuttel, Wurtz, Treuttel & Richter London, Volume 2, 320 p. https://doi.org/10.5962/bhl.title.95127

GRAY J. E. 1840. — XXII. A synopsis of the genera and species of the class Hypostoma (Asterias, Linnaeus). *Annals and Magazine of Natural History* 6: 175-184. https://doi.org/10.1080/03745484009443282

GRILL J. & KOZUR H. 1986. — The first evidence of the *Unuma echinatus* radiolarian zone in the Rudabanya Mts. (northern Hungary). *Geologisch Paläontologische Mitteilungen Innsbruck* 13: 239-275.

HAECKEL E. 1861a. — Über neue, lebende Radiolarien des Mittelmeeres und die dazu gehörigen Abbildungen. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1860): 794-817. https://www.biodiversitylibrary.org/page/36276045

HAECKEL E. 1861b. — Fernere Abbildungen und Diagnosen neuer Gattungen und Arten von lebenden Radiolarien des Mittelmeeres. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1860): 835-845. https://www.biodiversitylibrary.org/page/36276090

HAECKEL E. 1862. — *Die Radiolarien (Rhizopoda Radiaria). Eine Monographie*. Reimer, Berlin, 572 p. https://doi.org/10.5962/bhl.title.10155

HAECKEL E. 1865. — Über den Sarcodekorper der Rhizopoden. *Zeitschrift für Wissenschaftliche Zoologie* 15 (342-370): https://www.biodiversitylibrary.org/page/45004119

HAECKEL E. 1870. — Beiträge zur Plastidentheorie. 3. *Myxobrachia* von Lanzerote. *Jenaische Zeitschrift Medicin und Naturwissenschaft* 5: 519-527. https://www.biodiversitylibrary.org/page/33425271

HAECKEL E. 1878. — *Das Protistenreich. Eine populare Uebersicht über das Formengebiet der niedersten Lebewesen*. Ernst Gunther, Leipzig, Germany, Kosmos. Zeitschrift für einheitliche Weltanschauung auf Grund der Entwicklungslehre, 1-104 p. https://www.biodiversitylibrary.org/page/38849242

HAECKEL E. 1879a. — *Naturliche Schopfungs-Geschichte, 7th ed.* Reimer, Berlin, Germany, 718 p. https://doi.org/10.5962/bhl.title.15249

HAECKEL E. 1879b. — Das System der Medusen. Erster Teil einer Monographie der Medusen. *Denkschriften der Medicinisch-Naturwissenschaftlichen Gesellschaft zu Jena*. Volume 1, 360 p. https://www.biodiversitylibrary.org/page/39286760

HAECKEL E. 1882. — Entwurf eines Radiolarien-Systems auf Grund von Studien der Challenger-Radiolarien. *Jenaische Zeitschrift für Naturwissenschaft* 15: 418-472. https://www.biodiversitylibrary.org/page/8700599

HAECKEL E. 1884. — Über die Ordnungen der Radiolarien. *Sitzungsberichte der Jenaischen Gesellschaft für Medicin und Naturwissenschaft, Jena, für das Jahr 1883*: 18-36.

HAECKEL E. 1887. — Report on the Radiolaria collected by *H.M.S. Challenger* during the years 1873-1876. *Report on the Scientific Results of the Voyage of the* H.M.S. Challenger, *Zoology* 18: clxxxviii + 1803. https://www.biodiversitylibrary.org/page/23487918. See also: http://www.biolib.de/haeckel/challenger/index.htm

HAECKER V. 1906. — Über einige grosse Tiefsee-Radiolarien. *Zoologischer Anzeiger* 30 (26): 878-895. https://www.biodiversitylibrary.org/page/30259582

HAECKER V. 1907. — Altertumliche Spharellarien und Cyrtellarien aus grossen Meerestiefen. *Archiv für Protistenkunde* 10: 114-126. https://archive.org/details/bub_gb_tw4BAAAAYAAJ/page/n75

HAECKER V. 1908. — Tiefsee-Radiolarien. Spezieller Teil. Die Tripyleen, Collodarienund Mikroradiolarien der Tiefsee, *in* CHUN C. (ed.), *Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem Dampfer «Valdivia», 1898-1899*. Vol. 14, Jena, Germany: 336-476. https://www.biodiversitylibrary.org/page/3441590

HARTING P. 1863. — Bijdrage tot de kennis der mikroskopische fauna en flora van de Banda-Zee, naar aanleiding van een onderzoek van eenige door diepzeeloodingen van 990 tot 4000 vademen uit die zee opgebragte gronden. *Verhandelingen der Koninklijke Akademie van Wetenschappen, Amsterdam* 10 (1): 1-34. https://www.biodiversitylibrary.org/page/26303020

HAYS J. D. 1965. — Radiolaria and late Tertiary and Quaternary history of Antarctic Seas, *in* LLANO G. A. (ed.), *Biology of Antarctic Seas II*. American Geophysical Union, Antarctic Research Series 5: 125-184. https://doi.org/10.1029/AR005p0125

HEAD M. J., AUBRY M. P., WALKER M., MILLER K. G., PRATT B. R. 2017. — A case for formalizing subseries (subepochs) of the Cenozoic Era[(a)]. *Episodes* 40: 22-27. https://doi.org/10.18814/epiiugs/2017/v40i1/017004

HEMMING F. 1957. — *Copenhagen decisions on zoological nomenclature: additions to, and modifications of, the Règles internationales de la nomenclature zoologique*. International Commission on Zoological Nomenclature. Colloquium on Zoological Nomenclature. International Congress of Zoology. Copenhagen, Denmark 1953. 135 p. https://doi.org/10.5962/bhl.title.50030

HEMPRICH F. G. & EHRENBERG C. G. 1829. — Zoologica II: Animalia evertebrata, *in* EHRENBERG C. G. (ed.), *Symbolae Physicae seu Iconis et Descriptiones Animalium Everteratorum Sepositis Insectis. Berolini ex offcina Academica*. 1828: 126 p. (date of plates 1828; date of text 1831). https://www.biodiversitylibrary.org/page/48517147

HERTWIG R. 1877. — Studien über Rhizopoden. *Jenaische Zeitschrift für Naturwissenschaft* 11: 324-348. https://www.biodiversitylibrary.org/page/28986191

HERTWIG R. 1879. — *Der Organismus der Radiolarien*. Verlag von G. Fischer, Jena, iv +149 p.

HERTWIG R. 1932. — Über den Bau der Perpyleen (Sphaeroideen). *Abhandlungen der Bayerischen Akademie der Wissenschaften, Mathematisch-naturwissenschaftliche Abteilung, new series* 12: 1-40.

HOLLANDE A. & CACHON-ENJUMET M. 1959. — Origine, structure et évolution des nucléoles chez les Radiolaires (Collodaires et Sphaerellaires). *Comptes Rendus hebdomadaires des Séances de l'Academie des Sciences (Paris), Série D: Sciences naturelles* 249: 16l-169. https://gallica.bnf.fr/ark:/12148/bpt6k3201c/f167.image

HOLLANDE A. & ENJUMET M. 1953. — Contribution a l'étude biologique des Sphaerocollides (Radiolaires Collodaires et Radiolaires polycyttaires et leurs parasites. 1. – Thalassicollidae, Physematidae, Thalassophysidae. *Annales des Sciences naturelles, Zoologie et Biologie animale, Série 11* 15: 99-183.

HOLLANDE A. & ENJUMET M. 1960. — Cytologie, évolution et systématique des Sphaeroïdés (Radiolaires). *Archives du Muséum national d'Histoire naturelle, Paris, série 7,* 7: 1-134. https://www.biodiversitylibrary.org/page/59809053

HOLLIS C. J. 1997. — Cretaceous-Paleocene Radiolaria from eastern Marlborough, New Zealand. *Institute of Geological and Nuclear Sciences, Monograph* 17: 1-152.

HOLLIS C. J. 2002. — Biostratigraphy and paleoceanographic significance of Paleocene radiolarians from offshore eastern New Zealand. *Marine Micropaleontology* 46 (3-4): 265-316. https://doi.org/10.1016/S0377-8398(02)00066-X

HOPE F. W. 1834. — XI. Characters and Descriptions of several New Genera and Species of Coleopterous Insects. *Transactions*

of the Zoological Society of London 1(2): 91-112. https://doi.org/10.1111/j.1096-3642.1835.tb00607.x

HUANG T. C. 1967. — A new Radiolaria from the Somachi Formation, Kikai-Jima, Kagoshima Prefecture, Japan. *Transactions and Proceedings of the palaeontological Society of Japan, new Series* 68: 177-184. https://doi.org/10.14825/prpsj1951.1967.68_177

HUXLEY T. H. 1851. — Zoological notes and observations made on board *H.M.S. Rattlesnake*. III. Upon *Thalassicolla*, a new zoophyte. *Annals and Magazine of Natural History, Series 2* 8 (48): 433-442. https://www.biodiversitylibrary.org/page/2320324

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE 1999. — *International Code of Zoological Nomenclature*. Published by the International Trust for Zoological Nomenclature 1999; 4th edition. The Natural History Museum, London. 306 p. https://doi.org/10.5962/bhl.title.50608

ISHITANI Y., UJIIÉ Y., DE VARGAS C., NOT F. & TAKAHASHI K. 2012. — Phylogenetic Relationships and Evolutionary Patterns of the Order Collodaria (Radiolaria). *PLoS ONE* 7 (5): e35775. https://doi.org/10.1371/journal.pone.0035775

ISSEL A. 1889-1890. — Il calcifiro fossilifero di Rovegno in Val di Trebbia. *Annali del Museo Civico di Storia Naturale di Genova, Serie 2* 9 (29): 91-119. https://www.biodiversitylibrary.org/page/29871333

ITAKI T. 2009. — Last glacial to Holocene polycystine radiolarians from the Japan Sea. *News of Osaka Micropaleontologists, Special Volume* 14: 43-89.

ITAKI T. & BJØRKLUND K. R. 2007. — Bailey's (1856) radiolarian types from the Bering Sea re-examined. *Micropaleontology* 52 (5): 449-463. https://doi.org/10.2113/gsmicropal.52.5.449

JACKETT S.-J. 2007. — *Low Latitude Paleocene to early Eocene Radiolarian Systematics, Biochronology and Paleoenvironmental Analysis*. PhD Thesis, Université de Lausanne, 304 p.

JØRGENSEN E. 1900. — Protophyten und Protozoen im Plankton aus der norwegischen Westküste. *Bergens Museums Aarbog (1899)* 2 (6): 1-112. https://www.biodiversitylibrary.org/page/41793226

JØRGENSEN E. 1905. — The protist plankton and the diatoms in bottom samples, *in* NORDGAARD O. (ed.), *Hydrographical and Biological Investigation in Norwegian Fiords*. Vol. 7. Bergens Museums skrifter, Bergen, 1905: 49-151. https://doi.org/10.5962/bhl.title.4290

KAMIKURI S.-I. 2019. — Radiolarian assemblages from the lower to middle Miocene at IODP Site U1335 in the eastern equatorial Pacific. *Bulletin of the Geological Survey of Japan* 70 (1-2): 137-161.

KAMIKURI S.-I., MOORE T. C., OGANE K., SUZUKI N., PÄLIKE H. & NISHI H. 2012. — Early Eocene to early Miocene radiolarian biostratigraphy for the low-latitude Pacific Ocean. *Stratigraphy* 9 (1): 77-108.

KAMIKURI S.-I., MOTOYAMA I., NISHI H. & IWAI M. 2009. — Neogene Radiolarian Biostratigraphy and Faunal Evolution Rates in the Eastern Equatorial Pacific ODP Sites 845 and 1241. *Acta palaeontologica polonica* 54 (4): 713-742. https://doi.org/10.4202/app.2008.0076

KAZINTSOVA L. I. & TIKHOMIROVA L. B. 1975. — New representatives of the family Conosphaeridae, *Ancient Radiolarians of Middle Asia: Collection of scientific articles*. Vol. 4. Department of Geology and Paleontology, The Tadzhiksk V. I. Lenin State University, Dushanbe, USSR: 30-46 [in Russian].

KEELING P. J. & BURKI F. 2019. — Progress towards the Tree of Eukaryotes. *Current Biology* 29 (16): PR808-R817. https://doi.org/10.1016/j.cub.2019.07.031

KLING S. A. 1973. — Radiolaria from the eastern North Pacific, Deep Sea Drilling Project Leg 18, *in* KULM L. D., VON HUENE R. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 18. U.S. Government Printing Office, Washington, D.C.: 617-671. https://doi.org/10.2973/dsdp.proc.18.116.1973

KOZLOVA G. E. 1960. — Radiolarians of the Middle and Upper Miocene of Northern Sakhalin. *Proceedings of the All-Union Institute of Geology and Exploration of Oil (VNIGRI)* 153: 307-325 [in Russian].

KOZLOVA G. E. 1967. — On the phylogenetic relation between the Suborders Discoidea and Larcoidea (Radiolaria, Spumellaria). *Zoologicheskii Zhurnal, Akademia Nauk SSSR* 46 (9): 1311-1320 .[in Russian]

KOZLOVA G. E. 1983. — Radiolarian associations of boreal regions in the lower Paleocene, *in* LYUBINOVA P. C. & MYATLYUK E. V. (eds), *The Use of Microfauna in the Study of Sediments from the Continents and Oceans (Miscellaneous Scientific Reports)*. Proceedings of the All Union Petroleum Scientific Research Institute for Geological Survey (VNIGRI), Leningrad: 84-112 [in Russian].

KOZLOVA G. E. 1990. — Studies of phylogeny as basis for development of the Boreal Paleogene radiolarian zonal scale., *in* CHUVASHOV B. I., ZHAMOIDA A. I. & AMON E. O. (eds), *Radiolaria in Biostratigraphy*. Academy of Sciences of the USSR, Ural Branch, Sverdlovsk: 70-81, 123-124, 135-136 [in Russian].

KOZLOVA G. E. 1999. — *Paleogene Boreal Radiolarians from the Russia*. Ministry of Natural resources of Russian Federation, All-Russian Petroleum research Exploration Institute (VNIGRI), Practical manual of microfauna, 393 p. [in Russian].

KOZLOVA G. E. & GORBOVETZ A. N. 1966. — Radiolarians of the Upper Cretaceous and Upper Eocene deposits of the West Siberian Lowland. *Proceedings of the All-Union Institute of Geology and Exploration of Oil (VNIGRI)* 248: 1-159 [in Russian].

KOZUR H. & MOSTLER H. 1972. — Beiträge zur Erforschung der mesozoischen Radiolarien. Teil I: Revision der Oberfamilie Coccodiscacea HAECKEL 1862 emend. und Beschreibung ihrer triassischen Vertreter. *Geologisch Paläontologische Mitteilungen Innsbruck* 2: 1-60.

KOZUR H. & MOSTLER H. 1978. — Beiträge zur Erforschung der mesozoischen Radiolarien Teil II: Oberfamilie Trematodiscacea HAECKEL 1862 emend. und Beschreibung ihrer triassischen Vertreter. *Geologisch Paläontologische Mitteilungen Innsbruck* 8: 123-182.

KOZUR H. & MOSTLER H. 1979. — Beiträge zur Erforschung der mesozoischen Radiolarien. Teil III: Die Oberfamilien Actinommacea Haeckel 1862 emend., Artiscacea Haeckel 1882, Multiarcusellacea nov. der Spumellaria und triassische Nassellaria. *Geologisch Paläontologische Mitteilungen Innsbruck* 9 (1/2): 1-132.

KOZUR H. & MOSTLER H. 1982. — Entactinaria subordo Nov., a new radiolarian suborder. *Geologisch Paläontologische Mitteilungen Innsbruck* 11 (1): 399-414.

KRABBERØD A. K., BRÅTE J., DOLVEN J. K., OSE R. F., KLAVENESS D., KRISTENSEN T., BJØRKLUND K. R. & SHALCHIAN-TABRIZI K. 2011. — Radiolaria Divided into Polycystina and Spasmaria in Combined 18S and 28S rDNA Phylogeny. *PLoS ONE* 6: e23526. https://doi.org/10.1371/journal.pone.0023526

KRASHENINNIKOV V. A. 1960. — Some radiolarians of the Lower and Middle Eocene of the Westen Caucasus. *Transactions of the All Union Scientific Research Institute of Geology (VSEGEI), new series* 16: 271-308 [in Russian].

KRŠINIĆ F. & KRŠINIĆ A. 2012. — Radiolarians in the Adriatic Sea plankton (Eastern Mediterranean). *Acta Adriatica* 53 (2): 189-212.

KURIHARA T. & MATSUOKA A. 2004. — Shell structure and morphologic variation in *Spongosphaera steptacantha* Haeckel (Spumellaria, Radiolaria). *Science Reports of Niigata University, Series E, (Geology)* 19: 35-48. http://hdl.handle.net/10191/2141

LAZARUS D. B., SCHERER R. P. & PROTHERO D. R. 1985. — Evolution of the radiolarian species-complex *Pterocanium*: a preliminary survey. *Journal of Paleontology* 59 (1): 183-220. https://www.jstor.org/stable/1304835

LE CONTE J. L. 1860. — Synopsis of the Scaphidiidae. *Proceedings of the Academy of Natural Sciences of Philadelphia* 12: 321-324. https://www.biodiversitylibrary.org/page/1801262

LEIDY J. 1859. — Notices of remains of extinct vertebrated animals discovered by Professor E. Emmons. *Proceedings of the Academy of Natural Sciences of Philadelphia* 8: 255-256. https://www.biodiversitylibrary.org/page/1935310

LEVYKINA I. E. 1986. — *Stratigraphy of Neogene Deposits in North-West Pacific According to Radiolarians*. Transactions of the Academy of Science of the USSR, Moscow, 117 p. [in Russian].

LING H. Y. 1972. — Polycystine Radiolaria from surface sediments of the South ChinaSea and the adjacent seas of Taiwan. *Acta Oceanographica Taiwanica* 2: 159-178.

LING H. Y. 1975. — Radiolaria: Leg 31 of the Deep Sea Drilling Project, *in* KARIG D. E., INGLE J. C. J. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 31. U.S. Government Printing Office, Washington, D.C.: 703-761. https://doi.org/10.2973/dsdp.proc.31.137.1975

LIPMAN R. K. 1949. — Order Radiolaria, *in* BODYLEVSKY B. I. (ed.), *Atlas of Principal Fossils of the USSR. Paleogene*. Vol. 12. Gosgeolizdat, Moskov: 111-119 [in Russian].

LIPMAN R. K. 1952. — Data on the monographic study of the radiolarians of the Upper Cretaceous deposits of the Russian Platform. *Transactions of the All Union Scientific Research Institute of Geology (VSEGEI), Paleontology and Stratigraphy*: 24-51 [in Russian].

LIPMAN R. K. 1969. — A new genus and new species of Eocene radiolarians in the USSR. *Transactions of the All Union Scientific Research Institute of Geology (VSEGEI), new series* 130: 180-200. [in Russian]

LIPMAN R. K. 1972. — New Eocene Radiolaria from the Turgai trough and northern Aral region, *New species of ancient plants and invertebrates in the USSR*. Nauka, Moscow: 42-56 [in Russian].

LIU J. & AITCHISON J. C. 2002. — Upper Paleocene radiolarians from the Yamdrok Melange, South Xizang (Tibet), China. *Micropaleontology* 48: 145-154. https://www.jstor.org/stable/1486017

LOEBLICH A. R. & TAPPAN H. 1961. — Remarks on the systematics of the Sarkodina (Protozoa), renamed homonyms and new validated genera. *Proceedings of the Biological Society of Washington* 74: 213-234. https://www.biodiversitylibrary.org/page/42295598

LOMBARI G. & LAZARUS D. B. 1988. — Neogene cycladophorid radiolarians from the North Atlantic, Antarctic, and North Pacific deep-sea sediments. *Micropaleontology* 34 (2): 97-135. https://doi.org/10.2307/1485657

LUCCHESE C. 1927. — Radiolari miocenici di Salsomaggiore. *Giornale di geologia, Annali del Reale Museo geologico di Bologna, Serie 2,* 2: 80-116.

MAHAPATRA A. K. & SHARMA V. 1994. — Trissocyclid Radiolaria from the Late Early Miocene Sequences of Colebrook, North Passage and Great Nicobar Islands, Northeast Indian Ocean. *Micropaleontology* 40 (2): 157-168. https://doi.org/10.2307/1485773

MAMEDOV N. A. 1969. — New radiolarian species from the Eocene deposits of Azerbaidzhan, *Reports of the Academy of Sciences of the Azerbaidzhan SSR, Series on Earth Sciences*. Vol. 4. Academy of Sciences, Azerbaidzhan SSR, Baku: 21-30 [in Russian].

MAMEDOV N. A. 1970. — New radiolarian species from the Eocene deposits of northeastern Azerbaidzhan. *Scientific Reports, Series 9, Geology and Research*. Vol. 3-4. Publication of the Azerbaidzhan M. Azizbekov Institute of Oil and Chemistry, Baku: 61-69 [in Russian].

MAMEDOV N. A. 1973. — New radiolarian species from the Eocene deposits of Azerbaidzhan. *Bulletin of the Academy of Sciences of the Azerbaidzhan SSR* 2: 59-67 [in Russian].

MANTELL G. A. 1850. — *A Pictorial Atlas of Fossil Remains*. H. G. Bohn, London, 207 p. https://www.biodiversitylibrary.org/page/31204028

MAST H. 1910. — Die Astrophaeriden der Deutschen Tiefsee-Expedition. *Wissenschaftliche Ergebnisse der Deutschen Expedition auf dem Dampfer «Valdivia» 1898-1899. Inaugural-Dissertation zur Erlangung der Doktorwurde, Universitat Tubingen* 19 (4): 1-68. https://doi.org/10.5962/bhl.title.2171

MATSUZAKI K. M., SUZUKI N. & NISHI H. 2015. — Middle to Upper Pleistocene Polycystine Radiolarians from Hole 902-C9001C, Northwestern Pacific. *Paleontological Research* 19 (supplement 1): 1-77. https://doi.org/10.2517/2015PR003

MCMILLEN K. J. & CASEY R. E. 1978. — Distribution of living polycystine radiolarians in the Gulf of Mexico and Caribbean Sea, and comparison with the sedimentary record. *Marine Micropaleontology* 3 (2): 121-145. https://doi.org/10.1016/0377-8398(78)90002-6

MEDIAMATIC 2019. — [online] Available at: https://www.mediamatic.net [Accessed 15 Dec. 2019]. https://www.mediamatic.net/en/page/369299/obituary-of-adolf-giltsch-by-ernst-haeckel

MENSHUTKIN V. V. & PETRUSHEVSKAYA M. G. 1989. — Classification of the Collosphaeridae (Radiolaria) by phenetical methods. *Marine Plankton: Taxonomy Ecology and Distribution* 41 (49): 61-99 [in Russian].

MEYEN F. J. F. 1834. — Über das Leuchten des Meeres und Beschreibung einiger Polypen und anderer niederer Tiere, *in* WEBER E. (ed.), *Beiträge zur Zoologie, gesammelt auf einer Reise um die Erde. Novorum actorum Academiae Caesareae Leopoldino Carolinae naturae curiosorum*. Vol. 16 (2), Bonn: 125-216. https://hdl.handle.net/2027/nyp.33433009859301?urlappend=%3Bseq=265%3B

MIVART S. G. 1878. — Notes touching recent researches on the Radiolaria. *Journal of the Linnean Society, Zoology* 14: 136-186. https://doi.org/10.1111/j.1096-3642.1878.tb02351.x

MOKSYAKOVA A. M. 1965. — Biostratigraphical determination of the Kuberlinsk and Kerestinsk horizons of the Upper Eocene of Turkmenistan as based on radiolarians. *Proceedings of the All-Union Institute of Geology and Exploration of Oil (VNIGRI)* 44: 231-249 [in Russian].

MOKSYAKOVA A. M. 1972. — *The Bodrak Group of the Turan Plate (stratigraphy, Radiolaria, paleozoogeography)*, Proceedings of the All-Union Institute of Geology and Exploration of Oil (VNIGRI), 103 p. [in Russian].

MOORE T. C. 1972. — Mid-Tertiary evolution of the radiolarian genus *Calocycletta*. *Micropaleontology* 18 (2): 144-152. https://doi.org/10.2307/1484991

MORLEY J. J. 1985. — Radiolarians from the Northwest Pacific, Deep Sea Drilling Project Leg 86, *in* HEATH G. R., BURCKLE L. H. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 86. U.S. Government Printing Office, Washington, D.C.: 399-422. https://doi.org/10.2973/dsdp.proc.86.114.1985

MORLEY J. J. & NIGRINI C. 1995. — Miocene to Pleistocene radiolarian biostratigraphy of North Pacific sites 881, 884, 885, 886 and 887, *in* REA D. K., BASOV I. A., SCHOLL D. W. & ALLAN J. F. (eds), *Proceedings of the Ocean Drilling Program, Scientific Results*. Vol. 145. College Station, TX (Ocean Drilling Program): 55-91. https://doi.org/10.2973/odp.proc.sr.145.107.1995

MÜLLER J. 1855a. — Über *Sphaerozoum* und *Thalassicolla*. *Bericht der Königlich Preussischen Akademie der Wissenschaften zu Berlin*: 229-253. https://www.biodiversitylibrary.org/page/11070423

MÜLLER J. 1855b. — Über die im Hafen von Messina beobachteten Polycystinen. *Bericht der Königlich Preussischen Akademie der Wissenschaften zu Berlin*: 671-674. https://www.biodiversitylibrary.org/page/11070865

MÜLLER J. 1856. — Über die Thalassicollen, Polycystinen und Acanthometren des Mittelmeeres. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin*: 474-503. https://www.biodiversitylibrary.org/page/11069128

MÜLLER J. 1859a. — Über die Thalassicollen, Polycystinen und Acanthometren des Mittelmeeres. *Abhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1858): 1-62. https://www.biodiversitylibrary.org/page/29502127

MÜLLER J. 1859b. — Einige neue bei St. Tropez am Mittelmeer beobachtete Polycystinen und Acanthometren. *Monatsberichte der Königlich Preussischen Akademie der Wissenschaften zu Berlin* (1858): 154-155. https://www.biodiversitylibrary.org/page/11071854

MULLINEAUX L. S. & WESTBERG-SMITH M. J. 1986. — Radiolarians as paleoceanographic indicators in the Miocene Monterey Formation, Upper Newport Bay, California. *Micropaleontology* 32 (1): 48-71. https://www.jstor.org/stable/1485701

MURRAY J. & RENARD A. F. 1891. — Report on deep-sea deposits based on the specimens collected during the Voyage of *H.M.S. Challenger* in the years 1872 to 1876. *Report on the Scientific Results of the Voyage of* H.M.S. Challenger *during the year 1873-1876, Zoology*: 1-525. http://www.19thcenturyscience.org/HMSC/HMSC-Reports/1891-DeepSeaDeposits/htm/doc.html

NAKAMURA Y., SANDÍN M. M., SUZUKI N., TUJI A. & NOT F. 2020. — Phylogenetic revision of the order Entactinaria—Paleozoic relict Radiolaria (Rhizaria, SAR). *Protist* 171 (1): 125712. https://doi.org/10.1016/j.protis.2019.125712

NAKASEKO K. 1955. — Miocene radiolarian fossil assemblage from the southern Toyama Prefecture in Japan. *Science Reports, College of General Education Osaka University* 4: 65-127.
NAKASEKO K. 1963. — Neogene Cyrtoidea (Radiolaria) from the Isozaki Formation in Ibaraki Prefecture, Japan. *Science Reports, College of General Education Osaka University* 12 (2): 165-198.
NAKASEKO K., NAGATA K. & NISHIMURA A. 1983. — *Pentactinosphaera hokurikuensis* (Nakaseko): A revised early Miocene Radiolaria. *Science Reports, College of General Education Osaka University* 32 (1): 31-37.
NAKASEKO K. & NISHIMURA A. 1982. — *Radiolaria from the Bottom Sediments of the Bellingshausen Basinin the Antarctic Sea*, Report of the Technology Research Center, Japan National Oil Corporation, 91-244 p.
NEVIANI A. 1900. — Supplemento alla fauna a Radiolari delle rocce mesozoiche del Bolognese. *Bollettino della Società Geologica Italiana* 19: 645-671. https://www.biodiversitylibrary.org/page/51392241
NIGRINI C. 1967. — Radiolaria in pelagic sediments from the Indian and Atlantic Oceans. *Bulletin of the Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California* 11: 1-125.
NIGRINI C. 1970. — Radiolarian assemblages in the north Pacific and their application to a study of Quaternary sediments in Core V20-130, *in* HAYS J. D. (ed.), *Geological Investigations of the North Pacific*. Vol. 126. Geological Society of America, Boulder, CO, USA: 139-183. https://doi.org/10.1130/MEM126-p139
NIGRINI C. 1977. — Tropical Cenozoic Artostrobiidae (Radiolaria). *Micropaleontology* 23 (3): 241-269. https://doi.org/10.2307/1485215
NIGRINI C. & CAULET J. P. 1992. — Late Neogene radiolarian assemblages characteristic of Indo-Pacific areas of upwelling. *Micropaleontology* 38 (2): 139-164. https://doi.org/10.2307/1485992
NIGRINI C. & LOMBARI G. 1984. — A guide to Miocene Radiolaria. *Cushman Foundation for foraminiferal Research, special Publication* 22 (22): i-xvii, S1-S102, N101-N206.
NIGRINI C., SANFILIPPO A. & MOORE JR. T. J. 2006. — Cenozoic radiolarian biostratigraphy: a magnetobiostratigraphic chronology of Cenozoic sequences from ODP Sites 1218, 1219, and 1220, equatorial Pacific, *in* WILSON P. A., LYLE M. & FIRTH J. V. (eds), *Proceedings of the Ocean Drilling Program, Scientific Results*. Vol. 199: 1-76. https://doi.org/10.2973/odp.proc.sr.199.225.2006
NISHIMURA A. 1987. — Cenozoic Radiolaria in the western North Atlantic, Site 603, Leg 93 of the Deep Sea Drilling Project, *in* VAN HINTE J. E., WISE S. W. J. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 93. U.S. Government Printing Office, Washington, D.C.: 713-737. https://doi.org/10.2973/dsdp.proc.93.120.1987
NISHIMURA A. 1992. — Paleocene radiolarian biostratigraphy in the northwest Atlantic at Site 384, Leg 43, of the Deep Sea Drilling Project. *Micropaleontology* 38 (4): 317-362. https://doi.org/10.2307/1485764
NISHIMURA A. & YAMAUCHI M. 1984. — Radiolarians from the Nankai Trough in the Northwest Pacific. *News of Osaka Micropaleontologists, Special Volume* 6: 1-148.
NISHIMURA H. 1990. — Taxonomic study on Cenozoic Nassellaria (Radiolaria). *Science Reports of the Institute of Geoscience, University of Tsukuba, Section B: Geological Sciences* 11: 69-172. http://hdl.handle.net/2241/4970
NOBLE P., AITCHISON J. C., DANELIAN T., DUMITRICA P., MALETZ J., SUZUKI N., CUVELIER J., CARIDROIT M. & O'DOGHERTY L. 2017. — Taxonomy of Paleozoic radiolarian genera, *in* DANELIAN T., CARIDROIT M., NOBLE P. & AITCHISON J. C. (eds), Catalogue of Paleozoic radiolarian genera. *Geodiversitas* 39 (3): 419-502. https://doi.org/10.5252/g2017n3a4
O'CONNOR B. 1997. — New Radiolaria from the Oligocene and Early Miocene of Northland, New Zealand. *Micropaleontology* 43 (1): 63-100. https://doi.org/10.2307/1485923
O'CONNOR B. 1999. — Radiolaria from the Late Eocene Oamaru Diatomite, South Island, New Zealand. *Micropaleontology* 45 (1): 1-55. https://doi.org/10.2307/1486201
O'DOGHERTY L. 1994. — Biochronology and Paleontology of Mid-Cretaceous Radiolarians from Northern Apennines (Italy) and Betic Cordillera (Spain). *Mémoires de Géologie (Lausanne)* 21: 1-415.
O'DOGHERTY L., CARTER E. S., DUMITRICA P., GORIČAN Š., DE WEVER P., BANDINI A. N., BAUMGARTNER P. O. & MATSUOKA A. 2009a. — Catalogue of Mesozoic radiolarian genera; Part 2, Jurassic-Cretaceous, *in* O'DOGHERTY L., GORIČAN Š. & DE WEVER P. (eds), Catalogue of Mesozoic radiolarian genera. *Geodiversitas* 31 (2): 271-356. https://doi.org/10.5252/g2009n2a4
O'DOGHERTY L., GORIČAN Š. & DE WEVER P. (eds) 2009b. — Catalogue of Mesozoic radiolarian genera. *Geodiversitas* 31 (2): 189-486. http://geodiversitas.com/31/2
O'DOGHERTY L., GORIČAN Š. & GAWLICK H.-J. 2017. — Middle and Late Jurassic radiolarians from the Neotethys suture in the Eastern Alps. *Journal of Paleontology* 91 (1): 25-72. https://doi.org/10.1017/jpa.2016.96
OGANE K., SUZUKI N., AITA Y., LAZARUS D. & SAKAI T. 2009a. — The Ehrenberg type species of flat-shaped radiolarian genera (Spongodiscidae and Stylodictyidae, Spumellaria, Polycystina). *Journal of Systematic Palaeontology* 7 (1): 81-94. https://doi.org/10.1017/S1477201908002575
OGANE K., SUZUKI N., AITA Y., SAKAI T. & LAZARUS D. 2009b. — Ehrenberg's Radiolarian Collections from Barbados, *in* TANIMURA Y. & AITA Y. (eds), *Joint Haeckel and Ehrenberg Project: Reexamination of the Haeckel and Ehrenberg Microfossil Collections as a Historical and Scientific Legacy*. Vol. 40. National Museum of Nature and Science Monographs: 97-106. https://www.kahaku.go.jp/research/db/botany/ehrenberg/pdf/97-106.pdf; https://www.kahaku.go.jp/research/db/botany/ehrenberg/pdf/P-5-corr.pdf
ÖZDIKMEN H. 2009. — Substitute names for some unicellular animal taxa (Protozoa). *Munis Entomology & Zoology* 4 (1): 233-256.
PANTANELLI D. 1880. — Radiolarie nei calcari. *Atti della Società Toscana di Scienze Naturali, Residente in Pisa, Processi Verbali* 2: 111-112.
PESSAGNO E. A. 1969. — The Neosciadiocapsidae, a new family of Upper Cretaceous Radiolaria. *Bulletins of american Paleontology* 56 (253): 377-439. https://www.biodiversitylibrary.org/page/10585380
PESSAGNO E. A. 1971. — Jurassic and Cretaceous Hagiastridae from the Blake-Bahama Basin (Site 5A, JOIDES Leg 1) and the Great Valley Sequence, California Coast Ranges. *Bulletins of American Paleontology* 60 (264): 5-83. https://www.biodiversitylibrary.org/page/28721248
PESSAGNO E. A. 1972. — Cretaceous Radiolaria. Part I: The Phaseliformidae, new family, and other Spongodiscacea from the Upper Cretaceous portion of the Great Valley Sequence, part II; Pseudoaulophacidae Riedel from the Cretaceous of California and the Blake-Bahama Basin (JOIDES leg 1). *Bulletins of American Paleontology* 61 (270): 269-328. https://www.biodiversitylibrary.org/page/10584886
PESSAGNO E. A. 1973. — Upper Cretaceous Spumellariina from the Great Valley Sequence, California Coast Ranges. *Bulletins of American Paleontology* 63 (276): 49-102. https://www.biodiversitylibrary.org/page/10666190
PESSAGNO E. A. 1975. — Upper Cretaceous Radiolaria from DSDP Site 275, *in* KENNETT J., HOUTZ R. *et al.* (eds), Initial Reports of the Deep Sea Drilling Project. Vol. 29. U.S. Government Printing Office, Washington: 1011-1029. https://doi.org/10.2973/dsdp.proc.29.127.1975
PESSAGNO E. A. 1976. — Radiolarian zonation and stratigraphy of the Upper Cretaceous portion of the Great Valley Sequence, California Coast Ranges. *Micropaleontology, Special Publication* 2: 1-95.
PESSAGNO E. A. 1977. — Lower Cretaceous radiolarian biostratigraphy of the Great Valley Sequence and Franciscan Complex, California Coast Ranges. *Cushman Foundation for Foraminiferal Research, Special Publication* 15: 1-87.
PETRUSHEVSKAYA M. G. 1965. — Peculiarities of the construction of the skeleton of radiolarians Botryoidae (Order Nassellaria). *Proceedings of the Zoological Institute, Academy of Sciences of the USSR* 35: 79-118 [in Russian].

PETRUSHEVSKAYA M. G. 1967. — Radiolarians of the orders Spumellaria and Nassellaria of the Antartic Region (according to data of the Soviet Antrctic Expedition), *in Exploration of the Fauna of the Seas, Biological Results of the Soviet Antarctic Expedition 1955-1958 (3)*. Vol. 4 (12). Zoological Institute of the Academy of Science, USSR, Leningrad: 5-186 [in Russian].

PETRUSHEVSKAYA M. G. 1969. — Spumellarian and Nassellarian radiolarians in bottom sediments as indicators of hydrological conditions, *in* JOUSE A. P. (ed.), *Basic Problems of Micropaleontology and the Accumulation of Organogenic Sedimentsin Oceans and Seas*. Science Publishing House, USSR Academy of Sciences, Oceanographic Commission, Moscow: 127-151 [in Russian].

PETRUSHEVSKAYA M. G. 1971a. — The determination of stratigraphic zones of the Quaternary and Upper Tertiary deposits by means of radiolarian analysis, *Ancient Radiolarians of Middle Asia: Collection of scientific articles*. Vol. 2. Department of Geology and Paleontology, The Tadzhiksk V. I. Lenin State University, Duchanbe, USSR: 108-120 [in Russian].

PETRUSHEVSKAYA M. G. 1971b. — Nassellarian radiolarians in the plankton of the World Ocean, *in* SMRELKOV A. A. (ed.), *Exploration of the Fauna of the Seas. Radiolarians of the Ocean. Reports on the Soviet Expeditions*. Vol. 9. Academy of Sciences of the USSR, Zoological Institute: 1-294 [in Russian].

PETRUSHEVSKAYA M. G. 1975. — Cenozoic radiolarians of the Antarctic, Leg 29, DSDP, *in* KENNET J. P., HOUTZ R. E. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 29. U.S. Government Printing Office, Washington, D.C.: 541-675. https://doi.org/10.2973/dsdp.proc.29.114.1975

PETRUSHEVSKAYA M. G. 1981. — *Nassellarian radiolarians from the world oceans*. Nauka, Publications of the Zoological Institute, Academy of Sciences of the USSR, Leningrad, Description of the Fauna of the USSR, 405 p. [in Russian].

PETRUSHEVSKAYA M. G. & KOZLOVA G. E. 1972. — Radiolaria: Leg 14, Deep Sea Drilling Project, *in* HAYES D. E., PIMM A. C. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 14. U.S. Government Printing Office, Washington, D.C.: 495-648. https://doi.org/10.2973/dsdp.proc.14.116.1972

PETRUSHEVSKAYA M. G. & KOZLOVA G. E. 1979. — Description of the radiolarian genera and species, *in* STERLKOV A. A. & M.G. P. (eds), *The history of the microplankton of the Norwegian Sea (on the Deep Sea Drilling materials)*. Vol. 23. Nauka Academy of Sciences of the USSR, Zoological Institute, Leningrad: 86-157 [in Russian].

POCHE F. 1913. — Das System der Protozoa. *Archiv für Protistenkunde* 30: 125-321.

POLUZZI A. 1982. — I radiolari quaternari di un ambiente idrotermale del Mar Tirreno. *Memorie della Societa Italiana di Scienze Naturali e del Museo Civico di Storia Naturale di Milano* 23 (2): 48-72.

POPOFSKY A. 1907. — Neue Radiolarien der deutschen Sudpolar-Expedition. *Zoologischer Anzeiger* 31 (23): 697-705. https://www.biodiversitylibrary.org/page/30257589

POPOFSKY A. 1908. — Die Radiolarien der Antarktis (mit Ausnahme der Tripyleen), *in* DRYGALSKI E. (ed.), *Deutsche Sudpolar-Expedition, 1901-1903*. Vol. 10. Georg Reimer, Berlin, Germany: 183-306. https://www.biodiversitylibrary.org/page/5955366

POPOFSKY A. 1912. — Die Sphaerellarien des Warmwassergebietes, *in* DRYGALSKI E. (ed.), *Deutsche Sudpolar-Expedition, 1901-1903*. Vol. 13. Georg Reimer, Berlin, Germany: 73-159. https://www.biodiversitylibrary.org/page/2138893

POPOFSKY A. 1913. — Die Nassellarien des Warmwassergebietes, *in* DRYGALSKI E. (ed.), *Deutsche Sudpolar-Expedition, 1901-1903*. Vol. 14. Georg Reimer, Berlin, Germany: 217-416. https://www.biodiversitylibrary.org/page/6262073

POPOFSKY A. 1917. — Die Collosphaeriden der Deutschen Sudpolar-Expedition 1901-1903.Mit Nachtrag zu den Spumellarien und Nassellarien, *in* DRYGALSKI E. (ed.), *Deutsche Sudpolar-Expedition, 1901-1903*. Vol. 16. Walter de Gruyter, Berlin and Leipzig, Germany: 235-278. https://www.biodiversitylibrary.org/page/2106887

POPOFSKY A. 1920. — Die Sphaerozoiden der Deutschen Sudpolar-Expedition 1901-1903, *in* DRYGALSKI E. (ed.), *Deutsche Sudpolar-Expedition, 1901-1903*. Vol. 16. Walter de Gruyter, Berling and Leipzig, Germany: 541-587. https://www.biodiversitylibrary.org/page/2107301

POPOVA I. M. 1989. — Some new Theopiliidae and its systematic paleontology, *Paleontological and stratigraphic studies of the Phanerozoic of the Dal'nego East*. Vladivostok: 68-77 [in Russian].

PRINCIPI P. 1909. — Contributo allo studio dei Radiolari Miocenici Italiani. *Bollettino della Società Geologica Italiana* 28: 1-22. https://www.biodiversitylibrary.org/page/51663448

RENAUDIE J. 2012. —*A Synthesis of Antarctic Neogene Radiolarians: Taxonomy, Macroevolution and Biostratigraphy*. PhD Thesis, Humboldt-Universität zu Berlin, 306 p.

RENAUDIE J. & LAZARUS D. B. 2016. — New species of Neogene radiolarians from the Southern Ocean – part IV. *Journal of Micropalaeontology* 35 (1): 26-53. https://doi.org/10.1144/jmpaleo2014-026

RENZ G. W. 1974. — Radiolaria from Leg 27 of the Deep Sea Drilling Project, *in* VEEVERS J. J., HEIRTZLER J. R. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 27. U.S. Government Printing Office, Washington, D.C.: 769-841. https://doi.org/10.2973/dsdp.proc.27.138.1974

RENZ G. W. 1976. — The distribution and ecology of Radiolaria in the Central Pacific plankton and surface sediments. *Bulletin of the Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California* 22: 1-267.

REZZO E. 1922. — Contributo allo studio dei Radiolari viventi nel Plancton superficiale di Quarto dei Mille. *Memoria del Reale Comitato Talassografico Italiano* 84: 1-16.

RIEDEL W. R. 1958. — Radiolaria in Antarctic sediments. *Reports of the B.A.N.Z. Antarctic Research Expedition, series B,* 6: 217-255.

RIEDEL W. R. 1959. — Oligocene and Lower Miocene Radiolaria in tropical Pacific sediments. *Micropaleontology* 5 (3): 285-302. https://doi.org/10.2307/1484421

RIEDEL W. R. 1967. — Some new families of Radiolaria. *Proceedings of the Geological Society of London* 1640: 148-149.

RIEDEL W. R. 1971. — Systematic classification of polycystine Radiolaria, *in* FUNNELL B. M. & RIEDEL W. R. (eds), *The Micropalaeontology of Oceans*. Cambridge University Press, Cambridge: 649-660.

RIEDEL W. R. & CAMPBELL A. S. 1952. — A new Eocene radiolarian genus. *Journal of Paleontology* 26 (4): 667-669. https://www.jstor.org/stable/1299858

RIEDEL W. R. & SANFILIPPO A. 1970. — Radiolaria, Leg 4, Deep Sea Drilling Project, *in* BADER R. G. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 4. U.S. Government Printing Office, Washington, D.C.: 503-575. https://doi.org/10.2973/dsdp.proc.4.124.1970

RIEDEL W. R. & SANFILIPPO A. 1971. — Cenozoic Radiolaria from the western tropical Pacific, Leg 7, *in* WINTERER E. L., RIEDEL W. R. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 7. U.S. Government Printing Office, Washington, D.C.: 1529-1672. https://doi.org/10.2973/dsdp.proc.7.132.1971

RIEDEL W. R. & SANFILIPPO A. 1973. — Cenozoic Radiolaria from the Caribbean, Deep Sea Drilling Project, Leg 15, *in* EDGAR N. T., SAUNDERS J. B. *et al.* (eds), Initial Reports of the Deep Sea Drilling Project. Vol. 15. U.S. Government Printing Office, Washington: 705-751. https://doi.org/10.2973/dsdp.proc.15.117.1973

RIEDEL W. R. & SANFILIPPO A. 1977. — Cainozoic Radiolaria, *in* RAMSAY A. T. S. (ed.), *Oceanic Micropalaeontology*. Vol. 2. Academic Press, London, New York, San Francisco: 847-912.

RIEDEL W. R. & SANFILIPPO A. 1978. — Stratigraphy and evolution of tropical Cenozoic radiolarians. *Micropaleontology* 24 (1): 61-96. https://doi.org/10.2307/1485420

ROBINSON W. J. & GOLL R. M. 1978. — Fine skeletal structures of the radiolarian *Callimitra carolotae* Haeckel. *Micropaleontology* 24 (4): 432-439. https://doi.org/10.2307/1485372

ROGERS J. 2020. — Rare species of *Stylotrochus* (Radiolaria: Spongodiscidae) found in the southern Indian Ocean. *Revue de Micropaléontologie* 67: 100415. https://doi.org/10.1016/j.revmic.2020.100415

RÜST D. 1885. — Beiträge zur Kenntniss der fossilen Radiolarien aus Gesteinen des Jura. *Palaeontographica* 31: 269-321. https://www.biodiversitylibrary.org/page/33299216

SAKAI T. 1980. — Radiolarians from Sites 434, 435, and 436, Northwest Pacific, Leg 56, Deep Sea Drilling Project, *in* LEE M., STOUT L. N., LANGSETH M. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 56-57. U.S. Government Printing Office, Washington, D.C.: 695-733. https://doi.org/10.2973/dsdp.proc.5657.119.1980

SAKAI T., SUZUKI N., OGANE K., LAZARUS D., BREIDBACH O. & BACH T. 2009. — Haeckel's Messina Radiolarian Collection Housed in the Ernst-Haeckel-Haus, *in* TANIMURA Y. & AITA Y. (eds), *Joint Haeckel and Ehrenberg Project: Reexamination of the Haeckel and Ehrenberg Microfossil Collections as a Historical and Scientific Legacy*. Vol. 40. National Museum of Nature and Science Monographs: 47-54. https://www.kahaku.go.jp/research/db/botany/ehrenberg/pdf/47-54.pdf; https://www.kahaku.go.jp/research/db/botany/ehrenberg/pdf/P-3.pdf

SANDÍN M. M. 2019. — *Diversité et évolution des Nassellaires et Spumellaires (Radiolaires)*. Thèse de doctorat d'Évolution et Diversité Moléculaire, Sorbonne Université, Station biologique de Roscoff, 202 p.

SANDÍN M. M., BIARD T., ROMAC S., O'DOGHERTY L., SUZUKI N. & NOT F. 2021. — A morpho-molecular perspective on the diversity and evolution of Spumellaria (Radiolaria). *Protist* 172 (3): 125806. https://doi.org/10.1016/j.protis.2021.125806

SANDÍN M. M., PILLET L., BIARD T., POIRIER C., BIGEARD E., ROMAC S., SUZUKI N. & NOT F. 2019. — Time Calibrated Morpho-molecular Classification of Nassellaria (Radiolaria). *Protist* 170 (2): 187-208. https://doi.org/10.1016/j.protis.2019.02.002

SANFILIPPO A. 1990. — Origin of the subgenra *Cyclampterium*, *Paralampterium* and *Sciadiopeplus* from *Lophocyrtis* (*Lophocyrtis*) (Radiolaria, Theoperidae). *Marine Micropaleontology* 15 (3-4): 287-312. https://doi.org/10.1016/0377-8398(90)90016-F

SANFILIPPO A. & BLOME C. D. 2001. — Biostratigraphic implications of mid-latitude Palaeocene-Eocene radiolarian faunas from Hole 1051A, Ocean Drilling Program Leg 171B, Blake Nose, western North Atlantic, *in* KROON D., NORRIS R. D. & KLAUS A. (eds), *Western North Atlantic Palaeogene and Cretaceous Palaeoceanography*. Vol. 183. Special Publications of the Geological Society of London: 185-224. https://doi.org/10.1144/GSL.SP.2001.183.01.10

SANFILIPPO A., BURCKLE L. H., MARTINI E. & RIEDEL W. R. 1973. — Radiolarians, diatoms, silicoflagellates and calcareous nannofossils in the Mediterranean Neogene. *Micropaleontology* 19 (2): 209-234. https://doi.org/10.2307/1485164

SANFILIPPO A. & CAULET J. P. 1998. — Taxonomy and evolution of Paleogene Antartic and Tropical Lophocyrtid radiolarians. *Micropaleontology* 44 (1): 1-43. https://doi.org/10.2307/1486083

SANFILIPPO A., CAULET J. P. & RIEDEL W. R. 1978. — Radiolaria from Mediterranean sediments, DSDP Leg 42A, *in* HSU K. J., MONTADERT L. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 44. U.S. Government Printing Office, Washington, D.C.: 753-760. https://doi.org/10.2973/dsdp.proc.42-1.133.1978

SANFILIPPO A. & RIEDEL W. R. 1970. — Post-Eocene "closed" theoperid radiolarians. *Micropaleontology* 16 (4): 446-462. https://doi.org/10.2307/1485072

SANFILIPPO A. & RIEDEL W. R. 1973. — Cenozoic Radiolaria (exclusive of theoperids, artostrobiids and amphipyndacids) from the Gulf of Mexico, DSDP Leg 10, *in* WORZEL J. L., BRYANT W. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 10. U.S. Government Printing Office, Washington, D.C.: 475-611. https://doi.org/10.2973/dsdp.proc.10.119.1973

SANFILIPPO A. & RIEDEL W. R. 1974. — Radiolaria from the west-central Indian Ocean and Gulf of Aden, DSDP Leg 24, *in* FISHER R. L., BUNCE E. T. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 24. U.S. Government Printing Office, Washington, D.C.: 997-1035. https://doi.org/10.2973/dsdp.proc.24.125.1974

SANFILIPPO A. & RIEDEL W. R. 1980. — A revised generic and suprageneric classification of the Artiscins (Radiolaria). *Journal of Paleontology* 54 (5): 1008-1011. https://www.jstor.org/stable/1304365

SANFILIPPO A. & RIEDEL W. R. 1982. — Revision of the radiolarian genera *Theocotyle*, *Theocotylissa* and *Thyrsocyrtis*. *Micropaleontology* 28 (2): 170-188. https://doi.org/10.2307/1485229

SANFILIPPO A. & RIEDEL W. R. 1985. — Cretaceous Radiolaria, *in* BOLLI H. M., SAUNDERS J. B. & PERCH-NIELSEN K. (eds), *Plankton Stratigraphy*. Vol. 2. Cambridge University Press, Cambridge: 573-630.

SANFILIPPO A. & RIEDEL W. R. 1992. — The origin and evolution of Pterocorythidae (Radiolaria): A Cenozoic phylogenetic study. *Micropaleontology* 38 (1): 1-36. https://doi.org/10.2307/1485841

SASHIDA K. & KURIHARA T. 1999. — Recent radiolarian faunas in the surface water off the coast of Shimoda, Izu Peninsula, Japan. *Science Reports of the Institute of Geoscience, University of Tsukuba, Section B: Geological Sciences* 20: 115-144.

SCHAAF A. 1976. — *Suttonium praedicator* nov. gen., nov. sp. (Radiolaria, Nassellaria) et la famille des Suttonidae nov. fam. *Geobios* 9 (6): 789-793. https://doi.org/10.1016/S0016-6995(76)80079-4

SCHAUM H. R. 1845. — Observations critiques sur la famille des lamellicorns mélitophiles. *Annales de la Société entomologique de France*, 2ème série 2: 333-426. https://www.biodiversitylibrary.org/page/8292089

SCHNEIDER A. 1866. — *Monographie der Nematoden*. G. Reimer, Berlin, 357 p. https://doi.org/10.5962/bhl.title.1938

SCHRÖDER O. 1906a. — Neue Protozoen der deutschen Sudpolar-Expedition. *Zoologischer Anzeiger* 30: 448-454. https://www.biodiversitylibrary.org/page/30259150

SCHRÖDER O. 1906b. — Eine neu Cytocladusart (*Cytocladus spinosus*). *Zoologischer Anzeiger* 30: 587-590. https://www.biodiversitylibrary.org/page/30259289

SCHRÖDER O. 1908. — Neue Radiolarien (*Cytocladus gracilis* und *C. major*), *in* DRYGALSKI E. (ed.), *Deutsche Sudpolar-Expedition, 1901-1903*. Vol. 9. Georg Reimer, Berlin, Germany: 205-223. https://www.biodiversitylibrary.org/page/6025354

SCHRÖDER O. 1909. — *Sticholonche zanclea* (R. Hertwig) und *Wagnerella borealis* (Mereschkowsky), *in* DRYGALSKI E. (ed.), *Deutsche Sudpolar-Expedition, 1901-1903*. Vol. 10. Georg Reimer, Berlin, Germany: 317-322.

SCHRÖDER O. 1914. — Die nordischen Nassellarian, *in* BRANDT K. & APSTEIN C. (eds), *Nordisches Plankton*. Vol. 17. Verlag von Lipsius & Tischer, Kiel & Leipzig: 67-146.

SCUDDER S.H. 1897. — The Genera of North American Melanopli. *Proceedings of the American Academy of Arts and Sciences* 32 (9): 195-206. https://www.biodiversitylibrary.org/page/3124524

SHRUBSOLE W. H. 1889. — Notes on the Radiolaria of the London Clay. *Quarterly Journal of the geological Society of London* 45 (1-4): 121-124. https://doi.org/10.1144/GSL.JGS.1889.045.01-04.09

SQUINABOL S. 1903. — Le Radiolarie dei noduli selciosi nella Scaglia degli Euganei. Contribuzione I. *Rivista italiana di Paleontologia* 9: 105-151. https://www.biodiversitylibrary.org/page/14547793

SQUINABOL S. 1904. — Radiolarie cretacee degli Euganei. *Atti e Memorie della reale Accademia di Scienze, Lettere ed Arti in Padova, nuova serie* 20: 171-244.

STECHOW E. 1921. — Neue Genera und Species von Hydrozoen und anderen Evertebraten. *Archiv für Naturgeschichte, Abteilung A* 87: 248-265. https://www.biodiversitylibrary.org/page/45494398

STEIGER T. 1992. — Systematik, stratigraphie und Palökologie der Radiolarien des Oberjura-Unterkreiden-Grenzbereiches im Osterhorn-Tirolikum (Nördliche Kalkalpen, Salzburg und Bayern. *Zitteliana* 19: 3-188. https://www.biodiversitylibrary.org/page/28277432

STEIN F. 1859. — Charakteristik neuer Infusoriengatttungen. *Lotos* 9 (5-6): 57-60.

STEINMAN G. 1878. — Über fossile Hydrozoen aus der Familie der Coryniden. *Palaeontographica* Series 3, 25 (3): 102-124. https://www.biodiversitylibrary.org/page/33294880

STÖHR E. 1878. — Sulla posizione geologica del tufo e del tripoli nella zona solfifera di Sicilia. *Bollettino del reale Comitato geologico d'Italia* 9: 498-519. https://www.biodiversitylibrary.org/page/53522791

STÖHR E. 1880. — Die Radiolarienfauna der Tripoli von Grotte, Provinz Girgenti in Sicilien. *Palaeontographica* 26: 71-124. https://www.biodiversitylibrary.org/page/33300080

STRELKOV A. A. & LIPMAN R. K. 1959. — Subclass of Radiolaria. Systematical Part, *in* ORLOV Y. A. (ed.), *Fundamentals of Paleontology*. USSR Academy of Sciences Publishing House, Moscow, USSR: 426-461 [in Russian].

STRELKOV A. A. & RESHETNYAK V. V. 1971. — Colonial Spumellarian radiolarians of the world ocean, *in Exploration of the Fauna of the Seas. Radiolarians of the Ocean. Reports on the Soviet Expeditions*. Vol. 9. Academy of Sciences of the USSR, Zoological Institute: 295-418 [in Russian].

SUGIYAMA K. 1992a. — New spumellarians (Radiolaria) from the lower Miocene Toyohama formation, Morozaki Group, central Japan. *Bulletin of the Mizunami Fossil Museum* 19: 193-197.

SUGIYAMA K. 1992b. — *Syscioscenium velamen* gen. et sp. nov., a new sethoformid Radiolaria from the lower to middle Miocene of central Japan. *Bulletin of the Mizunami Fossil Museum* 19: 215-218.

SUGIYAMA K. 1993. — Skeletal structures of lower and middle Miocene Lophophaenids (Radiolaria) from central Japan. *Transactions and Proceedings of the palaeontological Society of Japan, new Series* 169: 44-72. https://doi.org/10.14825/prpsj1951.1993.169_44

SUGIYAMA K. 1994. — Lower Miocene new nassellarians (Radiolaria) from the Toyohama Formation, Morozaki Group, central Japan. *Bulletin of the Mizunami Fossil Museum* 21: 1-11.

SUGIYAMA K. & FURUTANI H. 1992. — Middle Miocene radiolarians from the Oidawara formation, Mizunami Group, Gifu Prefecture, central Japan. *Bulletin of the Mizunami Fossil Museum* 19: 199-213.

SUGIYAMA K., NOBUHARA T. & INOUE K. 1992. — Preliminary report on Pliocene radiolarians from the Nobori formation, Tonohama Group Shikoku, southwest Japan. *Journal of Earth and Planetary Sciences, Nagoya University* 39: 1-30. https://doi.org/10.18999/joueps.39.1

SUTTON H. J. 1896a. — Radiolaria; a new genus from Barbados. *American Monthly Microscopical Journal* 17 (2): 61-62. https://www.biodiversitylibrary.org/page/16257252

SUTTON H. J. 1896b. — Radiolaria: a new genus from Barbados. *American Monthly Microscopical Journal* 17 (4): 138-139. https://www.biodiversitylibrary.org/page/16257333

SUZUKI N. 2009. — Radiolarian Studies by Christian Gottfried Ehrenberg (1795-1876) and Value of his Species as Type Species of Genera, *in* TANIMURA Y. & AITA Y. (eds), *Joint Haeckel and Ehrenberg Project: Reexamination of the Haeckel and Ehrenberg Microfossil Collections as a Historical and Scientific Legacy*. Vol. 40. National Museum of Nature and Science Monographs: 55-69. https://www.kahaku.go.jp/research/db/botany/ehrenberg/pdf/55-70.pdf; https://www.kahaku.go.jp/research/db/botany/ehrenberg/pdf/T-3.pdf

SUZUKI N., OGANE K., AITA Y., SAKAI T. & LAZARUS D. 2009a. — Reexamination of Ehrenberg's Neogene Radiolarian Collections and its Impact on Taxonomic Stability, *in* TANIMURA Y. & AITA Y. (eds), *Joint Haeckel and Ehrenberg Project: Reexamination of the Haeckel and Ehrenberg Microfossil Collections as a Historical and Scientific Legacy*. Vol. 40. National Museum of Nature and Science Monographs: 87-96. https://www.kahaku.go.jp/research/db/botany/ehrenberg/pdf/87-96.pdf; https://www.kahaku.go.jp/research/db/botany/ehrenberg/pdf/P-4-corr.pdf

SUZUKI N., OGANE K. & CHIBA K. 2009b. — Middle to Late Eocene polycystine radiolarians from the Site 1172, Leg 189, Southwest Pacific. *News of Osaka Micropaleontologists, Special Volume* 14: 239-296.

SUZUKI N., O'DOGHERTY L., CAULET J.-P. & DUMITRICA P. 2021. — A new integrated morpho- and molecular systematic classification of Cenozoic radiolarians (Class Polycystinea) – suprageneric taxonomy and logical nomenclatorial acts, *in* O'DOGHERTY L. (ed.), Catalog of Cenozoic radiolarians. *Geodiversitas* 43 (15): 405-573. https://doi.org/10.5252/geodiversitas2021v43a15. http://geodiversitas.com/43/15

SWANBERG N. R., ANDERSON O. R. & BENNETT P. 1985. — Spongiose spumellarian radiolaria; the functional morphology of the radiolarian skeleton with a description of *Spongostaurus*, a new genus. *Marine Micropaleontology* 9 (5): 455-464. https://doi.org/10.1016/0377-8398(85)90011-8

TAKAHASHI K. 1991. — Radiolaria: Flux, Ecology, and Taxonomy in the Pacific and Atlantic, *in* HONJO S. (ed.), *Ocean Biocoenosis Series*. Vol. 3. Woods Hole Oceanographic Institution, Woods Hole, Massachusetts: 1-303. https://doi.org/10.1575/1912/408

TAKAHASHI K. & HONJO S. 1981. — Vertical flux of Radiolaria: a taxon-quantitative sediment trap study from the western tropical Atlantic. *Micropaleontology* 27 (2): 140-190. https://doi.org/10.2307/1485284

TAKAHASHI K. & LING H. Y. 1980. — Distribution of *Sticholonche* (Radiolaria) in the upper 800 m of the waters in the equatorial Pacific. *Marine Micropaleontology* 5 (3): 311-319. https://doi.org/10.1016/0377-8398(80)90015-8

TAKEMURA A. 1986. — Classification of Jurassic Nassellarians (Radiolaria). *Palaeontographica. Abteilung A: Palaozoologie-Stratigraphie* 195 (1-3): 29-74.

TAN Z. Y. 1998. — *Phylum Protozoa. Class Sacodina. Order Acantharia. Order Spumellaria*, Fauna Sinica, Protozoa, 315 p. [in Chinese]

TAN Z. Y. & CHEN M. H. 1999. — *Offshore Radiolaria in China*. China. Scientific Publications, 1-404 p. [in Chinese].

TAN Z. Y. & SU X. H. 2003. — *Radiolaria. Polycystinea: Nasellaria; Phaeodarea: Phaeodaria*. Science Press, Beijing, Fauna Sinica, Invertebrata.

TAN Z. Y. & TCHANG T. R. 1976. — Studies on the Radiolaria of the East China Sea. II Spumellaria, Nassellaria, Phaeodaria, Sticholonchea. *Studia marina sinica* 11: 217-310 [in Chinese].

TANIMURA Y. & AITA Y. 2009. — *Joint Haeckel and Ehrenberg Project: Reexamination of the Haeckel and Ehrenberg Microfossil Collections as a Historical and Scientific Legacy*, National Museum of Nature and Science Monographs, 106 p. https://www.kahaku.go.jp/english/research/publication/monograph/v40.html

TCHANG T. R. & TAN Z. Y. 1964. — Studies on the Radiolaria of the East China Sea I Acantharia. *Studia Marina Sinica* 6: 33-78 .[in Chinese]

TCHANG T. R. & TAN Z. Y. 1965. — A new genus and two new species of Glycobotrydidae from the East China Sea. *Studia Marina Sinica* 7: 15-18 [in Chinese].

TEDESCHI E. 1895. — I radiolari delle marne mioceniche di Arcevia. *Rivista italiana di Paleontologia* 1: 39-43. https://www.biodiversitylibrary.org/page/14521873

TEMMINCK L. J. & SCHLEGEL H. 1842-1850. — Pisces, *in* SIEBOLD, P. F. (ed.), *Fauna Japonica*. Leiden, 323 p. https://www.biodiversitylibrary.org/page/53641367

THOMSON C. W. 1877. — *The Voyage of the "*Challenger*": The Atlantic: a Preliminary Account of the General Results of the Exploring Voyage of* H.M.S. "Challenger" *during the Year 1873 and the Early Part of the Year 1876*. Harper & Brothers Publishers, New York, vol. 1, xx +424; vol. 422, xiv +396 p. https://doi.org/10.5962/bhl.title.11338

TIZARD T. H., MOSELEY H. N., BUCHANAN J. Y. & MURRAY J. 1885. — Narrative of the Cruise of *H.M.S. Challenger* with a general account of the scientific results of the expedition. *Report on the Scientific Results of the Voyage of the* H.M.S. Challenger *during the years 1873-76* 1: 1-1107. https://www.biodiversitylibrary.org/page/22166832

TOCHILINA S. V. 1970. — *Hexacyclia* – new Spumellaria genus from the Upper eocene deposits from the Voronezh Anticline. *Proceedings of the Voronezh University* 70: 172-177 [in Russian].

TOCHILINA S. V. 1985. — *Biostratigraphy of the Cenozoic North-Western Pacific Ocean*. Nauka, Academy of Science of the USSR, Moscow, 133 p. [in Russian].
TOCHILINA S. V. 1989. — On taxonomy of Cenozoic radiolarians, *Paleontological and stratigraphic investigation of Phanerozoic in the Far Eastern Region*. USSR Academy of Science, Vladivostok: 53-58 [in Russian].
TOCHILINA S. V. 2008. — On criteria of Nassellaria taxonomy, *News of Paleontology and Stratigraphy, 10-11*. Vol. 49, Novosibirsk: 61-66 [in Russian].
TRYON G. W. & PILSBRY H. A. 1891. — *Manual of Conchology, Structural and Systematic: with Illustrations of the Species*. Series 2, Volume 7, 225 p. https://www.biodiversitylibrary.org/page/23627266
VAN DE PAVERD P. J. 1995. —*Recent Polycystine Radiolaria from the Snellius-II Expedition*. PhD Thesis, Free University, 351 p.
VASILENKO L. N. 2019. — New Radiolaria Species from the Cenozoic Deposits on the Island Slope of the Kuril-Kamchatka Trench. *Paleontological Journal* 53 (4): 325-333. https://doi.org/10.1134/S0031030119040130
VINASSA DE REGNY P. E. 1898. — Nuovi generi di Radiolari del Miocene de Arcevia. *Bollettino della Società Geologica Italiana* 17: 197-198. https://www.biodiversitylibrary.org/page/51386652
VINASSA DE REGNY P. E. 1900. — Radiolari Miocenici Italiani. *Memorie della Reale Accademia delle Scienze dell'Istituto di Bologna, Serie 5* 8: 565-595. https://www.biodiversitylibrary.org/page/39041621
VITUKHIN D. I. 1993. — *Subdivision of the Russian Far East Cenozoic Sediment based on Radiolaria*. Russian Academy of Sciences. Geological Institue, Moscow, v. Transactions [in Russian].
WALKER F. 1865. — Catalogue of Lepidoptera Heterocera, seventh series. *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum* 33 (3): 707-1120. https://www.biodiversitylibrary.org/page/38917760
WEAVER F. M. & DINKELMAN M. G. 1978. — Cenozoic radiolarians from the Blake Plateau and the Blake Bahama Basin, DSDP Leg 44, *in* BENSON W. E., SHERIDAN R. E. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 44. U.S. Government Printing Office, Washington, D.C.: 865-885. https://doi.org/10.2973/dsdp.proc.44.138.1978
WETZEL O. 1933. — Die in organischer Substanz erhaltenen Mikrofossilien des baltischen Kreide-Feuersteins mit einem sedimentpetrographischen und stratigraphischen Anhang. *Palaeontographica. Abteilung A: Palaozoologie-Stratigraphie* 77 (4-6): 141-186.
WETZEL O. 1936. — Die Mikropalaontologie des Heiligengener Kieseotones (Ober-Eozän). *Siebenundzwanzigster Jahresbericht des Niedersächsischen geologischen Vereins (Geologische Abteilung der Naturhistorischen Gesellschaft zu Hannover)* 27: 41-75.
WHITE A. 1842. — XIII. Description of some Hemipterous Insects of the Section Heteroptera. *Transactions of the Entomological Society of London* 3 (2): 84-94. https://www.biodiversitylibrary.org/page/13709073
WOLFART R. 1981. — Neogene radiolarians from the eastern North Pacific (off Alta and Baja California), Deep Sea Drilling Project Leg 63, *in* ORLOFSKY S., YEATS R. S., HAQ B. U., BARRON J. A. *et al.* (eds), *Initial Reports of the Deep Sea Drilling Project*. Vol. 63. U.S. Government Printing Office, Washington, D.C.: 473-506. https://doi.org/10.2973/dsdp.proc.63.112.1981
WOLFENDEN R. N. 1902. — The plankton of the Faroe Channel and Shetlands. Preliminary notes on some Radiolaria and Copepoda. *Journal of the Marine Biological Association of the United Kingdom, New Series* 6 (3): 344-372. https://doi.org/10.1017/S0025315400043587
YEH K. Y. & CHENG Y. N. 1990. — Radiolaria in surface sediments from marginal basin off southwest Taiwan. *Bulletin of the National Museum of Natural Science, Taiwan* 2: 65-87.
ZACHARIAS O. 1906. — Über Periodizitat, Variation und Verbreitung verschiede Planktonwesen in sudlichen Meeren. *Archiv für Hydrobiologie und Planktonkunde, Neue Folge Forschungsberichte aus der Biologischen Station zu Plon* 1: 498-575.
ZAYNUTDINOV A. A. 1978. — Age of flat discoids radiolarians from the Eocene deposits of some regions of Central Asia. *Ancient Radiolarians of Central Asia: Collection of Scientific Works* 5: 68-129 [in Russian].
ZHANG L. & SUZUKI N. 2017. — Taxonomy and species diversity of Holocene pylonioid radiolarians from surface sediments of the northeastern Indian Ocean. *Palaeontologia Electronica* 20.3.48A: 1-68. https://doi.org/10.26879/718
ZITTEL K. A. 1876. — Über einige fossile Radiolarien aus der norddeutschen Kreiden. *Zeitschrift der deutschen geologischen Gesellschaft* 28: 75-87. https://www.biodiversitylibrary.org/page/44574437

Submitted on 19 December 2019;
accepted on 1 April 2021;
published on 16 November 2021.

APPENDIX 1. — Family-group files: pdf files of genera belonging to a same family. The reader can quickly navigate visually, or jump to a particular genus, by clicking on the bookmarks in the left navigation pane. The 97 family files are downloadable as a single ZIP file (https://doi.org/10.5852/geodiversitas2021v43a21_appendix1) or individually by hyperlinks in Table 2.

APPENDIX 2. — Genus-group files: includes all those species considered as valid into a same genus with a selected references list showing only reliable subjective synonyms. The stratigraphic occurrences assigned in the original publications are also documented (see Supplement part for more details). The 409 genus files are downloadable as a single ZIP file (https://doi.org/10.5852/geodiversitas2021v43a21_appendix2) or individually by hyperlinks in Appendix 5.

APPENDIX 3. — Species regarded as *nomina dubia* and *nomina nuda*. The file is downloadable as a single PDF file (https://doi.org/10.5852/geodiversitas2021v43a21_appendix3).

APPENDIX 4. — Taxa erroneously described as Polycystinea. The file is downloadable as a single PDF file (https://doi.org/10.5852/geodiversitas2021v43a21_appendix4).

APPENDIX 5. — Synthesis of valid Cenozoic genera. An active hyperlink under the genus name redirect to a PDF file holding all the species revised and belonging to the genus (see explanations for the supplements). The file is downloadable as a single PDF file (https://doi.org/10.5852/geodiversitas2021v43a21_appendix5).

APPENDIX 6. — Complete catalog of Cenozoic genera (p. 738-1138). For the subseries/subepoch equivalences used in the catalogue, see the Appendix 10.

The Appendix 7 (p. 1139-1158) corresponds to the Taxonomic index of Cenozoic Polycystinea radiolarians, while the Appendix 8 (p. 1159) lists the 76 genera without any known described species. The Appendix 9 (p. 1160-1184) is an alphabetic index of Cenozoic Polycystinea radiolarian genera. At last, the Appendix 10 contains the subseries/subepoch equivalences used in the catalogue.

S - LINEAGE I (A) HEXACARYIDAE
ASSIGNED HEREIN

GENUS ***Cleveiplegma***
Dumitrica, 2013: 24

Diagnosis: Spongy shell based on six three-bladed and verticillated long spines originating in a heteropolar and tetrapetaloid microsphere.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Hexadoras borealis* Cleve, 1899.

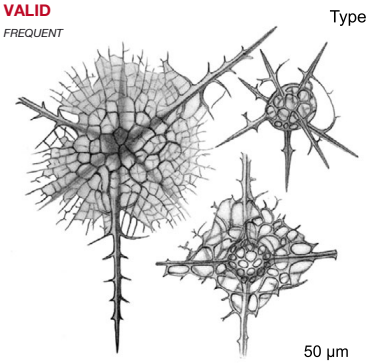
FIXATION MONOTYPY

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

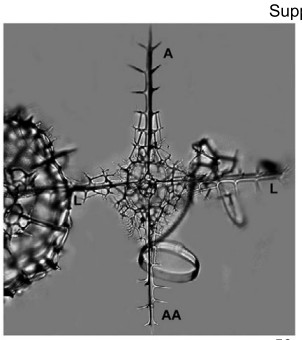
VALID
FREQUENT

Type



Hexadoras borealis
Cleve, 1899: 30, pl. 2, figs 4a-c

Support



Cleveiplegma boreale (Cleve)
Dumitrica 2013: 25, pl. 1, fig. 1

S - LINEAGE I (A) HEXACARYIDAE
ASSIGNED HEREIN

GENUS ***Haliphormis***
Ehrenberg, 1846: 385

Diagnosis: Shell spherical with polygonally framed pores bearing six three-bladed spines in the three cartesian arches. Initial microsphere unknown.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported. The SD of *Haliphormis calva* Haeckel, 1887 by Campbell (1954: D116) seems erroneous because it is a nomen nudum.

Original series: *Haliphormis hexacanthus* Ehrenberg, 1873a.

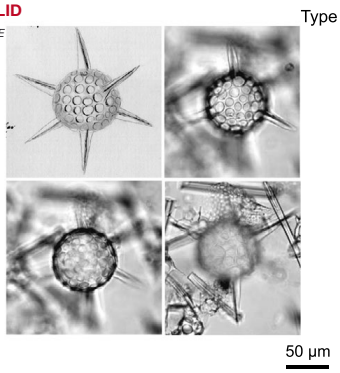
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE MIOCENE–LIVING***

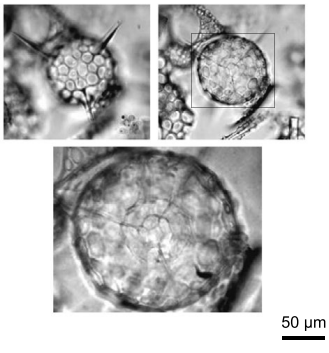
VALID
RARE

Type



Haliphormis hexacanthus
Ehrenberg, 1873a: 314 (unfigured); 1873b: 294-295, pl. 10, fig. 6 [Suzuki *et al.* 2009a: pl. 69, figs 1a-d; lectotype herein]

Support



Haliphormis hexacanthus Ehrenberg
Suzuki *et al.* 2009a: pl. 69, figs 2a-c [topotypic material]

S - LINEAGE I (A) HEXACARYIDAE

GENUS ***Hexastylanthus***
Haeckel, 1887: 171

SUBGENUS ***Hexastylus* (*Hexastylanthus*)**

Remarks: No type species was designated. Type species frequently reported. Campbell (1954: D58) considers *HEXASTYLANTHUS* to be the nominate subgenus of *HEXASTYLUS* Haeckel, 1882. However, this seems inappropriate since the type species of *HEXASTYLUS*, *Hexastylus primaevus* Rüst, 1885, was not among those species originally assigned to *HEXASTYLANTHUS*.

Original series: **Hexastylus biantis* Haeckel, 1887; **Hexastylus favosus* Haeckel, 1887; **Hexastylus longissimus* Haeckel, 1887; **Hexastylus maximus* Haeckel, 1887; *Hexastylus minimus* Haeckel, 1887; **Hexastylus periandri* Haeckel, 1887; *Hexastylus phaenaxonius* Haeckel, 1887; **Hexastylus pittaci* Haeckel, 1887; **Hexastylus sapientum* Haeckel, 1887 and Hexastylus thaletis Haeckel, 1887.

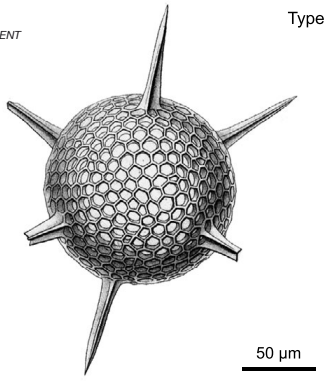
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HALIPHORMIS***

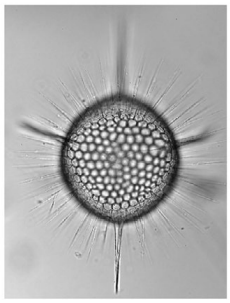
SYN.
FREQUENT

Type



Hexastylus phaenaxonius
Haeckel, 1887: 171, pl. 21, fig. 3

Support



Hexastylus phaenaxonius Haeckel
Suzuki's collection (Quaternary, North Pacific)

S - LINEAGE I (A) HEXACARYIDAE

GENUS ***Hexastylettus***
Haeckel, 1887: 173

SUBGENUS ***Hexastylus* (*Hexastylettus*)**

Remarks: Type species rarely reported. The support image is one of those species originally included into this genus.

Original series: *Acanthosphaera setosa* Ehrenberg, 1873a; **Hexastylus chilonis* Haeckel, 1887; **Hexastylus cleobuli* Haeckel, 1887; *Hexastylus cochleatus* Haeckel, 1887 and *Hexastylus solonis* Haeckel, 1887.

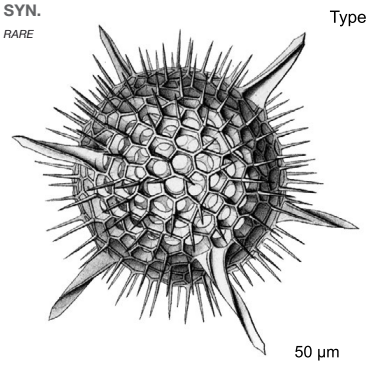
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D58)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HALIPHORMIS***

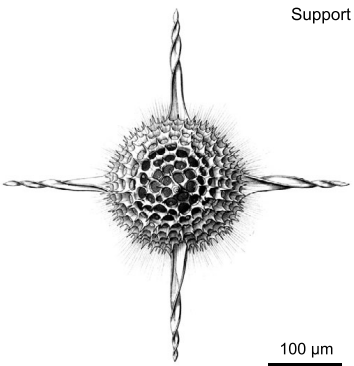
SYN.
RARE

Type



Hexastylus solonis
Haeckel, 1887: 173, pl. 21, fig. 11

Support



Hexastylus cochleatus
Haeckel, 1887: 174, pl. 21, fig. 1

S - LINEAGE I (A) HEXACARYIDAE

GENUS ***Hexastylissus***
Haeckel, 1887: 175

SUBGENUS ***Hexastylus* (*Hexastylissus*)**

Remarks: Type species frequently reported.

Original series: **Hexastylus brevispinus* Haeckel, 1887; **Hexastylus conifer* Haeckel, 1887; *Hexastylus dimensivus* Haeckel, 1887; **Hexastylus longispinus* Haeckel, 1887; *Hexastylus marginatus* Haeckel, 1887 and *Hexastylus triaxonius* Haeckel, 1887.

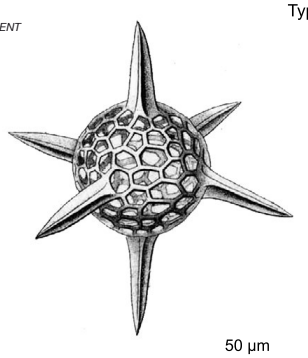
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D58)

STATUS JUNIOR SYNONYM
synonymized by Takahashi 1991: 71

SEE ***HALIPHORMIS***

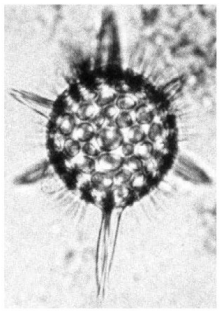
SYN.
FREQUENT

Type



Hexastylus triaxonius
Haeckel, 1887: 175, pl. 21, fig. 2

Support



Hexastylus triaxonius Haeckel
Takahashi 1991: 71, pl. 12, fig. 7

S - LINEAGE I (A) HEXACARYIDAE

GENUS ***Hexastylurus***
Haeckel, 1887: 176

SUBGENUS ***Hexastylus* (*Hexastylurus*)**

Remarks: Type species only illustrated by Haeckel (1887). It has been synonymized with *Hexastylus triaxonius* Haeckel by Takahashi (1991: 71). *HEXASTYLURUS* should be the correct name for the Cenozoic species assigned to *HEXASTYLUS*.

Original series: *Hexastylus contortus* Haeckel, 1887; *Hexastylus dictyotus* Haeckel, 1887; **Hexastylus hirsutus* Haeckel, 1887 and *Hexastylus spiralis* Haeckel, 1887.

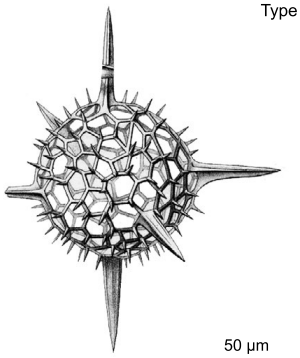
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D58)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HALIPHORMIS***

SYN.
UNIQUE

Type



Hexastylus dictyotus
Haeckel, 1887: 176, pl. 21, fig. 8

Support



Hexastylus spiralis
Haeckel, 1887: 177, pl. 21, fig. 7

S - LINEAGE I (A) HEXACARYIDAE
ASSIGNED HEREIN

GENUS ***Hexacaryum***
Haeckel, 1882: 454

Diagnosis: Skeleton of three very delicate octahedral shells with irregular polygonal meshes and six very long three-bladed dimensive spines with pinnate verticils of spinules. Four to 6 (or more) external concentric shells. Microspheric structure unknown, most likely tetrapetaloid.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Hexacaryum arborescens* Haeckel, 1887.

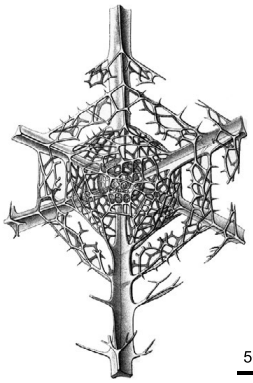
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

Type



Hexacaryum arborescens
Haeckel, 1887: 203, pl. 23, fig. 4

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (A) HEXACARYIDAE
ASSIGNED HEREIN

GENUS ***Hexalonchetta***
Haeckel, 1887: 182

SUBGENUS ***Hexalonche* (*Hexalonchetta*)**

Diagnosis: Cortical shell spherical, thin-walled, with numerous bristle-shaped by-spines, interconnected to an octahedral microsphere (tetrapetaloid-type?) by six dimensive radial beams extended externally into three-bladed spines.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Hexalonche amphisiphon* Haeckel, 1887; *Hexalonche anaximandri* Haeckel, 1887; *Hexalonche anaximenis* Haeckel, 1887; **Hexalonche aspera* Haeckel, 1887; **Hexalonche castanella* Haeckel, 1887; **Hexalonche cristata* Haeckel, 1887; *Hexalonche octocolpa* Haeckel, 1887 and **Hexalonche serrata* Haeckel, 1887.

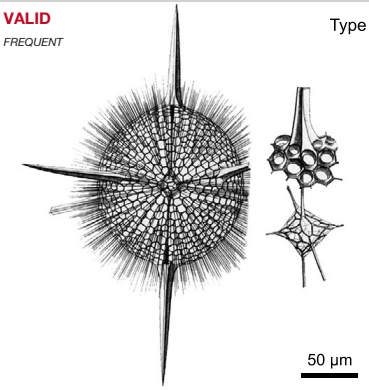
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS **VALID**

AGE ***LIVING***

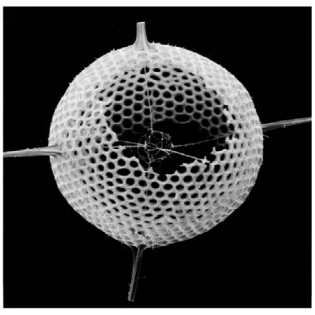
VALID
FREQUENT

Type



Hexalonche amphisiphon
Haeckel, 1887: 182, pl. 25, figs 2, 2a

Support



Hexalonche amphisiphon Haeckel
Anderson *et al.* 1986: 209, pl. 1, fig. 4

S - LINEAGE I (A) — HEXACARYIDAE
ASSIGNED HEREIN

GENUS **Hexancistra**
Haeckel, 1879a: 705

NOMINOTYPE ***Hexancistra* (*Hexancistra*)**

Diagnosis: Skeleton with two shells: a spherical medullary one, with tetrapetaloid structure, and a spherical or octahedral cortical shell with six branched spines of equal size.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated again by Haeckel (1887).

Original series: *Hexancistra quadricuspis* Haeckel, 1879a.

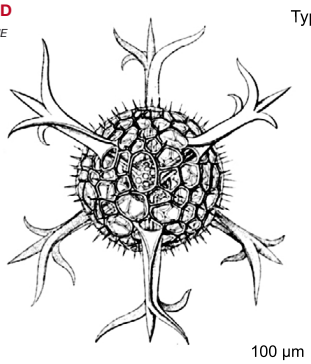
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE PALEOCENE–EARLY EOCENE***

VALID
UNIQUE

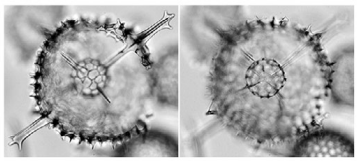
Type



100 µm

Hexancistra quadricuspis
Haeckel, 1879a: 705, pl. 16, fig. 2

Support



50 µm

Hexancistra aff. *quadricuspis* Haeckel
Suzuki's collection (Late Paleocene-Early Eocene, Pacific Ocean)

S - LINEAGE I (A) — HEXACARYIDAE

GENUS **Hexancora**
Haeckel, 1887: 188

SUBGENUS ***Hexancistra* (*Hexancora*)**

Remarks: Type species only illustrated by Haeckel (1879a); the support image is one of those species originally included into this genus.

Original series: **Hexancistra ancorata* Haeckel, 1887; *Hexancistra quadricuspis* Haeckel, 1879a; *Hexancistra tricuspis* Haeckel, 1887 and *Hexancistra triserrata* Haeckel, 1887.

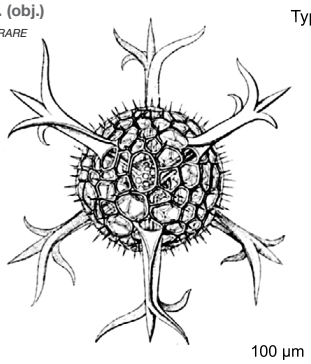
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***HEXANCISTRA***

SYN. (obj.)
VERY RARE

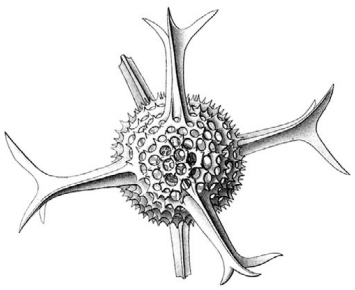
Type



100 µm

Hexancistra quadricuspis
Haeckel, 1879a: 705, pl. 16, fig. 2

Support



50 µm

Hexancistra tricuspis
Haeckel, 1887: 188, pl. 22, fig. 9

S - LINEAGE I (A) — HEXACARYIDAE
ASSIGNED HEREIN

GENUS **Hexapitys**
Haeckel, 1882: 451

SUBGENUS ***Hexancistra* (*Hexapitys*)**

Diagnosis: Spherical double medullary shell containing a microsphere with tetrapetaloid structure, and an octahedral cortical shell with six very long spines, each one with verticils of pennate spinules.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. Only one species subsequently assigned.

Original series: *Hexancistra mirabilis* Haeckel, 1887.

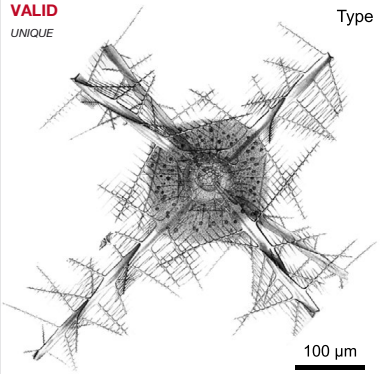
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

Type



100 µm

Hexancistra mirabilis
Haeckel, 1887: 189, pl. 23, fig. 3

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (A) — ? HEXACARYIDAE

GENUS **Hexadendrum**
Haeckel, 1882: 452

Remarks: See comments under *HEXADENDRON*. Type species never figured. The support image is the closest species among those originally included in this genus.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *HEXAPITYS***

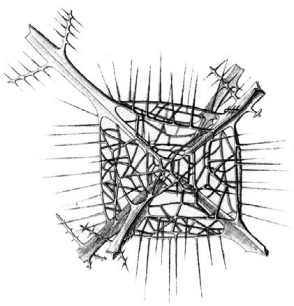
N.D.

Type

UNFIGURED SPECIES

Hexadendron quadricuspis
Haeckel, 1887: 199, unfigured

Support



50 µm

Hexadendron bipinnatum
Haeckel, 1887: 200, pl. 23, fig. 1

S - Lineage I (A) ? HEXACARYIDAE

GENUS ***Hexadendron*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 199

Remarks: An incorrect subsequent spelling for *HEXADENDRUM*. By referring back to p. 452 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *HEXADENDRON* to be an emendation of the name *HEXADENDRUM*, which is unjustified according to the provisions of ICZN art. 33.3.

Original series: *Hexadendron bipinnatum* Haeckel, 1887 and *Hexadendron quadricuspis* Haeckel, 1887.

FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D60)

STATUS INVALID NAME
designated herein

SEE ***HEXADENDRUM***

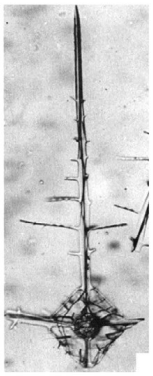
INV.

Type

UNFIGURED SPECIES

Hexadendron quadricuspis
Haeckel, 1887: 199, unfigured

Support



100 µm

Hexadendron bipinnatum Haeckel
Tan 1998: 143, pl. 15, fig. 5

S - Lineage I (A) ? HEXACARYIDAE

GENUS ***Hexastylarium***
Haeckel, 1887: 177

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Hexastylarium elongatum* Haeckel, 1887; **Hexastylarium heteraxonium* Haeckel, 1887 and **Hexastylarium quadratum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D58)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Hexastylarium elongatum
Haeckel, 1887: 178, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage I (A) ? HEXACARYIDAE

GENUS ***Hexastylidium***
Haeckel, 1882: 450

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Hexastylidium rhomboides* Haeckel, 1887 and **Hexastylidium spirale* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D58)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Hexastylidium rhomboides
Haeckel, 1887: 178, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage I (B) ? HEXACROMYIDAE
ASSIGNED HEREIN

GENUS ***Carpocanthum***
Chen & Tan, 1989: 1

Diagnosis: Double medullary shell interconnected to a spherical latticed cortical shell by six radial beams. One beam extended outside into a three-bladed spine. Microspheric structure unknown.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Carpocanthum lubricum* Chen & Tan, 1989.

FIXATION MONOTYPY

STATUS **VALID**

AGE ***Late Pliocene–Living***

VALID
FREQUENT

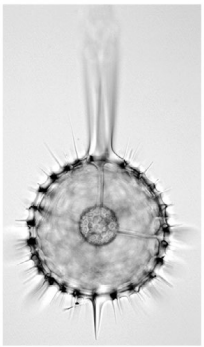
Type



50 µm

Carpocanthum lubricum
Chen & Tan, 1989: 1, pl. 1, fig. 4

Support



50 µm

Carpocanthum lubricum Chen & Tan
Topotypic material (South China Sea), Zhang's collection

S - LINEAGE I (B) HEXACROMYIDAE

GENUS ***Hexacromyum***
Haeckel, 1882: 453

Diagnosis: Three latticed concentric shells interconnected by six three-bladed spines. Quite similar to *HEXALONCHILLA*, however the medullary shell is double and possesses a normal tetrapetaloid microsphere.

Remarks: Only the type species clearly belongs to this genus; frequently reported. This genus name best represents all characters classically attributed to *HEXACONTIUM* (n.d.).

Original series: **Hexacromyum arachnoides* Haeckel, 1887; *Hexacromyum elegans* Haeckel, 1887; *Hexacromyum octahedrum* Haeckel, 1887 and **Hexacromyum quadrigatum* Haeckel, 1887.

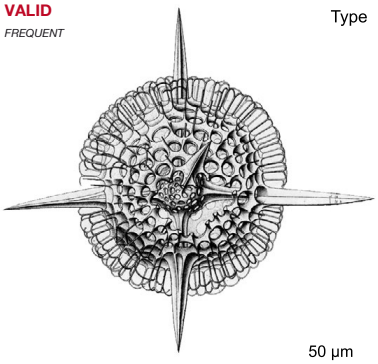
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS **VALID**

AGE ***LATE OLIGOCENE–LIVING***

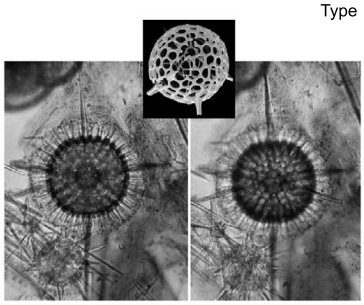
VALID
FREQUENT

Type



Hexacromyum elegans
Haeckel, 1887: 201, pl. 24, fig. 9

Type



Hexacromyum elegans Haeckel
Dumitrica's collection, SEM (late Middle Miocene, Romania); Aita *et al.* 2009: pl. 9, figs 2a, 2b [neotype herein]

S - LINEAGE I (B) HEXACROMYIDAE

GENUS ***Cubosphaera***
Haeckel, 1887: 202

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: **Cubosphaera concentrica* Haeckel, 1887 and *Cubosphaera cubaxonia* Haeckel, 1887.

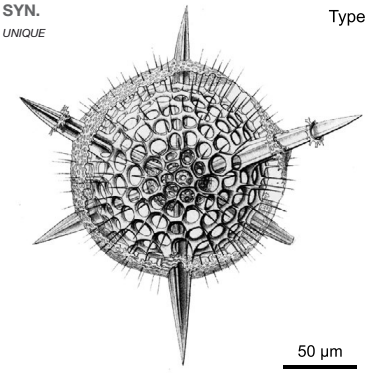
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D58)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HEXACROMYUM***

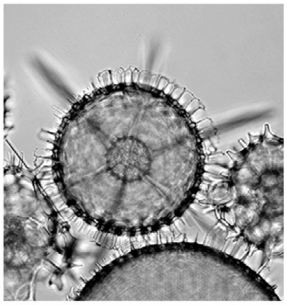
SYN.
UNIQUE

Type



Cubosphaera cubaxonia
Haeckel, 1887: 203, pl. 24, fig. 8

Support



Cubosphaera cubaxonia Haeckel
Zhang's collection (South China Sea)

S - LINEAGE I (B) HEXACROMYIDAE

GENUS ***Hexacontura***
Haeckel, 1887: 197

SUBGENUS ***Hexacontium* (*Hexacontura*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Haliomma drymodes* Haeckel, 1861a; **Hexacontium furcatum* Haeckel, 1887; *Hexacontium gladiatum* Haeckel, 1887; *Hexacontium papillosum* Haeckel, 1887; **Hexacontium periplectum* Haeckel, 1887 and **Hexacontium setosum* Haeckel, 1887.

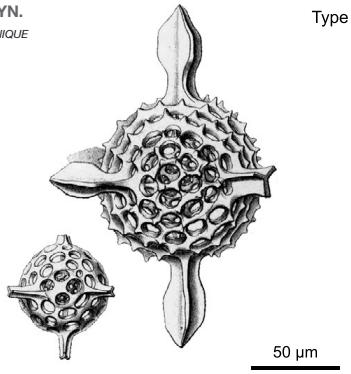
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HEXACROMYUM***

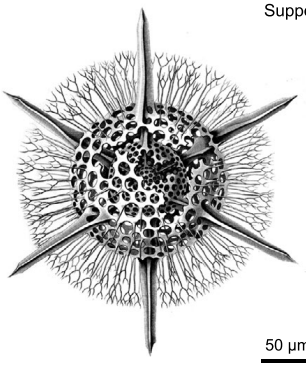
SYN.
UNIQUE

Type



Hexacontium papillosum
Haeckel, 1887: 197, pl. 24, figs 5, 5a

Support



Actinomma drymodes (Haeckel)
Haeckel 1862: 442, pl. 24, fig. 9

S - LINEAGE I (B) ? HEXACROMYIDAE

GENUS ***Hexacontium***
Haeckel, 1882: 452

NOMINOTYPE ***Hexacontium* (*Hexacontium*)**

Remarks: See comments under *HEXACONTANNA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *HEXACROMYUM***

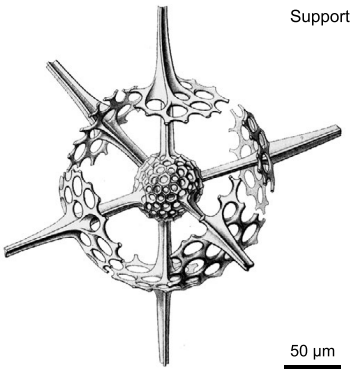
N.D.

Type

UNFIGURED SPECIES

Hexacontium phaenaxonium
Haeckel, 1887: 192, unfigured

Support



Hexacontium axotrias
Haeckel, 1887: 192, pl. 24, fig. 3

S - LINEAGE I (B) ? HEXACROMYIDAE

GENUS ***Hexacontanna***
Haeckel, 1887: 192

SUBGENUS ***Hexacontium* (*Hexacontanna*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Hexacontium axotrias* Haeckel, 1887; *Hexacontium circumtextum* Haeckel, 1887; *Hexacontium laevigatum* Haeckel, 1887; **Hexacontium octahedrum* Haeckel, 1887; **Hexacontium phaenaxonium* Haeckel, 1887 and **Hexacontium triplosphaerium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***HEXACONTIUM***

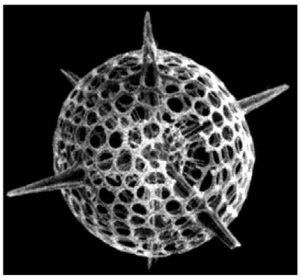
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Hexacontium phaenaxonium
Haeckel, 1887: 192, unfigured

Support



50 µm

Hexacontium axotrias Haeckel
Nishimura & Yamauchi 1984: 29, pl. 4, fig. 11

S - LINEAGE I (B) ? HEXACROMYIDAE

GENUS ***Hexacontosa***
Haeckel, 1887: 196

SUBGENUS ***Hexacontium* (*Hexacontosa*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Hexacontium antarcticum* Haeckel, 1887; **Hexacontium axophaenum* Haeckel, 1887 and **Hexacontium polygonale* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Hexacontium axophaenum
Haeckel, 1887: 196, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (B) HEXACROMYIDAE
ASSIGNED IN Haeckel 1887: 170

GENUS ***Hexalonchilla***
Haeckel, 1887: 184

SUBGENUS ***Hexalonche* (*Hexalonchilla*)**

Diagnosis: Skeleton with two concentric shells and six dimensive three-bladed spines originating in a tetrapetaloid microsphere.

Remarks: Type species rarely reported. The support image is a subsequently included species into this genus (showing the internal microsphere).

Original series: *Haliomma hexacanthum* Müller, 1855b; *Hexalonche aristarchi* Haeckel, 1887; **Hexalonche ekphantaea* Haeckel, 1887; **Hexalonche geometrica* Haeckel, 1887 and *Hexalonche pythagoraea* Haeckel, 1887.

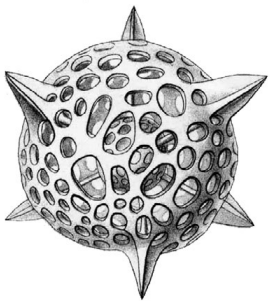
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS **VALID**

AGE ***LATE PALEOCENE–LIVING***

VALID
RARE

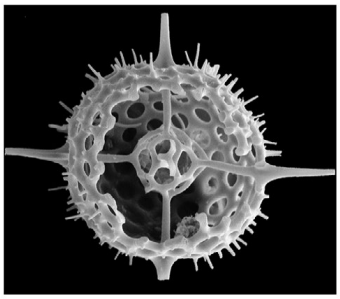
Type



50 µm

Hexalonche pythagoraea
Haeckel, 1887: 185, pl. 22, fig. 1

Support



50 µm

Hexalonchilla subcarpatica (Dumitrica)
Dumitrica's collection (late Middle Miocene, Romania); apical view showing tetrapetaloid structure

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S - LINEAGE I (B) HEXACROMYIDAE

GENUS ***Hexalonchusa***
Haeckel, 1887: 186

SUBGENUS ***Hexalonche* (*Hexalonchusa*)**

Remarks: Type species frequently reported.

Original series: *Haliomma sexaculeatum* Stöhr, 1880; *Hexalonche heracliti* Haeckel, 1887; *Hexalonche hystricina* Haeckel, 1887; *Hexalonche philosophica* Haeckel, 1887; **Hexalonche seleuci* Haeckel, 1887; **Hexalonche setosa* Haeckel, 1887 and **Hexalonche xenophanis* Haeckel, 1887.

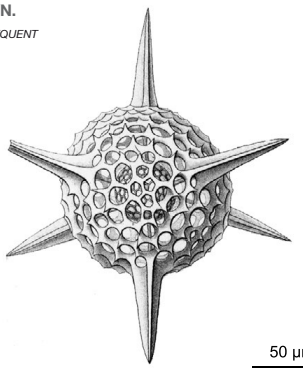
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 569

SEE ***HEXALONCHILLA***

SYN.
FREQUENT

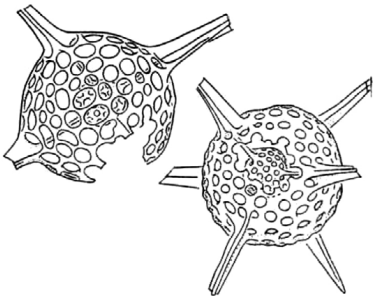
Type



50 µm

Hexalonche philosophica
Haeckel, 1887: 186, pl. 22, fig. 4

Support



50 µm

Hexalonche philosophica Haeckel
Petrushevskaya & Kozlova 1979: figs 208, 209

S - LINEAGE I (B) HEXACROMYIDAE

GENUS ***Staurolonchantha***
Haeckel, 1887: 158

SUBGENUS ***Staurolonche* (*Staurolonchantha*)**

Remarks: No type species was designated. Type species rarely reported. Campbell (1954: D56) considers *STAUROLONCHANTHA* to be the nominate subgenus of *STAUROLONCHE* Haeckel, 1882. However, this seems inappropriate since the type species of STAUROLONCHE, *Staurolonche robusta* Rüst, 1885, was not among those species originally assigned to *STAUROLONCHANTHA*.

Original series: *Haliomma apertum* Ehrenberg, 1874b; *Haliomma hexagonum* Ehrenberg, 1854b; **Staurolonche brunonis* Haeckel, 1887; *Staurolonche pertusa* Haeckel, 1887 and **Staurolonche spinozae* Haeckel, 1887.

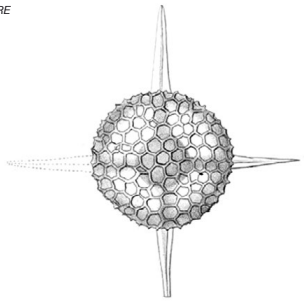
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HEXALONCHILLA***

SYN.
RARE

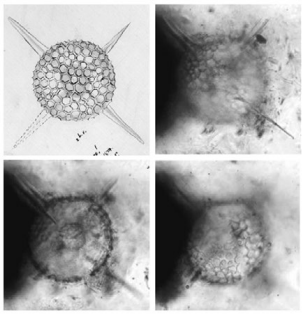
Type



50 µm

Haliomma hexagonum
Ehrenberg, 1854b: 243 (unfigured); Ehrenberg, 1854c: pl. 35B-B.IV, fig.17

Type



100 µm

Haliomma hexagonum Ehrenberg
Suzuki *et al.* 2009a: pl. 36, figs 2a-d [lectotype herein]

S - LINEAGE I (B) ? HEXACROMYIDAE

GENUS ***Hexalonche***
Haeckel, 1882: 451

NOMINOTYPE ***Hexalonche* (*Hexalonche*)**

Remarks: See comments under *HEXALONCHARA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *HEXALONCHILLA***

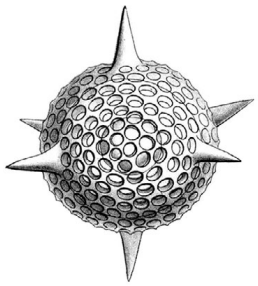
N.D.

Type

UNFIGURED SPECIES

Hexalonche phaenaxonia
Haeckel, 1887: 180, unfigured

Support



50 µm

Hexalonche conicornis
Haeckel, 1887: 181, pl. 22, fig. 2

S - LINEAGE I (B) ? HEXACROMYIDAE

GENUS ***Hexalonchara***
Haeckel, 1887: 179

SUBGENUS ***Hexalonche* (*Hexalonchara*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Hexalonche brevicornis* Haeckel, 1887; *Hexalonche conicornis* Haeckel, 1887; *Hexalonche curvicornis* Haeckel, 1887; **Hexalonche favosa* Haeckel, 1887; **Hexalonche grandis* Haeckel, 1887; *Hexalonche octahedra* Haeckel, 1887; **Hexalonche phaenaxonia* Haeckel, 1887 and *Hexalonche rosetta* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***HEXALONCHE***

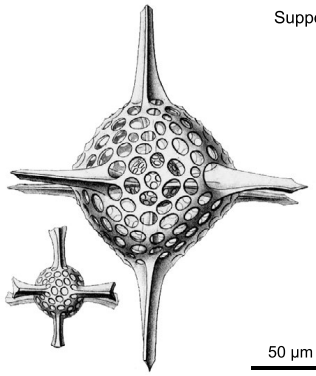
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Hexalonche phaenaxonia
Haeckel, 1887: 180, unfigured

Support



50 µm

Hexalonche octahedra
Haeckel, 1887: 181, pl. 22, fig. 8

S - LINEAGE I (B) ? HEXACROMYIDAE

GENUS ***Stauracontium***
Haeckel, 1882: 452

NOMINOTYPE ***Stauracontium* (*Stauracontium*)**

Remarks: See comments under *STAURACONTARIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D58)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *HEXALONCHILLA***

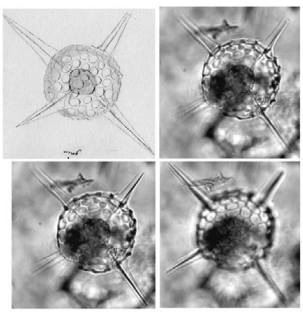
N.D.

Type

UNFIGURED SPECIES

Stauracontium cruciferum
Haeckel, 1887: 164, unfigured

Type



50 µm

Haliomma tetracanthum Ehrenberg
Suzuki *et al.* 2009a: pl. 69, figs 3a-d [lectotype herein]

S - LINEAGE I (B) ? HEXACROMYIDAE

GENUS ***Stauracontarium***
Haeckel, 1887: 163

SUBGENUS ***Stauracontium (Stauracontarium)***

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Actinomma tetracanthum* Stöhr, 1880; *Haliomma tetracanthum* Ehrenberg, 1873a and **Stauracontium cruciferum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D58)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***STAURACONTIUM***

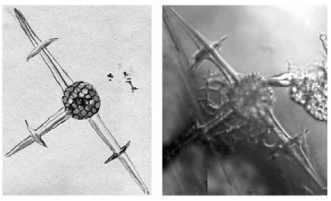
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Stauracontium cruciferum
Haeckel, 1887: 164, unfigured

Support



50 µm

Haliomma tetracanthum Ehrenberg
Suzuki *et al.* 2009a: pl. 70, figs 1a, 1b [paralectotype herein]

S - LINEAGE I (B) HEXACROMYIDAE

ASSIGNED IN De Wever *et al.* 2001: 210

GENUS ***Nanina***
Kozur & Mostler, 1982: 409

Diagnosis: Thick-walled globular cortical shell with circular pores. Inner shell represented by a heteropolar microsphere with tetrapetaloid apical structure connected to the cortical shell by six radial bars, of which one apical, one antapical and four lateral.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Melittosphaera* (*Melittosphaera*) *hokurikuensis* Nakaseko, 1955.

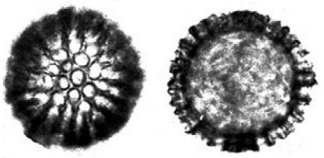
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EARLY MIOCENE–EARLY PLIOCENE***

VALID
FREQUENT

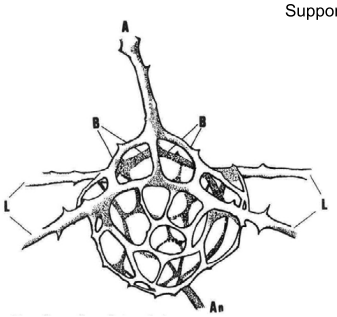
Type



50 µm

Melittosphaera (*Melittosphaera*) *hokurikuensis*
Nakaseko, 1955: 70, pl. 1, figs 7a, b

Support



50 µm

Pentactinosphaera hokurikuensis (Nakaseko)
Nakaseko *et al.* 1983: 33, text-fig. 1

S - LINEAGE I (B) HEXACROMYIDAE

GENUS ***Pentactinosphaera***
Nagata & Nishimura in Nakaseko *et al.*, 1983: 32

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Melittosphaera* (*Melittosphaera*) *hokurikuensis* Nakaseko, 1955.

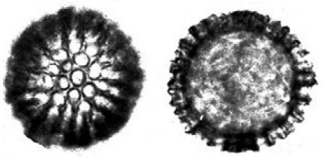
FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***NANINA***

SYN. (obj.)
FREQUENT

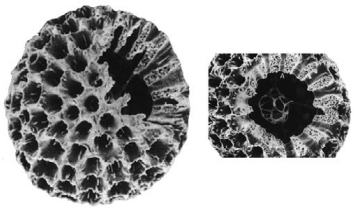
Type



50 µm

Melittosphaera (*Melittosphaera*) *hokurikuensis*
Nakaseko, 1955: 70, pl. 1, figs 7a, b

Support



100 µm

Pentactinosphaera hokurikuensis (Nakaseko)
Nakaseko *et al.* 1983: 33, pl. 1, figs 1, 2

S - LINEAGE I (B) ? HEXACROMYIDAE

GENUS ***Cromyostaurus***
Haeckel, 1882: 453

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Cromyostaurus verticillatus* Haeckel, 1887.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

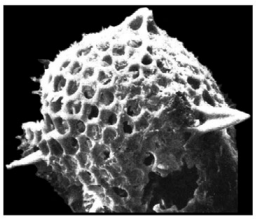
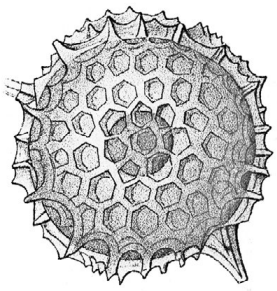
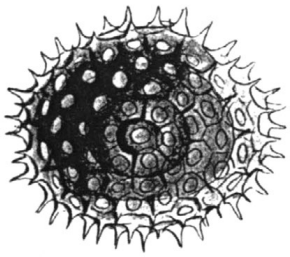
Cromyostaurus verticillatus
Haeckel, 1887: 167, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage I (B) ? HEXACROMYIDAE GENUS ***Cubaxonium*** Haeckel, 1887: 204 **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Cubaxonium octahedrum* Haeckel, 1887 and **Cubaxonium spongiosum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Cubaxonium spongiosum* Haeckel, 1887: 204, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage I (B) ? HEXACROMYIDAE GENUS ***Hexacontarium*** Haeckel, 1887: 200 **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Hexacontarium clavatum* Haeckel, 1887 and **Hexacontarium dentatum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Hexacontarium dentatum* Haeckel, 1887: 200, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage I (B) ? HEXACROMYIDAE GENUS ***Hexadoras*** Haeckel, 1882: 455 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Hexadoras axophaena* Haeckel, 1887; **Hexadoras lychnosphaera* Haeckel, 1887 and **Hexadoras octahedrum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Hexadoras axophaena* Haeckel, 1887: 205, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage I (B) ? HEXACROMYIDAE GENUS ***Hexaloncharium*** Haeckel, 1887: 190 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Hexaloncharium hystricinum* Haeckel, 1887; **Hexaloncharium octahedrum* Haeckel, 1887 and **Hexaloncharium philosophicum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Hexaloncharium philosophicum* Haeckel, 1887: 190, unfigured	Support NO IMAGE PUBLISHED no image available

S - Lineage I (B) ? HEXACROMYIDAE	N.D. Type	Support
GENUS **Hexalonchidium** Haeckel, 1882: 451 **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Hexalonchidium axonometrum* Haeckel, 1887. FIXATION SUBSEQUENT MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	UNFIGURED SPECIES *Hexalonchidium axonometrum* Haeckel, 1887: 191, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (B) ? HEXACROMYIDAE	N.D. *UNIQUE* Type	Support
GENUS **Spongiuspinus** Alvira-Martín, 1971: 224 **Remarks**: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. **Original series**: *Spongiuspinus philiphus* Alvira-Martín, 1971. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type not diagnostic	 100 µm *Spongiuspinus philiphus* Alvira-Martín, 1971: 224, pl. 2, fig. 1	NO IMAGE PUBLISHED no image available
S - Lineage I (B) ? HEXACROMYIDAE	N.D. *RARE* Type	Support
GENUS **Stauracontellium** Haeckel, 1887: 164 SUBGENUS ***Stauracontium* (*Stauracontellium*)** **Remarks**: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition. **Original series**: *Actinomma daturaeformis* Stöhr, 1880 and **Stauracontium sparganium* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D58) STATUS NOMEN DUBIUM designated herein; name-bearing type not diagnostic	 50 µm *Actinomma daturaeformis* Stöhr, 1880: 93, pl. 2, fig. 13	 50 µm *Actinomma daturaeformis* Stöhr Lucchese 1927: 91, pl. 5 (3), fig. 1
S - Lineage I (B) ? HEXACROMYIDAE	N.D. Type	Support
GENUS **Stauracontidium** Haeckel, 1887: 165 SUBGENUS ***Stauracontium* (*Stauracontidium*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Stauracontium antarcticum* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	UNFIGURED SPECIES *Stauracontium antarcticum* Haeckel, 1887: 165, unfigured	NO IMAGE PUBLISHED no image available

S - Lineage I (B) ? HEXACROMYIDAE GENUS ***Stauracontonium*** Haeckel, 1887: 165 SUBGENUS ***Stauracontium* (*Stauracontonium*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Stauracontium papillosum* Haeckel, 1887 and **Stauracontium setosum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D58) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Stauracontium setosum* Haeckel, 1887: 165, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage I (B) ? HEXACROMYIDAE GENUS ***Staurancistra*** Haeckel, 1882: 451 **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Staurancistra quadricuspis* Haeckel, 1887. FIXATION SUBSEQUENT MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Staurancistra quadricuspis* Haeckel, 1887: 162, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage I (B) ? HEXACROMYIDAE GENUS ***Staurocromyum*** Haeckel, 1882: 453 **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Staurocromyum quadrispinum* Haeckel, 1887 and **Staurocromyum quadruplex* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D58) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Staurocromyum quadruplex* Haeckel, 1887: 166, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage I (B) ? HEXACROMYIDAE GENUS ***Staurolonchella*** Haeckel, 1887: 160 SUBGENUS ***Staurolonche* (*Staurolonchella*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Staurolonche feuerbachi* Haeckel, 1887; **Staurolonche moleschottii* Haeckel, 1887 and **Staurolonche straussi* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D56) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Staurolonche straussi* Haeckel, 1887: 160, unfigured	Support NO IMAGE PUBLISHED no image available

S - LINEAGE I (B) ? HEXACROMYIDAE

GENUS ***Staurolonchissa***
Haeckel, 1887: 160

SUBGENUS ***Staurolonche* (*Staurolonchissa*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Staurolonche gassendi* Haeckel, 1887 and **Staurolonche holbachi* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D56)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Staurolonche holbachi
Haeckel, 1887: 160, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (B) ? HEXACROMYIDAE

GENUS ***Staurolonchura***
Haeckel, 1887: 161

SUBGENUS ***Staurolonche* (*Staurolonchura*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Staurolonche epicuri* Haeckel, 1887 and **Staurolonche lucreti* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D56)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Staurolonche epicurii
Haeckel, 1887: 161, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (C) HOLLANDOSPHAERIDAE

GENUS ***Heterosoma***
Mast, 1910: 45

Remarks: Homonym of *HETEROSOMA* Schaum, 1845: 390 (Coleoptera) and *HETEROSOMA* Bernhauer, 1903: 33 (Coleoptera); see *ANOMALOSOMA nomen novum*.

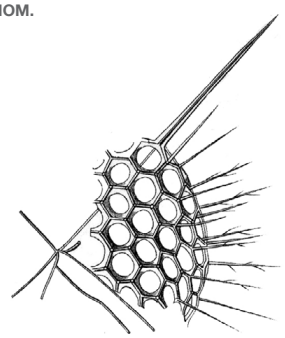
Original series: *Heterosoma heptacanthum* Mast, 1910; *Heterosoma polyacanthum* Mast, 1910; *Heterosoma ramosum* Mast, 1910 and *Heterosoma ramosum* var. *simplex* Mast, 1910.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS HOMONYM

SEE ***ANOMALOSOMA* NOMEN NOVUM**

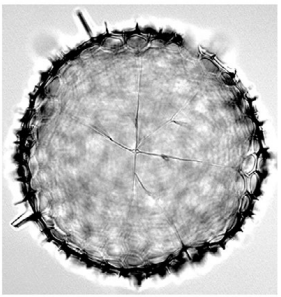
HOM. Type



50 µm

Heterosoma heptacanthum
Mast, 1910: 45, pl. 14 (1), fig. 5

Support



50 µm

Anomalosoma heptacantha (Mast)
Zhang's collection (South China Sea)

S - LINEAGE I (C) HOLLANDOSPHAERIDAE
ASSIGNED IN Hollande & Enjumet 1960: 91

GENUS ***Anomalosoma*** *NOMEN NOVUM* PRO *HETEROSOMA*
Loeblich & Tappan, 1961: 223

Diagnosis: Spherical shell with honeycomb structure and fibrillar spicule originating in a center. Spicule with one simple apical spine and four lateral and forked branches, each one prolonged into three-bladed spines.

Remarks: Type species frequently reported.

Original series: *Heterosoma heptacanthum* Mast, 1910; **Heterosoma polyacanthum* Mast, 1910; *Heterosoma ramosum* Mast, 1910 and *Heterosoma ramosum* var. *simplex* Mast, 1910.

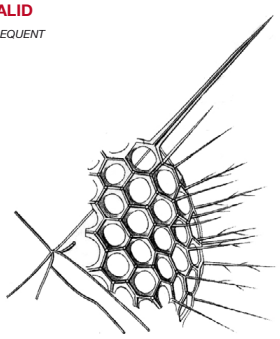
FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1954: D62)

STATUS **VALID PRO**

AGE ***LIVING***

VALID
FREQUENT

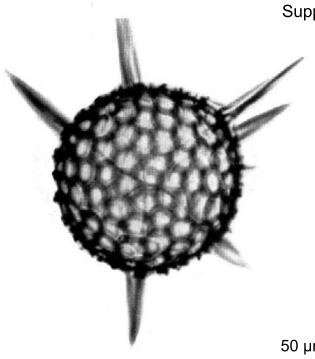
Type



50 µm

Heterosoma heptacanthum
Mast, 1910: 45, pl. 14 (1), fig. 5

Suppc



50 µm

Heterosoma heptacanthum Mast
Tan & Chen 1999: 172, pl. 5, fig. 5

S - LINEAGE I (C) HOLLANDOSPHAERIDAE

GENUS ***Heliaster***
Hollande & Enjumet, 1960: 91

Remarks: Homonym of *HELIASTER* Gray, 1840: 179 (Echinoderma); see *HOLLANDOSPHAERA nomen novum*.

Original series: *Heliaster hexagonium* Hollande & Enjumet, 1960.

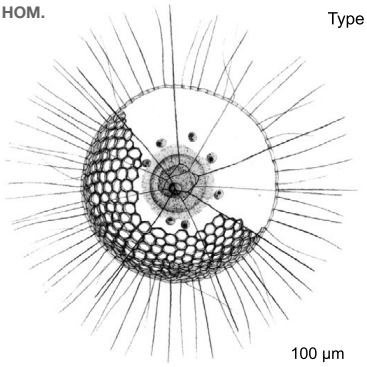
FIXATION MONOTYPY

STATUS HOMONYM

SEE ***HOLLANDOSPHAERA NOMEN NOVUM***

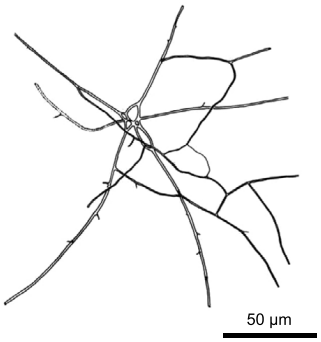
HOM.

Type



Heliaster hexagonium
Hollande & Enjumet, 1960: 92, pl. 41, fig. 2 [lectotype herein]

Support



Heliaster hexagonium Hollande & Enjumet
Dumitrica 1973: 834, pl. 19, fig. 4

S - LINEAGE I (C) HOLLANDOSPHAERIDAE
ASSIGNED IN Hollande & Enjumet 1960: 91

GENUS ***Hollandosphaera*** *NOMEN NOVUM* PRO *HELIASTER*
Deflandre, 1973: 1150

Diagnosis: Shell spherical with honeycomb structure and numerous bristle-shaped spines; microsphere with tetrapetaloid structure reduced to a center and connected to shell by up to sixteen beams.

Remarks: Genus described as monospecific at the time of the generic definition; reported only once by Hollande & Enjumet (1960).

Original series: *Heliaster hexagonium* Hollande & Enjumet, 1960.

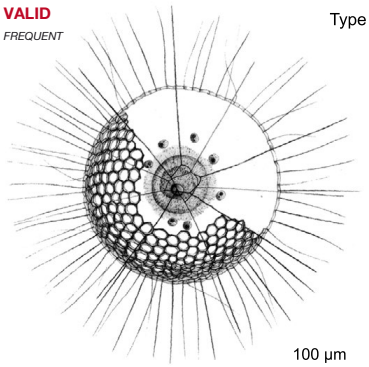
FIXATION MONOTYPY; ICZN, ART. 67.8

STATUS **VALID PRO**

AGE ***LIVING***

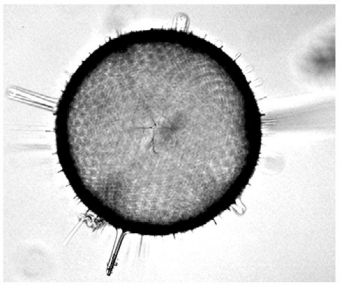
VALID
FREQUENT

Type



Heliaster hexagonium
Hollande & Enjumet, 1960: 92, pl. 41, fig. 2 [lectotype herein]

Support



Hollandosphaera hexagonia (Hollande & Enjumet)
Zhang's collection (South China Sea)

S - LINEAGE I (C) ? HOLLANDOSPHAERIDAE

GENUS ***Coscinomma***
Haeckel, 1887: 222

NOMINOTYPE ***Coscinomma* (*Coscinomma*)**

Remarks: See comments under *COSCINOMMARIUM*.

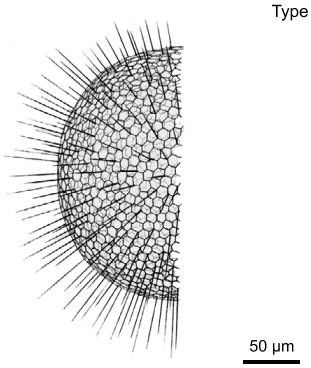
FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

SEE ***? HOLLANDOSPHAERA***

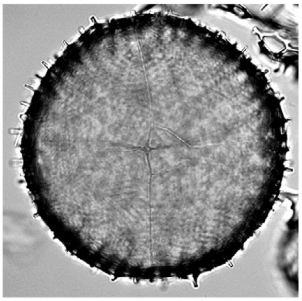
N.D.
UNIQUE

Type



Coscinomma amphisiphon
Haeckel, 1887: 222, pl. 26, fig. 1

Support



Coscinomma amphisiphon Haeckel
Zhang's collection (South China Sea)

S - LINEAGE I (C) ? HOLLANDOSPHAERIDAE

GENUS ***Coscinommarium***
Haeckel, 1887: 222

SUBGENUS ***Coscinomma* (*Coscinommarium*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Coscinomma amphisiphon* Haeckel, 1887.

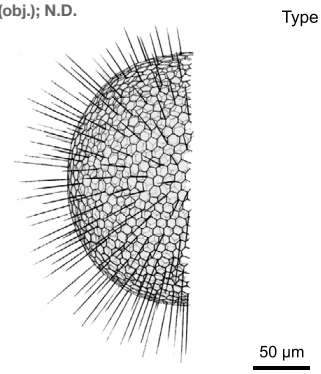
FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***COSCINOMMA***

SYN. (obj.); N.D.
UNIQUE

Type



Coscinomma amphisiphon
Haeckel, 1887: 222, pl. 26, fig. 1

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (C) ? HOLLANDOSPHAERIDAE

GENUS **Coscinommidium**
Haeckel, 1887: 222

SUBGENUS ***Coscinomma* (*Coscinommidium*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Coscinomma ectosiphon* Haeckel, 1887 and **Coscinomma macrosiphon* Haeckel, 1887.

FIXATION NO TYPE SPECIES DESIGNATED (SD HEREIN)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Coscinomma ectosiphon
Haeckel, 1887: 222, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (C) ? HOLLANDOSPHAERIDAE

GENUS **Coscinommonium**
Haeckel, 1887: 223

SUBGENUS ***Coscinomma* (*Coscinommonium*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Coscinomma endosiphon* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Coscinomma endosiphon
Haeckel, 1887: 223, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (C) HOLLANDOSPHAERIDAE
ASSIGNED IN Hollande & Enjumet 1960: 91

GENUS **Tetrapetalon**
Hollande & Enjumet, 1960: 92

Diagnosis: Thin-walled spherical shell with a honeycomb structure and six to ten spines originated in the microsphere. Microsphere fibrillar and heteropolar with a tetrapetaloid structure and connecting arches.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Tetrapetalon elegans* Hollande & Enjumet, 1960.

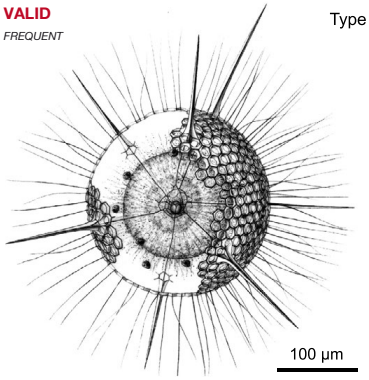
FIXATION MONOTYPY

STATUS **VALID**

AGE **HOLOCENE–LIVING**

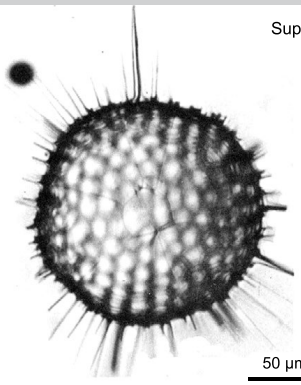
VALID
FREQUENT

Type



Tetrapetalon elegans
Hollande & Enjumet, 1960: 93, pl. 41, fig. 4 [lectotype herein]

Support



Tetrapetalon elegans Hollande & Enjumet
Tan 1998: 156, pl. 10, fig. 2

S - LINEAGE I (D) SPONGOSPHAERIDAE
ASSIGNED IN Hollande & Enjumet 1960: 68

GENUS **Diplospongus**
Mast, 1910: 61

Diagnosis: Spherical spongious shell with an irregular microsphere and about twelve robust three-bladed radial spines and many fibrillar ones; central part of envelope with a dense spongy meshwork, external part with a loose one.

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: **Diplospongus arachne* Mast, 1910 and *Diplospongus dendrophorus* Mast, 1910.

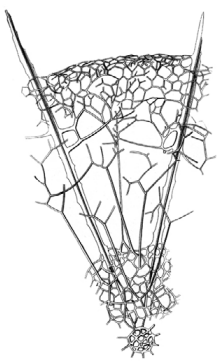
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS **VALID**

AGE **EARLY MIDDLE MIOCENE–LIVING**

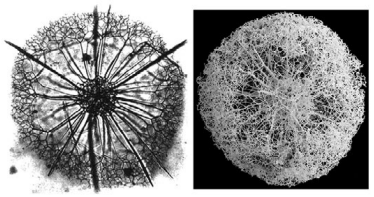
VALID
RARE

Type



Diplospongus dendrophorus
Mast, 1910: 61, pl. 17 (4), fig. 40

Support



Diplospongus dendrophorus Mast
Hollande & Enjumet 1960: 106, pl. 25, fig. 3; Dumitrica's collection (late Middle Miocene, Romania) SEM

S - LINEAGE I (D) SPONGOSPHAERIDAE

ASSIGNED IN Hollande & Enjumet 1960: 68

GENUS **Spongodendron**
Hollande & Enjumet, 1960: 99

Diagnosis: Spherical spongy shell with a small microsphere always separated by an empty space from the peripheral spongy meshwork and bearing up to twelve very long serrated radial spines with very thin siliceous threads constituting the spongy meshwork.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Spongodendron macrodoras* Hollande & Enjumet, 1960.

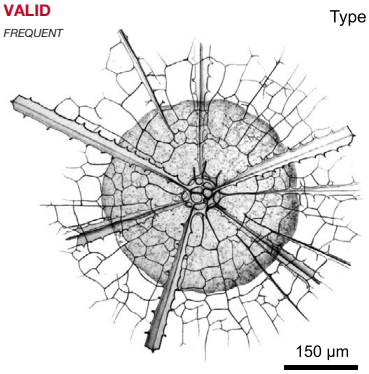
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

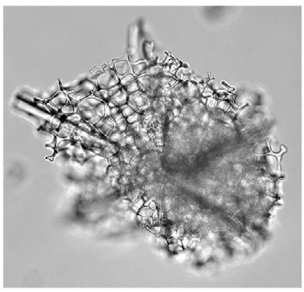
VALID
FREQUENT

Type



Spongodendron macrodoras
Hollande & Enjumet, 1960: 99, pl. 46, fig. 2 [lectotype herein]

Support



Spongodendron macrodoras Hollande & Enjumet
Zhang's collection (South China Sea)

S - LINEAGE I (D) SPONGOSPHAERIDAE

ASSIGNED IN Haeckel 1862: 452

GENUS **Spongosphaera**
Ehrenberg, 1847: 54

NOMINOTYPE ***Spongosphaera* (*Spongosphaera*)**

Diagnosis: Spherical spongy skeleton with a double medullary shell and up to twelve three-bladed, finely serrated radial spines of equal length with thin apophyses building a delicate meshwork.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Spongosphaera polyacantha* Müller, 1856.

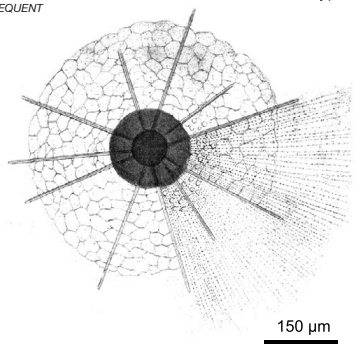
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

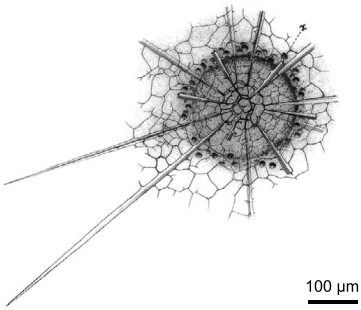
VALID
FREQUENT

Type



Spongosphaera polyacantha
Müller, 1856: 487 (unfigured); Müller, 1859b: 32, pl. 4, fig. 1 [lectotype herein]

Support



Spongosphaera polyacantha Müller
Hollande & Enjumet 1960: 97, pl. 46, fig. 1

S - LINEAGE I (D) SPONGOSPHAERIDAE

GENUS **Spongosphaeromma**
Haeckel, 1887: 283

SUBGENUS ***Spongosphaera* (*Spongosphaeromma*)**

Remarks: Only the type species was figured for this genus (rarely reported). The support image is a junior subjective synonym; just two species originally included at the time of the generic definition.

Original series: *Spongosphaera helioides* Haeckel, 1862 and **Spongosphaera quadricuspis* Haeckel, 1887.

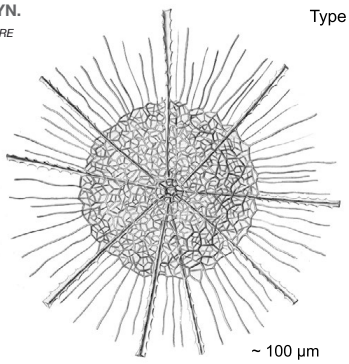
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1979: 10

SEE ***SPONGOSPHAERA***

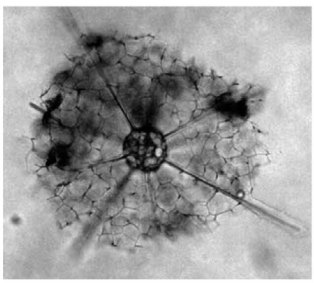
SYN.
RARE

Type



Spongosphaera helioides
Haeckel, 1862: 456, pl. 12, fig. 11

Support



Spongosphaera streptacantha Haeckel
Sakai *et al.* 2009: 52, pl. 3, fig. 10b [neotype herein]

S - LINEAGE I (D) SPONGOSPHAERIDAE

GENUS **Hexadoridium**
Haeckel, 1882: 455

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. See a detailed analysis on ontogenitc stages in Kurihara & Matsuoka (2004) justifying the synonymy.

Original series: *Hexadoridium streptacanthum* Haeckel, 1887.

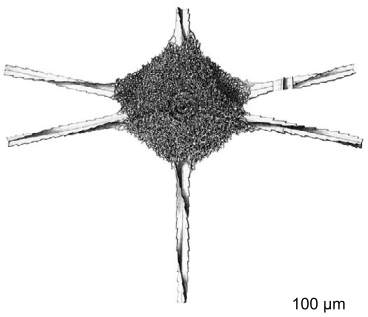
FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***SPONGOSPHAERA***

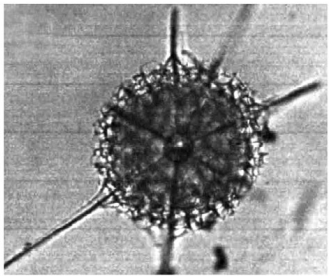
SYN.
FREQUENT

Type



Hexadoridium streptacanthum
Haeckel, 1887: 206, pl. 25, fig. 1

Support



Spongosphaera streptacantha Haeckel
Kurihara & Matsuoka 2004: 46, fig. 9.2b

S - LINEAGE I (D) ? SPONGOSPHAERIDAE

GENUS ***Spongioconcha***
Mast, 1910: 62

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Spongioconcha inversa* Mast, 1910.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Spongioconcha inversa
Mast, 1910: 62, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) ASTRACTURIDAE
ASSIGNED IN Haeckel 1887: 458

GENUS ***Amphactura***
Haeckel, 1882: 458

Diagnosis: A single convex lens-shaped, hollow large cortical shell with a phacodiscid center and two equatorial, wide arms of spongy or chambered structure. Spongy or chambered equatorial zone between arms in some specimens.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. The correction of the name *AMPHIACTURA* in Haeckel (1887: 470), is an erroneous action.

Original series: *Amphiactura amphibrachia* Haeckel, 1887.

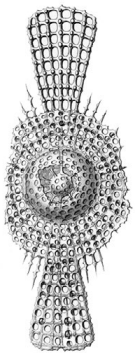
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***[LATE EOCENE] –[QUATERNARY]***

VALID
UNIQUE

Type



Amphiactura amphibrachia
Haeckel, 1887: 470, pl. 38, fig. 3

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) ? ASTRACTURIDAE

GENUS ***Amphiactura*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 470

Remarks: An incorrect subsequent spelling for *AMPHACTURA*. By referring back to p. 458 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *AMPHIACTURA* to be an emendation of the name *AMPHACTURA*, which is unjustified according to the provisions of ICZN art. 33.3. Genus described as monospecific at the time of the generic definition.

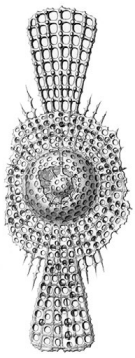
Original series: *Amphiactura amphibrachia* Haeckel, 1887.

FIXATION SUBSEQUENT MONOTYPY; ICZN, ART. 67.6

STATUS INVALID NAME
designated herein

SEE ***AMPHACTURA***

INV. Type



Amphiactura amphibrachia
Haeckel, 1887: 470, pl. 38, fig. 3

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) ASTRACTURIDAE

GENUS ***Dicoccura***
Carter, 1896b: 163

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Carter (1896b).

Original series: *Dicoccura brevibrachia* Carter, 1896b.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***AMPHACTURA***

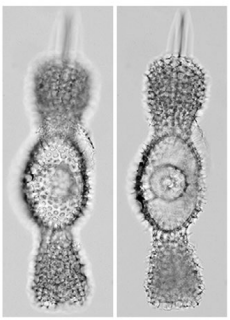
SYN.
UNIQUE

Type



Dicoccura brevibrachia
Carter, 1896b: 163, unnumbered text-fig. p. 163

Support



Dicoccura brevibrachia Carter
Topotypic material (Barbados, Late Eocene), Suzuki's collection

S - Lineage I (E1) ASTRACTURIDAE

GENUS ***Diplactinium***
Haeckel, 1887: 470

SUBGENUS ***Diplactura* (*Diplactinium*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Diplactura diploconus* Haeckel, 1887.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***AMPHACTURA***

SYN.
UNIQUE

Type



100 µm

Diplactura diploconus
Haeckel, 1887: 470, pl. 38, fig. 5

Support

NO IMAGE PUBLISHED

no image available

S - Lineage I (E1) ? ASTRACTURIDAE

GENUS ***Diplacturium***
Haeckel, 1887: 469

SUBGENUS ***Diplactura* (*Diplacturium*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Diplactura diplobrachia* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Diplactura diplobrachia
Haeckel, 1887: 469, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage I (E1) ASTRACTURIDAE
ASSIGNED IN Campbell 1954: D82

GENUS ***Astromma***
Ehrenberg, 1846: 385

Diagnosis: A single convex lens-shaped, hollow large cortical shell with a phacodiscid center and four equatorial, wide arms of spongy or chambered structure. Spongy or chambered equatorial zone between arms in some specimens.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. The SD by Campbell (1954: D74) of *Astromma entomocora* Ehrenberg, 1854c seems to be wrong.

Original series: *Astromma aristotelis* Ehrenberg, 1847.

FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***Late Middle Eocene–Early Oligocene***

VALID
FREQUENT

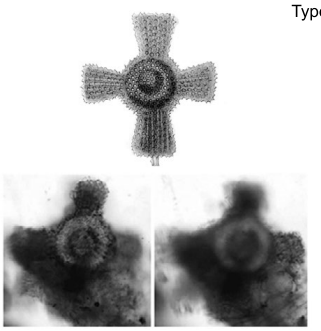
Type



50 µm

Astromma aristotelis
Ehrenberg, 1847: 55, fig. 10

Type



100 µm

Astromma aristotelis Ehrenberg
Ogane *et al.* 2009b: pl. 71, figs 1a-c [lectotype herein]

S - Lineage I (E1) ASTRACTURIDAE

GENUS ***Astractinium***
Haeckel, 1887: 476

SUBGENUS ***Astractura* (*Astractinium*)**

Remarks: Type species frequently reported.

Original series: *Astractura democriti* Haeckel, 1887; **Astractura hippocratis* Haeckel, 1887 and *Astromma aristotelis* Ehrenberg, 1847.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D83)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ASTROMMA***

SYN. (obj.)
FREQUENT

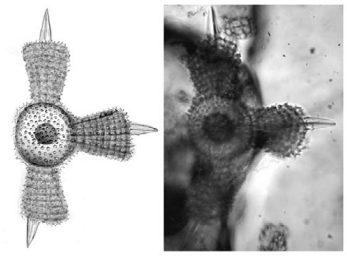
Type



50 µm

Astromma aristotelis
Ehrenberg, 1847: 55, fig. 10

Support



50 µm

Astromma aristotelis Ehrenberg
Ogane *et al.* 2009b: pl. 72, figs 1a, 1b [paralectotype herein]

S - LINEAGE I (E1) ASTRACTURIDAE

GENUS ***Astractura***
Haeckel, 1882: 458

NOMINOTYPE ***Astractura (Astractura)***

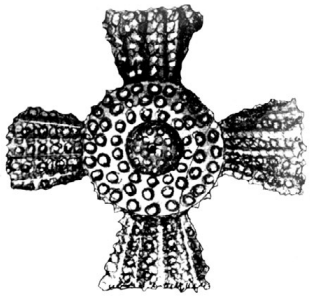
Remarks: See comments under *ASTRACTURIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ASTROMMA***

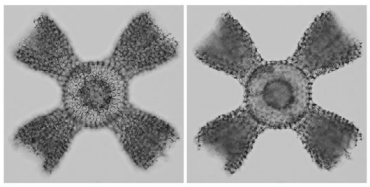
SYN. Type
VERY RARE



50 µm

Astractura ordinata
Haeckel, 1887: 476, unfigured [specimen of Bury 1862: pl. 14, fig. 3]

Support



100 µm

Astractura ordinata Haeckel
Paratypic material (Challenger Station 265), Suzuki's collection

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S - LINEAGE I (E1) ASTRACTURIDAE

GENUS ***Astracturium***
Haeckel, 1887: 476

SUBGENUS ***Astractura (Astracturium)***

Remarks: The type species has been figured just once after the first illustration. The support image is the other species originally included and illustrated at the time of the generic definition.

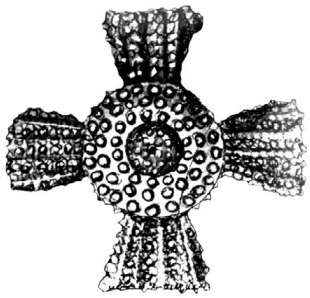
Original series: *Astractura clavigera* Haeckel, 1887 and *Astractura ordinata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ASTRACTURA***

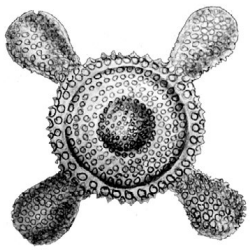
SYN. (obj.) Type
VERY RARE



50 µm

Astractura ordinata
Haeckel, 1887: 476, unfigured [specimen of Bury 1862: pl. 14, fig. 3]

Support



50 µm

Astractura clavigera
Haeckel, 1887: 476 [specimen of Bury 1862: pl. 4, fig. 2]

S - LINEAGE I (E1) ASTRACTURIDAE

GENUS ***Astrococcura***
Sutton, 1896b: 138

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Sutton (1896b).

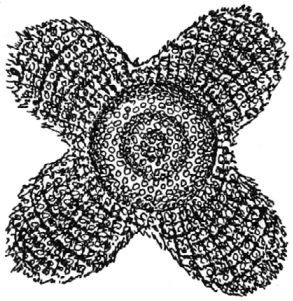
Original series: *Astrococcura concinna* Sutton, 1896b.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ASTROMMA***

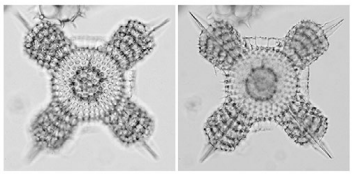
SYN. Type
UNIQUE



50 µm

Astrococcura concinna
Sutton, 1896b: 138, unnumbered figure on p. 138

Support



100 µm

Astrococcura concinna Sutton
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE I (E1) ? ASTRACTURIDAE

GENUS ***Astrococcus*** INCORRECT SUBSEQUENT SPELLING
Campbell, 1954: D83

Remarks: An incorrect subsequent spelling for *ASTROCOCCURA*, which is unjustified according to the provisions of ICZN art. 33.3.

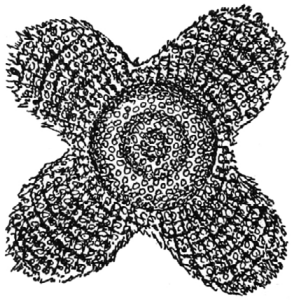
Original series: *Astrococcura concinna* Sutton, 1896b.

FIXATION MONOTYPY; ICZN, ART. 67.6

STATUS INVALID NAME
designated herein

SEE ***ASTROCOCCURA***

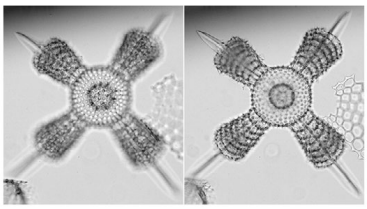
INV. Type



50 µm

Astrococcura concinna
Sutton, 1896b: 138, unnumbered figure on p. 138

Support



50 µm

Astrococcura concinna Sutton
Topotypic material (Barbados, Late Eocene), Suzuki's collection

S - LINEAGE I (E1) ASTRACTURIDAE

GENUS ***Staurococcura***
Carter, 1896a: 96

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Carter (1896a). Nevertheless, few months later, Carter (1896b) published another species: *Staurococcura clavigera*.

Original series: *Staurococcura quarternaria* Carter, 1896a.

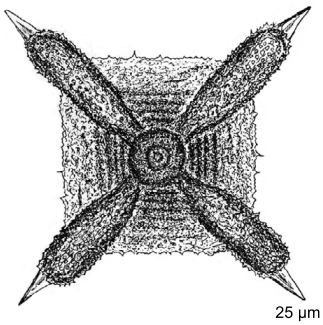
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ASTROMMA***

SYN.
UNIQUE

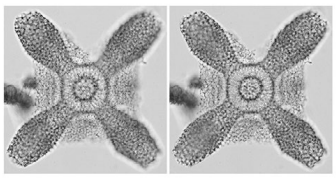
Type



25 µm

Staurococcura quarternaria
Carter, 1896a: 96, unnumbered text-fig. p. 97

Support



100 µm

Staurococcura quarternaria Carter
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE I (E1) ASTRACTURIDAE
ASSIGNED HEREIN

GENUS ***Hymeniastrum***
Ehrenberg, 1846: 385

NOMINOTYPE ***Hymeniastrum* (*Hymeniastrum*)**

Diagnosis: A single convex lens-shaped, hollow large cortical shell with a phacodiscid center and three equatorial, wide arms with spongy or chambered structure. Spongy or chambered equatorial zone between arms in some specimens.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Hymeniastrum pythagorae* Ehrenberg, 1854c.

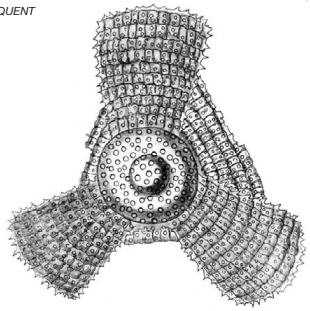
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–EARLY OLIGOCENE***

VALID
FREQUENT

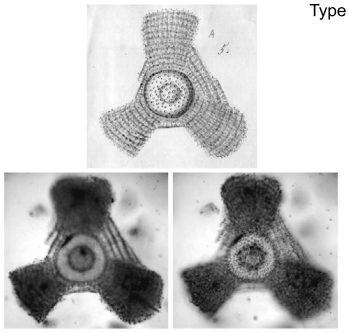
Type



50 µm

Hymeniastrum pythagorae
Ehrenberg, 1854c: pl. 36, fig. 31 [description in Haeckel, 1862: 490]

Type



100 µm

Hymeniastrum pythagorae Ehrenberg
Ogane *et al.* 2009b: pl. 34, figs 1a, 1c, 1d [lectotype herein]

S - LINEAGE I (E1) ASTRACTURIDAE

GENUS ***Hymenastrella***
Haeckel, 1887: 530

SUBGENUS ***Hymeniastrum* (*Hymenastrella*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Euchitonia koellikeri* Haeckel, 1862; *Euchitonia leydigi* Haeckel, 1862; **Hymeniastrum archimedis* Haeckel, 1887; *Hymeniastrum euclidis* Haeckel, 1887; *Hymeniastrum pythagorae* Ehrenberg, 1854c and *Stylactis guembeli* Stöhr, 1880

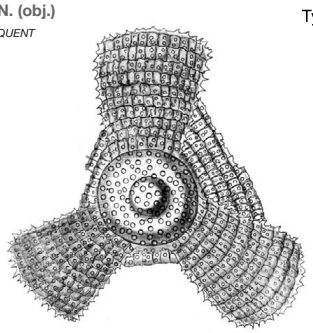
FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***HYMENIASTRUM***

SYN. (obj.)
FREQUENT

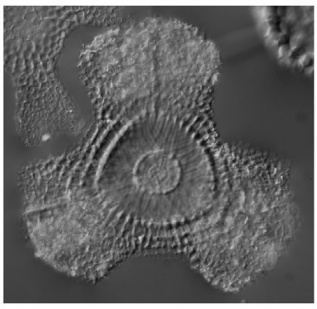
Type



50 µm

Hymeniastrum pythagorae
Ehrenberg, 1854c: pl. 36, fig. 31 [description in Haeckel, 1862: 490]

Support



100 µm

Hymeniastrum pythagorae Ehrenberg
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE I (E1) ASTRACTURIDAE

GENUS ***Hymenactura***
Haeckel, 1882: 458

NOMINOTYPE ***Hymenactura* (*Hymenactura*)**

Remarks: See comments under *HYMENACTURIUM*.

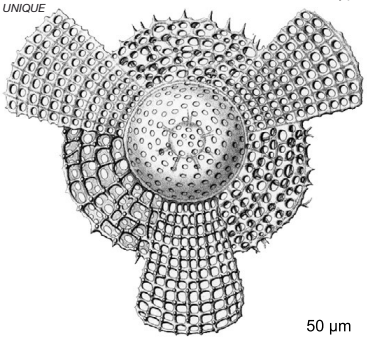
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D83)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HYMENIASTRUM***

SYN.
UNIQUE

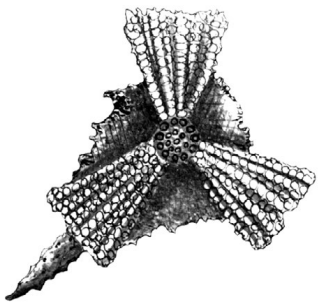
Type



50 µm

Hymenactura archimedis
Haeckel, 1887: 473, pl. 38, fig. 8

Support



50 µm

Hymenactura hexagona
Haeckel, 1887: 447 [specimen of Bury 1862: pl. 15, fig. 3]

S - LINEAGE I (E1) ASTRACTURIDAE

GENUS ***Hymenacturium***
Haeckel, 1887: 458

SUBGENUS ***Hymenactura* (*Hymenacturium*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is a junior subjective synonym.

Original series: *Hymenactura archimedis* Haeckel, 1887; *Hymenactura hexagona* Haeckel, 1887; *Hymenactura trigona* Haeckel, 1887 and *Hymeniastrum pythagorae* Ehrenberg, 1854c.

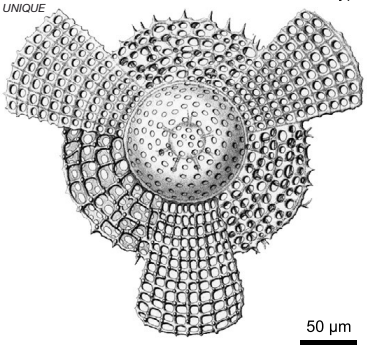
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D83)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***HYMENACTURA***

SYN. (obj.)
UNIQUE

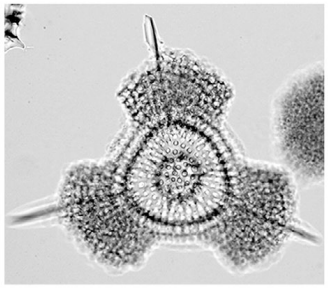
Type



50 µm

Hymenactura archimedis
Haeckel, 1887: 473, pl. 38, fig. 8

Support



50 µm

Hymeniastrum pythagorae Ehrenberg
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE I (E1) ASTRACTURIDAE

GENUS ***Hymenactinium***
Haeckel, 1887: 475

SUBGENUS ***Hymenactura* (*Hymenactinium*)**

Remarks: The type species is synonym of *Trigonactura triacantha* Haeckel, 1887. Only two species originally included at the time of the generic definition (both illustrated, but illustrated only once).

Original series: *Hymenactura copernici* Haeckel, 1887 and *Hymenactura ptolemaei* Haeckel, 1887.

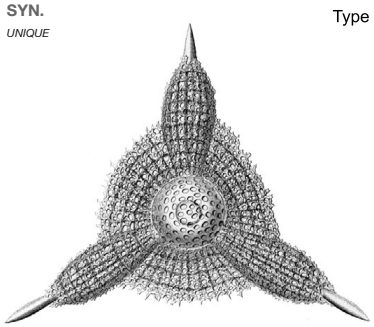
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D83)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1972: 46

SEE ***HYMENIASTRUM***

SYN.
UNIQUE

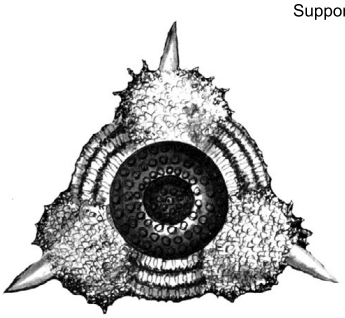
Type



100 µm

Hymenactura copernici
Haeckel, 1887: 475, pl. 38, fig. 9

Support



50 µm

Hymenactura ptolemaei
Haeckel, 1887: 475 [specimen of Bury 1862: pl. 15, fig. 5]

S - LINEAGE I (E1) ASTRACTURIDAE

GENUS ***Pentactura***
Haeckel, 1882: 458

Remarks: Illustration available only for the type species (figured just once after the first illustration). Only two species originally included at the time of the generic definition. The occurrence of five-armed forms it is a very common anomaly of three-armed skeletal development (see De Wever *et al.*, 2001),

Original series: *Astromma pentactis* Ehrenberg, 1874b and **Pentactura astropecten* Haeckel, 1887.

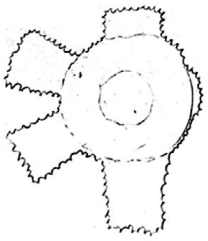
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D83)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1972: 46

SEE ***HYMENIASTRUM***

SYN.
VERY RARE

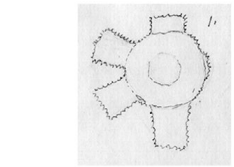
Type

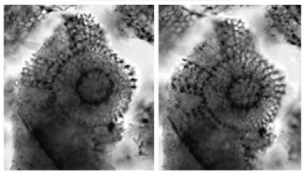


50 µm

Astromma pentactis
Ehrenberg, 1874b: 217 (unfigured); Ehrenberg, 1876: 66, pl. 30, fig. 1

Type





100 µm

Astromma pentactis Ehrenberg
Ogane *et al.* 2009b: pl. 69, figs 1a-c [lectotype herein]

S - LINEAGE I (E1) ASTRACTURIDAE

GENUS ***Trigonactinium***
Haeckel, 1887: 472

SUBGENUS ***Trigonactura* (*Trigonactinium*)**

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Trigonactura triacantha* Haeckel, 1887; *Trigonactura trigonodiscus* Haeckel, 1887 and **Trigonactura trixiphos* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D84)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HYMENIASTRUM***

SYN.
UNIQUE

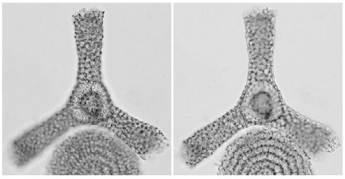
Type



100 µm

Trigonactura triacantha
Haeckel, 1887: 472, pl. 38, fig. 6

Support



100 µm

Trigonactura triacantha Haeckel
Topotypic material (Barbados, Late Eocene), Suzuki's collection

S - LINEAGE I (E1) ASTRACTURIDAE

GENUS **Trigonacturium**
Haeckel, 1887: 471

SUBGENUS ***Trigonactura* (*Trigonacturium*)**

Remarks: No type species was designated. Only the type species clearly belongs to this genus; frequently reported. Campbell (1954: D84) considers *TRIGONACTURIUM* to be the nominate subgenus of *TRIGONACTURA* Haeckel, 1882. However, this seems inappropriate since the type species of *TRIGONACTURA*, *Trigonactura weismanni* Rüst, 1885, was not among those species originally assigned to *TRIGONACTURIUM*.

Original series: *Astromma pythagorae* Ehrenberg, 1873a; **Trigonactura lanceolata* Haeckel, 1887; *Trigonactura rhopalastrella* Haeckel, 1887 and **Trigonactura trigonobrachia* Haeckel, 1887.

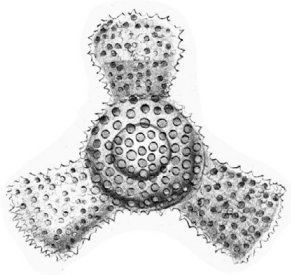
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1972: 47

SEE ***HYMENIASTRUM***

SYN.
FREQUENT

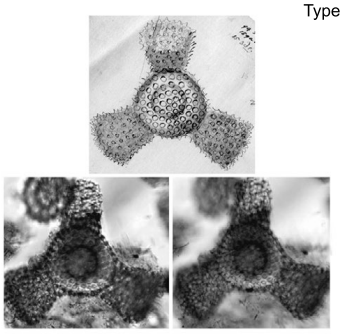
Type



100 µm

Astromma pythagorae
Ehrenberg, 1873a: 301 (unfigured); Ehrenberg, 1876: 66, pl. 30, fig. 2

Type



100 µm

Astromma pythagorae Ehrenberg
Ogane *et al.* 2009b: pl. 70, figs 3a, 3b [lectotype herein]

S - LINEAGE I (E1) LITHOCYCLIIDAE
ASSIGNED HEREIN

GENUS **Cromyatractus**
Haeckel, 1887: 334

NOMINOTYPE ***Cromyatractus* (*Cromyatractus*)**

Diagnosis: Lithocycliidae with four (or more) concentric latticed shells. Innermost shell spherical. Second and external shells of nearly identical ellipsoidal shapes. Numerous radial beams between shells. Polar spines connected to inner shell by radial beams.

Remarks: See comments under *CROMYATRACTIUM*. Only the type species clearly belongs to this genus; a single report after the first illustration.

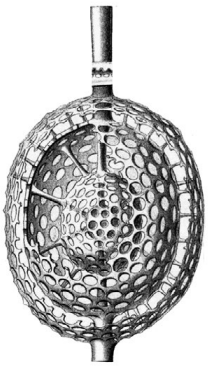
FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 112)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–QUATERNARY***

VALID
VERY RARE

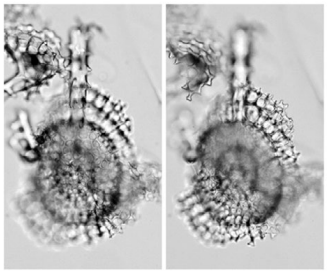
Type



50 µm

Cromyatractus tetraphractus
Haeckel, 1887: 335, pl. 15, fig. 2

Support



100 µm

Cromyatractus tetraphractus Haeckel
Topotypic material (Challenger Station 266), Suzuki's collection

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS **Cromyatractium**
Haeckel, 1887: 335

SUBGENUS ***Cromyatractus* (*Cromyatractium*)**

Remarks: A single report of the type species after the first illustration. Campbell (1954: D70) considers *CROMYATRACTIUM* Haeckel, 1887 to be the nominate subgenus of *CARYODORAS* Haeckel, 1882 and designates *Cromyatractus tetraphractus* Haeckel as the type species, but only by inference of *CROMYATRACTUS*. However, this seems inappropriate since no species are known to have been assigned to *CARYODORAS*. Therefore, we consider the type species designation of *Cromyatractus tetraphractus* Haeckel, 1887, to date from Chediya (1959: 112). There is also an invalid SD by Kozur & Mostler (1979: 39).

Original series: *Cromyatractus tetracelyphus* Haeckel, 1887; **Cromyatractus tetralepas* Haeckel, 1887 and *Cromyatractus tetraphractus* Haeckel, 1887.

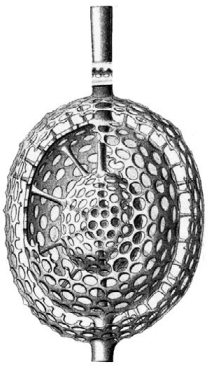
FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 112)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CROMYATRACTUS***

SYN. (obj.)
VERY RARE

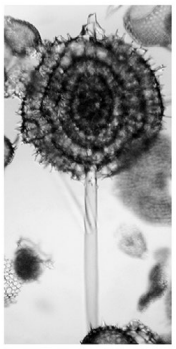
Type



50 µm

Cromyatractus tetraphractus
Haeckel, 1887: 335, pl. 15, fig. 2

Support



100 µm

Cromyatractus tetraphractus Haeckel
Dumitrica's collection (DSDP 21-207A-13 CC, SW Pacific; Middle Eocene)

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS **Caryatractus**
Haeckel, 1887: 336

SUBGENUS ***Cromyatractus* (*Caryatractus*)**

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Cromyatractus ceparius* Haeckel, 1887 and *Cromyatractus cepicius* Haeckel, 1887.

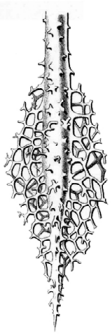
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D70)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CROMYATRACTUS***

SYN.
UNIQUE

Type



50 µm

Cromyatractus cepicius
Haeckel, 1887: 336, pl. 15, fig. 3

Support



100 µm

Cromyatractus ceparius
Haeckel, 1887: 336, pl. 15, fig. 4

S - LINEAGE I (E1) LITHOCYCLIIDAE
ASSIGNED HERE

GENUS ***Heliosestrum***
Haeckel, 1882: 457

NOMINOTYPE ***Heliosestrum* (*Heliosestrum*)**

Diagnosis: A single convex lens-shaped, hollow large cortical shell with circular outline; phacodiscid center; many bladed robust equatorial spines.

Remarks: See comments under *HELIOSESTANTHA*.

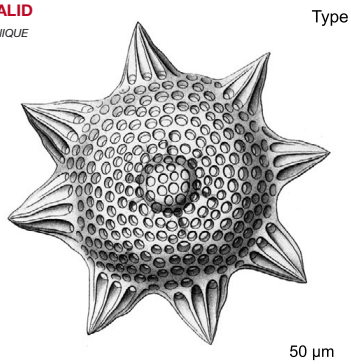
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS **VALID**

AGE ***LATE PALEOCENE–LATE EARLY MIOCENE***

VALID
UNIQUE

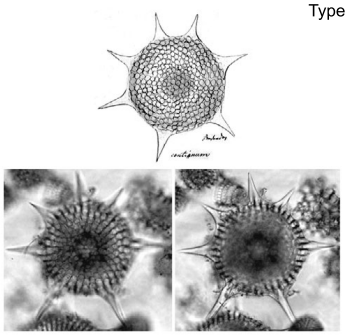
Type



50 µm

Heliosestrum medusinum
Haeckel, 1887: 438, pl. 34, fig. 6

Type



100 µm

Haliomma contiguum Ehrenberg
Ogane *et al.* 2009b: pl. 31, figs 1a-c [lectotype herein]

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Heliosestantha***
Haeckel, 1887: 438

SUBGENUS ***Heliosestrum* (*Heliosestantha*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is a junior subjective synonym.

Original series: *Haliomma contiguum* Ehrenberg, 1874b; **Heliosestrum irregulare* Haeckel, 1887; **Heliosestrum liriope* Haeckel, 1887; *Heliosestrum medusinum* Haeckel, 1887; **Heliosestrum octastrum* Haeckel, 1887; **Heliosestrum quadrigeminum* Haeckel, 1887 and *Heliosestrum solarium* Haeckel, 1887.

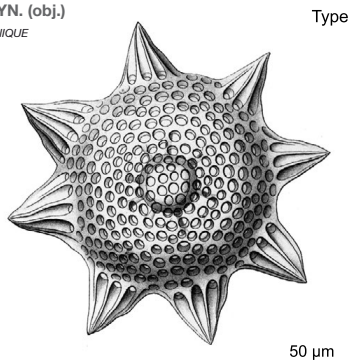
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***HELIOSESTRUM***

SYN. (obj.)
UNIQUE

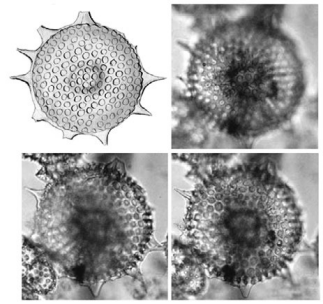
Type



50 µm

Heliosestrum medusinum
Haeckel, 1887: 438, pl. 34, fig. 6

Type



100 µm

Haliomma umbonatum Ehrenberg
Ogane *et al.* 2009b: pl. 14, figs 5a-d [lectotype herein]

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Astrosestrum***
Haeckel, 1882: 457

NOMINOTYPE ***Astrosestrum* (*Astrosestrum*)**

Remarks: See comments under *ASTROSESTANTHA*.

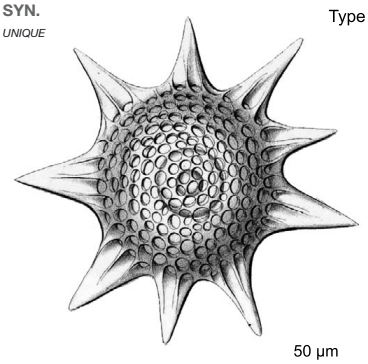
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1972: 19

SEE ***HELIOSESTRUM***

SYN.
UNIQUE

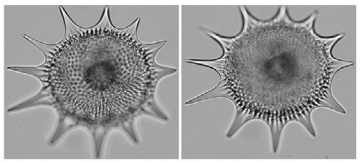
Type



50 µm

Astrosestrum ephyra
Haeckel, 1887: 442, pl. 32, fig. 4

Support



100 µm

Astrosestrum ephyra Haeckel
Topotypic material (Challenger Station 272), Suzuki's collection

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S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Astrosestantha***
Haeckel, 1887: 442

SUBGENUS ***Astrosestrum* (*Astrosestantha*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is a junior subjective synonym.

Original series: **Astrosestrum acraspedum* Haeckel, 1887; *Astrosestrum ephyra* Haeckel, 1887; *Astrosestrum nauphanta* Haeckel, 1887 and *Haliomma octacanthum* Ehrenberg, 1873a.

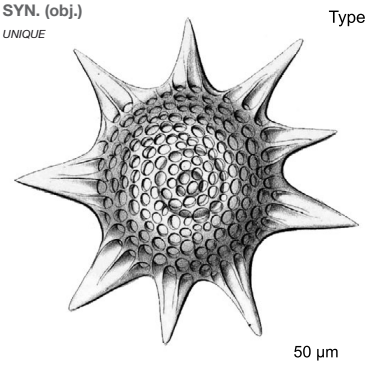
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ASTROSESTRUM***

SYN. (obj.)
UNIQUE

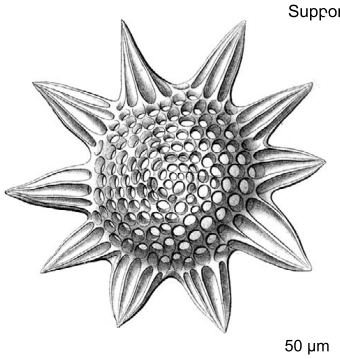
Type



50 µm

Astrosestrum ephyra
Haeckel, 1887: 442, pl. 32, fig. 4

Support



50 µm

Heliodiscus glyphodon
Haeckel, 1887: 446, pl. 35, fig. 2

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Astrophacura***
Haeckel, 1887: 455

SUBGENUS ***Astrophacus* (*Astrophacura*)**

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1887).

Original series: *Astrophacus apollinis* Haeckel, 1887.

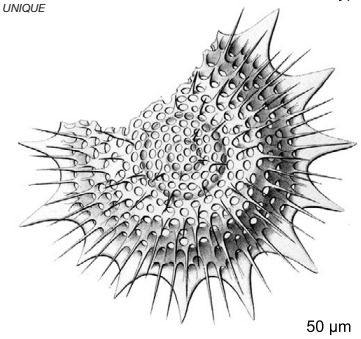
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HELIOSESTRUM***

SYN.
UNIQUE

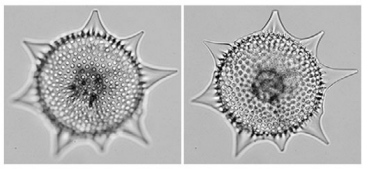
Type



50 µm

Astrophacus apollinis
Haeckel, 1887: 455, pl. 32, fig. 2

Support



100 µm

Astrophacus apollinis Haeckel
Paratypic material (Challenger Station 265), Suzuki's collection

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S - LINEAGE I (E1) ? LITHOCYCLIIDAE

GENUS ***Staurodiscus***
Krasheninnikov, 1960: 289

Remarks: Homonym of *STAURODISCUS* Haeckel, 1879b: 140 (Hydrozoa), non Neviani, 1900: 652 (Polycystinea); see *ASTROSESTRUM* (a new name is not required since it is a junior synonym). Genus described as monospecific at the time of the generic definition; only illustrated by Krasheninnikov (1960).

Original series: *Staurodiscus primus* Krasheninnikov, 1960.

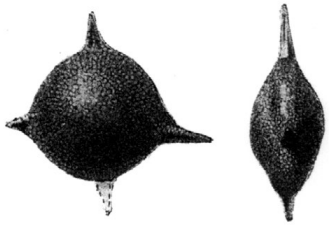
FIXATION MONOTYPY

STATUS HOMONYM, JUNIOR SYNONYM

SEE ***HELIOSESTRUM***

HOM.; SYN.
UNIQUE

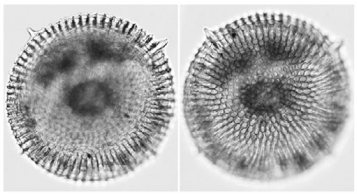
Type



100 µm

Staurodiscus primus
Krasheninnikov, 1960: 289, pl. 2, figs 11a, 11b

Support



100 µm

Staurodiscus primus Krasheninnikov
Challenger Station 265, Suzuki's collection

S - LINEAGE I (E1) ? LITHOCYCLIIDAE

GENUS ***Heliosestomma***
Haeckel, 1887: 441

SUBGENUS ***Heliosestrum* (*Heliosestomma*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Heliosestrum craspedotum* Haeckel, 1887; **Heliosestrum octangulum* Haeckel, 1887 and **Heliosestrum octogonium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? HELIOSESTRUM***

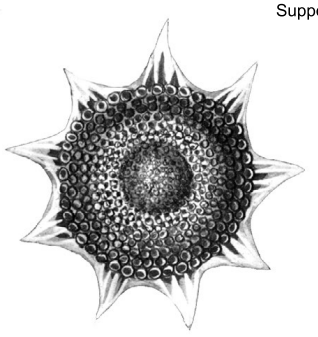
N.D.

Type

UNFIGURED SPECIES

Heliosestrum octangulum
Haeckel, 1887: 441, unfigured

Support



~ 50 µm

Heliosestrum craspedotum
Haeckel, 1887: 441 [specimen of Bury 1862: pl. 8, fig. 4]

S - LINEAGE I (E1) ? LITHOCYCLIIDAE

GENUS ***Pristodiscus***
Haeckel, 1887: 418

SUBGENUS ***Trochodiscus* (*Pristodiscus*)**

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

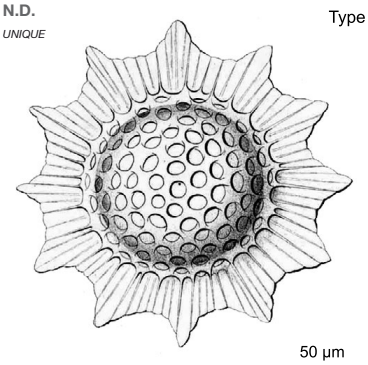
Original series: **Trochodiscus cingillum* Haeckel, 1887 and *Trochodiscus stellaris* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

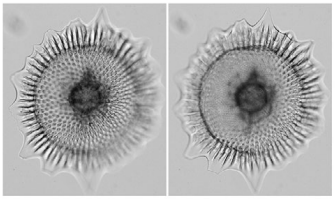
Type



50 µm

Trochodiscus stellaris
Haeckel, 1887: 418, pl. 48, fig. 3

Support



100 µm

Trochodiscus stellaris Haeckel
Topotypic material (Barbados, Late Eocene), Suzuki's collection

S - LINEAGE I (E1) LITHOCYCLIIDAE

ASSIGNED IN De Wever *et al.* 2001: 121

GENUS ***Heliostylus***
Haeckel, 1882: 457

SUBGENUS ***Sethostylus* (*Heliostylus*)**

Diagnosis: A large, single, lens-shaped, hollow cortical shell with a circular, or ellipsoidal, outline. Double medullary shell, or phacodiscid center, with two polar primary beams. Polar spines not bladed. Keel-type equatorial zone present in some species.

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Sethostylus dentatus* Haeckel, 1887; **Sethostylus hastatus* Haeckel, 1887; *Sethostylus serratus* Haeckel, 1887 and **Sethostylus spicatus* Haeckel, 1887.

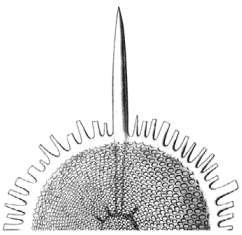
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D81)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LATE OLIGOCENE***

VALID
UNIQUE

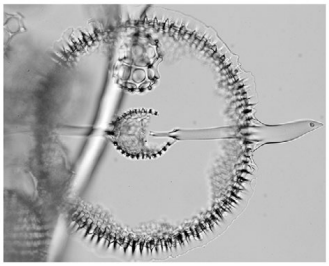
Type



100 µm

Sethostylus dentatus
Haeckel, 1887: 429, pl. 34, fig. 1

Support



100 µm

Sethostylus dentatus Haeckel
Topotypic material (Challenger Station 272), Suzuki's collection

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S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Astrostylus***
Haeckel, 1887: 431

SUBGENUS ***Phacostylus* (*Astrostylus*)**

Remarks: Only the type species was figured in this genus by Haeckel (1887); no other images have been published.

Original series: **Phacostylus amphipyramis* Haeckel, 1887; *Phacostylus caudatus* Haeckel, 1887 and **Phacostylus maximus* Haeckel, 1887.

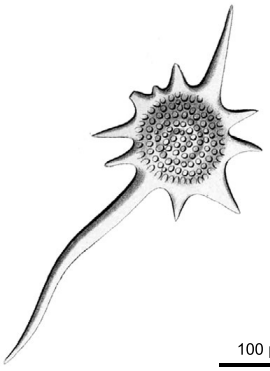
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D42)

STATUS JUNIOR SYNONYM
questionably synonymized by Kozur & Mostler 1979: 10

SEE ***HELIOSTYLUS***

SYN.
UNIQUE

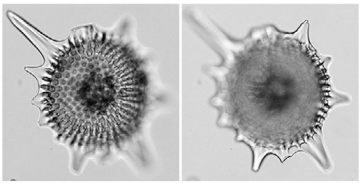
Type



100 µm

Phacostylus caudatus
Haeckel, 1887: 431, pl. 32, fig. 6

Support



100 µm

Phacostylus caudatus Haeckel
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Stylodiscus***
Haeckel, 1887: 412

NOMINOTYPE ***Stylodiscus* (*Stylodiscus*)**

Remarks: See comments under *STYLENTODISCUS*.

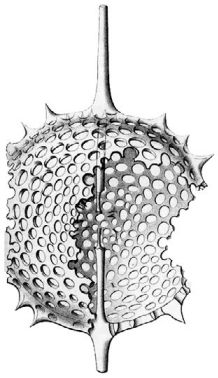
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Sanfilippo & Riedel 1973: 522

SEE ***HELIOSTYLUS***

SYN.
UNIQUE

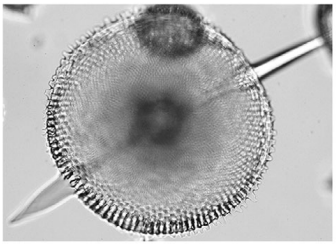
Type



50 µm

Stylodiscus endostylus
Haeckel, 1887: 413, pl. 31, fig. 11

Support



100 µm

Stylodiscus endostylus Haeckel
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Stylentodiscus***
Haeckel, 1887: 413

SUBGENUS ***Stylodiscus* (*Stylentodiscus*)**

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1887).

Original series: *Stylodiscus endostylus* Haeckel, 1887.

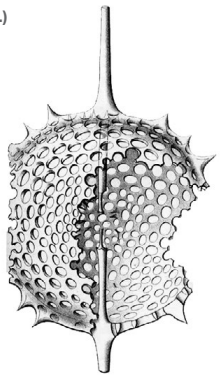
FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***STYLODISCUS***

SYN. (obj.)
UNIQUE

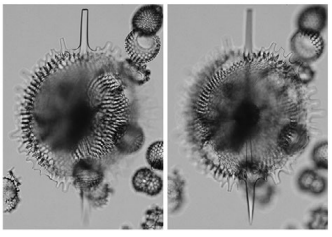
Type



50 µm

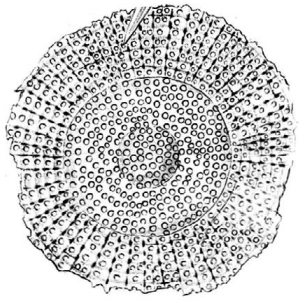
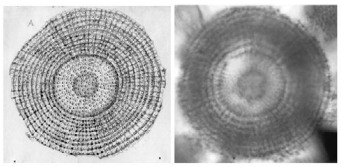
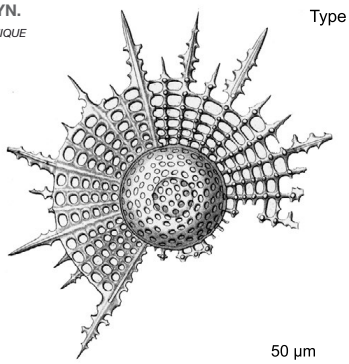
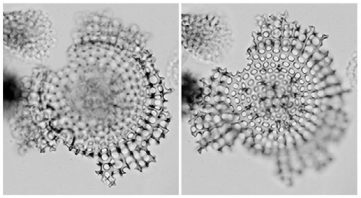
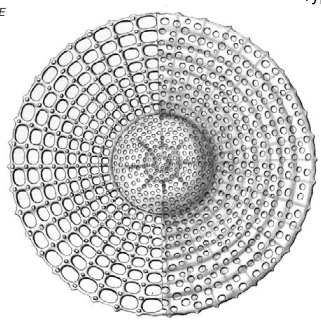
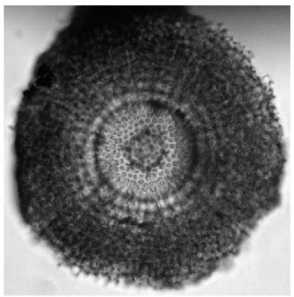
Stylodiscus endostylus
Haeckel, 1887: 413, pl. 31, fig. 11

Support



50 µm

Stylodiscus endostylus Haeckel
Paratypic material (Challenger Station 268), Suzuki's collection

S - Lineage I (E1) ? LITHOCYCLIIDAE GENUS ***Stylexodiscus*** Haeckel, 1887: 413 SUBGENUS ***Stylodiscus* (*Stylexodiscus*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Stylodiscus amphistylus* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Stylodiscus amphistylus* Haeckel, 1887: 413, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage I (E1) LITHOCYCLIIDAE ASSIGNED IN Kozur & Mostler 1972: 46 GENUS ***Lithocyclia*** Ehrenberg, 1846: 385 **Diagnosis**: A large, single, lens-shaped, hollow cortical shell with a phacodiscid center. Equatorial zone of spongy, concentrically-chambered structure around the cortical shell. No robust spines. **Remarks**: Genus described as monospecific at the time of the generic definition; frequently reported. **Original series**: *Lithocyclia ocellus* Ehrenberg, 1854c. FIXATION SUBSEQUENT MONOTYPY STATUS **VALID** AGE ***Early Eocene–Late Oligocene***	**VALID** *FREQUENT* Type  50 µm *Lithocyclia ocellus* Ehrenberg, 1854c: pl. 36, fig. 30 [description in Haeckel, 1862: 488]	Type  100 µm *Lithocyclia ocellus* Ehrenberg Ogane *et al.* 2009b: pl. 32, figs 2a, 2b [lectotype herein]
S - Lineage I (E1) LITHOCYCLIIDAE GENUS ***Astrocyclia*** Haeckel, 1882: 458 **Remarks**: Type species only illustrated by Haeckel (1887). **Original series**: **Astrocyclia arachnia* Haeckel, 1887; *Astrocyclia heterocycla* Haeckel, 1887; **Astrocyclia rotula* Haeckel, 1887; *Astrocyclia solaster* Haeckel, 1887 and *Lithocyclia stella* Ehrenberg, 1874b. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82) STATUS JUNIOR SYNONYM synonymized by Riedel & Sanfilippo 1970: 522 SEE ***LITHOCYCLIA***	**SYN.** *UNIQUE* Type  50 µm *Astrocyclia solaster* Haeckel, 1887: 466, pl. 36, fig. 7	Support  100 µm *Astrocyclia solaster* Haeckel Topotypic material (Challenger Station 266), Suzuki's collection
S - Lineage I (E1) LITHOCYCLIIDAE GENUS ***Coccodiscus*** Haeckel, 1862: 485 **Remarks**: Genus described as monospecific at the time of the generic definition; rarely reported. There is also a subsequent designation of the same type species by Campbell (1954: D82). **Original series**: *Coccodiscus darwini* Haeckel, 1862. FIXATION MONOTYPY STATUS JUNIOR SYNONYM synonymized by Kozur & Mostler 1972: 46 SEE ***LITHOCYCLIA***	**SYN.** *RARE* Type  50 µm *Coccodiscus darwini* Haeckel, 1862: 486, pl. 28, fig. 11	Type  100 µm *Coccodiscus darwini* Haeckel Sakai *et al.* 2009: 50, pl. 7, fig. 4b [neotype herein]

S - LINEAGE I (E1) ? LITHOCYCLIIDAE

GENUS **Coccocyclia**
Haeckel, 1882: 458

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: *Coccocylia heliantha* Haeckel, 1887 and **Coccocylia liriantha* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *LITHOCYCLIA***

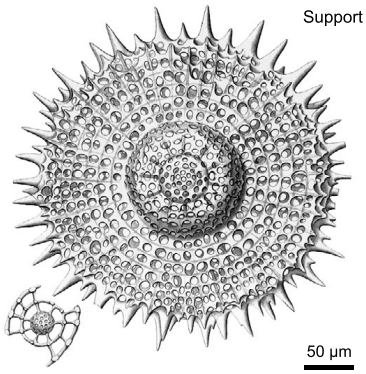
N.D.

Type

UNFIGURED SPECIES

Coccocyclia liriantha
Haeckel, 1887: 468, unfigured

Support



Coccocyclia heliantha
Haeckel, 1887: 468, pl. 36, figs 5, 6

S - LINEAGE I (E1) LITHOCYCLIIDAE
ASSIGNED IN De Wever *et al.* 2001: 121

GENUS **Phacostaurus**
Haeckel, 1882: 457

NOMINOTYPE ***Phacostaurus* (*Phacostaurus*)**

Diagnosis: A large, single, lens-shaped, hollow cortical shell with a phacodiscid center. Four equatorial robust bladed spines connected, or not, to the center by a radial beam. Shell with, or without, an equatorial zone of concentrically-chambered structure.

Remarks: See comments under *PHACOSTAURIUM*.

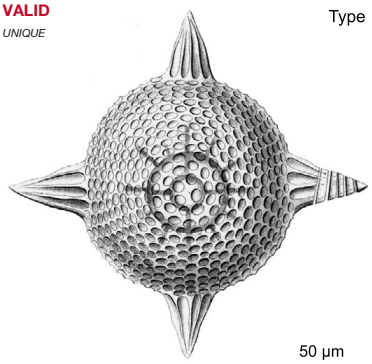
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EOCENE–[QUATERNARY]***

VALID
UNIQUE

Type



Phacostaurus oceanidum
Haeckel, 1887: 435, pl. 31, fig. 6

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS **Phacostaurium**
Haeckel, 1887: 435

SUBGENUS ***Phacostaurus* (*Phacostaurium*)**

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1887).

Original series: *Phacostaurus oceanidum* Haeckel, 1887.

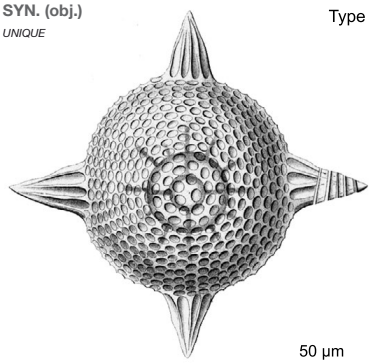
FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PHACOSTAURUS***

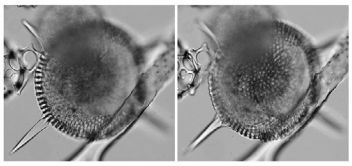
SYN. (obj.)
UNIQUE

Type



Phacostaurus oceanidum
Haeckel, 1887: 435, pl. 31, fig. 6

Support



Phacostaurus oceanidum Haeckel
Paratypic material (Challenger Station 272), Suzuki's collection

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S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS **Astrostaurus**
Haeckel, 1882: 457

SUBGENUS ***Phacostaurus* (*Astrostaurus*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: *Phacostaurus magnificus* Haeckel, 1887 and **Phacostaurus quadrigatus* Haeckel, 1887.

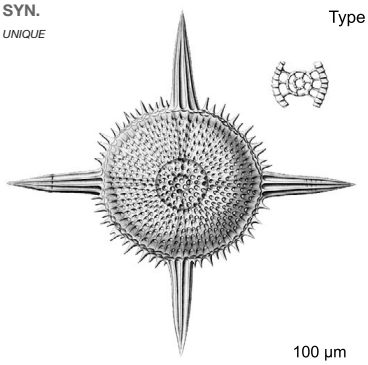
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D79)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1972: 19

SEE ***PHACOSTAURUS***

SYN.
UNIQUE

Type



Phacostaurus magnificus
Haeckel, 1887: 436, pl. 31, figs 7, 8

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Crucidiscus***
Haeckel, 1887: 415

NOMINOTYPE ***Crucidiscus* (*Crucidiscus*)**

Remarks: See comments under *STAURENTODISCUS*.

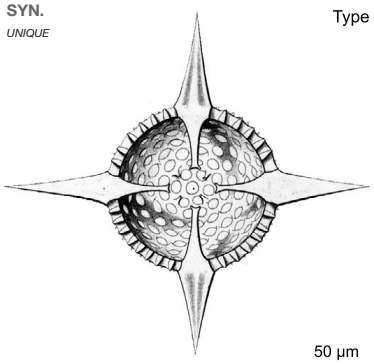
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PHACOSTAURUS***

SYN.
UNIQUE

Type



Crucidiscus endostaurus
Haeckel, 1887: 416, pl. 48, fig. 2

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Staurentodiscus***
Haeckel, 1887: 416

SUBGENUS ***Crucidiscus* (*Staurentodiscus*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Crucidiscus endostaurus* Haeckel, 1887.

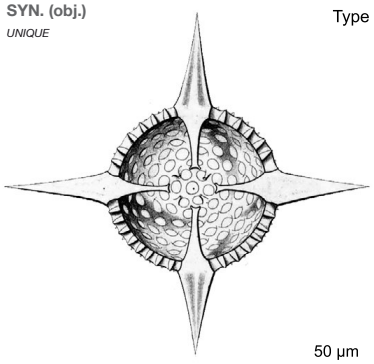
FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CRUCIDISCUS***

SYN. (obj.)
UNIQUE

Type



Crucidiscus endostaurus
Haeckel, 1887: 416, pl. 48, fig. 2

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Sethostaurus***
Haeckel, 1882: 457

NOMINOTYPE ***Sethostaurus* (*Sethostaurus*)**

Remarks: See comments under *SETHOSTAURIUM*.

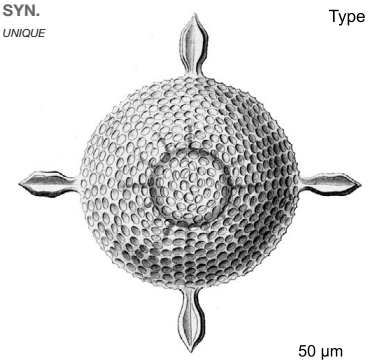
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D81)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PHACOSTAURUS***

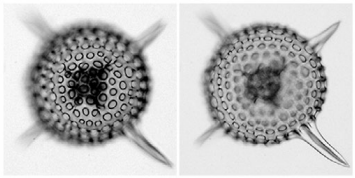
SYN.
UNIQUE

Type



Sethostaurus orthostaurus
Haeckel, 1887: 433, pl. 31, fig. 1

Support



Sethostaurus orthostaurus Haeckel
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Sethostaurium***
Haeckel, 1887: 433

SUBGENUS ***Sethostaurus* (*Sethostaurium*)**

Remarks: Type species only illustrated by Haeckel (1887). Only the type species clearly belongs to this genus and no other images have been published.

Original series: *Sethostaurus conostaurus* Haeckel, 1887; *Sethostaurus orthostaurus* Haeckel, 1887; *Sethostaurus recurvatus* Haeckel, 1887 and *Sethostaurus rhombostaurus* Haeckel, 1887.

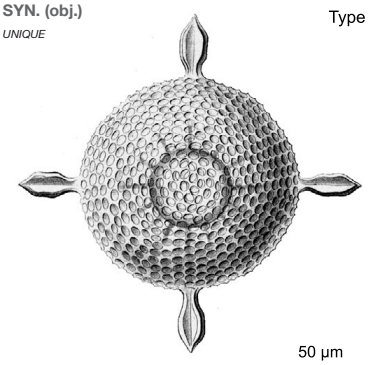
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D81)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SETHOSTAURUS***

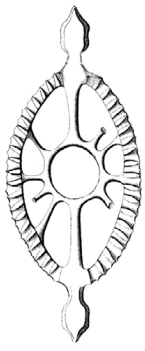
SYN. (obj.)
UNIQUE

Type



Sethostaurus orthostaurus
Haeckel, 1887: 433, pl. 31, fig. 1

Support



Sethostaurus orthostaurus
Haeckel, 1887: 433, pl. 31, fig. 2

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Heliostaurus***
Haeckel, 1882: 457

SUBGENUS ***Sethostaurus* (*Heliostaurus*)**

Remarks: Only the type species was figured in this genus by Haeckel (1887); no other images have been published.

Original series: **Sethostaurus coronatus* Haeckel, 1887; *Sethostaurus cruciatus* Haeckel, 1887 and **Sethostaurus gigas* Haeckel, 1887.

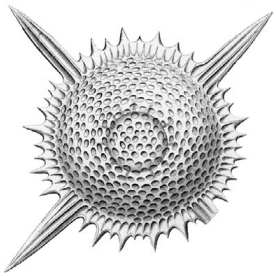
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D81)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PHACOSTAURUS***

SYN.
UNIQUE

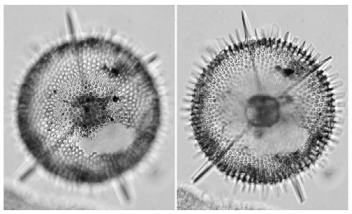
Type



50 µm

Sethostaurus cruciatus
Haeckel, 1887: 434, pl. 31, fig. 5

Support



100 µm

Sethostaurus cruciatus Haeckel
Topotypic material (Challenger Station 266), Suzuki's collection

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S - LINEAGE I (E1) ? LITHOCYCLIIDAE

GENUS ***Staurexodiscus***
Haeckel, 1887: 416

SUBGENUS ***Crucidiscus* (*Staurexodiscus*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. Nevertheless, Haeckel indicates that *Crucidiscus cruciatus* is similar to *Sethostaurus cruciatus* but without internal axial rods and medullary shell.

Original series: **Crucidiscus cruciatus* Haeckel, 1887; **Crucidiscus cuspidatus* Haeckel, 1887 and **Crucidiscus echinatus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? PHACOSTAURUS***

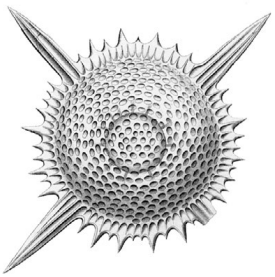
N.D.

Type

UNFIGURED SPECIES

Crucidiscus cuspidatus
Haeckel, 1887: 416, unfigured

Support



50 µm

Sethostaurus cruciatus
Haeckel, 1887: 434, pl. 31, fig. 5

S - LINEAGE I (E1) LITHOCYCLIIDAE
ASSIGNED HEREIN

GENUS ***Phacotriactis***
Sutton, 1896a: 61

Diagnosis: A single triangular cortical shell with a phacodiscid center. Three short equatorial spines at each corner of the cortical shell.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Phacotriactis triangula* Sutton, 1896a.

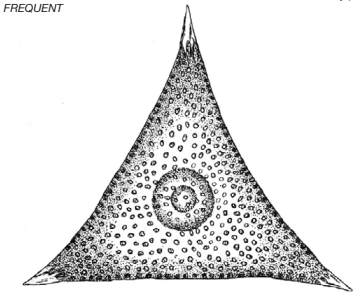
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY EOCENE–EARLY MIDDLE EOCENE***

VALID
FREQUENT

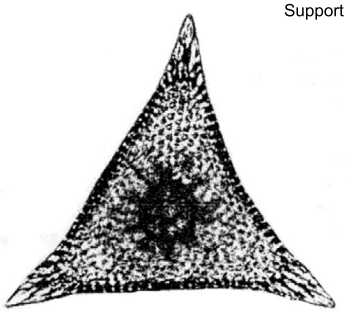
Type



50 µm

Phacotriactis triangula
Sutton, 1896a: 61, text-fig. 3

Support



50 µm

Phacotriactis triangula Sutton
Göke 1986: fig. 5 (right)

S - LINEAGE I (E1) LITHOCYCLIIDAE
ASSIGNED HEREIN

GENUS ***Sethostylus***
Haeckel, 1882: 457

NOMINOTYPE ***Sethostylus* (*Sethostylus*)**

Diagnosis: A large, single, lens-shaped, hollow cortical shell with a circular, or ellipsoidal, outline. Double medullary shell, or phacodiscid center, with two polar primary beams. Polar spines more or less bladed. Equatorial zone present in some species.

Remarks: See comments under *SETHOSTYLIUM*.

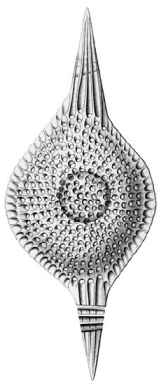
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D81)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LATE EOCENE***

VALID
UNIQUE

Type



50 µm

Sethostylus distyliscus
Haeckel, 1887: 428, pl. 31, fig. 9

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Sethostylium***
Haeckel, 1887: 428

SUBGENUS ***Sethostylus* (*Sethostylium*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); only the type species belongs to this genus. Two species originally included at the time of the generic definition.

Original series: *Sethostylus dicylindrus* Haeckel, 1887 and *Sethostylus distyliscus* Haeckel, 1887.

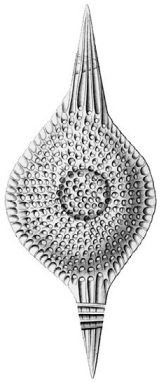
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D81)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SETHOSTYLUS***

SYN. (obj.)
UNIQUE

Type



Sethostylus distyliscus
Haeckel, 1887: 428, pl. 31, fig. 9

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Amphicyclia***
Haeckel, 1882: 458

Remarks: Type species only illustrated by Haeckel (1887). Only the type species clearly belongs to this genus and no other images have been published.

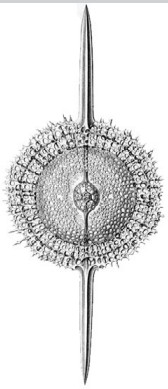
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 522

SEE ***SETHOSTYLUS***

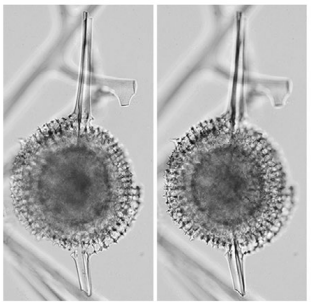
SYN.
UNIQUE

Type



Amphicyclia chronometra
Haeckel, 1887: 463, pl. 38, fig. 1

Support



Amphicyclia chronometra Haeckel
Paratypic material (Challenger Station 272), Suzuki's collection

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S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Phacostylus***
Haeckel, 1882: 457

NOMINOTYPE ***Phacostylus* (*Phacostylus*)**

Remarks: See comments under *PHACOSTYLIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D80)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***SETHOSTYLUS***

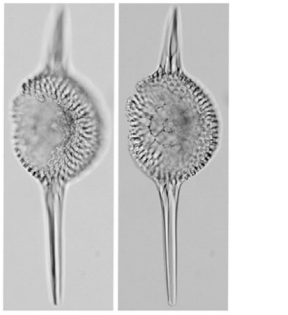
SYN.
RARE

Type



Phacostylus amphistylus
Haeckel, 1887: 430, pl. 31, fig. 12

Support



Phacostylus amphistylus Haeckel
Topotypic material (Challenger Station 272), Suzuki's collection

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S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Phacostylium***
Haeckel, 1887: 430

SUBGENUS ***Phacostylus* (*Phacostylium*)**

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: *Phacostylus amphistylus* Haeckel, 1887 and **Phacostylus amphixiphus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D80)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PHACOSTYLUS***

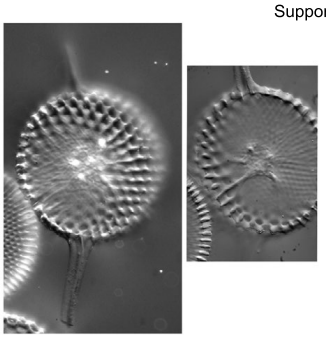
SYN. (obj.)
RARE

Type



Phacostylus amphistylus
Haeckel, 1887: 430, pl. 31, fig. 12

Support



Phacostylus amphistylus Haeckel
Topotypic material (Barbados, Late Eocene), Suzuki's collection

S - LINEAGE I (E1) LITHOCYCLIIDAE

ASSIGNED IN Haeckel 1882: 458

GENUS ***Staurocyclia***
Haeckel, 1882: 458

Diagnosis: A single lens-shaped cortical shell with a phacodiscid center. Equatorial concentrically-chambered structure around the cortical shell. Four robust and long external equatorial bladed-spines directly connected to the medullary structure.

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Staurocyclia cruciata* Haeckel, 1887; *Staurocyclia magniducis* Haeckel, 1887; *Staurocyclia phacostaurus* Haeckel, 1887 and *Staurocyclia serrata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82)

STATUS **VALID**

AGE ***[QUATERNARY]–LIVING***

VALID
UNIQUE

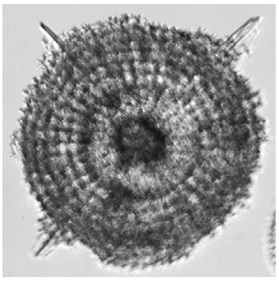
Type



50 µm

Staurocyclia cruciata
Haeckel, 1887: 465, pl. 37, fig. 1

Support



50 µm

Staurocyclia cruciata Haeckel
Topotypic material (Challenger Station 265), Suzuki's collection

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S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Coccostaurus***
Haeckel, 1882: 458

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1887). In 1881 (Haeckel's manuscript), a single species has been ascribed (but not published) to this genus: *Coccostaurus magniducis*. This species was renamed, described, and illustrated as *Staurocyclia magniducis* Haeckel, 1887.

Original series: *Staurocyclia magniducis* Haeckel, 1887.

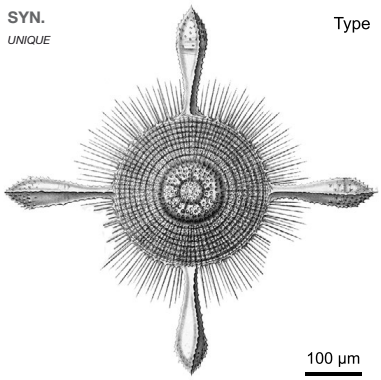
FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Campbell 1954: D82

SEE ***STAUROCYCLIA***

SYN.
UNIQUE

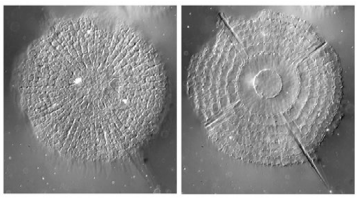
Type



100 µm

Staurocyclia magniducis
Haeckel, 1887: 466, pl. 37, fig. 4

Support



50 µm

Staurocyclia magniducis Haeckel
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE I (E1) LITHOCYCLIIDAE

ASSIGNED HEREIN

GENUS ***Triactiscus***
Haeckel, 1882: 457

Diagnosis: A large, single, lens-shaped, hollow cortical shell with a phacodiscid center. Three equatorial robust bladed spines. Surface and margin of the disk spiny.

Remarks: Type species frequently reported.

Original series: *Haliomma triactis* Ehrenberg, 1874b; *Triactiscus tricuspis* Haeckel, 1887 and *Triactiscus tripyramis* Haeckel, 1887.

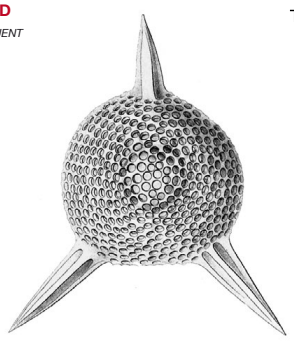
FIXATION SUBSEQUENT DESIGNATION (Strelkov & Lipman 1959: 443)

STATUS **VALID**

AGE ***EARLY EOCENE–LATE EOCENE***

VALID
FREQUENT

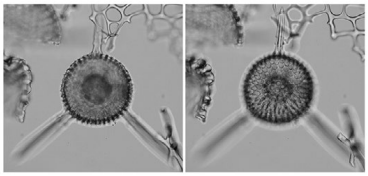
Type



50 µm

Triactiscus tripyramis
Haeckel, 1887: 432, pl. 33, fig. 6

Support



100 µm

Triactiscus tripyramis Ehrenberg
Topotypic material (Challenger Station 272), Suzuki's collection

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S - LINEAGE I (E1) LITHOCYCLIIDAE

GENUS ***Trigonocyclia***
Haeckel, 1887: 464

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1887). Erroneously it was related by Haeckel, 1887 to the genus *TRIGONOCYCLIA* Haeckel, 1882: 458, which does not exist (probably a typographical error for *TRIPOCYCLIA* Haeckel, 1882: 458).

Original series: *Trigonocyclia triangularis* Haeckel, 1887.

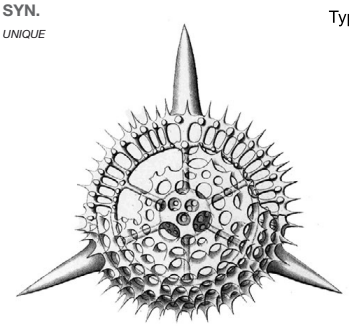
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRIACTISCUS***

SYN.
UNIQUE

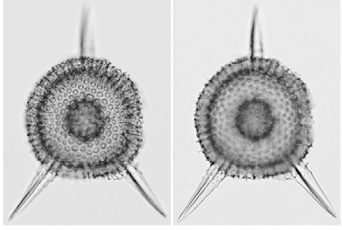
Type



50 µm

Trigonocyclia triangularis
Haeckel, 1887: 464, pl. 37, fig. 5

Support



100 µm

Trigonocyclia triangularis Haeckel
Topotypic material (Barbados, Late Eocene), Suzuki's collection

	Type	Support
S - Lineage I (E1) ? LITHOCYCLIIDAE GENUS ***Echinactura*** Haeckel, 1887: 480 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Echinactura asteriscus* Haeckel, 1887; **Echinactura culcita* Haeckel, 1887 and **Echinactura goniaster* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D83) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Echinactura culcita* Haeckel, 1887: 480, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? LITHOCYCLIIDAE GENUS ***Stauractura*** Haeckel, 1882: 458 NOMINOTYPE ***Stauractura* (*Stauractura*)** **Remarks**: See comments under *STAURACTURIUM*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D83) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Stauractura octogona* Haeckel, 1887: 478, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? LITHOCYCLIIDAE GENUS ***Stauracturium*** Haeckel, 1887: 477 SUBGENUS ***Stauractura* (*Stauracturium*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Stauractura octogona* Haeckel, 1887 and **Stauractura tetragona* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D83) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***STAURACTURA***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Stauractura octogona* Haeckel, 1887: 478, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? LITHOCYCLIIDAE GENUS ***Stauractinium*** Haeckel, 1887: 478 SUBGENUS ***Stauractura* (*Stauractinium*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Stauractura medusina* Haeckel, 1887 and **Stauractura quadrata* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D84) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Stauractura medusina* Haeckel, 1887: 478, unfigured	NO IMAGE PUBLISHED no image available

	Type	Support
S - LINEAGE I (E1) ? LITHOCYCLIIDAE GENUS ***Theodiscus*** Haeckel, 1887: 414 NOMINOTYPE ***Theodiscus* (*Theodiscus*)** **Remarks**: See comments under *THEODISCOMA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Theodiscus divinus* Haeckel, 1887: 414, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? LITHOCYCLIIDAE GENUS ***Theodiscoma*** Haeckel, 1887: 414 SUBGENUS ***Theodiscus* (*Theodiscoma*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Theodiscus christianus* Haeckel, 1887; **Theodiscus divinus* Haeckel, 1887 and **Theodiscus trinitatis* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***THEODISCUS***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Theodiscus divinus* Haeckel, 1887: 414, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? LITHOCYCLIIDAE GENUS ***Theodiscura*** Haeckel, 1887: 415 SUBGENUS ***Theodiscus* (*Theodiscura*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Theodiscus nirvana* Haeckel, 1887 and **Theodiscus vanitatis* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Theodiscus vanitatis* Haeckel, 1887: 415, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? LITHOCYCLIIDAE GENUS ***Trochodiscus*** Haeckel, 1887: 417 NOMINOTYPE ***Trochodiscus* (*Trochodiscus*)** **Remarks**: See comments under *TROCHODISCULUS*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D77) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Trochodiscus cenophacus* Haeckel, 1887: 417, unfigured	NO IMAGE PUBLISHED no image available

S - Lineage I (E1) ? LITHOCYCLIIDAE

GENUS **Trochodisculus**
Haeckel, 1887: 417

SUBGENUS ***Trochodiscus* (*Trochodisculus*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Trochodiscus cenophacus* Haeckel, 1887; **Trochodiscus echiniscus* Haeckel, 1887; **Trochodiscus medusinus* Haeckel, 1887; **Trochodiscus odontotrochus* Haeckel, 1887 and **Trochodiscus solaris* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D77)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***TROCHODISCUS***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Trochodiscus cenophacus
Haeckel, 1887: 417, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage I (E1) PANARTIDAE
ASSIGNED IN Haeckel 1887: 354

GENUS **Cannartus**
Haeckel, 1882: 462

Diagnosis: Ellipsoidal twin latticed cortical shell including a spherical double medullary shell in center and bearing a hollow or prismatic spongy polar tube on both ends of the cortical shell along the longest axis of the test. No extra-cortical caps on cortical shell.

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Cannartus biscottus* Haeckel, 1887; **Cannartus bitubulus* Haeckel, 1887 and *Cannartus violina* Haeckel, 1887.

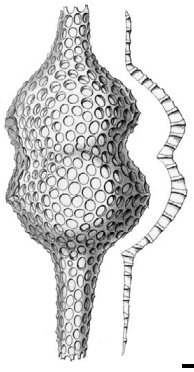
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS **VALID**

AGE ***Early Oligocene–early Late Miocene***

VALID
FREQUENT

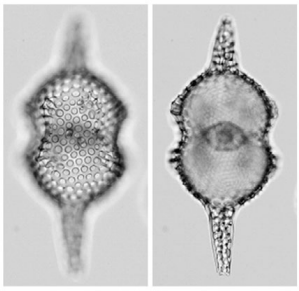
Type



50 µm

Cannartus violina
Haeckel, 1887: 358, pl. 39, fig. 10

Support



100 µm

Cannartus violina Haeckel
Topotypic material (Challenger Station 268), Suzuki's collection

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S - Lineage I (E1) PANARTIDAE

GENUS **Cannartidissa**
Haeckel, 1887: 375

SUBGENUS ***Cannartidium* (*Cannartidissa*)**

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Cannartidium mammiferum* Haeckel, 1887 and *Cannartidium mastophorum* Haeckel, 1887.

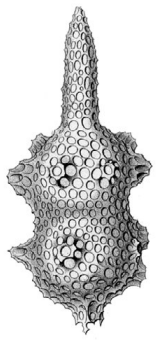
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D75)

STATUS JUNIOR SYNONYM
synonymized by Riedel 1971: 652

SEE ***CANNARTUS***

SYN.
FREQUENT

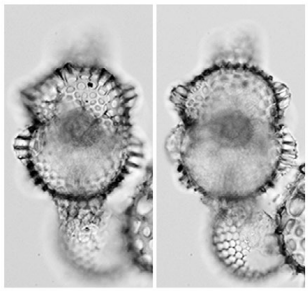
Type



50 µm

Cannartidium mammiferum
Haeckel, 1887: 375, pl. 39, fig. 16

Support



50 µm

Cannartidium mammiferum Haeckel
Paratypic material (Challenger Station 225), Suzuki's collection

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S - Lineage I (E1) PANARTIDAE

GENUS **Cannartiscus**
Haeckel, 1887: 372

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: *Cannartiscus amphiconiscus* Haeckel, 1887 and **Cannartiscus amphicylindrus* Haeckel, 1887.

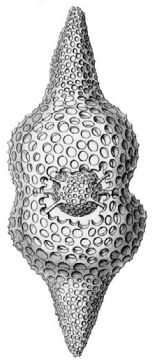
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D75)

STATUS JUNIOR SYNONYM
synonymized by Riedel 1971: 652

SEE ***CANNARTUS***

SYN.
UNIQUE

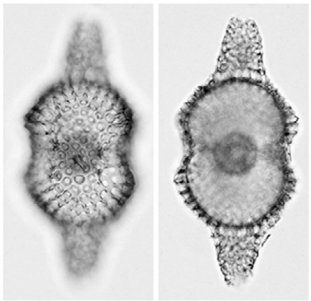
Type



50 µm

Cannartiscus amphiconiscus
Haeckel, 1887: 372, pl. 39, fig. 19

Support



50 µm

Cannartiscus amphiconiscus Haeckel
Paratypic material (Challenger Station 225), Suzuki's collection

S - LINEAGE I (E1) PANARTIDAE

GENUS ***Druppula***
Haeckel, 1887: 307

NOMINOTYPE ***Druppula* (*Druppula*)**

Remarks: See comments under *DRUPPULETTA*. In the original description, Haeckel (1887) indicates the presence of a simple medullary shell, without spines or polar tubes. However, no reports have been found after Haeckel's illustration as far as known. The support images are the closest forms found in the paratypic material; quite often, there are broken specimens in which the polar tubes are poorly preserved.

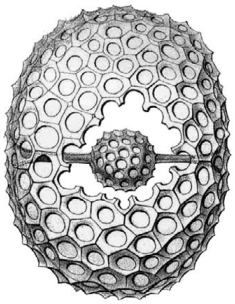
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 21)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CANNARTUS***

SYN.
UNIQUE

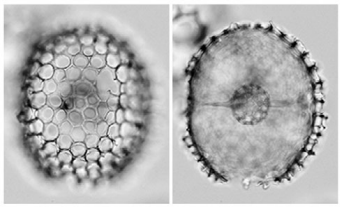
Type



50 µm

Druppula pandanus
Haeckel, 1887: 308, pl. 39, fig. 3

Support



50 µm

Druppula pandanus Haeckel
Paratypic material (Challenger Station 272), Suzuki's collection

S - LINEAGE I (E1) PANARTIDAE

GENUS ***Druppuletta***
Haeckel, 1887: 308

SUBGENUS ***Druppula* (*Druppuletta*)**

Remarks: Type species only illustrated by Haeckel (1887). Only the type species clearly belongs to this genus and no other images have been published.

Original series: **Druppula areca* Haeckel, 1887; **Druppula caryota* Haeckel, 1887; **Druppula cocos* Haeckel, 1887; **Druppula drupa* Haeckel, 1887; *Druppula pandanus* Haeckel, 1887; **Druppula phaenix* Haeckel, 1887 and *Haliomma ovatum* Ehrenberg, 1840.

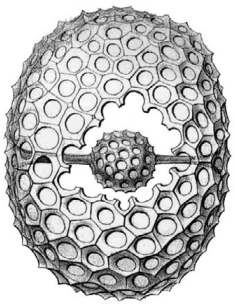
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 21)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***DRUPPULA***

SYN. (obj.)
UNIQUE

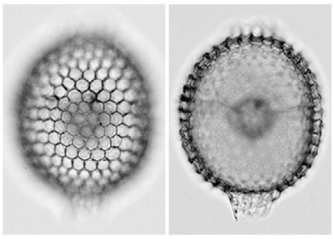
Type



50 µm

Druppula pandanus
Haeckel, 1887: 308, pl. 39, fig. 3

Support



50 µm

Druppula pandanus Haeckel
Paratypic material (Challenger Station 225), Suzuki's collection

S - LINEAGE I (E1) PANARTIDAE

GENUS ***Pipetta***
Haeckel, 1887: 337

Remarks: Type species only illustrated by Haeckel (1887). Only the type species clearly belongs to this genus and no other images have been published.

Original series: **Pipetta conus* Haeckel, 1887; *Pipetta fusus* Haeckel, 1887; **Pipetta salpinx* Haeckel, 1887 and *Pipetta tuba* Haeckel, 1887.

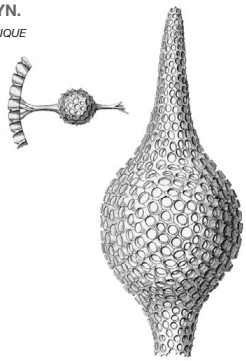
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72)

STATUS JUNIOR SYNONYM
synonymized by Riedel 1971: 652

SEE ***CANNARTUS***

SYN.
UNIQUE

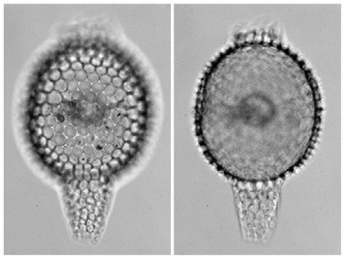
Type



50 µm

Pipetta fusus
Haeckel, 1887: 337, pl. 39, fig. 8

Support



50 µm

Pipetta fusus Haeckel
Paratypic material (Challenger Station 225), Suzuki's collection

S - LINEAGE I (E1) PANARTIDAE

GENUS ***Pipettaria***
Haeckel, 1887: 338

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: **Pipettaria fusaria* Haeckel, 1887 and *Pipettaria tubaria* Haeckel, 1887.

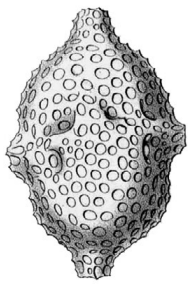
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72)

STATUS JUNIOR SYNONYM
synonymized by Riedel 1971: 652

SEE ***CANNARTUS***

SYN.
FREQUENT

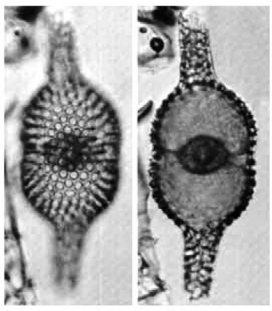
Type



50 µm

Pipettaria tubaria
Haeckel, 1887: 339, pl. 39, fig. 15

Support



50 µm

Cannartus tubarius (Haeckel)
Sakai 1980: 707, pl. 5, figs 11a, 11b

S - LINEAGE I (E1) PANARTIDAE

GENUS ***Pipettella***
Haeckel, 1887: 304

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Pipettella elongata* Haeckel, 1887; **Pipettella fusiformis* Haeckel, 1887; *Pipettella prismatica* Haeckel, 1887 and **Pipettella tubulosa* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D69)

STATUS JUNIOR SYNONYM
synonymized by Riedel 1971: 652

SEE ***CANNARTUS***

SYN.
FREQUENT

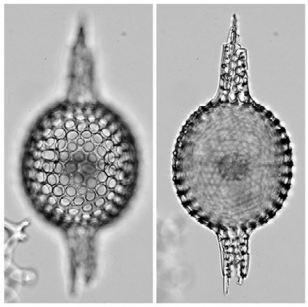
Type



50 µm

Pipettella prismatica
Haeckel, 1887: 305, pl. 39, fig. 6

Support



100 µm

Pipettella prismatica Haeckel
Paratypic material (Challenger Station 272), Suzuki's collection

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S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Cannartidium***
Haeckel, 1887: 373

NOMINOTYPE ***Cannartidium* (*Cannartidium*)**

Remarks: See comments under *CANNARTIDELLA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D75)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? CANNARTUS***

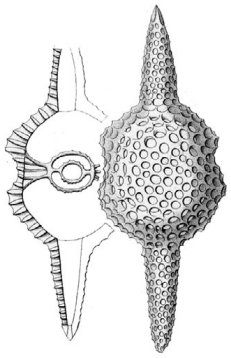
N.D.

Type

UNFIGURED SPECIES

Cannartidium amphiconicum
Haeckel, 1887: 373, unfigured

Support



50 µm

Cannartidium bicinctum
Haeckel, 1887: 374, pl. 39, figs 18, 18a

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Cannartidella***
Haeckel, 1887: 373

SUBGENUS ***Cannartidium* (*Cannartidella*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Cannartidium amphicanna* Haeckel, 1887; **Cannartidium amphiconicum* Haeckel, 1887; *Cannartidium bicinctum* Haeckel, 1887 and **Haliomma*? *amphisiphon* Ehrenberg, 1844c.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D75)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***CANNARTIDIUM***

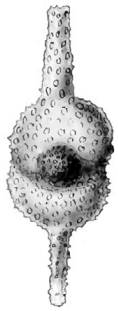
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Cannartidium amphiconicum
Haeckel, 1887: 373, unfigured

Support



~50 µm

Cannartidium amphicanna
Haeckel, 1887: 374, [specimen of Bury 1862: pl. 20, fig. 4]

S - LINEAGE I (E1) PANARTIDAE
ASSIGNED IN Sanfilippo & Riedel 1980: 1010

GENUS ***Diartus***
Sanfilippo & Riedel, 1980: 1010

Diagnosis: Cylindrical and equatorially constricted twin cortical shell including a spherical double medullary shell in the center and bearing at each pole several layers of lattice shell and a dense spongy meshwork.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Ommatocampe* (*Ommatocampula*) *hughesi* Campbell & Clark, 1944a.

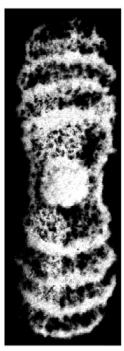
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE MIOCENE–EARLY PLIOCENE***

VALID
FREQUENT

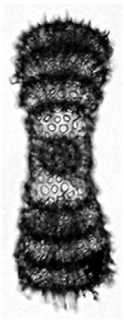
Type



50 µm

Ommatocampe (*Ommatocampula*) *hughesi*
Campbell & Clark, 1944a: 23, pl. 3, fig. 12

Support



50 µm

Diartus hughesi (Campbell & Clark)
Suzuki's collection (IODP U1338A-20H-1W, Middle Miocene)

S - LINEAGE I (E1) PANARTIDAE

ASSIGNED IN Sanfilippo & Riedel 1980: 1010

GENUS **Didymocyrtis**
Haeckel, 1862: 445

SUBGENUS ***Cypassis* (*Didymocyrtis*)**

Diagnosis: Convex lens-shaped to spherical double medullary shell in center and one to several cupola-shaped or conical caps. Cylindrical and equatorially constricted twin latticed cortical shell. With or without vellum.

Remarks: The type species has been frequently illustrated (as senior synonym of *Panartus tetrathalamus* Haeckel, 1887). Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Haliomma didymocyrtis* Haeckel, 1861a and *Haliomma didymum* Ehrenberg, 1844a.

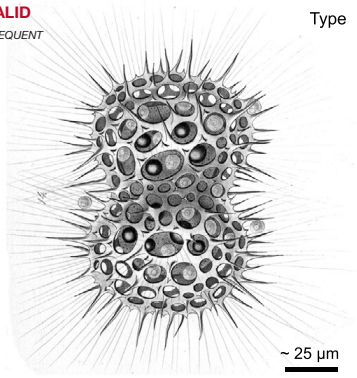
FIXATION ABSOLUTE TAUTONOMY

STATUS **VALID**

AGE ***EARLY MIDDLE MIOCENE–LIVING***

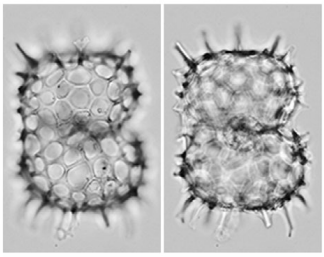
VALID
FREQUENT

Type



Haliomma didymocyrtis
Haeckel, 1861a: 816 (unfigured); Haeckel, 1862: 445, pl. 22, fig. 14

Support



Didymocyrtis didymocyrtis (Haeckel)
Paratypic material (Challenger Station 265), Suzuki's collection

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S - LINEAGE I (E1) PANARTIDAE

GENUS **Artidium**
Haeckel, 1882: 462

SUBGENUS ***Artiscus* (*Artidium*)**

Remarks: Only the type species was figured in this genus by Haeckel (1887); no other images have been published.

Original series: **Artiscus elegans* Haeckel, 1887; **Artiscus hystrix* Haeckel, 1887 and *Artiscus nodosus* Haeckel, 1887.

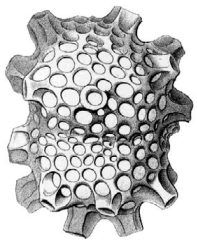
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

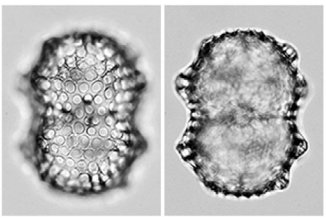
SYN.
UNIQUE

Type



Artiscus nodosus
Haeckel, 1887: 356, pl. 39, fig. 9

Support



Artiscus nodosus Haeckel
Paratypic material (Challenger Station 268), Suzuki's collection

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S - LINEAGE I (E1) PANARTIDAE

GENUS **Cyphinura**
Haeckel, 1887: 370

SUBGENUS ***Cyphinus* (*Cyphinura*)**

Remarks: Only the type species clearly belongs to this genus (figured just once); just two species originally included at the time of the generic definition.

Original series: *Cyphinus amphilophus* Haeckel, 1887 and *Ommatospyris penicillata* Ehrenberg, 1873a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D75)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

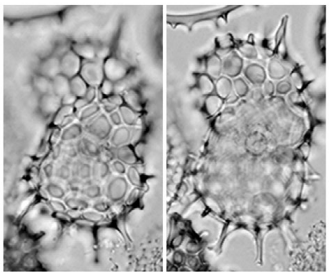
SYN.
UNIQUE

Type



Cyphinus amphilophus
Haeckel, 1887: 370, pl. 39, fig. 14

Support



Cyphinus amphilophus Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

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S - LINEAGE I (E1) PANARTIDAE

GENUS **Cyphocolpus**
Haeckel, 1887: 368

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: **Cyphocolpus didymus* Haeckel, 1887 and *Cyphocolpus virginis* Haeckel, 1887.

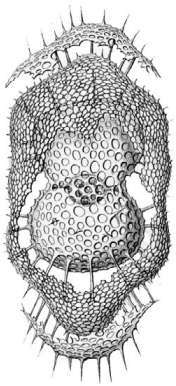
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D75)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

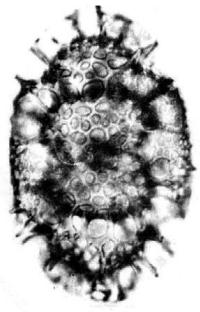
SYN.
FREQUENT

Type



Cyphocolpus virginis
Haeckel, 1887: 369, pl. 40, fig. 11

Support



Cyphocolpus virginis Haeckel
Chen & Tan 1996: 179, pl. 11, fig. 13; pl. 41, fig. 9

S - LINEAGE I (E1) PANARTIDAE

GENUS ***Desmartus***
Haeckel, 1887: 398

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: *Desmartus larvalis* Haeckel, 1887 and **Desmartus tubulatus* Haeckel, 1887.

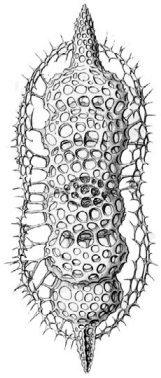
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

SYN.
UNIQUE

Type



50 µm

Desmartus larvalis
Haeckel, 1887: 398, pl. 40, fig. 12

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) PANARTIDAE

GENUS ***Ommatocampula***
Haeckel, 1887: 394

SUBGENUS ***Ommatocampe* (*Ommatocampula*)**

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: **Ommatocampe erucaeformis* Haeckel, 1887 and *Ommatocampe nereis* Haeckel, 1887.

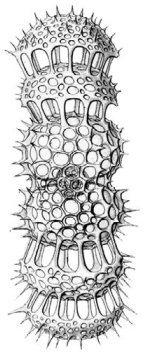
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

SYN.
UNIQUE

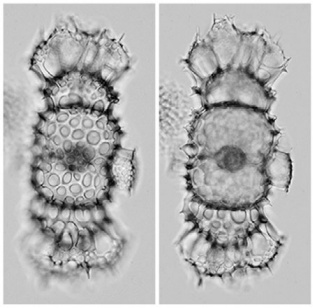
Type



50 µm

Ommatocampe nereis
Haeckel, 1887: 394, pl. 40, fig. 10

Support



100 µm

Ommatocampe nereis Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

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S - LINEAGE I (E1) PANARTIDAE

GENUS ***Panaromium***
Haeckel, 1887: 389

SUBGENUS ***Panarium* (*Panaromium*)**

Remarks: Only the type species was figured in this genus by Haeckel (1887); no other images have been published.

Original series: **Panarium annularium* Haeckel, 1887; **Panarium artophorum* Haeckel, 1887 and *Panarium tubularium* Haeckel, 1887.

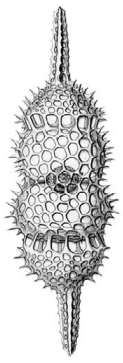
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

SYN.
UNIQUE

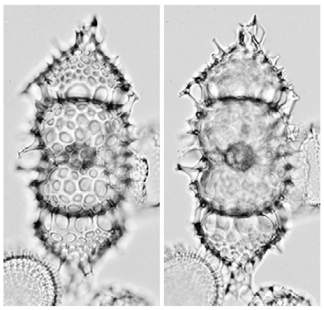
Type



50 µm

Panarium tubularium
Haeckel, 1887: 390, pl. 40, fig. 9

Support



50 µm

Panarium tubularium Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

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S - LINEAGE I (E1) PANARTIDAE

GENUS ***Panartus***
Haeckel, 1887: 376

NOMINOTYPE ***Panartus* (*Panartus*)**

Remarks: See comments under *PANARTELLA*. According to Sanfilippo & Riedel (1980), we think that do not exist notorious differences between *DIDYMOCYRTIS* and *PANARTUS*. The solely difference is in the structure of both medullary shells: in the genus *DIDYMOCYRTIS* one is convex lens-shaped and the other one spherical, whereas both are spherical in the genus *PANARTUS*. This is why the type species of *PANARTUS* (*P. tetrathalamus*) was already moved to *DIDYMOCYRTIS* by Sanfilippo & Riedel in 1980.

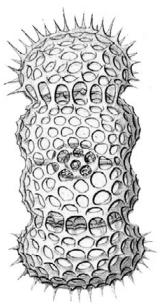
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR SYNONYM
synonymized by Sanfilippo & Riedel, 1980: 1010

SEE ***DIDYMOCYRTIS***

SYN.
FREQUENT

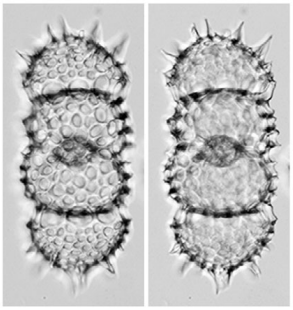
Type



50 µm

Panartus tetrathalamus
Haeckel, 1887: 378, pl. 40, fig. 3

Support



50 µm

Panartus tetrathalamus Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

S - LINEAGE I (E1) PANARTIDAE

GENUS ***Panartella***
Haeckel, 1887: 377

SUBGENUS ***Panartus* (*Panartella*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Panartus tetracolus* Haeckel, 1887; **Panartus tetrameres* Haeckel, 1887; **Panartus tetraphalangus* Haeckel, 1887; **Panartus tetraplus* Haeckel, 1887 and *Panartus tetrathalamus* Haeckel, 1887.

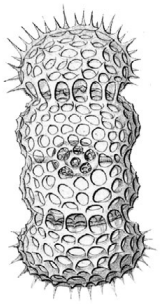
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PANARTUS***

SYN. (obj.)
FREQUENT

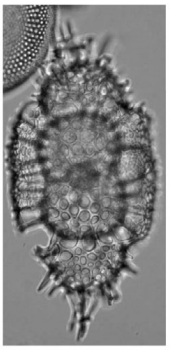
Type



50 µm

Panartus tetrathalamus
Haeckel, 1887: 378, pl. 40, fig. 3

Support



50 µm

Didymocyrtis tetrathalamus (Haeckel)
Matsuzaki *et al.* 2015: 17, fig. 3.8

S - LINEAGE I (E1) PANARTIDAE

GENUS ***Panartissa***
Haeckel, 1887: 379

SUBGENUS ***Panartus* (*Panartissa*)**

Remarks: Only the type species was figured in this genus by Haeckel (1887); no other images have been published.

Original series: *Ommatocampe profundissima* Ehrenberg, 1873a; **Panartus amphiconus* Haeckel, 1887; *Panartus diploconus* Haeckel, 1887 and **Panartus fusiformis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

SYN.
UNIQUE

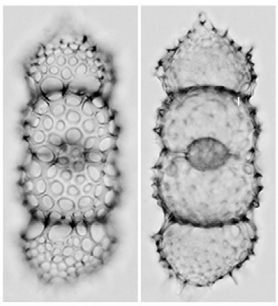
Type



50 µm

Panartus diploconus
Haeckel, 1887: 379, pl. 40, fig. 1

Support



50 µm

Panartus diploconus Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

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S - LINEAGE I (E1) PANARTIDAE

GENUS ***Panartura***
Haeckel, 1887: 381

SUBGENUS ***Panartus* (*Panartura*)**

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Ommatocampe setosa* Ehrenberg, 1873a; *Panartus pluteus* Haeckel, 1887 and **Panartus spinosus* Haeckel, 1887.

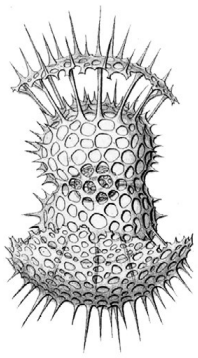
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

SYN.
UNIQUE

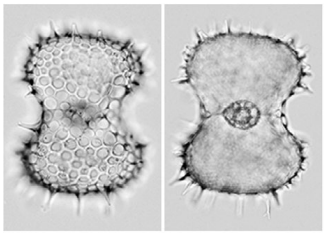
Type



50 µm

Panartus pluteus
Haeckel, 1887: 382, pl. 40, fig. 2

Support



50 µm

Panartus pluteus Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

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S - LINEAGE I (E1) PANARTIDAE

GENUS ***Panartidium***
Haeckel, 1887: 385

SUBGENUS ***Panicium* (*Panartidium*)**

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: *Panicium coronatum* Haeckel, 1887 and **Panicium scoparium* Haeckel, 1887.

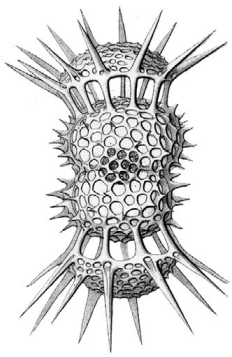
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

SYN.
FREQUENT

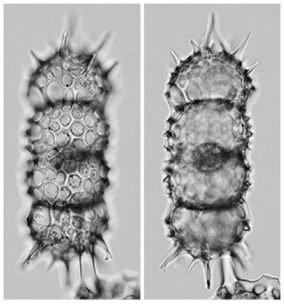
Type



50 µm

Panicium coronatum
Haeckel, 1887: 386, pl. 40, fig. 4

Support



50 µm

Panicium coronatum Haeckel
Paratypic material (Challenger Station 265), Suzuki's collection

S - LINEAGE I (E1) PANARTIDAE

GENUS ***Peripanartus***
Haeckel, 1887: 382

NOMINOTYPE ***Peripanartus (Peripanartus)***

Remarks: See comments under *PERIPANARTULA*.

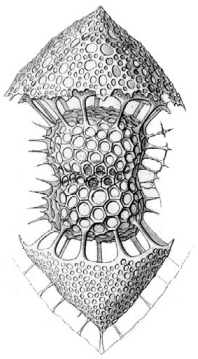
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

SYN.
VERY RARE

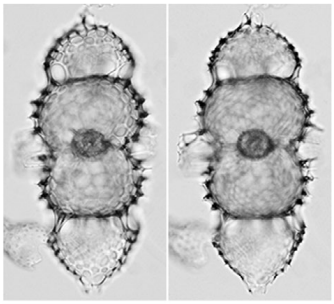
Type



50 µm

Peripanartus amphiconus
Haeckel, 1887: 383, pl. 40, fig. 5

Support



50 µm

Peripanartus amphiconus Haeckel
Paratypic material (Challenger Station 224), Suzuki's collection

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S - LINEAGE I (E1) PANARTIDAE

GENUS ***Peripanartula***
Haeckel, 1887: 382

SUBGENUS ***Peripanartus (Peripanartula)***

Remarks: Illustration available only for the type species (just a single report after the first illustration).

Original series: *Peripanartus amphiconus* Haeckel, 1887; **Peripanartus laevigatus* Haeckel, 1887 and **Peripanartus palliatus* Haeckel, 1887.

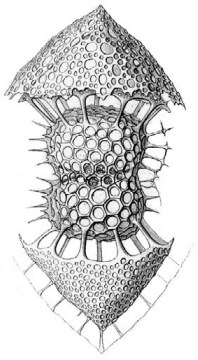
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PERIPANARTUS***

SYN. (obj.)
VERY RARE

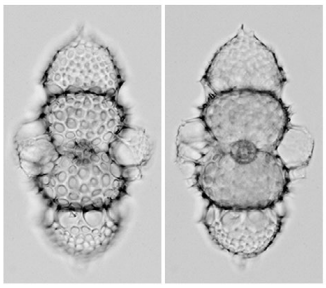
Type



50 µm

Peripanartus amphiconus
Haeckel, 1887: 383, pl. 40, fig. 5

Support



100 µm

Peripanartus amphiconus Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

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S - LINEAGE I (E1) PANARTIDAE

GENUS ***Peripanartium***
Haeckel, 1887: 384

SUBGENUS ***Peripanartus (Peripanartium)***

Remarks: Only two species originally included at the time of the generic definition (both illustrated, but the type species figured just once after the first illustration).

Original series: *Peripanartus atractus* Haeckel, 1887 and *Peripanartus cylindrus* Haeckel, 1887.

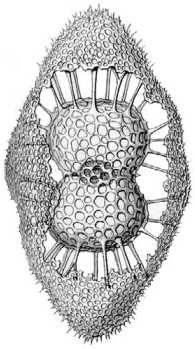
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

SYN.
VERY RARE

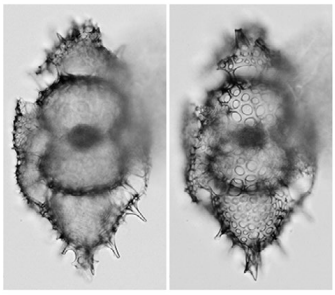
Type



50 µm

Peripanartus atractus
Haeckel, 1887: 384, pl. 40, fig. 7

Support



100 µm

Peripanartus atractus Haeckel
Paratypic material (Challenger Station 271), Suzuki's collection

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S - LINEAGE I (E1) PANARTIDAE

GENUS ***Peripanicula***
Haeckel, 1887: 387

SUBGENUS ***Peripanicium (Peripanicula)***

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: *Peripanicium amphicorona* Haeckel, 1887 and **Peripanicium coronarium* Haeckel, 1887.

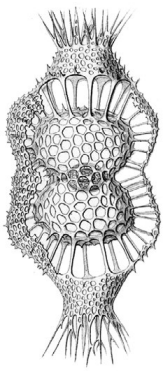
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIDYMOCYRTIS***

SYN.
UNIQUE

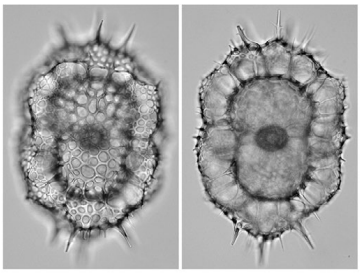
Type



50 µm

Peripanicium amphicorona
Haeckel, 1887: 387, pl. 40, fig. 8

Support



50 µm

Peripanicium amphicorona Haeckel
Zhang's collection (South China Sea)

S - LINEAGE I (E1) ? PANARTIDAE

GENUS **Cyphonium**
Haeckel, 1887: 362

NOMINOTYPE ***Cyphonium* (*Cyphonium*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Cyphonium coscinoides* Haeckel, 1887; **Cyphonium diattus* Haeckel, 1887; **Cyphonium ethmarium* Haeckel, 1887; **Cyphonium mammarium* Haeckel, 1887; **Cyphonium trinacrium* Haeckel, 1887 and *Cyphonium virgineum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 117)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

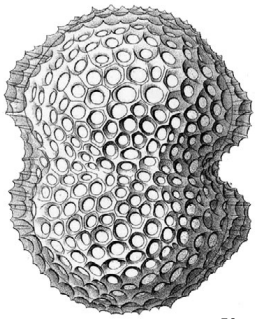
SEE **? *DIDYMOCYRTIS***

N.D. Type

UNFIGURED SPECIES

Cyphonium coscinoides
Haeckel, 1887: 363, unfigured

Support



50 µm

Cyphonium virgineum
Haeckel, 1887: 363, pl. 39, fig. 12

S - LINEAGE I (E1) ? PANARTIDAE

GENUS **Ommatocyrtis**
Haeckel, 1887: 364

SUBGENUS ***Cyphonium* (*Ommatocyrtis*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Cyphonium cribellum* Haeckel, 1887; **Cyphonium facettarium* Haeckel, 1887; **Cyphonium hexagonium* Haeckel, 1887; *Haliomma didymocyrtis* Haeckel, 1861a and *Ommatospyris profunda* Ehrenberg, 1873a.

FIXATION SUBSEQUENT DESIGNATION (Riedel 1971: 653)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

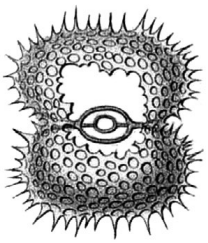
SEE **? *DIDYMOCYRTIS***

N.D. Type

UNFIGURED SPECIES

Cyphonium hexagonium
Haeckel, 1887: 364, unfigured

Support



25 µm

Cyphonium cribellum
Haeckel, 1887: 365, pl. 39, fig. 11

S - LINEAGE I (E1) ? PANARTIDAE

GENUS **Ommatospyris**
Ehrenberg, 1861b: 832

SUBGENUS ***Cyphonium* (*Ommatospyris*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Ommatospyris apicata* Ehrenberg, 1873a; *Ommatospyris laevis* Ehrenberg, 1873a; *Ommatospyris penicillata* Ehrenberg, 1873a and *Ommatospyris profunda* Ehrenberg, 1873a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D75)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

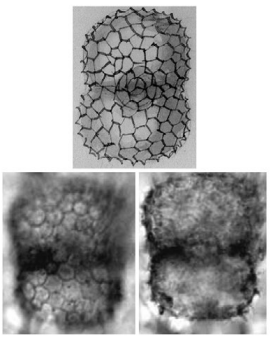
SEE **? *DIDYMOCYRTIS***

N.D. Type

UNFIGURED SPECIES

Ommatospyris apicata
Ehrenberg, 1861b: 823 (n.n.); Ehrenberg, 1873a: 317, unfigured

Type



50 µm

Ommatospyris profunda Ehrenberg
Suzuki *et al.* 2009a: pl. 52, figs 7a-c [lectotype herein]

S - LINEAGE I (E1) ? PANARTIDAE

GENUS **Zygartus**
Haeckel, 1882: 462

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: *Zygartus chrysalis* Haeckel, 1887 and **Zygartus doliolum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *DIDYMOCYRTIS***

N.D. Type

UNFIGURED SPECIES

Zygartus doliolum
Haeckel, 1887: 401, unfigured

Support



100 µm

Zygartus chrysalis
Haeckel, 1887: 401, pl. 40, fig. 13

	Type	Support
S - Lineage I (E1) ? PANARTIDAE GENUS ***Artiscus*** Haeckel, 1882: 462 NOMINOTYPE ***Artiscus* (*Artiscus*)** **Remarks**: See comments under *ARTISCIUM*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Artiscus paniscus* Haeckel, 1887: 355, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Artiscium*** Haeckel, 1887: 355 SUBGENUS ***Artiscus* (*Artiscium*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Artiscus facetus* Haeckel, 1887; **Artiscus panarius* Haeckel, 1887; **Artiscus paniculus* Haeckel, 1887 and **Artiscus paniscus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***ARTISCUS***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Artiscus paniscus* Haeckel, 1887: 355, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Cyphinidium*** Haeckel, 1887: 371 NOMINOTYPE ***Cyphinidium* (*Cyphinidium*)** **Remarks**: See comments under *CYPHINIDOMA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D75) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Cyphinidium amphistylium* Haeckel, 1887: 371, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Cyphinidoma*** Haeckel, 1887: 371 SUBGENUS ***Cyphinidium* (*Cyphinidoma*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Cyphinidium amphistylium* Haeckel, 1887 and **Ommatospyris apicata* Ehrenberg, 1873a. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D75) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***CYPHINIDIUM***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Cyphinidium amphistylium* Haeckel, 1887: 371, unfigured	NO IMAGE PUBLISHED no image available

	Type	Support
S - Lineage I (E1) ? PANARTIDAE GENUS ***Cyphinidura*** Haeckel, 1887: 372 SUBGENUS ***Cyphinidium* (*Cyphinidura*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Cyphinidium coronatum* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Cyphinidium coronatum* Haeckel, 1887: 372, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Cyphinus*** Haeckel, 1882: 462 NOMINOTYPE ***Cyphinus* (*Cyphinus*)** **Remarks**: See comments under *CYPHINOMA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D75) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Cyphinus amphacanthus* Haeckel, 1887: 369, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Cyphinoma*** Haeckel, 1887: 369 SUBGENUS ***Cyphinus* (*Cyphinoma*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Cyphinus amphacanthus* Haeckel, 1887 and **Cyphinus dixiphus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D75) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***CYPHINUS***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Cyphinus amphacanthus* Haeckel, 1887: 369, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Ommatocorona*** Haeckel, 1887: 394 SUBGENUS ***Ommatocampe* (*Ommatocorona*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Ommatocampe chaetopodum* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Ommatocampe chaetopodum* Haeckel, 1887: 395, unfigured	NO IMAGE PUBLISHED no image available

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Panarium***
Haeckel, 1882: 462

NOMINOTYPE ***Panarium* (*Panarium*)**

Remarks: See comments under *PANARELIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Panarium facettarium
Haeckel, 1887: 388, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Panarelium***
Haeckel, 1887: 388

SUBGENUS ***Panarium* (*Panarelium*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Panarium facettarium* Haeckel, 1887 and **Panarium pipettarium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***PANARIUM***

SYN. (obj.); N.D. Type

UNFIGURED SPECIES

Panarium facettarium
Haeckel, 1887: 388, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) PANARTIDAE
ASSIGNED HEREIN

GENUS ***Spongolivella***
Dumitrica, 2021: 2

Diagnosis: A double-layered medullary shell in the middle of an 8-shaped figure cortical shell which is covered by a relatively thick extracortical spongy framework. Wall of cortical shell with pores variable in shape and size. No polar caps but with polar ends slightly open.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. It differs from the genus *DIDYMOCYRTIS*, which is probably its direct forerunner, by having a cortical shell with irregular pores and no polar caps.

Original series: *Spongoliva ellipsoides* Popofsky, 1912.

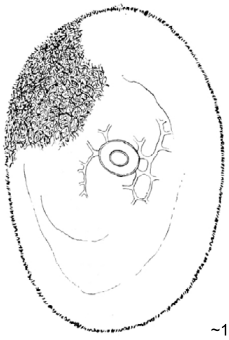
FIXATION MONOTYPY

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

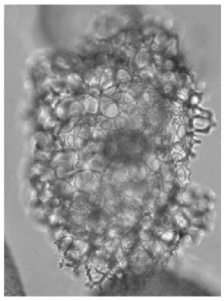
VALID
UNIQUE

Support



Spongoliva ellipsoides
Popofsky, 1912: 117, text-fig. 28

Support



Spongoliva?ellipsoides Popofsky
Matsuzaki *et al.* 2015: 18, fig. 6.19

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Spongoliva***
Haeckel, 1887: 351

NOMINOTYPE ***Spongoliva* (*Spongoliva*)**

Remarks: See comments under *SPONGOLIVETTA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

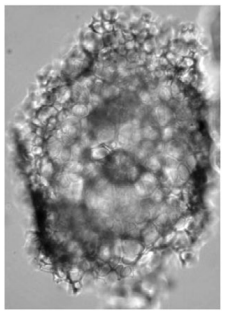
SEE ***SPONGOLIVELLA***

N.D. Type

UNFIGURED SPECIES

Spongoliva cerasina
Haeckel, 1887: 352, unfigured

Support



Spongoliva?ellipsoides Popofsky
Matsuzaki *et al.* 2015: 18, fig. 6.20

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Spongolivetta***
Haeckel, 1887: 351

SUBGENUS ***Spongoliva (Spongolivetta)***

Remarks: Type species never figured; however, Popofsky (1912) reinterpreted the genus by describing and illustrating the new species *Spongoliva ellipsoides* (p. 117, text-fig. 28); a better illustration for this genus was reported by Hollande & Enjumet (1960).

Original series: **Spongoliva amygdalina* Haeckel, 1887; **Spongoliva cerasina* Haeckel, 1887; **Spongoliva persicina* Haeckel, 1887 and **Spongoliva prunulina* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***SPONGOLIVA***

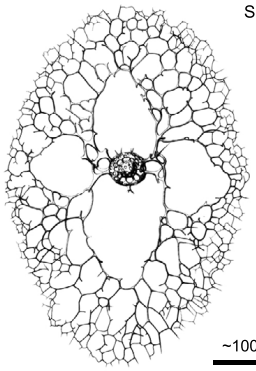
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Spongoliva cerasina
Haeckel, 1887: 352, unfigured

Support



Spongoliva sp.
Hollande & Enjumet, 1960: 18, pl. 63, fig. 1

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Spongolivina***
Haeckel, 1887: 352

SUBGENUS ***Spongoliva (Spongolivina)***

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Spongoliva daturina* Haeckel, 1887 and **Spongoliva opuntina* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Spongoliva opuntina
Haeckel, 1887: 352, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Cladospyris***
Ehrenberg, 1846: 385

SUBGENUS ***Ceratospyris (Cladospyris)***

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Harting (1863). Invalid subsequent designation of *Ceratospyris ramosa* Ehrenberg, 1874b by Campbell (1954: D114) since Harting's species (1863) has the priority.

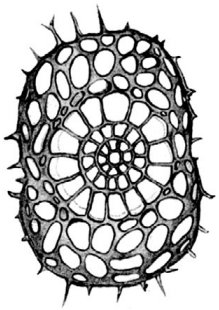
Original series: *Cladospyris moluccanus* Harting, 1863.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

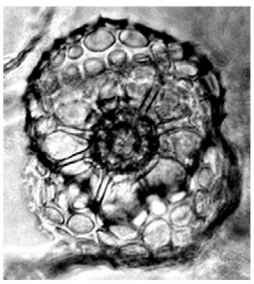
N.D.
UNIQUE

Type



Cladospyris moluccanus
Harting, 1863: 16, pl. 3, fig. 48

Support



Cladospyris moluccanus Harting
Aita's collection (plankton, East China Sea)

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Cromyocarpus***
Haeckel, 1887: 318

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Cromyocarpus quadrifarius* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

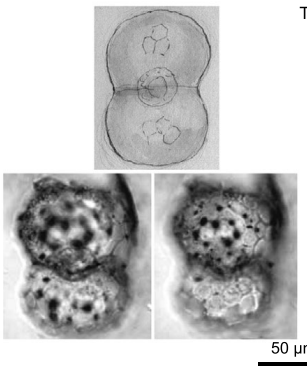
Cromyocarpus quadrifarius
Haeckel, 1887: 318, unfigured

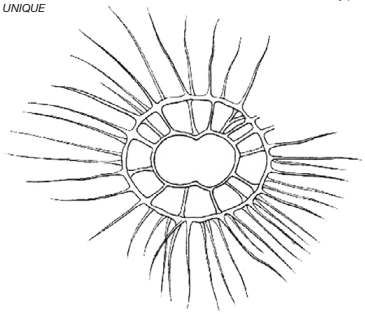
Support

NO IMAGE PUBLISHED

no image available

	Type	Support
S - Lineage I (E1) ? PANARTIDAE GENUS ***Cromyodruppa*** Haeckel, 1887: 317 NOMINOTYPE ***Cromyodruppa* (*Cromyodruppa*)** **Remarks**: See comments under *CROMYODRUPPIUM*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D70) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Cromyodruppa cepa* Haeckel, 1887: 317, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Cromyodruppium*** Haeckel, 1887: 317 SUBGENUS ***Cromyodruppa* (*Cromyodruppium*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Cromyodruppa cepa* Haeckel, 1887. FIXATION MONOTYPY STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***CROMYODRUPPA***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Cromyodruppa cepa* Haeckel, 1887: 317, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Caryodruppula*** Haeckel, 1887: 318 SUBGENUS ***Cromyodruppa* (*Caryodruppula*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Cromyodruppa mango* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Cromyodruppa mango* Haeckel, 1887: 318, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Cypassis*** Haeckel, 1887: 366 NOMINOTYPE ***Cypassis* (*Cypassis*)** **Remarks**: See comments under *DIDYMOSPYRIS*. FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 117) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Cypassis palliata* Haeckel, 1887: 366, unfigured	NO IMAGE PUBLISHED no image available

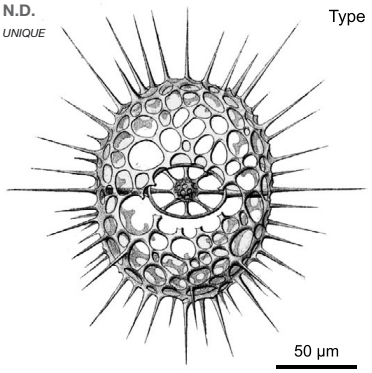
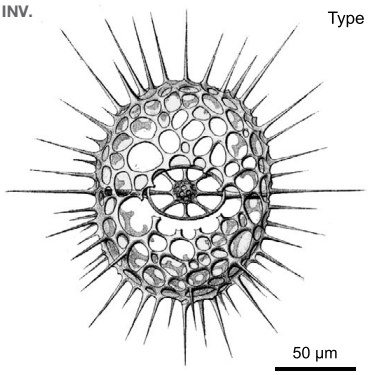
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Didymospyris*** Haeckel, 1887: 366 SUBGENUS ***Cypassis* (*Didymospyris*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Cypassis eucolpos* Haeckel, 1887 and **Cypassis palliata* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 117) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***CYPASSIS***	**SYN. (obj.); N.D.** Type UNFIGURED SPECIES *Cypassis palliata* Haeckel, 1887: 366, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Cyphanta*** Haeckel, 1887: 360 NOMINOTYPE ***Cyphanta* (*Cyphanta*)** **Remarks**: Homonym of *CYPHANTA* Walker, 1865: 855 (Lepidoptera); see *CYPHANTELLA nomen novum*. **Original series**: *Cyphanta arachnoides* Haeckel, 1887; *Cyphanta circopora* Haeckel, 1887; *Cyphanta colpodes* Haeckel, 1887 and *Ommatospyris laevis* Ehrenberg, 1873a. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74) STATUS HOMONYM, NOMEN DUBIUM SEE ***CYPHANTELLA NOMEN NOVUM***	**HOM.; N.D.** Type UNFIGURED SPECIES *Cyphanta colpodes* Haeckel, 1887: 361, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Cyphantella*** *NOMEN NOVUM* PRO *CYPHANTA* Haeckel, 1887: 360 SUBGENUS ***Cyphanta* (*Cyphantella*)** **Remarks**: Type species never figured. The support image is the closest species among those originally included in this genus. **Original series**: **Cyphanta arachnoides* Haeckel, 1887; **Cyphanta circopora* Haeckel, 1887; **Cyphanta colpodes* Haeckel, 1887 and *Ommatospyris laevis* Ehrenberg, 1873a. FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1954: D74) STATUS *NOMEN NOVUM*, NOMEN DUBIUM designated herein; name-bearing type non-existent	**NOM. NOV.; N.D.** Type UNFIGURED SPECIES *Cyphanta colpodes* Haeckel, 1887: 361, unfigured	Type  *Ommatospyris laevis* Ehrenberg Suzuki *et al.* 2009a: pl. 52, figs 4a-c [lectotype herein]
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Haeckelocyphanta*** *NOMEN NOVUM* PRO *CYPHANTA* Özdikmen, 2009: 245 **Remarks**: Nomen novum for *CYPHANTA*, but Loeblich & Tappan (1961: 223) already validate the use of *CYPHANTELLA* previously. No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Cyphanta arachnoides* Haeckel, 1887; **Cyphanta circopora* Haeckel, 1887; **Cyphanta colpodes* Haeckel, 1887 and **Ommatospyris laevis* Ehrenberg, 1873a. FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1954: D74) STATUS *NOMEN NOVUM*, JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***CYPHANTELLA***	**NOM. NOV.; SYN. (obj.); N.D.** Type UNFIGURED SPECIES *Cyphanta colpodes* Haeckel, 1887: 361, unfigured	Support NO IMAGE PUBLISHED no image available

	Type	Support
S - Lineage I (E1) ? PANARTIDAE GENUS ***Cyphantissa*** Haeckel, 1887: 362 SUBGENUS ***Cyphanta* (*Cyphantissa*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Cyphanta hispida* Haeckel, 1887 and **Cyphanta hystrix* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Cyphanta hispida* Haeckel, 1887: 362, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Desmocampe*** Haeckel, 1887: 396 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Desmocampe aphrodite* Haeckel, 1887; **Desmocampe atractus* Haeckel, 1887; **Desmocampe catenula* Haeckel, 1887 and **Desmocampe taenioides* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Desmocampe catenula* Haeckel, 1887: 397, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Diplellipsis*** Popofsky, 1908: 220 **Remarks**: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. **Original series**: *Diplellipsis lapidosa* Popofsky, 1908. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type incomplete	**N.D.** *UNIQUE*  *Diplellipsis lapidosa* Popofsky, 1908: 221, pl. 24, fig. 5	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Druppocarpus*** Haeckel, 1887: 311 NOMINOTYPE ***Druppocarpus* (*Druppocarpus*)** **Remarks**: See comments under *DRUPPOCARPETTA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D70) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Druppocarpus ananassa* Haeckel, 1887: 311, unfigured	NO IMAGE PUBLISHED no image available

S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Druppocarpetta*** Haeckel, 1887: 311 SUBGENUS ***Druppocarpus* (*Druppocarpetta*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Druppocarpus ananassa* Haeckel, 1887 and **Druppocarpus castanea* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D70) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***DRUPPOCARPUS***	**SYN. (obj.); N.D.** Type UNFIGURED SPECIES *Druppocarpus ananassa* Haeckel, 1887: 311, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Druppocarpissa*** Haeckel, 1887: 311 SUBGENUS ***Druppocarpus* (*Druppocarpissa*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Druppocarpus borassus* Haeckel, 1887; **Druppocarpus chamaerops* Haeckel, 1887 and **Druppocarpus corypha* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D71) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Druppocarpus chamaerops* Haeckel, 1887: 312, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Ommatartus*** Haeckel, 1882: 462 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Ommatartus amphicanna* Haeckel, 1887; **Ommatartus amphisiphon* Haeckel, 1887 and **Ommatartus amphobolus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Ommatartus amphicanna* Haeckel, 1887: 396, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Ommatacantha*** Haeckel, 1887: 395 SUBGENUS ***Ommatocampe* (*Ommatacantha*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Ommatocampe amphilonche* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Ommatocampe amphilonche* Haeckel, 1887: 395, unfigured	Support NO IMAGE PUBLISHED no image available

	Type	Support
S - Lineage I (E1) ? PANARTIDAE GENUS ***Ommatocoryne*** Ehrenberg, 1861a: 768 **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Ommatocoryne profundissima* Ehrenberg, 1861a. FIXATION MONOTYPY STATUS NOMEN NUDUM designated herein; name-bearing type non-existent	**N.N.** UNFIGURED SPECIES *Ommatocoryne profundissima* Ehrenberg, 1861a: 768, unfigured (n.n.)	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Panartoma*** Haeckel, 1887: 380 SUBGENUS ***Panartus* (*Panartoma*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Panartus quadriceps* Haeckel, 1887; **Panartus quadrigeminus* Haeckel, 1887 and **Panartus quadrijugus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Panartus quadriceps* Haeckel, 1887: 380, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Panicium*** Haeckel, 1887: 384 NOMINOTYPE ***Panicium* (*Panicium*)** **Remarks**: See comments under *PANICIDIUM*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Panicium amphacanthum* Haeckel, 1887: 385, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage I (E1) ? PANARTIDAE GENUS ***Panicidium*** Haeckel, 1887: 385 SUBGENUS ***Panicium* (*Panicidium*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Panicium amphacanthum* Haeckel, 1887 and **Panicium amphistylus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***PANICIUM***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Panicium amphacanthum* Haeckel, 1887: 385, unfigured	NO IMAGE PUBLISHED no image available

	Type	Support
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Peripanarium*** Haeckel, 1887: 390 **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Peripanarium cenoconicum* Haeckel, 1887 and **Peripanarium cenocylindricum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Peripanarium cenoconicum* Haeckel, 1887: 390, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Peripanicium*** Haeckel, 1887: 386 NOMINOTYPE ***Peripanicium* (*Peripanicium*)** **Remarks**: See comments under *PERIPANICEA*. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Peripanicium amphixiphus* Haeckel, 1887: 386, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Peripanicea*** Haeckel, 1887: 386 SUBGENUS ***Peripanicium* (*Peripanicea*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Peripanicium amphixiphus* Haeckel, 1887. FIXATION MONOTYPY STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***PERIPANICIUM***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Peripanicium amphixiphus* Haeckel, 1887: 386, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Phacopyle*** Dreyer, 1889: 28 **Remarks**: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. **Original series**: *Phacopyle stomatopora* Dreyer, 1889. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type juvenile	**N.D.** *UNIQUE*  25 µm *Phacopyle stomatopora* Dreyer, 1889: 28, pl. 1, fig. 10	NO IMAGE PUBLISHED no image available

S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Prunocarpus*** Haeckel, 1887: 315 NOMINOTYPE ***Prunocarpus* (*Prunocarpus*)** **Remarks**: See comments under *PRUNOCARPETTA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Prunocarpus datura* Haeckel, 1887: 316, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Prunocarpetta*** Haeckel, 1887: 315 SUBGENUS ***Prunocarpus* (*Prunocarpetta*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Prunocarpus datura* Haeckel, 1887 and **Prunocarpus sparganium* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***PRUNOCARPUS***	**SYN. (obj.); N.D.** Type UNFIGURED SPECIES *Prunocarpus datura* Haeckel, 1887: 316, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Prunocarpilla*** Haeckel, 1887: 316 SUBGENUS ***Prunocarpus* (*Prunocarpilla*)** **Remarks**: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition. **Original series**: *Prunocarpus artocarpium* Haeckel, 1887 and **Prunocarpus melocactus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72) STATUS NOMEN DUBIUM designated herein; name-bearing type not diagnostic	**N.D.** Type *UNIQUE*  *Prunocarpus artocarpium* Haeckel, 1887: 316, pl. 39, fig. 5	Support NO IMAGE PUBLISHED no image available
S - LINEAGE I (E1) ? PANARTIDAE GENUS ***Artocarpium*** PREMATURE NAME Haeckel, 1887: figure description for pl. 39, fig. 5 **Remarks**: A premature name (vel *Artocarpium indicum*) used by Haeckel as alternative of the name *Prunocarpus artocarpium* Haeckel. Genus described as monospecific at the time of the generic definition. **Original series**: *Artocarpium indicum* Haeckel, 1887. FIXATION MONOTYPY; ICZN, ART. 67.6 STATUS INVALID NAME designated herein SEE ***PRUNOCARPILLA***	**INV.** Type  *Artocarpium indicum* Haeckel, 1887: 313, pl. 39, fig. 5	Support NO IMAGE PUBLISHED no image available

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Prunulissa***
Haeckel, 1887: 314

SUBGENUS ***Prunulum* (*Prunulissa*)**

Remarks: Illustration available only for the type species (rarely reported).

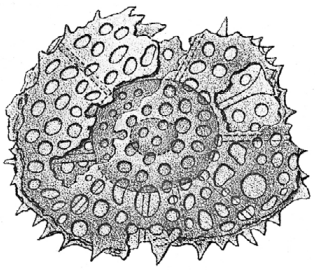
Original series: *Actinomma fenestratum* Stöhr, 1880; **Prunulum persicum* Haeckel, 1887 and **Prunulum pyrenium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
RARE

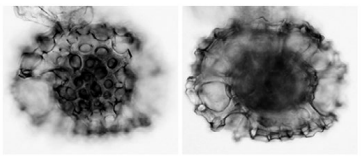
Type



~ 25 µm

Actinomma fenestratum
Stöhr, 1880: 94, pl. 3, fig. 2

Support



50 µm

Actinomma fenestratum Stöhr
Suzuki's collection (Middle Miocene, Akita, Japan)

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Stylartus***
Haeckel, 1882: 462

NOMINOTYPE ***Stylartus* (*Stylartus*)**

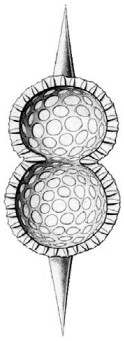
Remarks: See comments under *STYLARTELLA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



100 µm

Stylartus bipolaris
Haeckel, 1887: 357, pl. 48, fig. 5

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Stylartella***
Haeckel, 1887: 357

SUBGENUS ***Stylartus* (*Stylartella*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Stylartus bicuspis* Haeckel, 1887 and *Stylartus bipolaris* Haeckel, 1887.

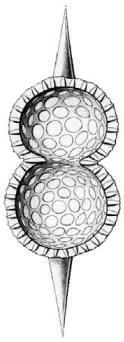
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***STYLARTUS***

SYN. (obj.); N.D.
UNIQUE

Type



100 µm

Stylartus bipolaris
Haeckel, 1887: 357, pl. 48, fig. 5

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) ? PANARTIDAE

GENUS ***Stylartura***
Haeckel, 1887: 357

SUBGENUS ***Stylartus* (*Stylartura*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Stylartus palatus* Haeckel, 1887 and **Stylartus penicillus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Stylartus palatus
Haeckel, 1887: 358, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage I (E1) ? PANARTIDAE

GENUS ***Zygocampe***
Haeckel, 1887: 399

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Zygocampe chrysalidium* Haeckel, 1887; **Zygocampe corasium* Haeckel, 1887 and **Zygocampe pupula* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Zygocampe chrysalidium
Haeckel, 1887: 400, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage I (E1) PHACODISCIDAE
ASSIGNED IN Campbell 1954: D78

GENUS ***Periphaena***
Ehrenberg, 1874b: 246

Diagnosis: A large, single, lens-shaped, hollow cortical shell with a circular outline, a phacodiscid center, a poorly to well-developed equatorial zone of keel-type, but no equatorial spines.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

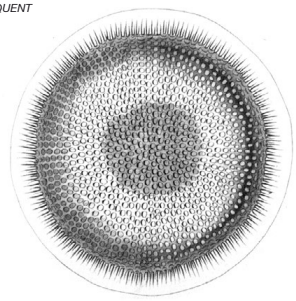
Original series: *Periphaena decora* Ehrenberg, 1874b.

FIXATION MONOTYPY

STATUS **VALID**

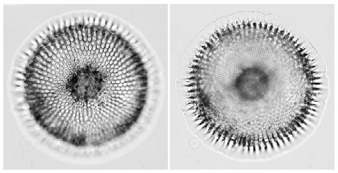
AGE ***Early Eocene–early Middle Miocene***

VALID Type
FREQUENT



Periphaena decora
Ehrenberg, 1874b: 246 (unfigured); Ehrenberg, 1876: 80, pl. 28, fig. 6

Support



Periphaena decora Ehrenberg
Challenger Station 265, Suzuki's collection

S - Lineage I (E1) PHACODISCIDAE

GENUS ***Astrophacomma***
Haeckel, 1887: 454

SUBGENUS ***Astrophacus* (*Astrophacomma*)**

Remarks: Only the type species clearly belongs to this genus (figured just once after the first illustration); just two species originally included at the time of the generic definition. Haeckel includes only questionably *Chilomma saturnus* Ehrenberg, 1862b in the type series; otherwise the genus should be considered as monospecific.

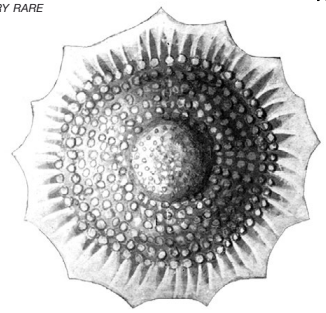
Original series: *Astrophacus cingillum* Haeckel, 1887 and *Chilomma saturnus* Ehrenberg, 1862b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82)

STATUS JUNIOR SYNONYM
synonymized by Sanfilippo & Riedel 1973: 522

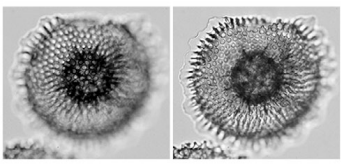
SEE ***PERIPHAENA***

SYN. Type
VERY RARE



Astrophacus cingillum
Haeckel, 1887: 454, unfigured [specimen of Bury 1862: pl. 8, fig. 3]

Support



Astrophacus cingillum Haeckel
Paratypic material (Challenger Station 265), Suzuki's collection

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S - Lineage I (E1) PHACODISCIDAE

GENUS ***Heliodiscomma***
Haeckel, 1887: 448

SUBGENUS ***Heliodiscus* (*Heliodiscomma*)**

Remarks: Only the type species clearly belongs to this genus; rarely reported.

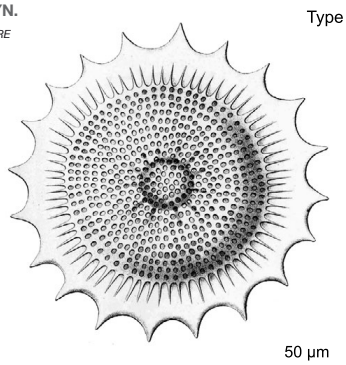
Original series: *Haliomma humboldti* Ehrenberg, 1847; *Haliomma umbonatum* Ehrenberg, 1874b; *Heliodiscus cingillum* Haeckel, 1887; *Heliodiscus marginatus* Haeckel, 1887 and **Heliodiscus sulcatus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82)

STATUS JUNIOR SYNONYM
synonymized by Sanfilippo & Riedel 1973: 522

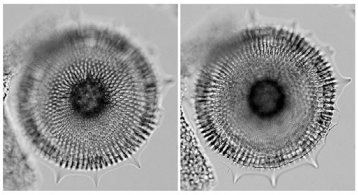
SEE ***PERIPHAENA***

SYN. Type
RARE



Heliodiscus cingillum
Haeckel, 1887: 448, pl. 33, fig. 7

Support



Heliodiscus cingillum Haeckel
Paratypic material (Challenger Station 265), Suzuki's collection

S - LINEAGE I (E1) PHACODISCIDAE

GENUS ***Perizona***
Haeckel, 1882: 457

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Perizona pterygota* Haeckel, 1887 and *Perizona scutella* Haeckel, 1887.

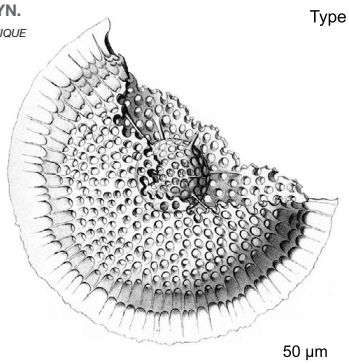
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1972: 19

SEE ***PERIPHAENA***

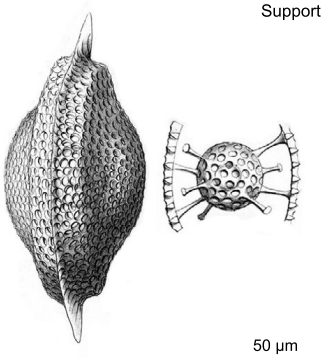
SYN.
UNIQUE

Type



Perizona scutella
Haeckel, 1887: 427, pl. 32, fig. 7

Support



Perizona pterygota
Haeckel, 1887: 427, pl. 32, figs 8, 8a

S - LINEAGE I (E1) PHACODISCIDAE
ASSIGNED IN Campbell 1954: D78

GENUS ***Phacodiscus***
Haeckel, 1882: 457

NOMINOTYPE ***Phacodiscus (Phacodiscus)***

Diagnosis: A large, single, lens-shaped, hollow cortical shell with a circular outline, a phacodiscid center; no equatorial zone of keel-type or equatorial spines.

Remarks: See comments under *PHACODISCINUS*.

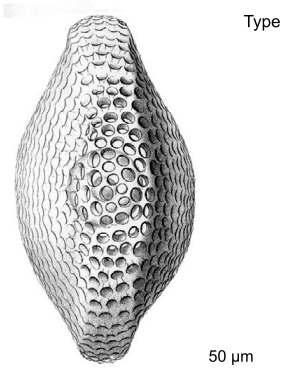
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LIVING***

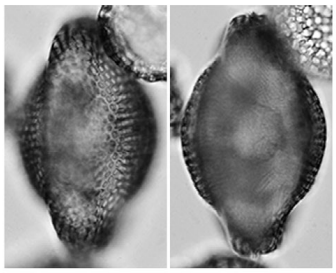
VALID
VERY RARE

Type



Phacodiscus rotula
Haeckel, 1887: 424, pl. 35, fig. 7

Support



Phacodiscus rotula Haeckel
Paratypic material (Challenger Station 268), Suzuki's collection

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S - LINEAGE I (E1) PHACODISCIDAE

GENUS ***Phacodiscinus***
Haeckel, 1887: 424

SUBGENUS ***Phacodiscus (Phacodiscinus)***

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: **Phacodiscus grandis* Haeckel, 1887; *Phacodiscus lentiformis* Haeckel, 1887 and *Phacodiscus rotula* Haeckel, 1887.

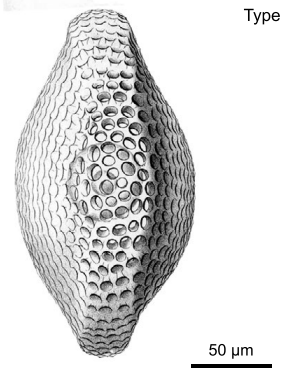
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PHACODISCUS***

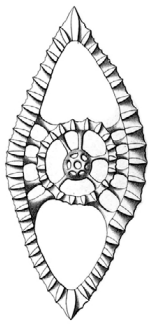
SYN. (obj.)
VERY RARE

Type



Phacodiscus rotula
Haeckel, 1887: 424, pl. 35, fig. 7

Support



Phacodiscus lentiformis
Haeckel, 1887: 425, pl. 35, fig. 8

S - LINEAGE I (E1) PHACODISCIDAE

GENUS ***Phacodisculus***
Haeckel, 1887: 425

SUBGENUS ***Phacodiscus (Phacodisculus)***

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: *Phacodiscus clypeus* Haeckel, 1887 and **Phacodiscus echiniscus* Haeckel, 1887.

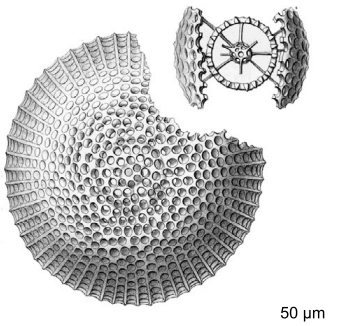
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PHACODISCUS***

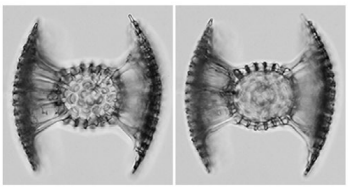
SYN.
UNIQUE

Type



Phacodiscus clypeus
Haeckel, 1887: 425, pl. 35, figs 6, 9

Support



Phacodiscus clypeus Haeckel
Topotypic material (Challenger Station 265), Suzuki's collection

S - LINEAGE I (E1) PHACODISCIDAE

GENUS ***Astrophacilla***
Haeckel, 1887: 454

SUBGENUS ***Astrophacus* (*Astrophacilla*)**

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1887).

Original series: *Astrophacus phacodiscus* Haeckel, 1887.

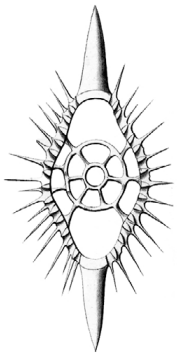
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PHACODISCUS***

SYN.
UNIQUE

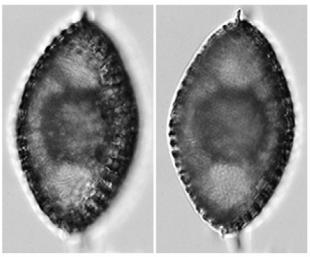
Type



50 µm

Astrophacus phacodiscus
Haeckel, 1887: 454, pl. 32, fig. 3

Support



50 µm

Astrophacus phacodiscus Haeckel
Paratypic material (Challenger Station 270), Suzuki's collection

S - LINEAGE I (E1) PHACODISCIDAE

GENUS ***Paracenodiscus***
Krasheninnikov, 1960: 283

Remarks: Type species only illustrated by Krasheninnikov (1960).

Original series: *Paracenodiscus circumtextus* Krasheninnikov, 1960; *Paracenodiscus familiaris* Krasheninnikov, 1960 and *Paracenodiscus zonatus* Krasheninnikov, 1960.

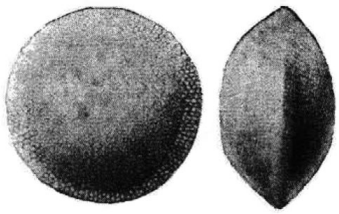
FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PHACODISCUS***

SYN.
UNIQUE

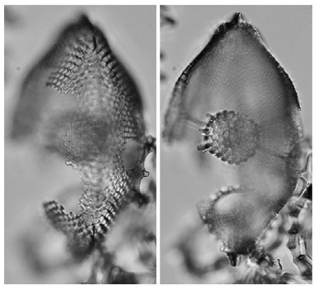
Type



100 µm

Paracenodiscus familiaris
Krasheninnikov, 1960: 284, pl. 2, figs 4a, 4b

Support



100 µm

Paracenodiscus familiaris Haeckel
Challenger Station 272, Suzuki's collection

S - LINEAGE I (E1) PHACODISCIDAE

GENUS ***Prunulum***
Haeckel, 1887: 312

NOMINOTYPE ***Prunulum* (*Prunulum*)**

Remarks: See comments under *PRUNULETTA*.

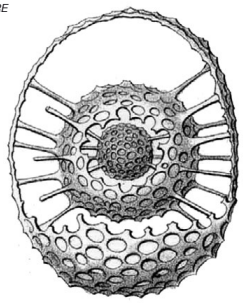
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PHACODISCUS***

SYN.
VERY RARE

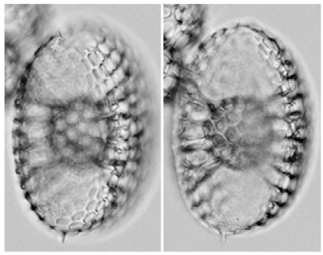
Type



50 µm

Prunulum coccymelium
Haeckel, 1887: 313, pl. 39, fig. 4

Support



50 µm

Prunulum coccymelium Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

S - LINEAGE I (E1) PHACODISCIDAE

GENUS ***Prunuletta***
Haeckel, 1887: 313

SUBGENUS ***Prunulum* (*Prunuletta*)**

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: *Haliomma crenatum* Ehrenberg, 1839a; *Haliomma triplex* Ehrenberg, 1854b; **Prunulum amygdalum* Haeckel, 1887; **Prunulum cerasum* Haeckel, 1887; *Prunulum coccymelium* Haeckel, 1887 and **Prunulum frugulum* Haeckel, 1887.

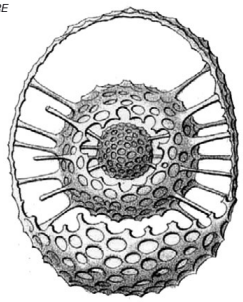
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PRUNULUM***

SYN. (obj.)
VERY RARE

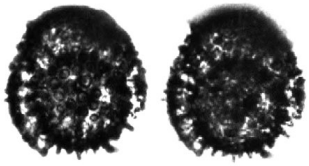
Type



50 µm

Prunulum coccymelium
Haeckel, 1887: 313, pl. 39, fig. 4

Support



50 µm

Prunulum coccymelium Haeckel
Chen *et al.* 2017: 134, pl. 35, figs 1, 2

S - LINEAGE I (E1) ? PHACODISCIDAE

GENUS ***Coccymelium*** PREMATURE NAME
Haeckel, 1887: figure description for pl. 39, fig. 4

Remarks: A premature name (vel *Coccymelium prunulum*) used by Haeckel as alternative of the name *Prunulum coccymelium* Haeckel.

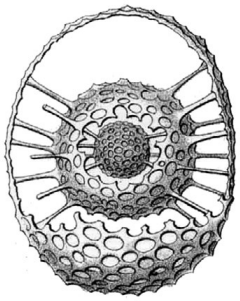
Original series: *Coccymelium prunulum* Haeckel, 1887 and *Coccymelium pandanus* Haeckel, 1887.

FIXATION ABSOLUTE TAUTONOMY, ICZN, ART. 67.6

STATUS INVALID NAME
designated herein

SEE ***PRUNULUM***

INV. Type



50 µm

Coccymelium prunulum
Haeckel, 1887: 313, pl. 39, figs 3, 4

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) PHACODISCIDAE

GENUS ***Sethodiscinus***
Haeckel, 1887: 422

SUBGENUS ***Sethodiscus* (*Sethodiscinus*)**

Remarks: Only the type species clearly belongs to this genus; rarely reported.

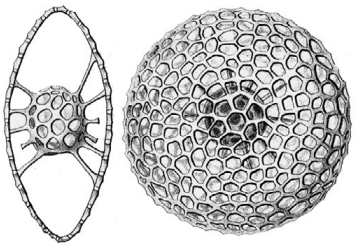
Original series: *Sethodiscus lenticula* Haeckel, 1887; *Sethodiscus macrococcus* Haeckel, 1887; **Sethodiscus macroporus* Haeckel, 1887; **Sethodiscus micrococcus* Haeckel, 1887; **Sethodiscus microporus* Haeckel, 1887 and **Sethodiscus phacoides* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PHACODISCUS***

SYN. *RARE* Type



50 µm

Sethodiscus lenticula
Haeckel, 1887: 423, pl. 33, figs 1, 2

Support



50 µm

Sethodiscus lenticula Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

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S - LINEAGE I (E1) ? PHACODISCIDAE

GENUS ***Conophacodiscus***
Gorbunov, 1979: 120

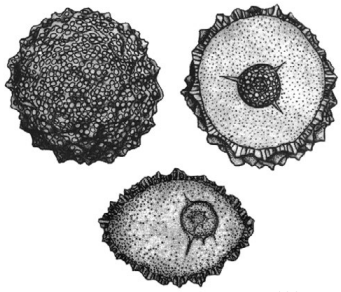
Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. Biconvex disc-shape.

Original series: *Conophacodiscus romenicus* Gorbunov, 1979.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D. *UNIQUE* Type



100 µm

Conophacodiscus romenicus
Gorbunov, 1979: 120, pl. 4, figs 2a, 2b, 2v

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E1) ? PHACODISCIDAE

GENUS ***Pentadiscus***
Moksyakova, 1965: 249

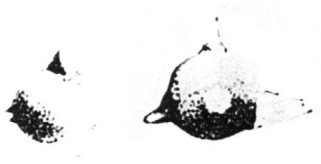
Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Moksyakova (1972). Biconvex disc-shape.

Original series: *Pentadiscus cornutus* Moksyakova, 1965.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

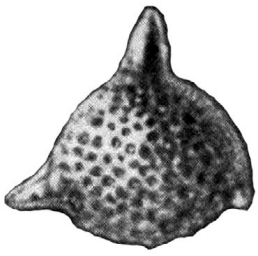
N.D. *UNIQUE* Type



100 µm

Pentadiscus cornutus
Moksyakova, 1965: 249, pl. 1, figs 6, 6a

Support



100 µm

Pentadiscus cornutus Moksyakova
Moksyakova 1972: pl. 1, fig. 4

S - LINEAGE I (E1) — ? PHACODISCIDAE

GENUS **Triadiscus**
Krasheninnikov, 1960: 290

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. Biconvex disc-shape.

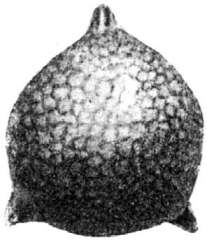
Original series: *Triadiscus caucasicus* Krasheninnikov, 1960.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



50 µm

Triadiscus caucasicus
Krasheninnikov, 1960: 290, pl. 3, figs 1a, 1b

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E2) — SPONGODISCIDAE
ASSIGNED IN Haeckel 1882: 462

GENUS **Spongaster**
Ehrenberg, 1861b: 833

NOMINOTYPE ***Spongaster* (*Spongaster*)**

Diagnosis: Shell discoidal, quadrangular, rarely pentagonal with dense concentric sponge-like tissue. Arms with bulb-like ends separated by a patagium. All skeletal tissue opaque. No primary spines.

Remarks: See comments under *SPONGASTRELLA*.

Original series: *Spongaster tetras* Ehrenberg, 1862b.

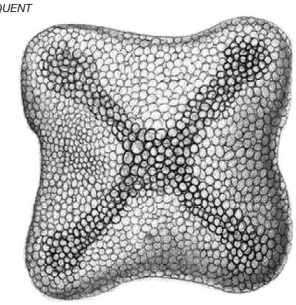
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY LATE MIOCENE–LIVING***

VALID
FREQUENT

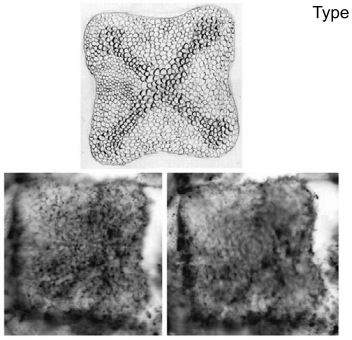
Type



50 µm

Spongaster tetras
Ehrenberg, 1861a: 769 (n.n.); Ehrenberg, 1862b: 301; Ehrenberg, 1873b: 298-299, pl. 6, fig. III-8

Type



100 µm

Spongaster tetras Ehrenberg
Suzuki *et al.* 2009a: pl. 50, figs 5a-c [lectotype herein]

S - LINEAGE I (E2) — SPONGODISCIDAE

GENUS **Spongastrella**
Haeckel, 1887: 597

SUBGENUS ***Spongaster* (*Spongastrella*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Spongaster cruciatus* Haeckel, 1887; **Spongaster pentacyclus* Haeckel, 1887; **Spongaster quadratus* Haeckel, 1887 and *Spongaster tetras* Ehrenberg, 1862b.

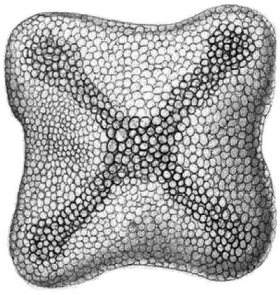
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SPONGASTER***

SYN. (obj.)
FREQUENT

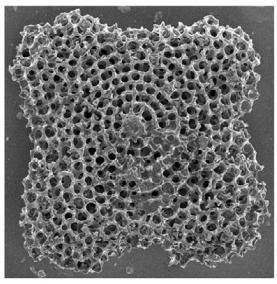
Type



50 µm

Spongaster tetras
Ehrenberg, 1861a: 769 (n.n.); Ehrenberg, 1862b: 301; Ehrenberg, 1873b: 298-299, pl. 6, fig. III-8

Support



100 µm

Spongaster tetras Ehrenberg
Challenger Station 271, Ogane's collection

S - LINEAGE I (E2) — SPONGODISCIDAE

GENUS **Histiastrella**
Haeckel, 1887: 544

SUBGENUS ***Histiastrum* (*Histiastrella*)**

Remarks: Type species only illustrated by Haeckel (1887).

Original series: **Histiastrum excisum* Haeckel, 1887; *Histiastrum quadrigatum* Haeckel, 1887 and *Histiastrum velatum* Haeckel, 1887.

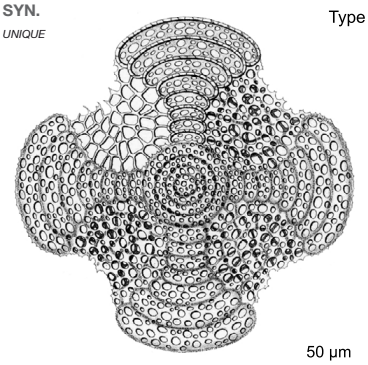
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***SPONGASTER***

SYN.
UNIQUE

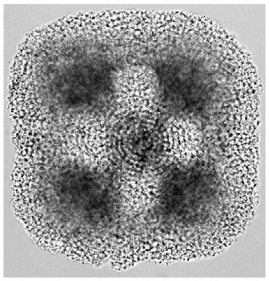
Type



50 µm

Histiastrum quadrigatum
Haeckel, 1887: 544, pl. 46, fig. 3

Support



100 µm

Histiastrum quadrigatum Haeckel
Challenger Station 265, Suzuki's collection

S - LINEAGE I (E2) SPONGODISCIDAE
ASSIGNED IN Haeckel 1882: 461

GENUS **Spongodiscus**
Ehrenberg, 1854a: 70 (n.n.); Ehrenberg, 1854b: 237

NOMINOTYPE *Spongodiscus* (*Spongodiscus*)

Diagnosis: Shell discoidal, lens-shaped. Circular disk with sponge-like dense concentric structure. No equatorial primary spines; secondary spines in some species.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: **Spongodiscus aculeatus* Ehrenberg, 1854b; *Spongodiscus haliomma* Ehrenberg, 1854b and *Spongodiscus resurgens* Ehrenberg, 1854b.

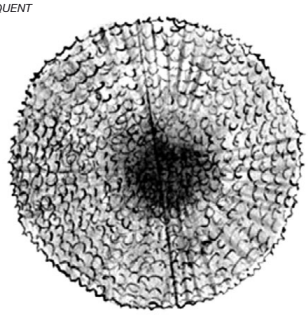
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 26)

STATUS **VALID**

AGE ***EARLY PLIOCENE–LIVING***

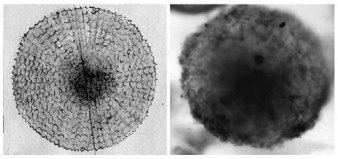
VALID
FREQUENT

Type



Spongodiscus resurgens
Ehrenberg, 1854b: 246 (unfigured); Ehrenberg, 1854c: pl. 35B-IV, fig. 16

Type



Spongodiscus resurgens Ehrenberg
Suzuki *et al.* 2009a: pl. 34, figs 7a, 7b [lectotype herein]

S - LINEAGE I (E2) SPONGODISCIDAE

GENUS **Spongodisculus**
Haeckel, 1887: 576

SUBGENUS *Spongodiscus* (*Spongodisculus*)

Remarks: Type species frequently reported.

Original series: **Spongodiscus biconcavus* Haeckel, 1887; *Spongodiscus favus* Ehrenberg, 1862b; *Spongodiscus mediterraneus* Haeckel, 1862; **Spongodiscus radiatus* Haeckel, 1887 and *Spongodiscus resurgens* Ehrenberg, 1854b.

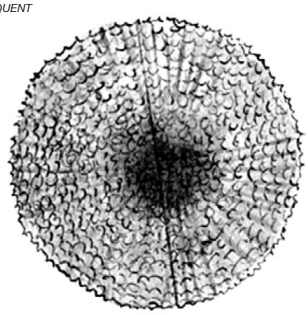
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 26)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SPONGODISCUS***

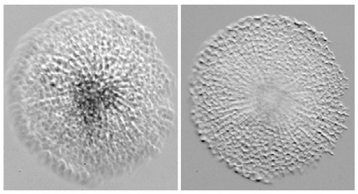
SYN. (obj.)
FREQUENT

Type



Spongodiscus resurgens
Ehrenberg, 1854b: 246 (unfigured); Ehrenberg, 1854c: pl. 35B-IV, fig. 16

Support



Spongodiscus resurgens Ehrenberg
Suzuki's collection (Quaternary, Equatorial Pacific)

S - LINEAGE I (E2) SPONGODISCIDAE
ASSIGNED IN Haeckel 1882: 461

GENUS **Spongotrochus**
Haeckel, 1861b: 844

NOMINOTYPE *Spongotrochus* (*Spongotrochus*)

Diagnosis: Shell as a flat circular disk with a dense concentric spongy tissue. No equatorial primary spines; secondary spines in many species.

Remarks: Only two species originally included at the time of the generic definition (both rarely illustrated). *Spongotrochus glacialis* Popofsky, 1908, figured by Riedel (1958) must be regarded as a junior subjective synonym of *Spongotrochus brevispinus* Haeckel, 1862.

Original series: *Spongotrochus brevispinus* Haeckel, 1861b and *Spongotrochus longispinus* Haeckel, 1861b.

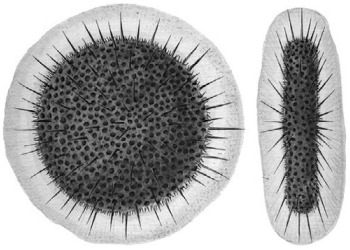
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS **VALID**

AGE ***EARLY EOCENE–LIVING***

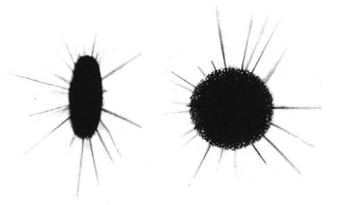
VALID
RARE

Type



Spongotrochus brevispinus
Haeckel, 1861b: 844 (unfigured); Haeckel, 1862: 462, pl. 27, figs 4, 5

Support



Spongotrochus brevispinus Haeckel
Tan 1998: 241, pl. 18, figs 3, 6

S - LINEAGE I (E2) SPONGODISCIDAE

GENUS **Spongotrochiscus**
Haeckel, 1887: 585

SUBGENUS *Spongotrochus* (*Spongotrochiscus*)

Remarks: Type species rarely reported. The support image is one of those species originally included into this genus.

Original series: *Spongotrochus brevispinus* Haeckel, 1861b; *Spongotrochus longispinus* Haeckel, 1861b and *Spongotrochus multispinus* Haeckel, 1887.

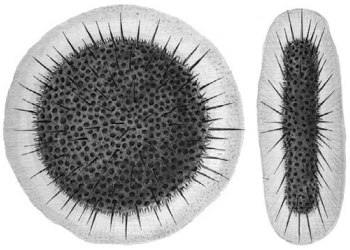
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SPONGOTROCHUS***

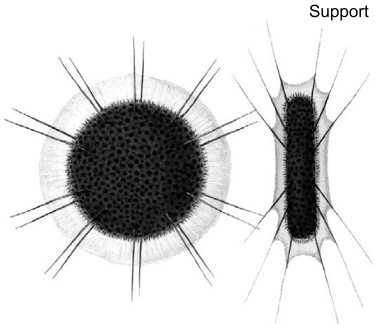
SYN. (obj.)
RARE

Type



Spongotrochus brevispinus
Haeckel, 1861b: 844 (unfigured); Haeckel, 1862: 462, pl. 27, figs 4, 5

Support



Spongotrochus longispinus
Haeckel, 1862: 463, pl. 27, figs 2, 3

S - LINEAGE I (E2) ? SPONGODISCIDAE

GENUS ***Stylotrochus***
Haeckel, 1862: 463

SUBGENUS ***Spongotrochus* (*Stylotrochus*)**

Remarks: No type species was designated. Type species never figured; only two species originally included at the time of the generic definition. The support image is a senior synonym of the type species (see Takahashi 1991: 84). Haeckel (1862: 463) included *STYLOTROCHUS* as a subgenus of *SPONGOTROCHUS*. Later on, in 1887, he regarded both taxa as separated genera.

Original series: **Spongotrochus arachnius* Haeckel, 1862 and **Spongotrochus heteracanthus* Haeckel, 1862.

FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

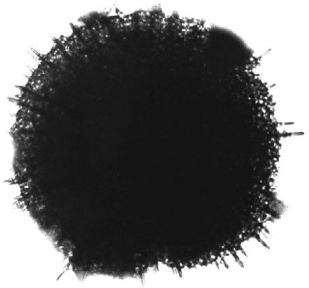
SEE ***? SPONGOTROCHUS***

N.D. Type

UNFIGURED SPECIES

Spongotrochus arachnius
Haeckel, 1862: 464, unfigured

Support



50 µm

Spongotrochus glacialis Popofsky
Chen *et al.* 2017: 147, pl. 41, fig. 6

S - LINEAGE I (E2) ? SPONGODISCIDAE

GENUS ***Stylotrochiscus***
Haeckel, 1887: 583

SUBGENUS ***Stylotrochus* (*Stylotrochiscus*)**

Remarks: No type species was designated. The type species (*Stylospongia huxleyi* Haeckel, 1862: 473, pl. 28, fig. 7) designated by Campbell (1954: 94) and also by Strelkov & Lipman (1959: 450) is ineligible because it was not among those species originally assigned (see comments in Sanfilippo & Riedel 1973: 526).

Original series: *Spongosphaera rhabdostyla* Ehrenberg, 1874b; **Spongotrochus arachnius* Haeckel, 1862; *Spongotrochus craticulatus* Stöhr, 1880; **Spongotrochus heteracanthus* Haeckel, 1862 and **Stylotrochus helianthus* Haeckel, 1887.

FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

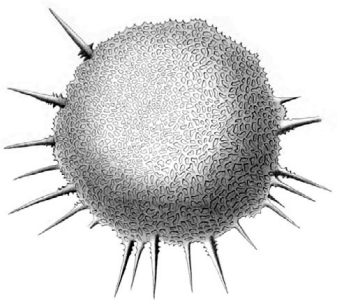
SEE ***STYLOTROCHUS***

SYN. (obj.); N.D. Type

UNFIGURED SPECIES

Spongotrochus arachnius
Haeckel, 1862: 464, unfigured

Support



100 µm

Stylotrochus arachnius (Haeckel)
Popofsky 1908: 227, pl. 26, fig. 5

S - LINEAGE I (E2) ? SPONGODISCIDAE

GENUS ***Pseudocephalis***
Alvira-Martín, 1972a: 21

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Pseudocephalis minimus* Alvira-Martín & Alonso, 1971.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D. Type
UNIQUE



50 µm

Pseudocephalis minimus
Alvira-Martín & Alonso, 1971: fig. 6 [description in Alvira-Martín, 1972a: 21]

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E2) ? SPONGODISCIDAE

GENUS ***Spongolonche***
Haeckel, 1882: 461

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Spongolonche amphistyla* Haeckel, 1887 and **Spongolonche conostyla* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 16)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Spongolonche conostyla
Haeckel, 1887: 580, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) — EUCHITONIIDAE
ASSIGNED IN Haeckel 1882: 460

GENUS ***Amphicraspedum***
Haeckel, 1882: 460

NOMINOTYPE ***Amphicraspedum (Amphicraspedum)***

Diagnosis: Shell spongy, with two chambered arms opposite in one axis; arms of equal size and form, without terminal spines.

Remarks: See comments under *AMPHICRASPEDON*.

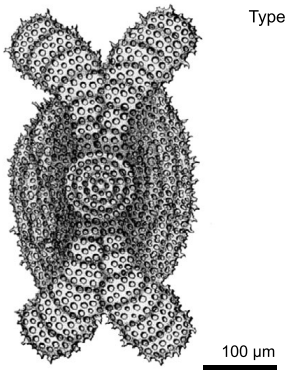
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

Type



Amphicraspedum maclaganium
Haeckel, 1887: 523, pl. 45, fig. 11

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) — EUCHITONIIDAE

GENUS ***Amphicraspedon***
Haeckel, 1887: 523

SUBGENUS ***Amphicraspedum (Amphicraspedon)***

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Amphicraspedum maclaganium* Haeckel, 1887.

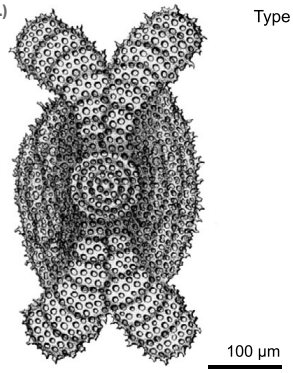
FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***AMPHICRASPEDUM***

SYN. (obj.)
UNIQUE

Type



Amphicraspedum maclaganium
Haeckel, 1887: 523, pl. 45, fig. 11

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) — EUCHITONIIDAE

GENUS ***Amphirrhopella***
Haeckel, 1887: 522

SUBGENUS ***Amphirhopalum (Amphirrhopella)***

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Amphirhopalum bigeminum* Haeckel, 1887 and *Amphirhopalum echinatum* Haeckel, 1887.

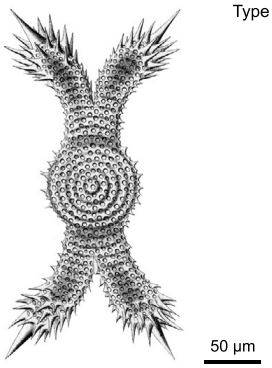
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***AMPHICRASPEDUM***

SYN.
UNIQUE

Type



Amphirhopalum echinatum
Haeckel, 1887: 522, pl. 45, fig. 10

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) — ? EUCHITONIIDAE

GENUS ***Amphirhopalum***
Haeckel, 1882: 460

NOMINOTYPE ***Amphirhopalum (Amphirhopalum)***

Remarks: See comments under *AMPHIRHOPALIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? AMPHICRASPEDUM***

N.D.

Type

UNFIGURED SPECIES

Amphirhopalum ximorphum
Haeckel, 1887: 521, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) ? EUCHITONIIDAE

GENUS ***Amphirrhopalium***
Haeckel, 1887: 521

SUBGENUS ***Amphirhopalum* (*Amphirrhopalium*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition. However, Haeckel (1887: 521) mentioned that the type species is similar to *Amphicraspedum maclaganium* but without patagium; the latter is included as support image.

Original series: **Amphirhopalum amphidicranum* Haeckel, 1887 and **Amphirhopalum ximorphum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***AMPHIRHOPALUM***

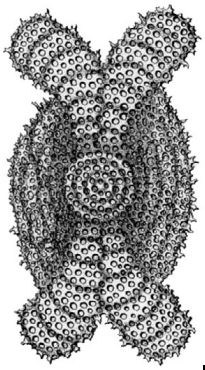
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Amphirhopalum ximorphum
Haeckel, 1887: 521, unfigured

Support



100 µm

Amphicraspedum maclaganium
Haeckel, 1887: 523, pl. 45, fig. 11

S - LINEAGE I (E3) EUCHITONIIDAE
ASSIGNED IN Matsuzaki *et al.* 2015: 18

GENUS ***Dictyocoryne***
Ehrenberg, 1861b: 830

NOMINOTYPE ***Dictyocoryne* (*Dictyocoryne*)**

Diagnosis: Flat shell with three arms. Arms with spongious or indistinctively divided internal structure. Arm ends usually not divided. Central skeleton with a spinose microsphere and two to three rings.

Remarks: See comments under *DICTYOCORYNULA*.

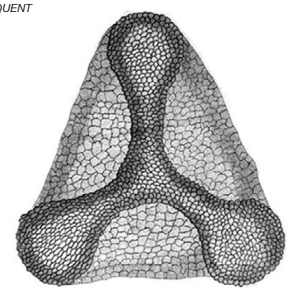
FIXATION SUBSEQUENT DESIGNATION (Haeckel 1887: 591)

STATUS **VALID**

AGE ***EARLY MIDDLE EOCENE–LIVING***

VALID
FREQUENT

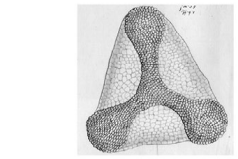
Type

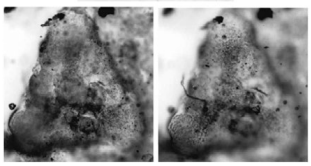


100 µm

Dictyocoryne profunda
Ehrenberg, 1873a: 307 (unfigured); Ehrenberg, 1873b: 288-289, pl. 7, fig. 23

Type





100 µm

Dictyocoryne profunda Ehrenberg
Suzuki *et al.* 2009a: pl. 47, figs 1a-c [lectotype herein]

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Dictyocorynula***
Haeckel, 1887: 592

SUBGENUS ***Dictyocoryne* (*Dictyocorynula*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Dictyocoryne euchitonia* Haeckel, 1862; *Dictyocoryne profunda* Ehrenberg, 1873a; **Dictyocoryne tetradiscus* Haeckel, 1887 and **Dictyocoryne trigona* Haeckel, 1887.

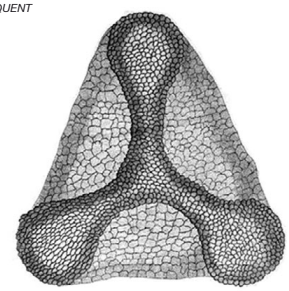
FIXATION SUBSEQUENT DESIGNATION (Haeckel 1887: 591)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***DICTYOCORYNE***

SYN. (obj.)
FREQUENT

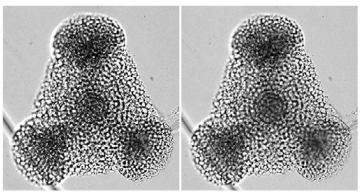
Type



100 µm

Dictyocoryne profunda
Ehrenberg, 1873a: 307 (unfigured); Ehrenberg, 1873b: 288-289, pl. 7, fig. 23

Support



100 µm

Dictyocoryne profunda Ehrenberg
Suzuki's collection (plankton, off Sesoko Island, Japan)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Dictyastrum***
Ehrenberg, 1861b: 830

NOMINOTYPE ***Dictyastrum* (*Dictyastrum*)**

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Dictyastrum angulatum* Ehrenberg, 1873a and *Dictyastrum triactis* Ehrenberg, 1873a.

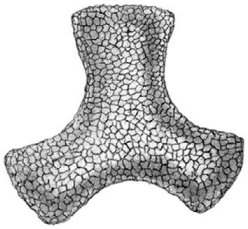
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 19

SEE ***DICTYOCORYNE***

SYN.
FREQUENT

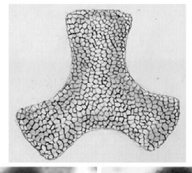
Type

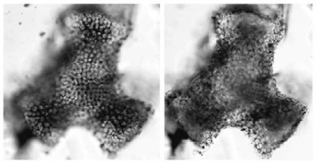


100 µm

Dictyastrum angulatum
Ehrenberg, 1873a: 306 (unfigured); Ehrenberg, 1873b: 288-289, pl. 8, fig. 18

Type





100 µm

Dictyastrum angulatum Ehrenberg
Suzuki *et al.* 2009a: pl. 46, figs 1a-c [lectotype herein]

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Dictyastrella***
Haeckel, 1887: 524

SUBGENUS ***Dictyastrum* (*Dictyastrella*)**

Remarks: Type species frequently reported.

Original series: *Dictyastrum angulatum* Ehrenberg, 1873a; *Dictyastrum hexagonum* Haeckel, 1887; **Dictyastrum trirrhopalum* Haeckel, 1887 and *Rhopalastrum bandaicum* Harting, 1863.

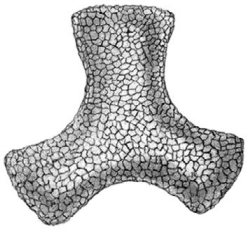
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***DICTYASTRUM***

SYN. (obj.) *FREQUENT*

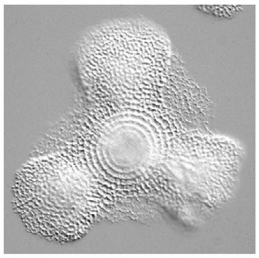
Type



100 µm

Dictyastrum angulatum
Ehrenberg, 1873a: 306 (unfigured); Ehrenberg, 1873b: 288-289, pl. 8, fig. 18

Support



100 µm

Dictyastrum angulatum Ehrenberg
Suzuki's collection (Quaternary, Equatorial Pacific)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Euchitonia***
Ehrenberg, 1861b: 831

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Euchitonia furcata* Ehrenberg, 1873a.

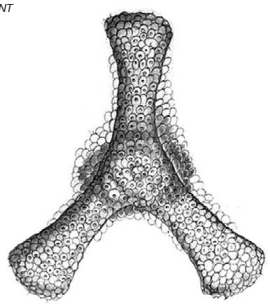
FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Ogane *et al.* 2009a: 89

SEE ***DICTYOCORYNE***

SYN. *FREQUENT*

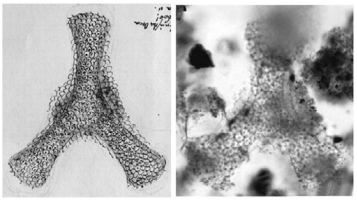
Type



50 µm

Euchitonia furcata
Ehrenberg, 1861a: 767 (n.n.); 1861b: 823 (n.n.); 1873a: 308 (unfigured); 1873b: 288-289, pl. 6, fig. III-6 [description in Ehrenberg, 1873a: 308]

Type



100 µm

Euchitonia furcata Ehrenberg
Suzuki *et al.* 2009a: pl. 60, figs 4a, 4b [lectotype herein]

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Hymenastromma***
Haeckel, 1887: 531

SUBGENUS ***Hymeniastrum* (*Hymenastromma*)**

Remarks: Illustration available only for the type species (figured just once after the first illustration). Only two species originally included at the time of the generic definition.

Original series: *Histiastrum ternarium* Ehrenberg, 1874b and **Hymeniastrum trigonarium* Haeckel, 1887.

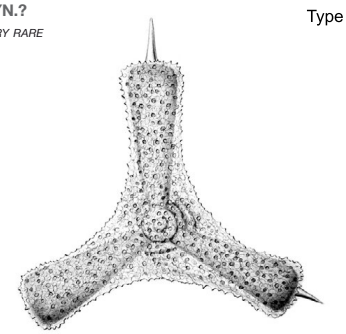
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***DICTYOCORYNE***

SYN.? *VERY RARE*

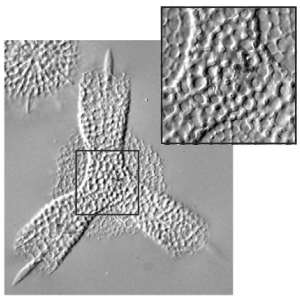
Type



100 µm

Histiastrum ternarium
Ehrenberg, 1874b: 237 (unfigured); Ehrenberg, 1876: 76, pl. 24, fig. 2

Support



100 µm

Histiastrum ternarium Ehrenberg
Topotypic material (Barbados, Late Eocene), Suzuki's collection

---

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Pteractis***
Ehrenberg, 1873a: 277

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Ehrenberg (1873a).

Original series: *Pteractis elegans* Ehrenberg, 1873a.

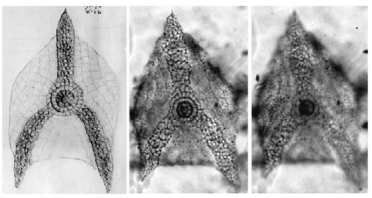
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Ogane *et al.* 2009a: 89

SEE ***DICTYOCORYNE***

SYN. *UNIQUE*

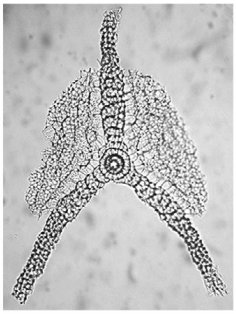
Type



100 µm

Pteractis elegans
Ehrenberg, 1873a: 319 (unfigured); 1873b: 298-299, pl. 8, fig. 3 [Suzuki *et al.* 2009a: pl. 48, figs 2a-c; lectotype herein]

Support



50 µm

Pteractis elegans Ehrenberg
Dumitrica's collection (DSDP 21-204-1-1-0-2, SW Pacific; Holocene)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Rhopalodictyum***
Ehrenberg, 1861b: 832

NOMINOTYPE ***Rhopalodictyum* (*Rhopalodictyum*)**

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

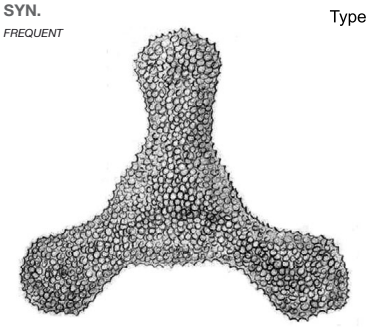
Original series: *Rhopalodictyum abyssorum* Ehrenberg, 1873a.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Ogane *et al.* 2009a: 89

SEE ***DICTYOCORYNE***

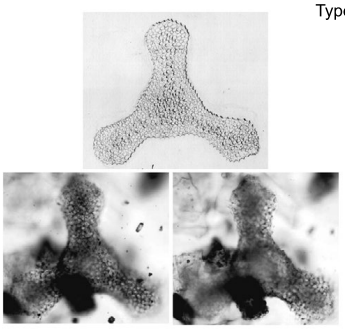
SYN. Type
FREQUENT



100 µm

Rhopalodictyum abyssorum
Ehrenberg, 1861a: 769 (n.n.); Ehrenberg, 1873a: 319 (unfigured); Ehrenberg, 1873b: 288-289, pl. 8, fig. 17

Type



100 µm

Rhopalodictyum abyssorum Ehrenberg
Suzuki *et al.* 2009a: pl. 49, figs 3a-c [lectotype herein]

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Rhopalodictya***
Haeckel, 1887: 589

SUBGENUS ***Rhopalodictyum* (*Rhopalodictya*)**

Remarks: Type species frequently reported.

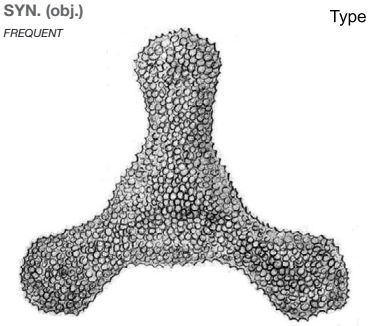
Original series: *Rhopalodictyum abyssorum* Ehrenberg, 1873a; **Rhopalodictyum bifidum* Haeckel, 1887; **Rhopalodictyum subacutum* Ehrenberg, 1862b and *Rhopalodictyum truncatum* Ehrenberg, 1862b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***RHOPALODYCTIUM***

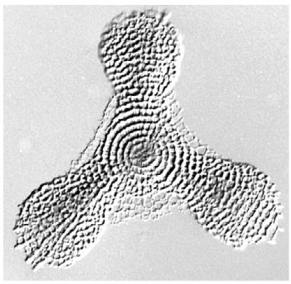
SYN. (obj.) Type
FREQUENT



100 µm

Rhopalodictyum abyssorum
Ehrenberg, 1861a: 769 (n.n.); Ehrenberg, 1873a: 319 (unfigured); Ehrenberg, 1873b: 288-289, pl. 8, fig. 17

Support



50 µm

Rhopalodictyum abyssorum Ehrenberg
Suzuki's collection (plankton, off Tokyo, Japan)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Stylactis***
Ehrenberg, 1873a: 277

Remarks: Homonym of *STYLACTIS* Allman, 1864: 353 (Hydrozoa); see *STYLA nomen novum*. No type species was designated.

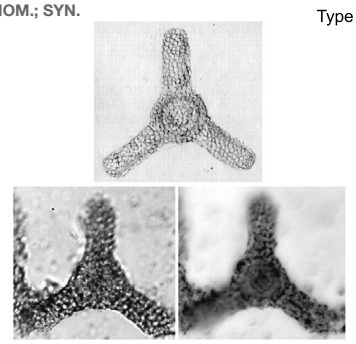
Original series: *Stylactis pacifica* Ehrenberg, 1873a and *Stylactis triangulum* Ehrenberg, 1873a.

FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS HOMONYM, JUNIOR SYNONYM

SEE ***STYLA NOMEN NOVUM***

HOM.; SYN. Type



100 µm

Stylactis pacifica
Ehrenberg, 1873a: 319, Ehrenberg, 1873b: 298-299 (unfigured); Suzuki *et al.* 2009a: pl. 46, figs 4a-4c [lectotype herein]

Support



50 µm

Stylactis pacifica Ehrenberg
Suzuki *et al.*, 2009a: pl. 46, fig. 3 [topotypic material]

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Styla*** *NOMEN NOVUM* PRO *STYLACTIS*
Stechow, 1921: 263

Remarks: The type species has been figured just once after the first illustration. The support image is the other species originally included and illustrated at the time of the generic definition.

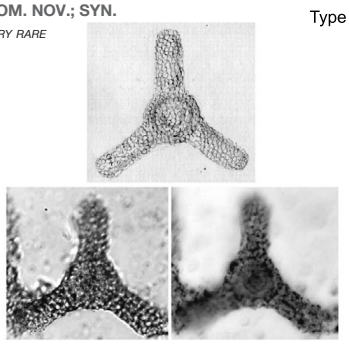
Original series: *Stylactis pacifica* Ehrenberg, 1873a and *Stylactis triangulum* Ehrenberg, 1873a.

FIXATION SD ACCORDING TO ICZN, ART. 67.8

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 19

SEE ***DICTYOCORYNE***

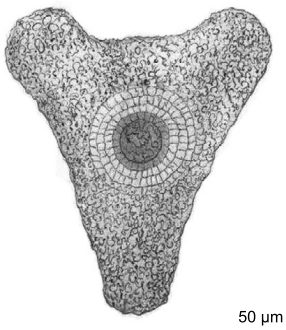
NOM. NOV.; SYN. Type
VERY RARE



100 µm

Stylactis pacifica
Ehrenberg, 1873a: 319, Ehrenberg, 1873b: 298-299 (unfigured); Suzuki *et al.* 2009a: pl. 46, figs 4a-4c [lectotype herein]

Support



50 µm

Stylactis triangulum
Ehrenberg, 1873b: 298-299, pl. 8, fig. 9

S - LINEAGE I (E3) ? EUCHITONIIDAE

GENUS ***Rhopalastrum***
Ehrenberg, 1846: 385

NOMINOTYPE ***Rhopalastrum* (*Rhopalastrum*)**

Remarks: See comments under *RHOPALASTRELLA*. The plate 11, figures 2a-d of Suzuki *et al.* (2009a) are the only one that shows the medial test (support image). In these figures, the vertical arm shows very clearly the internal structure of a *STEPHANASTRUM* with a radius (axis) central to the arm and the short side bars that link this radius to the arm wall. Looking again at the figures, it is suspected that the 4 rays that bind the microsphere to the circle are indeed the borders of the belt S1b of the first larnacillid system. So, these three-arm models represent a *STEPHANASTRUM* with three arms (three-arm anomaly).

Original series: *Haliomma lagena* Ehrenberg, 1840.

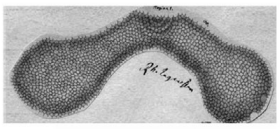
FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
name-bearing type incomplete; related by inference

SEE **? *DICTYOCORYNE***

N.D.
UNIQUE

Type



100 µm

Haliomma lagena
Ehrenberg, 1840: 200 (unfigured); Ehrenberg, 1854c: pl. 19, fig. 60 [lectotype herein]

Support



100 µm

Rhopalastrum lagenosum (Ehrenberg)
Suzuki *et al.* 2009a: pl. 11, figs 2a-c

S - LINEAGE I (E3) ? EUCHITONIIDAE

GENUS ***Rhopalastrella***
Haeckel, 1887: 526

SUBGENUS ***Rhopalastrum* (*Rhopalastrella*)**

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: *Haliomma lagena* Ehrenberg, 1840; **Rhopalastrum clavatum* Haeckel, 1887; *Rhopalastrum irregulare* Haeckel, 1887; *Rhopalastrum malleus* Haeckel, 1887 and *Rhopalastrum ypsilinum* Haeckel, 1887.

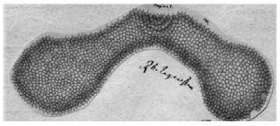
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***RHOPALASTRUM***

SYN. (obj.); N.D.
VERY RARE

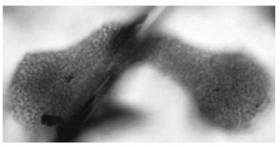
Type



100 µm

Haliomma lagena
Ehrenberg, 1840: 200 (unfigured); Ehrenberg, 1854c: pl. 19, fig. 60

Type



100 µm

Rhopalastrum lagenosum (Ehrenberg)
Suzuki *et al.* 2009a: pl. 24, fig. 10b [lectotype herein]

S - LINEAGE I (E3) EUCHITONIIDAE
ASSIGNED IN Haeckel 1887: 485

GENUS ***Hexinastrum***
Haeckel, 1882: 461

Diagnosis: Flat shell with four to six arms. Arms with distinct internal divided tissue. Arms usually with no divided terminal ends. Central skeleton with a spinose microsphere and two to three rings.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Hexinastrum geryonidum* Haeckel, 1887.

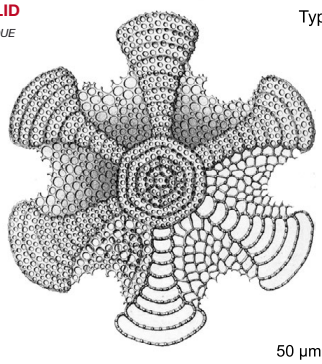
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

Type



50 µm

Hexinastrum geryonidum
Haeckel, 1887: 560, pl. 44, fig. 4

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Hexalastromma***
Haeckel, 1887: 560

SUBGENUS ***Hexalastrum* (*Hexalastromma*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Hexalastrum orchidaceum* Haeckel, 1887.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HEXINASTRUM***

SYN.
UNIQUE

Type



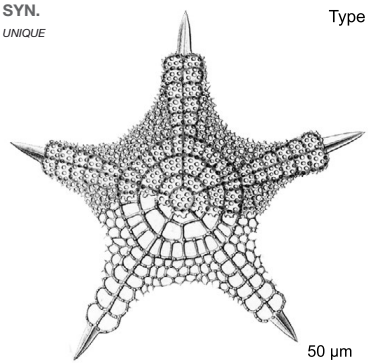
200 µm

Hexalastrum orchidaceum
Haeckel, 1887: 560, pl. 44, fig. 5

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) EUCHITONIIDAE GENUS ***Pentalastromma*** Haeckel, 1887: 557 SUBGENUS ***Pentalastrum* (*Pentalastromma*)** **Remarks**: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition. **Original series**: **Pentalastrum cometa* Haeckel, 1887 and *Pentalastrum ophidiaster* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88) STATUS JUNIOR SYNONYM synonymized herein SEE ***HEXINASTRUM***	**SYN.** Type *UNIQUE*  100 µm *Pentalastrum ophidiaster* Haeckel, 1887: 557, pl. 44, fig. 3	Support NO IMAGE PUBLISHED no image available
S - LINEAGE I (E3) EUCHITONIIDAE GENUS ***Pentinastrum*** Haeckel, 1882: 461 **Remarks**: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition. **Original series**: *Pentinastrum asteriscus* Haeckel, 1887 and *Pentinastrum goniaster* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88) STATUS JUNIOR SYNONYM synonymized herein SEE ***HEXINASTRUM***	**SYN.** Type *UNIQUE*  50 µm *Pentinastrum asteriscus* Haeckel, 1887: 557, pl. 44, fig. 2	Support NO IMAGE PUBLISHED no image available
S - LINEAGE I (E3) ? EUCHITONIIDAE GENUS ***Hexalastrum*** Haeckel, 1882: 461 NOMINOTYPE ***Hexalastrum* (*Hexalastrum*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Hexalastrum crinanthum* Haeckel, 1887 and **Hexalastrum palmanthum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 144) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Hexalastrum palmanthum* Haeckel, 1887: 559, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE I (E3) ? EUCHITONIIDAE GENUS ***Pentalastrum*** Haeckel, 1882: 461 NOMINOTYPE ***Pentalastrum* (*Pentalastrum*)** **Remarks**: See comments under *PENTALASTRELLA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Pentalastrum asteracanthion* Haeckel, 1887: 556, unfigured	Support NO IMAGE PUBLISHED no image available

S - LINEAGE I (E3) ? EUCHITONIIDAE

GENUS ***Pentalastrella***
Haeckel, 1887: 557

SUBGENUS ***Pentalastrum* (*Pentalastrella*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Pentalastrum asteracanthion* Haeckel, 1887 and **Pentalastrum astropecten* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***PENTALASTRUM***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Pentalastrum asteracanthion
Haeckel, 1887: 556, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) EUCHITONIIDAE
ASSIGNED HEREIN

GENUS ***Ommatocampe***
Ehrenberg, 1861b: 832

NOMINOTYPE ***Ommatocampe* (*Ommatocampe*)**

Diagnosis: Shell rod-like, long, articulated, without spines, with four or more kidney-shaped chambers and a double medullary shell.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Ommatocampe polyarthra* Ehrenberg, 1873a; *Ommatocampe profundissima* Ehrenberg, 1873a and *Ommatocampe setosa* Ehrenberg, 1873a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS **VALID**

AGE ***HOLOCENE–LIVING***

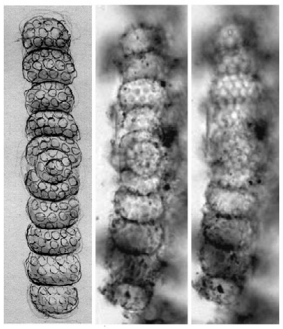
VALID
FREQUENT

Type



Ommatocampe polyarthra
Ehrenberg, 1861b: 823 (n.n.); Ehrenberg, 1873b: 296-297, pl. 6, fig. III-9

Type



Ommatocampe polyarthra Ehrenberg
Suzuki *et al.* 2009a: pl. 63, figs 2a-c [lectotype herein]

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Ommatocampium***
Haeckel, 1887: 393

SUBGENUS ***Ommatocampe* (*Ommatocampium*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: **Ommatocampe annulata* Haeckel, 1887; *Ommatocampe increscens* Stöhr, 1880 and *Ommatocampe polyarthra* Ehrenberg, 1873a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***OMMATOCAMPE***

SYN. (obj.)
FREQUENT

Type



Ommatocampe polyarthra
Ehrenberg, 1861b: 823 (n.n.); Ehrenberg, 1873b: 296-297, pl. 6, fig. III-9

Support



Ommatocampe polyarthra Ehrenberg
Suzuki's collection (Quaternary, Equatorial Pacific)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Amphymenium***
Haeckel, 1882: 460

NOMINOTYPE ***Amphymenium* (*Amphymenium*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Amphymenium monstrosum* Haeckel, 1887; *Amphymenium pupula* Haeckel, 1887; *Amphymenium zygartus* Haeckel, 1887 and *Ommatogramma navicularis* Ehrenberg, 1873a.

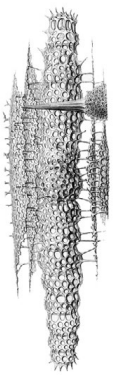
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 527

SEE ***OMMATOCAMPE***

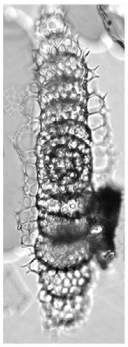
SYN.
UNIQUE

Type



Amphymenium zygartus
Haeckel, 1887: 520, pl. 44, fig. 7

Support



Amphymenium pupula Haeckel
Suzuki's collection (Quaternary, Equatorial Pacific)

S - LINEAGE I (E3) — EUCHITONIIDAE
ASSIGNED IN Haeckel 1887: 485

GENUS ***Tessarastrum***
Haeckel, 1887: 547

NOMINOTYPE ***Tessarastrum (Tessarastrum)***

Diagnosis: Cross-shaped shell with probably a normal microsphere surrounded by a few latticed rings and bearing four undivided chambered arms of which one is longer.

Remarks: See comments under *TESSARASTRELLA*.

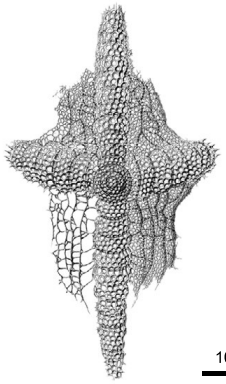
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS **VALID**

AGE ***EARLY PLEISTOCENE–LIVING***

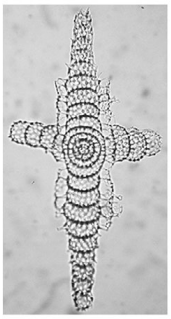
VALID
FREQUENT

Type



Tessarastrum straussi
Haeckel, 1887: 547, pl. 45, fig. 8

Support



Tessarastrum straussi Haeckel
Dumitrica's collection (DSDP 21-204-1-1-0-2, SW Pacific; Holocene)

S - LINEAGE I (E3) — EUCHITONIIDAE

GENUS ***Tessarastrella***
Haeckel, 1887: 547

SUBGENUS ***Tessarastrum (Tessarastrella)***

Remarks: Type species frequently reported.

Original series: *Tessarastrum brunonis* Haeckel, 1887; **Tessarastrum spinozae* Haeckel, 1887 and *Tessarastrum straussi* Haeckel, 1887.

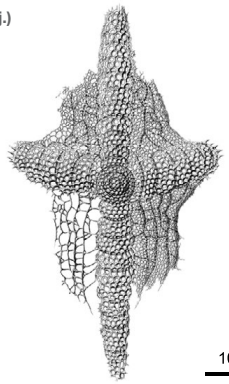
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TESSARASTRUM***

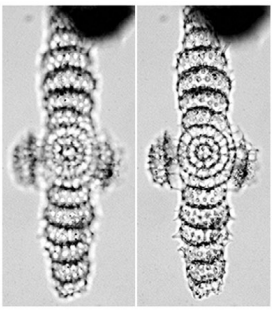
SYN. (obj.)
FREQUENT

Type



Tessarastrum straussi
Haeckel, 1887: 547, pl. 45, fig. 8

Support



Tessarastrum straussi Haeckel
Challenger Station 244, Suzuki's collection

S - LINEAGE I (E3) — ? EUCHITONIIDAE

GENUS ***Tessarastromma*** INCORRECT SUBSEQUENT SPELLING
Campbell, 1954: D88

Remarks: An incorrect subsequent spelling for *TESSAROSTROMMA*, which is unjustified according to the provisions of ICZN art. 33.3. Genus described as monospecific at the time of the generic definition.

Original series: *Tessarastrum democriti* Haeckel, 1887.

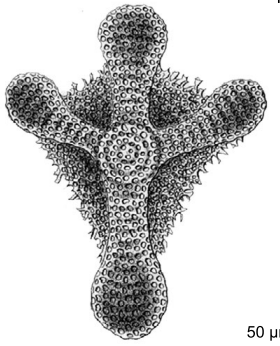
FIXATION MONOTYPY; ICZN, ART. 67.6

STATUS INVALID NAME
designated herein

SEE ***TESSARASTROMMA***

INV.

Type



Tessarastrum democriti
Haeckel, 1887: 548, pl. 45, fig. 7

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) — EUCHITONIIDAE

GENUS ***Tessarostromma***
Haeckel, 1887: 548

SUBGENUS ***Tessarastrum (Tessarostromma)***

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Tessarastrum democriti* Haeckel, 1887.

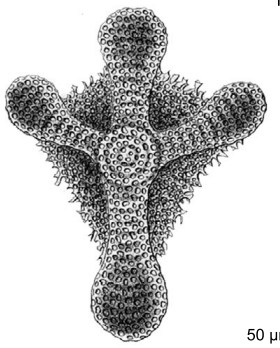
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TESSARASTRUM***

SYN.
UNIQUE

Type



Tessarastrum democriti
Haeckel, 1887: 548, pl. 45, fig. 7

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Hagiastromma***
Haeckel, 1887: 543

SUBGENUS ***Hagiastrum* (*Hagiastromma*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Hagiastrum christi* Haeckel, 1887; **Hagiastrum mohammedis* Haeckel, 1887 and *Hagiastrum mosis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TESSARASTRUM***

SYN.
UNIQUE

Type



100 µm

Hagiastrum mosis
Haeckel, 1887: 543, pl. 45, fig. 3

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) EUCHITONIIDAE
ASSIGNED IN Haeckel 1882: 460

GENUS ***Tricranastrum***
Haeckel, 1879a: 705

SUBGENUS ***Dicranastrum* (*Tricranastrum*)**

Diagnosis: Flat shell with three to more wide flat arms, variably sub-divided. All shell parts except the center extremely fragile. Central skeleton with a spinose microsphere and two to three rings.

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

Original series: *Tricranastrum wyvillei* Haeckel, 1879a.

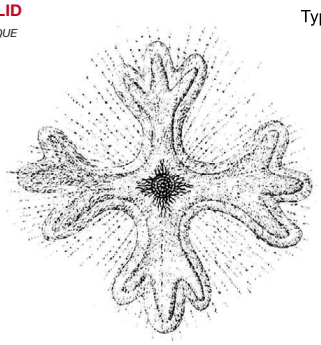
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

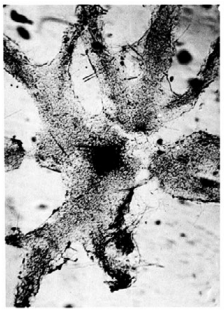
Type



200 µm

Tricranastrum wyvillei
Haeckel, 1879a: 705, pl. 16, fig. 5

Support



200 µm

Myelastrum dodecaceros Haeckel
Tan 1998: 223, pl. 22, fig. 1

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Dicranastrum***
Haeckel, 1882: 460

NOMINOTYPE ***Dicranastrum* (*Dicranastrum*)**

Remarks: See comments under *DICRANASTER*.

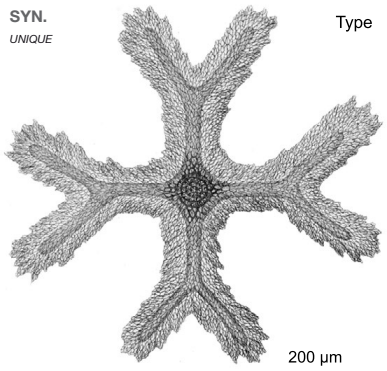
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRICRANASTRUM***

SYN.
UNIQUE

Type



200 µm

Dicranastrum furcatum
Haeckel, 1887: 550, pl. 47, fig. 2

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Dicranaster***
Haeckel, 1887: 550

SUBGENUS ***Dicranastrum* (*Dicranaster*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Dicranastrum antilope* Haeckel, 1887; *Dicranastrum cornutum* Haeckel, 1887; **Dicranastrum dichotomum* Haeckel, 1887 and *Dicranastrum furcatum* Haeckel, 1887.

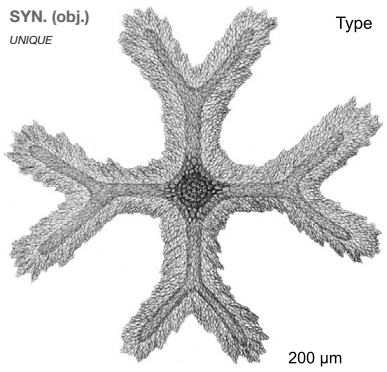
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***DICRANASTRUM***

SYN. (obj.)
UNIQUE

Type



200 µm

Dicranastrum furcatum
Haeckel, 1887: 550, pl. 47, fig. 2

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS **Spongodicranastrum**
Tan & Tchang, 1976: 304

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

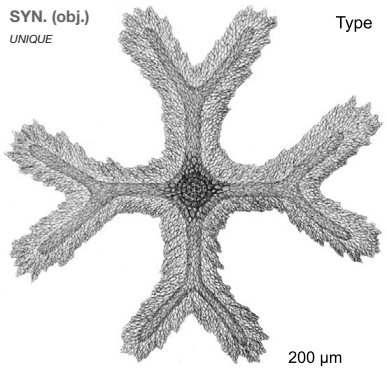
Original series: *Dicranastrum furcatum* Haeckel, 1887.

FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***DICRANASTRUM***

SYN. (obj.) Type
UNIQUE



Dicranastrum furcatum
Haeckel, 1887: 550, pl. 47, fig. 2

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS **Myelastrum**
Haeckel, 1882: 460

NOMINOTYPE ***Myelastrum* (*Myelastrum*)**

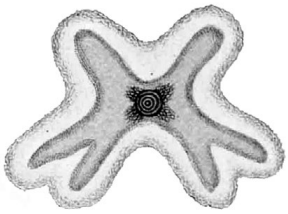
Remarks: See comments under *MYELASTRELLA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR SYNONYM
synonymized by van de Paverd 1995: 172

SEE ***TRICRANASTRUM***

SYN. Type
UNIQUE



Myelastrum medullare
Haeckel, 1887: 553, pl. 47, fig. 13

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS **Myelastrella**
Haeckel, 1887: 553

SUBGENUS ***Myelastrum* (*Myelastrella*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

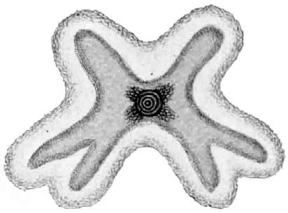
Original series: *Myelastrum heteropterum* Haeckel, 1887; *Myelastrum medullare* Haeckel, 1887 and **Myelastrum spinale* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR OBJECTIVE SYNONYM

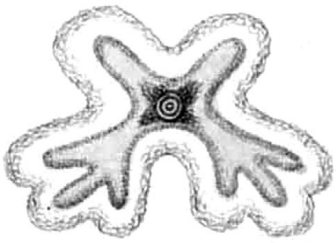
SEE ***MYELASTRUM***

SYN. (obj.) Type
UNIQUE



Myelastrum medullare
Haeckel, 1887: 553, pl. 47, fig. 13

Support



Myelastrum heteropterum
Haeckel, 1887: 553, pl. 47, fig. 8

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS **Spongomyelastrum**
Tan & Tchang, 1976: 306

Remarks: Genus described by Tan & Tchang (1976) without any reason, just to separate those forms having four forked spongy arms; no new illustration was given by the Chinese scientists. It is, without any doubt, a junior objective synonym of *MYELASTRUM*. The support image is one of those species originally included into this genus.

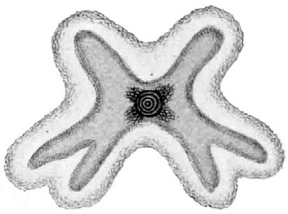
Original series: *Myelastrum anomalum* Haeckel, 1887; *Myelastrum decaceros* Haeckel, 1887; *Myelastrum dodecaceros* Haeckel, 1887; *Myelastrum farfalla* Haeckel, 1887; *Myelastrum medullare* Haeckel, 1887; *Myelastrum octocorne* Haeckel, 1887 and *Myelastrum papilio* Haeckel, 1887.

FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

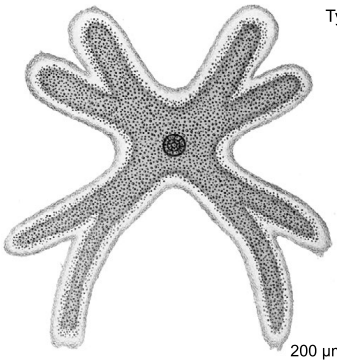
SEE ***MYELASTRUM***

SYN. (obj.) Type
UNIQUE



Myelastrum medullare
Haeckel, 1887: 553, pl. 47, fig. 13

Type



Myelastrum octocorne
Haeckel, 1887: 553, pl. 47, fig. 12

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Myelastromma***
Haeckel, 1887: 553

SUBGENUS ***Myelastrum* (*Myelastromma*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Myelastrum anomalum* Haeckel, 1887; **Myelastrum ciliatum* Haeckel, 1887; *Myelastrum decaceros* Haeckel, 1887; *Myelastrum dodecaceros* Haeckel, 1887; *Myelastrum farfalla* Haeckel, 1887; **Myelastrum giganteum* Haeckel, 1887; **Myelastrum lobatum* Haeckel, 1887; *Myelastrum octocorne* Haeckel, 1887; *Myelastrum papilio* Haeckel, 1887 and **Myelastrum rotula* Haeckel, 1887.

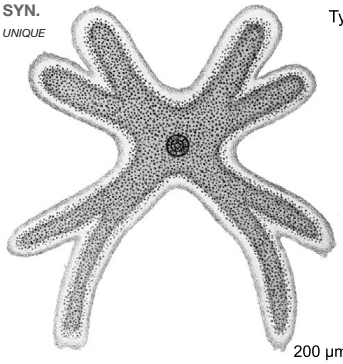
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRICRANASTRUM***

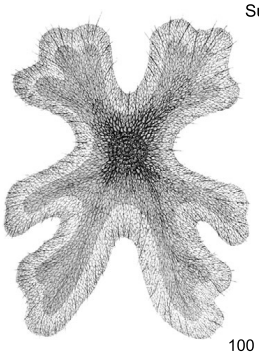
SYN.
UNIQUE

Type



Myelastrum octocorne
Haeckel, 1887: 553, pl. 47, fig. 12

Support



Myelastrum dodecaceros
Haeckel, 1887: 554, pl. 47, fig. 11

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Spongohagiastrum***
Tan & Tchang, 1976: 250

SUBGENUS ***Myelastrum* (*Spongohagiastrum*)**

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Tan & Tchang (1976).

Original series: *Spongohagiastrum digitatum* Tan & Tchang, 1976.

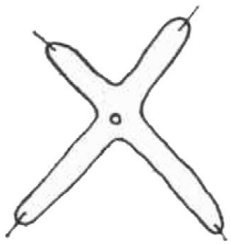
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRICRANASTRUM***

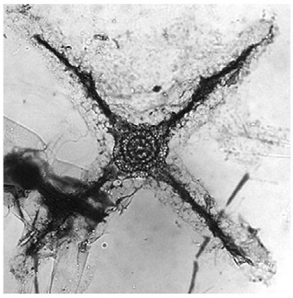
SYN.
UNIQUE

Type



Spongohagiastrum digitatum
Tan & Tchang, 1976: 250, fig. 21y

Support



Spongohagiastrum digitatum Tan & Tchang
Aita's collection (plankton, East China Sea)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Pentophiastromma***
Haeckel, 1887: 558

SUBGENUS ***Pentophiastrum* (*Pentophiastromma*)**

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Pentophiastrum caudatum* Haeckel, 1887 and *Pentophiastrum forcipatum* Haeckel, 1887.

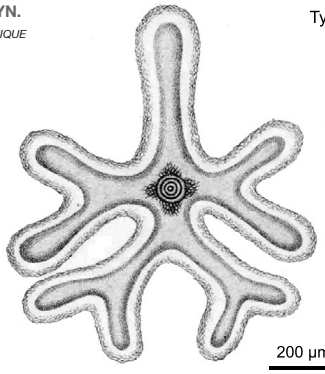
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRICRANASTRUM***

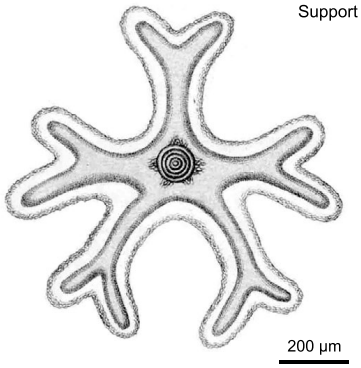
SYN.
UNIQUE

Type



Pentophiastrum caudatum
Haeckel, 1887: 559, pl. 47, fig. 5

Support



Pentophiastrum forcipatum
Haeckel, 1887: 559, pl. 47, fig. 4

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Spongopentophiastrum***
Tan & Tchang, 1976: 306

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1887).

Original series: *Pentophiastrum caudatum* Haeckel, 1887.

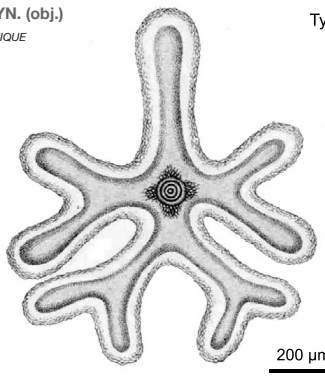
FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PENTOPHIASTROMMA***

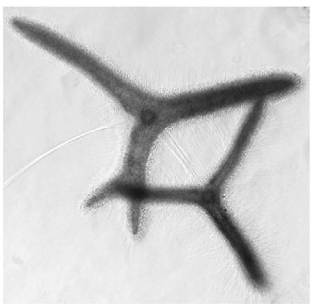
SYN. (obj.)
UNIQUE

Type



Pentophiastrum caudatum
Haeckel, 1887: 559, pl. 47, fig. 5

Support



Pentophiastrum caudatum Haeckel
Suzuki's collection (plankton, off Sesoko Island, Japan)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Spongostaurus***
Swanberg *et al.*, 1985: 457

Remarks: Homonym of *SPONGOSTAURUS* Haeckel, 1882: 461 (Polycystinea); see *SPONGOSTAURINA nomen novum*.

Original series: *Spongostaurus gracilis* Swanberg *et al.*, 1985 and *Spongostaurus lobus* Swanberg *et al.*, 1985.

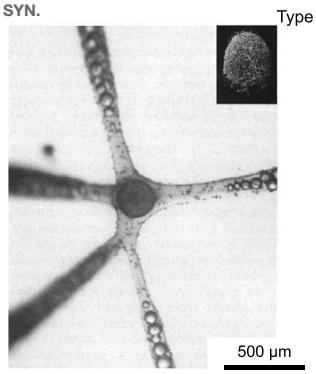
FIXATION ORIGINAL DESIGNATION

STATUS HOMONYM, JUNIOR SYNONYM

SEE ***SPONGOSTAURINA NOMEN NOVUM***

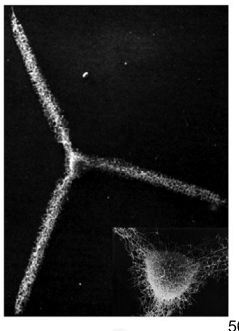
HOM.; SYN.

Type



Spongostaurus gracilis
Swanberg *et al.*, 1985: 457, pl. 1, figs 1, 2 [syntype]

Support



Spongostaurus lobus
Swanberg *et al.*, 1985: 457, pl. 1, figs 3, 4

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Spongostaurina*** *NOMEN NOVUM* PRO *SPONGOSTAURUS*
Anderson & Swanberg, 2017: 56

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Spongostaurus gracilis* Swanberg *et al.*, 1985 and *Spongostaurus lobus* Swanberg *et al.*, 1985.

FIXATION ORIGINAL DESIGNATION; ICZN, ART. 67.8

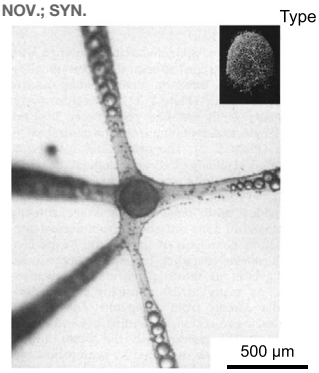
STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRICRANASTRUM***

NOM. NOV.; SYN.

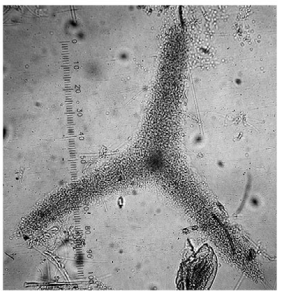
UNIQUE

Type



Spongostaurus gracilis
Swanberg *et al.*, 1985: 457, pl. 1, figs 1, 2 [syntype]

Support



Spongostaurus lobus Swanberg *et al.*
Suzuki's collection (plankton, off Kashijima Island, Japan)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Tetracranastrum***
Haeckel, 1887: 552

SUBGENUS ***Dicranastrum* (*Tetracranastrum*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Dicranastrum bifurcatum* Haeckel, 1887.

FIXATION MONOTYPY

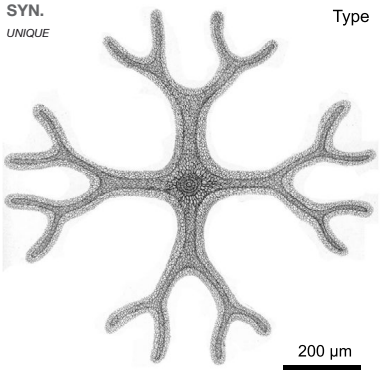
STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRICRANASTRUM***

SYN.

UNIQUE

Type



Dicranastrum bifurcatum
Haeckel, 1887: 552, pl. 47, fig. 1

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Triastrum***
Cleve, 1901: 53

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Cleve (1901).

Original series: *Triastrum aurivilli* Cleve, 1901.

FIXATION MONOTYPY

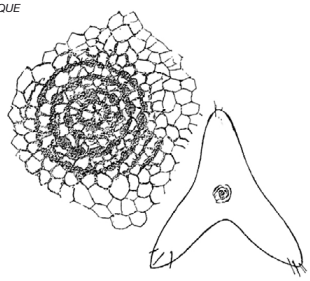
STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRICRANASTRUM***

SYN.

UNIQUE

Type



Triastrum aurivilli
Cleve, 1901: 53, pl. 7, figs 16, 17

Support



Triastrum aurivilli Cleve
Suzuki's collection (plankton, off Sesoko Island, Japan)

S - LINEAGE I (E3) ? EUCHITONIIDAE

GENUS ***Pentophiastrum***
Haeckel, 1887: 558

NOMINOTYPE ***Pentophiastrum* (*Pentophiastrum*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Pentophiastrum dicranastrum* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Pentophiastrum dicranastrum
Haeckel, 1887: 558, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) EUCHITONIIDAE
ASSIGNED IN Haeckel 1887: 485

GENUS ***Trigonastrum***
Haeckel, 1887: 538

NOMINOTYPE ***Trigonastrum* (*Trigonastrum*)**

Diagnosis: Flat shell with two to several arms. Arms branched in some species and with internal structure distinctively divided. Central skeleton with a spinose microsphere and two to three rings.

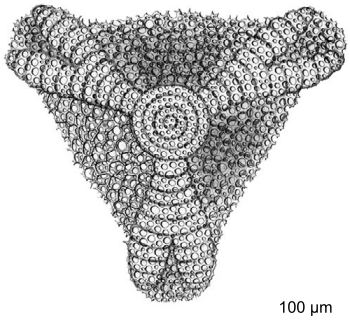
Remarks: See comments under *TRIGONASTRELLA*.

FIXATION MONOTYPY

STATUS **VALID**

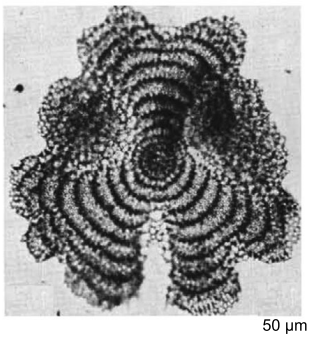
AGE ***EARLY MIDDLE MIOCENE–LIVING***

VALID
UNIQUE Type



Trigonastrum regulare
Haeckel, 1887: 539, pl. 43, fig. 16

Support



Trigonastrum regulare Haeckel
Dumitrica 1973: 835, pl. 11, fig. 3

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Trigonastrella***
Haeckel, 1887: 539

SUBGENUS ***Trigonastrum* (*Trigonastrella*)**

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1887).

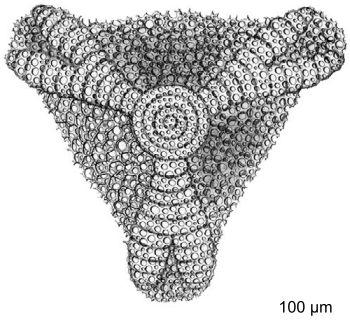
Original series: *Trigonastrum regulare* Haeckel, 1887.

FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

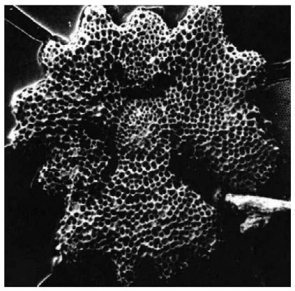
SEE ***TRIGONASTRUM***

SYN. (obj.)
UNIQUE Type



Trigonastrum regulare
Haeckel, 1887: 539, pl. 43, fig. 16

Support



Trigonastrum regulare Haeckel
Dumitrica 1973: 835, pl. 10, fig. 1

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Trigonastromma***
Haeckel, 1887: 539

SUBGENUS ***Trigonastrum* (*Trigonastromma*)**

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

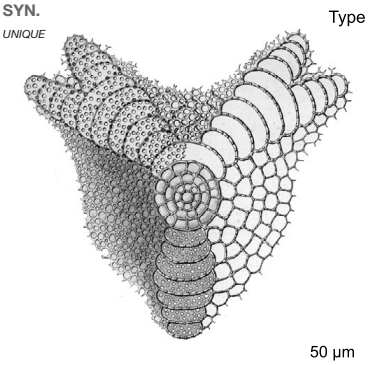
Original series: *Euchitonia gegenbauri* Haeckel, 1862 and **Euchitonia krohni* Haeckel, 1862.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR SYNONYM
synonymized herein

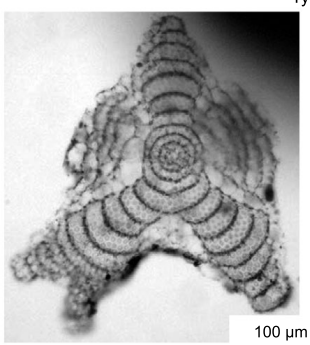
SEE ***TRIGONASTRUM***

SYN.
UNIQUE Type



Euchitonia gegenbauri
Haeckel, 1862: 506, pl. 31, fig. 2

Type



Euchitonia gegenbauri Haeckel
Sakai *et al.* 2009: 50, pl. 12, fig. 1 [neotype herein]

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Amphicraspedina***
Haeckel, 1887: 523

SUBGENUS ***Amphicraspedum* (*Amphicraspedina*)**

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1887). All *Amphirhopalum ypsilon* Haeckel, 1887 figured afterwards Nigrini (1967) must be regarded as a junior subjective synonym of *Amphicraspedum wyvilleanum* Haeckel, 1887 because Haeckel never figured the holotype of the former.

Original series: *Amphicraspedum wyvilleanum* Haeckel, 1887.

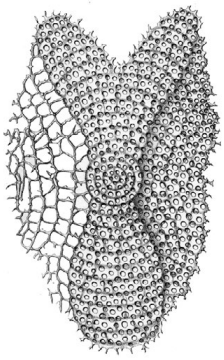
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRIGONASTRUM***

SYN.
UNIQUE

Type



50 µm

Amphicraspedum wyvilleanum
Haeckel, 1887: 523, pl. 45, fig. 12

Support



100 µm

Amphicraspedum wyvilleanum Haeckel
Suzuki's collection (Chishima Trench, Quaternary)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Amphirrhopoma***
Haeckel, 1887: 522

SUBGENUS ***Amphirhopalum* (*Amphirrhopoma*)**

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported after the publication by Nigrini (1967) of Challenger's topotypic material.

Original series: *Amphirhopalum ypsilon* Haeckel, 1887.

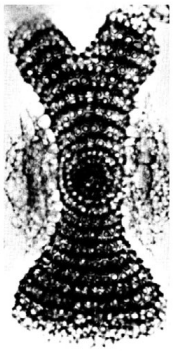
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRIGONASTRUM***

SYN.
FREQUENT

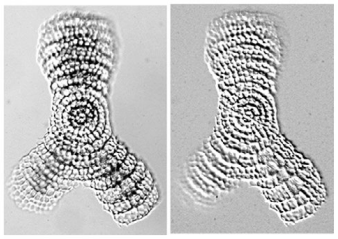
Type



50 µm

Amphirhopalum ypsilon
Haeckel, 1887: 522 (unfigured); Nigrini, 1967: 35, pl. 3, fig. 3a [paratype]

Support



100 µm

Amphirhopalum ypsilon Haeckel
Suzuki's collection (Quaternary, Equatorial Pacific)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Chitonastromma***
Haeckel, 1887: 537

SUBGENUS ***Chitonastrum* (*Chitonastromma*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: **Chitonastrum dicranodes* Haeckel, 1887; *Chitonastrum jugatum* Haeckel, 1887 and *Chitonastrum lyra* Haeckel, 1887.

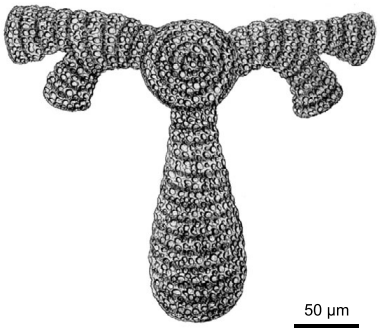
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1978: 136

SEE ***TRIGONASTRUM***

SYN.
UNIQUE

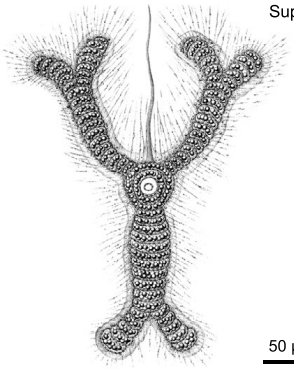
Type



50 µm

Chitonastrum jugatum
Haeckel, 1887: 537, pl. 43, fig. 14

Support



50 µm

Chitonastrum lyra
Haeckel, 1862: 538, pl. 43, fig. 15

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Dictyastromma***
Haeckel, 1887: 525

SUBGENUS ***Dictyastrum* (*Dictyastromma*)**

Remarks: Type species only illustrated by Haeckel (1887). Only the type species clearly belongs to this genus and no other images have been published.

Original series: **Dictyastrum aculeatum* Haeckel, 1887; *Dictyastrum triactis* Ehrenberg, 1873a and *Dictyastrum trispinosum* Haeckel, 1887.

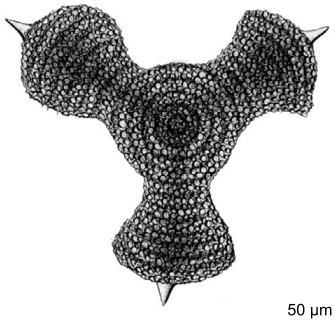
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRIGONASTRUM***

SYN.
UNIQUE

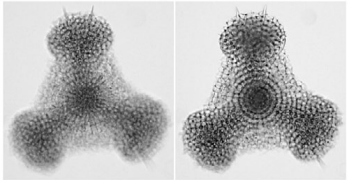
Type



50 µm

Dictyastrum trispinosum
Haeckel, 1887: 525, pl. 43, fig. 5

Support



100 µm

Dictyastrum trispinosum Haeckel
Zhang's collection (South China Sea)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Monaxonium***
Popofsky, 1912: 125

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Popofsky (1912).

Original series: *Monaxonium perforatum* Popofsky, 1912.

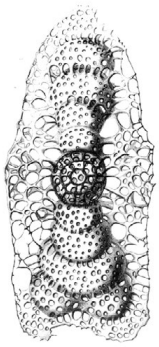
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRIGONASTRUM***

SYN. *UNIQUE*

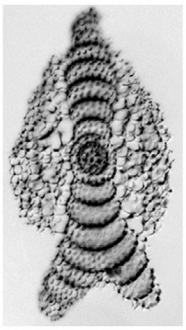
Type



50 µm

Monaxonium perforatum
Popofsky, 1912: 126, pl. 6, fig. 3

Support



50 µm

Monaxonium perforatum Popofsky
Suzuki's collection (plankton, off Japan)

S - LINEAGE I (E3) EUCHITONIIDAE

GENUS ***Rhopalastromma***
Haeckel, 1887: 528

SUBGENUS ***Rhopalastrum* (*Rhopalastromma*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Rhopalastrum arcticum* Haeckel, 1887; *Rhopalastrum hexaceros* Haeckel, 1887; **Rhopalastrum martellum* Haeckel, 1887 and *Rhopalastrum triceros* Haeckel, 1887.

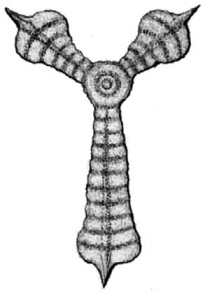
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1978: 128

SEE ***TRIGONASTRUM***

SYN. *UNIQUE*

Type



100 µm

Rhopalastrum triceros
Haeckel, 1887: 529, pl. 43, fig. 4

Support



100 µm

Rhopalastrum arcticum
Haeckel, 1887: 529, pl. 43, fig. 6

S - LINEAGE I (E3) ? EUCHITONIIDAE

GENUS ***Chitonastrum***
Haeckel, 1882: 460

NOMINOTYPE ***Chitonastrum* (*Chitonastrum*)**

Remarks: See comments under *CHITONASTRELLA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Chitonastrum triglochin
Haeckel, 1887: 537, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (E3) ? EUCHITONIIDAE

GENUS ***Chitonastrella***
Haeckel, 1887: 537

SUBGENUS ***Chitonastrum* (*Chitonastrella*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Chitonastrum bathybium* Haeckel, 1887 and **Chitonastrum triglochin* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS JUNIOR OBJECTIVE SYNONYM, NOMEN DUBIUM

SEE ***CHITONASTRUM***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Chitonastrum triglochin
Haeckel, 1887: 537, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE I (UNKNOWN) SPONGOBRACHIIDAE

GENUS ***Spongasteriscus***
Haeckel, 1862: 474

NOMINOTYPE ***Spongasteriscus* (*Spongasteriscus*)**

Diagnosis: Concentric central convex lens-shaped shell with an inflated densely spongious margin of variable outline including bulb-like arms and a patagium. Vent-like pylome present in some species.

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition. O'Dogherty *et al.* (2009a: 341) incorrectly consider *Spongasteriscus dunikowskyi* Rüst (1885) as the type species by subsequent monotypy.

Original series: **Spongasteriscus tetraceros* Haeckel, 1862 and *Spongodiscus quadricornis* Haeckel, 1861b.

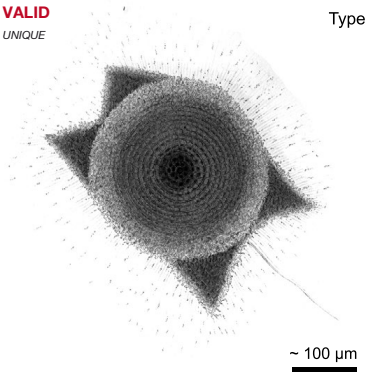
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS **VALID**

AGE ***EARLY MIDDLE MIOCENE–LIVING***

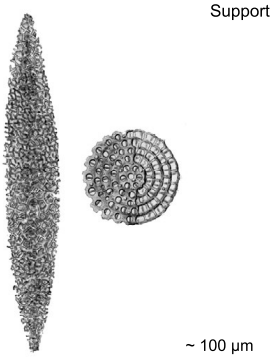
VALID
UNIQUE

Type



Spongodiscus quadricornis
Haeckel, 1861b: 844 (unfigured); Haeckel, 1862: 474, pl. 28, fig. 8

Support



Spongodiscus quadricornis
Haeckel, 1862: 474, pl. 28, figs 9, 10

S - LINEAGE I (UNKNOWN) SPONGOBRACHIIDAE

GENUS ***Spongasterisculus***
Haeckel, 1887: 595

SUBGENUS ***Spongasteriscus* (*Spongasterisculus*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is a junior subjective synonym.

Original series: **Spongasteriscus myelastrum* Haeckel, 1887; **Spongasteriscus tetraceros* Haeckel, 1862 and *Spongodiscus quadricornis* Haeckel, 1861b.

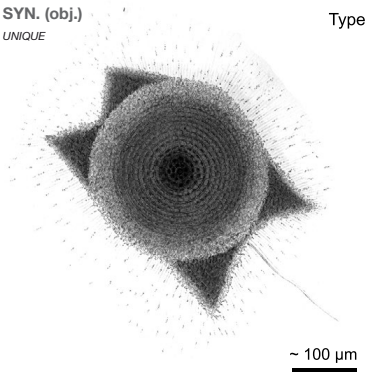
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SPONGASTERISCUS***

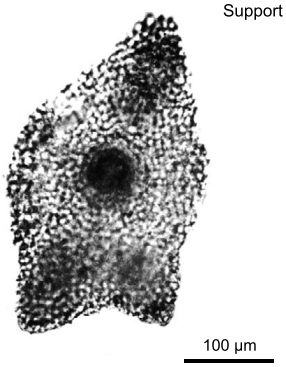
SYN. (obj.)
UNIQUE

Type



Spongodiscus quadricornis
Haeckel, 1861b: 844 (unfigured); Haeckel, 1862: 474, pl. 28, fig. 8

Support



Spongobrachium pentagrama
Chen, 1987: 224, pl. 2, fig. 1

S - LINEAGE I (UNKNOWN) SPONGOBRACHIIDAE

GENUS ***Dictyocorynium***
Haeckel, 1887: 593

SUBGENUS ***Dictyocoryne* (*Dictyocorynium*)**

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: *Dictyocoryne agrigentina* Stöhr, 1880; **Dictyocoryne echinata* Haeckel, 1887; *Dictyocoryne pentagona* Stöhr, 1880 and *Spongodiscus charybdaeus* Haeckel, 1861b.

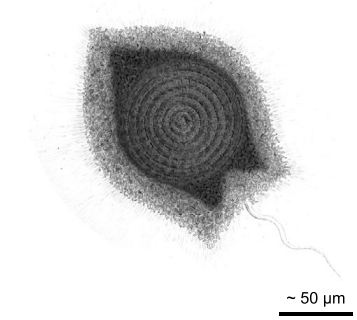
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***SPONGASTERISCUS***

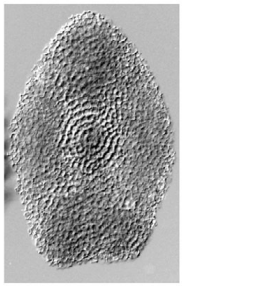
SYN.
VERY RARE

Type



Spongodiscus charybdaeus
Haeckel, 1861b: 844 (unfigured); Haeckel, 1862: 472, pl. 28, fig. 5

Support



Spongodiscus charybdaeus Haeckel
Challenger Station 244, Suzuki's collection

S - LINEAGE I (UNKNOWN) SPONGOBRACHIIDAE
ASSIGNED IN Haeckel 1887: 575

GENUS ***Spongastromma***
Haeckel, 1887: 598

SUBGENUS ***Spongaster* (*Spongastromma*)**

Diagnosis: Central circular disc with two main club-shaped arms of same diameter as center and two very reduced opposite smaller arms; all structures enveloped in a complete patagium of rectangular shape.

Remarks: Only the type species clearly belongs to this genus (figured just once); just two species originally included at the time of the generic definition.

Original series: *Spongodiscus orthogonus* Haeckel, 1861b and *Spongodiscus scyllaeus* Haeckel, 1861b.

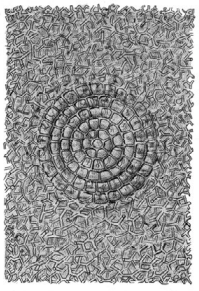
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS **VALID**

AGE ***QUATERNARY–LIVING***

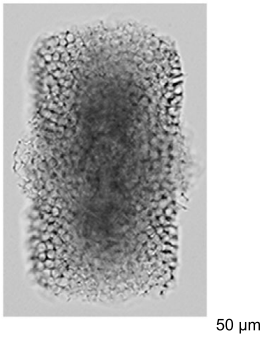
VALID
UNIQUE

Type



Spongodiscus orthogonus
Haeckel, 1861b: 844 (unfigured); Haeckel, 1862: 471, pl. 28, fig. 3

Support



Spongodiscus orthogonus Haeckel
Challenger Station 225, Suzuki's collection

S - LINEAGE I (UNKNOWN) SPONGOBRACHIIDAE

ASSIGNED IN Haeckel 1882: 461

GENUS **Spongobrachium**
Haeckel, 1882: 461

Diagnosis: Circular central disk with four to eight concentrical rows of chambers and very short opposite truncated arms all enveloped by a larger elliptical disk of spongy framework.

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: **Spongobrachium lanceolatum* Haeckel, 1887 and *Spongodiscus ellipticus* Haeckel, 1861b.

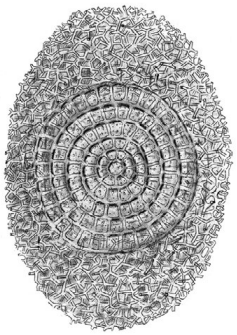
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

Type



50 µm

Spongodiscus ellipticus
Haeckel, 1861b: 844 (unfigured); Haeckel, 1862: 470, pl. 28, fig. 2

Support



50 µm

Spongodiscus ellipticus Haeckel
Suzuki's collection (IODP U1312B-01C-CC, Quaternary)

S - LINEAGE II (F1) ETHMOSPHAERIDAE

ASSIGNED IN Kozur & Mostler 1979: 23

GENUS **Cyrtidosphaera**
Haeckel, 1861a: 803

Diagnosis: One spherical to globular cortical shell without radial spines, by-spines (more delicate spines originating on the cortical surface), and internal skeletal structure; wall of cortical shell relatively thick with a rough surface and irregularly polygonal pores of unequal sizes and shapes.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Cyrtidosphaera reticulata* Haeckel, 1861a.

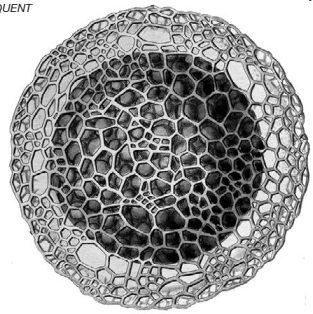
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY MIDDLE MIOCENE–LIVING***

VALID
FREQUENT

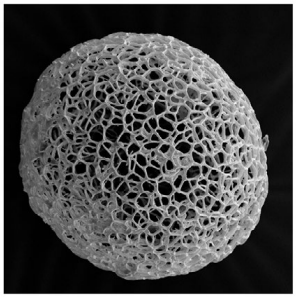
Type



50 µm

Cyrtidosphaera reticulata
Haeckel, 1861a: 803 (unfigured); Haeckel, 1862: 349, pl. 11, fig. 2

Support



100 µm

Cyrtidosphaera reticulata Haeckel
Dumitrica's collection (late Middle Miocene, Romania)

S - LINEAGE II (F1) ETHMOSPHAERIDAE

ASSIGNED IN Haeckel 1862: 346

GENUS **Ethmosphaera**
Haeckel, 1861a: 802

NOMINOTYPE ***Ethmosphaera* (*Ethmosphaera*)**

Diagnosis: One spherical cortical shell without radial spines, by-spines, and internal skeletal structure; pore frame moderate to thick; pores with or without short tubular extensions (conical or cylindrical tubules). Species without tubular extensions convey a concept identical to the former *CENOSPHAERA* before it was recognized a three concentric shells system in the latter's holotype.

Remarks: Monospecific genus. Because no other figures are available, the support image is selected among those species subsequently assigned to this genus.

Original series: *Ethmosphaera siphonophora* Haeckel, 1861a.

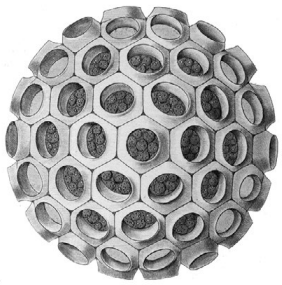
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE OLIGOCENE–LIVING***

VALID
RARE

Type



~ 25 µm

Ethmosphaera siphonophora
Haeckel, 1861a: 802 (unfigured); Haeckel, 1862: 350, pl. 11, fig. 1

Support



50 µm

Ethmosphaera conosiphonia
Haeckel, 1887: 69, pl. 12, fig. 5

S - LINEAGE II (F1) ETHMOSPHAERIDAE

GENUS **Ethmosphaerella**
Haeckel, 1887: 69

SUBGENUS ***Ethmosphaera* (*Ethmosphaerella*)**

Remarks: Type species rarely reported. The support image is one of those species originally included into this genus.

Original series: *Ethmosphaera conosiphonia* Haeckel, 1887; *Ethmosphaera polysiphonia* Haeckel, 1887 and *Ethmosphaera siphonophora* Haeckel, 1861a.

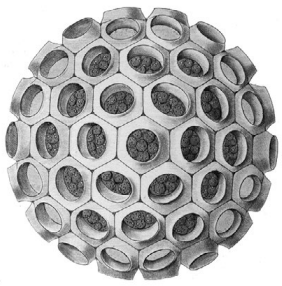
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ETHMOSPHAERA***

SYN. (obj.)
RARE

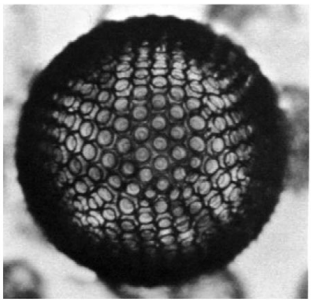
Type



~ 25 µm

Ethmosphaera siphonophora
Haeckel, 1861a: 802 (unfigured); Haeckel, 1862: 350, pl. 11, fig. 1

Support



50 µm

Ethmosphaera conosiphonia Haeckel
Blueford 1982: 193, pl. 1, figs 5, 6

S - LINEAGE II (F1) ETHMOSPHAERIDAE

GENUS ***Monosphaera***
Shrubsole, 1889: 123

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Monosphaera toliapica* Shrubsole, 1889.

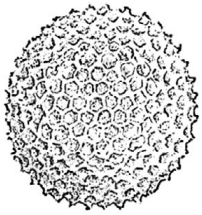
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ETHMOSPHAERA***

SYN.
UNIQUE

Type



50 µm

Monosphaera toliapica
Shrubsole, 1889: 123, text-fig. 11

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F1) ? ETHMOSPHAERIDAE

GENUS ***Phormosphaera***
Haeckel, 1882: 448

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Cenosphaera anthophora* Haeckel, 1887; **Cenosphaera bombus* Haeckel, 1887; *Cenosphaera favosa* Haeckel, 1887; **Cenosphaera hexagonalis* Haeckel, 1887; **Cenosphaera melecta* Haeckel, 1887; *Cenosphaera mellifica* Haeckel, 1887; **Cenosphaera primordialis* Haeckel, 1887; **Cenosphaera rosetta* Haeckel, 1887; *Cenosphaera vesparia* Haeckel, 1887 and *Heliosphaera inermis* Haeckel, 1861a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D49)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? ETHMOSPHAERA***

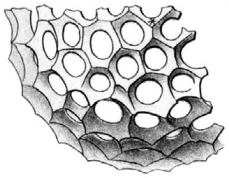
N.D.

Type

UNFIGURED SPECIES

Cenosphaera primordialis
Haeckel, 1887: 61, unfigured

Support



50 µm

Cenosphaera mellifica
Haeckel, 1887: 61, pl. 12, fig. 9

S - LINEAGE II (F1) ? ETHMOSPHAERIDAE

GENUS ***Ethmosphaeromma***
Haeckel, 1887: 70

SUBGENUS ***Ethmosphaera* (*Ethmosphaeromma*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Ethmosphaera leptosiphonia* Haeckel, 1887; **Ethmosphaera macrosiphonia* Haeckel, 1887; **Ethmosphaera pachysiphonia* Haeckel, 1887 and **Ethmosphaera stenosiphonia* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Ethmosphaera stenosiphonia
Haeckel, 1887: 70, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F1) ETHMOSPHAERIDAE
ASSIGNED IN Kozur & Mostler 1979: 23

GENUS ***Haplosphaera***
Hollande & Enjumet, 1960: 114

Diagnosis: One spherical cortical shell without internal skeletal structure; very thin centripetally directed radial spines in some specimens.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Haplosphaera sphaerica* Hollande & Enjumet, 1960.

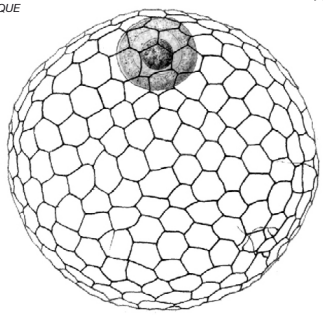
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

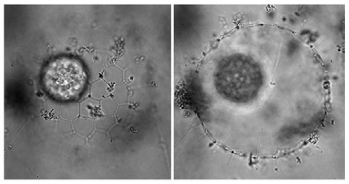
Type



50 µm

Haplosphaera sphaerica
Hollande & Enjumet, 1960: 114, pl. 61, fig. 4

Support



25 µm

Haplosphaera sphaerica Hollande & Enjumet
Suzuki's collection (plankton, off Sesoko Island, Japan)

S - LINEAGE II (F1) ETHMOSPHAERIDAE
ASSIGNED IN Hollande & Enjumet 1960: 67

GENUS ***Heliosphaera***
Haeckel, 1861a: 803

NOMINOTYPE ***Heliosphaera* (*Heliosphaera*)**

Diagnosis: Single fragile and large lattice-sphere, with hexagonal pore frames; surface with many spines of two sizes: larger main spines and smaller by-spines. Inner structure spongy; spines starting from the central capsule.

Remarks: Type species only illustrated by Haeckel (1862); the support image is one of those species originally included into this genus. The illustration drawn in Haeckel (1862, pl. 9, fig. 4) is apparently wrong; no further reports for this species have been found having an internal siliceous skeleton.

Original series: *Heliosphaera actinota* Haeckel, 1861a; *Heliosphaera echinoides* Haeckel, 1861a; *Heliosphaera elegans* Haeckel, 1861a; *Heliosphaera inermis* Haeckel, 1861a and *Heliosphaera tenuissima* Haeckel, 1861a.

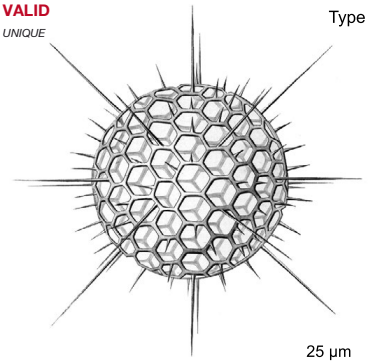
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS **VALID**

AGE ***LIVING***

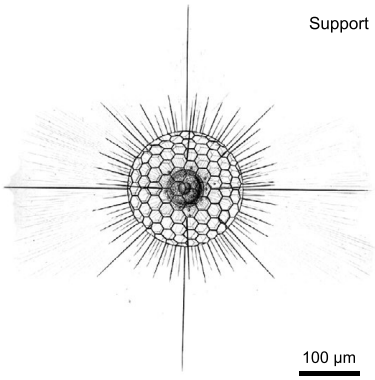
VALID
UNIQUE

Type



Heliosphaera echinoides
Haeckel, 1861a: 803 (unfigured); Haeckel, 1862: 352, pl. 9, fig. 3

Support



Heliosphaera actinota
Haeckel, 1862: 352, pl. 9, fig. 4

S - LINEAGE II (F1) ETHMOSPHAERIDAE

GENUS ***Heliosphaerella***
Haeckel, 1887: 217

SUBGENUS ***Heliosphaera* (*Heliosphaerella*)**

Remarks: Type species only illustrated by Haeckel (1862); the support image is one of those species originally included into this genus.

Original series: *Heliosphaera actinota* Haeckel, 1861a; **Heliosphaera castanella* Haeckel, 1887; *Heliosphaera coronata* Haeckel, 1887; **Heliosphaera cristata* Haeckel, 1887; *Heliosphaera echinoides* Haeckel, 1861a; *Heliosphaera elegans* Haeckel, 1861a; **Heliosphaera floribunda* Haeckel, 1887; *Heliosphaera hexagonaria* Haeckel, 1887 and *Heliosphaera pectinata* Haeckel, 1887.

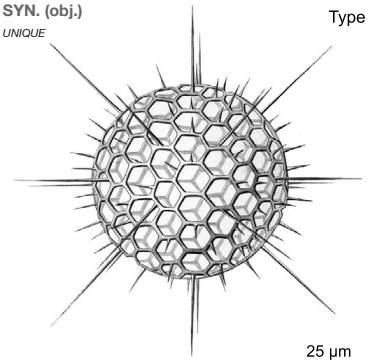
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***HELIOSPHAERA***

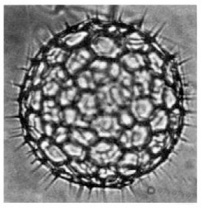
SYN. (obj.)
UNIQUE

Type



Heliosphaera echinoides
Haeckel, 1861a: 803 (unfigured); Haeckel, 1862: 352, pl. 9, fig. 3

Support



Heliosphaera actinota Haeckel
Takahashi & Honjo 1981: 146, pl. 1, fig. 18

S - LINEAGE II (F1) ? ETHMOSPHAERIDAE

GENUS ***Heliosphaeromma***
Haeckel, 1887: 220

SUBGENUS ***Heliosphaera* (*Heliosphaeromma*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Heliosphaera elector* Haeckel, 1887; **Heliosphaera heteracantha* Haeckel, 1887; **Heliosphaera hyperionis* Haeckel, 1887; **Heliosphaera polygonaria* Haeckel, 1887 and **Heliosphaera solaris* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Heliosphaera polygonaria
Haeckel, 1887: 220, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F1) ETHMOSPHAERIDAE
ASSIGNED IN Kozur & Mostler 1979: 23

GENUS ***Liosphaera***
Haeckel, 1887: 76

NOMINOTYPE ***Liosphaera* (*Liosphaera*)**

Diagnosis: Two spherical cortical shells with polygonal pore frames; no internal skeletal structure. Distance between cortical shell very short.

Remarks: See comments under *MELITOMMA*. Although Haeckel refers back to his *Prodromus* (Haeckel 1882: 449) no mention of the genus *LIOSPHAERA* is made there; only the subfamily Liosphaeria is mentioned.

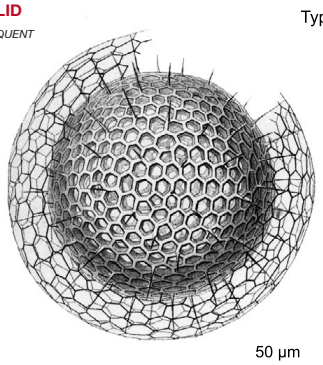
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

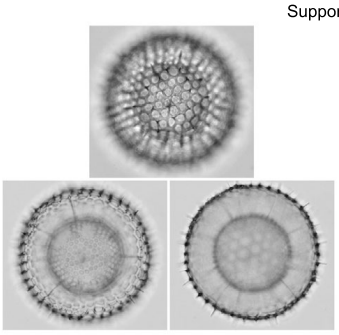
VALID
FREQUENT

Type



Liosphaera hexagonia
Haeckel, 1887: 76, pl. 20, fig. 3

Support



Liosphaera hexagonia Haeckel
Challenger Station 271, Suzuki's collection

S - LINEAGE II (F1) ETHMOSPHAERIDAE

GENUS ***Melitomma***
Haeckel, 1887: 76

SUBGENUS ***Liosphaera* (*Melitomma*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: *Liosphaera hexagonia* Haeckel, 1887; **Liosphaera porulosa* Haeckel, 1887 and **Liosphaera rhodococcus* Haeckel, 1887.

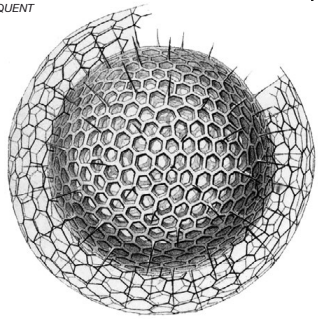
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***LIOSPHAERA***

SYN. (obj.)
FREQUENT

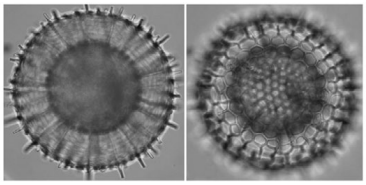
Type



50 µm

Liosphaera hexagonia
Haeckel, 1887: 76, pl. 20, fig. 3

Support



50 µm

Liosphaera hexagonia Haeckel
Matsuzaki *et al.* 2015: 13, fig. 2.18

S - LINEAGE II (F1) ETHMOSPHAERIDAE

GENUS ***Craspedomma***
Haeckel, 1887: 77

SUBGENUS ***Liosphaera* (*Craspedomma*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Liosphaera peridromium* Haeckel, 1887 and *Liosphaera polypora* Haeckel, 1887.

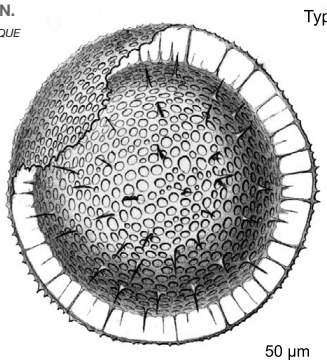
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***LIOSPHAERA***

SYN.
UNIQUE

Type



50 µm

Liosphaera polypora
Haeckel, 1887: 78, pl. 20, fig. 2

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F1) ? ETHMOSPHAERIDAE

GENUS ***Briorradiolites***
Alvira-Martín, 1972a: 21

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

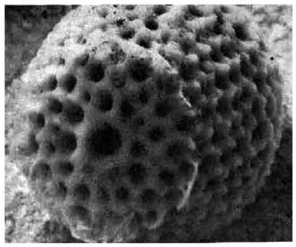
Original series: *Briorradiolites aguilariensis* Alvira-Martín, 1972a.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.
UNIQUE

Type



25 µm

Briorradiolites aguilariensis
Alvira-Martín, 1972a: 21, pl. 8, fig. 6

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F1) ? ETHMOSPHAERIDAE

GENUS ***Cenodiscus***
Haeckel, 1887: 411

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

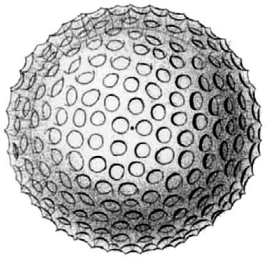
Original series: **Cenodiscus lenticula* Haeckel, 1887 and *Cenodiscus phacoides* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D77)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.
UNIQUE

Type



50 µm

Cenodiscus phacoides
Haeckel, 1887: 411, pl. 48, fig. 1

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F1) ? ETHMOSPHAERIDAE

GENUS ***Cenolarcus***
Haeckel, 1887: 606

Remarks: Illustration available only for the type species (just a single report after the first illustration).

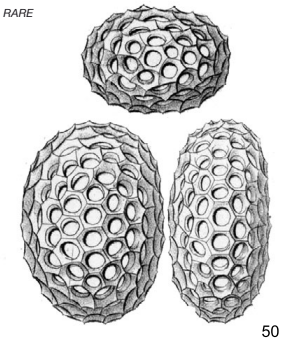
Original series: **Cenolarcus dimensivus* Haeckel, 1887; **Cenolarcus lentellipticus* Haeckel, 1887; **Cenolarcus minimus* Haeckel, 1887; *Cenolarcus primordialis* Haeckel, 1887 and **Cenolarcus triaxonius* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D95)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

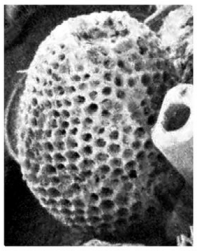
N.D.
VERY RARE

Type



Cenolarcus primordialis
Haeckel, 1887: 607, pl. 50, figs 7, 7a, 7b

Support



Cenolarcus primordialis Haeckel
Alvira-Martín & Alonso 1972: 130, pl. 3, fig. 1

S - LINEAGE II (F1) ? ETHMOSPHAERIDAE

GENUS ***Coccolarcus***
Haeckel, 1887: 610

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Coccolarcus lentellipsis* Haeckel, 1887 and **Coccolarcus platellipsis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D95)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Coccolarcus lentellipsis
Haeckel, 1887: 610, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F1) ? ETHMOSPHAERIDAE

GENUS ***Larcarium***
Haeckel, 1887: 608

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Larcarium amphistylum* Haeckel, 1887; **Larcarium axostylum* Haeckel, 1887; **Larcarium chaetostylum* Haeckel, 1887; **Larcarium hexastylum* Haeckel, 1887; **Larcarium octostylum* Haeckel, 1887; **Larcarium polystylum* Haeckel, 1887 and **Larcarium staurostylum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D95)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Larcarium amphistylum
Haeckel, 1887: 608, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F1) ? ETHMOSPHAERIDAE

GENUS ***Rhodosphaera***
Haeckel, 1882: 452

NOMINOTYPE ***Rhodosphaera* (*Rhodosphaera*)**

Remarks: See comments under *RHODOSPHAERELLA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

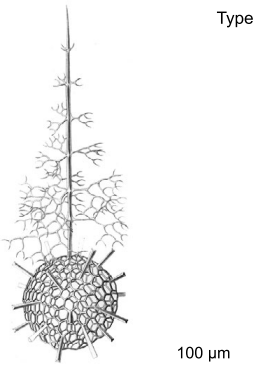
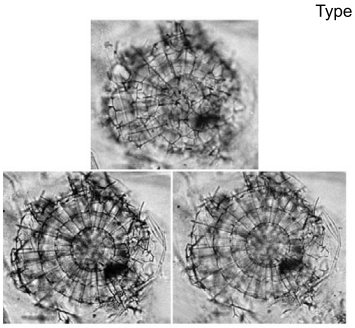
UNFIGURED SPECIES

Rhodosphaera hexagonia
Haeckel, 1887: 83, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage II (F1) ? ETHMOSPHAERIDAE GENUS ***Rhodosphaerella*** Haeckel, 1887: 82 SUBGENUS ***Rhodosphaera* (*Rhodosphaerella*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Rhodosphaera hexagonia* Haeckel, 1887 and **Rhodosphaera melitomma* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***RHODOSPHAERA***	**SYN. (obj.); N.D.** Type UNFIGURED SPECIES *Rhodosphaera hexagonia* Haeckel, 1887: 83, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage II (F1) ? ETHMOSPHAERIDAE GENUS ***Rhodosphaeromma*** Haeckel, 1887: 83 SUBGENUS ***Rhodosphaera* (*Rhodosphaeromma*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Rhodosphaera palliata* Haeckel, 1887 and **Rhodosphaera pentaphylla* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Rhodosphaera palliata* Haeckel, 1887: 83, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage II (F1) ? ETHMOSPHAERIDAE GENUS ***Zonodiscus*** Haeckel, 1887: 412 **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Zonodiscus saturnalis* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Zonodiscus saturnalis* Haeckel, 1887: 412, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage II (F2) CLADOCOCCIDAE ASSIGNED IN Hollande & Enjumet 1960: 114 GENUS ***Arachnosphaera*** Haeckel, 1861a: 804 NOMINOTYPE ***Arachnosphaera* (*Arachnosphaera*)** **Diagnosis**: Single spherical, fragile cortical shell with polygonal pore frames and bearing several tens rod-like radial spines; three to six concentric spherical structure made of fibrous or very thin-walled meshworks. **Remarks**: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated). The support image is a junior synonym of the type species, frequently reported. **Original series**: *Arachnosphaera myriacantha* Haeckel, 1861a and *Arachnosphaera oligacantha* Haeckel, 1861a. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66) STATUS **VALID** AGE ***LIVING***	**VALID** *FREQUENT* Type  100 µm *Arachnosphaera oligacantha* Haeckel, 1861a: 805 (unfigured); Haeckel, 1862: 356, pl. 11, fig. 3	Type  100 µm *Arachnosphaera oligacantha* Haeckel Aita *et al.* 2009: pl. 2, figs 3a-c [neotype herein]

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Arachnosphaerella***
Haeckel, 1887: 268

SUBGENUS ***Arachnosphaera* (*Arachnosphaerella*)**

Remarks: Type species frequently reported. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: **Arachnosphaera dolichacantha* Haeckel, 1887; **Arachnosphaera increscens* Haeckel, 1887; *Arachnosphaera myriacantha* Haeckel, 1861a and *Arachnosphaera oligacantha* Haeckel, 1861a.

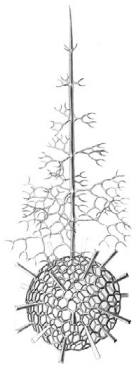
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ARACHNOSPHAERA***

SYN. (obj.)
FREQUENT

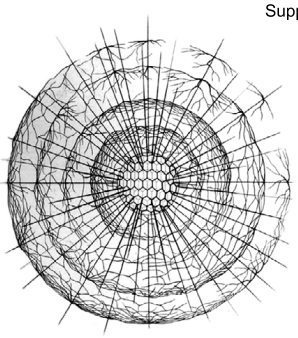
Type



100 µm

Arachnosphaera oligacantha
Haeckel, 1861a: 805 (unfigured); Haeckel, 1862: 356, pl. 11, fig. 3

Support



200 µm

Arachnosphaera myriacantha
Haeckel, 1862: 357, pl. 10, fig. 3

S - LINEAGE II (F2) ? CLADOCOCCIDAE

GENUS ***Arachnosphaeromma***
Haeckel, 1887: 269

SUBGENUS ***Arachnosphaera* (*Arachnosphaeromma*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Arachnosphaera tenuissima* Haeckel, 1887 and **Arachnosphaera velaris* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Arachnosphaera tenuissima
Haeckel, 1887: 269, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F2) CLADOCOCCIDAE
ASSIGNED HEREIN

GENUS ***Arachnospongus***
Mast, 1910: 56

Diagnosis: Shell consisting of a macrosphere with hexagonal pore frames and two to three cortical envelopes with loose meshes, all interconnected by numerous primary radial bars. External envelope with ramified spines.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Mast (1910).

Original series: *Arachnospongus varians* Mast, 1910.

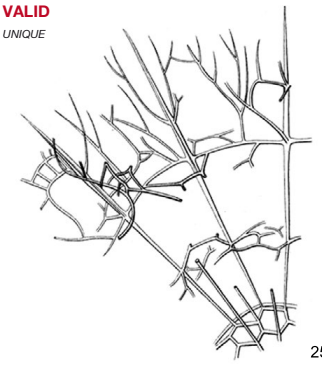
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

Type



25 µm

Arachnospongus varians
Mast, 1910: 57, pl. 15 (2), fig. 29 [lectotype herein]

Support



100 µm

Arachnospongus varians Mast
Aita's collection (plankton, East China Sea)

S - LINEAGE II (F2) CLADOCOCCIDAE
ASSIGNED IN Haeckel 1862: 364

GENUS ***Cladococcus***
Müller, 1856: 485

NOMINOTYPE ***Cladococcus* (*Cladococcus*)**

Diagnosis: Single spherical lattice cortical shell with more than six thre-bladed radial spines bearing lateral branched spinules on the distal part; spinules never forming an external envelope.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Müller (1859b).

Original series: *Cladococcus arborescens* Müller, 1856.

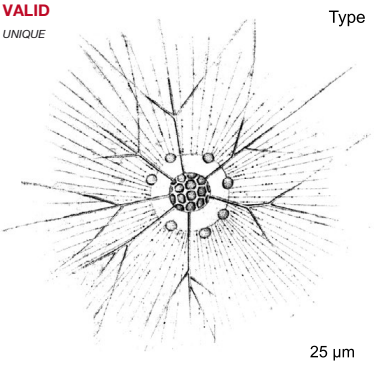
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY LATE MIOCENE–LIVING***

VALID
UNIQUE

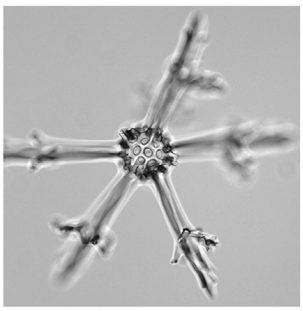
Type



25 µm

Cladococcus arborescens
Müller, 1856: 485 (unfigured); Müller, 1859b: 31, pl. 1, fig. 2

Support



100 µm

Cladococcus arborescens Müller
Zhang's collection (South China Sea)

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Cladococcalis***
Haeckel, 1887: 224

SUBGENUS ***Cladococcus* (*Cladococcalis*)**

Remarks: Type species only illustrated by Müller (1859b). Only the type species clearly belongs to this genus and no other images have been published.

Original series: *Cladococcus arborescens* Müller, 1859b; **Cladococcus penicillus* Haeckel, 1887 and *Cladococcus spinifer* Haeckel, 1861a.

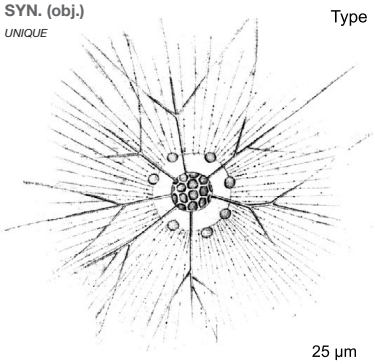
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D63)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CLADOCOCCUS***

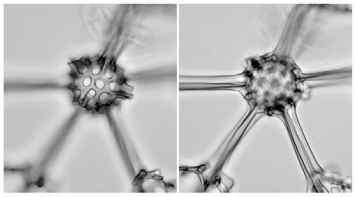
SYN. (obj.)
UNIQUE

Type



Cladococcus arborescens
Müller, 1856: 485 (unfigured); Müller, 1859b: 31, pl. 1, fig. 2

Support



Cladococcus arborescens Müller
Zhang's collection (South China Sea)

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Cladococcodes***
Haeckel, 1887: 225

SUBGENUS ***Cladococcus* (*Cladococcodes*)**

Remarks: Type species frequently reported.

Original series: *Cladococcus bifurcus* Haeckel, 1861a; *Cladococcus pinetum* Haeckel, 1887; *Cladococcus scoparius* Haeckel, 1887 and *Cladococcus viminalis* Haeckel, 1861a.

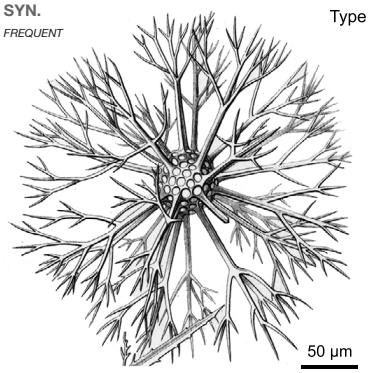
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D63)

STATUS JUNIOR SYNONYM
synonymized by Mast 1910: 158

SEE ***CLADOCOCCUS***

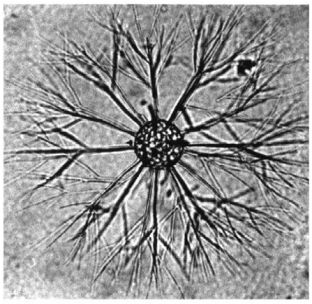
SYN.
FREQUENT

Type



Cladococcus scoparius
Haeckel, 1887: 225, pl. 27, fig. 2

Support



Cladococcus scoparius Haeckel
Takahashi 1991: 67, pl. 10, fig. 6

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Cladococcurus***
Haeckel, 1887: 226

SUBGENUS ***Cladococcus* (*Cladococcurus*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Cladococcus abietinus* Haeckel, 1887; *Cladococcus dendrites* Haeckel, 1887; *Cladococcus stalactites* Haeckel, 1887 and **Cladococcus tricladus* Haeckel, 1887.

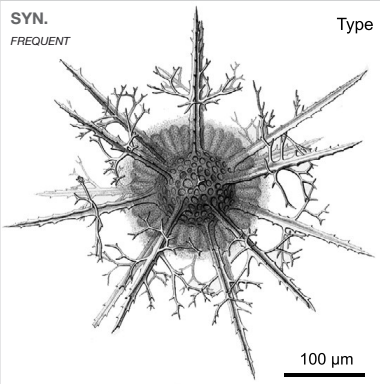
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D63)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CLADOCOCCUS***

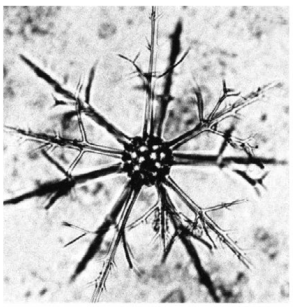
SYN.
FREQUENT

Type



Cladococcus abietinus
Haeckel, 1887: 226, pl. 27, fig. 3

Support



Cladococcus abietinus Haeckel
Takahashi 1991: 67, pl. 10, fig. 5

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Heteracantha***
Mast, 1910: 37

Remarks: Homonym of *HETERACANTHA* Brullé, 1834: 383 (Coleoptera); see *ANOMALACANTHA nomen novum*.

Original series: *Heteracantha dentata* Mast, 1910; *Heteracantha elegans* Mast, 1910; *Heteracantha fragilis* Mast, 1910; *Heteracantha indica* Mast, 1910; *Heteracantha lychnosphaera* Mast, 1910; *Heteracantha racemosa* Mast, 1910; *Heteracantha tenuis* Mast, 1910 and *Heteracantha varians* Mast, 1910.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS HOMONYM, JUNIOR SYNONYM

SEE ***ANOMALACANTHA NOMEN NOVUM***

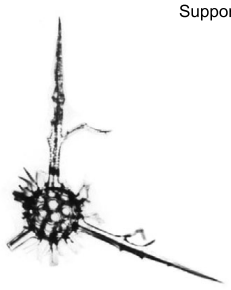
HOM.; SYN.

Type



Heteracantha dentata
Mast, 1910: 37, pl. 18 (5), fig. 47

Support



Anomalacantha dentata (Mast)
Benson 1966: 170, pl. 5, fig. 10

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Anomalacantha*** *NOMEN NOVUM PRO HETERACANTHA*
Loeblich & Tappan, 1961: 223

Remarks: Type species only illustrated by Mast (1910); the support image is one of those species originally included into this genus.

Original series: *Heteracantha dentata* Mast, 1910; *Heteracantha elegans* Mast, 1910; *Heteracantha fragilis* Mast, 1910; **Heteracantha indica* Mast, 1910; *Heteracantha lychnosphaera* Mast, 1910; *Heteracantha racemosa* Mast, 1910; *Heteracantha tenuis* Mast, 1910 and *Heteracantha varians* Mast, 1910.

FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1954: D62)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CLADOCOCCUS***

NOM. NOV.; SYN.
UNIQUE

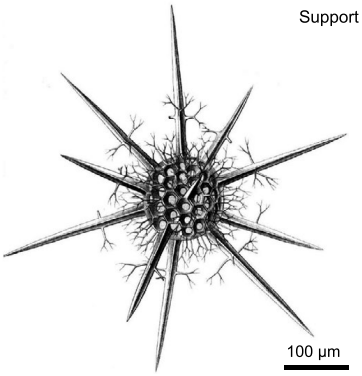
Type



50 µm

Heteracantha dentata
Mast, 1910: 37, pl. 18 (5), fig. 47

Support



100 µm

Heteracantha elegans
Mast 1910: 160, pl. 18 (5), fig. 48

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Porococcus***
Hollande & Enjumet, 1960: 120

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Hollande & Enjumet (1960).

Original series: *Porococcus enigmaticus* Hollande & Enjumet, 1960.

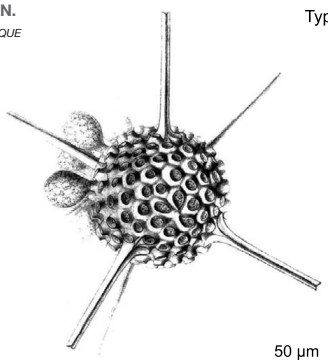
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein; name-bearing type juvenile

SEE ***CLADOCOCCUS***

SYN.
UNIQUE

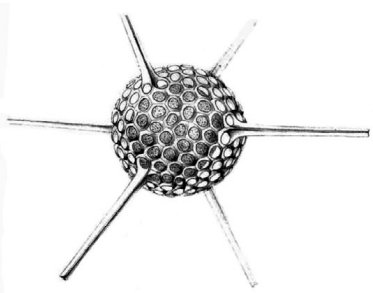
Type



50 µm

Porococcus enigmaticus
Hollande & Enjumet, 1960: 120, pl. 58, fig. 3 [lectotype herein]

Support



50 µm

Porococcus enigmaticus
Hollande & Enjumet, 1960: 120, pl. 58, fig. 1

S - LINEAGE II (F2) ? CLADOCOCCIDAE

GENUS ***Elaphococcus***
Haeckel, 1882: 450

NOMINOTYPE ***Elaphococcus* (*Elaphococcus*)**

Remarks: See comments under *ELAPHOCOCCINUS*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D64)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? CLADOCOCCUS***

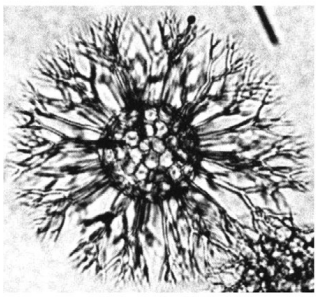
N.D.

Type

UNFIGURED SPECIES

Elaphococcus furcatus
Haeckel, 1887: 228, unfigured

Support



50 µm

Cladococcus cervicornis Haeckel
Takahashi 1991: 67, pl. 10, fig. 9

S - LINEAGE II (F2) ? CLADOCOCCIDAE

GENUS ***Elaphococcinus***
Haeckel, 1887: 228

SUBGENUS ***Elaphococcus* (*Elaphococcinus*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. Invalid subsequent designation of *Cladococcus cervicornis* Haeckel, 1862: 370 by Kozur & Mostler (1979: 12) as the type species.

Original series: *Cladococcus cervicornis* Haeckel, 1861a; **Elaphococcus elaphoceras* Haeckel, 1887; **Elaphococcus furcatus* Haeckel, 1887 and **Elaphococcus umbellifer* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D64)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***ELAPHOCOCCUS***

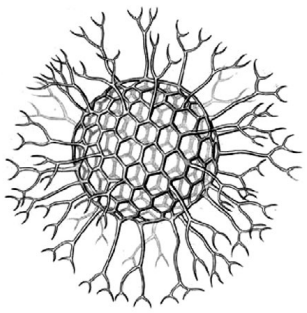
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Elaphococcus furcatus
Haeckel, 1887: 228, unfigured

Support



50 µm

Cladococcus cervicornis
Haeckel, 1862: 370, pl. 14, fig. 5

S - Lineage II (F2) ? CLADOCOCCIDAE

GENUS **Cladococcinus**
Haeckel, 1887: 224

SUBGENUS ***Cladococcus* (*Cladococcinus*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Cladococcus antarcticus* Haeckel, 1887; **Cladococcus japonicus* Haeckel, 1887 and **Cladococcus quadricuspis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D63)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Cladococcus quadricuspis
Haeckel, 1887: 225, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage II (F2) ? CLADOCOCCIDAE

GENUS **Elaphococculus**
Haeckel, 1887: 229

SUBGENUS ***Elaphococcus* (*Elaphococculus*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Elaphococcus dichotomus* Haeckel, 1887; **Elaphococcus drymodes* Haeckel, 1887 and **Elaphococcus umbellatus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D64)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Elaphococcus dichotomus
Haeckel, 1887: 229, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage II (F2) CLADOCOCCIDAE
ASSIGNED HEREIN

GENUS **Diplosphaera**
Haeckel, 1861a: 804

NOMINOTYPE ***Diplosphaera* (*Diplosphaera*)**

Diagnosis: Large spherical shell made of polygonal fragile pore frames bearing more than ten long three-bladed spines interconnected at a certain distance by thin straight bars.

Remarks: Monospecific genus. Because no other figures are available, the support image is selected among those species subsequently assigned to this genus.

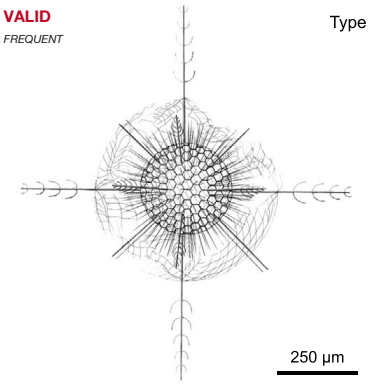
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Middle Pleistocene–Living***

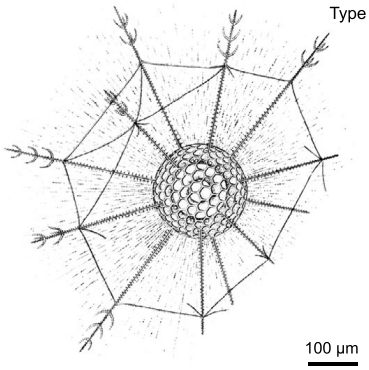
VALID
FREQUENT

Type



Diplosphaera gracilis
Haeckel, 1861a: 804 (unfigured); Haeckel, 1862: 354, pl. 10, fig. 1

Type



Diplosphaera spinosa
Hertwig, 1879: 169, pl. 5, fig. 2

S - Lineage II (F2) CLADOCOCCIDAE

GENUS **Diplosphaeromma**
Haeckel, 1887: 247

SUBGENUS ***Diplosphaera* (*Diplosphaeromma*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Diplosphaera denticulata* Haeckel, 1887; *Diplosphaera gracilis* Haeckel, 1861a; **Diplosphaera reticulata* Haeckel, 1887 and **Diplosphaera triglochin* Haeckel, 1887.

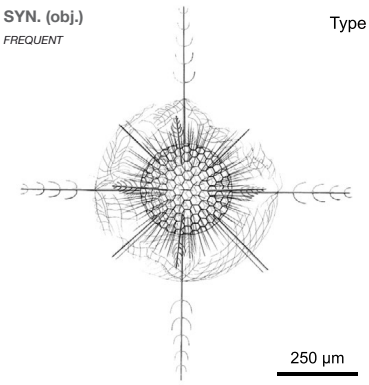
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***DIPLOSPHAERA***

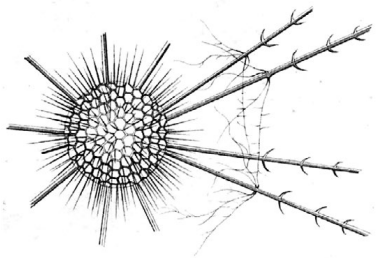
SYN. (obj.)
FREQUENT

Type



Diplosphaera gracilis
Haeckel, 1861a: 804 (unfigured); Haeckel, 1862: 354, pl. 10, fig. 1

Support



Diplosphaera gracilis var. Haeckel
Rezzo 1922: 6, fig. 2

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Astrosphaera***
Haeckel, 1887: 250

NOMINOTYPE ***Astrosphaera* (*Astrosphaera*)**

Remarks: See comments under *ASTROSPHAERELLA*.

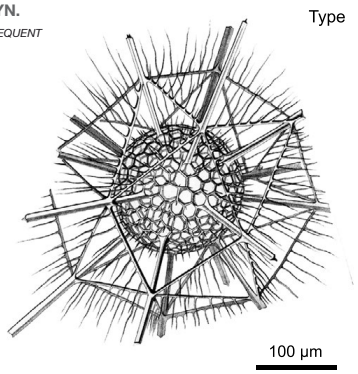
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS JUNIOR SYNONYM
synonymized by Hollande & Enjumet 1960: 116

SEE ***DIPLOSPHAERA***

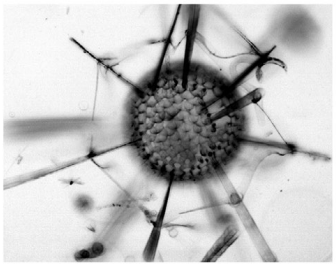
SYN.
FREQUENT

Type



Astrosphaera hexagonalis
Haeckel, 1887: 250, pl. 19, fig. 4

Support



Astrosphaera hexagonalis Haeckel
Suzuki's collection (plankton, off Sesoko Island, Japan)

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Astrosphaerella***
Haeckel, 1887: 250

SUBGENUS ***Astrosphaera* (*Astrosphaerella*)**

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: *Astrosphaera hexagonalis* Haeckel, 1887 and **Astrosphaera splendens* Haeckel, 1887.

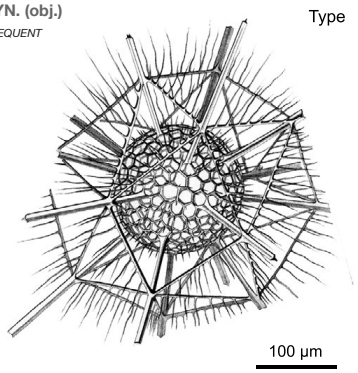
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ASTROSPHAERA***

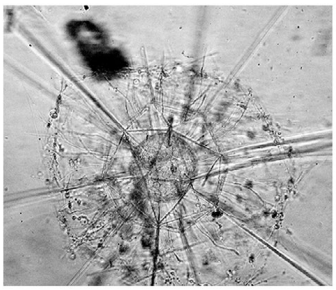
SYN. (obj.)
FREQUENT

Type



Astrosphaera hexagonalis
Haeckel, 1887: 250, pl. 19, fig. 4

Support



Astrosphaera hexagonalis Haeckel
Suzuki's collection (plankton, off Sesoko Island, Japan)

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Astrospongus***
Mast, 1910: 55

Remarks: Only the type species has been illustrated (reported only by Mast 1910).

Original series: **Astrospongus intermedius* Mast, 1910; *Astrospongus ramosus* Mast, 1910 and **Astrospongus simplex* Mast, 1910.

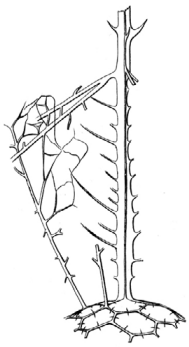
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIPLOSPHAERA***

SYN.
UNIQUE

Type



Astrospongus ramosus
Mast, 1910: 56, pl. 19 (6), fig. 75

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Diplosphaerella***
Haeckel, 1887: 246

SUBGENUS ***Diplosphaera* (*Diplosphaerella*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Diplosphaera dictyota* Haeckel, 1887; *Diplosphaera hexagonalis* Haeckel, 1887; **Diplosphaera ornata* Haeckel, 1887 and **Diplosphaera polygonalis* Haeckel, 1887.

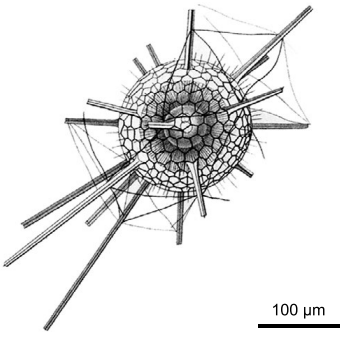
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR SYNONYM
synonymized by Hollande & Enjumet 1960: 116

SEE ***DIPLOSPHAERA***

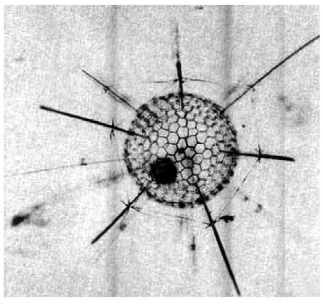
SYN.
FREQUENT

Type



Diplosphaera hexagonalis
Haeckel, 1887: 246, pl. 19, fig. 3

Support



Diplosphaera hexagonalis Haeckel
Fujioka 1990: pl. 39, fig. 5

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Drymosphaeromma***
Haeckel, 1887: 249

SUBGENUS ***Drymosphaera* (*Drymosphaeromma*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Drymosphaera cladophora* Haeckel, 1887; *Drymosphaera dendrophora* Haeckel, 1887 and **Drymosphaera furcata* Haeckel, 1887.

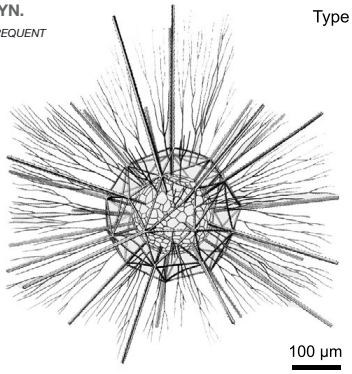
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIPLOSPHAERA***

SYN.
FREQUENT

Type



Drymosphaera dendrophora
Haeckel, 1887: 249, pl. 20, fig. 1

Support



Drymosphaera dendrophora Haeckel
Takahashi 1991: 70, pl. 11, fig. 4

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Leptosphaera***
Haeckel, 1887: 243

NOMINOTYPE ***Leptosphaera* (*Leptosphaera*)**

Remarks: See comments under *LEPTOSPHAERELLA*.

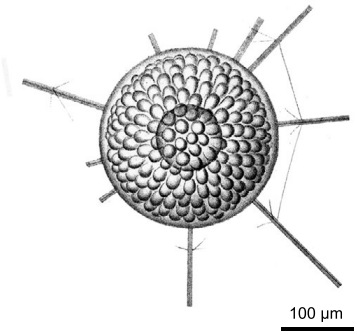
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR SYNONYM
synonymized by Hollande & Enjumet 1960: 116

SEE ***DIPLOSPHAERA***

SYN.
UNIQUE

Type



Leptosphaera hexagonalis
Haeckel, 1887: 244, pl. 19, fig. 2

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Leptosphaerella***
Haeckel, 1887: 244

SUBGENUS ***Leptosphaera* (*Leptosphaerella*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: *Leptosphaera hexagonalis* Haeckel, 1887; **Leptosphaera polygonalis* Haeckel, 1887 and **Leptosphaera serrata* Haeckel, 1887.

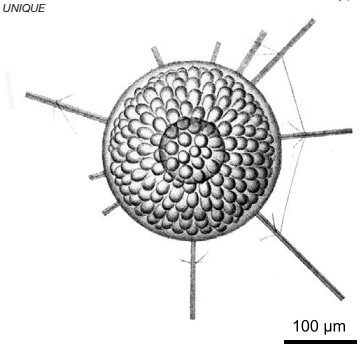
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***LEPTOSPHAERA***

SYN. (obj.)
UNIQUE

Type



Leptosphaera hexagonalis
Haeckel, 1887: 244, pl. 19, fig. 2

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Leptosphaeromma***
Haeckel, 1887: 245

SUBGENUS ***Leptosphaera* (*Leptosphaeromma*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: *Diplosphaera spinosa* Hertwig, 1879; **Leptosphaera ciliata* Haeckel, 1887; **Leptosphaera reticulum* Haeckel, 1887 and **Leptosphaera stellata* Haeckel, 1887.

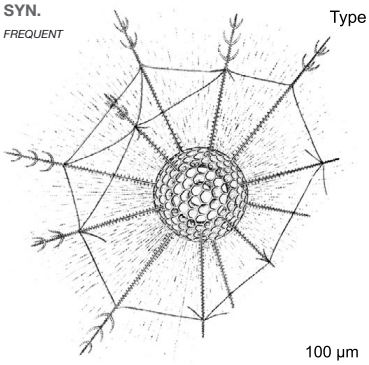
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DIPLOSPHAERA***

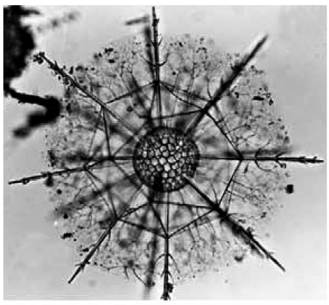
SYN.
FREQUENT

Type



Diplosphaera spinosa
Hertwig, 1879: 168, pl. 5, fig. 2

Support



Diplosphaera spinosa Hertwig
Kršinić & Kršinić 2012: pl. 1, fig. 8

S - LINEAGE II (F2) ? CLADOCOCCIDAE

GENUS ***Astrosphaeromma***
Haeckel, 1887: 251

SUBGENUS ***Astrosphaera* (*Astrosphaeromma*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: **Astrosphaera sideraea* Haeckel, 1887 and *Astrosphaera stellata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D61)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

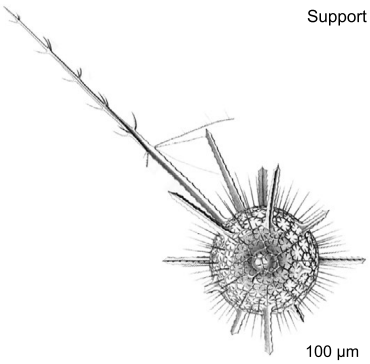
SEE **? *DIPLOSPHAERA***

N.D. Type

UNFIGURED SPECIES

Astrosphaera sideraea
Haeckel, 1887: 251, unfigured

Support



Astrosphaera stellata
Haeckel, 1887: 251, pl. 19, fig. 5

S - LINEAGE II (F2) ? CLADOCOCCIDAE

GENUS ***Drymosphaera***
Haeckel, 1882: 451

NOMINOTYPE ***Drymosphaera* (*Drymosphaera*)**

Remarks: See comments under *DRYMOSPHAERELLA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

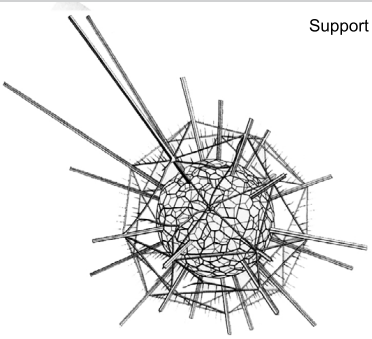
SEE **? *DIPLOSPHAERA***

N.D. Type

UNFIGURED SPECIES

Drymosphaera hexagonalis
Haeckel, 1887: 248, unfigured

Support



Drymosphaera polygonalis
Haeckel, 1887: 249, pl. 19, fig. 1

S - LINEAGE II (F2) ? CLADOCOCCIDAE

GENUS ***Drymosphaerella***
Haeckel, 1887: 248

SUBGENUS ***Drymosphaera* (*Drymosphaerella*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: **Drymosphaera hexagonalis* Haeckel, 1887 and *Drymosphaera polygonalis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

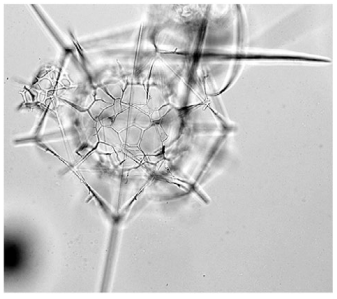
SEE **? *DRYMOSPHAERA***

SYN. (obj.); N.D. Type

UNFIGURED SPECIES

Drymosphaera hexagonalis
Haeckel, 1887: 248, unfigured

Support



Drymosphaera polygonalis Haeckel
Suzuki's collection (Chishima Trench, Quaternary)

S - LINEAGE II (F2) CLADOCOCCIDAE
ASSIGNED IN Hollande & Enjumet 1960: 114

GENUS ***Haeckeliella***
Hollande & Enjumet, 1960: 119

Diagnosis: Skeleton with a very thin macrosphere with hexagonally framed pores and robust cortical shell bearing numerous cylindrical or slightly three-bladed radial spines with short distal spinules.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Haliomma macrodoras* Haeckel, 1887.

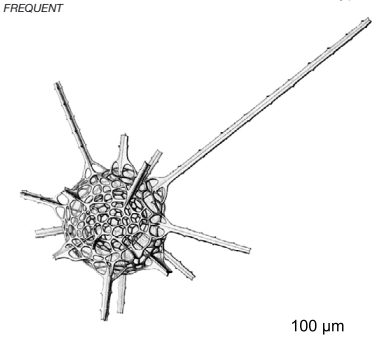
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY MIDDLE MIOCENE–LIVING***

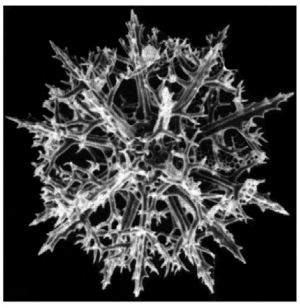
VALID
FREQUENT

Type



Haliomma macrodoras
Haeckel, 1887: 238, pl. 28, fig. 6

Support



Haeckeliella macrodoras (Haeckel)
Takahashi 1991: 69, pl. 10, fig. 1

S - LINEAGE II (F2) CLADOCOCCIDAE
ASSIGNED IN Hollande & Enjumet 1960: 114

GENUS ***Lychnosphaera***
Haeckel, 1882: 452

Diagnosis: Lattice macrosphere with hexagonally framed pores and about twelve three-bladed long spines, which in the middle part bear two verticils that form a very loose spongy cortical shell.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Lychnosphaera regina* Haeckel, 1887.

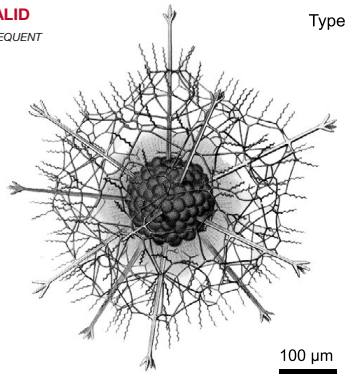
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE MIOCENE–LIVING***

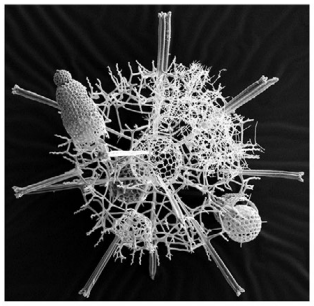
VALID
FREQUENT

Type



Lychnosphaera regina
Haeckel, 1887: 277, pl. 11, fig. 1

Support



Lychnosphaera regina Haeckel
Dumitrica's collection (late Middle Miocene, Romania)

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Rhizoplegmidium***
Haeckel, 1887: 276

SUBGENUS ***Rhizoplegma* (*Rhizoplegmidium*)**

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Rhizoplegma lychnosphaera* Haeckel, 1887 and *Rhizoplegma radicatum* Haeckel, 1887.

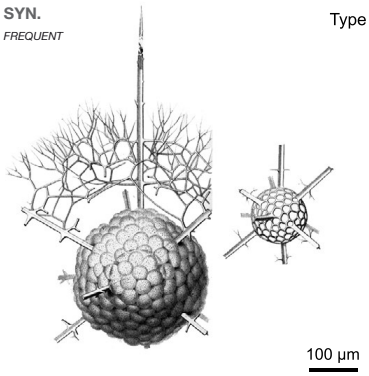
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***LYCHNOSPHAERA***

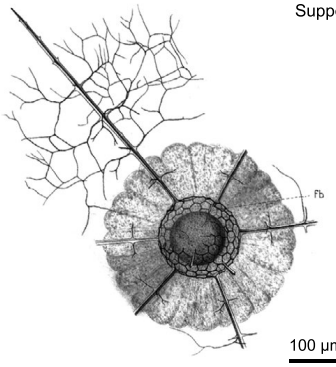
SYN.
FREQUENT

Type



Rhizoplegma radicatum
Haeckel, 1887: 276, pl. 15, figs 9, 9a

Support



Rhizoplegma radicatum Haeckel
Hollande & Enjumet 1960: 117, pl. 57, fig. 1

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Rhizospongus***
Mast, 1910: 59

Remarks: Only the type species clearly belongs to this genus; rarely reported.

Original series: *Rhizospongus arachnoideus* Mast, 1910; *Rhizospongus dendrophorus* Mast, 1910 and **Rhizospongus fragilis* Mast, 1910.

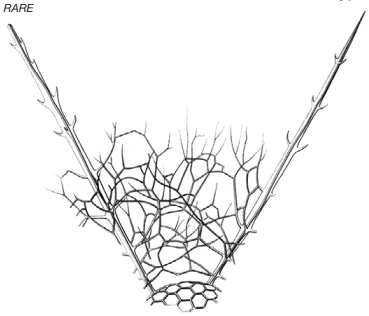
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***LYCHNOSPHAERA***

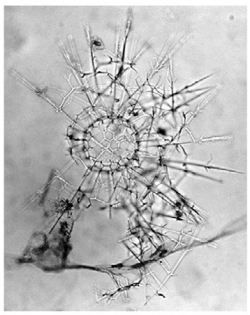
SYN.
RARE

Type



Rhizospongus arachnoideus
Mast, 1910: 59, pl. 15 (2), fig. 30

Support



Rhizospongus arachnoideus Mast
Aita's collection (plankton, East China Sea)

S - LINEAGE II (F2) CLADOCOCCIDAE

GENUS ***Thalassoplegma***
Hollande & Enjumet, 1960: 117

Remarks: Genus described as monospecific at the time of the generic definition; reported only once by Hollande & Enjumet (1960).

Original series: *Lychnosphaera tenuis* Mast, 1910.

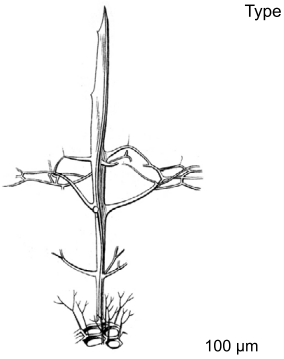
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***LYCHNOSPHAERA***

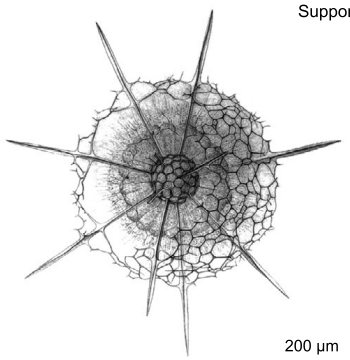
SYN.
VERY RARE

Type



Lychnosphaera tenuis
Mast, 1910: 58, pl. 16 (3), fig. 32

Support



Thalassoplegma tenuis (Mast)
Hollande & Enjumet 1960: 118, pl. 59, fig. 2

S - LINEAGE II (F2) ? CLADOCOCCIDAE

GENUS ***Spongopila***
Haeckel, 1882: 455

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: **Spongopila dichotoma* Haeckel, 1887 and **Spongopila verticillata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

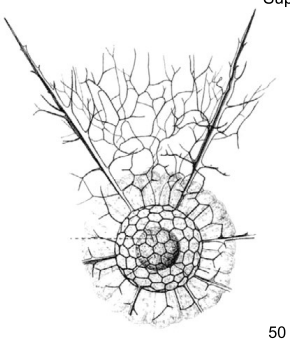
SEE ***? LYCHNOSPHAERA***

N.D. Type

UNFIGURED SPECIES

Spongopila dichotoma
Haeckel, 1887: 274, unfigured

Support



Rhizoplegma verticillata (Haeckel)
Hollande & Enjumet 1960: 117, pl. 50, fig. 5

S - LINEAGE II (F2) ? CLADOCOCCIDAE

GENUS ***Acanthospongus***
Mast, 1910: 65

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Acanthospongus minutus* Mast, 1910.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Acanthospongus minutus
Mast, 1910: 65, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F2) ? CLADOCOCCIDAE

GENUS ***Arachnopegma***
Haeckel, 1882: 454

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Arachnopegma increscens* Haeckel, 1887; **Arachnopegma longispinum* Haeckel, 1887 and **Arachnopegma verticillatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 100)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Arachnopegma verticillatum
Haeckel, 1887: 267, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE II (F2) ? CLADOCOCCIDAE

GENUS ***Arachnopila***
Haeckel, 1887: 266

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Arachnopila hexagonella* Haeckel, 1887 and **Arachnopila polygonella* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

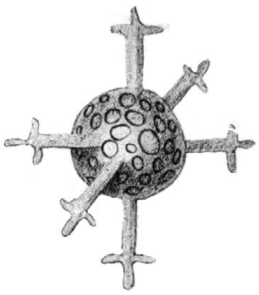
UNFIGURED SPECIES

Arachnopila hexagonella
Haeckel, 1887: 266, unfigured

Support

NO IMAGE PUBLISHED

no image available

	Type	Support
S - Lineage II (F2) ? CLADOCOCCIDAE GENUS ***Caryomma*** Haeckel, 1887: 265 **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Caryomma irregulare* Haeckel, 1887 and **Caryomma regulare* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Caryomma regulare* Haeckel, 1887: 265, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage II (F2) ? CLADOCOCCIDAE GENUS ***Hexacladus*** Vinassa de Regny, 1898: 198 **Remarks**: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. **Original series**: *Hexacladus pantanellii* Vinassa de Regny, 1900. FIXATION SUBSEQUENT MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** *UNIQUE*  100 µm *Hexacladus pantanellii* Vinassa de Regny, 1900: 570, pl. 1, fig. 21	NO IMAGE PUBLISHED no image available
S - Lineage II (F2) ? CLADOCOCCIDAE GENUS ***Rhizoplegma*** Haeckel, 1882: 455 NOMINOTYPE ***Rhizoplegma* (*Rhizoplegma*)** **Remarks**: See comments under *RHIZOPLEGMARIUM*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Rhizoplegma polyacanthum* Haeckel, 1887: 275, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage II (F2) ? CLADOCOCCIDAE GENUS ***Rhizoplegmarium*** Haeckel, 1887: 275 SUBGENUS ***Rhizoplegma* (*Rhizoplegmarium*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Rhizoplegma polyacanthum* Haeckel, 1887; **Rhizoplegma spirale* Haeckel, 1887 and **Rhizoplegma trigonacantha* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***RHIZOPLEGMA***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Rhizoplegma polyacanthum* Haeckel, 1887: 275, unfigured	NO IMAGE PUBLISHED no image available

E - LINEAGE III (G) RHIZOSPHAERIDAE
ASSIGNED IN Cachon & Cachon 1985: 287

GENUS ***Haliommilla***
Haeckel, 1887: 236

SUBGENUS ***Haliomma* (*Haliommilla*)**

Diagnosis: Ovoid and heteropolar microsphere connected to spherical cortical shell by ten to fifteen cylindrical rays. Microsphere with entopically placed spicule consisting of MB, two A and four B rays. A rays free, but B rays give rise to a sack like microsphere.

Remarks: Type species frequently reported.

Original series: **Haliomma boreale* Haeckel, 1887; *Haliomma capillaceum* Haeckel, 1861a; *Haliomma erinaceum* Haeckel, 1861a; *Haliomma rhodococcus* Haeckel, 1887; *Haliomma spinulosum* Müller, 1856 and **Haliomma tenellum* Haeckel, 1862.

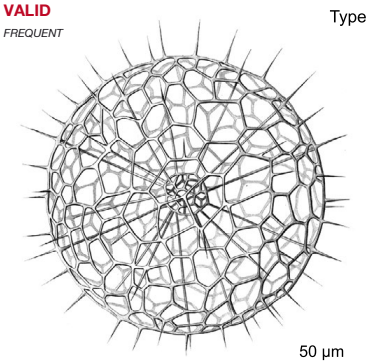
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS **VALID**

AGE ***EARLY PALEOCENE–LIVING***

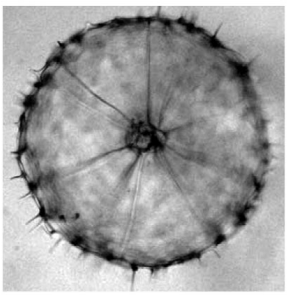
VALID
FREQUENT

Type



Haliomma capillaceum
Haeckel, 1861a: 814 (unfigured); Haeckel, 1862: 426, pl. 23, fig. 2

Type



Haliomma capillaceum Haeckel
Sakai *et al.* 2009: 51, pl. 23, fig. 4a [neotype herein]

E - LINEAGE III (G) RHIZOSPHAERIDAE

GENUS ***Actinosphaera***
Hollande & Enjumet, 1960: 109

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Haliomma capillaceum* Haeckel, 1861a.

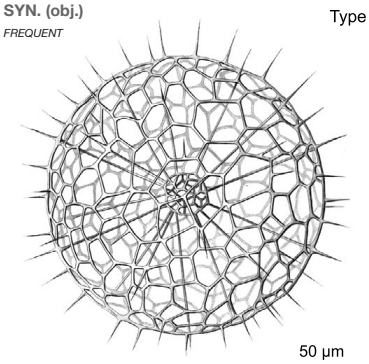
FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***HALIOMMILLA***

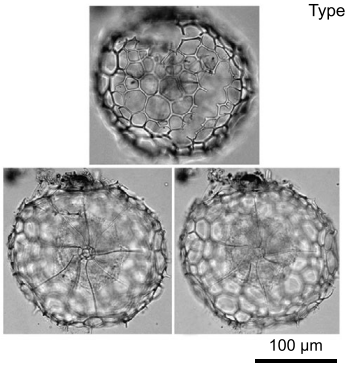
SYN. (obj.)
FREQUENT

Type



Haliomma capillaceum
Haeckel, 1861a: 814 (unfigured); Haeckel, 1862: 426, pl. 23, fig. 2

Type



Haliomma capillaceum Haeckel
Aita *et al.* 2009: pl. 37, figs 4a-c

E - LINEAGE III (G) RHIZOSPHAERIDAE

GENUS ***Elatommura***
Haeckel, 1887: 242

SUBGENUS ***Elatomma* (*Elatommura*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Elatomma irregulare* Haeckel, 1887; *Elatomma juniperinum* Haeckel, 1887 and **Elatomma penicillus* Haeckel, 1887.

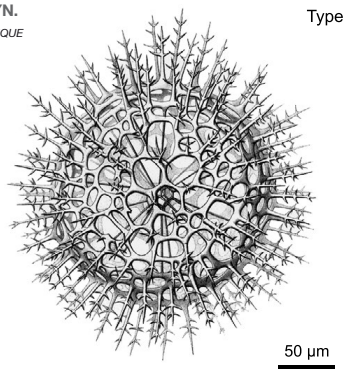
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR SYNONYM
synonymized by Dumitrica 2017: 478

SEE ***HALIOMMILLA***

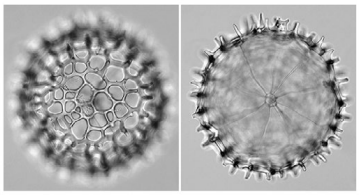
SYN.
UNIQUE

Type



Elatomma juniperinum
Haeckel, 1887: 243, pl. 28, fig. 8

Support



Elatomma juniperinum Haeckel
Zhang's collection (South China Sea)

E - LINEAGE III (G) ? RHIZOSPHAERIDAE

GENUS ***Elatomma***
Haeckel, 1887: 242

NOMINOTYPE ***Elatomma* (*Elatomma*)**

Remarks: See comments under *ELATOMMELLA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Elatomma pinetum
Haeckel, 1887: 242, unfigured

Support

NO IMAGE PUBLISHED

no image available

E - LINEAGE III (G) ? RHIZOSPHAERIDAE

GENUS ***Elatommella***
Haeckel, 1887: 242

SUBGENUS ***Elatomma* (*Elatommella*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Elatomma pinetum* Haeckel, 1887 and **Elatomma scoparium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***ELATOMMA***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Elatomma pinetum
Haeckel, 1887: 242, unfigured

Support

NO IMAGE PUBLISHED

no image available

E - LINEAGE III (G) RHIZOSPHAERIDAE
ASSIGNED HEREIN

GENUS ***Heliosoma***
Haeckel, 1882: 451

NOMINOTYPE ***Heliosoma* (*Heliosoma*)**

Diagnosis: Skeleton with one medullary and one cortical shell interconnected by many radial beams. Shell surface covered with radial spines of two different sizes.

Remarks: See comments under *HELIOSOMANTHA*.

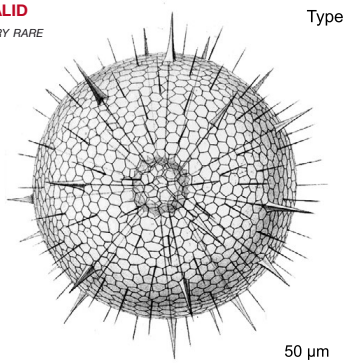
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS **VALID**

AGE ***LIVING***

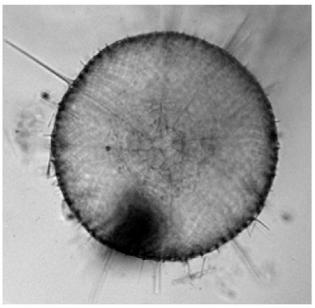
VALID
VERY RARE

Type



Heliosoma radians
Haeckel, 1887: 240, pl. 28, fig. 3

Support



Heliosoma radians Haeckel
Topotypic material (Challenger Station 269), Suzuki's collection

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E - LINEAGE III (G) RHIZOSPHAERIDAE

GENUS ***Heliosomantha***
Haeckel, 1887: 240

SUBGENUS ***Heliosoma* (*Heliosomantha*)**

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: *Haliomma echinaster* Haeckel, 1861a; **Heliosoma duodecilla* Haeckel, 1887; **Heliosoma elegans* Haeckel, 1887 and *Heliosoma radians* Haeckel, 1887.

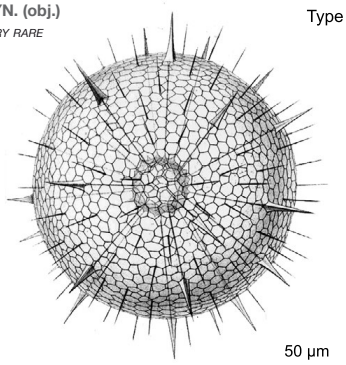
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***HELIOSOMA***

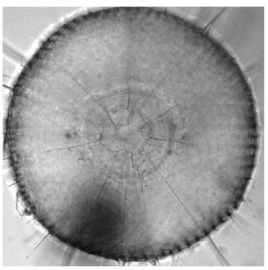
SYN. (obj.)
VERY RARE

Type



Heliosoma radians
Haeckel, 1887: 240, pl. 28, fig. 3

Support



Heliosoma radians Haeckel
Topotypic material (Challenger Station 269), Suzuki's collection

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E - LINEAGE III (G) RHIZOSPHAERIDAE
ASSIGNED IN Dumitrica 2017: 488

GENUS ***Hexarhizacontium***
Dumitrica, 2017: 488

Diagnosis: Skeleton with double medullary shell and spherical cortical shell, all interconnected by six three-bladed rays prolonged into six spines. Microsphere heteropolar with entopically placed spicule with MB, two A and four B. All B and one A rays short, other A forming one of the six spines.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Dumitrica (2017).

Original series: *Hexarhizacontium noritoshii* Dumitrica, 2017.

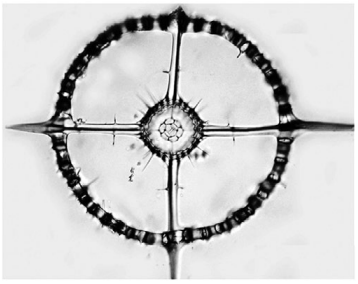
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE MIOCENE***

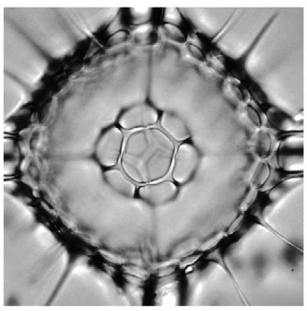
VALID
UNIQUE

Type



Hexarhizacontium noritoshii
Dumitrica, 2017: 490, pl. 9, fig. 1

Support



Hexarhizacontium noritoshii
Dumitrica, 2017: 490, pl. 9, fig. 3

E - LINEAGE III (G) RHIZOSPHAERIDAE
ASSIGNED IN Haeckel 1887: 209

GENUS ***Rhizosphaera***
Haeckel, 1861b: 840

Diagnosis: Ovoid microsphere surrounded by a spongy shell and connected to single or double spherical cortical shell by many rays. Microsphere with entopically placed spicule consisting of MB, two A and 4B rays. The A rays free, but B rays give rise to a sack like microsphere.

Remarks: The type species has been figured just once after the first illustration. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Rhizosphaera leptomita* Haeckel, 1861b and *Rhizosphaera trigonacantha* Haeckel, 1861b.

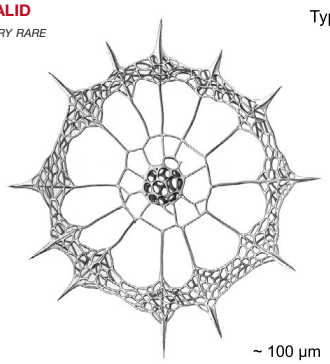
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68)

STATUS **VALID**

AGE ***EARLY OLIGOCENE–LIVING***

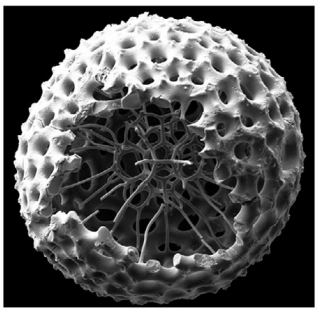
VALID
VERY RARE

Type



Rhizosphaera leptomita
Haeckel, 1861b: 840 (unfigured); Haeckel, 1862: 453, pl. 25, fig. 9

Support



Rhizosphaera trigonacantha Haeckel
Dumitrica's collection (late Late Miocene, Sicily)

E - LINEAGE III (G) ? RHIZOSPHAERIDAE

GENUS ***Rhizospongia***
Hertwig, 1932: 27

Remarks: Homonym of *RHIZOSPONGIA* d'Orbigny, 1852: 213 (Foraminifera); a new name is not required since it is a nomen dubium. No type species was designated. Only two species originally included at the time of the generic definition.

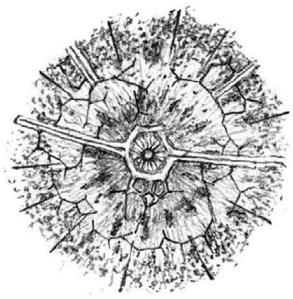
Original series: *Rhizospongia ovalis* Hertwig, 1932 and *Rhizospongia sphaeroidea* Hertwig, 1932.

FIXATION NO TYPE SPECIES DESIGNATED (SD HEREIN)

STATUS HOMONYM, NOMEN DUBIUM
designated herein; name-bearing type incomplete

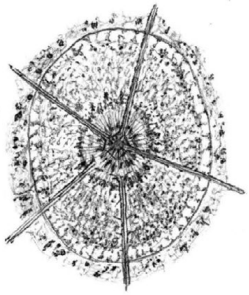
HOM.; N.D.
UNIQUE

Type



Rhizospongia sphaeroidea
Hertwig, 1932: 27, pl. 4, fig. 5

Support



Rhizospongia ovalis
Hertwig, 1932: 27, pl. 4, fig. 3

E - LINEAGE III (G) ? RHIZOSPHAERIDAE

GENUS ***Pityomma***
Haeckel, 1882: 452

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Pityomma drymodes* Haeckel, 1887; **Pityomma piniferum* Haeckel, 1887 and **Pityomma scoparium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

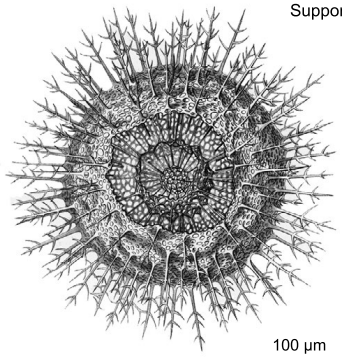
N.D.

Type

UNFIGURED SPECIES

Pityomma scoparium
Haeckel, 1887: 259, unfigured

Support



Pityomma drymodes
Haeckel, 1887: 260, pl. 29, fig. 9

E - LINEAGE III (H) CENTROCUBIDAE
ASSIGNED IN Hollande & Enjumet 1960: 120

GENUS ***Centrocubus***
Haeckel, 1887: 277

Diagnosis: Initial skeleton consisting of MB, and 2A and 4B rays. The B rays connected proximally by two arches parallel with MB which are connected, at their turn, by two arches perpendicular to MB and that give rise to two rays. All rays long, thick, three-bladed and connected by a thick spongy framework that may give raise to secondary rays.

Remarks: Illustration available only for the type species (frequently reported).

Original series: *Centrocubus cladostylus* Haeckel, 1887; **Centrocubus octostylus* Haeckel, 1887 and **Centrocubus polystylus* Haeckel, 1887.

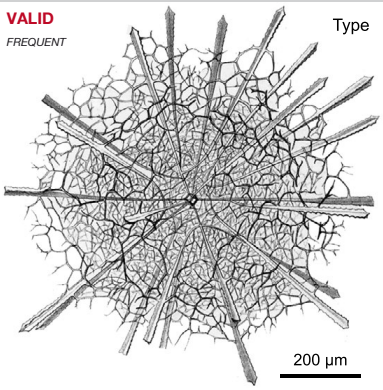
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS **VALID**

AGE ***EARLY MIDDLE MIOCENE–LIVING***

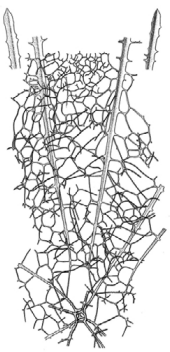
VALID
FREQUENT

Type



Centrocubus cladostylus
Haeckel, 1887: 278, pl. 18, fig. 1

Support



Centrocubus cladostylus Haeckel
Dumitrica 1983b: 230, pl. 2, fig. 2

E - LINEAGE III (H) — CENTROCUBIDAE
ASSIGNED IN Cachon & Cachon 1985: 286

GENUS **Octodendron**
Haeckel, 1887: 279

NOMINOTYPE ***Octodendron* (*Octodendron*)**

Diagnosis: Basal skeleton of *Centrocubus*-type with the eight primary three-bladed spines connected at equal distance by a lattice spherical shell from which a spongy framework spring.

Remarks: See comments under *OCTODENDRIUM*.

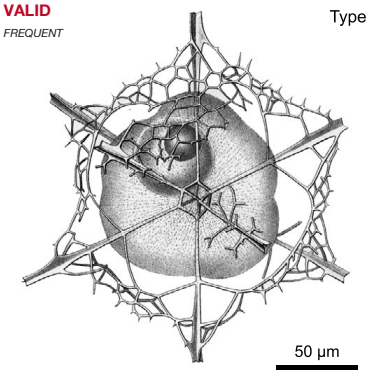
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68)

STATUS **VALID**

AGE ***LIVING***

VALID
FREQUENT

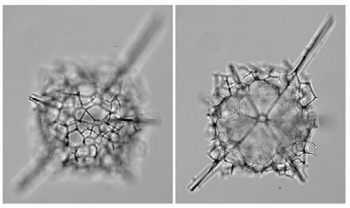
Type



50 µm

Octodendron cubocentron
Haeckel, 1887: 279, pl. 18, fig. 3

Support



100 µm

Octodendron cubocentron Haeckel
Zhang's collection (South China Sea)

E - LINEAGE III (H) — CENTROCUBIDAE

GENUS **Octodendridium**
Haeckel, 1887: 279

SUBGENUS ***Octodendron* (*Octodendridium*)**

Remarks: Type species frequently reported.

Original series: **Octodendron araucaria* Haeckel, 1887; *Octodendron cubocentron* Haeckel, 1887; **Octodendron pinetum* Haeckel, 1887; *Octodendron spathillatum* Haeckel, 1887 and **Octodendron spirale* Haeckel, 1887.

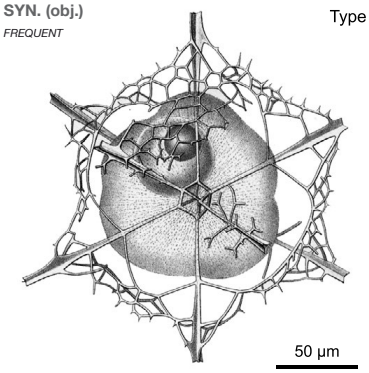
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***OCTODENDRON***

SYN. (obj.)
FREQUENT

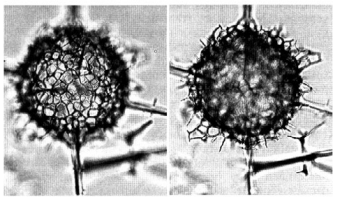
Type



50 µm

Octodendron cubocentron
Haeckel, 1887: 279, pl. 18, fig. 3

Support



100 µm

Spongodrymus cubocentron (Haeckel)
van de Paverd 1995: 106, pl. 26 figs 3a, 3b

E - LINEAGE III (H) — CENTROCUBIDAE

GENUS **Heterospongus**
Mast, 1910: 63

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Heterospongus varians* Mast, 1910.

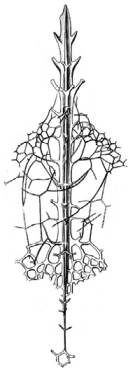
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***OCTODENDRON***

SYN.
UNIQUE

Type



150 µm

Heterospongus varians
Mast, 1910: 64, pl. 16 (3), fig. 31

Support

NO IMAGE PUBLISHED

no image available

E - LINEAGE III (H) — ? CENTROCUBIDAE

GENUS **Octodendronium**
Haeckel, 1887: 281

SUBGENUS ***Octodendron* (*Octodendronium*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Octodendron arboretum* Haeckel, 1887; **Octodendron contortum* Haeckel, 1887 and **Octodendron verticillatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Octodendron verticillatum
Haeckel, 1887: 281, unfigured

Support

NO IMAGE PUBLISHED

no image available

E - Lineage III (I) EXCENTROCONCHIDAE

assigned in De Wever *et al.* 2001: 197

GENUS ***Excentroconcha***
Mast, 1910: 64

Diagnosis: Initial skeleton of *Gonosphaera*-type included in a spherical spongy framework.

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: **Excentroconcha major* Mast, 1910 and *Excentroconcha minor* Mast, 1910.

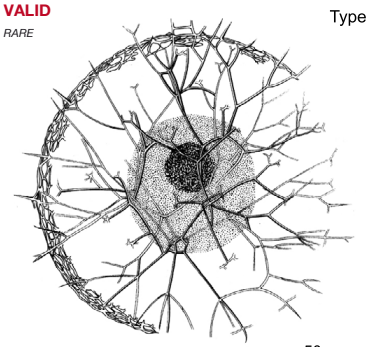
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D67)

STATUS **VALID**

AGE ***Late Pliocene–Living***

VALID
RARE

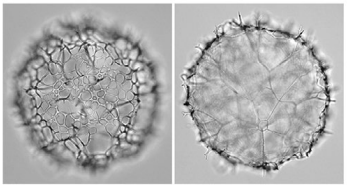
Type



50 µm

Excentroconcha minor
Mast, 1910: 64, pl. 17 (4), fig. 42

Support



50 µm

Excentroconcha minor Mast
Zhang's collection (South China Sea)

E - Lineage III (I) EXCENTROCONCHIDAE

assigned in Dumitrica 2001: 194

GENUS ***Gonosphaera***
Jørgensen, 1905: 132

Diagnosis: Spicular skeleton consisting of MB, 2A and 4B rays, the latter connected by an arch perpendicular to MB and bearing two rays.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Gonosphaera primordialis* Jørgensen, 1905.

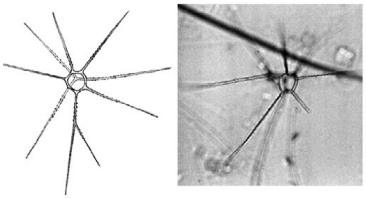
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Holocene–Living***

VALID
FREQUENT

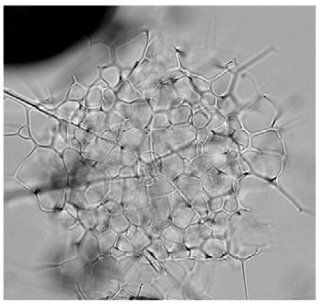
Type



50 µm

Gonosphaera primordialis
Jørgensen, 1905: 132, pl. 14, fig. 64; Dolven *et al.* 2014: pl. 6, fig. 1 (lectotype)

Support



100 µm

Gonosphaera primordialis Jørgensen
Suzuki's collection (plankton, off Sesoko Island, Japan)

E - Lineage III (I) EXCENTROCONCHIDAE

assigned in De Wever *et al.* 2001: 200

GENUS ***Lonchosphaera***
Popofsky, 1908: 217

Diagnosis: Lattice spherical cortical skeleton with a medullary shell consisting of MB, 2A free and 4B. On each side of MB each pair of B connected by an arch and the two arches connected by an antapical arch perpendicular to MB and bearing an antapical ray AA.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Lonchosphaera spicata* Popofsky, 1908.

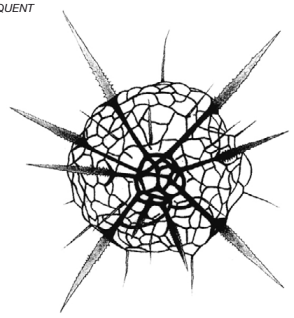
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Early Early Miocene–Living***

VALID
FREQUENT

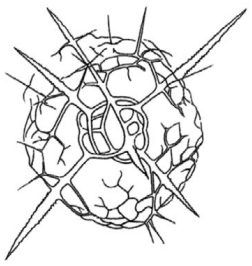
Type



25 µm

Lonchosphaera spicata
Popofsky, 1908: 218, pl. 24, fig. 2 [lectotype by Dumitrica 2014a]

Support



50 µm

Lonchosphaera spicata Popofsky
Dumitrica 2014a: 61, fig. 1b

E - Lineage III (I) EXCENTROCONCHIDAE

GENUS ***Arachnostylus***
Hollande & Enjumet, 1960: 93

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Dumitrica (2014a).

Original series: *Arachnostylus tregouboffi* Hollande & Enjumet, 1960.

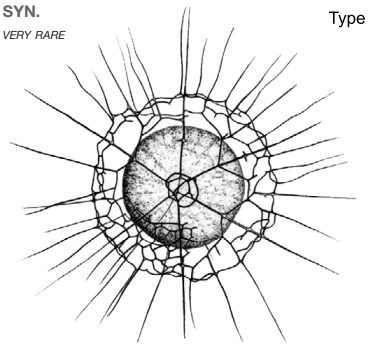
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Dumitrica 1984: 94

SEE ***LONCHOSPHAERA***

SYN.
VERY RARE

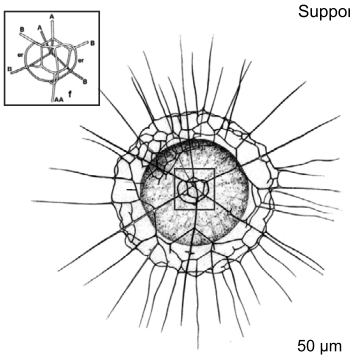
Type



50 µm

Arachnostylus tregouboffi
Hollande & Enjumet, 1960: 93, pl. 43, fig. 3

Support



50 µm

Arachnostylus tregouboffi Hollande & Enjumet
Dumitrica 2014a: 61, figs 1d, 2f

E - LINEAGE III (I) — QUINQUECAPSULARIIDAE
ASSIGNED IN Bjørklund *et al.* 2008: 460

GENUS ***Joergensenium***
Bjørklund, Dumitrica, Dolven & Swanberg, 2008: 460

Diagnosis: Quinquecapsulariidae with a double medullary shell and a spherical cortical shell, both interconnected by numerous radial beams. Microsphere is an irregular pentagonal prism. Outer medullary shell has seven domes corresponding to the faces of the microspheric prism.

Remarks: Type species only illustrated by Bjørklund *et al.* (2008). Only the type species clearly belongs to this genus and no other images have been published.

Original series: *Actinomma mirabile* Goll & Bjørklund, 1989 and *Joergensenium rotatile* Bjørklund, Dumitrica, Dolven & Swanberg, 2008.

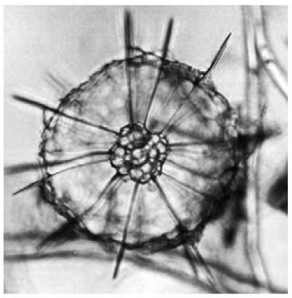
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE MIOCENE–LIVING***

VALID
UNIQUE

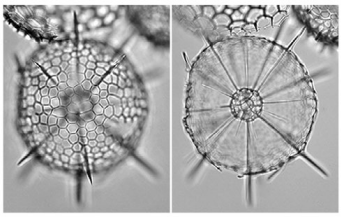
Type



50 µm

Joergensenium rotatile
Bjørklund, Dumitrica, Dolven & Swanberg, 2008: 462, pl. 1, fig. 3

Support



100 µm

Joergensenium rotatile Bjørklund, Dumitrica, Dolven & Swanberg
Zhang's collection (South China Sea)

E - LINEAGE III (I) — SPONGODRYMIDAE
ASSIGNED HEREIN

GENUS ***Plegmosphaeromma***
Haeckel, 1887: 89

SUBGENUS ***Plegmosphaera* (*Plegmosphaeromma*)**

Diagnosis: Spongy spherical shell with empty center, usually without microsphere or radial spines; hundreds, intricately branched, fibrous radial beams to form the outermost shell.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Kršinić & Kršinić (2012).

Original series: *Plegmosphaera exodictyon* Haeckel, 1887.

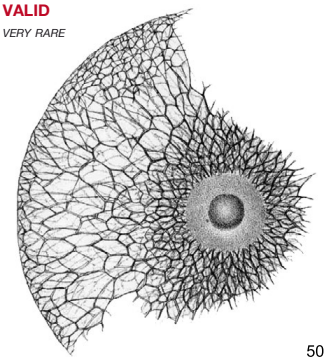
FIXATION MONOTYPY

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

VALID
VERY RARE

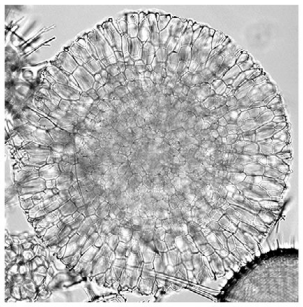
Type



50 µm

Plegmosphaera exodictyon
Haeckel, 1887: 89, pl. 18, fig. 8

Support



50 µm

Plegmosphaera exodictyon Haeckel
Zhang's collection (South China Sea)

E - LINEAGE III (I) — ? SPONGODRYMIDAE

GENUS ***Plegmosphaera***
Haeckel, 1882: 455

NOMINOTYPE ***Plegmosphaera* (*Plegmosphaera*)**

Remarks: See comments under *PLEGMOSPHAERANTHA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? PLEGMOSPHAEROMMA***

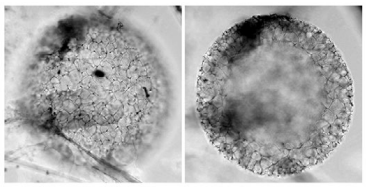
N.D.

Type

UNFIGURED SPECIES

Plegmosphaera maxima
Haeckel, 1887: 88, unfigured

Support



100 µm

Plegmosphaera maxima Haeckel
Suzuki's collection (plankton, off Sendai, Japan)

E - LINEAGE III (I) — ? SPONGODRYMIDAE

GENUS ***Plegmosphaerantha***
Haeckel, 1887: 88

SUBGENUS ***Plegmosphaera* (*Plegmosphaerantha*)**

Remarks: Type species never figured; however, it has been reinterpreted in modern times after Nishimura & Yamauchi (1984).

Original series: **Plegmosphaera coelopila* Haeckel, 1887; **Plegmosphaera maxima* Haeckel, 1887 and **Plegmosphaera pachypila* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***PLEGMOSPHAERA***

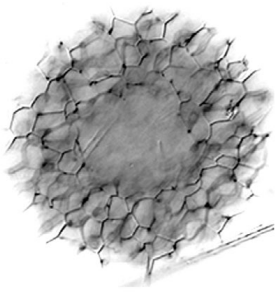
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Plegmosphaera maxima
Haeckel, 1887: 88, unfigured

Support



50 µm

Plegmosphaera pachypila Haeckel
Suzuki's collection (plankton, off Sesoko Island, Japan)

E - LINEAGE III (I) ? SPONGODRYMIDAE

GENUS ***Plegmosphaerella***
Haeckel, 1887: 88

SUBGENUS ***Plegmosphaera* (*Plegmosphaerella*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition. However, it has been reinterpreted by Hollande & Enjumet (1960).

Original series: **Plegmosphaera entodictyon* Haeckel, 1887 and **Plegmosphaera leptodictyon* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

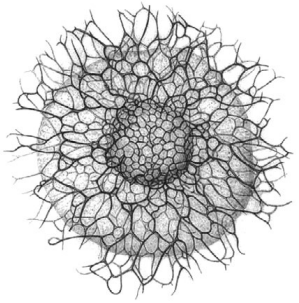
SEE **? *PLEGMOSPHAEROMMA***

N.D. Type

UNFIGURED SPECIES

Plegmosphaera entodictyon
Haeckel, 1887: 88, unfigured

Support



50 µm

Plegmosphaera entodictyon Haeckel
Hollande & Enjumet 1960: 103, pl. 48, fig. 1

E - LINEAGE III (I) ? SPONGODRYMIDAE

GENUS ***Plegmosphaerusa***
Haeckel, 1887: 89

SUBGENUS ***Plegmosphaera* (*Plegmosphaerusa*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: **Plegmosphaera leptoplegma* Haeckel, 1887 and **Plegmosphaera pachyplegma* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

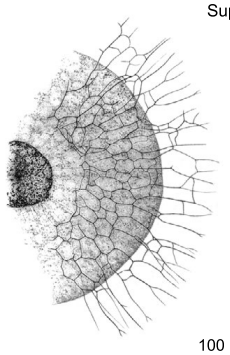
SEE **? *PLEGMOSPHAEROMMA***

N.D. Type

UNFIGURED SPECIES

Plegmosphaera leptoplegma
Haeckel, 1887: 89, unfigured

Support



100 µm

Plegmosphaera leptoplegma Haeckel
Hollande & Enjumet 1960: 103, pl. 48, fig. 5

E - LINEAGE III (I) ? SPONGODRYMIDAE

GENUS ***Styptosphaera***
Haeckel, 1882: 455

Remarks: Type species never figured; however, it has been reinterpreted in modern times after Renz (1974).

Original series: **Styptosphaera spongiacea* Haeckel, 1887; **Styptosphaera spumacea* Haeckel, 1887 and **Styptosphaera stupacea* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

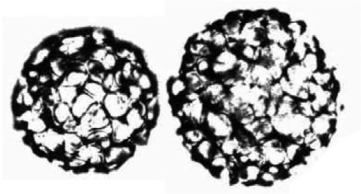
SEE **? *PLEGMOSPHAEROMMA***

N.D. Type

UNFIGURED SPECIES

Styptosphaera spumacea
Haeckel, 1887: 87, unfigured

Support



50 µm

Styptosphaera spumacea Haeckel
Nigrini 1970: 167, pl. 1, figs 7, 8

E - LINEAGE III (I) SPONGODRYMIDAE
ASSIGNED HEREIN

GENUS ***Spongodictyum***
Haeckel, 1862: 459

NOMINOTYPE ***Spongodictyum* (*Spongodictyum*)**

Diagnosis: Spherical cortical shell with a coarse polygonal meshwork and a double latticed medullary shell; no radial spines but several tens of fibrillar radial beams.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1862).

Original series: *Dictyosoma trigonizon* Haeckel, 1861b.

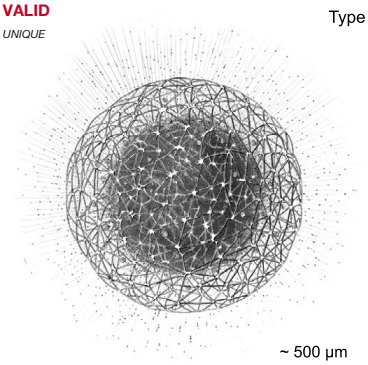
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

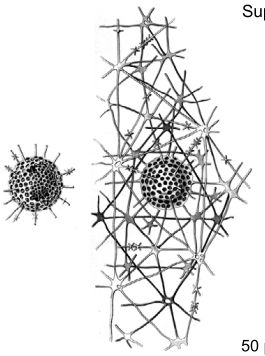
Type



~ 500 µm

Dictyosoma trigonizon
Haeckel, 1861b: 841 (unfigured); Haeckel, 1862: 459, pl. 26, fig. 4

Support



50 µm

Dictyosoma trigonizon
Haeckel, 1862: 459, pl. 26, figs 5, 6

E - LINEAGE III (I) SPONGODRYMIDAE

GENUS ***Spongodictyoma***
Haeckel, 1887: 91

SUBGENUS ***Spongodictyum* (*Spongodictyoma*)**

Remarks: Type species illustrated and reported only once by Haeckel (1862); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: *Dictyosoma trigonizon* Haeckel, 1861b and **Spongodictyon arcadophoron* Haeckel, 1887.

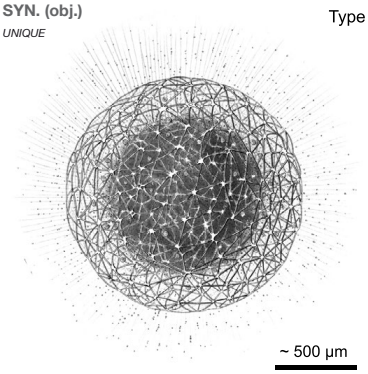
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SPONGODICTYUM***

SYN. (obj.)
UNIQUE

Type



Dictyosoma trigonizon
Haeckel, 1861b: 841 (unfigured); Haeckel, 1862: 459, pl. 26, fig. 4

Support

NO IMAGE PUBLISHED

no image available

E - LINEAGE III (I) ? SPONGODRYMIDAE

GENUS ***Spongodictyon*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 90

Remarks: An incorrect subsequent spelling for *SPONGODICTYUM*. By referring back to p. 459 in his monography of 1862, Haeckel apparently means *SPONGODICTYUM* to be an emendation to the name *SPONGODICTYON*, which is unjustified according to the provisions of ICZN art. 33.3.

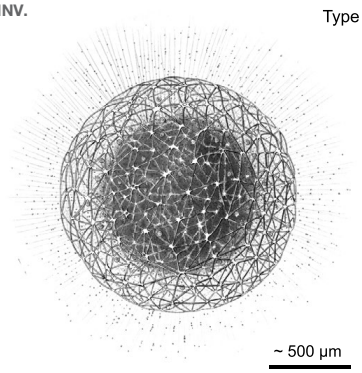
FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D50)

STATUS INVALID NAME
designated herein

SEE ***SPONGODICTYUM***

INV.

Type



Dictyosoma trigonizon
Haeckel, 1861b: 841 (unfigured); Haeckel, 1862: 459, pl. 26, fig. 4

Support

NO IMAGE PUBLISHED

no image available

E - LINEAGE III (I) SPONGODRYMIDAE
ASSIGNED IN Hollande & Enjumet 1960: 69

GENUS ***Spongodrymus***
Haeckel, 1882: 455

Diagnosis: External spherical envelope, thin and spongy, around a dense spongy medullary shell with a small central microsphere. Interval between envelope and medullary shell occupied by several tens to hundreds of fibrillar radial beams distally ramified. No radial spines.

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: **Spongodrymus abietinus* Haeckel, 1887 and *Spongodrymus elaphococcus* Haeckel, 1887.

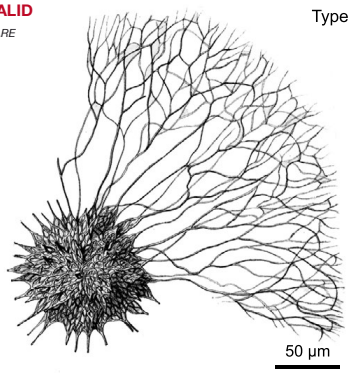
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS **VALID**

AGE ***LIVING***

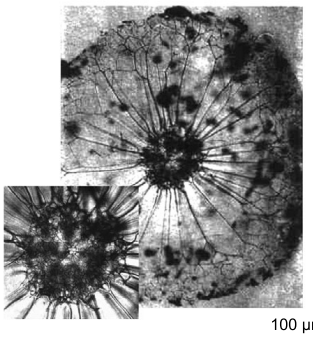
VALID
RARE

Type



Spongodrymus elaphococcus
Haeckel, 1887: 272, pl. 18, fig. 9

Support



Spongodrymus elaphococcus Haeckel
Hollande & Enjumet 1960: 106, pl. 25, figs 1, 2

E - LINEAGE III (I) ? SPONGODRYMIDAE
FAMILY TENTATIVELY ASSIGNED HEREIN

GENUS ***Tetrasphaera***
Popofsky, 1912: 111

Diagnosis: Spherical cortical spongy shell including a three-layered medullary shell; no radial spines but several tens to hundreds of fibrillar radial beams distally multi-ramified to form the cortical wall.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Tetrasphaera spongiosa* Popofsky, 1912.

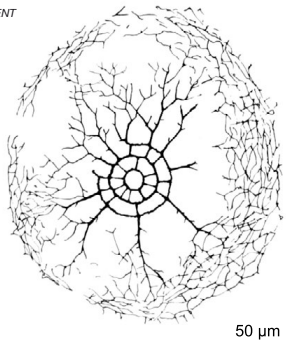
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

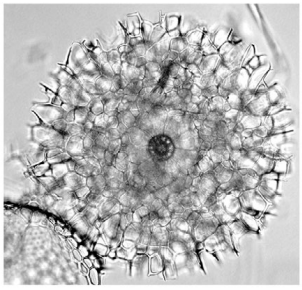
VALID
FREQUENT

Type



Tetrasphaera spongiosa
Popofsky, 1912: 112, text-fig. 23

Support



Tetrasphaera spongiosa Popofsky
Zhang's collection (South China Sea)

E - LINEAGE III (I) ? SPONGODRYMIDAE
FAMILY TENTATIVELY ASSIGNED HEREIN

GENUS ***Tricorporisphaera***
O'Connor, 1999: 4

Diagnosis: Three concentric spheroidal shells with a lattice microsphere and a cortical shell as a double spongy-like envelope, all inter-connected by six main spines externally extended and numerous secondary beams.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by O'Connor (1999).

Original series: *Tricorporisphaera bibula* O'Connor, 1999.

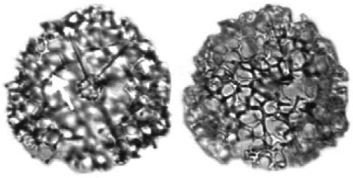
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EOCENE***

VALID
UNIQUE

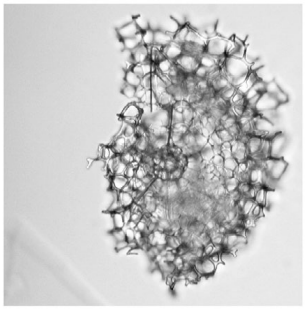
Type



100 µm

Tricorporisphaera bibula
O'Connor, 1999: 5, pl. 5, figs 1a, 1b

Support



100 µm

Tricorporisphaera bibula O'Connor
Suzuki's collection (Late Eocene, Equatorial Pacific)

E - LINEAGE III (I) ? SPONGODRYMIDAE

GENUS ***Dictyosoma***
Müller, 1856: 485

Remarks: Homonym of *DICTYOSOMA* Temminck & Schlegel, 1845: 139 (Teleostei); see *DICTYOPLEGMA nomen novum*.

Original series: *Dictyosoma angulare* Müller, 1856 and *Dictyosoma spongiosum* Müller, 1856.

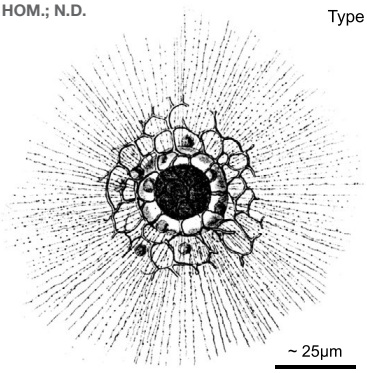
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS HOMONYM, NOMEN DUBIUM

SEE ***DICTYOPLEGMA NOMEN NOVUM***

HOM.; N.D.

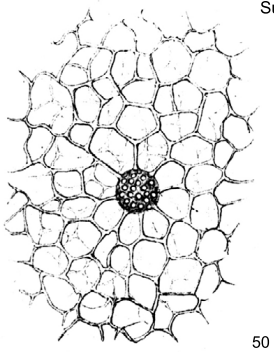
Type



~ 25µm

Dictyosoma spongiosum
Müller, 1856: 486 (unfigured); Müller, 1859b: 31, pl. 2, fig. 9 [lectotype herein]

Support



50 µm

Dictyosoma spongiosum
Müller, 1859b: 31, pl. 2, fig. 10 [paratype]

E - LINEAGE III (I) ? SPONGODRYMIDAE

GENUS ***Dictyoplegma*** *NOMEN NOVUM* PRO *DICTYOSOMA*
Haeckel, 1862: 458

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Müller (1859b). The subsequent designation by Campbell (1954: D50) of *Dictyoplegma integrum* Rüst 1885: 292, pl. 29 (4), fig. 10, should be considered erroneous; consequently, O'Dogherty *et al*. (2009a: 337) wrongly followed Campbell's action.

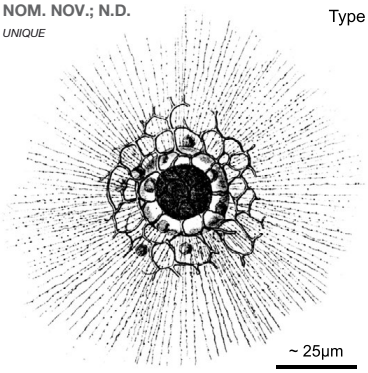
Original series: *Dictyosoma spongiosum* Müller, 1856.

FIXATION MONOTYPY; ICZN, ART. 67.8

STATUS *NOMEN NOVUM*, NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

NOM. NOV.; N.D.
UNIQUE

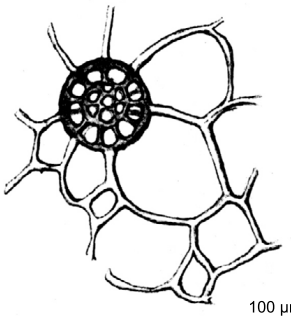
Type



~ 25µm

Dictyosoma spongiosum
Müller, 1856: 486 (unfigured); Müller, 1859b: 31, pl. 2, fig. 9 [lectotype herein]

Support



100 µm

Dictyosoma spongiosum
Müller, 1859b: 31, pl. 2, fig. 11 [paratype]

E - LINEAGE III (I) ? SPONGODRYMIDAE

GENUS ***Dictyosphagma*** *NOMEN NOVUM* PRO *DICTYOSOMA*
Mivart, 1878: 155

Remarks: *DICTYOSPHAGMA* Mivart, 1878 is proposed to replace *DICTYOSOMA* Müller, 1856 and is thus a junior objective synonym of *DICTYOPLEGMA* Haeckel, 1862, a previously proposed replacement name (indicated by Loeblich & Tappan 1961: 222). Illustration available only for the type species (figured just once after the first illustration). Only two species originally included at the time of the generic definition.

Original series: **Dictyosoma angulare* Müller, 1856 and *Dictyosoma spongiosum* Müller, 1856.

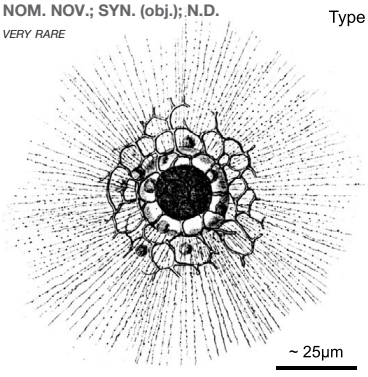
FIXATION MONOTYPY; ICZN, ART. 67.8

STATUS *NOMEN NOVUM*, JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***DICTYOPLEGMA***

NOM. NOV.; SYN. (obj.); N.D.
VERY RARE

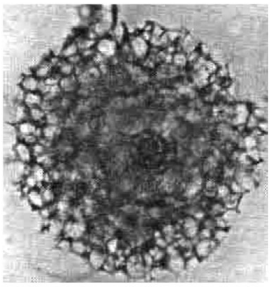
Type



~ 25µm

Dictyosoma spongiosum
Müller, 1856: 486 (unfigured); Müller, 1859b: 31, pl. 2, fig. 9 [lectotype herein]

Support



50 µm

Dictyosoma spongiosum Müller
Boltovskoy & Jankilevich 1985: pl. 2, fig. 5

E - LINEAGE III (I) ? SPONGODRYMIDAE

GENUS ***Dispongia***
Popofsky, 1912: 113

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Popofsky (1912).

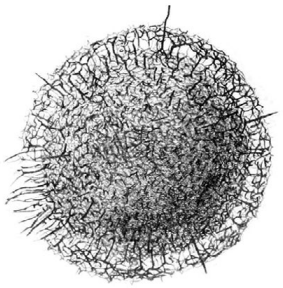
Original series: *Dispongia velata* Popofsky, 1912.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



100 µm

Dispongia velata
Popofsky, 1912: 113, pl. 1, fig. 4

Support



50 µm

Dispongia velata
Popofsky, 1912: 113, pl. 1, fig. 5

E - LINEAGE III (I) ? SPONGODRYMIDAE

GENUS ***Spongiommella***
Haeckel, 1887: 270

SUBGENUS ***Spongiomma* (*Spongiommella*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Spongiomma clavatum* Haeckel, 1887; **Spongiomma denticulatum* Haeckel, 1887; **Spongiomma radiatum* Haeckel, 1887 and **Spongiomma spathillatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Spongiomma radiatum
Haeckel, 1887: 270, unfigured

Support

NO IMAGE PUBLISHED

no image available

E - LINEAGE III (I) ? SPONGODRYMIDAE

GENUS ***Spongothamnus***
Haeckel, 1887: 273

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Spongothamnus furcatus* Haeckel, 1887 and **Spongothamnus scoparius* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Spongothamnus furcatus
Haeckel, 1887: 274, unfigured

Support

NO IMAGE PUBLISHED

no image available

E - LINEAGE III (UNKNOWN) CENTROLONCHIDAE
ASSIGNED IN CAMPBELL: D60

GENUS ***Centrolonche***
Popofsky, 1912: 89

Diagnosis: Latticed shell with a fibrillar spicule arising from a point and prolonged externally in six three-bladed radial spines.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Centrolonche hexalonche* Popofsky, 1912.

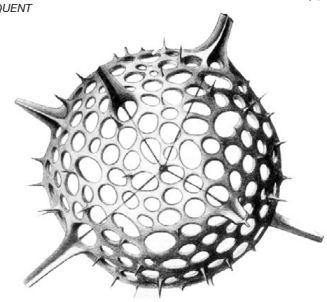
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
FREQUENT

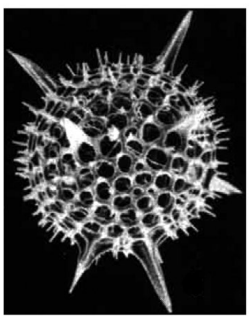
Type



50 µm

Centrolonche hexalonche
Popofsky, 1912: 89, pl. 1, fig. 1

Support



50 µm

Centrolonche hexalonche Popofsky
Nishimura & Yamauchi 1984: 24, pl. 6, fig. 4

E - Lineage III (unknown) CENTROLONCHIDAE
assigned in Kozur & Mostler 1979: 27

GENUS **Stigmosphaerusa**
Hollande & Enjumet, 1960: 90

Diagnosis: Latticed spherical shell including a fibrillar spicule consisting of six rays of which four bear an antapical branch, the others being free and apically directed. Cortical shell spherical with numerous thin spines.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Stigmosphaerusa horrida* Hollande & Enjumet, 1960.

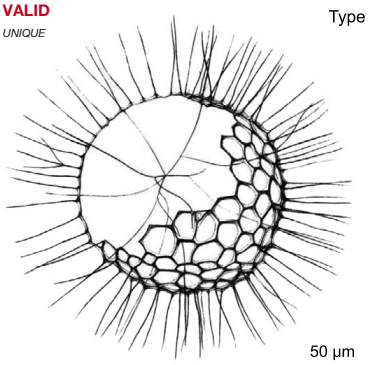
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Late Late Miocene–Living***

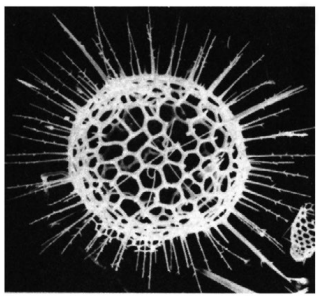
VALID
UNIQUE

Type



Stigmosphaerusa horrida
Hollande & Enjumet, 1960: 90, pl. 40, fig. 1

Support



Stigmosphaerusa horrida Hollande & Enjumet
Dumitrica's collection (late Late Miocene, Sicily)

E - Lineage III (unknown) CENTROLONCHIDAE
assigned in Kozur & Mostler 1979: 30

GENUS **Stigmostylus**
Hollande & Enjumet, 1960: 90

Diagnosis: Spicule consisting of four fibrillar cross-shaped rays originated in a center and bearing an obliquely antapically disposed branch. All inner rays prolonged externally in three-bladed spines.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Stigmostylus ferrusae* Hollande & Enjumet, 1960.

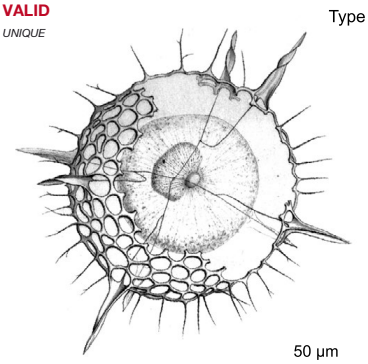
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Living***

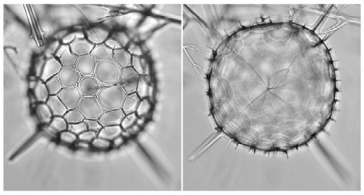
VALID
UNIQUE

Type



Stigmostylus ferrusae
Hollande & Enjumet, 1960: 90, pl. 61, fig. 1 [name corrected herein]

Support



Stigmostylus ferrusae Hollande & Enjumet
Zhang's collection (South China Sea)

E - Lineage III (unknown) ? CENTROLONCHIDAE

GENUS **Centracontium**
Popofsky, 1912: 89

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Takahashi & Honjo (1981).

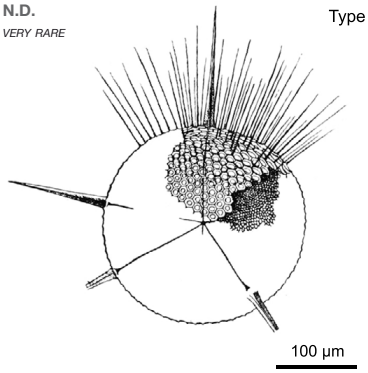
Original series: *Centracontium hexacontarium* Popofsky, 1912.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

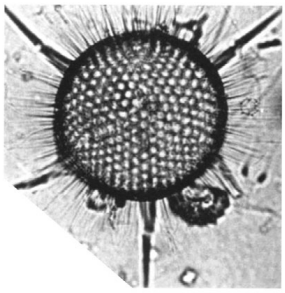
N.D.
VERY RARE

Type



Centracontium hexacontarium
Popofsky, 1912: 90, text-fig. 4

Support



Centracontium hexacontarium Popofsky
Takahashi & Honjo 1981: 148, pl. 3, fig. 17

E - Lineage III (unknown) ? CENTROLONCHIDAE

GENUS **Stigmosphaera**
Haeckel, 1887: 68

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Stigmosphaera actinocentra* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Stigmosphaera actinocentra
Haeckel, 1887: 68, unfigured

Support

NO IMAGE PUBLISHED

no image available

E - Lineage III (unknown) — AXOPRUNIDAE
assigned in Dumitrica 1985: 186

genus ***Axoprunum***
Haeckel, 1887: 298

Diagnosis: Spherical or ellipsoidal latticed and single shell with saturnalid microsphere and two cylindrical or conical and equal polar spines.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Axoprunum stauraxonium* Haeckel, 1887.

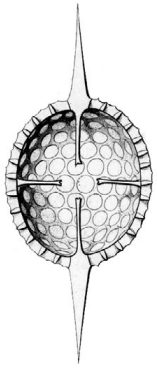
fixation MONOTYPY

status **VALID**

age ***Early Paleocene–Living***

VALID
FREQUENT

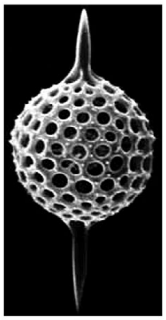
Type



50 µm

Axoprunum stauraxonium
Haeckel, 1887: 289, pl. 48, fig. 4

Support



50 µm

Axoprunum stauraxonium Haeckel
Takahashi 1991: 76, pl. 14, fig.10

E - Lineage III (unknown) — AXOPRUNIDAE

genus ***Ellipsoxiphium***
Haeckel, 1887: 296

nominotype ***Ellipsoxiphium* (*Ellipsoxiphium*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. A new generic name (*Ellipsoxiphium pallatium*) for *Ellipsoxiphus elegans* Haeckel, was suggested, but never used, by Haeckel (1887: 296).

Original series: *Ellipsoxiphus elegans* var. *palliatus* Haeckel, 1887.

fixation MONOTYPY

status JUNIOR SYNONYM?
questionably synonymized herein

see ***AXOPRUNUM***

SYN.?
UNIQUE

Type



50 µm

Ellipsoxiphus elegans var. palliatus
Haeckel, 1887: 296, pl. 14, fig. 7

Support

NO IMAGE PUBLISHED

no image available

E - Lineage III (unknown) — AXOPRUNIDAE

genus ***Stylacontarium***
Popofsky, 1912: 90

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Stylacontarium bispiculum* Popofsky, 1912.

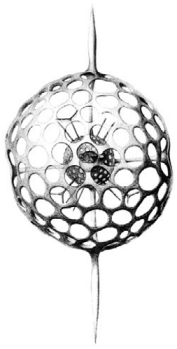
fixation MONOTYPY

status JUNIOR SYNONYM
synonymized by Sugiyama *et al*. 1992: 16

see ***AXOPRUNUM***

SYN.
FREQUENT

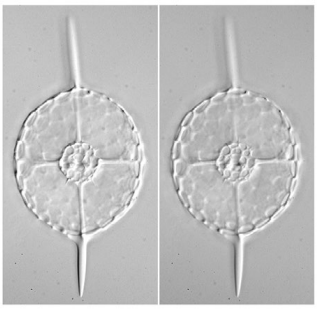
Type



50 µm

Stylacontarium bispiculum
Popofsky, 1912: 91, pl. 2, fig. 2

Support



50 µm

Axoprunum bispiculum (Popofsky)
Suzuki's collection (Quaternary, Equatorial Pacific)

E - Lineage III (unknown) — AXOPRUNIDAE

genus ***Xiphosphaerella***
Haeckel, 1887: 124

subgenus ***Xiphosphaera* (*Xiphosphaerella*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Xiphosphaera flora* Haeckel, 1887; **Xiphosphaera gigantea* Haeckel, 1887; **Xiphosphaera juno* Haeckel, 1887 and *Xiphosphaera pallas* Haeckel, 1887.

fixation SUBSEQUENT DESIGNATION (Campbell 1954: D54)

status JUNIOR SYNONYM
synonymized herein

see ***AXOPRUNUM***

SYN.
UNIQUE

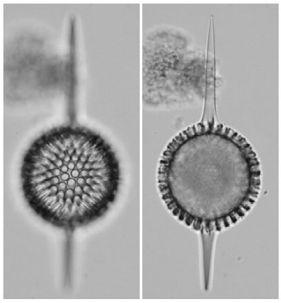
Type



50 µm

Xiphosphaera pallas
Haeckel, 1887: 124, pl. 14, fig. 4

Support



100 µm

Xiphosphaera pallas Haeckel
Paratypic material (Challenger Station 271), Suzuki's collection

E - Lineage III (unknown) AXOPRUNIDAE

assigned in Dumitrica 1985: 186

GENUS ***Dorylonchella***
Clark & Campbell, 1942: 22

SUBGENUS ***Dorylonchidium* (*Dorylonchella*)**

Diagnosis: Spherical to ellipsoidal latticed cortical shell with a conical polar spine. Medullary shell double of unknown structure connected to cortical shell by several rays.

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Dorylonchidium* (*Dorylonchella*) *monoxyphos brachioxyphos* Clark & Campbell, 1942 and *Dorylonchidium* (*Dorylonchella*) *monoxyphos monoxyphos* Clark & Campbell, 1942.

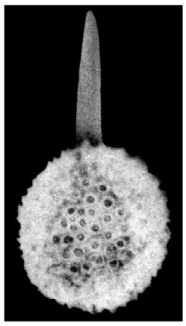
FIXATION SUBSEQUENT DESIGNATION (Dumitrica 1985: 186)

STATUS **VALID**

AGE ***Late Paleocene–early Middle Miocene***

VALID
UNIQUE

Type



25 µm

Dorylonchidium (*Dorylonchella*) *monoxyphos*
Clark & Campbell, 1942: 23, pl. 5, fig. 10

Support



25 µm

Dorylonchidium (*Dorylonchella*) *monoxyphos brachioxyphos*
Clark & Campbell, 1942: 23, pl. 5, fig. 8

E - Lineage III (unknown) ? AXOPRUNIDAE

GENUS ***Dorylonchomma***
Clark & Campbell, 1942: 23

SUBGENUS ***Dorylonchidium* (*Dorylonchomma*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

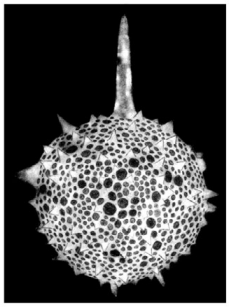
Original series: *Dorylonchidium* (*Dorylonchomma*) *fructiforme* Clark & Campbell, 1942.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



50 µm

Dorylonchidium (*Dorylonchomma*) *fructiforme*
Clark & Campbell, 1942: 23, pl. 5, fig. 26

Support

NO IMAGE PUBLISHED

no image available

E - Lineage III (unknown) ? AXOPRUNIDAE

GENUS ***Dorydiscus***
Carnevale, 1908: 5

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

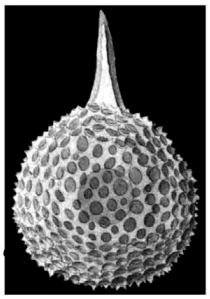
Original series: *Dorydiscus bergontianus* Carnevale, 1908.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



50 µm

Dorydiscus bergontianus
Carnevale, 1908: 21, pl. 3, fig. 13

Support

NO IMAGE PUBLISHED

no image available

E - Lineage III (unknown) ? AXOPRUNIDAE

GENUS ***Dorydruppa***
Vinassa de Regny, 1898: 198

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Vinassa de Regny (1900).

Original series: *Dorydruppa simonellii* Vinassa de Regny, 1900.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

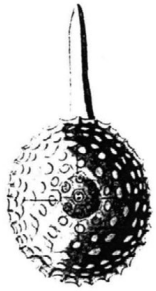
Type



200 µm

Dorydruppa simonellii
Vinassa de Regny, 1900: 574, pl. 1, fig. 42

Support



200 µm

Dorydruppa simonellii Vinassa de Regny
Lucchese 1927: 94, pl. 5 (3), fig. 10

E - LINEAGE III (UNKNOWN) ? AXOPRUNIDAE

GENUS ***Doryphacus***
Carnevale, 1908: 5

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

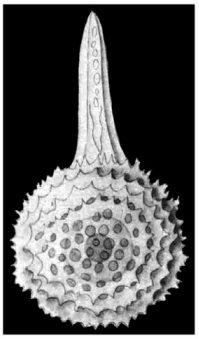
Original series: *Doryphacus bergontianus* Carnevale, 1908 and *Doryphacus poroacanthos* Carnevale, 1908.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

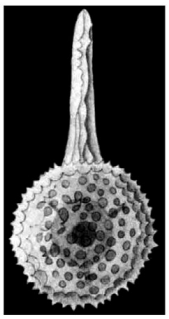
Type



50 µm

Doryphacus poroacanthos
Carnevale, 1908: 22, pl. 3, fig. 15

Support



50 µm

Doryphacus bergontianus
Carnevale, 1908: 22, pl. 3, fig. 14

E - LINEAGE III (UNKNOWN) ? AXOPRUNIDAE

GENUS ***Doryprunum***
Vinassa de Regny, 1898: 198

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

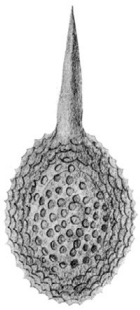
Original series: *Doryprunum appenninicum* Vinassa de Regny, 1900.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



200 µm

Doryprunum appenninicum
Vinassa de Regny, 1900: 574, pl. 1, fig. 43

Support

NO IMAGE PUBLISHED

no image available

E - LINEAGE III (UNKNOWN) SATURNULIDAE
ASSIGNED IN Kozur & Mostler 1972: 30

GENUS ***Saturnulus***
Haeckel, 1879a: 705

Diagnosis: Spongy central shell with heteropolar microsphere and elliptical ring with a spine et each end.

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species. Campbell (1954: D53) erroneously designated *Saturnulus circulus* Haeckel, 1887 as the type species.

Original series: *Saturnulus planeta* Haeckel, 1879a.

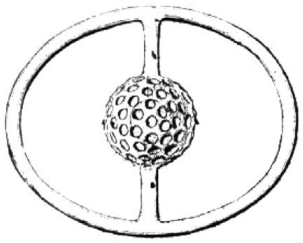
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY PALEOCENE–LIVING***

VALID
UNIQUE

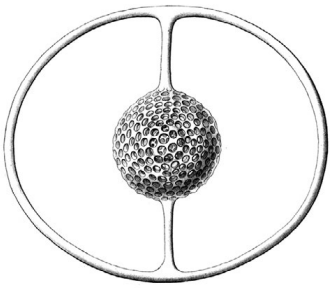
Type



~ 100 µm

Saturnulus planeta
Haeckel, 1879a: 705, pl. 16, fig. 3

Support



50 µm

Saturnulus ellipticus
Haeckel, 1887: 141, pl. 16, fig. 16

E - LINEAGE III (UNKNOWN) SATURNULIDAE

GENUS ***Saturnalium***
Haeckel, 1882: 450

SUBGENUS ***Saturnalis* (*Saturnalium*)**

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Saturnalis rotula* Haeckel, 1887 and *Saturnalis trochoides* Haeckel, 1887.

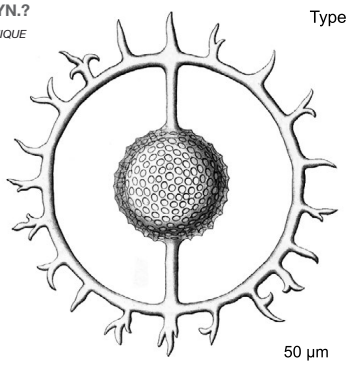
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***SATURNULUS***

SYN.?
UNIQUE

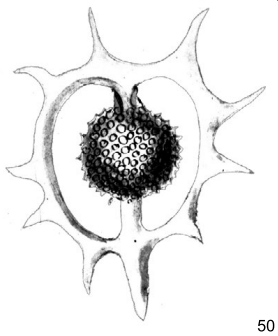
Type



50 µm

Saturnalis rotula
Haeckel, 1887: 133, pl. 13, fig. 15

Support



50 µm

Saturnalis trochoides
Haeckel, 1887: 132, [specimen of Bury 1862: pl. 20, fig. 2]

E - LINEAGE III (UNKNOWN) ? SATURNULIDAE

GENUS ***Saturnalis***
Haeckel, 1882: 450

NOMINOTYPE ***Saturnalis* (*Saturnalis*)**

Remarks: See comments under *SATURNALINA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

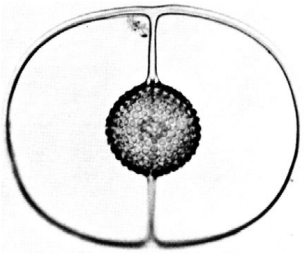
SEE **? *SATURNULUS***

N.D. Type

UNFIGURED SPECIES

Saturnalis circularis
Haeckel, 1887: 131, unfigured

Support



50 µm

Saturnalis circularis Haeckel
Nigrini 1967: 25, pl. 1, fig. 9 [topotypic material]

E - LINEAGE III (UNKNOWN) ? SATURNULIDAE

GENUS ***Saturnalina***
Haeckel, 1887: 131

SUBGENUS ***Saturnalis* (*Saturnalina*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Saturnalis annularis* Haeckel, 1887; *Saturnalis circoides* Haeckel, 1887; **Saturnalis circularis* Haeckel, 1887 and *Saturnalis cyclus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

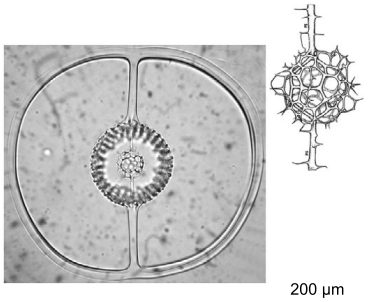
SEE ***SATURNALIS***

SYN. (obj.); N.D. Type

UNFIGURED SPECIES

Saturnalis circularis
Haeckel, 1887: 131, unfigured

Support



200 µm

Saturnalis circularis Haeckel
De Wever *et al.* 2001: figs 130.3, 131.10 (Miocene)

E - LINEAGE III (UNKNOWN) ? SATURNULIDAE

GENUS ***Saturninus***
Haeckel, 1887: 146

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Saturninus triplex* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *SATURNULUS***

N.D. Type

UNFIGURED SPECIES

Saturninus triplex
Haeckel, 1887: 146, unfigured

Support

NO IMAGE PUBLISHED

no image available

E - LINEAGE III (UNKNOWN) ? SATURNULIDAE

GENUS ***Spongostylus***
Haeckel, 1882: 455

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Spongostylus hastatus* Haeckel, 1887; **Spongostylus serratus* Haeckel, 1887 and *Stylosphaera holosphaera* Ehrenberg, 1873a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D56)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

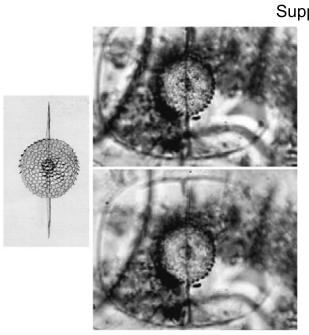
SEE **? *SATURNULUS***

N.D. Type

UNFIGURED SPECIES

Spongostylus hastatus
Haeckel, 1887: 149, unfigured

Support



50 µm

Stylosphaera holosphaera
Ehrenberg, 1873b: 298, pl. 8, fig. 14 [lectotype herein]

E - Lineage III (unknown) — SATURNULIDAE
assigned in De Wever *et al.* 2001: 209

genus **Spongosaturninus**
Campbell & Clark, 1944b: 7

Diagnosis: Microsphere heteropolar included in a single or double spherical lattice shell. Ring simple or with peripheral spines.

Remarks: Type species frequently reported.

Original series: *Spongosaturninus ellipticus* Campbell & Clark, 1944b; *Spongosaturninus latuformis* Campbell & Clark, 1944b; *Spongosaturninus parvulus* Campbell & Clark, 1944b and *Spongosaturninus parvulus lateralispinosus* Campbell & Clark, 1944b.

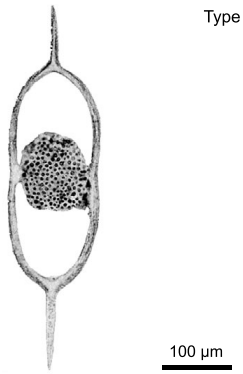
fixation ORIGINAL DESIGNATION

status **VALID**

age ***Early Toarcian–Early Paleocene***

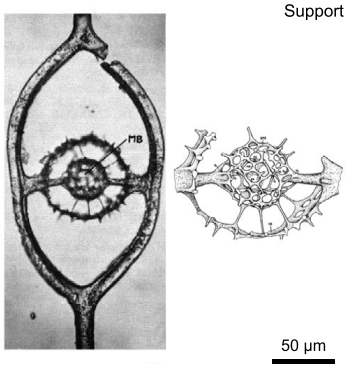
VALID
FREQUENT

Type



Spongosaturninus ellipticus
Campbell & Clark, 1944b: 8, pl. 1, fig. 16 [lectotype by Pessagno, 1976: 39]

Support



Spongosaturninus ellipticus Campbell & Clark
Dumitrica 1985: pl. 1, fig. 8; pl. 3, fig. 11 (Early Paleocene)

E - Lineage unknown — THALASSOTHAMNIDAE
assigned in De Wever *et al.* 2001: 177

genus **Cytocladus**
Schröder, 1908: 219

Diagnosis: Gelatinous substances wrap solid siliceous skeletons. Dozens of rod-like radial spines are converging in a single central nodal point. All spines of the same length and structure, and are regularly branched in the distal part of spine. The central capsule is not spherical, diverging into several branches.

Remarks: Type species rarely reported.

Original series: *Cytocladus gracilis* Schröder, 1906a; *Cytocladus major* Schröder, 1906a and *Cytocladus spinosus* Schröder, 1906b.

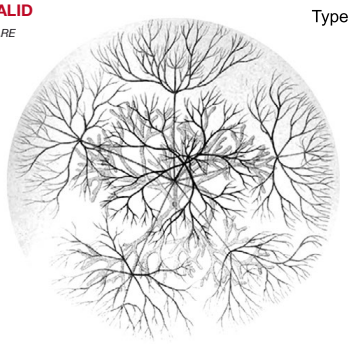
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D46)

status **VALID**

age ***Holocene–Living***

VALID
RARE

Type



Cytocladus gracilis
Schröder, 1906a: 448, fig. 1

Support



Cytocladus gracilis Schröder
Nakamura's collection (Northwest Pacific, Plankton)

E - Lineage unknown — THALASSOTHAMNIDAE
assigned in Haecker 1906: 885

genus **Thalassothamnus**
Haecker, 1906: 888

Diagnosis: Radial spines of the diverging spicule mostly converge on several points. The overall appearance of the skeleton sometime has a directionality: each radial spine is not developed with the same angle. The central capsule is generally spherical.

Remarks: Illustration available only for the type species (just a single report after the first illustration). The overall appearance resembles that of the family Astracanthidae (Phaeodaria). However, it differs by having a solid cross-section of radial spines (not hollow) and one central capsule (whereas, several central capsules can be found in Astracanthidae).

Original series: *Thalassothamnus genista* Haecker, 1906; *Thalassothamnus ramosus* Haecker, 1906; *Thalassothamnus tenerrimus* Haecker, 1906 and *Thalassothamnus spermatophorus* Haecker, 1906.

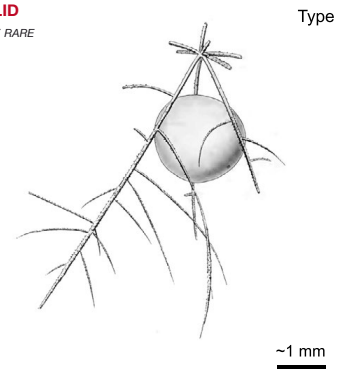
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D46)

status **VALID**

age ***Living***

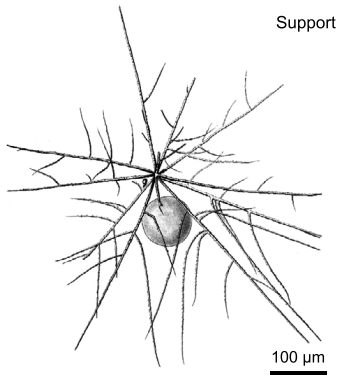
VALID
VERY RARE

Type



Thalassothamnus genista
Haecker, 1906: 881, text-fig. 4

Support



Thalassothamnus genista Haecker
Haecker 1908: 401, text-fig. 56, pl. 73, fig. 537; pl. 77, fig. 543

S - Lineage IV (J1-J2) — TREMATODISCIDAE
assigned in Kozur & Mostler 1978: 128

genus **Flustrella**
Ehrenberg, 1839a: 90

Diagnosis: Shell as a flat to slightly convex circular disk; no equatorial spines; no obvious pylome; four or more narrow concentric rings. In some cases, the outermost part of the disk is surrounded by a thin porous (but not chambered) equatorial girdle.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Flustrella concentrica* Ehrenberg, 1839a.

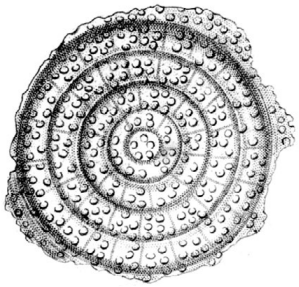
fixation MONOTYPY

status **VALID**

age ***Late Middle Eocene–Living***

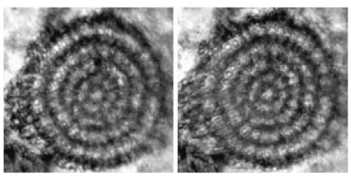
VALID
FREQUENT

Type



Flustrella concentrica
Ehrenberg, 1839a: 132 (unfigured); Ehrenberg, 1854c: pl. 20-I, fig. 42 [lectotype by Ogane *et al.* 2009a: 84]

Type



Flustrella concentrica Ehrenberg
Suzuki *et al.* 2009a: pl. 22, figs 3b, 3c [lectotype herein]

S - Lineage IV (J1-J2) TREMATODISCIDAE

GENUS ***Discospira***
Haeckel, 1862: 513

Remarks: Homonym of *DISCOSPIRA* Mantell, 1850: 142 (Foraminifera); see *DISCOSPIRELLA nomen novum*.

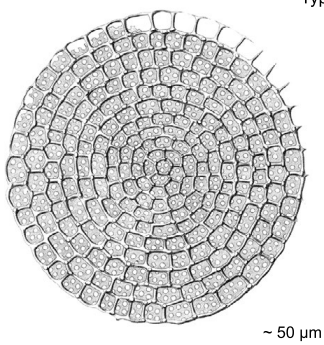
Original series: *Discospira operculina* Haeckel, 1862 and *Trematodiscus helicoides* Haeckel, 1861b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D90)

STATUS HOMONYM, JUNIOR SYNONYM

SEE ***DISCOSPIRELLA NOMEN NOVUM***

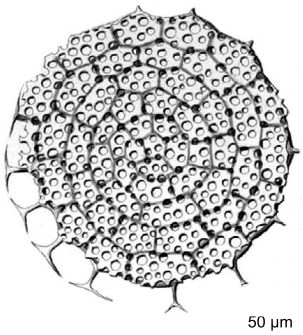
HOM.; SYN. Type



~ 50 µm

Trematodiscus helicoides
Haeckel, 1861b: 841 (unfigured); Haeckel, 1862: 514, pl. 29, fig. 7

Support



50 µm

Discospira operculina
Haeckel, 1862: 514, pl. 29, fig. 8

S - Lineage IV (J1-J2) TREMATODISCIDAE

GENUS ***Discospirella*** *NOMEN NOVUM* PRO *DISCOSPIRA*
Loeblich & Tappan, 1961: 226

Remarks: Only two species originally included at the time of the generic definition (both illustrated, but figured just once).

Original series: *Discospira operculina* Haeckel, 1862 and *Trematodiscus helicoides* Haeckel, 1861b.

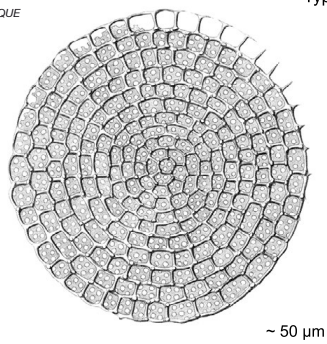
FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1954: D90)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1978: 128

SEE ***FLUSTRELLA***

NOM. NOV.; SYN. Type

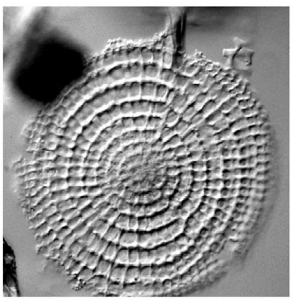
UNIQUE



~ 50 µm

Trematodiscus helicoides
Haeckel, 1861b: 841 (unfigured); Haeckel, 1862: 514, pl. 29, fig. 7

Support



100 µm

Trematodiscus helicoides Haeckel
Suzuki's collection (IODP 1312B-01C-CC, Quaternary)

S - Lineage IV (J1-J2) TREMATODISCIDAE

GENUS ***Perichlamydium***
Ehrenberg, 1846: 385

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Flustrella limbata* Ehrenberg, 1844a and *Flustrella praetexta* Ehrenberg, 1844a.

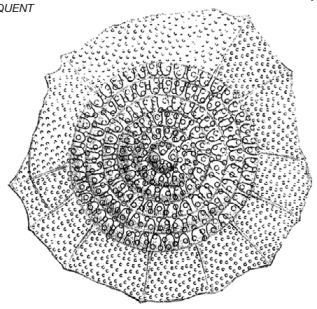
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D90)

STATUS JUNIOR SYNONYM
synonymized by Ogane *et al.* 2009a: 86

SEE ***FLUSTRELLA***

SYN. Type

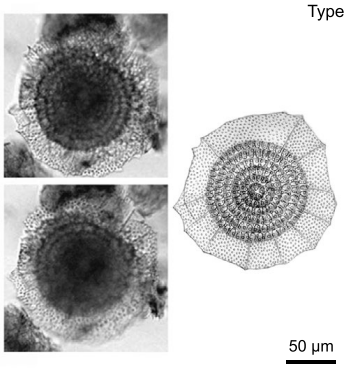
FREQUENT



50 µm

Flustrella praetexta
Ehrenberg, 1844a: 81 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 20

Type



50 µm

Perichlamydium praetextum (Ehrenberg)
Suzuki *et al.* 2009a: pl. 8, figs 3a-c [lectotype herein]

S - Lineage IV (J1-J2) TREMATODISCIDAE

GENUS ***Polydiscus***
Zaynutdinov, 1978: undescribed

Remarks: Type species illustrated (but not described) only once by Zaynutdinov (1978). Two species originally included at the time of the generic definition.

Original series: *Polydiscus compositus* Zaynutdinov, 1978 and *Xiphodictya* (*Xiphodictyon*) *amphixiphos* Clark & Campbell, 1942.

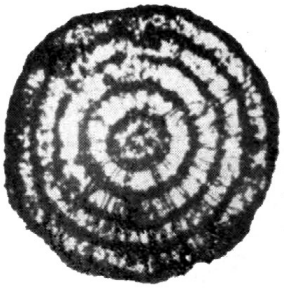
FIXATION MONOTYPY

STATUS NOMEN NUDUM, JUNIOR SYNONYM
designated herein

SEE ***FLUSTRELLA***

N.N.; SYN. Type

UNIQUE



50 µm

Polydiscus compositus
Zaynutdinov, 1978: undescribed, pl. 9, fig. 4a (n.n.)

Support

NO IMAGE PUBLISHED

no image available

S - Lineage IV (J1-J2) TREMATODISCIDAE

GENUS ***Centrospira***
Haeckel, 1882: 459

SUBGENUS ***Porodiscus* (*Centrospira*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Porodiscus centrospira* Haeckel, 1887.

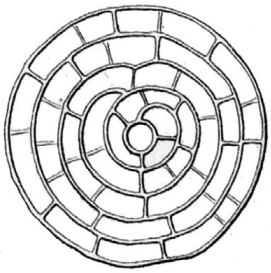
FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1978: 128

SEE ***FLUSTRELLA***

SYN.
UNIQUE

Type



50 µm

Porodiscus centrospira
Haeckel, 1887: 495, pl. 41, fig. 6

Support

NO IMAGE PUBLISHED

Porodiscus centrospira Haeckel
Ogane collection (ODP884B-32-2W, Pliocene)

S - Lineage IV (J1-J2) TREMATODISCIDAE

GENUS ***Perispira***
Haeckel, 1882: 459

SUBGENUS ***Porodiscus* (*Perispira*)**

Remarks: Homonym of *PERISPIRA* Stein, 1859: 60 (Haptorida); see *PERISPIRELLA nomen novum*.

Original series: *Porodiscus perispira* Haeckel, 1887 and *Porodiscus radiatus* Haeckel, 1887.

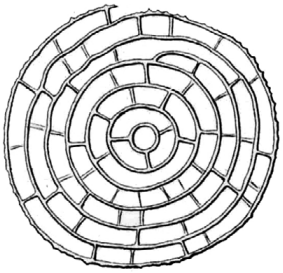
FIXATION ABSOLUTE TAUTONOMY

STATUS HOMONYM, JUNIOR SYNONYM

SEE ***PERISPIRELLA NOMEN NOVUM***

HOM.; SYN.

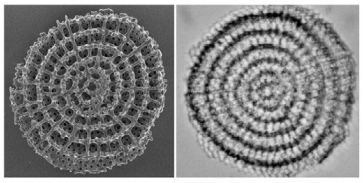
Type



50 µm

Porodiscus perispira
Haeckel, 1887: 495, pl. 41, fig. 2

Support



50 µm

Porodiscus perispira Haeckel
Ogane collection (ODP884B-32-2W, Pliocene)

S - Lineage IV (J1-J2) TREMATODISCIDAE

GENUS ***Perispirella*** *NOMEN NOVUM* PRO *PERISPIRA*
Loeblich & Tappan, 1961: 226

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: *Porodiscus perispira* Haeckel, 1887 and **Porodiscus radiatus* Haeckel, 1887.

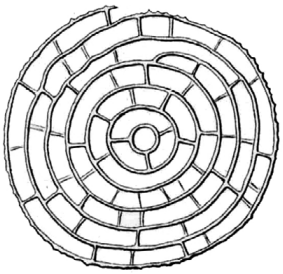
FIXATION ABSOLUTE TAUTONOMY; ICZN, ART. 67.8

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***FLUSTRELLA***

NOM. NOV.; SYN.
UNIQUE

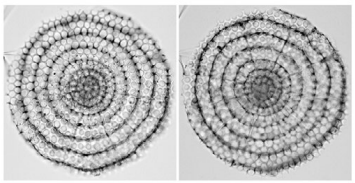
Type



50 µm

Porodiscus perispira
Haeckel, 1887: 495, pl. 41, fig. 2

Support



50 µm

Porodiscus perispira Haeckel
Zhang's collection (South China Sea)

S - Lineage IV (J1-J2) TREMATODISCIDAE

GENUS ***Trematodiscus***
Haeckel, 1861b: 841

SUBGENUS ***Porodiscus* (*Trematodiscus*)**

Remarks: Only two species originally included at the time of the generic definition (both rarely illustrated).

Original series: *Trematodiscus helicoides* Haeckel, 1861b and *Trematodiscus orbiculatus* Haeckel, 1861b.

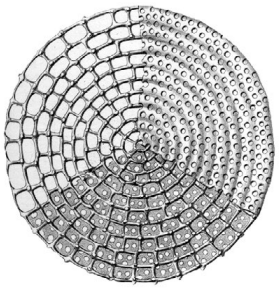
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 24)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1978: 128

SEE ***FLUSTRELLA***

SYN.
RARE

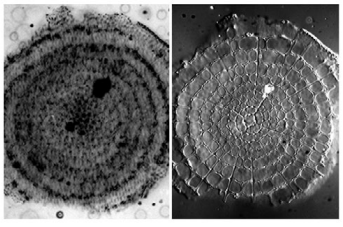
Type



~ 50 µm

Trematodiscus orbiculatus
Haeckel, 1862: 492, pl. 29, fig. 1

Support



100 µm

Trematodiscus orbiculatus Haeckel
Suzuki's collection (Middle Miocene, Niigata, Japan)

S - LINEAGE IV (J1-J2) TREMATODISCIDAE

GENUS ***Stylochlamyum***
Haeckel, 1887: 515

SUBGENUS ***Stylochlamydium* (*Stylochlamyum*)**

Remarks: Only two species originally included at the time of the generic definition (both illustrated, but figured just once). The type species is the specimen figured by Stöhr (1880: 109, pl. 5, fig. 1) as *Perichlamydium limbatum* (Ehrenberg), this species is a junior subjective synonym of *Flustrella praetexta* Ehrenberg, 1844a.

Original series: *Perichlamydium spongiosum* Stöhr, 1880 and *Stylochlamydium perispirale* Haeckel, 1887.

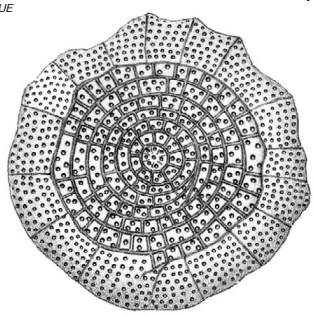
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***FLUSTRELLA***

SYN.
UNIQUE

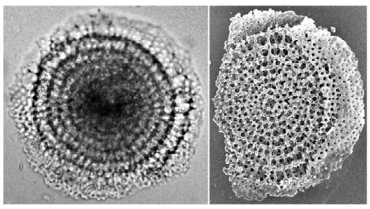
Type



50 µm

Stylochlamydium perispirale
Haeckel, 1887: 515 [holotype in Stöhr, 1880: 109, pl. 5, fig. 1]

Support



50 µm

Stylochlamydium perispirale Haeckel
Ogane collection (ODP884B-17-4W, Pliocene-Pleistocene boundary)

S - LINEAGE IV (J1-J2) ? TREMATODISCIDAE

GENUS ***Spongophacus***
Haeckel, 1882: 461

Remarks: Monospecific genus and never figured. Since no other images were illustrated at the time of the generic definition, the support image is a junior subjective synonym of the genus *FLUSTRELLA*.

Original series: **Spongophacus periphaena* Haeckel, 1887.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? FLUSTRELLA***

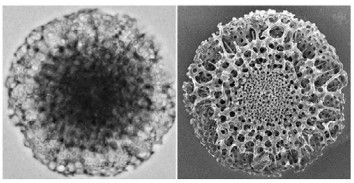
N.D.

Type

UNFIGURED SPECIES

Spongophacus periphaena
Haeckel, 1887: 579, unfigured

Support



50 µm

Spongodiscus cauleti Kamikuri
Ogane collection (ODP884B-31-2W, Early Pliocene)

S - LINEAGE IV (J1-J2) TREMATODISCIDAE
ASSIGNED IN Kozur & Mostler 1978: 128

GENUS ***Staurospira***
Haeckel, 1887: 507

SUBGENUS ***Staurodictya* (*Staurospira*)**

Diagnosis: Shell as a circular to quadrangular flat disk having many radial beams; two to four primary equatorial spines; two to seven concentric rings growing in zigzag shape; a decussate microsphere.

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Staurodictya cruciata* Haeckel, 1887; *Staurodictya grandis* Haeckel, 1887; *Stylodictya ocellata* Ehrenberg, 1874b and *Stylodictya splendens* Ehrenberg, 1874b.

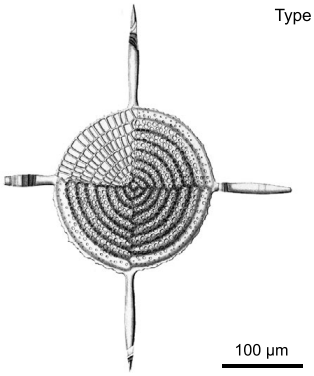
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS **VALID**

AGE ***MIDDLE PALEOCENE–LATE OLIGOCENE***

VALID
UNIQUE

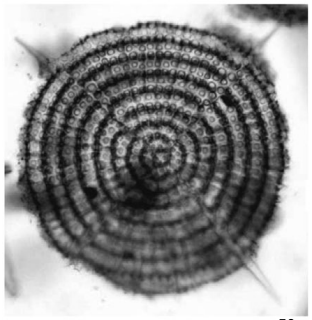
Type



100 µm

Staurodictya cruciata
Haeckel, 1887: 507, pl. 42, fig. 4

Type



50 µm

Stylodictya splendens Ehrenberg
Ogane *et al.* 2009b: pl. 66, fig. 4b [lectotype herein]

S - LINEAGE IV (J1-J2) TREMATODISCIDAE

GENUS ***Staurodictyon***
Haeckel, 1887: 506

SUBGENUS ***Staurodictya* (*Staurodictyon*)**

Remarks: No type species was designated. Only the type species clearly belongs to this genus (reported only by Haeckel). Campbell (1954: D92) considers *STAURODICTYON* to be the nominate subgenus of *STAURODICTYA* Haeckel 1882. However, this seems inappropriate since the type species of *STAURODICTYA*, *Staurodictya beneckei* Rüst 1885, was not among those species originally assigned to *STAURODICTYON*.

Original series: *Staurodictya ciliata* Haeckel, 1887; *Staurodictya elegans* Haeckel, 1887; *Staurodictya medusa* Haeckel, 1887 and *Stylodictya quadrispina* Haeckel, 1861b.

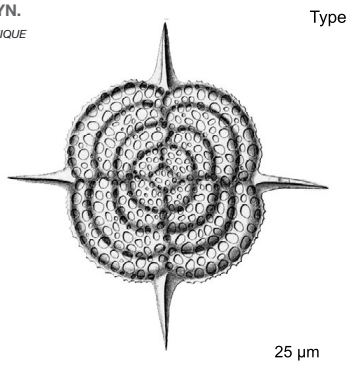
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 525

SEE ***STAUROSPIRA***

SYN.
UNIQUE

Type



25 µm

Staurodictya medusa
Haeckel, 1887: 506, pl. 42, fig. 3

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (J1-J2) TREMATODISCIDAE

GENUS ***Tholodiscus***
Kozlova in Petrushevskaya & Kozlova, 1972: 525

Remarks: Type species frequently reported.

Original series: *Staurodictya*? *fresnoensis* Foreman, 1968; *Stylodictya ocellata* Ehrenberg, 1874b and *Stylodictya splendens* Ehrenberg, 1874b.

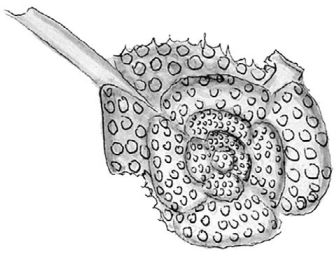
FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STAURODISCUS***

SYN.
FREQUENT

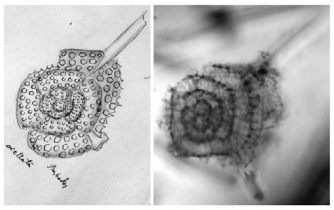
Type



50 µm

Stylodictya ocellata
Ehrenberg, 1874b: 258 (unfigured); Ehrenberg, 1876: 84, pl. 23, fig. 7

Type



50 µm

Stylodictya ocellata Ehrenberg
Ogane *et al.* 2009b: pl. 65, figs 3a, 3b [lectotype herein]

S - LINEAGE IV (J1-J2) TREMATODISCIDAE

GENUS ***Xiphospira***
Haeckel, 1887: 504

SUBGENUS ***Xiphodictya* (*Xiphospira*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Xiphodictya heliospira* Haeckel, 1887 and *Xiphodictya staurospira* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STAURODISCUS***

SYN.
UNIQUE

Type



50 µm

Xiphodictya staurospira
Haeckel, 1887: 504, pl. 42, fig. 12

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (J1-J2) TREMATODISCIDAE
ASSIGNED IN Kozur & Mostler 1978: 128

GENUS ***Stylodictya***
Ehrenberg, 1846: 385

NOMINOTYPE ***Stylodictya* (*Stylodictya*)**

Diagnosis: Shell as a circular to subcircular flat disk; four cylindrical primary and many cylindrical secondary equatorial spines; three to ten narrow to broad concentric rings; a decussate microsphere.

Remarks: *STYLODICTYA* is easily distinguished from *FLUSTRELLA* by the presence of four primary radial beams growing from the microsphere. See also comments under *STYLODICTYON*.

Original series: *Stylodictya gracilis* Ehrenberg, 1854c.

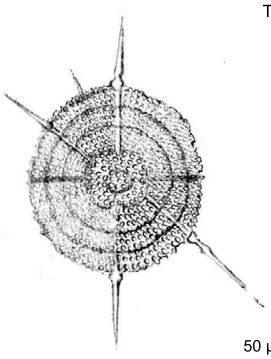
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***EARLY MIDDLE EOCENE–LIVING***

VALID
FREQUENT

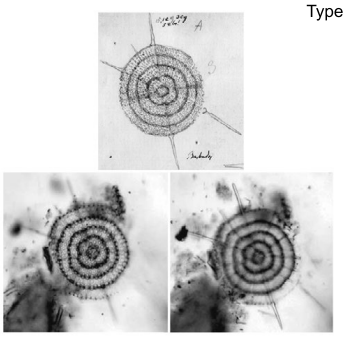
Type



50 µm

Stylodictya gracilis
Ehrenberg, 1854c: pl. 36, fig. 28 [description in Haeckel, 1862: 499]

Type



50 µm

Stylodictya gracilis Ehrenberg
Ogane *et al.* 2009b: pl. 65, figs 1a-c [lectotype herein]

S - LINEAGE IV (J1-J2) TREMATODISCIDAE

GENUS ***Stylodictyon***
Haeckel, 1887: 509

SUBGENUS ***Stylodictya* (*Stylodictyon*)**

Remarks: Type species frequently reported.

Original series: *Stylodictya gracilis* Ehrenberg, 1854c; *Stylodictya hastata* Ehrenberg, 1874b; *Stylodictya multispina* Haeckel, 1861b; **Stylodictya octogonia* Haeckel, 1887; **Stylodictya solmaris* Haeckel, 1887 and *Stylodictya stellata* Bailey, 1856.

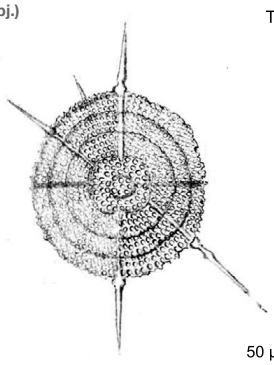
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***STYLODICTYA***

SYN. (obj.)
FREQUENT

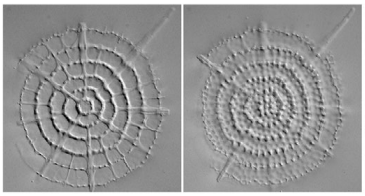
Type



50 µm

Stylodictya gracilis
Ehrenberg, 1854c: pl. 36, fig. 28 [description in Haeckel, 1862: 499]

Support



50 µm

Stylodictya gracilis Ehrenberg
Topotypic material (Barbados, Late Eocene), Suzuki's collection

S - LINEAGE IV (J1-J2) TREMATODISCIDAE

GENUS ***Stylochlamydium***
Haeckel, 1882: 459

NOMINOTYPE ***Stylochlamydium* (*Stylochlamydium*)**

Remarks: See comments under *STYLOCHLAMYS*.

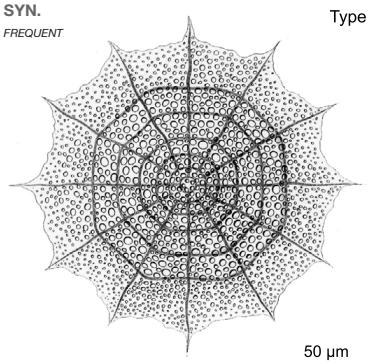
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STYLODICTYA***

SYN. *FREQUENT*

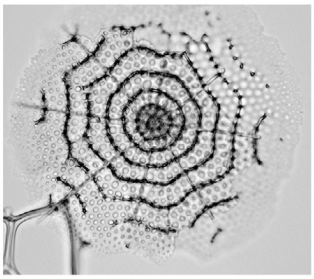
Type



50 µm

Stylochlamydium asteriscus
Haeckel, 1887: 514, pl. 41, fig. 10

Support



50 µm

Stylochlamydium asteriscus Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (J1-J2) TREMATODISCIDAE

GENUS ***Stylochlamys***
Haeckel, 1887: 514

SUBGENUS ***Stylochlamydium* (*Stylochlamys*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Flustrella limbata* Ehrenberg, 1844a; *Perichlamydium aequale* Stöhr, 1880; *Perichlamydium venustum* Bailey, 1856 and *Stylochlamydium asteriscus* Haeckel, 1887.

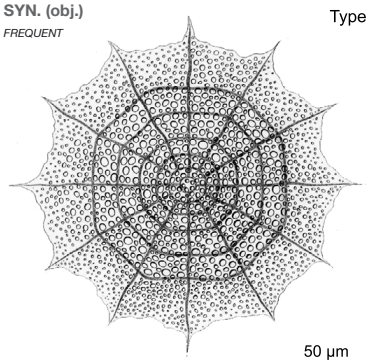
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***STYLODICTYA***

SYN. (obj.) *FREQUENT*

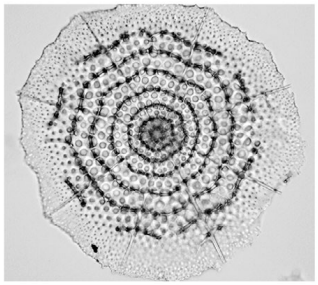
Type



50 µm

Stylochlamydium asteriscus
Haeckel, 1887: 514, pl. 41, fig. 10

Support



50 µm

Stylochlamydium asteriscus Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (J1-J2) TREMATODISCIDAE

GENUS ***Stylocyclia***
Ehrenberg, 1847: 54

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. The subsequent designation by Campbell (1954: D82) of *Stylocyclia dimidiata* Ehrenberg, 1876: 84-85, pl. 24, fig. 4, is erroneous.

Original series: *Stylocyclia arachnia* Müller, 1856.

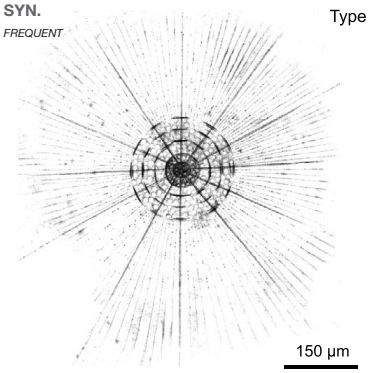
FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Müller 1859b: 41

SEE ***STYLODICTYA***

SYN. *FREQUENT*

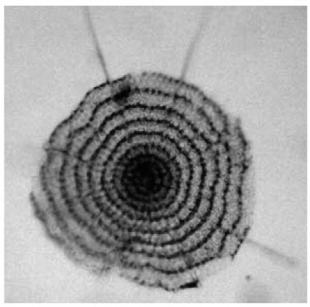
Type



150 µm

Stylocyclia arachnia
Müller, 1856: 492 (unfigured); Müller, 1859b: 41, pl. 1, fig. 8

Type



100 µm

Stylodictya arachnia (Müller)
Sakai *et al.* 2009: 52, pl. 11, fig. 5a [neotype herein]

S - LINEAGE IV (J1-J2) TREMATODISCIDAE

GENUS ***Stylospongia***
Haeckel, 1862: 473

SUBGENUS ***Stylotrochus* (*Stylospongia*)**

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Bütschli (1882a).

Original series: *Stylospongia huxleyi* Haeckel, 1862.

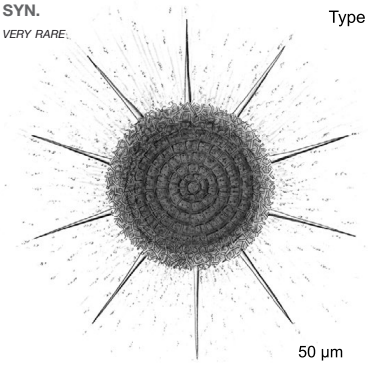
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STYLODICTYA***

SYN. *VERY RARE*

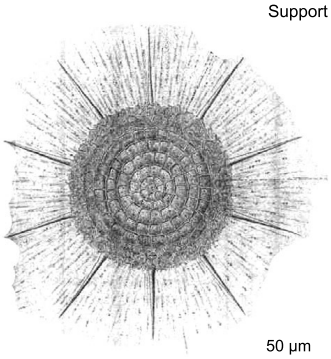
Type



50 µm

Stylospongia huxleyi
Haeckel, 1862: 473, pl. 28, fig. 7

Support



50 µm

Stylospongia huxleyi Haeckel
Bütschli 1882a: pl. 26, fig. 3

S - LINEAGE IV (J1-J2) TREMATODISCIDAE

GENUS ***Stylospira***
Haeckel, 1862: 515

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Stylospira dujardini* Haeckel, 1862.

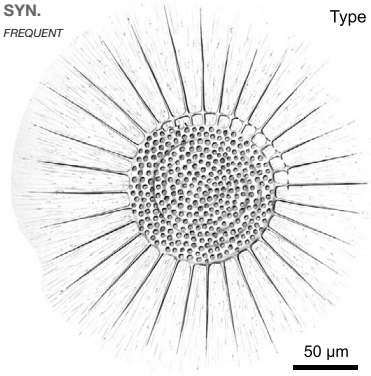
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Haeckel 1887: 513

SEE ***STYLODICTYA***

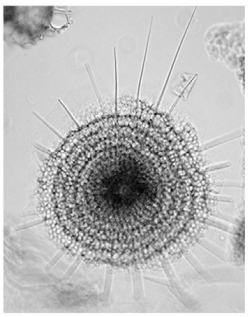
SYN.
FREQUENT

Type



Stylospira dujardini
Haeckel, 1862: 515, pl. 29, fig. 9

Support



Stylospira dujardini Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (J1-J2) ? TREMATODISCIDAE

GENUS ***Stylodictula***
Haeckel, 1887: 511

SUBGENUS ***Stylodictya* (*Stylodictula*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. The type species was not illustrated but in its description Haeckel mentioned «outer rings forming a single spiral».

Original series: *Stylodictya centrospira* Haeckel, 1887; **Stylodictya perispira* Haeckel, 1887 and *Stylodictya setigera* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? STYLODICTYA***

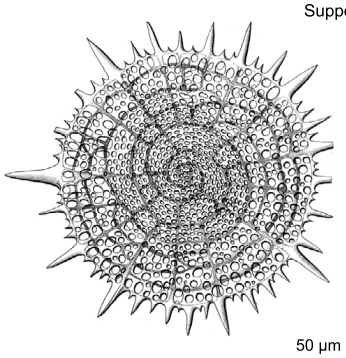
N.D.

Type

UNFIGURED SPECIES

Stylodictya perispira
Haeckel, 1887: 511, unfigured

Support



Stylodictya centrospira
Haeckel, 1887: 512, pl. 41, fig. 9

S - LINEAGE IV (J1-J2) ? TREMATODISCIDAE
ASSIGNED IN Kozur & Mostler 1978: 128

GENUS ***Tripodictya***
Haeckel, 1882: 459

Diagnosis: Shell as a flat triangular to sub-circular disk with concentric rings not having many radial beams; number of spine variable with the species, two to four-bladed spines at each corner of the disk.

Remarks: Type species only illustrated by Haeckel (1887). Only the type species clearly belongs to this genus and no other images have been published.

Original series: *Tripodictya triacantha* Haeckel, 1887; *Tripodictya tribelonia* Haeckel, 1887 and *Tripodictya trigonaria* Haeckel, 1887.

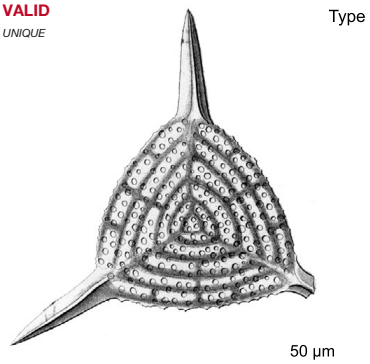
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS **VALID**

AGE ***[QUATERNARY]***

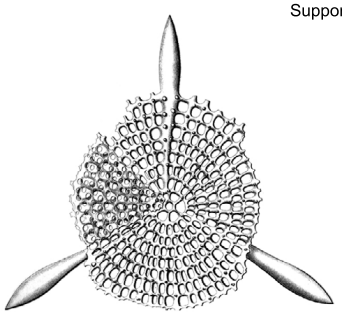
VALID
UNIQUE

Type



Tripodictya trigonaria
Haeckel, 1887: 505, pl. 42, fig. 8

Support



Tripodictya triacantha
Haeckel, 1887: 505, pl. 42, fig. 7

S - LINEAGE IV (J1-J2) TREMATODISCIDAE

GENUS ***Xiphodictyon***
Haeckel, 1887: 503

SUBGENUS ***Xiphodictya* (*Xiphodictyon*)**

Remarks: No type species was designated. Only two species originally included at the time of the generic definition.

Original series: *Xiphodictya amphibelonia* Haeckel, 1887 and *Xiphodictya amphirrhopalia* Haeckel, 1887.

FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRIPODICTYA***

SYN.
UNIQUE

Type



Xiphodictya amphirrhopalia
Haeckel, 1887: 504, pl. 42, fig. 11

Support



Xiphodictya amphibelonia
Haeckel, 1887: 503, pl. 42, fig. 10

	Type	Support
S - Lineage IV (J1-J2) ? TREMATODISCIDAE GENUS ***Amphibrachium*** Hertwig, 1879: 190 **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. No generic description was included in the first description by Hertwig (1879: 190) of the species *Amphibrachium rhopalum*. The first author to give a short diagnosis of the genus was Haeckel (1882: 460); however, *AMPHIBRACHIUM* Haeckel, 1882 (type species *Amphibrachium diminutum* Rüst 1885: 296, pl. 32 (7), fi g. 5) should be considered as a junior homonym of *AMPHIBRACHIUM* Hertwig, 1879 (see O'Dogherty *et al*. 2009a: 334). **Original series**: **Amphibrachium rhopalum* Hertwig, 1879. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Amphibrachium rhopalum* Hertwig, 1879: 190, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (J1-J2) ? TREMATODISCIDAE GENUS ***Spongostaurus*** Haeckel, 1882: 461 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Spongostaurus cruciatus* Haeckel, 1887; **Spongostaurus hastatus* Haeckel, 1887; **Spongostaurus quadratus* Haeckel, 1887 and **Spongostaurus serratus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Spongostaurus cruciatus* Haeckel, 1887: 582, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (J1-J2) ? TREMATODISCIDAE GENUS ***Spongotripus*** Haeckel, 1882: 461 NOMINOTYPE ***Spongotripus* (*Spongotripus*)** **Remarks**: See comments under *SPONGOTRIPODISCUS*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Spongotripus regularis* Haeckel, 1887: 580, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (J1-J2) ? TREMATODISCIDAE GENUS ***Spongotripodiscus*** Haeckel, 1887: 580 SUBGENUS ***Spongotripus* (*Spongotripodiscus*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Spongotripus regularis* Haeckel, 1887 and **Spongotripus strepsiceros* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***SPONGOTRIPUS***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Spongotripus regularis* Haeckel, 1887: 580, unfigured	NO IMAGE PUBLISHED no image available

S - LINEAGE IV (J1-J2) ? TREMATODISCIDAE

GENUS ***Spongotripodium***
Haeckel, 1887: 581

SUBGENUS ***Spongotripus* (*Spongotripodium*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Spongotripus irregularis* Haeckel, 1887 and **Spongotripus ypsilon* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Spongotripus ypsilon
Haeckel, 1887: 581, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (J1-J2) ? TREMATODISCIDAE

GENUS ***Stylospongidium***
Haeckel, 1882: 459

SUBGENUS ***Spongotrochus* (*Stylospongidium*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Spongotrochus parma* Haeckel, 1887 and **Spongotrochus scutella* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Spongotrochus scutella
Haeckel, 1887: 586, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) ACTINOMMIDAE
ASSIGNED IN Haeckel 1887: 251

GENUS ***Actinomma***
Haeckel, 1861a: 815

NOMINOTYPE ***Actinomma* (*Actinomma*)**

Diagnosis: Actinommidae with a latticed spherical cortical shell and two medullary shells. Cortical shell with numerous spines of different sizes.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Haliomma asteracanthion* Haeckel, 1861a; *Haliomma didymocyrtis* Haeckel, 1861a; *Haliomma drymodes* Haeckel, 1861a; *Haliomma inerme* Haeckel, 1861a and *Haliomma trinacrium* Haeckel, 1861a.

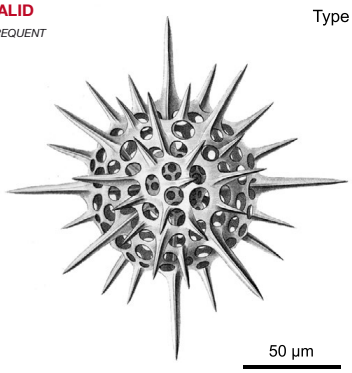
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D64)

STATUS **VALID**

AGE ***MIDDLE PALEOCENE–LIVING***

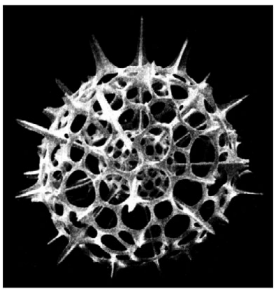
VALID
FREQUENT

Type



Haliomma trinacrium
Haeckel, 1861a: 815 (unfigured); Haeckel, 1862: 441, pl. 24, fig. 6

Support



Actniomma trinacrium (Haeckel)
Caulet 1974: 227, pl. 4, fig. 2

S - LINEAGE IV (K) ACTINOMMIDAE

GENUS ***Actinommetta***
Haeckel, 1887: 253

SUBGENUS ***Actinomma* (*Actinommetta*)**

Remarks: Type species frequently reported.

Original series: *Actinomma denticulatum* Haeckel, 1887; **Actinomma japonicum* Haeckel, 1887; *Actinomma pachyderma* Haeckel, 1887 and *Haliomma trinacrium* Haeckel, 1861a.

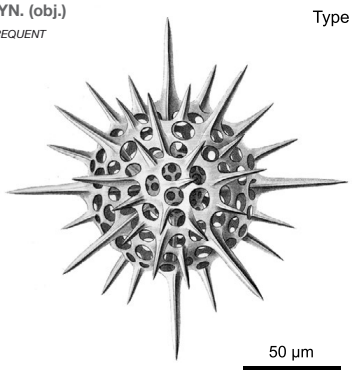
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D64)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ACTINOMMA***

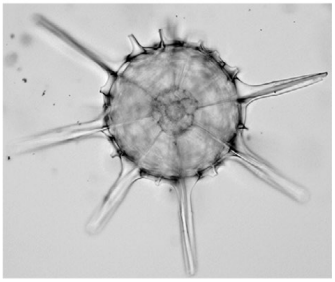
SYN. (obj.)
FREQUENT

Type



Haliomma trinacrium
Haeckel, 1861a: 815 (unfigured); Haeckel, 1862: 441, pl. 24, fig. 6

Support



Haliomma trinacrium Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (K) ACTINOMMIDAE

GENUS ***Cromyomma***
Haeckel, 1862: 446

NOMINOTYPE ***Cromyomma* (*Cromyomma*)**

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported. The SD of *Cromyomma villosum* Haeckel, 1887 by Campbell (1954: D66) seems erroneous.

Original series: *Haliomma quadruplex* Ehrenberg, 1854b.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Bjørklund 1976b: 114

SEE ***ACTINOMMA***

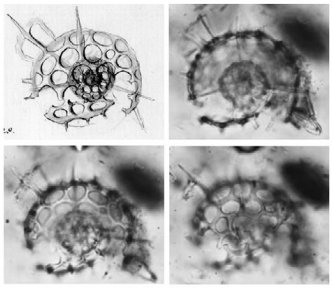
SYN. Type
RARE



25 µm

Haliomma quadruplex
Ehrenberg, 1854a: table (n.n.); Ehrenberg, 1854b: 243 (unfigured); Suzuki *et al.*, 2009a: pl. 31, figs 1a-d [lectotype herein]

Type



50 µm

Haliomma quadruplex Ehrenberg
Suzuki *et al.* 2009a: pl. 31, figs 1a-d [lectotype herein]

S - LINEAGE IV (K) ACTINOMMIDAE

GENUS ***Dreyerella***
Kozur & Mostler, 1979: 44

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. The correct name for the type species should be *Actinomma friedrichdreyeri*. It is a a new substitute name due to a case of homonymy, see Burridge *et al.* (2014).

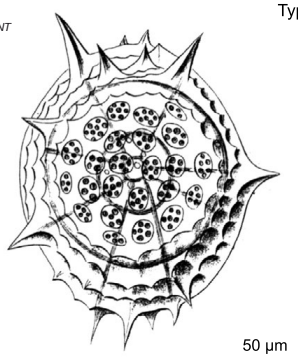
Original series: *Prunopyle antarctica* Dreyer, 1889.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Burridge *et al.* 2014: 51

SEE ***ACTINOMMA***

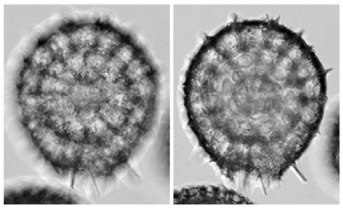
SYN. Type
FREQUENT



50 µm

Prunopyle antarctica
Dreyer, 1889: 24, pl. 5, fig. 75

Support



50 µm

Actinomma friedrichdreyeri Burridge, Bjørklund & Kruglikova
Topotypic material (Challenger Station 157), Suzuki's collection

S - LINEAGE IV (K) ACTINOMMIDAE

GENUS ***Drymyomma***
Jørgensen, 1900: 58

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

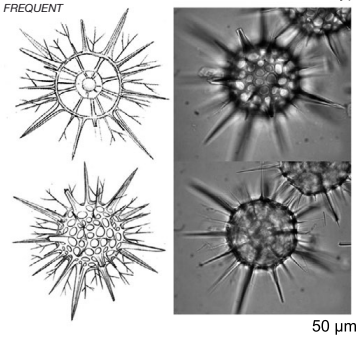
Original series: *Drymyomma elegans* Jørgensen, 1900.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 7

SEE ***ACTINOMMA***

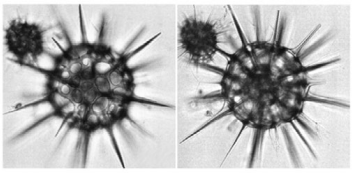
SYN. Type
FREQUENT



50 µm

Drymyomma elegans
Jørgensen, 1900: 58 (unfigured); 1905: 117, pl. 8, figs 34a, 34b; Dolven *et al.* 2014: 24, pl. 1, figs 5a, 5b (lectotype)

Support



50 µm

Drymyomma elegans Jørgensen
Dolven *et al.* 2014: 24, pl. 1, figs 6a, 6b [paralectotype]

S - LINEAGE IV (K) ACTINOMMIDAE

GENUS ***Echinommura***
Haeckel, 1887: 258

SUBGENUS ***Echinomma* (*Echinommura*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

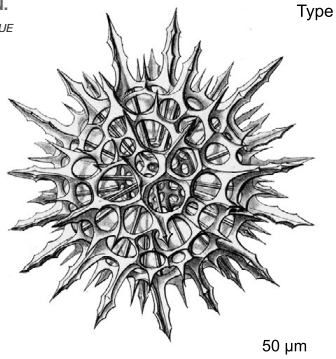
Original series: *Echinomma sphaerechinus* Haeckel, 1887; *Echinomma toxopneustes* Haeckel, 1887 and *Haliomma trinacrium* Haeckel, 1861a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 568

SEE ***ACTINOMMA***

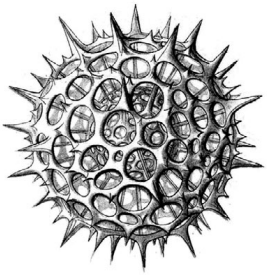
SYN. Type
UNIQUE



50 µm

Echinomma toxopneustes
Haeckel, 1887: 259, pl. 29, fig. 1

Support



50 µm

Echinomma sphaerechinus
Haeckel, 1887: 258, pl. 29, fig. 2

S - LINEAGE IV (K) ACTINOMMIDAE

GENUS ***Haliommura***
Haeckel, 1887: 237

SUBGENUS ***Haliomma* (*Haliommura*)**

Remarks: No type species was designated. Only the type species clearly belongs to this genus; frequently reported. Campbell (1954: D62) considers *HALIOMMURA* to be the nominate subgenus of *HALIOMMA* Ehrenberg, 1839a. However, this seems inappropriate since the species originally assigned to *HALIOMMURA* do not include either of the species originally assigned to *HALIOMMA*.

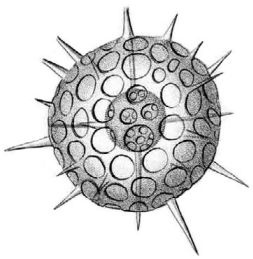
Original series: **Haliomma antarcticum* Haeckel, 1887; *Haliomma beroes* Ehrenberg, 1854b; **Haliomma clavatum* Haeckel, 1887; *Haliomma compactum* Haeckel, 1887; *Haliomma macrodoras* Haeckel, 1887; **Haliomma patagonicum* Haeckel, 1887; **Haliomma permagnum* Haeckel, 1887 and *Haliomma wyvillei* Haeckel, 1878.

FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ACTINOMMA***

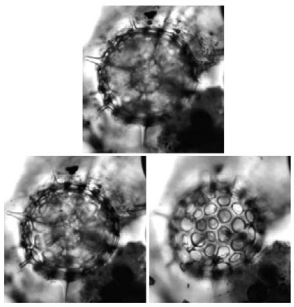
SYN. Type
FREQUENT



50 µm

Haliomma beroes
Ehrenberg, 1854b: 243 (unfigured); Ehrenberg, 1854c: pl. 35B-B.IV, fig.19

Type



50 µm

Haliomma beroes Ehrenberg
Suzuki *et al.* 2009a: pl. 36, figs 1a-c [lectotype herein]

S - LINEAGE IV (K) ACTINOMMIDAE

GENUS ***Heliosomura***
Haeckel, 1887: 241

SUBGENUS ***Heliosoma* (*Heliosomura*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

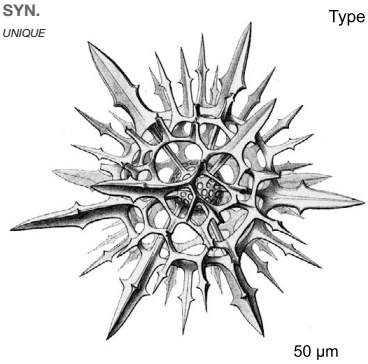
Original series: *Heliosoma hastatum* Haeckel, 1887 and **Heliosoma indicum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 568

SEE ***ACTINOMMA***

SYN. Type
UNIQUE



50 µm

Heliosoma hastatum
Haeckel, 1887: 241, pl. 28, fig. 4

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) ACTINOMMIDAE

GENUS ***Rhaphidococcus***
Haeckel, 1861a: 800

SUBGENUS ***Acanthosphaera* (*Rhaphidococcus*)**

Remarks: No type species was designated. Type species only illustrated by Haeckel (1862). Campbell (1954: D62) designates *Heliosphaera tenuissima* Haeckel, 1861a as the type species of *RHAPHIDOCOCCUS*. However, this seems inappropriate since that species was not among those species originally assigned. O'Dogherty *et al*. 2009a: 340) inadvertently consider *Rhaphidococcus lurianensis* Pantanelli (1880: 46, fig. 9) as the type species by subsequent monotypy.

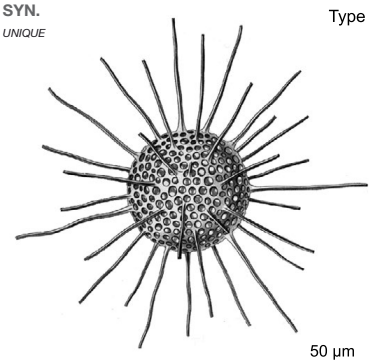
Original series: *Cladococcus acufer* Haeckel, 1861a; *Cladococcus dentatus* Haeckel, 1861a and *Cladococcus simplex* Haeckel, 1861a.

FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ACTINOMMA***

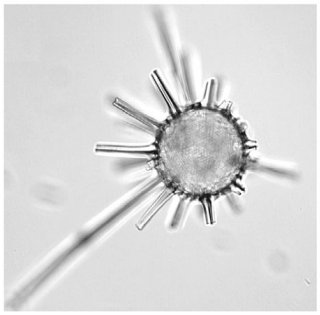
SYN. Type
UNIQUE



50 µm

Cladococcus simplex
Haeckel, 1861a: 800 (unfigured); Haeckel, 1862: 366, pl. 13, fig. 5

Support



100 µm

Cladococcus simplex Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (K) ACTINOMMIDAE

GENUS ***Riedelipyle***
Kozur & Mostler, 1979: 14

Remarks: Type species only illustrated by Dreyer (1889).

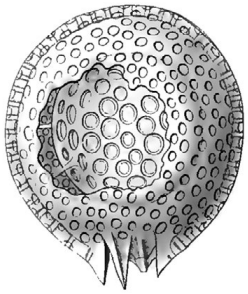
Original series: *Sphaeropyle haeckeli* Dreyer, 1889; *Sphaeropyle kuekenthali* Dreyer, 1889; *Sphaeropyle mespilus* Dreyer, 1889 and *Sphaeropyle walteri* Dreyer, 1889.

FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ACTINOMMA***

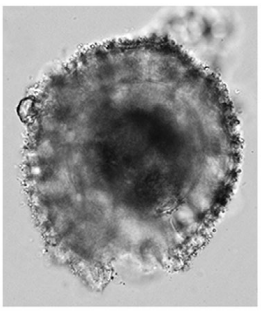
SYN. Type
UNIQUE



50 µm

Sphaeropyle kuekenthalii
Dreyer, 1889: 16, pl. 2, fig. 27

Support



50 µm

Sphaeropyle kuekenthalii Dreyer
Topotypic material (Challenger Station 267), Suzuki's collection

S - LINEAGE IV (K) ACTINOMMIDAE

GENUS **Sphaeropyle**
Dreyer, 1889: 12

Remarks: Type species frequently reported.

Original series: *Sphaeropyle haeckeli* Dreyer, 1889; *Sphaeropyle heteropora* Dreyer, 1889; *Sphaeropyle kuekenthali* Dreyer, 1889; *Sphaeropyle langi* Dreyer, 1889; *Sphaeropyle mespilus* Dreyer, 1889; *Sphaeropyle ovulum* Dreyer, 1889; *Sphaeropyle walteri* Dreyer, 1889 and *Sphaeropyle weissenborni* Dreyer, 1889.

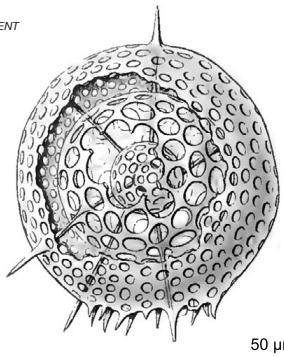
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 568

SEE **ACTINOMMA**

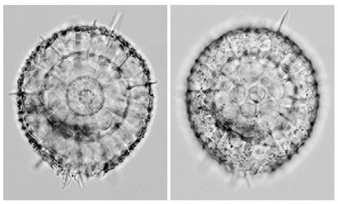
SYN.
FREQUENT

Type



Sphaeropyle langii
Dreyer, 1889: 13, pl. 4, fig. 54

Support



Sphaeropyle langii Dreyer
Topotypic material (Challenger Station 244), Suzuki's collection

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S - LINEAGE IV (K) ? ACTINOMMIDAE

GENUS **Acanthosphaera**
Ehrenberg, 1859: 12

NOMINOTYPE ***Acanthosphaera* (*Acanthosphaera*)**

Remarks: Only the type species clearly belongs to this genus (rarely reported); just two species originally included at the time of the generic definition.

Original series: *Acanthosphaera haliphormis* Ehrenberg, 1862b and *Acanthosphaera*? *zonaster* Ehrenberg, 1862b.

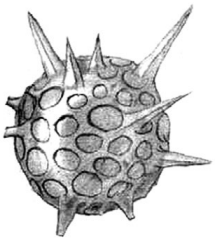
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

SEE **? ACTINOMMA**

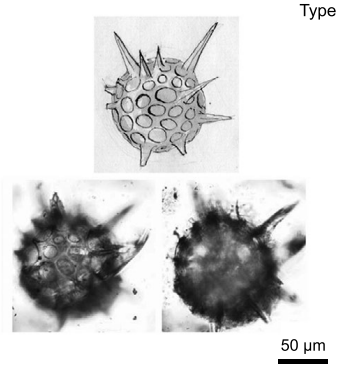
N.D.
RARE

Type



Acanthosphaera haliphormis
Ehrenberg, 1862a: 295 (unfigured); Ehrenberg, 1873b: 284-285, pl. 2, fig. 1

Type



Acanthosphaera haliphormis Ehrenberg
Suzuki *et al.* 2009a: pl. 42, figs 1a-c [lectotype herein]

S - LINEAGE IV (K) ? ACTINOMMIDAE

GENUS **Rhaphidosphaera**
Haeckel, 1882: 450

SUBGENUS ***Acanthosphaera* (*Rhaphidosphaera*)**

Remarks: Type species frequently reported.

Original series: *Acanthosphaera angulata* Haeckel, 1887; **Acanthosphaera brevispina* Haeckel, 1887; **Acanthosphaera conifera* Haeckel, 1887; **Acanthosphaera gibbosa* Haeckel, 1887; *Acanthosphaera haliphormis* Ehrenberg, 1862b; **Acanthosphaera longispina* Haeckel, 1887; **Acanthosphaera maxima* Haeckel, 1887; *Acanthosphaera reticulata* Haeckel, 1887; *Cenosphaera acanthica* Stöhr, 1880; *Cladococcus simplex* Haeckel, 1861a and *Cyrtidosphaera echinoides* Haeckel, 1865.

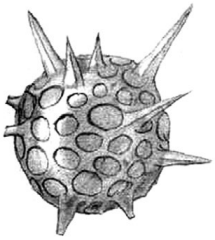
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE **ACANTHOSPHAERA**

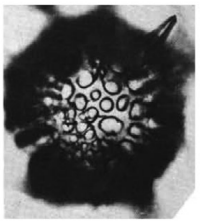
SYN. (obj.); N.D.
FREQUENT

Type



Acanthosphaera haliphormis
Ehrenberg, 1862a: 295 (unfigured); Ehrenberg, 1873b: 284-285, pl. 2, fig. 1

Support



Acanthosphaera? *haliphormis* Ehrenberg
Petrushevskaya & Kozlova 1972: pl. 9, fig. 16

S - LINEAGE IV (K) ? ACTINOMMIDAE

GENUS **Chilomma**
Ehrenberg, 1847: 54

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Chilomma saturnus* Ehrenberg, 1862b.

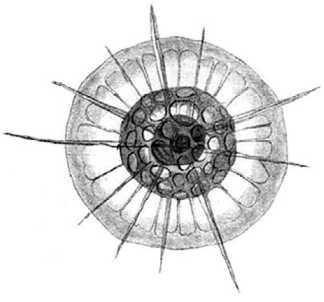
FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN OBLITUM
designed in Matsuzaki *et al.* 2015: 7

SEE **? ACTINOMMA**

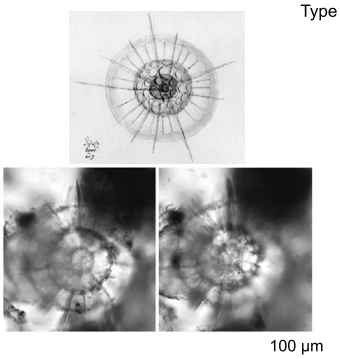
N.O.
RARE

Type



Chilomma saturnus
Ehrenberg, 1862b: 297 (unfigured); Ehrenberg, 1873b: 286-287, pl. 2, fig. 5

Type



Chilomma saturnus Ehrenberg
Suzuki *et al.* 2009a: pl. 40, figs 1a-c [lectotype herein]

S - LINEAGE IV (K) ? ACTINOMMIDAE

GENUS ***Echinomma***
Haeckel, 1882: 452

NOMINOTYPE ***Echinomma* (*Echinomma*)**

Remarks: See comments under *ECHINOMMETA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? ACTINOMMA***

N.D. Type

UNFIGURED SPECIES

Echinomma echinidium
Haeckel, 1887: 257, unfigured

Support



50 µm

Actinomma aculeatum Stöhr
Lucchese 1927: 92, pl. 5 (3), fig. 4

S - LINEAGE IV (K) ? ACTINOMMIDAE

GENUS ***Echinommetta***
Haeckel, 1887: 257

SUBGENUS ***Echinomma* (*Echinommetta*)**

Remarks: Type species never figured. The support image is the only illustrated species among those originally included in this genus.

Original series: *Actinomma aculeatum* Stöhr, 1880; **Echinomma cidaris* Haeckel, 1887; **Echinomma diadema* Haeckel, 1887 and **Echinomma echinidium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

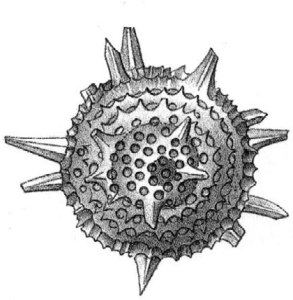
SEE ***ECHINOMMA***

SYN. (obj.); N.D. Type

UNFIGURED SPECIES

Echinomma echinidium
Haeckel, 1887: 257, unfigured

Support



50 µm

Actinomma aculeatum
Stöhr, 1880: 92, pl. 2, fig. 11

S - LINEAGE IV (K) ACTINOMMIDAE
ASSIGNED IN Petrushevskaya 1975: 568

GENUS ***Cromyechinus***
Haeckel, 1882: 453

Diagnosis: Actinommidae with double medullary shell. Two cortical lattice spherical shells bearing spines of two kinds, larger main spines and smaller by-spines. The fourth shell is a delicate external envelope.

Remarks: Type species rarely reported. This genus it is very close to *ACTINOMMA*, the main difference as pointed out by Petrushevskaya & Kozlova in 1972 lies «mainly in the nearly obligate presence of a delicate fourth shell in *CROMYECHINUS*. Very often the fourth shell has a pylome at one pole».

Original series: *Cromyechinus dodecacanthus* Haeckel, 1887; *Cromyechinus icosacanthus* Haeckel, 1887 and **Cromyechinus polyacanthus* Haeckel, 1887.

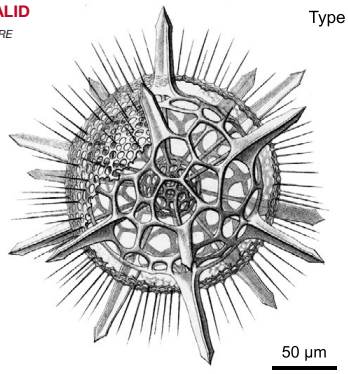
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS **VALID**

AGE ***EARLY EARLY MIOCENE–LIVING***

VALID
RARE

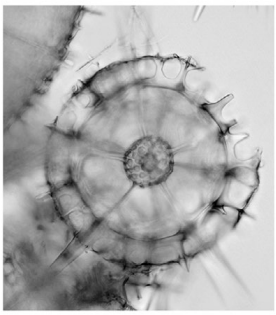
Type



50 µm

Cromyechinus icosacanthus
Haeckel, 1887: 263, pl. 30, fig. 1

Support



50 µm

Cromyechinus icosacanthus Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (K) ACTINOMMIDAE

GENUS ***Cromyodrymus***
Haeckel, 1882: 453

Remarks: Type species illustrated and reported only once by Haeckel (1887); only the type species belongs to this genus. Two species originally included at the time of the generic definition.

Original series: *Cromyodrymus abietinus* Haeckel, 1887 and *Cromyodrymus quadricuspis* Haeckel, 1887.

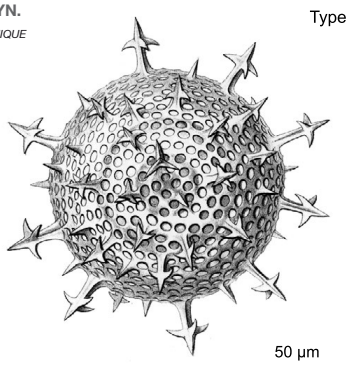
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1979: 12

SEE ***CROMYECHINUS***

SYN.
UNIQUE

Type



50 µm

Cromyodrymus quadricuspis
Haeckel, 1887: 264, pl. 30, fig. 7

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) ? ACTINOMMIDAE

GENUS ***Haliommetta***
Haeckel, 1887: 233

SUBGENUS ***Haliomma* (*Haliommetta*)**

Remarks: Type species only illustrated by Haeckel (1887). Only the type species clearly belongs to this genus and no other images have been published.

Original series: **Haliomma capense* Haeckel, 1887; *Haliomma circumtextum* Haeckel, 1887; **Haliomma denticulatum* Haeckel, 1887; **Haliomma duodecinum* Haeckel, 1887; **Haliomma enneaxiphos* Haeckel, 1887; **Haliomma grande* Haeckel, 1887; *Haliomma longispinum* Müller, 1856; **Haliomma megaporum* Ehrenberg, 1873a; *Haliomma oculatum* Ehrenberg, 1874b; *Haliomma tenuispinum* Müller, 1856 and *Thalassicolla* (*Collosphaera*) *huxleyi* Müller, 1855a.

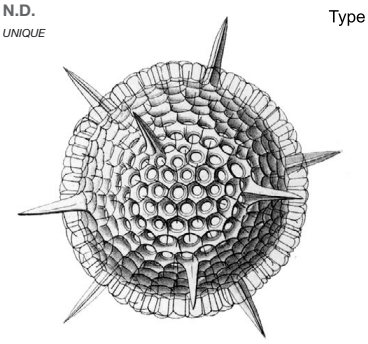
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? CROMYECHINUS***

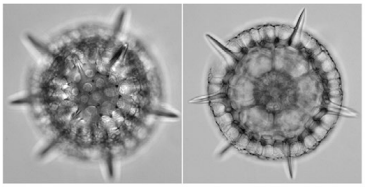
N.D.
UNIQUE

Type



Haliomma circumtextum
Haeckel, 1887: 233, pl. 28, fig. 7

Support



Haliomma circumtextum Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (K) ACTINOMMIDAE
ASSIGNED HEREIN

GENUS ***Rhaphidocapsa***
Haeckel, 1887: 211

SUBGENUS ***Acanthosphaera* (*Rhaphidocapsa*)**

Diagnosis: Actinommidae probably having a single microsphere with regular or subregular pores. Spherical medullary shell of polygonal pore frames and many tens of radial spines as support of several concentric spherical structures made of fibrous or very thin-walled meshwork.

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Acanthosphaera clavata* Haeckel, 1887; **Acanthosphaera compacta* Haeckel, 1887; **Acanthosphaera enneacantha* Haeckel, 1887; **Acanthosphaera florida* Haeckel, 1887; **Acanthosphaera fortispina* Haeckel, 1887; **Acanthosphaera marginata* Haeckel, 1887; *Acanthosphaera mucronata* Haeckel, 1887; **Acanthosphaera octahedralis* Haeckel, 1887 and *Heliosphaera insignis* Hertwig, 1879.

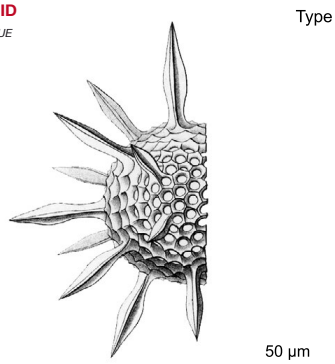
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS **VALID**

AGE ***EARLY LATE MIOCENE–HOLOCENE***

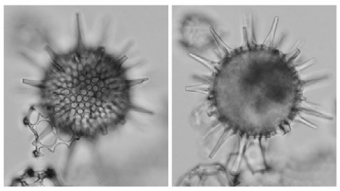
VALID
UNIQUE

Type



Acanthosphaera mucronata
Haeckel, 1887: 212, pl. 26, fig. 7

Support



Acanthosphaera mucronata Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

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S - LINEAGE IV (K) ? ACTINOMMIDAE
FAMILY TENTATIVELY ASSIGNED HEREIN

GENUS ***Sphaeractis***
Brandt in Wetzel, 1936: 50

Diagnosis: Actinommidae with double medullary shell. Skeleton having two or three small concentric spherical shells and three spines.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Brandt in Wetzel (1936).

Original series: *Sphaeractis triacantha* Brandt in Wetzel, 1936.

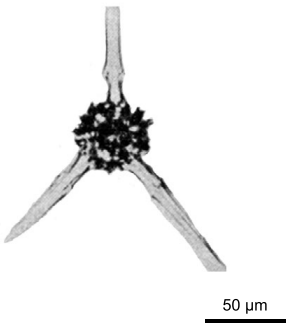
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EOCENE***

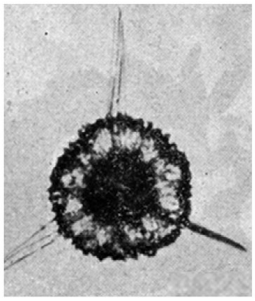
VALID
UNIQUE

Type



Sphaeractis triacantha
Brandt in Wetzel, 1936: 51, pl. 9, fig. 3 [lectotype herein]

Support



Sphaeractis triacantha Brandt
Wetzel 1936: 51, pl. 9, fig. 4

S - LINEAGE IV (K) ? ACTINOMMIDAE
FAMILY TENTATIVELY ASSIGNED HEREIN

GENUS ***Staurocaryum***
Haeckel, 1882: 454

Diagnosis: Actinommidae with a double medullary shell. Skeleton with five or more concentric lattice spheres and four cross-distributed cylindrical spines of similar size.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Staurocaryum arborescens* Haeckel, 1887.

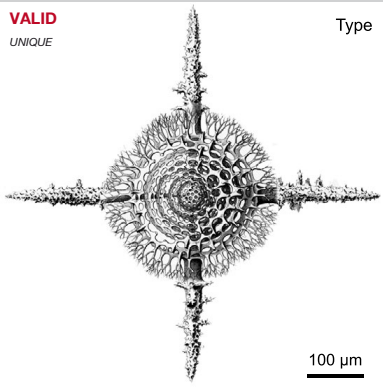
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LATE EARLY MIOCENE***

VALID
UNIQUE

Type



Staurocaryum arborescens
Haeckel, 1887: 167, pl. 15, fig. 8

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) — ACTINOMMIDAE
ASSIGNED HEREIN

GENUS **Stomatosphaera**
Dreyer, 1889: 26

Diagnosis: Actinommidae with a spiny subspherical cortical shell bearing two unequal opposite pylomes bordered by a few long spines. Two inner shells.

Remarks: The type species has been figured just once, hence the support image is a junior subjective synonym of the type species. Only two species originally included at the time of the generic definition.

Original series: *Stomatosphaera amphistoma* Dreyer, 1889 and *Stomatosphaera dinoceras* Dreyer, 1889.

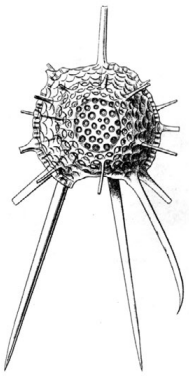
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

VALID
UNIQUE

Type



Stomatosphaera dinoceras
Dreyer, 1889: 26, pl. 5, fig. 76

Support



Stomatosphaera sp. B
Takahashi, 1991: 74, pl. 13, fig. 15

S - LINEAGE IV (K) — ? ACTINOMMIDAE
FAMILY TENTATIVELY ASSIGNED HEREIN

GENUS **Stuermeria**
Deflandre, 1964: 2119

Diagnosis: Actinommidae with an ellipsoidal cortical shell, latticed, with two long unequal and three-bladed polar spines. Two medullary shells, including a spherical microsphere, connected by three to four rays to cortical shell, not to polar spines.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Stuermeria hollandei* Deflandre, 1964.

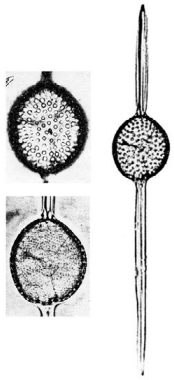
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY MIDDLE EOCENE***

VALID
UNIQUE

Type



Stuermeria hollandei
Deflandre, 1964: 2119, figs 12-14 [lectotype herein]

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) — ? ACTINOMMIDAE

GENUS **Caryosphaera**
Haeckel, 1882: 454

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition. Strelkov & Lipman (1959: 432) also designated subsequently the same type species.

Original series: **Caryosphaera hexalepas* Haeckel, 1887 and **Caryosphaera pentalepas* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 72)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Caryosphaera pentalepas
Haeckel, 1887: 86, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) — ? ACTINOMMIDAE

GENUS **Dermatosphaera**
Ehrenberg, 1861b: 830

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Dermatosphaera laevigata* Ehrenberg, 1861b.

FIXATION MONOTYPY

STATUS NOMEN NUDUM
designated herein; name-bearing type non-existent

N.N.

Type

UNFIGURED SPECIES

Dermatosphaera laevigata
Ehrenberg, 1861b: 823, unfigured (n.n.)

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) ? ACTINOMMIDAE

GENUS ***Heterosphaera***
Mast, 1910: 49

Remarks: Type species only illustrated by Mast (1910); the support image is one of those species originally included into this genus.

Original series: *Heterosphaera cromyommoides* Mast, 1910; **Heterosphaera dodecastyla* Mast, 1910; *Heterosphaera intermedia* Mast, 1910 and *Heterosphaera tenuis* Mast, 1910.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
VERY RARE

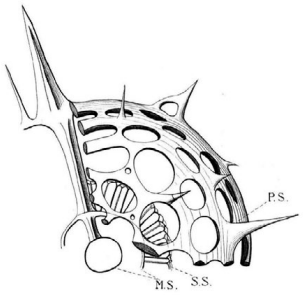
Type



50 µm

Heterosphaera tenuis
Mast, 1910: 49, pl. 15 (2), fig. 20

Support



50 µm

Heterosphaera cromyommoides
Mast, 1910: 50, pl. 15 (2), fig. 24

S - LINEAGE IV (K) ? ACTINOMMIDAE

GENUS ***Heterosphaerina*** AN ORIGINAL INADVERTENT ERROR
Mast, 1910: 49

Remarks: An original inadvertent error, since all species from this genus have the generic name of *HETEROSPHAERINA* corrected to *HETEROSPHAERA* according to ICZN art. 32a(ii).

FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D66)

STATUS INVALID NAME
designated herein

SEE ***HETEROSPHAERA***

INV.

Type



50 µm

Heterosphaera tenuis
Mast, 1910: 49, pl. 15 (2), fig. 20

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) ? ACTINOMMIDAE

GENUS ***Parastomatosphaera***
Kozur & Mostler, 1979: 44

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

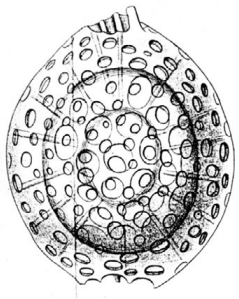
Original series: *Stomatosphaera amphistoma* Dreyer, 1889.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
UNIQUE

Type



50 µm

Stomatosphaera amphistoma
Dreyer, 1889: 26, pl. 2, fig. 30

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) ? ACTINOMMIDAE

GENUS ***Raphidodrymus***
Haeckel, 1887: 214

SUBGENUS ***Acanthosphaera (Raphidodrymus)***

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Acanthosphaera antarctica* Haeckel, 1887; **Acanthosphaera arctica* Haeckel, 1887 and **Acanthosphaera capillaris* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Acanthosphaera capillaris
Haeckel, 1887: 214, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) ? ACTINOMMIDAE

GENUS **Sethosphaera**
Haeckel, 1882: 452

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Sethosphaera entosiphonia* Haeckel, 1887 and **Sethosphaera entosolenia* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Sethosphaera entosiphonia
Haeckel, 1887: 71, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) HALIOMMIDAE
ASSIGNED HEREIN

GENUS **Cromyosphaera**
Haeckel, 1882: 453

Diagnosis: Haliommidae with double medullary shell and two cortical spheres interconnected by radial beams, without external spines.

Remarks: Only the type species was figured in this genus by Haeckel (1887); no other images have been published.

Original series: **Cromyosphaera antarctica* Haeckel, 1887; **Cromyosphaera bigemina* Haeckel, 1887; **Cromyosphaera cepa* Haeckel, 1887; *Cromyosphaera quadruplex* Haeckel, 1887; **Cromyosphaera rosetta* Haeckel, 1887 and **Cromyosphaera scorodonium* Haeckel, 1887.

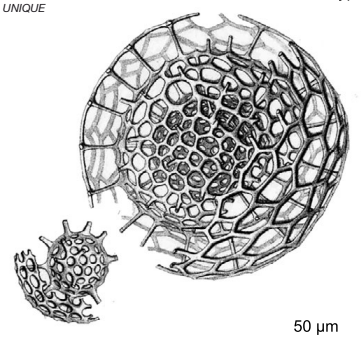
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS **VALID**

AGE *LATE EOCENE–LIVING*

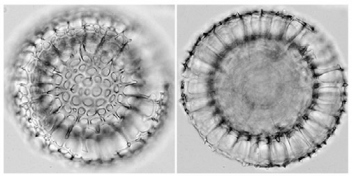
VALID
UNIQUE

Type



Cromyosphaera quadruplex
Haeckel, 1887: 84, pl. 30, figs 9, 9a

Support



Cromyosphaera quadruplex Haeckel
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE IV (K) HALIOMMIDAE

GENUS **Cromyommetta**
Haeckel, 1887: 261

SUBGENUS ***Cromyomma* (*Cromyommetta*)**

Remarks: No type species was designated. Only the type species clearly belongs to this genus; a single report after the first illustration. Campbell (1954: D66) considers *CROMYOMMETTA* to be the nominate subgenus of *CROMYOMMA* Haeckel, 1862. However, this seems inappropriate since the type species of *CROMYOMMA*, *Haliomma quadruplex* Ehrenberg, 1854b, was not among those species originally assigned to *CROMYOMMETTA*.

Original series: *Acanthosphaera*? *zonaster* Ehrenberg, 1862b; *Cromyomma perplexum* Stöhr, 1880 and *Cromyomma villosum* Haeckel, 1887.

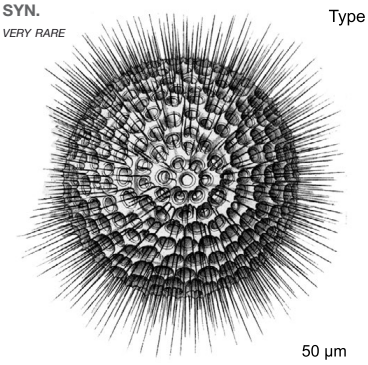
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CROMYOSPHAERA***

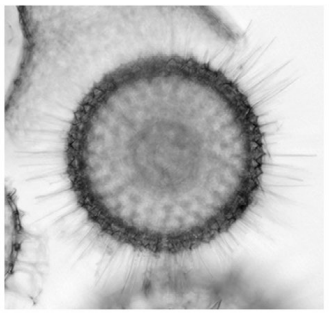
SYN.
VERY RARE

Type



Cromyomma villosum
Haeckel, 1887: 261, pl. 30, fig. 2

Support



Cromyomma villosum Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (K) HALIOMMIDAE

GENUS **Cromyommura**
Haeckel, 1887: 262

SUBGENUS ***Cromyomma* (*Cromyommura*)**

Remarks: Type species only illustrated by Haeckel (1887). Only the type species clearly belongs to this genus and no other images have been published.

Original series: *Cromyomma circumtextum* Haeckel, 1887; *Cromyomma mucronatum* Haeckel, 1887 and *Cromyomma perspicuum* Haeckel, 1887.

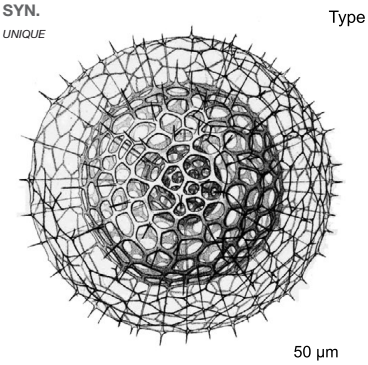
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 7

SEE ***CROMYOSPHAERA***

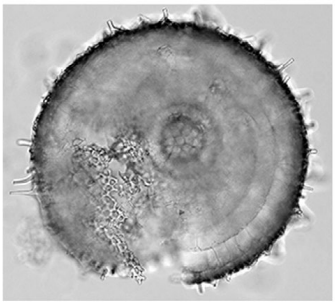
SYN.
UNIQUE

Type



Cromyomma perspicuum
Haeckel, 1887: 262, pl. 30, fig. 8

Support



Cromyomma perspicuum Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (K) HALIOMMIDAE

ASSIGNED IN Ehrenberg 1846: 385

GENUS ***Haliomma***
Ehrenberg, 1839a: 128

NOMINOTYPE ***Haliomma* (*Haliomma*)**

Diagnosis: Haliommidae having a spherical latticed cortical shell interconnected to an internal double medullary shell by six beams protruding outside as very short spines. Microspheric structure tetrapetaloid.

Remarks: No type species was designated. Only two species originally included at the time of the generic definition. Therefore, the SD of *Haliomma aequorea*, Ehrenberg 1844a by Campbell (1954: D62), *Haliomma inerme* Haeckel, 1861a by Petrushevskaya & Kozlova (1979: 91) and *Haliomma beroes* Ehrenberg, 1854b by Strelkov & Lipman (1959: 437) are erroneous. Not *Haliomma medusa* Ehrenberg, 1844a by monotypy (in Suzuki 2009: 62).

Original series: *Haliomma crenatum* Ehrenberg, 1839a and *Haliomma medusa* Ehrenberg, 1844a.

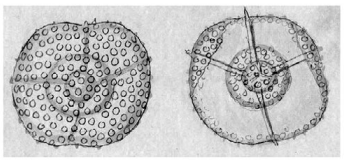
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS **VALID**

AGE ***LATE PALEOCENE–LIVING***

VALID
FREQUENT

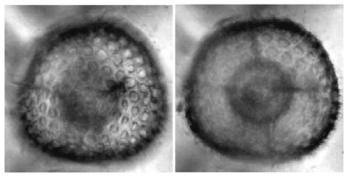
Type



50 µm

Haliomma medusa
Ehrenberg, 1839a: 130 (unfigured); Ehrenberg, 1854c: pl. 22, figs 34a, 34b

Type



50 µm

Haliomma medusa Ehrenberg
Suzuki *et al.* 2009a: pl. 1, figs 3c, 3d [lectotype herein]

S - LINEAGE IV (K) HALIOMMIDAE

GENUS ***Actinommilla***
Haeckel, 1887: 254

SUBGENUS ***Actinomma* (*Actinommilla*)**

Remarks: Type species illustrated and reported only once by Stöhr (1880); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Actinomma hirsutum* Haeckel, 1887 and *Actinomma spinigerum* Stöhr, 1880.

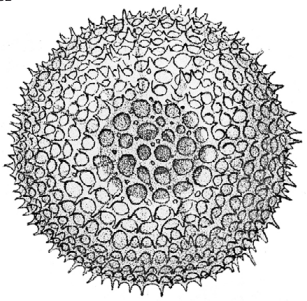
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D65)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HALIOMMA***

SYN.
UNIQUE

Type



50 µm

Actinomma spinigerum
Stöhr, 1880: 92, pl. 2, fig. 10

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) HALIOMMIDAE

GENUS ***Cenosphaera***
Ehrenberg, 1854a: 70 (n.n.); Ehrenberg, 1854b: 237

NOMINOTYPE ***Cenosphaera* (*Cenosphaera*)**

Remarks: Genus described as monospecific at the time of the generic definition; reported only once by Suzuki *et al.* (2009a). This genus has been regarded for long time as having a single shell, however reexamination of type material shows a double medullary shell.

Original series: *Cenosphaera plutonis* Ehrenberg, 1854b.

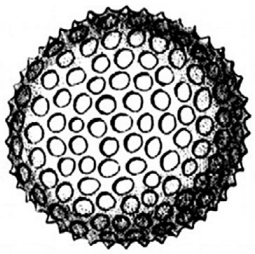
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HALIOMMA***

SYN.
FREQUENT

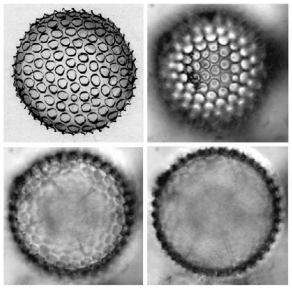
Type



25 µm

Cenosphaera plutonis
Ehrenberg, 1854b: 241 (unfigured); Ehrenberg, 1854c: pl. 35B-B.IV, fig. 20

Type



50 µm

Cenosphaera plutonis Ehrenberg
Suzuki *et al.* 2009a: pl. 30, figs 1a-d [lectotype herein]

S - LINEAGE IV (K) HALIOMMIDAE

GENUS ***Circosphaera***
Haeckel, 1887: 63

SUBGENUS ***Cenosphaera* (*Circosphaera*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported. The support image is a junior subjective synonym of the type species.

Original series: *Cenosphaera compacta* Haeckel, 1887; **Cenosphaera crassa* Haeckel, 1887; *Cenosphaera elysia* Haeckel, 1887; **Cenosphaera eridani* Haeckel, 1887; **Cenosphaera lethe* Haeckel, 1887; **Cenosphaera maxima* Haeckel, 1887; **Cenosphaera nirwana* Haeckel, 1887; *Cenosphaera plutonis* Ehrenberg, 1854b; *Cenosphaera porophaena* Ehrenberg, 1859; **Cenosphaera proserpinae* Haeckel, 1887; *Cenosphaera setosa* Ehrenberg, 1873a and **Cenosphaera solida* Haeckel, 1887.

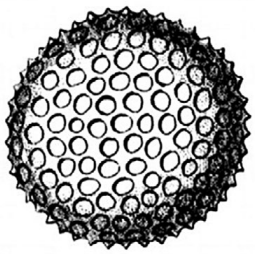
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***HALIOMMA***

SYN. (obj.)
FREQUENT

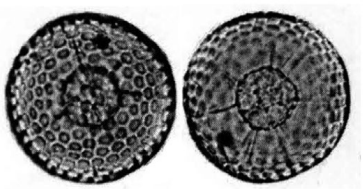
Type



25 µm

Cenosphaera plutonis
Ehrenberg, 1854b: 241 (unfigured); Ehrenberg, 1854c: pl. 35B-B.IV, fig. 20

Support



50 µm

Thecosphaera grecoi Vinassa de Regny
Chen & Tan 1996: 156, pl. 1, figs 8, 9

S - LINEAGE IV (K) ? HALIOMMIDAE

GENUS ***Circulosphaera*** INCORRECT SUBSEQUENT SPELLING
Clark & Campbell, 1942: 20

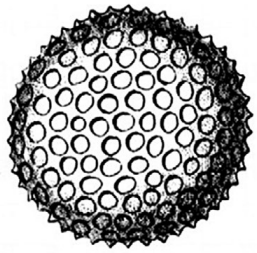
Remarks: An incorrect subsequent spelling for *CIRCOSPHAERA*, which is unjustified according to the provisions of ICZN art. 33.3. Although Clark & Campbell 1942 refer back to Haeckel 1887, there is not any genus under this spelling; however, *CIRCOSPHAERA* Haeckel, 1887 seems to be the closer, since the species *Cenosphaera lethe* Haeckel is discussed under the description of the new genus and species *Cenosphaera* (*Circulosphaera*) *veneris* Clark & Campbell, 1942.

FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D48)

STATUS INVALID NAME
designated herein

SEE ***CIRCOSPHAERA***

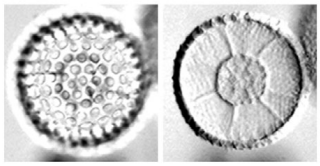
INV. Type



25 µm

Cenosphaera plutonis
Ehrenberg, 1854b: 241 (unfigured); Ehrenberg, 1854c: pl. 35B-B.IV, fig. 20

Support



100 µm

Cenosphaera plutonis Ehrenberg
Suzuki's collection (IODP U1338A-1H-1W, Quaternary)

S - LINEAGE IV (K) HALIOMMIDAE

GENUS ***Thecosphaerella***
Haeckel, 1887: 80

SUBGENUS ***Thecosphaera* (*Thecosphaerella*)**

Remarks: Type species frequently reported.

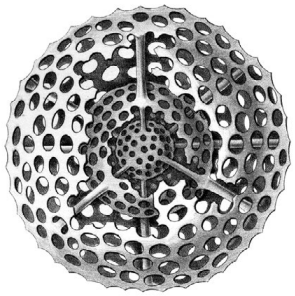
Original series: *Haliomma aequorea* Ehrenberg, 1844a; *Haliomma inerme* Haeckel, 1861a; *Haliomma medusa* Ehrenberg, 1844a; **Thecosphaera entactinia* Haeckel, 1887 and **Thecosphaera micropora* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 568

SEE ***HALIOMMA***

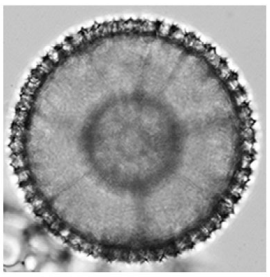
SYN. Type
FREQUENT



25 µm

Haliomma inerme
Haeckel, 1861a: 815 (unfigured); Haeckel, 1862: 440, pl. 24, fig. 5

Support



50 µm

Haliomma inerme Haeckel
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE IV (K) ? HALIOMMIDAE

GENUS ***Porosphaera***
Haeckel, 1887: 67

SUBGENUS ***Cenosphaera* (*Porosphaera*)**

Remarks: Homonym of *POROSPHAERA* Steinman, 1878: 120 (Calcarea); see *CHAUNOSPHAERA nomen novum*.

Original series: *Cenosphaera antiqua* Haeckel, 1887; *Cenosphaera aspera* Stöhr, 1880; *Cenosphaera gigantea* Haeckel, 1887; *Cenosphaera*? *hirsuta* Ehrenberg, 1873a and *Cenosphaera marginata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS HOMONYM, NOMEN DUBIUM

SEE ***CHAUNOSPHAERA NOMEN NOVUM***

HOM.; N.D. Type

UNFIGURED SPECIES

Cenosphaera antiqua
Haeckel, 1887: 67, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) ? HALIOMMIDAE

GENUS ***Chaunosphaera*** *NOMEN NOVUM* PRO *POROSPHAERA*
Loeblich & Tappan, 1961: 22

Remarks: Type species never figured; however, an image is available by inference since a name was given in the synonymy list of the type species.

Original series: **Cenosphaera antiqua* Haeckel, 1887; *Cenosphaera aspera* Stöhr, 1880; **Cenosphaera gigantea* Haeckel, 1887; *Cenosphaera*? *hirsuta* Ehrenberg, 1873a and **Cenosphaera marginata* Haeckel, 1887.

FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1954: D50)

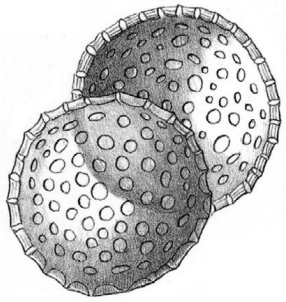
STATUS *NOMEN NOVUM*, NOMEN DUBIUM
designated herein; name-bearing type non-existent

NOM. NOV.; N.D. Type

UNFIGURED SPECIES

Cenosphaera antiqua
Haeckel, 1887: 67, unfigured

Support



50 µm

Cenosphaera antiqua
Haeckel, 1887: 67 [specimen of Stöhr *Cenosphaera plutonis* var., 1880: 85, pl. 1, fig. 1]

S - LINEAGE IV (K) ? HALIOMMIDAE

GENUS ***Thecosphaerantha***
Haeckel, 1887: 78

SUBGENUS ***Thecosphaera* (*Thecosphaerantha*)**

Remarks: No type species was designated. Campbell (1954: D50) considers *THECOSPHAERANTHA* to be the nominate subgenus of *THECOSPHAERA* Haeckel, 1882. However, this seems inappropriate since the type species of *THECOSPHAERA*, *Thecosphaera unica* Rüst, 1885, was not among those species originally assigned to *THECOSPHAERANTHA*.

Original series: **Thecosphaera favosa* Haeckel, 1887; **Thecosphaera floribunda* Haeckel, 1887; **Thecosphaera phaenaxonia* Haeckel, 1887 and **Thecosphaera triplodictyon* Haeckel, 1887.

FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

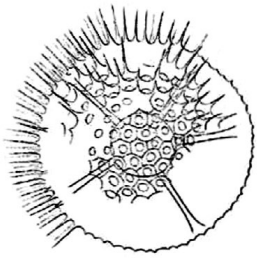
STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Thecosphaera favosa
Haeckel, 1887: 79, unfigured

Support



50 µm

Haliomma favosum Haeckel
Popofsky 1908: 214, pl. 24, fig. 3

S - LINEAGE IV (K) ? HALIOMMIDAE

GENUS ***Thecosphaerina***
Haeckel, 1887: 81

SUBGENUS ***Thecosphaera* (*Thecosphaerina*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Thecosphaera capillacea* Haeckel, 1887 and **Thecosphaera diplococcus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Thecosphaera capillacea
Haeckel, 1887: 81, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) ? HALIOMMIDAE

GENUS ***Thecosphaeromma***
Haeckel, 1887: 81

SUBGENUS ***Thecosphaera* (*Thecosphaeromma*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Thecosphaera dodecactis* Haeckel, 1887; **Thecosphaera icosactis* Haeckel, 1887 and **Thecosphaera maxima* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D50)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Thecosphaera maxima
Haeckel, 1887: 82, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) HALIOMMIDAE
ASSIGNED HEREIN

GENUS ***Haliommantha***
Haeckel, 1887: 230

SUBGENUS ***Haliomma* (*Haliommantha*)**

Diagnosis: Haliommidae having two concentric shells interconnected by six or more beams; microsphere without tetrapetaloid structure. Cortical shell covered with numerous small spines. Long spines absent.

Remarks: Only the type species clearly belongs to this genus; rarely reported.

Original series: **Haliomma arachnium* Haeckel, 1887; *Haliomma castanea* Haeckel, 1861a; **Haliomma datura* Haeckel, 1887; **Haliomma favosum* Haeckel, 1887; **Haliomma hexagonium* Haeckel, 1887; *Haliomma horridum* Stöhr, 1880; *Haliomma lirianthus* Haeckel, 1887; **Haliomma melitomma* Haeckel, 1887 and **Haliomma regulare* Haeckel, 1887.

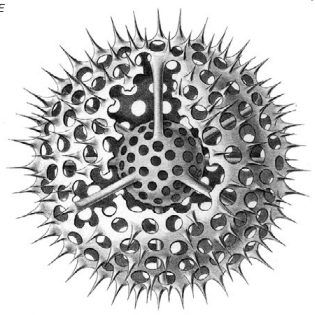
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D62)

STATUS **VALID**

AGE ***LIVING***

VALID
RARE

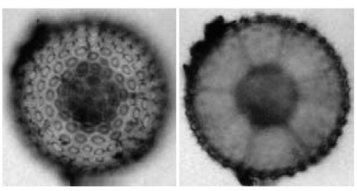
Type



~ 50 µm

Haliomma castanea
Haeckel, 1861a: 815 (unfigured); Haeckel, 1862: 428, pl. 24, fig. 4

Type



100 µm

Haliomma castanea Haeckel
Sakai *et al.* 2009: 51, pl. 21, figs 3a, 3b [neotype herein]

S - LINEAGE IV (K) — HALIOMMIDAE
ASSIGNED IN Kozur & Mostler 1979: 20

GENUS **Hexacontella**
Haeckel, 1887: 194

SUBGENUS ***Hexacontium* (*Hexacontella*)**

Diagnosis: Haliommidae having three latticed concentric shells interconnected by six three-bladed spines; without tetrapetaloid microsphere and primary spines. Medullary shell double; secondary spines originating in the external medullary shell. Externally, this genus is homeomorph with some Hexalonchidae, however it has not a heteropolar microsphere.

Remarks: Type species only illustrated by Haeckel (1887). Only the type species clearly belongs to this genus; no other images have been published.

Original series: *Haliomma asteracanthion* Haeckel, 1861a; *Hexacontium clavigerum* Haeckel, 1887; *Hexacontium favosum* Haeckel, 1887; *Hexacontium floridum* Haeckel, 1887; **Hexacontium hexaconicum* Haeckel, 1887; **Hexacontium hexagonale* Haeckel, 1887; *Hexacontium prionacanthum* Haeckel, 1887 and *Hexacontium sceptrum* Haeckel, 1887.

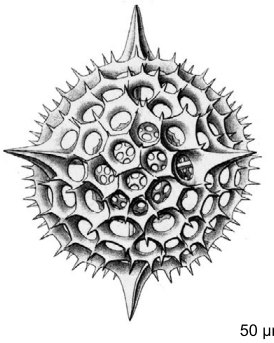
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D60)

STATUS **VALID**

AGE ***[MIOCENE]–[QUATERNARY]***

VALID
UNIQUE

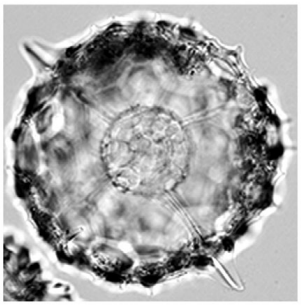
Type



50 µm

Hexacontium favosum
Haeckel, 1887: 194, pl. 24, fig. 2

Support



50 µm

Hexacontium favosum Haeckel
Topotypic material (Challenger Station 265), Suzuki's collection

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S - LINEAGE IV (K) — HALIOMMIDAE
ASSIGNED HEREIN

GENUS **Melittosphaera**
Haeckel, 1882: 451

SUBGENUS ***Carposphaera* (*Melittosphaera*)**

Diagnosis: Haliommidae with a single microsphere and a single spherical cortical shell with small thorns on pore frames. Connecting beams not extended as external spines.

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: **Carposphaera capillacea* Haeckel, 1887; **Carposphaera cubaxonia* Haeckel, 1887; **Carposphaera melissa* Haeckel, 1887; *Carposphaera melitomma* Haeckel, 1887 and *Haliomma infundibuliforme* Stöhr, 1880.

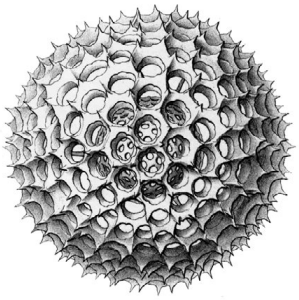
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 10)

STATUS **VALID**

AGE ***EARLY EOCENE–LATE PLEISTOCENE***

VALID
VERY RARE

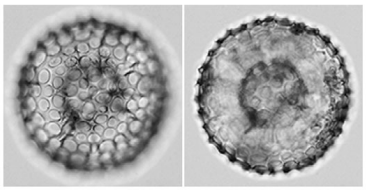
Type



50 µm

Carposphaera melitomma
Haeckel, 1887: 73, pl. 20, fig. 4

Support



50 µm

Carposphaera melitomma Haeckel
Topotypic material (Challenger Station 268), Suzuki's collection

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S - LINEAGE IV (K) — HALIOMMIDAE

GENUS **Conoactinomma**
Gorbunov, 1979: 104

Remarks: Genus described as monospecific at the time of the generic definition; reported only by Gorbunov (1979).

Original series: *Actinomma undosa undosa* Kozlova in Kozlova & Gorbovetz, 1966.

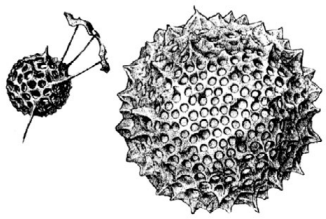
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***MELITTOSPHAERA***

SYN.
VERY RARE

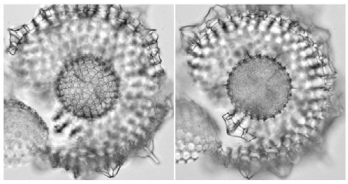
Type



100 µm

Actinomma undosa undosa
Kozlova in Kozlova & Gorbovetz, 1966: 60, pl. 9, figs 1, 2

Support



50 µm

Actinomma undosa Kozlova in Kozlova & Gorbovetz
Suzuki's collection (Late Paleocene-Early Eocene, Japan)

S - LINEAGE IV (K) — ? HALIOMMIDAE

GENUS **Prunosphaera**
Haeckel, 1882: 451

SUBGENUS ***Carposphaera* (*Prunosphaera*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Carposphaera borassus* Haeckel, 1887; **Carposphaera corypha* Haeckel, 1887 and **Carposphaera prunulum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Carposphaera prunulum
Haeckel, 1887: 74, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage IV (K) HALIOMMIDAE
ASSIGNED HEREIN

GENUS ***Pseudostaurosphaera***
Krasheninnikov, 1960: 276

Diagnosis: Haliommidae with a spherical cortical shell bearing four robust three-bladed spines distributed in tetrahedron order. A single microsphere connected to cortical shell by four rays.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Pseudostaurosphaera perelegans* Krasheninnikov, 1960.

FIXATION MONOTYPY

STATUS **VALID**

AGE ***Middle Paleocene–Late Eocene***

VALID
RARE

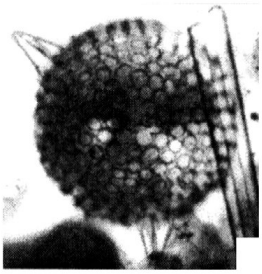
Type



100 µm

Pseudostaurosphaera perelegans
Krasheninnikov, 1960: 276, pl. 1, fig. 6

Support



50 µm

Hexacontium? *perelegans* (Krasheninnikov)
Kozlova 1999: 75, pl. 28, fig. 5

S - Lineage IV (K) HALIOMMIDAE

GENUS ***Pseudostaurolonche***
Mamedov, 1969: 21

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Pseudostaurolonche khilimiliensis* Mamedov, 1969.

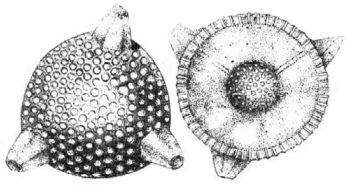
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Kozlova 1999: 75

SEE ***PSEUDOSTAUROSPHAERA***

SYN.
UNIQUE

Type



100 µm

Pseudostaurolonche khilimiliensis
Mamedov, 1969: 21, pl. 1, figs 1, 2

Support

NO IMAGE PUBLISHED

no image available

S - Lineage IV (K) HELIODISCIDAE
ASSIGNED IN De Wever *et al.* 2001: 124

GENUS ***Actinommura***
Haeckel, 1887: 255

SUBGENUS ***Actinomma* (*Actinommura*)**

Diagnosis: Heliodiscidae with a double medullary shell including an eccentric microsphere and a spherical to prunoid outer medullary shell surrounded by two concentric spherical cortical shells. Lattice shells connected by numerous fibrillar beams extending in short thin external spines.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Actinomma arcadophorum* Haeckel, 1887; *Actinomma capillaceum* Haeckel, 1887; **Actinomma dodecomma* Haeckel, 1887; **Actinomma giganteum* Haeckel, 1887; **Actinomma pachycapsa* Haeckel, 1887 and *Actinomma schwageri* Stöhr, 1880.

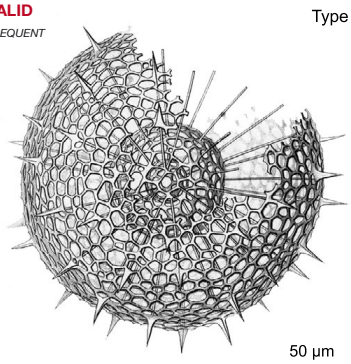
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D66)

STATUS **VALID**

AGE ***Early Middle Miocene–Living***

VALID
FREQUENT

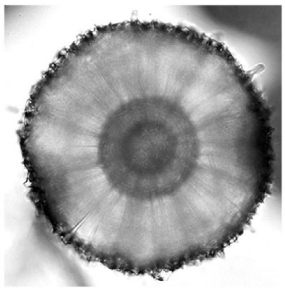
Type



50 µm

Actinomma capillaceum
Haeckel, 1887: 255, pl. 29, fig. 6

Support



50 µm

Actinomma capillaceum Haeckel
Suzuki's collection (Middle Miocene, Toyama, Japan)

S - Lineage IV (K) HELIODISCIDAE

GENUS ***Excentrosphaerella***
Dumitrica, 1978: 238

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Sugiyama & Furutani (1992). However, the Japanese species is placed by Dumitrica (2019) in the synonymy of *Excentroconcha annulatus* Dumitrica, 1978.

Original series: *Excentrosphaerella sphaeroconcha* Dumitrica, 1978.

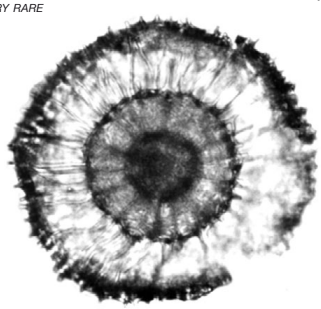
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***ACTINOMMURA***

SYN.?
VERY RARE

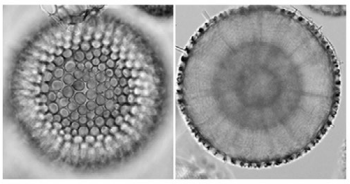
Type



50 µm

Excentrosphaerella sphaeroconcha
Dumitrica, 1978: 238, pl. 5, fig. 22 [lectotype herein]

Support



50 µm

Excentrosphaerella sphaeroconcha Dumitrica
Suzuki's collection (IODP U1338A-1H-1W, Quaternary)

S - LINEAGE IV (K) — HELIODISCIDAE
ASSIGNED IN De Wever *et al.* 2001: 124

GENUS **Excentrococcus**
Dumitrica, 1978: 238

Diagnosis: Heliodiscidae with a double medullary shell including an eccentric microsphere and a spherical or prunoid outer medullary shell surrounded by a one or more circular, or oval, coplanar rings.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Excentrococcus annulatus* Dumitrica, 1978.

FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY MIDDLE MIOCENE–LATE MIDDLE MIOCENE***

VALID
RARE

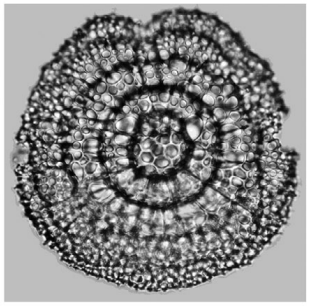
Type



50 µm

Excentrococcus annulatus
Dumitrica, 1978: 238, pl. 5, fig. 19 [lectotype herein]

Support



50 µm

Excentrococcus annulatus Dumitrica
Dumitrica 2019: 54, fig. 8a

S - LINEAGE IV (K) — HELIODISCIDAE
ASSIGNED IN De Wever *et al.* 2001: 124

GENUS **Excentrodiscus**
Hollande & Enjumet, 1960: 125

Diagnosis: Heliodiscidae with a double medullary shell including an eccentric microsphere and a spherical or prunoid outer medullary shell surrounded by a spherical cortical shell with, or without, spines.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Hollande & Enjumet (1960).

Original series: *Excentrodiscus echinatus* Hollande & Enjumet, 1960.

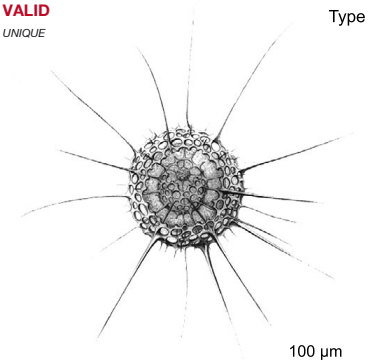
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY EOCENE–LIVING***

VALID
UNIQUE

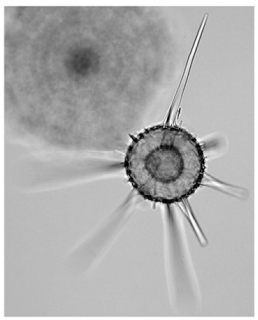
Type



100 µm

Excentrodiscus echinatus
Hollande & Enjumet, 1960: 125, pl. 62, fig. 3 [lectotype herein]

Support



50 µm

Excentrodiscus echinatus Hollande & Enjumet
Zhang's collection (South China Sea)

S - LINEAGE IV (K) — HELIODISCIDAE
ASSIGNED IN Haeckel 1887: 421

GENUS **Heliodiscus**
Haeckel, 1862: 436

NOMINOTYPE ***Heliodiscus* (*Heliodiscus*)**

Diagnosis: Heliodiscidae with a double medullary shell including a concentric microsphere related to cortical shell by radial beams.Lattice lenticular cortical usually with peripheral spines in the equatorial plane (sometimes ramified).

Remarks: Type species frequently reported. Campbell (1954: D54) designated *Heliodiscus inchoatus* Rüst, 1885 as type species. However, this seems inappropriate since the aforementioned, was not among those species included at the time of the generic definition. Therefore, we considered the fixation by Strelkov & Lipman 1959 (ICZN, art. 70.3).

Original series: *Haliomma amphidiscus* Müller, 1859b; *Haliomma humboldti* Ehrenberg, 1847; *Haliomma phacodiscus* Haeckel, 1861a and *Haliomma sol* Ehrenberg, 1840.

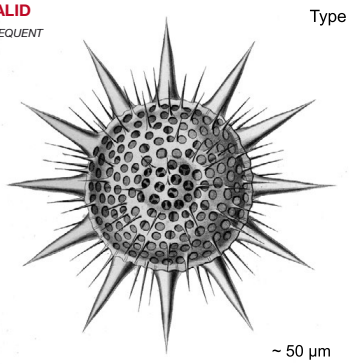
FIXATION SUBSEQUENT DESIGNATION (Strelkov & Lipman 1959: 444)

STATUS **VALID**

AGE ***LATE EARLY MIOCENE–LIVING***

VALID
FREQUENT

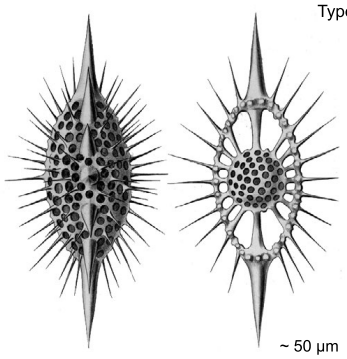
Type



~ 50 µm

Haliomma phacodiscus
Haeckel, 1861a: 815 (unfigured); Haeckel, 1862: 437, pl. 17, fig. 5

Type



~ 50 µm

Haliomma phacodiscus
Haeckel, 1862: 437, pl. 17, figs 6, 7

S - LINEAGE IV (K) — HELIODISCIDAE

GENUS **Heliodiscilla**
Haeckel, 1887: 447

SUBGENUS ***Heliodiscus* (*Heliodiscilla*)**

Remarks: Type species frequently reported. Although Campbell (1954: D82) designates *Heliodiscus pertusus* as the type species of *HELIODISCILLA*, this seems inappropriate since *Haliomma phacodiscus* (the type species of *HELIODISCUS*) was originally included in *HELIODISCILLA*, thus the latter genus becomes the junior objective synonym of *HELIODISCUS*.

Original series: *Haliomma amphidiscus* Müller, 1859b; *Haliomma phacodiscus* Haeckel, 1861a; *Heliodiscus echiniscus* Haeckel, 1887 and *Heliodiscus pertusus* Haeckel, 1887.

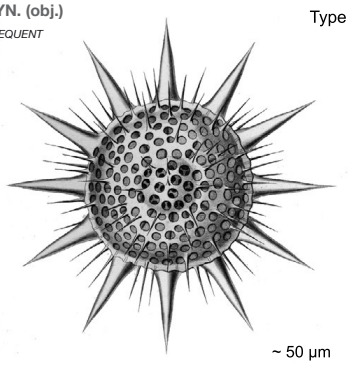
FIXATION SUBSEQUENT DESIGNATION (Strelkov & Lipman 1959: 444)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***HELIODISCUS***

SYN. (obj.)
FREQUENT

Type



~ 50 µm

Haliomma phacodiscus
Haeckel, 1861a: 815 (unfigured); Haeckel, 1862: 437, pl. 17, fig. 5

Type



50 µm

Heliodiscus pertusus Haeckel
Topotypic material (Challenger Station 244), Suzuki's collection

S - LINEAGE IV (K) HELIODISCIDAE

GENUS ***Heliodiscetta***
Haeckel, 1887: 445

SUBGENUS ***Heliodiscus* (*Heliodiscetta*)**

Remarks: Type species frequently reported. Campbell (1954: D82) considers *HELIODISCETTA* to be the nominate subgenus of *HELIODISCUS* Haeckel, 1862. However, this seems inappropriate since the type species of *HELIODISCUS* was not among those species originally included at the time of the generic definition of *HELIODISCETTA*.

Original series: *Haliomma helianthus* Ehrenberg, 1874b; *Haliomma sol* Ehrenberg, 1840; *Heliodiscus asteriscus* Haeckel, 1887; *Heliodiscus glyphodon* Haeckel, 1887; *Heliodiscus polymorphus* Haeckel, 1887; *Heliodiscus siculus* Stöhr, 1880; *Heliodiscus solaster* Haeckel, 1887; **Heliodiscus trigonodon* Haeckel, 1887 and *Heliodiscus trochiscus* Haeckel, 1887.

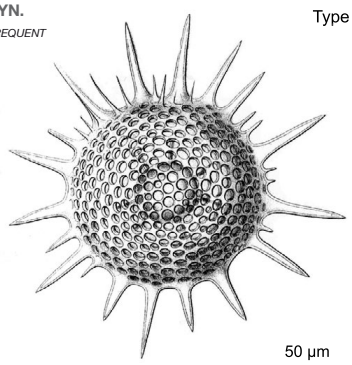
FIXATION NO TYPE SPECIES DESIGNATED (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HELIODISCUS***

SYN. *FREQUENT*

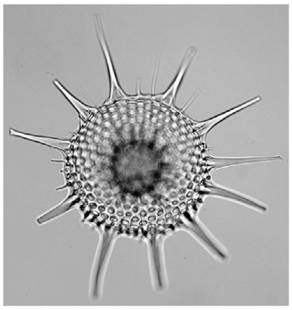
Type



50 µm

Heliodiscus asteriscus
Haeckel, 1887: 445, pl. 33, fig. 8

Support



50 µm

Heliodiscus asteriscus Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (K) HELIODISCIDAE

GENUS ***Heliocladus***
Haeckel, 1879a: 705

SUBGENUS ***Heliodrymus* (*Heliocladus*)**

Remarks: See comments under *HELIODRYMUS*. Monospecific genus. Because no other figures are available, the support image correspond to one of those species included by Haeckel (1887) in *HELIODRYMUS* since *HELIOCLADUS* was included as a subgenus of the latter. Campbell (1954: D82) incorrectly designated *Heliodrymus dendrocyclus* Haeckel, 1887 as the type species of *HELIOCLADUS*. Species subsequently included are: *Heliocladus furcatus* Haeckel, 1879a, *Heliodiscus grottensis* Stöhr, 1880, *Heliodrymus dendrocyclus* Haeckel, 1887 and *Heliodrymus furcatus* Haeckel, 1887.

Original series: *Heliocladus furcatus* Haeckel, 1879a.

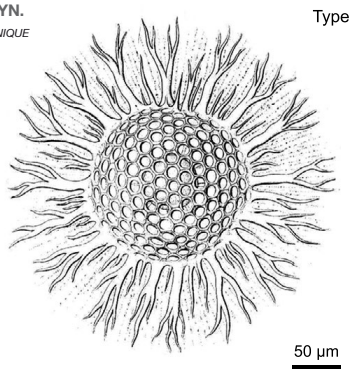
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***HELIODISCUS***

SYN. *UNIQUE*

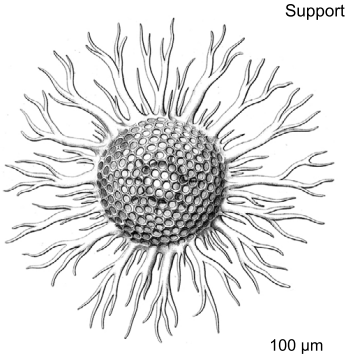
Type



50 µm

Heliocladus furcatus
Haeckel, 1879a: 705, pl. 16, fig. 4

Support



100 µm

Heliodrymus dendrocyclus
Haeckel, 1887: 451, pl. 33, fig. 9

S - LINEAGE IV (K) HELIODISCIDAE

GENUS ***Heliodrymus***
Haeckel, 1882: 457

NOMINOTYPE ***Heliodrymus* (*Heliodrymus*)**

Remarks: Haeckel in 1887 erects the new species *Heliodrymus dendrocyclus*, however it corresponds to the same illustration as for *Heliocladus furcatus* of his publication of 1879. Because the illustrated specimens of *Heliodrymus dendrocyclus* Haeckel, 1887 and *Heliocladus furcatus* Haeckel, 1879a are identical, we consider *Heliodrymus dendrocyclus* to be a junior objective synonym of *Heliocladus furcatus* and, therefore, *HELIODRYMUS* is a junior objective synonym of *HELIOCLADUS*.

Original series: *Heliocladus furcatus* Haeckel, 1879a; *Heliodiscus grottensis* Stöhr, 1880; *Heliodrymus dendrocyclus* Haeckel, 1887 and *Heliodrymus furcatus* Haeckel, 1887.

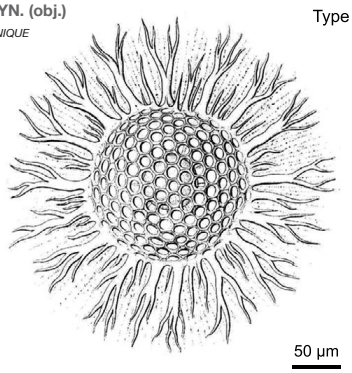
FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***HELIODISCUS***

SYN. (obj.) *UNIQUE*

Type



50 µm

Heliocladus furcatus
Haeckel, 1879a: 705, pl. 16, fig. 4

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) HELIODISCIDAE

GENUS ***Heliodendrum***
Haeckel, 1887: 452

SUBGENUS ***Heliodrymus* (*Heliodendrum*)**

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Heliodrymus ramosus* Haeckel, 1887; **Heliodrymus setosus* Haeckel, 1887 and *Heliodrymus viminalis* Haeckel, 1887.

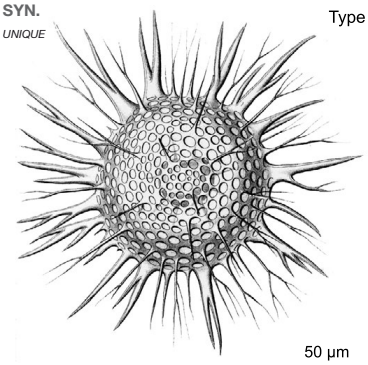
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1972: 19

SEE ***HELIODISCUS***

SYN. *UNIQUE*

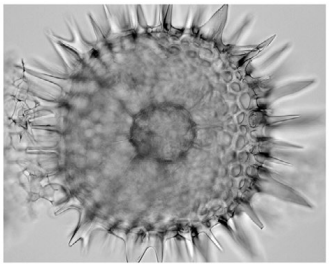
Type



50 µm

Heliodrymus ramosus
Haeckel, 1887: 452, pl. 35, fig. 3

Support



50 µm

Heliodrymus ramosus Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (K) HELIODISCIDAE

GENUS ***Heliosestilla***
Haeckel, 1887: 440

SUBGENUS ***Heliosestrum* (*Heliosestilla*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

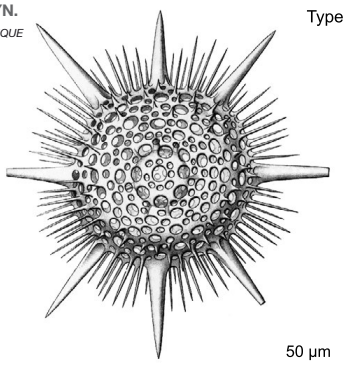
Original series: **Heliosestrum aegineta* Haeckel, 1887 and *Heliosestrum octonum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1972: 19

SEE ***HELIODISCUS***

SYN. Type
UNIQUE



Heliosestrum octonum
Haeckel, 1887: 440, pl. 34, fig. 3

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) ? HELIODISCIDAE

GENUS ***Astrophacus***
Haeckel, 1882: 457

NOMINOTYPE ***Astrophacus* (*Astrophacus*)**

Remarks: See comments under *ASTROPHACETTA*. It is pretty sure that *Astrophacus solaris* Haeckel, 1887, has not a centric microsphere as illustrated by Haeckel, but an eccentric one because it comes from Quaternary sediments and has peripheral spines as in the Quaternary species. One can never see such peripheral spines in the Paleogene. See for comparison all phacodiscids illustrated from Leg 10 in Sanfilippo & Riedel (1973). The type species is a junior subjective synonym of *Heliodiscus asteriscus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

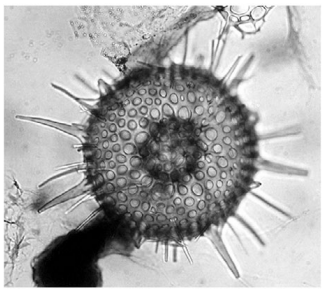
SEE ***? HELIODISCUS***

N.D. Type

UNFIGURED SPECIES

Astrophacus asteriscus
Haeckel, 1887: 453, unfigured

Support



Heliodiscus asteriscus Haeckel
Aita's collection (plankton, East China Sea)

S - LINEAGE IV (K) ? HELIODISCIDAE

GENUS ***Astrophacetta***
Haeckel, 1887: 453

SUBGENUS ***Astrophacus* (*Astrophacetta*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Astrophacus asteriscus* Haeckel, 1887; *Astrophacus solaris* Haeckel, 1887 and *Astrophacus trochiscus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

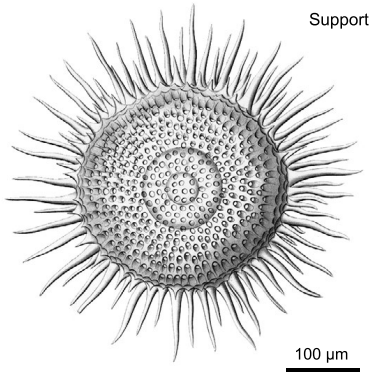
SEE ***ASTROPHACUS***

SYN. (obj.); N.D. Type

UNFIGURED SPECIES

Astrophacus asteriscus
Haeckel, 1887: 453, unfigured

Support



Astrophacus solaris
Haeckel, 1887: 453, pl. 32, fig. 1

S - LINEAGE IV (K) HELIODISCIDAE
ASSIGNED IN Dumitrica 2019: 51

GENUS ***Helioferrusa***
Dumitrica, 2019: 52

Diagnosis: Heliodiscidae with a lenticular lattice cortical shell. Double medullary shell with an eccentric microsphere. No peripheral spines as in *HELIODISCUS*, but a peripheral porous ring.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Dumitrica (2019).

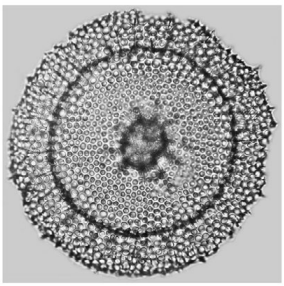
Original series: *Helioferrusa hollandei* Dumitrica, 2019.

FIXATION MONOTYPY

STATUS **VALID**

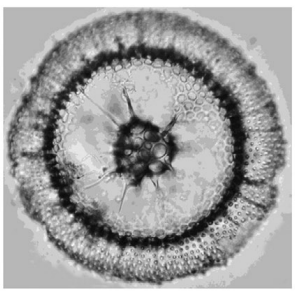
AGE ***LATE MIDDLE MIOCENE***

VALID Type
UNIQUE



Helioferrusa hollandei
Dumitrica, 2019: 52, fig. 9b

Type



Helioferrusa hollandei
Dumitrica, 2019: 52, fig. 9c

S - LINEAGE IV (K) — HELIODISCIDAE
ASSIGNED HEREIN

GENUS ***Phaenicosphaera***
Haeckel, 1887: 75

SUBGENUS ***Carposphaera* (*Phaenicosphaera*)**

Diagnosis: Heliodiscidae with a characteristic tuberculate cortical shell and a single microsphere. External tubercles with small pores. No external spines.

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: **Carposphaera maxima* Haeckel, 1887; **Carposphaera micrococcus* Haeckel, 1887; *Carposphaera nodosa* Haeckel, 1887 and *Haliomma*? *nobile* Ehrenberg, 1844c.

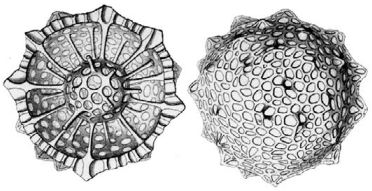
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS **VALID**

AGE ***EARLY EOCENE–EARLY LATE MIOCENE***

VALID
VERY RARE

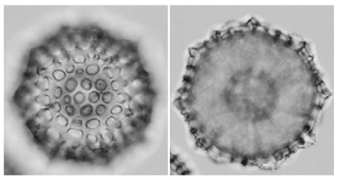
Type



50 µm

Carposphaera nodosa
Haeckel, 1887: 76, pl. 28, figs 2, 2a

Support



50 µm

Carposphaera nodosa Haeckel
Topotypic material (Challenger Station 268), Suzuki's collection

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S - LINEAGE IV (K) — ? HELIODISCIDAE

GENUS ***Anthomma*** PREMATURE NAME
Haeckel, 1887: 76

Remarks: A premature name used by Haeckel for the subgenus *PHAENICOSPHAERA*. No description given. Mentioned in the synonymy of the included species *Carposphaera nodosa* Haeckel. Genus described as monospecific at the time of the generic definition.

Original series: *Carposphaera nodosa* Haeckel, 1887.

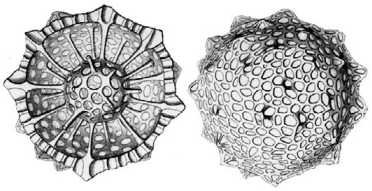
FIXATION MONOTYPY; ICZN, ART. 67.6

STATUS INVALID NAME
designated herein

SEE ***PHAENICOSPHAERA***

INV.

Type



50 µm

Carposphaera nodosa
Haeckel, 1887: 76, pl. 28, figs 2, 2a

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (K) — HELIODISCIDAE

GENUS ***Dreyeropyle***
Kozur & Mostler, 1979: 14

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Dreyer (1889).

Original series: *Sphaeropyle heteropora* Dreyer, 1889.

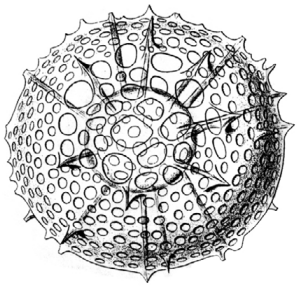
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PHAENICOSPHAERA***

SYN.
UNIQUE

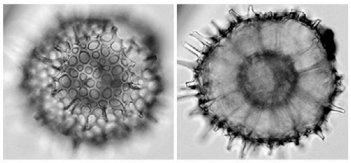
Type



50 µm

Sphaeropyle heteropora
Dreyer, 1889: 15, pl. 4, fig. 52

Support



50 µm

Sphaeropyle heteropora Dreyer
Suzuki's collection (Middle Miocene, Akita, Japan)

S - LINEAGE IV (K) — ? HELIODISCIDAE

GENUS ***Actinommantha***
Haeckel, 1887: 252

SUBGENUS ***Actinomma* (*Actinommantha*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Actinomma anthomma* Haeckel, 1887; **Actinomma castanomma* Haeckel, 1887; **Actinomma facetum* Haeckel, 1887; **Actinomma hexagonium* Haeckel, 1887 and *Haliomma entactinia* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D65)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *PHAENICOSPHAERA***

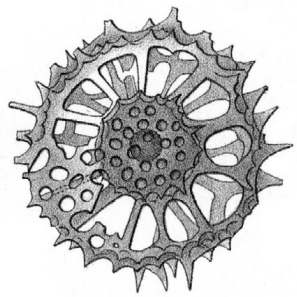
N.D.

Type

UNFIGURED SPECIES

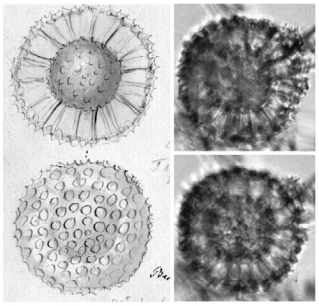
Actinomma hexagonium
Haeckel, 1887: 252, unfigured

Support



50 µm

Actinomma entactinia (Ehrenberg)
Stöhr 1880: 93, pl. 2, fig. 12

S - LINEAGE IV (K) ? HELIODISCIDAE GENUS ***Cerasosphaera*** Haeckel, 1882: 451 SUBGENUS ***Carposphaera* (*Cerasosphaera*)** **Remarks**: Type species never figured. The support image is the closest species among those originally included in this genus. **Original series**: **Carposphaera areca* Haeckel, 1887; **Carposphaera belladonna* Haeckel, 1887; **Carposphaera cerasus* Haeckel, 1887; **Haliomma apiculatum* Ehrenberg, 1873a; *Haliomma entactinia* Ehrenberg, 1874b and *Haliomma modestum* Stöhr, 1880. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48) STATUS NOMEN DUBIUM name-bearing type non-existent; related by inference SEE **? *PHAENICOSPHAERA***	**N.D.** Type UNFIGURED SPECIES *Carposphaera cerasus* Haeckel, 1887: 73, unfigured	Type  100 µm *Haliomma entactinia* Ehrenberg Ogane *et al.* 2009b: pl. 1, figs 5a-d [lectotype herein]
S - LINEAGE IV (K) ? HELIODISCIDAE GENUS ***Astrosestilla*** Haeckel, 1887: 443 SUBGENUS ***Astrosestrum* (*Astrosestilla*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Astrosestrum acanthastrum* Haeckel, 1887 and **Astrosestrum echinastrum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Astrosestrum acanthastrum* Haeckel, 1887: 443, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (K) ? HELIODISCIDAE GENUS ***Astrosestomma*** Haeckel, 1887: 444 SUBGENUS ***Astrosestrum* (*Astrosestomma*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Astrosestrum floscula* Haeckel, 1887 and **Astrosestrum pelagia* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Astrosestrum pelagia* Haeckel, 1887: 444, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (K) ? HELIODISCIDAE GENUS ***Distriactis*** Haeckel, 1887: 436 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Distriactis alterna* Haeckel, 1887; **Distriactis amphithecta* Haeckel, 1887; **Distriactis corallantha* Haeckel, 1887; **Distriactis liriantha* Haeckel, 1887 and **Distriactis palmantha* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Distriactis liriantha* Haeckel, 1887: 436, unfigured	Support NO IMAGE PUBLISHED no image available

S - LINEAGE IV (K) ? HELIODISCIDAE

GENUS ***Heliodiscura***
Haeckel, 1887: 450

SUBGENUS ***Heliodiscus* (*Heliodiscura*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Heliodiscus apollinis* Haeckel, 1887 and **Heliodiscus zoroaster* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D82)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Heliodiscus apollinis
Haeckel, 1887: 450, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (UNKNOWN) CONOCARYOMMIDAE
ASSIGNED IN Lipman 1969: 184

GENUS ***Conocaryomma***
Lipman, 1969: 184

Diagnosis: Spherical spumellarians with a tuberculate cortical shell and four to five closely distributed inner concentric shells, all interconnected by many radial beams.

Remarks: The type species has been frequently figured. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Conocaryomma aralensis* Lipman, 1969 and *Conocaryomma lentis* Lipman, 1969.

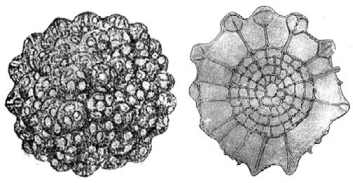
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY EOCENE–LATE EOCENE***

VALID
FREQUENT

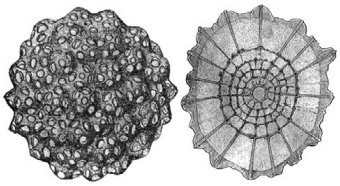
Type



100 µm

Conocaryomma aralensis
Lipman, 1969: 186, pl. 1, figs 1, 4

Support



100 µm

Conocaryomma lentis
Lipman, 1969: 188, pl. 3, figs 1, 4a

S - LINEAGE IV (UNKNOWN) CONOCARYOMMIDAE

GENUS ***Conocromyomma***
Kazintsova in Kazintsova & Tikhomirova, 1975: 41

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Cromyomma tuberculata* Lipman, 1949.

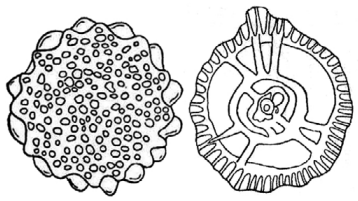
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***CONOCARYOMMA***

SYN.?
UNIQUE

Type



100 µm

Cromyomma tuberculata
Lipman, 1949: 113, pl. 13, fig. 4

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (L1) LITHELIIDAE
ASSIGNED IN Haeckel 1882: 464

GENUS ***Lithelius***
Haeckel, 1861b: 843

NOMINOTYPE ***Lithelius* (*Lithelius*)**

Diagnosis: Shell spherical to ellipsoidal with a porous envelope around a loosely concentric or spiral internal structure. With robust primary beams. Tens of radial primary beams originating from a very small spherical microsphere. Tens to hundreds, relatively robust, long spines radiating outside of the shell. Pylome absent.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Lithelius spiralis* Haeckel, 1861b.

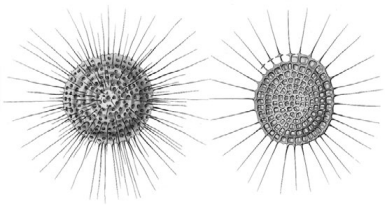
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LIVING***

VALID
FREQUENT

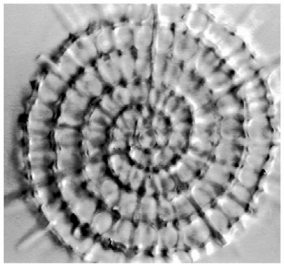
Type



100 µm

Lithelius haeckelspiralis
Haeckel, 1861b: 843 (unfigured); 1862: 519, pl. 27, figs 6, 7
[*nomen novum* Matsuzaki & Suzuki in Matsuzaki *et al.* 2015]

Support



25 µm

Lithelius spiralis Haeckel
Suzuki's collection (Nakayama Fm., Miocene Japan)

S - LINEAGE IV (L1) — LITHELIIDAE

GENUS ***Lithospira***
Haeckel, 1887: 693

SUBGENUS ***Lithelius* (*Lithospira*)**

Remarks: Type species frequently reported.

Original series: *Lithelius alveolina* Haeckel, 1862; **Lithelius capreolus* Haeckel, 1887; *Lithelius primordialis* Hertwig, 1879 and *Lithelius spiralis* Haeckel, 1861b.

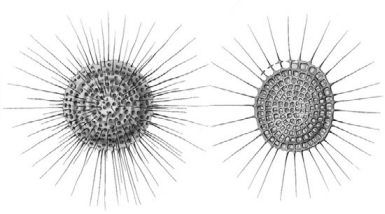
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D99)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***LITHELIUS***

SYN. (obj.)
FREQUENT

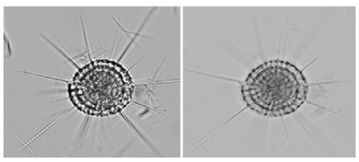
Type



100 µm

Lithelius haeckelspiralis
Haeckel, 1861b: 843 (unfigured); 1862: 519, pl. 27, figs 6, 7 [*nomen novum* Matsuzaki & Suzuki in Matsuzaki *et al.* 2015]

Support



50 µm

Lithelius haeckelspiralis Matsuzaki & Suzuki
Suzuki's collection (plankton, off Sesoko Island, Japan)

S - LINEAGE IV (L1) — LITHELIIDAE

GENUS ***Azerbaidjanicus***
Mamedov, 1973: 61

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

Original series: *Azerbaidjanicus compositus* Mamedov, 1973.

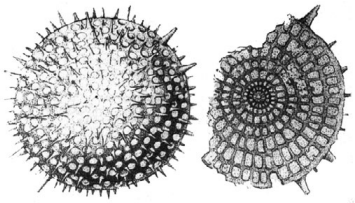
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***LITHELIUS***

SYN.?
UNIQUE

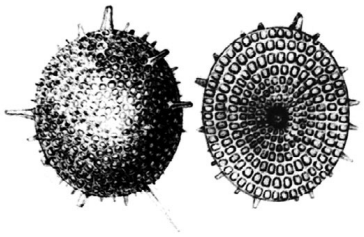
Type



100 µm

Azerbaidjanicus compositus
Mamedov, 1973: 61, pl. 1, figs 3, 4

Support



100 µm

Cromyocarpus echinatus
Mamedov, 1970: 63, pl. 1, figs 1, 2

S - LINEAGE IV (L1) — ? LITHELIIDAE

GENUS ***Spireuma***
Haeckel, 1882: 464

Remarks: See comments under *SPIREMARIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D99)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? LITHELIUS***

N.D.

Type

UNFIGURED SPECIES

Spirema lentellipsis
Haeckel, 1887: 692, unfigured

Support



50 µm

Spirema melonia
Haeckel, 1887: 692, pl. 49, fig. 1

S - LINEAGE IV (L1) — ? LITHELIIDAE

GENUS ***Spiremarium***
Haeckel, 1887: 692

SUBGENUS ***Spirema* (*Spiremarium*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Flustrella*? *haliomma* Ehrenberg, 1862b; **Spirema flustrella* Haeckel, 1887; **Spirema lentellipsis* Haeckel, 1887 and *Spirema melonia* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D99)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***?SPIREMA***

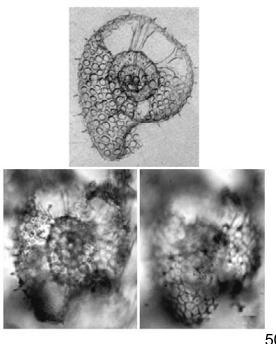
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Spirema lentellipsis
Haeckel, 1887: 692, unfigured

Type



50 µm

Flustrella haliomma Ehrenberg
Suzuki *et al.* 2009a: pl. 41, figs 1a-c [lectotype herein]

S - LINEAGE IV (L1) ? LITHELIIDAE

GENUS ***Spirema*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 691

NOMINOTYPE ***Spirema* (*Spirema*)**

Remarks: An incorrect subsequent spelling for *SPIREUMA*. By referring back to p. 464 in his *Prodromus* of 1882, Haeckel apparently means *SPIREMA* to be an emendation to the name *SPIREUMA*, which is unjustified according to the provisions of ICZN art. 33.3.

FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D99)

STATUS INVALID NAME
designated herein

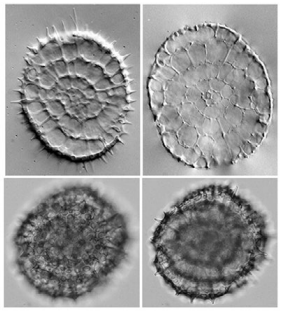
SEE ***SPIREUMA***

INV. Type

UNFIGURED SPECIES

Spirema lentellipsis
Haeckel, 1887: 692, unfigured

Support



100 µm

Spirema melonia Haeckel
Suzuki's collection (Middle Miocene, Akita, Japan)

S - LINEAGE IV (L1) ? LITHELIIDAE

GENUS ***Spiremidium***
Haeckel, 1887: 693

SUBGENUS ***Spirema* (*Spiremidium*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Spirema diplospira* Haeckel, 1887 and **Spirema subglobosum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Spirema diplospira
Haeckel, 1887: 693, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (L1) LITHELIIDAE
ASSIGNED HEREIN

GENUS ***Middourium***
Kozlova, 1999: 101

Diagnosis: Shell with a porous ellipsoidal to cylindrical envelope (in some species) around a densely to loosely concentric or spiral internal structure. No robust primary spines; pylome(s) present in some species.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Cromyodruppa regularia* Borisenko, 1958.

FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY PALEOCENE–EARLY PLEISTOCENE***

VALID
FREQUENT

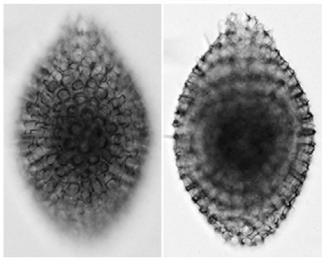
Type



100 µm

Cromyodruppa regularia
Borisenko, 1958: 88, pl. 5, fig. 14 [lectotype herein]

Support



50 µm

Cromyodruppa regularia Borisenko
Suzuki's collection (Late Paleocene-Early Eocene, Pacific Ocean)

S - LINEAGE IV (L1) LITHELIIDAE

GENUS ***Monobrachium***
Kozlova, 1999: 102

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Spongurus? irregularis* Nishimura, 1992.

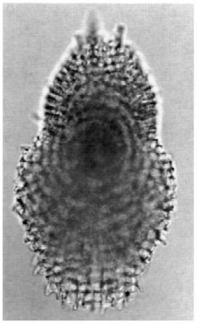
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***MIDDOURIUM***

SYN.
RARE

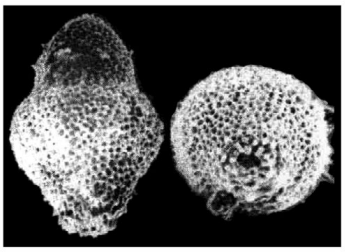
Type



100 µm

Spongurus? irregularis
Nishimura, 1992: 327, pl. 12, fig. 3

Support



100 µm

Monobrachium irregularis (Nishimura)
Kozlova 1999: 102, pl. 43, figs 8, 9

S - LINEAGE IV (L1) — LITHELIIDAE
ASSIGNED IN Kozlova 1960: 315

GENUS **Spiremaria**
Kozlova, 1960: 315

Diagnosis: Shell spherical to ellipsoidal with a porous envelope around a densely concentric or spiral internal structure. Very small spherical microsphere; it may develop one pylome. No robust primary beams; sometimes tens to hundreds of very short beams/spines are visible radiating outside of the shell.

Remarks: Only the type species clearly belongs to this genus (figured just once); just two species originally included at the time of the generic definition.

Original series: *Spiremaria decens* Kozlova, 1960 and *Spiremaria fragosa* Kozlova, 1960.

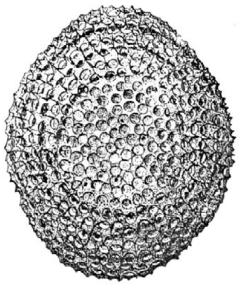
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE OLIGOCENE–HOLOCENE***

VALID
UNIQUE

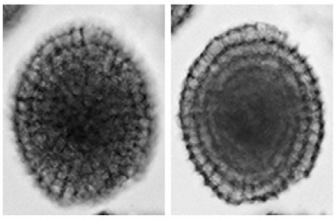
Type



50 µm

Spiremaria decens
Kozlova, 1960: 315, pl. 4, fig. 3

Support



50 µm

Spiremaria decens Kozlova
Suzuki's collection (Middle Miocene, Toyama, Japan)

S - LINEAGE IV (L1) — LITHELIIDAE

GENUS **Spiromultitunica**
Tochilina & Popova in Tochilina, 1985: 102

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

Original series: *Spiromultitunica circumflexa* Tochilina & Popova in Tochilina, 1985.

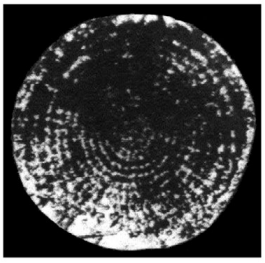
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***SPIREMARIA***

SYN.
UNIQUE

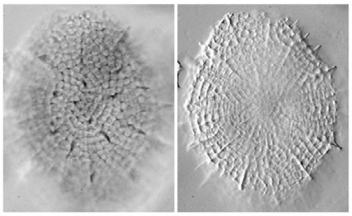
Type



50 µm

Spiromultitunica circumflexa
Tochilina & Popova in Tochilina, 1985: 102, pl. 3, fig. 3

Support



50 µm

Acanthosphaera elliptica Ehrenberg
Suzuki's collection (Quaternary, Equatorial Pacific)

S - LINEAGE IV (L1) — ? LITHELIIDAE

GENUS **Spongodruppium**
Haeckel, 1887: 349

SUBGENUS ***Spongodruppa* (*Spongodruppium*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Acanthosphaera elliptica* Ehrenberg, 1873a; *Haliomma polyacanthum* Müller, 1855b and **Spongodruppa frangula* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? SPIREMARIA***

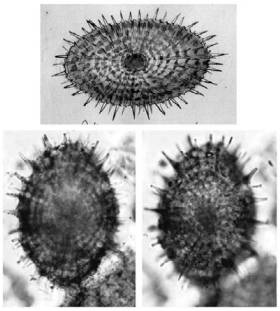
N.D.

Type

UNFIGURED SPECIES

Spongodruppa frangula
Haeckel, 1887: 349, unfigured

Type



50 µm

Acanthosphaera elliptica Ehrenberg
Suzuki *et al.* 2009a: pl. 51, figs 10a-c [lectotype herein]

S - LINEAGE IV (L1) — LITHELIIDAE
ASSIGNED HEREIN

GENUS **Spongocyclia**
Haeckel, 1862: 469

Diagnosis: Circular to subelliptical, bifasciculate shell with a bulb-like, highly concentric and densely packed central structure and no spongy margin. No pylome structure observed. Sometimes the gown is open on the one pole, but there is no definite pylome (see Petrushevskaya, 1975: 572).

Remarks: Only the type species clearly belongs to this genus; rarely reported.

Original series: *Spongodiscus charybdaeus* Haeckel, 1861b; *Spongodiscus cycloides* Haeckel, 1861b; *Spongodiscus ellipticus* Haeckel, 1861b; *Spongodiscus orthogonus* Haeckel, 1861b; *Spongodiscus quadricornis* Haeckel, 1861b and *Spongodiscus scyllaeus* Haeckel, 1861b.

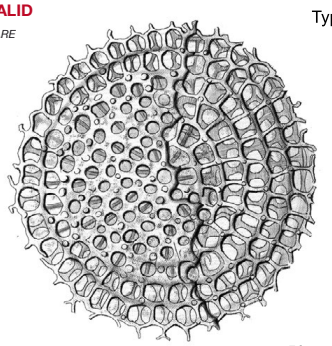
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 26)

STATUS **VALID**

AGE ***LATE PALEOCENE–LIVING***

VALID
RARE

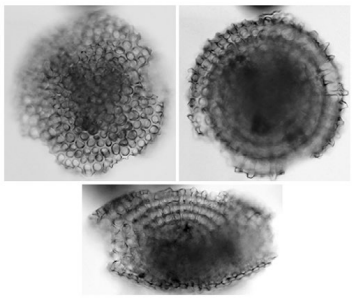
Type



~ 50 µm

Spongodiscus cycloides
Haeckel, 1861b: 843 (unfigured); Haeckel, 1862: 469, pl. 28, fig. 1

Support



50 µm

Spongodiscus cycloides Haeckel
Suzuki's collection (Middle Miocene, Akita, Japan)

S - LINEAGE IV (L1) LITHELIIDAE

GENUS **Ommatodiscus**
Stöhr, 1880: 115

NOMINOTYPE ***Ommatodiscus* (*Ommatodiscus*)**

Remarks: Type species frequently reported. The disk shape in *SPONGOCYCLIA* is the most important character making the difference from any other Litheliidae. No intermediate form between them have been recognized.

Original series: *Ommatodiscus decipiens* Stöhr, 1880; *Ommatodiscus fragilis* Stöhr, 1880; *Ommatodiscus haeckeli* Stöhr, 1880 and *Ommatodiscus laevigatus* Stöhr, 1880.

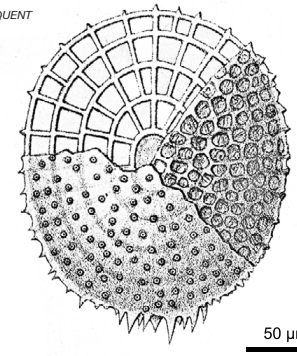
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 25)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***SPONGOCYCLIA***

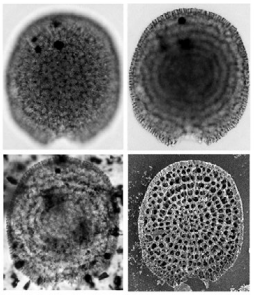
SYN.
FREQUENT

Type



Ommatodiscus haeckeli
Stöhr, 1880: 115, pl. 6, fig. 7

Support



Ommatodiscus haeckeli Stöhr
Ogane's collection (ODP 1172A-42X-CC, East Tasman Plateau)

S - LINEAGE IV (L1) LITHELIIDAE

GENUS **Ommatodisculus**
Haeckel, 1887: 501

SUBGENUS ***Ommatodiscus* (*Ommatodisculus*)**

Remarks: Type species frequently reported.

Original series: *Ommatodiscus fragilis* Stöhr, 1880; *Ommatodiscus haeckeli* Stöhr, 1880 and *Ommatodiscus laevigatus* Stöhr, 1880.

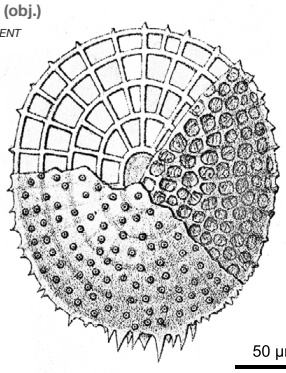
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 25)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***OMMATODISCUS***

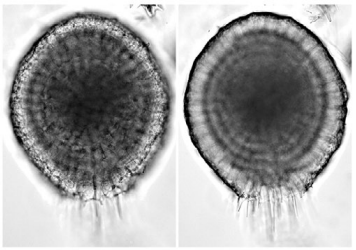
SYN. (obj.)
FREQUENT

Type



Ommatodiscus haeckeli
Stöhr, 1880: 115, pl. 6, fig. 7

Support



Ommatodiscus haeckeli Stöhr
Zhang's collection (South China Sea)

S - LINEAGE IV (L1) LITHELIIDAE

GENUS **Ommatodiscinus**
Haeckel, 1887: 500

SUBGENUS ***Ommatodiscus* (*Ommatodiscinus*)**

Remarks: Only the type species has been illustrated (reported only by Stöhr 1880).

Original series: **Ommatodiscus circularis* Haeckel, 1887; *Ommatodiscus decipiens* Stöhr, 1880 and **Ommatodiscus stoehrii* Haeckel, 1887.

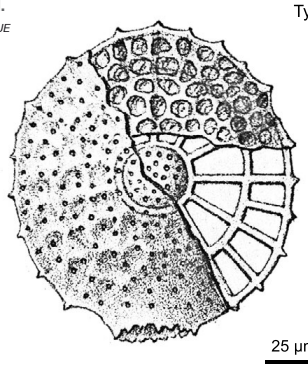
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***SPONGOCYCLIA***

SYN.
UNIQUE

Type



Ommatodiscus decipiens
Stöhr, 1880: 115, pl. 6, fig. 8

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (L1) LITHELIIDAE

GENUS **Lithocarpium**
Stöhr, 1880: 97

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Lithocarpium pyriforme* Stöhr, 1880.

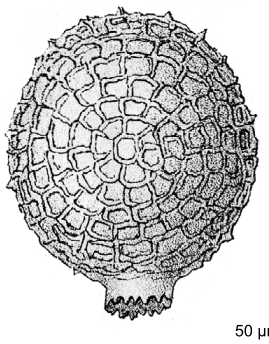
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***SPONGOCYCLIA***

SYN.?
UNIQUE

Type



Lithocarpium pyriforme
Stöhr, 1880: 97, pl. 3, fig. 10

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (L1) — PHASELIFORMIDAE
ASSIGNED IN Pessagno 1972: 273

GENUS ***Phaseliforma***
Pessagno, 1972: 274

Diagnosis: Test subellipsoidal, thicker on anterior than posterior end. Internal meshwork weakly concentric. Posterior end with a keel and a V-shaped indentation along the middle of one side.

Remarks: Type species frequently reported. The support image is a specimen form Cenozoic material. The species was described, and subsequently assigned to this genus, by Pessagno (1975).

Original series: *Cromyodruppa concentrica* Lipman, 1952; *Phaseliforma carinata* Pessagno, 1972; *Phaseliforma laxa* Pessagno, 1972 and *Phaseliforma meganosensis* Pessagno, 1972.

FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY HAUTERIVIAN–EARLY PALEOCENE***

VALID
FREQUENT

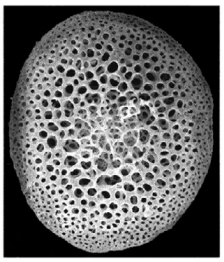
Type



100 µm

Phaseliforma carinata
Pessagno, 1972: 274, pl. 22, fig. 1

Support



100 µm

Phaseliforma subcarinata Pessagno
Hollis 1997: 49, pl. 8, fig. 4 (Early Paleocene)

S - LINEAGE IV (L1) — PYRAMISPONGIIDAE
ASSIGNED IN Kozur & Mostler 1978:168

GENUS ***Pyramispongia***
Pessagno, 1973: 78

Diagnosis: Shell spongy, tetrahedral with a spherical latticed medullary shell and four solid beams arising from the corners of the tetrahedron.

Remarks: Only the type species was figured for this genus (rarely reported). The support image is a subsequently assigned species; just two species originally included at the time of the generic definition.

Original series: *Pyramispongia glascockensis* Pessagno, 1973 and *Pyramispongia magnifica* Pessagno, 1973.

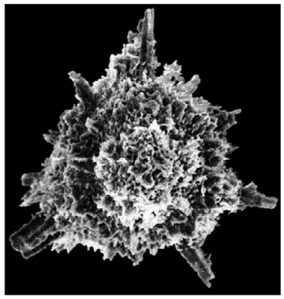
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE TITHONIAN–LATE PALEOCENE***

VALID
RARE

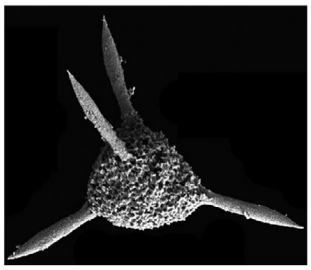
Type



100 µm

Pyramispongia magnifica
Pessagno, 1973: 80, pl. 19, fig. 5

Support



100 µm

Pyramispongia? sp.
Jackett, 2007: 191, pl. 49, fig. 10 (Early Paleocene)

S - LINEAGE IV (L1) — PYRAMISPONGIIDAE

GENUS ***Nodotetraedra***
Steiger, 1992: 32

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Nodotetraedra barmsteinensis* Steiger, 1992.

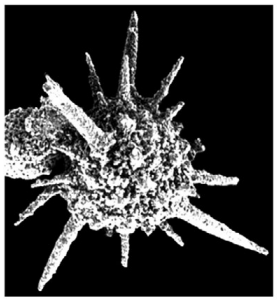
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Baumgartner *et al.* 1995: 464

SEE ***PYRAMISPONGIA***

SYN.
RARE

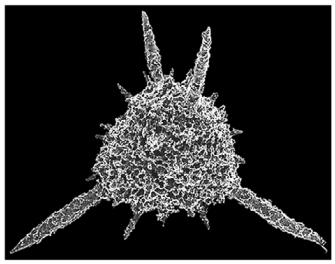
Type



100 µm

Nodotetraedra barmsteinensis
Steiger, 1992: 33, pl. 4, fig. 9

Support



100 µm

Pyramispongia barmsteinensis (Steiger)
Baumgartner *et al.* 1995: 464, pl. 6109, fig. 4

S - LINEAGE IV (L1) — SPONGURIDAE
ASSIGNED IN Petrushevskaya & Kozlova 1972: 528

GENUS ***Ommatogramma***
Ehrenberg, 1861b: 832

Diagnosis: Cylindrical to slightly ellipsoidal or three-segmented spongy shell with a central microsphere without spines but with a pylome at one end. With or without mantle or small spines around shell.

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species. The type species of *OMMATOGRAMMA* is not so well defined and illustrated as that of *SPONGURUS* and as they were published almost simultaneously (just one week later) it could be better for taxonomic stability to keep the later as the valid genus.

Original series: *Ommatogramma navicularis* Ehrenberg, 1873a.

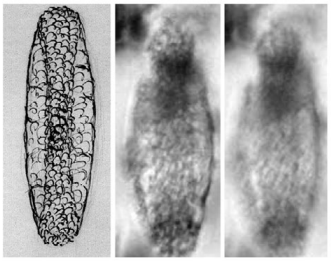
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE CAMPANIAN–LIVING***

VALID
VERY RARE

Type



50 µm

Ommatogramma navicularis
Ehrenberg, 1861b: 823 (n.n.); 1873a: 317; 1873b: 296-297, pl. 6, fig. III-7 [Suzuki *et al.* 2009a: pl. 63, figs 4a-c; lectotype herein]

Support



100 µm

Ommatogramma dumitricai
Petrushevskaya, 1975: 577, pl. 7, fig. 3

S - LINEAGE IV (L1) SPONGURIDAE

GENUS ***Spongurus***
Haeckel, 1861b: 844

NOMINOTYPE ***Spongurus* (*Spongurus*)**

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Spongurus cylindricus* Haeckel, 1861b.

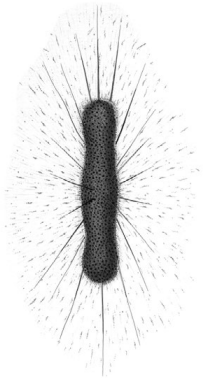
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***OMMATOGRAMMA***

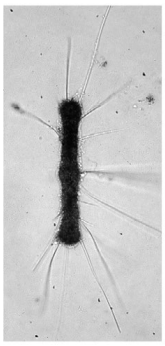
SYN.
FREQUENT

Type



Spongurus cylindricus
Haeckel, 1861b: 845 (unfigured); Haeckel, 1862: 465, pl. 27, fig. 1

Support



Spongurus cylindricus Haeckel
Suzuki & Not's collection (plankton, off Sendai, Japan)

S - LINEAGE IV (L1) SPONGURIDAE

GENUS ***Spongurella***
Haeckel, 1887: 344

SUBGENUS ***Spongurus* (*Spongurella*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Haliomma asperum* Müller, 1859b; *Spongurus cylindricus* Haeckel, 1861b and **Spongurus tricolus* Haeckel, 1887.

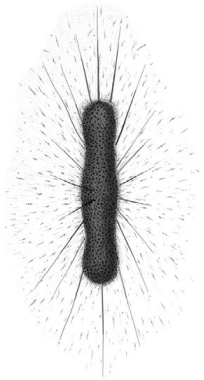
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SPONGURUS***

SYN. (obj.)
FREQUENT

Type



Spongurus cylindricus
Haeckel, 1861b: 845 (unfigured); Haeckel, 1862: 465, pl. 27, fig. 1

Support



Spongurus cylindricus Haeckel
Dumitrica 1973: 834, pl. 18, fig. 23

S - LINEAGE IV (L1) SPONGURIDAE

GENUS ***Spongurantha***
Haeckel, 1887: 343

SUBGENUS ***Spongurus* (*Spongurantha*)**

Remarks: Only the type species was figured in this genus by Haeckel (1887); no other images have been published. Although no images were illustrated at the time of the generic definition, the type species is the specimen figured by Stöhr which was included in the synonymy list of *Spongurus phalanga* by Haeckel.

Original series: *Spongurus phalanga* Haeckel, 1887; **Spongurus stuparius* Haeckel, 1887 and **Spongurus stypticus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 23)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***OMMATOGRAMMA***

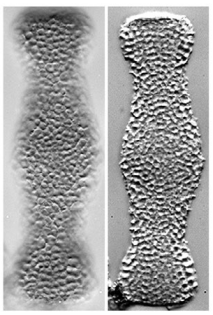
SYN.?
UNIQUE

Type



Spongurus phalanga
Haeckel, 1887: 343, unfigured [specimen of Stöhr, 1880: 119, pl. 7, fig. 3]

Support



Spongurus phalanga Haeckel
Suzuki's collection (IODP 1312B-01C-CC, Quaternary)

S - LINEAGE IV (L1) SPONGURIDAE

GENUS ***Spongocorisca***
Haeckel, 1887: 346

SUBGENUS ***Spongocore* (*Spongocorisca*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Spongocore chrysalis* Haeckel, 1887; **Spongocore cincta* Haeckel, 1887; *Spongocore puella* Haeckel, 1887 and **Spongocore pupula* Haeckel, 1887.

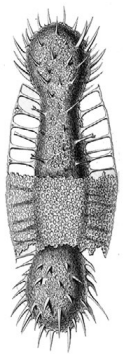
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 528

SEE ***OMMATOGRAMMA***

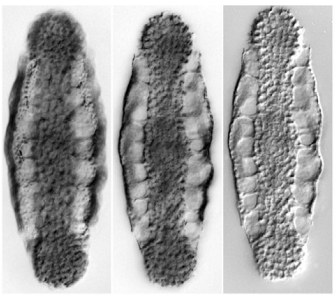
SYN.
FREQUENT

Type



Spongocore puella
Haeckel, 1887: 347, pl. 48, fig. 6

Support



Spongocore puella Haeckel
Suzuki's collection (plankton, off Japan)

	Type	Support
S - Lineage IV (L1) ? SPONGURIDAE GENUS ***Sponguromma*** Haeckel, 1887: 344 SUBGENUS ***Spongurus* (*Spongurumma*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Spongurus radians* Haeckel, 1887 and **Spongurus spongechinus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Spongurus radians* Haeckel, 1887: 345, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (L1) ? SPONGURIDAE GENUS ***Spongellipsis*** Haeckel, 1887: 341 NOMINOTYPE ***Spongellipsis* (*Spongellipsis*)** **Remarks**: See comments under *SPONGELLIPSARIUM*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Spongellipsis laevis* Haeckel, 1887: 342, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (L1) ? SPONGURIDAE GENUS ***Spongellipsarium*** Haeckel, 1887: 341 SUBGENUS ***Spongellipsis* (*Spongellipsarium*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Spongellipsis aplysina* Haeckel, 1887; **Spongellipsis aspera* Haeckel, 1887 and **Spongellipsis laevis* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***SPONGELLIPSIS***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Spongellipsis laevis* Haeckel, 1887: 342, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (L1) ? SPONGURIDAE GENUS ***Spongellipsidium*** Haeckel, 1887: 342 SUBGENUS ***Spongellipsis* (*Spongellipsidium*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Spongellipsis setosa* Haeckel, 1887 and **Spongellipsis spinosa* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Spongellipsis setosa* Haeckel, 1887: 342, unfigured	NO IMAGE PUBLISHED no image available

S - LINEAGE IV (L1) ? SPONGURIDAE GENUS ***Spongodruppa*** Haeckel, 1887: 348 NOMINOTYPE ***Spongodruppa (Spongodruppa)*** **Remarks**: See comments under *SPONGODRUPPULA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Spongodruppa terebintha* Haeckel, 1887: 349, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (L1) ? SPONGURIDAE GENUS ***Spongodruppula*** Haeckel, 1887: 349 SUBGENUS ***Spongodruppa (Spongodruppula)*** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Spongodruppa lentisca* Haeckel, 1887; **Spongodruppa pistacia* Haeckel, 1887 and **Spongodruppa terebintha* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***SPONGODRUPPA***	**SYN. (obj.); N.D.** Type UNFIGURED SPECIES *Spongodruppa terebintha* Haeckel, 1887: 349, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (L1) ? SPONGURIDAE GENUS ***Spongolena*** Haeckel, 1887: 587 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Spongolena cypselura* Haeckel, 1887; **Spongolena rhopalura* Haeckel, 1887 and **Spongolena spongura* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Spongolena rhopalura* Haeckel, 1887: 587, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (L1) ? SPONGURIDAE GENUS ***Spongocore*** Haeckel, 1887: 345 NOMINOTYPE ***Spongocore (Spongocore)*** **Remarks**: See comments under *SPONGOCORINA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Spongocore velata* Haeckel, 1887: 346, unfigured	Support NO IMAGE PUBLISHED no image available

S - LINEAGE IV (L1) ? SPONGURIDAE

GENUS ***Spongocorina***
Haeckel, 1887: 345

SUBGENUS ***Spongocore* (*Spongocorina*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Spongocore diplocylindrica* Haeckel, 1887 and **Spongocore velata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***SPONGOCORE***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Spongocore velata
Haeckel, 1887: 346, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (L1) ? SPONGURIDAE

GENUS ***Stypolarcus***
Haeckel, 1887: 614

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Stypolarcus spongiosus* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Stypolarcus spongiosus
Haeckel, 1887: 614, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (L2) SPONGOPYLIDAE
ASSIGNED HEREIN

GENUS ***Schizodiscus***
Dogiel in Dogiel & Reshetnyak, 1952: 8

Diagnosis: Shell as a circular to subcircular flat disk with a spongy center surrounded by a spongy peripheral depression. Latticed cortical shell. No radial spines through the skeleton, but small spines may be present on the border on the surface of the disc. The pylome is outlined by a narrow furrow.

Remarks: Type species frequently reported. There is also an invalid subsequent designation (monotypy) by Ling (1972: 167).

Original series: *Schizodiscus disymmetricus* Dogiel in Dogiel & Reshetnyak, 1952; *Schizodiscus spatangus* Dogiel in Dogiel & Reshetnyak, 1952 and *Schizodiscus stylotrochoides* Dogiel in Dogiel & Reshetnyak, 1952.

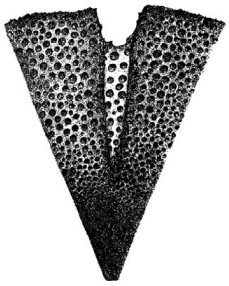
FIXATION SUBSEQUENT DESIGNATION (Petrushevskaya & Kozlova 1972: 528)

STATUS **VALID**

AGE ***LIVING***

VALID
FREQUENT

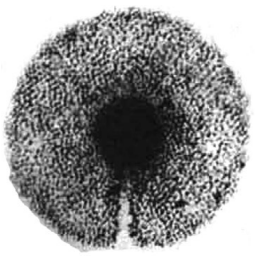
Type



100 µm

Schizodiscus disymmetricus
Dogiel in Dogiel & Reshetnyak, 1952: 8, fig. 3

Support



100 µm

Schizodiscus disymmetricus Dogiel & Reshetnyak
Petrushevskaya & Kozlova 1972: 512, pl. 21, fig. 14 [from type series of Dogiel's collection]

S - LINEAGE IV (L2) SPONGOPYLIDAE
ASSIGNED HEREIN

GENUS ***Spongobrachiopyle***
Kozur & Mostler, 1978: 160

Diagnosis: Lenticular flat shell with an elliptical outline, a thick coarse surface with pit-shaped pores; a funnel-like pylome; a dense central part with a coarse surface; no radial spines.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Spongopyle osculosa* Dreyer, 1889.

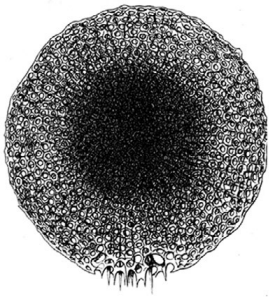
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE OLIGOCENE–LIVING***

VALID
FREQUENT

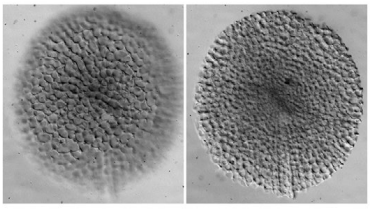
Type



50 µm

Spongopyle osculosa
Dreyer, 1889: 42, pl. 6, fig. 99 [lectotype herein]

Support



50 µm

Spongopyle osculosa Dreyer
Suzuki's collection (Middle Miocene, Niigata, Japan)

S - LINEAGE IV (L2) — SPONGOPYLIDAE
ASSIGNED IN Dreyer 1889: 42

GENUS **Spongopyle**
Dreyer, 1889: 42

NOMINOTYPE ***Spongopyle* (*Spongopyle*)**

Diagnosis: Shell as a circular to subcircular convex disk with a spongy center surrounded by a spongy peripheral depression. Smooth to spinose border. Peripheral aperture marked by one tunnel-like pylome.

Remarks: *SPONGOPYLE* is easily distinguished from *SPONGOBRACHIOPYLE* by the flatten outer disk and the suture between central and outer parts of the disk. See also comments under *SPONGOPYLARIUM*.

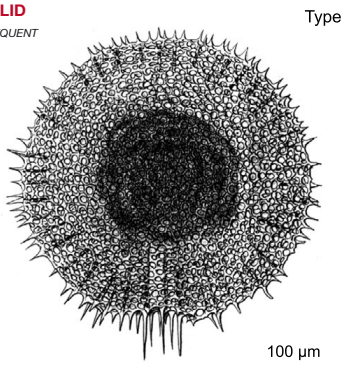
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS **VALID**

AGE ***EARLY PLEISTOCENE–LIVING***

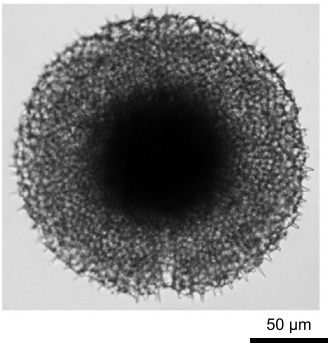
VALID
FREQUENT

Type



Spongopyle setosa
Dreyer, 1889: 43, pl. 6, fig. 97 [lectotype by O'Dogherty *et al.* 2009a: 297]

Support



Spongopyle setosa Dreyer
Topotypic material (Challenger Station 157), Suzuki's collection

S - LINEAGE IV (L2) — SPONGOPYLIDAE

GENUS **Spongopylarium**
Dreyer, 1889: 42

SUBGENUS ***Spongopyle* (*Spongopylarium*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Spongopyle circularis* Dreyer, 1889; *Spongopyle osculosa* Dreyer, 1889; *Spongopyle setosa* Dreyer, 1889 and *Spongotrochus craticulatus* Stöhr, 1880.

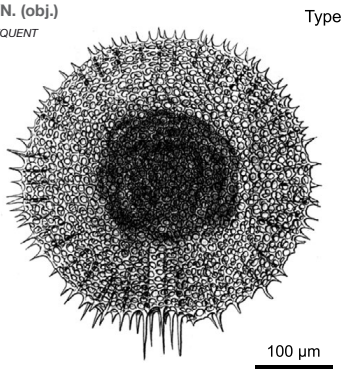
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SPONGOPYLE***

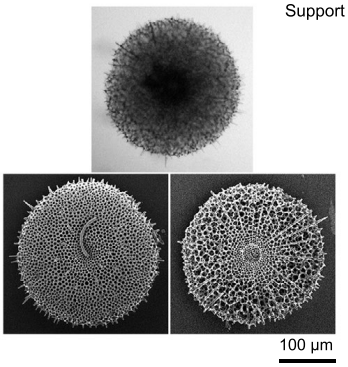
SYN. (obj.)
FREQUENT

Type



Spongopyle setosa
Dreyer, 1889: 43, pl. 6, fig. 97 [lectotype by O'Dogherty *et al.* 2009a: 297]

Support



Spongopyle setosa Dreyer
Ogane's collection (ODP884B-32-2W, Pliocene)

S - LINEAGE IV (L2) — SPONGOPYLIDAE
ASSIGNED HEREIN

GENUS **Spongospira**
Stöhr, 1878: 507 (n.n.); Stöhr, 1880: 120

Diagnosis: Discoidal shell with a circular to rounded triangular outline. Inner dense spiral convolutions surrounded by an irregular spongy framework externally thickening. No primary spines. Pylome structure present.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Stöhr (1880).

Original series: *Spongospira florealis* Stöhr, 1880.

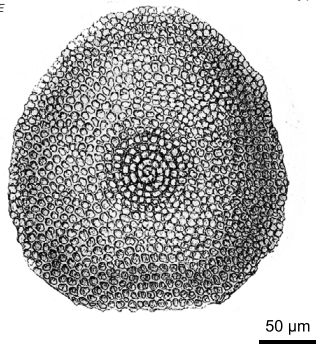
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EOCENE–LIVING***

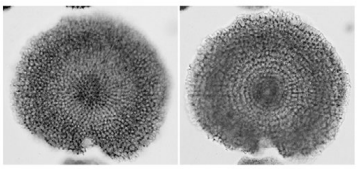
VALID
UNIQUE

Type



Spongospira florealis
Stöhr, 1880: 120, pl. 7, fig. 6

Support



Spongospira florealis Stöhr
Suzuki's collection (Middle Miocene, Toyama, Japan)

S - LINEAGE IV (L2) — ? SPONGOPYLIDAE

GENUS **Spiropyle**
Tochilina, 1985: 98

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

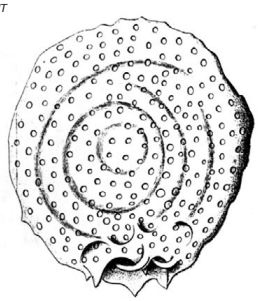
Original series: *Ommatodiscus murrayi* Dreyer, 1889.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

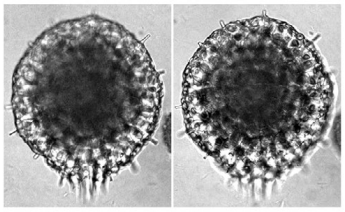
N.D.
FREQUENT

Type



Ommatodiscus murrayi
Dreyer, 1889: 31, pl. 4, fig. 56

Support



Ommatodiscus murrayi Dreyer
Zhang's collection (plankton, Indian Ocean)

S - LINEAGE IV (L2) — CRISTALLOSPHAERIDAE
ASSIGNED IN Popofsky 1912: 155

GENUS **Calcaromma**
Thomson, 1877: 232-233

Diagnosis: A solitary cell with a translucent spherical cytoplasm. Granular solid bodies scattered around the cell that may be dissolved in seawater. A siliceous discoidal central skeleton is hidden in the cytoplasm.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Thomson (1877).

Original series: *Calcaromma calcarea* Thomson, 1877.

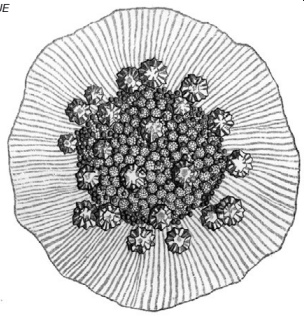
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

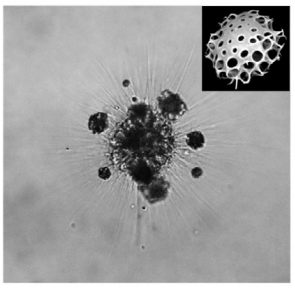
Type



100 µm

Calcaromma calcarea
Thomson, 1877: 232-233, text-fig. 51

Support



50 µm

Calcaromma calcarea Thomson
Not's collection (Living plankton, North Atlantic)

S - LINEAGE IV (L2) — CRISTALLOSPHAERIDAE

GENUS **Cristallosphaera**
Popofsky, 1912: 155

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. The support image is the senior synonym of this species.

Original series: *Cristallosphaera cristalloides* Popofsky, 1912.

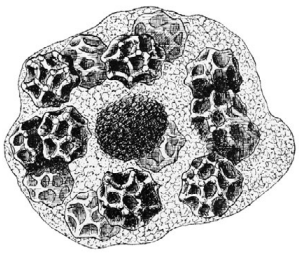
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CALCAROMMA***

SYN.
FREQUENT

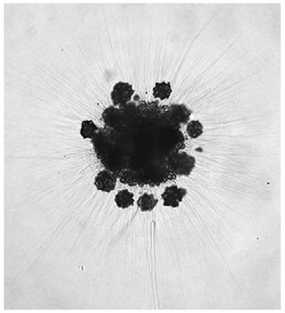
Type



25 µm

Cristallosphaera cristalloides
Popofsky, 1912: 155, text-fig. 77

Support



100 µm

Cristallosphaera cristalloides Popofsky
Suzuki's collection (plankton, off Sesoko Island, Japan)

S - LINEAGE IV (L2) — CRISTALLOSPHAERIDAE
ASSIGNED HEREIN

GENUS **Enalomelon**
Sugiyama 1992a:195

Diagnosis: Spherical cortical shell, robust, with a very short pylome. Internal structure of spongy tissue, internally dense and fibrous to externally sparsely fibrous. Tiny *Spongodiscus*-like spongy lens in the center.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Tan & Chen (1999).

Original series: *Enalomelon inemmestum* Sugiyama, 1992a.

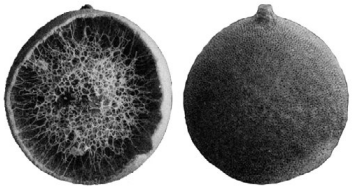
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EOCENE–LIVING***

VALID
VERY RARE

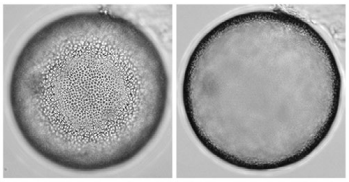
Type



50 µm

Enalomelon inemmestum
Sugiyama, 1992a: 195, pl. 11, figs 2a, 4a

Support



100 µm

Enalomelon inemmestum Sugiyama
Zhang's collection (South China Sea)

S - LINEAGE IV (UNKNOWN) — PRUNOPYLIDAE
ASSIGNED IN Poche 1913: 207

GENUS **Prunopyle**
Dreyer, 1889: 18

Diagnosis: Two or multiple concentric lattice shells with a spherical microsphere and a pylome on the outermost ovoid shell.

Remarks: Type species only illustrated by Dreyer (1889).

Original series: *Prunopyle antarctica* Dreyer, 1889; *Prunopyle burbachi* Dreyer, 1889; *Prunopyle craticulata* Dreyer, 1889; *Prunopyle haackei* Dreyer, 1889; *Prunopyle monocyrtis* Dreyer, 1889; *Prunopyle petrosa* Dreyer, 1889; *Prunopyle prunoides* Dreyer, 1889; *Prunopyle pyriformis* Dreyer, 1889; *Prunopyle semoni* Dreyer, 1889; *Prunopyle solida* Dreyer, 1889 and *Prunopyle waltheri* Dreyer, 1889.

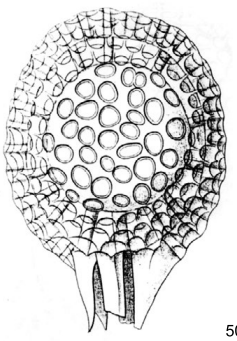
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72)

STATUS **VALID**

AGE ***EARLY OLIGOCENE–EARLY PLEISTOCENE***

VALID
UNIQUE

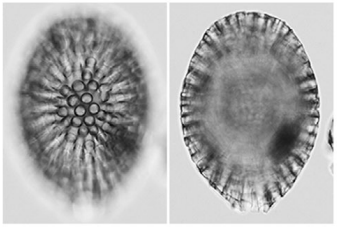
Type



50 µm

Prunopyle pyriformis
Dreyer, 1889: 18, pl. 2, fig. 19

Support



50 µm

Prunopyle pyriformis Dreyer
Paratypic material (Challenger Station 268), Suzuki's collection

S - LINEAGE IV (UNKNOWN) — PRUNOPYLIDAE
ASSIGNED HEREIN

GENUS **Spongopylidium**
Dreyer, 1889: 46

SUBGENUS *Spongopyle* (*Spongopylidium*)

Diagnosis: Shell as an ellipsoidal convex spongy disk; no spines; one aperture-like pylome.

Remarks: Type species only illustrated by Dreyer (1889). *SPONGOPYLIDIUM* is herein retained as an artificial genus for those forms whose internal structure cannot be strictly confirmed.

Original series: *Spongopyle aspera* Dreyer, 1889; *Spongopyle caltanisettae* Dreyer, 1890; *Spongopyle elliptica* Dreyer, 1889; *Spongopyle ovata* Dreyer, 1889 and *Spongopyle variabilis* Dreyer, 1889.

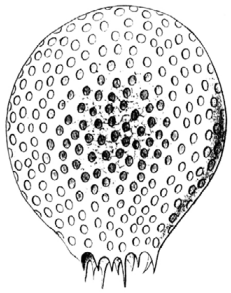
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS **VALID**

AGE *EARLY MIDDLE MIOCENE–HOLOCENE*

VALID
UNIQUE

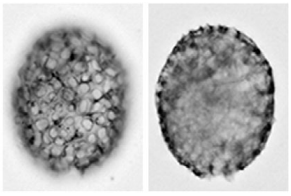
Type



50 µm

Spongopyle ovata
Dreyer, 1889: 46, pl. 5, fig. 65

Support



50 µm

Spongopyle ovata Dreyer
Paratypic material (Challenger Station 253), Suzuki's collection

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S - LINEAGE IV (UNKNOWN) — ? PRUNOPYLIDAE

GENUS **Ovulopyle**
Kozur & Mostler, 1979: 14

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

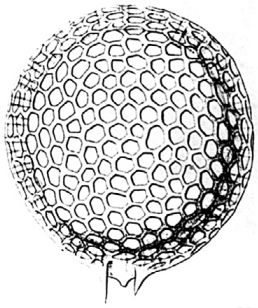
Original series: *Sphaeropyle ovulum* Dreyer, 1889.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



50 µm

Sphaeropyle ovulum
Dreyer, 1889: 17, pl. 3, fig. 40

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (UNKNOWN) — ? PRUNOPYLIDAE

GENUS **Spirotunica**
Tochilina & Popova in Tochilina, 1985: 103

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. The type species designated by Tochilina for this genus is *Spirotunica elliptica* (Dreyer) which is, after her, a new combination for *Prunopyle elliptica* Dreyer, 1889: pl. 3, fig. 67. However, there is no *Prunopyle elliptica* described by Dreyer 1889, only he illustrates *Spongopyle variabilis* (pl. 3, fig. 67) and *Spongopyle elliptica* (pl. 3, fig. 66). It is not clear whether Tochilina was mistaken with the illustration number, or the name of the species.

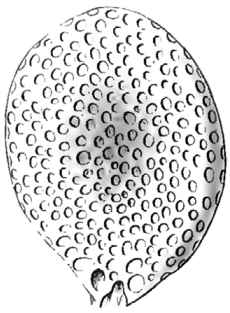
Original series: *Spongopyle elliptica* Dreyer, 1889.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
FREQUENT

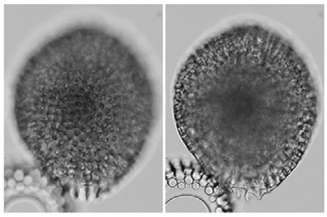
Type



50 µm

Spongopyle elliptica
Dreyer, 1889: 46, pl. 5, fig. 66

Support



50 µm

Spongopyle elliptica Dreyer
Topotypic material (Challenger Station 268), Suzuki's collection

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S - LINEAGE IV (M1) — AMPHITHOLIDAE
ASSIGNED IN Haeckel 1887: 663

GENUS **Tholomura**
Haeckel, 1887: 672

SUBGENUS *Tholoma* (*Tholomura*)

Diagnosis: Amphitholoniidae with simple or double cortical shell composed of four closed cupolas disposed in cross-shape around the central chamber and opposite to one another on the poles of the two axes.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. We keep as valid the genus *THOLOMURA* (and not *THOLOMA* Haeckel, 1887), since it has been frequently illustrated in the living plankton and Holocene sediments.

Original series: *Tholoma metallasson* Haeckel, 1887.

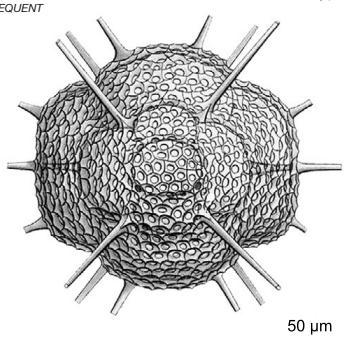
FIXATION MONOTYPY

STATUS **VALID**

AGE *HOLOCENE–LIVING*

VALID
FREQUENT

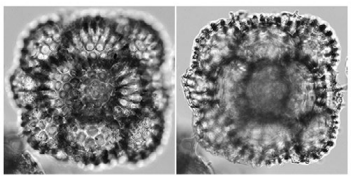
Type



50 µm

Tholoma metallasson
Haeckel, 1887: 672, pl. 10, fig. 13

Support



50 µm

Tholoma metallasson Haeckel
Paratypic material (Challenger Station 244), Suzuki's collection

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Amphitholonium***
Haeckel, 1887: 668

Remarks: Illustration available only for the type species (just a single report after the first illustration). The type species is a synonym of *Tholonium hexonium* Haeckel, 1887.

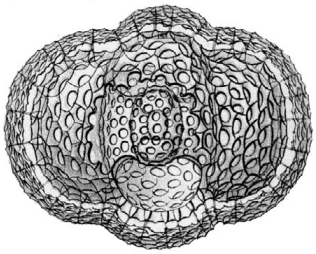
Original series: **Amphitholonium acanthonium* Haeckel, 1887; **Amphitholonium octostylium* Haeckel, 1887 and *Amphitholonium tricolonium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 36

SEE ***THOLOMURA***

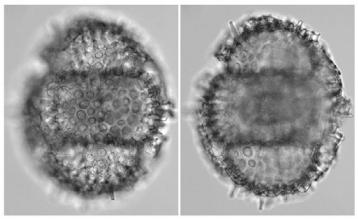
SYN. Type
VERY RARE



50 µm

Amphitholonium tricolonium
Haeckel, 1887: 669, pl. 10, fig. 7

Support



50 µm

Amphitholonium tricolonium Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Amphitholus***
Haeckel, 1887: 666

NOMINOTYPE ***Amphitholus (Amphitholus)***

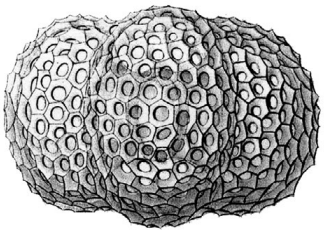
Remarks: See comments under *AMPHITHOLISSA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THOLOMURA***

SYN. Type
UNIQUE



50 µm

Amphitholus artiscus
Haeckel, 1887: 666, pl. 10, fig. 3

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Amphitholissa***
Haeckel, 1887: 666

SUBGENUS ***Amphitholus (Amphitholissa)***

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

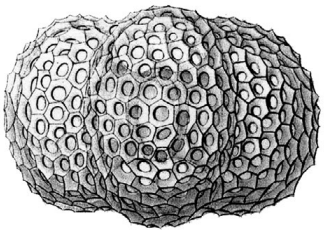
Original series: **Amphitholus artidium* Haeckel, 1887 and *Amphitholus artiscus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***AMPHITHOLUS***

SYN. (obj.) Type
UNIQUE



50 µm

Amphitholus artiscus
Haeckel, 1887: 666, pl. 10, fig. 3

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Amphitholura***
Haeckel, 1887: 667

SUBGENUS ***Amphitholus (Amphitholura)***

Remarks: Only the type species clearly belongs to this genus; rarely reported.

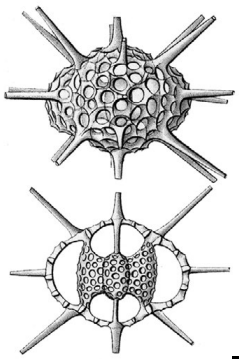
Original series: *Amphitholus acanthometra* Haeckel, 1887; **Amphitholus armatus* Haeckel, 1887; **Amphitholus dodecanthus* Haeckel, 1887; **Amphitholus octacanthus* Haeckel, 1887; *Amphitholus panicium* Haeckel, 1887 and **Amphitholus polyacanthus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THOLOMURA***

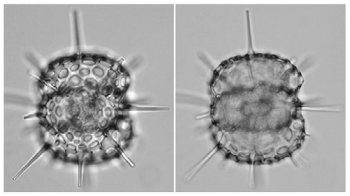
SYN. Type
RARE



50 µm

Amphitholus acanthometra
Haeckel, 1887: 667, pl. 10, figs 5, 6

Support



50 µm

Amphitholus acanthometra Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Cubotholonium***
Haeckel, 1887: 681

Remarks: Illustration available only for the type species (figured just once after the first illustration). Only two species originally included at the time of the generic definition.

Original series: *Cubotholonium ellipsoides* Haeckel, 1887 and **Cubotholonium sphaeroides* Haeckel, 1887.

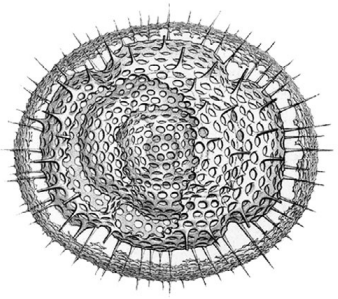
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 36

SEE ***THOLOMURA***

SYN.
VERY RARE

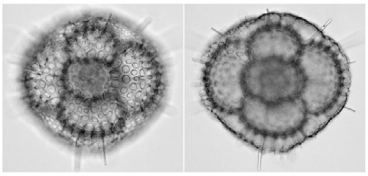
Type



50 µm

Cubotholonium ellipsoides
Haeckel, 1887: 682, pl. 10, fig. 15

Support



50 µm

Cubotholonium ellipsoides Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (M1) ? AMPHITHOLIDAE

GENUS ***Tholothauma*** PREMATURE NAME
Haeckel, 1887: 682

Remarks: A premature name used by Haeckel for *CUBOTHOLONIUM* Haeckel, 1887.

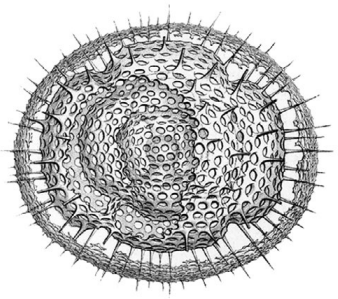
FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D98)

STATUS INVALID NAME
designated herein

SEE ***CUBOTHOLONIUM***

INV.

Type



50 µm

Cubotholonium ellipsoides
Haeckel, 1887: 682, pl. 10, fig. 15

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Cubotholus***
Haeckel, 1887: 680

NOMINOTYPE ***Cubotholus* (*Cubotholus*)**

Remarks: See comments under *CUBOTHOLISSA*.

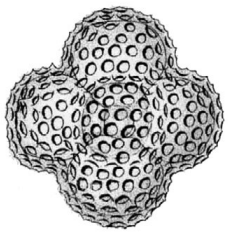
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 36

SEE ***THOLOMURA***

SYN.
FREQUENT

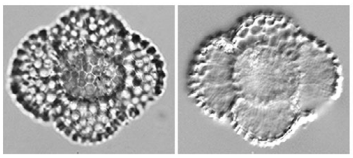
Type



50 µm

Cubotholus regularis
Haeckel, 1887: 680, pl. 10, fig. 14

Support



50 µm

Cubotholus regularis Haeckel
Suzuki's collection (ODP 1210A-002H-02W, Quaternary)

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Cubotholissa***
Haeckel, 1887: 680

SUBGENUS ***Cubotholus* (*Cubotholissa*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Cubotholus quadraticus* Haeckel, 1887; *Cubotholus regularis* Haeckel, 1887 and **Cubotholus rhombicus* Haeckel, 1887.

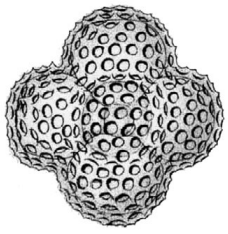
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CUBOTHOLUS***

SYN. (obj.)
FREQUENT

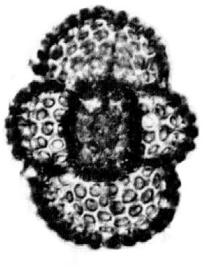
Type



50 µm

Cubotholus regularis
Haeckel, 1887: 680, pl. 10, fig. 14

Support



50 µm

Cubotholus regularis Haeckel
Chen & Tan 1996: 196, pl. 22, fig. 6

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Staurotholoma***
Haeckel, 1887: 676

SUBGENUS ***Staurotholonium* (*Staurotholoma*)**

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

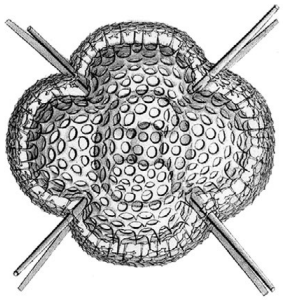
Original series: **Staurotholonium octodoratium* Haeckel, 1887 and *Staurotholonium octodoronium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 36

SEE ***THOLOMURA***

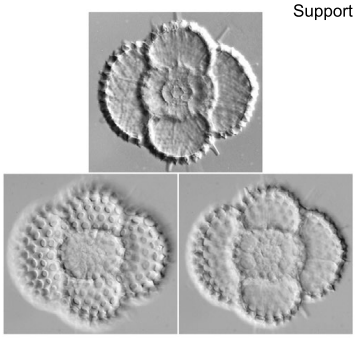
SYN. Type
UNIQUE



50 µm

Staurotholonium octodoronium
Haeckel, 1887: 676, pl. 10, fig. 11

Support



50 µm

Staurotholonium octodoronium Haeckel
Suzuki's collection (plankton, off Japan)

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Staurotholura***
Haeckel, 1887: 673

SUBGENUS ***Staurotholus* (*Staurotholura*)**

Remarks: Type species only illustrated by Haeckel (1887).

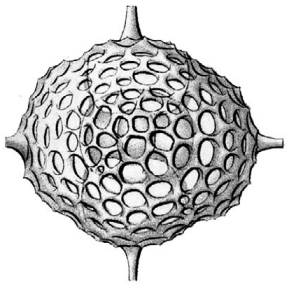
Original series: **Staurotholus decastylus* Haeckel, 1887; *Staurotholus dodecastylus* Haeckel, 1887; **Staurotholus octostylus* Haeckel, 1887; **Staurotholus polystylus* Haeckel, 1887 and *Staurotholus tetrastylus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THOLOMURA***

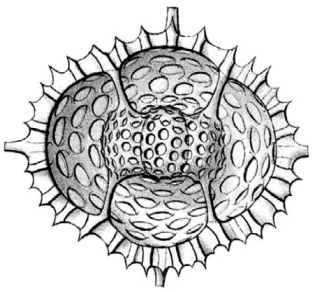
SYN. Type
UNIQUE



50 µm

Staurotholus tetrastylus
Haeckel, 1887: 673, pl. 10, fig. 8

Support



25 µm

Staurotholus dodecastylus
Haeckel, 1887: 674, pl. 10, fig. 9

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Tholartus***
Haeckel, 1887: 663

NOMINOTYPE ***Tholartus* (*Tholartus*)**

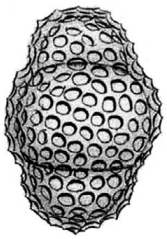
Remarks: See comments under *THOLARTELLA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THOLOMURA***

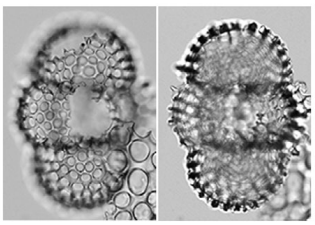
SYN. Type
UNIQUE



50µm

Tholartus tricolus
Haeckel, 1887: 664, pl. 10, fig. 1

Support



50 µm

Tholartus tricolus Haeckel
Topotypic material (Challenger Station 266), Suzuki's collection

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Tholartella***
Haeckel, 1887: 664

SUBGENUS ***Tholartus* (*Tholartella*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

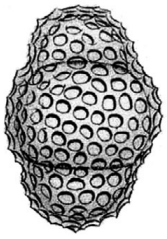
Original series: **Tholartus isocolus* Haeckel, 1887; **Tholartus paniscus* Haeckel, 1887 and *Tholartus tricolus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***THOLARTUS***

SYN. (obj.) Type
UNIQUE



50µm

Tholartus tricolus
Haeckel, 1887: 664, pl. 10, fig. 1

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Tholocubus***
Haeckel, 1887: 677

NOMINOTYPE ***Tholocubus* (*Tholocubus*)**

Remarks: See comments under *THOLOCUBULUS*.

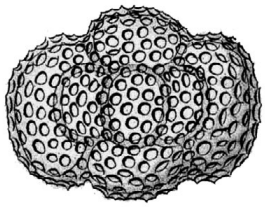
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THOLOMURA***

SYN.
VERY RARE

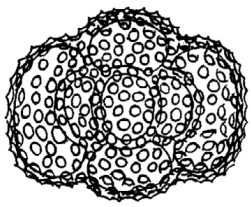
Type



50 µm

Tholocubus tessellatus
Haeckel, 1887: 677, pl. 10, fig. 12

Type



50 µm

Tholocubus tessellatus Haeckel
Campbell 1954: D98, fig. 48.2

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Tholocubulus***
Haeckel, 1887: 677

SUBGENUS ***Tholocubus* (*Tholocubulus*)**

Remarks: Illustration available only for the type species (figured just once after the first illustration). Only two species originally included at the time of the generic definition. The support image is a synonym in open nomenclature.

Original series: *Tholocubus tessellatus* Haeckel, 1887 and **Tholocubus tesserarius* Haeckel, 1887.

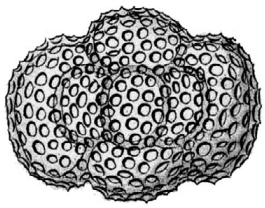
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***THOLOCUBUS***

SYN. (obj.)
VERY RARE

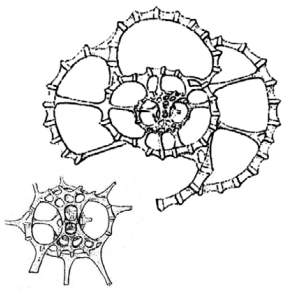
Type



50 µm

Tholocubus tessellatus
Haeckel, 1887: 677, pl. 10, fig. 12

Support



100 µm

Porodiscus sp.
Kozlova, 1967: text-figs 4.2b, 4.2b'

S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Tholocubitus***
Haeckel, 1887: 678

SUBGENUS ***Tholocubus* (*Tholocubitus*)**

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1887).

Original series: *Tholocubus tesseralis* Haeckel, 1887.

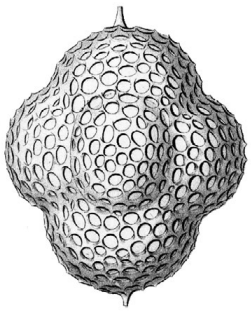
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THOLOMURA***

SYN.
UNIQUE

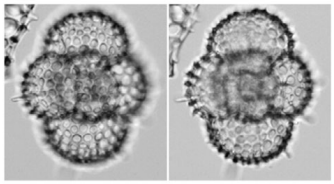
Type



50 µm

Tholocubus tesseralis
Haeckel, 1887: 678, pl. 10, fig. 16

Support



50 µm

Tholocubus tesseralis Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

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S - LINEAGE IV (M1) AMPHITHOLIDAE

GENUS ***Tholodes***
Haeckel, 1887: 665

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Tholodes cupula* Haeckel, 1887.

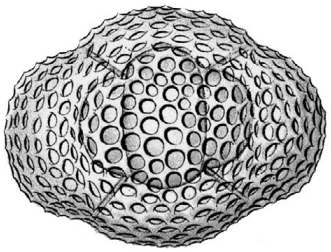
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THOLOMURA***

SYN.
UNIQUE

Type



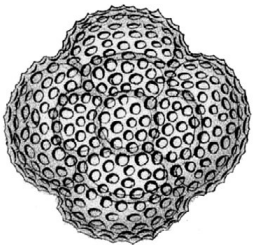
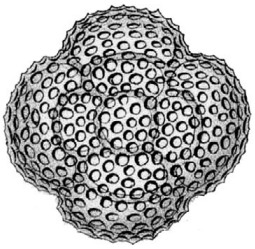
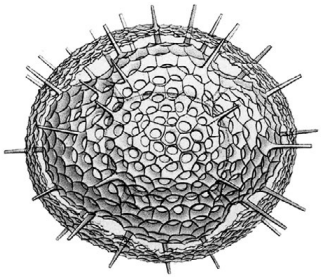
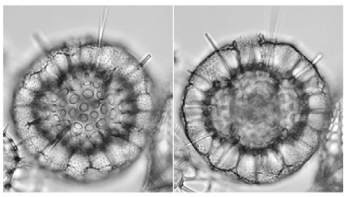
50 µm

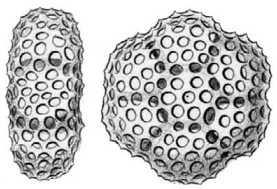
Tholodes cupula
Haeckel, 1887: 665, pl. 10, fig. 2

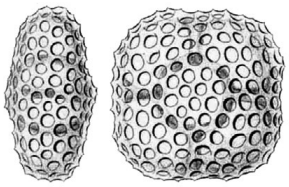
Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M1) AMPHITHOLIDAE GENUS ***Tholoma*** Haeckel, 1887: 671 NOMINOTYPE ***Tholoma* (*Tholoma*)** **Remarks**: See comments under *THOLOMANTHA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98) STATUS JUNIOR SYNONYM synonymized herein SEE ***THOLOMURA***	**SYN.** *UNIQUE* Type  50 µm *Tholoma quadrigeminum* Haeckel, 1887: 672, pl. 10, fig. 10	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M1) AMPHITHOLIDAE GENUS ***Tholomantha*** Haeckel, 1887: 672 SUBGENUS ***Tholoma* (*Tholomantha*)** **Remarks**: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. **Original series**: *Tholoma quadrigeminum* Haeckel, 1887. FIXATION MONOTYPY STATUS JUNIOR OBJECTIVE SYNONYM SEE ***THOLOMA***	**SYN. (obj.)** *UNIQUE* Type  50 µm *Tholoma quadrigeminum* Haeckel, 1887: 672, pl. 10, fig. 10	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M1) AMPHITHOLIDAE GENUS ***Tholonilla*** Haeckel, 1887: 679 SUBGENUS ***Tholonium* (*Tholonilla*)** **Remarks**: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition. **Original series**: *Tholonium hexonium* Haeckel, 1887 and **Tholonium sphaeronium* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98) STATUS JUNIOR SYNONYM synonymized by Zhang & Suzuki 2017: 59 SEE ***THOLOMURA***	**SYN.** *RARE* Type  50 µm *Tholonium hexonium* Haeckel, 1887: 679, pl. 10, fig. 17	Support  50 µm *Tholomura hexonia* (Haeckel) Zhang's collection (South China Sea)
S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Archidiscus*** Haeckel, 1887: 486 NOMINOTYPE ***Archidiscus* (*Archidiscus*)** **Remarks**: See comments under *DIONISCUS*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Archidiscus dioniscus* Haeckel, 1887: 486, unfigured	Support NO IMAGE PUBLISHED no image available

S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Dioniscus*** Haeckel, 1887: 486 SUBGENUS ***Archidiscus* (*Dioniscus*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Archidiscus dioniscus* Haeckel, 1887 and **Archidiscus dithalamus* Haeckel, 1887. FIXATION ABSOLUTE TAUTONOMY STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***ARCHIDISCUS***	**SYN. (obj.); N.D.** Type UNFIGURED SPECIES *Archidiscus dioniscus* Haeckel, 1887: 486, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Circoniscus*** Haeckel, 1887: 489 SUBGENUS ***Archidiscus* (*Circoniscus*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Archidiscus octoniscus* Haeckel, 1887 and **Archidiscus polythalamus* Haeckel, 1887. FIXATION NO TYPE SPECIES DESIGNATED (SD HEREIN) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Archidiscus octoniscus* Haeckel, 1887: 489, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Hexoniscus*** Haeckel, 1887: 488 SUBGENUS ***Archidiscus* (*Hexoniscus*)** **Remarks**: Only the type species clearly belongs to this genus (reported only by Haeckel 1887). **Original series**: **Archidiscus hexathalamus* Haeckel, 1887; *Archidiscus hexoniscus* Haeckel, 1887 and *Archidiscus pyloniscus* Haeckel, 1887. FIXATION ABSOLUTE TAUTONOMY STATUS NOMEN DUBIUM designated herein; name-bearing type juvenile	**N.D.** Type *UNIQUE*  25 µm *Archidiscus hexoniscus* Haeckel, 1887: 488, pl. 48, figs 10, 10a	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Pentoniscus*** Haeckel, 1887: 488 SUBGENUS ***Archidiscus* (*Pentoniscus*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Archidiscus pentoniscus* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Archidiscus pentoniscus* Haeckel, 1887: 488, unfigured	Support NO IMAGE PUBLISHED no image available

S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Tetroniscus*** Haeckel, 1887: 487 SUBGENUS ***Archidiscus* (*Tetroniscus*)** **Remarks**: Only the type species has been illustrated (reported only by Haeckel 1887). **Original series**: *Archidiscus stauroniscus* Haeckel, 1887; **Archidiscus tetrathalamus* Haeckel, 1887 and **Archidiscus tetroniscus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88) STATUS NOMEN DUBIUM designated herein; name-bearing type juvenile	**N.D.** *UNIQUE* Type  25 µm *Archidiscus stauroniscus* Haeckel, 1887: 487, pl. 48, figs 9, 9a	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Trioniscus*** Haeckel, 1887: 486 SUBGENUS ***Archidiscus* (*Trioniscus*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Archidiscus trioniscus* Haeckel, 1887 and **Archidiscus trithalamus* Haeckel, 1887. FIXATION ABSOLUTE TAUTONOMY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Archidiscus trioniscus* Haeckel, 1887: 487, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Axodiscus*** Haeckel, 1887: 489 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Axodiscus hexagonus* Haeckel, 1887; **Axodiscus octogonus* Haeckel, 1887; **Axodiscus spinosus* Haeckel, 1887; **Axodiscus staurophorus* Haeckel, 1887; **Axodiscus stylophorus* Haeckel, 1887; **Axodiscus trigonus* Haeckel, 1887 and **Axodiscus triradiatus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Axodiscus stylophorus* Haeckel, 1887: 490, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Cubotholura*** Haeckel, 1887: 681 SUBGENUS ***Cubotholus* (*Cubotholura*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Cubotholus octoceras* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Cubotholus octoceras* Haeckel, 1887: 681, unfigured	Support NO IMAGE PUBLISHED no image available

	Type	Support
S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Staurotholonium*** Haeckel, 1887: 674 NOMINOTYPE ***Staurotholonium (Staurotholonium)*** **Remarks**: See comments under *STAUROTHOLODES*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Staurotholonium biquadratum* Haeckel, 1887: 675, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Staurotholodes*** Haeckel, 1887: 675 SUBGENUS ***Staurotholonium (Staurotholodes)*** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Staurotholonium alternatum* Haeckel, 1887; **Staurotholonium bicruciatum* Haeckel, 1887; **Staurotholonium biquadratum* Haeckel, 1887 and **Staurotholonium lenticulare* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***STAUROTHOLONIUM***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Staurotholonium biquadratum* Haeckel, 1887: 675, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Staurotholus*** Haeckel, 1887: 672 NOMINOTYPE ***Staurotholus (Staurotholus)*** **Remarks**: See comments under *STAUROTHOLISSA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Staurotholus quadratus* Haeckel, 1887: 673, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M1) ? AMPHITHOLIDAE GENUS ***Staurotholissa*** Haeckel, 1887: 673 SUBGENUS ***Staurotholus (Staurotholissa)*** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Staurotholus cruciatus* Haeckel, 1887 and **Staurotholus quadratus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***STAUROTHOLUS***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Staurotholus quadratus* Haeckel, 1887: 673, unfigured	NO IMAGE PUBLISHED no image available

	Type	Support
S - Lineage IV (M1) ? AMPHITHOLIDAE GENUS ***Tholartissa*** Haeckel, 1887: 665 SUBGENUS ***Tholartus* (*Tholartissa*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Tholartus sagitta* Haeckel, 1887 and **Tholartus tripanis* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Tholartus tripanis* Haeckel, 1887: 665, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (M1) ? AMPHITHOLIDAE GENUS ***Tholonium*** Haeckel, 1887: 678 NOMINOTYPE ***Tholonium* (*Tholonium*)** **Remarks**: See comments under *THOLONETTA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Tholonium bicubicum* Haeckel, 1887: 678, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (M1) ? AMPHITHOLIDAE GENUS ***Tholonetta*** Haeckel, 1887: 678 SUBGENUS ***Tholonium* (*Tholonetta*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Tholonium bicubicum* Haeckel, 1887; **Tholonium ellipticum* Haeckel, 1887 and **Tholonium sphaericum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***THOLONIUM***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Tholonium bicubicum* Haeckel, 1887: 678, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (M1) ? AMPHITHOLIDAE GENUS ***Tholostaurus*** Haeckel, 1887: 670 NOMINOTYPE ***Tholostaurus* (*Tholostaurus*)** **Remarks**: See comments under *THOLOSTAURANTHA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Tholostaurus quadrigatus* Haeckel, 1887: 670, unfigured	NO IMAGE PUBLISHED no image available

S - LINEAGE IV (M1) ? AMPHITHOLIDAE

GENUS ***Tholostaurantha***
Haeckel, 1887: 670

SUBGENUS ***Tholostaurus* (*Tholostaurantha*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Tholostaurus cruciformis* Haeckel, 1887 and **Tholostaurus quadrigatus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***THOLOSTAURUS***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Tholostaurus quadrigatus
Haeckel, 1887: 670, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M1) ? AMPHITHOLIDAE

GENUS ***Tholostauroma***
Haeckel, 1887: 671

SUBGENUS ***Tholostaurus* (*Tholostauroma*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Tholostaurus dodecabelos* Haeckel, 1887; **Tholostaurus octobelonis* Haeckel, 1887; **Tholostaurus polybelonis* Haeckel, 1887 and **Tholostaurus tetrabelonis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Tholostaurus tetrabelonis
Haeckel, 1887: 671, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) CIRCODISCIDAE
ASSIGNED HEREIN

GENUS ***Annulatospira***
Clark & Campbell, 1945: 26

SUBGENUS ***Spongodiscus* (*Annulatospira*)**

Diagnosis: Flat discoidal shell with dense concentric spongious tissue. Prominent central part with spinose microsphere and twelve or more primary beams/radial spines; equatorial secondary spines in some species.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Spongodiscus* (*Annulatospira*) *pulcher* Clark & Campbell, 1945.

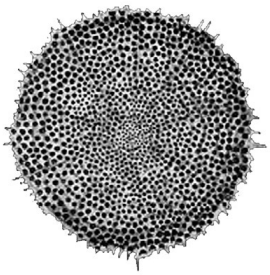
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY EOCENE–EARLY OLIGOCENE***

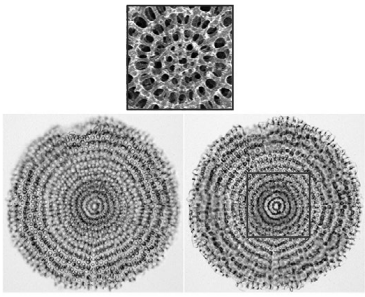
VALID
FREQUENT

Type



Spongodiscus (*Annulatospira*) *pulcher*
Clark & Campbell, 1945: 26, pl. 4, fig. 5

Support



Annulatospira pulchra (Clark & Campbell)
Barbados, Late Eocene, Suzuki's collection

S - LINEAGE IV (M2) CIRCODISCIDAE
ASSIGNED IN Dumitrica 2020: 30

GENUS ***Circodiscullus***
Dumitrica, 2020: 30

Diagnosis: Shell consisting of an initial circodiscid medullary shell included in a lenticular lattice shell, which is surrounded, at its turn, by a lattice lamellar or spongy equatorial girdle.

Remarks: Only two species originally included at the time of the generic definition.

Original series: *Circodiscullus coroniger* Dumitrica, 2020 and *Circodiscullus stephanophorus* Dumitrica, 2020.

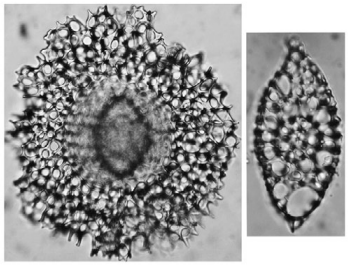
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE PALEOCENE–EARLY PLIOCENE***

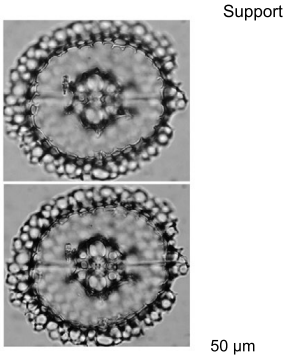
VALID
UNIQUE

Type



Circodiscullus stephanophorus
Dumitrica, 2020: 31, pl. 16, figs 4, 5

Support



Circodiscullus coroniger
Dumitrica, 2020: 30, pl. 16, figs 1, 2

S - Lineage IV (M2) CIRCODISCIDAE

assigned in Dumitrica 1989: 237

genus ***Circodiscus***

Kozlova in Petrushevskaya & Kozlova, 1972: 526

Diagnosis: Disc-shaped skeleton with *Larnacilla*-type medullary shell surrounded by a variable number of perforate rings or spirals. Periphery possibly spongy. When complete, last ring usually with a pylome.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Trematodiscus microporus* Stöhr, 1880.

fixation MONOTYPY

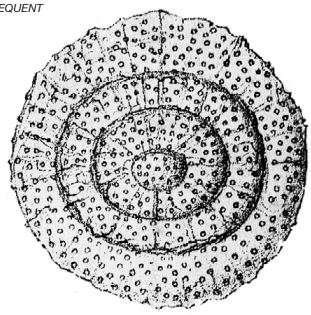
status **VALID**

age ***Late Paleocene–Living***

VALID

FREQUENT

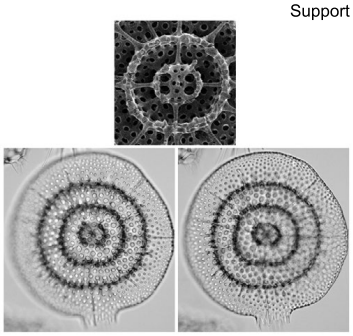
Type



25 µm

Trematodiscus microporus
Stöhr, 1880: 108, pl. 4, fig. 17

Support



100 µm

Circodiscus microporus Dumitrica
Ogane's Collection (ODP 844B-17-4W, Late Pliocene, SEM); Zhang's collection (South China Sea, light microscope)

S - Lineage IV (M2) CIRCODISCIDAE

genus ***Plectodiscus***

Kozlova in Petrushevskaya & Kozlova, 1972: 526

Remarks: Only the type species clearly belongs to this genus (frequently reported); just two species originally included at the time of the generic definition.

Original series: *Porodiscus bergontianus* Carnevale, 1908 and *Porodiscus* (*Trematodiscus*) *circularis* Clark & Campbell, 1942.

fixation ORIGINAL DESIGNATION

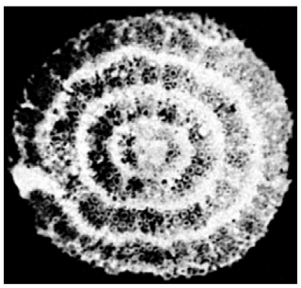
status JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 575

see ***CIRCODISCUS***

SYN.

FREQUENT

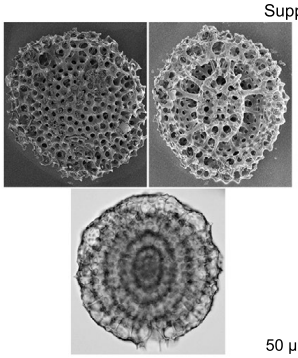
Type



100 µm

Porodiscus (*Trematodiscus*) *circularis*
Clark & Campbell, 1942: 42, pl. 2, fig. 10 [lectotype herein]

Support



50 µm

Plectodiscus circularis (Clark & Campbell)
Ogane's Collection (ODP 844B-17-4W, Late Pliocene)

S - Lineage IV (M2) CIRCODISCIDAE

assigned in Dumitrica 2020: 18

genus ***Sanfiriedelus***

Dumitrica, 2020: 18

Diagnosis: Discoid test with central medullary shell surrounded by an equatorial plate disc with three primary layers with radially disposed pores. All these three plates interconnected by short transversal bars at the nodal points. Each circle of pores and nodes contains only one row of pores and one row of nodes, respectively. Periphery may have also more layers by superposition of one additional layer to the previous ones. Spines are prolongations of the inner rays, but four or eight of them, originated in the microsphere, can be very long and robust. Microsphere with polar axis perpendicular to the equatorial plane of shell.

Remarks: Type species rarely reported.

Original series: *Sanfiriedelus octogonus* Dumitrica, 2020; *Sanfiriedelus solidiscus* Dumitrica, 2020; *Spongodiscus quartus bosoculus* Sanfilippo & Riedel 1973 and *Staurodictya quartus* Borisenko, 1958.

fixation ORIGINAL DESIGNATION

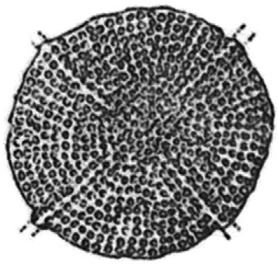
status **VALID**

age ***Late Paleocene–late Middle Eocene***

VALID

RARE

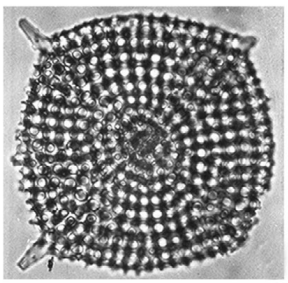
Type



50 µm

Staurodictya quartus
Borisenko, 1958: 96, pl. 2, fig. 5

Support



50 µm

Sanfiriedelus quartus (Borisenko)
Dumitrica 2020: 18, pl. 11, fig. 1

S - Lineage IV (M2) CIRCODISCIDAE

assigned in Dumitrica 2020: 33

genus ***Stylotrochellus***

Dumitrica, 2020: 33

Diagnosis: Lens-shaped skeleton with medullary shell surrounded by several concentric lenticular shells. Cortical shell rather independent of the inner structure. Pylome present or not on the last chamber.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Stylotrochus nitidus* Sanfilippo & Riedel, 1973.

fixation MONOTYPY

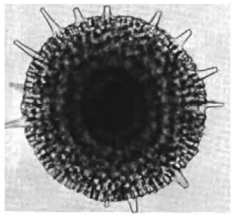
status **VALID**

age ***Middle Paleocene–Late Eocene***

VALID

FREQUENT

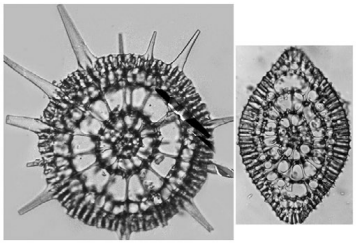
Type



100 µm

Stylotrochus nitidus
Sanfilippo & Riedel, 1973: 525, pl. 30, fig. 7

Support



100 µm

Stylotrochellus nitidus (Sanfilippo & Riedel)
Dumitrica 2020: 33, pl. 18, figs 1, 3

S - Lineage IV (M2) CRYPTOLARNACIIDAE

assigned in Dumitrica 1989: 242

GENUS **Coccolarnacium**
Dumitrica, 1989: 242

Diagnosis: Cortical shell lenticular periphaenoid with a *Larnacilla*-type medullary shell (formed of systems of mutually perpendicular elliptical girdles) and peripheral spines. Medullary shell relatively small, formed of two to three systems.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by De Wever *et al.* (2001).

Original series: *Coccolarnacium periphaenoides* Dumitrica, 1989.

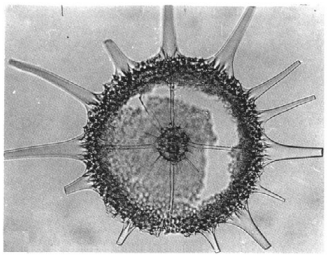
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Late Paleocene***

VALID
VERY RARE

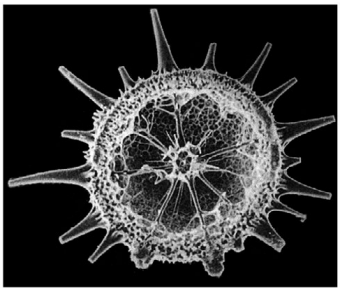
Type



100 µm

Coccolarnacium periphaenoides
Dumitrica, 1989: 242, pl. 10, fig. 1

Support



50 µm

Coccolarnacium periphaenoides Dumitrica
De Wever *et al.* 2001: 156, fig. 92.2

S - Lineage IV (M2) CRYPTOLARNACIIDAE

assigned in Dumitrica 1989: 246

GENUS **Cryptolarnacium**
Dumitrica, 1989: 246

Diagnosis: Cortical shell spherical, latticed, usually thick-walled, separated from the medullary shell (*Larnacilla*-type) by an empty space and connected with it through primary and diagonal beams. Former beams prolonged outside into conical or cylindrical spines.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Dumitrica (1989).

Original series: *Cryptolarnacium hexastylus* Dumitrica, 1989.

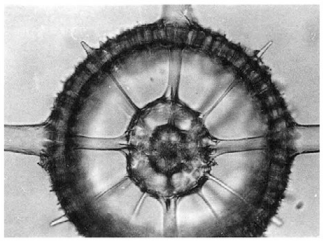
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Early Eocene–Late Eocene***

VALID
UNIQUE

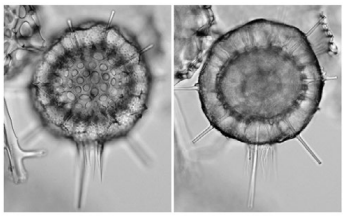
Type



50 µm

Cryptolarnacium hexastylus
Dumitrica, 1989: 246, pl. 10, fig. 5

Support



50 µm

Cryptolarnacium hexastylus
Zhang's collection (South China Sea)

S - Lineage IV (M2) CRYPTOLARNACIIDAE

assigned in Dumitrica 2020: 13

GENUS **Globolarnacium**
Dumitrica, 2020: 13

Diagnosis: Shell of two parts: a cortical shell and a medullary shell. Cortical shell large spherical and thick-walled, consisting of an external lattice part and a spongy internal one. Pylome absent.

Remarks: Genus described as monospecific at the time of the generic definition

Original series: *Globolarnacium crassitesta* Dumitrica, 2020.

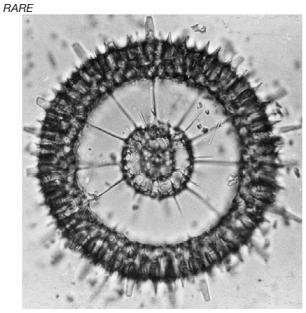
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Late Middle Eocene***

VALID
VERY RARE

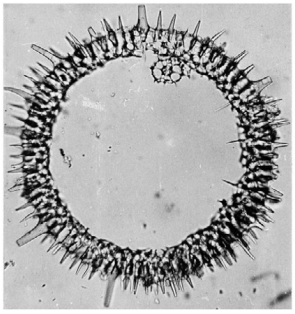
Type



50 µm

Globolarnacium crassitesta
Dumitrica, 2020: 13, pl. 8, fig. 1

Support



100 µm

Globolarnacium crassitesta
Dumitrica, 2020: 33, pl. 7, fig. 1

S - Lineage IV (M2) CRYPTOLARNACIIDAE

assigned in Dumitrica 2020: 7

GENUS **Phacolarnacium**
Dumitrica, 2020: 7

Diagnosis: Lenticular latticed shell with a double medullary shell connected to the two faces of the cortical shell by numerous radial bars. At least in the type species the microsphere has the same position as in the type species of the genus *CIRCODISCUS*, the equatorial plane of the medullary shell coinciding approximately with the equatorial plane of the cortical shell.

Remarks: Genus described as monospecific at the time of the generic definition.

Original series: *Phacolarnacium oculus* Dumitrica, 2020.

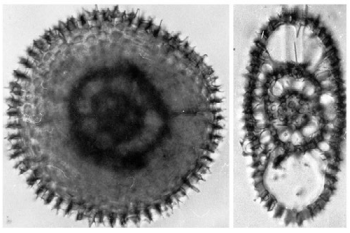
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Late Middle Eocene***

VALID
UNIQUE

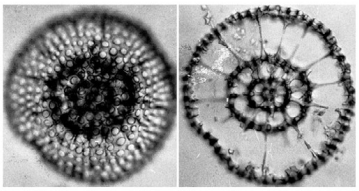
Type



50 µm

Phacolarnacium oculus
Dumitrica, 2020: 7, pl. 3, figs 7, 8

Support



50 µm

Phacolarnacium oculus
Dumitrica, 2020: 33, pl. 3, figs 2, 4

S - LINEAGE IV (M2) — CRYPTOLARNACIIDAE
ASSIGNED IN Dumitrica 2020: 16

GENUS ***Pylolarnacium***
Dumitrica, 2020: 16

Diagnosis: Balloon-shaped or ovoid cortical shell with an aperture at the narrow end. Medullary and cortical shell separated by an empty space or a loose spongy framework, and connected by beams originated from the medullary shell. Cortical shell generally double-layered and closely connected to each other. Shell surface without spines.

Remarks: Type species only illustrated by Dumitrica (2020); the support image is one of those species originally included into this genus.

Original series: *Pylolarnacium mongolfieri* Dumitrica, 2020; *Pylolarnacium nishimurae* Dumitrica, 2020 and *Pylolarnacium ovum* Dumitrica, 2020.

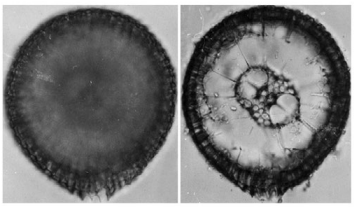
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE PALEOCENE–LATE MIDDLE EOCENE***

VALID
UNIQUE

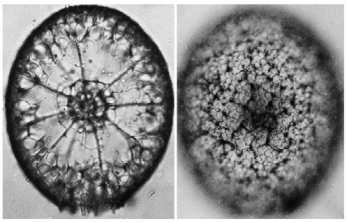
Type



50 µm

Pylolarnacium mongolfieri
Dumitrica, 2020: 16, pl. 9, figs 5, 6

Support



50 µm

Pylolarnacium ovum
Dumitrica, 2020: 33, pl. 9, figs 12, 13

S - LINEAGE IV (M2) — ? CRYPTOLARNACIIDAE

GENUS ***Staurosphaerantha***
Haeckel, 1887: 153

SUBGENUS ***Staurosphaera* (*Staurosphaerantha*)**

Remarks: Type species never figured. The support image is the only illustrated species among those originally included in this genus.

Original series: **Staurosphaera christiana* Haeckel, 1887; **Staurosphaera cruciata* Haeckel, 1887; **Staurosphaera jacobi* Haeckel, 1887; **Staurosphaera johannis* Haeckel, 1887; **Staurosphaera pauli* Haeckel, 1887; **Staurosphaera petri* Haeckel, 1887 and *Staurosphaera simonis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D56)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

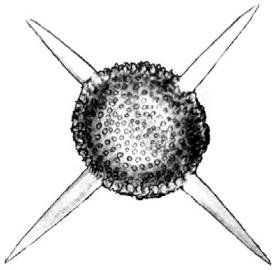
N.D.

Type

UNFIGURED SPECIES

Staurosphaera cruciata
Haeckel, 1887: 153, unfigured

Support



~ 50 µm

Staurosphaera simonis
Haeckel, 1887: 154 [specimen of Bury 1862: pl. 4, fig. 4]

S - LINEAGE IV (M2) — HISTIASTRIDAE
ASSIGNED HEREIN

GENUS ***Amphicraspedula***
Haeckel, 1887: 523

SUBGENUS ***Amphicraspedum* (*Amphicraspedula*)**

Diagnosis: Histiastrids with a flat spindle-shaped shell consisting of a central part and two unequal opposite ends. Central part with a histiastrid central structure, not always visible, surrounded by a few narrow concentric shells. Arms opposite in one axis and having different shapes or sizes. One arm may have a pylome. Middle part with a patagium.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Amphicraspedum murrayanum* Haeckel, 1887.

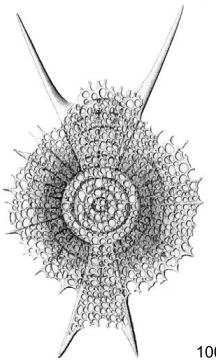
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE CAMPANIAN–LIVING***

VALID
FREQUENT

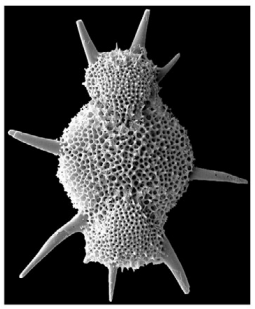
Type



100 µm

Amphicraspedum murrayanum
Haeckel, 1887: 523, pl. 44, fig. 10

Support



100 µm

Amphicraspedula murrayana (Haeckel)
Dumitrica's collection (DSDP 21-207A-13CC-R01-0, SW Pacific; Middle Eocene)

S - LINEAGE IV (M2) — HISTIASTRIDAE

GENUS ***Amphicarydiscus***
Lipman, 1972: 50

Remarks: Type species only illustrated by Lipman (1972); the support image is one of those species originally included into this genus.

Original series: *Amphicarydiscus fusoideus* Lipman, 1972; *Amphicarydiscus ovoides* Lipman, 1972 and *Amphicarydiscus tschelkarensis* Lipman, 1972.

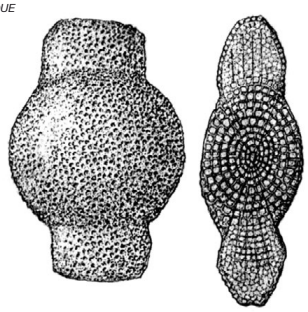
FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***AMPHICRASPEDULA***

SYN.
UNIQUE

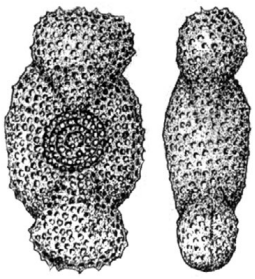
Type



50 µm

Amphicarydiscus ovoides
Lipman, 1972: 51, pl. 10, figs 1, 2

Support



100 µm

Amphicarydiscus fusoideus
Lipman, 1972: 53, pl. 10, figs 3, 4

S - LINEAGE IV (M2) HISTIASTRIDAE

GENUS ***Prunobrachium***
Kozlova in Kozlova & Gorbovetz, 1966: 65

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Prunobrachium incisum* Kozlova in Kozlova & Gorbovetz, 1966 and *Spongoprunum crassum* Lipman, 1952.

FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***AMPHICRASPEDULA***

SYN.
FREQUENT

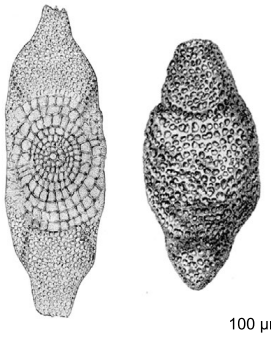
Type



100 µm

Spongoprunum crassum
Lipman, 1952: 29, pl. 1, fig. 11

Support



100 µm

Prunobrachium crassum (Lipman)
Kozlova & Gorbovetz 1966: 65, pl. 1, figs 5, 6

S - LINEAGE IV (M2) HISTIASTRIDAE
ASSIGNED IN Dumitrica 1989: 238

GENUS ***Histiastrum***
Ehrenberg, 1846: 385

NOMINOTYPE ***Histiastrum* (*Histiastrum*)**

Diagnosis: Cross-shaped test with a *Larnacilla*-type central shell surrounded by a few narrow rings. Arms broad, spongy with some narrow growing rings and connected by a patagium.

Remarks: Only the type species clearly belongs to this genus (frequently reported); just two species originally included at the time of the generic definition.

Original series: *Histiastrum quaternarium* Ehrenberg, 1874b and *Histiastrum ternarium* Ehrenberg, 1874b.

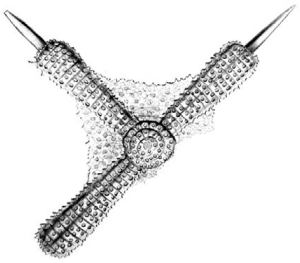
FIXATION SUBSEQUENT DESIGNATION (Haeckel 1887: 544)

STATUS **VALID**

AGE ***EARLY EOCENE–LATE MIDDLE MIOCENE***

VALID
FREQUENT

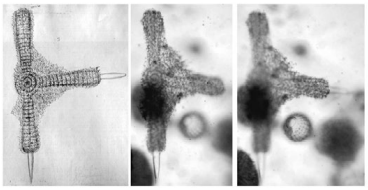
Type



100 µm

Histiastrum quaternarium
Ehrenberg, 1874b: 237 (unfigured); Ehrenberg, 1876: 74, pl. 24, fig. 3

Type



200 µm

Histiastrum quaternarium Ehrenberg
Ogane *et al.* 2009b: pl. 16, figs 3a-c [lectotype herein]

S - LINEAGE IV (M2) HISTIASTRIDAE

GENUS ***Histiastromma***
Haeckel, 1887: 545

SUBGENUS ***Histiastrum* (*Histiastromma*)**

Remarks: Type species frequently reported.

Original series: *Histiastrum boseanum* Haeckel, 1887; *Histiastrum circulare* Haeckel, 1887; *Histiastrum coronatum* Haeckel, 1887; *Histiastrum gladiatum* Haeckel, 1887; *Histiastrum pentadiscus* Haeckel, 1887 and *Histiastrum quaternarium* Ehrenberg, 1874b.

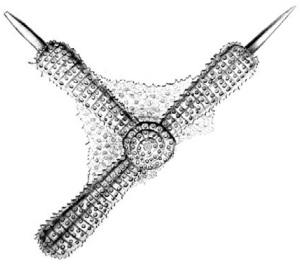
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***HISTIASTRUM***

SYN. (obj.)
FREQUENT

Type



100 µm

Histiastrum quaternarium
Ehrenberg, 1874b: 237 (unfigured); Ehrenberg, 1876: 74, pl. 24, fig. 3 [lectotype herein]

Support



100 µm

Histiastrum gladiatum
Haeckel, 1887: 545 [specimen of Bury 1862: pl. 5, fig. 1]

S - LINEAGE IV (M2) HISTIASTRIDAE
ASSIGNED HERE

GENUS ***Ommathymenium***
Haeckel, 1887: 520

SUBGENUS ***Amphymenium* (*Ommathymenium*)**

Diagnosis: Cylindrical shell with equal chambered arms originated in a probable histiastrid central structure. Arms traversed by an axial ray prolonged into a spine and enveloped in the central part by a latticed cylindrical patagium.

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: *Amphymenium amphistylium* Haeckel, 1887 and **Amphymenium fusiforme* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D76)

STATUS **VALID**

AGE ***LATE PALEOCENE–EARLY MIDDLE MIOCENE***

VALID
RARE

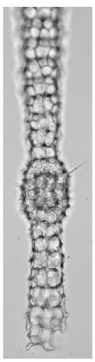
Type



100 µm

Amphymenium amphistylium
Haeckel, 1887: 520, pl. 44, fig. 9

Support



50 µm

Amphymenium amphistylium Haeckel
Suzuki's collection (Late Paleocene-Early Eocene, Pacific Ocean)

S - LINEAGE IV (M2) HISTIASTRIDAE

ASSIGNED IN De Wever *et al.* 2001: 157

GENUS ***Stephanastrum***
Ehrenberg, 1846: 385

NOMINOTYPE ***Stephanastrum* (*Stephanastrum*)**

Diagnosis: Cross-shaped shell with a *Larnacilla*-type medullary shell and thin cylindrical arms with a longitudinal ray aligned with a distal spine. Patagium thin proximally, thick distally forming a peripheral rhombic string.

Remarks: See comments under *STEPHANASTROMMA*.

Original series: *Stephanastrum rhombus* Ehrenberg, 1847.

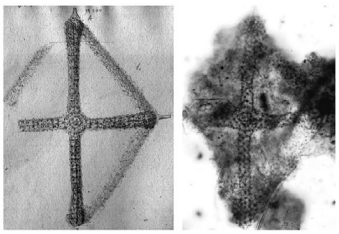
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LIVING***

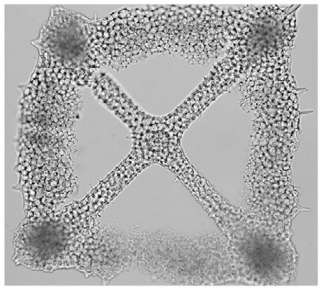
VALID
UNIQUE

Type



Stephanastrum rhombus
Ehrenberg, 1847: 55, fig. 11 [Ogane *et al.* 2009b: pl. 74, figs 1a, 1b; lectotype herein]

Support



Stephanastrum rhombus Ehrenberg
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE IV (M2) HISTIASTRIDAE

GENUS ***Stephanastromma***
Haeckel, 1887: 549

SUBGENUS ***Stephanastrum* (*Stephanastromma*)**

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Ehrenberg (1847).

Original series: *Stephanastrum rhombus* Ehrenberg, 1847.

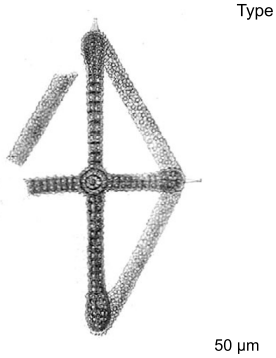
FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***STEPHANASTRUM***

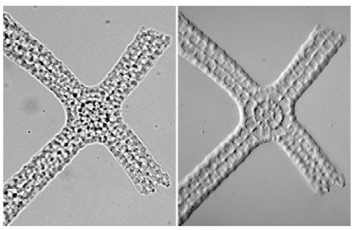
SYN. (obj.)
UNIQUE

Type



Stephanastrum rhombus
Ehrenberg, 1847: 55, fig. 11

Support



Stephanastrum rhombus
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE IV (M2) HISTIASTRIDAE

GENUS ***Stephanastrella***
Haeckel, 1887: 549

SUBGENUS ***Stephanastrum* (*Stephanastrella*)**

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Stephanastrum capitatum* Haeckel, 1887 and *Stephanastrum quadratum* Haeckel, 1887.

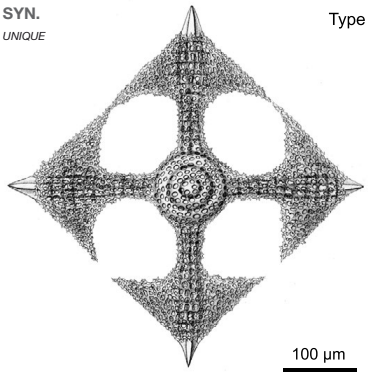
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1978: 136

SEE ***STEPHANASTRUM***

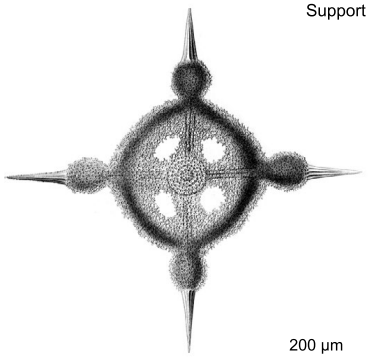
SYN.
UNIQUE

Type



Stephanastrum quadratum
Haeckel, 1887: 549, pl. 46, fig. 5

Support



Stephanastrum capitatum
Haeckel, 1887: 549, pl. 44, fig. 1

S - LINEAGE IV (M2) HISTIASTRIDAE

GENUS ***Hagiastrella***
Haeckel, 1887: 542

SUBGENUS ***Hagiastrum* (*Hagiastrella*)**

Remarks: No type species was designated. Only two species originally included at the time of the generic definition.

Original series: **Hagiastrum bramae* Haeckel, 1887 and *Hagiastrum buddhae* Haeckel, 1887.

FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STEPHANASTRUM***

SYN.
UNIQUE

Type



Hagiastrum buddhae
Haeckel, 1887: 542, pl. 45, fig. 5

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) HISTIASTRIDAE

GENUS **Stauralastromma**
Haeckel, 1887: 541

SUBGENUS ***Stauralastrum* (*Stauralastromma*)**

Remarks: A single report of the type species after the first illustration.

Original series: *Stauralastrum antiquum* Haeckel, 1887; **Stauralastrum horridum* Haeckel, 1887; *Stauralastrum rhopalophorum* Haeckel, 1887 and **Stauralastrum staurolonche* Haeckel, 1887.

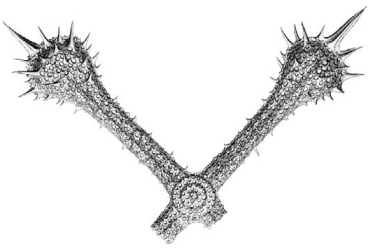
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 527

SEE ***STEPHANASTRUM***

SYN.
VERY RARE

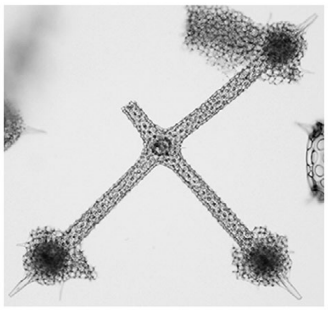
Type



50 µm

Stauralastrum rhopalophorum
Haeckel, 1887: 541, pl. 45, fig. 1

Support



100 µm

Stauralastrum rhopalophorum Haeckel
Barbados, Late Eocene, Suzuki's collection

S - LINEAGE IV (M2) ? HISTIASTRIDAE

GENUS **Stauralastrum**
Haeckel, 1887: 540

NOMINOTYPE ***Stauralastrum* (*Stauralastrum*)**

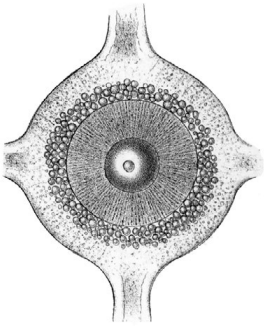
Remarks: See comments under *STAURALASTRELLA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



50 µm

Stauralastrum cruciforme
Haeckel, 1887: 540, pl. 45, fig. 6

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) ? HISTIASTRIDAE

GENUS **Stauralastrella**
Haeckel, 1887: 540

SUBGENUS ***Stauralastrum* (*Stauralastrella*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Stauralastrum clavigerum* Haeckel, 1887; *Stauralastrum cruciforme* Haeckel, 1887; **Stauralastrum dilatatum* Haeckel, 1887; **Stauralastrum lanceolatum* Haeckel, 1887 and **Stauralastrum ordo* Haeckel, 1887.

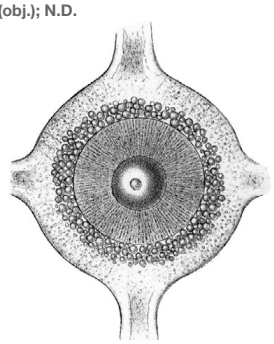
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D88)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***STAURALASTRUM***

SYN. (obj.); N.D.
UNIQUE

Type



50 µm

Stauralastrum cruciforme
Haeckel, 1887: 540, pl. 45, fig. 6

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) PHORTICIIDAE
ASSIGNED IN Haeckel 1887: 617

GENUS **Larnacilla**
Haeckel, 1887: 617

Diagnosis: Skeleton with a simple lentelliptical cortical shell, connected by the lateral wings of the transverse girdle with the simple lentelliptical medullary shell. Without radial spines.

Remarks: Type species only illustrated by Haeckel (1887); the support image is a synonym in open nomenclature. The support image shows the internal structure in a sagittal vue.

Original series: **Larnacilla medullaris* Haeckel, 1887; **Larnacilla prometor* Haeckel, 1887; **Larnacilla subglobosa* Haeckel, 1887 and *Larnacilla typus* Haeckel, 1887.

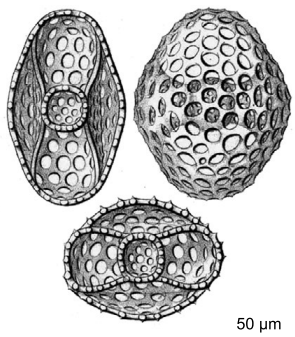
FIXATION ORIGINAL DESIGNATION; ICZN, ART. 68.2.2

STATUS **VALID**

AGE ***LATE LATE MIOCENE–LIVING***

VALID
UNIQUE

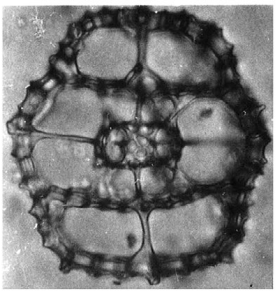
Type



50 µm

Larnacilla typus
Haeckel, 1887: 617, pl. 50, figs 1, 1a, 1b

Support



25 µm

Larnacilla? spp.
Dumitrica, 1989: pl. 11, fig. 5

S - LINEAGE IV (M2) PHORTICIIDAE

GENUS ***Larnacalpis***
Haeckel, 1887: 620

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Larnacalpis lentellipsis* Haeckel, 1887; **Larnacalpis macrococcus* Haeckel, 1887; **Larnacalpis phacodiscus* Haeckel, 1887; **Larnacalpis subsphaerica* Haeckel, 1887 and *Larnacalpis triaxonia* Haeckel, 1887.

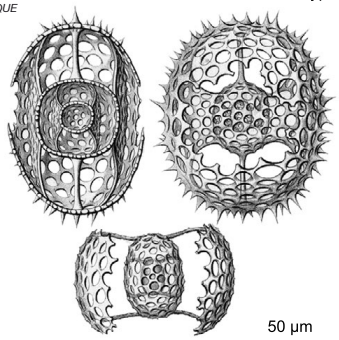
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 27)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***LARNACILLA***

SYN.
UNIQUE

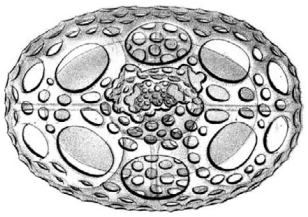
Type



50 µm

Larnacalpis lentellipsis
Haeckel, 1887: 620, pl. 50, figs 2, 2a, 2b

Support



50 µm

Larnacalpis triaxonia
Haeckel, 1887: 621, pl. 50, fig. 3

S - LINEAGE IV (M2) PHORTICIIDAE
ASSIGNED IN De Wever *et al.* 2001: 156

GENUS ***Phorticium***
Haeckel, 1882: 464

NOMINOTYPE ***Phorticium* (*Phorticium*)**

Diagnosis: Slightly flattened *Larnacilla*-type shell with about two irregular cortical systems of open girdles enclosing a lentelliptical *Larnacilla*-type medullary shell.

Remarks: *PHORTICIUM* differs from other Phorticiidae by the presence of gates in a regular direction and a flatten box-like appearance. See also comments under *PHORTOPYLE*.

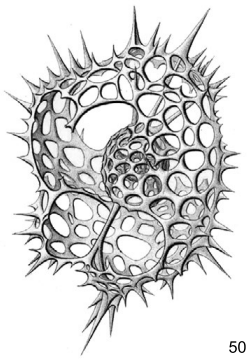
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LIVING***

VALID
FREQUENT

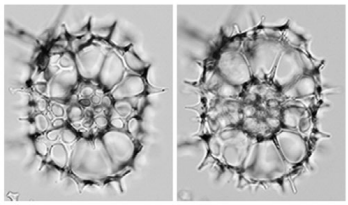
Type



50 µm

Phorticium pylonium
Haeckel, 1887: 709, pl. 49, fig. 10

Support



50 µm

Phorticium pylonium Haeckel
Topotypic material (Challenger Station 266), Suzuki's collection

S - LINEAGE IV (M2) PHORTICIIDAE

GENUS ***Phortopyle***
Haeckel, 1887: 709

SUBGENUS ***Phorticium* (*Phortopyle*)**

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: *Phorticium pylonium* Haeckel, 1887 and **Phorticium spironium* Haeckel, 1887.

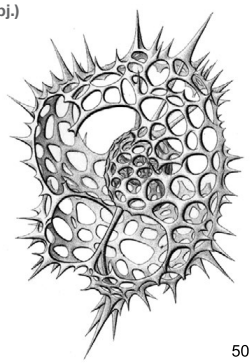
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PHORTICIUM***

SYN. (obj.)
FREQUENT

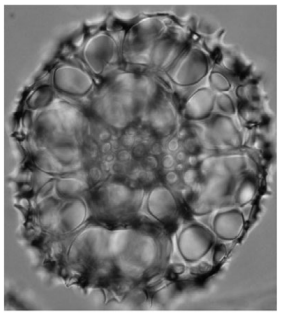
Type



50 µm

Phorticium pylonium
Haeckel, 1887: 709, pl. 49, fig. 10

Support



50 µm

Phorticium pylonium Haeckel
Matsuzaki *et al.* 2015: 32, fig. 6.12

S - LINEAGE IV (M2) PHORTICIIDAE
ASSIGNED IN Zhang & Suzuki 2017: 52

GENUS ***Qiuripylolena***
Zhang & Suzuki, 2017: 52

Diagnosis: *Larnacilla*-type shell with two or three spherical to ellipsoidal concentric cortical shells without gates, enclosing a lentelliptical *Larnacilla*-type medullary shell.

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition. *QIURIPYLOLENA* is easily distinguished from *PHORTICIUM* by its spherical shape, normal concentric-like appearance and no gates.

Original series: *Qiuripylolena chikuchik* Zhang & Suzuki, 2017 and *Qiuripylolena pompon* Zhang & Suzuki, 2017.

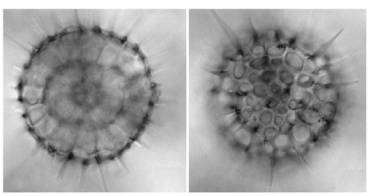
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY MIDDLE MIOCENE–HOLOCENE***

VALID
UNIQUE

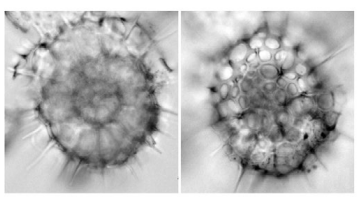
Type



50 µm

Qiuripylolena pompon
Zhang & Suzuki, 2017: 52, figs 30.19, 30.20

Support



50 µm

Qiuripylolena chikuchik
Zhang & Suzuki, 2017: 52, figs 30.7, 30.8

S - LINEAGE IV (M2) — PHORTICIIDAE
ASSIGNED IN Zhang & Suzuki 2017: 47

GENUS **Sphaerolarnacillium**
Zhang & Suzuki, 2017: 47

Diagnosis: *Larnacilla*-type shell with irregularly coiled cortical-shell like caps enclosing a lentelliptical *Larnacilla*-type medullary shell. Gates placed at the jointed portion of different cortical-shell like caps.

Remarks: Type species only illustrated by Zhang & Suzuki (2017); the support image is one of those species originally included into this genus. *SPHAEROLARNACILLIUM* differs from *PHORTICIUM* by having distorted girdles, gates which are irregularly arranged or, even no gates at all.

Original series: *Sphaerolarnacillium cochleatum* Zhang & Suzuki, 2017; *Sphaerolarnacillium exactum* Zhang & Suzuki, 2017 and *Sphaerolarnacillium tanzhiyuani* Zhang & Suzuki, 2017.

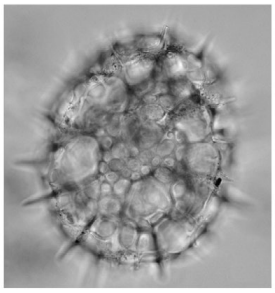
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***HOLOCENE–LIVING***

VALID
UNIQUE

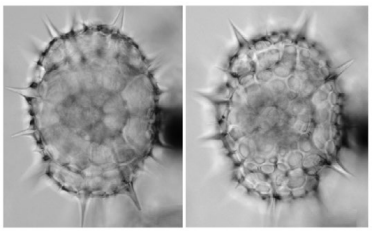
Type



50 µm

Sphaerolarnacillium cochleatum
Zhang & Suzuki, 2017: 47, fig. 27.13

Support



100 µm

Sphaerolarnacillium exactum
Zhang & Suzuki, 2017: 49, figs 28.6, fig. 28.7

S - LINEAGE IV (M2) — ? PHORTICIIDAE

GENUS **Amphibrachella**
Haeckel, 1887: 517

SUBGENUS ***Amphibrachium* (*Amphibrachella*)**

Remarks: No type species was designated. A single report of the type species after the first illustration. Campbell (1954: D86) considered this genus as the nominate subgenus of *AMPHIBRACHIUM* Haeckel, 1882 (type species *Amphibrachium diminutum* Rüst, 1885), however this seems inappropriate since the type species of *AMPHIBRACHIUM* was not among those species originally assigned to *AMPHIBRACHELLA*.

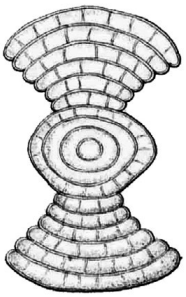
Original series: *Amphibrachium dilatatum* Haeckel, 1887; **Amphibrachium lanceolatum* Haeckel, 1887 and **Amphibrachium sponguroides* Haeckel, 1887.

FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
VERY RARE

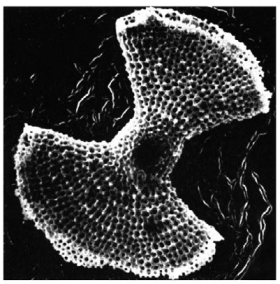
Type



200 µm

Amphibrachium dilatatum
Haeckel, 1887: 517, pl. 44, fig. 6

Support



200 µm

Amphibrachium aff. *dilatatum* Haeckel
Poluzzi 1982: 57, pl. 20, fig. 7

S - LINEAGE IV (M2) — ? PHORTICIIDAE

GENUS **Amphibrachidium**
Haeckel, 1887: 517

SUBGENUS ***Amphibrachium* (*Amphibrachidium*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Amphibrachium amphilonche* Haeckel, 1887; **Amphibrachium armatum* Haeckel, 1887 and **Amphibrachium capitatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D86)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Amphibrachium amphilonche
Haeckel, 1887: 517, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) — ? PHORTICIIDAE

GENUS **Amphibrachoma**
Haeckel, 1887: 518

SUBGENUS ***Amphibrachium* (*Amphibrachoma*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Amphibrachium indicum* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

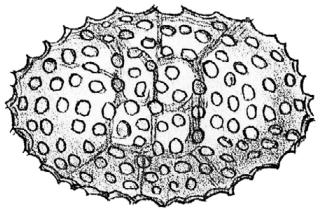
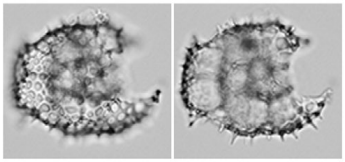
UNFIGURED SPECIES

Amphibrachium indicum
Haeckel, 1887: 518, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - Lineage IV (M2) ? PHORTICIIDAE GENUS ***Amphibrachura*** Haeckel, 1887: 518 SUBGENUS ***Amphibrachium* (*Amphibrachura*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Amphibrachium clavula* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Amphibrachium clavula* Haeckel, 1887: 518, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage IV (M2) ? PHORTICIIDAE GENUS ***Druppulissa*** Haeckel, 1887: 309 SUBGENUS ***Druppula* (*Druppulissa*)** **Remarks**: Illustration available only for the type species (just a single report after the first illustration). **Original series**: **Druppula nucula* Haeckel, 1887; **Druppula oliva* Haeckel, 1887; **Druppula prunum* Haeckel, 1887 and *Haliomma ellipticum* Stöhr, 1880. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D70) STATUS NOMEN DUBIUM designated herein; name-bearing type not diagnostic	**N.D.** Type *VERY RARE*  25 µm *Haliomma ellipticum* Stöhr, 1880: 88, pl. 1, fig. 11	Support  50 µm *Haliomma ellipticum* Stöhr Challenger Station 225, Suzuki's collection
S - Lineage IV (M2) ? PHORTICIIDAE GENUS ***Larnacidium*** Haeckel, 1887: 618 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Larnacidium hexabelonium* Haeckel, 1887; **Larnacidium polybelonium* Haeckel, 1887 and **Larnacidium staurobelonium* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Larnacidium staurobelonium* Haeckel, 1887: 619, unfigured	Support NO IMAGE PUBLISHED no image available
S - Lineage IV (M2) ? PHORTICIIDAE GENUS ***Larnacoma*** Haeckel, 1887: 625 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Larnacoma hexagonium* Haeckel, 1887; **Larnacoma lentellipticum* Haeckel, 1887 and **Larnacoma quadruplex* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Larnacoma lentellipticum* Haeckel, 1887: 625, unfigured	Support NO IMAGE PUBLISHED no image available

S - LINEAGE IV (M2) ? PHORTICIIDAE

GENUS ***Larnacospongus***
Haeckel, 1887: 625

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Larnacospongus larnacillifer* Haeckel, 1887 and **Larnacospongus tetrapylifer* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Larnacospongus larnacillifer
Haeckel, 1887: 626, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) ? PHORTICIIDAE

GENUS ***Larnacostupa***
Haeckel, 1887: 627

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Larnacostupa dendrophora* Haeckel, 1887; **Larnacostupa octacantha* Haeckel, 1887 and **Larnacostupa spinosa* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Larnacostupa octacantha
Haeckel, 1887: 627, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) ? PHORTICIIDAE

GENUS ***Phortolarcus***
Haeckel, 1887: 710

SUBGENUS ***Phorticium* (*Phortolarcus*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Phorticium abnorme* Haeckel, 1887 and **Phorticium deforme* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Phorticium deforme
Haeckel, 1887: 710, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) DIPYLISSIDAE
ASSIGNED IN Dumitrica 1988: 190

GENUS ***Dipylissa***
Dumitrica, 1988: 190

Diagnosis: Skeleton with systems of two single-capped girdles disposed face to face along the polar axis and rotated successively at 90° to one another. Microsphere with antapical polar ray.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Dipylissa bensoni* Dumitrica, 1988.

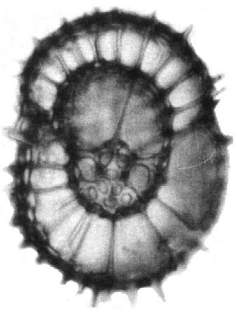
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE LATE MIOCENE–HOLOCENE***

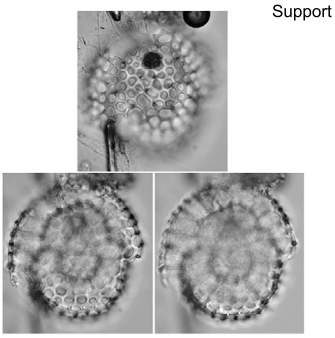
VALID
FREQUENT

Type



Dipylissa bensoni
Dumitrica, 1988: 190, pl. 6, fig. 3

Support



Dipylissa bensoni Dumitrica
Suzuki's collection (plankton, off Sesoko Island, Japan)

S - LINEAGE IV (M2) — LARCOSPIRIDAE
ASSIGNED IN Haeckel 1887: 691

GENUS ***Larcospira***
Haeckel, 1887: 695

NOMINOTYPE ***Larcospira* (*Larcospira*)**

Diagnosis: Spindle-shaped or ellipsoidal skeleton with a wide double spiral shell having as medullary shell the first pyloniid system of girdles.

Remarks: See comments under *LARCOSPIREMA*.

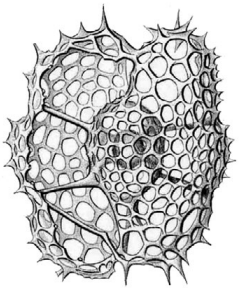
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS **VALID**

AGE ***EARLY MIDDLE MIOCENE–LIVING***

VALID
FREQUENT

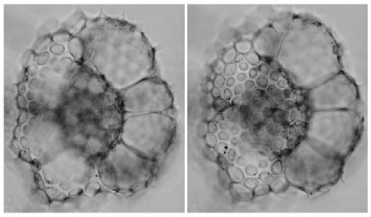
Type



50 µm

Larcospira quadrangula
Haeckel, 1887: 696, pl. 49, fig. 3

Support



50 µm

Larcospira quadrangula sensu stricto Haeckel
Zhang & Suzuki 2017: 21, figs 12.2, 12.3

S - LINEAGE IV (M2) — LARCOSPIRIDAE

GENUS ***Larcospirema***
Haeckel, 1887: 696

SUBGENUS ***Larcospira* (*Larcospirema*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Larcospira lentelliptica* Haeckel, 1887; *Larcospira quadrangula* Haeckel, 1887 and **Larcospira sexangula* Haeckel, 1887.

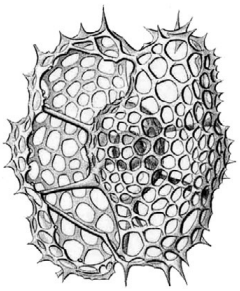
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***LARCOSPIRA***

SYN. (obj.)
FREQUENT

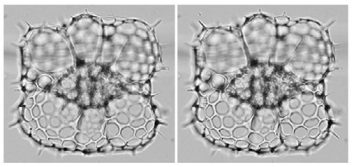
Type



50 µm

Larcospira quadrangula
Haeckel, 1887: 696, pl. 49, fig. 3

Support



100 µm

Larcospira quadrangula sensu stricto Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

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S - LINEAGE IV (M2) — ? LARCOSPIRIDAE

GENUS ***Drymospira***
Haeckel, 1882: 464

SUBGENUS ***Lithelius* (*Drymospira*)**

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

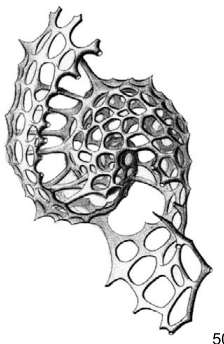
Original series: **Lithelius arborescens* Haeckel, 1887 and *Lithelius solaris* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D99)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
RARE

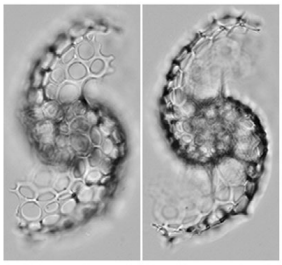
Type



50 µm

Lithelius solaris
Haeckel, 1887: 695, pl. 49, fig. 2

Support



50 µm

Lithelius solaris Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

---

S - LINEAGE IV (M2) — LARCOSPIRIDAE
ASSIGNED IN Haeckel 1887: 691

GENUS ***Pylospira***
Haeckel, 1887: 697

NOMINOTYPE ***Pylospira* (*Pylospira*)**

Diagnosis: Skeleton with *Larnacilla*-shaped medullary shell surrounded by a spherical or subspherical cortical shell consisting of a simple or double spiral.

Remarks: This genus differs from *THOLOSPIRA* by having straight radial beams from any of the internal girdles. These beams penetrate through outer girdles to form part of radial spines. See also comments under *PYLOSPIREMA*.

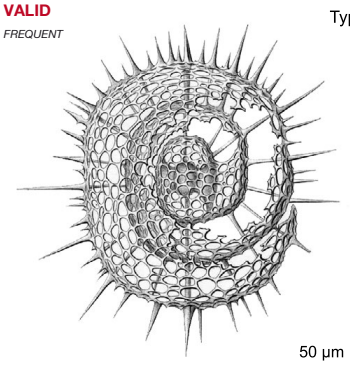
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LIVING***

VALID
FREQUENT

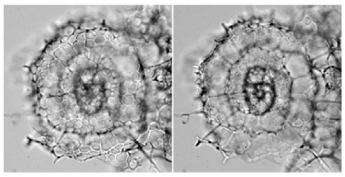
Type



50 µm

Pylospira octopyle
Haeckel, 1887: 698, pl. 49, fig. 4

Support



100 µm

Pylospira octopyle Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

S - LINEAGE IV (M2) LARCOSPIRIDAE

GENUS ***Pylospirema***
Haeckel, 1887: 697

SUBGENUS ***Pylospira (Pylospirema)***

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: *Pylospira octopyle* Haeckel, 1887 and **Pylospira tetrapyle* Haeckel, 1887.

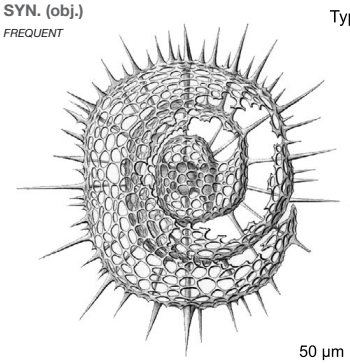
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PYLOSPIRA***

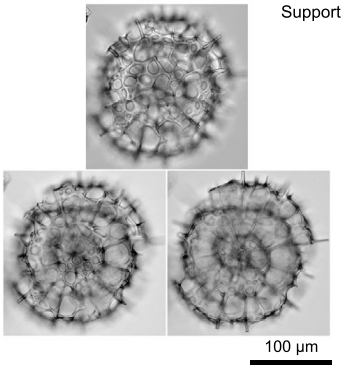
SYN. (obj.)
FREQUENT

Type



Pylospira octopyle
Haeckel, 1887: 698, pl. 49, fig. 4

Support



Pylospira octopyle Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (M2) LARCOSPIRIDAE
ASSIGNED IN Haeckel 1887: 691

GENUS ***Streblacantha***
Haeckel, 1887: 706

Diagnosis: Skeleton with a medullary shell spherical, subspherical, or lentelliptical; cortical shell evolving in screw-like series of spirally ascending series. Surface spiny.

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Streblacantha calcarina* Haeckel, 1887; **Streblacantha hastigerina* Haeckel, 1887 and *Streblacantha siderolina* Haeckel, 1887.

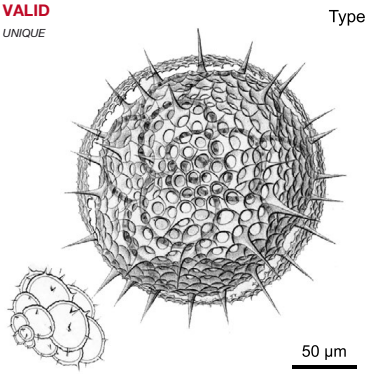
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS **VALID**

AGE ***[QUATERNARY]***

VALID
UNIQUE

Type



Streblacantha siderolina
Haeckel, 1887: 706, pl. 49, figs 8, 8a

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) LARCOSPIRIDAE

GENUS ***Spironium***
Haeckel, 1887: 701

NOMINOTYPE ***Spironium (Spironium)***

Remarks: See comments under *SPIRONETTA*.

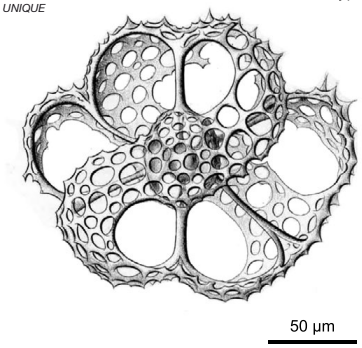
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STREBLACANTHA***

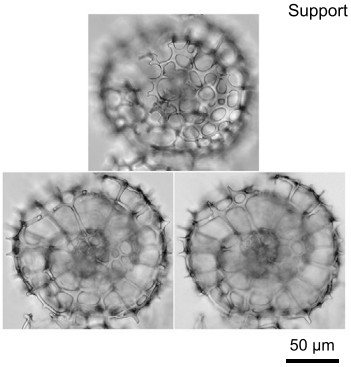
SYN.
UNIQUE

Type



Spironium octonium
Haeckel, 1887: 701, pl. 49, fig. 7

Support



Spironium octonium Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (M2) LARCOSPIRIDAE

GENUS ***Spironetta***
Haeckel, 1887: 701

SUBGENUS ***Spironium (Spironetta)***

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Spironium diagonale* Haeckel, 1887 and *Spironium octonium* Haeckel, 1887.

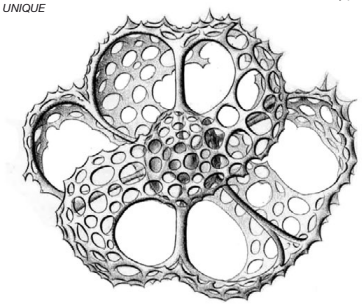
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SPIRONIUM***

SYN. (obj.)
UNIQUE

Type



Spironium octonium
Haeckel, 1887: 701, pl. 49, fig. 7

Support

NO IMAGE PUBLISHED

no image available

S - Lineage IV (M2) LARCOSPIRIDAE

GENUS ***Streblopyle***
Haeckel, 1887: 707

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: *Streblopyle helicina* Haeckel, 1887 and **Streblopyle spirulina* Haeckel, 1887.

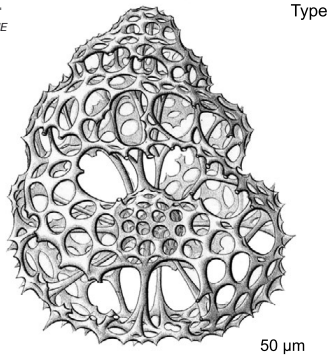
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STREBLACANTHA***

SYN.
UNIQUE

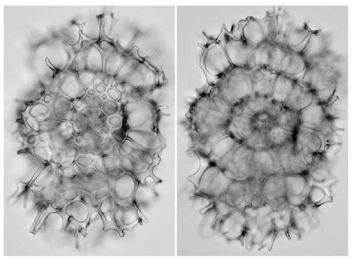
Type



50 µm

Streblopyle helicina
Haeckel, 1887: 707, pl. 49, fig. 9

Support



50 µm

Streblopyle helicina Haeckel
Zhang's collection (South China Sea)

S - Lineage IV (M2) LARCOSPIRIDAE
ASSIGNED IN Haeckel 1887: 691

GENUS ***Tholospira***
Haeckel, 1887: 699

NOMINOTYPE ***Tholospira* (*Tholospira*)**

Diagnosis: Skeleton with a simple, or double, spiral of domes evolving from a *Larnacilla*-shaped medullary shell; shell spiny.

Remarks: This genus differs from *PYLOSPIRA* by having many inter-connecting beams between girdles. See also comments under *THOLOSPIREMA*.

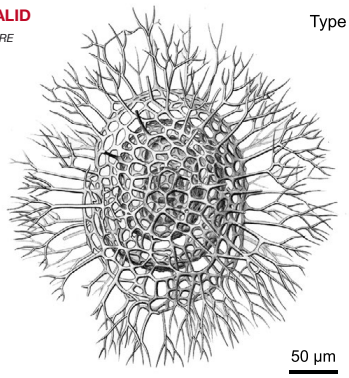
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS **VALID**

AGE ***Late Oligocene–Living***

VALID
RARE

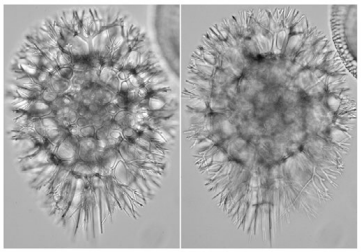
Type



50 µm

Tholospira dendrophora
Haeckel, 1887: 700, pl. 49. fig. 6

Support



100 µm

Tholospira dendrophora Haeckel
Zhang's collection (South China Sea)

S - Lineage IV (M2) LARCOSPIRIDAE

GENUS ***Tholospirema***
Haeckel, 1887: 699

SUBGENUS ***Tholospira* (*Tholospirema*)**

Remarks: Illustration available only for the type species (rarely reported).

Original series: *Tholospira dendrophora* Haeckel, 1887; **Tholospira nautiloides* Haeckel, 1887 and **Tholospira spinosa* Haeckel, 1887.

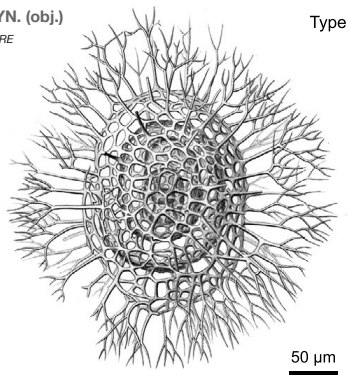
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***THOLOSPIRA***

SYN. (obj.)
RARE

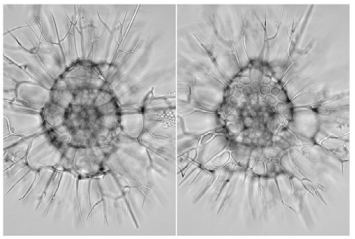
Type



50 µm

Tholospira dendrophora
Haeckel, 1887: 700, pl. 49. fig. 6

Support



100 µm

Tholospira dendrophora Haeckel
Zhang's collection (South China Sea)

S - Lineage IV (M2) LARCOSPIRIDAE

GENUS ***Tholospironium***
Haeckel, 1887: 700

SUBGENUS ***Tholospira* (*Tholospironium*)**

Remarks: Only the type species was figured for this genus (frequently reported). The support image is a junior subjective synonym; just two species originally included at the time of the generic definition.

Original series: *Tholospira cervicornis* Haeckel, 1887 and **Tholospira hystrix* Haeckel, 1887.

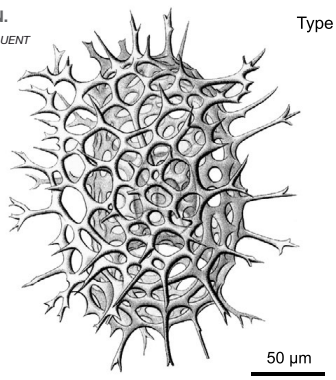
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS JUNIOR SYNONYM
synonymized by Popofsky 1912: 152

SEE ***THOLOSPIRA***

SYN.
FREQUENT

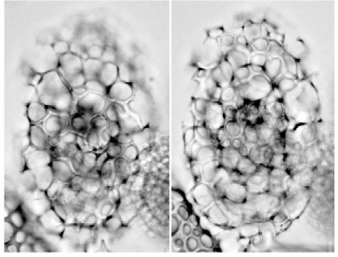
Type



50 µm

Tholospira cervicornis
Haeckel, 1887: 700, pl. 49, fig. 5

Support



25 µm

Larcopyle cervicornis sensu stricto (Haeckel)
Topotypic material (Challenger Station 271), Zhang & Suzuki 2017: 28, figs 17.1, 17.2

S - LINEAGE IV (M2) LARCOSPIRIDAE

GENUS ***Larcopyle***
Dreyer, 1889: 48

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Larcopyle buetschlii* Dreyer, 1889.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Tochilina 1985: 99

SEE ***THOLOSPIRA***

SYN.
FREQUENT

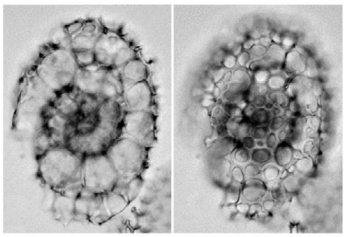
Type



50 µm

Larcopyle buetschlii
Dreyer, 1889: 48, pl. 5, fig. 70

Support



25 µm

Larcopyle buetschlii buetschlii Dreyer
Topotypic material (Challenger Station 271), Zhang & Suzuki 2017: 30, figs 17.11, 17.12

S - LINEAGE IV (M2) LARCOSPIRIDAE

GENUS ***Stomatodiscus***
Haeckel, 1887: 502

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: **Stomatodiscus amphistomus* Haeckel, 1887 and *Stomatodiscus osculatus* Haeckel, 1887.

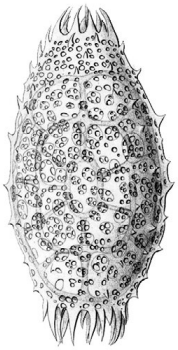
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 25)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THOLOSPIRA***

SYN.
UNIQUE

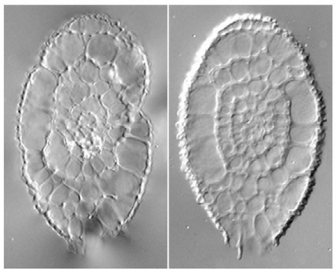
Type



50 µm

Stomatodiscus osculatus
Haeckel, 1887: 503, pl. 48, fig. 8

Support



50 µm

Stomatodiscus osculatus Haeckel
Suzuki's collection (Middle Miocene, Niigata, Japan)

S - LINEAGE IV (M2) ? LARCOSPIRIDAE

GENUS ***Larcospironium***
Haeckel, 1887: 697

SUBGENUS ***Larcospira* (*Larcospironium*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Larcospira oliva* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Larcospira oliva
Haeckel, 1887: 697, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) ? LARCOSPIRIDAE

GENUS ***Pylospironium***
Haeckel, 1887: 698

SUBGENUS ***Pylospira* (*Pylospironium*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Pylospira cymbium* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Pylospira cymbium
Haeckel, 1887: 698, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) ? LARCOSPIRIDAE

GENUS ***Soreuma***
Haeckel, 1882: 464

NOMINOTYPE ***Soreuma* (*Soreuma*)**

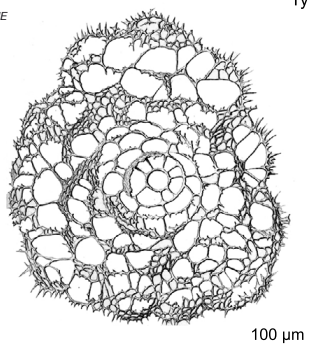
Remarks: See comments under *SOREUMIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

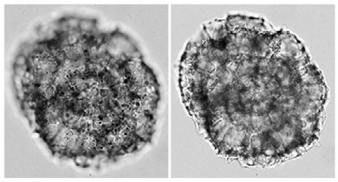
Type



100 µm

Soreuma irregulare
Haeckel, 1887: 713, pl. 49, fig. 12

Support



50 µm

Soreuma irregulare Haeckel
Topotypic material (Challenger Station 244), Suzuki's collection

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S - LINEAGE IV (M2) ? LARCOSPIRIDAE

GENUS ***Soreumium***
Haeckel, 1887: 713

SUBGENUS ***Soreuma* (*Soreumium*)**

Remarks: Only the type species was figured in this genus by Haeckel (1887); no other images have been published.

Original series: **Soreuma acervulina* Haeckel, 1887; **Soreuma acinosum* Haeckel, 1887; *Soreuma irregulare* Haeckel, 1887 and **Soreuma subglobosum* Haeckel, 1887.

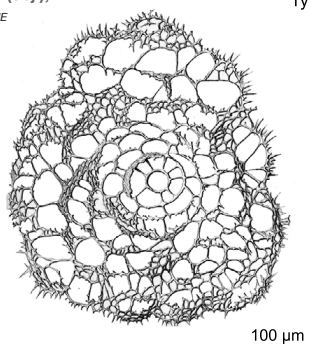
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***SOREUMA***

SYN. (obj.); N.D.
UNIQUE

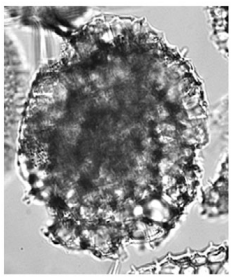
Type



100 µm

Soreuma irregulare
Haeckel, 1887: 713, pl. 49, fig. 12

Support



50 µm

Soreuma irregulare Haeckel
Topotypic material (Challenger Station 244), Suzuki's collection

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S - LINEAGE IV (M2) ? LARCOSPIRIDAE

GENUS ***Soreumidium***
Haeckel, 1882: 464

SUBGENUS ***Soreuma* (*Soreumidium*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Soreuma setosum* Haeckel, 1887 and **Soreuma spinosum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Soreuma spinosum
Haeckel, 1887: 714, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) ? LARCOSPIRIDAE

GENUS ***Sorolarcus***
Haeckel, 1887: 714

NOMINOTYPE ***Sorolarcus* (*Sorolarcus*)**

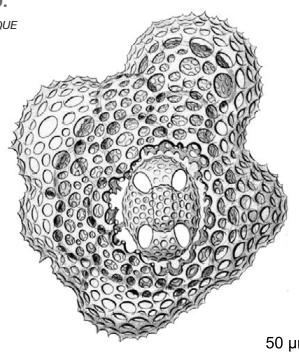
Remarks: See comments under *SOROLARCIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

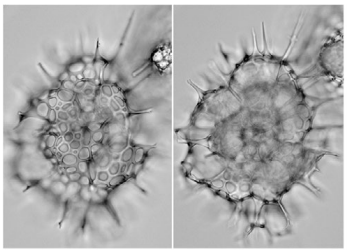
Type



50 µm

Sorolarcus larnacillifer
Haeckel, 1887: 715, pl. 49, fig. 13

Support



50 µm

Sorolarcus larnacillifer Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (M2) ? LARCOSPIRIDAE

GENUS **Sorolarcium**
Haeckel, 1887: 715

SUBGENUS ***Sorolarcus* (*Sorolarcium*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: *Sorolarcus larnacillifer* Haeckel, 1887 and **Sorolarcus tetrapylifer* Haeckel, 1887.

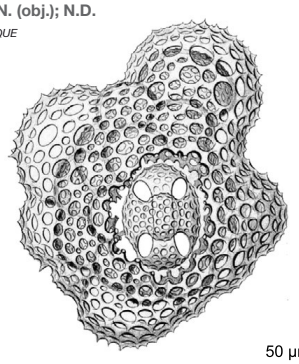
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***SOROLARCUS***

SYN. (obj.); N.D.
UNIQUE

Type



Sorolarcus larnacillifer
Haeckel, 1887: 715, pl. 49, fig. 13

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) ? LARCOSPIRIDAE

GENUS **Sorolarcidium**
Haeckel, 1887: 715

SUBGENUS ***Sorolarcus* (*Sorolarcidium*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Sorolarcus terminalis* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Sorolarcus terminalis
Haeckel, 1887: 715, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M2) ? LARCOSPIRIDAE

GENUS **Spironilla**
Haeckel, 1887: 702

SUBGENUS ***Spironium* (*Spironilla*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Spironium arbustum* Haeckel, 1887 and **Spironium spinosum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Spironium spinosum
Haeckel, 1887: 702, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (UNKNOWN) PALAEOTETRAPYLIDAE
ASSIGNED IN Dumitrica 1988: 186

GENUS **Palaeotetrapyle**
Dumitrica, 1988: 186

Diagnosis: Skeleton *Tetrapyle*-like but the microsphere possesses many pores on the apical end and two residual lateral spines.

Remarks: It differs from *TETRAPYLE*, by the structure of the microsphere. This genus possesses more than four apical pores, whereas *TETRAPYLE* has only four pores. In addition, it has more than eight lateral pores instead of the only two pores observed in *TETRAPYLE* (see Dumitrica, 1988). Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Palaeotetrapyle muelleri* Dumitrica, 1988.

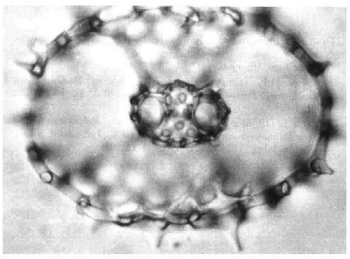
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY PALEOCENE***

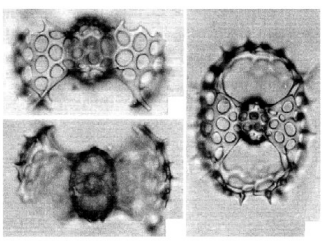
VALID
FREQUENT

Type



Palaeotetrapyle muelleri
Dumitrica, 1988: 186, pl. 5, fig. 4

Support



Palaeotetrapyle muelleri
Dumitrica, 1988: 186, pl. 5, figs 1-3

S - Lineage IV (M3) PYLODISCIDAE
ASSIGNED IN Haeckel 1887: 563

GENUS ***Pylodiscus***
Haeckel, 1887: 570

Diagnosis: Skeleton with pylodiscid-shaped medullary shell surrounded by three distal arm-chambers; notches between arms closed by latticework and an equatorial girdle. Sometimes it may develops a spiny pylome on the margin of the disc.

Remarks: Illustration available only for the type species (rarely reported).

Original series: **Pylodiscus cardiopylus* Haeckel, 1887; **Pylodiscus nephropylus* Haeckel, 1887; **Pylodiscus sexangularis* Haeckel, 1887 and *Pylodiscus triangularis* Haeckel, 1887.

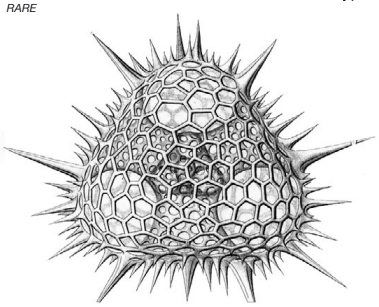
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS **VALID**

AGE ***Holocene–Living***

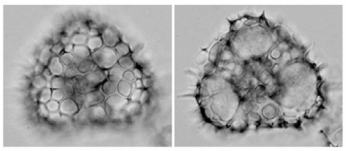
VALID
RARE

Type



Pylodiscus triangularis
Haeckel, 1887: 570, pl. 48, fig. 17

Support



Pylodiscus triangularis Haeckel
Suzuki's collection (Quaternary, Equatorial Pacific)

S - Lineage IV (M3) PYLODISCIDAE

GENUS ***Discopyle***
Haeckel, 1887: 572

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: *Discopyle elliptica* Haeckel, 1887 and *Discopyle osculata* Haeckel, 1887.

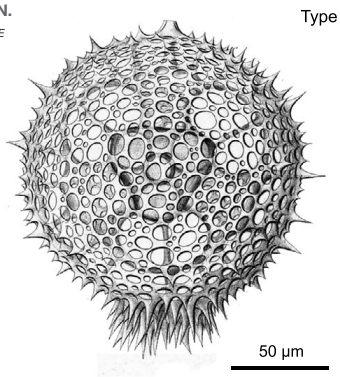
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D93)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PYLODISCUS***

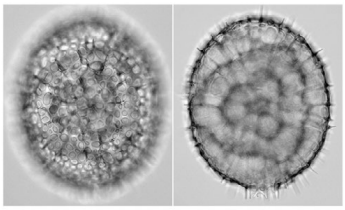
SYN.
RARE

Type



Discopyle osculata
Haeckel, 1887: 573, pl. 48, fig. 19

Support



Discopyle osculata Haeckel
Zhang's collection (South China Sea)

S - Lineage IV (M3) PYLODISCIDAE

GENUS ***Discozonium***
Haeckel, 1887: 571

Remarks: Only the type species was figured in this genus by Haeckel (1887); no other images have been published.

Original series: **Discozonium cyclonium* Haeckel, 1887; *Discozonium hexagonium* Haeckel, 1887 and **Discozonium trigonium* Haeckel, 1887.

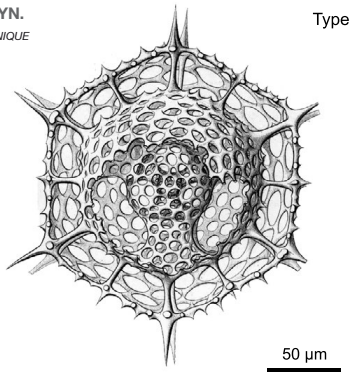
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D93)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PYLODISCUS***

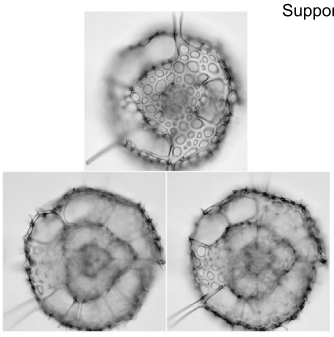
SYN.
UNIQUE

Type



Discozonium hexagonium
Haeckel, 1887: 572, pl. 48, fig. 18

Support



Discozonium hexagonium Haeckel
Zhang's collection (South China Sea)

S - Lineage IV (M3) PYLODISCIDAE

GENUS ***Pylolena***
Haeckel, 1887: 567

Remarks: Only the type species was figured for this genus (rarely reported); just two species originally included at the time of the generic definition. The support image is a junior subjective synonym of the type species.

Original series: *Pylolena armata* Haeckel, 1887 and **Pylolena inermis* Haeckel, 1887.

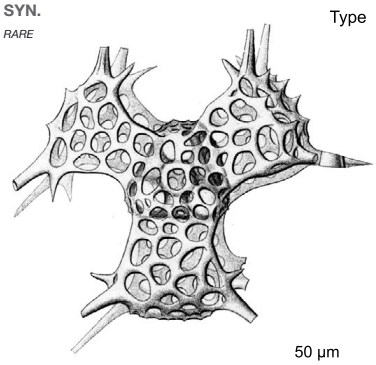
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS JUNIOR SYNONYM
synonymized by Zhang & Suzuki 2017: 25

SEE ***PYLODISCUS***

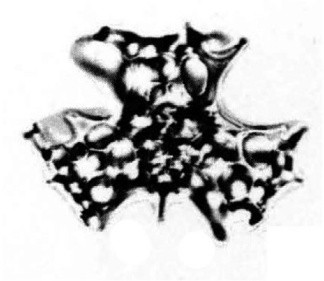
SYN.
RARE

Type



Pylolena armata
Haeckel, 1887: 568, pl. 48, fig. 15

Support



Pylolena hexagona
Chen & Tan, 1996: 188, pl. 17, fig. 2

S - LINEAGE IV (M3) PYLODISCIDAE

GENUS ***Trilobatum***
Popofsky, 1912: 132

Remarks: Only two species originally included at the time of the generic definition (both illustrated, but figured just once).

Original series: *Trilobatum acuferum* Popofsky, 1912 and *Trilobatum tribracchium* Popofsky, 1912.

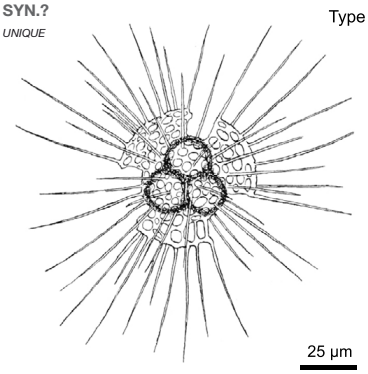
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D56)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***PYLODISCUS***

SYN.?
UNIQUE

Type



Trilobatum tribracchium
Popofsky, 1912: 133, text-fig. 49

Support



Trilobatum tribracchium Popofsky
Aita's collection (plankton, East China Sea)

S - LINEAGE IV (M3) PYLODISCIDAE

GENUS ***Triodiscus***
Haeckel, 1887: 566

Remarks: Only the type species was figured in this genus by Haeckel (1887); no other images have been published.

Original series: **Triodiscus lenticula* Haeckel, 1887; *Triodiscus spinosus* Haeckel, 1887 and **Triodiscus trigonus* Haeckel, 1887.

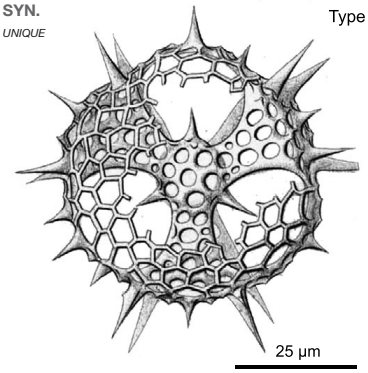
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PYLODISCUS***

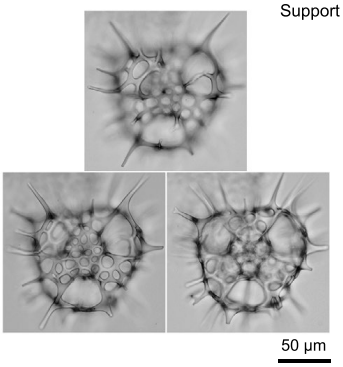
SYN.
UNIQUE

Type



Triodiscus spinosus
Haeckel, 1887: 567, pl. 48, fig. 14

Support



Triodiscus spinosus Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (M3) PYLODISCIDAE

GENUS ***Triolena***
Haeckel, 1887: 563

Remarks: Illustration available only for the type species (just a single report after the first illustration).

Original series: **Triolena hexabelone* Haeckel, 1887; *Triolena primordialis* Haeckel, 1887; **Triolena tribelone* Haeckel, 1887; **Triolena trigonalis* Haeckel, 1887 and **Triolena trispinosa* Haeckel, 1887.

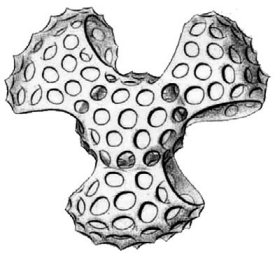
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PYLODISCUS***

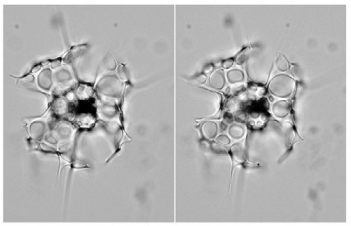
SYN.
VERY RARE

Type



Triolena primordialis
Haeckel, 1887: 564, pl. 48, fig. 12

Support



Triolena primordialis Haeckel
Suzuki's collection (plankton, off Sesoko Island, Japan)

S - LINEAGE IV (M3) ? PYLODISCIDAE

GENUS ***Hexapyle***
Haeckel, 1882: 463

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Hexapyle circularis* Haeckel, 1887; *Hexapyle dodecantha* Haeckel, 1887; **Hexapyle hexacantha* Haeckel, 1887; **Hexapyle polyacantha* Haeckel, 1887; **Hexapyle sexangula* Haeckel, 1887; **Hexapyle triacantha* Haeckel, 1887 and **Hexapyle triangula* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *PYLODISCUS***

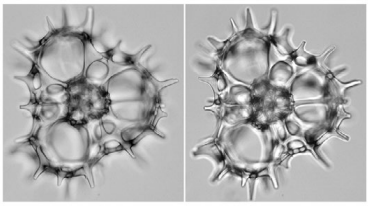
N.D.

Type

UNFIGURED SPECIES

Hexapyle triangula
Haeckel, 1887: 568, unfigured

Support



Hexapyle triangula Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (M3) ? PYLODISCIDAE

GENUS ***Triopyle***
Haeckel, 1882: 463

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Triopyle circulus* Haeckel, 1887; **Triopyle cordigera* Haeckel, 1887; *Triopyle hexagona* Haeckel, 1887; **Triopyle renigera* Haeckel, 1887; **Triopyle spinigera* Haeckel, 1887 and **Triopyle trigona* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D92)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? PYLODISCUS***

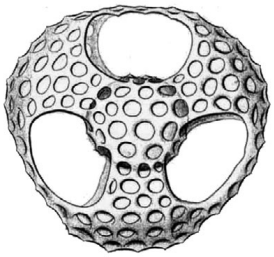
N.D.

Type

UNFIGURED SPECIES

Triopyle circulus
Haeckel, 1887: 565, unfigured

Support



10 µm

Triopyle hexagona
Haeckel, 1887: 565, pl. 48, fig. 13

S - LINEAGE IV (M3) PYLODISCIDAE
ASSIGNED IN Zhang & Suzuki 2017: 38

GENUS ***Sphaeropylolena***
Zhang & Suzuki, 2017: 38

Diagnosis: Skeleton with pylodiscid-shaped medullary shell surrounded by an irregular spherical or subspherical and loose shell.

Remarks: It differs from representatives of Larcospiridae by the triangular central part (pylodiscid-type), a very distinguish character of all Pylodiscidae. The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Sphaeropylolena laxa* Zhang & Suzuki, 2017 and *Sphaeropylolena tenellispinosa* Zhang & Suzuki, 2017.

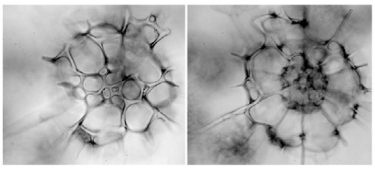
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY PLIOCENE–LIVING***

VALID
UNIQUE

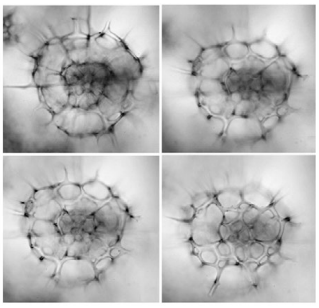
Type



100 µm

Sphaeropylolena laxa
Zhang & Suzuki, 2017: 39, figs 22.3, 22.4

Support



50 µm

Sphaeropylolena tenellispinosa
Zhang & Suzuki, 2017: 39, figs 23.7-22.10

S - LINEAGE IV (M4) ZONARIIDAE
ASSIGNED HERE

GENUS ***Larcidium***
Haeckel, 1887: 611

Diagnosis: Skeleton consisting of an inner spherical or lentelliptical shell and an outer lentelliptical medullary shell, both connected by radial beams.

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Larcidium axacanthum* Haeckel, 1887; **Larcidium dissacanthum* Haeckel, 1887; *Larcidium dodecanthum* Haeckel, 1887; **Larcidium hexacanthum* Haeckel, 1887; **Larcidium octacanthum* Haeckel, 1887 and **Larcidium polyacanthum* Haeckel, 1887.

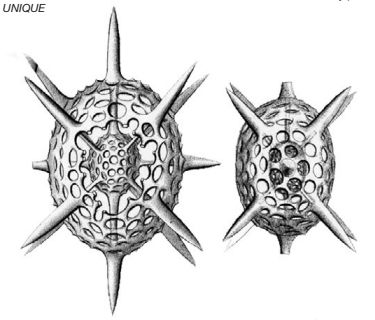
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D95)

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

Type



50 µm

Larcidium dodecanthum
Haeckel, 1887: 612, pl. 50, figs 8, 8a

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M4) ZONARIIDAE
ASSIGNED IN Haeckel 1887: 632

GENUS ***Pylozonium***
Haeckel, 1887: 659

Diagnosis: Skeleton with trizonal lentelliptical medullary shell surrounded by double latticed cortical shell with three perfect closed girdles.

Remarks: This genus differs from *TETRAPYLE* by having three perfect closed girdles, otherwise the internal structure is identical. Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: **Pylozonium novemcinctum* Haeckel, 1887 and *Pylozonium octacanthum* Haeckel, 1887.

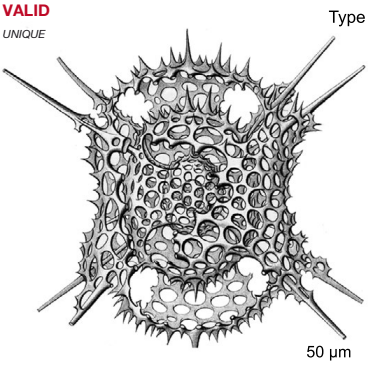
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D97)

STATUS **VALID**

AGE ***HOLOCENE–[LIVING]***

VALID
UNIQUE

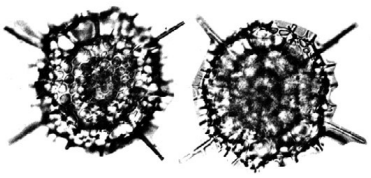
Type



50 µm

Pylozonium octacanthum
Haeckel, 1887: 660, pl. 9, fig. 16

Support



100 µm

Pylozonium octacanthum Haeckel
Chen & Tan, 1996: 195, pl. 22, figs 1, 2

S - LINEAGE IV (M4) ZONARIIDAE
ASSIGNED IN Haeckel 1887: 632

GENUS **Tetrapyle**
Müller, 1859a: 154

NOMINOTYPE ***Tetrapyle* (*Tetrapyle*)**

Diagnosis: Skeleton with a trizonal lentelliptical medullary shell surrounded by two crossed cortical girdles leaving four gates between them.

Remarks: The main difference with *PALAEOTETRAPYLE* is the structure of the microsphere. *TETRAPYLE* has only four apical pores and six lateral pores. See comments under *PALAEOTETRAPYLE*. Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Tetrapyle octacantha* Müller, 1859b.

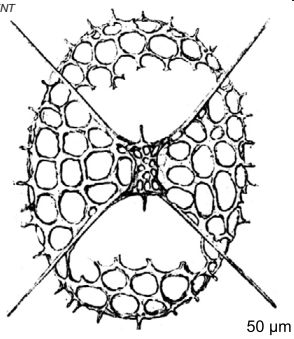
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE LATE MIOCENE–LIVING***

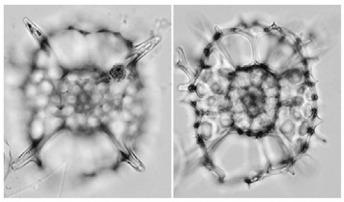
VALID
FREQUENT

Type



Tetrapyle octacantha
Müller, 1859a: 154 (n.n.); Müller, 1859b: 33, pl. 3, fig. 2 [lectotype herein]

Support



Tetrapyle octacantha Müller
Challenger Station 253, Suzuki's collection

S - LINEAGE IV (M4) ZONARIIDAE

GENUS **Tetrapylura**
Haeckel, 1887: 646

SUBGENUS ***Tetrapyle* (*Tetrapylura*)**

Remarks: Type species frequently reported.

Original series: **Tetrapyle cladacantha* Haeckel, 1887; **Tetrapyle cruciata* Haeckel, 1887; **Tetrapyle dodecaceros* Haeckel, 1887; **Tetrapyle fusiformis* Haeckel, 1887; *Tetrapyle octacantha* Müller, 1859b; *Tetrapyle pleuracantha* Haeckel, 1887; **Tetrapyle pluteus* Haeckel, 1887; **Tetrapyle quadricornis* Haeckel, 1887; **Tetrapyle quadrigata* Haeckel, 1887; **Tetrapyle staurophora* Haeckel, 1887; **Tetrapyle tetracantha* Haeckel, 1887; **Tetrapyle transversa* Haeckel, 1887 and *Tetrapyle turrita* Haeckel, 1887.

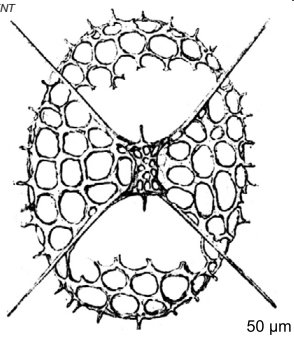
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TETRAPYLE***

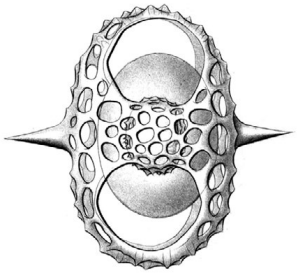
SYN. (obj.)
FREQUENT

Type



Tetrapyle octacantha
Müller, 1859a: 154 (n.n.); Müller, 1859b: 33, pl. 3, fig. 2 [lectotype herein]

Support



Tetrapyle pleuracantha
Haeckel, 1887: 646, pl. 9, fig. 9

S - LINEAGE IV (M4) ZONARIIDAE

GENUS **Tetrapylissa**
Haeckel, 1887: 644

SUBGENUS ***Tetrapyle* (*Tetrapylissa*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Tetrapyle cardiopyle* Haeckel, 1887; **Tetrapyle circopyle* Haeckel, 1887; *Tetrapyle circularis* Haeckel, 1887 and **Tetrapyle nephropyle* Haeckel, 1887.

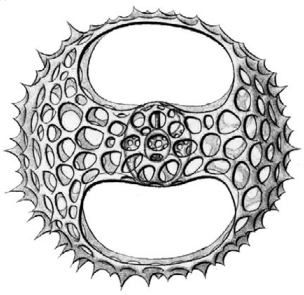
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS JUNIOR SYNONYM
synonymized by Itaki 2009: 47

SEE ***TETRAPYLE***

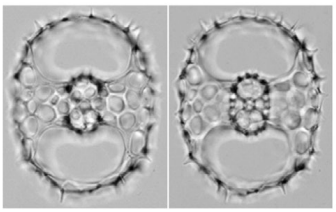
SYN.
FREQUENT

Type



Tetrapyle circularis
Haeckel, 1887: 645, pl. 9, fig. 8

Support



Tetrapyle circularis Haeckel
Challenger Station 271, Suzuki's collection

S - LINEAGE IV (M4) ZONARIIDAE

GENUS **Amphiaspis**
Harting, 1863: 16

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Harting (1863).

Original series: *Haliomma amphiaspis* Harting, 1863.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***TETRAPYLE***

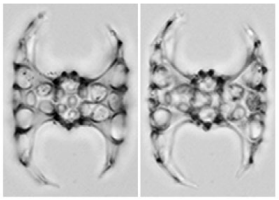
SYN.?
UNIQUE

Type



Haliomma amphiaspis
Harting, 1863: 15, pl. 2, fig. 43

Support



Haliomma amphiaspis Harting
Challenger Station 265, Suzuki's collection

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Amphipylura***
Haeckel, 1887: 641

SUBGENUS ***Amphipyle* (*Amphipylura*)**

Remarks: Type species only illustrated by Haeckel (1887).

Original series: **Amphipyle amphiceros* Haeckel, 1887; *Amphipyle amphiptera* Haeckel, 1887; *Amphipyle callizona* Haeckel, 1887; **Amphipyle cladoceros* Haeckel, 1887; **Amphipyle decaceros* Haeckel, 1887; **Amphipyle dodecaceros* Haeckel, 1887; **Amphipyle hexaceros* Haeckel, 1887; **Amphipyle octoceros* Haeckel, 1887; **Amphipyle staurocerus* Haeckel, 1887 and *Amphipyle tetraceros* Haeckel, 1887.

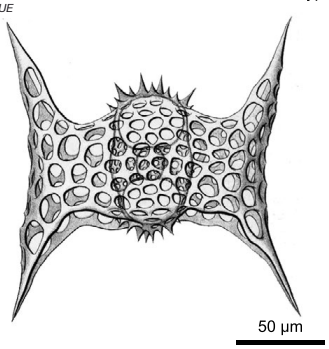
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TETRAPYLE***

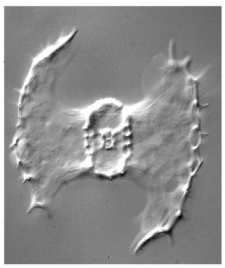
SYN. *UNIQUE*

Type



Amphipyle tetraceros
Haeckel, 1887: 642, pl. 9, fig. 5

Support



Amphipyle tetraceros Haeckel
Suzuki's collection (plankton, off Tokyo, Japan)

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Dizonitis***
Haeckel, 1887: 636

SUBGENUS ***Dizonium* (*Dizonitis*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: **Dizonium amphacanthum* Haeckel, 1887; **Dizonium octacanthum* Haeckel, 1887; *Dizonium pleuracanthum* Haeckel, 1887 and *Dizonium stauracanthum* Haeckel, 1887.

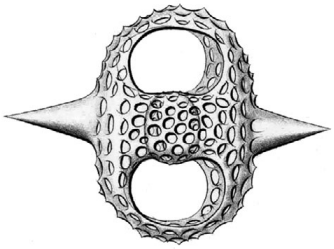
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TETRAPYLE***

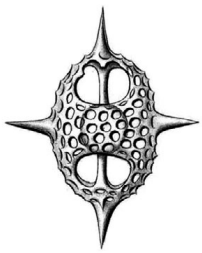
SYN. *UNIQUE*

Type



Dizonium pleuracanthum
Haeckel, 1887: 636, pl. 9, fig. 2

Support



Dizonium stauracanthum
Haeckel, 1887: 636, pl. 9, fig. 3

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Echinosphaera***
Hertwig, 1879: 181

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Bütschli (1882a).

Original series: *Echinosphaera datura* Hertwig, 1879.

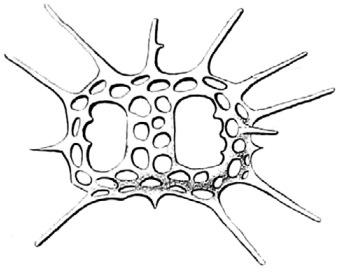
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 34

SEE ***TETRAPYLE***

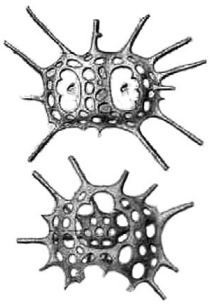
SYN. *VERY RARE*

Type



Echinosphaera datura
Hertwig, 1879: 181, pl. 6, fig. 3 [lectotype herein]

Support



Echinosphaera datura Hertwig
Bütschli 1882a: 378, pl. 23, figs 3a, 3b

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Larnacantha***
Haeckel, 1887: 621

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Larnacantha bicruciata* Haeckel, 1887; **Larnacantha cladacantha* Haeckel, 1887; **Larnacantha decacantha* Haeckel, 1887; **Larnacantha dissacantha* Haeckel, 1887; **Larnacantha dodecantha* Haeckel, 1887; **Larnacantha drymacantha* Haeckel, 1887; *Larnacantha hexacantha* Haeckel, 1887; **Larnacantha octacantha* Haeckel, 1887; *Larnacantha prismatica* Haeckel, 1887; **Larnacantha quadricornis* Haeckel, 1887 and **Larnacantha stauracantha* Haeckel, 1887.

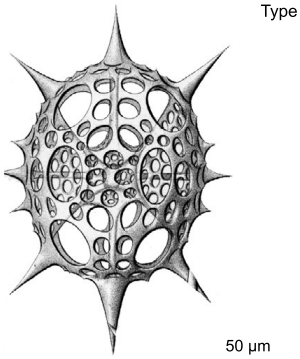
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TETRAPYLE***

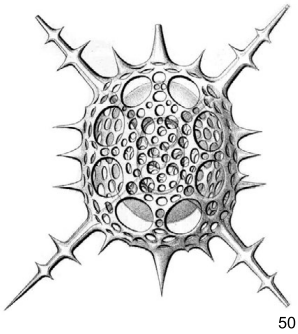
SYN. *UNIQUE*

Type



Larnacantha hexacantha
Haeckel, 1887: 622, pl. 50, fig. 4

Support



Larnacantha bicruciata
Haeckel, 1887: 623, pl. 50, fig. 5

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Octopylura***
Haeckel, 1887: 651

SUBGENUS ***Octopyle* (*Octopylura*)**

Remarks: Type species frequently reported.

Original series: **Octopyle amphistyle* Haeckel, 1887; *Octopyle decastyle* Haeckel, 1887; **Octopyle euryzona* Haeckel, 1887; **Octopyle hexastyle* Haeckel, 1887; **Octopyle obtecta* Haeckel, 1887; **Octopyle octostyle* Haeckel, 1887; *Octopyle sexangulata* Haeckel, 1887; **Octopyle staurostyle* Haeckel, 1887; *Octopyle stenozona* Haeckel, 1887; **Octopyle tetraptera* Haeckel, 1887 and **Octopyle tetrastyle* Haeckel, 1887.

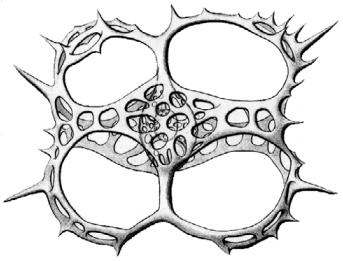
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TETRAPYLE***

SYN.
FREQUENT

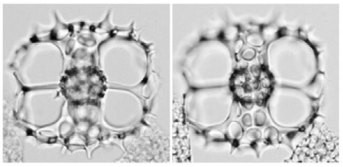
Type



50 µm

Octopyle stenozona
Haeckel, 1887: 652, pl. 9, fig. 11

Support



50 µm

Octopyle stenozona Haeckel
Challenger Station 271, Suzuki's collection

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Pylonura***
Haeckel, 1887: 655

SUBGENUS ***Pylonium* (*Pylonura*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is a synonym in open nomenclature.

Original series: **Pylonium octacanthum* Haeckel, 1887; *Pylonium quadricorne* Haeckel, 1887 and **Pylonium stenozonium* Haeckel, 1887.

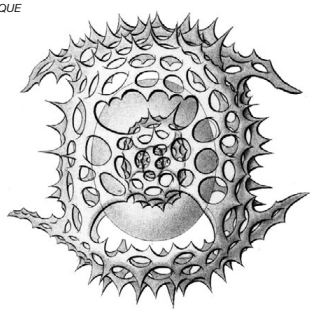
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TETRAPYLE***

SYN.
UNIQUE

Type



50 µm

Pylonium quadricorne
Haeckel, 1887: 655, pl. 9, fig. 14

Support



50 µm

Pylonium sp.
Bjørklund, 1973: pl. 1, fig. q

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Schizomma***
Ehrenberg, 1861b: 833

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Schizomma quadrilobum* Ehrenberg, 1862b.

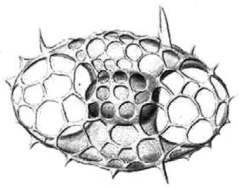
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Haeckel 1862: 436

SEE ***TETRAPYLE***

SYN.
FREQUENT

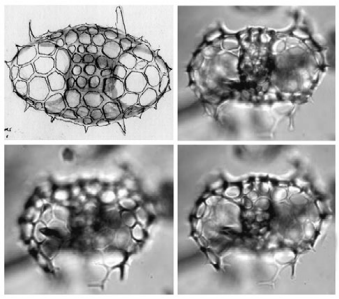
Type



50 µm

Schizomma quadrilobum
Ehrenberg, 1861a: 769 (n.n.); Ehrenberg, 1862b: 301; Ehrenberg, 1873b: 298-299, pl. 10, fig. 12

Type



50 µm

Schizomma quadrilobum Ehrenberg
Suzuki *et al.* 2009a: pl. 70, figs 7a-d [lectotype herein]

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Trizonium***
Haeckel, 1887: 637

NOMINOTYPE ***Trizonium* (*Trizonium*)**

Remarks: See comments under *TRIZONARIS*.

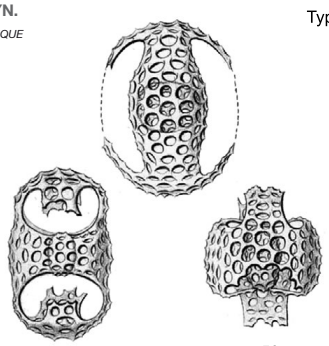
FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 154)

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 34

SEE ***TETRAPYLE***

SYN.
UNIQUE

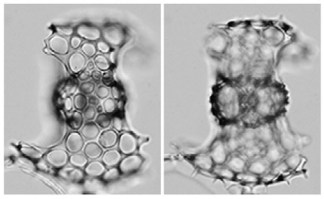
Type



50 µm

Trizonium tricinctum
Haeckel, 1887: 637, pl. 9, figs 4a, 4b

Support



50 µm

Trizonium tricinctum Haeckel
Topotypic material (Challenger Station 266), Suzuki's collection

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Trizonaris***
Haeckel, 1887: 637

SUBGENUS ***Trizonium* (*Trizonaris*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887). The type species is a junior subjective synonym of *Tetrapyle octacantha* Müller 1859b.

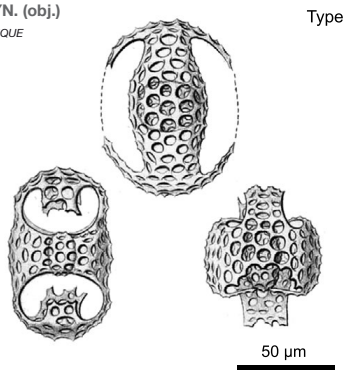
Original series: **Trizonium constrictum* Haeckel, 1887; **Trizonium hexagonium* Haeckel, 1887; **Trizonium octogonium* Haeckel, 1887 and *Trizonium tricinctum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 154)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TRIZONIUM***

SYN. (obj.) Type
UNIQUE



Trizonium tricinctum
Haeckel, 1887: 637, pl. 9, figs 4a, 4b

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Zoniscus***
Haeckel, 1887: 686

NOMINOTYPE ***Zoniscus* (*Zoniscus*)**

Remarks: Type species only illustrated by Haeckel (1887).

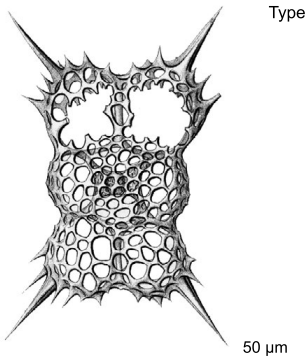
Original series: **Zoniscus hexathalamus* Haeckel, 1887; *Zoniscus hexatholius* Haeckel, 1887; **Zoniscus octacanthus* Haeckel, 1887; **Zoniscus rectangulus* Haeckel, 1887 and *Zoniscus tetracanthus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized herein

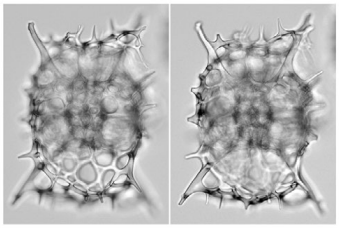
SEE ***TETRAPYLE***

SYN. Type
UNIQUE



Zoniscus tetracanthus
Haeckel, 1887: 687, pl. 50, fig. 10

Support



Zoniscus tetracanthus Haeckel
Zhang's collection (South China Sea)

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Zonarium***
Haeckel, 1887: 684

SUBGENUS ***Zoniscus* (*Zonarium*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

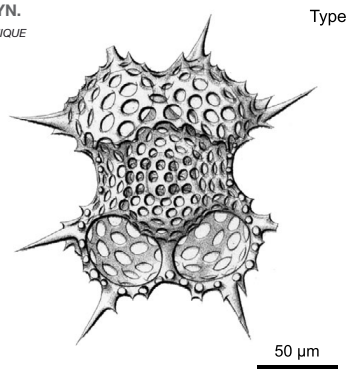
Original series: *Zonarium octangulum* Haeckel, 1887; **Zonarium quadrigatum* Haeckel, 1887; **Zonarium quadrispinum* Haeckel, 1887 and **Zonarium tetratholium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TETRAPYLE***

SYN. Type
UNIQUE



Zonarium octangulum
Haeckel, 1887: 685, pl. 50, fig. 9

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M4) ZONARIIDAE

GENUS ***Zonidium***
Haeckel, 1887: 687

SUBGENUS ***Zoniscus* (*Zonidium*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

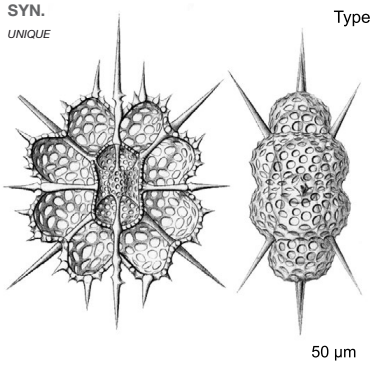
Original series: **Zonidium octostylium* Haeckel, 1887 and *Zonidium octotholium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D98)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TETRAPYLE***

SYN. Type
UNIQUE



Zonidium octotholium
Haeckel, 1887: 688, pl. 50, figs 12, 12a

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M4) ? ZONARIIDAE

GENUS ***Monozonium***
Haeckel, 1887: 633

NOMINOTYPE ***Monozonium* (*Monozonium*)**

Remarks: See comments under *MONOZONARIS*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

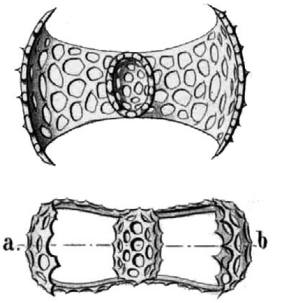
SEE ***? TETRAPYLE***

N.D. Type

UNFIGURED SPECIES

Monozonium primordiale
Haeckel, 1887: 633, unfigured

Support



Monozonium alatum
Haeckel, 1887: 634, pl. 9, figs 1, 1a

S - LINEAGE IV (M4) ? ZONARIIDAE

GENUS ***Monozonaris***
Haeckel, 1887: 633

SUBGENUS ***Monozonium* (*Monozonaris*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: *Monozonium alatum* Haeckel, 1887 and **Monozonium primordiale* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

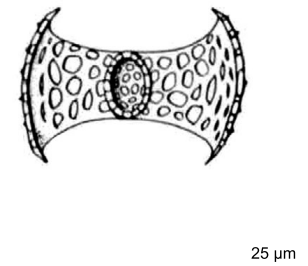
SEE ***MONOZONIUM***

SYN. (obj.); N.D. Type

UNFIGURED SPECIES

Monozonium primordiale
Haeckel, 1887: 633, unfigured

Support



Monozonium alatum Haeckel
Cachon & Cachon 1985: 290, fig. 44d

S - LINEAGE IV (M4) ? ZONARIIDAE

GENUS ***Spongophortis***
Haeckel, 1882: 464

NOMINOTYPE ***Spongophortis* (*Spongophortis*)**

Remarks: See comments under *STYPOPHORTICIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

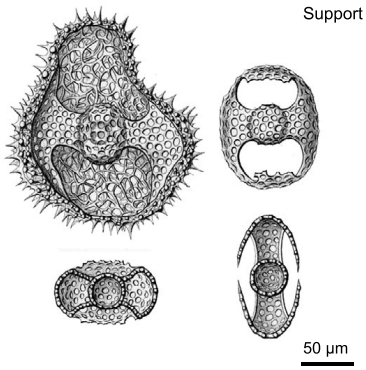
SEE ***? TETRAPYLE***

N.D. Type

UNFIGURED SPECIES

Spongophortis spongiosa
Haeckel, 1887: 711, unfigured

Support



Spongophortis larnacilla
Haeckel, 1887: 711, pl. 49, figs 11a-1d

S - LINEAGE IV (M4) ? ZONARIIDAE

GENUS ***Stypophorticium***
Haeckel, 1887: 711

SUBGENUS ***Spongophortis* (*Stypophorticium*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Spongophortis spongiosa* Haeckel, 1887.

FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***SPONGOPHORTIS***

SYN. (obj.); N.D. Type

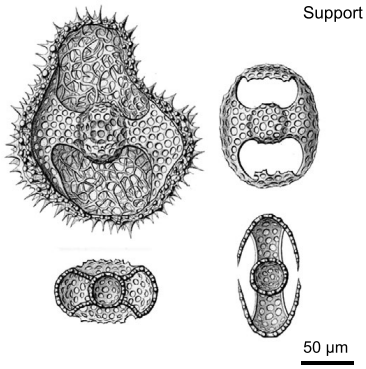
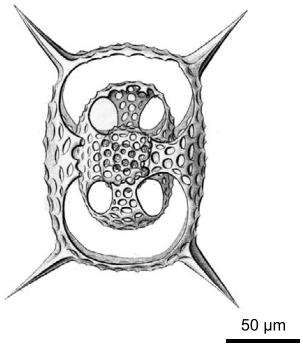
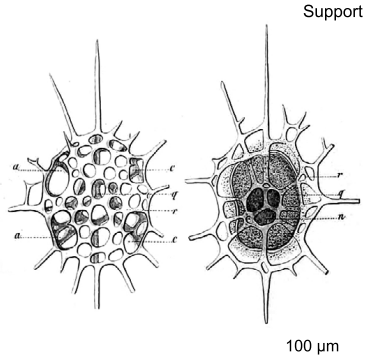
UNFIGURED SPECIES

Spongophortis spongiosa
Haeckel, 1887: 711, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Stylophorticium*** INCORRECT SUBSEQUENT SPELLING Campbell, 1954: D100 **Remarks**: An incorrect subsequent spelling for *STYPOPHORTICIUM*, which is unjustified according to the provisions of ICZN art. 33.3. FIXATION MONOTYPY; ICZN, ART. 67.6 STATUS INVALID NAME designated herein SEE ***STYPOPHORTICIUM***	**INV.** Type UNFIGURED SPECIES *Spongophortis spongiosa* Haeckel, 1887: 711, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Spongophorticium*** Haeckel, 1887: 711 SUBGENUS ***Spongophortis* (*Spongophorticium*)** **Remarks**: Type species never figured; only two species originally included at the time of the generic definition. **Original series**: *Spongophortis larnacilla* Haeckel, 1887 and **Spongophortis* radiosa Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100) STATUS NOMEN DUBIUM name-bearing type non-existent; related by inference SEE ***? TETRAPYLE***	**N.D.** Type UNFIGURED SPECIES *Spongophortis radiosa* Haeckel, 1887: 711, unfigured	Support  *Spongophortis larnacilla* Haeckel, 1887: 711, pl. 49, figs 11a-1d
S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Tetrapylonium*** Haeckel, 1882: 463 **Remarks**: Type species never figured. The support image is the closest species among those originally included in this genus. **Original series**: **Tetrapylonium armatum* Haeckel, 1887; **Tetrapylonium octacanthum* Haeckel, 1887; **Tetrapylonium pantellipticum* Haeckel, 1887; *Tetrapylonium quadrangulare* Haeckel, 1887 and **Tetrapylonium reniforme* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS NOMEN DUBIUM name-bearing type non-existent; related by inference SEE ***? TETRAPYLE***	**N.D.** Type UNFIGURED SPECIES *Tetrapylonium pantellipticum* Haeckel, 1887: 658, unfigured	Support  *Tetrapylonium quadrangulare* Haeckel, 1887: 658, pl. 9, fig. 15
S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Trizonitis*** Haeckel, 1887: 638 SUBGENUS ***Trizonium* (*Trizonitis*)** **Remarks**: No type species was designated. Campbell (1954: D96) considers *TRIZONITIS* to be the nominate subgenus of *ECHINOSPHAERA* Hertwig, 1879. However, this seems inappropriate since the type species, *Echinosphaera datura* Hertwig, 1879, is only partially questionably among those species originally assigned to *TRIZONITIS*. **Original series**: **Trizonium amphibelonium* Haeckel, 1887; **Trizonium dodecabelos* Haeckel, 1887; **Trizonium hexabelonium* Haeckel, 1887; **Trizonium octobelonium* Haeckel, 1887; **Trizonium pleurobelonium* Haeckel, 1887 and **Trizonium staurobelonium* Haeckel, 1887. FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN) STATUS NOMEN DUBIUM name-bearing type non-existent; related by inference SEE ***? TETRAPYLE***	**N.D.** Type UNFIGURED SPECIES *Trizonium amphibelonium* Haeckel, 1887: 638, unfigured	Support  *Echinosphaera datura* Hertwig, 1879: 51, pl. 4, figs 8, 8a

	Type	Support
S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Amphipyle*** Haeckel, 1882: 463 NOMINOTYPE ***Amphipyle (Amphipyle)*** **Remarks**: See comments under *AMPHIPYLISSA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Amphipyle aceros* Haeckel, 1887: 641, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Amphipylissa*** Haeckel, 1887: 640 SUBGENUS ***Amphipyle (Amphipylissa)*** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Amphipyle aceros* Haeckel, 1887; **Amphipyle platyptera* Haeckel, 1887 and **Amphipyle stenoptera* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***AMPHIPYLE***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Amphipyle aceros* Haeckel, 1887: 641, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Amphipylonium*** Haeckel, 1882: 463 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Amphipylonium octoceros* Haeckel, 1887; **Amphipylonium semilunare* Haeckel, 1887; **Amphipylonium spinosissimum* Haeckel, 1887 and **Amphipylonium tetraceros* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D97) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Amphipylonium semilunare* Haeckel, 1887: 656, unfigured	NO IMAGE PUBLISHED no image available
S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Caryolithis*** Ehrenberg, 1847: 43 **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. Cited by Haeckel (1887: 314) under the synonymy of *Prunulum crenatum* Haeckel. **Original series**: **Caryolithis crenata* Ehrenberg, 1847. FIXATION MONOTYPY STATUS NOMEN NUDUM designated herein; name-bearing type non-existent	**N.N.** UNFIGURED SPECIES *Caryolithis crenata* Ehrenberg, 1847: 43, unfigured (n.n.)	NO IMAGE PUBLISHED no image available

	Type	Support
S - Lineage IV (M4) ? ZONARIIDAE GENUS ***Dizonium*** Haeckel, 1887: 634 NOMINOTYPE ***Dizonium* (*Dizonium*)** **Remarks**: See comments under *DIZONARIS*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Dizonium circulare* Haeckel, 1887: 635, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (M4) ? ZONARIIDAE GENUS ***Dizonaris*** Haeckel, 1887: 635 SUBGENUS ***Dizonium* (*Dizonaris*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Dizonium circulare* Haeckel, 1887; **Dizonium ellipticum* Haeckel, 1887 and **Dizonium transversum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***DIZONIUM***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Dizonium circulare* Haeckel, 1887: 635, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (M4) ? ZONARIIDAE GENUS ***Monozonitis*** Haeckel, 1887: 634 SUBGENUS ***Monozonium* (*Monozonitis*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Monozonium amphistylum* Haeckel, 1887; **Monozonium pleurostylum* Haeckel, 1887 and **Monozonium staurostylum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Monozonium pleurostylum* Haeckel, 1887: 634, unfigured	NO IMAGE PUBLISHED no image available
S - Lineage IV (M4) ? ZONARIIDAE GENUS ***Octopyle*** Haeckel, 1882: 463 NOMINOTYPE ***Octopyle* (*Octopyle*)** **Remarks**: See comments under *OCTOPYLISSA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Octopyle ovulina* Haeckel, 1887: 650, unfigured	NO IMAGE PUBLISHED no image available

S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Octopylissa*** Haeckel, 1887: 650 SUBGENUS ***Octopyle* (*Octopylissa*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Octopyle ovulina* Haeckel, 1887; **Octopyle quadrata* Haeckel, 1887; **Octopyle subglobosa* Haeckel, 1887 and **Octopyle transversaria* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***OCTOPYLE***	**SYN. (obj.); N.D.**	Type	Support
	UNFIGURED SPECIES		NO IMAGE PUBLISHED
	Octopyle ovulina Haeckel, 1887: 650, unfigured		no image available
S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Pylonium*** Haeckel, 1882: 463 NOMINOTYPE ***Pylonium* (*Pylonium*)** **Remarks**: See comments under *PYLONISSA*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.**	Type	Support
	UNFIGURED SPECIES		NO IMAGE PUBLISHED
	Pylonium circozonium Haeckel, 1887: 654, unfigured		no image available
S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Pylonissa*** Haeckel, 1887: 654 SUBGENUS ***Pylonium* (*Pylonissa*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Pylonium circozonium* Haeckel, 1887; **Pylonium hexazonium* Haeckel, 1887 and **Pylonium nephropylium* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***PYLONIUM***	**SYN. (obj.); N.D.**	Type	Support
	UNFIGURED SPECIES		NO IMAGE PUBLISHED
	Pylonium circozonium Haeckel, 1887: 654, unfigured		no image available
S - LINEAGE IV (M4) ? ZONARIIDAE GENUS ***Streblonia*** Haeckel, 1887: 704 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Streblonia bulimina* Haeckel, 1887; **Streblonia globigerina* Haeckel, 1887; **Streblonia planorbulina* Haeckel, 1887; **Streblonia polymorphina* Haeckel, 1887; **Streblonia pulvinulina* Haeckel, 1887; **Streblonia rosalina* Haeckel, 1887 and **Streblonia uvigerina* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.**	Type	Support
	UNFIGURED SPECIES		NO IMAGE PUBLISHED
	Streblonia globigerina Haeckel, 1887: 704, unfigured		no image available

S - LINEAGE UNKNOWN — PATULIBRACCHIIDAE
ASSIGNED IN Dumitrica 2019: 48

GENUS **Cryptomanicula**
Dumitrica, 2019: 48

Diagnosis: Shell thin, lens-shaped, circular and spongy, without arms. Initial skeleton of *Trimanicula*-type included in the centre of shell, and the three primary rays not prolonged beyond periphery of shell. Inner shell with many secondary and tertiary rays, none of them extended outside periphery of shell.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Dumitrica (2019).

Original series: *Cryptomanicula absconsa* Dumitrica, 2019.

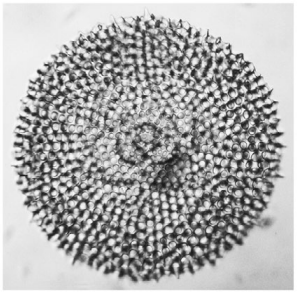
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY PALEOCENE***

VALID
UNIQUE

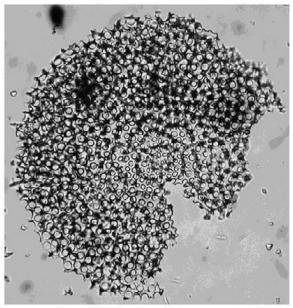
Type



50 µm

Cryptomanicula absconsa
Dumitrica, 2019: 51, fig. 5a

Support



50 µm

Cryptomanicula absconsa
Dumitrica, 2019: 51, fig. 5c

S - LINEAGE UNKNOWN — ? PATULIBRACCHIIDAE
ASSIGNED HERE

GENUS **Heterosestrum**
Clark & Campbell, 1945: 21

Diagnosis: Shell as sexangular to rounded flat disk with six primary equatorial spines; two to four broad concentric rings and double medullary shells.

Remarks: A single report of the type species after the first illustration.

Original series: *Heterosestrum sexispinatum rotundum* Clark & Campbell, 1945 and *Stylodictya* (*Stylodictyon*) *sexispinata* Clark & Campbell, 1942.

FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY MIDDLE EOCENE–EARLY OLIGOCENE***

VALID
VERY RARE

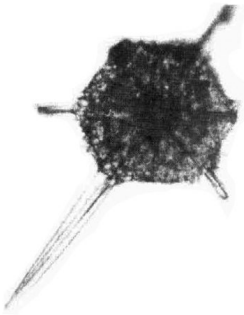
Type



25 µm

Stylodictya (*Stylodictyon*) *sexispinata*
Clark & Campbell, 1942: 45, pl. 3, fig. 7

Support



25 µm

Heterosestrum sexispinatum (Clark & Campbell)
Kozlova 1999: 174, pl. 17, fig. 13

S - LINEAGE UNKNOWN — ? PATULIBRACCHIIDAE

GENUS **Hexacyclia**
Tochilina, 1970: 172

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Hexacyclia formosa* Tochilina, 1970.

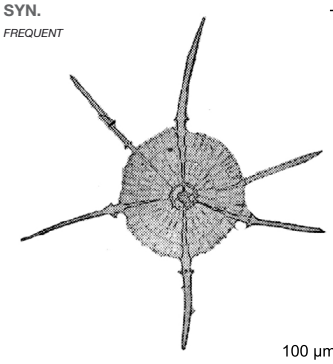
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1979: 103

SEE ***HETEROSESTRUM***

SYN.
FREQUENT

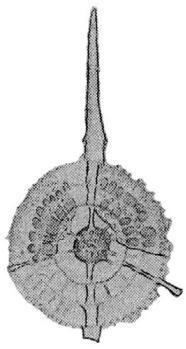
Type



100 µm

Hexacyclia formosa
Tochilina, 1970: 175, fig. 2.1

Support



50 µm

Hexacyclia formosa
Tochilina, 1970: 175, fig. 3.7

S - LINEAGE UNKNOWN — PATULIBRACCHIIDAE
ASSIGNED IN De Wever *et al.* 2001: 143

GENUS **Trimanicula**
Dumitrica, 1991: 46

Diagnosis: Skeleton flat, with three-rays, surrounded by a latticed cortical shell around along a central spine. Microsphere five-gated, eccentric and heteropolar. Arms short and cylindrical.

Remarks: Only two species originally included at the time of the generic definition (both illustrated, but figured just once).

Original series: *Trimanicula centrospina* Dumitrica, 1991 and *Trimanicula penultima* Dumitrica, 1991.

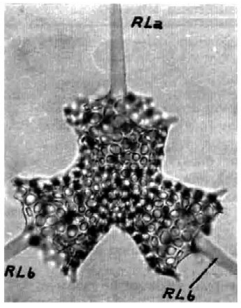
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY PALEOCENE–EARLY PLIOCENE***

VALID
UNIQUE

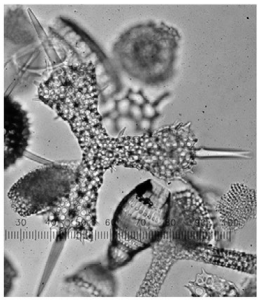
Type



50 µm

Trimanicula centrospina
Dumitrica, 1991: 52, pl. 7, fig. 8

Support



200 µm

Trimanicula centrospina Dumitrica
Barbados, Late Eocene, Aita's collection

S - Lineage unknown — PSEUDOAULOPHACIDAE

assigned in De Wever *et al.* 2001: 146

genus **Pentapylonium**
Dumitrica, 1991: 37

Diagnosis: Spherical or lenticular Cenozoic radiolarians with whole skeleton growth according to the pseudoaulophacid-type. Shell globular with nine primary radial spines originating in a five-gated microsphere and formed of systems of three complex girdles of which the second is a triangular bipyramid and the third a hexagon whose corners represent cupolas lying in the principal plane of symmetry.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Pentapylonium implicatum* Dumitrica, 1991.

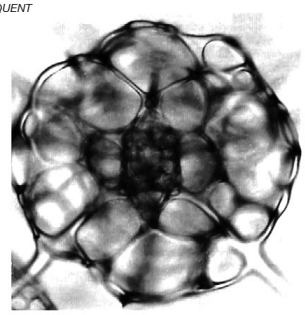
fixation MONOTYPY

status **VALID**

age **Early Early Miocene–Early Pliocene**

VALID
FREQUENT

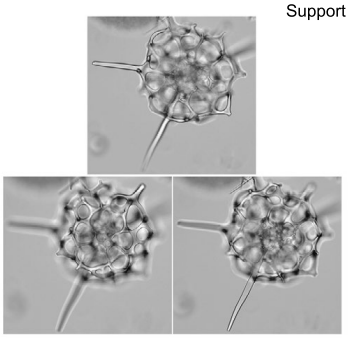
Type



50 µm

Pentapylonium implicatum
Dumitrica, 1991: 37, pl. 5, fig. 3

Support



200 µm

Pentapylonium implicatum Dumitrica
Zhang's collection (South China Sea)

S - Lineage unknown — SUTTONIIDAE

assigned in Dumitrica 2019: 41

genus **Homunculodiscus**
Dumitrica, 2019: 41

Diagnosis: Flat discoid shell with eccentric microsphere and initial diploconchal structure, without primary rays.

Remarks: Type species only illustrated by Dumitrica (2019); the support image is one of those species originally included into this genus.

Original series: *Homunculodiscus cauleti* Dumitrica, 2019; *Homunculodiscus nascens* Dumitrica, 2019; *Homunculodiscus tribullatus* Dumitrica, 2019 and *Stylodictya tainemplekta* Caulet, 1991.

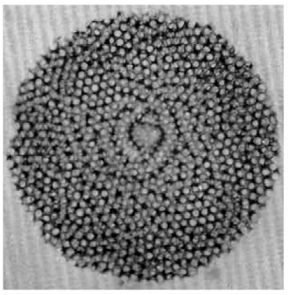
fixation ORIGINAL DESIGNATION

status **VALID**

age **Early Paleocene–Early Oligocene**

VALID
UNIQUE

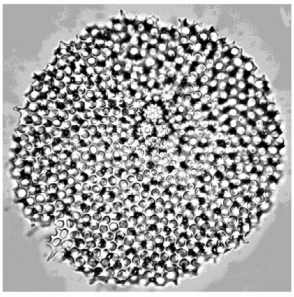
Type



50 µm

Stylodictya tainemplekta
Caulet, 1991: 533, pl. 1, fig. 8

Support



50 µm

Homunculodiscus tribulatus
Dumitrica, 2019: 41, fig. 3a

S - Lineage unknown — SUTTONIIDAE

assigned in Dumitrica 2019: 47

genus **Parasuttonium**
Dumitrica, 2019: 47

Diagnosis: Test flat, three-armed, consisting of two parallel latticed plates with circular pores of rather regular size and radial or irregular disposition. Central structure consisting of a spherical and slightly eccentric latticed microsphere with three primary rays. Rays prolonged outside to form three latticed arms around them. Distal part of primary rays simple, not forked. Microsphere rather large, surrounded on the antapical side by a bilobate deuteroconcha.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Dumitrica (2019).

Original series: *Parasuttonium taiwanense* Dumitrica, 2019.

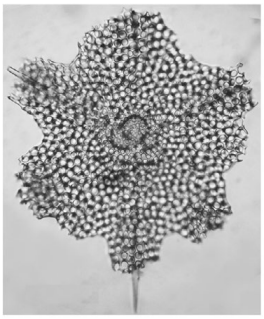
fixation MONOTYPY

status **VALID**

age **Holocene**

VALID
UNIQUE

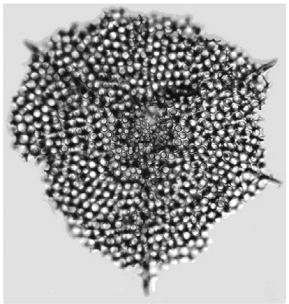
Type



50 µm

Parasuttonium taiwanense
Dumitrica, 2019: 47, fig. 6a

Support



50 µm

Parasuttonium taiwanense
Dumitrica, 2019: 47, fig. 6b

S - Lineage unknown — SUTTONIIDAE

assigned in Dumitrica 1983a: 41

genus **Suttonium**
Schaaf, 1976: 790

Diagnosis: Heteropolar, three segmented with a microsphere with three rays, a crescent shaped diploconcha and three-armed cortical shell around rays.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Suttonium praedicator* Schaaf, 1976.

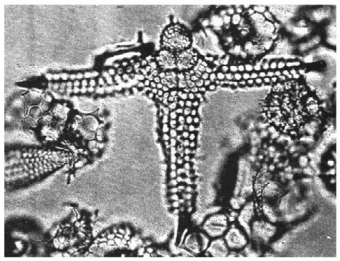
fixation MONOTYPY

status **VALID**

age **Early Eocene–Late Pleistocene**

VALID
FREQUENT

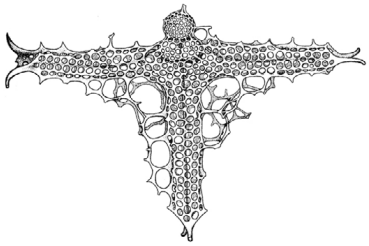
Type



100 µm

Suttonium praedicator
Schaaf, 1976: 790, pl. 1, fig. 1

Support



100 µm

Suttonium praedicator Schaaf
Dumitrica 1983a: 42, pl. 1, fig. 1

S - LINEAGE UNKNOWN — ENTAPIIDAE

ASSIGNED BY DUMITRICA IN De Wever *et al.* 2001: 118

GENUS **Entapium**
Sanfilippo & Riedel, 1973: 491

Diagnosis: One cortical latticed spherical shell and one pyriform internal shell; three to six three-bladed radial beams. In some species these radial beams are externally extended as three-bladed radial spines.

Remarks: Only two species originally included at the time of the generic definition (both rarely illustrated).

Original series: *Entapium chaenapium* Sanfilippo & Riedel, 1973 and *Entapium regulare* Sanfilippo & Riedel, 1973.

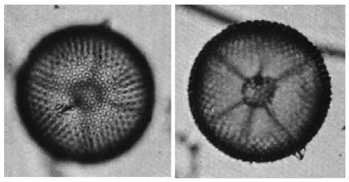
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***MIDDLE PALEOCENE–EARLY MIDDLE EOCENE***

VALID
RARE

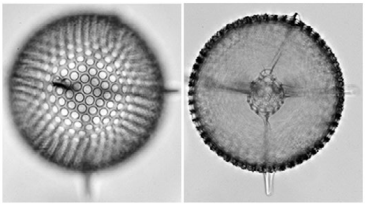
Type



100 µm

Entapium regulare
Sanfilippo & Riedel, 1973: 492, pl. 24, figs 1, 2

Support



50 µm

Entapium regulare Sanfilippo & Riedel
Suzuki's collection (Late Paleocene-Early Eocene, Pacific Ocean)

S - LINEAGE UNKNOWN — STYLATRACTIDAE

ASSIGNED IN Matsuzaki *et al.* 2015: 10

GENUS **Druppatractylis**
Haeckel, 1887: 325

SUBGENUS ***Druppatractus* (*Druppatractylis*)**

Diagnosis: Skeleton with three latticed ovoidal shells and two three-sided polar spines. Polar spines connected to inner cortical shell by three-sided beams. Numerous radial beams between outer and inner cortical shells extended in radial spines.

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: **Druppatractus accipenser* Haeckel, 1887 and *Druppatractus ostracion* Haeckel, 1887.

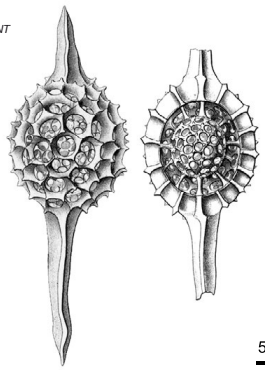
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D71)

STATUS **VALID**

AGE ***EARLY PALEOCENE–LIVING***

VALID
FREQUENT

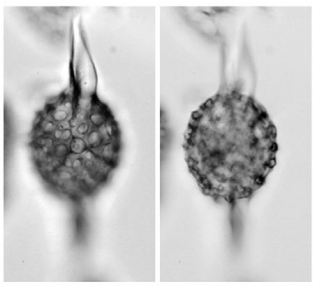
Type



50 µm

Druppatractus ostracion
Haeckel, 1887: 326, pl. 16, figs 8, 9

Support



100 µm

Druppatractylis ostracion (Haeckel)
Topotypic material (Challenger Station 265), Suzuki's collection

---

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS **Lithatractus**
Haeckel, 1887: 319

NOMINOTYPE ***Lithatractus* (*Lithatractus*)**

Remarks: See comments under *LITHATRACTARA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72)

STATUS JUNIOR SYNONYM
synonymized by Kozur & Mostler 1979: 40

SEE ***DRUPPATRACTYLIS***

SYN.
RARE

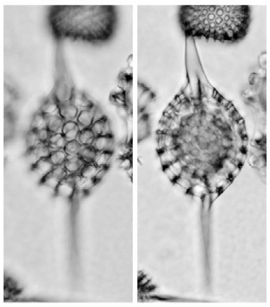
Type



50 µm

Lithatractus fragilis
Haeckel, 1887: 319, pl. 16, fig. 3

Support



100 µm

Lithatractus fragilis Haeckel
Paratypic material (Challenger Station 268), Suzuki's collection

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S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS **Lithatractara**
Haeckel, 1887: 319

SUBGENUS ***Lithatractus* (*Lithatractara*)**

Remarks: Illustration available only for the type species (rarely reported).

Original series: **Lithatractus convallaria* Haeckel, 1887; *Lithatractus fragilis* Haeckel, 1887; **Lithatractus hexagonalis* Haeckel, 1887; **Lithatractus leptostylus* Haeckel, 1887 and **Lithatractus pachystylus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***LITHATRACTUS***

SYN. (obj.)
RARE

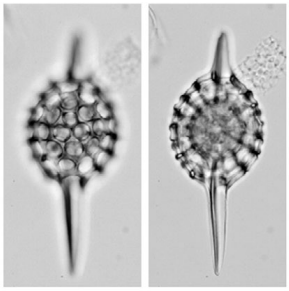
Type



50 µm

Lithatractus fragilis
Haeckel, 1887: 319, pl. 16, fig. 3

Support



100 µm

Lithatractus fragilis Haeckel
Paratypic material (Challenger Station 270), Suzuki's collection

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Stylatractus***
Haeckel, 1887: 328

NOMINOTYPE ***Stylatractus* (*Stylatractus*)**

Remarks: See comments under *STYLATRACTARA*.

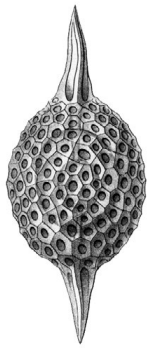
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D73)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 570

SEE ***DRUPPATRACTYLIS***

SYN.
RARE

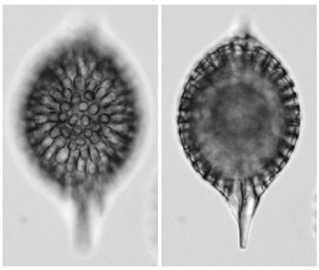
Type



50 µm

Stylatractus neptunus
Haeckel, 1887: 328, pl. 17, fig. 6

Support



50 µm

Stylatractus neptunus Haeckel
Topotypic material (Challenger Station 268), Suzuki's collection

---

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Stylatractara***
Haeckel, 1887: 328

SUBGENUS ***Stylatractus* (*Stylatractara*)**

Remarks: Only the type species clearly belongs to this genus; rarely reported.

Original series: *Stylatractus compactus* Haeckel, 1887; **Stylatractus fusiformis* Haeckel, 1887 and *Stylatractus neptunus* Haeckel, 1887.

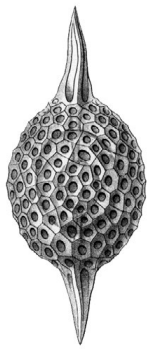
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D73)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***DRUPPATRACTYLIS***

SYN. (obj.)
RARE

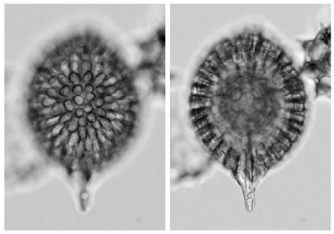
Type



50 µm

Stylatractus neptunus
Haeckel, 1887: 328, pl. 17, fig. 6

Support



100 µm

Stylatractus neptunus Haeckel
Topotypic material (Challenger Station 268), Suzuki's collection

---

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Stylatractylis***
Haeckel, 1887: 329

SUBGENUS ***Stylatractus* (*Stylatractylis*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); only the type species belongs to this genus. Two species originally included at the time of the generic definition.

Original series: *Stylatractus giganteus* Haeckel, 1887 and *Stylosphaera carduus* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D73)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DRUPPATRACTYLIS***

SYN.
UNIQUE

Type



100 µm

Stylatractus giganteus
Haeckel, 1887: 329, pl. 17, fig. 1

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — STYLATRACTIDAE
ASSIGNED HEREIN

GENUS ***Ellipsostylus***
Haeckel, 1887: 299

NOMINOTYPE ***Ellipsostylus* (*Ellipsostylus*)**

Diagnosis: Skeleton with a single latticed cortical shell, spherical to ovoid. Two three-sided polar spines of similar (or not) length. Internal part of the shell probably (?) empty.

Remarks: See comments under *ELLIPSOSTYLETTA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68)

STATUS **VALID**

AGE ***[QUATERNARY]***

VALID
UNIQUE

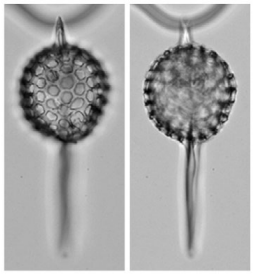
Type



50 µm

Ellipsostylus psittacus
Haeckel, 1887: 300, pl. 13, fig. 6

Support



100 µm

Ellipsostylus psittacus
Topotypic material (Challenger Station 265), Suzuki's collection

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Ellipsostyletta***
Haeckel, 1887: 299

SUBGENUS ***Ellipsostylus* (*Ellipsostyletta*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Ellipsostylus aquila* Haeckel, 1887; **Ellipsostylus avicularis* Haeckel, 1887; *Ellipsostylus ciconia* Haeckel, 1887; *Ellipsostylus columba* Haeckel, 1887; **Ellipsostylus ornithoides* Haeckel, 1887 and *Ellipsostylus psittacus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ELLIPSOSTYLUS***

SYN. (obj.)
UNIQUE

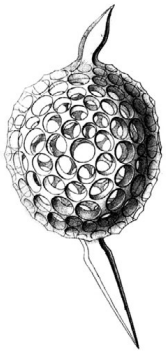
Type



50 µm

Ellipsostylus psittacus
Haeckel, 1887: 300, pl. 13, fig. 6

Support



50 µm

Ellipsostylus aquila
Haeckel, 1887: 300, pl. 13, fig. 1

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Ellipsostylissa***
Haeckel, 1887: 301

SUBGENUS ***Ellipsostylus* (*Ellipsostylissa*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym. Heterogeneous group of species originally included.

Original series: **Ellipsostylus gallinula* Haeckel, 1887; *Ellipsostylus hirundo* Haeckel, 1887 and *Stylosphaera megadictya* Ehrenberg, 1873a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D69)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ELLIPSOSTYLUS***

SYN.
UNIQUE

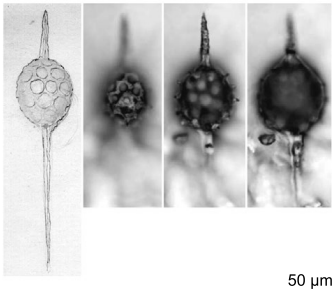
Type



100 µm

Ellipsostylus hirundo
Haeckel, 1887: 301, pl. 13, fig. 2

Type



50 µm

Stylosphaera megadictya Ehrenberg
Suzuki *et al.* 2009a: pl. 53, figs 3a-d [lectotype herein]

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Sphaerostylomma***
Haeckel, 1887: 140

SUBGENUS ***Sphaerostylus* (*Sphaerostylomma*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Sphaerostylus ophidium* Haeckel, 1887.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ELLIPSOSTYLUS***

SYN.
UNIQUE

Type



100 µm

Sphaerostylus ophidium
Haeckel, 1887: 140, pl. 16, fig. 14

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — STYLATRACTIDAE
ASSIGNED IN Deflandre 1953: 418

GENUS ***Lithapium***
Haeckel, 1887: 303

Diagnosis: Skeleton with three latticed ovoidal shells and one significant polar spine. Another short to relatively shorter polar spine may occur. This genus includes those forms with one of the polar spines poorly developed; otherwise, it is similar to *STYLATRACTONA* if inner structures are missing.

Remarks: A single report of the type species after the first illustration.

Original series: *Lithapium halicapsa* Haeckel, 1887; *Lithapium monocyrtis* Haeckel, 1887 and *Lithapium pyriforme* Haeckel, 1887.

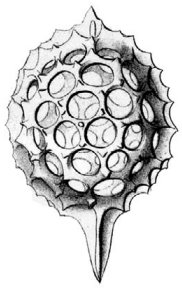
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D69)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LIVING***

VALID
VERY RARE

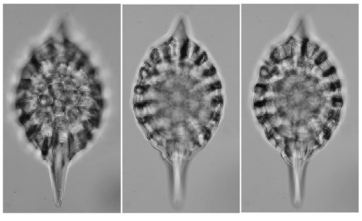
Type



50 µm

Lithapium pyriforme
Haeckel, 1887: 303, pl. 14, fig. 9

Support



50 µm

Lithapium pyriforme Haeckel
Topotypic material (Challenger Station 266), Suzuki's collection

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS **Xiphatractus**
Haeckel, 1887: 331

NOMINOTYPE ***Xiphatractus* (*Xiphatractus*)**

Remarks: See comments under *XIPHATRACTARA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D73)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 570

SEE ***LITHAPIUM***

SYN.
UNIQUE

Type



50 µm

Xiphatractus armadillo
Haeckel, 1887: 332, pl. 17, fig. 11

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS **Xiphatractara**
Haeckel, 1887: 331

SUBGENUS ***Xiphatractus* (*Xiphatractara*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: *Xiphatractus armadillo* Haeckel, 1887 and **Xiphatractus euphractus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D73)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***XIPHATRACTUS***

SYN. (obj.)
UNIQUE

Type



50 µm

Xiphatractus armadillo
Haeckel, 1887: 332, pl. 17, fig. 11

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS **Xiphatractium**
Haeckel, 1887: 334

SUBGENUS ***Xiphatractus* (*Xiphatractium*)**

Remarks: Only the type species clearly belongs to this genus (rarely reported); just two species originally included at the time of the generic definition.

Original series: *Stylosphaera radiosa* Ehrenberg, 1876 and *Xiphatractus glyptodon* Haeckel, 1887.

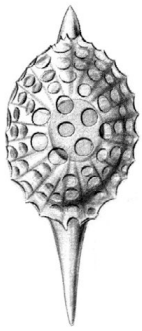
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 15)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***LITHAPIUM***

SYN.
RARE

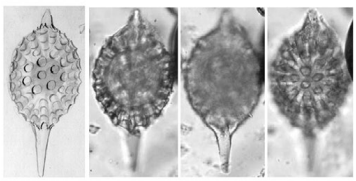
Type



50 µm

Stylosphaera radiosa
Ehrenberg, 1876: 84, pl. 24, fig. 5

Type



50 µm

Stylosphaera radiosa Ehrenberg
Ogane *et al.* 2009b: pl. 12, figs 3a-d [lectotype herein]

S - LINEAGE UNKNOWN — ? STYLATRACTIDAE

GENUS **Druppatractium**
Haeckel, 1887: 327

SUBGENUS ***Druppatractus* (*Druppatractium*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition. However, in the description of the type species Haeckel stated that it is similar to *Ellipsoxiphus atractus* Haeckel, 1887: 298, pl. 14, fig. 1; the latter is included as support image.

Original series: **Druppatractus diodon* Haeckel, 1887 and **Druppatractus pisciculus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D71)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? LITHAPIUM***

N.D.

Type

UNFIGURED SPECIES

Druppatractus diodon
Haeckel, 1887: 327, unfigured

Support



50 µm

Ellipsoxiphus atractus
Haeckel, 1887: 298, pl. 14, fig. 1

S - LINEAGE UNKNOWN — STYLATRACTIDAE
ASSIGNED HEREIN

GENUS ***Lithomespilus***
Haeckel, 1882: 450

Diagnosis: Skeleton with only one latticed spherical to ovoid cortical shell. One to a few polar spines on one polar side of the cortical shell and many several spines on the other polar side of the cortical shell.

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus. We cannot prove the consistency of this genus because there are no reports after Haeckel's description; in addition, the assigned age by Haeckel's is uncertain. Nonetheless, there are similar forms, but stratigraphically disconnected, having this characteristic arrangement of spines on one polar side of the cortical shell (i.e., *DRUPPATRACTYLIS*). We retain this genus, but obviously more studies are required.

Original series: *Lithomespilus flammabundus* Haeckel, 1887; *Lithomespilus flammeus* Haeckel, 1887; *Lithomespilus phloginus* Haeckel, 1887 and *Lithomespilus phlogoides* Haeckel, 1887.

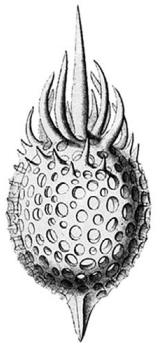
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D69)

STATUS **VALID**

AGE ***[QUATERNARY]***

VALID
UNIQUE

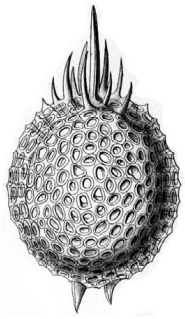
Type



50 µm

Lithomespilus phloginus
Haeckel, 1887: 302, pl. 14, fig. 16

Support



25 µm

Lithomespilus phlogoides
Haeckel, 1887: 302, pl. 14, fig. 17

S - LINEAGE UNKNOWN — STYLATRACTIDAE
ASSIGNED IN Matsuzaki *et al.* 2015: 10

GENUS ***Stylatractona***
Haeckel, 1887: 330

SUBGENUS ***Stylatractus* (*Stylatractona*)**

Diagnosis: Skeleton with three latticed shells and two three-sided polar spines. Innermost shell spherical. second and third shells spherical to subspherical. Shells connected in most species by numerous radial beams (eighteen radial beams including two polar radial beams). Radial spines directly connected with radial beams.

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition. This genus resembles *DRUPPATRACTYLIS*; but, the major difference lies in the connection between radial spines and radial beams

Original series: *Stylatractus sethoporus* Haeckel, 1887 and **Stylatractus variabilis* Haeckel, 1887.

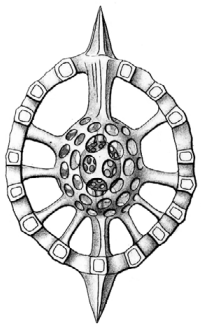
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D73)

STATUS **VALID**

AGE ***LATE EOCENE–LIVING***

VALID
UNIQUE

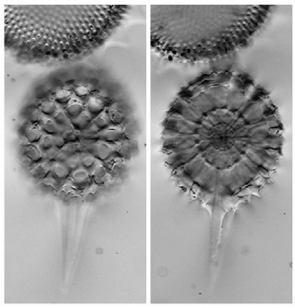
Type



50 µm

Stylatractus sethoporus
Haeckel, 1887: 330, pl. 17, fig. 2

Support



100 µm

Stylatractus sethoporus Haeckel
Barbados, Late Eocene, Suzuki's collection

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Amphisphaerissa***
Haeckel, 1887: 144

SUBGENUS ***Amphisphaera* (*Amphisphaerissa*)**

Remarks: Only the type species clearly belongs to this genus (rarely reported). The support image is a subsequent species assigned to this genus; just two species originally included at the time of the generic definition.

Original series: *Amphisphaera cronos* Haeckel, 1887 and *Amphisphaera pluto* Haeckel, 1887.

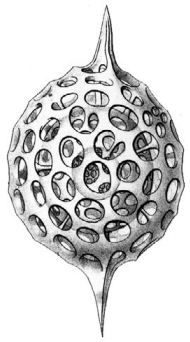
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 570

SEE ***STYLATRACTONA***

SYN.
RARE

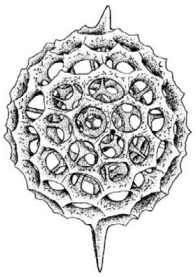
Type



50 µm

Amphisphaera cronos
Haeckel, 1887: 144, pl. 17, fig. 5

Support



50 µm

Xiphatractus spumeus
Dumitrica, 1973: 833, pl. 20, fig. 9

S - LINEAGE UNKNOWN — STYLATRACTIDAE
ASSIGNED IN Matsuzaki *et al.* 2015: 10

GENUS ***Stylosphaerantha***
Haeckel, 1887: 133

SUBGENUS ***Stylosphaera* (*Stylosphaerantha*)**

Diagnosis: Skeleton with two latticed shell and two long straight, very thin three-bladed polar spines. Internal structure unknown. The number of latticed shells in matured form is a key-criteria at the genus level.

Remarks: A single report of the type species after the first illustration.

Original series: *Haliomma dixyphos* Ehrenberg, 1844a; *Stylosphaera calliope* Haeckel, 1887; *Stylosphaera clio* Haeckel, 1887; **Stylosphaera musa* Haeckel, 1887; **Stylosphaera polyhymnia* Haeckel, 1887 and **Stylosphaera urania* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D53)

STATUS **VALID**

AGE ***LATE CAMPANIAN–HOLOCENE***

VALID
VERY RARE

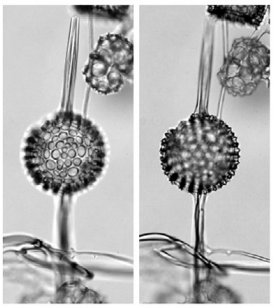
Type



50 µm

Stylosphaera calliope
Haeckel, 1887: 134, pl. 16, fig. 6

Support



100 µm

Stylosphaera calliope Haeckel
Paratypic material (Challenger Station 272), Suzuki's collection

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Praestylosphaera***
Empson-Morin, 1981: 261

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Sphaerostylus* (*Sphaerostylantha*) *hastatus* Campbell & Clark, 1944b.

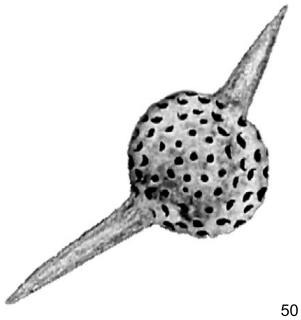
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by O'Dogherty *et al.* 2009a: 283

SEE ***STYLOSPHAERANTHA***

SYN.
FREQUENT

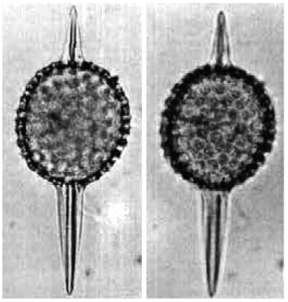
Type



50 µm

Sphaerostylus (*Sphaerostylantha*) *hastatus*
Campbell & Clark, 1944b: 5, pl. 1, fig. 6 [lectotype herein]

Support



50 µm

Praestylosphaera hastata (Campbell & Clark)
Empson-Morin 1981: 262, pl. 4, figs 5a, 5b

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Xiphosphaerantha***
Haeckel, 1887: 123

SUBGENUS ***Xiphosphaera* (*Xiphosphaerantha*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported. Although Haeckel (1887) did not show the internal structure of this species, Dumitrica (1985) described the internal structure of the genus *XIPHOSPHAERANTHA* by a probably closely related species: *Xiphosphaera venus* Haeckel, 1887 and incorrectly designated it as the type species. Later on, Suzuki *et al.* (2009b: 241) designated *Xiphosphaera pallas* Haeckel, 1887 as the type species. Both taxonomic acts are invalid according to the ICZN.

Original series: **Xiphosphaera euphrosyne* Haeckel, 1887; *Xiphosphaera gaea* Haeckel, 1887; **Xiphosphaera hebe* Haeckel, 1887; **Xiphosphaera luna* Haeckel, 1887; **Xiphosphaera maxima* Haeckel, 1887; **Xiphosphaera planeta* Haeckel, 1887 and *Xiphosphaera venus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 13)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***STYLOSPHAERANTHA***

SYN.?
FREQUENT

Type



100 µm

Xiphosphaera gaea
Haeckel, 1887: 123, pl. 14, fig. 5

Support



25 µm

Xiphosphaera gaea Haeckel
Takahashi 1991: 70, pl. 12, fig. 1

S - LINEAGE UNKNOWN — ? STYLATRACTIDAE

GENUS ***Amphistylus***
Haeckel, 1882: 452

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. However, in the description of the type species Haeckel stated that it is similar to *Stylosphaera clio* Haeckel, 1887: 134, pl. 16, fig. 7. We illustrate the later only as an indirect reference.

Original series: **Amphistylus clio* Haeckel, 1887; **Amphistylus glyptodon* Haeckel, 1887 and **Amphistylus hippocampus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *STYLOSPHAERANTHA***

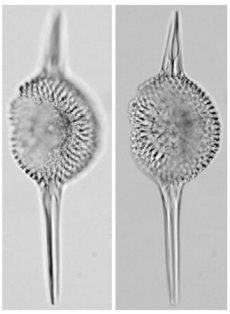
N.D.

Type

UNFIGURED SPECIES

Amphistylus clio
Haeckel, 1887: 145, unfigured

Support



100 µm

Stylosphaera clio Haeckel
Topotypic material (Challenger Station 270), Suzuki's collection

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S - LINEAGE UNKNOWN — STYLATRACTIDAE
ASSIGNED IN Matsuzaki *et al.* 2015: 10

GENUS ***Xiphatractylis***
Haeckel, 1887: 332

SUBGENUS ***Xiphatractus* (*Xiphatractylis*)**

Diagnosis: Skeleton with two latticed shells (a third is suspected), two polar spines and several radial spines obliquely directed. Polar spines of different lengths, with three-sided bases. Inner shell spherical. Cortical shell spherical to ovoid. Tens (or less) radial beams between shells.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Stylosphaera spinulosa* Ehrenberg, 1874b; *Stylosphaera sulcata* Ehrenberg, 1874b and **Xiphatractus dasypus* Haeckel, 1887.

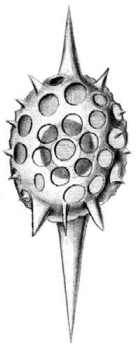
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D73)

STATUS **VALID**

AGE ***LATE MAASTRICHTIAN–EARLY MIDDLE MIOCENE***

VALID
FREQUENT

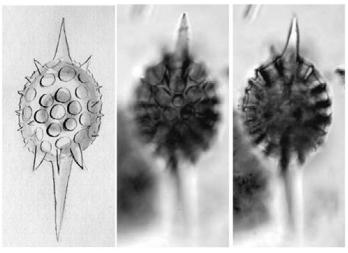
Type



50 µm

Stylosphaera spinulosa
Ehrenberg, 1874b: 259 (unfigured); Ehrenberg, 1876: 84, pl. 25, fig. 8

Support



50 µm

Stylosphaera spinulosa Ehrenberg
Ogane *et al.* 2009b: pl. 3, figs 6a, 6b [lectotype herein]

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Cromydruppocarpus***
Campbell & Clark, 1944a: 20

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Cromydruppocarpus esterae* Campbell & Clark, 1944a.

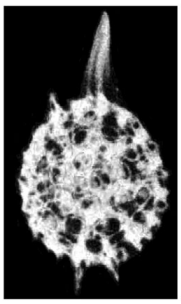
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***XIPHATRACTYLIS***

SYN.
FREQUENT

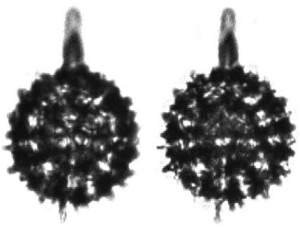
Type



50 µm

Cromydruppocarpus esterae
Campbell & Clark, 1944a: 20, pl. 2, fig. 28 [lectotype herein]

Support



50 µm

Cromydruppocarpus esterae Campbell & Clark
Chen *et al.* 2017: 135, pl. 35, figs 6, 7

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Heliosestarium***
Campbell & Clark, 1944b: 14

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Heliosestarium cretaceum* Campbell & Clark, 1944b.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***XIPHATRACTYLIS***

SYN.
UNIQUE

Type



50 µm

Heliosestarium cretaceum
Campbell & Clark, 1944b: 14, pl. 4, fig. 1

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Xiphosphaeromma***
Haeckel, 1887: 126

SUBGENUS ***Xiphosphaera* (*Xiphosphaeromma*)**

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: **Xiphosphaera astraea* Haeckel, 1887 and *Xiphosphaera vesta* Haeckel, 1887.

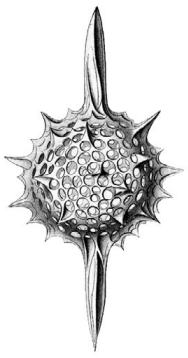
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***XIPHATRACTYLIS***

SYN.?
UNIQUE

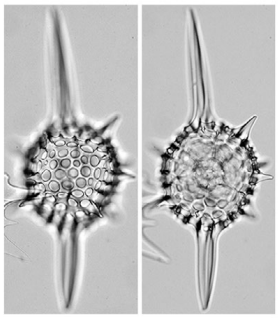
Type



100 µm

Xiphosphaera vesta
Haeckel, 1887: 126, pl. 14, fig. 6

Support



100 µm

Xiphosphaera vesta Haeckel
Barbados, Late Eocene, Suzuki's collection

S - LINEAGE UNKNOWN — STYLATRACTIDAE
ASSIGNED HEREIN

GENUS ***Xiphostylantha***
Haeckel, 1887: 127

SUBGENUS ***Xiphostylus* (*Xiphostylantha*)**

Diagnosis: Skeleton with one thick ovoidal cortical shell and two polar spines, one stout and pommel-like. Medullary shell spherical, connected to cortical shell by short beams.

Remarks: No type species fixed. Campbell (1954: D54) considers *XIPHOSTYLANTHA* to be the nominate subgenus of *XIPHOSTYLUS* Haeckel, 1882, however its type species (*X. attenuatus* Rüst, 1885) was not among those species originally assigned to *XIPHOSTYLANTHA*. Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym (group of species originally included heterogeneous).

Original series: *Xiphostylus alauda* Haeckel, 1887; *Xiphostylus alcedo* Haeckel, 1887; *Xiphostylus anhinga* Haeckel, 1887; **Xiphostylus gallus* Haeckel, 1887; **Xiphostylus motacilla* Haeckel, 1887 and *Xiphostylus phasianus* Haeckel, 1887.

FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS **VALID**

AGE ***EARLY PALEOCENE–LIVING***

VALID
UNIQUE

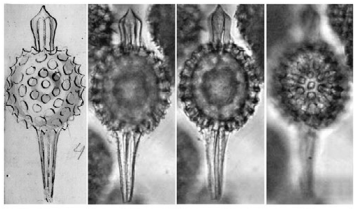
Type



100 µm

Xiphostylus phasianus
Haeckel, 1887: 127, pl. 13, fig. 9

Type



50 µm

Stylosphaera coronata Ehrenberg
Ogane *et al.* 2009b: pl. 12, figs 1a-d [lectotype herein]

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Druppatractus***
Haeckel, 1887: 324

NOMINOTYPE ***Druppatractus* (*Druppatractus*)**

Remarks: See comments under *DRUPPATRACTARA*.

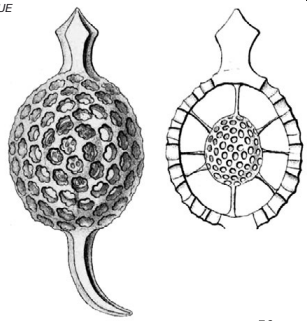
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 20)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 570

SEE ***XIPHOSTYLANTHA***

SYN.
UNIQUE

Type



Druppatractus hippocampus
Haeckel, 1887: 324, pl. 16, fig. 10

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Druppatractara***
Haeckel, 1887: 324

SUBGENUS ***Druppatractus* (*Druppatractara*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Druppatractus belone* Haeckel, 1887; *Druppatractus hippocampus* Haeckel, 1887; **Druppatractus ichthydium* Haeckel, 1887 and *Stylosphaera testudo* Ehrenberg, 1873a.

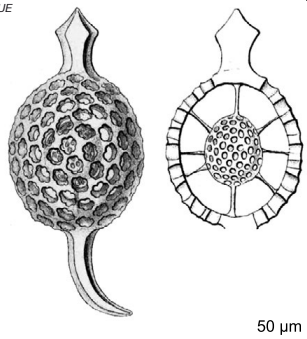
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 20)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***XIPHOSTYLANTHA***

SYN. (obj.)
UNIQUE

Type



Druppatractus hippocampus
Haeckel, 1887: 324, pl. 16, fig. 10

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Sphaerostylantha***
Haeckel, 1887: 138

SUBGENUS ***Sphaerostylus* (*Sphaerostylantha*)**

Remarks: No type species was designated. Campbell (1954: D53) considers *SPHAEROSTYLANTHA* to be the nominate subgenus of *SPHAEROSTYLUS* Haeckel, 1882. However, this seems inappropriate since the type species of *SPHAEROSTYLUS*, *Sphaerostylus zitteli* Rüst, 1885, was not among those species originally assigned to *SPHAEROSTYLANTHA*.

Original series: **Sphaerostylus clio* Haeckel, 1887; *Sphaerostylus hippocampus* Haeckel, 1887; *Stylosphaera flexuosa* Ehrenberg, 1874b and *Stylosphaera liostylus* Ehrenberg, 1874b.

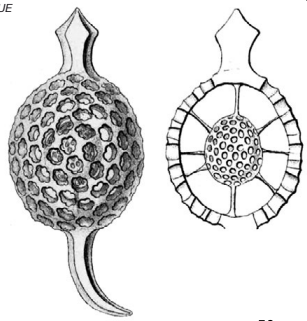
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***XIPHOSTYLANTHA***

SYN. (obj.)
UNIQUE

Type



Sphaerostylus hippocampus
Haeckel, 1887: 139, pl. 16, figs 10, 11

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — STYLATRACTIDAE
ASSIGNED IN Matsuzaki *et al.* 2015: 10

GENUS ***Xiphostylissa***
Haeckel, 1887: 129

SUBGENUS ***Xiphostylus* (*Xiphostylissa*)**

Diagnosis: Skeleton with a spherical shell with ten to twelve irregular pores on half the equator. Major polar spine three-sided, nearly one and a half long as the axis of the sphere; minor polar spine rudimentary, as long as short, surrounded by three tosix short spines.

Remarks: Only the type species clearly belongs to this genus; rarely reported.

Original series: *Xiphostylus alca* Haeckel, 1887; *Xiphostylus edolius* Haeckel, 1887; *Xiphostylus falco* Haeckel, 1887 and *Xiphostylus trogon* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–[QUATERNARY]***

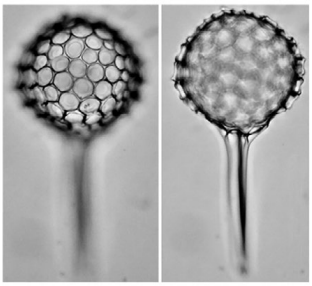
VALID
RARE

Type



Xiphostylus trogon
Haeckel, 1887: 129, pl. 14, fig. 12

Support



Xiphostylus trogon Haeckel
Topotypic material (Challenger Station 225), Suzuki's collection

S - LINEAGE UNKNOWN — STYLATRACTIDAE

GENUS ***Xiphostyletta***
Haeckel, 1887: 128

SUBGENUS ***Xiphostylus* (*Xiphostyletta*)**

Remarks: Type species only illustrated by Haeckel (1887).

Original series: **Xiphostylus cuculus* Haeckel, 1887; *Xiphostylus picus* Haeckel, 1887 and *Xiphostylus trochilus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***XIPHOSTYLISSA***

SYN.
UNIQUE

Type



100 µm

Xiphostylus picus
Haeckel, 1887: 129, pl. 14, fig. 13

Support



50 µm

Xiphostylus trochilus
Haeckel, 1887: 129, pl. 13, fig. 10

S - LINEAGE UNKNOWN — ? STYLATRACTIDAE

GENUS ***Amphisphaera***
Haeckel, 1882: 452

NOMINOTYPE ***Amphisphaera* (*Amphisphaera*)**

Remarks: See comments under *AMPHISPHAERANTHA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Amphisphaera neptunus
Haeckel, 1887: 142, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — ? STYLATRACTIDAE

GENUS ***Amphisphaerantha***
Haeckel, 1887: 142

SUBGENUS ***Amphisphaera* (*Amphisphaerantha*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Amphisphaera jupiter* Haeckel, 1887; **Amphisphaera neptunus* Haeckel, 1887 and **Amphisphaera uranus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***AMPHISPHAERA***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Amphisphaera neptunus
Haeckel, 1887: 142, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — ? STYLATRACTIDAE

GENUS ***Amphisphaerella***
Haeckel, 1887: 143

SUBGENUS ***Amphisphaera* (*Amphisphaerella*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Amphisphaera apollo* Haeckel, 1887 and **Amphisphaera mercurius* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

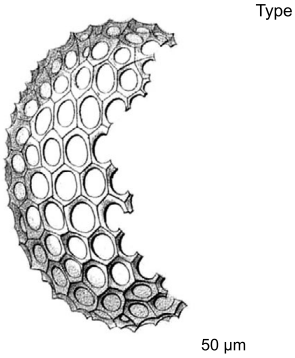
UNFIGURED SPECIES

Amphisphaera apollo
Haeckel, 1887: 143, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Amphisphaeromma*** Haeckel, 1887: 144 SUBGENUS ***Amphisphaera (Amphisphaeromma)*** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Amphisphaera mars* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Amphisphaera mars* Haeckel, 1887: 144, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Axellipsis*** Haeckel, 1887: 293 **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Axellipsis lobata* Haeckel, 1887 and **Axellipsis perforata* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Axellipsis perforata* Haeckel, 1887: 293, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Caryostylus*** Haeckel, 1882: 454 **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Caryostylus hexalepas* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Caryostylus hexalepas* Haeckel, 1887: 148, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Cenellipsis*** Haeckel, 1887: 290 SUBGENUS **Remarks**: Homonym of *CENELLIPSIS* Rüst, 1885: 286 (Polycystinea); a new name is not required since it is a nomen dubium. See comments under *CENELLIPSIUM*. FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 19) STATUS NOMEN DUBIUM designated herein; name-bearing type incomplete	**N.D.** Type *UNIQUE*  *Cenellipsis faceta* Haeckel, 1887: 291, pl. 39, fig. 1	Support NO IMAGE PUBLISHED no image available

S - LINEAGE UNKNOWN ? STYLATRACTIDAE

GENUS ***Cenellipsium***
Haeckel, 1887: 290

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: **Cenellipsis circopora* Haeckel, 1887; *Cenellipsis faceta* Haeckel, 1887; **Cenellipsis micropora* Haeckel, 1887; **Cenellipsis primitiva* Haeckel, 1887 and *Haliomma*? *cenosphaera* Ehrenberg, 1876.

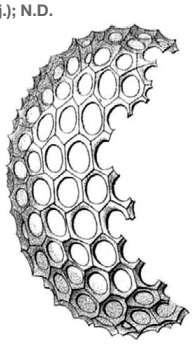
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 19)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***CENELLIPSIS***

SYN. (obj.); N.D. Type

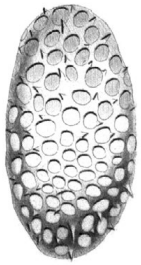
UNIQUE



50 µm

Cenellipsis faceta
Haeckel, 1887: 291, pl. 39, fig. 1

Support



100 µm

Haliomma? *cenosphaera*
Ehrenberg, 1876: 74-75, pl. 26, fig. 5

S - LINEAGE UNKNOWN ? STYLATRACTIDAE

GENUS ***Cenellipsula***
Haeckel, 1887: 292

SUBGENUS ***Cenellipsis* (*Cenellipsula*)**

Remarks: Type species only illustrated by Haeckel (1887). Illustration available only for the type species.

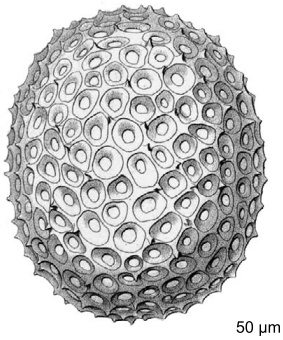
Original series: **Cenellipsis heteropora* Haeckel, 1887; *Cenellipsis infundibulum* Haeckel, 1887; **Cenellipsis maxima* Haeckel, 1887; **Cenellipsis oblonga* Haeckel, 1887 and **Cenellipsis ovulum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 19)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D. Type

UNIQUE



50 µm

Cenellipsis infundibulum
Haeckel, 1887: 292, pl. 39, fig. 2

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN ? STYLATRACTIDAE

GENUS ***Ellipsis*** PREMATURE NAME
Haeckel, 1887: figure description for pl. 39, figs 1, 2

Remarks: A premature name (vel *ELLIPSIS*) used by Haeckel as alternative of the name *CENELLIPSIS* (*CENELLIPSULA*). Only two species originally included in the figure captions, *Cenellipsis faceta* and *C. infundibulum*, pl. 39, figs 1, 2 (*Ellipsis faceta* Haeckel, 1887 and *Ellipsis infundibulum* Haeckel, 1887).

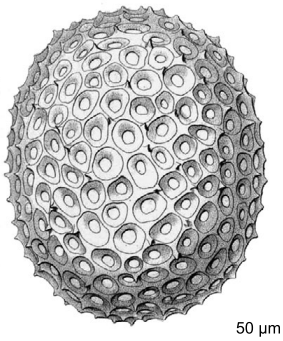
Original series: *Ellipsis infundibulum* Haeckel, 1887 and *Ellipsis infundibulum* Haeckel, 1887.

FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Frizzell & Middour 1951: 19)

STATUS INVALID NAME
designated herein

SEE ***CENELLIPSULA***

INV. Type



50 µm

Ellipsis infundibulum
Haeckel, 1887: 292, pl. 39, fig. 2

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN ? STYLATRACTIDAE

GENUS ***Cromyostaurolonche***
Campbell & Clark, 1944a: 13

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

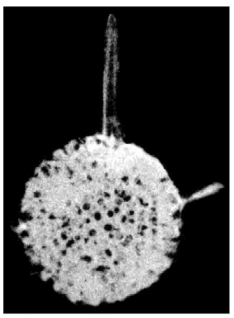
Original series: *Cromyostaurolonche cruciformis* Campbell & Clark, 1944a.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.

UNIQUE



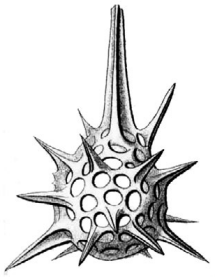
50 µm

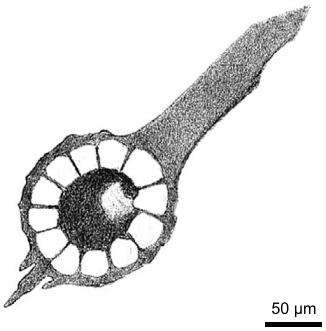
Cromyostaurolonche cruciformis
Campbell & Clark, 1944a: 13, pl. 2, fig. 4

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Cromyostylus*** Haeckel, 1882: 453 **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Cromyostylus gladius* Haeckel, 1887. FIXATION SUBSEQUENT MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Cromyostylus gladius* Haeckel, 1887: 147, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Echinocapsa*** Haeckel, 1882: 428 SUBGENUS ***Halicapsa* (*Echinocapsa*)** **Remarks**: Type species never figured. The support image is the closest species among those originally included in this genus. **Original series**: *Halicapsa hystrix* Haeckel, 1887; **Halicapsa papillata* Haeckel, 1887 and *Haliomma pyriforme* Harting, 1863. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122) STATUS NOMEN DUBIUM designated herein; name-bearing type not diagnostic	**N.D.** Type UNFIGURED SPECIES *Halicapsa papillata* Haeckel, 1887: 1190, unfigured	Support  25 µm *Halicapsa hystrix* Haeckel, 1887: 1190, pl. 53, fig. 5
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Ellipsidium*** Haeckel, 1887: 294 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Ellipsidium artocarpus* Haeckel, 1887; **Ellipsidium datura* Haeckel, 1887; **Ellipsidium echinidium* Haeckel, 1887; **Ellipsidium opuntia* Haeckel, 1887 and **Ellipsidium pandanidium* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D68) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Ellipsidium datura* Haeckel, 1887: 294, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Ellipsoxiphetta*** Haeckel, 1887: 296 SUBGENUS ***Ellipsoxiphium* (*Ellipsoxiphetta*)** **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Ellipsoxiphus elegans* Haeckel, 1887; **Ellipsoxiphus flosculus* Haeckel, 1887 and **Ellipsoxiphus fragilis* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D69) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Ellipsoxiphus flosculus* Haeckel, 1887: 296, unfigured	Support NO IMAGE PUBLISHED no image available

S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Sphaerostylus*** Haeckel, 1882: 451 NOMINOTYPE ***Sphaerostylus* (*Sphaerostylus*)** **Remarks**: Homonym of *SPHAEROSTYLUS* Chaudoir, 1854: 43 (Coleoptera); a new name is not required since it is a nomen dubium. Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. **Original series**: *Sphaerostylus zitteli* Rüst, 1885. FIXATION SUBSEQUENT MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type incomplete	**N.D.** Type *UNIQUE*  *Sphaerostylus zittelii* Rüst, 1885: 291, pl. 29, fig. 1	Support NO IMAGE PUBLISHED no image available
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Sphaerostyletta*** Haeckel, 1887: 139 SUBGENUS ***Sphaerostylus* (*Sphaerostyletta*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Sphaerostylus diadema* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Sphaerostylus diadema* Haeckel, 1887: 139, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Sphaerostylissa*** Haeckel, 1887: 140 SUBGENUS ***Sphaerostylus* (*Sphaerostylissa*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Sphaerostylus cottus* Haeckel, 1887 and **Sphaerostylus trigla* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Sphaerostylus cottus* Haeckel, 1887: 140, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Spongolonche*** Haeckel, 1882: 455 **Remarks**: Homonym of *SPONGOLONCHE* Haeckel, 1882: 461 (Polycystinea); see *SPONGOLONCHIS nomen novum*. **Original series**: *Spongolonchis compacta* Haeckel, 1887 and *Spongolonchis laxa* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 16) STATUS HOMONYM, NOMEN DUBIUM SEE ***SPONGOLONCHIS NOMEN NOVUM***	**HOM.; N.D.** Type UNFIGURED SPECIES *Spongolonchis compacta* Haeckel, 1887: 149, unfigured	Support NO IMAGE PUBLISHED no image available

S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Spongolonchis*** *NOMEN NOVUM PRO SPONGOLONCHE* Haeckel, 1887: 149 **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. This genus name is a replacement for *SPONGOLONCHE* Haeckel, 1882: 455, synonym of *SPONGOLONCHE* Haeckel, 1882: 461; see errata list in Haeckel (1887: 1763). **Original series**: **Spongolonchis compacta* Haeckel, 1887 and **Spongolonchis laxa* Haeckel, 1887. FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Frizzell & Middour 1951: 16) STATUS *NOMEN NOVUM*, NOMEN DUBIUM designated herein; name-bearing type non-existent	**NOM. NOV.; N.D.** Type UNFIGURED SPECIES *Spongolonchis compacta* Haeckel, 1887: 149, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Spongostylium*** Haeckel, 1882: 455 **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. Campbell (1954: D56) considers *SPONGOSTYLIUM* to be the nominate subgenus of *SPONGOSTYLUS*, however this is erroneous because Haeckel in 1887 considered these taxa as independent genera. **Original series**: **Spongostylidium streptacanthum* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Spongostylidium streptacanthum* Haeckel, 1887: 150, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Spongostylidium*** INCORRECT SUBSEQUENT SPELLING Haeckel, 1887: 150 **Remarks**: An incorrect subsequent spelling for *SPONGOSTYLIUM*. By referring back to p. 455 in his *Prodromus* of 1882 (Haeckel 1882), Haeckel apparently means *SPONGOSTYLIDIUM* to be an emendation to the name *SPONGOSTYLIUM* which is unjustified according to the provisions of ICZN art. 33.3. **Original series**: *Spongostylidium streptacanthum* Haeckel, 1887. FIXATION SUBSEQUENT MONOTYPY; ICZN, ART. 67.6 STATUS INVALID NAME designated herein SEE ***SPONGOSTYLIUM***	**INV.** Type UNFIGURED SPECIES *Spongostylidium streptacanthum* Haeckel, 1887: 150, unfigured	Support NO IMAGE PUBLISHED no image available
S - LINEAGE UNKNOWN ? STYLATRACTIDAE GENUS ***Stylatractium*** Haeckel, 1887: 331 SUBGENUS ***Stylatractus* (*Stylatractium*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Stylatractus disetanius* Haeckel, 1887 and **Stylatractus papillosus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D73) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Stylatractus papillosus* Haeckel, 1887: 331, unfigured	Support NO IMAGE PUBLISHED no image available

S - LINEAGE UNKNOWN ? STYLATRACTIDAE

GENUS ***Stylocromyum***
Haeckel, 1882: 453

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Stylocromyum amphiconus* Haeckel, 1887 and **Stylocromyum amphipyramis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Stylocromyum amphipyramis
Haeckel, 1887: 147, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN ? STYLATRACTIDAE

GENUS ***Xiphatractona***
Haeckel, 1887: 333

SUBGENUS ***Xiphatractus* (*Xiphatractona*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Xiphatractus chlamydophorus* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Xiphatractus chlamydophorus
Haeckel, 1887: 333, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN ? STYLATRACTIDAE

GENUS ***Xiphosphaerissa***
Haeckel, 1887: 125

SUBGENUS ***Xiphosphaera* (*Xiphosphaerissa*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Xiphosphaera ceres* Haeckel, 1887 and **Xiphosphaera clavigera* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D54)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Xiphosphaera ceres
Haeckel, 1887: 126, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN STYLOSPHAERIDAE
ASSIGNED IN Matsuzaki *et al.* 2015: 10

GENUS ***Druppatractona***
Haeckel, 1887: 326

SUBGENUS ***Druppatractus* (*Druppatractona*)**

Diagnosis: Stylosphaeridae with two latticed cortical shells and two conical polar spines. External shell spherical to ovoid; internal cortical shell pyriform. Polar spines of variable length, directly connected to the internal shell. Other radial beams unknown.

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: **Druppatractus xiphias* Haeckel, 1887 and *Stylosphaera laevis* Ehrenberg, 1874b.

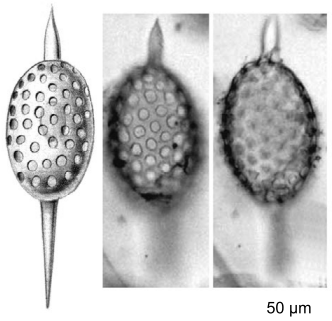
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D71)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–EARLY MIDDLE MIOCENE***

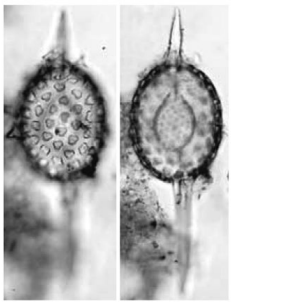
VALID
FREQUENT

Type



Stylosphaera laevis
Ehrenberg, 1874b: 259 (unfigured); Ehrenberg, 1876: 84, pl. 25, fig. 6 [Ogane *et al.* 2009b: pl. 27, figs 2a, 2b; lectotype herein]

Support



Stylosphaera laevis Ehrenberg
Ogane *et al.* 2009b: pl. 61, figs 2a, 2b [paralectotype herein]

S - LINEAGE UNKNOWN — STYLOSPHAERIDAE
ASSIGNED HEREIN

GENUS **Lithatractona**
Haeckel, 1887: 322

SUBGENUS *Lithatractus* (*Lithatractona*)

Diagnosis: Stylosphaeridae with thre latticed and two three-sided polar spines. Innermost shell is pyriform. Polar spines connected to inner cortical shell by three-sided beams. Numerous radial beams between outer and second outermost shells.

Remarks: Type species only illustrated by Haeckel (1887). Only the type species clearly belongs to this genus and no other images have been published. It is nearly impossible to differentiate *LITHTRACTONA* from *DRUPPATRACTYLIS* without observation of their innermost shell.

Original series: **Lithatractus conifer* Haeckel, 1887; *Lithatractus jugatus* Haeckel, 1887; **Lithatractus lobatus* Haeckel, 1887 and *Stylosphaera lithatractus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72)

STATUS **VALID**

AGE ***LATE EOCENE–QUATERNARY***

VALID
UNIQUE

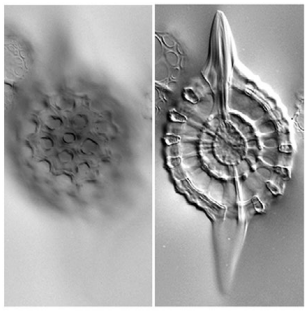
Type



50 µm

Lithatractus jugatus
Haeckel, 1887: 323, pl. 16, fig. 2

Support



50 µm

Lithatractus jugatus Haeckel
Suzuki's collection (Antarctic, Quaternary)

S - LINEAGE UNKNOWN — ? STYLOSPHAERIDAE

GENUS **Lithatractium**
Haeckel, 1887: 323

SUBGENUS *Lithatractus* (*Lithatractium*)

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Lithatractus conostylus* Haeckel, 1887 and **Lithatractus gamoporus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Lithatractus conostylus
Haeckel, 1887: 323, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — ? STYLOSPHAERIDAE

GENUS **Lithatractylis**
Haeckel, 1887: 321

SUBGENUS *Lithatractus* (*Lithatractylis*)

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Lithatractus carduelis* Haeckel, 1887; **Lithatractus cirsium* Haeckel, 1887; **Lithatractus echiniscus* Haeckel, 1887 and **Lithatractus rosetta* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D72)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Lithatractus echiniscus
Haeckel, 1887: 321, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — STYLOSPHAERIDAE
ASSIGNED IN De Wever *et al.* 2001: 118

GENUS **Spongatractus**
Haeckel, 1887: 350

Diagnosis: Stylosphaeridae with two cortical shells: external one ellipsoid or ovoid with a spongy wall, inner one latticed, pyriform. Two three-bladed polar spines of equal (or not) length, connected by similar beams to the inner shell. Several three-sided beams in the equatorial plane.

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Spongatractus fusiformis* Haeckel, 1887; **Spongatractus streptacanthus* Haeckel, 1887 and *Spongosphaera pachystyla* Ehrenberg, 1874b.

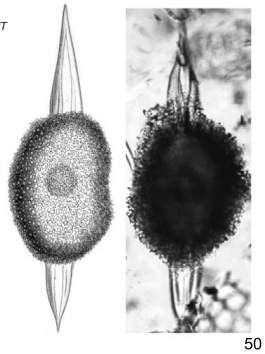
FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 115)

STATUS **VALID**

AGE ***EARLY EOCENE–[QUATERNARY]***

VALID
FREQUENT

Type



50 µm

Spongosphaera pachystyla
Ehrenberg, 1874b: 256 (unfigured); Ehrenberg, 1876: 82, pl. 26, fig. 3 [Ogane *et al.* 2009b: pl. 21, figs 3a, 3b; lectotype herein]

Support



50 µm

Spongosphaera pachystyla Ehrenberg
Pessagno 1973: pl. 15, fig. 4

S - LINEAGE UNKNOWN — STYLOSPHAERIDAE

GENUS ***Spongoprunum***
Haeckel, 1887: 347

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Spongoprunum amphicylindricus* Haeckel, 1887; *Spongoprunum amphilonche* Haeckel, 1887 and **Spongoprunum atractus* Haeckel, 1887.

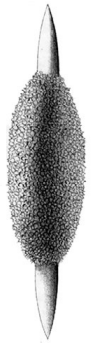
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS JUNIOR SYNONYM?
questionably synonymized herein; non-bladed spines ever recognized

SEE ***SPONGATRACTUS***

SYN.?
UNIQUE

Type



50 µm

Spongoprunum amphilonche
Haeckel, 1887: 347, pl. 48, fig. 7

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — STYLOSPHAERIDAE

GENUS ***Spongoxiphus***
Haeckel, 1887: 353

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: *Spongoxiphus prunococcus* Haeckel, 1887 and **Spongoxiphus sphaerococcus* Haeckel, 1887.

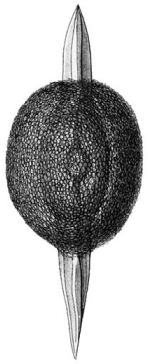
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D74)

STATUS JUNIOR SYNONYM
synonymized by Sanfilippo & Riedel 1973: 519

SEE ***SPONGATRACTUS***

SYN.
UNIQUE

Type



50 µm

Spongoxiphus prunococcus
Haeckel, 1887: 354, pl. 17, fig. 12

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — STYLOSPHAERIDAE
ASSIGNED IN Haeckel 1887: 121

GENUS ***Stylosphaera***
Ehrenberg, 1846: 385

NOMINOTYPE ***Stylosphaera* (*Stylosphaera*)**

Diagnosis: Stylosphaeridae with two latticed cortical shells and two three-bladed polar spines of variable length. Outer cortical shell spherical to ovoid; internal one pyriform. Internal shell connected to polar spines by three-sided beams and surrounded by 4 or more identical beams in the equatorial plane. Very short tertiary or primary radial spines in some species.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Stylosphaera hispida* Ehrenberg, 1854b.

FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE CAMPANIAN–LIVING***

VALID
FREQUENT

Type

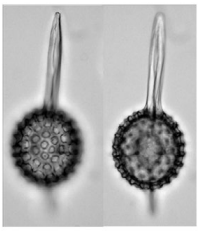


50 µm

Stylosphaera hispida
Ehrenberg, 1854b: 246 (unfigured); Ehrenberg, 1854c: pl. 36, fig. 26 [description in Ehrenberg, 1854b: 246]

Support





50 µm

Stylosphaera hispida Ehrenberg
Topotypic material (Barbados, Late Eocene), Suzuki's collection; Ehrenberg's original drawing 1590

S - LINEAGE UNKNOWN — STYLOSPHAERIDAE

GENUS ***Stylosphaerella***
Haeckel, 1887: 135

SUBGENUS ***Stylosphaera* (*Stylosphaerella*)**

Remarks: Only the type species clearly belongs to this genus; rarely reported.

Original series: **Stylosphaera euterpe* Haeckel, 1887; *Stylosphaera hispida* Ehrenberg, 1854b; *Stylosphaera liostylus* Ehrenberg, 1874b; *Stylosphaera melpomene* Haeckel, 1887 and *Stylosphaera setosa* Ehrenberg, 1873a.

FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 14)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***STYLOSPHAERA***

SYN. (obj.)
RARE

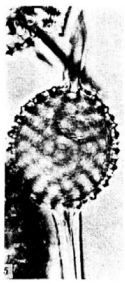
Type



50 µm

Stylosphaera hispida
Ehrenberg, 1854b: 246 (unfigured); Ehrenberg, 1854c: pl. 36, fig. 26 [description in Ehrenberg, 1854c: 246]

Support



50 µm

Stylosphaera hispida Ehrenberg
Deflandre 1964: 2118, fig. 5

S - LINEAGE UNKNOWN — STYLOSPHAERIDAE

GENUS ***Stylosphaerissa***
Haeckel, 1887: 136

SUBGENUS ***Stylosphaera* (*Stylosphaerissa*)**

Remarks: Only the type species was figured in this genus by Haeckel (1887); no other images have been published.

Original series: **Stylosphaera jugata* Haeckel, 1887; *Stylosphaera nana* Haeckel, 1887 and **Stylosphaera terpsichore* Haeckel, 1887.

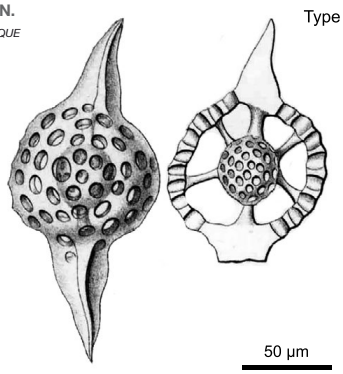
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D53)

STATUS JUNIOR SYNONYM
synonymized herein; name-bearing type juvenile

SEE ***STYLOSPHAERA***

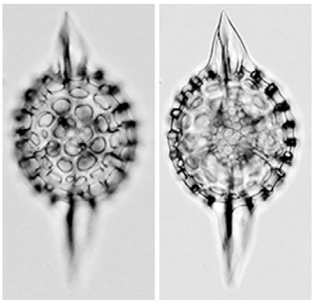
SYN.
UNIQUE

Type



Stylosphaera nana
Haeckel, 1887: 136, pl. 16, figs 12, 13

Support



Stylosphaera nana Haeckel
Suzuki's collection (Late Paleocene-Early Eocene, Pacific Ocean)

S - LINEAGE UNKNOWN — ? STYLOSPHAERIDAE

GENUS ***Stylosphaeromma***
Haeckel, 1887: 137

SUBGENUS ***Stylosphaera* (*Stylosphaeromma*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Stylosphaera erato* Haeckel, 1887 and **Stylosphaera thalia* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D53)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Stylosphaera thalia
Haeckel, 1887: 137, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — TUBOSPHAERIDAE
ASSIGNED HEREIN

GENUS ***Staurosphaerella***
Haeckel, 1887: 154

SUBGENUS ***Staurosphaera* (*Staurosphaerella*)**

Diagnosis: Tubosphaeridae with a single latticed cortical shell and four very long, very thin conical radial spines, distributed at right angles to each other on the same plane. Cortical shell wall covered with by-spines.

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Staurosphaera andreae* Haeckel, 1887; *Staurosphaera philippi* Haeckel, 1887 and **Staurosphaera thomae* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D56)

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

Type



Staurosphaera philippi
Haeckel, 1887: 154, pl. 15, fig. 6

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — ? TUBOSPHAERIDAE

GENUS ***Staurosphaeromma***
Haeckel, 1887: 156

SUBGENUS ***Staurosphaera* (*Staurosphaeromma*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Staurosphaera bartholomaei* Haeckel, 1887; **Staurosphaera matthaei* Haeckel, 1887 and **Staurosphaera thaddaei* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D56)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Staurosphaera bartholomaei
Haeckel, 1887: 156, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — TUBOSPHAERIDAE
ASSIGNED HEREIN

GENUS **Stauroxiphos**
Haeckel, 1887: 163

Diagnosis: Tubosphaeridae with two latticed cortical shells. Four three-bladed radial spines of moderate length, distributed at 90° from each other on the same plane and connected to the inner shell by three-bladed radial beams. Outer and inner shells of identical shape.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Stauroxiphos gladius* Haeckel, 1887.

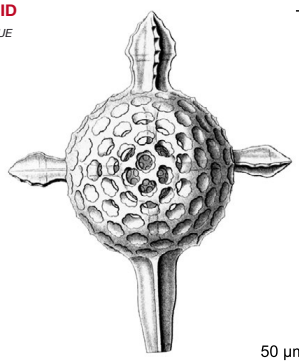
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–[QUATERNARY]***

VALID
UNIQUE

Type



Stauroxiphos gladius
Haeckel, 1887: 163, pl. 15, fig. 7

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — TUBOSPHAERIDAE

GENUS **Staurolonchidium**
Haeckel, 1887: 162

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: *Haliomma perspicuum* Ehrenberg, 1874b and **Staurolonchidium artioscelides* Haeckel, 1887.

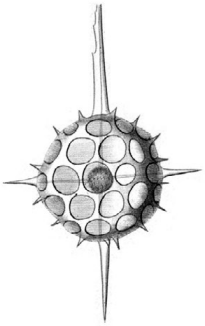
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D56)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STAUROXIPHOS***

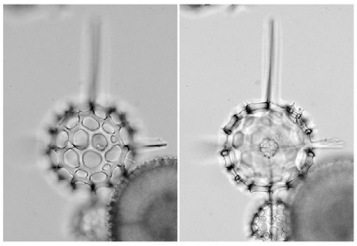
SYN.
UNIQUE

Type



Haliomma perspicuum
Ehrenberg, 1874b: 236 (unfigured); Ehrenberg, 1876: 74, pl. 29, fig. 1

Support



Haliomma perspicuum Haeckel
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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S - LINEAGE UNKNOWN — TUBOSPHAERIDAE
ASSIGNED HEREIN

GENUS **Stylostaurus**
Haeckel, 1882: 450

Diagnosis: Tubosphaeridae with a single latticed cortical shell and four three-bladed spines distributed in a cross. One spine much longer than others. Internal structure unknown.

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition. *STYLOSTAURUS* differs from *TUBOSPHAERA* in having extremely long three-bladed radial spines (0.5 mm in length or longer).

Original series: *Stylostaurus caudatus* Haeckel, 1887 and **Stylostaurus gladiatus* Haeckel, 1887.

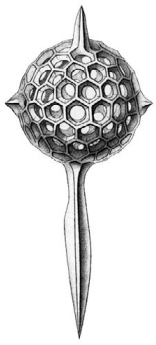
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 17)

STATUS **VALID**

AGE ***[QUATERNARY]***

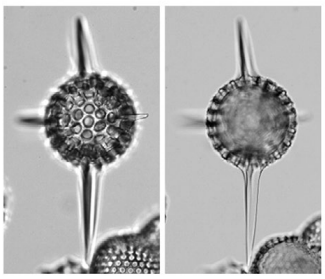
VALID
UNIQUE

Type



Stylostaurus caudatus
Haeckel, 1887: 157, pl. 13, fig. 7

Support



Stylostaurus caudatus Haeckel
Topotypic material (Challenger Station 268), Suzuki's collection

---

S - LINEAGE UNKNOWN — TUBOSPHAERIDAE
ASSIGNED HEREIN

GENUS **Tubosphaera**
Popofsky, 1917: 268

Diagnosis: Tubosphaeridae with a single latticed shell and four very long and very thin, three-bladed radial spines distributed at right angles from each other on the same plane. Cortical shell covered with by-spines.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Tubosphaera quadrispina* Popofsky, 1917.

FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

Type



Tubosphaera quadrispina
Popofsky, 1917: 268, text-fig. 33

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — ? TUBOSPHAERIDAE

GENUS **Staurostylus**
Haeckel, 1882: 450

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Staurostylus germanicus* Haeckel, 1887; **Staurostylus graecus* Haeckel, 1887 and **Staurostylus latinus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D56)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Staurostylus graecus
Haeckel, 1887: 156, unfigured

Support

NO IMAGE PUBLISHED

no image available

S - LINEAGE UNKNOWN — INCERTAE FAMILIAE
ASSIGNED IN Pessagno 1976: 45

GENUS **Peritiviator**
Pessagno, 1976: 45

Diagnosis: Rare Spumellaria with an ellipsoidal shell composed of a cortical envelope with large pores of various shapes and an inner one with smaller uniform pores.

Remarks: Monospecific genus. Because no other figures are available, the support image is selected among those species subsequently assigned to this genus.

Original series: *Peritiviator labyrinthi* Pessagno, 1976.

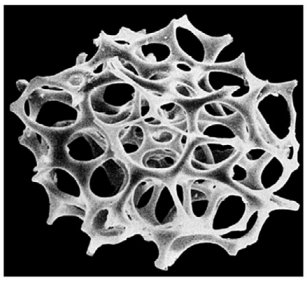
FIXATION MONOTYPY

STATUS **VALID**

AGE **LATE CAMPANIAN–MIDDLE PALEOCENE**

VALID
RARE

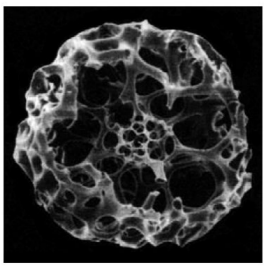
Type



100 µm

Peritiviator labyrinthi
Pessagno, 1976: 45, pl. 13, fig. 2

Support



50 µm

Peritiviator? dumitricai
Nishimura, 1992: 328, pl. 1, fig. 13

S - LINEAGE UNKNOWN — INCERTAE FAMILIAE
ASSIGNED IN Dumitrica 2014b: 95

GENUS **Tanochenia**
Dumitrica, 2014b: 95

Diagnosis: Very rare convex-concave, or plan convex, lens-shaped latticed cortical shell with a delicate inner spongy inner shell attached to the convex (upper) side as a framework covered by a porous plate. No central structure visible in the internal spongy structure.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Stylotrochus asteros* Tan & Chen, 1999.

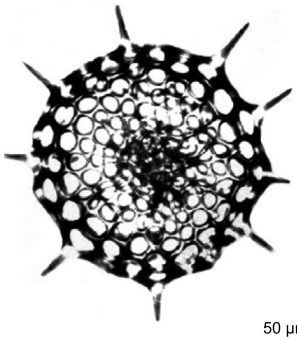
FIXATION MONOTYPY

STATUS **VALID**

AGE **LATE PLIOCENE–HOLOCENE**

VALID
RARE

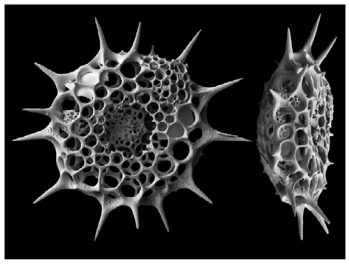
Type



50 µm

Stylotrochus asteros
Tan & Chen, 1999: 233, pl. 9, fig. 4

Support



200 µm

Tanochenia asteros (Tan & Chen)
Dumitrica 2014b: 95, pl. 1, figs 2, 2a

S - LINEAGE UNKNOWN — INCERTAE FAMILIAE
ASSIGNED BY SANFILIPPO & RIEDEL IN Sanfilippo *et al.* 1973: 228

GENUS **Tepka**
Sanfilippo & Riedel in Sanfilippo *et al.*, 1973: 228

Diagnosis: A thin, approximately circular, siliceous plate with a large central pore, smaller pores over the remainder of the plate, and an undifferentiated margin.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported. Probably a broken part of a large siliceous microfossil.

Original series: *Tepka perforata* Sanfilippo & Riedel in Sanfilippo *et al.*, 1973.

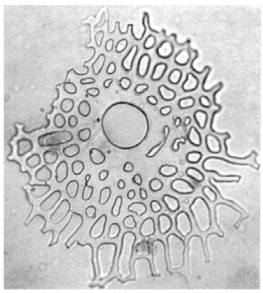
FIXATION MONOTYPY

STATUS **VALID**

AGE **LATE OLIGOCENE–EARLY LATE MIOCENE**

VALID
RARE

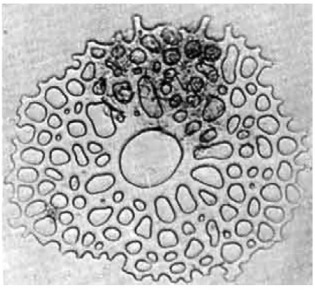
Type



50 µm

Tepka perforata
Sanfilippo & Riedel in Sanfilippo *et al.*, 1973: 228, pl. 6, fig. 19

Support



50 µm

Tepka perforata Sanfilippo & Riedel
Weaver & Dinkelman 1978: pl. 3, fig. 6

N - LINEAGE I (A) AMPHIPYNDACIDAE

ASSIGNED IN Foreman 1973: 430

GENUS ***Amphipternis***
Foreman, 1973: 430

Diagnosis: Amphipyndacidae with a multi-segmented conical shell. Cephalis knob-like, constricting to form a neck, usually poreless, with short thorns. Internal spicule undescribed. No horns, thoracic ribs or feet. When present, aperture small, circular, with ragged edge.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Lithocampe*? *clava* Ehrenberg, 1874b.

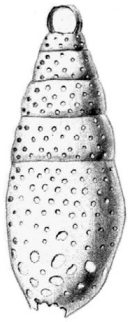
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY BERRIASIAN–EARLY MIDDLE MIOCENE***

VALID
FREQUENT

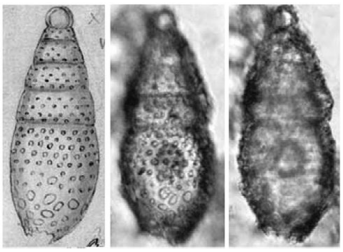
Type



50 µm

Lithocampe? *clava*
Ehrenberg, 1874b: 238 (unfigured); Ehrenberg, 1876: 76, pl. 4, fig. 2

Type



50 µm

Lithocampe clava Ehrenberg
Ogane *et al.* 2009b: pl. 22, figs 2a-c [lectotype herein]

N - LINEAGE I (A) AMPHIPYNDACIDAE

GENUS ***Amphiparvex***
Garg & Jain, 1978: 164

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Garg & Jain (1978).

Original series: *Amphiparvex breviori* Garg & Jain, 1978.

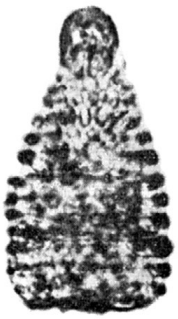
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by O'Dogherty *et al.* 2009a: 327

SEE ***AMPHIPTERNIS***

SYN.
UNIQUE

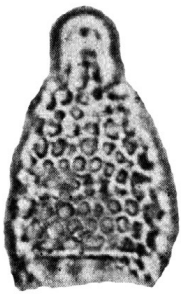
Type



50 µm

Amphiparvex breviori
Garg & Jain, 1978: 165, pl. 3, fig. 45

Support



50 µm

Amphiparvex breviori
Garg & Jain, 1978: 165, pl. 3, fig. 47

N - LINEAGE I (A) AMPHIPYNDACIDAE

GENUS ***Protostichocapsa***
Empson-Morin, 1982: 514

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Stichocapsa*? *stocki* Campbell & Clark, 1944b and *Protostichocapsa streckta* Empson-Morin, 1982.

FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized by De Wever *et al.* 2001: 268

SEE ***AMPHIPTERNIS***

SYN.
FREQUENT

Type



50 µm

Stichocapsa? *stocki*
Campbell & Clark, 1944b: 44, pl. 8, fig. 33 [lectotype by Empson-Morin 1982: 518]

Support



100 µm

Protostichocapsa stocki (Campbell & Clark)
Empson-Morin 1982: 516, pl. 4, figs 1-3

N - LINEAGE I (A) ARCHAEODICTYOMITRIDAE

ASSIGNED IN Pessagno 1976: 49

GENUS ***Dictyomitra***
Zittel, 1876: 81

NOMINOTYPE ***Dictyomitra* (*Dictyomitra*)**

Diagnosis: Archaeodictyomitridae with a multisegmented shell. Cephalis small rounded to conical imperforate with, or without, A horn. Internal spicule undescribed. Post-thoracic segments separated by septa, with continuous costae and intermediate rows of pores. Small aperture.

Remarks: Type species frequently reported.

Original series: *Dictyomitra polypora* Zittel, 1876; *Dictyomitra multicostata* Zittel, 1876; *Dictyomitra ehrenbergi* Zittel, 1876 and *Dictyomitra trigona* Zittel, 1876.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS **VALID**

AGE ***EARLY BERRIASIAN–LATE MIDDLE EOCENE***

VALID
FREQUENT

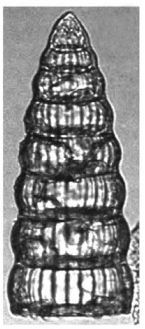
Type



100 µm

Dictyomitra multicostata
Zittel, 1876: 81, pl. 2, fig. 2 [lectotype by Pessagno 1976: 52]

Support



50 µm

Dictyomitra multicostata Zittel
Hollis 1997: 69, pl. 16, fig. 10 (Early Paleocene)

N - LINEAGE I (A) ARCHAEODICTYOMITRIDAE

GENUS **Dictyomitroma**
Haeckel, 1887: 1478

SUBGENUS *Dictyomitra* (*Dictyomitroma*)

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: **Dictyomitra costata* Haeckel, 1887 and *Dictyomitra multicostata* Zittel, 1876.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE **DICTYOMITRA**

SYN. (obj.)
FREQUENT

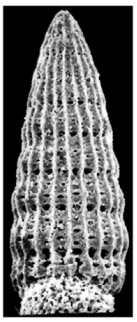
Type



100 µm

Dictyomitra multicostata
Zittel, 1876: 81, pl. 2, fig. 2 [lectotype by Pessagno 1976: 52]

Support



50 µm

Dictyomitra multicostata Zittel
O'Dogherty 1994: 82, pl. 4, fig. 17

N - LINEAGE I (A) ARCHAEODICTYOMITRIDAE

GENUS **Diplostrobus**
Squinabol, 1903: 140

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Diplostrobus crassispina* Squinabol, 1903.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 550

SEE **DICTYOMITRA**

SYN.
FREQUENT

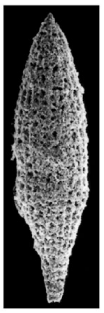
Type



100 µm

Diplostrobus crassispina
Squinabol, 1903: 140, pl. 8, fig. 37

Support



50 µm

Dictyomitra crassispina (Squinabol)
O'Dogherty 1994: 79, pl. 4, fig. 2

N - LINEAGE I (A) ARCHAEODICTYOMITRIDAE

GENUS **Zifondium**
Pessagno, 1977: 47

Remarks: Only the type species clearly belongs to this genus (rarely reported). The support image is a junior subjective synonym; just two species originally included at the time of the generic definition.

Original series: *Dictyomitra paupera* Squinabol, 1904 and *Zifondium lassenensis* Pessagno, 1977.

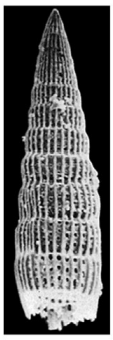
FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 196

SEE **DICTYOMITRA**

SYN.
RARE

Type



200 µm

Zifondium lassenensis
Pessagno, 1977: 47, pl. 7, fig. 4

Support



50 µm

Zifondium sp. A
Pessagno, 1977: 47, pl. 7, fig. 9

N - LINEAGE I (A) EUCYRTIDIIDAE
ASSIGNED IN Petrushevskaya 1981: 210

GENUS **Artocapsa**
Haeckel, 1882: 438

Diagnosis: Eucyrtidiidae with a cylindrical multi-segmented shell. Cephalis small, globular, with a short A apical horn. Internal spicule undescribed. No lateral apophyses or feet related to the D and 2L spines. Aperture may be surrounded by a tubular peristome.

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: **Artocapsa armata* Haeckel, 1887; *Artocapsa elegans* Haeckel, 1887; *Artocapsa fusiformis* Haeckel, 1887; **Artocapsa octocamera* Haeckel, 1887; **Artocapsa quadricamera* Haeckel, 1887; *Artocapsa spinosa* Haeckel, 1887 and *Eucyrtidium infraaculeatum* Stöhr, 1880.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D143)

STATUS **VALID**

AGE *LATE EARLY MIOCENE*

VALID
UNIQUE

Type



50 µm

Artocapsa fusiformis
Haeckel, 1887: 1519, pl. 76, fig. 5

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS **Acanthocyrtis**
Haeckel, 1882: 437

SUBGENUS ***Eucyrtidium* (*Acanthocyrtis*)**

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887) although questionably.

Original series: *Eucyrtidium armatum* Haeckel, 1887; *Eucyrtidium conostoma* Haeckel, 1887; *Eucyrtidium ehrenbergi* Haeckel, 1887; **Eucyrtidium ovatum* Haeckel, 1887 and *Eucyrtidium tricinctum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***ARTOCAPSA***

SYN.?
UNIQUE

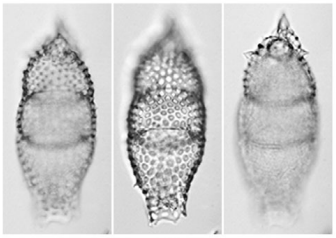
Type



50 µm

Eucyrtidium tricinctum
Haeckel, 1887: 1494, pl. 78, fig. 13

Support



50 µm

Eucyrtidium tricinctum Haeckel
Topotypic material (Challenger Station 225), Suzuki's collection

N - LINEAGE I (A) EUCYRTIDIIDAE
ASSIGNED IN De Wever *et al.* 2001: 278

GENUS **Cymaetron**
Caulet, 1991: 536

Diagnosis: Eucyrtidiidae with a multi-segmented shell. Cephalis small, globular. A as a columella before protruding as a strong apical horn. V spine as a small external thorn. D and 2L prolonged as thoracic ribs on upper thorax. Thorax constricted. Aperture wide open.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Caulet (1991).

Original series: *Cymaetron sinolampas* Caulet, 1991.

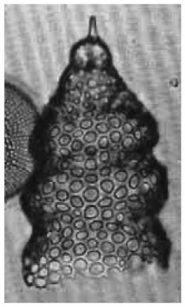
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EOCENE–EARLY OLIGOCENE***

VALID
UNIQUE

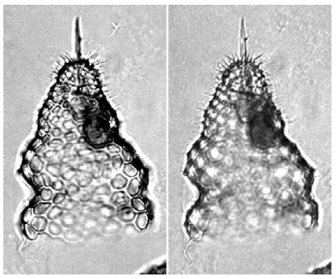
Type



50 µm

Cymaetron sinolampas
Caulet, 1991: 536, pl. 4, fig. 11

Support



50 µm

Cymaetron sinolampas Caulet
Zhang's collection (East Indian Ocean)

N - LINEAGE I (A) EUCYRTIDIIDAE
ASSIGNED IN Petrushevskaya 1981: 209

GENUS **Cyrtocapsella**
Haeckel, 1887: 1512

SUBGENUS ***Cyrtocapsa* (*Cyrtocapsella*)**

Diagnosis: Eucyrtidiidae with a spindle-shaped, multi-segmented (four to five), thick-walled, shell. Cephalis spherical with a short and thin A horn. No D and 2L lateral apophyses or feet. Deep septa between segments. Third segment usually widest. Aperture funnel-shaped.

Remarks: Type species frequently reported.

Original series: *Cyrtocapsa compacta* Haeckel, 1887; *Cyrtocapsa cornuta* Haeckel, 1887; *Cyrtocapsa diploconus* Haeckel, 1887; *Cyrtocapsa fusulus* Haeckel, 1887; **Cyrtocapsa inflata* Haeckel, 1887; *Cyrtocapsa pyrum* Haeckel, 1887 and *Cyrtocapsa tetrapera* Haeckel, 1887.

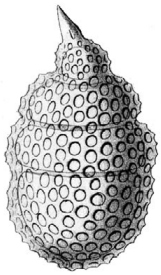
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D143)

STATUS **VALID**

AGE ***LATE OLIGOCENE–LATE LATE MIOCENE***

VALID
FREQUENT

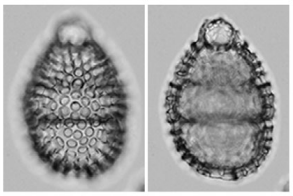
Type



50 µm

Cyrtocapsa tetrapera
Haeckel, 1887: 1512, pl. 78, fig. 5

Support



50 µm

Cyrtocapsa tetrapera Haeckel
Topotypic material (Challenger Station 268), Suzuki's collection

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS **Syringium**
Principi, 1909: 19

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Syringium vinassai* Principi, 1909.

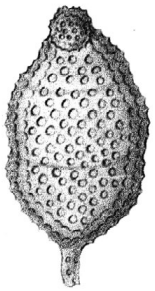
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Riedel & Sanfilippo 1970: 530

SEE ***CYRTOCAPSELLA***

SYN.
UNIQUE

Type



50 µm

Syringium vinassai
Principi, 1909: 19, pl. 1, fig. 60

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) EUCYRTIDIIDAE
ASSIGNED IN Ehrenberg 1846: 385

GENUS ***Eucyrtidium***
Ehrenberg, 1846: 385

NOMINOTYPE ***Eucyrtidium* (*Eucyrtidium*)**

Diagnosis: Euyrtidiidae with a fusiform multi-segmented shell. Small cephalis with a well-developed A horn, D and 2L as elongated furrows or ribs on thorax. No V horn. Segments with almost similar pores separated by internal ridges. Aperture constricted or funnel-shaped.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Cornutella lithocampe* Ehrenberg, 1844a; *Lithocampe acuminata* Ehrenberg, 1844a; *Lithocampe antarctica* Ehrenberg, 1844b; **Lithocampe auricula* Ehrenberg, 1847; *Lithocampe aurita* Ehrenberg, 1844a; *Lithocampe australis* Ehrenberg, 1873b; *Lithocampe punctata* Ehrenberg, 1844a and **Lithocampe*? *stiligera* Ehrenberg, 1845.

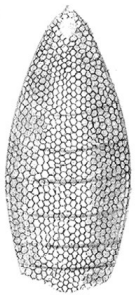
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 33)

STATUS **VALID**

AGE ***EARLY PALEOCENE–LIVING***

VALID
FREQUENT

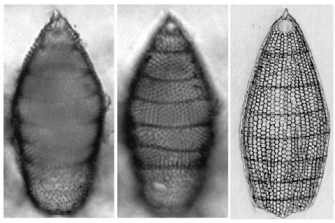
Type



50 µm

Lithocampe acuminata
Ehrenberg, 1844a: 84 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 27

Type



50 µm

Eucyrtidium acuminatum (Ehrenberg)
Suzuki *et al.* 2009a: pl. 14, figs 13a-c [lectotype herein]

N - LINEAGE I (A) ? EUCYRTIDIIDAE

GENUS ***Stichocyrtis***
Haeckel, 1882: 438

SUBGENUS ***Eucyrtidium* (*Stichocyrtis*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Eucyrtidium chrysalidium* Haeckel, 1887 and **Eucyrtidium spinosum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Eucyrtidium spinosum
Haeckel, 1887: 1490, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) EUCYRTIDIIDAE
ASSIGNED IN Petrushevskaya 1981: 211

GENUS ***Glomaria***
Sanfilippo & Riedel, 1970: 455

SUBGENUS ***Lithopera* (*Glomaria*)**

Diagnosis: Eucyrtidiidae with an elongated globular three-segmented shell. Small cephalis often enclosed in thorax with a small A horn. D and 2L sometimes extended as thoracic ribs. Thorax as a loose spongy meshwork in most specimens distally closed.

Remarks: Type species frequently reported.

Original series: *Lithopera* (*Glomaria*) *baueri* Sanfilippo & Riedel, 1970 and *Lithopera* (*Glomaria*) *thornburgi* Sanfilippo & Riedel, 1970.

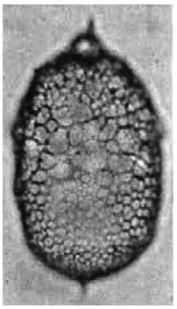
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY EARLY MIOCENE–EARLY LATE MIOCENE***

VALID
FREQUENT

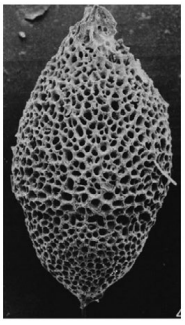
Type



50 µm

Lithopera (*Glomaria*) *baueri*
Sanfilippo & Riedel, 1970: 455, pl. 2, fig. 2

Support



50 µm

Lithopera baueri Riedel & Sanfilippo
Goll 1972a: 960, pl. 32, fig. 4

N - LINEAGE I (A) EUCYRTIDIIDAE
ASSIGNED IN Petrushevskaya 1971a: 171

GENUS ***Lithocampe***
Ehrenberg, 1839a: 128

NOMINOTYPE ***Lithocampe* (*Lithocampe*)**

Diagnosis: Eucyrtidiidae with a multi-segmented shell. Cephalis small partly included in cephalis; very small A horn. Internal spicule undescribed. Segments IV or V usually the widest. Segments separated by internal septa, protruding deeply inside the inner cavity of the shell.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Lithocampe lineata* Ehrenberg, 1839a; *Lithocampe radicula* Ehrenberg, 1839a and *Lithocampe solitaria* Ehrenberg, 1839a.

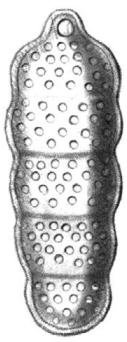
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D143)

STATUS **VALID**

AGE ***EARLY OLIGOCENE–HOLOCENE***

VALID
FREQUENT

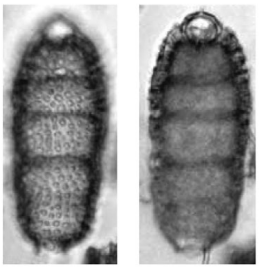
Type



25 µm

Lithocampe radicula
Ehrenberg, 1839a: 130 (unfigured); Ehrenberg, 1839b: 128, pl. 4, fig. 11q

Support



50 µm

Lithocampe radicula Ehrenberg
Suzuki *et al.* 2009a: pl. 12, figs 8a, 8b [topotypic material]

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Lithocampula***
Haeckel, 1887: 1502

SUBGENUS ***Lithocampe* (*Lithocampula*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

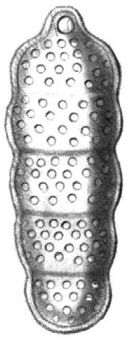
Original series: *Dictyomitra ventricosa* Stöhr, 1880; *Eucyrtidium euporum* Ehrenberg, 1873a; *Eucyrtidium nereidum* Ehrenberg, 1854b; *Eucyrtidium platycephalum* Ehrenberg, 1873a; **Lithocampe fusiformis* Haeckel, 1887 and *Lithocampe radicula* Ehrenberg, 1839a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D143)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***LITHOCAMPE***

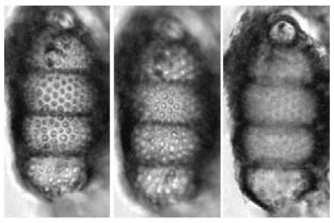
SYN. (obj.) Type
FREQUENT



25 µm

Lithocampe radicula
Ehrenberg, 1839a: 130 (unfigured); 1839b: 128, pl. 4, fig. 11q [Suzuki *et al.*, 2009a: pl. 12, fig. 7; lectotype herein]

Support



50 µm

Lithocampe radicula Ehrenberg
Suzuki *et al.* 2009a: pl. 12, figs 11a-c

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Ariadnella***
Tochilina, 2008: 62

Remarks: Type species frequently reported.

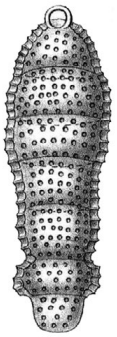
Original series: *Ariadnella numerosa* Tochilina, 2008 and *Lithocampe subligata* Stöhr, 1880

FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***LITHOCAMPE***

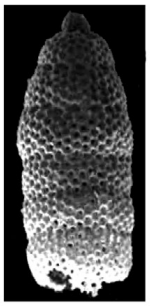
SYN. Support
FREQUENT



50 µm

Lithocampe subligata
Stöhr, 1880: 102, pl. 4, fig. 1

Support



50 µm

Ariadnella numerosa
Tochilina, 2008: 63, fig. 10

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Cyrtopenta***
Tochilina, 1989: 56

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

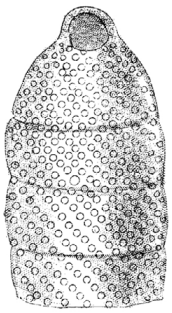
Original series: *Lithocampe punctata* Ehrenberg, 1844a.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Haeckel 1862: 316

SEE ***LITHOCAMPE***

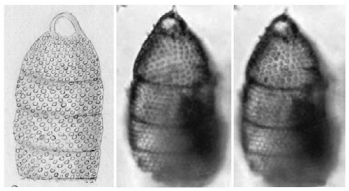
SYN. Type
FREQUENT



25 µm

Lithocampe punctata
Ehrenberg, 1844a: 84 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 24

Type



50 µm

Eucyrtidium punctatum (Ehrenberg)
Suzuki *et al.* 2009a: pl. 15, fig. 7b [lectotype herein]

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Lithomitrissa***
Haeckel, 1887: 1485

SUBGENUS ***Lithomitra* (*Lithomitrissa*)**

Remarks: Type species rarely reported.

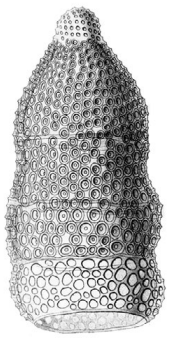
Original series: *Dictyomitra costata* Stöhr, 1880; *Eucyrtidium hyperboreum* Bailey, 1856; *Eucyrtidium seriolatum* Ehrenberg, 1859; *Lithocampe australis* Ehrenberg, 1873b; *Lithocampe eminens* Stöhr, 1880; *Lithocampe punctata* Ehrenberg, 1844a; **Lithomitra cylindrica* Haeckel, 1887 and *Lithomitra infundibulum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D141)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***LITHOCAMPE***

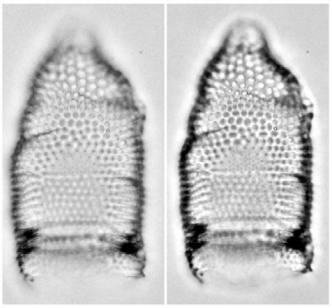
SYN. Type
RARE



50 µm

Lithomitra infundibulum
Haeckel, 1887: 1487, pl. 79, fig. 5

Support



50 µm

Lithomitra infundibulum Haeckel
Topotypic material (Challenger Station 271), Suzuki's collection

N - LINEAGE I (A) EUCYRTIDIIDAE

ASSIGNED IN Petrushevskaya 1981: 210

GENUS **Lithopera**
Ehrenberg, 1846: 385

NOMINOTYPE ***Lithopera* (*Lithopera*)**

Diagnosis: Eucyrtidiidae with a two-segmented spherical shell. Vestigial third segment rarely present. Cephalis simple, spherical, thick-walled with a needle-like A horn. Initially included, D and 2L spines extend as divergent ribs on thorax, or even as small wings. Thoracic pores small, subcircular. No aperture.

Remarks: Type species frequently reported.

Original series: *Lithobotrys*? *denticulata* Ehrenberg, 1844b; *Lithopera bacca* Ehrenberg, 1873a; *Lithopera bursella* Ehrenberg, 1873a; *Lithopera gutta* Ehrenberg, 1873a; *Lithopera oceanica* Ehrenberg, 1873a; **Lithopera pyrum* Ehrenberg, 1873a and *Lithopera*? *setosa* Ehrenberg, 1854b.

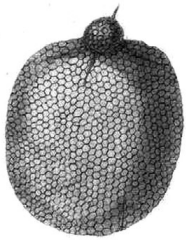
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS **VALID**

AGE ***EARLY MIDDLE MIOCENE–LIVING***

VALID
FREQUENT

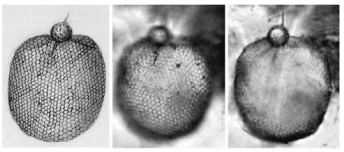
Type



50 µm

Lithopera bacca
Ehrenberg, 1861a: 768 (n.n.); Ehrenberg, 1873b: 296-297, pl. 8, fig. 1

Type



100 µm

Lithopera bacca Ehrenberg
Suzuki *et al.*, 2009a: pl. 56, figs 2a-c [lectotype herein]

N - LINEAGE I (A) EUCYRTIDIIDAE

ASSIGNED IN Petrushevskaya & Kozlova 1972: 546

GENUS **Stichocorys**
Haeckel, 1882: 438

Diagnosis: Eucyrtidiidae with a multi-segmented shell, the first third or fourth segments as a conical upper portion, the subsequent narrower segments as a cylindrical lower portion. Cephalis with a small A horn. No D and 2L feet or ribs. Constrictions and internal septa between segments. Basal aperture usually as a simple rim, either wide or funnel-shaped with teeth.

Remarks: Type species frequently reported.

Original series: *Stichocorys baeri* Haeckel, 1887; *Stichocorys huschkei* Haeckel, 1887; **Stichocorys muelleri* Haeckel, 1887; *Stichocorys okenii* Haeckel, 1887; *Stichocorys panderi* Haeckel, 1887; **Stichocorys rathkei* Haeckel, 1887 and *Stichocorys wolffii* Haeckel, 1887.

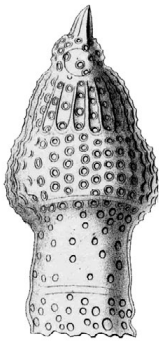
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LATE PLIOCENE***

VALID
FREQUENT

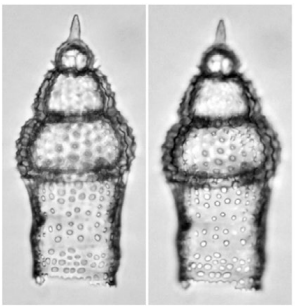
Type



50 µm

Stichocorys wolffi
Haeckel, 1887: 1479, pl. 80, fig. 10

Support



50 µm

Stichocorys wolffi Haeckel
Topotypic material (Challenger Station 225), Suzuki's collection

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N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS **Artophormis**
Haeckel, 1882: 438

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: **Artophormis costata* Haeckel, 1887; *Artophormis horrida* Haeckel, 1887 and *Calocyclas barbadensis* Ehrenberg, 1874b.

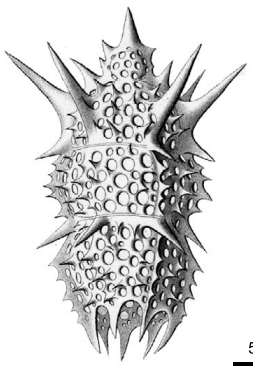
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D139)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STICHOCORYS***

SYN.
UNIQUE

Type



50 µm

Artophormis horrida
Haeckel, 1887: 1458, pl. 75, fig. 2

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS **Cyrtharia**
Tochilina, 2008: 63

Remarks: The type species has been figured just once.

Original series: *Cyrtharia septima* Tochilina, 2008.

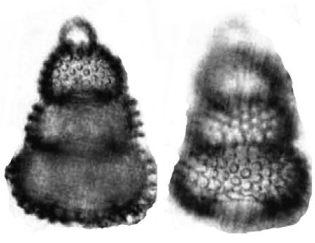
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STICHOCORYS***

SYN.
UNIQUE

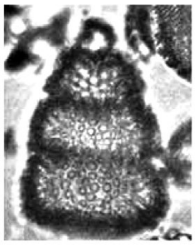
Type



50 µm

Cyrtharia septima
Tochilina, 2008: 64, figs 14a, 14b

Support



50 µm

Cyrtharia septima
Tochilina, 2008: 64, fig. 21

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS **Cyrtophormis**
Haeckel, 1887: 1459

NOMINOTYPE ***Cyrtophormis* (*Cyrtophormis*)**

Remarks: See comments under *CYRTOPHORMIUM*.

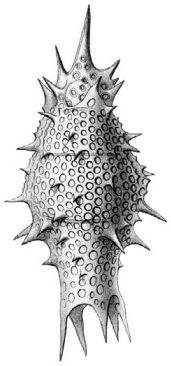
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D139)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 213

SEE ***STICHOCORYS***

SYN.
FREQUENT

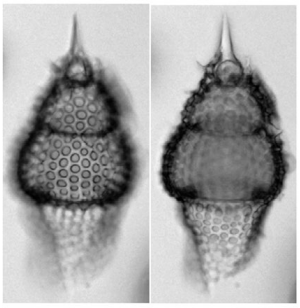
Type



50 µm

Cyrtophormis armata
Haeckel, 1887: 1460, pl. 78, fig. 17

Support



50 µm

Cyrtophormis armata Haeckel
Kamikuri *et al.* 2009: 730, figs 10o

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS **Cyrtophormium**
Haeckel, 1887: 1460

SUBGENUS ***Cyrtophormis* (*Cyrtophormium*)**

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: *Cyrtophormis armata* Haeckel, 1887 and **Cyrtophormis ovata* Haeckel, 1887.

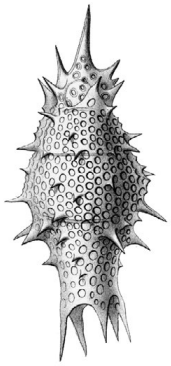
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D139)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CYRTOPHORMIS***

SYN. (obj.)
FREQUENT

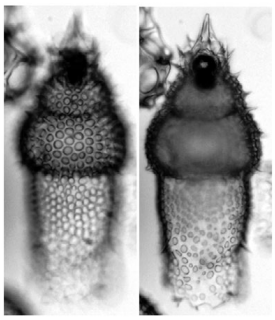
Type



50 µm

Cyrtophormis armata
Haeckel, 1887: 1460, pl. 78, fig. 17

Support



50 µm

Cyrtophormis armata Haeckel
Kamikuri 2019: 153, pl. 10, figs 13a, 13b

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS **Cyrtophormiscus**
Haeckel, 1887: 1460

SUBGENUS ***Cyrtophormis* (*Cyrtophormiscus*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym. Heterogeneous group of species originally included.

Original series: **Cyrtophormis aculeata* Haeckel, 1887; *Cyrtophormis cingulata* Haeckel, 1887 and *Eucyrtidium acutatum* Stöhr, 1880.

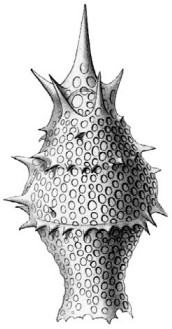
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D139)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 547

SEE ***STICHOCORYS***

SYN.
UNIQUE

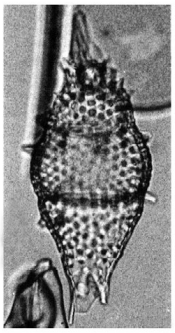
Type



50 µm

Cyrtophormis cingulata
Haeckel, 1887: 1460, pl. 78, fig. 18

Support



50 µm

Stichocorys armata (Haeckel)
Sugiyama & Furutani 1992: 210, pl. 14, fig. 5

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS **Stichophaenoma**
Haeckel, 1887: 1466

SUBGENUS ***Stichophaena* (*Stichophaenoma*)**

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Stichophaena nonaria* Haeckel, 1887 and *Stichophaena novena* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 213

SEE ***STICHOCORYS***

SYN.
UNIQUE

Type



50 µm

Stichophaena nonaria
Haeckel, 1887: 1466, pl. 76, fig. 6

Support



50 µm

Stichophaena novena
Haeckel, 1887: 1466, pl. 76, fig. 7

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Cyrtocapsoma***
Haeckel, 1887: 1514

SUBGENUS ***Cyrtocapsa* (*Cyrtocapsoma*)**

Remarks: Type species only illustrated by Stöhr (1880); the support image is one of those species originally included into this genus.

Original series: *Cyrtocapsa chrysalidium* Haeckel, 1887; **Cyrtocapsa costata* Haeckel, 1887 and *Eucyrtidium incrassatum* Stöhr, 1880.

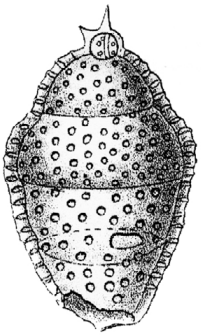
FIXATION SUBSEQUENT DESIGNATION (Petrushevskaya 1981: 210)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***STICHOCORYS***

SYN.?
UNIQUE

Type



50 µm

Eucyrtidium incrassatum
Stöhr, 1880: 105, pl. 4, fig. 9

Support



50 µm

Cyrtocapsa chrysalidium
Haeckel, 1887: 1515, pl. 76, fig. 9

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Eusyringoma***
Haeckel, 1887: 1498

SUBGENUS ***Eusyringium* (*Eusyringoma*)**

Remarks: Only the type species clearly belongs to this genus (reported only by Stöhr 1880).

Original series: *Eucyrtidium lagenoides* Stöhr, 1880; *Eucyrtidium raphanus* Stöhr, 1880; *Eusyringium cannostoma* Haeckel, 1887 and *Eusyringium siphonostoma* Haeckel, 1887.

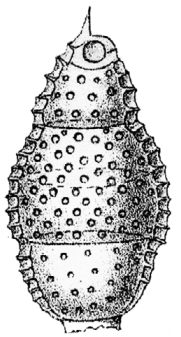
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 35)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***STICHOCORYS***

SYN.?
UNIQUE

Type



50 µm

Eucyrtidium lagenoides
Stöhr, 1880: 104, pl. 4, fig. 8

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) EUCYRTIDIIDAE
ASSIGNED IN Petrushevskaya 1971a: 215

GENUS ***Stichophatna***
Haeckel, 1882: 439

Diagnosis: Eucyrtidiidae with a muti-segmented (six to twelve) shell. A horn long and sometimes curved. No ribs or feet from D, L spines. Thorns coalescing in longitudinal ridges on segments separated by constrictions and septa. Aperture closed or with peri-oral spines.

Remarks: See comments under *STICHOPHAENIDIUM*.

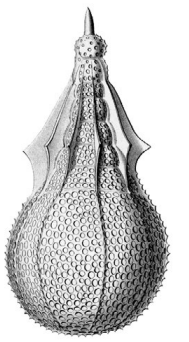
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS **VALID**

AGE ***EARLY OLIGOCENE–LIVING***

VALID
UNIQUE

Type



50 µm

Stichophaena ritteriana
Haeckel, 1887: 1465, pl. 75, fig. 12

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) ? EUCYRTIDIIDAE

GENUS ***Stichophaena*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1465

NOMINOTYPE ***Stichophaena* (*Stichophaena*)**

Remarks: An incorrect subsequent spelling for *STICHOPHATNA*. By referring to p. 439 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *STICHOPHAENA* to be an emendation of the name *STICHOPHATNA*, which is unjustified according to the provisions of ICZN art. 33.3.

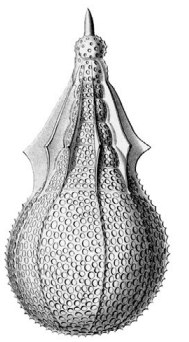
FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D140)

STATUS INVALID NAME
designated herein

SEE ***STICHOPHATNA***

INV.

Type



50 µm

Stichophaena ritteriana
Haeckel, 1887: 1465, pl. 75, fig. 12

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Stichophaenidium***
Haeckel, 1887: 1465

SUBGENUS ***Stichophaena* (*Stichophaenidium*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Stichophaena darwiniana* Haeckel, 1887; **Stichophaena goetheana* Haeckel, 1887 and *Stichophaena ritteriana* Haeckel, 1887.

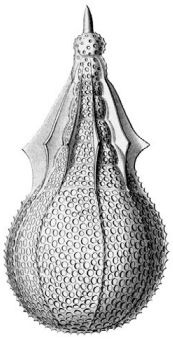
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***STICHOPHAENA***

SYN. (obj.)
UNIQUE

Type



50 µm

Stichophaena ritteriana
Haeckel, 1887: 1465, pl. 75, fig. 12

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Cyrtolagena***
Haeckel, 1887: 1451

SUBGENUS ***Cyrtopera* (*Cyrtolagena*)**

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: **Cyrtopera lagenella* Haeckel, 1887 and *Cyrtopera laguncula* Haeckel, 1887.

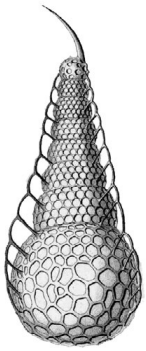
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D138)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 175

SEE ***STICHOPHATNA***

SYN.
FREQUENT

Type



50 µm

Cyrtopera laguncula
Haeckel, 1887: 1451, pl. 75, fig. 10

Support



50 µm

Cyrtopera laguncula Haeckel
Chen *et al.* 2017: 221, pl. 79, figs 15, 16, 18

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Sticholagena***
Haeckel, 1887: 1449

SUBGENUS ***Stichopera* (*Sticholagena*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Stichopera clavata* Haeckel, 1887; *Stichopera pectinata* Haeckel, 1887 and **Stichopera verticillata* Haeckel, 1887.

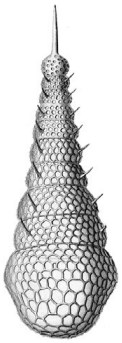
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 582

SEE ***STICHOPHATNA***

SYN.
FREQUENT

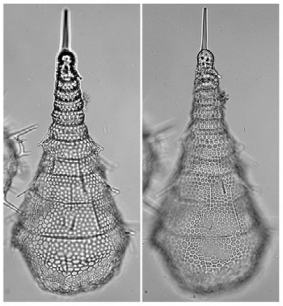
Type



50 µm

Stichopera pectinata
Haeckel, 1887: 1449, pl. 75, fig. 11

Support



100 µm

Stichopera pectinata Haeckel
Zhang's collection (South China Sea)

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Stichophormiscus***
Haeckel, 1887: 1455

SUBGENUS ***Stichophormis* (*Stichophormiscus*)**

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: *Stichophormis novena* Haeckel, 1887 and **Stichophormis radiata* Haeckel, 1887.

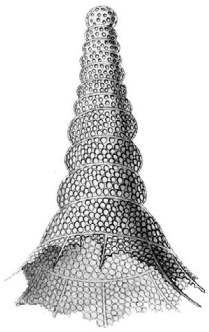
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS JUNIOR SYNONYM
synonymized by Nishimura & Yamauchi 1984: 55

SEE ***STICHOPHATNA***

SYN.
RARE

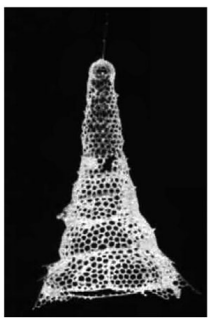
Type



50 µm

Stichophormis novena
Haeckel, 1887: 1455, pl. 79, fig. 9

Support



50 µm

Cyrtolagena novena (Haeckel)
Nishimura & Yamauchi 1984: 55, pl. 41, fig. 9

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Stichophormium***
Haeckel, 1887: 1454

SUBGENUS ***Stichophormis* (*Stichophormium*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Stichophormis cornutella* Haeckel, 1887; **Stichophormis lucerna* Haeckel, 1887 and **Stichophormis pyramidalis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Petrushevskaya 1981: 175)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STICHOPHATNA***

SYN.
FREQUENT

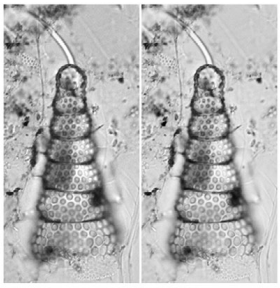
Type



50 µm

Stichophormis cornutella
Haeckel, 1887: 1455, pl. 75, fig. 9

Support



200 µm

Stichophormis cornutella Haeckel
Suzuki's collection (Quaternary, North Pacific)

N - LINEAGE I (A) ? EUCYRTIDIIDAE

GENUS ***Stichopera***
Haeckel, 1882: 439

NOMINOTYPE ***Stichopera* (*Stichopera*)**

Remarks: See comments under *STICHOPERINA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Stichopera ovata
Haeckel, 1887: 1448, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) ? EUCYRTIDIIDAE

GENUS ***Stichoperina***
Haeckel, 1887: 1448

SUBGENUS ***Stichopera* (*Stichoperina*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Stichopera lagena* Haeckel, 1887; **Stichopera ovata* Haeckel, 1887 and **Stichopera serrata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***STICHOPERA***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Stichopera ovata
Haeckel, 1887: 1448, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) EUCYRTIDIIDAE
ASSIGNED IN Petrushevskaya 1981: 208

GENUS ***Stichopterygium***
Haeckel, 1882: 439

SUBGENUS ***Artopilium* (*Stichopterygium*)**

Diagnosis: Eucyrtidiidae with a multi-segmented shell. Cephalis with a simple A horn. D and 2L prolonged in upper part of thoracic wall. No feet or wings. Thorax often separated from abdomen by a stronger constriction. Aperture usually open, sometimes tube-like.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. The subsequent designation by Campbell (1954: D136) of *Artopilium trifenestra* Haeckel, 1887 as the type species seems erroneous, because Haeckel (1887: 1442) proposed himself this species as "perhaps the type of a peculiar genus, *STICHOPTERYGIUM*".

Original series: *Artopilium stichopterygium* Haeckel, 1887.

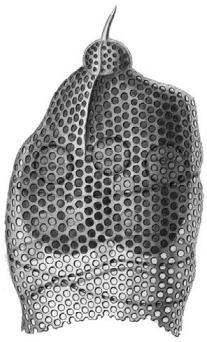
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LIVING***

VALID
FREQUENT

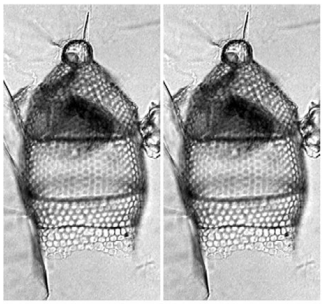
Type



25 µm

Lithocampe anomala
Haeckel, 1861b: 839 (unfigured); Haeckel, 1862: 1442, pl. 75, fig. 8

Support



100 µm

Lithocampe anomala Haeckel
Zhang's collection (East Indian Ocean)

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Artocyrtis***
Haeckel, 1887: 1490

SUBGENUS ***Eucyrtidium* (*Artocyrtis*)**

Remarks: Type species frequently reported.

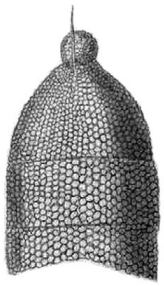
Original series: *Eucyrtidium buetschlii* Haeckel, 1887; *Eucyrtidium cienkowski* Haeckel, 1887; *Eucyrtidium elongatum* Stöhr, 1880; *Eucyrtidium eruca* Ehrenberg, 1874b; *Eucyrtidium galatheae* Ehrenberg, 1854b; *Eucyrtidium hertwigii* Haeckel, 1887; *Eucyrtidium montiparum* Ehrenberg, 1874b; *Eucyrtidium profundissimum* Ehrenberg, 1873a; **Eucyrtidium scalarium* Haeckel, 1887; **Eucyrtidium stoehri* Haeckel, 1887; *Eucyrtidium teuscheri* Haeckel, 1887; *Lithocampe galea* Haeckel, 1861b; *Lithocampe lagena* Haeckel, 1861b and *Thyrsocyrtis anthophora* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 34)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STICHOPTERYGIUM***

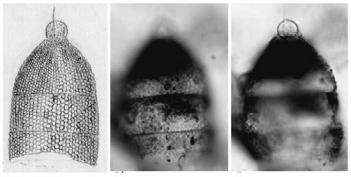
SYN. Type
FREQUENT



50 µm

Eucyrtidium profundissimum
Ehrenberg, 1873a: 311 (unfigured); Ehrenberg, 1873b: 292-293, pl. 7, fig. 12

Type



50 µm

Eucyrtidium profundissimum Ehrenberg
Suzuki *et al.* 2009a: pl. 55, figs 5a-c [lectotype herein]

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Conostrobus***
Haeckel, 1887: 1469

SUBGENUS ***Lithostrobus* (*Conostrobus*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

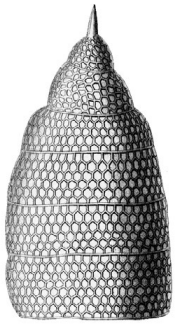
Original series: *Eucyrtidium cuspidatum* Bailey, 1856; **Lithostrobus distichus* Haeckel, 1887; *Lithostrobus hexastichus* Haeckel, 1887; **Lithostrobus monostichus* Haeckel, 1887; **Lithostrobus pentastichus* Haeckel, 1887 and *Lithostrobus tetrastichus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D141)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STICHOPTERYGIUM***

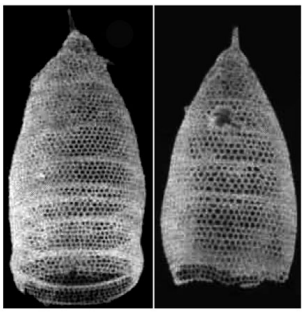
SYN. Type
FREQUENT



50 µm

Lithostrobus hexastichus
Haeckel, 1887: 1470, pl. 80, fig. 15

Support



50 µm

Eucyrtidium hexastichum (Haeckel)
Nishimura & Yamauchi 1984: 57, pl. 39, figs 9, 10

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Spirocyrtoma***
Haeckel, 1887: 1509

SUBGENUS ***Spirocyrtis* (*Spirocyrtoma*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

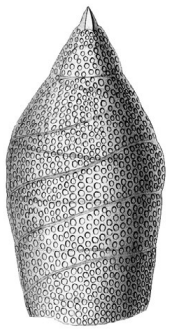
Original series: *Spirocyrtis diplospira* Haeckel, 1887; **Spirocyrtis hemispira* Haeckel, 1887; *Spirocyrtis holospira* Haeckel, 1887 and *Spirocyrtis merospira* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D142)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 205

SEE ***STICHOPTERYGIUM***

SYN. Type
VERY RARE



50 µm

Spirocyrtis holospira
Haeckel, 1887: 1509, pl. 76, fig. 16

Support



50 µm

Spirocyrtis diplospira
Haeckel, 1887: 1510, pl. 76, fig. 17

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Stichopodium***
Haeckel, 1882: 439

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

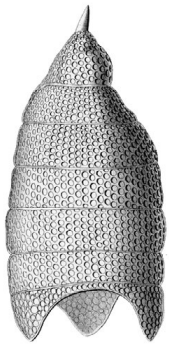
Original series: *Stichopodium dictyopodium* Haeckel, 1887.

FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***STICHOPTERYGIUM***

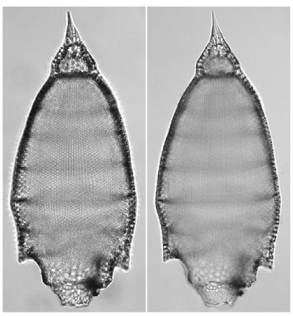
SYN. Type
FREQUENT



50 µm

Stichopodium dictyopodium
Haeckel, 1887: 323, pl. 7, fig. 11

Support



50 µm

Stichopodium dictyopodium Haeckel
Zhang's collection (South China Sea)

N - LINEAGE I (A) EUCYRTIDIIDAE

ASSIGNED IN Petrushevskaya 1981: 227

GENUS ***Theocoronium***
Haeckel, 1887: 1415

SUBGENUS ***Theocorys* (*Theocoronium*)**

Diagnosis: Eucyrtidiidae with a three-segmented shell. Cephalis globular with a long robust A horn. Internal structure not described. No lateral ribs, wings or feet, on nearly spherical thorax. Abdomen ovate with a constricted aperture, or closed.

Remarks: Type species rarely reported.

Original series: *Eucyrtidium creticum* Ehrenberg, 1859; *Eucyrtidium scolopax* Ehrenberg, 1874b; *Eucyrtidium turgidulum* Ehrenberg, 1873a; *Theocorys ovata* Haeckel, 1887; *Theocorys plutonis* Haeckel, 1887 and *Theocorys veneris* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 31)

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

VALID
RARE

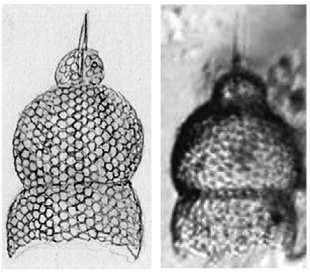
Type



25 µm

Eucyrtidium turgidulum
Ehrenberg, 1861a: 768 (n.n.); Ehrenberg, 1873b: 292-293, pl. 7, fig. 13

Type



25 µm

Eucyrtidium turgidulum Ehrenberg
Suzuki *et al.* 2009a: pl. 55, figs 11a, 11b [lectotype herein]

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Theocapsetta***
Haeckel, 1887: 1426

SUBGENUS ***Theocapsa* (*Theocapsetta*)**

Remarks: No type species was designated. Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym. Campbell (1954: D136) considers *THEOCAPSETTA* to be the nominate subgenus of *THEOCAPSA* Haeckel, 1882. However, this seems inappropriate since the type species of *THEOCAPSA*, *Theocapsa gratiosa* Rüst, 1885, was not among those species originally assigned to *THEOCAPSETTA*.

Original series: *Theocapsa aristotelis* Haeckel, 1887; *Theocapsa democriti* Haeckel, 1887; **Theocapsa galeni* Haeckel, 1887 and **Theocapsa plini* Haeckel, 1887.

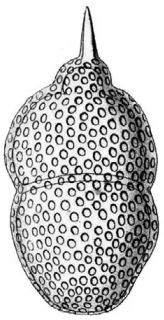
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THEOCORONIUM***

SYN.
UNIQUE

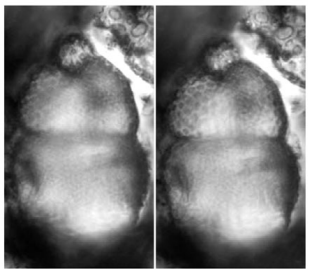
Type



50 µm

Theocapsa aristotelis
Haeckel, 1887: 1427, pl. 66, fig. 6

Type



25 µm

Eucyrtidium creticum Ehrenberg
Suzuki *et al.* 2009a: pl. 37, figs 7b, 7d [lectotype herein]

N - LINEAGE I (A) EUCYRTIDIIDAE

GENUS ***Theocapsomma***
Haeckel, 1887: 1428

SUBGENUS ***Theocapsa* (*Theocapsomma*)**

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Theocapsa forskali* Haeckel, 1887; *Theocapsa linnaei* Haeckel, 1887; **Theocapsa pallasi* Haeckel, 1887 and *Theocapsa wolffi* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THEOCORONIUM***

SYN.
UNIQUE

Type



50 µm

Theocapsa linnaei
Haeckel, 1887: 1429, pl. 66, fig. 13

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) EUCYRTIDIIDAE

ASSIGNED IN Petrushevskaya 1981: 206

GENUS ***Tricolocamptra***
Haeckel, 1887: 1413

SUBGENUS ***Tricolocampe* (*Tricolocamptra*)**

Diagnosis: Eucyrtidiidae with a three-segmented shell. Cephalis with a short A horn. D and 2L spines extended as ribs on thoracic surface, but almost not externally noticeable. Abdomen may be subdivided by surficial strictures. Aperture open or closed by a meshwork.

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887). The support image corresponds to a subsequent species assigned to this genus; in turn, a junior subjective synonym of *Eucyrtidium teuscheri* Haeckel, 1887.

Original series: **Eucyrtidium arctum* Ehrenberg, 1859; **Tricolocampe cingulata* Haeckel, 1887; **Tricolocampe doliolum* Haeckel, 1887 and *Tricolocampe urnula* Haeckel, 1887.

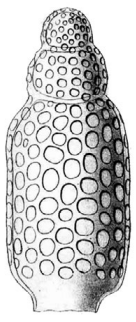
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS **VALID**

AGE ***LATE MIDDLE MIOCENE***

VALID
UNIQUE

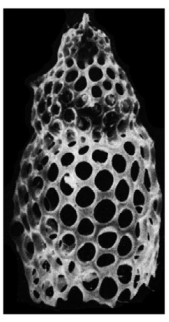
Type



50 µm

Tricolocampe urnula
Haeckel, 1887: 1413, pl. 66, fig. 22

Support



50 µm

Stichopylium variabile Popofsky
Poluzzi 1982: 57, pl. 26, fig. 5

N - LINEAGE I (A) — EUCYRTIDIIDAE
ASSIGNED HEREIN

GENUS ***Udan***
Renz, 1976: 127

Diagnosis: Eucyrtidiidae with a multi-segmented shell. Cephalis with a short pyramidal A horn. D and 2L as thoracic ribs or short winglets. Abdominal segments separated by different transversal constrictions and with rounded hexagonal sections. Aperture open.

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

Original series: *Udan undulata* Renz, 1976.

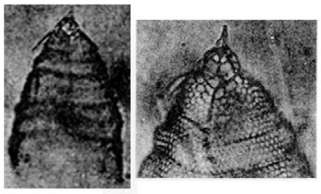
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

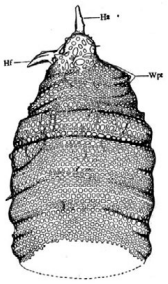
Type



50 µm

Udan undulata
Renz, 1976: 128, pl. 4, figs 2a, 2b

Support



50 µm

Artopilium sitularium
Tan & Tchang, 1976: 292, text-fig. 73

N - LINEAGE I (A) — ? EUCYRTIDIIDAE

GENUS ***Artophatna***
Haeckel, 1882: 438

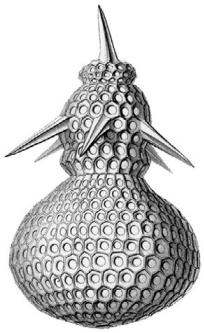
Remarks: See comments under *ARTOPHAENA*. Only the type species has been illustrated (reported only by Haeckel 1887).

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



50 µm

Artophaena aerostatica
Haeckel, 1887: 1463, pl. 75, fig. 4

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) — ? EUCYRTIDIIDAE

GENUS ***Artophaena*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1463

Remarks: An incorrect subsequent spelling for *ARTOPHATNA*. By referring back to p. 438 in his *Prodromus* of 1882 (Haeckel 1882), Haeckel in 1887 apparently means *ARTOPHAENA* to be an emendation of the name *ARTOPHATNA* which is unjustified according to the provisions of ICZN art. 33.3.

Original series: *Artophaena aerostatica* Haeckel, 1887; *Artophaena hexalatractus* Haeckel, 1887; *Artophaena hexapodiscus* Haeckel, 1887 and *Artophaena senaria* Haeckel, 1887.

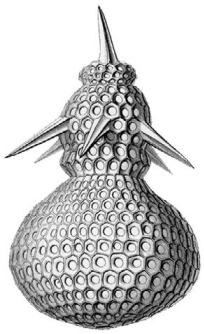
FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D140)

STATUS INVALID NAME
designated herein

SEE ***ARTOPHATNA***

INV.

Type



50 µm

Artophaena aerostatica
Haeckel, 1887: 1463, pl. 75, fig. 4

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) — ? EUCYRTIDIIDAE

GENUS ***Diabolocampe***
Burma, 1959: 329

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

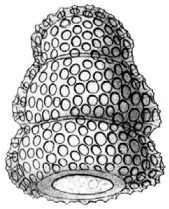
Original series: *Eucyrtidium cryptocephalum* Ehrenberg, 1874b; *Eucyrtidium versipellis* Ehrenberg, 1874b; *Theocampe* (*Theocamptra*) *pavonis* Clark & Campbell, 1945; *Theocampe sphaerothorax* Haeckel, 1887 and *Theocampe stenostoma* Haeckel, 1887.

FIXATION ORIGINAL DESIGNATION

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



50 µm

Theocampe stenostoma
Haeckel, 1887: 1423, pl. 66, fig. 23

Support

NO IMAGE PUBLISHED

no image available

N - Lineage I (A) ? EUCYRTIDIIDAE

GENUS ***Podocampe***
Haeckel, 1882: 439

Remarks: Type species never figured. The support image is the only species figured originally in this genus.

Original series: **Podocampe conica* Haeckel, 1887; **Podocampe cornuta* Haeckel, 1887; *Podocampe trictenota* Haeckel, 1887 and **Podocampe tripodiscus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

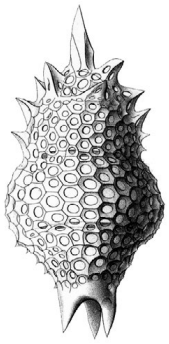
STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D. Type

UNFIGURED SPECIES

Podocampe tripodiscus
Haeckel, 1887: 1446, unfigured

Support



50 µm

Podocampe trictenota
Haeckel, 1887: 1446, pl. 97, fig. 15

N - Lineage I (A) ? EUCYRTIDIIDAE

GENUS ***Pylosphaera***
Ehrenberg, 1859: 12

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Suzuki *et al.* (2009a, Ehrenberg's collection).

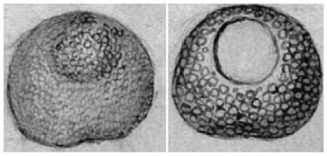
Original series: *Pylosphaera mediterranea* Ehrenberg, 1859.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D. Type

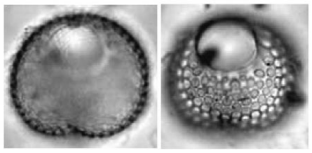
VERY RARE



50 µm

Pylosphaera mediterranea
Ehrenberg, 1858: 549 (n.n.); Ehrenberg, 1859: 35 (unfigured); Suzuki *et al.* 2009a: pl. 37, figs 2a, 2b [lectotype herein]

Type



50 µm

Pylosphaera mediterranea Ehrenberg
Suzuki *et al.* 2009a: pl. 37, figs 2c, 2d [lectotype herein]

N - Lineage I (A) ? EUCYRTIDIIDAE

GENUS ***Spirocampe***
Haeckel, 1882: 438

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

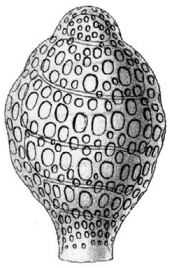
Original series: *Spirocampe allospira* Haeckel, 1887; *Spirocampe callispira* Haeckel, 1887 and **Spirocampe polyspira* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D142)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D. Type

UNIQUE



50 µm

Spirocampe callispira
Haeckel, 1887: 1511, pl. 76, fig. 11

Support

NO IMAGE PUBLISHED

no image available

N - Lineage I (A) LITHOSTROBIDAE
ASSIGNED IN Petrushevskaya 1975: 582

GENUS ***Lithostrobus***
Bütschli, 1882b: 529

NOMINOTYPE ***Lithostrobus* (*Lithostrobus*)**

Diagnosis: Lithostrobidae with a conical multi-segmented (six to ten) conical, sometimes curved, shell. Cephalis small with a strong A horn. D and 2L spines may extended as small ribs on thoracic wall almost not protruding. Constrictions and internal septa between segments, which are increasing in width and height distally. Surface smooth or slightly papillose. Large aperture circular.

Remarks: Only the type species clearly belongs to this genus; rarely reported.

Original series: **Dictyomitra costata* Haeckel, 1887; *Eucyrtidium argus* Ehrenberg, 1874b; *Eucyrtidium articulatum* Ehrenberg, 1874b; *Eucyrtidium cornutella* Ehrenberg, 1862b; *Eucyrtidium cuspidatum* Bailey, 1856; *Eucyrtidium microporum* Ehrenberg, 1874b and *Eucyrtidium picus* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D141)

STATUS **VALID**

AGE ***Early Turonian–Late Late Miocene***

VALID Type

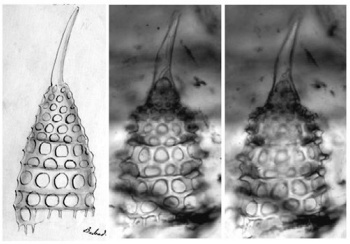
RARE



50 µm

Eucyrtidium argus
Ehrenberg, 1874b: 225 (unfigured); Ehrenberg, 1876: 70, pl. 9, fig. 1

Type



100 µm

Eucyrtidium argus Ehrenberg
Ogane *et al.* 2009b: pl. 48, figs 8a-c [lectotype herein]

N - LINEAGE I (A) LITHOSTROBIDAE

GENUS **Cornustrobus**
Haeckel, 1887: 1470

SUBGENUS ***Lithostrobus* (*Cornustrobus*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Lithostrobus caloceras* Haeckel, 1887; *Lithostrobus cyrtoceras* Haeckel, 1887; **Lithostrobus leptoceras* Haeckel, 1887 and **Lithostrobus macroceras* Haeckel, 1887.

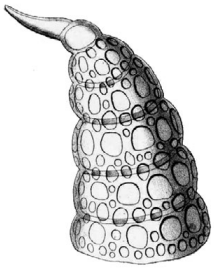
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D141)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 173

SEE ***LITHOSTROBUS***

SYN.
UNIQUE

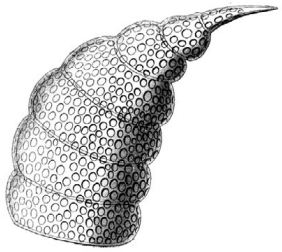
Type



50 µm

Lithostrobus caloceras
Haeckel, 1887: 1471, pl. 80, fig. 4

Support



50 µm

Lithostrobus cyrtoceras
Haeckel, 1887: 1470, pl. 80, fig. 2

N - LINEAGE I (A) LITHOSTROBIDAE

GENUS **Cyrtostrobus**
Haeckel, 1887: 1471

SUBGENUS ***Lithostrobus* (*Cyrtostrobus*)**

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Eucyrtidium argus* Ehrenberg, 1874b; *Eucyrtidium cornutella* Ehrenberg, 1862b; *Eucyrtidium cuspidatum* Bailey, 1856; *Eucyrtidium microporum* Ehrenberg, 1874b; *Eucyrtidium picus* Ehrenberg, 1874b; *Eucyrtidium tornatum* Ehrenberg, 1873a; *Lithostrobus acuminatus* Haeckel, 1887; *Lithostrobus conulus* Haeckel, 1887; *Lithostrobus cornutus* Haeckel, 1887; *Lithostrobus hexagonalis* Haeckel, 1887; **Lithostrobus quadratus* Haeckel, 1887 and *Lithostrobus seriatus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 33)

STATUS JUNIOR SYNONYM?
synonymized by Petrushevskaya 1981: 171

SEE ***LITHOSTROBUS***

SYN.?
UNIQUE

Type



50 µm

Lithostrobus conulus
Haeckel, 1887: 1472, pl. 80, fig. 1

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE I (A) LITHOSTROBIDAE

GENUS **Eostichomitra**
Empson-Morin, 1981: 280

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Eostichomitra warzigita* Empson-Morin, 1981.

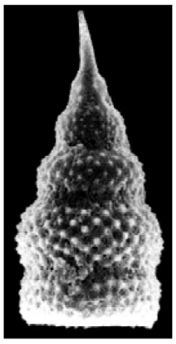
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***LITHOSTROBUS***

SYN.
FREQUENT

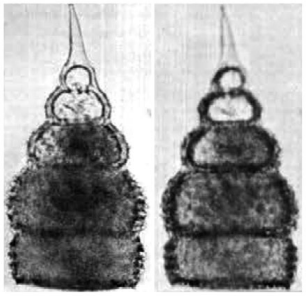
Type



50 µm

Eostichomitra warzigita
Empson-Morin, 1981: 280, pl. 13, fig. 1a

Support



50 µm

Eostichomitra warzigita
Empson-Morin, 1981: 280, pl. 13, figs 1b, 1c

N - LINEAGE I (A) XITOMITRIDAE
ASSIGNED IN O'Dogherty *et al.* 2017: 60

GENUS **Dictyomitrella**
Haeckel, 1887: 1476

SUBGENUS ***Dictyomitra* (*Dictyomitrella*)**

Diagnosis: Xitomitridae with a multisegmented shell. Cephalis small with a very short A horn. Internal spicule undescribed. Post-cephalic segments increasing in width and height but not the two final segments. No lateral apophyses or feet. Aperture usually open.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: **Dictyomitra conica* Haeckel, 1887; *Eucyrtidium articulatum* Ehrenberg, 1874b and *Eucyrtidium macilentum* Ehrenberg, 1873a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS **VALID**

AGE ***EARLY AALENIAN–LATE MIDDLE EOCENE***

VALID
FREQUENT

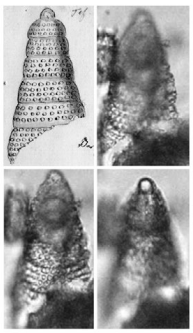
Type



25 µm

Eucyrtidium articulatum
Ehrenberg, 1874b: 226 (unfigured); Ehrenberg, 1876: 70, pl. 11, fig. 3

Type



50 µm

Eucyrtidium articulatum Ehrenberg
Ogane *et al.* 2009b: pl. 22, figs 1a-c [lectotype herein]

N - LINEAGE I (A) XITOMITRIDAE

GENUS ***Parvimitrella***
O'Dogherty, Gorican & Gawlick, 2017: 61

Remarks: Type species rarely reported. The support image is one of those species originally included into this genus.

Original series: *Amphipyndax plousios* Foreman, 1968; *Parvifavus irregularis* Takemura, 1986; *Pseudodictyomitrella wallacheri* Kozur & Mostler in Grill & Kozur, 1986; *Stichomitra*? *cechena* Foreman, 1968; *Stichomitra*? *angulata* Bragin & Tekin, *in* Bragin *et al.*, 2002; *Stichomitra cathara* Foreman, 1968; *Stichomitra communis* Squinabol, 1903; *Stichomitra compsa* Foreman, 1968; *Stichomitra magna* Squinabol, 1904 and *Stichomitra navalis* O'Dogherty, 1994.

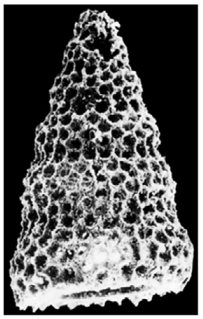
FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DICTYOMITRELLA***

SYN.
RARE

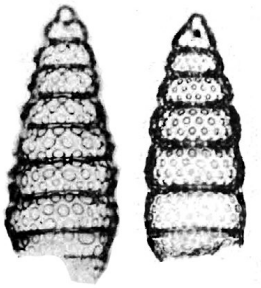
Type



25 µm

Pseudodictyomitrella wallacheri
Grill & Kozur, 1986: 253, pl. 4, fig. 5

Support



50 µm

Stichomitra compsa
Foreman, 1968: 72, pl. 8, figs 8a, 8b

N - LINEAGE II (B) PLECTOPYRAMIDIDAE
ASSIGNED IN Petrushevskaya 1981: 158

GENUS ***Cinclopyramis***
Haeckel, 1879a: 705

Diagnosis: Plectopyramididae with a slender, pyramidal shell, with nine strong radial ribs connected by eighteen to twenty-four complete horizontal rings resulting in subregular square meshes with a very delicate secondary meshwork. Structure of the apex never precisely described.

Remarks: Monospecific genus. Because no other figures are available, the support image is selected among those species subsequently assigned to this genus. The SD by Campbell (1954: D118) of *Cinclopyramis cribellum* Haeckel, 1887 as type species is erroneous.

Original series: *Cinclopyramis murrayana* Haeckel, 1879a.

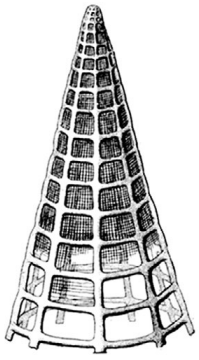
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY CALLOVIAN–LIVING***

VALID
UNIQUE

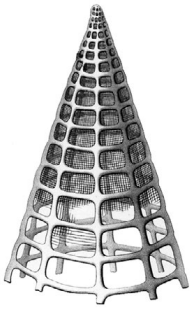
Type



100 µm

Cinclopyramis murrayana
Haeckel, 1879a: 705, pl. 16, fig. 8

Support



100 µm

Cinclopyramis infundibulum
Haeckel, 1887: 1161, pl. 54, fig. 7

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

GENUS ***Peripyramis***
Haeckel, 1882: 428

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: *Peripyramis circumtexta* Haeckel, 1887 and **Peripyramis spongiosa* Haeckel, 1887.

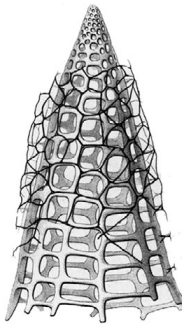
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D119)

STATUS JUNIOR SYNONYM
synonymized by Suzuki *et al.* 2009b: 262

SEE ***CINCLOPYRAMIS***

SYN.
FREQUENT

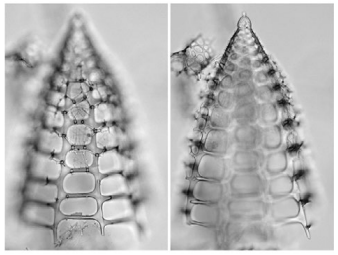
Type



100 µm

Peripyramis circumtexta
Haeckel, 1887: 1162, pl. 54, fig. 5

Support



50 µm

Peripyramis circumtexta Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

GENUS ***Enneapleuris***
Haeckel, 1887: 1257

SUBGENUS ***Plectopyramis* (*Enneapleuris*)**

Remarks: Type species frequently reported.

Original series: *Plectopyramis dodecomma* Haeckel, 1887; *Plectopyramis fenestrata* Haeckel, 1887; **Plectopyramis furcata* Haeckel, 1887; **Plectopyramis heteromma* Haeckel, 1887; **Plectopyramis polygonomma* Haeckel, 1887; **Plectopyramis quadratomma* Haeckel, 1887; **Plectopyramis serrata* Haeckel, 1887 and *Plectopyramis trapezomma* Haeckel, 1887.

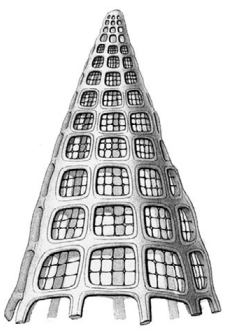
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128)

STATUS JUNIOR SYNONYM
synonymized by Suzuki *et al.* 2009b: 262

SEE ***CINCLOPYRAMIS***

SYN.
FREQUENT

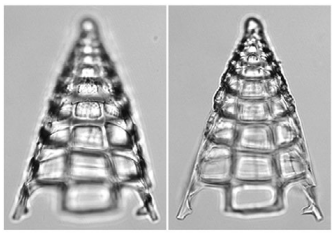
Type



100 µm

Plectopyramis dodecomma
Haeckel, 1887: 1258, pl. 54, fig. 6

Support



50 µm

Plectopyramis dodecomma Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

GENUS ***Plectopyramis***
Haeckel, 1882: 432

NOMINOTYPE ***Plectopyramis* (*Plectopyramis*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Plectopyramis hexapleura* Haeckel, 1887 and *Plectopyramis magnifica* Haeckel, 1887 (actually; «magnificent polycystin» pl., 11; fig., 1).

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CINCLOPYRAMIS***

SYN.
UNIQUE

Type



50 µm

Plectopyramis magnifica
Haeckel, 1887: 1257, unfigured [specimen of Bury 1862: pl. 11, fig. 1]

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

GENUS ***Cephalopyramis***
Haeckel, 1882: 432

SUBGENUS ***Sethopyramis* (*Cephalopyramis*)**

Remarks: Type species rarely reported.

Original series: *Cornutella quadratella* Ehrenberg, 1874b; **Sethopyramis cyclomma* Haeckel, 1887; *Sethopyramis enneactis* Haeckel, 1887; **Sethopyramis hexagonalis* Haeckel, 1887; *Sethopyramis quadrata* Haeckel, 1887; **Sethopyramis spinosa* Haeckel, 1887 and **Sethopyramis trapezoides* Haeckel, 1887.

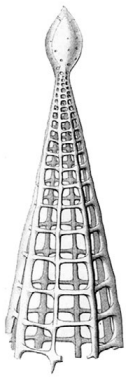
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D127)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CINCLOPYRAMIS***

SYN.
RARE

Type



50 µm

Sethopyramis enneactis
Haeckel, 1887: 1254, pl. 56, fig. 7

Support



50 µm

Cephalopyramis enneactis (Haeckel)
Petrushevskaya 1971b: fig. 4.5

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

GENUS ***Sestropyramis***
Haeckel, 1887: 1253

SUBGENUS ***Sethopyramis* (*Sestropyramis*)**

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: *Cornutella scalaris* Ehrenberg, 1874b and **Sethopyramis hexalactis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D127)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CINCLOPYRAMIS***

SYN.
FREQUENT

Type



100 µm

Cornutella scalaris
Ehrenberg, 1874b: 221 (unfigured); Ehrenberg, 1876: 68, pl. 2, fig. 1

Type



100 µm

Cornutella scalaris Ehrenberg
Ogane *et al.* 2009b: pl. 21, figs 6a, 6d [lectotype herein]

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

GENUS ***Sethopyramis***
Haeckel, 1882: 432

NOMINOTYPE ***Sethopyramis* (*Sethopyramis*)**

Remarks: A single report of the type species after the first illustration.

Original series: *Cornutella quadratella* Ehrenberg, 1874b; *Cornutella scalaris* Ehrenberg, 1874b; **Sethopyramis cyclomma* Haeckel, 1887; *Sethopyramis enneactis* Haeckel, 1887; **Sethopyramis hexagonalis* Haeckel, 1887; **Sethopyramis hexalactis* Haeckel, 1887; *Sethopyramis quadrata* Haeckel, 1887; **Sethopyramis spinosa* Haeckel, 1887 and **Sethopyramis trapezoides* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Strelkov & Lipman 1959: 455)

STATUS JUNIOR SYNONYM
synonymized by Suzuki *et al.* 2009b: 262

SEE ***CINCLOPYRAMIS***

SYN.
VERY RARE

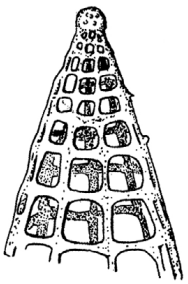
Type



50 µm

Sethopyramis quadrata
Haeckel, 1887: 1254, pl. 54, fig. 2

Support



25 µm

Sethopyramis quadrata Haeckel
Tan & Chen 1999: 315, text-fig. 5.246

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

GENUS **Spongopyramis**
Haeckel, 1887: 1260

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: *Spongopyramis spongiosa* Haeckel, 1887 and **Spongopyramis spongoplecta* Haeckel, 1887.

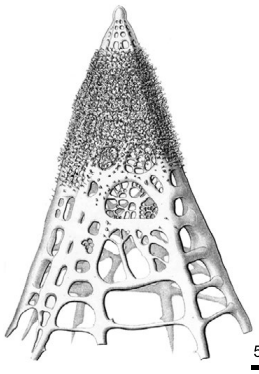
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CINCLOPYRAMIS***

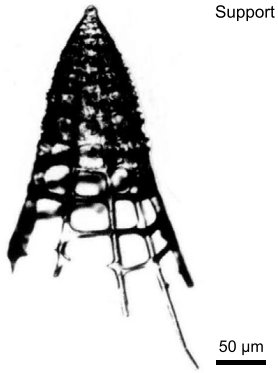
SYN.
RARE

Type



Spongopyramis spongiosa
Haeckel, 1887: 1261, pl. 56, fig. 10

Support



Spongopyramis spongiosa Haeckel
Tan & Su 2003: 160, pl. 6, fig. 7

N - LINEAGE II (B) ? PLECTOPYRAMIDIDAE

GENUS **Bathropyramis**
Haeckel, 1882: 428

NOMINOTYPE ***Bathropyramis* (*Bathropyramis*)**

Remarks: See comments under *ACROPYRAMIS*. The subsequent designation of *Bathropyramis quadrata* by Petrushevskaya & Kozlova (1972: 551) should be regarded as invalid; consequently, O'Dogherty *et al.* (2009a) wrongly followed Petrushevskaya & Kozlova's action. The support image is selected among those species originally included in this genus (see below).

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *CINCLOPYRAMIS***

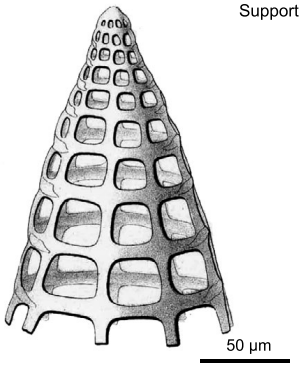
N.D.

Type

UNFIGURED SPECIES

Bathropyramis acephala
Haeckel, 1887: 1159, unfigured

Support



Bathropyramis quadrata
Haeckel, 1887: 1159, pl. 54, fig. 1

N - LINEAGE II (B) ? PLECTOPYRAMIDIDAE

GENUS **Acropyramis**
Haeckel, 1882: 428

SUBGENUS ***Bathropyramis* (*Acropyramis*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Bathropyramis acephala* Haeckel, 1887; *Bathropyramis interrupta* Haeckel, 1887; **Bathropyramis medusa* Haeckel, 1887; *Bathropyramis quadrata* Haeckel, 1887 and *Bathropyramis trapezoides* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***BATHROPYRAMIS***

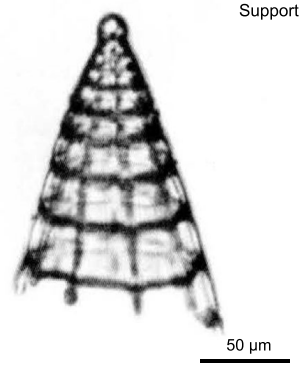
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Bathropyramis acephala
Haeckel, 1887: 1159, unfigured

Support



Bathropyramis quadrata Haeckel
Tan & Su 2003: 158, pl. 12, fig. 9

N - LINEAGE II (B) ? PLECTOPYRAMIDIDAE

GENUS **Cladopyramis**
Haeckel, 1882: 428

SUBGENUS ***Bathropyramis* (*Cladopyramis*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: *Bathropyramis ramosa* Haeckel, 1887 and **Bathropyramis spinosa* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *CINCLOPYRAMIS***

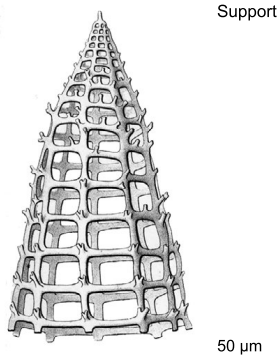
N.D.

Type

UNFIGURED SPECIES

Bathropyramis spinosa
Haeckel, 1887: 1160, unfigured

Support



Bathropyramis ramosa
Haeckel, 1887: 1161, pl. 54, fig. 4

N - LINEAGE II (B) ? PLECTOPYRAMIDIDAE

GENUS ***Hexapleuris***
Haeckel, 1887: 1257

SUBGENUS ***Plectopyramis* (*Hexapleuris*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: **Plectopyramis hexapleura* Haeckel, 1887 and *Plectopyramis magnifica* Haeckel, 1887 (actually; «magnificent polycystin» pl., 11; fig., 1).

FIXATION ABSOLUTE TAUTONOMY

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? CINCLOPYRAMIS***

N.D. Type

UNFIGURED SPECIES

Plectopyramis hexapleura
Haeckel, 1887: 1257, unfigured

Type



50 µm

Plectopyramis magnifica
Haeckel, 1887: 1257 [specimen of Bury 1862: pl. 11, fig. 1, "magnificent polycystin"]

N - LINEAGE II (B) ? PLECTOPYRAMIDIDAE

GENUS ***Actinopyramis***
Haeckel, 1887: 1256

SUBGENUS ***Sethopyramis* (*Actinopyramis*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Sethopyramis bicornis* Haeckel, 1887; **Sethopyramis dodecalactis* Haeckel, 1887 and **Sethopyramis maxima* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D127)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Sethopyramis dodecalactis
Haeckel, 1887: 1256, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

ASSIGNED IN Petrushevskaya 1981: 165

GENUS ***Cladarachnium***
Haeckel, 1882: 430

Diagnosis: Plectopyramididae with flatly conical or nearly discoidal shell with numerous branched radial ribs. Cephalis thin-walled. Apical horn, when present, thin and short. Nine to thirteen main longitudinal ribs sub-divided in secondary ribs. Short transversal beams making more or less longitudinal rows of pores.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Haeckel (1887).

Original series: *Cladarachnium ramosum* Haeckel, 1887.

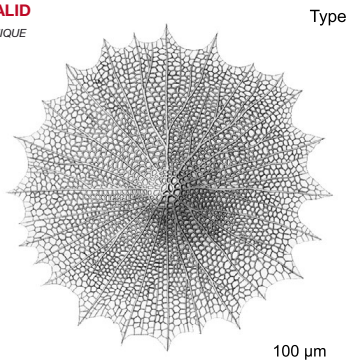
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

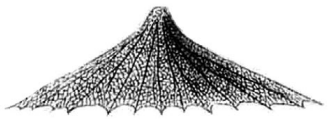
Type



100 µm

Cladarachnium ramosum
Haeckel, 1887: 1165, pl. 55, fig. 5

Support



100 µm

Cladarachnium ramosum
Haeckel, 1887: 1165, pl. 55, fig. 6

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

ASSIGNED IN Petrushevskaya 1981: 117

GENUS ***Cornutella***
Ehrenberg, 1839a: 128

NOMINOTYPE ***Cornutella* (*Cornutella*)**

Diagnosis: Plectopyramididae with conical shell and an open aperture. Cephalis and upper second segment hyaline. Median and lower second segment with large pores. A giving an apical horn; L, V and MB spines rudimentary; D and L spines with no appendages. Aperture narrow, shape-less, usually open.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Cornutella clathrata* Ehrenberg, 1844a.

FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE ANISIAN–LIVING***

VALID
FREQUENT

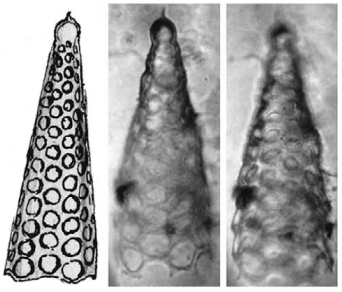
Type



25 µm

Cornutella clathrata
Ehrenberg, 1839a: 129 (n.n.); Ehrenberg, 1844a (unfigured); Ehrenberg, 1854c: pl. 22, fig. 39a

Type



50 µm

Cornutella clathrata beta profunda Ehrenberg
Suzuki *et al.* 2009a: pl. 35, figs 4a, 4b [lectotype herein]

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

GENUS ***Cornutissa***
Haeckel, 1882: 427

SUBGENUS ***Cornutella* (*Cornutissa*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Cornutella circularis* Ehrenberg, 1874b; *Cornutella clathrata* Ehrenberg, 1844a; *Cornutella granulata* Ehrenberg, 1873a; *Cornutella mitra* Ehrenberg, 1874b; *Cornutella stylophaena* Ehrenberg, 1873a and *Cornutella*? *annulata* Bailey, 1856.

FIXATION NO TYPE SPECIES DESIGNATED (SD HEREIN)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CORNUTELLA***

SYN. (obj.)
FREQUENT

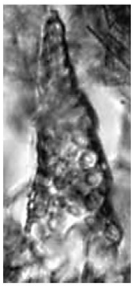
Type



25 µm

Cornutella clathrata
Ehrenberg, 1839a: 129 (n.n.); Ehrenberg, 1844a (unfigured); Ehrenberg, 1854c: pl. 22, fig. 39a

Support



25 µm

Cornutella clathrata Ehrenberg
Suzuki *et al.* 2009a: pl. 16, fig. 2 [topotypic material]

N - LINEAGE II (B) ? PLECTOPYRAMIDIDAE

GENUS ***Sethodrepanum*** PREMATURE NAME
Haeckel, 1887: 1295

SUBGENUS ***Sethoconus* (*Sethodrepanum*)**

Remarks: A premature name used by Haeckel for *CORNUTELLA* Ehrenberg, 1839a.

Original series: *Cornutella clathrata* Ehrenberg, 1844a.

FIXATION MONOTYPY; ICZN, ART. 67.6

STATUS INVALID NAME
designated herein

SEE ***CORNUTELLA***

INV.

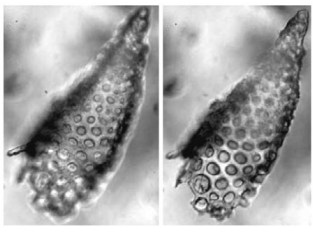
Type



25 µm

Cornutella clathrata
Ehrenberg, 1839a: 129 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 39a

Support



50 µm

Cornutella clathrata Ehrenberg
Suzuki *et al.* 2009a: pl. 16, figs 4a, 4b [topotypic material]

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

GENUS ***Cornutellium***
Haeckel, 1887: 1180

SUBGENUS ***Cornutella* (*Cornutellium*)**

Remarks: Homonym of *CORNUTELLIUM* Haeckel, 1882: 430 (Polycystinea); see *CORNUTELLA* (a new name is not required since it is a junior synonym). No type species was designated. Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym.

Original series: *Cornutella hexagona* Haeckel, 1887; *Cornutella sethoconus* Haeckel, 1887; *Cornutella distenta* Ehrenberg, 1873a and *Cornutella stiligera* Ehrenberg, 1876.

FIXATION NO TYPE SPECIES DESIGNATED (SD HEREIN)

STATUS HOMONYM, JUNIOR SYNONYM
synonymized herein

SEE ***CORNUTELLA***

HOM.; SYN.
UNIQUE

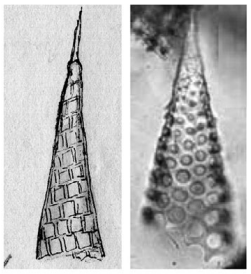
Type



50 µm

Cornutella sethoconus
Haeckel, 1887: 1180, pl. 54, fig. 10

Type



25 µm

Cornutella stiligera Ehrenberg
Ogane *et al.* 2009b: pl. 21, figs 9a, 9b [lectotype herein]

N - LINEAGE II (B) PLECTOPYRAMIDIDAE

GENUS ***Orthocornutanna***
Clark & Campbell, 1945: 35

SUBGENUS ***Cornutanna* (*Orthocornutanna*)**

Remarks: Monospecific genus. Because no other figures are available, the support image is a senior subjective synonym of the type species.

Original series: *Cornutanna* (*Orthocornutanna*) *charlestonensis* Clark & Campbell, 1945.

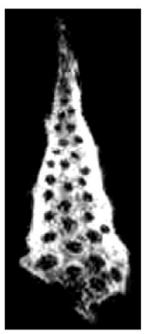
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CORNUTELLA***

SYN.
UNIQUE

Type



25 µm

Cornutanna (Orthocornutanna) charlestonensis
Clark & Campbell, 1945: 35, pl. 7, fig. 42

Support



50 µm

Cornutella stiligera
Ehrenberg, 1854c: pl. 36, fig. 1

N - LINEAGE II (B) ? PLECTOPYRAMIDIDAE

GENUS ***Ceratarachnium*** PREMATURE NAME
Haeckel, 1887: 1293

SUBGENUS ***Sethoconus* (*Ceratarachnium*)**

Remarks: A premature name (vel *CERATARACHNIUM*) is also used by Haeckel as alternative of the name *CORNUTELLIUM*.

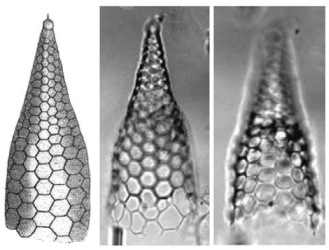
Original series: *Cornutella clathrata* Ehrenberg, 1844a; *Cornutella clathrata*? ß *profunda* Ehrenberg, 1854c; *Cornutella longiseta* Ehrenberg, 1873a; *Cornutella trichostyla* Ehrenberg, 1873a; *Cornutella trochus* Ehrenberg, 1873a; *Cornutella verrucosa* Ehrenberg, 1873a; *Eucyrtidium gracile* Ehrenberg, 1874b; *Sethoconus bimarginatus* Haeckel, 1887 and *Sethoconus orthoceras* Haeckel, 1887.

FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D128)

STATUS INVALID NAME
designated herein

SEE ***CORNUTELLA***

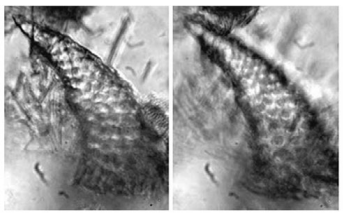
INV. Type



50 µm

Cornutella trochus
Ehrenberg, 1873a: 305 (unfigured); 1873b: 286-287, pl. 9, fig. 14 [Suzuki *et al.* 2009a: pl. 73, figs 9a-c; lectotype herein]

Support



25 µm

Cornutella clathrata Ehrenberg
Suzuki *et al.* 2009a: pl. 16, figs 1a, 1b [paralectotype herein]

N - LINEAGE II (B) ? PLECTOPYRAMIDIDAE

GENUS ***Cornutosa***
Haeckel, 1882: 427

SUBGENUS ***Cornutella* (*Cornutosa*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition. However, Haeckel (1887: 1183) included in the synonymy of *Cornutella curvata* the species *Cornutella clathrata* Ehrenberg, 1847; the latter is included as support image.

Original series: **Cornutella curvata* Haeckel, 1887 and **Cornutella spiralis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D121)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

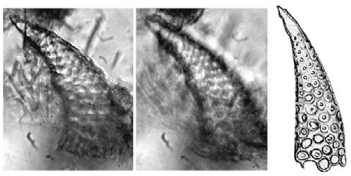
SEE ***? CORNUTELLA***

N.D. Type

UNFIGURED SPECIES

Cornutella curvata
Haeckel, 1887: 1183, unfigured

Support



50 µm

Cornutella clathrata Ehrenberg
Suzuki *et al.* 2009a: pl. 16, figs 1a-c [paralectotype herein]

N - LINEAGE II (B) ? PLECTOPYRAMIDIDAE

GENUS ***Cornutanna***
Haeckel, 1882: 427

NOMINOTYPE ***Cornutanna* (*Cornutanna*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Cornutanna cyrtoconus* Haeckel, 1887; **Cornutanna loxoconus* Haeckel, 1887 and **Cornutanna orthoconus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D121)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Cornutanna orthoconus
Haeckel, 1887: 1183, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (B) ? PLECTOPYRAMIDIDAE

GENUS ***Heterocornutanna***
Clark & Campbell, 1945: 36

SUBGENUS ***Cornutanna* (*Heterocornutanna*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Cornutanna cyrtoconus* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Cornutanna cyrtoconus
Haeckel, 1887: 1184, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - Lineage II (B) PLECTOPYRAMIDIDAE

GENUS ***Haliphormis***
Haeckel, 1882: 428

Remarks: Homonym of *HALIPHORMIS* Ehrenberg, 1847: 385 (Polycystinea); see *HALIPHORMARTIDIUM nomen novum*.

Original series: *Haliphormis costata* Haeckel, 1887 and *Haliphormis lagena* Haeckel, 1887.

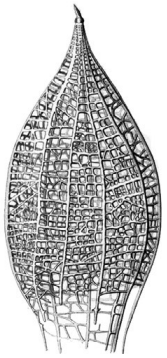
FIXATION ORIGINAL DESIGNATION

STATUS HOMONYM

SEE ***HALIPHORMARTIDIUM NOMEN NOVUM***

HOM.

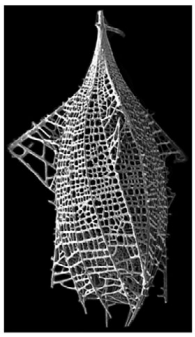
Type



100 µm

Haliphormis lagena
Haeckel, 1887: 1167, pl. 97, fig. 5

Support



300 µm

Haliphormartidium lagena (Haeckel)
photo by Lora Teitler (Late Pleistocene, Agulhas Ridge, South Atlantic):

N - Lineage II (B) PLECTOPYRAMIDIDAE
ASSIGNED IN Petrushevskaya 1981: 163

GENUS ***Haliphormartidium*** NOMEN NOV. PRO *HALIPHORMIS*
Campbell, 1951: 528

Diagnosis: Plectopyramididae with a sub spindle-shaped shell with a narrow aperture. Cephalis thin-walled with a short, thin apical horn. Eight to eleven main longitudinal ribs with no secondary ones. No rings built by the bars joining the next ribs. Orthogonal or trapezoidal large pores covered with an irregular meshwork.

Remarks: Illustration available only for the type species (figured just once). Only two species originally included at the time of the generic definition.

Original series: **Haliphormis costata* Haeckel, 1887 and *Haliphormis lagena* Haeckel, 1887.

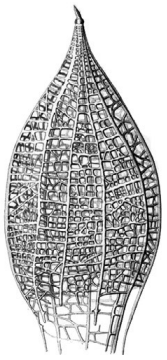
FIXATION ORIGINAL DESIGNATION; ICZN, ART. 67.8

STATUS **VALID** PRO

AGE ***LATE PLEISTOCENE–LIVING***

VALID
UNIQUE

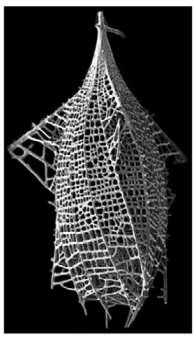
Type



100 µm

Haliphormis lagena
Haeckel, 1887: 1167, pl. 97, fig. 5

Support



300 µm

Haliphormartidium lagena (Haeckel)
photo by Lora Teitler (Late Pleistocene, Agulhas Ridge, South Atlantic):

N - Lineage II (B) PLECTOPYRAMIDIDAE
ASSIGNED IN Petrushevskaya 1981: 163

GENUS ***Litharachnium***
Haeckel, 1861b: 835

NOMINOTYPE ***Litharachnium (Litharachnium)***

Diagnosis: Plectopyramididae with a widely conical shell. Cephalis reduced of unknown structure, no apical horn. Ten to nineteen fundamental, longitudinal abdominal ribs divided into ten to hundreds of thin ribs near the wide aperture. Transversal beams produce rectangular nearly similar pores.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Litharachnium tentorium* Haeckel, 1861b.

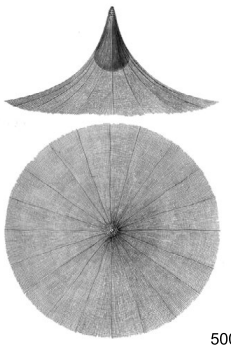
FIXATION MONOTYPY

STATUS **VALID**

AGE ***HOLOCENE–LIVING***

VALID
FREQUENT

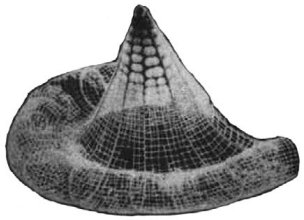
Type



500 µm

Litharachnium tentorium
Haeckel, 1861b: 836 (unfigured); Haeckel, 1862: 281, pl. 4, figs 7, 8

Support



50 µm

Litharachnium tentorium Haeckel
Nishimura & Yamauchi 1984: 58, pl. 25, fig. 12

N - Lineage II (B) PLECTOPYRAMIDIDAE

GENUS ***Litharachnidium***
Haeckel, 1887: 1163

SUBGENUS ***Litharachnium (Litharachnidium)***

Remarks: Type species frequently reported.

Original series: *Carpocanium*? *arachnodiscus* Ehrenberg, 1862b; *Litharachnium araneosum* Haeckel, 1887; *Litharachnium epeira* Haeckel, 1887 and *Litharachnium tentorium* Haeckel, 1861b.

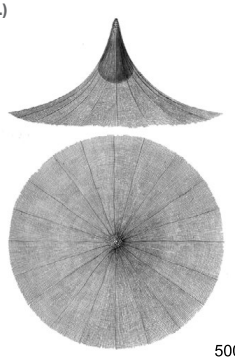
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D119)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***LITHARACHNIUM***

SYN. (obj.)
FREQUENT

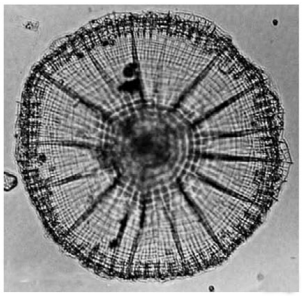
Type



500 µm

Litharachnium tentorium
Haeckel, 1861b: 836 (unfigured); Haeckel, 1862: 281, pl. 4, figs 7, 8

Support



50 µm

Litharachnium tentorium Haeckel
Kršinić & Kršinić 2012: pl. 6, fig. 69

N - Lineage II (B) ? PLECTOPYRAMIDIDAE

GENUS ***Craspedilium*** PREMATURE NAME
Haeckel, 1887: 1247

Remarks: A premature name (vel *Craspedilium eupilium*) used by Haeckel as alternative of the name *Sethophormis eupilium*.

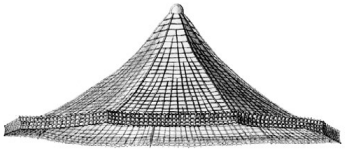
Original series: *Craspedilium eupilium* Haeckel, 1887.

FIXATION MONOTYPY; ICZN, ART. 67.6

STATUS INVALID NAME
designated herein

SEE ***LITHARACHNIUM***

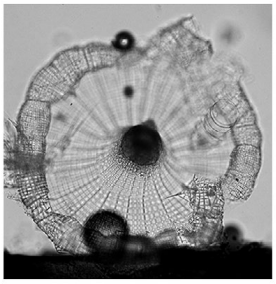
INV. Type



50 µm

Craspedilium eupilium
Haeckel, 1887: 1247, pl. 56, fig. 9

Support



100 µm

Craspedilium eupilium Haeckel
Tuji's collection (plankton off Puket)

N - Lineage II (B) ? PLECTOPYRAMIDIDAE

GENUS ***Litharachnoma***
Haeckel, 1887: 1164

SUBGENUS ***Litharachnium* (*Litharachnoma*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Litharachnium discoides* Haeckel, 1887 and **Litharachnium pilidium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D119)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Litharachnium pilidium
Haeckel, 1887: 1164, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - Lineage II (B) PLECTOPYRAMIDIDAE
ASSIGNED IN Petrushevskaya 1981: 162

GENUS ***Polypleuris***
Haeckel, 1887: 1260

SUBGENUS ***Plectopyramis* (*Polypleuris*)**

Diagnosis: Plectopyramididae with an open conical two-segmented shell. Thick-walled cephalis with a well-differentiated, sometimes ramified, apical horn. Ten to twenty thick main longitudinal abdominal ribs. Transversal ribs forming longitudinal and transversal rows of nearly identical pores.

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: **Plectopyramis lagena* Haeckel, 1887 and *Plectopyramis polypleura* Haeckel, 1887.

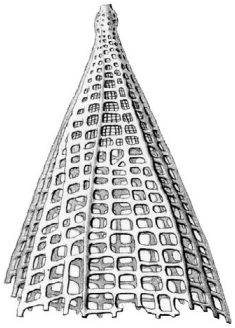
FIXATION ABSOLUTE TAUTONOMY

STATUS **VALID**

AGE ***Middle Albian–Living***

VALID
FREQUENT

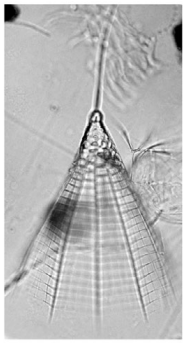
Type



50 µm

Plectopyramis polypleura
Haeckel, 1887: 1260, pl. 56, fig. 8

Support



100 µm

Plectopyramis polypleura Haeckel
Zhang's collection (East Indian Ocean)

N - Lineage II (B) ? PLECTOPYRAMIDIDAE

GENUS ***Archiphormis***
Haeckel, 1882: 428

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

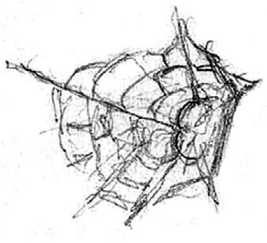
Original series: **Archiphormis campanulata* Haeckel, 1887; *Archiphormis urceolata* Haeckel, 1887 and *Halicalyptra*? *cancellata* Ehrenberg, 1854b.

FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 194)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
VERY RARE

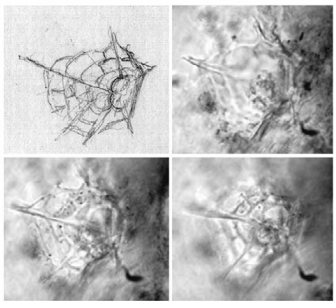
Type



20 µm

Halicalyptra? *cancellata*
Ehrenberg, 1854a: table (n.n.); Ehrenberg, 1854b: 243 (unfigured); Suzuki *et al.* 2009a: pl. 32, fig. 11a [lectotype herein]

Type



25 µm

Halicalyptra cancellata Ehrenberg
Suzuki *et al.* 2009a: pl. 32, figs 11a-d [lectotype herein]

N - LINEAGE II (B) LAMPROMITRIDAE
ASSIGNED IN Petrushevskaya 1981: 104

GENUS ***Lamprodiscus***
Ehrenberg, 1861b: 831

Diagnosis: Lampromitridae with two segments: a small globular porous cephalis and a very large campanulate thorax with numerous pores and a denticulate peristome. Robust A horn laterally distributed. V spine much reduced. D and L spines extended as thoracic ribs, not feet.

Remarks: Illustration available only for the type species (figured just once after the first illustration). Only two species originally included at the time of the generic definition. The A spine is located in the cephalic wall and produces a strong lateral horn in this genus, whereas in *LAMPROMITRA* the A is a free columella in the cephalis and produces a small apical horn.

Original series: *Lamprodiscus coscinodiscus* Ehrenberg, 1873a and *Lamprodiscus monoceros* Ehrenberg, 1873a.

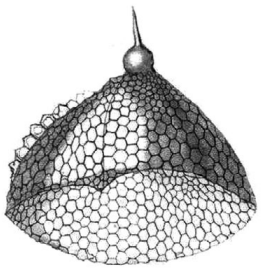
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS **VALID**

AGE ***EARLY PLIOCENE–LIVING***

VALID
VERY RARE

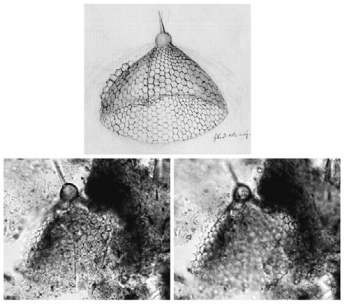
Type



50 µm

Lamprodiscus monoceros
Ehrenberg, 1873a: 314 (unfigured); Ehrenberg, 1873b: 294-295, pl. 7, fig. 2

Type



100 µm

Lamprodiscus monoceros Ehrenberg
Suzuki *et al.* 2009a: pl. 57, figs 2a-c [lectotype herein]

N - LINEAGE II (B) LAMPROMITRIDAE
ASSIGNED IN Petrushevskaya 1981: 107

GENUS ***Lampromitra***
Haeckel, 1882: 431

Diagnosis: Lampromitridae with two segments: a porous cupola-shaped cephalis and a campanula-shaped thorax with a denticulate peristome. A as a columella inside cephalis and, as V, extended in a small horn. D and 2L spines pass in the thoracic wall as ribs. Ax may be well-developed.

Remarks: Type species frequently reported.

Original series: *Eucecryphalus huxleyi* Haeckel, 1879a; *Eucecryphalus schultzei* Haeckel, 1861b; *Lampromitra arborescens* Haeckel, 1887; *Lampromitra coronata* Haeckel, 1887; *Lampromitra dendrocorona* Haeckel, 1887; *Lampromitra furcata* Haeckel, 1887; **Lampromitra pyramidalis* Haeckel, 1887 and *Lampromitra quadricuspis* Haeckel, 1887.

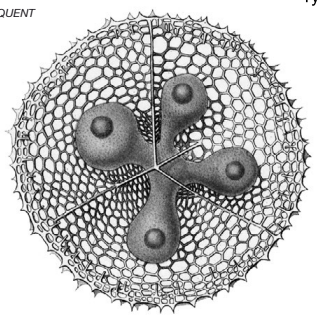
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS **VALID**

AGE ***EARLY PLEISTOCENE–LIVING***

VALID
FREQUENT

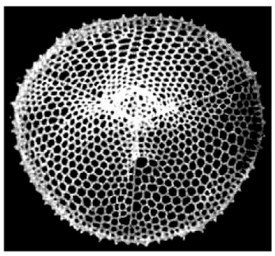
Type



50 µm

Lampromitra coronata
Haeckel, 1887: 1214, pl. 60, fig. 7

Support



50 µm

Lampromitra coronata Haeckel
Nishimura & Yamauchi 1984: 52, pl. 26, fig. 2

N - LINEAGE II (B) ? LAMPROMITRIDAE

GENUS ***Heptaphormis*** PREMATURE NAME
Haeckel, 1887: 1245

SUBGENUS ***Sethophormis* (*Heptaphormis*)**

Remarks: A premature name (vel *HEPTAPHORMIS*) used by Haeckel as alternative of the name *SETHOPHORMIS*. Genus described as monospecific at the time of the generic definition.

Original series: *Heptaphormis heptalactis* Haeckel, 1887.

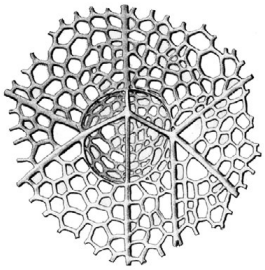
FIXATION MONOTYPY; ICZN, ART. 67.6

STATUS INVALID NAME
designated herein

SEE ***LAMPROMITRA***

INV.

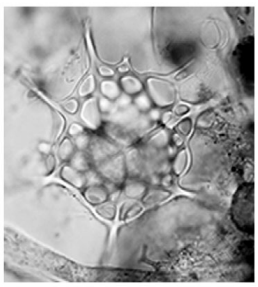
Type



50 µm

Heptaphormis heptalactis
Haeckel, 1887: 1245, pl. 56, fig. 6

Support



25 µm

Heptaphormis heptalactis Haeckel
Suzuki's collection (Quaternary, North Pacific)

N - LINEAGE II (B) LAMPROMITRIDAE

GENUS ***Hexaphormis***
Haeckel, 1882: 432

SUBGENUS ***Sethophormis* (*Hexaphormis*)**

Remarks: Illustration available only for the type species (figured just once after the first illustration). Only two species originally included at the time of the generic definition.

Original series: **Sethophormis hexagonalis* Haeckel, 1887 and *Sethophormis hexalactis* Haeckel, 1887.

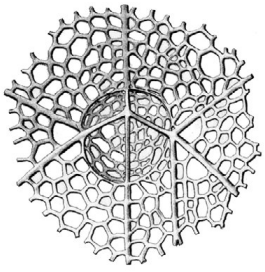
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 103

SEE ***LAMPROMITRA***

SYN.
VERY RARE

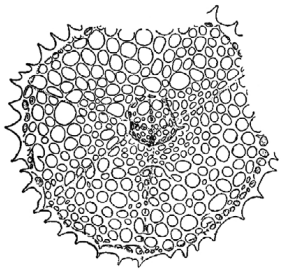
Type



50 µm

Sethophormis hexalactis
Haeckel, 1887: 1245, pl. 56, fig. 6

Support



50 µm

Lampromitra cf. *hexalactis* Haeckel
Petrushevskaya 1971a: pl. 55, fig. 6

N - LINEAGE II (B) — LAMPROMITRIDAE

GENUS ***Pentaphormis***
Haeckel, 1882: 432

SUBGENUS ***Sethophormis* (*Pentaphormis*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Sethophormis asteriscus* Haeckel, 1887; **Sethophormis astrodiscus* Haeckel, 1887 and *Sethophormis pentalactis* Haeckel, 1887.

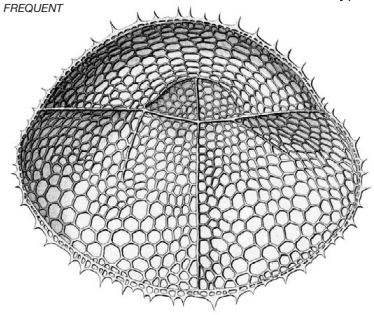
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D125)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 103

SEE ***LAMPROMITRA***

SYN.
FREQUENT

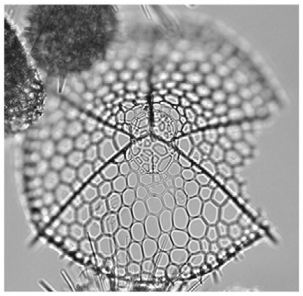
Type



50 µm

Sethophormis pentalactis
Haeckel, 1887: 1244, pl. 56, fig. 5

Support



50 µm

Sethophormis pentalactis Haeckel
Zhang's collection (South China Sea)

N - LINEAGE INCERTAE — INCERTAE FAMILIAE
ASSIGNED HEREIN

GENUS ***Zealithapium***
O'Connor, 1999: 5

Diagnosis: Two-segmented shell with a small cylindrical cephalis and an inflated ovate thorax. Internal structure unknown. A apparently extended as a more or less robust apical horn. Other internal spines not externally extended. Basal aperture narrow and denticulate.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by O'Connor (1999).

Original series: *Zealithapium oamaru* O'Connor, 1999.

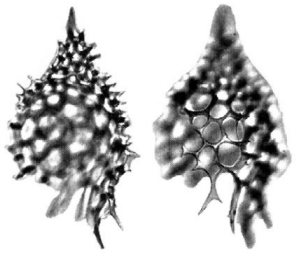
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY EOCENE–EARLY LATE MIOCENE***

VALID
UNIQUE

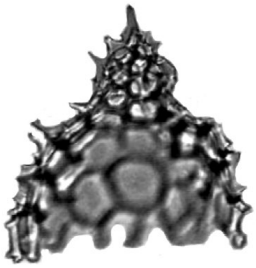
Type



50 µm

Zealithapium oamaru
O'Connor, 1999: 5, pl. 5, figs 29a, 29b

Support



50 µm

Zealithapium oamaru
O'Connor, 1999: 5, pl. 5, fig. 30

N - LINEAGE II (C) — CARPOCANIIDAE
ASSIGNED HEREIN

GENUS ***Anthocyrturium***
Haeckel, 1887: 1276

SUBGENUS ***Anthocyrtium* (*Anthocyrturium*)**

Diagnosis: Carpocaniidae with two clearly separated segments. Cephalis hemispherical, with a small, bristle-shaped apical horn. Internal spicule undescribed. Porous thorax inflated, well distinguished from cephalis. Aperture constricted with a denticulate or full peristome.

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Anthocyrtis ehrenbergi* Stöhr, 1880; *Anthocyrtis ficus* Ehrenberg, 1874b; *Anthocyrtis zanguebarica* Ehrenberg, 1873a; *Anthocyrtium flosculus* Haeckel, 1887; *Anthocyrtium pyrum* Haeckel, 1887 and *Lithopera*? *setosa* Ehrenberg, 1854b.

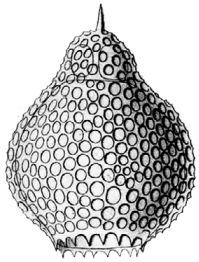
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D125)

STATUS **VALID**

AGE ***EARLY EOCENE–LIVING***

VALID
UNIQUE

Type



50 µm

Anthocyrtium pyrum
Haeckel, 1887: 1276, pl. 62, fig. 12

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (C) — CARPOCANIIDAE
ASSIGNED IN De Wever *et al.* 2001: 258

GENUS ***Artobotrys***
Petrushevskaya, 1971a: 237

Diagnosis: Carpocaniidae with three segments. Cephalis three-chambered with no differentiated collar area. A may be differentiated in a short polar tubule, V as a short external thorn. Thorax sub-globose. No lateral horns of feet. Abdomen often reduced to a porous, or not, peristome.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Theocorys borealis* Cleve, 1899.

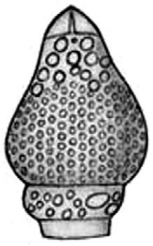
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE PLEISTOCENE–LIVING***

VALID
FREQUENT

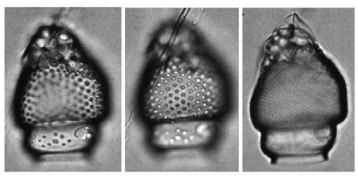
Type



50 µm

Theocorys borealis
Cleve, 1899: 33, pl. 3, fig. 5

Support



25 µm

Artobotrys borealis (Cleve)
Bjørklund *et al.* 2014: 71, pl. 8, figs 5b-c [lectotype]

N - LINEAGE II (C) CARPOCANIIDAE

ASSIGNED IN Petrushevskaya & Kozlova 1972: 536

GENUS ***Carpocanium***
Ehrenberg, 1846: 385

NOMINOTYPE ***Carpocanium* (*Carpocanium*)**

Diagnosis: Carpocaniidae with a cylindroidal two-segmented shell. Cephalis mostly included in the thorax. No apical horn usually differentiated. D and 2L spines only extended as furrows in thoracic wall. Peristome as a smooth ridge or tube around the aperture.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Lithocampe solitaria* Ehrenberg, 1839a.

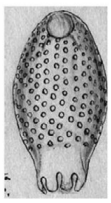
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***EARLY MIDDLE EOCENE–LIVING***

VALID
FREQUENT

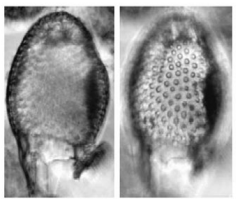
Type



50 µm

Lithocampe solitaria
Ehrenberg, 1839a: 130 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 28

Type



50 µm

Carpocanium solitarium (Ehrenberg)
Suzuki *et al.* 2009a: pl. 18 figs 3a, 3b [lectotype herein]

N - LINEAGE II (C) CARPOCANIIDAE

GENUS ***Carpocanidium***
Haeckel, 1887: 1280

SUBGENUS ***Carpocanium* (*Carpocanidium*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: **Carpocanium cylindricum* Haeckel, 1887; *Carpocanium diadema* Haeckel, 1861b; **Carpocanium enneaphyllum* Haeckel, 1887; **Carpocanium gemmula* Haeckel, 1887; *Carpocanium microdon* Ehrenberg, 1859 and *Lithocampe solitaria* Ehrenberg, 1839a.

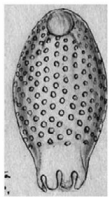
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D127)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CARPOCANIUM***

SYN. (obj.)
FREQUENT

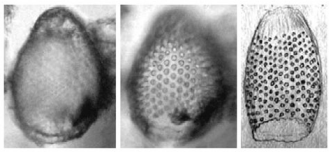
Type



50 µm

Lithocampe solitaria
Ehrenberg, 1839a: 130 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 28

Type



50 µm

Lithocampe solitaria Ehrenberg
Suzuki *et al.* 2009a: pl. 19 figs 2a-c [lectotype herein]

N - LINEAGE II (C) CARPOCANIIDAE

GENUS ***Asecta***
Popofsky, 1913: 373

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

Original series: *Asecta prunoides* Popofsky, 1913.

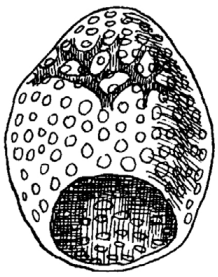
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 240

SEE ***CARPOCANIUM***

SYN.
UNIQUE

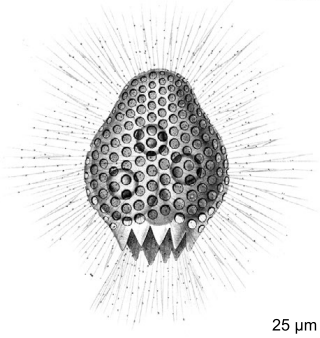
Type



25 µm

Asecta prunoides
Popofsky, 1913: 373, text-fig. 89

Support



25 µm

Carpocanium diadema
Haeckel, 1862: 290, pl. 5, fig. 1

N - LINEAGE II (C) CARPOCANIIDAE

GENUS ***Cryptoprora***
Ehrenberg, 1847: 54

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Cryptoprora plutonis* Ehrenberg, 1854b.

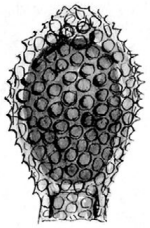
FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CARPOCANIUM***

SYN.
FREQUENT

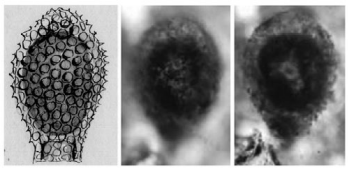
Type



25 µm

Cryptoprora plutonis
Ehrenberg, 1854b: 241 (unfigured); Suzuki *et al.* 2009a: pl. 32, fig. 8c [lectotype herein]

Type



50 µm

Cryptoprora plutonis Ehrenberg
Suzuki *et al.* 2009a: pl. 32, figs 8a-c [lectotype herein]

N - LINEAGE II (C) CARPOCANIIDAE

GENUS ***Cyrtocalpis***
Haeckel, 1861b: 835

Remarks: Only two species originally included at the time of the generic definition (both illustrated, but the type species figured just once after the first illustration).

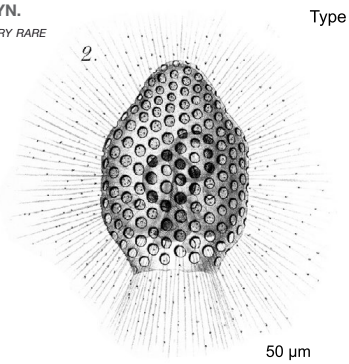
Original series: *Cyrtocalpis amphora* Haeckel, 1861b and *Cyrtocalpis obliqua* Haeckel, 1861b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D121)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 239

SEE ***CARPOCANIUM***

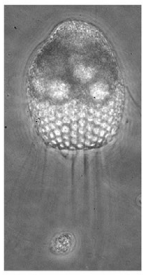
SYN. Type
VERY RARE



50 µm

Cyrtocalpis amphora
Haeckel, 1861b: 835 (unfigured); Haeckel, 1862: 286, pl. 5, fig. 2

Support



50 µm

Cyrtocalpis amphora Haeckel
Topotypic material (plankton, Villefranche-sur-Mer), Suzuki's collection

N - LINEAGE II (C) CARPOCANIIDAE

GENUS ***Sethamphora***
Haeckel, 1887: 1249

NOMINOTYPE ***Sethamphora* (*Sethamphora*)**

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated). It may seem that this genus should have been called *CRYPTOCEPHALUS* Haeckel, 1882, since Haeckel in 1887 treats *CRYPTOCEPHALUS* as a subgenus of *SETHAMPHORA*. However, this seems inappropriate, since the type species of *CRYPTOCEPHALUS* (by subsequent monotypy, *Cryptocephalus exiguus* Rüst, 1885) was not included in *SETHAMPHORA* at the time of the generic definition.

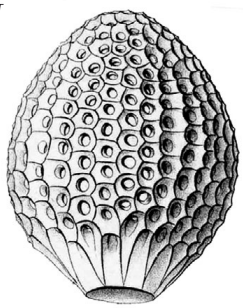
Original series: *Sethamphora favosa* Haeckel, 1887 and *Sethamphora microstoma* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Burma 1959: 327)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 535

SEE ***CARPOCANIUM***

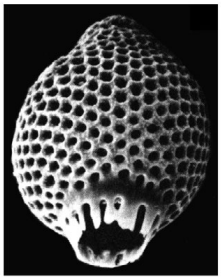
SYN. Type
FREQUENT



50 µm

Sethamphora favosa
Haeckel, 1887: 1252, pl. 57, fig. 4

Support



50 µm

Carpocanistrum favosum (Haeckel)
Takahashi 1991: 131, pl. 45, fig. 8

N - LINEAGE II (C) CARPOCANIIDAE

GENUS ***Spongiocanium***
Nishimura, 1990: 169

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

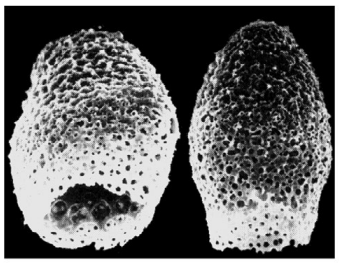
Original series: *Spongiocanium pacificum* Nishimura, 1990.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CARPOCANIUM***

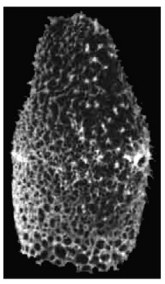
SYN. Type
UNIQUE



50 µm

Spongiocanium pacificum
Nishimura, 1990: 169, figs 36.11a, 36.11b

Support



50 µm

Botryocyrtis sp.
Nishimura & Yamauchi, 1984: 66, pl. 41, fig. 4

N - LINEAGE II (C) ? CARPOCANIIDAE

GENUS ***Carpocanobium***
Haeckel, 1887: 1282

SUBGENUS ***Carpocanium* (*Carpocanobium*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Carpocanium coronatum* Ehrenberg, 1859; **Carpocanium dactylus* Haeckel, 1887; *Carpocanium hexagonale* Haeckel, 1887; *Carpocanium irregulare* Haeckel, 1887; **Carpocanium palmipes* Haeckel, 1887; *Carpocanium peristomium* Haeckel, 1887; *Carpocanium petalospyris* Haeckel, 1887; *Carpocanium trepanium* Haeckel, 1887; *Carpocanium verecundum* Haeckel, 1887; *Carpocanium virgineum* Haeckel, 1887 and *Cryptoprora polyptera* Ehrenberg, 1873a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D127)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

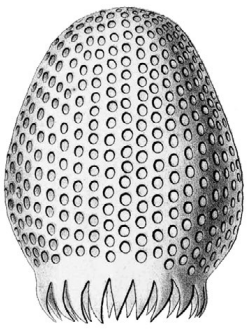
N.D. Type
UNIQUE



50 µm

Carpocanium trepanium
Haeckel, 1887: 1282, pl. 52, fig. 18

Support



50 µm

Carpocanium peristomium
Haeckel, 1887: 1282, pl. 52, fig. 16

N - LINEAGE II (C) ? CARPOCANIIDAE

GENUS **Carpocanistrum**
Haeckel, 1887: 1170

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Carpocanistrum acephalum* Haeckel, 1887; *Carpocanistrum evacuatum* Haeckel, 1887; *Carpocanistrum flosculum* Haeckel, 1887; **Carpocanistrum giganteum* Haeckel, 1887; **Carpocanistrum novenum* Haeckel, 1887 and *Lithocarpium pyriforme* Stöhr, 1880.

FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 194)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

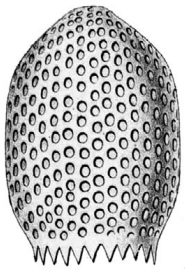
SEE **? *CARPOCANIUM***

N.D. Type

UNFIGURED SPECIES

Carpocanistrum novenum
Haeckel, 1887: 1171, unfigured

Support



50 µm

Carpocanistrum evacuatum
Haeckel, 1887: 1172, pl. 52, fig. 11

N - LINEAGE II (C) ? CARPOCANIIDAE

GENUS **Dictyoprona**
Haeckel, 1882: 430

SUBGENUS ***Sethamphora* (*Dictyoprona*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. See errata in Haeckel 1887: 1764 (in page 1250 for *DICTYOPRORA* read *DICTYOPRONA*) to understand Campbell's mistake (see also *STREPTODELUS*. and *DICTYOPRORA*).

Original series: *Eucyrtidium ampulla* Ehrenberg, 1854c; *Eucyrtidium mongolfieri* Ehrenberg, 1854c; *Podocyrtis aerostatica* Ehrenberg, 1874b; *Sethamphora costata* Haeckel, 1887; **Sethamphora dodecapleura* Haeckel, 1887; **Sethamphora enneapleura* Haeckel, 1887; **Sethamphora hexapleura* Haeckel, 1887 and **Sethamphora serrata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Burma 1959: 326)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

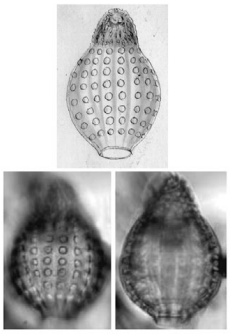
SEE **? *CARPOCANIUM***

N.D. Type

UNFIGURED SPECIES

Sethamphora hexapleura
Haeckel, 1887: 1250, unfigured

Type



50 µm

Eucyrtidium mongolfieri Ehrenberg
Ogane *et al.* 2009b: pl. 10, figs 3a-c [lectotype herein]

N - LINEAGE II (C) CARPOCANIIDAE
ASSIGNED IN Riedel & Sanfilippo 1971: 1596

GENUS **Carpocanopsis**
Riedel & Sanfilippo, 1971: 1596

Diagnosis: Carpocaniidae with three-segments. Multi-chambered cephalis more or less clearly separated from thorax. No apical horn. No lateral horns or feet. Abdomen separated from thorax by an internal septum and usually developed with a porous wall. No true peristome.

Remarks: Type species frequently reported. The main difference with *CARPOCANIUM* is in the structure of the cephalis. As pointed out by Petrushevskaya (1981) the eucephalic chamber is less than half externally expressed, and the Cephalis is clearly separated from thorax. There is also the fact that *CARPOCANOPSIS* is an old ancestor of *CARPOCANIUM*.

Original series: *Carpocanopsis bramlettei* Riedel & Sanfilippo, 1971; *Carpocanopsis cingulatum* Riedel & Sanfilippo, 1971; *Cycladophora favosa* Haeckel, 1887 and *Sethocorys cristata* Carnevale, 1908.

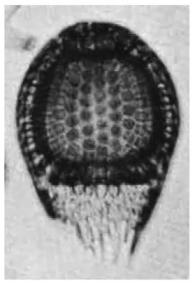
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY EOCENE–EARLY LATE MIOCENE***

VALID
FREQUENT

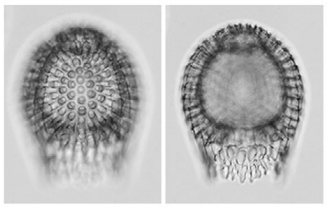
Type



50 µm

Carpocanopsis cingulatum
Riedel & Sanfilippo, 1971: 1597, pl. 8, fig. 8

Support



50 µm

Carpocanopsis cingulatum Riedel & Sanfilippo
Challenger Station 268, Suzuki's collection

N - LINEAGE II (C) CARPOCANIIDAE

GENUS **Cryptocarpium**
Sanfilippo & Riedel, 1992: 6

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Cryptoprora ornata* Ehrenberg, 1874b.

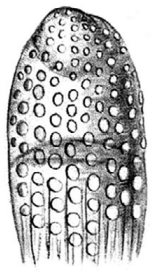
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CARPOCANOPSIS***

SYN.
FREQUENT

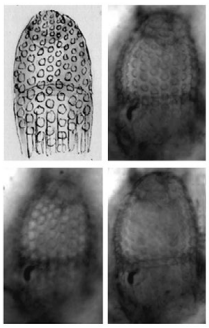
Type



25 µm

Cryptoprora ornata
Ehrenberg, 1874b: 222 (unfigured); Ehrenberg, 1876: 68, pl. 5, fig. 8

Type



50 µm

Cryptoprora ornata Ehrenberg
Ogane *et al.* 2009b: pl. 83, figs 5a-d [lectotype herein]

N - LINEAGE II (C) — CARPOCANIIDAE
ASSIGNED HEREIN

GENUS ***Tripterocalpis***
Haeckel, 1882: 427

Diagnosis: Carpocaniidae with a two-segmented shell. Cephalis completely included in the thorax and undescribed. Internal spicule unknown. Thorax globular, almost spherical, uniformly porous, with three robust lateral feet or wings. Aperture constricted with a corona of thorns.

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Tripterocalpis conoptera* Haeckel, 1887; *Tripterocalpis ogmoptera* Haeckel, 1887 and *Tripterocalpis phylloptera* Haeckel, 1887.

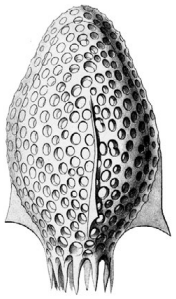
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS **VALID**

AGE ***[QUATERNARY]***

VALID
UNIQUE

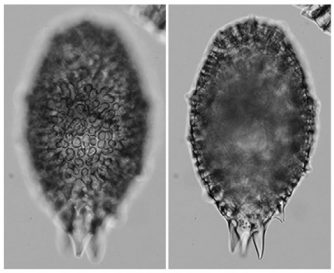
Type



50 µm

Tripterocalpis phylloptera
Haeckel, 1887: 1138, pl. 51, fig. 1

Support



50 µm

Tripterocalpis phylloptera Haeckel
Topotypic material (Challenger Station 272), Suzuki's collection

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N - LINEAGE II (C) — ? CARPOCANIIDAE

GENUS ***Cystophormis***
Haeckel, 1887: 1165

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus. In errata list (p. 1764), Haeckel notes that this genus should be called *CYSTOPHORMIS* rather than *CYRTOPHORMIS* as is in the text.

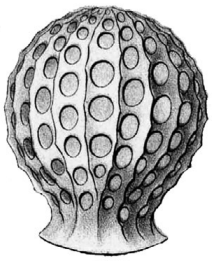
Original series: *Cystophormis aerostatica* Haeckel, 1887; *Cystophormis pila* Haeckel, 1887; *Cystophormis spiralis* Haeckel, 1887 and *Cystophormis tabulata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

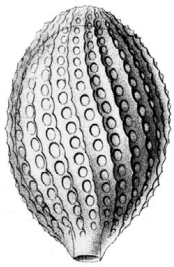
Type



50 µm

Cystophormis pila
Haeckel, 1887: 1165, pl. 52, fig. 1

Support



50 µm

Carpocanium spiralis
Haeckel, 1887: 1166, pl. 51, fig. 9

N - LINEAGE II (C) — DIACANTHOCAPSIDAE
ASSIGNED IN O'Dogherty 1994: 216

GENUS ***Myllocercion***
Foreman, 1968: 37

Diagnosis: Diacanthocapsidae with three segments. Cephalis partially included in thorax. No A horn. Internal spicule undescribed. Thorax inflated with longitudinal rows of pores between ribs. Three ribs extended in the abdominal wall. Thin-walled abdomen irregular with a small aperture.

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Myllocercion acineton* Foreman, 1968 and *Myllocercion rhodanon* Foreman, 1968.

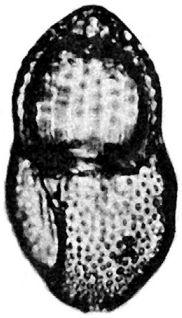
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY CAMPANIAN–EARLY MIDDLE EOCENE***

VALID
FREQUENT

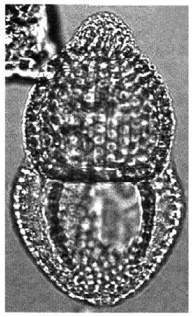
Type



50 µm

Myllocercion acineton
Foreman, 1968: 37, pl. 5, fig. 11b

Support



50 µm

Myllocercion acineton Foreman
Hollis 1997: 62, pl. 14, fig. 11 (Early Paleocene)

N - LINEAGE II (C) — DIACANTHOCAPSIDAE

GENUS ***Schadelfusslerus***
Empson-Morin, 1981: 276

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Schadelfusslerus echtus* Empson-Morin, 1981.

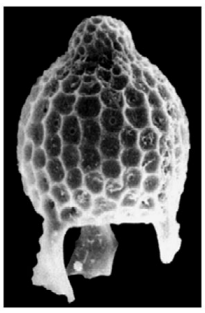
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Hollis 1997: 62

SEE ***MYLLOCERCION***

SYN.
FREQUENT

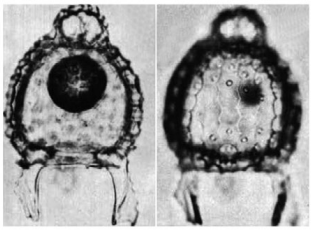
Type



25 µm

Schadelfusslerus echtus
Empson-Morin, 1981: 276, pl. 10, fig. 6A

Support



50 µm

Schadelfusslerus echtus
Empson-Morin, 1981: 276, pl. 10, figs 6B, 6C

N - LINEAGE II (D) ARTOSTROBIIDAE

ASSIGNED IN Petrushevskaya 1971a: 236

GENUS ***Botryostrobus***
Haeckel, 1887: 1475

SUBGENUS ***Lithostrobus* (*Botryostrobus*)**

Diagnosis: Artostrobiidae with a multi-segmented (five to nine) spindle-shaped shell. A horn sometimes related to a tube as the V spine as a tube often upwardly recurved. All post-thoracic segments as long as thorax with pores in transverse rows. Aperture narrowing, shapeless.

Remarks: The type species has been frequently figured (is a junior subjective synonym of *Lithocampe aurita* Ehrenberg, 1844a).

Original series: *Lithostrobus botryocyrtis* Haeckel, 1887 and *Lithostrobus lithobotrys* Haeckel, 1887.

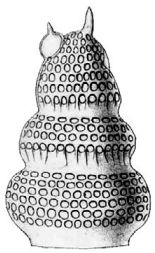
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D141)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LIVING***

VALID
FREQUENT

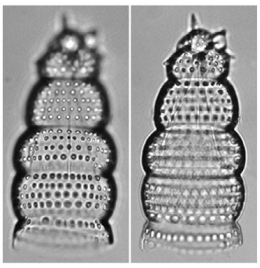
Type



50 µm

Lithostrobus botryocyrtis
Haeckel, 1887: 1475, pl. 79, fig. 18

Support



50 µm

Lithostrobus botryocyrtis Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (D) ARTOSTROBIIDAE

GENUS ***Artostrobium***
Haeckel, 1887: 1482

SUBGENUS ***Artostrobus* (*Artostrobium*)**

Remarks: Type species frequently reported.

Original series: *Artostrobus articulatus* Haeckel, 1887; **Artostrobus biseriatus* Haeckel, 1887 and *Lithocampe aurita* Ehrenberg, 1844a.

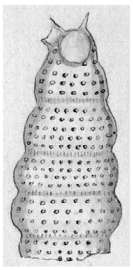
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS JUNIOR SYNONYM
synonymized by Caulet 1974: 236

SEE ***BOTRYOSTROBUS***

SYN.
FREQUENT

Type



50 µm

Lithocampe aurita
Ehrenberg, 1844a: 84 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 25

Support



100 µm

Lithocampe aurita Ehrenberg
Suzuki's collection (Quaternary, North Pacific)

N - LINEAGE II (D) ARTOSTROBIIDAE

ASSIGNED IN Petrushevskaya 1981: 264

GENUS ***Buryella***
Foreman, 1973: 433

Diagnosis: Artostrobiidae fusiform shell with three to more segments. A spine passes in the cephalic wall before a triangular apical horn. V as a short spine. Ax may be present with one to seven thin threads. No external feet or wings. Pores usually in orthogonal order. Aperture narrowed, not defined.

Remarks: Type species frequently reported.

Original series: *Buryella clinata* Foreman, 1973; *Buryella pentadica* Foreman, 1973 and *Buryella tetradica* Foreman, 1973.

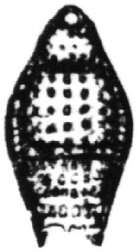
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY PALEOCENE–LATE EOCENE***

VALID
FREQUENT

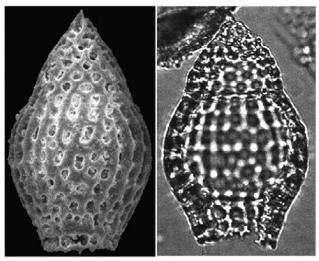
Type



50 µm

Buryella tetradica
Foreman, 1973: 433, pl. 9, fig. 14

Support



50 µm

Buryella tetradica Foreman
Hollis 1997: 81, pl. 21, figs 16, 19

N - LINEAGE II (D) ARTOSTROBIIDAE

ASSIGNED IN Nigrini 1977: 249

GENUS ***Dictyoprora***
Haeckel, 1887: 1305

SUBGENUS ***Dictyocephalus* (*Dictyoprora*)**

Diagnosis: Artostrobiidae with a three segmented spindle-shaped shell. Subspherical cephalis with rarely a A horn. V spine as a short tubule on the side of cephalis. III segment the largest and longest with transversal rows of pores. Aperture narrow, ending in a septum or a tube.

Remarks: See comments under *STREPTODELUS*.

Original series: *Dictyocephalus amphora* Haeckel, 1887; **Dictyocephalus ampulla* Haeckel, 1887; *Dictyocephalus australis* Haeckel, 1887; *Dictyocephalus mediterraneus* Haeckel, 1887; **Dictyocephalus tabulatus* Haeckel, 1887; *Dictyocephalus urceolus* Haeckel, 1887; *Eucyrtidium crassiceps* Ehrenberg, 1874b; *Eucyrtidium excellens* Ehrenberg, 1874b; *Eucyrtidium*? *ocellatum* Ehrenberg, 1862b; *Eucyrtidium papillosum* Ehrenberg, 1873a and *Eucyrtidium reticulatum* Ehrenberg, 1861a.

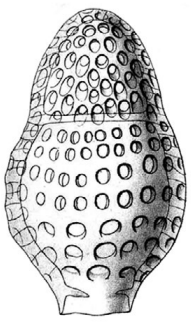
FIXATION SUBSEQUENT DESIGNATION (Campbell 1953: 296)

STATUS **VALID**

AGE ***EARLY TOARCIAN–LIVING***

VALID
FREQUENT

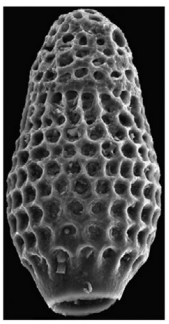
Type



50 µm

Dictyocephalus amphora
Haeckel, 1887: 1305, pl. 62, fig. 4

Support



50 µm

Dictyoprora amphora (Haeckel)
Jackett 2007: 144, pl. 19, fig. 14 (Early Paleocene)

N - Lineage II (D) ARTOSTROBIIDAE

GENUS **Streptodelus**
Campbell, 1953: 296

Remarks: Type species frequently reported. Campbell (1953: 296) erected this new genus because he thought that Haeckel (1887) had used the name *DICTYOPRORA* twice. Campbell (1954: D127) designated *Sethamphora hexapleura* Haeckel, 1887 as the type species for *DICTYOPRORA* Haeckel, 1882, and on p. D128 he designated *Dictyocephalus amphora* Haeckel, 1887, as the type species for *DICTYOPRORA* Haeckel, 1887: 1350 (non Haeckel 1882). Campbell apparently overlooked Haeckel's errata (1887: 1764) correcting *DICTYOPRORA* (1887: 1250) to *DICTYOPRONA* Haeckel, 1887.

Original series: *D. amphora* Haeckel, 1887; **D. ampulla* Haeckel, 1887; *D. australis* Haeckel, 1887; *D. mediterraneus* Haeckel, 1887; **D. tabulatus* Haeckel, 1887; *D. urceolus* Haeckel, 1887; *Eucyrtidium crassiceps* Ehrenberg, 1874b; *E. excellens* Ehrenberg, 1874b; *E.? ocellatum* Ehrenberg, 1862b; *E. papillosum* Ehrenberg, 1873a and *E. reticulatum* Ehrenberg, 1861a.

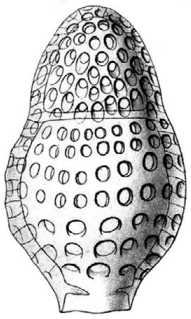
FIXATION SUBSEQUENT DESIGNATION (Campbell 1953: 296)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE **DICTYOPRORA**

SYN. (obj.)
FREQUENT

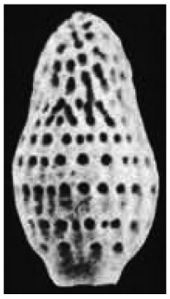
Type



50 µm

Dictyocephalus amphora
Haeckel, 1887: 1305, pl. 62, fig. 4

Support



50 µm

Dictyoprora amphora (Haeckel)
Nishimura 1987: 725, pl. 2, fig. 3

N - Lineage II (D) ARTOSTROBIIDAE
ASSIGNED IN Petrushevskaya 1971a: 236

GENUS **Lithamphora**
Popofsky, 1908: 294

Diagnosis: Artostrobiidae with a four to six segments shell. A horn developed. V tube short and downwardly directed. Not as other segments, the thorax is separated from other segments by a constriction and a septum. Aperture narrow, open, sometimes modified as a tube.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Lithamphora furcaspiculata* Popofsky, 1908.

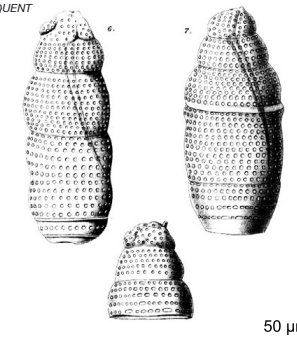
FIXATION MONOTYPY

STATUS **VALID**

AGE **LATE MIDDLE EOCENE–LIVING**

VALID
FREQUENT

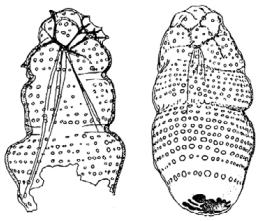
Type



50 µm

Lithamphora furcaspiculata
Popofsky, 1908: 295, pl. 36, fig. 6 [lectotype herein]

Support



50 µm

Lithamphora furcaspiculata Popofsky
Petrushevskaya 1971a: 125, figs 7, 9

N - Lineage II (D) ARTOSTROBIIDAE

GENUS **Acanthocyrtis**
Haeckel, 1887: 1461

SUBGENUS ***Cyrtophormis* (*Acanthocyrtis*)**

Remarks: Homonym of *ACANTHOCYRTIS* Haeckel, 1882: 437 (Polycystinea); see *PHORMOSTICHOARTUS nomen novum*. The type species has been only illustrated by Haeckel, it has been classically illustrated as a junior subjective synonym of *Lithocampe corbula* Harting, 1863.

Original series: *Cyrtophormis cornuta* Haeckel, 1887; *Cyrtophormis corona* Haeckel, 1887; *Cyrtophormis cylindrica* Haeckel, 1887; *Cyrtophormis turricula* Haeckel, 1887; *Cyrtophormis turrita* Haeckel, 1887 and *Lithocampe fimbriata* Stöhr, 1880.

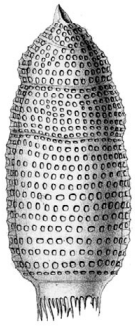
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D139)

STATUS HOMONYM, JUNIOR SYNONYM

SEE **PHORMOSTICHOARTUS NOMEN NOVUM**

HOM.; SYN.

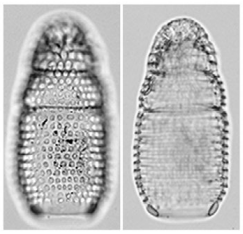
Type



50 µm

Cyrtophormis cylindrica
Haeckel, 1887: 1461, pl. 77, fig. 17

Support



50 µm

Cyrtophormis cylindrica Haeckel
Paratypic material (Challenger Station 265), Suzuki's collection

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N - Lineage II (D) ARTOSTROBIIDAE

GENUS **Phormostichoartus** NOMEN NOV. PRO *ACANTHOCYRTIS*
Campbell, 1951: 530

SUBGENUS ***Cyrtophormis* (*Phormostichoartus*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym. Heterogeneous group of species originally included.

Original series: *Cyrtophormis cornuta* Haeckel, 1887; *Cyrtophormis corona* Haeckel, 1887; *Cyrtophormis cylindrica* Haeckel, 1887; *Cyrtophormis turricula* Haeckel, 1887; **Cyrtophormis turrita* Haeckel, 1887 and *Lithocampe fimbriata* Stöhr, 1880.

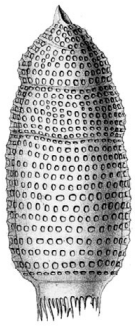
FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1954: D139)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 273

SEE **LITHAMPHORA**

NOM. NOV.; SYN.
UNIQUE

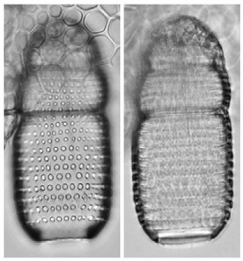
Type



50 µm

Cyrtophormis cylindrica
Haeckel, 1887: 1461, pl. 77, fig. 17

Support



50 µm

Phormostichoartus corbula (Harting)
Zhang's collection (South China Sea)

N - LINEAGE II (D) ARTOSTROBIIDAE

GENUS ***Poroamphora***
Popofsky, 1908: 293

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

Original series: *Poroamphora paradoxa* Popofsky, 1908.

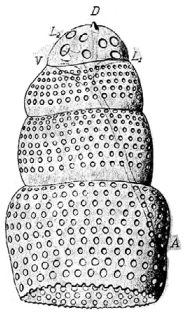
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1967: 129

SEE ***LITHAMPHORA***

SYN.
UNIQUE

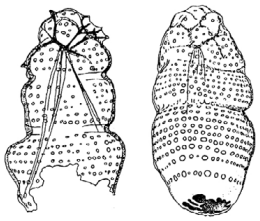
Type



25 µm

Poroamphora paradoxa
Popofsky, 1908: 294, pl. 36, fig. 5

Support



50 µm

Lithocampe? furcaspiculata (Popofsky)
Petrushevskaya, 1967: 129, figs 74.2, 74.4

N - LINEAGE II (D) ARTOSTROBIIDAE
ASSIGNED IN O'Connor 1997: 6

GENUS ***Plannapus***
O'Connor, 1997: 69

Diagnosis: Artostrobiidae with two segments. Multilobated cephalis with an A horn and a well-developed V tube; inner spicule well developed with many arches, but no external extensions. Second segment closed or with a constricted peristome.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Dicolocapsa microcephala* Haeckel, 1887.

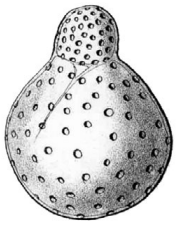
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY OLIGOCENE–LATE EARLY MIOCENE***

VALID
FREQUENT

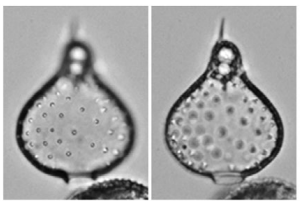
Type



50 µm

Dicolocapsa microcephala
Haeckel, 1887: 1312, pl. 57, fig. 1

Support



50 µm

Dicolocapsa microcephala Haeckel
Paratypic material (Challenger Station 255), Suzuki's collection

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N - LINEAGE II (D) ARTOSTROBIIDAE
ASSIGNED HEREIN

GENUS ***Sertiseria***
Sugiyama, 1994: 2

Diagnosis: Artostrobiidae with cylindrical multi-segmented shell. A single species recognized. Cephalis small with a small A horn. D, 2L and V as short conical spines. Simple Ax present. No internal septa between segments. Pores circular. Aperture as a simple rim.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Sugiyama (1994).

Original series: *Sertiseria batlax* Sugiyama, 1994.

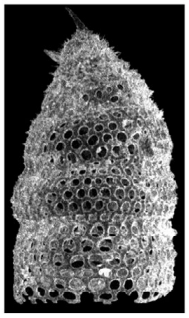
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EARLY MIOCENE***

VALID
UNIQUE

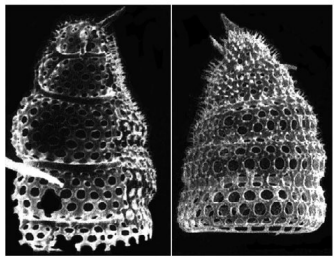
Type



25 µm

Sertiseria batlax
Sugiyama, 1994: 3, pl. 1, fig. 1a

Support



50 µm

Sertiseria batlax
Sugiyama, 1994: 3, pl. 1, figs 1a, 3a

N - LINEAGE II (D) ARTOSTROBIIDAE
ASSIGNED IN Nigrini 1977: 254

GENUS ***Siphocampe***
Haeckel, 1882: 438

NOMINOTYPE ***Siphocampe (Siphocampe)***

Diagnosis: Artostrobiidae with a multi-segmented cylindrical shell. Small cephalis without A horn; V spine as an upwardly directed tubule. Ramified Ax may be present. Post-thoracic shell with many segments bearing furrows and ribs and no more than 2 transversal rows of pores each.

Remarks: Type species only illustrated by Haeckel (1887); the support image is a junior subjective synonym. Heterogeneous group of species originally included.

Original series: *Siphocampe annulosa* Haeckel, 1887; *Siphocampe caminosa* Haeckel, 1887; *Siphocampe erucosa* Haeckel, 1887; **Siphocampe quadrantalis* Haeckel, 1887; *Siphocampe spiralis* Haeckel, 1887 and *Siphocampe tubulosa* Haeckel, 1887.

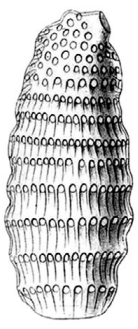
FIXATION SUBSEQUENT DESIGNATION (Strelkov & Lipman 1959: 459)

STATUS **VALID**

AGE ***EARLY BAJOCIAN–LIVING***

VALID
UNIQUE

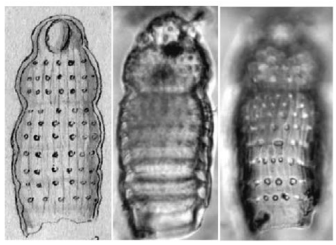
Type



50 µm

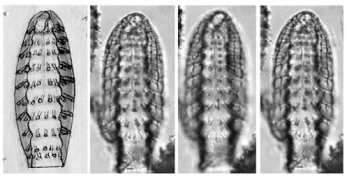
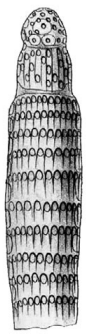
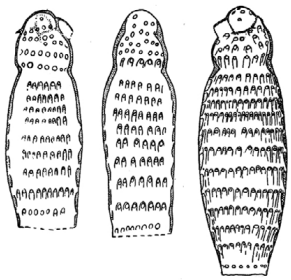
Siphocampe annulosa
Haeckel, 1887: 1500, pl. 79, fig. 10

Support



50 µm

Eucyrtidium lineatum Ehrenberg
Suzuki *et al.* 2009a: pl. 16, figs 5a-5c [paralectotype herein]

N - LINEAGE II (D) ARTOSTROBIIDAE GENUS ***Siphocampula*** Haeckel, 1887: 1499 SUBGENUS ***Siphocampe* (*Siphocampula*)** **Remarks**: Only the type species has been illustrated (reported only by Haeckel 1887). **Original series**: *Siphocampe annulosa* Haeckel, 1887; *Siphocampe caminosa* Haeckel, 1887; *Siphocampe erucosa* Haeckel, 1887 and *Siphocampe tubulosa* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D141) STATUS JUNIOR SYNONYM synonymized herein SEE ***SIPHOCAMPE***	**SYN.** Type *UNIQUE*  50 µm *Siphocampe tubulosa* Haeckel, 1887: 1500, pl. 79, fig. 13	Support NO IMAGE PUBLISHED no image available
N - LINEAGE II (D) ARTOSTROBIIDAE GENUS ***Lithomitra*** Bütschli, 1882b: 529 NOMINOTYPE ***Lithomitra* (*Lithomitra*)** **Remarks**: See comments under *LITHOMITRELLA*. **Original series**: *Eucyrtidium acephalum* Ehrenberg, 1874b; *Eucyrtidium imbricatum* Ehrenberg, 1874b; *Eucyrtidium*? *obstipum* Ehrenberg, 1874b; *Eucyrtidium pachyderma* Ehrenberg, 1874b and *Eucyrtidium pauperum* Ehrenberg, 1874b. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D141) STATUS JUNIOR SYNONYM synonymized by Nigrini 1977: 254 SEE ***SIPHOCAMPE***	**SYN.** Type *RARE*  50 µm *Eucyrtidium pachyderma* Ehrenberg, 1874b: 231 (unfigured); Ehrenberg, 1876: 72, pl. 11, fig. 21	Type  50 µm *Eucyrtidium pachyderma* Ehrenberg Ogane *et al.* 2009b: pl. 21, figs 1a-d [lectotype herein]
N - LINEAGE II (D) ARTOSTROBIIDAE GENUS ***Lithomitrella*** Haeckel, 1887: 1483 SUBGENUS ***Lithomitra* (*Lithomitrella*)** **Remarks**: Type species rarely reported. **Original series**: *Eucyrtidium acephalum* Ehrenberg, 1874b; *Eucyrtidium pachyderma* Ehrenberg, 1874b; *Lithocampe lineata* Ehrenberg, 1839a; *Lithomitra chrysalis* Haeckel, 1887; *Lithomitra eruca* Haeckel, 1887 and *Lithomitra nodosaria* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D141) STATUS JUNIOR OBJECTIVE SYNONYM SEE ***LITHOMITRA***	**SYN. (obj.)** Type *RARE*  50 µm *Eucyrtidium pachyderma* Ehrenberg, 1874b: 231 (unfigured); Ehrenberg, 1876: 72, pl. 11, fig. 21	Support  50 µm *Siphocampe pachyderma* (Ehrenberg) Caulet 1991: 539, pl. 3, fig. 13
N - LINEAGE II (D) ARTOSTROBIIDAE GENUS ***Tricolocampium*** Haeckel, 1887: 1412 SUBGENUS ***Tricolocampe* (*Tricolocampium*)** **Remarks**: Only the type species clearly belongs to this genus; frequently reported. **Original series**: *Eucyrtidium panthera* Ehrenberg, 1874b; *Eucyrtidium pupa* Ehrenberg, 1873a; *Tricolocampe amphizona* Haeckel, 1887; *Tricolocampe cylindrica* Haeckel, 1887; *Tricolocampe polyzona* Haeckel, 1887 and *Tricolocampe stenozona* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Burma 1959: 326) STATUS JUNIOR SYNONYM synonymized herein SEE ***SIPHOCAMPE***	**SYN.** Type *FREQUENT*  50 µm *Tricolocampe cylindrica* Haeckel, 1887: 1412, pl. 66, fig. 21	Support  50 µm *Tricolocampe cylindrica* Haeckel Petrushevskaya 1971a: 123, figs 1-3

N - LINEAGE II (D) ARTOSTROBIIDAE

ASSIGNED IN Nigrini 1977: 257

GENUS ***Siphostichartus***
Nigrini, 1977: 257

Diagnosis: Artostrobiidae with a multi-segmented shell. A as a columella and a sided apical horn, V as a duck-billed vertical tube. No feet nor lateral extensions related to internal spicule. Pores distributed in horizontal rows. Intersegment strictures not internally pronounced. Peristome.

Remarks: Only the type species clearly belongs to this genus (frequently reported); just two species originally included at the time of the generic definition.

Original series: *Cyrtophormis corona* Haeckel, 1887 and *Siphostichartus praecorona* Nigrini, 1977.

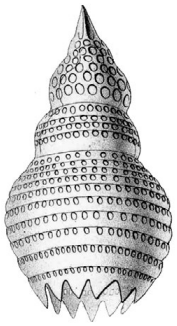
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE EARLY MIOCENE–EARLY PLIOCENE***

VALID
FREQUENT

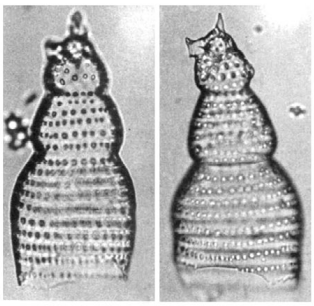
Type



50 µm

Cyrtophormis corona
Haeckel, 1887: 1462, pl. 77, fig. 15

Support



50 µm

Siphostichartus corona (Haeckel)
Nigrini 1977: 257, pl. 2, figs 6, 7

N - LINEAGE II (D) ARTOSTROBIIDAE

ASSIGNED IN Petrushevskaya 1971a: 236

GENUS ***Spirocyrtis***
Haeckel, 1882: 438

NOMINOTYPE ***Spirocyrtis* (*Spirocyrtis*)**

Diagnosis: Artostrobiidae with a multi-segmented shell with a scalariform outline. A horn almost as long as cephalis and sided. Small additional cephalic horns including V spine sometimes tubular. D and 2L extended as very small thoracic lateral appendages. Aperture open.

Remarks: See comments under *SPIROCYRTIDIUM*.

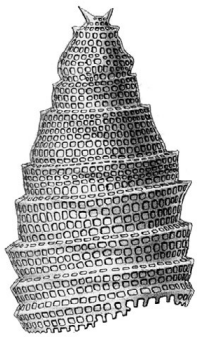
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D142)

STATUS **VALID**

AGE ***EARLY OLIGOCENE–LIVING***

VALID
FREQUENT

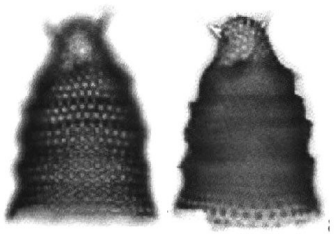
Type



50 µm

Spirocyrtis scalaris
Haeckel, 1887: 1509, pl. 76, fig. 14

Support



50 µm

Spirocyrtis scalaris Haeckel
Chen *et al.* 2017: 233, pl. 84, figs 7, 8

N - LINEAGE II (D) ARTOSTROBIIDAE

GENUS ***Spirocyrtidium***
Haeckel, 1887: 1509

SUBGENUS ***Spirocyrtis* (*Spirocyrtidium*)**

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Spirocyrtis cornutella* Haeckel, 1887 and *Spirocyrtis scalaris* Haeckel, 1887.

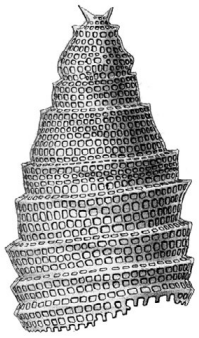
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D142)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SPIROCYRTIS***

SYN. (obj.)
FREQUENT

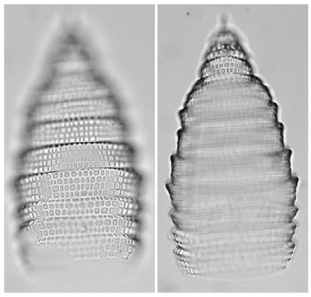
Type



50 µm

Spirocyrtis scalaris
Haeckel, 1887: 1509, pl. 76, fig. 14

Support



50 µm

Spirocyrtis scalaris Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (D) ARTOSTROBIIDAE

ASSIGNED IN Petrushevskaya 1981: 266

GENUS ***Theocamptra***
Haeckel, 1887: 1424

SUBGENUS ***Theocampe* (*Theocamptra*)**

Diagnosis: Artostrobiidae with a fourth segmented shell. A horn variable. V spine as a short wide and upwardly directed tubule. D and 2L not expressed as ribs or feet. Fourth segment longest and widest with transversal rows of pores. Peristome tubular.

Remarks: Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym.

Original series: *Eucyrtidium cryptocephalum* Ehrenberg, 1874b; *Eucyrtidium gemmatum* Ehrenberg, 1874b; *Eucyrtidium megaloporum* Ehrenberg, 1873b; *Eucyrtidium versipellis* Ehrenberg, 1874b; *Theocampe collaris* Haeckel, 1887; *Theocampe costata* Haeckel, 1887 and *Theocampe sphaerothorax* Haeckel, 1887.

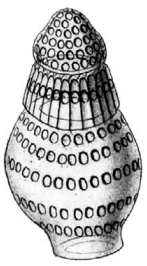
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS **VALID**

AGE ***EARLY OLIGOCENE–EARLY MIDDLE MIOCENE***

VALID
UNIQUE

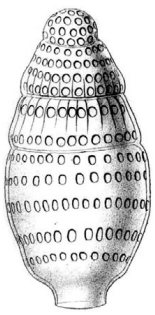
Type



50 µm

Theocampe collaris
Haeckel, 1887: 1425, pl. 66, fig. 18

Support



25 µm

Lithocampe ovata
Haeckel, 1887: 1504, pl. 77, fig. 1

N - LINEAGE II (D) ARTOSTROBIIDAE

ASSIGNED IN Riedel 1967: 149

GENUS ***Tricolocapsa***
Haeckel, 1882: 436

NOMINOTYPE ***Tricolocapsa* (*Tricolocapsa*)**

Diagnosis: Artostrobiidae with a three-segmented shell. Hemispherical cephalis with a V spine as a short tubule. A horn usually not developed. D and 2L prolonged as ribs in thorax wall. Abdomen usually ovate with a funnel-shaped, sometimes porous, peristome around the aperture.

Remarks: See comments under *TRICOLOCAPSULA*.

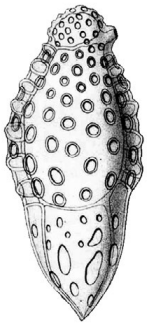
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS **VALID**

AGE ***LATE EOCENE–LIVING***

VALID
UNIQUE

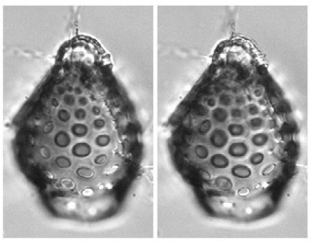
Type



50 µm

Tricolocapsa theophrasti
Haeckel, 1887: 1432, pl. 66, fig. 1

Support



50 µm

Tricolocapsa theophrasti Haeckel
Suzuki's collection (Quaternary, North Pacific)

N - LINEAGE II (D) ? ARTOSTROBIIDAE

GENUS ***Tricolopera*** PREMATURE NAME
Haeckel, 1882: 436

Remarks: An alternative, but premature name used by Haeckel in 1882 for *TRICOLOCAPSULA* Haeckel 1887. Genus described as monospecific at the time of the generic definition.

Original series: *Tricolocapsa theophrasti* Haeckel, 1887.

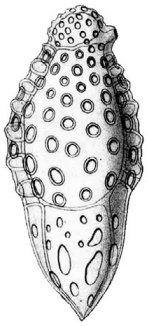
FIXATION MONOTYPY; ICZN, ART. 67.6

STATUS INVALID NAME
designated herein

SEE ***TRICOLOCAPSA***

INV.

Type



50 µm

Tricolocapsa theophrasti
Haeckel, 1887: 1432, pl. 66, fig. 1

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (D) ARTOSTROBIIDAE

GENUS ***Tricolocapsula***
Haeckel, 1887: 1432

SUBGENUS ***Tricolocapsa* (*Tricolocapsula*)**

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Tricolocapsa decandollei* Haeckel, 1887; *Tricolocapsa dioscoridis* Haeckel, 1887; *Tricolocapsa linnaei* Haeckel, 1887 and *Tricolocapsa theophrasti* Haeckel, 1887.

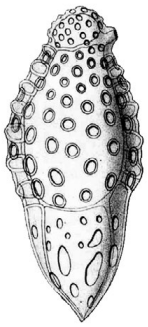
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TRICOLOCAPSA***

SYN. (obj.)
UNIQUE

Type



50 µm

Tricolocapsa theophrasti
Haeckel, 1887: 1432, pl. 66, fig. 1

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (D) ARTOSTROBIIDAE

GENUS ***Carpocanarium***
Haeckel, 1887: 1279

SUBGENUS ***Carpocanium* (*Carpocanarium*)**

Remarks: Type species only illustrated by Stöhr (1880).

Original series: *Carpocanium calycothes* Stöhr, 1880; **Carpocanium laeve* Ehrenberg, 1873a; **Carpocanium lanceolatum* Haeckel, 1887 and *Halicalyptra setosa* Ehrenberg, 1876.

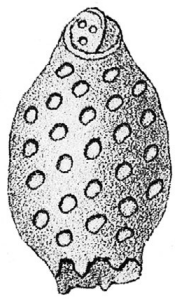
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D127)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRICOLOCAPSA***

SYN.
UNIQUE

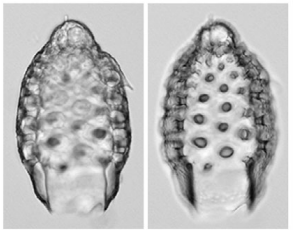
Type



25 µm

Carpocanium calycothes
Stöhr, 1880: 96, pl. 3, fig. 8

Support



50 µm

Carpocanium calycothes Stöhr
Zhang's collection (South China Sea)

N - LINEAGE II (D) ? ARTOSTROBIIDAE

GENUS ***Chlamidophora***
Ehrenberg, 1876: 160

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Chlamidophora chilensis* Ehrenberg, 1876.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Chlamidophora chilensis
Ehrenberg, 1856: 428 (n.n.); Ehrenberg, 1876: 160 (unfigured)

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (D) ? ARTOSTROBIIDAE

GENUS ***Stylocapsa***
Principi, 1909: 20

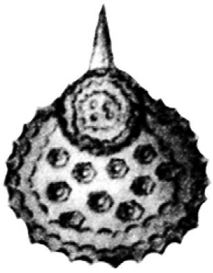
Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Stylocapsa exagonata* Principi, 1909.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D. Type
UNIQUE



25 µm

Stylocapsa exagonata
Principi, 1909: 20, pl. 1, fig. 64

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (D) ? ARTOSTROBIIDAE

GENUS ***Tricolocapsium***
Haeckel, 1887: 1433

SUBGENUS ***Tricolocapsa* (*Tricolocapsium*)**

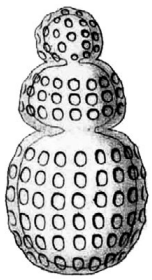
Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Tricolocapsa browni* Haeckel, 1887 and *Tricolocapsa schleideni* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D. Type
UNIQUE



50 µm

Tricolocapsa schleideni
Haeckel, 1887: 1433, pl. 66, fig. 2

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (D) RHOPALOSYRINGIIDAE
ASSIGNED HEREIN

GENUS ***Artostrobus***
Haeckel, 1887: 1481

NOMINOTYPE ***Artostrobus* (*Artostrobus*)**

Diagnosis: Rhopalosyringiidae with a cylindrical two-segmented shell. Small poreless cephalis well-separated from thorax and with lateral lobes. A as a columella and vertical apical horn. D, L and V spines as thin lateral easily broken spines. Aperture open, shapeless.

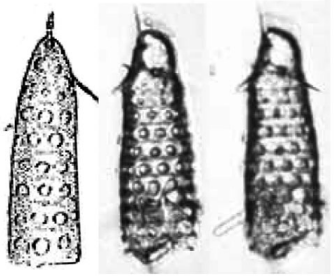
Remarks: See comments under *ARTOSTROBULUS*. The type species is a senior homonym of *Cornutella annulata* Haeckel, 1887: 1182.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS **VALID**

AGE ***EARLY MIDDLE EOCENE–LIVING***

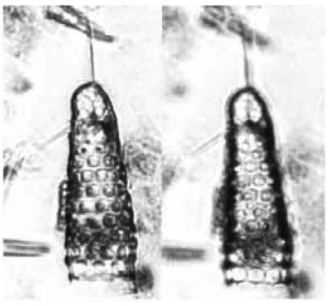
VALID Type
FREQUENT



25 µm

Cornutella? annulata
Bailey, 1856: 3, pl. 1, fig. 5b; [Itaki & Bjørklund 2007: 451, pl. 1, figs 16-17b. Bailey's collection]

Type



25 µm

Cornutella? annulata Bailey
Itaki & Bjørklund 2007: 451, pl. 1, figs 15a, 15b [lectotype]

N - LINEAGE II (D) RHOPALOSYRINGIIDAE

GENUS ***Artostrobulus***
Haeckel, 1887: 1481

SUBGENUS ***Artostrobus* (*Artostrobulus*)**

Remarks: Only the type species clearly belongs to this genus (frequently reported); just two species originally included at the time of the generic definition.

Original series: *Cornutella*? *annulata* Bailey, 1856 and *Eucyrtidium elegans* Ehrenberg, 1854c.

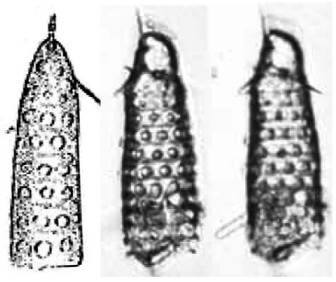
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D140)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ARTOSTROBUS***

SYN. (obj.)
FREQUENT

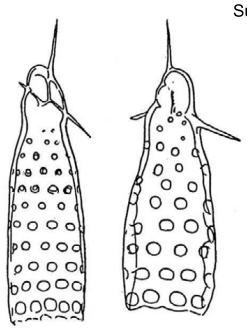
Type



25 µm

Cornutella? *annulata*
Bailey, 1856: 3, pl. 1, fig. 5b [Itaki & Bjørklund 2007: 451, pl. 1, figs 16-17b. Bailey's collection]

Support



25 µm

Artostrobus annulatus (Bailey)
Petrushevskaya 1967: 99, figs 56.2, 56.3

N - LINEAGE II (D) RHOPALOSYRINGIIDAE
ASSIGNED HEREIN

GENUS ***Botryometra***
Petrushevskaya, 1975: 590

Diagnosis: Rhopalosyringiidae with two-three segments. Multilobate cephalis but with no collar area. A as a columella before a robust A horn not shorter than cephalis. Thorax may be sub-divided in segments with A, L, 2D spines prolonged by horns and lateral feet.

Remarks: Type species frequently reported.

Original series: *Lithomelissa* (*Micromelissa*) *heros* Campbell & Clark, 1944b and *Lithomelissa* (*Micromelissa*) *robusta* Campbell & Clark, 1944b.

FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE CAMPANIAN–LATE PALEOCENE***

VALID
FREQUENT

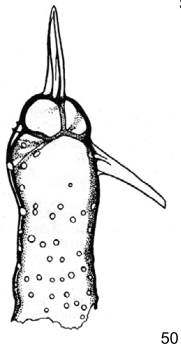
Type



50 µm

Lithomelissa (*Micromelissa*) *heros*
Campbell & Clark, 1944b: 25, pl. 7, fig. 23

Support



50 µm

Lithomelissa heros Campbell & Clark
Petrushevskaya 1981: 310, fig. 474

N - LINEAGE II (D) RHOPALOSYRINGIIDAE
ASSIGNED HEREIN

GENUS ***Ectonocorys***
Foreman, 1968: 40

Diagnosis: Rhopalosyringiidae with a conical shell with three segments. Multilobated cephalis with no collar stricture. A as a columella and a short flare apical horn. D and 2L as short lateral thoracic horns. Unshaped abdominal aperture, sometimes closed by a mesh.

Remarks: Type species only illustrated by Foreman (1968); the support image is one of those species originally included into this genus.

Original series: *Ectonocorys lampra* Foreman, 1968; *Ectonocorys deltota* Foreman, 1968; *Ectonocorys scolia* Foreman, 1968 and *Ectonocorys hemicarena* Foreman, 1968.

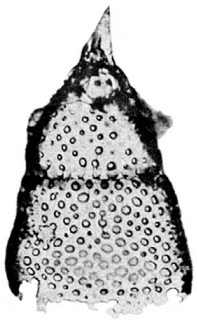
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY BAJOCIAN–EARLY PALEOCENE***

VALID
VERY RARE

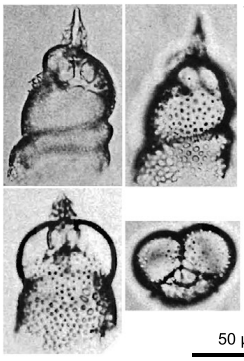
Type



50 µm

Ectonocorys lampra
Foreman, 1968: 40, pl. 5, fig. 7a

Support



50 µm

Ectonocorys? *hemicarena*
Foreman, 1968: 42, pl. 5, figs 6a-d

N - LINEAGE II (D) RHOPALOSYRINGIIDAE
ASSIGNED HEREIN

GENUS ***Pterocyrtidium***
Bütschli, 1882b: 531

SUBGENUS ***Pterocorys* (*Pterocyrtidium*)**

Diagnosis: Rhopalosyringiidae with three segments. Small globular cephalis with a strong lateral A horn. Internal bars not recognized. D and L spines passing as ribs in the thoracic wall and outgrowing from the upper abdomen as lateral feet. Aperture narrow or closed.

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated). Campbell (1954: D87) designates *Pterocorys campanula* Haeckel, 1887 as the type species of *PTEROCYRTIDIUM*. However, this seems inappropriate as this species was not among those included at the time of the generic definition.

Original series: *Pterocanium barbadense* Ehrenberg, 1874b and *Pterocyrtidium zitteli* Bütschli, 1882b.

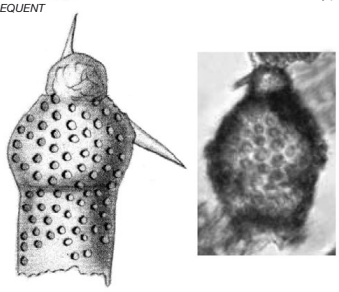
FIXATION SUBSEQUENT DESIGNATION (Petrushevskaya & Kozlova 1972: 552)

STATUS **VALID**

AGE ***EARLY PALEOCENE–EARLY OLIGOCENE***

VALID
FREQUENT

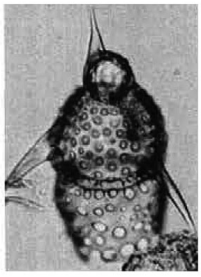
Type



50 µm

Pterocanium barbadense
Ehrenberg, 1874b: 254 (unfigured); Ehrenberg, 1876: 82, pl. 17, fig. 6 [Ogane *et al.* 2009b: pl. 1, fig. 3; topotype]

Support



50 µm

Lophocyrtis (*Lophocyrtis*?) *barbadense* (Ehrenberg)
Sanfilippo & Caulet 1998: 8, pl. 4, fig. 10a

N - LINEAGE II (D) — RHOPALOSYRINGIIDAE
ASSIGNED IN Empson-Morin, 1981: 264

GENUS ***Rhopalosyringium***
Campbell & Clark 1944b: 30

Diagnosis: Rhopalosyringiidae with three segments. Small knob-like cephalis with A as a columella and strong sided A and V horns. No D and 2L lateral feet or ribs. Greater thorax with large thick-framed pores. Usually longer cylindrical abdomen with a shapeless aperture.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Rhopalosyringium magnificum* Campbell & Clark, 1944b.

FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY APTIAN–LATE EOCENE***

VALID
FREQUENT

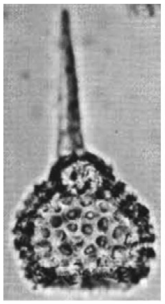
Type



50 µm

Rhopalosyringium magnificum
Campbell & Clark, 1944b: 30, pl. 7, fig. 16 [lectotype by O'Dogherty *et al.*, 2009a: 315]

Support



50 µm

Rhopalosyringium sp.
Dinkelman 1973: pl. 1, fig. 2

N - LINEAGE II (D) — RHOPALOSYRINGIIDAE

GENUS ***Calompterium***
Clark & Campbell, 1945: 45

SUBGENUS ***Calocyclas* (*Calompterium*)**

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Calocyclas* (*Calompterium*) *rachiphora* Clark & Campbell, 1945.

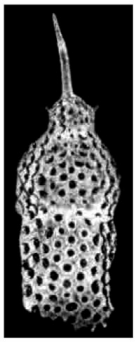
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***RHOPALOSYRINGIUM***

SYN.
VERY RARE

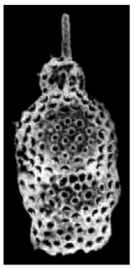
Type



50 µm

Calocyclas (*Calompterium*) *rachiphora*
Clark & Campbell, 1945: 45, pl. 6, fig. 19

Support



50 µm

Calocyclas (*Calompterium*) *rachiphora*
Clark & Campbell, 1945: 45, pl. 6, fig. 18

N - LINEAGE II (D) — ? RHOPALOSYRINGIIDAE

GENUS ***Lithocampana***
Clark & Campbell, 1942: 66

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

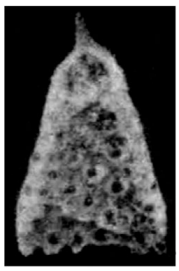
Original series: *Lithocampana lithoconella* Clark & Campbell, 1942.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
RARE

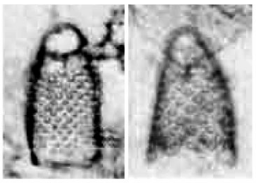
Type



25 µm

Lithocampana lithoconella
Clark & Campbell, 1942: 66, pl. 9, fig. 24

Support



25 µm

Lithocampana lithoconella Clark & Campbell
Dzinoridze *et al.* 1976: pl. 32, figs 25, 26

N - LINEAGE II (E) — ACANTHODESMIIDAE
ASSIGNED IN Haeckel 1862: 265

GENUS ***Acanthodesmia***
Müller, 1856: 485

Diagnosis: Acanthodesmiidae with a shell constituted by a sagittal ring whose apophyses l, j, m, q, and f constitute the other frontal, mitral and basal rings. Apophyses and bars of the rings may have circular or sided sections. On these usually thick apophyses, thorns and even ramified spinules can be distributed. The shape of the bars and the outlines of the openings they define vary as strongly as in *TRICYCLIDIUM*. Feet and galea are not differentiated.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Acanthodesmia dumetum* Müller, 1859b; *Acanthodesmia prismatium* Haeckel, 1861a and *Lithocircus vinculatus* Müller, 1856.

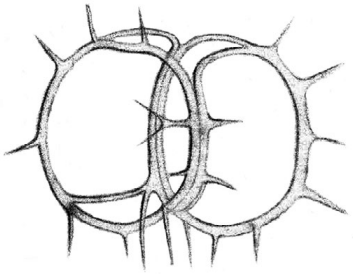
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D107)

STATUS **VALID**

AGE ***LATE EARLY MIOCENE–LIVING***

VALID
FREQUENT

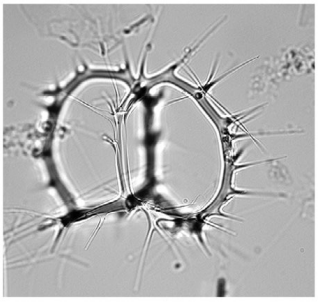
Type



50 µm

Lithocircus vinculatus
Müller, 1856: 484 (unfigured); Müller, 1859b: 30, pl. 1, fig. 7 [lectotype herein]

Support



50 µm

Lithocircus vinculatus Müller
Suzuki's collection (plankton, off Sesoko Island, Japan)

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Acanthostephanus***
Haeckel, 1879a: 705

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Acanthostephanus corona* Haeckel, 1879a.

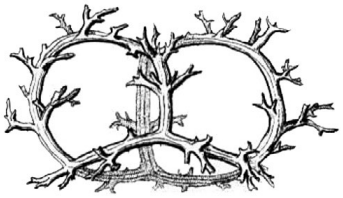
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ACANTHODESMIA***

SYN. *UNIQUE*

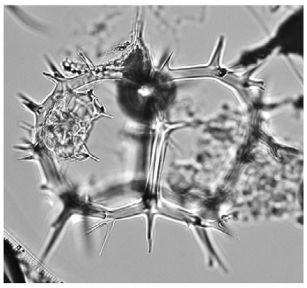
Type



~ 100 µm

Acanthostephanus corona
Haeckel, 1879a: 705, pl. 16, fig. 7

Support



50 µm

Acanthostephanus corona Haeckel
Suzuki's collection (plankton, off Sesoko Island, Japan)

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Lithocoronis***
Haeckel, 1882: 445

SUBGENUS ***Eucoronis* (*Lithocoronis*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Lithocoronis challengeri* Haeckel in Tizard *et al.*, 1885.

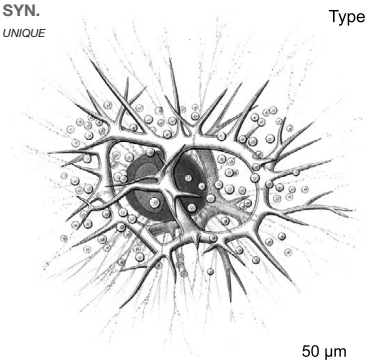
FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 274

SEE ***ACANTHODESMIA***

SYN. *UNIQUE*

Type



50 µm

Lithocoronis challengeri
Haeckel in Tizard *et al.*, 1885: 225, text-fig. 95; Haeckel, 1887: 978, pl. 82, fig. 4

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Octotympanum***
Haeckel, 1887: 999

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: **Octotympanum arborescens* Haeckel, 1887; *Octotympanum cervicorne* Haeckel, 1887; *Octotympanum octonarium* Haeckel, 1887 and **Octotympanum octospinum* Haeckel, 1887.

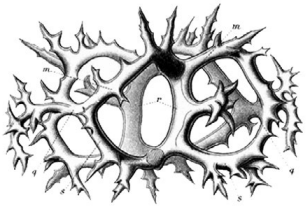
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ACANTHODESMIA***

SYN. *UNIQUE*

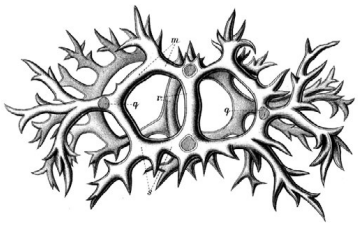
Type



50 µm

Octotympanum octonarium
Haeckel, 1887: 1000, pl. 94, fig. 3

Support



100 µm

Octotympanum cervicorne
Haeckel, 1887: 1000, pl. 94, fig. 2

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Tristephanium***
Haeckel, 1887: 982

NOMINOTYPE ***Tristephanium* (*Tristephanium*)**

Remarks: See comments under *TRIOSTEPHUS*. Although Haeckel here refers to p. 446 in his *Prodromus* of 1882, there is no genus named *TRISTEPHANIUM* on that or any other page of that reference.

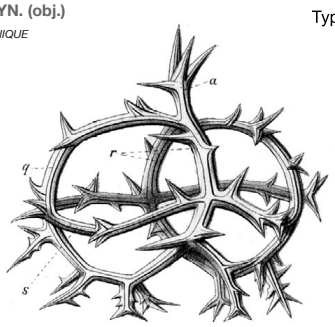
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TRIOSTEPHUS***

SYN. (obj.) *UNIQUE*

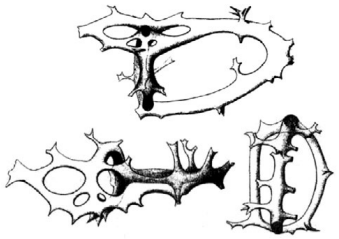
Type



50 µm

Tristephanium dimensivum
Haeckel, 1887: 983, pl. 93, fig. 9

Support



50 µm

Acanthodesmia hertwigi
Bütschli, 1882b: 499, pl. 32, figs 9a-c

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Triostephus***
Haeckel, 1882: 445

SUBGENUS ***Tristephanium* (*Triostephus*)**

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Acanthodesmia hertwigi* Bütschli, 1882b; *Tristephanium dimensivum* Haeckel, 1887 and *Tristephanium octopyle* Haeckel, 1887.

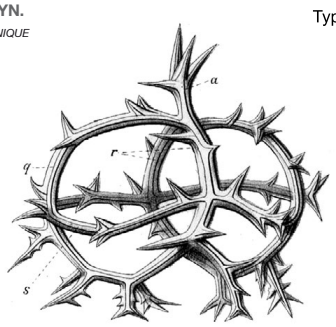
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ACANTHODESMIA***

SYN.
UNIQUE

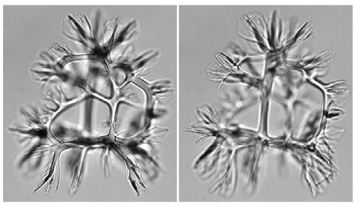
Type



50 µm

Tristephanium dimensivum
Haeckel, 1887: 983, pl. 93, fig. 9

Support



50 µm

Tristephanium dimensivum Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Tristephaniscus***
Haeckel, 1882: 445

SUBGENUS ***Tristephanium* (*Tristephaniscus*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Tristephanium quadricorne* Haeckel, 1887.

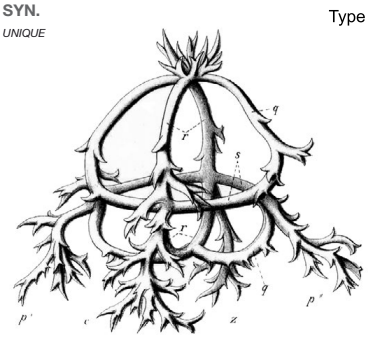
FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ACANTHODESMIA***

SYN.
UNIQUE

Type



50 µm

Tristephanium quadricorne
Haeckel, 1887: 984, pl. 93, fig. 7

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Tympanium***
Haeckel, 1882: 447

Remarks: See comments under *TYMPANIDIUM*.

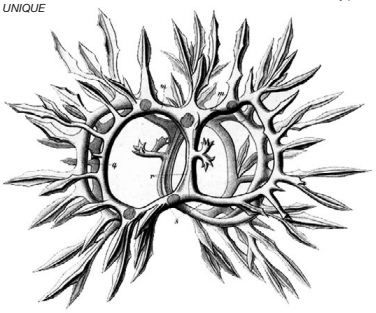
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D109)

STATUS JUNIOR SYNONYM
synonymized by Nigrini & Lombari 1984: N75

SEE ***ACANTHODESMIA***

SYN.
UNIQUE

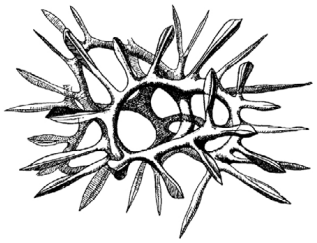
Type



100 µm

Tympanidium foliosum
Haeckel, 1887: 1003, pl. 94, fig. 1

Support



100 µm

Tympanidium foliosum Haeckel
Popofsky 1913: 302, tex-fig. 22

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Tympanidium*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1003

NOMINOTYPE ***Tympanidium* (*Tympanidium*)**

Remarks: An incorrect subsequent spelling for *TYMPANIUM*. By referring back to p. 447 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *TYMPANIDIUM* to be an emendation of the name *TYMPANIUM*, which is unjustified according to the provisions of ICZN art. 33.3.

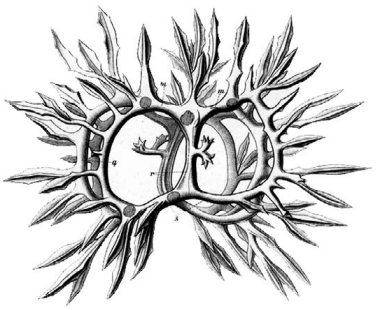
FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D109)

STATUS INVALID NAME
designated herein

SEE ***ACANTHODESMIA***

INV.

Type



100 µm

Tympanidium foliosum
Haeckel, 1887: 1003, pl. 94, fig. 1

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Tympanura***
Haeckel, 1887: 1003

SUBGENUS ***Tympanidium* (*Tympanura*)**

Remarks: Illustration available only for the type species (rarely reported). The type species is a junior subjective of *Lithocircus vinculatus* Müller, 1856.

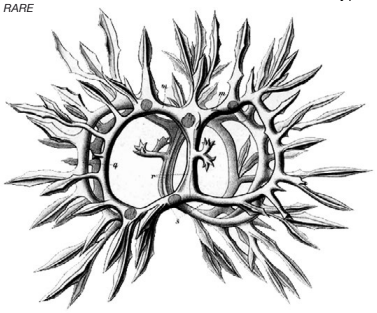
Original series: *Tympanidium foliosum* Haeckel, 1887 and **Tympanidium spinosum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D109)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TYMPANIDIUM***

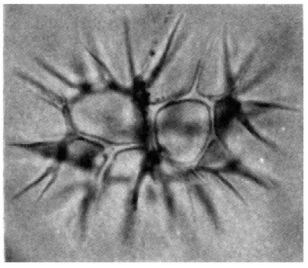
SYN. (obj.) Type
RARE



100 µm

Tympanidium foliosum
Haeckel, 1887: 1003, pl. 94, fig. 1

Support



50 µm

Tympanidium foliosum Haeckel
Renz 1976: 85, pl. 8, fig. 1

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Zygostephanus***
Haeckel, 1862: 268

NOMINOTYPE ***Zygostephanus* (*Zygostephanus*)**

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

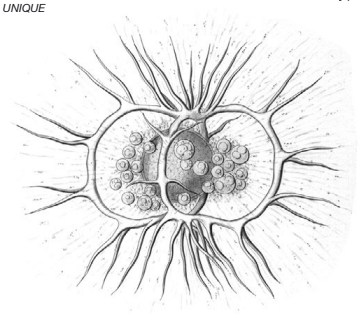
Original series: *Zygostephanus muelleri* Haeckel, 1862.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ACANTHODESMIA***

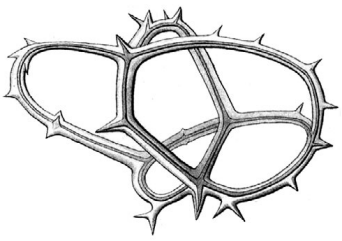
SYN. Type
UNIQUE



50 µm

Zygostephanus muelleri
Haeckel, 1862: 268, pl. 12, fig. 2

Support



50 µm

Eucoronis angulata
Haeckel, 1887: 978, pl. 82, fig. 3

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Zygostephus***
Haeckel, 1882: 446

SUBGENUS ***Zygostephanus* (*Zygostephus*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is a junior subjective synonym. The SD by Petrushevskaya (1981: 360) must be regarded as invalid designation.

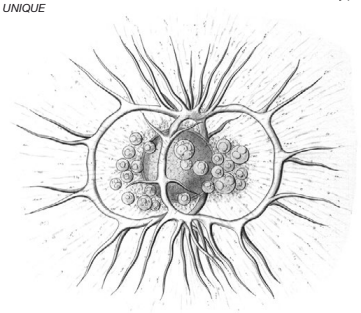
Original series: *Zygostephanus dissocircus* Haeckel, 1887; *Zygostephanus muelleri* Haeckel, 1862; **Zygostephanus ramosus* Haeckel, 1887 and **Zygostephanus serratus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ZYGOSTEPHANUS***

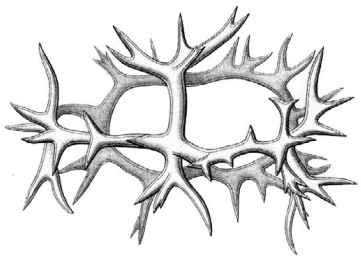
SYN. (obj.) Type
UNIQUE



50 µm

Zygostephanus muelleri
Haeckel, 1862: 268, pl. 12, fig. 2

Support



50 µm

Coronidium cervicorne
Haeckel, 1887: 974, pl. 82, fig. 1

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Zygostephaniscus***
Haeckel, 1882: 446

SUBGENUS ***Zygostephanus* (*Zygostephaniscus*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Zygostephanus bicornis* Haeckel, 1887; **Zygostephanus reniformis* Haeckel, 1887 and **Zygostephanus violina* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

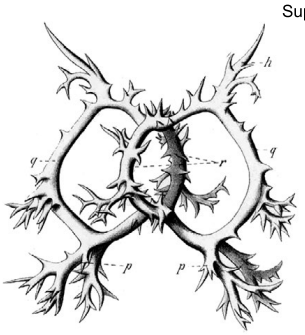
SEE ***? ACANTHODESMIA***

N.D. Type

UNFIGURED SPECIES

Zygostephanus reniformis
Haeckel, 1887: 972, unfigured

Support



50 µm

Zygostephanus bicornis
Haeckel, 1887: 972, pl. 93, fig. 2

N - LINEAGE II (E) ACANTHODESMIIDAE

ASSIGNED IN Riedel & Sanfilippo 1973: 527

GENUS **Dictyospyris**
Ehrenberg, 1846: 385

NOMINOTYPE ***Dictyospyris* (*Dictyospyris*)**

Diagnosis: Acanthodesmiidae with a nut-shaped shell without external stricture, but with a complete internal sagittal ring. Basal plate with four heart-shaped collar pores, two larger than the others. Shell divided by the basal ring into two juxtaposed similar halves with small circular pores usually of uniform size. Pore frames smooth or with tubercles. No feet or strong horns.

Remarks: Genus described as monospecific at the time of definition; rarely reported. The SD by Campbell (1954: D114) of *Dictyospyris ceratospyris* (n.n.) is invalid; see discussion by Sanfilippo & Riedel (1973: 527), who, incorrectly, also designated *Dictyospyris triloba* subsequently as the type species.

Original series: *Dictyospyris triloba* Ehrenberg, 1854c.

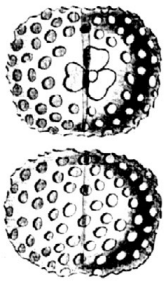
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***EARLY EOCENE–EARLY OLIGOCENE***

VALID
RARE

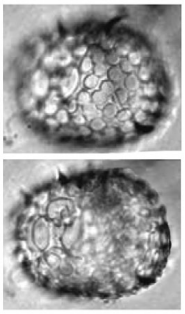
Type



50 µm

Dictyospyris triloba
Ehrenberg, 1854c: pl. 36, figs 24a, 24b [description in Haeckel, 1862: 292]

Support



50 µm

Dictyospyris trilobata Ehrenberg
Ogane *et al.* 2009b: pl. 9, figs 2a, 2b [topotypic material]

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS **Dictyospyrantha**
Haeckel, 1887: 1073

SUBGENUS ***Dictyospyris* (*Dictyospyrantha*)**

Remarks: No type species was designated. Only the type species clearly belongs to this genus; never reported. Campbell (1954: D114) considers *DICTYOSPYRANTHA* to be the nominate subgenus of *DICTYOSPYRIS* Ehrenberg, 1846. He designates *Dictyospyris ceratospyris* Ehrenberg, 1861b (n.n.) as the type species of *DICTYOSPYRIS* and only by inference of *DICTYOSPYRANTHA*. However, this is erroneous because *Dictyospyris ceratospyris* was not among those species originally assigned to the genus.

Original series: **Dictyospyris biloba* Haeckel, 1887; *Dictyospyris distoma* Haeckel, 1887 and *Dictyospyris stalactites* Haeckel, 1887.

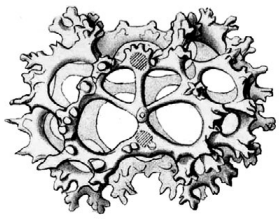
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***DICTYOSPYRIS***

SYN.?
UNIQUE

Type



50 µm

Dictyospyris stalactites
Haeckel, 1887: 1073, pl. 89, fig. 7

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS **Dictyospyrella**
Haeckel, 1887: 1074

SUBGENUS ***Dictyospyris* (*Dictyospyrella*)**

Remarks: Type species rarely reported. The support image is a junior objective synonym of the type species.

Original series: *Dictyospyris gigas* Ehrenberg, 1874b; *Dictyospyris triloba* Ehrenberg, 1854c; **Dictyospyris triomma* Haeckel, 1887 and *Dictyospyris tristoma* Ehrenberg, 1874b.

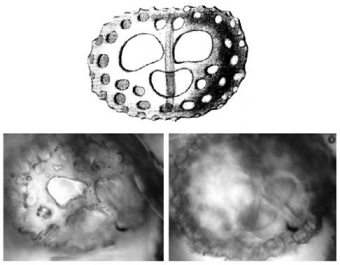
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS JUNIOR SYNONYM
synonymized by Kozlova 1999: 164

SEE ***DICTYOSPYRIS***

SYN.
RARE

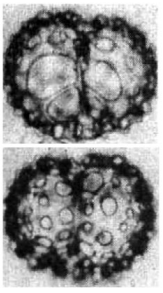
Type



50 µm

Dictyospyris tristoma
Ehrenberg, 1874b: 224 (unfigured); Ehrenberg, 1876: 70, pl. 19, fig. 9. Ogane *et al.* 2009b: pl. 75, figs 3b, 3c [lectotype herein]

Support



50 µm

Dictyospyrella asymmetrica
Kozlova, 1999: 163, pl. 15, figs 17, 21

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS **Dictyospyrissa**
Haeckel, 1887: 1075

SUBGENUS ***Dictyospyris* (*Dictyospyrissa*)**

Remarks: Type species rarely reported.

Original series: *Dictyospyris anthophora* Haeckel, 1887; *Dictyospyris fenestra* Ehrenberg, 1874b; *Dictyospyris mammillaris* Haeckel, 1887; *Dictyospyris messanensis* Müller, 1855b; **Dictyospyris quadriloba* Haeckel, 1887 and *Dictyospyris tetrastoma* Ehrenberg, 1874b.

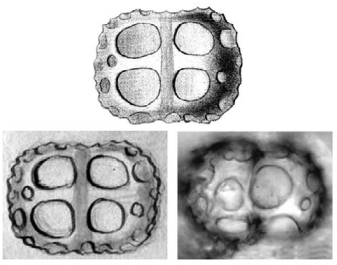
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 267

SEE ***DICTYOSPYRIS***

SYN.
RARE

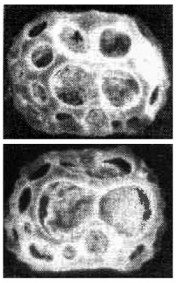
Type



50 µm

Dictyospyris fenestra
Ehrenberg, 1874b: 224 (unfigured); 1876: 68, pl. 19, fig. 11. Ogane *et al.* 2009b: pl. 38, figs 1a, 1b [lectotype herein]

Support



50 µm

Dictyospyris fenestra Ehrenberg
Kozlova 1999: 165, pl. 31, figs 23, 24

N - Lineage II (E) ? ACANTHODESMIIDAE

GENUS **Dictyospyromma**
Haeckel, 1887: 1076

SUBGENUS ***Dictyospyris* (*Dictyospyromma*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Dictyospyris enneastoma* Haeckel, 1887; **Dictyospyris hexastoma* Haeckel, 1887 and **Dictyospyris polystoma* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Dictyospyris hexastoma
Haeckel, 1887: 1077, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - Lineage II (E) ACANTHODESMIIDAE
ASSIGNED IN Petrushevskaya 1971a: 260

GENUS **Eucoronis**
Haeckel, 1882: 445

NOMINOTYPE ***Eucoronis* (*Eucoronis*)**

Diagnosis: Acanthodesmiidae with a sagittal ring, a frontal ring constituted by all apophyses from the sagittal ring and a basal ring constituted by the l and j apophyses of the sagittal ring. The basal ring has a secondary importance and presents two pores at the basis of the frontal ring. All bars strong, with a circular or irregular section. There may be mammillae and thorns differentiated on the sagittal ring and all bars. Basal feet and galea usually not differentiated.

Remarks: See comments under *ACROCORONIS*.

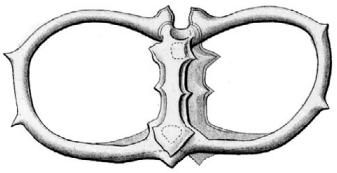
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS **VALID**

AGE **Early Oligocene–late Middle Miocene**

VALID
UNIQUE

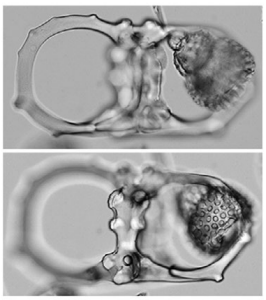
Type



50 µm

Eucoronis perspicillum
Haeckel, 1887: 977, pl. 82, fig. 6

Support



50 µm

Eucoronis perspicillum Haeckel
Paratypic material (Challenger Station 268), Suzuki's collection

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N - Lineage II (E) ACANTHODESMIIDAE

GENUS **Acrocoronis**
Haeckel, 1882: 445

SUBGENUS ***Eucoronis* (*Acrocoronis*)**

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Eucoronis angulata* Haeckel, 1887; **Eucoronis laevigata* Haeckel, 1887; *Eucoronis nephrospyris* Haeckel, 1887 and *Eucoronis perspicillum* Haeckel, 1887.

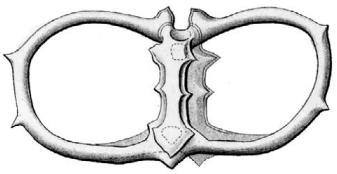
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE **EUCORONIS**

SYN. (obj.)
UNIQUE

Type



50 µm

Eucoronis perspicillum
Haeckel, 1887: 977, pl. 82, fig. 6

Support

NO IMAGE PUBLISHED

no image available

N - Lineage II (E) ACANTHODESMIIDAE

GENUS **Acrocubus**
Haeckel, 1882: 446

NOMINOTYPE ***Acrocubus* (*Acrocubus*)**

Remarks: See comments under *APOCUBUS*.

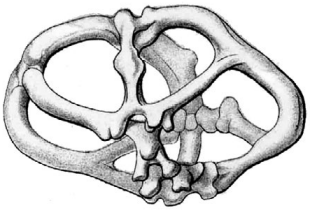
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 267

SEE **EUCORONIS**

SYN.
RARE

Type



50 µm

Acrocubus octopylus
Haeckel, 1887: 993, pl. 82 fig. 9

Support



50 µm

Acrocubus octopylus Haeckel
Nishimura 1987: 718, pl. 5, fig. 24

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS **Apocubus**
Haeckel, 1887: 992

SUBGENUS ***Acrocubus* (*Apocubus*)**

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: *Acrocubus octopylus* Haeckel, 1887 and **Acrocubus tesseralis* Haeckel, 1887.

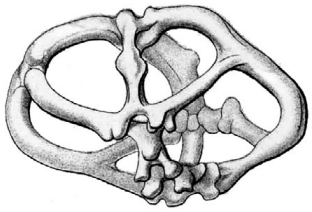
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ACROCUBUS***

SYN. (obj.)
RARE

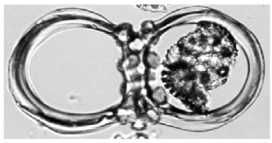
Type



50 µm

Acrocubus octopylus
Haeckel, 1887: 993, pl. 82 fig. 9

Support



100 µm

Acrocubus octopylus Haeckel
Nigrini *et al.* 2006: 24, pl. P1, fig. 9

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS **Coronidium**
Haeckel, 1887: 973

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Coronidium acacia* Haeckel, 1887; *Coronidium cervicorne* Haeckel, 1887; *Coronidium diadema* Haeckel, 1887 and *Coronidium dyostephanus* Haeckel, 1887.

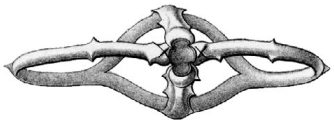
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D107)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 358

SEE ***EUCORONIS***

SYN.
UNIQUE

Type



50 µm

Coronidium dyostephanus
Haeckel, 1887: 974, pl. 82, fig. 7

Support



50 µm

Coronidium dyostephanus Haeckel
Paratypic material (Challenger Station 268), Suzuki's collection

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N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS **Tetracubus**
Haeckel, 1887: 994

SUBGENUS ***Acrocubus* (*Tetracubus*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: *Acrocubus amphithectus* Haeckel, 1887 and **Acrocubus tetrapodius* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? EUCORONIS***

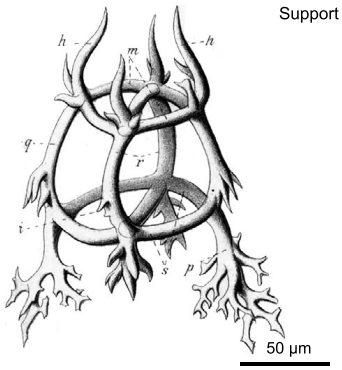
N.D.

Type

UNFIGURED SPECIES

Acrocubus tetrapodius
Haeckel, 1887: 994, unfigured

Support



50 µm

Acrocubus amphithectus
Haeckel, 1887: 995, pl. 93, fig. 17

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS **Podocoronis**
Haeckel, 1882: 445

NOMINOTYPE ***Podocoronis* (*Podocoronis*)**

Remarks: See comments under *DIPOCORONIS*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? EUCORONIS***

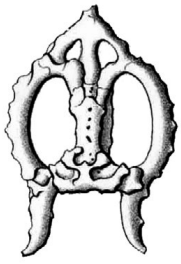
N.D.

Type

UNFIGURED SPECIES

Podocoronis dipodiscus
Haeckel, 1887: 980, unfigured

Support



50 µm

Podocoronis toxarium
Haeckel, 1887: 980, pl. 83, fig. 7

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Dipocoronis***
Haeckel, 1882: 445

SUBGENUS ***Podocoronis* (*Dipocoronis*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: **Podocoronis dipodiscus* Haeckel, 1887 and *Podocoronis toxarium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***PODOCORONIS***

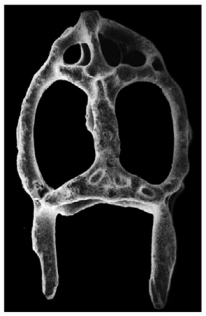
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Podocoronis dipodiscus
Haeckel, 1887: 980, unfigured

Support



50 µm

Giraffospyris toxaria (Haeckel)
Goll 1972a: 965, pl. 55, fig. 1

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Hexacoronis***
Haeckel, 1887: 981

SUBGENUS ***Podocoronis* (*Hexacoronis*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Podocoronis hexapodiscus* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? EUCORONIS***

N.D.

Type

UNFIGURED SPECIES

Podocoronis hexapodiscus
Haeckel, 1887: 982, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Tympaniscus***
Haeckel, 1887: 1001

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. The subsequent designation by Petrushevskaya (1981: 362) of *Tympaniscus dipodiscus* as type species is not valid (ICZN, Art. 69.1).

Original series: *Ceratospyris fibula* Ehrenberg, 1874b; **Tympaniscus bipes* Haeckel, 1887; **Tympaniscus corona* Haeckel, 1887; *Tympaniscus dipodiscus* Haeckel, 1887; **Tympaniscus dodecaster* Haeckel, 1887; *Tympaniscus quadrupes* Haeckel, 1887 and *Tympaniscus tripodiscus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 174)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? EUCORONIS***

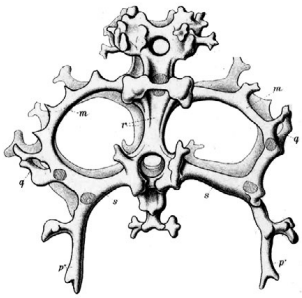
N.D.

Type

UNFIGURED SPECIES

Tympaniscus corona
Haeckel, 1887: 1001, unfigured

Support



50 µm

Tympaniscus dipodiscus
Haeckel, 1887: 1001, pl. 94, fig. 5

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Dipocubus***
Haeckel, 1887: 993

SUBGENUS ***Acrocubus* (*Dipocubus*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

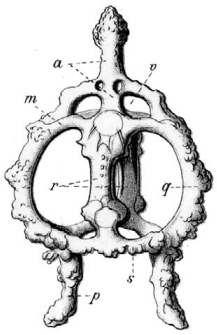
Original series: **Acrocubus amphistylus* Haeckel, 1887; *Acrocubus arcuatus* Haeckel, 1887 and **Acrocubus brachiatus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

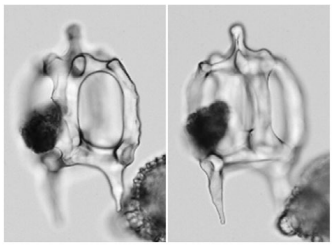
Type



50 µm

Acrocubus arcuatus
Haeckel, 1887: 993, pl. 93, fig. 15

Support



50 µm

Acrocubus arcuatus Haeckel
Paratypic material (Challenger Station 268), Suzuki's collection

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Tripocubus***
Haeckel, 1887: 994

SUBGENUS ***Acrocubus* (*Tripocubus*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

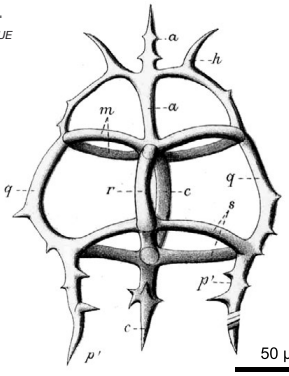
Original series: *Acrocubus cortina* Haeckel, 1887 and **Acrocubus lasanum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



50 µm

Acrocubus cortina
Haeckel, 1887: 994, pl. 93, fig. 16

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ACANTHODESMIIDAE
ASSIGNED IN Petrushevskaya 1971a: 260

GENUS ***Lithocircus***
Müller, 1856: 484

Diagnosis: Acanthodesmiidae with a shell constituted by a sagittal ring figuring a hexagon in which the fundamental spines are poorly expressed. Sometimes, these spines are slightly ramified without forming a large shell; they may develop a secondary meshwork which enfolds the entire shell like a thin cover. Sometimes there is only the characteristic sagittal ring.

Remarks: Only the type species clearly belongs to this genus (rarely reported); just two species originally included at the time of the generic definition.

Original series: *Lithocircus annularis* Müller, 1856 and *Lithocircus vinculatus* Müller, 1856.

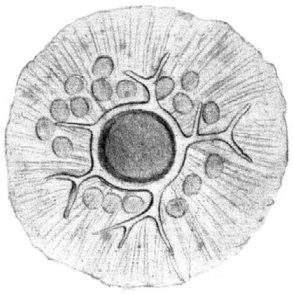
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106)

STATUS **VALID**

AGE ***LIVING***

VALID
RARE

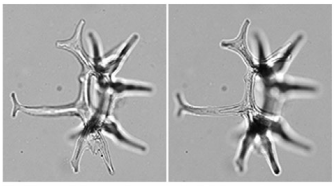
Type



25 µm

Lithocircus annularis
Müller, 1856: 484 (unfigured); Müller, 1859b: 29, pl. 1, fig. 1

Support



50 µm

Lithocircus annularis Haeckel
Paratypic material (Challenger Station 265), Suzuki's collection

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N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Archicircus***
Haeckel, 1887: 940

NOMINOTYPE ***Archicircus* (*Archicircus*)**

Remarks: See comments under *ARCHISTEPHUS*. In accordance with ICZN art.23, this genus should have been called *MONOSTEPHUS* Haeckel, 1882, since Haeckel (1887) treats *MONOSTEPHUS* as a subgenus of *ARCHICIRCUS*, and the other subgeneric name used is of a later date.

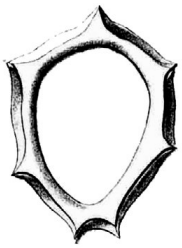
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 269

SEE ***LITHOCIRCUS***

SYN.
RARE

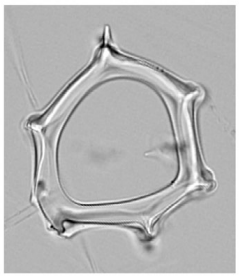
Type



50 µm

Archicircus primordialis
Haeckel, 1887: 942, pl. 81, fig. 1

Support



25 µm

Archicircus primordialis Haeckel
Suzuki's collection (plankton, off Sesoko Island, Japan)

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Archistephus***
Haeckel, 1887: 941

SUBGENUS ***Archicircus* (*Archistephus*)**

Remarks: Type species rarely reported. The subsequent designation by Caulet (1974: 252) of *Archistephus rhombus* Haeckel, 1887 is erroneous.

Original series: **Archicircus duodenus* Haeckel, 1887; **Archicircus hertwigi* Haeckel, 1887; *Archicircus hexacanthus* Haeckel, 1887; *Archicircus primordialis* Haeckel, 1887; **Archicircus quadratus* Haeckel, 1887; *Archicircus rhombus* Haeckel, 1887; *Archicircus sexangularis* Haeckel, 1887 and **Archicircus triglyphus* Haeckel, 1887.

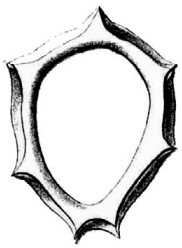
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ARCHICIRCUS***

SYN. (obj.)
RARE

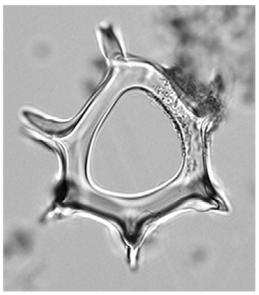
Type



50 µm

Archicircus primordialis
Haeckel, 1887: 942, pl. 81, fig. 1

Support



25 µm

Archicircus primordialis Haeckel
Suzuki's collection (plankton, off Sesoko Island, Japan)

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Monostephus***
Haeckel, 1887: 940

SUBGENUS ***Archicircus* (*Monostephus*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887). Although Haeckel refers back to p. 447 of his *Prodromus* (Haeckel 1882), the name *MONOSTEPHUS* does not appear there. Thus, we regard the description in 1887 as original.

Original series: **Archicircus ellipsis* Haeckel, 1887; **Archicircus monopylus* Haeckel, 1887; *Archicircus monostephus* Haeckel, 1887; **Archicircus ovalis* Haeckel, 1887 and **Archicircus princeps* Haeckel, 1887.

FIXATION ABSOLUTE TAUTONOMY

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
UNIQUE

Type



25 µm

Archicircus monostephus
Haeckel, 1887: 941, pl. 83, fig. 17

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Dendrocircus***
Haeckel, 1882: 447

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Dendrocircus arborescens* Haeckel, 1887; **Dendrocircus barbadensis* Haeckel, 1887; *Dendrocircus dodecancistra* Haeckel, 1887; **Dendrocircus dodecarrhiza* Haeckel, 1887; *Dendrocircus elegans* Haeckel, 1887; **Dendrocircus quadrangulus* Haeckel, 1887 and *Dendrocircus stalactites* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? LITHOCIRCUS***

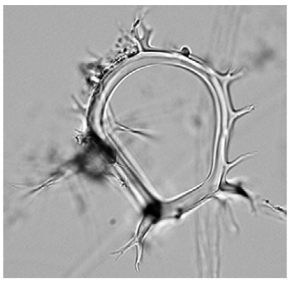
N.D.

Type

UNFIGURED SPECIES

Dendrocircus quadrangulus
Haeckel, 1887: 948, unfigured

Support



50 µm

Dendrocircus elegans Haeckel
Suzuki's collection (plankton, off Sesoko Island, Japan)

N - LINEAGE II (E) ACANTHODESMIIDAE
ASSIGNED HEREIN

GENUS ***Lithocubus***
Haeckel, 1882: 446

Diagnosis: Acanthodesmiidae with a regularly cubical shell composed of twelve circular rods corresponding to the twelve edges of a cube. The parallel horizontal gates are the superior mitral gate and the inferior basal gate. Their angles are connected by 4 parallel vertical rods. All gates, of same or different sizes, are square or rectangular and bear more or less long and sharp external appendages. Very rare.

Remarks: Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym (*Archicircus rhombus* Haeckel, 1887: 942, pl. 81, fig. 7).

Original series: *Lithocircus vinculatus* Müller, 1856; *Lithocubus astragalus* Haeckel, 1887; *Lithocubus geometricus* Haeckel, 1887 and **Lithocubus octacanthus* Haeckel, 1887.

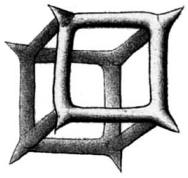
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D111)

STATUS **VALID**

AGE ***EARLY PLIOCENE–EARLY PLEISTOCENE***

VALID
UNIQUE

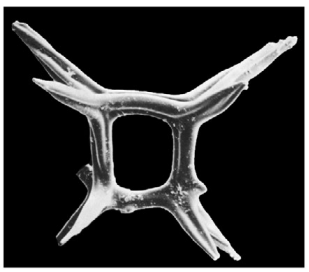
Type



50 µm

Lithocubus geometricus
Haeckel, 1887: 1011, pl. 94, fig. 13

Support



50 µm

Tholospyris rhombus (Haeckel)
Goll 1972b: 455, pl. 16, fig. 11

N - LINEAGE II (E) ACANTHODESMIIDAE
ASSIGNED IN Petrushevskaya 1971a: 260

GENUS ***Lithotympanium***
Haeckel, 1882: 447

Diagnosis: Acanthodesmiidae with closed thorax and cupola-shaped galea not differentiated. The sagittal ring is constituted by its apophyses with close pores similar to that of *TRICOLOSPYRIS*. The difference is that the lateral sides of the cephalis are distributed in parallel sagittal planes. The shell is composed of 2 globular porous plates united by a mesh-like eucephalic part. The upper parts of these plates correspond to the galea, their lower parts to the thorax, their frontal sides to the antecephalic part and their rear sides to the postcephalic part.

Remarks: See comments under *LITHOTYMPANUM*.

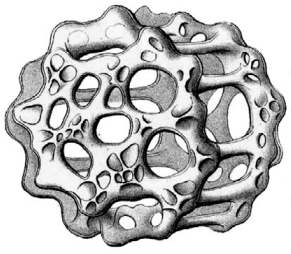
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D110)

STATUS **VALID**

AGE ***EARLY EARLY MIOCENE–[QUATERNARY]***

VALID
VERY RARE

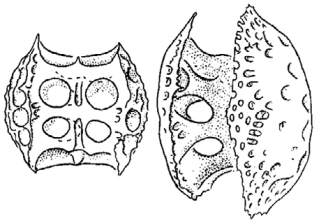
Type



50 µm

Lithotympanum tuberosum
Haeckel, 1887: 1006, pl. 83, fig. 1

Support



25 µm

Lithotympanum tuberosum Haeckel
Petrushevskaya 1971a: 253, pl. 131, figs 18, 19

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Lithotympanum*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1006

Remarks: An incorrect subsequent spelling for *LITHOTYMPANIUM*. By referring back to p. 447 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *LITHOTYMPANUM* to be an emendation of the name *LITHOTYMPANIUM*, which is unjustified according to the provisions of ICZN art. 33.3. Only the type species has been illustrated.

Original series: *Lithotympanum spinosum* Haeckel, 1887 and *Lithotympanum tuberosum* Haeckel, 1887.

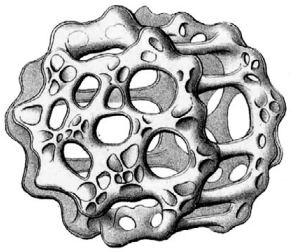
FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D110)

STATUS INVALID NAME
designated herein

SEE ***LITHOTYMPANIUM***

INV.

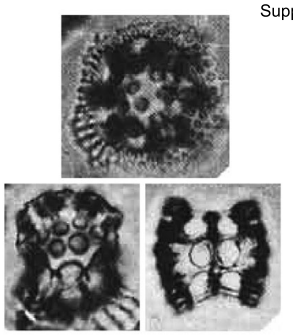
Type



50 µm

Lithotympanum tuberosum
Haeckel, 1887: 1006, pl. 83, fig. 1

Support



50 µm

Lithotympanum tuberosum Haeckel
Petrushevskaya & Kozlova 1972: 533, pl. 38, figs 22-24

N - LINEAGE II (E) ACANTHODESMIIDAE
ASSIGNED IN Petrushevskaya 1981: 364

GENUS ***Semantis***
Haeckel, 1887: 956

Diagnosis: Acanthodesmiidae with apophyses originating from a well-developed, obliquely ovate, sagittal ring. Apical, dorsal and lateral horns may be developed; but only two pairs of l and j apophyses united to each other as to form a basal ring with two gates. All bars not sided but rather with a circular cross section, bearing many tubercules or thorns. No «feet» nor galea.

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Semantis biforis* Haeckel, 1887; **Semantis dipyla* Haeckel, 1887; *Semantis distephanus* Haeckel, 1887; **Semantis distoma* Haeckel, 1887; *Semantis sigillum* Haeckel, 1887 and *Stephanolithis spinescens* Ehrenberg, 1854c.

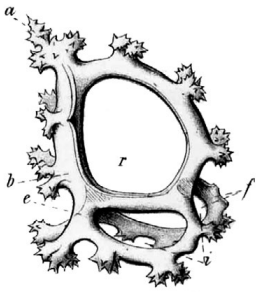
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106)

STATUS **VALID**

AGE ***[EARLY MIOCENE]–[QUATERNARY]***

VALID
UNIQUE

Type



50 µm

Semantis biforis
Haeckel, 1887: 956, pl. 92, fig. 2

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Cortiniscus***
Haeckel, 1887: 963

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Cortiniscus dipylaris* Haeckel, 1887; **Cortiniscus tetrapylaris* Haeckel, 1887; *Cortiniscus tripodiscus* Haeckel, 1887; **Cortiniscus tripylaris* Haeckel, 1887 and *Cortiniscus typicus* Haeckel, 1887.

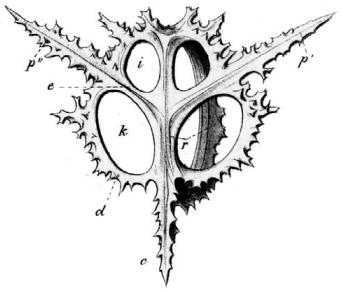
FIXATION ORIGINAL DESIGNATION; ICZN, ART. 68.2.2

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***SEMANTIS***

SYN.
UNIQUE

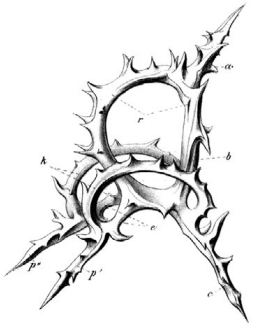
Type



50 µm

Cortiniscus typicus
Haeckel, 1887: 964, pl. 92, fig. 12

Support



50 µm

Cortiniscus tripodiscus
Haeckel, 1887: 963, pl. 92, fig. 11

N - LINEAGE II (E) ACANTHODESMIIDAE
ASSIGNED IN Petrushevskaya 1981: 354

GENUS ***Tricolospyris***
Haeckel, 1882: 443

Diagnosis: Acanthodesmiidae with a thick-walled cephalis including the sagittal ring in its walls and a small number of large pores symmetrically distributed on each side of the sagittal plane. The sagittal ring may protrude externally in the front and rear sides of the shell. The a, l, m, j, f, q and l apophyses are internally well-developed. An upper galea and a lower pseudo-thorax with delicate walls with small pores or thin meshes, which can cover all of the shell, are present.

Remarks: Type species frequently reported.

Original series: *Tricolospyris baconiana* Haeckel, 1887; *Tricolospyris kantiana* Haeckel, 1887; *Tricolospyris leibnitziana* Haeckel, 1887 and *Tricolospyris newtoniana* Haeckel, 1887.

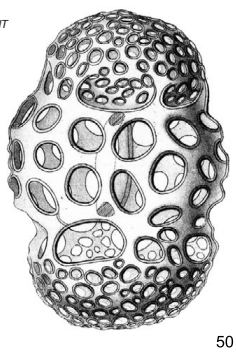
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS **VALID**

AGE ***LATE EARLY MIOCENE–LIVING***

VALID
FREQUENT

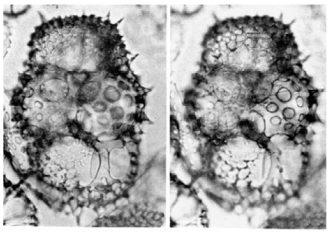
Type



50 µm

Tricolospyris kantiana
Haeckel, 1887: 1098, pl. 88, fig. 10

Support



50 µm

Tholospyris newtoniana (Haeckel)
Goll 1972b: 450, pl. 1, figs 5, 6

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Perispyris***
Haeckel, 1882: 443

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Perispyris bicincta* Haeckel, 1887; *Perispyris lentellipsis* Haeckel, 1887 and **Perispyris spongiosa* Haeckel, 1887.

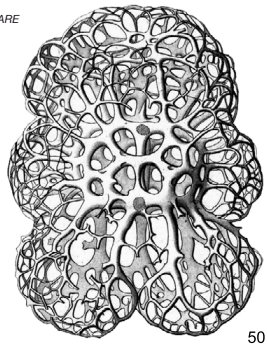
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRICOLOSPYRIS***

SYN.
VERY RARE

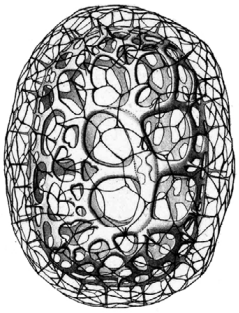
Type



50 µm

Perispyris bicincta
Haeckel, 1887: 1099, pl. 88, fig. 13

Support



50 µm

Perispyris lentellipsis
Haeckel, 1887: 1099, pl. 88, fig. 12

N - LINEAGE II (E) ACANTHODESMIIDAE
ASSIGNED IN Petrushevskaya 1971a: 260

GENUS ***Trissocyclus***
Haeckel, 1882: 446

NOMINOTYPE ***Trissocyclus* (*Trissocyclus*)**

Diagnosis: Acanthodesmiidae with the l, j, m, f, and sometimes the q and L apophyses originating from a sub-polygonal sagittal ring. These apophyses, sub-circular in cross section, define two to three pairs of very large ovate gates or small windows. No feet nor mitral-galearic structures. A short knoblike apical spine may be present on some specimens. Some small pores may occur at the junctions of the sagittal rings with the frontal and basal girdles. There may be no pores on the lateral surfaces of the shell.

Remarks: See comments under *TRICYCLARIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS **VALID**

AGE ***LATE OLIGOCENE–LIVING***

VALID
RARE

Type



50 µm

Trissocyclus stauroporus
Haeckel, 1887: 987, pl. 83, fig. 5

Support



25 µm

Liriospyris stauropora (Haeckel)
Goll 1972a: 967, pl. 70, fig. 3

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Tricyclarium***
Haeckel, 1887: 987

SUBGENUS ***Trissocyclus* (*Tricyclarium*)**

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: *Trissocyclus stauroporus* Haeckel, 1887 and **Trissocyclus triaxonius* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TRISSOCYCLUS***

SYN. (obj.)
RARE

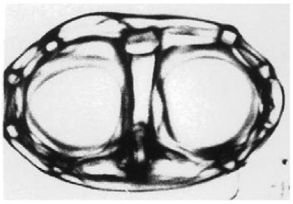
Type



50 µm

Trissocyclus stauroporus
Haeckel, 1887: 987, pl. 83, fig. 5

Support



25 µm

Liriospyris stauropora (Haeckel)
Mahapatra & Sharma 1994: 161, pl. 2, fig. 14

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS ***Tricyclonium***
Haeckel, 1887: 987

SUBGENUS ***Trissocyclus* (*Tricyclonium*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Trissocyclus sphaeridium* Haeckel, 1887.

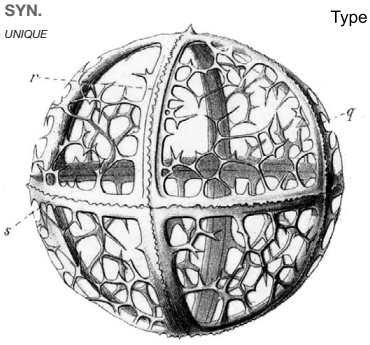
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRISSOCYCLUS***

SYN.
UNIQUE

Type



50 µm

Trissocyclus sphaeridium
Haeckel, 1887: 987, pl. 93, fig. 12

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS **Trissocircus**
Haeckel, 1882: 446

NOMINOTYPE ***Trissocircus* (*Trissocircus*)**

Remarks: See comments under *TRICIRCARIUM*. The asterisk following the generic name in Haeckel (1887: 985) indicates that Haeckel believed this to be a new genus in 1882. Although, Haeckel here evidently meant to define two genera, and his use of the same name twice is evidently an error, the fact that he defined this and related genera differently in 1887 makes it impossible to know how to correct the error.

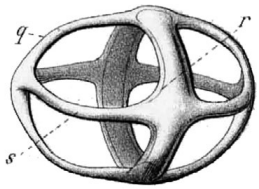
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 533

SEE ***TRISSOCYCLUS***

SYN.
VERY RARE

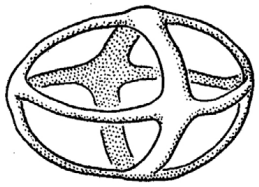
Type



50 µm

Trissocircus lentellipsis
Haeckel, 1887: 985, pl. 93, fig. 10

Support



50 µm

Trissocircus lentellipsis Haeckel
Petrushevskaya 1981: 358, fig. 566

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS **Tricircarium**
Haeckel, 1887: 985

SUBGENUS ***Trissocircus* (*Tricircarium*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Trissocircus binellipsis* Haeckel, 1887; *Trissocircus lentellipsis* Haeckel, 1887 and *Trissocircus octostoma* Haeckel, 1887.

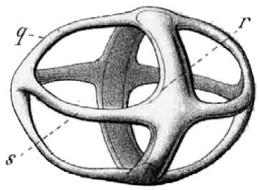
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TRISSOCIRCUS***

SYN. (obj.)
VERY RARE

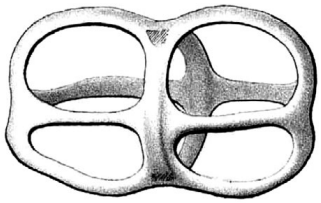
Type



50 µm

Trissocircus lentellipsis
Haeckel, 1887: 985, pl. 93, fig. 10

Support



50 µm

Trissocircus binellipsis
Haeckel, 1887: 985, pl. 83, fig. 6

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS **Tricirconium**
Haeckel, 1887: 986

SUBGENUS ***Trissocircus* (*Tricirconium*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: *Trissocircus globus* Haeckel, 1887 and **Trissocircus octahedrus* Haeckel, 1887.

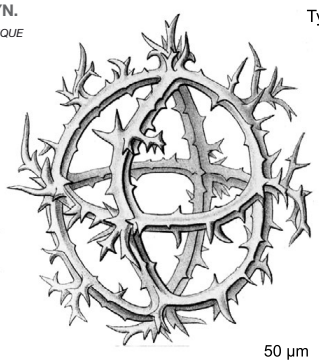
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRISSOCYCLUS***

SYN.
UNIQUE

Type



50 µm

Trissocircus globus
Haeckel, 1887: 986, pl. 82, fig. 13

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ACANTHODESMIIDAE

GENUS **Zygostephanium**
Haeckel, 1887: 972

Remarks: Type species only illustrated by Haeckel (1887); the support image is a junior subjective synonym. Although Haeckel here refers to p. 446 in his *Prodromus* of 1882 (Haeckel 1882), there is no genus named *ZYGOSTEPHANIUM* on that or any other page of that reference.

Original series: **Zygostephanium constrictum* Haeckel, 1887; *Zygostephanium dizonium* Haeckel, 1887 and *Zygostephanium paradictyum* Haeckel, 1887.

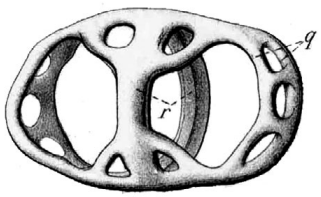
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 533

SEE ***TRISSOCYCLUS***

SYN.
UNIQUE

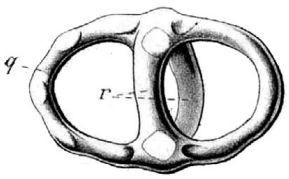
Type



50 µm

Zygostephanium dizonium
Haeckel, 1887: 973, pl. 93, fig. 3

Support



50 µm

Zygostephanus dissocircus
Haeckel, 1887: 971, pl. 93, fig. 1

N - LINEAGE II (E) — ACANTHODESMIIDAE
ASSIGNED IN Petrushevskaya 1971a: 260

GENUS **Tympanomma**
Haeckel, 1887: 1004

SUBGENUS ***Tympanidium* (*Tympanomma*)**

Diagnosis: Acanthodesmiidae with the apophyses l, a, j, m, q, f and usually L, originating from the sagittal ring. They give robust bars, more irregular than circular in cross section, which enclose large pores, or gates. On the lateral surfaces of the shell and farther from the sagittal ring, there are 2-6 some smaller pores. No frontal nor basal girdles differentiated. No feet nor galearic structures.

Remarks: Type species frequently reported.

Original series: *Tympanidium barbadense* Haeckel, 1887; *Tympanidium binoctonum* Haeckel, 1887 and **Tympanidium staurocircum* Haeckel, 1887.

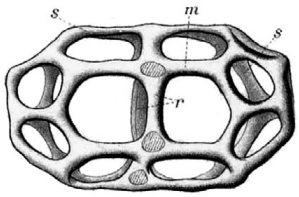
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D109)

STATUS **VALID**

AGE ***MIDDLE PALEOCENE–LATE MIDDLE MIOCENE***

VALID
FREQUENT

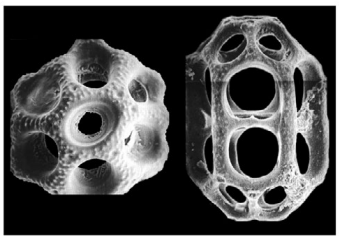
Type



50 µm

Tympanidium binoctonum
Haeckel, 1887: 1004, pl. 94, fig. 18

Support



50 µm

Tympanidium binoctonum Haeckel
Goll 1972a: 969, pl. 87, figs 1, 2

N - LINEAGE II (E) — ? ACANTHODESMIIDAE

GENUS **Circospyris**
Haeckel, 1882: 443

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

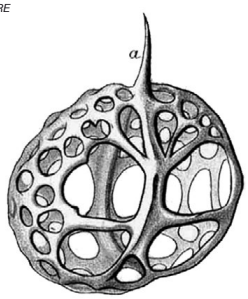
Original series: *Circospyris nucula* Haeckel, 1887; *Dictyospyris gigas* Ehrenberg, 1874b and *Dictyospyris tridentata* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
VERY RARE

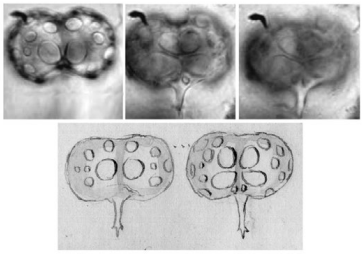
Type



50 µm

Circospyris nucula
Haeckel, 1887: 1072, pl. 95, fig. 13

Type



50 µm

Dictyospyris tridendata Ehrenberg
Ogane *et al.* 2009b: pl. 5, figs 3a-e [lectotype herein]

N - LINEAGE II (E) — ? ACANTHODESMIIDAE

GENUS **Plectocoronis**
Haeckel, 1882: 445

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Plectocoronis anacantha* Haeckel, 1887; *Plectocoronis pentacantha* Haeckel, 1887 and **Plectocoronis triacantha* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

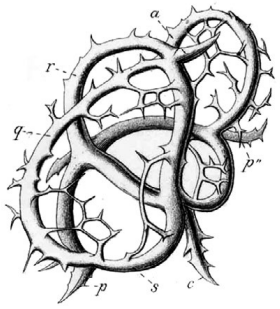
N.D.

Type

UNFIGURED SPECIES

Plectocoronis anacantha
Haeckel, 1887: 979, unfigured

Support



50 µm

Plectocoronis pentacantha
Haeckel, 1887: 979, pl. 93, fig. 6

N - LINEAGE II (E) — ? ACANTHODESMIIDAE

GENUS **Stylocoronis**
Haeckel, 1887: 982

SUBGENUS ***Podocoronis* (*Stylocoronis*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Podocoronis petalospyris* Haeckel, 1887 and **Podocoronis polypodiscus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Podocoronis petalospyris
Haeckel, 1887: 982, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Tetracoronis***
Haeckel, 1882: 445

SUBGENUS ***Podocoronis* (*Tetracoronis*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Podocoronis tetrapodiscus* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Podocoronis tetrapodiscus
Haeckel, 1887: 981, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Tripocoronis***
Haeckel, 1882: 445

SUBGENUS ***Podocoronis* (*Tripocoronis*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: *Podocoronis cortiniscus* Haeckel, 1887 and **Podocoronis tripodiscus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D. Type
UNIQUE



Podocoronis cortiniscus
Haeckel, 1887: 981, pl. 97, fig. 2

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Prismatium***
Haeckel, 1862: 270

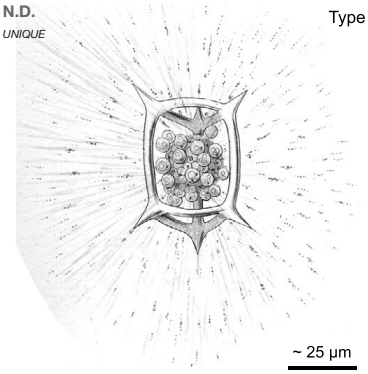
Remarks: Monospecific genus. Because no other figures are available, the support image is selected among those species subsequently assigned to this genus. The type species is also called *Prismatium tripleurum* Haeckel, 1862: 270, pl. 4, fig. 6 (invalid name).

Original series: *Acanthodesmia prismatium* Haeckel, 1861a.

FIXATION MONOTYPY

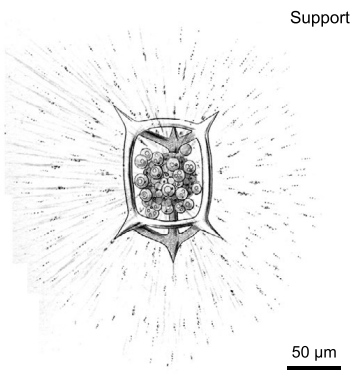
STATUS NOMEN DUBIUM
designated herein; name-bearing type juvenile

N.D. Type
UNIQUE



Acanthodesmia prismatium
Haeckel, 1861a: 799 (unfigured); Haeckel, 1862: 270, pl. 4, fig. 6

Support



Prismatium tripodium
Haeckel, 1887: 1009, pl. 93, fig. 22

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS ***Stephaniscus***
Haeckel, 1887: 965

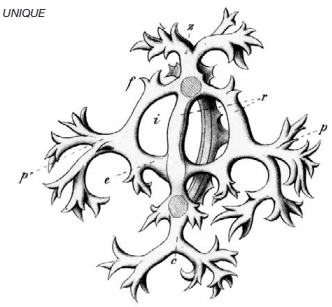
Remarks: Type species only illustrated by Haeckel (1887).

Original series: **Stephaniscus medusinus* Haeckel, 1887; *Stephaniscus quadrifurcus* Haeckel, 1887; *Stephaniscus quadrigatus* Haeckel, 1887 and **Stephaniscus tetrapodius* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106)

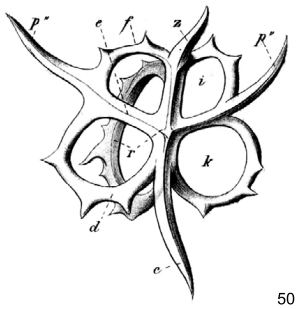
STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D. Type
UNIQUE



Stephaniscus quadrifurcus
Haeckel, 1887: 965, pl. 92, fig. 14

Support



Stephaniscus quadrigatus
Haeckel, 1887: 965, pl. 92, fig. 15

N - LINEAGE II (E) ? ACANTHODESMIIDAE

GENUS **Stephanolithis**
Ehrenberg, 1847: 50

Remarks: Only the type species clearly belongs to this genus (rarely reported); just two species originally included at the time of the generic definition. The type species was also illustrated as new species: *Stephanolithis spinescens* Ehrenberg, 1876: 160, pl. 1, fig. 29.

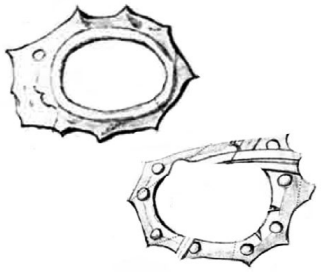
Original series: *Stephanolithis nodosa* Ehrenberg, 1854c and *Stephanolithis spinescens* Ehrenberg, 1854c.

FIXATION SUBSEQUENT DESIGNATION (Bütschli 1882b: 497)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
RARE

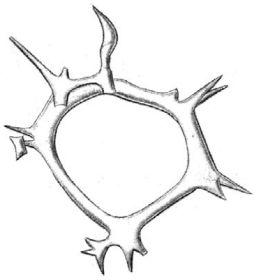
Type



50 µm

Stephanolithis spinescens
Ehrenberg, 1854c: pl. 36, fig. 57, B lower & C lower (no description); Ehrenberg, 1876: 160, unfigured

Support



50 µm

Stephanolithis spinescens
Ehrenberg, 1876: 160, pl. 1, fig. 29

N - LINEAGE II (E) CEPHALOSPYRIDIDAE
ASSIGNED IN Petrushevskaya 1981: 351

GENUS **Androspyris**
Haeckel, 1887: 1092

Diagnosis: Cephalospyrididae with a porous shell including a cephalis represented by a sagittal ring fused with the wall of the external shell, the fundamental spines A, D, Lr, Ll (maybe V), an apical horn first included in the galea and next protruding outside, and three feet, external or included in the wall. Pores circular, irregularly distributed and of different sizes.

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Androspyris anthropiscus* Haeckel, 1887; **Androspyris aptenodytes* Haeckel, 1887; **Androspyris homunculus* Haeckel, 1887 and *Androspyris pithecus* Haeckel, 1887.

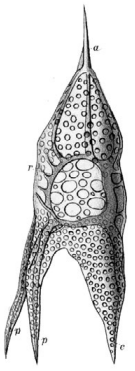
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS **VALID**

AGE ***LATE PLIOCENE–LIVING***

VALID
UNIQUE

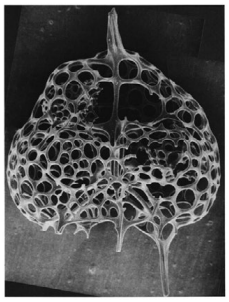
Type



50 µm

Androspyris pithecus
Haeckel, 1887: 1093, pl. 95, fig. 20

Support



100 µm

Androspyris anthopiscus Haeckel
Goll 1972a: 961, pl. 38, fig. 1

N - LINEAGE II (E) CEPHALOSPYRIDIDAE
ASSIGNED IN Petrushevskaya 1971a: 245

GENUS **Ceratospyris**
Ehrenberg, 1846: 385

NOMINOTYPE ***Ceratospyris* (*Ceratospyris*)**

Diagnosis: Cephalospyrididae with a sagittal ring not included in the external wall of the cephalis, or only included in its upper part between the A and V horns; cephalis usually as a bilobate cupola with irregularly distributed pores of different sizes not symmetrically distributed. Usually three feet, sometimes more, easily broken arising from the D, Lr and Ll apophyses. Apical horn not always present.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. The first illustration of type species corresponds to *Ceratospyris radicata* in Ehrenberg, 1854c.

Original series: *Haliomma*? *radicatum* Ehrenberg, 1844a.

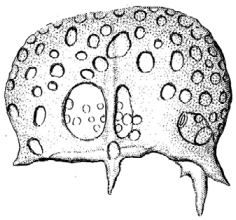
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***EARLY EOCENE–LIVING***

VALID
FREQUENT

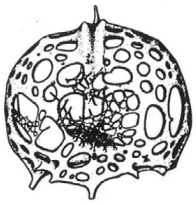
Type



50 µm

Haliomma? *radicatum*
Ehrenberg, 1844a: 83 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 37

Support



50 µm

Ceratospyris radicata (Ehrenberg)
Dumitrica *et al.* 1975: pl. 7, fig. 6

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS **Liriocyrtis**
Dogiel in Petrushevskaya, 1969: 134

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Liriocyrtis problematica* Dogiel in Petrushevskaya, 1969.

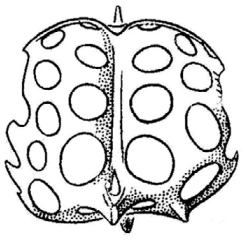
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 41

SEE ***CERATOSPYRIS***

SYN.
RARE

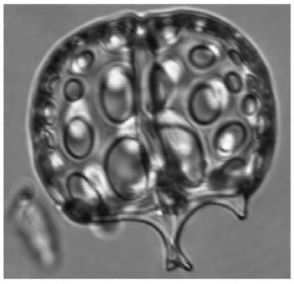
Type



25 µm

Liriocyrtis problematica
Dogiel in Petrushevskaya, 1969: 134, fig. 1.6

Support



25 µm

Ceratospyris problematica (Dogiel in Petrushevskaya)
Matsuzaki *et al.* 2015: 41, fig. 7.23

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Hexaspyris***
Haeckel, 1887: 1046

NOMINOTYPE ***Hexaspyris* (*Hexaspyris*)**

Remarks: See comments under *HEXASPYRIDIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D113)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

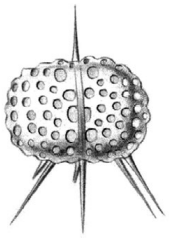
SEE **? *CERATOSPYRIS***

N.D. Type

UNFIGURED SPECIES

Hexaspyris alterna
Haeckel, 1887: 1047, unfigured

Support



25 µm

Ceratospyris setigera
Ehrenberg, 1876: 66, pl. 20, fig. 11

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Hexaspyridium***
Haeckel, 1887: 1047

SUBGENUS ***Hexaspyris* (*Hexaspyridium*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. Heterogenous group of species included at the time of the generic definition. The subsequent designation by Petrushevskaya (1981: 337) of *Ceratospyris setigera* as the type species is not valid (ICZN, art. 69.1).

Original series: *Ceratospyris setigera* Ehrenberg, 1874b; **Hexaspyris alterna* Haeckel, 1887; **Hexaspyris buetschlii* Haeckel, 1887; *Petalospyris ophirensis* Ehrenberg, 1873a and *Petalospyris spinosa* Stöhr, 1880.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D113)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

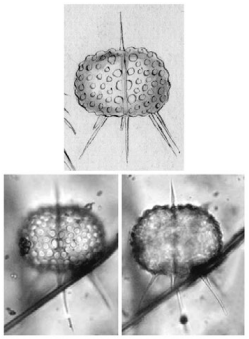
SEE ***HEXASPYRIS***

SYN. (obj.); N.D. Type

UNFIGURED SPECIES

Hexaspyris alterna
Haeckel, 1887: 1047, unfigured

Type



50 µm

Ceratospyris setigera Ehrenberg
Ogane *et al.* 2009b: pl. 9, figs 3a-c [lectotype herein]

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Zygospyris***
Haeckel, 1887: 1055

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: *Zygospyris equus* Haeckel, 1887 and **Zygospyris quadrupes* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

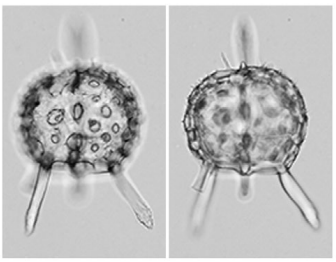
SEE **? *CERATOSPYRIS***

N.D. Type

UNFIGURED SPECIES

Zygospyris quadrupes
Haeckel, 1887: 1055, unfigured

Support



50 µm

Zygospyris equus Haeckel
Challenger Station 272, Suzuki's collection

N - LINEAGE II (E) CEPHALOSPYRIDIDAE
ASSIGNED IN Petrushevskaya 1981: 322

GENUS ***Corythospyris***
Haeckel, 1882: 443

SUBGENUS ***Elaphospyris* (*Corythospyris*)**

Diagnosis: Cephalospyrididae with the sagittal ring protruding on the external side of the cephalis, based on IL and Lj arches, without ante- and post-cephalic lobes. A and V spines extended in the wall. Lr, Ll, and D prolonged into three feet. A spine producing a thin apical horn. Wall porous, developed on upper and lateral parts as a frontal lattice belt including «gates» and «windows» larger than pores.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

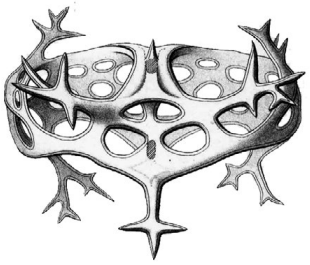
Original series: *Elaphospyris alcicornis* Haeckel, 1887; *Elaphospyris cervicornis* Haeckel, 1887 and *Elaphospyris damaecornis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS **VALID**

AGE ***LATE OLIGOCENE–[LIVING]***

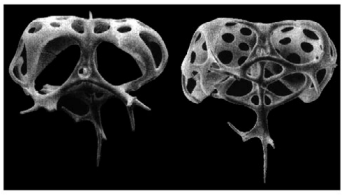
VALID
FREQUENT Type



50 µm

Elaphospyris damaecornis
Haeckel, 1887: 1057, pl. 84, fig. 10

Support



50 µm

Corythospyris damaecornis (Haeckel)
Sugiyama *et al.* 1992: pl. 29, figs 1a, 1b

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

ASSIGNED IN Petrushevskaya & Kozlova 1972: 532

GENUS ***Dendrospyris***
Haeckel, 1882: 441

Diagnosis: Cephalospyrididae with a shell constituted by a thick-walled porous cephalis with two similar lateral parts and including the sagittal ring. Lateral pores of different sizes disposed regularly, symmetrically with respect to the sagittal ring. Feet directed downwards, two of them being stronger than the others. Several horns on the cephalis, the apical horn being more robust.

Remarks: Type species rarely reported.

Original series: *Ceratospyris dirrhiza* Ehrenberg, 1874b; *Ceratospyris stylophora* Ehrenberg, 1874b; *Cladospyris bibrachiata* Ehrenberg, 1874b; *Dendrospyris arborescens* Haeckel, 1887; **Dendrospyris furcata* Haeckel, 1887; *Dendrospyris polyrrhiza* Haeckel, 1887 and **Dendrospyris ramosa* Haeckel, 1887.

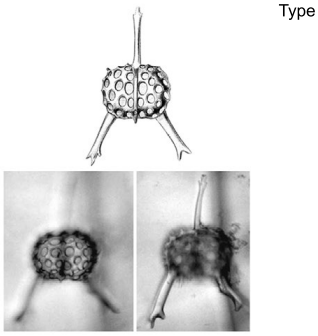
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–EARLY OLIGOCENE***

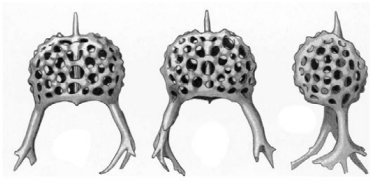
VALID
RARE

Type



Ceratospyris stylophora
Ehrenberg, 1874b: 220 (unfigured); 1876: 66, pl. 20, fig. 10 [Ogane *et al.* 2009b: pl. 38, figs 6b, 6c; lectotype herein]

Support



Dendrospyris stylophora (Ehrenberg)
Goll 1968: 1423, pl. 173, figs 23, 24

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

ASSIGNED IN Petrushevskaya & Kozlova 1972: 531

GENUS ***Desmospyris***
Haeckel, 1882: 443

Diagnosis: Cephalospyrididae with a two-segmented porous shell with a thorax narrower than the cephalis. Sagittal ring, either included in the cephalic wall with rather large lateral pores, or enclosed in the cephalis with numerous irregular pores. No feet, but twelve to sixteen peri-apertural teeth around a usually narrow aperture. No apical horn. A spongious envelope may be developed that may form a sort of galea.

Remarks: Illustration available only for the type species (rarely reported).

Original series: **Desmospyris carpocanium* Haeckel, 1887; **Desmospyris cyrtocolpos* Haeckel, 1887; *Desmospyris mammillata* Haeckel, 1887 and *Petalospyris anthocyrtoides* Bütschli, 1882b.

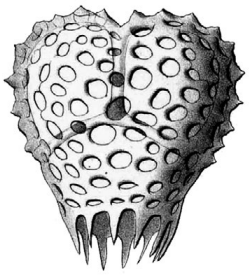
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS **VALID**

AGE ***EARLY EOCENE–LIVING***

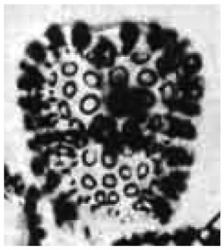
VALID
VERY RARE

Type



Desmospyris mammillata
Haeckel, 1887: 1089, pl. 83, fig. 14

Support



Desmospyris sp. aff. *D. mammillata* Haeckel
Petrushevskaya & Kozlova 1972: pl. 38, fig. 6

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Phormospyris***
Haeckel, 1882: 442

Remarks: A single report of the type species after the first illustration.

Original series: *Phormospyris tricostata* Haeckel, 1887; *Phormospyris tridentata* Haeckel, 1887 and **Phormospyris trifoliata* Haeckel, 1887.

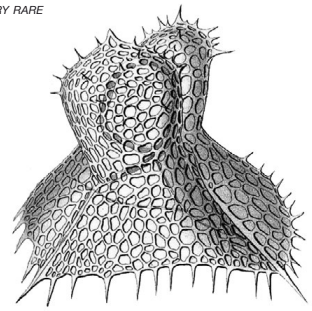
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D100)

STATUS JUNIOR SYNONYM
synonymized by Caulet 1979: 136

SEE ***DESMOSPYRIS***

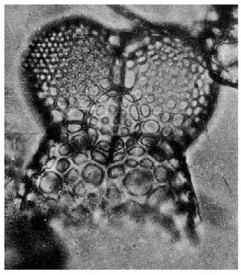
SYN.
VERY RARE

Type



Phormospyris tricostata
Haeckel, 1887: 1087, pl. 83, fig. 15

Support



Desmospyris tricostata (Haeckel)
Caulet 1979: 136, pl. 5, fig. 2

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

ASSIGNED IN Campbell 1954: D112

GENUS ***Dorcadospyris***
Haeckel, 1882: 441

Diagnosis: Cephalospyrididae with a small, globular, porous, cephalis including the sagittal ring, with a well-differentiated apical horn and six "feet", two of them very strong and characteristically bent with their terminations linked as to form a ring. Apical horn and feet may bear spines and lateral apophyses. Pores small, circular, almost similar. Basal plate with four gates.

Remarks: Type species frequently reported.

Original series: *Dorcadospyris antilope* Haeckel, 1887; *Dorcadospyris decussata* Haeckel, 1887; *Dorcadospyris dentata* Haeckel, 1887; *Dorcadospyris dinoceras* Haeckel, 1887 and **Dorcadospyris lunulata* Haeckel, 1887.

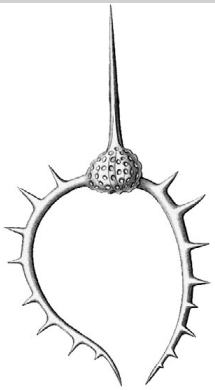
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–EARLY LATE MIOCENE***

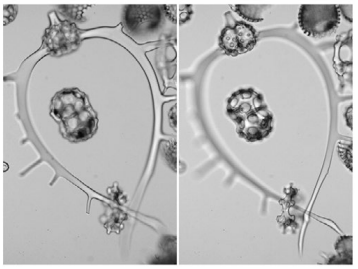
VALID
FREQUENT

Type



Dorcadospyris dentata
Haeckel, 1887: 1040, pl. 85, fig. 6

Support



Dorcadospyris dentata Haeckel
Paratypic material (Challenger Station 268), Suzuki's collection

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Brachiospyris***
Haeckel, 1882: 441

Remarks: Only the type species clearly belongs to this genus (figured just once after the first illustration); just two species originally included at the time of the generic definition. The type species is a junior subjective synonym of *Ceratospyris ateuchus* Ehrenberg, 1874b.

Original series: **Ceratospyris diacantha* Ehrenberg, 1873a and *Ceratospyris ocellata* Ehrenberg, 1874b.

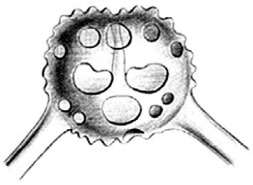
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 28)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 532

SEE ***DORCADOSPYRIDIS***

SYN.
VERY RARE

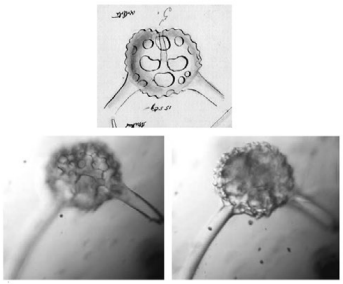
Type



25 µm

Ceratospyris ocellata
Ehrenberg, 1874b: 219 (unfigured); Ehrenberg, 1876: 66, pl. 20, fig. 5

Type



50 µm

Ceratospyris ocellata Ehrenberg
Ogane *et al.* 2009b: pl. 77, figs 4a-c [lectotype herein]

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Gamospyris***
Haeckel, 1882: 441

Remarks: Only the type species clearly belongs to this genus (frequently reported); just two species originally included at the time of the generic definition.

Original series: **Gamospyris annulus* Haeckel, 1887 and *Gamospyris circulus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 532

SEE ***DORCADOSPYRIDIS***

SYN.
FREQUENT

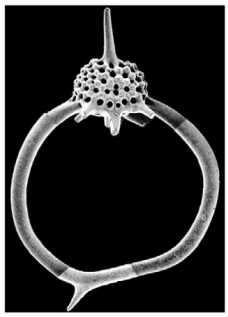
Type



100 µm

Gamospyris circulus
Haeckel, 1887: 1042, pl. 83, fig. 19

Support



100 µm

Gamospyris circulus Haeckel
Goll 1972a: 965, pl. 59, fig. 1

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Stephanospyris***
Haeckel, 1882: 441

Remarks: Homonym of *STEPHANOSPYRIS* Haeckel, 1862: 295 (Polycystinea); see *DORCADOSPYRIS* (a new name is not required since it is a junior synonym). Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym. Haeckel used this name twice, once in 1862 (p. 295) as a subgenus of *PETALOSPYRIS* Ehrenberg and again in 1882 (p. 441) as a genus (see Haeckel 1887: 1042), but for quite different taxonomic concepts. Hence the 1882 concept do not require a new generic name since is a junior synonym of *DORCADOSPYRIS*.

Original series: *Stephanospyris cordata* Haeckel, 1887; *Stephanospyris excellens* Haeckel, 1887 and *Stephanospyris verticillata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS HOMONYM, JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 532

SEE ***DORCADOSPYRIDIS***

HOM.; SYN.
UNIQUE

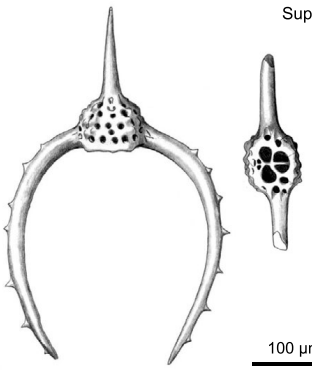
Type



100 µm

Stephanospyris cordata
Haeckel, 1887: 1042, pl. 85, fig. 10

Support



100 µm

Dorcadospyris dentata Haeckel
Goll 1969: 338, pl. 60, figs 8, 13

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Cantharospyris***
Haeckel, 1887: 1050

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. Heterogenous group of species included at the time of the generic definition.

Original series: **Cantharospyris carabus* Haeckel, 1887; *Cantharospyris platybursa* Haeckel, 1887; *Ceratospyris ateuchus* Ehrenberg, 1874b and *Haliomma*? *radicatum* Ehrenberg, 1844a.

FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 179)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *DORCADOSPYRIDIS***

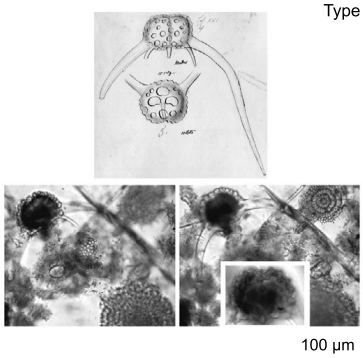
N.D.

Type

UNFIGURED SPECIES

Cantharospyris carabus
Haeckel, 1887: 1051, unfigured

Type



100 µm

Ceratospyris ateuchus Ehrenberg
Ogane *et al.* 2009b: pl. 77, figs 5a-d [lectotype herein]

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Dipodospyris***
Haeckel, 1882: 441

Remarks: See comments under *DIPOSPYRIS*. Type species never figured. The support image is the closest species among those originally included in this genus.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? DORCADOSPYRIS***

N.D. Type

UNFIGURED SPECIES

Dipospyris bipes
Haeckel, 1887: 1036, unfigured

Support



100 µm

Dipospyris forcipata Haeckel
Goll 1972a: 964, pl. 54, fig. 1

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Dipospyris*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1036

Remarks: An incorrect subsequent spelling for *DIPODOSPYRIS*. By referring back to p. 441 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *DIPOSPYRIS* to be an emendation of the name *DIPODOSPYRIS*, which is unjustified according to the provisions of ICZN art. 33.3.

Original series: *Ceratospyris mystax* Ehrenberg, 1874b; *Dipospyris bipes* Haeckel, 1887; *Dipospyris chelifer* Haeckel, 1887; *Dipospyris cubus* Haeckel, 1887; *Dipospyris forcipata* Haeckel, 1887; *Dipospyris irregularis* Haeckel, 1887 and *Dipospyris sigmopodium* Haeckel, 1887.

FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D112)

STATUS INVALID NAME
designated herein

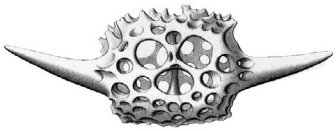
SEE ***DIPODOSPYRIS***

INV. Type

UNFIGURED SPECIES

Dipospyris bipes
Haeckel, 1887: 1036, unfigured

Support



50 µm

Dipospyris cubus
Haeckel, 1887: 1036, pl. 83, fig. 18

N - LINEAGE II (E) CEPHALOSPYRIDIDAE
ASSIGNED IN Campbell 1954: D114

GENUS ***Elaphospyris***
Haeckel, 1882: 442

NOMINOTYPE ***Elaphospyris* (*Elaphospyris*)**

Diagnosis: Cephalospyrididae with a nut-shaped, tuberculate shell reduced to a cephalis with a slight sagittal stricture and subregular circular pores. Basal plate with four large pores. Conical apical horn shorter than the two upper curved lateral horns. D and V feet small, conical, straight. Two to four basal feet, divergent, sometimes bifurcated, as long, or longer than the shell.

Remarks: See comments under *GIRAFFOSPYRIS*. Campbell (1954: D114) erroneously considers *ELAPHOSPYRIS* Haeckel, 1882 to be an objective synonym of *GIRAFFOSPYRIS* Haeckel, 1882. He designates *Ceratospyris heptaceros* Ehrenberg, 1874b as the type species of *GIRAFFOSPYRIS* and only by inference of *ELAPHOSPYRIS*.

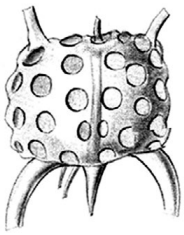
FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 180)

STATUS **VALID**

AGE ***LATE PALEOCENE–LATE OLIGOCENE***

VALID
VERY RARE

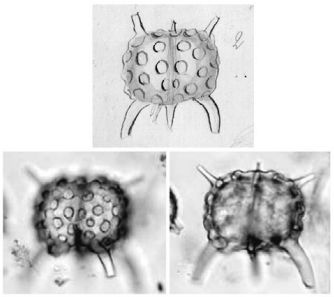
Type



25 µm

Ceratospyris heptaceros
Ehrenberg, 1874b: 219 (unfigured); Ehrenberg, 1876: 66pl. 20, fig. 2

Type



50 µm

Ceratospyris heptaceros Ehrenberg
Ogane *et al.* 2009b: pl. 18, figs 4a-c [lectotype herein]

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Giraffospyris***
Haeckel, 1882: 442

SUBGENUS ***Elaphospyris* (*Giraffospyris*)**

Remarks: Only the type species clearly belongs to this genus (figured just once after the first illustration); just two species originally included at the time of the generic definition. The type species is a junior subjective synonym of *Ceratospyris didiceros* Ehrenberg, 1874b.

Original series: *Ceratospyris heptaceros* Ehrenberg, 1874b and **Elaphospyris capricornis* Haeckel, 1887.

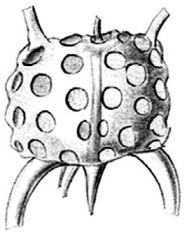
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ELAPHOSPYRIS***

SYN. (obj.)
VERY RARE

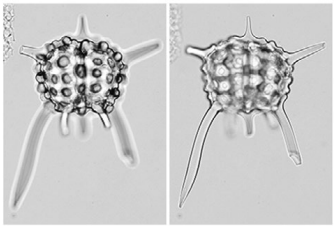
Type



25 µm

Ceratospyris heptaceros
Ehrenberg, 1874b: 219 (unfigured); Ehrenberg, 1876: 66, pl. 20, fig. 2

Type



100 µm

Ceratospyris heptaceros Ehrenberg
Paratypic material (Challenger Station 265), Suzuki's collection

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Aegospyris***
Haeckel, 1882: 442

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Aegospyris aegoceras* Haeckel, 1887; **Aegospyris aequispina* Haeckel, 1887; *Aegospyris caprina* Haeckel, 1887; **Aegospyris octospina* Haeckel, 1887 and *Ceratospyris longibarba* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

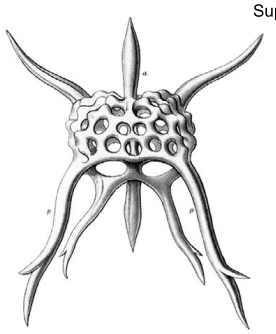
SEE ***? ELAPHOSPYRIS***

N.D. Type

UNFIGURED SPECIES

Aegospyris aequispina
Haeckel, 1887: 1053, unfigured

Support



50 µm

Aegospyris aegoceras
Haeckel, 1887: 1054, pl. 95, fig. 10

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Therospyris***
Haeckel, 1882: 442

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Therospyris canis* Haeckel, 1887; *Therospyris felis* Haeckel, 1887 and *Therospyris leo* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

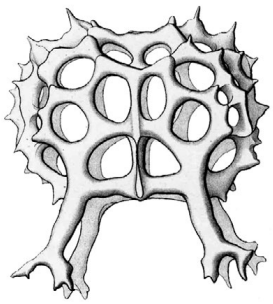
SEE ***? ELAPHOSPYRIS***

N.D. Type

UNFIGURED SPECIES

Therospyris canis
Haeckel, 1887: 1058, unfigured

Support



50 µm

Therospyris felis
Haeckel, 1887: 1059, pl. 89, fig. 6

N - LINEAGE II (E) CEPHALOSPYRIDIDAE
ASSIGNED IN Campbell 1954: D114

GENUS ***Gorgospyris***
Haeckel, 1882: 443

NOMINOTYPE ***Gorgospyris* (*Gorgospyris*)**

Diagnosis: Cephalospyrididae with a very small globular cephalis with small circular pores and an internal sagittal ring. Very numerous (more than ten) peri-oral appendages downwardly recurved and distributed on the border of the aperture with a reduced basal plate. No apical or vertical horns differentiated.

Remarks: See comments under *GORGOSPYRIUM*.

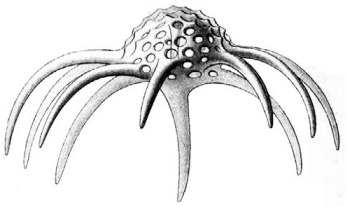
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS **VALID**

AGE ***[QUATERNARY]***

VALID
UNIQUE

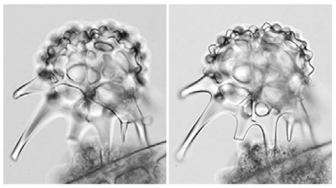
Type



50 µm

Gorgospyris medusa
Haeckel, 1887: 1070, pl. 87, fig. 1

Support



50 µm

Gorgospyris polypus Haeckel
Challenger Station 272, Suzuki's collection

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Gorgospyrium***
Haeckel, 1887: 1070

SUBGENUS ***Gorgospyris* (*Gorgospyrium*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Gorgospyris eurycolpos* Haeckel, 1887; **Gorgospyris lamellosa* Haeckel, 1887; *Gorgospyris liriope* Haeckel, 1887; *Gorgospyris medusa* Haeckel, 1887; *Gorgospyris medusetta* Haeckel, 1887; *Gorgospyris polypus* Haeckel, 1887 and *Petalospyris pentas* Ehrenberg, 1874b.

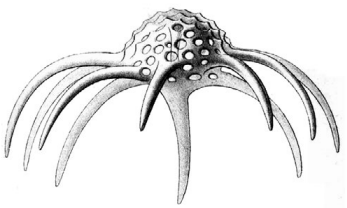
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***GORGOSPYRIS***

SYN. (obj.)
UNIQUE

Type



50 µm

Gorgospyris medusa
Haeckel, 1887: 1070, pl. 87, fig. 1

Support



25 µm

Gorgospyris medusetta
Haeckel, 1887: 1070, pl. 87, fig. 2

N - Lineage II (E) CEPHALOSPYRIDIDAE

assigned in Petrushevskaya 1981: 352

genus ***Lamprospyris***
Haeckel, 1882: 441

Diagnosis: Cephalospyrididae with a circular sagittal ring and its apophyses completely enveloped by a long spongy, very delicate, almost transparent wickerwork, upwardly elongated as a galea. The three free basal feet and the apical horn are well-developed, subdivided many times with lateral apophyses and partly fenestrated. Some secondary horns on the shell.

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Lamprospyris darwini* Haeckel, 1887; **Lamprospyris hookeri* Haeckel, 1887; *Lamprospyris huxleyi* Haeckel, 1887; **Lamprospyris lyelli* Haeckel, 1887 and **Lamprospyris spenceri* Haeckel, 1887.

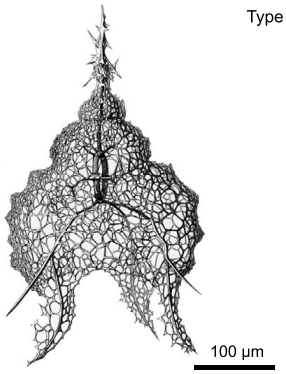
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D122)

status **VALID**

age ***Late Middle Miocene–Living***

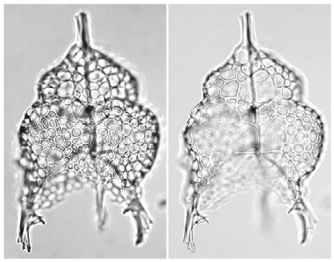
VALID
very rare

Type



Lamprospyris darwini
Haeckel, 1887: 1094, pl. 89, fig. 13

Support



Lamprospyris darwini Haeckel
Zhang's collection (South China Sea)

N - Lineage II (E) CEPHALOSPYRIDIDAE

genus ***Lophospyris***
Haeckel, 1887: 1080

Remarks: Homonym of *LOPHOSPYRIS* Haeckel, 1882: 443 (Polycystinea); see *EULOPHOSPYRIS nomen novum*.

Original series: *Ceratospyris acuminata* Hertwig, 1879; *Lophospyris comosa* Haeckel, 1887 and *Lophospyris dipodiscus* Haeckel, 1887.

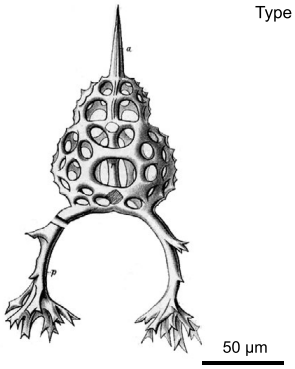
fixation SUBSEQUENT DESIGNATION (Campbell 1951: 528)

status HOMONYM

see ***EULOPHOSPYRIS nomen novum***

HOM.

Type



Lophospyris dipodiscus
Haeckel, 1887: 1080, pl. 95, fig. 14

Support

NO IMAGE PUBLISHED

no image available

N - Lineage II (E) CEPHALOSPYRIDIDAE

genus ***Eulophospyris*** *nomen novum* pro *Lophospyris*
Campbell, 1951: 528

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887). A new name proposed by Campbell for *LOPHOSPYRIS* Haeckel 1887: 1080 (not *LOPHOSPYRIS* Haeckel 1882: 443 and 1887: 1066) a junior homonym of *LOPHOSPYRIS* Haeckel 1882.

Original series: *Ceratospyris acuminata* Hertwig, 1879; **Lophospyris comosa* Haeckel, 1887 and *Lophospyris dipodiscus* Haeckel, 1887.

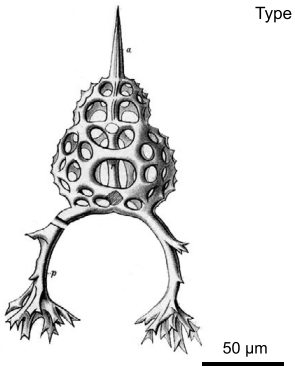
fixation SD according to ICZN, art. 67.8 (Campbell 1951: 528)

status JUNIOR SYNONYM?
questionably synonymized herein

see ***LAMPROSPYRIS***

SYN.?
unique

Type



Lophospyris dipodiscus
Haeckel, 1887: 1080, pl. 95, fig. 14

Support

NO IMAGE PUBLISHED

no image available

N - Lineage II (E) CEPHALOSPYRIDIDAE

assigned in Campbell 1954: D114

genus ***Liriospyris***
Haeckel, 1882: 443

Diagnosis: Cephalospyrididae reduced to a cephalis including the sagittal ring in the external part of its porous wall. Pores symmetrically distributed in pairs on either side of the sagittal ring. Pores on each side of the dorsal part of the ring larger than others. Up to six small basal feet, subconical, more or less developed. Subconical and usually small apical horn. Secondary horns may be present.

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Ceratospyris turrita* Ehrenberg, 1874b; *Dictyospyris clathrus* Ehrenberg, 1854c; *Liriospyris amphithecta* Haeckel, 1887; **Liriospyris heteropoda* Haeckel, 1887 and *Liriospyris hexapoda* Haeckel, 1887.

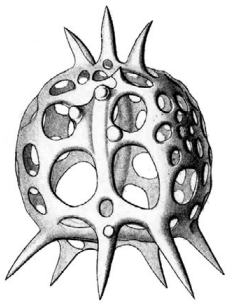
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D114)

status **VALID**

age ***Early Middle Eocene–early Late Miocene***

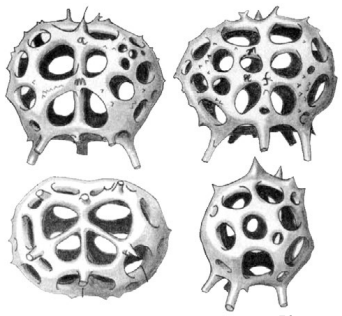
VALID
very rare

Type



Liriospyris hexapoda
Haeckel, 1887: 1049, pl. 86, fig. 7

Support



Liriospyris clathrata (Ehrenberg)
Goll 1968: 1426, pl. 175, figs 12, 13, 16, 17

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS **Petalospyromma**
Haeckel, 1887: 1062

SUBGENUS *Petalospyris* (*Petalospyromma*)

Remarks: Only the type species clearly belongs to this genus; rarely reported.

Original series: *Petalospyris argiscus* Ehrenberg, 1874b; **Petalospyris bellidiastrum* Haeckel, 1887; *Petalospyris dictyocubus* Haeckel, 1887; *Petalospyris dinoceras* Haeckel, 1887; **Petalospyris furcata* Haeckel, 1887; *Petalospyris lobata* Haeckel, 1887; *Petalospyris novena* Haeckel, 1887 and **Petalospyris papillata* Haeckel, 1887.

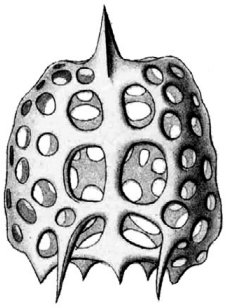
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 332

SEE ***LIRIOSPYRIS***

SYN.
RARE

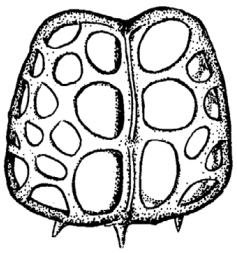
Type



25 µm

Petalospyris dictyocubus
Haeckel, 1887: 1063, pl. 86, fig. 6

Support



50 µm

Petalospyris dictyocubus Haeckel
Tan & Chen 1999: 274, text-fig. 5.191

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS **Clathrospyris**
Haeckel, 1882: 442

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Clathrospyris camelopardalis* Haeckel, 1887; **Clathrospyris fusiformis* Haeckel, 1887 and *Clathrospyris pyramidalis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D113)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *LIRIOSPYRIS***

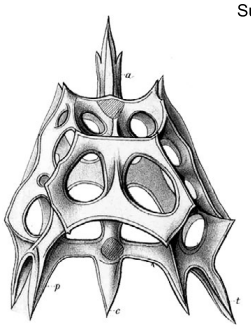
N.D.

Type

UNFIGURED SPECIES

Clathrospyris camelopardalis
Haeckel, 1887: 1052, unfigured

Support



50 µm

Clathrospyris pyramidalis
Haeckel, 1887: 1052, pl. 95, fig. 9

N - LINEAGE II (E) CEPHALOSPYRIDIDAE
ASSIGNED IN Campbell 1954: D114

GENUS **Lophospyris**
Haeckel, 1882: 443

SUBGENUS *Ceratospyris* (*Lophospyris*)

Diagnosis: Cephalospyrididae with a sagittal ring included in the bilocular cephalic wall and protruding on its surface. Near the ring, five to seven pairs of pores are constituted by the thin three-sided l, a, m, q, f, j and L apophyses; extend outside as short thorns approximately of same sizes. Apical horn similar. Larger pentagonal pores. No true basal feet.

Remarks: Type species frequently reported. Campbell (1954: D114) changes the type species designation to *Ceratospyris polygona* Haeckel, 1887: 1066, but the previous Campbell's designation in 1951 has the priority.

Original series: *C. allmersi* Haeckel, 1887; *C. echinus* Ehrenberg, 1874b; *C. krausei* Haeckel, 1887; *C. mulderi* Haeckel, 1887; *C. muelleri* Stöhr, 1880; *C. pentagona* Ehrenberg, 1873a; *C. polygona* Haeckel, 1887; *C. preyeri* Haeckel, 1887 and *C. strasburgeri* Haeckel, 1887.

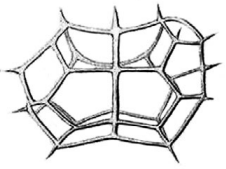
FIXATION SUBSEQUENT DESIGNATION (Campbell 1951: 528)

STATUS **VALID**

AGE ***EARLY OLIGOCENE–LIVING***

VALID
FREQUENT

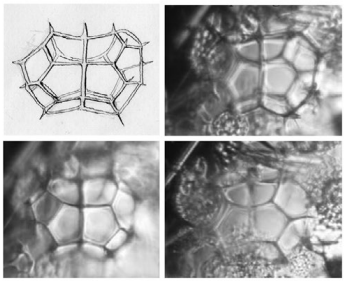
Type



50 µm

Ceratospyris pentagona
Ehrenberg, 1873a: 303 (unfigured); Ehrenberg, 1873b: 286-287, pl. 10, fig. 15

Type



50 µm

Ceratospyris pentagona Ehrenberg
Suzuki *et al.* 2009a: pl. 71, figs 5a-d [lectotype herein]

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS **Semantrum**
Haeckel, 1887: 958

Remarks: Type species rarely reported.

Original series: *Semantrum quadrifore* Haeckel, 1887; **Semantrum tetrapylum* Haeckel, 1887 and *Semantrum tetrastoma* Haeckel, 1887.

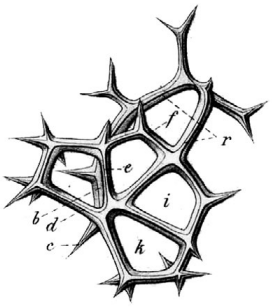
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106)

STATUS JUNIOR SYNONYM?
questionably synonymized herein; name-bearing type juvenile

SEE ***LOPHOSPYRIS***

SYN.?
RARE

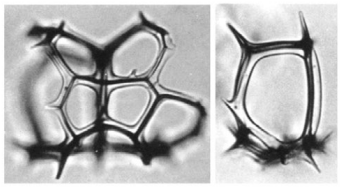
Type



100 µm

Semantrum quadrifore
Haeckel, 1887: 958, pl. 92, fig. 5

Support



50 µm

Lophospyris pentagona quadriforis (Haeckel)
Goll 1976: 398, pl. 13, figs 5, 6

N - Lineage II (E) CEPHALOSPYRIDIDAE

assigned in Campbell 1954: D112

genus **Pentaspyris**
Haeckel, 1882: 442

Diagnosis: Cephalospyrididae with a nut-shaped, tuberculate cephalis with a deep sagittal stricture including the sagittal ring. Two pairs of large pores on each side of the sagittal ring. A and Vert spines included in the shell wall not extended in horns. Two additional secondary apical horns may occur. 4 to 5 feet S-shaped, curved and strongly divergent with short branches; some feet may be shorter.

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Pentaspyris isacantha* Haeckel, 1887 and *Pentaspyris pentacantha* Haeckel, 1887.

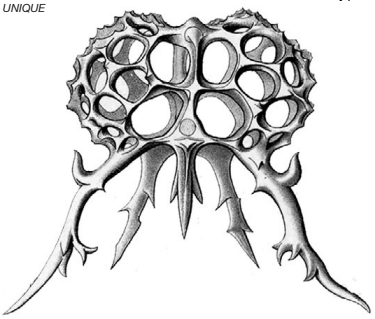
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D112)

status **VALID**

age ***Early Late Miocene***

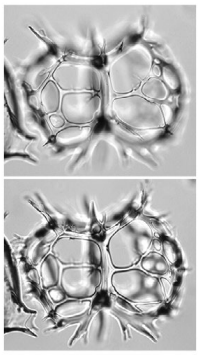
VALID
UNIQUE

Type



Pentaspyris pentacantha
Haeckel, 1887: 1054, pl. 95, fig. 11

Support



Pentaspyris pentacantha Haeckel
Zhang's collection (South China Sea)

N - Lineage II (E) CEPHALOSPYRIDIDAE

genus **Taurospyris**
Haeckel, 1882: 442

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Taurospyris bovina* Haeckel, 1887 and *Taurospyris cervina* Haeckel, 1887.

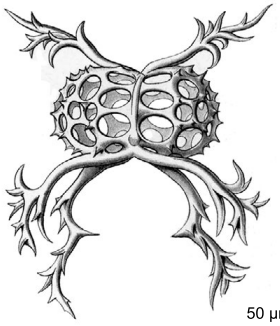
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D114)

status JUNIOR SYNONYM
synonymized herein

see ***PENTASPYRIS***

SYN.
UNIQUE

Type



Taurospyris cervina
Haeckel, 1887: 1058, pl. 95, fig. 12

Support

NO IMAGE PUBLISHED

no image available

N - Lineage II (E) CEPHALOSPYRIDIDAE

assigned in Petrushevskaya 1981: 335

genus **Petalospyris**
Ehrenberg, 1846: 385

nominotype ***Petalospyris* (*Petalospyris*)**

Diagnosis: Cephalospyrididae with a two-segmented shell with a globular cephalis with circular pores of different sizes, irregularly distributed. Sagittal ring not included in the cephalic wall. Second segment constituted by five to ten peri-apertural smooth, elongated, unbranched feet of circular or oval section, sometimes coalesced beneath the basal plate. Apical horn straight, rarely with additional horns.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Petalospyris diaboliscus* Ehrenberg, 1847.

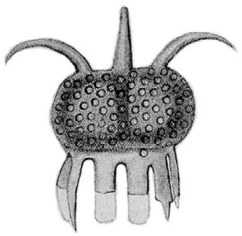
fixation SUBSEQUENT MONOTYPY

status **VALID**

age ***Middle Paleocene–late Middle Miocene***

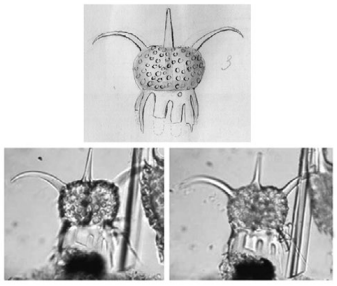
VALID
FREQUENT

Type



Petalospyris diaboliscus
Ehrenberg, 1847: 55, fig. 6

Type



Petalospyris diaboliscus Ehrenberg
Ogane *et al.* 2009b: pl. 76, figs 3a-c [lectotype herein]

N - Lineage II (E) CEPHALOSPYRIDIDAE

genus **Petalospyrantha**
Haeckel, 1887: 1060

subgenus ***Petalospyris* (*Petalospyrantha*)**

Remarks: No type species was designated. Only two species originally included at the time of the generic definition. Campbell (1954: D114) considers *PETALOSPYRANTHA* to be the nominate subgenus of *PETALOSPYRIS* Ehrenberg, 1846. However, this seems inappropriate since the type species of *PETALOSPYRIS* (*Petalospyris diaboliscus* Ehrenberg, 1847) was not among those species originally included at the time of the generic definition.

Original series: **Petalospyris floscula* Haeckel, 1887 and *Petalospyris foveolata* Ehrenberg, 1854c.

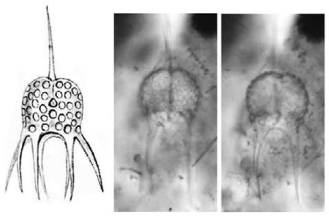
fixation INVALID SUBSEQUENT DESIGNATION (SD herein)

status JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 335

see ***PETALOSPYRIS***

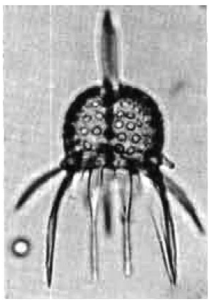
SYN.
FREQUENT

Type



Petalospyris foveolata
Ehrenberg, 1854c: pl. 36, fig. 14 [Ogane *et al.* 2009b: pl. 38, figs 9a-c (lectotype herein); description in Haeckel 1862: 295]

Support



Petalospyris foveolata Ehrenberg
Ling 1975: 727, pl. 7, fig. 23

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Petalospyrella***
Haeckel, 1887: 1060

SUBGENUS ***Petalospyris* (*Petalospyrella*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Petalospyris corona* Stöhr, 1880; *Petalospyris platyacantha* Ehrenberg, 1874b and *Petalospyris triomma* Haeckel, 1887.

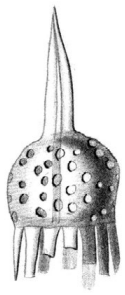
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 532

SEE ***PETALOSPYRIS***

SYN.
FREQUENT

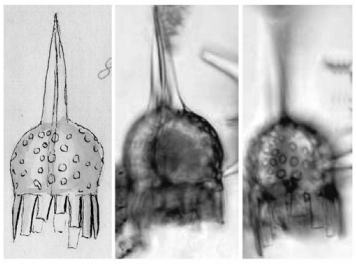
Type



50 µm

Petalospyris platyacantha
Ehrenberg, 1874b: 247 (unfigured); Ehrenberg, 1876: 80, pl. 22, fig. 8

Type



50 µm

Petalospyris platyacantha Ehrenberg
Ogane *et al.* 2009b: pl. 77, figs 3a-c [lectotype herein]

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Petalospyrissa***
Haeckel, 1887: 1061

SUBGENUS ***Petalospyris* (*Petalospyrissa*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: **Petalospyris anthemis* Haeckel, 1887; *Petalospyris eupetala* Ehrenberg, 1874b; *Petalospyris octopus* Haeckel, 1887 and **Petalospyris tessaromma* Haeckel, 1887.

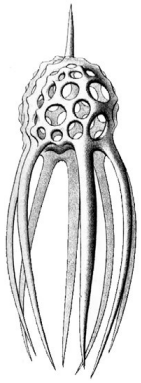
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 335

SEE ***PETALOSPYRIS***

SYN.
UNIQUE

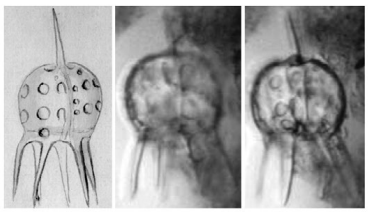
Type



50 µm

Petalospyris octopus
Haeckel, 1887: 1061, pl. 87, fig. 11

Type



50 µm

Petalospyris ocellata Ehrenberg
Ogane *et al.* 2009b: pl. 77, figs 1a-c [lectotype herein]

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Anthospyris***
Haeckel, 1882: 443

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Anthospyris aculeata* Haeckel, 1887; *Anthospyris doronicum* Haeckel, 1887; *Anthospyris mammillata* Haeckel, 1887; *Anthospyris spathulata* Haeckel, 1887; *Anthospyris tragopogon* Haeckel, 1887; *Petalospyris arachnoides* Haeckel, 1862 and *Petalospyris diaboliscus* Ehrenberg, 1847.

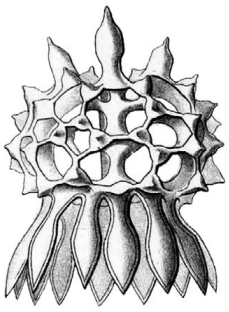
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PETALOSPYRIS***

SYN.
UNIQUE

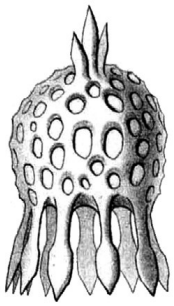
Type



50 µm

Anthospyris mammillata
Haeckel, 1887: 1064, pl. 87, fig. 16

Support



25 µm

Anthospyris spathulata
Haeckel, 1887: 1065, pl. 87, fig. 15

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Patagospyris***
Haeckel, 1882: 443

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Lithobotrys stiligera* Ehrenberg, 1874b; *Patagospyris anthocyrtis* Haeckel, 1887; **Patagospyris lanceolata* Haeckel, 1887 and *Petalospyris confluens* Ehrenberg, 1874b.

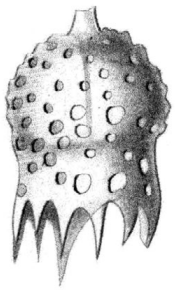
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS JUNIOR SYNONYM
synonymized by Ling 1975: 272

SEE ***PETALOSPYRIS***

SYN.
FREQUENT

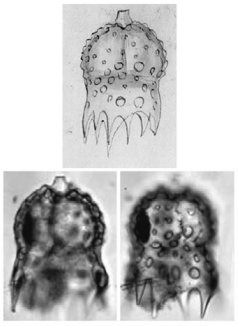
Type



25 µm

Petalospyris confluens
Ehrenberg, 1874b: 246 (unfigured); Ehrenberg, 1876: 80, pl. 22, fig. 5

Type



50 µm

Petalospyris confluens Ehrenberg
Ogane *et al.* 2009b: pl. 77, figs 2a-c [lectotype herein]

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Rhodospyris***
Haeckel, 1882: 443

Remarks: The type species has been figured just once, hence the support image is a subsequently assigned species. Only two species originally included at the time of the generic definition. The support image is selected among those species subsequently assigned to this genus.

Original series: **Rhodospyris triceros* Haeckel, 1887 and *Rhodospyris tricornis* Haeckel, 1887.

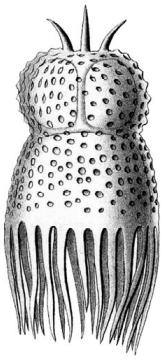
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PETALOSPYRIDIS***

SYN.
UNIQUE

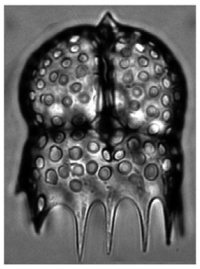
Type



50 µm

Rhodospyris tricornis
Haeckel, 1887: 1089, pl. 83, fig. 13

Support



25 µm

Rhodospyris pulchra
Renaudie & Lazarus, 2016: 47, pl. 8, fig. 13

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Sepalospyris***
Haeckel, 1882: 443

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: *Sepalospyris platyphylla* Haeckel, 1887 and **Sepalospyris polyphylla* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PETALOSPYRIDIS***

SYN.
UNIQUE

Type



50 µm

Sepalospyris platyphylla
Haeckel, 1887: 1081, pl. 95, fig. 15

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) CEPHALOSPYRIDIDAE
ASSIGNED IN Petrushevskaya 1981: 349

GENUS ***Platybursa***
Haeckel, 1882: 429

Diagnosis: Cephalospyrididae with a large thin-walled cephalis usually subdivided into two halves by a sagittal constriction. Shell wall constituted by small irregular meshes. Upper part of sagittal ring usually not differentiated. All apophyses originating from MB and five arches (ll, lp and pj) well-differentiated, D spine remaining free. Two lateral apophyses may produce two feet. No apical horn.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. *Cantharospyris platybursa* Haeckel, 1887 (= *Platybursa compressa*) is the type species of *PLATYBURSA* by subsequent monotypy and only by inference of *CANTHAROSPYRIS*. Partyally synonymyzed with *CANTHAROSPYRIS* since its type species was included among those originally included species.

Original series: *Cantharospyris platybursa* Haeckel, 1887.

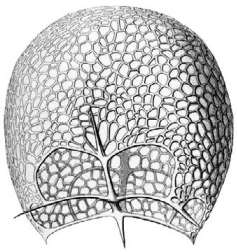
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LATE OLIGOCENE–LIVING***

VALID
FREQUENT

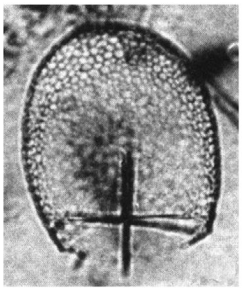
Type



50 µm

Cantharospyris platybursa
Haeckel, 1887: 1051, pl. 53, fig. 7

Support



50 µm

Cantharospyris platybursa Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Cephalospyris***
Haeckel, 1882: 441

Remarks: Type species rarely reported.

Original series: *Cephalospyris cancellata* Haeckel, 1887; **Cephalospyris ovata* Haeckel, 1887 and *Cephalospyris triangulata* Haeckel, 1887.

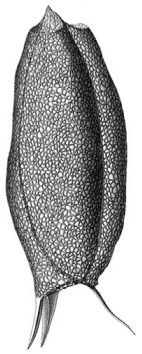
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 257

SEE ***PLATYBURSA***

SYN.
RARE

Type



100 µm

Cephalospyris cancellata
Haeckel, 1887: 1035, pl. 83, fig. 10

Support



50 µm

Cephalospyris cancellata Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS **Cyrtostephanus**
Popofsky, 1913: 289

Remarks: The type species has been figured just once.

Original series: *Cyrtostephanus cordiformis* Popofsky, 1913 and *Cyrtostephanus globosus* Popofsky, 1913.

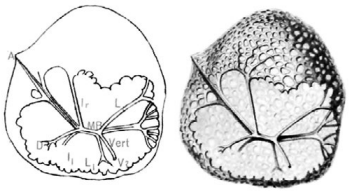
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 257

SEE ***PLATYBURSA***

SYN.
UNIQUE

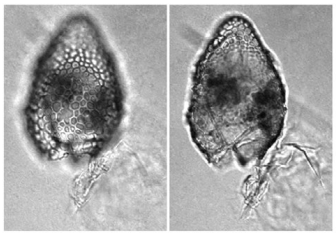
Type



25 µm

Cyrtostephanus globosus
Popofsky, 1913: 289, pl. 28, figs 4, 5

Support



100 µm

Cyrtostephanus globosus Popofsky
Zhang's collection (South China Sea)

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS **Tessarospyris**
Haeckel, 1882: 442

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Tessarospyris petalospyris* seminolum Stöhr, 1880; *Tessarospyris clathrobursa* Haeckel, 1887 and **Tessarospyris nuciformis* Haeckel, 1887.

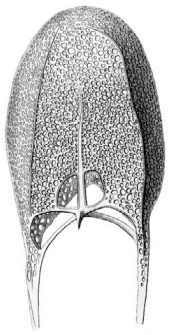
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 259

SEE ***PLATYBURSA***

SYN.
FREQUENT

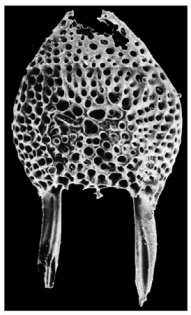
Type



50 µm

Tessarospyris clathrobursa
Haeckel, 1887: 1045, pl. 53, fig. 8

Support



50 µm

Clathrobursa clathrobursa (Haeckel)
Goll 1972a: 962, pl. 46, fig. 1

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS **Clathrobursa**
Haeckel, 1882: 429

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported. As indicated by Petrushevskaya (1971a: 259) this genus was synonymized with *TESSAROSPYRIS* by Haeckel (1887: 1045) without doubts (see *Clathrobursa dictyopus* in the synonymy list of *Tessarospyris clathrobursa*).

Original series: *Clathrobursa dictyopus* Haeckel, 1887.

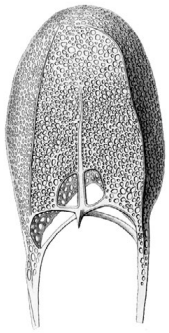
FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM
synonymized by Haeckel 1887: 1045

SEE ***TESSAROSPYRIS***

SYN. (obj.)
RARE

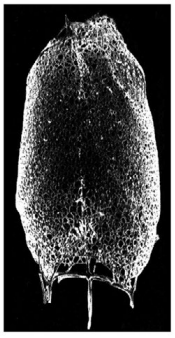
Type



50 µm

Clathrobursa dictyopus
Haeckel, 1887: 1045, pl. 53, fig. 8

Support



50 µm

Lophospyris dictyopus (Haeckel)
van de Paverd 1995: 209, pl. 62 fig. 8

N - LINEAGE II (E) CEPHALOSPYRIDIDAE
ASSIGNED IN Campbell 1954: D114

GENUS **Thamnospyris**
Haeckel, 1882: 443

SUBGENUS ***Gorgospyris* (*Thamnospyris*)**

Diagnosis: Cephalospyrididae constituted by a cephalis with thick smooth porous walls prolonged into a peristome shaped as a crown of ten to fifteen flat chisel-shaped springs not connected with the internal apophyses D, L, I. Sagittal ring rounded D-shaped enclosed in the cephalis except in a small area of its apical part, with only a short apical thorn.

Remarks: Only the type species clearly belongs to this genus (frequently reported); just two species originally included at the time of the generic definition.

Original series: *Gorgospyris schizopodia* Haeckel, 1887 and **Gorgospyris thamnopodia* Haeckel, 1887.

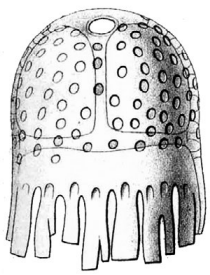
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS **VALID**

AGE ***LATE PALEOCENE–EARLY MIDDLE MIOCENE***

VALID
FREQUENT

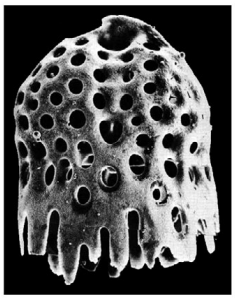
Type



50 µm

Gorgospyris schizopodia
Haeckel, 1887: 1071, pl. 87, fig. 4

Support



25 µm

Gorgospyris schizopodia Haeckel
Goll 1972a: 966, pl. 67, fig. 1

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

ASSIGNED IN Petrushevskaya 1981: 347

GENUS ***Tholospyris***
Haeckel, 1882: 441

NOMINOTYPE ***Tholospyris* (*Tholospyris*)**

Diagnosis: Cephalospyrididae constituted by a sagittal ring included in the cephalis based on the arches IL and Lj, but with no ante- and post-cephalic chambers. The A and Vert apophyses are included in the external wall, near them the large pores al, ma and fj are clearly visible. Typical galearic apophyses merge with the upper part of the shell wall. An apical horn may occur.

Remarks: See comments under *THOLOSPYRIUM*. The type species is a junior subjective synonym of *Ceratospyris acuminata* Hertwig, 1879.

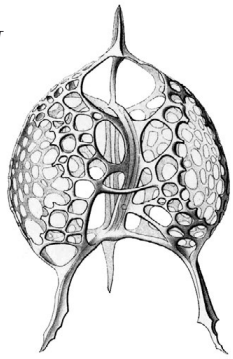
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LIVING***

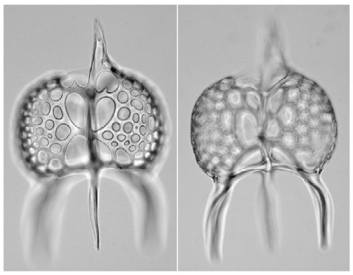
VALID
FREQUENT

Type



Tholospyris tripodiscus
Haeckel, 1887: 1079, pl. 89, fig. 1

Support



Tholospyris tripodiscus Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Tholospyrium***
Haeckel, 1887: 1078

SUBGENUS ***Tholospyris* (*Tholospyrium*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Tholospyris fenestrata* Haeckel, 1887; **Tholospyris galeata* Haeckel, 1887 and *Tholospyris tripodiscus* Haeckel, 1887.

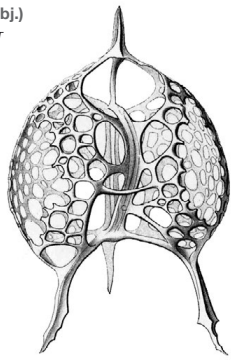
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***THOLOSPYRIS***

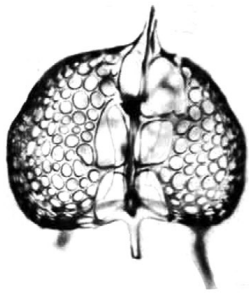
SYN. (obj.)
FREQUENT

Type



Tholospyris tripodiscus
Haeckel, 1887: 1079, pl. 89, fig. 1

Support



Androspyris fenestrata (Haeckel)
Goll 1980: 436, pl. 4, fig. 1

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Tholospyridium***
Haeckel, 1887: 1079

SUBGENUS ***Tholospyris* (*Tholospyridium*)**

Remarks: Only two species originally included at the time of the generic definition (both rarely illustrated).

Original series: *Tholospyris cupola* Haeckel, 1887 and *Tholospyris ramosa* Haeckel, 1887.

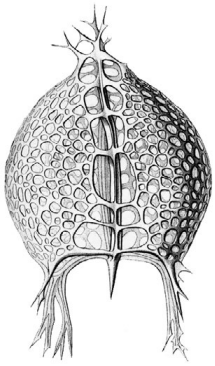
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THOLOSPYRIS***

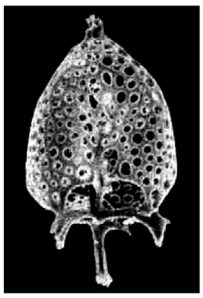
SYN.
RARE

Type



Tholospyris ramosa
Haeckel, 1887: 1079, pl. 89, fig. 3

Support



Tholospyris ramosa Haeckel
Nishimura & Yamauchi 1984: 69, pl. 21, fig. 8

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Tristylospyris***
Haeckel, 1882: 441

NOMINOTYPE ***Tristylospyris* (*Tristylospyris*)**

Remarks: See comments under *TRISTYLOSPYRULA*.

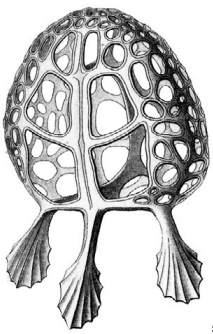
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS JUNIOR SYNONYM
synonymized by De Wever *et al.* 2001: 230

SEE ***THOLOSPYRIS***

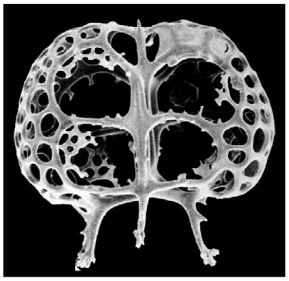
SYN.
FREQUENT

Type



Tristylospyris palmipes
Haeckel, 1887: 1033, pl. 84, fig. 14

Support



Tristylospyris palmipes Haeckel
Goll 1972a: 969, pl. 83, fig. 2

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Tristylospyrula***
Haeckel, 1887: 1033

SUBGENUS ***Tristylospyris* (*Tristylospyrula*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Tristylospyris clavipes* Haeckel, 1887; *Tristylospyris palmipes* Haeckel, 1887 and *Tristylospyris scaphipes* Haeckel, 1887.

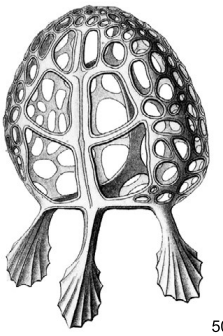
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TRISTYLOSPYRIS***

SYN. (obj.)
FREQUENT

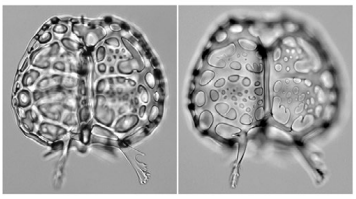
Type



50 µm

Tristylospyris palmipes
Haeckel, 1887: 1033, pl. 84, fig. 14

Support



50 µm

Tristylospyris palmipes Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (E) CEPHALOSPYRIDIDAE
ASSIGNED HEREIN

GENUS ***Tiarospyris***
Haeckel, 1882: 443

Diagnosis: Cephalospyrididae constituted by a small, smooth, nut-shaped cephalis with a well-marked sagittal ring forming a stricture marked by two large collar pores between lateral sides with numerous small pores. No A and V horns. Cupola flat with 2 larger pores above the ring. 8 to 10 conical, slightly divergent feet, about one-fourth as long as the shell below the basal plate.

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: *Tiarospyris amphora* Haeckel, 1887; **Tiarospyris galea* Haeckel, 1887; *Tiarospyris mitra* Haeckel, 1887 and *Tiarospyris pervia* Haeckel, 1887.

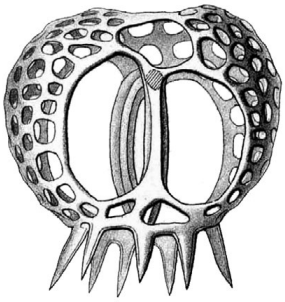
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS **VALID**

AGE ***LATE PLIOCENE–HOLOCENE***

VALID
VERY RARE

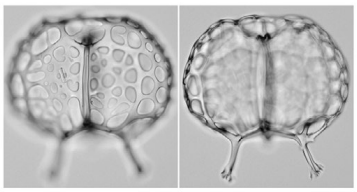
Type



50 µm

Tiarospyris pervia
Haeckel, 1887: 1082, pl. 87, fig. 7

Support



50 µm

Tiarospyris pervia Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (E) CEPHALOSPYRIDIDAE
ASSIGNED HEREIN

GENUS ***Triceraspyris***
Haeckel, 1882: 441

NOMINOTYPE ***Triceraspyris* (*Triceraspyris*)**

Diagnosis: Cephalospyrididae with a shell constituted by a porous bilocular thick-walled cephalis. Sagittal ring may be completely included in the cephalis wall with circular or sub-quadrangular pores. The A, D and L apophyses produce an apical horn and three strong elongated feet which may be tuberculate or ramified. There may be several horns on cephalis or secondary feet.

Remarks: Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym. Heterogeneous group of species originally included.

Original series: *Ceratospyris furcata* Ehrenberg, 1874b; *Triceraspyris corallorrhiza* Haeckel, 1887; *Triceraspyris gazella* Haeckel, 1887; *Triceraspyris giraffa* Haeckel, 1887; **Triceraspyris longicornis* Haeckel, 1887 and **Triceraspyris maniculata* Haeckel, 1887.

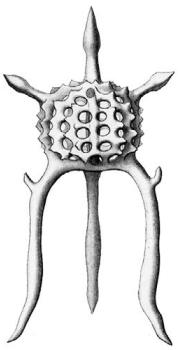
FIXATION SUBSEQUENT DESIGNATION (Petrushevskaya 1975: 593)

STATUS **VALID**

AGE ***EARLY EOCENE–LATE LATE MIOCENE***

VALID
UNIQUE

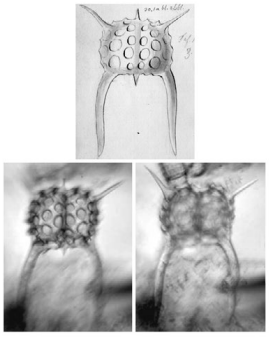
Type



50 µm

Triceraspyris giraffa
Haeckel, 1887: 1031, pl. 84, fig. 11

Type



50 µm

Ceratospyris didiceros Ehrenberg
Ogane *et al.* 2009b: pl. 39, figs 1a-c [lectotype herein]

N - LINEAGE II (E) CEPHALOSPYRIDIDAE

GENUS ***Triospyrium***
Haeckel, 1887: 1030

SUBGENUS ***Triceraspyris* (*Triospyrium*)**

Remarks: A single report of the type species after the first illustration.

Original series: *Ceratospyris furcata* Ehrenberg, 1874b; *Triceraspyris corallorrhiza* Haeckel, 1887; *Triceraspyris gazella* Haeckel, 1887; *Triceraspyris giraffa* Haeckel, 1887; **Triceraspyris longicornis* Haeckel, 1887 and **Triceraspyris maniculata* Haeckel, 1887.

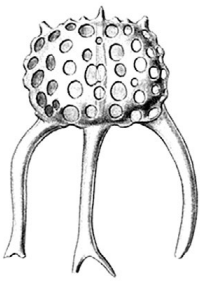
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 248

SEE ***TRICERASPYRIS***

SYN.
VERY RARE

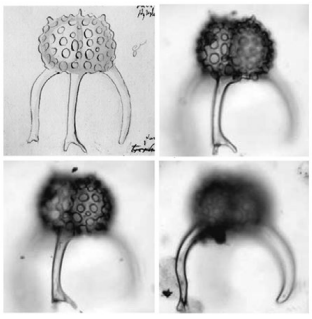
Type



50 µm

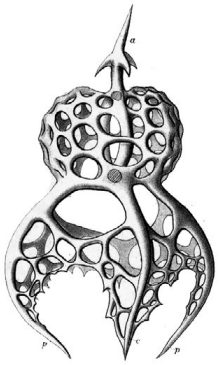
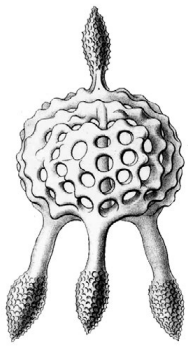
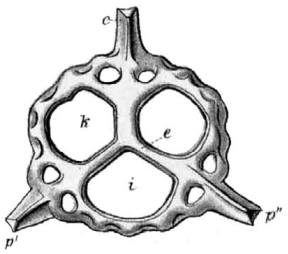
Ceratospyris furcata
Ehrenberg, 1874b: 219 (unfigured); Ehrenberg, 1876: 66, pl. 20, fig. 8

Type



50 µm

Ceratospyris furcata Ehrenberg
Ogane *et al.* 2009b: pl. 39, figs 5a-d [lectotype herein]

N - LINEAGE II (E) CEPHALOSPYRIDIDAE GENUS ***Acrospyris*** Haeckel, 1882: 441 **Remarks**: Only the type species has been illustrated (reported only by Haeckel 1887). **Original series**: *Acrospyris clathrocanium* Haeckel, 1887; **Acrospyris dictyophimus* Haeckel, 1887; **Acrospyris fragilis* Haeckel, 1887; **Acrospyris macrocephala* Haeckel, 1887 and **Acrospyris pyramidalis* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116) STATUS JUNIOR SYNONYM synonymized herein SEE ***TRICERASPYRIDIS***	**SYN.** *UNIQUE* Type  50 µm *Acrospyris clathrocanium* Haeckel, 1887: 1085, pl. 95, fig. 17	Support NO IMAGE PUBLISHED no image available
N - LINEAGE II (E) CEPHALOSPYRIDIDAE GENUS ***Tripospyrella*** Haeckel, 1887: 1026 SUBGENUS ***Tripospyris* (*Tripospyrella*)** **Remarks**: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus. **Original series**: *Ceratospyris triomma* Ehrenberg, 1874b; *Tripospyris conifera* Haeckel, 1887 and *Tripospyris triplecta* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112) STATUS JUNIOR SYNONYM synonymized herein SEE ***TRICERASPYRIDIS***	**SYN.** *UNIQUE* Type  50 µm *Tripospyris conifera* Haeckel, 1887: 1027, pl. 84, fig. 7	Support  50 µm *Tripospyris triplecta* Haeckel, 1887: 1027, pl. 95, fig. 2
N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE GENUS ***Triospyridium*** Haeckel, 1887: 1032 SUBGENUS ***Triceraspyris* (*Triospyridium*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. However, it seems likely that the type species of this genus is a junior subjective synonym of *Elaphospyris damaecornis* Haeckel, 1887 (see Haeckel's comment in p. 1032). **Original series**: **Triceraspyris arborescens* Haeckel, 1887 and **Triceraspyris damaecornis* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112) STATUS NOMEN DUBIUM designated herein; name-bearing type incomplete	**N.D.** Type UNFIGURED SPECIES *Triceraspyris damaecornis* Haeckel, 1887: 1032, unfigured	Support NO IMAGE PUBLISHED no image available
N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE GENUS ***Triospyris*** Haeckel, 1882: 441 SUBGENUS ***Triceraspyris* (*Triospyris*)** **Remarks**: Campbell (1954: D112) considers *TRICERASPYRIS* Haeckel, 1882 to be an objective synonym of *TRIOSPYRIS* Haeckel, 1882. He designates *Triceraspyris tripodiscus* Haeckel, 1887: 1030 as the type species of *TRIOSPYRIS* and only by inference of *TRICERASPYRIS*. Therefore, we consider the type species designation of *Triceraspyris tripodiscus* for *TRICERASPYRIS* to date from Chediya (1959: 177). The SD of *Triceraspyris giraffa* by Petrushevskaya (1975: 593) is wrong according to ICZN Art. 69.1.2. No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Ceratospyris didiceros* Ehrenberg, 1874b; **Triceraspyris cortiniscus* Haeckel, 1887 and **Triceraspyris tripodiscus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112) STATUS NOMEN DUBIUM designated herein; name-bearing type incomplete	**N.D.** Type UNFIGURED SPECIES *Triceraspyris tripodiscus* Haeckel, 1887: 1030, unfigured	Support NO IMAGE PUBLISHED no image available

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Tripodospyris***
Haeckel, 1882: 441

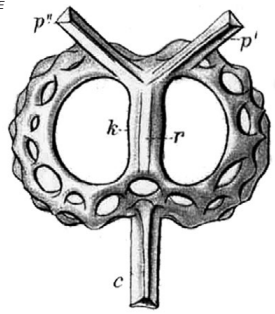
Remarks: See comments under *TRIPODOSPYRIS*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



25 µm

Tripospyris cortina
Haeckel, 1887: 1025, pl. 95, fig. 1

Support



50 µm

Tholospyris cortinisca (Haeckel)
Goll 1972a: 968, pl. 75, fig. 3

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Tripospyris*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1025

NOMINOTYPE ***Tripospyris* (*Tripospyris*)**

Remarks: An incorrect subsequent spelling for *TRIPODOSPYRIS*. By referring back to p. 441 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *TRIPOSPYRIS* to be an emendation of the name *TRIPODOSPYRIS* which is unjustified according to the provisions of ICZN art. 33.3.

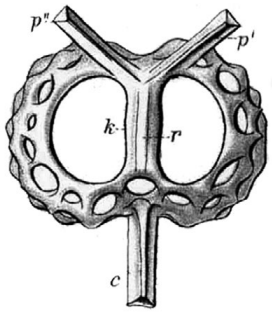
FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D112)

STATUS INVALID NAME
designated herein

SEE ***TRIPODOSPYRIS***

INV.

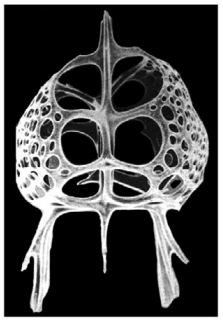
Type



25 µm

Tripospyris cortina
Haeckel, 1887: 1025, pl. 95, fig. 1

Support



50 µm

Tholospyris cortinisca (Haeckel)
Goll 1972a: 968, pl. 75, fig. 2

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Tripospyrantha***
Haeckel, 1887: 1025

SUBGENUS ***Tripospyris* (*Tripospyrantha*)**

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Tripospyris cortina* Haeckel, 1887; *Tripospyris cortiniscus* Haeckel, 1887; *Tripospyris diomma* Haeckel, 1887 and *Tripospyris semantis* Haeckel, 1887.

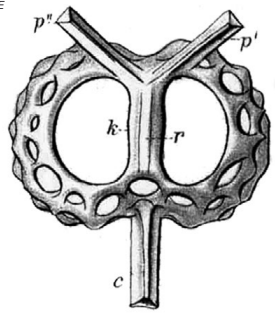
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***TRIPOSPYRIS***

SYN. (obj.); N.D.
UNIQUE

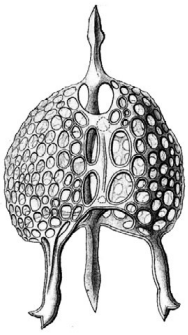
Type



25 µm

Tripospyris cortina
Haeckel, 1887: 1025, pl. 95, fig. 1

Support



50 µm

Tripospyris semantis
Haeckel, 1887: 1026, pl. 84, fig. 2

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Tripospyrissa***
Haeckel, 1887: 1027

SUBGENUS ***Tripospyris* (*Tripospyrissa*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

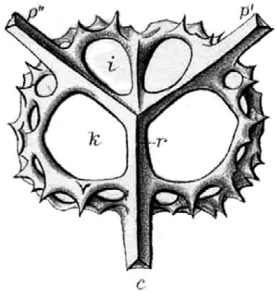
Original series: *Ceratospyris clavata* Bütschli, 1882b; *Tripospyris capitata* Haeckel, 1887; *Tripospyris semantrum* Haeckel, 1887 and **Tripospyris tessaromma* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
UNIQUE

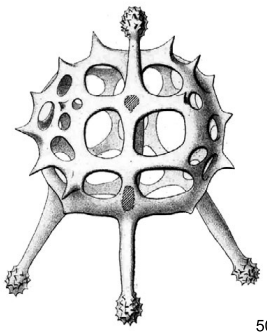
Type



25 µm

Tripospyris semantrum
Haeckel, 1887: 1027, pl. 95, fig. 3

Support



50 µm

Tripospyris capitata
Haeckel, 1887: 1028, pl. 84, fig. 1

N - Lineage II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Tripospyromma***
Haeckel, 1887: 1028

SUBGENUS ***Tripospyris* (*Tripospyromma*)**

Remarks: Type species only illustrated by Haeckel (1887).

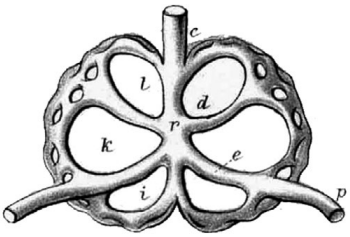
Original series: *Cladospyris tribrachiata* Ehrenberg, 1874b; *Tripospyris eucolpos* Haeckel, 1887; *Tripospyris furcata* Haeckel, 1887; *Tripospyris hexomma* Haeckel, 1887 and **Tripospyris semantidium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
UNIQUE

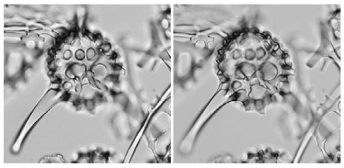
Type



25 µm

Tripospyris hexomma
Haeckel, 1887: 1028, pl. 95, fig. 4

Support



50 µm

Tripospyris hexomma Haeckel
Zhang's collection (South China Sea)

N - Lineage II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Archiphatna***
Haeckel, 1882: 429

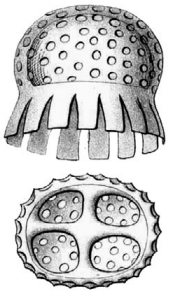
Remarks: See comments under *ARCHIPHAENA*. The support image is a senior subjective synonym of the type species.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D119)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

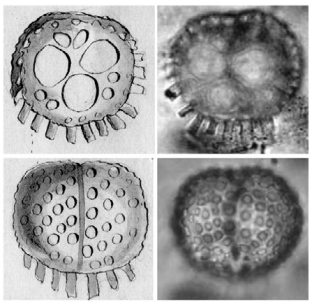
Type



50 µm

Archiphaena gorgospyris
Haeckel, 1887: 1178, pl. 98, figs 10, 10a

Type



25 µm

Petalospyris pentas Ehrenberg
Ogane *et al.* 2009b: pl. 9, figs 1a-c, 1e [lectotype herein]

N - Lineage II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Archiphaena*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1177

NOMINOTYPE ***Archiphaena* (*Archiphaena*)**

Remarks: An incorrect subsequent spelling for *ARCHIPHATNA*. By referring back to p. 429 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *ARCHIPHAENA* to be an emendation of the name *ARCHIPHATNA* which is unjustified according to the provisions of ICZN art. 33.3.

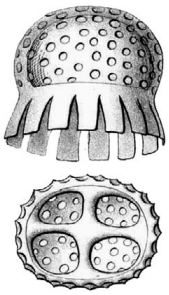
FIXATION SD according to ICZN, art. 67.6 (Campbell 1954: D119)

STATUS INVALID NAME
designated herein

SEE ***ARCHIPHATNA***

INV.

Type



50 µm

Archiphaena gorgospyris
Haeckel, 1887: 1178, pl. 98, figs 10, 10a

Support

NO IMAGE PUBLISHED

no image available

N - Lineage II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Coronophatna***
Haeckel, 1882: 429

Remarks: See comments under *CORONOPHAENA*. The support image is a junior subjective synonym of the type species.

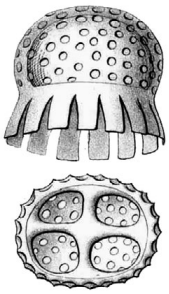
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D119)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***ARCHIPHATNA***

SYN. (obj.); N.D.
UNIQUE

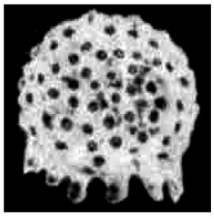
Type



50 µm

Archiphaena gorgospyris
Haeckel, 1887: 1178, pl. 98, figs 10, 10a

Support



25 µm

Gorgospyris (*Gorgospyrium*) *hemisphaerica*
Clark & Campbell, 1942: 61, pl. 9, fig. 6

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Coronophaena*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1178

SUBGENUS ***Archiphaena* (*Coronophaena*)**

Remarks: An incorrect subsequent spelling for *CORONOPHATNA*. By referring back to p. 429 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *CORONOPHAENA* to be an emendation of the name *CORONOPHATNA* which is unjustified according to the provisions of ICZN art. 33.3. Only two species originally included at the time of the generic definition. The support image is a junior subjective synonym of the type species

Original series: *Archiphaena corona* Haeckel, 1887 and *Archiphaena gorgospyris* Haeckel, 1887.

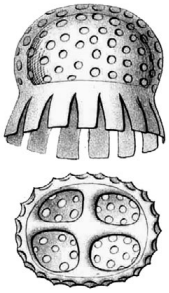
FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D119)

STATUS INVALID NAME
designated herein

SEE ***ARCHIPHATNA***

INV.

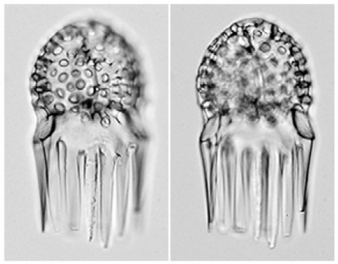
Type



50 µm

Archiphaena gorgospyris
Haeckel, 1887: 1178, pl. 98, figs 10, 10a

Support



50 µm

Gorgospyris (*Gorgospyrium*) *hemisphaerica*
Clark & Campbell
Suzuki's collection (Late Paleocene-Early Eocene, Japan)

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Cladophatna***
Haeckel, 1882: 429

Remarks: See comments under *CALPOPHAENA*. Campbell (1954: D120) considers *CALPOPHAENA* Haeckel, 1887 [= *CLADOPHATNA* Haeckel, 1882] to be an objective synonym of *ACROCORONA* Haeckel, 1882. He designates *Calpophaena tetrarrhabda* Haeckel, 1887: 1176 as the type species of *ACROCORONA* and only by inference of *CALPOPHAENA*. Therefore, Foreman & Riedel (1972) consider the type species designation of *Calpophaena tetrarrhabda* for *CALPOPHAENA* = *CLADOPHATNA* to date from Chediya 1959: 195.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D120)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

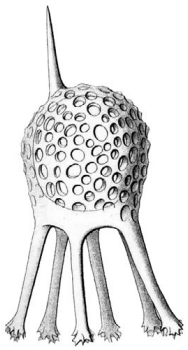
N.D.

Type

UNFIGURED SPECIES

Calpophaena tetrarrhabda
Haeckel, 1887: 1176, unfigured

Support



50 µm

Calpophaena hexarrhabda
Haeckel, 1887: 1176, pl. 53, figs 17, 18

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Calpophaena*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1175

NOMINOTYPE ***Calpophaena* (*Calpophaena*)**

Remarks: An incorrect subsequent spelling for *CLADOPHATNA*. By referring back to p. 429 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *CALPOPHAENA* to be an emendation of the name *CLADOPHATNA* which is unjustified according to the provisions of ICZN art. 33.3.

FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D120)

STATUS INVALID NAME
designated herein

SEE ***CLADOPHATNA***

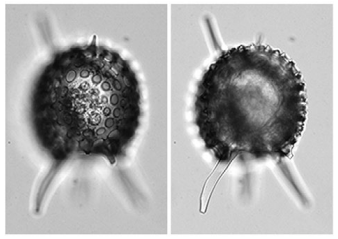
INV.

Type

UNFIGURED SPECIES

Calpophaena tetrarrhabda
Haeckel, 1887: 1176, unfigured

Support



50 µm

Calpophaena hexarrhabda Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Acrocorona***
Haeckel, 1882: 430

SUBGENUS ***Calpophaena* (*Acrocorona*)**

Remarks: Type species never figured. The support image is selected among those species subsequently assigned to this genus.

Original series: **Calpophaena enneaphylla* Haeckel, 1887; **Calpophaena ennearrhabda* Haeckel, 1887; *Calpophaena hexarrhabda* Haeckel, 1887; **Calpophaena petalospyris* Haeckel, 1887 and **Calpophaena tetrarrhabda* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D120)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***CLADOPHATNA***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

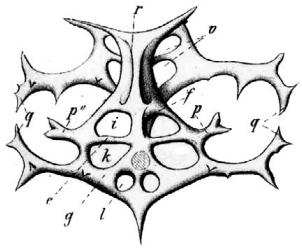
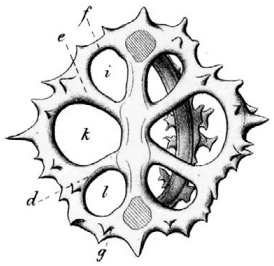
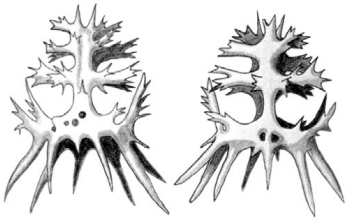
Calpophaena tetrarrhabda
Haeckel, 1887: 1176, unfigured

Support



50 µm

Calpophaena pentarrhabda
Chen *et al.*, 2017: 178, pl. 59, figs 1, 2

N - Lineage II (E) ? CEPHALOSPYRIDIDAE GENUS ***Cladocorona*** Haeckel, 1882: 430 SUBGENUS ***Calpophaena* (*Cladocorona*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Calpophaena hexacorethra* Haeckel, 1887 and **Calpophaena tetracorethra* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D120) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Calpophaena tetracorethra* Haeckel, 1887: 1177, unfigured	Support NO IMAGE PUBLISHED no image available
N - Lineage II (E) ? CEPHALOSPYRIDIDAE GENUS ***Clathrocircus*** Haeckel, 1882: 447 **Remarks**: Type species never figured. The support image is the closest species among those originally included in this genus. **Original series**: **Clathrocircus decaporus* Haeckel, 1887; *Clathrocircus dictyospyris* Haeckel, 1887; **Clathrocircus hexaporus* Haeckel, 1887; *Clathrocircus multiforis* Haeckel, 1887; **Clathrocircus octoporus* Haeckel, 1887 and *Clathrocircus stapedius* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Clathrocircus hexaporus* Haeckel, 1887: 962, unfigured	Support  25 µm *Clathrocircus stapedius* Haeckel, 1887: 962, pl. 92, fig. 8
N - Lineage II (E) ? CEPHALOSPYRIDIDAE GENUS ***Calpocapsa*** Haeckel, 1887: 1190 SUBGENUS ***Halicapsa* (*Calpocapsa*)** **Remarks**: No type species was designated. Campbell (1954: D122) considers *CALPOCAPSA* to be the nominate subgenus of *HALICAPSA* Haeckel, 1882. However, this seems inappropriate since the type species of *HALICAPSA*, *Halicapsa pulex* Rüst, 1885, was not among those species originally assigned to *CALPOCAPSA*. **Original series**: *Halicapsa lithapium* Haeckel, 1887; **Halicapsa prunoides* Haeckel, 1887 and *Halicapsa triglochin* Haeckel, 1887. FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN) STATUS NOMEN DUBIUM designated herein; name-bearing type incomplete	**N.D.** Type *UNIQUE*  50 µm *Halicapsa lithapium* Haeckel, 1887: 1190, pl. 97, fig. 6	Support NO IMAGE PUBLISHED no image available
N - Lineage II (E) ? CEPHALOSPYRIDIDAE GENUS ***Semantidium*** Haeckel, 1887: 960 **Remarks**: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus. **Original series**: *Semantidium hexastoma* Haeckel, 1887; **Semantidium sexangulum* Haeckel, 1887; *Semantidium signatorium* Haeckel, 1887 and *Stephanolithis haeckeli* Bütschli, 1882b. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106) STATUS NOMEN DUBIUM designated herein; name-bearing type juvenile	**N.D.** Type *UNIQUE*  50 µm *Semantidium hexastoma* Haeckel, 1887: 960, pl. 92, fig. 6	Support  50 µm *Giraffospyris haeckeli* (Bütschli) Goll 1969: 334, pl. 57, figs 5-8

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Semantiscus***
Haeckel, 1887: 966

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

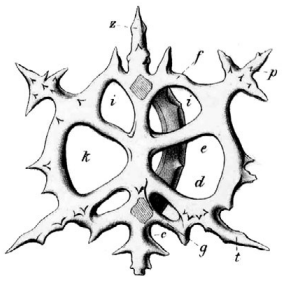
Original series: *Semantiscus hexapodius* Haeckel, 1887; *Semantiscus hexapylus* Haeckel, 1887 and *Semantiscus hexaspyris* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

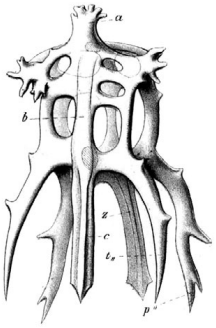
Type



50 µm

Semantiscus hexapylus
Haeckel, 1887: 967, pl. 92, fig. 17

Support



50 µm

Semantiscus hexaspyris
Haeckel, 1887: 966, pl. 92, fig. 18

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Spyridobotrys***
Haeckel, 1862: 341

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

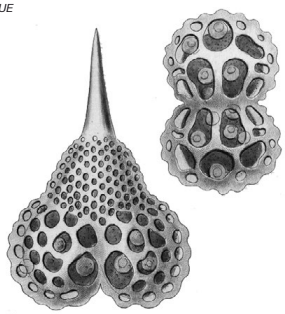
Original series: *Spyridobotrys trinacria* Haeckel, 1862.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type juvenile

N.D.
UNIQUE

Type



~ 25 µm

Spyridobotrys trinacria
Haeckel, 1862: 341, pl. 12, figs 8, 9

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Polyspyris***
Haeckel, 1882: 443

Remarks: See comments under *PYLOSPYRIS*. The support image is selected among those species originally included in this genus.

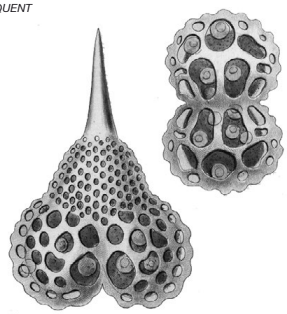
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***SPYRIDOBOTRYS***

SYN. (obj.); N.D.
FREQUENT

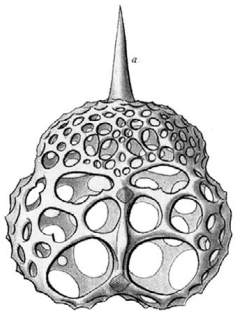
Type



~ 25 µm

Spyridobotrys trinacria
Haeckel, 1862: 341, pl. 12, figs 8, 9

Support



50 µm

Pylospyris canariensis
Haeckel, 1887: 1084, pl. 95, fig. 16

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Pylospyris*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1083

Remarks: An incorrect subsequent spelling for *POLYSPYRIS*. By referring back to p. 443 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *PYLOSPYRIS* to be an emendation of the name *POLYSPYRIS*, which is unjustified according to the provisions of ICZN art. 33.3.

Original series: *Lithobotrys*? *denticulata* Ehrenberg, 1844b; *Pylospyris canariensis* Haeckel, 1887 and *Spyridobotrys trinacria* Haeckel, 1862.

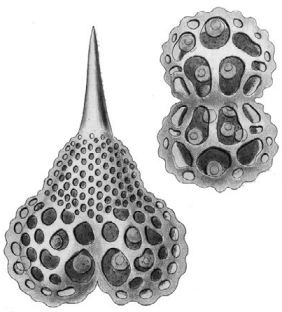
FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D116)

STATUS INVALID NAME
designated herein

SEE ***POLYSPYRIS***

INV.

Type



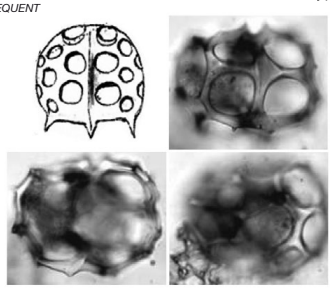
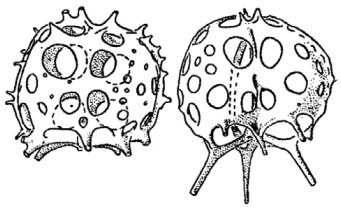
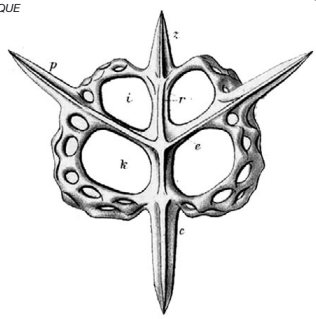
~ 25 µm

Spyridobotrys trinacria
Haeckel, 1862: 341, pl. 12, figs 8, 9

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE GENUS ***Stephanophatna*** Haeckel, 1882: 429 **Remarks**: See comments under *STEPHANOPHAENA*. Genus described as monospecific at the time of the generic definition and never figured. FIXATION SUBSEQUENT MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Archiphaena stephanoma* Haeckel, 1887: 1178, unfigured	Support NO IMAGE PUBLISHED no image available
N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE GENUS ***Stephanophaena*** INCORRECT SUBSEQUENT SPELLING Haeckel, 1887: 1178 SUBGENUS ***Archiphaena* (*Stephanophaena*)** **Remarks**: An incorrect subsequent spelling for *STEPHANOPHATNA*. By referring back to p. 429 in his *Prodromus* of 1882, Haeckel apparently means *STEPHANOPHAENA* to be an emendation to the name *STEPHANOPHATNA* which is unjustified according to the provisions of ICZN art. 33.3. Monospecific genus. **Original series**: *Archiphaena stephanoma* Haeckel, 1887. FIXATION SUBSEQUENT MONOTYPY; ICZN, ART. 67.6 STATUS INVALID NAME designated herein SEE ***STEPHANOPHATNA***	**INV.** Type UNFIGURED SPECIES *Archiphaena stephanoma* Haeckel, 1887: 1178, unfigured	Support NO IMAGE PUBLISHED no image available
N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE GENUS ***Stephanospyris*** Haeckel, 1862: 295 SUBGENUS ***Petalospyris* (*Stephanospyris*)** **Remarks**: No type species was designated. Only two species originally included at the time of the generic definition. Campbell (1954: D112) incorrectly designated as type species *Stephanospyris cordata* Haeckel, 1887. **Original series**: *Dictyospyris clathrus* Ehrenberg, 1854c and *Haliomma*? *radicatum* Ehrenberg, 1844a. FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN) STATUS NOMEN DUBIUM designated herein; name-bearing type not diagnostic	**N.D.** Type *FREQUENT*  50 µm *Dictyospyris clathrus* Ehrenberg, 1854c: pl. 36, fig. 25 [Ogane *et al.* 2009b: pl. 38, figs 5a-c (lectotype herein); description in Ehrenberg 1858: 551]	Support  50 µm *Ceratospyris clathrata* (Ehrenberg) Petrushevskaya 1971a: 245, pl. 127, figs 8, 9
N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE GENUS ***Tetraspyris*** Haeckel, 1882: 442 NOMINOTYPE ***Tetraspyris* (*Tetraspyris*)** **Remarks**: See comments under *TETRARHABDA*. Campbell (1954: D112) considers *TETRASPYRIS* Haeckel, 1882 to be an objective synonym of *TETRARHABDA* Haeckel, 1882. He designates *Tetraspyris stephanium* Haeckel, 1887: 1044 as the type species of *TETRARHABDA* and only by inference. FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 179) STATUS NOMEN DUBIUM designated herein; name-bearing type not diagnostic	**N.D.** Type *UNIQUE*  50 µm *Tetraspyris stephanium* Haeckel, 1887: 1044, pl. 95, fig. 6	Support NO IMAGE PUBLISHED no image available

N - LINEAGE II (E) ? CEPHALOSPYRIDIDAE

GENUS ***Tetrarhabda***
Haeckel, 1882: 429

SUBGENUS ***Tetraspyris (Tetrarhabda)***

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Tetraspyris cubica* Haeckel, 1887 and *Tetraspyris stephanium* Haeckel, 1887.

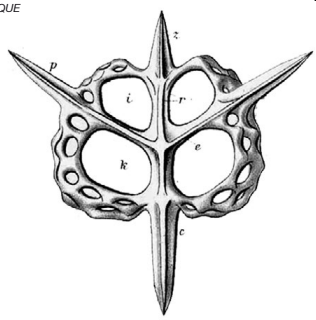
FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 179)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***TETRASPYRIS***

SYN. (obj.); N.D.
UNIQUE

Type



Tetraspyris stephanium
Haeckel, 1887: 1044, pl. 95, fig. 6

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) PARADICTYIDAE

ASSIGNED IN Petrushevskaya 1971a: 260

GENUS ***Amphispyris***
Haeckel, 1882: 443

NOMINOTYPE ***Amphispyris (Amphispyris)***

Diagnosis: Paradictyidae with nearly rectangular shell with a thick sagittal ring more or less square shaped. Main apophyses of the sagittal ring forming strong and thick lateral bars defining four lateral and four basal gates joined at their ends by a fine meshwork of irregular pores. A well-developed galea but no apical horn nor basal feet.

Remarks: See comments under *AMPHISPYRIUM*. The type species is a junior subjective synonym of *Dictyospyris reticulata* Ehrenberg, 1873b: 288-289, pl. 10, fig. 19.

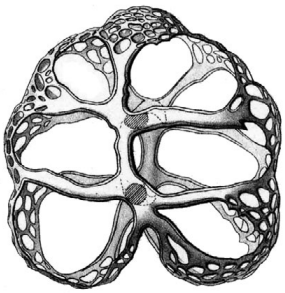
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS **VALID**

AGE ***EARLY EARLY MIOCENE–LIVING***

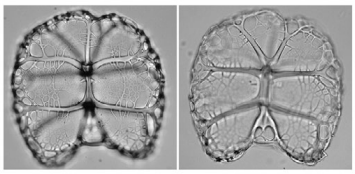
VALID
RARE

Type



Amphispyris thorax
Haeckel, 1887: 1096, pl. 88, fig. 4

Support



Amphispyris thorax Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (E) PARADICTYIDAE

GENUS ***Amphispyrium***
Haeckel, 1887: 1095

SUBGENUS ***Amphispyris (Amphispyrium)***

Remarks: Type species rarely reported. The support image is one of those species originally included into this genus.

Original series: *Amphispyris quadrigemina* Haeckel, 1887; *Amphispyris thorax* Haeckel, 1887 and *Dictyospyris reticulata* Ehrenberg, 1873a.

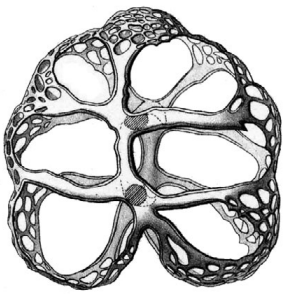
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***AMPHISPYRIS***

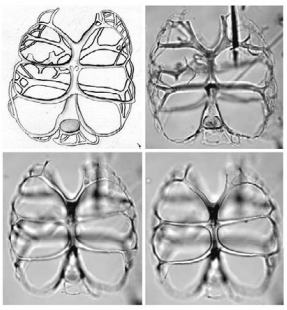
SYN. (obj.)
RARE

Type



Amphispyris thorax
Haeckel, 1887: 1096, pl. 88, fig. 4

Type



Dictyospyris reticulata Ehrenberg
Suzuki *et al.* 2009a: pl. 71, figs 4a-d [lectotype herein]

N - LINEAGE II (E) PARADICTYIDAE

GENUS ***Amphispyridium***
Haeckel, 1887: 1096

SUBGENUS ***Amphispyris (Amphispyridium)***

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Amphispyris costata* Haeckel, 1887; *Amphispyris sternalis* Haeckel, 1887; *Amphispyris subquadrata* Haeckel, 1887 and *Amphispyris toxarium* Haeckel, 1887.

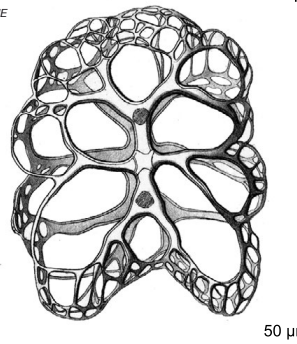
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 368

SEE ***AMPHISPYRIS***

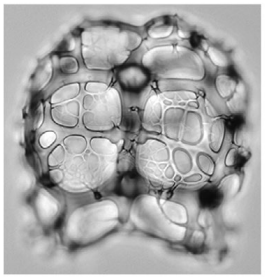
SYN.
UNIQUE

Type



Amphispyris sternalis
Haeckel, 1887: 1096, pl. 88, fig. 2

Support



Amphispyris sternalis Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (E) PARADICTYIDAE

GENUS ***Microcubus***
Haeckel, 1882: 446

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

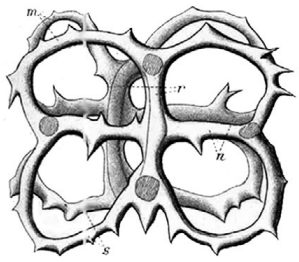
Original series: *Microcubus amphispyris* Haeckel, 1887; **Microcubus cornutus* Haeckel, 1887; *Microcubus dodecastoma* Haeckel, 1887; **Microcubus pentacircus* Haeckel, 1887; **Microcubus quadrupes* Haeckel, 1887 and *Microcubus zonarius* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***AMPHISPYRIS***

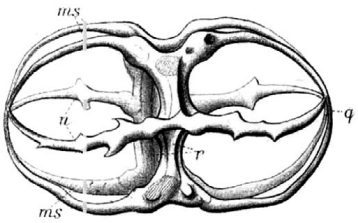
SYN. UNIQUE — Type



50 µm

Microcubus dodecastoma
Haeckel, 1887: 998, pl. 94, fig. 9

Support



50 µm

Microcubus zonarius
Haeckel, 1887: 998, pl. 94, fig. 8

N - LINEAGE II (E) PARADICTYIDAE

GENUS ***Toxarium***
Haeckel, 1887: 995

NOMINOTYPE ***Toxarium* (*Toxarium*)**

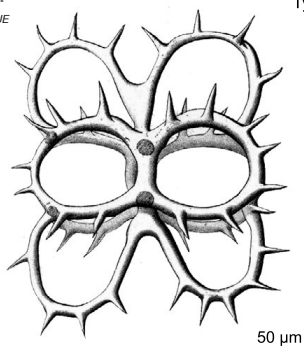
Remarks: See comments under *TOXELLIUM*. The type species is a junior subjective synonym of *Dictyospyris reticulata* Ehrenberg, 1873b: 288-289, pl. 10, fig. 19.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***AMPHISPYRIS***

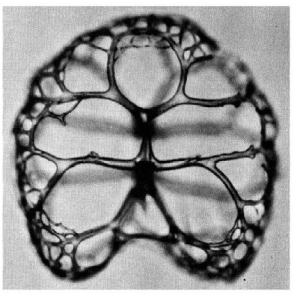
SYN. UNIQUE — Type



50 µm

Toxarium circospyris
Haeckel, 1887: 995, pl. 88, fig. 1

Support



25 µm

Amphispyris reticulata Haeckel
Nigrini 1967: 44, pl. 5, fig. 3 [topotypic material]

N - LINEAGE II (E) PARADICTYIDAE

GENUS ***Toxellium***
Haeckel, 1887: 995

SUBGENUS ***Toxarium* (*Toxellium*)**

Remarks: Type species only illustrated by Haeckel (1887).

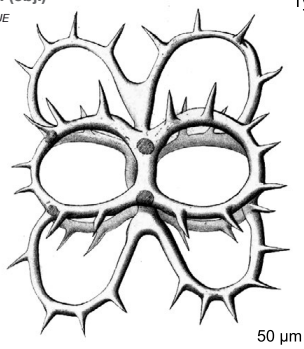
Original series: *Toxarium circospyris* Haeckel, 1887; **Toxarium constrictum* Haeckel, 1887; **Toxarium subcirculare* Haeckel, 1887 and *Toxarium thorax* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TOXARIUM***

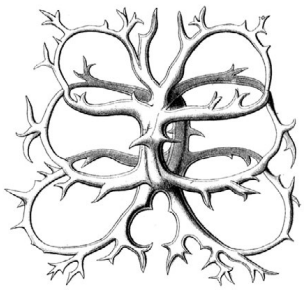
SYN. (obj.) UNIQUE — Type



50 µm

Toxarium circospyris
Haeckel, 1887: 995, pl. 88, fig. 1

Support



50 µm

Toxarium thorax
Haeckel, 1887: 996, pl. 93, fig. 18

N - LINEAGE II (E) PARADICTYIDAE

GENUS ***Toxonium***
Haeckel, 1887: 997

SUBGENUS ***Toxarium* (*Toxonium*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition. The type species can be regarded as a junior subjective synonym of *Dictyospyris reticulata* Ehrenberg, 1873b: 288-289, pl. 10, fig. 19.

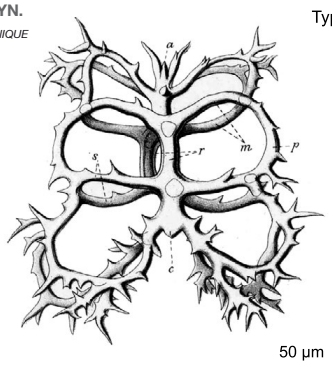
Original series: *Toxarium bifurcum* Haeckel, 1887 and **Toxarium costatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D109)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***AMPHISPYRIS***

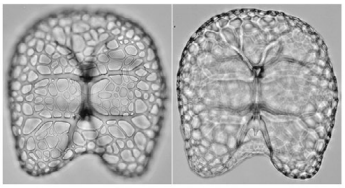
SYN. UNIQUE — Type



50 µm

Toxarium bifurcum
Haeckel, 1887: 997, pl. 93, fig. 20

Support



100 µm

Toxarium bifurcum Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (E) PARADICTYIDAE

GENUS **Toxidium**
Haeckel, 1887: 996

SUBGENUS ***Toxarium* (*Toxidium*)**

Remarks: Homonym of *TOXIDIUM* Le Conte, 1860: 324 (Arthropoda); see *TOXIDIELLA nomen novum*.

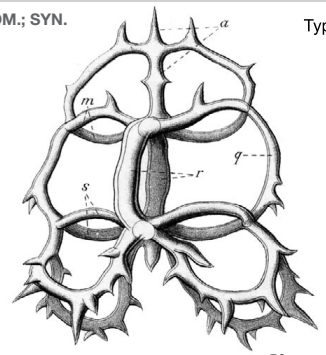
Original series: *Toxarium cordatum* Haeckel, 1887; *Toxarium furcatum* Haeckel, 1887 and *Toxarium pedatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D109)

STATUS HOMONYM, JUNIOR SYNONYM
synonymized herein

SEE ***TOXIDIELLA NOMEN NOVUM***

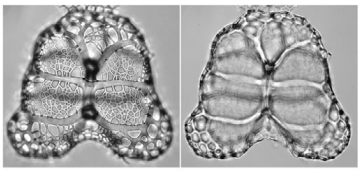
HOM.; SYN. Type



50 µm

Toxarium cordatum
Haeckel, 1887: 996, pl. 93, fig. 19

Support



100 µm

Toxarium cordatum Haeckel
Zhang's collection (South China Sea)

N - LINEAGE II (E) PARADICTYIDAE

GENUS **Toxidiella** *NOMEN NOVUM* PRO *TOXIDIUM*
Loeblich & Tappan, 1961: 228

SUBGENUS ***Toxarium* (*Toxidiella*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

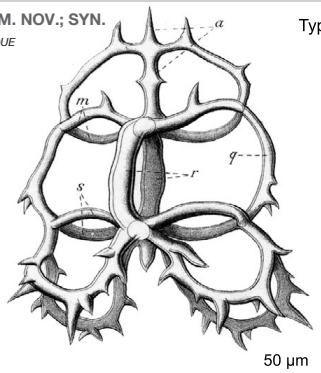
Original series: *Toxarium cordatum* Haeckel, 1887; **Toxarium furcatum* Haeckel, 1887 and **Toxarium pedatum* Haeckel, 1887.

FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1954: D109)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***AMPHISPYRIS***

NOM. NOV.; SYN. Type
UNIQUE



50 µm

Toxarium cordatum
Haeckel, 1887: 996, pl. 93, fig. 19

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE II (E) PARADICTYIDAE

GENUS **Tricyclidium**
Haeckel, 1882: 446

Remarks: Illustration available only for the type species (figured just once after the first illustration). Only two species originally included at the time of the generic definition.

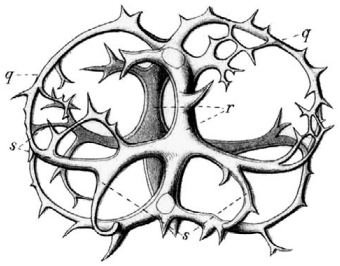
Original series: *Tricyclidium dictyospyris* Haeckel, 1887 and **Tricyclidium semantrum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***AMPHISPYRIS***

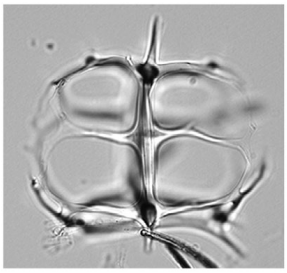
SYN.? Type
VERY RARE



50 µm

Tricyclidium dictyospyris
Haeckel, 1887: 984, pl. 93, fig. 13

Support



50 µm

Tricyclidium dictyospyris Haeckel
Suzuki's collection (plankton, off Sesoko Island, Japan)

N - LINEAGE II (E) ? PARADICTYIDAE

GENUS **Protympanium**
Haeckel, 1882: 446

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Protympanium amphipodium* Haeckel, 1887; **Protympanium primordiale* Haeckel, 1887 and **Protympanium trissocircus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

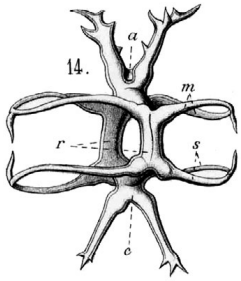
SEE **? *AMPHISPYRIS***

N.D. Type

UNFIGURED SPECIES

Protympanium primordiale
Haeckel, 1887: 991, unfigured

Support



50 µm

Protympanium amphipodium
Haeckel, 1887: 992, pl. 93, fig. 14

N - Lineage II (E) PARADICTYIDAE

assigned in Haeckel 1887: 1099

genus **Nephrodictyum**
Haeckel, 1882: 444

Diagnosis: Paradictyidae with a discoidal shell constituted by two lattice-plates parallel and linked by the sagittal ring. Plates with relatively thin and narrow flat frames around irregular pores. Sagittal ring with well differentiated apophyses: frontal l and m, g at the distal end of spine A, c at the distal end of spine D, and the posterior q and j. Spines L thin, not participating to the construction of the plates, developed inside the shell.

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Nephrospyris cordata* Haeckel, 1887; **Nephrospyris nephridium* Haeckel, 1887; **Nephrospyris phaseolus* Haeckel, 1887 and *Nephrospyris renilla* Haeckel, 1887.

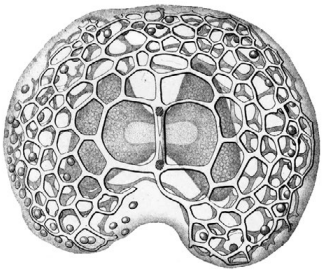
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D106)

status **VALID**

age **Early Pliocene–Living**

VALID
FREQUENT

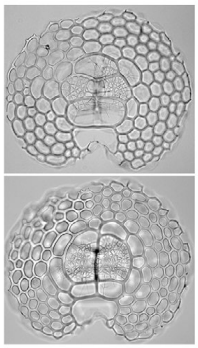
Type



100 µm

Nephrospyris renilla
Haeckel, 1887: 1101, pl. 90, fig. 9

Support



100 µm

Nephrospyris renilla Haeckel
Zhang's collection (South China Sea)

N - Lineage II (E) PARADICTYIDAE

genus **Nephrospyris**
Haeckel, 1887: 1100

Remarks: Illustration available only for the type species (frequently reported). The support image is one of the subsequently included subspecies.

Original series: **Nephrospyris cordata* Haeckel, 1887; **Nephrospyris nephridium* Haeckel, 1887; *Nephrospyris paradictyum* Haeckel, 1887; **Nephrospyris paradoxa* Haeckel, 1887; **Nephrospyris phaseolus* Haeckel, 1887 and *Nephrospyris renilla* Haeckel, 1887.

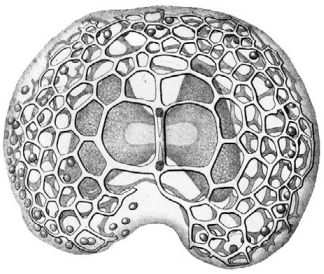
fixation SUBSEQUENT DESIGNATION (Goll & Bjørklund 1985: 115)

status JUNIOR OBJECTIVE SYNONYM
synonymized by Campbell 1954: D116

see **NEPHRODICTYUM**

SYN. (obj.)
FREQUENT

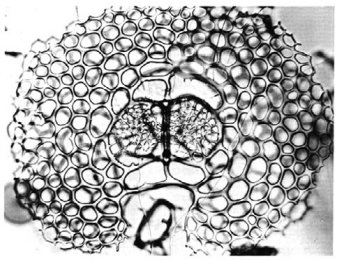
Type



100 µm

Nephrospyris renilla
Haeckel, 1887: 1101, pl. 90, fig. 9

Support



100 µm

Nephrospyris renilla renilla Haeckel
Goll 1980: 437, pl. 5, fig. 2

N - Lineage II (E) PARADICTYIDAE

genus **Paradictyum**
Haeckel, 1882: 444

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: *Nephrospyris paradictyum* Haeckel, 1887 and **Nephrospyris paradoxa* Haeckel, 1887.

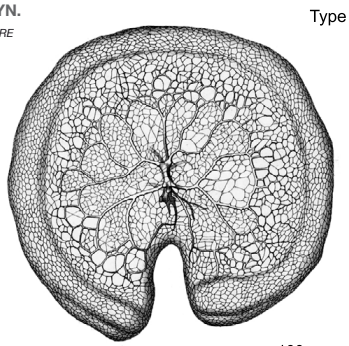
fixation ABSOLUTE TAUTONOMY

status JUNIOR SYNONYM
synonymized by Goll & Bjørklund 1985: 115

see **NEPHRODICTYUM**

SYN.
RARE

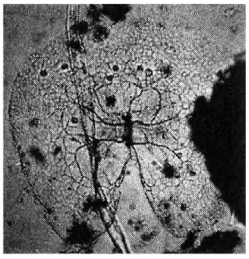
Type



100 µm

Nephrospyris paradictyum
Haeckel, 1887: 1102, pl. 90, fig. 1

Support



100 µm

Nephrospyris paradictyum Haeckel
Renz 1976: 175, pl. 8, fig. 16

N - Lineage II (E) PARADICTYIDAE

assigned in Petrushevskaya 1981: 354

genus **Psychospyris**
Riedel & Sanfilippo, 1971: 1591

Diagnosis: Paradictyidae with a shell constituted by two lattice-plates linked by the edges of their bars; these last ones form a radially striated spongious ring, surrounding the entire cephalic cavity. Shell wall spongious or with rare pores; some of the sagittal ring may not be differentiated. Two prominent bars q arise from the top of the D-shaped sagittal ring and obliquely extend upward to the spongy zone at the top of the shell.

Remarks: Type species only illustrated by Riedel & Sanfilippo (1971); the support image is one of those species originally included into this genus.

Original series: *Psychospyris grandis* Riedel & Sanfilippo, 1971; *Psychospyris intermedia* Riedel & Sanfilippo, 1971 and *Psychospyris parva* Riedel & Sanfilippo, 1971.

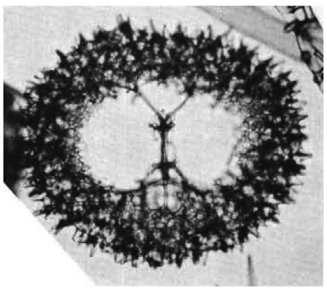
fixation ORIGINAL DESIGNATION

status **VALID**

age **Late Oligocene–late Early Miocene**

VALID
UNIQUE

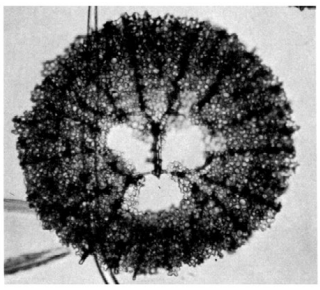
Type



50 µm

Psychospyris intermedia
Riedel & Sanfilippo, 1971: 1591, pl. 5, fig. 11

Support



50 µm

Psychospyris parva
Riedel & Sanfilippo, 1971: 1591, pl. 5, fig. 10

N - LINEAGE II (E) PARADICTYIDAE
ASSIGNED HEREIN

GENUS ***Sphaerospyris***
Haeckel, 1887: 1099

Diagnosis: Paradictyidae with a sagittal ring almost entirely included within a globular shell. Shell wall complete, relatively thick, with rather small circular pores irregularly distributed. Only MB and two pairs of the basal arches IL and Lj protrude externally on the surface of the shell. The D, l, L, a, m and f apophyses originating from the sagittal ring are irregularly ramified and linked inside the shell wall. No feet nor galea.

Remarks: Type species rarely reported.

Original series: *Dictyospyris sphaera* Bütschli, 1882b; *Sphaerospyris globosa* Haeckel, 1887 and **Sphaerospyris quadriforis* Haeckel, 1887.

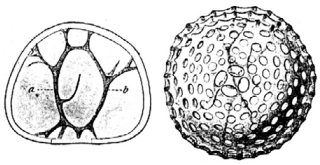
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D116)

STATUS **VALID**

AGE ***LATE PALEOCENE–EARLY MIDDLE EOCENE***

VALID
RARE

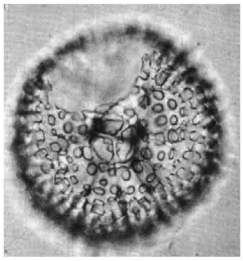
Type



50 µm

Dictyospyris sphaera
Bütschli, 1882b: 511, pl. 32, figs 15a, b

Support



50 µm

Dictyospyris sphaera Bütschli
Sanfilippo & Riedel 1973: 528, pl. 32, fig. 17

N - LINEAGE II (E) STEPHANIIDAE
ASSIGNED IN Petrushevskaya 1981: 372

GENUS ***Zygocircus***
Bütschli, 1882b: 496

Diagnosis: Stephaniidae with a shell composed by one sagittal ring with MB and curved A and V spines. 2L and l spines may be rudimentary. Except MB, all spines are three-sided and bearing lateral apophyses developed, or reduced to thorns.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. The first description of *LITHOCIRCUS* is very poor (Müller 1856) and the following descriptions by different authors are also not so similar. We think that the shape of the ring is different in *ZYGOCIRCUS* and *LITHOCIRCUS*. As Petrushevskaya (1971a) writes: the genus *ZYGOCIRCUS* differs from species of the genus *LITHOCIRCUS* (as *L. annulatus* and *L. primordialis*) by the shape of the ring and the presence of (although rudimentary) L spines.

Original series: *Lithocircus productus* Hertwig, 1879.

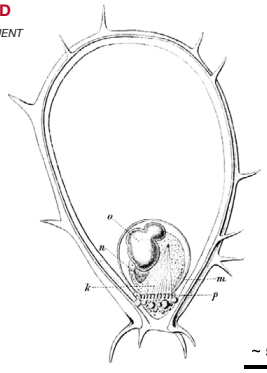
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY MIDDLE EOCENE–LIVING***

VALID
FREQUENT

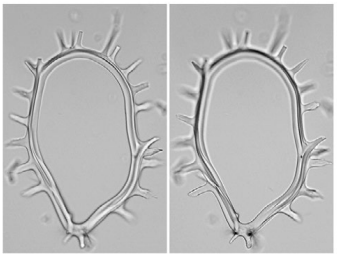
Type



~ 50 µm

Lithocircus productus
Hertwig, 1879: 197, pl. 7, fig. 4

Support



50 µm

Lithocircus productus Hertwig
Zhang's collection (South China Sea)

N - LINEAGE II (E) STEPHANIIDAE

GENUS ***Cortina***
Haeckel, 1887: 950

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Cortina cervina* Haeckel, 1887; **Cortina conifera* Haeckel, 1887; **Cortina dendroides* Haeckel, 1887; **Cortina furcata* Haeckel, 1887; *Cortina tripus* Haeckel, 1887 and *Cortina typus* Haeckel, 1887.

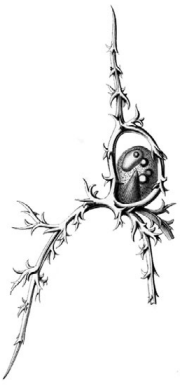
FIXATION ORIGINAL DESIGNATION; ICZN, ART. 68.2.2

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ZYGOCIRCUS***

SYN.
UNIQUE

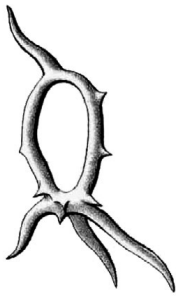
Type



100 µm

Cortina typus
Haeckel, 1887: 951, pl. 97, fig. 1

Support



50 µm

Cortina tripus
Haeckel, 1887: 950, pl. 83, fig. 9

N - LINEAGE II (E) STEPHANIIDAE

GENUS ***Plagiocarpa***
Haeckel, 1882: 424

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: *Plagiocarpa procortina* Haeckel, 1887 and **Plagiocarpa procyrtella* Haeckel, 1887.

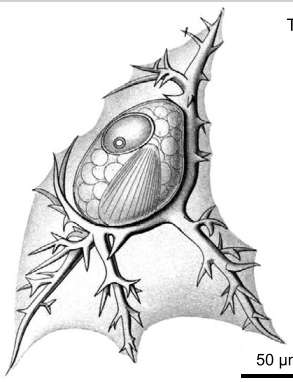
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS JUNIOR SYNONYM
synonymized herein; name-bearing type juvenile

SEE ***ZYGOCIRCUS***

SYN.
RARE

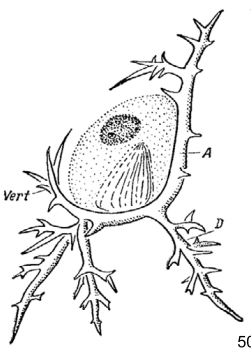
Type



50 µm

Plagiocarpa procortina
Haeckel, 1887: 914, pl. 91, fig. 5

Support



50 µm

Plagiocarpa procortina Haeckel
Petrushevskaya 1971a: 22, pl. 14, fig. 3

N - LINEAGE II (E) STEPHANIIDAE

GENUS ***Stephanium***
Haeckel, 1887: 952

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: *Stephanium quadrupes* Haeckel, 1887 and **Stephanium tetrapus* Haeckel, 1887.

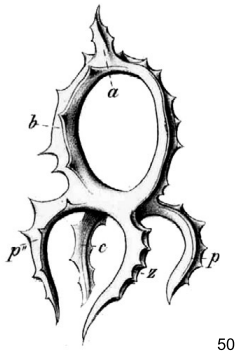
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ZYGOCIRCUS***

SYN.
UNIQUE

Type



Stephanium quadrupes
Haeckel, 1887: 952, pl. 92, fig. 20

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (EX) ARCHIPILIIDAE
ASSIGNED IN Haeckel 1882: 427

GENUS ***Archipilium***
Haeckel, 1882: 427

Diagnosis: Archipiliidae with a small bi-segmented shell. Small globular cephalis with a short A horn. Short hemispherical or tubular thorax as a lamellar rim with circular openings and three divergent hollow feet, open at the apex and forming a pyramid.

Remarks: Illustration available only for the type species (rarely reported).

Original series: **Archipilium cyrtopterum* Haeckel, 1887; *Archipilium orthopterum* Haeckel, 1887 and **Archipilium sigmopterum* Haeckel, 1887.

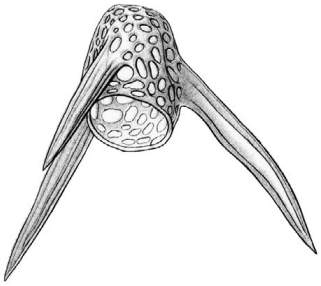
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D117)

STATUS **VALID**

AGE ***LATE OLIGOCENE–LIVING***

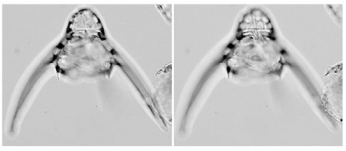
VALID
RARE

Type



Archipilium orthopterum
Haeckel, 1887: 1139, pl. 98, fig. 7

Support



Archipilium orthopterum Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (EX) ARCHIPILIIDAE

GENUS ***Nothotripodiscinus***
Deflandre, 1972: 231

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

Original series: *Nothotripodiscinus johannismonicae* Deflandre, 1972.

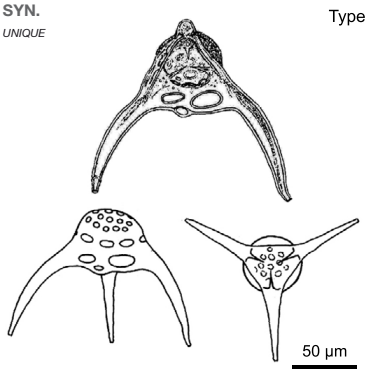
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 584

SEE ***ARCHIPILIUM***

SYN.
UNIQUE

Type



Nothotripodiscinus johannismonicae
Deflandre, 1972: 229, pl. 1, figs 1-3 [lectotype herein]

Support



Archipilium eburneforme Chen & Tan
Chen & Tan 1996: 207, pl. 27, figs 2, 3

N - LINEAGE III (EX) ? ARCHIPILIIDAE

GENUS ***Trissopilium***
Haeckel, 1882: 427

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Trissopilium lithomelissa* Haeckel, 1887 and **Trissopilium tetraplecta* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Trissopilium tetraplecta
Haeckel, 1887: 1139, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (EX) THEOPHORMIDIDAE

ASSIGNED IN Petrushevskaya 1981: 128

GENUS ***Enneaphormis***
Haeckel, 1882: 432

SUBGENUS ***Sethophormis* (*Enneaphormis*)**

Diagnosis: Theophormididae with a large umbrella-shaped bi-segmented shell. Thin-walled cephalis with vertical arches (ac and ap ?) and lower aches cd and dd forming an horizontal ring. No V spine. Thorax with radial and transversal bars like a cobweb meshwork.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: **Sethophormis arachnium* Haeckel, 1887; **Sethophormis enneactis* Haeckel, 1887; **Sethophormis enneastrum* Haeckel, 1887; *Sethophormis eupilium* Haeckel, 1887; *Sethophormis rotula* Haeckel, 1887 and **Sethophormis triloba* Haeckel, 1887.

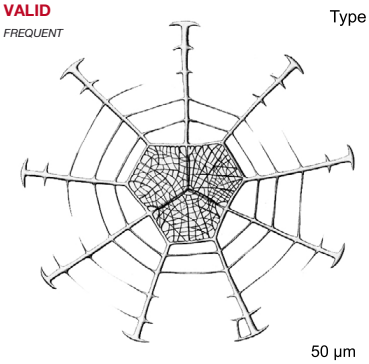
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS **VALID**

AGE ***EARLY EARLY MIOCENE–LIVING***

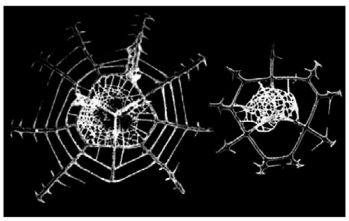
VALID
FREQUENT

Type



Sethophormis rotula
Haeckel, 1887: 1246, pl. 57, fig. 9

Support



Enneaphormis rotula (Haeckel)
Nishimura & Yamauchi 1984: 50, pl. 26, figs 8, 9

N - LINEAGE III (EX) THEOPHORMIDIDAE

ASSIGNED IN Haeckel 1887: 1366

GENUS ***Theophormis***
Haeckel, 1882: 436

Diagnosis: Theophormididae with a flattened cephalis and a campanulate thorax with a wide border. A as a columella before extended as a small apical horn. V, D and 2L in MB plane before extended as appendages in thoracic wall with small similar pores. Thorax border as a flat corona.

Remarks: Illustration available only for the type species (frequently reported).

Original series: *Theophormis callipilium* Haeckel, 1887; **Theophormis cruciata* Haeckel, 1887; **Theophormis medusa* Haeckel, 1887 and **Theophormis senaria* Haeckel, 1887.

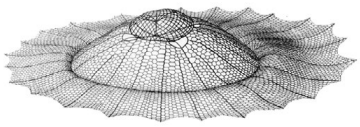
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS **VALID**

AGE ***LIVING***

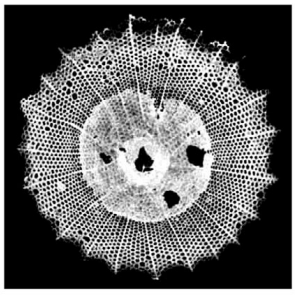
VALID
FREQUENT

Type



Theophormis callipilium
Haeckel, 1887: 1367, pl. 70, fig. 1

Support



Theophormis callipilium Haeckel
Nishimura & Yamauchi 1984: 54, pl. 26, fig. 5

N - LINEAGE III (EX) THEOPHORMIDIDAE

GENUS ***Astrophormis***
Haeckel, 1887: 1248

SUBGENUS ***Sethophormis* (*Astrophormis*)**

Remarks: Type species frequently reported.

Original series: *Sethophormis aurelia* Haeckel, 1887; *Sethophormis dodecaster* Haeckel, 1887; **Sethophormis floscula* Haeckel, 1887; **Sethophormis leptopilium* Haeckel, 1887; **Sethophormis leptoscenium* Haeckel, 1887 and *Sethophormis umbrella* Haeckel, 1887.

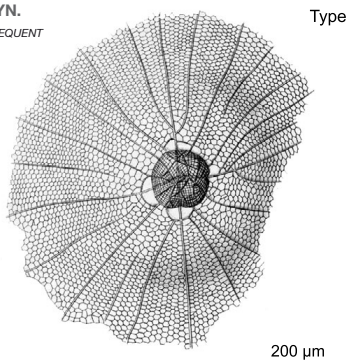
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***THEOPHORMIS***

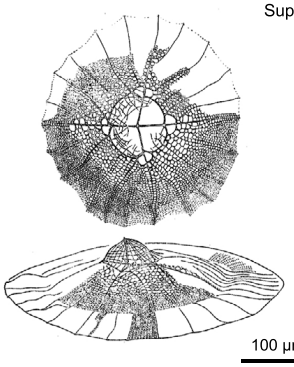
SYN.
FREQUENT

Type



Sethophormis aurelia
Haeckel, 1887: 1248, pl. 55, fig. 3

Support



Sethophormis aurelia (Haeckel)
Petrushevskaya 1971a: 66, pl. 30, figs 1, 2

N - LINEAGE III (EX) ? THEOPHORMIDIDAE

GENUS ***Leptarachnium*** PREMATURE NAME
Haeckel, 1887: figure description for pl. 55, fig. 3

Remarks: A premature name (vel *Leptarachnium aurelia*) used by Haeckel as alternative of the name *Sethophormis* (*Astrophormis*) *aurelia*.

Original series: *Leptarachnium aurelia* Haeckel, 1887.

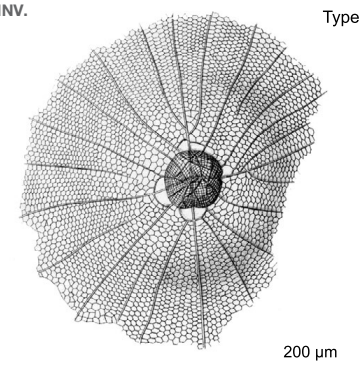
FIXATION MONOTYPY; ICZN, ART. 67.6

STATUS INVALID NAME
designated herein

SEE ***ASTROPHORMIS***

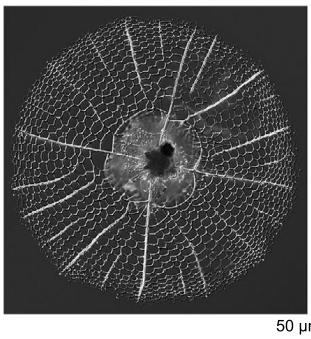
INV.

Type

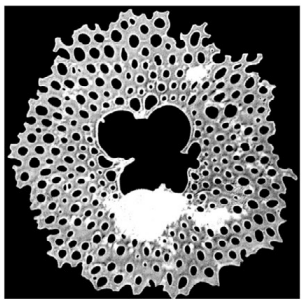
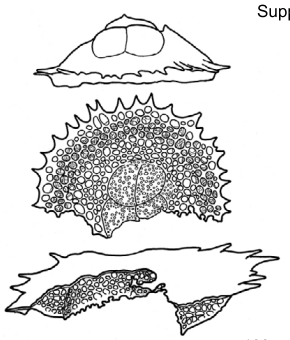


Leptarachnium aurelia
Haeckel, 1887: 1248, pl. 55, fig. 3

Support



Sethophormis aurelia (Haeckel)
photo by Flickr Tintinnidguy (South Pacific Ocean):

N - Lineage III (EX) ? THEOPHORMIDIDAE GENUS ***Octophormis*** Haeckel, 1887: 1245 SUBGENUS ***Sethophormis* (*Octophormis*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Sethophormis octalactis* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Sethophormis octalactis* Haeckel, 1887: 1245, unfigured	Support NO IMAGE PUBLISHED no image available
N - Lineage III (EX) ? THEOPHORMIDIDAE GENUS ***Sethophormis*** Haeckel, 1887: 1243 NOMINOTYPE ***Sethophormis* (*Sethophormis*)** **Remarks**: See comments under *TETRAPHORMIS*. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Sethophormis cruciata* Haeckel, 1887: 1243, unfigured	Support NO IMAGE PUBLISHED no image available
N - Lineage III (EX) ? THEOPHORMIDIDAE GENUS ***Tetraphormis*** Haeckel, 1882: 432 SUBGENUS ***Sethophormis* (*Tetraphormis*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Sethophormis cruciata* Haeckel, 1887 and **Sethophormis medusa* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124) STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***SETHOPHORMIS***	**SYN. (obj.); N.D.** Type UNFIGURED SPECIES *Sethophormis cruciata* Haeckel, 1887: 1243, unfigured	Support NO IMAGE PUBLISHED no image available
N - Lineage III (EX) THEOPHORMIDIDAE ASSIGNED IN Petrushevskaya 1981: 130 GENUS ***Velicucullus*** Riedel & Campbell, 1952: 669 **Diagnosis**: Theophormididae with a multilobate cephalis and a four to nine times larger thorax. The A, D, L and V spines do not extend as ribs on the shell walls, or as external thorns and horns. A small Ax may be present. Thorax may be constricted at the insertion level of the porous plate (velum). **Remarks**: Genus described as monospecific at the time of the generic definition; rarely reported. Probably a broken part of a large siliceous microfossil. **Original series**: *Soreuma* (*Soreumium*?) *magnificum* Clark & Campbell, 1942. FIXATION MONOTYPY STATUS **VALID** AGE ***Middle Paleocene–late Early Miocene***	**VALID** Type *RARE*  50 µm *Soreuma* (*Soreumium*?) *magnificum* Clark & Campbell, 1942: 51, pl. 4, fig. 15	Support  100 µm *Velicucullus magnificus* (Clark & Campbell) Riedel & Campbell 1952: 669, figs 1-3

N - LINEAGE III (F) ANTHOCYRTIDIDAE

ASSIGNED IN Haeckel 1887: 1241

GENUS ***Anthocyrtis***
Ehrenberg, 1846: 385

NOMINOTYPE ***Anthocyrtis* (*Anthocyrtis*)**

Diagnosis: Anthocyrtididae with two to three, rarely four segmented shells. Small cephalis with a strong sided A horn. V as a small tube on collar area. D and 2L appendages rarely differentiated. Thorax and abdomen pores large and in checkerboard order. Peristome denticulate or porous.

Remarks: See comments under *ANTHOCYRTELLA*. Loeblich & Tappan (1961: 228) erroneously replaced *ANTHOCYRTIS* Ehrenberg, 1847 (table on p. 54) by *ANTHOCYRTELLA* Haeckel (1887: 1269) misunderstanding it was a fish published by Ehrenberg in 1846 (table on p. 385).

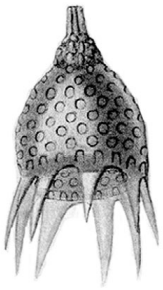
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE CONIACIAN–LATE OLIGOCENE***

VALID
FREQUENT

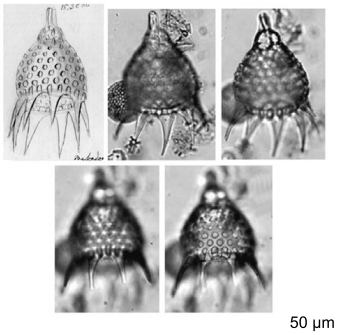
Type



100 µm

Anthocyrtis mespilus
Ehrenberg, 1847: 55, fig. 9

Type



50 µm

Anthocyrtis mespilus Ehrenberg
Ogane *et al.* 2009b: pl. 80, figs 5a-e [lectotype herein]

N - LINEAGE III (F) ANTHOCYRTIDIDAE

GENUS ***Anthocyrtella***
Haeckel, 1887: 1269

SUBGENUS ***Anthocyrtis* (*Anthocyrtella*)**

Remarks: Type species frequently reported. Incorrectly validated as a *nomen novum* by Loeblich & Tappan (1961: 288) because they though that *ANTHOCYRTIS* Ehrenberg, 1846 was a fish; actually it is a Polycystinea and corresponds to the first publication of this genus (see Ehrenberg, 1846, table on p. 385); inexplicably they attributed this genus to Pisces (Chordata). They erroneously considered the publication date as 1847, the second time that Ehrenberg mentioned this name in table p. 54

Original series: **Anthocyrtis butomus* Haeckel, 1887; *Anthocyrtis furcata* Ehrenberg, 1874b; *Anthocyrtis mespilus* Ehrenberg, 1847 and *Anthocyrtis ventricosa* Ehrenberg, 1874b.

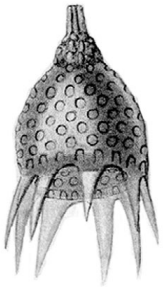
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D126)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ANTHOCYRTIS***

NOM. NOV.; SYN.
FREQUENT

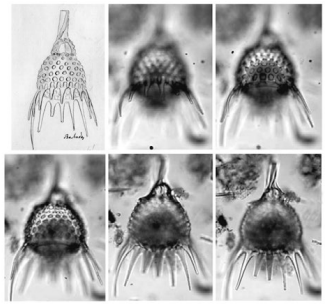
Type



100 µm

Anthocyrtis mespilus
Ehrenberg, 1847: 55, fig. 9

Support



100 µm

Anthocyrtis mespilus Ehrenberg
Ogane *et al.* 2009b: pl. 81, figs 1a-f [paralectotype herein]

N - LINEAGE III (F) ANTHOCYRTIDIDAE

GENUS ***Anthocyrtium***
Haeckel, 1887: 1272

NOMINOTYPE ***Anthocyrtium* (*Anthocyrtium*)**

Remarks: See comments under *ANTHOCYRTARIUM*. Actually, the illustrated species was included by Haeckel (1887: 1273) as *Anthocyrtis mespilus* var. *major* Ehrenberg, 1876 in the synonymy list of *Anthocyrtium centaurea* Haeckel, 1887. However, Ehrenberg (1876) never used or cited this variety in the cited paper.

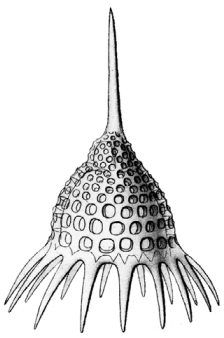
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D125)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ANTHOCYRTIS***

SYN.
UNIQUE

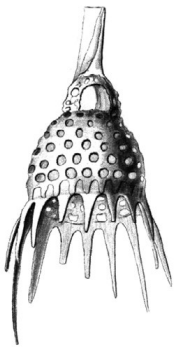
Type



50 µm

Anthocyrtium chrysanthemum
Haeckel, 1887: 1272, pl. 62, fig. 14

Support



100 µm

Anthocyrtis mespilus
Ehrenberg, 1876: 66, pl. 6, fig. 5

N - LINEAGE III (F) ANTHOCYRTIDIDAE

GENUS ***Anthocyrtarium***
Haeckel, 1887: 1272

SUBGENUS ***Anthocyrtium* (*Anthocyrtarium*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Anthocyrtis collaris* Ehrenberg, 1874b; *Anthocyrtium adonis* Haeckel, 1887; **Anthocyrtium anemone* Haeckel, 1887; **Anthocyrtium anthemis* Haeckel, 1887; **Anthocyrtium centaurea* Haeckel, 1887 and *Anthocyrtium chrysanthemum* Haeckel, 1887.

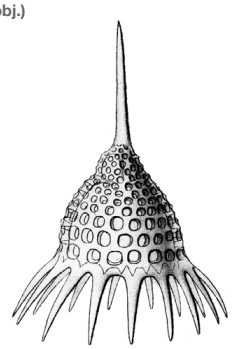
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D125)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ANTHOCYRTIUM***

SYN. (obj.)
UNIQUE

Type



50 µm

Anthocyrtium chrysanthemum
Haeckel, 1887: 1272, pl. 62, fig. 14

Support



100 µm

Anthocyrtium adonis
Haeckel, 1887: 1273, pl. 62, fig. 20

N - LINEAGE III (F) ANTHOCYRTIDIDAE

GENUS ***Clathrocyclas***
Haeckel, 1882: 434

NOMINOTYPE ***Clathrocyclas* (*Clathrocyclas*)**

Remarks: See comments under *CLATHROCYCLIA*. The support image corresponds to the senior synonym of *Clathrocyclas collaris* Haeckel, 1887.

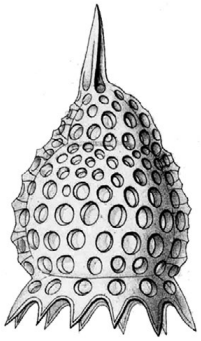
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ANTHOCYRTIS***

SYN.
RARE

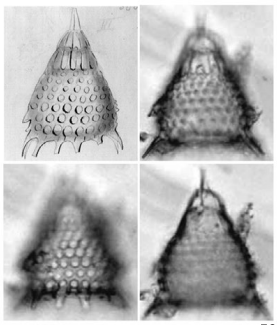
Type



50 µm

Clathrocyclas principessa
Haeckel, 1887: 1386, pl. 74, fig. 7

Type



50 µm

Anthocyrtis collaris Ehrenberg
Ogane *et al.* 2009b: pl. 50, figs 3a-d [lectotype herein]

N - LINEAGE III (F) ANTHOCYRTIDIDAE

GENUS ***Clathrocyclia***
Haeckel, 1887: 1386

SUBGENUS ***Clathrocyclas* (*Clathrocyclia*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Clathrocyclas basilea* Haeckel, 1887; *Clathrocyclas collaris* Haeckel, 1887; *Clathrocyclas principessa* Haeckel, 1887; *Halicalyptra fimbriata* Ehrenberg, 1854c; *Podocyrtis dominasinensis* Ehrenberg, 1874b and *Podocyrtis puellasinensis* Ehrenberg, 1874b.

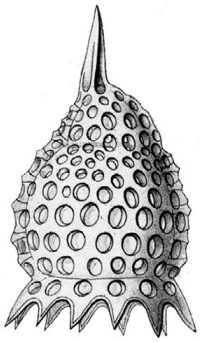
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CLATHROCYCLAS***

SYN. (obj.)
VERY RARE

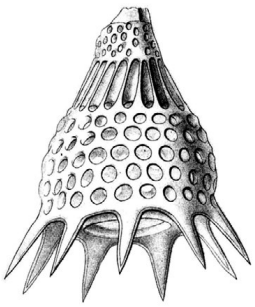
Type



50 µm

Clathrocyclas principessa
Haeckel, 1887: 1386, pl. 74, fig. 7

Support



50 µm

Clathrocyclas collaris
Haeckel, 1887: 1387, pl. 74, fig. 8

N - LINEAGE III (F) ANTHOCYRTIDIDAE

GENUS ***Coniforma***
Pessagno, 1969: 397

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Coniforma antiochensis* Pessagno, 1969.

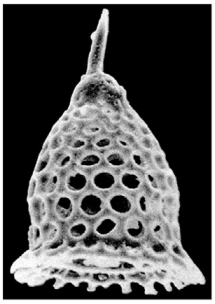
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ANTHOCYRTIS***

SYN.
FREQUENT

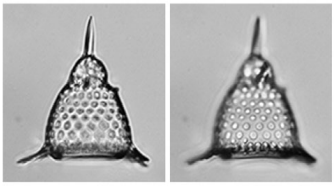
Type



100 µm

Coniforma antiochensis
Pessagno, 1969: 398, pl. 37, fig. 11 [paratype]

Support



50 µm

Coniforma sp. 1
Suzuki's collection (Late Paleocene-Early Eocene, Pacific Ocean)

N - LINEAGE III (F) ANTHOCYRTIDIDAE
ASSIGNED HEREIN

GENUS ***Eurystomoskevos***
Caulet, 1991: 536

Diagnosis: Anthocyrtididae with two segments (actually the only Theopiliidae having two segment). Cephalis distinct (or not) with a long A horn. V small, usually included in cephalic wall. D and 2L as lateral thoracic horns. Aperture open and no peristome. Only one species assigned at the time of generic definition.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Eurystomoskevos petrushevskayae* Caulet, 1991.

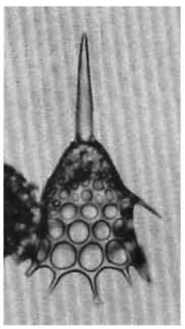
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE PALEOCENE–EARLY OLIGOCENE***

VALID
RARE

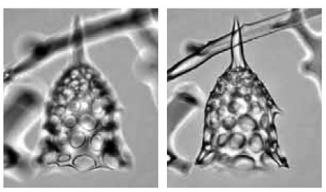
Type



50 µm

Eurystomoskevos petrushevskayae
Caulet, 1991: 536, pl. 3, fig. 14

Support



50 µm

Eurystomoskevos petrushevskayae Caulet
Funakawa & Nishi 2005: pl. 4, figs 13a, 13b

N - LINEAGE III (F) ANTHOCYRTIDIDAE
ASSIGNED HEREIN

GENUS ***Microsciadiocapsa***
Pessagno, 1969: 403

Diagnosis: Anthocyrtididae with a two-segmented shell. Hemispherical cephalis with a short three-bladed A horn. V extended as a short tubule. D may protrude as a rib on thorax wall. No feet. Thorax inflated with a large flat thoracic skirt. Concentric rows of circular pores on all shell.

Remarks: Type species frequently reported. The support image is subsequently assigned species.

Original series: *Microsciadiocapsa cortinaensis* Pessagno, 1969; *Microsciadiocapsa berryessaensis* Pessagno, 1969; *Microsciadiocapsa lipmanae* Pessagno, 1969; *Microsciadiocapsa madisonae* Pessagno, 1969; *Microsciadiocapsa monticelloensis* Pessagno, 1969; *Microsciadiocapsa radiata* Pessagno, 1969 and *Microsciadiocapsa sutterensis* Pessagno, 1969.

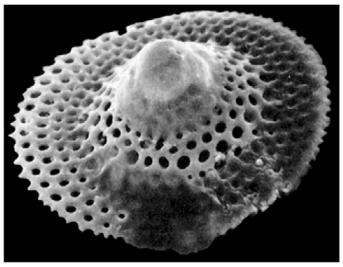
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY BERRIASIAN–MIDDLE PALEOCENE***

VALID
FREQUENT

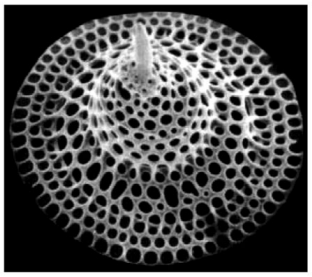
Type



50 µm

Microsciadiocapsa monticelloensis
Pessagno, 1969: 407, pl. 32, fig. 3

Support



50 µm

Cassideus mariae
Nishimura, 1992: 333, pl. 4, fig. 1 (Middle Paleocene)

N - LINEAGE III (F) ANTHOCYRTIDIDAE

GENUS ***Lipmanium***
Pessagno, 1969: 401

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Lipmanium sacramentoensis* Pessagno, 1969.

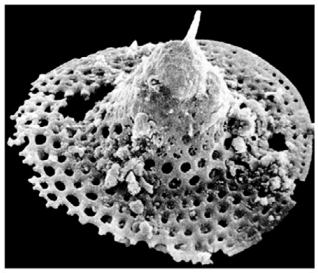
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 152

SEE ***MICROSCIADIOCAPSA***

SYN.
RARE

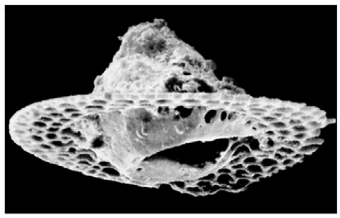
Type



50 µm

Lipmanium sacramentoensis
Pessagno, 1969: 402, pl. 26, fig. 4

Support



100 µm

Lipmanium sacramentoensis
Pessagno, 1969: 402, pl. 26, fig. 11

N - LINEAGE III (F) ANTHOCYRTIDIDAE

GENUS ***Scyphiforma***
Pessagno, 1969: 416

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Scyphiforma cachensis* Pessagno, 1969.

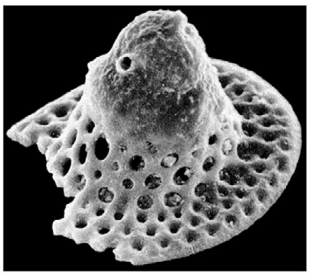
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 153

SEE ***MICROSCIADIOCAPSA***

SYN.
RARE

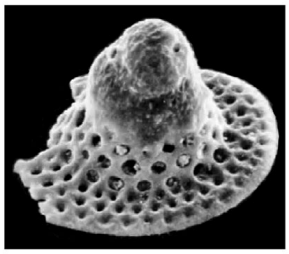
Type



50 µm

Scyphiforma cachensis
Pessagno, 1969: 417, pl. 33, fig. 5

Support



50 µm

Scyphiforma cachensis
Pessagno, 1969: 417, pl. 33, fig. 4

N - LINEAGE III (F) ANTHOCYRTIDIDAE

GENUS ***Squinabolella***
Pessagno, 1969: 418

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Squinabolella putahensis* Pessagno, 1969.

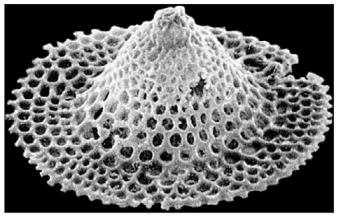
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by O'Dogherty 1994: 227

SEE ***MICROSCIADIOCAPSA***

SYN.
FREQUENT

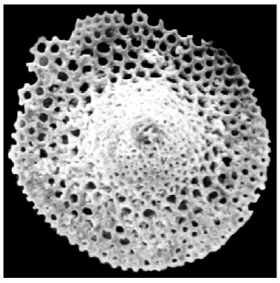
Type



50 µm

Squinabolella putahensis
Pessagno, 1969: 418, pl. 33, fig. 6

Support



50 µm

Squinabolella putahensis
Pessagno, 1969: 418, pl. 33, fig. 9

N - LINEAGE III (F) THEOPILIIDAE

ASSIGNED IN Petrushevskaya 1981: 146

GENUS **Clathrocycloma**
Haeckel, 1887: 1388

SUBGENUS ***Clathrocyclas* (*Clathrocycloma*)**

Diagnosis: Theopiliidae with a two-segmented shell. Small hemispherical cephalis with A and V spines as two strong sided horns. No lateral ribs or feet from D and 2L. Wide open conical second segment with large hexagonal pores and a horizontal velum as peristome.

Remarks: Type species frequently reported.

Original series: *Clathrocyclas alcmenae* Haeckel, 1887; *Clathrocyclas cassiopeiae* Haeckel, 1887; *Clathrocyclas coscinodiscus* Haeckel, 1887; *Clathrocyclas danaes* Haeckel, 1887; *Clathrocyclas europae* Haeckel, 1887; *Clathrocyclas jonis* Haeckel, 1887; *Clathrocyclas latonae* Haeckel, 1887 and *Clathrocyclas semeles* Haeckel, 1887.

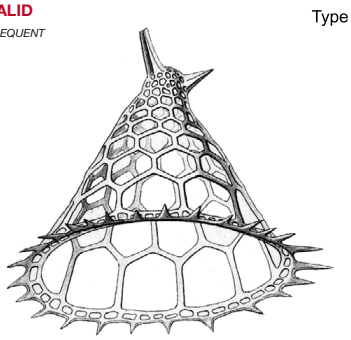
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS **VALID**

AGE ***EARLY EARLY MIOCENE–LIVING***

VALID
FREQUENT

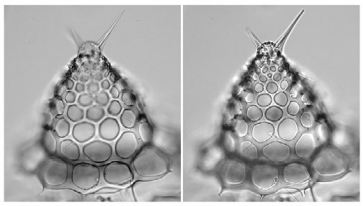
Type



50 µm

Clathrocyclas alcmenae
Haeckel, 1887: 1388, pl. 59, fig. 6

Support



50 µm

Clathrocyclas alcmenae Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (F) THEOPILIIDAE

ASSIGNED IN Petrushevskaya 1981: 146

GENUS **Eucecryphalus**
Haeckel, 1861b: 836

NOMINOTYPE ***Eucecryphalus* (*Eucecryphalus*)**

Diagnosis: Theopiliidae with two segments and an important abdominal peristomial velum. A and V free in cephalis before protruding as 2 ramified apical horns. D and 2L extended as furrows in the upper thoracic walls before protruding externally as lateral appendages.

Remarks: See comments under *EUCECRYPHALIUM*. The real taxonomic difference between *EUCECRYPHALUS* and *CLATHROCYCLOMA* cannot be solved in this catalogue. The skeleton in *CLATHROCYCLOMA* is large and robust whereas *EUCECRYPHALUS* is smaller and quite fragile

Original series: *Eucecryphalus gegenbauri* Haeckel, 1861b and *Eucecryphalus schultzei* Haeckel, 1861b.

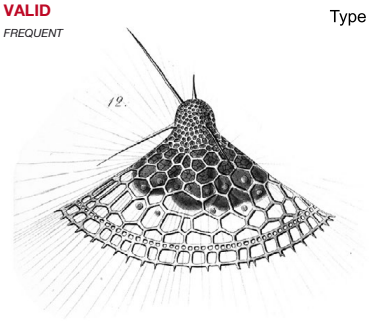
FIXATION SUBSEQUENT DESIGNATION (Haeckel 1887: 1221)

STATUS **VALID**

AGE ***EARLY PLIOCENE–LIVING***

VALID
FREQUENT

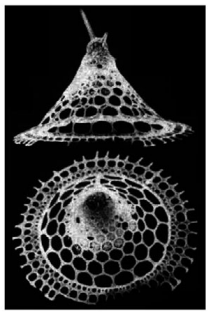
Type



~ 50 µm

Eucecryphalus gegenbauri
Haeckel, 1861b: 836 (unfigured); Haeckel, 1862: 308, pl. 5, fig. 12

Support



50 µm

Eucecryphalus gegenbauri Haeckel
Nishimura & Yamauchi 1984: 50, pl. 27, figs 3a, 3b

N - LINEAGE III (F) THEOPILIIDAE

GENUS **Eucecryphalium**
Haeckel, 1887: 1221

SUBGENUS ***Eucecryphalus* (*Eucecryphalium*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: **Eucecryphalus cuvieri* Haeckel, 1887; *Eucecryphalus gegenbauri* Haeckel, 1861b; **Eucecryphalus muelleri* Haeckel, 1887 and *Pterocodon campanella* Ehrenberg, 1874b.

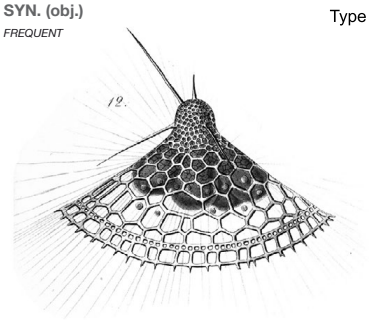
FIXATION SUBSEQUENT DESIGNATION (Haeckel 1887: 1221)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***EUCECRYPHALUS***

SYN. (obj.)
FREQUENT

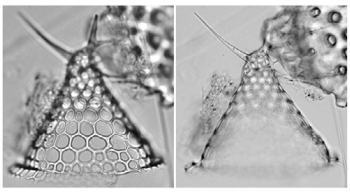
Type



~ 50 µm

Eucecryphalus gegenbauri
Haeckel, 1861b: 836 (unfigured); Haeckel, 1862: 308, pl. 5, fig. 12

Support



50 µm

Eucecryphalus gegenbauri Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (F) THEOPILIIDAE

GENUS **Cecryphalium**
Haeckel, 1882: 434

Remarks: The type species has been figured just once after the first illustration. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Cecryphalium lamprodiscus* Haeckel, 1887 and *Cecryphalium sestrodiscus* Haeckel, 1887.

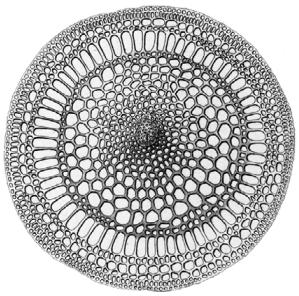
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 146

SEE ***EUCECRYPHALUS***

SYN.
VERY RARE

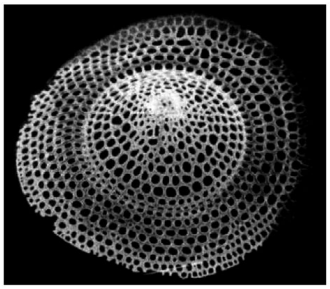
Type



50 µm

Cecryphalium lamprodiscus
Haeckel, 1887: 1398, pl. 58, fig. 2

Support



50 µm

Eucecryphalus sestrodiscus (Haeckel)
Nishimura & Yamauchi 1984: 51, pl. 26, fig. 3a

N - LINEAGE III (F) THEOPILIIDAE

GENUS ***Corocalyptra***
Haeckel, 1887: 1322

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Corocalyptra agnesae* Haeckel, 1887; *Corocalyptra elisabethae* Haeckel, 1887; *Corocalyptra emmae* Haeckel, 1887; **Corocalyptra ludovicae* Haeckel, 1887 and **Corocalyptra margarethae* Haeckel, 1887.

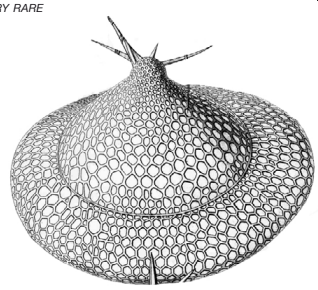
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 146

SEE ***EUCECRYPHALUS***

SYN.
VERY RARE

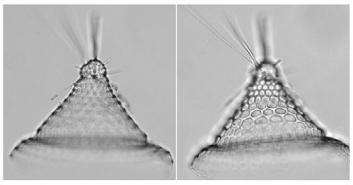
Type



50 µm

Corocalyptra agnesae
Haeckel, 1887: 1323, pl. 59, fig. 3

Support



50 µm

Corocalyptra agnesae Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (F) THEOPILIIDAE

GENUS ***Theopilium***
Haeckel, 1882: 435

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Eucyrtidium cranoides* Haeckel, 1861b; *Theopilium tricostatum* Haeckel, 1887 and **Theopilium triradiatum* Haeckel, 1887.

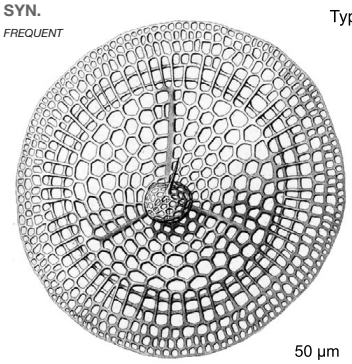
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR SYNONYM
synonymized by Sanfilippo & Riedel 1992: 31

SEE ***EUCECRYPHALUS***

SYN.
FREQUENT

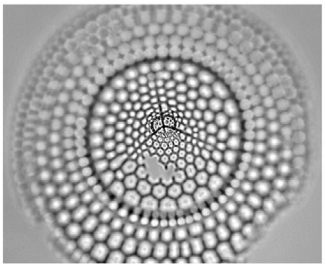
Type



50 µm

Theopilium tricostatum
Haeckel, 1887: 1322, pl. 70, fig. 6

Support



50 µm

Theopilium tricostatum Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (F) ? THEOPILIIDAE

GENUS ***Eucyrtomphalus***
Haeckel, 1882: 430

SUBGENUS ***Eucecryphalus* (*Eucyrtomphalus*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Eucecryphalus corocalyptra* Haeckel, 1887 and **Eucecryphalus halicalyptra* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Eucecryphalus corocalyptra
Haeckel, 1887: 1221, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (F) ? THEOPILIIDAE

GENUS ***Theocalyptra***
Haeckel, 1882: 434

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Cycladophora discoides* Ehrenberg, 1874b; *Halicalyptra*? *cornuta* Bailey, 1856; *Halicalyptra orci* Ehrenberg, 1873a and **Theocalyptra veneris* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? EUCECRYPHALUS***

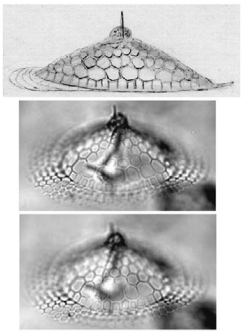
N.D.

Type

UNFIGURED SPECIES

Theocalyptra veneris
Haeckel, 1887: 1397, unfigured

Type



50 µm

Halicalyptra orci Ehrenberg
Suzuki *et al.* 2009a: pl. 75, figs 2a-c [lectotype herein]

N - LINEAGE III (F) STICHOPILIIDAE

ASSIGNED HERE

GENUS ***Artopilium***
Haeckel, 1882: 437

NOMINOTYPE ***Artopilium* (*Artopilium*)**

Diagnosis: Stichopiliidae with three segments. Small cephalis with two A and V robust, sided, horns. D and 2L spines extended as long denticulate ribs and feet on a very large pyramidal thorax with numerous small circular pores. Tubular abdomen open with a simple peristome.

Remarks: See comments under *TRICTENARTUS*.

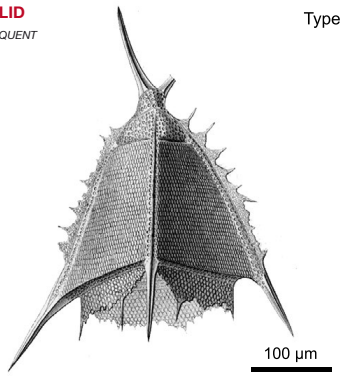
FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 226)

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

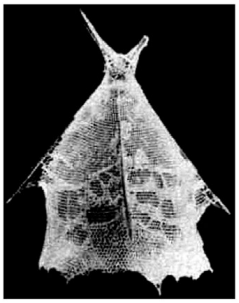
VALID
FREQUENT

Type



Artopilium elegans
Haeckel, 1887: 1440, pl. 75, fig. 1

Support



Trictenartus elegans Haeckel
Nishimura & Yamauchi 1984: 54, pl. 30, fig. 15

N - LINEAGE III (F) STICHOPILIIDAE

GENUS ***Trictenartus***
Haeckel, 1882: 437

SUBGENUS ***Artopilium* (*Trictenartus*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported. Campbell (1954: D136) considers *ARTOPILIUM* Haeckel, 1882 to be an objective synonym of *TRICTENARTUS* Haeckel, 1882. He designates *Artopilium elegans* Haeckel, 1887 as the type species of *TRICTENARTUS* and only by inference of *ARTOPILIUM*. Therefore, we consider the type species designation of *ARTOPILIUM* to date from Chediya (1959: 226).

Original series: *Artopilium cyrtopterum* Haeckel, 1887; *Artopilium elegans* Haeckel, 1887 and *Artopilium longicorne* Haeckel, 1887.

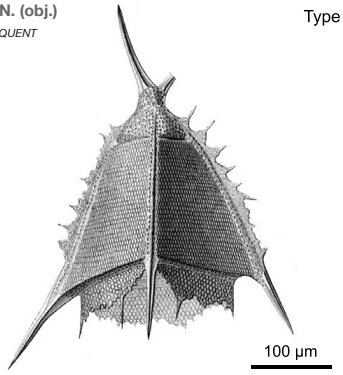
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ARTOPILIUM***

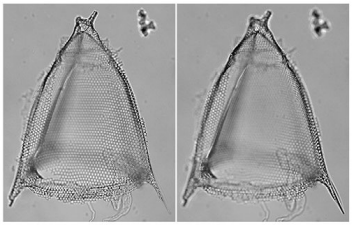
SYN. (obj.)
FREQUENT

Type



Artopilium elegans
Haeckel, 1887: 1440, pl. 75, fig. 1

Support



Artopilium elegans Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (F) STICHOPILIIDAE

GENUS ***Pterocorythium***
Haeckel, 1887: 1320

SUBGENUS ***Pterocorys* (*Pterocorythium*)**

Remarks: Homonym of *PTEROCORYTHIUM* Haeckel, 1882: 437 (Polycystinea); see *ARTOPILIUM* (a new name is not required since it is a junior synonym). Only the type species clearly belongs to this genus; frequently reported.

Original series: **Pterocorys macroptera* Haeckel, 1887; **Pterocorys prismatica* Haeckel, 1887; *Pterocorys rhinoceros* Haeckel, 1887; **Pterocorys tricornis* Haeckel, 1887 and *Pterocyrtidium zitteli* Bütschli, 1882b.

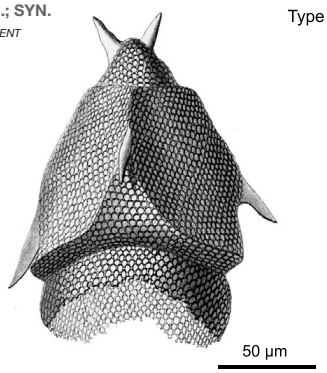
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS HOMONYM, JUNIOR SYNONYM
synonymized by Campbell 1954: D136

SEE ***ARTOPILIUM***

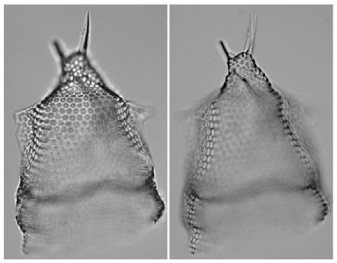
HOM.; SYN.
FREQUENT

Type



Pterocorys rhinoceros
Haeckel, 1887: 1320, pl. 71, fig. 1

Support



Pterocorys rhinoceros Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (F) STICHOPILIIDAE

ASSIGNED HERE

GENUS ***Ectotoxon***
Sugiyama, 1994: 6

Diagnosis: Stichopiliidae with a multi-segmented shell. Subhemispherical cephalis with many horns (including A and a small V) and a wart-like Ax. D and two L extended as thoracic horns. Post-cephalic segments with a wavy outline and separated by septa and constrictions.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Sugiyama (1994).

Original series: *Ectotoxon xetton* Sugiyama, 1994.

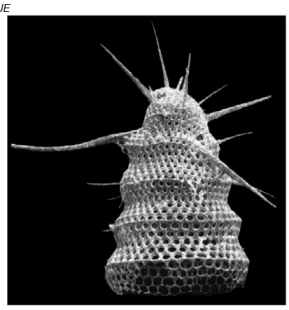
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EARLY MIOCENE***

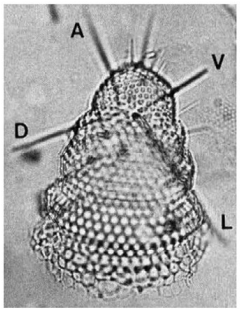
VALID
UNIQUE

Type



Ectotoxon xetton
Sugiyama, 1994: 6, pl. 3, fig. 4a

Support



Ectotoxon xetton
Sugiyama, 1994: 6, pl. 4, fig. 2

N - LINEAGE III (F) STICHOPILIIDAE

ASSIGNED HERE

GENUS ***Lophoconus***
Haeckel, 1887: 1403

Diagnosis: Stichopiliidae with a three-segmented conical shell. Only one species recorded. Cephalis with A and V horns. D and L spines protruding as thoracic ribs (? external appendages). Aperture open and shapeless.

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: *Eucyrtidium antilope* Ehrenberg, 1873a; *Eucyrtidium apiculatum* Ehrenberg, 1874b; *Eucyrtidium cervus* Ehrenberg, 1873a; **Lophoconus cornutella* Haeckel, 1887; **Lophoconus hexagonalis* Haeckel, 1887 and *Lophoconus rhinoceros* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 30)

STATUS **VALID**

AGE ***HOLOCENE–LIVING***

VALID
VERY RARE

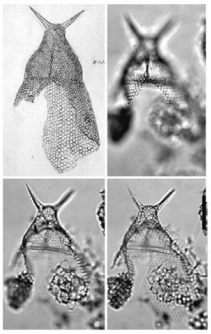
Type



50 µm

Eucyrtidium antilope
Ehrenberg, 1873a: 308 (unfigured); Ehrenberg, 1873b: 290-291, pl. 9, fig. 18

Type



100 µm

Eucyrtidium antilope Ehrenberg
Suzuki *et al.* 2009a: pl. 77, figs 1a-d [lectotype herein]

N - LINEAGE III (F) STICHOPILIIDAE

ASSIGNED IN Haeckel 1887: 1436

GENUS ***Stichopilium***
Haeckel, 1882: 439

NOMINOTYPE ***Stichopilium* (*Stichopilium*)**

Diagnosis: Stichopiliidae with a conical multi-segmented shell. Only one single species recorded. Hemispherical cephalis with A and V horns. D and 2L spines externally prolonged as thin thoracic feet or wings. Thin septa and small constrictions between segments. Aperture unknown.

Remarks: See comments under *TRICARTUS*.

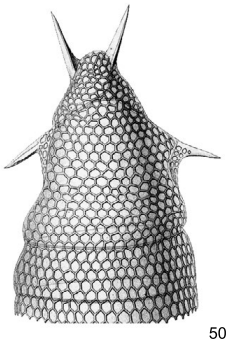
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 32)

STATUS **VALID**

AGE ***LATE OLIGOCENE–LIVING***

VALID
FREQUENT

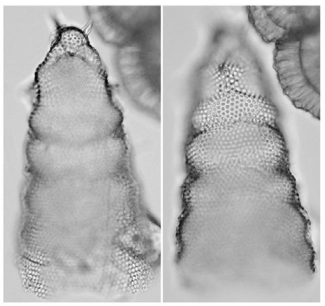
Type



50 µm

Stichopilium bicorne
Haeckel, 1887: 1437, pl. 77, fig. 9

Support



50 µm

Stichopilium bicorne Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (F) STICHOPILIIDAE

GENUS ***Triacartus***
Haeckel, 1882: 437

SUBGENUS ***Stichopilium* (*Triacartus*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Cycladophora? davisiana* Ehrenberg, 1862b; *Stichopilium bicorne* Haeckel, 1887; *Stichopilium campanulatum* Haeckel, 1887; **Stichopilium cortina* Haeckel, 1887; **Stichopilium costatum* Haeckel, 1887 and **Stichopilium triserratum* Haeckel, 1887.

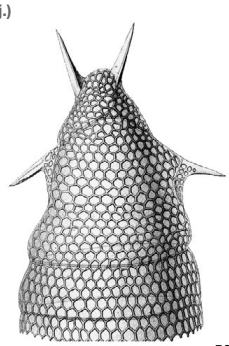
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 32)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***STICHOPILIUM***

SYN. (obj.)
FREQUENT

Type



50 µm

Stichopilium bicorne
Haeckel, 1887: 1437, pl. 77, fig. 9

Support



50 µm

Stichopilium bicorne Haeckel
Benson 1983: 422, pl. 29, fig. 1

N - LINEAGE III (G) CERATOCYRTIDAE

ASSIGNED IN Petrushevskaya 1975: 111

GENUS ***Ceratocyrtis***
Bütschli, 1882b: 536

Diagnosis: Ceratocyrtidae with a two-segmented open conical shell. Thorax up to three times longer than cephalis, thorny. A horn as a small-sided spine. V spine slightly differentiated. D and L spines produce lateral thorns but no feet. Ax large and branched, variable, diverging from a very short MB.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Cornutella ampliata* Ehrenberg, 1874b; *Cornutella circularis* Ehrenberg, 1874b; *Cornutella mitra* Ehrenberg, 1874b and *Cornutella? cucullaris* Ehrenberg, 1874b.

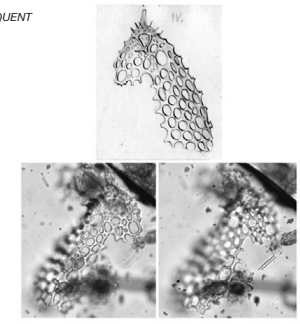
FIXATION SUBSEQUENT DESIGNATION (Petrushevskaya 1971a: 98)

STATUS **VALID**

AGE ***LATE PALEOCENE–LIVING***

VALID
FREQUENT

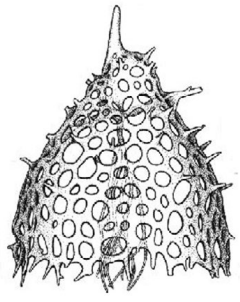
Type



50 µm

Cornutella? cucullaris
Ehrenberg, 1874b: 221 (unfigured); Ehrenberg, 1876: 68, pl. 2, fig. 7 [Ogane *et al.* 2009b: pl. 81, figs 3a-c; lectotype herein]

Support



50 µm

Ceratocyrtis sp.
De Wever *et al.*, 2001: fig. 142.4

N - LINEAGE III (G) CERATOCYRTIDAE

GENUS ***Bathrocalpis***
Clark & Campbell, 1942: 64

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Bathrocalpis campanula* Clark & Campbell, 1942.

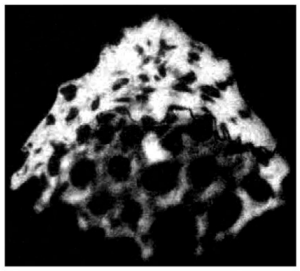
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 98

SEE ***CERATOCYRTIS***

SYN.
FREQUENT

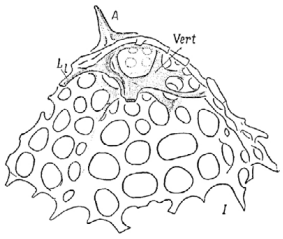
Type



25 µm

Bathrocalpis campanula
Clark & Campbell, 1942: 64, pl. 9, fig. 27

Support



25 µm

Ceratocyrtis campanula (Clark & Campbell)
Petrushevskaya 1971a: pl. 51, fig. 1

N - LINEAGE III (G) CERATOCYRTIDAE

GENUS ***Helotholus***
Jørgensen, 1905: 137

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Dolven *et al.* (2014).

Original series: *Helotholus histricosa* Jørgensen, 1905.

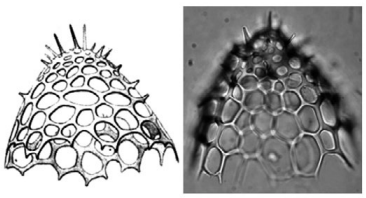
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 587

SEE ***CERATOCYRTIS***

SYN.
VERY RARE

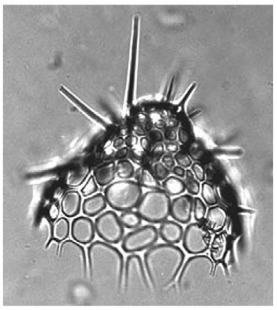
Type



50 µm

Helotholus histricosa
Jørgensen, 1905: 137, pl. 16, figs 87a; Dolven *et al.* 2014: 50, pl. 6, fig. 3 (lectotype)

Support



50 µm

Helotholus histricosa Jørgensen
Dolven *et al.* 2014: 41, pl. 6, fig. 4 [paralectotype]

N - LINEAGE III (G) CERATOCYRTIDAE

GENUS ***Dictyoceras***
Haeckel, 1862: 333

Remarks: Homonym of *DICTYOCERAS* Eichwald, 1860: 1263 (Cephalopoda); see *LIPMANELLA nomen novum*.

Original series: *Lithornithium dictyoceras* Haeckel, 1861b.

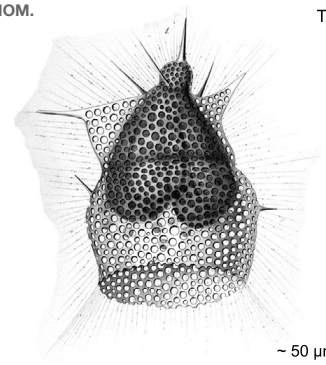
FIXATION ABSOLUTE TAUTONOMY

STATUS HOMONYM

SEE ***LIPMANELLA NOMEN NOVUM***

HOM.

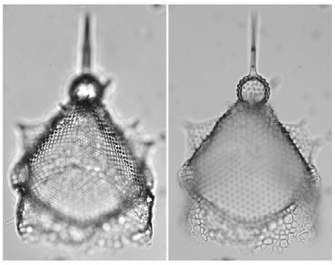
Type



~ 50 µm

Lithornithium dictyoceras
Haeckel, 1861b: 840 (unfigured); Haeckel, 1862: 333, pl. 8, fig. 1

Support



50 µm

Lithornithium dictyoceras Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (G) CERATOCYRTIDAE
ASSIGNED HEREIN

GENUS ***Lipmanella*** *NOMEN NOVUM PRO DICTYOCERAS*
Loeblich & Tappan, 1961: 226

Diagnosis: Ceratocyrtidae with a porous three-segmented shell. Spherical cephalis with a long A horn, and a short thin V horn. D and 2L extended as strong thoracic horns, or lattice wings, on a prismatic thorax. Short Ax. Abdomen tubular or globular with no feet.

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

Original series: *Lithornithium dictyoceras* Haeckel, 1861b.

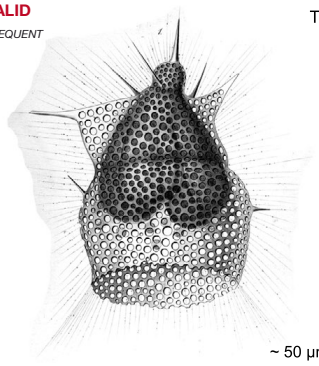
FIXATION ABSOLUTE TAUTONOMY; ICZN, ART. 67.8

STATUS **VALID PRO**

AGE ***EARLY OLIGOCENE–LIVING***

VALID
FREQUENT

Type



~ 50 µm

Lithornithium dictyoceras
Haeckel, 1861b: 840 (unfigured); Haeckel, 1862: 333, pl. 8, fig. 1

Support



50 µm

Lipmanella virchowii (Haeckel)
Funakawa 2000: 110, pl. 5, fig. 1a

N - Lineage III (G) CERATOCYRTIDAE

ASSIGNED HERE

GENUS ***Entepipedus***
Sugiyama, 1994: 6

Diagnosis: Ceratocyrtidae with an all porous trilobate cephalis and tubular undulate thorax. A extended as a rod-like spine on lateral cephalis and D as a rod-like spine on lateral thorax. V and 2l attached to thorax, no L. Connector bars between shell wall and spines.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Sugiyama (1994).

Original series: *Entepipedus zophyi* Sugiyama, 1994.

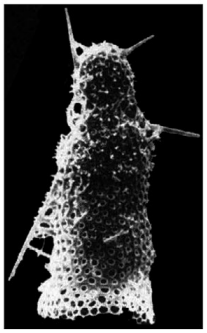
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EARLY MIOCENE***

VALID
UNIQUE

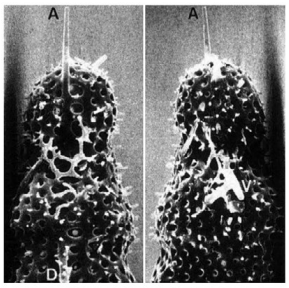
Type



25 µm

Entepipedus zophyi
Sugiyama, 1994: 7, pl. 4, fig. 4a

Support



20 µm

Entepipedus zophyi
Sugiyama, 1994: 7, pl. 4, figs 4d. 4e

N - Lineage III (G) CERATOCYRTIDAE

ASSIGNED HERE

GENUS ***Gomisterna***
Sugiyama, 1994: 8

Diagnosis: Ceratocyrtidae with an all porous or micro-granulate trilobate cephalis and wider tubular thorax. A extended as a long lateral spine on cephalis and V as a short spine on the collar area. D and two L proximally incorporated in shell wall, next protruding as slender external spines.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Sugiyama (1994).

Original series: *Gomisterna hospes* Sugiyama, 1994.

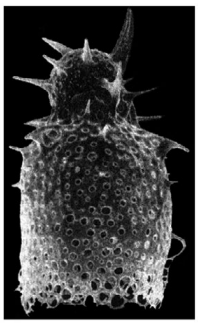
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EARLY MIOCENE***

VALID
UNIQUE

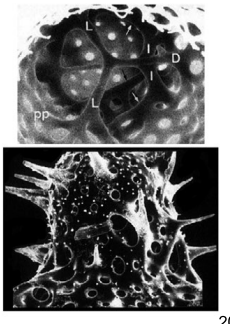
Type



50 µm

Gomisterna hospes
Sugiyama, 1994: 9, pl. 5, fig. 1a

Support



20 µm

Gomisterna hospes
Sugiyama, 1994: 9, pl. 5, figs 1b, 1c

N - Lineage III (G) CERATOCYRTIDAE

ASSIGNED IN Petrushevskaya 1981: 109

GENUS ***Gondwanaria***
Petrushevskaya, 1975: 584

Diagnosis: Ceratocyrtidae with two segments: a variable globular cephalis separated from an undulate open thorax by a well marked collar stricture. A and V horns well differentiated. A as a free internal columella. D and L spines prolonged by 3-sided lateral appendages.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Gondwanaria deflandrei* group Petrushevskaya, 1975; *Gondwanaria hister* Petrushevskaya, 1975; *Sethoconus? dogieli* Petrushevskaya, 1967 and *Sethocyrtis japonica* Nakaseko, 1963.

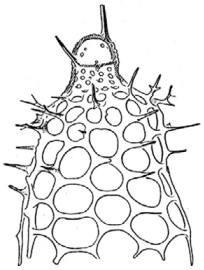
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE PALEOCENE–LIVING***

VALID
FREQUENT

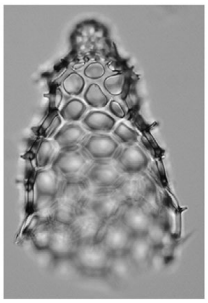
Type



50 µm

Sethoconus? dogieli
Petrushevskaya, 1967: 95, fig. 53.1 [lectotype herein]

Support



50 µm

Sethoconus? dogieli Petrushevskaya
Zhang's collection (South China Sea)

N - Lineage III (G) ? CERATOCYRTIDAE

ASSIGNED IN Petrushevskaya 1981: 112

GENUS ***Periarachnium***
Haeckel, 1882: 430

Diagnosis: Ceratocyrtidae with a small variable cephalis and a large conical thorax. The A, D, L and V spines may pass as ribs in the thorax wall or extend as small horns and appendages. The thorns of the thorax wall form a second thin spongious irregular meshwork.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Periarachnium periplectum* Haeckel, 1887.

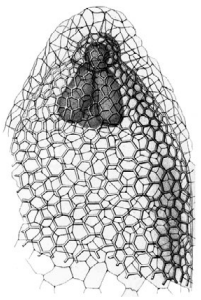
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***HOLOCENE–LIVING***

VALID
RARE

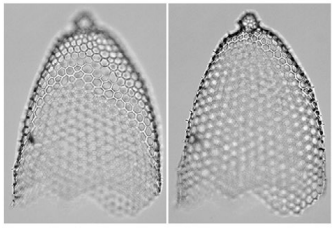
Type



50 µm

Periarachnium periplectum
Haeckel, 1887: 1297, pl. 55, fig. 11

Support



50 µm

Periarachnium periplectum Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (G) ? CERATOCYRTIDAE
ASSIGNED IN Petrushevskaya 1981: 113

GENUS ***Phlebarachnium***
Haeckel, 1882: 430

SUBGENUS ***Sethoconus (Phlebarachnium)***

Diagnosis: Ceratocyrtidae with two segments including a very small cephalis and a larger conical open thorax. A, D, L, and V spines almost not differentiated. Thorax with twenty or more rows of pores on half equator. Aperture may be covered by a meshwork.

Remarks: Type species rarely reported.

Original series: *Sethoconus anthocyrtis* Haeckel, 1887; *Sethoconus facetus* Haeckel, 1887; **Sethoconus setosus* Haeckel, 1887; *Sethoconus venosus* Haeckel, 1887 and **Sethoconus virgultus* Haeckel, 1887.

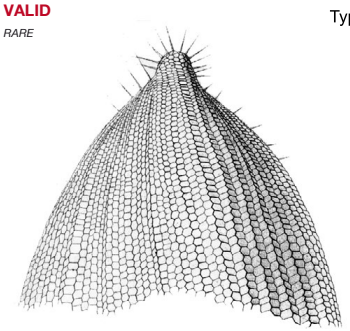
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128)

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

VALID
RARE

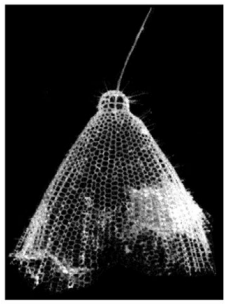
Type



50 µm

Sethoconus facetus
Haeckel, 1887: 1296, pl. 55, fig. 1

Support



50 µm

Conarachnium facetum (Haeckel)
Takahashi 1991: 118, pl. 39, fig. 7

N - LINEAGE III (G) DICTYOCRYPHALIDAE
ASSIGNED HEREIN

GENUS ***Antarctissa***
Petrushevskaya, 1967: 85

Diagnosis: Dictyocryphalidae with two segments having walls of nearly equal structure. Multilobate cephalis with A, D, 2L and V external horns not different from secondary spines. Ax usually long. Thorax aperture may be closed by a flat plane. Outer surface of the shell rough, with ribs, bristles, by spines.

Remarks: Type species frequently reported.

Original series: *Antarctissa denticulata cylindrica* Petrushevskaya, 1967; *Antarctissa denticulata faceata* Petrushevskaya, 1967; *Antarctissa strelkovi* Petrushevskaya, 1967; *Helotholus histricosa clausa* Popofsky, 1908; *Helotholus longus* Popofsky, 1908 and *Lithobotrys*? *denticulata* Ehrenberg, 1844b.

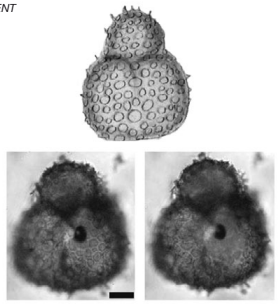
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY OLIGOCENE–LIVING***

VALID
FREQUENT

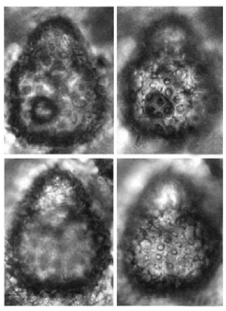
Type



50 µm

Lithobotrys? *denticulata*
Ehrenberg, 1844b: 203 (unfigured); 1873b: 296-297, pl. 12, fig. 7 [Suzuki *et al.* 2009a: pl. 27, fig. 5a-c; lectotype herein]

Support



50 µm

Lithobotrys denticulata Ehrenberg
Suzuki *et al.* 2009a: pl. 27, figs 6a-7b [topotypic material]

N - LINEAGE III (G) DICTYOCRYPHALIDAE
ASSIGNED HEREIN

GENUS ***Botryopera***
Haeckel, 1887: 1108

Diagnosis: Dictyocryphalidae with a small two-segmented cylindrical shell. Multilobate cephalis partly immerged in a trilobate thorax. A, D, L and V partly extended as external appendages. Long Ax. Shell wall partly hyaline, partly thickened. Aperture narrow, unshaped, usually open.

Remarks: Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym. Heterogeneous group of species originally included.

Original series: *Botryopera cyrtoloba* Haeckel, 1887; **Botryopera multiloba* Haeckel, 1887; *Botryopera quinqueloba* Haeckel, 1887; **Lithobotrys quadriloba* Ehrenberg, 1844a and *Lithobotrys triloba* Ehrenberg, 1844a.

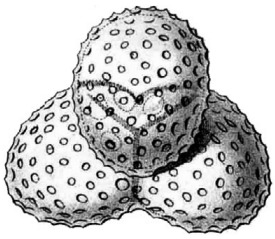
FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 185)

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

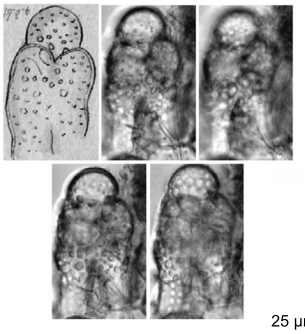
Type



25 µm

Botryopera cyrtoloba
Haeckel, 1887: 1108, pl. 96, fig. 1

Type



25 µm

Lithobotrys triloba Ehrenberg
Suzuki *et al.* 2009a: pl. 20, figs 9a-e [lectotype herein]

N - LINEAGE III (G) DICTYOCRYPHALIDAE

GENUS ***Trisulcus***
Popofsky, 1913: 354

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Trisulcus triacanthus* Popofsky, 1913.

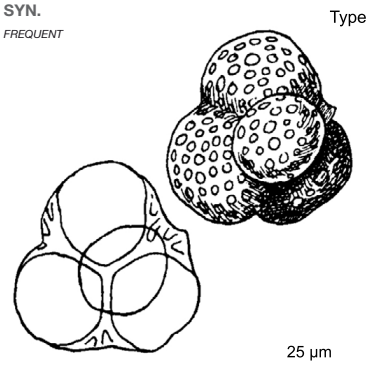
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 591

SEE ***BOTRYOPERA***

SYN.
FREQUENT

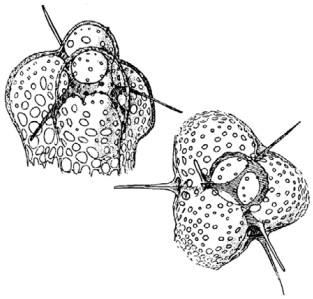
Type



25 µm

Trisulcus triacanthus
Popofsky, 1913: 354, text-figs 59, 60

Support



25 µm

Trisulcus triacanthus Popofsky
Petrushevskaya 1971a: 141, pl. 72, figs 8, 9

N - LINEAGE III (G) ? DICTYOCRYPHALIDAE

GENUS ***Lithobotrys***
Ehrenberg, 1844a: 74

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. Haeckel (1887: 1117) subsequently designated *Lithobotrys geminata* Ehrenberg, 1874b as type species of *LITHOBOTRYS*. However, it seems incorrect since that species was not among those species originally included at the time of the generic definition. The subsequent designation of *Lithobotrys galea* by Petrushevskaya & Kozlova (1979: 155) should be considered also invalid.

Original series: *Lithobotrys galea* Ehrenberg, 1844a; **Lithobotrys quadriloba* Ehrenberg, 1844a and *Lithobotrys triloba* Ehrenberg, 1844a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D143)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *BOTRYOPERA***

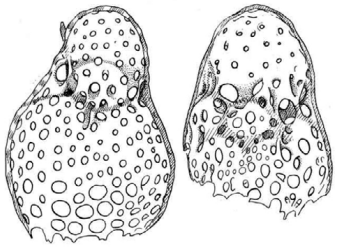
N.D.

Type

UNFIGURED SPECIES

Lithobotrys quadriloba
Ehrenberg, 1844a: 84, unfigured

Support



25 µm

Botryopera triloba group (Ehrenberg)
Petrushevskaya 1975: 591, pl. 20, figs 3, 4

N - LINEAGE III (G) DICTYOCRYPHALIDAE
ASSIGNED IN Petrushevskaya 1971a: 105

GENUS ***Dictyocryphalus***
Haeckel, 1887: 1308

SUBGENUS ***Dictyocephalus* (*Dictyocryphalus*)**

Diagnosis: Dictyocryphalidae with two segments. A as a rib in the cephalic wall. V often linked with one of the lateral spines D, 2L. All spines may produce small lateral winglet apophyses or induce feet. Aperture usually open or covered by a meshwork.

Remarks: No report of the type species after the first illustration. The support image is the closest specimen from the type locality (Caltanissetta Basin, Sicily). Although Haeckel refers back to 1882 (p. 430), the name *DICTYOCRYPHALUS* does not appear there. Thus, we regard the description in 1887 as original even though Haeckel might have intended to make an unjustified emendation of *DICTYOCEPHALUS* here.

Original series: *Cornutella*? *obtusa* Ehrenberg, 1844a; *Dictyocephalus capito* Ehrenberg, 1873a; **Dictyocephalus cavea* Haeckel, 1887; *Dictyocephalus globiceps* Haeckel, 1887 and *Dictyocephalus hispidus* Ehrenberg, 1862b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128)

STATUS **VALID**

AGE ***EARLY MIDDLE EOCENE–LIVING***

VALID
UNIQUE

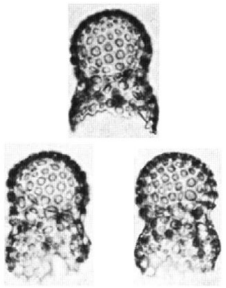
Type



100 µm

Cornutella? *obtusa*
Ehrenberg, 1844a: 77 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 40

Support



50 µm

Lophophaena sp.
Cortese & Bjørklund 1999: figs 21P-21R

N - LINEAGE III (G) DICTYOCRYPHALIDAE

GENUS ***Dictyocephalus***
Ehrenberg, 1861b: 830

NOMINOTYPE ***Dictyocephalus* (*Dictyocephalus*)**

Remarks: Homonym of *DICTYOCEPHALUS* Leidy, 1859: 256 (Chordata); see *DISCOCEPHALUS nomen novum*. Monospecific genus. Because no other figures are available, the support image is selected among those species subsequently assigned to this genus.

Original series: *Cornutella*? *obtusa* Ehrenberg, 1844a.

FIXATION MONOTYPY

STATUS HOMONYM, JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 81

SEE ***DICTYOCRYPHALUS***

HOM.; SYN.

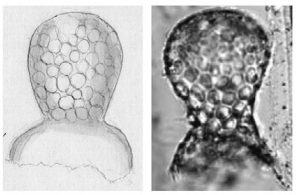
Type



100 µm

Cornutella? *obtusa*
Ehrenberg, 1844a: 77 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 40

Type



50 µm

Dictyocephalus capito Ehrenberg
Suzuki *et al.* 2009a: pl. 53, figs 7a, 7b [lectotype herein]

N - LINEAGE III (G) DICTYOCRYPHALIDAE

GENUS ***Discocephalus*** NOMEN CORR. PRO *DICTYOCEPHALUS*
Ehrenberg, 1861b: 920 (errata list)

Remarks: Homonym of *DISCOCEPHALUS* Ehrenberg in Hemprich & Ehrenberg, 1829: 16 (Alveolates); see *DICTYOCRYPHALUS* (a new name is not required since it is a junior synonym). Genus described as monospecific at the time of the generic definition (see above).

Original series: *Cornutella*? *obtusa* Ehrenberg, 1844a.

FIXATION MONOTYPY; ICZN, ART. 67.8

STATUS HOMONYM, JUNIOR SYNONYM
synonymized herein

SEE ***DICTYOCRYPHALUS***

NOM. CORR.; HOM.; SYN.
VERY RARE

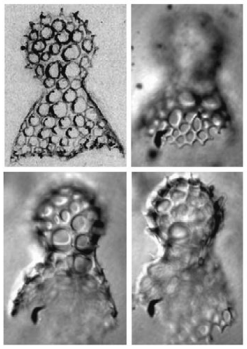
Type



100 µm

Cornutella? *obtusa*
Ehrenberg, 1844a: 77 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 40

Type



50 µm

Dictyocephalus hispidus Ehrenberg
Suzuki *et al.* 2009a: pl. 39, figs 11a-d [lectotype herein]

N - LINEAGE III (G) DICTYOCRYPHALIDAE

GENUS ***Cephaluspinus***
Alvira-Martín, 1971: 223

Remarks: Monospecific genus. Because no other figures are available, the support image is a synonym in open nomenclature of the type species.

Original series: *Cephaluspinus josephinus* Alvira-Martín, 1971.

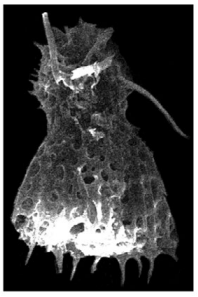
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***DICTYOCRYPHALUS***

SYN.?
UNIQUE

Type



50 µm

Cephaluspinus josephinus
Alvira-Martín, 1971: 223, pl. 3, fig. 2

Support



50 µm

Lophophaena group
Mullineaux & Westberg-Smith, 1986: 67, pl. 2, fig. 13e

N - LINEAGE III (G) ? DICTYOCRYPHALIDAE

GENUS ***Lophophaena***
Ehrenberg, 1847: 54

NOMINOTYPE ***Lophophaena* (*Lophophaena*)**

Remarks: Monospecific genus and never figured. Since no other images were illustrated at the time of the generic definition, the support image is selected among those species subsequently assigned to this genus. The first subsequently included species are: *Lophophaena apiculata* Ehrenberg, 1876, *Lophophaena capito* Ehrenberg, 1876, *Lophophaena*? *galeata* Ehrenberg, 1876 and *Lophophaena larvata* Ehrenberg, 1876.

Original series: **Lophophaena galeaorci* Ehrenberg, 1854b.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? DICTYOCRYPHALUS***

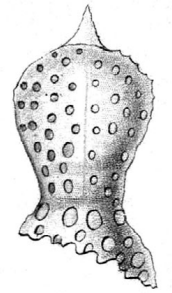
N.D.

Type

UNFIGURED SPECIES

Lophophaena galeaorci
Ehrenberg, 1854b: 245, unfigured

Support



50 µm

Lophophaena? *galeata*
Ehrenberg, 1876: pl. 8, fig. 12

N - LINEAGE III (G) ? DICTYOCRYPHALIDAE

GENUS ***Lophophaenula***
Haeckel, 1887: 1303

SUBGENUS ***Lophophaena* (*Lophophaenula*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus (see above). This species was included by Haeckel (1887) in the synonymy list of *Lophophaena galea* Ehrenberg.

Original series: **Lophophaena echinocephala* Haeckel, 1887; **Lophophaena galeaorci* Ehrenberg, 1854b; **Lophophaena liothorax* Haeckel, 1887 and *Lophophaena radians* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***LOPHOPHAENA***

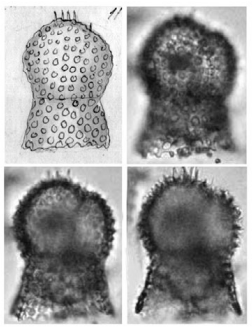
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Lophophaena galeaorci
Ehrenberg, 1854b: 245, unfigured

Type



50 µm

Lophophaena apiculata Ehrenberg
Ogane *et al.* 2009b: pl. 19, figs 3a-d [lectotype herein]

N - LINEAGE III (G) ? DICTYOCRYPHALIDAE

GENUS ***Lophophaenoma***
Haeckel, 1887: 1304

SUBGENUS ***Lophophaena* (*Lophophaenoma*)**

Remarks: Actually, the type species should be *Lophophaena radians* Ehrenberg, 1874b: 243 (figured later in Ehrenberg 1876) because this species was listed in the synonym of the *Lophophaena circumtexta* Haeckel, 1887.

Original series: **Lophophaena circumtexta* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? DICTYOCRYPHALUS***

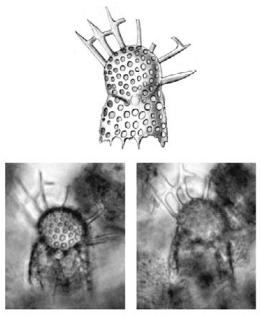
N.D.

Type

UNFIGURED SPECIES

Lophophaena circumtexta
Haeckel, 1887: 1304, unfigured

Type



50 µm

Lophophaena radians Ehrenberg
Ogane *et al.* 2009b: pl. 3, figs 3a-c [lectotype herein]

N - LINEAGE III (G) DIMELISSIDAE

ASSIGNED IN Petrushevskaya 1981: 85

GENUS ***Arachnocorys***
Haeckel, 1861b: 837

NOMINOTYPE ***Arachnocorys* (*Arachnocorys*)**

Diagnosis: Dimelissidae with two segments. Cephalis globular, A horn passes through its anterior part and builds a cobweb net around the shell with additional horns. V spine in the sagittal plane. Thorax as an irregular meshwork including the D, Lr, and Ll ribs.

Remarks: See comments under *ARACHNOCORONIUM*.

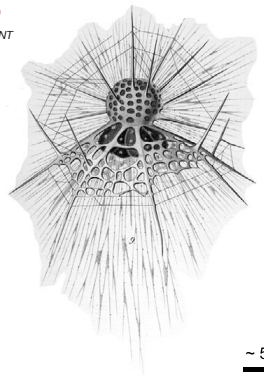
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D126)

STATUS **VALID**

AGE ***EARLY PLEISTOCENE–LIVING***

VALID
FREQUENT

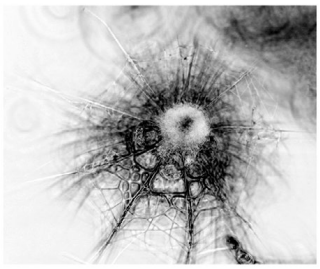
Type



~ 50 µm

Arachnocorys circumtexta
Haeckel, 1861b: 837 (unfigured); Haeckel, 1862: 304, pl. 6, fig. 9

Support



50 µm

Arachnocorys circumtexta Haeckel
Topotypic material (plankton, Villefranche-sur-Mer), Suzuki's collection

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N - LINEAGE III (G) DIMELISSIDAE

GENUS ***Arachnocoronium***
Haeckel, 1887: 1266

SUBGENUS ***Arachnocorys* (*Arachnocoronium*)**

Remarks: Type species frequently reported.

Original series: **Arachnocorys arachnodiscus* Haeckel, 1887; *Arachnocorys araneosa* Haeckel, 1887; *Arachnocorys circumtexta* Haeckel, 1861b; **Arachnocorys enneaptera* Haeckel, 1887 and **Arachnocorys trifida* Haeckel, 1887.

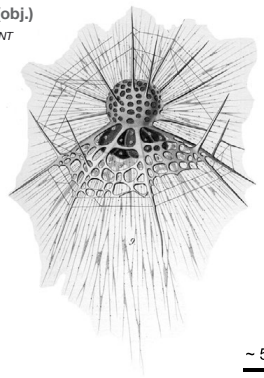
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D126)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ARACHNOCORYS***

SYN. (obj.)
FREQUENT

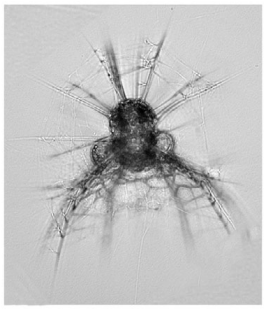
Type



~ 50 µm

Arachnocorys circumtexta
Haeckel, 1861b: 837 (unfigured); Haeckel, 1862: 304, pl. 6, fig. 9

Support



50 µm

Arachnocorys circumtexta Haeckel
Topotypic material (plankton, Villefranche-sur-Mer), Suzuki's collection

---

N - LINEAGE III (G) DIMELISSIDAE

GENUS ***Acanthocoronium***
Haeckel, 1887: 1263

SUBGENUS ***Acanthocorys* (*Acanthocoronium*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: **Acanthocorys enneapodia* Haeckel, 1887; **Acanthocorys furcata* Haeckel, 1887; *Acanthocorys macroceras* Haeckel, 1887; **Acanthocorys triloba* Haeckel, 1887 and *Arachnocorys umbellifera* Haeckel, 1861b.

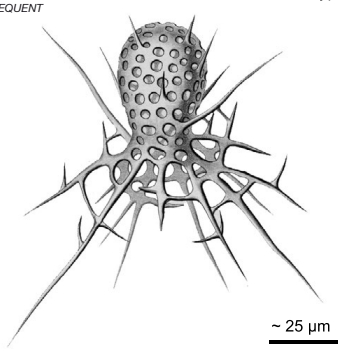
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D125)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ARACHNOCORYS***

SYN.
FREQUENT

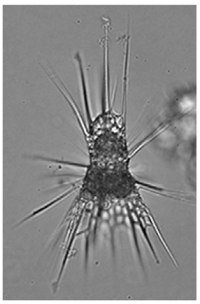
Type



~ 25 µm

Arachnocorys umbellifera
Haeckel, 1861b: 837 (unfigured); Haeckel, 1862: 305, pl. 6, fig. 12

Support



50 µm

Arachnocorys umbellifera Haeckel
Tuji's collection (plankton off Puket)

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Arachnocorallium***
Haeckel, 1887: 1265

SUBGENUS ***Arachnocorys* (*Arachnocorallium*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition. However, it has been reinterpreted by Hertwig (1879).

Original series: **Arachnocorys discoides* Haeckel, 1887 and **Arachnocorys hexaptera* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D126)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? ARACHNOCORYS***

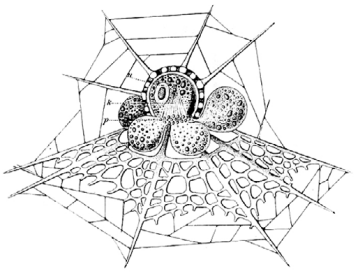
N.D.

Type

UNFIGURED SPECIES

Arachnocorys hexaptera
Haeckel, 1887: 1265, unfigured

Support



~ 50 µm

Arachnocorys hexaptera Haeckel
Hertwig 1879: 79, pl. 8, fig. 2

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Arachnocorythium***
Haeckel, 1887: 1267

SUBGENUS ***Arachnocorys* (*Arachnocorythium*)**

Remarks: Monospecific genus and never figured. Since no other images were illustrated at the time of the generic definition, the support image is selected among those species closely related (in Haeckel's opinion) to the type species, differing only in the number of feet and spines.

Original series: **Arachnocorys polyptera* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

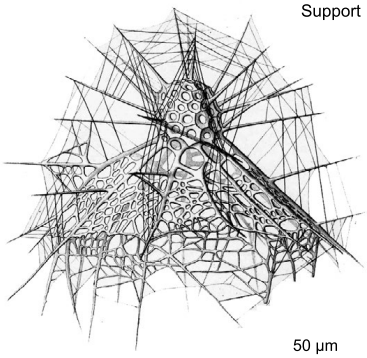
SEE ***? ARACHNOCORYS***

N.D. Type

UNFIGURED SPECIES

Arachnocorys polyptera
Haeckel, 1887: 1267, unfigured

Support



50 µm

Arachnocorys araneosa
Haeckel, 1887: 1266 pl. 56, fig. 11

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Acanthocorythium***
Haeckel, 1887: 1264

SUBGENUS ***Acanthocorys* (*Acanthocorythium*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Acanthocorys dodecaster* Haeckel, 1887 and **Acanthocorys polypodia* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D125)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Acanthocorys dodecaster
Haeckel, 1887: 1264, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) DIMELISSIDAE
ASSIGNED IN Petrushevskaya 1981: 85

GENUS ***Archiperidium***
Haeckel, 1882: 429

Diagnosis: Dimelissidae, with only one eucephalic lobe, a long A horn and three feet formed by the D, Lr, and Ll spines below the cephalis. V is invisible or very tiny, if present. Numerous secondary thorns building an irregular cobweb net around the shell.

Remarks: Type species frequently reported.

Original series: *Peridium alatum* Haeckel, 1887; **Peridium cervinum* Haeckel, 1887; *Peridium palmipes* Haeckel, 1887 and *Peridium spinipes* Haeckel, 1887.

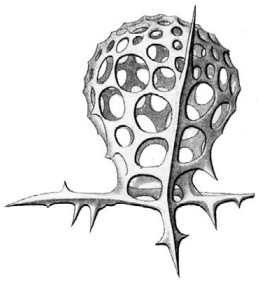
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS **VALID**

AGE ***EARLY LATE MIOCENE–LIVING***

VALID
FREQUENT

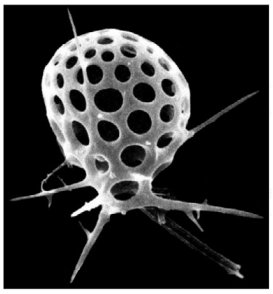
Type



25 µm

Peridium spinipes
Haeckel, 1887: 1154, pl. 53, fig. 9

Support



25 µm

Peridium spinipes Haeckel
Takahashi 1991: 98, pl. 26, fig. 4

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Mitrocalpis***
Haeckel, 1882: 427

Remarks: Monospecific genus and never figured. Since no other images were illustrated at the time of the generic definition, the support image is selected among those species subsequently assigned to this genus.

Original series: **Mitrocalpis palliata* Haeckel, 1887.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? ARCHIPERIDIUM***

N.D. Type

UNFIGURED SPECIES

Mitrocalpis palliata
Haeckel, 1887: 1188, unfigured

Support



25 µm

Mitrocalpis araneafera
Popofsky, 1908: 273, pl. 30, fig. 1

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Peridium***
Haeckel, 1887: 1153

NOMINOTYPE ***Peridium* (*Peridium*)**

Remarks: See comments under *PERIDARIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D. Type

UNFIGURED SPECIES

Peridium lasanum
Haeckel, 1887: 1154, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Peridarium***
Haeckel, 1887: 1153

SUBGENUS ***Peridium* (*Peridarium*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Peridium curvipes* Haeckel, 1887; **Peridium lasanum* Haeckel, 1887 and **Peridium papillatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***PERIDIUM***

SYN. (obj.); N.D. Type

UNFIGURED SPECIES

Peridium lasanum
Haeckel, 1887: 1154, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) DIMELISSIDAE
ASSIGNED HEREIN

GENUS ***Cryptogyrus***
Sugiyama, 1993: 65

Diagnosis: Dimelissidae with a large eucephalic lobe, with or without a loosely defined ante- and postcephalic lattice shell. D and two L relatively thin extended as short feet, V present, A short, usually not externally prolonged. A coarse lattice wall encloses the internal skeleton.

Remarks: Monospecific genus. Because no other figures are available, the support image is selected among those species subsequently assigned to this genus.

Original series: *Cryptogyrus trachylobus* Sugiyama, 1993.

FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE OLIGOCENE–LATE PLEISTOCENE***

VALID
UNIQUE

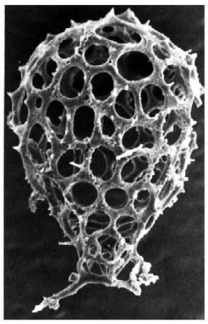
Type



25 µm

Cryptogyrus trachylobus
Sugiyama, 1993: 65, fig. 19.1b

Support



50 µm

Peridium sphaerum
Funakawa, 1995: 21, pl. 2, fig. 1a

N - LINEAGE III (G) DIMELISSIDAE
ASSIGNED IN Petrushevskaya 1981: 82

GENUS ***Lithomelissa***
Ehrenberg, 1847: 54

NOMINOTYPE ***Lithomelissa* (*Lithomelissa*)**

Diagnosis: Dimelissidae with two hyaline or porous segments. Aperture usually open. A as a columella extended in a strong apical horn. Internal collar area defined by apophyses a and ap outgrowing from A. V poorly differentiated. D and L spines extended in lateral spines.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Lithomelissa microptera* Ehrenberg, 1854c.

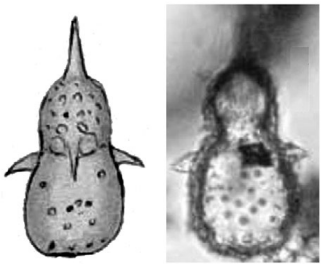
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–EARLY PLEISTOCENE***

VALID
FREQUENT

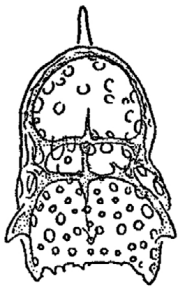
Type



50 µm

Lithomelissa microptera
Ehrenberg, 1854c: pl. 36, fig. 2 [Ogane *et al.* 2009b: pl. 21, fig. 3b (lectotype herein); description in Haeckel, 1862: 303]

Support



50 µm

Lithomelissa microptera Ehrenberg
Petrushevskaya 1971a: 90, pl. 44, fig. 3

N - Lineage III (G) DIMELISSIDAE

GENUS ***Acromelissa***
Haeckel, 1882: 431

SUBGENUS ***Lithomelissa* (*Acromelissa*)**

Remarks: Only the type species clearly belongs to this genus; rarely reported.

Original series: *Lithomelissa amphora* Stöhr, 1880; *Lithomelissa ehrenbergi* Bütschli, 1882b; **Lithomelissa macroceras* Haeckel, 1887; *Lithomelissa macroptera* Ehrenberg, 1874b; **Lithomelissa microstoma* Haeckel, 1887; *Lithomelissa mitra* Bütschli, 1882b and **Lithomelissa pycnoptera* Haeckel, 1887.

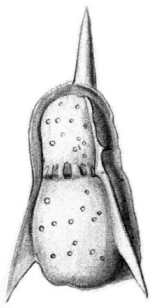
FIXATION SUBSEQUENT DESIGNATION (Petrushevskaya 1981: 83)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 592

SEE ***LITHOMELISSA***

SYN.
RARE

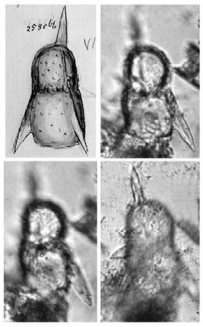
Type



25 µm

Lithomelissa macroptera
Ehrenberg, 1874b: 241 (unfigured); Ehrenberg, 1876: 78, pl. 3, fig. 9

Type



50 µm

Lithomelissa macroptera Ehrenberg
Ogane *et al.* 2009b: pl. 19, figs 6a-d [lectotype herein]

N - Lineage III (G) ? DIMELISSIDAE

GENUS ***Acanthocorys***
Haeckel, 1882: 432

NOMINOTYPE ***Acanthocorys* (*Acanthocorys*)**

Remarks: See comments under *ACANTHOCORALLIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D125)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? LITHOMELISSA***

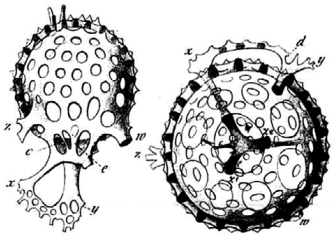
N.D.

Type

UNFIGURED SPECIES

Acanthocorys hexapodia
Haeckel, 1887: 1262, unfigured

Support



25 µm

Clathrocanium? ehrenbergi
Bütschli, 1882b: 531, pl. 32, figs 18a, 18b

N - Lineage III (G) ? DIMELISSIDAE

GENUS ***Acanthocorallium***
Haeckel, 1887: 1262

SUBGENUS ***Acanthocorys* (*Acanthocorallium*)**

Remarks: Type species never figured. Type species never figured. The support image corresponds to *Clathrocanium*? *ehrenbergi* Bütschli, 1882b, that was only questionably included by Haeckel in the synonymy of *Acanthocorys buetschlii* Haeckel, 1887: 1262.

Original series: **Acanthocorys buetschlii* Haeckel, 1887; **Acanthocorys hexapodia* Haeckel, 1887; **Acanthocorys macropodia* Haeckel, 1887 and **Acanthocorys pristipodia* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D125)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***ACANTHOCORYS***

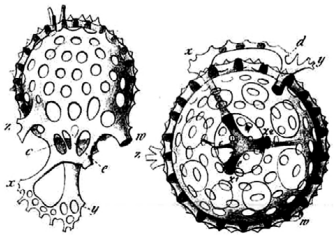
SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Acanthocorys hexapodia
Haeckel, 1887: 1262, unfigured

Support



25 µm

Clathrocanium? ehrenbergi
Bütschli, 1882b: 531, pl. 32, figs 18a, 18b

N - Lineage III (G) DIMELISSIDAE
ASSIGNED IN Petrushevskaya 1981: 84

GENUS ***Peromelissa***
Haeckel, 1882: 433

Diagnosis: Dimelissidae with a large cephalis and a shorter usually closed thorax. A oblique inside the cephalis protruding as a fragile lateral horn. V rarely as an external horn. D and 2L extending through the thoracic wall as lateral feet. Rare secondary thorns.

Remarks: Type species frequently reported.

Original series: *Lithomelissa capito* Ehrenberg, 1874b; *Peromelissa calva* Haeckel, 1887; *Peromelissa phalacra* Haeckel, 1887 and **Peromelissa psilocrana* Haeckel, 1887.

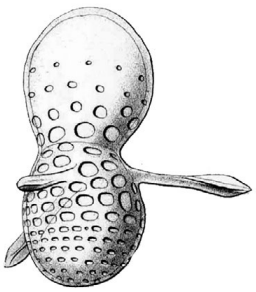
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS **VALID**

AGE ***Holocene–Living***

VALID
FREQUENT

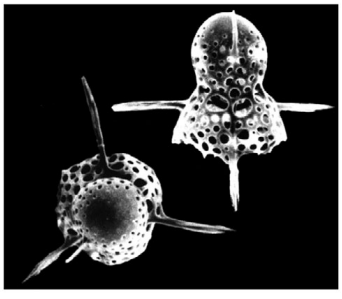
Type



50 µm

Peromelissa phalacra
Haeckel, 1887: 1236, pl. 57, fig. 11

Support



25 µm

Peromelissa phalacra Haeckel
Nishimura & Yamauchi 1984: 45, pl. 32, figs 1a, 1b

N - LINEAGE III (G) DIMELISSIDAE

GENUS ***Dicorys***
Popofsky, 1913: 369

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Petrushevskaya (1981).

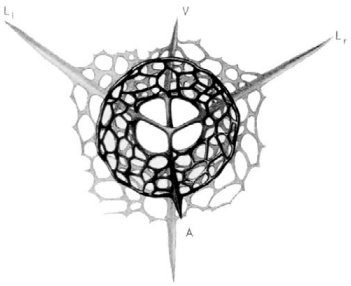
Original series: *Dicorys architypus* Popofsky, 1913.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM?
synonymized by Petrushevskaya 1981: 84

SEE ***PEROMELISSA***

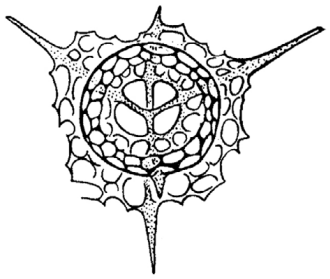
SYN.? Type
VERY RARE



25 µm

Dicorys architypus
Popofsky, 1913: 415, pl. 37, fig. 5

Support



25 µm

Dicorys architypus Popofsky
Petrushevskaya 1981: 84, fig. 75

N - LINEAGE III (G) DIMELISSIDAE

GENUS ***Micromelissa***
Haeckel, 1882: 433

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

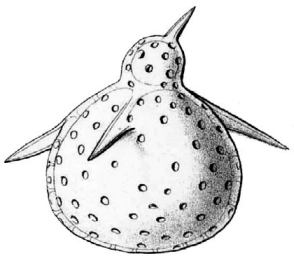
Original series: *Lithomelissa microptera* Ehrenberg, 1854c; *Lithomelissa ventricosa* Ehrenberg, 1874b; **Micromelissa apis* Haeckel, 1887; *Micromelissa bombus* Haeckel, 1887 and **Micromelissa vespa* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS JUNIOR SYNONYM?
synonymized by Petrushevskaya 1971a: 133

SEE ***PEROMELISSA***

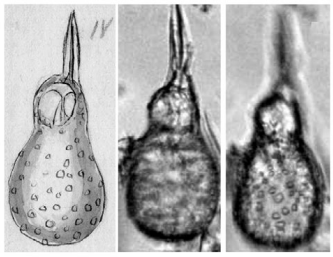
SYN.? Type
UNIQUE



50 µm

Micromelissa bombus
Haeckel, 1887: 1235, pl. 57, fig. 14

Type



25 µm

Lithopera nidus pendulus Ehrenberg
Ogane *et al.* 2009b: pl. 21, figs 4a-c [lectotype herein]

N - LINEAGE III (G) DIMELISSIDAE

GENUS ***Micromelissa***
Haeckel, 1887: 1205

SUBGENUS ***Lithomelissa (Micromelissa)***

Remarks: Homonym of *MICROMELISSA* Haeckel, 1882: 433 (Polycystinea); see *DIMELISSA nomen novum*. Haeckel in 1887 uses the generic name *MICROMELISSA* twice (pages 1205 and 1235). Because Campbell (1951: 529) replaces the name as used here with the name *DIMELISSA*, we follow this usage and we regard here *MICROMELISSA* Haeckel, 1887: 1205 to be a junior homonym of *MICROMELISSA*. The support image is a junior subjective synonym of the type species.

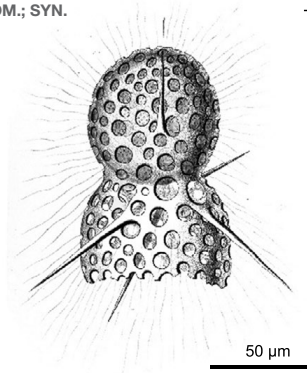
Original series: *Lithomelissa buetschlii* Haeckel, 1887; *Lithomelissa haeckeli* Bütschli, 1882b; *Lithomelissa mediterranea* Müller, 1859b; *Lithomelissa thoracites* Haeckel, 1861b and *Lithomelissa*? *bicornis* Ehrenberg, 1862b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1951: 529)

STATUS HOMONYM, JUNIOR SYNONYM

SEE ***DIMELISSA NOMEN NOVUM***

HOM.; SYN. Type



50 µm

Lithomelissa thoracites
Haeckel, 1861b: 836 (unfigured); Haeckel, 1862: 301, pl. 6, fig. 2

Support



100 µm

Psilomelissa tricuspidata abdominalis
Popofsky, 1908: 284, pl. 33, fig. 8

N - LINEAGE III (G) DIMELISSIDAE

GENUS ***Dimelissa*** *NOMEN NOVUM* PRO *MICROMELISSA*
Campbell, 1951: 529

SUBGENUS ***Lithomelissa (Dimelissa)***

Remarks: Only the type species clearly belongs to this genus; frequently reported.

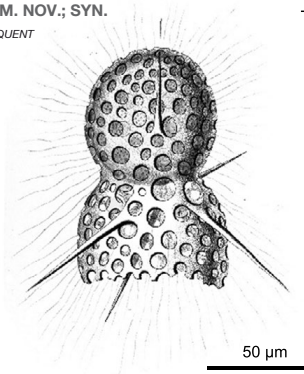
Original series: *Lithomelissa buetschlii* Haeckel, 1887; *Lithomelissa haeckeli* Bütschli, 1882b; *Lithomelissa mediterranea* Müller, 1859b; *Lithomelissa thoracites* Haeckel, 1861b and *Lithomelissa*? *bicornis* Ehrenberg, 1862b.

FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1951: 529)

STATUS JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 44

SEE ***PEROMELISSA***

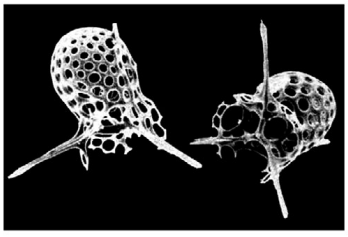
NOM. NOV.; SYN. Type
FREQUENT



50 µm

Lithomelissa thoracites
Haeckel, 1861b: 836 (unfigured); Haeckel, 1862: 301, pl. 6, fig. 2

Support



25 µm

Lithomelissa thoracites Haeckel
Nishimura & Yamauchi 1984: 45, pl. 32, figs 2a, 2b

N - LINEAGE III (G) DIMELISSIDAE

GENUS ***Psilomelissa***
Haeckel, 1882: 431

Remarks: Only the type species clearly belongs to this genus; rarely reported.

Original series: *Dictyocephalus galeatus* Ehrenberg, 1873a; *Lithomelissa hertwigi* Bütschli, 1882b; *Psilomelissa calvata* Haeckel, 1887; **Psilomelissa phalacra* Haeckel, 1887 and **Psilomelissa sphaerocephala* Haeckel, 1887.

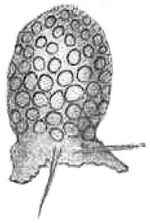
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 133

SEE ***PEROMELISSA***

SYN.
RARE

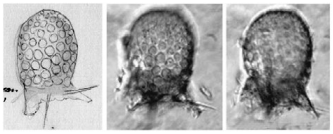
Type



25 µm

Dictyocephalus galeatus
Ehrenberg, 1873a: 307 (unfigured); Ehrenberg, 1873b: 288-289, pl. 7, fig. 25

Type



50 µm

Dictyocephalus galeatus Ehrenberg
Suzuki *et al.* 2009a: pl. 53, figs 9a-c [lectotype herein]

N - LINEAGE III (G) DIMELISSIDAE
ASSIGNED IN Petrushevskaya 1981: 87

GENUS ***Phormacantha***
Jørgensen, 1905: 132

Diagnosis: Dimelissidae with one segment: the eucephalic chamber. Other parts of shell, when present, represented by arches. A, D, Lr and Ll spines extended in rather long appendages on the shell; V spine as a short lateral thorn.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Peridium hystrix* Jørgensen, 1900.

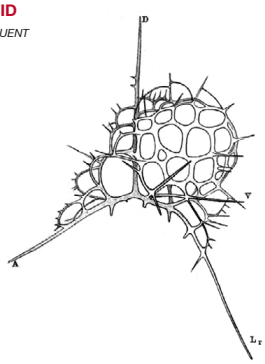
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
FREQUENT

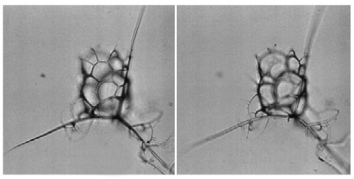
Type



25 µm

Peridium hystrix
Jørgensen, 1900: 76 (unfigured); Jørgensen, 1905: 132, pl. 14, fig. 59a

Type



50 µm

Phormacantha hystrix (Jørgensen)
Dolven *et al.* 2014: 53, pl. 6, figs 20a, 20b [lectotype]

N - LINEAGE III (G) DIMELISSIDAE
ASSIGNED IN Petrushevskaya 1981: 79

GENUS ***Plectacantha***
Jørgensen, 1905: 131

Diagnosis: Dimelissidae with one segment: the eucephalic chamber reduced to a meshwork. A spine through the lateral wall but not as a typical horn, V spine not always clearly differentiated, D, Lr and Ll not as so-called feet but as oral appendages. No basal ring.

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Plectacantha oikiskos* Jørgensen, 1905 and *Plectacantha trichoides* Jørgensen, 1905.

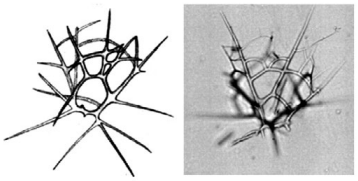
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

VALID
FREQUENT

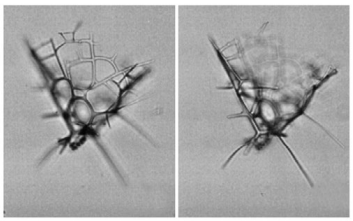
Type



50 µm

Plectacantha oikiskos
Jørgensen, 1905: 131: pl. 13, fig. 55a; Dolven *et al.* 2014: 54, pl. 7, fig. 4 (lectotype)

Support



50 µm

Plectacantha oikiskos Jørgensen
Dolven *et al.* 2014: 54, pl. 7, figs 5a, 5b [paralectotype]

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Amphicentria***
Ehrenberg, 1862a: 293

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Ehrenberg (1862b). The support image is a junior subjective synonym.

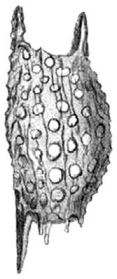
Original series: *Amphicentria salpa* Ehrenberg, 1862b.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
UNIQUE

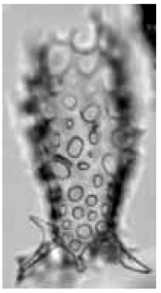
Type



50 µm

Amphicentria salpa
Ehrenberg, 1862b: 296 (unfigured); Ehrenberg, 1873b: 284-285, pl. 2, fig. 18

Support



50 µm

Amphicentria sp. 1
Suzuki *et al.*, 2009b: 257, pl. 22, fig. 4

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Spongolarcus***
Haeckel, 1887: 613

Remarks: Type species never figured. The support image was queried in the synonymy of *Spongolarcus amphicentria*.

Original series: *Spongolarcus amphicentria* Haeckel, 1887; **Spongolarcus dimensivus* Haeckel, 1887; **Spongolarcus lentellipsis* Haeckel, 1887 and **Spongolarcus triaxonius* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D96)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

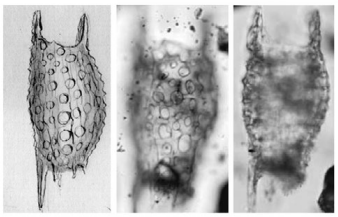
SEE ***? AMPHICENTRIA***

N.D. Type

UNFIGURED SPECIES

Spongolarcus lentellipsis
Haeckel, 1887: 613, unfigured

Type



50 µm

Amphicentria salpa Ehrenberg
Suzuki *et al.* 2009a: pl. 41, figs 2a-c [lectotype herein]

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Amphiplecta***
Haeckel, 1882: 424

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. The subsequent designation by Petrushevskaya (1971b: 103) of *Amphiplecta acrostoma* is not valid according to ICZN art. 69.1. This is an easy recognizable genera having a cephalis cylindrical open above, it ranges from Early Pleistocene–Living. A new generic name is required.

Original series: *Amphiplecta acrostoma* Haeckel, 1887; **Amphiplecta amphistoma* Haeckel, 1887 and *Amphiplecta callistoma* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

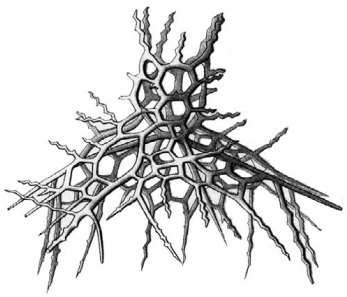
STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Amphiplecta amphistoma
Haeckel, 1887: 1223, unfigured

Support



50 µm

Amphiplecta acrostoma
Haeckel, 1887: 1223, pl. 97, fig. 10

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Amphicryphalus*** PREMATURE NAME
Haeckel, 1887: 1223

Remarks: A premature name (vel *AMPHICRYPHALUS*) used by Haeckel as alternative of the name *AMPHIPLECTA*. Support image is selected among those species subsequently assigned to this genus.

FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D122)

STATUS INVALID NAME
designated herein

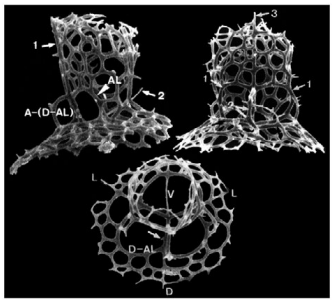
SEE ***AMPHIPLECTA***

INV. Type

UNFIGURED SPECIES

Amphiplecta amphistoma
Haeckel, 1887: 1223, unfigured

Support



200 µm

Amphiplecta tripleura
Funakawa, 1995: 18, pl. 1, figs 1a, 2, 3

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Sethopilium***
Haeckel, 1882: 431

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: **Sethopilium cyrtopus* Haeckel, 1887; *Sethopilium macropus* Haeckel, 1887 and *Sethopilium orthopus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D. Type
UNIQUE



50 µm

Sethopilium orthopus
Haeckel, 1887: 1202, pl. 97, fig. 8

Support



50 µm

Sethopilium macropus
Haeckel, 1887: 1203, pl. 97, fig. 9

N - LINEAGE III (G) ? DIMELISSIDAE

GENUS ***Sethomelissa***
Haeckel, 1882: 431

SUBGENUS ***Lithomelissa* (*Sethomelissa*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Sethomelissa hymenoptera* Haeckel, 1887.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Sethomelissa hymenoptera
Haeckel, 1887: 1238, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) ? PHAENOCALPIDIDAE
ASSIGNED HEREIN

GENUS ***Archipera***
Haeckel, 1882: 429

Diagnosis: This genus includes species with a shell restricted to a globular cephalis with small pores. The A, D, 2L spines protrude externally as a long and sided horn and three feet whose ends may be branched, the V spine as a shorter lateral horn. No inner A columella.

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Archipera bicornis* Haeckel, 1887; *Archipera cortiniscus* Haeckel, 1887; **Archipera multicornis* Haeckel, 1887; **Archipera pentacantha* Haeckel, 1887; **Archipera quadricornis* Haeckel, 1887 and **Archipera tricornis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS **VALID**

AGE ***[QUATERNARY]***

VALID
UNIQUE

Type



Archipera cortiniscus
Haeckel, 1887: 1155, pl. 98, fig. 5

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) PHAENOCALPIDIDAE
ASSIGNED IN Petrushevskaya 1981: 75

GENUS ***Archiscenium***
Haeckel, 1882: 429

Diagnosis: Phaenocalpididae with a small shell composed of a single, very thin-walled cephalis bearing one apical horn and three feet (2 lateral, 1 dorsal).

Remarks: A single report of the type species after the first illustration.

Original series: **Archiscenium callimitra* Haeckel, 1887; **Archiscenium clathrocorys* Haeckel, 1887; *Archiscenium cyclopterum* Haeckel, 1887; *Archiscenium quadrispinum* Haeckel, 1887 and **Archiscenium tripterygium* Haeckel, 1887.

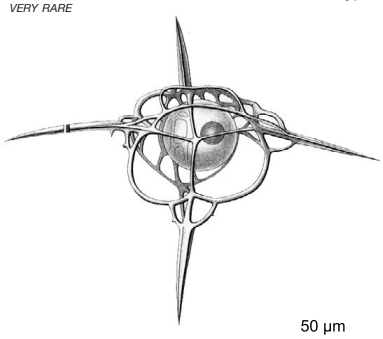
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS **VALID**

AGE ***[QUATERNARY]–LIVING***

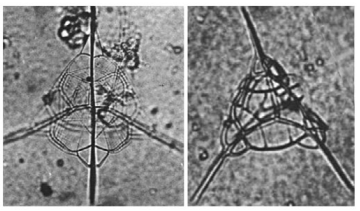
VALID
VERY RARE

Type



Archiscenium quadrispinum
Haeckel, 1887: 1150, pl. 53, fig. 11

Support



Archiscenium quadrispinum Haeckel
Takahashi & Honjo 1981: 150, pl. 6, figs 10, 11

N - LINEAGE III (G) PHAENOCALPIDIDAE

GENUS ***Euscenium***
Haeckel, 1887: 1146

NOMINOTYPE ***Euscenium* (*Euscenium*)**

Remarks: A single report of the type species after the first illustration.

Original series: **Euscenium archicyrtis* Haeckel, 1887; **Euscenium hemisphaericum* Haeckel, 1887; *Euscenium plectaniscus* Haeckel, 1887; *Euscenium tricolpium* Haeckel, 1887 and *Euscenium tripospyris* Haeckel, 1887.

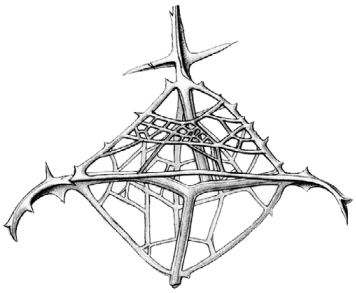
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ARCHISCENIUM***

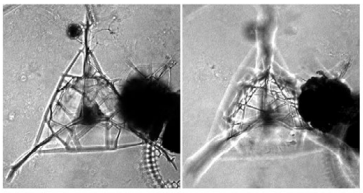
SYN.
VERY RARE

Type



Euscenium plectaniscus
Haeckel, 1887: 1146, pl. 98, fig. 1

Support



Euscenium plectaniscus Haeckel
Zhang's collection (East Indian Ocean)

N - LINEAGE III (G) PHAENOCALPIDIDAE

GENUS ***Euscenarium***
Haeckel, 1887: 1146

SUBGENUS ***Euscenium (Euscenarium)***

Remarks: Type species frequently reported. Type species also named *Euscenium eucolpium* in Haeckel's plate captions. As *EUSCENARIUM* was considered as a subjective synonym of *EUSCENIUM* by Campbell (1954: D118), no type species was then designated in the Treatise. Therefore, we consider the type species designation of *EUSCENARIUM* to date from Petrushevskaya (1971a: 65).

Original series: **Euscenium archicyrtis* Haeckel, 1887; **Euscenium hemisphaericum* Haeckel, 1887; *Euscenium plectaniscus* Haeckel, 1887; *Euscenium tricolpium* Haeckel, 1887 and *Euscenium tripospyris* Haeckel, 1887.

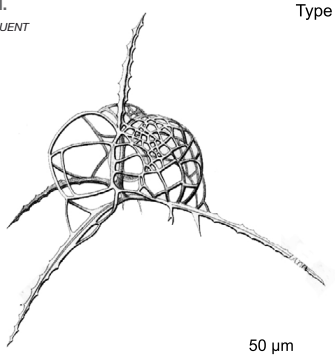
FIXATION SUBSEQUENT DESIGNATION (Petrushevskaya 1971a: 65)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***ARCHISCENIUM***

SYN.
FREQUENT

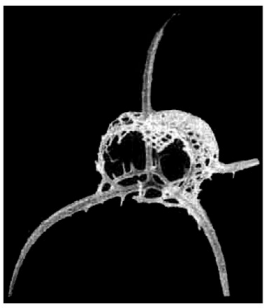
Type



50 µm

Euscenium tricolpium
Haeckel, 1887: 1147, pl. 53, fig. 12

Support



25 µm

Cladoscenium tricolpium (Haeckel)
Nishimura & Yamauchi 1984: 44, pl. 24, fig. 6

N - LINEAGE III (G) ? PHAENOCALPIDIDAE

GENUS ***Euscenidium***
Haeckel, 1887: 1147

SUBGENUS ***Euscenium (Euscenidium)***

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Euscenium furcatum* Haeckel, 1887; **Euscenium quadratum* Haeckel, 1887 and **Euscenium ramosum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Euscenium furcatum
Haeckel, 1887: 1147, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) PHAENOCALPIDIDAE
ASSIGNED IN Petrushevskaya 1981: 71

GENUS ***Clathromitra***
Haeckel, 1882: 431

Diagnosis: Phaenocalpididae with large cephalis and very short thorax. A spine as a free columella inside the cephalis, protruding as a large apical horn with porous plates. D, Lr, Ll spines extend outside as sided feet. V spine giving a short external horn. Ramified axobate present.

Remarks: Only the type species clearly belongs to this genus (frequently reported); just two species originally included at the time of the generic definition.

Original series: **Clathromitra pentacantha* Haeckel, 1887 and *Clathromitra pterophormis* Haeckel, 1887.

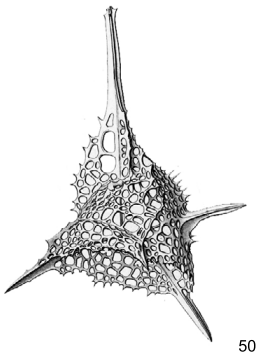
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS **VALID**

AGE ***EARLY MIOCENE–LIVING***

VALID
FREQUENT

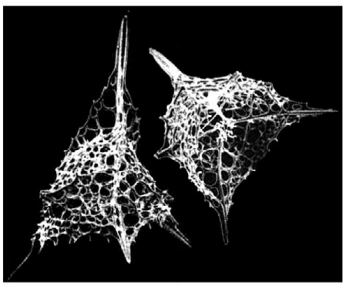
Type



50 µm

Clathromitra pterophormis
Haeckel, 1887: 1219, pl. 57, fig. 8

Support



50 µm

Clathromitra pterophormis Haeckel
Nishimura & Yamauchi 1984: 42, pl. 29, figs 6a, 6b

N - LINEAGE III (G) PHAENOCALPIDIDAE
ASSIGNED HEREIN

GENUS ***Conicavus***
Takahashi, 1991: 117

Diagnosis: Phaenocalpididae with an unsegmented conical shell with an irregular, very fine, meshwork. One or two short apical horns separated by triangular openings. No sagittal ring. Basal end of the shell enclosed by a mesh with a few large basal pores.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Takahashi (1991).

Original series: *Conicavus tipiopsis* Takahashi, 1991.

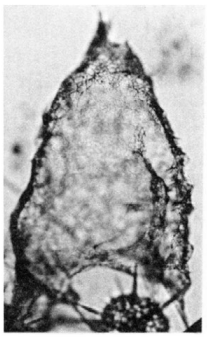
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

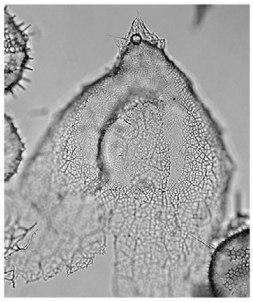
Type



50 µm

Conicavus tipiopsis
Takahashi, 1991: 117, pl. 38, fig. 4

Support



50 µm

Conicavus tipiopsis Takahashi
Zhang's collection (South China Sea)

N - Lineage III (G) PHAENOCALPIDIDAE
ASSIGNED HEREIN

GENUS **Genetrix**
Sugiyama, 1994: 5

Diagnosis: Phaenocalpididae with a bi-segmented shell with a small cephalis above a large, barrel-shaped thorax covered by a spongy layer. Internal spicule with MB, A, D, 2L, V and Ax. A forming an apical horn. D and two L prolonged as three thoracic ribs extended as short three-sided feet.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Sugiyama (1994).

Original series: *Genetrix petrushevskayae* Sugiyama, 1994.

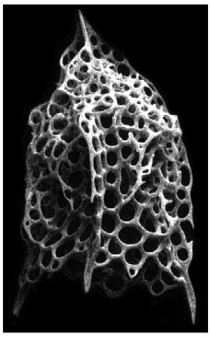
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Late Early Miocene***

VALID
UNIQUE

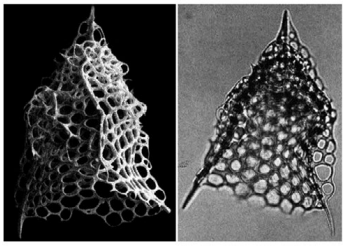
Type



50 µm

Genetrix petrushevskayae
Sugiyama, 1994: 5, pl. 3, fig. 1a

Support



200 µm

Genetrix petrushevskayae
Sugiyama, 1994: 5, pl. 3, figs 2a, 3

N - Lineage III (G) PHAENOCALPIDIDAE
ASSIGNED HEREIN

GENUS **Periplecta**
Haeckel, 1882: 424

Diagnosis: Phaenocalpididae with a globular, irregularly spongy, mono-segmented cephalis, bearing prismatic, well-developed, A, D, and 2L spines. The three basal spines (or feet) are curved, pinnate, each with three to five pairs of opposite simple apophyses, connected to the shell by a collar septum.

Remarks: Type species only illustrated by Haeckel (1887); a junior subjective synonym frequently reported is *Cladoscenium ancoratum* Haeckel, 1887.

Original series: *Periplecta cortina* Haeckel, 1887; **Periplecta monocyrtis* Haeckel, 1887 and **Periplecta pteroscenium* Haeckel, 1887.

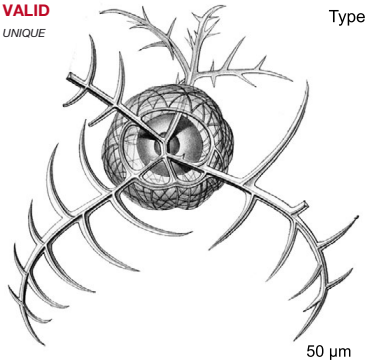
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS **VALID**

AGE ***Early Oligocene–Living***

VALID
UNIQUE

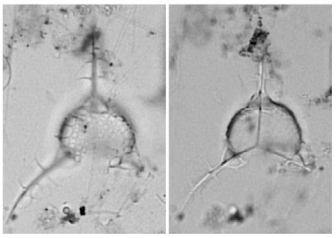
Type



50 µm

Periplecta cortina
Haeckel, 1887: 926, pl. 91, fig. 10

Support



50 µm

Periplecta cortina Haeckel
Suzuki's collection (Quaternary, North Pacific)

N - Lineage III (G) PHAENOCALPIDIDAE
ASSIGNED IN Petrushevskaya 1981: 66

GENUS **Phaenocalpis**
Haeckel, 1887: 1173

Diagnosis: Phaenocalpididae with a mono-segmented, thick-walled, globular, cephalis with longitudinal rows of uniform pores. A, D and 2L spines extended as strong sided external horn and feet, sometimes crenulated. A spine as a free columella inside the cephalis.

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: *Petalospyris carinata* Ehrenberg, 1874b; *Petalospyris flabellum* Ehrenberg, 1874b; *Petalospyris ocellata* Ehrenberg, 1874b and *Phaenocalpis petalospyris* Haeckel, 1887.

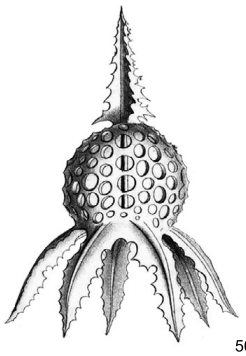
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D120)

STATUS **VALID**

AGE ***Middle Paleocene–late Middle Eocene***

VALID
UNIQUE

Type



50 µm

Phaenocalpis petalospyris
Haeckel, 1887: 1173, pl. 97, fig. 4

Support

NO IMAGE PUBLISHED

no image available

N - Lineage III (G) PHAENOCALPIDIDAE
ASSIGNED IN Petrushevskaya 1981: 70

GENUS **Pteroscenium**
Haeckel, 1882: 429

Diagnosis: Phaenocalpididae with a conical cephalis with an irregular network of small pores. A, D and 2L extended in long, three-edged, horn and feet. A columella straight with two to three verticils of branches. External edges of feet with numerous bristles connected in 3 delicate lateral spiny wings.

Remarks: Type species rarely reported.

Original series: **Pteroscenium arcadophorum* Haeckel, 1887; *Pteroscenium arcuatum* Haeckel, 1887; **Pteroscenium macropodium* Haeckel, 1887; *Pteroscenium pinnatum* Haeckel, 1887; **Pteroscenium spinulosum* Haeckel, 1887 and **Pteroscenium tripocolpum* Haeckel, 1887.

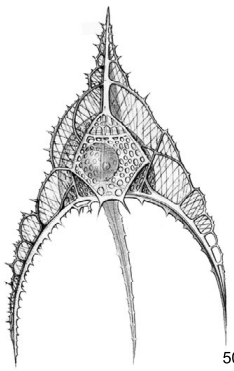
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS **VALID**

AGE ***Middle Pleistocene–Living***

VALID
RARE

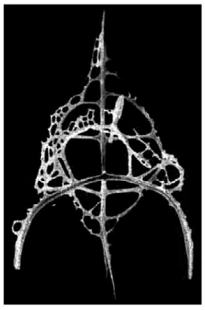
Type



50 µm

Pteroscenium arcuatum
Haeckel, 1887: 1152, pl. 98, fig. 4

Support



25 µm

Pteroscenium arcuatum Haeckel
Nishimura & Yamauchi 1984: 61, pl. 29, fig. 8

N - LINEAGE III (G) PHAENOCALPIDIDAE

GENUS ***Verticillata***
Popofsky, 1913: 281

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Verticillata hexacantha* Popofsky, 1913.

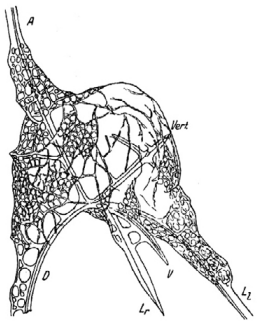
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Nishimura 1990: 114

SEE ***PTEROSCENIUM***

SYN.
FREQUENT

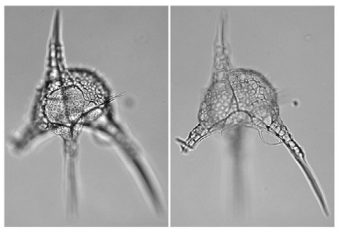
Type



50 µm

Verticillata hexacantha
Popofsky, 1913: 282, text-fig. 11

Support



100 µm

Verticillata hexacantha Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (G) PHAENOCALPIDIDAE
ASSIGNED IN Petrushevskaya 1981: 7

GENUS ***Spongomelissa***
Haeckel, 1887: 1209

Diagnosis: Phaenocalpididae with a two-segmented shell. Cephalis porous, thick-walled, spongious, divided into lobes. Thorax subcylindrical not shorter than cephalis. A (as an internal columella), D, 2L spines (not V) extended externally as costulate horn and lateral feet.

Remarks: Monospecific genus. Because no other figures are available, the support image is selected among those species subsequently assigned to this genus.

Original series: *Lithomelissa spongiosa* Bütschli, 1882b.

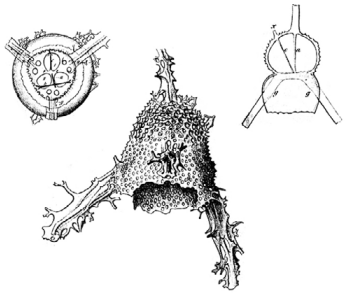
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE PALEOCENE–LATE OLIGOCENE***

VALID
VERY RARE

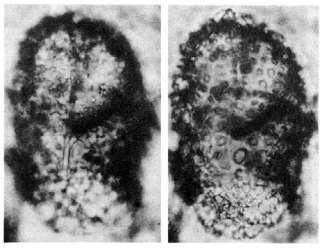
Type



50 µm

Lithomelissa spongiosa
Bütschli, 1882b: 539, pl. 33, figs 25a-c

Support



50 µm

Spongomelissa superspongiosa
Vitukhin, 1993: 78, pl. 12, figs 3a, 3b

N - LINEAGE III (G) PHAENOCALPIDIDAE
ASSIGNED IN Petrushevskaya 1981: 69

GENUS ***Tripophaenoscenium***
Campbell & Clark, 1944a: 38

Diagnosis: Phaenocalpididae with a two-segmented shell, the thorax being longer than the conical cephalis. A, D and 2L extended respectively by three feet and a strong apical horn. V as a small horizontal horn. A as a columella inside the cephalis. Surface of shell with numerous thorns.

Remarks: Genus described as monospecific at the time of the generic definition.

Original series: *Tripophaenoscenium laimingi* Campbell & Clark, 1944a.

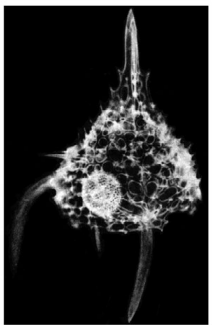
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY LATE MIOCENE***

VALID
VERY RARE

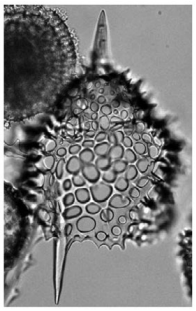
Type



100 µm

Tripophaenoscenium laimingi
Campbell & Clark, 1944a: 38, pl. 5, fig. 19

Support



50 µm

Tripophaenoscenium laimingi Campbell & Clark
Renaudie 2012: 105, pl. 20, fig. 4

N - LINEAGE III (G) ? PHAENOCALPIDIDAE

GENUS ***Cladoscenium***
Haeckel, 1882: 429

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Cladoscenium ancoratum* Haeckel, 1887; **Cladoscenium fulcratum* Haeckel, 1887; **Cladoscenium gladiatum* Haeckel, 1887; *Cladoscenium pectinatum* Haeckel, 1887; **Cladoscenium pinnatum* Haeckel, 1887 and **Cladoscenium verticillatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

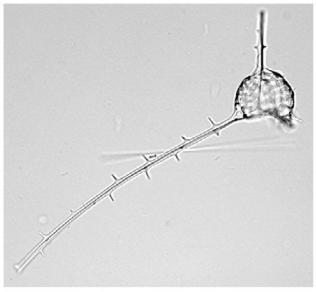
N.D.

Type

UNFIGURED SPECIES

Cladoscenium fulcratum
Haeckel, 1887: 1148, unfigured

Support



50 µm

Cladoscenium pectinatum Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (G) ? PHAENOCALPIDIDAE

GENUS ***Dictyocircus***
Jørgensen, 1905: 129

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

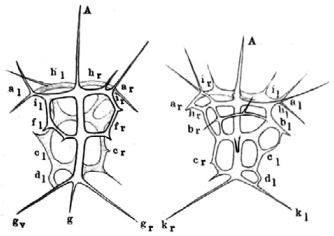
Original series: *Dictyocircus clathratus* Jørgensen, 1905.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type juvenile

N.D.
UNIQUE

Type



50 µm

Dictyocircus clathratus
Jørgensen, 1905: 130, pl. 13, figs 48a, 48e

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) ? PHAENOCALPIDIDAE

GENUS ***Phaenoscenium***
Haeckel, 1887: 1174

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

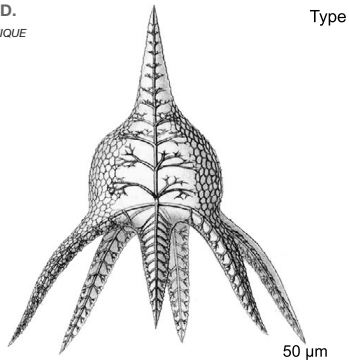
Original series: **Phaenoscenium cladopodium* Haeckel, 1887; *Phaenoscenium hexapodium* Haeckel, 1887 and **Phaenoscenium polypodium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D120)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

Type



50 µm

Phaenoscenium hexapodium
Haeckel, 1887: 1175, pl. 98, fig. 9

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) PLAGIACANTHIDAE
ASSIGNED IN Petrushevskaya 1981: 79

GENUS ***Arachnocalpis***
Haeckel, 1882: 427

Diagnosis: Skeleton pear-shaped or ovoid and double shelled with outer shell arachnoidal or spongy and very delicate; peristome constricted or with a crown of radial spines; no apical horn.

Remarks: The type species has been figured just once, hence the support image is a subsequently assigned species. Only two species originally included at the time of the generic definition.

Original series: **Arachnocalpis ellipsoides* Haeckel, 1887 and *Arachnocalpis sphaeroides* Haeckel, 1887.

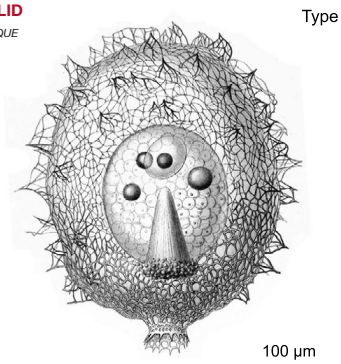
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

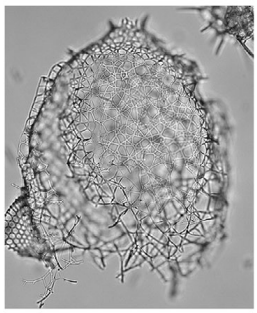
Type



100 µm

Arachnocalpis ellipsoides
Haeckel, 1887: 1172, pl. 98, fig. 13

Support



50 µm

Arachnocalpis ellipsoides Haeckel
Zhang's collection (South China Sea)

N - LINEAGE III (G) PLAGIACANTHIDAE
ASSIGNED IN Petrushevskaya 1981: 97

GENUS ***Cystidium***
Hertwig, 1879: 214

Diagnosis: Ellipsoidal nassellarian without external skeleton containing only a very small and simple apical spicule in endoplasm.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Hertwig (1879).

Original series: *Cystidium inerme* Hertwig, 1879.

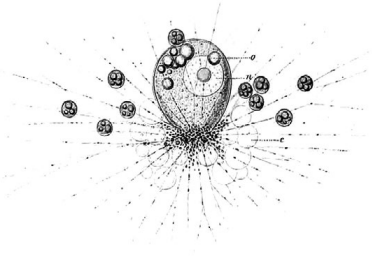
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

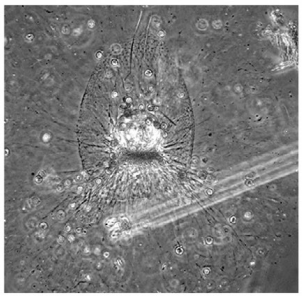
Type



~ 25 µm

Cystidium inerme
Hertwig, 1879: 214, pl. 7, fig. 1 [lectotype herein]

Support



100 µm

Cystidium inerme Hertwig
Suzuki's collection (plankton, off Sesoko Island, Japan)

N - LINEAGE III (G) PLAGIACANTHIDAE

GENUS ***Paracystidium***
Cachon & Cachon, 1969: 247

Remarks: Genus described as monospecific at the time of the generic definition; reported only once by Cachon & Cachon (1969).

Original series: *Cystidium spiculosum* Hollande & Enjumet, 1960.

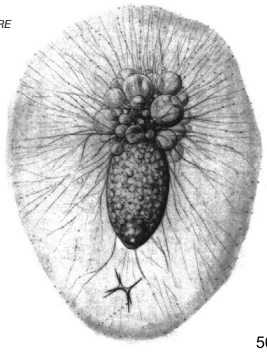
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CYSTIDIUM***

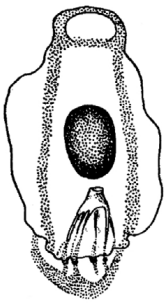
SYN.
VERY RARE

Type



Cystidium spiculosum
Hollande & Enjumet, 1960: 243, pl. 37, fig. 2 [lectotype herein]

Support



Paracystidium spiculosum (Hollande & Enjumet)
Petrushevskaya 1981: 98, fig. 102

N - LINEAGE III (G) PLAGIACANTHIDAE
ASSIGNED IN Petrushevskaya 1971a: 147

GENUS ***Dumetum***
Popofsky, 1908: 264

Diagnosis: Very short MB with five robust three-bladed rays: A, D, 2L and V. All rays, except A, bear one pair of long pointed branches. A may have two verticils. Branches free or interconnected.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Petrushevskaya (1967).

Original series: *Dumetum rectum* Popofsky, 1908.

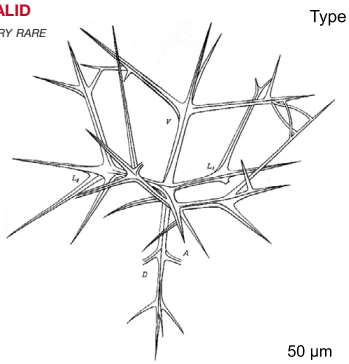
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

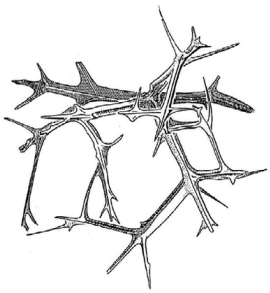
VALID
VERY RARE

Type



Dumetum rectum
Popofsky, 1908: 265, pl. 29, fig. 5 [lectotype herein]

Support



Dumetum rectum Popofsky
Petrushevskaya 1967: 63, fig. 35

N - LINEAGE III (G) PLAGIACANTHIDAE

GENUS ***Pentaplagia***
Cachon & Cachon, 1969: 246

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Petrushevskaya (1981).

Original series: *Pentaplagia haeckeli* Cachon & Cachon, 1969.

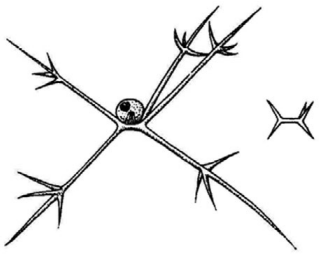
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Dumitrica 2004: 216

SEE ***DUMETUM***

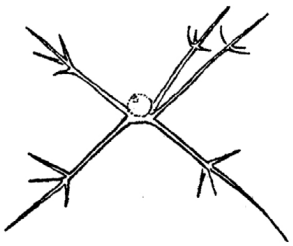
SYN.
VERY RARE

Type



Pentaplagia haeckeli
Cachon & Cachon, 1969: 246, fig. 8

Support



Pentaplagia haeckeli Cachon & Cachon
Petrushevskaya 1981: 96, fig. 65

N - LINEAGE III (G) PLAGIACANTHIDAE
ASSIGNED HERE

GENUS ***Enneaplegma***
Haeckel, 1882: 424

Diagnosis: Skeleton with very short MB, three-bladed, longer and thicker A, D and 2L bearing five to seven verticils, and thinner V and 2l in equatorial plane with a single verticil. All verticils interconnected by arachnoidal threads.

Remarks: See comments under *POLYPLECTA*.

Original series: *Acanthodesmia dumetum* Müller, 1859b; *Acanthodesmia prismatium* Haeckel, 1861a; **Polyplecta decacantha* Haeckel, 1887; **Polyplecta enneacantha* Haeckel, 1887 and *Polyplecta heptacantha* Haeckel, 1887.

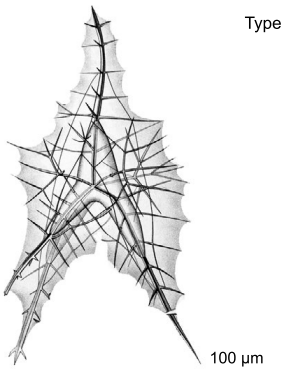
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D105)

STATUS **VALID**

AGE ***LIVING***

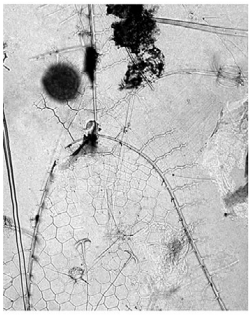
VALID
UNIQUE

Type



Polyplecta heptacantha
Haeckel, 1887: 929, pl. 91, fig. 12

Support



Polyplecta heptacantha Haeckel
Zhang's collection (East Indian Ocean)

N - LINEAGE III (G) PLAGIACANTHIDAE

GENUS ***Polyplecta***
Haeckel, 1887: 929

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: *Acanthodesmia dumetum* Müller, 1859b; *Acanthodesmia prismatium* Haeckel, 1861a; **Polyplecta decacantha* Haeckel, 1887; **Polyplecta enneacantha* Haeckel, 1887 and *Polyplecta heptacantha* Haeckel, 1887.

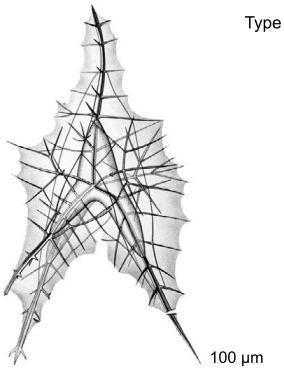
FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 167)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ENNEAPLEGMA***

SYN. (obj.)
VERY RARE

Type



Polyplecta heptacantha
Haeckel, 1887: 929, pl. 91, fig. 12

Support



Polyplecta heptacantha Haeckel
Petrushevskaya 1981: 305, fig. 471

N - LINEAGE III (G) PLAGIACANTHIDAE
ASSIGNED IN Dumitrica 2004: 217

GENUS ***Jeanpierria***
Dumitrica, 2004: 217

Diagnosis: Very short MB, three-bladed A, D and 2L. A with one or more verticils of 3 branches, D and 2L with only two branches in each verticils. First verticil interconnected by arches.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Dumitrica (2004).

Original series: *Jeanpierria splendida* Dumitrica, 2004.

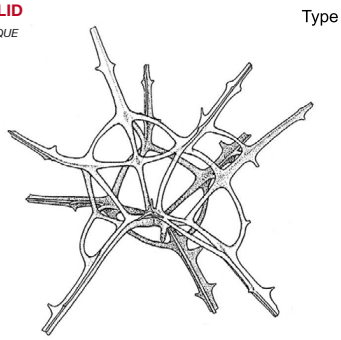
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE***

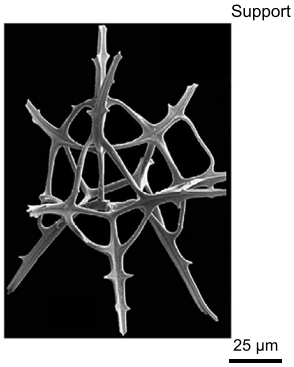
VALID
UNIQUE

Type



Jeanpierria splendida
Dumitrica, 2004: 220, pl. 6, fig. 1

Support



Jeanpierria splendida
Dumitrica, 2004: 220, pl. 5, fig. 10

N - LINEAGE III (G) PLAGIACANTHIDAE
ASSIGNED IN Petrushevskaya 1981: 93

GENUS ***Neosemantis***
Popofsky, 1913: 298

Diagnosis: Spicule consisting of A and 2L three-bladed, denticulate and apically curved and possibly distally united. D short and three-bladed. V very thin, sometimes absent.

Remarks: Only the type species clearly belongs to this genus (frequently reported); just two species originally included at the time of the generic definition. The image of the type species has been turned some 90° to the right to have it in a nassellarian position.

Original series: *Neosemantis distephanus* Popofsky, 1913 and *Neosemantis porophora* Popofsky, 1913.

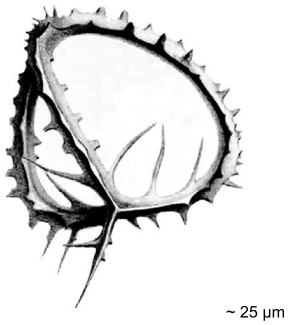
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D106)

STATUS **VALID**

AGE ***LATE EARLY MIOCENE–LIVING***

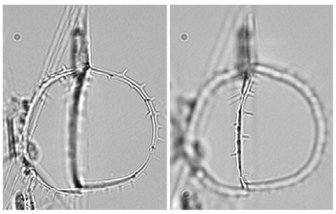
VALID
FREQUENT

Type



Neosemantis distephanus
Popofsky, 1913: 299, pl. 29, fig. 2

Support



Neosemantis distephanus Popofsky
Suzuki's collection (plankton, off Sesoko Island, Japan)

N - LINEAGE III (G) PLAGIACANTHIDAE

GENUS ***Campylacantha***
Jørgensen, 1905: 129

Remarks: Homonym of *CAMPYLACANTHA* Scudder, 1897: 198 (Orthoptera); see *DEFLANDRELLA nomen novum*.

Original series: *Campylacantha cladophora* Jørgensen, 1905.

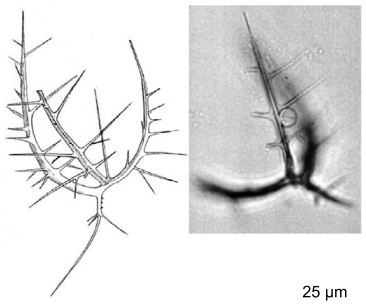
FIXATION MONOTYPY

STATUS HOMONYM, JUNIOR SYNONYM

SEE ***DEFLANDRELLA NOMEN NOVUM***

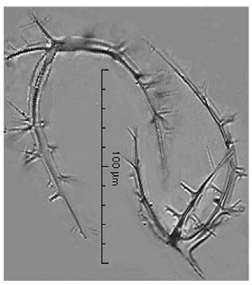
HOM.; SYN.

Type



Campylacantha cladophora
Jørgensen, 1905: 129, pl. 12, fig. 47a; Dolven *et al.* 2014: 45, pl. 4, fig. 7 (lectotype)

Support



Campylacantha cladophora Jørgensen
Bjørklund's collection (Norwegian Sea)

N - LINEAGE III (G) PLAGIACANTHIDAE

GENUS **Deflandrella** *NOMEN NOVUM* PRO *CAMPYLACANTHA*
Loeblich & Tappan, 1961: 227

Remarks: Genus described as monospecific at the time of the generic definition.The image of the type species has been rotated 180° to have it in a nassellarian position.

Original series: *Campylacantha cladophora* Jørgensen, 1905.

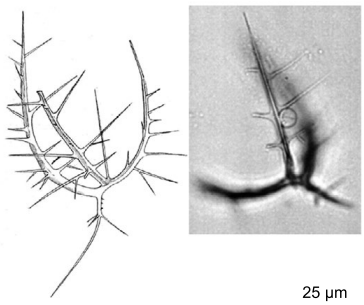
FIXATION MONOTYPY; ICZN, ART. 67.8

STATUS JUNIOR SYNONYM
synonymized by Dumitrica 1978: 240

SEE ***NEOSEMANTIS***

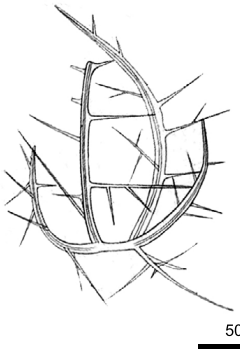
NOM. NOV.; SYN.
FREQUENT

Type



Campylacantha cladophora
Jørgensen, 1905: 129, pl. 12, fig. 47a; Dolven *et al.* 2014: 45, pl. 4, fig. 7 (lectotype)

Support



Campylacantha cladophora
Jørgensen, 1905: 129, pl. 12, fig. 47b

N - LINEAGE III (G) PLAGIACANTHIDAE
ASSIGNED IN Hertwig 1879

GENUS **Plagiacantha**
Claparède in Müller, 1856: 500

Diagnosis: Skeleton consisting of A and 2L subplanar radiating from a short MB and a short D. A with a verticil of three branches, 2L with only two branches. All branches three-bladed and possibly interconnected.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Acanthometra arachnoides* Claparède, 1855.

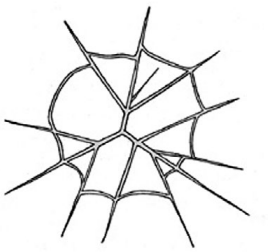
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY PLEISTOCENE–LIVING***

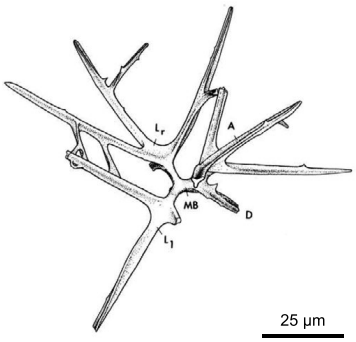
VALID
FREQUENT

Type



Acanthometra arachnoides
Claparède, 1855: 675 (unfigured); Claparède & Lachmann, 1858: 462, pl. 22, fig. 9

Support



Plagiacantha arachnoides (Claparède)
Dumitrica 1973: 835, pl. 22, figs 2, 4

N - LINEAGE III (G) PLAGIACANTHIDAE

GENUS **Plagoniscus**
Haeckel, 1887: 912

Remarks: Illustration available only for the type species (just a single report after the first illustration).

Original series: **Plagoniscus cortinaris* Haeckel, 1887; **Plagoniscus euscenium* Haeckel, 1887; **Plagoniscus nassellaris* Haeckel, 1887 and *Plagoniscus tripodiscus* Haeckel, 1887.

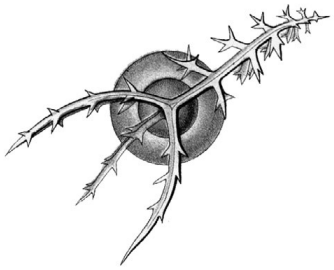
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PLAGIACANTHA***

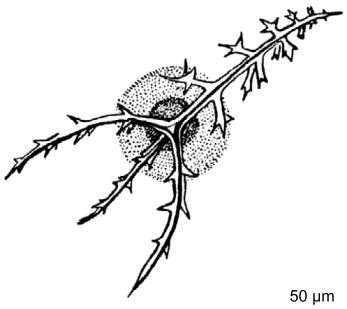
SYN.
VERY RARE

Type



Plagoniscus tripodiscus
Haeckel, 1887: 912, pl. 91, fig. 4

Support



Plagoniscus tripodiscus Haeckel
Petrushevskaya 1981: 93, fig. 99

N - LINEAGE III (G) PLAGIACANTHIDAE

GENUS **Triplagia**
Haeckel, 1882: 423

Remarks: Illustration available only for the type species (just a single report after the first illustration).

Original series: **Triplagia horizontalis* Haeckel, 1887; *Triplagia primordialis* Haeckel, 1887 and **Triplagia triradialis* Haeckel, 1887.

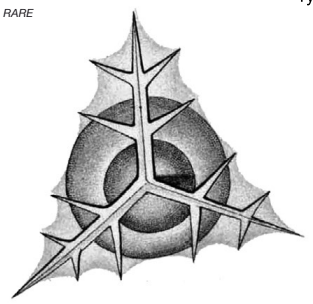
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS JUNIOR SYNONYM
synonymized by Dumitrica 2004: 199

SEE ***PLAGIACANTHA***

SYN.
VERY RARE

Type



Triplagia primordialis
Haeckel, 1887: 909, pl. 91, fig. 2

Support



Triplagia primordialis Haeckel
Petrushevskaya 1981: 93, fig. 93

N - LINEAGE III (G) PLAGIACANTHIDAE

GENUS ***Triplagiacantha***
Schröder, 1914: 73

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Petrushevskaya (1981).

Original series: *Plagiacantha abietina* Hertwig, 1879.

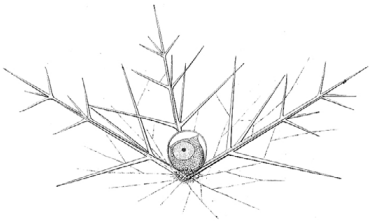
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 96

SEE ***PLAGIACANTHA***

SYN.
VERY RARE

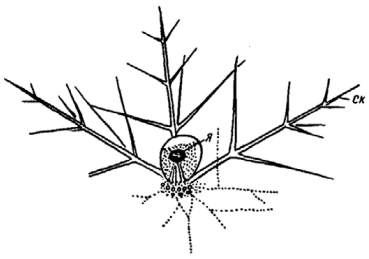
Type



~100 µm

Plagiacantha abietina
Hertwig, 1879: 200, pl. 7, fig. 6

Support



~100 µm

Plagiacantha abietina Hertwig
Petrushevskaya 1981: 96, text-fig. 1.2

N - LINEAGE III (G) ? PLAGIACANTHIDAE

GENUS ***Plectophora***
Haeckel, 1882: 424

Remarks: Homonym of *PLECTOPHORA* Gray, 1834: pl. 42 (Aves); see *PLECTOPHORINA nomen novum*.

Original series: *Acanthometra arachnoides* Claparède, 1855; *Plectophora novena* Haeckel, 1887; *Plectophora pyramidalis* Haeckel, 1887 and *Plectophora triomma* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS HOMONYM, NOMEN DUBIUM

SEE ***PLECTOPHORINA NOMEN NOVUM***

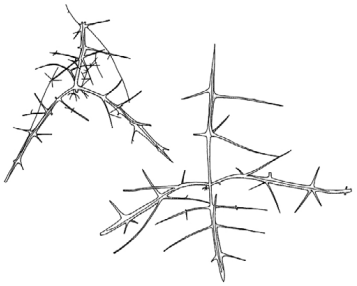
HOM.; N.D.

Type

UNFIGURED SPECIES

Plectophora triomma
Haeckel, 1887: 922, unfigured

Support



50 µm

Plagiacantha arachnoides (Claparède)
Goll 1979: 368, pl. 3, figs 13, 14

N - LINEAGE III (G) ? PLAGIACANTHIDAE

GENUS ***Plectophorina*** *NOMEN NOVUM* PRO *PLECTOPHORA*
Loeblich & Tappan, 1961: 227

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Acanthometra arachnoides* Claparède, 1855; **Plectophora novena* Haeckel, 1887; **Plectophora pyramidalis* Haeckel, 1887 and **Plectophora triomma* Haeckel, 1887.

FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1954: D104)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? PLAGIACANTHA***

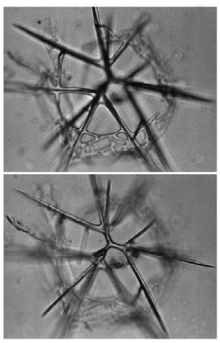
NOM. NOV.; N.D.

Type

UNFIGURED SPECIES

Plectophora triomma
Haeckel, 1887: 922, unfigured

Support



25 µm

Plagiacantha arachnoides (Claparède)
Bjørklund *et al.* 2014: 89, pl. 16, figs 8a, 8b

N - LINEAGE III (G) ? PLAGIACANTHIDAE

GENUS ***Triplecta***
Haeckel, 1882: 424

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: *Triplecta triactis* Haeckel, 1887 and **Triplecta triangulum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? PLAGIACANTHA***

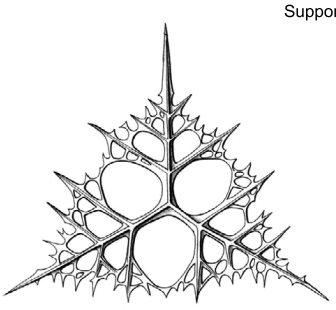
N.D.

Type

UNFIGURED SPECIES

Triplecta triangulum
Haeckel, 1887: 921, unfigured

Support



50 µm

Triplecta triactis
Haeckel, 1887: 922, pl. 91, fig. 7

N - LINEAGE III (G) PLAGIACANTHIDAE

ASSIGNED IN Takahashi 1991: 92

GENUS ***Plectagonidium***
Cachon & Cachon, 1969: 236

Diagnosis: Skeleton consisting of MB with long rays A, D and 2L in tetrahedral position and bearing a number of short verticils decreasing in length distally and interconnected by arches.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Petrushevskaya (1981).

Original series: *Plectagonidium deflandrei* Cachon & Cachon, 1969.

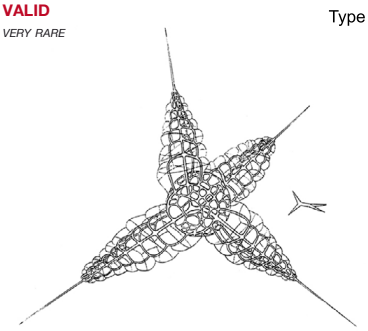
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
VERY RARE

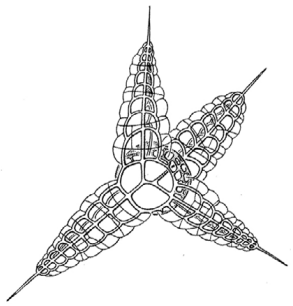
Type



25 µm

Plectagonidium deflandrei
Cachon & Cachon, 1969: 236, fig. 1, pl. 39

Support



25 µm

Plectagonidium deflandrei Cachon & Cachon
Petrushevskaya 1981: 304, fig. 469

N - LINEAGE III (G) ? PLAGIACANTHIDAE

GENUS ***Tetraplecta***
Haeckel, 1882: 424

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. The subsequent designation of *Tetraplecta pinigera* Haeckel, 1887 by Petrushevskaya (1981: 306) should be considered invalid; consequently, O'Dogherty *et al.* (2009a) wrongly followed Petrushevskaya's action.

Original series: *Tetraplecta pinigera* Haeckel, 1887; **Tetraplecta quadricornis* Haeckel, 1887 and **Tetraplecta tetrahedra* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? PLECTAGONIDIUM***

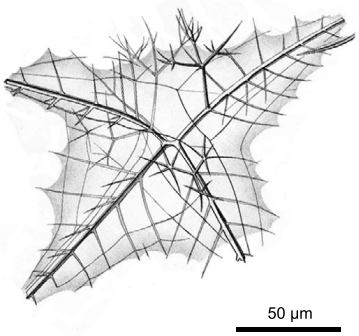
N.D.

Type

UNFIGURED SPECIES

Tetraplecta tetrahedra
Haeckel, 1887: 923, unfigured

Support



50 µm

Tetraplecta pinigera
Haeckel, 1887: 924, pl. 91, fig. 8

N - LINEAGE III (G) PLAGIACANTHIDAE

ASSIGNED IN Petrushevskaya 1981: 72

GENUS ***Plectanium***
Haeckel, 1882: 424

Diagnosis: Skeleton with three-bladed and straight A, D, and 2L radiating from MB. A with two long three-bladed lateral branches.

Remarks: Type species only illustrated by Haeckel (1887); the support image is a junior subjective synonym.

Original series: **Plectanium ovodimare* Haeckel, 1887; **Plectanium sphaerozoum* Haeckel, 1887 and *Plectanium trigeminum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

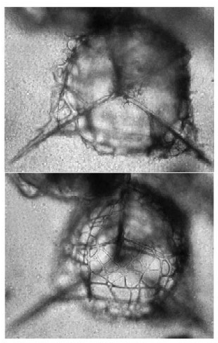
Type



50 µm

Plectanium trigeminum
Haeckel, 1887: 928, pl. 91, fig. 11

Support



50 µm

Euscenium corynephorum Jørgensen
Bjørklund *et al.* 2014: 88, pl. 10, figs 12a, 12b

N - LINEAGE III (G) PLAGIACANTHIDAE

GENUS ***Plectaniscus***
Haeckel, 1887: 924

Remarks: Illustration available only for the type species (just a single report after the first illustration).

Original series: **Plectaniscus archiscenium* Haeckel, 1887; **Plectaniscus cladoscenium* Haeckel, 1887; **Plectaniscus clathrocorys* Haeckel, 1887; *Plectaniscus cortiniscus* Haeckel, 1887 and **Plectaniscus tripodiscus* Haeckel, 1887.

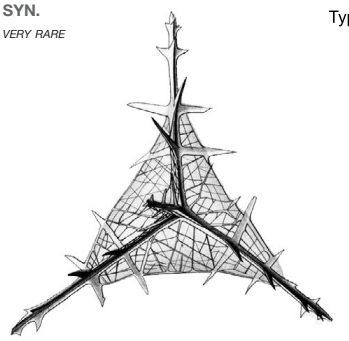
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PLECTANIUM***

SYN.
VERY RARE

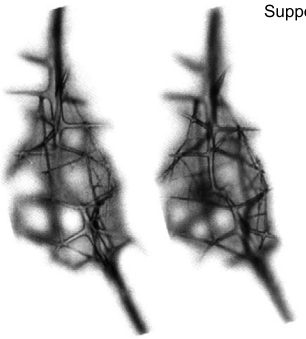
Type



50 µm

Plectaniscus cortiniscus
Haeckel, 1887: 925, pl. 91, fig. 9

Support



50 µm

Plectaniscus cortiniscus Haeckel
Chen *et al.* 2017: 164, pl. 52, figs 12, 13

N - Lineage III (G) PLAGIACANTHIDAE
assigned in Funakawa 1995: 33

genus ***Pseudocubus***
Haeckel, 1887: 1010

Diagnosis: Skeleton with thin 2L, short D and Ax, and a long A, all interconnected by strong arches ALr, ALl and LrLl, the middle of whom is apically and laterally prolonged into three-bladed bars similar to A. The four apically directed bars are connected by four arches.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Pseudocubus hexapylus* Haeckel, 1887; *Pseudocubus obeliscus* Haeckel, 1887 and **Pseudocubus octostylus* Haeckel, 1887.

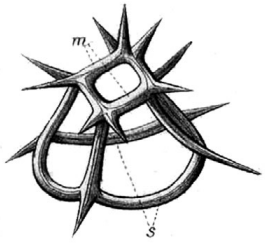
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D111)

status **VALID**

age ***Early Miocene–Living***

VALID
FREQUENT

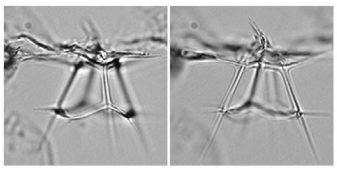
Type



25 µm

Pseudocubus obeliscus
Haeckel, 1887: 1010, pl. 94, fig. 11

Support



25 µm

Pseudocubus obeliscus Haeckel
Suzuki's collection (plankton, off Sesoko Island, Japan)

N - Lineage III (G) PLAGIACANTHIDAE

genus ***Drepotadium***
Deflandre, 1953: 429

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Drepotadium ambiguum* Deflandre, 1953.

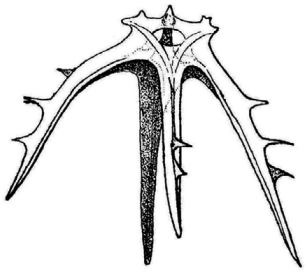
fixation MONOTYPY

status JUNIOR SYNONYM?
questionably synonymized herein

see ***PSEUDOCUBUS***

SYN.?
UNIQUE

Type



~ 50 µm

Drepotadium ambiguum
Deflandre, 1953: 430, fig. 327

Support

NO IMAGE PUBLISHED

no image available

N - Lineage III (G) PLAGIACANTHIDAE

genus ***Obeliscus***
Popofsky, 1913: 279

Remarks: Homonym of *OBELISCUS* Beck, 1837: 61 (Gastropoda), *OBELISCUS* Agassiz, 1845: 60 (Gastropoda); see *TALARISCUS nomen novum*.

Original series: *Obeliscus pseudocuboides* Popofsky, 1913.

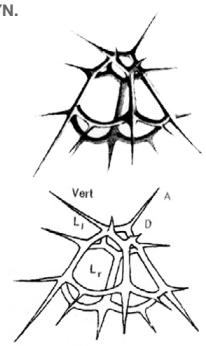
fixation MONOTYPY

status HOMONYM, JUNIOR SYNONYM

see ***TALARISCUS nomen novum***

HOM.; SYN.

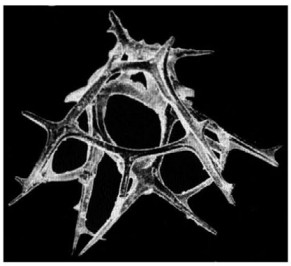
Type



25µm

Obeliscus pseudocuboides
Popofsky, 1913: 280, pl. 29, figs 4, 5

Support



25 µm

Pseudocubus obeliscus Haeckel
Sugiyama 1993: 51, fig. 7.3a

N - Lineage III (G) PLAGIACANTHIDAE

genus ***Talariscus*** *nomen novum* pro *Obeliscus*
Loeblich & Tappan, 1961: 227

Remarks: Genus described as monospecific at the time of the generic definition. Because no other images are available, the support image is a junior subjective synonym of the type species.

Original series: *Obeliscus pseudocuboides* Popofsky, 1913.

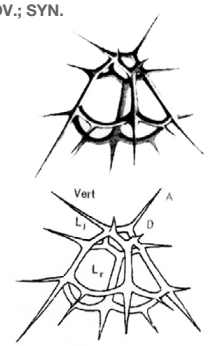
fixation MONOTYPY; ICZN, art. 67.8

status JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 149

see ***PSEUDOCUBUS***

NOM. NOV.; SYN.
VERY RARE

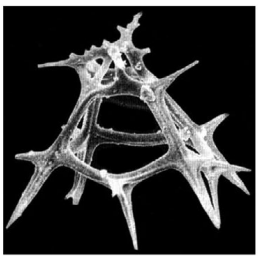
Type



25µm

Obeliscus pseudocuboides
Popofsky, 1913: 280, pl. 29, figs 4, 5

Support



25 µm

Pseudocubus obeliscus Haeckel
Sugiyama 1993: 51, fig. 7.1a

N - LINEAGE III (G) PLAGIACANTHIDAE

GENUS ***Rhizoplecta***
Frenguelli, 1940: 77

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

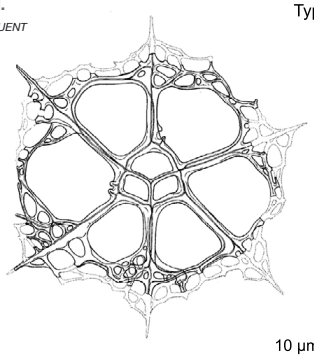
Original series: *Rhizoplecta trithyris* Frenguelli, 1940.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Dumitrica 1973: 836

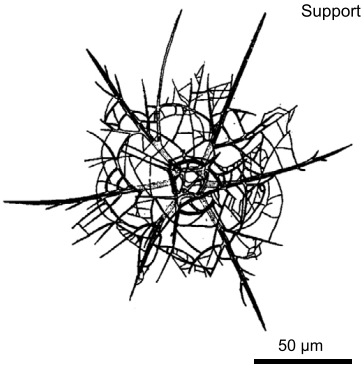
SEE ***PSEUDOCUBUS***

SYN. Type
FREQUENT



Rhizoplecta trithyris
Frenguelli, 1940: 77, figs 20a-d

Support



Rhizoplecta trithyris Frenguelli
Tchang & Tan 1964: 79, text-fig. 6

N - LINEAGE III (G) ? PLAGIACANTHIDAE

GENUS ***Hexaplagia***
Haeckel, 1882: 424

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Hexaplagia antarctica* Haeckel, 1887; **Hexaplagia arctica* Haeckel, 1887; **Hexaplagia australis* Haeckel, 1887 and **Hexaplagia collaris* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Hexaplagia arctica
Haeckel, 1887: 915, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) ? PLAGIACANTHIDAE

GENUS ***Hexaplegma***
Haeckel, 1882: 424

Remarks: See comments under *HEXAPLECTA*. No images are available for this genus because it has never been illustrated after the generic definition.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. Type

UNFIGURED SPECIES

Hexaplecta triaxonia
Haeckel, 1887: 927, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) ? PLAGIACANTHIDAE

GENUS ***Hexaplecta*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 927

Remarks: An incorrect subsequent spelling for *HEXAPLEGMA*. By referring back to p. 425 in his *Prodromus* of 1882 (Haeckel 1882), Haeckel in 1887 apparently means *HEXAPLECTA* to be an emendation to the name *HEXAPLEGMA*, which is unjustified according to the provisions of ICZN art. 33.3.

Original series: *Hexaplecta triaxonia* Haeckel, 1887 and *Hexaplecta tricladonia* Haeckel, 1887.

FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D104)

STATUS INVALID NAME
designated herein

SEE ***HEXAPLEGMA***

INV. Type

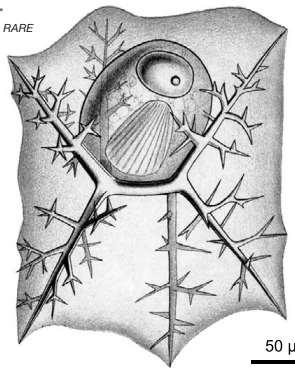
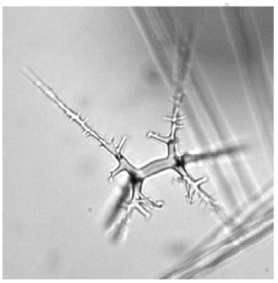
UNFIGURED SPECIES

Hexaplecta triaxonia
Haeckel, 1887: 927, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - Lineage III (G) ? PLAGIACANTHIDAE GENUS ***Nassella*** Haeckel, 1887: 898 **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Nassella nassiterna* Haeckel, 1887 and **Nassella thalassicolla* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D103) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Nassella thalassicolla* Haeckel, 1887: 898, unfigured	Support NO IMAGE PUBLISHED no image available
N - Lineage III (G) ? PLAGIACANTHIDAE GENUS ***Plagonidium*** Haeckel, 1882: 424 **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Plagonidium bigeminum* Haeckel, 1887 and **Plagonidium quadrigeminum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Plagonidium bigeminum* Haeckel, 1887: 913, unfigured	Support NO IMAGE PUBLISHED no image available
N - Lineage III (G) ? PLAGIACANTHIDAE GENUS ***Plagonium*** Haeckel, 1882: 423 **Remarks**: Illustration available only for the type species (just a single report after the first illustration). *SPHAEROZOUM* like spicule with 6 rays arising in 2 groups of 3 from each end of a long MB. Something is wrong in this drawing because the spicule looks very well that of *SPHAEROZOUM*, however, the central capsule, with its podocone, suggests a nassellarian. Cachon & Cachon (1969) also could not see a nassellarian spicule in the spicule of this genus. The original *PLAGONIUM* drawing has been overturned to have the central capsule at the upper part, above MB. **Original series**: **Plagonium arborescens* Haeckel, 1887; **Plagonium distriactis* Haeckel, 1887; **Plagonium lampoxanthium* Haeckel, 1887; *Plagonium sphaerozoum* Haeckel, 1887 and **Plagonium trigeminum* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104) STATUS NOMEN DUBIUM designated herein; name-bearing type not diagnostic	**N.D.** Type *VERY RARE*  *Plagonium sphaerozoum* Haeckel, 1887: 916, pl. 91, fig. 6	Support  *Plagonium sphaerozoum* Haeckel Renaudie's collection (Middle Miocene, Kerguelen Plateau)
N - Lineage III (G) ? PLAGIACANTHIDAE GENUS ***Polyplagia*** Haeckel, 1887: 917 **Remarks**: No images are available for this genus because it has never been illustrated after the generic definition. **Original series**: **Polyplagia duodenaria* Haeckel, 1887; **Polyplagia novenaria* Haeckel, 1887; **Polyplagia octonaria* Haeckel, 1887; **Polyplagia septenaria* Haeckel, 1887 and **Polyplagia viminaria* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 166) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Polyplagia septenaria* Haeckel, 1887: 918, unfigured	Support NO IMAGE PUBLISHED no image available

N - LINEAGE III (G) ? PLAGIACANTHIDAE

GENUS ***Tetraplagia***
Haeckel, 1882: 424

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Plagiacantha abietina quadrispina* Hertwig, 1879; **Tetraplagia geometrica* Haeckel, 1887 and *Tetraplagia phaenaxonia* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D104)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

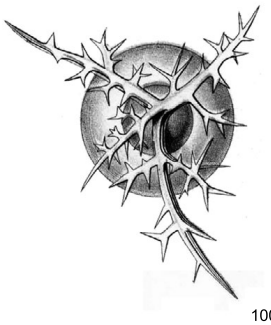
N.D.

Type

UNFIGURED SPECIES

Tetraplagia geometrica
Haeckel, 1887: 911, unfigured

Support



Tetraplagia phaenaxonia
Haeckel, 1887: 911, pl. 91, fig. 3

N - LINEAGE III (G) ? PSEUDODICTYOPHIMIDAE
ASSIGNED HEREIN

GENUS ***Chitascenium***
Sugiyama, 1994: 4

Diagnosis: Skeleton with a robust globular cephalis. A spine extended as an apical horn, D and 2L as downwardly directed feet. Arches ac and ap as lattice bars of cephalic wall. Long by-spines scattered on the cephalic wall and also like feet at the middle of arches cp and pp.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Sugiyama (1994).

Original series: *Chitascenium cranites* Sugiyama, 1994.

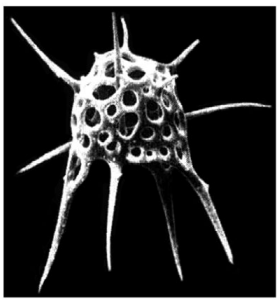
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY EOCENE–LATE PLEISTOCENE***

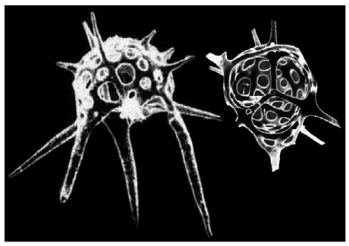
VALID
UNIQUE

Type



Chitascenium cranites
Sugiyama, 1994: 5, pl. 1, fig. 4a

Support



Chitascenium cranites
Sugiyama, 1994: 5, pl. 1, figs 4c, 6a

N - LINEAGE III (G) ? PSEUDODICTYOPHIMIDAE

GENUS ***Sethomelissa***
Haeckel, 1887: 1207

SUBGENUS ***Lithomelissa (Sethomelissa)***

Remarks: Homonym of *SETHOMELISSA* Haeckel, 1882: 431 (Polycystinea); see *CORYTHOMELISSA nomen novum*.

Original series: *Lithomelissa corythium* Ehrenberg, 1874b and *Lithomelissa decacantha* Haeckel, 1887.

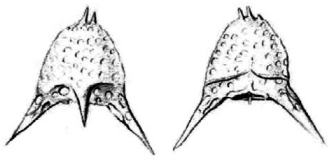
FIXATION SUBSEQUENT DESIGNATION (Campbell 1951: 529)

STATUS HOMONYM

SEE ***CORYTHOMELISSA NOMEN NOVUM***

HOM.

Type



Lithomelissa corythium
Ehrenberg, 1874b: 240 (unfigured); Ehrenberg, 1876: 78, pl. 3, fig. 12

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) ? PSEUDODICTYOPHIMIDAE
ASSIGNED HEREIN

GENUS ***Corythomelissa*** *NOMEN NOVUM PRO SETHOMELISSA*
Campbell, 1951: 529

SUBGENUS ***Lithomelissa (Corythomelissa)***

Diagnosis: Two-segmented shell with a hemispherical cephalis and an open bell-shaped thorax. The A, D, 2L spines are respectively prolonged by an apical horn and three thoracic ribs and horns, V by a small lateral horn. Thorax border with a peristome.

Remarks: Only the type species clearly belongs to this genus (figured just once after the first illustration); just two species originally included at the time of the generic definition.

Original series: *Lithomelissa corythium* Ehrenberg, 1874b and *Lithomelissa decacantha* Haeckel, 1887.

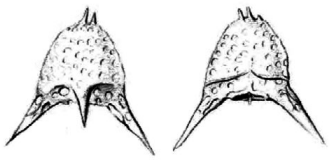
FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1951: 529)

STATUS **VALID PRO**

AGE ***LATE MIDDLE EOCENE–LATE LATE MIOCENE***

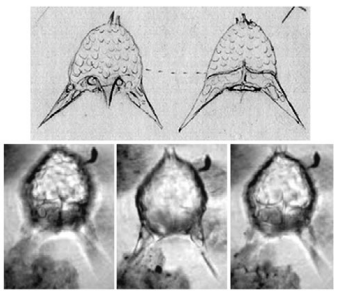
VALID
VERY RARE

Type



Lithomelissa corythium
Ehrenberg, 1874b: 240 (unfigured); Ehrenberg, 1876: 78, pl. 3, fig. 12

Support



Lithomelissa corythium Ehrenberg
Ogane *et al.* 2009b: pl. 4, figs 5a-e [topotypic material]

N - LINEAGE III (G) PSEUDODICTYOPHIMIDAE
ASSIGNED IN Funakawa 1994: 472

GENUS ***Pseudodictyophimus***
Petrushevskaya, 1971a: 91

Diagnosis: Pseudodictyophimidae with two porous segments. A as an apical rib in the wall and an apical horn. V as a small sagittal horn. D and 2L spines as ribs in the shell wall and extended as basal feet. Aperture either open and shapeless, or closed by a meshwork or a flat plate.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Dictyophimus gracilipes* Bailey, 1856.

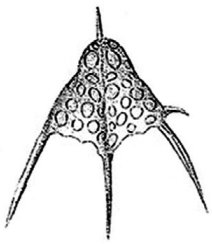
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EOCENE–LIVING***

VALID
FREQUENT

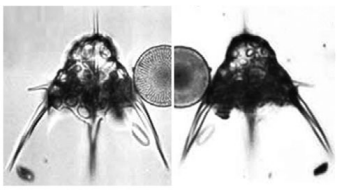
Type



50 µm

Dictyophimus gracilipes
Bailey, 1856: 4, pl. 1, fig. 8

Type



50 µm

Dictyophimus gracilipes Bailey
Itaki & Bjørklund 2007: 452, pl. 1, figs 19a, 19b [lectotype]

N - LINEAGE III (G) ? PSEUDODICTYOPHIMIDAE

GENUS ***Tripocalpis***
Haeckel, 1882: 427

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Halicalyptra galea* Ehrenberg, 1874b; *Tripocalpis cortinaris* Haeckel, 1887; **Tripocalpis plectaniscus* Haeckel, 1887; **Tripocalpis tricostata* Haeckel, 1887 and *Tripocalpis triserrata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D117)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? PSEUDODICTYOPHIMUS***

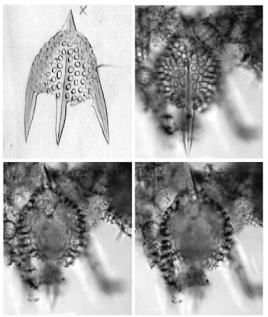
N.D.

Type

UNFIGURED SPECIES

Tripocalpis plectaniscus
Haeckel, 1887: 1136, unfigured

Type



50 µm

Halicalyptra galea Ehrenberg
Ogane *et al.* 2009b: pl. 44, figs 2a-d [lectotype herein]

N - LINEAGE III (G) PSEUDODICTYOPHIMIDAE
ASSIGNED IN Funakawa 1995: 29

GENUS ***Steganocubus***
Sugiyama, 1993: 56

Diagnosis: Pseudodictyophimidae with a three-lobed cephalis and a short thorax. V very small. Internal spines not externally prolonged by horns or feet. Ax wartlike or absent. Shell wall thin, bearing numerous, short by spines on its upper half. Support image is selected from one of those species subsequently assigned into this genus.

Remarks: The type species has been figured just once, hence the support image is a subsequently assigned species. Only two species originally included at the time of the generic definition (both illustrated, but illustrated only once).

Original series: *Steganocubus lipus* Sugiyama, 1993 and *Steganocubus subtilis* Sugiyama, 1993.

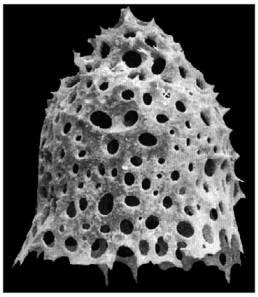
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE OLIGOCENE–LIVING***

VALID
UNIQUE

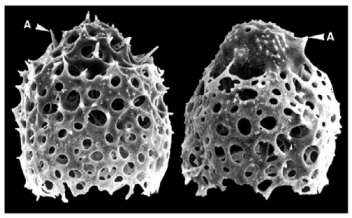
Type



25µm

Steganocubus subtilis
Sugiyama, 1993: 56, fig. 10.1a

Support



100 µm

Steganocubus incrassatus
Funakawa, 1995: 30, pl. 9, figs 1a, 2

N - LINEAGE III (G) PSEUDODICTYOPHIMIDAE

GENUS ***Marimoum***
Funakawa, 1994: 468

Remarks: Monospecific genus. Because no other figures are available, the support image is a senior subjective synonym of the type species.

Original series: *Marimoum robustum* Funakawa, 1994.

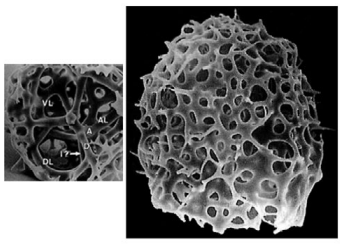
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Funakawa 1994: 468

SEE ***STEGANOCUBUS***

SYN.
UNIQUE

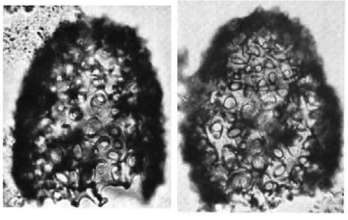
Type



25 µm

Marimoum robustum
Funakawa, 1994: 468, figs 9.1a, 9.1b

Support



25 µm

Antarctissa whitei
Bjørklund, 1976a: 1125, pl. 13, figs 9, 11

N - LINEAGE III (G) PSEUDODICTYOPHIMIDAE

ASSIGNED HERE

GENUS ***Syscioscenium***
Sugiyama, 1992b: 216

Diagnosis: Pseudodictyophimidae with a small, bell-shaped, two-segmented shell. A as a columella before a small apical horn. V completely absent. D and 2L penetrating the shell wall at the collar area with no external feet. Ax moderately developed.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Sugiyama (1992b).

Original series: *Syscioscenium velamen* Sugiyama, 1992b.

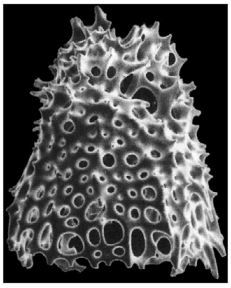
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EARLY MIOCENE–EARLY LATE MIOCENE***

VALID
UNIQUE

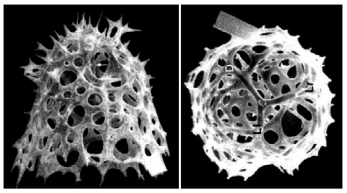
Type



100 µm

Syscioscenium velamen
Sugiyama, 1992b: 217, pl. 21, fig. 1a

Support



25 µm

Syscioscenium velamen
Sugiyama, 1992b: 217, pl. 21, figs 2a, 2b

N - LINEAGE III (G) PSEUDODICTYOPHIMIDAE

ASSIGNED IN Funakawa 1994: 473

GENUS ***Tripodocyrtis***
Funakawa, 1994: 473

Diagnosis: Pseudodictyophimidae with a small two-segmented shell. Cephalic internal skeletal structure with MB, A, D, 2L, no V. A as a short apical horn. Collar stricture not well marked. D and 2L extended as thoracic ribs and distal un-sided abdominal feet. Aperture wide open. No peristome.

Remarks: Monospecific genus. Because no other figures are available, the support image is selected among those species subsequently assigned to this genus.

Original series: *Tripodocyrtis elegans* Funakawa, 1994.

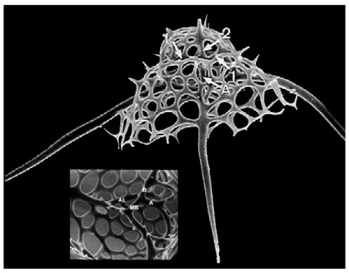
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EARLY MIOCENE–EARLY PLIOCENE***

VALID
UNIQUE

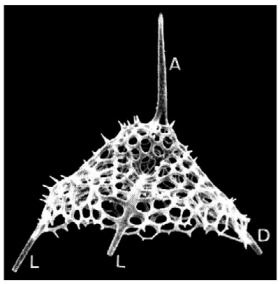
Type



200 µm

Tripodocyrtis elegans
Funakawa, 1994: 474, figs 13.2a, 13.2b

Support



200 µm

Tripodocyrtis umbellaris
Funakawa, 1995: 32, pl. 10, fig. 5a

N - LINEAGE III (G) ? PSEUDODICTYOPHIMIDAE

GENUS ***Dictyophimus***
Ehrenberg, 1846: 385

NOMINOTYPE ***Dictyophimus* (*Dictyophimus*)**

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

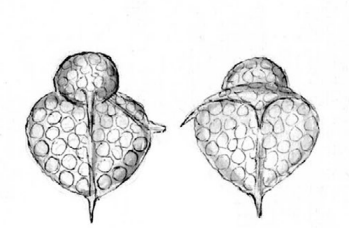
Original series: *Dictyophimus crisiae* Ehrenberg, 1854b.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
FREQUENT

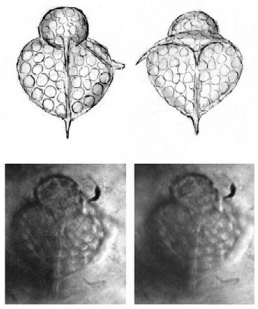
Type



25 µm

Dictyophimus crisiae
Ehrenberg, 1854b: 241 (unfigured); Suzuki *et al.* 2009a: pl. 35, figs 1a-d [lectotype herein]

Type



50 µm

Dictyophimus crisiae Ehrenberg
Suzuki *et al.* 2009a: pl. 35, figs 1a-d [lectotype herein]

N - LINEAGE III (G) ? PSEUDODICTYOPHIMIDAE

GENUS ***Pterocanium***
Ehrenberg, 1846: 385

NOMINOTYPE ***Pterocanium* (*Pterocanium*)**

Remarks: See comments under *PTEROCANARIUM*. *Lithocampe aculeata* Ehrenberg, 1844c: 269 is the type species by SM (*Pterocanium aculeatum* Ehrenberg, 1847; 43, and illustrated in Suzuki *et al.* 2009a). Campbell (1954: D130) incorrectly designates *Pterocanium proserpinae* as the type species, which can be regarded as a junior subjective synonym of *Podocyrtis charybdea* Müller, 1855b (see Petrushevskaya 1971b: 228).

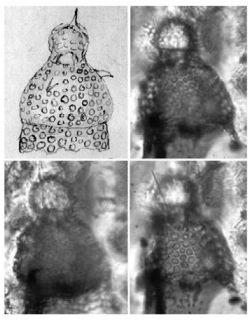
Original series: *Lithocampe aculeata* Ehrenberg, 1844c.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
RARE

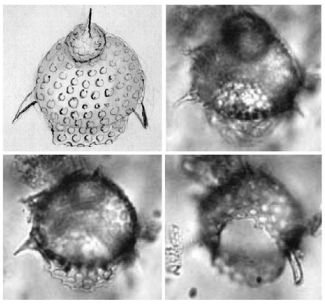
Type



100 µm

Lithocampe aculeata
Ehrenberg, 1844c: 269 (unfigured); Suzuki *et al.* 2009a: pl. 29, figs 4a-4d [lectotype herein]

Support



50 µm

Pterocanium aculeatum (Ehrenberg)
Suzuki *et al.* 2009a: pl. 29, figs 3a-c, 3e

N - LINEAGE III (G) ? PSEUDODICTYOPHIMIDAE

GENUS ***Tripodonium***
Haeckel, 1887: 1137

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Tripodonium campanulatum* Haeckel, 1887 and **Tripodonium ovatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Tripodonium campanulatum
Haeckel, 1887: 1137, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) TRIPODISCIIDAE
ASSIGNED HEREIN

GENUS ***Tridictyopus***
Hertwig, 1879: 203

Diagnosis: Elongated shell with a more or less regular meshwork. Inner structure unknown probably reduced to a sagittal ring with no arches. A and V spines apically united in a small apical horn. Usually three basal shovel-shaped extensions (? feet related to 2L and D).

Remarks: Monospecific genus. Because no other figures are available, the support image is selected among those species subsequently assigned to this genus.

Original series: *Tridictyopus elegans* Hertwig, 1879.

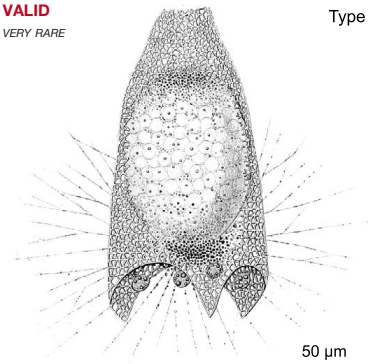
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

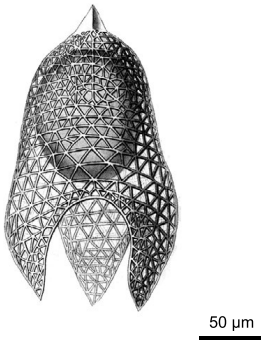
VALID
VERY RARE

Type



Tridictyopus elegans
Hertwig, 1879: 203, pl. 7, fig. 3 [lectotype herein]

Support



Tridictyopus vatillum
Haeckel, 1887: 1145, pl. 51, fig. 8

N - LINEAGE III (G) TRIPODISCIIDAE
ASSIGNED IN Haeckel 1882: 428

GENUS ***Tripodiscium***
Haeckel, 1882: 427

NOMINOTYPE ***Tripodiscium (Tripodiscium)***

Diagnosis: Two segmented shell without external stricture between segments. Cephalis large, sub-spherical. A spine as a columella, apical horn very reduced. V as an occipital small horn or tube. D and 2L extended as three, almost horizontal, strong ramified feet around an annular thorax.

Remarks: See comments under *TRIPODISCINUS*.

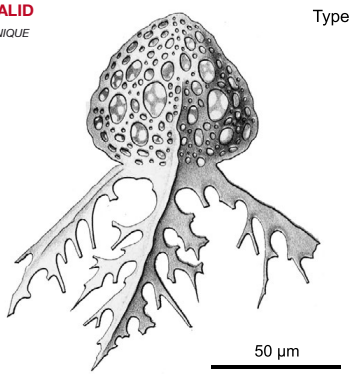
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D117)

STATUS **VALID**

AGE ***[EARLY MIOCENE]–[QUATERNARY]***

VALID
UNIQUE

Type



Tripodiscium tristylospyris
Haeckel, 1887: 1143, pl. 52, fig. 22

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) TRIPODISCIIDAE

GENUS ***Tripodiscinus***
Haeckel, 1887: 1143

SUBGENUS ***Tripodiscium (Tripodiscinus)***

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Carpocanium campanula* Stöhr, 1880; *Tripodiscium clavatum* Haeckel, 1887; **Tripodiscium ovatum* Haeckel, 1887 and **Tripodiscium tristylospyris* Haeckel, 1887.

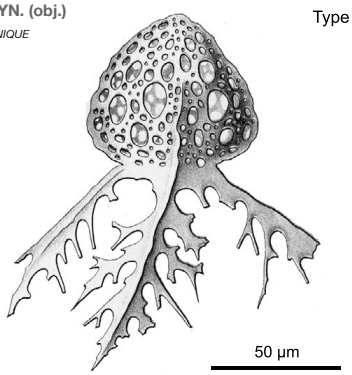
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D117)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TRIPODISCIUM***

SYN. (obj.)
UNIQUE

Type



Tripodiscium tristylospyris
Haeckel, 1887: 1143, pl. 52, fig. 22

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) TRIPODISCIIDAE

GENUS ***Tripodisculus***
Haeckel, 1887: 1144

SUBGENUS ***Tripodiscium (Tripodisculus)***

Remarks: Type species only illustrated by Haeckel (1887).

Original series: **Tripodiscium furcatum* Haeckel, 1887; *Tripodiscium ramosum* Haeckel, 1887 and *Tripodiscium sphaerocephalum* Haeckel, 1887.

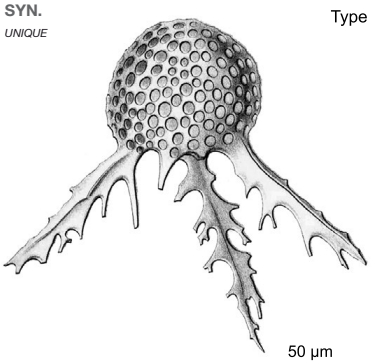
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRIPODISCIUM***

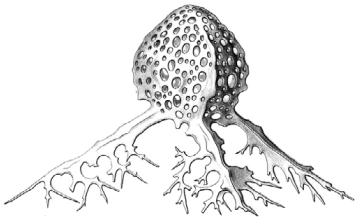
SYN.
UNIQUE

Type



Tripodiscium sphaerocephalum
Haeckel, 1887: 1144, pl. 52, fig. 21

Support



Tripodiscium ramosum
Haeckel, 1887: 1144, pl. 52, fig. 23

N - LINEAGE III (G) TRIPODISCIIDAE

GENUS ***Tristylospyrium***
Haeckel, 1887: 1034

SUBGENUS ***Tristylospyris (Tristylospyrium)***

Remarks: Type species only illustrated by Haeckel (1887).

Original series: **Tristylospyris furcata* Haeckel, 1887; *Tristylospyris ramosa* Haeckel, 1887 and *Tristylospyris tripodiscium* Haeckel, 1887.

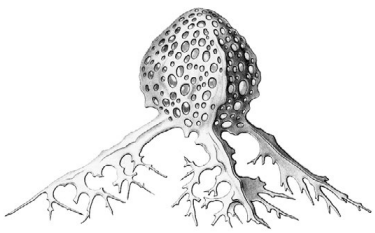
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D112)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***TRIPODISCIUM***

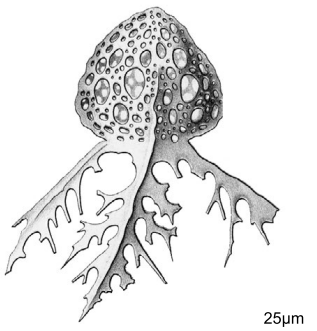
SYN.
UNIQUE

Type



Tristylospyris ramosa
Haeckel, 1887: 1034, pl. 52, fig. 23

Support



Tristylospyris tripodiscium
Haeckel, 1887: 1034, pl. 52, fig. 22

N - LINEAGE III (G) ? TRIPODISCIIDAE
ASSIGNED HEREIN

GENUS ***Tristylocorys***
Haeckel, 1887: 1140

SUBGENUS ***Tripilidium (Tristylocorys)***

Diagnosis: Shell ovate, twice as broad as long. Surface with fifteen to twenty robust longitudinal ribs. Internal structure unknown. Short apical horn. Very narrow peristome with three or more denticulate vertical feet.

Remarks: No type species was fixed. Campbell (1954: D117) considers *TRISTYLOCORYS* to be the nominate subgenus of *TRIPILIDIUM* Haeckel 1882. However, this seems inappropriate as the type species of *TRIPILIDIUM*, *Tripilidium nanum* Rüst, 1885, was not among those species originally assigned to *TRISTYLOCORYS*.

Original series: **Tripilidium clavatum* Haeckel, 1887; **Tripilidium cortina* Haeckel, 1887; *Tripilidium costatum* Haeckel, 1887; **Tripilidium* elongatum Haeckel, 1887; **Tripilidium hemisphaericum* Haeckel, 1887; **Tripilidium lychnocanium* Haeckel, 1887 and **Tripilidium ovatum* Haeckel, 1887.

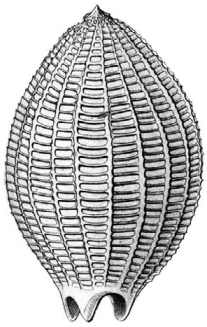
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS **VALID**

AGE ***[QUATERNARY]***

VALID
UNIQUE

Type



Tripilidium costatum
Haeckel, 1887: 1141, pl. 98, fig. 8

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) XIMOLZASIDAE
ASSIGNED IN Dumitrica 2004: 208

GENUS ***Daniplagia***
Dumitrica, 2004: 208

Diagnosis: Spicule massif consisting of rays A, D and 2L radiating from a short MB. D simple but A and 2L bear a pair of branches. Ax present or not. V absent. No arches.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Daniplagia danica* Dumitrica, 2004.

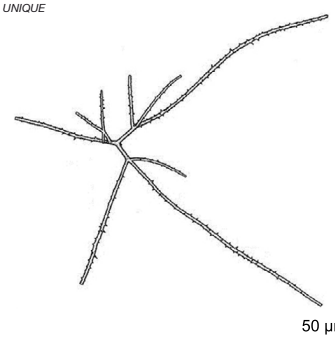
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE PALEOCENE–EARLY EOCENE***

VALID
UNIQUE

Type



Daniplagia danica
Dumitrica, 2004: 208, pl. 6, fig. 5

Support

NO IMAGE PUBLISHED

no image available

N - Lineage III (G) — XIMOLZASIDAE
assigned in Dumitrica 2004: 199

genus **Protoscenium**
Jørgensen, 1905: 133

Diagnosis: Spicule massif with very short MB and rays A, D and 2L. A with a vertical of 3 branches, D and 2L with a pair of branches. All branches interconnected by arches.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Plectanium*? *simplex* Cleve, 1899.

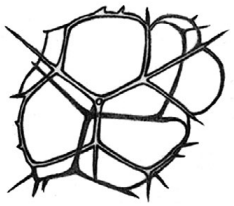
fixation MONOTYPY

status **VALID**

age ***Living***

VALID
FREQUENT

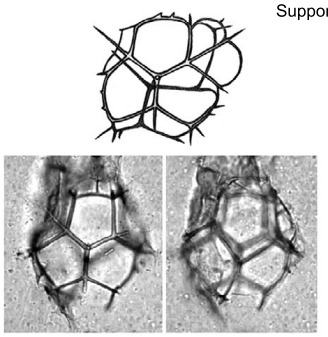
Type



25 µm

Plectanium? *simplex*
Cleve, 1899: 32, pl. 3, fig. 3

Support



50 µm

Protoscenium simplex (Cleve)
Bjørklund *et al.* 2014: 77, pl. 9, figs 16, 17a, 17b [lectotype]

N - Lineage III (G) — XIMOLZASIDAE
assigned in Dumitrica 2004: 215

genus **Rhabdolithis**
Ehrenberg, 1847: 50

Diagnosis: Spicule massif consisting of MB and rays A, D, 2L, 2l, V and Ax. A very long bearing several branches and usually a distal tumor. The other rays except Ax, ramified. No arches.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: **Rhabdolithis fulgur* Ehrenberg, 1854c (n.n.); **Rhabdolithis leucophaea* Ehrenberg, 1854c (n.n.); *Rhabdolithis pipa* Ehrenberg, 1854c; *Rhabdolithis sceptrum* Ehrenberg, 1854c and *Rhabdolithis verticilligera* Ehrenberg, 1854c.

fixation SUBSEQUENT DESIGNATION (Sanfilippo & Riedel 1973: 529)

status **VALID**

age ***Early Coniacian–Living***

VALID
FREQUENT

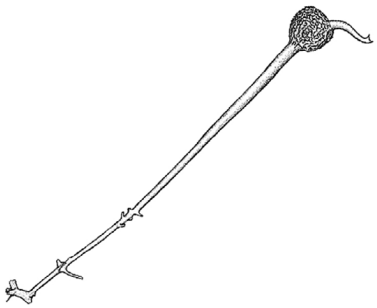
Type



100 µm

Rhabdolithis pipa
Ehrenberg, 1854c: pl. 36, fig. 59 [description in Ehrenberg, 1876: 159, pl. 1, fig. 27]

Support



50 µm

Rhabdolithis pipa Ehrenberg
Dumitrica 2004: 215, pl. 9, fig. 7

N - Lineage III (G) — XIMOLZASIDAE

genus **Xiphostylomma**
Haeckel, 1887: 130

subgenus ***Xiphostylus* (*Xiphostylomma*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Xiphostylus ardea* Haeckel, 1887 and *Xiphostylus emberiza* Haeckel, 1887.

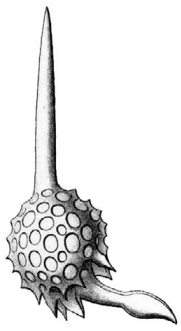
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D54)

status JUNIOR SYNONYM
synonymized herein

see ***RHABDOLITHIS***

SYN.
UNIQUE

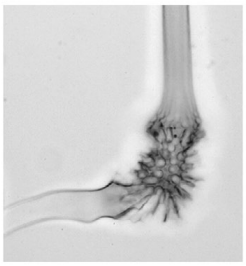
Type



50 µm

Xiphostylus emberiza
Haeckel, 1887: 131, pl. 13, fig. 11

Support



50 µm

Xiphostylus emberiza Haeckel
Paratypic material (Challenger Station 266), Suzuki's collection

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N - Lineage III (G) — PYLOBOTRYDIDAE
assigned in Petrushevskaya 1971a: 159

genus **Amphimelissa**
Jørgensen, 1905: 136

Diagnosis: Two-segmented, small, thin-walled, shell with a narrow termination or tubule. Three-lobed cephalis with spines A, D, Lr and Ll prolonged by thin and long external appendages. Post-cephalic lobe may be transformed into a tube.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Botryopyle setosa* Cleve, 1899.

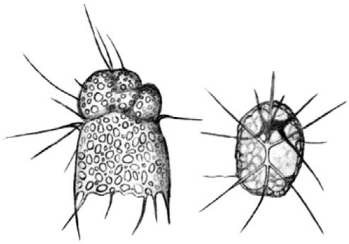
fixation MONOTYPY

status **VALID**

age ***Late Middle Eocene–Living***

VALID
FREQUENT

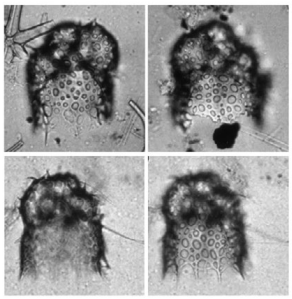
Type



25 µm

Botryopyle setosa
Cleve, 1899: 27, pl. 1, fig. 10a

Support



50 µm

Amphimelissa setosa (Cleve)
Bjørklund *et al.* 2014: 71, pl. 6, figs 1 [lectotype], 2, 7a, 7b

N - LINEAGE III (G) PYLOBOTRYDIDAE

GENUS ***Bisphaerocephalina***
Petrushevskaya, 1965: 91

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Bisphaerocephalina armata* Petrushevskaya, 1965.

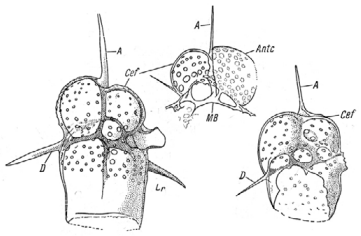
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 158

SEE ***AMPHIMELISSA***

SYN.
RARE

Type



25 µm

Bisphaerocephalina armata
Petrushevskaya, 1965: 93, figs 8.3-8.5

Support



50 µm

Botryocephalina armata (Petrushevskaya)
Kršinić & Kršinic 2012: pl. 8, fig. 87

N - LINEAGE III (G) PYLOBOTRYDIDAE

GENUS ***Bisphaerocephalus***
Popofsky, 1908: 284

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Bisphaerocephalus minutus* Popofsky, 1908.

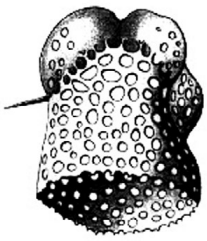
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 165

SEE ***AMPHIMELISSA***

SYN.
RARE

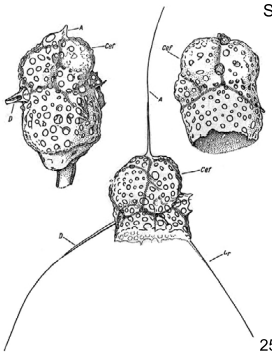
Type



25 µm

Bisphaerocephalus minutus
Popofsky, 1908: 285, pl. 33, fig. 9

Support



25 µm

Bisphaerocephalus minutus Popofsky
Petrushevskaya 1965: 95, figs 9.1-9.3

N - LINEAGE III (G) PYLOBOTRYDIDAE

GENUS ***Lithobotrys***
Haeckel, 1887: 1117

Remarks: Homonym of *LITHOBOTRYS* Ehrenberg, 1844a: 74 (Polycystinea); see *GLYCOBOTRYS nomen novum*.

Original series: *Lithobotrys geminata* Ehrenberg, 1874b; *Lithobotrys lithocorythium* Haeckel, 1887; *Lithobotrys mascula* Haeckel, 1887; *Lithobotrys nasuta* Ehrenberg, 1874b; *Lithobotrys orchidea* Haeckel, 1887; *Lithobotrys ornata* Ehrenberg, 1874b and *Lithobotrys sphaerothorax* Haeckel, 1887.

FIXATION ORIGINAL DESIGNATION

STATUS HOMONYM, JUNIOR SYNONYM?

SEE ***GLYCOBOTRYS NOMEN NOVUM***

HOM.; SYN.?

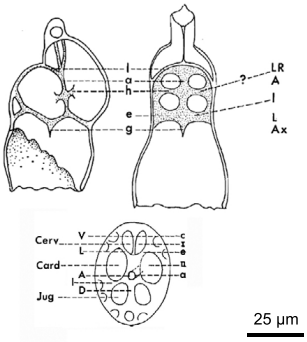
Type



25 µm

Lithobotrys geminata
Ehrenberg, 1874b: 238 (unfigured); Ehrenberg, 1876: 76, pl. 3, fig. 19

Support



25 µm

Lithobotrys geminata Ehrenberg
Foreman 1968: text-figs 11a-c

N - LINEAGE III (G) PYLOBOTRYDIDAE

GENUS ***Glycobotrys*** *NOMEN NOVUM PRO LITHOBOTRYS*
Campbell, 1951: 530

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Lithobotrys geminata* Ehrenberg, 1874b; **Lithobotrys lithocorythium* Haeckel, 1887; *Lithobotrys mascula* Haeckel, 1887; *Lithobotrys nasuta* Ehrenberg, 1874b; *Lithobotrys orchidea* Haeckel, 1887; *Lithobotrys ornata* Ehrenberg, 1874b and *Lithobotrys sphaerothorax* Haeckel, 1887.

FIXATION ORIGINAL DESIGNATION; ICZN, ART. 67.8

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***AMPHIMELISSA***

NOM. NOV.; SYN.?
FREQUENT

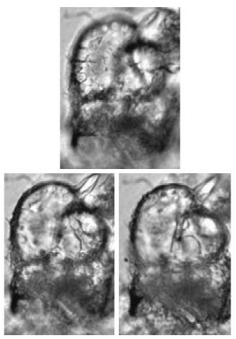
Type



25 µm

Lithobotrys geminata
Ehrenberg, 1874b: 238 (unfigured); Ehrenberg, 1876: 76, pl. 3, fig. 19

Support



25 µm

Lithobotrys geminata Ehrenberg
Ogane *et al.* 2009b: pl. 19, figs 7a-c [topotypic material]

N - Lineage III (G) PYLOBOTRYDIDAE

assigned in Campbell 1954: D144

genus **Botryocampe**
Ehrenberg, 1861b: 829

Diagnosis: Two-segmented shell with a three-lobed cephalis above a short recurved thorax below a basal plate including D and L rods and a short axobate. Thick walled eucephalic lobe with a small apophyse a. Post-cephalic lobe reduced. No A, D and V external horns.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Lithobotrys inflatum* Bailey, 1856.

fixation SUBSEQUENT MONOTYPY

status **VALID**

age **LATE EARLY MIOCENE–LIVING**

VALID
FREQUENT

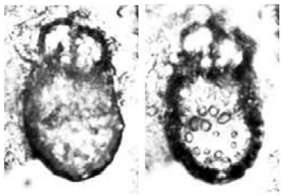
Type



25 µm

Lithobotrys inflatum
Bailey, 1856: 5, pl. 1, fig. 15

Type



25 µm

Lithobotrys inflatum Bailey
Itaki & Bjørklund 2007: 458, pl. 3, figs 12a, 12b [lectotype]

N - Lineage III (G) PYLOBOTRYDIDAE

genus **Saccospyris**
Haecker, 1907: 124

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Saccospyris antarctica* Haecker, 1907.

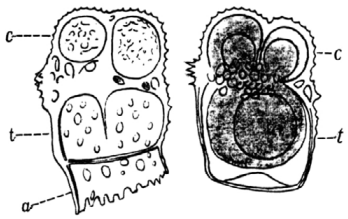
fixation MONOTYPY

status JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 59

see **BOTRYOCAMPE**

SYN.
FREQUENT

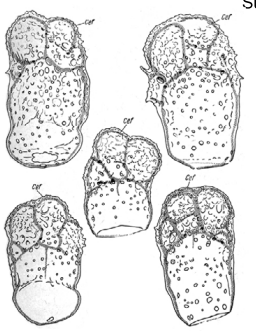
Type



50 µm

Saccospyris antarctica
Haecker, 1907: 124, text-figs 10a, b

Support



50 µm

Saccospyris antarctica Haecker
Petrushevskaya 1965: 96, figs 10.1-10.5

N - Lineage III (G) PYLOBOTRYDIDAE

assigned in Petrushevskaya 1965: 100

genus **Botryocella**
Haeckel, 1887: 1116

Diagnosis: Two-segmented shell with very thick wall. Ante-cephalic lobe with a galea overhanging above the smaller eucephalic lobe; no upper tube. Post-cephalic lobe well differentiated with no tube.

Remarks: A single report of the type species after the first illustration.

Original series: *Botryocella multicellaris* Haeckel, 1887; *Botryocella quadricellaris* Haeckel, 1887; *Botryocella quadrigemina* Haeckel, 1887; **Botryocella tricellaris* Haeckel, 1887; *Lithobotrys borealis* Ehrenberg, 1862b and *Lithobotrys nucula* Ehrenberg, 1874b.

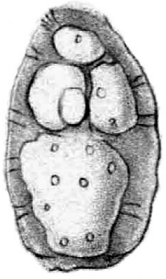
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D144)

status **VALID**

age **LATE MIDDLE EOCENE–LATE MIDDLE MIOCENE**

VALID
VERY RARE

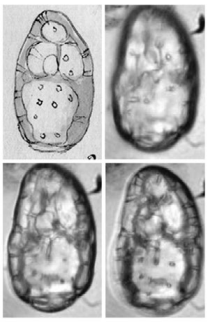
Type



25 µm

Lithobotrys nucula
Ehrenberg, 1874b: 238 (unfigured); Ehrenberg, 1876: 76, pl. 3, fig. 16

Type



25 µm

Lithobotrys nucula Ehrenberg
Ogane *et al.* 2009b: pl. 6, figs 8a-d [lectotype herein]

N - Lineage III (G) PYLOBOTRYDIDAE

assigned in Petrushevskaya 1965: 101

genus **Botryocyrtis**
Ehrenberg, 1861b: 829

Diagnosis: Three-segmented shell covered by a spongious tissue and very thin and long needle-shaped spines. Ante- and eucephalic lobes of same size, larger than the post-cephalic lobe. Thin horns, appendages and some tubes extending from A, D and L rods.

Remarks: Only two species originally included at the time of the generic definition (both illustrated, but the type species figured just once after the first illustration).

Original series: *Botryocyrtis caputserpentis* Ehrenberg, 1873a and *Botryocyrtis lithobotrys* Ehrenberg, 1873a.

fixation SUBSEQUENT DESIGNATION (Campbell 1954: D144)

status **VALID**

age **LATE MIDDLE MIOCENE–LIVING**

VALID
VERY RARE

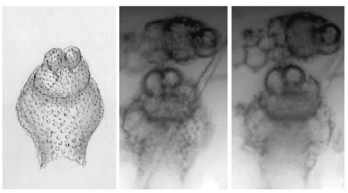
Type



25 µm

Botryocyrtis caputserpentis
Ehrenberg, 1873a: 301 (unfigured); Ehrenberg, 1873b: 286-287, pl. 10, fig. 21

Type



50 µm

Botryocyrtis caputserpentis Ehrenberg
Suzuki *et al.* 2009a: pl. 73, figs 1a-c [lectotype herein]

N - LINEAGE III (G) PYLOBOTRYDIDAE

GENUS ***Acanthobotrys***
Popofsky, 1913: 314

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Petrushevskaya (1981).

Original series: *Acanthobotrys multispina* Popofsky, 1913.

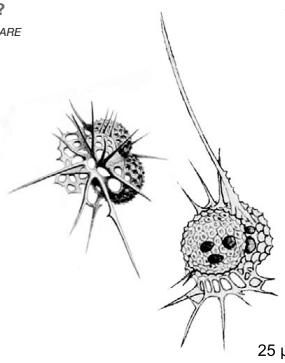
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM?
synonymized by Petrushevskaya & Kozlova 1972: 554

SEE ***BOTRYOCYRTIS***

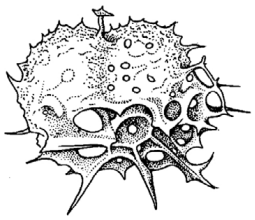
SYN.?
VERY RARE

Type



Acanthobotrys multispina
Popofsky, 1913: 316, pl. 29, fig. 1; pl. 30, fig. 5

Support



Acanthobotrys multispina Popofsky
Petrushevskaya 1981: 314, fig. 487

N - LINEAGE III (G) PYLOBOTRYDIDAE
ASSIGNED IN Petrushevskaya 1965: 113

GENUS ***Centrobotrys***
Petrushevskaya, 1965: 113

Diagnosis: Two-segmented shell. Cephalis as long as thorax, with a eucephalic lobe included inside the shell, a galea linked to the post-cephalic lobe and an ante-cephalic lobe twice as large as the eucephalic one. A, D and V extended into external spines.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Centrobotrys thermophila* Petrushevskaya, 1965.

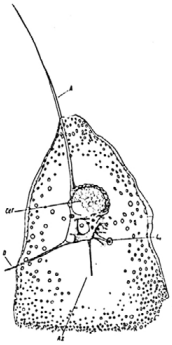
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE EOCENE–LIVING***

VALID
FREQUENT

Type



Centrobotrys thermophila
Petrushevskaya, 1965: 115, fig. 20

Support



Centrobotrys thermophila Petrushevskaya
Nigrini *et al.* 2006: 30, pl. P6, fig. 24

N - LINEAGE III (G) PYLOBOTRYDIDAE
ASSIGNED IN Petrushevskaya 1981: 322

GENUS ***Lithocorythium***
Ehrenberg, 1847: 54

Diagnosis: Three-segmented shell. Large ante-cephalic lobe with A spine stretched into a tube, higher than the eucephalic lobe below a galea. No external appendages of D and L. Third segment rudimentary when present.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. Actually, the type species is designed by monotypy (erroneous action in Petrushevskaya 1981: 322).

Original series: *Lithobotrys galea* Ehrenberg, 1844a.

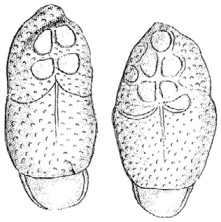
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–EARLY PLEISTOCENE***

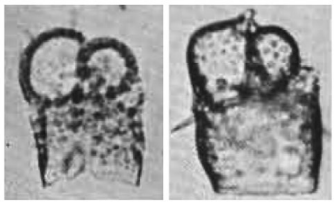
VALID
FREQUENT

Type



Lithobotrys galea
Ehrenberg, 1844a: 83 (unfigured); Ehrenberg, 1854c: pl. 22, fig. 29a, 29b

Support



Lithobotrys galea Ehrenberg
Sanfilippo *et al.* 1978: 756, pl. 1, figs 4, 5

N - LINEAGE III (G) PYLOBOTRYDIDAE

GENUS ***Phormobotrys***
Haeckel, 1882: 440

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Botryocampe hexathalamia* Haeckel, 1862; *Phormobotrys cannothalamia* Haeckel, 1887; *Phormobotrys pentathalamia* Haeckel, 1887; **Phormobotrys polythalamia* Haeckel, 1887 and *Phormobotrys trithalamia* Haeckel, 1887.

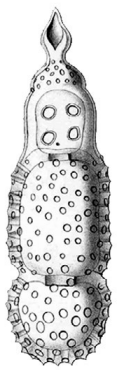
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D144)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***LITHOCORYTHIUM***

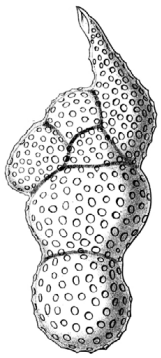
SYN.?
UNIQUE

Type



Phormobotrys trithalamia
Haeckel, 1887: 1124, pl. 96, fig. 26

Support



Phormobotrys pentathalamia
Haeckel, 1887: 1124, pl. 96, fig. 27

N - LINEAGE III (G) PYLOBOTRYDIDAE

ASSIGNED IN Petrushevskaya 1965: 99

GENUS **Monotubus**
Popofsky, 1913: 322

Diagnosis: Two-segmented shell with a thick spiny spongious wall. First segment with almost similar cephalic lobes and a basal plate. Internal rods extended as external spines, V as a short tube. Simple, elongated, thorax ending in a basal tube.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Petrushevskaya (1965).

Original series: *Monotubus microporus* Popofsky, 1913.

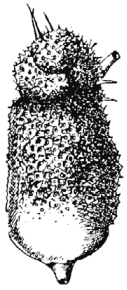
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
VERY RARE

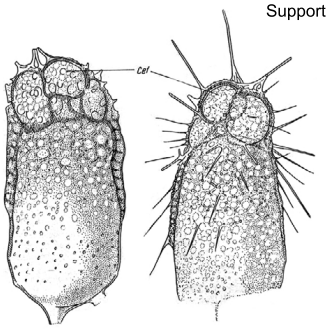
Type



25 µm

Monotubus microporus
Popofsky, 1913: 322, text-fig. 30

Support



25 µm

Monotubus microporus Popofsky
Petrushevskaya 1965: 100, fig. 12

N - LINEAGE III (G) PYLOBOTRYDIDAE

ASSIGNED IN Petrushevskaya 1971a: 159

GENUS **Neobotrys**
Popofsky, 1913: 320

Diagnosis: Two-segmented shell. Three thick-walled cephalic lobes of different sizes with A and V extended into long tubes, two L and D extended as strong external spines. Simple, elongated, thorax with a porous wall.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Neobotrys quadritubulosa* Popofsky, 1913.

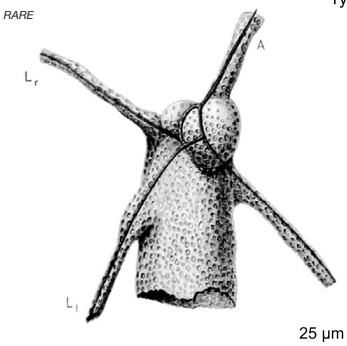
FIXATION MONOTYPY

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

VALID
RARE

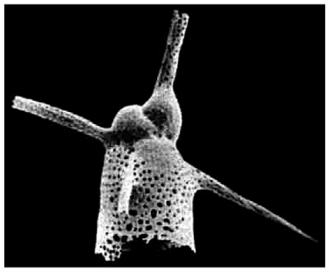
Type



25 µm

Neobotrys quadritubulosa
Popofsky, 1913: 320, pl. 30, fig. 4

Support



50 µm

Neobotrys quadritubulosa Popofsky
Nishimura & Yamauchi 1984: 66, pl. 41, fig. 3a

N - LINEAGE III (G) PYLOBOTRYDIDAE

GENUS **Xiphobotrys**
Tchang & Tan, 1965: 17

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Xiphobotrys clavata* Tchang & Tan, 1965 and *Xiphobotrys passerina* Tchang & Tan, 1965.

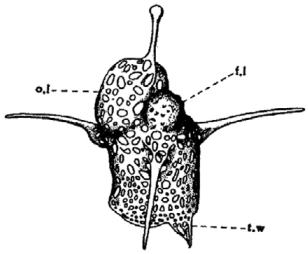
FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***NEOBOTRYS***

SYN.
FREQUENT

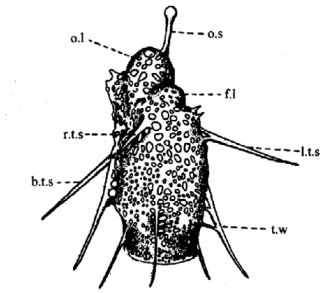
Type



50 µm

Xiphobotrys clavata
Tchang & Tan, 1965: 17, fig. 3

Support



50 µm

Xiphobotrys clavata Tchang & Tan
Tan & Su 2003: 108, text-fig. 86

N - LINEAGE III (G) PYLOBOTRYDIDAE

ASSIGNED IN Haeckel 1887: 1119

GENUS **Pylobotrys**
Haeckel, 1882: 440

Diagnosis: Smooth two-segmented shell with circular pores. Small eucephalic lobe between larger ante- and post-cephalic lobes prolonged into long tubes including A and V spines. Abdomen closed, pylome-shaped or extended into a third segment.

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Pylobotrys cerebralis* Haeckel, 1887; *Pylobotrys fontinalis* Haeckel, 1887 and *Pylobotrys putealis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D144)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LIVING***

VALID
UNIQUE

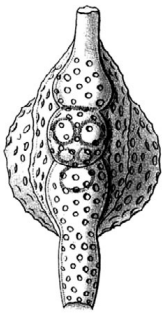
Type



25 µm

Pylobotrys putealis
Haeckel, 1887: 1121, pl. 96, fig. 21

Support



100 µm

Pylobotrys fontinalis
Haeckel, 1887: 1122, pl. 96, fig. 20

N - LINEAGE III (G) PYLOBOTRYDIDAE

GENUS ***Acrobotrissa***
Haeckel, 1887: 1114

SUBGENUS ***Acrobotrys (Acrobotrissa)***

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Acrobotrys trisolenia* Haeckel, 1887.

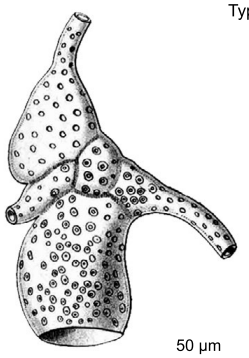
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PYLOBOTRYS***

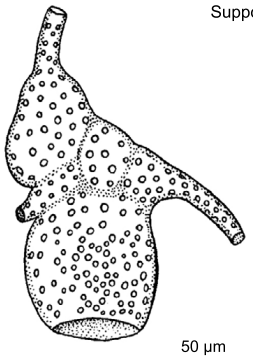
SYN.
RARE

Type



Acrobotrys trisolenia
Haeckel, 1887: 1115, pl. 96, fig. 8

Support



Acrobotrys trisolenia Haeckel
Petrushevskaya 1981: 320, fig. 494

N - LINEAGE III (G) PYLOBOTRYDIDAE

GENUS ***Acrobotrissa***
Popofsky, 1913: 321

Remarks: Homonym of *ACROBOTRISSA* Haeckel, 1887: 1114 (Polycystinea); see *ACROBOTRISSA* (a new name is not required since it is a junior synonym). Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Acrobotrissa cribosa* Popofsky, 1913.

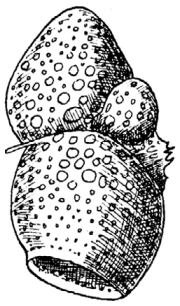
FIXATION MONOTYPY

STATUS HOMONYM, JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 320

SEE ***PYLOBOTRYS***

HOM.; SYN.
FREQUENT

Type



Acrobotrissa cribosa
Popofsky, 1913: 322, text-fig. 29

Support



Acrobotrissa cribosa Popofsky
Benson 1983: 499, pl. 9, fig. 5

N - LINEAGE III (G) PYLOBOTRYDIDAE

GENUS ***Acrobotrella***
Haeckel, 1887: 1114

SUBGENUS ***Acrobotrys (Acrobotrella)***

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Acrobotrys disolenia* Haeckel, 1887.

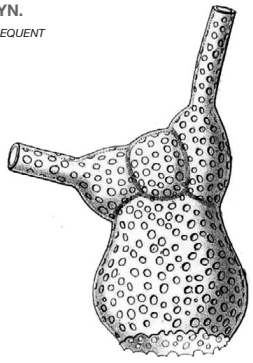
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 319

SEE ***PYLOBOTRYS***

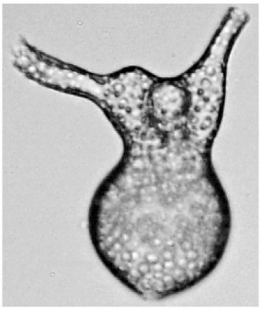
SYN.
FREQUENT

Type



Acrobotrys disolenia
Haeckel, 1887: 1114, pl. 96, fig. 10

Support



Acrobotrys disolenia Haeckel
Nigrini *et al.* 2006: 24, pl. P6, fig. 14

N - LINEAGE III (G) PYLOBOTRYDIDAE

GENUS ***Ceratobotrys***
Nishimura, 1990: 169

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Nishimura (1990).

Original series: *Ceratobotrys riedeli* Nishimura, 1990.

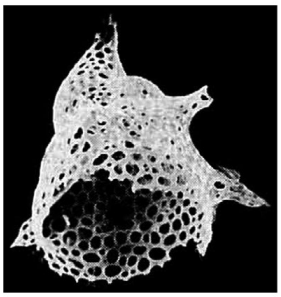
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PYLOBOTRYS***

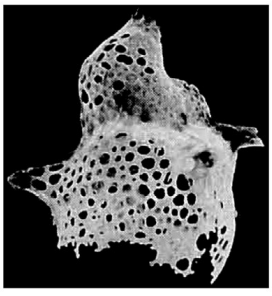
SYN.
UNIQUE

Type



Ceratobotrys riedeli
Nishimura, 1990: 169, fig. 37.3a

Support



Ceratobotrys riedeli
Nishimura, 1990: 169, fig. 37.2a

	Type	Support
N - LINEAGE III (G) ? PYLOBOTRYDIDAE GENUS ***Acrobotrys*** Haeckel, 1882: 440 NOMINOTYPE ***Acrobotrys* (*Acrobotrys*)** **Remarks**: See comments under *ACROBOTRANTHA*. **Original series**: *Acrobotrys acuminata* Haeckel, 1887; **Acrobotrys aquaria* Haeckel, 1887; *Acrobotrys auriculata* Haeckel, 1887; *Acrobotrys disolenia* Haeckel, 1887; **Acrobotrys monosolenia* Haeckel, 1887; **Acrobotrys pentasolenia* Haeckel, 1887; **Acrobotrys tetrasolenia* Haeckel, 1887 and *Acrobotrys trisolenia* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D144) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Acrobotrys monosolenia* Haeckel, 1887: 1114, unfigured	NO IMAGE PUBLISHED no image available
N - LINEAGE III (G) ? PYLOBOTRYDIDAE GENUS ***Acrobotrantha*** Haeckel, 1887: 1114 SUBGENUS ***Acrobotrys* (*Acrobotrantha*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Acrobotrys monosolenia* Haeckel, 1887. FIXATION MONOTYPY STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM SEE ***ACROBOTRYS***	**SYN. (obj.); N.D.** UNFIGURED SPECIES *Acrobotrys monosolenia* Haeckel, 1887: 1114, unfigured	NO IMAGE PUBLISHED no image available
N - LINEAGE III (G) ? PYLOBOTRYDIDAE GENUS ***Acrobotromma*** Haeckel, 1887: 1114 SUBGENUS ***Acrobotrys* (*Acrobotromma*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Acrobotrys tetrasolenia* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Acrobotrys tetrasolenia* Haeckel, 1887: 1115, unfigured	NO IMAGE PUBLISHED no image available
N - LINEAGE III (G) ? PYLOBOTRYDIDAE GENUS ***Acrobotrusa*** Haeckel, 1887: 1114 SUBGENUS ***Acrobotrys* (*Acrobotrusa*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Acrobotrys pentasolenia* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** UNFIGURED SPECIES *Acrobotrys pentasolenia* Haeckel, 1887: 1115, unfigured	NO IMAGE PUBLISHED no image available

N - LINEAGE III (G) ? PYLOBOTRYDIDAE

GENUS ***Botryopyle***
Haeckel, 1882: 440

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus. Petrushevskaya (1965: 87) proposed more convenient to designate *Botryopyle dictyocephalus* Haeckel as type species; however, this is an invalid act according to ICZN (Art. 24.2).

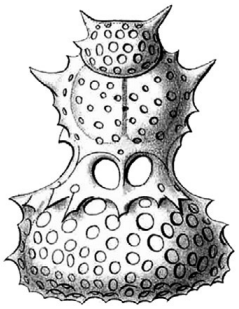
Original series: *Botryopyle dictyocephalus* Haeckel, 1887; *Botryopyle inclusa* Haeckel, 1887; *Botryopyle sethocorys* Haeckel, 1887; *Lithobotrys cribrosa* Ehrenberg, 1874b and *Lithocorythium cephalodes* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D144)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.
UNIQUE

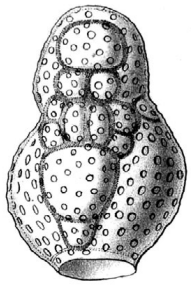
Type



50 µm

Botryopyle sethocorys
Haeckel, 1887: 1112, pl. 96, fig. 7

Support



50 µm

Botryopyle inclusa
Haeckel, 1887: 1113, pl. 96, fig. 5

N - LINEAGE III (G) ? PYLOBOTRYDIDAE

GENUS ***Cannobotrys***
Haeckel, 1882: 440

NOMINOTYPE ***Cannobotrys (Cannobotrys)***

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Cannobotrys cortina* Haeckel, 1887; **Cannobotrys dicanna* Haeckel, 1887; **Cannobotrys monocanna* Haeckel, 1887; **Cannobotrys pentacanna* Haeckel, 1887; **Cannobotrys sagittalis* Haeckel, 1887; **Cannobotrys tetracanna* Haeckel, 1887 and *Cannobotrys tricanna* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D143)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

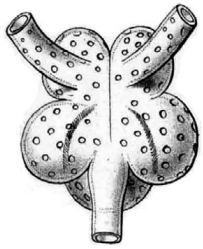
N.D.

Type

UNFIGURED SPECIES

Cannobotrys monocanna
Haeckel, 1887: 1110, unfigured

Support



25 µm

Cannobotrys cortina
Haeckel, 1887: 1110, pl. 96, fig. 4

N - LINEAGE III (G) ? PYLOBOTRYDIDAE

GENUS ***Cannobotrantha***
Haeckel, 1887: 1109

SUBGENUS ***Cannobotrys (Cannobotrantha)***

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Cannobotrys monocanna* Haeckel, 1887.

FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***CANNOBOTRYS***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Cannobotrys monocanna
Haeckel, 1887: 1110, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) ? PYLOBOTRYDIDAE

GENUS ***Cannobotrella***
Haeckel, 1887: 1109

SUBGENUS ***Cannobotrys (Cannobotrella)***

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Cannobotrys dicanna* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

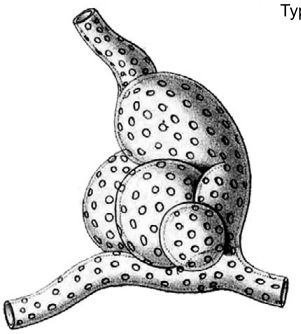
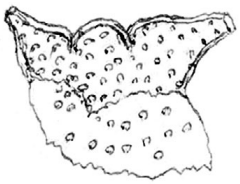
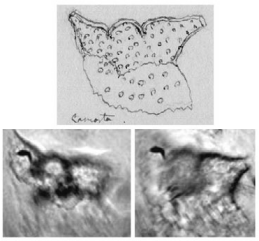
UNFIGURED SPECIES

Cannobotrys dicanna
Haeckel, 1887: 1110, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE III (G) ? PYLOBOTRYDIDAE GENUS ***Cannobotrissa*** Haeckel, 1887: 1109 SUBGENUS ***Cannobotrys* (*Cannobotrissa*)** **Remarks**: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. **Original series**: *Cannobotrys tricanna* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type not diagnostic	**N.D.** *UNIQUE* Type  50 µm *Cannobotrys tricanna* Haeckel, 1887: 1110, pl. 96, fig. 3	Support NO IMAGE PUBLISHED no image available
N - LINEAGE III (G) ? PYLOBOTRYDIDAE GENUS ***Cannobotromma*** Haeckel, 1887: 1109 SUBGENUS ***Cannobotrys* (*Cannobotromma*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Cannobotrys tetracanna* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Cannobotrys tetracanna* Haeckel, 1887: 1111, unfigured	Support NO IMAGE PUBLISHED no image available
N - LINEAGE III (G) ? PYLOBOTRYDIDAE GENUS ***Cannobotrusa*** Haeckel, 1887: 1109 SUBGENUS ***Cannobotrys* (*Cannobotrusa*)** **Remarks**: Genus described as monospecific at the time of the generic definition and never figured. **Original series**: **Cannobotrys pentacanna* Haeckel, 1887. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Cannobotrys pentacanna* Haeckel, 1887: 1111, unfigured	Support NO IMAGE PUBLISHED no image available
N - LINEAGE III (G) ? PYLOBOTRYDIDAE GENUS ***Diauletes*** Ehrenberg, 1873a: 306 **Remarks**: Genus described as monospecific at the time of the generic definition; reported only once by Suzuki *et al.* (2009a). **Original series**: *Diauletes nicobaricus* Ehrenberg, 1873a. FIXATION MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type incomplete	**N.D.** *VERY RARE* Type  10 µm *Diauletes nicobaricus* Ehrenberg, 1854c: 176 (n.n.); Ehrenberg, 1873a: 306 (unfigured); Suzuki *et al.* 2009a: pl. 38, figs 14a-c [lectotype herein]	Type  10 µm *Diauletes nicobaricus* Ehrenberg Suzuki *et al.* 2009a: pl. 38, figs 14a-c [lectotype herein]

N - LINEAGE IV (H) CYCLADOPHORIDAE

ASSIGNED IN Popova 1989: 71

GENUS **Cycladophora**
Ehrenberg, 1846: 385

NOMINOTYPE ***Cycladophora* (*Cycladophora*)**

Diagnosis: Cycladophoridae with two to three thick-walled segments. Cephalis small. A as a columella and apical horn. V as a smaller lateral apical horn. D and 2L as thin thoracic appendages. Thorax conical, wider third segment with large pores and a circular dentate terminal peristome.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. The subsequent designation by Campbell (1954: D132) of *Cycladophora stiligera* Ehrenberg, 1874b: 223 (illustrated in Ehrenberg 1876: 68, pl. 18, fig. 3) as the type species is erroneous. Similarly, Foreman (1973: 434) incorrectly indicate that the type species by subsequent monotypy is *Cycladophora tabulata* Ehrenberg, 1873a: 306 (illustrated in Ehrenberg 1873b, pl. 4, fig. 18).

Original series: *Cycladophora*? *davisiana* Ehrenberg, 1862a.

FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LATE EOCENE–LIVING***

VALID
FREQUENT

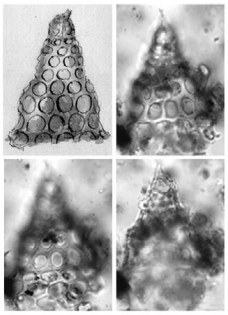
Type



25 µm

Cycladophora? *davisiana*
Ehrenberg, 1862a: 297 (unfigured); Ehrenberg, 1873b: 288-289, pl. 2, fig. 11

Type



50 µm

Cycladophora davisiana Ehrenberg
Suzuki *et al.* 2009a: pl. 42, figs 9a-d [lectotype herein]

N - LINEAGE IV (H) CYCLADOPHORIDAE

GENUS **Cyclamptidium**
Haeckel, 1887: 1380

SUBGENUS ***Cycladophora* (*Cyclamptidium*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Cycladophora*? *davisiana* Ehrenberg, 1862b; *Cycladophora fenestrata* Haeckel, 1887 and *Cycladophora stiligera* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CYCLADOPHORA***

SYN. (obj.)
FREQUENT

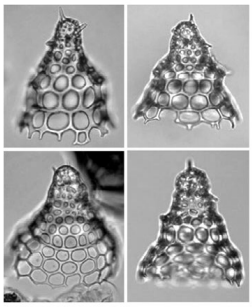
Type



25 µm

Cycladophora? *davisiana*
Ehrenberg, 1862a: 297 (unfigured); Ehrenberg, 1873b: 288-289, pl. 2, fig. 11

Support



50 µm

Cycladophora davisiana Ehrenberg
Matsuzaki *et al.* 2015: 61, fig. 8.9, 8.11, 8.12, 8.14

N - LINEAGE IV (H) CYCLADOPHORIDAE

GENUS **Diplocyclas**
Haeckel, 1882: 434

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Diplocyclas bicincta* Haeckel, 1887; *Diplocyclas bicorona* Haeckel, 1887 and **Diplocyclas bizonalis* Haeckel, 1887.

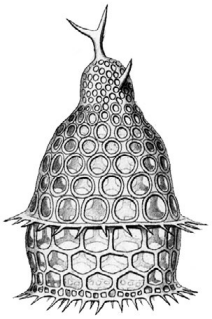
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR SYNONYM
synonymized by Bjørklund & De Ruiter 1987: 274

SEE ***CYCLADOPHORA***

SYN.
FREQUENT

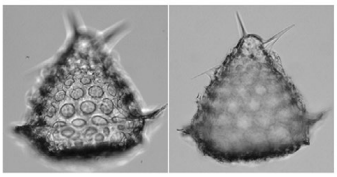
Type



50 µm

Diplocyclas bicorona
Haeckel, 1887: 1392, pl. 59, fig. 8

Support



50 µm

Diplocyclas bicorona Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (H) CYCLADOPHORIDAE

GENUS **Spuroclathrocyclas**
Popova, 1989: 72

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Clathrocyclas* semeles Haeckel, 1887; *Spuroclathrocyclas bianularis* Popova, 1989; *Spuroclathrocyclas fundatum* Popova, 1989; *Spuroclathrocyclas sphaeris* Popova, 1989 and *Spuroclathrocyclas subtilis* Popova, 1989.

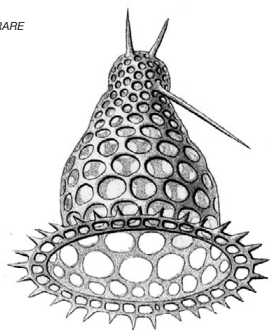
FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized by Lombari & Lazarus 1988: 108

SEE ***CYCLADOPHORA***

SYN.
VERY RARE

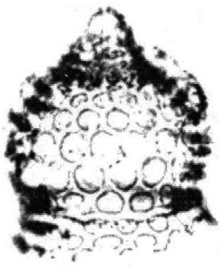
Type



50 µm

Clathrocyclas semeles
Haeckel, 1887: 1388, pl. 58, fig. 5

Support



50 µm

Spuroclathrocyclas sphaeris
Popova, 1989: 73, pl. 11, fig. 17

N - LINEAGE IV (H) — ? CYCLADOPHORIDAE
FAMILY TENTATIVELY ASSIGNED HEREIN

GENUS ***Valkyria***
O'Connor, 1997: 74

Diagnosis: Cycladophoridae with a three-segmented shell. Small cephalis with A and V horns. D and 2L extended as distal thoracic ribs and terminal abdominal feet. Abdomen with large pores and a constricted aperture. No peristome.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Valkyria pukapuka* O'Connor, 1997.

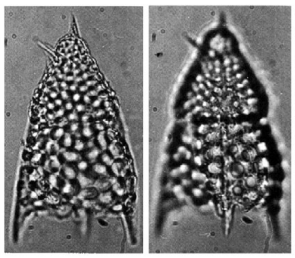
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–EARLY EARLY MIOCENE***

VALID
RARE

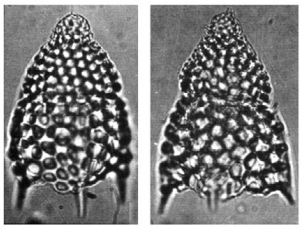
Type



50 µm

Valkyria pukapuka
O'Connor, 1997: 74, pl. 2, figs 15, 16

Support



50 µm

Valkyria pukapuka
O'Connor, 1997: 74, pl. 3, figs 1, 2

N - LINEAGE IV (H) — SETHOPERIDAE
ASSIGNED IN Petrushevskaya 1971a: 82

GENUS ***Callimitra***
Haeckel, 1882: 431

Diagnosis: Sethoperidae with a cephalis surrounded by six plates of irregular meshwork. From A, D and the 2L outgrow lateral apophyses constituting the frames of the six plates regularly distributed laterally and below the central cephalis. V small.

Remarks: Type species frequently reported.

Original series: *Callimitra agnesae* Haeckel, 1887; *Callimitra annae* Haeckel, 1887; *Callimitra carolotae* Haeckel, 1887; *Callimitra elisabethae* Haeckel, 1887 and *Callimitra emmae* Haeckel, 1887.

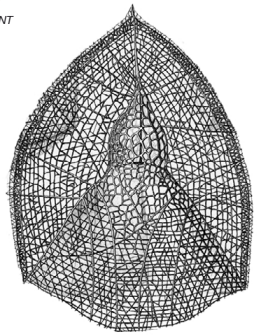
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS **VALID**

AGE ***LATE LATE MIOCENE–LIVING***

VALID
FREQUENT

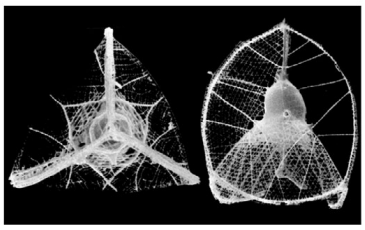
Type



50 µm

Callimitra carolotae
Haeckel, 1887: 1217, pl. 63, fig. 1

Support



100 µm

Callimitra carolotae Haeckel
Robinson & Goll 1978: 434, pl. 1, figs 1, 3

N - LINEAGE IV (H) — SETHOPERIDAE

GENUS ***Arachnothauma***
Zacharias, 1906: 565

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Arachnothauma mirabile* Zacharias, 1906.

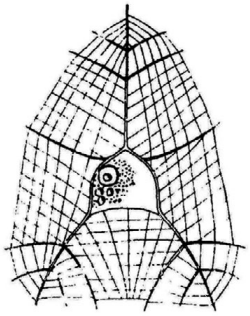
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CALLIMITRA***

SYN.
UNIQUE

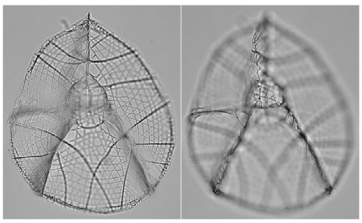
Type



50 µm

Arachnothauma mirabile
Zacharias, 1906: 565, text-fig. 19

Support



50 µm

Arachnothauma mirabile Zacharias
Zhang's collection (South China Sea)

N - LINEAGE IV (H) — SETHOPERIDAE
ASSIGNED IN Petrushevskaya 1981: 304

GENUS ***Clathrocanium***
Ehrenberg, 1861b: 829

NOMINOTYPE ***Clathrocanium* (*Clathrocanium*)**

Diagnosis: Sethoperidae with a thick-walled globular cephalis surrounded by intersecting bars. A as a strong apical horn. D and 2L spines constituting important trihedral appendages with wide sides perforated by pores or gates extended as a pseudo-thorax with a ring.

Remarks: See comments under *CLATHROCANIDIUM*.

Original series: *Clathrocanium coarctatum* Ehrenberg, 1873a and *Clathrocanium squarrosum* Ehrenberg, 1873a.

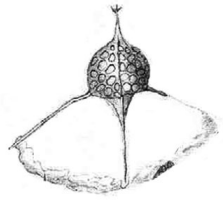
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS **VALID**

AGE ***EARLY MIDDLE MIOCENE–LIVING***

VALID
VERY RARE

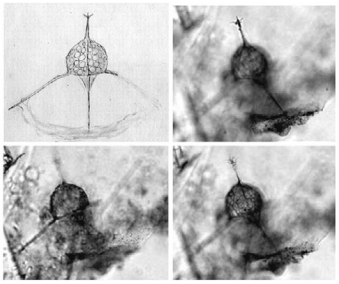
Type



25 µm

Clathrocanium squarrosum
Ehrenberg, 1873a: 303 (unfigured); Ehrenberg, 1873b: 286-287, pl. 7, fig. 5

Type



50 µm

Clathrocanium squarrosum Ehrenberg
Suzuki *et al.* 2009a: pl. 54, figs 5a-d [lectotype herein]

N - LINEAGE IV (H) SETHOPERIDAE

GENUS **Clathrocanidium**
Haeckel, 1887: 1210

SUBGENUS ***Clathrocanium* (*Clathrocanidium*)**

Remarks: Type species only illustrated by Ehrenberg (1873b); the support image is one of those species originally included into this genus.

Original series: *Clathrocanium coarctatum* Ehrenberg, 1873a; *Clathrocanium sphaerocephalum* Haeckel, 1887; *Clathrocanium squarrosum* Ehrenberg, 1873a and *Clathrocanium triomma* Haeckel, 1887.

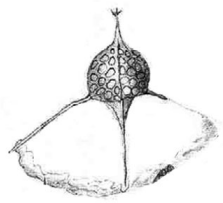
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CLATHROCANIUM***

SYN. (obj.) *VERY RARE*

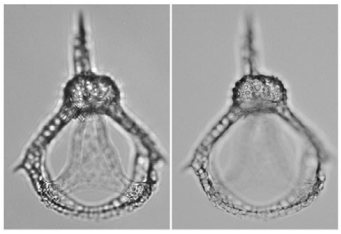
Type



25 µm

Clathrocanium squarrosum
Ehrenberg, 1873a: 303 (unfigured); Ehrenberg, 1873b: 286-287, pl. 7, fig. 5

Support



50 µm

Clathrocanium squarrosum Ehrenberg
Zhang's collection (South China Sea)

N - LINEAGE IV (H) SETHOPERIDAE

GENUS **Clathrocorona**
Haeckel, 1882: 431

SUBGENUS ***Clathrocanium* (*Clathrocorona*)**

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Clathrocanium diadema* Haeckel, 1887 and *Clathrocanium reginae* Haeckel, 1887.

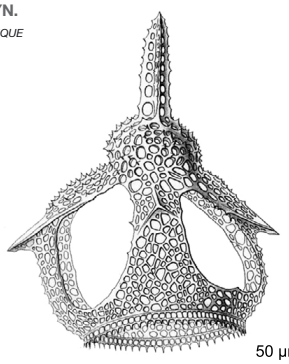
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 80

SEE ***CLATHROCANIUM***

SYN. *UNIQUE*

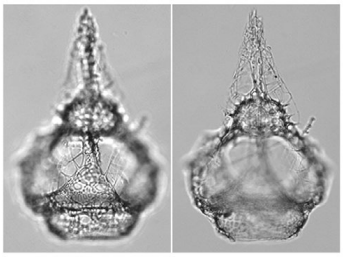
Type



50 µm

Clathrocanium diadema
Haeckel, 1887: 1212, pl. 64, fig. 2

Support



50 µm

Clathrocanium reginae Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (H) SETHOPERIDAE

GENUS **Arachnopilium**
Haeckel, 1882: 435

SUBGENUS ***Pteropilium* (*Arachnopilium*)**

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Pteropilium clathrocanium* Haeckel, 1887.

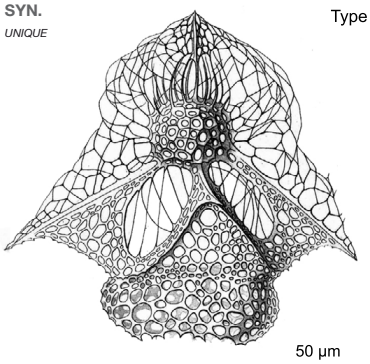
FIXATION SUBSEQUENT MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 80

SEE ***CLATHROCANIUM***

SYN. *UNIQUE*

Type



50 µm

Pteropilium clathrocanium
Haeckel, 1887: 1327, pl. 64, fig. 7

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (H) SETHOPERIDAE

GENUS **Clathrolychnus**
Haeckel, 1882: 431

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Clathrolychnus araneosus* Haeckel, 1887 and *Clathrolychnus periplectus* Haeckel, 1887.

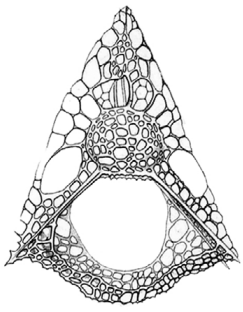
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 80

SEE ***CLATHROCANIUM***

SYN. *UNIQUE*

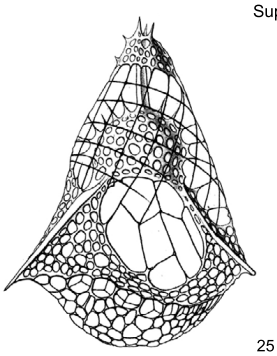
Type



50 µm

Clathrolychnus araneosus
Haeckel, 1887: 1240, pl. 64, fig. 5

Support



25 µm

Clathrolychnus periplectus
Haeckel, 1887: 1241, pl. 64, fig. 6

N - LINEAGE IV (H) SETHOPERIDAE

GENUS ***Sethopera***
Haeckel, 1882: 433

Remarks: Type species only illustrated by Haeckel (1887); the support image is a junior subjective synonym.

Original series: *Lithopera lagena* Ehrenberg, 1874b; *Lithopera oceanica* Ehrenberg, 1873a; **Lithopera pyrum* Ehrenberg, 1873a and *Sethopera tricostata* Haeckel, 1887.

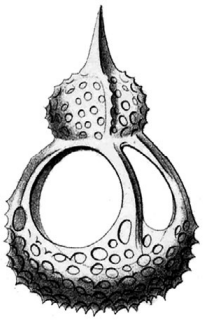
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CLATHROCANIUM***

SYN.
UNIQUE

Type



50 µm

Sethopera tricostata
Haeckel, 1887: 1232, pl. 97, fig. 11

Support



25 µm

Clathrocanium sp.
Riedel & Sanfilippo, 1977: pl. 14, fig. 8

N - LINEAGE IV (H) SETHOPERIDAE

GENUS ***Tripocyrtis***
Haeckel, 1887: 1201

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Tripocyrtis plagoniscus* Haeckel, 1887; *Tripocyrtis plectaniscus* Haeckel, 1887 and **Tripocyrtis tripodiscus* Haeckel, 1887.

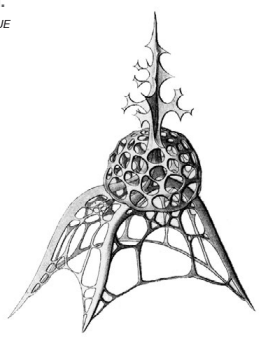
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 300

SEE ***CLATHROCANIUM***

SYN.
UNIQUE

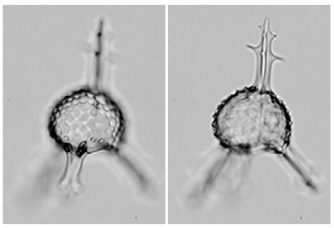
Type



50 µm

Tripocyrtis plagoniscus
Haeckel, 1887: 1201, pl. 60, fig. 10

Support



50 µm

Tripocyrtis cf. *plagoniscus* Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (H) SETHOPERIDAE
ASSIGNED IN Petrushevskaya 1971a: 82

GENUS ***Clathrocorys***
Haeckel, 1882: 431

Diagnosis: Sethoperidae with a thick-walled globular cephalis. Internal spicule undescribed. A. D and 2L extended as nearly equal sided horns with distal apophyses connected by a peripheral meshwork of quadrangular pores sometimes directly related to cephalis walls.

Remarks: Type species frequently reported.

Original series: *Clathrocorys giltschi* Haeckel, 1887; *Clathrocorys murrayi* Haeckel, 1887 and *Clathrocorys teuscheri* Haeckel, 1887.

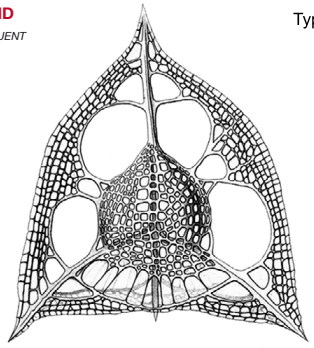
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS **VALID**

AGE ***LATE EOCENE–LIVING***

VALID
FREQUENT

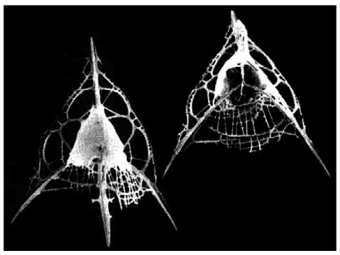
Type



50 µm

Clathrocorys murrayi
Haeckel, 1887: 1219, pl. 64, fig. 8

Support



50 µm

Clathrocorys murrayi Haeckel
Nishimura & Yamauchi 1984: 48, pl. 34, figs 3a, 3b

N - LINEAGE IV (H) SETHOPERIDAE
ASSIGNED IN Petrushevskaya 1981: 296

GENUS ***Dictyocodoma***
Haeckel, 1887: 1335

SUBGENUS ***Dictyocodon (Dictyocodoma)***

Diagnosis: Sethoperidae with two to three segments. Small globular cephalis. Robust sided A horn with lateral apophyses, not united to thorax. D and 2L spines elongated as lateral winglets on the large thoracic wall with regular small meshes. Aperture open with delicate peristomial teeth.

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: *Dictyocodon palladius* Haeckel, 1887 and **Dictyocodon prometheus* Haeckel, 1887.

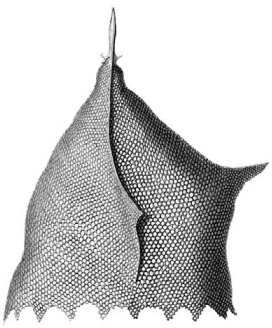
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS **VALID**

AGE ***LIVING***

VALID
RARE

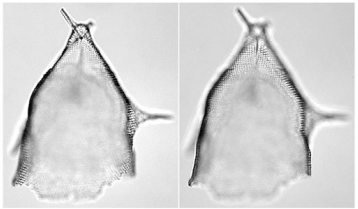
Type



50 µm

Dictyocodon palladius
Haeckel, 1887: 1335, pl. 71, fig. 12 [lectotype herein]

Support



50 µm

Dictyocodon palladius Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (H) SETHOPERIDAE

ASSIGNED IN Petrushevskaya 1981: 296

GENUS ***Dictyocodon***
Haeckel, 1882: 435

NOMINOTYPE ***Dictyocodon* (*Dictyocodon*)**

Diagnosis: Sethoperidae with three porous segments. A as a robust sided apical horn with lateral apophyses. D and 2L spines prolonged as porous thoracic winglets, or horns. Vert spine as a lateral small horn. Abdomen open with a variable peristome, denticulate when complete.

Remarks: See comments under *DICTYOCODELLA*.

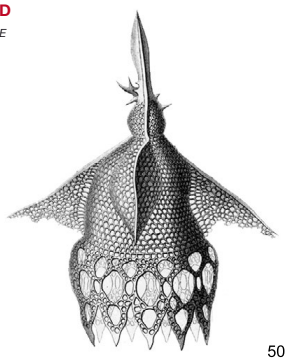
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

Type



50 µm

Dictyocodon annasethe
Haeckel, 1887: 1334, pl. 71, fig. 11

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (H) SETHOPERIDAE

GENUS ***Dictyocodella***
Haeckel, 1887: 1334

SUBGENUS ***Dictyocodon* (*Dictyocodella*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: *Dictyocodon annasethe* Haeckel, 1887 and *Dictyocodon carolotae* Haeckel, 1887.

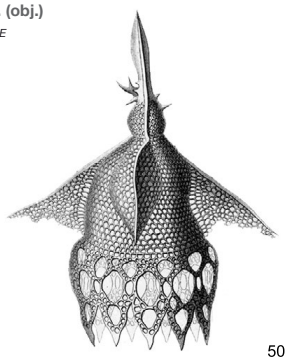
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***DICTYOCODON***

SYN. (obj.)
UNIQUE

Type



50 µm

Dictyocodon annasethe
Haeckel, 1887: 1334, pl. 71, fig. 11

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (H) SETHOPERIDAE

ASSIGNED IN Petrushevskaya 1971a: 85

GENUS ***Pteropilium***
Haeckel, 1882: 435

NOMINOTYPE ***Pteropilium* (*Pteropilium*)**

Diagnosis: Sethoperidae with three segments. A sided apical horn with lateral apophyses joining the D and 2L thoracic winglets. Inner structure unknown. No gates in shell wall. Thorax irregular with an open aperture and a shapeless peristome.

Remarks: See comments under *CLATHROPILIUM*.

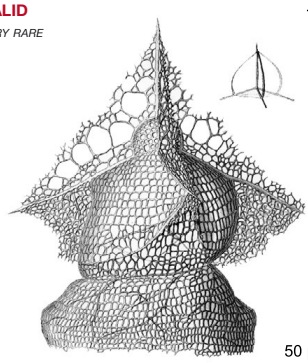
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS **VALID**

AGE ***LIVING***

VALID
VERY RARE

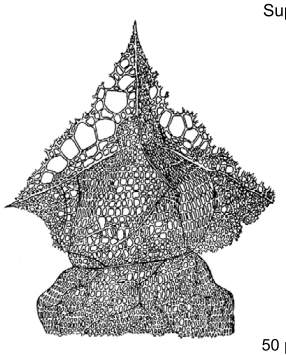
Type



50 µm

Pteropilium stratiotes
Haeckel, 1887: 1326, pl. 70, fig. 9

Support



50 µm

Pteropilium stratiotes Haeckel
Petrushevskaya 1981: 297, fig. 455

N - LINEAGE IV (H) SETHOPERIDAE

GENUS ***Clathropilium***
Haeckel, 1882: 435

SUBGENUS ***Pteropilium* (*Clathropilium*)**

Remarks: A single report of the type species after the first illustration.

Original series: **Pteropilium eques* Haeckel, 1887; **Pteropilium hoplites* Haeckel, 1887 and *Pteropilium stratiotes* Haeckel, 1887.

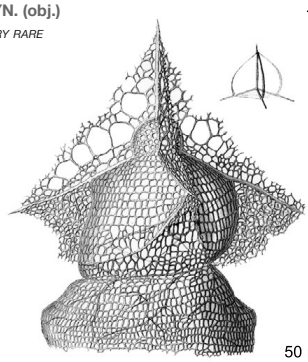
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PTEROPILIUM***

SYN. (obj.)
VERY RARE

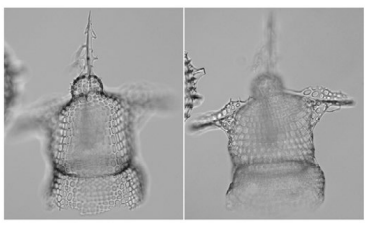
Type



50 µm

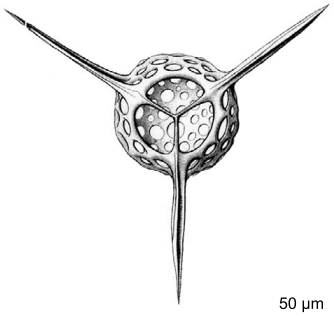
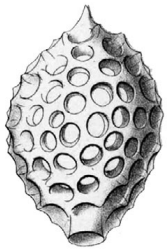
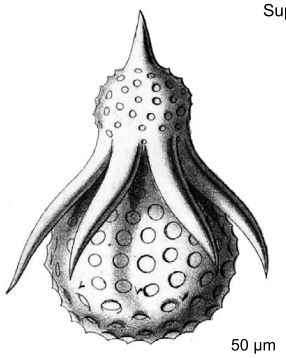
Pteropilium stratiotes
Haeckel, 1887: 1326, pl. 70, fig. 9

Support



50 µm

Pteropilium stratiotes Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (H) ? SETHOPERIDAE GENUS ***Archibursa*** Haeckel, 1882: 429 **Remarks**: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. **Original series**: *Archibursa tripodiscus* Haeckel, 1887. FIXATION SUBSEQUENT MONOTYPY STATUS NOMEN DUBIUM designated herein; name-bearing type not diagnostic	**N.D.** Type *UNIQUE*  *Archibursa tripodiscus* Haeckel, 1887: 1157, pl. 98, fig. 6	Support NO IMAGE PUBLISHED no image available
N - LINEAGE IV (H) ? SETHOPERIDAE GENUS ***Archicorys*** Haeckel, 1882: 427 **Remarks**: Type species never figured. The support image is the closest species among those originally included in this genus. **Original series**: **Archicorys ampulla* Haeckel, 1887; **Archicorys galea* Haeckel, 1887; **Archicorys globosa* Haeckel, 1887; *Archicorys microstoma* Haeckel, 1887 and *Archicorys ovata* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D121) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Archicorys galea* Haeckel, 1887: 1184, unfigured	Support  *Archicorys microstoma* Haeckel, 1887: 1185, pl. 51, fig. 12
N - LINEAGE IV (H) ? SETHOPERIDAE GENUS ***Sethophatna*** Haeckel, 1882: 433 **Remarks**: See comments under *SETHOPHAENA*. Type species never figured. The support image is the closest species among those originally included in this genus. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128) STATUS NOMEN DUBIUM designated herein; name-bearing type non-existent	**N.D.** Type UNFIGURED SPECIES *Sethophaena tetraptera* Haeckel, 1887: 1285, unfigured	Support  *Sethophaena hexaptera* Haeckel, 1887: 1286, pl. 97, fig. 13
N - LINEAGE IV (H) ? SETHOPERIDAE GENUS ***Sethophaena*** INCORRECT SUBSEQUENT SPELLING Haeckel, 1887: 1285 **Remarks**: An incorrect subsequent spelling for *SETHOPHATNA*. By referring back to p. 433 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *SETHOPHAENA* to be an emendation of the name *SETHOPHATNA* which is unjustified according to the provisions of ICZN art. 33.3. **Original series**: *Sethophaena enneaptera* Haeckel, 1887; *Sethophaena hexaptera* Haeckel, 1887; *Sethophaena polyptera* Haeckel, 1887 and *Sethophaena tetraptera* Haeckel, 1887. FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D128) STATUS INVALID NAME designated herein SEE ***SETHOPHATNA***	**INV.** Type UNFIGURED SPECIES *Sethophaena tetraptera* Haeckel, 1887: 1285, unfigured	Support NO IMAGE PUBLISHED no image available

N - LINEAGE IV (I) BEKOMIDAE

ASSIGNED IN De Wever *et al.* 2001: 284

GENUS **Bekoma**
Riedel & Sanfilippo, 1971: 1592

Diagnosis: Bekomidae with a two-segmented shell with three robust feet usually connected by lateral arches. Small porous cephalis with A and V horns. Upper thorax elongated, lower thorax with circular pores and D and 2L extended as ribs and feet. No real abdominal wall.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Bekoma bidarfensis* Riedel & Sanfilippo, 1971.

FIXATION MONOTYPY

STATUS **VALID**

AGE ***MIDDLE PALEOCENE–EARLY EOCENE***

VALID
FREQUENT

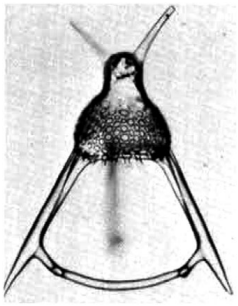
Type



50 µm

Bekoma bidarfensis
Riedel & Sanfilippo, 1971: 1592, pl. 7, fig. 1

Support



100 µm

Bekoma bidarfensis Riedel & Sanfilippo
Nishimura 1992: 332, pl. 5, fig. 8

N - LINEAGE IV (I) BEKOMIDAE

ASSIGNED IN De Wever *et al.* 2001: 284

GENUS **Bekomiforma**
Sanfilippo & Riedel, 1974: 1020

Diagnosis: Bekomidae with a three-segmented shell including a small pitted cephalis, a porous campanulate thorax, and an elongated abdomen enclosed in three strong D and 2L feet without projections. A spine extended as a strong horn, V spine as a shorter thorn.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Bekomiforma mynx* Sanfilippo & Riedel, 1974.

FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY MIDDLE MIOCENE–EARLY PLEISTOCENE***

VALID
RARE

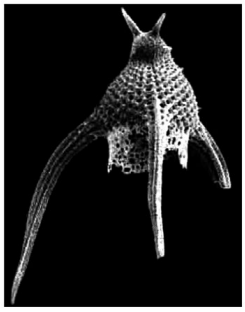
Type



50 µm

Bekomiforma mynx
Sanfilippo & Riedel, 1974: 1020, pl. 2, fig. 3

Support



50 µm

Bekomiforma mynx Sanfilippo & Riedel
Sugiyama *et al.* 1992: pl. 20, fig. 1a

N - LINEAGE IV (I) BEKOMIDAE

ASSIGNED IN Matsuzaki *et al.* 2015: 63

GENUS **Lamprotripus**
Haeckel, 1882: 431

SUBGENUS ***Dictyophimus* (*Lamprotripus*)**

Diagnosis: Bekomidae with a three-segmented porous shell with a knob-like cephalis, a campanulate thorax, and an open tube-like abdomen. A as a columella before producing a strong horn. V spine may be fused with one L spine. D and 2L spines as strong thoracic feet.

Remarks: A single report of the type species after the first illustration.

Original series: **Dictyophimus bicornis* Haeckel, 1887; *Dictyophimus buetschlii* Haeckel, 1887; *Dictyophimus cienkowski* Haeckel, 1887; *Dictyophimus hertwigi* Haeckel, 1887; *Dictyophimus triserratus* Haeckel, 1887 and *Dictyophimus*? *pocillum* Ehrenberg, 1874b.

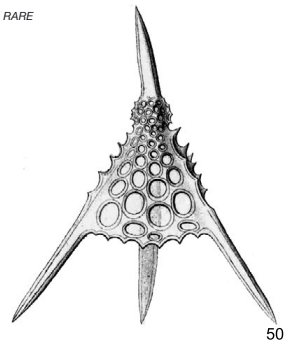
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS **VALID**

AGE ***MIDDLE PALEOCENE–LIVING***

VALID
VERY RARE

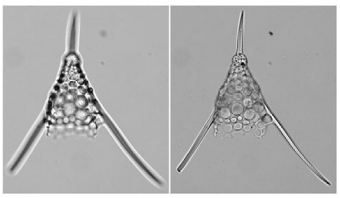
Type



50 µm

Dictyophimus triserratus
Haeckel, 1887: 1200, pl. 61, fig. 17

Support



50 µm

Dictyophimus triserratus Haeckel
Challenger Station 265, Suzuki's collection

N - LINEAGE IV (I) BEKOMIDAE

ASSIGNED IN De Wever *et al.* 2001: 284

GENUS **Orbula**
Foreman, 1973: 437

Diagnosis: Bekomidae with a two-segmented shell with a thick knob-like cephalis and a porous thorax with a possibly swelled peristome. Relatively small A horn. D and L spines slightly differentiated as very short «feet» above peristome.

Remarks: Type species rarely reported.

Original series: *Orbula comitata* Foreman, 1973; *Orbula discipulus* Foreman, 1973 and *Orbula ducalis* Foreman, 1973.

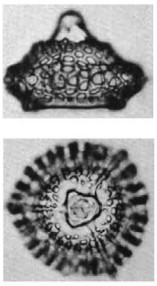
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE PALEOCENE***

VALID
RARE

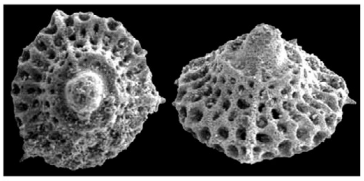
Type



100 µm

Orbula ducalis
Foreman, 1973: 438, pl. 10, fig. 11

Support



50 µm

Orbula ducalis Foreman
Liu & Aitchison 2002: 150, pl. 2, figs 18, 19

N - LINEAGE IV (I) — ? BEKOMIDAE

GENUS **Stichocampe**
Haeckel, 1882: 439

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Stichocampe convergens* Haeckel, 1887 and **Stichocampe divergens* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. — Type

UNFIGURED SPECIES

Stichocampe divergens
Haeckel, 1887: 1444, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (I) — ? BEKOMIDAE

GENUS **Stichopterium**
Haeckel, 1887: 1444

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Stichopterium dictyopodium* Haeckel, 1887; **Stichopterium pterocanium* Haeckel, 1887 and **Stichopterium virgineum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. — Type

UNFIGURED SPECIES

Stichopterium pterocanium
Haeckel, 1887: 1445, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (I) — LITHOCHYTRIDIDAE
ASSIGNED HEREIN

GENUS **Dictyopodium**
Ehrenberg, 1847: 54

Diagnosis: Lithochytrididae with a three-segmented porous and thorny shell, the third segment often vestigial. Spherical cephalis with a cylindrical A horn and a reduced lateral V horn. D and 2L spines extended as thoracic ribs and strong long porous feet. Abdomen thin irregular.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Dictyopodium trilobum* Haeckel, 1861b.

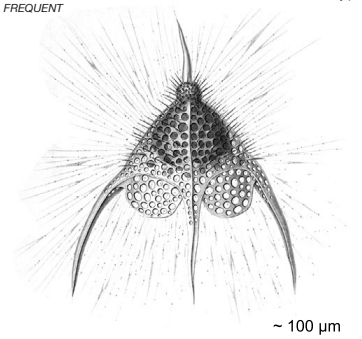
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LATE LATE MIOCENE–LIVING***

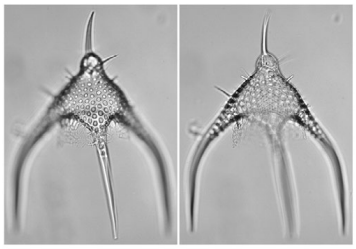
VALID
FREQUENT

Type



Dictyopodium trilobum
Haeckel, 1861b: 839 (unfigured); Haeckel, 1862: 340, pl. 8, fig. 6

Support



Dictyopodium trilobum Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (I) — LITHOCHYTRIDIDAE

GENUS **Pterocanarium**
Haeckel, 1887: 1329

SUBGENUS ***Pterocanium* (*Pterocanarium*)**

Remarks: No type species fixed. Campbell (1954: 130) considers *PTEROCANARIUM* the nominate subgenus of *PTEROCANIUM* Ehrenberg, 1846. However, the type species of *PTEROCANIUM* (*Lithocampe aculeata* Ehrenberg, 1844c) was not originally included in *PTEROCANARIUM*.

Original series: *Lychnocanium campanella* Ehrenberg, 1873a; *Lychnocanium depressum* Ehrenberg, 1873a; *Lychnocanium praetextum* Ehrenberg, 1873a; *Pterocanium contiguum* Ehrenberg, 1874b; *Pterocanium gravidum* Haeckel, 1887; *Pterocanium orcinum* Haeckel, 1887; *Pterocanium proserpinae* Ehrenberg, 1859; *Pterocanium pyramis* Haeckel, 1887; *Pterocanium tricolpum* Haeckel, 1887 and *Pterocanium virgineum* Haeckel, 1887.

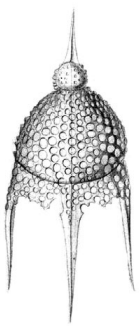
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***DICTYOPODIUM***

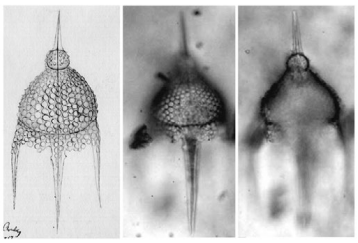
SYN.
RARE

Type



Pterocanium proserpinae
Ehrenberg, 1859: 34 (unfigured); Ehrenberg, 1873b: 298-299, pl. 11, fig. 22

Type



Pterocanium proserpinae Ehrenberg
Suzuki *et al.* 2009a: pl. 37, figs 6a-c [lectotype herein]

N - LINEAGE IV (I) LITHOCHYTRIDIDAE

GENUS ***Pterocanidium***
Haeckel, 1887: 1332

SUBGENUS ***Pterocanium (Pterocanidium)***

Remarks: Type species frequently reported.

Original series: *Dictyopodium trilobum* Haeckel, 1861b; *Pterocanium bicorne* Haeckel, 1887 and *Pterocanium eucolpum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR SYNONYM
synonymized by Riedel & Sanfilippo 1970: 529

SEE ***DICTYOPODIUM***

SYN.
FREQUENT

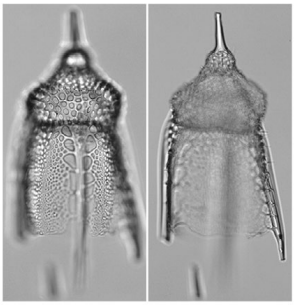
Type



50 µm

Pterocanium eucolpum
Haeckel, 1887: 1332, pl. 73, fig. 4

Support



50 µm

Pterocanium eucolpum Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (I) LITHOCHYTRIDIDAE

GENUS ***Lychnodictyum***
Haeckel, 1882: 431

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Dictyophimus challengeri* Haeckel, 1878; *Lychnodictyum scaphopodium* Haeckel, 1887; **Lychnodictyum sethopodium* Haeckel, 1887 and **Lychnodictyum wyvillei* Haeckel, 1887.

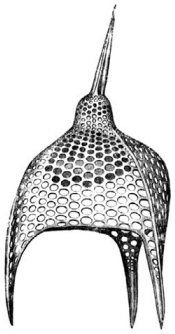
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS JUNIOR SYNONYM
synonymized by Lazarus *et al.* 1985: 196

SEE ***DICTYOPODIUM***

SYN.
FREQUENT

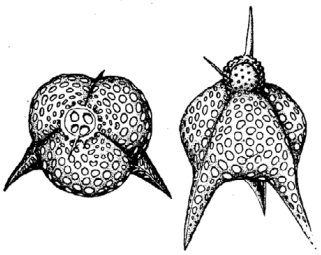
Type



50 µm

Dictyophimus challengeri
Haeckel, 1878: 47, fig. 35

Support



50 µm

Lychnodictyum challengeri (Haeckel)
Tan & Tchang 1976: 279, text-figs 54a, 54b

N - LINEAGE IV (I) LITHOCHYTRIDIDAE

GENUS ***Pleuropodium***
Haeckel, 1882: 435

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: **Pleuropodium cortina* Haeckel, 1887 and *Podocyrtis charybdea* Müller, 1855b.

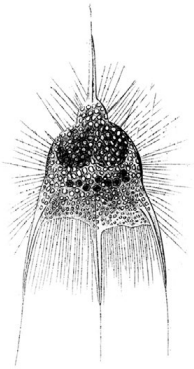
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR SYNONYM
synonymized by Riedel & Sanfilippo 1970: 529

SEE ***DICTYOPODIUM***

SYN.
FREQUENT

Type



50 µm

Podocyrtis charybdea
Müller, 1855b: 673 (unfigured); Müller, 1859b: 43, pl. 6, fig. 7 [lectotype herein]

Support



50 µm

Pterocanium charybdeum (Müller)
Sugiyama *et al.* 1992: pl. 24, fig. 8a

N - LINEAGE IV (I) ? LITHOCHYTRIDIDAE

GENUS ***Fenestracanthia***
Enriques in Bertolini, 1937: undescribed

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Fenestracanthia spinulosa* Enriques in Bertolini, 1937.

FIXATION MONOTYPY

STATUS NOMEN NUDUM, JUNIOR SYNONYM
designed in Petrushevskaya 1981: 384

SEE ***DICTYOPODIUM***

N.N.; SYN.
UNIQUE

Type



50 µm

Fenestracanthia spinulosa
Enriques in Bertolini, 1937: undescribed, pl. 53, fig. D (n.n.)

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (I) — LITHOCHYTRIDIDAE

GENUS ***Inversumbella***
Nigrini & Caulet, 1992: 150

Diagnosis: Lithochytrididae with two segments: a sub-spherical cephalis and a robust conical open thorax. A as a columella and a very long smooth vertical horn. D and 2L extended as ribs and long feet. Additional ribs and feet on thorax. Short Ax present. Secondary thorns on shell.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Acanthocorys macroceras* Haeckel, 1887.

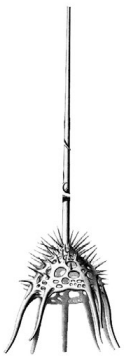
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY PLIOCENE–LIVING***

VALID
FREQUENT

Type



200 µm

Acanthocorys macroceras
Haeckel, 1887: 1264, pl. 97, fig. 12

Support



50 µm

Inversumbella macroceras (Haeckel)
Nigrini & Caulet 1992: 150, pl. 4, fig. 2

N - LINEAGE IV (I) — LITHOCHYTRIDIDAE
ASSIGNED IN Petrushevskaya 1981: 246

GENUS ***Lithochytris***
Ehrenberg, 1846: 385

NOMINOTYPE ***Lithochytris* (*Lithochytris*)**

Diagnosis: Lithochytrididae with a very thick-walled three-segmented shell. Globular cephalis with a short pyramidal A horn. Internal bars not recognized. Short globular thorax, no ribs. Abdomen completely closed in three basal hollow conical excrescences and stout feet.

Remarks: Type species frequently reported.

Original series: *Lithochytris pileata* Ehrenberg, 1874b; *Lithochytris pyramidalis* Ehrenberg, 1874b; *Lithochytris tripodium* Ehrenberg, 1874b and *Lithochytris vespertilio* Ehrenberg, 1874b.

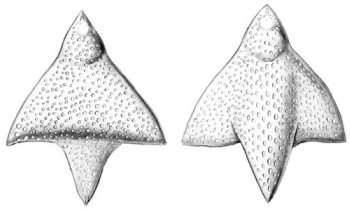
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS **VALID**

AGE ***EARLY EOCENE–LATE EOCENE***

VALID
FREQUENT

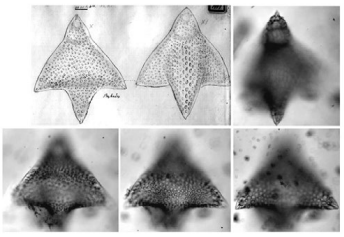
Type



100 µm

Lithochytris vespertilio
Ehrenberg, 1874b: 239 (unfigured); Ehrenberg, 1876: 76, pl. 4, fig. 10

Type



200 µm

Lithochytris vespertilio Ehrenberg
Ogane *et al.* 2009b: pl. 45, figs 3a-f [lectotype herein]

N - LINEAGE IV (I) — LITHOCHYTRIDIDAE

GENUS ***Lithochytridium***
Haeckel, 1887: 1363

SUBGENUS ***Lithochytris* (*Lithochytridium*)**

Remarks: Type species frequently reported.

Original series: *Lithochytris galeata* Haeckel, 1887; *Lithochytris pileata* Ehrenberg, 1876; *Lithochytris lucerna* Haeckel, 1887; *Lithochytris lanterna* Haeckel, 1887; *Lithochytris pyramidalis* Ehrenberg, 1876; *Lithochytris pteropus* Haeckel, 1887 and *Lithochytris vespertilio* Ehrenberg, 1876.

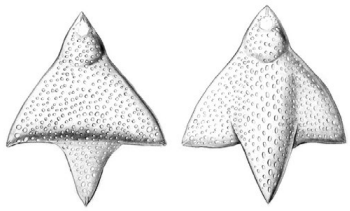
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***LITHOCHYTRIS***

SYN. (obj.)
FREQUENT

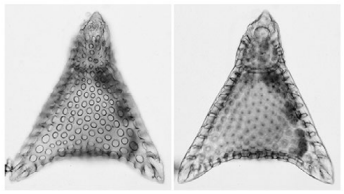
Type



100 µm

Lithochytris vespertilio
Ehrenberg, 1874b: 239 (unfigured); Ehrenberg, 1876: 76, pl. 4, fig. 10

Support



50 µm

Lithochytris vespertilio Ehrenberg
Challenger Station 266, Suzuki's collection

N - LINEAGE IV (I) — LITHOCHYTRIDIDAE

GENUS ***Sethochytris***
Haeckel, 1882: 433

Remarks: Type species frequently reported.

Original series: *Lithochytris barbadensis* Ehrenberg, 1876; **Sethochytris pyramis* Haeckel, 1887; *Sethochytris triangula* Haeckel, 1887 and *Sethochytris triconiscus* Haeckel, 1887.

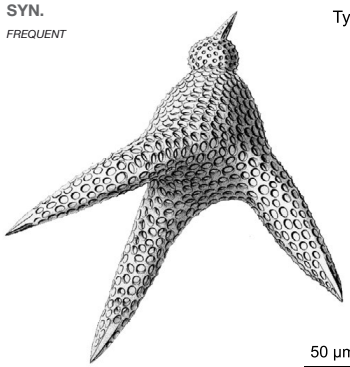
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 247

SEE ***LITHOCHYTRIS***

SYN.
FREQUENT

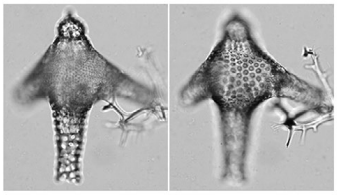
Type



50 µm

Sethochytris triconiscus
Haeckel, 1887: 1239, pl. 57, fig. 13

Support



100 µm

Sethochytris triconiscus Haeckel
Challenger Station 265, Suzuki's collection

N - LINEAGE IV (I) ? LITHOCHYTRIDIDAE

GENUS ***Tetraedrina***
Haeckel, 1882: 433

Remarks: See comments under *TETRAHEDRINA*. Type species never figured. The support image is the closest species among those originally included in this genus. The illustrated specimen corresponds to «species of Polycystin» in Bury 1862 which was included under the synonymy of *Tetrahedrina quadricornis* by Haeckel.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

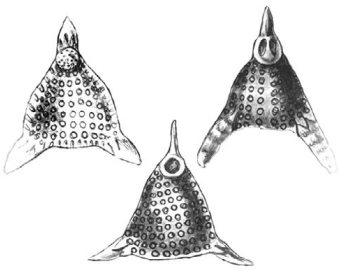
SEE ***? LITHOCHYTRIS***

N.D. Type

UNFIGURED SPECIES

Tetrahedrina pyramidalis
Haeckel, 1887: 1238, unfigured

Support



~100 µm

Tetrahedrina quadricornis
Haeckel, 1887: 1239 [specimen of Bury 1862: pl. 19, figs 4-6]

N - LINEAGE IV (I) ? LITHOCHYTRIDIDAE

GENUS ***Tetrahedrina*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1238

Remarks: An Incorrect subsequent spelling for *TETRAEDRINA*. By referring back to p. 433 in his *Prodromus* of 1882, Haeckel in 1887 obviously means *TETRAHEDRINA* to be an emendation of the name *TETRAEDRINA*, which is unjustified according to the provisions of ICZN art. 33.3.

Original series: *Tetrahedrina pyramidalis* Haeckel, 1887; *Tetrahedrina pyriformis* Haeckel, 1887 and *Tetrahedrina quadricornis* Haeckel, 1887.

FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D124)

STATUS INVALID NAME
designated herein

SEE ***TETRAEDRINA***

INV. Type

UNFIGURED SPECIES

Tetrahedrina pyramidalis
Haeckel, 1887: 1238, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (I) LITHOCHYTRIDIDAE
ASSIGNED IN Petrushevskaya 1981: 242

GENUS ***Lychnocanissa***
Haeckel, 1887: 1226

SUBGENUS ***Lychnocanium* (*Lychnocanissa*)**

Diagnosis: Lithochytrididae with three segments. Small globular cephalis with strong vertical A horn. Inner bars not recognized. Thorax more than three times larger than cephalis, thick-walled, with a small peristome between three strong sided divergent feet. Tubular abdomen vestigial.

Remarks: No type species fixed. Campbell (1954: D124) considers *LYCHNOCANISSA* the nominal subgenus of *LYCHNOCANIUM* Ehrenberg, 1847. However, the type species of *LYCHNOCANIUM*, *Lychnocanium lucerna* Ehrenberg, 1847, was not originally included in *LYCHNOCANISSA*. Support image is one of those species originally included.

Original series: *Lychnocanium falciferum* Ehrenberg, 1854c; *Lychnocanium fenestratum* Haeckel, 1887; *Lychnocanium fortipes* Haeckel, 1887; *Lychnocanium sigmopodium* Haeckel, 1887; *Lychnocanium tetrapodium* Ehrenberg, 1874b; *Lychnocanium trichopus* Ehrenberg, 1874b and *Lychnocanium tuberosum* Haeckel, 1887.

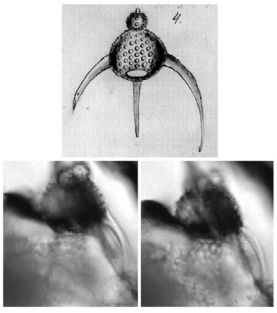
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS **VALID**

AGE ***LATE PALEOCENE–LATE PLEISTOCENE***

VALID
RARE

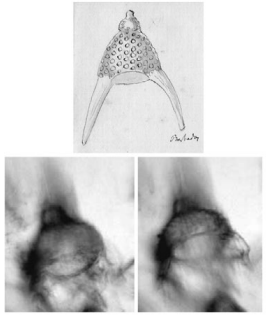
Type



50 µm

Lychnocanium falciferum
Ehrenberg, 1854c: pl. 36, fig. 7B left [Ogane *et al.* 2009b: pl. 43, figs 1a-c (lectotype herein); description in Haeckel 1862: 303]

Type



50 µm

Lychnocanium hirundo Ehrenberg
Ogane *et al.* 2009b: pl. 22, figs 7a-c [lectotype herein]

N - LINEAGE IV (I) LITHOCHYTRIDIDAE

GENUS ***Lychnocanoma***
Haeckel, 1887: 1229

SUBGENUS ***Lychnocanium* (*Lychnocanoma*)**

Remarks: Type species only illustrated by Haeckel (1887); the type species is a junior subjective synonym of *Lychnocanium tripodium* Ehrenberg, 1874b.

Original series: *Lychnocanium clavigerum* Haeckel, 1887; *Lychnocanium crassipes* Ehrenberg, 1874b; *Lychnocanium cypselus* Ehrenberg, 1874b; **Lychnocanium ovatum* Haeckel, 1887; *Lychnocanium pudicum* Haeckel, 1887 and *Lychnocanium tripodium* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS JUNIOR SYNONYM
synonymized by Riedel & Sanfilippo 1970: 529

SEE ***LYCHNOCANISSA***

SYN.
UNIQUE

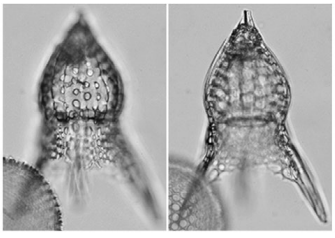
Type



50 µm

Lychnocanium clavigerum
Haeckel, 1887: 1230, pl. 61, fig. 4

Support



50 µm

Lychnocanium clavigerum Haeckel
Suzuki's collection (plankton, North Pacific)

N - LINEAGE IV (I) LITHOCHYTRIDIDAE

GENUS ***Acerahedrina***
Vinassa de Regny, 1900: 581

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Acerahedrina hirta* Vinassa de Regny, 1900.

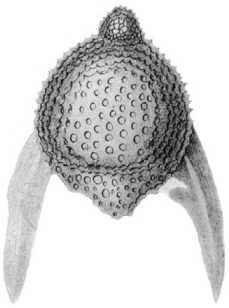
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Riedel & Sanfilippo 1970: 529

SEE ***LYCHNOCANISSA***

SYN. *UNIQUE*

Type



200 µm

Acerahedrina hirta
Vinassa de Regny, 1900: 581, pl. 2, fig. 32

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (I) LITHOCHYTRIDIDAE

GENUS ***Acerocanium***
Vinassa de Regny, 1900: 580

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Acerocanium globosum* Vinassa de Regny, 1900.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Riedel & Sanfilippo 1970: 529

SEE ***LYCHNOCANISSA***

SYN. *UNIQUE*

Type



200 µm

Acerocanium globosum
Vinassa de Regny, 1900: 581, pl. 2, fig. 28

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (I) LITHOCHYTRIDIDAE

GENUS ***Podocyrtecium***
Haeckel, 1887: 1339

SUBGENUS ***Podocyrtis (Podocyrtecium)***

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Podocyrtis argulus* Ehrenberg, 1874b; *Podocyrtis brevipes* Harting, 1863; *Podocyrtis centriscus* Ehrenberg, 1874b; *Podocyrtis collaris* Ehrenberg, 1874b; *Podocyrtis cristata* Haeckel, 1887; *Podocyrtis divergens* Haeckel, 1887; *Podocyrtis euceros* Ehrenberg, 1874b; *Podocyrtis flosculata* Haeckel, 1887; **Podocyrtis hexagonalis* Haeckel, 1887; *Podocyrtis magnifica* Haeckel, 1887; **Podocyrtis ovata* Haeckel, 1887; *Podocyrtis princeps* Ehrenberg, 1874b; *Podocyrtis prismatica* Haeckel, 1887; *Podocyrtis schomburgki* Ehrenberg, 1847; *Podocyrtis urceolata* Haeckel, 1887; *Podocyrtis ventricosa* Ehrenberg, 1874b and *Podocyrtis*? *amphiacantha* Ehrenberg, 1874b.

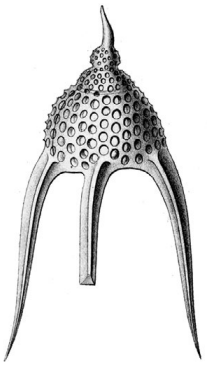
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***LYCHNOCANISSA***

SYN. *UNIQUE*

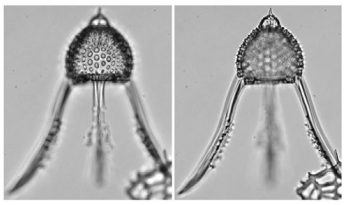
Type



50 µm

Podocyrtis prismatica
Haeckel, 1887: 1340, pl. 72, fig. 1

Support



50 µm

Podocyrtis prismatica Haeckel
Challenger Station 272, Suzuki's collection

N - LINEAGE IV (I) ? LITHOCHYTRIDIDAE

GENUS ***Lithornithium***
Ehrenberg, 1847: 54

Remarks: Monospecific genus and never figured. Since no other images were illustrated at the time of the generic definition, the support image is selected among those species subsequently assigned to this genus. The SD by Campbell (1954: D132) is erroneous because Ehrenberg' publication in 1854b has the priority.

Original series: **Lithornithium charontis* Ehrenberg, 1854b.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? LYCHNOCANISSA***

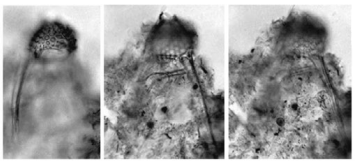
N.D.

Type

UNFIGURED SPECIES

Lithornithium charontis
Ehrenberg, 1854b: 245, unfigured

Type



100 µm

Lithornithium hirundo (Ehrenberg)
Suzuki *et al.* 2009a: pl. 26, figs 1b-d [lectotype herein, fig. 1b]

N - LINEAGE IV (I) LITHOCHYTRIDIDAE

ASSIGNED IN Petrushevskaya 1971a: 227

GENUS ***Lychnocanium***
Ehrenberg, 1846: 385

NOMINOTYPE ***Lychnocanium* (*Lychnocanium*)**

Diagnosis: Lithochytrididae with a porous three-segmented shell. Cephalis cupola-shaped with a robust short vertical A horn, V, D, 2L and 2l prolonged by seven strong sided horns on cephalis and thorax. A as a columella in cephalis and D passing freely in upper thorax. Thorax more than three times larger than cephalis, thick-walled, with a reduced peristome between three strong sided divergent short feet. Tubular abdomen vestigial.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Lychnocanium lucerna* Ehrenberg, 1847.

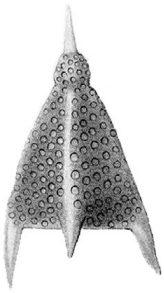
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***EARLY PALEOCENE–LATE EOCENE***

VALID
FREQUENT

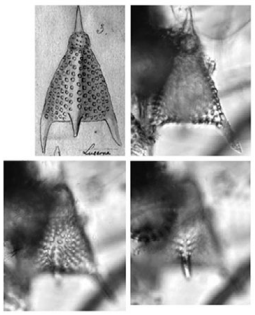
Type



100 µm

Lychnocanium lucerna
Ehrenberg, 1847: 55, fig. 5

Type



50 µm

Lychnocanium lucerna Ehrenberg
Ogane *et al.* 2009b: pl. 44, figs 1a-d [lectotype herein]

N - LINEAGE IV (I) LITHOCHYTRIDIDAE

GENUS ***Dictyophimium***
Haeckel, 1887: 1195

SUBGENUS ***Dictyophimus* (*Dictyophimium*)**

Remarks: Type species frequently reported. Campbell (1954: D122) considers *DICTYOPHIMIUM* the nominate subgenus of *DICTYOPHIMUS*. However, the type species of *DICTYOPHIMUS*, *Dictyophimus crisiae* Ehrenberg, 1854b, was not originally included. The SD by Kozlova 1983: 95 of *Dictyophimus distanovi* Kozlova, 1983 is an invalid action

Original series: *Dictyophimus brandti* Haeckel, 1887; *D. challengeri* Haeckel, 1878; *D. cortina* Haeckel, 1887; *D. craticula* Ehrenberg, 1874b; *D. gracilipes* Bailey, 1856; *D. lasanum* Haeckel, 1887; *D. longipes* Haeckel, 1887; *D. platycephalus* Haeckel, 1887; *D. plectaniscus* Haeckel, 1887; *D. pyramis* Haeckel, 1887; *D. sphaerocephalus* Haeckel, 1887; *D. tripus* Haeckel, 1861b; *Lychnocanium arabicum* Ehrenberg, 1873a; *L. hamosum* Ehrenberg, 1874b; *L. lucerna* Ehrenberg, 1847 and *L. tridentatum* Ehrenberg, 1874b.

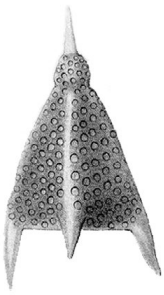
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D122)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***LYCHNOCANIUM***

SYN. (obj.)
FREQUENT

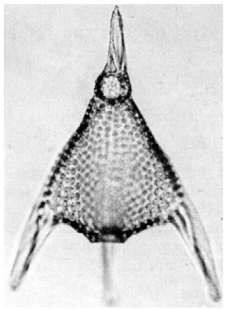
Type



100 µm

Lychnocanium lucerna
Ehrenberg, 1847: 55, fig. 5

Support



50 µm

Lychnocanoma lucerna (Ehrenberg)
Sanfilippo & Blome 2001: 214, fig. 9m

N - LINEAGE IV (I) LITHOCHYTRIDIDAE

GENUS ***Lychnocanella***
Haeckel, 1887: 1224

SUBGENUS ***Lychnocanium* (*Lychnocanella*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is a junior subjective synonym.

Original series: *Lychnocanium carinatum* Ehrenberg, 1874b; *Lychnocanium continuum* Ehrenberg, 1874b; *Lychnocanium favosum* Haeckel, 1887; *Lychnocanium lanterna* Haeckel, 1887; *Lychnocanium nodosum* Haeckel, 1887; *Lychnocanium pyriforme* Haeckel, 1887; *Lychnocanium tribulus* Ehrenberg, 1874b and *Lychnocanium ventricosum* Ehrenberg, 1874b.

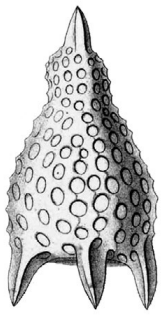
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D124)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***LYCHNOCANIUM***

SYN.
UNIQUE

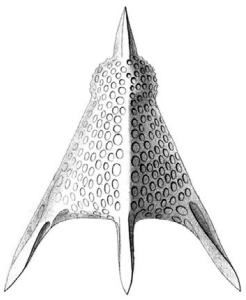
Type



50 µm

Lychnocanium lanterna
Haeckel, 1887: 1224, pl. 61, fig. 7

Support



25 µm

Dictyophimus pyramis
Haeckel, 1887: 1196, pl. 61, fig. 16

N - LINEAGE IV (I) LITHOCHYTRIDIDAE

GENUS ***Lithochytrodes***
Haeckel, 1887: 1362

SUBGENUS ***Lithochytris* (*Lithochytrodes*)**

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Lithochytris cortina* Haeckel, 1887; *Lithochytris pyriformis* Haeckel, 1887 and *Lithochytris tripodium* Ehrenberg, 1874b.

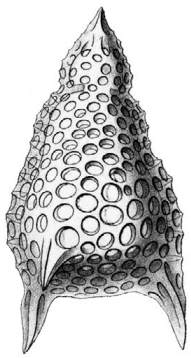
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1975: 583

SEE ***LYCHNOCANIUM***

SYN.
UNIQUE

Type



50 µm

Lithochytris pyriformis
Haeckel, 1887: 1362, pl. 67, fig. 13

Support

NO IMAGE PUBLISHED

no image available

N - Lineage IV (I) — ? LITHOCHYTRIDIDAE
ASSIGNED HERE

GENUS **Verutotholus**
O'Connor, 1999: 13

Diagnosis: Lithochytrididae with three segments. Poreless cephalis with a stout A horn (from A columella) and a upwardly directed V tube. D and 2L as three ribs (or external wings) on inflated thorax; enlarged abdomen variable, usually with large square pores.

Remarks: Type species only illustrated by O'Connor (1999); the support image is one of those species originally included into this genus.

Original series: *Verutotholus doigi* O'Connor, 1999; *Verutotholus edwardsi* O'Connor, 1999 and *Verutotholus mackayi* O'Connor, 1999.

FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***Late Eocene***

VALID
UNIQUE

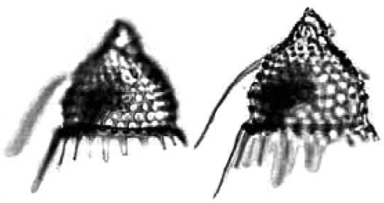
Type



50 µm

Verutotholus doigi
O'Connor, 1999: 14, pl. 6, figs 1a, 1b

Support



50 µm

Verutotholus edwardsi
O'Connor, 1999: 15, pl. 6, figs 5a, 5b

N - Lineage IV (J) — LOPHOCYRTIIDAE
ASSIGNED IN De Wever *et al.* 2001: 283

GENUS **Aphetocyrtis**
Sanfilippo & Caulet, 1998: 16

Diagnosis: Lophocyrtiidae with a three-segmented cylindrical shell. Internal spicule variable in the Lineage. A spine partly as a columella and a short apical horn. V spine as a small thorn. No lateral ribs or feet related to D and 2L. Termination as a simple peristome or closed.

Remarks: Type species rarely reported. The support image is one of those species originally included into this genus.

Original series: *Aphetocyrtis catalexis* Sanfilippo & Caulet, 1998; *Aphetocyrtis gnomabax* Sanfilippo & Caulet, 1998 and *Aphetocyrtis rossi* Sanfilippo & Caulet, 1998.

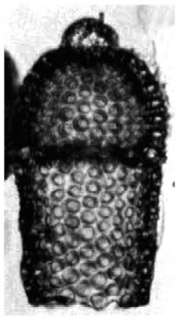
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***Early Middle Eocene–early Early Miocene***

VALID
RARE

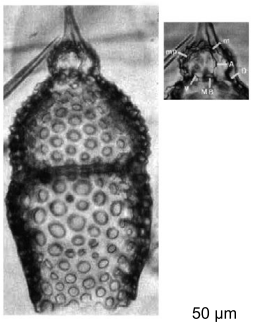
Type



50 µm

Aphetocyrtis gnomabax
Sanfilippo & Caulet, 1998: 16, pl. 7, fig. 10

Support



50 µm

Aphetocyrtis catalexis
Sanfilippo & Caulet, 1998: 18, pl. 7, figs 14a, 14b

N - Lineage IV (J) — LOPHOCYRTIIDAE
ASSIGNED IN De Wever *et al.* 2001: 283

GENUS **Apoplanius**
Sanfilippo & Caulet, 1998: 12

SUBGENUS ***Lophocyrtis* (*Apoplanius*)**

Diagnosis: Lophocyrtiidae with a three-segmented shell. Cephalis subspherical with A spine partly as a columella followed by a long A horn. V spine as a short horn. D spine as a small spine in thoracic wall. Abdomen undulated or cylindrical with an undifferentiated aperture.

Remarks: Type species only illustrated by Sanfilippo & Caulet (1998); the support image is one of those species originally included into this genus.

Original series: *Eucyrtidium asperum* Ehrenberg, 1874b; *Lophocyrtis* (*Apoplanius*) *keraspera* Sanfilippo & Caulet, 1998; *Lophocyrtis* (*Apoplanius*) *klydus* Sanfilippo & Caulet, 1998 and *Lophocyrtis* (*Apoplanius*) *nomas* Sanfilippo & Caulet, 1998.

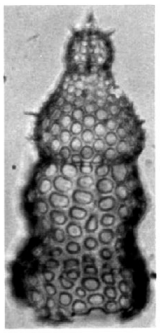
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***Early Eocene–Late Oligocene***

VALID
UNIQUE

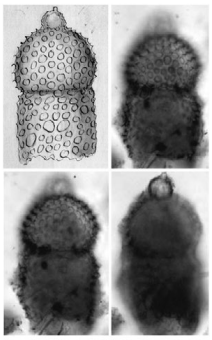
Type



50 µm

Lophocyrtis (*Apoplanius*) *klydus*
Sanfilippo & Caulet, 1998: 12, pl. 5, fig. 5a

Type



50 µm

Eucyrtidium asperum Ehrenberg
Ogane *et al.* 2009b: pl. 89, figs 3a, 3c-e [lectotype herein]

N - Lineage IV (J) — LOPHOCYRTIIDAE
ASSIGNED IN De Wever *et al.* 2001: 283

GENUS **Clinorhabdus**
Sanfilippo & Caulet, 1998: 19

Diagnosis: Lophocyrtiidae with a three-segmented shell. A spine as a columella and a short apical horn. Mitral arches externally as secondary apophyses. V spine as a small horn. D and 2L as obliquely extended furrows on neck area. Thin septal ring. Abdomen rarely complete.

Remarks: Type species only illustrated by Sanfilippo & Caulet (1998); the support image is one of those species originally included into this genus.

Original series: *Clinorhabdus anantomus* Sanfilippo & Caulet, 1998; *Clinorhabdus ocymora* Sanfilippo & Caulet, 1998; *Cyrtocapsella robusta* Abelmann, 1990 and *Theocorys longithorax* Petrushevskaya, 1975.

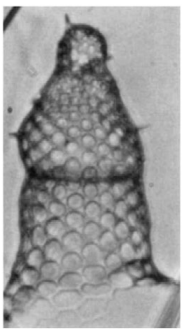
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***Late Middle Eocene–early Middle Miocene***

VALID
UNIQUE

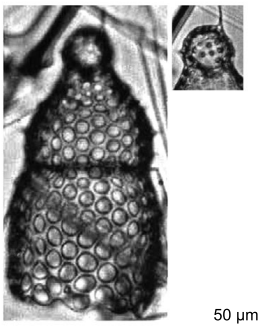
Type



25 µm

Clinorhabdus anantomus
Sanfilippo & Caulet, 1998: 20, pl. 8, fig. 1a

Support



50 µm

Clinorhabdus ocymora
Sanfilippo & Caulet, 1998: 20, pl. 8, figs 5a, 5b

N - LINEAGE IV (J) LOPHOCYRTIIDAE

ASSIGNED IN De Wever *et al.* 2001: 283

GENUS **Cyclampterium**
Haeckel, 1887: 1379

SUBGENUS ***Cycladophora* (*Cyclampterium*)**

Diagnosis: Lophocyrtiidae with a three-segmented shell. Initial spicule undescribed. A as a columella and a short to long apical horn. No other horns or feet related to initial spicule. Thorax globular and abdomen cylindrical with variable pores. Peristome variable.

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: **Cycladophora campanula* Haeckel, 1887; **Cycladophora dodecapleura* Haeckel, 1887; *Cycladophora favosa* Haeckel, 1887; *Cycladophora pantheon* Haeckel, 1887 and *Cycladophora spatiosa* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS **VALID**

AGE ***EARLY EOCENE–LATE MIDDLE MIOCENE***

VALID
UNIQUE

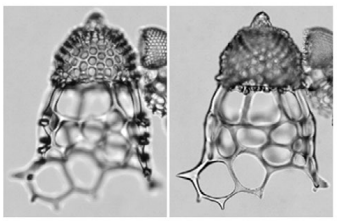
Type



50 µm

Cycladophora pantheon
Haeckel, 1887: 1379, pl. 68, fig. 3

Support



100 µm

Cycladophora pantheon Haeckel
Paratypic material (Challenger Station 272), Suzuki's collection

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N - LINEAGE IV (J) LOPHOCYRTIIDAE

GENUS **Polyalacorys**
Haeckel, 1887: 1374

SUBGENUS ***Alacorys* (*Polyalacorys*)**

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Alacorys carcinus* Haeckel, 1887; *Alacorys dodecantha* Haeckel, 1887; **Alacorys polyacantha* Haeckel, 1887 and *Cryptoprora ornata* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Nishimura 1990: 142)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CYCLAMPTERIUM***

SYN.
UNIQUE

Type



50 µm

Alacorys carcinus
Haeckel, 1887: 1375, pl. 74, fig. 9

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (J) LOPHOCYRTIIDAE

ASSIGNED IN De Wever *et al.* 2001: 283

GENUS **Lophocyrtis**
Haeckel, 1887: 1410

NOMINOTYPE ***Lophocyrtis* (*Lophocyrtis*)**

Diagnosis: Lophocyrtiidae with a three-segmented cylindrical shell. A as a partly free columella and as a strong apical horn. V as a short, rarely external, spine. No D and 2L external horns or ribs. Thorax and abdomen separated by a septum. Aperture with a simple peristome.

Remarks: Type species rarely reported.

Original series: *Eucyrtidium biauritum* Ehrenberg, 1874b; *Eucyrtidium coronatum* Ehrenberg, 1874b; *Eucyrtidium stephanophorum* Ehrenberg, 1874b; **Lophocyrtis holothuria* Haeckel, 1887 and *Lophocyrtis synapta* Haeckel, 1887.

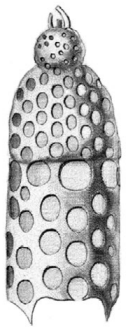
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–EARLY MIDDLE MIOCENE***

VALID
RARE

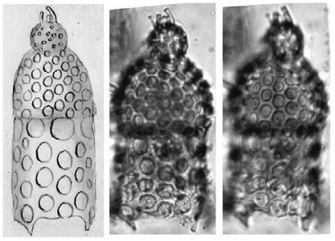
Type



50 µm

Eucyrtidium stephanophorum
Ehrenberg, 1874b: 233 (unfigured); Ehrenberg, 1876: 72, pl. 8, fig. 14

Type



50 µm

Eucyrtidium stephanophorum Ehrenberg
Ogane *et al.* 2009b: pl. 88, figs 2a-c [lectotype herein]

N - LINEAGE IV (J) LOPHOCYRTIIDAE

ASSIGNED IN De Wever *et al.* 2001: 283

GENUS **Paralampterium**
Sanfilippo, 1990: 307

SUBGENUS ***Lophocyrtis* (*Paralampterium*)**

Diagnosis: Lophocyrtiidae with a three-segmented shell of variable shape. A as a columella and a long apical denticulate horn. No D, L and V known external extensions on hemispherical thorax. Abdomen of variable shape. Peristome may develop three terminals latticed or solid feet.

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Cyclampterium*? *longiventer* Chen, 1975; *Lophocyrtis* (*Paralampterium*) *dumitricai* Sanfilippo, 1990 and *Lophocyrtis* (*Paralampterium*?) *galenum* Sanfilippo, 1990.

FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***EARLY EOCENE–EARLY MIDDLE MIOCENE***

VALID
UNIQUE

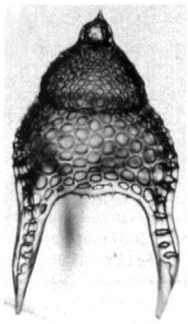
Type



50 µm

Lophocyrtis (*Paralampterium*) *dumitricai*
Sanfilippo, 1990: 308, pl. 3, fig. 8

Support



50 µm

Lophocyrtis (*Paralampterium*?) *galenum*
Sanfilippo, 1990: 308, pl. 3, fig. 15

N - LINEAGE IV (J) LOPHOCYRTIIDAE

GENUS ***Spongiopodium***
Nishimura, 1990: 135

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Nishimura (1990).

Original series: *Spongiopodium virgeum* Nishimura, 1990.

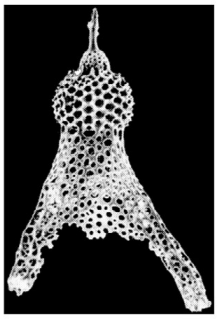
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PARALAMPTERIUM***

SYN.
UNIQUE

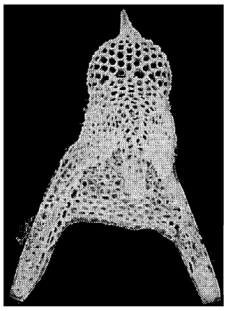
Type



100 µm

Spongiopodium virgeum
Nishimura, 1990: 135, Fig. 27.2

Support



50 µm

Spongiopodium virgeum
Nishimura, 1990: 135, fig. 27.2

N - LINEAGE IV (J) LOPHOCYRTIIDAE
ASSIGNED IN De Wever *et al.* 2001: 283

GENUS ***Sciadiopeplus***
Sanfilippo, 1990: 310

SUBGENUS ***Lophocyrtis* (*Sciadiopeplus*)**

Diagnosis: Lophocyrtiidae with a three-segmented shell. Initial spicule undescribed. A as a short apical horn. No D, 2L and V external extensions. Cephalis small, thorax globular. Abdomen large with large irregular pores. Aperture may be surrounded by long and curved feet.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Sanfilippo (1990).

Original series: *Lophocyrtis* (*Sciadiopeplus*) *oberhaensliae* Sanfilippo, 1990.

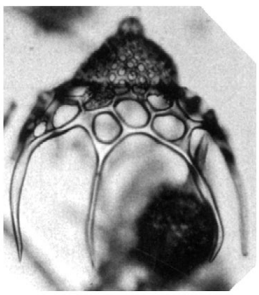
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE PALEOCENE–EARLY OLIGOCENE***

VALID
UNIQUE

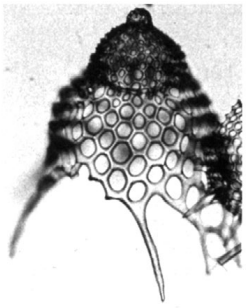
Type



100 µm

Lophocyrtis (*Sciadiopeplus*) *oberhaensliae*
Sanfilippo, 1990: 310, pl. 2, fig. 11

Support



100 µm

Lophocyrtis (*Sciadiopeplus*) *oberhaensliae*
Sanfilippo, 1990: 310, pl. 2, fig. 12

N - LINEAGE IV (J) PTEROCORYTHIDAE
ASSIGNED IN Sanfilippo & Riedel 1992: 16

GENUS ***Albatrossidium***
Sanfilippo & Riedel, 1992: 16

Diagnosis: Pterocorythidae with a cylindrical three-segmented shell. Trilobate cephalis with a strong and pyramidal A horn. A as a columella. D and 2L as thin thoracic ribs. Strong internal septa between thorax and abdomen. Longitudinal ribs on abdomen. Aperture undifferentiated.

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Sanfilippo & Riedel (1992).

Original series: *Albatrossidium minzok* Sanfilippo & Riedel, 1992.

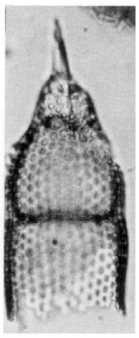
FIXATION MONOTYPY

STATUS **VALID**

AGE ***EARLY MIDDLE EOCENE–LATE OLIGOCENE***

VALID
UNIQUE

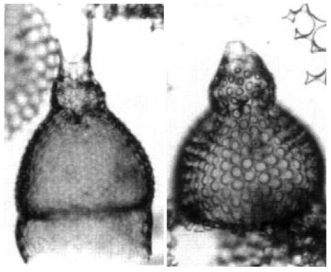
Type



50 µm

Albatrossidium minzok
Sanfilippo & Riedel, 1992: 18, pl. 2, fig. 7

Support



50 µm

Albatrossidium minzok
Sanfilippo & Riedel, 1992: 18, pl. 2, fig. 7

N - LINEAGE IV (J) PTEROCORYTHIDAE
ASSIGNED IN Riedel & Sanfilippo 1977: 876

GENUS ***Anthocyrtidium***
Haeckel, 1882: 430

Diagnosis: Pterocorythidae with a two-segmented shell. Trilobate cephalis with a strong porous A horn and an important neck collar. D and 2L extended as thoracic ribs, rarely feet. Thorax ovate to campanulate with a slightly constricted peristome, with or without basal spines.

Remarks: Only the type species clearly belongs to this genus; frequently reported. The type species is a junior subjective synonym of *Anthocyrtis ophirensis* Ehrenberg, 1873a.

Original series: **Anthocyrtidium cineraria* Haeckel, 1887; *Anthocyrtidium ligularia* Haeckel, 1887 and *Anthocyrtidium matricaria* Haeckel, 1887.

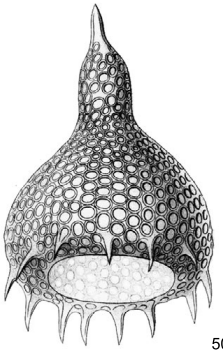
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D125)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LIVING***

VALID
FREQUENT

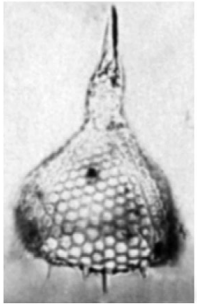
Type



50 µm

Anthocyrtidium cineraria
Haeckel, 1887: 1278, pl. 62, fig. 16

Support



50 µm

Anthocyrtidium cineraria Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Anthocyrtissa***
Haeckel, 1887: 1270

SUBGENUS ***Anthocyrtis* (*Anthocyrtissa*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Anthocyrtis grossularia* Ehrenberg, 1874b; **Anthocyrtis lauranthus* Haeckel, 1887; *Anthocyrtis ophirensis* Ehrenberg, 1873a and **Anthocyrtis subglobosa* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D126)

STATUS JUNIOR SYNONYM
synonymized by Caulet 1974: 239

SEE ***ANTHOCYRTIDIUM***

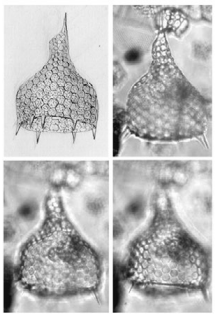
SYN. Type
FREQUENT



50 µm

Anthocyrtis ophirensis
Ehrenberg, 1873a: 301 (unfigured); Ehrenberg, 1873b: 284-285, pl. 9, fig. 13

Type



100 µm

Anthocyrtis ophirensis Ehrenberg
Suzuki *et al.* 2009a: pl. 74, figs 4a-d [lectotype herein]

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Anthocyrtura***
Haeckel, 1887: 1271

SUBGENUS ***Anthocyrtis* (*Anthocyrtura*)**

Remarks: Only the type species was figured for this genus (rarely reported); just two species originally included at the time of the generic definition. The type species is a junior subjective synonym of *Anthocyrtis zanguebarica* Ehrenberg, 1873a.

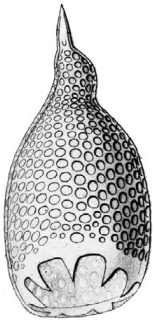
Original series: **Anthocyrtis enneaphylla* Haeckel, 1887 and *Anthocyrtis ovata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D126)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 545

SEE ***ANTHOCYRTIDIUM***

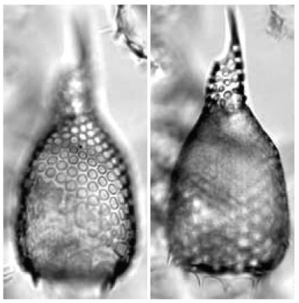
SYN. Type
RARE



50 µm

Anthocyrtis ovata
Haeckel, 1887: 1272, pl. 62, fig. 13

Type



50 µm

Anthocyrtis zanguebarica Ehrenberg
Suzuki *et al.* 2009a: pl. 74, figs 5c, 5d [lectotype herein]

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Phormocampe***
Haeckel, 1887: 1456

NOMINOTYPE ***Phormocampe* (*Phormocampe*)**

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Phormocampe campanula* Haeckel, 1887; **Phormocampe conus* Haeckel, 1887; *Phormocampe eucalyptra* Haeckel, 1887; *Phormocampe lamprocyclas* Haeckel, 1887; **Phormocampe metalis* Haeckel, 1887 and **Phormocampe mitra* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 228)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 282

SEE ***ANTHOCYRTIDIUM***

SYN. Type
UNIQUE



50 µm

Phormocampe campanula
Haeckel, 1887: 1456, pl. 77, fig. 13

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Sethocorys***
Haeckel, 1882: 430

Remarks: Only the type species clearly belongs to this genus; rarely reported.

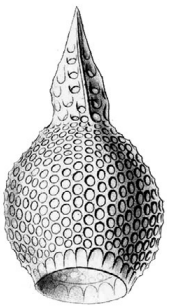
Original series: *Eucyrtidium armadillo* Ehrenberg, 1874b; *Lophophaena amphora* Stöhr, 1880; *Sethocorys achillis* Haeckel, 1887; **Sethocorys ajacis* Haeckel, 1887; *Sethocorys odysseus* Haeckel, 1887 and **Sethocorys patrocli* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128)

STATUS JUNIOR SYNONYM
synonymized by Caulet 1979: 132

SEE ***ANTHOCYRTIDIUM***

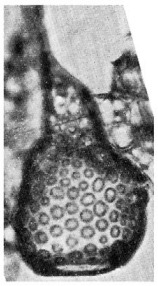
SYN. Type
RARE



50 µm

Sethocorys achillis
Haeckel, 1887: 1301, pl. 62, fig. 8

Support



50 µm

Anthocyrtidium achillis (Haeckel)
Caulet 1979: 132, pl. 2, fig. 4

N - Lineage IV (J) PTEROCORYTHIDAE

GENUS **Sethocyrtis**
Haeckel, 1887: 1298

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Cornutella cassis* Ehrenberg, 1844a; *Eucyrtidium cancrinum* Ehrenberg, 1874b; *Eucyrtidium pleuracanthus* Ehrenberg, 1873a; *Eucyrtidium subacutum* Ehrenberg, 1873a; *Sethocyrtis agamemnonis* Haeckel, 1887; **Sethocyrtis diomedis* Haeckel, 1887; **Sethocyrtis menelai* Haeckel, 1887 and *Sethocyrtis oxycephalis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128)

STATUS JUNIOR SYNONYM
synonymized by Caulet 1974: 239

SEE **ANTHOCYRTIDIUM**

SYN.
VERY RARE

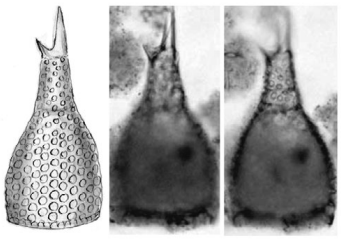
Type



50 µm

Sethocyrtis oxycephalis
Haeckel, 1887: 1299, pl. 62, fig. 9

Support



50 µm

Eucyrtidium cancrinum Ehrenberg
Ogane *et al.* 2009b: pl. 86, figs 1a-c [topotypic material]

N - Lineage IV (J) ? PTEROCORYTHIDAE

GENUS **Cyrtocoris**
Haeckel, 1882: 438

Remarks: Homonym of *CYRTOCORIS* White, 1842: 89 (Hemiptera); see *CYRTOCORYS nomen novum*.

Original series: *Phormocampe conus* Haeckel, 1887 and *Phormocampe mitra* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D139)

STATUS HOMONYM, NOMEN DUBIUM

SEE **CYRTOCORYS *NOMEN NOVUM***

HOM.; N.D.

Type

UNFIGURED SPECIES

Phormocampe mitra
Haeckel, 1887: 1458, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - Lineage IV (J) ? PTEROCORYTHIDAE

GENUS **Cyrtocorys** *NOMEN NOVUM* PRO *CYRTOCORIS*
Haeckel, 1887: 1457

SUBGENUS ***Phormocampe* (*Cyrtocorys*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition. This is a new spelling of *CYRTOCORIS*, validated by Loeblich & Tappan, 1961: 230.

Original series: **Phormocampe conus* Haeckel, 1887 and **Phormocampe mitra* Haeckel, 1887.

FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1954: D139)

STATUS *NOMEN NOVUM*, NOMEN DUBIUM
designated herein; name-bearing type non-existent

NOM. NOV.; N.D.

Type

UNFIGURED SPECIES

Phormocampe mitra
Haeckel, 1887: 1458, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - Lineage IV (J) PTEROCORYTHIDAE
ASSIGNED IN Riedel & Sanfilippo 1977: 876

GENUS **Calocyclas**
Ehrenberg, 1847: 54

NOMINOTYPE ***Calocyclas* (*Calocyclas*)**

Diagnosis: Pterocorythidae with a three-segmented shell. Lobate cephalis with A as a columella and a strong horn. No V, D and 2L external horns. Larger globular thick-walled thorax with pores in checkerboard order. Vestigial abdomen with an open, sometimes denticulate peristome.

Remarks: Only the type species clearly belongs to this genus (frequently reported); just two species originally included at the time of the generic definition.

Original series: *Calocyclas barbadensis* Ehrenberg, 1874b and *Calocyclas turris* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS **VALID**

AGE ***Early Eocene–late Late Miocene***

VALID
FREQUENT

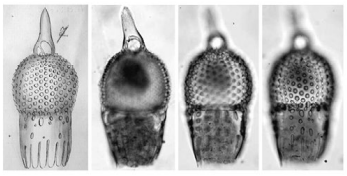
Type



50 µm

Calocyclas turris
Ehrenberg, 1874b: 218 (unfigured); Ehrenberg, 1876: 66, pl. 18, fig. 7

Type



100 µm

Calocyclas turris Ehrenberg
Ogane *et al.* 2009b: pl. 94, figs 1a-d [lectotype herein]

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS **Calocyclissa**
Haeckel, 1887: 1383

SUBGENUS ***Calocyclas* (*Calocyclissa*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: **Calocyclas hyalogaster* Haeckel, 1887; *Calocyclas turris* Ehrenberg, 1874b; *Cycladophora erinaceus* Ehrenberg, 1874b and *Cycladophora gigas* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CALOCYCLAS***

SYN. (obj.)
FREQUENT

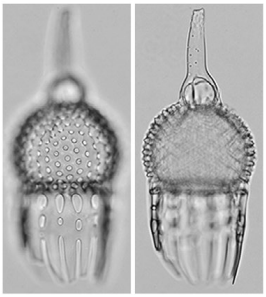
Type



50 µm

Calocyclas turris
Ehrenberg, 1874b: 218 (unfigured); Ehrenberg, 1876: 66, pl. 18, fig. 7

Support



50 µm

Calocyclas turris Ehrenberg
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS **Anthocyrtonium**
Haeckel, 1887: 1274

SUBGENUS ***Anthocyrtium* (*Anthocyrtonium*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Anthocyrtis hispida* Ehrenberg, 1874b; *Anthocyrtis leptostyla* Ehrenberg, 1874b; *Anthocyrtium campanula* Haeckel, 1887; *Anthocyrtium doronicum* Haeckel, 1887; **Anthocyrtium turris* Haeckel, 1887 and *Thyrsocyrtis reticulata* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D125)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 280

SEE ***CALOCYCLAS***

SYN.
VERY RARE

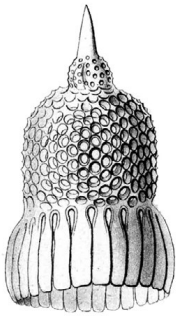
Type



50 µm

Anthocyrtium campanula
Haeckel, 1887: 1274, pl. 62, fig. 17

Support



50 µm

Anthocyrtium doronicum
Haeckel, 1887: 1276, pl. 62, fig. 18

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS **Calocycletta**
Haeckel, 1887: 1381

SUBGENUS ***Calocyclas* (*Calocycletta*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Calocyclas amicae* Haeckel, 1887; **Calocyclas minervae* Haeckel, 1887; **Calocyclas sacerdotis* Haeckel, 1887; *Calocyclas veneris* Haeckel, 1887; *Calocyclas vestalis* Haeckel, 1887 and *Calocyclas virginis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CALOCYCLAS***

SYN.
FREQUENT

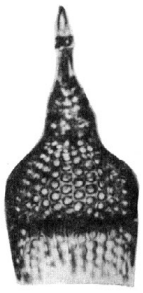
Type



50 µm

Calocyclas veneris
Haeckel, 1887: 1381, pl. 74, fig. 5

Support



50 µm

Calocycletta veneris (Haeckel)
Levykina 1986: 74, pl. 6, fig. 1

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS **Calocyclior**
Sanfilippo & Riedel, 1992: 31

SUBGENUS ***Calocycletta* (*Calocyclior*)**

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Calocycletta caepa* Moore, 1972.

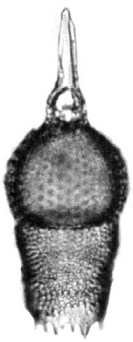
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CALOCYCLAS***

SYN.
FREQUENT

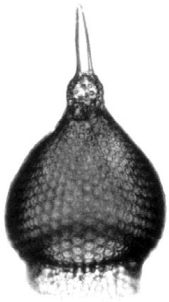
Type



50 µm

Calocycletta caepa
Moore, 1972: 150, pl. 2, fig. 6

Support



50 µm

Calocycletta (*Calocycletta*) *caepa* Moore
Sanfilippo & Riedel 1992: pl. 2, fig. 11

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Calocyclissima***
Sanfilippo & Riedel, 1992: 30

SUBGENUS ***Calocycletta* (*Calocyclissima*)**

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Calocyclas costata* Riedel, 1959.

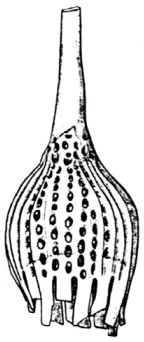
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CALOCYCLAS***

SYN.
FREQUENT

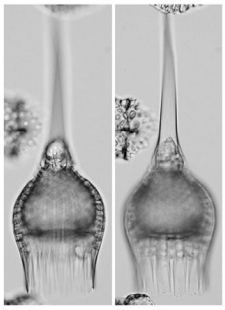
Type



50 µm

Calocyclas costata
Riedel, 1959: 296, pl. 2, fig. 9

Support



50 µm

Calocyclas costata Riedel
Challenger Station 268, Suzuki's collection

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Calocyclopsis***
Sanfilippo & Riedel, 1992: 30

SUBGENUS ***Calocycletta* (*Calocyclopsis*)**

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Calocycletta serrata* Moore, 1972.

FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CALOCYCLAS***

SYN.
FREQUENT

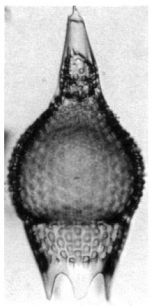
Type



100 µm

Calocycletta serrata
Moore, 1972: 148, pl. 2, fig. 2

Support



50 µm

Calocycletta (*Calocyclopsis*) *serrata* Moore
Sanfilippo & Riedel 1992: pl. 2, fig. 10

N - LINEAGE IV (J) PTEROCORYTHIDAE
ASSIGNED HEREIN

GENUS ***Calocycloma***
Haeckel, 1887: 1384

SUBGENUS ***Calocyclas* (*Calocycloma*)**

Diagnosis: Pterocoythidae with a three-segmented shell. Small cephalis with a long A horn. No D, 2L and V external ribs of horns. Thorax conical with small pores. Abdomen inflated spherical with large pores, needle-like spines projecting between pores. Aperture constricted.

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: *Calocyclas casta* Haeckel, 1887 and **Calocyclas pudica* Haeckel, 1887.

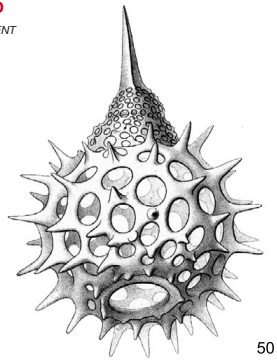
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS **VALID**

AGE ***LATE PALEOCENE–LATE EARLY MIOCENE***

VALID
FREQUENT

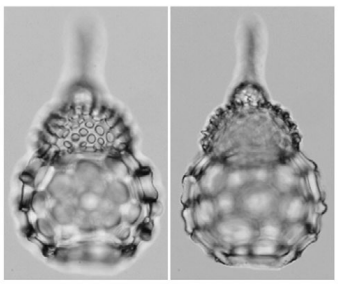
Type



50 µm

Calocyclas casta
Haeckel, 1887: 1384, pl. 73, fig. 10

Support



50 µm

Calocyclas casta Haeckel
Challenger Station 272, Suzuki's collection

N - LINEAGE IV (J) PTEROCORYTHIDAE
ASSIGNED IN Riedel & Sanfilippo 1977: 876

GENUS ***Lamprocyclas***
Haeckel, 1882: 434

NOMINOTYPE ***Lamprocyclas* (*Lamprocyclas*)**

Diagnosis: Pterocorythidae with a three-segmented shell. Cephalis cylindrical with a sided A horn (sometimes hollow). No D, 2L and V extensions on thorax. Abdomen longer and broader than thorax, often thorny. Aperture open with a peristome with one or two rows of festoons or teeth.

Remarks: See comments under *LAMPROCYCLIA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS **VALID**

AGE ***EARLY MIDDLE EOCENE–LIVING***

VALID
RARE

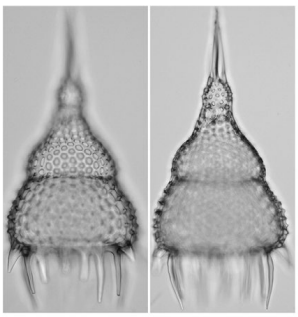
Type



50 µm

Lamprocyclas nuptialis
Haeckel, 1887: 1390, pl. 74, fig. 15

Support



50 µm

Lamprocyclas nuptialis Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Lamprocyclia***
Haeckel, 1887: 1390

SUBGENUS ***Lamprocyclas* (*Lamprocyclia*)**

Remarks: Type species rarely reported. The type species can be considered a junior subjective synonym of *Podocyrtis aegles* Ehrenberg, 1854b.

Original series: *Lamprocyclas deflorata* Haeckel, 1887; *Lamprocyclas maritalis* Haeckel, 1887; *Lamprocyclas nuptialis* Haeckel, 1887; *Lamprocyclas reginae* Haeckel, 1887; *Lamprocyclas saltatricis* Haeckel, 1887 and *Podocyrtis aegles* Ehrenberg, 1854b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***LAMPROCYCLAS***

SYN. (obj.)
RARE

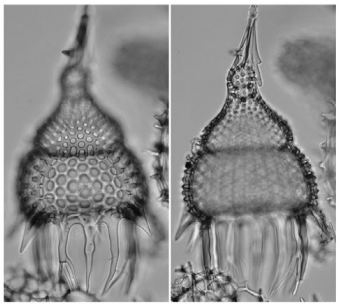
Type



50 µm

Lamprocyclas nuptialis
Haeckel, 1887: 1390, pl. 74, fig. 15

Support



50 µm

Lamprocyclas nuptialis Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Androcyclas***
Jørgensen, 1905: 139

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Pterocorys gamphonyxos* Jørgensen, 1900.

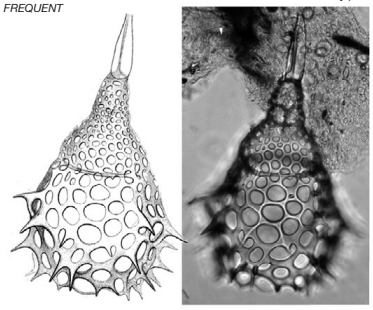
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 117

SEE ***LAMPROCYCLAS***

SYN.
FREQUENT

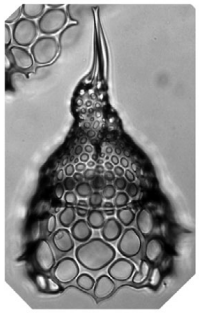
Type



50 µm

Pterocorys gamphonyxos
Jørgensen, 1900: 86 (unfigured); Jørgensen, 1905: 139, pl. 18, fig. 92; Dolven *et al.* 2014: 44, pl. 4, figs 1a, 1b (lectotype)

Support



50 µm

Androcyclas gamphonycha (Jørgensen)
Dolven *et al.* 2014: 44, pl. 3, fig. 3 [paralectotype]

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Craterocyclas***
Haecker, 1908: 454

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

Original series: *Craterocyclas robustissima* Haecker, 1908.

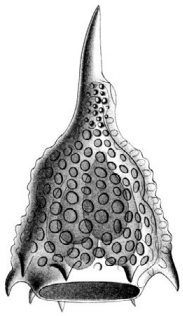
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 544

SEE ***LAMPROCYCLAS***

SYN.
UNIQUE

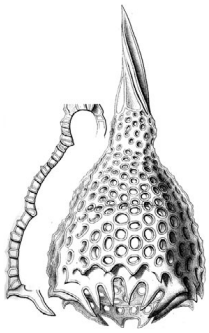
Type



50 µm

Craterocyclas robustissima
Haecker, 1908: 454, pl. 85, fig. 596

Support



50 µm

Lamprocyclas maritalis
Haecker, 1887: 1390, pl. 74, figs 13, 14

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Hexalodus***
Haecker, 1908: 456

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Petrushevskaya (1971b).

Original series: *Hexalodus dendrophorus* Haecker, 1908.

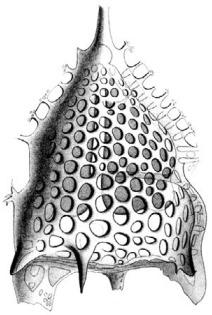
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 544

SEE ***LAMPROCYCLAS***

SYN.
VERY RARE

Type



50 µm

Hexalodus dendrophorus
Haecker, 1908: 456, pl. 85, fig. 593

Support



50 µm

Hexalodus dendrophorus Haecker
Petrushevskaya 1971b: fig. 3.13

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Theocorbis***
Haeckel, 1887: 1401

SUBGENUS ***Theoconus* (*Theocorbis*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Eucyrtidium ficus* Ehrenberg, 1874b; *Lithocampe*? *ampullacea* Ehrenberg, 1874b; *Podocyrtis*? *ampla* Ehrenberg, 1874b; **Theoconus ariadnes* Haeckel, 1887; *Theoconus jovis* Haeckel, 1887; *Theoconus junonis* Haeckel, 1887; **Theoconus laterna* Haeckel, 1887; **Theoconus longicornis* Haeckel, 1887 and *Thyrsocyrtis dionysia* Ehrenberg, 1874b.

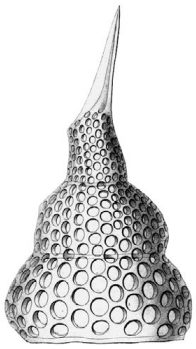
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 544

SEE ***LAMPROCYCLAS***

SYN.
VERY RARE

Type



50 µm

Theoconus jovis
Haeckel, 1887: 1401, pl. 69, fig. 4

Support



50 µm

Theoconus junonis
Haeckel, 1887: 401, pl. 69, fig. 7

N - LINEAGE IV (J) ? PTEROCORYTHIDAE

GENUS ***Lamprocycloma***
Haeckel, 1887: 1392

SUBGENUS ***Lamprocyclas* (*Lamprocycloma*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Lamprocyclas bajaderae* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Lamprocyclas bajaderae
Haeckel, 1887: 1392, unfigured

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (J) PTEROCORYTHIDAE
ASSIGNED IN De Wever *et al.* 2001: 258

GENUS ***Lamprocyrtis***
Kling, 1973: 638

Diagnosis: Pterocyrthidae with a three-segmented cylindrical shell. Usually open cylindrical cephalis with a stout sided A spines, V as a much shorter lateral horn. No D, and 2L thoracic horns or feet. Abdomen cylindrical with larger pores. Aperture slightly constricted with short teeth.

Remarks: Type species frequently reported.

Original series: *Calocyclas* (*Calocycletta*) *hannai* Campbell & Clark, 1944a; *Lamprocyclas heteroporos* Hays, 1965; *Lamprocyrtis haysi* Kling, 1973 and *Lamprocyrtis neoheteroporos* Kling, 1973.

FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE LATE MIOCENE–LIVING***

VALID
FREQUENT

Type



50 µm

Lamprocyclas heteroporos
Hays, 1965: 179, pl. 3, fig. 1

Support



50 µm

Lamprocyrtis heteroporos (Hays)
Morley & Nigrini 1995: 82, pl. 7, fig. 5

N - LINEAGE IV (J) PTEROCORYTHIDAE
ASSIGNED IN Riedel & Sanfilippo 1970: 534

GENUS ***Lampterium***
Haeckel, 1882: 434

SUBGENUS ***Cycladophora* (*Lampterium*)**

Diagnosis: Pterocorythidae with a lantern-shaped three-segmented shell. Cephalis hemispherical with a long A horn. No D, 2L and V external horns or feet. Thorax porous globular. Abdomen long, 4-sided prismatic with gates between bars. Aperture with a narrow peristome.

Remarks: Illustration available only for the type species (frequently reported).

Original series: *Cycladophora goetheana* Haeckel, 1887; **Cycladophora lanterna* Haeckel, 1887 and **Cycladophora tetrapleura* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS **VALID**

AGE ***EARLY MIDDLE EOCENE–LATE EOCENE***

VALID
FREQUENT

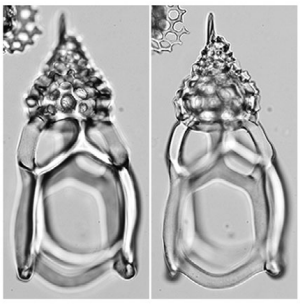
Type



100 µm

Cycladophora goetheana
Haeckel, 1887: 1376, pl. 65, fig. 5

Support



50 µm

Cycladophora goetheana Haeckel
Paratypic material (Challenger Station 265), Suzuki's collection

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Lamptidium***
Haeckel, 1887: 1377

SUBGENUS ***Cycladophora* (*Lamptidium*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Cycladophora hexapleura* Haeckel, 1887; *Cycladophora pyramidalis* Haeckel, 1887 and **Cycladophora spinosa* Haeckel, 1887.

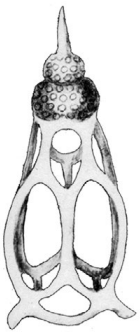
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR SYNONYM?
synonymized by Petrushevskaya & Kozlova 1972: 543

SEE ***LAMPTERIUM***

SYN.?
UNIQUE

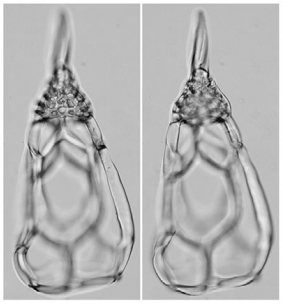
Type



~ 100 µm

Cycladophora hexapleura
Haeckel, 1887: 1377, unfigured [specimen of Bury 1862: pl. 13, fig. 7]

Support



50 µm

Cycladophora pyramidalis Haeckel
Challenger Station 265, Suzuki's collection

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Alacorys***
Haeckel, 1887: 1370

NOMINOTYPE ***Alacorys* (*Alacorys*)**

Remarks: See comments under *TETRALACORYS*.

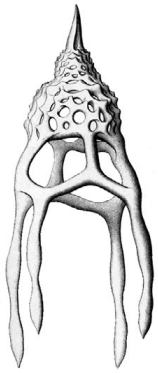
FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 132)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 543

SEE ***LAMPTERIUM***

SYN.
UNIQUE

Type



50 µm

Alacorys lutheri
Haeckel, 1887: 1370, pl. 65, fig. 4

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Tetralacorys***
Haeckel, 1882: 436

SUBGENUS ***Alacorys* (*Tetralacorys*)**

Remarks: Only the type species clearly belongs to this genus (reported only once by Haeckel 1887).

Original series: *Alacorys lutheri* Haeckel, 1887 and *Podocyrtis tetracantha* Ehrenberg, 1874b.

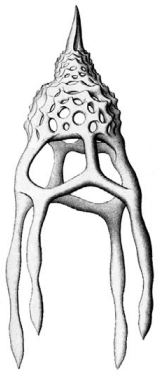
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***ALACORYS***

SYN. (obj.)
UNIQUE

Type



50 µm

Alacorys lutheri
Haeckel, 1887: 1370, pl. 65, fig. 4

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (J) PTEROCORYTHIDAE
ASSIGNED IN Kozlova 1999: 147

GENUS ***Phormocyrtis***
Haeckel, 1887: 1368

Diagnosis: Pterocorythidae with a three-segmented shell. Small cephalis with a long A horn. No D, 2L or V horns or ribs. Thorax large and hight with longitudinal rows of pores between ribs. Abdomen narrowing towards a narrowing aperture with ribs prolonged as festoons.

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Eucyrtidium embolum* Ehrenberg, 1874b; *Eucyrtidium fastuosum* Ehrenberg, 1873a; **Phormocyrtis carinata* Haeckel, 1887; *Phormocyrtis costata* Haeckel, 1887; *Phormocyrtis longicornis* Haeckel, 1887 and **Phormocyrtis quadrata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS **VALID**

AGE ***EARLY EOCENE–EARLY EARLY MIOCENE***

VALID
UNIQUE

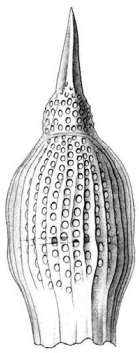
Type



50 µm

Phormocyrtis longicornis
Haeckel, 1887: 1370, pl. 69, fig. 15

Support



50 µm

Phormocyrtis costata
Haeckel, 1887: 1369, pl. 69, fig. 6

N - LINEAGE IV (J) PTEROCORYTHIDAE

ASSIGNED IN Riedel & Sanfilippo 1977: 877

GENUS **Podocyrtis**
Ehrenberg, 1846: 385

NOMINOTYPE ***Podocyrtis* (*Podocyrtis*)**

Diagnosis: Pterocorythidae with a three-segmented shell. Lobate cephalis with A as a robust apical horn. No D, 2L and V ribs or horns on thorax. Thorax and abdomen separated by an internal septum, both with longitudinal rows of circular pores. Aperture narrow with (or not) three feet.

Remarks: Only the type species clearly belongs to this genus (frequently reported); just two species originally included at the time of the generic definition.

Original series: *Podocyrtis papalis* Ehrenberg, 1847 and *Podocyrtis schomburgki* Ehrenberg, 1847.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS **VALID**

AGE ***LATE PALEOCENE–LATE EOCENE***

VALID
FREQUENT

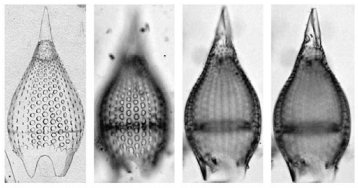
Type



50 µm

Podocyrtis papalis
Ehrenberg, 1847: 55, fig. 2

Type



100 µm

Podocyrtis papalis Ehrenberg
Ogane *et al.* 2009b: pl. 58, figs 1a-d [lectotype herein]

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS **Podocyrtidium**
Haeckel, 1887: 1344

SUBGENUS ***Podocyrtis* (*Podocyrtidium*)**

Remarks: Type species frequently reported.

Original series: *Podocyrtis argus* Ehrenberg, 1874b; **Podocyrtis costata* Haeckel, 1887; *Podocyrtis eulophos* Ehrenberg, 1874b; **Podocyrtis favosa* Haeckel, 1887; **Podocyrtis fusiformis* Haeckel, 1887; *Podocyrtis mitra* Ehrenberg, 1854c; *Podocyrtis mitrella* Ehrenberg, 1874b and *Podocyrtis papalis* Ehrenberg, 1847.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PODOCYRTIS***

SYN. (obj.)
FREQUENT

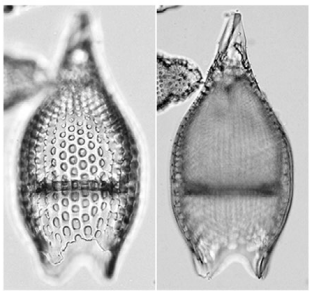
Type



50 µm

Podocyrtis papalis
Ehrenberg, 1847: 55, fig. 2

Support



100 µm

Podocyrtis papalis Ehrenberg
Challenger Station 267, Suzuki's collection

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS **Podocyrtoges**
Sanfilippo & Riedel, 1992: 14

SUBGENUS ***Podocyrtis* (*Podocyrtoges*)**

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Podocyrtis*? *ampla* Ehrenberg, 1874b.

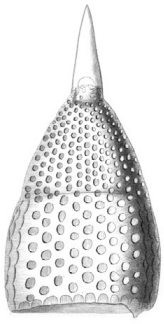
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PODOCYRTIS***

SYN.
FREQUENT

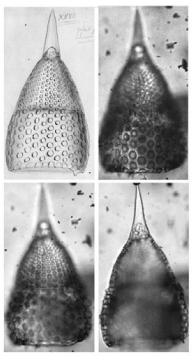
Type



100 µm

Podocyrtis? *ampla*
Ehrenberg, 1874b: 248 (unfigured); Ehrenberg, 1876: 80, pl. 16, fig. 7

Type



100 µm

Podocyrtis ampla Ehrenberg
Ogane *et al.* 2009b: pl. 25, figs 1a-d [lectotype herein]

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS **Podocyrtonium**
Haeckel, 1887: 1347

SUBGENUS ***Podocyrtis* (*Podocyrtonium*)**

Remarks: Type species only illustrated by Haeckel (1887); the type species is a junior subjective synonym of *Podocyrtis mitra* Ehrenberg, 1874b. Heterogeneous group of species originally included.

Original series: *Podocyrtis*? *ampla* Ehrenberg, 1874b; **Podocyrtis floribunda* Haeckel, 1887; *Podocyrtis lithoconus* Haeckel, 1887; *Podocyrtis nana* Ehrenberg, 1874b; *Podocyrtis pedicellaria* Haeckel, 1887; **Podocyrtis scaphopodia* Haeckel, 1887; *Podocyrtis sinuosa* Ehrenberg, 1874b; **Podocyrtis sphaerogaster* Haeckel, 1887; *Podocyrtis triacantha* Ehrenberg, 1874b; **Podocyrtis tripus* Haeckel, 1887; *Thyrsocyrtis bromia* Ehrenberg, 1874b and *Thyrsocyrtis lyaea* Ehrenberg, 1874b.

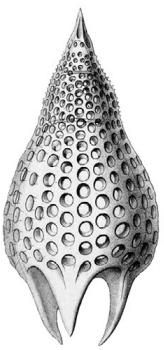
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PODOCYRTIS***

SYN.
UNIQUE

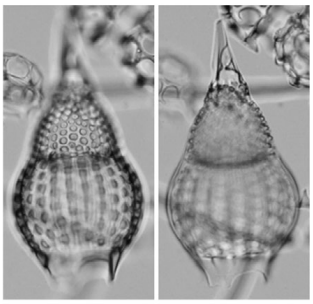
Type



50 µm

Podocyrtis pedicellaria
Haeckel, 1887: 1347, pl. 72, fig. 8

Support



50 µm

Podocyrtis pedicellaria Haeckel
Challenger Station 272, Suzuki's collection

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Podocyrtopsis***
Sanfilippo & Riedel, 1992: 14

SUBGENUS ***Podocyrtis* (*Podocyrtopsis*)**

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Podocyrtis* (*Podocyrtopsis*) *apeza* Sanfilippo & Riedel, 1992.

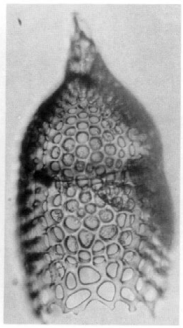
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PODOCYRTIS***

SYN.
RARE

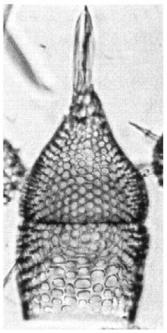
Type



50 µm

Podocyrtis (*Podocyrtopsis*) *apeza*
Sanfilippo & Riedel, 1992: 14, pl. 3, fig. 15

Support



50 µm

Podocyrtis (*Podocyrtopsis*) *apeza* Sanfilippo & Riedel
Sanfilippo & Blome 2001: 217, fig. 10d

N - LINEAGE IV (J) PTEROCORYTHIDAE
ASSIGNED IN Petrushevskaya 1981: 284

GENUS ***Pterocorys***
Haeckel, 1882: 435

NOMINOTYPE ***Pterocorys* (*Pterocorys*)**

Diagnosis: Pterocorythidae with a three-segmented shell. Trilobate cephalis with a A horn. D and 2L prolonged by thoracic wings or ribs, sometimes down on abdomen. Additional ribs possible. Abdomen campanulate. No differentiated peristome, terminal or subterminal teeth.

Remarks: Type species frequently reported. Heterogeneous group of originally included species.

Original series: *Eucyrtidium carinatum* Haeckel, 1861b; *Lychnocanium turgidum* Ehrenberg, 1874b; *Pterocanium barbadense* Ehrenberg, 1874b; *Pterocanium falciferum* Stöhr, 1880; *Pterocanium sabae* Ehrenberg, 1873a; *Pterocodon apis* Ehrenberg, 1874b; *Pterocorys aquila* Haeckel, 1887; *Pterocorys campanula* Haeckel, 1887; *Pterocorys columba* Haeckel, 1887; *Pterocorys hirundo* Haeckel, 1887 and *Rhopalocanium ornatum* Ehrenberg, 1847.

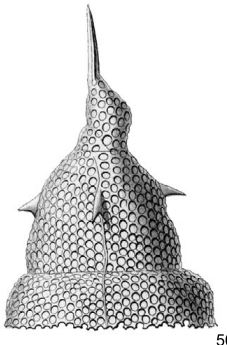
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS **VALID**

AGE ***EARLY LATE MIOCENE–LIVING***

VALID
FREQUENT

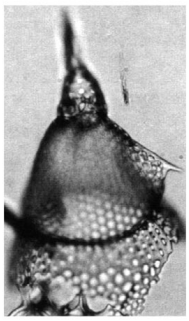
Type



50 µm

Pterocorys campanula
Haeckel, 1887: 1316, pl. 71, fig. 3

Support



50 µm

Pterocorys campanula Haeckel
Sanfilippo & Riedel 1992: pl. 4, fig. 13

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Sethoconus***
Haeckel, 1887: 1290

NOMINOTYPE ***Sethoconus* (*Sethoconus*)**

Remarks: See comments under *CONARACHNIUM*. Although Haeckel here refers to p. 430 of 1882, there is no generic name on that or any other page of that reference related to the name *SETHOCONUS*. Therefore, since the name dates from 1887 and the three subgeneric names *CONARACHNIUM*, *CORNUTELLIUM* and *PHLEBARACHIUM* date from 1882, it appears that one of the latter three names must be treated as the nominate subgenus and replace *SETHOCONUS*. However, since the type species of *CORNUTELLIUM* (by subsequent monotypy, *Cornutellium limbatum* Rüst, 1885) is not among those species originally included in 1887, *CORNUTELLIUM* is not eligible, and the generic name must be either *CONARACHNIUM* or *PHLEBARACHNIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CONARACHNIUM***

SYN. (obj.)
VERY RARE

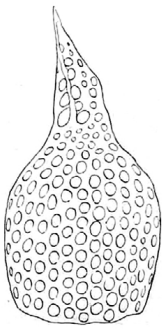
Type



50 µm

Eucyrtidium trochus
Ehrenberg, 1861a: 768 (n.n.); Ehrenberg, 1873b: 292-293, pl. 7, fig. 17

Support



25 µm

Sethoconus trochus (Ehrenberg)
Popofsky 1917: 273, text-fig. 37

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Conarachnium***
Haeckel, 1882: 430

SUBGENUS ***Sethoconus* (*Conarachnium*)**

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: *Cornutella ampliata* Ehrenberg, 1874b; *Cornutella? cucullaris* Ehrenberg, 1874b; *Cornutella mitra* Ehrenberg, 1874b; *Cycladophora tabulata* Ehrenberg, 1873a; *Eucyrtidium? nassa* Ehrenberg, 1874b; *Eucyrtidium cervus* Ehrenberg, 1873a; *Eucyrtidium trochus* Ehrenberg, 1873a; *Lophophaena larvata* Ehrenberg, 1874b; **Sethoconus lophophaena* Haeckel, 1887; **Sethoconus pileus* Haeckel, 1887 and *Sethoconus rayianus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PTEROCORYS***

SYN.
VERY RARE

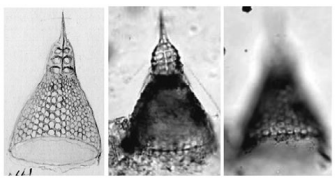
Type



50 µm

Eucyrtidium trochus
Ehrenberg, 1861a: 768 (n.n.); Ehrenberg, 1873b: 292-293, pl. 7, fig. 17

Type



50 µm

Eucyrtidium trochus Ehrenberg
Suzuki *et al.* 2009a: pl. 55, figs 12a-c [lectotype herein]

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Lithopilium***
Popofsky, 1913: 377

Remarks: Type species frequently reported. Heterogeneous group of originally included species.

Original series: *Lithopilium hexacanthum* Popofsky, 1913; *Lithopilium macroceras* Popofsky, 1913; *Lithopilium reticulatum* Popofsky, 1913 and *Lithopilium sphaerocephalum* Popofsky, 1913.

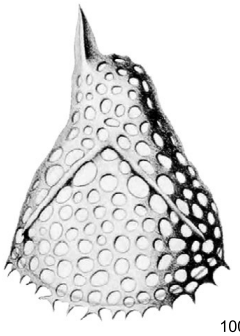
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 232

SEE ***PTEROCORYS***

SYN.
FREQUENT

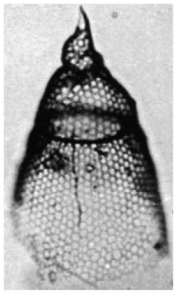
Type



100 µm

Lithopilium macroceras
Popofsky, 1913: 377, pl. 38, fig. 2 [lectotype herein]

Support



50 µm

Pterocorys macroceras (Popofsky)
Caulet & Nigrini 1988: 230, pl. 2, fig. 2

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Theoconus***
Haeckel, 1887: 1399

NOMINOTYPE ***Theoconus (Theoconus)***

Remarks: See comments under *THEOCORAX*.

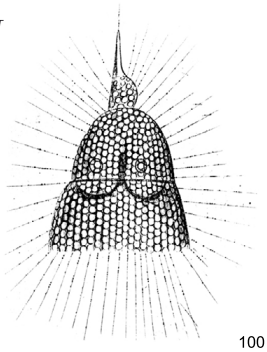
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 232

SEE ***PTEROCORYS***

SYN.
FREQUENT

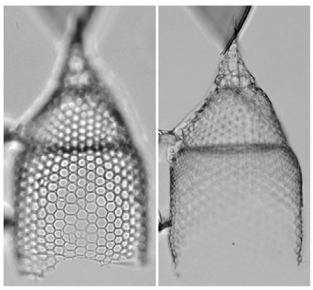
Type



100 µm

Eucyrtidium zanclaeum
Müller, 1855b: 672 (unfigured); Müller, 1859b: 41, pl. 6, fig. 1 [lectotype herein]

Support



50 µm

Eucyrtidium zancleum Müller
Zhang's collection (South China Sea)

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Theocorax***
Haeckel, 1887: 1399

SUBGENUS ***Theoconus (Theocorax)***

Remarks: Type species frequently reported. The type species is a junior subjective synonym of *Eucyrtidium trochus* Ehrenberg, 1873a.

Original series: *Eucyrtidium aegaeum* Ehrenberg, 1854c; *Eucyrtidium campanulatum* Ehrenberg, 1854b; *Eucyrtidium zanclaeum* Müller, 1855b; *Eucyrtidium zanguebarica* Ehrenberg, 1873a and **Theoconus orthoconus* Haeckel, 1887.

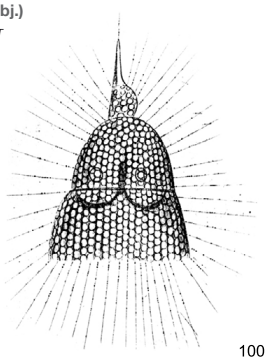
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***THEOCONUS***

SYN. (obj.)
FREQUENT

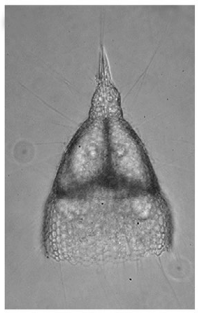
Type



100 µm

Eucyrtidium zanclaeum
Müller, 1855b: 672 (unfigured); Müller, 1859b: 41, pl. 6, fig. 1 [lectotype herein]

Support



100 µm

Eucyrtidium zancleum Müller
Topotypic material (plankton, Villefranche-sur-Mer), Suzuki's collection

N - LINEAGE IV (J) PTEROCORYTHIDAE
ASSIGNED IN Campbell 1954: D112

GENUS ***Tetracorethra***
Haeckel, 1882: 429

SUBGENUS ***Tetraspyris (Tetracorethra)***

Diagnosis: Pterocorythidae constituted by a small cephalis, that may be bilobate, and very long appendages constituted by external prolongations of the A, D, L, Vert apophyses, directed upwards for the apical spine and downwards for the other apophyses. The appendages are many times sub-divided and have almost brush-shaped ends, mostly the lower ones. No sagittal ring well expressed.

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Tetraspyris calcarata* Haeckel, 1887; **Tetraspyris scoparia* Haeckel, 1887 and *Tetraspyris tetracorethra* Haeckel, 1887.

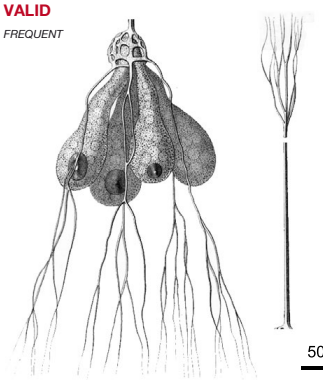
FIXATION ABSOLUTE TAUTONOMY

STATUS **VALID**

AGE ***LIVING***

VALID
FREQUENT

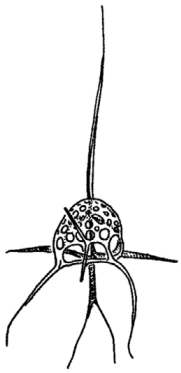
Type



50 µm

Tetraspyris tetracorethra
Haeckel, 1887: 1044, pl. 53, fig. 19

Support



25 µm

Tetracorethra tetracorethra (Haeckel)
Petrushevskaya 1971a: 235, pl. 121, fig. 2

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS **Hexacorethra**
Haeckel, 1887: 1048

SUBGENUS *Hexaspyris* (*Hexacorethra*)

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated after its description by Petrushevskaya (1971b).

Original series: *Hexaspyris hexacorethra* Haeckel, 1887.

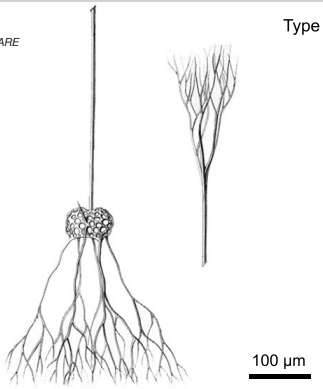
FIXATION ABSOLUTE TAUTONOMY

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1971a: 234

SEE **TETRACORETHRA**

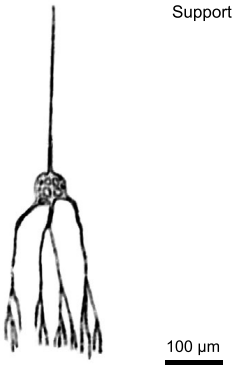
SYN.
VERY RARE

Type



Hexaspyris hexacorethra
Haeckel, 1887: 1048, pl. 95, fig. 8

Support



Hexaspyris hexacorethra Haeckel
Petrushevskaya 1971b: fig. 3.21

N - LINEAGE IV (J) PTEROCORYTHIDAE
ASSIGNED IN Petrushevskaya 1971a: 231

GENUS **Theocorythium**
Haeckel, 1887: 1416

SUBGENUS *Theocorys* (*Theocorythium*)

Diagnosis: Pterocorythidae with a three-segmented shell. Cephalis globular with a narrow neck and a long-sided A horn. No D, 2L and V horns or ribs. Circular pores in longitudinal rows. No longitudinal ribs. Aperture slightly narrow with, sometimes, a peristome bearing teeth.

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Eucyrtidium alauda* Ehrenberg, 1874b; *Eucyrtidium attenuatum* Ehrenberg, 1874b; *Eucyrtidium sphaerophilum* Ehrenberg, 1874b; *Theocorys apollinis* Haeckel, 1887; *Theocorys dianae* Haeckel, 1887; **Theocorys hyalothorax* Haeckel, 1887; **Theocorys martis* Haeckel, 1887; **Theocorys mercurii* Haeckel, 1887; *Theocorys minervae* Haeckel, 1887; *Theocorys obliqua* Haeckel, 1887; **Theocorys tuberculata* Haeckel, 1887 and *Thyrsocyrtis bacchabunda* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS **VALID**

AGE ***LATE EARLY MIOCENE–LIVING***

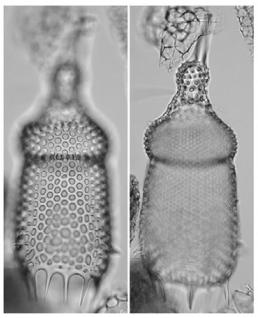
VALID
FREQUENT

Type



Theocorys dianae
Haeckel, 1887: 1416, pl. 69, fig. 11

Support



Theocorys dianae Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS **Theocapsilla**
Haeckel, 1887: 1427

SUBGENUS *Theocapsa* (*Theocapsilla*)

Remarks: Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym.

Original series: **Theocapsa aldrovandi* Haeckel, 1887; **Theocapsa gessneri* Haeckel, 1887; *Theocapsa malpighii* Haeckel, 1887 and *Theocapsa wottonis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 286

SEE **THEOCORYTHIUM**

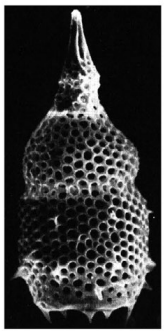
SYN.
UNIQUE

Type



Theocapsa wottonis
Haeckel, 1887: 1428, pl. 66, fig. 11

Support



Theocorythium trachelium dianae (Haeckel)
Poluzzi 1982: 64, pl. 27, figs 10, 11

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS **Theocapsura**
Haeckel, 1887: 1430

SUBGENUS *Theocapsa* (*Theocapsura*)

Remarks: Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym. Heterogeneous group of species originally included.

Original series: **Theocapsa baeri* Haeckel, 1887; *Theocapsa cuvieri* Haeckel, 1887; *Theocapsa darwini* Haeckel, 1887; *Theocapsa lamarcki* Haeckel, 1887; *Theocapsa muelleri* Haeckel, 1887; **Theocapsa rathkei* Haeckel, 1887; **Theocapsa sarsi* Haeckel, 1887 and **Theocapsa schwanni* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 287

SEE **THEOCORYTHIUM**

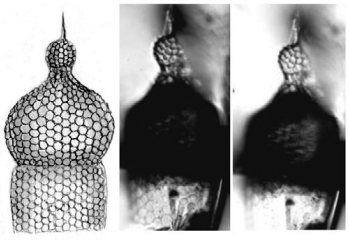
SYN.
UNIQUE

Type



Theocapsa lamarckii
Haeckel, 1887: 1430, pl. 66, fig. 16

Type



Eucyrtidium trachelius Ehrenberg
Suzuki *et al.* 2009a: pl. 55, figs 4a-c [lectotype herein]

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Theocyrtis***
Haeckel, 1887: 1405

NOMINOTYPE ***Theocyrtis* (*Theocyrtis*)**

Remarks: See comments under *THEOCORYPHA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS JUNIOR SYNONYM?
questionably synonymized herein

SEE ***THEOCORYTHIUM***

SYN.?
UNIQUE

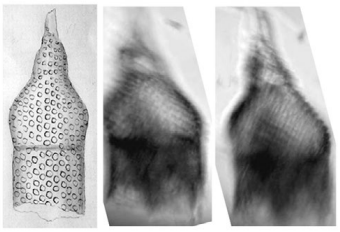
Type



50 µm

Eucyrtidium barbadense
Ehrenberg, 1874b: 226 (unfigured); Ehrenberg, 1876: 70, pl. 9, fig. 7

Type



50 µm

Eucyrtidium barbadense Ehrenberg
Ogane *et al.* 2009b: pl. 85, figs 7a-c [lectotype herein]

N - LINEAGE IV (J) PTEROCORYTHIDAE

GENUS ***Theocorypha***
Haeckel, 1887: 1405

SUBGENUS ***Theocyrtis* (*Theocorypha*)**

Remarks: Type species only illustrated by Ehrenberg (1876); the support image is a junior subjective synonym.

Original series: *Eucyrtidium cylindricum* Ehrenberg, 1874b; *Eucyrtidium barbadense* Ehrenberg, 1874b and *Eucyrtidium trachelius* Ehrenberg, 1873a.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***THEOCYRTIS***

SYN. (obj.)
UNIQUE

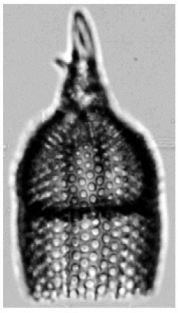
Type



50 µm

Eucyrtidium barbadense
Ehrenberg, 1874b: 226 (unfigured); Ehrenberg, 1876: 70, pl. 9, fig. 7

Support



50 µm

Theocyrtis careotuberosa
Nigrini & Sanfilippo in Nigrini *et al.*, 2006: 50, pl. P5, fig. 15

N - LINEAGE IV (J) ? PTEROCORYTHIDAE
FAMILY TENTATIVELY ASSIGNED HEREIN

GENUS ***Anthocyrtoma***
Haeckel, 1887: 1268

Diagnosis: Pterocorythidae with a two-segmented shell. Thick-walled cephalis globular with an important A horn. D and 2L may extend as thoracic ribs. Large egg-shaped thorax with thorns and longitudinal pores. Aperture open, cylindrical, with thin, peri-apertural peristomial thorns.

Remarks: Illustration available only for the type species (figured just once after the first illustration). Only two species originally included at the time of the generic definition.

Original series: *Anthocyrtis serrulata* Ehrenberg, 1874b and **Anthocyrtoma alterna* Haeckel, 1887.

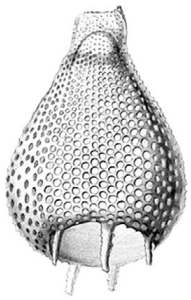
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 29)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LATE EOCENE***

VALID
VERY RARE

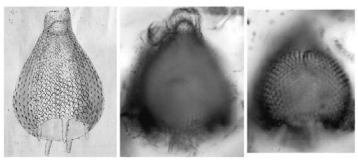
Type



100 µm

Anthocyrtis serrulata
Ehrenberg, 1874b: 217 (unfigured); Ehrenberg, 1876: 64, pl. 6, fig. 7

Type



100 µm

Anthocyrtis serrulata Ehrenberg
Ogane *et al.* 2009b: pl. 51, figs 1a-c [lectotype herein]

N - LINEAGE IV (J) ? PTEROCORYTHIDAE

GENUS ***Ennealacorys***
Haeckel, 1887: 1374

SUBGENUS ***Alacorys* (*Ennealacorys*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition. However, Haeckel (1887: 1374) mentioned that one of the originally included species is very similar to *Cycladophora gigas* Ehrenberg, 1874b (a junior subjective synonym of *Cycladophora erinaceus*, Ehrenberg 1874b); the latter is included as support image.

Original series: **Alacorys enneacantha* Haeckel, 1887 and **Alacorys gigas* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? ANTHOCYRTOMA***

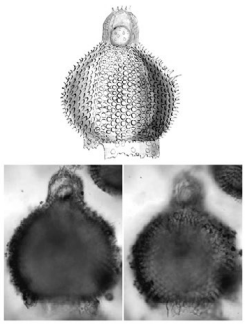
N.D.

Type

UNFIGURED SPECIES

Alacorys enneacantha
Haeckel, 1887: 1374, unfigured

Type



100 µm

Cycladophora gigas Ehrenberg
Ogane *et al.* 2009b: pl. 53, figs 1a-c [lectotype herein]

N - LINEAGE IV (J) ? PTEROCORYTHIDAE

GENUS ***Lamptonium***
Haeckel, 1887: 1378

SUBGENUS ***Cycladophora* (*Lamptonium*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition. However, Haeckel (1887: 1374) mentioned that one of the originally included species is similar to *Cycladophora gigas* Ehrenberg, 1874b; the latter is included as support image.

Original series: **Cycladophora enneapleura* Haeckel, 1887 and **Cycladophora nonagona* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

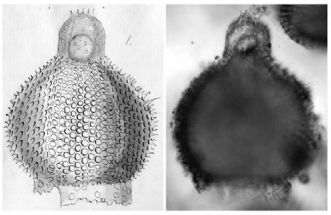
SEE ***? ANTHOCYRTOMA***

N.D. Type

UNFIGURED SPECIES

Cycladophora enneapleura
Haeckel, 1887: 1378, unfigured

Type



100 µm

Cycladophora erinaceous Ehrenberg
Ogane *et al.* 2009b: pl. 52, figs 1a-c [lectotype herein]

N - LINEAGE IV (J) ? PTEROCORYTHIDAE
FAMILY TENTATIVELY ASSIGNED HEREIN

GENUS ***Calocyclura***
Haeckel, 1887: 1384 [errata 1764]

SUBGENUS ***Calocyclas* (*Calocyclura*)**

Diagnosis: Pterocorythidae with a three to four-segmented shell. One species described. Internal spicule undescribed. Cephalis with a A horn. Thorax and abdomen with pores of different sizes and shapes. Aperture open sometimes festooned.

Remarks: Only the type species clearly belongs to this genus; frequently reported. See correction of genus name in Haeckel 1887 errata page 1764 (for *CALOCYCLOMA* read *CALOCYCLURA*).

Original series: **Calocyclas aspasia* Haeckel, 1887; *Calocyclas monumentum* Haeckel, 1887 and *Calocyclas parthenia* Haeckel, 1887.

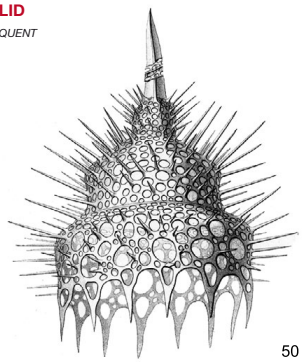
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS **VALID**

AGE ***MIDDLE PLEISTOCENE–LIVING***

VALID
FREQUENT

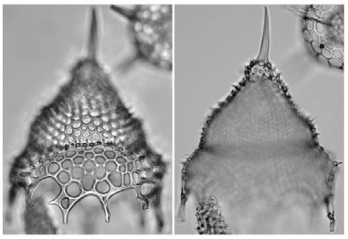
Type



50 µm

Calocyclas monumentum
Haeckel, 1887: 1385, pl. 73, fig. 9

Support



100 µm

Calocyclas monumentum Haeckel
Zhang's collection (South China Sea)

N - LINEAGE IV (J) ? PTEROCORYTHIDAE
FAMILY TENTATIVELY ASSIGNED HEREIN

GENUS ***Theocorusca***
Haeckel, 1887: 1407

SUBGENUS ***Theocyrtis* (*Theocorusca*)**

Diagnosis: Pterocorythidae with a cylindrical three-segmented shell. Internal spicule unobserved. Cephalis hemispherical with a very long A horn. No D, 2L and V ribs or horns on thorax. Small pores circular. Aperture open with a small peristome.

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: *Eucyrtidium asperum* Ehrenberg, 1874b; *Theocyrtis macroceros* Haeckel, 1887; **Theocyrtis proserpinae* Haeckel, 1887; *Theocyrtis ptychodes* Haeckel, 1887 and *Thyrsocyrtis oenovila* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D134)

STATUS **VALID**

AGE ***LATE PALEOCENE–LATE EOCENE***

VALID
UNIQUE

Type



100 µm

Theocyrtis macroceros
Haeckel, 1887: 1407, pl. 69, fig. 13

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (J) ? PTEROCORYTHIDAE

GENUS ***Phrenocodon***
Haeckel, 1887: 1433

Remarks: Illustration available only for the type species (figured just once after the first illustration). Only two species originally included at the time of the generic definition.

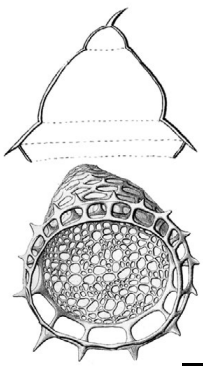
Original series: *Phrenocodon clathrostomium* Haeckel, 1887 and **Phrenocodon diaphragma* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
VERY RARE

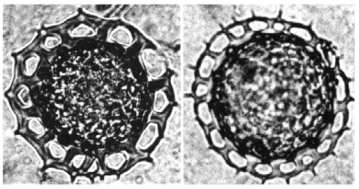
Type



50 µm

Phrenocodon clathrostomium
Haeckel, 1887: 1434, pl. 70, figs 7, 8

Support



50 µm

Phrenocodon clathrostomium Haeckel
Takahashi 1991: 34, figs 3, 4

N - LINEAGE IV (J) THEOCOTYLIDAE

ASSIGNED IN Petrushevskaya 1981: 280

GENUS **Axocorys**
Haeckel, 1882: 434

Diagnosis: Theocotylidae with a three-segmented shell. Generally, pear-shaped shell, with two distinct strictures. Small globular cephalis with a A horn. Internal spicule undescribed. No lateral thoracic wing or feet related to D and 2L. Very long Ax. Abdomen usually inflated, drop-shaped. Aperture open with an annular or dentate peristome.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Axocorys macroceros* Haeckel, 1887.

FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***LATE PALEOCENE–LATE EOCENE***

VALID
RARE

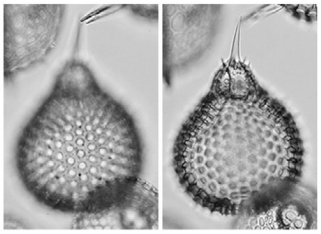
Type



100 µm

Axocorys macroceros
Haeckel, 1887: 1420, pl. 68, fig. 1

Support



100 µm

Axocorys macroceros Haeckel
Suzuki's collection (Late Paleocene-Early Eocene, Pacific Ocean)

N - LINEAGE IV (J) THEOCOTYLIDAE

GENUS **Theocotyle**
Riedel & Sanfilippo, 1970: 524

NOMINOTYPE ***Theocotyle (Theocotyle)***

Remarks: Type species frequently reported.

Original series: *Eucyrtidium cryptocephalum* Ehrenberg, 1874b; *Eucyrtidium ficus* Ehrenberg, 1874b; *Theocotyle cryptocephala*? *nigriniae* Riedel & Sanfilippo, 1970 and *Theocotyle venezuelensis* Riedel & Sanfilippo, 1970.

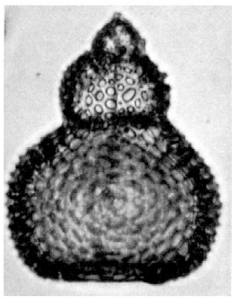
FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 220

SEE ***AXOCORYS***

SYN.
FREQUENT

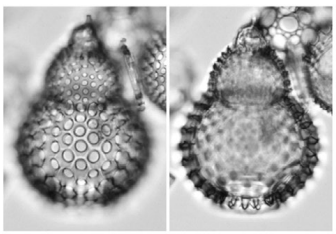
Type



50 µm

Theocotyle venezuelensis
Riedel & Sanfilippo, 1970: 524, pl. 6, fig. 10

Support



100 µm

Theocotyle venezuelensis Riedel & Sanfilippo
Challenger Station 272, Suzuki's collection

N - LINEAGE IV (J) THEOCOTYLIDAE

GENUS **Theocotylissa**
Foreman, 1973: 440

SUBGENUS ***Theocotyle (Theocotylissa)***

Remarks: Type species frequently reported.

Original series: *Eucyrtidium ficus* Ehrenberg, 1874b; *Theocotyle* (*Theocotylissa*) *alpha* Foreman, 1973; *Theocotyle* (*Theocotylissa*) *auctor* Foreman, 1973 and *Theocotyle* (*Theocotylissa*?) *fimbria* Foreman, 1973.

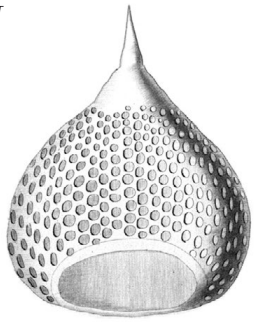
FIXATION ORIGINAL DESIGNATION

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***AXOCORYS***

SYN.
FREQUENT

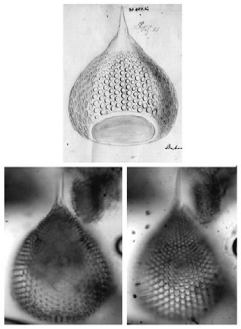
Type



50 µm

Eucyrtidium ficus
Ehrenberg, 1874b: 228 (unfigured); Ehrenberg, 1876: 70, pl. 11, fig. 19

Type



100 µm

Eucyrtidium ficus Ehrenberg
Ogane *et al.* 2009b: pl. 59, figs 2a, 2b [lectotype herein]

N - LINEAGE IV (J) THEOCOTYLIDAE

ASSIGNED IN Petrushevskaya 1981: 221

GENUS **Clistophatna**
Haeckel, 1882: 433

Diagnosis: Theocotylidae with a two-segmented shell. Cephalis small with a long and stout, sided and denticulate A horn. Internal spicule unobserved. Thorax inflated with a margin bearing six divergent, stout and sided feet similar to the A horn. Other horns on shells may occur.

Remarks: See comments under *CLISTOPHAENA*. Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

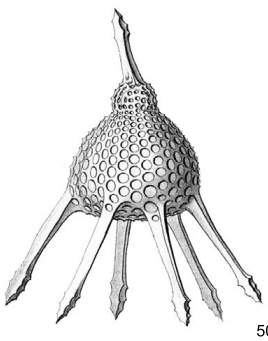
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D128)

STATUS **VALID**

AGE ***[QUATERNARY]***

VALID
UNIQUE

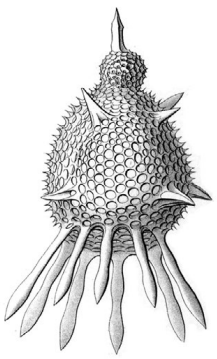
Type



50 µm

Clistophaena ruestiana
Haeckel, 1887: 1287, pl. 57, fig. 6

Support



50 µm

Clistophaena armata
Haeckel, 1887: 1288, pl. 57, fig. 7

N - LINEAGE IV (J) ? THEOCOTYLIDAE

GENUS ***Clistophaena*** INCORRECT SUBSEQUENT SPELLING
Haeckel, 1887: 1286

Remarks: An incorrect subsequent spelling for *CLISTOPHATNA*. By referring back to p. 433 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *CLISTOPHAENA* to be an emendation of the name *CLISTOPHATNA*, which is unjustified according to the provisions of ICZN art. 33.3.

Original series: *Clistophaena armata* Haeckel, 1887; *Clistophaena enneolena* Haeckel, 1887; *Clistophaena hexolena* Haeckel, 1887; *Clistophaena polyolena* Haeckel, 1887; *Clistophaena pyramidalis* Haeckel, 1887 and *Clistophaena ruestiana* Haeckel, 1887.

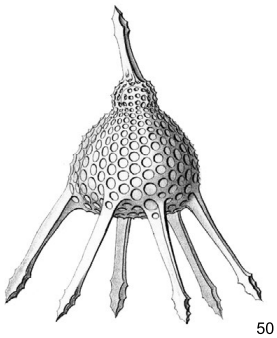
FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D128)

STATUS INVALID NAME
designated herein

SEE ***CLISTOPHATNA***

INV.

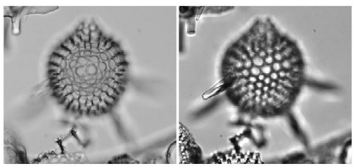
Type



50 µm

Clistophaena ruestiana
Haeckel, 1887: 1287, pl. 57, fig. 6

Support



50 µm

Clistophaena armata Haeckel
Challenger Station 272, Suzuki's collection

N - LINEAGE IV (J) THEOCOTYLIDAE
ASSIGNED IN Petrushevskaya 1981: 220

GENUS ***Pentalacorys***
Haeckel, 1882: 436

SUBGENUS ***Alacorys (Pentalacorys)***

Diagnosis: Theocotylidae with a three-segmented shell. Cephalis small, globular with a variable (short to long) A horn. Internal spicule undescribed. Thorax with small pores and no external appendages. Abdomen globular with larger pores and peristomial feet or teeth.

Remarks: The type species has been figured just once after the first illustration. The support image is a senior subjective synonym of the type species.

Original series: *Alacorys bismarcki* Haeckel, 1887 and *Podocyrtis pentacantha* Ehrenberg, 1874b.

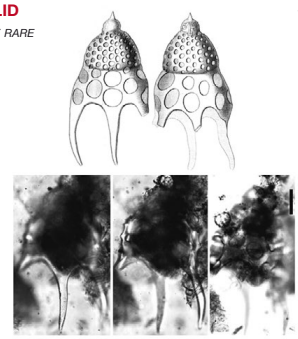
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS **VALID**

AGE ***LATE PALEOCENE–EARLY OLIGOCENE***

VALID
VERY RARE

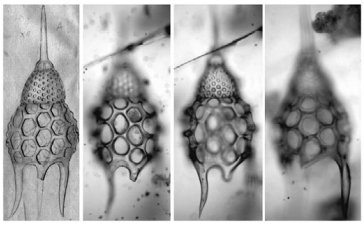
Type



100 µm

Podocyrtis pentacantha
Ehrenberg, 1874b: 252 (unfigured); Ehrenberg, 1876: 82, pl. 17, fig. 1 [Ogane *et al.* 2009b: pl. 93, figs 1a-d; lectotype herein]

Type



100 µm

Podocyrtis schomburgkii Ehrenberg
Ogane *et al.* 2009b: pl. 57, figs 1a-d [lectotype herein]

N - LINEAGE IV (J) THEOCOTYLIDAE

GENUS ***Hexalacorys***
Haeckel, 1882: 436

SUBGENUS ***Alacorys (Hexalacorys)***

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887). The support image corresponds to the senior synonym of the type species.

Original series: *Alacorys friderici* Haeckel, 1887; *Alacorys guilelmi* Haeckel, 1887; **Alacorys hexacantha* Haeckel, 1887 and **Alacorys hexapleura* Haeckel, 1887.

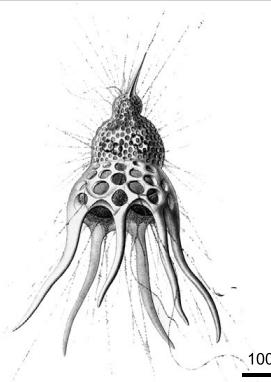
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***PENTALACORYS***

SYN.
UNIQUE

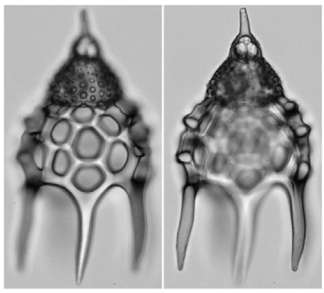
Type



100 µm

Alacorys friderici
Haeckel, 1887: 1372, pl. 65, fig. 1

Support



100 µm

Podocyrtis pentacantha Ehrenberg
Topotypic material (Barbados, Late Eocene), Suzuki's collection

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N - LINEAGE IV (J) THEOCOTYLIDAE

GENUS ***Octalacorys***
Haeckel, 1887: 1373

SUBGENUS ***Alacorys (Octalacorys)***

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition. The type species is a junior subjective synonym of *Podocyrtis schomburgkii* Ehrenberg, 1847.

Original series: **Alacorys octacantha* Haeckel, 1887 and *Podocyrtis aculeata* Ehrenberg, 1874b.

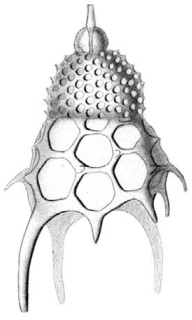
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR SYNONYM
synonymized by Sanfilippo & Riedel 1982: 175

SEE ***PENTALACORYS***

SYN.
RARE

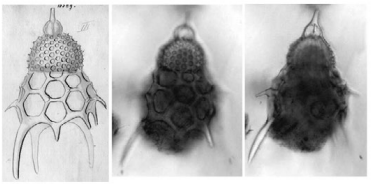
Type



50 µm

Podocyrtis aculeata
Ehrenberg, 1874b: 248 (unfigured); Ehrenberg, 1876: 80, pl. 13, fig. 3

Type



100 µm

Podocyrtis aculeata Ehrenberg
Ogane *et al.* 2009b: pl. 92, figs 3a-c [lectotype herein]

N - Lineage IV (J) — THEOCOTYLIDAE
ASSIGNED IN Petrushevskaya 1981: 224

GENUS **Pterocodon**
Ehrenberg, 1847: 54

Diagnosis: Theocotylidae with a three-segmented shell. Small globular cephalis with a long vertical A horn. Thorax globular with D and 2L protruding as strong lateral curved feet. Abdomen more elongated with larger pores and a denticulate peristome around an open aperture.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Pterocodon campana* Ehrenberg, 1847.

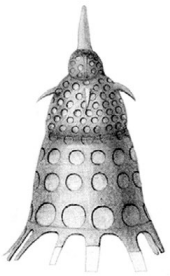
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Middle Paleocene–Late Eocene***

VALID
FREQUENT

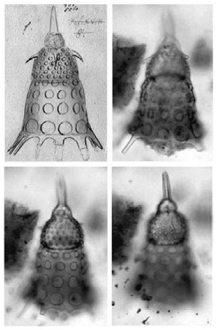
Type



50 µm

Pterocodon campana
Ehrenberg, 1847: 55, fig. 4

Type



50 µm

Pterocodon campana Ehrenberg
Ogane *et al.* 2009b: pl. 87, figs 1a-d [lectotype herein]

N - Lineage IV (J) — THEOCOTYLIDAE
ASSIGNED IN Petrushevskaya 1981: 220

GENUS **Thyrsocyrtis**
Ehrenberg, 1847: 54

Diagnosis: Theocotylidae with a three-segmented shell. Cephalis small, globular with a variable (short to long) A horn. Internal spicule undescribed. Thorax with small pores and no external appendages. Abdomen as wide as thorax with same pores and peristomial feet or teeth.

Remarks: Type species frequently reported.

Original series: *Thyrsocyrtis anthophora* Ehrenberg, 1874b; *Thyrsocyrtis bacchabunda* Ehrenberg, 1874b; *Thyrsocyrtis bromia* Ehrenberg, 1874b; *Thyrsocyrtis dionysia* Ehrenberg, 1874b; *Thyrsocyrtis jacchia* Ehrenberg, 1874b; *Thyrsocyrtis lyaea* Ehrenberg, 1874b; *Thyrsocyrtis oenovila* Ehrenberg, 1874b; *Thyrsocyrtis*? *pristis* Ehrenberg, 1874b; *Thyrsocyrtis reticulata* Ehrenberg, 1874b and *Thyrsocyrtis rhizodon* Ehrenberg, 1874b.

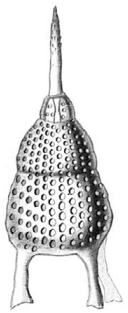
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS **VALID**

AGE ***Late Paleocene–early Middle Miocene***

VALID
FREQUENT

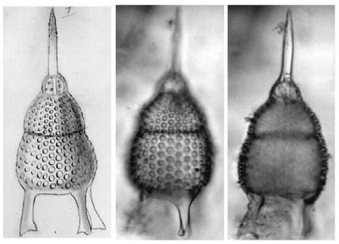
Type



50 µm

Thyrsocyrtis rhizodon
Ehrenberg, 1874b: 262 (unfigured); Ehrenberg, 1876: 84, pl. 12, fig. 1

Type



50 µm

Thyrsocyrtis rhizodon Ehrenberg
Ogane *et al.* 2009b: pl. 56, figs 1a-c [lectotype herein]

N - Lineage IV (J) — THEOCOTYLIDAE

GENUS **Podocyrtarium**
Haeckel, 1887: 1337

SUBGENUS ***Podocyrtis* (*Podocyrtarium*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: **Podocyrtis conica* Haeckel, 1887; **Podocyrtis conulus* Haeckel, 1887; *Podocyrtis corythaeola* Haeckel, 1887; *Podocyrtis surena* Haeckel, 1887; **Podocyrtis thyrsoceras* Haeckel, 1887; **Podocyrtis tridactyla* Haeckel, 1887 and *Podocyrtis tripodiscus* Haeckel, 1887.

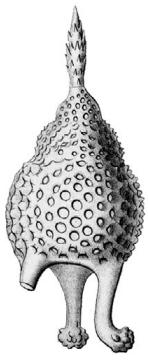
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya & Kozlova 1972: 542

SEE ***THYRSOCYRTIS***

SYN.
UNIQUE

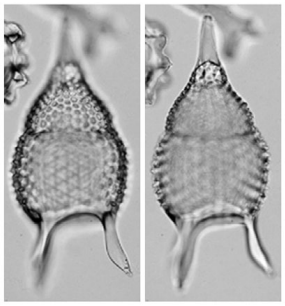
Type



50 µm

Podocyrtis tripodiscus
Haeckel, 1887: 1338, pl. 72, fig. 4

Support



50 µm

Podocyrtis tripodiscus Haeckel
Challenger Station 272, Suzuki's collection

N - Lineage IV (J) — THEOPERIDAE
ASSIGNED HEREIN

GENUS **Clathropyrgus**
Haeckel, 1882: 439

SUBGENUS ***Artopilium* (*Clathropyrgus*)**

Diagnosis: Theoperidae with a multi-segmented shell. Small subspherical cephalis with a long A horn and a short V horn. D and 2L as thoracic ribs and abdominal wings between gates. Segments separated by constrictions and inner septa. Aperture shapeless.

Remarks: Only the type species clearly belongs to this genus (reported only by Haeckel 1887).

Original series: **Artopilium cornutella* Haeckel, 1887; **Artopilium curvatum* Haeckel, 1887; *Artopilium stichopterygium* Haeckel, 1887; *Artopilium trifenestra* Haeckel, 1887; **Artopilium trigonopterum* Haeckel, 1887 and **Lithocampe anomala* Haeckel, 1861b.

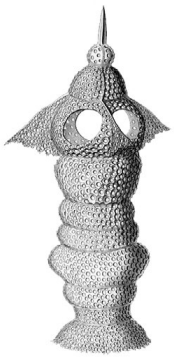
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS **VALID**

AGE ***Middle Paleocene–Early Eocene***

VALID
UNIQUE

Type



50 µm

Artopilium trifenestra
Haeckel, 1887: 1441, pl. 75, fig. 7

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (J) THEOPERIDAE
ASSIGNED HEREIN

GENUS **Cyrtopera**
Haeckel, 1882: 439

NOMINOTYPE ***Cyrtopera* (*Cyrtopera*)**

Diagnosis: Theoperidae with a four to six-segmented shell. Cephalis small with a very long and strong A horn. D and 2L spines prolonged as lateral thoracic, next abdominal, important wings. Segments separated by deep constrictions. Aperture open with a simple peristome.

Remarks: See comments under *ARTOPERA*.

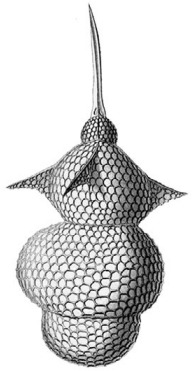
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D138)

STATUS **VALID**

AGE ***[QUATERNARY]***

VALID
UNIQUE

Type



50 µm

Cyrtopera thoracoptera
Haeckel, 1887: 1450, pl. 75, fig. 3

Support



50 µm

Cyrtopera thoracoptera Haeckel
Challenger Station 272, Suzuki's collection

N - LINEAGE IV (J) THEOPERIDAE

GENUS **Artopera**
Haeckel, 1882: 438

SUBGENUS ***Cyrtopera* (*Artopera*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Cyrtopera gasteroptera* Haeckel, 1887; **Cyrtopera ornithoptera* Haeckel, 1887 and *Cyrtopera thoracoptera* Haeckel, 1887.

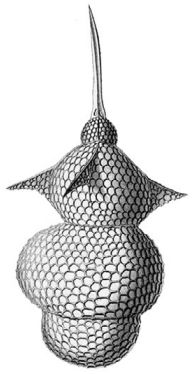
FIXATION SUBSEQUENT DESIGNATION (Petrushevskaya 1981: 295)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CYRTOPERA***

SYN. (obj.)
UNIQUE

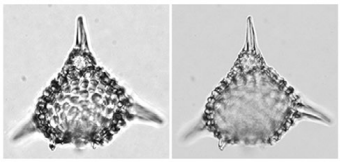
Type



50 µm

Cyrtopera thoracoptera
Haeckel, 1887: 1450, pl. 75, fig. 3

Support



100 µm

Cyrtopera thoracoptera Haeckel
Suzuki's collection (Late Paleocene-Early Eocene, Pacific Ocean)

N - LINEAGE IV (J) THEOPERIDAE
ASSIGNED HEREIN

GENUS **Eusyringium**
Haeckel, 1882: 437

NOMINOTYPE ***Eusyringium* (*Eusyringium*)**

Diagnosis: Theoperidae with a spindle-shaped three-segmented shell. Cephalis with a pyramidal A horn. D and 2L as ribs,more rarely winglets, on thoracic wall. Abdomen strongly inflated; no deep constrictions between segments. Funnel-shaped aperture festooned, or tubule-like.

Remarks: See comments under *EUSYRINGARTUS*. The type species is a junior subjective synonym of *Eucyrtidium fistuligerum* Ehrenberg, 1874b.

FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 35)

STATUS **VALID**

AGE ***EARLY PALEOCENE–LATE OLIGOCENE***

VALID
UNIQUE

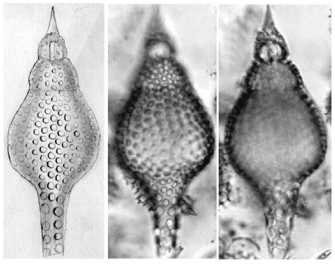
Type



50 µm

Eusyringium conosiphon
Haeckel, 1887: 1496, pl. 78, fig. 10

Type



100 µm

Eucyrtidium fistuligerum Ehrenberg
Ogane *et al.* 2009b: pl. 47, figs 3a, 3b, 3d [lectotype herein]

N - LINEAGE IV (J) THEOPERIDAE

GENUS **Eusyringartus**
Haeckel, 1887: 1496

SUBGENUS ***Eusyringium* (*Eusyringartus*)**

Remarks: Type species only illustrated by Haeckel (1887); the support image is a senior subjective synonym.

Original series: *Eucyrtidium fistuligerum* Ehrenberg, 1874b; *Eucyrtidium sipho* Ehrenberg, 1874b; *Eusyringium conosiphon* Haeckel, 1887; **Eusyringium leptosiphon* Haeckel, 1887; *Eusyringium macrosiphon* Haeckel, 1887 and *Eusyringium pachysiphon* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 35)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***EUSYRINGIUM***

SYN. (obj.)
UNIQUE

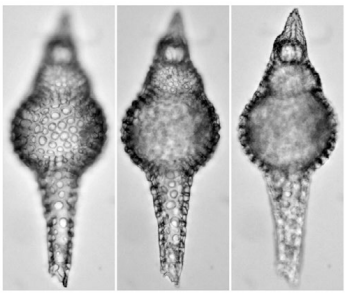
Type



50 µm

Eusyringium conosiphon
Haeckel, 1887: 1496, pl. 78, fig. 10

Support



50 µm

Eucyrtidium fistuligerum Ehrenberg
Topotypic material (Challenger Station 268), Suzuki's collection

N - Lineage IV (J) THEOPERIDAE

GENUS ***Pterosyringium***
Haeckel, 1887: 1319

SUBGENUS ***Pterocorys* (*Pterosyringium*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: **Pterocorys pipetta* Haeckel, 1887 and *Pterocorys tubulosa* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 218

SEE ***EUSYRINGIUM***

SYN.
UNIQUE

Type



50 µm

Pterocorys tubulosa
Haeckel, 1887: 1319, pl. 68, fig. 6

Support

NO IMAGE PUBLISHED

no image available

N - Lineage IV (J) THEOPERIDAE
ASSIGNED IN Haeckel 1882: 437

GENUS ***Rhopalocanium***
Ehrenberg, 1846: 385

Diagnosis: Theoperidae with a three-segmented shell. Cephalis globular with a stout A horn. D and 2L spines extended as ribs on thorax and long robust abdominal feet, sometimes with rough bases. Lateral wings on abdomen wall may be presented. Abdomen inverted-conical (sometimes with cylindrical extensions) with a narrow tubular closed aperture.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Rhopalocanium ornatum* Ehrenberg, 1847.

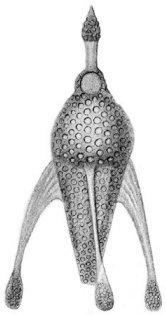
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***Late Paleocene–early Middle Miocene***

VALID
FREQUENT

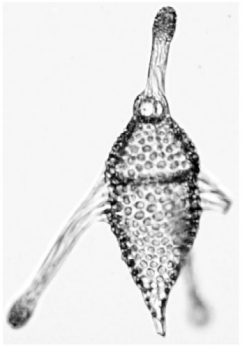
Type



50 µm

Rhopalocanium ornatum
Ehrenberg, 1847: 55, fig. 3

Support



50 µm

Rhopalocanium ornatum Ehrenberg
Nigrini *et al.* 2006: 47, pl. P4, fig. 15

N - Lineage IV (J) THEOPERIDAE

GENUS ***Artopera***
Haeckel, 1887: 1452

SUBGENUS ***Cyrtopera* (*Artopera*)**

Remarks: Homonym of *ARTOPERA* Haeckel, 1882: 438 (Polycystinea); see *ARTOPERINA nomen novum*. The support image is a junior subjective synonym of the type species.

Original series: *Artopera fusiformis* Haeckel, 1887; *Artopera motacilla* Haeckel, 1887 and *Lithornithium loxia* Ehrenberg, 1854c.

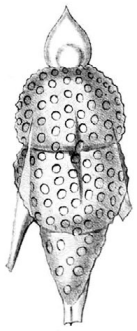
FIXATION SUBSEQUENT DESIGNATION (Campbell 1951: 529)

STATUS HOMONYM, JUNIOR SYNONYM

SEE ***ARTOPERINA nomen novum***

HOM.; SYN.

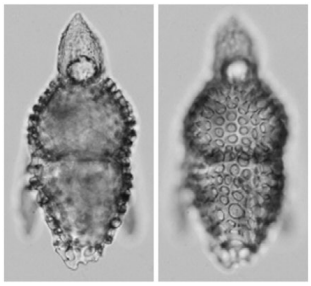
Type



50 µm

Lithornithium loxia
Ehrenberg, 1854c: pl. 36, fig. 8 [description in Haeckel, 1862: 335]

Support



50 µm

Rhopalatractus foveolatus Haeckel
Challenger Station 265, Suzuki's collection

N - Lineage IV (J) THEOPERIDAE

GENUS ***Artoperina*** *nomen novum* pro *Artopera*
Campbell, 1951: 529

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Artopera fusiformis* Haeckel, 1887; **Artopera motacilla* Haeckel, 1887 and *Lithornithium loxia* Ehrenberg, 1854c.

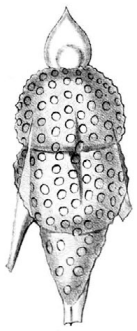
FIXATION SD according to ICZN, art. 67.8 (Campbell 1951: 529)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***RHOPALOCANIUM***

NOM. NOV.; SYN.
FREQUENT

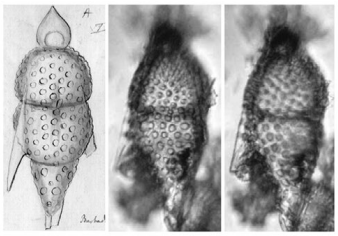
Type



50 µm

Lithornithium loxia
Ehrenberg, 1854c: pl. 36, fig. 8 [description in Haeckel, 1862: 335]

Type



50 µm

Lithcorithium loxia (Ehrenberg)
Ogane *et al.* 2009b: pl. 24, figs 1a-c [lectotype herein]

N - LINEAGE IV (J) THEOPERIDAE

GENUS ***Dictyatractus***
Haeckel, 1882: 436

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

Original series: *Rhopalatractus fenestratus* Haeckel, 1887.

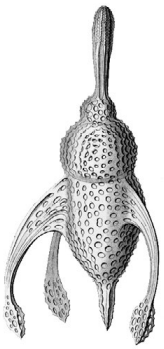
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***RHOPALOCANIUM***

SYN.
UNIQUE

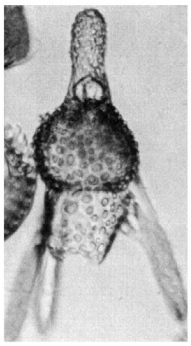
Type



100 µm

Rhopalatractus fenestratus
Haeckel, 1887: 1361, pl. 68, fig. 12

Support



50 µm

Rhopalocanium ornatum Ehrenberg
Sanfilippo & Blome 2001: 217, fig. 10o

N - LINEAGE IV (J) THEOPERIDAE

GENUS ***Rhopalatractus***
Haeckel, 1882: 436

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Rhopalatractus fenestratus* Haeckel, 1887; *Rhopalatractus foveolatus* Haeckel, 1887; **Rhopalatractus fusiformis* Haeckel, 1887 and *Rhopalatractus pentacanthus* Haeckel, 1887.

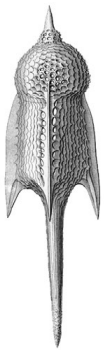
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D132)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***RHOPALOCANIUM***

SYN.
UNIQUE

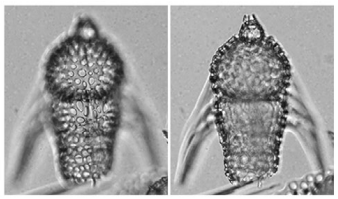
Type



100 µm

Rhopalatractus pentacanthus
Haeckel, 1887: 1361, pl. 68, fig. 11

Support



100 µm

Rhopalocanium ornatum Haeckel
Suzuki's collection (Late Paleocene-Early Eocene, Pacific Ocean)

N - LINEAGE IV (J) THEOPERIDAE

GENUS ***Rhopalocyrtis***
Bütschli, 1882b: 526

Remarks: No type species has been fixed for *RHOPALOCYRTIS*. Bütschli (1882b: 526) examined two Ehrenberg's species from Barbados that are close related to *RHOPALOCANIUM*; however, Bütschli considered that these two species are somewhat different by the more inflated third segment and he suggested the erection of a new genus "if necessary". For taxonomic stability, we fix the most appropriate species to regard this genus as a junior subjective synonym of *RHOPALOCANIUM*. The type species has been rarely illustrated. Only two species originally included at the time of the generic definition (both illustrated but rarely reported).

Original series: *Pterocanium bombus* Ehrenberg, 1874b and *Pterocanium*? *sphinx* Ehrenberg, 1874b.

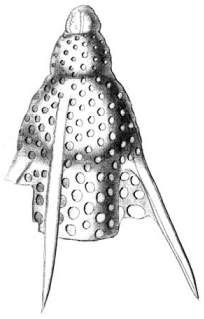
FIXATION NO TYPE SPECIES DESIGNATED (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***RHOPALOCANIUM***

SYN.
RARE

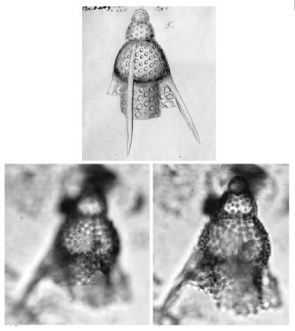
Type



50 µm

Pterocanium? *sphinx*
Ehrenberg, 1874b: 255 (unfigured); Ehrenberg, 1876: 82, pl. 17, fig. 5

Type



100 µm

Pterocanium sphinx Ehrenberg
Ogane *et al.* 2009b: pl. 1, figs 4a-c [lectotype herein]

N - LINEAGE IV (J) THEOPERIDAE

GENUS ***Pteropilium***
Haeckel, 1887: 1442

Remarks: Homonym of *PTEROPILIUM* Haeckel, 1882: 435 (Polycystinea); see *RHOPALOCYRTIS* (a new name is not required since it is a junior synonym). The type species has been rarely illustrated.

Original series: *Pterocanium bombus* Ehrenberg, 1874b; **Pteropilium pyramis* Haeckel, 1887 and *Pterocanium*? *sphinx* Ehrenberg, 1874b.

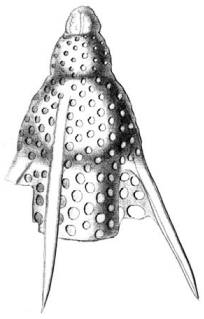
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D136)

STATUS HOMONYM, JUNIOR OBJECTIVE SYNONYM

SEE ***RHOPALOCYRTIS***

HOM.; SYN. (obj.)
RARE

Type



50 µm

Pterocanium? *sphinx*
Ehrenberg, 1874b: 255 (unfigured); Ehrenberg, 1876: 82, pl. 17, fig. 5

Support



50 µm

Stichopilidium sphinx (Ehrenberg)
Petrushevskaya & Kozlova 1972: 552, pl. 27, fig. 1

N - LINEAGE IV (J) THEOPERIDAE

GENUS ***Theopera***
Haeckel, 1882: 436

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Lithornithium luscinia* Ehrenberg, 1874b; *Theopera chytropus* Haeckel, 1887; *Theopera cortina* Haeckel, 1887; *Theopera fusiformis* Haeckel, 1887; *Theopera prismatica* Haeckel, 1887 and *Theopera pyramis* Haeckel, 1887.

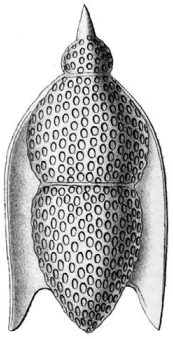
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D130)

STATUS JUNIOR SYNONYM
synonymized by Petrushevskaya 1981: 232

SEE ***RHOPALOCANIUM***

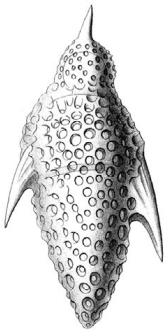
SYN.
UNIQUE

Type



Theopera prismatica
Haeckel, 1887: 1357, pl. 67, fig. 7

Support



Theopera fusiformis
Haeckel, 1887: 1357, pl. 67, fig. 5

N - LINEAGE IV (J) THEOPERIDAE

GENUS ***Theophaena***
Haeckel, 1887: 1394

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: *Theophaena corona* Haeckel, 1887 and **Theophaena nonaria* Haeckel, 1887.

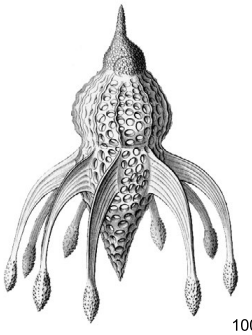
FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 219)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***RHOPALOCANIUM***

SYN.
UNIQUE

Type



Theophaena corona
Haeckel, 1887: 1394, pl. 70, fig. 12

Support

NO IMAGE PUBLISHED

no image available

N - LINEAGE IV (J) ? THEOPERIDAE

GENUS ***Hexalatractus***
Haeckel, 1887: 1393

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: *Hexalatractus fusiformis* Haeckel, 1887 and **Hexalatractus sexalatus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 219)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE ***? RHOPALOCANIUM***

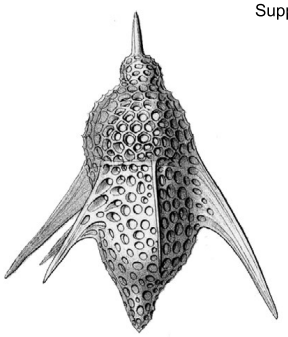
N.D.

Type

UNFIGURED SPECIES

Hexalatractus sexalatus
Haeckel, 1887: 1394, unfigured

Support



Hexalatractus fusiformis
Haeckel, 1887: 1394, pl. 68, fig. 13

N - LINEAGE IV (J) THEOPERIDAE
ASSIGNED HEREIN

GENUS ***Stichopilidium***
Haeckel, 1887: 1438

SUBGENUS ***Stichopilium* (*Stichopilidium*)**

Diagnosis: Theoperidae with a four-segmented shell. Inner cephalic structure undescribed. A horn well-differentiated. D and 2L spines extended as long relatively horizontal thoracic feet. Post-thoracic part of the shell subcylindrical. Aperture open, shapeless.

Remarks: Type species only illustrated by Haeckel (1887); the support image is a synonym in open nomenclature.

Original series: *Stichopilium macropterum* Haeckel, 1887; **Stichopilium pectinatum* Haeckel, 1887 and **Stichopilium thoracopterum* Haeckel, 1887.

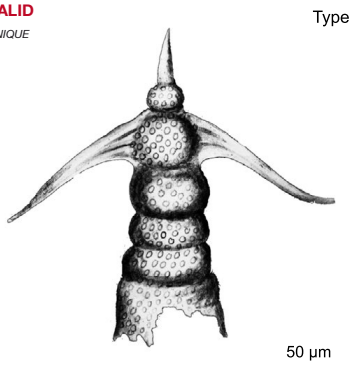
FIXATION SUBSEQUENT DESIGNATION (Frizzell & Middour 1951: 32)

STATUS **VALID**

AGE ***LATE MIDDLE EOCENE–LATE EOCENE***

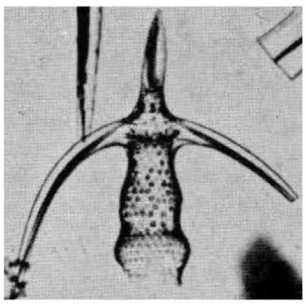
VALID
UNIQUE

Type



Stichopilium macropterum
Haeckel, 1887: 1438, unfigured [specimen of Bury 1862: pl. 17, fig. 7]

Support



Theoperid gen. et sp. indet.
Riedel & Sanfilippo, 1977: pl. 12, fig. 4

N - Lineage IV (J) ? THEOPERIDAE

GENUS ***Sestrornithium***
Haeckel, 1882: 436

Remarks: Monospecific genus. Because no other figures are available, the support image is a similar species cited by Haeckel under the description of the type species (similar to *Lithornithium fringilla* Haeckel, 1887: pl. 67, fig. 2).

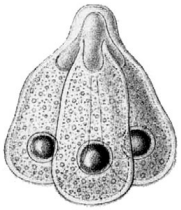
Original series: *Sethornithium dictyopterum* Haeckel, 1887.

FIXATION SUBSEQUENT MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

N.D.
UNIQUE

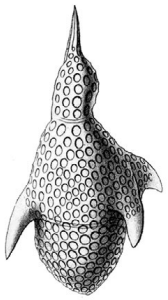
Type



50 µm

Sethornithium dictyopterum
Haeckel, 1887: 1356, pl. 68, fig. 14

Support



50 µm

Lithornithium fringilla
Haeckel, 1887: 1355, pl. 67, fig. 2

N - Lineage IV (J) ? THEOPERIDAE

GENUS ***Sethornithium***
Haeckel, 1887: 1356
INCORRECT SUBSEQUENT SPELLING

Remarks: An incorrect subsequent spelling for *SESTRORNITHIUM*. By referring back to p. 436 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *SETHORNITHIUM* to be an emendation of the name *SESTRORNITHIUM* which is unjustified according to the provisions of ICZN art. 33.3. Genus described as monospecific at the time of the generic definition.

Original series: *Sethornithium dictyopterum* Haeckel, 1887.

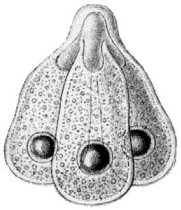
FIXATION SUBSEQUENT MONOTYPY; ICZN, art. 67.6

STATUS INVALID NAME
designated herein

SEE ***SESTRORNITHIUM***

INV.

Type



50 µm

Sethornithium dictyopterum
Haeckel, 1887: 1356, pl. 68, fig. 14

Support

NO IMAGE PUBLISHED

no image available

N - Lineage incertae INCERTAE FAMILIAE
ASSIGNED IN Nishimura 1992: 358

GENUS ***Aspis***
Nishimura, 1992: 358

Diagnosis: Multicyrtid with a three (?) segmented shell. Thick-walled cephalis with a stout A horn and a thick tube-like structure (V ?) near the collar area. Elongated thorax with D and 2L lateral wings/feet at base. Abdomen (?) broken.

Remarks: Only two species originally included at the time of the generic definition (both rarely illustrated). *Aspis murus* is distinguished from *Aspis velutochlamydosaurus* by lacking solid, rod-like feet.

Original series: *Aspis murus* Nishimura, 1992 and *Aspis velutochlamydosaurus* Nishimura, 1992.

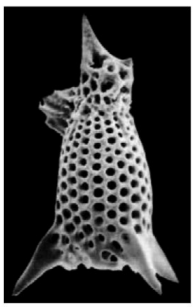
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***Middle Paleocene–Late Paleocene***

VALID
RARE

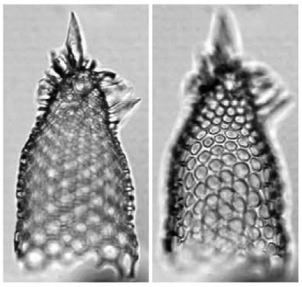
Type



50 µm

Aspis velutochlamydosaurus
Nishimura, 1992: 360, pl. 10, figs 8

Support



50 µm

Aspis murus Nishimura
Hollis 2002: 303, pl. 5, figs 11a, 11b

C - Colonial Lineage COLLOPHIDIIDAE
ASSIGNED IN Biard & Suzuki IN Biard *et al.* 2015: 384

GENUS ***Collophidium***
Haeckel, 1887: 26

SUBGENUS ***Collozoum* (*Collophidium*)**

Diagnosis: Colonial Collodaria with colonies of tens to hundreds of cells enclosed with algal symbionts in a firm gelatinous material of different apparent form and size. No siliceous skeleton.

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: **Collozoum contortum* Haeckel, 1887; *Collozoum serpentinum* Haeckel, 1887 and *Collozoum vermiforme* Haeckel, 1887.

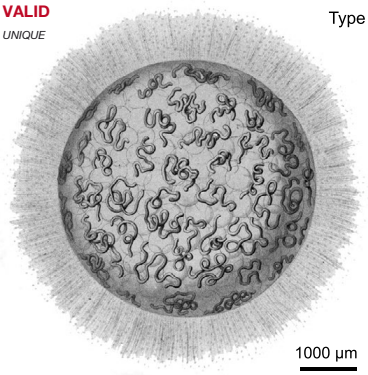
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D44)

STATUS **VALID**

AGE ***Living***

VALID
UNIQUE

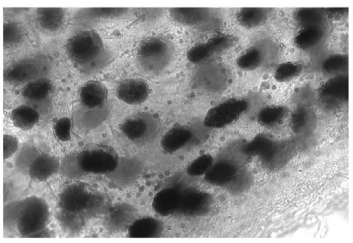
Type



1000 µm

Collozoum serpentinum
Haeckel, 1887: 26, pl. 3, fig. 1

Support



200 µm

Collophidium sp.
Suzuki's collection (plankton, East China Sea)

C - Colonial Lineage — ? COLLOPHIDIIDAE

GENUS ***Colloprunum***
Haeckel, 1887: 25

SUBGENUS ***Collozoum* (*Colloprunum*)**

Remarks: Type species never figured; only two species originally included at the time of the generic definition.

Original series: *Collozoum ellipsoides* Haeckel, 1887 and **Collozoum ovatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D44)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

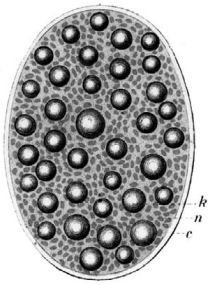
SEE ***? COLLOPHIDIUM***

N.D. — Type

UNFIGURED SPECIES

Collozoum ovatum
Haeckel, 1887: 25, unfigured

Support



100 µm

Collozoum ellipsoides
Haeckel, 1887: 26, pl. 3, fig. 9

C - Colonial Lineage — COLLOSPHAERIDAE
ASSIGNED IN Haeckel 1887: 94

GENUS ***Choenicosphaera***
Haeckel, 1887: 102

NOMINOTYPE ***Choenicosphaera* (*Choenicosphaera*)**

Diagnosis: Colonial Collodaria with cells scattered in a gelatin envelope. Each cell with one cortical shell having a fenestrated wall with a few large pores surrounded with coronals or tiny spicules.

Remarks: See comments under *CHOENICOSPHAERULA*.

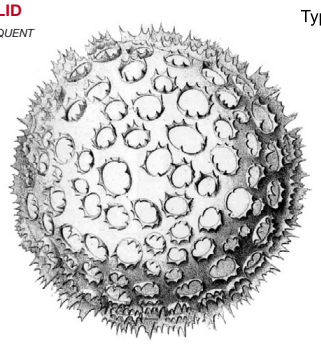
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS **VALID**

AGE ***EARLY LATE MIOCENE–LIVING***

VALID
FREQUENT

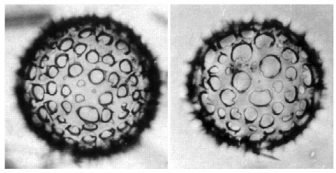
Type



50 µm

Choenicosphaera murrayana
Haeckel, 1887: 102, pl. 8, fig. 4

Support



100 µm

Acrosphaera murrayana (Haeckel)
Nigrini & Caulet 1992: 144, pl. 1, figs 2, 4

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS ***Choenicosphaerula***
Haeckel, 1887: 102

SUBGENUS ***Choenicosphaera* (*Choenicosphaerula*)**

Remarks: Only the type species was figured for this genus (frequently reported). The support image is a senior subjective synonym of the type species; just two species originally included at the time of the generic definition.

Original series: **Choenicosphaera flosculenta* Haeckel, 1887 and *Choenicosphaera murrayana* Haeckel, 1887.

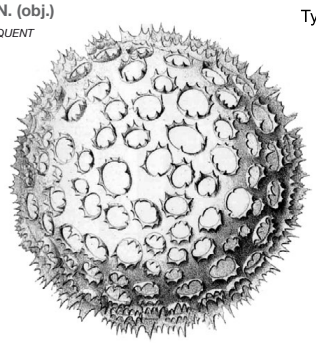
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CHOENICOSPHAERA***

SYN. (obj.)
FREQUENT

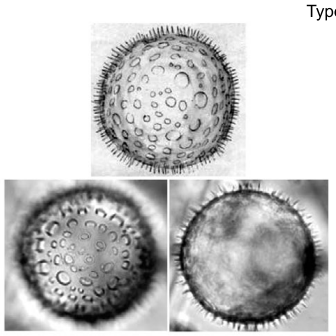
Type



50 µm

Choenicosphaera murrayana
Haeckel, 1887: 102, pl. 8, fig. 4

Type



50 µm

Cenosphaera hirsuta Ehrenberg
Suzuki *et al.* 2009a: pl. 68, figs 5a-5c [lectotype herein]

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS ***Choenicosphaerium***
Haeckel, 1887: 103

SUBGENUS ***Choenicosphaera* (*Choenicosphaerium*)**

Remarks: The type species has been frequently figured. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Choenicosphaera flammabunda* Haeckel, 1887 and *Choenicosphaera nassiterna* Haeckel, 1887.

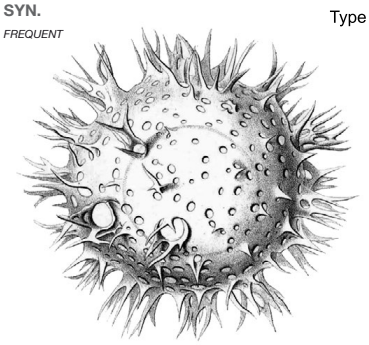
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CHOENICOSPHAERA***

SYN.
FREQUENT

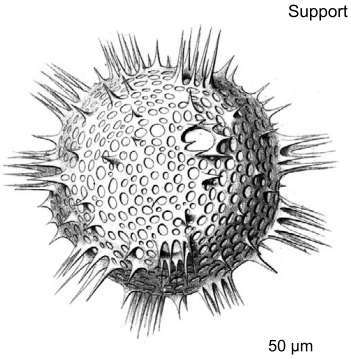
Type



50 µm

Choenicosphaera flammabunda
Haeckel, 1887: 103, pl. 8, fig. 5

Support



50 µm

Choenicosphaera nassiterna
Haeckel, 1887: 103, pl. 8, fig. 3

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Coronosphaera**
Haeckel, 1887: 117

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Coronosphaera calycina* Haeckel, 1887; **Coronosphaera convolvulus* Haeckel, 1887 and *Coronosphaera diadema* Haeckel, 1887.

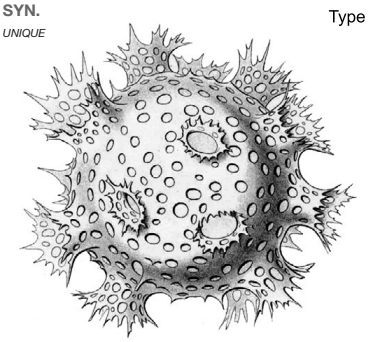
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CHOENICOSPHAERA***

SYN.
UNIQUE

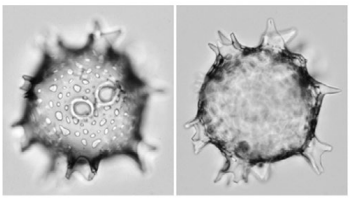
Type



50 µm

Coronosphaera diadema
Haeckel, 1887: 117, pl. 7, fig. 3

Support



100 µm

Coronosphaera diadema Haeckel
Challenger Station 225, Suzuki's collection

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Trypanosphaera**
Haeckel, 1887: 109

NOMINOTYPE ***Trypanosphaera* (*Trypanosphaera*)**

Remarks: See comments under *TRYPANOSPHAERULA*.

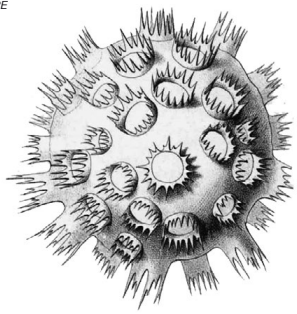
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS JUNIOR SYNONYM
synonymized by Menshutkin & Petrushevskaya 1989: 91

SEE ***CHOENICOSPHAERA***

SYN.
RARE

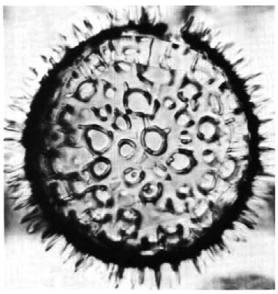
Type



50 µm

Trypanosphaera trepanata
Haeckel, 1887: 110, pl. 5, fig. 4

Support



50 µm

Trypanosphaera trepanata Haeckel
Goll 1980: 436, pl. 2, fig. 7

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Trypanosphaerula**
Haeckel, 1887: 109

SUBGENUS ***Trypanosphaera* (*Trypanosphaerula*)**

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: **Trypanosphaera dentata* Haeckel, 1887 and *Trypanosphaera trepanata* Haeckel, 1887.

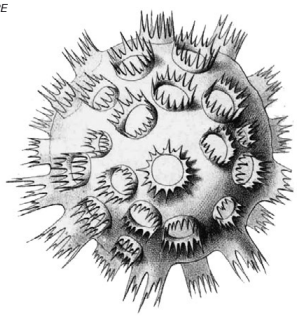
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***TRYPANOSPHAERA***

SYN. (obj.)
RARE

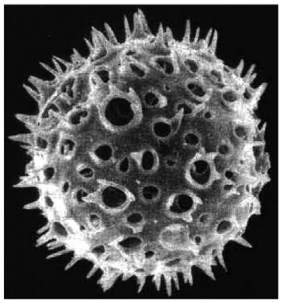
Type



50 µm

Trypanosphaera trepanata
Haeckel, 1887: 110, pl. 5, fig. 4

Support



50 µm

Choenicosphaera trepanata (Haeckel)
Sugiyama *et al.* 1992: pl. 6, fig. 3

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Trypanosphaerium**
Haeckel, 1887: 110

SUBGENUS ***Trypanosphaera* (*Trypanosphaerium*)**

Remarks: A single report of the type species after the first illustration.

Original series: *Trypanosphaera coronata* Haeckel, 1887; *Trypanosphaera transformata* Haeckel, 1887 and **Trypanosphaera terebrata* Haeckel, 1887.

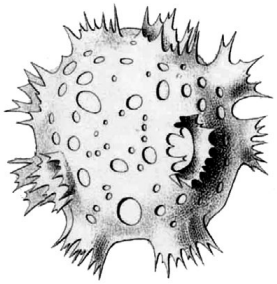
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***CHOENICOSPHAERA***

SYN.
VERY RARE

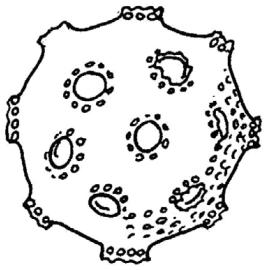
Type



50 µm

Trypanosphaera coronata
Haeckel, 1887: 110, pl. 5, fig. 3

Support



50 µm

Siphonosphaera (*Disolenia*) *coronata* (Haeckel)
Menshutkin & Petrushevskaya 1989: 95, fig. 31

C - Colonial Lineage — COLLOSPHAERIDAE
ASSIGNED IN Haeckel 1882: 472

GENUS **Clathrosphaera**
Haeckel, 1882: 472

NOMINOTYPE ***Clathrosphaera* (*Clathrosphaera*)**

Diagnosis: Colonial Collodaria with cells scattered in a gelatin envelope. Each cell with one cortical shell having a fenestrated wall with a few large pores, some of them connected by a fine bars meshwork.

Remarks: See comments under *CLATHROSPHAERULA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS **VALID**

AGE ***Holocene–Living***

VALID
FREQUENT

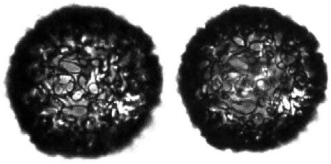
Type



50 µm

Clathrosphaera circumtexta
Haeckel, 1887: 118, pl. 8, fig. 6

Support



100 µm

Clathrosphaera circumtexta Haeckel
Chen & Tan 1996: 162, pl. 4, figs 3, 4

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Clathrosphaerula**
Haeckel, 1887: 118

SUBGENUS ***Clathrosphaera* (*Clathrosphaerula*)**

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Clathrosphaera circumtexta* Haeckel, 1887.

FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***CLATHROSPHAERA***

SYN. (obj.)
FREQUENT

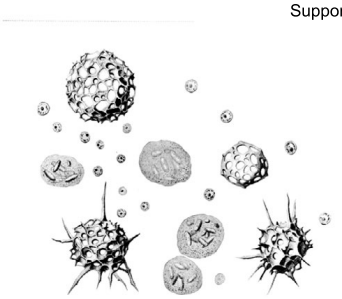
Type



50 µm

Clathrosphaera circumtexta
Haeckel, 1887: 118, pl. 8, fig. 6

Support



200 µm

Acrosphaera circumtexta (Haeckel)
Popofsky 1917: 254, pl. 15, fig. 3 (colony)

C - Colonial Lineage — COLLOSPHAERIDAE
ASSIGNED IN Müller 1859b: 17

GENUS **Collosphaera**
Müller, 1855a: 238

NOMINOTYPE ***Collosphaera* (*Collosphaera*)**

Diagnosis: Colonial Collodaria with cells scattered in a gelatin envelope. Each cell with one cortical shell having a porous wall without significantly larger pores, Pore simple. No spinules.

Remarks: *COLLOSPHAERA* differs from *CLATHROSPHAERA* in that the latter has edged wall encircling pores. See also comments under *DYSCOLLOSPHAERA*.

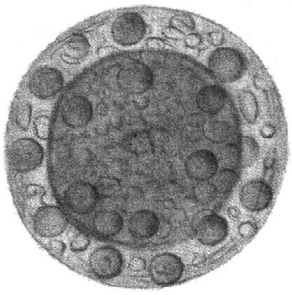
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D51)

STATUS **VALID**

AGE ***Early Early Miocene–Living***

VALID
FREQUENT

Type



50 µm

Thalassicolla (*Collosphaera*) *huxleyi*
Müller, 1855a: 238 (unfigured); Müller, 1859b: 55, pl. 8, fig. 6

Type



50 µm

Collosphaera huxleyi Müller
Sakai *et al.* 2009: 50, pl. 3, fig. 3 [neotype herein]

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Dyscollosphaera**
Haeckel, 1887: 96

SUBGENUS ***Collosphaera* (*Dyscollosphaera*)**

Remarks: Type species frequently reported.

Original series: *Collosphaera irregularis* Haeckel, 1887; **Collosphaera polyedra* Haeckel, 1887; *Collosphaera polygona* Haeckel, 1887; **Collosphaera pyriformis* Haeckel, 1887; **Collosphaera tuberosa* Haeckel, 1887 and *Thalassicolla* (*Collosphaera*) *huxleyi* Müller, 1855a.

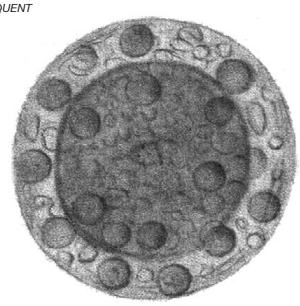
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D51)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***COLLOSPHAERA***

SYN. (obj.)
FREQUENT

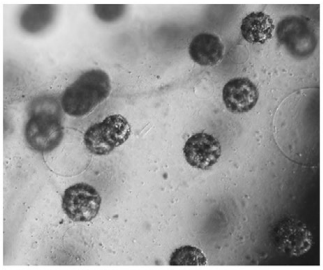
Type



50 µm

Thalassicolla (*Collosphaera*) *huxleyi*
Müller, 1855a: 238 (unfigured); Müller, 1859b: 55, pl. 8, fig. 6 [lectotype herein]

Support



200 µm

Collosphaera huxleyi Müller
Suzuki's collection (plankton, off Sesoko Island, Japan)

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Conosphaera**
Haeckel, 1882: 450

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Conosphaera orthoconus* Haeckel, 1887; *Conosphaera plagioconus* Haeckel, 1887 and *Conosphaera platyconus* Haeckel, 1887.

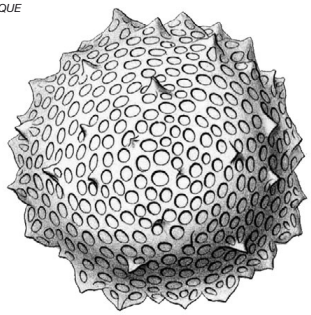
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D63)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***COLLOSPHAERA***

SYN.
UNIQUE

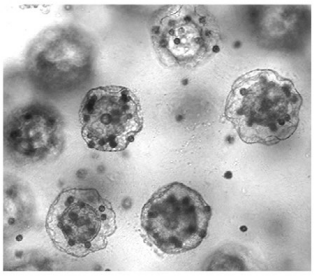
Type



50 µm

Conosphaera platyconus
Haeckel, 1887: 221, pl. 12, fig. 3

Support



200 µm

Conosphaera platyconus Haeckel
Suzuki's collection (plankton, East China Sea)

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Myxosphaera**
Brandt, 1885: 254

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Sphaerozoum coeruleum* Haeckel, 1861b.

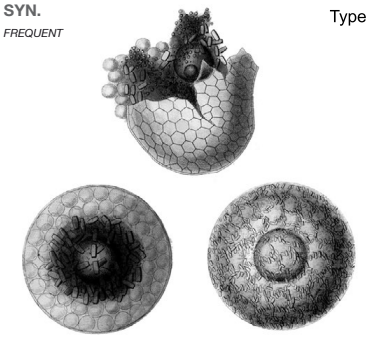
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***COLLOSPHAERA***

SYN.
FREQUENT

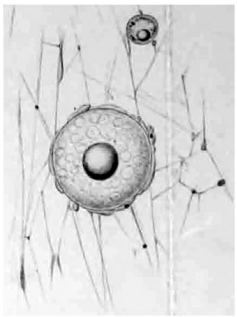
Type



~ 500 µm

Sphaerozoum coeruleum
Haeckel, 1861b: 845 (unfigured); Haeckel, 1862: 523, pl. 32, figs 6-8

Support



~ 500 µm

Myxosphaera coerulea (Haeckel)
Brandt 1885: pl. 2, fig. 18

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Collodiscus**
Haeckel, 1887: 27

SUBGENUS ***Collozoum* (*Collodiscus*)**

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: **Collozoum discoideum* Haeckel, 1887 and *Sphaerozoum coeruleum* Haeckel, 1861b.

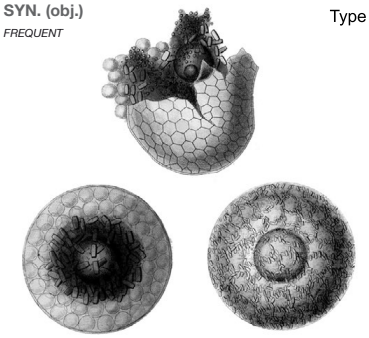
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D44)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***MYXOSPHAERA***

SYN. (obj.)
FREQUENT

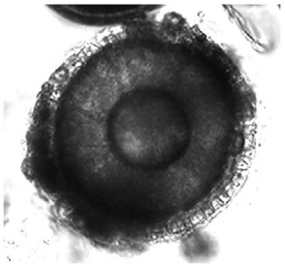
Type



~ 500 µm

Sphaerozoum coeruleum
Haeckel, 1861b: 845 (unfigured); Haeckel, 1862: 523, pl. 32, figs 6-8

Support



25 µm

Myxosphaera coerulea (Haeckel)
Tuji's collection (plankton, North Pacific)

C - Colonial Lineage — ? COLLOSPHAERIDAE

GENUS **Eucollosphaera**
Haeckel, 1887: 95

SUBGENUS ***Collosphaera* (*Eucollosphaera*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Collosphaera globularis* Haeckel, 1887; **Collosphaera primordialis* Haeckel, 1887 and **Collosphaera regularis* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D51)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Collosphaera primordialis
Haeckel, 1887: 95, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - Colonial Lineage — COLLOSPHAERIDAE
assigned in Campbell 1954: D52

genus ***Disolenia***
Ehrenberg, 1861b: 831

Diagnosis: Colonial Collodaria with cells scattered in a gelatin envelope. Each cell with one cortical shell having a porous wall with two to five, rarely six, large pores; larger pores with porous tubes terminally rough.

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated). See extended comment in Matsuzaki *et al.* (2015) concerning the type species.

Original series: *Tetrasolenia quadrata* Ehrenberg, 1873a and *Trisolenia zanguebarica* Ehrenberg, 1873a.

fixation SUBSEQUENT DESIGNATION (Suzuki in Matsuzaki *et al.* 2015: 6)

status **VALID**

age ***EARLY EARLY MIOCENE–LIVING***

VALID
FREQUENT

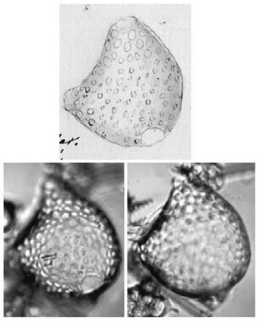
Type



50 µm

Trisolenia zanguebarica
Ehrenberg, 1873a: 321 (unfigured); Ehrenberg, 1873b: 300-301, pl. 10, fig. 11

Type



50 µm

Trisolenia zanguebarica Ehrenberg
Suzuki *et al.* 2009a: pl. 68, figs 2a-c [lectotype herein]

C - Colonial Lineage — COLLOSPHAERIDAE

genus ***Tetrasolenia***
Ehrenberg, 1861b: 833

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Tetrasolenia quadrata* Ehrenberg, 1873a.

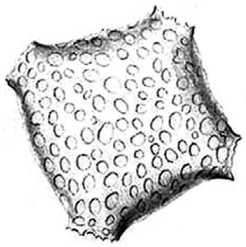
fixation SUBSEQUENT MONOTYPY

status JUNIOR SYNONYM
synonymized by Campbell 1954: D52

see ***DISOLENIA***

SYN.
FREQUENT

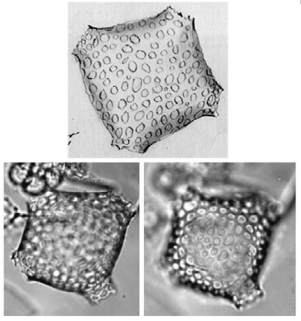
Type



50 µm

Tetrasolenia quadrata
Ehrenberg, 1873a: 320 (unfigured); Ehrenberg, 1873b: 300-301, pl. 10, fig. 20

Type



50 µm

Tetrasolenia quadrata Ehrenberg
Suzuki *et al.* 2009a: pl. 68, figs 1a-c [lectotype herein]

C - Colonial Lineage — COLLOSPHAERIDAE

genus ***Solenosphaera***
Haeckel, 1887: 112

nominotype ***Solenosphaera* (*Solenosphaera*)**

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Tetrasolenia quadrata* Ehrenberg, 1873a.

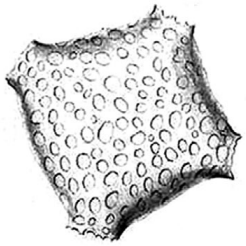
fixation SUBSEQUENT MONOTYPY

status JUNIOR OBJECTIVE SYNONYM
synonymized by Haeckel 1887: 113

see ***TETRASOLENIA***

SYN. (obj.)
FREQUENT

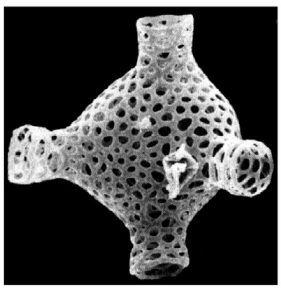
Type



50 µm

Tetrasolenia quadrata
Ehrenberg, 1873a: 320 (unfigured); Ehrenberg, 1873b: 300-301, pl. 10, fig. 20

Support



50 µm

Disolenia quadrata (Ehrenberg)
Takahashi 1991: 57, pl. 5, fig. 5

C - Colonial Lineage — COLLOSPHAERIDAE

genus ***Trisolenia***
Ehrenberg, 1861b: 833

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Trisolenia megalactis* Ehrenberg, 1873a.

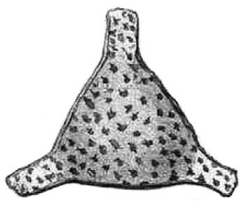
fixation SUBSEQUENT MONOTYPY

status JUNIOR SYNONYM
synonymized by Haeckel 1887: 114

see ***DISOLENIA***

SYN.
FREQUENT

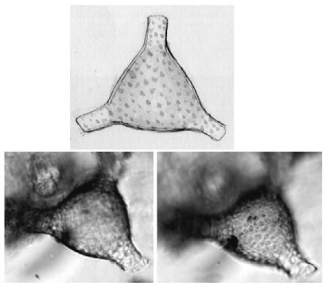
Type



50 µm

Trisolenia megalactis
Ehrenberg, 1861b: 824 (n.n.); Ehrenberg, 1873a: 321 (unfigured); Ehrenberg, 1873b: 300-301, pl. 8, fig. 19

Type



50 µm

Trisolenia megalactis Ehrenberg
Suzuki *et al.* 2009a: pl. 51, figs 8a-c [lectotype herein]

C - Colonial Lineage — COLLOSPHAERIDAE
assigned in Haeckel 1887: 94

genus **Otosphaera**
Haeckel, 1887: 116

Diagnosis: Colonial Collodaria with cells scattered in a gelatin envelope. Each cell with one cortical shell having a fenestrated wall and pit-like pores with tubes. Tube ends closed or with fenestrated spines.

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

Original series: *Otosphaera auriculata* Haeckel, 1887 and *Otosphaera polymorpha* Haeckel, 1887.

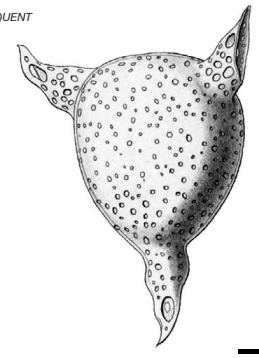
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D52)

status **VALID**

age ***Late Early Miocene–Living***

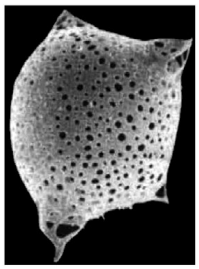
VALID
FREQUENT

Type



Otosphaera polymorpha
Haeckel, 1887: 116, pl. 7, fig. 6

Support



Otosphaera polymorpha Haeckel
Nishimura & Yamauchi 1984: 18, pl. 1, fig. 13

C - Colonial Lineage — COLLOSPHAERIDAE
assigned in Campbell 1954: D52

genus **Polysolenia**
Ehrenberg, 1861b: 832

Diagnosis: Colonial Collodaria with cells scattered in a gelatin envelope. Each cell with one cortical shell having a spinose, fenestrated, wall with a few large pores through a rough surface (sometimes mammae).

Remarks: Only two species originally included at the time of the generic definition (both illustrated, but the type species figured just once after the first illustration).

Original series: *Polysolenia abyssi* Ehrenberg, 1873a and *Polysolenia setosa* Ehrenberg, 1873a.

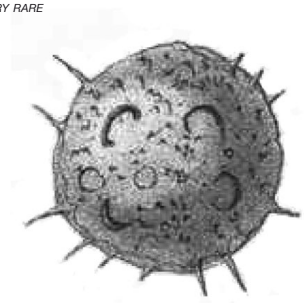
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D52)

status **VALID**

age ***Early Middle Miocene–Living***

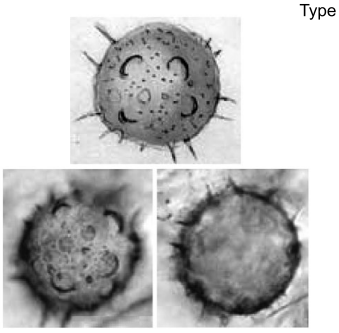
VALID
VERY RARE

Type



Polysolenia setosa
Ehrenberg, 1861b: 824 (n.n.); Ehrenberg, 1873a: 318 (unfigured); Ehrenberg, 1873b: 298-299, pl. 8, fig. 10

Type



Polysolenia setosa Ehrenberg
Suzuki *et al.* 2009a: pl. 51, figs 6a-c [lectotype herein]

C - Colonial Lineage — COLLOSPHAERIDAE

genus **Acrosphaera**
Haeckel, 1882: 471

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. Placed as objective synonymy of *POLYSOLENIA* by Campbell (1954: D52), however this seems inappropriate because Haeckel does not included *ACROSPHAERA* as a subgneus of *POLYSOLENIA*. Type species by subsequent monotypy (see Brandt 1885: 263).

Original series: *Collosphaera spinosa* Haeckel, 1861b.

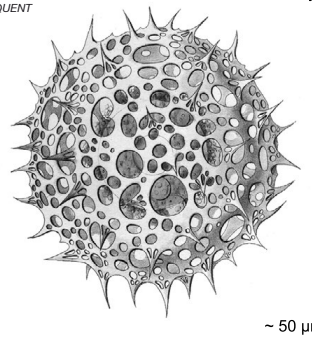
fixation SUBSEQUENT MONOTYPY

status JUNIOR SYNONYM
synonymized by Nigrini 1967: 14

see ***POLYSOLENIA***

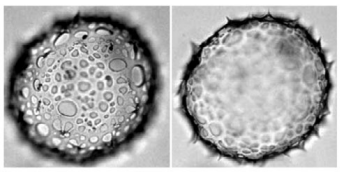
SYN.
FREQUENT

Type



Collosphaera spinosa
Haeckel, 1861b: 845 (unfigured); Haeckel, 1862: 536, pl. 34, fig. 12

Type



Collosphaera spinosa Haeckel
Sakai *et al.* 2009: 50, pl. 8, figs 4a, 4b [neotype herein]

C - Colonial Lineage — COLLOSPHAERIDAE

genus **Clathrosphaerium**
Haeckel, 1887: 118

subgenus ***Clathrosphaera* (*Clathrosphaerium*)**

Remarks: Only the type species clearly belongs to this genus (rarely reported); just two species originally included at the time of the generic definition.

Original series: *Clathrosphaera arachnoides* Haeckel, 1887 and *Clathrosphaera lamellosa* Haeckel, 1887.

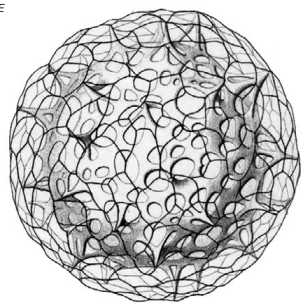
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D52)

status JUNIOR SYNONYM
synonymized by Matsuzaki *et al.* 2015: 4

see ***POLYSOLENIA***

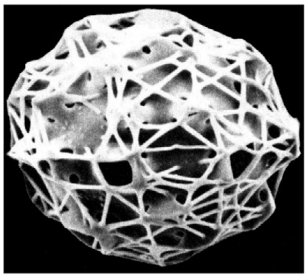
SYN.
RARE

Type



Clathrosphaera arachnoides
Haeckel, 1887: 119, pl. 8, fig. 7

Support



Clathrosphaera arachnoides Haeckel
Takahashi 1991: 55, pl. 1, fig. 15

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS ***Mazosphaera***
Ehrenberg, 1861b: 832

Remarks: Monospecific genus. Because no other figures are available, the support image is selected among those species subsequently assigned to this genus. Based on molecular phylogenetics, *MAZOSPHAERA* and *POLYSOLENIA* can been separated; albeit, from a morphological point of view, both genera are nearly identical

Original series: *Mazosphaera apicata* Ehrenberg, 1873a.

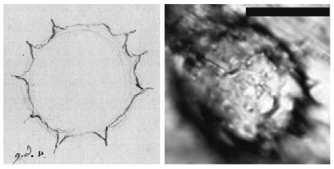
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Menshutkin & Petrushevskaya 1989: 93

SEE ***POLYSOLENIA***

SYN.
VERY RARE

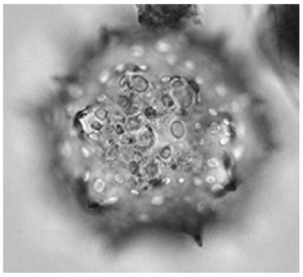
Type



50 µm

Mazosphaera apicata
Ehrenberg, 1861a: 768 (n.n.); Ehrenberg, 1873a: 316 (unfigured); Suzuki *et al.* 2009a: pl. 51, figs 1a, 1b [lectotype herein]

Support



50 µm

Mazosphaera laevis Ehrenberg
Suzuki's collection (plankton, North Pacific)

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS ***Odontosphaera***
Haeckel, 1887: 101

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Odontosphaera cyrtodon* Haeckel, 1887 and *Odontosphaera monodon* Haeckel, 1887.

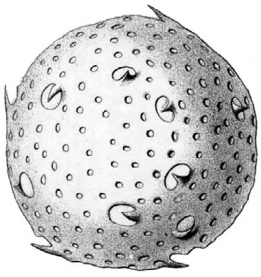
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***POLYSOLENIA***

SYN.
UNIQUE

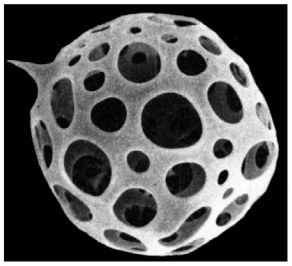
Type



50 µm

Odontosphaera monodon
Haeckel, 1887: 102, pl. 5, fig. 5

Support



50 µm

Acrosphaera cyrtodon Haeckel
Takahashi 1991: 55, pl. 1, fig. 12

C - Colonial Lineage — ? COLLOSPHAERIDAE

GENUS ***Xanthiosphaera***
Haeckel, 1882: 472

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Xanthiosphaera capillacea* Haeckel, 1887; *Xanthiosphaera erinacea* Haeckel, 1887 and *Xanthiosphaera lappacea* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *POLYSOLENIA***

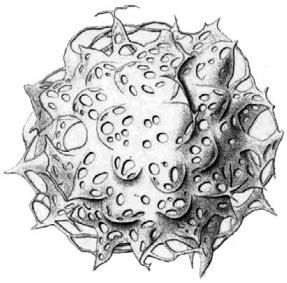
N.D.

Type

UNFIGURED SPECIES

Xanthiosphaera capillacea
Haeckel, 1887: 119, unfigured

Support



25 µm

Xanthiosphaera lappacea
Haeckel, 1887: 120, pl. 8, fig. 10

C - Colonial Lineage — COLLOSPHAERIDAE
ASSIGNED IN Haeckel 1887: 94

GENUS ***Siphonosphaera***
Müller, 1859b: 59

NOMINOTYPE ***Siphonosphaera* (*Siphonosphaera*)**

Diagnosis: Colonial Collodaria with cells scattered in a gelatin envelope. Each cell with one cortical shell having a fenestrated, porous, wall with a few large pores, the larger ones associated with a poreless open tube.

Remarks: See comments under *HOLOSIPHONIA*.

Original series: *Collosphaera*? *tubulosa* Müller, 1855a.

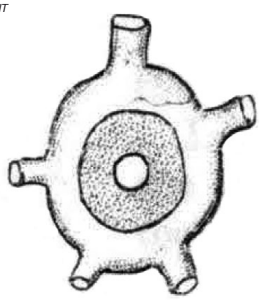
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LATE MIDDLE MIOCENE–LIVING***

VALID
FREQUENT

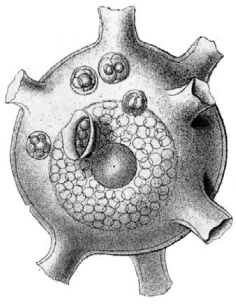
Type



~ 50 µm

Collosphaera? *tubulosa*
Müller, 1855a: 243, unfigured [specimen of Huxley 1851: pl. 16, fig. 5]

Support



50 µm

Siphonosphaera tubulosa Müller
Haeckel 1887: 105, pl. 6, fig. 4

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Holosiphonia**
Haeckel, 1887: 104

SUBGENUS ***Siphonosphaera* (*Holosiphonia*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Collosphaera*? *tubulosa* Müller, 1855a; *Siphonosphaera conifera* Haeckel, 1887; *Siphonosphaera cyathina* Haeckel, 1887; **Siphonosphaera fragilis* Haeckel, 1887; **Siphonosphaera infundibulum* Haeckel, 1887; **Siphonosphaera marginata* Haeckel, 1887; **Siphonosphaera pansiphonia* Haeckel, 1887 and *Siphonosphaera patinaria* Haeckel, 1887.

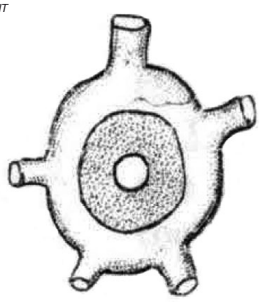
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SIPHONOSPHAERA***

SYN. (obj.)
FREQUENT

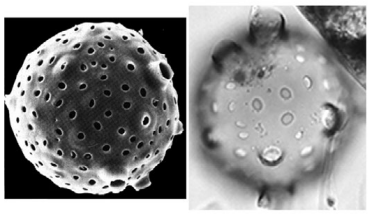
Type



~ 50 µm

Collosphaera? *tubulosa*
Müller, 1855a: 243, unfigured [specimen of Huxley 1851: pl. 16, fig. 5]

Support



50 µm

Siphonosphaera tubulosa (Müller)
Anderson & Swanberg 1981: pl. 1, fig. 5 (SEM); Suzuki's collection (Quaternary, Plankton Pacific)

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Merosiphonia**
Haeckel, 1887: 106

SUBGENUS ***Siphonosphaera* (*Merosiphonia*)**

Remarks: Type species frequently reported.

Original series: *Siphonosphaera chonophora* Haeckel, 1887; **Siphonosphaera macrosiphonia* Haeckel, 1887; *Siphonosphaera pipetta* Haeckel, 1887; **Siphonosphaera polysiphonia* Haeckel, 1887; *Siphonosphaera serpula* Haeckel, 1887 and *Siphonosphaera socialis* Haeckel, 1887.

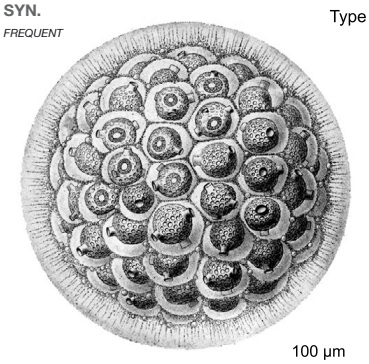
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D108)

STATUS JUNIOR SYNONYM
synonymized by Riedel 1971: 651

SEE ***SIPHONOSPHAERA***

SYN.
FREQUENT

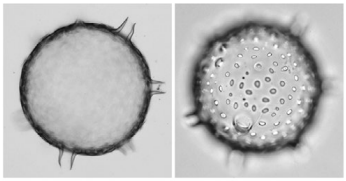
Type



100 µm

Siphonosphaera socialis
Haeckel, 1887: 106, pl. 6, fig. 2

Support



50 µm

Siphonosphaera socialis Haeckel
Zhang's collection (South China Sea)

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Solenosphactra**
Haeckel, 1887: 113

SUBGENUS ***Solenosphaera* (*Solenosphactra*)**

Remarks: No type species was designated. Type species frequently reported. Campbell (1954: D52) considers *SOLENOPHACTRA* Haeckel, 1887 to be an objective synonym of *DISOLENIA* Ehrenberg, 1861a. However, this seems inappropriate as the type species designated by Campbell for *DISOLENIA*, *Disolenia follis* Ehrenberg, 1861a (n.n.), was not among those species originally assigned to *SOLENOPHACTRA*.

Original series: *Solenosphaera pandora* Haeckel, 1887; *Solenosphaera serpentina* Haeckel, 1887; *Tetrasolenia quadrata* Ehrenberg, 1873a and *Trisolenia megalactis* Ehrenberg, 1873a.

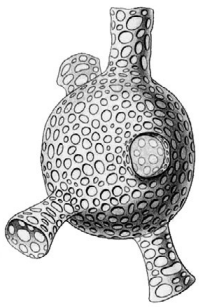
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized by Menshutkin & Petrushevskaya 1989: 95

SEE ***SIPHONOSPHAERA***

SYN.
FREQUENT

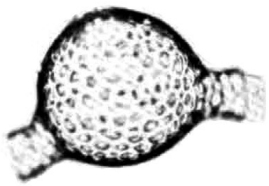
Type



50 µm

Solenosphaera pandora
Haeckel, 1887: 113, pl. 7, fig. 10

Support



50 µm

Solenosphaera pandora Haeckel
Bjørklund 1973: pl. 1, fig. f

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Solenosphenia**
Haeckel, 1887: 114

SUBGENUS ***Solenosphaera* (*Solenosphenia*)**

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Solenosphaera ascensionis* Haeckel, 1887 and *Tetrasolenia venosa* Ehrenberg, 1873b.

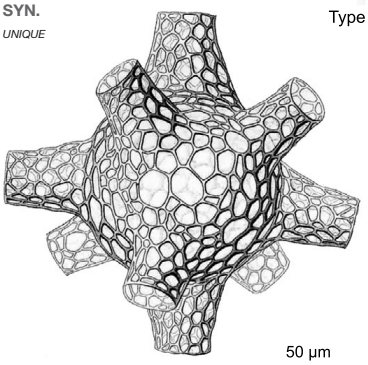
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***SIPHONOSPHAERA***

SYN.
UNIQUE

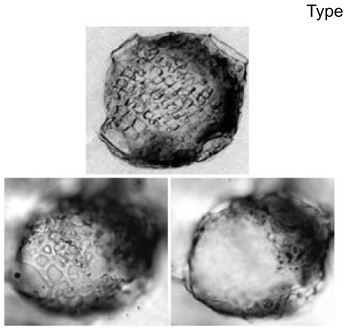
Type



50 µm

Solenosphaera ascensionis
Haeckel, 1887: 115, pl. 7, fig. 9

Type



50 µm

Tetrasolenia venosa Ehrenberg
Suzuki *et al.* 2009a: pl. 51, figs 7a-c [lectotype herein]

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Solenosphyra**
Haeckel, 1887: 115

SUBGENUS ***Solenosphaera* (*Solenosphyra*)**

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

Original series: **Solenosphaera amalthea* Haeckel, 1887 and *Solenosphaera cornucopia* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D52)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***SIPHONOSPHAERA***

SYN.
UNIQUE

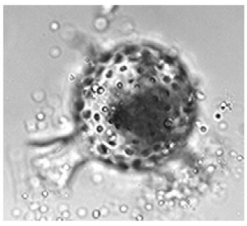
Type



50 µm

Solenosphaera cornucopia
Haeckel, 1887: 115, pl. 7, fig. 8

Support



50 µm

Solenosphaera cornucopia Haeckel
Tuji's collection (plankton, North Pacific)

C - Colonial Lineage — COLLOSPHAERIDAE
ASSIGNED IN Haeckel 1887: 94

GENUS **Tribonosphaera**
Haeckel, 1882: 471

Diagnosis: Colonial Collodaria with cells scattered in a gelatin envelope. Each cell with one cortical shell having a porous wall with a few large pores, associated to inwardly directed tubes.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported. The type species is a junior subjective synonym of *Buccinosphaera invaginata* Haeckel.

Original series: *Tribonosphaera centripetalis* Haeckel, 1887.

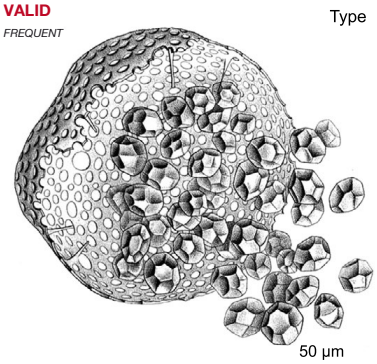
FIXATION SUBSEQUENT MONOTYPY

STATUS **VALID**

AGE ***Late Pleistocene–Living***

VALID
FREQUENT

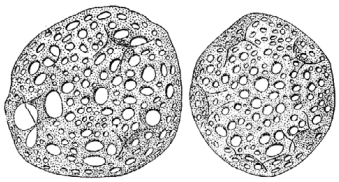
Type



50 µm

Tribonosphaera centripetalis
Haeckel, 1887: 98, pl. 5, fig. 12

Support



50 µm

Tribonosphaera centripetalis Haeckel
Strelkov & Reshetnyak 1971: 348, pl. 8, figs 48, 49

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Buccinosphaera**
Haeckel, 1887: 99

Remarks: Illustration available only for the type species (frequently reported). Only two species originally included at the time of the generic definition.

Original series: *Buccinosphaera invaginata* Haeckel, 1887 and **Buccinosphaera tubaria* Haeckel, 1887.

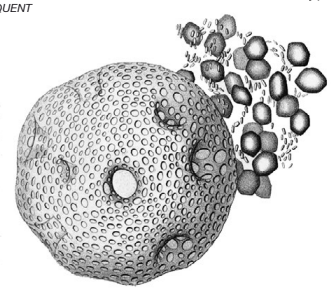
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D51)

STATUS JUNIOR SYNONYM
synonymized by Menshutkin & Petrushevskaya 1989: 90

SEE ***TRIBONOSPHAERA***

SYN.
FREQUENT

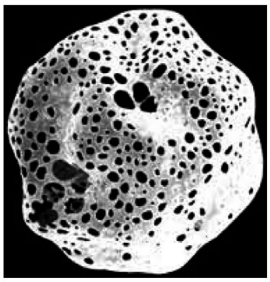
Type



50 µm

Buccinosphaera invaginata
Haeckel, 1887: 99, pl. 5, fig. 11

Support



25 µm

Buccinosphaera invaginata Haeckel
Yeh & Cheng 1990: pl. 1, fig. 13

C - Colonial Lineage — COLLOSPHAERIDAE

GENUS **Pharyngosphaera**
Haeckel, 1887: 98

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Pharyngosphaera stomodaea* Haeckel, 1887.

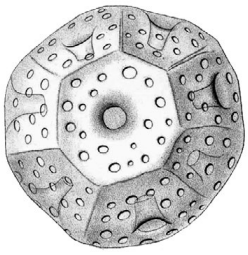
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized by Menshutkin & Petrushevskaya 1989: 90

SEE ***TRIBONOSPHAERA***

SYN.
UNIQUE

Type



50 µm

Pharyngosphaera stomodaea
Haeckel, 1887: 98, pl. 5, fig. 10

Support

NO IMAGE PUBLISHED

no image available

C - Colonial Lineage — ? COLLOSPHAERIDAE

GENUS ***Caminosphaera***
Haeckel, 1887: 111

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Caminosphaera dendrophora* Haeckel, 1887; *Caminosphaera dichotoma* Haeckel, 1887; **Caminosphaera elongata* Haeckel, 1887 and **Caminosphaera furcata* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D51)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

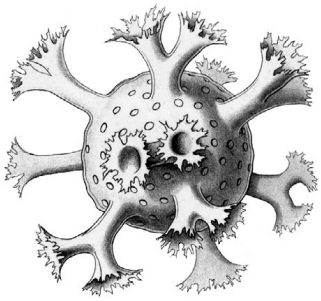
N.D.

Type

UNFIGURED SPECIES

Caminosphaera furcata
Haeckel, 1887: 111, unfigured

Support



Caminosphaera dichotoma
Haeckel, 1887: 112, pl. 7, fig. 2

C - Colonial Lineage — ? COLLOSPHAERIDAE

GENUS ***Pachysphaera***
Brandt, 1902: 66

Remarks: Homonym of *PACHYSPHAERA* Pilsbry *in* Tryon & Pilsbry, 1891: 172 (Gastropoda); a new name is not required since it is a nomen dubium. This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Pachysphaera globosa* Brandt, 1902 and **Pachysphaera octofurcata* Brandt, 1902.

FIXATION NO TYPE SPECIES DESIGNATED (SD HEREIN)

STATUS HOMONYM, NOMEN DUBIUM
designated herein; name-bearing type non-existent

HOM.; N.D.

Type

UNFIGURED SPECIES

Pachysphaera octofurcata
Brandt, 1902: 67, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - Colonial Lineage — ? COLLOSPHAERIDAE

GENUS ***Pentasolenia***
Ehrenberg, 1861b: 832

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Pentasolenia sphaera* Ehrenberg, 1861b.

FIXATION MONOTYPY

STATUS NOMEN NUDUM
designated herein; name-bearing type non-existent

N.N.

Type

UNFIGURED SPECIES

Pentasolenia sphaera
Ehrenberg, 1861b: 823 (n.n.)

Support

NO IMAGE PUBLISHED

no image available

C - Colonial Lineage — SPHAEROZOIDAE
ASSIGNED IN Haeckel 1887: 39

GENUS ***Belonozoum***
Haeckel, 1887: 39

Diagnosis: Colonial, cells are scattered in a gelatin, no cortical shell. Simple isolated spicules are scattered around each cell.

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: **Belonozoum atlanticum* Haeckel, 1887; **Belonozoum bacillosum* Haeckel, 1887; *Sphaerozoum italicum* Haeckel, 1887 and *Sphaerozoum spinulosum* Müller, 1856.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D46)

STATUS **VALID**

AGE ***LIVING***

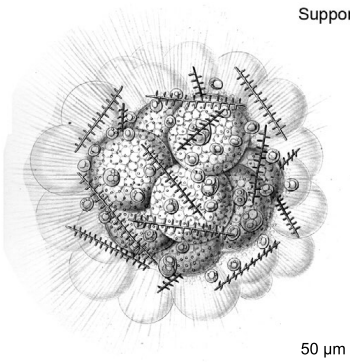
VALID
VERY RARE

Type



Sphaerozoum spinulosum
Müller, 1856: 477 (unfigured); Müller, 1859b: 54, pl. 8, fig. 4

Support



Sphaerozoum spinulosum Müller
Haeckel 1862: 527, pl. 33, fig. 4

C - Colonial Lineage — SPHAEROZOIDAE
assigned in Brandt 1905: 314

genus **Collozoum**
Haeckel, 1862: 522

nominotype ***Collozoum* (*Collozoum*)**

Diagnosis: Colonial, cells are scattered in a gelatin, no cortical shell, no isolated spicules.

Remarks: Type species frequently reported.

Original series: *Sphaerozoum coeruleum* Haeckel, 1861b; *Sphaerozoum inerme* Müller, 1859b and *Sphaerozoum pelagicum* Haeckel, 1861b.

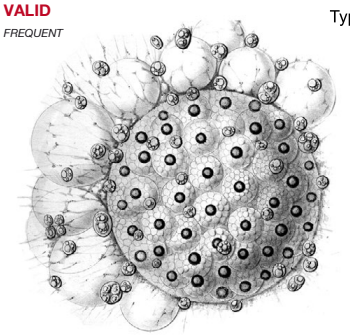
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D44)

status **VALID**

age ***Living***

VALID
FREQUENT

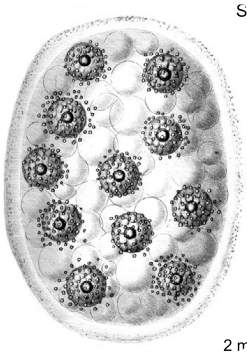
Type



2 mm

Sphaerozoum inerme
Müller, 1856: 478 (unfigured); Haeckel, 1862: 522, pl. 35, fig. 12 [lectotype herein]

Support



2 mm

Collozoum inerme (Müller)
Haeckel 1862: 522, pl. 35, fig. 10

C - Colonial Lineage — SPHAEROZOIDAE

genus **Collodinium**
Haeckel, 1887: 24

subgenus ***Collozoum* (*Collodinium*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Collozoum nostochinum* Haeckel, 1887; **Collozoum volvocinum* Haeckel, 1887 and *Sphaerozoum inerme* Müller, 1859b.

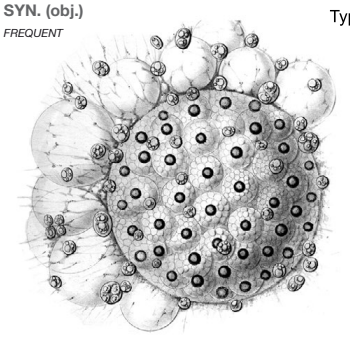
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D44)

status JUNIOR OBJECTIVE SYNONYM

see ***COLLOZOUM***

SYN. (obj.)
FREQUENT

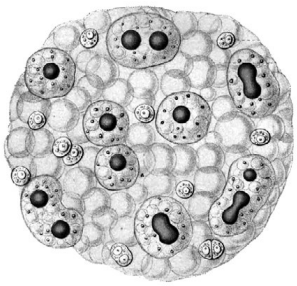
Type



2 mm

Sphaerozoum inerme
Müller, 1856: 478 (unfigured); Haeckel, 1862: 522, pl. 35, fig. 12 [lectotype herein]

Support



50 µm

Collozoum inerme (Müller)
Haeckel 1887: 25, pl. 3, fig. 12

C - Colonial Lineage — SPHAEROZOIDAE

genus **Coinozoum**
Enriques, 1919: 63

subgenus ***Collozoum* (*Coinozoum*)**

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Enriques (1919).

Original series: *Collozoum* (*Coinozoum*) *minus* Enriques, 1919.

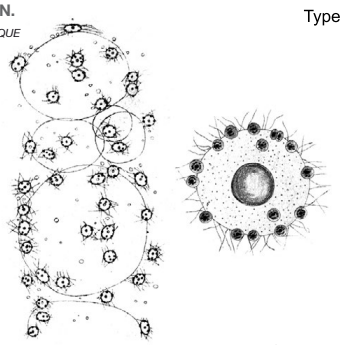
fixation MONOTYPY

status JUNIOR SYNONYM
synonymized herein

see ***COLLOZOUM***

SYN.
UNIQUE

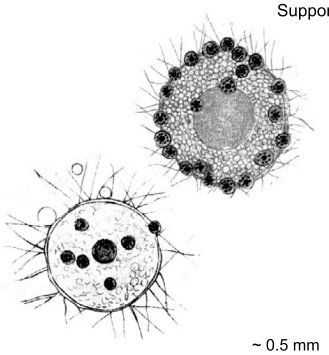
Type



~ 0.5 mm

Collozoum (*Coinozoum*) *minus*
Enriques, 1919: 18, pl. 1, figs 15, 20 [lectotype herein]

Support



~ 0.5 mm

Collozoum (*Coinozoum*) *minus*
Enriques, 1919: 18, pl. 1, figs 18, 19

C - Colonial Lineage — SPHAEROZOIDAE

genus **Collodastrum**
Haeckel, 1887: 27

subgenus ***Collozoum* (*Collodastrum*)**

Remarks: Only the type species clearly belongs to this genus; frequently reported.

Original series: *Collozoum amaeboides* Haeckel, 1887; **Collozoum stellatum* Haeckel, 1887 and *Sphaerozoum pelagicum* Haeckel, 1861b.

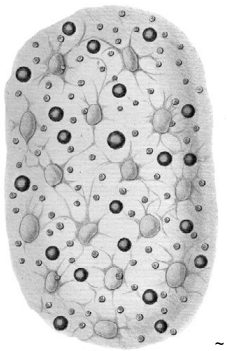
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D44)

status JUNIOR SYNONYM
synonymized by Haeckel 1887: 28

see ***COLLOZOUM***

SYN.
FREQUENT

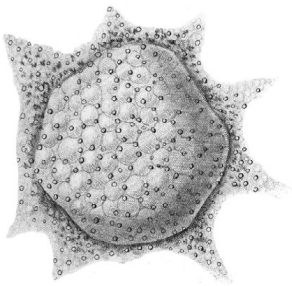
Type



~ 1 mm

Sphaerozoum pelagicum
Haeckel, 1861b: 845 (unfigured); Haeckel, 1862: 525, pl. 32, fig. 4

Support



~ 25 µm

Sphaerozoum pelagicum
Haeckel, 1862: 525, pl. 32, fig. 5

C - Colonial Lineage — SPHAEROZOIDAE

GENUS **Xantozoum**
Enriques, 1919: 21

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Collozoum fulvum* Brandt, 1885.

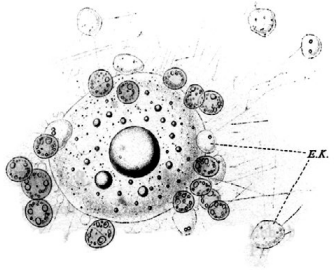
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE **COLLOZOUM**

SYN.
FREQUENT

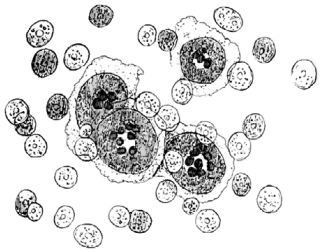
Type



500 µm

Collozoum fulvum
Brandt, 1885: 223, pl. 2, fig. 7 [lectotype herein]

Support



1 mm

Collozoum fulvum Brandt
Popofsky 1920: 549, text-fig. 5 (colony)

C - Colonial Lineage — ? SPHAEROZOIDAE

GENUS **Jozoum**
Enriques, 1919: 63

SUBGENUS ***Collozoum* (*Jozoum*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured. The type species is a junior homonym of *Collozoum brandtii* Wolfenden, 1902.

Original series: **Collozoum brandti* Enriques, 1919.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Collozoum brandti
Enriques, 1919: 60, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - Colonial Lineage — SPHAEROZOIDAE
ASSIGNED IN Haeckel 1862: 529

GENUS **Rhaphidozoum**
Haeckel, 1862: 529

NOMINOTYPE ***Rhaphidozoum* (*Rhaphidozoum*)**

Diagnosis: Colonial, cells are scattered in a gelatin, no cortical shell. Isolated spicules are always mixed with simple, bifurcated, triple or more bifurcated types.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Thalassicolla acufera* Müller, 1855a.

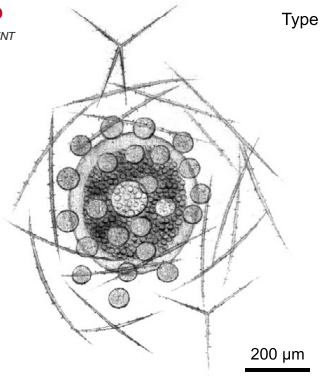
FIXATION MONOTYPY

STATUS **VALID**

AGE **LIVING**

VALID
FREQUENT

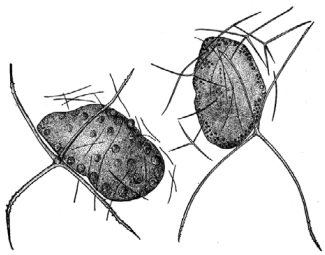
Type



200 µm

Thalassicolla acufera
Müller, 1855a: 236 (unfigured); Müller, 1859b: 54, pl. 8, fig. 3

Support



100 µm

Rhaphidozoum acuferum (Müller)
Strelkov & Reshetnyak 1971: 329, text-figs 16c, 16d

C - Colonial Lineage — SPHAEROZOIDAE

GENUS **Rhaphidonactis**
Haeckel, 1887: 46

SUBGENUS ***Rhaphidozoum* (*Rhaphidonactis*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Rhaphidozoum arachnoides* Haeckel, 1887; **Rhaphidozoum asperum* Haeckel, 1887; **Rhaphidozoum pacificum* Haeckel, 1887; **Rhaphidozoum pelagicum* Haeckel, 1887; *Sphaerozoum acuferum* Müller, 1859b and **Thalassicolla acufera* Müller, 1855a.

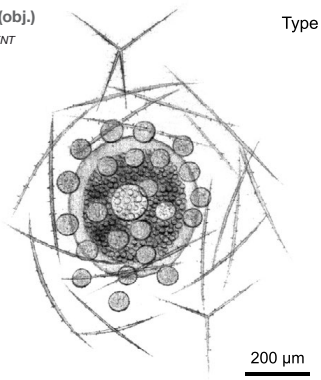
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D46)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE **RHAPHIDOZOUM**

SYN. (obj.)
FREQUENT

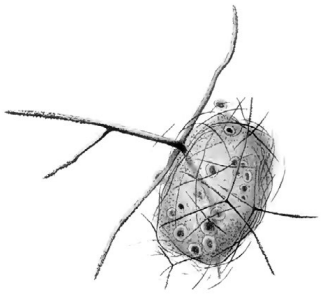
Type



200 µm

Thalassicolla acufera
Müller, 1855a: 236 (unfigured); Müller, 1859b: 54, pl. 8, fig. 3

Support



500 µm

Rhaphidozoum acuferum (Müller)
Popofsky 1920: 552, pl. 57, fig. 3

C - Colonial Lineage — SPHAEROZOIDAE

GENUS ***Rhaphidoceras***
Haeckel, 1887: 47

SUBGENUS ***Rhaphidozoum* (*Rhaphidoceras*)**

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Rhaphidozoum ascensionis* Haeckel, 1887; **Rhaphidozoum australe* Haeckel, 1887; **Rhaphidozoum capense* Haeckel, 1887; **Rhaphidozoum patagonicum* Haeckel, 1887 and *Sphaerozoum neapolitanum* Brandt, 1882.

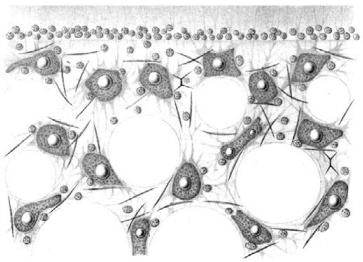
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D46)

STATUS JUNIOR SYNONYM
synonymized by Popofsky 1920: 587

SEE ***RHAPHIDOZOUM***

SYN.
FREQUENT

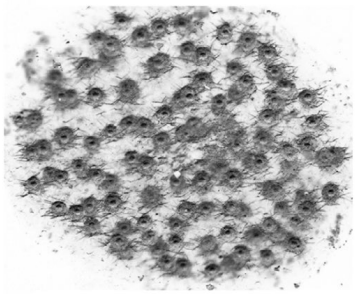
Type



500 µm

Sphaerozoum neapolitanum
Brandt, 1882: 390, fig. 18 [lectotype herein]

Support



200 µm

Rhaphidozoum neapolitanum (Brandt)
Suzuki's collection (plankton, North Pacific)

C - Colonial Lineage — SPHAEROZOIDAE

GENUS ***Rhaphidonura***
Haeckel, 1887: 49

SUBGENUS ***Rhaphidozoum* (*Rhaphidonura*)**

Remarks: Illustration available only for the type species (rarely reported). Only two species originally included at the time of the generic definition.

Original series: *Rhaphidozoum pandora* Haeckel, 1887 and **Rhaphidozoum polymorphum* Haeckel, 1887.

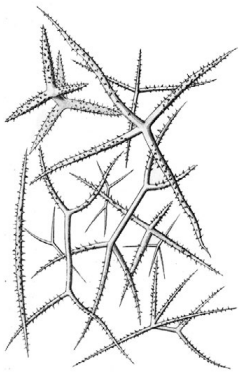
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D46)

STATUS JUNIOR SYNONYM
synonymized by Popofsky 1920: 567

SEE ***RHAPHIDOZOUM***

SYN.
RARE

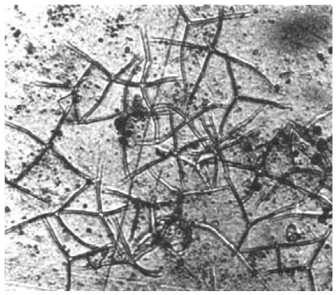
Type



50 µm

Rhaphidozoum pandora
Haeckel, 1887: 49, pl. 4, fig. 6

Support



100 µm

Rhaphidozoum pandora Haeckel
Takahashi & Honjo 1981: 144, pl. 1, fig. 1

C - Colonial Lineage — SPHAEROZOIDAE
ASSIGNED IN Müller 1859b: 17

GENUS ***Sphaerozoum***
Meyen, 1834: 163

NOMINOTYPE ***Sphaerozoum* (*Sphaerozoum*)**

Diagnosis: Colonial, cells are scattered in a gelatin, no cortical shell. Isolated spicules are bifurcated (two, three or more bifurcactions at end tips), but always in a same colony all spicule must show the same patter; If a single species have two or more kinds of forms, this is not *SPAHEROZOUM*.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Sphaerozoum fuscum* Meyen, 1834.

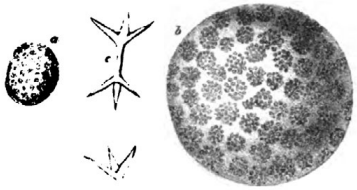
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
FREQUENT

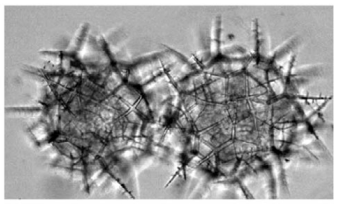
Type



5 mm

Sphaerozoum fuscum
Meyen, 1834: 164, pl. 28, figs 7a-c

Type



50 µm

Sphaerozoum fuscum Haeckel
Aita *et al.* 2009: pl. 4, fig. 1a [neotype herein]

C - Colonial Lineage — SPHAEROZOIDAE

GENUS ***Sphaerozonoceras***
Haeckel, 1887: 42

SUBGENUS ***Sphaerozoum* (*Sphaerozonoceras*)**

Remarks: Type species frequently reported.

Original series: *Sphaerozoum alveolatum* Haeckel, 1887; **Sphaerozoum araucaria* Haeckel, 1887; *Sphaerozoum arborescens* Haeckel, 1887; **Sphaerozoum furcatum* Haeckel, 1887; **Sphaerozoum furculosum* Haeckel, 1887; *Sphaerozoum fuscum* Meyen, 1834; **Sphaerozoum octoceras* Haeckel, 1887; *Sphaerozoum ovodimare* Haeckel, 1861b; **Sphaerozoum quadrigeminum* Haeckel, 1887; *Sphaerozoum trigeminum* Haeckel, 1887; *Sphaerozoum verticillatum* Haeckel, 1887 and *Thalassicolla punctata* Huxley, 1851.

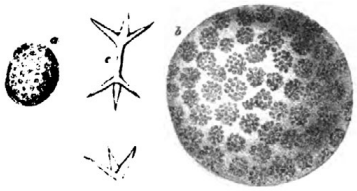
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D46)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***SPHAEROZOUM***

SYN. (obj.)
FREQUENT

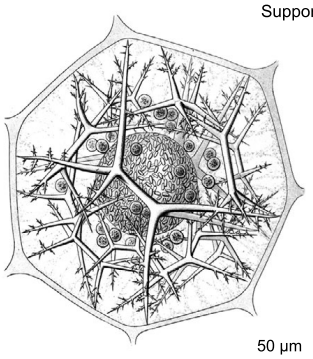
Type



5 mm

Sphaerozoum fuscum
Meyen, 1834: 164, pl. 28, figs 7a-c

Support



50 µm

Sphaerozoum alveolatum
Haeckel, 1887: 43, pl. 4, fig. 3

C - Colonial Lineage — SPHAEROZOIDAE

GENUS **Actinozoum**
Enriques, 1919: 21

SUBGENUS ***Sphaerozoum* (*Actinozoum*)**

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Thalassicolla punctata* Huxley, 1851.

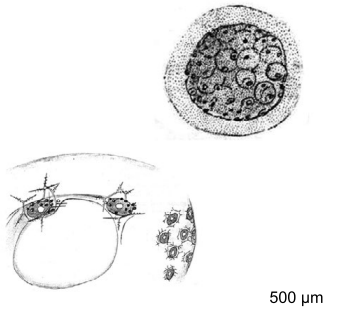
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***SPHAEROZOUM***

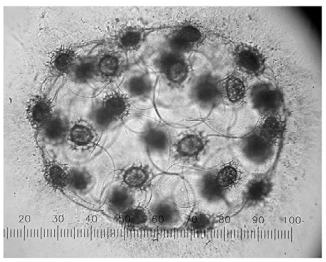
SYN.
FREQUENT

Type



Thalassicolla punctata
Huxley, 1851: 434, pl. 16, figs 3, 3a [lectotype herein]

Support



Sphaerozoum punctatum (Huxley)
Suzuki's collection (plankton, off Okinawa, Japan)

C - Colonial Lineage — SPHAEROZOIDAE

GENUS **Sphaerozonura**
Haeckel, 1887: 45

SUBGENUS ***Sphaerozoum* (*Sphaerozonura*)**

Remarks: Type species only illustrated by Haeckel (1887).

Original series: **Sphaerozoum circumtextum* Haeckel, 1887; *Sphaerozoum geminatum* Haeckel, 1887; **Sphaerozoum stellatum* Haeckel, 1887 and *Sphaerozoum variabile* Haeckel, 1887.

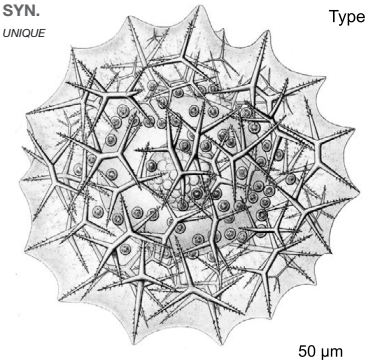
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D46)

STATUS JUNIOR SYNONYM
synonymized by Popofsky 1920: 568

SEE ***SPHAEROZOUM***

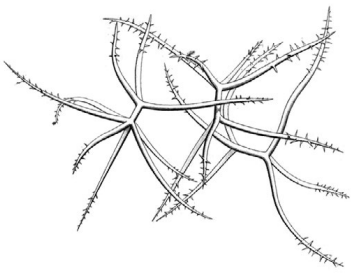
SYN.
UNIQUE

Type



Sphaerozoum geminatum
Haeckel, 1887: 45, pl. 4, fig. 4

Support



Sphaerozoum variabile
Haeckel, 1887: 45, pl. 4, fig. 5

C - Colonial Lineage — ? SPHAEROZOIDAE

GENUS **Sphaerozonactis**
Haeckel, 1887: 41

SUBGENUS ***Sphaerozoum* (*Sphaerozonactis*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Sphaerozoum hamatum* Haeckel, 1887; **Sphaerozoum hexactinium* Haeckel, 1887; **Sphaerozoum medusinum* Haeckel, 1887 and **Sphaerozoum triactinium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D46)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Sphaerozoum triactinium
Haeckel, 1887: 41, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - Solitary Lineage — THALASSICOLLIDAE
ASSIGNED IN Campbell 1954: D44

GENUS **Myxobrachia**
Haeckel, 1870: 519

Diagnosis: Collodaria with solitary cells and no siliceous skeleton. Extracapsular calymma with a variable shape. Pseudopodia are bundled as to present a thick arm-like appearance.

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Myxobrachia pluteus* Haeckel, 1870 and *Myxobrachia rhopalum* Haeckel, 1870.

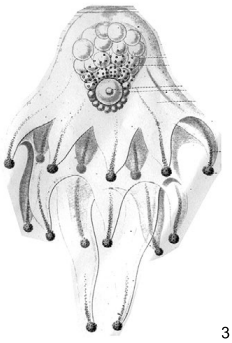
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D44)

STATUS **VALID**

AGE ***LIVING***

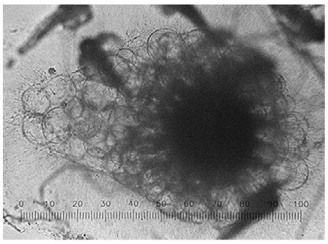
VALID
UNIQUE

Type



Myxobrachia pluteus
Haeckel, 1870: 520, pl. 18, fig. 3

Support



Myxobrachia pluteus Haeckel
Suzuki's collection (plankton, East China Sea)

C - Solitary Lineage — THALASSICOLLIDAE
ASSIGNED IN Haeckel 1887: 12

GENUS ***Procyttarium***
Haeckel, 1879a: 705

SUBGENUS ***Actissa* (*Procyttarium*)**

Diagnosis: Collodaria with solitary cells and no siliceous skeleton. Central capsule without alveolar layer. Pseudopodia are radiated outside the extracapsular calymma.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Procyttarium primordiale* Haeckel, 1879a.

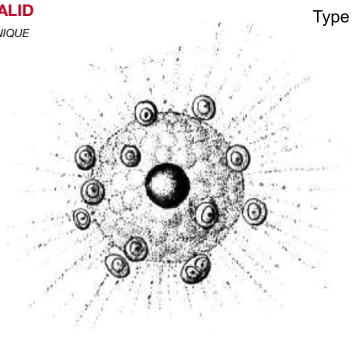
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

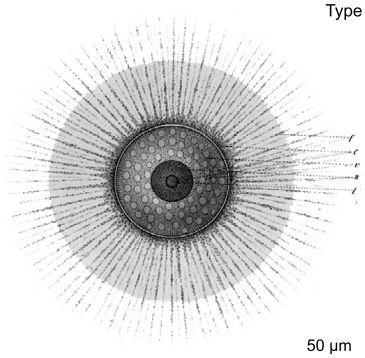
VALID
UNIQUE

Type



Procyttarium primordiale
Haeckel, 1879a: 705, pl. 16, fig. 1

Type



Actissa princeps
Haeckel, 1887: 13, pl. 1, fig. 1

C - Solitary Lineage — THALASSICOLLIDAE

GENUS ***Actissa***
Haeckel, 1887: 12

NOMINOTYPE ***Actissa* (*Actissa*)**

Remarks: According to ICZN art. 23.3.5, this genus should have been called *PROCYTTARIUM* Haeckel, 1879a, since Haeckel, 1887 treats *PROCYTTARIUM* as a subgenus of *ACTISSA* and the other subgeneric names used are of a later date than1879. The fixation by subsequent designation of *Actissa princeps* by Brandt (1902: 81) as the type species of *ACTISSA* is erroneous, because, as signaled by Campbell (1954: D44) *ACTISSA* is the junior objective synonym of *PROCYTTARIUM*, since *Actissa princeps* Haeckel, 1887 was included together *Procyttarium primordiale* Haeckel, 1879a in the originally included species of *ACTISSA* (see Haeckel 1887: 13). Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

Original series: *Actissa princeps* Haeckel, 1887; **Actissa prototypus* Haeckel, 1887; **Actissa radiata* Haeckel, 1887 and *Procyttarium primordiale* Haeckel, 1879a.

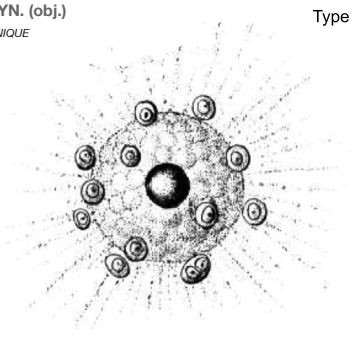
FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***PROCYTTARIUM***

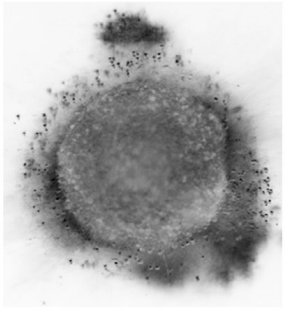
SYN. (obj.)
UNIQUE

Type



Procyttarium primordiale
Haeckel, 1887: 13, pl. 1, fig. 1

Support



Actissa princeps Haeckel
Shimode's collection (plankton, off Tokyo)

C - Solitary Lineage — ? THALASSICOLLIDAE

GENUS ***Actidiscus***
Haeckel, 1887: 15

SUBGENUS ***Actissa* (*Actidiscus*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Actissa discoides* Haeckel, 1887; **Actissa lenticularis* Haeckel, 1887 and **Actissa phacoides* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D44)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Actissa discoides
Haeckel, 1887: 15, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - Solitary Lineage — ? THALASSICOLLIDAE

GENUS ***Actilarcus***
Haeckel, 1887: 16

SUBGENUS ***Actissa* (*Actilarcus*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Actissa larcoides* Haeckel, 1887.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Actissa larcoides
Haeckel, 1887: 16, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - SOLITARY LINEAGE — ? THALASSICOLLIDAE

GENUS ***Actiprunum***
Haeckel, 1887: 14

SUBGENUS ***Actissa* (*Actiprunum*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Actissa ellipsoides* Haeckel, 1887 and **Actissa prunoides* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D44)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D. — Type

UNFIGURED SPECIES

Actissa prunoides
Haeckel, 1887: 14, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - SOLITARY LINEAGE — THALASSICOLLIDAE
ASSIGNED IN Haeckel 1862: 237

GENUS ***Thalassicolla***
Huxley, 1851: 433

NOMINOTYPE ***Thalassicolla* (*Thalassicolla*)**

Diagnosis: Collodaria with solitary cells and no siliceous skeleton. Central capsule without alveolar layer. Central capsular membrane areolated. Extracapsular calymma spherical, voluminous, and alveolate. Pseudopodia radiated inside the extracapsular calymma.

Remarks: The type species has been frequently illustrated. Only two species originally included at the time of the generic definition (both illustrated).

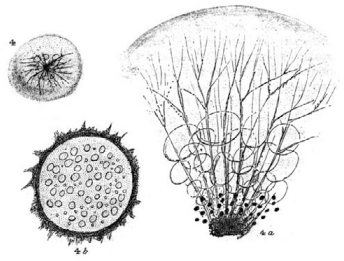
Original series: *Thalassicolla nucleata* Huxley, 1851 and *Thalassicolla punctata* Huxley, 1851.

FIXATION SUBSEQUENT DESIGNATION (Haeckel 1887: 18)

STATUS **VALID**

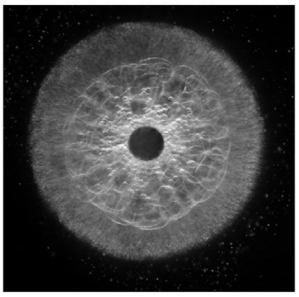
AGE ***LIVING***

VALID — *FREQUENT* — Type



Thalassicolla nucleata
Huxley, 1851: 435, pl. 16, figs 4, 4a, 4b

Support



Thalassicolla nucleata Huxley
Shimode's collection (plankton, off Tokyo)

C - SOLITARY LINEAGE — THALASSICOLLIDAE

GENUS ***Thalassicollidium***
Haeckel, 1887: 20

SUBGENUS ***Thalassicolla* (*Thalassicollidium*)**

Remarks: Type species frequently reported.

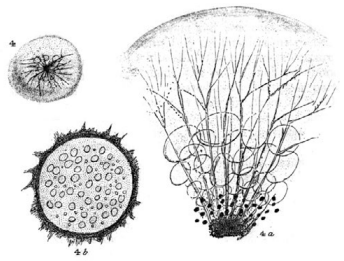
Original series: **Thalassicolla australis* Haeckel, 1887; *Thalassicolla maculata* Haeckel, 1887; *Thalassicolla melacapsa* Haeckel, 1887 and *Thalassicolla nucleata* Huxley, 1851.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D44)

STATUS JUNIOR OBJECTIVE SYNONYM

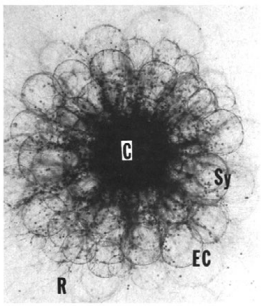
SEE ***THALASSICOLLA***

SYN. (obj.) — *FREQUENT* — Type



Thalassicolla nucleata
Huxley, 1851: 435, pl. 16, figs 4, 4a, 4b

Support



Thalassicolla nucleata Huxley
Anderson & Botfield 1983: fig. 1.1

C - SOLITARY LINEAGE — THALASSICOLLIDAE
ASSIGNED IN Haeckel 1887: 12

GENUS ***Thalassicollarium***
Haeckel, 1887: 18

SUBGENUS ***Thalassicolla* (*Thalassicollarium*)**

Diagnosis: Collodaria with solitary cells and no siliceous skeleton. Central capsule without alveolar layer. Central capsular membrane with many pores. Extracapsular calymma spherical, voluminous, and alveolate. Pseudopodia nearly absent.

Remarks: Only the type species has been illustrated (reported only by Haeckel 1862).

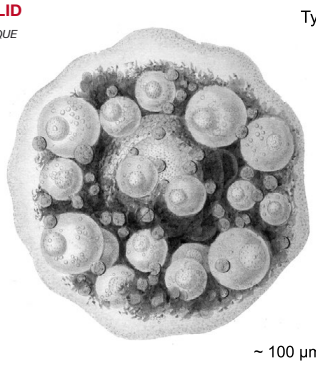
Original series: **Thalassicolla pellucida* Haeckel, 1887; **Thalassicolla spumida* Haeckel, 1887 and *Thalassicolla zanclea* Haeckel, 1862.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D44)

STATUS **VALID**

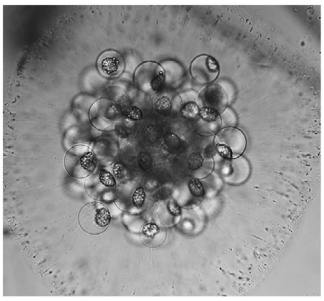
AGE ***LIVING***

VALID — *UNIQUE* — Type



Thalassicolla zanclea
Haeckel, 1862: 252, pl. 2, fig. 3

Support



Thalassicolla zanclea Haeckel
Tuji's collection (plankton, North Pacific)

C - Solitary Lineage — THALASSICOLLIDAE
assigned in Haeckel 1887: 12

genus ***Thalassolampe***
Haeckel, 1862: 253

Diagnosis: Collodaria with solitary cells and no siliceous skeleton. Central capsule with alveolar layer. Extracapsular calymma variable. Pseudopodia radiated outside the extracapsular calymma.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Thalassolampe margarodes* Haeckel, 1862.

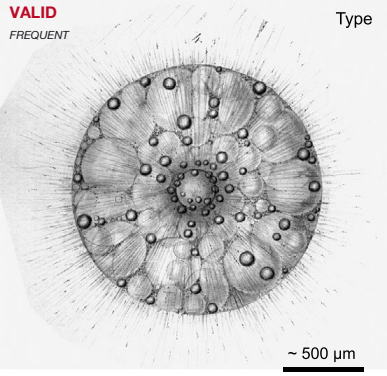
fixation MONOTYPY

status **VALID**

age ***Living***

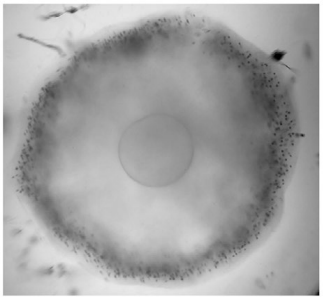
VALID
FREQUENT

Type



Thalassolampe margarodes
Haeckel, 1862: 253, pl. 2, fig. 4 [lectotype herein]

Support



Thalassolampe margarodes Haeckel
Tuji's collection (plankton, North Pacific)

C - Solitary Lineage — THALASSICOLLIDAE
assigned in Haeckel 1887: 12

genus ***Thalassopila***
Haeckel, 1882: 469

Diagnosis: Collodaria with solitary cells and no siliceous skeleton. Nucleus single, very large, spherical with radiated papillated lobes.

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

Original series: *Thalassopila cladococcus* Haeckel, 1887.

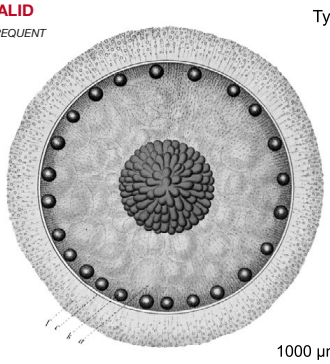
fixation SUBSEQUENT MONOTYPY

status **VALID**

age ***Living***

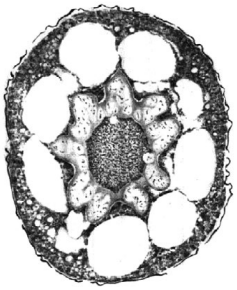
VALID
FREQUENT

Type



Thalassopila cladococcus
Haeckel, 1887: 17, pl. 1, fig. 3

Support



Thalassopila cladococcus Haeckel
Hollande & Enjumet 1953: 121, fig. 24

C - Solitary Lineage — ? THALASSICOLLIDAE

genus ***Monocarion***
Enriques, 1919: 33

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Enriques (1919).

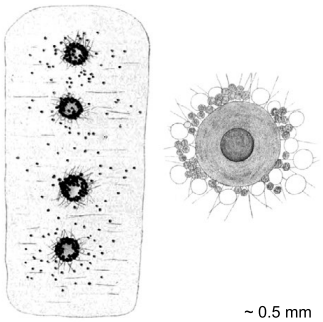
Original series: Monocarion uniseriatum Enriques, 1919.

fixation MONOTYPY

status NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

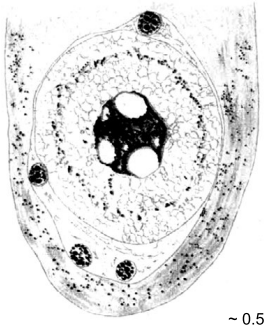
N.D.
UNIQUE

Type



Monocarion uniseriatum
Enriques, 1919: 33, pl. 2, figs 89, 90 [lectotype herein]

Support



Monocarion uniseriatum
Enriques, 1919: 33, pl. 2, fig. 91

C - Solitary Lineage — ? THALASSICOLLIDAE

genus ***Thalassophysa***
Haeckel, 1882: 469

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus. The support image was included in the synonymy list of *Thalassophysa sanguinolenta* Haeckel, 1887: 22 (unfigured).

Original series: *Thalassicolla pelagica* Haeckel, 1861a; *Thalassicolla sanguinolenta* Hertwig, 1879 and **Thalassophysa papillosa* Haeckel, 1887.

fixation SUBSEQUENT DESIGNATION (Chediya 1959: 66)

status NOMEN DUBIUM
designated herein; name-bearing type non-existent

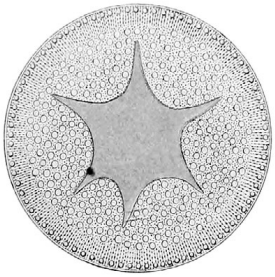
N.D.

Type

UNFIGURED SPECIES

Thalassophysa papillosa
Haeckel, 1887: 22, unfigured

Support



Thalassicolla sanguinolenta
Hertwig, 1879: 37, pl. 3, fig. 1

C - SOLITARY LINEAGE — THALASSOSPHAERIDAE
ASSIGNED IN Haeckel 1887: 30

GENUS ***Lampoxanthura***
Haeckel, 1887: 38

SUBGENUS ***Lampoxanthium* (*Lampoxanthura*)**

Diagnosis: Collodaria with solitary cells and isolated spicules with triple or more bifurcated ends scattered around the cell. Central capsule without alveolar layer. Capsular membrane structureless. Extracapsular calymma without alveolar layer. Pseudopodia nearly absent.

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Lampoxanthium pandora* Haeckel, 1887.

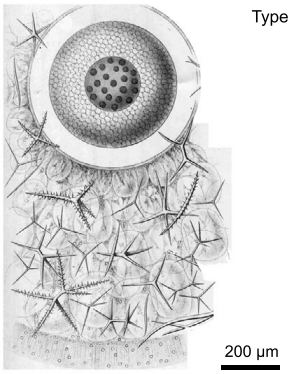
FIXATION MONOTYPY

STATUS **VALID**

AGE ***LIVING***

VALID
UNIQUE

Type



Lampoxanthium pandora
Haeckel, 1887: 38, pl. 2, fig. 1

Support

NO IMAGE PUBLISHED

no image available

C - SOLITARY LINEAGE — ? THALASSOSPHAERIDAE

GENUS ***Lampoxanthium***
Haeckel, 1887: 36

NOMINOTYPE ***Lampoxanthium* (*Lampoxanthium*)**

Remarks: See comments under *LAMPOXANTHELLA*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D46)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Lampoxanthium tetractinium
Haeckel, 1887: 37, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - SOLITARY LINEAGE — ? THALASSOSPHAERIDAE

GENUS ***Lampoxanthella***
Haeckel, 1887: 37

SUBGENUS ***Lampoxanthium* (*Lampoxanthella*)**

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Lampoxanthium tetractinium* Haeckel, 1887.

FIXATION MONOTYPY

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***LAMPOXANTHIUM***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Lampoxanthium tetractinium
Haeckel, 1887: 37, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - SOLITARY LINEAGE — ? THALASSOSPHAERIDAE

GENUS ***Lampoxanthomma***
Haeckel, 1887: 37

SUBGENUS ***Lampoxanthium* (*Lampoxanthomma*)**

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Lampoxanthium octoceras* Haeckel, 1887 and **Lampoxanthium punctatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D46)

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Lampoxanthium punctatum
Haeckel, 1887: 37, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - Solitary Lineage — THALASSOSPHAERIDAE
ASSIGNED IN Haeckel 1862: 255

GENUS **Thalassosphaera**
Haeckel, 1862: 259

Diagnosis: Collodaria with solitary cells, isolated spicules with bifurcated ends scattered around the cell. Central capsule without alveolar layer. Capsular membrane structureless. Extracapsular calymma without alveolar layer. Pseudopodia radiated outside the extracapsular calymma.

Remarks: Type species illustrated and reported only once by Haeckel (1862); only the type species belongs to this genus. Two species originally included at the time of the generic definition.

Original series: *Sphaerozoum bifurcum* Haeckel, 1861b and *Thalassicolla morum* Müller, 1859b.

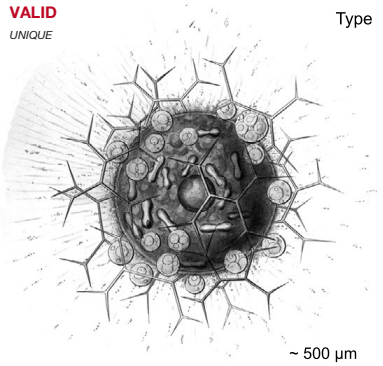
FIXATION SUBSEQUENT DESIGNATION (Campbell 1951: 527)

STATUS **VALID**

AGE ***LIVING***

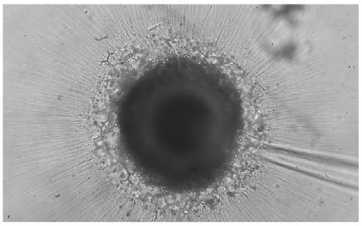
VALID
UNIQUE

Type



Sphaerozoum bifurcum
Haeckel, 1861b: 845 (unfigured); Haeckel, 1862: 260, pl. 12, fig. 1

Support



Sphaerozoum bifurcum Haeckel
Suzuki's collection (plankton, East China Sea)

C - Solitary Lineage — THALASSOSPHAERIDAE

GENUS **Thalassoxanthomma**
Haeckel, 1887: 33

SUBGENUS ***Thalassoxanthium* (*Thalassoxanthomma*)**

Remarks: Type species frequently reported.

Original series: *Sphaerozoum bifurcum* Haeckel, 1861b; **Thalassoxanthium furcatum* Haeckel, 1887; *Thalassoxanthium octoceras* Haeckel, 1887; **Thalassoxanthium ovodimare* Haeckel, 1887 and **Thalassoxanthium punctatum* Haeckel, 1887.

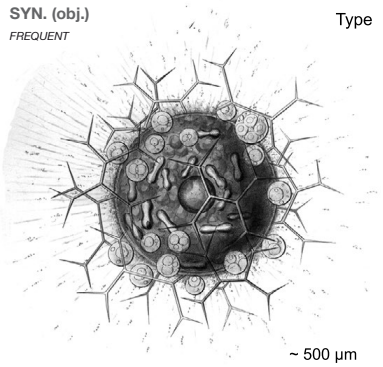
FIXATION SUBSEQUENT DESIGNATION (Campbell 1951: 527)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***THALASSOSPHAERA***

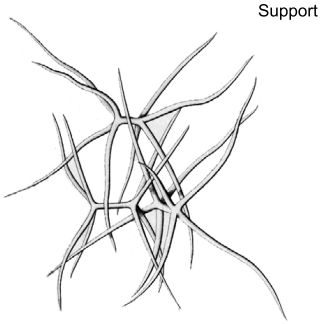
SYN. (obj.)
FREQUENT

Type



Sphaerozoum bifurcum
Haeckel, 1861b: 845 (unfigured); Haeckel, 1862: 260, pl. 12, fig. 1

Support



Thalassoxanthium octoceras
Haeckel, 1887: 34, pl. 2, fig. 6

C - Solitary Lineage — THALASSOSPHAERIDAE
ASSIGNED IN Haeckel 1887: 30

GENUS **Thalassoxanthella**
Haeckel, 1887: 31

SUBGENUS ***Thalassoxanthium* (*Thalassoxanthella*)**

Diagnosis: Collodaria with solitary cells, isolated spicules with triple or more bifurcated ends scattered around the cell. Central capsule without alveolar layer. Capsular membrane structureless. Extracapsular calymma without alveolar layer. Pseudopodia nearly absent.

Remarks: Type species only illustrated by Haeckel (1887).

Original series: *Thalassoxanthium cervicorne* Haeckel, 1887; **Thalassoxanthium hexactinium* Haeckel, 1887; *Thalassoxanthium medusinum* Haeckel, 1887; **Thalassoxanthium triactinium* Haeckel, 1887 and **Thalassoxanthium triradiatum* Haeckel, 1887.

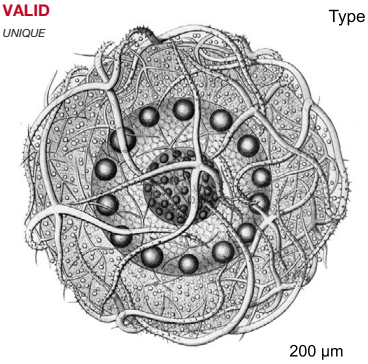
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D45)

STATUS **VALID**

AGE ***LIVING***

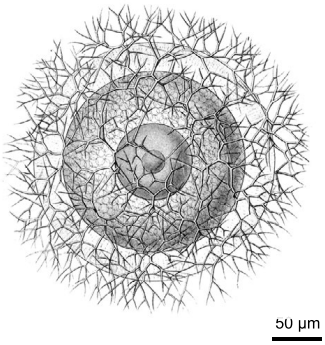
VALID
UNIQUE

Type



Thalassoxanthium medusinum
Haeckel, 1887: 32, pl. 2, fig. 5

Support



Thalassoxanthium cervicorne
Haeckel, 1887: 33, pl. 2, figs 3, 4

C - Solitary Lineage — ? THALASSOSPHAERIDAE

GENUS **Thalassoxanthium**
Haeckel, 1882: 470

NOMINOTYPE ***Thalassoxanthium* (*Thalassoxanthium*)**

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: *Thalassoxanthium cervicorne* Haeckel, 1887; **Thalassoxanthium furcatum* Haeckel, 1887; **Thalassoxanthium hexactinium* Haeckel, 1887; *Thalassoxanthium medusinum* Haeckel, 1887; *Thalassoxanthium octoceras* Haeckel, 1887; **Thalassoxanthium ovodimare* Haeckel, 1887; **Thalassoxanthium punctatum* Haeckel, 1887; **Thalassoxanthium triactinium* Haeckel, 1887 and **Thalassoxanthium triradiatum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Chediya 1959: 66)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *THALASSOSPHAERA***

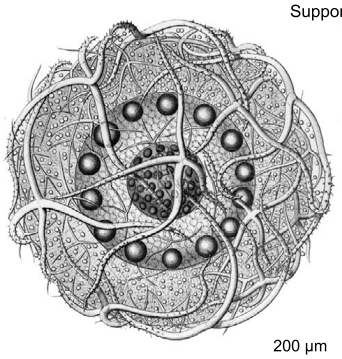
N.D.

Type

UNFIGURED SPECIES

Thalassoxanthium triactinium
Haeckel, 1887: 32, unfigured

Support



Thalassoxanthium medusinum
Haeckel, 1887: 32, pl. 2, fig. 5

C - Solitary Lineage — ? THALASSOSPHAERIDAE

GENUS ***Physematium***
Meyen, 1834: 160

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

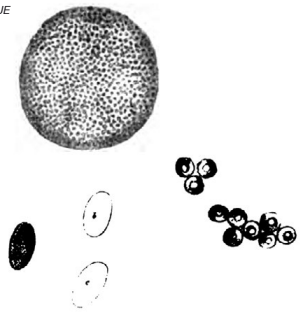
Original series: *Physematium atlanticum* Meyen, 1834 and *Physematium vermiculare* Meyen, 1834.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D46)

STATUS NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

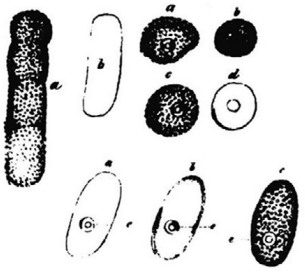
N.D.
UNIQUE

Type



Physematium atlanticum
Meyen, 1834: 162, pl. 28, figs 1-3

Support



Physematium vermiculare
Meyen, 1834: 163, pl. 28, figs 4-6

C - Solitary Lineage — ? THALASSOSPHAERIDAE

GENUS ***Thalassiosolen***
Wolfenden, 1902: 354

Remarks: Genus described as monospecific at the time of the generic definition and never figured.

Original series: **Thalassiosolen atlanticus* Wolfenden, 1902.

FIXATION MONOTYPY

STATUS NOMEN DUBIUM
designated herein; name-bearing type non-existent

N.D.

Type

UNFIGURED SPECIES

Thalassiosolen atlanticus
Wolfenden, 1902: 355, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - Solitary Lineage — ? THALASSOSPHAERIDAE

GENUS ***Thalassoplancta***
Haeckel, 1887: 36

Remarks: Homonym of *THALASSOPLANCTA* Haeckel, 1862: 261 (Phaeodaria); see *THALASSORHAPHIS nomen novum*.

Original series: *Thalassoplancta brevispicula* Haeckel, 1887 and *Thalassoplancta longispicula* Haeckel, 1887.

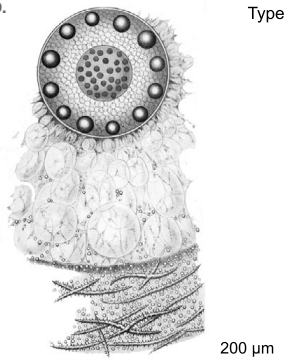
FIXATION SUBSEQUENT DESIGNATION (Campbell 1951: 527)

STATUS HOMONYM, NOMEN DUBIUM

SEE ***THALASSORHAPHIS NOMEN NOVUM***

HOM.; N.D.

Type



Thalassoplancta brevispicula
Haeckel, 1887: 36, pl. 2, fig. 2

Support

NO IMAGE PUBLISHED

no image available

C - Solitary Lineage — ? THALASSOSPHAERIDAE

GENUS ***Thalassorhaphis*** *NOMEN NOVUM* PRO *THALASSOPLANCTA*
Campbell, 1951: 527

Remarks: Type species illustrated and reported only once by Haeckel (1887); except the type species, no images have ever been illustrated. Two species originally included at the time of the generic definition.

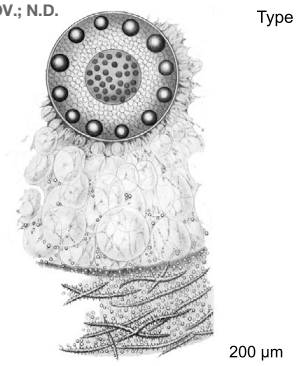
Original series: *Thalassoplancta brevispicula* Haeckel, 1887 and **Thalassoplancta longispicula* Haeckel, 1887.

FIXATION SD ACCORDING TO ICZN, ART. 67.8 (Campbell 1951: 527)

STATUS *NOMEN NOVUM*, NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

NOM. NOV.; N.D.
UNIQUE

Type



Thalassoplancta brevispicula
Haeckel, 1887: 36, pl. 2, fig. 2

Support

NO IMAGE PUBLISHED

no image available

C - Solitary Lineage — ? THALASSOSPHAERIDAE

genus ***Thalassosphaera***
Haeckel, 1887: 30

Remarks: Homonym of *THALASSOSPHAERA* Haeckel, 1862: 259 (Polycystinea); see *CALOSPHAERA nomen novum*.

Original series: *Thalassosphaera belonium* Haeckel, 1887 and *Thalassosphaera rhaphidium* Haeckel, 1887.

fixation ORIGINAL DESIGNATION

status HOMONYM, NOMEN DUBIUM

see ***CALOSPHAERA NOMEN NOVUM***

HOM.; N.D. — Type

UNFIGURED SPECIES

Thalassosphaera belonium
Haeckel, 1887: 31, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - Solitary Lineage — ? THALASSOSPHAERIDAE

genus ***Calosphaera*** *NOMEN NOVUM* PRO *THALASSOSPHAERA*
Campbell, 1951: 527

Remarks: This genus has never been illustrated; only two species originally included at the time of the generic definition.

Original series: **Thalassosphaera belonium* Haeckel, 1887 and **Thalassosphaera rhaphidium* Haeckel, 1887.

fixation ORIGINAL DESIGNATION; ICZN, art. 67.8

status *NOMEN NOVUM*, NOMEN DUBIUM
designated herein; name-bearing type non-existent

NOM. NOV.; N.D. — Type

UNFIGURED SPECIES

Thalassosphaera belonium
Haeckel, 1887: 31, unfigured

Support

NO IMAGE PUBLISHED

no image available

C - Unknown Lineage — OROSCENIDAE
assigned in Friend & Riedel 1967: 222

genus ***Orodapis***
Friend & Riedel, 1967: 222

Diagnosis: Spherical shell with long and thicker spines and numerous thinner ones containing inside a spicule with two sets of three rays joined by a short MB.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Orodapis spongiosa* Friend & Riedel, 1967.

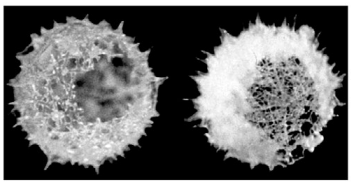
fixation MONOTYPY

status **VALID**

age ***Early Oligocene–early Early Miocene***

VALID
RARE

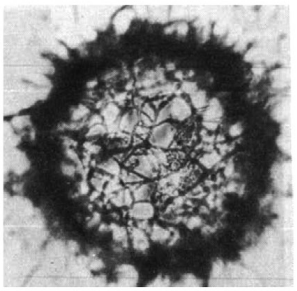
Type



1 mm

Orodapis spongiosa
Friend & Riedel, 1967: 222, pl. 1, figs 7, 8

Support



50 µm

Orodapis spongiosa Friend & Riedel
Vitukhin in Gladenkov *et al.* 1992: pl. 24, fig. 5b

C - Unknown Lineage — OROSCENIDAE
assigned in Haeckel 1887: 1593

genus ***Orodendrum***
Haeckel, 1887: 1598

subgenus ***Oroscena* (*Orodendrum*)**

Diagnosis: Skeleton with spherical or slightly polyhedral lattice-shell enveloped by a loose spongy framework. Sometimes flattened basally, slightly wider than long. Lattice laminar with ribs. Shell surface with spines, some of which are branched.

Remarks: Illustration available only for the type species (frequently reported).

Original series: **Oroscena darwini* Haeckel, 1887; **Oroscena duncani* Haeckel, 1887 and *Oroscena huxleyi* Haeckel, 1887.

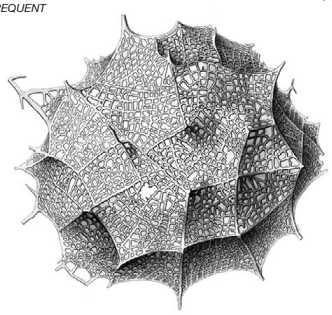
fixation SUBSEQUENT DESIGNATION (Campbell 1954: D48)

status **VALID**

age ***Living***

VALID
FREQUENT

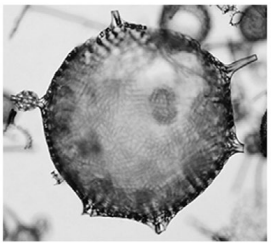
Type



500 µm

Oroscena huxleyi
Haeckel, 1887: 1599, pl. 12, fig. 1

Support



500 µm

Oroscena huxleyi Haeckel
Topotypic material (Challenger Station 272), Suzuki's collection

C - Unknown Lineage — OROSCENIDAE

GENUS **Oroplegma**
Haeckel, 1887: 1599

NOMINOTYPE ***Oroplegma* (*Oroplegma*)**

Remarks: No type species was designated. Although Campbell (1954: D48) designates *Oroplegma diploplegmium* Haeckel, 1887 as the type species of *OROPLEGMA*, there is no species known by that name. We assume he intended to designate *Oroplegma diplosphaera* Haeckel, 1887. See comments under *OROPLEGMIUM*.

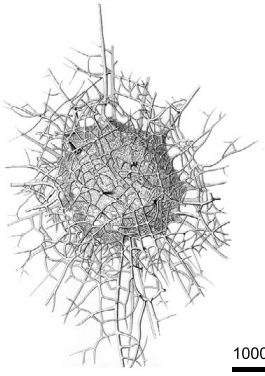
FIXATION INVALID SUBSEQUENT DESIGNATION (SD HEREIN)

STATUS JUNIOR SYNONYM
synonymized by Friend & Riedel 1967: 228

SEE ***ORODENDRUM***

SYN.
UNIQUE

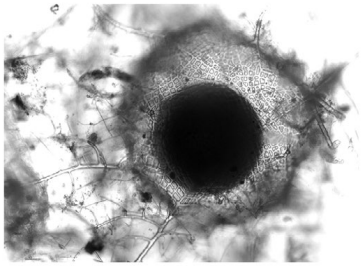
Type



1000 µm

Oroplegma diplosphaera
Haeckel, 1887: 1600, pl. 107, fig. 1

Support



50 µm

Oroplegma diplosphaera Haeckel
Suzuki's collection (plankton, East China Sea)

C - Unknown Lineage — OROSCENIDAE

GENUS **Oroplegmium**
Haeckel, 1887: 1600

SUBGENUS ***Oroplegma* (*Oroplegmium*)**

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

Original series: *Oroplegma diplosphaera* Haeckel, 1887; **Oroplegma spinulosum* Haeckel, 1887 and **Oroplegma velatum* Haeckel, 1887.

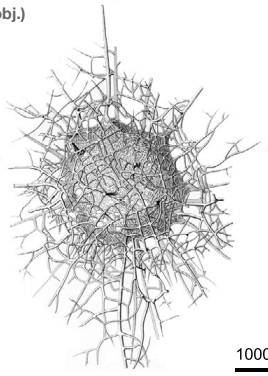
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***OROPLEGMA***

SYN. (obj.)
UNIQUE

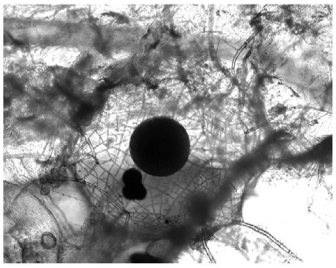
Type



1000 µm

Oroplegma diplosphaera
Haeckel, 1887: 1600, pl. 107, fig. 1

Support



50 µm

Oroplegma diplosphaera Haeckel
Suzuki's collection (plankton, East China Sea)

C - Unknown Lineage — OROSCENIDAE
ASSIGNED IN Friend & Riedel 1967: 223

GENUS **Oropelex**
Friend & Riedel, 1967: 223

Diagnosis: Subcylindrical to conical single lattice shell with rounded closed upper end and ribs or bars prolonged to form spines at the lower end.

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Oropelex pagoda* Friend & Riedel, 1967.

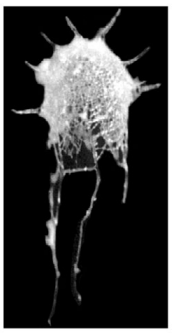
FIXATION MONOTYPY

STATUS **VALID**

AGE ***Early Oligocene–early Early Miocene***

VALID
RARE

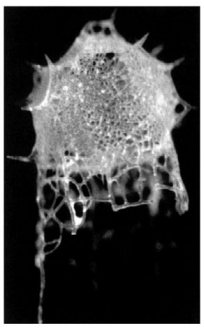
Type



1 mm

Oropelex pagoda
Friend & Riedel, 1967: 224, pl. 2, fig. 1

Support



50 µm

Oropelex pagoda
Friend & Riedel, 1967: 224, pl. 2, fig. 4

C - Unknown Lineage — OROSCENIDAE

GENUS **Oropagis**
Friend & Riedel, 1967: 226

Remarks: Genus described as monospecific at the time of the generic definition; rarely reported.

Original series: *Oropagis dolium* Friend & Riedel, 1967.

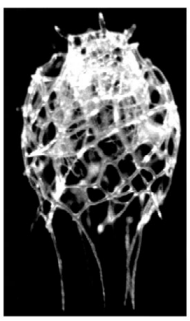
FIXATION MONOTYPY

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***OROPELEX***

SYN.
RARE

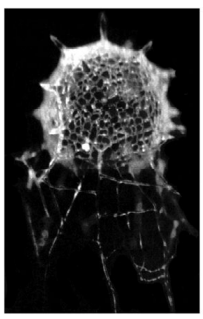
Type



1 mm

Oropagis dolium
Friend & Riedel, 1967: 226, pl. 3, fig. 8

Support



2 mm

Oropagis dolium
Friend & Riedel, 1967: 226, pl. 3, fig. 8

C - Unknown Lineage — OROSCENIDAE
ASSIGNED IN Haeckel 1887: 1593

GENUS **Oroscena**
Haeckel, 1887: 1597

NOMINOTYPE ***Oroscena* (*Oroscena*)**

Diagnosis: Subspherical shell with variable lattice with or without ribs. Spines on upper end radial, cylindrical and acute, branched or curved or club-shaped. On lower end spines thinner and curved downward.

Remarks: See comments under *OROSCENIUM*.

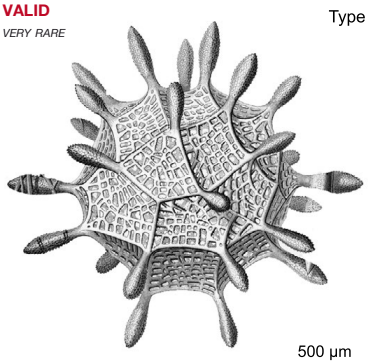
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS **VALID**

AGE ***Late Oligocene–Early Pliocene***

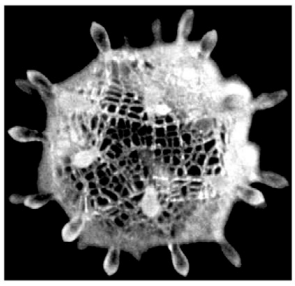
VALID
VERY RARE

Type



Oroscena gegenbauri
Haeckel, 1887: 1597, pl. 106, fig. 4

Support



Oroscena gegenbauri Haeckel
Friend & Riedel, 1967: 225, pl. 2, fig. 7

C - Unknown Lineage — OROSCENIDAE

GENUS **Oroscenium**
Haeckel, 1887: 1597

SUBGENUS ***Oroscena* (*Oroscenium*)**

Remarks: Only the type species clearly belongs to this genus; a single report after the first illustration.

Original series: *Oroscena baeri* Haeckel, 1887; *Oroscena cuvieri* Haeckel, 1887; *Oroscena gegenbauri* Haeckel, 1887; *Oroscena muelleri* Haeckel, 1887 and **Oroscena wolffi* Haeckel, 1887.

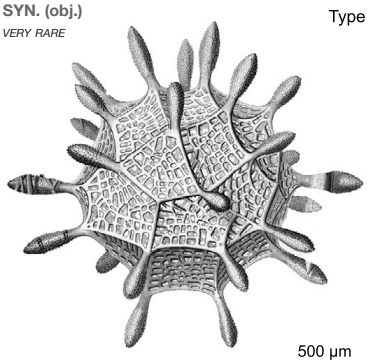
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS JUNIOR OBJECTIVE SYNONYM

SEE ***OROSCENA***

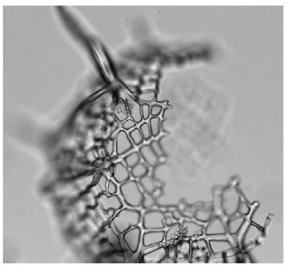
SYN. (obj.)
VERY RARE

Type



Oroscena gegenbauri
Haeckel, 1887: 1597, pl. 106, fig. 4

Support



Oroscena gegenbauri Haeckel
Topotypic material (Challenger Station 272), Suzuki's collection

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C - Unknown Lineage — OROSCENIDAE

GENUS **Orothamnus**
Haeckel, 1887: 1596

SUBGENUS ***Orosphaera* (*Orothamnus*)**

Remarks: Illustration available only for the type species (just a single report after the first illustration).

Original series: *Orosphaera arborescens* Haeckel, 1887; **Orosphaera confluens* Haeckel, 1887; **Orosphaera furcata* Haeckel, 1887 and *Orosphaera ramigera* Haeckel, 1887.

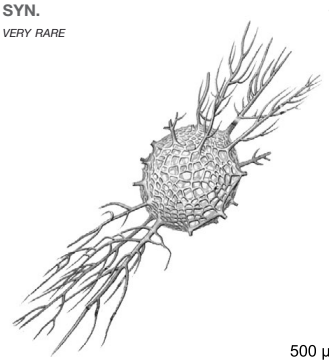
FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS JUNIOR SYNONYM
synonymized herein

SEE ***OROSCENA***

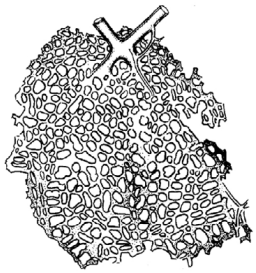
SYN.
VERY RARE

Type



Orosphaera arborescens
Haeckel, 1887: 1597, pl. 106, fig. 3

Support



Orosphaera arborescens Haeckel
Tan & Chen 1999: 121, text-fig. 5.12

C - Unknown Lineage — ? OROSCENIDAE

GENUS **Orosphaera**
Haeckel, 1882: 450

NOMINOTYPE ***Orosphaera* (*Orosphaera*)**

Remarks: See comments under *ORONIUM*.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS NOMEN DUBIUM
name-bearing type non-existent; related by inference

SEE **? *OROSCENA***

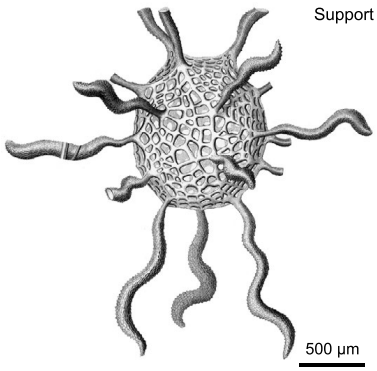
N.D.

Type

UNFIGURED SPECIES

Orosphaera hastigera
Haeckel, 1887: 1595, unfigured

Support



Orosphaera serpentina
Haeckel, 1887: 1595, pl. 106, fig. 1

C - UNKNOWN LINEAGE — ? OROSCENIDAE

GENUS **Oronium**
Haeckel, 1887: 1594

SUBGENUS *Orosphaera* (*Oronium*)

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Orosphaera clavigera* Haeckel, 1887; **Orosphaera foveolata* Haeckel, 1887; **Orosphaera fusigera* Haeckel, 1887; **Orosphaera hastigera* Haeckel, 1887; *Orosphaera horrida* Haeckel, 1887; *Orosphaera serpentina* Haeckel, 1887 and **Orosphaera spinigera* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS JUNIOR OBJECTIVE SYNONYM; NOMEN DUBIUM

SEE ***OROSPHAERA***

SYN. (obj.); N.D.

Type

UNFIGURED SPECIES

Orosphaera hastigera
Haeckel, 1887: 1595, unfigured

Support



1 mm

Orosphaera horrida
Haeckel, 1887: 1596, pl. 106, fig. 2

C - UNKNOWN LINEAGE — ? OROSCENIDAE

GENUS **Orodictyum**
Haeckel, 1887: 1601

SUBGENUS *Oroplegma* (*Orodictyum*)

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

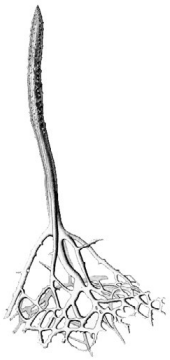
Original series: *Oroplegma giganteum* Haeckel, 1887 and *Oroplegma spongiosum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
UNIQUE

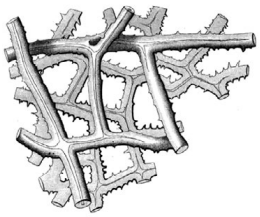
Type



500 µm

Oroplegma spongiosum
Haeckel, 1887: 1601, pl. 107, fig. 3

Support



100 µm

Oroplegma giganteum
Haeckel, 1887: 1601, pl. 107, fig. 2

C - UNKNOWN LINEAGE — OROSCENIDAE
ASSIGNED IN Friend & Riedel 1967: 221

GENUS **Orostaurus**
Friend & Riedel, 1967: 221

Diagnosis: Large outer cylindrical shell closed at the top by four bars. Spicule of two groups of three to four rays at the end of a MB. Four rays are much longer and bear lateral branches, which join to form a laminar network. A second latticed lamina may also occur.

Remarks: The type species has been figured just once. The support image is the other species originally included and illustrated at the time of the generic definition.

Original series: *Orostaurus duplex* Friend & Riedel, 1967 and *Orostaurus simplex* Friend & Riedel, 1967.

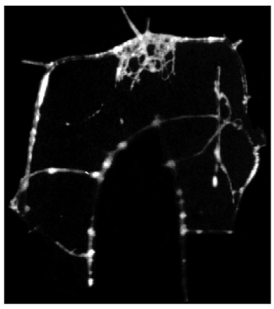
FIXATION ORIGINAL DESIGNATION

STATUS **VALID**

AGE ***LATE EOCENE–EARLY OLIGOCENE***

VALID
UNIQUE

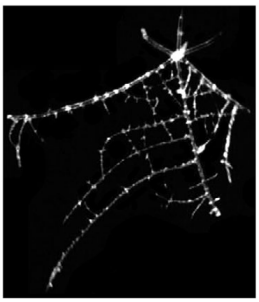
Type



2 mm

Orostaurus duplex
Friend & Riedel, 1967: 221, pl. 1, fig. 1

Support



2 mm

Orostaurus simplex
Friend & Riedel, 1967: 221, pl. 1, fig. 3

C - UNKNOWN LINEAGE — ? OROSCENIDAE

GENUS **Orona**
Haeckel, 1887: 1593

Remarks: Type species only illustrated by Haeckel (1887); the support image is one of those species originally included into this genus.

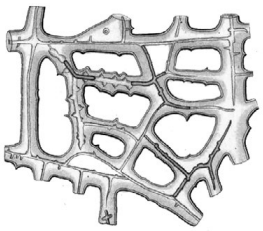
Original series: *Orona crassissima* Haeckel, 1887; *Orona maxima* Haeckel, 1887 and **Orona robusta* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D48)

STATUS NOMEN DUBIUM
designated herein; name-bearing type incomplete

N.D.
UNIQUE

Type



50 µm

Orona maxima
Haeckel, 1887: 1594, pl. 107, fig. 5

Support



50 µm

Orona crassissima
Haeckel, 1887: 1594, pl. 107, fig. 7

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Acanthometra***
Müller, 1855a: 248

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

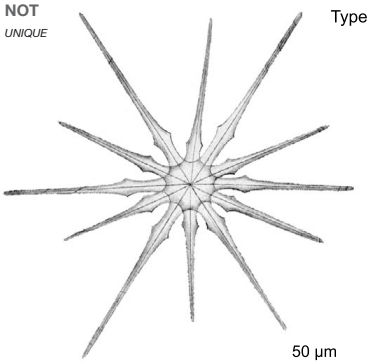
Original series: *Acanthometra multispina* Müller, 1855a.

FIXATION MONOTYPY

STATUS ACANTHARIA

NOT
UNIQUE

Type



Acanthometra multispina
Müller, 1855a: 249 (unfigured); Müller, 1859b: 47, pl. 7, fig. 7 [lectotype herein]

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Radiosphaera***
Jørgensen, 1905: 122

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Jørgensen (1905).

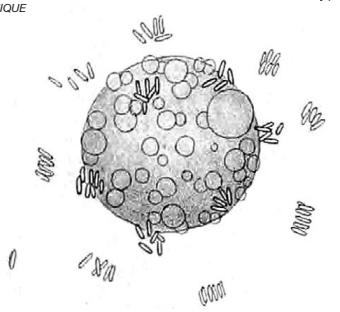
Original series: *Radiosphaera anacanthica* Jørgensen, 1905.

FIXATION MONOTYPY

STATUS ACANTHARIA

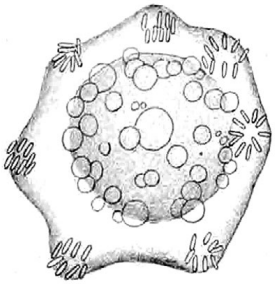
NOT
UNIQUE

Type



Radiosphaera anacanthica
Jørgensen, 1905: 122, pl. 17, fig. 105 [lectotype herein]

Support



Radiosphaera anacanthica
Jørgensen, 1905: 122, pl. 17, fig. 106

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Zygacantha***
Müller, 1859b: 51

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

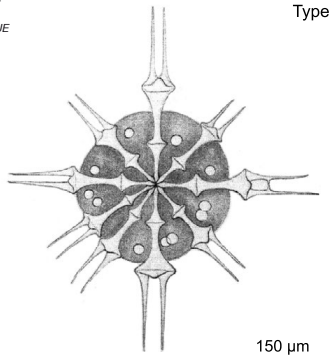
Original series: *Zygacantha furcata* Müller, 1859b.

FIXATION MONOTYPY

STATUS ACANTHARIA

NOT
UNIQUE

Type



Zygacantha furcata
Müller, 1859b: 51, pl. 9, fig. 6

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Prismozoon***
Burchardt, 1900: 788

Remarks: Genus described as monospecific at the time of the generic definition; frequently reported.

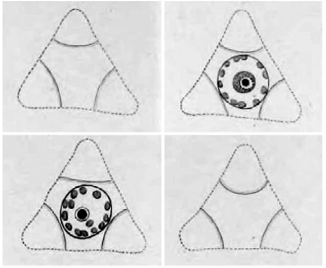
Original series: *Prismozoon neapolitanum* Burchardt, 1900.

FIXATION MONOTYPY

STATUS DIATOM

NOT
FREQUENT

Type



Prismozoon neapolitanum
Burchardt, 1900: 788, pl. 26, figs a-d

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Rhaphiophorasphaera***
Clark & Campbell, 1945: 18

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

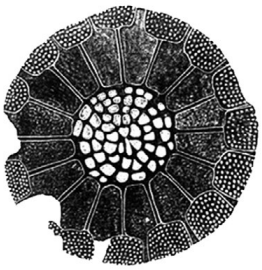
Original series: *Rhaphiophorasphaera sol* Clark & Campbell, 1945.

FIXATION MONOTYPY

STATUS DIATOM

NOT
UNIQUE

Type



25 µm

Rhaphiophorasphaera sol
Clark & Campbell, 1945: 18, pl. 5, fig. 1

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Cannosphaeropsis***
Wetzel, 1933: 52

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Cannosphaeropsis utinensis* Wetzel, 1933.

FIXATION MONOTYPY

STATUS DINOFLAGELLATE

NOT
UNIQUE

Type



100 µm

Cannosphaeropsis utinensis
Wetzel, 1933: 52, text-fig. 12

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Spirillina***
Ehrenberg, 1859: 35

Remarks: Homonym of *SPIRILLINA* Ehrenberg, 1843: 402 (Foraminifera); a new name is not required since it is a nomen dubium. Monospecific genus and never figured. Since no other images were illustrated at the time of the generic definition, the support image is an original drawing from the Ehrenberg's collection.

Original series: **Spirillina imperforata* Ehrenberg, 1859.

FIXATION MONOTYPY

STATUS FORAMINIFERA, NOMEN DUBIUM
designated herein; name-bearing type non-existent

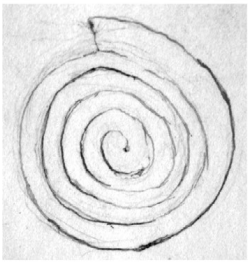
NOT; HOM.; N.D.

Type

UNFIGURED SPECIES

Spirillina imperforata
Ehrenberg, 1858: 560 (n.n.); Ehrenberg, 1859: 35, unfigured

Support



~200 µm

Spirillina imperforata
Ehrenberg's original drawing n° 1055

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Bathysphaera***
Hollande & Enjumet, 1960: 127

Remarks: Homonym of *BATHYSPHAERA* Beebe, 1932: 175 (Actinopterygii); see *ENJUMETIA nomen novum*.

Original series: *Bathysphaera pelagica* Hollande & Enjumet, 1960.

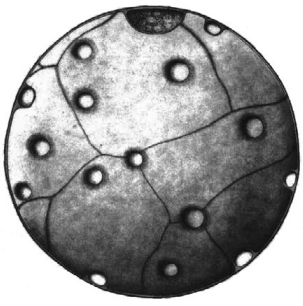
FIXATION MONOTYPY

STATUS INCERTAE SEDIS, HOMONYM, NOMEN DUBIUM

SEE ***ENJUMETIA NOMEN NOVUM***

NOT; HOM.; N.D.

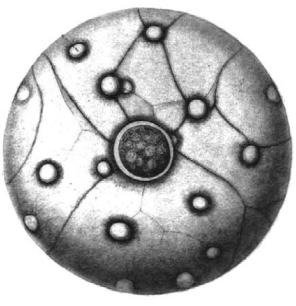
Type



50 µm

Bathysphaera pelagica
Hollande & Cachon-Enjumet, 1959: 167, pl. 2, figs 1-6 (*n.n.*); Hollande & Enjumet, 1960: 127, pl. 37, fig. 4 [lectotype herein]

Support



50 µm

Bathysphaera pelagica Hollande & Enjumet
Hollande & Enjumet, 1960: 127, pl. 37, fig. 3

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Enjumetia*** *NOMEN NOVUM* PRO *BATHYSPHAERA*
Özdikmen, 2009: 245

Remarks: Genus described as monospecific at the time of the generic definition; only illustrated by Hollande & Enjumet (1960).

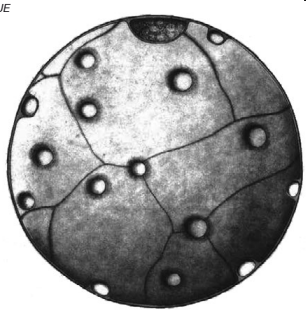
Original series: *Bathysphaera pelagica* Hollande & Enjumet, 1960.

FIXATION MONOTYPY; ICZN, ART. 67.8

STATUS INCERTAE SEDIS, NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

NOT; NOM. NOV.; N.D.
UNIQUE

Type



50 µm

Bathysphaera pelagica
Hollande & Enjumet, 1960: 127, pl. 37, fig. 4 [lectotype herein]

Support



200 µm

Bathysphaera pelagica
Hollande & Enjumet, 1960: 127, pl. 37, fig. 3

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Campanula***
Alvira-Martín, 1972b: 206

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

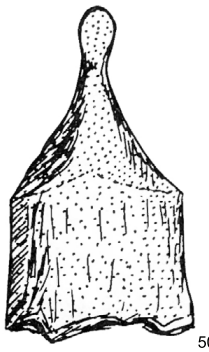
Original series: *Campanula elegans* Alvira-Martín, 1972b.

FIXATION MONOTYPY

STATUS INCERTAE SEDIS, NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

NOT; N.D.
UNIQUE

Type



50 µm

Campanula elegans
Alvira-Martín, 1972b: 206, pl. 2, fig. 5

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Centrocolla***
Cachon & Cachon, 1970 (n.n.); Cachon & Cachon, 1985: 285

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards. Very rare solitary Spumellaria from the Mediterranean plankton characterized by a skeleton of curved spines, a central nuclear axoplast and a perinuclear capsule. Axoplast-roots dichotomous. However, it is considered a nomen nudum because the publication of 1970 is an unpublished work (ICZN art. 9.10) and there is no description in 1985.

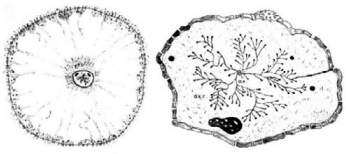
Original series: *Centrocolla asteroides* Cachon & Cachon, 1985.

FIXATION SUBSEQUENT MONOTYPY

STATUS INCERTAE SEDIS, NOMEN DUBIUM
designated herein; name-bearing type not diagnostic

NOT; N.D.
UNIQUE

Type



500 µm

Centrocolla asteroides
Cachon & Cachon, 1985: 285, figs 37a, 37b

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS ***Eutympanium***
Haeckel, 1882: 446

Remarks: Illustration available only for the type species (just a single report after the first illustration).

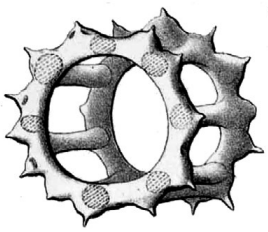
Original series: **Eutympanium coronarium* Haeckel, 1887; **Eutympanium dodecarium* Haeckel, 1887; *Eutympanium militare* Haeckel, 1887; *Eutympanium musicantum* Haeckel, 1887 and **Eutympanium octonarium* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D110)

STATUS INCERTAE SEDIS

NOT
VERY RARE

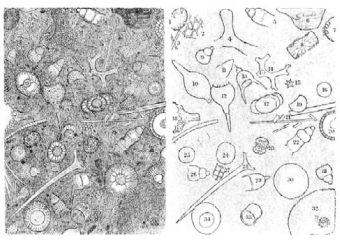
Type



50 µm

Eutympanium musicantum
Haeckel, 1887: 1013, pl. 83, fig. 2

Support



500 µm

Eutympanium musicantum Haeckel
Murray & Renard 1891: pl. 15, fig. 3.33

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Dystympanium**
Haeckel, 1887: 1006

Remarks: Only the type species has been illustrated (reported only by Haeckel 1887).

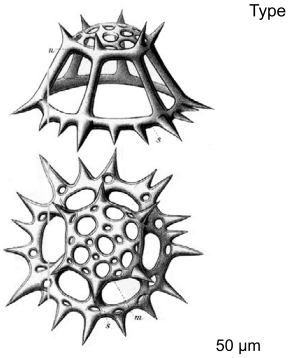
Original series: *Dystympanium dictyocha* Haeckel, 1887; **Dystympanium distephanus* Haeckel, 1887 and **Dystympanium medusa* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D110)

STATUS SILICOFLAGELLATE

NOT
UNIQUE

Type



50 µm

Dystympanium dictyocha
Haeckel, 1887: 1007, pl. 94, figs 15, 16

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Halicalyptra**
Ehrenberg, 1846: 385

NOMINOTYPE ***Halicalyptra* (*Halicalyptra*)**

Remarks: Only two species originally included at the time of the generic definition (both illustrated but just a single report).

Original series: *Halicalyptra fimbriata* Ehrenberg, 1854c and *Halicalyptra virginica* Ehrenberg, 1854c.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D118)

STATUS SILICOFLAGELLATE

NOT
UNIQUE

Type



25 µm

Halicalyptra virginica
Ehrenberg, 1854c: pl. 18, fig. 110 [description in Haeckel, 1862: 289]

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Acrocalpis**
Haeckel, 1882: 427

SUBGENUS ***Halicalyptra* (*Acrocalpis*)**

Remarks: Only the type species clearly belongs to this genus (reported only by Ehrenberg 1854c).

Original series: *Halicalyptra ampulla* Haeckel, 1887; *Halicalyptra campanula* Haeckel, 1887; **Halicalyptra novena* Haeckel, 1887; *Halicalyptra petalospyris* Haeckel, 1887 and *Halicalyptra virginica* Ehrenberg, 1854c.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D119)

STATUS SILICOFLAGELLATE, JUNIOR OBJECTIVE SYNONYM

SEE ***HALICALYPTRA***

NOT; SYN. (obj.)
UNIQUE

Type



25 µm

Halicalyptra virginica
Ehrenberg, 1854c: pl. 18, fig. 110 [description in Haeckel, 1862: 289]

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Paratympanium**
Haeckel, 1882: 447

Remarks: Type species never figured. The support image is the closest species among those originally included in this genus.

Original series: **Paratympanum decastylum* Haeckel, 1887; **Paratympanum hexastylum* Haeckel, 1887 and *Paratympanum octostylum* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D110)

STATUS ? SILICOFLAGELLATE, NOMEN DUBIUM
designated herein; name-bearing type non-existent

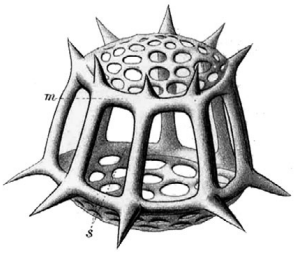
NOT; N.D.

Type

UNFIGURED SPECIES

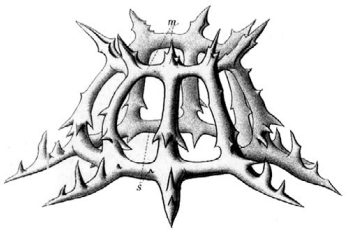
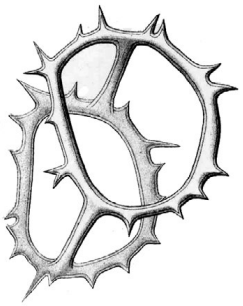
Paratympanum hexastylum
Haeckel, 1887: 1005, unfigured

Support



50 µm

Paratympanum octostylum
Haeckel, 1887: 1005, pl. 94, fig. 14

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA GENUS ***Paratympanum*** INCORRECT SUBSEQUENT SPELLING Haeckel, 1887: 1005 **Remarks**: An incorrect subsequent spelling for *PARATYMPANIUM*. By referring back to p. 447 in his *Prodromus* of 1882, Haeckel in 1887 apparently means *PARATYMPANUM* to be an emendation of the name *PARATYMPANIUM* which is unjustified according to the provisions of ICZN art. 33.3. FIXATION SD ACCORDING TO ICZN, ART. 67.6 (Campbell 1954: D110) STATUS ? SILICOFLAGELLATE, INVALID NAME designated herein SEE ***PARATYMPANIUM***	**NOT; INV.** Type UNFIGURED SPECIES *Paratympanum hexastylum* Haeckel, 1887: 1005, unfigured	Support NO IMAGE PUBLISHED no image available
ERRONEOUSLY DESCRIBED AS POLYCYSTINEA GENUS ***Circotympanum*** Haeckel, 1887: 1012 **Remarks**: Type species never figured. The support image is the closest species among those originally included in this genus. **Original series**: **Circotympanum decagonium* Haeckel, 1887; **Circotympanum hexagonium* Haeckel, 1887 and *Circotympanum octogonium* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D110) STATUS ? SILICOFLAGELLATE, NOMEN DUBIUM designated herein; name-bearing type non-existent	**NOT; N.D.** Type UNFIGURED SPECIES *Circotympanum hexagonium* Haeckel, 1887: 1012, unfigured	Support  50 µm *Circotympanum octogonium* Haeckel, 1887: 1012, pl. 94, fig. 17
ERRONEOUSLY DESCRIBED AS POLYCYSTINEA GENUS ***Echinocalpis*** Haeckel, 1882: 427 SUBGENUS ***Halicalyptra* (*Echinocalpis*)** **Remarks**: This genus has never been illustrated; only two species originally included at the time of the generic definition. **Original series**: **Halicalyptra castanella* Haeckel, 1887 and **Halicalyptra spinosa* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D119) STATUS ? SILICOFLAGELLATE, NOMEN DUBIUM designated herein; name-bearing type non-existent	**NOT; N.D.** Type UNFIGURED SPECIES *Halicalyptra spinosa* Haeckel, 1887: 1170, unfigured	Support NO IMAGE PUBLISHED no image available
ERRONEOUSLY DESCRIBED AS POLYCYSTINEA GENUS ***Parastephanus*** Haeckel, 1882: 446 **Remarks**: Type species never figured. The support image is the closest species among those originally included in this genus. **Original series**: *Parastephanus asymmetricus* Haeckel, 1887; **Parastephanus circularis* Haeckel, 1887; **Parastephanus dispar* Haeckel, 1887 and *Parastephanus quadrispinus* Haeckel, 1887. FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D111) STATUS ? SILICOFLAGELLATE, NOMEN DUBIUM designated herein; name-bearing type non-existent	**NOT; N.D.** Type UNFIGURED SPECIES *Parastephanus circularis* Haeckel, 1887: 1008, unfigured	Support  50 µm *Parastephanus asymmetricus* Haeckel, 1887: 1008, pl. 82, fig. 10

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Conostylus**
Popofsky, 1907: 702

Remarks: Only two species originally included at the time of the generic definition (both illustrated, but the type species figured just once after the first illustration).

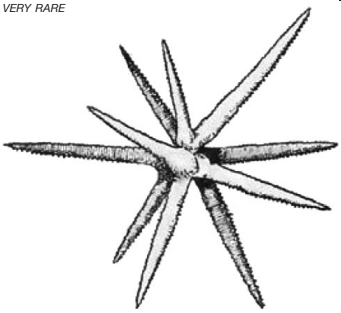
Original series: *Conostylus diploconus* Popofsky, 1907 and *Conostylus vitrosimilis* Popofsky, 1907.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D46)

STATUS SPONGE SPICULE

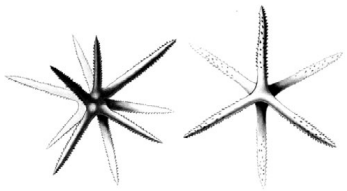
NOT
VERY RARE

Type



Conostylus diploconus
Popofsky, 1907: 704, text-fig. 4

Support



Conostylus diploconus Popofsky
Popofsky 1908: 206, pl. 20, figs 2, 4

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Hataina**
Huang, 1967: 178

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

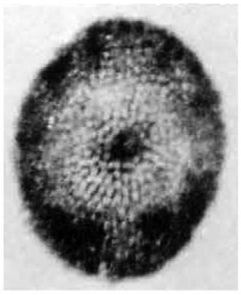
Original series: *Hataina ovata* Huang, 1967.

FIXATION MONOTYPY

STATUS SPONGE SPICULE

NOT
UNIQUE

Type



Hataina ovata
Huang, 1967: 178, pl. 17, fig. 1 [lectotype herein]

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Lithacanthus**
Popofsky, 1907: 699

Remarks: Only two species originally included at the time of the generic definition (both illustrated, but the type species figured just once after the first illustration).

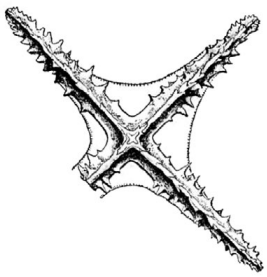
Original series: *Lithacanthus aculeatus* Popofsky, 1907 and *Lithacanthus margarethae* Popofsky, 1907.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D114)

STATUS SPONGE SPICULE

NOT
VERY RARE

Type



Lithacanthus aculeatus
Popofsky, 1907: 700, text-fig. 1

Support



Lithacanthus aculeatus Popofsky
Popofsky 1908: 235, text-fig. 2

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Sethodisculus**
Haeckel, 1887: 423

SUBGENUS ***Sethodiscus* (*Sethodisculus*)**

Remarks: Illustration available only for the type species (just a single report after the first illustration).

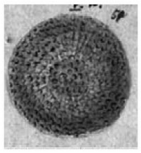
Original series: *Haliomma echinatum* Ehrenberg, 1874b; *Haliomma radiatum* Ehrenberg, 1844b and **Sethodiscus cristatus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D78)

STATUS SPONGE SPICULE

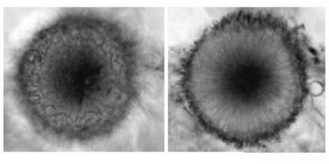
NOT
VERY RARE

Type



Haliomma? *radians*
Ehrenberg, 1839b: 154 (unfigured); Ehrenberg, 1854c: pl. 19, fig. 50

Support



Haliomma radians Ehrenberg
Suzuki *et al.* 2009a: pl. 22, figs 2b, 2c [topotypic material]

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Spongasteriscinus**
Haeckel, 1887: 594

SUBGENUS ***Spongasteriscus* (*Spongasteriscinus*)**

Remarks: No images are available for this genus because it has never been illustrated after the generic definition.

Original series: **Spongasteriscus armatus* Haeckel, 1887; **Spongasteriscus clavatus* Haeckel, 1887; **Spongasteriscus furcatus* Haeckel, 1887; **Spongasteriscus mucronatus* Haeckel, 1887 and **Spongasteriscus ovatus* Haeckel, 1887.

FIXATION SUBSEQUENT DESIGNATION (Campbell 1954: D94)

STATUS ? SPONGE SPICULE. NOMEN DUBIUM
designated herein; name-bearing type non-existent

NOT; N.D.

Type

UNFIGURED SPECIES

Spongasteriscus ovatus
Haeckel, 1887: 594, unfigured

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Tetracanthus**
Popofsky, 1907: 701

Remarks: Homonym of *TETRACANTHUS* Hope, 1834: 107 (Coleoptera), non Hemprich & Ehrenberg *in* Schneider, 1866: 104 (Nematoda); see *TETRACINA nomen novum*.

Original series: *Tetracanthus simplex* Popofsky, 1907.

FIXATION MONOTYPY

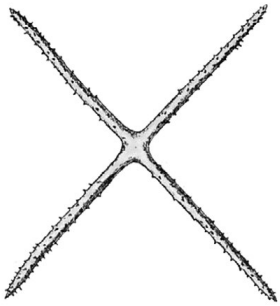
STATUS SPONGE SPICULE, HOMONYM

SEE ***TETRACINA* NOMEN NOVUM**

NOT; HOM.

Type

UNIQUE



50 µm

Tetracanthus simplex
Popofsky, 1907: 701, text-fig. 3

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Tetracina** *NOMEN NOVUM* PRO *TETRACANTHUS*
Loeblich & Tappan, 1961: 221

Remarks: Genus described as monospecific at the time of the generic definition; besides the type species, no other images are available at that time or afterwards.

Original series: *Tetracanthus simplex* Popofsky, 1907.

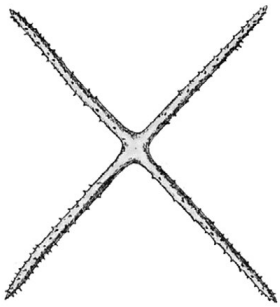
FIXATION MONOTYPY; ICZN, ART. 67.8

STATUS SPONGE SPICULE

NOT; NOM. NOV.

Type

UNIQUE



50 µm

Tetracanthus simplex
Popofsky, 1907: 701, text-fig. 3

Support

NO IMAGE PUBLISHED

no image available

ERRONEOUSLY DESCRIBED AS POLYCYSTINEA

GENUS **Sticholonche**
Hertwig, 1877: 324

Remarks: Monospecific genus. Because no other figures are available, the support image is a junior subjective synonym of the type species.

Original series: *Sticholonche zanclea* Hertwig, 1877.

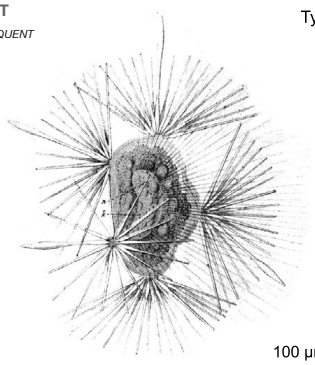
FIXATION MONOTYPY

STATUS TAXOPODIA

NOT

Type

FREQUENT



100 µm

Sticholonche zanclea
Hertwig, 1877: 324, pl. 19, fig. 1

Support



25 µm

Sticholonche sp. A
Takahashi & Ling, 1980: 313, pl. 1, fig. 1

APPENDIX 7. — Taxonomic index of Cenozoic Polycystinea radiolarians. Current taxonomic status is indicated after genus name: homonyms (**hom.**), junior subjective synonyms (**syn.**), junior objective synonyms (**syn. obj.**), invalid taxa (**inv.**); *nomina dubia* (**n.d.**); *nomina nuda* (**n.n.**) and *nomina oblita* (**n.o.**). Suprageneric ranks are provided with reference to the original publications. Abbreviation: n. nov., *nomen novum*.

Infrakingdom RHIZARIA Cavalier-Smith, 2002
Phylum RETARIA Cavalier-Smith, 1999
Subphylum ECTORETA Cavalier-Smith in Cavalier-Smith *et al.*, 2018
Infraphylum RADIOLARIA Müller, 1859b
Class POLYCYSTINEA Ehrenberg, 1839a

Order SPUMELLARIA Ehrenberg, 1876

LINEAGE I Sandín *et al.*, 2021
Superfamily HEXACROMYOIDEA Haeckel, 1882
Clade A Sandín *et al.*, 2021
Family HEXACARYIDAE Haeckel, 1882

	Cleveiplegma	valid
	Haliphormis	valid
	Hexastylanthus	syn.; see *Haliphormis*
	Hexastylettus	syn.; see *Haliphormis*
	Hexastylissus	syn.; see *Haliphormis*
	Hexastylurus	syn.; see *Haliphormis*
	Hexacaryum	valid
	Hexalonchetta	valid
	Hexancistra	valid
	Hexancora	syn. (obj.); *see Hexancistra*
	Hexapitys	valid
?	*Hexadendrum*	n.d.; see ? *Hexapitys*
?	*Hexadendron*	inv.; see *Hexadendrum*
?	*Hexastylarium*	n.d.
?	*Hexastylidium*	n.d.

Clade B Sandín *et al.*, 2021
Family HEXACROMYIDAE Haeckel, 1882

?	*Carpocanthum*	valid
	Hexacromyum	valid
	Cubosphaera	syn.; see *Hexacromyum*
	Hexacontura	syn.; see *Hexacromyum*
?	*Hexacontium*	n.d.; see ? *Hexacromyum*
?	*Hexacontanna*	syn. (obj.); n.d.; see *Hexacontium*
?	*Hexacontosa*	n.d.
	Hexalonchilla	valid
	Hexalonchusa	syn.; see *Hexalonchilla*
	Staurolonchantha	syn.; see *Hexalonchilla*
?	*Hexalonche*	n.d.; see ? *Hexalonchilla*
?	*Hexalonchara*	syn. (obj.); n.d.; see *Hexalonche*
?	*Stauracontium*	n.d.; see ? *Hexalonchilla*
?	*Stauracontarium*	syn. (obj.); n.d.; see *Stauracontium*
	Nanina	valid
	Pentactinosphaera	syn. (obj.); see *Nanina*
?	*Cromyostaurus*	n.d.
?	*Cubaxonium*	n.d.
?	*Hexacontarium*	n.d.
?	*Hexadoras*	n.d.
?	*Hexalonchariu*m	n.d.
?	*Hexalonchidium*	n.d.
?	*Spongiuspinus*	n.d.
?	*Stauracontellium*	n.d.
?	*Stauracontidium*	n.d.
?	*Stauracontonium*	n.d.
?	*Staurancistra*	n.d.
?	*Staurocromyum*	n.d.
?	*Staurolonchella*	n.d.
?	*Staurolonchissa*	n.d.
?	*Staurolonchura*	n.d.

Clade C Sandín *et al.*, 2021
Family HOLLANDOSPHAERIDAE Deflandre, 1973

	Heterosoma	hom.; see *Anomalosoma* n. nov.
	Anomalosoma	n. nov.; valid
	Heliaster	hom.; see *Hollandosphaera* n. nov.
	Hollandosphaera	n. nov.; valid
?	*Coscinomma*	n.d.; see ? *Hollandosphaera*
?	*Coscinommarium*	syn. (obj.); n.d.; see *Coscinomma*
?	*Coscinommidium*	n.d.
?	*Coscinommonium*	n.d.
	Tetrapetalon	valid

Clade D Sandín *et al.*, 2021
Superfamily SPONGOSPHAEROIDEA Haeckel, 1862
Family SPONGOSPHAERIDAE Haeckel, 1862

	Diplospongus	valid
	Spongodendron	valid
	Spongosphaera	valid
	Spongosphaeromma	syn.; see *Spongosphaera*
	Hexadoridium	syn.; see *Spongosphaera*
?	*Spongioconcha*	n.d.

Clade E1 Sandín *et al.*, 2021
Superfamily LITHOCYCLIOIDEA Ehrenberg, 1846
Family ASTRACTURIDAE Haeckel, 1882

	Amphactura	valid
?	*Amphiactura*	inv.; see *Amphactura*
	Dicoccura	syn.; see *Amphactura*
	Diplactinium	syn.; see *Amphactura*
?	*Diplacturium*	n.d.
	Astromma	valid
	Astractinium	syn. (obj.); see *Astromma*
	Astractura	syn.; see *Astromma*
	Astracturium	syn. (obj.); see *Astractura*
	Astrococcura	syn.; see *Astromma*
?	*Astrococcus*	inv.; see *Astrococcura*
	Staurococcura	syn.; see *Astromma*
	Hymeniastrum	valid
	Hymenastrella	syn. (obj.); see *Hymeniastrum*

APPENDIX 7. — Continuation.

	Hymenactura	syn.; see *Hymeniastrum*
	Hymenacturium	syn. (obj.); see *Hymenactura*
	Hymenactinium	syn.; see *Hymeniastrum*
	Pentactura	syn.; see *Hymeniastrum*
	Trigonactinium	syn.; see *Hymeniastrum*
	Trigonacturium	syn.; see *Hymeniastrum*

Family LITHOCYCLIIDAE Ehrenberg, 1846

	Cromyatractus	valid
	Cromyatractium	syn. (obj.); see *Cromyatractus*
	Caryatractus	syn.; see *Cromyatractus*
	Heliosestrum	valid
	Heliosestantha	syn. (obj.); see *Heliosestrum*
	Astrosestrum	syn.; see *Heliosestrum*
	Astrosestantha	syn. (obj.); see *Astrosestrum*
	Astrophacura	syn.; see *Heliosestrum*
?	*Staurodiscus*	hom.; syn.; see *Heliosestrum*
?	*Heliosestomma*	n.d.; see ? *Heliosestrum*
?	*Pristodiscus*	n.d.
	Heliostylus	valid
	Astrostylus	syn.; see *Heliostylus*
	Stylodiscus	syn.; see *Heliostylus*
	Stylentodiscus	syn. (obj.); see *Stylodiscus*
?	*Stylexodiscus*	n.d.
	Lithocyclia	valid
	Astrocyclia	syn.; see *Lithocyclia*
	Coccodiscus	syn.; see *Lithocyclia*
?	*Coccocyclia*	n.d.; see ? *Lithocyclia*
	Phacostaurus	valid
	Phacostaurium	syn. (obj.); see *Phacostaurus*
	Astrostaurus	syn.; see *Phacostaurus*
	Crucidiscus	syn.; see *Phacostaurus*
	Staurentodiscus	syn. (obj.); see *Crucidiscus*
	Sethostaurus	syn.; see *Phacostaurus*
	Sethostaurium	syn. (obj.); see *Sethostaurus*
	Heliostaurus	syn.; see *Phacostaurus*
?	*Staurexodiscus*	n.d.; see ? *Phacostaurus*
	Phacotriactis	valid
	Sethostylus	valid
	Sethostylium	syn. (obj.); see *Sethostylus*
	Amphicyclia	syn.; see *Sethostylus*
	Phacostylus	syn.; see *Sethostylus*
	Phacostylium	syn. (obj.); see *Phacostylus*
	Staurocyclia	valid
	Coccostaurus	syn.; see *Staurocyclia*
	Triactiscus	valid
	Trigonocyclia	syn.; see *Triactiscus*
?	*Echinactura*	n.d.
?	*Stauractura*	n.d.
?	*Stauracturium*	syn. (obj.); n.d.; see *Stauractura*
?	*Stauractinium*	n.d.
?	*Theodiscus*	n.d.
?	*Theodiscoma*	syn. (obj.); n.d.; see *Theodiscus*
?	*Theodiscura*	n.d.
?	*Trochodiscus*	n.d.
?	*Trochodisculus*	syn. (obj.); n.d.; see *Trochodiscus*

Family PANARTIDAE Haeckel, 1887

	Cannartus	valid
	Cannartidissa	syn.; see *Cannartus*
	Cannartiscus	syn.; see *Cannartus*
	Druppula	syn.; see *Cannartus*
	Druppuletta	syn. (obj.); see *Druppula*
	Pipetta	syn.; see *Cannartus*
	Pipettaria	syn.; see *Cannartus*
	Pipettella	syn.; see *Cannartus*
?	*Cannartidium*	n.d.; see ? *Cannartus*
?	*Cannartidella*	syn. (obj.); n.d.; see *Cannartidium*
	Diartus	valid
	Didymocyrtis	valid
	Artidium	syn.; see *Didymocyrtis*
	Cyphinura	syn.; see *Didymocyrtis*
	Cyphocolpus	syn.; see *Didymocyrtis*
	Desmartus	syn.; see *Didymocyrtis*
	Ommatocampula	syn.; see *Didymocyrtis*
	Panaromium	syn.; see *Didymocyrtis*
	Panartus	syn.; see *Didymocyrtis*
	Panartella	syn. (obj.); see *Panartus*
	Panartissa	syn.; see *Didymocyrtis*
	Panartura	syn.; see *Didymocyrtis*
	Panartidium	syn.; see *Didymocyrtis*
	Peripanartus	syn.; see *Didymocyrtis*
	Peripanartula	syn. (obj.); see *Peripanartus*
	Peripanartium	syn.; see *Didymocyrtis*
	Peripanicula	syn.; see *Didymocyrtis*
?	*Cyphonium*	n.d.; see ? *Didymocyrtis*
?	*Ommatocyrtis*	n.d.; see ? *Didymocyrtis*
?	*Ommatospyris*	n.d.; see ? *Didymocyrtis*
?	*Zygartus*	n.d.; see ? *Didymocyrtis*
?	*Artiscus*	n.d.
?	*Artiscium*	syn. (obj.); n.d.; see *Artiscus*
?	*Cyphinidium*	n.d.
?	*Cyphinidoma*	syn. (obj.); n.d.; see *Cyphinidium*
?	*Cyphinidura*	n.d.
?	*Cyphinus*	n.d.
?	*Cyphinoma*	syn. (obj.); n.d.; see *Cyphinus*
?	*Ommatocorona*	n.d.
?	*Panarium*	n.d.
?	*Panarelium*	syn. (obj.); n.d.; see *Panarium*
	Spongolivella	valid
?	*Spongoliva*	n.d. ; see ? *Spongolivella*
?	*Spongolivetta*	syn. (obj.); n.d.; see *Spongoliva*
?	*Spongolivina*	n.d.

APPENDIX 7. — Continuation.

?	*Cladospyris*	n.d.
?	*Cromyocarpus*	n.d.
?	*Cromyodruppa*	n.d.
?	*Cromyodruppium*	syn. (obj.); n.d.; see *Cromyodruppa*
?	*Caryodruppula*	n.d.
?	*Cypassis*	n.d.
?	*Didymospyris*	syn. (obj.); n.d.; see *Cypassis*
?	*Cyphanta*	hom.; n.d.; see *Cyphantella* n. nov.
?	*Cyphantella*	n. nov.; n.d.
?	*Haeckelocyphanta*	n. nov.; syn. (obj.); n.d.; see *Cyphantella*
?	*Cyphantissa*	n.d.
?	*Desmocampe*	n.d.
?	*Diplellipsis*	n.d.
?	*Druppocarpus*	n.d.
?	*Druppocarpetta*	syn. (obj.); n.d.; see *Druppocarpus*
?	*Druppocarpissa*	n.d.
?	*Ommatartus*	n.d.
?	*Ommatacantha*	n.d.
?	*Ommatocoryne*	n.n.
?	*Panartoma*	n.d.
?	*Panicium*	n.d.
?	*Panicidium*	syn. (obj.); n.d.; see *Panicium*
?	*Peripanarium*	n.d.
?	*Peripanicium*	n.d.
?	*Peripanicea*	syn. (obj.); n.d.; see *Peripanicium*
?	*Phacopyle*	n.d.
?	*Prunocarpus*	n.d.
?	*Prunocarpetta*	syn. (obj.); n.d.; see *Prunocarpus*
?	*Prunocarpilla*	n.d.
?	*Artocarpium*	inv.; see *Prunocarpilla*
?	*Prunulissa*	n.d.
?	*Stylartus*	n.d.
?	*Stylartella*	syn. (obj.); n.d.; see *Stylartus*
?	*Stylartura*	n.d.
?	*Zygocampe*	n.d.

Family PHACODISCIDAE Haeckel, 1882

	Periphaena	valid
	Astrophacomma	syn.; see *Periphaena*
	Heliodiscomma	syn.; see *Periphaena*
	Perizona	syn.; see *Periphaena*
	Phacodiscus	valid
	Phacodiscinus	syn. (obj.); see *Phacodiscus*
	Phacodisculus	syn.; see *Phacodiscus*
	Astrophacilla	syn.; see *Phacodiscus*
	Paracenodiscus	syn.; see *Phacodiscus*
	Prunulum	syn.; see *Phacodiscus*
	Prunuletta	syn. (obj.); see *Prunulum*
?	*Coccymelium*	inv.; see *Prunulum*
	Sethodiscinus	syn.; see *Phacodiscus*
?	*Conophacodiscus*	n.d.
?	*Pentadiscus*	n.d.
?	*Triadiscus*	n.d.

Superfamily SPONGODISCOIDEA Haeckel, 1862
Clade E2 Sandín *et al.*, 2021
Family SPONGODISCIDAE Haeckel, 1862

	Spongaster	valid
	Spongastrella	syn. (obj.); see *Spongaster*
	Histiastrella	syn.; see *Spongaster*
	Spongodiscus	valid
	Spongodisculus	syn. (obj.); see *Spongodiscus*
	Spongotrochus	valid
	Spongotrochiscus	syn. (obj.); see *Spongotrochus*
?	*Stylotrochus*	n.d.; see ? *Spongotrochus*
?	*Stylotrochiscus*	syn. (obj.); n.d.; see *Stylotrochus*
?	*Pseudocephalis*	n.d.
?	*Spongolonche*	n.d.

Clade E3 Sandín *et al.*, 2021
Family EUCHITONIIDAE Stöhr, 1880

	Amphicraspedum	valid
	Amphicraspedon	syn. (obj.); see *Amphicraspedum*
	Amphirrhopella	syn.; see *Amphicraspedum*
?	*Amphirhopalum*	n.d.; see ? *Amphicraspedum*
?	*Amphirrhopalium*	syn. (obj.); n.d.; see *Amphirhopalum*
	Dictyocoryne	valid
	Dictyocorynula	syn. (obj.); see *Dictyocoryne*
	Dictyastrum	syn.; see *Dictyocoryne*
	Dictyastrella	syn. (obj.); see *Dictyastrum*
	Euchitonia	syn.; see *Dictyocoryne*
	Hymenastromma	syn.?; see *Dictyocoryne*
	Pteractis	syn.; see *Dictyocoryne*
	Rhopalodictyum	syn.; see *Dictyocoryne*
	Rhopalodictya	syn. (obj.); see *Rhopalodyctium*
	Stylactis	hom.; syn.; see *Styla* n. nov.
	Styla	n. nov.; syn.; see *Dictyocoryne*
?	*Rhopalastrum*	n.d.; see ? *Dictyocoryne*
?	*Rhopalastrella*	syn. (obj.); n.d.; see *Rhopalastrum*
	Hexinastrum	valid
	Hexalastromma	syn.; see *Hexinastrum*
	Pentalastromma	syn.; see *Hexinastrum*
	Pentinastrum	syn.; see *Hexinastrum*
?	*Hexalastrum*	n.d.
?	*Pentalastrum*	n.d.
?	*Pentalastrella*	syn. (obj.); n.d.; see *Pentalastrum*
	Ommatocampe	valid
	Ommatocampium	syn. (obj.); see *Ommatocampe*
	Amphymenium	syn.; see *Ommatocampe*
	Tessarastrum	valid
	Tessarastrella	syn. (obj.); see *Tessarastrum*

APPENDIX 7. — Continuation.

?	*Tessarastromma*	inv.; see *Tessarastromma*
	Tessarostromma	syn.; see *Tessarastrum*
	Hagiastromma	syn.; see *Tessarastrum*
	Tricranastrum	valid
	Dicranastrum	syn.; see *Tricranastrum*
	Dicranaster	syn. (obj.); see *Dicranastrum*
	Spongodicranastrum	syn. (obj.); see *Dicranastrum*
	Myelastrum	syn.; see *Tricranastrum*
	Myelastrella	syn. (obj.); see *Myelastrum*
	Spongomyelastrum	syn. (obj.); see *Myelastrum*
	Myelastromma	syn.; see *Tricranastrum*
	Spongohagiastrum	syn.; see *Tricranastrum*
	Pentophiastromma	syn.; see *Tricranastrum*
	Spongopentophiastrum	syn. (obj.); see *Pentophiastromma*
	Spongostaurus	hom.; syn.; see *Spongostaurina* n. nov.
	Spongostaurina	n. nov.; syn.; see *Tricranastrum*
	Tetracranastrum	syn.; see *Tricranastrum*
	Triastrum	syn.; see *Tricranastrum*
?	*Pentophiastrum*	n.d.
	Trigonastrum	valid
	Trigonastrella	syn. (obj.); see *Trigonastrum*
	Trigonastromma	syn.; see *Trigonastrum*
	Amphicraspedina	syn.; see *Trigonastrum*
	Amphirrhopoma	syn.; see *Trigonastrum*
	Chitonastromma	syn.; see *Trigonastrum*
	Dictyastromma	syn.; see *Trigonastrum*
	Monaxonium	syn.; see *Trigonastrum*
	Rhopalastromma	syn.; see *Trigonastrum*
?	*Chitonastrum*	n.d.
?	*Chitonastrella*	syn. (obj.); n.d.; see *Chitonastrum*

Clade unknown
Family SPONGOBRACHIIDAE Haeckel, 1882

	Spongasteriscus	valid
	Spongasterisculus	syn. (obj.); see *Spongasteriscus*
	Dictyocorynium	syn.; see *Spongasteriscus*
	Spongastromma	valid
	Spongobrachium	valid

LINEAGE II Sandín *et al.*, 2021
Superfamily CLADOCOCCOIDEA Haeckel, 1862
Clade F1 Sandín *et al.*, 2021
Family ETHMOSPHAERIDAE Haeckel, 1862

	Cyrtidosphaera	valid
	Ethmosphaera	valid
	Ethmosphaerella	syn. (obj.); see *Ethmosphaera*
	Monosphaera	syn.; see *Ethmosphaera*
?	*Phormosphaera*	n.d.; see ? *Ethmosphaera*
?	*Ethmosphaeromma*	n.d.
	Haplosphaera	valid
	Heliosphaera	valid
	Heliosphaerella	syn. (obj.); see *Heliosphaera*
?	*Heliosphaeromma*	n.d.
	Liosphaera	valid
	Melitomma	syn. (obj.); see *Liosphaera*
	Craspedomma	syn.; see *Liosphaera*
?	*Briorradiolites*	n.d.
?	*Cenodiscus*	n.d.
?	*Cenolarcus*	n.d.
?	*Coccolarcus*	n.d.
?	*Larcarium*	n.d.
?	*Rhodosphaera*	n.d.
?	*Rhodosphaerella*	syn. (obj.); n.d.; see *Rhodosphaera*
?	*Rhodosphaeromma*	n.d.
?	*Zonodiscus*	n.d.

Clade F2 Sandín *et al.*, 2021
Family CLADOCOCCIDAE Haeckel, 1862

	Arachnosphaera	valid
	Arachnosphaerella	syn. (obj.); see *Arachnosphaera*
?	*Arachnosphaeromma*	n.d.
	Arachnospongus	valid
	Cladococcus	valid
	Cladococcalis	syn. (obj.); see *Cladococcus*
	Cladococcodes	syn.; see *Cladococcus*
	Cladococcurus	syn.; see *Cladococcus*
	Heteracantha	hom.; syn.; see *Anomalacantha* n. nov.
	Anomalacantha	n. nov.; syn.; see *Cladococcus*
	Porococcus	syn.; see *Cladococcus*
?	*Elaphococcus*	n.d.; see ? *Cladococcus*
?	*Elaphococcinus*	syn. (obj.); n.d.; see *Elaphococcus*
?	*Cladococcinus*	n.d.
?	*Elaphococculus*	n.d.
	Diplosphaera	valid
	Diplosphaeromma	syn. (obj.); see *Diplosphaera*
	Astrosphaera	syn.; see *Diplosphaera*
	Astrosphaerella	syn. (obj.); see *Astrosphaera*
	Astrospongus	syn.; see *Diplosphaera*
	Diplosphaerella	syn.; see *Diplosphaera*
	Drymosphaeromma	syn.; see *Diplosphaera*
	Leptosphaera	syn.; see *Diplosphaera*
	Leptosphaerella	syn. (obj.); see *Leptosphaera*
	Leptosphaeromma	syn.; see *Diplosphaera*
?	*Astrosphaeromma*	n.d.; see ? *Diplosphaera*
?	*Drymosphaera*	n.d.; see ? *Diplosphaera*
?	*Drymosphaerella*	syn. (obj.); n.d.; see ? *Drymosphaera*
	Haeckeliella	valid
	Lychnosphaera	valid
	Rhizoplegmidium	syn.; see *Lychnosphaera*
	Rhizospongus	syn.; see *Lychnosphaera*
	Thalassoplegma	syn.; see *Lychnosphaera*
?	*Spongopila*	n.d.; see ? *Lychnosphaera*
?	*Acanthospongus*	n.d.

APPENDIX 7. — Continuation.

?	*Arachnopegma*	n.d.
?	*Arachnopila*	n.d.
?	*Caryomma*	n.d.
?	*Hexacladus*	n.d.
?	*Rhizoplegma*	n.d.
?	*Rhizoplegmarium*	syn. (obj.); n.d.; see *Rhizoplegma*

ORDER ENTACTINARIA
Kozur & Mostler, 1982

LINEAGE III Sandín *et al.*, 2021
Clade G Sandín *et al.*, 2021
Superfamily RHIZOSPHAEROIDEA Haeckel, 1882
Family RHIZOSPHAERIDAE Haeckel, 1882

	Haliommilla	valid
	Actinosphaera	syn. (obj.); see *Haliommilla*
	Elatommura	syn.; see *Haliommilla*
?	*Elatomma*	n.d.
?	*Elatommella*	syn. (obj.); n.d.; see *Elatomma*
	Heliosoma	valid
	Heliosomantha	syn. (obj.); see *Heliosoma*
	Hexarhizacontium	valid
	Rhizosphaera	valid
?	*Rhizospongia*	hom.; n.d.
?	*Pityomma*	n.d.

Superfamily CENTROCUBOIDEA Hollande & Enjumet, 1960
Clade H Sandín *et al.*, 2021
Family CENTROCUBIDAE Hollande & Enjumet, 1960

	Centrocubus	valid
	Octodendron	valid
	Octodendridium	syn. (obj.); see *Octodendron*
	Heterospongus	syn.; see *Octodendron*
?	*Octodendronium*	n.d.

Clade I Sandín *et al.*, 2021
Family EXCENTROCONCHIDAE Hollande & Enjumet, 1960

	Excentroconcha	valid
	Gonosphaera	valid
	Lonchosphaera	valid
	Arachnostylus	syn.; see *Lonchosphaera*

Family QUINQUECAPSULARIIDAE Dumitrica *in* Baumgartner *et al.*, 1995

	Joergensenium	valid

Family SPONGODRYMIDAE Haeckel, 1887

	Plegmosphaeromma	valid
?	*Plegmosphaera*	n.d.; see ? *Plegmosphaeromma*
?	*Plegmosphaerantha*	syn. (obj.); n.d.; see *Plegmosphaera*
?	*Plegmosphaerella*	n.d.; see ? *Plegmosphaeromma*
?	*Plegmosphaerusa*	n.d.; see ? *Plegmosphaeromma*
?	*Styptosphaera*	n.d.; see ? *Plegmosphaeromma*
	Spongodictyum	valid
	Spongodictyoma	syn. (obj.); see *Spongodictyum*
?	*Spongodictyon*	inv.; see *Spongodictyum*
	Spongodrymus	valid
?	*Tetrasphaera*	valid
?	*Tricorporisphaera*	valid
?	*Dictyosoma*	hom.; n.d.; see *Dictyoplegma* n. nov.
?	*Dictyoplegma*	n. nov.; n.d.
?	*Dictyosphagma*	n. nov.; syn. (obj.); n.d.; see *Dictyoplegma*
?	*Dispongia*	n.d.
?	*Spongiommella*	n.d.
?	*Spongothamnus*	n.d.

Clade unknown
Superfamily CENTROLONCHOIDEA Campbell, 1954
Family CENTROLONCHIDAE Campbell, 1954

	Centrolonche	valid
	Stigmosphaerusa	valid
	Stigmostylus	valid
?	*Centracontium*	n.d.
?	*Stigmosphaera*	n.d.

Clade unknown
Superfamily HELIOSATURNALOIDEA Kozur & Mostler, 1972
Family AXOPRUNIDAE Dumitrica, 1985

	Axoprunum	valid
	Ellipsoxiphium	syn.?; see *Axoprunum*
	Stylacontarium	syn.; see *Axoprunum*
	Xiphosphaerella	syn.; see *Axoprunum*
	Dorylonchella	valid
?	*Dorylonchomma*	n.d.
?	*Dorydiscus*	n.d.
?	*Dorydruppa*	n.d.
?	*Doryphacus*	n.d.
?	*Doryprunum*	n.d.

Family SATURNULIDAE Suzuki in Suzuki *et al.* (2021)

	Saturnulus	valid
	Saturnalium	syn.?; see *Saturnulus*
?	*Saturnalis*	n.d.; see ? *Saturnulus*
?	*Saturnalina*	syn. (obj.); n.d.; see *Saturnalis*
?	*Saturninus*	n.d.; see ? *Saturnulus*
?	*Spongostylus*	n.d.; see ? *Saturnulus*
	Spongosaturninus	valid

APPENDIX 7. — Continuation.

LINEAGE unknown
Superfamily THALASSOTHAMNOIDEA Haecker, 1906
Family THALASSOTHAMNIDAE Haecker, 1906

	Cytocladus	valid
	Thalassothamnus	valid

Order SPUMELLARIA
Ehrenberg, 1876 (suite)

LINEAGE IV Sandín *et al.*, 2021
Clade J1–J2 Sandín *et al.*, 2021
Superfamily TREMATODISCOIDEA Haeckel, 1862
Family TREMATODISCIDAE Haeckel, 1862

	Flustrella	valid
	Discospira	hom.; syn.; see *Discospirella* n. nov.
	Discospirella	n. nov.; syn.; see *Flustrella*
	Perichlamydium	syn.; see *Flustrella*
	Polydiscus	n.n.; syn.; see *Flustrella*
	Centrospira	syn.; see *Flustrella*
	Perispira	hom.; syn.; see *Perispirella* n. nov.
	Perispirella	n. nov.; syn.; see *Flustrella*
	Trematodiscus	syn.; see *Flustrella*
	Stylochlamyum	syn.; see *Flustrella*
?	*Spongophacus*	n.d.; see ? *Flustrella*
	Staurospira	valid
	Staurodictyon	syn.; see *Staurospira*
	Tholodiscus	syn.; see *Staurospira*
	Xiphospira	syn.; see *Staurospira*
	Stylodictya	valid
	Stylodictyon	syn. (obj.); see *Stylodictya*
	Stylochlamydium	syn.; see *Stylodictya*
	Stylochlamys	syn. (obj.); see *Stylodictya*
	Stylocyclia	syn.; see *Stylodictya*
	Stylospongia	syn.; see *Stylodictya*
	Stylospira	syn.; see *Stylodictya*
?	*Stylodictula*	n.d.; see ? *Stylodictya*
?	*Tripodictya*	valid
	Xiphodictyon	syn.; see *Tripodictya*
?	*Amphibrachium*	n.d.
?	*Spongostaurus*	n.d.
?	*Spongotripus*	n.d.
?	*Spongotripodiscus*	syn. (obj.); n.d.; see *Spongotripus*
?	*Spongotripodium*	n.d.
?	*Stylospongidium*	n.d.

Clade K Sandín *et al.*, 2021
Superfamily HALIOMMOIDEA Ehrenberg, 1846
Family ACTINOMMIDAE Haeckel, 1862

	Actinomma	valid
	Actinommetta	syn. (obj.); see *Actinomma*
	Cromyomma	syn.; see *Actinomma*
	Dreyerella	syn.; see *Actinomma*
	Drymyomma	syn.; see *Actinomma*
	Echinommura	syn.; see *Actinomma*
	Haliommura	syn.; see *Actinomma*
	Heliosomura	syn.; see *Actinomma*
	Rhaphidococcus	syn.; see *Actinomma*
	Riedelipyle	syn.; see *Actinomma*
	Sphaeropyle	syn.; see *Actinomma*
?	*Acanthosphaera*	n.d.; see ? *Actinomma*
?	*Rhaphidosphaera*	syn. (obj.); n.d.; see *Acanthosphaera*
?	*Chilomma*	n.o.; see ? *Actinomma*
?	*Echinomma*	n.d.; see ? *Actinomma*
?	*Echinommetta*	syn. (obj.); n.d.; see *Echinomma*
	Cromyechinus	valid
	Cromyodrymus	syn.; see *Cromyechinus*
?	*Haliommetta*	n.d.; see ? *Cromyechinus*
	Rhaphidocapsa	valid
?	*Sphaeractis*	valid
?	*Staurocaryum*	valid
	Stomatosphaera	valid
?	*Stuermeria*	valid
?	*Caryosphaera*	n.d.
?	*Dermatosphaera*	n.n.
?	*Heterosphaera*	n.d.
?	*Heterosphaerina*	inv.; see *Heterosphaera*
?	*Parastomatosphaera*	n.d.
?	*Raphidodrymus*	n.d.
?	*Sethosphaera*	n.d.

Family HALIOMMIDAE Ehrenberg, 1846

	Cromyosphaera	valid
	Cromyommetta	syn.; see *Cromyosphaera*
	Cromyommura	syn.; see *Cromyosphaera*
	Haliomma	valid
	Actinommilla	syn.; see *Haliomma*
	Cenosphaera	syn.; see *Haliomma*
	Circosphaera	syn. (obj.); see *Haliomma*
?	*Circulosphaera*	inv.; see *Circosphaera*
	Thecosphaerella	syn.; see *Haliomma*
?	*Porosphaera*	hom.; n.d.; see *Chaunosphaera* n. nov.
?	*Chaunosphaera*	n. nov.; n.d.
?	*Thecosphaerantha*	n.d.
?	*Thecosphaerina*	n.d.
?	*Thecosphaeromma*	n.d.
	Haliommantha	valid
	Hexacontella	valid
	Melittosphaera	valid

APPENDIX 7. — Continuation.

	Conoactinomma	syn.; see *Melittosphaera*
?	*Prunosphaera*	n.d.
	Pseudostaurosphaera	valid
	Pseudostaurolonche	syn.; see *Pseudostaurosphaera*

Family HELIODISCIDAE Haeckel, 1882

	Actinommura	valid
	Excentrosphaerella	syn.?; see *Actinommura*
	Excentrococcus	valid
	Excentrodiscus	valid
	Heliodiscus	valid
	Heliodiscilla	syn. (obj.); see *Heliodiscus*
	Heliodiscetta	syn.; see *Heliodiscus*
	Heliocladus	syn.; see *Heliodiscus*
	Heliodrymus	syn. (obj.); see *Heliodiscus*
	Heliodendrum	syn.; see *Heliodiscus*
	Heliosestilla	syn.; see *Heliodiscus*
?	*Astrophacus*	n.d.; see ? *Heliodiscus*
?	*Astrophacetta*	syn. (obj.); n.d.; see *Astrophacus*
	Helioferrusa	valid
	Phaenicosphaera	valid
?	*Anthomma*	inv.; see *Phaenicosphaera*
	Dreyeropyle	syn.; see *Phaenicosphaera*
?	*Actinommantha*	n.d.; see ? *Phaenicosphaera*
?	*Cerasosphaera*	n.d.; see ? *Phaenicosphaera*
?	*Astrosestilla*	n.d.
?	*Astrosestomma*	n.d.
?	*Distriactis*	n.d.
?	*Heliodiscura*	n.d.

Superfamily LITHELIOIDEA Haeckel, 1862
Clade unknown
? Family CONOCARYOMMIDAE Lipman, 1969

	Conocaryomma	valid
	Conocromyomma	syn.?; see *Conocaryomma*

Clade L1 Sandín *et al.*, 2021
Family LITHELIIDAE Haeckel, 1862

	Lithelius	valid
	Lithospira	syn. (obj.); see *Lithelius*
	Azerbaidjanicus	syn.?; see *Lithelius*
?	*Spireuma*	n.d.; see ? *Lithelius*
?	*Spiremarium*	syn. (obj.); n.d.; see *?Spirema*
?	*Spirema*	inv.; see *Spireuma*
?	*Spiremidium*	n.d.
	Middourium	valid
	Monobrachium	syn.; see *Middourium*
	Spiremaria	valid
	Spiromultitunica	syn.; see *Spiremaria*
?	*Spongodruppium*	n.d.; see ? *Spiremaria*
	Spongocyclia	valid
	Ommatodiscus	syn.; see *Spongocyclia*
	Ommatodisculus	syn. (obj.); see *Ommatodiscus*
	Ommatodiscinus	syn.; see *Spongocyclia*
	Lithocarpium	syn.?; see *Spongocyclia*

Family PHASELIFORMIDAE Pessagno, 1972

	Phaseliforma	valid

Family PYRAMISPONGIIDAE Kozur & Mostler, 1978

	Pyramispongia	valid
	Nodotetraedra	syn.; see *Pyramispongia*

Family SPONGURIDAE Haeckel, 1862

	Ommatogramma	valid
	Spongurus	syn.; see *Ommatogramma*
	Spongurella	syn. (obj.); see *Spongurus*
	Spongurantha	syn.?; see *Ommatogramma*
	Spongocorisca	syn.; see *Ommatogramma*
?	*Sponguromma*	n.d.
?	*Spongellipsis*	n.d.
?	*Spongellipsarium*	syn. (obj.); n.d.; see *Spongellipsis*
?	*Spongellipsidium*	n.d.
?	*Spongodruppa*	n.d.
?	*Spongodruppula*	syn. (obj.); n.d.; see *Spongodruppa*
?	*Spongolena*	n.d.
?	*Spongocore*	n.d.
?	*Spongocorina*	syn. (obj.); n.d.; see *Spongocore*
?	*Stypolarcus*	n.d.

Clade L2 Sandín *et al.*, 2021
Superfamily SPONGOPYLOIDEA Dreyer, 1889
Family SPONGOPYLIDAE Dreyer, 1889

	Schizodiscus	valid
	Spongobrachiopyle	valid
	Spongopyle	valid
	Spongopylarium	syn. (obj.); see *Spongopyle*
	Spongospira	valid
?	*Spiropyle*	n.d.

Family CRISTALLOSPHAERIDAE Popofsky, 1912

	Calcaromma	valid
	Cristallosphaera	syn.; see *Calcaromma*
	Enalomelon	valid

? Family PRUNOPYLIDAE Poche, 1913

	Prunopyle	valid
	Spongopylidium	valid
?	*Ovulopyle*	n.d.
?	*Spirotunica*	n.d.

Appendix 7. — Continuation.

Superfamily Phorticioidea Haeckel, 1882
Clade M1 Sandín *et al.*, 2021
Family Amphitholidae Haeckel, 1887

	Tholomura	valid
	Amphitholonium	syn.; see *Tholomura*
	Amphitholus	syn.; see *Tholomura*
	Amphitholissa	syn. (obj.); see *Amphitholus*
	Amphitholura	syn.; see *Tholomura*
	Cubotholonium	syn.; see *Tholomura*
?	*Tholothauma*	inv.; see *Cubotholonium*
	Cubotholus	syn.; see *Tholomura*
	Cubotholissa	syn. (obj.); see *Cubotholus*
	Staurotholoma	syn.; see *Tholomura*
	Staurotholura	syn.; see *Tholomura*
	Tholartus	syn.; see *Tholomura*
	Tholartella	syn. (obj.); see *Tholartus*
	Tholocubus	syn.; see *Tholomura*
	Tholocubulus	syn. (obj.); see *Tholocubus*
	Tholocubitus	syn.; see *Tholomura*
	Tholodes	syn.; see *Tholomura*
	Tholoma	syn.; see *Tholomura*
	Tholomantha	syn. (obj.); see *Tholoma*
	Tholonilla	syn.; see *Tholomura*
?	*Archidiscus*	n.d.
?	*Dioniscus*	syn. (obj.); n.d.; see *Archidiscus*
?	*Circoniscus*	n.d.
?	*Hexoniscus*	n.d.
?	*Pentoniscus*	n.d.
?	*Tetroniscus*	n.d.
?	*Trioniscus*	n.d.
?	*Axodiscus*	n.d.
?	*Cubotholura*	n.d.
?	*Staurotholonium*	n.d.
?	*Staurotholodes*	syn. (obj.); n.d.; see *Staurotholonium*
?	*Staurotholus*	n.d.
?	*Staurotholissa*	syn. (obj.); n.d.; see *Staurotholus*
?	*Tholartissa*	n.d.
?	*Tholonium*	n.d.
?	*Tholonetta*	syn. (obj.); n.d.; see *Tholonium*
?	*Tholostaurus*	n.d.
?	*Tholostaurantha*	syn. (obj.); n.d.; see *Tholostaurus*
?	*Tholostauroma*	n.d.

Clade M2 Sandín *et al.*, 2021
Family Circodiscidae Dumitrica, 1989

	Annulatospira	valid
	Circodiscullus	valid
	Circodiscus	valid
	Plectodiscus	syn.; see *Circodiscus*
	Sanfiriedelus	valid
	Stylotrochellus	valid

Family Cryptolarnaciidae Dumitrica, 1989

	Coccolarnacium	valid
	Cryptolarnacium	valid
	Globolarnacium	valid
	Phacolarnacium	valid
	Pylolarnacium	valid
?	*Staurosphaerantha*	n.d.

Family Histiastridae Dumitrica, 1989

	Amphicraspedula	valid
	Amphicarydiscus	syn.; see *Amphicraspedula*
	Prunobrachium	syn.; see *Amphicraspedula*
	Histiastrum	valid
	Histiastromma	syn. (obj.); see *Histiastrum*
	Ommathymenium	valid
	Stephanastrum	valid
	Stephanastromma	syn. (obj.); see *Stephanastrum*
	Stephanastrella	syn.; see *Stephanastrum*
	Hagiastrella	syn.; see *Stephanastrum*
	Stauralastromma	syn.; see *Stephanastrum*
?	*Stauralastrum*	n.d.
?	*Stauralastrella*	syn. (obj.); n.d.; see *Stauralastrum*

Family Phorticiidae Haeckel, 1882

	Larnacilla	valid
	Larnacalpis	syn.; see *Larnacilla*
	Phorticium	valid
	Phortopyle	syn. (obj.); see *Phorticium*
	Qiuripylolena	valid
	Sphaerolarnacillium	valid
?	*Amphibrachella*	n.d.
?	*Amphibrachidium*	n.d.
?	*Amphibrachoma*	n.d.
?	*Amphibrachura*	n.d.
?	*Druppulissa*	n.d.
?	*Larnacidium*	n.d.
?	*Larnacoma*	n.d.
?	*Larnacospongus*	n.d.
?	*Larnacostupa*	n.d.
?	*Phortolarcus*	n.d.

Superfamily Larcospiroidea Haeckel, 1887
Family Dipylissidae Dumitrica, 1989

	Dipylissa	valid

Family Larcospiridae Haeckel, 1887

	Larcospira	valid
	Larcospirema	syn. (obj.); see *Larcospira*
?	*Drymospira*	n.d.

APPENDIX 7. — Continuation.

	Pylospira	valid
	Pylospirema	syn. (obj.); see *Pylospira*
	Streblacantha	valid
	Spironium	syn.; see *Streblacantha*
	Spironetta	syn. (obj.); see *Spironium*
	Streblopyle	syn.; see *Streblacantha*
	Tholospira	valid
	Tholospirema	syn. (obj.); see *Tholospira*
	Tholospironium	syn.; see *Tholospira*
	Larcopyle	syn.; see *Tholospira*
	Stomatodiscus	syn.; see *Tholospira*
?	*Larcospironium*	n.d.
?	*Pylospironium*	n.d.
?	*Soreuma*	n.d.
?	*Soreumium*	syn. (obj.); n.d.; see *Soreuma*
?	*Soreumidium*	n.d.
?	*Sorolarcus*	n.d.
?	*Sorolarcium*	syn. (obj.); n.d.; see *Sorolarcus*
?	*Sorolarcidium*	n.d.
?	*Spironilla*	n.d.

Family PALAEOTETRAPYLIDAE Dumitrica, 1989

	Palaeotetrapyle	valid

Clade M3 Sandín *et al.*, 2021
Family PYLODISCIDAE Haeckel, 1887

	Pylodiscus	valid
	Discopyle	syn.; see *Pylodiscus*
	Discozonium	syn.; see *Pylodiscus*
	Pylolena	syn.; see *Pylodiscus*
	Trilobatum	syn.?; see *Pylodiscus*
	Triodiscus	syn.; see *Pylodiscus*
	Triolena	syn.; see *Pylodiscus*
?	*Hexapyle*	n.d.; see ? *Pylodiscus*
?	*Triopyle*	n.d.; see ? *Pylodiscus*
	Sphaeropylolena	valid

Clade M4 Sandín *et al.*, 2021
Family ZONARIIDAE Haeckel, 1887

	Larcidium	valid
	Pylozonium	valid
	Tetrapyle	valid
	Tetrapylura	syn. (obj.); see *Tetrapyle*
	Tetrapylissa	syn.; see *Tetrapyle*
	Amphiaspis	syn.?; see *Tetrapyle*
	Amphipylura	syn.; see *Tetrapyle*
	Dizonitis	syn.; see *Tetrapyle*
	Echinosphaera	syn.; see *Tetrapyle*
	Larnacantha	syn.; see *Tetrapyle*
	Octopylura	syn.; see *Tetrapyle*
	Pylonura	syn.; see *Tetrapyle*
	Schizomma	syn.; see *Tetrapyle*
	Trizonium	syn.; see *Tetrapyle*
	Trizonaris	syn. (obj.); see *Trizonium*
	Zoniscus	syn.; see *Tetrapyle*
	Zonarium	syn.; see *Tetrapyle*
	Zonidium	syn.; see *Tetrapyle*
?	*Monozonium*	n.d.; see ? *Tetrapyle*
?	*Monozonaris*	syn. (obj.); n.d.; see *Monozonium*
?	*Spongophortis*	n.d.; see ? *Tetrapyle*
?	*Stypophorticium*	syn. (obj.); n.d.; see *Spongophortis*
?	*Stylophorticium*	inv.; see *Stypophorticium*
?	*Spongophorticium*	n.d.; see ? *Tetrapyle*
?	*Tetrapylonium*	n.d.; see ? *Tetrapyle*
?	*Trizonitis*	n.d.; see ? *Tetrapyle*
?	*Amphipyle*	n.d.
?	*Amphipylissa*	syn. (obj.); n.d.; see *Amphipyle*
?	*Amphipylonium*	n.d.
?	*Caryolithis*	n.n.
?	*Dizonium*	n.d.
?	*Dizonaris*	syn. (obj.); n.d.; see *Dizonium*
?	*Monozonitis*	n.d.
?	*Octopyle*	n.d.
?	*Octopylissa*	syn. (obj.); n.d.; see *Octopyle*
?	*Pylonium*	n.d.
?	*Pylonissa*	syn. (obj.); n.d.; see *Pylonium*
?	*Streblonia*	n.d.

LINEAGE unknown
Superfamily PSEUDOAULOPHACOIDEA Riedel, 1967
Family PATULIBRACCHIIDAE Pessagno, 1971

	Cryptomanicula	valid
?	*Heterosestrum*	valid
?	*Hexacyclia*	syn.; see *Heterosestrum*
	Trimanicula	valid

Family PSEUDOAULOPHACIDAE Riedel, 1967

	Pentapylonium	valid

Family SUTTONIIDAE Schaaf, 1976

	Homunculodiscus	valid
	Parasuttonium	valid
	Suttonium	valid

LINEAGE unknown
Superfamily STYLOSPHAEROIDEA Haeckel, 1887
Family ENTAPIIDAE Dumitrica in De Wever *et al.*, 2001

	Entapium	valid

Family STYLATRACTIDAE Schröder, 1909

	Druppatractylis	valid

APPENDIX 7. — Continuation.

	Lithatractus	syn.; see *Druppatractylis*
	Lithatractara	syn. (obj.); see *Lithatractus*
	Stylatractus	syn.; see *Druppatractylis*
	Stylatractara	syn. (obj.); see *Druppatractylis*
	Stylatractylis	syn.; see *Druppatractylis*
	Ellipsostylus	valid
	Ellipsostyletta	syn. (obj.); see *Ellipsostylus*
	Ellipsostylissa	syn.; see *Ellipsostylus*
	Sphaerostylomma	syn.; see *Ellipsostylus*
	Lithapium	valid
	Xiphatractus	syn.; see *Lithapium*
	Xiphatractara	syn. (obj.); see *Xiphatractus*
	Xiphatractium	syn.; see *Lithapium*
?	*Druppatractium*	n.d.; see ? *Lithapium*
	Lithomespilus	valid
	Stylatractona	valid
	Amphisphaerissa	syn.; see *Stylatractona*
	Stylosphaerantha	valid
	Praestylosphaera	syn.; see *Stylosphaerantha*
	Xiphosphaerantha	syn.?; see *Stylosphaerantha*
?	*Amphistylus*	n.d.; see ? *Stylosphaerantha*
	Xiphatractylis	valid
	Cromydruppocarpus	syn.; see *Xiphatractylis*
	Heliosestarium	syn.; see *Xiphatractylis*
	Xiphosphaeromma	syn.?; see *Xiphatractylis*
	Xiphostylantha	valid
	Druppatractus	syn.; see *Xiphostylantha*
	Druppatractara	syn. (obj.); see *Xiphostylantha*
	Sphaerostylantha	syn. (obj.); see *Xiphostylantha*
	Xiphostylissa	valid
	Xiphostyletta	syn.; see *Xiphostylissa*
?	*Amphisphaera*	n.d.
?	*Amphisphaerantha*	syn. (obj.); n.d.; see *Amphisphaera*
?	*Amphisphaerella*	n.d.
?	*Amphisphaeromma*	n.d.
?	*Axellipsis*	n.d.
?	*Caryostylus*	n.d.
?	*Cenellipsis*	n.d.
?	*Cenellipsium*	syn. (obj.); n.d.; see *Cenellipsis*
?	*Cenellipsula*	n.d.
?	*Ellipsis*	inv.; see *Cenellipsula*
?	*Cromyostaurolonche*	n.d.
?	*Cromyostylus*	n.d.
?	*Echinocapsa*	n.d.
?	*Ellipsidium*	n.d.
?	*Ellipsoxiphetta*	n.d.
?	*Sphaerostylus*	n.d.
?	*Sphaerostyletta*	n.d.
?	*Sphaerostylissa*	n.d.
?	*Spongolonche*	hom.; n.d.; see *Spongolonchis* n. nov.
?	*Spongolonchis*	n. nov.; n.d.
?	*Spongostylium*	n.d.
?	*Spongostylidium*	inv.; see *Spongostylium*
?	*Stylatractium*	n.d.
?	*Stylocromyum*	n.d.
?	*Xiphatractona*	n.d.
?	*Xiphosphaerissa*	n.d.

Family STYLOSPHAERIDAE Haeckel, 1887

	Druppatractona	valid
	Lithatractona	valid
?	*Lithatractium*	n.d.
?	*Lithatractylis*	n.d.
	Spongatractus	valid
	Spongoprunum	syn.?; see *Spongatractus*
	Spongoxiphus	syn.; see *Spongatractus*
	Stylosphaera	valid
	Stylosphaerella	syn. (obj.); see *Stylosphaera*
	Stylosphaerissa	syn.; see *Stylosphaera*
?	*Stylosphaeromma*	n.d.

Family TUBOSPHAERIDAE Suzuki in Suzuki *et al.* (2021)

	Staurosphaerella	valid
?	*Staurosphaeromma*	n.d.
	Stauroxiphos	valid
	Staurolonchidium	syn.; see *Stauroxiphos*
	Stylostaurus	valid
	Tubosphaera	valid
?	*Staurostylus*	n.d.

Incertae placement spumellarians

	Peritiviator	valid
	Tanochenia	valid
	Tepka	valid

ORDER NASSELLARIA Ehrenberg, 1876

LINEAGE I Sandín *et al.*, 2019
Clade A Sandín *et al.*, 2019
Superfamily AMPHIPYNDACOIDEA Riedel, 1967
Family AMPHIPYNDACIDAE Riedel, 1967

	Amphipternis	valid
	Amphiparvex	syn.; see *Amphipternis*
	Protostichocapsa	syn.; see *Amphipternis*

APPENDIX 7. — Continuation.

Superfamily ARCHAEODICTYOMITROIDEA Pessagno, 1976
Family ARCHAEODICTYOMITRIDAE Pessagno, 1976

	Dictyomitra	valid
	Dictyomitroma	syn. (obj.); see *Dictyomitra*
	Diplostrobus	syn.; see *Dictyomitra*
	Zifondium	syn.; see *Dictyomitra*

Superfamily EUCYRTIDIOIDEA Ehrenberg, 1846
Family EUCYRTIDIIDAE Ehrenberg, 1846

	Artocapsa	valid
	Acanthocyrtis	syn.?; see *Artocapsa*
	Cymaetron	valid
	Cyrtocapsella	valid
	Syringium	syn.; see *Cyrtocapsella*
	Eucyrtidium	valid
?	*Stichocyrtis*	n.d.
	Glomaria	valid
	Lithocampe	valid
	Lithocampula	syn. (obj.); see *Lithocampe*
	Ariadnella	syn.; see *Lithocampe*
	Cyrtopenta	syn.; see *Lithocampe*
	Lithomitrissa	syn.; see *Lithocampe*
	Lithopera	valid
	Stichocorys	valid
	Artophormis	syn.; see *Stichocorys*
	Cyrtharia	syn.; see *Stichocorys*
	Cyrtophormis	syn.; see *Stichocorys*
	Cyrtophormium	syn. (obj.); see *Cyrtophormis*
	Cyrtophormiscus	syn.; see *Stichocorys*
	Stichophaenoma	syn.; see *Stichocorys*
	Cyrtocapsoma	syn.?; see *Stichocorys*
	Eusyringoma	syn.?; see *Stichocorys*
	Stichophatna	valid
?	*Stichophaena*	inv.; see *Stichophatna*
	Stichophaenidium	syn. (obj.); see *Stichophaena*
	Cyrtolagena	syn.; see *Stichophatna*
	Sticholagena	syn.; see *Stichophatna*
	Stichophormiscus	syn.; see *Stichophatna*
	Stichophormium	syn.; see *Stichophatna*
?	*Stichopera*	n.d.
?	*Stichoperina*	syn. (obj.); n.d.; see *Stichopera*
	Stichopterygium	valid
	Artocyrtis	syn.; see *Stichopterygium*
	Conostrobus	syn.; see *Stichopterygium*
	Spirocyrtoma	syn.; see *Stichopterygium*
	Stichopodium	syn.; see *Stichopterygium*
	Theocoronium	valid
	Theocapsetta	syn.; see *Theocoronium*
	Theocapsomma	syn.; see *Theocoronium*
	Tricolocamptra	valid
	Udan	valid
?	*Artophatna*	n.d.
?	*Artophaena*	inv.; see *Artophatna*
?	*Diabolocampe*	n.d.
?	*Podocampe*	n.d.
?	*Pylosphaera*	n.d.
?	*Spirocampe*	n.d.

Family LITHOSTROBIDAE Petrushevskaya, 1975

	Lithostrobus	valid
	Cornustrobus	syn.; see *Lithostrobus*
	Cyrtostrobus	syn.?; see *Lithostrobus*
	Eostichomitra	syn.; see *Lithostrobus*

Family XITOMITRIDAE O'Dogherty *et al.*, 2017

	Dictyomitrella	valid
	Parvimitrella	syn.; see *Dictyomitrella*

LINEAGE II Sandín *et al.*, 2019
Clade B Sandín *et al.*, 2019
Superfamily PLECTOPYRAMIDOIDEA Haecker, 1908
Family PLECTOPYRAMIDIDAE Haecker, 1908

	Cinclopyramis	valid
	Peripyramis	syn.; see *Cinclopyramis*
	Enneapleuris	syn.; see *Cinclopyramis*
	Plectopyramis	syn.; see *Cinclopyramis*
	Cephalopyramis	syn.; see *Cinclopyramis*
	Sestropyramis	syn.; see *Cinclopyramis*
	Sethopyramis	syn.; see *Cinclopyramis*
	Spongopyramis	syn.; see *Cinclopyramis*
?	*Bathropyramis*	n.d.; see ? *Cinclopyramis*
?	*Acropyramis*	syn. (obj.); n.d.; see *Bathropyramis*
?	*Cladopyramis*	n.d.; see ? *Cinclopyramis*
?	*Hexapleuris*	n.d.; see ? *Cinclopyramis*
?	*Actinopyramis*	n.d.
	Cladarachnium	valid
	Cornutella	valid
	Cornutissa	syn. (obj.); see *Cornutella*
?	*Sethodrepanum*	inv.; see *Cornutella*
	Cornutellium	hom.; syn.; see *Cornutella*
	Orthocornutanna	syn.; see *Cornutella*
?	*Ceratarachnium*	inv.; see *Cornutella*
?	*Cornutosa*	n.d.; see ? *Cornutella*
?	*Cornutanna*	n.d.
?	*Heterocornutanna*	n.d.
	Haliphormis	hom.; see *Haliphormartidium* n. nov.
	Haliphormartidium	valid
	Litharachnium	valid
	Litharachnidium	syn. (obj.); see *Litharachnium*
?	*Craspedilium*	inv.; see *Litharachnium*
?	*Litharachnoma*	n.d.
	Polypleuris	valid
?	*Archiphormis*	n.d.

APPENDIX 7. — Continuation.

? Family LAMPROMITRIDAE Haeckel, 1882

	Lamprodiscus	valid
	Lampromitra	valid
?	*Heptaphormis*	inv.; see *Lampromitra*
	Hexaphormis	syn.; see *Lampromitra*
	Pentaphormis	syn.; see *Lampromitra*

Incertae Familiae

	Zealithapium	valid

Clade C Sandín *et al.*, 2019
Superfamily CARPOCANIOIDEA Haeckel, 1882
Family CARPOCANIIDAE Haeckel, 1882

	Anthocyrturium	valid
	Artobotrys	valid
	Carpocanium	valid
	Carpocanidium	syn. (obj.); see *Carpocanium*
	Asecta	syn.; see *Carpocanium*
	Cryptoprora	syn.; see *Carpocanium*
	Cyrtocalpis	syn.; see *Carpocanium*
	Sethamphora	syn.; see *Carpocanium*
	Spongiocanium	syn.; see *Carpocanium*
?	*Carpocanobium*	n.d.
?	*Carpocanistrum*	n.d.; see ? *Carpocanium*
?	*Dictyoprona*	n.d.; see ? *Carpocanium*
	Carpocanopsis	valid
	Cryptocarpium	syn.; see *Carpocanopsis*
	Tripterocalpis	valid
?	*Cystophormis*	n.d.

Family DIACANTHOCAPSIDAE O'Dogherty, 1994

	Myllocercion	valid
	Schadelfusslerus	syn.; see *Myllocercion*

Clade D Sandín *et al.*, 2019
Superfamily ARTOSTROBIOIDEA Riedel, 1967
Family ARTOSTROBIIDAE Riedel, 1967

	Botryostrobus	valid
	Artostrobium	syn.; see *Botryostrobus*
	Buryella	valid
	Dictyoprora	valid
	Streptodelus	syn. (obj.); see *Dictyoprora*
	Lithamphora	valid
	Acanthocyrtis	hom.; syn.; see *Phormostichoartus* n. nov.
	Phormostichoartus	n. nov.; syn.; see *Lithamphora*
	Poroamphora	syn.; see *Lithamphora*
	Plannapus	valid
	Sertiseria	valid
	Siphocampe	valid
	Siphocampula	syn.; see *Siphocampe*
	Lithomitra	syn.; see *Siphocampe*
	Lithomitrella	syn. (obj.); see *Lithomitra*
	Tricolocampium	syn.; see *Siphocampe*
	Siphostichartus	valid
	Spirocyrtis	valid
	Spirocyrtidium	syn. (obj.); see *Spirocyrtis*
	Theocamptra	valid
	Tricolocapsa	valid
?	*Tricolopera*	inv.; see *Tricolocapsa*
	Tricolocapsula	syn. (obj.); see *Tricolocapsa*
	Carpocanarium	syn.; see *Tricolocapsa*
?	*Chlamidophora*	n.d.
?	*Stylocapsa*	n.d.
?	*Tricolocapsium*	n.d.

Family RHOPALOSYRINGIIDAE Empson-Morin, 1981

	Artostrobus	valid
	Artostrobulus	syn. (obj.); see *Artostrobus*
	Botryometra	valid
	Ectonocorys	valid
	Pterocyrtidium	valid
	Rhopalosyringium	valid
	Calompterium	syn.; see *Rhopalosyringium*
?	*Lithocampana*	n.d.

Clade E Sandín *et al.*, 2019
Superfamily ACANTHODESMIOIDEA Haeckel, 1862
Family ACANTHODESMIIDAE Haeckel, 1862

	Acanthodesmia	valid
	Acanthostephanus	syn.; see *Acanthodesmia*
	Lithocoronis	syn.; see *Acanthodesmia*
	Octotympanum	syn.; see *Acanthodesmia*
	Tristephanium	syn. (obj.); see *Triostephus*
	Triostephus	syn.; see *Acanthodesmia*
	Tristephaniscus	syn.; see *Acanthodesmia*
	Tympanium	syn.; see *Acanthodesmia*
?	*Tympanidium*	inv.; see *Acanthodesmia*
	Tympanura	syn. (obj.); see *Tympanidium*
	Zygostephanus	syn.; see *Acanthodesmia*
	Zygostephus	syn. (obj.); see *Zygostephanus*
?	*Zygostephaniscus*	n.d.; see ? *Acanthodesmia*
	Dictyospyris	valid
	Dictyospyrantha	syn.?; see *Dictyospyris*
	Dictyospyrella	syn.; see *Dictyospyris*
	Dictyospyrissa	syn.; see *Dictyospyris*
?	*Dictyospyromma*	n.d.
	Eucoronis	valid
	Acrocoronis	syn. (obj.); see *Eucoronis*
	Acrocubus	syn.; see *Eucoronis*
	Apocubus	syn. (obj.); see *Acrocubus*
	Coronidium	syn.; see *Eucoronis*
?	*Tetracubus*	n.d.; see ? *Eucoronis*

Appendix 7. — Continuation.

?	*Podocoronis*	n.d.; see ? *Eucoronis*
?	*Dipocoronis*	syn. (obj.); n.d.; see *Podocoronis*
?	*Hexacoronis*	n.d.; see ? *Eucoronis*
?	*Tympaniscus*	n.d.; see ? *Eucoronis*
?	*Dipocubus*	n.d.
?	*Tripocubus*	n.d.
	Lithocircus	valid
	Archicircus	syn.; see *Lithocircus*
	Archistephus	syn. (obj.); see *Archicircus*
?	*Monostephus*	n.d.
?	*Dendrocircus*	n.d.; see ? *Lithocircus*
	Lithocubus	valid
	Lithotympanium	valid
?	*Lithotympanum*	inv.; see *Lithotympanium*
	Semantis	valid
	Cortiniscus	syn.; see *Semantis*
	Tricolospyris	valid
	Perispyris	syn.; see *Tricolospyris*
	Trissocyclus	valid
	Tricyclarium	syn. (obj.); see *Trissocyclus*
	Tricyclonium	syn.; see *Trissocyclus*
	Trissocircus	syn.; see *Trissocyclus*
	Tricircarium	syn. (obj.); see *Trissocircus*
	Tricirconium	syn.; see *Trissocyclus*
	Zygostephanium	syn.; see *Trissocyclus*
	Tympanomma	valid
?	*Circospyris*	n.d.
?	*Plectocoronis*	n.d.
?	*Stylocoronis*	n.d.
?	*Tetracoronis*	n.d.
?	*Tripocoronis*	n.d.
?	*Prismatium*	n.d.
?	*Stephaniscus*	n.d.
?	*Stephanolithis*	n.d.

Family Cephalospyrididae Haeckel, 1882

	Androspyris	valid
	Ceratospyris	valid
	Liriocyrtis	syn.; see *Ceratospyris*
?	*Hexaspyris*	n.d.; see ? *Ceratospyris*
?	*Hexaspyridium*	syn. (obj.); n.d.; see *Hexaspyris*
?	*Zygospyris*	n.d.; see ? *Ceratospyris*
	Corythospyris	valid
	Dendrospyris	valid
	Desmospyris	valid
	Phormospyris	syn.; see *Desmospyris*
	Dorcadospyris	valid
	Brachiospyris	syn.; see *Dorcadospyris*
	Gamospyris	syn.; see *Dorcadospyris*
	Stephanospyris	hom.; syn.; see *Dorcadospyris*
?	*Cantharospyris*	n.d.; see ? *Dorcadospyris*
?	*Dipodospyris*	n.d.; see ? *Dorcadospyris*
?	*Dipospyris*	inv.; see *Dipodospyris*
	Elaphospyris	valid
	Giraffospyris	syn. (obj.); see *Elaphospyris*
?	*Aegospyris*	n.d.; see ? *Elaphospyris*
?	*Therospyris*	n.d.; see ? *Elaphospyris*
	Gorgospyris	valid
	Gorgospyrium	syn. (obj.); see *Gorgospyris*
	Lamprospyris	valid
	Lophospyris	hom.; see *Eulophospyris* n. nov.
	Eulophospyris	syn.?; see *Lamprospyris*
	Liriospyris	valid
	Petalospyromma	syn.; see *Liriospyris*
?	*Clathrospyris*	n.d.; see ? *Liriospyris*
	Lophospyris	valid
	Semantrum	syn.?; see *Lophospyris*
	Pentaspyris	valid
	Taurospyris	syn.; see *Pentaspyris*
	Petalospyris	valid
	Petalospyrantha	syn.; see *Petalospyris*
	Petalospyrella	syn.; see *Petalospyris*
	Petalospyrissa	syn.; see *Petalospyris*
	Anthospyris	syn.; see *Petalospyris*
	Patagospyris	syn.; see *Petalospyris*
	Rhodospyris	syn.; see *Petalospyris*
	Sepalospyris	syn.; see *Petalospyris*
	Platybursa	valid
	Cephalospyris	syn.; see *Platybursa*
	Cyrtostephanus	syn.; see *Platybursa*
	Tessarospyris	syn.; see *Platybursa*
	Clathrobursa	syn. (obj.); see *Tessarospyris*
	Thamnospyris	valid
	Tholospyris	valid
	Tholospyrium	syn. (obj.); see *Tholospyris*
	Tholospyridium	syn.; see *Tholospyris*
	Tristylospyris	syn.; see *Tholospyris*
	Tristylospyrula	syn. (obj.); see *Tristylospyris*
	Tiarospyris	valid
	Triceraspyris	valid
	Triospyrium	syn.; see *Triceraspyris*
	Acrospyris	syn.; see *Triceraspyris*
	Tripospyrella	syn.; see *Triceraspyris*
?	*Triospyridium*	n.d.
?	*Triospyris*	n.d.
?	*Tripodospyris*	n.d.
?	*Tripospyris*	inv.; see *Tripodospyris*
?	*Tripospyrantha*	syn. (obj.); n.d.; see *Tripospyris*
?	*Tripospyrissa*	n.d.
?	*Tripospyromma*	n.d.
?	*Archiphatna*	n.d.

APPENDIX 7. — Continuation.

?	*Archiphaena*	inv.; see *Archiphatna*
?	*Coronophatna*	syn. (obj.); n.d.; see *Archiphatna*
?	*Coronophaena*	inv.; see *Archiphatna*
?	*Cladophatna*	n.d.
?	*Calpophaena*	inv.; see *Cladophatna*
?	*Acrocorona*	syn. (obj.); n.d.; see *Cladophatna*
?	*Cladocorona*	n.d.
?	*Clathrocircus*	n.d.
?	*Calpocapsa*	n.d.
?	*Semantidium*	n.d.
?	*Semantiscus*	n.d.
?	*Spyridobotrys*	n.d.
?	*Polyspyris*	syn. (obj.); n.d.; see *Spyridobotrys*
?	*Pylospyris*	inv.; see *Polyspyris*
?	*Stephanophatna*	n.d.
?	*Stephanophaena*	inv.; see *Stephanophatna*
?	*Stephanospyris*	n.d.
?	*Tetraspyris*	n.d.
?	*Tetrarhabda*	syn. (obj.); n.d.; see *Tetraspyris*

Family PARADICTYIDAE Haeckel, 1882

	Amphispyris	valid
	Amphispyrium	syn. (obj.); see *Amphispyris*
	Amphispyridium	syn.; see *Amphispyris*
	Microcubus	syn.; see *Amphispyris*
	Toxarium	syn.; see *Amphispyris*
	Toxellium	syn. (obj.); see *Toxarium*
	Toxonium	syn.; see *Amphispyris*
	Toxidium	hom.; syn.; see *Toxidiella* n. nov.
	Toxidiella	n. nov.; syn.; see *Amphispyris*
	Tricyclidium	syn.?; see *Amphispyris*
?	*Protympanium*	n.d.; see ? *Amphispyris*
	Nephrodictyum	valid
	Nephrospyris	syn. (obj.); see *Nephrodictyum*
	Paradictyum	syn.; see *Nephrodictyum*
	Psychospyris	valid
	Sphaerospyris	valid

Family STEPHANIIDAE Haeckel, 1882

	Zygocircus	valid
	Cortina	syn.; see *Zygocircus*
	Plagiocarpa	syn.; see *Zygocircus*
	Stephanium	syn.; see *Zygocircus*

LINEAGE III Sandín *et al.*, 2019
Clade X Sandín *et al.*, 2019
Superfamily ARCHIPILIOIDEA Haeckel, 1882
Family ARCHIPILIIDAE Haeckel, 1882

	Archipilium	valid
	Nothotripodiscinus	syn.; see *Archipilium*
?	*Trissopilium*	n.d.

Family THEOPHORMIDIDAE Haeckel, 1882

	Enneaphormis	valid
	Theophormis	valid
	Astrophormis	syn.; see *Theophormis*
?	*Leptarachnium*	inv.; see *Astrophormis*
?	*Octophormis*	n.d.
?	*Sethophormis*	n.d.
?	*Tetraphormis*	syn. (obj.); n.d.; see *Sethophormis*
	Velicucullus	valid

Clade F Sandín *et al.*, 2019
Superfamily THEOPILIOIDEA Haeckel, 1882
Family ANTHOCYRTIDIDAE Haeckel, 1882

	Anthocyrtis	valid
	Anthocyrtella	n. nov.; syn.; see *Anthocyrtis*
	Anthocyrtium	syn.; see *Anthocyrtis*
	Anthocyrtarium	syn. (obj.); see *Anthocyrtium*
	Clathrocyclas	syn.; see *Anthocyrtis*
	Clathrocyclia	syn. (obj.); see *Clathrocyclas*
	Coniforma	syn.; see *Anthocyrtis*
	Eurystomoskevos	valid
	Microsciadiocapsa	valid
	Lipmanium	syn.; see *Microsciadiocapsa*
	Scyphiforma	syn.; see *Microsciadiocapsa*
	Squinabolella	syn.; see *Microsciadiocapsa*

Family THEOPILIIDAE Haeckel, 1882

	Clathrocycloma	valid
	Eucecryphalus	valid
	Eucecryphalium	syn. (obj.); see *Eucecryphalus*
	Cecryphalium	syn.; see *Eucecryphalus*
	Corocalyptra	syn.; see *Eucecryphalus*
	Theopilium	syn.; see *Eucecryphalus*
?	*Eucyrtomphalus*	n.d.
?	*Theocalyptra*	n.d.; see ? *Eucecryphalus*

Superfamily STICHOPILIOIDEA Haeckel, 1882
Family STICHOPILIIDAE Haeckel, 1882

	Artopilium	valid
	Trictenartus	syn. (obj.); see *Artopilium*
	Pterocorythium	hom.; syn.; see *Artopilium*
	Ectotoxon	valid
	Lophoconus	valid
	Stichopilium	valid
	Triacartus	syn. (obj.); see *Stichopilium*

APPENDIX 7. — Continuation.

Clade G Sandín *et al.*, 2019
Superfamily PLAGIACANTHOIDEA Hertwig, 1879
Family CERATOCYRTIDAE Petrushevskaya, 1981

	Ceratocyrtis	valid
	Bathrocalpis	syn.; see *Ceratocyrtis*
	Helotholus	syn.; see *Ceratocyrtis*
	Dictyoceras	hom.; see *Lipmanella* n. nov.
	Lipmanella	valid
	Entepipedus	valid
	Gomisterna	valid
	Gondwanaria	valid
?	*Periarachnium*	valid
?	*Phlebarachnium*	valid

Family DICTYOCRYPHALIDAE Suzuki in Suzuki *et al.* (2021)

	Antarctissa	valid
	Botryopera	valid
	Trisulcus	syn.; see *Botryopera*
?	*Lithobotrys*	n.d.; see ? *Botryopera*
	Dictyocryphalus	valid
	Dictyocephalus	hom.; syn.; see *Dictyocryphalus*
	Discocephalus	nom. corr.; hom.; syn.; see *Dictyocryphalus*
	Cephaluspinus	syn.?; see *Dictyocryphalus*
?	*Lophophaena*	n.d.; see ? *Dictyocryphalus*
?	*Lophophaenula*	syn. (obj.); n.d.; see *Lophophaena*
?	*Lophophaenoma*	n.d.; see ? *Dictyocryphalus*

Family DIMELISSIDAE Petrushevskaya, 1981

	Arachnocorys	valid
	Arachnocoronium	syn. (obj.); see *Arachnocorys*
	Acanthocoronium	syn.; see *Arachnocorys*
?	*Arachnocorallium*	n.d.; see ? *Arachnocorys*
?	*Arachnocorythium*	n.d.; see ? *Arachnocorys*
?	*Acanthocorythium*	n.d.
	Archiperidium	valid
?	*Mitrocalpis*	n.d.; see ? *Archiperidium*
?	*Peridium*	n.d.
?	*Peridarium*	syn. (obj.); n.d.; see *Peridium*
	Cryptogyrus	valid
	Lithomelissa	valid
	Acromelissa	syn.; see *Lithomelissa*
?	*Acanthocorys*	n.d.; see ? *Lithomelissa*
?	*Acanthocorallium*	syn. (obj.); n.d.; see *Acanthocorys*
	Peromelissa	valid
	Dicorys	syn.?; see *Peromelissa*
	Micromelissa	syn.?; see *Peromelissa*
	Micromelissa	hom.; syn.; see *Dimelissa* n. nov.
	Dimelissa	n. nov.; syn.; see *Peromelissa*
	Psilomelissa	syn.; see *Peromelissa*
	Phormacantha	valid
	Plectacantha	valid
?	*Amphicentria*	n.d.
?	*Spongolarcus*	n.d.; see ? *Amphicentria*
?	*Amphiplecta*	n.d.
?	*Amphicryphalus*	inv.; see *Amphiplecta*
?	*Sethopilium*	n.d.
?	*Sethomelissa*	n.d.

Family PHAENOCALPIDIDAE Haeckel, 1887

?	*Archipera*	valid
	Archiscenium	valid
	Plectoscenium	syn. (obj.); see *Archiscenium*
	Euscenium	syn.; see *Archiscenium*
	Euscenarium	syn.; see *Archiscenium*
?	*Euscenidium*	n.d.
	Clathromitra	valid
	Conicavus	valid
	Genetrix	valid
	Periplecta	valid
	Phaenocalpis	valid
	Pteroscenium	valid
	Verticillata	syn.; see *Pteroscenium*
	Spongomelissa	valid
	Tripophaenoscenium	valid
?	*Cladoscenium*	n.d.
?	*Dictyocircus*	n.d.
?	*Phaenoscenium*	n.d.

Family PLAGIACANTHIDAE Hertwig, 1879

	Arachnocalpis	valid
	Cystidium	valid
	Paracystidium	syn.; see *Cystidium*
	Dumetum	valid
	Pentaplagia	syn.; see *Dumetum*
	Enneaplegma	valid
	Polyplecta	syn. (obj.); see *Enneaplegma*
	Jeanpierria	valid
	Neosemantis	valid
	Campylacantha	hom.; syn.; see *Deflandrella* n. nov.
	Deflandrella	n. nov.; syn.; see *Neosemantis*
	Plagiacantha	valid
	Plagoniscus	syn.; see *Plagiacantha*
	Triplagia	syn.; see *Plagiacantha*
	Triplagiacantha	syn.; see *Plagiacantha*
?	*Plectophora*	hom.; n.d.; see *Plectophorina* n. nov.
?	*Plectophorina*	n. nov.; n.d.; see ? *Plagiacantha*
?	*Triplecta*	n.d.; see ? *Plagiacantha*
	Plectagonidium	valid
?	*Tetraplecta*	n.d.; see ? *Plectagonidium*
	Plectanium	valid
	Plectaniscus	syn.; see *Plectanium*
	Pseudocubus	valid

APPENDIX 7. — Continuation.

	Drepotadium	syn.?; see *Pseudocubus*
	Obeliscus	hom.; syn.; see *Talariscus* n. nov.
	Talariscus	n. nov.; syn.; see *Pseudocubus*
	Rhizoplecta	syn.; see *Pseudocubus*
?	*Hexaplagia*	n.d.
?	*Hexaplegma*	n.d.
?	*Hexaplecta*	inv.; see *Hexaplegma*
?	*Nassella*	n.d.
?	*Plagonidium*	n.d.
?	*Plagonium*	n.d.
?	*Polyplagia*	n.d.
?	*Tetraplagia*	n.d.

Family PSEUDODICTYOPHIMIDAE Suzuki in Suzuki *et al.* (2021)

?	*Chitascenium*	valid
?	*Sethomelissa*	hom.; see *Corythomelissa* n. nov.
?	*Corythomelissa*	valid
	Pseudodictyophimus	valid
?	*Tripocalpis*	n.d.; see ? *Pseudodictyophimus*
	Steganocubus	valid
	Marimoum	syn.; see *Steganocubus*
	Syscioscenium	valid
	Tripodocyrtis	valid
?	*Dictyophimus*	n.d.
?	*Tripodoconus*	syn. (obj.); see *Dictyophimus*
?	*Pterocanium*	n.d.
?	*Tripodonium*	n.d.

Family TRIPODISCIIDAE Haeckel, 1882

	Tridictyopus	valid
	Tripodiscium	valid
	Tripodiscinus	syn. (obj.); see *Tripodiscium*
	Tripodisculus	syn.; see *Tripodiscium*
	Tristylospyrium	syn.; see *Tripodiscium*
?	*Tristylocorys*	valid

Family XIMOLZASIDAE Dumitrica in Suzuki *et al.* (2021)

	Daniplagia	valid
	Protoscenium	valid
	Rhabdolithis	valid
	Xiphostylomma	syn.; see *Rhabdolithis*

Superfamily PYLOBOTRYDOIDEA Haeckel, 1882
Family PYLOBOTRYDIDAE Haeckel, 1882

	Amphimelissa	valid
	Bisphaerocephalina	syn.; see *Amphimelissa*
	Bisphaerocephalus	syn.; see *Amphimelissa*
	Lithobotrys	hom.; syn.?; see *Glycobotrys* n. nov.
	Glycobotrys	n. nov.; syn.?; see *Amphimelissa*
	Botryocampe	valid
	Saccospyris	syn.; see *Botryocampe*
	Botryocella	valid
	Botryocyrtis	valid
	Acanthobotrys	syn.?; see *Botryocyrtis*
	Centrobotrys	valid
	Lithocorythium	valid
	Phormobotrys	syn.?; see *Lithocorythium*
	Monotubus	valid
	Neobotrys	valid
	Xiphobotrys	syn.; see *Neobotrys*
	Pylobotrys	valid
	Acrobotrissa	syn.; see *Pylobotrys*
	Acrobotrissa	hom.; syn.; see *Pylobotrys*
	Acrobotrella	syn.; see *Pylobotrys*
	Ceratobotrys	syn.; see *Pylobotrys*
?	*Acrobotrys*	n.d.
?	*Acrobotrantha*	syn. (obj.); n.d.; see *Acrobotrys*
?	*Acrobotromma*	n.d.
?	*Acrobotrusa*	n.d.
?	*Botryopyle*	n.d.
?	*Cannobotrys*	n.d.
?	*Cannobotrantha*	syn. (obj.); n.d.; see *Cannobotrys*
?	*Cannobotrella*	n.d.
?	*Cannobotrissa*	n.d.
?	*Cannobotromma*	n.d.
?	*Cannobotrusa*	n.d.
?	*Diauletes*	n.d.

Lineage IV Sandín *et al.*, 2019
Clade H Sandín *et al.*, 2019
Superfamily CYCLADOPHOROIDEA Suzuki in Sandín *et al.*, 2019
Family CYCLADOPHORIDAE Suzuki in Sandín *et al.*, 2019

	Cycladophora	valid
	Cyclamptidium	syn. (obj.); see *Cycladophora*
	Diplocyclas	syn.; see *Cycladophora*
	Spuroclathrocyclas	syn.; see *Cycladophora*
?	*Valkyria*	valid

Superfamily SETHOPEROIDEA Haeckel, 1882
Family SETHOPERIDAE Haeckel, 1882

	Callimitra	valid
	Arachnothauma	syn.; see *Callimitra*
	Clathrocanium	valid
	Clathrocanidium	syn. (obj.); see *Clathrocanium*
	Clathrocorona	syn.; see *Clathrocanium*
	Arachnopilium	syn.; see *Clathrocanium*
	Clathrolychnus	syn.; see *Clathrocanium*
	Sethopera	syn.; see *Clathrocanium*
	Tripocyrtis	syn.; see *Clathrocanium*
	Clathrocorys	valid
	Dictyocodoma	valid
	Dictyocodon	valid
	Dictyocodella	syn. (obj.); see *Dictyocodon*
	Pteropilium	valid
	Clathropilium	syn. (obj.); see *Pteropilium*
?	*Archibursa*	n.d.

Appendix 7. — Continuation.

?	*Archicorys*	n.d.
?	*Sethophatna*	n.d.
?	*Sethophaena*	inv.; see *Sethophatna*

Clade I Sandín *et al.*, 2019
Superfamily Lithochytridoidea Ehrenberg, 1846
Family Bekomidae Dumitrica *in* De Wever *et al.*, 2001

	Bekoma	valid
	Bekomiforma	valid
	Lamprotripus	valid
	Orbula	valid
?	*Stichocampe*	n.d.
?	*Stichopterium*	n.d.

Family Lithochytridiidae Ehrenberg, 1846

	Dictyopodium	valid
	Pterocanarium	syn.; see *Dictyopodium*
	Pterocanidium	syn.; see *Dictyopodium*
	Lychnodictyum	syn.; see *Dictyopodium*
	Pleuropodium	syn.; see *Dictyopodium*
?	*Fenestracanthia*	n.n.; syn.; see *Dictyopodium*
	Inversumbella	valid
	Lithochytris	valid
	Lithochytridium	syn. (obj.); see *Lithochytris*
	Sethochytris	syn.; see *Lithochytris*
?	*Tetraedrina*	n.d.; see ? *Lithochytris*
?	*Tetrahedrina*	inv.; see *Tetraedrina*
	Lychnocanissa	valid
	Lychnocanoma	syn.; see *Lychnocanissa*
	Acerahedrina	syn.; see *Lychnocanissa*
	Acerocanium	syn.; see *Lychnocanissa*
	Podocyrtecium	syn.; see *Lychnocanissa*
?	*Lithornithium*	n.d.; see ? *Lychnocanissa*
	Lychnocanium	valid
	Dictyophimium	syn. (obj.); see *Lychnocanium*
	Lychnocanella	syn.; see *Lychnocanium*
	Lithochytrodes	syn.; see *Lychnocanium*
?	*Verutotholus*	valid

Clade J Sandín *et al.*, 2019
Superfamily Pterocorythoidea Haeckel, 1882
Family Lophocyrtiidae Sanfilippo & Caulet in De Wever *et al.*, 2001

	Aphetocyrtis	valid
	Apoplanius	valid
	Clinorhabdus	valid
	Cyclampterium	valid
	Polyalacorys	syn.; see *Cyclampterium*
	Lophocyrtis	valid
	Paralampterium	valid
	Spongiopodium	syn.; see *Paralampterium*
	Sciadiopeplus	valid

Family Pterocorythidae Haeckel, 1882

	Albatrossidium	valid
	Anthocyrtidium	valid
	Anthocyrtissa	syn.; see *Anthocyrtidium*
	Anthocyrtura	syn.; see *Anthocyrtidium*
	Phormocampe	syn.; see *Anthocyrtidium*
	Sethocanium	syn.; see *Anthocyrtidium*
	Sethocorys	syn.; see *Anthocyrtidium*
	Sethocyrtis	syn.; see *Anthocyrtidium*
?	*Cyrtocoris*	hom.; n.d.; see *Cyrtocorys* n. nov.
?	*Cyrtocorys*	n. nov.; n.d.
	Calocyclas	valid
	Calocyclissa	syn. (obj.); see *Calocyclas*
	Anthocyrtonium	syn.; see *Calocyclas*
	Calocycletta	syn.; see *Calocyclas*
	Calocyclior	syn.; see *Calocyclas*
	Calocyclissima	syn.; see *Calocyclas*
	Calocyclopsis	syn.; see *Calocyclas*
	Calocycloma	valid
	Lamprocyclas	valid
	Lamprocyclia	syn. (obj.); see *Lamprocyclas*
	Androcyclas	syn.; see *Lamprocyclas*
	Craterocyclas	syn.; see *Lamprocyclas*
	Hexalodus	syn.; see *Lamprocyclas*
	Theocorbis	syn.; see *Lamprocyclas*
?	*Lamprocycloma*	n.d.
	Lamprocyrtis	valid
	Lampterium	valid
	Lamptidium	syn.?; see *Lampterium*
	Alacorys	syn.; see *Lampterium*
	Tetralacorys	syn. (obj.); see *Alacorys*
	Phormocyrtis	valid
	Podocyrtis	valid
	Podocyrtidium	syn. (obj.); see *Podocyrtis*
	Podocyrtoges	syn.; see *Podocyrtis*
	Podocyrtonium	syn.; see *Podocyrtis*
	Podocyrtopsis	syn.; see *Podocyrtis*
	Pterocorys	valid
	Sethoconus	syn. (obj.); see *Conarachnium*
	Conarachnium	syn.; see *Pterocorys*
	Lithopilium	syn.; see *Pterocorys*
	Theoconus	syn.; see *Pterocorys*
	Theocorax	syn. (obj.); see *Theoconus*
	Tetracorethra	valid
	Hexacorethra	syn.; see *Tetracorethra*
	Theocorythium	valid
	Theocapsilla	syn.; see *Theocorythium*
	Theocapsura	syn.; see *Theocorythium*
	Theocyrtis	syn.?; see *Theocorythium*
	Theocorypha	syn. (obj.); see *Theocyrtis*
?	*Anthocyrtoma*	valid
?	*Ennealacorys*	n.d.; see ? *Anthocyrtoma*
?	*Lamptonium*	n.d.; see ? *Anthocyrtoma*

APPENDIX 7. — Continuation.

?	*Calocyclura*	valid
?	*Theocorusca*	valid
?	*Phrenocodon*	n.d.

Family THEOCOTYLIDAE Petrushevskaya, 1981

	Axocorys	valid
	Theocotyle	syn.; see *Axocorys*
	Theocotylissa	syn.; see *Axocorys*
	Clistophatna	valid
?	*Clistophaena*	inv.; see *Clistophatna*
	Pentalacorys	valid
	Hexalacorys	syn.; see *Pentalacorys*
	Octalacorys	syn.; see *Pentalacorys*
	Pterocodon	valid
	Thyrsocyrtis	valid
	Podocyrtarium	syn.; see *Thyrsocyrtis*

Family THEOPERIDAE Haeckel, 1882

	Clathropyrgus	valid
	Cyrtopera	valid
	Artopera	syn. (obj.); see *Cyrtopera*
	Eusyringium	valid
	Eusyringartus	syn. (obj.); see *Eusyringium*
	Pterosyringium	syn.; see *Eusyringium*
	Rhopalocanium	valid
	Artopera	hom.; syn.; see *Artoperina* n. nov.
	Artoperina	n. nov.; syn.; see *Rhopalocanium*
	Dictyatractus	syn.; see *Rhopalocanium*
	Rhopalatractus	syn.; see *Rhopalocanium*
	Rhopalocyrtis	syn.; see *Rhopalocanium*
	Pteropilium	hom.; syn. (obj.); see *Rhopalocyrtis*
	Theopera	syn.; see *Rhopalocanium*
	Theophaena	syn.; see *Rhopalocanium*
?	*Hexalatractus*	n.d.; see ? *Rhopalocanium*
	Stichopilidium	valid
?	*Sestrornithium*	n.d.
?	*Sethornithium*	inv.; see *Sestrornithium*

Incertae Familiae

	Aspis	valid

ORDER COLLODARIA
Haeckel, 1882

Colonial collodarians Lineage Biard *et al.*, 2015

Superfamily SPHAEROZOIDEA Müller, 1859a

Family COLLOPHIDIIDAE Biard & Suzuki in Biard *et al.*, 2015

	Collophidium	valid
?	*Colloprunum*	n.d.; see ? *Collophidium*

Family COLLOSPHAERIDAE Müller, 1859a

	Choenicosphaera	valid
	Choenicosphaerula	syn. (obj.); see *Choenicosphaera*
	Choenicosphaerium	syn.; see *Choenicosphaera*
	Coronosphaera	syn.; see *Choenicosphaera*
	Trypanosphaera	syn.; see *Choenicosphaera*
	Trypanosphaerula	syn. (obj.); see *Trypanosphaera*
	Trypanosphaerium	syn.; see *Choenicosphaera*
	Clathrosphaera	valid
	Clathrosphaerula	syn. (obj.); see *Clathrosphaera*
	Collosphaera	valid
	Dyscollosphaera	syn. (obj.); see *Collosphaera*
	Conosphaera	syn.; see *Collosphaera*
	Myxosphaera	syn.; see *Collosphaera*
	Collodiscus	syn. (obj.); see *Myxosphaera*
?	*Eucollosphaera*	n.d.
	Disolenia	valid
	Tetrasolenia	syn.; see *Disolenia*
	Solenosphaera	syn. (obj.); see *Tetrasolenia*
	Trisolenia	syn.; see *Disolenia*
	Otosphaera	valid
	Polysolenia	valid
	Acrosphaera	syn.; see *Polysolenia*
	Clathrosphaerium	syn.; see *Polysolenia*
	Mazosphaera	syn.; see *Polysolenia*
	Odontosphaera	syn.; see *Polysolenia*
?	*Xanthiosphaera*	n.d.; see ? *Polysolenia*
	Siphonosphaera	valid
	Holosiphonia	syn. (obj.); see *Siphonosphaera*
	Merosiphonia	syn.; see *Siphonosphaera*
	Solenosphactra	syn.; see *Siphonosphaera*
	Solenosphenia	syn.; see *Siphonosphaera*
	Solenosphyra	syn.; see *Siphonosphaera*
	Tribonosphaera	valid
	Buccinosphaera	syn.; see *Tribonosphaera*
	Pharyngosphaera	syn.; see *Tribonosphaera*
?	*Caminosphaera*	n.d.
?	*Pachysphaera*	hom.; n.d.
?	*Pentasolenia*	n.n.

Family SPHAEROZOIDAE Müller, 1859a

	Belonozoum	valid
	Collozoum	valid
	Collodinium	syn. (obj.); see *Collozoum*
	Coinozoum	syn.; see *Collozoum*
	Collodastrum	syn.; see *Collozoum*
	Xantozoum	syn.; see *Collozoum*
?	*Jozoum*	n.d.
	Rhaphidozoum	valid
	Rhaphidonactis	syn. (obj.); see *Rhaphidozoum*
	Rhaphidoceras	syn.; see *Rhaphidozoum*
	Rhaphidonura	syn.; see *Rhaphidozoum*
	Sphaerozoum	valid

Appendix 7. — Continuation.

	Sphaerozonoceras	syn. (obj.); see *Sphaerozoum*
	Actinozoum	syn.; see *Sphaerozoum*
	Sphaerozonura	syn.; see *Sphaerozoum*
?	*Sphaerozonactis*	n.d.

Solitary collodarians Lineage Biard *et al.*, 2015
Superfamily Thalassicolloidea Müller, 1859a
Family Thalassicollidae Müller, 1859a

	Myxobrachia	valid
	Procyttarium	valid
	Actissa	syn. (obj.); see *Procyttarium*
?	*Actidiscus*	n.d.
?	*Actilarcus*	n.d.
?	*Actiprunum*	n.d.
	Thalassicolla	valid
	Thalassicollidium	syn. (obj.); see *Thalassicolla*
	Thalassicollarium	valid
	Thalassolampe	valid
	Thalassopila	valid
?	*Monocarion*	n.d.
?	*Thalassophysa*	n.d.

Family Thalassosphaeridae Haeckel, 1862

	Lampoxanthura	valid
?	*Lampoxanthium*	n.d.
?	*Lampoxanthella*	syn. (obj.); n.d.; see *Lampoxanthium*
?	*Lampoxanthomma*	n.d.
	Thalassosphaera	valid
	Thalassoxanthomma	syn. (obj.); see *Thalassosphaera*
	Thalassoxanthella	valid
?	*Thalassoxanthium*	n.d.; see ? *Thalassosphaera*
?	*Physematium*	n.d.
?	*Thalassiosolen*	n.d.
?	*Thalassoplancta*	hom.; n.d.; see *Thalassorhaphis* n. nov.
?	*Thalassorhaphis*	n. nov.; n.d.
?	*Thalassosphaera*	hom.; n.d.; see *Calosphaera* n. nov.
?	*Calosphaera*	n. nov.; n.d.

Unknown Lineage Nakamura *et al.*, 2020
Superfamily Oroscenoidea Haeckel, 1887
Family Oroscenidae Haeckel, 1887

	Orodapis	valid
	Orodendrum	valid
	Oroplegma	syn.; see *Orodendrum*
	Oroplegmium	syn. (obj.); see *Oroplegma*
	Oropelex	valid
	Oropagis	syn.; see *Oropelex*
	Oroscena	valid
	Oroscenium	syn. (obj.); see *Oroscena*
	Orothamnus	syn.; see *Oroscena*
?	*Orosphaera*	n.d.; see ? *Oroscena*
?	*Oronium*	syn. (obj.); n.d.; see *Orosphaera*
?	*Orodictyum*	n.d.
	Orostaurus	valid
?	*Orona*	n.d.

Erroneously taxa described as Polycystinea

Acanthometra	Acantharia
Radiosphaera	Acantharia
Zygacantha	Acantharia
Prismozoon	Diatom
Rhaphiophorasphaera	Diatom
Cannosphaeropsis	Dinoflagellate
Spirillina	Foraminifera; hom.; n.d.
Bathysphaera	incertae sedis; hom.; n.d.; see *Enjumetia* n. nov.
Enjumetia	incertae sedis; n. nov.; n.d.
Campanula	incertae sedis; n.d.
Centrocolla	incertae sedis; n.d.
Eutympanium	Silicoflagellate
Dystympanium	Silicoflagellate
Halicalyptra	Silicoflagellate
Acrocalpis	Silicoflagellate; syn. (obj.); see *Halicalyptra*
Paratympanium	? Silicoflagellate; n.d.
Paratympanum	? Silicoflagellate; inv.; see *Paratympanium*
Circotympanum	? Silicoflagellate; n.d.
Echinocalpis	? Silicoflagellate; n.d.
Parastephanus	? Silicoflagellate; n.d.
Conostylus	Sponge spicule
Hataina	Sponge spicule
Lithacanthus	Sponge spicule
Sethodisculus	Sponge spicule
Spongasteriscinus	? Sponge spicule; n.d.
Tetracanthus	Sponge spicule; hom.; see *Tetracina* n. nov.
Tetracina	Sponge spicule; n. nov.
Sticholonche	Taxopodia

APPENDIX 7. — Continuation.

Polycystinea described with no known species

Acantholarcus	n.n.
Actinocyrtis	n.n.
Actinolithis	n.n.
Amphilarcus	n.n.
Amphisphaeridium	n.n.
Arachnorhiza	n.n.
Archilophus	n.n.
Artocorys	n.n.
Pterocorythium	n.n.
Botryacantha	n.n.
Botryocanna	n.n.
Caryodoras	n.n.
Caryolonche	n.n.
Caryostaurus	n.n.
Caryoxiphus	n.n.
Ceratastrum	n.n.
Ceriosphaera	n.n.
Cladocalpis	n.n.
Polelazoum	n.n.
Cornutura	n.n.
Cromyosphaerium	n.n.
Cryptopera	n.n.
Cyrtolarcus	n.n.
Dictyocyrtis	n.n.
Didymophormis	n.n.
Dyospyris	n.n.
Dyostephaniscus	n.n.
Dyostephanus	n.n.
Dyostephus	n.n.
Echinobotrys	n.n.
Enneaplagia	n.n.
Enneplagidium	n.n.
Hexacromydium	n.n.
Hexactura	n.n.
Hexadilemma	n.n.
Hexadorium	n.n.
Hexadrymium	n.n.
Hexaplagidium	n.n.
Hexaspongonium	n.n.
Lamprodisculus	n.n.
Larcodiscus	n.n.
Lentellipsis	n.n.
Lophocapsa	n.n.
Lophopera	n.n.
Microlecitos	n.n.
Monacantha	n.n.
Parastephus	n.n.
Pentaplegma	n.n.
Platysestrum	n.n.
Plectotripus	n.n.
Plegmatium	n.n.
Plegmodiscus	n.n.
Pleurocorys	n.n.
Pleurospyris	n.n.
Prismatidium	n.n.
Pteroperidium	n.n.
Pteropilium	n.n.; hom.
Pylocapsa	n.n.
Sestropodium	n.n.
Sethodiscus	n.n.; hom.
Sethoperidium	n.n.
Sphaerocircus	n.n.
Sphaerocolla	n.n.
Sphaeromespilius	n.n.
Spongosphaerium	n.n.
Spongospyra	n.n.
Stomatolarcus	n.n.
Tetrapera	n.n.
Tetrapteroma	n.n.
Tetraspongonium	n.n.
Theocanium	n.n.
Theophatna	n.n.
Theosphaera	n.n.
Thiosphaera	n.n.
Trilampterium	n.n.
Tripleurium	n.n.

APPENDIX 8. — List of 76 genera without any known described species. Before the genus name, the Order originally assigned by the author is indicated.

? S *Acantholarcus* Tedeschi, 1895: 41
? N *Actinocyrtis* Haeckel, 1882: 656
? S *Actinolithis* Ehrenberg, 1847: 50
? S *Amphilarcus* Tedeschi, 1895: 41
? S *Amphisphaeridium* Haeckel, 1887: 142
? S *Arachnorhiza* Hertwig, 1932: 29
? N *Archilophus* Haeckel, 1882: 427
? N *Artocorys* Haeckel, 1882: 437
? N *Pterocorythium* Haeckel, 1882: 437
? N *Botryacantha* Haeckel, 1882: 440
? N *Botryocanna* Haeckel, 1882: 440
? S *Caryodoras* Haeckel, 1882: 454
? S *Caryolonche* Haeckel, 1882: 454
? S *Caryostaurus* Haeckel, 1882: 454
? S *Caryoxiphus* Haeckel, 1882: 454
? S *Ceratastrum* Haeckel, 1882: 460
? S *Ceriosphaera* Haeckel, 1882: 448
? N *Cladocalpis* Haeckel, 1882: 427
? C *Polelazoum* Enriques, 1919: 63
? N *Cornutura* Haeckel, 1882: 427
? S *Cromyosphaerium* Haeckel, 1882: 453
? N *Cryptopera* Haeckel, 1882: 433
? S *Cyrtolarcus* Tedeschi, 1895: 41
? N *Dictyocyrtis* Ehrenberg, 1861b: 823
? S *Didymophormis* Haeckel, 1882: 462
? N *Dyospyris* Haeckel, 1882: 441
? N *Dyostephaniscus* Haeckel, 1882: 446
? N *Dyostephanus* Haeckel, 1882: 446
? N *Dyostephus* Haeckel, 1882: 446
? N *Echinobotrys* Haeckel, 1882: 440
? N *Enneaplagia* Haeckel, 1882: 424
? N *Enneplagidium* Haeckel, 1882: 424
? S *Hexacromydium* Haeckel, 1882: 453
? S *Hexactura* Haeckel, 1882: 458
? S *Hexadilemma* Haeckel, 1887: 179
? S *Hexadorium* Haeckel, 1882: 455
? S *Hexadrymium* Haeckel, 1882: 452
? N *Hexaplagidium* Haeckel, 1882: 424
? S *Hexaspongonium* Haeckel, 1882: 463
? N *Lamprodisculus* Haeckel, 1882: 431
? S *Larcodiscus* Tedeschi, 1895: 41
? S *Lentellipsis* Haeckel, 1887: 633
? N *Lophocapsa* Haeckel, 1882: 433
? N *Lophopera* Haeckel, 1882: 436
? N *Microlecitos* Issel, 1889-1890: 104
? S *Monacantha* Tedeschi, 1895: 42
? N *Parastephus* Haeckel, 1882: 446
? N *Pentaplegma* Haeckel, 1882: 424
? N *Platysestrum* Haeckel, 1882: 430
? N *Plectotripus* Haeckel, 1882: 437
? N *Plegmatium* Haeckel, 1882: 424
? S *Plegmodiscus* Haeckel, 1887: 341
? N *Pleurocorys* Haeckel, 1882: 435
? N *Pleurospyris* Ehrenberg, 1847: 54
? N *Prismatidium* Haeckel, 1882: 446
? N *Pteroperidium* Haeckel, 1882: 429
? N *Pteropilium* Haeckel, 1882: 427 (hom.)
? S *Pylocapsa* Haeckel, 1882: 463
? N *Sestropodium* Haeckel, 1882: 435
? N *Sethodiscus* Haeckel, 1882: 430 (hom.)
? N *Sethoperidium* Haeckel, 1882: 433
? N *Sphaerocircus* Haeckel, 1882: 447
? C *Sphaerocolla* Hollande & Enjumet, 1953: 112
? S *Sphaeromespilius* Haeckel, 1887: 301
? S *Spongosphaerium* Haeckel, 1882: 455
? S *Spongospyra* Stöhr, 1878: 517
? S *Stomatolarcus* Dreyer, 1889: 49
? N *Tetrapera* Haeckel, 1882: 438
? N *Tetrapteroma* Haeckel, 1882: 429
? S *Tetraspongonium* Haeckel, 1882: 463
? N *Theocanium* Haeckel, 1882: 436
? N *Theophatna* Haeckel, 1882: 437
? S *Theosphaera* Haeckel, 1887: 414
? S *Thiosphaera* Enriques, 1932: 984
? N *Trilampterium* Haeckel, 1882: 434
? N *Tripleurium* Haeckel, 1882: 427

APPENDIX 9. — Alphabetic index of Cenozoic Polycystinea radiolarian genera. Abbreviations: homonyms (**hom.**), junior subjective synonyms (**syn.**), junior objective synonyms (**syn. obj.**), invalid taxa (**inv.**); *nomina dubia* (**n.d.**); *nomina nuda* (**n.n.**) and *nomina oblita* (**n.o.**).

	Genus	Status	See	Family
	Acanthobotrys	SYN.?	*Botryocyrtis*	PYLOBOTRYDIDAE
?	*Acanthocorallium*	SYN. (obj.); N.D.	*Acanthocorys*	? DIMELISSIDAE
	Acanthocoronium	SYN.	*Arachnocorys*	DIMELISSIDAE
?	*Acanthocorys*	N.D.	? *Lithomelissa*	? DIMELISSIDAE
?	*Acanthocorythium*	N.D.		? DIMELISSIDAE
	Acanthocyrtis	HOM.; SYN.	*Phormostichoartus* n. nov.	ARTOSTROBIIDAE
	Acanthocyrtis	SYN.?	*Artocapsa*	EUCYRTIDIIDAE
	Acanthodesmia	VALID		ACANTHODESMIIDAE
	Acantholarcus	N.N.		no species are known
	Acanthometra	(Acantharia)		wrongly described as POLYCYSTINEA
?	*Acanthosphaera*	N.D.	? *Actinomma*	? ACTINOMMIDAE
?	*Acanthospongus*	N.D.		? CLADOCOCCIDAE
	Acanthostephanus	SYN.	*Acanthodesmia*	ACANTHODESMIIDAE
	Acerahedrina	SYN.	*Lychnocanissa*	LITHOCHYTRIDIDAE
	Acerocanium	SYN.	*Lychnocanissa*	LITHOCHYTRIDIDAE
?	*Acrobotrantha*	SYN. (obj.); N.D.	*Acrobotrys*	? PYLOBOTRYDIDAE
	Acrobotrella	SYN.	*Pylobotrys*	PYLOBOTRYDIDAE
	Acrobotrissa	HOM.; SYN.	*Pylobotrys*	PYLOBOTRYDIDAE
	Acrobotrissa	SYN.	*Pylobotrys*	PYLOBOTRYDIDAE
?	*Acrobotromma*	N.D.		? PYLOBOTRYDIDAE
?	*Acrobotrusa*	N.D.		? PYLOBOTRYDIDAE
?	*Acrobotrys*	N.D.		? PYLOBOTRYDIDAE
	Acrocalpis	(Silicoflagellate); SYN. (obj.)	*Halicalyptra*	wrongly described as POLYCYSTINEA
?	*Acrocorona*	SYN. (obj.); N.D.	*Cladophatna*	? CEPHALOSPYRIDIDAE
	Acrocoronis	SYN. (obj.)	*Eucoronis*	ACANTHODESMIIDAE
	Acrocubus	SYN.	*Eucoronis*	ACANTHODESMIIDAE
	Acromelissa	SYN.	*Lithomelissa*	DIMELISSIDAE
?	*Acropyramis*	SYN. (obj.); N.D.	*Bathropyramis*	? PLECTOPYRAMIDIDAE
	Acrosphaera	SYN.	*Polysolenia*	COLLOSPHAERIDAE
	Acrospyris	SYN.	*Triceraspyris*	CEPHALOSPYRIDIDAE
?	*Actidiscus*	N.D.		? THALASSICOLLIDAE
?	*Actilarcus*	N.D.		? THALASSICOLLIDAE
	Actinocyrtis	N.N.		no species are known
	Actinolithis	N.N.		no species are known
	Actinomma	VALID		ACTINOMMIDAE
?	*Actinommantha*	N.D.	? *Phaenicosphaera*	? HELIODISCIDAE
	Actinommetta	SYN. (obj.)	*Actinomma*	ACTINOMMIDAE
	Actinommilla	SYN.	*Haliomma*	HALIOMMIDAE
	Actinommura	VALID		HELIODISCIDAE
?	*Actinopyramis*	N.D.		? PLECTOPYRAMIDIDAE
	Actinosphaera	SYN. (obj.)	*Haliommilla*	RHIZOSPHAERIDAE
	Actinozoum	SYN.	*Sphaerozoum*	SPHAEROZOIDAE
?	*Actiprunum*	N.D.		? THALASSICOLLIDAE
	Actissa	SYN. (obj.)	*Procyttarium*	THALASSICOLLIDAE
?	*Aegospyris*	N.D.	? *Elaphospyris*	? CEPHALOSPYRIDIDAE
	Alacorys	SYN.	*Lampterium*	PTEROCORYTHIDAE
	Albatrossidium	VALID		PTEROCORYTHIDAE
	Amphactura	VALID		ASTRACTURIDAE
?	*Amphiactura*	INV.	*Amphactura*	? ASTRACTURIDAE
	Amphiaspis	SYN.?	*Tetrapyle*	ZONARIIDAE
?	*Amphibrachella*	N.D.		? PHORTICIIDAE
?	*Amphibrachidium*	N.D.		? PHORTICIIDAE
?	*Amphibrachium*	N.D.		? TREMATODISCIDAE
?	*Amphibrachoma*	N.D.		? PHORTICIIDAE
?	*Amphibrachura*	N.D.		? PHORTICIIDAE
	Amphicarydiscus	SYN.	*Amphicraspedula*	HISTIASTRIDAE
?	*Amphicentria*	N.D.		? DIMELISSIDAE
	Amphicraspedina	SYN.	*Trigonastrum*	EUCHITONIIDAE
	Amphicraspedon	SYN. (obj.)	*Amphicraspedum*	EUCHITONIIDAE
	Amphicraspedula	VALID		HISTIASTRIDAE
	Amphicraspedum	VALID		EUCHITONIIDAE
?	*Amphicryphalus*	INV.	*Amphiplecta*	? DIMELISSIDAE
	Amphicyclia	SYN.	*Sethostylus*	LITHOCYCLIIDAE
	Amphilarcus	N.N.		no species are known
	Amphimelissa	VALID		PYLOBOTRYDIDAE
	Amphiparvex	SYN.	*Amphipternis*	AMPHIPYNDACIDAE
?	*Amphiplecta*	N.D.		? DIMELISSIDAE
	Amphipternis	VALID		AMPHIPYNDACIDAE

Appendix 9. — Continuation.

	Genus	Status	See	Family
?	*Amphipyle*	N.D.		? Zonariidae
?	*Amphipylissa*	SYN. (obj.); N.D.	*Amphipyle*	? Zonariidae
?	*Amphipylonium*	N.D.		? Zonariidae
	Amphipylura	SYN.	*Tetrapyle*	Zonariidae
?	*Amphirhopalum*	N.D.	? *Amphicraspedum*	? Euchitoniidae
?	*Amphirrhopalium*	SYN. (obj.); N.D.	*Amphirhopalum*	? Euchitoniidae
	Amphirrhopella	SYN.	*Amphicraspedum*	Euchitoniidae
	Amphirrhopoma	SYN.	*Trigonastrum*	Euchitoniidae
?	*Amphisphaera*	N.D.		? Stylatractidae
?	*Amphisphaerantha*	SYN. (obj.); N.D.	*Amphisphaera*	? Stylatractidae
?	*Amphisphaerella*	N.D.		? Stylatractidae
	Amphisphaeridium	N.N.		no species are known
	Amphisphaerissa	SYN.	*Stylatractona*	Stylatractidae
?	*Amphisphaeromma*	N.D.		? Stylatractidae
	Amphispyridium	SYN.	*Amphispyris*	Paradictyidae
	Amphispyris	VALID		Paradictyidae
	Amphispyrium	SYN. (obj.)	*Amphispyris*	Paradictyidae
?	*Amphistylus*	N.D.	? *Stylosphaerantha*	? Stylatractidae
	Amphitholissa	SYN. (obj.)	*Amphitholus*	Amphitholidae
	Amphitholonium	SYN.	*Tholomura*	Amphitholidae
	Amphitholura	SYN.	*Tholomura*	Amphitholidae
	Amphitholus	SYN.	*Tholomura*	Amphitholidae
	Amphymenium	SYN.	*Ommatocampe*	Euchitoniidae
	Androcyclas	SYN.	*Lamprocyclas*	Pterocorythidae
	Androspyris	VALID		Cephalospyrididae
	Annulatospira	VALID		Circodiscidae
	Anomalacantha	NOM. NOV.; SYN.	*Cladococcus*	Cladococcidae
	Anomalosoma	VALID		Hollandosphaeridae
	Antarctissa	VALID		Dictyocryphalidae
	Anthocyrtarium	SYN. (obj.)	*Anthocyrtium*	Anthocyrtididae
	Anthocyrtella	NOM. NOV.; SYN.	*Anthocyrtis*	Anthocyrtididae
	Anthocyrtidium	VALID		Pterocorythidae
	Anthocyrtis	VALID		Anthocyrtididae
	Anthocyrtissa	SYN.	*Anthocyrtidium*	Pterocorythidae
	Anthocyrtium	SYN.	*Anthocyrtis*	Anthocyrtididae
?	*Anthocyrtoma*	VALID		? Pterocorythidae
	Anthocyrtonium	SYN.	*Calocyclas*	Pterocorythidae
	Anthocyrtura	SYN.	*Anthocyrtidium*	Pterocorythidae
	Anthocyrturium	VALID		Carpocaniidae
?	*Anthomma*	INV.	*Phaenicosphaera*	? Heliodiscidae
	Anthospyris	SYN.	*Petalospyris*	Cephalospyrididae
	Aphetocyrtis	VALID		Lophocyrtiidae
	Apocubus	SYN. (obj.)	*Acrocubus*	Acanthodesmiidae
	Apoplanius	VALID		Lophocyrtiidae
	Arachnocalpis	VALID		Plagiacanthidae
?	*Arachnocorallium*	N.D.	? *Arachnocorys*	? Dimelissidae
	Arachnocoronium	SYN. (obj.)	*Arachnocorys*	Dimelissidae
	Arachnocorys	VALID		Dimelissidae
?	*Arachnocorythium*	N.D.	? *Arachnocorys*	? Dimelissidae
?	*Arachnopegma*	N.D.		? Cladococcidae
?	*Arachnopila*	N.D.		? Cladococcidae
	Arachnopilium	SYN.	*Clathrocanium*	Sethoperidae
	Arachnorhiza	N.N.		no species are known
	Arachnosphaera	VALID		Cladococcidae
	Arachnosphaerella	SYN. (obj.)	*Arachnosphaera*	Cladococcidae
?	*Arachnosphaeromma*	N.D.		? Cladococcidae
	Arachnospongus	VALID		Cladococcidae
	Arachnostylus	SYN.	*Lonchosphaera*	Excentroconchidae
	Arachnothauma	SYN.	*Callimitra*	Sethoperidae
?	*Archibursa*	N.D.		? Sethoperidae
	Archicircus	SYN.	*Lithocircus*	Acanthodesmiidae
	Archicorys	N.D.		? Sethoperidae
?	*Archidiscus*	N.D.		? Amphitholidae
	Archilophus	N.N.		no species are known
?	*Archipera*	VALID		? Phaenocalpididae
	Archiperidium	VALID		Dimelissidae
?	*Archiphaena*	INV.	*Archiphatna*	? Cephalospyrididae
?	*Archiphatna*	N.D.		? Cephalospyrididae
?	*Archiphormis*	N.D.		? Plectopyramididae

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Archipilium	VALID		ARCHIPILIIDAE
	Archiscenium	VALID		PHAENOCALPIDIDAE
	Archistephus	SYN. (obj.)	*Archicircus*	ACANTHODESMIIDAE
	Ariadnella	SYN.	*Lithocampe*	EUCYRTIDIIDAE
	Artidium	SYN.	*Didymocyrtis*	PANARTIDAE
?	*Artiscium*	SYN. (obj.); N.D.	*Artiscus*	? PANARTIDAE
?	*Artiscus*	N.D.		? PANARTIDAE
	Artobotrys	VALID		CARPOCANIIDAE
	Artocapsa	VALID		EUCYRTIDIIDAE
?	*Artocarpium*	INV.	*Prunocarpilla*	? PANARTIDAE
	Artocorys	N.N.		no species are known
	Artocyrtis	SYN.	*Stichopterygium*	EUCYRTIDIIDAE
	Artopera	HOM.; SYN.	*Artoperina* n. nov.	THEOPERIDAE
	Artopera	SYN. (obj.)	*Cyrtopera*	THEOPERIDAE
	Artoperina	NOM. NOV.; SYN.	*Rhopalocanium*	THEOPERIDAE
?	*Artophaena*	INV.	*Artophatna*	? EUCYRTIDIIDAE
?	*Artophatna*	N.D.		? EUCYRTIDIIDAE
	Artophormis	SYN.	*Stichocorys*	EUCYRTIDIIDAE
	Artopilium	VALID		STICHOPILIIDAE
	Artostrobium	SYN.	*Botryostrobus*	ARTOSTROBIIDAE
	Artostrobulus	SYN. (obj.)	*Artostrobus*	RHOPALOSYRINGIIDAE
	Artostrobus	VALID		RHOPALOSYRINGIIDAE
	Asecta	SYN.	*Carpocanium*	CARPOCANIIDAE
	Aspis	VALID		INCERTAE FAMILIAE
	Astractinium	SYN. (obj.)	*Astromma*	ASTRACTURIDAE
	Astractura	SYN.	*Astromma*	ASTRACTURIDAE
	Astracturium	SYN. (obj.)	*Astractura*	ASTRACTURIDAE
	Astrococcura	SYN.	*Astromma*	ASTRACTURIDAE
?	*Astrococcus*	INV.	*Astrococcura*	? ASTRACTURIDAE
	Astrocyclia	SYN.	*Lithocyclia*	LITHOCYCLIIDAE
	Astromma	VALID		ASTRACTURIDAE
?	*Astrophacetta*	SYN. (obj.); N.D.	*Astrophacus*	? HELIODISCIDAE
	Astrophacilla	SYN.	*Phacodiscus*	PHACODISCIDAE
	Astrophacomma	SYN.	*Periphaena*	PHACODISCIDAE
	Astrophacura	SYN.	*Heliosestrum*	LITHOCYCLIIDAE
?	*Astrophacus*	N.D.	? *Heliodiscus*	? HELIODISCIDAE
	Astrophormis	SYN.	*Theophormis*	THEOPHORMIDIDAE
	Astrosestantha	SYN. (obj.)	*Astrosestrum*	LITHOCYCLIIDAE
?	*Astrosestilla*	N.D.		? HELIODISCIDAE
?	*Astrosestomma*	N.D.		? HELIODISCIDAE
	Astrosestrum	SYN.	*Heliosestrum*	LITHOCYCLIIDAE
	Astrosphaera	SYN.	*Diplosphaera*	CLADOCOCCIDAE
	Astrosphaerella	SYN. (obj.)	*Astrosphaera*	CLADOCOCCIDAE
?	*Astrosphaeromma*	N.D.	? *Diplosphaera*	? CLADOCOCCIDAE
	Astrospongus	SYN.	*Diplosphaera*	CLADOCOCCIDAE
	Astrostaurus	SYN.	*Phacostaurus*	LITHOCYCLIIDAE
	Astrostylus	SYN.	*Heliostylus*	LITHOCYCLIIDAE
?	*Axellipsis*	N.D.		? STYLATRACTIDAE
	Axocorys	VALID		THEOCOTYLIDAE
?	*Axodiscus*	N.D.		? AMPHITHOLIDAE
	Axoprunum	VALID		AXOPRUNIDAE
	Azerbaidjanicus	SYN.?	*Lithelius*	LITHELIIDAE
	Bathrocalpis	SYN.	*Ceratocyrtis*	CERATOCYRTIDAE
?	*Bathropyramis*	N.D.	? *Cinclopyramis*	? PLECTOPYRAMIDIDAE
	Bathysphaera	(incertae sedis); HOM.; N.D.	*Enjumetia* n. nov.	wrongly described as POLYCYSTINEA
	Bekoma	VALID		BEKOMIDAE
	Bekomiforma	VALID		BEKOMIDAE
	Belonozoum	VALID		SPHAEROZOIDAE
	Bisphaerocephalina	SYN.	*Amphimelissa*	PYLOBOTRYDIDAE
	Bisphaerocephalus	SYN.	*Amphimelissa*	PYLOBOTRYDIDAE
	Botryacantha	N.N.		no species are known
	Botryocampe	VALID		PYLOBOTRYDIDAE
	Botryocanna	N.N.		no species are known
	Botryocella	VALID		PYLOBOTRYDIDAE
	Botryocyrtis	VALID		PYLOBOTRYDIDAE
	Botryometra	VALID		RHOPALOSYRINGIIDAE
	Botryopera	VALID		DICTYOCRYPHALIDAE
?	*Botryopyle*	N.D.		? PYLOBOTRYDIDAE

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Botryostrobus	VALID		ARTOSTROBIIDAE
	Brachiospyris	SYN.	*Dorcadospyris*	CEPHALOSPYRIDIDAE
?	*Briorradiolites*	N.D.		? ETHMOSPHAERIDAE
	Buccinosphaera	SYN.	*Tribonosphaera*	COLLOSPHAERIDAE
	Buryella	VALID		ARTOSTROBIIDAE
	Calcaromma	VALID		CRISTALLOSPHAERIDAE
	Callimitra	VALID		SETHOPERIDAE
	Calocyclas	VALID		PTEROCORYTHIDAE
	Calocycletta	SYN.	*Calocyclas*	PTEROCORYTHIDAE
	Calocyclior	SYN.	*Calocyclas*	PTEROCORYTHIDAE
	Calocyclissa	SYN. (obj.)	*Calocyclas*	PTEROCORYTHIDAE
	Calocyclissima	SYN.	*Calocyclas*	PTEROCORYTHIDAE
	Calocycloma	VALID		PTEROCORYTHIDAE
	Calocyclopsis	SYN.	*Calocyclas*	PTEROCORYTHIDAE
?	*Calocyclura*	VALID		? PTEROCORYTHIDAE
	Calompterium	SYN.	*Rhopalosyringium*	RHOPALOSYRINGIIDAE
?	*Calosphaera*	NOM. NOV.; N.D.		? THALASSOSPHAERIDAE
?	*Calpocapsa*	N.D.		? CEPHALOSPYRIDIDAE
?	*Calpophaena*	INV.	*Cladophatna*	? CEPHALOSPYRIDIDAE
?	*Caminosphaera*	N.D.		? COLLOSPHAERIDAE
	Campanula	(incertae sedis); N.D.		wrongly described as POLYCYSTINEA
	Campylacantha	HOM.; SYN.	*Deflandrella* n. nov.	PLAGIACANTHIDAE
?	*Cannartidella*	SYN. (obj.); N.D.	*Cannartidium*	? PANARTIDAE
	Cannartidissa	SYN.	*Cannartus*	PANARTIDAE
?	*Cannartidium*	N.D.	? *Cannartus*	? PANARTIDAE
	Cannartiscus	SYN.	*Cannartus*	PANARTIDAE
	Cannartus	VALID		PANARTIDAE
?	*Cannobotrantha*	SYN. (obj.); N.D.	*Cannobotrys*	? PYLOBOTRYDIDAE
?	*Cannobotrella*	N.D.		? PYLOBOTRYDIDAE
?	*Cannobotrissa*	N.D.		? PYLOBOTRYDIDAE
?	*Cannobotromma*	N.D.		? PYLOBOTRYDIDAE
?	*Cannobotrusa*	N.D.		? PYLOBOTRYDIDAE
?	*Cannobotrys*	N.D.		? PYLOBOTRYDIDAE
	Cannosphaeropsis	(Dinoflagellate)		wrongly described as POLYCYSTINEA
?	*Cantharospyris*	N.D.	? *Dorcadospyris*	? CEPHALOSPYRIDIDAE
	Carpocanarium	SYN.	*Tricolocapsa*	ARTOSTROBIIDAE
	Carpocanidium	SYN. (obj.)	*Carpocanium*	CARPOCANIIDAE
?	*Carpocanistrum*	N.D.	? *Carpocanium*	? CARPOCANIIDAE
	Carpocanium	VALID		CARPOCANIIDAE
?	*Carpocanobium*	N.D.		? CARPOCANIIDAE
	Carpocanopsis	VALID		CARPOCANIIDAE
?	*Carpocanthum*	VALID		? HEXACROMYIDAE
	Caryatractus	SYN.	*Cromyatractus*	LITHOCYCLIIDAE
	Caryodoras	N.N.		no species are known
?	*Caryodruppula*	N.D.		? PANARTIDAE
?	*Caryolithis*	N.N.		? ZONARIIDAE
	Caryoloncche	N.N.		no species are known
?	*Caryomma*	N.D.		? CLADOCOCCIDAE
?	*Caryosphaera*	N.D.		? ACTINOMMIDAE
	Caryostaurus	N.N.		no species are known
?	*Caryostylus*	N.D.		? STYLATRACTIDAE
	Caryoxiphus	N.N.		no species are known
	Cecryphalium	SYN.	*Eucecryphalus*	THEOPILIIDAE
?	*Cenellipsis*	N.D.		? STYLATRACTIDAE
?	*Cenellipsium*	SYN. (obj.); N.D.	*Cenellipsis*	? STYLATRACTIDAE
?	*Cenellipsula*	N.D.		? STYLATRACTIDAE
?	*Cenodiscus*	N.D.		? ETHMOSPHAERIDAE
?	*Cenolarcus*	N.D.		? ETHMOSPHAERIDAE
	Cenosphaera	SYN.	*Haliomma*	HALIOMMIDAE
?	*Centracontium*	N.D.		? CENTROLONCHIDAE
	Centrobotrys	VALID		PYLOBOTRYDIDAE
	Centrocolla	(incertae sedis); N.D.		wrongly described as POLYCYSTINEA
	Centrocubus	VALID		CENTROCUBIDAE
	Centrolonche	VALID		CENTROLONCHIDAE
	Centrospira	SYN.	*Flustrella*	TREMATODISCIDAE
	Cephalopyramis	SYN.	*Cinclopyramis*	PLECTOPYRAMIDIDAE

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Cephalospyris	SYN.	*Platybursa*	CEPHALOSPYRIDIDAE
	Cephaluspinus	SYN.?	*Dictyocryphalus*	DICTYOCRYPHALIDAE
?	*Cerasosphaera*	N.D.	? *Phaenicosphaera*	? HELIODISCIDAE
?	*Ceratarachnium*	INV.	*Cornutella*	? PLECTOPYRAMIDIDAE
	Ceratastrum	N.N.		no species are known
	Ceratobotrys	SYN.	*Pylobotrys*	PYLOBOTRYDIDAE
	Ceratocyrtis	VALID		CERATOCYRTIDAE
	Ceratospyris	VALID		CEPHALOSPYRIDIDAE
	Ceriosphaera	N.N.		no species are known
?	*Chaunosphaera*	NOM. NOV.; N.D.		? HALIOMMIDAE
?	*Chilomma*	N.O.	? *Actinomma*	? ACTINOMMIDAE
?	*Chitascenium*	VALID		? PSEUDODICTYOPHIMIDAE
?	*Chitonastrella*	SYN. (obj.); N.D.	*Chitonastrum*	? EUCHITONIIDAE
	Chitonastromma	SYN.	*Trigonastrum*	EUCHITONIIDAE
?	*Chitonastrum*	N.D.		? EUCHITONIIDAE
?	*Chlamidophora*	N.D.		? ARTOSTROBIIDAE
	Choenicosphaera	VALID		COLLOSPHAERIDAE
	Choenicosphaerium	SYN.	*Choenicosphaera*	COLLOSPHAERIDAE
	Choenicosphaerula	SYN. (obj.)	*Choenicosphaera*	COLLOSPHAERIDAE
	Cinclopyramis	VALID		PLECTOPYRAMIDIDAE
	Circodiscullus	VALID		CIRCODISCIDAE
	Circodiscus	VALID		CIRCODISCIDAE
?	*Circoniscus*	N.D.		? AMPHITHOLIDAE
	Circosphaera	SYN. (obj.)	*Haliomma*	HALIOMMIDAE
?	*Circospyris*	N.D.		? ACANTHODESMIIDAE
	Circotympanum	(? Silicoflagellate); N.D.		wrongly described as POLYCYSTINEA
?	*Circulosphaera*	INV.	*Circosphaera*	? HALIOMMIDAE
	Cladarachnium	VALID		PLECTOPYRAMIDIDAE
	Cladocalpis	N.N.		no species are known
	Cladococcalis	SYN. (obj.)	*Cladococcus*	CLADOCOCCIDAE
?	*Cladococcinus*	N.D.		? CLADOCOCCIDAE
	Cladococcodes	SYN.	*Cladococcus*	CLADOCOCCIDAE
	Cladococcurus	SYN.	*Cladococcus*	CLADOCOCCIDAE
	Cladococcus	VALID		CLADOCOCCIDAE
?	*Cladocorona*	N.D.		? CEPHALOSPYRIDIDAE
?	*Cladophatna*	N.D.		? CEPHALOSPYRIDIDAE
?	*Cladopyramis*	N.D.	? *Cinclopyramis*	? PLECTOPYRAMIDIDAE
?	*Cladoscenium*	N.D.		? PHAENOCALPIDIDAE
?	*Cladospyris*	N.D.		? PANARTIDAE
	Clathrobursa	SYN. (obj.)	*Tessarospyris*	CEPHALOSPYRIDIDAE
	Clathrocanidium	SYN. (obj.)	*Clathrocanium*	SETHOPERIDAE
	Clathrocanium	VALID		SETHOPERIDAE
?	*Clathrocircus*	N.D.		? CEPHALOSPYRIDIDAE
	Clathrocorona	SYN.	*Clathrocanium*	SETHOPERIDAE
	Clathrocorys	VALID		SETHOPERIDAE
	Clathrocyclas	SYN.	*Anthocyrtis*	ANTHOCYRTIDIDAE
	Clathrocyclia	SYN. (obj.)	*Clathrocyclas*	ANTHOCYRTIDIDAE
	Clathrocycloma	VALID		THEOPILIIDAE
	Clathrolychnus	SYN.	*Clathrocanium*	SETHOPERIDAE
	Clathromitra	VALID		PHAENOCALPIDIDAE
	Clathropilium	SYN. (obj.)	*Pteropilium*	SETHOPERIDAE
	Clathropyrgus	VALID		THEOPERIDAE
	Clathrosphaera	VALID		COLLOSPHAERIDAE
	Clathrosphaerium	SYN.	*Polysolenia*	COLLOSPHAERIDAE
	Clathrosphaerula	SYN. (obj.)	*Clathrosphaera*	COLLOSPHAERIDAE
?	*Clathrospyris*	N.D.	? *Liriospyris*	? CEPHALOSPYRIDIDAE
	Cleveiplegma	VALID		HEXACARYIDAE
	Clinorhabdus	VALID		LOPHOCYRTIIDAE
?	*Clistophaena*	INV.	*Clistophatna*	? THEOCOTYLIDAE
	Clistophatna	VALID		THEOCOTYLIDAE
?	*Coccocyclia*	N.D.	? *Lithocyclia*	? LITHOCYCLIIDAE
	Coccodiscus	SYN.	*Lithocyclia*	LITHOCYCLIIDAE
?	*Coccolarcus*	N.D.		? ETHMOSPHAERIDAE
	Coccolarnacium	VALID		CRYPTOLARNACIIDAE
	Coccostaurus	SYN.	*Staurocyclia*	LITHOCYCLIIDAE
?	*Coccymelium*	INV.	*Prunulum*	? PHACODISCIDAE
	Coinozoum	SYN.	*Collozoum*	SPHAEROZOIDAE
	Collodastrum	SYN.	*Collozoum*	SPHAEROZOIDAE

Appendix 9. — Continuation.

	Genus	Status	See	Family
	Collodinium	SYN. (obj.)	*Collozoum*	Sphaerozoidae
	Collodiscus	SYN. (obj.)	*Myxosphaera*	Collosphaeridae
	Collophidium	VALID		Collophidiidae
?	*Colloprunum*	N.D.	? *Collophidium*	? Collophidiidae
	Collosphaera	VALID		Collosphaeridae
	Collozoum	VALID		Sphaerozoidae
	Conarachnium	SYN.	*Pterocorys*	Pterocorythidae
	Conicavus	VALID		Phaenocalpididae
	Coniforma	SYN.	*Anthocyrtis*	Anthocyrtididae
	Conoactinomma	SYN.	*Melittosphaera*	Haliommidae
	Conocaryomma	VALID		Conocaryommidae
	Conocromyomma	SYN.?	*Conocaryomma*	Conocaryommidae
?	*Conophacodiscus*	N.D.		? Phacodiscidae
	Conosphaera	SYN.	*Collosphaera*	Collosphaeridae
	Conostrobus	SYN.	*Stichopterygium*	Eucyrtidiidae
	Conostylus	(Sponge spicule)		wrongly described as Polycystinea
	Cornustrobus	SYN.	*Lithostrobus*	Lithostrobidae
?	*Cornutanna*	N.D.		? Plectopyramididae
	Cornutella	VALID		Plectopyramididae
	Cornutellium	HOM.; SYN.	*Cornutella*	Plectopyramididae
	Cornutissa	SYN. (obj.)	*Cornutella*	Plectopyramididae
?	*Cornutosa*	N.D.	? *Cornutella*	? Plectopyramididae
	Cornutura	N.N.		no species are known
	Corocalyptra	SYN.	*Eucecryphalus*	Theopiliidae
	Coronidium	SYN.	*Eucoronis*	Acanthodesmiidae
?	*Coronophaena*	INV.	*Archiphatna*	? Cephalospyrididae
?	*Coronophatna*	SYN. (obj.); N.D.	*Archiphatna*	? Cephalospyrididae
	Coronosphaera	SYN.	*Choenicosphaera*	Collosphaeridae
	Cortina	SYN.	*Zygocircus*	Stephaniidae
	Cortiniscus	SYN.	*Semantis*	Acanthodesmiidae
?	*Corythomelissa*	VALID		? Pseudodictyophimidae
	Corythospyris	VALID		Cephalospyrididae
?	*Coscinomma*	N.D.	? *Hollandosphaera*	? Hollandosphaeridae
?	*Coscinommarium*	SYN. (obj.); N.D.	*Coscinomma*	? Hollandosphaeridae
?	*Coscinommidium*	N.D.		? Hollandosphaeridae
?	*Coscinommonium*	N.D.		? Hollandosphaeridae
?	*Craspedilium*	INV.	*Litharachnium*	? Plectopyramididae
	Craspedomma	SYN.	*Liosphaera*	Ethmosphaeridae
	Craterocyclas	SYN.	*Lamprocyclas*	Pterocorythidae
	Cristallosphaera	SYN.	*Calcaromma*	Cristallosphaeridae
	Cromyatractium	SYN. (obj.)	*Cromyatractus*	Lithocyclidae
	Cromyatractus	VALID		Lithocyclidae
	Cromydruppocarpus	SYN.	*Xiphatractylis*	Stylatractidae
	Cromyechinus	VALID		Actinommidae
?	*Cromyocarpus*	N.D.		? Panartidae
?	*Cromyodruppa*	N.D.		? Panartidae
?	*Cromyodruppium*	SYN. (obj.); N.D.	*Cromyodruppa*	? Panartidae
	Cromyodrymus	SYN.	*Cromyechinus*	Actinommidae
	Cromyomma	SYN.	*Actinomma*	Actinommidae
	Cromyommetta	SYN.	*Cromyosphaera*	Haliommidae
	Cromyommura	SYN.	*Cromyosphaera*	Haliommidae
	Cromyosphaera	VALID		Haliommidae
	Cromyosphaerium	N.N.		no species are known
?	*Cromyostaurolonche*	N.D.		? Stylatractidae
?	*Cromyostaurus*	N.D.		? Hexacromyidae
?	*Cromyostylus*	N.D.		? Stylatractidae
	Crucidiscus	SYN.	*Phacostaurus*	Lithocyclidae
	Cryptocarpium	SYN.	*Carpocanopsis*	Carpocaniidae
	Cryptogyrus	VALID		Dimelissidae
	Cryptolarnacium	VALID		Cryptolarnaciidae
	Cryptomanicula	VALID		Patulibracchiidae
	Cryptopera	N.N.		no species are known
	Cryptoprora	SYN.	*Carpocanium*	Carpocaniidae
?	*Cubaxonium*	N.D.		? Hexacromyidae
	Cubosphaera	SYN.	*Hexacromyum*	Hexacromyidae
	Cubotholissa	SYN. (obj.)	*Cubotholus*	Amphitholidae
	Cubotholonium	SYN.	*Tholomura*	Amphitholidae
?	*Cubotholura*	N.D.		? Amphitholidae

Appendix 9. — Continuation.

	Genus	Status	See	Family
	Cubotholus	SYN.	*Tholomura*	Amphitholidae
	Cycladophora	VALID		Cycladophoridae
	Cyclampterium	VALID		Lophocyrtiidae
	Cyclamptidium	SYN. (obj.)	*Cycladophora*	Cycladophoridae
	Cymaetron	VALID		Eucyrtidiidae
?	*Cypassis*	N.D.		? Panartidae
?	*Cyphanta*	HOM.; N.D.	*Cyphantella* n. nov.	? Panartidae
?	*Cyphantella*	NOM. NOV.; N.D.		? Panartidae
?	*Cyphantissa*	N.D.		? Panartidae
?	*Cyphinidium*	N.D.		? Panartidae
?	*Cyphinidoma*	SYN. (obj.); N.D.	*Cyphinidium*	? Panartidae
?	*Cyphinidura*	N.D.		? Panartidae
?	*Cyphinoma*	SYN. (obj.); N.D.	*Cyphinus*	? Panartidae
	Cyphinura	SYN.	*Didymocyrtis*	Panartidae
?	*Cyphinus*	N.D.		? Panartidae
	Cyphocolpus	SYN.	*Didymocyrtis*	Panartidae
?	*Cyphonium*	N.D.	? *Didymocyrtis*	? Panartidae
	Cyrtharia	SYN.	*Stichocorys*	Eucyrtidiidae
	Cyrtidosphaera	VALID		Ethmosphaeridae
	Cyrtocalpis	SYN.	*Carpocanium*	Carpocaniidae
	Cyrtocapsella	VALID		Eucyrtidiidae
	Cyrtocapsoma	SYN.?	*Stichocorys*	Eucyrtidiidae
?	*Cyrtocoris*	HOM.; N.D.	*Cyrtocorys* n. nov.	? Pterocorythidae
?	*Cyrtocorys*	NOM. NOV.; N.D.		? Pterocorythidae
	Cyrtolagena	SYN.	*Stichophatna*	Eucyrtidiidae
	Cyrtolarcus	N.N.		no species are known
	Cyrtopenta	SYN.	*Lithocampe*	Eucyrtidiidae
	Cyrtopera	VALID		Theoperidae
	Cyrtophormis	SYN.	*Stichocorys*	Eucyrtidiidae
	Cyrtophormiscus	SYN.	*Stichocorys*	Eucyrtidiidae
	Cyrtophormium	SYN. (obj.)	*Cyrtophormis*	Eucyrtidiidae
	Cyrtostephanus	SYN.	*Platybursa*	Cephalospyrididae
	Cyrtostrobus	SYN.?	*Lithostrobus*	Lithostrobidae
	Cystidium	VALID		Plagiacanthidae
?	*Cystophormis*	N.D.		? Carpocaniidae
	Cytocladus	VALID		Thalassothamnidae
	Daniplagia	VALID		Ximolzasidae
	Deflandrella	NOM. NOV.; SYN.	*Neosemantis*	Plagiacanthidae
?	*Dendrocircus*	N.D.	? *Lithocircus*	? Acanthodesmiidae
	Dendrospyris	VALID		Cephalospyrididae
?	*Dermatosphaera*	N.N.		? Actinommidae
	Desmartus	SYN.	*Didymocyrtis*	Panartidae
?	*Desmocampe*	N.D.		? Panartidae
	Desmospyris	VALID		Cephalospyrididae
?	*Diabolocampe*	N.D.		? Eucyrtidiidae
	Diartus	VALID		Panartidae
?	*Diauletes*	N.D.		? Pylobotrydidae
	Dicoccura	SYN.	*Amphactura*	Astracturidae
	Dicorys	SYN.?	*Peromelissa*	Dimelissidae
	Dicranaster	SYN. (obj.)	*Dicranastrum*	Euchitoniidae
	Dicranastrum	SYN.	*Tricranastrum*	Euchitoniidae
	Dictyastrella	SYN. (obj.)	*Dictyastrum*	Euchitoniidae
	Dictyastromma	SYN.	*Trigonastrum*	Euchitoniidae
	Dictyastrum	SYN.	*Dictyocoryne*	Euchitoniidae
	Dictyatractus	SYN.	*Rhopalocanium*	Theoperidae
	Dictyocephalus	HOM.; SYN.	*Dictyocryphalus*	Dictyocryphalidae
	Dictyoceras	HOM.	*Lipmanella* n. nov.	Ceratocyrtidae
?	*Dictyocircus*	N.D.		? Phaenocalpididae
	Dictyocodella	SYN. (obj.)	*Dictyocodon*	Sethoperidae
	Dictyocodoma	VALID		Sethoperidae
	Dictyocodon	VALID		Sethoperidae
	Dictyocoryne	VALID		Euchitoniidae
	Dictyocorynium	SYN.	*Spongasteriscus*	Spongobrachiidae
	Dictyocorynula	SYN. (obj.)	*Dictyocoryne*	Euchitoniidae
	Dictyocryphalus	VALID		Dictyocryphalidae
	Dictyocyrtis	N.N.		no species are known
	Dictyomitra	VALID		Archaeodictyomitridae
	Dictyomitrella	VALID		Xitomitridae
	Dictyomitroma	SYN. (obj.)	*Dictyomitra*	Archaeodictyomitridae

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Dictyophimium	SYN. (obj.)	*Lychnocanium*	LITHOCHYTRIDIDAE
?	*Dictyophimus*	N.D.		? PSEUDODICTYOPHIMIDAE
?	*Dictyoplegma*	NOM. NOV.; N.D.		? SPONGODRYMIDAE
	Dictyopodium	VALID		LITHOCHYTRIDIDAE
?	*Dictyoprona*	N.D.	? *Carpocanium*	? CARPOCANIIDAE
	Dictyoprora	VALID		ARTOSTROBIIDAE
?	*Dictyosoma*	HOM.; N.D.	*Dictyoplegma* n. nov.	? SPONGODRYMIDAE
?	*Dictyosphagma*	NOM. NOV.; SYN. (obj.); N.D.	*Dictyoplegma*	? SPONGODRYMIDAE
	Dictyospyrantha	SYN.?	*Dictyospyris*	ACANTHODESMIIDAE
	Dictyospyrella	SYN.	*Dictyospyris*	ACANTHODESMIIDAE
	Dictyospyris	VALID		ACANTHODESMIIDAE
	Dictyospyrissa	SYN.	*Dictyospyris*	ACANTHODESMIIDAE
?	*Dictyospyromma*	N.D.		? ACANTHODESMIIDAE
	Didymocyrtis	VALID		PANARTIDAE
	Didymophormis	N.N.		no species are known
?	*Didymospyris*	SYN. (obj.); N.D.	*Cypassis*	? PANARTIDAE
	Dimelissa	NOM. NOV.; SYN.	*Peromelissa*	DIMELISSIDAE
?	*Dioniscus*	SYN. (obj.); N.D.	*Archidiscus*	? AMPHITHOLIDAE
	Diplactinium	SYN.	*Amphactura*	ASTRACTURIDAE
?	*Diplacturium*	N.D.		? ASTRACTURIDAE
?	*Diplellipsis*	N.D.		? PANARTIDAE
	Diplocyclas	SYN.	*Cycladophora*	CYCLADOPHORIDAE
	Diplosphaera	VALID		CLADOCOCCIDAE
	Diplosphaerella	SYN.	*Diplosphaera*	CLADOCOCCIDAE
	Diplosphaeromma	SYN. (obj.)	*Diplosphaera*	CLADOCOCCIDAE
	Diplospongus	VALID		SPONGOSPHAERIDAE
	Diplostrobus	SYN.	*Dictyomitra*	ARCHAEODICTYOMITRIDAE
?	*Dipocoronis*	SYN. (obj.); N.D.	*Podocoronis*	? ACANTHODESMIIDAE
?	*Dipocubus*	N.D.		? ACANTHODESMIIDAE
?	*Dipodospyris*	N.D.	? *Dorcadospyris*	? CEPHALOSPYRIDIDAE
?	*Dipospyris*	INV.	*Dipodospyris*	? CEPHALOSPYRIDIDAE
	Dipylissa	VALID		DIPYLISSIDAE
	Discocephalus	NOM. CORR.; HOM.; SYN.	*Dictyocryphalus*	DICTYOCRYPHALIDAE
	Discopyle	SYN.	*Pylodiscus*	PYLODISCIDAE
	Discospira	HOM.; SYN.	*Discospirella* n. nov.	TREMATODISCIDAE
	Discospirella	NOM. NOV.; SYN.	*Flustrella*	TREMATODISCIDAE
	Discozonium	SYN.	*Pylodiscus*	PYLODISCIDAE
	Disolenia	VALID		COLLOSPHAERIDAE
?	*Dispongia*	N.D.		? SPONGODRYMIDAE
?	*Distriactis*	N.D.		? HELIODISCIDAE
?	*Dizonaris*	SYN. (obj.); N.D.	*Dizonium*	? ZONARIIDAE
	Dizonitis	SYN.	*Tetrapyle*	ZONARIIDAE
?	*Dizonium*	N.D.		? ZONARIIDAE
	Dorcadospyris	VALID		CEPHALOSPYRIDIDAE
?	*Dorydiscus*	N.D.		? AXOPRUNIDAE
?	*Dorydruppa*	N.D.		? AXOPRUNIDAE
	Dorylonchella	VALID		AXOPRUNIDAE
?	*Dorylonchomma*	N.D.		? AXOPRUNIDAE
?	*Doryphacus*	N.D.		? AXOPRUNIDAE
?	*Doryprunum*	N.D.		? AXOPRUNIDAE
	Drepotadium	SYN.?	*Pseudocubus*	PLAGIACANTHIDAE
	Dreyerella	SYN.	*Actinomma*	ACTINOMMIDAE
	Dreyeropyle	SYN.	*Phaenicosphaera*	HELIODISCIDAE
	Druppatractara	SYN. (obj.)	*Xiphostylantha*	STYLATRACTIDAE
?	*Druppatractium*	N.D.	? *Lithapium*	? STYLATRACTIDAE
	Druppatractona	VALID		STYLOSPHAERIDAE
	Druppatractus	SYN.	*Xiphostylantha*	STYLATRACTIDAE
	Druppatractylis	VALID		STYLATRACTIDAE
?	*Druppocarpetta*	SYN. (obj.); N.D.	*Druppocarpus*	? PANARTIDAE
?	*Druppocarpissa*	N.D.		? PANARTIDAE
?	*Druppocarpus*	N.D.		? PANARTIDAE
	Druppula	SYN.	*Cannartus*	PANARTIDAE
	Druppuletta	SYN. (obj.)	*Druppula*	PANARTIDAE
?	*Druppulissa*	N.D.		? PHORTICIIDAE
?	*Drymosphaera*	N.D.	? *Diplosphaera*	? CLADOCOCCIDAE
?	*Drymosphaerella*	SYN. (obj.); N.D.	? *Drymosphaera*	? CLADOCOCCIDAE
	Drymosphaeromma	SYN.	*Diplosphaera*	CLADOCOCCIDAE
?	*Drymospira*	N.D.		? LARCOSPIRIDAE
	Drymyomma	SYN.	*Actinomma*	ACTINOMMIDAE

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Dumetum	VALID		PLAGIACANTHIDAE
	Dyospyris	N.N.		no species are known
	Dyostephaniscus	N.N.		no species are known
	Dyostephanus	N.N.		no species are known
	Dyostephus	N.N.		no species are known
	Dyscollosphaera	SYN. (obj.)	*Collosphaera*	COLLOSPHAERIDAE
	Dystympanium	(Silicoflagellate)		wrongly described as POLYCYSTINEA
?	*Echinactura*	N.D.		? LITHOCYCLIIDAE
	Echinobotrys	N.N.		no species are known
	Echinocalpis	(? Silicoflagellate); N.D.		wrongly described as POLYCYSTINEA
?	*Echinocapsa*	N.D.		? STYLATRACTIDAE
?	*Echinomma*	N.D.	? *Actinomma*	? ACTINOMMIDAE
?	*Echinommetta*	SYN. (obj.); N.D.	*Echinomma*	? ACTINOMMIDAE
	Echinommura	SYN.	*Actinomma*	ACTINOMMIDAE
	Echinosphaera	SYN.	*Tetrapyle*	ZONARIIDAE
	Ectonocorys	VALID		RHOPALOSYRINGIIDAE
	Ectotoxon	VALID		STICHOPILIIDAE
?	*Elaphococcinus*	SYN. (obj.); N.D.	*Elaphococcus*	? CLADOCOCCIDAE
?	*Elaphococculus*	N.D.		? CLADOCOCCIDAE
?	*Elaphococcus*	N.D.	? *Cladococcus*	? CLADOCOCCIDAE
	Elaphospyris	VALID		CEPHALOSPYRIDIDAE
?	*Elatomma*	N.D.		? RHIZOSPHAERIDAE
?	*Elatommella*	SYN. (obj.); N.D.	*Elatomma*	? RHIZOSPHAERIDAE
	Elatommura	SYN.	*Haliommilla*	RHIZOSPHAERIDAE
?	*Ellipsidium*	N.D.		? STYLATRACTIDAE
?	*Ellipsis*	INV.	*Cenellipsula*	? STYLATRACTIDAE
	Ellipsostyletta	SYN. (obj.)	*Ellipsostylus*	STYLATRACTIDAE
	Ellipsostylissa	SYN.	*Ellipsostylus*	STYLATRACTIDAE
	Ellipsostylus	VALID		STYLATRACTIDAE
?	*Ellipsoxiphetta*	N.D.		? STYLATRACTIDAE
	Ellipsoxiphium	SYN.?	*Axoprunum*	AXOPRUNIDAE
	Enalomelon	VALID		CRISTALLOSPHAERIDAE
	Enjumetia	(incertae sedis); NOM. NOV.; N.D.		wrongly described as POLYCYSTINEA
?	*Ennealacorys*	N.D.	? *Anthocyrtoma*	? PTEROCORYTHIDAE
	Enneaphormis	VALID		THEOPHORMIDIDAE
	Enneaplagia	N.N.		no species are known
	Enneaplegma	VALID		PLAGIACANTHIDAE
	Enneapleuris	SYN.	*Cinclopyramis*	PLECTOPYRAMIDIDAE
	Enneplagidium	N.N.		no species are known
	Entapium	VALID		ENTAPIIDAE
	Entepipedus	VALID		CERATOCYRTIDAE
	Eostichomitra	SYN.	*Lithostrobus*	LITHOSTROBIDAE
	Ethmosphaera	VALID		ETHMOSPHAERIDAE
	Ethmosphaerella	SYN. (obj.)	*Ethmosphaera*	ETHMOSPHAERIDAE
?	*Ethmosphaeromma*	N.D.		? ETHMOSPHAERIDAE
	Eucecryphalium	SYN. (obj.)	*Eucecryphalus*	THEOPILIIDAE
	Eucecryphalus	VALID		THEOPILIIDAE
	Euchitonia	SYN.	*Dictyocoryne*	EUCHITONIIDAE
?	*Eucollosphaera*	N.D.		? COLLOSPHAERIDAE
	Eucoronis	VALID		ACANTHODESMIIDAE
	Eucyrtidium	VALID		EUCYRTIDIIDAE
?	*Eucyrtomphalus*	N.D.		? THEOPILIIDAE
	Eulophospyris	SYN.?	*Lamprospyris*	CEPHALOSPYRIDIDAE
	Eurystomoskevos	VALID		ANTHOCYRTIDIDAE
	Euscenarium	SYN.	*Archiscenium*	PHAENOCALPIDIDAE
?	*Euscenidium*	N.D.		? PHAENOCALPIDIDAE
	Euscenium	SYN.	*Archiscenium*	PHAENOCALPIDIDAE
	Eusyringartus	SYN. (obj.)	*Eusyringium*	THEOPERIDAE
	Eusyringium	VALID		THEOPERIDAE
	Eusyringoma	SYN.?	*Stichocorys*	EUCYRTIDIIDAE
	Eutympanium	(Silicoflagellate)		wrongly described as POLYCYSTINEA
	Excentrococcus	VALID		HELIODISCIDAE
	Excentroconcha	VALID		EXCENTROCONCHIDAE
	Excentrodiscus	VALID		HELIODISCIDAE
	Excentrosphaerella	SYN.?	*Actinommura*	HELIODISCIDAE

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
?	*Fenestracanthia*	N.N.; SYN.	*Dictyopodium*	? LITHOCHYTRIDIDAE
	Flustrella	VALID		TREMATODISCIDAE
	Gamospyris	SYN.	*Dorcadospyris*	CEPHALOSPYRIDIDAE
	Genetrix	VALID		PHAENOCALPIDIDAE
	Giraffospyris	SYN. (obj.)	*Elaphospyris*	CEPHALOSPYRIDIDAE
	Globolarnacium	VALID		CRYPTOLARNACIIDAE
	Glomaria	VALID		EUCYRTIDIIDAE
	Glycobotrys	NOM. NOV.; SYN.?	*Amphimelissa*	PYLOBOTRYDIDAE
	Gomisterna	VALID		CERATOCYRTIDAE
	Gondwanaria	VALID		CERATOCYRTIDAE
	Gonosphaera	VALID		EXCENTROCONCHIDAE
	Gorgospyris	VALID		CEPHALOSPYRIDIDAE
	Gorgospyrium	SYN. (obj.)	*Gorgospyris*	CEPHALOSPYRIDIDAE
	Haeckeliella	VALID		CLADOCOCCIDAE
?	*Haeckelocyphanta*	NOM. NOV.; SYN. (obj.); N.D.	*Cyphantella*	? PANARTIDAE
	Hagiastrella	SYN.	*Stephanastrum*	HISTIASTRIDAE
	Hagiastromma	SYN.	*Tessarastrum*	EUCHITONIIDAE
	Halicalyptra	(Silicoflagellate)		wrongly described as POLYCYSTINEA
	Haliomma	VALID		HALIOMMIDAE
	Haliommantha	VALID		HALIOMMIDAE
?	*Haliommetta*	N.D.	? *Cromyechinus*	? ACTINOMMIDAE
	Haliommilla	VALID		RHIZOSPHAERIDAE
	Haliommura	SYN.	*Actinomma*	ACTINOMMIDAE
	Haliphormartidium	VALID		PLECTOPYRAMIDIDAE
	Haliphormis	HOM.	*Haliphormartidium* n. nov.	PLECTOPYRAMIDIDAE
	Haliphormis	VALID		HEXACARYIDAE
	Haplosphaera	VALID		ETHMOSPHAERIDAE
	Hataina	(Sponge spicule)		wrongly described as POLYCYSTINEA
	Heliaster	HOM.	*Hollandosphaera* n. nov.	HOLLANDOSPHAERIDAE
	Heliocladus	SYN.	*Heliodiscus*	HELIODISCIDAE
	Heliodendrum	SYN.	*Heliodiscus*	HELIODISCIDAE
	Heliodiscetta	SYN.	*Heliodiscus*	HELIODISCIDAE
	Heliodiscilla	SYN. (obj.)	*Heliodiscus*	HELIODISCIDAE
	Heliodiscomma	SYN.	*Periphaena*	PHACODISCIDAE
?	*Heliodiscura*	N.D.		? HELIODISCIDAE
	Heliodiscus	VALID		HELIODISCIDAE
	Heliodrymus	SYN. (obj.)	*Heliodiscus*	HELIODISCIDAE
	Helioferrusa	VALID		HELIODISCIDAE
	Heliosestantha	SYN. (obj.)	*Heliosestrum*	LITHOCYCLIIDAE
	Heliosestarium	SYN.	*Xiphatractylis*	STYLATRACTIDAE
	Heliosestilla	SYN.	*Heliodiscus*	HELIODISCIDAE
?	*Heliosestomma*	N.D.	? *Heliosestrum*	? LITHOCYCLIIDAE
	Heliosestrum	VALID		LITHOCYCLIIDAE
	Heliosoma	VALID		RHIZOSPHAERIDAE
	Heliosomantha	SYN. (obj.)	*Heliosoma*	RHIZOSPHAERIDAE
	Heliosomura	SYN.	*Actinomma*	ACTINOMMIDAE
	Heliosphaera	VALID		ETHMOSPHAERIDAE
	Heliosphaerella	SYN. (obj.)	*Heliosphaera*	ETHMOSPHAERIDAE
?	*Heliosphaeromma*	N.D.		? ETHMOSPHAERIDAE
	Heliostaurus	SYN.	*Phacostaurus*	LITHOCYCLIIDAE
	Heliostylus	VALID		LITHOCYCLIIDAE
	Helotholus	SYN.	*Ceratocyrtis*	CERATOCYRTIDAE
?	*Heptaphormis*	INV.	*Lampromitra*	? LAMPROMITRIDAE
	Heteracantha	HOM.; SYN.	*Anomalacantha* n. nov.	CLADOCOCCIDAE
?	*Heterocornutanna*	N.D.		? PLECTOPYRAMIDIDAE
?	*Heterosestrum*	VALID		? PATULIBRACCHIIDAE
	Heterosoma	HOM.	*Anomalosoma* n. nov.	HOLLANDOSPHAERIDAE
?	*Heterosphaera*	N.D.		? ACTINOMMIDAE
?	*Heterosphaerina*	INV.	*Heterosphaera*	? ACTINOMMIDAE
	Heterospongus	SYN.	*Octodendron*	CENTROCUBIDAE
	Hexacaryum	VALID		HEXACARYIDAE
?	*Hexacladus*	N.D.		? CLADOCOCCIDAE
?	*Hexacontanna*	SYN. (obj.); N.D.	*Hexacontium*	? HEXACROMYIDAE
?	*Hexacontarium*	N.D.		? HEXACROMYIDAE
	Hexacontella	VALID		HALIOMMIDAE
?	*Hexacontium*	N.D.	? *Hexacromyum*	? HEXACROMYIDAE
?	*Hexacontosa*	N.D.		? HEXACROMYIDAE

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Hexacontura	SYN.	*Hexacromyum*	HEXACROMYIDAE
	Hexacorethra	SYN.	*Tetracorethra*	PTEROCORYTHIDAE
?	*Hexacoronis*	N.D.	? *Eucoronis*	? ACANTHODESMIIDAE
	Hexacromydium	N.N.		no species are known
	Hexacromyum	VALID		HEXACROMYIDAE
	Hexactura	N.N.		no species are known
?	*Hexacyclia*	SYN.	*Heterosestrum*	? PATULIBRACCHIIDAE
?	*Hexadendron*	INV.	*Hexadendrum*	? HEXACARYIDAE
?	*Hexadendrum*	N.D.	? *Hexapitys*	? HEXACARYIDAE
	Hexadilemma	N.N.		no species are known
?	*Hexadoras*	N.D.		? HEXACROMYIDAE
	Hexadoridium	SYN.	*Spongosphaera*	SPONGOSPHAERIDAE
	Hexadorium	N.N.		no species are known
	Hexadrymium	N.N.		no species are known
	Hexalacorys	SYN.	*Pentalacorys*	THEOCOTYLIDAE
	Hexalastromma	SYN.	*Hexinastrum*	EUCHITONIIDAE
?	*Hexalastrum*	N.D.		? EUCHITONIIDAE
?	*Hexalatractus*	N.D.	? *Rhopalocanium*	? THEOPERIDAE
	Hexalodus	SYN.	*Lamprocyclas*	PTEROCORYTHIDAE
?	*Hexalonchara*	SYN. (obj.); N.D.	*Hexalonche*	? HEXACROMYIDAE
?	*Hexaloncharium*	N.D.		? HEXACROMYIDAE
?	*Hexalonche*	N.D.	? *Hexalonchilla*	? HEXACROMYIDAE
	Hexalonchetta	VALID		HEXACARYIDAE
?	*Hexalonchidium*	N.D.		? HEXACROMYIDAE
	Hexalonchilla	VALID		HEXACROMYIDAE
	Hexalonchusa	SYN.	*Hexalonchilla*	HEXACROMYIDAE
	Hexancistra	VALID		HEXACARYIDAE
	Hexancora	SYN. (obj.)	*Hexancistra*	HEXACARYIDAE
	Hexaphormis	SYN.	*Lampromitra*	LAMPROMITRIDAE
	Hexapitys	VALID		HEXACARYIDAE
?	*Hexaplagia*	N.D.		? PLAGIACANTHIDAE
	Hexaplagidium	N.N.		no species are known
?	*Hexaplecta*	INV.	*Hexaplegma*	? PLAGIACANTHIDAE
?	*Hexaplegma*	N.D.		? PLAGIACANTHIDAE
?	*Hexapleuris*	N.D.	? *Cinclopyramis*	? PLECTOPYRAMIDIDAE
?	*Hexapyle*	N.D.	? *Pylodiscus*	? PYLODISCIDAE
	Hexarhizacontium	VALID		RHIZOSPHAERIDAE
	Hexaspongonium	N.N.		no species are known
?	*Hexaspyridium*	SYN. (obj.); N.D.	*Hexaspyris*	? CEPHALOSPYRIDIDAE
?	*Hexaspyris*	N.D.	? *Ceratospyris*	? CEPHALOSPYRIDIDAE
	Hexastylanthus	SYN.	*Haliphormis*	HEXACARYIDAE
?	*Hexastylarium*	N.D.		? HEXACARYIDAE
	Hexastylettus	SYN.	*Haliphormis*	HEXACARYIDAE
?	*Hexastylidium*	N.D.		? HEXACARYIDAE
	Hexastylissus	SYN.	*Haliphormis*	HEXACARYIDAE
	Hexastylurus	SYN.	*Haliphormis*	HEXACARYIDAE
	Hexinastrum	VALID		EUCHITONIIDAE
?	*Hexoniscus*	N.D.		? AMPHITHOLIDAE
	Histiastrella	SYN.	*Spongaster*	SPONGODISCIDAE
	Histiastromma	SYN. (obj.)	*Histiastrum*	HISTIASTRIDAE
	Histiastrum	VALID		HISTIASTRIDAE
	Hollandosphaera	VALID		HOLLANDOSPHAERIDAE
	Holosiphonia	SYN. (obj.)	*Siphonosphaera*	COLLOSPHAERIDAE
	Homunculodiscus	VALID		SUTTONIIDAE
	Hymenactinium	SYN.	*Hymeniastrum*	ASTRACTURIDAE
	Hymenactura	SYN.	*Hymeniastrum*	ASTRACTURIDAE
	Hymenacturium	SYN. (obj.)	*Hymenactura*	ASTRACTURIDAE
	Hymenastrella	SYN. (obj.)	*Hymeniastrum*	ASTRACTURIDAE
	Hymenastromma	SYN.?	*Dictyocoryne*	EUCHITONIIDAE
	Hymeniastrum	VALID		ASTRACTURIDAE
	Inversumbella	VALID		LITHOCHYTRIDIDAE
	Jeanpierria	VALID		PLAGIACANTHIDAE
	Joergensenium	VALID		QUINQUECAPSULARIIDAE
?	*Jozoum*	N.D.		? SPHAEROZOIDAE
?	*Lampoxanthella*	SYN. (obj.); N.D.	*Lampoxanthium*	? THALASSOSPHAERIDAE
?	*Lampoxanthium*	N.D.		? THALASSOSPHAERIDAE
?	*Lampoxanthomma*	N.D.		? THALASSOSPHAERIDAE
	Lampoxanthura	VALID		THALASSOSPHAERIDAE
	Lamprocyclas	VALID		PTEROCORYTHIDAE

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Lamprocyclia	SYN. (obj.)	*Lamprocyclas*	PTEROCORYTHIDAE
?	*Lamprocycloma*	N.D.		? PTEROCORYTHIDAE
	Lamprocyrtis	VALID		PTEROCORYTHIDAE
	Lamprodisculus	N.N.		no species are known
	Lamprodiscus	VALID		LAMPROMITRIDAE
	Lampromitra	VALID		LAMPROMITRIDAE
	Lamprospyris	VALID		CEPHALOSPYRIDIDAE
	Lamprotripus	VALID		BEKOMIDAE
	Lampterium	VALID		PTEROCORYTHIDAE
	Lamptidium	SYN.?	*Lampterium*	PTEROCORYTHIDAE
?	*Lamptonium*	N.D.	? *Anthocyrtoma*	? PTEROCORYTHIDAE
?	*Larcarium*	N.D.		? ETHMOSPHAERIDAE
	Larcidium	VALID		ZONARIIDAE
	Larcodiscus	N.N.		no species are known
	Larcopyle	SYN.	*Tholospira*	LARCOSPIRIDAE
	Larcospira	VALID		LARCOSPIRIDAE
	Larcospirema	SYN. (obj.)	*Larcospira*	LARCOSPIRIDAE
?	*Larcospironium*	N.D.		? LARCOSPIRIDAE
	Larnacalpis	SYN.	*Larnacilla*	PHORTICIIDAE
	Larnacantha	SYN.	*Tetrapyle*	ZONARIIDAE
?	*Larnacidium*	N.D.		? PHORTICIIDAE
	Larnacilla	VALID		PHORTICIIDAE
?	*Larnacoma*	N.D.		? PHORTICIIDAE
?	*Larnacospongus*	N.D.		? PHORTICIIDAE
?	*Larnacostupa*	N.D.		? PHORTICIIDAE
	Lentellipsis	N.N.		no species are known
?	*Leptarachnium*	INV.	*Astrophormis*	? THEOPHORMIDIDAE
	Leptosphaera	SYN.	*Diplosphaera*	CLADOCOCCIDAE
	Leptosphaerella	SYN. (obj.)	*Leptosphaera*	CLADOCOCCIDAE
	Leptosphaeromma	SYN.	*Diplosphaera*	CLADOCOCCIDAE
	Liosphaera	VALID		ETHMOSPHAERIDAE
	Lipmanella	VALID		CERATOCYRTIDAE
	Lipmanium	SYN.	*Microsciadiocapsa*	ANTHOCYRTIDIDAE
	Liriocyrtis	SYN.	*Ceratospyris*	CEPHALOSPYRIDIDAE
	Liriospyris	VALID		CEPHALOSPYRIDIDAE
	Lithacanthus	(Sponge spicule)		wrongly described as POLYCYSTINEA
	Lithamphora	VALID		ARTOSTROBIIDAE
	Lithapium	VALID		STYLATRACTIDAE
	Litharachnidium	SYN. (obj.)	*Litharachnium*	PLECTOPYRAMIDIDAE
	Litharachnium	VALID		PLECTOPYRAMIDIDAE
?	*Litharachnoma*	N.D.		? PLECTOPYRAMIDIDAE
	Lithatractara	SYN. (obj.)	*Lithatractus*	STYLATRACTIDAE
?	*Lithatractium*	N.D.		? STYLOSPHAERIDAE
	Lithatractona	VALID		STYLOSPHAERIDAE
	Lithatractus	SYN.	*Druppatractylis*	STYLATRACTIDAE
?	*Lithatractylis*	N.D.		? STYLOSPHAERIDAE
	Lithelius	VALID		LITHELIIDAE
	Lithobotrys	HOM.; SYN.?	*Glycobotrys* n. nov.	PYLOBOTRYDIDAE
?	*Lithobotrys*	N.D.	? *Botryopera*	? DICTYOCRYPHALIDAE
?	*Lithocampana*	N.D.		? RHOPALOSYRINGIIDAE
	Lithocampe	VALID		EUCYRTIDIIDAE
	Lithocampula	SYN. (obj.)	*Lithocampe*	EUCYRTIDIIDAE
	Lithocarpium	SYN.?	*Spongocyclia*	LITHELIIDAE
	Lithochytridium	SYN. (obj.)	*Lithochytris*	LITHOCHYTRIDIDAE
	Lithochytris	VALID		LITHOCHYTRIDIDAE
	Lithochytrodes	SYN.	*Lychnocanium*	LITHOCHYTRIDIDAE
	Lithocircus	VALID		ACANTHODESMIIDAE
	Lithocoronis	SYN.	*Acanthodesmia*	ACANTHODESMIIDAE
	Lithocorythium	VALID		PYLOBOTRYDIDAE
	Lithocubus	VALID		ACANTHODESMIIDAE
	Lithocyclia	VALID		LITHOCYCLIIDAE
	Lithomelissa	VALID		DIMELISSIDAE
	Lithomespilus	VALID		STYLATRACTIDAE
	Lithomitra	SYN.	*Siphocampe*	ARTOSTROBIIDAE
	Lithomitrella	SYN. (obj.)	*Lithomitra*	ARTOSTROBIIDAE
	Lithomitrissa	SYN.	*Lithocampe*	EUCYRTIDIIDAE
	Lithopera	VALID		EUCYRTIDIIDAE
	Lithopilium	SYN.	*Pterocorys*	PTEROCORYTHIDAE

Appendix 9. — Continuation.

	Genus	Status	See	Family
?	*Lithornithium*	N.D.	? *Lychnocanissa*	? Lithochytrididae
	Lithospira	SYN. (obj.)	*Lithelius*	Litheliidae
	Lithostrobus	VALID		Lithostrobidae
	Lithotympanium	VALID		Acanthodesmiidae
?	*Lithotympanum*	INV.	*Lithotympanium*	? Acanthodesmiidae
	Lonchosphaera	VALID		Excentroconchidae
	Lophocapsa	N.N.		no species are known
	Lophoconus	VALID		Stichopiliidae
	Lophocyrtis	VALID		Lophocyrtiidae
	Lophopera	N.N.		no species are known
?	*Lophophaena*	N.D.	? *Dictyocryphalus*	? Dictyocryphalidae
?	*Lophophaenoma*	N.D.	? *Dictyocryphalus*	? Dictyocryphalidae
?	*Lophophaenula*	SYN. (obj.); N.D.	*Lophophaena*	? Dictyocryphalidae
	Lophospyris	HOM.	*Eulophospyris* n. nov.	Cephalospyrididae
	Lophospyris	VALID		Cephalospyrididae
	Lychnocanella	SYN.	*Lychnocanium*	Lithochytrididae
	Lychnocanissa	VALID		Lithochytrididae
	Lychnocanium	VALID		Lithochytrididae
	Lychnocanoma	SYN.	*Lychnocanissa*	Lithochytrididae
	Lychnodictyum	SYN.	*Dictyopodium*	Lithochytrididae
	Lychnosphaera	VALID		Cladococcidae
	Marimoum	SYN.	*Steganocubus*	Pseudodictyophimidae
	Mazosphaera	SYN.	*Polysolenia*	Collosphaeridae
	Melitomma	SYN. (obj.)	*Liosphaera*	Ethmosphaeridae
	Melittosphaera	VALID		Haliommidae
	Merosiphonia	SYN.	*Siphonosphaera*	Collosphaeridae
	Microcubus	SYN.	*Amphispyris*	Paradictyidae
	Microlecitos	N.N.		no species are known
	Micromelissa	HOM.; SYN.	*Dimelissa* n. nov.	Dimelissidae
	Micromelissa	SYN.?	*Peromelissa*	Dimelissidae
	Microsciadiocapsa	VALID		Anthocyrtididae
	Middourium	VALID		Litheliidae
?	*Mitrocalpis*	N.D.	? *Archiperidium*	? Dimelissidae
	Monacantha	N.N.		no species are known
	Monaxonium	SYN.	*Trigonastrum*	Euchitoniidae
	Monobrachium	SYN.	*Middourium*	Litheliidae
?	*Monocarion*	N.D.		? Thalassicollidae
	Monosphaera	SYN.	*Ethmosphaera*	Ethmosphaeridae
?	*Monostephus*	N.D.		? Acanthodesmiidae
	Monotubus	VALID		Pylobotrydidae
?	*Monozonaris*	SYN. (obj.); N.D.	*Monozonium*	? Zonariidae
?	*Monozonitis*	N.D.		? Zonariidae
?	*Monozonium*	N.D.	? *Tetrapyle*	? Zonariidae
	Myelastrella	SYN. (obj.)	*Myelastrum*	Euchitoniidae
	Myelastromma	SYN.	*Tricranastrum*	Euchitoniidae
	Myelastrum	SYN.	*Tricranastrum*	Euchitoniidae
	Myllocercion	VALID		Diacanthocapsidae
	Myxobrachia	VALID		Thalassicollidae
	Myxosphaera	SYN.	*Collosphaera*	Collosphaeridae
	Nanina	VALID		Hexacromyidae
?	*Nassella*	N.D.		? Plagiacanthidae
	Neobotrys	VALID		Pylobotrydidae
	Neosemantis	VALID		Plagiacanthidae
	Nephrodictyum	VALID		Paradictyidae
	Nephrospyris	SYN. (obj.)	*Nephrodictyum*	Paradictyidae
	Nodotetraedra	SYN.	*Pyramispongia*	Pyramispongiidae
	Nothotripodiscinus	SYN.	*Archipilium*	Archipiliidae
	Obeliscus	HOM.; SYN.	*Talariscus* n. nov.	Plagiacanthidae
	Octalacorys	SYN.	*Pentalacorys*	Theocotylidae
	Octodendridium	SYN. (obj.)	*Octodendron*	Centrocubidae
	Octodendron	VALID		Centrocubidae
?	*Octodendronium*	N.D.		? Centrocubidae
?	*Octophormis*	N.D.		? Theophormididae
?	*Octopyle*	N.D.		? Zonariidae
?	*Octopylissa*	SYN. (obj.); N.D.	*Octopyle*	? Zonariidae
	Octopylura	SYN.	*Tetrapyle*	Zonariidae
	Octotympanum	SYN.	*Acanthodesmia*	Acanthodesmiidae
	Odontosphaera	SYN.	*Polysolenia*	Collosphaeridae
?	*Ommatacantha*	N.D.		? Panartidae

Appendix 9. — Continuation.

	Genus	Status	See	Family
?	*Ommatartus*	N.D.		? Panartidae
	Ommathymenium	VALID		Histiastridae
	Ommatocampe	VALID		Euchitoniidae
	Ommatocampium	SYN. (obj.)	*Ommatocampe*	Euchitoniidae
	Ommatocampula	SYN.	*Didymocyrtis*	Panartidae
?	*Ommatocorona*	N.D.		? Panartidae
?	*Ommatocoryne*	N.N.		? Panartidae
?	*Ommatocyrtis*	N.D.	? *Didymocyrtis*	? Panartidae
	Ommatodiscinus	SYN.	*Spongocyclia*	Litheliidae
	Ommatodisculus	SYN. (obj.)	*Ommatodiscus*	Litheliidae
	Ommatodiscus	SYN.	*Spongocyclia*	Litheliidae
	Ommatogramma	VALID		Spongurida
?	*Ommatospyris*	N.D.	? *Didymocyrtis*	? Panartidae
	Orbula	VALID		Bekomidae
	Orodapis	VALID		Oroscenidae
	Orodendrum	VALID		Oroscenidae
?	*Orodictyum*	N.D.		? Oroscenidae
?	*Orona*	N.D.		? Oroscenidae
?	*Oronium*	SYN. (obj.); N.D.	*Orosphaera*	? Oroscenidae
	Oropagis	SYN.	*Oropelex*	Oroscenidae
	Oropelex	VALID		Oroscenidae
	Oroplegma	SYN.	*Orodendrum*	Oroscenidae
	Oroplegmium	SYN. (obj.)	*Oroplegma*	Oroscenidae
	Oroscena	VALID		Oroscenidae
	Oroscenium	SYN. (obj.)	*Oroscena*	Oroscenidae
?	*Orosphaera*	N.D.	? *Oroscena*	? Oroscenidae
	Orostaurus	VALID		Oroscenidae
	Orothamnus	SYN.	*Oroscena*	Oroscenidae
	Orthocornutanna	SYN.	*Cornutella*	Plectopyramididae
	Otosphaera	VALID		Collosphaeridae
?	*Ovulopyle*	N.D.		? Prunopylidae
?	*Pachysphaera*	HOM.; N.D.		? Collosphaeridae
	Palaeotetrapyle	VALID		Palaeotetrapylidae
?	*Panarelium*	SYN. (obj.); N.D.	*Panarium*	? Panartidae
?	*Panarium*	N.D.		? Panartidae
	Panaromium	SYN.	*Didymocyrtis*	Panartidae
	Panartella	SYN. (obj.)	*Panartus*	Panartidae
	Panartidium	SYN.	*Didymocyrtis*	Panartidae
	Panartissa	SYN.	*Didymocyrtis*	Panartidae
?	*Panartoma*	N.D.		? Panartidae
	Panartura	SYN.	*Didymocyrtis*	Panartidae
	Panartus	SYN.	*Didymocyrtis*	Panartidae
?	*Panicidium*	SYN. (obj.); N.D.	*Panicium*	? Panartidae
?	*Panicium*	N.D.		? Panartidae
	Paracenodiscus	SYN.	*Phacodiscus*	Phacodiscidae
	Paracystidium	SYN.	*Cystidium*	Plagiacanthidae
	Paradictyum	SYN.	*Nephrodictyum*	Paradictyidae
	Paralampterium	VALID		Lophocyrtiidae
	Parastephanus	(? Silicoflagellate); N.D.		wrongly described as Polycystinea
	Parastephus	N.N.		no species are known
?	*Parastomatosphaera*	N.D.		? Actinommidae
	Parasuttonium	VALID		Suttoniidae
	Paratympanium	(? Silicoflagellate); N.D.		wrongly described as Polycystinea
	Paratympanum	(? Silicoflagellate); INV.	*Paratympanium*	wrongly described as Polycystinea
	Parvimitrella	SYN.	*Dictyomitrella*	Xitomitridae
	Patagospyris	SYN.	*Petalospyris*	Cephalospyrididae
	Pentactinosphaera	SYN. (obj.)	*Nanina*	Hexacromyidae
	Pentactura	SYN.	*Hymeniastrum*	Astracturidae
?	*Pentadiscus*	N.D.		? Phacodiscidae
	Pentalacorys	VALID		Theocotylidae
?	*Pentalastrella*	SYN. (obj.); N.D.	*Pentalastrum*	? Euchitoniidae
	Pentalastromma	SYN.	*Hexinastrum*	Euchitoniidae
?	*Pentalastrum*	N.D.		? Euchitoniidae
	Pentaphormis	SYN.	*Lampromitra*	Lampromitridae
	Pentaplagia	SYN.	*Dumetum*	Plagiacanthidae
	Pentaplegma	N.N.		no species are known

Appendix 9. — Continuation.

	Genus	Status	See	Family
	Pentapylonium	VALID		Pseudoaulophacidae
?	*Pentasolenia*	N.N.		? Collosphaeridae
	Pentaspyris	VALID		Cephalospyrididae
	Pentinastrum	SYN.	*Hexinastrum*	Euchitoniidae
?	*Pentoniscus*	N.D.		? Amphitholidae
	Pentophiastromma	SYN.	*Tricranastrum*	Euchitoniidae
?	*Pentophiastrum*	N.D.		? Euchitoniidae
?	*Periarachnium*	VALID		? Ceratocyrtidae
	Perichlamydium	SYN.	*Flustrella*	Trematodiscidae
?	*Peridarium*	SYN. (obj.); N.D.	*Peridium*	? Dimelissidae
?	*Peridium*	N.D.		? Dimelissidae
?	*Peripanarium*	N.D.		? Panartidae
	Peripanartium	SYN.	*Didymocyrtis*	Panartidae
	Peripanartula	SYN. (obj.)	*Peripanartus*	Panartidae
	Peripanartus	SYN.	*Didymocyrtis*	Panartidae
?	*Peripanicea*	SYN. (obj.); N.D.	*Peripanicium*	? Panartidae
?	*Peripanicium*	N.D.		? Panartidae
	Peripanicula	SYN.	*Didymocyrtis*	Panartidae
	Periphaena	VALID		Phacodiscidae
	Periplecta	VALID		Phaenocalpididae
	Peripyramis	SYN.	*Cinclopyramis*	Plectopyramididae
	Perispira	HOM.; SYN.	*Perispirella* n. nov.	Trematodiscidae
	Perispirella	NOM. NOV.; SYN.	*Flustrella*	Trematodiscidae
	Perispyris	SYN.	*Tricolospyris*	Acanthodesmiidae
	Peritiviator	VALID		incertae familiae
	Perizona	SYN.	*Periphaena*	Phacodiscidae
	Peromelissa	VALID		Dimelissidae
	Petalospyrantha	SYN.	*Petalospyris*	Cephalospyrididae
	Petalospyrella	SYN.	*Petalospyris*	Cephalospyrididae
	Petalospyris	VALID		Cephalospyrididae
	Petalospyrissa	SYN.	*Petalospyris*	Cephalospyrididae
	Petalospyromma	SYN.	*Liriospyris*	Cephalospyrididae
	Phacodiscinus	SYN. (obj.)	*Phacodiscus*	Phacodiscidae
	Phacodisculus	SYN.	*Phacodiscus*	Phacodiscidae
	Phacodiscus	VALID		Phacodiscidae
	Phacolarnacium	VALID		Cryptolarnaciidae
?	*Phacopyle*	N.D.		? Panartidae
	Phacostaurium	SYN. (obj.)	*Phacostaurus*	Lithocyclidae
	Phacostaurus	VALID		Lithocyclidae
	Phacostylium	SYN. (obj.)	*Phacostylus*	Lithocyclidae
	Phacostylus	SYN.	*Sethostylus*	Lithocyclidae
	Phacotriactis	VALID		Lithocyclidae
	Phaenicosphaera	VALID		Heliodiscidae
	Phaenocalpis	VALID		Phaenocalpididae
?	*Phaenoscenium*	N.D.		? Phaenocalpididae
	Pharyngosphaera	SYN.	*Tribonosphaera*	Collosphaeridae
	Phaseliforma	VALID		Phaseliformidae
?	*Phlebarachnium*	VALID		? Ceratocyrtidae
	Phormacantha	VALID		Dimelissidae
	Phormobotrys	SYN.?	*Lithocorythium*	Pylobotrydidae
	Phormocampe	SYN.	*Anthocyrtidium*	Pterocorythidae
	Phormocyrtis	VALID		Pterocorythidae
?	*Phormosphaera*	N.D.	? *Ethmosphaera*	? Ethmosphaeridae
	Phormospyris	SYN.	*Desmospyris*	Cephalospyrididae
	Phormostichoartus	NOM. NOV.; SYN.	*Lithamphora*	Artostrobiidae
	Phorticium	VALID		Phorticiidae
?	*Phortolarcus*	N.D.		? Phorticiidae
	Phortopyle	SYN. (obj.)	*Phorticium*	Phorticiidae
?	*Phrenocodon*	N.D.		? Pterocorythidae
?	*Physematium*	N.D.		? Thalassosphaeridae
	Pipetta	SYN.	*Cannartus*	Panartidae
	Pipettaria	SYN.	*Cannartus*	Panartidae
	Pipettella	SYN.	*Cannartus*	Panartidae
?	*Pityomma*	N.D.		? Rhizosphaeridae
	Plagiacantha	VALID		Plagiacanthidae
	Plagiocarpa	SYN.	*Zygocircus*	Stephaniidae
?	*Plagonidium*	N.D.		? Plagiacanthidae
	Plagoniscus	SYN.	*Plagiacantha*	Plagiacanthidae
?	*Plagonium*	N.D.		? Plagiacanthidae

Appendix 9. — Continuation.

	Genus	Status	See	Family
	Plannapus	VALID		Artostrobiidae
	Platybursa	VALID		Cephalospyrididae
	Platysestrum	N.N.		no species are known
	Plectacantha	VALID		Dimelissidae
	Plectagonidium	VALID		Plagiacanthidae
	Plectaniscus	SYN.	*Plectanium*	Plagiacanthidae
	Plectanium	VALID		Plagiacanthidae
?	*Plectocoronis*	N.D.		? Acanthodesmiidae
	Plectodiscus	SYN.	*Circodiscus*	Circodiscidae
?	*Plectophora*	HOM.; N.D.	*Plectophorina* n. nov.	? Plagiacanthidae
?	*Plectophorina*	NOM. NOV.; N.D.	? *Plagiacantha*	? Plagiacanthidae
	Plectopyramis	SYN.	*Cinclopyramis*	Plectopyramididae
	Plectoscenium	SYN. (obj.)	*Archiscenium*	Phaenocalpididae
	Plectotripus	N.N.		no species are known
	Plegmatium	N.N.		no species are known
	Plegmodiscus	N.N.		no species are known
?	*Plegmosphaera*	N.D.	? *Plegmosphaeromma*	? Spongodrymidae
?	*Plegmosphaerantha*	SYN. (obj.); N.D.	*Plegmosphaera*	? Spongodrymidae
?	*Plegmosphaerella*	N.D.	? *Plegmosphaeromma*	? Spongodrymidae
	Plegmosphaeromma	VALID		Spongodrymidae
?	*Plegmosphaerusa*	N.D.	? *Plegmosphaeromma*	? Spongodrymidae
	Pleurocorys	N.N.		no species are known
	Pleuropodium	SYN.	*Dictyopodium*	Lithochytrididae
	Pleurospyris	N.N.		no species are known
?	*Podocampe*	N.D.		? Eucyrtidiidae
?	*Podocoronis*	N.D.	? *Eucoronis*	? Acanthodesmiidae
	Podocyrtarium	SYN.	*Thyrsocyrtis*	Theocotylidae
	Podocyrtecium	SYN.	*Lychnocanissa*	Lithochytrididae
	Podocyrtidium	SYN. (obj.)	*Podocyrtis*	Pterocorythidae
	Podocyrtis	VALID		Pterocorythidae
	Podocyrtoges	SYN.	*Podocyrtis*	Pterocorythidae
	Podocyrtonium	SYN.	*Podocyrtis*	Pterocorythidae
	Podocyrtopsis	SYN.	*Podocyrtis*	Pterocorythidae
	Polelazoum	N.N.		no species are known
	Polyalacorys	SYN.	*Cyclampterium*	Lophocyrtiidae
	Polydiscus	N.N.; SYN.	*Flustrella*	Trematodiscidae
?	*Polyplagia*	N.D.		? Plagiacanthidae
	Polyplecta	SYN. (obj.)	*Enneaplegma*	Plagiacanthidae
	Polypleuris	VALID		Plectopyramididae
	Polysolenia	VALID		Collosphaeridae
?	*Polyspyris*	SYN. (obj.); N.D.	*Spyridobotrys*	? Cephalospyrididae
	Poroamphora	SYN.	*Lithamphora*	Artostrobiidae
	Porococcus	SYN.	*Cladococcus*	Cladococcidae
?	*Porosphaera*	HOM.; N.D.	*Chaunosphaera* n. nov.	? Haliommidae
	Praestylosphaera	SYN.	*Stylosphaerantha*	Stylatractidae
	Prismatidium	N.N.		no species are known
?	*Prismatium*	N.D.		? Acanthodesmiidae
	Prismozoon	(Diatom)		wrongly described as Polycystinea
?	*Pristodiscus*	N.D.		? Lithocyclidae
	Procyttarium	VALID		Thalassicollidae
	Protoscenium	VALID		Ximolzasidae
	Protostichocapsa	SYN.	*Amphipternis*	Amphipyndacidae
?	*Protympanium*	N.D.	? *Amphispyris*	? Paradictyidae
	Prunobrachium	SYN.	*Amphicraspedula*	Histiastridae
?	*Prunocarpetta*	SYN. (obj.); N.D.	*Prunocarpus*	? Panartidae
?	*Prunocarpilla*	N.D.		? Panartidae
?	*Prunocarpus*	N.D.		? Panartidae
	Prunopyle	VALID		Prunopylidae
?	*Prunosphaera*	N.D.		? Haliommidae
	Prunuletta	SYN. (obj.)	*Prunulum*	Phacodiscidae
?	*Prunulissa*	N.D.		? Panartidae
	Prunulum	SYN.	*Phacodiscus*	Phacodiscidae
?	*Pseudocephalis*	N.D.		? Spongodiscidae
	Pseudocubus	VALID		Plagiacanthidae
	Pseudodictyophimus	VALID		Pseudodictyophimidae
	Pseudostaurolonche	SYN.	*Pseudostaurosphaera*	Haliommidae
	Pseudostaurosphaera	VALID		Haliommidae
	Psilomelissa	SYN.	*Peromelissa*	Dimelissidae

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Psychospyris	VALID		PARADICTYIDAE
	Pteractis	SYN.	*Dictyocoryne*	EUCHITONIIDAE
	Pterocanarium	SYN.	*Dictyopodium*	LITHOCHYTRIDIDAE
	Pterocanidium	SYN.	*Dictyopodium*	LITHOCHYTRIDIDAE
?	*Pterocanium*	N.D.		? PSEUDODICTYOPHIMIDAE
	Pterocodon	VALID		THEOCOTYLIDAE
	Pterocorys	VALID		PTEROCORYTHIDAE
	Pterocorythium	HOM.; SYN.	*Artopilium*	STICHOPILIIDAE
	Pterocorythium	N.N.		no species are known
	Pterocyrtidium	VALID		RHOPALOSYRINGIIDAE
	Pteroperidium	N.N.		no species are known
	Pteropilium	HOM.; SYN. (obj.)	*Rhopalocyrtis*	THEOPERIDAE
	Pteropilium	VALID		SETHOPERIDAE
	Pteropilium	N.N.; HOM.		no species are known
	Pteroscenium	VALID		PHAENOCALPIDIDAE
	Pterosyringium	SYN.	*Eusyringium*	THEOPERIDAE
	Pylobotrys	VALID		PYLOBOTRYDIDAE
	Pylocapsa	N.N.		no species are known
	Pylodiscus	VALID		PYLODISCIDAE
	Pylolarnacium	VALID		CRYPTOLARNACIIDAE
	Pylolena	SYN.	*Pylodiscus*	PYLODISCIDAE
?	*Pylonissa*	SYN. (obj.); N.D.	*Pylonium*	? ZONARIIDAE
?	*Pylonium*	N.D.		? ZONARIIDAE
	Pylonura	SYN.	*Tetrapyle*	ZONARIIDAE
?	*Pylosphaera*	N.D.		? EUCYRTIDIIDAE
	Pylospira	VALID		LARCOSPIRIDAE
	Pylospirema	SYN. (obj.)	*Pylospira*	LARCOSPIRIDAE
?	*Pylospironium*	N.D.		? LARCOSPIRIDAE
?	*Pylospyris*	INV.	*Polyspyris*	? CEPHALOSPYRIDIDAE
	Pylozonium	VALID		ZONARIIDAE
	Pyramispongia	VALID		PYRAMISPONGIIDAE
	Qiuripylolena	VALID		PHORTICIIDAE
	Radiosphaera	(Acantharia)		wrongly described as POLYCYSTINEA
?	*Raphidodrymus*	N.D.		? ACTINOMMIDAE
	Rhabdolithis	VALID		XIMOLZASIDAE
	Rhaphidocapsa	VALID		ACTINOMMIDAE
	Rhaphidoceras	SYN.	*Rhaphidozoum*	SPHAEROZOIDAE
	Rhaphidococcus	SYN.	*Actinomma*	ACTINOMMIDAE
	Rhaphidonactis	SYN. (obj.)	*Rhaphidozoum*	SPHAEROZOIDAE
	Rhaphidonura	SYN.	*Rhaphidozoum*	SPHAEROZOIDAE
?	*Rhaphidosphaera*	SYN. (obj.); N.D.	*Acanthosphaera*	? ACTINOMMIDAE
	Rhaphidozoum	VALID		SPHAEROZOIDAE
	Rhaphiophorasphaera	(Diatom)		wrongly described as POLYCYSTINEA
	Rhizoplecta	SYN.	*Pseudocubus*	PLAGIACANTHIDAE
?	*Rhizoplegma*	N.D.		? CLADOCOCCIDAE
?	*Rhizoplegmarium*	SYN. (obj.); N.D.	*Rhizoplegma*	? CLADOCOCCIDAE
	Rhizoplegmidium	SYN.	*Lychnosphaera*	CLADOCOCCIDAE
	Rhizosphaera	VALID		RHIZOSPHAERIDAE
?	*Rhizospongia*	HOM.; N.D.		? RHIZOSPHAERIDAE
	Rhizospongus	SYN.	*Lychnosphaera*	CLADOCOCCIDAE
?	*Rhodosphaera*	N.D.		? ETHMOSPHAERIDAE
?	*Rhodosphaerella*	SYN. (obj.); N.D.	*Rhodosphaera*	? ETHMOSPHAERIDAE
?	*Rhodosphaeromma*	N.D.		? ETHMOSPHAERIDAE
	Rhodospyris	SYN.	*Petalospyris*	CEPHALOSPYRIDIDAE
?	*Rhopalastrella*	SYN. (obj.); N.D.	*Rhopalastrum*	? EUCHITONIIDAE
	Rhopalastromma	SYN.	*Trigonastrum*	EUCHITONIIDAE
?	*Rhopalastrum*	N.D.	? *Dictyocoryne*	? EUCHITONIIDAE
	Rhopalatractus	SYN.	*Rhopalocanium*	THEOPERIDAE
	Rhopalocanium	VALID		THEOPERIDAE
	Rhopalocyrtis	SYN.	*Rhopalocanium*	THEOPERIDAE
	Rhopalodictya	SYN. (obj.)	*Rhopalodyctium*	EUCHITONIIDAE
	Rhopalodictyum	SYN.	*Dictyocoryne*	EUCHITONIIDAE
	Rhopalosyringium	VALID		RHOPALOSYRINGIIDAE
	Riedelipyle	SYN.	*Actinomma*	ACTINOMMIDAE
	Saccospyris	SYN.	*Botryocampe*	PYLOBOTRYDIDAE
	Sanfiriedelus	VALID		CIRCODISCIDAE
?	*Saturnalina*	SYN. (obj.); N.D.	*Saturnalis*	? SATURNULIDAE

Appendix 9. — Continuation.

	Genus	Status	See	Family
?	*Saturnalis*	N.D.	? *Saturnulus*	? Saturnulidae
	Saturnalium	SYN.?	*Saturnulus*	Saturnulidae
?	*Saturninus*	N.D.	? *Saturnulus*	? Saturnulidae
	Saturnulus	VALID		Saturnulidae
	Schadelfusslerus	SYN.	*Myllocercion*	Diacanthocapsidae
	Schizodiscus	VALID		Spongopylidae
	Schizomma	SYN.	*Tetrapyle*	Zonariidae
	Sciadiopeplus	VALID		Lophocyrtiidae
	Scyphiforma	SYN.	*Microsciadiocapsa*	Anthocyrtididae
?	*Semantidium*	N.D.		? Cephalospyrididae
	Semantis	VALID		Acanthodesmiidae
?	*Semantiscus*	N.D.		? Cephalospyrididae
	Semantrum	SYN.?	*Lophospyris*	Cephalospyrididae
	Sepalospyris	SYN.	*Petalospyris*	Cephalospyrididae
	Sertiseria	VALID		Artostrobiidae
	Sestropodium	N.N.		no species are known
	Sestropyramis	SYN.	*Cinclopyramis*	Plectopyramididae
?	*Sestrornithium*	N.D.		? Theoperidae
	Sethamphora	SYN.	*Carpocanium*	Carpocaniidae
	Sethocanium	SYN.	*Anthocyrtidium*	Pterocorythidae
	Sethochytris	SYN.	*Lithochytris*	Lithochytridae
	Sethoconus	SYN. (obj.)	*Conarachnium*	Pterocorythidae
	Sethocorys	SYN.	*Anthocyrtidium*	Pterocorythidae
	Sethocyrtis	SYN.	*Anthocyrtidium*	Pterocorythidae
	Sethodiscinus	SYN.	*Phacodiscus*	Phacodiscidae
	Sethodisculus	(Sponge spicule)		wrongly described as Polycystinea
	Sethodiscus	N.N.; HOM.		no species are known
?	*Sethodrepanum*	INV.	*Cornutella*	? Plectopyramididae
?	*Sethomelissa*	HOM.	*Corythomelissa* n. nov.	? Pseudodictyophimidae
?	*Sethomelissa*	N.D.		? Dimelissidae
	Sethopera	SYN.	*Clathrocanium*	Sethoperidae
	Sethoperidium	N.N.		no species are known
?	*Sethophaena*	INV.	*Sethophatna*	? Sethoperidae
?	*Sethophatna*	N.D.		? Sethoperidae
?	*Sethophormis*	N.D.		? Theophormididae
?	*Sethopilium*	N.D.		? Dimelissidae
	Sethopyramis	SYN.	*Cinclopyramis*	Plectopyramididae
?	*Sethornithium*	INV.	*Sestrornithium*	? Theoperidae
?	*Sethosphaera*	N.D.		? Actinommidae
	Sethostaurium	SYN. (obj.)	*Sethostaurus*	Lithocyclidae
	Sethostaurus	SYN.	*Phacostaurus*	Lithocyclidae
	Sethostylium	SYN. (obj.)	*Sethostylus*	Lithocyclidae
	Sethostylus	VALID		Lithocyclidae
	Siphocampe	VALID		Artostrobiidae
	Siphocampula	SYN.	*Siphocampe*	Artostrobiidae
	Siphonosphaera	VALID		Collosphaeridae
	Siphostichartus	VALID		Artostrobiidae
	Solenosphactra	SYN.	*Siphonosphaera*	Collosphaeridae
	Solenosphaera	SYN. (obj.)	*Tetrasolenia*	Collosphaeridae
	Solenosphenia	SYN.	*Siphonosphaera*	Collosphaeridae
	Solenosphyra	SYN.	*Siphonosphaera*	Collosphaeridae
?	*Soreuma*	N.D.		? Larcospiridae
?	*Soreumidium*	N.D.		? Larcospiridae
?	*Soreumium*	SYN. (obj.); N.D.	*Soreuma*	? Larcospiridae
?	*Sorolarcidium*	N.D.		? Larcospiridae
?	*Sorolarcium*	SYN. (obj.); N.D.	*Sorolarcus*	? Larcospiridae
?	*Sorolarcus*	N.D.		? Larcospiridae
?	*Sphaeractis*	VALID		? Actinommidae
	Sphaerocircus	N.N.		no species are known
	Sphaerocolla	N.N.		no species are known
	Sphaerolarnacillium	VALID		Phorticiidae
	Sphaeromespilius	N.N.		no species are known
	Sphaeropyle	SYN.	*Actinomma*	Actinommidae
	Sphaeropylolena	VALID		Pylodiscidae
	Sphaerospyris	VALID		Paradictyidae
	Sphaerostylantha	SYN. (obj.)	*Xiphostylantha*	Stylatractidae
?	*Sphaerostyletta*	N.D.		? Stylatractidae
?	*Sphaerostylissa*	N.D.		? Stylatractidae

Appendix 9. — Continuation.

	Genus	Status	See	Family
	Sphaerostylomma	SYN.	*Ellipsostylus*	Stylatractidae
?	*Sphaerostylus*	N.D.		? Stylatractidae
?	*Sphaerozonactis*	N.D.		? Sphaerozoidae
	Sphaerozonoceras	SYN. (obj.)	*Sphaerozoum*	Sphaerozoidae
	Sphaerozonura	SYN.	*Sphaerozoum*	Sphaerozoidae
	Sphaerozoum	VALID		Sphaerozoidae
?	*Spirema*	INV.	*Spireuma*	? Litheliidae
	Spiremaria	VALID		Litheliidae
?	*Spiremarium*	SYN. (obj.); N.D.	*?Spirema*	? Litheliidae
?	*Spiremidium*	N.D.		? Litheliidae
?	*Spireuma*	N.D.	? *Lithelius*	? Litheliidae
	Spirillina	(Foraminifera); HOM.; N.D.		wrongly described as Polycystinea
?	*Spirocampe*	N.D.		? Eucyrtidiidae
	Spirocyrtidium	SYN. (obj.)	*Spirocyrtis*	Artostrobiidae
	Spirocyrtis	VALID		Artostrobiidae
	Spirocyrtoma	SYN.	*Stichopterygium*	Eucyrtidiidae
	Spiromultitunica	SYN.	*Spiremaria*	Litheliidae
	Spironetta	SYN. (obj.)	*Spironium*	Larcospiridae
?	*Spironilla*	N.D.		? Larcospiridae
	Spironium	SYN.	*Streblacantha*	Larcospiridae
?	*Spiropyle*	N.D.		? Spongopylidae
?	*Spirotunica*	N.D.		? Prunopylidae
	Spongaster	VALID		Spongodiscidae
	Spongasteriscinus	(? Sponge spicule); N.D.		wrongly described as Polycystinea
	Spongasterisculus	SYN. (obj.)	*Spongasteriscus*	Spongobrachiidae
	Spongasteriscus	VALID		Spongobrachiidae
	Spongastrella	SYN. (obj.)	*Spongaster*	Spongodiscidae
	Spongastromma	VALID		Spongobrachiidae
	Spongatractus	VALID		Stylosphaeridae
?	*Spongellipsarium*	SYN. (obj.); N.D.	*Spongellipsis*	? Sponguridae
?	*Spongellipsidium*	N.D.		? Sponguridae
?	*Spongellipsis*	N.D.		? Sponguridae
	Spongiocanium	SYN.	*Carpocanium*	Carpocaniidae
?	*Spongioconcha*	N.D.		? Spongosphaeridae
?	*Spongiommella*	N.D.		? Spongodrymidae
	Spongiopodium	SYN.	*Paralampterium*	Lophocyrtiidae
?	*Spongiuspinus*	N.D.		? Hexacromyidae
	Spongobrachiopyle	VALID		Spongopylidae
	Spongobrachium	VALID		Spongobrachiidae
?	*Spongocore*	N.D.		? Sponguridae
?	*Spongocorina*	SYN. (obj.); N.D.	*Spongocore*	? Sponguridae
	Spongocorisca	SYN.	*Ommatogramma*	Sponguridae
	Spongocyclia	VALID		Litheliidae
	Spongodendron	VALID		Spongosphaeridae
	Spongodicranastrum	SYN. (obj.)	*Dicranastrum*	Euchitoniidae
	Spongodictyoma	SYN. (obj.)	*Spongodictyum*	Spongodrymidae
?	*Spongodictyon*	INV.	*Spongodictyum*	? Spongodrymidae
	Spongodictyum	VALID		Spongodrymidae
	Spongodisculus	SYN. (obj.)	*Spongodiscus*	Spongodiscidae
	Spongodiscus	VALID		Spongodiscidae
?	*Spongodruppa*	N.D.		? Sponguridae
?	*Spongodruppium*	N.D.	? *Spiremaria*	? Litheliidae
?	*Spongodruppula*	SYN. (obj.); N.D.	*Spongodruppa*	? Sponguridae
	Spongodrymus	VALID		Spongodrymidae
	Spongohagiastrum	SYN.	*Tricranastrum*	Euchitoniidae
?	*Spongolarcus*	N.D.	? *Amphicentria*	? Dimelissidae
?	*Spongolena*	N.D.		? Sponguridae
?	*Spongoliva*	N.D.	? *Spongolivella*	? Panartidae
	Spongolivella	VALID		Panartidae
?	*Spongolivetta*	SYN. (obj.); N.D.	*Spongoliva*	? Panartidae
?	*Spongolivina*	N.D.		? Panartidae
?	*Spongolonche*	HOM.; N.D.	*Spongolonchis* n. nov.	? Stylatractidae
?	*Spongolonche*	N.D.		? Spongodiscidae
?	*Spongolonchis*	NOM. NOV.; N.D.		? Stylatractidae
	Spongomelissa	VALID		Phaenocalpididae
	Spongomyelastrum	SYN. (obj.)	*Myelastrum*	Euchitoniidae
	Spongopentophiastrum	SYN. (obj.)	*Pentophiastromma*	Euchitoniidae

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
?	*Spongophacus*	N.D.	? *Flustrella*	? TREMATODISCIDAE
?	*Spongophorticium*	N.D.	? *Tetrapyle*	? ZONARIIDAE
?	*Spongophortis*	N.D.	? *Tetrapyle*	? ZONARIIDAE
?	*Spongopila*	N.D.	? *Lychnosphaera*	? CLADOCOCCIDAE
	Spongoprunum	SYN.?	*Spongatractus*	STYLOSPHAERIDAE
	Spongopylarium	SYN. (obj.)	*Spongopyle*	SPONGOPYLIDAE
	Spongopyle	VALID		SPONGOPYLIDAE
	Spongopylidium	VALID		PRUNOPYLIDAE
	Spongopyramis	SYN.	*Cinclopyramis*	PLECTOPYRAMIDIDAE
	Spongosaturninus	VALID		SATURNULIDAE
	Spongosphaera	VALID		SPONGOSPHAERIDAE
	Spongosphaerium	N.N.		no species are known
	Spongosphaeromma	SYN.	*Spongosphaera*	SPONGOSPHAERIDAE
	Spongospira	VALID		SPONGOPYLIDAE
	Spongospyra	N.N.		no species are known
	Spongostaurina	NOM. NOV.; SYN.	*Tricranastrum*	EUCHITONIIDAE
	Spongostaurus	HOM.; SYN.	*Spongostaurina* n. nov.	EUCHITONIIDAE
?	*Spongostaurus*	N.D.		? TREMATODISCIDAE
?	*Spongostylidium*	INV.	*Spongostylium*	? STYLATRACTIDAE
?	*Spongostylium*	N.D.		? STYLATRACTIDAE
?	*Spongostylus*	N.D.	? *Saturnulus*	? SATURNULIDAE
?	*Spongothamnus*	N.D.		? SPONGODRYMIDAE
?	*Spongotripodiscus*	SYN. (obj.); N.D.	*Spongotripus*	? TREMATODISCIDAE
?	*Spongotripodium*	N.D.		? TREMATODISCIDAE
?	*Spongotripus*	N.D.		? TREMATODISCIDAE
	Spongotrochiscus	SYN. (obj.)	*Spongotrochus*	SPONGODISCIDAE
	Spongotrochus	VALID		SPONGODISCIDAE
	Spongoxiphus	SYN.	*Spongatractus*	STYLOSPHAERIDAE
	Spongurantha	SYN.?	*Ommatogramma*	SPONGURIDAE
	Spongurella	SYN. (obj.)	*Spongurus*	SPONGURIDAE
?	*Sponguromma*	N.D.		? SPONGURIDAE
	Spongurus	SYN.	*Ommatogramma*	SPONGURIDAE
	Spuroclathrocyclas	SYN.	*Cycladophora*	CYCLADOPHORIDAE
?	*Spyridobotrys*	N.D.		? CEPHALOSPYRIDIDAE
	Squinabolella	SYN.	*Microsciadiocapsa*	ANTHOCYRTIDIDAE
?	*Stauracontarium*	SYN. (obj.); N.D.	*Stauracontium*	? HEXACROMYIDAE
?	*Stauracontellium*	N.D.		? HEXACROMYIDAE
?	*Stauracontidium*	N.D.		? HEXACROMYIDAE
?	*Stauracontium*	N.D.	? *Hexalonchilla*	? HEXACROMYIDAE
?	*Stauracontonium*	N.D.		? HEXACROMYIDAE
?	*Stauractinium*	N.D.		? LITHOCYCLIIDAE
?	*Stauractura*	N.D.		? LITHOCYCLIIDAE
?	*Stauracturium*	SYN. (obj.); N.D.	*Stauractura*	? LITHOCYCLIIDAE
?	*Stauralastrella*	SYN. (obj.); N.D.	*Stauralastrum*	? HISTIASTRIDAE
	Stauralastromma	SYN.	*Stephanastrum*	HISTIASTRIDAE
?	*Stauralastrum*	N.D.		? HISTIASTRIDAE
?	*Staurancistra*	N.D.		? HEXACROMYIDAE
	Staurentodiscus	SYN. (obj.)	*Crucidiscus*	LITHOCYCLIIDAE
?	*Staurexodiscus*	N.D.	? *Phacostaurus*	? LITHOCYCLIIDAE
?	*Staurocaryum*	VALID		? ACTINOMMIDAE
	Staurococcura	SYN.	*Astromma*	ASTRACTURIDAE
?	*Staurocromyum*	N.D.		? HEXACROMYIDAE
	Staurocyclia	VALID		LITHOCYCLIIDAE
	Staurodictyon	SYN.	*Staurospira*	TREMATODISCIDAE
?	*Staurodiscus*	HOM.; SYN.	*Heliosestrum*	? LITHOCYCLIIDAE
	Staurolonchantha	SYN.	*Hexalonchilla*	HEXACROMYIDAE
?	*Staurolonchella*	N.D.		? HEXACROMYIDAE
	Staurolonchidium	SYN.	*Stauroxiphos*	TUBOSPHAERIDAE
?	*Staurolonchissa*	N.D.		? HEXACROMYIDAE
?	*Staurolonchura*	N.D.		? HEXACROMYIDAE
?	*Staurosphaerantha*	N.D.		? CRYPTOLARNACIIDAE
	Staurosphaerella	VALID		TUBOSPHAERIDAE
?	*Staurosphaeromma*	N.D.		? TUBOSPHAERIDAE
	Staurospira	VALID		TREMATODISCIDAE
?	*Staurostylus*	N.D.		? TUBOSPHAERIDAE
?	*Staurotholissa*	SYN. (obj.); N.D.	*Staurotholus*	? AMPHITHOLIDAE
?	*Staurotholodes*	SYN. (obj.); N.D.	*Staurotholonium*	? AMPHITHOLIDAE
	Staurotholoma	SYN.	*Tholomura*	AMPHITHOLIDAE
?	*Staurotholonium*	N.D.		? AMPHITHOLIDAE

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Staurotholura	SYN.	*Tholomura*	AMPHITHOLIDAE
?	*Staurotholus*	N.D.		? AMPHITHOLIDAE
	Stauroxiphos	VALID		TUBOSPHAERIDAE
	Steganocubus	VALID		PSEUDODICTYOPHIMIDAE
	Stephanastrella	SYN.	*Stephanastrum*	HISTIASTRIDAE
	Stephanastromma	SYN. (obj.)	*Stephanastrum*	HISTIASTRIDAE
	Stephanastrum	VALID		HISTIASTRIDAE
?	*Stephaniscus*	N.D.		? ACANTHODESMIIDAE
	Stephanium	SYN.	*Zygocircus*	STEPHANIIDAE
?	*Stephanolithis*	N.D.		? ACANTHODESMIIDAE
?	*Stephanophaena*	INV.	*Stephanophatna*	? CEPHALOSPYRIDIDAE
?	*Stephanophatna*	N.D.		? CEPHALOSPYRIDIDAE
	Stephanospyris	HOM.; SYN.	*Dorcadospyris*	CEPHALOSPYRIDIDAE
?	*Stephanospyris*	N.D.		? CEPHALOSPYRIDIDAE
?	*Stichocampe*	N.D.		? BEKOMIDAE
	Stichocorys	VALID		EUCYRTIDIIDAE
?	*Stichocyrtis*	N.D.		? EUCYRTIDIIDAE
	Sticholagena	SYN.	*Stichophatna*	EUCYRTIDIIDAE
	Sticholonche	(Taxopodia)		wrongly described as POLYCYSTINEA
?	*Stichopera*	N.D.		? EUCYRTIDIIDAE
?	*Stichoperina*	SYN. (obj.); N.D.	*Stichopera*	? EUCYRTIDIIDAE
?	*Stichophaena*	INV.	*Stichophatna*	? EUCYRTIDIIDAE
	Stichophaenidium	SYN. (obj.)	*Stichophaena*	EUCYRTIDIIDAE
	Stichophaenoma	SYN.	*Stichocorys*	EUCYRTIDIIDAE
	Stichophatna	VALID		EUCYRTIDIIDAE
	Stichophormiscus	SYN.	*Stichophatna*	EUCYRTIDIIDAE
	Stichophormium	SYN.	*Stichophatna*	EUCYRTIDIIDAE
	Stichopilidium	VALID		THEOPERIDAE
	Stichopilium	VALID		STICHOPILIIDAE
	Stichopodium	SYN.	*Stichopterygium*	EUCYRTIDIIDAE
?	*Stichopterium*	N.D.		? BEKOMIDAE
	Stichopterygium	VALID		EUCYRTIDIIDAE
?	*Stigmosphaera*	N.D.		? CENTROLONCHIDAE
	Stigmosphaerusa	VALID		CENTROLONCHIDAE
	Stigmostylus	VALID		CENTROLONCHIDAE
	Stomatodiscus	SYN.	*Tholospira*	LARCOSPIRIDAE
	Stomatolarcus	N.N.		no species are known
	Stomatosphaera	VALID		ACTINOMMIDAE
	Streblacantha	VALID		LARCOSPIRIDAE
?	*Streblonia*	N.D.		? ZONARIIDAE
	Streblopyle	SYN.	*Streblacantha*	LARCOSPIRIDAE
	Streptodelus	SYN. (obj.)	*Dictyoprora*	ARTOSTROBIIDAE
?	*Stuermeria*	VALID		? ACTINOMMIDAE
	Styla	NOM. NOV.; SYN.	*Dictyocoryne*	EUCHITONIIDAE
	Stylacontarium	SYN.	*Axoprunum*	AXOPRUNIDAE
	Stylactis	HOM.; SYN.	*Styla* n. nov.	EUCHITONIIDAE
?	*Stylartella*	SYN. (obj.); N.D.	*Stylartus*	? PANARTIDAE
?	*Stylartura*	N.D.		? PANARTIDAE
?	*Stylartus*	N.D.		? PANARTIDAE
	Stylatractara	SYN. (obj.)	*Druppatractylis*	STYLATRACTIDAE
?	*Stylatractium*	N.D.		? STYLATRACTIDAE
	Stylatractona	VALID		STYLATRACTIDAE
	Stylatractus	SYN.	*Druppatractylis*	STYLATRACTIDAE
	Stylatractylis	SYN.	*Druppatractylis*	STYLATRACTIDAE
	Stylentodiscus	SYN. (obj.)	*Stylodiscus*	LITHOCYCLIIDAE
?	*Stylexodiscus*	N.D.		? LITHOCYCLIIDAE
?	*Stylocapsa*	N.D.		? ARTOSTROBIIDAE
	Stylochlamydium	SYN.	*Stylodictya*	TREMATODISCIDAE
	Stylochlamys	SYN. (obj.)	*Stylodictya*	TREMATODISCIDAE
	Stylochlamyum	SYN.	*Flustrella*	TREMATODISCIDAE
?	*Stylocoronis*	N.D.		? ACANTHODESMIIDAE
?	*Stylocromyum*	N.D.		? STYLATRACTIDAE
	Stylocyclia	SYN.	*Stylodictya*	TREMATODISCIDAE
?	*Stylodictula*	N.D.	? *Stylodictya*	? TREMATODISCIDAE
	Stylodictya	VALID		TREMATODISCIDAE
	Stylodictyon	SYN. (obj.)	*Stylodictya*	TREMATODISCIDAE
	Stylodiscus	SYN.	*Heliostylus*	LITHOCYCLIIDAE
?	*Stylophorticium*	INV.	*Stypophorticium*	? ZONARIIDAE

Appendix 9. — Continuation.

	Genus	Status	See	Family
	Stylosphaera	VALID		Stylosphaeridae
	Stylosphaerantha	VALID		Stylatractidae
	Stylosphaerella	SYN. (obj.)	*Stylosphaera*	Stylosphaeridae
	Stylosphaerissa	SYN.	*Stylosphaera*	Stylosphaeridae
?	*Stylosphaeromma*	N.D.		? Stylosphaeridae
	Stylospira	SYN.	*Stylodictya*	Trematodiscidae
	Stylospongia	SYN.	*Stylodictya*	Trematodiscidae
?	*Stylospongidium*	N.D.		? Trematodiscidae
	Stylostaurus	VALID		Tubosphaeridae
	Stylotrochellus	VALID		Circodiscidae
?	*Stylotrochiscus*	SYN. (obj.); N.D.	*Stylotrochus*	? Spongodiscidae
?	*Stylotrochus*	N.D.	? *Spongotrochus*	? Spongodiscidae
?	*Stypolarcus*	N.D.		? Sponguridae
?	*Stypophorticium*	SYN. (obj.); N.D.	*Spongophortis*	? Zonariidae
?	*Styptosphaera*	N.D.	? *Plegmosphaeromma*	? Spongodrymidae
	Suttonium	VALID		Suttoniidae
	Syringium	SYN.	*Cyrtocapsella*	Eucyrtidiidae
	Syscioscenium	VALID		Pseudodictyophimidae
	Talariscus	NOM. NOV.; SYN.	*Pseudocubus*	Plagiacanthidae
	Tanochenia	VALID		incertae familiae
	Taurospyris	SYN.	*Pentaspyris*	Cephalospyrididae
	Tepka	VALID		incertae familiae
	Tessarastrella	SYN. (obj.)	*Tessarastrum*	Euchitoniidae
?	*Tessarastromma*	INV.	*Tessarastromma*	? Euchitoniidae
	Tessarastrum	VALID		Euchitoniidae
	Tessarospyris	SYN.	*Platybursa*	Cephalospyrididae
	Tessarostromma	SYN.	*Tessarastrum*	Euchitoniidae
	Tetracanthus	(Sponge spicule); HOM.	*Tetracina* n. nov.	wrongly described as Polycystinea
	Tetracina	(Sponge spicule); NOM. NOV.		wrongly described as Polycystinea
	Tetracorethra	VALID		Pterocorythidae
?	*Tetracoronis*	N.D.		? Acanthodesmiidae
	Tetracranastrum	SYN.	*Tricranastrum*	Euchitoniidae
?	*Tetracubus*	N.D.	? *Eucoronis*	? Acanthodesmiidae
?	*Tetraedrina*	N.D.	? *Lithochytris*	? Lithochytrididae
?	*Tetrahedrina*	INV.	*Tetraedrina*	? Lithochytrididae
	Tetralacorys	SYN. (obj.)	*Alacorys*	Pterocorythidae
	Tetrapera	N.N.		no species are known
	Tetrapetalon	VALID		Hollandosphaeridae
?	*Tetraphormis*	SYN. (obj.); N.D.	*Sethophormis*	? Theophormididae
?	*Tetraplagia*	N.D.		? Plagiacanthidae
?	*Tetraplecta*	N.D.	? *Plectagonidium*	? Plagiacanthidae
	Tetrapteroma	N.N.		no species are known
	Tetrapyle	VALID		Zonariidae
	Tetrapylissa	SYN.	*Tetrapyle*	Zonariidae
?	*Tetrapylonium*	N.D.	? *Tetrapyle*	? Zonariidae
	Tetrapylura	SYN. (obj.)	*Tetrapyle*	Zonariidae
?	*Tetrarhabda*	SYN. (obj.); N.D.	*Tetraspyris*	? Cephalospyrididae
	Tetrasolenia	SYN.	*Disolenia*	Collosphaeridae
?	*Tetrasphaera*	VALID		? Spongodrymidae
	Tetraspongonium	N.N.		no species are known
?	*Tetraspyris*	N.D.		? Cephalospyrididae
?	*Tetroniscus*	N.D.		? Amphitholidae
	Thalassicolla	VALID		Thalassicollidae
	Thalassicollarium	VALID		Thalassicollidae
	Thalassicollidium	SYN. (obj.)	*Thalassicolla*	Thalassicollidae
?	*Thalassiosolen*	N.D.		? Thalassosphaeridae
	Thalassolampe	VALID		Thalassicollidae
?	*Thalassophysa*	N.D.		? Thalassicollidae
	Thalassopila	VALID		Thalassicollidae
?	*Thalassoplancta*	HOM.; N.D.	*Thalassorhaphis* n. nov.	? Thalassosphaeridae
	Thalassoplegma	SYN.	*Lychnosphaera*	Cladococcidae
?	*Thalassorhaphis*	NOM. NOV.; N.D.		? Thalassosphaeridae
?	*Thalassosphaera*	HOM.; N.D.	*Calosphaera* n. nov.	? Thalassosphaeridae
	Thalassosphaera	VALID		Thalassosphaeridae
	Thalassothamnus	VALID		Thalassothamnidae
	Thalassoxanthella	VALID		Thalassosphaeridae
?	*Thalassoxanthium*	N.D.	? *Thalassosphaera*	? Thalassosphaeridae

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Thalassoxanthomma	SYN. (obj.)	*Thalassosphaera*	THALASSOSPHAERIDAE
	Thamnospyris	VALID		CEPHALOSPYRIDIDAE
?	*Thecosphaerantha*	N.D.		? HALIOMMIDAE
	Thecosphaerella	SYN.	*Haliomma*	HALIOMMIDAE
?	*Thecosphaerina*	N.D.		? HALIOMMIDAE
?	*Thecosphaeromma*	N.D.		? HALIOMMIDAE
?	*Theocalyptra*	N.D.	? *Eucecryphalus*	? THEOPILIIDAE
	Theocamptra	VALID		ARTOSTROBIIDAE
	Theocanium	N.N.		no species are known
	Theocapsetta	SYN.	*Theocoronium*	EUCYRTIDIIDAE
	Theocapsilla	SYN.	*Theocorythium*	PTEROCORYTHIDAE
	Theocapsomma	SYN.	*Theocoronium*	EUCYRTIDIIDAE
	Theocapsura	SYN.	*Theocorythium*	PTEROCORYTHIDAE
	Theoconus	SYN.	*Pterocorys*	PTEROCORYTHIDAE
	Theocorax	SYN. (obj.)	*Theoconus*	PTEROCORYTHIDAE
	Theocorbis	SYN.	*Lamprocyclas*	PTEROCORYTHIDAE
	Theocoronium	VALID		EUCYRTIDIIDAE
?	*Theocorusca*	VALID		? PTEROCORYTHIDAE
	Theocorypha	SYN. (obj.)	*Theocyrtis*	PTEROCORYTHIDAE
	Theocorythium	VALID		PTEROCORYTHIDAE
	Theocotyle	SYN.	*Axocorys*	THEOCOTYLIDAE
	Theocotylissa	SYN.	*Axocorys*	THEOCOTYLIDAE
	Theocyrtis	SYN.?	*Theocorythium*	PTEROCORYTHIDAE
?	*Theodiscoma*	SYN. (obj.); N.D.	*Theodiscus*	? LITHOCYCLIIDAE
?	*Theodiscura*	N.D.		? LITHOCYCLIIDAE
?	*Theodiscus*	N.D.		? LITHOCYCLIIDAE
	Theopera	SYN.	*Rhopalocanium*	THEOPERIDAE
	Theophaena	SYN.	*Rhopalocanium*	THEOPERIDAE
	Theophatna	N.N.		no species are known
	Theophormis	VALID		THEOPHORMIDIDAE
	Theopilium	SYN.	*Eucecryphalus*	THEOPILIIDAE
	Theosphaera	N.N.		no species are known
?	*Therospyris*	N.D.	? *Elaphospyris*	? CEPHALOSPYRIDIDAE
	Thiosphaera	N.N.		no species are known
	Tholartella	SYN. (obj.)	*Tholartus*	AMPHITHOLIDAE
?	*Tholartissa*	N.D.		? AMPHITHOLIDAE
	Tholartus	SYN.	*Tholomura*	AMPHITHOLIDAE
	Tholocubitus	SYN.	*Tholomura*	AMPHITHOLIDAE
	Tholocubulus	SYN. (obj.)	*Tholocubus*	AMPHITHOLIDAE
	Tholocubus	SYN.	*Tholomura*	AMPHITHOLIDAE
	Tholodes	SYN.	*Tholomura*	AMPHITHOLIDAE
	Tholodiscus	SYN.	*Staurospira*	TREMATODISCIDAE
	Tholoma	SYN.	*Tholomura*	AMPHITHOLIDAE
	Tholomantha	SYN. (obj.)	*Tholoma*	AMPHITHOLIDAE
	Tholomura	VALID		AMPHITHOLIDAE
?	*Tholonetta*	SYN. (obj.); N.D.	*Tholonium*	? AMPHITHOLIDAE
	Tholonilla	SYN.	*Tholomura*	AMPHITHOLIDAE
?	*Tholonium*	N.D.		? AMPHITHOLIDAE
	Tholospira	VALID		LARCOSPIRIDAE
	Tholospirema	SYN. (obj.)	*Tholospira*	LARCOSPIRIDAE
	Tholospironium	SYN.	*Tholospira*	LARCOSPIRIDAE
	Tholospyridium	SYN.	*Tholospyris*	CEPHALOSPYRIDIDAE
	Tholospyris	VALID		CEPHALOSPYRIDIDAE
	Tholospyrium	SYN. (obj.)	*Tholospyris*	CEPHALOSPYRIDIDAE
?	*Tholostaurantha*	SYN. (obj.); N.D.	*Tholostaurus*	? AMPHITHOLIDAE
?	*Tholostauroma*	N.D.		? AMPHITHOLIDAE
?	*Tholostaurus*	N.D.		? AMPHITHOLIDAE
?	*Tholothauma*	INV.	*Cubotholonium*	? AMPHITHOLIDAE
	Thyrsocyrtis	VALID		THEOCOTYLIDAE
	Tiarospyris	VALID		CEPHALOSPYRIDIDAE
	Toxarium	SYN.	*Amphispyris*	PARADICTYIDAE
	Toxellium	SYN. (obj.)	*Toxarium*	PARADICTYIDAE
	Toxidiella	NOM. NOV.; SYN.	*Amphispyris*	PARADICTYIDAE
	Toxidium	HOM.; SYN.	*Toxidiella* n. nov.	PARADICTYIDAE
	Toxonium	SYN.	*Amphispyris*	PARADICTYIDAE
	Trematodiscus	SYN.	*Flustrella*	TREMATODISCIDAE
	Triacartus	SYN. (obj.)	*Stichopilium*	STICHOPILIIDAE
	Triactiscus	VALID		LITHOCYCLIIDAE
?	*Triadiscus*	N.D.		? PHACODISCIDAE

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Triastrum	SYN.	*Tricranastrum*	EUCHITONIIDAE
	Tribonosphaera	VALID		COLLOSPHAERIDAE
	Triceraspyris	VALID		CEPHALOSPYRIDIDAE
	Tricircarium	SYN. (obj.)	*Trissocircus*	ACANTHODESMIIDAE
	Tricirconium	SYN.	*Trissocyclus*	ACANTHODESMIIDAE
	Tricolocampium	SYN.	*Siphocampe*	ARTOSTROBIIDAE
	Tricolocamptra	VALID		EUCYRTIDIIDAE
	Tricolocapsa	VALID		ARTOSTROBIIDAE
?	*Tricolocapsium*	N.D.		? ARTOSTROBIIDAE
	Tricolocapsula	SYN. (obj.)	*Tricolocapsa*	ARTOSTROBIIDAE
?	*Tricolopera*	INV.	*Tricolocapsa*	? ARTOSTROBIIDAE
	Tricolospyris	VALID		ACANTHODESMIIDAE
?	*Tricorporisphaera*	VALID		? SPONGODRYMIDAE
	Tricranastrum	VALID		EUCHITONIIDAE
	Trictenartus	SYN. (obj.)	*Artopilium*	STICHOPILIIDAE
	Tricyclarium	SYN. (obj.)	*Trissocyclus*	ACANTHODESMIIDAE
	Tricyclidium	SYN.?	*Amphispyris*	PARADICTYIDAE
	Tricyclonium	SYN.	*Trissocyclus*	ACANTHODESMIIDAE
	Tridictyopus	VALID		TRIPODISCIIDAE
	Trigonactinium	SYN.	*Hymeniastrum*	ASTRACTURIDAE
	Trigonacturium	SYN.	*Hymeniastrum*	ASTRACTURIDAE
	Trigonastrella	SYN. (obj.)	*Trigonastrum*	EUCHITONIIDAE
	Trigonastromma	SYN.	*Trigonastrum*	EUCHITONIIDAE
	Trigonastrum	VALID		EUCHITONIIDAE
	Trigonocyclia	SYN.	*Triactiscus*	LITHOCYCLIIDAE
	Trilampterium	N.N.		no species are known
	Trilobatum	SYN.?	*Pylodiscus*	PYLODISCIDAE
	Trimanicula	VALID		PATULIBRACCHIIDAE
	Triodiscus	SYN.	*Pylodiscus*	PYLODISCIDAE
	Triolena	SYN.	*Pylodiscus*	PYLODISCIDAE
?	*Trioniscus*	N.D.		? AMPHITHOLIDAE
?	*Triopyle*	N.D.	? *Pylodiscus*	? PYLODISCIDAE
?	*Triospyridium*	N.D.		? CEPHALOSPYRIDIDAE
?	*Triospyris*	N.D.		? CEPHALOSPYRIDIDAE
	Triospyrium	SYN.	*Triceraspyris*	CEPHALOSPYRIDIDAE
	Triostephus	SYN.	*Acanthodesmia*	ACANTHODESMIIDAE
	Triplagia	SYN.	*Plagiacantha*	PLAGIACANTHIDAE
	Triplagiacantha	SYN.	*Plagiacantha*	PLAGIACANTHIDAE
?	*Triplecta*	N.D.	? *Plagiacantha*	? PLAGIACANTHIDAE
	Tripleurium	N.N.		no species are known
?	*Tripocalpis*	N.D.	? *Pseudodictyophimus*	? PSEUDODICTYOPHIMIDAE
?	*Tripocoronis*	N.D.		? ACANTHODESMIIDAE
?	*Tripocubus*	N.D.		? ACANTHODESMIIDAE
	Tripocyrtis	SYN.	*Clathrocanium*	SETHOPERIDAE
?	*Tripodictya*	VALID		? TREMATODISCIDAE
	Tripodiscinus	SYN. (obj.)	*Tripodiscium*	TRIPODISCIIDAE
	Tripodiscium	VALID		TRIPODISCIIDAE
	Tripodisculus	SYN.	*Tripodiscium*	TRIPODISCIIDAE
?	*Tripodoconus*	SYN. (obj.)	*Dictyophimus*	? PSEUDODICTYOPHIMIDAE
	Tripodocyrtis	VALID		PSEUDODICTYOPHIMIDAE
?	*Tripodonium*	N.D.		? PSEUDODICTYOPHIMIDAE
?	*Tripodospyris*	N.D.		? CEPHALOSPYRIDIDAE
	Tripophaenoscenium	VALID		PHAENOCALPIDIDAE
?	*Tripospyrantha*	SYN. (obj.); N.D.	*Tripospyris*	? CEPHALOSPYRIDIDAE
	Tripospyrella	SYN.	*Triceraspyris*	CEPHALOSPYRIDIDAE
?	*Tripospyris*	INV.	*Tripodospyris*	? CEPHALOSPYRIDIDAE
?	*Tripospyrissa*	N.D.		? CEPHALOSPYRIDIDAE
?	*Tripospyromma*	N.D.		? CEPHALOSPYRIDIDAE
	Tripterocalpis	VALID		CARPOCANIIDAE
	Trisolenia	SYN.	*Disolenia*	COLLOSPHAERIDAE
	Trissocircus	SYN.	*Trissocyclus*	ACANTHODESMIIDAE
	Trissocyclus	VALID		ACANTHODESMIIDAE
?	*Trissopilium*	N.D.		? ARCHIPILIIDAE
	Tristephaniscus	SYN.	*Acanthodesmia*	ACANTHODESMIIDAE
	Tristephanium	SYN. (obj.)	*Triostephus*	ACANTHODESMIIDAE
?	*Tristylocorys*	VALID		? TRIPODISCIIDAE
	Tristylospyris	SYN.	*Tholospyris*	CEPHALOSPYRIDIDAE
	Tristylospyrium	SYN.	*Tripodiscium*	TRIPODISCIIDAE
	Tristylospyrula	SYN. (obj.)	*Tristylospyris*	CEPHALOSPYRIDIDAE

APPENDIX 9. — Continuation.

	Genus	Status	See	Family
	Trisulcus	SYN.	*Botryopera*	DICTYOCRYPHALIDAE
	Trizonaris	SYN. (obj.)	*Trizonium*	ZONARIIDAE
?	*Trizonitis*	N.D.	? *Tetrapyle*	? ZONARIIDAE
	Trizonium	SYN.	*Tetrapyle*	ZONARIIDAE
?	*Trochodisculus*	SYN. (obj.); N.D.	*Trochodiscus*	? LITHOCYCLIIDAE
?	*Trochodiscus*	N.D.		? LITHOCYCLIIDAE
	Trypanosphaera	SYN.	*Choenicosphaera*	COLLOSPHAERIDAE
	Trypanosphaerium	SYN.	*Choenicosphaera*	COLLOSPHAERIDAE
	Trypanosphaerula	SYN. (obj.)	*Trypanosphaera*	COLLOSPHAERIDAE
	Tubosphaera	VALID		TUBOSPHAERIDAE
?	*Tympanidium*	INV.	*Acanthodesmia*	? ACANTHODESMIIDAE
?	*Tympaniscus*	N.D.	? *Eucoronis*	? ACANTHODESMIIDAE
	Tympanium	SYN.	*Acanthodesmia*	ACANTHODESMIIDAE
	Tympanomma	VALID		ACANTHODESMIIDAE
	Tympanura	SYN. (obj.)	*Tympanidium*	ACANTHODESMIIDAE
	Udan	VALID		EUCYRTIDIIDAE
?	*Valkyria*	VALID		? CYCLADOPHORIDAE
	Velicucullus	VALID		THEOPHORMIDIDAE
	Verticillata	SYN.	*Pteroscenium*	PHAENOCALPIDIDAE
?	*Verutotholus*	VALID		? LITHOCHYTRIDIDAE
?	*Xanthiosphaera*	N.D.	? *Polysolenia*	? COLLOSPHAERIDAE
	Xantozoum	SYN.	*Collozoum*	SPHAEROZOIDAE
	Xiphatractara	SYN. (obj.)	*Xiphatractus*	STYLATRACTIDAE
	Xiphatractium	SYN.	*Lithapium*	STYLATRACTIDAE
?	*Xiphatractona*	N.D.		? STYLATRACTIDAE
	Xiphatractus	SYN.	*Lithapium*	STYLATRACTIDAE
	Xiphatractylis	VALID		STYLATRACTIDAE
	Xiphobotrys	SYN.	*Neobotrys*	PYLOBOTRYDIDAE
	Xiphodictyon	SYN.	*Tripodictya*	TREMATODISCIDAE
	Xiphosphaerantha	SYN.?	*Stylosphaerantha*	STYLATRACTIDAE
	Xiphosphaerella	SYN.	*Axoprunum*	AXOPRUNIDAE
?	*Xiphosphaerissa*	N.D.		? STYLATRACTIDAE
	Xiphosphaeromma	SYN.?	*Xiphatractylis*	STYLATRACTIDAE
	Xiphospira	SYN.	*Staurospira*	TREMATODISCIDAE
	Xiphostylantha	VALID		STYLATRACTIDAE
	Xiphostyletta	SYN.	*Xiphostylissa*	STYLATRACTIDAE
	Xiphostylissa	VALID		STYLATRACTIDAE
	Xiphostylomma	SYN.	*Rhabdolithis*	XIMOLZASIDAE
	Zealithapium	VALID		INCERTAE FAMILIAE
	Zifondium	SYN.	*Dictyomitra*	ARCHAEODICTYOMITRIDAE
	Zonarium	SYN.	*Tetrapyle*	ZONARIIDAE
	Zonidium	SYN.	*Tetrapyle*	ZONARIIDAE
	Zoniscus	SYN.	*Tetrapyle*	ZONARIIDAE
?	*Zonodiscus*	N.D.		? ETHMOSPHAERIDAE
	Zygacantha	(Acantharia)		wrongly described as POLYCYSTINEA
?	*Zygartus*	N.D.	? *Didymocyrtis*	? PANARTIDAE
?	*Zygocampe*	N.D.		? PANARTIDAE
	Zygocircus	VALID		STEPHANIIDAE
?	*Zygospyris*	N.D.	? *Ceratospyris*	? CEPHALOSPYRIDIDAE
?	*Zygostephaniscus*	N.D.	? *Acanthodesmia*	? ACANTHODESMIIDAE
	Zygostephanium	SYN.	*Trissocyclus*	ACANTHODESMIIDAE
	Zygostephanus	SYN.	*Acanthodesmia*	ACANTHODESMIIDAE
	Zygostephus	SYN. (obj.)	*Zygostephanus*	ACANTHODESMIIDAE

APPENDIX 10. — Cenozoic part of the International Chronostratigraphic, showing the subseries/subepoch scheme for the Paleogene and for the Neogene. Despite the wide use in the Cenozoic literature, the subseries/subepochs ranks are not yet officially accepted by the International Commission on Stratigraphy (with the exception for the Holocene and Pleistocene series). Since the beginning of this revision work, we have preferred to use the rank of "subseries" for the ages of the genera in this genera catalogue, as well as for the species in the appendices. We think that there are many solid reasons to keep using the subseries; even though, they have yet to be formally defined. Modified from Head *et al.* 2017 (see there a good discussion and proposal) and from the ICS International Chronostratigraphic Chart, July 2021 (http://www.stratigraphy.org/ICSchart/ChronostratChart2021-07.pdf). Abbreviations: **L/E**, Lower/Early; **M**, Middle; **U/L**, Upper/Late; **e**, early; **l**, late. Bold stages/ages are ratified by the Global Boundary Stratotype Section and Points (GSSP). Italic fonts indicate informal units and placeholders for unnamed units.

