



<http://dx.doi.org/10.11646/zootaxa.3847.1.3>

<http://zoobank.org/urn:lsid:zoobank.org:pub:93242732-2B5A-4083-8EC5-6FA53BD83E7D>

Review of the species of the genus *Serrapinnus* Malabarba, 1998 (Teleostei: Characidae: Cheirodontinae) from the rio Tocantins-Araguaia basin, with description of three new species

LUIZ R. MALABARBA¹ & FERNANDO C. JEREP^{2,3}

¹Departamento de Zoologia, Universidade Federal do Rio Grande do Sul, Av. Bento Gonçalves 9500, 91501-970 Porto Alegre, RS, Brazil.

E-mail: malabarb@ufrgs.br

²Universidade Estadual de Londrina, Programa de Pós-Graduação em Ciências Biológicas, Departamento de Biologia Animal e Vegetal, Centro de Ciências Biológicas, 86057-970 Londrina, PR, Brazil. fjerep@gmail.com

³Research Associate, Division of Fishes, Department of Vertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, D.C.

Abstract

Species of the genus *Serrapinnus* from the rio Tocantins-Araguaia basin are revised and three new species are described. *Serrapinnus aster* new species is diagnosed by the presence of scimitar-shaped ventral procurrent caudal-fin rays of mature males forming a semicircle and by the presence of 7–9 cusps on the premaxillary teeth; *S. lucindai* new species is distinguished from its congeners by the presence of a higher number of ventral procurrent caudal-fin rays (17 to 19); and *S. tocaninensis* new species differs from the remaining species of the genus by the elongation of the unbranched dorsal and pelvic-fin rays into filaments in mature males. *Serrapinnus sterbai* is recognized as broadly distributed in the Tocantins-Araguaia basin and is redescribed based on specimens from across its entire distribution. A key for the cheirodontines occurring in the Atlantic drainages of northeastern Brazil, from the rio Tocantins-Araguaia to the rio Paraguaçu is provided.

Key words: Cheirodontini, *Ctenocheirodon*, identification key, sexual dimorphism, taxonomy

Resumo

As espécies do gênero *Serrapinnus* da bacia dos rios Tocantins-Araguaia são revisadas e três novas espécies são descritas. *Serrapinnus aster* espécie nova é diagnosticada pela presença de raios procorrentes ventrais da nadadeira caudal com o formato de cimitarra nos machos maduros, formando um semicírculo e pela presença de 7 a 9 cúspides nos dentes do pré-maxilar; *Serrapinnus lucindai* espécie nova é diagnosticada de seus congêneres pela presença de maior número de raios procorrentes ventrais na nadadeira caudal (17 a 19); e *S. tocaninensis* difere das demais espécies do gênero pela presença dos raios não ramificados das nadadeiras dorsal e pélvica alongados em um filamento nos machos maduros. *Serrapinnus sterbai* espécie nova é diagnosticada como amplamente distribuída na bacia e redescrita com base em espécimes de toda sua área de distribuição. É fornecida uma chave para os queirodontíneos dos rios do nordeste brasileiro da bacia do rio Tocantins-Araguaia bacia do rio Paraguaçu.

Introduction

The genus *Serrapinnus* Malabarba was created together with a cladistic definition of the subfamily Cheirodontinae (Malabarba, 1998). In that study, *Serrapinnus* included a putative monophyletic group of cheirodontines previously assigned to other genera of the subfamily, such as *Cheirodon* Girard, *Odontostilbe* Cope and *Holoshesthes* Eigenmann. The species of *Serrapinnus* were found to share the following synapomorphies: the presence of the caudal peduncle conspicuously arched ventrally in mature males, and the main axis of those ventral procurrent caudal-fin rays not supported by the parhypural being perpendicular to the longitudinal axis of the body, whereas

Miguel Calmone. *Cheirodontops geayi*: USNM 121507, holotype, 35.5 mm SL, Venezuela, Estado de Aragua, río Guarico. *Compsura heterura*: FMNH 57825, holotype, 28.7 mm SL, Brazil, rio Itapicuru, Queimadas. *Holesthes heterodon* (= *Serrapinnus heterodon*): CAS 117522, paratypes, 4, 32.2–36.5 mm SL, Brazil, Minas Gerais, rio Grande, Jaguará. *Leptobrycon jatuaranae*: MCP 14936, 17, 20.8–25.1 mm SL, 3 c&s, Brazil, Amazonas, rio Negro. "*Macropsobrycon*" *xinguensis*: MCP 34546, 26, 18.6–29.1 mm SL, 3 c&s, Brazil, Mato Grosso, Nova Canaã do Norte, rio Kaiapá. *Microschemobrycon guaporensis*: FMNH 57926, holotype, 29.1 mm SL, Brazil, Maciel, rio Guaporé. *Odontostilbe hastatus*: FMNH 56383, holotype, 30.2 mm SL, Colombia, Soplaviento. *Oligobrycon microstomus*: holotype, 31.0 mm SL, Brazil, Jacarehy on rio Parahyba. *Oxybrycon* sp.: MCP 33105, 8, 13.7–14.9 mm SL, 2 c&s, Venezuela, Titi Lagoon, upper Río Orinoco basin. *Parecbasis cyclolepis*: FMNH 56677, holotype, 56.3 mm SL, Brazil, rio Madeira. MZUSP 26146, 7, 40.3–53.5 mm SL, Peru, Ucayali, rio Ucayali. *Pristella aubynei*: FMNH 52698, holotype, 34.9 mm SL, British Guiana. *Prodontocharax alleni*: CAS 117472, holotype, 32.8 mm SL, Peru, Ucayali, rio Amazonas basin. *Prodontocharax melanotus*: CAS 59793, holotype, 44.9 mm SL, Bolivia, La Paz, rio Amazonas drainage, Tumupasa. *Pseudocheirodon affinis*: CAS 117516, paratype, 10, 32.1–35.4 mm SL, Panama, rio Gatun, at Gatun. *Saccoderma melanostigma*: USNM 121519, holotype, 26.7 mm SL, Venezuela, rio San Juan, south of Mene Grande. *Spintherobolus broccae*: FMNH 58864, paratype, 1, 18.7 mm SL, Brazil, Rio de Janeiro. *Spintherobolus papilliferus*: FMNH 104802, holotype, 32.9 mm SL, Brazil, São Paulo, Alto da Serra. *Thrissobrycon pectinifer*: SU 16944, holotype, 26.8 mm SL, Brazil, Cucuhy, rio Negro. MCP 14932, 12, 26.4–30.2 mm SL, 3 c&s, Brazil, rio Arirara.

Acknowledgements

Special thanks to Fernando R. Carvalho (IBSJR) for the analysis of the type material of *Serrapinnus sterbai* and Richard P. Vari for his review of the manuscript. We are thankful to Carlos A. Lucena (MCP), Paulo H. F. Lucinda (UNT), Lucia Rapp Py-Daniel (INPA), Wilson Costa (UFRJ), Flávio C. T. Lima, Osvaldo Oyakawa (MZUSP), Paulo A. Buckup (MNRJ), Mary Anne Rogers, Kevin Swagel (FMNH), Richard Vari, Jerry Finan, Jeffrey Clayton (NMNH), John Lundberg, Mark Sabaj-Pérez (ANSP), David Catania and Jon D. Fong (CAS) for the loan of specimens, and museum and technical support. We thank José L. Birindelli (UEL) and project SACI for photographs of *S. sterbai*. LRM research is supported by CNPq (300705/2010-7; 477318/2012-6).

References

- Bertaco, V.A. & Carvalho, F.R. (2010) New species of *Hasemania* (Characiformes: Characidae) from central Brazil, with comments on the endemism of upper rio Tocantins basin, Goiás State. *Neotropical Ichthyology*, 8, 27–32. <http://dx.doi.org/10.1590/s1679-62252010000100004>
- Bertaco, V.A., Jerep, F.C. & Carvalho, F.R. (2011) New species of *Moenkhausia* Eigenmann (Ostariophysi: Characidae) from the upper Rio Tocantins basin in central Brazil. *Neotropical Ichthyology*, 9, 57–63. <http://dx.doi.org/10.1590/s1679-62252011000100003>
- Bührnheim, C.M., Carvalho, T.P., Malabarba, L.R. & Weitzman, S.H. (2008) A new genus and species of characid fish from the Amazon basin: the recognition of a relictual lineage of characid fishes (Ostariophysi: Cheirodontinae: Cheirodontini). *Neotropical Ichthyology*, 6, 663–678. <http://dx.doi.org/10.1590/s1679-62252008000400016>
- Bührnheim, C.M. & Malabarba, L.R. (2006) Redescription of the type species of *Odontostilbe* Cope, 1870 (Teleostei: Characidae: Cheirodontinae), and description of three new species from the Amazon basin. *Neotropical Ichthyology*, 4, 167–196. <http://dx.doi.org/10.1590/s1679-62252006000200004>
- Bührnheim, C.M. & Malabarba, L.R. (2007) Redescription of *Odontostilbe pulchra* (Gill, 1858) (Teleostei: Characidae: Cheirodontinae), and description of two new species from the rio Orinoco basin. *Neotropical Ichthyology*, 5, 1–20. <http://dx.doi.org/10.1590/s1679-62252007000100001>
- Fink, W.L. & Weitzman, S.H. (1974) The so-called cheirodontin fishes of Central America with descriptions of two new species (Pisces: Characidae). *Smithsonian Contributions to Zoology*, 172, 1–46. <http://dx.doi.org/10.5479/si.00810282.172>
- Jerep, F.C. & Malabarba, L.R. (2014) A new species of *Serrapinnus* Malabarba, 1998 (Teleostei: Characidae: Cheirodontinae) from Rio Grande do Norte State, northeastern Brazil. *Neotropical Ichthyology*, 12 (2), 301–308.
- Malabarba, L.R. (1998) Monophyly of the Cheirodontinae, characters and major clades (Ostariophysi: Characidae). *In*:

- Malabarba, L.R., Reis, R.E., Vari, R.P., Lucena, Z.M.S. & Lucena, C.A.S. (Eds.), *Phylogeny and Classification of Neotropical Fishes*. Edipucrs, Porto Alegre, pp. 193–233.
- Malabarba, L.R. (2003) Subfamily Cheirodontinae (Characins, tetras). *In*: Reis, R.E., Kullander, S.O. & Ferraris Jr., C. (Eds.), *Check list of the freshwater fishes of South and Central America*. Edipucrs, Porto Alegre, pp. 215–221.
- Malabarba, L.R. & Bertaco, V.A. (1999) Description of a new species of *Heterocheirodon* Malabarba (Teleostei: Characidae: Cheirodontinae: Cheirodontini) with further comments on the diagnosis of the genus. *Comunicações do Museu de Ciências e Tecnologia da PUCRS, Série Zoologia*, 12, 83–109.
- Malabarba, L.R. & Jerep, F.C. (2012) A new genus and species of cheirodontine fish from South America (Teleostei: Characidae). *Copeia*, 2012, 243–250.
<http://dx.doi.org/10.1643/ci-11-143>
- Malabarba, L.R., Lima, F.C.T. & Weitzman, S.H. (2004) A new species of *Kolpotocheirodon* (Teleostei: Characidae: Cheirodontinae: Compsurini) from Bahia, Northeastern Brazil, with new diagnosis of the genus. *Proceedings of the Biological Society of Washington*, 117, 317–329.
- Malabarba, L.R. & Weitzman, S.H. (1999) A new genus and new species of South American fishes (Teleostei: Characidae: Cheirodontinae) with a derived caudal fin, together with comments on internally inseminated Cheirodontines. *Proceedings of the Biological Society of Washington*, 112, 410–432.
- Malabarba, M.C.S.L. (1998) *Megacheirodon*, a new fossil genus of characiform fish (Ostariophysi: Characidae) from Tremembé Formation, Tertiary of São Paulo, Brazil. *Ichthyological Exploration of Freshwaters*, 8, 193–200.
- Mariguela, T.C., Ortí, G., Avelino, G.S., Abe, K.T. & Oliveira, C. (2013) Composition and interrelationships of a large Neotropical freshwater fish group, the subfamily Cheirodontinae (Characiformes: Characidae): a case study based on mitochondrial and nuclear DNA sequences. *Molecular Phylogenetics and Evolution*, 68, 23–34.
<http://dx.doi.org/10.1016/j.ympev.2013.03.011>
- Taylor, W.R. & Van Dyke, G.C. (1985) Revised procedures for staining and clearing small fishes and other vertebrates for bone and cartilage. *Cybium*, 9, 107–119.
- Weitzman, S.H. (1962) The osteology of *Brycon meeki*, a generalized Characidae fish, with an osteological definition of the family. *Stanford Ichthyological Bulletin*, 8, 1–77.
- Weitzman, S.H. & Malabarba, L.R. (1999) Systematics of *Spintherobolus* (Teleostei: Characidae: Cheirodontinae) from eastern Brazil. *Ichthyological Exploration of Freshwaters*, 10, 1–43.
- Zanata, A.M. & Vari, R.P. (2005) The family Alestidae (Ostariophysi, Characiformes): a phylogenetic analysis of a trans-Atlantic clade. *Zoological Journal of the Linnean Society*, 145, 1–144.
<http://dx.doi.org/10.1111/j.1096-3642.2005.00183.x>
- Zarske, A. (2012) *Serrapinnus sterbai* spec. nov. Beschreibung eines neuen Salmers (Teleostei: Characiformes: Characidae: Cheirodontinae) aus Brasilien mit Bemerkungen zu *S. gracilis* (Géry, 1960) comb. nov. und *S. littoris* (Géry, 1960) comb. nov. *Vertebrate Zoology*, 62, 3–17.