



<http://dx.doi.org/10.11646/zootaxa.3860.3.8>

<http://zoobank.org/urn:lsid:zoobank.org:pub:134481C3-F21F-4A68-AEA0-9EC347214EFC>

Description of the tadpole of *Proceratophrys carranca* Godinho, Moura, Lacerda and Feio, 2013, (Anura, Odontophrynidae)

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Proceratophrys carranca Godinho, Moura, Lacerda & Feio, 2013 belongs to the *P. cristiceps* group, which currently contains 15 species (Brandão *et al.* 2013). This group is defined by species lacking palpebral appendages, postocular swellings and inhabiting mainly seasonally dry open environments (Cerrado and Caatinga domains) in Brazil (Giaretta *et al.* 2000). Using molecular data, Amaro *et al.* (2009) showed the non-monophyletic status of the *P. cristiceps* group. These authors emphasize that more studies are needed for to understand the taxonomy of the genus *Proceratophrys*. Larval characters are important tools that make a significant contribution to the resolution of taxonomic problems.

Herein we describe tadpoles of *Proceratophrys carranca* that were collected in January 2012 from a stream at the Fazenda Serra do Cristal, municipality of Buritizeiro, state of Minas Gerais (MG), Brazil, (17°24'13" S, 45°03'36" W; 654 m a.s.l.; MZUFV 264–6) located at the type locality of the species. All tadpoles were readily preserved in 10% formalin, and housed at the herpetological collection of the Museu de Zoologia João Moojen (MZUFV), Universidade Federal de Viçosa, municipality of Viçosa (MG), Brazil. Three tadpoles were reared to metamorphosis to confirm species identity (MZUFV 12601–03).

Description of the external morphology was based on seventeen tadpoles at stages 28–41 (Gosner 1960). All measurements were taken using a digital caliper (to the nearest 0.1 mm) and are expressed in millimeters. Morphological measurements follow Altig & McDiarmid (1999) and Mêrces & Juncá (2010).

Measurements (Standard deviation): Stages 38–29 (n=5): Total Length (TL): 20.76 (2.55); Body Length (BL): 8.8 (0.80); Body Height (BH): 5.13 (0.31); Body Width (BW): 5.7 (0.43); Tail Length (TLG): 11.96 (1.77); Maximum Tail Height (MTH): 4.15 (0.56); Tail Muscle Height (TMH): 1.84 (0.19); Dorsal Fin Height (DFH): 1.5 (0.38); Ventral Fin Height (VFH): 0.92 (0.19); Eye Diameter (ED): 0.96 (0.11); Interorbital Distance (IOD): 1.93 (0.18); Internostril Distance (IND): 1.44 (0.12); Spiracle Length (SL): 0.82 (0.10); Oral Disc Width (ODW): 1.82 (0.20); Nostril-snout Distance (NSD): 1.44 (0.15), and Eyes-snout Distance (ESD): 2.67 (0.46).

Stages 32–34 (n=5): TL: 28.11 (0.97); BL: 10.86 (0.16); BH: 5.93 (0.32); BW: 7.0 (0.36); TLG: 16.86 (0.84); MTH: 5.33 (0.62); TMH: 2.55 (0.23); DFH: 1.8 (0.25); VFH: 0.93 (0.38); ED: 1.33 (0.10); IOD: 2.69 (0.10); IND: 1.84 (0.11); SL: 0.86 (0.21); ODW: 2.22 (0.13); NSD: 1.73 (0.14), and ESD: 3.56 (0.17).

Stage 35 (n=2): TL: 29.95 (2.08); BL: 12.13(0.35); BH: 6.6 (0.09); BW: 7.54 (0.65); TLG: 17.83 (2.43); MTH: 5.9 (0.14); TMH: 2.90 (0.14); DFH: 1.93 (0.09); VFH: 1.06 (0.374); ED: 1.40 (0.00); IOD: 2.88 (0.162); IND: 1.98 (0.028); SL: 1.03 (0.424); ODW: 2.51 (0.162); NSD: 1.67 (0.155), and ESD: 3.7 (0.141).

Stage 37–38 (n=3): TL: 29.66 (0.56); BL: 11.13 (0.54); BH: 6.2 (0.33); BW: 7.42 (0.66); TLG: 18.40 (0.21); MTH: 5.87 (0.10); TMH: 2.80 (0.04); DFH: 1.93 (0.13); VFH: 1.13 (0); ED: 1.78 (0.07); IOD: 3.07 (0.09); IND: 1.93 (0.07); SL: 1.00 (0.04); ODW: 2.45 (0.17); NSD: 2.07 (0.27) and ESD: 3.88 (0.50).

Stage 41 (n=2): TL: 27.16 (1.94); BL: 10.53 (0.04); BH: 5.17 (0.60); BW: 6.6 (0.00); TLG: 16.63 (1.99); MTH: 4.89 (0.05); TMH: 2.14 (0.01); DFH: 1.65 (0.07); VFH: 1.10 (0.141); ED: 1.59 (0.11); IOD: 3.82 (0.14); IND: 2.08 (0.07); SL: 0.82 (0.00); ODW: 2.41 (0.35); NSD: 1.51 (0) and ESD: 3.40 (0.10).

Tadpole description: Body depressed, wider than high, rounded and depressed in lateral view and elliptic in dorsal view (Figure 1c). Snout rounded in lateral view and oval in dorsal view. Eyes large, dorsolaterally positioned and laterally directed. Nostrils smalls, oval, dorsally positioned, closer to the eyes than to the snout. Spiracle short, sinistral, lateroventrally positioned, with posterodorsal opening and inner wall free from body (Figure 1a). Vent tube short, both walls attached directly to ventral fin with dextral opening. Tail as tall as the body, with an obtuse tip. Dorsal fin more curved than ventral fin. Dorsal fin originates at the posterior third of the body, and ventral fin originates at the vent tube level. Oral disc emarginated ventrally positioned. Marginal papillae arranged in a single row in the posterior region and double in the laterals regions. Posterior jaw sheath V-shaped with free margin. Labial tooth row formula (LTRF) 2(2)/

ventral fin with brown edge, the muscular part of tail with a slightly dispersed spots and upper part of muscle tail with 4–5 five bars in *P. schirchi*).

TABLE 1. Comparison of selected larval characters among species of the *Proceratophrys cristiceps* group. n= number of tadpoles used in the description. *near to the eyes or near to the snout. All of them show a LRTF=2(2)/3(1).

| Species (n) | Spiracle | Nostrils position* | Nostril shape | Oral disc position | Caudal end | Reference |
|---------------------------------|----------|--------------------|---------------|--------------------|------------|-----------------------------|
| <i>P. carranca</i> (n=17) | free | eyes | rounded | ventral | obtuse | present study |
| <i>P. concavitympanum</i> (n=2) | free | - | rounded | anteroventral | pointed | Giaretta <i>et al.</i> 2000 |
| <i>P. cristiceps</i> (n=20) | fused | snout | rounded | ventral | pointed | Vieira <i>et al.</i> 2007 |
| <i>P. cururu</i> (n=2) | - | snout | - | anteroventral | pointed | Eterovick & Sazima 1998 |
| <i>P. minuta</i> (n=9) | free | eyes | reniform | ventral | rounded | Napoli <i>et al.</i> 2011 |
| <i>P. moratoi</i> (n=9) | fused | - | rounded | ventral | rounded | Rossa-Feres & Jim 1996 |
| <i>P. schirchi</i> (n=5) | free | eyes | reniform | ventral | acute | Peixoto <i>et al.</i> 1984 |

Acknowledgments

Marco Antônio Peixoto and Daniellen Martins Pires are grateful to the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for the current scholarship. L.B. Godinho is grateful to the Coordenação de Aperfeiçoamento de Nível Superior (CAPES) for his current scholarship. We are grateful to the Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA) for the collection permit (30677-1/2011). We thank J. L. Neto for photographing of the tadpoles and to Anne Baldisseri for the English review. RNF thanks for CNPq for the productivity fellowship conceded. We are grateful to anonymous reviewers and to M. Vences for improve comments in the early version of this manuscript.

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