THE GENUS Rineloricaria BLEEKER, 1862 IN EASTERN RIO GRANDE DO SUL, BRASIL, WITH DESCRIPTIONS OF SIX NEW SPECIES (PISCES, SILURIFORMES, LORICARIIDAE).

ROBERTO ESSER DOS REIS

Dissertação apresentada à Comissão de Bacharelado em Ciências Biológicas da Universidade Federal do Rio Grande do Sul, para a obtenção do grau de Bacharel em Ciências Biológicas - ênfase em Zoologia.

Orientador:
Profª Leda Francisca Armani Jardim

UFRGS
BIBLIOTECA SETORIAL DO
INSTITUTO DE BIOCIÊNCIAS

PORTO ALEGRE
RIO GRANDE DO SUL - BRASIL
Novembro, 1983

UFRGS
BIBLIOTECA SETORIAL
INSTITUTO DE BIOCIÊNCIAS

NOTICE

Please, this dissertation is NOT a published paper, so do not regard any names that are proposed herein as available in zoological nomenclature before actual publication. Thank you!

12489

BIO
B10/85

BIO
1998/3197-4
1998/11/10
8467

No Chamada:

597.554.4.063.7 (816.5-11)
R375g

APRESENTAÇÃO

O trabalho aqui apresentado é parte de um trabalho maior, feito em co-autoria com Isaac J. H. Isbrücker e Han Nijssen do Instituut voor Taxonomisch Zoölogie - Zoölogisch Museum (ZMA), de Amsterdam: "REIS, R.E., I.J.H.Isbrücker & H.Nijssen, The genus Rineloricaria in Uruguay and eastern Rio Grande do Sul, Brasil, with descriptions of six new species (Pisces, Siluriformes, Loricariidae)".

É importante ressaltar que a área estudada constitui uma unidade biogeográfica, uma vez que a bacia da Lagoa dos Patos e as pequenas bacias costeiras estão totalmente isoladas da bacia do Rio Uruguai.

Esta dissertação, portanto, é apresentada sob forma de "Publicação Científica" e está feita de acordo com os padrões da revista Beaufortia, do ITZ. A dissertação é apresentada em inglês, idioma em que o trabalho será publicado.

Comentários sobre alguns aspéctos do trabalho se fazem necessários: os dados faltantes nas tabelas de medidas estão, no momento, em Amsterdam, assim como todos os dados de Rineloricaria microlepidogaster, e não foram incluídos na presente dissertação. Os peixes ainda não numerados (unreg.), o serão antes da publicação final do trabalho.

UFRGS
BIBLIOTECA SETORIAL
INSTITUTO DE BIOCIÊNCIAS

SUMÁRIO

UFRGS
BIBLIOTECA SETORIAL
INSTITUTO DE BIOCIÊNCIAS

The genus Rineloricaria Bleeker, 1862 in eastern Rio Grande do Sul, Brasil, with descriptions of six new species (Pisces, Siluriformes, Loricariidae).

Roberto E. Reis

Museu Anchieta, Setor de Ictiologia, Av. Nilo Peçanha, 1521, C.Postal 358, Porto Alegre, Brasil

ABSTRACT

This paper deals with those Rineloricaria species occurring in the eastern Rio Grande do Sul (Brasil) - except the Uruguay River system. Descriptions, illustrations and brief comments on ecology and behavior are presented on: R. cadeae (Hensel, 1868), R. strigilata (Hensel, 1868), R. longicauda Reis, 1983, R. quadrensis Reis, 1983, R. maquinensis sp. n., R. malabarbai sp. n., R. heterogaster sp. n., R. isocuspis sp. n., R. baliola sp. n. and R. intermedia sp. n. Comments on the status of R. lima (Kner, 1854) are presented. A map of distribution and a key to the species studied are also given.

RESUMO

Este trabalho estuda as espécies do gênero Rineloricaria que ocorrem na parte leste do Rio Grande do Sul (Brasil) - exceto a bacia do Rio Uruguai. Descrições, ilustrações e breves comentários sobre ecologia e comportamento das seguintes espécies são apresentados: R. cadeae (Hensel, 1868), R. strigilata (Hensel, 1868), R. longicauda Reis, 1983, R. quadrensis Reis, 1983, R. maquinensis sp. n., R. malabarbai sp. n., R. heterogaster sp. n., R. isocuspis sp. n., R. baliola sp. n. e R. intermedia sp. n. Comentários sobre o status de R. lima (Kner, 1854), um mapa de distribuição e uma chave para as espécies estudadas são também apresentados.

UFRGS
BIBLIOTECA SETORIAL
INSTITUTO DE BIOCIÊNCIAS

INTRODUCTION

The species of Rineloricaria Bleeker, 1862 are very common in the streams of southern Brasil and Uruguay. The fish fauna of this region, however, has never been properly studied.

The area studied comprehends those streams of southern Brasil and Uruguay flowing into the Atlantic - except the Uruguay River drainage system (see map), which form a biogeographic unit. The distribution pattern of the fish species in this region is homogeneous, the fauna originating from tha La Plata basin (Eigenmann, 1910a:351). An exception to this homogeneity are the small streams of northeastern Rio Grande do Sul and Southern Santa Catarina States, flowing into the coastal lagoons or directly into the Atlantic, north of Tramandaí Lagoon. Many fish species inhabiting that area do not occur in the other systems of Rio Grande do Sul and Uruguay: R. quadrensis, R. maquinensis and R. isocuspis.

Rineloricaria is easily distinguished from the other Loricariinae genus inhabiting this region (Loricariichthys), by the characteristic lip structure (see fig. 20).

Various Rineloricaria species have been previously assigned to this area: Hensel (1868) described R. cadeae from the Cadeia River, a tributary of Caí River of the Jacuí System and R. strigilata from the Santa Cruz River system - also a Jacuí River tributary. In the same paper Hensel recorded for the first time for southern Brasil, probably an incorrect identification, (see pag.10) three specimens of R. lima (Kner, 1854) from Santa Cruz. Cope (1894) described four specimens of R. cadeae from the Jacuí River. Ribeiro (1918) identified two specimens of Rineloricaria from Rio Grande do Sul as R. lima. These fish are still at MZUSP 02166 and an accurate examination showed they are R. cadeae. Regan (1904), in his extense monograph of Loricariidae, descibed and figured R. microlepidogaster from Rio Grande do Sul, but without stating any type-locality. Fowler (1943) described and figured three Rineloricaria species from Uruguay: R. felipponei, R. pareiacantha and R. thrissoceps, the last two from the Santa Lúcia River at Canelones.

R. lima has been recorded from Uruguay by Devincenzi (1943) - certainly incorrectly (see pag. 10).

Gomes (1947), studying a collection from Rio Grande do Sul State (UMMZ), described and figured a species incorrectly identified as Loricaria (Rhineloricaria) steinbachi Regan, 1906, from the Maquiné River. L. steinbachi (presently in the genus Ixinandria Isbrücker & Nijssen, 1979) is typic from Salta, northwestern Ar-

gentina. This species, misidentified by Gomes, is herein described as R. isocuspis sp. n.

R. longicauda, from the Banhado do Taim, southern Rio Grande do Sul and R. quadrensis, from the Quadros Lagoon in northeastern Rio Grande do Sul were recently described and figured by Reis (1983).

ABBREVIATIONS

BM(NH) - British Museum (Natural History), London
CECN - Centro de Estudios de Ciencias Naturales, Montevideo
DZUFRGS - Departamento de Zoologia da Universidade Federal do Rio Grande do Sul, Porto Alegre
MAPA - Museu Anchieta, Porto Alegre
MZUSP - Museu de Zoologia da Universidade de São Paulo, São Paulo
NMW - Naturhistorisches Museum, Vienna
UMMZ - University of Michigan, Museum of Zoology, Ann Arbor
ZMA - Instituut voor Taxonomische Zoölogie (Zoölogisch Museum), Amsterdam
ZMB - Museum für Naturkunde der Humboldt-Universität, Berlin

BW - body width (at first anal ray level)
ED - eye diameter
HD - head depth
HL - head length
HW - head width
IW - interorbital width
PA - preanal length
PD - predorsal length
Post-A - postanal length (from the first anal ray to the caudal fin)
PV - preventral length
RS - Rio Grande do Sul State, Brasil
SC - Santa Catarina State, Brasil
SL - standard length
SnL -snout length
TL - total length
TP - thoracic plates
y - young

METHODS

Methods of morphometric data measurements were defined by Reis (1983:62). Proportions are presented with minimum and maximum values found and the mean in paranthesis. Fishes with less than 50 mm (TL) have not been measured. Morphometric data are presented in table 1 to 8 and are not repeated in the descriptions. Only the specimens measured are listed of *R. cadeae* and *R. strigilata*. The photographs and draws are by the author when not otherwise stated.

KEY TO THE *Rineloricaria* SPECIES STUDIED

1. Upper caudal ray produced in a short filament (fig. 29) . . . *R. intermedia*

1'. Upper caudal ray not produced 2

2. Abdomen with only three or few polygonal scutes preceeding the preanal plate and with one or two small scutelets facing the first ventral rays (fig 1-a and 20). 3

2'. Abdomen covered by scutelets; if not, also without the small scutelets facing the first ventral rays 4

3. Width of body at the first anal ray level up to 4.8 in the postanal distance . . . . . *R. malabarbai*

3'. Width of body at the first anal ray level at least 4.8 in the postanal distance . . . . . *R. maquinensis*

4. Snout tip with an elongate naked area, extended backwards, reaching beyond the last pore of the infra-orbital sensorial canal (fig. 2) 5

4'. Snout tip with a roundish naked area, not reaching the last pore of the infra-orbital sensorial canal (fig. 3) 6

5. Width of body at the first anal ray level up to 5.2 (4.5 on the average) in the postanal distance - in young up to 60 mm length, may be 5.8 . . . . . *R. cadeae*

5'. Width of body at the first anal ray level at least 5.4 (7.4 on the average) in the postanal distance . . . *R. longicauda*

6. Fins with the distal half dusky (fig. 23), abdomen completely covered by scutelets . . . . . *R. baliola*

6'. Fins with only dusky spots in the rays, abdomen sometimes incompletely covered by scutelets 7

7. Pectoral fins reaching just the base of ventrals . . . . . R. quadrensis

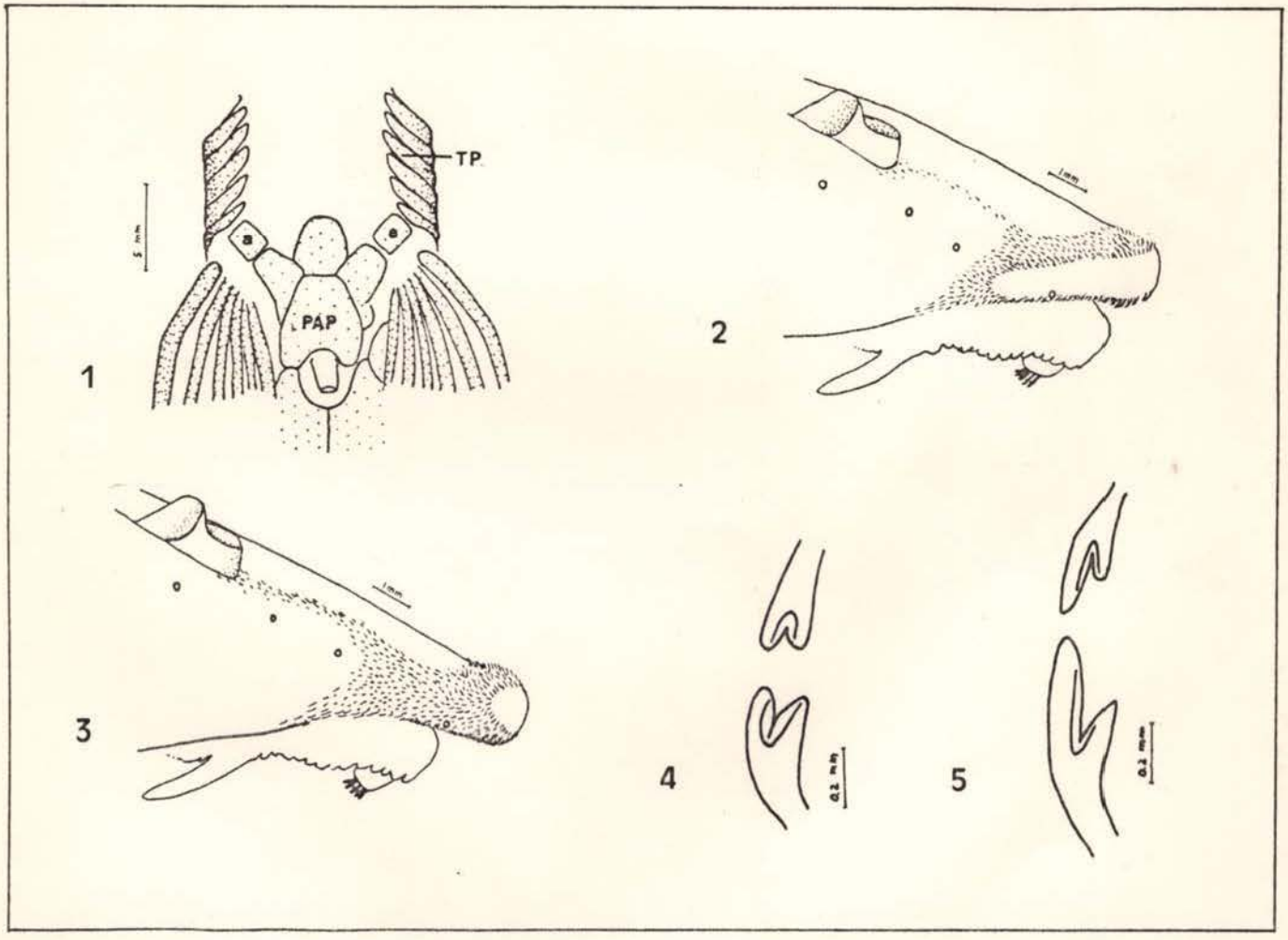
7'. Pectoral fins reaching the first third to half of ventrals . 8

8. Light brown ground dorsal colour, with several irregular dusky spots; head depth 2.5-3.3 in its length; abdomen completely covered by scutelets . . . . . R. strigilata

8'. Dark ground dorsal colour, with six typical transverse stripes; head depth 2.0-2.5 in its length; abdomen usually incompletely covered by scutelets 9

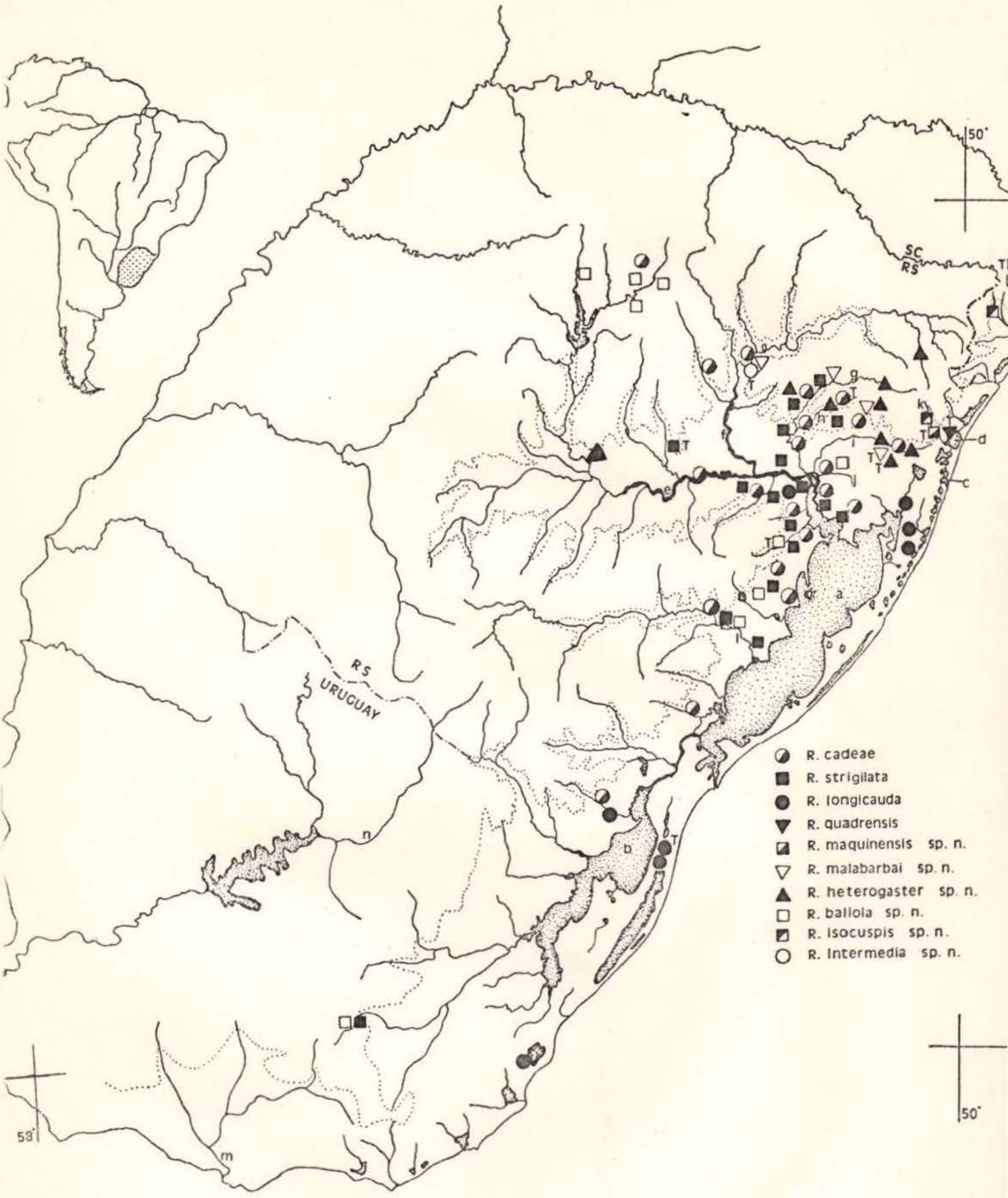
9. Teeth with two cuspids nearly equal in size (figs. 4 and 32) . R. isocuspis

9'. Teeth with a big and a small cuspids (figs. 5 and 26) . . . . R. heterogaster



FIGS. 1-5. TP - thoracic plates, PAP - preanal plate

BIBLIOTECA SETORIAL



MAP OF Rineloricaria SPECIMENS EXAMINED. a - Lagoa dos Patos, b - Lagoa Mirim, c - Lagoa de Tramandaí, d - Lagoa dos Quadros, e - Rio Jacuí, f - Rio Taquarí, g - Rio Caí, h - Rio Cadeia, i - Rio dos Sinos, j - Rio Gravataí, k - Rio Maquiné, l - Rio Camaquã, m - Rio Santa Lúcia, n - Rio Negro, o - Rio Jordão, T - type-locality.

Rineloricaria lima (Kner, 1854)

R. lima, with various taxonomic problems, is the type-species of the genus Rineloricaria and is currently assigned to Rio Grande do Sul State (see Fowler, 1954:118). This species was proposed by Kner (1854) based on a single dry specimen, which could not be recently found at NMW (Isbrücker, 1979:112), probably being lost during the second World War. Furthermore, Kner did not define a type-locality, just refering: "Aus Brasilien durch Natterer, aber ohne nähere Angabe des Fundortes".

The imprecise description - already considered as questionable by the author in the original paper - led to the inclusion of some non-lima specimens in this species by later authors. These misidentifications extended the R. lima range to a very wide area, from the Amazon to Uruguay and Argentina.

All these problems brought R. lima to a very critical condition, in such a way that nowadays it is impossible to design a neotype. The redefinition of R. lima and restriction of its type-locality will be the subject of another paper by Isbrücker, Nijssen & Reis.

Rineloricaria cadeae (Hensel, 1868)

(Figs. 6 and 7, Tab. 1)

Loricaria cadeae Hensel, Archiv. Naturgesh., 1868:369 (Cadeia River - type locality). - Eigenmann & Eigenmann, Occas. Pap. Cal. Acad. Sci., 1890:361 (copy); Proc. U. S. Nat. Mus., 1891:39 (reference). - Cope, Proc. Philos. Soc., 1894:94 (Jacuí River). -Regan, Trans. Zool. Soc. London, 1904:279 (Cadeia River). - Steindachner, Anz. Akad. Wiss. Wien, 1909:197 (synonym of L. lima Kner). - Eigenmann, Rep. Princeton Univ. Exped. Patagonia, 1910:413 (reference). - Ribeiro, Archiv. Mus. nac. Rio de Janeiro, 1911:124 (copy). - Devincenzi, Com. Zool. Mus. Hist. Nat. Montevideo, 1943:2 (in key). - Gosline, Bol. Mus. nac. Rio de Janeiro, Zool., 1945:102 (reference).

Rhineloricaria cadeae, Fowler, Proc. Acad. Nat. Sci. Phila., 1915: 238 (specimens of Cope, 1894).

Rineloricaria cadeae, Fowler, Arq. Zool. Est. São Paulo, 1954:113 (reference). - Isbrücker, Rev. fr. Aquariol., 1979:112 (designation of lectotype); Versl. Tech. Gegevens, 1980:104 (reference). - Reis, Iheringia ser. Zool., 1983:63 (Rio Grande do Sul material).

UFRGS
BIBLIOTECA SETORIAL

SPECIMENS MEASURED

BRASIL, RS. Lectotype ♀ ZMB 7430, headwaters of Rio Cadeia, Nova petrópolis, 1866(?), R.Hensel leg. Topotypes MAPA 1157, 1158 and 1166, ZMA 119.073 (formerly MAPA 1159) and ZMA 119.074 (formerly MAPA 1165), Arroio Isabela, tributary of Rio Cadeia, Picada Café, Nova Petrópolis, 20.VII.1980, P.A.Buckup, L.R.Malabarba & R.E.Reis leg. MAPA 1143, 1151 and 1153, ZMA 119.075 (formerly MAPA 1145) and ZMA 119.076 (formerly MAPA 1152), Rio Cedeia, between Joaneta and Pinhal Alto, Nova Petrópolis, 20.VII.1980, P.A.Buckup, L.R.Malabarba & R.E.Reis leg. MAPA 1112 and 1116, Rio Cadeia between Picada Café and Joaneta, Nova Petrópolis, 20.VII.1980, P.A.Buckup, L.R.Malabarba & R.E.Reis leg.

DIAGNOSE

Head length 4.2-4.9, width 5.5-6.4 in the standard length. Predorsal length 2.8-3.2 in the standard length. Body width at the first anal ray level 3.8-5.8 in the distance from this point to the caudal fin. Snout tip has an elongate horizontal naked area, reaching beyond the last pore of the infra-orbital canal. Usually there are three longitudunal series of scutelets in the abdomen between the thoracic plates. Scales in the postcleithral lateral series are 16-20 + 10-13, usually 18 + 12. Pectoral fins reach the origin of ventral fins or go slightly beyond.

DESCRIPTION

About 480 specimens of R. cadeae were examined 19 of which were measured.

The lectotype (ZMB 7430) shown some small differences that may be due to mode and period of preservation.

Head length 4.2-4.9 (4.6), head width 5.5-6.4 (6.1) in the standard length; head depth 2.1-2.3 (2.2), head width 1.2-1.5 (1.3) in its length. Snout length 2.1-2.5 (2.2), eye diameter 5.5-7.3 (6.4) in the head length. Eye diameter 1.3-1.8 (1.5) in the inter-orbital width. Interorbital width 3.9-4.6 (4.3) in the head length. Predorsal length 2.8-3.2 (3.0), preventral length 2.9-3.3 (3.1) and preanal length 2.0-2.2 (2.1) in the standard length.

...IOTECA SETORIAL

Nuptial males develop dense bristles in head edges and dorsum of spine and branched rays of pectoral fins. Upper edges of the orbits are lifted and the ridges of the head are very conspicuous. A sharp depression is present just behind the posterior margin of the sphenotics, in both sides of the supraoccipital bone. The iris has a large roundish dorsal flap.

Snout tip presents an elongate horizontal naked area, extended backwards, reaching beyond the last pore of the infra-orbital sensorial canal. Lips are well developed, abundantly covered by papillae and with a fringed margin. Lower lip is slightly to deeply notched medially. Two conspicuous rows of papillae separate the upper and the lower lips. The typical rictal barbel occurs and there are 6 to 9 bilobed teeth, usually 8, in the functional series, at each side of both maxillae, lower ones more developed than upper ones. No sexual dimorphism is visible in the teeth.

Postcleithral lateral series are 16-20 + 10-13, usually 18 + 12, coalescing posteriorly.

Abdomen is usually covered by three regular, sometimes four irregular, series of scutelets, between thoracic plates. Thoracic plates are 6-9, usually 8. As in most species of Rineloricaria, this character is extremely variable, partly due to ontogenetic development - sometimes the same fish presents one number of plates at one side and another at the opposite.

The distance from the origin of the anal fin to the caudal fin is 1.7-1.9 (1.8) in the standard length. Width of body at the first anal ray level 3.8-5.8 (4.5) in the distance from this point to the caudal fin.

Fin rays occur in numbers usual in this genus (Isbrücker & Nijssen, 1976). Dorsal spine is equal or slightly smaller than the head length. Depressed pectorals reach or go slightly beyond the origin of ventral fins, which reach or go slightly beyond the origin of the anal fin. Upper caudal spine is longer than the lower one and the caudal fin profile is truncated.

Colour in alcohol (fig. 6) - Ground colour of ossified parts is light to reddish brown. There are five transverse stripes dark brown, the first one passing across the base of spine and first soft dorsal rays. Spine and branched rays of all fins yellowish, with conspicuous dark spots. Dorsal fin apex and first and last thirds of the caudal fin are dusky. Sometimes the membrane of the fins, usually in the pectorals, have a diffuse dark pigmentation. The margin of the head, branchiostegal membranes and anterior part of upper lip have various irregularly sized and shaped brown spots.

...PROS
...LIOTECA SETORIAL
...CIÊNCIAS

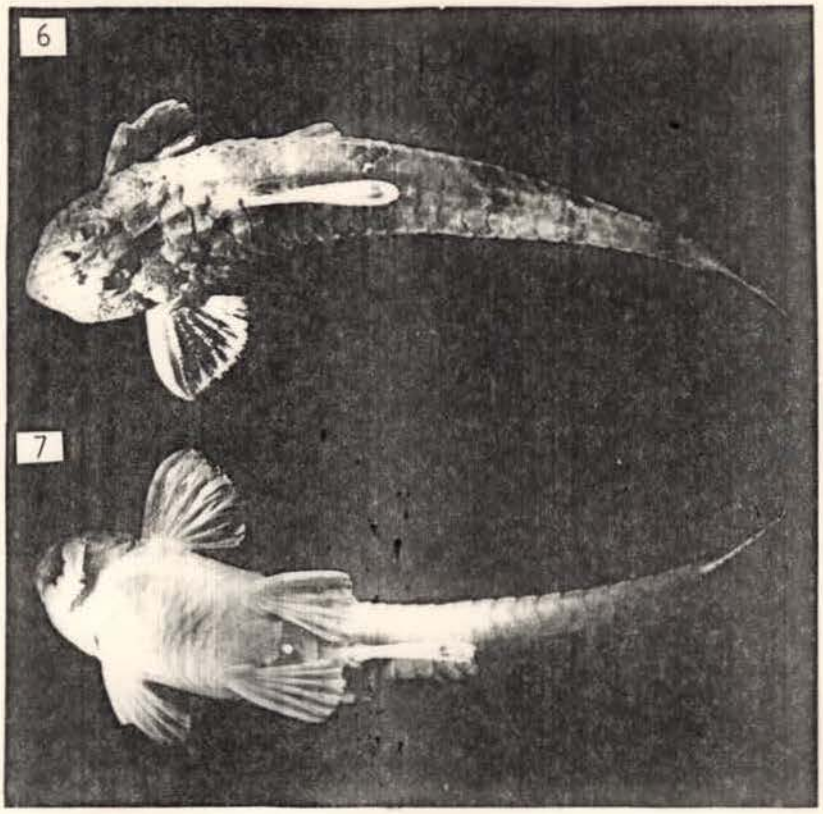
Numerous diminute irregular dusky spots are sometimes distributed on the dorsal surface. Ventral face is yellowish, sometimes with some brown pigmentation on the caudal peduncle of the young. Pores of the sensorial canals are black.

COMMENTS

A lectotype has been designated by Isbrücker (1979:112) - ZMB 7430. R. cadeae is the most common species in the area studied. Usually found in small rivers and brooks with sandy bottom and light water flow.

Adults are most commonly found over sandy bottom while the young prefer the leaves of marginal vegetation, sometimes associated with Microlepidogaster spp. and Otocinclus flexilis Cope, 1894.

The spawning is easily observed in aquarium, the male having a very important role in care and aeration of the eggs. Spawning of R. cadeae was observed twice in the Museu Anchieta aquaria. The eggs have a deep green yolk and 177 were laid in the first time. The time from spawning to hatching was 20 and 8 days respectively, this difference probably being due to average temperature: 15.5ºC in the former case (august) and 24.5ºC in the latter (november). The rearing of the young is very difficult and all died in less than two weaks.



FIGS. 6,7. Rineloricaria cadeae, Dorsal and ventral view of the topotype MAPA 1157 ♂ - Standard length 97.2 mm.

Rineloricaria strigilata (Hensel, 1868)

(Figs. 8 and 9. Tab. 2)

Loricaria strigilata Hensel, Archiv. Naturgesch., 1868:368 (Santa Cruz, RS, - Type-locality). - Regan, Trans. Zool. Soc. London, 1904:283 (Rio Grande do Sul). - Eigenmann, Rep. Princeton Univ. Exped. Patagonia, 1910:414 (reference). - Gosline, Bol. Mus. nac. Rio de Janeiro, Zool., 1945:103 (reference).

Rineloricaria strigilata, Fowler, Arq. Zool. Est. São Paulo, 1954: 121 (reference). - Isbrücker, Rev, fr. Aquariol., 1979:87 (reference). - Versl. Tec. Gegevens, 1980:110 (reference). - Reis, Iheringia ser. Zool., 1983:63 (Rio Grande do Sul material).

SPECIMENS MEASURED

BRASIL, RS. Holotype ♀ ZMB (?), Small creek near Santa Cruz (Jacuí system), 1866(?), R.Hensel leg. Other specimens MAPA 1454 (5 ex), Arroio dos Ratos, Guaíba, 29.VIII.1981, L.R.Malabarba & J.R.Steh-

UFRGS
BIBLIOTECA SETORIAL

mann leg. ZMA 119.081 (2 ex), Rio Guaíba near Ponta do Gasômetro, Porto Alegre, 11.IX.1982, R.E.Reis & L.R.Malabarba leg. MAPA 1452 (3 ex), Rio Guaíba near Ponta do Gasômetro, Porto Alegre, 8.VIII. 1981, R.E.Reis, L.R.Malabarba, C.F.M.Souto & J.R.Stehmann leg. DZUFRGS 0656, 0657 and 0659, Rio Guaíba at Ponta Grossa, Porto Alegre, 17.V.1981, L.R.Malabarba & J.R.Stehmann leg. ZMA 119.080 (formerly MAPA 0887), Rio Camaquã at Pacheca, limit between Camaquã and São Lourenço do Sul, 28.I.1979, P.A.Buckup leg.

DIAGNOSIS

Head length 4.0-4.8, width 4.9-7.0 in the standard length. Predorsal length 2.8-3.3 in the standard length. Body width at the first anal ray level 3.3-7.5 in the distance from this point to the caudal fin. Snout tip has a roundish naked area, not reaching the last pore of the infra-orbital canal. Usually there are five longitudinal series of scutelets in the abdomen between the thoracic plates. Scales in the postcleithral lateral series are 16-18 + 11-14, usually 17 + 12. Pectoral fins reach the first third to half of ventral fins.

DESCRIPTION

About 60 specimens of R. strigilata were examined, 15 of which were measured.

The holotype of R. strigilata has an abruptly, very slender head just in front of the cleithrum, what is an individual aberration. Some of the small morphometric differences for other individuals of the same species may be due to this feature as well as to mode and period of preservation.

Head length 4.0-4.8 (4.4), head width 4.9-7.0 (5.9) in the standard length; head depth 2.5-3.3 (2.8), head width 1.1-1.5 (1.3) in its length. Snout length 1.8-2.2 (2.0), eye diameter 6.1-7.6 (6.8) in the head length. Eye diameter 1.2-1.7 (1.4) in the interbital width. Interobital width 4.3-5.8 in the head length. Predorsal length 2.8-3.3 (3.0), preventral length 3.0-3.5 (3.2) and preanal length 2.1-2.4 (2.2) in the standard length.

Odontodes are well developed and sharply arranged into lines on the dorsal surface, specially on the head dorsum and the pre-

dorsal area. The nuptial males develop dense bristles at edges of the head and dorsum of spine and branched rays of the pectoral fins. The upper edges of the orbits are lifted and the ridges of the head are very conspicuous. There is a small depression just behind the sphenotics posterior margin, at both sides of the supra-occipital bone. The iris presents a small, triangular to roundish dorsal flap and there is a large postorbital notch.

Snout tip presents a roundish naked area, not reaching the last pore of the infra-orbital sensorial canal. Lips are well developed, abundantly covered by papillae and with a fringed margin. Lower lip is deeply notched medially. Two conspicuous papillae rows separate lower and upper lips. A large rictal barbel is present. There are 6 to 13 bilobed teeth, usually 8 in the functional series, at each side of both maxillae, lower ones being more developed than the upper ones. No apparent sexual dimorphism in the teeth can be seen.

Postcleithral lateral series are 16-18 + 11-13, usually 17 + 12, coalescing posteriorly.

Abdomen is covered by three to five, regular to irregular, series of scutelets between the thoracic plates. Thoracic plates are 5-8, usually 8. A great variation exist in this character, partly due to specimen age.

The distance from the origin of the anal fin to the caudal fin 1.7-2.0 (1.8) in the standard length. Width of body at the first anal ray level 3.4-7.5 (5.1) in the distance from this point to the caudal fin. Fin rays are in numbers usual to the genus. Dorsal spine is smaller than head length. Depressed pectoral fins reach the first third to half the ventral fins, which do not reach or reach just the base of the anal fin. Upper caudal spine is longer than the lower one; the caudal profile is truncated.

Colour in alcohol - Ground colour of ossified perts is yellowish to light brown. Head and body dorsum are completely covered with numerous dark very irregularly sized and shaped spots, concentrated on the five or six typical transverse stripes. The upper lip anterior margin and the branchiostegal membrane have only inconspicuous spots. The spine and soft rays of all fins are yellowish with conspicuous dark brown spots. Membranes of the pectoral fins usually have a diffuse dark pigmentation. Ventral side is yellowish, rarely with some dark pigmentation on the caudal peduncle of young. Pores of the sensorial canals are black.

USP
BIBLIOTECA SETORIAL
INSTITUTO DE BIOCIÊNCIAS

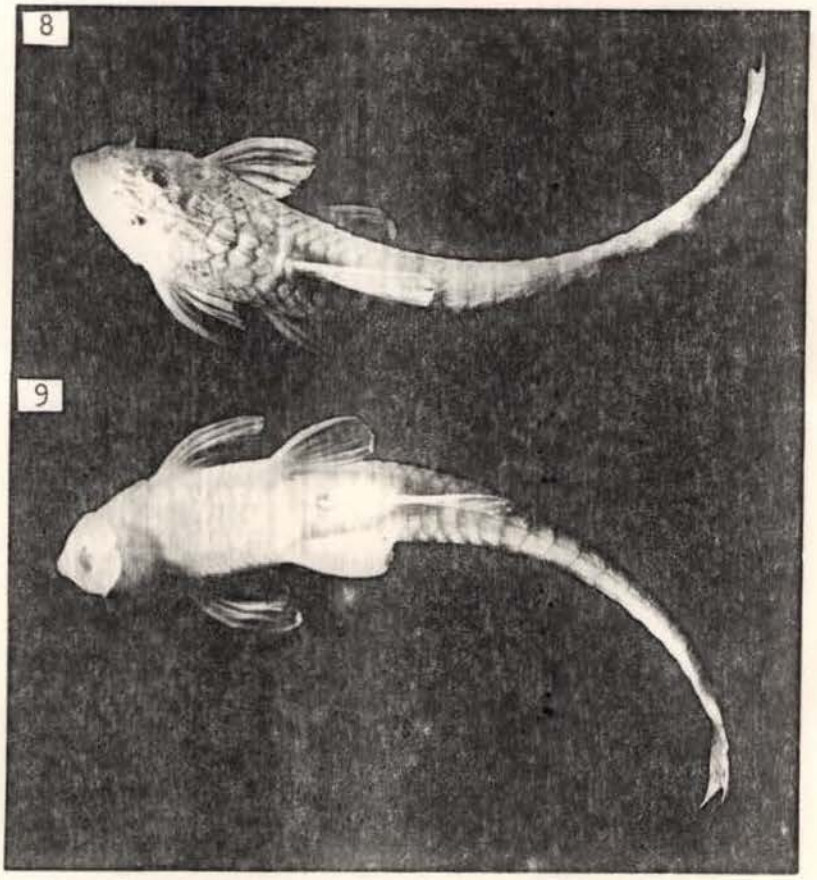
In living fishes the dorsal irregular colour tends to be intensified, resulting in a nerly perfect mimicry with the bottom.

COMMENTS

This species is less common than R. cadeae and is usually found in sandy-bottoned light-flowing water courses.

Agressive behavior was observed in males of this species in Museu Anchieta aquaria. Adult males repel approximation of other males by attacking with brusque repeated lateral movements of the trunk and with pectoral fins completely expanded. This bahavior turns to be very interesting if one remember that on the head edges and dorsum of spine and branched rays of the pectorals there are hypertrophyated odontodes which are used for the attack.

This behavior may also explain the fact that most adult males of several species of Rineloricaria, when directly fixed in formalin, die with pectoral fins completely expanded and when living adult males are held by the head, they strongly expand the pectorals, sometimes compressing the observer's fingers against the rostral bristles.



FIGS. 8,9. Rineloricaria strigilata, dorsal and ventral view of MAPA 1452 ♀ - Standard length 102.8 mm.

Rineloricaria longicauda Reis, 1983

(Figs. 10-12)

Rineloricaria longicauda Reis, Iheringia ser. Zool., 1983:64 (Banhado do Taim, Rio Grande, RS - type-locality).

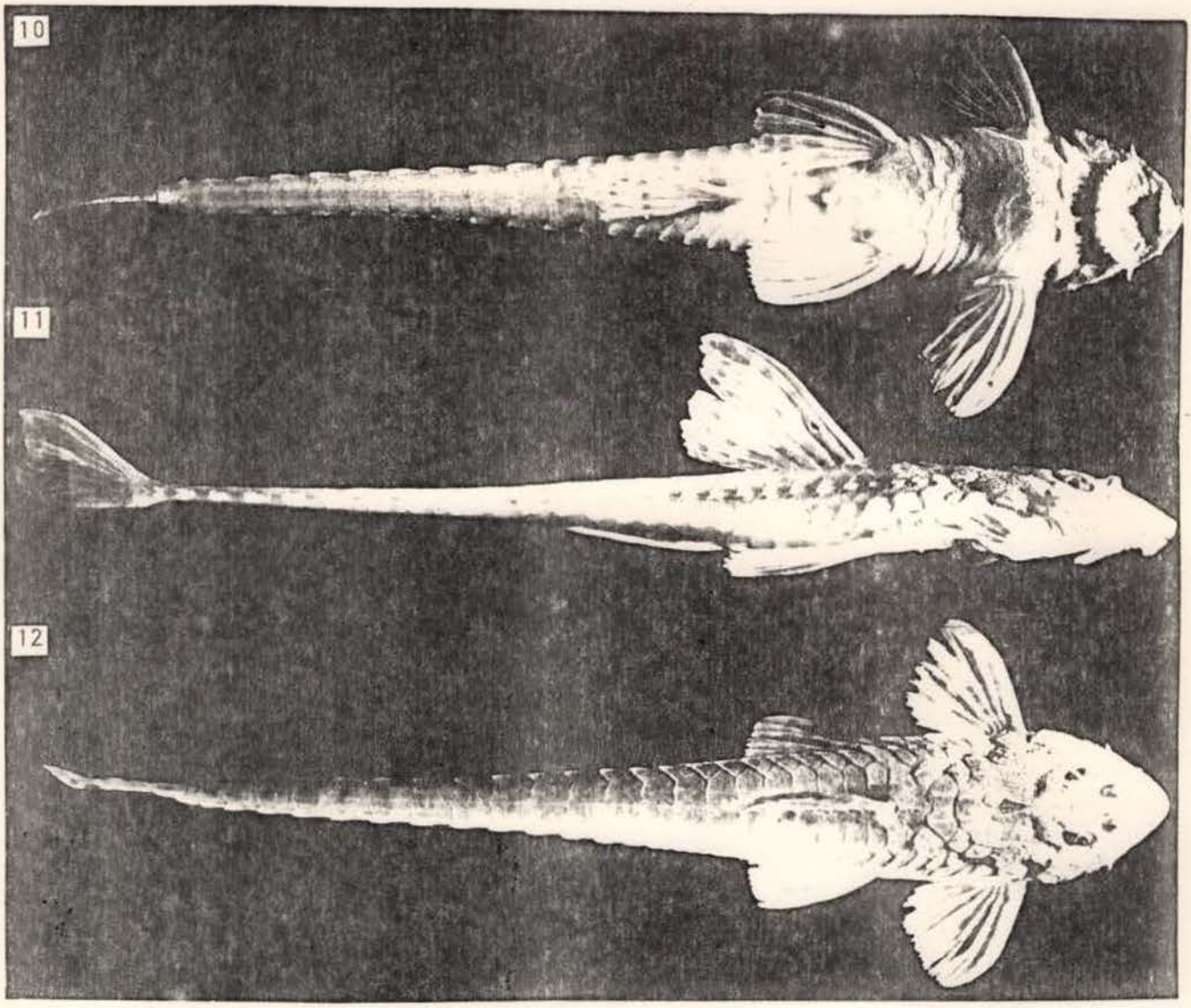
COMMENTS

This species was recently described from the Ecological Station of Taim, in southern Rio Grande do Sul, where the fish live in the lagoons and canals of the Banhado do Taim. Adults are usually found over the muddy, rarely sandy bottom. The young prefer to remain adhered to the pending leaves of marginal vegetation (most Gramineae) or stalks of "aguapé" (Eichornia azurea and E. crassipes - Pontederiaceae), sometimes associated with Microlepidogaster taimensis Buckup, 1981.

Afterwards we found R. longicauda south of the Banhado do Taim, in the Lagoa Negra, in Uruguay (sandy bottom) and to the north, in some brooks and small lagoons near Pinhal, RS and in a small brook with light water flow near Porto Alegre, RS, therefore differing from the two first localities.

Spawning was observed three times in aquaria and is in all details like the spawning of R. cadeae. About 50, 110 and 75 eggs were laid in each spawning; days for hatching was 15, 7 and 10 respectively. These differences of eggs number and time to hatching may be also due to average temperature: 17.4ºC in the first (october), 24.3ºC in the second (december) and 24.1ºC in the third case (march). Rearing of the young is also very difficult and all died in less than two weeks.

OTROS



FIGS. 10-12. Rineloricaria longicauda, ventral, lateral and dorsal view of holotype MZUSP 16078 ♂ - Standard length 120.0 mm (Photo by L.R.Malabarba).

Rineloricaria quadrensis Reis, 1983

(Figs. 13-15)

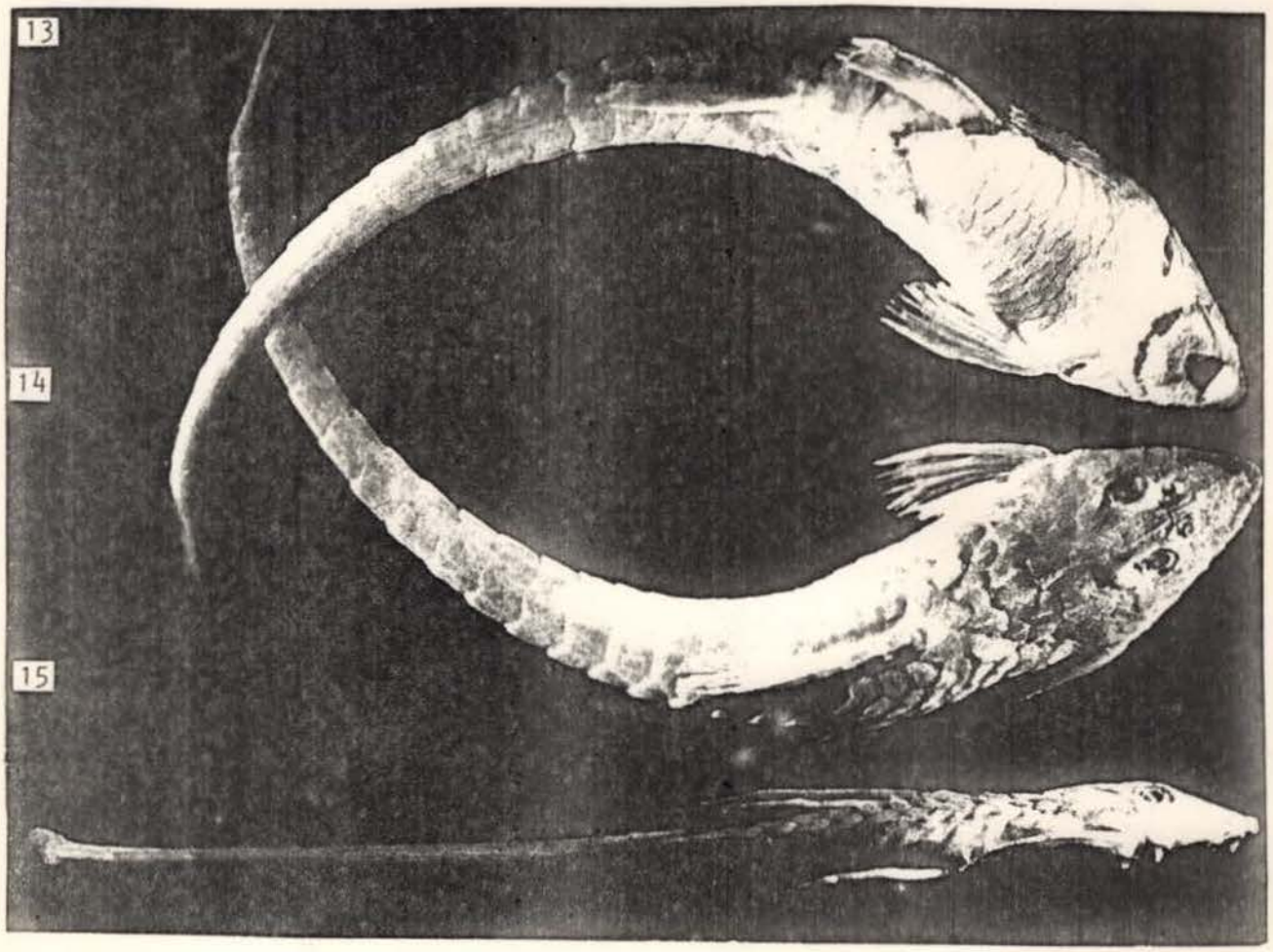
Rineloricaria quadrensis Reis, Iheringia ser. Zool., 1983:66 (Quadros Lagoon, Osório, RS - type-locality).

COMMENTS

This species was recently described from the Quadros Lagoon and lower parts of its tributaries, in Osório, RS. The Quadros Lagoon, as several other small lagoons in the same region, where

BIBLIOTECA SETORIAL

R. quadrensis is found, has a sandy or slightly muddy bottom. After the description, R. quadrensis was found inhabiting the Jordão River, a small river in southern Santa Catarina State.



FIGS. 13-15. Rineloricaria quadrensis, ventral, lateral and dorsal view of holotype MZUSP 14363 ♀ - Standard length 123.0 mm (Photo by L.R.Malabarba).

Some ecological considerations may be added. There is an extensive coastal lacunar complex including northeastern Uruguay and southern Brasil, which is geologically very recent - about 6,000 years (Godolphim, 1976). This lacunar complex can be preliminarly and tentatively divided in three smaller systems.

The first one comprehends some small lagoons - as the Negra Lagoon - and swamp environments in northeastern Uruguay that flow into the Mirim Lagoon, southern Rio Grande do Sul State. The Mirim Lagoon drainage system, including some swamp environments - as the Banhado do Taim - is connected to the Patos Lagoon through the São Gonçalo Canal, flowing to the Atlantic Ocean through the Rio Grande

harbour entrance.

The second system includes the Patos Lagoon and several small lagoons between it and the Atlantic Ocean. Although these small lagoon are presently isolated from the Patos Lagoon, they were probably conected in a very recent past. These small lagoons are connected to each other and flow into the Atlantic through the Tramandaí Lagoon.

The third system includes those lagoons which are distributed from the Tramandaí Lagoon to the North, until the southern Santa Catarina State. All these lagoons are connected by natural canals and flow into the Atlantic through the Tramandaí Lagoon.

R. quadrensis inhabits only the third system, which is connected to the second, more southern system, through the Tramandaí Lagoon, a typical estuarine environment, with brackish water, where no Rineloricaria species is found, Silva (1982). R. longicauda inhabits the two southern systems (see map).

Rineloricaria maquinensis sp. n.

(Figs. 16 and 17, Tab. 3)

Type-material, BRASIL,
Holotype ♂ MZUSP 27347, Rio Maquiné at Maquiné, Osório, RS, 3.III. 1983, R.E.Reis & L.R.Malabarba leg. Paratypes DZUFRGS 0510, 0513 and 0514, Rio Jordão at Jordão Baixo, Siderópolis, SC, 2/9.XII.1977, C.L.L.Santos leg. MAPA 1258 (7 ex), Rio Maquiné at Maquiné, Osório, RS, 3.I.1981, R.E.Reis & J.R.Reis leg. ZMA 119.082 (4 ex), Rio Maquiné at Maquiné, Osório, RS, 20.II.1983, R.E.Reis & C.M.Penz leg. MZUSP 27348 to 27355, MAPA 2096 to 2108, Rio Maquiné at Maquiné, Osório, RS, 20.II.1983, R.E.Reis & C.M.Penz leg.

Type-locality: Rio Maquiné at Maquiné, in Osório, RS, Brasil. The Maquiné River at Maquiné has a loose-stone bottom and strong water flow.

Etymology: Rineloricaria maquinensis is named after its type-locality.

DIAGNOSE

Head length 4.5-5.2, width 5.8-7.2 in the standard length.

UFRGS
BIBLIOTECA SETORIAL

Predorsal length 3.0-3.4 in the standard length. Body width at the first anal ray level 4.7-5.7 in the distance from this point to the caudal fin. Snout tip with a globular protuberance of naked skin. Abdomen naked, except for a single posterior complex, consisting of a well-developed preanal plate, usually bordered by three polygonal scutes. One or two small squarish scutelets just facing the base of ventral spine and first branched ray. Scales in postcleithral lateral series are 14-17 + 14-16, usually 15 + 15. Pectoral fins reach slightly beyond the origin of ventral fins.

DESCRIPTION

Head length 4.5-5.2 (4.8), head width 5.8-7.2 (6.2) in the standard length; head depth 2.3-2.7 (2.5), head width 1.2-1.4 (1.3) in its length. Snout length 1.8-2.1 (2.0), eye diameter 5.3-6.8 (6.1) in head length. Eye diameter 1.2-1.7 (1.5) in the interorbital width. Interorbital width 3.8-5.2 (4.2) in the head length. Predorsal length 3.0-3.4 (3.2), preventral length 3.1-3.7 (3.4) and preanal length 2.2-2.8 (2.4) in the standard length.

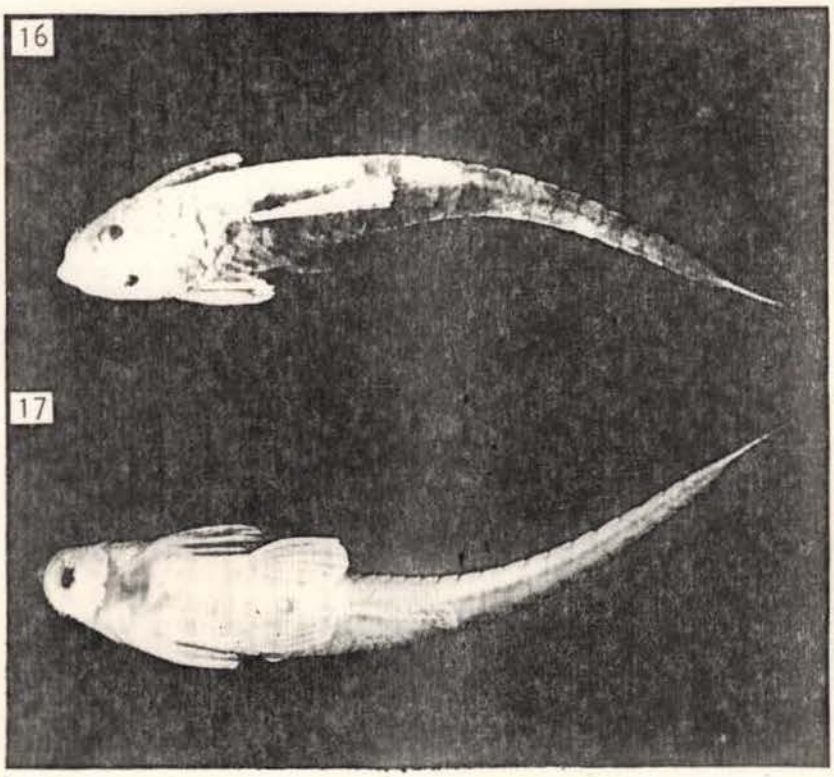
The odontodes are very small, so the fish is somewhat smooth. The head ridges are very slight, as are the two small divergent supraoccipital and predorsal ridges. The nuptial males develop weak proeminent odontodes on the head edges and dorsum of the pectoral fins spine and branched rays - as usual in most members of this genus. There is a very small postorbital notch. The upper edges of the orbits are not lifted. The iris presents a big, roundish dorsal flap.

Snout tip has a globular protuberance of naked skin. This naked skin area do not extend backwards and never reaches the last pore of the infra-orbital sensorial canal. Between this protuberance and the upper lip there are no odontodes, only rugose skin resembling small papillae. Lips are well developed, abundantly covered by papillae and with a fringed edge. Lower lip is slightly notched medially. Two conspicuous papillae rows separate the upper and lower lips. There is a rictal barbel equal or slightly smaller than the eye diameter (fig. 17). There are 4 to 7 bilobed teeth, usually 5-6 in the functional series, at each side of both maxillae, lower ones stronger than upper ones. No apparent sexual dimorphism in the teeth can be seen.

Postcleithral lateral series are 14-17 + 14-16, usually

...TROS
...IOTECA SETORIAL

15 + 15, coalescing posteriorly. The paratype MZUSP 27348 presents 15 + 12 plates, due to an individual aberration.



FIGS. 16 and 17. Rineloricaria maquinensis sp. n. dorsal and ventral view of paratype MAPA 2108 ♀ - Standard length 85.0 mm.

There is only one posterior complex in the abdomen, consisting of a well-developed preanal plate, anteriorly bordered by three polygonal scutes. These scutes may be fractioned, increasing their number. There is also one or two small squarish scutelets just facing the base of ventral spine and first branched ray, always present. The abdomen anterior to this single complex is entirely naked. Thoracic plates are 5 to 9, usually 7; there is a great variation in this character - sometimes the same fish presents one number of plates at one side and another at the opposite side. The first thoracic plate is usually round and longer than following ones.

The caudal peduncle has a weak lateral ridge. The distance from the origin of the anal fin to the caudal fin is 1.7-1.8 (1.8) in the standard length. Width of body at the first anal ray level 4.7-5.7 (5.2) in the distance from this point to the caudal fin.

Fin rays are in numbers usual to the genus. Some variations on that countings, due to individual aberration, may be found: the

paratype MZUSP 27348 presents C I.9.I, the paratype MZUSP 27355 presents C I.8.I and the paratype MAPA 2098, with a very damaged caudal fin has C II.4.I. Dorsal spine is equal or slightly smaller than the head length. Depressed pectorals reach slightly beyond the origin of ventral fins, that reach or go slightly beyond the origin of anal fin. Upper caudal spine slightly longer than the lower one; caudal fin profile is truncated.

Colour in alcohol (fig. 16) - Ground colour of ossified parts is greyish brown. Head dorsum and the six transverse stripes are dark brown. The sensorial canal pores are usually black. All fin rays are yellowish tan with numerous small dark brown spots. The ventral face is yellowish with whitish abdominal naked skin. The inferior margin of the head and branchiostegal membranes have numerous small brown spots irregularly shaped.

In the living fish all the dorsum tends to be darker, making the transverse stripes inconspicuous. Sometimes the pectoral fins presents a diffuse reddish pigmentation.

COMMENTS

This species is commonly found in the Maquiné River, in places with light to strong water flow and loose-stone bottom. R. maquinensis remain strongly adhered between the stones, where it can resist the water flow, in a depth of up to about 30 cm.

The absence of the abdominal scutelets may reflect an adaptation to facilitate adhesion to the substratum and maintain position against a strong water flow.

Rineloricaria malabarbai sp. n.

(Figs. 18-20, Tab. 4)

Type-material, BRASIL, RS,
Holotype ♂ MZUSP 27356, Rio dos Sinos at bridge to Nossa Senhora do Monte Serrat, Santo Antônio, 13.VI.1982, R.E.Reis & L.R.Malabarba leg. Paratypes MAPA 1327, Arroio Marrecão at Santa Teresa, Bento Gonçalves, 19.III.1981, R.E.Reis leg. MAPA 1273 (2 ex), Rio Caí near Feliz, 26.I.1981, R.E.Reis leg. DZUFRGS 2507 to 2513, Rio da Ilha between Padilha and Rio da Ilha, Taquara, 21.III.1982, R.E.

UFRGS
BIBLIOTECA SETORIAL

Reis leg. MAPA 1261 (3 ex), Rio dos Sinos, Santo Antônio, 12.I. 1981, R.E.Reis leg. ZMA 119.083 (3 ex), MZUSP 27357 and 27358, MAPA 2109 to 2111, same data of holotype.

Type-locality: Rio dos Sinos at Santo Antônio, RS, Brasil. The Sinos River at Santo Antônio has loose-stone bottom and strong water flow.

Etymology: Rineloricaria malabarbai is named in honour to Luis R. Malabarba, who have collected several specimens of Rineloricaria, including a large part of the material upon which this study is based.

DIAGNOSIS

Head length 4.1-4.5, width 4.4-5.8 in the standard length. Predorsal length 2.8-3.0 in the standard length. Body width at the first anal ray level 3.8-4.8 in the distance from this point to the caudal fin. Snout tip has a roundish naked skin area, never reaching the last pore of the infra-orbital sensorial canal. Abdomen in naked, except for a single posterior complex, consisting of a well-developed preanal plate, usually bordered by three polygonal scutes. There are one or two small squarish scutelets just facing the base of ventral spine and first branched rays. Scales in the postcleithral lateral series are 15-17 + 12-14, usually 15-16 + 13. Pectoral fins reach the first third of the ventral fins.

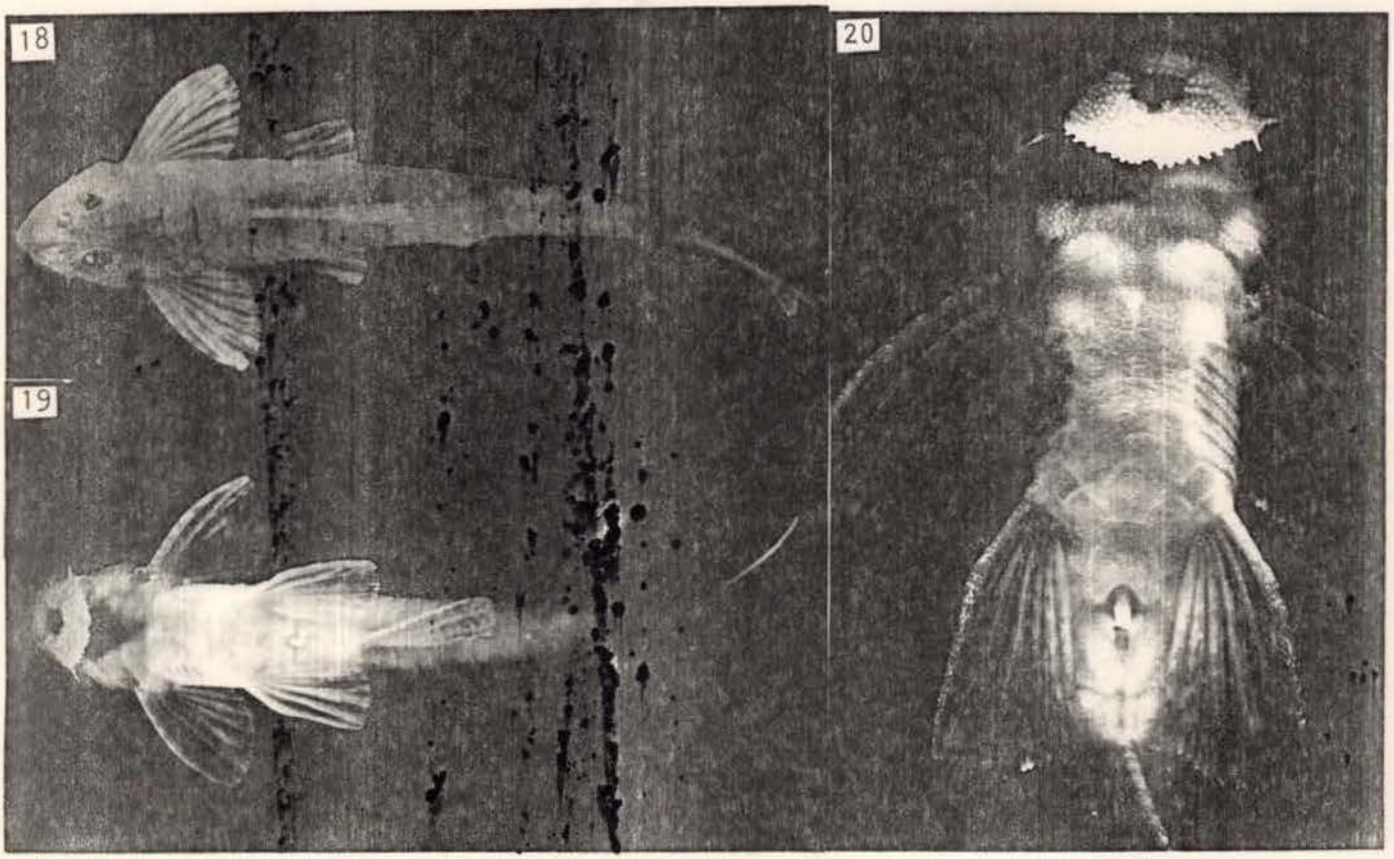
DESCRIPTION

Head length 4.1-4.5 (4.3), head width 4.4-5.8 (5.4) in the standard length; head depth 2.2-2.6 (2.3), head width 1.1-1.3 (1.3) in its length. Snout length 1.9-2.4 (2.1), eye diameter 5.6-6.9 (6.3) in the head length. Eye diameter 1.4-1.8 (1.5) in the interorbital width. Interorbital width 3.7-4.3 (4.0) in the head length. Predorsal length 2.8-3.0 (2.9), preventral length 3.0-3.3 (3.1) and preanal length 2.1-2.2 (2.2) in the standard length.

The odontodes are very small and somewhat arranged into thin lines on the head. The head ridges are very slight as well as

UFRGS
BIBLIOTECA SETORIAL
INSTITUTO DE BIOCIÊNCIAS

the two small divergent supraoccipital and predorsal ridges. Nuptial males develop proeminents odontodes on the head edges and dorsum of pectoral fins. There is a small, subtriangular post-orbital notch. Superior edges of the orbits are not ridged. The iris presents a large roundish dorsal flap.



FIGS. 18-20. Rineloricaria malabarbai sp. n. dorsal and ventral view of paratype MAPA 2110 ♀ - Standard length 87.7 mm.

Snout tip with a roundish naked area, do not extending bakwards and never reaching the last pore of the infra-orbital sensorial canal. Between the naked skin area and the upper lip there are no odontodes, but only rugose skin resemblig small papillae. Lips are well developed, abundantly covered by papillae and with a fringed margin. Lower lip slightly to distinctly notched medially. Two conspicuous rows of papillae separate upper and lower lips. There is a rictal barbel slightly smaller than the eye diameter (fig. 20). There are 4 to 8 bilobed teeth, usually 5-6 in the functional series, at each side of both maxillae, lower ones stronger developed than the upper ones. No apparent sexual dimorphism in the teeth can be seen.

Post-cleithral lateral series are 15-17 + 12-14, usually 15-16 + 13, coalescing posteriorly.

The abdomen is like that of R. maquinensis, with only one posterior complex of plates, consisting of a well-developed pre--anal plate, anteriorly bordered by three polygonal scutes. As in R. maquinensis, these scutes may be fractioned. There is also always one or two small squarish scutelets just facing the base of ventral spine ans first branched rays (fig. 20). Anterior to this single complex the abdomen is entirely neked. Thoracic plates are 5 to 7, usually 6; there is a great variation in this character and sometimes the same fish presents one number of plates at one side and another at the opposite side. The young paratype MAPA 2111 (46 mm SL) has 3/2 thoracic plates.

The distance from the origin of the anal fin to the caudal fin is 1.8-1.9 (1.9) in the standard length. Width of body at the first anal ray level 3.8-4.8 (4.2) in the distance from this point to the caudal fin.

Fins are in the usual formula to the genus. No variations were found to these countings. Dorsal fin spine slightly smaller than head length. Depressed pectoral reach the first third of the ventral fins. Ventral fins reach slightly beyond the origin of the anal fin. Upper caudal spine slightly longer than the lower one; caudal fin profile is truncated.

Colour in alcohol (fig. 18) - Ground colour of ossified parts is light brown. Head dorsum is dark brown. The characteristics dark brown transverse stripes are usually five. Sometimes the last transverse stripe is very long, indicating a possible coalescence of the two last stripes. Pores of the sensorial canal are usually black. All fin rays are yellowish tan with numerous small dark brown spots, forming irregular lines. All fin membranes have a diffuse light brown pigmentation. The ventral side is yellowish with whitish abdominal naked skin. Inferior margin of head and branchiostegal membranes have numerous small brown spots of irregular shape.

In living fish all the dorsum tends to be darker, the transverse stripes becoming incospicuous. Sometimes the pectoral fins present a diffuse reddish pigmentation.

COMMENTS

The habitat and the adhesion behavior of this species is

identical to that of R. maquinenis, except that R. malabarbai is found up to a depth of about 60 cm. This species is only found inhabiting small rivers and creeks of the Jacuí River system and is never sympatric with R. maquinensis.

The great similarity between these species and their distribution patterns probably indicates a very close phylogenetic relationship.

Rineloricaria baliola sp. n.

(Figs. 21-23, Tab. 5)

Type-material, BRASIL, RS,
Holotype MZUSP 27657, Arroio do Ribeiro just below the Açude dos Garcia, at km 55 of the highway BR-116, Barra do Ribeiro, 25.X. 1981, R.E.Reis, L.R.Malabarba & P.A.Buckup leg. Paratypes MAPA 1329 (7 ex) and ZMA 119.091 (5 ex), Rio Jacuí near Passo Fundo, 19.III.1981, R.E.Reis leg. MAPA 1270 (3 ex) and ZMA 119.092 (2 ex) (formerly MAPA 1270), Rio Jacuí near bridge of highway BR-324, Passo Fundo, 22.I.1981, R.E.Reis leg. MZUSP 15489 (6 ex), Rio Jacuí Mirim at highway between Carazinho and Ijuí, 19.IX.1977, Exp. MZUSP & USNM leg. MZUSP 16082, small creek near Passo Fundo, (Jacuí system), I.1976, G.Q.Benvegnú leg. MZUSP 15482 (4 ex), Rio Jacuí at Barragem de Ernestina, Passo Fundo, 20.IX.1977, Exp. MZUSP & USNM leg. MAPA 1990, Arroio Passo dos Ferreiros, Gravataí, 5.VII. 1981, R.E.Reis, P.A.Buckup & L.R.Malabarba leg. DZUFRGS 2500, Arroio do Ribeiro near highway BR-116, Barra do Ribeiro, 12.IX.1982, R.E.Reis & L.R.Malabarba leg. DZUFRGS 2501 to 2503, Açude dos Garcia, highway BR-116 km 56, Barra do Ribeiro, 12.IX.1982, R.E.Reis & L.R.Malabarba leg. MAPA 1463 (39 ex) and ZMA 119.090 (10 ex) (formerly MAPA 1463), same data of holotype. MAPA 1243, Arroio Velhaco near highway BR-116, limit between Tapes and Camaquã, 29. I.1979, P.A.Buckup leg. DZUFRGS 0672, Rio Camaquã near bridge of highway BR-116, limit between Camaquã and São Lourenço do Sul, 7.V. 1981, R.E.Reis & J.R.Stehmann leg.

URUGUAY
CECN 0928 and 0929, Arroio Polanco, Departamiento de Lavalleja, 29. II.1981, L.H.Amato Silveira & D.Oliveras leg.

Type-locality: Arroio do Ribeiro just below the Açude dos Garcia, at km 55 of highway BR-116, Barra do Ribeiro, RS, Brasil. At this point

UFRGS

the Arroio do Ribeiro is about one to six meters wide and up to about 60 cm depth, with sandy or gravelly bottom and light water flow.

Etymology: Rineloricaria baliola, from the latin "baliolus", meaning chestnut-brown, reddish-brown, after its colour pattern.

DIAGNOSIS

Head length 3.6-4.3, width 4.7-5.7 in the standard length. Predorsal length 2.5-3.0 in the standard length. Body width at the first anal ray level 3.7-5.4 in the distance from this point to the caudal fin. Fins with a very species-specific colour: the base (except sometimes the ventrals and anal fins) and the distal half of all fins with a continuous, reddish to dark brown, big, single spot (fig. 23). Snout tip with a roundish naked area, not reaching the last pore of the infra-orbital canal. Abdomen usually with three to five irregular median series of scutelets, between the thoracic plates. Scales in the postcleithral series are 15-19 + 10-13, usually 17 + 11. Pectoral fins reach the first third to half of ventral fins.

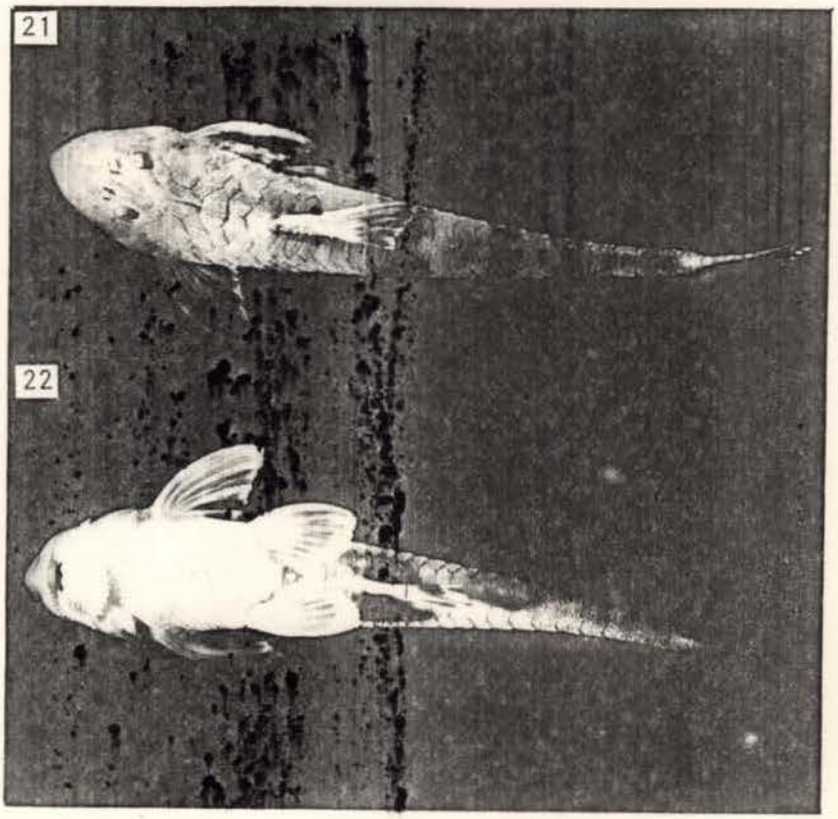
DESCRIPTION

Head length 3.6-4.3 (3.9), head width 4.7-5.7 (5.1) in the standard length; head depth 2.2-2.5 (2.3), head width 1.2-1.4 (1.3) in its length. Snout length 1.8-2.0 (1.9), eye diameter 6.5-8.9 7.6) in the head length. Eye diameter 1.4-2.2 (1.7) in the interorbital width. Interorbital width 3.8-5.0 (4.5) in the head length. Predorsal length 2.5-3.0 (2.7), preventral length 2.7-3.2 (3.0) and preanal length 1.9-2.2 (2.1) in the standard length.

The odontodes are small, so the fish is somewhat smooth. The head ridges are very slight, as is the two small divergent supraoccipital and predorsal ridges. The characteristic hypertrophyated odontodes that nuptial males of most Rineloricaria species develop on the head edges and dorsum of pectoral fins do not appear in any of the 87 specimens of R. baliola examined. There is a small postorbital notch. The upper orbital edges are slightly ridged. The iris presents a small to big, roundish to sub-triangular dorsal flap.

UFRGS
BIBLIOTECA SETORIAL

Snout tip has a roundish naked skin area, do not extending backwards and not reaching the last pore of the infra-orbital sensorial canal. Between the naked skin area and the upper lip there are no odontodes, just rugose skin resembling small papillae. Lips are well developed, abundantly covered by papillae and with a fringed edge. Lower lip is slightly to deeply notched medially. Two conspicuous rows of papillae separate upper and lower lips. There is a rictal barbel slightly smaller than the eye diameter (fig. 22). There are 4 to 9 bilobed teeth, usually 6 in the functional series, at each side of both maxillae, lower ones longer than the upper ones. The cuspids with blunt tips. No apparent sexual dimorphism in the teeth can be seen.



FIGS. 21 and 22. Rineloricaria baliola sp. n. dorsal and ventral view of holotype MZUSP 27657 - Standard length 89.6 mm.

Postcleithral lateral series are 15-19 + 10-13, usually 17 + 11, coalescing posteriorly.

The abdomen is usually completely covered by scutelets and this covering may be divided in three complexes, as follows:
1. A posterior complex, like that of R. cadeae and R. strigilata, consisting of a well-developed preanal plate anteriorly bordered by three to five polygonal large scutes. These are preceeded by

five to seven comparatively small scutes making contact with the posterior thoracic scutes.

2. The second complex is composed by small scutelets between the thoracic plates arranged into three to five irregular median series.

3. The third anterior complex consist of still smaller scutelets and reaches the inner angle of the gill-openings. This third anterior complex may be absent in some fish inhabiting those streams with loose-stones bottom and strong water flow, as are the headwaters of the Jacuí River system, however, a few small scutelets are present just behind the gill-openings. Thoracic plates are 6 to 11, usually 9; there is a great variation in this character.

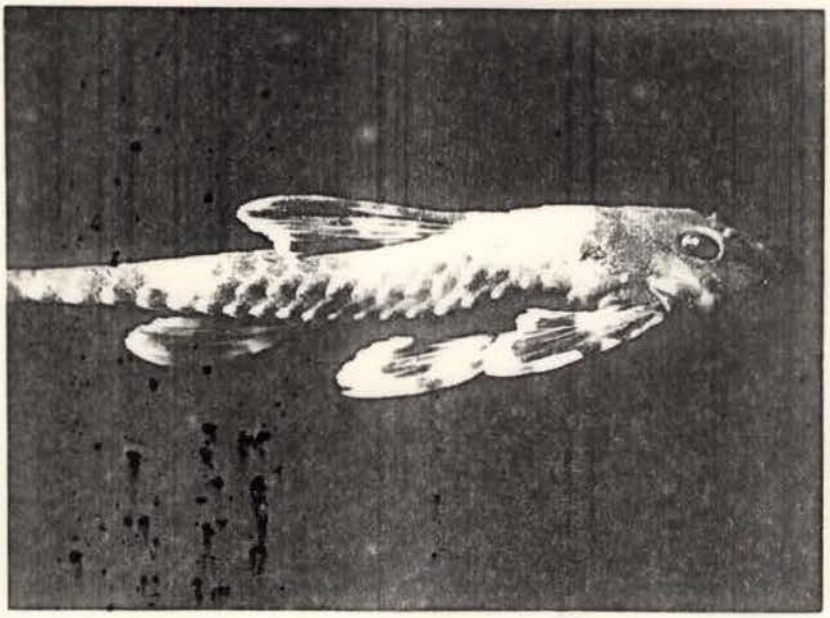


FIG. 23. Rineloricaria baliola sp. n. lateral view of the paratype MAPA 1463 - Standard length 66.7 mm.

The distance from the origin of anal fin to the caudal fin is 1.8-2.1 (1.9) in the standard length. Width of body at the first anal ray level 3.7-5.4 (4.4) in the distance from this point to the caudal fin.

Fin rays are in the usual formula to this genus. Only one variation of these countings, due to individual aberration,was found: one paratype MAPA 1463 (58.4 mm TL) presents C I.11.I. Dorsal spine is conspicuously smaller than the head length, usually being equal to the distance from the snout tip to the opercular bone posterior margin. Depressed pectorals reach the first to half the ventral fins, which just reach or go slightly beyond tha anal origin. Upper caudal spine is slightly longer than the lower one;

OTROS
BIBLIOTECA SETORIAL
INSTITUTO DE BIOCIÊNCIAS

expanded caudal fin profile is concave.

Colour in alcohol (figs. 21 and 23) - Ground colour of ossified parts is reddish brown. There are five dark brown stripes. The first two passing across the anterior part of dorsal base and just behind the end of dorsal base. Fins are yellowish; the spines have dark brown dots. In the branched rays and the inter-radial membranes there is a very diagnostic colour: the base (except sometimes in the in the ventral and anal fins) and the distal half of all fins have a continuous, reddish to dark brown, big, single spot (fig. 23). The ventral side is yellowish, sometimes with a diffuse brown pigmentation especially in the caudal peduncle of the young. Upper lip, inferior margin of head and sometimes the branchiostegal membranes have some brown irregularly sized and shaped spot.

COMMENTS

R. baliola has an interesting and very uncommon fin colour pattern and is found in those streams with sandy or gravelly bottom and light water flow. Another uncommon feature in the genus Rineloricaria is found in R. baliola: the absence of hypertrophyated odontodes which are a secondary sexual character of nuptial males.

Rineloricaria heterogaster sp. n.

(Figs. 24-26, Tab. 6)

Type-material, BRASIL, RS,
Holotype MZUSP unreg., Arroio do Meio at Vila Caraá, Santo Antônio, 13.VI.1982, R.E.Reis & L.R.Malabarba leg. Paratypes MAPA 1257 (4 ex), Rio Tainhas at Cachoeira do Passo do "S", São Francisco de Paula, 6.II.1979, P.A.Buckup leg. DZUFRGS 0401, Rio Tainhas, São Francisco de Paula, 8.XII.1960, C.Volkmer leg. MAPA 1268 (4 ex), Rio Caí near bridge of highway between Canela and Lageado Grande, Canela, 15.I.1981, R.E.Reis leg. MAPA 1321 (7ex), Rio Caí near bridge of highway between Canela and Lageado Grande, Canela, 11.III.1981, P.A.Buckup leg. MAPA 1223 (16 ex), Rio Caí at São Sebastião do Caí, 14.XII.1980, R.E.Reis, P.A.Buckup, L.R.Malabarba & C.F.M. Souto leg. MAPA 1149 and 1150, Rio cadeia between Joaneta and Pinhal Alto, Nova Petrópolis, 20.VII.1980, R.E.Reis, P.A.Buckup &

UFRGS

L.R.Malabarba leg. ZMA 119.087 (6 ex) and MAPA 2093 (12 ex), Rio da Ilha, between Padilha and Rio da Ilha, Taquara, 21.III.1982, R.E.Reis leg. MAPA 2095 (5 ex), Rio dos Sinos near bridge to São Pedro at Santo Antônio, 13.VI.1982, R.E.Reis & L.R.Malabarba leg. ZMA 119.089 (4 ex) and MZUSP unreg. (5 ex), Rio dos Sinos near bridge to Nossa Senhora do Monte Serrat, Santo Antônio, 13.VI.1982, R.E.Reis & L.R.Malabarba leg. DZUFRGS 2504 to 2506, Rio dos Sinos about 3 km northeast of Caraá, Santo Antônio, 13.VI.1982, R.E.Reis & L.R.Malabarba leg. MAPA 2094 (3 ex), same data of holotype.

Type-locality: Arroio do Meio at Vila Caraá, Santo Antônio, RS, Brasil. This creek is a tributary of the Sinos River (Jacuí system) and is about two to five meters wide and up to about half a meter deep, with clear water, loose-stone bottom and strong water flow.

Etymology: Rineloricaria heterogaster is named after its greatly variable abdomen covering.

DIAGNOSIS

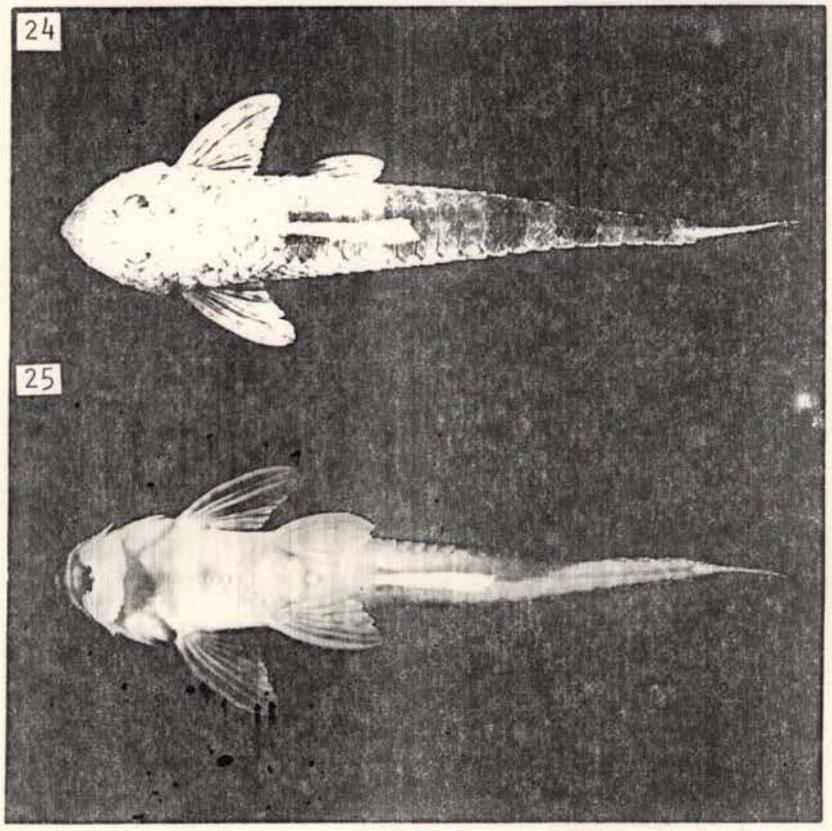
Head length 3.5-4.3, width 4.4-5.4 in the standard length. Predorsal length 2.6-3.0 in the standard length. Body width at the first anal ray level 3.2-5.9 in the distance from this point to the caudal fin. Snout tip has a roundish naked area, not reaching the last pore of the infra-orbital canal. Abdomen covering very variable. A posterior complex, consisting of a preanal plate and some large polygonal scutes is always present. A median complex, consisting of comparatively smaller scutelets, between the thoracic plates, is often present. An anterior complex, composed by numerous minute scutelets, reaching the gill-opening level is sometimes present. Scales is the postcleithral lateral series are 17-19 + 10-13, usually 17 + 11. Pectoral fins reach the third to half of ventral fins.

DESCRIPTION

Head length 3.5-4.1 (3.9), head width 4.4-5.4 (5.0) in the standard length; head depth 2.2-2.6 (2.4), head width 1.2-1.3 (1.4) in its length. Snout length 1.8-2.0 (1.9), eye diameter 6.2-9.3 (7.0) in the head length. Eye diameter 1.4-2.2 (1.6) in the inter-

orbital width. Interorbital width 3.6-4.6 (4.3) in the head length. Predorsal length 2.6-3.0 (2.7), preventral length 2.7-3.2 (3.0) and preanal length 1.9-2.2 (2.1) in the standard length.

The odontodes, the head and predorsal ridges and the upper orbital edges are equal to those of R. baliola. The hypertrophyated odontodes that nuptial males develop were found in only two large specimens of the 77 specimens of R. heterogaster examined. There is a small postorbital notch and the iris presents a big, roundish dorsal flap. Snout tip and lips are equal to those of R. baliola. The rictal barbel is present and may be equal the eye diameter. There are 4 to 11 bilobed teeth, usually 6 in the functional series, at each side of both maxillae, lower ones longer than upper ones. The cuspids are very different in size and with acute tips. No sexual dimorphism is visible in the teeth.



FIGS. 24 and 25. Rineloricaria heterogaster sp. n. dorsal and ventral view of holotype MZUSP unreg. - Standard length 89.3 mm.

Postcleithral lateral series are 17-19 + 10-13, usually 17 + 11, coalescing posteriorly.

The abdomen covering presents a great variation in this species and may be divided, when totally present, in three com-

plexes.

1. The posterior one comprehend the preanal plate anteriorly bordered by three to five polygonal scutes. Sometimes, often in juvenils, only the posterior complex is present.

2. The second complex consist of small irregular scutelets, arranged into a median group, sometimes extended until the pectoral spine insertion level and not making contact with the thoracic plates. This complex may be laterally expanded, with about five irregular median series, reaching the thoracic plates.

3. The third anterior complex consist of comparatively still smaller scutelets that reach the inner angle of branchiostegal membranes. This complex is only sometimes present.

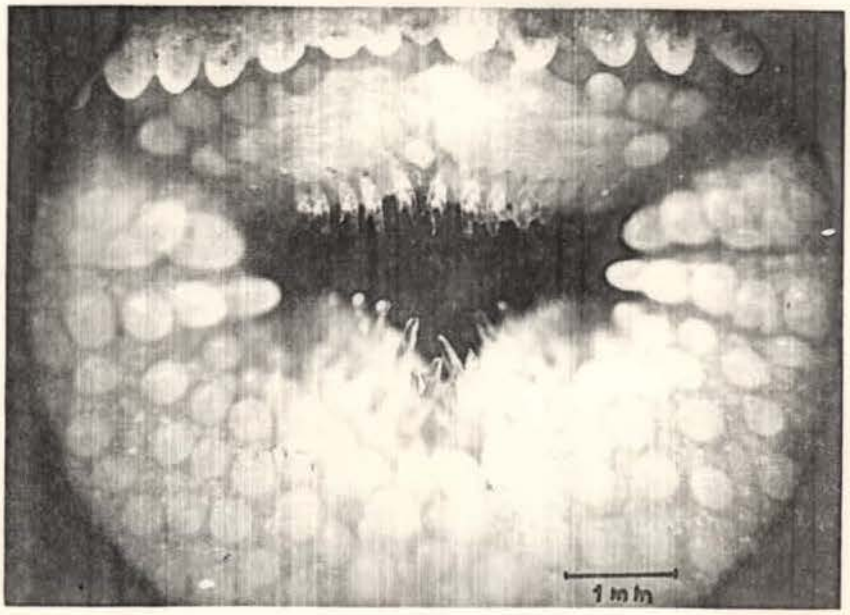


FIG. 26. Rineloricaria heterogaster sp. n. detail of dentition of paratype MZUSP unreg.

Thoracic plates are 3 to 12, usually 7-9; the variation of this character is very evident in R. heterogaster. The distance from the origin of anal fin to the caudal fin is 1.8-2.0 (1.9) in the standard length. Width of body at the first anal ray level is 3.2-5.9 (4.5) in the distance from this point to the caudal fin.

Fin rays are in numbers usual to the genus. Only one variation of these countings, due to individual aberration, was found: the paratype MAPA 2094 (70 mm TL) presents P I.7. Dorsal spine is conspicuously smaller than the head length, usually being equal or slightly longer than the distance from the snout tip to the opercular bone posterior margin. Depressed pectorals reach the first

third to half the ventral fins, which just reach or go slightly beyond the anal origin. Upper caudal spine is slightly longer than the lower one; expanded caudal fin profile is slightly concave.

Colour in alcohol (fig. 24) - Ground colour of ossified parts is light to dark brown. The five darker brown transverse stripes are present, the first two passing across the anterior part of the dorsal base and just behind the end of dorsal base. Fin rays are yellowish tan with dark brown small dots which are somewhat lined, forming irregular stripes. There is often a diffuse reddish pigmentation in the fin membranes, specially in the pectorals. Ventral side is yellowish, rarely with a diffuse brown pigmentation in the caudal peduncle. Upper lip, lateral margin of head and branchiostegal membranes - and incospicuously all dorsum - have some darker spots of various sizes and shapes.

COMMENTS

The abdomen covering variation of R. heterogaster has an ontogenetic component but certainly this is not the only one. Among the largest specimens measured there is often a large genetic variation.

This species inhabits those streams with loose-stone bottom and strong water flow.

The preceeding species and this one are similar in most morphometric and meristic counts. However, they chiefly diverge by some features as the colour, the abdomen covering, the relative size and shape of teeth cuspids and the habitat. Their - ecological - distribution patterns (R. baliola inhabits streams with gravelly bottom and light water flow while R. heterogaster inhabits those streams with loose-stone bottom and strong water flow) and their great morphometric similarity probably indicate a close phylogenetic relationship.

Rineloricaria intermedia sp. n.

(Figs. 27-29, Tab. 7)

Type-material, BRASIL, RS,
Holotype ♂ MZUSP 27658 (formerly MAPA 1494), Arroio Marrecão at

Santa Tereza, Bento Gonçalves, 22.I.1981, R.E.Reis leg. Paratypes MZUSP 27659 (formerly MAPA 1496), MAPA 1495 and 1271, same data of holotype. MAPA 1492, ZMA unreg. (formerly MAPA 1326) and ZMA unreg. (formerly MAPA 1493), Arroio Marrecão at Santa Tereza, Bento Gonçalves, 19.III.1981, R.E.Reis leg.

Type-locality: Arroio Marrecão at Santa Tereza, Bento Gonçalves, RS, Brasil. This creek empty into the Taquarí River of Jacuí drainage system. The collection site is about 30 meters upstream the mouth of the Marrecão creek which is, at that point, about ten meters wide and one to 3 meters deep.

Etymology: Rineloricaria intermedia is named after its intermediary characteristic (a small caudal filament) between the R. lima- and R. platyura-groups.

DIAGNOSIS

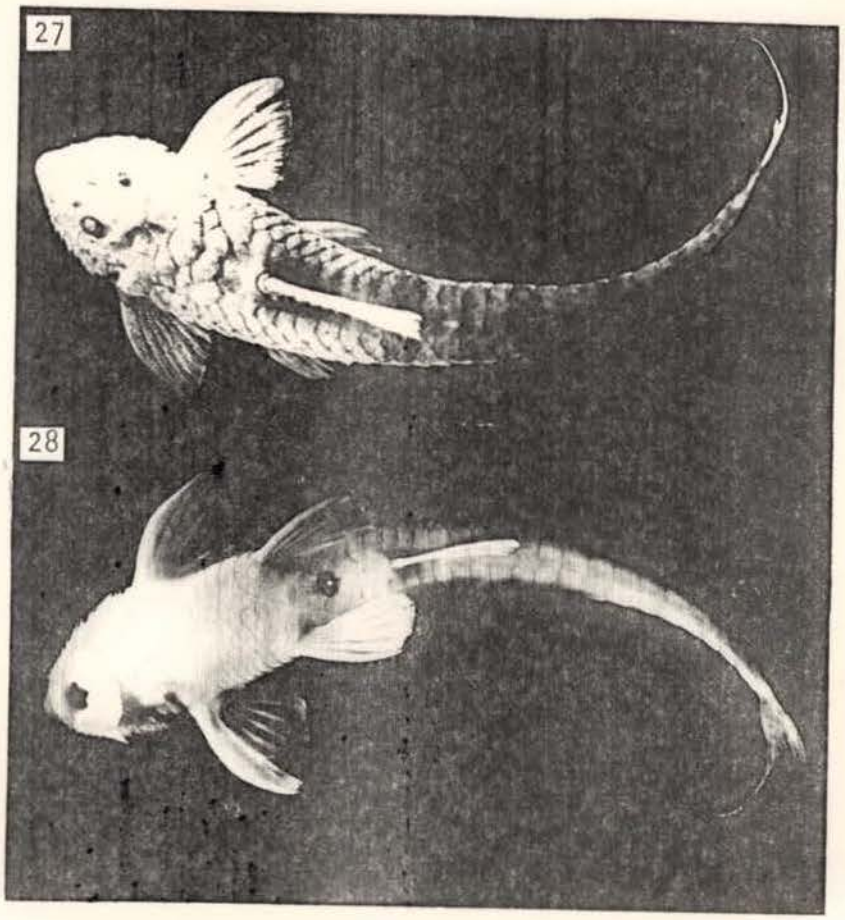
Head length 4.4-4.8, width 5.5-6.2 in the standard length. Predorsal length 2.9-3.1 in the standard length. Body width at the first anal ray level 4.1-4.4 in the distance from this point to the caudal fin. Snout tip with a roundish naked area, not reaching the last pore of the infra-orbital canal. Abdomen with four regular to seven irregular median series of scutelets, between the thoracic plates. Scales in the postcleithral lateral series are 16-18 + 12-14, usually 18 + 12-13. Pectoral fins reach just to or go slightly beyond the origin of the ventral fins. The upper caudal ray is produced into a free filament.

DESCRIPTION

Head length 4.4-4.8 (4.6), head width 5.5-6.2 (5.9) in the standard length; head depth 2.3-2.6 (2.5), head width 1.2-1.3 (1.3) in its length. Snout length 2.0-2.1 (2.1), eye diameter 6.3-7.4 (6.7) in the head length. Eye diameter. Eye diameter 1.3-1-6 (1.4) in the interobital width. Interorbital width 4.5--4.9 (4.7) in the head length. Predorsal length 2.9-3.1 (3.0), preventral length 3.1-3.3 (3.2) and preanal length 2.1-2.2 (2.1) in the standard length.

The odontodes are well developed (much more stronger in

males than in females) and sharply arranged into thin lines on the dorsal surface, especially on the head dorsum and predorsal area. The nuptial males develop dense bristles at the edges of the head and dorsum of spine and branched pectoral rays. The upper edges of the orbits are lifted and there is a small depression just behind the sphenotics posterior margin, at both sides of the supra-occipital bone. The iris presents a large, roundish dorsal flap and there is a large postorbital notch.



FIGS. 27 and 28. Rineloricaria intermedia dorsal and ventral view of holotype MZUSP 27658 ♂ - Standard length 131.7 mm.

Snout tip has a roundish area of naked skin, do not extended backwards and not reaching the last pore of the infra-orbital sensorial canal. Between the naked skin area and the upper lip there are always odontodes. Lips are well developed, abundantly covered by papillae and with a fringed margin. Lower lip is deeply notched medially. The characteristic rictal barbel is present. There are 6 to 8 bilobed teeth, usually 7-8 in the functional series, at each

side of both maxillae, lower ones longer than the upper ones. Both cuspids have acute tips, the inner one much longer than the small outer cuspid. No apparent sexual dimorphism can be seen in the teeth.

Postcleithral leteral series are 16-18 + 12-14, usually 18 + 12-13, coalescing posteriorly. The lateral keels are very rough.

The abdomen is completely covered by scutelets. There is a well-developed preanal plate anteriorly bordered by three to five irregular large scutes. These are preceeded by comparatively small polygonal scutes. Anteriorly to this posterior complex and between the thoracic plates the abdomen is covered by four regular to seven irregular median series of scutelets. These scutelets reach the branchiostegal membrane level. Thoracic plates are 7 to 9, usually 9.

The distance from the origin of anal fin to the caudal fin is 1.8-1.9 (1.9) in the standard length. Width of body at the first anal ray level is 4.1-4.4 (4.2) in the distance from this point to the caudal fin.

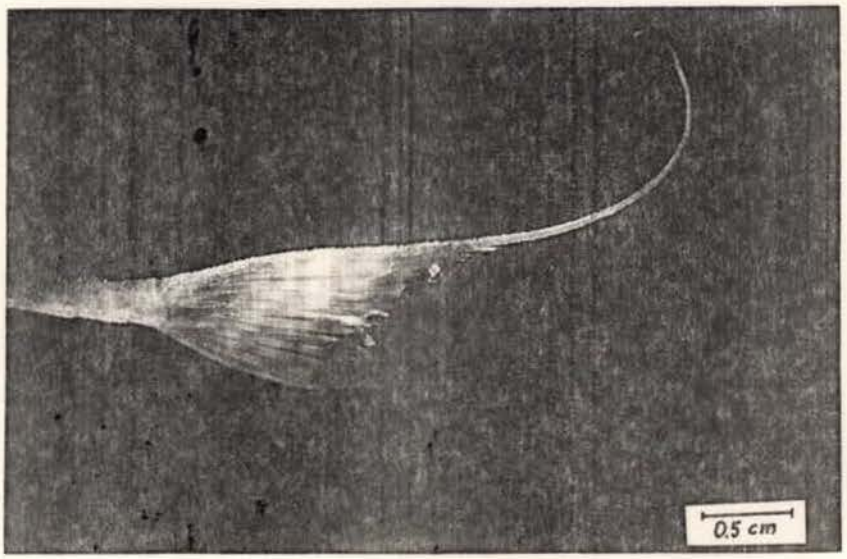


FIG. 29. Rineloricaria intermedia sp. n. deatail of the upper produced caudal spine of paratype MZUSP 27659.

Fin rays are in the usual formula to the genus. Only one unusual and curious aberration was found: the paratype MAPA 1495 has a damaged (broken) caudal peduncle and two caudal fins: a primitive one with normal rays and a second, five-rayed damaged caudal fin. Dorsal spine is slightly smaller than the head length. Depressed pectorals reach just to or go slightly beyond the origin of ventral fins, which just reach the anal fin origin. Upper caudal ray produced in a free filament which is, however, comparatively

smaller than other Rineloricaria species filament. Expanded caudal fin profile is slightly concave.

Colour in alcohol (fig. 27) - Ground colour of ossified parts is light brown. There are six dark brown transverse stripes, the first inconspicuous one passing across the anterior part of the dorsal fin base. There are several small comparatively darker spots, irregular in size and shape, distributed on all dorsal surface, specially on the head dorsum. Pores of the sensorial canals are black. The spine and soft rays of all fins are yellowish tan with inconspicuous darker dots. The ventral side is yellowish; outer side of upper lip has few brown dots of irregular size and shape.

COMMENTS

R. intermedia is the rarest species inhabiting the area studied and is known only from the type-locality that presents a rocky and sandy bottom and a light water flow.

The description is based on seven adult specimens, both males and females, in such a way that some features as colour pattern and abdomen covering of young and other ontogenetic variations remain still unknown.

Rineloricaria isocuspis sp. n.

(Figs. 4, 30-32, Tab 8)

Loricaria (Rhineloricaria) steinbachi, not Regan, 1906, Gomes, Mus. Zool. Univ. Mich., 1947:33 (figure and description based on 18 young specimens from Maquinê River - maximum SL 62 mm).

Type-material, BRASIL, SC,
Holotype ♂ MZUSP 27650 (formerly DZUFRGS 0476). Rio Jordão at Jordão Baixo, Siderópolis, 2-9.XII.1977, C.L.L.Santos leg. Paratypes DZUFRGS 0475, 0477, 0478, 0480 to 0491, 0493 to 0500, 0502, 0503, 0505 to 0509, 0511, 0512, 0515 to 0525, 0583, MZUSP 27651 (formerly DZUFRGS 0492), 27652 (formerly DZUFRGS 0501), 27653 (formerly DZUFRGS 0504) and ZMA unreg. (formerly DZUFRGS 0479), same data of holotype. DZUFRGS 0448 and 0449, Rio Jordão at Jordão Alto, Nova Veneza, 17.IX.1977, C.J.Albuquerque leg. DZUFRGS 2176, Rio Morto at Meleiro, 1.V.1983, Exp. UFSC leg.

BRASIL, RS,
MAPA 1254 (16 ex) and ZMA 119.088 (2 ex) (formerly MAPA 1254), small creek tributary of Rio Maquiné at Maquiné, Osório, 3.I.1981, R.E.Reis & J.L.Reis leg. MAPA 1253 (6 ex), Rio Maquiné at Maquiné, Osório, 3.I.1981, R.E.Reis & J.L.Reis leg. ZMA 119.086 (7 ex), MAPA 2087 to 2092 and MZUSP 27654 to 27656, Rio Maquiné at "balneário" de Maquiné, Osório, 20.II.1983, R.E.Reis & C.M.Penz leg. UMMZ 143278 (6 ex), 143279 (5 ex) and 143280 (4 ex) (maximum SL 62 mm - not measured), Rio Maquiné, affluent of the Lagoa dos Quadros, at Conceição do Arroio (?), VIII 1941, H.Kleerekoper leg. UMMZ 143288 (3 ex) (not measured), Lagoa dos Quadros at Conceição do Arroio (?), (ca. 20 mi N of Tramandaí), VIII, 1941, H.Kleerekoper leg.

Type-locality: Rio Jordão at Jordão Baixo, Siderópolis, SC, Brasil.

Etymology: Rineloricaria isocuspis is named after its teeth shape: the two cuspids are near equal in size.

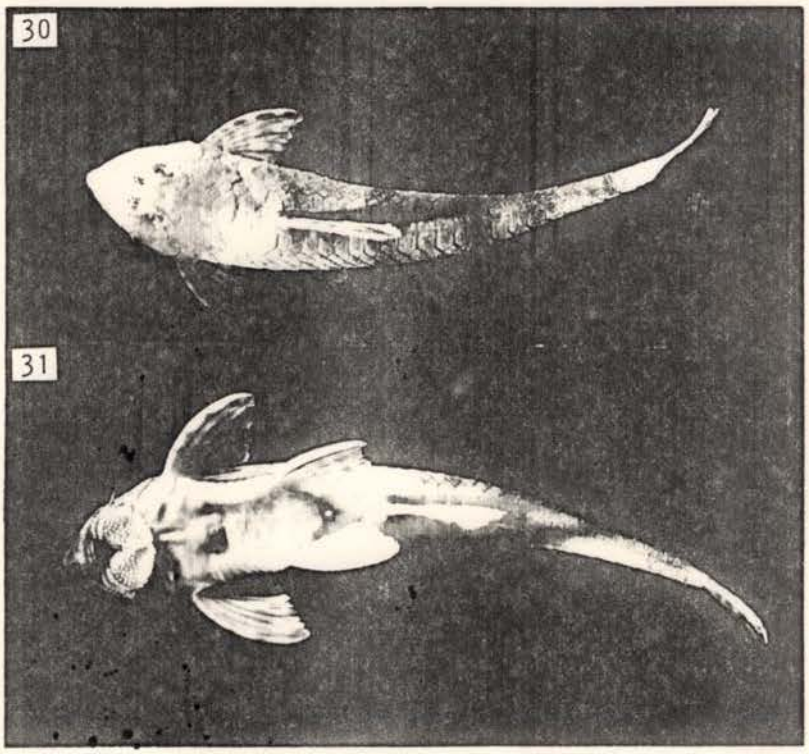
DIAGNOSIS

Head length 3.8-4.4, width 4.7-5.5 in the standard length. Predorsal length 2.7-2.9 in hte standard length. Body width at the first anal ray level 3.1-4.5 in the distance from this point to the caudal fin. Snout tip with a roundish naked area, not reaching the last pore of the infra-orbital canal. The teeth are numerous - 8 to 15, usually 11-12 at each side of both maxillae - and the two cuspids are near equal in size (figs. 4 and 32). Abdomen covering is variable: there is a posterior complex consisting of a well-developed preanal plate bordered by usually three large polygonal scutes. Another anterior complex consist of few small irregular scutelets, which may be absent. Anteriorly to these complexes the abdomen is entirely naked. Scales in the postcleithral lateral series are 16-20 + 10-12, usually 18+11. Pectoral fins just reach the origin to a third of ventral fins.

DESCRIPTION

Head length 3.8-4.4 (4.1), head width 4.7-5.5 (5.1) in the standard length; head depth 2.1-2.5 (2.3), head width 1.2-1.3 (1.2)

in its length. Snout length 1.9-2.1 (2.0), eye diameter 6.0-8.8 (7.0) in the head length. Eye diameter 1.3-1.9 (1.6) in the interorbital width. Interorbital width 3.9-4.9 (4.3) in the head length. Predorsal length 2.7-2.9 (2.8), preventral length 2.7-3.2 (2.9) and preanal length 2.0-2.2 (2.1) in the standard length.



FIGS. 30 and 31. Rineloricaria isocuspis sp. n. dorsal and ventral view of paratype MAPA 1253 - Standard length 82.0 mm.

The odontodes are very small and not lined, so the fish is somewhat smooth. Nuptial males develop hypertrophyated odontodes on all dorsum, specially on those usual places: the head margin and dorsum of pectoral rays. The head ridges are very slight and the supraoccipital and predorsal ridges are rather inconspicuous or non-existant. The upper edges of the orbits are only slightly lifted. The iris presents a very small to large, roundish dorsal flap.

Snout tip has a roundish naked area, do not extended backwards and not reaching the last pore of the infra-orbital sensorial canal. Between the naked skin area and the upper lip there are no odontodes, but only rugose skin resembling small papillae. Lips are well developed, the lower one slightly to deeply notched medially. There is a comparatively small rictal barbel (fig. 31). There are 8 to 15, usually 11-12 bilobed teeth in the functional series

at each side of both maxillae. The teeth are comparatively smaller and more numerous than those of other Rineloricaria species and have a very diagnostic shape: the two cuspids are near equal in size (fig. 4 and 32).

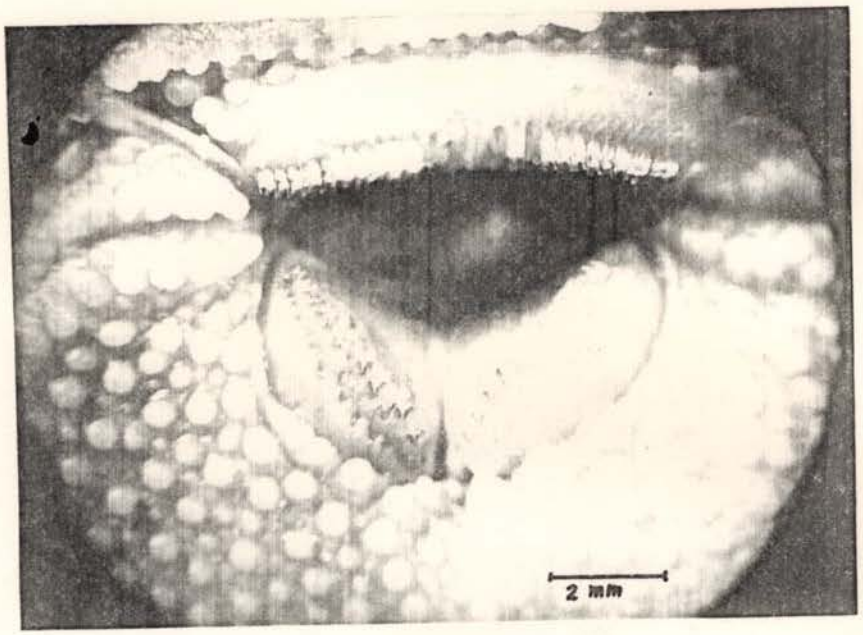


FIG. 32. Rineloricaria isocuspis sp. n. detail of dentition of paratype DZUFRGS 0478.

Postcleithral lateral series are 16-20 + 10-12, usually 18 + 11, coalescing posteriorly.

The abdomen covering may be divided in two complexes:
1. The posterior one comprehends a well-developed preanal plate, usually bordered by three polygonal scutes. These scutes together with the preanal plate form an inflexible plate between the ventral fins insertion.
2. Anteriorly to this posterior complex there are a few small irregular scutelets, that may be reduced to only one or disappear at all. Anteriorly to this second complex the abdomen is entirely naked. Thoracic plates are 5 to 11, usually 7; there is the usual great variation and the paratype MZUSP 27651 (116.4 mm SL) has 3/4 thoracic plates.

The distance from the origin of anal fin to the caudal fin is 1.8-2.0 (1.9) in the standard length. Width of body at the first anal ray level is 3.1-4.5 (3.9) in the distance from this point to the caudal fin.

Fins are in the usual formula to the genus and no variation was found to these countings. Dorsal fin spine is conspicuously

smaller than the head length, being usually equal or slightly smaller than the distance from the snout tip to the opercular bone posterior margin. Depressed pectorals reach the origin to a third of ventral fins, which just reach or go slightly beyond the anal origin. Upper caudal spine is equal or slightly longer than the lower one; expanded caudal fin profile is slightly concave.

Colour in alcohol (fig. 30) - Ground colour of ossified parts is light to chestnut-brown. The five darker brown transverse stripe are present, the first two passing across the anterior part of dorsal base and just behind the end of dorsal fin base. Fins are yellowish with dark brown small dots on the rays forming irregular stripes. Ventral side is yellowish, sometimes with some dark pigmentation on the caudal peduncle margin. Margin of upper lip and head edges have some dark spots irregularly sized and shaped.

In living fish (at least from the Maquiné River system) all dorsum tends to be darker.

COMMENTS

R. isocuspis is usually found is those streams flowing into the coastal lagoons or directly into the Atlantic, north of Tramandaí Lagoon. We collected the specimens in Rio Grande do Sul State and, at least in the Maquiné River system, this species is found inhabiting those places with light to strong water flow and loose-stone bottom. R. isocuspis has the same habitat of R. maquinensis and, therefore, the same habit of adhesion to the bottom, between the stones, in order to resist to the water current.

In this species, like in R. heterogaster, there is a continuous gradation in number of abdominal scutelets. We could find a difference in this aspect between the Santa Catarina and Rio Grande do Sul populations (presently isolated). The Santa Catarina specimens have usually only one or few small scutelets in the anterior complex of abdominal scutelets, which may be totally absent. The Rio Grande do Sul specimens often have comparatively more numerous scutelets in the anterior complex, sometimes extending up to the anterior thoracic plate level.

ACKNOWLEDGEMENTS

I would like to thanks Fernando R. Meyer, director of Museu Anchieta, for the friendly and extensive interest and for his constant encouragement.

I am much indebted to Leda F. A. Jardim for her special criticism and constant support at Departamento de Zoologia da Universidade Federal do Rio Grande do Sul and to the following persons and institutions for the loan and exchange of specimens, information and other assistance: L.H.Amato Silveira (CECN), H.A.Britski (MZUSP), W.Fink (UMMZ), L.R.Malabarba (DZUFRGS) and G.W.Nunan (Museu Nacional, Rio de Janeiro).

The comments and criticism of Paulo A. Buckup (Fundação Universidade do Rio Grande), specially in early stages of this work, while still in MAPA, Isaac J.H. Isbrücker (ZMA) and Fernando A. Pires (DZUFRGS) contributed gratly to the improvement of this paper.

C.M.Penz (MAPA, entomology) kindly provided technical assistance, which facilitated various aspects of the study and M.T. Schifino (UFRGS, Agronomy) kindly provided an English correction.

REFERENCES

BUCKUP, P. A., 1981. Microlepidogaster taimensis sp. n., novo Hypoptopomatinae da Estação Ecológica do Taim, Rio Grande do Sul, Brasil (Ostariophysi, Loricariidae). Iheringia ser. Zool., (60):19-31.

COPE, E. D., 1894. On the fishes obtained by the Naturalist Expedition in Rio Grande do Sul. Proc. Amer. Phil. Soc., 33:84-108, pls. 4-9.

DEVINCENZI, G. J., 1943. El genero Loricaria en la cuenca platense; descripción de una nueva espécies, Loricaria commersonoides sp. n. Com. zool. Mus. Hist. nat. Montevideo, 1(1):1-6.

EIGENMANN, C. H. 1910a. The Archiplata-Archihelenis theory. Rep. Princeton Univ. Exped. Patagonia, 1896-1899, 3(3):293-374.

___. 1910b. Catalogue of the fresh-water fishes of tropical and south temperate America. Rep. Priceton Univ. Exp. Patagonia, 1896-1899, 3(4):375-511.

___ & EIGENMANN, R. S., 1890. A revision of the South American nematognathi, or cat-fishes. Occ. Pap. California Acad. Sci., 1:1-508.

___ & ___. 1891. A catalogue of the fresh-water fishes of South America. Proc. U. S. nation. Mus., 14:1-81.

FOWLER, H. W., 1915. Notes on nematognathous fishes. Proc. Acad. nat. Sci. Philadelphia, 67:203-43.

___. 1943. Notes and descriptions of new or litter known fishes from Uruguay. Proc. Acad. nat. Sci. Philadelphia, 95:311-34.

___. 1954. Os peixes de água doce do Brasil 4. Arq. zool. São Paulo, 9:i-ix, 1-400.

GODOLPHIM, M. F., 1976. Geologia do holoceno costeiro de Rio Grande, RS, Porto Alegre, Curso de Pós-Graduação em Geociências da UFRGS, 146p. [Unpublished M.Sc. dissertation].

GOMES, L. A., 1947. A small collection of fishes from Rio Grande do Sul, Brazil. Misc. Publ. Mus. Zool. Univ. Mich., 67:1-39.

GOSLINE, W. A., 1945. Catálogo dos Nematognatos de água-doce da América do Sul e Central. Bol. Mus. nac. Rio de Janeiro, (n.s.), Zool., 33:1-138.

HENSEL, R., 1868. Beitrȳge zur Kenntniss der Wirbelthiere SÜdbrasiliens (Fortsetung). Arch. Naturgesch., 34(1):355-75.

ISBRUCKER, I. J. H., 1979. Descriptions préliminaires de nouveaux taxa de la famille des Loricariidae, Poissons-Chat cuirassés néotropicaux, avec un catalogue critique de la sous-famille nominale (Pisces, Siluriformes). Rev. fr. Aquariol., 5(4):86-116.

___. 1980. Classification and catalogue of the mailed Loricariidae (Pisces, Siluriformes). Vers. Tech. Gegevens, 22:1-170.

___ & NIJSSEN, H., 1976. Rineloricaria heteroptera, a new species of mailed cat-fish from Rio Amazonas near Manaus, Brazil (Pisces, Siluriformes, Loricariidae). Zool. Anz., 196 (1/2):109-24.

KNER, R., 1854. Die Panzerwelse des k. k. Hof-Naturalien-Cabinetes zu Wien. I. Abtheilung: Loricariinae. Denkschr. Akad. Wiss. Wien, mathem. - naturwiss. Cl., 7:251-86, 5 pls.

REGAN, C. T., 1904. A monograph of the fishes of the family Loricariidae. Trans. zool. Soc. London, 17(3):191-350, pls. 9-21.

REIS, R. E., 1983. Rineloricaria longicauda e Rineloricaria quadrensis, duas novas espécies de Loricariinae do sul do Brasil (Pisces, Siluriformes, Loricariidae). Iheringia ser. Zool., (62):61-80.

RIBEIRO, A. M., 1911. Fauna Brasiliense. Peixes IV. Eleutherobranchios Aspirophoros (A). Physostomos Scleracanthos. Arch. Mus. nac. Rio de Janeiro, 16:1-504, pls. 22-54, text-figures 44-144.

___. 1918. Lista dos peixes brasileiros do Museu Paulista (1ª parte). Revta. Mus. Paulista, 10:707-36.

RINGUELET, R. A., ARÁMBURU, R. H. & ARÁMBURU, A. A., 1967. Los peces argentinos de água dulce (Prov. Buenos Aires, Gobern., Com. Invest. Cient., La Plata), 602p., 10 pls.

SILVA, C. P., 1982. Ocorrência, distribuição e abundância de peixes na região estuarina de Tramandaí, Rio Grande do Sul. Atlântica, 5(1):49-66.

STEINDACHNER, F., 1909. Eine neue Brachyplatystoma und eine neue Loricaria-Art. Anz. Akad. Wiss. Wien, mathem. - naturwiss., 46 (12):195-7.

TABLE 1 - Rineloricaria caedae (Hensel, 1868) - (mm)

TOPOTYPES	TL	SL	HL	HD	HW	PD	PV	PA	SnL	ED	IW	BW	Post-A	TP	Sex
ZMB 7430		110.6													
MAPA 1166	123.4	107.0	22.0	9.5	16.8	35.6	33.8	50.0	10.4	3.0	4.8	13.4	57.6	8/8	♀
ZMA 119.073	-	103.3	22.0	9.9	16.0	-	-	-	-	-	-	13.2	54.0	-	♀
MAPA 1158	117.3	100.8	21.8	10.0	17.0	34.5	33.2	49.3	8.6	3.2	5.0	13.7	52.3	9/9	♀
ZMA 119.074	-	100.4	23.0	10.2	17.4	-	-	-	-	-	-	13.0	52.0	.	♂
MAPA 1157	111.0	97.2	22.2	10.2	17.6	34.1	33.8	46.7	10.7	3.1	5.5	13.4	51.3	8/8	♂
ZMA 119.076	-	96.4	19.6	9.0	15.0	-	-	-	-	-	-	11.7	52.6	-	♀
ZMA 119.075	-	95.6	21.3	9.2	16.3	-	-	-	-	-	-	11.8	53.0	-	♂
MAPA 1151	108.5	93.7	21.4	9.3	16.9	32.3	31.0	45.0	10.2	3.2	4.7	11.7	49.7	8/8	♂
MAPA 1143	100.0	88.2	18.7	8.3	14.3	29.4	27.2	40.9	8.9	3.0	4.8	10.5	47.7	9/9	♂
MAPA 1153	95.0	71.7	15.6	6.9	11.7	23.7	22.0	32.4	7,2	2.7	3.6	8.6	38.6	8/7	y
MAPA 1116	63.3	54.6	11.9	5.1	8.5	17.3	17.0	24.7	5.6	2.0	2.8	5.8	30.4	8/8	y
MAPA 1112	57.2	48.7	11.0	5.1	8.0	15.6	15.3	21.9	5.0	2.0	2.7	5.1	27.6	7/6	y

BIBLIOTECA SETORIAL

TABLE 2 - Rineloricaria strigilata (Hensel, 1868) - (mm)

	TL	SL	HL	HD	HW	PD	PV	PA	SnL	ED	IW	BW	Post-A	TP	Sex
DZUFRGS 0659	161.0	141.0	33.0	12.7	28.6	49.7	46.5	67.3	16.2	4.7	7.5	17.3	74.7	7/8	♂
DZUFRGS 0657	160.0	141.4	32.8	12.4	26.0	49.4	47.0	68.3	15.8	4.3	6.6	16.0	73.0	6/8	♂
ZMA 119.080	-	126.5	28.4	11.0	25.0	-	-	-	-	-	-	19.4	65.0	-	♂
DZUFRGS 0656	137.5	122.0	27.5	9.7	21.3	42.8	38.6	59.0	13.5	4.1	5.6	14.0	63.6	8/8	♀
ZMB (?)	-	111.2	-	-	-	-	-	-	-	-	-	-	-	-	-
MAPA 1452	117.8	102.8	22.8	8.6	17.2	34.2	31.2	47.0	10.9	3.4	4.7	11.0	56.3	8/8	♀
MAPA 1454	111.0	97.3	24.4	7.6	17.4	34.3	30.9	47.3	11.3	3.4	4.2	10.6	50.6	7/8	♀
MAPA 1454	90.4	78.6	18.8	6.8	14.2	27.8	24.6	37.7	9.5	2.9	3.9	8.9	41.8	8/7	♀
MAPA 1454	87.3	76.3	18.2	6.2	13.0	26.4	24.0	35.3	9.3	2.9	3.4	7.8	41.7	7/7	♀
MAPA 1454	86.5	75.4	17.0	6.2	12.6	25.4	23.8	35.0	8.3	2.8	3.5	7.6	40.4	7/8	♀
MAPA 1454	85.6	75.0	17.0	6.1	12.2	25.4	23.8	35.0	8.3	2.7	3.5	7.8	40.4	8/8	♀
MAPA 1452	73.0	65.0	13,7	4.8	9.3	19.6	18.8	27.5	7.5	1.9	3.1	5.9	37.5	8/8	y
MAPA 1452	60.3	52.6	11.5	4.1	8.0	16.5	15.7	22.6	5.8	1.6	2.7	4.8	30.4	5/6	y
ZMA 119.081	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZMA 119.081	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 3 - *Rineloricaria maquinensis* sp. n. - (mm)

	TL	SL	HL	HD	HW	PD	PV	PA	SnL	ED	IW	BW	Post-A	TP	Sex
MZUSP 27347	95.4	84.6	17.5	7.0	14.5	25.5	24.3	32.0	8.8	2.7	4.1	10.0	48.2	-	♂
MAPA 2108	94.5	85.0	17.8	6.9	12.6	26.2	25.7	36.6	9.0	2.9	3.4	9.4	47.7	6/6	♀
ZMA 119.082	92.1	81.6	16.4	6.2	12.3	25.0	23.1	33.8	7.8	3.0	3.6	9.2	46.5	-	♀
ZMA 119.082	92.0	81.0	16.0	6.0	11.3	24.2	22.0	32.9	8.3	2.6	3.6	8.7	47.2	-	♂
MAPA 2106	86.6	78.0	16.0	6.3	11.9	24.2	23.7	34.3	8.3	2.6	3.5	9.0	43.8	7/7	♀
MAPA 1258	84.5	76.7	14.8	6.3	11.1	23.3	21.4	32.5	7.5	2.4	3.7	8.6	44.4	7/8	♀
ZMA 119.082	82.8	74.2	15.0	5.5	10.8	23.3	21.6	31.9	7.5	2.2	3.4	8.6	42.3	-	♀
MAPA 2100	79.2	69.7	14.6	5.8	10.7	21.9	21.8	30.4	7.5	2.2	3.3	7.9	39.0	7/6	♂
MZUSP 27349	79.0	70.6	15.0	6.2	11.1	22.6	22.0	31.0	7.5	2.5	3.6	8.0	39.0	7/8	♂
MAPA 2097	78.4	70.7	14.3	5.7	10.7	21.4	20.7	30.2	8.0	2.2	3.5	7.7	39.6	9/7	♂
ZMA 119.082	78.0	70.4	14.9	5.8	11.2	22.3	21.2	30.5	7.5	2.5	3.8	7.8	39.7	-	♀
MAPA 2099	78.0	69.0	14.4	6.0	10.3	21.0	20.0	30.0	7.0	2.5	3.4	7.6	39.8	7/6	♀
MAPA 2107	77.0	67.7	13,6	5.5	10.2	20.8	19.2	28.3	6.7	2.1	3.2	7.0	39.8	5/6	♂
MZUSP 27350	75.0	67.7	14.3	5.8	10.8	21.2	19.9	28.4	7.4	2.4	3.5	7.1	38.4	6/7	♂
MAPA 2104	74.6	66.0	13.4	5.4	9.7	19.8	19.6	28.2	7.0	2.2	3.0	7.2	37.7	7/7	♀
MAPA 2103	74.5	65.4	13.8	5.7	10.2	20.5	19.0	28.0	6.8	2.4	3.4	7.2	37.0	5/7	♂
DZUFRGS 0510	74.4	66.4	13.3	5.5	9.8	19.9	18.5	26.7	6.4	2.4	3.3	7.2	40.0	6/6	♀
MAPA 1258	74.1	65.7	13.8	5.6	10.1	21.2	19.2	29.0	7.1	2.5	3.5	7.6	37.1	-	o
MZUSP 27348	73.0	63.3	14.2	5.5	10.3	20.9	20.3	29.0	7.3	2.1	3.2	7.3	34.6	6/7	♂
MZUSP 27353	72.4	65.6	13.3	5.0	9.6	20.1	19.6	27.2	6.6	2.2	3.2	6.7	37.0	7/7	y
MAPA 1258	71.5	63.4	13.2	5.3	9.7	20.0	18.3	26.6	6.6	2.0	3.2	7.0	36.0	7/7	y
MZUSP 27352	71.3	62.2	12.9	5.2	9.0	18.9	17.8	25.8	6.7	1.9	3.3	6.9	36.0	8/7	y
MAPA 2101	70.8	62.8	12.3	5.4	9.3	18.6	17.0	25.2	6.0	2.3	3.0	6.8	36.7	7/7	y
MAPA 1258	68.8	61.2	12.8	5.0	9.6	18.7	17.8	25.5	6.3	2.2	3.0	6.7	35.5	6/7	y
MZUSP 27351	68.7	61.2	12.5	5.4	9.3	18.6	17.4	26.0	6.0	2.0	3.0	6.5	34.6	8/7	y
MAPA 2105	68.6	60.4	12.7	5.1	9.5	18.9	17.5	25.0	6.4	2.0	2.9	6.7	33.5	6/7	y
MZUSP 27354	68.3	60.3	12.7	5.5	9.6	19.0	18.0	25.7	6.3	2.0	3.3	6.7	34.8	7/6	y
MAPA 2096	67.3	59.8	12.6	5.0	9.3	18.8	17.4	25.4	6.3	2.1	3.1	6.3	33.5	7/6	y
MAPA 2102	67.0	58.2	12.6	5.1	9.0	18.2	17.5	25.2	6.2	1.9	3.0	6.4	32.7	7/6	y
MAPA 1258	65.6	57.7	12.0	5.0	8.6	17.8	17.0	24.3	6.2	1.9	3.0	6.2	33.0	6/7	y
MAPA 1258	63.0	56.5	12.0	5.0	9.0	17.6	16.5	24.3	6.0	1.9	3.0	6.2	31.9	7/6	y
MZUSP 27355	63.0	56.5	11.9	4.8	8.8	18.2	17.0	25.0	6.2	2.0	2.9	5.7	32.0	7/7	y
DZUFRGS 0514	61.0	53.2	11.8	5.1	8.8	16.6	15.5	22.5	5.9	1.9	3.0	5.8	30.8	6/6	y
MAPA 1258	60.9	56.6	11.5	5.0	9.0	17.1	16.5	20.0	6.0	1.8	3.0	6.0	33.0	-	y
MAPA 2098	58.6	50.4	10.8	4.6	8.4	16.5	15.0	22.0	5.3	1.7	2.8	5.0	28.3	7/7	y
DZUFRGS 0513	53.0	46.2	10.2	4.5	7.2	14.9	13.8	20.1	4.8	1.9	2.6	5.2	26.1	6/7	y

TABLE 4 - *Rineloricaria malabarbai* sp. n. - (mm)

	TL	SL	HL	HD	HW	PD	PV	PA	SnL	ED	IW	BW	Post-A	TP	Sex
MAPA 2109	103.8	93.0	21.0	8.2	16.3	31.0	30.2	43.0	10.6	3.0	5.0	11.8	48.6	7/6	♀
MZUSP 27356	103.8	90.8	21.0	8.6	17.2	31.0	30.3	41.2	10.4	3.6	5.0	12.5	49.5	-	♂
MAPA 2110	100.3	87.7	21.0	9.4	18.4	31.2	29.3	41.8	10.4	2.8	4.9	11.8	45.8	6/6	♂
MAPA 1261	100.0	87.5	20.0	8.4	15.7	30.4	28.7	41.5	9.6	3.3	4.7	11.6	45.4	7/7	♀
MZUSP 27358	97.0	84.3	19.0	8.3	15.4	28.3	27.0	39.0	9.4	3.0	4.7	10.6	45.6	6/7	♀
MAPA 1261	96.0	82.9	18.9	8.3	15.0	28.2	27.4	39.4	9.3	2.9	4.6	11.6	44.0	-	o
ZMA 119.083	95.7	84.7	18.8	8.0	14.7	28.7	27.3	39.3	9.7	3.2	4.7	11.2	45.0	-	♀
MAPA 1327	91.0	79.1	18.7	8.0	15.0	27.7	25.6	37.8	9.4	2.6	4.4	10.2	42.0	7/7	♀
MZUSP 23757	85.0	74.4	17.1	7.5	13.o	25.3	24.2	34.0	7.0	2.8	4.3	9.5	39.8	7/6	♂
ZMA 119.083	81.6	69.6	16.2	6.8	13.2	23.2	23.2	33.0	7.8	2.8	3.9	8.9	37.3	-	♂
MAPA 1273	80.6	72.4	16.5	7.0	13.0	24.5	22.5	33.3	8.0	2.7	4.0	8.0	39.0	6/5	♀
DZUFRGS 2507	74.5	65.0	15.2	7.5	12.5	22.6	21.0	29.9	7.5	2.4	4.1	8.4	34.8	6/7	y
MAPA 1261	70.7	60.7	13.9	5.9	11.0	20.0	19.0	28.1	6.5	2.3	3.6	7.6	33.5	-	y
MAPA 1273	60.4	52.5	12.4	5.6	9.6	17.7	16.3	23.8	6.2	1.8	3.2	6.1	28.4	5/5	y
ZMA 119.083	59.6	52.4	12.4	5.5	9.7	17.8	15.7	23.5	6.0	2.2	3.2	6.2	28.3	-	y
MAPA 2111	53.0	46.0	11.2	4.8	8.5	15.6	14.9	21.1	5.4	1.9	2.9	5.0	24.0	3/2	y

TABLE 5 - Rineloricaria baliola sp. n. - (mm)

	TL	SL	HL	HD	HW	PD	PV	PA	SnL	ED	IW	BW	Post-A	TP
MZUSP 15482	173.0	148.0	35.8	15.6	29.6	53.2	50.6	72.7	18.9	4.0	9.0	20.0	76.8	6/6
MZUSP 15482	155.2	132.0	32.0	13.0	23.9	47.9	45.0	64.6	17.1	3.8	7.0	18.3	68.0	10/9
MZUSP 15482	140.0	120.4	29.0	11.8	22.0	43.6	39.2	57.3	14.5	3.8	6.6	16.2	63.4	8/8
DZUFRGS 0672	137.8	117.6	28.8	12.4	22.6	42.2	38.7	56.0	15.2	3.7	5.7	15.8	62.0	10/10
MAPA 1463	105.0	90.2	23.6	9.8	18.1	34.1	31.2	45.9	12.6	3.2	5.4	11.2	44.8	10/10
MZUSP 27657	104.0	89.6	22.8	10.0	17.6	33.3	30.4	45.4	12.3	3.0	5.1	10.8	44.2	9/9
DZUFRGS 2500	101.8	86.8	23.2	10.1	18.9	33.2	30.8	45.1	12.6	2.9	4.9	11.2	42.0	10/9
MAPA 1329	98.3	83.6	20.2	9.0	15.6	29.3	26.8	38.3	10.7	2.6	4.8	10.1	45.0	6/6
MAPA 1270	96.2	82.0	21.4	8.9	16.9	30.8	28.8	41.5	11.6	2.8	4.8	9.8	40.9	11/10
CECN 0929	89.0	77.6	18.8	7.6	14.3	27.5	25.7	37.4	10.1	2.8	4.1	8.4	40.0	10/9
MAPA 1270	87.7	74.8	18.2	8.0	14.7	25.7	23.9	35.5	9.7	2.3	4.7	9.4	39.4	7/7
MAPA 1270	81.4	69.1	16.6	7.2	13.6	24.5	21.5	32.0	8.5	2.3	3.9	8.1	36.6	6/7
MAPA 1463	78.4	66.7	17.2	7.3	13.0	24.6	22.1	33.0	9.4	2.3	3.8	7.6	34.0	8/8
MZUSP 15482	70.8	61.2	14.3	6.0	10.8	20.5	19.2	28.3	7.2	2.2	3.3	6.7	33.8	9/8
MAPA 1463	69.6	60.0	15.4	6.2	11.2	21.9	20.3	28.6	8.1	2.2	3.1	6.4	29.8	8/10
MAPA 1463	69.0	59.9	15.6	6.4	11.5	21.9	19.8	28.4	8.4	2.2	3.3	6.6	31.1	9/9
MAPA 1463	67.0	58.2	15.5	6.6	11.8	22.0	20.0	28.5	8.5	2.0	3.2	6.7	29.7	9/9
MAPA 1463	64.2	54.5	15.0	6.0	11.3	21.5	19.4	27.8	8.0	1.9	3.2	6.2	26.3	8/9
MAPA 1463	62.3	53.8	14.2	5.9	10.7	20.0	18.0	25.8	7.6	2.1	3.0	5.9	27.6	9/9
CECN 0928	60.8	53.2	12.9	5.3	9.6	18.5	17.0	24.5	6.7	1.8	2.8	5.4	28.6	9/9
MAPA 1463	60.5	51.2	13.3	5.6	10.3	18.5	17.8	25.5	7.1	1.7	3.0	5.2	25.7	9/9
DZUFRGS 2502	59.0	50.8	12.8	5.7	9.7	18.4	17.3	24.5	6.8	1.7	2.9	5.6	25.8	9/10
MAPA 1463	58.4	49.2	13.8	5.7	10.4	18.6	18.4	26.1	7.4	1.9	3.2	5.4	23.3	9/9
MAPA 1329	56.4	48.0	12.4	5.6	9.5	17.4	13.9	22.8	6.5	1.6	2.9	5.3	25.4	6/6
MAPA 1329	56.2	47.0	12.2	5.3	9.5	16.9	15.3	21.7	6.2	1.5	3.2	5.4	25.3	7/6
DZUFRGS 2501	54.8	46.4	12.2	5.2	9.8	17.1	16.0	23.0	6.3	1.5	2.8	4.9	26.3	9/9
ZMA 119.092	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZMA 119.090	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZMA 119.091	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 6 - Rineloricaria heterogaster sp. n. - (mm)

	TL	SL	HL	HD	HW	PD	PV	PA	SnL	ED	IW	BW	Post-A	TP	Sex
MAPA 2142	230.0	198.0	49.4	22.0	42.0	72.0	70.0	102.0	25.4	5.3	11.8	30.3	98.2	9/10	♂♂
MAPA 2143	203.0	170.0	46.6	20.3	38.3	69.2	62.4	91.0	24.0	5.0	10.3	25.2	86.0	9/10	♂♂
MAPA 2141	150.0	127.4	30.8	12.0	24.0	45.6	43.0	63.0	15.8	3.8	7.0	17.0	67.4	8/8	♀♀
MAPA 2140	142.0	122.8	28.6	12.2	22.8	41.2	38.8	57.7	15.3	3.8	6.8	15.3	64.4	7/8	♀♀
MAPA 1268	138.8	118.8	29.0	11.5	22.7	41.8	39.7	58.0	15.0	3.3	7.2	14.2	62.0	5/7	-
MZUSP unreg.	111.7	96.6	24.3	10.0	19.0	35.5	32.7	48.8	12.8	3.4	5.6	12.4	48.4	12/11	-
MZUSP unreg.	103.8	89.3	22.8	9.6	18.3	33.1	30.0	43.4	12.0	3.2	5.1	11.5	46.0	11/12	-
DZUFRGS 2506	97.5	83.7	20.6	8.6	15.5	30.0	28.0	41.4	10.6	2.9	4.5	10.0	41.6	10/11	-
MZUSP unreg.	90.7	77.5	20.6	8.6	15.8	29.0	27.0	38.6	10.7	2.8	4.7	10.1	38.4	7/7	-
DZUFRGS 2505	83.6	72.5	18.1	7.7	14.2	25.4	24.6	35.2	9.7	2.6	4.0	8.8	37.0	10/10	-
MAPA 1149	76.6	66.0	17.4	7.6	13.6	25.0	23.3	33.0	9.0	2.7	3.7	8.2	33.0	10/10	-
MAPA 1223	74.0	64.4	16.2	6.7	12.3	23.6	21.8	31.5	8.9	2.0	3.6	7.4	32.4	9/11	-
MAPA 2093	73.0	62.5	16.6	7.0	12.7	23.5	20.5	30.7	8.3	2.1	3.8	7.8	31.9	11/10	-
MAPA 2095	72.9	62.6	15.6	6.9	12.8	22.6	20.7	30.6	7.9	2.4	3.6	7.2	32.2	8/7	-
MAPA 2095	72.7	62.7	15.6	6.4	13.3	22.5	20.8	31.1	7.8	2.5	3.6	7.5	32.8	9/7	-
MAPA 2094	70.0	60.2	14.8	6.7	12.0	21.0	21.0	20.3	7.3	2.2	3.5	7.0	30.6	7/8	-
MZUSP unreg.	67.0	57.7	15.0	6.0	11.0	21.5	18.8	27.4	7.9	2.2	3.5	6.6	30.0	8/9	-
MAPA 2095	65.6	57.2	14.0	6.0	11.0	20.1	18.9	27.3	7.1	2.0	3.2	5.9	29.8	8/8	-
MZUSP unreg.	63.3	54.0	14.4	6.1	11.3	20.4	18.8	26.2	7.4	2.2	3.4	6.2	28.4	9/8	-
MAPA 2093	62.3	53.7	14.2	5.9	10.9	19.7	18.2	26.1	7.2	2.0	3.4	6.0	27.7	9/9	-
DZUFRGS 2504	61.0	51.7	13.7	6.0	10.0	18.7	18.0	26.0	6.9	2.0	3.2	5.6	26.6	7/9	-
MAPA 2094	60.6	51.5	13.3	5.9	10.5	18.8	17.7	25.4	6.9	2.1	2.9	5.6	26.9	5/3	-
MAPA 2093	60.3	52.2	13.6	6.0	10.5	19.7	18.1	25.8	7.2	1.9	3.3	5-7	26.0	8/7	-
MAPA 2094	60.3	51.5	13.2	5.7	10.2	18.6	17.8	25.5	6.8	2.0	3.1	5.7	26.4	6/7	-
MZUSP unreg.	55.0	47.0	13.3	5.5	9.6	18.2	15.6	23.2	7.1	1.9	3.2	5.2	24.0	8/8	-
MAPA 1257	52.0	45.4	11.3	5.0	8.4	15.2	14.5	20.5	5.5	1.7	3.1	4.2	24.8	6/6	-
MAPA 1257	51.8	44.7	11.2	4.9	8.5	15.0	14.5	20.3	5.5	1.7	3.0	4.4	24.2	7/7	-
MAPA 2093	51.7	44.6	11.7	5.0	8.8	16.1	15.0	21.6	5.9	1.9	2.9	4.9	22.4	7/9	-
MAPA 2093	50.6	43.7	11.3	5.1	8.9	15.7	14.4	20.5	5.9	1.6	2.8	4.6	22.7	9/9	-
ZMA 119.087	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZMA 119.089	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 7 - Rineloricaria intermedia sp. n. - (mm)

	TL	SL	HL	HD	HW	PD	PV	PA	SnL	ED	IW	BW	Post-A	TP	Sex
MZUSP 27658	169.0	131.7	29.7	11.9	24.0	45.5	41.9	61.6	14.8	4.0	6.4	16.8	70.0	9/7	♂
MAPA 1492	168.0	121.2	26.7	10.1	20.0	41.3	37.0	57.0	12.4	3.9	5.6	15.4	65.3	9/8	♀
MZUSP 27659	151.0	115.5	23.9	10.5	18.7	37.6	35.2	52.2	11.4	3.8	5.0	14.6	64.0	9/8	♀
MAPA 1271	141.0	114.7	25.0	10.1	18.8	38.5	37.4	54.0	12.6	3.8	5.6	14.8	61.4	9/9	♂
MAPA 1495	131.0	109.5	24.5	10.2	19.4	37.4	35.6	52.2	11.5	3.8	5.0	14.0	57.7	8/9	♂
ZMA unreg.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZMA unreg.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 8 - *Rineloricaria isocuspis* sp. n. - (mm)

	TL	SL	HL	HD	HW	PD	PV	PA	SnL	ED	IW	BW	Post-A	TP	Sex
DZUFRGS 0478	144.0	127.5	32.0	15.0	26.8	47.0	46.5	63.0	16.4	4.7	7.0	18.4	65.4	8/7	♂
MAPA 2087	142.0	125.0	31.6	13.7	23.5	45.0	44.5	65.0	16.2	3.6	7.0	18.0	61.5	6/8	♀♂
MZUSP 27650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	♀♂
ZMA unreg.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	♀
DZUFRGS 0484	142.0	124.5	31.0	13.5	24.3	45.5	45.5	63.5	15.7	3.8	6.3	17.2	61.2	9/11	♀
MZUSP 27651	136.0	116.4	28.0	12.4	22.0	41.7	41.0	58.0	13.8	4.2	6.0	15.8	58.3	3/4	♀
DZUFRGS 0477	131.8	114.0	28.5	12.0	23.0	42.2	40.3	57.8	14.1	3.8	6.0	15.4	56.7	6/8	♀
DZUFRGS 0485	128.0	111.5	27.5	13.0	21.4	41.0	37.6	54.0	13.8	3.8	6.1	16.7	51.4	7/7	♀
DZUFRGS 0475	126.0	109.8	27.5	12.4	22.0	41.2	38.7	55.8	14.4	4.1	6.2	16.4	54.2	6/7	♀
DZUFRGS 0483	126.0	109.0	26.0	12.2	21.0	39.3	36.0	52.0	13.2	3.6	5.9	16.7	56.3	7/7	♀
DZUFRGS 0487	123.5	106.8	26.0	11.6	20.2	37.7	35.3	51.8	13.0	3.8	6.0	14.9	55.0	7/7	♀
DZUFRGS 0493	121.0	106.0	26.2	11.9	21.4	38.8	37.8	52.0	13.7	4.0	6.4	16.0	53.6	7/7	♀
DZUFRGS 0480	121.0	105.8	26.7	11.5	21.0	38.6	39.0	53.0	13.4	3.8	6.0	15.4	53.3	7/8	♀
DZUFRGS 0481	121.0	104.5	26.3	11.3	21.0	38.3	38.0	51.8	14.0	3.3	6.2	14.4	53.0	7/7	♀
DZUFRGS 0482	116.4	100.2	25.2	11.3	20.0	37.5	36.3	49.3	13.0	3.9	5.4	14.7	50.5	7/8	♀
DZUFRGS 0491	115.7	99.6	25.2	11.0	19.4	37.2	33.5	47.0	12.6	3.8	5.4	14.2	51.0	9/8	♀
MZUSP 27654	112.5	98.0	24.5	10.9	19.3	36.2	32.8	48.0	12.8	3.3	5.8	13.6	51.0	6/6	-
MAPA 2089	110.0	95.4	23.4	10.0	18.7	34.0	32.6	46.8	12.2	2.9	5.4	12.2	48.1	7/7	-
DZUFRGS 0497	109.5	95.8	22.6	9.8	17.5	34.4	34.0	47.3	11.8	3.4	5.3	12.2	49.0	6/8	-
MAPA 2088	107.5	92.0	23.3	9.5	18.6	34.5	31.2	43.7	11.7	3.2	5.4	12.9	47.4	7/7	-
MAPA 2091	107.0	92.6	23.2	9.6	18.2	34.0	30.6	44.0	12.3	3.3	5.5	12.8	47.8	6/6	-
MZUSP 27652	106.0	92.0	22.0	9.6	17.2	31.4	32.3	45.0	11.3	3.1	5.0	12.4	47.7	8/7	-
DZUFRGS 0490	106.0	91.2	22.0	10.1	17.2	32.3	31.6	44.0	10.7	3.3	4.9	13.0	48.5	6/7	-
DZUFRGS 0505	105.0	91.0	21.6	9.6	17.6	32.2	30.6	44.0	10.5	3.4	4.8	12.6	47.7	7/8	-
DZUFRGS 0499	103.8	90.0	22.3	10.0	17.8	32.7	31.0	44.0	11.2	3.3	5.2	12.5	46.0	9/9	-
MZUSP 27655	103.4	90.2	21.3	8.8	16.6	31.2	30.2	43.2	10.8	3.3	4.8	11.8	47.3	5/7	-
DZUFRGS 0488	102.4	88.5	21.5	9.2	16.8	31.5	31.0	43.7	11.0	3.1	4.8	12.4	45.0	6/6	-
MAPA 2090	96.6	83.2	20.6	9.0	16.2	30.4	28.4	40.0	11.0	2.8	4.8	10.0	42.5	6/6	-
MZUSP 27656	93.5	81.0	19.7	8.5	15.5	28.5	26.4	38.0	10.2	2.8	4.6	10.7	42.7	8/9	-
MAPA 1253	93.0	82.0	20.7	8.5	16.1	29.2	28.0	40.0	10.7	2.7	4.8	11.3	42.0	9/8	-
DZUFRGS 0486	92.6	80.0	18.9	8.7	15.2	28.3	26.0	38.0	10.0	2.6	4.2	10.9	42.0	7/7	-
DZUFRGS 0496	91.6	79.3	18.2	7.3	15.0	27.2	26.2	37.0	9.5	2.5	4.5	10.5	42.4	6/7	-
DZUFRGS 0489	91.0	78.7	18.4	8.5	15.2	28.0	26.3	37.2	9.7	3.0	4.3	10.6	42.0	6/6	-
MAPA 1253	89.3	78.4	19.4	8.1	15.3	28.2	26.2	37.4	10.1	2.8	4.6	10.3	39.8	6/6	-

TABLE 8 - 2nd part

MAPA 1254	86.0	74.7	18.4	8.2	15.0	26.6	24.5	35.4	9.6	2.6	4.3	9.5	38.8	5/5	-
MAPA 1253	82.0	71.0	17.7	7.4	14.1	25.3	23.5	33.8	8.8	2.7	4.0	9.0	36.9	7/6	-
DZUFRGS 0508	78.8	68.7	16.4	7.2	13.3	24.1	22.4	32.0	8.0	2.7	3.7	8.7	37.0	9/8	-
DZUFRGS 0506	78.2	66.4	16.5	7.1	13.3	23.1	21.8	30.5	8.4	2.3	3.9	8.6	35.3	8/6	-
DZUFRGS 0507	77.4	67.5	16.2	7.8	12.9	24.0	22.6	32.4	8.0	2.5	3.7	8.8	35.4	6/7	-
DZUFRGS 0494	76.6	66.9	16.3	7.0	13.0	23.5	21.5	31.8	8.2	2.5	3.6	8.3	35.0	9/8	-
MAPA 1254	76.0	66.0	16.2	7.6	13.2	23.6	22.1	32.2	8.3	2.2	3.9	8.2	33.2	6/7	-
DZUFRGS 0500	75.6	65.7	16.5	7.6	13.0	24.4	21.9	31.3	8.6	2.3	4.0	8.2	34.2	8/6	-
DZUFRGS 0502	75.4	65.2	15.9	7.0	12.7	22.4	20.6	29.6	8.2	2.5	3.7	8.0	34.5	6/7	-
DZUFRGS 0495	75.0	65.8	16.1	7.0	13.0	24.0	22.3	31.3	8.3	2.7	3.7	8.3	34.5	7/8	-
MAPA 1254	73.2	63.0	15.5	6.5	12.4	22.4	20.4	28.9	7.8	2.1	3.7	7.4	33.0	7/8	-
MAPA 1254	73.0	63.0	15.0	6.9	12.0	22.0	21.0	30.0	7.8	1.9	3.7	7.5	33.0	5/6	-
MZUSP 27653	72.7	63.4	15.0	6.7	12.4	22.2	21.1	29.5	7.6	2.3	3.6	7.6	34.4	7/7	-
MAPA 1254	72.5	62.2	15.0	6.8	12.5	22.2	20.8	29.6	7.7	2.2	3.6	7.2	32.8	6/6	-
DZUFRGS 0509	72.0	62.8	15.3	6.7	12.5	22.2	21.3	30.2	7.8	2.4	3.6	8.4	31.7	6/8	-
MAPA 1254	70.0	60.0	15.2	6.8	12.4	21.8	21.0	30.0	8.0	2.2	3.9	7.5	31.0	5/6	-
DZUFRGS 0512	69.3	59.2	14.6	6.3	11.5	20.6	20.6	28.5	7.2	1.8	3.3	7.7	31.2	7/6	-
DZUFRGS 0498	68.2	60.0	15.0	6.6	11.8	22.0	20.6	29.0	7.7	2.4	3.4	7.4	30.2	7/7	-
DZUFRGS 0503	66.5	58.2	14.5	6.7	11.4	20.6	20.5	28.8	7.4	2.4	3.4	7.4	29.4	7/7	-
DZUFRGS 0449	64.3	55.5	13.6	6.4	11.2	19.3	18.2	26.0	6.9	2.0	3.4	7.0	29.8	6/7	-
DZUFRGS 0448	60.0	52.0	13.0	6.2	10.2	18.9	17.5	24.6	6.5	1.8	3.2	6.5	26.9	6/7	-
MAPA 2092	57.3	49.2	12.6	5.1	9.9	17.8	16.4	23.4	6.5	1.8	3.2	5.8	26.0	5/6	-
DZUFRGS 0517	53.6	46.0	12.0	5.4	9.7	17.0	16.3	22.0	6.2	2.0	2.7	5.6	23.6	5/7	-
ZMA 119.086	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZMA 119.088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-