

Two new Amazonian species of armored catfishes (Siluriformes: Loricariidae): *Ancistrus verecundus* and *Ancistrus parecis*

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Two new species *Ancistrus* are described: *A. verecundus* from the upper rio Madeira basin and *A. parecis* from the upper rio Juruena, rio Tapajós basin, Brazil. The two species differ from all congeners except *A. jataiensis*, *A. reisi*, and *A. tombador* in the absence of an adipose fin which is replaced by a series of median platelets forming a low postdorsal ridge. *Ancistrus verecundus* is further distinguished from these species, except *A. tombador* by the broad naked margin of the snout and reduced tentacle development. *Ancistrus verecundus* differs from *A. tombador* in various morphometric features, and in having the base of the first anal-fin pterygiophore covered by skin (vs. base of the first anal-fin pterygiophore exposed and forming a platelet-like element). *Ancistrus verecundus* and *A. tombador* have two or more dermal plates of the dorsal plate series between the end of the postdorsal ridge and the origin of the first plate-like procurrent caudal-fin ray, whereas the other species of the genus that lack an adipose fin, including *A. parecis*, have one or none. *Ancistrus parecis* is further distinguished from *A. tombador* and *A. verecundus* by the presence of tentacles in adults. It also differs from *A. tombador* in morphometric and meristic features and from *A. jataiensis* and *A. reisi* in the length of the mandibular tooth row, the number of teeth on dentary and premaxillary, and the caudal-peduncle depth. A key is provided for the identification of species of *Ancistrus* lacking an adipose fin.

Duas novas espécies de *Ancistrus* são descritas: *A. verecundus* das cabeceiras do rio Madeira e *A. parecis* das cabeceiras do rio Juruena, bacia do rio Tapajós, Brasil. As duas novas espécies diferem de todos congêneres, exceto de *A. jataiensis*, *A. reisi* e *A. tombador*, pela ausência da nadadeira adiposa, a qual é substituída por uma série de placas medianas, formando uma pequena e baixa crista postero-dorsal. *Ancistrus verecundus* é facilmente distinguido dessas espécies, exceto de *A. tombador*, por apresentar a margem nua do focinho larga e os tentáculos reduzidos. *Ancistrus verecundus* difere de *A. tombador* por vários caracteres morfométricos e por apresentar a base do primeiro pterigióforo da nadadeira anal coberto por pele (vs. base do primeiro pterigióforo da nadadeira anal exposto e formando uma placa pré-anal). *Ancistrus verecundus* and *A. tombador* apresentam duas ou mais placas dérmicas na série dorsal de placas entre a crista postero-dorsal e a origem do primeiro raio prócorrente da nadadeira caudal, enquanto que as outras espécies do gênero sem nadadeira adiposa, incluindo *A. parecis*, apresentam menos que duas. *Ancistrus parecis* é distinguido de *A. tombador* e *A. verecundus* pela presença de tentáculos em adultos. Ele também difere de *A. tombador* por caracteres morfométricos e merísticos, e de *A. jataiensis* e *A. reisi* pelo comprimento do ramo mandibular, número de dentes no dentário e na pré-maxila, e altura do pedúnculo caudal. É fornecida uma chave de identificação para as espécies de *Ancistrus* sem nadadeira adiposa.

Key words: Ancistrini, Madeira River, Tapajós River, Brazil, Taxonomy.

Introduction

In July 2004, an expedition in the Brazilian states of Mato Grosso, Rondônia, Acre, and Amazonas, yielded, two new

species of *Ancistrus* Kner, 1854 that lack an adipose fin. The loss of the adipose fin in the Hypostominae was recently discussed by Fisch-Muller *et al.* (2005), who described the first three species of *Ancistrus* with this condition: *A. jataiensis*,

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A. reisi, and *A. tombador*. In each of these species, the adipose fin is replaced by a series of small median, unpaired plates forming a low postdorsal ridge. This character was also observed in some other taxa, including *Liptopterichthys* Norman, 1935, *Corymbophanes* Eigenmann, 1909 (see also Armbruster *et al.*, 2000), and *Hemipsilichthys vestigipinnis* Pereira & Reis, 1992.

In addition to the absence of an adipose fin, one of the newly discovered species, along with *Ancistrus tombador*, lacks tentacles in both sexes or, as was discussed for *A. tombador*, shows a reduced development of these fleshy protuberances that are unique to the genus. Variation in the number, size, and distribution of tentacles in relation to reproductive condition, sex, and species, as well as the size of the naked margin of the snout where they occur, was extensively

documented recently (Sabaj *et al.*, 1999; Fisch-Muller, 1999; Fisch-Muller *et al.*, 2005). Some species of *Ancistrus* were described as lacking tentacles; however, we never observed any species of *Ancistrus* completely devoid of tentacles. An example is *A. gymnorhynchus* Kner, 1854, the first species to be distinguished from *A. cirrhosus* (type species of the genus) by the purported absence of tentacles. Kner based his description on a single specimen, a large female (111.2 mm SL) without tentacles. Several conspecific specimens, including females, have few, short tentacles along the naked margin of the snout, and a few other specimens probably in breeding condition have more developed tentacles (Fisch-Muller, 1999).

Ancistrus gymnorhynchus as well as other species with reduced tentacles had been placed in the genus *Xenocara*, a name that was initially proposed by Regan (1904) for all species presently placed in *Ancistrus*. This usage was disputed by Eigenmann (1905: 795) and the name was retained conditionally for some “Ancistroids without tentacles”. Eigenmann (1910) restricted further the use of the name *Xenocara* to include *A. gymnorhynchus* and *Chaetostomus latifrons* Günther, 1869, with the latter designated as the type species of the genus. The name *Xenocara* was subsequently used for such species of *Ancistrus* “without tentacles” in several works and other catalogs (*i.e.* Gosline, 1945; Fowler, 1954), until it was subsequently synonymized with *Ancistrus* by Isbrücker (1980).

The objective of the present paper is to describe the two new species and to provide an identification key for the species of *Ancistrus* lacking an adipose fin. The descriptions of these species bring to thirty the number of described species of *Ancistrus* from the Amazon River drainage, but several other undescribed forms are known from this basin.

Material and Methods

Measurements and counts were taken as described by Fisch-Muller *et al.* (2001) on all specimens measuring 35 mm standard length (SL) or more. Morphometric characters are expressed as percents of SL except for subunits of the head, which are expressed as percents of head length (HL). The nomenclature of the dermal plates in lateral series follows Schaefer (1997). Vertebrae counts are taken from radiography specimens, and include the Weberian and ural complexes. The sex of specimens was determined by the width of the naked margin of the snout. Specimens are deposited in the Museu de Ciências e Tecnologia, Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre (MCP) and in the Muséum d’histoire naturelle, Genève (MHNG). Comparative material includes the primary type specimens of all recognized and synonymized species of *Ancistrus* according to Fisch-Muller (2003), except for *Hypostomus punctatus* Jardine in Schomburgk, 1841 (holotype not preserved; invalid name, synonym of *A. dolichopterus* Kner, 1854, type material examined), *A. mattogrossensis* Ribeiro, 1912 (type material not found; type locality not stated), and *A. galani* Perez & Vilorio, 1994 (Venezuelan cave species).



Fig. 1. Collecting localities of *Ancistrus verecundus* (circle) from the upper rio Madeira, *Ancistrus parecis* (squares) and *Ancistrus tombador* (diamond) from the upper rio Tapajós, and *Ancistrus jataiensis* (triangle) and *Ancistrus reisi* (star), from the upper rio Tocantins. Open symbols represent type localities. Some symbols represent more than one locality.

***Ancistrus verecundus*, new species**

Figs. 1-2, 4a

Holotype. MCP 35572 (male, 53.7 mm SL), Brazil: Rondônia: Vilhena: igarapé Piracolina, about 6 km W of Vilhena, on the road BR-364, upper rio Madeira basin, 12°43'33"S 60°11'34"W, 14 Jul 2004, R. E. Reis, P. A. Buckup, A. R. Cardoso & E. H. Pereira.

Paratypes. MCP 35573, 10 (5 measured), 29.4-54.6 mm SL, MHNG 2664.033, 3 (2 measured), 33.2-51.9 mm SL, collected with the holotype.

Diagnosis. *Ancistrus verecundus* is easily distinguished from all congeners, except *A. jataiensis*, *A. parecis*, *A. reisi*, and *A. tombador* by the absence of an adipose fin which is replaced



Fig. 2. *Ancistrus verecundus*, MCP 35572, holotype, male, 53.7 mm SL; igarapé Piracolina, upper rio Madeira basin, Vilhena, Rondônia, Brazil.

Table 1. Morphometric and meristic data for the holotypes (H) and paratypes of *Ancistrus verecundus* from upper rio Madeira basin, and *Ancistrus parecis* from upper rio Tapajós basin.

	<i>A. verecundus</i>				<i>A. parecis</i>			
	H	N	Range	Mean	H	N	Range	Mean
Standard Length (mm)	53.7	8	37.6-54.6	46.0	59.5	4	42.2-59.5	47.4
Percents of Standard Length								
Predorsal length	46.0	8	45.2-46.3	45.8	47.1	4	45.3-47.1	46.4
Head depth at supraoccipital	19.3	8	17.9-19.3	18.7	19.4	4	18.7-19.4	18.9
Cleithral width	32.4	8	31.4-33.1	32.2	32.4	4	32.4-33.6	33.2
Head length	37.1	8	36.7-39.0	37.5	40.8	4	37.4-40.8	38.6
Dorsal-spine length	24.3	7	23.1-25.3	24.4	20.7	4	20.7-24.3	23.0
Dorsal-fin base length	24.1	8	20.2-24.1	21.7	22.2	3	22.2-23.6	23.0
Pectoral-spine length	25.5	8	24.2-27.0	25.4	23.9	4	23.9-25.5	24.7
Pelvic-spine length	25.5	8	23.3-25.6	24.6	22.9	4	22.9-25.7	24.7
Thoracic length	21.4	8	21.4-23.8	22.6	22.3	4	21.9-23.5	22.8
Abdominal length	21.6	8	20.0-21.6	21.1	22.7	4	22.7-23.6	23.1
Caudal peduncle length	28.8	8	28.8-30.9	29.8	25.6	4	25.6-27.9	26.9
Caudal peduncle depth	9.1	8	8.2-9.1	8.7	8.5	4	8.5-9.4	9.1
Anal-fin length	11.4	8	10.3-11.4	10.9	11.2	4	9.7-11.2	10.6
Upper caudal spine length	24.6	8	23.0-25.9	24.9	22.4	4	22.4-27.5	25.2
Lower caudal spine length	30.1	8	27.4-30.4	29.3	27.9	4	27.9-30.4	29.4
Body width at dorsal-fin origin	28.6	8	25.7-28.7	27.7	27.8	4	27.8-30.5	28.8
Percents of Head Length								
Supracleithral width	82.4	8	76.8-82.6	80.1	72.4	4	72.4-82.7	79.2
Snout length	61.6	8	57.2-61.6	60.2	60.5	4	60.4-61.8	60.8
Interorbital width	44.7	8	41.7-44.7	43.3	38.7	4	38.7-43.8	40.3
Plated internostril distance	21.1	8	17.9-21.1	19.5	16.1	4	16.1-18.4	17.3
Orbital diameter	15.1	8	14.9-18.1	16.1	14.4	4	14.4-17.0	15.9
Opercle length	16.6	8	14.4-17.2	15.7	10.1	4	10.1-16.5	14.7
Mandibular tooth row length	14.6	8	12.0-15.8	14.0	14.8	4	14.8-17.0	15.9
Interbranchial distance	56.0	8	45.7-56.0	52.2	47.3	4	47.3-55.9	53.4
Counts								
Total lateral median plates	24	8	24-25	24.1	24	4	23-24	23.8
Plates along dorsal-fin base	7	8	6-7	6.9	7	4	7-8	7.3
Plates between anal and caudal fins	10	8	10-11	10.6	10	4	9-10	9.8
Postopercular plates	7	8	2-7	5	5	4	5-8	6.3
Dentary teeth	46	8	40-51	44.3	50	4	50-59	55.5
Premaxillary teeth	48	8	36-54	45.5	47	4	47-55	52.8
Hypertrophied cheek odontodes	19	8	12-19	16	13	4	12-14	13

by a series of 3 to 5 median, unpaired platelets forming a low postdorsal ridge. *Ancistrus verecundus* differs from all congeners lacking an adipose fin, except for *A. tombador*, by the naked margin of snout broad and the reduced development of snout tentacles in both sexes (usually absent), and by the presence of two or more plates of the dorsal plate series between the end of the postdorsal ridge and the origin of the first dorsal procurent caudal-fin spine (Fig. 4a) (*vs.* one or none). *Ancistrus verecundus* is distinguished from *A. tombador* by the head depth at supraoccipital (17.9-19.3 *vs.* 15.6-16.9% SL), cleithral width (31.4-33.1 *vs.* 27.5-31.2% SL), interorbital width (15.9-16.8 *vs.* 12.7-15.1% SL), and by the base of the first anal-fin pterygiophore covered by skin (*vs.* exposed).

Description. Morphometric and meristics in Table 1. Head and body depressed. Dorsal profile of head convex from tip of snout tip to posterior tip of supraoccipital, nearly straight to slightly convex from tip of supraoccipital to dorsal-fin origin, straight and posteroventrally slanted along dorsal-fin base, slightly concave from end of dorsal-fin base to median platelets replacing adipose fin, more concave from that point to last procurent caudal-fin ray. Ventral profile straight, caudal peduncle slightly concave. Greatest width of body at

cleithrum, with body narrowing progressively from cleithrum to end of caudal peduncle. Caudal peduncle very low and slender.

Snout rounded with relatively broad naked margin in both sexes (much wider than distance between naked margin and nostril in specimens hypothesized to be males, including holotype; nearly as broad as distance between naked margin and nostril in specimens hypothesized to be females, including largest specimen examined). Thin median row of platelets extends up to, or nearly to, anterior extremity of snout. Tentacles usually absent in both sexes in specimens examined.

Eye small, dorsal margin of orbit slightly elevated, interorbital area slightly concave. Exposed part of opercle roughly triangular with posterior part slightly elongated; dermal plates of postopercular area never numerous, generally contiguous with pterotic-supracleithrum, sometimes few smaller plates anteriorly, leaving large naked area around opercle. Hypertrophied cheek odontodes numerous and short, none reaching posterior margin of adpressed opercle; base fleshy and sometimes thick.

Oral disk roughly circular, lips covered with minute papillae. Lower lip large but not reaching pectoral girdle, its border covered with very small papillae. Maxillary barbel short, about as long as buccal papilla. Mandibular tooth row short, pre-

maxillary tooth row slightly wider; teeth bifid, main cusp large; lateral cusp minute, pointed, never reaching more than one-third length of mesial cusp.

Supraoccipital with margins between surrounding bones and plates usually not clearly visible. Nuchal plate small and curved. Five series of lateral plates; mid-dorsal, and mid-ventral series ending at level of end of series of platelets replacing adipose fin. Last plate in median series rarely smaller than penultimate plate. Odontodes present on body plates except along dorsal-fin base, and on widely extended area below anal fin; odontodes generally short, only very slightly longer on ventral margin of opercle and on pectoral-fin spine of males. Abdomen entirely devoid of plates. Base of first anal-fin pterygiophore covered by skin (without preanal platelet-like element).

Dorsal-fin origin situated slightly anterior to vertical through pelvic-fin insertion; dorsal fin short, tip of adpressed fin not reaching series of median platelets. Area usually occupied by adipose fin covered by series of 3 to 5 small median platelets forming low postdorsal ridge. Two or more plates of dorsal plate series between end of postdorsal ridge and origin of first dorsal procurrent caudal-fin spine (Fig. 4a). Pectoral spine extending to anterior one-third of pelvic spine. Anal fin short. First anal-fin pterygiophore covered by skin. Caudal fin short, slightly concave. Fin-ray formulae: dorsal i,7 (7) or i,8 (1); pectoral i,6; pelvic i,5; anal i,4; caudal i,13,i (1) or i,14,i (7). Vertebrae: 27 (1).

Color in alcohol. Body reddish-brown, ventral portion of caudal peduncle paler. Body with irregularly distributed dark spots dorsally. Some specimens with numerous small and inconspicuous paler spots, limited to naked margin of snout (holotype), or more extending extensively on head. Lips yellowish. Ventral surface of head and abdomen plain or with coalescent spots forming thin and ill-defined whitish vermiculations. Fin rays generally reddish-brown with scattered dark-brown spots; membranes dark-brown when pigmented. Spots on distal one-half of dorsal and caudal fins sometimes forming bands (Fig. 2).

Distribution. *Ancistrus verecundus* was collected in a small river of the upper rio Madeira basin, in the state of Rondônia, Brazil (Fig. 1).

Etymology. From Latin, *verecundus*, meaning bashful, modest, in allusion to the absence or reduced development of tentacles on the snout.

Ancistrus parecis, new species

Figs. 1, 3, 4b

Holotype. MCP 35570 (male, 59.5 mm SL); Brazil: Mato Grosso: Campos de Júlio: rio Formiga (tributary of rio Juruena, upper rio Tapajós basin), on the road BR-364 (MT-235), between Campos de Júlio and Sapezal, 13°41'01"S 59°12'11"W, 13 Jul 2004, P. Lehmann, V. A. Bertaco, J. F. P. Silva & F. Langeani.

Paratypes. Brazil: Mato Grosso: Comodoro: MCP 35571 (2, 42.2–44.4 mm SL), MHNG 2664.034 (1, 44.4 mm SL), rio Juína, tributary of rio Juruena, upper rio Tapajós basin, on road BR-364 about 45 km of the crossing point to Campos de Júlio and Sapezal, 13°47'59"S 59°29'20"W, same collectors and date as holotype.

Diagnosis. *Ancistrus parecis* differs from all its congeners except *A. verecundus*, *A. jataiensis*, *A. reisi*, and *A. tombador* by the absence of an adipose fin. A series of 4 to 6 small median, unpaired platelets forming a low postdorsal ridge covers the area otherwise occupied by the adipose fin. *Ancistrus parecis* differs from *A. tombador* and *A. verecundus* by the presence of tentacles on the snout of adults (*vs.* absence or reduction of tentacles), and by a lower number of plates of the dorsal plate series between the end of the postdorsal ridge and the origin of the first plate-like procurrent caudal-fin ray (one or none *vs.* two or more; Fig. 4). It is further distinguished from *A. tombador* by the predorsal length (45.3–47.1 *vs.* 42.7–45.1% SL), head depth at supraoccipital (18.7–19.4 *vs.* 15.6–16.9% SL), cleithral width (32.4–33.6 *vs.* 27.5–31.2% SL), body width at dorsal-fin origin (27.8–30.5 *vs.* 22.8–26.9% SL), caudal-peduncle length (25.6–27.9 *vs.* 29.4–32.4% SL), and the number of plates between the anal and caudal fins (9–10 *vs.* 11–12). *Ancistrus parecis* differs from *A. reisi* and *A. jataiensis* by a narrower mandibular tooth row (14.8–17.0 *vs.* 19.4–24.0% HL), fewer teeth (50–59 *vs.* 62–80 on dentary and 47–55 *vs.* 61–80 on premaxillary), and by a lower caudal peduncle (8.5–9.4 *vs.* 9.6–10.7% SL), respectively.

Description. Morphometric and meristics in Table 1. Dorsal profile of head convex from snout tip to posterior tip of supraoccipital, nearly straight to slightly convex from supraoccipital tip to dorsal-fin origin, straight and posteroventrally slanted along dorsal-fin base, slightly concave from end of dorsal-fin base to median platelets in area otherwise occupied by adipose fin, more concave from that point to last procurrent caudal-fin ray. Ventral profile straight, caudal peduncle slightly concave. Greatest width of body at cleithrum, body narrowing progressively from that point to near caudal peduncle.

Snout rounded; plates delimiting posterior margin of naked area of snout irregularly placed; thin median row of platelets covering naked area up to or nearly to anterior extremity of snout. Naked margin of snout narrower than distance between naked margin and nostril in females, nearly as great as distance to nostrils in males, with fleshy tentacles (up to 30, in holotype). Tentacles placed along border of snout in two specimens; but also on dorsum of snout (only in holotype, 59.5 mm SL). Male of 44.4 mm SL with small tentacles arranged in one row bordering snout. Some tentacles branched in holotype.

Eye very small, dorsal margin of orbit slightly elevated and slightly convex. Exposed portion of opercle roughly triangular with posterior region slightly elongated; few dermal plates on postopercular area; plates generally contiguous



Fig. 3. *Ancistrus parecis*, MCP 35570, holotype, male, 59.5 mm SL; rio Formiga, upper rio Tapajós basin, Campos de Júlio, Mato Grosso, Brazil.

with pterotic-supracleithrum, sometimes with few smaller plates anteriorly leaving large naked area around opercle. Hypertrophied cheek odontodes stout but neither numerous nor very long, with fleshy base sometimes long and thick, posterior odontodes reaching posterior one-half of adpressed opercle.

Oral disk roughly circular; lips covered with minute papillae; lower lip large but not reaching posteriorly to pectoral girdle, its border formed by unequal small flaps. Maxillary barbels, about as large as buccal papilla. Mandibular and premaxillary tooth rows equal in length or latter slightly

longer; teeth numerous, bifid, main cusp large and long; lateral cusp minute, pointed, reaching more than one-third length of mesial cusp.

Supraoccipital with margins between surrounding bones and plates except median predorsal plate usually not clearly visible. Odontodes very short on head; central part of supraoccipital slightly granular. Nuchal plate and dorsal-fin spinelet exposed. Five series of lateral plates; mid-dorsal and mid-ventral series ending at level of end of series of platelets located in area occupied by adipose fin in most congeners. Last plate in median series rarely smaller than penultimate

plate. Odontodes present on body plates except along dorsal-fin base and on a widely extended area below anal fin; odontodes of males slightly longer on ventral margin of opercle and on pectoral-fin spine. Abdomen entirely devoid of plates. First anal-fin pterygiophore either exposed and forming preanal platelet-like element (holotype) or covered by skin.

Dorsal-fin origin located slightly anterior to pelvic-fin origin; dorsal fin short; tip of fin falling short of median platelets occupying space otherwise occupied by adipose fin. Adipose fin absent, replaced by series of 4 to 6 small median platelets forming low postdorsal ridge. One plate (sometimes none) of dorsal plate series between end of postdorsal ridge and origin of first dorsal procurrent caudal-fin spine (Fig. 4b). Pectoral-fin spine curved and short, extending to anterior one-fourth of pelvic-fin spine, and thickened in large specimens. Anal fin short. Caudal fin short, slightly concave. Fin-ray formulae: dorsal i,6 (1) or i,7 (3); pectoral i,6; pelvic i,5; anal i,4; caudal i,14,i. Vertebrae: 28 (2).

Color in alcohol. Ground coloration of body brown or reddish-brown, lower part of caudal peduncle paler. Ill-defined

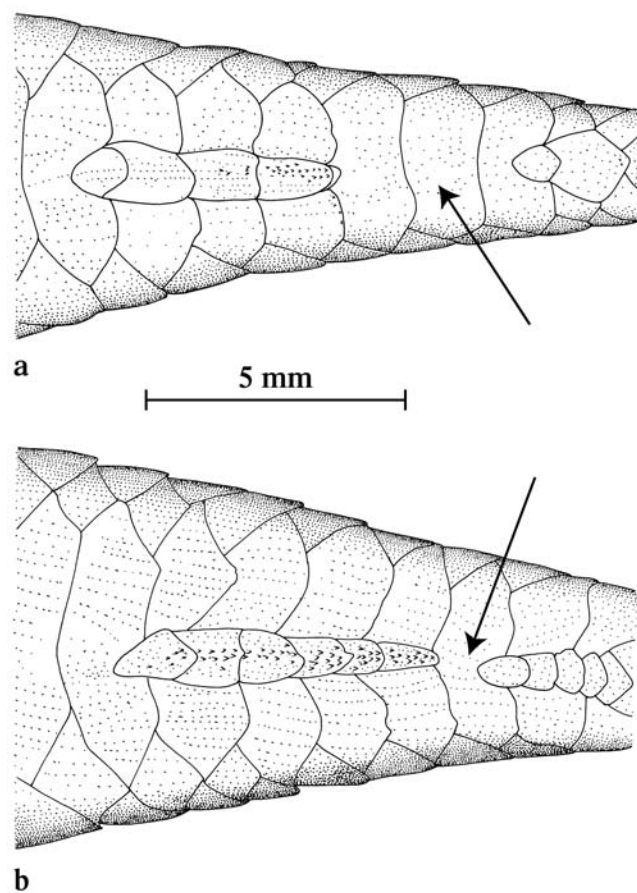


Fig. 4. Dorsal view of caudal peduncle in (a) *Ancistrus verecundus*, MCP 35573, paratype, 54.6 mm SL and (b) *Ancistrus parecis*, MCP 35570, holotype, 59.5 mm SL. Arrows indicate dermal plates of dorsal series of plates between the end of postdorsal ridge and the origin of the first plate-like procurent caudal-fin ray.

dark-brown and reddish or yellowish areas over body. Small, rounded or elongated lighter spots often present on snout but never very distinct. Ventral surface lighter; lips yellowish; belly light brown (rarely yellowish); when pigmented, chromatophores present on entire surface including central portion, with very ill-defined lighter spots. Fin rays generally dark brown and finely spotted with yellowish to orange, hyaline membranes unpigmented at least on central parts. Caudal fin with tips often yellowish to orange colored (Fig. 3).

Distribution. *Ancistrus parecis* was collected in small rivers of the upper rio Tapajós basin, in the state of Mato Grosso, Brazil (Fig. 1).

Etymology. The specific name *parecis* (a noun in apposition) refers to the Chapada dos Parecis, a plateau where the type locality is situated.

Key to the species of *Ancistrus* without an adipose fin.

1. Snout usually without tentacles in adults; two or more plates of the dorsal plate series between end of postdorsal ridge and origin of first dorsal procurrent caudal-fin spine (Fig. 4a) 2
- 1'. Snout with tentacles in adults; one or no plate of the dorsal plate series between end of postdorsal ridge and origin of first dorsal procurrent caudal-fin spine (Fig. 4b) 3
2. Body narrow (27.5-31.2% SL at cleithrum) and depressed (15.6-16.9% SL at supraoccipital); with preanal platelet-like element *A. tombador* (upper rio Tapajós basin)
- 2'. Body wide (31.4-33.1% SL at cleithrum) and deep (17.9-19.3% SL at supraoccipital); without preanal platelet-like element *A. verecundus* (upper rio Madeira basin)
3. Length of mandibular tooth row 19.4-24.0% HL; caudal-peduncle depth 9.6-10.7% SL; teeth on dentary 62-80 and premaxilla 61-78 4
- 3'. Length of mandibular tooth row 14.8-17.0% HL; caudal-peduncle depth 8.5-9.4% SL; teeth on dentary 50-59 and on premaxilla 47-55 ... *A. parecis* (upper rio Tapajós basin)
4. Predorsal length 43.8-46.4% SL; occipital depth 14.9-17.0% SL; caudal peduncle length 27.7-30.9% SL *A. reisi* (upper rio Tocantins basin)
- 4'. Predorsal length 47.5-49.3% SL; occipital depth 17.0-19.5% SL; caudal peduncle length 24.6-27.1% SL *A. jataiensis* (upper rio Tocantins basin)

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