

Taxonomical revision of the species of *Hypostomus* Lacépède, 1803 (Siluriformes, Loricariidae) from the Lower rio Paraiba do Sul, State of Rio de Janeiro, Brazil

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Taxonomical revision of the species of *Hypostomus* Lacépède, 1803 (Siluriformes, Loricariidae) from the Lower rio Paraiba do Sul, State of Rio de Janeiro, Brazil. – A taxonomical revision of the nominal species of the loricariid catfish genus *Hypostomus* from the lower rio Paraiba do Sul (State of Rio de Janeiro, Brazil) is presented. Analysis of a large sample (over 2'000 specimens), collected monthly from March 1989 to February 1990, revealed that only two species were found in the area. *Hypostomus affinis* (Steindachner, 1876) and *Hypostomus luetkeni* (Steindachner, 1877) are the names applicable to these species. Lectotypes are designed, and the synonymies, redescriptions and illustrations are presented. The current taxonomical status of each nominal species is discussed.

Key-words: Pisces - Siluriformes - Loricariidae - Taxonomy - Brazil.

INTRODUCTION

The species of the Neotropical loricariid catfish genus *Hypostomus* Lacépède, 1803 are usually hard to identify. Old descriptions, with incomplete or poor characterization of species, are often useless for correct recognition. This has resulted in a proliferation of misidentifications, and currently several nominal species are available for every fluvial system analysed.

The rio Paraíba do Sul, belonging to the Brazilian Eastern Basin, extends from the slopes of the Mantiqueira Mountain Range, in the State of São Paulo, to its mouth on the north of the State of Rio de Janeiro, after running for about 1'000 km.

This paper presents a taxonomical revision of the nominal species of the genus *Hypostomus* from the lower rio Paraíba do Sul. The study area (Fig. 1) comprises the rio Paraíba do Sul and its main tributaries, in the Municipalities of Três Rios, Além Paraíba, Cataguases, Itaocara, Nova Friburgo, Itaperuna and Campos, between 21°00' and 22°15' S, and 41°10' and 43°05' W, in the States of Rio de Janeiro and Minas Gerais, Southeastern Brazil.

MATERIAL AND METHODS

Type-specimens examined are housed in the fish collections of the Natural History Museum, London (BMNH), the Muséum national d'Histoire naturelle, Paris (MNHN) and the Naturhistorisches Museum, Wien (NMW). Voucher-specimens are in

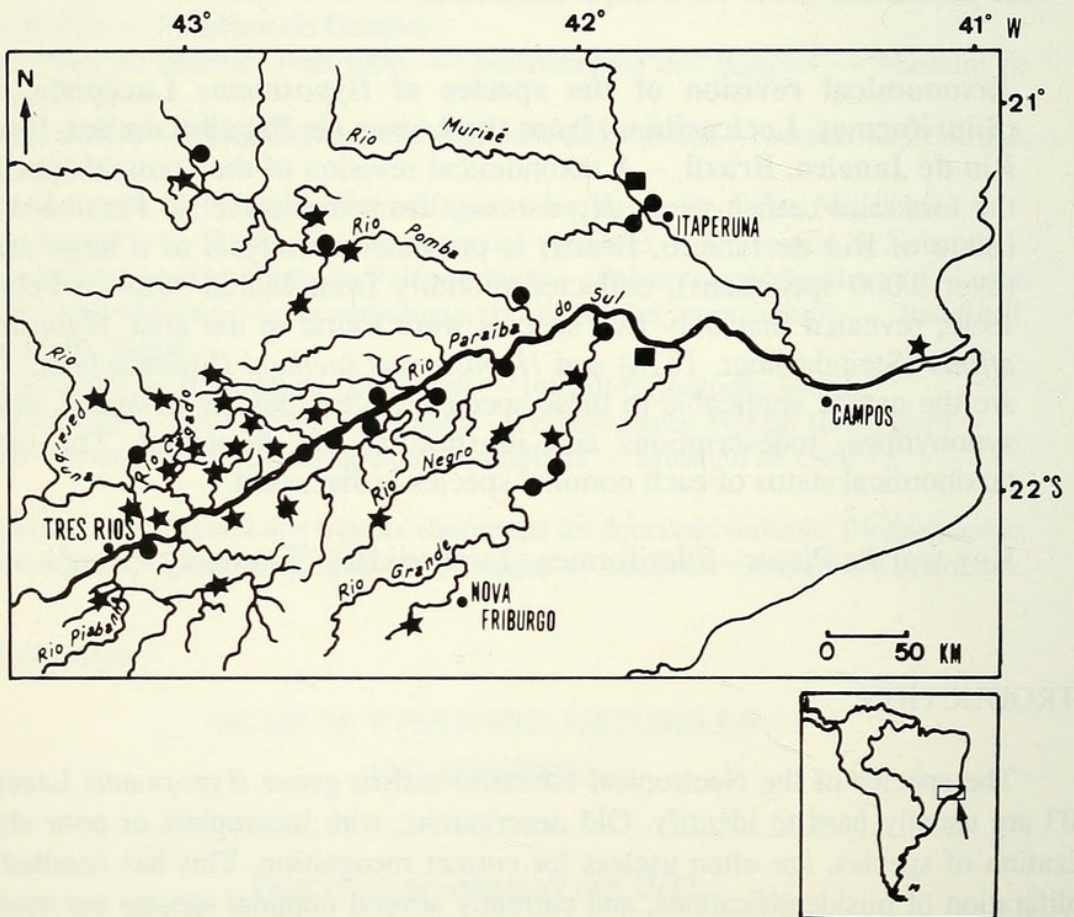


FIG. 1

Lower rio Paraíba do Sul, showing the localities reported for *Hypostomus affinis* (stars). *H.luetkeni* (squares), and the places where they are syntopic (dots); some marks represent more than one locality.

the Museu Nacional, Rio de Janeiro (MNRJ), and Museu de Zoologia, Universidade de São Paulo (MZUSP). In addition, over 2'000 specimens collected monthly from March 1989 to February 1990, during an analysis of the distributional and reproductive traits of the fish fauna of the study area, are deposited in the Departamento de Ecologia, Universidade Federal do Rio de Janeiro, Brazil (UFRJ), and were referred by CARAMASCHI (1991).

Measurements and terminology in Tables 2 and 3 follow WEBER (1985). Morphometric and meristic data were treated by routine statistical methods and processed with the the microcomputer program DATAX (REIS *et al.*, 1990; REIS & FONTOURA, 1991). Abbreviations are: L1 and L2, lower and upper confidence limits (CL); SD, standard deviation; SL, standard length.

RESULTS

Seven nominal species have been objectively recorded for the lower rio Paraíba do Sul system, a number that can be increased to twelve if more general regional citations were considered. The study of specimens, however, demonstrated that only two valid species are present. The analysis of the available names revealed that *Hypostomus affinis* (Steindachner, 1876) and *Hypostomus luetkeni* (1877) are the applicable ones to these species, as quoted below.

***Hypostomus affinis* (Steindachner)**

(Figs. 1 and 2; Tab. 1 and 2)

Plecostomus affinis Steindachner, 1876.

SPECIMENS EXAMINED:

L e c t o t y p e (by present designation): NMW 44041:1 (7190) (287.0 mm SL; alcohol preserved), collected at Campos (21°50' S, 41°20' W), rio Paraíba do Sul, State of Rio de Janeiro, Brazil, 1865 (registred in January 1874), by F. Hartt and E. Copeland (Thayer Expedition¹).

P a r a l e c t o t y p e s: NMW 44041: 2, 3, 4, 5, 6, 7 (225.0, 133.0, 109.8, 87.0, 110.3, 96.5 mm SL), same data as lectotype; NMW 55014: 1, 2 (142.3, 186.0 mm SL) collected in rio Muriaé, States of Rio de Janeiro, Brazil by F. Hartt and E. Copeland (Thayer Expedition); NMW 44044:1, 2, 3 (199.3, 193.7, 176.2 mm SL), collected at Santa Clara, rio Mucuri, State of Bahia, Brazil, no date (registred in January 1874), by A. Wertheimer ; NMW 44326: 1, 2, 3 (180.9, 149.5, 108.5 mm SL), collected at the same locality, 1865 (registred in January 1874), by F. Hartt and E. Copeland (Thayer Expedition); NMW 44040 (287.0 mm SL), collected at Santo Antônio dos Ferros, State of Minas Gerais, Brazil, 1865, by F. Hartt and E. Copeland (Thayer Expedition).

D e s c r i p t i o n: SL of examined specimens 78.0 to 397.0 mm; other meristic and morphometric data are presented in Table 2.

Head completely covered with small, juxtaposed dermal ossifications, except for a little naked area on tip of snout. Dorsal margin of orbit slightly elevated, continuing in

¹ Additional datas of Thayer Expedition from Dick (1977). Labels of NMW of Thayer's and Wertheimer's specimens bear January 1874, date of registration.

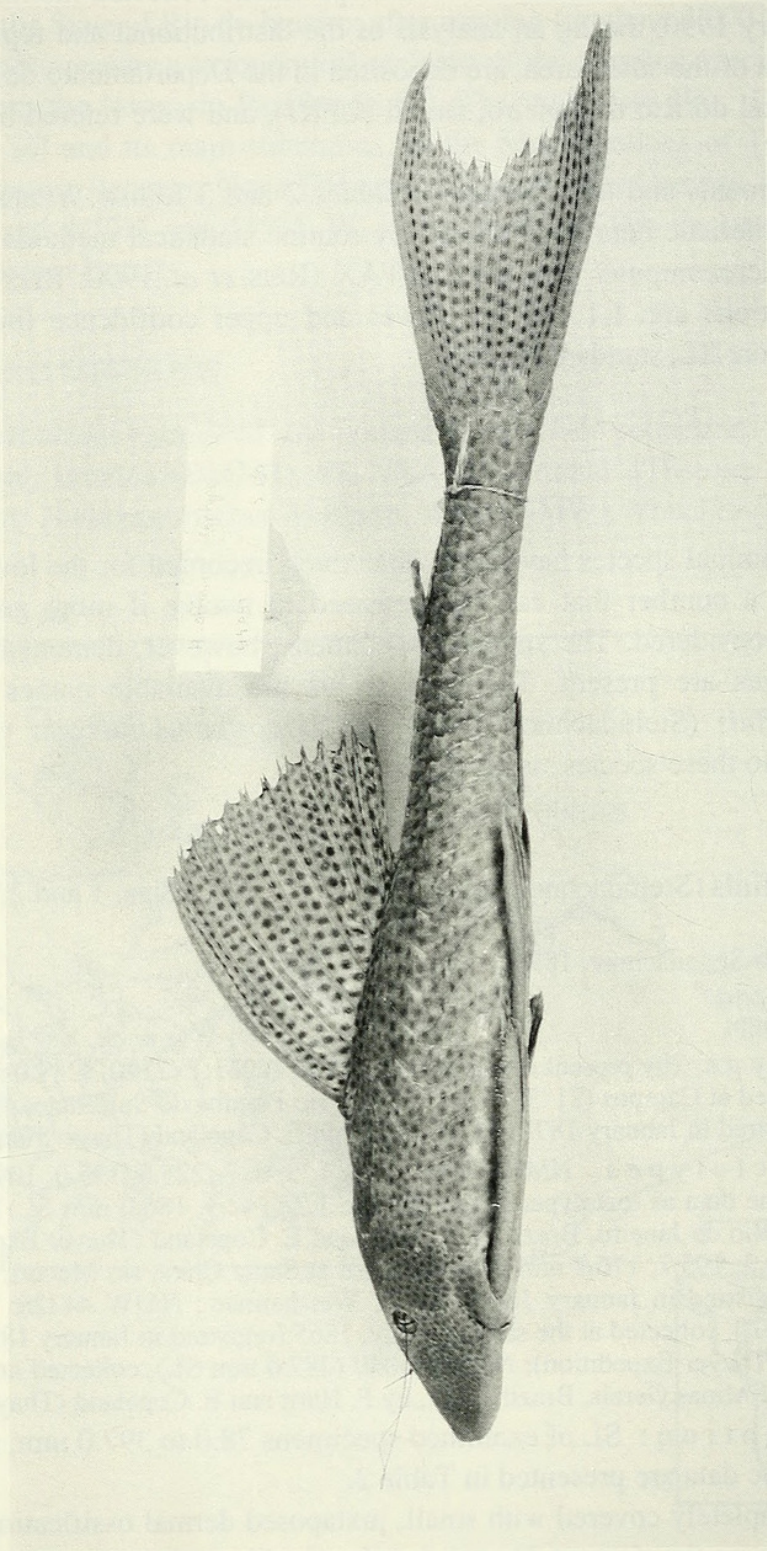


Fig. 2

Hypostomus affinis Steindachner, 1876. Lectotype, NMW 44041:1 (287.0 mm SL). (Photo: C. Weber)

a low ridge on post-temporal region. Interorbital space slightly convex. A low ridge on supraoccipital region, diverging in two separate ridges on predorsal plates. Posterior margin of supraoccipital bone bordered by one scute, sometimes subdivided in two or three portions. Body deep; dorsal profile raising abruptly from the tip of snout to the origin of dorsal fin, and gently descending from this point to the end of caudal peduncle.

Body covered by four rows of keeled scutes, forming four lateral ridges along flanks, progressively less conspicuous from anterior to posterior part of body, and disappearing on caudal peduncle region. Caudal peduncle ovate in cross-section; slightly flattened ventrally. Dorsal scutes between the end of dorsal fin base and adipose fin spine flattened in their dorsal portions.

Outer face of upper lip covered with small scutelets. Maxillary barbels normal. Teeth with short crown and small lateral cuspid, moderately numerous. Inner surface of lower lip covered with few, large papillae.

Pectoral fin with strong spine covered dorsally with odontodes anteriorly curved, specially in larger specimens. Abdomen and lower surface of head covered with minute scutelets, except in small specimens. Adipose fin with a strong spine, slightly curved. Margin of caudal fin concave; outer rays strong, medium-sized.

C o l o u r : In alcohol, colour pattern is given by many dark spots of variable diameter on a light-brown background; head covered by many small spots which increase in size as they grow away from the tip of the snout; all fins heavily spotted with two, sometimes one, row of black spots in inter-radial membranes. In life, specimens are commonly just like alcohol preserved ones, but also with a pattern of dark and clear transversal bands.

Hypostomus affinis belongs to the *plecostomus* group, as defined in MULLER & WEBER (1992) (see Table 2, mandibular ramus in head length, shape and count of teeth).

D i s t r i b u t i o n : Rio Paraíba do Sul basin (CARAMASCHI, 1991). For more detailed localities, see Appendix 1.

E c o l o g y : *Hypostomus affinis* was found in large and small waters, in lentic or rapids sections of the river, on rocky or sandy-rocky bottoms. Young specimens (to 50 mm SL) inhabit the riparian vegetation along those habitats.

C o m m e n t s : *Hypostomus affinis* was described by Steindachner (1876) based on a heterogeneous series of syntypes obtained from rio Mucuri, in the Municipality of Santa Clara, and from rio Mucuri without specific site, both localities in the State of Bahia, Brazil; from rio Santo Antônio at Santo Antônio dos Ferros, rio Doce basin in the State of Minas Gerais, Brazil; from rio Paraíba do Sul, in the Municipality of Campos, and from rio Muriaé, both localities in the State of Rio de Janeiro, Brazil.

By the present designation of the lectotype for this species, the type-locality is consequently restricted to Campos, in the rio Paraíba do Sul basin. The paralectotypes, coming from localities belonging to three distinct river basins, comprise a heterogeneous series.

Hypostomus luetkeni (Steindachner)

Figs. 1 and 3. Tab. 1 and 3)

Plecostomus lima Steindachner, 1876 (non *Plecostomus lima* Reinhardt in Lükten, 1874).*Plecostomus lütkeni* Steindachner, 1877.*Plecostomus vermicularis* Eigenmann & Eigenmann, 1888 (part).

SPECIMENS EXAMINED:

L e c t o t y p e (by present designation): NMW 44196:1 (906) (156.0 mm SL; alcohol preserved), collected in rio Paraíba do Sul and tributaries, State of Rio de Janeiro, Brazil, 1865, by F. Hartt and E. Copeland (Thayer Expedition).

P a r a l e c t o t y p e s: NMW 44196: 2, 3, 4, 5, 6, 7 (146.0, 144.0, 120.0, 111.0, 105.0, 83.0 mm SL), same data as lectotype; NMW 45014, same locality, no date, no collector; BMNH 89.11.14.50, MNHN 89-288 (259.5, 224 mm SL), collected at Santa Clara, rio Mucuri, State of Bahia, Brazil, 1865, by F. Hartt and E. Copeland (Thayer Expedition), from Mus. Comp. Zool. (registred in 1889¹); NMW 44190 (295.7 mm SL), same locality, Brazil, no date, no collector; NMW 44199:1, 2, 3, 4, (257.0, 227.0, 185.0, 184.0 mm SL), same locality, no date, by A. Wertheimer.

D e s c r i p t i o n: SL of examined specimens 82.0 to 286.0 mm; other meristic and morphometric data presented in Table 3.

Head completely covered with small, juxtaposed dermal ossifications, excluding a small naked area on tip of snout. Dorsal margin of orbit only slightly elevated, continuing in a low ridge on post-temporal region. Interorbital space flat. Supraoccipital and predorsal regions slightly convex, without ridges. Supraoccipital bone bordered by one scute subdivided in three portions. Body deep; dorsal profile raising from tip of snout to the origin of dorsal fin, and descending from this point to the end of caudal peduncle. Body covered with four rows of not keeled scutes. Caudal peduncle round in cross-section. Dorsal scutes between end of dorsal fin base and adipose fin spine flattened in their dorsal portions.

Outer face of upper lips covered with small scutelets. Maxillary barbels normal. Teeth with elongated crown and small lateral cuspid, numerous. Inner surface of lower lip covered with many little papillae.

Pectoral fin with strong spines covered dorsally with odontodes anteriorly curved, specially in larger specimens. Abdomen and lower surface of head covered with minutes scutelets, except in small specimens. Adipose fin with a strong spine, slightly curved. Margin of caudal fin concave; outer rays strong, medium-sized.

C o l o u r: In alcohol, colour given by a plain brownish pattern; sometimes with one large light brown spot on each dorsal scute; head covered by many small brown spots which coalesce into vermiculations. All fins usually plain brownish, sometimes with some light brown spots. In life, the specimens are just like alcohol preserved ones, varying only in the intensity of colour pattern described above.

¹ In 1870, Steindachner was invited by Agassiz in Cambridge (U.S.A.) to examine all fresh-water fishes of Thayer Expedition (Kähsbauer, 1959). Both specimens of BMNH and MNHN are to be regarded as typical specimens. Steindachner noted in the original description: "Museum zu Cambridge erhielt viele Exemplare durch die Herren Hartt und Copeland".

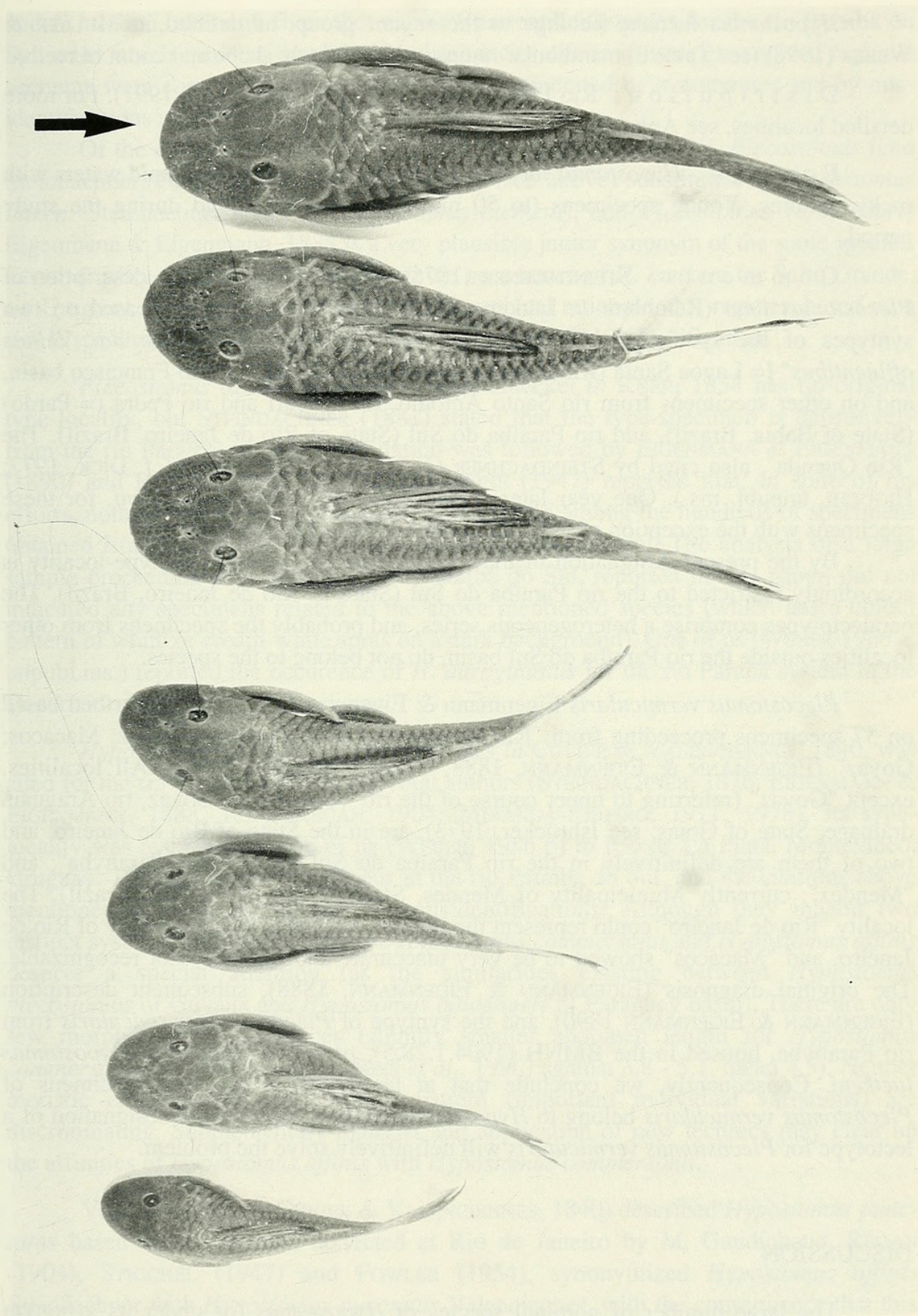


FIG 3

Hypostomus luetkeni Steindachner, 1877. Lectotype (arrow), NMW 44196: 1 (906) (156.0 mm SL). Paralectotypes, NMW 44196: 2 (146.0 mm SL), 3 (144.0 mm SL), 4 (120.0 mm SL), 5 (111.0 mm SL), 6 (105.0 mm SL), and 7 (83.0 mm SL). Photo: C. Weber.

Hypostomus luetkeni belongs to the *regani* group, as defined in MULLER & WEBER (1992) (see Table 3, mandibular ramus in head length, shape and count of teeth).

D i s t r i b u t i o n : Rio Paraíba do Sul basin (CARAMASCHI, 1991). For more detailed localities, see Appendix 1.

E c o l o g y : *Hypostomus luetkeni* is found mainly in big and rapid waters with rocky bottoms. Young specimens (to 50 mm SL) were not found during the study period.

C o m m e n t s : STEINDACHNER (1876) gave a complementary description of *Plecostomus lima* (Reinhardt in Lütken, 1874). This description was based on two syntypes of the species (NMW 44194-5) from "*rivulis flumini Rio das Velhas affluentibus*" [= Lagoa Santa (Ribeirão do Mato) on the label], rio São Francisco basin, and on other specimens from rio Santo Antônio, rio Mucuri and rio Pedra (= Pardo) (State of Bahia, Brazil), and rio Paraíba do Sul (State of Rio de Janeiro, Brazil). The "Rio Quenda", also cited by STEINDACHNER (1876) was not localized (cf. DICK, 1977; HIGUCHI, unpubl. ms.). One year later, he described *Plecostomus luetkeni*, for these specimens with the exception of those from the São Francisco basin.

By the present designation of the lectotype for the species, the type-locality is accordingly restricted to the rio Paraíba do Sul (State of Rio de Janeiro, Brazil). The paralectotypes comprise a heterogeneous series, and probably the specimens from other localities outside the rio Paraíba do Sul basin, do not belong to the species.

Plecostomus vermicularis Eigenmann & Eigenmann, 1888 was described based on 37 specimens proceeding from "Rio Parahyba; Rio de Janeiro; Mendez; Macacos; Goyaz" (EIGENMANN & EIGENMANN, 1888, 1890; ISBRÜCKER, 1980). All localities, except "Goyaz" (referring to upper course of the rio Vermelho at Goyaz, rio Araguaia drainage, State of Goiás; see Isbrücker, 1973), are in the State of Rio de Janeiro, and two of them are definitively in the rio Paraíba do Sul basin ("Rio Parahyba", and "Mendez", currently Municipality of Mendes, State of Rio de Janeiro, Brazil). The locality "Rio de Janeiro" could represent the homonyms State or Municipality of Rio de Janeiro, and "Macacos" showed to be very inaccurate and currently not recognizable. The original diagnosis (EIGENMANN & EIGENMANN, 1888), subsequent description (EIGENMANN & EIGENMANN 1890), and the syntype of *Plecostomus vermicularis* from rio Parahyba, housed in the BMNH (1904.1.28.5), perfectly agree with *Hypostomus luetkeni*. Consequently, we conclude that at least part of the type-specimens of *Plecostomus vermicularis* belong to *Hypostomus luetkeni*. The formal designation of a lectotype for *Plecostomus vermicularis* will definitively solve the problem.

DISCUSSION

The large number of nominal species of *Hypostomus* (or under its synonym *Plecostomus*) cited for the rio Paraíba do Sul in literature deserves some comments. Only two species were objectively identified in the large sample examined. *H. affinis*

and *H. luetkeni*, although five other names were explicitly given for the rio Paraíba do Sul, a list which could be amplified to nine species names if more generalized regional accounts were considered. These citations were generated by synonymies and by misidentifications repeated in subsequent works.

Of the extant five nominal species of the rio Paraíba do Sul, *Plecostomus lima* Steindachner, 1876 (*non* Lütken) was in part (see above) substituted by *Plecostomus lütkeni* Steindachner, 1877 (= *Hypostomus luetkeni*), and *Plecostomus vermicularis* Eigenmann & Eigenmann, 1888 is a very plausible junior synonym of the same species. LOPEZ & MIQUELARENA (1991) reported the occurrence of *H. luetkeni* for Salto Grande, rio Uruguay, Argentina; according to a geographical rationale, this register, based on a single specimen, probably is erroneous, and caused by a misidentification.

Plecostomus auroguttatus Natterer & Haeckel in KNER, 1854 has no original type-locality, but STEINDACHNER (1881) stated that the type-specimen is definitively from the rio Paraíba do Sul. This citation was followed by EIGENMANN & EIGENMANN (1890) and REGAN (1904). However, GOSLINE (1947) reported that, in spite of his efforts, nothing similar to *P. auroguttatus* was found among the hundreds of specimens obtained from several points in the upper rio Paraíba do Sul. The analysis of a large sample proceeding from the lower rio Paraíba do Sul, reported in this paper, did not indicated any specimens related to the above mentioned species (which has a colour pattern of white or cream-white spots on a dark background). One of us (WEBER 1986 a, unpubl.ms.) reported the occurrence of *H. auroguttatus* for the rio Paraná system in the Departamento Alto-Paraná, Paraguay.

Hypostomus commersonii Valenciennes in CUVIER & VALENCIENNES, 1840, was cited for the rio Paraíba do Sul by several authors (STEINDACHNER, 1876; EIGENMANN & EIGENMANN, 1888, 1890; REGAN, 1904; MIRANDA-RIBEIRO, 1911, 1918). Its type-locality was restricted by one of us (WEBER, 1986 b) to Rio de La Plata, Montevideo, Uruguay. The species does not occur in the rio Paraíba do Sul, and the citations above mentioned probably were based on misidentifications. Although they inhabit two distinct systems, similarities between *Hypostomus commersonii* and *Hypostomus affinis* deserve a special attention (as the similarities existing between *Hypostomus plecostomus* of Guyana and *Hypostomus boulengeri* of Paraguay basin). There are only few morphological differences (slightly smaller abdomen length for *Hypostomus commersonii* - 4.7-5.7 mean 5.2 (REIS *et al.*, 1990) against 3.8 - 5.1, mean 4.5). Neither meristic characters nor the colour pattern (important individual variations) are discriminating. Supplementary material and application of new technics may clear up the affinities of *Hypostomus affinis* with *Hypostomus commersonii*.

VALENCIENNES (in CUVIER & VALENCIENNES, 1840) described *Hypostomus punctatus* based on a specimen collected at Rio de Janeiro by M. Gaudichaud. REGAN (1904), STIGCHEL (1947) and FOWLER (1954), synonymized *Hypostomus affinis* Steindachner with *Hypostomus punctatus* Valenciennes, with the consequence that this last species was cited for the rio Paraíba do Sul. According to PAPAVERO (1971), Gaudichaud collected only in the vicinity of the city of Rio de Janeiro, and so that it is

very improbable that the specimen referred by Valenciennes comes from the rio Paraíba do Sul. Consequently, *Hypostomus punctatus* Valenciennes is an available name which refers to one species occurring in the coastal rivers of the State of Rio de Janeiro. Unfortunately the type was not found in MNHN at Paris and the original description is so poor that it is of no use. *Hypostomus rachovii* (Regan, 1913) was also described from near Rio de Janeiro, and may prove to be a junior synonym of *H. punctatus*.

Hypostomus subcarinatus Castelnau, 1855 was described from "des rivières de la province des Mines" (currently, rivers of the State of Minas Gerais), a type-locality very inaccurate considering the extension of the area explored by Castelnau, which involves sections of several river basins, including part of the rio Paraíba do Sul system. The species, however, have not been cited for this basin, and was treated as synonym of *H. commersonii* by EIGENMANN & EIGENMANN (1888, 1890), and of *H. punctatus* by REGAN (1904), FOWLER (1943), and GOSLINE (1945).

Three other nominal species, *Plecostomus wuchereri* Günther, 1864, *Plecostomus johnii* Steindachner, 1876, and *Plecostomus vaillanti* Steindachner, 1877, have been referred to Rio de Janeiro. The first one, described from "Bahia, Brazil", was erroneously considered a senior synonym of *Plecostomus vermicularis* Eigenmann & Eigenmann by REGAN (1904) and FOWLER (1954), and of *Plecostomus luetkeni* by MIRANDA-RIBEIRO (1918). However, *Hypostomus wuchereri*, of the *regani* group, is a name applicable to a species occurring in Northeastern Brazil, and was not currently recorded to the State of Rio de Janeiro.

Plecostomus johnii was described on the basis of specimens collected at the rio Poti (= rio Puty) and rio Preto by the Thayer Expedition. The rio Poti is a tributary of the rio Parnaíba, in the State of Piauí, and the rio Preto belongs to the rio São Francisco system. The citation of *P. johnii* for Rio de Janeiro, in Southeastern Brazil was caused by the erroneous synonymization of the species with *Plecostomus auroguttatus*, proposed by EIGENMANN (1910) and followed by FOWLER (1954).

Finally, *Plecostomus vaillanti* (type-locality, rio Preto, in the rio Parnaíba drainage) was recorded from Rio de Janeiro by FOWLER (1954); this citation was probably due to the reference of EIGENMANN & EIGENMANN (1889, 1890) to the occurrence of the species in "Rio Puty; Rio Preto; San Gonçallo". The rio Poti and rio Preto, as seen above, respectively belong to the rio Parnaíba and rio São Francisco systems, and São Gonçalo is situated next to the rio Poti. Fowler probably confused that last reference, with another locality also named São Gonçalo, that one in the State of Rio de Janeiro. *Plecostomus vaillanti* is a name applicable to a species occurring in the rio Parnaíba drainage, and possibly also in the rio São Francisco system, but not to the rivers in the State of Rio de Janeiro.

IDENTIFICATION

The two recognized species from the rio Paraíba do Sul Basin are distinguished easily one from the other by the data given in table 1. Nevertheless, it can be asserted

that these characters define more the respective group (*plecostomus* and *regani* group, in study by the third author) than the species and it seems somewhat prematured to open the discussion on characters and relationships between the species of each group, far from to be clearly established.

OTHER SPECIMENS EXAMINED:

Plecostomus group:

Holotype of *P. rachovii* Regan, 1913, BMNH 1913.10.30.15 (100.5 mm SL, alcohol preserved), collected near Rio de Janeiro by A. Rachow.

Regani group:

Syntypes of *P. johni* Steindachner, 1876, NMW 44191:1,2, NMW 44193:1,2 (118.9, 105.6, 102.1, 95.0 mm SL, alcohol preserved), collected in rio Preto, 1865 (registred Jan. 1874), by F. Hartt & E. Copeland (Thayer Exped.); 44192:1,2 (103.6, 88.4 mm SL, alcohol preserved), collected in rio Puty, no date (registred Jan. 1874), by O. St John (Thayer Exped.).

Syntype of *P. lima* Reinhardt, 1874, NMW 44195 (93.8 mm SL, alcohol preserved), collected near Lagoa Santa in Riberão do Mato (under stones), no date (registred Jan. 1874), collected by J. Reinhardt.

Syntypes of *P. vermicularis* Eigenmann & Eigenmann, 1888, NMW 44279 (190.0 mm SL, alcohol preserved) collected at "Goyaz", no date, by Honório. (Thayer Exped., received from Museum of Cambridge in 1889); BMNH 1904.1.28.5 (84.1 mm SL, alcohol preserved), collected in rio Parahyba, 1865, by F. Hartt & E. Copeland (Thayer Exped.)

Syntype of *P. wuchereri* Günther, 1864, BMNH 186.3.27.15. (198.9 mm SL, alcohol preserved), collected at "Bahia", by O. Wucherer.

Syntypes of *P. vaillanti* Steindachner, 1877, NMW 44273, 43276:1,2,3. (134.0, 112.2, 97.0, 71.8 mm SL, alcohol preserved), collected in rio Preto, no date (registred Jan. 1874), no collector.

TABLE I

Main comparing datas for *H. affinis* and *H. luetkeni*, with means in brackets.

Characters	<i>H. affinis</i>	<i>H. luetkeni</i>
Number of scales in length	28-31	26-29
Number of post-supraoccipital plates (main)	1	2-3
Four lateral ridges on flanks	yes	no
Number of teeth (right premaxilla)	smaller (30.5)	larger (54.2)
Mandibular ramus (in head length)	smaller (7.6)	larger (5.1)
Eye (in head length)	smaller (7.0)	larger (6.2)
Caudal peduncle (depth in SL)	lower (11.4)	deeper (9.6)

TABLE II

Morphometric and meristic data of *Hypostomus affinis* of the Lower Paraíba do Sul River.

Character	Range					95% CL\$		
	lectotype	n	low	high	mean	L1	L2	SD
Standard Length (mm)	285.0	37	87.0	285.0	179.2			42.992
Ratios of Std. length								
Predorsal distance	2.9	37	2.4	2.9	2.7	2.672	2.774	
Head length	3.8	37	3.1	3.8	3.4	3.390	3.495	
Cleithral width	4.4	37	3.1	4.4	3.9	3.788	3.942	
Length of dorsal fin spine	3.6	36	2.9	3.7	3.1	3.066	3.222	
Length of dorsal fin base	4.2	37	3.4	4.4	3.8	3.763	3.924	
Dorsal base to adipose spine	4.6	37	4.3	5.6	5.0	4.871	5.079	
Trunk length	4.3	37	3.5	4.9	4.1	3.999	4.174	
Pectoral fin spine length	4.0	37	3.0	4.0	3.6	3.515	3.667	
Abdominal length	4.6	37	3.8	5.1	4.5	4.437	4.645	
Pelvic fin spine length	4.5	37	3.6	4.6	4.1	4.062	4.228	
Caudal peduncle length	4.0	37	2.8	4.0	3.0	2.961	3.093	
Caudal peduncle depth	12.8	37	10.1	12.8	11.4	11.234	11.655	
Adipose fin spine length	14.9	37	11.9	17.6	13.8	13.369	14.215	
Upper caudal ray length	3.0	31	2.8	3.8	3.2	3.079	3.260	
Lower caudal ray length	2.8	30	2.6	3.6	3.1	2.972	3.154	
Ratios of head length								
Head depth	1.7	37	1.5	1.9	1.7	1.679	1.757	
Snout length	1.8	37	1.5	1.8	1.7	1.655	1.692	
Horizontal eye diameter	8.1	37	5.3	8.1	7.0	6.831	7.229	
Least interorbital width	2.7	37	2.3	2.9	2.5	2.501	2.580	
Right mandibular ramus	7.9	36	5.3	10.2	7.6	7.272	7.962	
Counts								
Series of lateral scutes	31	37	28	31	28.8			0.750
Predorsal scutes	3	35	3	4	3.5			0.169
Scutes at dorsal fin base	7	34	7	10	8.4			0.743
Teeth on left premaxilla	43	37	21	43	31.2			5.773
Teeth on right premaxilla	43	37	21	43	30.5			5.268
Teeth on left dentary	39	37	23	44	32.5			5.419
Teeth on right dentary	41	37	23	44	33.4			5.683
Plates bordering supraoccipital	1	37	1	1	1.0			0

TABLE III

Morphometric and meristic data of *Hypostomus luetkeni* of the Lower Paraíba do Sul River.

Character	Range					95% CLS		
	lectotype	n	low	high	mean	L1	L2	SD
Standard Length (mm)	156.0	24	83.0	229.0	172.0			39.387
Ratios of Std. length								
Predorsal distance	2.6	24	2.5	3.0	2.7	2.691	2.797	
Head length	3.2	24	2.9	3.6	3.4	3.319	3.497	
Cleithral width	3.6	24	3.3	4.0	3.6	3.562	3.706	
Length of dorsal fin spine	3.2	24	2.9	3.7	3.2	3.092	3.283	
Length of dorsal fin base	4.2	24	3.5	4.3	3.8	3.727	3.908	
Dorsal base to adipose spine	6.2	24	5.1	6.5	5.8	5.667	5.989	
Trunk length	4.7	24	3.8	5.3	4.5	4.302	4.607	
Pectoral fin spine length	3.5	24	3.1	3.8	3.4	3.333	3.497	
Abdominal length	3.9	24	3.9	4.6	4.2	4.126	4.266	
Pelvic fin spine length	4.0	24	3.7	4.5	4.0	3.908	4.108	
Caudal peduncle length	3.1	24	2.8	3.1	2.9	2.894	2.969	
Caudal peduncle depth	10.1	24	5.6	10.6	9.6	9.247	10.034	
Adipose fin spine length	11.0	24	7.6	12.6	11.0	10.595	11.463	
Upper caudal ray length	3.5	19	3.2	3.8	3.5	3.378	3.538	
Lower caudal ray length	2.9	19	2.9	3.5	3.2	3.035	3.269	
Ratios of head length								
Head depth	2.0	24	1.6	2.2	1.9	1.798	1.919	
Snout length	1.6	24	1.5	1.9	1.6	1.569	1.664	
Horizontal eye diameter	5.6	24	5.0	7.3	6.2	5.948	6.490	
Least interorbital width	2.8	24	2.6	3.1	2.8	2.752	2.874	
Right mandibular ramus	4.3	24	3.2	6.5	5.1	4.643	5.464	
Counts								
Series of lateral scutes	26	24	26	29	27.3			0.868
Predorsal scutes	3	24	3	3	3.0			0.000
Scutes at dorsal fin base	8	24	8	10	8.5			0.588
Teeth on left premaxilla	56	24	30	69	52.8			11.305
Teeth on right premaxilla	58	24	38	69	54.2			9.632
Teeth on left dentary	49	24	42	68	55.5			9.031
Teeth on right dentary	51	24	38	68	54.5			9.996
Plates bordering supraoccipital	3	24	2	3	2.6			0.504

APPENDIX 1

Rivers, localities and coordinates reported for *Hypostomus affinis* and *Hypostomusluetkeni* from Lower Paraíba do Sul River, (adapted from CARAMASCHI, 1991).

RIVER	LOCALITY	COORDINATES	H. AFFINIS	H. LUETKENI
Preto	Faz. Sta. Genoveva	22°07'S; 43°29'W	X	
Cágado	Chiador	22°01'S; 43°09'W	X	X
	Ericeira	22°00'S; 43°09'W	X	
	Caguinho	21°59'S; 43°10'W	X	
	Mar de Espanha	21°51'S; 43°02'W	X	
Paraibuna	Três Rios	22°06'S; 43°11'W	X	X
Paraíba do Sul	Pontal	22°07'S; 43°09'W	X	X
Piabanha	Paraíba do Sul	22°13'S; 43°10'W	X	
Calçado	Três Rios	22°06'S; 43°04'W	X	
	Bemposta	22°07'S; 43°10'W	X	
Macuco	Chiador	22°02'S; 43°01'W	X	
	Chiador	22°01'S; 43°01'W	X	
	Mar de Espanha	21°58'S; 43°01'W	X	
Paraíba do Sul	Areia	22°00'S; 43°55'W	X	
	Areia	22°01'S; 43°00'W	X	
	Areia	21°56'S; 42°57'W	X	
	Cachoeirinha	21°55'S; 42°56'W	X	
	Areia	21°55'S; 42°58'W	X	
	Lagoa Marginal	21°57'S; 42°53'W	X	
	Sapucaia	21°56'S; 42°52'W	X	X
	Ribeirão do Peixe	21°54'S; 42°58'W	X	
	Além Paraíba	21°54'S; 42°43'W	X	X
Paquequer	Carmo	21°53'S; 42°38'W	X	X
	Glória	21°55'S; 42°35'W	X	
	Glória	21°54'S; 42°33'W	X	
	Sumidouro	22°05'S; 42°45'W	X	
São Francisco	Sapucaia	22°02'S; 42°47'W	X	
Aventureiro	Marinópolis	21°46'S; 42°45'W	X	
	Cachoeira	21°46'S; 42°46'W	X	
São Geraldo	Boa Vista	21°48'S; 42°38'W	X	
Paraíba do Sul	Monte Alegre	21°52'S; 42°34'W	X	
	Volta Grande	21°51'S; 42°36'W	X	X
	Porto Velho do Cunha	21°50'S; 42°34'W		X
Angú	Senador Cortes	21°44'S; 42°54'W	X	
Paraíba do Sul	Coronel Teixeira	21°42'S; 42°07'W	X	X
Pomba	Baltazar	21°31'S; 42°08'W	X	X
	Cataguases	21°25'S; 42°39'W	X	
	Cataguases	21°31'S; 42°44'W	X	X
	Meia Pataca	21°21'S; 42°40'W	X	
Pardo	Cataguases	21°29'S; 42°46'W	X	
Novo	Calaguases	21°24'S; 42°46'W	X	X
Pomba	Astolfo Dutra	21°18'S; 42°50'W	X	
Paraopeba	Pirapetinga	21°17'S; 42°58'W	X	
	Astolfo Dutra	21°17'S; 42°56'W	X	X
Dois Rios	Pogo Dantas	21°38'S; 41°51'W	X	X
Negro	Itaocara	21°45'S; 41°57'W	X	
	Itaocara	21°49'S; 42°07'W	X	
	Duas Barras	22°00'S; 42°27'W	X	
Grande	São Sebastião do Alto	21°52'S; 42°02'W	X	
	São Sebastião do Alto	21°56'S; 42°07'W	X	X
	São Sebastião do Alto	22°00'S; 42°07'W	X	X
	São José	22°12'S; 42°24'W	X	
Paraíba do Sul	São Fidélis	21°40'S; 41°45'W	X	X
Muriaé	Itaperuna	21°15'S; 41°45'W	X	X
São Domingos	Itaperuna	21°16'S; 41°47'W	X	
	Itaperuna	21°16'S; 41°48'W		X
Glória	Muriaé	21°08'S; 42°20'W	X	
Paraíba do Sul	Cataia	21°41'S; 41°08'W	X	

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RESUMO

É apresentada a revisão taxonômica das espécies nominais do gênero *Hypostomus* (Loricariidae) do trecho inferior do rio Paraíba do Sul, Estado do Rio de Janeiro, Brasil. A análise de grande amostra (mais de 2'000 exemplares), coletada mensalmente entre março de 1989 e fevereiro de 1990, revelou que apenas duas espécies são encontradas na área. *Hypostomus affinis* (Steindachner, 1876) e *Hypostomus luetkeni* (Steindachner, 1877) são os nomes aplicáveis a essas espécies. Lectótipos são designados e são apresentadas as sinonimias, redescrições e ilustrações. A atual posição taxonômica de todas as espécies nominais é discutida.

REFERENCES

- CARAMASCHI, E.P. (coord.), 1991. Levantamento da ictiofauna do rio Paraíba do Sul e ciclo reprodutivo das principais espécies. Vol. 1.- Levantamento e distribuição da ictiofauna. *Relatório Final do Convênio ENGEVIX/FUJB/UFRJ*. 273 pp.
- CUVIER, G. & A. VALENCIENNES, 1840. Histoire naturelle des Poissons. *Ch. Pitois, Paris* 15: i-xxxii, 1-540.
- DICK, M.M. 1977. Stations of the Thayer Expedition to Brazil 1865-1866. *Breviora*, 444: 1-37.
- EIGENMANN, C.H. 1910. Catalogue of the fresh-water fishes of tropical and south temperate America, *Rep. Princeton Univ. Exped. Patagonia*, 3 (2): 375-511.
- EIGENMANN, C.H. & R.S. EIGENMANN, 1888. Preliminary notes on South American Nematognathi. *Proc. Calif. Acad. Sci.*, 1 (2): 119-172.
- EIGENMANN, C.H. & R.S. EIGENMANN, 1890. A revision of the South American Nematognathi or catfishes. *Occ. Pap. Calif. Acad. Sci.*, 1: 1-508.
- FOWLER, H.W. 1954. Os peixes de água doce do Brasil (4ª entrega). *Archos. Zool. Est. S. Paulo*, 9: 1-400.
- GOSLINE, W.A. 1947. Contributions to the classification of the loricariid catfishes. *Arq. Mus. Nac. Rio de Janeiro*, 41: 79-134.
- HIGUCHI, H. An updated list of ichthyological collecting stations of the Thayer Expedition to Brazil (1865-1866). 23 pp. Unpubl. ms.
- ISBRÜCKER, I.J.H. 1973. Status of the primary homonymous South American catfish *Loricaria cirrhosa* Perugia, 1897, with remarks on some other Loricariids (Pisces, Siluriformes, Loricariidae).- *Annali Mus. civ. Stor. nat. Giacomo Doria*, 79: 172-191.

- ISBRÜCKER, I.J.H. 1980. Classification and catalogue of the mailed Loricariidae (Pisces, Siluriformes). *Versl. Techn. Geg., Inst. Taxon. Zool. (Zool. Mus.), Univ. Amsterdam*. 22: 1-181.
- KÄSHBAUER, P. 1959. Intendant Dr. Franz Steindachner, sein Leben und Werk. *Ann. naturhist. Mus. Wien*, 63: 1-30.
- KNER, R. 1854. Die Hypostominien. Zweite hauptgruppe der familie der panzerfische (Loricata vel Goniodontes). *Denks. Akad. Wiss. Wien. Math.-nat. Kl.* 7: 269-271.
- LOPEZ, H.L. & A.M. MIQUELARENA. 1991. Los Hypostominae (Pisces: Loricariidae) de Argentina. In: *Fauna de Agua Dulce de la Republica Argentina*, 40 (2): 1-63.
- MULLER S. & C. WEBER. 1992. Les dents des sous-familles Hypostominae et Ancistrinae (Pisces, Siluriformes, Loricariidae) et leur valeur taxonomique. *Revue suisse Zool.* 99 (4): 747-754.
- MIRANDA-RIBEIRO, A. DE, 1991. Fauna brasiliense. Peixes IV. Eleutherobranchios Aspirophoros (A). *Physostomos Scleracanthos*. - *Arch. Mus. Nac. Rio de Janeiro*, 16: 1-504, pls. 1-54.
- MIRANDA-RIBEIRO, A. DE, 1918. Lista dos peixes do Museu Paulista. *Revta. Mus. paul.*, 10: 629-646.
- PAPAVERO, N. 1973. Essays on the History of Neotropical Dipterology. *Museu de Zoologia, Universidade de S. Paulo*. Vol 2. 446 pp.
- REGAN, C.T. 1904. A monograph of the fishes of the family Loricariidae. *Trans. Zool. Soc. Lond.*, 17 (1): 191-351.
- REGAN, C.T. 1913. Description of a new loricariid fish of the genus *Plecostomus* from Rio de Janeiro. *Ann. Mag. Nat. Hist. (ser.8)*, 12: 555.
- REIS, R.E., C. WEBER & L.R. MALABARBA. 1990. Review of the genus *Hypostomus* Lacépède, 1803 from Southern Brazil, with descriptions of three new species (Pisces, Siluriformes, Loricariidae). *Revue suisse Zool.*, 97: 729-766.
- REIS, R.E. & FONTOURA, N.F. 1991. DATAX: Biometric Data Management System - User Manual. Unpubl. ms.
- STEINDACHNER, F. 1876. Die Süßwasserfische es südöstlichen Brasilien - III. Sber. *Akad. Wiss. Wien. mathem.-naturwiss. Cl.*, 74: 1-136, 13 pls.
- STEINDACHNER, F. 1877. Die Süßwasserfische es südöstlichen Brasilien - IV. Sber. *Akad. Wiss. Wien. mathem.-naturwiss. Cl.*, 76 (1): 217-230, 2 pls.
- STEINDACHNER, F. 1881. Beiträge zur Kenntniss der Flussfische Südamerika's. *Denks. Akad. Wiss. Wien.* 44 (1):1-18.
- STIGCHEL, J.W.B. VAN, 1947. The south American Nematognathi of the museums at Leiden and Amsterdam. *Zoöl. Meded., Leiden*, 27: 1-204.
- WEBER, C. 1985. *Hypostomus dlouhyi*, nouvelle espèce de poisson-chat cuirassé du Paraguay (Pisces, Siluriformes, Loricariidae). *Revue suisse Zool.*, 92 (4): 955-968.
- WEBER, C. 1986 a. Les poissons-chats cuirassés de la sous-famille des Hypostominae du Paraguay. Mémoire pour obtenir le Diplôme d'Etudes Supérieures, *Université de Nancy*, 96 pp. Unpubl. ms.
- WEBER, C. 1986 b. Revision de *Hypostomus boulengeri* (Eigenmann & Kennedy) et deux espèces nouvelles de poissons-chats du Paraguay (Pisces, Siluriformes, Loricariidae). *Revue suisse Zool.*, 93 (4): 979-1007.



Mazzoni, R, Caramaschi, Ulisses, and Weber, C. 1994. "Taxonomical revision of the species of *Hypostomus* Lacépède, 1803 (Siluriformes, Loricariidae) from the Lower rio Paraiba do Sul, State of Rio de Janeiro, Brazil." *Revue suisse de zoologie* 101, 3–18. <https://doi.org/10.5962/bhl.part.79897>.

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