

A NEW SPECIES OF THE GENUS *OSTEOCEPHALUS* (HYLIDAE: ANURA) FROM THE WESTERN AMAZON

por

John D. Lynch¹

Resumen

Lynch, J. D. : A new species of the genus *Osteocephalus* (Hylidae: Anura) from the western Amazon. Rev. Acad. Colomb. Cienc. **26** (98): 289-292, 2002. ISSN 0370-3908.

Se describe una especie pequeña del género *Osteocephalus* del sudeste de Colombia y Perú adyacente. Con esta descripción, el género *Osteocephalus* queda cada vez peor definido.

Palabras clave: Especie nueva, ranas, taxonomía

Abstract

A small *Osteocephalus* is described from southeastern Colombia and adjacent Peru. With its description, the genus *Osteocephalus* continues to become less and less well-defined.

Key words: Frogs, New Species, Taxonomy

Introducción

In 1999, I had the opportunity to make herpetological collections on the Río Puré, just inside the Colombian-Brasilian frontier, and there collected a treefrog species that I did not recognize. Subsequent study of the sample convinced me that this was a species not known. During a brief visit to the University of Kansas in July 2000, Bill Duellman showed me a specimen of a treefrog from Perú that he did not recognize but which I identified as one I had collected in Colombia on the Río Puré. During our collections for tadpoles in the *trapezio amazonico* co-

lombiano in 2001-02, I managed to collect a single female of the same species.

The frog in question, which I initially assigned to the genus *Hyla*, must be a species of the “phenetic” genus *Osteocephalus*. *Osteocephalus*, under the criteria of the phylogenetic analysis of **da Silva** (1998), must represent some sort of biological illusion, because **da Silva** concluded that the genus is paraphyletic with respect to the casque-headed tree frogs (the genera *Aparasphenodon*, *Trachycephalus*, and *Tripion*, among others). *Osteocephalus*, as recognized by **Goin** (1966) and **Trueb & Duellman** (1971), was a genus defined in part by the

¹ Instituto de Ciencias Naturales, Universidad Nacional de Colombia.

presence of lateral vocal sacs, and thus related to *Phrynohyas* and *Trachycephalus*. **Trueb** (1970) viewed the exostosis of cranial bones and coossification of the skin of the head and skull bones as features which had been achieved independently in various lineages of tree frogs whereas **da Silva** (1998) decided that these represented, within the Hyalinae, evolutionary novelties.

Da Silva (1998) did not include vocal sac architecture as one of his characters but this character must represent some sort of homoplasy, given his cladogram. The position of **Trueb & Duellman** (1971) that these paired vocal sacs are restricted to a [nonphyletic] group consisting of the genera *Argenteohyla*, *Osteocephalus*, *Phrynohyas*, and *Trachycephalus*, is likewise in error because one of the three species of *Aparasphenodon* (*A. venezolanus*) shares this character (**Lynch & Vargas**, 2000; **Paolillo & Cerda**, 1983).

Working in the northern Andes these past 35 years allowed me to make an unjustified assumption/conclusion, that the fauna of the lowlands was well-known. Fieldwork in SE Colombia between 1999 and 2001 has dispelled my illusions. Ángela Suárez and I have collected no fewer than 64 species of frogs in the immediate vicinity of Leticia in only 60 days of fieldwork. One of these species is the subject of the present report.

Materials and methods

The specimens studied are housed in the collection of the Instituto de Ciencias Naturales (ICN) and the University of Kansas Museum of Natural History (KU). Terminology follows **Duellman** (2001). In the text, the following abbreviations are used: E-N, eye nostril distance; HW, greatest head width; IOD, interorbital distance; SVL, snout-vent length. When sample size permits, means are reported as ± 1 standard error of the mean.

Osteocephalus heyeri sp. nov.

Figura 1

Holotype: ICN 46916 (field number JDL 23466), an adult female obtained by John D. Lynch 8 January 2002.

Paratypes: ICN 46522-528, 46888, collected by J. D. Lynch, at the Río Puré campamento, municipio Leticia, Colombia, 02° 07' 05" S, 69° 37' 50" W, Dic., 19-21, 1999. KU 220885, Quebrada Grande, near junction of Río Sucusari and Río Napo, Depto. Loreto, Peru.

Type-locality. COLOMBIA, AMAZONAS, municipio Leticia, Km 18.5 carretera Leticia-Tarapacá y 1.5 km SE carretera a Nazareth, reserva "Aguasclaras", 04° 05' 02" S, 70° 00' 39" W.

Diagnosis: An *Osteocephalus* with nearly smooth skin dorsally (slightly more tuberculate in males than in females), subgular vocal sacs, green bones, protruding snout, minimal webbing of the fingers, nuptial excrescences in males, and of small size, males 31.0-36.1 (\bar{x} = 33.1 \pm 0.6) mm, females 42.8-47.7 mm SVL.

Description: Body slender, narrower than head in males, as wide as head in gravid females; snout short, protruding beyond margin of upper jaw in dorsal and lateral views; nostrils protuberant, directed laterally with prominent internarial depression; *canthus rostralis* curved, rounded in section; loreal region slightly concave; top of heads flat (no cranial crests); supratympanic fold relatively prominent, obscuring uppermost edge of tympanum; tympanic annulus strong; tympanum directed dorsolaterally with slight posterior vector, separated from eye by less than tympanic length; choanae large, ellipsoidal; vomerine dentigerous processes long, narrowly separated medially, curving posterolaterally, bearing 6-12 teeth each (mean 9.2), ending at level of posterior edge of choanae; tongue wider than long, without posterior notch, posterior edge not free from floor of mouth; vocal slits short, just medial to posterior end of mandible; vocal sac median, subgular, single (or perhaps bifid).

Forearm slender, lacking ulnar fold or tubercles; thenar tubercle oval, somewhat larger than bifid palmar tubercle; numerous supernumerary tubercles on palm, none distal to basal subarticular tubercles; basal subarticular tubercles subconical, distal tubercles non-conical; distal subarticular tubercle of finger IV bifid; fingers bearing lateral fringes, including along lateral border of finger IV; disks large (that of finger III nearly covers tympanum) on all digits (least so on thumb); first finger shorter than second; webbing formula **I** (2-2+) - (3-3+) **III** (2 4/5-3+) - (2 3/4-2 4/5) **IV**; thumb of males swollen, bearing patch of fine spinules (nuptial excrescence) on median edge of thumb and thenar tubercle. Hindlimbs slender; small tubercles on upper edge of heel; tarsus lacking tubercles or folds; inner metatarsal tubercle oval; outer metatarsal tubercle small, round, not pungent; supernumerary plantar tubercles present, not extending distal to basal subarticular tubercles; subarticular tubercles non-conical, simple; disks of toes narrower than those of fingers; toe webbing **I** (1-2+) - (2-2+) **II** (1-1 1/3) - (2+-2 1/3) **III** (1-1 1/2) - (2+-2 2/3) **IV** (2-2+) - (1-1 1/4) **V**.

Skin of dorsum in males finely tuberculate (not spinulate), that of females appears smooth but under magnification bears a tuberculation similar to but less dense than in males. Skin of flanks and venter areolate.

In preservative, brown above, usually with large cream blotches on the dorsum (Fig. 1); limbs cream with dark



Figura 1. Upper left: *O. cabrerai*, ICN jdl22733; upper right, *O. heyeri*, male, ICN 46522; lower left, *O. heyeri*, female, ICN 46528; lower right, *O. heyeri*, female holotype, ICN 46916.

brown bars; flanks and thighs dark brown with white spots edged in black; venter cream with brown spots, on throat (most) or not, sometimes forming loose reticulum on venter; cream stripe along upper lip; posterior surfaces of thigh brown; males have fewer pale spots on flanks and thighs, those of flanks tend to be larger than in females; palpebrum clear except for pigment along its upper edge and on the anterior 1/5.

In life, brown to reddish-brown above with darker markings, outlined with cream in holotype (otherwise only the interorbital triangle is outlined with cream); pale blotches on dorsum (when present) orange to tan; subocular spot dirty tan; flanks and concealed surfaces of limbs dark brown to black with white or yellow spots in males, spots pale blue in females; throat and anterior venter cream, spotted with brown, lower venter brown; iris very dark gray (almost black). Bones are green.

Measurements of holotype in mm. – SVL 42.8, shank 21.9, HW 14.3, HL 14.0, chord of head length 14.5, upper eyelid width 3.9, IOD 3.5, tympanum length 2.8, eye length 4.5, E-N 4.2.

Proportions (in percents). Males (N = 7). Shank/SVL 48.4-54.5, $\bar{x} = 50.9 \pm 0.8$, HW/SVL 32.8-37.1, $\bar{x} = 35.1 \pm 0.6$, upper eyelid/IOD 105.4-137.9, $\bar{x} = 119.6 \pm 4.4$, tympanum/eye 45.8-63.9, $\bar{x} = 56.0 \pm 2.2$, E-N/eye 76.7-91.9, $\bar{x} = 85.1 \pm 2.1$. Females (3). Shank/SVL 50.7-52.1, $\bar{x} = 51.3$, HW/SVL 32.1-33.4, $\bar{x} = 33.0$, upper eyelid/IOD 111.4-141.2, $\bar{x} = 124.2$, tympanum/eye 56.6-62.2, $\bar{x} = 60.4$, E-N/eye 92.4-97.8, $\bar{x} = 94.5$. The samples are inadequate but it appears that females have longer snouts than do males.

Natural history. I have collected *O. heyeri* on only three occasions. On the nights of 19 and 21 December 1999, specimens were found on low vegetation in a

seepage in primary rainforest. On each occasion, both males and females were found but no notes of calling were made. All frogs were found within 50 cm of the ground. The holotype was found perched on a palm leaf 2 meters above the ground in primary rainforest 8 January 2002. All three females are gravid. No female was found associated with bromeliads.

At the Río Puré site, *O. heyeri* is macrosympatric (= individuals were found within 1 km of each other) with *O. buckleyi*, *O. cabrerai*, *O. leprieurii*, *O. taurinus*, and *O. yasuni*. At the type-locality, it was sympatric with *O. planiceps* and *O. taurinus*.

Etymology: Named for my good friend, William Ronald Heyer, curator of Amphibians and Reptiles, in the National Museum of the United States, for his prescience to publish his opinion that the Amazonian fauna was inadequately known, a position that I rejected initially but now accept. The only thing inappropriate about the etymology is that this is one of the smallest *Osteocephalus* known (only *O. rodriguezii* is smaller) and Ron is anything but small.

Discussion

The descriptions of new species (Jungfer & Schiesari, 1995; Jungfer et al., 2000; Ron & Pramuck, 2000) and the belated acknowledgment that the wholesale synonymizing of names by Trueb & Duellman (1971) was an error (Duellman & Mendelson, 1995) have altered substantially our concept of *Osteocephalus* as defined by Trueb & Duellman (1971). Assuming that da Silva's (1998) phylogenetic analysis is approximately correct, we must recognize that *Osteocephalus* is an error (that is, it is paraphyletic). Da Silva (1998) may be correct but my reading of his thesis suggests to me that his conclusions are the result of a lack of concern that many of his characters are interdependent – this criticism applies especially to his casque-headed “clade” which includes *Osteocephalus*.

I doubt that *O. heyeri* is part of the presumed clade of oophagous species found in the western Amazon (*O. deridens*, *O. fuscifascies*, and *O. oophagus*) but am not willing to venture a hypothesis concerning its nearest relative (although *O. rodriguezii* strikes me as a plausible choice).

Osteocephalus cabrerai (Fig. 1) likewise lacks paired vocal sacs and seems remote from the species usually assigned to the genus. This species is strongly associated with streams, unlike typical *Osteocephalus*.

Acknowledgments

I thank Jorge Canchala of CORPOAMAZONIA for facilitating permits. During the course of these collections, I enjoyed field companionship of Tomás Defler, Estebán and Santiago Melendez, and Ángela Suárez. Directors of IMANI (Santiago Duque, Germán Palacios, and Carlos Zárate) made available facilities at the Leticia campus. My fieldwork in Amazonas has greatly benefited from the good offices of Héctor (Sancocho) Castillo. William E. Duellman permitted me to examine and report a specimen collected from Peru. Partial support for fieldwork was provided by funding from the DIB (803649).

Literature cited

- Da Silva, H. R. 1998. Phylogenetic relationships of the family Hylidae with emphasis on the relationships within the subfamily Hylinae (Amphibia: Anura). Unpublished doctoral dissertation, University of Kansas.
- Duellman, W. E. 2001. Hylid frogs of Middle America. 2nd edition. Society for the Study of Amphibians and Reptiles.
- Duellman, W. E. & J. R. Mendelson III. 1995. Amphibians and reptiles from northern Departamento Loreto, Peru: taxonomy and biogeography. The University of Kansas Science Bulletin 55: 329-376.
- Goin, C. J. 1966. Synopsis of the genera of hylid frogs. Annals of the Carnegie Museum 36: 5-18.
- Jungfer, K. H., S. Ron, R. Seipp, & A. Almendáriz. 2000. Two new species of hylid frogs, genus *Osteocephalus*, from Amazonian Ecuador. Amphibia-Reptilia 21: 327-340.
- Jungfer, K. H. & L. C. Schiesari. 1995. Description of a central Amazonian and Guianan tree frog, genus *Osteocephalus* (Anura, Hylidae), with oophagous tadpoles. Alytes 13: 1-13.
- Lynch, J. D. & M. A. Vargas Ramírez. 2000. Lista preliminar de especies de anuros del Departamento del Guainía, Colombia. Rev. Acad. Colomb. Ciencias Exac. Fís. Nat. 24 (93): 579-589.
- Paolillo, O. A. & J. Cerda. 1983 (“1981”). Nuevos hallazgos de *Aparasphenodon venezolanus* (Mertens) (Amphibia, Hylidae) en el territorio federal Amazonas, Venezuela, con anotaciones sobre su biología. Memoria Sociedad de Ciencias de La Salle 41 (115): 77-95.
- Ron, S. & J. B. Pramuck. 1999. A new species of *Osteocephalus* (Anura: Hylidae) from Amazonian Ecuador and Peru. Herpetologica 55: 433-446.
- Trueb, L. 1970. The evolutionary relationships of the casque-headed treefrogs with co-ossified skulls (family Hylidae). Univ. Kansas Publ. Mus. Nat. Hist. 18: 547-716.
- Trueb, L. & W. E. Duellman. 1971. A synopsis of Neotropical hylid frogs, genus *Osteocephalus*. Occasional Papers of the Museum of Natural History/ the University of Kansas/ Lawrence, Kansas (1): 1-47.