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Report on the Fishes collected by Mr. Harry Madsen during Professor O. Olufsen's Expedition to French Sudan in the Years 1927—28.

By

J. R. Pfaff.

(With Plate VI.)

The present paper deals with a fine collection of fishes, compiled by Mr. Harry Madsen, Conservator at the Zoological Museum of the University in Copenhagen, during the late professor O. Olufsen's expedition to French Sudan, etc. in the years 1927—1928.

The director of the Department of Vertebrates of the Zoological Museum of the University, Copenhagen, Professor, Dr. phil. Ad. S. Jensen, has handed over to me the collection for treatment and has besides procured me a grant from the Carlsberg Fund, which also paid the expences of Mr. Harry Madsen's travel.

It is with pleasure that I express my best thanks.

To Dr. Chr. I. Baastrup, Leader of the X-rays' clinic of Bispebjerg Hospital I am indebted for the X-rays' photography of *Muræna albomarginata* sp. n.

The collection consists of three parts, made in the following three localities: The Niger (to this locality is reckoned a single find from Zinder, halfway between Niger and Lake Chad), Lagos, and Dakar.

The greater part of the fishes originates from the Niger, especially from localities in the vicinity of Timbuctoo. In this locality were collected 135 specimens (+ 497 young ones of a single species), belonging to 35 different species, four of which are described as new species, and a single one as a new variety:

Gnathonemus elongatus sp. n.
Barbus lepidus sp. n.

Chrysichthys longifilis sp. n.
Panchax tœniatus sp. n.
and
Bagrus bayad Forskål, var. macropterus var. n.

The collection from Lagos consists of 34 specimens, belonging to 17 different species. Most of them were bought from fishermen, and all such specimens may be caught in the lagoon. Two specimens are described as new to science:

Arius lagoensis sp. n.
Gobionellus lepturus sp. n.

At Dakar were collected 24 specimens, belonging to 16 different species. Three species are new to science:

Muræna albomarginata sp. n.
Nematogobius brachynemus sp. n.
Scorpænodes africanus sp. n.

As new to the fauna was found:

Pomacentrus fuscus Cuvier et Valenciennes.

The last mentioned species is interesting as it was formerly known only from the western parts of the Atlantic. This form, as well as *Scorpænodes africanus* sp. n., *Gobionellus lepturus* sp. n. (and *Muræna albomarginata* sp. n.?), which have their nearest relatives on the opposite side of the Atlantic, are new evidences of the intimate connection between the coastal fish faunas in West Africa and in the West Indies.

In the following paper no attempt has been made to work out the synonomy of the species. For the fresh water forms I refer to G. A. Boulenger: Catalogue of the Fresh-Water Fishes of Africa, I—IV (cited as: Boulenger, 1909, 1911, 1915, or 1916), and J. Pellegrin: Les Poissons des eaux douces de l'Afrique Occidentale (cited as: Pellegrin, 1923).

As to the sea-fishes reference is made to J. Metzelaar: Report on the fishes, collected by Dr. J. Boeke, in the Dutch West Indies, 1904—1905, with comparative notes on marine fishes of Tropical West Africa (in J. Boeke: Rapport betreffende een voorloopig onderzoek

naar den toestand van de Visscherij en de Industrie van Zeeproducten in de Kolonie Curaçao). This work is cited as: Metzelaar. 1919.

References to other literature has been made in foot-prints, but a complete bibliography has not been placed in this paper, because various such have been published during the latest years; instead of this I shall refer to the above cited works, besides — for the marine fish fauna — to Th. Monod: Contribution à l'étude de la faune du Cameroun. Pisces I. Pisces marini, in: A. Gruvel: Faune des Colonies françaices. Tome I. Fasc. 6. Paris 1927, pp. 741—742.

For the fresh-water fishes a list of literature will be found in M. Holly: Synopsis der Süszwasserfische Kameruns. Sitzungsberichte der Akademie der Wissenschaften in Wien. Abteilung I. 139. Band. Jahrgang 1930. pp. 276—281.

I. Fishes from Niger.

Polypterus senegalus Cuvier.

Boulenger. 1909. p. 14.
Pellegrin. 1923. p. 36.

4 specimens, 27—30,8 cm. long, from Kabara. June 1927.

33—34 scales round middle of body. Anterior part of body depressed, posterior, from first dorsal spine, compressed.

Polypterus endlicheri Heckel.

Boulenger. 1909. p. 10.
Pellegrin. 1923. p. 35.

1 specimen, 54 cm. long, from Kabara. August 24, 1927.

Seven black bands across the back, the first of them just behind occiput and very distinct. The crossbands are on the sides of body broken up into angular spots, and one or two rows of similar spots are found between the bands. Lips, sides of head, and root of pectorals with much smaller black or blackish spots.

Protopterus annectens (Owen).

Boulenger. 1909. p. 20.
Pellegrin. 1923. p. 40.

1 specimen, 50 cm. long, from Jebba. December 11, 1927.

Snout 3,6 in head. Eye very small, 3,8 in interorbital width, 15 in length of head.

Petrocephalus bane (Lacepède).

Boulenger. 1909. p. 48.
Pellegrin. 1923. p. 49.

3 specimens, 8,5—15,7 cm. long, from Kabara. August 22—23, 1927.

1 specimen, 7 cm. long, from Kabara. August 26, 1927.

Gnathonemus elongatus sp. n.
(Fig. 1).

1 specimen, 19,5 cm. long, from Kabara. August 26, 1927.

Depth of body a little more than 4 times in total length, without caudal. Length of head $5^1/_3$ times in total length. Head a little longer

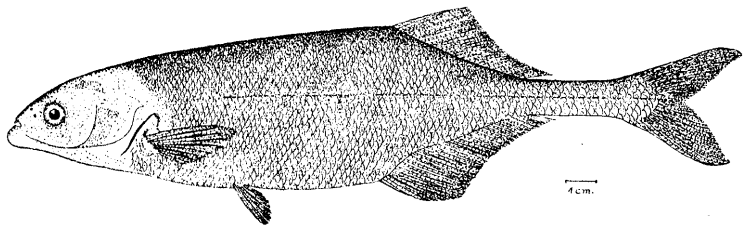


Fig. 1. *Gnathonemus elongatus* sp. n.

than deep, with feebly curved upper profile. Snout $^1/_4$ length of head. The teeth are conical, 5 in upper jaw, 6 in lower. A globular mental appendage, as long as eye. Eye moderate, $5^1/_3$ times in length of head, $^3/_4$ length of snout, a little more than $^1/_2$ interorbital width. Dorsal 28, originating above 9th ray of anal, its length half its distance from head. Anal 32, situated in nearly equal distance from base of ventral and from base of caudal, or rather a little nearer the latter. Pectoral pointed, a little shorter than head, twice as long as ventral, extending beyond base of latter. Caudal scaled in its basal half, with obtusely pointed lobes. Caudal peduncle nearly 4 times as long as deep, a little shorter than head. 73 scales in lateral line, $\frac{14}{17}$ in transverse series on body, $\frac{13}{14}$ in transverse series between origin of dorsal and origin of anal, 12

Table I.

	G. elongatus	G. senegalensis	G. stanleyanus	G. gracilis	G. angolensis
Length : Depth	4,1	3—3,5	3,25—4,3	4,25	3,25—3,5
Length : Head	5,3	4,5—5,0	4,5—5	4,25	4,3—5
Depth of Head : Head	0,9	1,0	1,0	1,0	1,0
Snout : Head	0,25	0,25	0,3	0,25	0,25
Eye : Snout	0,75	0,67—0,8	0,67	..	0,9
Interorbital : Eye	1,7	..	0,67—0,75	2,25	..
Eye : Interorbital	0,6	0,5	..	..	0,67
Head : Eye	5,3	..	..	6,0	..
Head—D : Dorsal	1,8	..	..	..	2,3—2,5
Dorsal : Head—D	0,5	0,5	0,5—0,67	0,5	..
Pectoral : Head	0,9	1,0—0,9	1,0	0,75	0,9
Pectoral : Ventral	1,9	2,0	2,0	1,67	2,0
Length / Depth of caud. ped.	3,8	3,0	3—3,5	2,75	2,5
Caudal ped. : Head	1,1	0,9	1,0—0,9	..	0,75
V—A : A—C	1,2	..	..	1,0	..
Number of Teeth	5 / 6	3—5 / 4—6	5—7 / 6	3 / 4	..
Dorsal	28	25—28	28—32	24	24—26
Anal	32	30—36	35—40	30	29—33
Pectoral	10	..	..	10	..
Ventral	6	..	..	6	..
Scales	14 / 17 / 73	13—15 / 19—21 / 65—72	14—18 / 20—22 / 70—85	14 / 17 / 72	10—12 / 16—18 / 56—60
Sc. between D a. A	13 / 14	12—14 / 9—12	13—16 / 12—15	12 / 15	8—10 / 8—13
Sc. round caud. ped.	12	12	12	12	12

round caudal peduncle. Colour in alcohol brown on the back; lower parts of body and fins yellowish. Operculum with a translucent spot, imitating a black blotch.

This species is closely related to *Gnathonemus senegalensis* (Steindachner), from which it is separated by its more slender body, its different number of scales below lateral line, and the pectoral reaching beyond base of ventral. It is related with *Gnathonemus stanleyanus* (Boulenger), but separated by its number of scales below lateral line, and by its number of anal rays. From *Gnathonemus gracilis* Pellegrin

it can be separated by its number of fin rays, and from *Gnathonemus angolensis* Boulenger by its greater number of scales in lateral line, and its well developed mental swelling.

From all of these species it may be separated by its more slender caudal peduncle, and its shorter head.

A synoptical key of the short-nosed species of Gnathonemus, with the anal originating in advance of dorsal, conical teeth, and 12 scales round caudal peduncle, may be arranged as follows:

× Caudal peduncle nearly 4 times as long as deep. Head $5^1/_3$ in total. Pectoral reaching beyond root of ventral.
D. 28; A. 32; L.l. 73 ..... *G. elongatus* sp. n.
×× Caudal peduncle not more than $3^1/_2$ times as long as deep. Head not more than 5 in total. Pectoral reaching to root of ventral or beyond.
§ Not more than 60 scales in L.l. Mental swelling feeble.
D. 24—26; A. 29—33; L.l. 56—60 ..... *G. angolensis* Blgr.
§§ At least 65 scales in L.l. Mental swelling as great as eye.
+ Pectoral not extending beyond root of ventral.
D. 25—28; A. 30—36; L.l. 65—72 ..... *G. senegalensis* Stdr.
++ Pectoral extending beyond root of ventral.
D. 28—32; A. 35—40; L.l. 70—85 ..... *G. stanleyanus* Blgr.
D. 24; A. 30; L.l. 72 ..... *G. gracilis* Pllgr.[1])

Mormyrus jubelini Cuvier et Valenciennes.

Pellegrin. 1923. p. 72.

2 specimens, 40—45 cm. long, from Kabara. August 27, 1927.

Hyperopisus bebe Lacepède.

Boulenger. 1909. p. 142.
Pellegrin. 1923. p. 73.

1 specimen, 34,5 cm. long, from Kabara. August 26, 1927.

Hydrocyon forskåli Cuvier.

Boulenger. 1909. p. 180.
Pellegrin. 1923. p. 93.

2 specimens, 22,1—27,2 cm. long, from Kabara. August 27, 1927.

Hydrocyon lineatus Bleeker.

Boulenger. 1909. p. 182.
Pellegrin. 1923. p. 93.

[1]) J. Pellegrin: Poissons du Gribingui recuillis par M. Baudon. Bulletin de la Société zoologique de France. XLVII, p. 221. Paris 1922.

1 specimen, 62,5 cm. long, from Kabara. August 21, 1927.

1 specimen from Niafounké. May 31, 1927. Only head and pectoral region.

The specimens at hand are considerably greater than stated as "greatest specimens" by Boulenger (42 cm.). I suppose that this species may grow to the same length as the foregoing one, i.e. about 1 metre. The head from Niafounké measuring abt. 16 cm. in length, may have belonged to a specimen of abt. 85 cm. length.

As to the colouration it is to be mentioned that in our specimen the black longitudinal streaks do not extend to the series of scales below lateral line. Adipose dorsal entirely black.

Alestes baremose (Joannis).

Boulenger. 1909. p. 195.
Pellegrin. 1923. p. 97.

1 specimen, 15,5 cm. long, from Kabara. June, 1927.

7 specimens, 14—30,3 cm. long, from Kabara. August 27, 1927.

Scales on the back each with a dark spot, the spots forming more or less distinct lines along the rows of scales. These lines are only present on the part above the dark lateral band; not parallel with this latter.

Brycinus nurse (Rüppel).

Alestes nurse Boulenger. 1909. p. 205.
— — Pellegrin. 1923. p. 98.

8 specimens, 7,4—23,5 cm. long, from Kabara. August 22—23, 1927.

3 specimens, 13,3—14,0 cm. long, from a little pond in the vicinity of Timbuctoo.

1 specimen, 2,5 cm. long, from Gao.

18 specimens, 0,9—1,1 cm. long, from Gao.

It is with some hesitation that I have listed the 18 small specimens here, but they correspond with the species in fin formulae, and there is a beginning pigment spot on the side behind opercle. On account of these facts I am rather sure that I am justified in referring them to the present species.

Brycinus macrolepidotus Cuvier et Valenciennes.

Alestes macrolepidotus Boulenger. 1909. p. 217.
— — Pellegrin. 1923. p. 101.

2 dried specimens, 25,5—28,5 cm. long, from Niamey. Novbr. 1927.

Boulenger states that the teeth in the upper jaw of the genus *Alestes* (here and in the next following in the Boulengerian sense of this genus) are arranged in two series (1909, p. 190). It would, however, in the case of *Alestes nurse* (Rüppel) be more correct to say that they

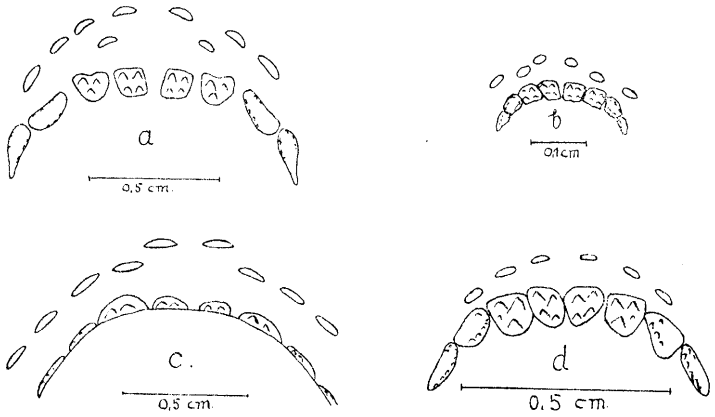


Fig. 2. Intermaxillary teeth of:— a. *Brycinus nurse* (Rüppel), adult; b. *Brycinus nurse* (Rüppel), juven.; c. *Brycinus macrolepidotus* Cuvier et Valenciennes; d. *Alestes baremose* (Joannis).

are arranged in three series, the middle series with only two teeth (fig. 2a). It is evident that this feature has developed in the manner that two of the teeth in the outer series — second in the row — have moved backwards. Their original place is indicated by intervals in the outer series, just in front of them. Also these two teeth are of just the same character as those in the outer row.

So it is in the greater specimens. In the specimens of 7—8 cm. length this backwards moving of the two teeth has only just begun (fig. 2b), and in the quite small individual (2,5 cm.) the outer teeth are all in a single row.

In adult specimens of *Alestes macrolepidotus* (Cuvier et Valenciennes) we shall find an arrangement similar to that found in half-grown individuals of *Alestes nurse*, i.e. the backwards moving of the teeth

has only just begun, indicated by a slight but very distinct incurvation of the outer row of teeth (fig. 2c).

Finally we shall find that in adult specimens of *Alestes baremose* (Joannis) all the teeth will be arranged in a straight row, no backwards moving of teeth having taken place (fig. 2d).

I have examined the single other species that was represented by adult specimens in the collections of the Zoological Museum, *Alestes dentex* (Linné), with the result that it was of what I may call the "Alestes baremose-type", i. e. all the outer teeth are standing in one straight row.

Of *Alestes imberi* Peters I have been able to examine two young specimens. In the smaller of them (5,0 cm.) all the teeth were standing in one, straight row, but in the greater one (8,0 cm.) a backwards moving of the second tooth had taken place; it was in an Alestes macrolepidotus-stage. Adult individuals were not at hand, and it is consequently not possible to say whether the development will be fixed in this stage, or it will proceed to an Alestes nurse-stage.

Shortly summarised this means: there are three developmental types of the intermaxillary teeth in the genus *Alestes* (in Boulengerian sense). The most primitive of them is represented in *Alestes baremose*, where all the teeth are arranged in a single straight row.

The second type is realised in *Alestes macrolepidotus* where the second tooth of each side has moved a trifle backwards.

The third type may be seen in *Alestes nurse* where the second tooth of both sides have moved so much backwards that they form so to speak an intermediate row between the two other rows of teeth.

Young ones of species of the "Alestes macrolepidotus-type" will pass through an "Alestes baremose-stage", and young ones of species of the "Alestes nurse-type" will pass through an "Alestes baremose-stage" and after that through an "Alestes macrolepidotus-stage".

Though I was aware that there were conspicuous external differences in body-shape, number of scales, etc. in two such species as *Alestes nurse* and *Alestes baremose* I did not intend from the preceding observations to draw conclusions that might lead to a generic separation, as there seemed to be transitional forms. When I nevertheless thought it worth the while to dwell upon, it was because it seemed to me a nice instance of a beginning specialisation inside a group of Characins of in other respects rather uniform character.

After the foregoing observations were written down I became, however, aware of a paper of G. S. Myers[1]) in which he very clearly showed that conspicuous cranial, as well as certain external, differences in the genus *Alestes* (in Boulengerian sense) ought to involve a separation of this genus into two: *Alestes* Müller und Troschel, and *Brycinus* Cuvier et Valenciennes[2]).

The species examined by me must with Myers' nomenclature be named as follows:—

Alestes baremose (Joannis), *Alestes dentex* (Linné).
Brycinus nurse (Rüppel), *Brycinus macrolepidotus* Cuvier et Valenciennes, *Brycinus imberi* (Peters).

It may be seen that this arrangement is in good agreement with the differences in dentition. The two *Alestes*-species are both of the "Alestes baremose-type", the three *Brycinus*-species of either the "Alestes macrolepidotus-type" or of the "Alestes nurse-type".

The material I had for disposal was very scanty and extensive conclusions could not be drawn of it.

The most interesting is, perhaps, that it supports Myers' view of the Boulengerian genus *Alestes*.

Further it seems to show that *Alestes* is, at least in this character, a more primitive type than *Brycinus*.

As to the differences in dentition inside the genus *Brycinus* (as defined by Myers) it is too early to say anything definite, though, indeed, the differences seem so conspicuous that they may perhaps lead to at least a sub-generic division[3]).

[1]) George S. Myers: Cranial differences in the African Characin Fishes of the genera *Alestes* and *Brycinus*, with notes on the arrangement of related genera. American Museum Novitates. Number 342. 1929. pp. 1—7.

[2]) In Cuvier et Valenciennes' figure of the intermaxillary teeth of *Brycinus macrolepidotus* it is very distinctly seen that tooth number two of the right side has moved backwards; in the left side this tooth seems to be lacking. (Cuvier et Valenciennes: Histoire Naturelle des Poissons. Vol. 22. 1849. Pl. CCCCCCXXXIX.

[3]) It is tempting to try to compare the dentition in *Brycinus* with that in the tetragonopterid genus *Bryconæthiops* Günther, which is said to have the intermaxillary teeth in three series. No specimens of that genus being available to me, too much stress may not be laid on the following observations.

In *Bryconæthiops microstoma* Günther the intermaxillary teeth are said to

Lastly seem the dentitions to be a practicable criterion upon the two genera *Brycinus* and *Alestes*, at least what belongs individuals from 7—8 cm. length.

Micralestes acutidens (Peters).

Boulenger. 1909. p. 224.
Pellegrin. 1923. p. 102.

2 specimens, 4,3—4,4 cm. long, from Kabara. August 22—23, 1927.

Citharinus citharus (Geoffroy).

Boulenger. 1909. p. 291.
Pellegrin. 1923. p. 118.

1 specimen, 40 cm. long, from Kabara. August 25, 1927.

With dark longitudinal lines running between the series of scales. Each scale is besides ornamented with a more or less distinct, dark vertical streak, not so distinctive as the horizontal lines.

Labeo senegalensis Cuvier et Valenciennes.

Boulenger. 1909. p. 308.
Pellegrin. 1923. p. 122.

1 specimen, 35 cm. long, from Kabara. August 26, 1927.

5 specimens, 20,5—36 cm. long, from Kabara. August 26—28, 1927.

$\frac{2}{8}$

be arranged in the following way 6. This seems in reality to be much like the

arrangement in *Brycinus macrolepidotus*, where the two anterior teeth apparently will be in a separate series (though it is indeed the second tooth on each side which has changed its place). According to this view the dentition will in *Brycinus macrolepidotus* be $\frac{2}{8}$ 7, or in reality identical with that of *Bryconæthiops*.

The dentition in *Brycinus nurse* cannot possibly be designated in a similar way; for this species the formula may rather be $\frac{7}{8}$ 2.

I regret, however, to be forced to leave the conclusions that perhaps may be drawn from these observations to investigators in places where a more abundant material may be at hand.

With dark longitudinal lines running between the series of scales. Each scale bordered with dusky, centre of scales lighter.

Barbus lepidus sp. n.
(Fig. 3).

1 specimen, 5,5 cm. long, from Kabara. August 22—23, 1927.

Depth of body equal to length of head, $3^1/_3$ times in total length. Snout rounded, $4^1/_3$ times in length of head, a little shorter than eye, which is contained $3^1/_4$ times in length of head. Interorbital width

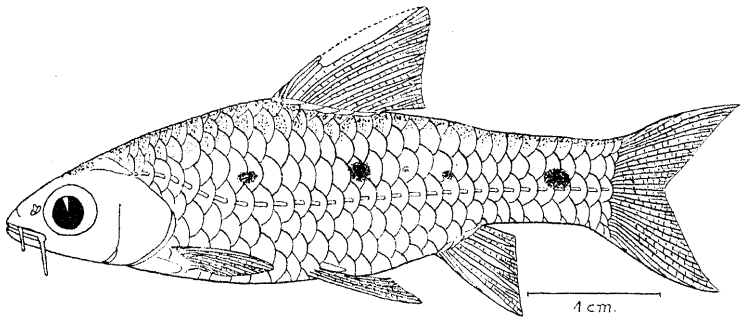


Fig. 3. *Barbus lepidus* sp. n.

$4^1/_3$ in length of head; lips feebly developed, the lower one interrupted in the middle. Two barbels on each side of mouth, the anterior one $^1/_2$ diameter of eye, the posterior $^3/_4$. Dorsal IV 8, equally distant from anterior border of eye and from root of caudal. The dorsal fin being rather damaged the following statements are given with reservation. Border slightly concave (?). Only the basal part of the last simple ray is present; it seems not to have been enlarged and not serrated (?). Anal III 5, not reaching caudal. Pectoral $^2/_3$ length of head, rounded, not reaching ventral. Base of latter below anterior half of dorsal. Caudal peduncle $1^1/_5$ times as long as deep. Lateral line complete. Scales with few radiating canals, 28 $\frac{4^1/_2}{3^1/_2}$, $2^1/_2$ between lateral line and ventral, 12 round caudal peduncle. Colour in alcohol yellowish, brownish on back. A dark spot on occiput, and a dark stripe in the middle line of back from head to caudal, only interrupted by the dorsal fin. Four distinct black spots forming a regular series along

Table II.

	B. lepidus	B. neglectus
Length : Depth	3,3	3—3,67
Length : Head	3,3	4—4,3
Head : Snout	4,3	..
Head : Eye	3,25	2,5—3
Eye : Interorbital	1,3	1,0
Head : Width of mouth	4,3	..
Ant. barbel : Eye	0,5	0,5
Post. barbel : Eye	0,75	1,0—0,9
Pectoral : Head	0,6	0,67—0,75
Length of caud. ped. : Depth of caud. ped.	1,2	1—1,3
Ant. border of eye—D : D—C	1,0	1,0
Dorsal	IV 8	III 8
Anal	III 5	III 5
Scales	$28\ \frac{4^1/_2}{3^1/_2}$	$26—30\ \frac{3^1/_2—4^1/_2}{3^1/_2}$
Sc. between Ll. and V	$2^1/_2$	$2—2^1/_2$
Sc. round caud. ped.	12	12

each side, and a 5th spot traceable between the second and third of these spots.

Related with *Barbus neglectus* Boulenger, known from Lower Nile to Blue Nile (Boulenger 1911, p. 173).

It may be distinguished by its greater head and different colouration. Other differences are the smaller eye, smaller interorbital width, and shorter posterior barbel.

Clarias senegalensis Cuvier et Valenciennes.

Boulenger. 1911. p. 231.
Pellegrin. 1923. p. 154.

1 specimen, 42,5 cm. long, from Kabara. August 27—28, 1927.
A dried head, 21 cm. long, from Niamey. Abt. November 1927.

It is with some hesitation that I have referred the dried head to this species, the maxillary barbel being rather long, longer than head as in *Clarias ebriensis* Plgr.[1]), but in all other respects it seems to agree with it.

[1]) Pellegrin. 1923. p. 158.

Eutropius niloticus (Rüppel).

Boulenger. 1911. p. 283.
Pellegrin. 1923. p. 169.

1 specimen, 23 cm. long, from Kabara. August 22—23, 1927.

Schilbe mystus (Linné).

Boulenger. 1911. p. 293.
Pellegrin. 1923. p. 172.

1 specimen, 23 cm. long, from Kabara. August 22—23, 1927.

5 specimens, 14,4—19 cm. long, from a pond in the vicinity of Timbuctoo. July 1927.

2 specimens, 12,5—13,5 cm. long, from a pond in the vicinity of Timbuctoo. August 8, 1927.

All of these specimens may be referred to the variety *fasciatus* Steindachner. The bands are very distinct in the smaller specimens, and all traceable in the greatest specimens.

This fish will give a thin, thrilling loud when drawn out of the water.

The pungent pectoral spines may produce painful wounds. They are without doubt poisonous as the wounds will cause a transitory lameness. Mr. Harry Madsen was during his collecting work stung in his finger which accident caused a paralysation of the arm for $^3/_4$ hour.

I shall here call attention to a morphological feature which is, I think, of some interest, viz. the strange decurvation of the caudal region of the body which may be observed in some nearly related genera of Silurids.

This feature is common to all species of the genera *Schilbe*, *Siluranodon*, *Eutropius*, *Physailia* and *Parailia*. The two last named may be united in a separate group, the characteristic of which is an even decurvation of the whole caudal region, while in the other group the decurvation is principally limited to the caudal peduncle, or, in a single case, to the caudal fin alone, through an enlargement of its lower lobe (*Eutropius depressirostris* (Peters)).

A parallelism to this peculiar structure may be found in the members of the well known genera *Centriscus* and *Aeoliscus* (*Amphisile*), in which it has, however, been developed to a much more extreme degree.

This fish is known to move in a vertical position in the water, with the head downwards and I should be much mistaken if the here mentioned specialised Silurids did not move in a similar way — in this instance not vertically, but obliquely in the water, searching for food on the bottom. The structure of the broad, rostriform mouth with the protruding lower jaw will, I think, advocate this opinion.

Bagrus bayad Forskål, var. *macropterus* var. n.
(Fig. 4).

1 specimen, 47 cm. long, from Kabara. August 27—28, 1927.

Depth of body 4 times in length (without caudal). Head $3^1/_5$ times, depressed, $1^3/_5$ times as long as broad, striated above, on the sides of

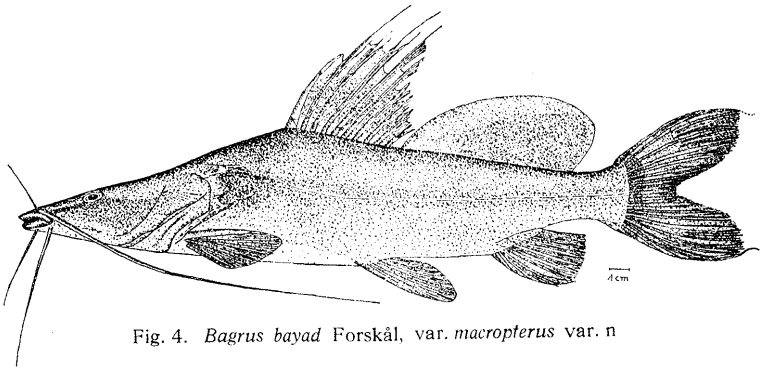


Fig. 4. *Bagrus bayad* Forskål, var. *macropterus* var. n

the median fontanelle. Occipital process long and narrow, in contact with first interneural bone. Snout broadly rounded, projecting, $2^3/_5$ in head. Eye moderate, $8^3/_5$ in head, $3^1/_3$ in snout, and $2^1/_5$ in the interocular width. Width of mouth $2^1/_5$ in length of head. Præmaxillary band of teeth abt. 6 times as long as broad, a little longer and a little narrower than the band of vomerine teeth. Nasal barbel $^1/_3$ the length of head. Maxillary barbel nearly 2 times the length of head, reaching middle of ventral. Outer mandibular barbel $1^1/_2$ times the length of inner, and slightly shorter than head. Gill-rakers long, 12 on lower part of anterior arch. Dorsal I 9, last ray behind vertical of inner ray of ventral. Spine smooth, moderately strong, $^2/_5$ length of head. 4 first rays prolonged into short filaments. Adipose dorsal very high, only $2^2/_5$ times as long as deep; its highest portion at the posterior end; $1^4/_5$ times as long as rayed dorsal, from which it is well, though nar-

Table III.

	B. bayad	B. bayad macropterus	B. filamentosus
Length : Depth	4,3—5,7	4,0	4,5
Length : Head	3,3—4,0	3,2	4,0
Head : Width of Head	1,6—1,8	1,6	1,6
Head : Snout	..	2,6	..
Snout : Eye	1,7—3,7	3,3	3,67
Head : Eye	4,5—11,0	8,6	8,75
Interocular width : Eye	1,7—3,7	2,2	2,75
Head : Width of mouth	2,2—2,7	2,2	3,0
Band of præmaxillary teeth, length : width	6,0—7,0	5,9	5,0
Nasal barbel : Head	0,3—0,6	0,3	0,2
Maxillary barbel : Head	2,0—3,3	1,9	1,5
$\frac{\text{Outer}}{\text{Inner}}$ mandibular barbel	1,5—2,0	1,5	..
$\frac{\text{Outer mandibular barbel}}{\text{Head}}$	0,4—0,7	0,9	0,67
$\frac{\text{Length}}{\text{Depth}}$ of adipose D.	3,5—5,0	2,4	4,5
$\frac{\text{Length of adipose D.}}{\text{Length of rayed D.}}$	abt. 2	1,8	1,75
Dorsal spine : Head	0,5—0,6	0,4	0,5
Pectoral : Head	0,4—0,5	0,5	..
Gill rakers	11—16	12	12
Dorsal	I 9—11	I 9	I 11
Anal	13—15 (9—10 br.)	13 (9 br.)	12 (8 br.)

rowly, separated. Anal with 13 rays, 9 of which are branched. Pectoral $^1/_2$ length of head, with a moderately strong spine, feebly serrated on inner side. Ventral a little nearer caudal than end of snout. Caudal deeply forked, lower (and upper?) lobe with a short filament. Caudal peduncle nearly as long as deep. Upper parts of body, to a little below eye and lateral line, greyish, lower parts white or yellowish. Fins light or rather light dusky, without distinct colour markings. A dark streak at base of dorsal, and a large, outflowing dark blotch just in front of it. An indistinct, dark streak from end of snout and backwards below eye.

This variety is very closely allied to *Bagrus bayad* Forskål (Boulenger 1911, p. 305. Pellegrin 1923, p. 176), known from the Nile System, Chad Basin, Senegal, and also from the Niger. Indeed it comes so close to that species that I at first sight identified it with it. A closer examination showed, however, that on more than one point it had some special features. On account of the scantiness of the material, only a single individual being at hand, I have preferred to describe it as a variety, leaving unanswered the question whether the differences are of specific value, or perhaps only local or individual variations.

The most striking feature is the enormous adipose dorsal, the depth of which equals the distance from tip of snout to the middle of eye, and is enclosed only $2^2/_5$ times in its length. Though the size of the adipose fin is rather variable, it is in this instance so much beyond the limits stated by Boulenger ($3^1/_2$ times in length) that it cannot *a priori* be regarded as an individual variation. To this comes other minor differences: the maxillary barbel only reaching to middle of ventral, which fin is situated nearer root of caudal than end of snout; caudal peduncle deeper, its depth nearly equalling length; caudal with shorter filaments; dorsal spine shorter, only $^2/_5$ of head, etc. (see table above).

It seems in some respects intermediate between *Bagrus bayad* and *Bagrus filamentosus* Pellegrin[1]): the rather long dorsal filaments, the short caudal filaments; — or allied to the last named: maxillary barbel reaching to middle of ventral.

Chrysichthys longifilis sp. n.

(Fig. 5).

1 specimen, 29,2 cm. long, from Kabara. August 26, 1927.

Depth of body $4^2/_3$ times in length (without caudal). Head $3^1/_5$ times, moderately depressed, $1^1/_5$ times as long as broad. The rugosities on upper side of head covered by thick skin, not visible. Occipital process moderately narrow, in contact with first interneural shield. Snout rounded, projecting, $1^4/_5$ times as broad as long, $1^4/_5$ times the diameter of eye. Eye $4^2/_5$ times in head, its diameter equalling interorbital width. Width of mouth $1^3/_5$ times in length of head. Præmaxillary

[1]) Bulletin du Muséum National d'Histoire Naturelle. Année 1924. p. 462.

band of teeth straight, $3^4/_5$ times as long as broad. Palatine teeth in four groups (fig. 6): two small, widely separated, patches on the vomer, and two oblong patches on the pterygoids, by an interval well separated from the vomerine ones. Nasal barbel $^2/_5$ diameter of eye. Maxillary barbel $^3/_5$ length of head, and $1^1/_3$ times as long as outer mandibular barbel, reaching to gill opening. Outer mandibular barbel $1^3/_5$ times as long as inner and half as long as head. Gill rakers moderate, 13 on lower part of anterior arch. Dorsal I 6, $1^1/_4$ as distant from caudal

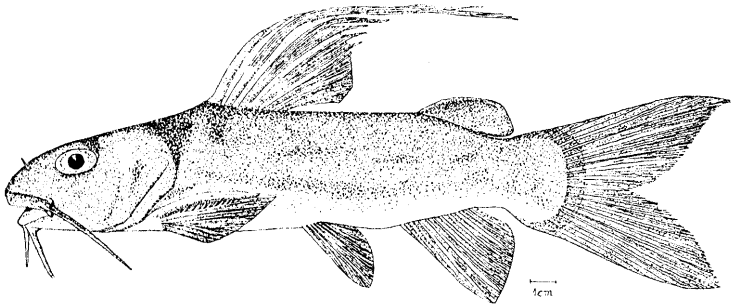


Fig. 5.

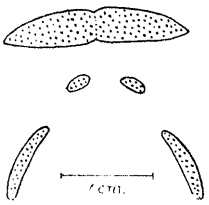


Fig. 6.

Fig. 5. *Chrysichthys longifilis* sp. n.

Fig. 6. *Chrysichthys longifilis* sp. n. Teeth of upper jaw and palate.

as from end of snout. Spine feebly serrated behind, $^2/_5$ length of head. First soft ray produced into a long band-shaped filament, twice as long as head, and reaching beyond root of caudal, when laid back; it terminates in four small tips of different length. Second soft dorsal ray as long as head. This ray as well as the other rays of the fin, terminate in few or several small tips. Adipose dorsal a little longer than deep, its base nearly as long as that of rayed dorsal from which it is separated by an interval $2^1/_2$ times as long as its base. Anal 12, 8 rays branched. Pectoral I 8, $^2/_3$ length of head; spine feebly serrated on inner side. Caudal a little more than 3 times in total length, deeply forked, with upper lobe acutely pointed, abt. 3 times as long as middle rays. Ventral 6, half as long as head. Caudal peduncle $1^1/_3$ times as long as deep. Skin densely covered with very short dermal papillæ.

Greyish above, light beneath. An indistinct, dark transverse band behind head, and a second one at the origin of rayed dorsal. Fins light.

This species seems to be most nearly allied to *Chrysichthys auratus* Geoffroy, known from Lower Nile and Chad Basin (Boulenger 1911, p. 325), though, on the other hand, it seems in some respects to be more nearly connected with *Chrysichthys persimilis* Günther (Boulenger 1911, p. 301) and its allies. The facts that seem to suggest a

Table IV.

	C. longifilis	C. auratus
Length : Depth	4,7	3,7—5,3
Length : Head	3,2	3,3—3,5
Head : Width of head	1,2	1,2—1,3
Head : Snout	2,5	..
Width of snout : Snout	1,8	..
Snout : Eye	1,8	1,0—1,8
Head : Eye	4,4	3,0—4,5
Interorbital : Eye	1,0	1,25—2
Head : Width of mouth	1,6	..
Band of præmaxillary teeth, length : width	3,8	2,5—3,5
D—C : Snout—D	1,2	1,2—1,5
D : Adipose D	1,0	1,0
D—adipose D : Adip. D	2,1	..
Maxillary barbel : Head	0,6	0,6—1,0
Head : Outer mandb. barb.	2,1	..
Maxillary barb. : Outer mandb. barb.	1,3	..
Nasal barbel : Eye	0,4	0,2—0,6
D-spine : Head	0,4	0,6—0,7
Head : 1' D-ray	0,5	..
Head : 2' D-ray	1,0	..
Pectoral : Head	0,7	..
Length : C.	3,1	..
Length of caud. ped. : Depth of caud. ped.	1,3	1,3—1,7
Longest C-ray : Shortest C-ray	2,9	..
Gill rakers	13	10—12
Dorsal	I 6	I 6
Anal	12 (8 br.)	11—13
Pectoral	I 8	(6-7, rarely 8 br.)
Ventral	6	..

nearer relation to *Chrysichthys auratus* are especially the shape of the caudal fin, and the colour markings. It is easily distinguished by its extremely prolonged dorsal ray, by its palatine teeth, its much wider mouth, and the circumstance that the adipose dorsal is contained more than two times in the distance between this fin and the rayed dorsal. This last fact, the wide mouth, etc., seem to suggest some relation to *Chrysichthys persimilis*, from which it may easily be distinguished by the long dorsal ray and the palatine teeth. The minor differences may be seen in table IV.

Clarotes laticeps (Rüppel).

Boulenger. 1911. p. 342.
Pellegrin. 1923. p. 180.

2 specimens, 36—41 cm. long, from Kabara. August 25, 1927.

2 specimens, 30,8—34,5 cm. long, from Kabara. August 27—28, 1927.

7 specimens, 17,5—20 cm. long, from a pond in the vicinity of Timbuctoo. July, 1927.

In all specimens from Timbuctoo the adipose dorsal has not yet been fully developed, the rays being traceable in the distal part of the fin only. No trace of a spine in the smallest of these specimens; only in the greatest one it is very distinct, though not yet fully developed.

Synodontis gambiensis Günther.

Boulenger. 1911. p. 407.
Pellegrin. 1923. p. 199.

7 specimens, 22,5—28 cm. long, from Kabara. August 23, 1927.

1 specimen, 21 cm. long, from Anzongo. September 20, 1927.

1 specimen, 5,1 cm. long, from Jebba. December 11, 1927.

All specimens from Kabara and Anzongo with a blackish, diffuse spot on side, just above humeral spine.

The juvenile specimen from Jebba is placed here with some reservation, the row of mandibular teeth being defect, so that it is impossible to state the accurate number of the teeth; it seems, however, to have been 20—30. Colour juvenile: brownish, with four cross-bands on caudal part of body. Body with dark round spots all over, the spots being smaller than eye. Head with much smaller spots. Adipose dorsal

with one row of great spots. Pectorals white; the other fins white, with distinct dark cross-bars. Belly white. Maxillary barbels greyish, mandibular barbels white. The specimen seems in more respects alike *Synodontis robbianus* J. A. Smith (Boulenger 1911, p. 435), the humeral process, for instance, reaching so far back as occipito-nuchal process; but the number of mandibular teeth seems to have been greater than in *S. robbianus*, and the maxillary barbel is not fringed.

Synodontis nigrita Cuvier et Valenciennes.

Boulenger. 1911. p. 429.
Pellegrin. 1923. p. 202.

1 specimen, 5 cm. long, from Jebba. December 11, 1927.

Maxillary barbel not quite so long as head. Mandibular teeth 28. In all other respects agreeing with the description given by Boulenger. Typical juvenile colouration.

Synodontis batensoda Rüppel.

Boulenger. 1911. p. 472.
Pellegrin. 1923. p. 209.

2 specimens, 21—21,5 cm. long, from Kabara. August 21—24, 1927.

Formerly recorded from Deert, mouth of Gurara River, Niger (Boulenger 1916, p. 323), from Senegal and Gambia.

Two typical specimens.

Synodontis membranaceus (Geoffroy).

Boulenger. 1911. p. 474.
Pellegrin. 1923. p. 210.

1 specimen, 8,5 cm. long, from Jebba. December 11, 1927.

With great, black, irregular blotches on body and adipose dorsal, forming irregular transverse series. Rayed dorsal, anal, ventrals, and caudal with minor black blotches in irregular transverse series. Lower parts black.

Malopterurus electricus (Gmelin).

Boulenger. 1911. p. 512.
Pellegrin. 1923. p. 213.

1 specimen, 27,5 cm. long, from a pond in the vicinity of Timbuctoo. August 19, 1927.

Panchax senegalensis Steindachner.

Haplochilus senegalensis, Boulenger. 1915. p. 71.
— — Pellegrin. 1923. p. 235.

1 specimen, 3,4 cm. long, from Jebba. December 11, 1927.

D. 9, A. 17. One anal ray more than stated by Boulenger, but the first anal ray being exeedingly small, it may have been overlooked formerly.

Panchax tæniatus sp. n.
(Fig. 7.)

4 specimens, 1,9—4 cm. long, from Jebba. December 11, 1927.

Description of type, 4,0 cm. long, from Jebba:

Depth of body 5 in total length, length of head $3^1/_3$. Head flat above. Snout a little longer than eye which is enclosed $3^3/_5$ times in

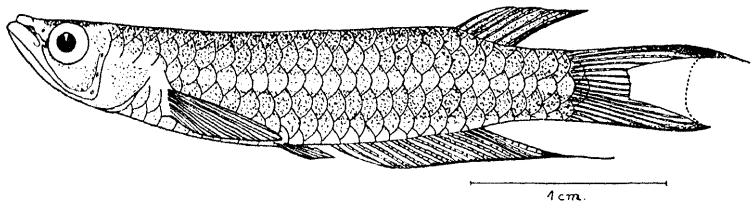


Fig. 7. *Panchax tæniatus* sp. n.

length of head, and $1^2/_5$ times in interorbital width. Præorbital very narrow. Mouth directed upwards, lower jaw slightly projecting. Dorsal 8, originating twice as far from head as from root of caudal, above posterior fourth of anal. Longest ray $^3/_5$ length of head. Anal 16. Pectoral $^3/_4$ length of head, reaching beyond base of ventral. Ventral small, reaching slightly beyond origin of anal, and situated a little nearer snout than caudal. Form and length of caudal cannot be stated as this fin is damaged in the type as well as in the other specimens. Caudal peduncle as long as deep. 27 scales in longitudinal series, 20 round body in front of ventrals. Lateral line indicated as a series of pits. Back and upper parts of sides brown. Lower parts white, with a broad, brown longitudinal band from pectoral to base of caudal. Fins dusky, anal and caudal edged with blackish.

This species seems to be related with *Panchax bifasciatus* Steindachner, known from the White Nile, Bahr-el-Seraf, Bahr-el-Gebel, and Sierra Leone (*Haplochilus bifasciatus*, Boulenger 1915, p. 76, and 1916, p. 425). It may be distinguished by its greater number of dorsal rays, and its greater number of scales round body. The colouration is very like that of *H. bifasciatus*, but differs in the dark back. Minor differences are the longer snout, the narrower interorbital space, and the more anterior position of the ventral fins.

The small individuals have a second, much narrower, dark band from the lower angle of the pectoral base to the root of the caudal fin, the two bands joining to a single one on the underside of the caudal peduncle. In other respects they are as the type.

Table V.

	P. tæniatus	P. bifasciatus
Length : Depth	5,0	4,5—5,6
Length : Head	3,3	3,25—3,5
Head : Eye	3,6	3,0—4,0
Interorbital : Eye	1,4	1,5—1,67
Longest D-ray : Head	0,6	0,6
Pectoral : Head	0,7	0,67—0,8
Length of caud. ped. : Depth of caud. ped.	1,0	1,0
Head—D : D—C	2,0	2,0
Snout—V : V—C	0,8	1,0
Dorsal	8	6—7
Anal	16	15—16
Scales	27	27—28
Sc. round body	20	16—18

Panchax spec. non det. (*kingi* Boulenger?).
(Fig. 8).

6 specimens, abt. 2,0 cm. long, from Mopti. May 21, 1927.

It has not been possible with certainty to refer these specimens to any known form, but, on the other hand, they are too juvenile to be established to a nova species.

Their essential features are as follows:

Dorsal 6—7. Anal 11—13. Sc. L. 27. Sc. round body 16. Dorsal

above posterior third or fourth of anal. Caudal rounded, a little longer than head. Colour yellowish-white, with a fine blackish lateral line.

They seem, indeed, much like *Panchax kingi* (Boulenger), (*Haplochilus kingii* Boulenger, 1915, p.64), and perhaps they will be acknowledged as the young ones of this species, formerly known from the White Nile and Sobat.

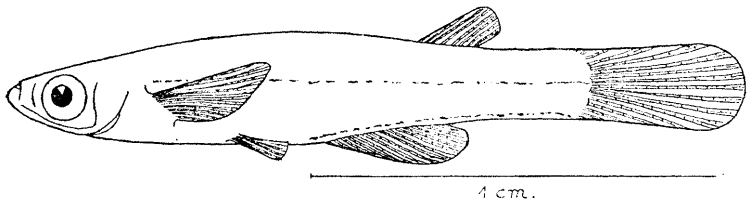


Fig. 8. *Panchax* sp. (*kingi* (Blgr.)?). Scales not much visible; not drawn.

Lates niloticus (Linné).

Boulenger. 1915. p. 105.
Pellegrin. 1923. p. 246.

1 specimen, 52 cm. long, from Kabara. August 27, 1927.

Tilapia nilotica (Linné).

Boulenger. 1915. p. 162.
Pellegrin. 1923. p. 279.

3 specimens, 1,6—2,9 cm. long, from Mopti. May 21, 1927.

1 specimen, 26 cm. long, from Couriomé (south of Timbuctoo). June 4, 1927.

2 specimens, 3,5—6 cm. long, from a pond in the vicinity of Timbuctoo. June 15, 1927.

1 specimen, 17,5 cm. long, from Kabara. August 27—28, 1927.

1 specimen, 3,1 cm. long, from Zinder (Niger Teritory, halfway between Niger and Lake Chad). November 1927.

Tilapia galilæa (Artedi).

Boulenger. 1915. p. 169.
Pellegrin. 1923. p. 280.

2 specimens, 19,5—20 cm. long, from Kabara. August 21—24, 1927.

1 specimen, 27,5 cm. long, from Kabara. August 27—28, 1927.

The last mentioned specimen seems to have the caudal slightly rounded, but in all other respects it agrees with the species to which I have referred it.

Under this species I shall also enter

497 specimens of young ones, abt. 0,8 cm. long, from Kabara, August 28, 1927.

They were spitted out by a very large specimen when it was captured, but this specimen not being preserved it is with much reservation that I refer them to a particular species, though the collector would certainly refer the mother specimen to the species here named.

These young ones which are all provided with a great yolk-sac, I have been told to be only a minor part of the total number spitted out by the mother-fish.

Tilapia zilli (Gervais).

Boulenger. 1915. p. 197.
Pellegrin. 1923. p. 289.

1 specimen, 14 cm. long, from a pond in the vicinity of Timbuctoo. July, 1927.

2 specimens, 11—11,2 cm. long, from a pond in the vicinity of Timbuctoo. August 10, 1927.

1 specimen, 26 cm. long, from Kabara. August 27—28, 1927.

Tetrodon fahaka Linné.

Boulenger. 1916. p. 143.
Pellegrin. 1923. p. 345.

1 specimen, 38 cm. long, from Couriomé (south of Timbuctoo). August 16, 1927.

1 specimen, 1,4 cm. long, from Gao. September 12, 1927.

The little specimen with irregular, on back partially confluent, spots or blotches.

II. Fishes from Lagos.

Elops lacerta Cuvier et Valenciennes.

Boulenger. 1909. p. 26.
Metzelaar. 1919. p. 202.
Pellegrin. 1923. p. 43.

1 specimen, 18,2 cm. long, from the lagoon. December 15, 1927.
1 specimen, 16,9 cm. long. Purchased. December 19, 1927.

Ethmalosa dorsalis (Cuvier et Valenciennes).

Regan. 1917. p. 303 and 380[1]).
Pellegrin. 1923. p. 84.

1 specimen, 19 cm. long. Purchased. December 19, 1927.

A blackish spot behind the upper part of the gill-cover, followed by a row of five smaller spots.

Metzelaar has in his list of marine fishes from tropical West Africa erroneously confounded this species with *Sardinella eba* (Cuvier et Valenciennes) (Metzelaar 1919, p. 203). For the synonomy of these two species I shall refer to Regan, who, indeed, is to be followed.

Chrysichthys nigrodigitatus (Lacepêde).

Boulenger. 1911. p. 321.
Metzelaar. 1919. p. 205.
Pellegrin. 1923. p. 178.

2 specimens, 17,0—21,5 cm. long. Purchased. December 19, 1927.

Arius lagoensis sp. n.
(Fig. 9).

2 specimens, 23,5—28 cm. long. Purchased. December 19, 1927.

Description of type, 28 cm. long:

Depth of body $4^3/_5$ times in total length, length of head $3^4/_5$ times. Head $^1/_5$ longer than broad, the posterior part of its upper surface with pearl-like rugosities; occipital process tectiform, broader at base than long, in contact with the small, crescentic, granulated interneural shield. Snout rounded, broad and projecting beyond mouth. Eye lateral, visible from above, oval, $1^2/_5$ times in length of snout, $5^1/_2$ times in length of head and $2^2/_3$ times in interocular width. Præmaxillary band of teeth $5^4/_5$ times as long as broad. Teeth on the palate villiform, in five sub-continuous groups: an unpaired, minor group on the vomer, and two larger lateral groups on each side of the palate, the anterior of them sub-quadrangulate, the posterior smaller, of

[1]) The Annals and Magazine of Natural History. Vol. XIX. — Eighth series. London. 1917.

triangular shape, longer than broad (fig. 10). Maxillary barbel slightly shorter than head, outer mandibular $^3/_5$ length of head, inner mandibular $^2/_5$. Gill-rakers moderately long, 12 on lower part of anterior arch. Dorsal I 7, spine $^4/_5$ length of head, its front side with granular tubercles on the basal part and small serræ distally; posteriorly with small serræ. Adipose dorsal small, its base $^4/_5$ that of rayed dorsal, about twice as distant from latter as from caudal. Anal 18 (13 rays

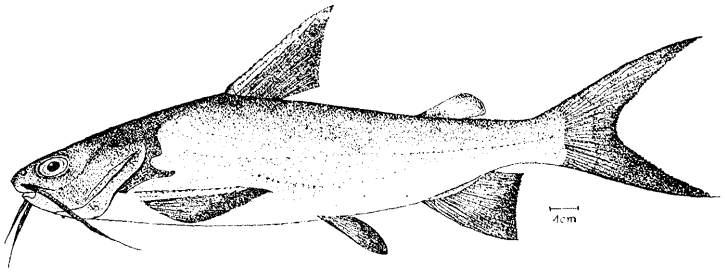


Fig. 9.

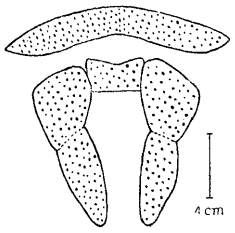


Fig. 10.

Fig. 9. *Arius lagoensis* sp. n.

Fig. 10. *Arius lagoensis* sp. n. Teeth of upper jaw and palate.

branched). Pectoral spine a little shorter than dorsal spine. Ventral not reaching origin of anal. Caudal deeply notched, with long, pointed lobes, the upper slightly the longest. Caudal peduncle $2^2/_5$ as long as deep. Olive-brown above, silvery on the sides and white beneath. The ends of the ribs produce, as in other species of the genus, small protuberances on the sides, which has much resemblance with a row of small dermal shields. Each of these protuberances is pigmented in the way that it appears as a little black spot. The anterior spots are rather indistinct, the posterior ones very distinct, and each of them ventrally produced into a pale grayish streak.

The minor specimen is distinguished by its longer barbels, especially the maxillary barbels which are $1^1/_5$ length of head. The costal protuberances on the sides are not pigmented.

This species may be distinguished from all other African forms by the unpaired patch of vomerine teeth.

It seems to come near to *Arius latiscutatus* Günther (Boulenger, 1911, p. 385), known from Gambia, Niger, Cameroon, Fernando Po, and Congo. The maxillary barbels are, however, slightly longer, the number of anal rays minor, and the ventral fins will not reach the anal. Also the palatine teeth are much like those of *A. latiscutatus*, but the lateral patches are of another form and size, and there is, as already mentioned, an unpaired patch on the vomer.

Table VI.

	Arius lagoensis		A. latiscutatus
	I (Type)	II	
Length : Depth	4,6	4,9	4—5
Length : Head	3,8	3,8	3,5—4
Snout : Eye	1,4	1,6	1,3—2,5
Head : Eye	5,5	5,1	4,5—8
Interocular : Eye	2,7	2,2	2,5—5
Maxillary barbel : Head	0,9	1,2	0,7—0,9
Outer mandibular barbel : Head	0,6	0,7	0,5—0,6
I. mandibular barbel : Head	0,4	0,4	0,4—0,7
Dorsal spine : Head	0,8	0,8	0,7—0,8
Adipose d : D	0,8	0,7	0,7
D—adipose d. : Adipose d.—C	1,7	1,9	2
Length / depth of caud. ped.	2,4	2,4	2—2,5
Gill-rakers	12	12	12
Dorsal	I 7	I 7	I 7
Anal	18 (13 br.)	18 (12 br.)	19—20 (13—14 br.)

Mugil cephalus Linné.

Boulenger. 1916. p. 80.
Metzelaar. 1919. p. 222.
Pellegrin. 1923. p. 323.

1 specimen, 14,2 cm. long, from the lagoon. December 15, 1927.

Polynemus quadrifilis Cuvier et Valenciennes.

Boulenger. 1916. p. 102.
Metzelaar. 1919. p. 225.
Pellegrin. 1923. p. 333.

2 specimens, 22,5—24 cm. long. Purchased. December 19, 1927.

Galeoides decadactylus (Bloch).

Boulenger. 1916. p. 103.
Metzelaar. 1919. p. 225.
Pellegrin. 1923. p. 334.

1 specimen, 12,6 cm. long, from the lagoon. December 15, 1927.
2 specimens, 14,5—15 cm. long. Purchased. December 19, 1927.

None of the specimens with any trace of a black lateral spot.

Lutjanus griseus (Cuvier et Valenciennes).

Metzelaar. 1919. p. 235.

1 specimen, 14,5 cm. long, from the lagoon. December 15, 1927.
1 specimen, 18,8 cm. long. Purchased. December 19, 1927.

Corvina nigrita Cuvier et Valenciennes.

Boulenger. 1915. p. 116.
Metzelaar. 1919. p. 239.
Pellegrin. 1923. p. 248.

4 specimens, 13—18 cm. long, from the lagoon. December 15, 1927.

Dorsal X, I 32—33. Anal II 6.

Gerres octactis Bleeker.

Metzelaar. 1919. p. 241.

2 specimens, 13—13,5 cm. long. Purchased. December 19, 1927.

Pristipoma jubelini Cuvier et Valenciennes.

Boulenger. 1915. p. 126.
Metzelaar. 1919. p. 241.
Pellegrin. 1923. p. 255.

3 specimens, 14—15,8 cm. long. Purchased. December 19, 1927.
1 specimen, 5 cm. long. December 22, 1927.

Boulenger's description is not quite correct when he states that the eye is enclosed $1^1/_4$—$1^1/_3$ times in the interocular width. The fact is that the interocular width is a little more than half the diameter of eye. This agrees with the description given by Bleeker: "....oculis diametro 3 circiter in longitudine capitis, diametro $^1/_2$ ad paulo plus diametro $^1/_2$ distantibus."[1]) The figure given by Steindachner and reproduced by Boulenger is not quite correct; the posterior border of the præoperculum is not straight but has midways a sinuosity, as it is clearly seen in the figure given by Bleeker.

Psettus sebæ Cuvier et Valenciennes.

Boulenger. 1915. p. 123.
Metzelaar. 1919. p. 254.
Pellegrin. 1923. p. 252.

1 specimen, 18 cm. long. Purchased. December 19, 1927.

Caranx hippos (Linné).

Metzelaar. 1919. p. 265.

2 specimens, 13,8—15 cm. long. Purchased. December 19, 1927.

Cynoglossus senegalensis (Kaup).

Boulenger. 1916. p. 6.
Metzelaar. 1919. p. 280.
Pellegrin. 1923. p. 298.

1 specimen, 33,5 cm. long. Purchased. December 19, 1927.

Gobius soporator Cuvier et Valenciennes.

Boulenger. 1916. p. 33.
Metzelaar. 1919. p. 281.
Pellegrin. 1923. p. 309.

1 specimen, 13 cm. long, from the lagoon. December 15, 1927.
1 specimen, 5 cm. long.

[1]) P. Bleeker: Mémoire sur les poissons de la Côte de Guinée. — Natuurkundige Verhandelingen van de Hollandsche Maatschappij der Wetenschappen te Haarlem. Tweede Verzameling. Achttiende Deel. p. 54, planche XII, fig. 2. 1863.

Greater specimen: Lt. 15. Colour nearly uniform bluish-black, lighter below. Caudal rays with dark spots; other fins nearly uniform blackish, second dorsal with a lighter margin.

Minor specimen: Lt. 12. Colour brownish, with yellow belly. Upper parts with blackish-brown lines along the rows of scales and with irregular blackish dots, especially along the middle line of body. Dorsals and caudal with dark spots.

Gobionellus lepturus sp. n.

(Fig. 11).

One specimen, 5,9 cm. long, from the lagoon. December 22, 1927.

Body compressed. Depth of body nearly 6 times in total length, length of head $3^2/_5$ times. Head $1^3/_4$ times as long as broad, entirely

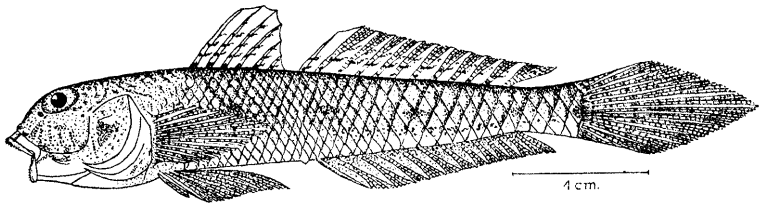


Fig. 11. *Gobionellus lepturus* sp. n.

naked, the scaleless area on nape reaching to front of dorsal. Snout rounded, as long as eye, which is 4 times in length of head. Interorbital space exceedingly narrow. Mouth subinferior, not reaching anterior border of eye. Teeth in villiform bands, outer ones much enlarged, especially the anterior in the upper jaw. Dorsals VI, I 11, well separated; longest rays $^3/_5$ length of head. Anal I 12, the origin a little behind that of second dorsal. Pectoral $^3/_4$ length of head, upper rays not free. Ventral not extending to vent, with a broad basal membrane, each side of which is pointed and produced. Caudal pointed, as long as head. Caudal peduncle $1^2/_5$ times as long as deep. Scales ciliated, 35 in longitudinal series, 11 in transverse series between second dorsal and anal. Colour in alcohol yellowish. Upper parts of body marbled with brown; irregular, narrow transverse stripes across nape; a narrow dark stripe from eye to angle of mouth; a dark spot on opercle. A series of about 5 very indistinct dark spots along middle

of sides, the posterior at root of caudal. Dorsals, caudal, and pectorals with transverse series of small dark spots. Anal and ventral dusky.

It is of great interest to state, that this goby, which does not seem to come very near to any known African species, probably has its nearest relatives in the West Indies, where *Gobionellus fasciatus* (Gill), *Gobionellus boleosoma* (Jordan and Gilbert), and *Gobionellus encæomus* (Jordan and Gilbert)[1]) come rather close to it. It may, perhaps, be distinguished from these species by its more slender body, its longer head, shorter pectorals, and greater number of scales. In colouration it comes very near to its American relatives. The here mentioned American forms, however, do not seem to be very well separated; until a revision will have taken place it is accordingly impossible to say anything definite regarding the nearer relationship between the species.

Table VII.

	G. lepturus	G. boleosoma
Length : Depth	5,9	4,5—5,5
Length : Head	3,4	4,0
Head, length : width	1,7	..
Snout : Eye	1,0	1,0
Head : Eye	4,0	4,0
Longest D-ray : Head	0,6	0,6
Pectoral : Head	0,7	1,1
Head : Caudal	1,0	0,9
Length of caud. ped. : Depth of caud. ped.	1,4	..
Dorsal	VI, I 11	VI, I 11
Anal	I 12	I 10—12
Scales	35	25—30
Sc. between D and A	12	..

Periophthalmus koelreuteri (Pallas), var. *papilio* Bloch & Schneider.

Metzelaar. 1919. p. 282 (*P. koelreuteri*).
Pellegrin. 1923. p. 314.

2 specimens, 3,4—9,3 cm. long, from the lagoon. December 15, 1927.

[1]) Jordan and Evermann: The Fishes of North and Middle America. III. 1898. pp. 2221—2223.

Meek and Hildebrand: The Marine Fishes of Panama. III. Field Museum of Natural History Publication. Nr. 249. Vol. XV. 1928. pp. 284—285.

III. Fishes from Dakar.

Sardinella aurita (Cuvier et Valenciennes).

Regan. 1917. p. 378[1]).
Metzelaar. 1919. p. 203.

1 specimen, 8,7 cm. long. March 15, 1927.

Head a little longer than stated by Regan, abt. $3^1/_4$ in total length. This is to be seen in connection with the smaller size of our specimen, the smallest of Regan's specimens being 12 cm. In all other respects it agrees with the type.

This mediterranian species has once before been recorded from Dakar by Pellegrin, and it is by the same author recorded so long southwards as Angola[2]).

Muræna afra (Bloch).

Metzelaar. 1919. p. 211.

1 specimen, 20,6 cm. long. January 6, 1928.

Muræna (*Muræna*) *albomarginata* sp. n.
(Pl. VI, Fig. 1).

1 specimen, 74 cm. long. December 1927.

Body rather stout, slightly compressed. Depth of body $10^1/_2$ times in total length, $^3/_5$ times in length of head (measured from tip of snout to posterior angle of gill-opening). Head $6^2/_3$ times in total length, a little more than twice in length of trunk, $1^4/_5$ times as long as deep. Snout of moderate length, $5^1/_2$ times in length of head, $2^1/_5$ times as long as eye, which is abt. 12 times in length of head, situated above middle of the gape. Posterior nasal tubes $1^1/_2$ times as long as the anterior ones. Cleft of mouth large, $2^1/_2$ times in length of head; cannot be completely closed. Teeth (Pl. VI, fig. 2) uniserial. Those in the upper jaw of moderate length, slender, compressed and curved backwards, abt. 15 in each side; the anterior ones slightly enlarged; none of them depressible. Two depressible mesial teeth on the intermaxillary plate,

[1]) The Annals and Magazine of Natural History. Vol. XIX. — Eighth series. London. 1917.

[2]) Pellegrin: Mission Gruvel sur la côte occidentale d'Afrique (1905—1912). Poissons. Annales de l'Institut Océanographique. Tome VI — Fasc. IV. p. 13. 1914.

the anterior one little, immediately behind the outer row of teeth; the posterior one much enlarged. Vomer with four small teeth of a similar shape as the maxillary teeth. Each of the mandibles with 12—13 teeth, similar to those in the upper jaw; none of them depressible; the anterior ones slightly enlarged. Gill opening comparatively large, $8^1/_2$ times in length of head, nearly $1^1/_2$ times as long as eye. Top of head with a triangular area between and just behind the eyes, with closely set longitudinal dermal ridges, which have partially been dissolved into rows of short dermal flaps. Tail a little longer than rest of body. Dorsal rather high, $^1/_3$ of the depth of body, originating on nape midways between eye and gill opening.

Number of vertebræ 126 (see x-rays' photo, Pl. VI, fig. 3).

Ground colour yellowish-brown (in alcohol). The greater part of the fish with a regular blackish reticulation, enclosing roundish light spots. Head and anterior part of body with small spots and fine reticulation. Ventrally the meshes will be incomplete and partly dissolve into black blotches. Belly uniform, light. Throat with longitudinal black lines. Dorsal reticulated as the body, with the light spots rather small; with a light edge. Anal posteriorly with incomplete reticulations which anteriorly pass into two irregular black lines, the one at the base of the fin, the other near the margin, which is light. Gill opening with a great, black blotch. Angle of mouth black.

It is not possible to say much regarding the relationship of this species, which cannot be confused with any known West African species. Most likely its nearest relatives will be found in the West Indies, where, for instance, *Muræna retifera* Good and Bean[1]) has,

Table VIII.

Total : Head	6,7	Trunk : Head	2,1
Total : Depth	10,6	Depth : Head	0,6
Head : Snout	5,5	Depth : Dorsal	3,0
Snout : Eye	2,2	Gill opening : Eye	1,4
Head : Eye	12,2	Snout—Vent : Depth	4,9
Head : Gill opening	8,5	Vent—Caudal : Total	0,54
Head : Mouth	2,5	2' nasal tube : 1' nasal t.	1,5
Head, length : depth	1,8	Teeth in upper jaw	14—15

[1]) Proceedings of the United States National Museum. V. p. 435. 1882.
Jordan and Evermann: The Fishes of North and Middle America. I. p. 401. 1896. IV. pl. LXVI, fig. 173. 1900.

at least, a striking resemblance in the colour pattern. No material, however, being at my disposal, I am forced to omit the discussion of this question.

Fistularia tabaccaria Linné.

Fistularia tabacaria. Metzelaar. 1919. p. 216.

1 specimen, 120 cm. long. December 1927.

Rhypticus saponaceus (Bloch & Schneider).

Metzelaar. 1919. p. 234.

2 specimens, 6,0—7,4 cm. long. January 7, 1928.

Pomacentrus (*Eupomacentrus*) *fuscus* Cuvier et Valenciennes.

Jordan and Evermann: The Fishes of North and Middle. America. II. p. 1552. 1898.

2 specimens, 5,1—6,2 cm. long. January 7, 1928.

Depth of body 2,1—2,7 times in total length, length of head 3,1—3,9. Snout 3,3—3,4 times in length of head, eye 3,1—2,8 times. Interorbital space 4,2—3,7 times in length of head, 0,7—0,8 diameter of eye. Maxillary 3,3—3,0 in head. Caudal peduncle a little deeper than long, the depth being 0,8—0,9 of length. Thickest part of body 1,6—1,7 in length of head. Longest dorsal spine 1,6—1,7, longest dorsal ray 1,3—1,4, second anal spine 1,6—1,7, longest anal ray 1,3—1,5, upper caudal lobe 1,1—1,0, pectoral 1,2—1,1, ventral 1,0 times in length of head. Dorsal XII 15—16. Anal II 13. Scales 28. No accessory scales on head.

Colour in alcohol brownish, with yellow breast. Tips of dorsal and anal light. The other fins light dusky. A black, white-edged ocellus at base of dorsal fin. A black spot at root of pectoral, and another at the back of caudal peduncle.

It is the first time that this species, which is common in the West Indies from Key West to Brazil, has been recorded from African waters. It agrees in all essentials with the descriptions given of this species, and by comparing them with specimens of *P. fuscus* from Tobago, British West Indies, I have found no specific differences.

Two other species of Pomacentrus were formerly known from West Africa, viz. *Pomacentrus hamyi* Rochebrune, and *Pomacentrus*

leucostictus Müller & Troschel (Metzelaar 1919, p. 258). Whether it really is possible to distinguish these species may be reserved for future investigations to decide.

Julis pavo (Hasselquist).

Metzelaar. 1919. p. 261.

1 specimen, 3,9 cm. long. January 7, 1928.

Caranx hippos (Linné).

Metzelaar. 1919. p. 265.

1 specimen, 68,0 cm. long. December, 1927.

Decapterus rhonchus (Geoffroy).

Caranx rhonchus. Metzelaar. 1919. p. 264.

2 specimens, 34,0—34,5 cm. long. December, 1927.

Dorsal VIII, I 30 I. Anal I 22—26 I. Scales 26.

Trachynotus goreensis Cuvier et Valenciennes, var. *myrias* Cuvier et Valenciennes.

Boulenger. 1916. p. 3.
Metzelaar. 1919. p. 270. (*Trachinotus goreensis*).
Pellegrin. 1923. p. 294.

2 specimens, 16,5—19,5 cm. long. December, 1927.

This species being subject to great variation, especially age-variation, I shall give some particulars:

Dorsal VI[1]), I 21—22. Anal II, I 19. Depth 2,5—2,6 in total length (caudal included), head 4,9 times. In the greater specimen the first dorsal and anal rays are not only actually but also relatively longer than in the minor one, the first dorsal ray reaching to root of caudal when laid back, in the minor only to base of 18th dorsal ray. First dorsal ray is by the greater specimen 1,6 times as long as head, by the minor 1,2 times. This fact is noteworthy as such prolonged fin rays are usually comparatively longer in smaller individuals. Full-grown specimens also seem to follow this rule, as it is shown by a specimen from Cape Blanco. This specimen, which is 72 cm. long, has its first

[1]) The horizontal, forward directed spine not included.

dorsal ray a trifle longer than head, and reaching to base of 15th ray (Metzelaar).

First prolonged anal ray is by the greater specimen 1,6 times as long as head, by the minor only 1,1 times. In Metzelaar's specimen this ray is "a trifle shorter than head".

Pectoral by both specimens 1,3 times in head (Metzelaar: pectoral = anal). Tips of dorsal and anal lobes more or less blackish, caudal lobes not blackish. A series of five blackish spots along lateral line.

Vomer setapinnis (Mitchell).

Selene setipinnis. Metzelaar. 1919. p. 266.

2 specimens, 25,0—27,8 cm. long. December, 1927.

Nematogobius brachynemus sp. n.
(Fig. 12).

2 specimens, 3,3—3,9 cm. long. At rocky coast. April 16, 1927.
2 specimens, 2,8—3,8 cm. long. January 7, 1928.

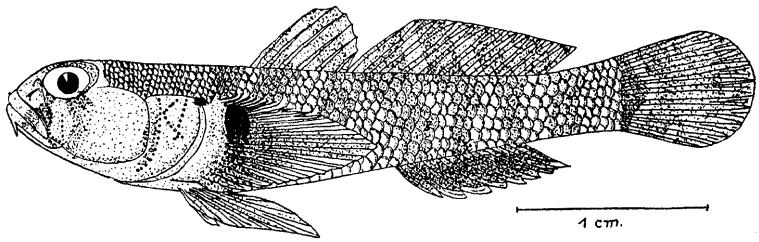


Fig. 12. *Nematogobius brachynemus* sp. n.

As type is described the 3,8 cm. long specimen, captured January 7, 1928:—

Body feebly compressed. Depth of body $5^1/_5$ times in total length, length of head a little more than 3 times. Head $1^2/_5$ as long as broad, naked, with exception of the nape, which is scaly from behind the eyes. Snout rounded, short, $^2/_3$ of eye, which is $3^1/_3$ times in length of head. Interorbital space exceedingly narrow. Mouth terminal, lower jaw enclosed, maxillary reaching to below middle of eye. Teeth in villiform bands, outer much enlarged, greatest in the upper jaw. Mental barbels very short, not half as long as diameter of pupil, shorter than nasal

barbels. Dorsals VI, I 11, narrowly separated; longest rays $^1/_2$ length of head. Anal I 8, the origin a little behind that of second dorsal. Pectoral slightly shorter than head, upper rays free, silk-like. Ventral not extending to vent, with a broad basal membrane, each side of which is pointed. Caudal rounded — sub-acuminate, abt. $^3/_4$ length of head. Caudal peduncle $1^2/_3$ as long as deep. Scales ciliated, 37 in longitudinal series, 12 in transverse series between second dorsal and anal. Colour in alcohol grayish. Body with abt. 7 irregular and very indistinct cross-bands. A broad, dark stripe from eye to middle of mandible, and a similar from eye to posterior end of maxillary. A distinct black spot at upper angle of opercle and a much greater black spot, ocellated with white, at upper part of pectoral base. Root of caudal blackish. Underside of head and belly light. Dorsal fins with great black blotches, or rather transverse bands, partially in continuation of the bands on body. Caudal with broad, dark bands, indistinctly separated with very narrow light stripes. Anal dark,

Table IX.

	N. brachynemus Type	N. brachynemus All specimens	N. ansorgi
Total : Depth	5,2	4,6—5,6	5,0—6,0
Total : Head	3,1	2,9—3,1	3,3—3,5
Length of head / width of head	1,4	1,3—1,5	1,5—1,7
Head : Eye	3,3	3,3—4,0	4,0—4,5
Longest D-ray : Head	0,5	0,4—0,5	0,5—0,7
Pectoral : Head	0,9	0,8—0,9	0,9—1,0
Caudal : Head	0,7	0,6—0,7	0,9—1,0
Length / depth of Caud. ped.	1,7	1,4—1,7	1,5—1,7
Dorsal	VI, I 11	VI, I 11	VI, I 11—12
Anal	I 8	I 7—9	I 9
Scales Ll.	37	35—37	37—40
Scales Lt.	12	12—13	10—11

bordered with light. Pectoral dark at root, with the before mentioned black ocellus; otherwise light or dusky. Ventral light, with fine grayish lines along some of the rays.

The other specimens agree in all essential features with the type. The most important differences may be seen in table IX. As to the colouration there is this to state that the specimen of 2,8 cm., captured together with the type on January 7, 1928, is of the same grayish ground colour, but the markings are much more distinct, both the transverse bands — of which there are seven, splitted in their lower halves — and the ocellus on the pectoral fin.

In the two specimens captured on April 16, 1927, the ground colour is reddish-brown.

This species is closely allied to *Nematogobius ansorgi* Boulenger (Boulenger 1916, p. 40), known from the coast of West Africa from Portuguese Guinea to Angola. It may be distinguished by its very short mental barbels and free pectoral rays. Minor diversities are the enclosed lower jaw, the greater number of scales in transverse series, differences in the colouration, as well as small differences in the proportions.

Scorpænodes africanus sp. n.
(Fig. 13).

One specimen, 6,5 cm. long. January 6, 1928.

Body compressed. Depth of body nearly 3 times in total length, length of head $2^3/_5$ times. Head slightly deeper than broad. Snout short, 4 in head, a little shorter than eye, which is $3^1/_3$ times in length of head. Interorbital width half diameter of eye, $6^2/_3$ times in length of head. Interorbital space concave, with two median ridges, ending in blunt spines. Supraorbital ridge moderately prominent, with 3 spines, the middle one with a dermal tentacle half as long as the pupil. A similar dermal tentacle on the upper border of eye, just outside the first ocular spine. No occipital pit. An elongate, scaleless depression below the eye, no pit. Nasal spine short and flat, triangular, with a broad base, the outer corner of which forms an obtuse auxillary spine; a much smaller spine posterior to the principal spine (fig. 14). Anterior nasal opening with a rim or very short tube, the posterior border of which is provided with a dermal tentacle. Suborbital stay with 3 small spines and posteriorly with two inconspicuous dermal tentacles. Preorbital with two blunt points. Behind the last ocular spine a rather great coronal spine, and on the inner side of this and a little more anteriorly a much smaller spine. Two short occipital ridges provided

with each two short spines. Preopercle with 3 spines, the uppermost largest, with an auxillary spine on its base. Opercle with 2 diverging spines on its upper angle. A short and blunt humeral spine above base of pectoral. 2 spines at the origin of the lateral line, the first of them bifid. Mouth broad, $1^1/_2$ times in length of head, oblique, lower jaw slightly enclosed. Maxillary reaching to posterior border of eye, $1^2/_3$ times in length of head. Maxillary and mandibulary teeth

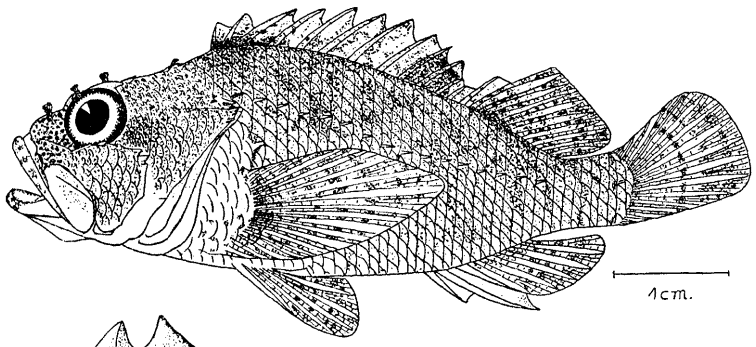


Fig. 13.

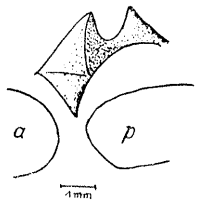


Fig. 14.

Fig. 13. *Scorpænodes africanus* sp. n.

Fig. 14. *Scorpænodes africanus* sp. n. Left nasal spine. *a*. anterior, *p*. posterior nasal opening.

in villiform bands. Vomer with a triangular patch of villiform teeth. Palatines without teeth. Gill rakers short and rather broad, 10 may be traced on lower limb of first arch, but only the upper ones are well developed. Pseudobranchiæ well developed. Scales rather small, finely ctenoid; only lower parts of head, snout, maxillary, preorbital, interorbital space, and ocular depression without scales. The scaleless parts on the upper side of head most frequently with small dermal flaps, often imitating scales. There seems to have been abt. 40 scales in longitudinal series on body, and abt. 23 pores in lateral line; it is, however, not possible to state the accurate number, because the squamation has been damaged. The number of scales in lateral series from dorsal to ventral is 5—1—12. Dorsal XIII 10, deeply notched, originating before upper angle of gill-opening. Sixth dorsal spine the

longest, slightly longer than diameter of eye, not quite as long as longest soft ray. Anal III 5, the last ray being double. Second anal spine much enlarged, as long as the distance from tip of snout to the posterior border of pupil; the soft rays as long as the second spine. Pectoral broad, its length $1^1/_3$ in length of head; 19 rays, the 2 uppermost unbranched, the next 6 branched, and the 11 lower rays simple. Ventrals inserted below base of pectorals, not reaching vent, $1^1/_2$ times in length of head. Caudal rounded, its middle rays $1^2/_3$ times in length of head. Caudal peduncle a trifle deeper than long.

Colour in alcohol brownish, with indefinite darker markings; lighter below. Breast and underside of head yellowish. No bands or distinct blotches traceable. A dark area as large as the eye surrounds the origin of the dorsal and extends to the fin. Another indistinct blackish blotch between 9th to 11th dorsal spine. Base of the anterior part of soft dorsal with a smaller indistinct dark blotch. Dorsal elsewhere with small brown spots, in irregular longitudinal series on the soft part of the fin. Pectorals and caudal with several transverse series of small brown spots. Anal and ventrals light, with a few brown spots in transverse series.

The present genus has not before been recorded from the African side of the Atlantic, and, upon the whole, it was not recorded from this ocean until the year 1919, when a species was described by Metzelaar under the name *Scorpæna tredecimspinosus* (Metzelaar 1919, p. 146) from the Dutch West Indies. A second species has been recorded from Panama in 1928 by Meek and Hildebrand as *Scorpænodes caribbæus*[1]).

From the Pacific coast of Mexico, Panama, etc. was known a single species, *Scorpænodes* (*Sebastopsis*) *xyris* (Cuvier et Valenciennes).

I have in table X tried to compare these three species with one another as well as with the African species. This comparison is for the greater part undertaken by means of the literature, but also partly by means of specimens of *Scorpænodes xyris* from Panama and from the Galapagos Islands.

The table shows, that the four species are very nearly related, and their number will probably be reduced, when in future a greater material will make it possible to undertake a revision of the genus.

Scorpænodes africanus seems to come nearest to *Scorpænodes xyris*

[1]) Meek and Hildebrand: The Marine Fishes of Panama. III. 1928. p. 847.

(the same number of soft dorsal rays), but the number of scales is probably smaller. This last character, however, is uncertain owing to the defectness of the squamation in the African specimen. I think,

Table X.

	S. africanus	S. xyris	S. caribbæus	S. tredecim-spinosus
Total : Depth	2,9	2,35—2,9	2,2	3,0
Total : Head	2,6	2,35—2,55	2,6	2,5
Head : Eye	3,3	3,1—4,15	3,65	3,0
Head : Snout	4,0	3,55—4,6	3,65	..
Interorbital : Eye	0,5	0,5—0,7	..	..
Head : Interorbital	6,7	5,75—8,6	8,3	..
Head : Mouth	1,5	1,5—1,8	..	..
Head : Maxillary	1,7	1,7—1,9	2,2	1,8
Head : Pectoral	1,3	1,2—1,6	1,7	..
Head : Ventral	1,5	1,5—1,6	..	1,6
Head : Longest D-spine	2,9	2,6—2,9	..	2,7—3,0
Head : Longest C-rays	1,7	1,7—1,8	..	1,6
Gill rakers	10	10	..	..
Dorsal	XIII 10	XIII 10	XIII 8	XIII 9
Anal	III 5	III 5	III 5 (?)	III 5
Pectoral	2+6+11	1—2+6—7 +10—11	3+6+9	?+?+8
Scales	abt. 40	44—50	42	48

however, that it may be known from all other species upon its peculiar nasal spines (fig. 14), these being quite different from the more or less slender, simple spines found in any other observed specimen belonging to this genus.

Salarius atlanticus Cuvier et Valenciennes.

Metzelaar. 1919. p. 292.

1 specimen, 10,2 cm. long. At rocky coast. January 6, 1928.

Clinus nuchipinnis Quoy et Gaimard.

Metzelaar. 1919. p. 292.

1 specimen, 4,1 cm. long. January 7, 1928.

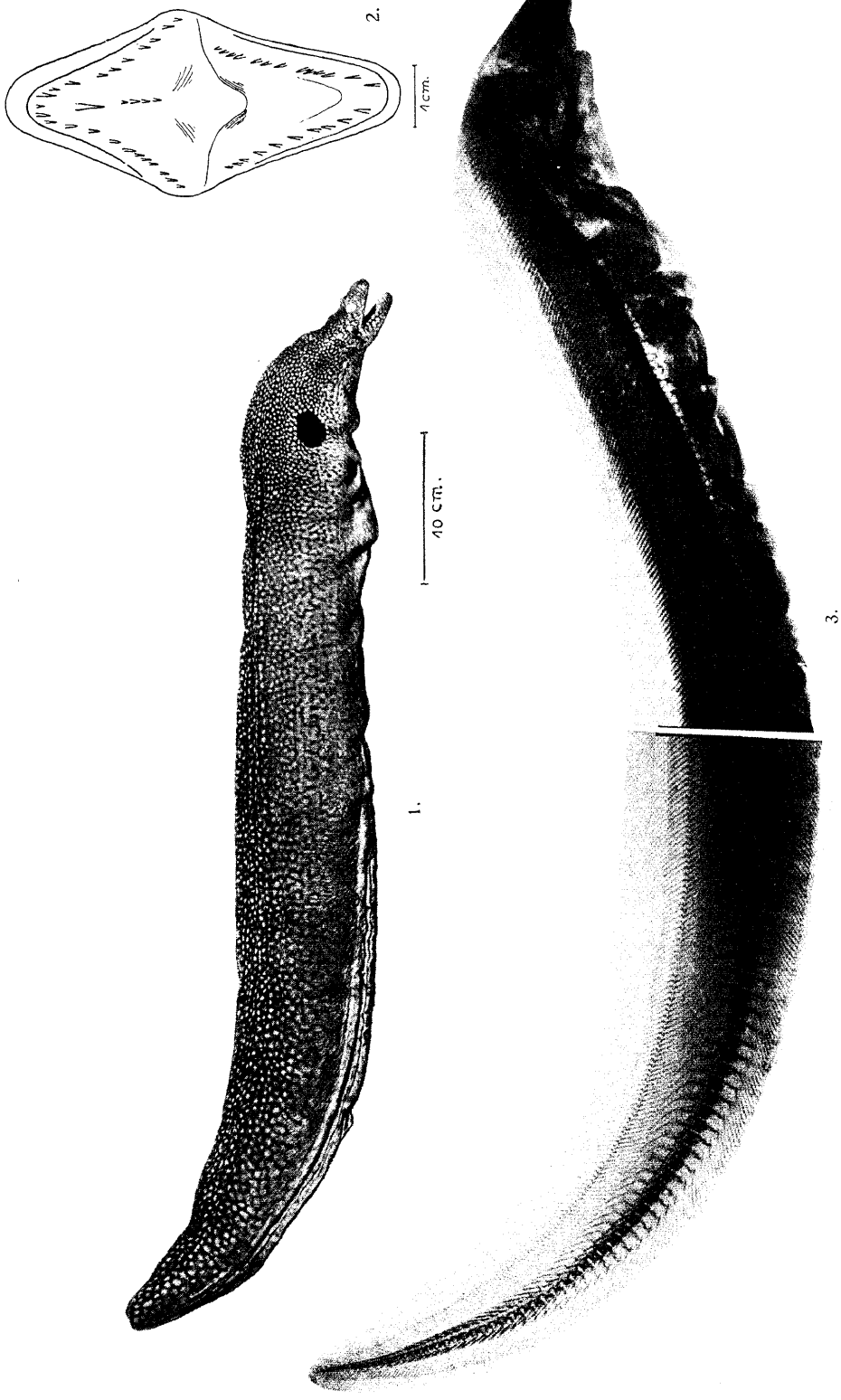
Batrachus (*Batrachoides*) *didactylus* Bloch & Schneider.
Metzelaar. 1919. p. 292.

1 specimen, 23,0 cm. long. December 1927.

Explanation of Plate.

Fig. 1. *Muræna albomarginata* sp. n.
- 2. — — - -. Dentition.
- 3. — — - -. X-rays' photography.

Separate copies ready from the press May 2nd, 1933.


2.
1 cm.
10 cm.
1.
3.