ON A SMALL COLLECTION OF CERATIOID FISHES FROM OFF DAKAR AND TWO RECENTLY ACQUIRED SPECIMENS FROM STOMACHS OF *APHANOPUS CARBO* TAKEN IN MADEIRA (MELANOCETIDAE, HIMANTOLOPHIDAE, DICERATIIDAE, ONEIRODIDAE, CERATIIDAE)

By G. E. Maul [1]

With 10 figures in text.

CONTENTS

1) Museu Municipal do Funchal, Madeira.

I. INTRODUCTION

The present paper is based on a small collection of 19 specimens from off Dakar, belonging to the Marine Biological Station of the Institut Français d'Afrique Noire (IFAN), and two specimens of the Funchal Municipal Museum (MMF). The IFAN material was taken in Midwater Trawls in various depths and localities in the neighbourhood of Dakar and is represented by 7 species. The MMF specimens were taken in Madeiran waters and come from the stomachs of *Aphanopus carbo*.

My thanks are due to the Director of the IFAN Marine Biological Station, J. Cadenat, for giving me an opportunity to examine the Ceratioids of his institute.

II. DESCRIPTIONS AND DISCUSSIONS

Family 1. ***Melanocetidae***

Genus ***Melanocetus*** Günther

Melanocetus johnsoni Günther

Melanocetus johnsoni Günther, 1864, Proc. Zool. Soc., p. 301, pl. XXV [not seen], Rep. Sci. Res. Voy. Challenger Zool., vol. XXII, p. 56. — Maul, 1961, Bol. Mus. Mun. Funchal, No. XIV, Art. 50, p. 91, fig. 1. *

* For further synonymy see Bertelsen (1951, p. 48).

Material

No.	T. L. (mm.)	S. L. (mm.)	Locality	Depth (m.)	Bottom depth (m.)	Date	Collector
1	34	23	13°30'N 17°40'W	600-800	—	29.VII.58	—
2	33	23	Fosse de Cayar	800	—	2.IX.58	—
3	36	26	14°58'N 18°43'W	2000	—	3.XI.58	—
4	19.5	13.5	14°52'N 18°15'W	700	—	9.XII.58	M. P. Doutre
5	23	17	"	"	—	"	"
6	21	15.5	16°16'N 22°16'W	1000	1800	16.1.59	"
7	32	23	"	"	"	"	"
8	24	16.5	15°37'N 20°39'W	"	3600	17.1.59	"
9	19	14	15°25'N 18°40'W	"	3200	18.1.59	"
10	21	15	"	"	"	"	"

All 10 specimens are well preserved, with all the characters necessary for identification intact. Where necessary for reliable counting the fin rays have been stained with alizarin. All have the characteristic esca of *M. johnsoni*, with the distal end conical and a more or less developed posterior crest. The diameter of the esca varies from 5.8% to 8% of the standard length and the numbers for pectoral rays vary from 17 to 20. There is, however, one specimen (No. 9) that stands outside the range of variation found for dorsal rays on some 150 specimens. The highest count in these is 15, whereas in this specimen there are 16. Of the remaining 9, five have 14 and four have 15.

Family 2. ***Himantolophidae***

Genus ***Himantolophus*** Reinhardt

1. ***Himantolophus albinares*** Maul

Fig. 1 & 2.

Himantolophus albinares Maul, 1961, Bol. Mus. Mun. Funchal, No. XIV, Art. 50., p. 111.

Material

One adolescent female, standard length 34 mm., 7.II.1962, Reg. No. 18983. From stomach of *Aphanopus carbo*. Lower part of skin between just under angle of mouth and origin of anal missing. Right pectoral fin torn away. All the rest is in very good state of preservation.

Description

Body compressed, its greatest depth twice in standard length. Papillae on snout and chin. Illicium thick and fleshy, its length about $2^1/_2$

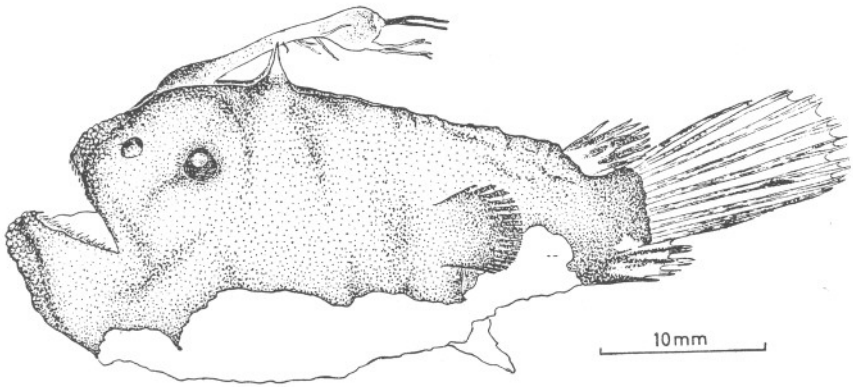

Fig. 1. — *Himantolophus albinares;* MMF Reg. No. 18983

in standard length. End of dorsal and anal reaching well beyond hypural. Skin of body and illicium completely naked. Each pair of nostrils on a large papilla-like base, some distance before eyes.

Measurements (in mm.). Total length 47.5; standard length 34; head 24; snout 7; least depth of caudal peduncle 5; distance between

sphenotic spines 12.5; greatest width (at cheeks) 11; greatest depth 17; diameter of orbit 2; length of lower jaw (bone) 12; distance between point of sphenotic spine and lowest point of lower jaw bone 23; distance from tip of snout to farthest point of preoperculum 13.7; illicium 13.5; length of operculum 9.5.

Counts. Dorsal 5; anal 4; pectoral (left) 17.

Teeth. In upper jaw 1 to 2 rows, in lower jaw 2 to 3 rows. The teeth of the outer rows are the smallest and those of the inner rows the largest. They are all thin and sharply pointed and slightly curved inwards.

Illicium (Fig. 2). The stem of the illicium is soft and fleshy and without spinules. Along the distal half, on its posterior side, 3 pairs of simple tentacles at equal intervals, the most distal one at the beginning of the bulb. Bulb compressed, with one double-branched tentacle at hind border, slightly beyond middle of length of bulb. Distally one branched fairly thick tentacle. The anterior and posterior pairs of swellings are not well defined as in the much larger type.

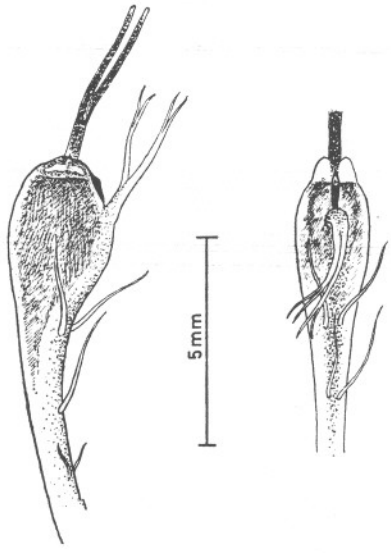

Fig. 2. — *Himantolophus albinares;* MMF Reg. No. 18983. Esca, side view and seen from behind.

Skeleton. On the right side of the head the opercular bones are visible. The opercle is strong, its upper branch is short and slender and quite straight, the lower branch is fairly broad and long and nearly straight. The suboperculum is broad below and has a long and slender curved upper point which nearly reaches the end of the upper branch of the operculum.

Colour. The skin on the body is black with some well defined unpigmented areas on top and bottom of caudal peduncle. The papilla-like bases of the nostrils are black. The illicium is grey with slightly heavier pigmentation along its posterior border and nearer its base. The paired tentacles along the stem are white. The double-branched posterior

tentacle of the bulb has some pigmentation on the inner side of its unbranched part, all the rest being white. The thick distal tentacle is heavily pigmented with black, except for the very ends, which are white. The inner dark lining of the bulb reaches up to about five sixths of the length of the bulb. The posterior pore is set in an elongate well-defined black area. The caudal fin is white except for a few black marks on some rays, mainly the upper and the lower. The rays of the dorsal and anal are irregularly but fairly heavily pigmented. The pectoral is black. The subdermal pigmentation of the caudal peduncle consists of evenly distributed very fine chromatophores.

Discussion

As is to be expected there are some marked proportional differences between the large type of this species and this small specimen which are given in the following comparison:

	Adolescent specimen	Type
Total length	47.5 mm.	242 mm.
Standard length	34 "	190 "
(Per cent of total length)		
Greatest depth	38	50
Distance between sphenotic spines	26.3	14.9
Distance between end of sphenotic spine and lowest point of lower jaw bone	48.4	36.4
Diameter of orbit	4.2	2.3
Length of lower jaw	25.3	17.8
Length of caudal fin	28.4	21.5

All these differences are completely in harmony with the ontogenetic differences that can be observed between small adolescent specimens and adult ones of *H. groenlandicus*. In a small specimen of 47mm. total length described and figured by Regan (1926) we likewise find a lesser body depth, longer and more prominent sphenotic spines (hence greater distances of any measurements taken from their points), much larger diameter of orbit, longer lower jaw bones (according to figures of young and full grown specimens), and a distinctly longer caudal fin.

The tentacles of the illicium are less developed and shorter proportionally the smaller the specimen.

As regards coloration, young specimens have unpigmented fins in contrast to the adult, where the fleshy rays are as black as the rest of the skin.

The skin of this small specimen of *H. groenlandicus* is also completely without the dermal broad-based spines which are so characteristic of the larger stages.

The round bases of the nostrils which are white in the type are quite black here. Whether they turn white in ontogeny will only be possible to tell when intermediate size stages come to hand. The presence or absence of pigmentation on these parts may well be an individual variation.

2. ***Himantolophus*** sp.

Fig. 3.

Himantolophus groenlandicus Reinhardt. Bertelsen, 1951, Dana-Rep. No. 39, Larvae (fig. 23) p. 61 [*? partim*].

Material

One larval male specimen, 7.XII.1958, 15°41′ N, 22°56′ W, 350m., without touching bottom. Collected by M. P. Doutre. In very good state of preservation.

Description

Body compressed, very deep, depth almost equalling standard length. Nostrils nearer snout than eye, anterior nostril opening distinctly forwards, the posterior one lateral. Total length 27mm., standard length 19mm., eye 2mm. (10.5% of S. L.). Dorsal 5; anal 4; pectorals 16/16; caudal 9.

Large melanophores on caudal peduncle, along back and on bases of dorsal and anal. A few widely spaced dermal pigment spots below gill opening.

Remarks

In size the present male specimen is slightly larger than the one figured under E of Fig. 23 by Bertelsen (1951). The subdermal and dermal

pigmentation agrees well, except that here we find a heavy pigmentation on the bases of the dorsal and anal fins, not shown or mentioned by Bertelsen.

This specimen is probably conspecific with the larvae of this genus without a pigmented hump and may well be *Himantolophus groenlandicus*. Possibly Bertelsen (1951) is even right in referring both the specimens

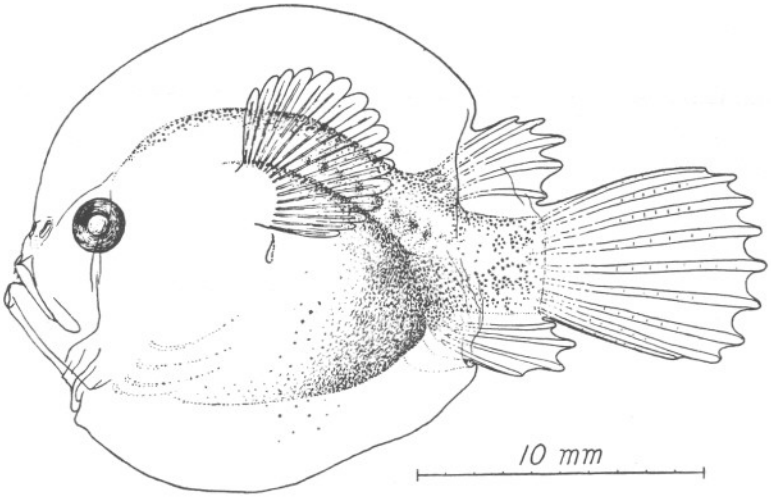

Fig. 3. — *Himantolophus* sp.; IFAN specimen here described.

with and without pigmented humps to the above species. However, since more than one adult species are now known from the Atlantic it has been deemed preferable to leave the specific determination open.

Family 3. ***Diceratiidae***

Genus ***Paroneirodes*** Alcock

Paroneirodes glomerulosus Alcock

Fig. 4-6.

Paroneirodes glomerulosus Alcock, 1890, Ann. Mag. Nat. Hist., vol. VI, ser. 6, p. 206, pl. IX, fig. 6 [not seen].

Paroneirodes glomerosus Alcock. Norman, 1930, Discovery Rep., vol. II, p. 356, fig. 46. — Regan & Trewavas, 1932, Dana-Rep. No. 2, fig. 29B & p. 58, fig. 85B.

Diceratias glomerulosus Alcock. Regan, 1926, Danish "Dana"-Exp. 1920-22, Oce. Rep. No. 2, p. 42.

Oneirodes glomerulosus Alcock, 1899, Cat. Indian deepsea fish., p. 57; 1900, Illustr. Zool. «Investigator», Fishes, pl. XXVIII, fig. 4 [not seen].

Phrynichthys wedli Pietschmann, 1926, Anz. Akad. der Wissensch. Wien, LXIII, No. 11, p. 89; Ann. Mus. Wien, XLIV, p. 419, fig. [not seen].

Paroneirodes wedli Pietschmann. Regan & Trewavas, 1932, Dana-Rep. No. 2, p. 58.

Material

Two adolescent or adult female specimens. One, standard length 25mm., 29.VII.58. 13°30'N, 17°40'W, 600 to 800 m. In very good state

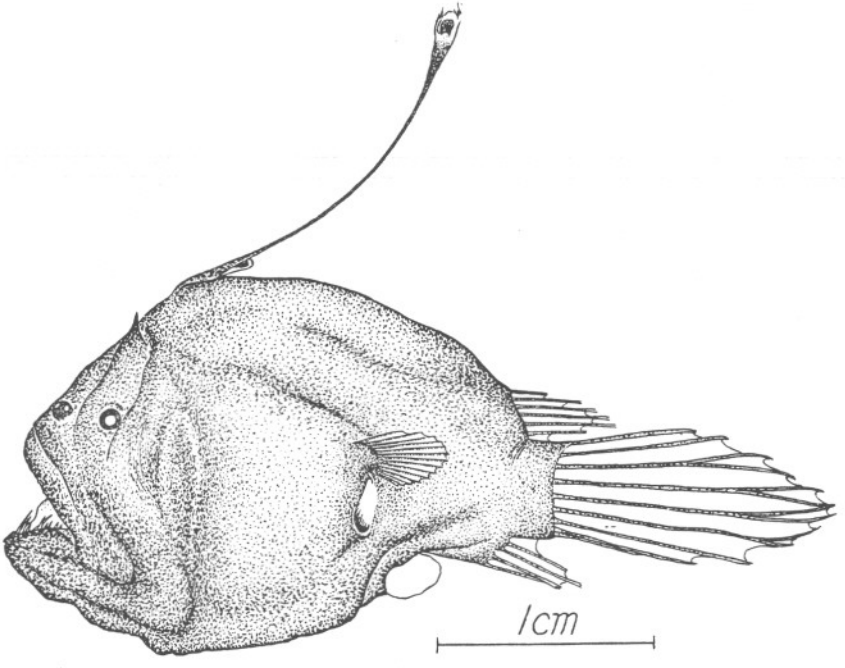

Fig. 4. — *Paroneirodes glomerulosus;* IFAN specimen of 25 mm. standard length, here described.

of preservation. The other specimen, standard length 30 5mm., 2.IX.58. From *Fosse de Cayar*. 800 m. In good state of preservation, but the esca must have been allowed to dry before the specimen was plunged into the preservative, for it is of very hard consistancy and only the posterior

filaments are discernible, in a much shrivelled state. Some cuts were made in the skin of this specimen to show the shape of the operculum and suboperculum, as well as the inner pigmentation.

Description

Body compressed, its greatest depth about $1\,^1/_4$ to $1\,^2/_5$ in standard length. Skin without spines or spinules. Lateral-line papillae on long stalks. Anterior cephalic ray thin and long, springing from behind sphenotic spines. Second cephalic ray immediately behind the first, very short, club-shaped. Ends of dorsal and anal reaching well beyond the end of the hypural. Nostrils on very long papillae, about half way between eyes and snout tip.

Measurements (in mm. and in per cent of total and standard lengths in brackets).

Total length	38	44.5
Standard length	25(66)	30.5(68.5)
Premaxillary	9.5(25, 38)	11(25, 36)
Lower jaw	12(31.5, 48)	14(31.5, 46)
Tip of snout to point of sphenotic spine	9(23.5, 36)	11(25, 36)
Distance between points of sphenotic spines	10(26.5, 40)	10.5(33.5, 34.5)
Operculum	—	9(20, 29.5)
Suboperculum		8.5(19, 28)
Illicium	19(50, 76)	25.5(57, 83.5)
Width of vomer	—	6.5(14.5, 21)
Counts		
Dorsal	6	6
Anal	4	4
Pectorals	14/14	14/14
Caudal	9	9
Branchiostegals	—	6

Teeth moderate, greatly varying in size, in a wavy row along edges of the upper and lower jaw. There are about 17 or 18 in the upper and about 15 or 16 in the lower jaw. Six strong teeth on vomer.

Illicium (Fig. 5). Stem of anterior cephalic ray thin and hard, without filaments. Bulb elongate, only slightly compressed, distally blunt and rounded. Anteriorly, more than half way down, a sturdy tentacle*

* Description of details of esca drawn up only from smaller specimen.

that divides into two main branches after a short distance. Each one of these branches divides into about 5 filaments. the longest reaching only slightly beyond end of bulb. Posteriorly, fairly near the end of the bulb, there is a pair of flat tentacles, side by side, each branching off into 4 filaments all of which reach well beyond the end of the bulb. Laterally, on the lower part of the bulb, there is a flat, short tentacle on each side. All over the bulb some very short fine papillae, one at the distal end being longer and rather conspicuous. Second cephalic ray short, club-shaped and without tentacles.

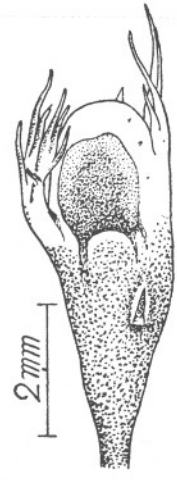

Fig. 5. — *Paroneirodes glomerulosus*; IFAN specimen of 25 mm. standard length, here described. Esca seen from left side.

Opercular bones (Fig. 6). The lower branch of the operculum is narrow and superiorly strongly curved. The upper branch is very narrow and distally strongly curved downwards. The outline of the suboperculum is that of a narrow club with the upper end drawn out long and slightly curved, and the lower part more or less narrowly rounded. Anteriorly it has a short spine directed forward slightly upward.

Colour. Whole body, and illicium up to half the length of the esca, blackish brown. The filaments of the anterior tentacle of the esca are brownish on their distal halves. The short lateral tentacles are brownish black and are lying against an unpigmented area of the esca. The anterior tentacles are white. The rays of the pectorals are black, those of the unpaired fins are lightly pigmented, but in the larger specimen they turn gradually brown distally. Membranes of all fins transparent white. Tongue whitish.

The inner pigmentation shows no well defined pigment spots in any distinctive pattern but consists rather of a general light brown coloration evenly spread over the whole body.

Remarks

Regan & Trewavas (1932, p. 58) referred Pietschmann's *Phrynichthys*

wedli to the genus *Paroneirodes* previously erected by Alcock (1890) for his species *glomerulosus*, considering that the former specimen's stronger and more numerous teeth did not separate it generically from it. Bertelsen (1951, p. 70) goes further, in stating that: «...its longer illicium may be due to age difference also. It seems uncertain, therefore, if the two species can be separated». Our present material seems to bear out Bertel-

Fig. 6. – *Paroneirodes glomerulosus;* IFAN specimen of 30.5 mm standard length, here described. Left operculum and suboperculum.

sen's suspicion conclusively. The first cephalic ray appears to grow longer in ontogeny, at least up to the size of the largest specimen so far known, as the following comparison shows quite clearly:

	T. L. (mm.)	Ill. in % of T. L.
P. glomerosus. (Norman, 1930, p. 356)	26	abt 33
P. glomerulosus. (IFAN)	38	50
P. glomerulosus. (IFAN)	44.5	57
Phrynichthys wedli. (Pietschmann 1926)	55	abt. 68

As can be seen the proportional increase of the length of the illicium is more or less evenly progressive parallel with the increase of the absolute length of the specimens, and the present material cannot be referred to either the one or the other species on the strength of the proportional length of the illicium. We must, logically, conclude that Pietschmann's fish

is but an older, ontogenetically more developed specimen of *Paroneirodes glomerulosus*, to which also the present material had to be referred.

Family 4. ***Oneirodidae***

Genus A. ***Oneirodes*** Lütken

Oneirodes spp. (***O. eschrichti***-group)

Figs. 7-9.

Material

Two adult or adolescent female specimens. Standard length of both 30mm., 17.I.1959, 15° 57'N, 20° 39'W. 1000m. at 3,600m. bottom depth. Collected by M. P. Doutre. In fair state of preservation. The skin on part

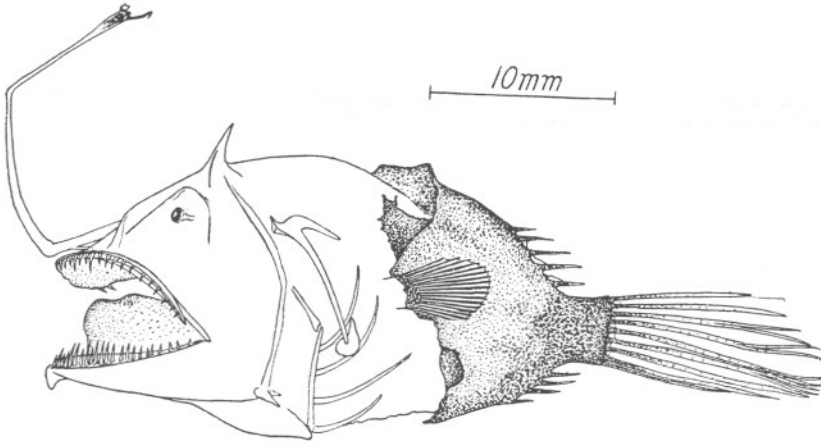

Fig. 7. — *Oneirodes* sp. *(O. eschrichti*-group); IFAN specimen No. 1 here described.

before pectoral fins was mostly lost and torn fragments still adhering were removed for easier examination of the specimens. In the part behind the pectorals the skin is well preserved but most of the inter-radial membranes of the fins are torn. Illicium well preserved but also without skin up to beginning of esca.

Description of specimen No. 1 (Figs. 7 & 8)

Body compressed, its greatest depth 2 in standard length. Cephalic

ray moderately long and thin. Dorsal pore present. Ends of dorsal and anal rays not reaching origin of caudal. Sphenotic and articular spines strongly developed. Operculum deeply notched, lower arm thin and only very slightly curved, the upper arm short. Suboperculum broadly rounded below, tapering above into a short slightly pointed end.

Measurements (in mm. and in per cent of standard length and total length in brackets).

Total length	42	
Standard length	30	(100, 71)
Distance between sphenotic sines	9.5	(32, 23)
Snout to point of sphenotic spine	11	(37, 26)
Lower jaw	15	(50, 36)
Illicium	7	(23, 17)
Basal bone	7	(23, 17)
Longest tooth in upper jaw	1.2	(4, 2.9)
Longest tooth in lower jaw	1.9	(6.3, 4.5)
Diameter of luminous bulb	1	(3.3, 2.4)
Operculum (measured from its uppermost point):		
upper arm	4	(13.2, 9.5)
lower arm	8	(26.5, 19)
Suboperculum	2.4	(8, 5.7)

Counts

Dorsal	6*
Anal	4
Pectorals	17/17
Branchiostegals	6 6

Teeth moderate, greatly varying in length, in one single row in upper and lower jaw. In the upper jaw there are 18 on the left and 17 on the right side, and in the lower jaw 23 on the left and 22 on the right side. On the very broad vomer there are 3 sturdy depressible teeth on each lateral end.

Illicium (Fig. 8). Stem thin and rigid. Luminous bulb narrow, elongate and slightly compressed. Anterior appendage strongly compressed, having a heart-shaped outline the point of which springs from a short cylindrical pigmented stem. Anteriorly and posteriorly, springing from near its base, a filament. The anterior one broadly triangular in transverse

* The first ray not piercing the skin but well developed.

section, the posterior one thin and cylindrical. On both sides of the distal papilla, near the anterior half of its base, about 6 quite short filaments. Posterior appendage cylindrical, moderately long and thick. The terminal papilla is sturdy and truncated and has a large distal pigment spot. Just below the distal filaments a very narrow black patch of the inner organ, ending in a fine point, shows through the translucent bulb. As most of

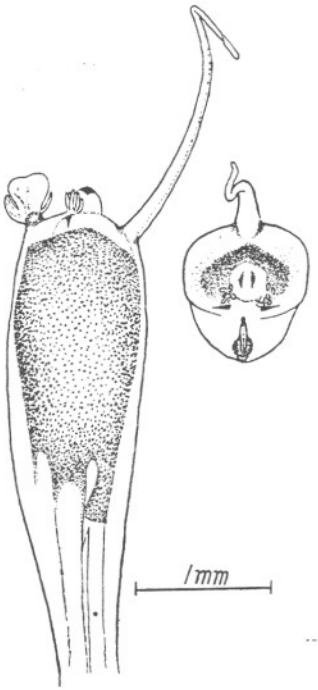

Fig. 8. — *Oneirodes* sp. (*O. eschrichti*-group); IFAN specimen No. 1 here described. Esca seen from left side and from above.

the outer skin is lost nothing can be said about the dermal pigmentation of the illicium.

Colour. Uniform brownish black on body, fin rays and illicium. This can be deduced from fragments of skin that were still adhering to the various parts of the portion where the skin was damaged. Fragmentary portions of the fin membranes still existing show clearly that these are transparent white. No subdermal melanophores anywhere.

Description of specimen No. 2 (Fig. 9)

General characteristics same as in specimen No. 1.

Measurements (in mm. and in per cent of standard length and total length in brackets)

Total length	41	
Standard length	30	(100, 80)
Distance between sphenotic spines	9.5	(32, 23)
Snout to point of sphenotic spine	11.5	(38, 28)
Lower jaw	15	(50, 37)
Illicium	6.8	(23, 17)
Basal bone	7	(23, 17)
Longest tooth in upper jaw	1	(3.3, 2.4)
Longest tooth in lower jaw	1.5	(5, 3.7)
Diameter of luminous bulb	1.2	(4, 2.9)
Operculum (measured from its uppermost point):		
upper arm	4.5	(15, 11)
lower arm	9	(30, 22)
Suboperculum	2.6	(8.7, 6.3)
Counts		
Dorsal	6	
Anal	4	
Pectorals	17/17	
Branchiostegals	6/6	

The teeth are on the whole slightly smaller than in specimen No. 1, but the arrangement and their shape is the same. The numbers are for upper jaw 16 on each side and for the lower 22 on each side. The vomer has 3 on each side.

Illicium (Fig. 9). Stem thin and rigid. Luminous bulb subspherical, slightly compressed. Anterior appendage digitiform, shorter than bulb, lightly pigmented round its base, and with filamentous branches: one pair of simple ones anteriorly near end, one pair of rather long forked ones posteriorly near base, one pair of short simple ones above the latter. One pair of large anteriorly branched distal filaments between anterior appendage and distal papilla. The latter large, truncate and without distal pigment spot. Posterior filament cylindrical and simple, about as long as bulb. On either side, just below the distal papilla a large black patch of the interior organ showing through the translucent bulb. The outer skin of the illicium being largely missing we do not know the dermal pigmentation of this organ.

Colour. Uniform brownish black on body and the rays of all the fins. Radial membranes transparent white. No subdermal melanophores.

Discussion

As can be seen the two specimens are of equal size and are nearly identical in all proportions and counts. There is, however, a vast diffe-

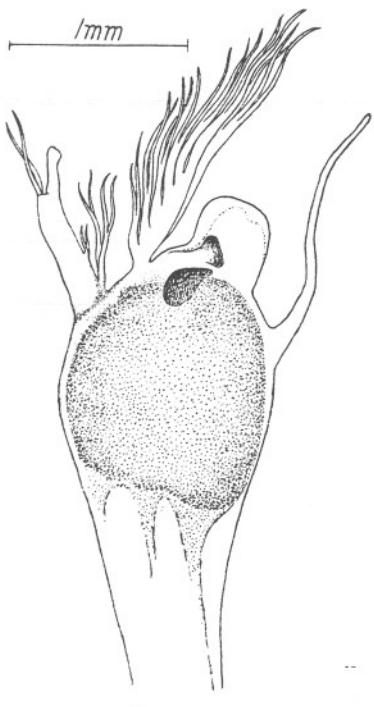

Fig. 9. — *(O. eschrichti*-group); IFAN specimen No. 2 here described. Esca seen from left side.

rence in the aspect of the esca and if we are to ascribe any diagnostic significance at all to its shape and the arrangement and form of the appendages, filaments and papillae, it is impossible to attribute both to one and the same species. Comparing the esca of specimen No. 1 with those of the species referred to the *Oneirodes eschrichti*-group by Bertelsen (1951) we find it to be practically identical in all details with that of the

specimens referred to *Dolopichthys megaceros* by Koefoed (1944, p. 6; Pl. I, figs. 4a, 4b & 5, Pl, III, fig. 6). The esca of *Dolopichthys cirrifer* Regan & Trewavas 1932 is also fairly similar, the only difference lying in the shape of the anterior appendage, which, in that «species», is said to be stout, whereas here it is distinctly leaf-like flattened and furthermore has a conspicuous anterior filament, in contrast to *D. cirrifer* which only possesses the small posterior one. It would seem likely, therefore, that Koefoed's material and the present specimen are one species, with the possible inclusion of *Dolopichthys cirrifer* Regan & Trewavas.

The esca of specimen No. 2 is like most of those within the group that have no lateral filaments, *Dolopichthys ptilotus* Regan & Trewavas being perhaps the most similar. It is not likely that the greater or lesser length of the posterior filament is of specific significance.

A lot more material will have to be examined before a definite conclusion can be reached as to how many of the species erected by authors prior to Bertelsen (1951) are valid. On the basis of the esca 3 main types among the species gathered under the *Oneirodes eschrichti*-group are recognizable at present: 1) esca with stout digitiform anterior appendage, fairly long distal filaments, and one usually quite simple posterior filament of greater or lesser length; 2) like the former but with lateral more or less developed filaments springing from about the middle of the esca; 3) a short broad but quite flat, leaf-like anterior appendage (compressed laterally) with 1 or 2 anterior and posterior filaments springing from near its base, very short simple distal filaments, and a simple curved cylindrical posterior filament.

Genus B. ***Chaenophryne***--Regan

Chaenophryne sp. ***(Ch. draco***-group)

Fig. 10.

Chaenophryne draco-group. Bertelsen, 1951, Dana-Rep. 39, p. 114.

Material

One female metamorphosing specimen, 9.XII.1958, 14° 52'N, 18° 15'W, 700 m., without touching bottom. Collected by M. P. Doutre. Well preserved.

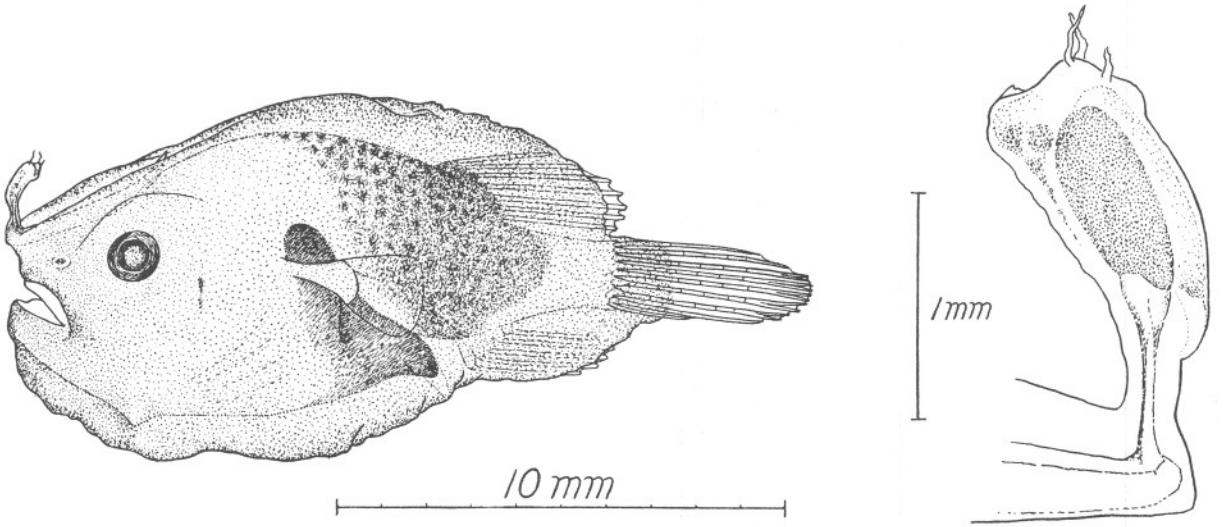

Fig. 10. — *Chaenophryne* sp. *(Ch. draco*-group); IFAN specimen here described. Detail on right, esca seen from right side.

Description

Body compressed, depth about $1^1/_2$ in standard length. Nostrils small, about in middle of snout, set in a small oval unpigmented area. Skin naked, covered with very fine brown pigmentation which does not entirely impede transparency. Eyes with aphacic space. Teeth minute.

Esca (Fig. 10, detail on right) short and thick, with a deep antero-distal groove dividing it into two symetrical portions between which, posteriorly, a small transparent distal papilla. One short thin filament at the end of the left portion and two on the right one. No external or internal pigmentation whatever. The dotted portions in the drawing of the esca show up in transparency as opaque parts after treatment with glycerine.

Measurements (in mm. and in per cent of standard length in brackets).

Total length	17.7	
Standard length	13.2	
Greatest depth	8	(61)
Head	7.2	(55)
Illicium	2	(15.2)
Thickness of esca	0.4	(3)
Basal bone	3.4	(26)
Eye	1.2	(9.1)

Counts. Dorsal 7; anal; pectorals ?/16*; caudal 9.

Subdermal pigmentation

Close-set melanophores covering area on back from about middle of standard length to some distance beyond base of dorsal. Downwards this pigmentation spreads to the lower outline of the muscular portion of the body, from some distance in advance of the anal base to about half the length of the latter. The anterior outline of the resulting pigment patch slopes parallel with the upper outline of the peritoneum but without touching it. The pigmentation is particularly dense on and just below the

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* Although the specimen was slightly stained in an alizarin solution the rays of the pectorals are extremely difficult to count. The correct number may possibly be 17.

dorsal base. The only other subdermal pigmentations are two small elongated patches, one below the other, a short distance behind the eye.

Remarks

Considering the size of the present specimen a specific identification was expected to be possible and an effort was made to accomplish this by a thorough examination of the esca. However, the general vagueness of the outline of the inner portions, the poor development of the distal papilla and the complete absence of any pigmentation made this impossible. On the one hand, there is no trace of filaments on the side of the lower basal part of the esca like in *Ch. parviconus*, on the other hand, the anterior, downward directed, tentacle-like organ is remindful of *Ch. ramifera*. There seems little similarity between the luminous bulbs of the present specimen and *Ch. draco*. Obviously, this organ is still at a weakly developed stage, as is also shown by the presence of a deep distal groove dividing the bulb into two halves, as described for the larvae of the *Ch. draco*-group by Bertelsen (1951, p. 116). There is, however, no doubt that our specimen is near the stage when adult characters are fully developed. The beginnings of details in the esca are laid down and the dermal pigmentation, though still very fine, is almost completed. The large patch of subdermal pigmentation has a much greater extention than in the larval specimens mentioned by Bertelsen, while some of the smaller pigmented areas anterior to the large patch do not exist.

Family 5. ***Ceratiidae***

Genus A. ***Ceratias*** Kröyer

Ceratias holboelli Kröyer

Ceratias holboelli Kröyer, 1844, Ichth. bidr. 10. Ceratias Holbölli. Naturhist. Tidsskr. I (2) [not seen]*.

One adolescent female specimen in very poor state of preservation, taken from stomach of *Aphanopus carbo*. Standard length about 175 mm., 11.VI.1962, Reg. No. 19123. Skin only on caudal peduncle and rays of

* For full synonymy see Bertelsen (1951, p. 133)

caudal. Rays of pectorals and part of dorsal lost. Caudal apparently intact, but the unusual count of 8 makes it likely that the lower and shorter one of the two lowest, close-set rays was lost. The basal bone of the illicium is intact and measures 167 mm.

Inspite of the damaged state this specimen is in it can be referred to the above species without doubt on account of skeletal characters of the head, the general outline of the whole fish, the great length of ihe basal bone, and the characteristic spines of the skin.

Genus B. ***Cryptopsaras*** Gill

Cryptopsaras couesi Gill

Cryptopsaras couesi Gill, 1883, «Forest and Stream», p. 285 [not seen].*

Material

Three small adolescent female specimens in very good state of preservation, collected by M. P. Doutre. They have the following measurements, fin ray counts and further data:—

T. L. (mm.)	*S. L. (mm.)*	*D*	*A*	*C*	*Locality*	*Depth (m.)*	*Bottom depth (m.)*	*Date*
17	12.5	4	4	8	16° 16' N 22° 16' W	1000	1800	16.1.59
18	13	4	4	8	15° 57' N 20° 39' W	«	3600	17.1.59
23	16	4	4	8	«	«	«	«

Cryptopsaras couesi is by no means an uncommon species. Of the 447 specimens recorded by Bertelsen (1951, Table X) 327 were taken in the Atlantic Ocean. Only 42 of these are adolescent or adult females. By far the greater part of the whole material comes from the western part of the Atlantic. From the North East Atlantic only 40 specimens, including 10 adolescent or adult females are recorded, all of which were taken near the localities given for the present material.

* For full synonymy see Bertelsen (1951, p. 139)

III. SUMMARY

Twenty female specimens. ranging from metamorphosing to adolescent or adult stages, and one larval male are listed and described in greater or lesser detail.

One adolescent specimen from off Madeira is described in detail and is attributed to *Himantolophus albinares* recently described from an adult female specimen of the same locality. An adolescent female of *Ceratias holboelli* is recorded for the first time from Madeira.

Two specimens of the genus *Paroneirodes* are shown to be intermediary growth stages between *P. wedli* (Pietschmann) and *P. glomerulosus* Alcock.

The *Oneirodes* material of the *eschrichti*-group is considered to belong to two different species on the strength of the formation of the esca.

The small specimen of *Chaenophryne* sp. representing a growth stage not previously recorded is figured and described in detail.

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