

do opérculo, terminam em espinhos fortes. Origem das ventrais, debaixo da origem das peitorais. Origem da dorsal, ligeiramente atrás do fim da base das ventrais. Origem da anal, ligeiramente à frente da vertical através do fim da base da dorsal. A base da anal é cerca de 2,5 na base da dorsal. Não existe linha lateral. O No. 3560 é uma fêmea com ovas bastante desenvolvidas, mas estas parecem não estar ainda maduras. Têm de diâmetro um pouco mais de 0,33mm..

A cor é dum preto azulado uniforme.

Há uma correlação muito grande nas proporções entre estes exemplares, e os descritos por ROULE & ANGEL, PARR, e KOEFOED, entretanto, todos estes autores têm figurado este peixe com um focinho grandemente elevado, de maneira que o perfil anterior é quase vertical. Nenhum dos exemplares disponíveis mostra esta corcova pronunciada. Também os espinhos da cabeça são muito mais longos e fortes do que os figurados pelos autores acima mencionados.

ventrals below origin of pectorals. Origin of dorsal slightly behind end of base of ventrals. Origin of anal slightly in advance of vertical through end of base of dorsal. Base of anal about 2.5 in base of dorsal. No lateral line. No. 3560 is a female with greatly developed roes, but the eggs do not seem to be ripe. They measure slightly more than 0.33 mm. in diameter.

The colour is uniform bluish black.

There is very good agreement in the proportions between these specimens and the ones described by ROULE & ANGEL, PARR, and KOEFOED, however, all these authors have figured this fish with a greatly elevated snout, so that the anterior profile is almost vertical. None of the specimens at hand show this pronounced hump. Also the spines on the head are much longer and stronger than figured by the aforementioned authors.

ADDITIONS TO PREVIOUSLY REVISED FAMILIES

No. VII, Art. 18.

By G. E. Maul

ORDER ISOSPONDYLI

FAMILY SEARSIDAE

SUBFAMILY SEARSINAE

Genus *Holtbyrnia* PARR, 1937

Subgenus *Mentodus* PARR, 1951

Holtbyrnia (Mentodus) polycoeca (PARR)

Figs. 14, 15 & 16.

Tab. 5 & 6.

Searsia polycoeca PARR, 1937, Bull. Bing. Oce. Coll., vol. 3, art. 7, pp. 15, 16, 19, figs. 1B, 3 (right), 5.

Holtbyrnia (M.) polycoeca (PARR, 1937), 1951, Am. Mus. Novit., No. 1531, p. 16.

One specimen, No. 4054, from stomach of *Aphanopus carbo* LOWE, 23. II. 1954. In good state of preservation.

Head and body compressed. Eyes large. Maxillary reaching beyond hind eye-edge. Head, measured from anterior end of tusk, 2.85, greatest depth 4.23 times in standard length. Snout 4.08, interorbital 3.03, orbit 4.24, least depth of caudal peduncle 3.79 in head.

Measurements in mm.

Total length	173
Standard length	148
Head	53
Snout	13
Orbit	12.5
Interorbital (maximum)	17.5
Greatest depth	35
Least depth of caudal peduncle	14
Snout to pectorals	53.5
» » ventrals	85
» » dorsal	100
» » anal	112
Base of dorsal	27.5
» » anal	20

Pectorals small, low in body depth. Origin of anal well behind origin of dorsal but slightly before middle of the base of the latter. End of base of anal slightly behind end of base of dorsal. Caudal forked, lobes pointed. Dorsal 22; anal 18; ventrals 9; pectorals 21.

Luminous organs distinct but not sharply marked. A horse shoe shaped membranaceous area on chin is of a slightly lighter, somewhat yellowish colour, and is probably luminous. This would correspond to the submental organ mentioned by KREFFT (1953, Zool. Anz., Bd. 151, Heft 9/10) for *Searsia schnakenbecki* and NORMAN and BEEBE (*vide* KREFFT, *op. cit.*) for *Perspersia*. The branchiostegal membranes are unfortunately torn, and nothing can be said as to the presence or absence of branchiostegal organs. Medianly, just behind the bases of the pectorals, one round organ. Three, in a transverse row, slightly in advance of the ventrals, the middle one the largest. A short distance before the anal, on either side of the anus, an elongated, posteriorly pointed organ. One oval organ, on either side, slightly before end of base of anal, and one median just before lower concurrent caudal rays.

The scales are cycloid and not very easily shed. From the end of the head to the last scale on caudal peduncle one counts 90 oblique rows, and from the same point forward, to the top of the skull, 50 more rows. A large part of the scales is well preserved, several patches being quite complete and reaching from upper to lower outline, but no trace of a lateral line can be found. Modified scales as those figured for *S. schnakenbecki* KREFFT would be easy to see after removing a strip of scales across the body, as has been done with this specimen.

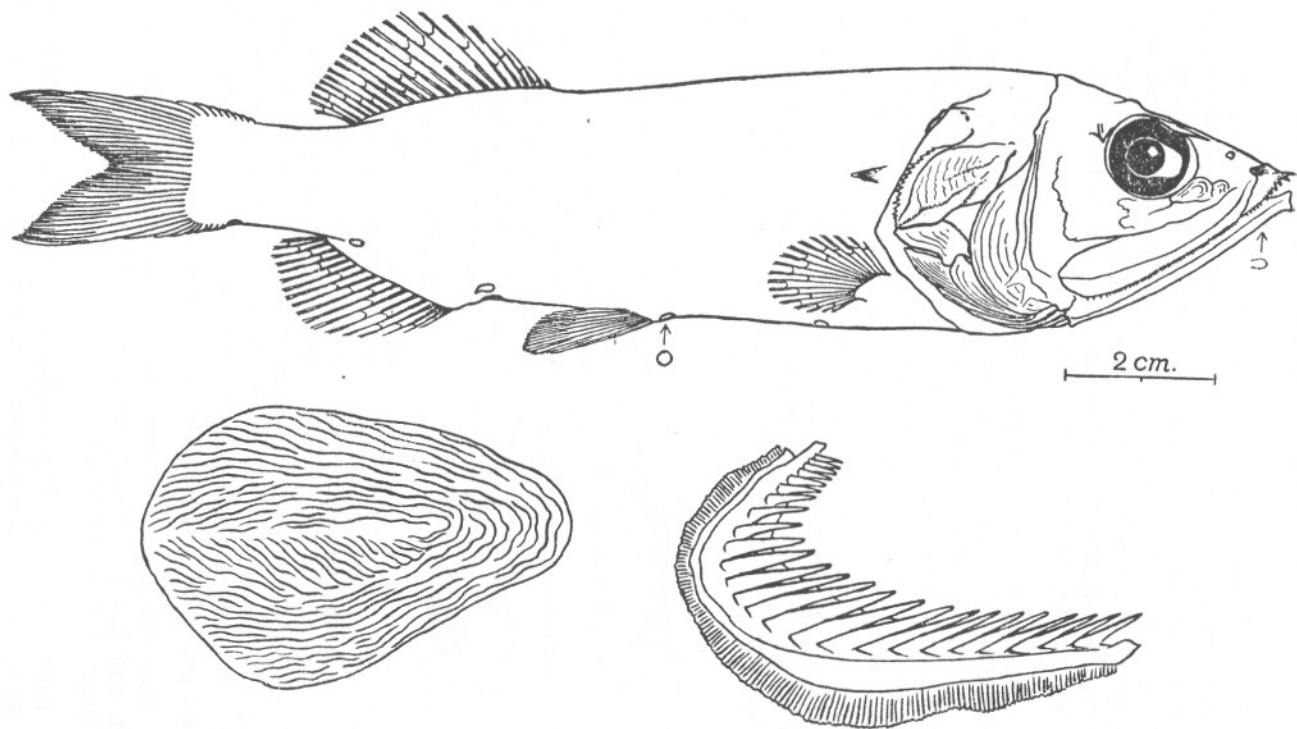


Fig. 14.—*Holtbyrnia (Mentodus) polycoea* (PARR), with scale of central lateral region and first right gill-arch.

Teeth small and pointed, in single rows along premaxillaries, maxillaries and limbs of lower jaw. There are 12 teeth on the premaxillaries, the foremost tusk-like and directed forward. Following this they gradually decrease in size backwards. Along the maxillaries about 70 small pointed teeth, none externally on lower jaw. A few very minute ones on tongue, and one pointed, somewhat enlarged tooth on each side of the head of the vomer. Two teeth anteriorly on each palatine.

Head with wide flat interorbital. Anterior half of eyes roofed by two large bones, attached to the outer edge of the frontals, but easily movable up or down. On this specimen they are hanging down, thus covering part of the eyes, but this position is likely to be due to pressure exerted on them by the walls of the stomach which enveloped the specimen for a considerable time. It is much more likely that these bones are directed sidewardly away from the frontals in the undamaged fish, as then their edges and those of the frontals fit well together and the outline of the two forms a natural curve. They seem to correspond to the prefrontals, even though the place of attachment of these bones is generally more forward in the orbit. Between preopercle, opercle and subopercle there is a triangular, uncovered area. Opercle with a serrated edge. There are 8 branchiostegal rays, the last two being very broad and thin. The pupils are large and elongate, their foremost points almost touching the border of the iris. Gill-rakers very thin, with smooth edges, 8 on upper and 17 on lower part of first gill-arch. Longest gill-raker 0.7 in orbit. Gill-filaments very short.

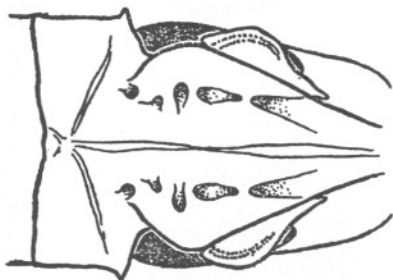


Fig. 15.—Head of *H. (M.) polycoeca* seen from above and showing the large prefrontals

two last pairs. There are 7 appendages in all, in one single series, the longest about 0.7 in diameter of orbit. Supraclavicular process in middle between base of pectoral and upper outline of body. Dark-rimmed dermal pit behind posterior edge of the supra-cleithrum.

The colour was uniform bluish mauvish black on body and head when fresh, and has become duller, more brownish, in alcohol. Inside of mouth and branchial cavity black.

Discussion. The most outstanding differences between the specimen here described and the type and specimens used by PARR for his key to the genera and species of the subfamily Searsinae (1951, *op. cit.*, p. 15) are the following:

	Type	Madeira specimen
Teeth on premaxillary	6	12
» » maxillary	20—25	abt. 70
Thoracic photophore	linear, about midway between bases of P. and V.	roundish, much nearer bases of P. than V.
Pyloric coeca	with terminal diverticles	simple

Table 5.

Considering the large size of the present specimen we must admit the possibility that an increase of the number of teeth has taken place during growth. This phenomenon has been observed in other species. For example, in *Paralepis brevisrostris* (PARR), specimens measuring about 190 mm. have more or less twice as many premaxillary teeth as smaller ones measuring about 60 mm.

How much importance can be attached to the difference in shape and position of the thoracic organ is difficult to assess, so long as only a small amount of young specimens of *H. polycoeca* have been examined prior to the present one. However, one of three large specimens of *Searsia koefoedi* PARR, in our collection, shows the analogous organ to be of a roundish shape, whereas usually it is linear in that species too.

Whether the difference in the formation of the ends of the pyloric coeca is of specific or ontogenetic nature, or whether this is a character which may vary individually, only the study of more specimens of different sizes will reveal.

PARR (*in lit.*) explains that the inconsistency with regard to the number of terminal diverticles between his 1951 key and his earlier publication (1937, *op. cit.*) is due to the fact that the type has become lost and that the key was based on several other specimens which he has seen in the meantime. These specimens are said otherwise not to reveal any discrepancies with his original description and figure, and, in spite of considering both description and figure inadequate for a satisfactory identification, he felt it was better to use the name for a form of which specimens were available, than to clutter up the literature with a species name that could no longer be adequately identified.

Assuming that the specimens used for PARR'S key are really conspecific with the type of *Searsia polycoeca*, we may conclude that a great individual variation as to number of coecal diverticles is possible, for the type possessed 25 (see PARR, 1937, fig. 1B, p. 11) whereas the later specimens are said to have fewer than 10 terminal diverticles. In other words, the total number of appendages being six to eight with fewer than 10 terminal diverticles, there can at the most be three branched appendages, with three simple ones.

The effort to try and explain these differences on the bases of individual variation or ontogeny is forced upon us by the weight of the resemblance of

a great number of important characters, which make it indeed likely that the specimen under consideration is identical with *Holtbyrnia polycoeca*.

A comparison of proportions and numerical values gives the following picture:

	Type	Madeira specimen
Standard length in mm.	48	148
Head	37.0	34.5
Eye	10.4	8.4
Snout	9.4	8.8
Depth	19.0	23.7
Snouth to D.	64.5	67.6
» to V.	55.0	57.4
Base of D.	17.7	18.6
» » A:	15.6	13.5
D.	20	22
A.	17	18
P.	22-23	21
Gill-rakers	6/1/15	8/1/17
Pyloric coeca	6-8	7
Branchiostegal rays	7 (?) *	8
Teeth on vomer	2	2
» » premaxillary	2/2	2/2

Tab. 6.

The eye, proportionally smaller than in the type, with its effect on the snout length, is to be expected in this large specimen and rather favours than disproves an identity, and the presence of a supra-cleithral dermal pit, a character not observed in any other species of this family, rounds up, as a final point, the long list of characters which support the likelihood that this specimen belongs to *Holtbyrnia polycoeca* (PARR).

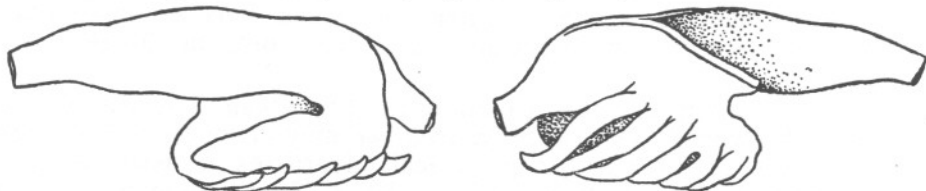


Fig. 16.—Right and left view of stomach with pyloric coeca of *H. (M.) polycoeca*.

KREFFT (1953, Zool. Anz., Bd. 151, Heft 9/10, p. 259-266) considers that his *Searsia schnakenbecki*, with its intermediary position between *Holtbyrnia polycoeca* and *Searsia*, has lessened the differences between those two genera, and suggests that the original position in the genus *Searsia* be given back to *Holtbyrnia polycoeca*.

Indeed, one cannot help being impressed by a great general outer similarity when comparing our large specimen of *Holtbyrnia polycoeca* with specimens of *Searsia koefoedi* of proximate size. Similar characters of both species are: the forwardly directed tusks of the premaxillaries, the general arrangement of the luminous organs, the squamation and the disposition of the fins.

* PARR, 1957, p. 6 (Key, oo)

Though short coecal diverticles exist in one species and, at least sometimes, not in the other, the shape of the stomach and position of the proximal parts of the pyloric coeca are the same.

A feature undoubtedly of importance is the presence or absence of modified lateral line scales, but, for *Searsia koefoedi*, the treatment of this character has always been too vague as to enable us to know whether modified scales exist or not. Thus ZUGMAYER (1911) and NORMAN (1930) do not mention the lateral line at all in their accounts. KOEFOED (1927), who had large specimens, says: «The lateral line indistinct». PARR (1937): «about 85 in lateral line» and (1951), in key to genera and species of the subfamily Searsiinae: «Lateral-line scales not enlarged» and, finally, the present author (1948): based on one specimen: «Lateral line indistinct». However, on three large specimens of our collection, I am unable to find the slightest trace of modified scales, and the same applies to the specimen of *Holtbyrnia polycoea*, the first examined with the scales fully developed.

The absence of modified lateral line scales would therefore constitute one more character of approximation of these two species and justify KREFFT'S opinion even more. On the other hand, if this character were given generic importance, it would remove *Searsia schnakenbecki*, which latter has very distinct and characteristic modified lateral line scales.

It appears, therefore, that the complexity of the generic relationship can only be settled by a worker who has comprehensive material of all the species of the Searsiinae at hand, and I have, for this reason, found it preferable to retain *Holtbyrnia* as the genus for the species under consideration, leaving it to the authority of PARR to assign the correct position for it in his final monograph.

ORDER INIOMI

NEW FAMILY?

Genus *Notosudis* WAITE, 1916

Notosudis argenteus sp. n.

Figs. 17 & 18, ~~19 & 20.~~

Tab. 7 & 8.

In December of last year a specimen of a dead fish was found on the sandy beach of Porto Santo by some inhabitants of that island. It was fortunate that the finders recognized it as being strange and different from any of the well known species taken by Porto Santo fishermen, and we owe the preservation of this interesting species to their care in taking it to Mr. JORGE BRUM DO CANTO, an enthusiastic fisherman and friend of the Museum, who kept it in formalin and shortly after presented it to us, to be incorporated in our collection.

Here in Madeira it was only possible to ascertain its relationship to several species belonging to the order Iniomi, but otherwise nothing indicative as to the exact family, genus or species this fish might belong to could be found in the literature at our disposal.

I must thank Mr. N. B. MARSHALL, of the British Museum (Natural History), for lending me a hand with the identification, and the loan of

WAITE'S paper*, where the type of *Notosudis hamiltoni* from Macquarie Island is described and figured. The fish under discussion belongs undoubtedly to the same genus and is indeed quite close to the species. Several numerical values, however, differ strongly enough to make it quite clear that it cannot be conspecific with it.

According to Mr. MARSHALL, who has been working on the group this species belongs to, the type of *N. hamiltoni* is still the only representative of its genus and our material is the first in good condition. There can be no doubt that we are dealing with an extremely rare fish, particularly if we consider that intensive collecting of deep-sea specimens has been going on for many years in all seas and uninterruptedly so in Madeira. It was therefore all the more surprising when only a few months later another, though much smaller specimen of the same species came to hand. This time we had an opportunity to observe the colouration in its natural state, as it was quite fresh and practically all the scales were preserved. The collecting date was 9. IV. 1954 and, according to the fishermen who handed it to us, it was taken from the stomach of a tunny *Thunnus thynnus* (L.).

The larger of the two, No. 3998, has been selected as type, and the smaller, No. 4341, as paratype.

Description of type: Body almost cylindrical, very slightly compressed, with upper and lower outline parallel between origins of pectorals and ventrals. Mouth large, otherwise proportions of characters normal. Head nearly 4, greatest depth 8.75 in standard length. Bases of fins short. Origin of dorsal slightly ~~in advance of~~ ^{behind} middle of standard length. Base of ventrals entirely in advance of dorsal. Origin of anal somewhat behind beginning of last one quarter of standard length. Adipose fin above posterior half of base of anal. Premaxillary longer than half the length of the head. Interorbital broad, slightly concave, 5 in head. Horizontal diameter of orbit slightly more than 3.5, snout (from tip to orbit) nearly 5, in head. Scales large and cycloid, on body and possibly on cheeks, as some bits of still adhering skin of this otherwise badly rubbed part appear to indicate. Lateral line descending in an almost straight line from upper border of opercle to middle of caudal peduncle. The least depth of the latter only slightly more than length of snout.

Eyes large, with large oval pupils, reaching from behind centre of iris to anterior border, so as to allow a forward field of vision. They are set in a pear-shaped orbit, the pointed end being in front. Upper border of orbit slightly impinging on upper profile of head.

Nostrils small, above, slightly in advance of anterior end of orbits, front one round orifice, hind one slit.

Upper border of jaws formed entirely by premaxillaries. Maxillaries broadening slightly towards posterior end, their greatest depth about 5 in longest diameter of orbit, supramaxillaries consisting of two bones, one thick

* E. R. WAITE, Austral. Ant. Exp., Sci. Rep., ser. C., vol. 3, part 1.

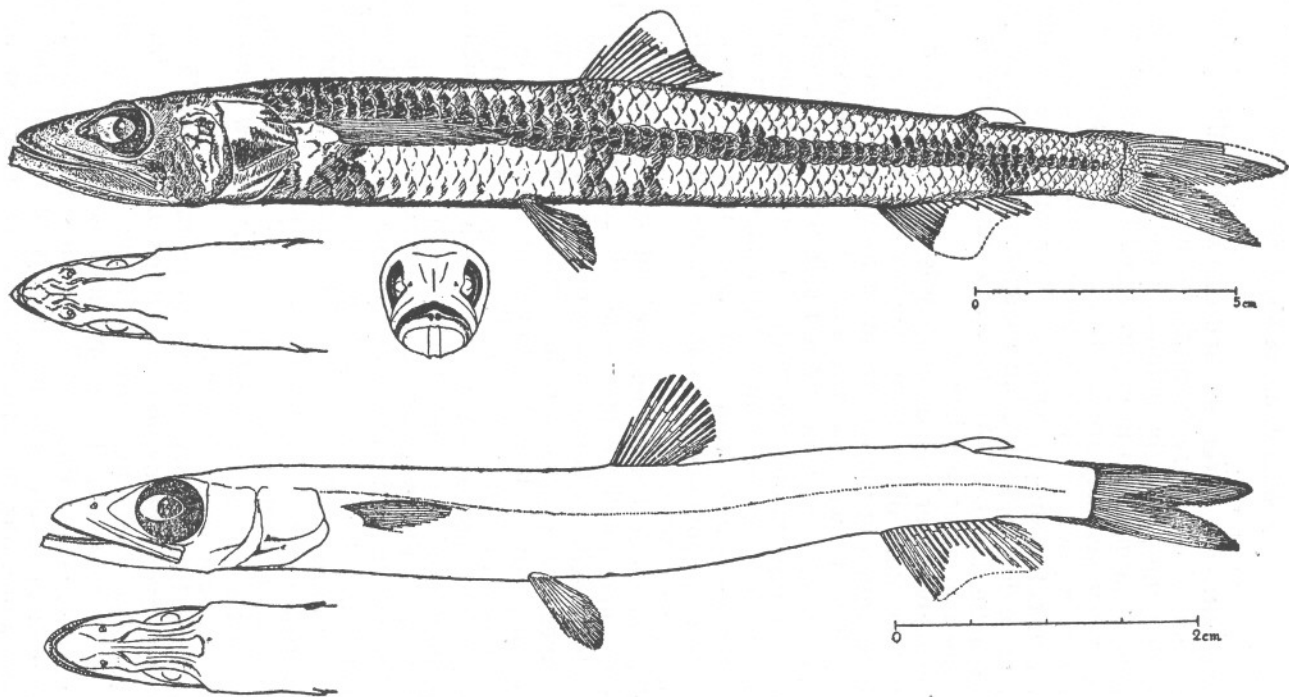


Fig. 17.—*Notosudis argenteus* sp. n. Type, with dorsal and frontal view of head, above; paratype, with dorsal view of head, below.

and deeply furrowed lower one and one smaller, thin and smooth upper one. Posterior end of maxillary distinctly behind orbit.

Teeth minute, bluntly pointed, those of jaws curved inwards, in lower jaw somewhat larger than in upper, along left premaxillary about 133. Along border of upper jaw they are in one row, very close-set and mostly touching one another, in lower jaw in two distinct, well separated rows, those of the outer row directed slightly outward. The latter are mostly missing, but this is likely to be due to the friction the specimen suffered on the beach, as these teeth are quite exposed. At the same time they break off very easily and may be shed in older specimens.

Lower jaw rather high at symphysis, its height 4.5 in horizontal diameter of orbit. The sides of the lower jaw are contained in the upper, and a slight superior elevation at the tip fits into a toothless emargination at the end of the snout. Tip of lower jaw with a pit on each side of symphysis.

First gill-arch of right and left side with one short gill-raker on upper part and 11 long ones on lower part. They are lanceolate, with the inner edges finely granulated. At the anterior end there are 5 more, rudimentary ones. The gill-filaments are about 1.25 times as long as the longest gill-raker, which latter is contained about 5 times in the horizontal eye-diameter. Pseudobranchiae present.

The opercular boneplates are quite smooth and shiny, but there are anteriorly some small fragments of skin left which show that on the quite undamaged specimen, before it was rubbed on the sandy beach by the action of the waves, these parts were less shiny and of softer texture to the feel than they are now. These fragments of skin show no trace of any scale structures and it is almost certain that the opercles in this species are quite scaleless in life, just as they are now on the type. Branchiostegal membranes are not united and are supported by 10 rays.

Except for the pectorals and caudal, which are normal, the fins are small. The numbers of fin rays are: dorsal 14; anal 19; ventrals 9; pectorals 14; caudal 11+16+10. The tips of the pectorals nearly reach a vertical through the origin of the ventrals. The anterior half or more of the soft rays of the dorsal and anal have their tips broken off, but none of the rays show any of the usual thickening in the proximal part of prolonged rays.

Almost all the scales were lost, but the few remaining on the various parts of the body are all cycloid.

A scale from under the pectoral has about 75 circuli, only 17 being continuous. Even the dermal structures underlying the scales have mostly been lost. These structures are caducous and of the same size and shape as the scales that cover them, and they are not to be confused with scale pockets, which are distinctly visible in those parts where both scales and these dermal structures are missing. Scales of lateral line 57, they are nearly complete, and where the actual scales have been lost, the dermal structures still exist. They are cycloid and in the centre there is an elongated elevation, pointed ~~in front~~ and ~~ending in two~~ ends ~~behind~~. A large pore opens under the middle of this elevation, the part posterior to the pore being free.

behind with free in front

Pyloric coeca 23, the shortest about 1.5, the longest about 0.5 in horizontal diameter of orbit. Vertebrae 54.

Measurements in mm.

Total length	245
Standard length	214
Greatest depth (between origin of P. & V.)	24
» width (» » » » »)	22
Head	54.5
Snout (from tip to orbit)	11.5
» (» » » iris)	14.5
Premaxillary	29
Orbit (horizontal diameter)	15
» (vertical » »)	10.8
Least depth of caudal peduncle	11.5
Interorbital (between orbits of skull)	11
« (» eyelids)	13
Snout to origin of pectorals	57.5
» » » » ventrals	97
» » » » dorsal	110
Snout to origin of anal	167
» » » » adipose	183
Base of dorsal	20
» » anal	24

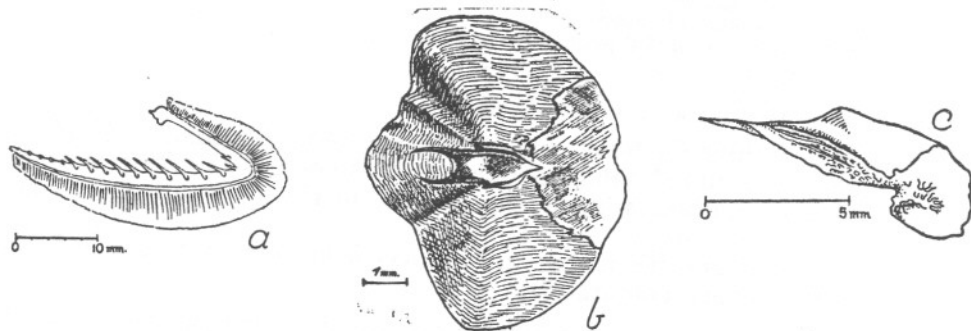


Fig. 18.—Details of type of *N. argenteus*: (a) first left gill-arch; (b) scale of lateral line; (c) left supramaxillary, showing upper smooth, rhomboid part and lower deeply furrowed part.

A water-colour sketch made by Mr. BRUM DO CANTO, from the fresh specimen, shows the fish with a more or less uniform, slightly bluish grey colouration. On the preserved specimen the scales of the lateral line and the cutaneous structures above it are dark greyish brown, whereas those below it are very light grey. The head is of the same dark colour as the lateral line, as well as the fins. Inside of mouth, branchial cavity and peritoneum black. Iris deep black.

Description of paratype, mainly with regard to characters which deviate from the type: Head 3.77, greatest depth

about 10 in standard length. Interorbital 6.3, horizontal diameter of orbit 2.8, snout (from tip to orbit) nearly 5 in head.

Gill-rakers long, about twice as long as longest gill-filament, 2.7 in horizontal diameter of orbit. In both left and right first gill-arch there are 2 gill-rakers on the upper part and 15 on the lower. The 2 upper only half as long as the longest lower one, but all the rakers of the lower part are long.

Dorsal 13; anal 19; pectorals 14; ventrals 9. Scales of lateral line 55.

Measurements in mm.

Total length	79.5
Standard length	69
Head	18.3
Snout (to iris)	5.5
Premaxillary	9
Orbit (horizontal diameter)	5.7
» (vertical	4.5
»)	
Snout to V.	31.5
» » D.	37
» » A.	55
» » adipose	59.3
Greatest depth of head	7
Least depth of caudal peduncle	4.5
Base of D.	7.5
» » A.	2.9
Interorbital (between orbits of skull)	2.9

Colour on fresh, undamaged specimen blackish on head, upper part of back and end of caudal peduncle. Fins colourless. Rest of body very bright silvery with bluish iridescences. Iris, inside of mouth, branchial cavity and peritoneum black.

The specific name «*argenteus*» is in allusion to the striking brightness of the silvery colouration.

As can be seen from the above measurements, there is an appreciable difference in the relative size of eyes, between the type and the paratype, but large eyes are normally found in young specimens. The only difference which might be considered of some significance is that which lies in the gill-rakers. It is generally believed, and has been observed in several species that the number of gill-rakers increases with the growth of the branchial arches. Though the total number is the same in both specimens, an atrophiation of the foremost lower gill-rakers appears to take place with growth—rudimentary anterior gill-rakers also exist in the type of *Notosudis hamiltoni*.

Comparison of differing characters:

	Type	Paratype
Head	25.4	26.5
Snout (from tip to iris)	14.5	8
Premaxillary	13.5	13
Orbit (horizontal diameter)	7	8.3
« (vertical »)	5	6.5
Interorbital (between orbits of skull)	5.2	4.2
Snout to D.	52	53.6
Snout to A.	78	79.7
Dorsal rays	14	13

Tab. 7.

From the differences pointed out we may conclude that the following ontogenetic transformation takes place during growth: A decrease of the relative size of the eyes, causing the relative size of the snout to increase and the end of the maxillaries to move backwards in relation to the eyes. An increase of the width of the interorbital, causing the bones of the forehead to flatten out, which makes several of the cranial ridges, distinct in the young, disappear. A general relative decrease of the length of the gill-rakers, and an atrophy of the anterior ones.

Comparison of the type of *Notosudis argenteus* sp. n. with *N. hamiltoni* Waite:

		argenteus	hamiltoni
Dorsal		14	12
Anal		19	15
Pectorals		14	12
Gill-rakers (total)		17	20
Head (% of standard length)		17 25.4	23.3
Eye		21.1	17.8
Interorbital	% of head *	20	24.5
Snout		27.5	28.9

Tab. 8.

Apart from these differences *Notosudis argenteus* has the entire base of the adipose fin situated distinctly before the end of the base of the anal, whereas in *N. hamiltoni* this fin is behind it. The latter species is said to have no pseudobranchiae and only single series of teeth in the jaws. It is possible, however, that an outer series of fragile teeth existed in the lower jaw, which were then lost through friction on the beach, where the specimen was found. The lack of pseudobranchiae is indeed strange, as these are distinctly developed in this new species, though they are hidden behind a fold of skin. With the complimentary characters now observed on these entire specimens, and the deviations in characters, WAITE'S diagnosis of the genus *Notosudis* can be amended as follows:—

Head as broad as deep; snout long, subacute; mouth large, the premaxilla forms the gape, reaches beyond the eye in adult, and is free from the maxilla, supramaxilla present, composed of two bones. Single or double series of teeth in jaws, on the palatines, and on vomer; body elongate, subcylindrical; dorsal fin short, in a median position, an adipose fin present; pectoral fins normal; ventrals normal, close together, inserted before dorsal; anal short, in advance of or under adipose; caudal with numerous procurrent rays; anus a short distance behind bases of ventrals, under origin of dorsal; scales cycloid; lateral line well developed.

Both the great scarcity and the formation of their eyes suggest that these fishes are denizens of the depth, and there is no doubt, they belong to the order Iniomi. Within this order they seem most closely related to the Aulopidae. Characters of good agreement are the subcylindrical shape and proportions of the body and head, the formation of the jaw bone, dentition, type of gill-rakers and squamation. The maxillary bears two supplemental bones. The teeth have the same disposition and similar shape as in Aulopids, and the gill-rakers are lanceolate and moderately numerous. Except for being cycloid, the formation of the scales of the lateral line is almost exactly as in *Aulopus filamentosus* (BLOCH).

Yet, in spite of all these analogies, there are some characters which exclude *Notosudis* from this family. There is the much more backward position of the dorsal and ventrals. The bases of the ventrals are far apart in the Aulopidae, whereas here they touch. The anus is near the ventrals, under the origin of the dorsal, in the Aulopidae it is situated far removed from the ventrals and nearer the anal origin.

* For *N. hamiltoni* calculated from figure.

Although *Notosudis argenteus* cannot belong to the Paralepididae, for obvious reasons (subcylindrical shape of the body, large mouth, with rictus reaching well beyond front eye-edge, relatively short supramaxillary, etc.), the small toothless emargination at the snout, into which fits the elevated symphysis of the mandible, the triangular part of the orbit in front of the actual eye, the backward position of the dorsal and the relative position of the anus are characters typical of that family, and an intermediary position of *Notosudis* between the Aulopidae and the Paralepididae is strongly indicated.

FAMILY PARALEPIDIDAE

Genus *Paralepis* CUVIER, 1817

Paralepis harryi sp. n.

Figs. 19, 19a-b-c-d, 20 & 21.

Tab. 9.

One specimen, holotype, No. 3863. From stomach of *Aphanopus carbo* LOWE. Funchal fish market, 17. IX. 1953.

Description: Body and head compressed, slender. Head about 4.33, greatest depth 11 in standard length. Dorsal behind middle in length, origin of ventrals under middle of base of dorsal. Anus behind dorsal, nearer ventrals than anal. Orbit 5, interorbital 7.5, snout about 2.4 in head. Scales moderate, cycloid, deciduous. Lateral line straight, extending from upper end of opercle to middle of depth near end of anal base. Least depth of caudal peduncle about 2.33 in snout.

Eyes large, pupils round, much larger than lens. Only the left posterior adipose eyelid preserved. Nostrils before end of maxillaries. End of maxillary not reaching anterior border of eye. Maxillary 3 in head.

Jaws apparently formed by premaxillaries and maxillaries (see Fig. 19), however, on close examination, it appears that the lower, thin part of the premaxillaries, in which the roots of the teeth are embedded, splintered away and carried away with it the whole posterior half of this bone. The same effect could be produced on the premaxillary of a large, strongly macerated specimen of *P. brevirostris* by pulling the upper half away from the lower, exerting only very little force. The supramaxillary is long, rod-shaped, overlying the maxillary at its posterior end. Anterior process of premaxillary with very minute foramen—in the left process this foramen is indistinct and can at the most be called a pore. End of mandible obliquely truncate, with a distinct knob below.

Teeth absent, except for a row of very short ones along the outer borders of the tongue. They are, however, likely to have been lost, due to the action of the gastric juices, which have rendered the tissues, particularly those of the head, very soft or entirely removed them. This has also caused the gill-rakers to be lost.

The few scales left under the pectorals are slightly oval and have about 40-50 circuli, of which only 15 or 16 are continuous, the others running off the scale posteriorly. There are large patches of scale-pockets left, which enable us to calculate the number of oblique rows from head to caudal to be about 140. Sixteen of the foremost structures, containing the

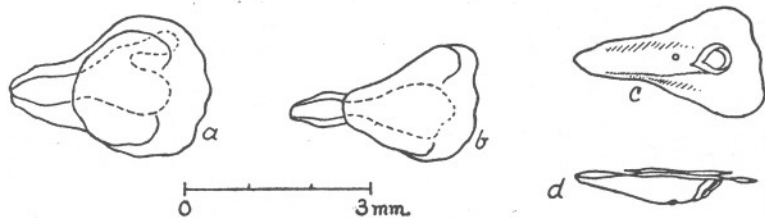
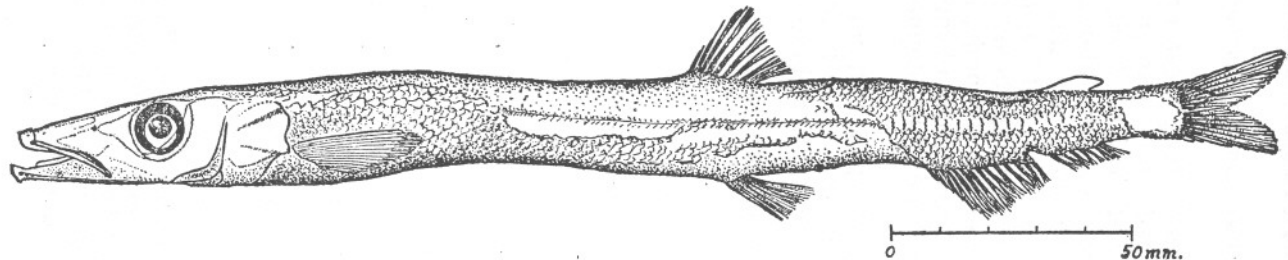


Fig. 19.—Type of *Paralepis harryi* sp. n.; (a) & (b) upper side of underlying scale-structures of lateral line; (c) the same from below; (d) sideview.

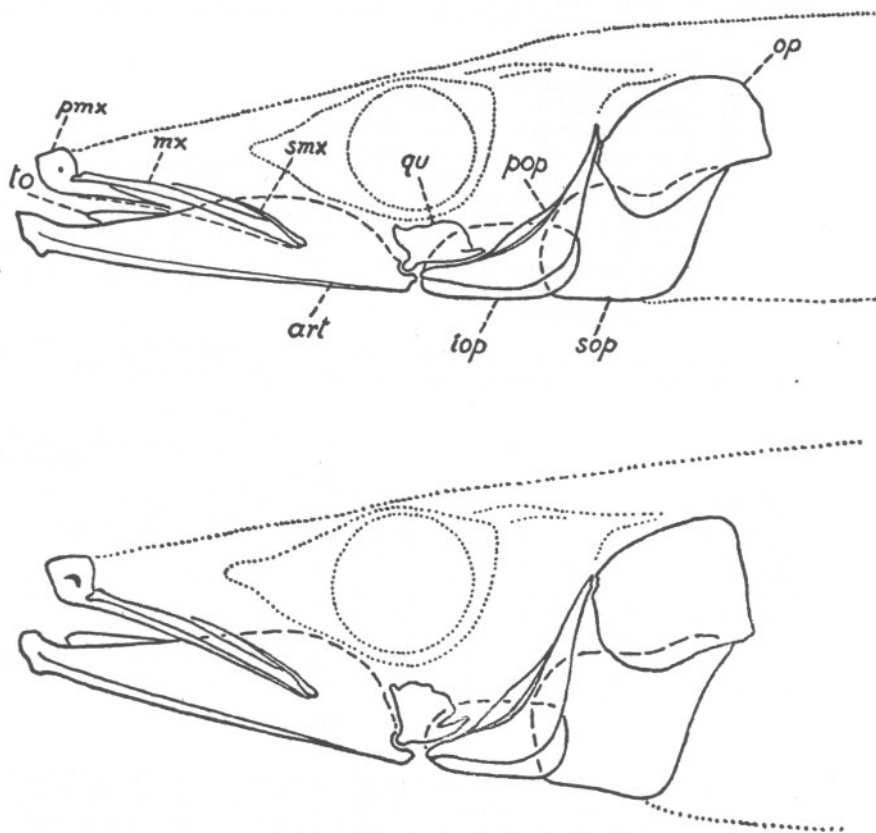


Fig. 20.—Upper figure, outline of head of type of *P. harryi*. Lower figure, head of specimen of *P. brevirostris* (Parr) of nearly 200 mm. standard length, for comparison.

art. articular; *iop.* interoperculum; *mx.* maxillary; *op.* operculum; *pmx.* premaxillary; *pop.* preoperculum; *qu.* quadratum; *smx.* supramaxillary; *sop.* suboperculum; *to.* tongue.

(1953, Studies Bathypelagic Fish. Paralepididae, Pacific Science, vol. 7, no. 2, pp. 235-266). Apart from intrinsic values, hard to express in words but easily recognizable to anyone who has handled and studied a large amount of adult material of Paralepidids, an aggregate of characters that decide quite definitely its inclusion into this genus, on the one hand, and exclusion from the other genera, on the other, are the following:

- 1) Pupil larger than lens.
- 2) Scales on body and head.
- 3) Nostrils well before end of maxillaries. *
- 4) Tip of lower jaw strongly elevated.
- 5) Supramaxillary long, rod-shaped.
- 6) Scales with only a small portion of the circuli continuus.
- 7) Scales overlying tube of lateral line almost certainly equal in size to the surrounding ones—the number of the row of scale-pockets running along the equally long row of cutaneous lateral-line structures is less than double that of the latter, and each cutaneous structure is covered by 1.5 to 2 scales in other members of the genus. By reason of likely analogy we may suppose that this was also the case here.

A comparison of certain characters of the other species of *Paralepis* so far recognized and the specimen under discussion gives the following picture:

Paralepis	D.	A.	P.	Vert.	Depth in standard length	Head in standard length	Origin of V. in relation to origin of D.	Foramen
<i>coregonoides</i>	10—11	24—25	14—16	70—74	abt. 10	4.35	before	large **
<i>speciosa</i>	10—11	23—24	15—16	67—70	abt. 9	3.6	slightly behind	—
<i>elongata</i>	10	25—26	12	—	abt. 6	4.35	before	—
<i>brevis</i>	11—12	22—24	15—17	64—67	abt. 9	3.5—3.8	distinctly behind	large **
<i>brevirostris</i>	11—12	25—25	16	65	abt. 8	4—4.2	distinctly behind	small **
<i>bronsoni</i>	abt. 9	20	16	—	abt. 9	abt. 3.3	distinctly behind	—
<i>danae</i>	12	26	17	—	abt. 7	abt. 3.2	distinctly behind	—
<i>harryi</i> sp. n.	10	22	15	64	11	abt. 4.2	distinctly behind	minute **

Tab. 9.

As can be seen by the numerical values of its fin-rays and vertebrae, it approaches only two other species, namely *P. brevis* and *P. brevisrostris*. From *P. brevis* it is easily distinguished by the very minute foramen. This same character is represented by a large round orifice in the centre of the premaxillary process in adult *P. brevis* (the largest examined measuring 182 mm.). It also has a proportionally smaller head than that species and the tip of the tongue is farther back, reaching only to within $\frac{1}{6}$ of the length of the mandible. From the other species, *P. brevisrostris*, it differs, at a glance, by the much more slender shape and also the more backwardly situated tip of the tongue. The greatest depth of the mandible is contained 4.5 times in its length in this new species, whereas in *P. brevisrostris* it is only contained 3.6 times in its length. A depth measurement of the head, taken from the posterior end of the mandible, up across the centre of the eye, to top of head, is contained 3.25 times in the head in the new species and 2.7 in *P. brevisrostris*.

* In *P. coregonoides* (RISSO) the nostrils are over the posterior tip of the maxillaries, like in *Notolepis*, as defined by HARRY (op. cit., p. 237), also the upper jaw terminates well in advance of eye, the distance which separates it from it equalling about the diameter of the eye.

** In adults.

Named for Dr. ROBERT R. HARRY, in recognition of his excellent work on the group of fishes this species belongs to.

Considerations on the foramen of the anterior process of the premaxillary. In his paper of April 1953, on the Paralepididae, HARRY separates the genus *Sudis* from all other genera of the family primarily on the grounds of lack of a foramen in the premaxillary, which he describes as wide and circular in his diagnosis of those genera. An examination of this character in our copious material of *Paralepis brevis*, the species we consider the most closely related one, showed that

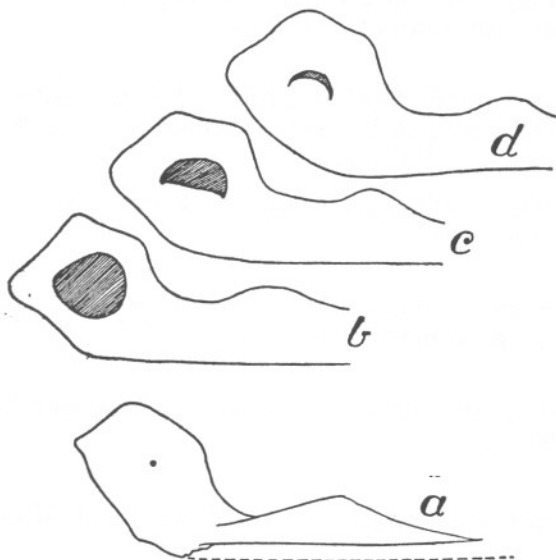


Fig. 21.—(a) left premaxillary process of type of *P. harryi*, showing minute foramen. (b), (c) & (d) same part of three graduated sizes of *Paralepis brevis* (PARR), about 50, 120 & 185mm. in standard length, respectively.

the foramen gradually develops towards closing up in ontogeny. The specimens at hand range from about 50mm. to 185mm. in standard length, and to illustrate the manner and extent to which this development takes place, three graduated sizes, each representative of several individuals of similar sizes, have been picked out and their left premaxillary processes are shown in Fig. 21. The gradual upward growth of the lower border of the circle formed by the foramen in young specimens raises the possibility of a complete disappearance of this orifice in older specimens.

As already pointed out above, in this new species the foramina are extremely small, indeed so small and difficult to detect that only a partial dissection and careful removal of all tissues on the anterior part of the premaxillaries brought them to light. The left upper process can only be pierced by the very point of an extremely fine needle, and it appeared that before piercing this fine orifice in the bone it was closed up by cartilage. It seems very likely that with further growth of the specimen the borders of the foramina might have met and grown together,

and the upper process of the premaxillaries would thus have been constituted by smooth, arched, unperforated bony plates. The possibility of an analogous development suggests itself for *Paralepis harryi* sp. n., particularly as the specimen is of large size.

Specimens of various sizes of *Paralepis coregonoides* (RISSO), *P. brevis* ZUGMAYER, *Macroparalepis affinis* EGE and *M. egei* MAUL have been examined, but this retrograding ontogenetic phenomenon could not be observed. Similarly, the large specimens of *Lestidium pseudosphyraenoides* (EGE) in the Museum's collection show large circular foramina.

From these observations we may conclude that in all the latter species the foramina retain their proportional size and shape throughout growth, whereas in *Paralepis brevis* they gradually decrease in size through the upward growth of the lower border of the orifice, and, by way of likely analogy, that a similar development takes place in *Paralepis harryi* sp. n.

It appears, therefore, that the wide circular foramen, as a character for the genera grouped together in the subfamily Paralepidinae by HARRY, in some genera only holds good for the young, or, at least, not for adult specimens. On the other hand, it becomes most desirable to examine young specimens of *Sudis hyalina* with regard to this character.

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LISTA DE TRABALHOS SOBRE INSECTOS

DO

ARQUIPÉLAGO DA MADEIRA

No. VII, Art. 19.

Por RUI VIEIRA

(Estação Agrária da Madeira)

Para o técnico ou cientista que pretenda estudar os problemas de Entomologia Aplicada ou os variadíssimos aspectos da Entomologia Pura, num determinado País ou numa região mais limitada, a existência duma lista das obras ou artigos publicados a seu respeito é sempre muito útil, porque além de outras vantagens o leva implicitamente a consultas mais rápidas e mais completas. Esta a principal razão de ser deste pequeno trabalho, relativo à bibliografia entomológica madeirense, que começámos a elaborar em fins de 1952, e que figura neste boletim por amável deferência do seu director.

A presente lista diz apenas respeito aos assuntos da Entomologia Pura e àqueles que, sendo de âmbito diverso, trouxeram qualquer novidade ou completaram os primeiros.

Os trabalhos são citados e numerados por ordem alfabética dos respectivos autores, dentro das ordens que IMMS estabeleceu na sua classificação. A frente dalgumas obras são citadas pessoas ou entidades que na