

## Correspondence

<http://dx.doi.org/10.11646/zootaxa.3946.2.11>  
<http://zoobank.org/urn:lsid:zoobank.org:pub:3E39921B-E587-4B2E-B45F-362B04A421BA>

### The tadpole of *Dendropsophus branneri* (Cochran, 1948) (Amphibia, Anura, Hylidae)

RAFAEL OLIVEIRA DE ABREU<sup>1,2</sup>, FLORA ACUÑA JUNCÁ<sup>3,4</sup>,  
ISANA CARLA AMORIM SOUZA<sup>3,5</sup> & MARCELO FELGUEIRAS NAPOLI<sup>1,6</sup>

<sup>1</sup>Departamento de Zoologia, Instituto de Biologia, Universidade Federal da Bahia, Campus Universitário, Rua Barão de Jeremoabo, Ondina, 40170-115 Salvador, Bahia, Brasil

<sup>3</sup>Programa de Pós-graduação em Zoologia, Departamento de Ciências Biológicas, Universidade Estadual de Feira de Santana, Av. Transnordestina, 44036-900 Feira de Santana, Bahia, Brasil

E-mail: <sup>2</sup>rafaoabreu@gmail.com, <sup>4</sup>florajunc@gmail.com, <sup>5</sup>isanacarla@yahoo.com.br, <sup>6</sup>npoli@ufba.br

*Dendropsophus branneri* is a small treefrog largely distributed throughout the Tropical Atlantic and Caatinga morphoclimatic domains (see Ab'Sáber 1977 for morphoclimatic domains), from northeastern to southeastern Brazil [Lutz 1973, Frost 2014; see Zina *et al.* 2014 for taxonomic comments on *D. minusculus* (Rivero, 1971) and *D. branneri*]. This species is currently placed in the *D. microcephalus* species group according to Bastos & Pombal (1996) and Faivovich *et al.* (2005). The *D. microcephalus* group comprises 36 species (Frost 2014), 14 of which have known tadpoles. Here, we describe the external morphology and color patterns of the previously unknown tadpole of *D. branneri*.

We collected tadpoles of *D. branneri* in temporary and permanent ponds at the municipality of Igarassu (October 2007, n = 7 tadpoles), state of Pernambuco, Brazil, and at the municipalities of Altamira (May 2005, n = 1 tadpole), Catu (June 2010, n = 1), Conde (May 2005, n = 1 tadpole), Igrapiuna (September 2007, December 2008, and July 2009; n = 5 tadpoles), and Mata de São João (June 2006, n = 1 tadpole), in the state of Bahia, Brazil. Tadpoles were preserved in 5% formalin, and are housed at the Museu de Zoologia da Universidade Federal da Bahia (UFBA lots 7774–7777) and Museu de Zoologia da Universidade Estadual de Feira de Santana (MZFS lots 603; 807; 914).

The morphological description and measurements follow McDiarmid & Altig (1999) and Mercês & Juncá (2010), and were based on eight tadpoles at stages 35 (n = 3 tadpoles), 36 (n = 3 tadpoles), and 37 (n = 2 tadpoles) (*sensu* Gosner 1960). The following measurements were taken in millimeters with an ocular micrometer in a stereomicroscope and are presented as range, average ± standard deviation: total length (TL), body length (BL), body maximum height (BH), body width (BW), tail length (TaL), maximum tail height (MTH), maximum tail musculature height (TMH), maximum tail musculature width (TMW), maximum dorsal fin height (DFH), maximum ventral fin height (VFH), interorbital distance (IO), eye diameter (E), eye-snout distance (ESD), internarial distance (IND), nostril major axis (N), nostril-snout distance (NS), and oral disc width (ODW).

Comparisons with tadpoles of the *D. microcephalus* species group were based on the following descriptions: Abreu *et al.* (2013) [*D. haddadi* (Bastos & Pombal, 1996)], Bokermann (1963a) [*D. sanborni* (Schmidt, 1944), *D. berthalutzae* (Bokermann, 1962)], Carvalho-e-Silva *et al.* (2003) [*D. studerae* (Carvalho-e-Silva *et al.*, 2003)], Cei (1980) (*D. sanborni*), Cruz & Dias (1991) [*D. bipunctatus* (Spix, 1824), *D. meridianus* (Lutz, 1954)], Cruz *et al.* (2000) [*D. pseudomeridianus* (Cruz, Caramaschi & Dias, 2000)], Duellman & Fouquette (1968) [*D. microcephalus* (Cope, 1886), *D. phlebodes* (Stejneger, 1906)], Duellman (1972) [*D. rhodopeplus* (Günther, 1858)], Lavilla (1990) [*D. nanus* (Boulenger, 1889)], Lourenço-de-Moraes *et al.* (2012) (*D. haddadi*), Pugliese *et al.* (2000) [*D. decipiens* (Lutz, 1925); *D. oliveirai* (Bokermann, 1963b)], and Pugliese *et al.* (2001) [*D. rubicundulus* (Reinhardt & Lütken, 1862)].

**Description.** Body violin-shaped, elongated in dorsal view and slightly depressed in lateral view (Fig. 1A, B, C), wider than high (BH/BW 0.77–0.94, 0.87 ± 0.07); body height about 50% of body length (BH/BL 0.45–0.54, 0.50 ± 0.03); body length 25% of total length (BL/TL 0.24–0.26, 0.25 ± 0.01). Snout elliptical to round in dorsal view. Nostrils small, elliptic, anteriorly located close to oral disc, laterally and dorsally visible, their major axis 5% of body width (N/BW 0.02–0.09, 0.06 ± 0.03). Nostril-snout distance about 3% of body length (NS/BL 0.02–0.05, 0.03 ± 0.01). Eyes laterally directed, located in the second third of the body, eye diameter approximately 25% of body width (E/BW 0.22–0.33, 0.26 ± 0.03); interorbital distance about 55% of body width (IO/BW 0.56–0.61, 0.58 ± 0.02). Spiracle single, long,

## References

- Ab'Sáber, A.N. (1977) Os domínios morfoclimáticos na América do Sul. Primeira aproximação. *Geomorfologia*, 52, 1–21.
- Abreu, R.O., Napoli, M.F., Camardelli, M. & Fonseca, P.M. (2013) The tadpole of *Dendropsophus haddadi* (Amphibia, Anura, Hylidae): additions on morphological traits and comparisons with tadpoles of the *D. decipiens* and *D. microcephalus* species groups. *Sitientibus, Série Ciências Biológicas*, 13, 1–4.  
<http://dx.doi.org/10.13102/scb202>
- Bastos, R.P. & Pombal, J.P. (1996) A new species of *Hyla* (Anura: Hylidae) from eastern Brazil. *Amphibia-Reptilia*, 17, 325–331.  
<http://dx.doi.org/10.1163/156853896X00054>
- Bokermann, W.C.A. (1962) Cuatro nuevos hylidos del Brasil. *Neotropica*, 8, 81–92.
- Bokermann, W.C.A. (1963a) Girinos de Anfíbios Brasileiros, (Amphibia – Salientia). *Anais da Academia Brasileira de Ciências*, 35 (3), 465–474.
- Bokermann, W.C.A. (1963b) Nova espécie de *Hyla* da Bahia, Brasil (Amphibia, Salientia). *Atas da Sociedade de Biologia do Rio de Janeiro*, 7, 6–8.
- Boulenger, G.A. (1889) On a collection of batrachians made by Prof. Charles Spegazzini at Colonia Resistencia, South Chaco, Argentine Republic. *Annali del Museo Civico di Storia Naturale di Genova*, Series 2 (7), 246–249.
- Carvalho-e-Silva, S.P., Carvalho-e-Silva, A.M.P.T. & Izeckson, E. (2003) Nova espécie de *Hyla Laurenti* do grupo de *H. microcephala* Cope (Amphibia, Anura, Hylidae) do nordeste do Brasil. *Revista Brasileira de Zoologia*, 20, 553–558.  
<http://dx.doi.org/10.1590/S0101-81752003000300029>
- Cei, M.J. (1980) Amphibians of Argentina. *Monitore Zoologico Italiano*, N.S., Monografia, 2, 1–609.
- Cochran, D.M. (1948) A new subspecies of tree frog from Pernambuco, Brazil. *Journal of the Washington Academy of Sciences*, 38, 316–318.
- Cope, E.D. (1886) Thirteenth contribution to the herpetology of tropical America. *Proceedings of the American Philosophical Society*, 23, 271–287.
- Cruz, C.A.G. & Dias, A.G. (1991) Girinos do grupo “microcephala” do estado do Rio de Janeiro (Amphibia, Anura, Hylidae). *Revista Brasileira de Zoologia*, 7 (4), 679–683.  
<http://dx.doi.org/10.1590/S0101-81751990000400023>
- Cruz, C.A.G., Caramaschi, U. & Dias, A.G. (2000) Espécie nova de *Hyla Laurenti*, 1768 do estado do Rio de Janeiro, Brasil (Amphibia, Anura, Hylidae). *Boletim do Museu Nacional*, 434, 1–8.
- Duellman, W.E. & Fouquette, M.J. (1968) Middle american frogs of the *Hyla microcephala* group. *University of Kansas Publications, Museum of Natural History*, 17, 517–557.
- Duellman, W.E. (1972) The Systematic status and life history of *Hyla rhodopepla* Günther. *Herpetologica*, 18 (4), 369–375.
- Faivovich, J., Haddad, C.F.B., Garcia, P.C.A., Frost, D.R., Campbell, J.A. & Wheeler, W.C. (2005) Systematic review of the frog family Hylidae, with special reference to Hylinae: phylogenetic analysis and taxonomic revision. *Bulletin of the American Museum of Natural History*, 294, 1–240.  
[http://dx.doi.org/10.1206/0003-0090\(2005\)294\[0001:SROTFF\]2.0.CO;2](http://dx.doi.org/10.1206/0003-0090(2005)294[0001:SROTFF]2.0.CO;2)
- Frost, D.R. (2014) Amphibian Species of the World: an Online Reference. Version 6.0. Electronic database available from: <http://research.amnh.org/herpetology/amphibia/index.html>. American Museum of Natural History, New York, USA (25 February 2015)
- Gosner, K.L. (1960) A simplified table for staging anuran embryo and larvae with notes on identification. *Herpetologica*, 16, 183–190.
- Günther, A.C.L.G. (1858) Neue Batrachier in der Sammlung des britischen Museums. *Archiv für Naturgeschichte*, 24, 319–328.
- Lavilla, E.O. (1990) The Tadpole of *Hyla nana*. *Journal of Herpetology*, 24, 207–209.  
<http://dx.doi.org/10.2307/1564233>
- Lourenço-de-Moraes, R., Campos, F.S. & Toledo, L.F. (2012) The tadpole of *Dendropsophus haddadi* (Bastos & Pombal 1996) (Hylidae: Hylinae). *Zootaxa*, 3476, 86–88.
- Lutz, A. (1925) Batraciens du Brésil. *Comptes Rendus et Mémoires Hebdomadaires des Séances de la Société de Biologie et des ses Filiales*, 93, 211–214.
- Lutz, B. (1954) Anfíbios anuros do Distrito Federal. *Memórias do Instituto Oswaldo Cruz*, 52, 155–197.  
<http://dx.doi.org/10.1590/S0074-02761954000100009>
- Lutz, B. (1973) *Brazilian Species of Hyla*. University of Texas Press, Austin/London, 265 pp.
- McDiarmid, R.W. & Altig, R. (1999) *Tadpoles: The Biology of Anuran Larvae*. University of Chicago Press, Chicago, 444 pp.
- Mercês, E.A. & Juncá, F.A. (2010) Girinos de três espécies de *Aplastodiscus* Lutz, 1950 (Anura, Hylidae) ocorrentes no estado da Bahia, Brasil. *Biota Neotropica*, 10, 167–172.

- <http://dx.doi.org/10.1590/S1676-06032010000400022>
- Pugliese, A., Alves, A.C.R. & Carvalho-e-Silva, S.P. (2000) The tadpoles of *Hyla oliveirai* and *Hyla decipiens* with notes on the *Hyla microcephala* group (Anura, Hylidae). *Alytes*, 18, 73–80.
- Pugliese, A., Alves, A.C.R. & Pombal-Jr, J.P. (2001) The tadpole of *Hyla rubicundula* (Anura: Hylidae). *Journal of Herpetology*, 35, 686–688.  
<http://dx.doi.org/10.2307/1565914>
- Reinhardt, J.T. & Lütken, C.F. (1862) Bidrag til Kundskab om Brasiliens Padder og Krybdyr. Förste Afdeling: Padderne og Öglerne. *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i Kjøbenhavn*, Series 2 (3), 143–242.
- Rivero, J.A. (1971) Tres nuevos records y una nueva especie de anfibios de Venezuela. *Caribbean Journal of Science*, 11 (1–2), 1–9.
- Schmidt, K.P. (1944) New frogs from Misiones and Uruguay. *Field Museum of Natural History Publication, Zoological Series*, 29, 153–160.
- Spix, J.B.V. (1824) *Animalia nova sive species novae testudinum et ranarum quas in itinere per Brasiliam annis MDCCCXVII–MDCCXX jussu et auspiciis Maximiliani Josephi I. Bavariae Regis*. Typis Franc. Seraph. Hübschmanni, Monachii, 53 pp.
- Stejneger, L. (1906) A new tree toad from Costa Rica. *Proceedings of the United States National Museum*, 30, 817–818.  
<http://dx.doi.org/10.5479/si.00963801.1471.817>
- Zina, J., Silva, G.R., Loebmann, D. & Orrico, V.G.D. (2014) The recognition of *Dendropsophus minusculus* (Rivero, 1971) (Hylidae, Dendropsophini) as a highly polymorphic, multi-domain distributed species. *Brazilian Journal of Biology*, 74, S146–S153.  
<http://dx.doi.org/10.1590/1519-6984.22912>