Case 3345

DENDROBATIDAE Cope, 1865 (1850) (Amphibia, Anura): proposed conservation

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Abstract. The purpose of this application, under Article 23.9.3 of the Code, is to conserve the widely used family-group name DENDROBATIDAE Cope, 1865 (1850), for a group of Neotropical frogs by giving it precedence over the senior synonym PHYLLOBATIDAE Fitzinger, 1843 whenever the two are considered synonyms. As a further protection of the family name it is proposed to suppress the generic name *Hysaplesia* Boie in Schlegel, 1826a, considered by some authors as a senior synonym of the generic name *Dendrobates* Wagler, 1830.

Keywords. Nomenclature; taxonomy; Amphibia; DENDROBATIDAE; *Dendrobates*; *Phyllobates*; *Hylaplesia*; *Dendrobates tinctorius*; *Phyllobates bicolor*; poison arrow frogs, poison dart frogs.

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1. In 1982 Dubois (BZN **39**: 267–278) in a lengthy discussion of application Z.N.(S).1930 (BZN **27**: 262–264) proposed conservation of the generic name *Dendrobates* Wagler, 1830, and establishment of precedence for DENDROBATIDAE Cope, 1865 over PHYLLOBATIDAE Fitzinger, 1843. Holthuis (BZN **40**: 197–198) disagreed with Dubois' conclusion that *Dendrobates* was a new replacement name for *Hylaplesia* H. Boie in Schlegel (1826b) and saw no need for any Commission action regarding the two names. He further stated that he saw no need to give

DENDROBATIDAE precedence over PHYLLOBATIDAE. Holthuis, however, supported placing the names *Dendrobates* and *Phyllobates* and their type species on the appropriate Official Lists. Dubois (BZN **40**: 198–199) responded but saw no reason to modify his original proposals. The Commission never acted on any of Dubois' proposals but we regard several of them to have merit that would contribute to stability and universality of anuran names. Consequently, we submit this new proposal to resolve the principal issues relating to the aforementioned names.

2. The generic name *Hysaplesia* was first published by Schlegel (1826a, p. 239) based explicitly on a manuscript by Heinrich Boie. *Hysaplesia* as originally conceived contained the following species: *Hyla trivittata* Spix, 1824; *Hyla nigerrima* Spix, 1824; *Hyla punctata* (Daudin, 1802), *Hyla tinctoria* (Daudin, 1800); *Hyla luteola* (Wied-Neuwied, 1824) and two nomina nuda, *Hysaplesia achatina* and *Hysaplesia borbonica*. The last two names were made available some years later by Tschudi (1838). They are now recognized (Frost, 2007) as valid species, *Microhyla achatina* and *Leptophryne borbonica,* in the family MICROHYLIDAE but as nomina nuda prior to 1838 have no bearing on the status of *Hysaplesia*. Schlegel (1826b, col. 294) published a German translation of his 1826a paper but in that subsequent publication used the spelling *Hylaplesia* as the generic name for the same suite of species previously allocated to *Hysaplesia*. Although *Hysaplesia* Boie, 1826 (in Schlegel, 1826a) is likely to be an original misprint for *Hylaplesia* it must stand as the correct original spelling under Article 32.2 of the Code as it is not demonstrably incorrect (Article 32.5 of the Code).

3. *Hylaplesia* Boie, 1826 (in Schlegel, 1826b) was considered an unjustified emendation by Dubois (1982) but it can also be interpreted as an incorrect subsequent spelling (Holthuis, 1983). Dubois dated *Hylaplesia* as 1827 based on Schlegel's '*Erpetologische Nachrichten*', published in *Isis von Oken*, vol. 20, part 3. In 1966, Brongersma, Inger & Marx (BZN **22**: 303–312) noted that the signatures of parts 1–3 of vol. 20 are dated 1826. In 1968, Smith (BZN **25**: 107–112) wrote that only parts 1–2 are dated on the title pages, and that part 3 'contains the first sections of the Literature-Register for 1827, and therefore could not have appeared in 1826'. Smith evidently was referring to the short list of titles in the '*Eingegangen*' section on the back cover of part 3, where there is a single 1827 item from the Heidelberg publisher [Joseph] Engelmann. However, Smith overlooked the 1826 date in the printer's gathering or signature title ('Isis B XX. Heft 3. 1826') on the bottom of every fifth page of part 3. It is likely that the aforesaid 1827 work was merely an advance notice from the publisher, as was sometimes done in the *Isis* (e.g. the 1827 '*Eingegangen*' entry in the penultimate part of vol. 19, 1826). Thus, there is no reliable basis for discarding the 1826 date on part 3 of vol. 20, and we accept a default date of December 31 for part 3. References to the '*Nachricten*' paper, therefore, are cited as Schlegel (1826b) throughout the present application. Although we certainly sympathize with Dubois' reasoning, in such instances Article 33.5 of the Code mandates that the name be treated as an incorrect subsequent spelling, making *Hylaplesia* an unavailable name but a special kind of subsequent usage of *Hysaplesia*. Stejneger (1937, p. 139) selected *Hyla punctata* Daudin, 1802 as the type species for *Hylaplesia*. Note that *Hyla punctata* (Daudin, 1802) was a new combination for the species originally described by Schneider (1799, p. 170) as *Calamita punctatus*. Stejneger's selection establishes the type species of *Hysaplesia* as *Calamita punctatus*

Schneider, 1799 because an incorrect subsequent spelling (*Hylaplesia*) has no status of its own but is to be treated as though the original spelling (*Hysaplesia*) were used at the time the type designation was made.

4. Wagler (1830, p. 202) proposed the name *Dendrobates* for *Hyla nigerrima* Spix, *Hyla tinctoria* Daudin and *Hyla trivittata* Spix. Dubois considered this name to be a new replacement name (nomen novum) for *Hylaplesia* Boie, 1826 (in Schlegel, 1826b). However, the fact that it contained only three of the species originally included in *Hylaplesia* does not support that notion. That Wagler did not automatically include *Hylaplesia borbonica*, *Hylapleisia achatina* or *Hyla luteola* in *Dendrobates* indicates that the latter is not a new replacement name but a new taxon based on a provisionally different concept. As Wagler had not seen specimens of *H. borbonica* and *H. achatina* he left open the possibility that *Dendrobates* might be the same as *Hylaplesia* once these two species were examined. It also held out the possibility that they would not fit into Wagler's concept of *Dendrobates*. This was the position of Holthuis (1983), with whom we concur. The type species of *Dendrobates* is *Hyla tinctoria* Daudin, 1800 = *Rana tinctoria* Cuvier, 1797, by subsequent designation of Duméril & Bibron (1841, p. 651) as previously noted by Lescure (BZN **39**: 265) and Dubois (BZN **39**: 271). Because *Dendrobates* is not a replacement name for *Hysaplesia*/*Hylaplesia* this designation can have no bearing on determining the type species of *Hysaplesia* Boie, 1826, contrary to Dubois (1982, pp. 270–271). Nevertheless, *Hysaplesia* has never been used as a valid generic name (except as the incorrect subsequent spelling *Hylaplesia*), other than in the original publication (Schlegel, 1826a). The usage of *Hylapesia* (Lutz, 1925, p. 139), the equivalent of *Hysaplesia*, negates the possibility of applying Article 23.9.2 of the Code (the nomen oblitum option) for suppression of *Hysaplesia*. Under the circumstances it is best to follow Dubois' request to place *Hysaplesia* on the Official List of Rejected and Invalid Generic Names so that it does not become a threat to stability in the future.

5. *Phyllobates* was first published in the binomen *Phyllobates bicolor* by Bibron in Sagra, 1840 (pl. 29), not by Duméril & Bibron in 1841, as asserted by Dubois in 1982 (and also 1986, p. 130). The name and illustration of the frog appeared in pl. 29 bis of Sagra's Atlas. Duméril & Bibron referenced this plate, but not the later text, in vol. 8 of the *Erpétologie générale* (1841, p. 638). Smith & Grant (1958, pp. 220, 221) accepted 1840 as the latest date for Sagra's Atlas. The *Avertissement* in vol. 8 of the *Erpétologie générale* is dated (p. ii) December 25, 1840, indicating that Sagra's pl. 29 bis must have appeared in 1840 before that date. *Phyllobates bicolor* is here sourced to the Spanish edition of Sagra, at least part of which appeared ahead of the French translation, although precise dating is difficult, as discussed by Smith and Grant (1958).

6. In regard to family-group names, Dubois (1982; BZN **39**: 272–273) pointed out the following sequence by priority: PHYLLOBATAE Fitzinger, 1843 (p. 32) (type genus *Phyllobates* Bibron, 1840); EUBAPHIDAE Bonaparte, 1850 (type genus *Eubaphus* Bonaparte, 1831, an objective junior synonym of *Dendrobates*) used only by Bonaparte again in 1852; HYLAPLESIIDAE and subfamily HYLAPLESINA Günther, 1858 (type genus *Hylaplesia* Boie, 1826 = *Hysaplesia* Boie, 1826) which must be considered to be incorrect original spellings of HYSAPLESIIDAE and HYSAPLESINA; DENDROBATIDAE Cope, 1865 (p. 100) (type genus *Dendrobates* Wagler, 1830). According to Article 40 of the Code, DENDROBATIDAE Cope, 1865 (1850) is the correct citation because its

objective junior synonym, EUBAPHIDAE, was replaced prior to 1961. Dubois (BZN **40**: 275) documented the nearly universal use of the names DENDROBATIDAE or DENDROBATINAE for these frogs from 1882 to 1982. Since that time the name DENDROBATIDAE has been used with few exceptions in a wide range of biological literature. However, as shown by Dubois (BZN **40**: 272; Frost, 2007) the names PHYLLOBATIDAE or PHYLLOBATINAE have been used as family-group names by a number of authors in the late 20th century. Commission action is therefore required to preclude any future threat to stability, which has become of paramount importance in this case. The family has been the subject of intense study by many investigators since 1982, with dozens of significant publications in systematics, natural history, and breeding studies. Additionally, hundreds of medically relevant publications have resulted from the isolation and study of alkaloids sequestered in defensive skin secretions; the novel 'dendrobatid alkaloids' are providing important tools in neuromuscular, cardiovascular, and CNS research. More than 800 biologically active alkaloids are currently known from frog skin, with the largest number and greatest chemical and pharmacological diversity occurring in the DENDROBATIDAE (for overviews see Daly et al., 1987, 1999, 2005; Daly, 2003).

7. The International Commission on Zoological Nomenclature is accordingly requested:

(1) to use its plenary power:
   (a) to suppress the generic name *Hysaplesia* Boie in Schlegel, 1826 (gender: feminine), type species '*Hyla punctata* Daudin' = *Calamita punctatus* Schneider, 1799 by subsequent designation of Stejneger, 1937 for the purposes of the Principle of Priority but not for those of the Principle of Homonymy;
   (b) to rule that the family-group name DENDROBATIDAE Cope, 1865 (1850) be given precedence over the family-group name PHYLLOBATIDAE Fitzinger, 1843 whenever the two are regarded as synonyms;

(2) to place on the Official List of Generic Names in Zoology:
   (a) *Dendrobates* Wagler, 1830 (gender: masculine), type species *Rana tinctoria* Cuvier, 1797, by subsequent designation by Duméril & Bibron (1841);
   (b) *Phyllobates* Bibron, 1840 (gender: masculine), type species by monotypy *Phyllobates bicolor* Bibron in Sagra, 1840;

(3) to place on the Official List of Specific Names in Zoology:
   (a) *tinctoria* Cuvier, 1797, as published in the binomen *Rana tinctoria* (specific name of the type species of *Dendrobates* Wagler, 1830);
   (b) *bicolor* Bibron, 1840, as published in the binomen *Phyllobates bicolor* (specific name of the type species of *Phyllobates* Bibron in Sagra, 1840);

(4) to place on the Official List of Family-Group Names in Zoology:
   (a) DENDROBATIDAE Cope, 1865 (1850) (type genus *Dendrobates* Wagler, 1830) with an endorsement that it is to be given precedence over PHYLLOBATIDAE Fitzinger, 1843 (type genus *Phyllobates* Bibron in Sagra, 1840) whenever the two names are considered synonyms;
   (b) PHYLLOBATIDAE Fitzinger, 1843 (type genus *Phyllobates* Bibron in Sagra, 1840) with an endorsement that it is not to be given priority over DENDROBATIDAE Cope, 1865 (1850) whenever the two names are considered synonyms;

(5) to place on the Official List of Rejected and Invalid Generic Names in Zoology the genus *Hysaplesia* Boie in Schlegel, 1826 (gender: feminine), type species '*Hyla punctata* Daudin' = *Calamita punctatus* Schneider, 1799, by subsequent designation by Stejneger (1937).

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Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to the Executive Secretary, I.C.Z.N., c/o Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).