

Description of a new species of *Microglanis* from the rio Barra Seca basin, southeastern Brazil (Teleostei: Siluriformes: Pseudopmelodidae)

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> Abstract

Microglanis minutus, new species, is described from the rio Barra Seca basin. This species belongs to the *Microglanis parahybae* species complex by the following combination of characters: body light brown with first and second dark brown saddles not extending ventrally below horizontal through pectoral-fin origin; light oval spot located below dorsal-fin spine; third dark brown saddle not reaching anal-fin base; and caudal fin with upper lobe more developed than the inferior. The new species differs from all others *M. parahybae* species complex by a combination of morphological characters: pectoral and anal fins mottled or with relatively faint bands; caudal fin emarginate, trunk with dark brown saddles; caudal peduncle with faint to dark blotch irregularly shaped, caudal fin lightly mottled with narrow vertical dark brown band across central portions of lobes, dark saddle beneath adipose fin not extending ventrally to anal fin as continuous bar, continuous portion of lateral line not reaching vertical through origin of adipose fin, tip of pectoral spine as distinct bony point, a wider head, a dark blotch beneath adipose fin not extending to anal fin, distal portion of anal fin without dark band, dark saddle beneath adipose fin extending ventrally to more than the half of trunk and a light oval spot located below dorsal-fin spine.

> Key words

Espírito Santo, *Microglanis minutus* sp. n., *Microglanis nigripinnis*, *Microglanis parahybae*, *Microglanis pataxo*, Taxonomy.

Introduction

Microglanis EIGENMANN, 1912 is a South American genus of Pseudopimelodidae, first described to include *Microglanis poecilus* EIGENMANN, 1912. It currently comprises 18 valid species: *M. parahybae* (STEINDACHNER, 1880); *M. cottoides* (BOULENGER, 1891); *M. poecilus*; *M. variegatus* EIGENMANN & HENN, 1914; *M. ater* AHL, 1936; *M. zonatus* EIGENMANN & ALLEN, 1942; *M. iheringi* GOMES, 1946; *M. secundus* MEES, 1974; *M. pellopterygius* MEES, 1978; *M. nigripinnis* BIZERRIL & PEREZ-NETO, 1992; *M. cibela* MALABARBA & MAHLER, 1998; *M. eurystoma* MALABARBA & MAHLER, 1998; *M. garavello* SHIBATTA & BENINE, 2005; *M. malabarbai* BERTACO & CARDOSO, 2005; *M. leptostriatus* MORI & SHIBATTA, 2006; *M. pataxo* SARMENTO-SOARES, MARTINS-PINHEIRO, ARANDA & CHAMON, 2006; *M. carlae* VERA

ALCARAZ, DA GRAÇA & SHIBATTA, 2008; and *M. robustus* RUIZ & SHIBATTA, 2010.

Microglanis is presently diagnosed by having a small adult size, no greater than 110 mm SL (SHIBATTA & BENINE, 2005); mouth wide (mouth gape equal to head width); barbels short, not extending to the pectoral-fin origin; eyes small and without free orbital margin; maxillary pore absent; and pre-maxillary plate with rounded margin and thin mesocoracoid arch (SHIBATTA, 2003a; 2003b).

Microglanis occurs in the cis-andine river basins between Venezuela and Uruguay, and in the transandine coastal river basins of Equador (SHIBATTA, 2003a; BERTACO & CARDOSO, 2005). Only three valid species are endemic to the river basins of eastern Brazil: *M. pataxo* (from the drainages of rio Peruípe, rio Ju-

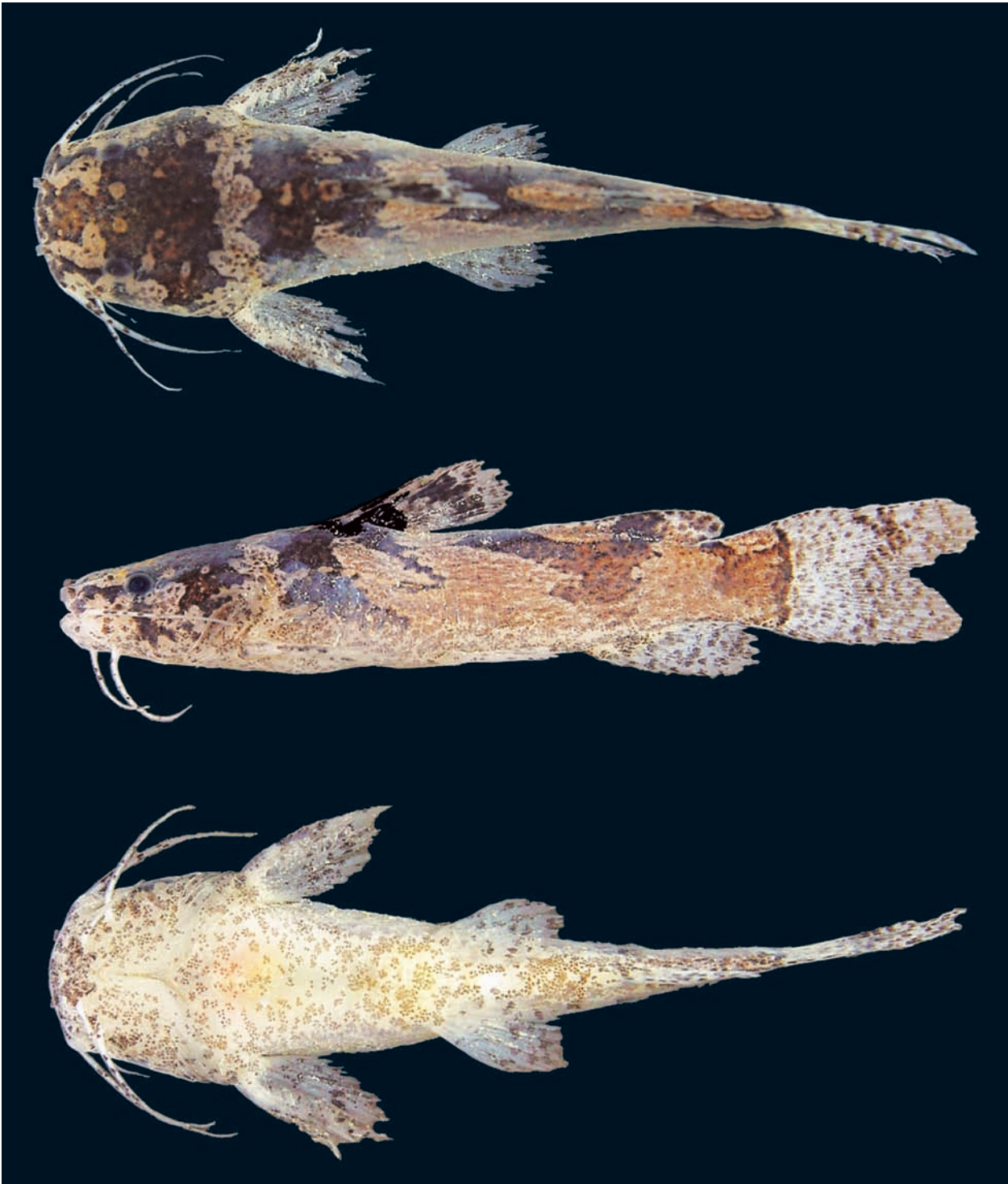


Fig. 1. *Microglanis minutus*, new species: UFRJ 7742, 29.7 mm SL (holotype): Brazil, Estado do Espírito Santo, between Municípios de Jaquaré and São Mateus, rio Barra seca basin.

curuçú, and rio Cahy, in southeastern Bahia state), *M. parahybae* (from the rio Paraíba do Sul and rio São João basins, in Rio de Janeiro state) and *M. nigripinnis* (from the rio Macacu and rio São João basins, in Rio de Janeiro state). A new species is herein described from the rio Barra Seca basin, Espírito Santo state, southeastern Brazil.

Materials and Methods

Material is deposited in MTD F, Museum für Tierkunde Dresden Fish Collection, Dresden, Germany; and UFRJ, Instituto de Biologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil. The method for

species delimitation follows DAVIS & NIXON (1992). Measurements were made according to MALABARBA & MAHLER (1998), BERTACO & CARDOSO (2005), and MORI & SHIBATTA (2006). Counts were made according to MORI & SHIBATTA (2006). Measurements are presented as percentages of standard length (SL), except for those related to head morphology, which are expressed as percentages of head length (HL). Counts of vertebrae, pleural ribs, branchiostegal rays, anal fin proximal and distal radials, and procurent caudal-fin rays were based only on cleared and stained (C&S) specimens prepared according to TAYLOR & VAN DYKE (1985). Vertebral counts were made according to MORI & SHIBATTA (2006). Comparisons with *M. parahybae* and *M. nigripinnis* were based on comparative material and literature. Comparisons with the other congeners were based on data available in the literature.

Comparative Material

Microglanis parahybae: UFRJ 3403, 21, 23.9–33.2 mm SL; rio São João, Silva Jardim, Rio de Janeiro, Brazil; C. MOREIRA, M. BRITTO & M. LANDIM, 13 Out. 1995. UFRJ 0567, 24, 25.2–39.2 mm SL; tributary of the rio São João Basin, on the street to Gaviões, Silva Jardim, Rio de Janeiro, Brazil; W. COSTA, R. CAMPOS-DA-PAZ, E. VICENTE & G. SOUZA, 7 Ago. 1991.

Microglanis nigripinnis: UFRJ 4476, 6, 27.9–52.1 mm SL; rio águas Claras (rio São João Basin), 29 km north from Silva Jardim, Rio de Janeiro, Brazil; F. AUTRAN, M. LANDIM, C. MOREIRA & A. VIANNA, 30 Jul. 1997. UFRJ 3404, 5, 27.0–32.5 mm SL; rio São João, Silva Jardim, Rio de Janeiro, Brazil; C. Moreira, M. Britto & M. Landim, 13 Out. 1995.

Results

Microglanis minutus, new species

Fig. 1

Holotype. UFRJ 7742, 29.7 mm SL; Brazil: Espírito Santo state: stream at the border of Jaquaré and São Mateus municipalities (18°34.953' S 40°26.115' W) rio Barra Seca basin; F.P. OTTONI & J.L. MATTOS, 8 Jul 2009.

Paratypes. Brazil: Estado do Espírito Santo: UFRJ 7726, 29, 18.1–29.1 mm SL; collected with holotype; UFRJ 7743, 5 C&S, 20.8–28.0 mm SL; MTD F 31587, 1, 24.5 mm SL; MTD F 31588, 1, 23.4 mm SL; and MTD F 31589, 1, 28.7 mm SL; all collected with holotype.

Diagnosis. The new species is a component of the *Microglanis parahybae* species complex, sharing with

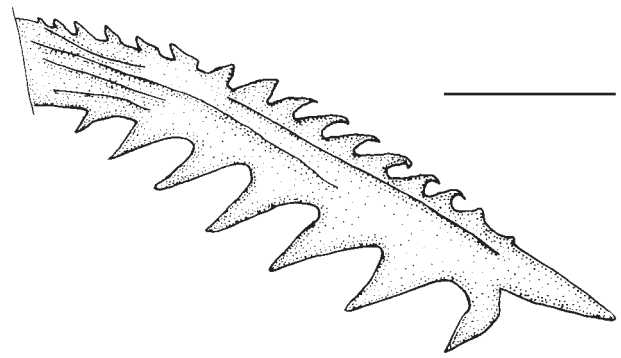


Fig. 2. Pectoral-fin of *Microglanis minutus*, new species. Scale bar = 1 mm.

species included in this complex the following combination of characters: body light brown with first and second dark brown saddles not extending ventrally below horizontal through pectoral-fin origin; light oval spot located below dorsal-fin spine; third dark brown saddle not reaching anal-fin base; and caudal fin with upper lobe more developed than the lower. *Microglanis minutus* is distinguished from *M. ater*, *M. pellopterygius* and *M. nigripinnis* by having pectoral and anal fins mottled or with relatively faint bands (vs. heavy dark bands); from *M. zonatus* by having caudal fin emarginate (vs. rounded); from *M. variegatus* by having trunk with dark brown saddles (vs. mottled); from *M. poecilus* and *M. pataxo* by having caudal peduncle with faint to dark blotch irregularly shaped (vs. triangular); from *M. malabarbai* by having caudal fin lightly mottled with narrow vertical dark brown band across central portions of lobes (vs. caudal fin almost completely black with narrow vertical white band across central portions of lobes); from *M. malabarbai*, *M. cottoides* and *M. carlae* by having dark saddle beneath adipose fin not extending ventrally to anal fin as continuous bar (vs. dark bar on posterior flank continuous from base of adipose fin to that of anal fin); from *M. iheringi* by having continuous portion of lateral line not reaching vertical through origin of adipose fin (vs. reaching vertical through adipose-fin origin); from *M. secundus* by having tip of pectoral spine as distinct bony point (vs. tip of pectoral spine soft, not as distinct bony point); from *M. cibelaie* by having a wider head (91.5–106.7 % HL vs. 78.6–81.7 % HL) and a dark blotch beneath adipose fin not extending to anal fin (vs. continuous dark bar between those fins); from *M. leptostriatus* by having distal portion of anal fin without dark band (vs. with dark band); from *M. garavelloii* and *M. parahybae* by having dark saddle beneath adipose fin extending ventrally to more than the half of trunk (vs. dark saddle beneath adipose fin extending ventrally to about 1/3 of the trunk); from *M. eurystoma* by having a light oval spot located below dorsal-fin spine (vs. absence); and

from *M. robustus* by the absence of a cordiform blotch in the nape (*vs.* presence) and 12–14 anal-fin rays (*vs.* 9–11).

Description. Morphometric data are summarized in Table 1. Head and anterior portion of body (from the dorsal fin to the mouth) depressed. Body becoming laterally compressed posteriorly, from pectoral-fin origin to caudal peduncle. Body depth highest at dorsal-fin origin, and body widest at pectoral-fin base. Anterior dorsal and ventral profile of body slightly convex. Head wider than long, rounded in dorsal and ventral views. Orbits small and located dorsally. Orbit rim covered by skin. Snout short with anterior nostril tubular and posterior one not tubular. Anterior nostril located near to upper lip and posterior nostril near to orbit. Mouth wide and terminal. Three pairs of thin barbels, one maxillary and two mental. Maxillary barbel longest, reaching to about 1/3 of pectoral-fin spine. Infraorbital laterosensory canal branch bearing six paired pores; supraorbital laterosensory canal branch with seven or eight paired pores; preopercular-mandibular canal branch with ten paired pores; lateral line on body incomplete, with six to nine pores, reaching vertical line through end of dorsal-fin base to slightly beyond it. Lateral line followed by isolated neuromasts reaching vertical line through the end of insertion of adipose-fin. Gill membranes free. Gill rakers filiform; gill rakers on first arch 1,1,4 – 2,1,4.

Dorsal fin rounded, located anteriorly to half of body length, with one spine and 6 rays. Anterior and posterior margins of dorsal spine smooth. Dorsal-fin spine short, smaller than soft rays. Elongated adipose fin with free posterior margin located posteriorly to half of body length. Caudal fin emarginate, with upper lobe slightly more developed than lower. Both lobes with rounded extremities; principal caudal rays, 15* (4), 16 (1); dorsal procurrent rays 15–17; ventral procurrent rays 11–13. Total vertebrae 28. Six pleural ribs. Pectoral fin triangular. Tip of pectoral fin not reaching base of pelvic fin. Pectoral fin I+6. Pectoral-fin spine with serrae on both margins: anterior margin of spine with 16 hooks; six small retrorse hooks proximally followed by eight big and two small retrorse hooks distally; posterior margin of spine with seven strong retrorse hooks along entire length, much larger than those along anterior margin (Fig. 2). Post-cleithral process slender and pointed. Pelvic fin rounded with 6 soft rays. Origin of pelvic fin in vertical line through base of last soft ray of dorsal fin. Tip of pelvic fin not reaching anal fin. Anal fin short and rounded. Anal fin base shorter than length of adipose fin and not confluent posteriorly with caudal fin. Anal fin with 12 to 14 soft rays.

Colouration in Alcohol (Fig. 1). Head dark brown in dorsal view with lighter areas on head lateral margins

and below eye. Conspicuous, transverse, light band just behind head, crossing pectoral-fin base. Barbels white with brown spots. Gill filament white.

Body with three dark brown saddles separate by light brown interspaces. First saddle in nuchal region, anteriorly to dorsal-fin spine; second below dorsal-fin base. First two saddles broadly confluent middorsally except for light brown oval spot at origin of dorsal-fin spine. Third saddle extending longitudinally from middle of trunk to middle of adipose fin, and vertically (as a bar) along 2/3 of body depth, not reaching to anal fin. Broad, irregularly shaped dark brown blotch on caudal peduncle. Ventral surface of body and head pale light brown with small dark brown spots.

Dorsal fin hyaline with dark brown base and broad dark brown submarginal band across fin spine, rays and membranes. Adipose with dark brown base, extending to its upper margin on origin and middle of fin, forming two light brown areas (one on middle and other on distal margin) on fin. Anal fin hyaline with dark brown spots on entire fin, with dark brown blotch on base. Pectoral and pelvic fins hyaline with dark brown spots. Caudal fin hyaline with dark brown spots on entire fin. Dark brown vertical band on caudal-fin base and dark brown vertical band continuous across middle portions of dorsal and ventral lobes (darker on dorsal lobe).

Distribution. Rio Barra Seca basin, Espírito Santo state, southeastern Brazil.

Etymology. From the Latin *minutus* meaning small, because of the smaller size of the species compared with all other congeners.

Discussion

Microglanis minutus is described from the rio Barra Seca basin, Espírito Santo state, southeastern Brazil. The new species was included in the genus *Microglanis* because it has all the diagnostic character states for the genus (see introduction above).

Although there is no phylogenetic studies available about the internal relationships of *Microglanis*, impossibilitating discussions about systematics at the species level, morphological features corroborate *M. parahybae* species complex as proposed by MORI & SHIBATTA (2006) and ALCARAZ *et al.* (2008). This species complex is diagnosed by the following character states: body light brown with first and second dark brown saddles not extending over pectoral-fin, with light oval spot located on the base of dorsal-fin spine; third dark brown saddle not reaching anal-fin base; and, caudal fin with upper lobe slightly more developed than lower

Tab. 1. Morphometric data of *Microglanis minutus*.

	Holotype	Range (n=20)	Mean (n=20)	S.Des. (n=20)
Standard length (mm)	29.7	22.1–29.7	25.7	2.0
Percents, standard length				
Head length	25.3	25.3–29.4	27.8	1.2
Head width	26.9	25.3–29.1	27.2	1.0
Maxillary-barbel length	27.9	26.7–31.9	29.3	1.4
Humeral-process length	11.4	9.6–12.0	10.9	0.6
Body depth at dorsal fin	17.5	17.1–18.9	18.1	0.5
Body depth at anal fin	15.8	13.6–15.9	14.8	0.6
Body width	21.6	18.3–22.6	20.2	1.5
Dorsal-fin spine length	14.1	12.8–15.6	14.7	0.8
Pectoral-fin spine length	20.9	17.6–20.9	19.1	1.1
Pelvic-fin length	17.5	17.2–19.6	18.3	0.8
Dorsal-fin base length	11.8	10.4–12.4	11.4	0.7
Adipose-fin base length	23.2	22.2–25.6	23.7	0.9
Anal-fin base length	12.8	12.2–14.1	13.2	0.6
Predorsal length	37.4	35.3–38.8	37.2	0.8
Prepelvic length	51.2	47.5–51.2	49.1	1.2
Preanal length	69.4	65.9–71.7	68.8	1.8
Caudal-peduncle length	16.2	14.9–16.9	16.0	0.6
Caudal-peduncle depth	11.1	9.3–11.1	10.2	0.5
Percents, head length				
Orbital diameter	14.7	11.4–14.7	12.5	0.9
Interorbital width	66.7	55.1–66.7	59.2	2.5
Snout length	45.3	32.3–45.3	37.9	4.4
Internarial distance	37.3	30.6–37.3	33.7	1.8
Head width	106.7	91.5–106.7	98.0	3.7
Head depth	62.7	45.1–62.7	55.1	3.5
Mouth width	72.0	60.6–72.0	64.3	2.9
Maxillary-barbel length	110.7	93.8–120.3	105.5	6.2

one. This group include: *M. minutus*, *M. pataxo*, *M. parahybae*, *M. leptostriatus*, *M. garavello* and *M. carlae*. The *M. parahybae* species complex is distributed in the coastal rivers of southern Brazil, and rio São Francisco, rio Paraíba do Sul and upper rio Paraná basins (MORI & SHIBATTA, 2006).

Microglanis minutus is characterized by its smaller size compared with its congeners (maximum standard length 29.7 mm SL in *M. minutus* vs. 60.0 mm SL in *M. iheringi*, 68.0 mm SL in *M. cottoides*, 71.0 mm SL in *M. cibela*, 81.0 mm SL in *M. ater*, 40.0 mm SL in *M. nigripinnis*, 34.0 mm SL in *M. carlae*, 78.0 mm SL in *M. eurystoma*, 39.0 mm SL in *M. pataxo*, 45.0 mm SL in *M. variegatus*, 69.0 mm SL in *M. poecilus*, 41.8 mm SL in *M. garavello*, 36.6 mm SL in *M. leptostriatus*, 40.0 mm SL in *M. secundus*, 54.0 mm SL in *M. pellopterygius*, 80.0 mm SL in *M. parahybae*, and 50.0 mm SL in *M. malabarbai*). The only species of the genus smaller than *Microglanis minutus* is *M. zonatus* (with 20.0 mm SL as maximum standard length).

There are three geographically closest species to *M. minutus*: *M. pataxo*, *M. parahybae* and *M. nigripinnis*. *Microglanis minutus* is very similar to *M. pataxo* in general color pattern. Both differ from *M. nigripinnis* by having saddle beneath adipose fin not extending to anal-fin base (vs. extending to anal-fin) and anal and pelvic fins hyaline (vs. dark brown) (SARMENTO-SOARES *et al.*, 2006; fig. 11); and from *M. parahybae* by having saddle beneath adipose fin extending ventrally to more than the half of trunk (vs. dark saddle beneath adipose fin extending ventrally to about 1/3 of the trunk, restricted to the base of adipose fin) (SARMENTO-SOARES *et al.*, 2006; fig. 11). *Microglanis minutus* differs from *M. pataxo* (the geographically closest species) by having caudal peduncle with faint to dark blotch irregularly shaped (vs. triangular), a higher interorbital distance (55.1–66.7 % HL vs. 39.2–45.5 % HL) and a wider head (head width 91.5–106.7 % HL vs. 67.8–74.3 % HL).

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References

- ALCARAZ, H.S.V.; GRAÇA, W.J. & SHIBATTA, O.A. (2008): *Microglanis carlae*, a new species of bumblebee catfish (Siluriformes: Pseudopimelodidae) from the rio Paraguay basin in Paraguay. – *Neotropical Ichthyology*, **6**(3): 425–432.
- BERTACO, V.A. & CARDOSO, A.R. (2005): A new species of *Microglanis* (Siluriformes: Pseudopimelodidae) from the rio Uruguay drainage, Brazil. – *Neotropical Ichthyology*, **3**(1): 61–67.
- DAVIS, J.I. & NIXON, K.C. (1992): Populations, genetic variation, and the delimitation of phylogenetic species. – *Systematic Biology*, **41**: 421–435.
- MALABARBA, L.R. & MAHLER, J.K.F. (1998): Review of the genus *Microglanis* in the rio Uruguay and coastal drainages of southern Brazil (Ostariophysi: Pimelodidae). – *Ichthyological Exploration of Freshwaters*, **9**(3): 243–254.
- MORI, H. & SHIBATTA, O.A. (2006): A new species of *Microglanis* Eigenmann, 1912 (Siluriformes, Pseudopimelodidae) from rio São Francisco basin, Brazil. – *Zootaxa*, **1302**: 31–42.
- SARMENTO-SOARES, L.M.; MARTINS-PINHEIRO, R.F.; ARANDA, A.T. & CHAMON, C.C. (2006): *Microglanis pataxo*, a new catfish from southern Bahia coastal rivers, northeastern Brazil (Siluriformes: Pseudopimelodidae). – *Neotropical Ichthyology*, **4**(2): 157–166.
- SHIBATTA, O.A. (2003a): Family Pseudopimelodidae (Bumblebee catfishes, dwarf marbled catfishes). Pp. 401–405. In: REIS, R.E.; KULLANDER, S.O. & FERRARIS, Jr., C.J. (Eds.): Check list of the freshwater fishes of South and Central America. Editora Universitária – EDIPUCRS, Porto Alegre, Brasil, x + 603 pp.
- SHIBATTA, O.A. (2003b): Phylogeny and classification of ‘Pimelodidae’. Pp. 385–400. In: ARRATIA, G.; KAPOOR, B.G.; CHARDON, M. & DIOGO, R. (Eds.): Catfishes. Vol. 1. – Enfield, Sciences Publishers Inc., 487 pp.
- SHIBATTA, O.A. & BENINE, R.C. (2005): A new species of *Microglanis* (Siluriformes: Pseudopimelodidae) from upper rio Paraná basin, Brazil. – *Neotropical Ichthyology*, **3**(4): 579–585.
- RUIZ, W.B.G. & SHIBATTA, O.A. (2010): A new species of *Microglanis* (Siluriformes, Pseudopimelodidae) from lower Rio Tocantins basin, Pará, Brazil, with description of superficial neuromasts and pores of lateral line system. – *Zootaxa*, **2632**: 53–66.
- TAYLOR, W.R. & VAN DYKE, G.C. (1985): Revised procedures for staining and clearing small fishes and other vertebrates for bone and cartilage study. – *Cybium*, **9**: 107–109.