# THE NOMENCLATURAL STATUS OF THE NAMES *HYLA BOANS* (LINNAEUS) AND *HYLA MAXIMA* (LAURENTI) (ANURA: HYLIDAE)

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ABSTRACT: *Rana boans* Linnaeus, 1758, has priority over *Rana maxima* Laurenti, 1768, as the valid name for a large South American tree frog, genus *Hyla*. *Hyla boans* Latreille, 1801, is a secondary homonym of *Hyla boans* (Linnaeus, 1758). The earliest available name for the frogs previously known as *Hyla boans* Latreille, 1801, is *Hyla albopunctata* Spix, 1824. Neotypes are designated for the valid nominal taxa *Hyla boans* (Linnaeus) and *Hyla albopunctata* Spix.

ACCURATE communication of biological data is dependent upon nomenclatural stability. In cases of many older names based on specimens that are no longer extant or from unknown regions, names have been misapplied; furthermore, the scanty data in original descriptions have been interpreted in various ways. Consequently, some widespread species of frogs are referred to in the literature by more than one name. The case in point here is that of a large and widespread species of *Hyla* in South America.

Beginning with Günther (1859) this frog became known as *Hyla maxima* (Laurenti, 1768). Laurenti's (1768) brief Latin diagnosis was based on Seba's (1734, vol. 1, pl. 72, Fig. 3) illustration labelled *Rana Virginiana exquisitissima*, which depicts a frog not grossly unlike the frogs to which the epithet eventually was applied. No locality was given by Seba or Laurenti, although many, if not all, of the South American specimens in the Seba collection originated from what is now Surinam. Although this frog had been named *Rana zebra* by Shaw (1802) and *Hyla palmata* by Daudin (1803), it was Günther (1859) who provided the first realistic synonymy of the species and also provided a basis for nomenclatural stability until 1900. Andersson (1900) resurrected *Hyla boans* (Linnaeus, 1758); the only locality given by Linnaeus (1758) is America. As pointed out by Andersson, Lönnberg (1896) had demonstrated that Linnaeus in 1754 had called the same frog *Rana lactea*, but that in 1758 Linnaeus changed the name to *Rana boans*. In the 12th edition of the *Systema Naturae* Linnaeus (1766) referred to his original description (1754) and to Seba (1734, vol. 1, pl. 72, Fig. 3 and pl. 71, Figs. 3, 4). Thus, Linnaeus was basing his description in part on the same illustration that was the basis for Laurenti's (1768) name *Rana maxima*. The frogs illustrated in Seba's Figs. 3 and 4 on plate 71 are labelled *Rana surinamensis*. Therefore, it seems to be obvious that *Rana boans* Linnaeus, 1758, is a senior objective synonym of *Rana*

HERPETOLOGICA 27:397–405. December, 1971

*maxima* Laurenti, 1768. It cannot be ascertained whether Laurenti proposed the name *Rana maxima* as a species distinct from *Rana boans* or as a replacement name, a common practise in the early decades of taxonomy.

Despite Andersson's (1900) resurrection of *Hyla boans* (Linnaeus), most anuran taxonomists continued to use *Hyla maxima*, the name used by Boulenger (1882). Boulenger's influence of herpetological taxonomy cannot be overemphasized, for even today some workers cite him as the most recent authority. Mertens (1940) reiterated Andersson's assignment of *Hyla maxima* to the synonymy of *Hyla boans*. Subsequently, various authors (Cochran, 1955; Rivero, 1961; Bokermann, 1962; Heatwole, Solano, and Heatwole, 1965; Trueb, 1970; Duellman, 1970) used *Hyla boans* (Linnaeus). However, some authors (Goin and Layne, 1958; Kenny, 1969; Cochran and Goin, 1970) continued to use *Hyla maxima*. Cochran and Goin (1970) explained their usage on the basis of considering *Rana boans* Linnaeus, 1758, to be a *nomen oblitum*. A petition requesting placement of *Rana boans* Linnaeus, 1758, on the Official List of Specific Names in Zoology has been submitted to the International Commission on Zoological Nomenclature (Duellman and Rivero, 1971). The *nomen oblitum* rule has been variously interpreted, but there is no provision in the rule for suppressing junior objective synonyms. This rule, Article 23(b), of the International Code of Zoological Nomenclature published in 1961 has been repealed (Declaration 43, Bull. Zool. Nomencl., vol. 27, pts. 3/4, p. 135, December, 1970). Thus, strict adherence to priority is mandatory, unless ruled otherwise by the International Commission on Zoological Nomenclature.

The recognition of *Hyla boans* (Linnaeus) necessitates the suppression of the secondary homonym, *Hyla boans* Latreille, 1801. In the interests of nomenclatural stability neotypes are designated for the valid nominal species; in so doing synonymies, descriptions of neotypes, diagnoses and justifications of type localities are presented.

## *Hyla boans* (Linnaeus)

*Rana Virginiana exquisitissima* Seba, 1734, pl. 72, Fig. 3.

*Rana lactea* Linnaeus, 1754:47 (based on Seba, 1734, pl. 72, Fig. 3; "America").

*Rana boans* Linnaeus, 1758:213 [= *Rana lactea* Linnaeus, 1754 (Linnaeus, 1766:358)].

*Rana maxima* Laurenti, 1768:32 (based on Seba, 1734, pl. 72, Fig. 3; "America").

*Calamita maxima*—Schneider, 1799:163.

*Rana zebra* Shaw, 1802:123 (substitute name for *Rana maxima* Laurenti).

*Hyla boans*—Daudin, 1803:64.
*Hyla palmata* Daudin, 1803:79 (holotype unknown; type locality "la Virginie et la Caroline").
*Calamita palmatus*—Merrem, 1820:173.
*Boana boans*—Gray, 1825:214.
*Hypsiboas palmata*—Wagler, 1830:200.
*Lobipes palmata*—Fitzinger, 1843:30.
*Hyla maxima*—Günther, 1859:99. Boulenger, 1882:349. Cochran and Goin, 1970:199.
*Hyla lactea* Lönnberg, 1896:13 (substitute name for *Rana boans* Linnaeus, 1758).
*Hyla boans*—Andersson, 1900:17. Mertens, 1940:195. Rivero, 1961: 96. Duellman, 1970:258.
*Hyla wavrini* Parker, 1936:2 (holotype, IRSNB 459 from the upper Río Orinoco, Amazonas, Venezuela; Marquis de Wavrin collector).
*Hyla miranda-ribeiri* Melin, 1941:20 (holotype, NHMG 466 from Taracuá, Rio Uaupés, Amazonas, Brasil; Douglas Melin collector).

*Diagnosis.*—*Hyla boans* is one of six species comprising the *Hyla boans* group; all of the species occur in South America, and three extend into Central America. All are predominantly brown, large frogs; *H. boans* attains a known snout-vent length of 130 mm, and *H. faber* Wied is about equally as large. *Hyla circumdata* (Cope), *crepitans* Wied, *pardalis* Spix, and *rosenbergi* Boulenger are smaller. *Hyla boans* differs from all other species in the group by having a reticulate palpebral membrane; the palpebrum is unpigmented in the other species. Furthermore, *Hyla boans* differs from all members of the group, except *pardalis*, by having a calcar, and from all, except *pardalis* and *rosenbergi*, by having fully webbed fingers; the fingers are no more than one-half webbed in the other four species. *Hyla pardalis* differs from *boans* by having tubercular skin dorsally and scalloped dermal fringe on the foot; the dorsal skin is smooth and a dermal fringe is lacking in *boans*. *Hyla rosenbergi* differs from *boans* by having a larger tympanum (about ⅘ of the diameter of the eye, as opposed to ½ in *boans*), pale, instead of dark, webbing on the feet, and an unmarked lip; in many specimens of *boans* the upper lip is weakly barred with darker brown. The only other Neotropical *Hyla* with which *boans* can be confused is *H. geographica* Spix, which also has calcars and reticulated palpebral membranes. *Hyla geographica* is smaller (females to 80 mm SVL) and has the fingers no more than two-thirds webbed.

*Neotype.*—RMNH 16603 from Brownsweg, Brokopondo, Surinam; obtained on 19 August 1968, by M. S. Hoogmoed; by present designation (Fig. 1). This same specimen is hereby designated as the neotype of *Hyla maxima* (Laurenti).

*Description of Neotype.*—An adult female; body robust, de-

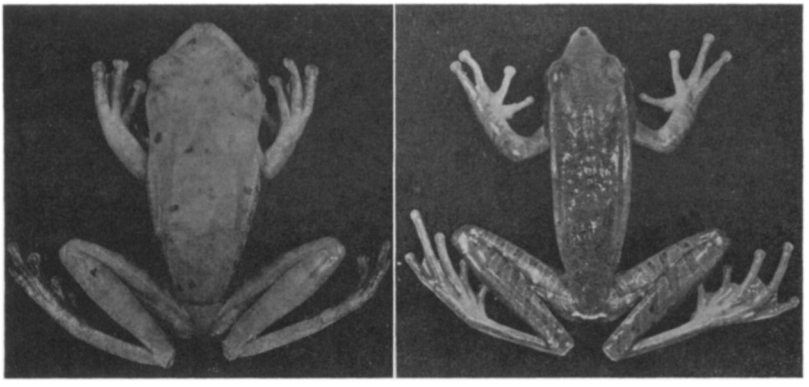

FIG. 1.—(Left). Neotype of *Hyla boans* (Linnaeus), RMNH 15503; actual snout-vent length 91.9 mm, (Right) neotype of *Hyla albopunctata* Spix, KU 100000; actual snout-vent length 47.7 mm.

pressed; head nearly as broad as long; snout long, rounded in lateral and dorsal profiles; canthus rostralis angular; loreal region deeply concave; lips flared; nostrils protuberant dorsolaterally; top of head flat; tympanum distinct, elevated, separated from eye by distance equal to about one-half diameter of tympanum; supratympanic fold weak, covering upper edge of tympanum, curving downward behind tympanum to angle of jaw. Axillary membrane absent; forearm more robust than upper arm, having a low, continuous ulnar fold; fingers moderately long; length from shortest to longest 1–2–4–3; discs round, large, 85% of diameter of tympanum; subarticular tubercles moderately small, round; supernumerary tubercles absent, palmar tubercle indistinct; prepollex projecting, spine not protruding; web extending from base of penultimate phalange of thumb to base of penultimate phalange of second digit; webs between other digits extending to bases of discs. Hind limbs long, slender; small dorsal calcar present; tarsal fold low, narrow, extending entire length of tarsus; outer metatarsal tubercle absent; inner metatarsal tubercle ovoid, visible from above; toes long, slender; length from shortest to longest 1–2–5–3–4; discs slightly smaller than those on fingers; subarticular tubercles small, conical; supernumerary tubercles minute, irregularly present proximally; webbing extending to bases of discs of all toes. Skin on chest, belly, and ventral surfaces of thighs granular; skin on other surfaces smooth, except for small tubercles in tympanic region and weak areolation on flanks; anal opening directed posteriorly at upper level of thighs; dentigerous processes of prevomers acutely angular, bearing 19–20 teeth, lying between large, rectangular choanae; tongue cordiform, shallowly indented posteriorly.

Measurements (in mm): snout-vent length 91.9, tibia 46.6, foot

37.5, head length 34.7, head width 33.9, interorbital 11.3, internarial 6.5, eyelid 8.0, eye 9.4, tympanum 5.8, eye-nostril 12.4.

Color in alcohol: Dorsum pale reddish tan with faintly darker transverse bars on dorsal surfaces of limbs and scattered small, dark brown spots on back; flanks and anterior surfaces of thighs creamy tan with irregular, brown vertical bars; posterior surfaces of thighs pale reddish brown with slightly darker brown, irregular vertical bars; side of head tan with brown spots along margin of upper lip; anal region creamy white; narrow pale cream stripe on outer edge of tarsus and forearm; webbing dark brown; all ventral surfaces uniformly creamy white; palpebral membrane feebly marked with fine network.

*Remarks.*—The selection of Surinam as the type locality of *Hyla boans* is logical in that many specimens figured by Seba originated from that country; also, one of the plates on which the name was based is labelled "*Rana surinamensis.*" The neotype is from Brownsweg, 90 km south of Paramaribo and just west of the Suriname River. Certainly Paramaribo was the port used by early explorers in Surinam, and the Suriname River must have been the main route into the interior.

### *Hyla albopunctata* Spix

*Hyla boans* (*nec* Linnaeus) Latreille, 1801:184 (no type designated, no locality given). Duméril and Bibron, 1841:605. Boulenger, 1882:360.

*Hyla albopunctata* Spix, 1824:33 (holotype, formerly in ZSM, now lost; locality unknown). Peters, 1873:207. Andersson, 1900:17. Cochran, 1955:80.

*Auletris boans*—Wagler, 1830:201.

*Hypsiboas boans*—Tschudi, 1838:72.

*Hyla oxyrhina* Reinhardt and Lütken, 1862:189 [syntypes, BMNH 1936.12.3.144, NHMW (1 specimen, no number), UZM 1433–5, SMB 4772 (2 specimens), all from Lagôa Santa, Minas Gerais, Brasil; Johannes Reinhardt collector].

*Hyla spectrum* Reinhardt and Lütken, 1862:195 (holotype, UZM 3432 from Lagôa Santa, Minas Gerais, Brasil; Johannes Reinhardt collector). Boulenger, 1882:361.

*Hyla* (*Hypsiboas*) *oxyrhina*—Cope, 1863:48.

*Hypsiboas spectrum*—Cope, 1867:200.

*Hypsiboas albipunctatus*—Cope, 1867:201.

*Hyla albopunctata albopunctata*—Rivero, 1961:105.

*Diagnosis.*—*Hyla albopunctata* is one of four species comprising the *Hyla albopunctata* group; all of the species occur in South America east of the Andes. All are medium to large brown frogs with darker brown transverse markings on the body and limbs. The snout

is acuminate, and the hind limbs are long and slender in all species. *Hyla lanciformis* (Cope) is the largest species (females to 89 mm snout-vent length); *H. raniceps* (Cope) is somewhat smaller (females to 70 mm), whereas *H. multifasciata* Günther and *albopunctata* are smallest (females to 58 mm). *Hyla albopunctata* can be distinguished from other members of the group by having cream spots on brown posterior surfaces of the thighs; these surfaces are uniform brown in *multifasciata* and *lanciformis* and cream with bold vertical brown bars in *raniceps*. *Hyla lanciformis* can be further distinguished from *albopunctata* by having a grayish brown venter with large cream spots on the chest; the venter in all other members of the group is uniform creamy white. The combination of transverse dorsal markings, white lip stripe, cream spots on the posterior surfaces of the thighs, pointed snout, and long slender legs distinguishes *Hyla albopunctata* from all other members of the genus.

*Neotype.*—University of Kansas Museum of Natural History (KU) 100000 from Belo Horizonte, Minas Gerais, Brasil, obtained on 9 February 1965 by W. C. A. Bokermann and A. B. Machado; by present designation (Fig. 1).

*Description of Neotype.*—An adult male; body slender; head longer than wide; snout acuminate in lateral and dorsal profiles, extending beyond margin of lip; canthus rostralis angular; loreal region barely concave; lips rounded; nostrils below canthal ridge, directed laterally; top of head flat; tympanum distinct, elevated, separated from eye by distance equal to about one-half diameter of tympanum; supratympanic fold extending to point slightly posterior to insertion of forelimb, covering upper edge of tympanum. Axillary membrane absent; forearm more robust than upper arm, lacking ulnar fold; fingers long; length from shortest to longest 1–2–4–3; discs round, small, equal to about one-half diameter of tympanum; subarticular tubercles large, round; supernumerary tubercles small, conical; palmar tubercle bifid; prepollex projecting, spine not protruding; fingers webbed basally. Hind limbs long, slender; calcar, tarsal fold, and outer metatarsal tubercle absent; inner metatarsal tubercle elongate, visible from above; toes long, slender; length from shortest to longest 1–2–5–3–4; discs slightly smaller than those on fingers; subarticular tubercles large, round; supernumerary tubercles small, conical; webbing extending from base of penultimate phalange of first to base of penultimate phalange of second, from middle of penultimate phalange of second to middle of antepenultimate phalange of third, from base of penultimate phalange of third to base of antepenultimate phalange of fourth and on to middle of penultimate phalange of fifth toe. Skin on belly and posteroventral surfaces of thighs granular; skin on other surfaces smooth; anal opening directed posteriorly at upper level of thighs; dentigerous processes of

prevomers angular, bearing 10–11 teeth, between ovoid choanae; tongue ovoid; vocal slits lying along inner edge of posterior one-half of mandible; vocal sac single, median, subgular.

Measurements (in mm): snout-vent length 47.7, tibia 27.2, foot 22.6, head length 16.0, head width 14.1, interorbital 4.5, internarial 4.5, eyelid 3.6, eye 5.0, tympanum 3.3, eye-nostril 4.8.

Color in alcohol: Dorsum dull brown with nine darker brown transverse marks, each narrowly outlined with tan, on head and body; six or seven similarly colored transverse bars on dorsal surfaces of thighs and shanks. Side of head dark brown; edges of lips creamy white; flanks dull brown with irregular vertical cream bars posteriorly; anterior and posterior surfaces of thighs dull brown with numerous creamy white spots on latter; anal region dark brown, bordered above by transverse white stripe. Ventrolateral surfaces of feet and forearms dark brown, bordered above by creamy tan stripe. Throat grayish tan; other ventral surfaces creamy-white; palpebrum plain.

*Remarks.*—Neither Latreille (1801) nor Spix (1824) gave a locality for their specimens; Latreille did not designate a type specimen, but Spix did designate a type, which was deposited in the Munich collection and was examined by Peters prior to 1873. The type, along with many others in the Munich collection, is now lost; there is no indication in the catalogue whether or not this was destroyed in World War II, only a notation that it cannot be found. Cochran examined South American frog types in Munich in 1938, but she does not list the holotype of *Hyla albopunctata* in her account of the species (1955).

The absence of type specimens and designated type localities provides no definite basis for selection of a neotype. The specimen that I have selected agrees with illustrations published by Spix and by Cochran; furthermore, it agrees reasonably well with the redescription of the type of *Hyla albopunctata* given by Peters (1873). Belo Horizonte is in a region that was visited by early naturalists, including Johannes Reinhardt, who collected at Lagôa Santa nearby.

I have examined the type specimens of *Hyla oxyrhina* Reinhardt and Lütken (1862) and *Hyla spectrum* Reinhardt and Lütken (1862). The former name was based on seven adults, which unquestionably are the same as *Hyla albopunctata.* The type of *Hyla spectrum* is a poorly preserved juvenile resembling juveniles of *Hyla albopunctata* and not juveniles of *Hyla geographica* Spix, a species with which the name *Hyla spectrum* has been associated by some workers.

*Acknowledgments.*—The impetus to prepare the present paper came from my good friends and colleagues Werner C. A. Bokermann, M. S. Hoogmoed, and Juan A. Rivero; to them I am grateful for specimens and helpful suggestions. Much of the data on which this paper is based was obtained during a visit to

European museums in 1969 made possible by a grant (No. 5063) from the Penrose Fund of the American Philosophical Society. I am indebted to the following curators who gave me access to the collections under their care (abbreviations for collections in parentheses): F. W. Braestrup, Universitets Zoologiske Museum, Copenhagen (UZM); Alice G. C. Grandison, British Museum (Natural History), (BMNH); Gaston F. deWitte, Institut Royal des Sciences Naturelles Belgique (IRSNB); Josef Eiselt, Naturhistorisches Museum, Wien (NHMW): Birgitta Hansson, Naturhistoriska Museet, Göteborg (NHMG); Walter Hellmich, Zoologisches Staatssammlung, München (ZSM); M. S. Hoogmoed, Riksmuseet van Natuurlijke Histoire, Leiden (RMNH); and Günther Peters, Zoologisches Museum, Berlin (ZMB). I thank John E. Simmons for taking the photographs. Finally, I thank Linda Trueb for her efforts towards making the text more readable.

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*Received*: 8 June 1971
*Accepted*: 19 July 1971

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