AN ANNOTATED LIST OF FISHES FROM THE NIGER DELTA

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(With 6 plates and 2 figures)

At the end of November 1960, the Leiden Museum received an interesting collection of animals, mostly fishes, from the Niger delta. All specimens were collected by Mr. H. J. G. Beets, at the time employed by Shell B.P. — Delta Investigations, during the period May to August 1960, and in the region between Port Harcourt and Brass. Unfortunately, owing to lack of time, the separate specimens or lots were not labelled, but the collecting localities are limited in number and restricted to only the eastern part of the delta. The fish collection, consisting of 130 specimens, proved to belong to 51 species, some of which gave occasion for a reexamination and comparison of Bleeker and Steindachner types in the Leiden Museum collection.

Collecting localities and descriptive notes (fig. 1)

The following information is almost wholly taken from the extensive notes provided by Mr. Beets.

Loc. 1: Brass, Brass River, St. Nicholas River, Okpoma Creek, and small confluent creeks. In this area, situated immediately behind the Atlantic coast, the water must be considered brackish (Okpoma Creek) to almost completely salt. Most specimens were collected here.

Loc. 2: Old Sangama, environs of Sego Creek, about 45 km WSW of Port Harcourt. Fresh water throughout the year. Only few fishes collected.

Loc. 3: Ekulama, Bille Creek, San Bartholomeo River, 35-45 km SW of Port Harcourt. Brackish water.

Loc. 4: Port Harcourt and environs. Brackish water.

Behind the sandy beach and a narrow zone of coastal forest, a wide marshy area reaches far inland to the foothills, its average width being approximately 35-40 km. This whole zone is covered with mangrove forest, especially dense along the shores of the various Niger River branches and the innumerable creeks of varying sizes by which they are mutually connected. A considerable part is flooded regularly at high tide. Still farther inland begins the dense tropical forest.

The localities 1 and 3 are situated wholly in the mangrove area, the localities 2 and 4 about at the transition between mangrove area and the

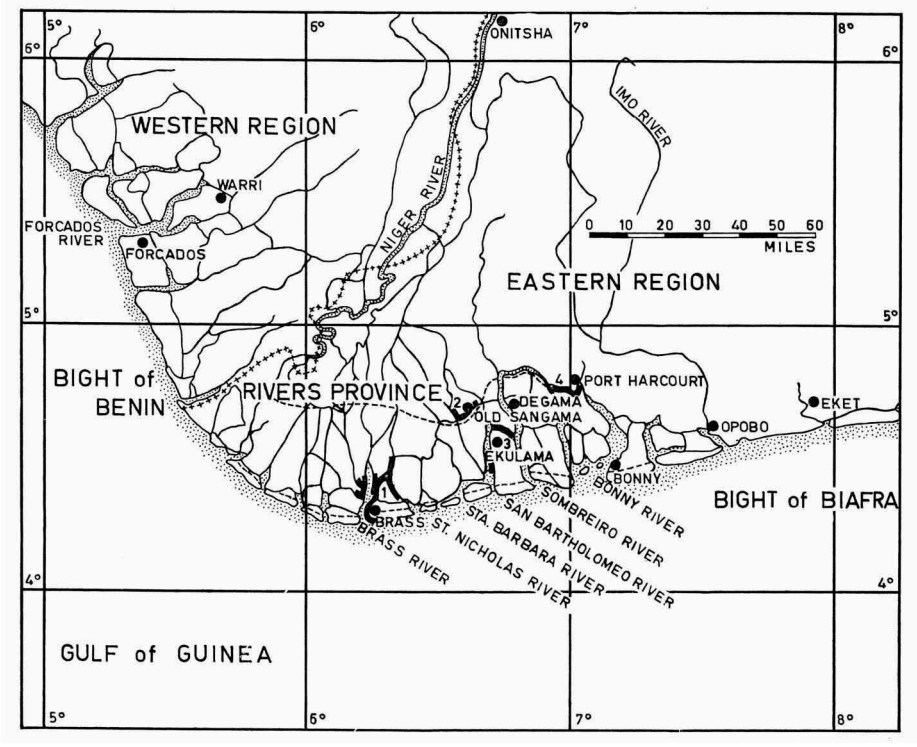

Fig. 1. Simplified map of the Niger delta, slightly modified after a sketch by Mr. Beets. The interrupted lines approximately indicate the transitional zones between the beach and coastal forest and the marshy mangrove forest, and between the mangrove forest and the inland tropical forest. The collecting localities are indicated with heavy black lines, the numbers correspond with the text.

inland tropical forest. No collecting took place outside the river outlets in open oceanic waters.

ELOPIDAE

Elops lacerta Valenciennes

Elops lacerta, Fowler, 1936, p. 156; —, Irvine, 1947, p. 105; —, Poll, 1953a, p. 10, fig. 1. 1 ex., length 210 (265) mm, reg. no. RMNH 24000.

Remarks: D VI.16(1); A V.13(1); scales in longitudinal series about 80, with approximately 14 small additional scales on proximal caudal fin (72-74 and 5-7, cf. Fowler); gill rakers on both sides 10+1+16, the an-

terior raker on lower part small or rudimentary (9+16, cf. Fowler, Poll); longest (anterior) dorsal ray hardly less than body height below origin of dorsal fin, and about equal to distance between nostril and posterior edge of operculum, thus considerably longer than drawn in Poll's figure; depth of body 4.66 in standard length.

CLUPEIDAE

Pellonula vorax Günther

Pellonula vorax, Regan, 1917, p. 200; —, Fowler, 1936, p. 170, fig. 68; —, Poll, 1953a, p. 49, fig. 17.
2 ex., length 37 & 72 (45 & 88) mm, reg. no. RMNH 24001.

Remarks: D (III?)IV.12-14(1); A III.15-18(1); V 1.7; gill rakers on lower part of anterior arch 28-about 30 (21-22, cf. Fowler); ventral scutes 12?-14+10. Especially the small specimen is in a bad condition, with all scales and most scutes lost, in the larger example only part of the squamation is left, and the number of scales in longitudinal series seems to have been 46, including about 4 on caudal base (38+3, cf. Fowler; 43, cf. Poll). The number of soft anal rays in the larger specimen seems to be exceptionally high. Günther's types also were collected in the Niger River.

Ethmalosa fimbriata (Bowdich)

Ethmalosa fimbriata, Fowler, 1936, p. 175, fig. 70.
Ethmalosa dorsalis, Irvine, 1947, p. 110, fig. 38; —, Poll, 1953a, p. 29, fig. 10.
Alausa platycephalus Bleeker, 1863, p. 123, plate 26 fig. 2.
1 ex., length 118 (150) mm, reg. no. RMNH 24002.

Remarks: D IV.14; A III.19; V 1.7; scales in longitudinal series about 42+4, squamation damaged; ventral scutes 17+12; predorsal line naked; gill rakers numerous; upper jaw with distinct median notch; scales characteristic; humeral spot still distinct.

The present specimen was compared with the holotype of *Alausa* (not *Alosa*!) *platycephalus* Bleeker (Ashantee, coll. H.S. Pel, reg. no. 3310, plate I fig. 1) and with various descriptions. The agreement proved convincing (*platycephalus*: D IV.14; A II.18; scales in longitudinal series about 42+5; ventral scutes 17+12; predorsal line naked; etc.), thus confirms the synonymy as hitherto presumed.

Fowler appears to have been the first author to synonymize *Alausa dorsalis* Valenciennes with *Clupea fimbriata* Bowdich, though the description of the last named species, according to the information provided by Fowler, is very scanty. Irvine, though mentioning the earlier Bowdich name as a synonym, strangely maintains Valenciennes's name.

Ilisha africana (Bloch)

Pellona africana, Bleeker, 1863, p. 122, plate 26 fig. 1.
Ilisha africana, Fowler, 1936, p. 178, fig. 71; —, Tucker, 1954, p. 211.
Ilisha melanota, Irvine, 1947, p. 111, fig. 39.
Ilisha dolloi, Poll, 1953a, p. 32, fig. 11.
5 ex., length 50-175 (62-215) mm, reg. no. RMNH 24003.

Remarks: D all III.12(1); A III.44(1), III.46(1), III.47(1), III.46(1), III.47(1) (II.43(1), cf. Fowler); scales in longitudinal series 42-44, including a few scales on caudal base; scales in transverse series below dorsal origin 10-11(12) (16, cf. Fowler, Poll); predorsal scales 14-16 (23, cf. Fowler); gill rakers (9)10+1+22 or 23 (12+28, cf. Fowler); depth of body in standard length 3.0-3.1; ventral scutes 25 or 26+6 or 7.

A review of the nomenclatorial difficulties and an argumentation of the probable synonymy, wholly confirmed by my own findings, has been expertly put forward by Tucker, but unfortunately that author did not point out that already Bleeker correctly interpreted Bloch's scant description. Therefore, I also reexamined the specimen described by Bleeker (Enkafran, Ashantee, coll. H. S. Pel, reg. no. 3327): D III.10; A III.45(1); scales in longitudinal series about 44, including those on caudal base; scales in transverse series 11 or 12; predorsal scales 15 or 16; gill rakers 11+1+22/23; depth of body 3.1; ventral scutes 26+7. Excepting the abnormally low number of soft dorsal rays, the agreement with the Niger specimens is conclusive; moreover, Bleeker gives in his description a total number of 15 dorsal rays, thus the present low number may be caused by damage.

CHARACIDAE

Hepsetus odoe (Bloch)

Sarcodaces odoë, Boulenger, 1909, p. 177, fig. 138.
Hepsetus odoë, Irvine, 1947, p. 230, fig. 143.
1 ex., length 230 (280) mm, reg. no. RMNH 24004.

Remarks: none, the specimen being wholly characteristic.

Alestes nurse Rüppell

Alestes nurse, Boulenger, 1909, p. 205, fig. 155; —, Irvine, 1947, p. 233, fig. 145.
2 ex., length 100-110 (127-140) mm, reg. no. RMNH 24005.

Remarks: D II.8(1); A III.13; scales in longitudinal series 26, 27 along lateral line; 5½ rows of scales above lateral line. Both specimens are in very good condition, with the dark humeral and precaudal spots still distinct.

SILURIDAE

Chrysichthys nigrodigitatus (Lacépède)

Chrysichthys Büttikoferi Steindachner, 1894, p. 60, plate 3 fig. 1.
Chrysichthys nigrodigitatus, Boulenger, 1911, p. 321, fig. 253; —, Pellegrin, 1923, p. 178; —, Irvine, 1947, p. 246, fig. 158.
3 ex., length 105-150 (137-230) mm, reg. no. RMNH 24006.

Remarks: D I.6; A 5.8-9; gill rakers variable, 10+14, 10+1+17, and 11+16/10+14; eye 2.9, 3.7, 3.8 in head, 1.0, 1.2, 1.4 in snout; dorsal spine ?(damaged), 1.2, 1.3 in head; longest soft dorsal ray ?, 0.85, 0.75 in head, reaching almost to adipose origin in medium sized specimen, beyond adipose origin in large specimen; upper caudal lobe elongate, filamentous, its length ?(damaged), 1.5, 1.7 head, or ?, 1.3, 1.4 times lower lobe, both measured from caudal base; the dorsal spine, mutilated in the small specimen, is in the medium sized specimen armed with some small barbs, especially near the top anteriorly, more developed and in a longer series posteriorly; in the large specimen hardly any anterior barbs on dorsal spine, but much better developed barbs behind. Excepting the much more elongate upper caudal lobes and the more developed barbs on the dorsal spines, all specimens show a close agreement with the given figures and descriptions.

The present specimens were compared with the holotype of *Chrysichthys Büttikoferi* Steindachner (Fisherman Lake, Liberia, 26 January 1881, coll. J. Büttikofer, reg. no. 5341, plate I fig. 2): D I.6; A 5.9(1); gill rakers 8+1+13/14; eye 3.9 in head, 1.5 in snout; dorsal spine 1.2 in head; longest soft dorsal ray 0.8 in head, reaching base of adipose fin; upper caudal lobe elongate, its length 1.5 head, or 1.2 times lower lobe; dorsal spine anteriorly with some barbs near top, and with a much longer series of rather strong retrorse barbs behind; length 152(210) mm. Only the low number of gill rakers on the upper part of anterior arch seems slightly aberrant, though probably within the normal range of variation considering that the number of rakers on the lower part varies between 12 and 17! (cf. Boulenger, p. 323).

ECHELIDAE

Paramyrus plumbeus (Cope)

Holopterura plumbea, Fowler, 1919, p. 240, fig. 9; —, Fowler, 1936, p. 290.

3 ex., length 287-331 (289-334) mm, reg. no. RMNH 24007.

Remarks: head 7.6, 7.4, 7.7; depth about 32, 33, 30; length till vent 2.4, 2.35, 2.27; tail including caudal fin 1.7, 1.72, 1.76; length till dorsal origin 4.1, 3.9, 4.1; all in standard length. Distance between dorsal origin and pectoral base 1.55, 1.45, 1.75 in distance between dorsal origin and vent; pectoral base about midway between dorsal origin and anterior margin of eye. Eye horizontally oval, situated above middle of upper jaw, its centre hardly before first fifth in head. Jaws curved, with lips removed lateral mouth open when anterior jaws meet. Teeth on jaws and vomer conical, rather sharp in smallest example, distinctly more robust in larger specimens; on jaws generally biserial in the smallest, anteriorly triserial in the medium, and mostly triserial in the largest specimen; the mandibular teeth are subcontinuous across symphysis, the premaxillary teeth in a more or less dis-

tinctly separated patch visible from below when mouth closed; lateral inner maxillary teeth movable. Dorsal and anal fins continuous with caudal; length of caudal fin slightly less than eye diameter. Lateral line distinct. Color in alcohol mostly brownish, not uniform, densely spotted with pigment; the ventral parts light yellowish; anal fin very light, occasionally with scattered spots; dorsal and caudal fins very dark, dorsal with rather wide light marginal band.

These specimens, especially the smallest, fairly closely agree with the given descriptions, both based on Cope's 232 mm type. The differences in the dentition of the larger specimens obviously depend on the size (age) of the examples, and show a normal development in the species. It remains strange that, though Fowler in 1936 still refers to only the single type specimen, the present small collection contains three examples. However, the present species is distinctly different from the more frequent and closely related *Myrophis punctatus* Lütken, not represented in this collection, by the much more anterior dorsal origin.

OPHICHTHIDAE

Ophichthus semicinctus (Richardson)

Pisodonophis semicinctus, Fowler, 1936, p. 297.
Ophichthus semicinctus, Irvine, 1947, p. 118, fig. 45.
Ophichthys semicinctus, Poll, 1953a, p. 146, fig. 59.
2 ex., length 58 & 65 mm, reg. no. RMNH 24008.

Remarks: both specimens closely agree with the splendid figure given by Poll, though the large blotches on the black and continued on the dorsal fin generally fail to reach the narrow dark dorsal margin. Excepting the predorsal blotch on the head, there are 15, respectively 17 blotches on body and tail (16 or 17, cf. Poll, Fowler), the fifth blotch being situated above, respectively before vent.

Caecula cephalopeltis (Bleeker)

Sphagebranchus? cephalopeltis Bleeker, 1863, p. 128.
Ophichthys (Sphagebranchus) Büttikoferi Steindachner, 1894, p. 88, plate 4 fig. 2.
Caecula cephalopeltis, Fowler, 1936, p. 294, fig. 139.
Sphagebranchus cephalopeltis, Irvine, 1947, pp. 119, 262; ?—, Poll, 1953a, p. 152, fig. 62 (possibly).
1 ex., 114 mm, reg. no. RMNH 24009.

Remarks: head (9 mm) 6.1 in length to vent (55 mm); depth of body about 60, head 12.7, tail 1.93, in total length. Upper jaw strongly projecting beyond tip of lower jaw; teeth sharp, in single row, directed obliquely backwards, the anterior teeth on upper jaw exposed when mouth closed. Gill openings rather close together. No pectoral fins, dorsal and anal fins not

reaching tip of tail (erroneous in Fowler's figure); origin of dorsal fin about snout length behind branchial apertures (not before, as stated and figured by Poll); tip of tail rather sharp (not as blunt as figured by Poll).

I compared the present specimens with the types of *Sphagebranchus? cephalopeltis* Bleeker (reg. no. 3826, 3 ex., 178-228 mm [1]), and with the types of *Ophichthys* (*Sphagebranchus*) *Büttikoferi* Steindachner (reg. no. 5331, 3 ex., 217-270 mm, plate I fig. 4), all in the collections of the Leiden Museum. The comparative characters are as follows: heads all badly damaged in *cephalopeltis*, in *Büttikoferi* 5.5-6.0 in preanal length; depth of body uncertain in *cephalopeltis*, about 55 in *Büttikoferi*; tail about 1.8, 1.85, ? in *cephalopeltis*, 1.8, 1.75, 1.75 in *Büttikoferi*; teeth as described for the Niger specimen, but the anterior vomerine teeth in *cephalopeltis* slightly less regularly placed, possibly in two rows; no pectorals, but this region badly damaged in the types of *cephalopeltis*; origin of dorsal fin seems situated slightly behind branchial apertures in *cephalopeltis*, 2|7-2|11 head behind branchial apertures in *Büttikoferi*; the remaining colour markings show some variation but no essential difference in comparison with the Niger specimen.

The given data seem fairly convincing for the presumed synonymy; only the fact that in all specimens the dorsal fin begins definitely behind the gill apertures, in contradistinction with the statements and figure as provided by Poll, makes the identification of Poll's examples rather dubious. According to information provided by Cadenat (in litt., 14 January, 1959), some closely related species with the dorsal fins originating before the gill apertures have recently been discovered in approximately the present area (Senegal). Presumably, one of these may eventually prove identical with Poll's *"cephalopeltis"*.

BELONIDAE

Belone houttuyni (Walbaum)

Strongylura marina, Fowler, 1936, pp. 446; —, Poll, 1953a, p. 172, fig. 70.
Belone houttuyni, Mees, 1962, p. 33, fig. 10.
1 ex., 320 (350) mm, reg. no. RMNH 24010.

Remarks: D 1.13; A 2.14; scales in longitudinal series about 235, in transverse series below dorsal origin 14-1-4(5), predorsal about 137, behind origin of anal 44(+8 on lower rudimentary caudal rays); opercles mostly scaled; no keels on caudal peduncle; a silvery longitudinal lateral band, widened below dorsal fin.

The specimen wholly agrees with the diagnosis as given by Mees, whose

1) The condition of these specimens does not allow a satisfactory photographic representation.

world-wide review of the Belonidae was issued recently. I therefore abstain here from giving further data, references, or a more extensive synonymy.

CYPRINODONTIDAE

?Epiplatys sexfasciatus Gill

Haplochilus infrafasciatus, Steindachner, 1894, p. 76.
Haplochilus sexfasciatus, Boulenger, 1915, p. 54, fig. 40; —, Heuber, 1928, p. 149, fig.
Panchax sexfasciatus, Beyer, 1931, p. 69.
Epiplatys sexfasciatus, Irvine, 1947, p. 263, fig. 174; —, Axelrod & Schultz, 1955, p. 429, fig.; —, Meinken, no date, pp. 27-28 (no. 18Ab, 12).
3 ex., 37-55 (51-75) mm, reg. no. RMNH 25011.

Remarks: D 11, 10, 11; A 15, 16, 16; scales in longitudinal series about 28+3; depth of body about 4.5, head 3.2-3.5 in standard length; eye 3.5-3.7 in head; caudal peduncle almost as high as long; dorsal origin above posterior 1/3 or 2/5 of anal; ventral fins elongate and filamentous, reaching to 4th anal ray in the smaller specimens, to 9th (left) or beyond last anal ray (right) in the larger example; caudal fin acutely pointed, its length 2.6-2.75 in standard length. All specimens still show distinct red spots on the scales; six cross bars are distinct on lower body and caudal peduncle in the large example, more vague with only the lower ends of the bars distinct in the smaller specimens which, moreover, show faint indications of an intermediary band between 3rd and 4th bar, principally consisting of a dark spot above anal base; lower jaw with dark margins and a less distinct ventral cross bar between angles of mouth, the latter lacking in the large example; a subocular blotch only in the large specimen, a dark submarginal stripe along lower opercles only in both small specimens; red spots on dorsal and caudal fins still distinct on all specimens, additional red spots on the anals only in the small specimens.

Morphologically, all three specimens differ from most descriptions and figures by their, in a varying degree, elongated ventral fins. It is remarkable that in scientific literature I have not been able to locate any description of this character, while in popular aquarist papers or books far better indications or even figures of this character can be found (e.g., Heuber, fig.; Beyer, ♂, "... spitz ausgezogene After-, resp. Bauchflossen ..."; Axelrod & Schultz, "the pelvics are long and pointed, much like *E. longiventralis*"). Beyer's description seems to indicate that our large specimen must be male, while the two smaller examples should be considered either female or subadult.

I compared the present specimens with three examples described by Steindachner (Junk River, Liberia, coll. F. X. Stämpfli, reg. no. 5251, 41-53 (55-71) mm), and with four additional specimens from the same region (Robertsport, Liberia, coll. J. Demery, reg. no. 5252, 32.5-54 (43-71) mm).

The specimens provided the following comparable data: D 12, 12, 13, and 12, 12, 11, 12; A 16, 17, 17, and 17, 17, 17, 18; scales in longitudinal series 27/28+4, 28+3, 28+4, and 28+3, 28+4, 28+4, 28+3; depth of body 4.2, 4.3, 4.2, and 4.4, 4.5, 4.5, 4.3; head 3.4, 3.4, 3.5, and 3.5, 3.4, 3.5, 3.3; eye 3.6-3.8 and 3.5-3.8; caudal peduncle about as high as long; dorsal origin above 1/3 or 2/5 of anal; ventral fins rather short, hardly reaching anal base, occasionally to about 3rd anal ray. Colour markings mostly rather indistinct except the red spots; some vague remains of many more transverse bands (see Steindachner, l.c.); no remains of a dark cross bar between angles of mouth, none of subocular blotches, and no submarginal band along lower opercle; red spots also on dorsal, anal, and caudal fins.

Resuming the previous paragraph, the number of dorsal rays seems generally slightly higher than in the Niger examples; the number of anal rays too seems slightly higher; the length of the ventral fins may about agree with the same in the small Niger specimens, but distinctly differs from the elongate and filamentous ventral fins in the larger one; the colour markings too show numerous variations. Still, using the key provided by Boulenger (l.c., p. 40) all specimens seem to belong to *sex-fasciatus* Gill, while none of the post-1915 newly described species agree with the present material.

It seems plausible to assume that the present species, as hitherto understood in literature, probably has been based on heterogeneous material, belonging to at least two separate species or subspecies (see Lambert, 1961. p. 30). Unfortunately, the specimens available in our collections are limited in number and mostly unsatisfactory in condition, therefore not providing the means to solve the present problem, especially as Gill's original description (1862, p. 136, footnote) is most inadequate. First, a reexamination of Gill's types seems necessary.

The present specimens evidently belong to a species closely related to the recently described *Epiplatys olbrechtsi* Poll (1941, p. 139, fig. 4) and *E. sheljuzhkoi* Poll (1953, p. 262, fig.), both from the Ivory Coast.

Aplocheilichthys spilenauchena (Duméril)

Aplocheilichthys typus Bleeker, 1863, p. 116, plate 24 fig. 1.
Haplochilus spilauchen, Steindachner, 1894, p. 75; —, Boulenger, 1915, p. 61, fig. 47.
7 ex., 30-51 (40-66) mm, reg. no. RMNH 25012.

Remarks: D 7 (2 ex.), 8 (4 ex.), 9 (1 ex.); A 11 (1 ex.), 12 (4 ex.), 13 (2 ex.); scales in longitudinal series (excluding those on C) 26-27; lower jaw hardly or slightly projecting; numerous dark transverse bands on body and peduncle, continued on C, and dark spots on posterior D and A.

The specimens were compared with the holotype of *Apocheilichthys typus*

Bleeker (reg. no. 1982, 38.5 (52) mm, from Gold Coast, plate II fig. 1) and with Steindachner's examples (reg. no. 5297, 8 ex., 34-45 (43-57.5) mm, from Liberia). The agreement proved very close, both in the meristic characters as well as in the colour markings as far as these still could be perceived. Only the holotype of *typus* Bleeker slightly differed by having 6 rays in D, in accordance with its original description, against 7 or 8 in the further examples. Another interesting feature is that, while the Gold Coast specimen has 13 anal rays, the Liberian all have only 12, while in literature generally a number of 13-14 is given.

Aplocheilichthys macrurus (Boulenger)

Haplochilus macrurus Boulenger, 1915, p. 67, fig. 53.
Aplocheilichthys macrurus, Daget, 1954, p. 325, fig. 125.
1 ex., 37 (49) mm, reg. no. RMNH 25013.

Remarks: D 8; A 13; scales in longitudinal series 26(+7), around body before V 18; a narrow dark lateral line; condition not very good.

Perusing through extensive literature, the given identification proved most satisfactory though, on account of the condition of the single specimen, it should be considered tentative only. *A. macrurus* has been recorded from Angola, Old Calabar, the Upper Niger, and Sierra Leone, but hitherto apparently never from the lower parts of the Niger.

SPHYRAENIDAE

Sphyraena sphyraena (Linnaeus)

Sphyraena sphyraena, Fowler, 1936, p. 574; —, Irvine, 1947, p. 196; —, Poll, 1959, p. 251, fig. 85.
2 ex., 120 (145), 227 (278) mm, reg. no. RMNH 25014.

Remarks: D V.I.1.8(1); A II.1.7(1); scales in longitudinal series both about 130 (+ 8 or 9); no gill rakers; distance eye to preopercular hind-margin equal (in juvenile) or slightly longer than horizontal eye diameter, in both examples slightly exceeding opercular length; V inserted below or hardly before origin of D; depth of caudal peduncle about 3 in its length; mandibular teeth 15+17 and 14+16, excluding 2 on symphysis; a single small tooth on vomer in juvenile, 4 large teeth in larger specimen; palatines with 2 or 3 larger teeth and a few smaller in juvenile, 3 and 4 large teeth in larger example; colour silvery, darker on back; back in juvenile with 11 indistinct cross-bands or blotches, in the larger specimen with 11 blotches interconnected across the dorsal median line and, moreover, with a series of about 18 vague but still distinct dark chevrons along the sides.

In literature, a number of 136 scales in longitudinal series is generally accepted as the lower limit of the range of variation in that character, but

Poll correctly mentions a range of 125-135 scales. On the other hand, Poll denies an occurrence of lateral chevrons in the present species, in contradistinction to the observations published by Irvine.

For security's sake, I reexamined the holotype of *Sphyraena dubia* Bleeker (1863, p. 70, plate 15 fig. 2), now generally considered identical with *Sphyraena guachancho* Cuvier. The specimen (reg. no. 454, plate I fig. 3) definitely belongs to a different species (scales about 110, V inserted distinctly before origin of D; caudal peduncle much less slender; distance eye to preopercular hindmargin much longer than horizontal eye diameter or very moderate length of opercle), and the hitherto presumed synonymy seems correct.

MUGILIDAE

Liza hoefleri (Steindachner)

Mugil hoefleri, Boulenger, 1916, p. 96, fig. 57; —, Chabanaud & Monod, 1927, pp. 256, 260; —, Fowler, 1936, p. 590; —, Irvine, 1947, p. 199, fig. 117.
1 ex., 125 (164) mm, reg. no. RMNH 25015.

Remarks: D IV.1.8(1); A III.1.8(1); scales in longitudinal series 34 (+4, excluding numerous minute scales); preorbital edge serrate; upper jaw with single row of minute ciliate teeth, none on mandible; P length 1.1 in head; depth caudal peduncle 1.3 in its length.

Liza grandisquamis (Valenciennes)

Mugil schlegeli Bleeker, 1863, p. 92, plate 19 fig. 1.
Mugil grandisquamis, Boulenger, 1916, p. 96, fig. 58; —, Chabanaud & Monod, 1927, p. 257; —, Fowler, 1936, p. 593; —, Irvine, 1947, p. 200.
Liza grandisquamis, Poll, 1959, p. 266, fig. 91.
4 ex., 17-18 (22-23) mm, reg. no. RMNH 25016.

Remarks: D IV.2.7(1), one example possibly IV.1.8(1); A III.9(1); scales in longitudinal series apparently 28-29; preorbital edge serrate; no scaly process in axil of P; C emarginate. Taking into account that proportional characters are more or less aberrant in juvenile specimens, there can not be much doubt about the present identification.

A reexamination of the holotype of *Mugil schlegeli* Bleeker (reg. no. 1647, 97(133) mm, plate II fig. 2), provided (e.g.) the following data: D IV.2.7 (1); A III.9(1); scales 28; preorbital edge serrate; P without axillary flap; C deeply emarginate. All data obtained confirmed the established synonymy and sustained the present identification.

Mugil curema Valenciennes

Mugil curema, Fowler, 1936, p. 595, fig. 271; —, Poll, 1959, p. 260, fig. 88.
1 ex., 65 (83) mm, reg. no. RMNH 25017.

Remarks: D IV.1.8; A III.9; scales in longitudinal series about 34; gill rakers on lower part of first arch about 36; head 3.6 in standard length; minute teeth along both jaws and in transverse series on palatine; a few scales left on proximal half of A and base of C, further squamation damaged; silvery, back dusky.

Three additional small specimens tentatively identified as *Mugil* (*curema* Val.?), may be recorded here:

3 ex., 21(26), 21(26), 21.5(26.5) mm, reg. no. RMNH 25018.

Remarks: D IV.1.8(1); A II.1.8(1), II.1.9(1), II.1.10(1); scales indistinct, probably about 36-40 in longitudinal series; no scaly axillary flap behind P; silvery white, dark along back and caudal base. There is a striking agreement with Fowler's figure of a slightly larger juvenile.

A reexamination of a specimen of *Mugil curema* recorded by Steindachner (reg. no. 5372, Great Cape Mount, Liberia, coll. J. Büttikofer, 1882, coll. no. 361, 220(282+) mm, plate II fig. 3) proved that it was evidently wrongly identified and that it represents a different species. The principal characters are as follows: D IV.1.8(1); A iii.9(1); scales in longitudinal series (excluding those on C) 37/38, transverse between median upper and lower rows 12, predorsal only 12 to occipital, about 26 to tip of snout; gill rakers about 90; head 4.25 in standard length; depth caudal peduncle 1.55 in its length; teeth on jaws minute, ciliate, in single row; no teeth on palatines; lower jaw not even rectangular at symphysis; adipose eyelid largely covering eyes, with only a narrow aperture; D and A almost wholly covered with small scales, C covered for about 2/3 to 3/4 of its length. I concur with the opinion expressed by Chabanaud (1926, p. 12) and Chabanaud & Monod (1927, p. 33), considering *curema* Steindachner different from both *curema* Valenciennes and *brasiliensis* Agassiz, and representing a separate species for which the name *Mugil metzelaari* was proposed. The specimens examined by Steindachner apparently being the types of *metzelaari*, the present example is hereby indicated as lectotype of that species. A paratype should be in the Vienna Museum collection.

Furthermore, the Leiden Museum collection contains the holotype of *Mugil ashanteensis* Bleeker (reg. no. 1631, plate II fig. 4), usually considered identical with *cephalus* Linnaeus or accepted as a subspecies of the latter (cf. Poll, 1959, p. 258, fig. 87).

POLYNEMIDAE

Galeoides decadactyllus (Bloch)

Galeoides decadactylus, Boulenger, 1916, p. 103, fig. 63; —, Irvine, 1947, p. 202, fig. 119; —, Poll, 1959, p. 279, fig. 96.

Geleoides polydactylus, Fowler, 1936, p. 600, fig. 273.
1 ex., 80 (107) mm, reg. no. RMNH 25019.

Remarks: 9 pectoral filaments; anal base shorter than dorsal; maxillary little expanded terminally. The total basis of the pectoral filaments is short, much less than eye diameter, not as figured by Fowler who evidently made a bad copy of Boulenger's illustration of the species.

SERRANIDAE

Epinephelus aeneus Geoffroy Saint-Hilaire

Epinephelus aeneus, Metzelaar, 1919, p. 232; —, Irvine, 1947, p. 129, fig. 55; —, Poll, 1954, p. 50, fig. 14.
Serranus aeneus, Fowler, 1936, p. 756.
3 ex., 90 (116), 145 (183), 180 (225) mm, reg. no. RMNH 25020.

Remarks: D XI.15(1); A III.8(1); scales in longitudinal series (excluding those on C) 96-102; tubes in lateral line 71-73, about 16-20 on C excluded; gill rakers (6+)1+1+10(+5)/(5+)2+1+9(+6), (7+)1+1+9(+5)/(8+)1+1+9(+5), (6+)2+9(+5)/(6+)2+9(+5); colour markings characteristic, with three oblique white stripes on head and six transverse dark bands consisting of dark brown spots on body and tail; P dark brownish in the small example, light in both larger specimens.

CARANGIDAE

Caranx hippos (Linnaeus)

Caranx hippos, Fowler, 1936, p. 696, fig. 312; —, Irvine, 1947, p. 140, fig. 65; —, Poll, 1954, p. 131, fig. 37.
3 ex., 38 (48), 135 (175), 145 (190) mm, reg. no. RMNH 25021.

Remarks: D I (procumbent). VIII.I.20-22, in largest specimen deformed: I (procumbent). II.IV.I.22; A II.I.17, in medium example II.I.19; lateral scutes 27, 30, 30; dark opercular spot and pectoral axil; small example still with juvenile markings: vague remains of 6 cross-bands.

Scyris alexandrinus (Geoffroy Saint-Hilaire)

Scyris alexandrina, Fowler, 1936, p. 704, fig. 315.
Scyris alexandrinus, Irvine, 1947, p. 141, fig. 66; —, Poll, 1954, p. 143, fig. 42.
1 ex., 50 (65) mm, reg. no. RMNH 25022.

Remarks: D I (procumbent). VII.I.21(1), with anterior four rays strongly elongated and filamentous, fifth more moderately so; A II.I.18(1), with three elongated rays; V I.5, two rays elongated; longest rays of D 60 mm, of A 41 mm, of V 59 mm; silvery with blackish filaments.

Vomer setapinnis (Mitchell)

Vomer setapinnis, Fowler, 1936, p. 707, fig. 317; —, Irvine, 1947, p. 142, fig. 67; —, Poll, 1954, p. 148, fig. 44.

1 ex., 42 (55) mm, reg. no. RMNH 25023.

Remarks: D VIII.I.23; A II.I.19. A wholly characteristic juvenile specimen.

LUTJANIDAE

Lutjanus agennes Bleeker

Lutjanus agennes Bleeker, 1863, p. 49, plate 9 fig 1; —, Steindachner, 1894, p. 5; —, Fowler, 1936, p. 790 ("agenes"!); —, Irvine, 1947, p. 148, fig. 73; —, Delais, 1952, p. 1224, figs. 7, 8; —, Poll, 1954, p. 182, fig. 55; —, Cadenat, 1960, p. 1397; —, Bauchot & Blanc, 1961, p. 80.

Lutjanus modestus Bleeker, 1863, p. 50, plate 9 fig. 2; —, Fowler, 1936, p. 790; —, Irvine, 1947, p. 148, fig. 74.

3 ex., 38 (47), 79 (105), 82 (106) mm, reg. no. RMNH 25024.

Remarks: while Fowler and Irvine still regard *agennes* and *modestus* as separate species, Delais, in a short review of the Western African Lutjanids, only discusses *agennes*, omitting *modestus* and apparently considering it a synonym. Unfortunately, Delais does not provide a synonymy. Cadenat too, in a list of species from the coastal seas between Senegal and Cameroons, lists *agennes* but does not mention *modestus*. However, I have vainly searched for a paper making a synonymy between these Bleeker names evident, either by Cadenat, who must have examined the Bleeker types and who apparently intended to publish on the subject (cf. Delais, l.c., p. 1214), or by any other author.

Therefore, I reexamined the types of *Lutjanus agennes* Bleeker (2 ex., reg. nos. 193 & 5062, (141(188) & 164(213) mm, plate III fig. 2) and the holotype of *Lutjanus modestus* Bleeker (reg. no. 243, 151(198) mm, plate IV fig. 1), and compared them with the present material. The principal meristical results are given in the following table:

reg. no.	25024a	25024b	25024c	193	243	5062	25025 [1]
length in mm.	38(47)	79(105)	82(106)	141(188)	151(198)	164(213+)	157(200)
D	X.13(1)	X.14(1)	X.14(1)	X.14(1)	X.14(1)	X.14(1)	X.13(1)
A	III.8(1)	III.8(1)	III.8(1)	III.8(1)	III.8(1)	III.8(1)	III.8(1)
scales	45(+n)	46(7/8)	45(6/8)	46(+n)	45(+n)	47(+n)	47/48(10)
sc. rows cheek	6	6	6/7	6	6	7	(8)9
gill rakers	1+1+7 / 1+1+7	1+6 / 1+6	1+6 / 1+6	1+1+7 / 1+1+7	1+6 / 1+7	1+7 / 1+6	1+6 / 1+7
depth in st.l.	2.8	2.8	2.8	3.1	3.0	3.15	2.6
head in st.l.	2.5	2.6	2.55	2.6	2.7	2.6	2.45

1) See next species.

The number of gill raker rudiments, not given in the table, is rather constant: 4-6, seldom 7, alternating with smaller secondary projectures. Further meristic characters (sizes of eye and interorbital, proportions of caudal peduncle, etc.) also show little or no variation unless that common in specimens of different age. Three of the specimens examined by Steindachner (l.c.) also completely fit in the given table (reg. no. 5327, 3 ex. measuring 39(48), 42(52), 92(118) mm).

The principal character used for specific discrimination between both presumed species is the shape of the vomerine patch of teeth, according to Bleeker triangular in *agennes* and a narrow transverse chevron in *modestus*. However, even between the types of both forms these differences proved to be of an only relative character: in both types of *agennes* the vomerine patch is triangular with the hind margin slightly concave or with a moderate median emargination; in the holotype of *modestus,* the general shape is similar, but with the hind margin slightly more concave. Furthermore, in the present Nigerian specimens, the smallest indeed has the "typical" very narrow transverse chevron, the two somewhat larger examples have the chevrons distinctly wider, especially in the median line, forming a transition towards the triangular patch. Resuming, the present moderate series gives the impression that, while in juveniles the vomerine patch beginns as a narrow chevron, in older examples it gradually changes in shape towards a triangle. A still further development is suggested by Delais's figure (l.c., fig. 8d), in which a median posterior prolongation is drawn after a specimen measuring 515 (660) mm.

As the shape of the vomerine patch of teeth apparently varies, possibly with age, and as the further characters, including those indicated for specific discrimination by Bleeker himself (l.c., p. 51), also do not hold, there can not be much doubt as to the synonymy as here proposed.

All specimens are brownish, with the scale margins darker, the ventral parts lighter, rosy to yellowish-orange; the larger specimens show a cross bar on base of P, the juvenile specimen still had the proximal parts of soft D yellowish-orange, of C and A orange; none of these specimens or of those used for comparison (including types!), showed any indications of a subocular horizontal band, which makes me slightly mistrust Delais's identification of specimens with these bands as *agennes* Bleeker. Irvine, distinguishing between *agennes* and *modestus* and giving some descriptive particulars about these "species", mentions differences in colouration; presumably, these can be accounted for by different sex, age, season of capture, or by normal variation.

Finally, I use the present opportunity to indicate the largest Bleeker

specimen (reg. no. 5062) as lectotype of *Lutjanus agennes*; the second (reg. no. 193) thus becoming a paratype of that species.

Lutjanus eutactus Bleeker

Lutjanus endecacanthus Bleeker, 1863, p. 48, plate 10 fig. 2.
Lutjanus eutactus Bleeker, 1863, p. 51, plate 11 fig. 2; —, Steindachner, 1894, p. 3; —, Fowler, 1936, p. 789; —, Irvine, 1947, p. 148; —, Cadenat, 1961, p. 241.
?*Lutjanus dentatus*, Delais, 1952, p. 1221, figs. 4-6; —, Poll, 1954, p. 180, fig. 54.
1 ex., 157(200) mm, reg. no. RMNH 25025.

Remarks: for meristical data, see the following table. Delais records from West Africa only four species: *fulgens* Val., *goreensis* Val. (= *guineensis* Blkr.), *agennes* Blkr., and *dentatus* Dum., to which Cadenat adds *eutactus* Blkr. as a fifth species. Bleeker's *endecacanthus* is rather obscure in literature, being only mentioned in the synonymy of Fowler's extremely heterogeneous *Lutjanus griseus* (l.c., p. 792). Therefore, I compared the present specimen with Bleeker's holotypes of both *eutactus* (reg. no. 247, plate III fig. 4) and *endecacanthus* (reg. no. 237, plate III fig. 3), adding comparative data on a specimen examined by Steindachner (reg. no. 5311).

reg. no.	5311	237	25025	247
length in mm.	136(175)	145(183)	157(200)	172(216)
D	X.14(1)	XI.13(1)	X.13(1)	XI.13(1)
A	III.8(1)	III.8(1)	III.8(1)	III.8(1)
scales ab.l.l.	63	62	58	58
scales in l.l.	46	48	48	47/48
scales transv.	8—1—16	8—1—16	8—1—17	8—1—17
sc. rows bef. D	about 15	about 14	about 15	about 15
sc. rows cheek	(8)9	9	(8)9	9
sc. rows opercle	9	9	9(10)	9
gill rakers	$\frac{1+7}{1+7}$	$\frac{1+6}{1+6}$	$\frac{1+6}{1+7}$	$\frac{1+6}{1+6}$
depth in st.l.	2.7	2.85	2.6	3.1 (deformed?)
head in st.l.	2.45	2.5	2.45	2.5
eye in head	4.0	4.3	4.35	4.25
snout in head	3.1	3.2	3.35	3.1
bony int. orb.	6.9	6.5	6.2	6.6
C ped., l/d	1.1	1.25	1.3	1.3

To these data should be added the following information: the lateral line is continued on C on 8-12 scales; there is a single row of scales on the subopercle; there are 4-5, seldom 6, rudiments of gill rakers on both ends of first gill arch; the holotype of *eutactus* (reg. no. 247) seems deformed on account of having been forced into a very narrow jar, which must also be the cause of the slender shape as described and figured in Bleeker's original description; the length of the caudal peduncle was measured from the posterior end of anal base.

All specimens have the vomerine patch of teeth about triangular, in one example (reg. no. 237) with a slight convexity at median hind margin, in a second specimen with the hind margin very slightly concave; D and A with a distinct scaly sheath along base; posterior caudal margin subtruncate; no subocular band along head; the Nigerian specimen is wholly dark brown with about 5 transverse rows of 2-4, generally 3, silvery spots on back and upper sides, the middle one mostly on lateral line; the pectoral fin is light with only a dark base; when the specimen arrived only a few months after being captured, throat and belly still were slightly rosy.

When comparing the data given in the previous table (see *Lutjanus agennes*), it is clear that the present specimen distinctly differs from that species by having more scale rows on the cheeks and by a much deeper body; furthermore, it (and the material used for comparison) differs from *fulgens* (Delais, l.c.: gill rakers 16 on lower part of arch) by having only 11-12(13) gill rakers on lower arch, and from *goreensis* by having no longitudinal subocular band on head. On the other hand, the second table makes clear that the Nigerian example completely agrees with all available specimens of *eutactus* and *endecacanthus,* including both holotypes. As Cadenat mentions *eutactis* as a separate, fifth West African species, it is clear that the Nigerian example should be identified as *eutactus,* while *endecacanthus* must be considered as a synonym.

There still remains another problem. The key given by Delais (l.c.), when used for the specimens now identified as *eutactus,* straightly leads to *Lutjanus dentatus* (Duméril), with which species the present agrees in many characters though differing in several others. Unfortunately, Delais seems to have examined primarily only specimens of a considerable size, not to be compared with those now available, but Poll (l.c.) gives data taken from specimens measuring 103-635 mm, also showing a remarkable resemblance with our material of *eutactus.* Therefore, I hestitatingly add *aentatus* Duméril to the synonymy of *eutactus.*

Lutjanus goreensis (Valenciennes)

Lutjanus guineensis Bleeker, 1863, p. 46, plate 10 fig. 1; —, Irvine, 1947, p. 150.
Lutjanus caxis, Steindachner, 1894, p. 2.
Lutjanus apodus, Fowler, 1936, p. 793, fig. 346.
Lutjanus goreensis, Delais, 1952, p. 1217, figs. 2 & 3; —, Poll, 1954, p. 177, fig. 53; —, Cadenat, 1960, p. 1397; —, idem, 1961, p. 241; —, Bauchot & Blanc, 1961, p. 80.
1 ex., 145(190) mm, reg. no. RMNH 25026.

Remarks: the principal meristical data are given in the following table where the present example is compared with the holotype of *guineensis*

Bleeker (reg. no. 248, plate IV fig. 2) and the specimens Steindachner identified as *caxis* Bl. Schn. (reg. no. 5288, 3 ex.).

reg. no.	5288a	5288b	248	5288c	25026
length in mm.	42(52)	49(63)	127(162)	142(181)	145(190)
D	X.14(1)	X.14(1)	X.14(1)	X.14(1)	X.14(1)
A	III.8(1)	III.8(1)	III.8(1)	III.8(1)	III.8(1)
scales ab.l.l.	49	50	48	50	50
scales in l.l.	46	45	44	46	45
scales transv.	7—1—14	7—1—14	7—1—14	7—1—14	7—1—13/14
sc. rows bef. D	about 12	about 11	about 13	about 12	about 12
sc. rows cheek	7	7	7	7	7
sc. rows opercle	8	8	7	8	8
gill rakers	2+1+7 / 1+1+7	2+1+8 / 2+1+8	1+1+7 / 1+1+7	1+1+7 / 1+1+7	1+1+7 / 1+1+6
depth in st.l.	2.8	2.7	2.6	2.65	2.5
head in st.l.	2.4	2.4	2.45	2.4	2.4
eye in head	3.2	3.5	4.0	3.8	4.0
snout in head	3.5	3.5	3.05	2.95	2.9
bony int. orb.	7.0	7.0	6.9	6.9	6.8
C ped., l/d	1.3	1.25	1.1	1.15	1.25

To these data, the following information can be added: the lateral line is continued on caudal base on 10-12 scales (not counted in juveniles); there is a single row of scales on subopercle; there are 5-6, seldom 4, rudiments of gill rakers at each end of first gill arch; the length of the caudal peduncle was measured from posterior end of anal base.

The vomerine patch of teeth is in all specimens examined arrow-shaped, with the median posterior shaft variably broad and, in the two small examples, slightly separated from the triangular head; D and A have a distinct scaly sheath along base; posterior margin of caudal slightly emarginate; a well defined horizontal subocular band still distinctly visible; the Nigerian specimen, when arriving after having been captured only a few months earlier, still had the lower head and lower sides reddish.

Accepting the presumed synonymy of *guineensis* Bleeker with *goreensis* Duméril as proposed by Delais and confirmed by Poll, Cadenat, and Bauchot & Blanc, the present identification seems to leave no room for doubt.

POMADASYIDAE

Pomadasys jubelini (Cuvier)

Pristipoma jubelini, Bleeker, 1863, p. 54, plate 12 fig. 2; —, Steindachner, 1894, p. 7. *Pomadasys jubelini,* Fowler, 1936, p. 802, fig. 350; —, Irvine, 1947, p. 153, fig. 77; —, Poll, 1954, p. 201, fig. 60; —, Bauchot & Blanc, 1961, p. 82.

2 ex., 69(86), 160(205) mm, reg. no. RMNH 25027.

Remarks: D XII.15(1); A III.8(1), III.9(1); scales in lateral line 50/51 and 53/53, excluding 8-12 on caudal base; gill rakers 6+1+12 and (2+) 3+1+11; silvery-yellowish, the small example with the markings largely faded, the bigger specimen as follows: two horizontal rows of dark spots on spinous dorsal, the upper row less distinct; soft dorsal with 2-3 horizontal rows of dark spots; sides and back with numerous dark spots, especially distinct above lateral line, generally more or less arranged in horizontal series, more irregular and obliquely arranged below soft dorsal fin.

Poll's description gives the impression that the penultimate dorsal spine should be shorter than the ultimate, which does not agree with his figure. In our larger example, the penultimate spine measures 12 mm, the ultimate one 14 mm, and the first soft dorsal ray 28 mm. Poll's figure also differs from our larger specimen by showing smaller and less regularly arranged spots on body and tail; in this character, our specimen far better agrees with Bleeker's figure.

Pseudopristipoma macrolepis (Boulenger)

Diagramma crassispinum, Steindachner, 1894, p. 6.
Diagramma macrolepis Boulenger, 1899a, p. 50, pl. 26; —, Poll, 1954, p. 213, fig. 64.
Plectorhinchus macrolepis, Fowler, 1936, p. 807, fig. 351.
Plectorhynchus macrolepis, Bauchot & Blanc, 1961, p. 81.
3 ex., 36(44), 53(64), 79(98) mm, reg. no. RMNH 25028.

Remarks: D XIV.16(1); A III.7(1) or III.8; scale rows above lateral line 55-58, excluding 7-10 on C; scales in lateral line 44-47, excluding those on C; scales in transverse series between predorsal and preanal median lines about 9-1-16/17, between lateral line and preventral median line 20-22 scales; gill rakers 10/11+1+16/17; all examples dark brown, lighter below, with very dark ventral fins, but with pectorals, caudal, and (only in both smallest examples) distal parts of soft dorsal and anal light.

I also reexamined one of Steindachner's specimens (reg. no. 5307, 216 (273) mm, Liberia), erroneously identified as *Diagramma crassispinum.* It proved to essentially agree with the present material, though slightly differing by having the pectorals and caudal rather dark brownish too. Presumably, this difference may be ascribed to either normal variation (seasonal?, sexual?) or to difference in age, as confirmed by the variation in colour of soft dorsal and anal in the Nigerian specimens, as indicated previously.

Smith (1949, p. 262) assumes that only two species were described in the genus *Pseudopristipoma*: *nigrum* Cuvier and *plagiodesmus* Fowler, both "possibly identical". It seems evident that the present species, much ressembling *nigrum,* pertains to the same genus. These three (or two) species form

a very homogeneous group, well separated from all other related species, justifying generic distinction.

The agreement with *nigrum* Cuvier being remarkably close, the specimens were also compared with a series of 22 examples of that species from the Bleeker collection (reg. no. 5643, southeastern Asia), identified by Bleeker as *crassispinum,* and measuring 51-243 mm standard length. Especially the crucial characters as indicated by Boulenger (l.c.), viz., the situation of the longest dorsal spine and the squamation, were examined, with the following results.

In almost all Bleeker specimens, the fourth dorsal spine was longest; occasionally the third was subequal but only in three examples slightly surpassing the fourth; in one specimen, the fifth was almost as long as the fourth spine. In the Nigerian specimens, the fourth and fifth spines are of equal length.

In the Bleeker specimens, the scale numbers in transverse series between predorsal median line and anal base are (10)11/12-1-20 to 24, usually 11-1-22; between lateral line and preventral median line 23-26. As stated before, these numbers are in the Nigerian specimens 9-1-16/17 and 20-22.

Finally, the number of gill rakers in the Bleeker specimens is 8/9+1+17 to 19, 19 seldom occurring. In the Nigerian specimens, the gill raker number is 10/11+1+16/17.

These differences between *nigrum* and *macrolepis* evidently suffice for specific discrimination.

LOBOTIDAE

Lobotes surinamensis (Bloch)

Lobotes surinamensis, Fowler, 1936, p. 785; —, Cadenat, 1960, p. 1396; —, Bauchot & Blanc, 1961, p. 86.

1 ex., 73(93) mm, reg. no. RMNH 25029.

Remarks: D XII.15(1); A III.12; scales in lateral line 45, excluding 4-6 on C; scales in transverse series 9-1-18; gill rakers 4/5+1+12 to 14; yellowish with brownish median fins and very dark ventrals; caudal with light margin; head with rather vague stripes or bands, one from eye to preopercular angle and beyond on interopercle, one from eye to below dorsal origin, and one (very vague and short) from upper end of preopercle back- and upwards; on body some vague blotches of brownish pigment consisting of separate spots on scales; lips bordered by narrow dark lines.

GERRIDAE

Gerres melanopterus Bleeker

Gerres melanopterus Bleeker, 1863, p. 44, plate 8 fig. 1; —, Hubrecht, 1881, p. 71; —, Steindachner, 1894, p. 12; —, Irvine, 1947, p. 151, fig. 76; —, Poll, 1954, p. 185, fig. 56; —, Cadenat, 1960, p. 1401; —, Bauchot & Blanc, 1961, p. 84.
Eucinostomus melanopterus, Fowler, 1936, p. 866.
4 ex., 53(70), 58(75), 78(101), 90(118) mm, reg. no. RMNH 25030.

Remarks: D IX.10(1); A III.7(1); scales in lateral line 42-44, excluding 4-7 (tubes) on C; gill rakers all 4+1+8, not 6+11 as stated by Fowler; silvery with black tip on spinous dorsal.

The present specimens were compared with Bleeker's holotype of *melanopterus* (reg. no. 5402, plate V fig. 1) and with three of Steindachner's examples (reg. no. 5326). All specimens proved to have D IX.10(1); three had A III.7(1), one A III.8(1); the number of scales in lateral line varied between 42 and 45; the number of gill rakers was ?+1+8 in the damaged holotype, 4/5+1+7/8 in Steindachner's specimens. The data confirm the present identification.

Gerres nigri Günther

Gerres nigri Günther, 1859, p. 347; —, Horst, 1883, pp. 27-30; —, Irvine, 1947, p. 151.
Gerres octactis Bleeker, 1863, p. 43, plate 8 fig. 2; —, Cadenat, 1950, p. 217, fig. 152; —, idem, 1960, p. 1401; —, Bauchot & Blanc, 1961, p. 85.
Diapterus nigri, Fowler, 1936, p. 868, fig. 373.
1 ex., 150(195) mm, reg. no. RMNH 25031.

Remarks: D IX.10(1); A III.8(1); scales in lateral line 44, in transverse series 5½-1-11½, 8 from lateral line to insertion of V; depth 2.6, head 3.4 in standard length; eye slightly more than 3 in head; gill rakers 7+1+2 (+3/4); second dorsal spine 1.8 in body depth, not quite twice length of second anal spine, which is 3.25 in body depth; length of P 3.75, of V 6.2 in total length; C almost wholly covered with scales; silvery, with indistinct longitudinal streaks, especially above lateral line; median fins yellowish with some dark pigment, in the dorsal fins rather restricted to marginal zone and basal interradial membranes.

The specimen was compared with the holotype of *octactis* Bleeker, which provided the following data (reg. no. 1091, Gold Coast, plate V fig. 2):

D IX.10(1); A III.8(1); scales in lateral line 44(+2), in transverse series 5½-1-11½, 8 between lateral line and insertion of V; depth 2.8, head 3.45 in standard length; eye slightly more than 3 in head; gill rakers 7+1+3(+3) (left side); second dorsal spine 2 in body depth, distinctly less than twice in length of second anal spine, which is slightly more than 3 in body depth; length of P 3.8, of V 7 in total length; C still with scales

on 2/3-3/4 of its length; colouration as described for the Nigerian specimen; length 145(185+, 192 cf. Bleeker) mm, C mutilated.

The agreement with the holotype of *octactis* is almost perfect, while for the synonymy with *nigri* Günther I refer to the extensive discussion given by Horst (l.c.). Fowler's figure, though presumed to be made after Bleeker's correct plate, gives an erroneous representation of the anterior dorsal spines.

SCIAENIDAE

Otolithus brachygnathus (Bleeker)

Pscudotolithus brachygnathus Bleeker, 1863, p. 62, plate 24 fig. 2.
Johnius brachygnathus, Fowler, 1936, p. 885.
Otolithus brachygnathus, Cadenat, 1950, p. 227, fig. 161; —, idem, 1960, p. 1402.
Cynoscion brachygnathus, Irvine, 1947, p. 157.
1 ex., 52(67) mm, reg. no. RMNH 25032.

Remarks: D X.I.26; A II.7(1); scales in lateral line (pores) 49 to caudal base; gill rakers (2+)4+1+10(+3); depth 3.6 in standard length; eye 3.6-3.7 in head, which is 3.5 in standard length; interorbital width about ¾ eye diameter; teeth on upper jaw in narrow band, outer series enlarged, with a few canines anteriorly; teeth on lower jaw in two series, inner enlarged, without distinct anterior canines; caudal ending in a very long median point; colour markings almost wholly lost, a series of dark spots along dorsal base.

I compared the present specimen with Bleeker's holotype of *brachygnathus* (reg. no. 671, 180(221+) mm, Ashantee, plate IV fig. 3), which provided the following comparative data: D X.I.27(1); A II.7(1); scales in lateral line 49 to caudal base; gill rakers (2+)4+1+9(+4); depth 3.9, head 3.4 in standard length; eye 4.4 in head; interorbital width ¾ eye diameter; teeth as described for the Nigerian example.

As all these characters, excepting such varying with age, show a most complete agreement, and as the combination of characters as given excludes all related species, there can remain little doubt about the identification of the juvenile Nigerian specimen.

Larimus elongatus (Bowdich)

Corvina nigrita, Boulenger, 1915, p. 116, fig. 87; —, Cadenat, 1950, p. 227, fig. 163; —, Poll, 1954, p. 252, fig. 76; —, Cadenat, 1960, p. 1402.
Johnius elongatus, Fowler, 1936, p. 886.
Sciaena nigrita, Irvine, 1947, p. 158, fig. 82.
1 ex., 178(229) mm, reg. no. RMNH 25033.

Remarks: D X.I.33(1); A II.6(1); scales in lateral line 49/50, excluding numerous small scales on C, with an abrupt angle at 26th scale, below 10th

soft dorsal ray; gill rakers (1+)6+1+13(+2)/(1+)6+1+14(+1), the longest about half eye diameter; mouth rather oblique; teeth on upper jaw in narrow band, outer series enlarged; teeth on lower jaw in narrow band or two series, inner enlarged; no canines; preopercle with some serrations along angle and lower margin; second anal spine greatly enlarged; silvery, gradually more dusky on back with vague oblique stripes along scale rows; spinous dorsal almost wholly brownish, soft dorsal with a brown longitudinal median band separated by a wide area from a narrow basal band and by a narrow area from a distal zone with more vague brown pigmentation; caudal dusky; anal with a blotch on three anterior rays.

The markings on soft dorsal fin are much more regularly arranged than figured either by Boulenger or Poll. The rather oblique mouth and the slender gill rakers differentiate the species from the genera mentioned in the given synonymy, making me accept the name as recently proposed by Collignon (see Cadenat, 1960, p. 1401, footnote).

It seems of interest to use the present opportunity to record that the Leiden Museum collection also contains, among the material Bleeker used for his report on the fishes of Guinea (1863), types of the following Sciaenid species: *Pseudotolithus typus* (holotype, reg. no. 752), *Ps. macrognathus* (holotype, reg. no. 753), *Larimus peli* (2 syntypes, reg. no. 765), and *Rhinoscion epipercus* (holotype, reg. no. 687).

NANDIDAE

Polycentropsis abbreviata Boulenger

Polycentropsis abbreviata Boulenger, 1901, p. 8, plate 3 fig. 2; —, idem, 1915, p. 100, fig. 79; —, Pellegrin, 1923, p. 240, fig. 51.

1 ex., 54(67) mm, reg. no. RMNH 25034.

Remarks: D XVI.10; A X.9; pinkish brown, vaguely marbled with darker brown, with pink remains especially distinct on ventral parts and along bases of unpaired fins; ventrals dark; soft dorsal, caudal, and anal pale.

MONDODACTYLIDAE

Monodactylus sebae (Cuvier)

Psettus sebae, Bleeker, 1863, p. 68; —, Boulenger, 1915, p. 123, fig. 91; —, Irvine, 1947, p. 169, fig. 92; —, Poll, 1954, p. 368, fig. 103.

Monodactylus sebae, Fowler, 1936, p. 896, fig. 382; —, Bauchot & Blanc, 1961, p. 96.

6 ex., 21(27), 32(44), 38(51), 57(73), 61(79), 90(120) mm, reg. no. RMNH 25035.

Remarks: the specimens are wholly characteristic and the only difficulty here appears to be nomenclatorial: both the generic names *Monodactylus* and *Psettus* have been frequently used, though apparently with a distinct

preference towards *Psettus*, evidently with the idea that *Monodactylus* is restricted to the Indo-Pacific, *Psettus* to the eastern tropical Atlantic Ocean.

If we prefer to put *sebae* in a separate genus, restricting *Monodactylus* Lacépède 1802 (type *falciformis*) to the Indo-Pacific species, a search for the type species of *Psettus* Cuvier 1817 becomes indispensable in order to see if that generic name is available for the Atlantic species. Unfortunately, all three species known from either *Monodactylus* or *Psettus* have at one time or another been indicated as typical for *Psettus*: *argenteus* Linnaeus 1758, cf. Jordan & Seale (1906, p. 236); *sebae* Cuvier 1817 (= *rhombeus* Bloch & Schneider 1801, nec Forskål 1775), cf. Jordan (1917, p. 128); and *falciformis* Lacépède 1802, cf. Fowler (l.c.). However, in accordance with general usage and not being acquainted with any previous indication, we should accept as type species for *Psettus* the one figured in the so-called "Disciples' Edition" of Cuvier's Règne Animal (Valenciennes, 1840, plate 42 fig. 2), viz. *rhombeus* Cuvier (= *argenteus* Linnaeus). This somewhat dubious [1]) usage is based on the following wording on the title pages in this edition: "Edition accompagnée de planches gravées, représentant les types de tous les genres, . . .". Accepting this type species selection, *Psettus* Cuvier becomes a synonym of *Monodactylus* Lacépède, and the proposal of *Psettias* Jordan & Seale as a new generic name for the Atlantic species is correct.

I must record here that Fowler (l.c.) considered *Psettus* Cuvier a junior synonym of *Psettus* Klein 1775. Unfortunately, I searched in vain for any Klein 1775 publication or any reference to it in subsequent literature, while no other authors seem to have mentioned a genus *Psettus* Klein. Still, even if Fowler's statement is correct, the final results are probably the same as stated in the previous paragraph.

The second possibility is, obviously, to consider *argenteus* Linnaeus, *falciformis* Lacépède, and *sebae* Cuvier congeneric; in this case, *Monodactylus* Lacépède 1802 (type *falciformis* Lacépède) would have priority over *Psettus* Cuvier 1817 (type *argenteus* Linnaeus) [2]).

The principal difference, if not the only one, used as an argument for putting *sebae* in a genus of its own, is the more extreme depth of body in comparison to its length, while *argenteus* and *falciformis* are primarily discriminated by a much smaller difference in the same character. As the differences between *sebae* on the one hand, and *argenteus* and *falciformis* on the other, are in fact differences in degree and not in kind, they should not

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1) Taking into account the rather ambiguous meaning of the word "type" at the time.

2) One could even doubt the validity of Cuvier's proposal of *Psettus*, but judging by his usage of cross-references between Latin and vernacular names in the Index, *Psettus* was evidently meant as a Latin name for Lacépède's "Acanthopodes et Monodactyles".

be considered of generic importance. Therefore, I prefer the second possibility as stated before, accepting as the correct name *Monodactylus sebae* (Cuvier).

EPHIPPIDAE

Chaetodipterus lippei Steindachner

Chaetodipterus lippei, Irvine, 1947, p. 170, fig. 171; —, Poll, 1954, p. 376, fig. 105.
1 ex., 90(116) mm, reg. no. RMNH 25036.

Remarks: D. IX.20(1); A III.17(1); scales in lateral line about 50, excluding 4 on C, in mid-lateral series to caudal base about 44; a hidden procumbent predorsal spine is situated at much lower level; 4 or 5 dark transverse bands still vaguely visible; ventrals dark.

CICHLIDAE

Hemichromis fasciatus Peters

Hemichromis fasciatus, Bleeker, 1863, p. 38, plate 5 fig. 1; —, Steindachner, 1894, p. 47; —, Boulenger, 1915, p. 428, fig. 293; —, Pellegrin, 1923, p. 262, fig. 58; —, Daget, 1954, p. 328, fig. 126.
1 ex., 90(113) mm, reg. no. RMNH 25037.

Remarks: D. IX.20(1); A III.17(1); scales in lateral line about 50, jaw in two rows, on lower jaw in single row; five dark transverse lateral blotches still distinct. Except the rather low number of dorsal spines a wholly characteristic specimen.

The specimens described by Bleeker and Steindachner, respectively all and for the greater part in the Leiden Museum collections, were used for comparison (reg. nos. 2019, 2277, 2278, 5 ex.; and reg. nos. 5224-5230, 23 ex.). Two of the specimens examined by Bleeker are indicated as syntypes (reg. no. 2278, Dabocrom, Guinea, coll. H. S. Pel). As Peters (1857, p. 403) did describe the present species after material collected by Pel, he must have returned part of the types to the Leiden Museum, retaining some in Berlin (see Boulenger, l.c., p. 429).

Tilapia melanopleura Duméril

Tilapia melanopleura, Boulenger, 1915, p. 190, fig. 123; —, Pellegrin, 1923, p. 286, fig. 61; —, Irvine, 1947, p. 273; —, Daget, 1954, p. 349, fig. 134.
2 ex., 84(112), 140(190) mm, reg. no. RMNH 25038.

Remarks: D XV-XVI.14; A III.9(1); scales in longitudinal series 29-30, excluding those on C; scales in lateral line 20/21 + 11/13, + 2 on C; scales in transverse series 3½-1-11½; two scale rows between upper and lower lateral lines; cheeks with (3-)4 scale rows; gill rakers short and sharp, 4 + 9; depth of body 2.0-2.2 in standard length; olive-brown, lighter below, scale

margins forming darker reticulation; 6 vague transverse bands still visible, especially on back; a dark opercular spot; a dark spot or ocellus on lower anterior soft dorsal.

Tilapia heudeloti Duméril [1])

Tilapia Heudelotii Duméril, 1860, p. 254.
Tilapia heudeloti, Boulenger, 1915, p. 173, fig. 111; —, Pellegrin, 1923, p. 282; —, Irvine, 1947, p. 275.
Melanogenes microcephalus, Bleeker, 1863, p. 37, plate 6 fig. 1.
nec *Melanogenes macrocephalus* Bleeker, 1863, p. 36, plate 6 fig. 2.
nec *Tilapia macrocephalus,* auct.
nec *Tilapia heudeloti macrocephala,* Bauchot & Blanc, 1961, p. 98.
6 ex., 63(83), 65(88), 85(110), 93(126), 96(131), 119(164) mm, reg. no. RMNH 25039.

Remarks: for meristical characters I refer to the accompanying table. All specimens have the anterior dorsal outline rather fluently convex, with only the upper profile of the snout about straight to slightly concave in the three smallest examples; a slight bulge may occur before orbit, but much less developed and less far backwards as figured by Boulenger; interorbital width usually slightly surpassing length of snout, seldom (1 ex.) subequal; teeth in outer row rather long and slender, notched laterally, in inner rows trilobate; radial striae on proximal half of scales numbering 11-17 in those examined; length of P surpassing head length with $^1/_3$-1 eye diameter; C moderately scaled on approximately $^1/_2$-$^2/_3$ of its length, the upper lobe slightly the longer; golden yellowish to yellowish brown, upper parts rather more brownish, lower lighter yellowish to very pale; no dark markings on lower head, but a rather distinct transverse band across chin behind lower lip; a dark blotch on upper opercle, not continued on body beyond gill slit; no distinct nuchal spots, but vague darker areas near dorsal outline and about above gill slit seem discernible; the same applies to possible supra-orbital spots; branchiostegal membrane uniformly pale; fins dusky, dorsal with (generally irregular) light spots

1) Rüppell (1852, p. 21) mentions *Sarotherodon melanotheron* nov. gen., nov. spec., without any specific description but adding (in a footnote) a generic diagnosis. *S. melanotheron,* being the only species referred to the genus, is therefore validated by the generic description.

Günther (1862, p. 273), adding information on Rüppell's species, moreover remarks "that this species is closely allied to *Chromis microcephalus*" (= *Tilapia heudeloti* Duméril). On the other hand Boulenger (1915, p. 176) refers to *S. melanotheron* Rüppell (which he erroneously considers a nomen nudum) as a synonym of *Tilapia macrocephala* (Bleeker). If Rüppell's species is identical with either *heudeloti* or *macrocephalus,* it has priority, and must replace one of these established names. Unfortunately, neither Rüppell's description nor that by Günther suffices to make clear the identity of *melanotheron.* Therefore, Rüppell's *Sarotherodon melanotheron* is provisionally considered a species dubius, awaiting a reexamination of the type, and the names *heudeloti* and *macrocephalus* are here maintained. The name *Sarotherodon* has been used for subgeneric purposes (Regan, 1920, p. 38).

or blotches, especially on soft part; these markings usually less distinct or even lacking on caudal and anal fins; in smallest example a vague ocellus on lower anterior soft dorsal fin.

Though the identification with *heudeloti* did not provide any particular difficulties, I compared the present specimens with Bleeker's examples of *microcephalus* (syntype?, see below; reg. no. 4831, plate V fig. 3) and *macrocephalus* (2 syntypes, reg. no. 4916, plate V fig. 4), both rather problematical forms of which the original Bleeker specimens but once seem to have been reexamined by a subsequent author [1]).

The single Bleeker specimen of *microcephalus* has been described by that author in a paper issued in 1863, though the manuscript must have been finished already by January 1862. Judging by the final remark in Gray's Preface to the fourth volume of Günther's Catalogue of Fishes (1862, p. iv), Bleeker must have sent either a copy of his manuscript or proof-sheets to Günther, in order to enable him to incorporate the contents in the latter's forthcoming volume. In other, similar cases (*macrocephalus*!), Günther merely transcribed Bleeker's extensive Latin description into a short English diagnosis, which he published in his Catalogue with a reference to "Bleek. in lit." and a final indication "Bl.", which confirmed Bleeker's authorship of the species concerned. However, in the present case, Günther finding himself in the possession of two examples presumably identical with Bleeker's proposed *microcephalus,* he composed a different diagnosis in accordance with his own data, added a new description based on his own specimens, and restricted himself to the usual reference to "Bleek. in lit.", not adding the usual "Bl." to either diagnosis or description.

Considering these facts, the authorship of *microcephalus* should be ascribed to Günther (1862, p. 272), and not to either Bleeker or Bleeker in Günther, as has been done. While the two British Museum specimens evidently are syntypes of this species, the Leiden Museum example can also be considered as such on account of the reference to "Bleek. in lit." and the circumstances as given above. Still, the choice of a lectotype apparently (see below) being important, such a choice preferably should be made from the British Museum examples [2]).

The principal meristic data on the Bleeker syntype of *microcephalus* (reg. no. 4831) are given in the accompanying table. Additional data are as

1) They have been reexamined by Dr. E. Trewavas (British Museum) who, unfortunately, never published the results.

2) As pointed out to me by Dr. Trewavas (in litt.), this preference is slightly weakened by the circumstance that, while the locality of Bleeker's specimen is rather accurately known, the two British Museum examples are only known to have been collected somewhere in Western Africa. Therefore, I abstain from lectotype selection.

follows: anterior dorsal outline fluently arched, without orbital bulge; interorbital width slightly surpassing length of snout; teeth in outer row rather long and slender, notched laterally, in inner rows trilobate; radial striae on proximal part of scales numbering 11-17 in those examined; length of P surpassing head with 4/5 eye diameter; C moderately scaled (squamation damaged!) upper lobe slightly longer than lower; mostly dark brown, head slightly lighter, throat and breast still lighter, beige; lower jaw (except lip), lower half of preopercle, most of interopercle, subopercle and lower anterior opercle very dark; a dark blotch on upper opercle, slightly continued on body beyond gill slit (one scale); nuchal spots dubious; vague darker areas above orbits; branchiostegal membrane pale, whitish, this colour slightly extending on part of interopercles; vague spots seem discernable on soft dorsal and caudal fin.

The description of *macrocephalus*, also first published in Günther's Catalogue (1862), is distinctly indicated as taken from Bleeker, so its authorship goes to Bleeker in Günther (1862, p. 273). Of the two syntypes, the principal meristical data are given in the accompanying table (reg. no. 4916). Additional data are as follows: anterior dorsal outline about straight, with a distinct angle at a distance slightly less than eye diameter before dorsal origin; interorbital width slightly less than length of snout; teeth in outer series rather long and slender, laterally notched, in inner rows trilobate; radial striae on proximal part of scales numbering 14-18 in those controlled; length of P surpassing head with $\frac{1}{2}$-$\frac{2}{3}$ eye diameter; C moderately scaled, upper lobe slightly the longer; wholly golden yellowish, head slightly lighter, breast and throat pale; lower jaw (except lip), an extensive part of lower preopercle, interopercle, and lower subopercle very dark brown; vague remains of a dark blotch on upper opercle, but a very distinct continuation beyond gill slit on body; two small but intense dark nuchal spots, one at each side of angle in dorsal outline; a rather distinct supraorbital spot; branchiostegal membrane very pale with few markings in the larger example, but with dark irregular markings in the smaller example; no markings remaining on fins.

Reconsidering these data, there appear to be no morphological differences between the Nigerian *heudeloti* specimens and the syntype of *microcephalus*, the latter being distinguished only by its intensely dark lower head. It is remarkable that, while an occurrence of a dark lower head in *heudeloti* has been described various times in aquarium literature as a common seasonal character, no such information was found in the rather extensive literature consulted, only part of which is mentioned here. Only Bleeker, in his description of *microcephalus*, which has unanimously been considered identical

reg. no.	25039a	25039b	20539c	25039d	25039e	4831	25039f	4916a	4916b
length in mm.	63(83)	65(88)	85(110)	93(126)	96(131)	117(157)	119(164)	131(174)	135(185)
D	XVI.11(1)	XV.11(1)	XVI.10(1)	XV.11(1)	XVI.10(1)	XV.11(1)	XVI.12(1)	XV.12(1)	XV.10
A	III.9(1)	III.9(1)	III.9(1)	III.8(1)	III.8(1)	III.8(1)	III.8(1)	III.9(1)	III.9(1)
sc. long. ser. [1]	27	26	27	27	27/28	27	28	27	26
transv. ser. [2]	3-1-2-1-7/8	3-1-2-1-7/8	3-1-2-1-7/8	3-1-2-1-7/8	3-1-2-1-7/8	3-1-2-1-7/8	3-1-2-1-7/8	3-1-2-1-7/8	3-1-2-1-7/8
lat. line [1]	19+11/12	18+9	18+11	19/20+8/10	19+9/10	18/19+10/11	19+10	18/19+10	16+/18+10
rows cheek	2	2	2	2	2	2	2	2	2
gill rakers	3+16/17	3+16/17	3+17	3+16	3+16	3+17	4+17/18	3+17	3+17
depth in st. l.	2.25	2.2	2.3	2.2	2.1	2.2	2.0	2.65	2.55
head in st. l.	2.8	2.7	3.0	2.8	2.8	3.0	2.85	2.5	2.45
eye in head	3.45	3.45	3.75	3.75	3.8	3.85	3.85	4.35	4.6
in snout	1.1	1.0	1.2	1.25	1.2	1.4	1.3	1.6	1.75
in interorb. w.	1.15	1.1	1.3	1.25	1.3	1.5	1.4	1.4	1.6
in preorb. depth	0.8	0.85	0.9	0.9	0.9	1.0	1.1	1.2	1.35
teeth rows u. jaw	1+1	1+2/3	1+2/3	1+3/4	1+4	1+5	1+4/5	1+5/6(7)	1+5/6
outer ser. u. jaw	35	46	44	57	63	74	65	75	85
caud. ped., l. in d.	1.5	1.4	1.4	1.5	1.55	1.4	1.55	1.3	1.35

1) Excluding those on C.

2) Counted in oblique series between predorsal and preanal median lines. Between upper part of lateral line and preventral median line the number is invariably 13-14.

with *heudeloti,* writes "mento, praeoperculo inferne et interoperculo ex parte nigricantibus", a statement apparently overlooked by later authors. Bauchot & Blanc (l.c.) state that their *Tilapia heudeloti macrocephala* "est facilement reconnaissable à la coloration noire de la gorge", evidently suggesting that no such dark colouration of the lower head does occur in the nominal form.

As aquarists are in an advantageous position for the observation of seasonal characters, I feel inclined to accept their point of view, even though I usually prefer to keep aquarist literature well apart from science. As a consequence, the present data should confirm a synonymy of *microcephalus* Günther with *heudeloti* Duméril, in accordance with modern usage.

Regarding the two syntypes of *macrocephalus* Bleeker (reg. no. 4916), there seems to be at least some evidence that they represent a separate form, distinguished from *heudeloti* by having a considerably more slender body, a larger head, eyes smaller in comparison with head length (though slightly larger in comparison with total or standard length), snout length surpassing interorbital width, a rather distinct occipital angle in dorsal outline of head accentuated by two approximate dark nuchal spots, a slightly more square caudal peduncle and, according to literature, a constantly dark lower head, while little variation was found in these characters. Unfortunately, the limited material available does not warrant a definite opinion on the status of *macrocephalus,* as either a mere variety (Boulenger, 1915, p. 178), or a subspecies (Bauchot & Blanc, 1961, p. 98) of *heudeloti* Duméril, or as a separate species.

Dr. Trewavas (in litt., August 8th & 15th, 1962) kindly put forward her ideas on *macrocephalus* Bleeker, based on a much more extensive and expert knowledge of the group and a personal examination of Bleeker's syntypes. Being inclined to consider *macrocephalus* a synonym or an aberrant form of *heudeloti,* she provided the following information in order to cover the gap existing in some characters between these two forms:

a. Environmental influences may account for the combination of a large head and a slender body in *macrocephalus,* as confirmed by similar characters in some forms living in crater-lakes (e.g., *Tilapia vulcani* Trewavas, 1933, p. 315, fig. 1).

b. In *heudeloti,* apparently the males have a relatively larger head than the females, at least in mature examples. The evidence given is as follows: 8 females of 135-230 mm standard length, head 32-37% of standard length, mean 34.2; 8 males of 130-216 mm standard length, head 34-39% of standard length, mean 36.3. In the two syntypes of *macrocephalus,* the head length is 40 and 40.8% of standard length according to my measurements, even 41.5% according to the measurements of Dr. Trewavas, while both are male.

c. The males of *heudeloti,* when carrying young in the mouth, are forced to fast for some time, which might cause the development of a so-called "Hungerform", the characteristics of which rather closely agree with the strange proportional features in *macrocephalus.* In fact, the two syntypes of *macrocephalus,* one of which still found with young in the mouth and throat, appear to be male, while our single example of *microcephalus* (= *heudeloti*) proved to be female.

In my opinion, there remains the strange fact that, as far as I know, among the numerous specimens of *heudeloti* examined by various students, some of which at least must also have been collected during the fasting period, no specimens seem to have been found agreeing with *macrocephalus* in the crucial proportional characters. Furthermore, it seems a very unlikely coincidence that of the three examples of *heudeloti* sensu Trewavas available to Bleeker, two should show such extremes in proportional characters as never since were met with in *heudeloti* material. Finally, though Dr. Trewavas warned me that most references in aquarium literature to *macrocephalus* in fact concern "something corresponding very well with *microcephalus* and therefore with *heudeloti*", it is interesting to note that Sterba (1959, p. 542) describes *heudeloti* as "recht friedlich" and *macrocephalus* as "rauflustig und bissig". Unfortunately, Sterba's description (p. 545) provides little opportunity to control his identifications, while his figure of *macrocephalus* (fig. 1120) is either extremely bad or represents a different species. A figure presumed to represent *macrocephalus,* and apparently correctly identified, was published by Schneider & Whitney (1957, p. 515).

Provisionally, I prefer to consider *macrocephalus* Bleeker a separate form, specifically or at least subspecifically [1]) distinguishable from the true *heudeloti,* even though it is remarkable that, if we do not accept references by aquarists or behaviour-students, it still appears to be known only from the types.

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1) As kindly pointed out by Dr. Trewavas, a subspecific discrimination is hardly tenable if we accept her suggestion that the Bleeker types of both *macrocephalus* and *microcephalus* might have been collected in the same pool or lagoon. However, as was usual at the time, collectors like Pel who did quite some travelling were not always very accurate with their localities; thus, the indication "Ashantee" merely means "region of Ashantee", and the actual localities for both forms possibly were still rather far apart. In fact, the indication of Ashantee for Bleeker's specimen of *microcephalus* (reg. no. 4831) is not substantiated by either its label or the general register in the Leiden fish collection, both mentioning only "Côte d'Or" as locality. It remains uncertain where Bleeker got his information necessary to restrict the locality.

On the other hand, if Dr. Trewavas is correct in assuming a single species and locality, the apparent differences between these two forms should be ascribed to the fact that oral gestation takes place only in males and is solely responsible for the occurrence of a "Hungerform".

This opportunity is used to indicate the larger example as the lectotype of *macrocephalus* Bleeker, the smaller becoming a paratype. It was interesting to find in the mouth and gill cavity of the lectotype 65 larvae, measuring approximately 10 mm, not mentioned and apparently overlooked by Bleeker.

Tilapia guineensis (Bleeker)

Chromis guineensis Bleeker, in Günther, 1862, p. 271.
Haligenes guineensis, Bleeker, 1863, p. 41, plate 7.
Tilapia guineensis, Boulenger, 1915, p. 201, fig. 128.
Tilapia zillii guineensis, Irvine, 1947, p. 273, fig. 182.

Remarks: though no specimens of this species were collected, the following observations may here be made.

As stated before, Bleeker, after concluding his manuscript on the fishes of Guinea, did put his results at the disposal of Günther to be incorporated in the latter's forthcoming volume of the Catalogue of Fishes, the issue of which subsequently antedated Bleeker's paper.

In the case of *Chromis guineensis*, Günther distinctly indicated his description to be an abstract of that given by Bleeker, which makes it indubitable that Bleeker (in Günther, 1862) should be considered as the author of the species. Moreover, it is clear that the two specimens examined by Bleeker, now in the collection of the Leiden Museum (reg. no. 2134, plate VI fig. 1), are the syntypes of *guineensis*. Less clear seems the status of a specimen in the British Museum collections (Günther, l.c., p. 510), but for the following reasons I presume it to be non-typical: the specimen is only mentioned separately in the Addenda et Corrigenda at the end of the volume, but not with the description of the species; the data given for this specimen partly disagree from those given in the species diagnosis abstracted after Bleeker, thus are not incorporated therein; the description as given by Günther is distinctly indicated as wholly taken from Bleeker; and there seem to be no indications that Bleeker ever examined this specimen, though he seems unquestionably the author of the present species. For these reasons, I can not follow Boulenger in his type designation, or Irvine in his ambiguous wording "British Museum specimen catalogued as the type of *T. guineensis*", with the additional "unnamed locality" though both Günther and Boulenger mention Ashantee as locality, which makes the specimen a topotype.

The two types in the Leiden Museum are in very good condition, measuring 92(125) and 165(225) mm. The large example is hereby selected as lectotype of the species.

TRICHIURIDAE

Trichiurus lepturus Linnaeus

Trichiurus lepturus, Fowler, 1936, p. 641; —, Irvine, 1947, p. 182, fig. 103; —, Poll, 1959, p. 113, fig. 39.
2 ex., 245 & 252 mm, reg. no. RMNH 25040.

Remarks: wholly characteristic specimens.

SCOMBRIDAE

Scomberomorus maculatus (Mitchill)

Scomberomorus (*S.*) *maculatus,* Fraser-Brunner, 1950, p. 159.
Scomberomorus maculatus, Poll, 1959, p. 104.
1 ex., 126(153) mm, reg. no. RMNH 25041.

Remarks: judging by the key given by Fraser-Brunner (p. 157) and the agreement with Poll's description, the present identification leaves no room for doubt, as is shown by the following characters: D XVII.5.12+8; A 5.13+8; gill rakers 2+1+9, all very short; wavy lateral line without abrupt bend; origin of soft dorsal slightly before middle of total length; pectoral without scales; maxillary distinctly longer than half head; anterior spinous dorsal black; no spots on body remaining.

Most authors hitherto have identified *Scomberomorus* species from the African Atlantic as *tritor* Cuvier, but most likely part of these should have been referred to the present species.

Unfortunately, Fraser-Brunner based his revision of the Scombridae only on the material in the British Museum, on his own observations in the field, and on literature. The group badly needs a thorough revision based rather on a careful reexamination of the types of the nominal species than on literature.

ELEOTRIDAE

Eleotris senegalensis Steindachner

Eleotris (*Culius*) *senegalensis* Steindachner, 1870, p. 949, plate 2 figs. 1, 2.
Eleotris (*Culius*) *Büttikoferi* Steindachner, 1894, p. 27 (partly), plate 2 fig. 2.
Eleotris vittata, Boulenger, 1916, p. 18, fig. 12 (partly); —, Fowler, 1936, p. 992 (partly); —, Poll, 1959, p. 143 (not fig. 48; partly).
Eleotris (*Culius*) *vittata,* Pellegrin, 1923, p. 305 (partly).
nec *Eleotris vittata* Duméril, 1860, p. 249, plate 21 figs. 4, 4a.
3 ex., 73(92), 77(97), 137(175) mm, reg. no. RMNH 25042.

Remarks: D VI.I.8(1); A I.8(1); scales in longitudinal series 41-43, excluding those on C; scales in transverse series 15-16; depth of caudal peduncle 1.6-1.9 in its length.

With these specimens, I received two examples apparently belonging to

the same species but with 50 and 52 scales in longitudinal series. Though these scale counts, even in the present small number of examples suggest a discontinuity, all specimens closely agree with *Eleotris vittata* as understood in recent literature since Boulenger (l.c.), the number of scales in longitudinal series being almost unanimously recorded as 40-50, according to Fowler 46-55 though again 40-50 in his key (l.c., p. 992).

The present specimens were compared with the types of *Eleotris büttikoferi* (3 ex., reg. no. 5253; 8 ex., reg. no. 5254), with additional specimens from the same collection though evidently not examined by Steindachner (5 ex., reg. no. 5255; 1 ex., reg. no. 5271), and with the specimens Steindachner erroneously identified as *Eleotris pisonis* (1 ex., reg. no. 5256; 2 ex., reg. no. 5257; 1 ex., reg. no. 5258). The principal results are given in the table on p. 37.

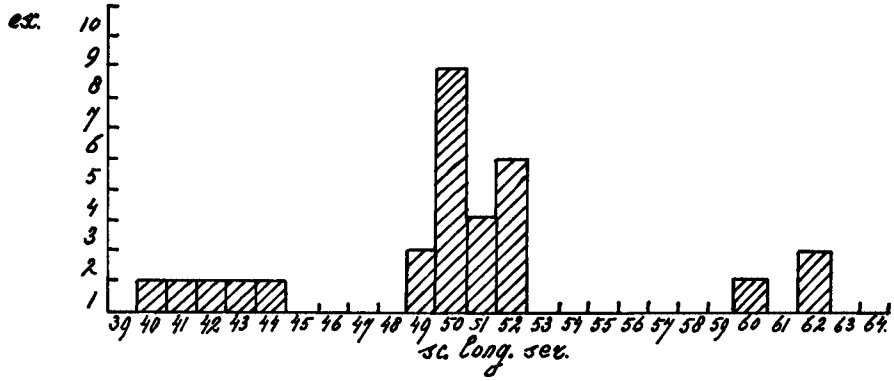

Fig. 2. Graph illustrating the frequency of occurrence of successive scale numbers in longitudinal series in the material at hand.

Further proportional characters more or less vary with age (eye 4.3 in smallest, 8.8 in largest example), but the differences appear to be negligible when comparing specimens of about the same size. All have a strong antrorse spine at preopercular angle, more or less hidden by skin.

The only apparent differences occurring within the present series of specimens is found in the squamation. When tabulating the frequency of the scale numbers in longitudinal series (see fig. 2), the series distinctly falls apart into three separate groups (40-44, 49-52, and 60-62 scales), the distinctness of which is partly confirmed by differences in the number of scales in transverse series.

According to literature, only two species of *Eleotris* with preopercular spines seem to have been reported from the African tropical Atlantic: *Eleo-*

1. reg. no.		25042a	25042b	25042c	25043a	25043b	5253a	5253b	5253c
2. length in mm.		73(92)	77(97)	137(175)	27(33)	45(56)	58(75)	68(85)	70(87)
3. D		VI.I.8(1)	VI.I.8(1)	VI.I.8(1)	VI.I.8(1)	VI.I.8	VI.I.8(1)	V.I.8(1)	VI.I.8(1)
4. A		I.8(1)	I.8(1)	I.8(1)	I.8(1)	I.8(1)	I.7(1)	I.8(1)	I.8(1)
5. scales l. ser.		43	42	41	52	50	50	50	52
6. scales tr. ser.		16	16	15	15?	16	15	15	15
7. C. ped., d. in l		1.9	1.7	1.6	2.0	1.9	1.9	1.9	1.9
1.	5254a	5254b	5254c	5254d	5254e	5254f	5254g	5254h	5255a
2.	39(48)	42(52)	45(54)	61(74)	69(?)	72(?)	77(91+)	158(202)	26(33)
3.	—	—	—	VI.I.8(1)	VI.I.8(1)	VI.I.8(1)	VI.I.8(1)	VI.I.8(1)	VI.I.8(1)
4.	—	—	—	I.8(1)	I.8(1)	I.8(1)	I.8(1)	I.8(1)	I.8(1)
5.	40	50	51	50	49	52	51	44	50
6.	15	16	15	16	15	15	16	16	15
7.	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.65	2.0
1.	5255b	5255c	5255d	5255e	5271	5256	5257a	5257b	5258
2.	41(50)	50(64)	61(77)	72(90)	72(?)	65(83)	161(200)	195(248)	201(250)
3.	VI.I.8(1)	VI.I.8(1)	VI.I.8(1)	VI.I.8(1)	VI.I.9(1)	VI.I.8(1)	VI.I.8(1)	VI.I.8(1)	VI.I.8(1)
4.	I.8(1)	I.8(1)	I.8(1)	I.8(1)	I.9(1)	I.8(1)	I.8(1)	I.8(1)	I.8(1)
5.	50	51	52	49	52?	50	62	60	62
6.	15	15	16	16	16?	16	22	21	22
7.	2.0	2.1	2.0	1.9	2.0	2.0	1.8	2.0	1.85

tris vittata Duméril and *E. monteiri* O'Shaughnessy, described as having respectively 40-50 (-55 cf. Fowler, l.c.) and 60-70 scales in longitudinal series. Unfortunately, the name *vittata* as presently used, is evidently erroneous. Duméril (1860, p. 249), in his description of the holotype of *vittata*, compares it with his holotype of *Eleotris maculatus* (p. 248), stating "le nombre des rangées verticales (-of scales-) est sensiblement le même"; for *maculatus* he states "à partir de l'opercule jusqu'a l'origine de l'uroptère, il y a soixante-cinq à soixante-dix rangées verticales d'écailles".

Reconsidering the two preceding paragraphs, it seems evident that *vittata* Duméril is identical with, and a senior synonym of, *monteiri* O'Shaughnessy, thus should replace that name as used by recent authors. This should be confirmed by a reexamination of the types [1]). Furthermore, it is evident that the species hitherto erroneously identified with *vittata* in fact represents two separate species, well distinguished in their squamation. These two forms agree fairly well with Steindachner's original descriptions of *Eleotris senegalensis* (40-45 scales in longitudinal series) and *E. daganensis* (48-50 scales in longitudinal series), though this opinion too should be corroborated by a reexamination of the types.

My preliminary conclusions are as follows: of the present series, five examples (reg. nos. 24042a-c, 5254a, h) belong to *Eleotris senegalensis* Steindachner (scales in longitudinal series 40-44, transverse 15-16; depth of body 4.35-5.2, head (measured from tip of lower jaw to upper attachment of gill cover) 2.7-3.1 in standard length; eye 4.6-7.3, snout to tip of upper jaw 5.2-5.9, interorbital width 3.8-5.2 in head; Steindachner obviously measured head length in a different way). Eighteen specimens (reg. nos. 24043a, b, 5253a-c, 5254b-g, 5255a-e, 5271, 5271, 5256) belong to *Eleotris daganensis* Steindachner (scales in longitudinal series 49-52, transverse 15-16; depth of body 4.4-6.6, head 2.8-3.05 in standard length; eye 4.3-6.4, snout 5.0-5.8, interorbital width 3.3-5.0 in head). Three examples (reg. nos. 5257a, b, 5258) belong to *Eleotris vittata* Duméril (= *monteiri* auct.) (scales in longitudinal series 60-62, transverse 21-22; depth of body 5.0-5.7, head 2.75-3.0 in standard length; eye 7.2-8.8, snout 5.3-5.7, interorbital width 3.1-3.4 in head).

Steindachner's *Eleotris pisonis* thus is referred to *Eleotris daganensis*

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1) At my request, Dr. Guibé kindly reexamined the holotypes of *Eleotris vittata* Duméril (reg. no. A. 1548, Mus. Paris) and *E. maculata* Duméril (= *E. dumerilii* Sauvage; reg. no. A. 1665, Mus. Paris), and states (in litt., August 16th, 1962): "Le nombre de rangées verticales d'écailles est toujours supérieur à 60, l'état de macération des échantillons ne permet pas une appréciation rigoureuse, j'arrive aux résultats suivants: *vittata*: 63-65, *dumerilii*: 65-66. Quand aux rangées horizontales elles dépassent toujours 20 et sont comprises entre 23 et 25".

This essentially confirms the above statements.

(reg. no. 5256, 1 ex., apparently erroneously included by Steindachner who records 58-63 scales in longitudinal series) and *Eleotris vittata* Duméril (reg. nos. 5257, 5258). The same author's *Eleotris büttikoferi* is also based on heterogeneous material, belonging to *E. senegalensis* and *E. daganensis* (reg. nos. 5253, 5254). As the principal part of the description of *büttikoferi* was based on the largest example (reg. no. 5254h, plate IV fig. 4), this specimen is selected as lectotype of the presumed species, which makes *büttikoferi* a junior synonym of *senegalensis* Steindachner. Poll's figure (l.c.) seems to represent a specimen with about 50 scales in longitudinal series, thus represents *daganensis*, while his description ("environ 40 à 50 écailles (généralement moins de 45) en ligne laterale") suggests a heterogenous material consisting of both *senegalensis* and *daganensis*.

Eleotris daganensis Steindachner

Eleotris (*Culius*) *daganensis* Steindachner, 1870, p. 951, plate 2 figs. 3-5.
Eleotris (*Culius*) *Büttikoferi* Steindachner, 1894, p. 27 (not plate 2 fig. 2; partly).
Eleotris vittata, Boulenger, 1916, p. 18 (not fig. 12; partly); —, Fowler, 1936, p. 992 (partly); —, Poll, 1959, p. 143, fig. 48 (partly).
Eleotris (*Culius*) vittata, Pellegrin, 1923, p. 305 (partly).
nec *Eleotris vittata* Duméril, 1860, p. 249, plate 21 figs. 4, 4a.
2 ex., 27(33), 45(56) mm, reg. no. RMNH 25043.

Remarks: the species and the present material are extensively discussed in the previous chapter (see *Eleotris senegalensis* Steindachner).

Hannoichthys africana Steindachner

Eleotris africana, Boulenger, 1916, p. 17, fig. 11; —, Fowler, 1936, p. 995, fig. 408.
Hannoichthys africanus, Poll, 1959, p. 149, fig. 51.
4 ex., 72(87), 115(140), 121(152), 121(152) mm, reg. no. RMNH 25044.

Remarks: D VI.I.9(1); A I.8(1); scales in longitudinal series about 81-94; a dark spot on upper caudal base usually distinct, vague in the small example; anal fin with light margin.

The species is distinctly characterized by the lack of a preopercular spine and the large number of scales in longitudinal lateral series.

GOBIIDAE

Bathygobius soporator (Valenciennes)

Gobius soporator, Boulenger, 1916, p. 33.
Bathygobius soporator, Fowler, 1936, p. 1001; —, Poll, 1959, p. 152, figs. 52, 53.
3 ex., 61(77), 70(88), 78(98) mm, reg. no. RMNH 25045.

Remarks: D VI.I.9(1); A I.8(1); scales in longitudinal series 37-40, excluding 3-4 large and numerous small scales on C; scales in transverse

series about 14; no scales on cheeks; upper pectoral rays free and silk-like; brownish with darker blotches or broad cross-bands; rows of small darker spots on rays of soft dorsal and caudal fins, more vague and to a varying extent on pectorals.

Acentrogobius schlegelii (Günther)

Gobius schlegelii Günther, 1861, p. 46; —, Boulenger, 1916, p. 37, fig. 20.
Gobius schlegelii, Bleeker, 1863, p. 103, plate 13 fig. 1.
Porogobius schlegelii, Fowler, 1936, p. 1010, fig. 415.
Acentrogobius schlegelii, Irvine, 1947, p. 191.
Coronogobius schlegeli, Poll, 1959, p. 163, fig. 58.
8 ex., 29(38), 30(40),49(70), 53(78), 58(81), 60(86), 68(97), 80(117) mm, reg. no. RMNH 25046.

Remarks: D VI.I.9(1); A I.9(1); scales in longitudinal series 27-29, excluding 4-5 on C; scales in transverse series below origin of soft dorsal 8-9; curved dark lines on head and pectoral base, and a series of short vertical stripes on lower sides characteristic.

These specimens completely agree with the holotype in the Leiden Museum collection (reg. no. 1920, plate III fig. 1), which also still distinctly shows the characteristic markings.

Bleeker (1874, p. 321) proposed the genus *Porogobius,* type species *Gobius schlegelii,* but subsequently considered *Porogobius* identical with his *Acentrogobius* (1876, p. 139, footnote). Herre (1945, p. 80) first proposed his genus *Coronogobius* for a new species named *C. striatus* only, but next year (1946, p. 125) also included *schlegelii.* If Herre is correct in putting both these species in the same genus, *Coronogobius* can only be regarded as a junior synonym of *Porogobius* Bleeker. Here, I accept Bleeker's final point of view, confirmed by Koumans (1931, p. 95), and consider *Porogobius* a junior synonym of *Acentrogobius* Bleeker.

Oxyurichthys occidentalis (Boulenger)

Gobius (*Oxyurichthys*) *occidentalis* Boulenger, 1909, p. 431.
Gobius occidentalis, Boulenger, 1916, p. 39, fig. 22.
Oxyurichthys occidentalis, Fowler, 1936, p. 1012, fig. 416.
7 ex., 38(56), 77(109), 79(116), 83(118), 86(126), 87(136), 90(130) mm, reg. no. RMNH 25047.

Remarks: D VI.I.13(1), in one example each VI.I.12(1) and VI.I.14(1); A I.14(1); scales in longitudinal series 60-63 to caudal base; a dark triangular spot on lower anterior opercle; a dark round spot on caudal just beyond base, with before it in some specimens a more or less distinct row of smaller spots, in the juvenile example almost coalescing into a continuous lateral band.

The generic name *Oxyurichthys* Bleeker is invariably accepted to have been

first proposed in1860 (1860a, p. 44), when Bleeker, in an enumeration of the species known from Celebes, writes "*Oxyurichthys belosso* Blkr = *Gobius belosso* Blkr", which would make *belosso* the type-species by monotypy. Unfortunately, there are at least three similar references by Bleeker published at an earlier date (1857, p. 464; 1859, p. 408; 1860, p. 42), the first of which should be accepted as the original proposal. In this 1857 paper, Bleeker merely lists *Oxyurichthys belosso*, *O. microlepis*, and *O. tentacularis*, without indicating a type-species. Only at a much later date (1874, p. 453) Bleeker gives a diagnosis of his genus, including the designation of *O. belosso* (Bleeker) as type-species. Here he also uses the spelling *Oxyurichthus* for the first time, which should be considered a mere typographical error.

PERIOPHTHALMIDAE

Periophthalmus koelreuteri (Pallas)

Periophthalmus koelreuteri (Pallas) var. papilio, Pellegrin, 1923, p. 314.
Periophthalmus koelreuteri, Fowler, 1936, p. 1013, fig. 417; —, Irvine, 1947, p. 191, fig. 111; —, Tortonese & Arbocco, 1958, p. 5; —, Poll, 1959, p. 169, fig. 62.
5 ex., 71(88), 75(93), 90(112), 115(146), 125(155) mm, reg. no. RMNH 25048.

Remarks: there is some controversion among recent authors as to the status of the West African form. If it should prove distinct, either specifically or subspecifically, the name *papilio* Bloch & Schneider is available (Tortonese & Arbocco, l.c.).

BOTHIDAE

Citharichthys stampflii (Steindachner)

Hemirhombus Stampflii Steindachner, 1894, p. 52, plate 3 fig. 3.
Citharichthys stampflii, Norman, 1934, p. 151, fig. 104; —, Irvine, 1947, p. 208, fig. 125; —, Chabanaud, 1953, p. 390; —, Poll, 1959, p. 296, fig. 101.
4 ex., 65(81), 77(95), 92(114), 96(119) mm, reg. no. RMNH 25049.

Remarks: D 83, 82, 82, 84; A 63, 61, 62, 63; V 6; gill rakers 5+1+15 (counted in two examples only); scales in longitudinal series 48, 48, 49, 48, excluding those on C; ocular pelvic median; lateral line hardly curved anteriorly; depth of body about 2.2 in standard length; eye about 5 in head; maxillary to below centre of eye; teeth on both jaws biserial(!), the outer anterior teeth enlarged, especially on upper jaw, the inner series mostly reclining or hidden by gums; gill rakers rather long and slender.

The specimens were compared with Steindachner's types (2 ex., reg. no. 5344, Grand Cape Mount, Liberia, coll. J. Büttikofer & J. A. Sala, Dec. 1881, 51(63) and 103(126) mm, plate VI fig. 4), and showed a complete agreement. Both the types also appeared to have the teeth in two rows as described above (especially distinct in the large type), a feature strangely overlooked by previous authors. The large type is now indicated as lectotype of the present species.

BATRACHOIDIDAE

Batrachoides liberiensis (Steindachner)

Batrachoides beninensis, Fowler, 1936, p. 1077.
Batrachoides liberiensis, Irvine, 1947, p. 219, fig. 133.
Batrachus liberiensis, Roux, 1957, p. 220, fig. 93; —, Roux & Collignon, 1957, p. 311; —, Poll, 1959, p. 332, fig. 112.
2 ex., 140(170), 175(210) mm, reg. no. RMNH 25050.

Remarks: D III.24-25; A 21-22; eye 11.8 and 12.5 in head; 2 opercular spines, 2 subopercular spines; squamation on back reaching forward to 1.5 or 2 eye diameter before first dorsal fin, not separated from dorsals by a naked region; teeth on upper jaw with a median patch of 4 rows of short conical teeth, two rows laterally, ending in single row; 1-2 rows on vomer and a single row on palatines; on mandible a median patch of 5-6 rows, laterally abruptly diminished into a single row.

I compared these specimens with the example described by Bleeker (1863, p. 99) as *Batrachus didactylus* Bloch & Schneider (reg. no. 2117), with the syntypes of *B. güntheri* Bleeker (l.c., p. 101; reg. no. 2114, plate VI fig. 2), and with the holotype of *B. elminensis* Bleeker (l.c., p. 98; reg. no. 4374, plate VI fig. 3), which provided the following data.

Reg. no. 2117: length 137(168) mm to tip of projecting lower jaw (about 165 mm to tip of upper jaw); D III.21; A 16; eye about 5 in head, not 3.6 as stated by Bleeker, about equal to interorbital width; 2 opercular spines, 1 subopercular spine with a lower basal spiny projecture covered by skin; head naked, upper surface with reticulate skinny ridges; squamation of body reaching forward only to below middle of spinous dorsal fin, and leaving a distinct rather wide naked area along soft dorsal base; maxillary teeth in 2 rows, a single row laterally; a single row on vomer and palatines; median part of mandible with 2 rows of teeth, a single row laterally; a small pore in upper pectoral axil; two lateral lines with single pores, apparently without skinny flaps; brownish with irregular darker spots and blotches, lower parts lighter, pale. Bleeker's identification seems correct.

Reg. no. 2114: length 175(218), 198(241) mm to tip of lower jaw (about 3-4 mm less to tip of upper jaw); D III.20-21; A 16; eye 5.3-5.5 in head, about 1.6 in interorbital width; 2 opercular spines, 1 subopercular spine shortly bifid near lower base, hidden by skin (one side of the larger example with a double subopercular spine!); head naked, rather smooth; squamation of body reaching forward to posterior or middle base of spinous dorsal, and leaving a distinct naked area along base of soft dorsal fin; maxillary teeth in 2 rows, laterally continued in single row; vomer with 1 row of teeth in smaller example, 2 rows in larger specimen; palatines with a single series; mandible with 2 (small ex.) or 3 (larger ex.) rows of teeth on median part,

2 rows laterally, ending in single row; a small pore in upper pectoral axil; two lateral lines with single pores, without skinny flaps; colouration lost, wholly pale. The agreement with the previous specimen (reg. no. 2114) is almost complete, especially if we accept a slight increase of teeth rows with age. *B. güntheri* Bleeker thus seems identical with *didactylus* Bloch and Schneider. The larger example is now selected as lectotype.

Reg. no. 4374: length 285(343) mm to tip of lower jaw, which projects about 5 mm; D III.21, last ray small and obscure; A 17, last ray small; eye about 8 in head, 3 in interorbital width, 2 in body interorbital; 2 opercular spines, 1 bifid subopercular spine hidden by skin; head naked, with reticulate markings; squamation rather indistinct, with weak cycloid scales, reaching forward to near spinous dorsal, and leaving a wide naked area along soft dorsal fin; maxillary teeth in 3 rows, 2 rows laterally, ending in a single row; vomer with 3-4 rows, 1-2 on palatines; mandible with 4-5 rows on median part, 2 laterally, ending in a single row; pectoral axil with a deep skinny pocket, deep inside subdivided into three cavities, situated slightly behind upper pectoral base; two lateral lines, rather indistinct, pores apparently single, especially the anterior pores of upper lateral line each accompanied by a small upper and lower skinny flap; brownish with irregular darker markings, dark spots or bands on soft dorsal, caudal, and pectoral fins, lower parts pale. In various characters this specimen remarkably agrees with *B. rossignoli* Roux (1957, p. 221, fig. 94), and still better with Poll's description and figure of that species (1959, p. 334, fig. 113), but I am unable to find double pores in the lateral lines, and there is no indication of any transverse dark bands on the present specimen. Roux records 13 rays in A, Poll 15 or 16, the present specimen having 17 rays with the last one very small and therefore easily overlooked. Roux also described the pectoral fin as reaching beyond anal origin, its length being about 3.6 in standard length; in the present example, the pectoral fin does not reach anal base, its length being approximately 4.5 in standard length, subequal ventral length, which seems to agree with Poll's description.

Provisionally, I accept the existence of two separate species with the strange skinny pockets in pectoral axil along the tropical Atlantic coast of Africa, and disagree with those authors which have hitherto considered *elminensis* Bleeker a synonym of *didactylus* Bloch & Schneider. The skinny axillar structure, in my opinion, may well warrant subgeneric or even generic distinction.

From these Bleeker specimens, the Nigerian examples are easy to distinguish on account of the differing finformula, the small axillar pore, the lack of an axillar pocket, and the distinct dark brown transverse bands on body and tail.

TETRAODONTIDAE

Tetraodon pustulatus Murray

Tetrodon pustulatus, Boulenger, 1916, p. 146, fig. 99; —, Fowler, 1936, p. 1113.
Tetraodon pustulatus, Irvine, 1947, p. 217; —, Poll, 1959, p. 339.
1 ex., 38(52) mm, reg. no. 25051.

Remarks: D 2.9; A 2.7; C truncate; rather large spinules only on ventral parts; upper half brownish, lower half pale, some indistinct brownish markings on caudal fin, other fins pale. Closely agreeing with Fowler's description, though the rather plain colouration seems atypical.

Poll (l.c.) suggests rather convincingly that *pustulatus* may represent the juvenile form of *Ephippion* (= *Hemiconiatus* auct.) *guttifer* (Bennett), which needs confirmation.

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Dr. E. Trewavas, British Museum (Natural History) generously provided information on specimens in the London collections as well as advice and valuable criticism. Though, rather presumptuously, not all criticisms were agreed on, all information proved most important and has been greatly appreciated. Information on specimens under his care was also provided by Dr. J. Guibé, Museum National d'Histoire Naturelle, and is hereby kindly acknowledged. Dr. L. B. Holthuis was especially helpful with advise in various problems, mostly nomenclatorial.

The accompanying plates have been made after photographs by H. F. Roman; the map (fig. 1) was drawn by W. Bergmans, the graph (fig. 2) by A. J. de Lange.

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EXPLANATION OF THE PLATES

Plate I, fig. 1. *Alausa platycephalus* Bleeker, Ashantee, Guinea, 155 (202) mm, reg. no. RMNH 3310, holotype; fig. 2. *Chrysichthys Büttikoferi* Steindachner, Buluma, Fisherman Lake, Liberia, 152(210) mm, reg. no. RMNH 5341, holotype; fig. 3. *Sphyraena dubia* Bleeker, Ashantee, Guinea, 470(555) mm, reg. no. RMNH 454, holotype; fig. 4. *Ophichthys* (*Sphagebranchus*) *Büttikoferi* Steindachner, branch of Du Queah River, Hill Town, Liberia, 270 mm, reg. no. RMNH 5331, syntype.

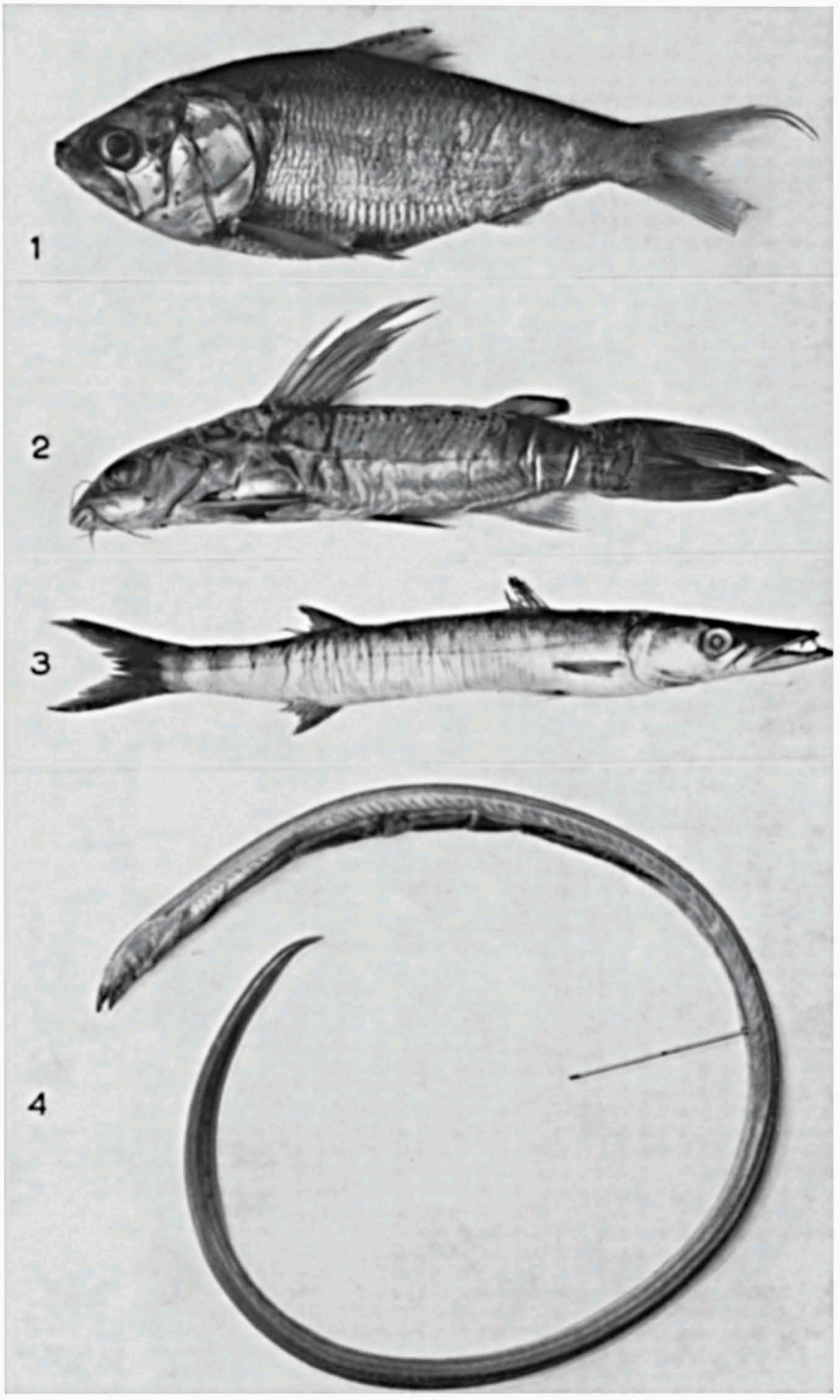
Plate II, fig. 1. *Aplocheilichthys typus* Bleeker, Guinea ("in pharynge Portmei argentei reperta"), 38.5(52) mm, reg. no. RMNH 1982, holotype; fig. 2. *Mugil Schlegeli* Bleeker, Ashantee, Guinea, 97(133) mm, reg. no. RMNH 1647, holotype; fig. 3. *Mugil Metzelaari* Chabanaud, Robertsport, Grand Cape Mount, Liberia, 220(282+) mm, reg. no. RMNH 5372, lectotype; fig. 4. *Mugil ashanteënsis* Bleeker, Ashantee, Guinea, 209(271) mm, reg. no. RMNH 1631, holotype.

Plate III, fig. 1. *Gobius schlegelii* Günther, Boutry, Gold Coast, 72(104) mm, reg. no. RMNH 1920, holotype; fig. 2. *Lutjanus agennes* Bleeker, Ashantee, Guinea, 164(213) mm, reg. no. RMNH 5062, lectotype; fig. 3. *Lutjanus endecacanthus* Bleeker, Ashantee, Guinea, 145(183) mm, reg. no. RMNH 237, holotype; fig. 4. *Lutjanus eutactus* Bleeker, Ashantee, Guinea, 172(216) mm, reg. no. RMNH 247, holotype.

Plate IV, fig. 1. *Lutjanus modestus* Bleeker, Ashantee, Guinea, 151(198) mm, reg. no. RMNH 243, holotype; fig. 2. *Lutjanus guineënsis* Bleeker, Ashantee, Guinea, 127(162) mm, reg. no. RMNH 248, holotype; fig. 3. *Pseudotolithus brachygnathus* Bleeker, Ashantee, Guinea, 180(221+) mm, reg. no. RMNH 671, holotype; fig. 4. *Eleotris* (*Culius*) *Büttikoferi* Steindachner, branch of Du Queah River, Hill Town, Liberia, 158(202) mm, reg. no. RMNH 5254, lectotype.

Plate V, fig. 1. *Gerres melanopterus* Bleeker, Guinea, 73(95) mm, reg. no. RMNH 5402, holotype; fig. 2. *Gerres octactis* Bleeker, Guinea, 145(185+) mm, reg. no. RMNH 1091, holotype; fig. 3. *Chromis microcephalus* Günther, Ashantee?, Guinea, 117(157) mm, reg. no. RMNH 4831, syntype?; fig. 4. *Chromis macrocephalus* Bleeker (in Günther), Ashantee, 135(185) mm, reg. no. RMNH 4916, lectotype.

Plate VI, fig. 1. *Chromis guineensis* Bleeker (in Günther), Ashantee, 165(225) mm, reg. no. RMNH 2134, lectotype; fig. 2. *Batrachus Güntheri* Bleeker, Elmina, Guinea, 198(241) mm, reg. no. RMNH 2114, lectotype; fig. 3. *Batrachus elminensis* Bleeker, Elmina, Guinea, 285(343) mm, reg. no. RMNH 4374, holotype; fig. 4. *Hemirhombus Stampflii* Steindachner, Grand Cape Mount, Liberia, 103(126) mm, reg. no. RMNH 5344, lectotype.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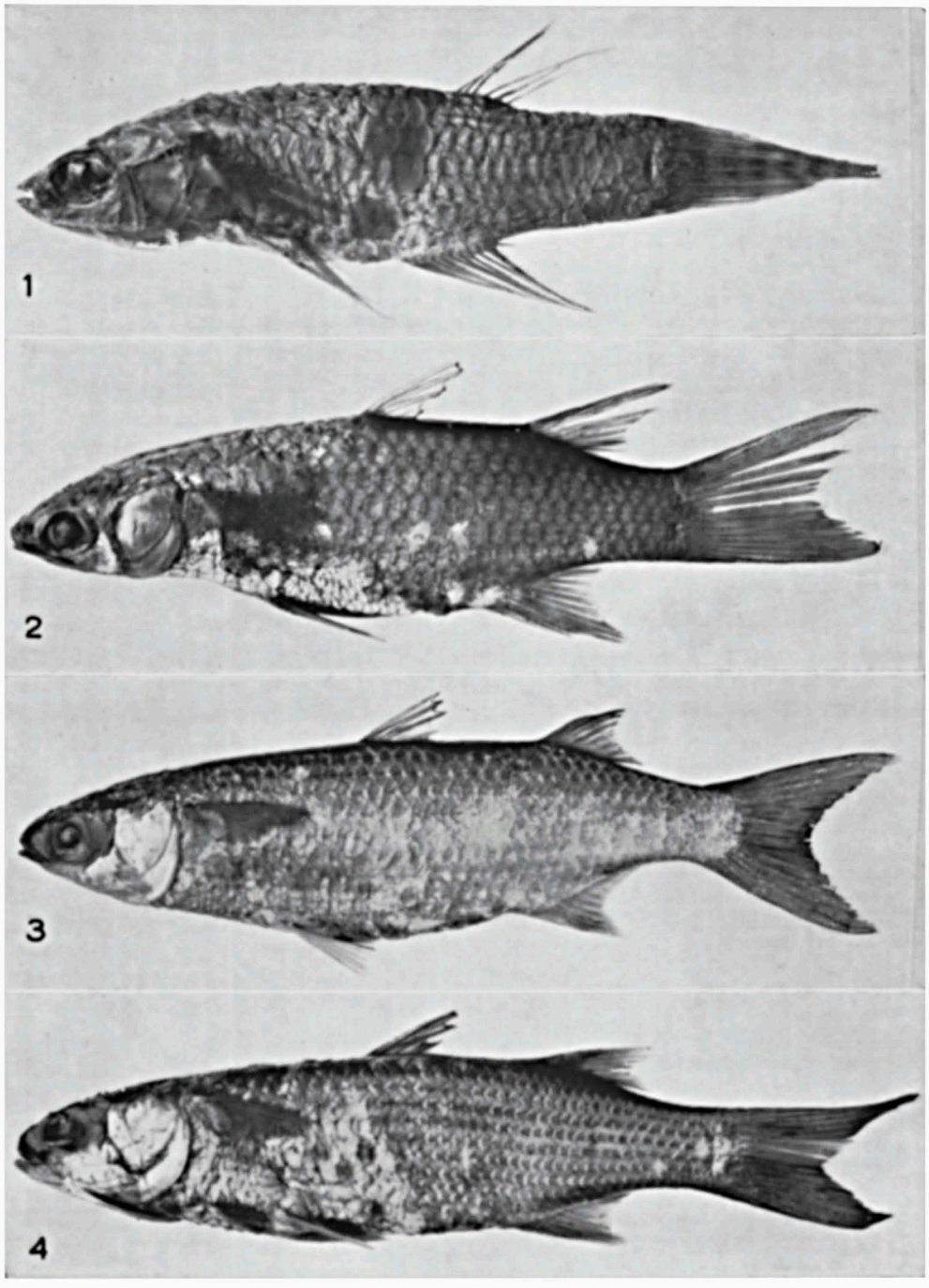
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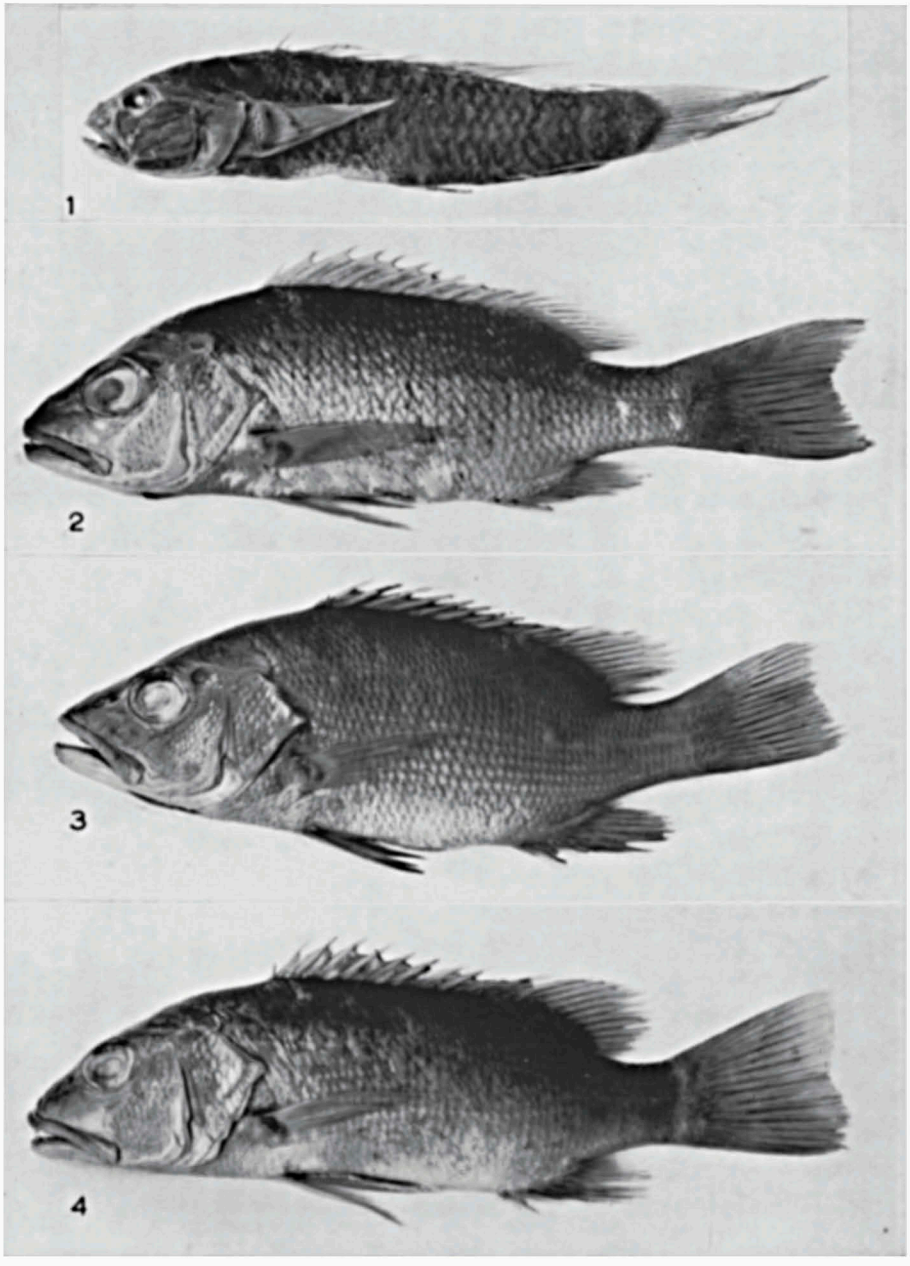
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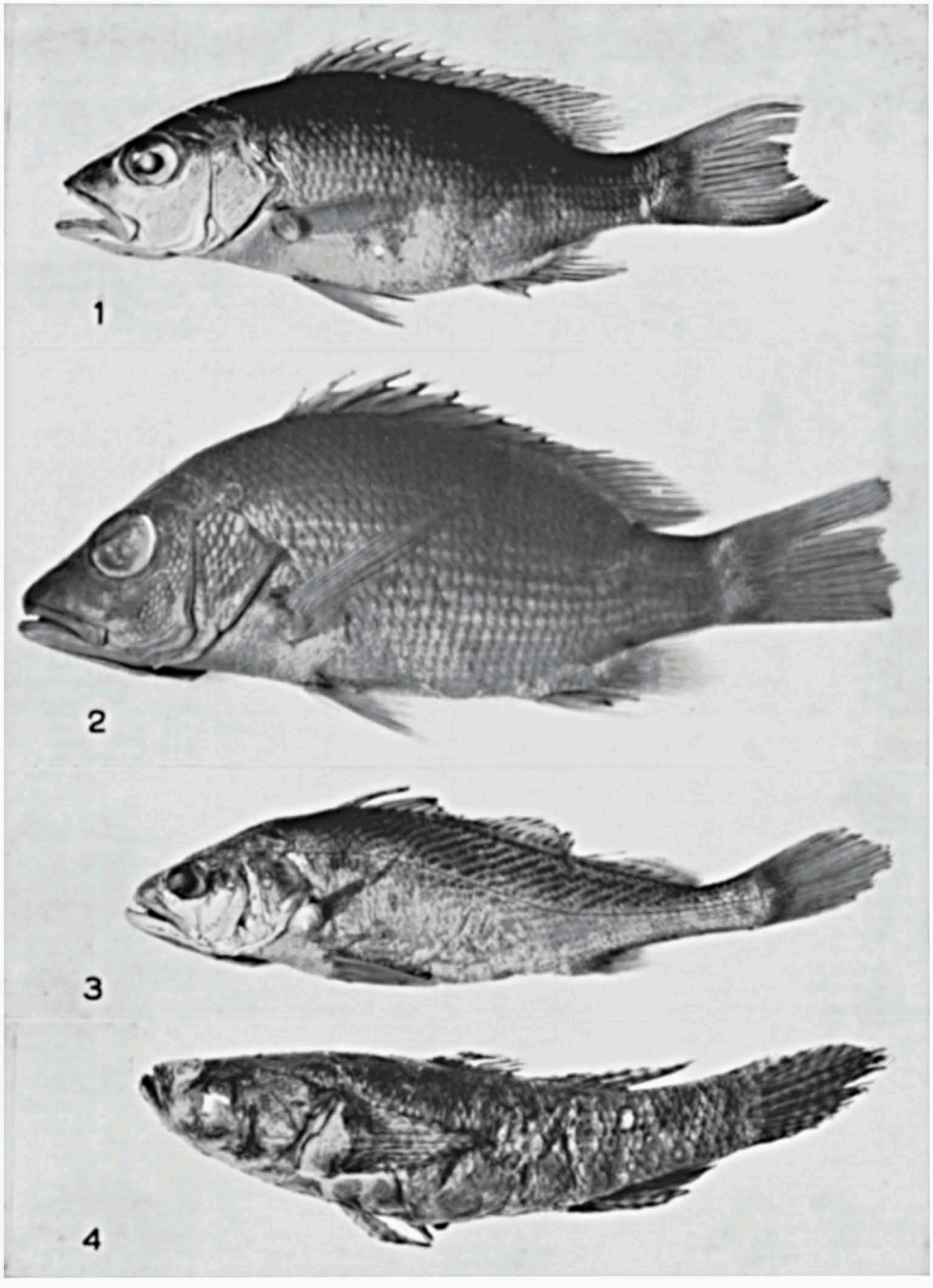
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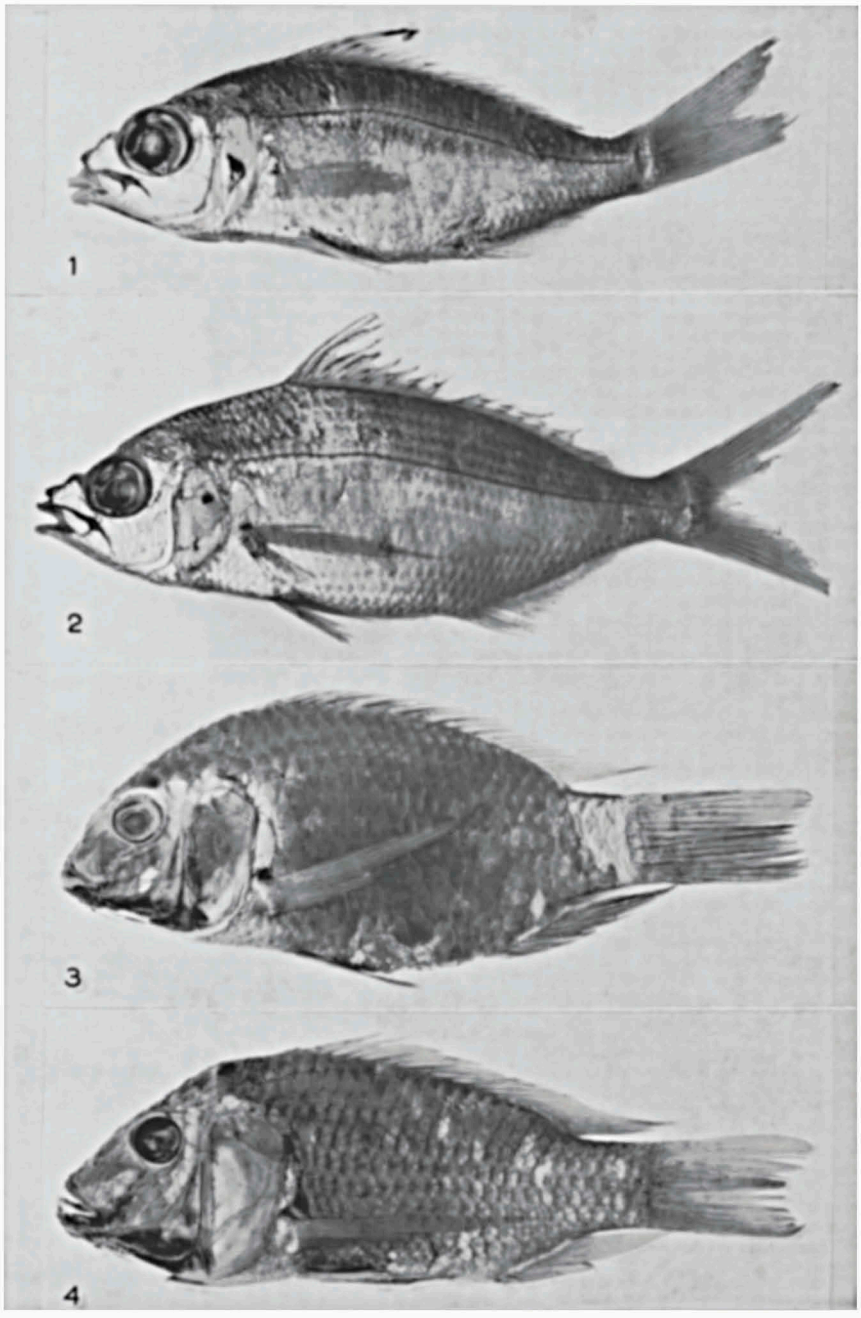
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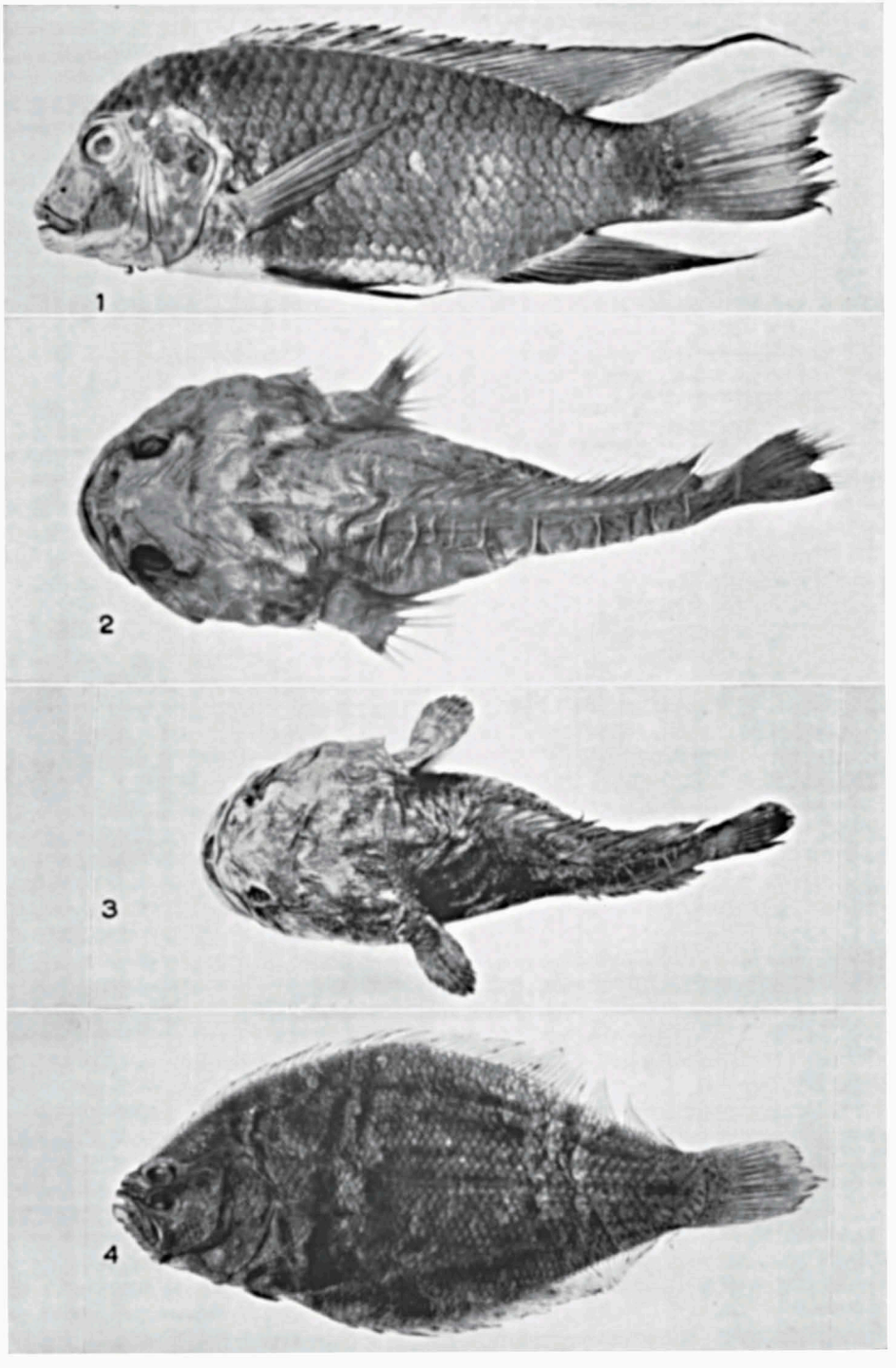
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