

# Description of two new species of the catfish genus *Trichomycterus* (Teleostei: Siluriformes: Trichomycteridae) from the coastal river basins, southeastern Brazil

MARIA ANAÏS BARBOSA

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, Brasil; [anaisbarbosa@yahoo.com.br](mailto:anaisbarbosa@yahoo.com.br)

Accepted 01.xi.2013.

Published online at [www.senckenberg.de/vertebrate-zoology](http://www.senckenberg.de/vertebrate-zoology) on 18.xii.2013.

## Abstract

Two new species of catfish genus *Trichomycterus* are described from southeastern Brazil. *Trichomycterus mimosensis* new species is diagnosed by the number of pectoral-fin rays, the first pectoral-fin ray prolonged as a filament, the length of the pectoral-fin filament, the length of the dorsal-fin base, the morphology of the metapterygoid, the length of the maxillary barbel, the morphology of the hypobranchial 1, the width and depth of the head, the depth of the caudal peduncle, the shape of the head and caudal fin, and the colour pattern. *Trichomycterus gasparinii* new species is diagnosed by the number of pectoral-fin rays, the length of the pectoral-fin filament, the width of the head, the depth of the caudal peduncle, the arrangement of the odontodes on opercular path, the morphology of the metapterygoid and the caudal-fin shape.

## Resumo

Duas espécies novas de peixes do gênero *Trichomycterus* do sudeste do Brasil são descritas. *Trichomycterus mimosensis* espécie nova é diagnosticada pelo número de raios da nadadeira peitoral, primeiro raio da nadadeira peitoral prolongado como um filamento, comprimento do filamento da nadadeira peitoral, comprimento da base da nadadeira dorsal, morfologia do metapterigóide, comprimento do barbilhão maxilar, morfologia do hipobranquial 1, largura e altura da cabeça, altura do pedúnculo caudal, formato da cabeça e da nadadeira caudal e pelo padrão de colorido. *Trichomycterus gasparinii* nova espécie é diagnosticada pelo número de raios da nadadeira peitoral, pelo comprimento do filamento da nadadeira peitoral, pela largura da cabeça, pela altura do pedúnculo caudal, pelo arranjo dos odontóides na placa opercular, pela morfologia do metapterigóide e pelo formato da nadadeira caudal.

## Key words

Loricarioidea, Catfishes, Trichomycterinae, Neotropical ichthyofauna, systematics, taxonomy.

## Introduction

The genus *Trichomycterus* VALENCIENNES is one of the most species-rich assemblages of Siluriform fishes, currently containing about 160 valid species (FERRARIS, 2007; BARBOSA & COSTA, 2008; 2011; 2012a, b; BARBOSA & AZEVEDO-SANTOS, 2012; CASTELLANOS-MORALES, 2008;

FERNANDEZ & VARI, 2009; KATZ *et al.*, 2013; LIMA, LAZZAROTO & COSTA, 2008; WOSIACKI & DE PINNA, 2008a, b), distributed in river drainages of South America and southern Central America. Species of *Trichomycterus*, however, are usually endemic to small areas in mountain rivers, of-

**Table 1.** Morphometric data of *Trichomycterus mimosensis*, n=6. H=Holotype.

	H	Range	X	SD
Standard length (mm)	50.8	45.3 – 54.3	49.4	
<b>Percentage of standard length</b>				
Body depth	13.2	13.2 – 15.6	14.1	0.8
Caudal peduncle depth	12.0	11.0 – 12.2	11.7	0.4
Body width	6.9	6.9 – 9.1	8.4	0.8
Caudal peduncle width	3.5	3.3 – 4.4	3.7	0.4
Dorsal-fin base length	12.2	9.5 – 12.2	11.1	1.0
Anal-fin base length	8.3	8.2 – 9.8	8.7	0.6
Pelvic-fin length	10.2	10.2 – 11.5	10.9	0.5
Distance between pelvic-fin bases	2.0	1.5 – 2.0	1.7	0.2
Pectoral-fin length	13.8	11.9 – 13.8	12.9	0.8
Predorsal length	65.7	60.2 – 65.7	62.3	2.0
Prepelvic length	56.5	53.7 – 56.5	55.1	1.0
Head length	21.1	19.9 – 21.1	20.5	0.4
<b>Percentage of head length</b>				
Head depth	41.1	36.2 – 45.5	41.2	3.3
Head width	73.8	71.2 – 79.4	75.9	3.0
Interorbital width	27.1	25.0 – 30.0	27.2	1.7
Preorbital length	38.3	34.4 – 45.1	40.5	3.7
Eye diameter	11.2	11.2 – 13.7	12.2	0.9

ten occupying a single stream (BARBOSA & COSTA, 2003a). A great diversity of *Trichomycterus* inhabits the streams of southeastern and southern Brazil, many of them near large cities, and is subject to all kinds of anthropic impacts, such as, deforestation, modification in the course of rivers, building of bridges and roads, impacts of pesticides runoff from plantations in surrounding lands, and introduction of exotic fish, among others, that are frequent in this region. Due to the high level of endemism in small areas, some of species of *Trichomycterus* may be considered as endangered, and even in risk of to be extinct before formally described (BARBOSA & COSTA, 2008).

*Trichomycterus mimosensis* and *T. gasparinii* here described were collected in a recent expedition to the upper section of the rio Itabapoana and rio Santa Maria da Vitória basins respectively, in southeastern Brazil.

## 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 procurrent 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). Morphological data for *T. davisii* (HASEMAN, 1911), *T. diabolus* BOCKMANN, CASATTI & DE

PINNA, 2004, *T. goeldii* (BOULENGER, 1896), *T. guaraques-saba* WOSIACKI, 2005, *T. iheringi* (EIGENMANN, 1917), *T. itacambirussu* TRIQUES & VONO, 2004, *T. jacupiranga* WOSIACKI & OYAKAWA, 2005, *T. jequitinhonhae* TRIQUES & VONO, 2004, *T. landinga* TRIQUES & VONO, 2004, *T. paquequerense* (MIRANDA RIBEIRO, 1943), *T. travassosi* (MIRANDA RIBEIRO, 1949), *T. tupinamba* WOSIACKI & OYAKAWA, 2005 were taken from literature. 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 (PAA), which is based on the presence of unique combination of non-overlapping character states to delimit species. Comparative material is listed in BARBOSA & COSTA (2008), BARBOSA & COSTA (2010a), and KATZ et al. (2013).

## *Trichomycterus mimosensis* – new species

Fig. 1; Table 1

**Holotype.** UFRJ 8156, 54.3 mm SL; Brazil: Estado do Espírito Santo: Município de Mimoso do Sul: rio Alto Pratinha, tributary of rio Muqui do Sul, tributary of the rio Itabapoana basin, 21°03'85"S 41°18'22"W, altitude about 660 m; M.A. BARBOSA, J.L.O. MATTOS & E.M. RIBEIRO, 27 February 2007.

**Paratypes.** UFRJ 7545, 11 ex., 34.1–54.3 mm SL; UFRJ 7792, 5 (c&s) ex., 41.4–44.0 mm SL; collected with holotype.

**Diagnosis:** Similar to *T. albinotatus*, *T. alternatus*, *T. auroguttatus*, *T. bahianus*, *T. caudofasciatus*, *T. concolor*, *T. davisii*, *T. diabolus*, *T. florensis*, *T. goeldii*, *T. guaraques-saba*, *T. iheringi*, *T. itacambirussu*, *T. jacupiranga*, *T. jequitinhonhae*, *T. landinga*, *T. longibarbatatus*, *T. maculosus*, *T. nigroauratus*, *T. paquequerense*, *T. tete*, *T. travassosi*, *T. tupinamba*, *T. zonatus*, and *T. variegatus* and distinguished from all other species from southeastern and northeastern Brazil by possessing eight pectoral-fin rays (vs. six, seven or nine). Distinguished from *T. davisii*, *T. diabolus*, *T. guaraques-saba*, *T. iheringi*, *T. tupinamba*, and *T. zonatus* by having the first pectoral-fin ray prolonged as a filament (vs. not prolonged); from *T. alternatus*, *T. bahianus*, *T. caudofasciatus*, and *T. longibarbatatus*, by the smaller pectoral-fin filament, about 20% of the pectoral-fin length (vs. about 50–70%); from *T. maculosus*, *T. diabolus*, and *T. nigroauratus* by possessing a deeper metapterygoid, much deeper than wide (vs. wider than deep); from *T. goeldii*, *T. itacambirussu*, *T. jequitinhonhae*, *T. landinga*, *T. longibarbatatus*, *T. nigroauratus* by having a shorter maxillary barbel, reaching the middle of the opercular patch of odontodes



Fig. 1. *Trichomycterus mimosensis*, UFRJ 8156, preserved holotype, 50.8 mm SL; Brazil: Espírito Santo: Município de Mimoso do sul.

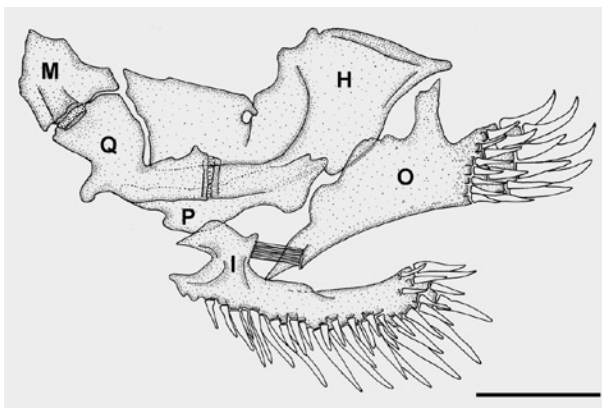


Fig. 2. Left jaw suspensorium and opercular series of *Trichomycterus mimosensis*, UFRJ 7792, lateral view. Abbreviations: H, hyomandibula; I, interopercle; M, metapterygoid; O, opercle; P, preopercle; Q, quadrate.

(vs. reaching pectoral-fin base); from *T. albinotatus*, *T. auroguttatus*, *T. bahianus*, *T. jacupiranga*, *T. jequitinhonha*, *T. landinga*, *T. longibarbatus*, *T. travassosi*, and *T. variegatus* by having narrower head (head depth 71.2–79.4 % of head length vs. 82.8–101.0 %); from *T. albinotatus*, *T. auroguttatus*, *T. bahianus*, *T. concolor*, *T. itacambirussu*, *T. jequitinhonha*, *T. landinga*, *T. longibarbatus*, and *T. variegatus* by having more compressed head (head depth 36.2–44.5 % of head length vs. 45.5–62.1 %); from *T. florensis*, *T. paquequerense* by having a caudal fin truncate (vs. emarginated); from *T. concolor* and *T. variegatus*, by having a trapezoidal head (vs. rectangular), and smaller dorsal-fin base (dorsal-fin base length 9.5–12.2 % SL, vs. 13.3–15.5 %); from *T. tete* by having deeper caudal peduncle (caudal peduncle depth 11.0–12.2 % SL, vs. 9.7–10.8 %), 36–42 interopercular odontodes (vs. 27–33), and by the outer edge of the hypobranchial 1 about the same deep as the inner edge [(vs. deeper outer edge of the hypobranchial 1) (BARBOSA & COSTA, 2011, Fig. 3)]. Furthermore, *T. mimosensis* is distinguished from all the above species, except *T. auroguttatus*, *T. florensis*, *T. travassosi*, and *T. zonatus* by the colour pattern with transverse dark bars on dorsum (vs. without transverse dark bars on dorsum).

**Description:** Morphometric data for holotype and paratypes given in Table I. Body moderately deep, subcylindrical on anterior portion, compressed on caudal peduncle. Dorsal profile slightly convex between snout and end of dorsal-fin base, straight to slightly convex on caudal peduncle. Ventral profile straight to slightly convex between lower jaw and end of anal-fin base, straight on caudal peduncle. Greatest body depth in vertical immediately in front of pelvic-fin origin. Skin papillae minute. Urogenital papilla spherical, in vertical through anterior third of dorsal-fin base. Dorsal and anal fins approximately triangular. Dorsal-fin origin in vertical between centrum of 17th and 19th vertebrae. Anal-fin origin in vertical through base of dorsal-fin ray 8 to 10 and between centrum of 21th and 22nd vertebrae. Pectoral fin about triangular, lateral and posterior edges slightly convex. First pectoral-fin ray terminating in short filament, about 20 % of pectoral-fin length. Pelvic fin shorter than anal fin, covering urogenital pore, tip not reaching anal fin, in vertical just anterior to dorsal-fin origin; pelvic-fin bases separated by interspace; pelvic-fin origin in vertical through centrum of 14th or 16th vertebra. Caudal fin truncate. Dorsal-fin rays 11–13; anal-fin rays 9–10; pectoral-fin rays 8; pelvic-fin rays 5; caudal-fin principal rays 13, dorsal procurrent rays 17–18, ventral procurrent rays 13–14. Total vertebrae 34–36; pleural ribs 11–13. Upper hypural plates separated, dorsal plate equal or slightly wider than ventral plate.

Head trapezoidal in dorsal view. Snout blunt. Mouth subventral. Maxilla shorter than premaxilla. Teeth incisor in outer rows, conic in innermost row. Eye at middle of head or slightly nearer to snout than to posterior edge of head. Barbels well developed. Tip of nasal barbel reaching posterior portion of opercular patch of odontodes. Tip of maxillary barbel reaching middle of opercular patch of odontodes. Tip of rictal barbel reaching posterior region of interopercular patch of odontodes. Seven or eight branchiostegal rays. Interopercular odontodes 36–42; opercular patch of odontodes wide, with 15–21 conical odontodes; opercular odontodes distinctly wider than interopercular odontodes; opercular odontodes arranged approximately in vertical line. Medial margins of autopalatine slightly concave; posterior process of autopala-



Fig. 3. *Trichomycterus gasparinii*, UFRJ 8157, preserved holotype, 84.5 mm SL; Brazil: Espírito Santo: Município de Fundão.

tine about equal in length to autopalatine without posterior process. Lacrimal about one fourth supraorbital length; supraorbital rod-shaped. Metapterygoid large, deeper than wide, without distinct processes. Anterodorsal surface of hyomandibula with weak concavity. Urohyal foramen rounded; distal portion of lateral arm of urohyal truncate.

Supraorbital canal continuous, with three pores; first pore in transverse line through anterior nostril, second in transverse line just posterior to posterior nostril, third supraorbital pore usually single, median, in transverse line between the orbit. Infraorbital divided into two sections, each with two pores; first infraorbital 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.** Side of body and head light yellow, with three longitudinal rows of dark brown blotches on lateral midline, above that on dorso-lateral region, and below this on ventro-lateral region; dorso-lateral midline sometimes with rectangular blotches, lateral midline row occasionally forming stripe and ventro-lateral row composed of several small dark brown blotches. Transverse brown bars on dorsum often united to upper row of dark blotches, sometimes forming wide transverse bars. Venter yellowish. Dark brown blotch on middle of dorsal surface of head between eye; opercular and interopercular patches of odontodes yellowish; one or two transverse rows anterior to opercular patch of odontodes. Nasal barbel dark grey, maxillary barbel light grey, and rictal barbel yellowish. Iris grey. Dorsal and caudal fins yellowish with small light brown blotches scattered. Anal and pelvic fins translucent. Pectoral fin yellow with brown chromatophores spread.

**Distribution.** Upper rio Alto Pratinha drainage, tributary of rio Muqui do Sul, tributary of the Itabapoana river basin, southeastern Brazil.

**Habitat.** Juveniles and adults were observed and collected swimming during daylight, usually in water pools, close to the bottom. Interestingly many specimens moved actively beneath fine sand. Specimens were collected between 5 and 20 cm deep, in clearwater streams with fast flowing water, and sandy substrate between rocks.

**Etymology.** The epithet *mimosensis* is an allusion to the name of the type locality, Mimoso do Sul, Espírito Santo, Brazil.

### *Trichomycterus gasparinii* – new species

Fig. 2; Table 2

**Holotype.** UFRJ 8157, 84.5 mm SL; Brazil: Estado do Espírito Santo: Município de Fundão: stream around the Park Goiapaba-Açu, tributary of rio Reis Magos basin, 19°54'60"S 40°27'86"W, altitude about 600 m; M.A. BARBOSA, J.L.O. MATTOS & E.M. RIBEIRO, 02 March 2007.

**Paratypes.** UFRJ 7542, 13 ex., 21.2–84.5 mm SL; UFRJ 8158, 7 (c&s), 45.6–68.8 mm SL; collected with holotype. UFRJ 7543, 2 ex., 49.8–67.9 mm SL; UFRJ 8184, 1 (c&s), 60.3 mm SL; same locality and collectors. UFRJ 5686, 2 ex., 48.6–48.4 mm SL; UFRJ 5679, 1 (c&s), 43.6 mm SL; stream around the Park Goiapaba-Açu, tributary of rio Reis Magos basin, altitude about 600 m, município de Fundão, Estado do Espírito Santo, Brazil; A. DENOVER, R. BIANCHI, J. GASPARINI, November 2001.

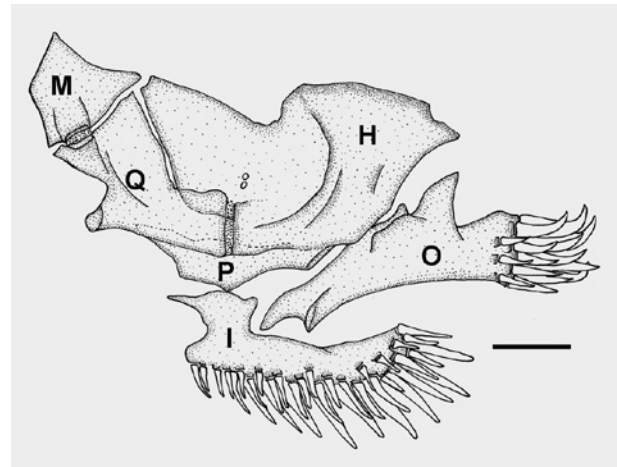
**Diagnosis.** Similar to *T. alternatus*, *T. itatiayae*, *T. itacarambiensis*, *T. pantherinus*, *T. paolence*, *T. payaya*, *T. septemradiatus*, *T. trefauti*, and all the species of the *Trichomycterus brasiliensis* complex, except *T. mimonha*, and distinguished from all other species from southeastern and northeastern by possessing seven pectoral-fin rays (vs. six or eight to ten). Distinguished from all species of *Trichomycterus brasiliensis* complex by opercular odontodes being vertically arranged (vs. diagonally), from *T. itatiayae* by possessing a deeper metapterygoid,

**Table 2.** Morphometric data of *Trichomycterus gasparinii*, n=6. H=Holotype.

	H	Range	M	SD
Standard length (mm)	84.5	49.8–84.5	70.9	
<b>Percentage of standard length</b>				
Body depth	13.3	11.6–14.1	12.9	0.9
Caudal peduncle depth	11.4	9.9–11.9	11.3	0.8
Body width	7.8	6.7–8.8	7.9	0.8
Caudal peduncle width	3.9	2.6–3.9	3.2	0.4
Dorsal-fin base length	10.1	9.3–11.4	10.4	0.7
Anal-fin base length	7.5	6.6–8.2	7.4	0.6
Pelvic-fin length	9.1	8.8–11.2	9.4	0.9
Distance between pelvic-fin bases	2.1	1.4–2.1	1.8	0.3
Pectoral-fin length	10.1	9.9–13.1	10.8	1.2
Predorsal length	63.0	58.8–63.0	60.9	1.6
Prepelvic length	54.7	53.5–58.1	55.2	1.6
Head length	18.6	18.6–20.1	19.4	0.5
<b>Percentage of head length</b>				
Head depth	44.6	39.4–53.1	46.2	4.8
Head width	80.9	73.0–81.6	77.2	3.4
Interorbital width	31.8	24.8–32.7	29.3	2.8
Preorbital length	44.6	42.3–46.0	44.2	1.5
Eye diameter	9.6	8.0–11.2	9.2	1.2

much deeper than wide (vs. wider than deeper), from *T. alternatus*, and *T. pantherinus* by the smaller pectoral-fin filament, (about 40% of pectoral-fin length, vs. 50–70%), from *T. paolence* and *T. trefauti* by the width of the head, 73.0–81.6% (vs. nearly as wide than long), and caudal fin subtruncate (vs. rounded or truncate), from *T. itacarambiensis* by the depth of caudal peduncle, caudal peduncle depth 9.9–11.9% (vs. 13–15%), and width of the head (73.0–81.6% vs. 94.0–101.0%), from *T. payaya* and *T. septemradiatus* by the absence of two anterior pores of infraorbital series (vs. presence). It also distinguished from *T. payaya* by possessing 12–13 pleural ribs (vs. 5–6), and from *T. septemradiatus* by the colour pattern with horizontal row of brown blotches on the flank (vs. broad dark brown stripe on the flank, dorsally bordered by a yellow zone), 12–13 pleural ribs (vs. 14–15), and seven branchiostegal rays (vs. eight).

**Description.** Morphometric data given in Table II. Body moderately deep, subcylindrical on anterior portion, compressed on caudal peduncle. Dorsal profile slightly convex between snout and end of dorsal-fin base, straight to slightly convex on caudal peduncle. Ventral profile straight to slightly convex between lower jaw and end of anal-fin base, straight on caudal peduncle. Greatest body depth in vertical immediately in front of pelvic-fin origin. Skin papillae minute. Urogenital papilla spherical, in vertical through anterior third of dorsal-fin base. Dorsal and anal fins approximately triangular. Dorsal-fin origin in vertical between centrum of 18th and 20th vertebrae. Anal-fin origin in vertical through base of dorsal-fin ray 7 and 10 and between centrum of 22nd 25th vertebrae. Pectoral fin about triangular, lateral and posterior edges



**Fig. 4.** Left jaw suspensorium and opercular series of *Trichomycterus gasparinii* UFRJ 8158, lateral view. Abbreviations: H, hyomandibula; I, interopercle; M, metapterygoid; O, opercle; P, preopercle; Q, quadrate.

slightly convex. First pectoral-fin ray terminating in a filament, about 40 % of pectoral-fin length. Pelvic fin shorter than anal fin, covering urogenital pore, tip not reaching anal fin, in vertical just anterior to dorsal-fin origin; pelvic-fin bases separated by interspace; pelvic-fin origin in vertical through centrum of 16th or 17th vertebra. Caudal fin subtruncate. Dorsal-fin rays 10–12; anal-fin rays 9–10; pectoral-fin rays 7; pelvic-fin rays 5; caudal-fin principal rays 13, dorsal procurrent rays 16–19, ventral procurrent rays 12–14. Total vertebrae 36–38; pleural ribs 12–13. Upper hypural plates separated dorsal plate equal or wider than ventral plate.

Head trapezoidal in dorsal view. Snout blunt. Mouth subventral. Maxilla shorter than premaxilla. Teeth conic. Eye at middle of head or slightly nearer to snout than to posterior edge of head. Barbels well developed. Tip of nasal barbel reaching final third of opercular patch of odontodes. Tip of maxillary barbel reaching middle of opercular patch of odontodes. Tip of rictal barbel reaching posterior region of interopercular patch of odontodes. Seven branchiostegal rays. Interopercular odontodes 31–38; opercular patch of odontodes moderate in width, with 17–19 conic odontodes; opercular odontodes about equal in width to interopercular odontodes; opercular odontodes arranged approximately in vertical line. Medial margin of autopalatine slightly concave; posterior process of autopalatine about one fourth length of autopalatine without posterior process. Lacrimal about one fourth of supraorbital length; median portion of supraorbital slightly enlarged, with distinct postero-ventral process. Metapterygoid large, deeper than wide, without distinct processes. Anterodorsal surface of hyomandibula with small concavity. Urohyal foramen elliptical; distal portion of lateral arm of urohyal truncate.

Supraorbital canal continuous, with three pores; first pore in transverse line through anterior nostril, second in transverse line just posterior to posterior nostril, third supraorbital pore paired, each pore about equidistant

from symmetrical pore and orbit. Infraorbital canal with two pores; first and second pores absent, 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.** Side of body yellowish brown, with horizontal row of brown blotches on lateral midline, sometimes coalesced forming a narrow brown stripe; a horizontal row of brown blotches above lateral midline. Horizontal row of brown blotches on dorsum; dorsolateral and dorsal blotches sometimes coalesced forming diagonal narrow stripe on dorsum, but never transverse bar; brown dots below lateral midline; venter white. Head yellowish brown with dark brown blotch on middle of dorsal surface; brown spots on infraorbital region and oblique dark brown bar on preopercular region; opercular and interopercular patches of odontodes light yellow; nasal barbel dark grey, maxillary and rictal barbels light grey; ventral surface of head white. Iris yellow. Fins pale yellow with small dark brown spots on basal portion.

**Distribution.** Creek crossing the road between the towns of Fundão and Santa Teresa, close to Goiapabaçu Park, a tributary of the rio Reis Magos basin, southeastern Brazil.

**Habitat.** This new species was collected in a clear water stream, above a waterfall. All specimens were found in shallow places (about 20–30 cm deep), under marginal vegetation, gravel or litter. In these places the bottom was composed of large rocks and the current reached high velocity.

**Etymology.** The name *gasparinii* was given in honor to the zoologist JOÃO LUIS ROSETTI GASPARINI, that first collected the new species in the field.

## Discussion

Southeastern Brazil is the region with the most important Brazilian cities, concentrating all major industrial centers in the country. This region was in the past almost completely covered by the Atlantic Forest, but it is currently under serious process of deforestation. Nevertheless, southeastern Brazil river basins concentrate a noteworthy species diversity of *Trichomycterus*, especially in the rio São Francisco, Paraíba do Sul, Paraná river basins and other smaller coastal river basins (COSTA, 1992; BARBOSA & COSTA, 2010a). The narrow region of south-eastern Brazil between the rio Itabapoana and rio Doce

part of the Brazilian continental margin, located between the Atlantic coast and the Brazilian crystalline shield (RIBEIRO, 2006). It is transversally crossed by several small rivers, draining directly to the Atlantic Ocean. That area has been seriously impacted, especially along the rivers banks, representing a threat to the ichthyofauna, especially those with high degree of endemism such as species of *Trichomycterus*.

*Trichomycterus* has been considered a challenging genus, due mainly to its remarkable diversity, elevated degree of endemism and presence of several species complexes (ALENCAR & COSTA, 2004; BOCKMANN & SAZIMA, 2004). The *T. itatiayae* species complex was established based on the morphology of the metapterygoid, currently including four species: *T. diabolus*, *T. itatiayae*, *T. nigroautratus* and *T. maculosus* (BARBOSA & COSTA, 2008; 2010b). BARBOSA & COSTA (2010a) proposed *T. brasiliensis* species complex, comprising today fourteen species [*T. brasiliensis* LÜTKEN, 1784; *T. bruno*i BARBOSA & COSTA, 2010a; *T. claudiae* BARBOSA & COSTA, 2010a; *T. fuliginosus* BARBOSA & COSTA, 2010a; *T. macrotrichopterus* BARBOSA & COSTA, 2010a; *T. maracaya* BOCKMANN & SAZIMA, 2004; *T. mariamole* BARBOSA & COSTA, 2010a; *T. mimonha* COSTA, 1992; *T. mirissumba* COSTA, 1992; *T. novalimensis* BARBOSA & COSTA, 2010a; *T. rubiginosus* BARBOSA & COSTA, 2010a; *T. pirabitira* BARBOSA & AZEVEDO-SANTOS 2012; *T. potschi* BARBOSA & COSTA, 2010a; and *T. vermiculatus* (EIGENMANN, 1918)], based on the distribution of odontodes on the opercular plate (BARBOSA & AZEVEDO-SANTOS, 2012). More recently *T. travassosi* species complex was established based on colour pattern consisting of transverse dark bars crossing the dorsum, consisting of six species: *T. auroguttatus* COSTA, 1992; *T. florensis* MIRANDA-RIBEIRO, 1943; *T. macrophthalmus* BARBOSA & COSTA, 2012; *T. travassosi* MIRANDA-RIBEIRO, 1949, and *T. zonatus* EIGENMANN, 1918 (BARBOSA & COSTA, 2012a; COSTA, 1992; EIGENMANN, 1918; MIRANDA-RIBEIRO, 1943; 1949).

Five species of *Trichomycterus* are known to occur in coastal streams between the rio Itabapoana and rio Doce basins: *T. alternatus* EIGENMANN 1918, from the rio Doce drainage, *T. longibarbat*us COSTA, 1992 from the rio Reis Magos drainage, *T. caudofasciatus* ALENCAR & COSTA, 2004 and *T. bruno*i BARBOSA & COSTA, 2010 from upper tributaries of the rio Itabapoana basin, and *T. pantherinus* ALENCAR & COSTA, 2004 from the rio Santa Maria da Vitória basin (ALENCAR & COSTA, 2004; BARBOSA & COSTA, 2010; COSTA, 1992; EIGENMANN, 1918). The two new species herein described also occur between rio Itabapoana and rio Doce basins. *Trichomycterus mimosensis* appears to belong to the *T. travassosi* species complex by having colour pattern consisting of transverse dark bars crossing the dorsum. On the other hand, *T. gasparinii* does not seem to be related to any previously defined species complex by not having any of the characters proposed for them.

## Acknowledgements

Special thanks are due to Wilson Costa for critical reading, corrections and suggestions on the manuscript, to J. L. O. Mattos and E. M. Ribeiro by help during collecting trips, to P. F. Amorin, A. M. Katz, O. Simões and G. J. da Silva for the daily help and assistance in the laboratory, and to P. H.N. Bragança and F. P. Ottoni, for the reading previous version of the manuscript. We are especially grateful to ACSI/NSF Project (All Catfish Species Inventory/National Science Foundation, NSF DEB-0315963) for funding the field expeditions. This study was supported by CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico – Ministério de Ciência e Tecnologia) and FAPERJ (Fundação de Amparo à Pesquisa do Estado do Rio de Janeiro).

## References

- ALENCAR, A.R. & COSTA, W.J.E.M. (2004): Description of two new species of the catfish genus *Trichomycterus* from southeastern Brazil (Siluriformes: Trichomycteridae). – *Zootaxa*, **744**: 1–8.
- BARBOSA, M.A. & COSTA, W.J.E.M. (2003a): *Trichomycterus potschi* (Siluriformes: Loricarioidei): a new trichomycterid catfish from coastal streams of southeastern Brazil. – *Ichthyological Exploration of Freshwaters*, **14**: 281–287.
- BARBOSA, M.A. & COSTA, W.J.E.M. (2003b): Validade, relações filogenéticas e redescricao de *Eremophilus candidus* (RIBEIRO, 1949) (Siluriformes: Trichomycteridae). – *Arquivos do Museu Nacional*, **61**: 179–188.
- BARBOSA, M.A. & COSTA, W.J.E.M. (2008): Description of a new species of catfish from the upper Rio Paraíba do Sul basin, southeastern Brazil (Teleostei: Siluriformes: Trichomycteridae) and redescription of *Trichomycterus itatiayae*. – *Aqua – International Journal of Ichthyology*, **14**: 175–186.
- BARBOSA, M.A. & COSTA, W.J.E.M. (2010a): Seven new species of catfish genus *Trichomycterus* (Teleostei: Siluriformes: Trichomycteridae): from southeastern Brazil and re-description of *T. brasiliensis*. – *Ichthyological Exploration of Freshwaters*, **21**: 97–122.
- BARBOSA, M.A. & COSTA, W.J.E.M. (2010b): Description of a new species of the catfish genus *Trichomycterus* (Teleostei: Siluriformes: Trichomycteridae): from the rio Paraíba do Sul basin, southeastern Brazil. – *Vertebrate Zoology*, **60**: 193–197.
- BARBOSA, M.A. & COSTA, W.J.E.M. (2011): Description of a new species of the catfish genus *Trichomycterus* (Teleostei: Siluriformes: Trichomycteridae) from the rio de Contas basin, northeastern Brazil. – *Vertebrate Zoology*, **61**: 307–312.
- BARBOSA, M.A. & COSTA, W.J.E.M. (2012a): *Trichomycterus macrophthalmus* (Teleostei: Siluriformes: Trichomycteridae), a new species of catfish from the Paraíba do Sul river basin, southeastern Brazil. – *Vertebrate Zoology*, **62**: 79–82.
- BARBOSA, M.A. & COSTA, W.J.E.M. (2012b): *Trichomycterus puriventris* (Teleostei: Siluriformes: Trichomycteridae), a new species of catfish from the Paraíba do Sul river basin, southeastern Brazil. – *Vertebrate Zoology*, **62**: 155–160.
- BARBOSA, M.A. & AZEVEDO SANTOS, V.M. (2012): A new species of the catfish genus *Trichomycterus* (Teleostei: Siluriformes: Trichomycteridae) from the rio Paraná basin, southeastern Brazil. – *Vertebrate Zoology*, **62**: 357–362.
- BOCKMANN, F.A. & SAZIMA, I. (2004): *Trichomycterus maracaya*, a new catfish from the upper rio Paraná, southeastern Brazil (Siluriformes: Trichomycteridae), with notes on the *T. brasiliensis* species-complex. – *Neotropical Ichthyology*, **2**(2): 61–74.
- CASTELLANOS-MORALES, C.A. (2008): *Trichomycterus uisae*: a new species of hypogean catfish (Siluriformes: Trichomycteridae) from the northeastern Andean Cordillera of Colombia. – *Neotropical Ichthyology*, **6**: 307–314.
- COSTA, W.J.E.M. (1992): Description de huit nouvelles espèces du genre *Trichomycterus* (Siluriformes: Trichomycteridae), du Brésil oriental. – *Revue Française d’Aquariologie et Herpetologie*, **18**: 101–110.
- DAVIS, J.I. & NIXON, K.C. (1992): Populations, genetic variation, and the delimitation of phylogenetic species. – *Systematic Biology*, **41**: 421–435.
- EIGENMANN, C.H. (1918). The Pygidiidae, a family of South American catfishes. – *Memoires of the Carnegie Museum*, **5**: 259–396.
- FERNANDEZ, L. & VARI, R.P. (2009): New Species of *Trichomycterus* from the Andean Cordillera of Argentina (Siluriformes: Trichomycteridae). – *Copeia*, 2009: 195–202.
- FERRARIS Jr., C.J. (2007): Checklist of catfishes, recent and fossil (Osteichthyes: Siluriformes), and catalogue of siluriform primary types. – *Zootaxa*, **1418**: 628pp.
- KATZ, A.M., BARBOSA, M.A. & COSTA, W.J.E.M. (2013): Two new species of the catfish genus *Trichomycterus* from the Paraná river basin, southeastern Brazil (Siluriformes: Trichomycteridae). – *Ichthyological Exploration of Freshwaters*, **4**: 359–366.
- LIMA, S.M.Q, LAZZAROTO, H. & COSTA, W.J.M. (2008): A new species of *Trichomycterus* (Siluriformes: Trichomycteridae) from lagoa Feia drainage, southeastern Brazil. – *Neotropical Ichthyology*, **6**: 315–332.
- RIBEIRO, A.C. (2006): Tectonic history and the biogeography of the freshwater fishes from the coastal drainages of eastern Brazil: an example of faunal evolution associated with a divergent continental margin. – *Neotropical Ichthyology*, **4**: 225–246.
- MIRANDA-RIBEIRO, P. (1943): Dois novos pigídiídeos brasileiros (Pisces – Pygidiidae). – *Boletim do Museu Nacional*, **9**: 1–3.
- MIRANDA-RIBEIRO, P. (1949): Duas novas espécies de peixes na coleção ictológica do Museu Nacional (Pisces: Callichthyidae et Pygidiidae). – *Revista Brasileira de Biologia*, Rio de Janeiro, **9**: 143–145.
- TAYLOR, W.R. & VAN DYKE, G.C. (1985): Revised procedures for staining and clearing small fishes and other vertebrates for bone and cartilage study. – *Cybio*, **9**: 107–109.
- WOSIACKI, W.B. & PINNA, M.C.C. (2008a): A New Species of the Neotropical Catfish Genus *Trichomycterus* (Siluriformes: Trichomycteridae) Representing a New Body Shape for the Family. – *Copeia*, 2008, 2: 273–278.
- WOSIACKI, W.B. & PINNA, M.C.C. (2008b): *Trichomycterus igobi*, a new catfish species from Rio Iguaçu drainage: the largest head in Trichomycteridae (Siluriformes: Trichomycteridae). – *Neotropical Ichthyology*, **6**: 17–23.