



A new species of *Microcaecilia* Taylor, 1968 (Amphibia: Gymnophiona: Siphonopidae) from Amazonian Brazil

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Abstract

A new species of siphonopid caecilian, *Microcaecilia butantan* sp. nov., is described based on four specimens from Belterra, in the State of Pará, Brazil. The new species differs from all other *Microcaecilia* in having a combination of more than 135 primary annuli and long premaxillary-maxillary tooth series that extend posteriorly beyond the choanae. Some specimens were dug from soil in a cupuaçu (*Theobroma grandiflorum*) plantation suggesting that this form of agriculture provides an environment suitable for at least some caecilians.

Key words: caecilians, South America, systematics, taxonomy

Introduction

Upon its first description, the Neotropical caecilian genus *Microcaecilia* Taylor, 1968 included only three nominal species of relatively small Neotropical caecilians with the eyes covered by bone. *Microcaecilia* has subsequently expanded substantially both through the descriptions of new species (Taylor 1969; Nussbaum and Hoogmoed 1979; Wilkinson *et al.* 2009; 2013a, Wilkinson & Kok 2010; Maciel & Hoogmoed 2011a,b, 2013; Donnelly & Wake 2013) and through acts of synonymy at the generic level (Wilkinson *et al.* 2013b, 2014). *Microcaecilia* currently comprises 15 species making it the second most speciose South American genus of caecilians (and the third most speciose genus globally behind *Caecilia* L. and *Ichthyophis* Fitzinger, 1843). Here we describe a further new species of *Microcaecilia* from Brazil. The species is identified as a *Microcaecilia* on the basis of it being a South American species with eyes under bone, tentacular apertures closer to the eyes than the nares, and no diastemata between the vomerine and palatine tooth series (Wilkinson *et al.*, 2011; 2013b).

Material and methods

Animals were obtained by digging with bladed hoes, exclusively during daylight hours. Specimens were killed by anaesthesia (MS222) or accidentally during digging, fixed in 5% formalin for at least two days, washed in water and stored in 70% ethanol. Total lengths and circumferences were measured to the nearest millimetre (mm) with a ruler, the latter by wrapping a piece of string around the body. Other measurements were made to the nearest 0.1 mm with dial callipers. Observations and counts of teeth were facilitated by the Nussbaum technique, i.e. using a directed stream of compressed air to temporarily dry and shrink the gingivae (Wilkinson *et al.* 2013a). Dermal and subdermal scales were examined and sought respectively with the methods described by Wilkinson *et al.* (2013a). Sex was determined by direct examination of gonads. Vertebrae of the holotype were counted from an X-radiograph. Condition of the orbit was assessed by probing with a fine pin and by X-radiography.

Following Kamei *et al.* (2009, 2013), Wilkinson & Kok (2010), Kotharambath *et al.* (2012) and Agarwal *et al.* (2013) we refer to the fleshy margins of the upper and lower jaws that form the edges of the mouth as lips and use the following abbreviations for anatomical features and ratios of measurements: AG = annular groove; AM =

Acknowledgments

We are grateful to Taran Grant, Hussam Zaher and Carolina Mello of the MZUSP for loans of specimens in their care. For loans of comparative material (see Wilkinson *et al.* 2013b for a list) we thank Roger Perez and the Museo de Biología, Universidad Central de Venezuela, Caracas; Rainer Günther and the Museum für Naturkunde, Berlin; Alain Dubois and Ivan Ineich and MNHNP; Ronald de Ruiter and the Nationaal Natuurhistorisch Museum Naturalis, Leiden; Harold Voris and Alan Resetar and the Field Museum of Natural History, Chicago; Jose Rosado and the Museum of Comparative Zoology, Harvard and Calvin Bernard, Center for Biological Diversity, University of Guyana; Ana Lúcia C. Prudente and the Museu Paraense Emilio Goeldi, Belém. We thank Jose Rosado also for facilitating examination of the holotype of *Microcaecilia pricei*. We also thank Natalino da Silva and Raimundo Fredson da Silva Souza for assistance in fieldwork. David Gower, Rachunliu Kamei and Adriano Maciel provided reviews that improved the manuscript. We are grateful to Dr. Otávio Azevedo Mercadante for inviting the authors to be part of Butantan na Amazônia project. SISBIO (Brazilian Federal Government) provided the license for the collection of specimens (# 15.964-1) to MMA. CNPq (Brazilian Research Council) provided grants to CJ and MMA.

References

- Agarwal, I., Wilkinson, M., Mohapatra, P.P., Dutta, S.K., Giri, V. & Gower, D.J. (2013) The first teresomatan caecilian (Amphibia: Gymnophiona) from the Eastern Ghats of India—a new species of *Gegeneophis* Peters, 1880. *Zootaxa*, 3693 (4), 534–546.
<http://dx.doi.org/10.11646/zootaxa.3693.4.7>
- Donneley, M.A. & Wake, M.H. (2013) A new species of *Microcaecilia* (Amphibia: Gymnophiona) from Guyana, with comments on *Epicrionops niger*. *Copeia*, 2013, 223–231.
<http://dx.doi.org/10.1643/ch-12-094>
- Kamei, R.G., Wilkinson, M., Gower, D.J. & Biju, S.D. (2009) Three new species of striped *Ichthyophis* (Amphibia: Gymnophiona: Ichthyophiidae) from the northeast Indian states of Manipur and Nagaland. *Zootaxa*, 2267, 26–42.
- Kamei, R.G., Gower, D.J., Wilkinson, M. & Biju, S. (2013) Systematics of the caecilian family Chikilidae (Amphibia: Gymnophiona) with the description of three new species of *Chikila* from northeast India. *Zootaxa*, 3666 (4), 401–435.
<http://dx.doi.org/10.11646/zootaxa.3666.4.1>
- Kotharambath, R., Wilkinson, M., Oommen, O.V., George, S., Nussbaum, R.A. & Gower, D.J. (2012) On the systematics, distribution and conservation status of *Ichthyophis longicephalus* Pillai, 1986 (Amphibia: Gymnophiona: Ichthyophiidae). *Journal of Natural History*, 46, 2935–2959.
<http://dx.doi.org/10.1080/00222933.2012.717972>
- Maciel, A.O. & Hoogmoed, M.S. (2011a) Taxonomy and distribution of caecilian amphibians (Gymnophiona) of Brazilian Amazonia, with a key to their identification. *Zootaxa*, 2984, 1–53.
- Maciel, A.O. & Hoogmoed, M.S. (2011b) Notes on the Vertebrates of northern Pará, Brazil: a forgotten part of the Guianan Region, III. A new species of *Microcaecilia* (Amphibia: Gymnophiona: Caeciliidae). *Boletim do Museu Paraense Emilio Goeldi Série Ciências Naturais*, 6, 67–72.
- Maciel, A.O. & Hoogmoed, M.S. (2013) A new species of *Microcaecilia* (Amphibia: Gymnophiona: Siphonopidae) from the Guianan region of Brazil. *Zootaxa* 3693 (3), 387–394.
<http://dx.doi.org/10.11646/zootaxa.3693.3.9>
- Nussbaum, R.A. & Hoogmoed, M.S. (1979) Surinam caecilians, with notes on *Rhinatrema bivittatum* and the description of a new species of *Microcaecilia* (Amphibia, Gymnophiona). *Zoologische Mededelingen Leiden*, 54, 217–235.
- Taylor, E.H. (1968) *The caecilians of the World: a taxonomic review*. Lawrence: University of Kansas Press, 848 pp.
- Taylor, E.H. (1969) A new caecilian from Brazil. *The University of Kansas Science Bulletin*, 48, 307–313.
- Wilkinson, M., Nussbaum, R.A. & Hoogmoed, M.S. (2009) A new species of *Microcaecilia* (Amphibia: Gymnophiona: Caeciliidae) from Suriname. *Herpetologica*, 65, 413–418.
<http://dx.doi.org/10.1655/08-030.1>
- Wilkinson, M. & Kok, P.J.R. (2010) A new species of *Microcaecilia* (Amphibia: Gymnophiona: Caeciliidae) from Guyana. *Zootaxa*, 2719, 35–40.
- Wilkinson, M., San Mauro, D., Sherratt, E. & Gower D.J. (2011) A nine-family classification of caecilians (Amphibia: Gymnophiona). *Zootaxa*, 2874, 41–64.
- Wilkinson, M., Sherratt, E., Starace, F. & Gower, D.J. (2013a) A new species of skin-feeding caecilian and the first report of reproductive mode in *Microcaecilia* (Amphibia: Gymnophiona: Siphonopidae). *PLoS ONE*, 8 (3), e57756.
<http://dx.doi.org/10.1371/journal.pone.0057756>
- Wilkinson, M., O'Connor, A. & Nussbaum, R.A. (2013b) Taxonomic status of the neotropical caecilian genera *Brasilotyphlus* Taylor, 1968, *Microcaecilia* Taylor, 1968 and *Parvicaecilia* Taylor, 1968 (Amphibia: Gymnophiona: Siphonopidae). *Occasional Papers of the Museum of Zoology, University of Michigan*, 744, 1–12.