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The tadpole of *Sphaenorhynchus caramaschii*, with comments on larval morphology of *Sphaenorhynchus* (Anura: Hylidae)

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Abstract

We describe the tadpole of *Sphaenorhynchus caramaschii*. It differs from tadpoles of other species of *Sphaenorhynchus* in having a short spiracle, submarginal papillae, and alternating short and large marginal papillae in the oral disc. Some larval characteristics, like morphology and position of the nostrils, length of the spiracle, and size of the marginal papillae on the oral disc are discussed for tadpoles of other species of *Sphaenorhynchus*.

Key words: Hylinae, Dendropsophini, *Sphaenorhynchus*, taxonomy, systematics

Introduction

The Neotropical hylid frog genus *Sphaenorhynchus* Tschudi includes small greenish treefrogs that inhabit temporary, permanent, or semi-permanent ponds in open areas where males vocalize while perched on the floating vegetation or partially submerged in the water (e.g. Lutz & Lutz 1938; Bokermann 1973; Cruz & Peixoto 1980). *Sphaenorhynchus* is currently composed of 14 species, three of which are widespread throughout the Amazon basin [*S. carneus* (Cope), *S. dorisae* (Goin), and *S. lacteus* (Daudin)]. The latter is also present in northeastern Brazil (states of Maranhão and Piauí; Caramaschi *et al.* 2009; Benício *et al.* 2011) and Trinidad (recorded as *Hyla orophila* by Kenny 1969). The other 10 species [*S. botocudo* Caramaschi, Almeida & Gasparini, *S. bromelicola* Bokermann, *S. caramaschii* Toledo, Garcia, Lingnau & Haddad, *S. mirim* Caramaschi, Almeida & Gasparini, *S. orophilus* (Lutz & Lutz), *S. palustris* Bokermann, *S. pauloalvini* Bokermann, *S. planicola* (Lutz & Lutz), *S. prasinus* Bokermann, and *S. surdus* (Cochran)] are distributed in the Atlantic Forest, from the northern portion of the State of Rio Grande do Sul to the State of Pernambuco. The remaining species, *S. platycephalus* (Werner), is of uncertain taxonomic status and is known solely from the poorly preserved holotype assigned to South America (Harding 1991; Frost 2014).

The monophyly of *Sphaenorhynchus* has been tested on the basis of only limited taxon sampling (Faivovich *et al.* 2005; Wiens *et al.* 2006; Pyron & Wiens 2011) and the relationships among its species have not been studied in a quantitative phylogenetic framework. Nevertheless, many morphological synapomorphies have been suggested for *Sphaenorhynchus* (Duellman & Wiens 1992; Faivovich *et al.* 2005), including some related to larval morphology such as structure and position of the nostrils, and the presence of large marginal papillae in some species. Also, Cruz & Peixoto (1980) tentatively grouped *S. bromelicola* with *S. orophilus* and *S. planicola* with *S. prasinus* based on some larval similarities as total length, color pattern, spiracle length, and marginal papillae size.

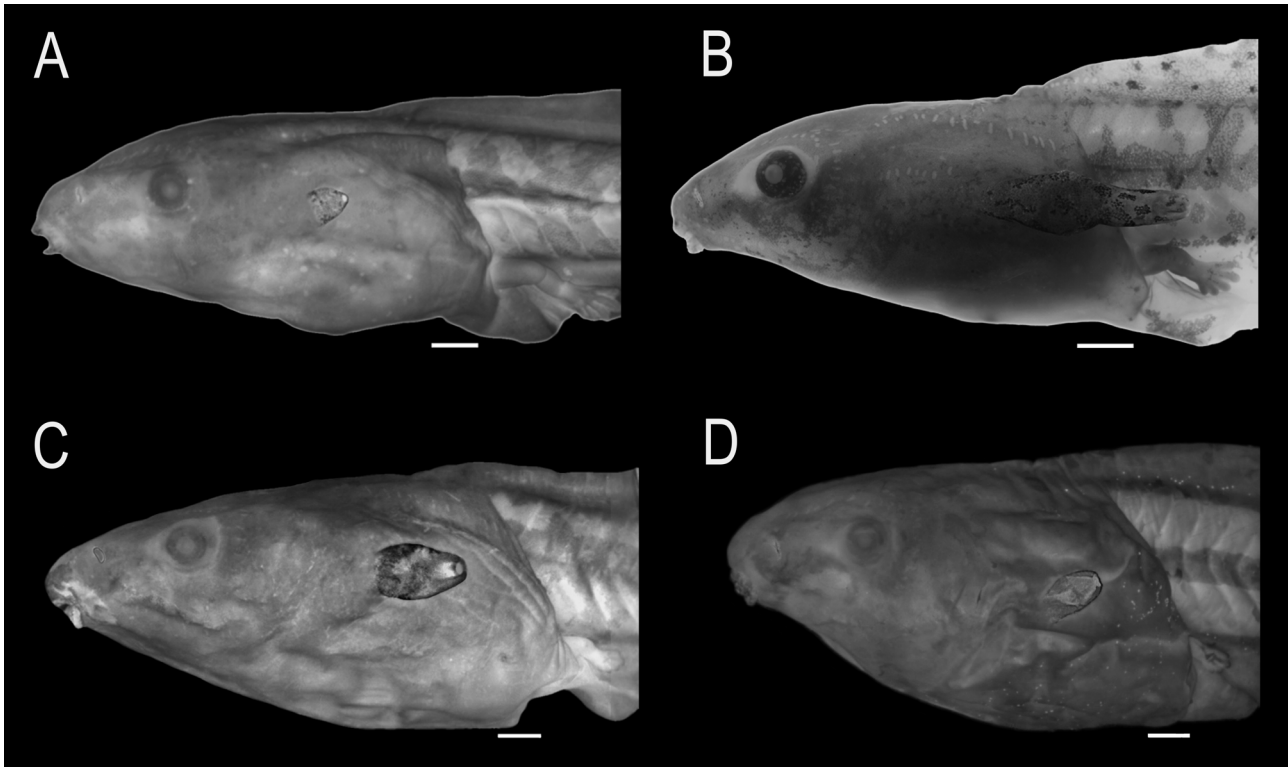


FIGURE 5. Lateral views of larvae of *Sphaenorhynchus*. A: *S. prasinus* (MZUSP 79553, stage 37). B: *S. palustris* (MNRJ 42616, stage 37). C: *S. bromelicola* (MZUSP 79559, stage 35). D: *S. orophilus* (MZUSP 57915, stage 34). Spiracles are digitally highlighted. Scale bars = 2.0 mm. Photos A, C and D: B. Blotto. Photo B: M. Rivera-Correa.

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APPENDIX 1. Larvae examined.

Sphaenorhynchus bromelicola—BRAZIL: *Bahia*: Maracás, Fazenda Canabrava, MZUSP 79559.

Sphaenorhynchus palustris—BRAZIL: *Bahia*: Porto Seguro, Estação Vera Cruz, RPPN, MNRJ 42616.

Sphaenorhynchus pauloalvini—BRAZIL: *Bahia*: Ilhéus, MZUSP 79580, 79568.

Sphaenorhynchus planicola—BRAZIL: *Rio de Janeiro*: Itaguaí, MZUSP 79552.

Sphaenorhynchus prasinus—BRAZIL: *Bahia*: Ilhéus, MZUSP 79571, 79553; CFBH 38057.

Sphaenorhynchus orophilus—BRAZIL: *Between São Paulo and Rio de Janeiro*, Serra da Bocaina, Bonito, ALMN 4324. *Santa Catarina*: between Porto União and Concórdia, Rio Roseira, MZUSP 57915.