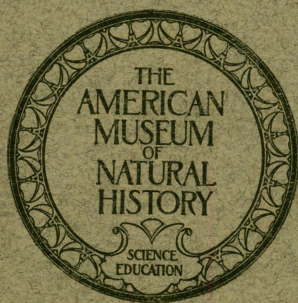


BULLETIN
OF
THE AMERICAN MUSEUM
OF NATURAL HISTORY

VOLUME LII, 1925



NEW YORK
PUBLISHED BY ORDER OF THE TRUSTEES
1925

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EDITED BY FRANK E. LUTZ

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ERRATA

Page 15, line 17 from top, for *Bothracara* read *Bothrocara*.

“ 46, line 9 from bottom, for *fifh* read *fifth*.

“ 79, line 5 from top, for *gelastes* read *genëi*.

“ 81, line 17 from top, for *franklini* read *pipixcan*.

“ 81, line 17 from top, for *gelastes* read *genëi*.

“ 87, line 11 from top, for *forbeeni* read *frobeeni*.

“ 88, line 24 from top, for *kittlitzii* read *kittlitzii*.

“ 90, line 3 from top, for *Larus* read *Hydrocolæus*.

“ 90, line 19 from bottom, for *Larus* read *Hydrocolæus*.

“ 106, line 9 from top, for *fuscus* read *furcatus*.

“ 111, line 2 from top, for *Chroicocephalus* read *Hydrocolæus*.

“ 185, line 19 from bottom, for *dominicanis* read *dominicanus*.

“ 261, line 2 from bottom, for *gelastes* read *pipixcan*.

“ 270, line 17 from bottom, for *cirrrocephalis* read *cirrrocephalus*.

“ 292, line 8 from bottom, for *franklini* read *pipixcan*.

“ 304, line 1 from top, for *Chroicocephalus* read *Hydrocolæus*.

“ 322, line 17 from bottom, for *stands* read *stand*.

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**Article I.—DEEP SEA FISHES OF THE 'ALBATROSS' LOWER
CALIFORNIA EXPEDITION¹**

PLATES I TO IV AND 1 MAP .

BY CHARLES H. TOWNSEND AND JOHN T. NICHOLS

The deep-sea fishes obtained by the 'Albatross' Expedition of 1911 to the Gulf of California were dredged at twenty-six stations between Cape San Lucas, Lower California, and Monterey, California, all but four being within the 1000-fathom line of depth.

The region covered by the dredgings, a thousand miles or more in length, is, in general, rich in those forms of life characteristic of the "deep-sea" fauna. Both fishes and invertebrates, including those taken near shore at a depth no greater than 284 fathoms, were often found in abundance.

The collection of fishes, numbering several hundred specimens, contains forty-nine species, of which only five are here described as new. This small proportion of new forms may be explained by the fact that the deep-sea fishes of this region are already well known from dredgings made by the 'Albatross' during many years of fishery service along the Pacific Coast.

The large number of species discovered since 1888 indicates that the continental slope here has a fish fauna largely its own. While there is some mingling with the many forms now known from Alaskan depths, there is comparatively little identity with those taken southward from the Gulf of California and still less with the deep-water fishes of the Hawaiian region.

¹Scientific Results of the Expedition to the Gulf of California in charge of C. H. Townsend, by the U. S. Fisheries Steamship 'Albatross,' in 1911. Commander G. H. Burrage, U. S. N., Commanding. XIV. Published by permission of the U. S. Commissioner of Fisheries.

Only a few fishes were taken in the four hauls deeper than 1000 fathoms, although invertebrates were well represented in number and species. The fishes are *Raja microtrachys*, *Bathysaurus mollis*, *Narcetes stomias*, *Cyclothone acclinidens*, *Plectromus maxillaris*, *Lycodapus fierasfer*, *Macrourus acrolepis*, and *Macrourus albatrossus*. Single representatives of Atlantic and Antarctic genera, *Cyema*, *Bathysaurus*, and *Harriotta*, are new to eastern Pacific waters, the last being different from the Atlantic form.

Deep-sea fishes were sometimes taken in considerable numbers; at station 5675 in 284 fathoms the dredge brought up fifty-nine *Macrourus*, eighteen *Catulus*, and one *Nemichthys*.

From station 5682 in 491 fathoms, there are forty-four fishes representing *Macrourus*, *Merluccius*, *Alepocephalus*, and *Argyropelecus*.

Station 5693, in 457 fathoms, yielded thirty fishes of four genera. Station 5696, in 440 fathoms, yielded nine species of fishes.

At most stations where fishes were taken there was a much greater weight and variety of invertebrates, good hauls of fishes, in fact, usually depending on the abundance and variety of invertebrate life as represented by crustaceans, mollusks and annelids. Fishes were at times, however, dredged with quantities of invertebrates showing nothing more palatable than starfishes, sea urchins, and crinoids.

It is probable that the deep-sea fishes already known to science represent but a moderate proportion of those that move aside from the path of the dredge, and that the discovery of other and larger forms awaits the use of some larger apparatus.

It is of interest to note that at station 5674, in 590 fathoms, three fishes, *Plectromus*, *Cyclothone* and *Serrivomer* came up alive, a most unusual occurrence in the case of fishes from such a depth. The difference between bottom and surface temperature at this station was recorded as nineteen degrees. There is a difference of more than half a ton to the square inch in sea pressure between the bottom at 590 fathoms and the surface, while the difference in the amount of light would be equal to that between night and day. Such are the barriers between the deep-sea and the shore faunæ, even at this moderate depth.

The records of bottom temperature kept during the voyage show that, at depths greater than 500 fathoms, bottom temperatures ranged from 37 to 39 degrees. In depths between 300 and 500 fathoms, bottom temperatures were from 40 to 44 degrees.

The greatest difference between bottom and surface temperatures was found off Cape San Lucas, where at a depth of 630 fathoms the

bottom temperature was 39 degrees, while at the surface it was 73 degrees. Bottom temperatures of 36 degrees were obtained by the Albatross in the lower part of the Gulf at depths of 1200 to 1500 fathoms.

About ten miles off Cape San Lucas the 1000-fathom line turns away from the coast until in Lat. $23^{\circ} 20'$ N. it is sixty miles off-shore. At Magdalena Bay it lies about half that distance away. A hundred miles farther north it is 65 miles off, again approaching the coast within 25 miles off San Hipolito Bay. From this point northward to the San Benito Islands there are depths of 1000 fathoms within sight of land.

North of the San Benitas the line lies farther off, trending nearer the coast at San Quentin. In the latitude of the United States and Mexican boundary the 1000-fathom line is more than 100 miles from the coast, passing from 20 to 40 miles outside of the islands of southern California. From Point Conception northward to near Monterey it lies at distances varying from 30 to 50 miles.

Four hauls were made in depths exceeding 1000 fathoms, the deepest being about 100 miles northwestward of Cape San Lucas in 1760 fathoms (two miles exactly), where the only fish taken was *Bathysaurus mollis*. The last dredge haul of the season was made about 35 miles south of Monterey in 659 fathoms.

The 2000-fathom line of depth, still imperfectly known, is not far beyond the 1000-fathom line, its distance from it apparently averaging less than the distance of the latter from the coast.

While the 1000-fathom curve extends into the Gulf of California as far as 180 miles north of Cape San Lucas, deep-water dredging was not attempted there, the results obtained during two former voyages having yielded little of interest.

During the voyage plaster casts of thirty-one deep-sea fishes in perfect condition were made by Mr. J. C. Bell, modeler of the Museum staff. Some of these yielded more exact measurements than the alcoholic specimens from which they were made when fresh. Photographs of the most interesting are reproduced herewith. The casts are of decided value as museum exhibits of deep-sea types, otherwise difficult to display in attractive form.—C. H. T.

DREDGING STATIONS

U. S. S. 'ALBATROSS' LOWER CALIFORNIA CRUISE, 1911

DREDGING STATIONS	LAT. AND LONG.		DATE	FATHOMS	BOTTOM TEMP.
5673	31° 26' 00" N.	117° 42' 00" W.	Mar. 1	1090
5674	31° 28' 45" N.	117° 09' 50" W.	Mar. 8	590	39.4
5675	27° 07' 08" N.	114° 33' 10" W.	Mar. 15	284	44.6
5676	25° 31' 15" N.	113° 29' 30" W.	Mar. 17	645	39.0
5677	25° 23' 45" N.	113° 16' 00" W.	Mar. 17	735	38.6
5678	24° 35' 20" N.	111° 59' 35" W.	Mar. 21	13½
5679	23° 47' 45" N.	111° 23' 00" W.	Mar. 22	325	44.1
5680	23° 40' 30" N.	111° 12' 45" W.	Mar. 22	389	43.6
5681	23° 33' 15" N.	111° 02' 10" W.	Mar. 22	405	43.3
5682	22° 48' 20" N.	109° 52' 40" W.	Mar. 24	491	40.8
5683	22° 46' 45" N.	109° 50' 15" W.	Apr. 20	630	39.1
5684	23° 23' 30" N.	112° 00' 30" W.	Apr. 21	1760
5685	25° 42' 45" N.	113° 38' 30" W.	Apr. 22	645
5686	26° 14' 00" N.	114° 00' 00" W.	Apr. 22	930	37.3
5687	27° 39' 15" N.	115° 16' 00" W.	Apr. 23	480	41.1
5688	27° 38' 45" N.	115° 17' 40" W.	Apr. 23	525	39.9
5689	29° 23' 00" N.	116° 14' 00" W.	Apr. 24	879
5690	29° 29' 00" N.	116° 18' 00" W.	Apr. 24	1101	38.1
5691	31° 08' 20" N.	118° 29' 30" W.	Apr. 25	868	37.2
5692	31° 23' 45" N.	118° 31' 30" W.	Apr. 25	1076	37.1
5693	33° 13' 30" N.	120° 04' 30" W.	Apr. 26	451
5694	33° 24' 36" N.	120° 12' 30" W.	Apr. 26	640
5695	33° 33' 00" N.	120° 17' 30" W.	Apr. 26	534	38.9
5696	35° 18' 30" N.	121° 28' 00" W.	Apr. 27	440	39.9
5697	35° 35' 00" N.	121° 39' 00" W.	Apr. 27	485	39.8
5698	35° 50' 00" N.	121° 49' 30" W.	Apr. 27	475	39.9
5699	36° 00' 30" N.	122° 00' 00" W.	Apr. 27	659	37.9

***Polistotrema curtiss-jamesi*, new species**

The common hagfish, *Polistotrema stouti*, is frequently recorded from depths down to several hundred fathoms, but perhaps specimens from the depths have not been carefully compared with those from shallow water. We have hagfish dredged from south of Monterey, California, to west of the Santa Barbara Islands, approximate latitudes 36° to 34°, depths of from 440 to 585 fathoms, as follows: one from station 5697 in 585 fathoms, one from station 5695 in 534 fathoms, three from station 5696 in 440 fathoms, and one from station 5698 in 475 fathoms, and these show constant differences which we here recognize as specific from *P. stouti*. They differ from it in two or three obvious proportional measurements as follows:

Head to first branchial aperture contained between 5 and 6, versus $4\frac{1}{2}$, times in total length; branchial region between 6 and 7, versus 8. Anal fin and abdominal keel uniform in color, lacking the pale edge. Branchial apertures 10 to 11. All are full-grown specimens—that from Sta. 5695, 15 inches total length; the stations are from Santa Barbara Islands to near Monterey.

The type, No. 8341, American Museum of Natural History, collected by the 'Albatross' Lower California Expedition of 1911 off Central California, between Monterey Bay and Pt. Conception, Sta. 5697, 585 fath., April 27, 1911, is $15\frac{1}{2}$ inches in total length. Snout, 18 times in total length; head to first branchial aperture, 6; branchial region, 6; tail, $6\frac{2}{3}$. Depth at beginning of abdominal keel, $2\frac{2}{3}$ in head. Dorsal and anal confluent with caudal, which is rounded, depth of this compound fin, 2 in head. Dorsal extending as a low keel to before vent; abdominal keel to a distance back of last branchial aperture equalling depth of body at that point. Branchial apertures 11. Uniform dark plum color, including fins, the barbels paler.

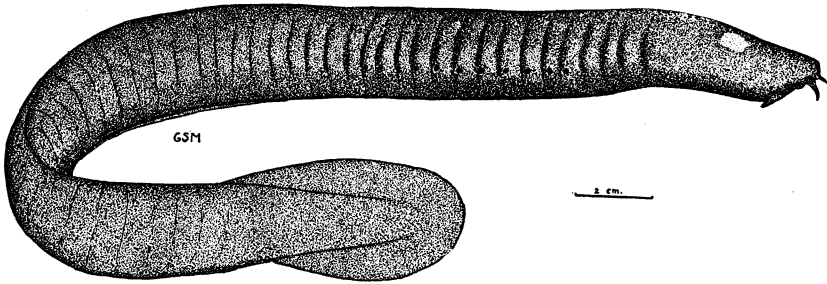


Fig. 1. *Polistotrema curtiss-jamesi*. Type.

Directly compared with a specimen of *P. stouti* (No. 2702 American Museum of Natural History) of the same length taken in Monterey Bay by E. C. Starks. All our six specimens (as well as the specimen of *P. stouti* with which they have been compared) have only the last branchial aperture of the left side conspicuously enlarged.

Named for Mr. Arthur Curtiss James, of New York.

***Catulus xaniurus* Gilbert**

A number of specimens (18) from station 5675, approximate latitude 27° , in 284 fathoms, off the middle of the west coast of Lower California. The largest of these measures 18 inches.

***Catulus brunneus* Gilbert**

One small specimen from station 5696 (north of Pt. Conception, California) in 440 fathoms, approximate latitude 35° .

Catulus cephalus Gilbert

One specimen from station 5680 in 389 fathoms and several from station 5681 in 405 fathoms; approximate latitude 24°, north of Cape San Lucas on the west coast of Lower California.

Raja trachura Gilbert

A male specimen 28 inches long, from station 5694 (southwest of Santa Barbara Islands, California, approximate latitude 33°), in 640 fathoms.

This differs from the type of *R. trachura*, apparently the only specimen of that fish previously described, 18 inches long and probably a female (though we find no definite statement to that effect), in several particulars which can be referred to age and sex.

Eye smaller, $1\frac{1}{2}$ in interorbital, 4 in snout. No tubercle in center of back between shoulders. A conspicuous patch of erectile hooks on the pectoral, consisting of 22 rows, with five spines in the longest of these. No median dorsal spines forward of pectoral angle. Color, fresh, plumbeous.

Raja microtrachys Osburn and Nichols

The type of *R. microtrachys* is from station 5673 (southwest of San Diego, California, approximate latitude 31°) in 1090 fathoms, and is so tagged. Osburn and Nichols erroneously attributed it to Guadaloupe Island, the nearest shore station where collecting was done by the 'Albatross' at this time, due to its having in some way become confused with the shore material.

So few specimens of deep-water skates allied to this and the preceding have been collected that it is impossible to state with certainty how many species should be recognized. Color, fresh, dark grayish brown.

Harriotta curtiss-jamesi, new species

A single specimen of *Harriotta* six inches in total length and the first fish of this genus to be recorded in the eastern Pacific is very similar to *Harriotta raleighiana*, from the Atlantic, as described by Goode and Bean in 'Oceanic Ichthyology.' Its eye is notably larger and the species apparently a smaller fish than its Atlantic representative. This specimen (No. 8342, American Museum of Natural History) is from station 5685, 645 fathoms, about 26° N. lat., off Lower California.

Four specimens of *H. raleighiana* are described; three of these similar, supposed to represent the adult form (of which the largest was

25 inches, the smallest about one foot in length) and it is these that our specimen closely resembles. The fourth specimen of *raleighiana*, a young one four inches long, was quite dissimilar. It might be argued that our young fish was of minimum size for the adult form of this previously described species and that the eye would become relatively smaller with growth. However, the four-inch Atlantic fish just referred to had a small eye and, if we are to accept it as the young of the same species represented by larger Atlantic specimens, this little Pacific specimen is not the same. It might reasonably be supposed that, if allied, it would be recognizably different.

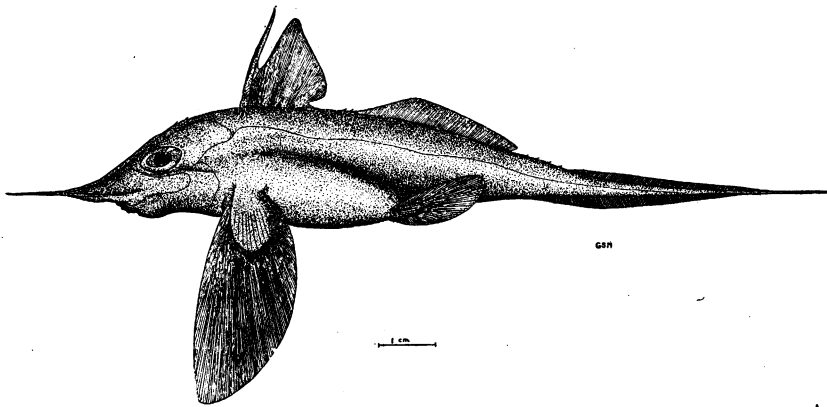


Fig. 2. *Harriotta curtiss-jamesi*. Type.

We find it shows the following discrepancies with the description of *Harriotta raleighiana*.

The interval between the two dorsal fins is two-thirds the diameter of the eye instead of nearly the diameter of the eye; the height of the second dorsal is two-thirds of the diameter of the eye instead of equaling the diameter of the eye; the length of the second dorsal is contained one and a half times in the head, instead of equaling the head; the ventrals extend to a point just short of the end of the second dorsal, instead of only to a point two-thirds of the distance between its origin and end; they measure a little more than two-thirds of the snout instead of a little less than half the snout; the eye is contained a scant three times in the snout instead of five and a half times in the larger specimens, four and a half times in the one of about a foot length, and in the young one of about four inches the eye is appreciably larger than the inter-orbital.

Otherwise this fish agrees closely with the figures and description of *Harriotta raleighiana*, having the same filamentous tail, long leaflike snout, arrangement of lateral lines, spines on the head and back, proportions and relative position of fins, shape of body, etc. It is black in color.

Named for Mr. Arthur Curtiss James through whose munificence the Museum was enabled to participate in the Lower California Expedition.

***Alepocephalus tenebrosus*, Gilbert**

Plate II, Figure 1

Specimens from stations 5682, 5685, 5688 in 491 to 645 fathoms, and two others too imperfect to be determinable with certainty from stations 5683 and 5694 in 630 to 640 fathoms. The above stations range from approximate latitudes 28° off Pt. San Bartholome to 23° off Cape San Lucas, Lower California, with the exception of the last named which is farther north, approximate latitude 33° , southwest of the Santa Barbara Islands, California.

Color, fresh, entirely black (station 5682). Five specimens, station 5688, pebbly bottom, head deep blue-black, body lighter.

Alepocephalidae

***BAJACALIFORNIA*, new genus**

Body covered with small thin cycloid scales. Ventrals well developed. Mouth moderately wide, larger than in *Alepocephalus*. Lower jaw strongly projecting, ending in a pointed knob directed obliquely forward. Edge of jaws with a single row of small teeth. Gill openings wide, membranes joined below, free from isthmus. Dorsal and anal short, of about equal length, anal origin behind middle of dorsal.

Named for the peninsula of Lower California. Based on the following new species.

***Bajacalifornia burragei*, new species**

The type and only specimen (No. 8343, American Museum of Natural History) collected by the 'Albatross' Expedition of 1911 off Todos Santos Bay, Lower California, station 5674, approximate latitude 31° , 590 fathoms, is $4\frac{3}{4}$ inches long to base of caudal (which is broken). Head, $3\frac{1}{2}$ in length to base of caudal; depth $5\frac{1}{2}$. Eye, $3\frac{1}{2}$ in head; maxillary, $2\frac{1}{4}$; snout, 3; interorbital space, $\frac{1}{2}$ eye.

Mandible projecting a distance equal diameter of pupil. Origin of dorsal equidistant from base of caudal and margin of preopercle. Base of ventral equidistant from base of caudal and center of eye. Origin of anal slightly behind center of dorsal. Greatest depth at back of head. Eye impinging on upper outline of head. A distinct ridge over each eye. Interorbital narrowly concave. Snout rather broad and rounded in cross section, concave in profile. Maxillary wide, barely reaching center of eye. Mandible with a pointed knob at symphysis directed forward and downward. Width of snout $\frac{2}{3}$ diameter of eye. Width of posterior end of maxillary $\frac{3}{5}$ eye. Color uniform black.

Dorsal, 16; anal, 13; pectoral, 17; ventral, 10.

Named for Commander G. H. Burrage, U. S. N., commanding the 'Albatross' in 1911.

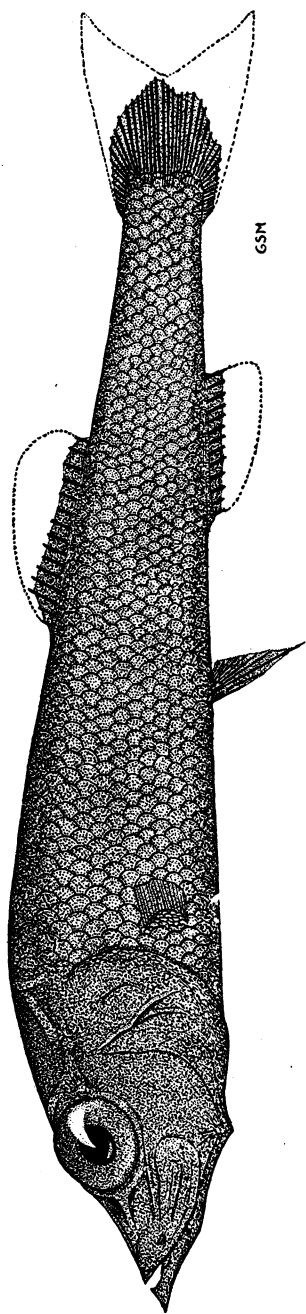


Fig. 3. *Bajacalifornius burragei*. Type.

Narcetes stomias (Gilbert)

One specimen fifteen inches long from station 5692, approximate latitude 31°, 1076 fathoms, southwest of San Diego, California, unquestionably represents Gilbert's *stomias*, but seems to belong in *Narcetes* rather than *Bathytroctes*. Garman's *Narcetes pleuriserialis* is not very different and may be the same.

Color, fresh, body and caudal dusky black, head blue-black.

Bathysaurus mollis Günther

Plate I, Figure 1

One from station 5684, in 1760 fathoms. The only fish from this station, which is off the west coast of southern Lower California, approximate latitude 23°. It is 17¼ inches long to base of caudal.

Although we can find no character to separate our fish from *mollis*, we give herewith a detailed description of this interesting specimen.

Head, 4½ in length to base of caudal; depth, 7¼; eye, 7½ in head. Dorsal with 15 rays; anal 12; ventral 8. Scales (estimated) 100. Width of head ½ its length; gape 6½ in total length of fish. Teeth slightly barbed.

Gape extending behind eye for a distance much greater than interorbital width; equaling distance from center of eye to snout. Dorsal inserted 1⅓ times the length of its base behind snout. Length of fourth dorsal ray slightly greater than that of maxillary. Mandible projecting beyond snout a distance equal to width of pupil. Maxillary 1½ in head. Interorbital width 5½ in head. Seven to 8 large oval pores on mandible, elongated except the two anterior ones. Head naked, except cheeks and nape. Adipose dorsal present, half-way between origin of ventral and base of caudal. Anal inserted behind dorsal a distance equal to the length of its own base. Anal base 1½ in dorsal base. Ventral, pectoral and dorsal rays equal in length, ⅓ of head. Color white, lining of gill cavity black.

Myctophum californiense Eigenmann and Eigenmann

A specimen from station 5695 (southwest of the Santa Barbara Islands, approximate latitude 34°) in 534 fathoms.

Nannobrachium leucopsarum (Eigenmann and Eigenmann)

A specimen from station 5693, southwest of the Santa Barbara Islands, California, in 451 fathoms; one from station 5694 in 640 fathoms; and a third (imperfect) from station 5697 between Monterey and Pt. Conception, California, in 485 fathoms, latitudes 36° to 33°.

Nannobrachium regale (Gilbert)

One large and one small specimen from station 5693, southwest of the Santa Barbara Islands, California, in 451 fathoms, and a small one from station 5695 in 534 fathoms, approximate latitudes 33° to 34°.

Scopelengys dispar Garman

One each from station 5687, off Pt. San Bartholome, Lower California, in 480 fathoms, and station 5677, somewhat farther south, in 735 fathoms, approximate latitudes 28° to 25°.

Cyclothone acclinidens Garman

One each from station 5693, 451 fathoms, and station 5692, 1076 fathoms; two from station 5687, 480 fathoms; southwest of the Santa Barbara Islands, California, to off Pt. San Bartholome, Lower California, approximate latitudes 33° to 28°. These fragile specimens are apparently *acclinidens* of Garman, which possibly may be what earlier authors have identified as *Pacific microdon*.

Chauliodus sloanei Bloch and Schneider

One from station 5697 (south of Monterey, California, approximate latitude 36°), in 485 fathoms, not in good condition.

Argyropelecus lichnus Garman

One taken at station 5682, in 491 fathoms.

Argyropelecus affinis Garman

A specimen from station 5691, in 868 fathoms (off Todos Santos Bay, Lower California, approximate latitude 31°), and another from station 5686, in 930 fathoms (off Balenas Bay, approximate latitude 26°).

Halosaurus attenuatus Garman

One from station 5676 (approximate latitude 26°, off Pt. San Juanico, Lower California), 645 fathoms. Identification somewhat uncertain owing to mutilation of specimen.

Venefica tentaculata Garman

Four specimens of this genus we refer to this single variable species. All approximate Garman's description thereof, and differ from *V. ocella* chiefly in having a decidedly shorter tentacle on snout. All are from near the same locality, approximate latitudes 25° to 26°, off Pt. San Juanico, Lower California, 647 to 735 fathoms.

One from station 5677, in 735 fathoms, 28 inches long, has well-developed caudal, equaling $\frac{1}{2}$ snout. One from station 5676, 647 fathoms, 30 inches long has less developed caudal equaling $\frac{1}{2}$ snout.

Another from the same station, 29 inches long, has whip-like caudal region and very narrow caudal equaling $\frac{2}{3}$ snout. One from station 5685, in 645 fathoms, $23\frac{1}{2}$ inches long, has wide and heavy caudal and much the broadest caudal region, caudal $1\frac{1}{2}$ times snout.

Serrivomer sector Garman

A specimen nineteen inches long from station 5674, approximate latitude 31° , off Todos Santos Bay, 590 fathoms, and a second somewhat imperfect one from station 5683, off Cape San Lucas, approximate latitude 23° , 630 fathoms, are obviously this species of Garman, which, as Gilbert suggests ('Deep Sea Fishes of the Hawaiian Islands,' p. 586), may be identical with *S. beani* of the Atlantic.

Nemichthys fronto Garman

One from station 5685 southwest of Balenas Bay, approximate latitude 26° in 284 fathoms, and one from station 5687 off Pt. San Bartholome, approximate latitude 28° , in 480 fathoms.

Cyema atrum Günther

One specimen from station 5691, 868 fathoms (approximate latitude 31° , off Todos Santos Bay, Lower California).

Color, fresh, entirely black.

This is the first record of the occurrence of this genus in eastern Pacific waters.

Plectromus [Melamphæs] maxillaris Garman

A specimen from station 5695 (near the Santa Barbara Islands, California, approximate latitude 34°) in 534 fathoms, and one from station 5692 (west of San Diego, California, approximate latitude 31°) in 1076 fathoms. A third specimen of this genus from station 5675 is too mutilated for specific determination.

Color, fresh, black (station 5692).

Plectromus [Melamphæs] cristiceps Gilbert

Plate II, Figure 2

Specimens from station 5674, off Todos Santos Bay, Lower California in 590 fathoms; station 5687, off Pt. St. Bartholome in 480 fathoms; station 5691, off Todos Santos Bay, in 868 fathoms; and one of $5\frac{1}{4}$ inches length to base of caudal, station 5674, 590 fathoms. Others from station 5688, 525 fathoms; 5693, 451 fathoms; 5685, 645

fathoms; and 5677 in 735 fathoms, probably represent the same species, but are not in condition for definite specific determination. Approximate latitudes of these stations run from 33° to 25°, depths from 451 to 868 fathoms.

Color, fresh, black (station 5685).

Plectromus [Melamphæus] lugubris Gilbert

Two of about 3½ inches total length from station 5683 in 630 fathoms off Cape San Lucas, approximate latitude 23°.

Sebastolobus alascanus Bean

Plate II, Figure 3

Numerous specimens from station 5694, off the Santa Barbara Islands, approximate latitude 33° in 640 fathoms.

Sebastolobus altivelis Gilbert

Numerous specimens from station 5693, off the Santa Barbara Islands, in 451 fathoms (approximate latitude 33°). One from station 5683, off Cape San Lucas, 630 fathoms (approximate latitude 23°).

It would seem from the above that, for the same latitude, *altivelis* occurs in shallower water than *alascanus*.

There is also *Sebastolobus* material from several other stations showing intergradation between the two forms. From station 5695 (approximate latitude 34°), off the Santa Barbara Islands, in the intermediate depth of 534 fathoms we have two typical *altivelis*, two specimens which are *altivelis* except for having sixteen dorsal spines, characteristic of *alascanus*, one is an *alascanus* except for fifteen dorsal spines characteristic of *altivelis*, and another with fifteen spines has the longest spine of intermediate length.

From station 5696 (approximate latitude 35°) north of Point Conception, in 440 fathoms, eight specimens are referable to *altivelis*, but one has sixteen spines, two others have the longest spine 2.2 and 2.3 in head respectively, which is a little short for that species.

On the other hand, three specimens from station 5699 (approximate latitude 36°), south of Monterey, California, in 659 fathoms, are intermediate, dorsal spines 16 in one, 15 in two, the longest spine 2.3 to 2.4 in head. A specimen from station 5697 (approximate latitude 36°) in 485 fathoms has dorsal XV, spine of intermediate length.

Of two specimens from station 5698 (approximate latitude 36°), south of Monterey, in 475 fathoms, one is an *altivelis*, the other an

alascanus (with longest dorsal spine 2.8 in head, but spines XV). Five others appear to be *alascanus*, but these are small, averaging 3 inches in length, and small specimens, of which we have a number from the other stations, have been excluded from the above discussion, where they might cause confusion due to our uncertainty regarding age changes.

To sum up, north of Pt. Conception, coastwise in latitude 36° , depths 475 to 659 fathoms, both species occur (at 475 fathoms) but intermediates are the rule. South of Pt. Conception off the Sta. Barbara Islands (latitude 33°) we find *alascanus* (described from Alaska in 159 fathoms) at 640 fathoms, intermediates at 534 fathoms, *altivelis* (described from Alaska in 625 fathoms) at 451 fathoms; and we have a single specimen of *altivelis* off Cape San Lucas (latitude 23°) in 630 fathoms.

Color, fresh, uniformly rose red.

***Zesticelus profundorum* Gilbert**

Two small specimens from station 5695, southwest of the Santa Barbara Islands (approximate latitude 34°), in 534 fathoms.

***Liparis osborni*, new species**

The type (No. 8344, American Museum of Natural History) is our only specimen, collected by the 'Albatross' Lower California Expedition of 1911, north of Pt. Conception, California (approximate latitude 35°), station 5696 in 440 fathoms. Head, $3\frac{3}{4}$

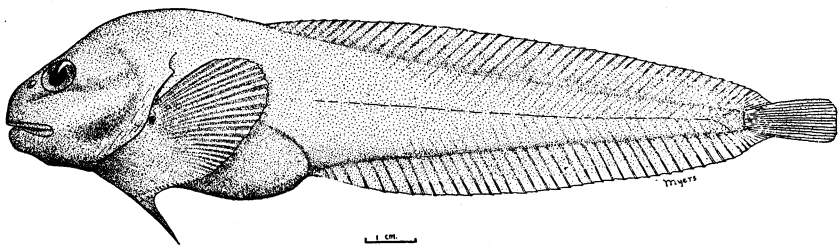
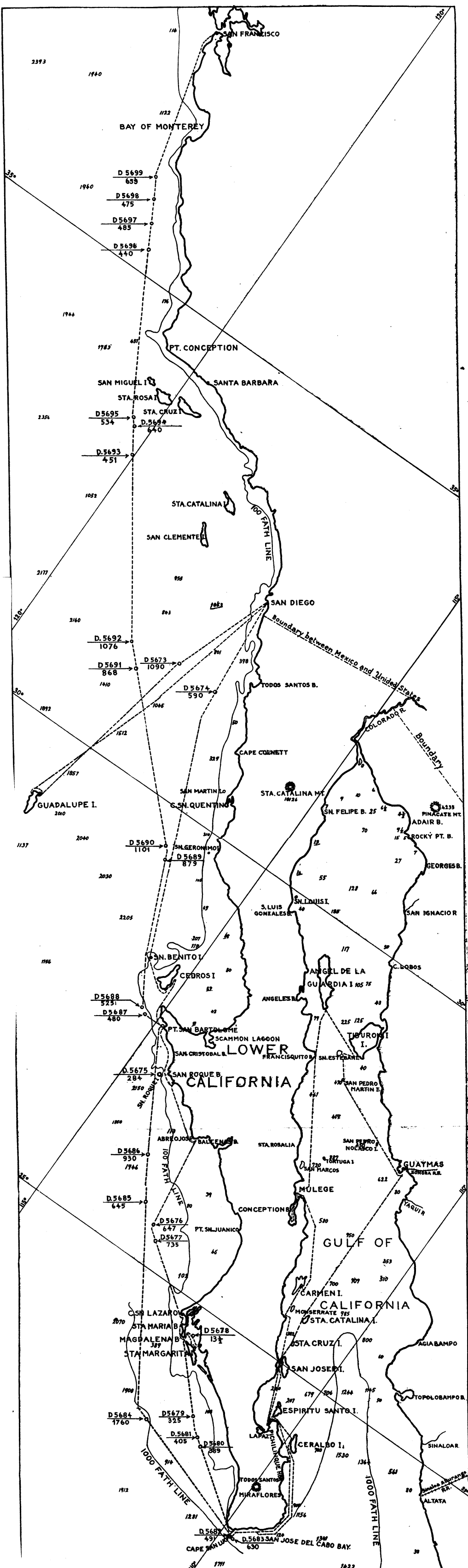


Fig. 4. *Liparis osborni*. Type.

in standard length; depth, $4\frac{1}{10}$; eye, $5\frac{1}{3}$ in head; snout, $3\frac{1}{3}$; maxillary, $2\frac{1}{2}$; interorbital, $3\frac{1}{5}$; pectoral from its upper axil, $1\frac{1}{3}$; length of disk, 3; longest dorsal ray, $3\frac{1}{2}$; longest anal ray $3\frac{1}{2}$; caudal, $2\frac{1}{2}$. Dorsal with 44 rays; anal with 39.

Body swollen in front of anal fin, thence compressed, slender, tapering backward; nape gibbous, profile concave above eye; interorbital flat. Gill opening moderately wide, its width equal to snout, extending for $\frac{1}{3}$ of its length below upper edge of pectoral. Lower rays of pectoral produced in a pointed lobe which reaches vent. Vent equidistant from front of anal and front of disk. Dorsal and anal adnate to caudal for $\frac{1}{3}$ its length. Dorsal origin behind nape, almost directly over the membranous tip of opercle. Caudal narrow, subtruncate, scarcely rounded at tip. Color in spirits whitish, in life uniformly pink.



MAP OF THE LOWER CALIFORNIA REGION
SHOWING ROUTE OF THE ALBATROSS EXPEDITION IN 1911
UNDER THE DIRECTION OF G.H. TOWNSEND

Named for President Henry Fairfield Osborn of The American Museum of Natural History, a promoter of the 'Albatross' Expedition of 1911.

Careproctus melanurus Gilbert

Plate III, Figure 1

One from station 5693, off the Santa Barbara Islands, approximate latitude 33°, in 451 fathoms.

Color, fresh, pink.

Paraliparis cephalus Gilbert

One from station 5696, approximate latitude 35° (north of Pt. Conception) in 440 fathoms.

Embryx crassilabris (Gilbert)

Plate III, Figure 2.

A specimen ten inches in length from station 5694, approximate latitude 33° (off the Santa Barbara Islands) in 640 fathoms.

Color, fresh, black.

Bothracara mollis Bean

Plate I, Figure 2

A small specimen from station 5699 in 475 fathoms south of Monterey (approximate latitude 36°), and one ten inches long from station 5697, 485 fathoms, a few miles farther south.

Melanostigma pammelas Gilbert

One from station 5693 off the Santa Barbara Islands (approximate latitude 33°) in 451 fathoms.

Color, fresh, jet-black.

Lepophidium emmelas (Gilbert)

Numerous specimens representing four stations off the west coast of Lower California as follows: 5675, 5679, 5680, 5681. Approximate latitudes range from 27° (in 284 fathoms) to 24° (in 325 to 405 fathoms).

Color, fresh, pink above, belly bluish, iris whitish (station 5681).

Lycodapus dermatinus Gilbert

One from station 5696 north of Pt. Conception, California (approximate latitude 35°) in 440 fathoms.

Lycodapus fierasfer Gilbert

One from station 5692 west of San Diego California (approximate latitude 31°) in 1076 fathoms.

Color, fresh, head black, body pale.

Mœbia promelas Gilbert

Plate III, Figure 3

Three specimens from off the west coast of Lower California, approximate latitudes 31° to 26°, from stations 5676, 645 fathoms, 5689 679 fathoms, and 5692, 1076 fathoms.

Merluccius productus (Ayres)

Fourteen specimens from station 5682, in 491 fathoms, of Cape San Lucas (approximate latitude 23°).

Color, fresh, silvery, top of head and fins blackish.

Antimora microlepis Bean

Five specimens from as many different stations (5687, 5693, 5694, 5695, 5696) these being in approximate latitudes 35° (north of Pt. Conception) to 33° (off the Santa Barbara Islands, California) and 28° off northern Lower California, in depths of 440 to 640 fathoms.

Color fresh, pale bluish gray (station 5692, specimen 10½ inches).

Macrourus acrolepis Bean

Plate IV, Figure 1

Numerous specimens representing various stations as follows: 5673, 5689, 5692, 5694, 5695, 5698, 5699. Obtained from southwest of Monterey, California, approximate latitude 36°, 649 fathoms; south to approximate latitude 29° off northern Lower California, and from depths of 534 to 1090 fathoms.

Color, fresh, dark grayish brown (5673). One very large specimen (station 5672) 1 foot 10 inches long, brownish dusky.

Six large specimens, station 5695, plumbeous black, lighter on belly.

Macrourus stelgidolepis Gilbert

Five specimens about 10 inches long from station 5675 off the west coast of Lower California, approximate latitude 27°, in 284 fathoms.

Fresh specimens dark slaty in color.

Macrourus albatrossus, new species

Plate IV, Figure 2

A single specimen (No. 8345, American Museum of Natural History) from station 5692, approximate latitude 31° , west-southwest of San Diego in 1076 fathoms, is clearly different from our other species of *Macrourus*, apparently a representative of a deeper water species. It is not in the best state of preservation, and, although we cannot match it with the description of any known form, we would hesitate to describe it as new were it not that a very satisfactory description can be drawn up with the aid of a plaster cast made of it when caught.

Head, $5\frac{3}{5}$ in total length; depth, $6\frac{1}{10}$. Eye, snout and interorbital equal, $3\frac{3}{5}$ in head; maxillary, $2\frac{1}{5}$; ventral, including filamentous ray, apparently 1; depth at origin 2nd dorsal, 2. Mouth to snout 2 in eye; base of first dorsal $2\frac{1}{2}$ in dorsal interspace. First dorsal with 10 soft rays; anal 101-105.

Orbit impinging on upper profile, its rim slightly raised; interorbital flat; low median ridge on snout ending in a slight knob; suborbital ridge low and rounded ending in a slight knob on side of snout; snout short, broad, blunt; a short low ridge on head above posterior margin of each eye. Height of dorsal slightly exceeding eye and snout; length of pectoral about the same. Origin of first dorsal slightly behind and origin of ventral slightly before origin of pectoral. Second dorsal very low. Depth of body equal to the distance from front of mouth to edge of opercle. Scales ridged, the ridges low, about five to a scale on the back.

Named for the good ship 'Albatross.'

Lionurus liolepis Gilbert

Numerous specimens representing various stations as follows: 5675, 5676, 5682, 5683, 5688, 5697, from north of Point Conception, California, to Cape San Lucas, Lower California, at depths of from 284 to 645 fathoms.

Color, fresh, bluish black (5682).

Embassichthys bathibius (Gilbert)

Plate IV, Figure 3

Four large specimens from depths of 440 to 659 fathoms. Stations 5694, 5696, 5697, 5699, south of Monterey to the Santa Barbara Islands, California.

From station 5696, 440 fathoms, north of Pt. Conception, California, there is also a juvenal individual $2\frac{1}{2}$ inches total length. This is more slender than the adults, depth 2.5 in length.

Color, fresh, black with gray mottling.

Malthopsis erinacea Garman

Plate I, Figure 3

Four specimens from station 5676 in 645 fathoms; and another in too poor condition for positive determination from station 5685 in 645 fathoms. The two stations are near together off the middle of Lower California, approximate latitude 26°.

Color, fresh, slaty (station 5685).

Dibranchius hystrix Garman

One from station 5683, off Cape San Lucas, in 630 fathoms.

SUMMARY

The following forms are new.

NEW GENUS

Bajacalifornia

NEW SPECIES

Polistotrema curtiss-jamesi
Bajacalifornia burragei

Harriotta curtiss-jamesi
Liparis osborni

Macrourus albatrossus

List of Stations with Species Collected at Each

STATION	FATHOMS	
5673	1090	<i>Macrourus acrolepis</i> <i>Raja microtrachys</i>
5674	590	<i>Serrivomer sector</i> <i>Plectromus cristiceps</i> <i>Bajacalifornia burragei</i>
5675	284	<i>Catulus xaniurus</i> <i>Nemichthys fronto</i> <i>Macrourus stelgidolepis</i> <i>Lionurus liolepis</i> <i>Plectromus</i> , sp. <i>Lepophidium emmelas</i>
5676	645	<i>Halosaurus attenuatus</i> <i>Venefica tentaculata</i> <i>Mæbia promelas</i> <i>Lionurus liolepis</i> <i>Malthopsis erinacea</i>
5677	735	<i>Scopelengys dispar</i> <i>Venefica tentaculata</i> <i>Plectromus cristiceps</i>

List of Stations with Species Collected at Each (Continued)

STATION	FATHOMS	
5679	325	<i>Lepophidium emmelas</i>
5680	389	<i>Lepophidium emmelas</i> <i>Catulus cephalus</i>
5681	405	<i>Lepophidium emmelas</i> <i>Catulus cephalus</i>
5682	491	<i>Alepocephalus tenebrosus</i> <i>Argyropelecus lichnus</i> <i>Merluccius productus</i> <i>Lionurus liolepis</i>
5683	630	<i>Serrivomer sector</i> <i>Plectromus lugubris</i> <i>Lionurus liolepis</i> <i>Dibranchius hystrix</i> <i>Sebastolobus altivelis</i> <i>Alepocephalus tenebrosus</i>
5684	1760	<i>Bathysaurus mollis</i>
5685	645	<i>Alepocephalus tenebrosus</i> <i>Harriotta curtiss-jamesi</i> <i>Venefica tentaculata</i> <i>Plectromus cristiceps</i> <i>Malthopsis erinacea</i>
5686	930	<i>Argyropelecus affinis</i>
5687	480	<i>Scopelengys dispar</i> <i>Cyclothone acclinidens</i> <i>Nemichthys fronto</i> <i>Plectromus cristiceps</i> <i>Antimora microlepis</i>
5688	525	<i>Alepocephalus tenebrosus</i> <i>Plectromus cristiceps</i> <i>Lionurus liolepis</i>
5689	679	<i>Macrourus acrolepis</i> <i>Mæbia promelas</i>
5690		(No fishes)
5691	868	<i>Cyema atrum</i> <i>Argyropelecus affinis</i> <i>Plectromus cristiceps</i>
5692	1076	<i>Plectromus maxillaris</i> <i>Macrourus acrolepis</i> <i>Macrourus albatrossus</i> <i>Narcetes stomias</i> <i>Lycodapus ferasfer</i> <i>Cyclothone acclinidens</i>
5693	451	<i>Sebastolobus altivelis</i> <i>Antimora microlepis</i> <i>Nannobrachium leucopsarum</i>

List of Stations with Species Collected at Each (Continued)

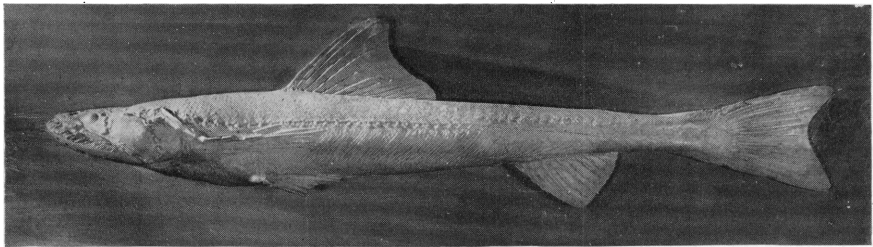
STATION FATHOMS

		<i>Nannobrachium regale</i>
		<i>Cyclothone acclinidens</i>
		<i>Plectromus cristiceps</i>
		<i>Careproctus melanurus</i>
		<i>Melanostigma pammelas</i>
5694	640	<i>Macrourus acrolepis</i>
		<i>Alepocephalus tenebrosus</i>
		<i>Raja trachura</i>
		<i>Nannobrachium leucopsarum</i>
5694	640	<i>Sebastolobus alascanus</i>
		<i>Embassichthys bathibius</i>
		<i>Antimora microlepis</i>
		<i>Embryx crassilabris</i>
5695	534	<i>Myctophum californiense</i>
		<i>Zesticelus profundorum</i>
		<i>Polistotrema curtiss-jamesi</i>
		<i>Nannobrachium regale</i>
		<i>Plectromus maxillaris</i>
		<i>Antimora microlepis</i>
		<i>Macrourus acrolepis</i>
5696	440	<i>Embassichthys bathibius</i>
		<i>Paraliparis cephalus</i>
		<i>Liparis osborni</i>
		<i>Sebastolobus altivelis</i>
		<i>Polistotrema curtiss-jamesi</i>
		<i>Catulus brunneus</i>
		<i>Lycodapus dermatinus</i>
		<i>Antimora microlepis</i>
		<i>Embassichthys bathibius</i>
5697	485	<i>Polistotrema curtiss-jamesi</i>
		<i>Nannobrachium leucopsarum</i>
		<i>Sebastolobus altivelis</i>
		<i>Bothrocara mollis</i>
		<i>Lionurus liolepis</i>
		<i>Embassichthys bathibius</i>
		<i>Chauliodus sloanei</i>
5698	475	<i>Polistotrema curtiss-jamesi</i>
		<i>Sebastolobus altivelis</i>
		<i>Macrourus acrolepis</i>
5699	659	<i>Sebastolobus altivelis</i>
		<i>Bothrocara mollis</i>
		<i>Macrourus acrolepis</i>
		<i>Embassichthys bathibius</i>

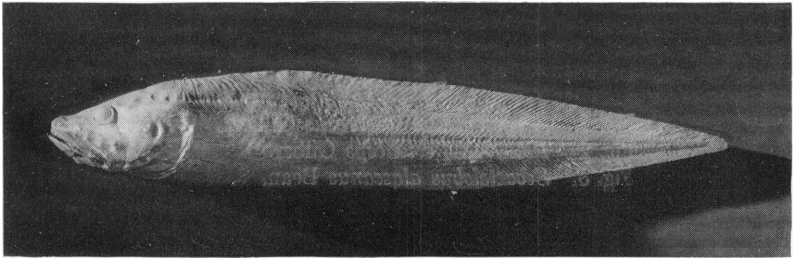
PLATES I to IV

PLATE I

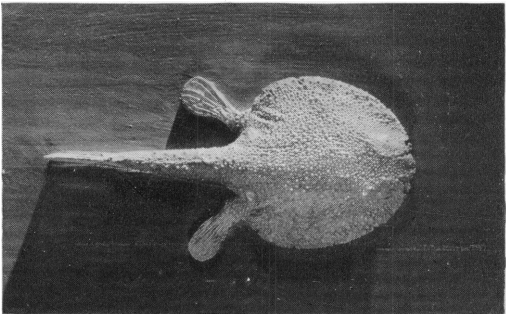
- Fig. 1. *Bathysaurus mollis* Günther.
Fig. 2. *Bothrocara mollis* Bean.
Fig. 3. *Malthopsis erinacea* Garman.



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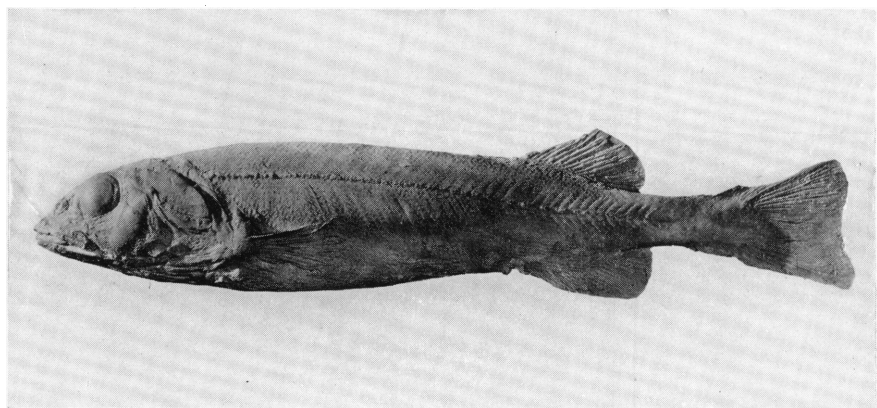
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PLATE II

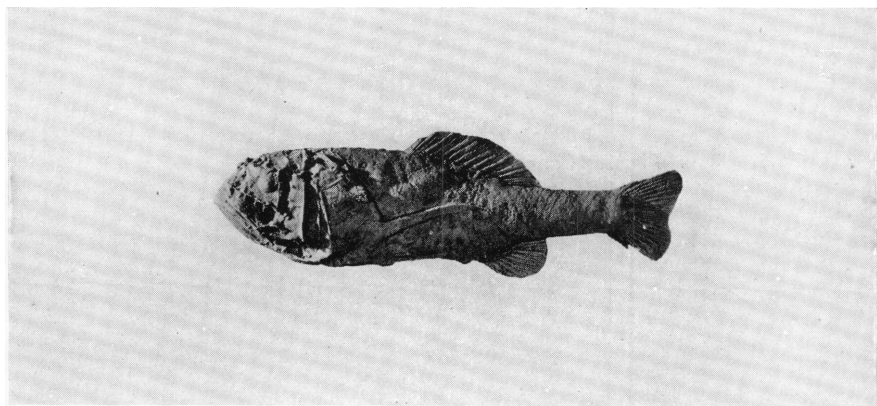
Fig. 1. *Alepocephalus tenebrosus* Gilbert.

Fig. 2. *Plectromus cristiceps* Gilbert.

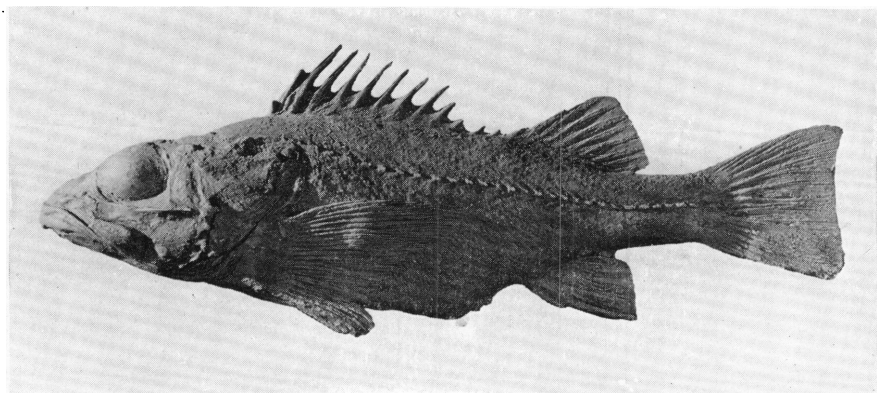
Fig. 3. *Sebastolobus alascanus* Bean.



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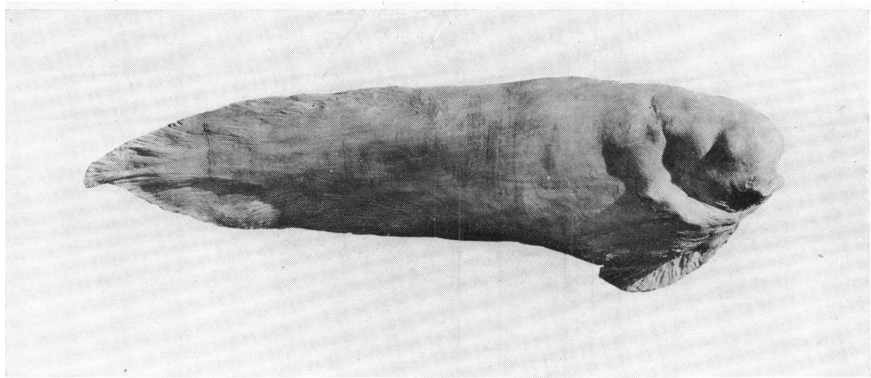
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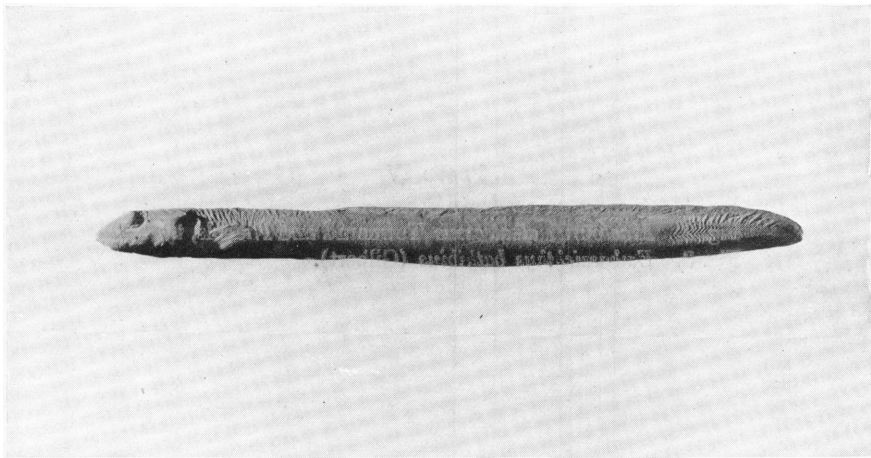
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PLATE III

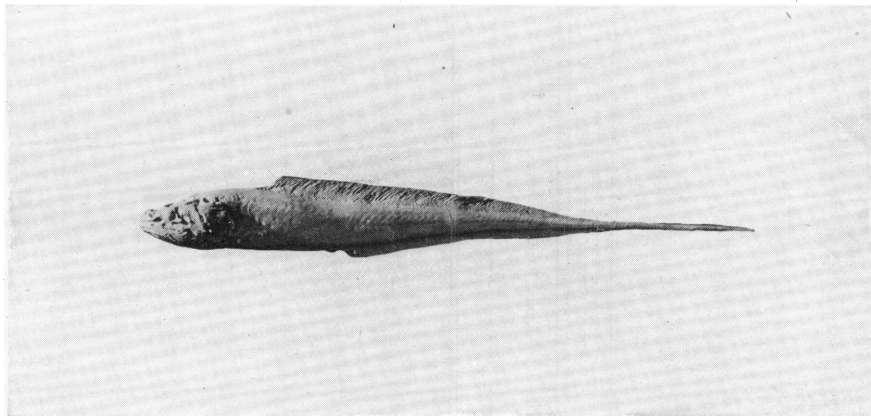
- Fig. 1. *Careproctus melanurus* Gilbert.
Fig. 2. *Embryx crassilabris* (Gilbert).
Fig. 3. *Mæbia promelas* Gilbert.



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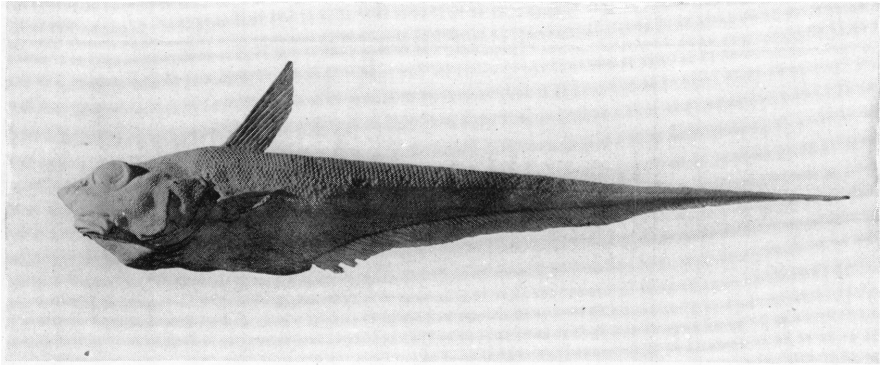
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PLATE IV

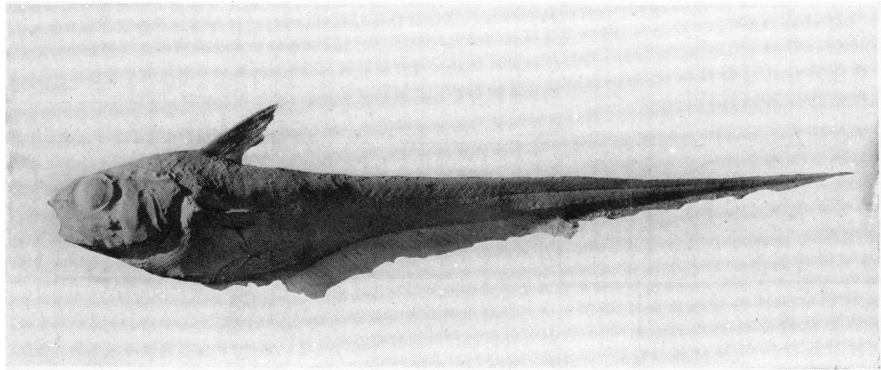
Fig. 1. *Macrourus acrolepis* Bean.

Fig. 2. *Macrourus albatrossus* Townsend and Nichols, type.

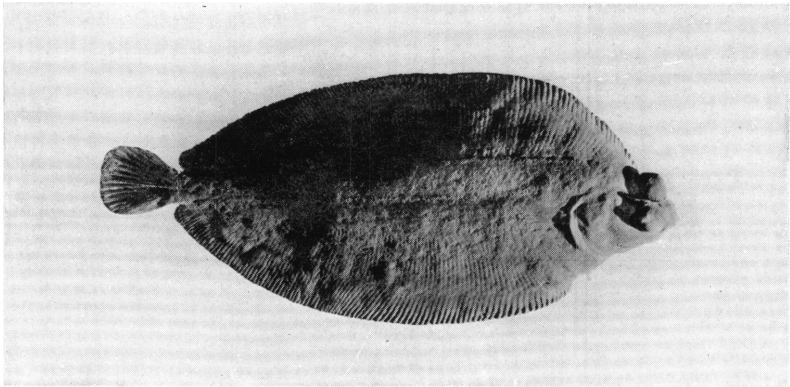
Fig. 3. *Embassichthys bathibius* (Gilbert).



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