

Article XVI.—SHORE FISHES COLLECTED BY THE 'ALBATROSS' EXPEDITION IN LOWER CALIFORNIA WITH DESCRIPTIONS OF NEW SPECIES.¹

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The 'Albatross' expedition to Lower California in the spring of 1911 was unusually successful in the number and variety of the fishes taken in the shore waters of that region. The present list contains 185 species taken between the dates of March 2 and April 26, inclusive. Of this number fourteen species and one variety appear to be new and are here described.

Besides these, there is much of interest in the collection, as numerous rare species known only from one or two, often more or less distant, localities were obtained, thus adding to our knowledge of their distribution. Also one well known Atlantic species, *Hemirhamphus balao* Le Sueur, is here recorded from the Pacific for the first time, and the range of a number of the common western species extended.

Undoubtedly the richness of the collection, accumulated within so short a time, is due in large part to the fact that various methods for the capture of fishes were constantly employed side by side wherever possible. Seining naturally produced the best results. Hand-line fishing was resorted to, and an electric-light lure made by immersing a strong electric light bulb in the water at the side of the ship at night attracted numerous species which were then taken in a dipnet. A boat dredge and a three and a half foot Tanner beam trawl were used in shallow water. Some species were picked up on the beach and other small ones were taken in their natural habitat in the tide pools or at the edge of the shore. Certain others living among the rocks were obtainable only by the use of dynamite. Each of these methods of collecting yielded species not taken in any other way. The method of capture is given in most cases in the following list, and reference to it will disclose the fact that usually any single species was taken by only one method.

The numbers given in this paper are not intended to show the relative abundance of individuals of the various species. In the case of common, well-known species, frequently only a single specimen from any locality

¹ Scientific 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. No. VI.

was preserved for study. The economic aspects of the fisheries will be dealt with elsewhere.

As indicated in the title, only the fishes from the shallow waters along shore are here included. While the small trawl and boat dredge were frequently employed in collecting, the lowest depth considered in this report is only thirteen fathoms (in Magdalena Bay). The fishes of the deeper waters will constitute a separate report.

Practically all the shallow water collecting was done along the coasts of the Lower California peninsula and the closely associated islands. The only exceptions are Guadalupe Island, which lies about a hundred and forty miles to the west of the peninsula, and Tiburon and San Esteban islands, which are more closely related to the mainland of Mexico, two thirds of the way toward the head of the Gulf of California.

The accompanying chart will indicate the course of the trip and the positions of the various stations. Guadalupe Island was first visited on a special trip, after which attention was directed entirely to the work about the peninsula. Passing down the west side, then along the eastern shore as far north as the island of Angel de la Guardia, the 'Albatross' crossed the gulf to Tiburon Island. A stop was made for coaling at Guaymas on the mainland of Mexico, but no collecting was done. The vessel then recrossed to the peninsula and made several more stations. Three of the earlier stations were revisited on the return trip, viz., Pichilique Bay, San Jose del Cabo and Port San Bartholome. Following is a list of the stations,¹ with date of arrival:

Guadalupe I.	March 2	Concepcion Bay	April 5
San Benito I.	" 9	San Francisquito Bay	" 9
Cerros I.	" 10	Angel de la Guardia I.	" 10
Port San Bartholome	" 13	Tiburon I.	" 11
San Cristobal Bay	" 15	San Esteban I.	" 13
Ballenas Bay	" 18	Santa Catalina I.	" 16
Cape San Lucas	" 23	Santa Cruz I.	" 16
San Jose del Cabo Bay	" 25	Pichilique Bay (repeated)	" 17
Pichilique Bay	" 27	Espiritu Santo I.	" 19
San Josef I.	" 30	Cerralbo I.	" 19
Agua Verde Bay	April 1	San Jose del Cabo (repeated)	" 20
Carmen I.	" 2	Port San Bartholome (repeated)	" 23
Mulege	" 4		

The fisheries of the Lower California region are almost wholly undeveloped. Food fishes of excellent quality and often of large size are very abundant. A glance at the lists under the Scombroid, Serranid, Lutianid,

¹ See also the map accompanying the Narrative of the Voyage, by Dr. C. H. Townsend, to be published later in the present volume of this Bulletin.

Hæmulid and Sciænid groups will serve to indicate how varied and numerous are the economic species.

In the preparation of this report we have been greatly aided by the notes taken during the work of collecting by Dr. Chas. H. Townsend, in charge of the expedition. Many color notes on the fresh specimens were made by Dr. Townsend and some of these have been incorporated in the following text.

The illustrations of the new species are the work of Mr. K. Kimoto, under the personal supervision of the junior author. The funds for this work were supplied by the American Museum of Natural History, in which institution the types of the new species are placed.

The list of new species is as follows:

<i>Raja microtrachys</i>	<i>Amia guadalupensis</i>
<i>Urobatis concentricus</i>	<i>Girella simplicidens</i>
<i>Letharchus pacificus</i>	<i>Hermosilla robusta</i>
<i>Bascanichthys bascanoides</i>	<i>Callyodon compressus</i>
<i>Fundulus parvipinnis</i> , subsp. <i>brevis</i> .	<i>Callyodon microps</i>
<i>Tylosurus pterurus</i>	<i>Dactyloscopus cinctus</i>
<i>Siphostoma exile</i>	<i>Lucioblennius lucius</i>
<i>Atherinopsis sonora</i>	

HETERODONTIDÆ. BULL-HEAD SHARKS.

***Gyropheurodus francisci* (Girard).** BULL-HEAD SHARK.

Magdalena Bay, March 12, one specimen eight inches long, dredged at 13 fathoms.

GALEIDÆ. REQUIEM SHARKS.

***Galeus dorsalis* (Gill).**

Tiburon I., April 12, a female three feet long, taken on a hand-line, contained six unborn young, each ten inches in length.

***Triakis semifasciatum* Girard.** CAT SHARK.

East side of Cerros I., March 11; Port San Bartholome, March 13 and 14 and again on April 23, and Ballenas Bay, off Abreojos Pt., March 16, all taken in the seine.

***Prionace glauca* (Linnaeus).** GREAT BLUE SHARK.

Carmen I., April 3, a young specimen taken on a hand-line.

RHINOBATIDÆ. GUITAR FISHES.

Rhinobatis productus Ayres. GUITAR FISH.

East Side of Cerros I., March 12; Port San Bartholome, March 13 and again on April 23, and Agua Verde Bay, April 1. Taken on hand-lines and with the seine.

RAJIDÆ. SKATES.

Raja microtrachys sp. nov.

Fig. 1.

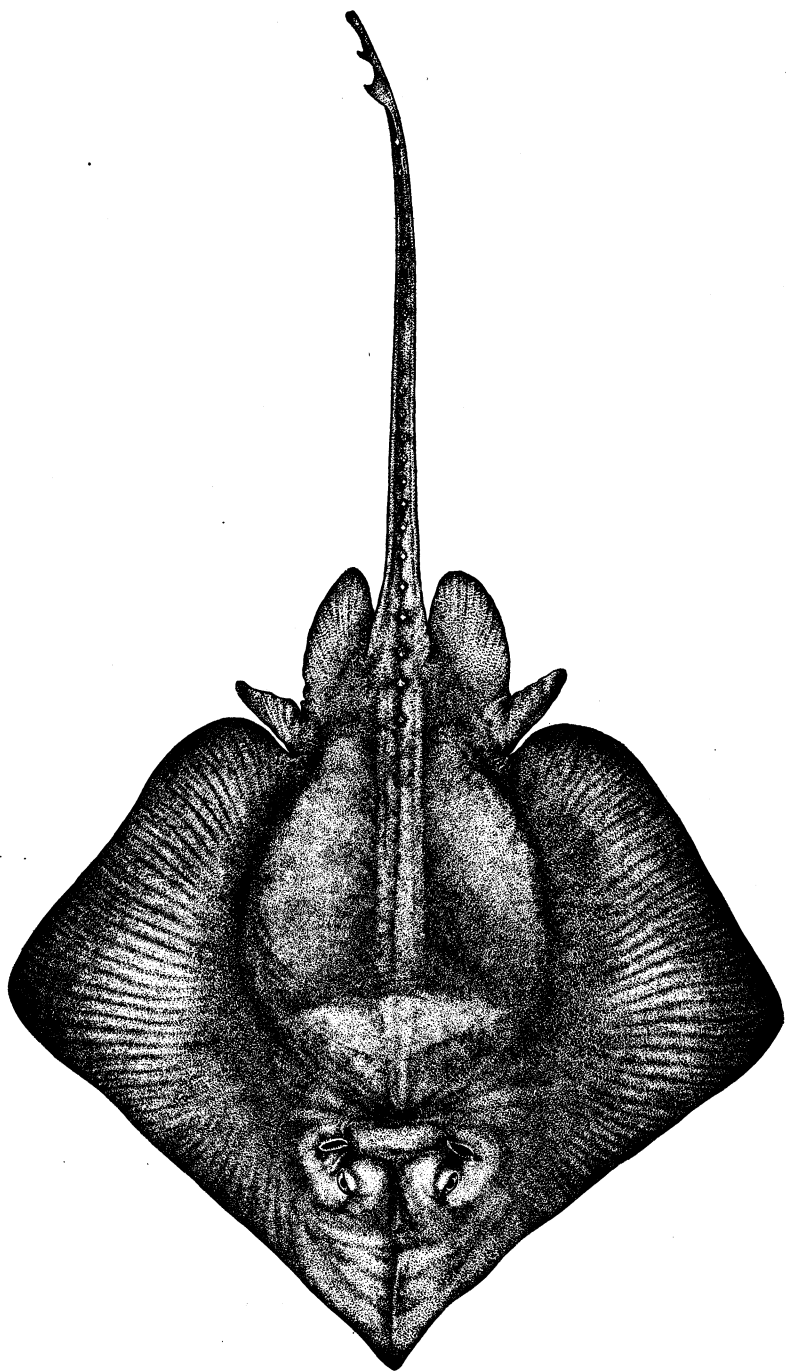
Cartilages weak, notably those of the snout, and structure generally loose. A deep water form allied to *isotrachys* and *trachura*, but lacking the mid-dorsal tubercle, with more white below and with other minor differences. Probably closely related also to the cotype of *R. aguja* Kendall and Radcliffe, Mem. Mus. Comp. Zool., Vol. 35, No. 25, pl. i, fig. 2.

Disk rhomboid, width about 1.2 times length to end of pectorals. Anterior edges meeting in an angle a little greater than 90 degrees, but slightly sinuated so that the angle of the snout is less than 90 degrees. On the hinder part of the snout the margin curves outward and is again somewhat incurved back of the spiracles. Outer and hinder angles of the pectorals broadly rounded, outer margin nearly straight. Snout moderately produced and pointed, the tip blunt, about 3.75 in length to posterior edge of pectoral. Tail from vent a little longer than the rest of the body, depressed, the lower surface nearly flat, with dermal keels posteriorly which are broad and fin-like near the end of the tail. Dorsal fins far back, contiguous (the margins too much broken to permit the form to be determined), origin of first dorsal a distance from the caudal equal to 1.4 in the snout. Pelvic fin deeply notched, separating a pointed fleshy anterior lobe which, measured from the bottom of the notch, is 2.6 in snout.

Orbit 4 in snout, interorbital the same, concave. Spiracle 1.5 in orbit. Preoral distance slightly greater than snout; mouth straight, 1.6 in preoral distance, equal to internarial space. Mesial nasal flaps large, the hinder limb with a fringe of broad, mostly bifid, papillæ, directed forward. Corners of mouth guarded by well-developed flaps; other flaps at the outer posterior margins of nares. Teeth small, with flat crowns and with backwardly directed cusps on their hinder margins.

Upper parts everywhere roughened with fine stellate prickles, these smallest and sparsest on the bases of the pectorals, largest and most closely set on the base of the tail and fine and close set between the eyes. Twenty strong retrorse tubercles on mid vertebral line between anterior pelvic lobes and origin of first dorsal, one or two of these spines apparently missing from spaces at middle of tail and again half way between this and origin of dorsal. No other tubercles anywhere. Anterior lobe of pelvic fin and entire under surface smooth, with the exception of a few scattered prickles along the ventral margins of the tail basally.

Color in spirits dark chocolate brown above, the margins narrowly darker, spiracles pale; underside slate colored, darker toward the margins of pectorals and

Fig. 1. *Raja microstachys* sp. nov.

on tail; center of disk broadly whitish, sharply contrasted with the slate of the pectorals, extending from about the middle of the snout backward to pelvic girdle and irregularly at the sides onto the anterior lobes of the pelvic fins.

Type No. 5198 American Museum of Natural History. Total length 29 inches. Collected at Guadalupe Island, March 1, 1911.

Our only specimen is an adult female with eggs, one of which measured $1\frac{1}{4}$ inches in diameter.

NARCOBATIDÆ. ELECTRIC RAYS.

***Narcine entemedor* Jordan and Starks.**

Agua Verde Bay, April 1, and Mulege, April 4, seined.

***Discopyge ommata* Jordan and Gilbert.**

Santa Cruz I., April 16, one specimen.

DASYATIDÆ. STING RAYS.

***Urobatis concentricus* sp. nov.**

Fig. 2.

Disc subcircular, anterior edges straight, meeting at snout in an obtuse angle. Breadth of disc about equal to length to base of tail. Tail to tip of caudal 1.4 in length of disc. Snout 4.5 in body to base of tail. Interorbital width 1.4 in snout. Snout from eye equal to snout from mouth. Width of mouth 1.6 in distance to tip of snout. Eye 4 in snout, equal to or slightly smaller than spiracle.

Teeth small, numerous, tessellated, with acute triangular cusps.

Tail with moderately developed lateral folds, extending backward to insertion of spine, which is about midway between the pectoral axil and the tip of the caudal. Caudal oblong, rounded at tip, its depth 2.5 in snout. Spine strong, retrorsely serrate, its length on dorsal ridge equal to interorbital width.

Skin everywhere smooth. Ground color in alcohol dark brown, broken into coarse reticulations on middle of disc by large rounded pale spots which average in diameter about one half the interorbital width. These spots are arranged more or less definitely in 3 concentric circles around a central one in the middle of the disc. Two narrower pale unbroken bands, concentric with these, on the edge of the disc, extending on the ventrals. Under side pale with a brown margin $\frac{3}{4}$ inch wide in a specimen 17 in. long and extending forward to opposite mouth. Extreme margin of disc and ventral fins pale. Under surface of tail pale, caudal dusky.

Type No. 5199 Am. Mus. Nat. Hist.

Length 17 inches, from the east side of Esteban Island, April 13, 1911.

We have two other specimens, 16 and $14\frac{1}{2}$ inches in length, from the same locality. All three are males.

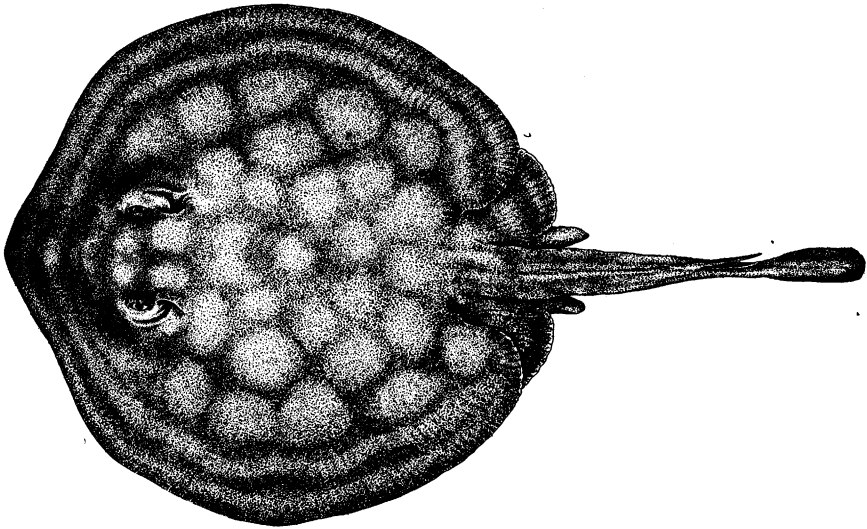


Fig. 2. *Urobatis concentricus* sp. nov.

***Urotrygon mundus* (Gill).**

Port San Bartholome, March 14, one specimen seined, and east side of Esteban I., April 13.

***Dasyatis dipterura* Jordan and Gilbert.**

Mulege, April 4, one specimen seined.

***Pteroplatea marmorata* Cooper. BUTTERFLY RAY.**

Port San Bartholome, March 13, one specimen seined.

MYLIOBATIDÆ. EAGLE RAYS.

***Myliobatis californicus* Gill.**

Port San Bartholome, March 14 and again on April 23, several specimens, and Santa Maria Bay, March 18, one specimen. All were taken in seining.

SILURIDÆ. CATFISHES.

Netuma platypogon (*Günther*).

A single specimen taken at Pichilique Bay, March 27, on a hand-line.

LEPTOCEPHALIDÆ. CONGER EELS.

Congrellus balearicus (*De la Roche*).

Cape San Lucas, March 23, one mutilated specimen, only the head and about an inch of the body being obtained.

MYRIDÆ. WORM EELS.

Myrophis vafer *Jordan and Gilbert*.

Pichilique Bay on March 27 and again on April 18, a number of specimens taken at night by the use of the electric light lure.

OPHICHTHYIDÆ. SNAKE EELS.

Sphagebranchus selachops (*Jordan and Gilbert*).

Two specimens taken at Cape San Lucas on March 23.

Letharchus pacificus sp. nov.

Fig. 3.

Teeth conical, directed inward and backward. Snout slender, pointed, projecting $\frac{2}{3}$ of its length beyond the lower jaw, cleft of mouth longer than snout, extending back of the eye a distance about equal to the diameter of the latter. Gill openings sub-inferior, diverging at about an angle of 60 degrees from a narrow isthmus, which is about equal to the eye and $\frac{1}{2}$ the width of the slit. Eye 12; snout about 6, head in trunk $6\frac{1}{2}$; tail $1\frac{3}{4}$ in trunk; depth $2\frac{1}{2}$ in head. Lateral line conspicuous. Dorsal beginning behind the eye a distance equal to snout, high at nape, gradually lower backward, practically absent on posterior $\frac{2}{3}$ of tail. Pectoral and anal fins wanting.

Color in spirits,—head, dorsal and ventral lines and dorsal fin, whitish; sides dark chocolate brown; many dark spots, mostly smaller than eye, on head, confluent

to form about four cross bars on throat, closer together on snout and lower jaw; the dark sides with obscure darker specks, the lateral line narrowly pale.

Type No. 5200 American Museum of Natural History, Cape San Lucas, March 23, 1911, 1 specimen, $5\frac{1}{2}$ inches in length.

This species differs somewhat in measurements and notably in color from the only other member of the genus, *L. velifer* Goode and Bean, from the Gulf of Mexico.

***Myrichthys tigrinus* Girard.**

Pichilique Bay, March 27, one specimen taken at the electric light lure.

***Bascanichthys peninsulæ* (Gilbert).**

Pichilique Bay, March 27, a single specimen seven and a half inches long.

***Bascanichthys bascanoides*, sp. nov.**

Fig. 4.

Close to *bascanium* and *scuticaris* of the Atlantic, with pectorals small and trunk elongate.

Trunk subterete, depth 2.2 in length of head, breadth 2.5 in head; tail terete; head and trunk about equal to tail; head contained 11 times in head and trunk. Eye 2 in snout, which is 7 in head; lower jaw reaching to middle of snout, gape about equal to snout. Teeth subequal, short, bluntish conical, slightly recurved, in a single series in the lower jaw with a few extra ones near the symphysis; sides of upper jaw with a single series, separated by a short interspace from two or three near the tip; vomerine teeth in a triple series in front, then double, becoming single toward the posterior, anterior teeth the larger. Gill openings vertical, equal to snout, slightly greater than isthmus. Pectoral rudimentary, situated in upper part of gill opening, slightly longer than eye. Dorsal commencing about midway between gill opening and eye; both dorsal and ventral low.

Color in spirits dark reddish brown, unmarked, darkest dorsally, fading out ventrally to yellowish on belly. Vertical fins pale and a narrow pale vertebral streak the full length of the dorsal. Snout and lower jaw dusky.

Type No. 5201, American Museum of Natural History, collected off San Cristobal Bay, March 15, 1911, total length 30 inches. A single specimen, recorded in Townsend's notes as "taken from the stomach of a jew-fish" (*Mycteroperca venadorum*).

***Quassiremus notochir* (Gilbert).**

Carmen I., April 3, one specimen.

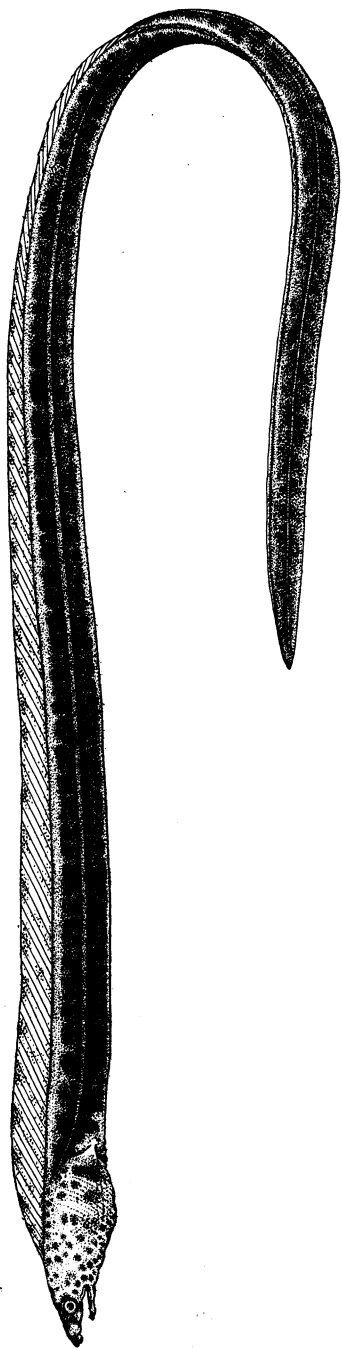


Fig. 3. *Leitharchus pacificus* sp. nov.

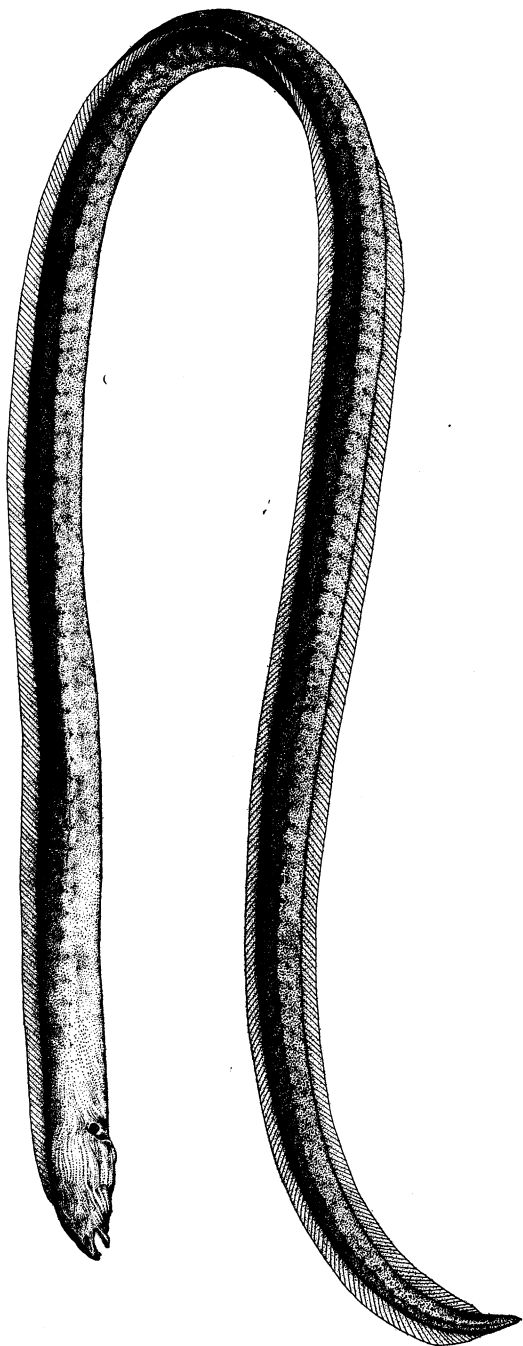


Fig. 4. *Bascanichthys bascanoides* sp. nov.

Ophichthus triserialis (*Kaup*).

Pichilique Bay, March 27, one specimen about five inches long taken at the electric light lure.

MURÆNIDÆ. MORAYS.

Lycodontis funebris (*Ranzani*). BLACK MORAY.

Agua Verde Bay, April 1, one specimen four inches long, seined.

Uropterygius necturus (*Jordan and Gilbert*).

Agua Verde Bay, April 1, a specimen six inches in length, seined.

ALBULIDÆ. LADY FISHES.

Albula vulpes (*Linnaeus*). LADY FISH.

Carmen I., April 3, three specimens, seined.

CLUPEIDÆ. HERRINGS.

Jenkinsia acuminata (*Gilbert*).

Carmen I., April 2, a specimen two inches long, seined.

Perkinsia othonops *R. S. Eigenmann*.

San Benito I., March 9, six dozen specimens, seined.

Clupanodon cæruleus (*Girard*). CALIFORNIA SARDINE.

San Benito I., March 9; Ballenas Bay and Cerros I., March 11, and Santa Catalina I., April 16, numerous specimens both young and adult.

Sardinella thrissina (*Jordan and Gilbert*). SCALED SARDINE.

Pichilique Bay, March 27; Agua Verde Bay, April 1, and Carmen I., April 2 and 3. Numerous specimens taken with the seine and at Agua Verde Bay they swarmed about the electric light lure at night.

Sardinella stolifera (*Jordan and Gilbert*).

Mouth of Mulege River, April 4, twenty specimens, seined.

Ophisthonema libertate (*Günther*). THREAD HERRING.

Ballenas Bay, March 16, and Carmen I., April 3; two specimens, taken in the seine.

ENGRAULIDIDÆ. ANCHOVIES.

Engraulis mordax *Girard*. CALIFORNIA ANCHOVY.

San Benito I., March 9 and Cerros I., March 11, three specimens, seined.

SYNODONTIDÆ. LIZARD FISHES.

Synodus lacertinus *Gilbert*.

Cape San Lucas, March 23, one specimen seined.

PÆCILIDÆ. KILLIFISHES.

Fundulus parvipinnis brevis subsp. nov.

Fig. 5.

Body moderately robust, depth 3.4, back elevated. Dorsal fin rising rather steeply from snout to above insertion of pectoral fin, thence gently rounded to in-

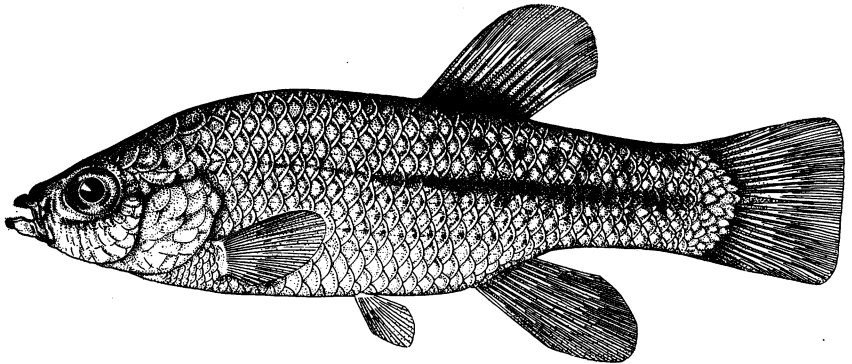


Fig. 5. *Fundulus parvipinnis brevis* subsp. nov.

sertion of dorsal, slanting downward rather steeply under base of dorsal fin, and thence more gently to base of caudal. Caudal peduncle long and slender, much

compressed, its depth 1.5 in its length. Head 3.3, eye 3.8 in head; interorbital 3; snout 3.5; mouth small, tip of snout to end of maxillary 3.5 in head. Scales 32, in 13 series. Pectoral 1.7, not quite reaching to ventral; ventral 2.3, not quite reaching to anal; anal 1.2, of 13 rays; caudal even, 1.5, with 4 rows of small scales in its base; dorsal 1.6, of 13 rays.

Color in spirits brownish, paler below, scales more or less margined with dark punctulations; about a dozen narrow, short, broken, dark bars posteriorly, connected by a lateral streak from above tips of pectorals to base of caudal.

Type No. 5208, Am. Mus. Nat. Hist.

Taken in south end of Magdalena Bay, March 20, 1911, 2.5 inches long. Four others of about the same size taken with it and two dozen of various sizes the following day, off Magdalena.

Our specimens have been compared with a series of specimens of *parvipinnis* from San Diego, Cal., from which they differ in the noticeably shorter and deeper body and in the scale count. The following table is based on the measurements of ten graded specimens of *parvipinnis* and of the subspecies.

	Length of					Locality
	body	Head	Depth	Eye	Scales	
<i>F. parvipinnis</i>	2.9	3.4	4.0	4.2	37	San Diego
	2.8	3.5	4.0	4.1	36	"
	2.6	3.5	3.7	4.0	35	"
	2.6	3.3	4.1	4.0	36	"
	2.5	3.3	3.6	4.0	34	"
	2.5	3.5	3.9	3.8	37	"
	2.2	3.5	3.8	3.6	34	"
	2.2	3.5	4.0	3.6	35	"
	1.7	3.5	4.3	3.3	33	"
	1.8	3.4	4.0	3.3	35	"
Average	2.38	3.44	3.94	3.79	35.2	
<i>F. parvipinnis brevis</i>	2.7	3.0	3.3	3.5	32	Off Magdalena
	2.5	3.2	3.4	4.0	32	S. end Magdalena Bay
	2.5	3.3	3.4	3.8	32	" " " "
	2.3	3.0	3.2	3.9	33	Off Magdalena
	2.3	3.2	3.1	3.9	32	" "
	2.1	3.3	3.6	3.5	33	" "
	1.9	3.1	3.2	3.4	33	" "
	2.0	3.2	3.6	3.5	30	" "
	1.7	3.1	3.5	3.5	33	" "
	1.6	3.3	3.6	3.3	33	" "
Average	2.16	3.17	3.39	3.63	32.3	

ESOCIDÆ. NEEDLE FISHES.

Tylosurus fodiator *Jordan and Gilbert.*

Cape San Lucas, March 24, four specimens taken in the seine.

Tylosurus pterurus sp. nov.

Fig. 6.

Head 3; depth 1.4 in postorbital part of head; eye large 1.7 in postorbital part of head; snout 3.7 times postorbital part of head, base of upper jaw depressed, the maxillary entirely concealed under preorbital; top of head with a shallow scaly groove. Teeth very small, conical, not compressed, and very even for this genus, about 60 in main row on one side of upper jaw. Pectoral .8 in postorbital part of head; ventrals inserted midway between pectorals and caudal; anal rays 16, inserted distinctly in advance of the shorter dorsal which has 13 rays; distance of insertion of dorsal to upper caudal lobe contained 3 times in its distance behind preopercle; caudal deeply lunate, the lower lobe longer. Scales large, about 185 in lateral line, 102 between nape and origin of dorsal.

Caudal peduncle much depressed, its width slightly more than twice its depth; laterally forming a thin scaled keel-like expansion above the axis of the body. The lateral line very low throughout; beginning on the throat, it sends a vertical branch to the base of the pectoral, curves upward to avoid the base of the pelvic fin and posteriorly extends along the base of the peduncular keel midway between the margin of this keel and the mid-ventral line of the body.

Color in spirits, above green, becoming abruptly white on a level with the top of the eye; mid-line of back, edging of dorsal scales and portions of top of head and snout more or less dusky; dorsal, ventrals and upper caudal lobe somewhat dusky, other fins pale.

Type No. 5202, American Museum of Natural History. Carmen Island, April 3, 1 specimen, 15 inches long.

HEMIRHAMPHIDÆ. HALF BEAKS.

Hyporhamphus roberti (*Cuvier and Valenciennes*). COMMON HALF-BEAK.

South end of Magdalena Bay, March 20; Port San Bartholome, March 14; Pichilique Bay, March 27; Carmen I., April 3; fifteen miles below the head of Concepcion Bay, April 7, and Ceralbo I., April 19. Numerous specimens were taken chiefly with the seine.

Hyporhamphus rosæ (*Jordan and Gilbert*).

Magdalena Bay, March 21, one young specimen seined.

Hemirhamphus balao *Le Sueur.*

San Josef I., March 31, and Ceralbo I., April 20, a single specimen from each of these localities was picked up on the beach. The species is well known and widely distributed in the Atlantic, but has not hitherto been reported from the Pacific Ocean.

EXOCETIDÆ. FLYING FISHES.

Fodiator acutus (*Cuvier and Valenciennes*). SHARP-NOSED FLYING-FISH.

Cape San Lucas, March 24, two specimens seined.

FISTULARIIDÆ. TRUMPET FISHES.

Fistularia depressa *Günther.* CORNETA.

Cape San Lucas, March 23; San Josef I., March 31; Agua Verde Bay, April 1, and Santa Catalina I., April 16, taken chiefly in the seine.

SYNGNATHIDÆ. PIPE FISHES.

Siphostoma carinatum *Gilbert.*

East side of Cerros I., March 11, one specimen seined.

Siphostoma leptorhynchum (*Girard*).

One specimen without special data.

Siphostoma exile sp. nov.

Fig. 7.

Head 9; depth 5 in head, equal to breadth; snout 2; eye 3 in postorbital part of head, equal to pectoral, equal to about $\frac{1}{2}$ of caudal. Rings 20 + 45. D. 38, on one and a quarter body rings and eight and three-quarters caudal rings, its base .8 in head, equal to distance from tip to snout to base of pectoral. Body slender, the posterior half of trunk distended, its diameter 3.6 in head; head and trunk in tail 1.4; trunk in tail 1.8. Angles rather low, a low keel on snout not extending on head; no nuchal or opercular ridges.

Color in spirits, pale yellowish; paler on belly, under side of tail with brownish flecks; a conspicuous dark brown band from chin to eye, thence more narrowly

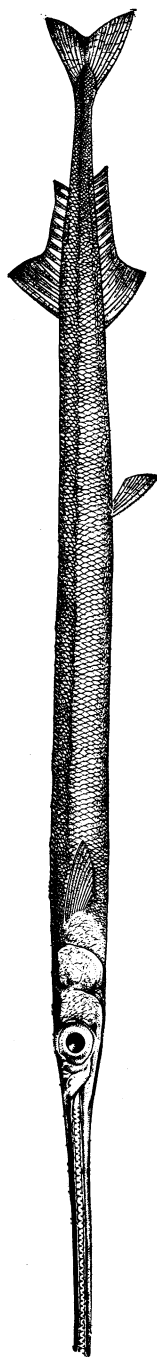


Fig. 6. *Tylosurus plerurus* sp. nov.

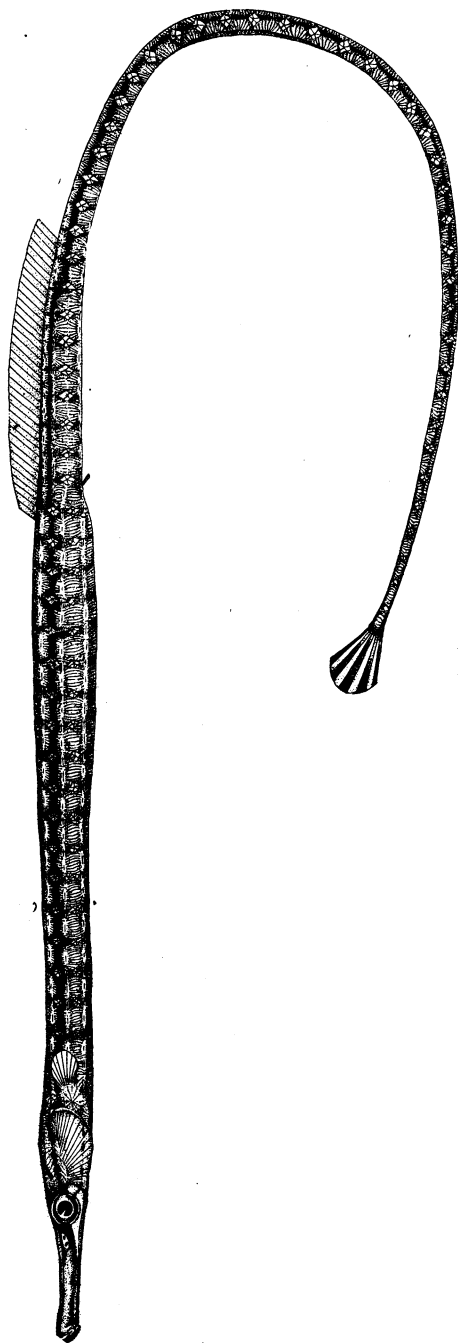


Fig. 7. *Siphostoma exile* sp. nov.

across upper part of opercle, thence backward along the upper part of the side, becoming faint and broken into specks towards caudal. A faint broken streak extends from the eye downward and backward across the lower part of the opercle. Caudal fin dusky, its upper margin whitish.

Type No. 5203 American Museum of Natural History, West San Benito I., March 9, 1911. 1 specimen, total length $6\frac{1}{2}$ inches.

Five smaller specimens, 4 to $4\frac{1}{2}$ inches long were taken at electric light in Port San Bartholome, March 14. The peculiar swollen appearance of the hinder half of the trunk is as evident in these as it is in the type. The dorsal rays in these vary from 35 to 38; the body rings are all 18, the caudal rings vary from 44 to 48. Otherwise there is a close agreement with the type in all structural points. In color, all show the stripe along the side of the snout, the oblique line downward and backward from the eye (which is more distinct than in the type) and the line across the upper part of the opercle. The dark line along the side is not so distinct, but is more or less fused with brownish spots above and below it and broken by lighter irregular cross-bands. The white upper margin of the dusky caudal is more conspicuous than in the type. The largest of these approach the type more nearly than the smaller ones in the matter of coloration.

Hippocampus ingens Girard. SEA HORSE.

Head of Concepcion Bay, April 6, one specimen.

Dr. Townsend adds the following note:

"The Sea horse of this region cannot be a common species as only one small living example was taken during the almost daily seining operations of the voyage. Two large dried specimens were found on the beach at Carmen Island, the larger being about ten inches long. The species has been recorded from but few points between San Diego, California and Mazatlan, Mex., the extremities of its known range."

ATHERINIDÆ. SILVER-SIDES.

Leuresthes tenuis (Ayres).

Ballenas Bay off Abreojos Point, one specimen six inches long, an adult female with eggs. Although this specimen is from the type locality of *L. crameri* Jordan and Everman, it has the small scales, 74, and the fin formula, D. V. 1, 9; A. 1, 22, of *L. tenuis*. In some measurements, however it agrees more nearly with *L. crameri*, as head 4.8; depth 5.3; eye in snout 1.5,

in head 4.3; lateral band 1.2 in eye, covering one row and two half rows of scales. This suggests the probability that *crameri* is a synonym of *tenuis*.

Eurystole eriarcha (Jordan and Gilbert).

Cape San Lucas, March 23 and 24, ten specimens taken at the electric light lure, and Santa Catalina I., April 16, one specimen.

Atherinopsis californiensis Girard. CALIFORNIA SMELT.

Ballenas Bay, March 16, and Cerros I., March 11, several specimens seined.

Atherinopsis sonoræ sp. nov.

Fig. 8.

Head 4.2; depth 5.8; D. VIII-I, 12; A. I, 22; scales 62-13. Eye 5 in head, snout 3; jaws equal; teeth pointed, in narrow bands, maxillary not reaching eye. Gill rakers long slender and numerous. Scales weakly crenate. Body slender, moderately compressed. Pectoral fin 1, 3 in head, reaching to origin of ventrals which extend $\frac{1}{2}$ distance to vent. Origin of spinous dorsal equidistant between caudal base and preopercle, considerably in advance of origin of anal; origin of soft dorsal about over middle of anal. Caudal widely forked.

Color in spirits; light brown above, silvery below, a plumbeous lateral stripe one fourth the width of the body. Pectorals, dorsals and caudal more or less dusky, ventrals and anal white.

Type No. 5211, American Museum of Natural History, $7\frac{1}{2}$ inches long, S.E. side of Cerros I. March 11, seined. Two smaller specimens 5 and 6 inches long with the same data, have respectively head 4, depth 5.9, scales indeterminate, and head 4.2, depth 5.5, scales about 58.

This species apparently differs from *A. californiensis* in the larger head, lesser depth and much larger scales.

Atherinops insularum Gilbert.

Guadalupe I., March 2; San Benito I., March 9, and Cerros I., March 11, numerous specimens.

Atherinops affinis (Ayres).

Santa Maria Bay, March 18; Port San Bartholome, March 13 and April 23; Magdalena Bay, March 20 and 21, numerous specimens.

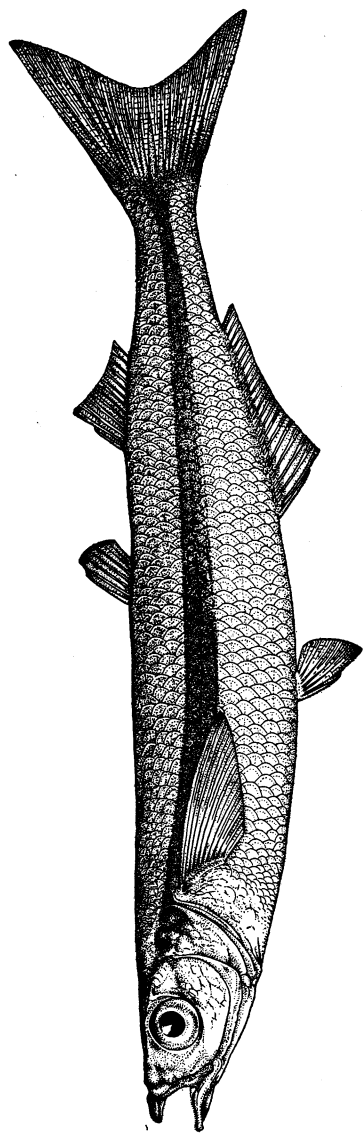


Fig. 8. *Atherinopsis sonore* sp. nov.

MUGILIDÆ. MULLET.

Mugil curema *Cuvier and Valenciennes*. WHITE MULLET.

Magdalena Bay, March 20 and 21; Cape San Lucas, March 24; San Jose del Cabo, March 26; Carmen I., April 3; Mouth of Mulege River, April 4, and head of Concepcion Bay, April 6. Large numbers of various sizes were taken with the seine. At San Jose del Cabo both young and adult were taken in fresh water.

Chænomugil proboscideus (*Günther*).

Cape San Lucas, March 23, one specimen taken at electric light.

SPHYRÆNIDÆ. BARRACUDAS.

Sphyræna argentea *Girard*. CALIFORNIA BARRACUDA.

Cerros I., March 11; Port San Bartholome, March 13; and Agua Verde Bay, April 1, several specimens taken in the seine.

MULLIDÆ. SURMULLETS.

Upeneus xanthogrammus *Gilbert*. GOAT-FISH.

San Josef I., March 31; Pichilique Bay, April 17, and Ceralbo I., April 20, several specimens.

SCOMBRIDÆ. MACKERELS.

Scomberomorus sierra *Jordan and Starks*. SIERRA.

Agua Verde Bay, April 1, one specimen taken in seine.

NEMATISTHIDÆ.

Nematistius pectoralis *Gill*.

San Josef I., March 31, and Agua Verde Bay, April 1, several specimens taken in the seine.

CARANGIDÆ. POMPANOS.

Oligoplites saurus (*Bloch and Schneider*). LEATHER JACKET.

Mouth of Mulege River, April 4, and fifteen miles below the head of Concepcion Bay, April 7, three specimens seined.

Oligoplites mundus *Jordan and Starks.*

Mulege, April 4, two taken in the seine.

Seriola dorsalis (*Gill*). YELLOW TAIL.

Carmen I., April 3, one specimen seined, and Concepcion Bay off Ricason I., April 7, one specimen.

Trachurus symmetricus *Ayres.*

Guadalupe I., March 3, three specimens taken on a hand-line.

Trachurops crumenophthalmus (*Bloch*). GOGGLE-EYED SCAD.

Carmen I., April 3, two specimens seined.

Caranx hippos (*Linnæus*). JACK.

Mulege, April 4, seined.

Caranx caballus (*Günther*).

Cape San Lucas, March 23, one specimen seined.

Gnathanodon speciosus (*Forskål*).

Carmen I., April 3, two specimens taken in the seine.

Citula dorsalis (*Gill*).

Agua Verde Bay, April 1, one large specimen seined.

Selene vomer (*Linnæus*). LOOK-DOWN OR MOON-FISH.

Mulege, April 4, two specimens seined.

Trachinotus rhodopus Gill. POMPANO.

Santa Maria Bay, March 18, one specimen three inches long, seined.

Trachinotus palomo Jordan and Starks. POMPANO.

Cerros I., March 11, and Ballenas Bay off Abreojos Point, March 16, several specimens two to three inches long taken in the seine.

CHEILODIPTERIDÆ. CARDINAL FISHES.

Amia retrosella Gill. CARDENAL.

San Josef I., March 31; Carmen I., April 3; San Francisquito Bay, April 9; southeast end of Tiburon I., April 11; Santa Cruz and Santa Catalina Is., April 16, and Pichilique Bay, April 17. Numerous specimens were taken by seining.

Amia guadalupensis sp. nov.

Fig. 9.

Head 2.5; depth 2.9; scales in lateral line 26. D. V-I, 10; A, II, 8. Eye 3.5; snout 4.3; interorbital width 3.8 in head; maxillary 2. Body moderately compressed, dorsal and ventral outlines similar. Caudal peduncle very long, deep and compressed, its least depth $\frac{1}{2}$ the greatest depth of the body. Teeth small, conical, recurved, in narrow bands; anterior teeth in upper jaw somewhat enlarged, teeth present on vomer and palatines. Pectoral fin 1.7 in head, reaching beyond tips of ventrals and not quite to origin of anal; ventral 2; soft dorsal and anal similar, high, somewhat falcate; first dorsal spine the highest and strongest, 2.2 in head, second dorsal 1.7, anal 1.8; caudal emarginate, the lobes blunt, 1.6 in head.

Color in spirits, brownish; caudal dusky, narrowly tipped with pale; central rays of spinous dorsal blackish, contrasting sharply with the rest of the fin; other fins pale. The black center of the spinous dorsal is the only distinctive color mark. It appears to be closely related to *A. atrodorsatus* (Heller and Snodgrass) from the Guadalupe Islands, but differs in color markings of vertical fins and in proportions, and to *A. atricaudus* (Jordan & McGregor) from the west coast of Mexico, from which it differs in the structure and color of the dorsal fin.

Type No. 5204, American Museum of Natural History, Guadalupe Island, March 2, one specimen 4 inches long.

SERRANIDÆ. SEA BASSES.

Petrometopon panamensis (Steindachner).

Concepcion Bay, at the head and fifteen miles below the head, on April 5, 6 and 7, nine specimens.

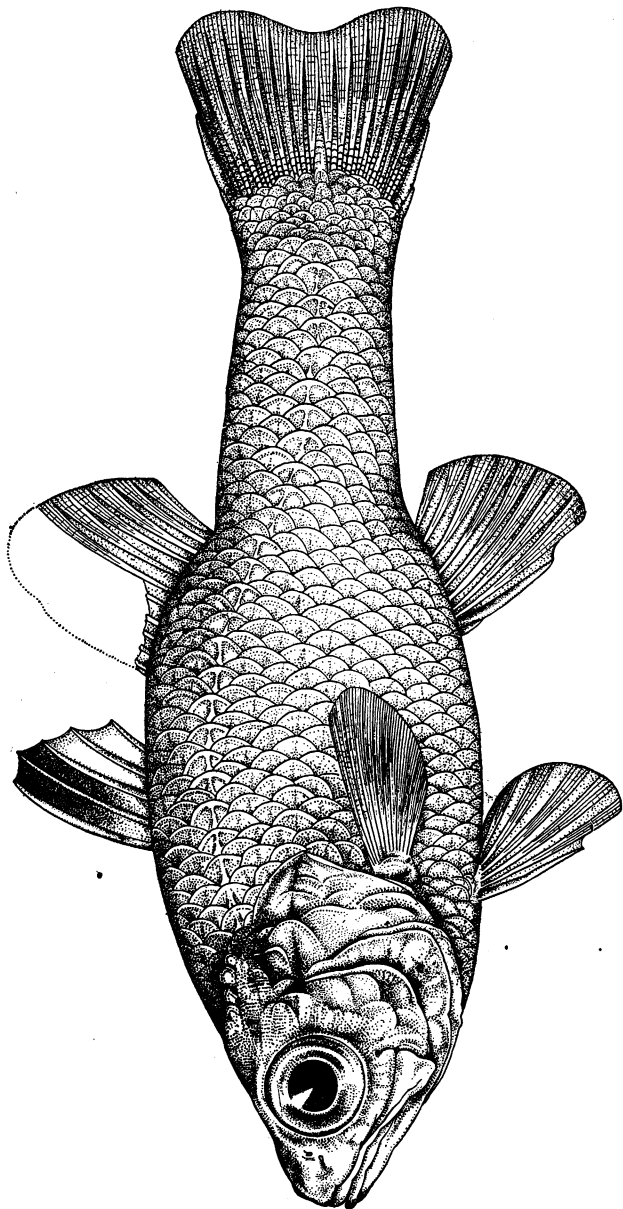


Fig. 9. *Amia guadalupensis* sp. nov.

Dermatolepis punctatus Gill.

Santa Catalina I., April 16, one specimen 30 inches long.

Mycteroperca venadorum Jordan and Starks.

Angel de la Guardia I., April 16, one specimen about 3 feet long, which contained in its stomach the type specimen of *Bascanichthys bascanoides* sp. nov.

Mycteroperca pardalis Gilbert.

San Josef I., March 31; Carmen I., April 3; Concepcion Bay, April 5 and 7; San Francisquito Bay, April 9; Esteban I., April 13, and Ceralbo I., April 19. Numerous specimens of various sizes were taken.

Mycteroperca rosacea (Streets).

Angel de la Guardia I., April 10. One adult specimen. Dr. Townsend's color notes on the fresh specimen are, "Plain colored without markings. Graded from orange on the back to light yellow on the belly; the fins, especially the pectorals, similarly graded in color from the upper edge to the lower."

Paralabrax nebulifer (Girard). JOHNNY VERDE.

East side of Cerros I., March 11, one specimen on a hand-line.

Paralabrax maculatofasciatus (Steindachner). SPOTTED CABRILLA.

Pichilique Bay, April 17, one specimen. The collection contains three other specimens without data.

Paralabrax clathratus (Girard). CABRILLA.

South end of Cerros I., March 12, three specimens.

Diplectrum sciurus Gilbert. SQUIRREL-FISH.

Magdalena Bay, March 21, six specimens taken at 13 fathoms in the 3½ ft. Tanner trawl.

Diplectrum radiale (*Quoy and Gaimard*). SQUIRREL-FISH.

Northeast side of Santa Margarita I., March 19, one specimen taken on a hand-line.

Rypticus xanti *Gill*. SOAP-FISH.

Carmen I., April 3, one specimen.

LUTIANIDÆ. SNAPPERS.

Hoplopagrus güntheri *Gill*. PARGO.

San Josef I., March 31; Mulege, April 4, and Concepcion Bay off Ricason I., April 7, several specimens, seined.

Neomænis novemfasciatus (*Gill*). BLACK SNAPPER.

San Jose del Cabo, March 26, numerous specimens taken in fresh water, and Agua Verde Bay, April 2.

Neomænis argentiventris (*Peters*). YELLOW SNAPPER.

Concepcion Bay off Ricason I., April 8, and Pichilingue Bay, April 17, several specimens.

Neomænis colorado (*Jordan and Gilbert*). MAZATLAN RED SNAPPER.

Mulege, at the mouth of the river, one specimen, seined.

Xenistius californiensis (*Steindachner*).

Cerroş I., March 11, and Port San Bartholome, March 13, several specimens seined.

HÆMULIDÆ. GRUNTS.

Hæmulon sexfasciatum *Gill*.

San Josef I., March 31, Carmen I., April 3, and Pichilingue Bay, April 17, several specimens seined.

Hæmulon steindachneri (*Jordan and Gilbert*).

Pichilingue Bay, March 28, one taken on a hand-line.

Lythrulon flaviguttatum (Gill).

Southeast end of Tiburon I., April 12, a dozen young specimens, and Esteban I., April 13, one specimen.

Anisotremus interruptus (Gill).

San Josef I., March 31; Esteban I., April 13, and Port San Bartholome, April 23, several specimens seined. These approach *A. surinamensis* somewhat more closely than the type description of *interruptus* does.

Anisotremus davidsoni (Steindachner).

Port San Bartholome, April 23, two specimens seined.

Brachydeuterus leuciscus (Günther). BURRITO.

Mulege, at mouth of river, April 4, two specimens seined.

Isaciella brevipinnis (Steindachner).

Carmen I., April 3, one specimen.

SPARIDÆ. PORGIES.

Calamus brachysomus (Lockington).

Pichilique Bay, March 28, one taken on a hand-line, and Concepcion Bay off Ricason I., April 7, several specimens.

GERRIDÆ.

Eucinostomus californiensis (Gill).

Port San Bartholome, March 14 and April 23; Magdalena Bay, March 20 and 21; San Jose del Cabo, March 25; Agua Verde Bay, April 1; Carmen I., April 3; Mulege, at mouth of river, April 4; Concepcion Bay, April 5 to 7. Apparently this is a very abundant species throughout the region as numerous specimens were taken at most of the above localities. At San Jose del Cabo they were taken in fresh water.

Xystæma cinereum (*Walbaum*). BROAD SHAD.

Magdalena Bay, March 21; San Jose del Cabo, March 26; Agua Verde Bay, April 1 and 2; Carmen I., April 3; Concepcion Bay, April 6 and 7, and Tiburon I., April 11. This species occurred with the preceding, in most of its range, but apparently is not so abundant. The specimens from San Jose del Cabo were taken in fresh water.

Gerres peruvianus (*Cuvier and Vallenciennes*).

Mulege, at mouth of river, April 4, two specimens seined.

Gerres lineatus (*Humboldt*).

Mulege, April 4, two specimens seined.

KYPHOSIDÆ.

Girella nigricans (*Ayres*). GREEN FISH.

Guadalupe I., March 2; San Benito I., March 9, and Cerros I., March 11, young and adults seined.

Girella simplicidens sp. nov.

Fig. 10.

Head 3.6; depth 2.1. D. XIV, 14; A. III, 12. Scales finely ctenoid; downward and forward from front of soft dorsal to lateral line 7, upward and forward from front of anal to lateral line 15, lateral line 50. Body deep, compressed, upper and lower outlines similar, strongly arched. Eye 5; snout 2.5; interorbital width 3; maxillary 2.8; preorbital equal to eye; preopercle finely serrate. Mouth sub-inferior, transverse, its width 2.6 in head; lips fleshy; premaxillary protractile and very broad, 1.5 in eye; teeth moveable, two to four front rows of simple incisiform teeth, with bands of minute teeth behind these. Gill rakers moderately long, slender, close set and numerous. Pectoral broad, 1.1 in head; ventrals short, not reaching vent, 1.3 in head; dorsal low, not emarginate, the longest spine 2.2, longest ray 2; anal spines rather stout, graduated, the third 2.5; longest ray 1.7; caudal lunate.

Color in spirits, uniformly dark with obscure, darker lengthwise stripes indicated by spots at the centers of the scales.

Type No. 5209, American Museum of Natural History, from San Francisquito Bay, April 8, 9½ inches long.

Besides the type we have two larger specimens, one 13 in. long from Tiburon I., April 11 and one 15 in. long from the type locality, April 8, and one smaller specimen 8 in. long from the east side of Esteban I., April 13.

In the 13 inch specimen the teeth resemble those of the type except for the presence of a small blunt cusp more or less basally situated on each side.

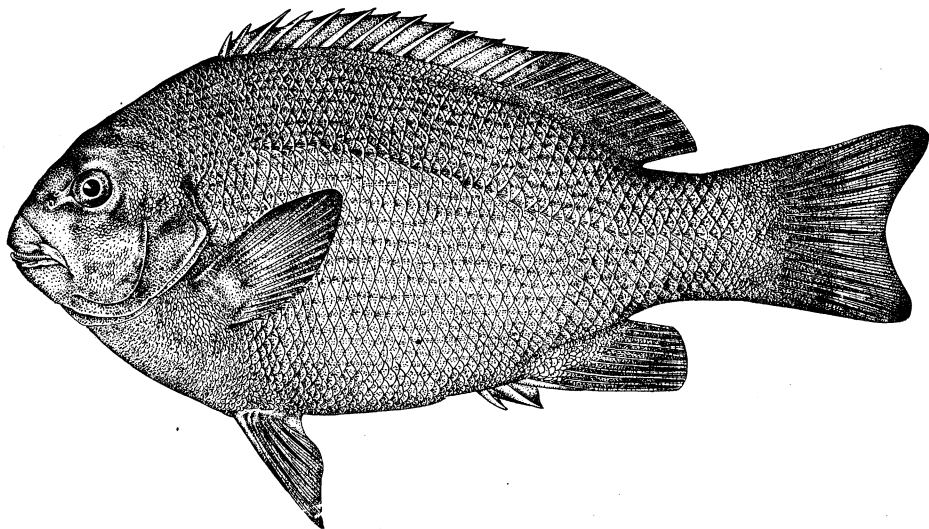


Fig. 10. *Girella simplicidens* sp. nov.

The largest specimen has a few such cusped teeth, the greater number being simple like those of the two smaller specimens. Even when the lateral cusps of these teeth are best developed they are still strongly contrasted with those of *G. nigricans* which are trident with the three cusps nearly equally developed.

Our specimens are still further distinguished from those of *G. nigricans* in the collection by the shorter, deeper body.

***Hermosilla azurea* Jenkins and Evermann.**

Cerros I., March 11, four specimens, and Port San Bartholome, April 23, one specimen, seined.

***Hermosilla robusta* sp. nov.**

Fig. 11.

Head 3.7; depth 2; eye 5 in head. D. XI, 10; A. III, 10; scales 9, 52, 19. Body deep, robust; dorsal and ventral outlines rounded, similar. Snout 3; inter-

orbital 2.4; maxillary not quite reaching front of eye, 3.5 in head; preorbital 1.5 in eye. Gill rakers short and stout, about 12 on lower limb of arch, 3 in eye. Dorsal and anal fins each with a basal sheath of scales; soft fins densely scaled. Second anal spine longest, 3.8 in head, longer and stouter than the first and third which are about 4.7 in head; when depressed the second spine reaches about to the tip of

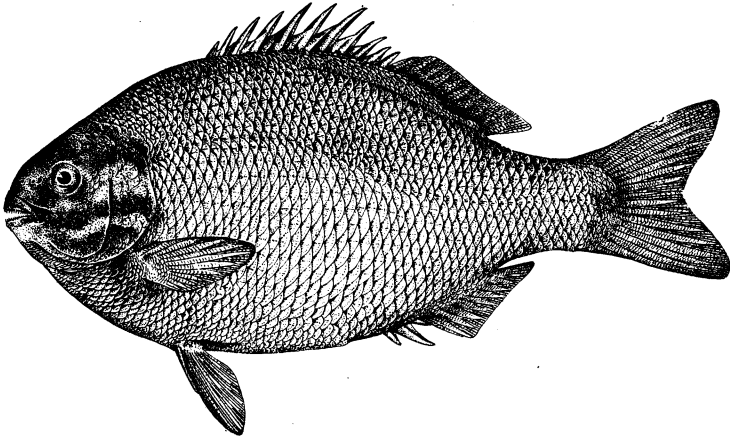


Fig. 11. *Hermosilla robusta* sp. nov.

the third. Ventrals 1.5 in head, reaching slightly more than half way to the origin of the anal.

Color in spirits dusky, somewhat paler below, lacking the cross bands of *azurea*; the fins all dusky; a silvery stripe below eye extending backward on opercle; an intense black blotch in axil of pectoral; the black mark at angle of opercle narrower than in *azurea*.

Type No. 5210, American Museum of Natural History, Tiburon I., April 12, 15 inches long.

Besides the type we have another specimen 14 inches long from Carmen I., April 3, which agrees with it in all essentials. The two differ notably from specimens of *H. azurea*, from the places listed under that species, in the following points; noticeably greater depth in specimens of the same length; the stouter gill rakers; ventral fins not extending so far backward, and the absence of vertical bars on the body.

***Kyphosus analogus* (Gill).**

San Josef I., March 31; Carmen I., April 3; Mulege, April 4; Tiburon I., April 11, and Santa Catalina I., April 16, a number of specimens seined.

SCIÆNIDÆ. CROAKERS.

Seriphus politus Ayres. QUEEN-FISH.

Port San Bartholome, March 13, one specimen two and a half inches long taken in the seine.

Umbrina roncadore Jordan and Gilbert. YELLOW-FINNED RONCADOR.

Port San Bartholome, April 23, two specimens seined.

Umbrina xanti Gill.

South end of Magdalena Bay, March 20; Mulege River at its mouth, April 4, and Concepcion Bay, April 6, several specimens seined.

Menticirrhus undulatus (Girard). CALIFORNIA WHITING.

Ballenas Bay at Abreojos Point, March 16, a dozen specimens seined.

Eques viola Gilbert.

San Josef I., March 31; Carmen I., April 3, and Concepcion Bay at various points, April 6 to 8. Seven specimens in all.

EMBIOTOCIDÆ. SURF-FISHES.

Brachyistius frenatus (Gill).

Guadalupe I., March 2, a half dozen specimens.

Embiotoca jacksoni Agassiz. COMMON SURF-FISH.

San Benito I., March 9, and north and east sides of Cerros I., March 11, several specimens seined.

POMACENTRIDÆ. DEMOISELLES.

Chromis atrilobatus Gill.

Santa Catalina I., April 16, one specimen.

Chromis punctipinnis (Cooper). BLACKSMITH.

Guadalupe I., March 2, four specimens.

Eupomacentrus rectifrenum (Gill).

San Josef I., March 31; Carmen I., April 3; Concepcion Bay, April 4 and 5; San Francisquito Bay, April 9; Tiburon I., April 11; San Esteban I.,

April 13; Santa Cruz I., April 16; Santa Catalina I., April 16, and Pichilique Bay, April 17. Many specimens were taken by various methods.

Abudefduf saxatilis (*Linnaeus*). SERGEANT MAJOR.

San Josef I., March 31; Carmen I., April 3; Mulege, April 4, and Concepcion Bay, April 7, a number of specimens.

Hypsypops rubicundus (*Girard*). GARABALDI.

Guadalupe I., March 2, eight specimens.

LABRIDÆ. WRASSES.

Harpe diplotænia *Gill*.

Cerralbo I., April 19, two specimens.

Pimelometopon pulcher (*Ayres*). FAT-HEAD.

Cerralbo I., April 19, two specimens.

Iridio semicinctus (*Ayres*). KELP-FISH.

Southeast part of Tiburon I., April 11, one specimen.

Iridio dispilus (*Günther*).

Head of Concepcion Bay, April 5, one specimen.

Oxyjulis californicus (*Günther*).

North end of Cerros I., March 11, one specimen seined.

Emmeekia venusta (*Jenkins and Evermann*).

Cerros I., off the northern and the southeastern shores, March 11 and 12, two specimens taken in the $3\frac{1}{2}$ ft. Tanner trawl; southeast end of Tiburon I., April 11 and 12, two specimens.

SCARIDÆ. PARROT FISHES.

Callyodon perrico (*Jordan and Gilbert*).

San Josef I., March 31, one large specimen.

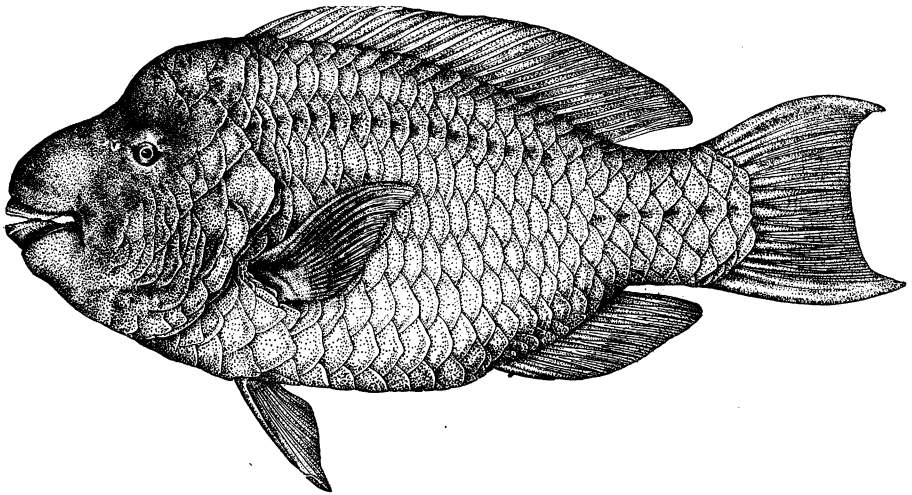
Callyodon microps sp. nov.

Fig. 12.

Head 2.8; the body robust, deep and compressed, depth 2.3. A conspicuous fleshy hump at the nape, extending from before the eyes to the insertion of the dorsal fin. Snout 2; preorbital 3.8; maxillary 3.2; eye very small, 11 in head, 5.5 in snout. Teeth green; no posterior canines; upper lip covering two thirds of the tooth base, the lower about two fifths. Two rows of scales on the cheek, five scales in each row. Gill membranes united, free from the isthmus.

Scales moderate, $2\frac{1}{2}$, 23, $6\frac{1}{2}$; lateral line complete.

Dorsal X, 9, beginning over the insertion of the pectoral, the posterior rays

Fig. 12. *Callyodon microps* sp. nov.

highest, the longest 2.5 in head; pectoral bluntly falcate, 1.5 in head; ventrals pointed, 1.8 in head, reaching three fifths of the distance to the vent; anal II, 9, its longest ray 3.3 in head; caudal lunate, its angles strongly exserted, the lobes extending for a distance equal to 2.75 in the snout. Caudal peduncle short and deep, its depth 2.5 in head.

Color in spirits everywhere, including the fins, dark olive green; the fins with more or less dusky, especially so on the middle rays of the caudal.

Type No. 5212, American Museum of Natural History. One specimen 28 inches long, from Santa Catalina I., April 16, 1915.

Like *C. perrico*, but differs in the exserted caudal lobes, the much smaller eye, and minor points.

Callyodon noyesi (*Heller and Snodgrass*).

This species has hitherto been known from the Galapagos Is., from which place it was described in 1903. Kendall and Radcliffe in 1912 listed

it "probably from Perico Island or Panama." In the present collection it appears from two localities, San Josef I., Mch. 31, 1911, one specimen 23 inches long, and Concepcion Bay, off Ricason I., three specimens of about the same size. Although these specimens differ from the description somewhat in proportions and coloration, the differences hardly warrant their separation as a distinct species. The description of the San Josef specimen is as follows:

Body compressed, elliptical, dorsal and ventral outlines similar, depth 2.7. Head large, rather pointed, 3 in body. Eye small, 3.4 in snout, 2.5 in preorbital. Snout 2.4 in head. Gape of mouth 4.5 in head. Teeth whitish, the tessellation evident; central suture prominent; posterior canines moderate, 2 on one side and 2 and a rudiment on the other. Scales on cheek in two and a half rows. Scales of body $2\frac{1}{2}$, 25, $6\frac{1}{2}$; six before dorsal. Dorsal IX, 10; the highest spine 2.9 in head, the highest ray 2.6. Anal II, 9, increasing slightly in height posteriorly, the longest ray 3 in head. Pectoral narrowly rounded, 1.4 in head. Ventrals pointed, nearly 2 in head, reaching a little more than half way to vent. Caudal peduncle long and rather slender, 2.4 in head. Caudal fin with nearly straight hind margin, but its angles much exerted and pointed, projecting a distance equal to .4 of the head beyond the median portion of the fin.

Color in spirits, uniform yellowish white, except for a faint indication of lengthwise stripes on the sides below and dusky marks about the lower jaw; central rays of caudal very narrowly tipped with dusky.

The following color notes in life were made by Dr. Chas. H. Townsend when the specimen was taken: Pale cream or milky white color, with all markings in pale light blue. Blotches around orbit; fins, except ventrals, all bordered (only the upper edge of the pectoral so marked), a spot at the base of the caudal, and about five striped on the side, all of this color.

***Callyodon compressus* sp. nov.**

Fig. 13.

Body much compressed, deep, 2.5 in length, lower outline more arched than upper. Head 3, moderately pointed, slightly humped over the eyes. Eye 3.7 in snout, 8.5 in head, 2.2 in preorbital, vertical distance above eye one half that from eye downward. Gape of mouth 4 in head. Snout 2.3. No canine teeth present. Scales on cheek in two and a half rows, 6, 5, 2, those of the upper row somewhat larger. Scales of body $2\frac{1}{2}$, 25, $6\frac{1}{2}$; six before dorsal.

Dorsal IX, 10, about even throughout its length, highest spine 2.4 in head, longest ray 2.6. Anal II, 9, longest ray 2.5 in head. Pectoral pointed, extending beyond tips of ventrals, 1.4 in head. Ventrals 1.6 in head, extending more than half way to vent. Caudal weakly lunate, its outer rays scarcely exerted. Caudal peduncle deep and compressed, its least depth 2 in head.

Color in alcohol, brownish, slightly darker along back; dorsal, caudal and anal fins dusky, the anal with a lighter margin. Paired fins pale. Teeth whitish, with indications of rosy toward the base.

Type No. 5205, American Museum of Natural History.

Concepcion Bay off Ricason Pt., April 7, 1911. Only the type specimen taken, total length 19 inches.

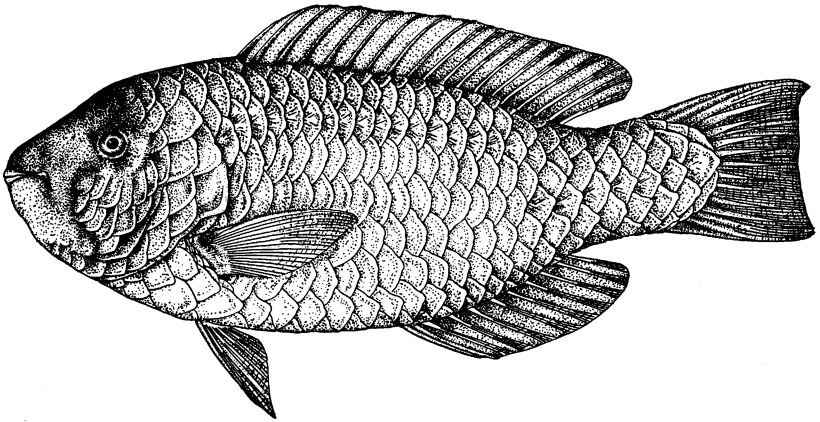


Fig. 13. *Callyodon compressus* sp. nov.

EPHIPPIDÆ. SPADE FISHES.

Chætodipterus zonatus (*Girard*). SPADE-FISH.

Santa Maria Bay, March 18, two young specimens seined.

CHÆTODONTIDÆ. BUTTERFLY FISHES.

Holocanthus passer *Valenciennes*.

Santa Cruz I., April 16, a single specimen.

TEUTHIDIDÆ. SURGEON FISHES, TANGS.

Xesurus punctatus (*Gill*).

Santa Catalina I., April 16, two specimens, each about 18 inches long.

BALISTIDÆ. TRIGGER FISHES.

Balistes polylepis *Steindachner*.

Pichilique Bay, March 27; Carmen I., April 3; Concepcion Bay off Ricason I., and also at the head of the Bay, April 6; Angel de la Guardia I.,

April 10; Tiburon I., April 11. Specimens ranging in size from 7 to 18 inches were taken, on hand-lines, and by other methods.

Pachynathus capistratus (*Shaw*).

San Josef I., March 31; Santa Catalina I., April 16; Pichilique Bay, April 17, and Ceralbo I., April 20, one or two specimens taken at each of these localities.

TETRAODONTIDÆ. SWELL FISHES.

Sphæroides lobatus (*Steindachner*).

Cape San Lucas, March 23, one young specimen $3\frac{1}{2}$ inches long.

Sphæroides annulatus (*Jenyns*).

Port San Bartholome, March 13 and April 23; Santa Maria Bay, March 18; Magdalena Bay, March 20; Pichilique Bay, March 27; Agua Verde Bay, April 1; Concepcion Bay, April 7, and Tiburon I., April 11. One to several specimens taken at each locality, mostly by seining, but one was taken on a hand-line. Two specimens from San Bartholome have the small spots of the variety *politus*.

Ovoides setosus (*Rosa Smith*).

Cape San Lucas, March 23, three specimens seined, and Ceralbo I., April 20. Two of the specimens from Cape San Lucas were blue-black in color, with rounded yellow spots, while the third was black with vermiculations of yellow. The Ceralbo specimen was yellowish all over except for a black bar across the pectoral and dorsal. All were approximately of the same size.

DIODONTIDÆ. PORCUPINE FISHES.

Diodon hystrix *Linnaeus*. PORCUPINE FISH.

Cape San Lucas, March 23 and 24; San Josef I., March 31; Agua Verde Bay, April 1; Carmen I., April 3, and Espiritu Santo, April 20, one or more specimens at each place. At Espiritu Santo they are injurious to the pearl oysters.

The color markings on these specimens intergraded from *D. hystrix* to *D. holocanthus*, and in some of them the frontal spines were larger than the

post-pectoral, after the manner of *D. holocanthus*. Jordan and Evermann (Fishes of North and Middle America, Bull. 47, U. S. Nat. Mus., pp. 1745-6) suggest that these supposed species may be identical. The Lower California specimens support this hypothesis.

SCORPÆNIDÆ.

Sebastopsis xyris *Jordan and Gilbert.*

Carmen I., April 3; San Francisquito Bay, April 9; southeast end of Tiburon I., April 11; Esteban I., April 13; Santa Catalina I., April 16. Numerous specimens, ranging in size from a half inch in length to adult, were taken by seining.

Scorpæna guttata *Girard.* SCORPION-FISH.

Guadalupe I., March 4; Cerros I., March 12; Port San Bartholome, March 13, and Esteban I., April 12, a single specimen at each locality, taken in the seine.

Scorpæna mystes *Jordan and Starks.* SCORPION-FISH.

Pichilique Bay, March 27, one taken at the electric light lure, and Carmen I., April 4, one taken in the seine.

Scorpæna sonoræ *Jenkins and Evermann.* SCORPION-FISH.

Santa Maria Bay, March 18; Magdalena Bay, March 21, and Agua Verde Bay, April 1. At Magdalena Bay one specimen was taken at 13 fathoms in the Tanner Trawl; those from the other stations were seined.

COTTIDÆ. SCULPINS.

Icelinus quadriseriatus (*Lockington*).

Cerros I., March 12, and Port San Bartholome, March 13, a single specimen taken at each place by means of the boat (3½ ft. Tanner) dredge, in shallow water.

Clinocottus analis (*Girard*).

San Benito I., March 9, one specimen seined.

GOBIIDÆ. GOBIES.

Philypnus lateralis *Gill.*

San Jose del Cabo, March 26, a dozen specimens seined in fresh water.

Dormitator maculatus (*Bloch*).

San Jose del Cabo, March 26, one specimen, and Agua Verde Bay, April 2, several dozen specimens, ranging in size from one half to four inches long. All were taken by the seine in fresh water.

Eleotris pictus (*Kner and Steindachner*).

San Jose del Cabo, March 25, three specimens seined in fresh water.

Gobius saggitula (*Günther*).

Agua Verde Bay, April 2, six specimens seined.

Awaous taiasica (*Lichtenstein*).

San Jose del Cabo, March 26, a dozen specimens seined in fresh water.

Zalypnus emblematicus (*Jordan and Gilbert*).

San Josef I., March 31, one specimen, one and a half inches long.

Gobiosoma histrio *Jordan.*

San Francisquito Bay, April 9, one specimen.

Gobiosoma crescentale *Gilbert.*

Agua Verde Bay, April 11, two specimens, one and a half inches long, taken in the seine. Hitherto the species has been known only from the type specimen.

MALACANTHIDÆ.

Caulolatilus princeps (*Jenyns*).

Guadalupe I., March 2, one specimen, and Cerros I., March 10, three specimens, all taken on hand-lines.

DACTYLOSCOPIDÆ. SAND STAR-GAZERS.

Gillellus arenicola Gilbert.

Cape San Lucas, March 23, two specimens, about one and a half inches long, taken in the seine.

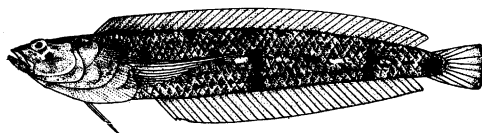
Dactyloscopus lunaticus Gilbert.

Cape San Lucas, March 23, a dozen specimens, and San Josef I., March 31, one taken. All were captured in the seine.

Dactyloscopus cinctus, sp. nov.

Fig. 14.

Head 4; depth 6; D. about 43, spines weak, indistinguishable from rays; A. II, 33. Body compressed, tapering rather evenly backward from the insertion of the pectorals. Head cuboid behind the eyes, abruptly conical in front, the profile straight, top of head flat. Eye slightly longer than snout, 5.5 in head. Snout 6. Maxillary

Fig. 14. *Dactyloscopus cinctus* sp. nov.

reaching posterior edge of pupil, 3.5 in head. Interorbital width half the diameter of the eye. Opercle fringed with about 20 teeth, the upper six or seven rather deeply incised.

Dorsal continuous, beginning just behind nape and well in front of anal origin. Pectoral pointed, equal to head. Ventrals a little less than one half the head. Caudal a little more than one third of the head.

Scales 53. Anterior portion of lateral line running up close to base of the dorsal fin, thence descending abruptly over three rows of scales and continuing posteriorly on the middle of the side; anterior portion contained three and a third times in the posterior portion.

Color in alcohol, faintly purplish gray, more or less straw-colored about the head. A conspicuous purplish black cross-bar at about the middle of the body, interrupted on the upper part of the side; a similar bar about half way between this and base of caudal, and a short bar across the upper part of the side just behind the head; a dark blotch at base of caudal; dark linear spots on middle line of side at intermediate points; a linear pearly white spot on midline of side on either side of median and

posterior cross-band; a pearly white blotch on opercle and a line of the same color downward from eye; a series of dark spots on mid-dorsal line and small dots on the upper side of the head.

Type No. 5206, American Museum of Natural History, Cape San Lucas, March 23, 1911, length 1.3 inches, taken in seining. Two other specimens about the same size and corresponding remarkably well in color were taken at the same time.

***Dactylagnus mundus* Gill.**

South end of Magdalena Bay, March 20, one specimen seined.

***Myxodagnus opercularis* Gill.**

Cape San Lucas, March 23, two specimens, one $1\frac{1}{4}$ inches, the other $1\frac{3}{4}$ inches in length, both taken in the seine.

URANOSCOPIDÆ. STAR-GAZERS.

***Astroscopus zephyreus* Gilbert and Starks.**

Ballenas Bay, March 16, one specimen 8 inches long taken in the seine. Only two specimens hitherto known.

BATRACHOIDIDÆ. TOAD-FISHES.

***Porichthys notatus* Girard. MIDSHIPMAN.**

San Bartholome Bay, March 13; Santa Maria Bay, March 18, and Magdalena Bay, March 21. Specimens were seined at all three places, and one was taken at 13 fathoms by the trawl at Magdalena Bay.

GOBIESOCIDÆ. CLING-FISHES.

***Gobiesox adustus* Jordan and Gilbert.**

San Francisquito Bay, April 9, one specimen.

***Gobiesox funebris* Gilbert.**

San Francisquito Bay, April 9, numerous specimens taken at the shore.

***Arbacia humeralis* (Gilbert).**

San Francisquito Bay, April 9, a dozen specimens taken at the shore.

Arbacirosa eos (*Jordan and Gilbert*).

San Francisquito Bay, April 9, two specimens, and Angel de la Guardia I., April 11, ten specimens, taken at the edge of the shore.

BLENNIIDÆ. BLENNIES.

Gibbonsia elegans (*Cooper*). SPOTTED KELP-FISH.

South end of Cerros I., March 12; two specimens.

? Malacoctenus delalandi (*Cuvier and Valenciennes*).

San Benito I., March 9, one specimen an inch long, apparently belongs to this species.

Labrisomus xanti *Gill*.

Port San Bartholome, March 14; south end of Magdalena Bay, March 20, and Cape San Lucas, March 24, taken with the seine. Those from Cape San Lucas were only about an inch in length.

Exerpes asper (*Jenkins and Evermann*).

Pichilingue Bay, March 27, two specimens taken at the electric light lure.

Runula azalea *Jordan and Bollman*.

Cape San Lucas, on the evenings of March 23 and 24, when a couple of dozens of specimens were taken about the electric light lure.

Hypsoblennius gentilis (*Girard*).

Port San Bartholome, March 14, and Concepcion Bay, April 7, about a dozen specimens in all were taken with the seine.

Emblemaria oculocirris *Jordan*.

San Josef I., March 31, one specimen.

Lucioblennius alepidotus *Gilbert*.

Cape San Lucas, March 23; three specimens seined, and Carmen I., April 3, one specimen taken in shallow water with the 3½ ft. Tanner trawl.

Our specimens range in size from one to two inches, and are more elongate than the description, the head varying from 3.5 to 4, instead of 3.25. Hitherto only two specimens have been known.

Lucioblennius lucius sp. nov.

Fig. 15.

Head 3; depth 4 in head; body elongate compressed throughout; the head flat above, broader and deeper than the body; jaws pike-like, elongate, depressed and broadly rounded in front. Eyes placed high, close together, 6 in head. Mouth wide, maxillary 1.9 in head, extending well beyond the posterior border of the eye; snout 3.5; lower jaw slightly projecting; teeth rather strong, in narrow bands, a single series on the sides of the lower jaw, a few teeth on the vomer. Body scaleless.

Ventral fins 2.3 in head, composed of one spine and two soft rays, inserted

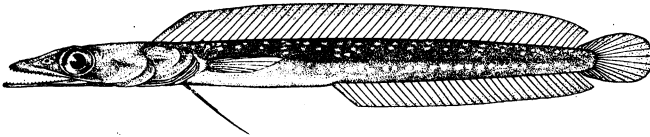


Fig. 15. *Lucioblennius lucius* sp. nov.

slightly in front of the pectorals which they equal in length. Dorsal about 50, anal about 35, both fins continuous and rather low, the rays and spines not well differentiated; dorsal beginning on nape over the anterior part of the opercle, the anterior spines the longest, about equal to eye; anal origin nearer base of caudal than tip of snout; caudal short.

Color in alcohol, pale olive; a row of small distinct, pearly white specks along upper part of side, each speck connected with its fellow of the opposite side across the back by one or two less distinct specks; other pearly white dots on the side and the lower half of the head of the same color. Anterior part of dorsal fin with a few blackish markings.

Type No. 5207, American Museum of Natural History, 1.5 inches long, San Josef Island, March 31, 1911. Another similar specimen of about the same size taken with the type.

Ulvicola sanctæ-rosæ Gilbert and Starks.

Guadalupe I., March 3, two specimens.

OPHIDIIDÆ. CUSK EELS.

?*Otophidium galeoides* (Gilbert).

Cape San Lucas, March 23, one mutilated specimen, the head only preserved.

BROTULIDÆ.

Ogilbia ventralis (*Gill*).

Carmen I., April 3, and at the head of Concepcion Bay, April 6, four specimens in all.

PLEURONECTIDÆ. FLOUNDERS.

Hippoglossina macrops *Steindachner*.

Cerros I., March 12, one young specimen taken in the $3\frac{1}{2}$ ft. Tanner trawl.

Paralichthys californicus (*Ayres*). BASTARD HALIBUT.

Port San Bartholome, March 14, and again on April 23; Ballenas Bay, March 16, and Magdalena Bay, March 20. Numerous specimens were seined, of which only two were sinistral, one from Ballenas Bay and one from Magdalena Bay.

Pleuronichthys verticalis *Jordan and Gilbert*.

Cerros I., March 11; Port San Bartholome, March 13; and Magdalena Bay, March 21, a single specimen from each locality. At Magdalena Bay the specimen was dredged in 13 fathoms.

Hypsopsetta guttulata (*Girard*). DIAMOND FLOUNDER.

Port San Bartholome, March 13 and 14, and Ballenas Bay, March 16, four specimens in all were seined.

Platophrys leopardinus (*Günther*).

Cape San Lucas, March 23, two specimens seined.

Syacium ovale (*Günther*).

Carmen I., April 3, one specimen seined.

Citharichthys gilberti *Jenkins and Evermann*.

San Jose del Cabo, March 26, one specimen seined in fresh water.

***Etropus crossotus* Jordan and Gilbert.**

Ballenas Bay at Abrejos Point, March 16; Santa Maria Bay, March 18; Magdalena Bay, March 20 and 21, and Port San Bartholome, April 23. Numerous specimens were seined, and at Magdalena Bay a number were taken at 13 fathoms.

SOLEIDÆ. SOLES.

***Symphurus fasciolaris* Gilbert.**

Port San Bartholome, March 13, Carmen I., April 3, and Tiburon I., April 12, seined, one specimen from each locality.

***Symphurus atricaudus* (Jordan and Gilbert).**

Cerros I., March 12; Port San Bartholome, March 13, and Cape San Lucas, March 23, one specimen seined at each place.

***Symphurus williamsi* Jordan and Culver.**

Cape San Lucas, March 23, one taken in the seine.

