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Redescription and figures of the South American Mailed Catfish *Rineloricaria lanceolata* (Günther, 1868) (Pisces, Siluriformes, Loricariidae)

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ABSTRACT

Rineloricaria lanceolata was originally described from a single specimen of unknown sex, with a faded colour pattern. The present paper contains a redescription with figures of the species, based on the holotype from Peru, and on additional specimens from Ecuador, Bolivia, Guyana, and Brazil, including males with fully developed "bristles", a secondary sexual character.

INTRODUCTION

Rineloricaria lanceolata was originally described by Günther (1868 a: 477—478) as a member of the genus *Loricaria*. The first description (June, 1868) was soon followed by a more extended description including figures of the unique holotype (Günther, 1868 b: 235, fig. 3, specimen in ventral, lateral, and dorsal view). In the introduction of his first paper, Günther states (1868 a: 475): "For the present I give diagnoses of those species which I have found to be undescribed; and more detailed descriptions with illustrations will be published in the 'Proceedings of the Zoological Society', before which the paper was read on March 26." This date, in fact, appears at the top of the pages of Günther's Proc. zool. Soc. paper (1868 b) but this does not indicate the date of publication. However, it seems clear to me that the 1868 b paper was published after the 1868 a one.

Günther (1868 a: 478; 1868 b: 235) described the colour of the holotype as: "Brown; back with about five obscure dark cross bands; fins with broad, irregular, confluent, black cross bands." This description indicates that the colour pattern of the holotype was already quite faded, obscuring the observation of the characteristic pale spots at the base of dorsal, anal, pectoral,

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and pelvic fins. However, close examination of the holotype reveals that this colour pattern is still apparent. Regan (1904: 277), describing the colour pattern on the holotype and two more specimens (recorded from Canelos by Boulenger, 1887: 277—278), states: "Back with obscure cross-bands; a dark stripe on each side of the snout running forward from the eye. Dorsal blackish, with a light area at its base and on the upper part of the posterior half of the fin; pectorals, ventrals, and anal blackish, with their basal part light; caudal dark at the base and in its outer half."

Boulenger (1887: 277—278) made the following observations on *Loricaria lanceolata*: "Two specimens from Canelos, one of which agrees in every respect with the type. The other, an adult male with long hair-like bristles on the sides of the snout, the nape, and the pectoral fin, differs in the much smaller size of the pectorals, which do not reach the base of the ventrals. I must add that the ventral and dorsal scutes of the three specimens before me agree perfectly with the accurate figure of *L. magdalenae* Stdr. (Denkschr. Ak. Wien, xxxix. p. 74, and xli. p. 26, pl. vii. fig. 2)." Regan, examining the same material, described the secondary sexual characters (1904: 277) as: "Males armed with bristles on the sides of the head, on the occipital region and nuchal scutes, and on the pectoral spine."

The authors cited above have supplied us with the basic descriptions of *Rineloricaria lanceolata*. The species has never been figured from freshly preserved specimens, and only Günther's (1868 b, fig. 3) illustrations of the faded pattern of the holotype are available. Subsequently the only illustrations of this species have been those in A. de Miranda Ribeiro (1911, fig. 70), and in Fowler (1954, fig. 720), which are copies after Günther's actual illustrations.

Eigenmann & Eigenmann (1889: 39; 1890: 364, and 378; 1891: 39) placed (erroneously) *Rineloricaria lanceolata* into the subgenus *Loricariichthys* Bleeker, 1862. Fowler (1942: 85; 1945: 104) retained this classification, but raised *Loricariichthys* to full generic level. Fowler (1940: 98; 1954: 116—117) correctly considered *lanceolata* to be a species of *Rineloricaria* both before and after the period 1942—1945. In my opinion, *Loricariichthys* is a genus characterized by the development of a large, broad lower lip in adult males, which do not develop bristles, as males of *Rineloricaria* species do. The dentition in *Loricariichthys* species is only weakly developed, whereas it is well developed in *Rineloricaria*. Furthermore, the scutes covering the belly in *Loricariichthys* are large, and are regular in shape, whilst those in *Rineloricaria* are small and irregular in shape.

Regan (1904: 271, and 277) was the first author who correctly placed the species within *Rineloricaria* Bleeker, 1862. He considered this a subgenus of *Loricaria*, and used a somewhat different spelling from that proposed by Bleeker (1862: 3), *Rhineloricaria* instead of *Rineloricaria*. The spelling *Rhineloricaria* was introduced by Berg (1895: 137). With the single exception of Fowler (1942: 85; 1945: 104), the species has since then been classified either as a *Loricaria* (mostly within the subgenus *Rineloricaria* [or

Rhineloricaria]), or as a member of the genus *Rineloricaria* (including the variant spelling).

The only synonymy dealing with *Rineloricaria lanceolata* was that proposed by A. de Miranda Ribeiro (1911: 129), who compared descriptions and illustrations (by Günther, 1868 b, Steindachner, 1879, and Eigenmann & Eigenmann, 1890) of *Loricaria lanceolata* and *Loricaria teffeana* Steindachner, 1879 (a *Rineloricaria* species), and concluded that these two were identical. As shown by Konopicky's fine figures of *Rineloricaria teffeana* (in Steindachner, 1879, pl. 6 figs. 2, 2a—b), this species is well distinguished from *Rineloricaria lanceolata* by its different colour pattern. Comparisons of *Rineloricaria teffeana* and *Rineloricaria lanceolata* will undoubtedly yield additional characteristics which can be used to separate these two species.

During a visit to the British Museum (Natural History), London (BMNH), Mrs. Dr. R. H. Lowe-McConnell kindly allowed me to study several samples of *Rineloricaria lanceolata* from the Rio das Mortes and its tributaries, collected during the Royal Society — Royal Geographical Society — Xavantina/Cachimbo Expedition, 1968/1969. Dr. P. H. Greenwood and Mr. G. J. Howes (BMNH) subsequently loaned to me the holotype of *Loricaria lanceolata* together with the Buckley specimens of this species. Later, Mrs. M. M. Dick (Museum of Comparative Zoology, Harvard University, Cambridge, Mass., MCZ), Dr. J. P. Gosse and Mr. E. Walschaerts (Institut Royal des Sciences Naturelles de Belgique, Brussels, IRScNB), loaned additional valuable specimens. Mr. L. A. van der Laan (Instituut voor Taxonomische Zoölogie, "Zoölogisch Museum", Amsterdam, ZMA) made the photographic illustrations for this publication. Mr. G. J. Howes kindly read the manuscript. I am grateful to all these individuals for their kind assistance in the preparation of this paper.

***Rineloricaria lanceolata* (Günther, 1868)**
(figs. 1—5, table I)

Loricaria lanceolata Günther, 1868a: 477—478 (original description; type locality: "Xeberos"), — Günther, 1868b: 235, fig. 3 (extended description of the holotype), — Boulenger, 1887: 277—278 (two specimens — one male — compared with holotype; Ecuador, Canelos; comparison with original figure of *Loricaria magdalenae* Steindachner, 1878, in Steindachner, 1879), — Eigenmann & Eigenmann, 1889: 39 (listed; in subgenus *Loricariichthys*), — 1890: 378 (listed; references), — 1891: 39 (listed; in subgenus *Loricariichthys*), — Regan, 1904: 277 (description, based on holotype and on the two specimens reported by Boulenger, 1887; Xeberos and Canelos, Upper Amazon; in subgenus *Rhineloricaria* in key on p. 271), — Eigenmann, 1910: 413 (listed; Xeberos, Canelos; in subgenus *Rhineloricaria*), — A. de Miranda Ribeiro, 1911: 128—129, fig. 70 (in part; description translated from Günther, 1868b, figure copied from Günther, 1868b; discussion; *Loricaria teffeana* Steindachner, 1879, erroneously considered a junior synonym; distribution: "Alto Amazonas, de Tefé para cima"; references listed on pp. 428—429), — Eigenmann & Allen, 1942: 203 (listed; references; Oriental Peru and Ecuador), — Gosline, 1945: 102 (listed; Xeberos and Canelos; in subgenus *Rineloricaria*).

[*Loricaria (Loricariichthys)*] *lanceolatus*; Eigenmann & Eigenmann, 1890: 364 (in key).
Rhineloricaria lanceolata; Fowler, 1940: 98 (listed; see below).

Loricariichthys lanceolatus; Fowler, 1942: 85 (listed), — 1945: 104 (listed; paper not seen, reference copied from Fowler, 1954: 117).

Rineloricaria lanceolata; Fowler, 1954: 116—117, fig. 720 (references; figure after Günther, 1868b), — Ovchynnyk, 1968: 258 (listed; Canelos, Prov. Napo-Pastaza).

The material recorded by the following authors has not been re-examined:

Loricaria lanceolata; Steindachner, 1882: 80 (listed; Canelos, Ecuador), — A. de Miranda Ribeiro, 1918: 720 (listed; Rio Juquiá, Poço Grande), — Pearson, 1924: 24 (listed; Bolivia, Rio Beni basin, Ixiamas), — 1937: 112 (in distributional table; symbols used mean "Amazon basin without the Beni-Mamoré basin", and "Rio Beni basin", cf. Pearson, 1937: 107).

Rhineloricaria lanceolata; Fowler, 1940: 98 (listed; Bolivia, Madeira-Mamore watershed, Ixiamas; apparently based on Pearson, 1924: 24).

SPECIMENS EXAMINED

PERU: BMNH 1867.6.13.79, one (holotype), standard length 82.7 mm, Rio Amazonas system, tributary of the Rio Huallagas near Jeberos (= Xeberos), 05°18' S, 76°15' W, coll. E. Bartlett.

ECUADOR: BMNH 1880.12.8.75—76, two, standard length 85.4 to 115 mm (largest a male), Rio Amazonas system, upper Rio Pastaza drainage, Rio Bobonaza at Canelos, 01°39' S, 77°46' W, coll. C. Buckley; — MCZ 48810, three, standard length 30.0 to 103.2 mm (largest a male), Rio Amazonas system, Río Napo drainage, small stream one mile up Rio Payamimo from its mouth at (Puerta) Coca, 00°28' S, 76°56' W, coll. Capn. Carcia, G. Herrera & T. Roberts, 22-XI-1971.

BOLIVIA: ZMA 109.217, one, standard length 63.6 mm, Rio Amazonas

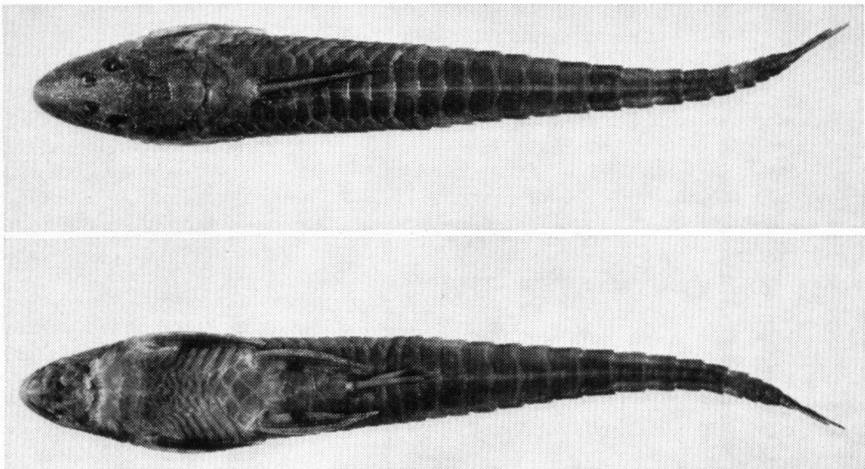


FIG. 1. *Rineloricaria lanceolata*. Holotype (BMNH 1867.6.13.79) in dorsal (above) and ventral (below) view.

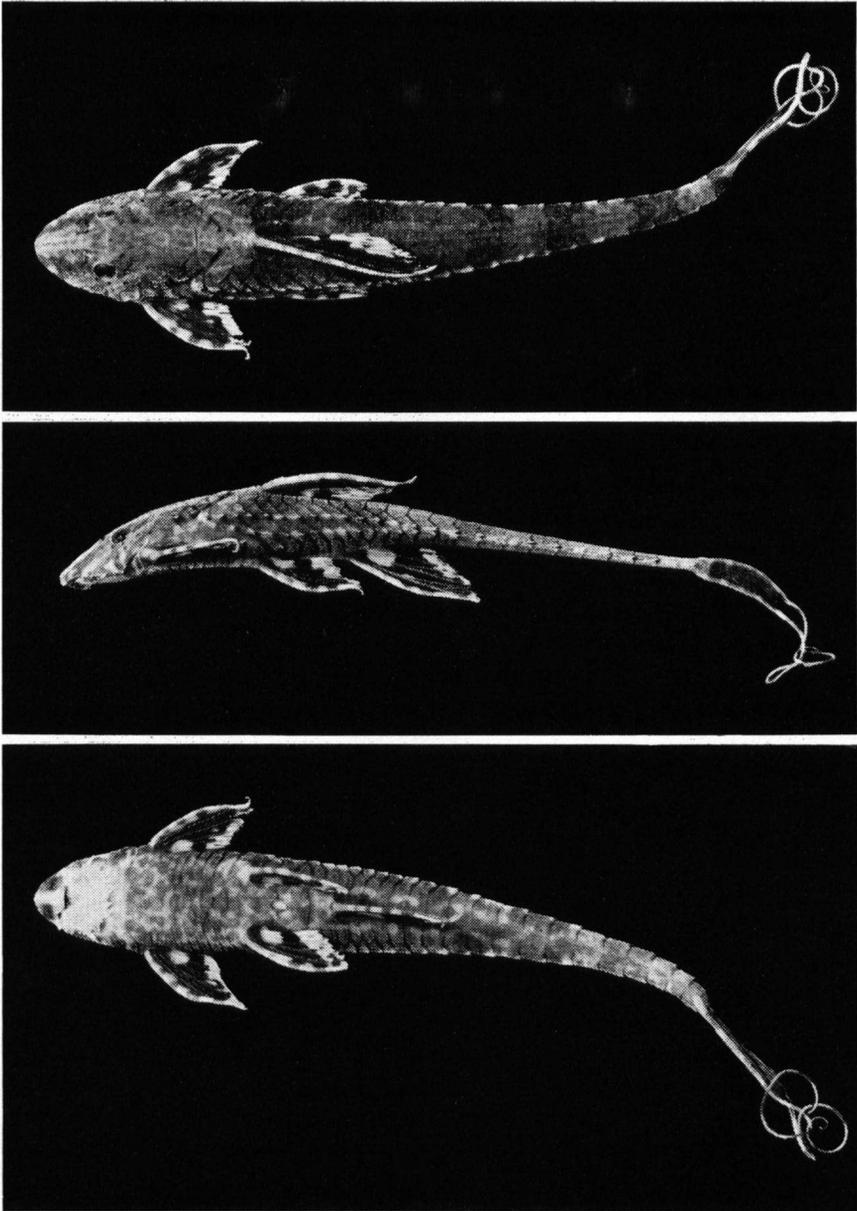


FIG. 2. *Rineloricaria lanceolata*. Specimen (presumably a ♀) from a tributary of Rio das Mortes, Brazil (BMNH 1971.1.22.45) in dorsal (above), lateral (centre), and ventral (below) view.

system, Rio Madeira drainage, Rio Chapare, a tributary of Rio Mamoré, small turbid creek at the airport of Todos Santos, 16°49' S, 65°08' W, coll. K. H. Lüling, 28-IX-1966.

GUYANA: MCZ 48811, two, standard length 63.3 to 97.6 mm (largest a male), district Essequibo, Moco Moco Creek near Lethem, tributary of Rio Tacutú, Rio Branco system, coll. C. Hopkins, 7-III-1970; — MCZ 48812, one, standard length 75.7 mm, Crusa Creek or Moco Moco Creek, coll. C. Hopkins, V-1971.

BRAZIL: BMNH 1971.1.22.45, one (figured in fig. 2), standard length 73 mm, BMNH 1971.1.22.46—55, eleven, standard length 37.6 to 80.9 mm, BMNH 1973.3.29.16—24, nine, standard length 42.0 to 77.2 mm, ZMA 112.725, one, standard length 55.3 mm, Est. Mato Grosso, Rio Araguaia system, C. do Bacaba, tributary of Rio das Mortes, 68 km north of Chavantina, on road crossing, dipnet in weed, Xavantina/Cachimbo Expedition, coll. R. H. Lowe-McConnell, 3-V-1968; — BMNH 1971.1.22.56, one, standard length 29.7 mm, Est. Mato Grosso, Rio Araguaia system, C. do Bacaba, tributary of Rio das Mortes, Xavantina/Cachimbo Expedition, coll. R. H. Lowe-McConnell, 18-I-1969; — BMNH 1971.1.22.57, one, standard length 45.5 mm, Est. Mato Grosso, Rio Araguaia system, Rio das Mortes at Chavantina (= Xavantina), Xavantina/Cachimbo Expedition, coll. R. H. Lowe-McConnell, 1-V-1968; — IRScNB 17869, one, standard length 91.3 mm, Est. Amazonas, Rio Amazonas system, Furo do Cuia, tributary at left bank of Rio Solimões, upstream of village de Cuia, 90 km upstream of Manacapuru, coll. J. P. Gosse, 24-XI-1962.

Distribution. — All specimens examined were collected in the Rio Amazonas system.

Description. — Morphometric and meristic data of the holotype are given first, followed (in parentheses) by the range obtained from ten specimens (for actual measurements see table I): standard length (sl), from tip of snout to base of middle triangular caudal scute 82.7 (63.3 to 115.0) mm; predorsal length, from tip of snout to posterior rim of predorsal shield 3.3 (3.0 to 3.3) in sl; head length (hl), from tip of snout to end of occipital process 4.9 (4.4 to 4.9) in sl; head width, taken at opercle, just before pectoral spine insertion 7.8 (6.6 to 8.2) in sl, 1.6 (1.4 to 1.8) in hl; head depth, taken at end of occipital process 12.2 (10.3 to 12.6) in sl, 2.5 (2.2 to 2.6) in hl; snout length, from tip of snout to anteriormost point of orbital rim 8.9 (8.1 to 9.0) in sl, 1.8 (1.8 to 1.9) in hl; orbital diameter, excluding notch 7.4 (7.5 to 10.6) in hl; orbital diameter, including notch 5.9 (6.1 to 6.9) in hl; least interorbital width 3.8 (3.2 to 3.8) in hl; internasal width, at the middle of the nostrils

TABLE I. *Rineloricaria lanceolata*. Actual measurements in millimetres to the nearest tenth, of the specimens described in this article; a — BMNH 1867.6.13.79 (holotype, Peru), b — BMNH 1880.12.8.75—76 (Ecuador, largest a ♂), c — MCZ 48810 (Ecuador, largest a ♂), d — ZMA 109.217 (Bolivia), e — MCZ 48811 (Guyana, largest a ♂), f — MCZ 48812 (Guyana), g — BMNH 1971.1.22.45 (Brazil, Est. Mato Grosso), h — IRScNB 17869 (Brazil, Est. Amazonas).

specimen	a	b	b	c	c	d	e	e	f	g	h
standard length	82.7	115.0	85.4	103.2	68.4	63.6	97.6	63.3	75.7	73.0	91.3
axial length	-	-	-	113.3	74.3	71.1	105.5	69.0	80.2	85.0	99.0
total length	-	134.2	-	122.4	-	104.0	151.0	-	90.5	±117.0	-
predorsal length	25.3	36.9	25.6	33.4	21.7	19.7	32.0	19.9	24.2	24.0	28.9
head length	17.0	25.4	17.6	22.5	15.0	13.5	22.1	13.4	15.8	16.3	19.4
head width	10.6	±14.0	10.6	14.6	8.9	9.6	13.3	8.5	10.3	10.6	12.9
head depth	6.8	11.1	6.8	10.0	5.7	5.3	9.2	5.3	7.3	7.1	8.4
snout length	9.3	13.5	9.6	12.3	8.0	7.1	12.0	7.5	8.7	8.6	10.2
orbital diameter, excluding notch	2.3	2.4	1.9	2.4	1.7	1.7	2.2	1.6	2.1	2.1	2.1
orbital diameter, including notch	2.9	3.7	2.6	3.7	2.3	2.2	3.3	2.2	2.6	2.5	3.1
interorbital width	4.5	7.9	5.4	6.0	4.3	3.9	6.0	3.8	4.5	4.4	5.6
internasal width	2.6	4.5	2.9	3.9	2.2	2.3	3.6	2.4	2.6	2.8	3.1
dorsal spine length	17.3	23.1	19.5	21.7	16.3	14.9	23.1	15.3	17.8	18.1	20.0
length first dorsal ray	-	22.6	18.8	20.7	15.0	15.0	22.7	14.9	17.3	17.6	19.5
length last dorsal ray	-	7.8	6.0	9.8	5.6	4.5	6.5	-	5.0	5.8	8.4
dorsal fin base	6.4	9.6	6.3	8.5	5.7	4.3	7.5	4.0	4.7	5.8	8.7
anal spine length	-	19.3	15.3	19.4	13.9	14.3	21.5	14.6	15.8	16.2	21.1
pectoral spine length	13.5	15.9	14.7	14.6	11.9	11.9	16.0	10.6	12.0	13.8	15.5
pelvic spine length	13.7	17.7	13.7	16.2	11.4	11.4	15.8	10.5	11.5	12.6	16.6
upper caudal spine length	-	19.2	-	20.0	-	38.8	54.0	-	15.8	±44.0	-
lower caudal spine length	-	19.2	-	14.0	11.2	15.4	19.2	-	13.2	±37.0	18.5
cleithral width	11.8	16.8	11.8	15.5	9.9	10.2	14.8	8.9	11.2	11.3	14.0
supra-cleithral width	8.8	12.0	8.6	10.7	7.3	7.1	10.2	6.7	8.0	8.4	10.4
thoracic length	11.8	18.2	12.2	17.0	9.0	9.3	15.1	9.3	11.7	11.1	13.7
abdominal length	11.1	16.8	11.7	14.8	9.2	8.9	13.2	8.6	10.0	9.5	11.9
post-anal peduncular length	44.1	58.5	45.0	53.0	37.0	33.9	50.2	33.8	40.3	37.9	46.9
depth caudal peduncle	1.2	1.7	1.3	1.7	1.0	1.0	1.5	0.9	1.1	1.1	1.3
width caudal peduncle	2.2	2.9	2.4	3.0	1.7	1.9	3.2	1.9	1.9	2.2	2.7
anus-anal fin origin	6.6	9.8	6.8	8.4	4.8	5.0	7.1	4.7	5.6	6.0	6.3
length rectal barbel	-	-	-	5.2	4.4	-	6.3	4.7	4.7	4.3	4.9
axial length lower lip	2.7	3.0	2.4	2.9	3.3	1.3	3.4	2.2	2.0	2.8	1.8

6.5 (5.6 to 6.8) in hl; dorsal spine length 4.8 (4.0 to 5.0) in sl, 1.0 (0.9 to 1.1) in hl; length of first dorsal ray, broken in holotype (4.1 to 5.1 in sl, 0.9 to 1.1 in hl); length of last dorsal ray, broken in holotype (10.5 to 15.2 in sl, 2.3 to 3.4 in hl); dorsal fin base 12.9 (10.5 to 16.1) in sl, 2.7 (2.2 to 3.4) in hl; anal spine length, broken in holotype (4.3 to 6.0 in sl, 0.9 to 1.3 in hl); pectoral spine length 6.1 (5.3 to 7.2) in sl, 1.3 (1.1 to 1.6) in hl; pelvic spine length 6.0 (5.5 to 6.6) in sl, 1.2 (1.2 to 1.4) in hl; greatest cleithral width 7.0 (6.2 to 7.4) in sl, 1.4 (1.3 to 1.5) in hl; supra-cleithral width 9.4 (8.7 to 9.9) in sl, 1.9 (1.9 to 2.2) in hl; thoracic length, taken between spine insertions of pectoral and pelvic fins 7.0 (6.1 to 7.6) in sl, 1.4 (1.3 to 1.7) in hl; abdominal length, taken between spine insertions of pelvic and anal fins 7.5 (6.9 to 7.7) in sl, 1.5 (1.5 to 1.7) in hl; post-anal peduncular length, taken from base of last anal ray to base of middle triangular caudal scute 1.9 (1.8 to 2.0) in sl; least depth caudal peduncle 14.2 (13.2 to 15.0) in hl; least width caudal peduncle 7.7 (6.9 to 8.8) in hl; distance between anus and anal fin origin 12.5 (10.7 to 14.5) in sl, 2.6 (2.6 to 3.1) in hl; length rictal barbel, shrunken in holotype (12.0 to 19.9 in sl, 2.9 to 4.3 in hl); greatest axial length of lower lip 6.3 (4.4 to 10.8) in hl.

Body scutes in longitudinal lateral series; first scute, the one following the cleithrum, last scute, the middle triangular one on caudal fin base 32 (30 to 31). Two postoccipital scutes, predorsal scute not included. Three pairs of scutes between anus and anal fin origin. Abdomen completely covered with small, irregular scutes, increasing in size towards the anus. Oblong scutes on thorax between last pectoral fin ray and pelvic spines (left/right) 8/8 (8 to 10/8 to 10).

Fin spine and ray counts: dorsal fin I,6, last ray split to its base; anal fin I,4, last ray split to its base; pectoral fin I,6; pelvic fin I,5; principal caudal fin rays I,10,I. The specimen MCZ 48812 has only 9 branched caudal fin rays next to the outer unbranched rays, and the specimen BMNH 1971.1.22.45 has only 5 branched caudal fin rays next to the outer unbranched rays.

Teeth are present in both jaws, those in lower jaw somewhat larger than those in upper jaw (fig. 5). The holotype has (left/right) 7/5 teeth in the upper jaw, the other specimens 5 to 8/5 to 8. In the lower jaw the holotype has (left/right) 7/8 teeth, the other specimens 5 to 10/6 to 10. In the specimens BMNH 1880.12.8.75—76 the poor condition of the oral area allows the observation of replacement teeth, which have not developed an erect position like functional teeth. Since — due to their depressed position — only the tip of replacement teeth is visible in the gums, they seem to be somewhat smaller than functional teeth. The larger specimen has 4 replacement teeth next to 6 functional teeth in both halves of the lower jaw. The smaller specimen has 3 replacement teeth next to 7 functional teeth in the left half of the lower jaw, and 2 replacement teeth next to 8 functional teeth in the right half of the lower jaw.

Eye round or slightly oval in shape, iris partly covered by a small rounded

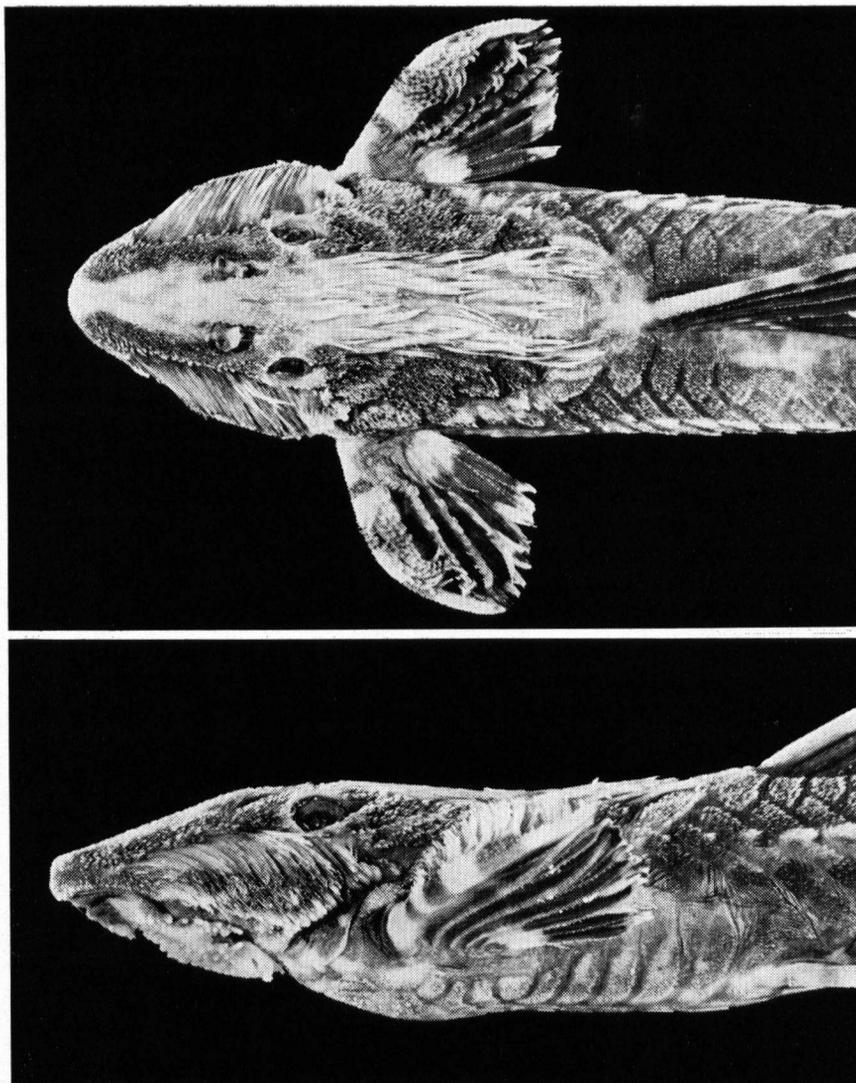


FIG. 3. *Rineloricaria lanceolata*. Male from Rio Payamimo, Ecuador (MCZ 48810, standard length 103.2 mm), showing bristles in dorsal (above) and lateral (below) view.

triangular flap, hardly visible in some specimens. A large posterior orbital notch is present.

Dermal ossifications, fin spine and rays covered by minute sharp denticles. On the dorsum, posterior to the base of dorsal fin spine, these denticles are arranged in fine wavy rows; in the predorsal area the denticles are arranged in somewhat stronger wavy rows. Tip of snout with a narrow naked horizontal area in most specimens; the ventral edge of this area with denticles.

The dermal ossification of the head extends a little on the ventral surface, on a vertical from the anteriormost point of the orbital rim. Two distinct rows of denticles along the lateral body scutes converge posteriorly on the first (left/right) 15/15 (14 to 16/14 to 16) scutes, and run parallel along the remaining scutes.

Lips close-set with papillae of about equal size, edges with relatively long subbarbels — up to about seven times longer than a papilla —, about 40 to 55 in adult specimens. Lower lip slightly notched in the middle. There are no differences in lip structure of juveniles, females, and males.

Pores of the sensory canal system on head and between longitudinal lateral rows of denticles; between the converging rows the pores are often bifurcated.

Colour in alcohol (see figs. 2 to 4). — Colour pattern highly variable. Characteristic unpigmented — light yellow — round spots, which may vary in size, at base of dorsal, pectoral, pelvic, and anal fin rays.

Ground colour pale tan. Dorsum of head with median broad tan area from tip of snout up to base of dorsal fin spine. This area often with minute to small brown spots and/or lines, sometimes with finely, evenly scattered brown pigment, occasionally without pigment at all. Sides of head brown with either distinct oblique tan stripes or with brown/tan marbling patterns. Dorsal surface of upper lip brown with an axial tan line, often with two or more tan dots or lines at either side of the axial line. Ventral surface of lips tan, dorsal surface of lower lip about up to rictal barbels with brown markings, being a continuation of the colour pattern of the ventral surface of head around.

A more or less prominent tan line from base of dorsal fin spine to base of last pectoral ray. Dorsum of body brownish with darker markings; especially a large blotch just anterior to base of dorsal fin spine, reaching the tan line anteriorly and becoming gradually less intense posteriorly. Three to five transverse bands may be present, which are darkest laterally. The longitudinal lateral denticle ridges are mostly tan, the pores of the sensory canal system are often brown.

Interthoracic area tan with either widely scattered brownish pigment, or marbled with tan and brown, or evenly brown. Ventral area posterior to pelvic fins brown with irregular tan dots and lines, or almost evenly dark brown, or with some inconspicuous transverse bands, corresponding with those situated on the dorsum.

Dorsal fin spine tan with one to several more brownish dots. Dorsal fin rays and membrane brown, leaving a circular tan spot near the base of the first rays, and a tan area at distal half of third through last ray. Some irregular spots may occur here. A similar colour pattern is also present on pectoral, pelvic, and anal fins: an unpigmented circular spot near the base of first rays, sharply contrasting with the surrounding dark brown pigmentation, forming an irregular pattern on the fin and resulting in the characteristic (and attractive) appearance of the fish.

Outer (unbranched) caudal fin rays tan, with or without brownish dots,

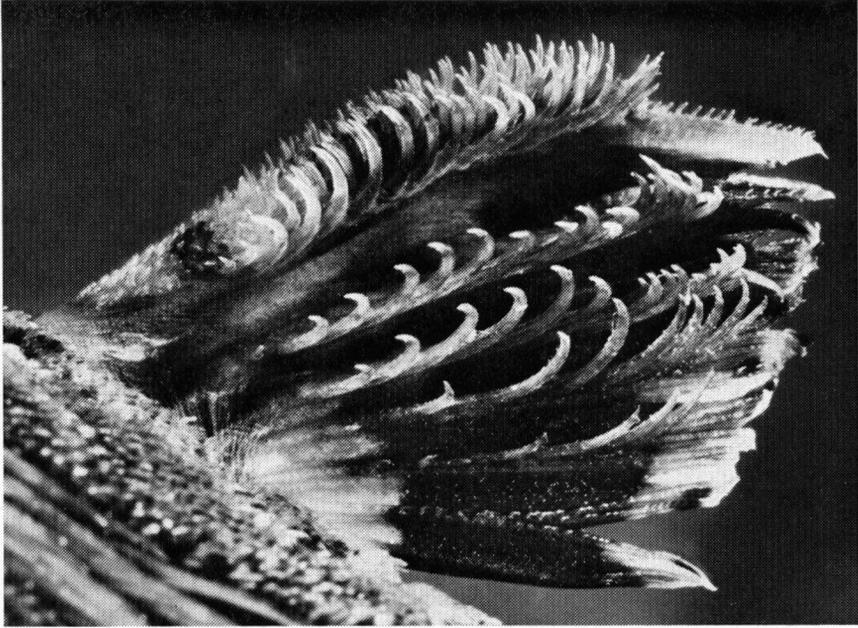


FIG. 4. *Rineloricaria lanceolata*. Pectoral fin of male from Rio Payamimo (MCZ 48810). Photograph taken from dorso-caudal direction.

which may continue when these rays are — still — filamentous. Remaining caudal fin rays and membrane brown, except for a median tan area, which may contain some small brown spots, in some cases forming two small vertical lines. Caudal fin base brown.

The juvenile specimen in BMNH 1971.1.22.56 (standard length 29.7 mm) is almost completely dark brown, except for the fins, which show the characteristic colour pattern. The dorsum of the head shows a somewhat less intense pigmentation from tip of snout to interorbital area, and a lighter line anterior to eye.

The juvenile specimen in MCZ 48810 (standard length 30.0 mm) has one of the most distinct colour patterns observed, having the predorsal blotches connected by a transverse brown stripe at the height of the supraoccipital tip. This stripe is anteriorly bordered with tan.

The specimen in IRScNB 17869 (standard length 91.3 mm) has a light reddish-brown pigmentation. The pigmented part of the dorsal fin is marbled rather than solid, while the pigment in pectoral, pelvic, and anal fins forms some oblique lines which are darker than the remaining markings in the fins. The circular tan spot at the base of pectoral, pelvic, and anal fins are smaller than in the other specimens, and lacking in the dorsal fin.

Five out of twenty-one specimens from C. do Bacaba and Rio das Mortes (BMNH 1971.1.22.45 to —57, BMNH 1973.3.29.16 to —24, ZMA

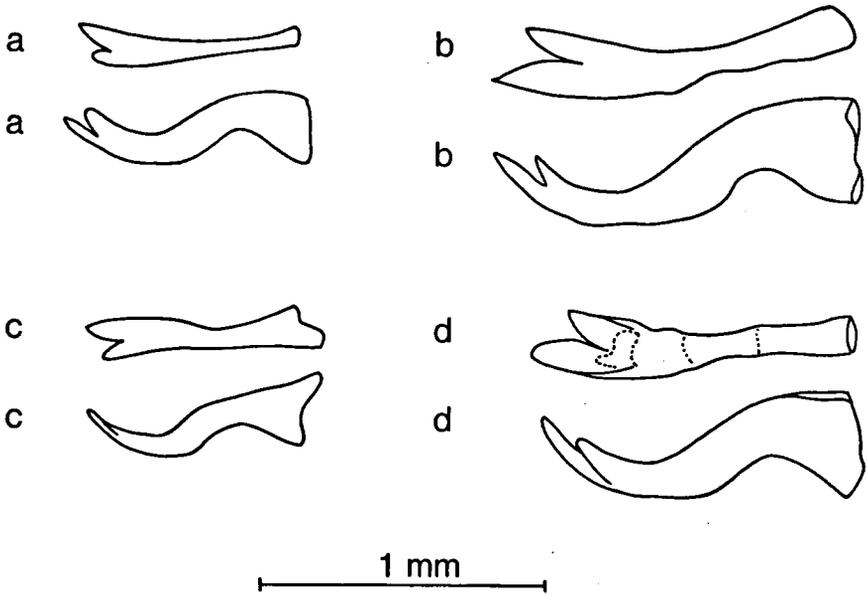


FIG. 5. *Rineloricaria lanceolata*. Profiles of teeth from a specimen (presumably a ♀) from a tributary of Rio das Mortes, Brazil (BMNH 1971.1.22.46, standard length 80.9 mm), a — from upper jaw, b — from lower jaw; and from a specimen (presumably a ♀) from Crusa Creek or Moco Moco Creek, Guyana (MCZ 48812, standard length 75.7 mm), c — from upper jaw, d — from lower jaw.

112.725) show a somewhat more reddish-brown pigmentation, rather than the chocolate brown pigmentation in the remaining material.

Bristles of the male (see figs. 3 and 4). — Three out of the thirty-four specimens examined had developed immovable “bristles”, a character known as a secondary sexual character of males. These three specimens have a standard length of 115, 103, and 97.6 mm, respectively, and are the largest specimens of our material, the next to largest being 91.3 mm standard length. There are three areas where bristles are developed:

1) interorbital through predorsal area. The bristles are slender, long, nearly straight, and lay just over the body. The base of the spines in this area is covered with a thin dermal layer. Length of these bristles up to about 5 mm in the specimen illustrated in fig. 3.

2) suborbital through opercular area. A close-set tuft of bristles, somewhat more slender than those in the interorbital/predorsal area and like these long and nearly straight, except for the tip, which points downward. Length up to about 5.5 mm in the specimen illustrated.

Ventral to these numerous slender bristles, is a row of about 15 curved, spine-like bristles at the edge of the operculum. These latter are about three times thicker and four times shorter than the other bristles in this area. The tip of the thick spine-like bristles points towards the branchiostegal membrane.

3) the pectoral fin (fig. 4). The pectoral fin spine in males is much thicker than in females, and provided with numerous erect, recurved, spine-like bristles, up to about 3 mm high (the outer ones the smallest) in the specimen illustrated. An area of about 2.5 mm at the base of the spine is without bristles. The spine terminates in a slender, flexible tip without bristles, but with a row of relatively large denticles. The first four rays bear bristles similar to those on the spine, decreasing in size towards the body.

The pectoral bristles are developed in this way so that their effect upon restricting fin movements is negligible. However, well-equipped males of this and other *Rineloricaria* species are often found with spread fins, whereas females and juveniles — including males without bristles — have the pectoral fins in various degrees of spreading.

As Boulenger (1887: 277—278) stated, the pectoral fin spine is relatively smaller in males than in females. In the three mature males available to me, the ratio of pectoral fin spine length is 6.1 to 7.2 as expressed in standard length, and 1.4 to 1.6 as expressed in head length. In the females and immature males it is 5.3 to 6.3 in standard length and 1.1 to 1.3 in head length.

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