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Article 23.9 of the *Code* cannot be used to reject the nomen *Hyla quoyi* Bory de Saint-Vincent, 1828 as a *nomen oblitum*

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Holophoront (holotype) of *Hyla gaimardi* Bory de Saint-Vincent, 1828. Plate 125 of Bory de Saint-Vincent (1831) first published in Bory de Saint Vincent (1828a) as plate 3 of part 13 of plates. https://www.archive.org/download/b21301141_0016/page/n404_w497

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Article 23.9 of the *Code* cannot be used to reject the nomen *Hyla quoyi* Bory de Saint-Vincent, 1828 as a *nomen oblitum*

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ABSTRACT
Article 23.9 of the *Code*, introduced in its last 1999 version, allows the validation, in some cases, of a well known junior synonym or homonym as opposed to a senior synonym or homonym that had been ignored in the literature after 1899. In such cases, the junior nomen qualifies as a *nomen protectum* and the senior one as a *nomen oblitum*, a formula redefined in a new sense in this edition. The implementation of this Article requires one to follow strictly several conditions: the invalidation can concern only *senior* synonyms or homonyms (a junior one cannot be a *nomen oblitum*); it must have been *published* in the sense given to this term in the *Code* (i.e., it cannot have been proposed online in an unpublished electronic document); and evidence must be published that the junior synonym or homonym has been used as valid for the same taxon in at least 25 works published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years. A *nomen oblitum* remains an available nomen and can be revalidated subsequently, for example in the case of re-evaluation of a subjective synonymy. Since the implementation of this new Article, some authors have used it without respecting these conditions or some of them: in such cases, the nomenclatural act supposed to have been effected under Article 23.9 is null and void, and the regular Rules of the *Code* must be applied (e.g., through validation of the senior synonym or homonym). A few examples concerning amphibian nomina of the family *Hylidae* illustrate these statements. The statuses of the nomina, spellings, emendations and combinations *Hyla fulva*, *Hyla gaimardi*, *Hyla lesueurii*, *Hyla lesueuri*, *Hyla prasina*, *Hyla quoyi*, *Hyla septentrionalis*, *Hyla suerii*, *Hyla sueurii*, *Rana gaimardii*, *Istriurus lesueurii*, *Istriurus sueurii* and *Trachycephalus marmoratus* are discussed. A lectophoront (lectotype) is designated for *Hyla septentrionalis* and *Trachycephalus marmoratus* and neophoronts (neotypes) are designated for *Hyla fulva*, *Hyla gaimardi* and *Hyla sueurii*.

KEY WORDS
Nomen protectum,
nomenclatural act,
original and subsequent spelling,
unjustified emendation.

RÉSUMÉ
L'Article 23.9 du Code *ne peux pas être utilisé pour rejeter le nomen* Hyla quoyi *Bory de Saint-Vincent, 1828 comme* nomen oblitum.
L'Article 23.9 du *Code* (1999) permet, dans certains cas, de valider un synonyme ou homonyme plus récent bien connu par rapport à un synonyme ou homonyme plus ancien qui a été ignoré dans la littérature après 1899. Dans ces cas, le nomen plus récent est considéré *nomen protectum* et le nomen plus ancien *nomen oblitum*, cette formule étant employée dans un nouveau sens introduit dans cette édition. L'emploi de cet Article demande de remplir plusieurs conditions : l'invalidation ne peut concerner que des synonymes ou homonymes plus anciens (un nomen plus récent ne peut être *nomen oblitum*) ; elle doit être publiée dans le sens donné à ce terme dans le *Code* ; et il faut fournir la preuve que le synonyme plus récent a été utilisé comme valide pour le même taxon dans au moins 25 travaux publiés par au moins 10 auteurs dans les cinquante ans immédiatement précédents et couvrant une période d'au moins dix ans. Un *nomen oblitum* reste un nomen disponible et peut être revalidé ultérieurement, par exemple dans le cas de réévaluation d'une synonymie subjective. Quelques exemples concernant des nomina d'amphibiens de la famille des *Hylidae* illustrent l'application correcte de l'Article 23.9. Les statuts des nomina *Hyla gaimardi*, *Hyla lesueuri*, *Hyla lesueurii*, *Hyla prasina*, *Hyla quoyi*, *Hyla septentrionalis*, *Hyla suerii*, *Hyla sueurii*, *Istriurus lesueurii*, *Istriurus sueurii Rana gaimardii* et *Trachycephalus marmoratus* sont discutés. Un lectophoronte (lectotype) est désigné pour *Hyla septentrionalis* and *Trachycephalus marmoratus* et des néophorontes (néotypes) sont désignés pour *Hyla fulva*, *Hyla gaimardi* et *Hyla sueurii*.

MOTS CLÉS
Nomen protectum, acte nomenclatural, orthographe originale et subséquente, émendation injustifiée.

INTRODUCTION

In zoological nomenclature, the *Code* (Anonymous 1999, 2003, 2012) provides Rules allowing the unambiguous establishment of the valid *nomen* ("scientific name") (for definitions of nomenclatural terms see Dubois 2000, 2005) of a taxon in the frame of a given classification. The nomenclatural process leading to this result consists of three independent stages that can be compared to a three-storey building (Dubois 2005): [F1] nomenclatural availability of nomen; [F2] taxonomic allocation of nomen; and [F3] nomenclatural validity of nomen.

Some zootaxonomists (whether authors, editors or referees) have difficulties understanding or using some of the Articles of the *Code*. Here we will examine, on the basis of a few concrete cases, such problems related mainly to two concepts and sets of Rules, namely "reversal of precedence" and "original" vs "subsequent" spellings.

ABBREVIATION
MNHN Muséum national d'Histoire naturelle, Paris.

REVERSAL OF PRECEDENCE: ARTICLE 23.9 OF THE *CODE*

Whenever several available nomina apply to the same taxon (synonyms) or have the same spelling (homonyms), one of the following criteria allows one to know which one is valid and which one(s) is/are invalid (Dubois 2013): [C1] publication priority; [C2] First Reviser action; [C3] rank precedence; [C4] reversal of precedence; and [C5] action of the Commission under its Plenary Powers. Furthermore, two particular Rules apply to the validity of nomina of the family-series ("family group" or "niveau famille" in the *Code*; see Dubois 2000): [C6] nomen replaced before 1961 (Article 40.2); and [C7] nomen "in use" in higher rank maintained against a senior nomen "in use" at a lower rank (Article 35.5).

The criterion [C4], which did not exist in the previous editions of the *Code*, was introduced in the new Article 23.9 of the so-called "fourth" edition (Anonymous 1999). This new Rule states that when a senior homonym or synonym has not been used as a valid nomen after 1899 (Article 23.9.1.1) and its junior synonym or homonym has been used as valid for the same taxon in at least 25 works published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years (Article 23.9.1.2), the junior synonym or homonym must be maintained as valid (Article 23.9.1). Article 23.9.2 then states that its implementation requires the publication of an explicit statement that the senior nomen qualifies as a *nomen oblitum* and the junior one as a *nomen protectum*, this latter statement being supported by the publication of "evidence that the conditions of Article 23.9.1.2 are met", which requires the provision of a list of at least 25 works corresponding to the criteria listed above. Article 23.9.2 adds: "In the case of subjective synonymy, whenever the names are not regarded as synonyms the older name may be used as valid". This important precision explains why this special procedure is called "reversal of precedence": in such a case, the senior nomen is just "silenced" or "juniorised" (Dubois 2000: 47) relative to the junior one, but it is not "suppressed"; it remains available but may be reinstated as valid if the taxonomic interpretations change.

It is unfortunate that, when implementing this new Rule, the Commission (in charge of updating the *Code*), instead of coining a new term, decided to "recycle" the formula "*nomen oblitum*", which had been used in the *Code* between 6 November 1961 and 1 January 1973, but in a different sense (see Article 23.12), and then removed from the *Code*. In particular, in this previous use the term "*nomen oblitum*" could apply to any nomen, whether senior or junior homonym or synonym, whereas in the new sense this formula can be used only for senior homonyms and synonyms. As will be shown below, some recent authors did not realise this distinction and used the formula in its previous sense, not in its current one.

Beside this terminological problem, the appropriateness of the introduction in the *Code* of this new Article, thus written (i.e., with such low quantitative requirements to qualify "usage"), may be questioned, as it encourages taxonomists to consider the *Code* as a lax system of "recommendations" that can be ignored rather than a set of binding Rules – an attitude which contributes to nomenclatural inaccuracy and chaos (Dubois 2005, 2010, 2011) –, but for the time being this Article is in force in the *Code* and must be followed. As a matter of fact, since its publication, it has been used by some authors to "validate" some junior synonyms or homonyms. In some cases this action was justified, but in others it was not, because this Article was misinterpreted. Four recurring misinterpretations can be pointed out:

[M1] Of course the use of Article 23.9 is necessary and justified only to invalidate a *senior* unused synonym or homonym of a well known nomen, but not to "suppress" a nomen, which does not threaten any other valid nomen, just because it is "old" and "forgotten". Such a mistake is just an avatar of a more general one, which consists in believing that nomina considered once as subjective synonyms are forever expelled from zoological nomenclature – a misunderstanding which is at the source of many nomenclatural errors. Once again, it should be clear that, in its current and new definition in the 1999 edition of the *Code*, the formula "*nomen oblitum*" can only apply to a *senior* synonym or homonym, not to a junior one.

[M2] The recourse to Article 23.9 is a *nomenclatural act*. As such, to be *available*, it must be *published*, in the sense given to this term in Article 8 of the *Code*, i.e., either printed on paper or distributed electronically online, but in both cases respecting the criteria for publication availability given in this Article. This excludes oral communication in meetings or in private conversations, letters or emails, as well as electronic communication through blogs, websites, or any kind of "electronic publications" not registered in *Zoobank* and failing to respect the criteria of the 2012 Amendment of the *Code* (Anonymous 2012).

[M3] To be valid, this nomenclatural act must be published following the requirements of Articles 23.9.1.2 and 23.9.2. In particular, a list of at least 25 works corresponding to these criteria must be provided. If this is not done, the nomenclatural act is null and void, which means that the regular Rules of the *Code* must be followed and precedence should not be reversed.

[M4] As shown by the list of criteria [C1] to [C7] above, reversal of precedence is just one among several ways in which a nomen can be invalidated. But this invalidation may be reversible, for example in the case of re-evaluation of a subjective synonymy. Thus, although invalidated by reversal of precedence, a nomen remains available – just like in the case of invalidation by priority or First Reviser action bearing on subjective synonyms. It is therefore wrong to claim that such a nomen is unavailable.

QUOY & GAIMARD (1824)

In the zoological part of the *Voyage autour du monde exécuté sur les corvettes de S. M. l'Uranie et la Physicienne*, Quoy & Gaimard (1824) briefly described *Hyla fulva*, indicating "Rio de Janeiro sur la route du jardin botanique" as onymotope (type locality). The description was most probably based on a single specimen, a holophoront, since for two of the five herpetological species described by Quoy & Gaimard, the number of specimens available was given. Freycinet (1825) mentioned that some members of the expedition of the *Uranie* traveled from Rio de Janeiro to the botanical garden on 22 January 1818. This might be the date of collection of the specimen. Gaimard, one of the naturalists in charge of the zoological collections, and Gaudichaud, pharmacist and in charge of the botanical collection, participated in this journey. These specimens were probably part of those sent from Mauritius Island to the Paris Muséum in May 1818 (Brosse 1983). Although the MNHN collection holds specimens donated by Quoy and Gaimard, the specimen of *Hyla fulva* was not mentioned by Duméril & Bibron (1841) and is not listed in the ancient catalogues. As we cannot locate the onymophoronts (type specimens), we have to consider them lost.

BORY DE SAINT-VINCENT (1828a, b, 1831)

The *Dictionnaire classique d'histoire naturelle* was published in 16 volumes from 1822 to 1831. In the introduction of the first of these volumes, Bory de Saint-Vincent (1822) explained the function and value of figures for natural history and insisted on his efforts to publish with each volume a part of 10 plates representing new or poorly known specimens. Indeed, with every volume a part of 10 plates was published. The plates were published without plate number but were attributed a number in the introduction to the *Explication des planches* (Bory de Saint-Vincent 1831). We examined five copies of this book (either on paper in the MNHN libraries or as PDFs obtained from the *Biodiversity Heritage Library*). In one of them the plates are bound within the text of the dictionaries and in others these plates are bound as a separate volume.

In the exemplar with the bookshelf number 8°Bn.414 in the Paris Muséum General Library (BC), we found evidence for the publication dates of the plates. The original envelopes of 13 of the 16 parts of the plates, that give the list of the plates of each part, had been bound into the volume. The plates of

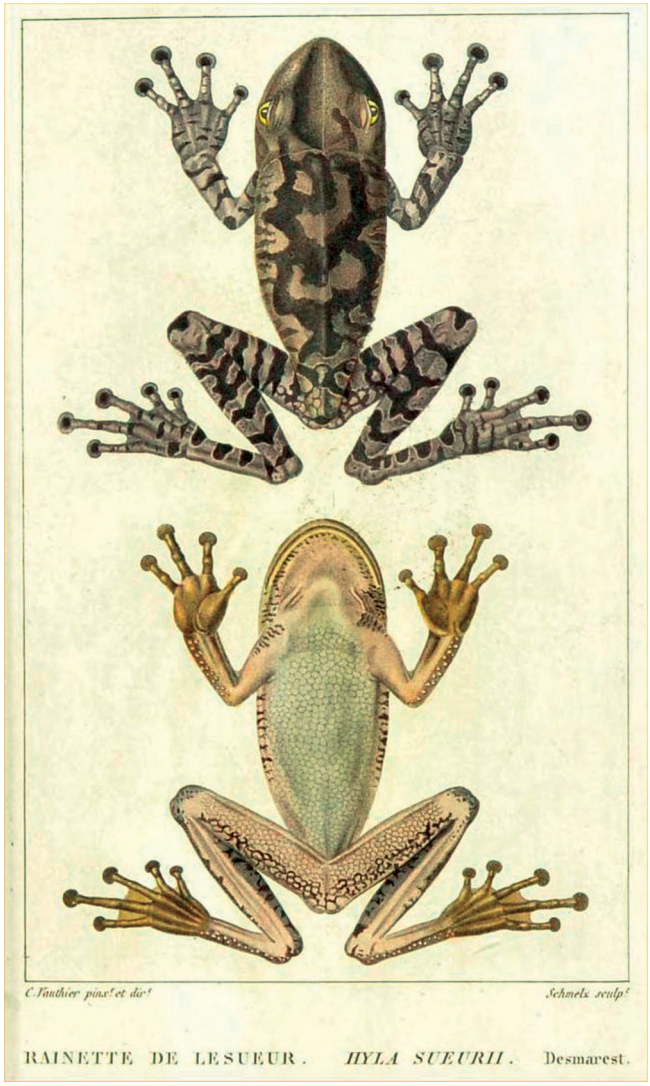

Fig. 1. — Colour plate of holophoront (holotype) of *Hyla sueurii* Desmarest, 1825. Plate 124 of Bory de Saint-Vincent (1831) first published in Bory de Saint Vincent (1825) as plate 4 of part 8 of plates. https://www.archive.org/download/b21301141_0016/page/n402_w497.

the *Dictionnaire classique d'histoire naturelle* were not published in the same order as their citation in the volumes, but each part held a mixture of plates of species or objects.

In volume 14 of his *Dictionnaire classique d'histoire naturelle*, Bory de Saint-Vincent (1828b) mentioned several species of the genus *Hyla*. The publication dates given on the envelopes of the parts holding the plates indicate that the nomina of hylid species were in fact made available first from the plates, not from the text as it had been considered until now. This entails a change in the publication dates and changes in the original orthography of the nomina, as we will describe below.

[N1] *Hyla sueurii* Desmarest, 1825

This nomen is available from part 8 of plates from September 1825 (Bory de Saint-Vincent 1825), as a Latin name is provided on the plate with the preliminary number 4 for the specimen figured (Fig. 1). Before 1931, a figure associated to a Latin nomen is considered as sufficient indication to make the nomen available (Article 12.2.7). The nomen is credited to Desmarest, and although he is not author of any of the entries of the *Dictionnaire*, he has to be considered author of this nomen. The onomatophore is the figured specimen by original monophory ('monotypy' according to the terminology of the *Code*, but see Dubois 2005). The description given in Bory de Saint-Vincent (1828b) can be unambiguously linked to this drawing, so we know that both the figure and the description had been made from a single specimen from "la Havane" (Havana, Cuba) where it had been received by Anselme Gaétan Desmarest. This specimen was reported by Bory de Saint-Vincent (1828b: 452) to have been 'completely deteriorated' ("totalement dégradé"). We do not know if it was ever in the Paris Muséum collection, as Desmarest was not working in the Muséum but at the *École nationale véterinaire* of Alfort (Val-de-Marne), East of Paris. In the description of the new rodent genus *Carpomys*, Desmarest (1823) mentioned that his friend Marcellin Fournier had brought him from his travel to Cuba a collection of fishes and this new rodent. The unique frog specimen might have been part of this donation. Nowadays the herpetology collection of the Paris Muséum does not hold any amphibian specimens from this collection, and in particular not the holophoront of *Hyla sueurii*, as was already the case at the time of Duméril & Bibron's (1841) book. The herpetology collection holds a series of specimens that are the symphoronts of *Trachycephalus marmoratus* Duméril & Bibron, 1841, a nomen that is currently considered a synonym of the name *Hyla septentrionalis* Duméril & Bibron, 1841 (Myers 1950). As the holophoront of *Hyla sueurii* has to be considered lost, in order to stabilise this situation we designate one of them, MNHN-RA-0.4613 as neophoront (neotype) of *Hyla sueurii* Desmarest, 1825 (Fig. 2). We give the description and measurements of this specimen in Appendix 1.

When first published (in the plate), the nomen of this species appeared under the spelling "*Hyla sueurii*" (Bory de Saint Vincent *et al.* 1825: i, plate with preliminary number 4). A distinct spelling "*Hyla Lesueurii*", appeared later in the part written by Bory de Saint-Vincent (1828b: 452). Finally, Bory de Saint-Vincent (1831: 133) reverted to the spelling *Hyla sueurii* for this frog. Bory de Saint-Vincent was known for introducing numerous errors when writing (Lauzun 1908), and there is no indication of a voluntary change, so *Hyla lesueurii* has to be considered an incorrect subsequent spelling, which has no separate nomenclatural availability and does not enter into homonymy.

[N2] *Hyla gaimardi* Bory de Saint-Vincent, 1828

This nomen was first published as *Hyla gaimardi* (Bory de Saint-Vincent 1828a: ii, plate with preliminary number 3) on a good figure (Fig. 3) where it was made available (Article 12.2.7). But later Bory de Saint-Vincent (1828b: 452) used the spelling *gaimardii* for this epithet, and furthermore in combination with the genus nomen *Rana*. The drawing was made from a single frog but the description of this species

Fig. 2. — Lectophoront (lectotype) of *Trachycephalus marmoratus* Duméril & Bibron, 1841 and *Hyla septentrionalis* Duméril & Bibron, 1841, and neophoront (neotype) of *Hyla sueurii* Desmarest, 1825, MNHN-RA-0.4613, adult female (SVL 83.6 mm) donated by Ramon de la Sagra: **A**, dorsal view; **B**, lateral view of head and body; **C**, ventral view. Scale bar: 50 mm.

was stated to have been made from an unspecified number of specimens taken by Gaimard in the neighbourhood of Rio de Janeiro (Brazil): "Cette espèce a été prise par Gaimard, à qui nous l'avons dédiée, aux environs de Rio-Janeiro" (Bory de Saint-Vincent 1828b: 453). This nominal species and these specimens were not mentioned by Duméril & Bibron (1841).

Bory de Saint-Vincent (1828b: 452, 453) provided a detailed description of this species, which allows nowadays its taxonomic allocation. He stated that this species was "close" ("voisine") to, but distinct from, Laurenti's (1768) *Rana maxima*, of which he considered rightly *Hyla palmata* La Cepède, 1788 (which is a new replacement nomen of the latter), to be a synonym. On the other hand, he stated that the new species, collected by Gaimard, had already been described by this author: 'it is the *Hyla fulva* of the Voyage de l'Uranie, p. 182' ("c'est la *Hyla fulva* du Voyage de l'Uranie, p. 182"). Therefore the nomen *Hyla fulva* is unambiguously linked to the nomen *Hyla gaimardi* and these two nomina are to be considered subjective synonyms, as they are based in part on the same onymophoront(s) and the same onymotope, this frog being reported for having been found 'on the road of the botanical garden' ("sur la route du jardin botanique") of Rio de Janeiro (Brazil). Bory de Saint

Fig. 3. — Colour plate of holophoront (holotype) of *Hyla gaimardi* Bory de Saint-Vincent, 1828. Plate 125 of Bory de Saint-Vincent (1831) first published in Bory de Saint Vincent (1828a) as plate 3 of part 13 of plates. https://www.archive.org/download/b21301141_0016/page/n404_w497

Vincent studied various collections that were accessible in France when preparing his *Dictionnaire* (Ferrière 2009). In this case also, as we cannot locate the type specimens, we have to consider that they are lost. Beside the collections, Bory de Saint-Vincent might have based his figures and descriptions on the fieldnotes and drawings prepared by Quoy and Gaimard during the *Voyage*. Quoy wrote a "*Journal*" on his observations and more than 500 drawings of the *Voyage* arrived in Paris. The journal of Quoy is kept in the Musée de la Défense in Rochefort (Charente-Maritime, France) but has only a short note on frogs from the first stay in Rio (corresponding to the text in the publication of Freycinet). No amphibian or reptiles drawings can be found, neither at the libraries of the MNHN, nor in the archives of the French *Académie des Sciences*, nor in the archives of the *Service historique de la Défense*, nor in the *Musée national de la Marine – École de Médecine navale* in Rochefort (e-mails from Denis Roland of 13.II.2017 and Pierre Chaucerel of 16.II.2017).

There are historical specimens in the Paris collections that might be good candidates for a neophoront designation. Gaudichaud, the pharmacist of the *Voyage of the Uranie*, made a *Voyage* on the ship *L'Herminie* to South America when he spent 15 month in Brazil (Gaudichaud 1843; Courcou 1999) and a second circumnavigation on the *Bonite*; the ship stayed from 24 March to 3 April 1836 in Rio de Janeiro. He donated an important number of specimens to the Paris Muséum herpetology collection but there are no precise collection dates in the catalogues. The *Catalogue des entrées 1832-1838* of the *Reptiles et Amphibiens* collections mentions that Gaudichaud donated five "*Hyla*" specimens in September 1833 and 4 "*Hyla*" specimens in December 1837. Among these specimens, two specimens which are still in the Paris Muséum's collection can be identified as onymotopic specimens (topotypes), collected by Gaudichaud in Rio de Janeiro: MNHN-RA-0.4620, adult female, SVL 82.0 mm and MNHN-RA-0.4622, adult female, SVL 94.3 mm. Their morphological characters correspond to those of the species *Hyla faber* Wied-Neuwied, 1821, a nomen considered a senior subjective synonym of *Hyla fulva* Quoy & Gaimard, 1824 since Wied (1825: 603-604). We hereby designate the specimen MNHN-RA-0.4620 as neophoront (neotype) of *Hyla fulva* Quoy & Gaimard, 1824 (fig. 4) and as neophoront of *Hyla gaimardi* Bory de Saint-Vincent, 1828. We give the description and measurements of this specimen in Appendix 1.

The nomen of this species appeared under a different combination and spelling in Bory de Saint-Vincent (1828b): "*Rana Gaimardii*" (page 452). The generic nomen *Rana* used in this second combination seems to be a simple result of inattention from the part of the author, as this species appears in an account devoted to the genus *Hyla*. The junior spelling of the specific epithet qualifies as an "incorrect subsequent spelling", which has no separate availability and does not enter into homonymy.

[N3] *Hyla quoyi* Bory de Saint-Vincent, 1828

This species was illustrated and named by Bory de Saint-Vincent (1828a: ii, N° 4) (Fig. 5). The author stated that this specimen came from the same place as the precedent species (*Hyla gaimardi*), i.e., from the neighbourhood of Rio de Janeiro (Brazil). Duméril & Bibron (1841) and Guibé (1950) did not mention this nomen or the specimen(s) on which it was based. No specimen of '*Hypsiboas prasinus*', the nomen recently used for this species (see below), from Rio de Janeiro is in the holdings of the Paris Muséum.

[N4] *Hyla communis* Bory de Saint-Vincent, 1828

This new nomen was explicitly presented by Bory de Saint-Vincent (1828b: 454) as a *nomen novum* for *Rana arborea* Linnaeus, 1758, of which it is, therefore, an available but invalid junior objective synonym. This nomen was ignored by all authors until now and was not mentioned in version 6.0 (accessed on 15.I.2017) of the website *Amphibian Species of the World* (*ASW*) [http://research.amnh.org/vz/herpetology/amphibia/]. Caramaschi & Niemeyer (2010: 63) mentioned it in a citation of Bory de Saint-Vincent (1828b) but did not discuss its status.

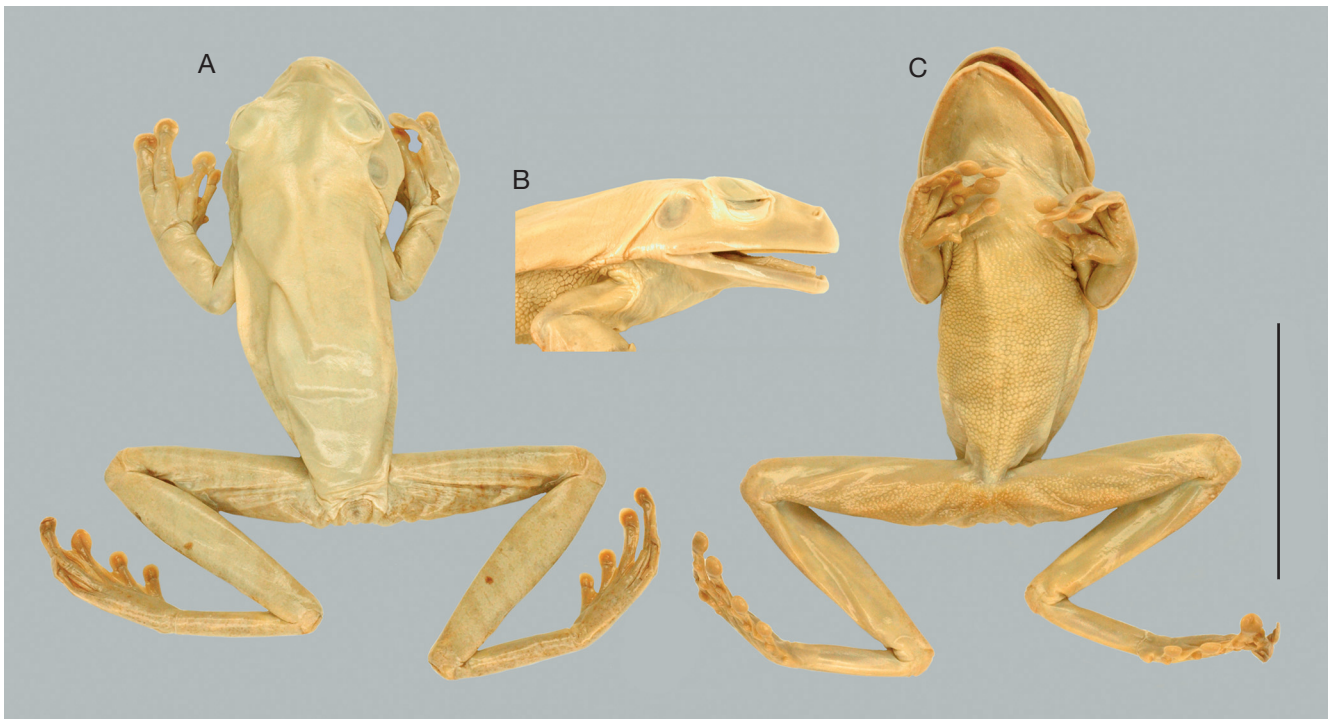

Fig. 4. — Neophoront (neotype) of *Hyla fulva* Quoy & Gaimard, 1824 and *Hyla gaimardi* Bory de Saint-Vincent, 1828, MNHN-RA-0.4622, adult female (SVL 96.1 mm) collected by Gaudichaud in Rio de Janeiro (Brasil) in 1831-1832. **A**, dorsal view; **B**, lateral view of head; **C**, ventral view. Scale bar: 50 mm.

SHEA (2001)

Shea (2001) discussed the status of the nomen "*Hyla lesueurii* Bory de Saint-Vincent, 1828" presented above under [N1]. From an analysis of the original figure and subsequent description (see above), he concluded that the species at stake was that described later by Duméril & Bibron (1841) under the nomen *Hyla septentrionalis* and now known as *Osteopilus septentrionalis*. He stated that he had been unable to identify any subsequent usage of Bory de Saint-Vincent's nomen in the scientific literature and he provided a list of 11 works by more than 10 authors over the last century using the nomen *septentrionalis* Duméril & Bibron, 1841 as valid. For one of these references, he wrote: "Duellman and Crombie, 1970, and references therein", but he did not precise how many references were cited in this paper and if they all mentioned this specific nomen. If at least 14 references being clearly in this case had been cited in this paper, this would have raised the total number of references to 25, thus complying with the requirements of Article 23.9.1.2, unless a rigid interpretation of this Article (Welter-Schultes & Klug 2011) was adopted, which might require an "hyper-validation" of the nomen *Hyla septentrionalis* (see Dubois & Bour 2012). But it is not the case here because the paper of Duellman & Crombie (1970) mentions only two references associated with the nomen *septentrionalis* in the synonymy of the species (Barbour 1937; Mertens 1938), both prior to the 50 years limit, and five, not cited in Shea (2001), in which this epithet appears in the title of the work (Trapido 1947; Mittleman 1950; Schwartz 1952; Allen & Neill 1953; Trueb 1966), of which three that can be retained for validation of the nomen. Therefore, Shea's (2001) work provides explicitly only 14 references (11 directly and three indirectly) to the use of *septentrionalis* Duméril & Bibron, 1841 as valid after 1899, and this is not enough for the validation of this nomen against Bory de Saint-Vincent's (1828a) senior synonym under Article 23.9. In order to settle this situation and to validate this nomen, we hereby provide in Appendix 2 a list of 25 post-1968 references by 70 different authors using *septentrionalis* as valid.

As a matter of fact, Shea (2001) considered the spelling "*Hyla lesueurii*" as the correct original spelling of the new nomen introduced in Bory de Saint-Vincent (1828b), and the spelling "*Hyla sueurii*" as an "apparent emendation" (an unclear formula) of the latter, introduced in Bory de Saint-Vincent (1831). However, as shown above, this is not true, as *Hyla sueurii* was made available already in 1825. The spelling "*Hyla lesueurii*" in Bory de Saint-Vincent (1828b) is just an incorrect subsequent spelling devoid of nomenclatural availability. Therefore it does not preoccupy the spelling of its epithet and the nomen *Hyla lesueuri* Duméril & Bibron, 1841 – which applies to a distinct, Australian, species now referred to the genus *Ranoidea* Tschudi, 1838 (see Dubois & Frétey 2016) – is not threatened by a senior homonym. There was, thus, no need to provide 25 references to "validate" it through Article 23.9.1.2 against "*Hyla lesueurii* Bory de Saint-Vincent, 1828" as was done by Shea (2001: 339).

It may be noted that Duméril & Bibron's (1841) nomen *Hyla lesueuri* was in turn subject to a spelling change but in the opposite direction. In Duméril *et al.* (1854: 406), the

Fig. 5. — Colour plate of holophoront (holotype) of *Hyla quoyi* Bory de Saint-Vincent, 1828. Plate 126 of Bory de Saint-Vincent (1831) first published in Bory de Saint Vincent (1828*a*) as plate 4 of part 13 of plates. https://www.archive.org/download/b21301141_0016/page/n406_w497

nomen of this species is spelt "*Hyla Suerii*". No justification is provided for this spelling change, but it is parallel to the replacement, introduced on page 274 of the same volume, of the lizard nomen *Istriurus Lesueurii*, originally proposed by Duméril & Bibron (1837: 384), by the nomen "*Istriurus Sueurii*". This situation corresponds to that described as follows in Article 33.2.1 of the *Code*: "when two or more names in the same work are treated in a similar way". This Article states that this situation must be interpreted as a "demonstrably intentional change in the original spelling of a name other than a mandatory change", which qualifies the new spelling as an emendation. Therefore both nomina *Istriurus sueurii* and *Hyla suerii* in Duméril *et al.* (1854) are unjustified emendations (Article 33.2.3) and thus available but invalid junior objective synonyms of respectively *Istriurus lesueurii* Duméril & Bibron, 1837 and *Hyla lesueuri* Duméril & Bibron, 1841, which should be added to the respective synonymic lists of these two nomina.

CARAMASCHI & NIEMEYER (2010)

Caramaschi & Niemeyer (2010) discussed the statuses of the nomina [N2] *Hyla gaimardi* and [N3] *Hyla quoyi* presented above. Let us consider these two nomina successively.

[N2] *Hyla gaimardi* Bory de Saint-Vincent, 1828

Caramaschi & Niemeyer (2010: 63, 64) discussed the taxonomic status of this nomen and, on the basis of the original figure and subsequent description (see above), concluded that it applies to the species described by Wied-Neuwied (1821: 249) as *Hyla faber*. They considered Bory de Saint-Vincent's species as a "brand new species" which is true from a nomenclatural point of view, as shown above and noted that it "corresponds to *Hyla fulva* of the 'Voyage Uranie'". As a matter of fact, these two nominal species are based in part on the same specimen(s). To stabilise their respective statuses, we designated above the same specimen MNHN-RA-0.4622 as neotype of both *Hyla fulva* and *Hyla gaimardi*, which are invalid junior subjective synonyms of *Hyla faber*. As shown by Dubois (2017), this species should now be known as *Boana faber* (Wied-Neuwied, 1821).

Caramaschi & Niemeyer (2010) considered the spelling "*gaimardii*" as the correct original spelling of the new nomen introduced in Bory de Saint-Vincent (1828b), instead of the spelling "*gaimardi*". However, as shown above, *Hyla gaimardi* was the correct original nomen (Bory de Saint-Vincent 1828a) and *Hyla gaimardii* was an incorrect subsequent spelling, without nomenclatural status, introduced by Bory de Saint-Vincent 1828b.

Finally, concerning this species, Caramaschi & Niemeyer (2010: 64) added the following comment, which was not only irrelevant (as it did not change their nomenclatural conclusions) but also unjustified and wrong, as it illustrates the misunderstandings [M1] to [M4] explained above: "Frost (2010) correctly considered *Rana gaimardi* a *nomen oblitum* under Article 23.9.1 of the International Code of Zoological Nomenclature (ICZN 1999); however, even considering that name an available name, it does not threatens [*sic*] the nomenclatural status of no [*sic*] other species because it is clearly a junior subjective synonym of *H. faber*." This sentence contains four distinct nomenclatural errors.

[M1] The recourse to Article 23.9.1 was in fact not at all justified in this case, as such a recourse is necessary only for the invalidation of a *senior* unused synonym of a well-known nomen, but in this case the invalidation of *Hyla gaimardi* was already effective through simple publication priority! This sentence suggests that Article 23.9.1 would allow one to 'suppress' some nomina simply because they are 'old' and 'unused', which is completely wrong.

[M2] In this sentence, the citation of "Frost (2010)" refers to the version 5.4, dated 8 April 2010, of the website *Amphibian Species of the World*, as accessed on 17 June 2010. However, this reference does not point to a permanent scientific work: the version 5.4 of *ASW* is no longer available on the net, and concerning nomenclatural acts it is relevant to cite only permanent scientific references. Strangely, although

Caramaschi & Niemeyer (2010) credited this interpretation to version 5.4 of *ASW*, in version 6.0 currently online its origin was reversed: "A *nomen oblitum* under 23.9.1 of the Interational [*sic*] Code of Zoological Nomenclature (1999) according to Caramaschi and Niemeyer, 2010".

[M3] It is misleading to state that *ASW* "correctly considered *Rana gaimardi* a *nomen oblitum* under Article 23.9.1", because to be available this nomenclatural act should have been accompanied by 25 references corresponding to the criteria of this Article. As Caramaschi & Niemeyer (2010) did not provide such a list, they simply did not implement this nomenclatural act.

[M4] Finally, the statement "even considering that name an available name" is irrelevant and misleading because, if this nomenclatural act had indeed been effected, it would not have resulted in removing the nomenclatural *availability* of *Hyla gaimardi*, but only in making it *invalid*, but only *as long as* it is considered a subjective synonym of *Hyla faber*.

[N3] *Hyla quoyi* Bory de Saint-Vincent, 1828

Caramaschi & Niemeyer (2010: 64, 65) discussed the taxonomic status of this nomen and, on the basis of the original figure and subsequent description, concluded that it applies to the species described by Burmeister (1856: 106) as *Hyla (Hyla) prasina* on the basis of a specimen from Nova Friburgo, Rio de Janeiro (Brazil).

Contrary to the nomen *Hyla septentrionalis* discussed above, the species nomen *Hyla prasina* has been used very rarely in the scientific literature, so that the normal course in this case would have been to simply validate the senior nomen *quoyi*, but Caramaschi & Niemeyer (2010: 64, 65) made another choice and wrote: "Frost (2010) considered *Hyla quoyi* Bory de Saint-Vincent, 1828 as *incertae sedis* in the Hylinae and correctly considered it as a *nomen oblitum* under the Article 23.9.1 of the International Code of Zoological Nomenclature (ICZN 1999). The name *Hyla quoyi* Bory de Saint-Vincent, 1828, if available, would replace the well established name *Hypsiboas prasinus* (Burmeister, 1856); therefore, to improve the nomenclatural status of *Hyla quoyi*, it must be included in the synonymy of *H. prasinus* as a *nomen oblitum*, as proposed by Shea (2001) for *Hyla lesueurii*. *Hypsiboas prasinus* (Burmeister, 1856) is a *nomen protectum* (ICZN 1999) relative to *Hyla quoyi* Bory de Saint-Vincent, 1828, a *nomen oblitum*." Version 6.0 of *ASW* supports this statement, but here also reverses its origin: "A *nomen oblitum* under 23.9.1 of the Interational [*sic*] Code of Zoological Nomenclature (1999) according to Caramaschi and Niemeyer, 2010".

The statements in these quotes are wrong, because they repeat the errors [M2] to [M4] stressed above for the nomen *Hyla gaimardi*. Furthermore, and even more importantly, this nomenclatural act cannot be justified because, in order to use Article 23.9 to invalidate *Hyla quoyi* and validate *Hyla prasina*, the references of at least 25 works published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years should be provided. We carried out a search on *Web of Science Core Collection* and *Web of Science Zoological Record*, and we recovered only 11 such references, so that it is clear that the conditions of implementation of Article 23.9 are not complied with and the regular Rules of the *Code* must be applied. In conclusion, this species should now be known under the nomen *Boana quoyi* (see Dubois 2017).

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APPENDICES

Appendix 1. — Descriptions of onymophoronts (type specimens).

Description of the lectophoront (lectotype) of *Trachycephalus marmoratus* Duméril & Bibron, 1841 and *Hyla septentrionalis* Duméril & Bibron, 1841, and neophoront (neotype) of *Hyla sueurii* Desmarest, 1825

Onymophoront. — MNHN-RA-0.4613, adult female donated by Ramon de la Sagra (Fig. 2).

Morphological description

Specimen in mediocre condition. Specimen of moderate size (SVL 83.6 mm), rather robust. Head of moderate size, as long (HL 29.0 mm; MN 25.1 mm; MFE 19.0 mm; MBE 12.4 mm) as wide (HW 29.1 mm), flat. Snout rounded, protruding; its length (SL 13.1 mm) longer than horizontal diameter of eye (EL 9.2 mm). Canthus rostralis rather sharp, loreal region concave, at an obtuse angle to upper head. Interobital space concave, larger (IUE 10.9 mm) than upper eyelid (UEW 6.1 mm) and internarial distance (IN 5.7 mm); distance between front of eyes (IFE 15.1 mm) about three fifth of distance between back of eyes (IBE 25.4 mm). Nostrils rounded, with small flap of skin, closer to tip of snout (NS 4.6 mm) than to eye (EN 7.3 mm). Pupil rounded. Tympanum very distinct, oval oblique, its diameter (TYD 5.92 mm) about four times its distance from eye (TYE 2.37 mm). Pineal ocellus absent. Vomerine ridges present, bearing 8 teeth, between choanae, perpendicular to body axis, less close to choanae than to each other, much longer than distance between them. Tongue very large rounded, not emarginate; median lingual process absent. Tooth-like bony projections on maxilla absent.

Forearm short, moderately thick (FLL 17.1 mm), shorter than length of hand (HAL 23.3 mm), not enlarged. Fingers I and II short, moderately thin, fingers III and IV long (TFL 14.2 mm). Relative length of fingers, shortest to longest: I < II < IV < III. Tips of toes rounded, very enlarged, with circummarginal grooves (WAI 2.14 mm; PAI 3.76 mm; WAII 2.20 mm; PAII 5.19 mm; WAIII 2.07 mm; PAIII 5.19 mm; WAIV 2.59 mm; PAIV 5.19 mm). Fingers I-IV with fringes; with rudimentary webbing: I 3 – 3 II 2 – 3 III 3 – 2 ⅔ IV. Subarticular tubercles small, very prominent, rounded or oval, single, but distal tubercle of finger II doubled and of finger IV bearing two tubercles, all present. Prepollex oval, prominent; numerous small tubercles on palm.

Shank four times longer (TL 42.4 mm) than their maximum width (TW 10.7 mm), longer than thigh (40.5 mm) and distance from base of internal metatarsal tubercle to tip of toe IV (FOL 34.6 mm). Toes long, thin; toe IV rather long (FTL 17.8 mm), about third of distance from base of tarsus to tip of toe IV (TFOL 54.6 mm). Relative length of toes, shortest to longest: I < II < V < III < IV. Tips of toes rounded, very enlarged with circummarginal grooves (WPI 1.30 mm; PPI 3.11 mm; WPII 1.43 mm; PPII 3.95 mm; WPIII 1.75 mm; PPIII 4.21 mm; WPIV 1.43 mm; PPIV 4.15 mm; WPV 1.56 mm; PPV 4.15 mm). Webbing moderate: I 1 – 2 II 1 – 2 III 1 – 2 IV 2 – 1 V (WTF 7.4 mm; WFF 7.5 mm; WI 6.7 mm; WII 6.6 mm; MTTF 19.7 mm; MTFF 21.5 mm; TFTF 10.7 mm; FFTF 7.0 mm). Dermal ridge along toe V well developed, from tip of toe to base of toe. Subarticular tubercles very prominent, rounded, simple, all present. Inner metatarsal tubercle short, prominent; its length (IMT 4.0 mm) 2.7 times in length of to I (ITL 10.8 mm). Tarsal ridge present, poorly distinct. Outer metatarsal tubercles absent; numerous tubercles on sole; tarsal tubercles absent.

Skin of dorsal parts of body: snout and side of head smooth between the eyes granular with horny spinules; supratympanic fold distinct, from eye to far behind upper arm (60% of its length); co-ossified skin on head present, covering region from behind nostrils, extending to eyelids and tympanum and to behind eyes; back and upper flanks bearing isolated rounded glandular warts; lower part of flanks with dense glandular warts. Dorsolateral folds absent. Dorsal parts of limbs smooth. Skin of ventral parts of body and thigh: with regularly set glandular warts ("treefrog belly skin"), less dense of throat and chest. No macroglands.

Coloration in alcohol

Dorsal and lateral parts of head and body: back and flanks light brown with darker dots; a whitish zone with brown marbling in groin; loreal and tympanic region light brown; tympanum transparent light brown. Dorsal parts of limbs: light brown with indistinct darker bands; posterior part of thigh brown with round white spots, densely set. Ventral parts light brown. Webbing: light brown.

Sex identification

A convoluted, glandular oviduct and ovaries with small oocytes and with black pigments (remnants of follicles). Adult female after egg laying.

Comment

The specimen is part of six symphoronts: three symphoronts donated by de la Sagra (the lectophoront MNHN-RA-0.4613; MNHN-RA-0.4612, adult male, 64.1 mm; MNHN-RA-1991.1113, adult male, 61.3 mm) and three symphoronts donated by Simon Barthélemy Joseph Noël Delamorinière (name written also Noël de la Morinière).

There are two problems concerning these symphoronts, the lectophoront designation of Guibé (1950) and the origin of the specimens of Delamorinière.

Guibé (1950) designated the largest specimen ("85 mm") as "holotype" and the two other smaller specimens ("60-65 mm") collected by de la Sagra as "paratypes". When doing so he made

an error in citing the catalogue labels, as the larger specimen – which is also the specimen for which Duméril & Bibron (1841: 540) gave a head length of 25 mm and a body length of 62 mm, the total of which, 87 mm, is close to the measurement indicated by Guibé (1950) and to the measurement found by us (83.6 mm) – bears the collection number MNHN-RA-0.4613. The collection number MNHN-RA-0.4612 was that attributed to the two smaller specimens of which one now is labelled MNHN-RA-1991.1113 for individualisation of specimens in the collection. Furthermore this lectotype designation is not valid according to Article 74.6 of the ICZN as Duméril & Bibron (1841: 540) when making the nomen available referred to a great number of specimens, clearly mentioning that the original description was based on more than a single specimen.

Noël Delamorinière (1765-1822), who was famous for his travel to Norway and his interest in Viking culture, gave a series of specimens to the Muséum's collection that was supposed to have come from Cap Nord (North Cape, Norway). Tschudi (1838) mentioned these specimens with a geographical coordinate of the locality, which is the first to our knowledge for an amphibian, and a description of the habitat of the specimens: "auf den krüppelhaften Gesträuchen, die sparsam den sterilen Boden dieses nördlichen Clima's bedecken" ("on the crippled bushes, that cover sparcely the steril soils of this northern climate"). It seems clear that Noël Delamornière had observed frogs, probably *Rana temporaria*, on the North Cape. Nevertheless the specimens MNHN-RA-4610, 1994.1137-1138 (adult males with SVL 48.0-49.8 mm) can be allocated without doubt to *Osteopilus septentrionalis*. These specimens still have the original label with "Cap Nord" as geographical origin. The locality must be considered in error as already mentioned by Duméril & Bibron (1841: 840).

Description of the neophoront (neotype) of *Hyla fulva* Quoy & Gaimard, 1824 and *Hyla gaimardi* Bory de Saint-Vincent, 1828

Onymophoront. — MNHN-RA-0.4622, adult female collected by Gaudichaud in Rio de Janeiro (Brasil) in 1831, 1832 (Fig. 4).

Morphological description

Specimen in good condition. Specimen of large size (SVL 96.1 mm), rather elongate. Head of large size, wider (HW 37.2 mm; MN 28.3 mm; MFE 20.7 mm; MBE 10.9 mm) than long (HW 33.8 mm), flat. Snout rounded, not protruding its length (SL 15.6 mm) longer than horizontal diameter of eye (EL 11.7 mm). Canthus rostralis rounded, loreal region concave, at an obtuse angle to upper head. Interobital space concave, larger (IUE 10.4 mm) than upper eyelid (UEW 5.9 mm) and internarial distance (IN 8.0 mm); distance between front of eyes (IFE 18.7 mm) about two third of distance between back of eyes (IBE 30.6 mm). Nostrils about as close to tip of snout (NS 7.0 mm) as to eye (EN 7.7 mm). Pupil not visible. Tympanum very distinct, oval oblique, its diameter (TYD 7.2 mm) about three times its distance from eye (TYE 2.7 mm). Pineal ocellus absent. Vomerine ridges present, bearing numerous (N = 13) teeth on a arched ridge situated behind choanae, perpendicular to body axis, exterior branch outlines choanae, longer than distance between them. Tongue large, round, slightly emarginate; median linguel process absent. Tooth-like bony projections on maxilla absent.

Forearm short, moderately thick (FLL 19.9 mm), shorter than length of hand (HAL 26.4 mm), not enlarged. Fingers I and II rather short, strong, fingers III and IV long (TFL 16.9 mm), strong. Relative length of fingers, shortest to longest: I < II < IV < III. Tips of toes rounded, very enlarged, with circumventral grooves (WAI 1.94 mm; PAI 4.08 mm; WAII 2.20 mm; PAII 5.19 mm; WAIII 2.20 mm; PAIII 5.44 mm; WAIV 2.20 mm; PAIV 5.19 mm). Fingers I-IV without fringes; with moderate webbing: I 2 – 2 II 1 – 2 III 2 – 1 IV. Subarticular tubercles very prominent, rounded, single, all present. Prepollex oval, flat; two oval, flat palmar tubercles; small, rounded supernumerary tubercles on base of fingers I to IV.

Shank four times longer (TL 51.7 mm) than their maximum width (TW 11.4 mm), about as long as thigh (50.0 mm) but distinctly longer than distance from base of internal metatrsal tubercle to tip of toe IV (FOL 40.0 mm). Toes relatively short, relatively strong; toe IV (FTL 20.7 mm) about third of distance from base of tarsus to tip of toe IV (TFOL 59.2 mm). Relative length of toes, shortest to longest: I < II < V < III < IV. Tips of toes rounded, enlarged with circumventral grooves (WPI 1.49 mm; PPI 3.50 mm; WPII 1.43 mm; PPII 3.89 mm; WPIII 2.33 mm; PPIII 4.34 mm; WPIV 2.33 mm; PPIV 4.28 mm; WPV 2.14 mm; PPV 4.21 mm). Webbing rather large: I 0 – 1 II 0 – 1 III 0 – 1 ½ IV 1 ½ – 0 V (WTF 10.3 mm; WFF 9.6 mm; WI 9.5 mm; WII 7.9 mm; MTTF 24.3 mm; MTFF 25.0 mm; TFTF 12.4 mm; FFTF 12.8 mm). Dermal ridge along toe V present, from tip of toe to level of inner metatarsal tubercle. Subarticular tubercles prominent, rounded, simple, all present. Inner metatarsal tubercle short, very prominent, digit-like; its length (IMT 4.6 mm) 2.5 times in length of to I (ITL 11.6 mm). Tarsal ridge present, flat, all along tarsus. Outer metatarsal, supernumerary and tarsal tubercles absent.

Skin of dorsal parts of body: snout, between eyes and side of head smooth; supratympanic fold distinct, from eye to above fore-arm; co-ossified skin on head absent; back and upper flanks smooth; lower part of flanks with glandular warts. Dorsolateral folds absent. Dorsal parts of limbs smooth. Skin of ventral parts of body and thigh: throat and chest smooth; belly and thigh with regularly set glandular warts ("treefrog belly skin"). No macroglands.

Coloration in alcohol

Dorsal and lateral parts of head and body: dorsum whitish; upper part of flanks with poorly distinct transversal brown bands; lower flank yellowish; tympanic region and tympanum whitish. Dorsal parts of limbs: forelimb whitish with brown line bordering ventral side; dorsal part of hind legs and posterior part of thigh with numerous light brown bands. Ventral parts: throat yellowish white; margin of throat light brown; chest whitish; belly and thigh light yellow. Webbing: light brown.

Sex identification

A convoluted, glandular oviduct and ovaries with black and white oocytes present.

APPENDIX 2. — A list of 25 titles of works mentioning the specific nomen *Hyla septentrionalis* Duméril & Bibron, 1841 published after 1968.

On 24 January 2017, we carried out a search on *Web of Science Core Collection* with the following search options: *Title*: Osteopilus septentrionalis Hyla septentrionalis; *Subject*: Anura. This resulted in a list of 36 references. We provide below a selection of 25 citations among them, which are the basis for the conservation of the nomen *Hyla septentrionalis* Duméril & Bibron, 1841 as a *nomen protectum* through reversal of precedence relative to its senior subjective synonym *Hyla sueurii* Desmarest, 1825, hereby afforded the status of *nomen oblitum*.

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