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## **SOME REMARKS ON THE SOUTH AMERICAN PIMELODID CAT- FISH USUALLY KNOWN BY THE NAME OF *PHRACTOCEPHALUS* *HEMILIOPTERUS* (BLOCH & SCHNEIDER) (PIMELODIDAE, SILURIFORMES)**

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With two plates

### **ABSTRACT**

The present note draws attention to the first substantiated *Phractocephalus* record from Surinam, to the customary incorrect spellings of the specific name since Cuvier, 1829 and to an unexpected ontogenetic change in the striking colour pattern of this species.

### **INTRODUCTION**

In the evening of April 11, 1971, during an expedition to northwestern Surinam with Dr. D. C. Geijskes and Mr. P. Staffeleu (both of the Leiden Museum, collecting mainly insects and non-aquatic mammals, respectively), amerindian fishermen brought us a large catfish evidently belonging to the monotypic genus *Phractocephalus*, captured in the Kabalebo River. The study of this specimen led to the following interesting observations.

### **IDENTITY AND DISTRIBUTION**

The Kabalebo River specimen of *Phractocephalus*, measuring 745 (855) mm, convincingly showed the characteristic heavy shape, with the coarsely rugose bony structure covering most of the upper head and the large pre-dorsal shield, the big and wide-mouthed head, the partly rayed adipose fin, the striking body markings consisting of a dark upper half and a light lower flank, with a dark post-pectoral blotch, and the partly or wholly (caudal fin) blood-reddish fins. Although there remained one problematical aspect in the colour markings of this specimen (discussed furtheron), there is no reason to doubt an allocation to the only species known to represent the genus, usually recorded as *Phractocephalus hemiliopterus* (Bloch & Schneider).

As a consequence of the extremely characteristic general features shown by this species, detailed descriptions are scarce and presumably considered superfluous. To partially cover this lack of information, some basic data are given in table 1, which also allows comparison with specimens from the Amazon and the Rio Negro, kindly sent on loan by the Vienna Museum.

To establish the distribution of the species as hitherto recorded, I consulted a pertinent literature as complete as possible, probably at most overlooking a few obscure South American local publications (e.g. see list in Nomura, 1973: 17-30) and possibly some aquarium journal records of varying reliability.

From this literature, half of which only provides more or less accurate locality information (see enumeration of synonyms and references in next chapter), we may get a reasonably clear picture of the total distribution of the species. Primarily it seems to be an Amazonian species, ranging in the southern part of the area from the Tocantins in the east to the Marañon in the west, and presumably occurring in all intermediary southern tributaries as well, as also in all northern Amazon tributaries. In the west, it is not recorded to pass the Andean divide, but in the Atrato (Colombia) it seems to come within 60 km from the Pacific Ocean. From the northern rivers flowing into the Caribbean Sea, the present species has hitherto only been recorded from Colombia, Venezuela and Guyana, but never from the region between the Rupununi and the lower Amazon. Therefore, the present record of a quite large specimen from the Kabalebo River below the Avanavero Falls, caught with hook and line by amerindian fishermen on April 11, 1971, constitutes a slight extension of the known range of occurrence of the species, and a first official record for Surinam.

The present specimen actually has already been mentioned previously, in a report on the 1971 N. W. Surinam Expedition, by its leader, Dr. D. C. Geijskes (1973: 33), while the occurrence of the species within Surinam territory might have been deduced from the general acquaintance with the species of the population of the Corantijn area as illustrated by the existence of a vernacular Surinam name 'switwatra-geribaka' (pronounce 'i' as 'ee'). This name is also recorded in a list by Teunissen & Werkhoven (1980: 198), added to a dictionary of the Surinam language.

The Kabalebo specimen is now registered in the Leiden collections under RMNH 28686. It is shown on plate 1, together with a picture of an earlier Corantijn specimen, unfortunately not preserved and hitherto not recorded. It was photographed by Dr. Geijskes when landed near the Wonotobe Falls in 1959.

#### THE CORRECT SPECIFIC NAME

After searching most of the available literature for reasons explained in the previous and next chapters, it was clear that the universally used scientific name for the species (neglecting a few aberrant spellings as obvious printers' or authors' errors) is *Phractocephalus hemiliopterus* (Bloch & Schneider). Therefore, it was a surprise to find in Bloch & Schneider's text (1801: 385) the original specific

TABLE 1

Principal measurements, with ratios (SL = in standard length, H = in head length)

Reg. no.	NMW 45494	NMW 45497	NMW 45495	RMNH 28686
loc.	Obidos, 1874, leg. Steindachner	Rio Negro, 1913, leg. Haseman	Cudajas, 1874, leg. Steindachner	Kabalebo, 1971, leg. Boeseman
t.l.	385	427	450	855
s.l.	330	372	390	745
head l.*	128(124)- SL 2.6(2.7)	144(139)- SL 2.6(2.7)	150(145)- SL 2.6(2.7)	275(265)-SL 2.7(2.8)
head w.	95-H 1.35	102-H 1.4	113-H 1.35	205-H 1.35
cleith. w.	102-H 1.25	113-H 1.3	119-H 1.25	215-H 1.28
pre-D l.	136-SL 2.45	160-SL 2.35	170-SL 2.3	315-SL 2.35
D base	52-H 2.45, SL 6.35	62-H 2.35, SL 6.0	63-H 2.4, SL 6.2	125-H 2.4, SL 6.0
int. D l.	44-SL 7.5	50-SL 7.45	52-SL 7.5	97-SL 7.65
adip. base	50-H 2.55, SL 6.6	54-H 2.65, SL 6.9	56-H 2.7, SL 7.0	110-H 2.5, SL 6.8
post-adip. l.	45-SL 7.4	46-SL 6.9	50-SL 7.75	98-SL 7.6
pre-P l.	89-SL 3.7	103-SL 3.6	106-SL 3.7	200-SL 3.7
P-orig. to V-orig.	107-SL 3.1	115-SL 3.25	123-SL 3.15	230-SL 3.25
pre-A l.	245-SL 1.35	280-SL 1.5	290-SL 1.35	550-SL 1.35
A base	28-H 4.6, SL 11.8	33-H 4.4, SL 11.2	37-H 4.1, SL 10.5	70-H 3.95, SL 10.65
post-A l.	54-SL 6.1	57-SL 6.5	62-SL 6.3	125-SL 6.0
w. at D. orig.	77-SL 4.3	(98-SL 3.8)**	88-SL 4.4	180-SL 4.15
h. C ped.	26-H 4.6, SL 12.75	29-H 4.95, SL 12.9	29-H 5.15, SL 13.4	60-H 4.6, SL 12.4
l. D sp.	48-H 2.7	52-H 2.8	56-H 2.7	98-H 2.8
l. 1st Dray	56-H 2.3	64-H 2.25	62-H 2.4	110-H 2.5
h. adip.	26-H 4.9	28-H 5.15	32-H 4.7	44-H 6.25
l. P sp.	67-H 1.9	70-H 2.05	75-H 2.0	122-H 2.25
l. longest V ray	44-H 2.9	49-H 2.95	50-H 3.0	100-H 2.75
l. longest A ray	43-H 3.0	49-H 2.95	57-H 2.65	87-H 3.15
eye diam.	11-H 11.6	11.5-H 12.5	12-H 12.5	18.5-H 15.0
int. orb. w.	50-H 2.25	57-H 2.5	60-H 2.5	115-H 2.4
l. snout	32-H 4.0	33-H 4.35	39-H 3.85	71-H 3.9
l. max. barb.	197-SL 1.7	191-SL 1.95	125-SL 3.1	270-SL 2.75
l. inn. mnd. b.	59-SL 5.6	62-SL 6.0	57-SL 6.8	95-SL 7.8
l. out. mnd. b.	102-SL 3.25	99-SL 3.75	95-SL 4.1	165-SL 4.5
w. pre-D scute	43-H 3.0	52-H 2.75	58-H 2.6	100-H 2.75
bony cover	head+scute rugose	rugose	rugose	rugose

\* Measured obliquely / horizontally along median line.

\*\* Specimen curved and deformed.

name to be *hemiliopterus*, with still another variation in the index of the same book (1801: xlviii): *hemiliopterus*. While the index version must be considered a mere printer's error, there seems to be no reason to diverge from the original *hemiliopterus* by omitting the first 'o' as erroneous (Fowler, 1951: 591), since such arbitrary procedure would not clarify its meaning: hemi (Gr. *hemisys*) = half, lio (Gr. *leios*) = smooth and ptero (Gr. *pteron*) = feather, wing or fin, form no applicable combination. Far more plausible is a derivation from (Gr.) *hemiolios* = one and one-half (e.g., Brown, 1956: 407, 486, 640 and various dictionaries), a name pointing to the remarkable half-rayed adipose fin (plate 2), also stressed in the original diagnosis ('pinnæ secundæ parte superiore radiata'), giving the species 'one and one-half' rayed dorsal fins.

It seems depressing that, after the original description and the references in both editions of Cuvier's *Règne animal* (1817: 203; 1829: 293), the only author correctly using the name *hemiliopterus* appears to be Sherborn (1927: 2949), who was not an ichthyologist; however, by restricting himself mainly to first descriptions he evaded the risk of being led astray by erring later authors.

The following synonymy, both of real synonyms and of aberrant spellings or printing errors, with references and distributional information, as complete as practicable, may here be given:

### ***Phractocephalus hemiliopterus* (Bloch & Schneider)**

- Silurus hemiliopterus* Bloch & Schneider, 1801: 385 ('in flumine Maranham Brasiliae'); Sherborn, 1927: 2949 (ref. to Bloch & Schneider).
- Silurus hemiliopterus* Bloch & Schneider, 1801: xlviii (index).
- Pimelodus hemiliopterus*; Cuvier, 1817: 203 (ref. to Bloch & Schneider); Cuvier, 1829: 293 (idem); Sherborn, 1927: 2949 (ref. to Cuvier).
- Pirarara bicolor* Spix in: Spix & Agassiz, 1828, pl. 16 (no loc., = in fluvio Amazonum cf. Agassiz, 1829); Magalhaes, 1931: 170, 242, 248, col. fig. 92 ('Rios das Guyanas, Amazonas, Crixás, Araguaya, Cupay, Xingú, Coary, Tefé, Manacapurú, Obidos e Huamary').
- Phractocephalus bicolor*; Agassiz in: Spix & Agassiz, 1829: 23 ('in fluvio Amazonum'); Schomburgk, 1847: 374 (Rupununi River); Geijskes, 1973: 33 (Kabalebo River).
- Phractocephalus hemiliopterus*; Valenciennes in: Cuvier & Valenciennes, 1840: 3, pl. 421 (no loc., drawing 'en Colombie'); Müller & Troschel, 1848: 643 ('in allen Flüssen Guiana's'); Castelnau, 1855: 47, pl. 15, fig. 1 ('Rio Crixas, l'Araguay et l'Amazone'); Bleeker, 1858: 66, 357 ('Colombia'); Kner, 1858: 375 (Brazil? - coll. Natterer); Günther, 1864: 110 (River Cupai (Amazon)); Vaillant, 1880: 152 ('Caldéron (Haute-Amazone)'); Eigenmann & Eigenmann, 1888: 135 (Xingu, Coary, Tefé, Manacapuru, Obidos, lake Hyanuary); Quelch, 1889: 156 (Canaruck below Warraputa, Essequibo); Eigenmann & Eigenmann, 1890: 188, fig. 42 (Xingu, Coary, Tefé, Manacapuru, Obidos, lake Hyanuary, Villa Bella, Rio Negro); Eigenmann & Eigenmann, 1891: 30 (Amazon, Solimões, Marañon, their tributaries, and northward); Goeldi, 1898: 463 ('valle do Amazonas', Guyana); Regan, 1905: 190 (Rio Negro and its tributaries); Silva, 1905: 23 ('bacia do Tocantins', Goyas; not seen, ref. copied); Eigenmann, 1910: 390 (Amazonas and northward); Ribeiro, 1911: 335, 465, pl. 49 ('rios das Guyanas, Amazonas, Crixas, Araguaya, Cupai, Xingú, Coary, Tefé, Manacapurú, Obidos, Huamary'); Eigenmann, 1912: 65, 76, 178 (lower Essequibo?, Demerara, Georgetown market!, none collected); Ribeiro, 1914: 10 ('Gy-Paraná'); Fisher, 1917: 417 (Maciel, Rio Guaporé); Ribeiro, 1920: 14 (Jamyary?, Rio Paranatinga, Vasconcellos); Magalhaes, 1931: 252 (see same ref. for *Pirarara bicolor*); Fowler, 1941: 382 (Peru; not seen, ref. copied); Eigenmann & Allen, 1942: 53, 110 (Ucayali, Huallaga,

- Marañon, Ecuador, Brazilian Amazon, Guianas, Venezuela, Colombia; Iquitos, Rio Puiagua at Bretana, eddy at outlet Rio Pacaya; Roth, 1943: 92, 103, pl. (Bremond Creek, lower Mazaruni; Quipari Channel, lower Mazaruni; on pl.: Puruni River); Fowler, 1945: 51 (Peru (Pebas)); Gosline, 1945: 48 ('Amazonas e para o norte'); Fowler, 1951: 591 (distribution omitted); Fowler, 1954: 344 (Amazonas, Tocantins, Xingu, Madeira, Negro, P. Amazonas); Dahl, 1961: 509 (Guayabero River); Axelrod et al., 1962: F-478.02/3 (Amazon basin cf. map, Brazilian Amazon cf. caption to photo); Emmens & Axelrod, 1968 (-1978): 94 (only photo and caption, no loc.); Mago, 1970: 34, 80 (rivers Venezuela); Frey, 1971: ? (not seen); Lüling, 1972: 240 (Iquitos, lower Rio Ucayali, various 'cochas', N. W. Brazil); Kovacs, 1974: 79 (Amazon River and its tributaries); Lüling, 1974: 40, 43 (Huallaga-Ucayali area); Lüling, 1975: 518 (middle and lower Ucayali, dept. Loreto); Géry, 1976: 6 (no loc.); Lüling, 1976: 392 (middle and lower Ucayali (Loreto), Rio Nanay); Mago, 1978: 12, 16, 19, 26 (Venezuela: rivers, Rio Portuguesa, Rio Boconó); Novoa & Ramos, 1978: 85 (Rio Orinoco from Las Bonitas to Amacuro delta); Goulding, 1980: 53 (Cachoeira do Teotonio, Rio Madeira); Teunissen & Werkhoven, 1980: 198 (vernacular name); Mayland, 1981: 437 (Rio Negro basin); Santos, 1981: 130 ('Amazônia'); Smith, 1981: 21, 68, 70-71, 74, 87-88 (deep waters of rivers and 'parana's', the Araguaia, and 120 km stretch of Amazon at Itacoatiara (ca. 250 km below Manaos)).
- Phractocephalus hemiliopterus*; Schomburgk, 1841: 169 ('common to all rivers of Guiana'); Fowler, 1915: 218 (Peruvian Amazon, Pebas); Goodson et al., 1979: 16 (Amazon, Venezuela and Guyana).
- Pirarara hemiliopterus*; Bleeker, 1862: 11 (no loc.); Bleeker, 1863: 100 (no loc.).
- Phractocephalus hemiliopterus*; Cope, 1878: 674 (Peruvian Amazon, Pebas?).
- Phractocephalus hemiliopterus*; Lüling, 1972: 9 (?; not seen, ref. copied).
- Phractocephalus hemeliopterus*; Goulding, 1980: 195 (Rio Machado, Rio Branco (Roraima), upper Rio Negro).
- Phractocephalus hemiliopterus*; Patton et al., 1978: 788 (Rio Negro, Rio Salimões, Brazil).
- Phractocephalus hemiliopterus*; Santos, 1981: 130 (legend to fig., no loc.).
- Phractocephalus* sp.; Schultz, 1944: 188 (presumably Venezuela).
- No scientific name, Krause, 1911: ? (not seen, ref. taken from next item); Krause, 1940: 190 (Rio Araguaia); Baensch, 1975: 33 (only fig., trib. of Rio Negro).
- ?, Shedd, 1947: ? (not seen, ref. taken from Kovacs, 1974; cited for completeness' sake).

Almost all localities given above concern open and relatively deep waters of the main streams, presumably the normal habitat, but Goulding (1980: 51-54) records upstream migrations possibly related to spawning. Unfortunately, hardly anything is known about when spawning takes place and where (in flooded forest or in creeks), or about the early development of the young. The smallest specimen seen (BM 1934.9.12.396), measuring 65 mm only, already was captured in the moderately large Mazaruni River.

#### CHANGE IN COLOUR MARKINGS

Although the colours and colour markings of the specimens here recorded from the Corantijn-Kabalebo basin hardly show any variation, a comparison with other specimens, pictures and descriptions, revealed a considerable variation in the extent of the post-pectoral blotch or band and in the intensity, extent and distribution of a usually dark pigmentation of the belly. Also the dark upper surface is of variable intensity, from brownish to almost black, while the reddish colour of the fins seems to vary between orange-red and blood-red.

A striking feature seemed in the beginning that all specimens examined, invariably from the Amazon basin, had a distinct and sharply defined light round spot on either side of the first dorsal spine (plate 1, lower fig.), while these were lacking in the Surinam specimens, suggesting a colour variant or geographic race. It was only after seeing many more specimens (table 2), covering a range

TABLE 2

Most of studied material listed according to size and showing the stage at which light spots on either side of dorsal spine disappear

Reg. no. / coll.	Locality	Size*	Spots
BM 1934.9.12.396	Rio Mazaruni, Guyana	65 mm	+
MNRJ 3972	Shansho Caño nr. Pebas, Peru	125 mm	+
CAS 6577	Santarém, Brazil	150 mm	+
MNRJ 1000	Cameté, Rio Tocantins, Brazil	200 mm	+
BM 1925.10.28.299	Manatapurú, Solimões, Brazil	210 mm	+
CAS 15951	Iquitos, Peru	250 mm	+?
BM 1911.4.10.3	Manaos, Brazil	260 mm	+
MNHN A-1952	Amazon at Calderon, Brazil	260 mm	+
FMNH 76416	Santarém, Brazil	300 mm	+ (vague)
slide Taphorn	Orinoco below Ciudad Guyana, Venez.	300 mm	+
BM 53.3.19.30	Cupai River, Brazil	305 mm	+
MNHN 89-243	Coary, Brazil	310 mm	? (faded)
CAS 64.572	Venezuela	310 mm	+
MNHN A-9425	"Amérique du Sud"	325 mm	+
BM 1926.10.27.286	Monte Alegre, Amaz., Brazil	330 mm	+
NMW 45494	Obidos, Amaz., Brazil	330 mm	+
aquar. Tokyo Tower	?	350 mm	+
NMNH 198958	?	370 mm	+
MNHN 1199	Amazon River	370 mm	+
NMW 45497	Rio Negro, Brazil	372 mm	+
MZSP 7406	Paraná do Ramos, Brazil	380 mm	+
NMW 45495	Cudajas, Amaz., Brazil	390 mm	+
BM 1934.9.12.396A	Rio Cuyuni, Guyana	590 mm (estim.)	? head only
aquar. Amst. Zoo (2 ex.)	Amazon River nr. Manaos, Brazil	< 600 mm	+
MZSP 5963	Boca do Purus, Amaz., Brazil	620 mm	+ (indist.)
NMNH 119339	Amazon River, Brazil	640 mm	-
SASF (3 ex.)	Amazon River	>650 mm	-
RMNH 28686	Kabalebo River, W. Surinam	745 mm	-
photo Geyskes	Wonotobo Falls, Corantijn, Surinam	750 mm (estim.)	-
FMNH 5.1525	Amazon River	920 mm	-
MNHN 8835	Brazil	1010 mm	- (faded)

\* Size often approximate when obviously above or below crucial size of 600-650 mm; of some specimens alive in aquaria only estimated size given.

from 65 to 1010 mm, and captured in various parts of the distributional area, that I realised the difference in size between the large Corantijn and Kabalebo specimens and those usually found in museum collections to be responsible for the observed difference. As may be shown by the second table, the light spots on either side of the first dorsal spine are just a juvenile character disappearing at a size of about 600-650 mm.

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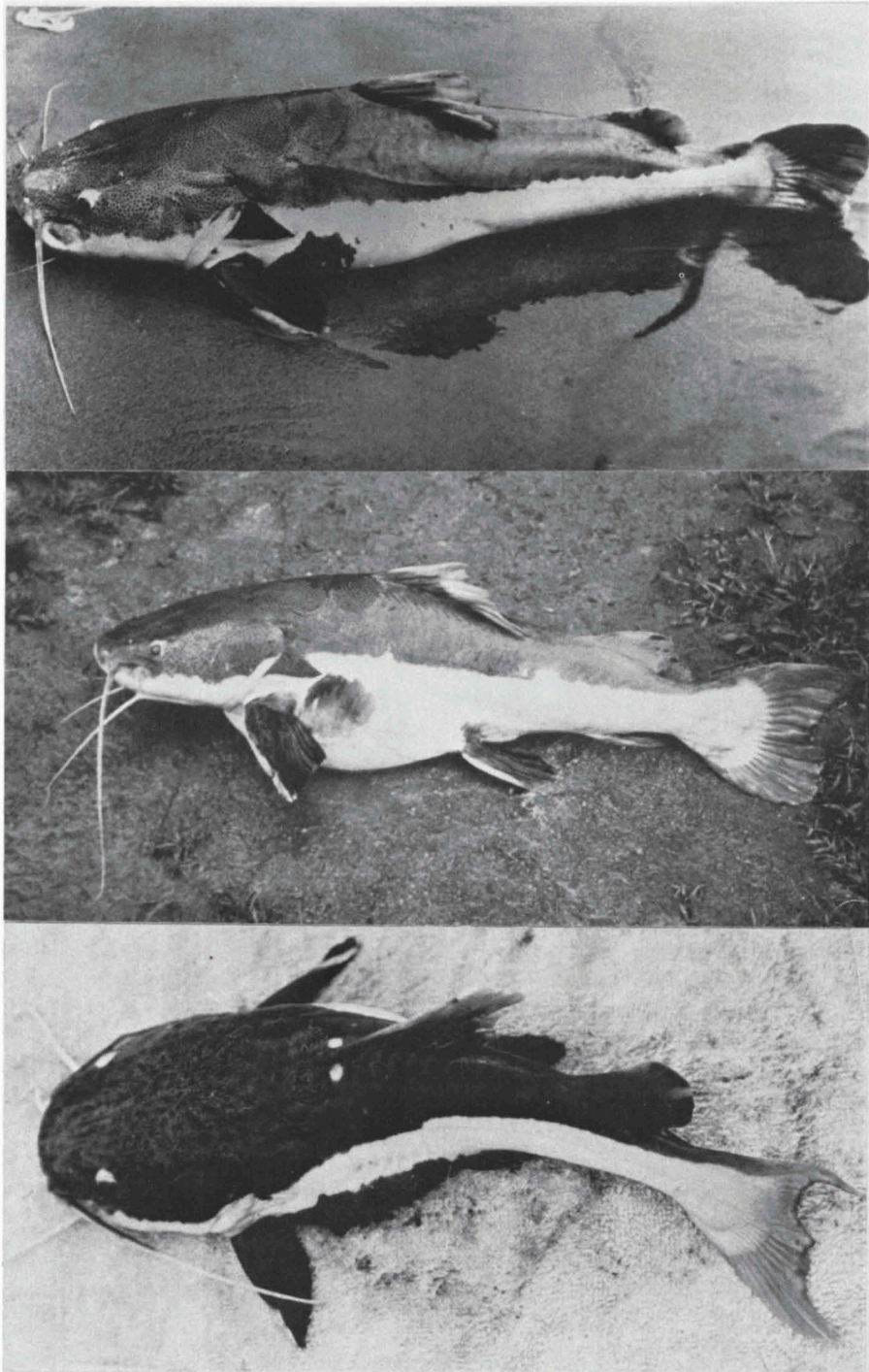
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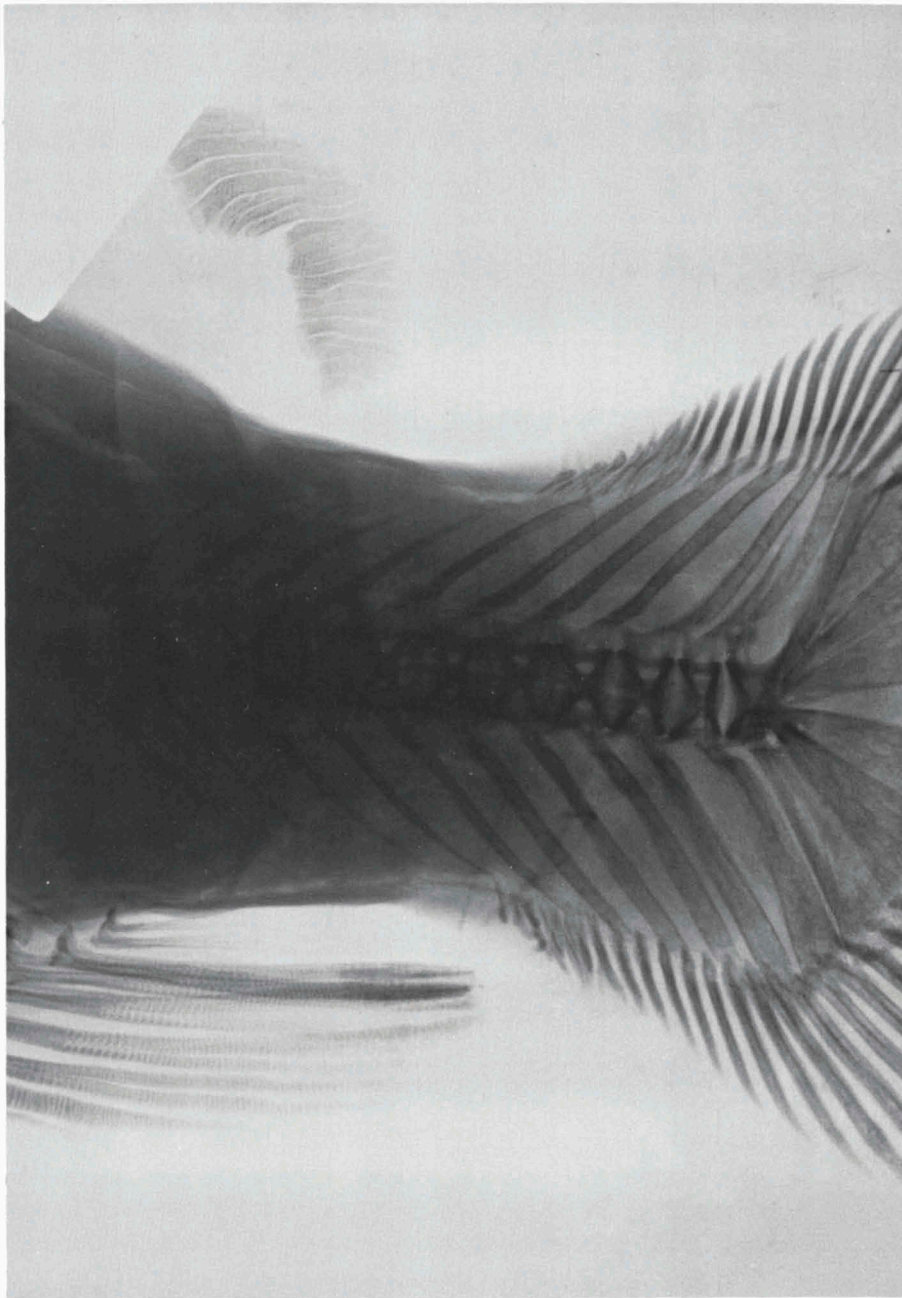


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*Phractocephalus hemioliopterus* (Bloch & Schneider). Upper fig.: from the Wonotobo Falls, Corantijn River, 1959, not preserved (phot. Dr. D. C. Geijskes). Middle fig.: from the Kabalebo River, Corantijn basin, 1971, RMNH 28686 (phot. Dr. D. C. Geijskes). Lower fig.: from the Orinoco River below Ciudad Guyana, 1978 (phot. Dr. D. C. Taphorn).



X-ray of adipose fin of *Phractocephalus hemiopterus* (Bloch & Schneider), clearly showing a rayed distal part lacking any skeletal connections with the vertebral column. A small anterior section unfortunately had to be covered by a heavy object used to flatten the fin.