

# New records of fishes (Actinopterygii: Ostariophysi) from the Upper Tapajós River Basin

Fernando C. P. Dagosta<sup>1,2\*</sup>, Murilo N. L. Pastana<sup>1</sup> and André L. H. Esguícero<sup>1</sup>

1 Universidade de São Paulo - FFCLRP, Laboratório de Ictiologia de Ribeirão Preto, Departamento de Biologia, Avenida dos Bandeirantes, 3900. CEP 14040-901. Ribeirão Preto, SP, Brazil.

2 Museu de Zoologia da Universidade de São Paulo, Avenida Nazaré, 481, Ipiranga. CEP 04218-970. São Paulo, SP, Brazil.

\* Corresponding author. E-mail: [ferdagosta@yahoo.com.br](mailto:ferdagosta@yahoo.com.br)

**ABSTRACT:** The first report of *Sartor* (Anostomidae) and *Tatia intermedia* (Auchenipteridae) for the Upper Tapajós River Basin are presented here. *Sartor* is very rare on collections, and is reported only from the Trombetas, Tocantins and Upper Xingu river basins. *Tatia intermedia* is registered in the upper reaches of the Araguaia, Tocantins, Xingu, and Capim rivers, tributaries of the lower Amazon River in Brazil, northwards to the Suriname coastal rivers and the Essequibo River in Guyana.

Since freshwater fishes are embedded within a terrestrial landscape that limits dispersal within and among drainage basins it can provide unique opportunities for the identification of distribution patterns, which may reflect continental changes and biogeographical patterns (Berra 2007; Olden *et al.* 2010). The Neotropical freshwater ichthyofauna is the most diverse of the world (Reis *et al.* 2003) and the distribution of most species remain unclear.

Located in the Brazilian Shield and with 1,784 km length, the Tapajós River is a large southern tributary of the Amazon River (Costa 2007). The Upper Tapajós drainage is defined as the region upstream the confluence of the Teles Pires and Juruena rivers (Bertaco and Garutti 2007). As part of a general taxonomic revision of fish species from the Upper Juruena River, we have been examining the fish collection from this region deposited at LIRP (Laboratório de Ictiologia de Ribeirão Preto), São Paulo, Brazil. *Sartor* aff. *elongatus* measurements were summarized in Table 1 and follow Santos and Jégu (1987) with the exclusion of interdorsal distance, head height, snout height, and snout width. In this paper we report the first record of one genus and one species of fish for the Upper Tapajós River Basin. Fishes were collected under SEMA (Secretaria de Estado do Meio Ambiente - Mato Grosso) permit # 11/2010.

## ORDER CHARACIFORMES

### Anostomidae

*Sartor* aff. *elongatus* (Figure 1A)

*Sartor* is very rare on collections and only three valid species are recognized. *S. elongatus* Santos and Jégu, 1987 is reported from the Trombetas River Basin; *S. respectus* Myers and Carvalho, 1959 from the Upper Xingu River Basin; and *S. tucuruense* Santos and Jégu, 1987 from the Tocantins River Basin (Santos and Jégu 1987; Garavello and Britski 2003; Britski and Garavello 2007a).

The nine specimens collected (Appendix 1) in the Upper Juruena River (Figure 2) can be distinguished from *S. respectus* by having 16 circumpeduncular scales (vs. 12).

It differs from *S. tucuruense* by body depth (18.1-19.8 vs. 23-25.9% of SL), caudal peduncle length (15-18.1 vs. 18.5-20% of SL), caudal peduncle depth (8.6-9.8 vs. 10.4-11.2% of SL), interorbital width (38-41.8 vs. 43.3-45.5% of HL), head width (40.4-50.6 vs. 54.9-56.2% of HL), and orbital diameter (21-23.7 vs. 18.5-20.4% of HL). Despite the sharing of an elongated and thin body (up to 23% and 15.7% in SL, respectively) with *S. elongatus*, the specimens from Juruena River are distinguished from *Sartor elongatus* by the caudal peduncle length (15-18.1 vs. 19.2-22.1% of SL), and by the number of dark vertical bands (7-9 vs. 12-16). Santos and Jégu (1987) reported the presence of twelve to sixteen inconspicuous dark vertical bands dorsally on body not reaching the lateral line in *S. elongatus*. Facing the lack of *Sartor elongatus* from different life stages to perceive, or not, ontogenetic modifications on color pattern, the presence of only 7-9 dark bands in examined specimens from Juruena River Basin is interpreted as a

**TABLE 1.** Morphometric data of *Sartor* aff. *elongatus*, LIRP 8176, from the Upper Juruena River Basin (n = 9). SD = standard deviation.

	Range	Mean	SD
Standard length (mm)	59.5 - 79.8	70.9	-
Percents of standard length			
Body depth	18.1 - 19.8	19.0	0.5
Body width	13.0 - 14.1	13.5	0.4
Predorsal distance	45.8 - 48.3	47.3	0.7
Prepelvic distance	49.9 - 54.3	51.4	1.3
Preanal distance	74.6 - 78.6	76.3	1.3
Preadipose distance	83.8 - 86.1	84.4	0.7
Dorsal to adipose	23.9 - 26.0	25.0	0.6
Caudal peduncle depth	8.6 - 9.8	9.4	0.4
Caudal peduncle length	15.0 - 18.1	16.3	1.0
Head length	25.4 - 28.1	26.9	0.8
Percents of head length			
Interorbital width	38.0 - 41.8	39.4	1.3
Head width	40.4 - 50.6	46.1	3.3
Snout length	40.1 - 48.7	43.7	2.3
Orbital diameter	21.0 - 23.7	22.5	0.9

difference between both populations. Thus, regarding the fact of the specimens collected in the Upper Tapajós do not completely fit the morphometric data and coloration features attributed to *S. elongatus* we prefer to refer to it as *Sartor* aff. *elongatus*.



FIGURE 1. A) *Sartor* aff. *elongatus*, LIRP 8176, 78,65 mm SL. B) *Tatia intermedia*, LIRP 8189, 37,04 mm SL.

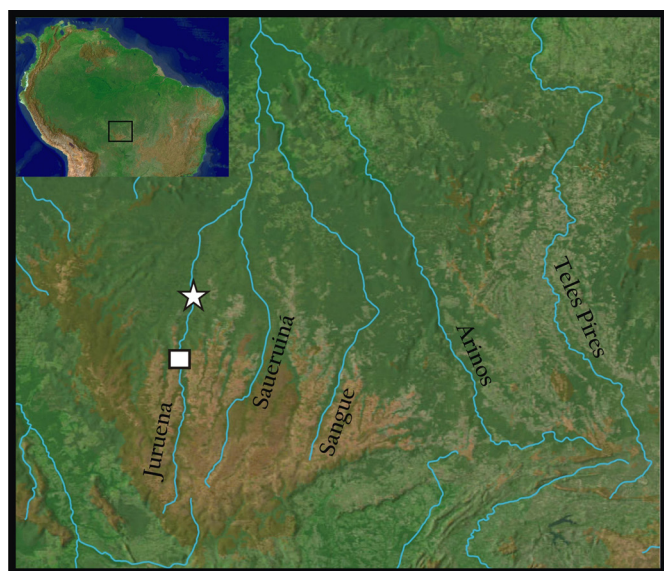


FIGURE 2. Records from *Sartor* aff. *elongatus* (star) and *Tatia intermedia* (square) in the Upper Jurueña River, Upper Tapajós Basin.

## ORDER SILURIFORMES

### Auchenipteridae

*Tatia intermedia* (Steindachner 1877) (Figure 1B)

The specimens collected in the Upper Jurueña River (Figure 2) have the externally recognizable characteristics of *Tatia*, proposed by Sarmento-Soares and Martins-Pinheiro (2008): caudal peduncle laterally compressed and deep with middorsal keel, eyes relatively large, first unbranched anal fin-ray not segmented and anal fin base modified in males. *T. intermedia* is distinguished from the other congeners by the presence of ellipsoid spots on body and short post-cleithral process not reaching vertical through origin of dorsal fin (Sarmento-Soares and Martins-Pinheiro 2008). According to the recent taxonomic revision of the genus performed by Sarmento-Soares and Martins-Pinheiro (2008), *T. intermedia* is the most widely distributed member of the genus, occurring in the upper reaches of the Araguaia, Tocantins, Xingu, Capim,

small tributaries of the lower Amazon River in Brazil, Essequibo River in Guyana, and coastal rivers of Surinam. The presence of this species on the Upper Tapajós River Basin further extends its distribution.

The description of several species in the last years (e.g. Moreira et al. 2002; Lucena 2003; Britski and Garavello 2005; 2007b; Bertaco and Carvalho 2005a, b; 2006; Fisch-Muller et al. 2005; Bertaco and Garutti 2007; Bertaco and Malabarba 2007; Lima et al. 2007; Britski and Lima 2008) reveal that the ichthyofauna of the Upper Tapajós River Basin is highly endemic and poorly known. The present work extends the distribution of *Sartor* aff. *elongatus* and *Tatia intermedia* adding these species records for the Upper Tapajós ichthyofauna.

**ACKNOWLEDGMENTS:** We are thankful to Ana C. Aquino and Hertz dos Santos for technical assistance at LIRP; to José L. de Figueiredo and Osvaldo Oyakawa for curatorial assistance provided during visits to MZUSP and to anonymous referee for their comments. The authors were benefited by the use of equipments acquired through the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP: 04/09219-6; 09/54931-0). FCPD was financially supported by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES).

### LITERATURE CITED

- Bertaco, V.A. and T.P. Carvalho. 2005a. New characid fish, *Hemigrammus skolioplatus* (Characiformes: Characidae) from upper rio Tapajós drainage, Central Brazil. *Comunicações do Museu de Ciências e Tecnologia da PUCRS, Série Zoologia* 18(2): 141-150.
- Bertaco, V.A. and T.P. Carvalho. 2005b. A new characid fish, *Hyphessobrycon hexastichos* (Characiformes: Characidae) from Chapada dos Parecis, Mato Grosso, Brazil. *Neotropical Ichthyology* 3(3): 439-443.
- Bertaco, V.A. and V. Garutti. 2007. New *Astyanax* from the upper rio Tapajós drainage, Central Brazil (Characiformes: Characidae). *Neotropical Ichthyology* 5(1): 25-30.
- Bertaco, V.A. and L.R. Malabarba. 2007. A New Species of *Hasemania* from the Upper Rio Tapajós Drainage, Brazil (Teleostei: Characiformes: Characidae). *Copeia* 2007(2): 350-354.
- Bertaco, V.A. and V. Garutti. 2007. New *Astyanax* from the upper rio Tapajós drainage, central Brazil (Characiformes: Characidae). *Neotropical Ichthyology* 5(1): 25-30.
- Berra, T.M. 2007. *Freshwater fish distribution*. Chicago: University of Chicago Press. 606 p.
- Britski, H.A. and J.C. Garavello. 2005. Uma nova espécie de *Leporinus* Agassiz, 1829, da bacia Amazônica (Ostariophysi: Characiformes: Anostomidae). *Comunicações do Museu de Ciências e Tecnologia da PUCRS, Série Zoologia* 18(2): 75-83.
- Britski, H.A. and J.C. Garavello. 2007a. Família Anostomidae; p. 23-27 In P.A. Buckup, N.A. Menezes and M.S. Ghazzi (ed.). *Catálogo das espécies de peixes de água doce do Brasil*. Rio de Janeiro: Museu Nacional.
- Britski, H.A. and J.C. Garavello. 2007b. Description of two new sympatric species of the genus *Hisonotus* Eigenmann & Eigenmann, 1889, from upper Rio Tapajós, Mato Grosso state, Brazil (Pisces: Ostariophysi: Loricariidae). *Brazilian Journal of Biology* 67(3): 413-420.
- Britski, H.A. and F.C.T. Lima. 2008. A New Species of *Hemigrammus* from the Upper Rio Tapajós Basin in Brazil (Teleostei: Characiformes: Characidae). *Copeia* 2008(3): 565-569.
- Carvalho, T.P. and V.A. Bertaco. 2006. Two new species of *Hyphessobrycon* (Teleostei: Characidae) from upper rio Tapajós Basin on Chapada dos Parecis, Central Brazil. *Neotropical Ichthyology* 4(3): 301-308.
- Costa, W.J.E.M. 2007. *Rivulus kayabi*, a new killifish from the Tapajós River Basin, southern Brazilian Amazon (Cyprinodontiformes: Rivulidae). *Ichthyological Exploration of Freshwaters* 18(4): 345-350.
- Fisch-Muller, S., A.R. Cardoso, J.P.P. Silva and V.A. Bertaco. 2005. Two new Amazonian species of armored catfishes (Siluriformes: Loricariidae): *Ancistrus verecundus* and *Ancistrus parecis*. *Neotropical Ichthyology* 3(4): 525-532.
- Garavello, J.C. and H.A. Britski. 2003. Family Anostomidae; p. 71-84 In R.E. Reis, S.O. Kullander and C.J. Ferraris Jr. (ed.). *Check List of the Freshwater Fishes of South and Central America*. Porto Alegre: EDIPUCRS.
- Lima, F.C.T., H.A. Britski and F.A. Machado. 2007. A new *Moenkhausia* (Characiformes: Characidae) from central Brazil, with comments on the area relationship between the upper rio Tapajós and upper rio

- Paraguai systems. *Aqua, International Journal of Ichthyology* 13(2): 45-54.
- Lucena, C.A.S. 2003. New characid fish, *Hyphessobrycon scutulatus*, from the rio Teles Pires drainage, upper rio Tapajós system (Ostariophysi: Characiformes: Characidae). *Neotropical Ichthyology* 1(2): 93-96.
- Moreira, C.R., M.I. Landim and W.J.E.M. Costa. 2002. *Hyphessobrycon heliacus*: a new characid fish (Ostariophysi: Characiformes) from the upper Rio Tapajós Basin, central Brazil. *Copeia* 2002(2): 428-432.
- Olden, J.D., M.J. Kennard, A. Tedesco, K.O. Winemiller and E.J. Berthou. 2010. Conservation biogeography of freshwater fishes: recent progress and future challenges. *Diversity and Distributions*, 16: 496–513.
- Reis, R.E., S.O. Kullander and C.J. Ferraris Jr. 2003. *Check List of the Freshwater Fishes of South and Central America*. Porto Alegre: EDIPUCRS. 729 p.
- Sarmento-Soares, L.M. and R.F. Martins-Pinheiro. 2008. A systematic review of *Tatia* (Siluriformes: Auchenipteridae: Centromochlinae). *Neotropical Ichthyology* 6(3): 495-542.

RECEIVED: September 2011

ACCEPTED: April 2012

PUBLISHED ONLINE: June 2012

EDITORIAL RESPONSIBILITY: Javier A. Maldonado O.

#### APPENDIX 1. Voucher specimens.

LIRP 8176, 9, *Sartor* aff. *elongatus* Brasil, Estado do Mato Grosso, Município de Sapezal, PCH Telegráfica, Rio Juruena. Bacia do Rio Tapajós 12°50'59" S, 58°55'36" W. Col. Rodrigo. J. Ilário. LIRP 8189, 10, *Tatia intermedia* Brasil, Estado do Mato Grosso, Município de Sapezal, PCH Cidezal, Rio Juruena. Bacia do Rio Tapajós 13°22'39" S, 59°00'57" W. Col. Rodrigo. J. Ilário.