A new species of the catfish genus Trichomycterus (Teleostei: Siluriformes: Trichomycteridae) from the rio Paraná basin, southeastern Brazil

M. A. Barbosa 1 & V. M. Azevedo-Santos 2

1 Laboratório de Sistemática e Evolução de Peixes Teleósteos, Departamento de Zoologia, Universidade Federal do Rio de Janeiro, Cidade Universitária, Caixa Postal 68049, CEP 21944-970, Rio de Janeiro, RJ, Brazil. anaisbarbosa(at)yahoo.com.br
2 Fundação de Ensino Superior de Passos, Universidade do Estado de Minas Gerais, CEP 37900-106, Passos, MG, Brazil. valter.ecologia(at)gmail.com

Accepted on May 14, 2012. Published online at www.vertebrate-zoology.de on December 10, 2012.

Abstract

A new species of the catfish genus Trichomycterus is described from tributaries of the upper rio Grande, rio Paraná basin, southeastern Brazil. Trichomycterus pirabitira new species is diagnosed by the morphology of the metapterygoid and the caudal fin, and number of vertebrae, branchiostegal rays and interopercular odontodes, relative position of the dorsal, anal, and pelvic fins, head length, and body width. The new species seems to be closely related to the species of the T. brasiliensis complex by having the oblique arrangement of opercular odontodes described for the group.

Resumo

Uma nova espécie de bagre do gênero Trichomycterus é descrita para tributários do alto rio Grande, bacia do rio Paraná, sudeste do Brasil. Trichomycterus pirabitira espécie nova é diagnosticada pela morfologia do metapterigóide e da nadadeira caudal, número de vértebras, raios branquiostegais e odontódeos interoperculares, posição relativa das nadadeiras dorsal, anal e pélvica, ponto de inserção da nadadeira pélvica, comprimento da cabeça e largura do corpo. A nova espécie parece ser proximamente relacionada às espécies do complexo T. brasiliensis por possuir o arranjo obliquo dos odontódeos operculares descrito para o grupo.

Key words

Catfishes, Loricarioidea, Neotropical ichthyofauna, new species, systematics, taxonomy, Trichomycteridae.

Introduction

The catfish family Trichomycteridae is a monophyletic group of freshwater fishes, currently including over 250 valid species (Eschmeyer & Fong, 2012). The family is extensively distributed throughout almost all the major river drainages of the Neotropics, from Costa Rica to Patagonia, occurring in practically all types of freshwater habitats, from inundated lowland forest to high-elevation streams of the Andes (De Pinna, 1998). Despite this wide distribution, taxa of the family have not been recorded to the rio Parnaiba basin, northeastern Brazil, the only break of this broad distribution (De Pinna & Wosiacki, 2003; Barbosa & Costa, 2011).

Trichomycterus is the most diversified genus of the Trichomycteridae comprising over 140 species (Barbosa & Costa, 2011), many of which described recently (e.g., Barbosa & Costa, 2010a, b; 2011; 2012a, b; Fernandez & Vari, 2009; Ferrer &
MALABARBA, 2011; SARTELO-SOARES et al., 2011). The genus shows a remarkable diversity in southeastern Brazil, with several species described from the rio São Francisco, Paraíba do Sul and Paraná basins, and numerous small coastal river basins (ALENCAR & COSTA, 2004; BARBOSA & COSTA, 2003a; 2008; 2010a,b; LIMA & COSTA, 2004). Thirteen of those species are grouped into the T. brasilensis complex, diagnosed by displaying a unique oblique arrangement of the opercular odontodes (BARBOSA & COSTA, 2010a). A new species of the T. brasilensis complex collected in an upper tributary of rio Grande, rio Paraná basin, southeastern Brazil is herein described.

Material and methods

Measurements and counts follow BARBOSA & COSTA (2003b). Measurements are presented as percentages of standard length (SL), except for subunits of head, which are presented as percentage of head length (HL). Counts of procurent caudal-fin rays, vertebrae, branchiostegal rays, teeth and odontodes were made only in cleared and stained specimens (c&s) prepared according to TAYLOR & VAN DYKE (1985). Abbreviation for institution is: UFRJ, Universidade Federal do Rio de Janeiro, Rio de Janeiro. The method for species delimitation follows the methodology proposed by DAVIS & NIXON (1992) formally identified as population aggregation analysis, in which species delimitation is achieved through the presence of unique combination of non-overlapping character states. Comparative material is listed in BARBOSA & COSTA (2008) and BARBOSA & COSTA (2010a).

Trichomycterus pirabitira – new species

Fig. 1

Holotype. UFRJ 8335, 75.9 mm SL; Brazil: Estado de Minas Gerais: Município de Conceição da Aparecida: small stream between Carmo do rio Claro and Conceição da Aparecida, tributary of the rio Grande, rio Paraná basin, approximately 21°5′53′′S, 46°14′95′′W, altitude approximately 960 m; V.M. AZEVEDO-SANTOS, 30 April 2011.

Paratypes. UFRJ 8140, 6, 36.6–73.6 mm SL; UFRJ 8264, 3 (c&s), 38.6–66.4 mm SL; same data as holotype; UFRJ 4927, 11, 22.0–71.3 mm SL; UFRJ 5829, 3 (c&s), 39.9–56.5 mm SL; small tributary of the rio Cuiabá, Conceição da Aparecida, MG; D’ALMEIDA, M. GONCALVES & M.A. BARBOSA; 24 September 1999. UFRJ 7279, 11, 28.0–63.1 mm SL; small tributary of the rio Cuiabá, on the way to the village of Nova Resende, Conceição da Aparecida, MG; J.P.B. BARATA, R. PAIVA & M.A. BARBOSA; 24 September 2006.

Diagnosis. Trichomycterus pirabitira is similar to all other species of the T. brasilensis complex (T. brasilensis LÜTKEN, 1784; T. brunoi BARBOSA & COSTA, 2010a; T. claudiae BARBOSA & COSTA, 2010a; T. fuliginosus BARBOSA & COSTA, 2010a; T. macrortichoepetus BARBOSA & COSTA, 2010a; T. maracay BÖCKMANN & SAZIMA, 2004; T. mariamole BARBOSA & COSTA, 2010a; T. mimonha COELHO & COSTA, 1992; T. mirissumba BARBOSA & COSTA, 1992; T. novalimensis BARBOSA & COSTA, 2010a; T. rubiginosus BARBOSA & COSTA, 2010a; T. potschi BARBOSA & COSTA, 2010a; and T. vermículatus (EIGENMANN, 1918)] and distinguished from the remaining species of southeastern Brazil by having opercular odontodes obliquely arranged (vs. vertically). The new species is similar to T. brunoi, T. claudiae, T. fuliginosus, T. mariamole, T. mimonha, T. novalimensis, T. rubiginosus, T. potschi, and distinguished from the remaining species of the T. brasilensis complex by having a long pointed process on the posterodorsal tip of the hyomandibula (fig. 2) (vs. short process; BARBOSA & COSTA, 2010a; figs. 9, 10). It differs from T. brunoi and T. fuliginosus by the morphology of the metapterygoid, which is narrow, without conspicuous process directed to the hyomandibula (vs. process present; BARBOSA & COSTA, 2010a; figs. 1, 4). It also differs from T. brunoi by having the caudal fin subtruncated (vs. rounded), and from T. fuliginosus by possessing 7–8 branchiostegal rays (vs. 9), and the pelvic-fin origin in a vertical through the centrum of 18th or 19th vertebra (vs. 17th). Differs from T. claudiae, T. novalimensis, and T. rubiginosus by having the caudal fin subtruncated (vs. rounded in T. claudiae or truncated in T. novalimensis, and T. rubiginosus). Also differs from T. claudiae by having 37–38 vertebrae (vs. 39), 32–34 interopercular odontodes (vs. 41–46), and by the narrow stripe along lateral midline (vs. broad and well defined mid-lateral stripe along whole flank); from T. mirissumba, and T. mariamole by the nasal barbel reaching middle of the pectoral-fin base (vs. the posterior portion of the opercular patch of odontodes); from T. macrortichoepetus, T. mimonha and T. rubiginosus by the presence of the two anterior pores of infraorbital series (vs. absence); from T. novalimensis and T. mirissumba by having shorter head, head length 18.7–20.8% SL (vs. 21.0–24.4%); from T. mimonha by having seven pectoral-fin rays (vs. six), 14–15 ribs (vs. 16–17), pelvic-fin insertion through 18th–19th vertebrae (vs. 21st), dorsal-fin and anal-fin origin in the vertical through 20th–21st (vs. 23rd–24th), 24th–25th (vs. 26th–27th) vertebrae respectively; from T. potschi by having narrower body, body width 6.4–9.3% SL (vs. 9.7–12.3%) and from T. vermículatus by having dorsal-fin origin posterior to pelvic-fin insertion (vs. dorsal-fin origin placed on pelvic-fin insertion).

Description. Morphometric data for holotype and paratypes given in Table 1. Body moderately deep,
fin, covering urogenital opening, tip not reaching anal fin, in vertical just anterior to dorsal-fin origin; pelvic girdle short with mesial process absent or vestigial; pelvic-fin bases medially in close proximity; pelvic-fin origin through vertical centrum of 18th or 19th vertebra. Caudal fin subtruncated, posterior margin slightly convex. Dorsal-fin rays 11; anal-fin rays 10; pectoral-fin rays 7; pelvic-fin rays 5; caudal-fin principal rays 13, dorsal procurrent rays 17–21, ventral procurrent rays 13–17. Total vertebrae 37–38; pleural ribs 14–15. Upper hypural plates separated, dorsal plate much wider than ventral plate.


Supraorbital canal with three pores; first pore in transverse line through anterior nostril, second in transverse line just posterior to posterior nostril, third in transverse line just posterior to orbit; third pore approximately equidistant to symmetrical pore and orbit. Infraorbital canal with four pores; first pore in transverse line through anterior nostril, second in transverse line just anterior to posterior nostril, third and fourth posterior to orbit. Preopercular canal with one pore, in vertical through anterior margin of opercular
patch of odontodes. Lateral line of body short, with three pores, posteriormost pore in vertical just posterior to pectoral-fin base.

**Colouration in life.** Side of body and head light yellow, with a pinky colouration on ventro-lateral region. Brown dots coalesced to form vermiculate pattern; intermittent, along lateral midline; tiny dots form narrow stripe, sometimes yellow on base, with brown dots scattered, light brown ventral region, light yellow stripes above and below lateral midline started on pectoral fin to dorsal-fin base. Pinky colouration on ventro-lateral region, light yellow stripes above and below lateral midline cannot be viewed at preserved specimens, but sometimes tiny dots on whole region below lateral midline are present. Dorsum and head brown, with coalesced tiny scattered dots; nasal barbel light brown on base, maxillary and rictal barbels yellow. Venter yellow, without dots. Iris dark grey. Dorsal fin hyaline, with yellow bases and brown dots scattered; anal fin hyaline, with yellow bases; caudal fin yellow on base, with brown dots scattered, light brown on extremity; tiny transverse reddish stripe on caudal-fin base, absent at preserved specimens; pectoral and pelvic fins hyaline with light yellow bases.

**Distribution and habitat notes.** *Trichomycterus pirabitira* is known from two streams, tributaries of the upper rio Grande, rio Paraná basin, northeastern Brazil: rio Cuiabá, and a small river without name (Fig. 3). Both streams were clearwater and ran moderately between rocks. The substrate was muddy with submerged litter, where a great number of individuals were found. *Trichomycterus candidus* (Miranda Ribeiro, 1949) also dwells the rio Cuiabá (Barbosa & Costa, 2003b; Miranda Ribeiro, 1949), but the two species were not collected together. Whereas *T. pirabitira* was found on the uppermost part of the stream, *T. candidus* was collected a few kilometers away.

**Etymology.** *Pirabitira*, from the Tupi, is a contraction of: *pira*, meaning fish, and *ybytyra*, meaning mountain. This name is a reference to the peculiar habit of species of the genus *Trichomycterus*, which usually inhabit mountainous regions.

**Discussion.** *Trichomycterus* is a diversified and complex taxon, with many species described and numerous others being collected in several headwater streams of the Neotropics. One of the great tools to the knowledge of the *Trichomycterus* taxonomy has been the close relationship between some species of the genus, suggesting that they constitute complexes of related species. Barbosa & Costa (2010a) recently established the *T. brasiliensis* complex based on the presence of a unique arrangement of opercular odontodes, disposed obliquely. This group consists of thirteen species distributed through the upper rio São Francisco, Paraíba do Sul, and Paraná basins, as well as, small coastal river basins in southeastern Brazil (Barbosa & Costa, 2010a). Among the four species of *Trichomycterus* currently recorded for the upper rio Paraná basin, *T. candidus*, *T. paolence* (Eigenmann, 1918), *T. maracaya*, and *T. pauradiatus* Alinecar & Costa, 2006 (Alinecar & Costa, 2006; Barbosa & Costa, 2003b; 2010a; Bockmann & Sazima, 2004; Eigenmann, 1918),

| Table 1. Morphometric data of *Trichomycterus pirabitira*, n = 15; H = Holotype. |
|---------------------------------|-----|-----|-----|-----|
| **H** | **Range** | **X** | **SD** |
| 75.9 | 38.6–75.9 | 56.1 | 3.9 |
| 16.7 | 14.6–16.7 | 15.9 | 0.7 |
| 13.6 | 12.8–14.9 | 13.5 | 0.5 |
| 9.0  | 6.4–9.3   | 7.9  | 0.9 |
| 3.7  | 2.3–3.7   | 3.0  | 0.4 |
| 11.1 | 10.2–13.7 | 11.1 | 1.0 |
| 8.2  | 8.1–10.3  | 9.1  | 0.7 |
| 9.1  | 8.3–10.5  | 9.1  | 0.7 |
| 0.5  | 0.3–0.8   | 0.6  | 0.2 |
| 12.4 | 11.3–14.8 | 13.1 | 1.3 |
| 63.0 | 41.8–65.2 | 60.9 | 1.2 |
| 61.4 | 56.9–61.4 | 59.7 | 1.3 |
| 19.9 | 18.7–20.8 | 19.7 | 0.5 |
| 56.3 | 44.9–57.9 | 49.7 | 4.0 |
| 76.8 | 71.7–87.8 | 78.8 | 3.7 |
| 31.8 | 29.6–36.8 | 32.0 | 2.2 |
| 41.7 | 39.4–46.2 | 41.0 | 2.2 |
| 7.3  | 7.0–9.0   | 8.6  | 0.8 |

Fig. 3. Stream tributary of rio Grande (Brazil: Minas Gerais: Conceição da Aparecida), type locality of *Trichomycterus pirabitira*. Photo: V.M. Azevedo-Santos.
only *T. maracayá* belongs to *T. brasilienisis* complex. Therefore, *T. pirabitira* is the second species of this complex assigned to the upper rio Paraná basin, which may suggest that other new species can be found in the area.

### Acknowledgements

Special thanks to Wilson Costa for critical reading, corrections and suggestions on the manuscript, to Orlando Simões, Gilvan Joaquim da Silva, José Leonardo Mattos, Felipe Ottoni and Pedro Amorim for the daily help and assistance in the laboratory, to Pedro Henrique Bragança for the reading previous version of the manuscript, to André J. da Silva and the staff of the group “Movimento Ventania Verde, who gave logistical support during the collection. We are especially grateful to ACSU/NSF Project (All Catfish Species Inventory/National Science Foundation, NSF DEB-0315963) for funding some of the field expeditions. This study was also supported by CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico – Ministério de Ciência e Tecnologia) and FAPERJ (Fundaçao de Amparo à Pesquisa do Estado do Rio de Janeiro).

### References


