

Illustrated Catalog of African brush-footed
trapdoor spiders: type specimens from
the Royal Museum for Central Africa
(Araneae, Mygalomorphae, Barychelidae)

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ABSTRACT

The brush-footed trapdoor spiders (Barychelidae Simon, 1889) represent a family of mygalomorphs that includes 285 species spread in 39 genera. Barychelids are mainly tropical spiders, distributed from South America to Oceania. The African barychelid fauna is the second most diverse in number of spiders described within the family, with 41 species known from nine different genera. Following several published taxonomic works of Pierre L. G. Benoit in the mid-1960s, few taxonomic revisions of Barychelidae have been proposed since from the African continent. To avoid deterioration and loss of information from the type specimens, we have made efforts to digitise these specimens, which serve as the definitive references and physical representations of the species. Among 174 mygalomorph types deposited at the Royal Museum of Central Africa (RMCA) in Belgium, Barychelidae is represented by 16 species from five different genera. The present paper aims to provide illustrations of important morphological characters. Additionally, we herein considered the species *Cyphonisia straba* Benoit, 1966, *Pisenor selindanus* (Benoit, 1966), and *Sipalolasma humicola* (Benoit, 1965) as *species inquirendae*, and *S. warnantae* Benoit, 1966 as senior synonym of *S. kissi* Benoit, 1966. This work aspires to improve the understanding and accessibility of name-bearing types through the cataloguing and digitisation of type specimens of Barychelidae deposited at the RMCA.

KEY WORDS

African spiders,
Barychelinae,
digitisation,
illustrations,
virtual collections.

RÉSUMÉ

Catalogue illustré des Mygales ornées africaines : les spécimens types du Musée royal de l'Afrique centrale (Araneae, Mygalomorphae, Barychelidae).

Les Mygales ornées (Barychelidae Simon, 1889) représentent une famille de mygalomorphes qui comprend 285 espèces réparties dans 39 genres. Les barychélidés sont principalement des araignées tropicales réparties de l'Amérique du Sud à l'Océanie. La faune africaine des Barychelidae est la deuxième plus diversifiée en nombre d'araignées décrites au sein de la famille, avec 41 espèces connues appartenant à neuf genres différents. Suite à plusieurs travaux taxonomiques publiés par Pierre L. G. Benoit au milieu des années 1960, rares sont les révisions taxonomiques des Barychelidae qui ont été proposées depuis pour le continent africain. Afin d'éviter la détérioration et la perte d'informations sur les spécimens types, nous nous sommes efforcés de numériser ces spécimens, qui servent de représentation physiques et de références irrévocables des espèces. Parmi les 174 types de mygalomorphes déposés au Musée royal de l'Afrique centrale (MRAC) en Belgique, les Barychelidae sont représentés par 16 espèces appartenant à cinq genres différents, pour lesquels nous fournissons des illustrations de caractères morphologiques importants. De plus, nous considérons ici les espèces *Cyphonisia straba* Benoit, 1966, *Pisenor selindanus* (Benoit, 1966) et *Sipalolasma humicola* (Benoit, 1965) comme *species inquirendae*, et *S. warnantae* Benoit, 1966 comme synonyme senior de *S. kissi* Benoit, 1966. Ce travail aspire à améliorer la compréhension et l'accessibilité des types porte-noms à travers le catalogage et la numérisation des spécimens types de Barychelidae déposés au MRAC.

MOTS CLÉS
Araignées africaines,
Barychelinae,
numérisation,
illustrations,
collections virtuelles.

INTRODUCTION

Barychelidae Simon, 1889 commonly known as brush-footed trapdoor spiders (Raven 1994), have a distribution concentrated mainly in the Southern Hemisphere. The highest species richness of Barychelidae is observed in Oceania and the Pacific islands, followed by the African continent, Asia and the Neotropical region (World Spider Catalog 2024). The African barychelid fauna is the second most diverse, with 41 species from nine different genera, making it one of the most speciose in the infraorder Mygalomorphae Pocock, 1892 (World Spider Catalog 2024).

The Royal Museum for Central Africa, Tervuren, Belgium (RMCA) holds an extensive collection related to the natural and cultural history of Central Africa, especially the Democratic Republic of Congo, Rwanda, and Burundi, as well as other parts of Africa and beyond (Van Bockhaven 2019). Between 1964 and 1966, Pierre L. G. Benoit published several works that not only reviewed existing information but also described new species of African barychelids. Since then, few species have been described (Gonzalez-Filho, Guadanucci & Brescovit 2023), and a significant part of the available information is still contained only in the original descriptions.

According to Article 72 of The International Code of Zoological Nomenclature (ICZN), the term “type” applies to three categories of specimens: (I) type series: all the specimens on which the author established a nominal species-group taxon; (II) name-bearing types: specimens with a name-bearing function, whether fixed originally

(holotype or syntypes) or fixed subsequently (lectotype or neotype); (III) other specimens: those without a name-bearing function (paratypes and paralectotypes) (ICZN 2023). In the field of taxonomy, the name-bearing type serves as a reference and physical representation of a newly described species, guiding subsequent researchers. Accurate species recognition is critical as species play a fundamental role in diverse research areas, including systematics, phylogenetic inferences, ecology, conservation, and behaviour (Dupérré 2023). Cataloguing existing knowledge is a crucial step in the taxonomic process, but it can be challenging due to taxonomic redundancy. Taxonomic revisions require time and access to museum specimens, inventories, and data. Furthermore, synonymies established by several researchers for the same species can result in inflated species numbers, further complicating the task of cataloguing (Dupérré & Harms 2018).

The present paper provides illustrations of important morphological characters of the types of 16 species distributed in five genera of Barychelidae deposited at the Royal Museum for Central Africa. The aim of this paper is not to revise the taxonomy of the species, which will be done somewhere else, thus no new diagnoses have usually been provided. The original high-quality photographs are available online through the Virtual Collections (<https://virtualcol.africamuseum.be>), where researchers from the Royal Belgian Institute of Natural Sciences and the Royal Museum for Central Africa work on the digitisation of natural science collections, within the framework of programs funded by the Belgian Science Policy (BELSPO).

MATERIAL AND METHODS

The type material studied is deposited in the Royal Museum for Central Africa, Tervuren, Belgium (RMCA) (curator: D. Van den Spiegel). All the data information from the types were based on the labels and the original publications. The information in brackets was provided by the RMCA database. Species are presented in alphabetical order of genera and species. Type status was determined using the International Code for Zoological Nomenclature (ICZN 2023). The term allotype (which represents a designated specimen of the opposite sex to the holotype) has no nominative function and is not regulated by the ICZN (see recommendation 72A of the code). An allotype can be considered equal to a paratype if it is referred to in the original description along with the holotype. An allotype has no functional value and cannot be considered a paratype when it is designated after the initial publication of the holotype. Although not recognised by the ICZN, these 'allotype' specimens are referred to here as examined material, without type status.

Digital multi-focal photos were taken using a Leica DMC500 digital camera mounted on a Leica MZ16A and stacked using Leica Application Suite (LAS) v.4.13. Spermathecae were dissected and submitted to the digestion of the non-chitinous tissue by Ultrazyme® Enzymatic Cleaner for 24hrs, where a tablet was diluted in 5 mL of distilled water. The male palps were first photographed either still attached to the spider or detached. Then palpal bulbs were removed from the cymbium and photographed.

RESULTS

Infraorder MYGALOMORPHAE Pocock, 1892

Family BARYCHELIDAE Simon, 1889

Genus *Ammonius* Thorell, 1899

Ammonius Thorell, 1899: 10.

TYPE SPECIES. — *Ammonius pupulus* Thorell, 1899, by monotypy.

DIAGNOSIS. — See Gonzalez-Filho *et al.* 2023.

INCLUDED SPECIES. — *Ammonius pupulus* Thorell, 1899; *A. benoitii* Gonzalez-Filho, Guadanucci & Brescovit, 2023.

DISTRIBUTION. — Cameroon and Ivory Coast.

Ammonius benoitii

Gonzalez-Filho, Guadanucci & Brescovit, 2023

(Fig. 1 – after Gonzalez-Filho,

Guadanucci & Brescovit, 2023, fig. 8A-J)

Ammonius benoitii Gonzalez-Filho, Guadanucci & Brescovit, 2023: 124, figs 8A-J, 9A-D (description ♂).

TYPE MATERIAL. — **Holotype.** Ivory Coast • ♂; Appouesso; 06°35'N, 003°28'W; 29.IX.1993; R. Jocqué & N. Séabé leg.; BE_RMCA_ARA.Ara.202482.

Paratypes. Ivory Coast • 1 ♂; same collection data as for holotype; 1.XII.1994 • 1 ♂; same collection data as for preceding; 1.XII.1994; BE_RMCA_ARA.Ara.202354.

DISTRIBUTION. — Ivory Coast.

Genus *Cyphonisia* Simon, 1889

(Figs 2-9)

Cyphonisia Simon, 1889: 410.

TYPE SPECIES. — *Cyphonisia obesa* Simon, 1889.

DIAGNOSIS. — *Cyphonisia* differs from *Pisenor* Simon, 1889 by the eyes group square-shaped, where the lateral anterior eyes separated by twice their size (Figs 2D; 3D; 6D; 7D) and by the presence of posterior median spinnerets (Figs 2F; 3F; 5B; 6E; 7F). Males resemble *Pisenor* by the tibial apophysis composed of two spurs with curved spines (Figs 4F; 5F; 8F), but can be differentiated by the male palpal bulb with a long thin embolus, twice the length of subtegulum, except in *C. itombwensis* Benoit, 1966 (Fig. 4G-J), and by the cymbium of the male not projected, except in *C. kissi* (Benoit, 1966) (Fig. 5C-E).

INCLUDED SPECIES. — *Cyphonisia affinitata* Strand, 1907; *C. annulata* Benoit, 1966; *C. itombwensis* Benoit, 1966; *C. kissi* (Benoit, 1966); *C. maculata* (Roewer, 1953); *C. maculipes* Strand, 1906; *C. manicata* Simon, 1907; *C. nesiotes* Simon, 1907; *C. nigella* (Simon, 1889); *C. obesa* Simon, 1889; *C. rastellata* Strand, 1907; *C. soleata* Thorell, 1899; *Cyphonisia straba* Benoit, 1966.

DISTRIBUTION. — Cameroon, Central Africa, Republic of the Congo, Democratic Republic of the Congo, Republic of Equatorial Guinea (Bioko), Ghana, São Tomé and Príncipe, and Tanzania.

Cyphonisia annulata Benoit, 1966

(Fig. 2)

Cyphonisia annulata Benoit, 1966: 224, figs 13-15 (description ♀).

TYPE MATERIAL. — **Holotype.** Ghana • 1 ♀; Akosombo; [05°30'N, 00°15'W]; 13.VII.1964; G. Marlier leg.; BE_RMCA_ARA.Ara.127267.

DISTRIBUTION. — Ghana.

Cyphonisia itombwensis Benoit, 1966

(Figs 3; 4)

Cyphonisia itombwensis Benoit, 1966: 226, figs 19-22 (description ♂, juvenile). — Blandin 1978: 26, fig. 8b (♂).

TYPE MATERIAL. — **Holotype.** DR Congo • 1 juvenile ♀; Kivu, Itombwe [03°30'S, 29°00'E]; XII.1961; R. Kissi leg.; 1200-1400 m, under stones in destroyed forest; BE_RMCA_ARA.Ara.120071.

Paratype. DR Congo • 1 ♂; Kivu, Uvira; [03°25'S, 29°08'E]; V.1962; R. Kissi leg.; BE_RMCA_ARA.Ara.129769 (designated originally as allotype).

DISTRIBUTION. — Democratic Republic of the Congo.

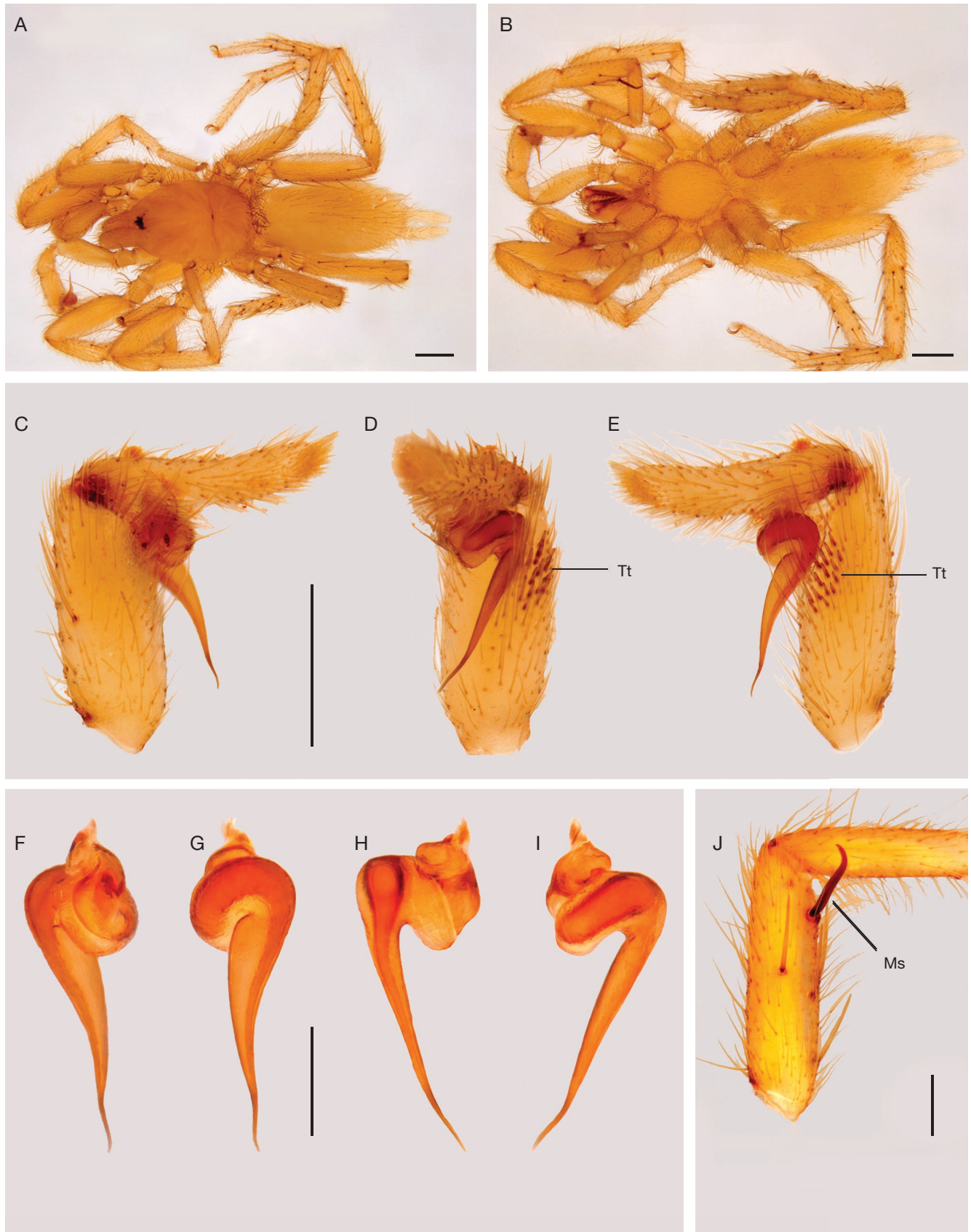


FIG. 1. — *Ammonius benoiti* Gonzalez-Filho, Guadanucci & Brescovit, 2023: **A-E**, holotype, ♂ (BE_RMCA_ARA.Ara.202482); **F-I**, paratype, ♂ (BE_RMCA_ARA.Ara.202354): **A**, habitus dorsal; **B**, idem, ventral; **C**, palp, prolateral view; **D**, idem, ventral view; **E**, retrolateral view; **F**, bulb, ventral view; **G**, idem, dorsal view; **H**, idem, prolateral view; **I**, idem, retrolateral view; **J**, tibia I, prolateral view. Abbreviations: **Ms**, megaspine; **Tt**, tibial thorns. Scale bars: A-E, J, 0.5 mm; F-I, 0.2 mm.

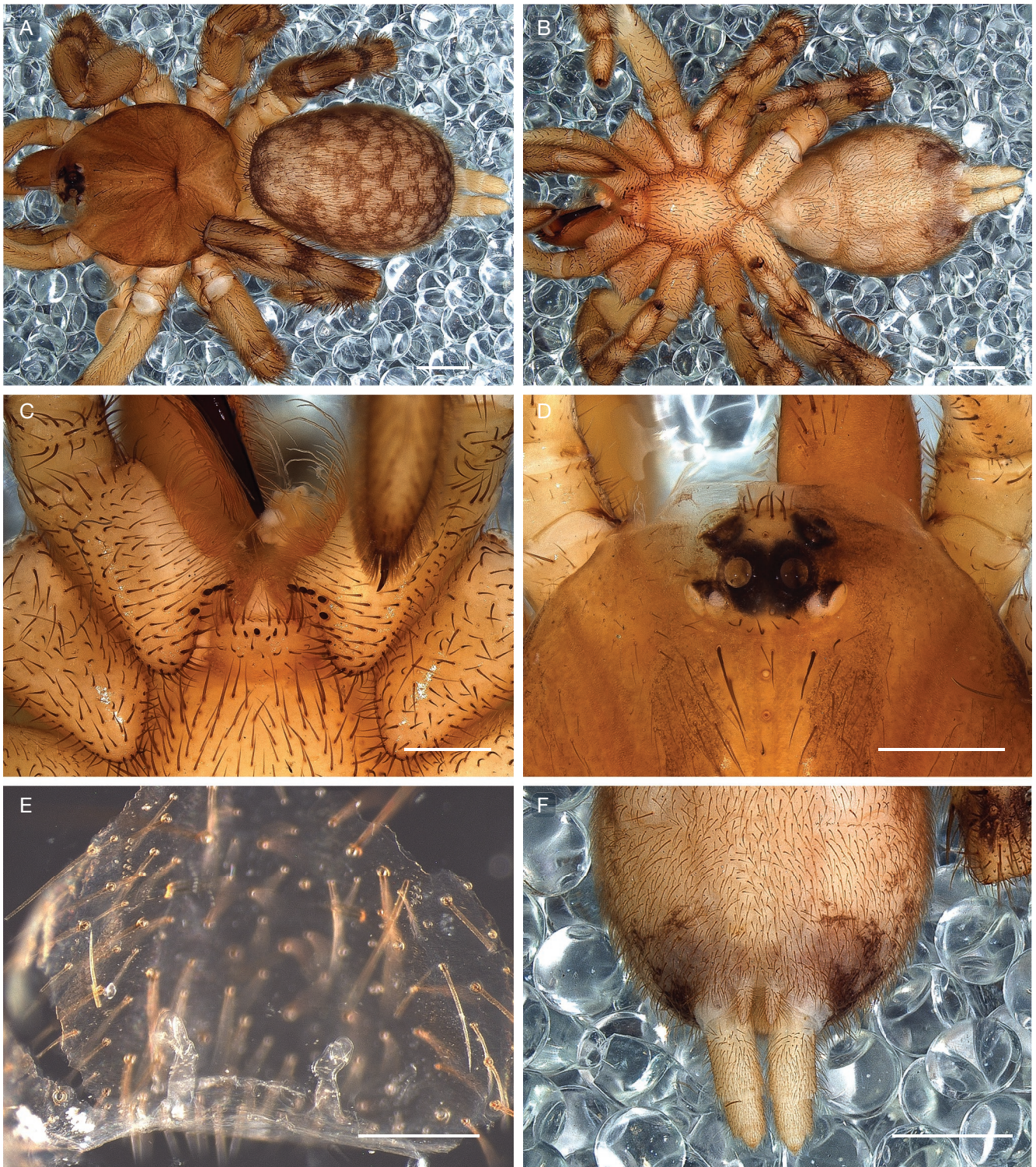


FIG. 2. — *Cyphonisia annulata* Benoit, 1966: **A-F**, holotype, ♀ (BE_RMCA_ARA.Ara.127267): **A**, habitus dorsal; **B**, idem, ventral; **C**, labium and maxillae, ventral view; **D**, eye tubercle, dorsal view; **E**, spermatheca, dorsal view; **F**, spinnerets, ventral view. Scale bars: A, B, 2 mm; C, D, 1 mm; E, F, 0.5 mm.

REMARK

Benoit (1966) considered the holotype of *C. itombwensis* to be an adult female. However, after examination of the

specimen and dissection of the genital area, we found that no spermatheca were developed (Fig. 3E), demonstrating that this specimen was actually not an adult.



FIG. 3. — *Cyphonisia itombwensis* Benoit, 1966: **A-F**, holotype, ♀ juvenile (BE_RMCA_ARA.Ara.120071): **A**, habitus dorsal; **B**, idem, ventral; **C**, labium and maxillae, ventral view; **D**, eye tubercle, dorsal view; **E**, spermatheca, dorsal view; **F**, spinnerets, ventral view. Scale bars: A, B, 2 mm; C, D, 1 mm; E, F, 0.5 mm.

Cyphonisia kissi (Benoit, 1966)
(Figs 5; 6)

Pisenor kissi Benoit, 1966: 234, figs 30-33 (description ♂).

Cyphonisia kissi – Raven 1985: 112 (♂, transfer from *Pisenor*).

TYPE MATERIAL. — **Holotype.** DR Congo • 1 ♂; Katanga, Albertville; [05°57'S, 29°12'E]; 1936; Hössli leg.; BE_RMCA_ARA.Ara.27054. **Paratype.** DR Congo • 1 ♀; Kivu, Kilibula; [03°25'S, 29°08'E]; 6.XII.1961; R. Kissi leg.; BE_RMCA_ARA.Ara.120754 (designated originally as allotype).

DISTRIBUTION. — Democratic Republic of the Congo.



FIG. 4. — *Cyphonisia itombwensis* Benoit, 1966: **A-J**, paratype, ♂ (BE_RMCA_ARA.Ara.129769): **A**, habitus dorsal; **B**, idem, ventral; **C-E**, male palp, ventral view; **D**, idem, prolateral view; **E**, idem, retrolateral view; **F**, right tibia I, prolateral view; **G**, male palpal bulb, dorsal view; **H**, idem, ventral view; **I**, idem, prolateral view; **J**, idem, retrolateral view. Scale bars: A, B, 2 mm; C-E, 0.5 mm; F, 1 mm; G-J, 0.5 mm.



FIG. 5. — *Cyphonisia kissi* (Benoit, 1966): **A–J**, holotype, ♂ (BE_RMCA_ARA.Ara.27054): **A**, habitus dorsal; **B**, idem, ventral; **C**, male palp, ventral view; **D**, idem, prolateral view; **E**, idem, retrolateral view; **F**, right tibia I, prolateral view; **G**, male palp bulb, dorsal view; **H**, idem, ventral view; **I**, idem, prolateral view; **J**, idem, retrolateral view. Scale bars: A, B, 2 mm; C–E, 0.5 mm; F, 1 mm; G–J, 0.5 mm.

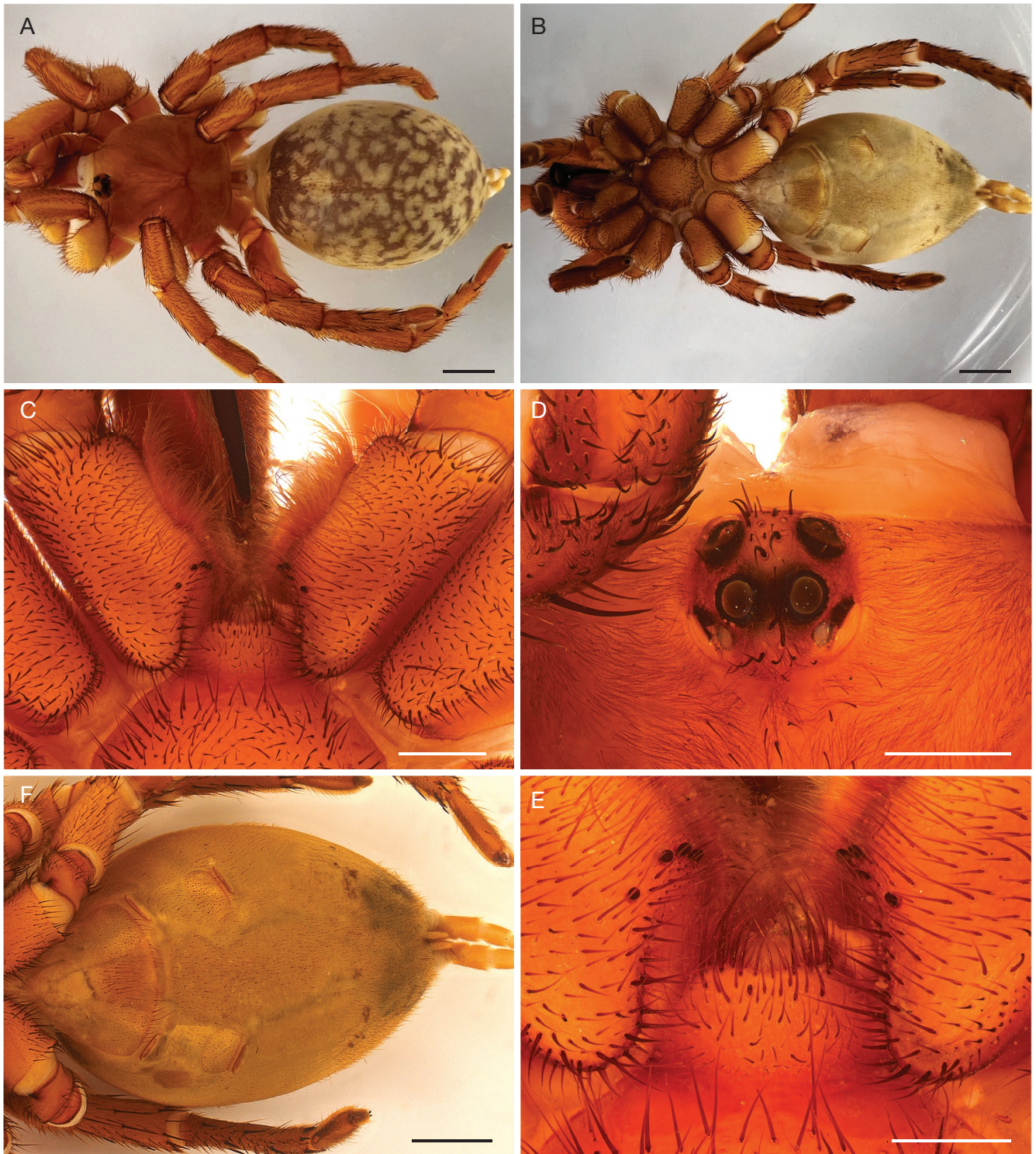


FIG. 6. — *Cyphonisia kissi* (Benoit, 1966): **A–F**, paratype, ♀ (BE_RMCA_ARA.Ara.120754): **A**, habitus dorsal; **B**, idem, ventral; **C**, labium and maxillae, ventral view; **D**, eye tubercle, dorsal view; **E**, abdomen, ventral view; **F**, labium, ventral view. Scale bars: **A**, **B**, 2 mm; **C**, **D**, 1 mm; **E**, **F**, 0.5 mm.

REMARK

In the original publication, Benoit (1966) did not explicitly designate this female as a paratype (BE_RMCA_ARA.

Ara.120754). However, in the original label he distinctly wrote “paratype”.



FIG. 7. — *Cyphonisia maculata* (Roewer, 1953): **A-F**, paratype, ♀ (BE_RMCA_ARA.Ara.139865): **A**, habitus dorsal; **B**, sternum, ventral view; **C**, spermatheca, dorsal view; **D**, eye tubercle, dorsal view; **E**, abdomen, ventral view; **F**, labium, ventral view. Scale bars: A, B, 2 mm; C, D, 1 mm; E, F, 0.5 mm.

Cyphonisia maculata (Roewer, 1953)
(Figs 7; 8)

Pisenor maculatus Roewer, 1953: 60, figs 20A-G (description ♀).

Pisenor tullgreni Roewer, 1953: 62, fig. 21A, B (description ♀).

Pisenorina maculata – Benoit 1966: 214, fig. 3 (♀, synonymy of *P. tullgreni*).

Cyphonisia maculata – Raven 1985: 157 (♀, transfer from *Pisenor*).

TYPE MATERIAL. — **Holotype**. DR Congo • 1 ♀; P. N. Upemba, Munoi; [08°45'S, 26°44'E]; 16-24.VI.1948; G. F. De Witte leg.;

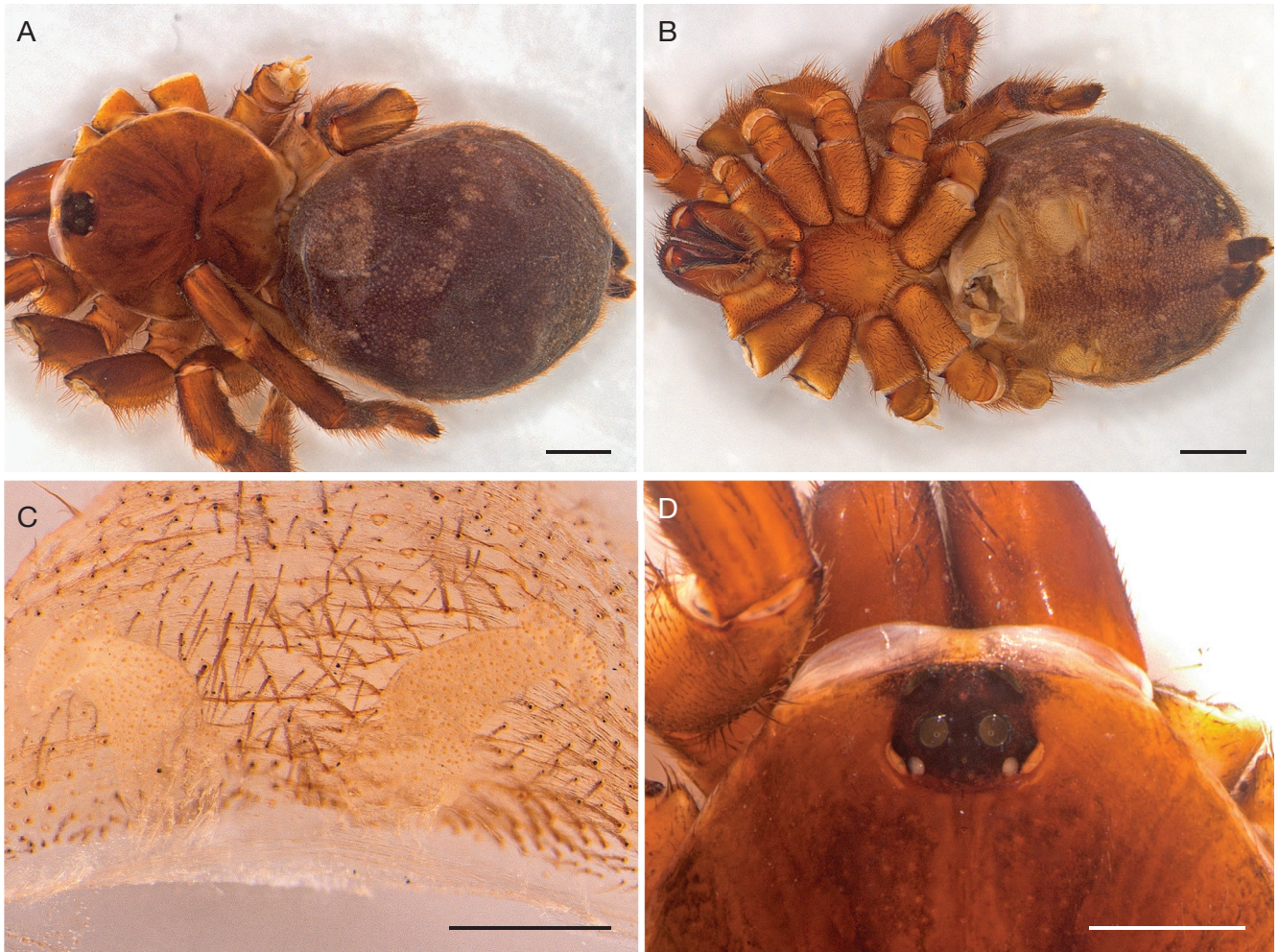


FIG. 8. — Holotype of *Pisenor tullgreni* Roewer, 1953 (= *Cyphonisia maculata* (Roewer, 1953)): **A–D**, holotype, ♀ (BE_RMCA_ARA.Ara.139866): **A**, habitus dorsal; **B**, idem, ventral; **C**, spermatheca, dorsal view; **D**, eye tubercle, dorsal view. Scale bars: A, B: 2 mm; C, 0.5 mm; D, 1 mm.

890 m; BE_RMCA_ARA.Ara.139865 and BE_RMCA_ARA.Ara.139810 (microslide preparation of leg pieces of no. 139865).

TYPE MATERIAL OF *PISENOR TULLGRENI*. — **DR Congo** • 1 ♀; P. N. Upemba, Lusinga; [08°56'S, 27°12'E]; 30.X-12.XII.1947, G. F. De Witte leg.; 1810 m; BE_RMCA_ARA.Ara.139866 and BE_RMCA_ARA.Ara.139807 (microslide preparation of leg pieces of no. 139866).

DISTRIBUTION. — Democratic Republic of the Congo.

REMARK

Benoit (1966) stated that the type of *C. maculata* (Roewer, 1953) was a juvenile specimen of the species described in the adult stage as *C. tullgreni* (Roewer, 1953) (Fig. 8). We show however that the holotype specimen of *C. maculata* (Roewer, 1953) is not a juvenile but an adult female (Fig. 7).

Cyphonisia obesa Simon, 1889 (Fig. 9)

Cyphonisia obesa Simon, 1889: 410 (description ♀).

Cyphonisia limbata Strand, 1920: 98 (description ♀).

MATERIAL EXAMINED. — **Ivory Coast** • 1 ♂ (labelled allotype by Benoit [1966]); Danané; [07°16'N, 08°09'E]; 1962; J. Decelle leg.; BE_RMCA_ARA.Ara.126815.

DISTRIBUTION. — Ivory Coast, Cameroon, Republic of the Congo, Democratic Republic of the Congo.

REMARK

Benoit (1966) described for the first time the male of *Cyphonisia obesa* Simon, 1889 and designated the male BE_RMCA_ARA.Ara.126815 as allotype.



FIG. 9. — *Cyphonisia obesa* Simon, 1889: **A–J**, non-type ♂ BE_RMCA_ARA.Ara.126815: **A**, habitus dorsal; **B**, idem, ventral; **C**, male palp, ventral view; **D**, idem, prolateral view; **E**, idem, retrolateral view; **F**, tibia I, prolateral view; **G**, male palp bulb, dorsal view; **H**, idem, ventral view; **I**, idem, prolateral view; **J**, idem, retrolateral view. Scale bars: A, B, 2 mm; C, E, 0.5 mm; F, 1 mm; G–J, 0.5 mm.



FIG. 10. — *Cyphonisia straba* Benoit, 1966: **A–D**, holotype, juvenile ♀ (BE_RMCA_ARA.Ara.112302): **A**, habitus dorsal; **B**, habitus ventral; **C**, labium and maxillae, ventral view; **D**, eye tubercle, dorsal view. Scale bars: A, B, 2 mm; C, D, 1 mm.

Cyphonisia straba Benoit, 1966 *species inquirenda*
(Fig. 10)

Cyphonisia straba Benoit, 1966: 223, fig. 10–12 (description juvenile).

TYPE MATERIAL. — **Holotype**. DR Congo • 1 juvenile; Kivu, Uvira; [03°25'S, 29°08'E]; I.1958; N. Leleup leg.; BE_RMCA_ARA.Ara.112302.

Paratype. DR Congo • 1 juvenile; Kivu, Uvira; [03°25'S, 29°08'E]; I.1958; N. Leleup leg.; BE_RMCA_ARA.Ara.129768.

DISTRIBUTION. — Democratic Republic of the Congo.

REMARK

Benoit (1966) considered the holotype of *C. straba* to be an adult female. However, after examination and dissection of the epigastric furrow of individual BE_RMCA_ARA.Ara.112302, we found that no spermatheca were developed, demonstrating that the holotype is juvenile. Thus, *C. straba* is herein considered as *species inquirenda*.

Genus *Idiactis* L. Koch, 1874
(Fig. 11)

Idiactis L. Koch, 1874: 484.

TYPE SPECIES. — *Idiactis helva* L. Koch, 1874.

DIAGNOSIS. — See Yu *et al.* (2023).

INCLUDED SPECIES. — *Idiactis eniwetok* Raven, 1988; *I. ferrophila* Churchill & Raven, 1992; *I. helva* L. Koch, 1874; *I. intertidalis* (Benoit & Legendre, 1968); *I. littoralis* Abraham, 1924; *I. marovo* Churchill & Raven, 1992; *I. parilarilao* Yu, Lo, Cheng, Raven & Kuntner, 2023; *I. talofa* Churchill & Raven, 1992; *I. xmas* Raven, 1988; *I. yerlata* Churchill & Raven, 1992.

DISTRIBUTION. — New Caledonia, Marshall Is., Caroline Is., Fiji, Madagascar, Seychelles, Mayotte, Singapore, Solomon Is., Samoa, Australia (Queensland and Christmas Is.), Taiwan.

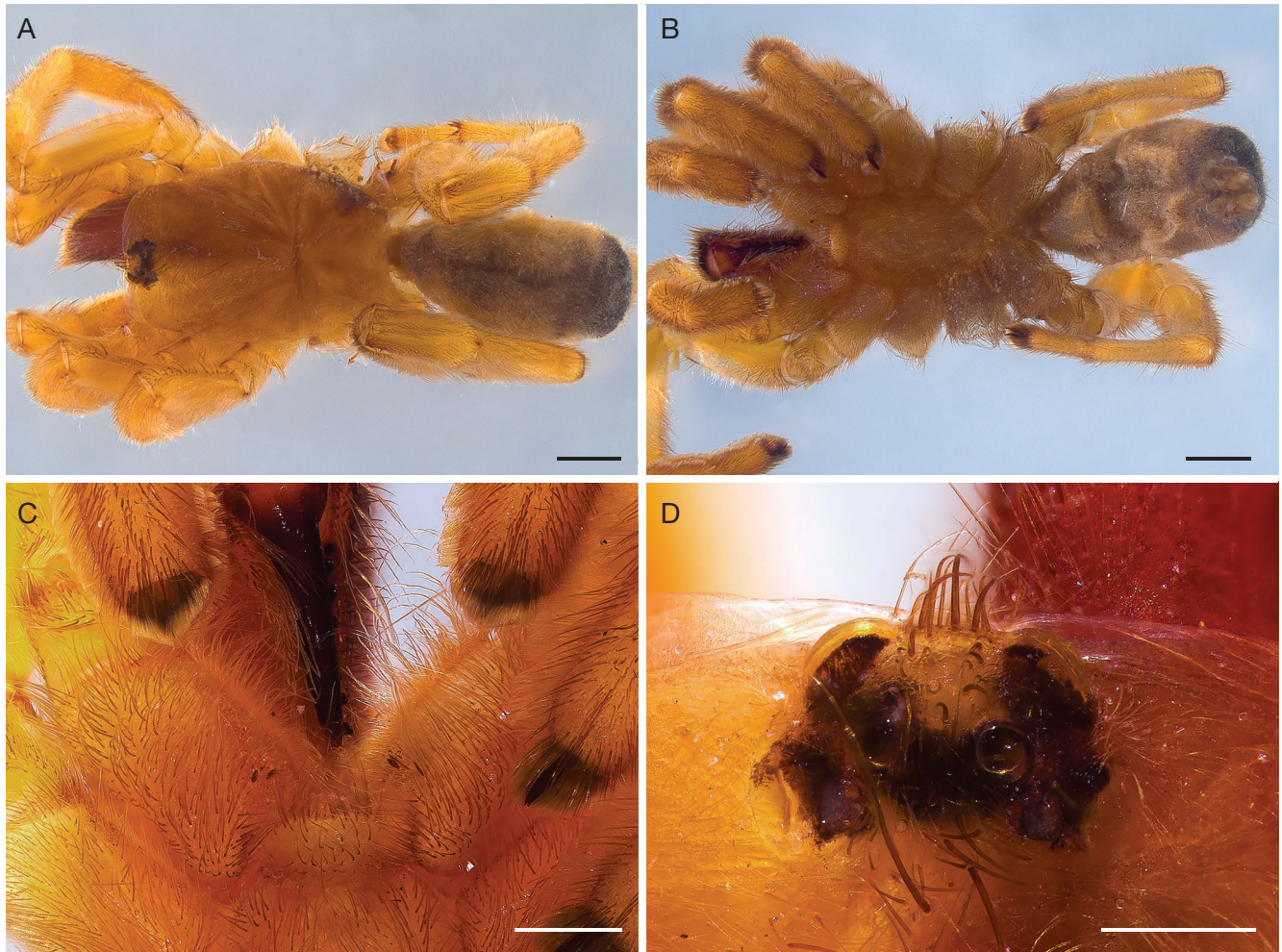


FIG. 11. — *Idiactis intertidalis* (Benoit & Legendre, 1968): **A–D**, holotype, ♀ (BE_RMCA_ARA.Ara.133045): **A**, habitus dorsal; **B**, idem, ventral; **C**, labium and maxillae, ventral view; **D**, eye tubercle, dorsal view. Scale bars: A, B, 2 mm; C, D, 1 mm.

Idiactis intertidalis (Benoit & Legendre, 1968)
(Fig. 11)

Atrophonysia intertidalis Benoit & Legendre, 1968: 331, figs 1-5 (description ♀). — Benoit 1978: 408, fig. 2A (♀).

Idiactis intertidalis – Raven 1985: 113 (♀); 1988: 8, figs 20-25 (♀). — Saaristo 2010: 25, figs 1.7-12 (♀).

TYPE MATERIAL. — **Holotype**. Madagascar • 1 ♀; Diego Suarez, Nosii-bé Island; [13°20'S, 48°15'E]; I.1964, J. Rudloe leg.; BE_RMCA_ARA.Ara.133045.

Paratype. Madagascar • 1 ♀; same data as for holotype; BE_RMCA_ARA.Ara.133046.

DISTRIBUTION. — Madagascar, Mayotte and the Seychelles.

REMARK

The adult specimen appears partially dried, as specified by Benoit & Legendre (1968: 332). Under these conditions, we chose not to dissect the specimen to avoid further damage to the holotype.

Genus *Pisenor* Simon, 1889
(Figs 12-19)

Pisenor Simon, 1889: 411.

TYPE SPECIES. — *Pisenor notius* Simon, 1889.

DIAGNOSIS. — *Pisenor* differs from *Cyphonisia* by the eye group trapezoid, lateral anterior eyes close together (Figs 12D; 13D; 14D, 16D; 18D) and by the absence of the posterior median spinnerets (Figs 13F; 14F). Males can be distinguished by the retrolateral lobe of the cymbium projected (in *P. leleupi* (Benoit, 1965) noticeably projected, in *P. tenuistylus* (Benoit, 1965) and *P. upembana* (Roewer, 1953) slightly projected), absent in *Cyphonisia*.

INCLUDED SPECIES. — *Pisenor arcturus* (Tucker, 1917); *P. leleupi* (Benoit, 1965); *P. lepidus* (Gerstaecker, 1873); *P. macequece* (Tucker, 1920); *P. notius* Simon, 1889; *P. plicatus* (Benoit, 1965); *Pisenor selindanus* (Benoit, 1965); *P. tenuistylus* (Benoit, 1965); *P. upembanus* (Roewer, 1953).

DISTRIBUTION. — Botswana, Republic of the Congo, Ethiopia, Mozambique, Tanzania, Rwanda, South Africa, Zimbabwe.



FIG. 12. — *Pisenor leleupi* (Benoit, 1965): **A–J**, holotype, ♂ (BE_RMCA_ARA.Ara.93110): **A**, habitus dorsal; **B**, idem, ventral; **C**, male palp, ventral view; **D**, idem, prolateral view; **E**, idem, retrolateral view; **F**, tibia I, prolateral view; **G**, male palp bulb, dorsal view; **H**, idem, ventral view; **I**, idem, prolateral view; **J**, idem, retrolateral view. Scale bars: A, B, 2 mm; C–E, 0.5 mm; F, 1 mm; G, J, 0.5 mm.



FIG. 13. — *Pisenor leleupi* (Benoit, 1965): **A–D**, paratype, ♀ (BE_RMCA_ARA.Ara.127641): **A**, habitus dorsal; **B**, idem, ventral; **C**, spermatheca, dorsal view; **D**, eye tubercle, dorsal view. Scale bars: A, B, 2 mm; C, 0.5 mm; D, 1 mm.

Pisenor leleupi (Benoit, 1965)
(Figs 12; 13)

Urothele leleupi Benoit, 1965: 37, fig. 4-6 (description ♂♀).

Pisenor leleupi – Raven 1985: 112.

TYPE MATERIAL. — **Holotype**. DR Congo • 1 ♂; Kivu, Kabare; [02°29'S, 28°48'E]; 11.I.1952; N. Leleup leg.; alt. 800 m, in humus BE_RMCA_ARA.Ara.93110.

Paratypes. DR Congo • 1 ♀; same data as for holotype; BE_RMCA_ARA.Ara.127641 (designated originally as allotype) • 3 undetermined stage; Kalehe, Bunyakiri; [2°04'34.0"S, 28°34'24.9"E]; IX.1953; N. Leleup leg.; BE_RMCA_ARA.Ara.75622, BE_RMCA_ARA.Ara.75642 and 75656 • 1 ♀; Kikonde; [04°28'S, 29°05'E]; II.1962; R. Kiss leg.; BE_RMCA_ARA.Ara.122158. • 5 ♀; Fizi; [04°18'S, 28°57'E]; 11.I.1952; N. Leleup leg.; BE_RMCA_ARA.Ara.93104.

DISTRIBUTION. — Democratic Republic of the Congo.

Pisenor plicatus (Benoit, 1965)
(Fig. 14)

Urothele plicata Benoit, 1965: 34, figs 1-2 (description ♀).

Pisenor plicatus – Raven 1985: 112.

TYPE MATERIAL. — **Holotype**. Rwanda • 1 ♀; Rugege; [02°30'S, 29°15'E]; III.1951, N. Leleup leg.; alt. 2100 m; BE_RMCA_ARA.Ara.92538.

DISTRIBUTION. — Rwanda.

Pisenor selindanus (Benoit, 1965) *species inquirenda*
(Fig. 15)

Urothele selindana Benoit, 1965: 37, fig. 3 (description ♀ juvenile).

Pisenor selindanus – Raven 1985: 112.

TYPE MATERIAL. — **Holotype**. Zimbabwe • ♀ juvenile; Selinda, Mount Selinda; [19°14'S, 32°14'E]; VII.1960; N. Leleup leg.;



FIG. 14. — *Pisenor plicatus* (Benoit, 1965): **A-F**, holotype, ♀ (BE_RMCA_ARA.Ara.92538): **A**, habitus dorsal; **B**, idem, ventral; **C**, labium and maxillae, ventral view; **D**, eye tubercle, dorsal view; **E**, spermatheca, dorsal view; **F**, spinnerets, ventral view. Scale bars: A, B, 2 mm; C, D, 1 mm; E, F, 0.5 mm.

forêt ombrophile de Chirinda, dans l'humus; alt. 1250 et 1300 m; BE_RMCA_ARA.Ara.116120.

REMARK

Benoit (1965) considered the type of *P. selindanus* to be an adult female. However, after examination of specimens and

dissection of the genital area, we did not find any developed spermatheca (Fig. 14E), demonstrating that this specimen is a juvenile. For this reason, *P. selindanus* is herein considered as *species inquirenda*.

DISTRIBUTION. — Zimbabwe.

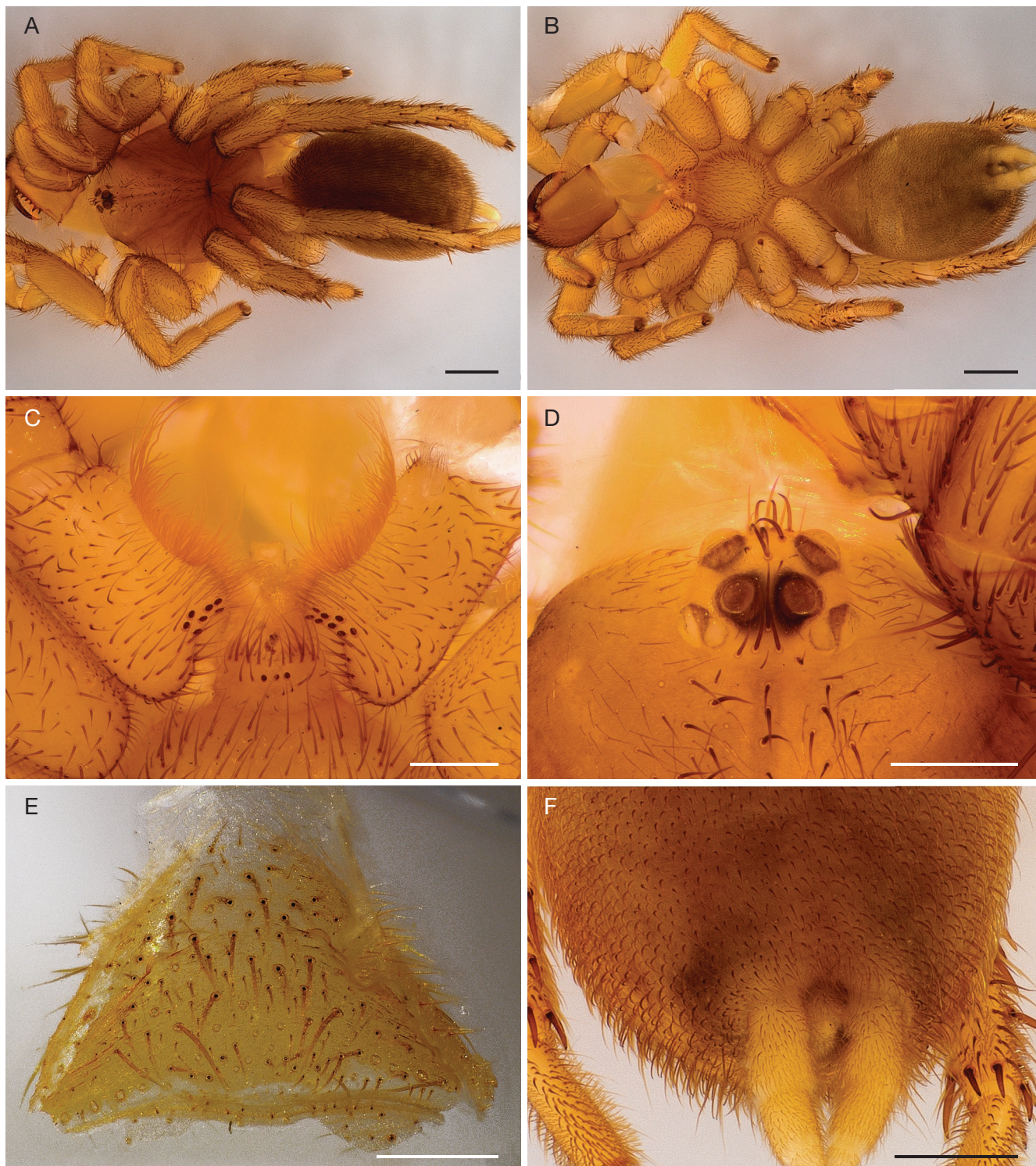


FIG. 15. — *Pisenor selindanus* (Benoit, 1965): **A–F**, holotype, juvenile ♀ (BE_RMCA_ARA.Ara.116120): **A**, habitus dorsal; **B**, idem, ventral; **C**, labium and maxillae, ventral view; **D**, eye tubercle, dorsal view; **E**, spermatheca, dorsal view; **F**, spinnerets, ventral view. Scale bars: A, B, 2 mm; C, D, 1 mm; E, F, 0.5 mm.

Pisenor tenuistylus (Benoit, 1965)
(Figs 16; 17)

Urothele tenuistylus Benoit, 1965: 39, figs 7-9 (description ♂ and ♀).

Pisenor tenuistylus – Raven 1985: 112.

TYPE MATERIAL. — **Holotype**. DR Congo • 1 ♂; Kivu, Fizi, Itombwe; [03°30'S, 29°00'E]; III.1951; N. Leleup leg.; alt. 800 m; BE_RMCA_ARA.Ara.92517.

Paratype. DR Congo • 1 ♀; same data as for holotype; BE_RMCA_ARA.Ara.92518 (designated originally as allotype).

DISTRIBUTION. — Democratic Republic of the Congo.



FIG. 16. — *Pisenor tenuistylus* (Benoit, 1965): **A–J**, holotype, ♂ (BE_RMCA_ARA.Ara.092517): **A**, habitus dorsal; **B**, idem, ventral; **C**, male palp, ventral view; **D**, idem, prolateral view; **E**, idem, retrolateral view; **F**, tibia I, prolateral view; **G**, male palp bulb, dorsal view; **H**, idem, ventral view; **I**, idem, prolateral view; **J**, idem, retrolateral view. Scale bars: A, B, 2 mm; C, E, 0.5 mm; F, 1 mm; G–J, 0.5 mm.



FIG. 17. — *Pisenor tenuistylus* (Benoit, 1965), paratype ♀ (BE_RMCA_ARA.Ara.092518): **A**, habitus dorsal; **B**, habitus ventral; **C**, spermatheca, dorsal view; **D**, eye tubercle, dorsal view. Scale bars: A, B, 2 mm; C, 0.5 mm; D, 1 mm.

Pisenor upembanus (Roewer, 1953)
(Figs 18; 19)

Urothele upembana Roewer, 1953: 63, figs 22A-E, 23A-H, 24A-E (description ♂ and ♀).

Pisenor upembanus – Raven 1985: 112.

TYPE MATERIAL. — **Holotype**. DR Congo • 1 ♂; Haut Lomami, Kaswabilenga; [08°51'S, 26°43'E]; 7-9.X.1947; G. F. de Witte leg.; 680 m; BE_RMCA_ARA.Ara.139899.

Paratypes. DR Congo • 1 ♀; same data as holotype; BE_RMCA_ARA.Ara.139898 (designated originally as allotype) • 1 ♀; Haut Lomami, P.N.U., Kaswabilenga, rivière Lufira; [08°51'S, 26°43'E]; 1.X.1947; G. F. de Witte leg.; 680 m; BE_RMCA_ARA.Ara.139869. • 1 ♀; P.N.U., Munoi, riv. Lupiala affl. dr. Lufira; [8°45'00.0"S, 26°43'60.0"E]; 15.VI.1948; G. F. de Witte leg.; 890m; BE_RMCA_ARA.Ara.139870 • 1 ♀; P.N.U., Kateke, affl. Muovwe et affl. dr. Lufira; [8°45'00.0"S, 26°43'60.0"E]; 23.XI-5.XII.1947; G. F. de Witte leg.; 860 m; BE_RMCA_ARA.Ara.139871 • 3 ♂; Haut Lomami, P.N.U., Kaswabilenga, rivière Lufira; [08°51'S, 26°43'E]; 1.X.1947; G. F. de Witte leg.; 680 m; BE_RMCA_ARA.Ara.139809.

DISTRIBUTION. — Democratic Republic of the Congo.

Genus *Sipalolasma* Simon, 1892
(Figs 20-22)

Sipalolasma Simon, 1892: 123.

TYPE SPECIES. — *Sipalolasma ellioti* Simon, 1892.

DIAGNOSIS. — See Javed *et al.* (2010).

INCLUDED SPECIES. — *Sipalolasma aedificatrix* Abraham, 1924; *S. arthropophys* (Gravely, 1915); *S. bicalcarata* (Simon, 1904); *S. ellioti* Simon, 1892; *S. greeni* Pocock, 1900; *S. humicola* benoit, 1965; *S. ophiriensis* Abraham, 1924; *S. warnantae* Benoit, 1966.

DISTRIBUTION. — Republic of the Congo, Democratic Republic of the Congo, Ethiopia, India, Malaysia, Mozambique, Sri Lanka, South Africa, Zimbabwe.

Sipalolasma humicola (Benoit, 1965) *species inquirenda*
(Fig. 20)

Cyclopelma humicola Benoit, 1965: 303 (description ♀).

Sipalolasma humicola – Raven 1985: 113.



FIG. 18. — *Pisenor upembanus* (Roewer, 1953): **A-F**, holotype, ♂ (BE_RMCA_ARA.Ara.139899): **A**, habitus dorsal; **B**, idem, ventral; **C**, male palp, ventral view; **D**, idem, prolateral view; **E**, idem, retrolateral view; **F**, right tibia I, prolateral view; **G**, male palp bulb, dorsal view; **H**, idem, ventral view; **I**, idem, prolateral view; **J**, idem, retrolateral view. Scale bars: A, B, 2 mm; C-E, 0.5 mm; F, 1 mm; G-J, 0.5 mm.



FIG. 19. — *Pisenor upembanus* (Roewer, 1953): **A-D**, paratype, ♀ (BE_RMCA_ARA.Ara.139809): **A**, habitus dorsal; **B**, idem, ventral; **C**, spermatheca, dorsal view; **D**, eye tubercle, dorsal view. Scale bars: A, B, 2 mm; C, 0.5 mm; D, 1 mm.

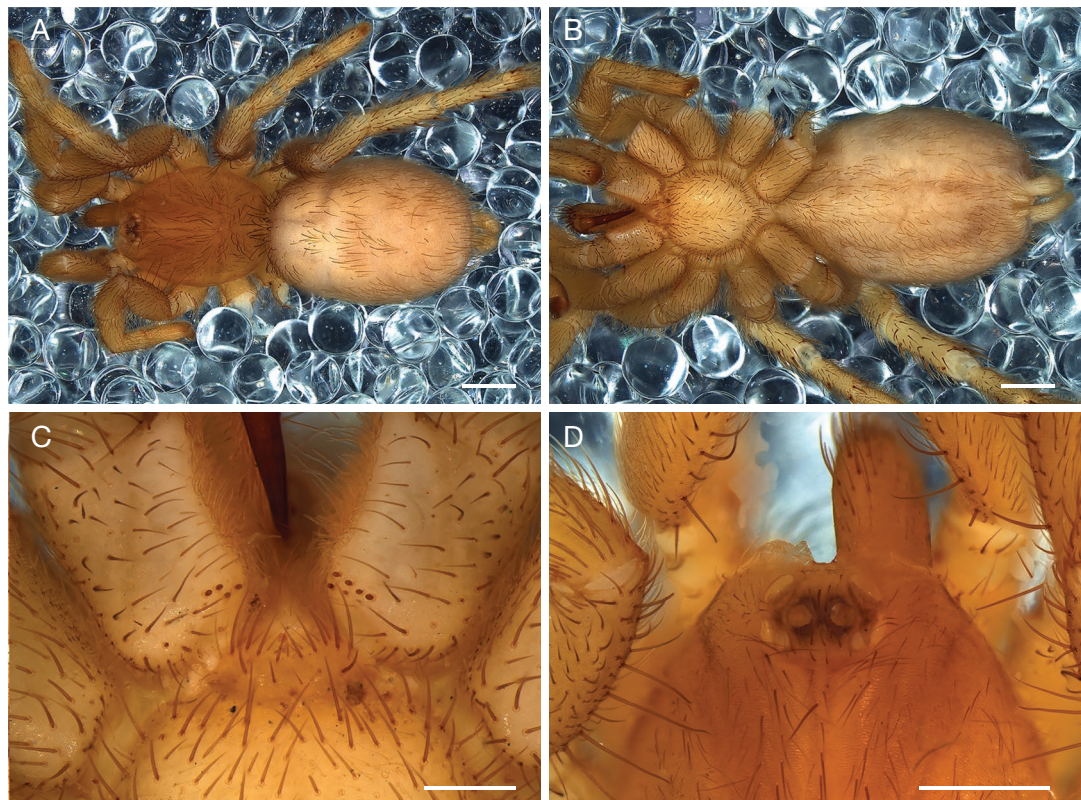


FIG. 20. — *Sipalolasma humicola* (Benoit, 1965): **A-D**, holotype, ♀ (BE_RMCA_ARA.Ara.127614): **A**, habitus dorsal; **B**, idem, ventral; **C**, labium and maxillae, ventral view; **D**, eye tubercle, dorsal view. Scale bars: A, B, 2 mm; C, D, 1 mm.

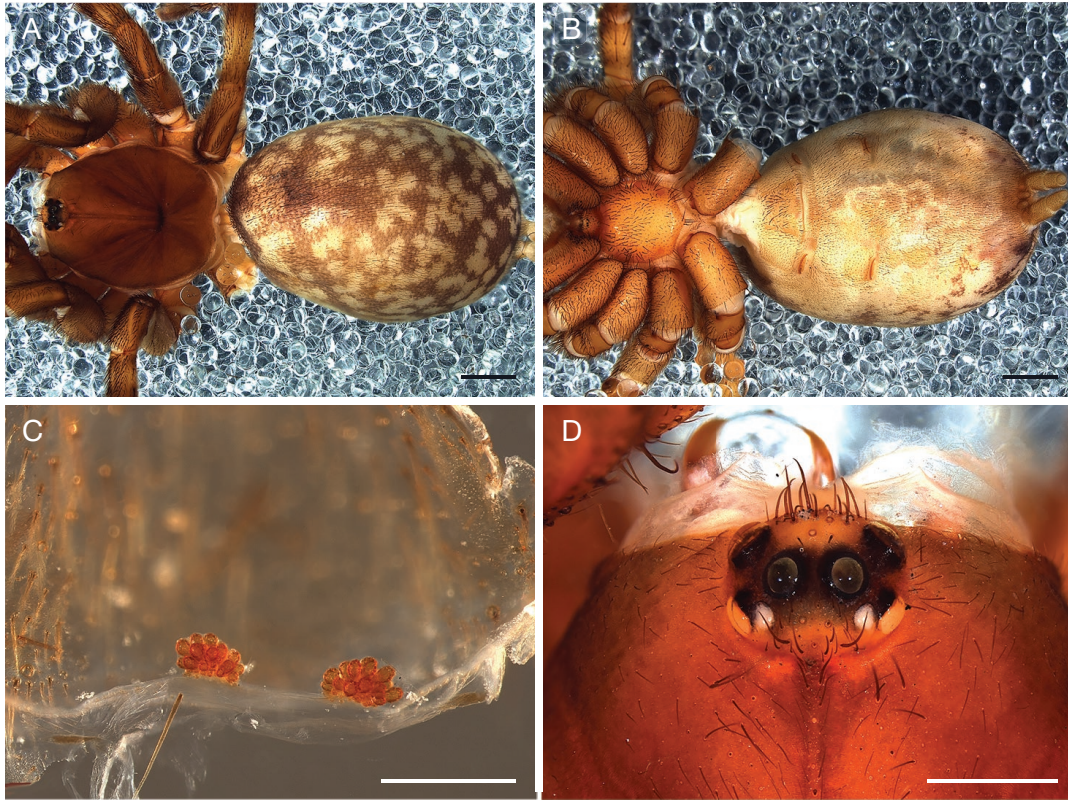


FIG. 21. — *Sipalolasma warnantae* Benoit, 1966: **A–D**: holotype, ♀ (BE_RMCA_ARA.Ara.57324): **A**, habitus dorsal; **B**, idem, ventral; **C**, spermatheca, dorsal view; **D**, eye tubercle, dorsal view. Scale bars: A, B, 2 mm; C, 0.5 mm; D, 1 mm.

TYPE MATERIAL. — **Holotype. Mozambique** • 1 ♀ juvenile; Provincia Sul do Save, Catuana; [26°50'17.6"S, 32°17'12.1"E]; X.1956; T. Lopez leg.; BE_RMCA_ARA.Ara.127614.

DISTRIBUTION. — Mozambique.

REMARK

Benoit (1965) initially considered the type as an adult female. Nevertheless, after examining the holotype, we verify that the epigastric furrow is closed, indicating that this specimen is not an adult. Consequently, *S. humicola* is herein considered as *species inquirenda*.

Sipalolasma warnantae Benoit, 1966 (Figs 21; 22)

Sipalolasma warnantae Benoit, 1966: 237, figs 34–36 (description ♀).

Sipalolasma kissi Benoit, 1966: 240, figs 40–41 (description ♀), **n. syn.**

TYPE MATERIAL. — **Holotype. DR Congo** • 1 ♀; Ituri, Mongbwalu, camp Mundu; [1°55'51.1"N, 30°03'00.8"E]; XI.1939; Mme Lepersonne leg.; BE_RMCA_ARA.Ara.57324.

Paratypes. DR Congo • 1 ♀; Mongbwalu, Mundu; [1°55'51.1"N, 30°03'00.8"E]; XI.1939; Mme. Scheitz leg.; BE_RMCA_ARA.Ara.3489 • 3 ♀; Kivu-S, Uvira, vallée du lac Tanganyika; alt. 700 m; [03°25'00"S, 29°08'00"E]; VIII. 1961; R. Kiss leg.; BE_RMCA_ARA.Ara.128137. • 2 ♀; Uvira, Kalimabenge et Kambekulu; [03°15'00"S, 28°50'00"E]; V. 1962; R. Kiss leg.; BE_RMCA_ARA.Ara.122789.

TYPE MATERIAL OF *SIPALOLASMA KISSI*. — **Holotype. DR Congo** • 1 ♀; Kivu, Territory Uvira, Mugesera; [03°25'S, 29°08'E]; 20.X.1961; R. Kiss leg.; route de Kabindula; BE_RMCA_ARA.Ara.12005. **Paratype. DR Congo** • 1 ♀; Territory Kabare, Fizi; [04°18'S, 28°57'E]; 11.I.1952; R. Kiss leg.; BE_RMCA_ARA.Ara.93111 • 1 ♀; same data as for holotype; BE_RMCA_ARA.Ara.120344.

DISTRIBUTION. — Democratic Republic of the Congo.

REMARK

Based on the similarity of the female spermatheca, we considered *Sipalolasma kissi* Benoit, 1966 (Fig. 22) a junior synonym of *S. warnantae* Benoit, 1966 (Fig. 21).

DISCUSSION

The knowledge about the African fauna of Barychelidae remained limited until the mid-1960s when Pierre L. G. Benoit initiated his research on Mygalomorphae from Central Africa during his tenure at the Royal Museum for Central Africa. Following up on his work, the barychelid spider diversity in Africa went unnoticed for decades. After the description of *Idioctis intertidalis* (Benoit & Legendre, 1968) from Madagascar in 1968, it took 55 years for a new species of Barychelidae deposited in the RMCA to be described from Africa (Gonzalez-Filho, Guadanucci & Brescovit 2023). Therefore, Benoit's legacy for the RMCA and barychelid taxonomy is



FIG. 22. — *Sipalolasma kissi* Benoit, 1966: **A-D**: holotype, ♀ (BE_RMCA_ARA.Ara.120051): **A**, habitus dorsal; **B**, idem, ventral; **C**, spermatheca, dorsal view; **D**, eye tubercle, dorsal view. Scale bars: A, B, 2 mm; C, 0.5 mm; D, 1 mm.

critical, as his work led to the description of 16 species of African barychelids. Despite many researchers examining the collection at RMCA, only some works on Barychelidae have been published.

The RMCA database DaRWIn has 1940 records for Mygalomorphae spiders (BE_RMCA_ARA.Ara.), which comprises 3856 physical samples estimated, whereas 174 records correspond to types, comprising an estimated 295 physical samples. The importance of digital conservation data for collection material is self-evident. Physical spider specimens are mainly preserved in ethanol and slowly deteriorate over time losing information for future studies. The digitisation of type specimens is particularly important, given they represent the definitive reference to species names, and therefore have inestimable value to the institutions that hold them and the scientific community.

Access to the virtual collections of RCMA (available online at <https://virtualcol.africamuseum.be>), which contains original high-quality photographs, allows any scientist to get first and quick access to information about the specimens as they can be seen in the collection (types and non-types), without the need to borrow the physical specimens. This avoids the risk of damage due to excessive and/or poor manipulation or loss during shipping. Furthermore, digitization serves as a kind of “backup” in case of fire, as happened to two Brazilian spiders collection museums – Laboratório de Artrópodes, Instituto Butantan, São Paulo in 2010 and Laboratório de

Aracnologia, Museu Nacional do Rio de Janeiro, Rio de Janeiro in 2018 – that suffered a series of fires in the recent past, resulting in irreparable losses. Although the physical specimens cannot be substituted solely by photographs, this proposal of a digital catalogue contributes to a significant role in preserving institutional collections as it prevents further damage to the types occasioned by manipulation.

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Authors contributions

Conceptualisation: HMOGF. Digital multi-focal photos: HMOGF, AH. Visualisation/Plates: HMOGF, MTCS. Writing – original draft: HMOGF, AH, MTCS, JPLG. Writing – review and editing: JPLG, AH, ADB, HMOGF, MTCS. All authors contributed to the article and approved the submitted version.

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