

NOTES ON FISHES COLLECTED IN THE TORTUGAS ARCHIPELAGO.

BY DAVID STARR JORDAN.

Dr. Joseph C. Thompson, United States naval surgeon, formerly stationed at Fort Jefferson, on Garden Key, one of the outlying archipelago of coral islands known as the Dry Tortugas, has sent to us a very interesting collection of small fishes from the coral reefs. Of the 21 species, 4 are new to science and 8 others are new to the waters of the United States. Series of these species are in the U. S. National Museum and U. S. Fish Commission; the others are in the collection of Stanford University. The accompanying drawings are by Mr. Kako Morita.

Family SPHYRÆNIDÆ.

Sphyræna barracuda (Walbaum).

One specimen, very young, of the common large-scaled barracuda or picuda.

Family HOLOCENTRIDÆ.

Holocentrus siccifer (Cope).

Holocentrum sicciferum Cope, Trans. Amer. Phil. Soc., xiv, n. s., 1871 (Dec.), 465, New Providence, Bahamas.

One fine specimen, the only one known except the original type, which came from New Providence. It agrees well with Professor Cope's description.

Depth 2.75 in length; head 3; mouth small; last dorsal spine very short, scarcely visible; third anal spine moderate, 1.5 in head; scales 45; opercle with two subequal spines, little divergent; preopercular spine short; dorsal spines low, 2.33 to 2.5 in head; soft dorsal 1.75 in head; maxillary rather less than eye, 3.33 in head; head broad above, with short snout.

Color in spirits, violet-silvery above, soiled silvery on sides, silvery below; 9 lengthwise streaks on side, along the rows of scales, 4 of them dark purple, the other 5 yellowish and marked by many dark points, giving a soiled appearance, the 2 uppermost of these broader than the others; axil with a jet-black spot; head plain, dotted with black; a little black on tip of opercle; spinous dorsal with a dusky area toward the base of each membrane, a dusky cross shade toward tip; membranes of first two spines largely jet-black with a white streak below and one above, forming an ocellate black blotch, continuous with the dusky median shade of the fin; soft dorsal and all other fins pale, doubtless red in life, with no dark edgings.

The low fins, small scales, striped body, and dusky spinous dorsal with an ocellate black area in front, well distinguish this pretty species.

Family APOGONIDÆ.

Apogon sellicauda Evermann & Marsh.

Apogon sellicauda Evermann & Marsh, Fishes of Porto Rico, p. 143, fig. 40, 1900 (Dec. 29).

One very fine specimen, about 3 inches long, twice as long as the type, from Culebra Island, Porto Rico, agrees closely with the figure. The black dorsal blotch is larger, extending on the base of the fin; a faint dusky area in front of dorsal; the caudal saddle and the opercular blotch are about as in Evermann's figure. Body and fins uniform bright scarlet. Both edges of preopercle finely serrated.

Family SCIÆNIDÆ.

Eques pulcher (Steindachner).

One fine specimen, about 3 inches long. Olivaceous; three black, ribbon-like stripes along the side, the middle one reaching to end of dorsal and extending forward to eye and across forehead between

eyes; faint dark streaks across middle of each interspace; a dark bar downward from eye, one behind mouth; four black cross streaks on forehead and one backward to nape; upper bands of body meeting across forehead; front dorsal black, white edged; base of soft dorsal with a black stripe anteriorly; pectoral with a large black stripe above; anal with a black crescent medially; ventrals almost entirely black; fins otherwise pale.

Family POMACENTRIDÆ.

Pomacentrus caudalis (Poey).

A small specimen about an inch long. Body deep, depth 2.2 in length. Olivaceous (bluish in life), posteriorly bright yellow; fins all yellow; no white or blue spot on last rays of anal; a large black ocellus on front of soft dorsal; a smaller one on back of tail, none on opercle nor in axil.

This little fish corresponds with Poey's *Pomacentrus caudalis* and with no other described species. It is probably a valid species, although specimens similarly colored have been considered the young of *Pomacentrus fuscus*.

Microspathodon chrysurus (Cuvier & Valenciennes).

A fine young specimen, 1.5 inches long. Color blue black, very dark; body and head with round light-blue spots about as large as pupil, rather regularly arranged; five with some fainter ones in a line from eye to tail; 5 or 6 spots on side of head; caudal fin and most of soft dorsal abruptly yellow; the other fins all blackish like the body. Dr. Thompson states that this fish is extremely active in the water, being caught only with great difficulty.

Family LABRIDÆ.

Halichoeres bivittatus (Bloch).

Three young specimens. The largest is perhaps a representative of a distinct species. Lateral stripe very black, the lower one black also, although narrower, the space between them pale, and a lunate black spot longer than pupil at base of anterior soft rays. The smaller specimens are green, without dorsal ocellus; the lateral stripe is light brown; the lower almost obsolete; opercle with a small spot. Specimens like the first with the dorsal ocellus are occasionally taken, and the writer has hitherto regarded it as a deep-water variety, which it may be.

Thalassoma nitidum (Günther).

A fine young specimen, 3.5 inches long. Side with a broad violet black stripe from snout to caudal, where it divides, extending to tip of either lobe; the band is broadest medially, and there about twice diameter of eye; a paler black stripe along middle line of back and base of dorsal; a yellowish-brown area between these; dorsal with a median broad black stripe, narrowly pale above and below it, the anterior spines in a jet-black blotch; a jet-black axillary spot; belly white; caudal yellowish, except for the black streaks; fins otherwise pale; opercle black, pale edged posteriorly.

Ventrals short, 1.5 in the short pectorals. *Thalassoma nitidissimum* (Goode), said to have the ventrals still shorter, must be the same species.

Doratonotus decoris Evermann & Marsh.

Doratonotus decoris Evermann & Marsh, Fishes of Porto Rico, p. 234, pl. 29, 1900.

One small specimen, beautifully colored, nearly 1.5 inches long. Body bright green with bronze dots and markings essentially as shown in Evermann's figure of the type of *Doratonotus decoris* from Ponce, but there is no bronze streak along the side of the head and the throat and the breast are green like the rest of the body.

Three nominal species of this genus have been described, and possibly all are valid. *Doratonotus megalepis* Günther, from St. Kitts, is said to have the profile straight and the number of scales 19. The color is lost in the typical example. *Doratonotus thalassinus* Jordan & Gilbert, from near Key West, has the profile concave above eye, the snout more elongate, number of scales 20, and the long spine of the dorsal with filamentous tips. The color is a little different from that of *D. decoris*. The type of *D. decoris*, like our specimen, has the profile a little convex above eye, a little concave above snout, no filaments on the dorsal spines, the scales 26 (we count 23 on our specimen, and Evermann's figure shows no more). Probably *Doratonotus thalassinus* is the male and the others the female of the same species. Perhaps the three are distinct. Except for the number of scales, we should identify *D. decoris* with *D. megalepis*.

Family SCARIDÆ.

Cryptotomus beryllinus (Jordan & Swain).

One small specimen of this common species.

Family CHÆTODONTIDÆ.

Chætodon capistratus Linnaeus.

One very small specimen, an inch long, typical of *Chætodon bricei*. It is highly probable that this is the young of *Chætodon capistratus*, from which it differs solely in the presence of a second smaller ocellus above the large one on the side. The large ocellus is, however, vertically oblong in *Chætodon bricei* and round in *Chætodon capistratus*. The two species may be identical.

Pomacanthus arcuatus (Linnaeus). One small specimen.

Family GOBIIDÆ.

Gobius saporator (Cuvier & Valenciennes).

Numerous examples of this very common species, very pale, as usual in coral-reef examples.

Ctenogobius glaucifrænum (Gill).

Three specimens, the longest about 1.5 inches long.

This species is known at once by the two black spots in a vertical line at base of caudal. Color very pale olive; fins translucent; sides with 3 rows of vertical olivaceous spots; a blackish streak backward from eye to shoulder; a dusky patch on preopercle; a slight dusky shade from eye to angle of mouth; two small black spots at base of caudal.

This little species was described as from the coast of Washington. This is an error, as Dr. Eigenmann has shown. It is not found in the Pacific, while it does occur at the Dry Tortugas, from which region Eigenmann had four examples.

Ctenogobius tortugæ Jordan, new species. Plate 1, fig. 1.

Head 3.4 in length; depth 4.66; D. VI—10 or 11; A. I, 10; scales 22 or 23, 9; eye 3.66 in head, a little shorter than snout; maxillary 2.75; pectoral equal to head, caudal a little shorter; united ventrals about four-fifths head; body elliptical-fusiform, a little slenderer and a little more compressed than in *Gnatholepis thompsoni*. Head lower and more pointed, the interorbital space scarcely more than one-third the rather large eye; mouth moderately oblique, the maxillary reaching front of pupil, lower jaw very slightly projecting, upper jaw protractile; teeth small, subequal, as usual in this group; snout about as long as eye; gill-openings very slightly continued forward below; cheeks and opercles naked; nape partly naked, with a low median ridge of skin; body covered with large thin scales, which are but slightly ctenoid; dorsals rather low, the species slender, the anterior longest; caudal subtruncate, the lower rays apparently rather longest; pectorals moderate; ventrals long, reaching vent.

Color very pale yellowish, almost white; a row of small blackish spots along base of dorsal, those behind smaller and reduced to dots; a row of small spots along side; a small spot or group of dots on humeral region; a row of small specks behind it in a line; a distinct short blackish bar at base of middle rays of caudal; a jet-black spot as large as pupil behind eye, above opercle; a faint dark bar below eye; a fainter one behind preopercle; a faint bluish streak behind eye; fins all plain whitish, the ventral faintly dusky; some scales with traces of a faint whitish spot.

A single fine specimen 2.2 inches long (type, No. 8363, L. S. Jr. Univ. Mus.) was sent by Dr. J. C. Thompson from Garden Key, one of the coral islands known as the Dry Tortugas.

Gnatholepis thompsoni Jordan, new species. Plate 1, fig. 2.

Head 3.75 in length; depth 4.25; D. VI—1, 11; A. I, 10; scales 28, -9; eye 3.5 in head, equal to snout; maxillary 2.75; pectoral equal to head; caudal equal to head; ventrals a little shorter. Body fusiform, shaped as in the percoid genus *Boleosoma*; head gibbous above eye, the snout short and decurved; interorbital space half width of the small eye; mouth low, small, horizontal, the lower jaw included; upper jaw protractile; teeth moderate, curved, subequal, apparently in a single row; preorbital broad; maxillary scarcely reaching past front of eye; cheeks and opercles each with about 4 rows of large scales; nape with smaller scales; body covered with large scales; gill-openings rather broad, extending forward anteriorly; spinous dorsal low, its outline rounded, the spines slender; anal moderate, caudal subanceolate, the middle rays slightly produced; pectorals moderate; none of the rays silky; ventrals large, the membrane across the base well developed.

Color pale straw-yellowish, with some mottlings of darker olive, these forming a row of faint shades along back, and 6 faint quadrate spots, largest and darkest anteriorly, on lower part of side; a black blotch above axil; a narrow, sharply defined black bar, like a pen-mark, below eye, a faint

dark shade across eye to humeral spot; no spot at base of caudal; a dark streak backward a short distance on base of pectoral; both dorsals with rows of very small, pale olive dots; a few dots on caudal; pectoral plain; anal pale, with a dusky shade along the edge; serrated ventrals dusky. The dark color on ventrals and anal is probably found only in the males.

A single fine specimen, about 2.25 inches long, type, No. 8364, L. S. Jr. Univ. Mus., was sent by Dr. Joseph C. Thompson, for whom the species is named. The genus *Gnatholepis*, to which it belongs, differs from *Ctenogobius* only in the scaly head. It is equivalent to the later-named genus *Hazeus*, Jordan & Snyder, based on a Japanese species.

Dr. Thompson gives the following note on this species:

"Coral-sand colored, with a vertical stripe through eye and lower cheek.

"Life color: About 10 faint dark squares down back. In these dots so arranged $\cdot \cdot$. Below this yet a light line; another row of blotches on level of eye, extending to tail; below this another light line; at level of pectoral 6 large blotches, the darkest; the dots in all these blotches follow parallel lines; caudal faintly speckled; dorsal more so; ventral cloudy gray; pectoral color of body, which is coral-sand colored; above each pectoral a round fawn-colored spot; anal and lower half of caudal tinged with gray. (This portion of body buried in sand when at rest.) Iris yellow, over eye a dark brown lid as long as eyeball is deep; not as thick as pupil; below eye extends vertically downward; below eye this line is a mite broader, nearly as broad as pupil.

"Habit: Lies on bottom, moves very quickly from spot to spot, about 6 inches at a time. When seen by a *Pomacentrus fuscus* it was attacked by it.

"Locality: Coral sandy bottom, around coral heads, inside Bush Key. (Half a dozen seen.) Depth of water, 3 feet."

Elacatinus oceanops Jordan, new genus and species (*Gobiidae*). Plate 2, fig. 3.

Head 4.25 in length; depth 4.66; D. VII-1, 12; A. I, 10; eye 3.66 in head; maxillary 3.5; pectoral 1.1; caudal 1.2; spinous dorsal 1.66; ventral disk 1.66 in head. Body fusiform, lanceolate, little compressed, covered with firm skin, which is entirely naked; head moderate, not rounded above, the interorbital space about equal to the small eye; mouth small, horizontal, inferior, with thick lips, resembling the mouth of *Rhinichthys*, the snout projecting beyond it for a distance equal to half the eye; each side of snout with two notching pores; teeth rather strong, sharp, somewhat close-set, apparently in two series below and somewhat unequal; maxillary extending to posterior edge of pupil; upper jaw scarcely protractile; gill-openings small, separated by a wide isthmus, the opening as wide as base of pectoral; skin smooth; lateral line indicated by a series of pores, each with three openings in a vertical line; spinous dorsal low, the spines slender, the median longest; soft dorsal and anal higher; caudal subtruncate, the median rays a little the longest; ventrals united, short, entirely free from the belly; anal papilla very small.

Color light blue; a narrow, jet-black streak from above eye along bases of dorsal and anal fins nearly to upper angle of caudal, these broader in some specimens and coalescing into a median dorsal stripe; a jet-black stripe through eye above pectoral, broadening in the axil, becoming nearly twice width of eye, and extending broad and black to tip of lower half of caudal; body and fins otherwise pale, apparently light blue in life. A color sketch by Dr. Thompson shows the dark stripes to be dark brown, in life, the dorsal stripe sky-blue, fins pinkish.

Five specimens, the largest 2 inches long, from the coral reef of Garden Key, collected by Dr. Joseph C. Thompson.

Type, No. 8365, L. S. Jr. Univ. Mus.; Cotype, No. 2757, U. S. Fish Commission.

This species is the type of a distinct genus, *Elacatinus*, allied to *Gobiosoma*, but differing in the small, inferior, minnow-like mouth and in the form of body. It is one of the handsomest of the gobies, its color suggesting that of the Matasami (eye of the sea), *Malacanthus lativittatus*.

On this species Dr. Thompson has the following notes:

"Blue-striped coral fish. Habit, clinging to coral heads; endeavors to shelter in grooves. When swimming free from one head to another, it moves a few inches—2 to 8—with great rapidity, then comes to a perfect halt and alters its course, then moves again, thus:



"The dots represent halts. Locality, coral heads, at a depth of 3 to 8 feet. Common."

Family BLENNIIDÆ.

Acteis moorei (Evermann & Marsh).

Malacoctenus moorei Evermann & Marsh, Fishes of Porto Rico, p. 309, fig. 97, 1900.

Numerous specimens, each about 2 to 2.25 inches in length. Head 3.66 in length; depth 3.66; D. XXI, 9 or 10; A. II, 20; V. I, 3, the inner ray very small; scales 3-42-9; eye 3.33 in head; snout 3.33; maxillary 3.33; pectoral equal to head; ventral a little longer, reaching part front of anal; caudal 1.2 in head; longest dorsal spine 1.75; longest soft ray 1.25; fourth dorsal spine 2.66 in head. A single simple cirrus lower than the eye at the nape, a simple one above eye, and a smaller one at the nostril; mouth small; outer teeth in jaws rather large, with a very small band of villiform teeth behind them; teeth on vomer, none on palatines.

These specimens agree very closely with the figure and description given by Evermann & Marsh, with this exception, that the first spine of the dorsal is longer than any of the others, the second and third are progressively shorter, as usual among related species. The original type was a very small example, 1.4 inches long, and it had not the dorsal spines fully developed.

Color brown, with nine crossbands of darker brown about as wide as the interspaces, these more regular and more distinct than in Evermann and Marsh's figure. Head more or less distinctly spotted or freckled below, conspicuously so in one specimen, less so in others; in one specimen the pale interspaces are marked above by a paler spot, the dark crossbands encroaching a little on the caudal. Fins all plain, light brown, the anal with a dusky shade toward the edge, the tips of the rays slightly paler.

This species may be regarded as the type of a distinct genus, *Acteis* (α , without; $\kappa\rho\epsilon\iota\varsigma$, comb), distinguished from *Malacoctenus* Gill by the absence of the broad comb of filaments at the nape. This is represented by a single thread as in *Acteis moorei*, *lugubris*, and *culebræ*, or altogether wanting as in *ocellatus*, *varius*, and *macropus*, provisionally referred to the same genus.

In all these species referred to *Malacoctenus*, *Acteis*, and *Lepisoma*, there are three soft rays in the ventrals, the last ray being very short. Vomerine teeth are present in all we have examined, and there is a narrow band of small teeth, besides the row of larger teeth in each jaw, in all except *Malacoctenus delalandi*.

Erictheis kalisheræ Jordan, new genus and species (*Blenniida*). Plate 2, fig. 4.

Head 3.33 in length; depth 4; maxillary 2.2 in head, reaching to opposite middle of eye; pectoral 1.5 in head; ventrals short, 1.66 in head; first dorsal spine 3 in head, longest 2.2, eye longer than snout, 3.33 in head, its cirrus 1.5 in eye; lower jaw longest. D. XVIII, 11, or XIX, 11, A. II, 18; V. I, 3; scales 4-49 to 52-13. Teeth rather strong; a single external series with a villiform band behind, this very narrow in lower jaw, but well developed in upper; vomer medially bare, but with a few small teeth on each side; a row of 4 or 5 strong blunt teeth on the palatines, first 4 dorsal spines much lower than the others, graduated backward, a small tuft of cirri at the nostril; a larger tuft over the eye; a comb of cirri on each side of the nape. Length, 2½ inches.

Color dark brown, much flecked with lighter and darker brown, side with 5 dark-brown, irregular, crossbars, these growing more irregular with age and extending on vertical fins; 8 dark bars across the dorsal, 6 or 7 across anal; fins all, including ventrals, closely spotted with light and dark brown, the colors forming irregular crossbars; pectoral with a black semicircle near its base parallel with the succeeding dark bars; ventrals with 5 or 6 dark bars; head mottled with dark, the markings not definite except a dark blotch, pale-edged below and behind, on opercle; throat with pale mottlings.

Two specimens, type No. 8366, Ichth. Coll., Stanford Univ.; the other retained by Dr. Thompson.

On this species Dr. Thompson has the following notes:

"Toad-fish like; life color, head greenish brown, front part of lower lip much lighter; two white dots near mouth angle; body brown; six brown bands extending on dorsal below lateral line; third, fourth, fifth, and sixth bordered with whitish scales; end of caudal peduncle three light spots, middle largest, joined together; abdomen yellowish brown with white spots; under part head, 6 white dots; dorsal brown, with darker brown bands that extend upward and forward, where there cross the spines obliquely 2 white dots; caudal rows of light dots; pectoral spines dotted in rows, with characteristic ventral brown dots; anal like dorsal, only a bit darker; opercle border light, white spot under middle of preopercle.

"Habit, lives in coral crevices; quite fearless.

"Locality, inside Bush Key; depth 3 feet. November 24, 1902."

This species seems to be well distinguished from all others thus far described. It may be nearest *Lepisoma bucciferum*, but the scanty description of the latter species does not well fit it. In all species of *Lepisoma* (*Labrosomus* Gill, but not of Swainson, whose type is rather *Clinus gobio*) and *Malacoctenus* there are 3 soft rays in the ventral fins, the outer often very short. From the type of *Lepisoma* the present species apparently differs in the strong palatine teeth and larger mouth, as well as in the form of the dorsal fin. From *Malacoctenus* it certainly differs in the presence of villiform teeth behind the larger ones. Apparently *Malacoctenus* should be united with *Lepisoma*, or else additional genera must be established. The generic name *Ericteis* is proposed for the present species.

These provisional genera may be defined as follows:

- a. Nape with a comb of filaments on each side.
 - b. Jaws each with a row of strong teeth only; no palatine teeth; dorsal fin notched; mouth small (*delalandi*). *Malacoctenus*
 - bb. Jaws each with a band of villiform teeth behind the row of strong teeth; mouth large.
 - c. Palatine teeth none; spinous dorsal fin not notched (*nuchipinne*).....*Lepisoma*
 - cc. Palatines with a few strong teeth; spinous dorsal fin notched (*kalisheræ*).....*Ericteis*
- aa. Nape with a single filament on each side or with none at all; mouth small; jaws with a narrow band behind the strong teeth; palatine teeth; dorsal with the first spine longest (*moorei*).....*Acteis*

Named, at the request of Dr. Thompson, in honor of Miss Kalisher, of San Francisco.

Blennius favosus Goode & Bean.

Blennius favosus Goode & Bean, Proc. U. S. Nat. Mus. v, 1882, 416 Garden Key, Florida.

Numerous examples agreeing very closely with the original description, the reticulating lines on the side of the head inclosing hexagonal honeycomb-like areas being very distinct, as also the blackish spot on membrane of first and second dorsal spines. In these specimens there are very few dark spots on body or fins, the body being plain light brown, with obsolete darker clouds. The multifid cirrus above eye is characteristic.

The specimens from the Dry Tortugas noted by Garman (Bull. Iowa Lab. Nat. Sci., 1896, 89) as *Blennius pilicornis*, belong to this species, which seems to differ from the Brazilian *pilicornis* by the fewer fin rays (D. XII, 18. A. II, 20). The trifold cirrus is characteristic of *Blennius favosus*.

Certain other specimens from Dr. Thompson's collection differ in color, but seem to agree in every other respect. These may be females of the same species; they are light olive brown with 8 dark crossbars made of blackish dots; interspaces closely speckled with blackish spots and with two rows of quadrate pale areas, one near the back, the other near the belly; sides of head mottled but with no distinct honeycomb marks; a dark bar below eye; dorsal pale, with small black dots numerous on spinous dorsal, few on soft dorsal; a black spot covering upper half of first membrane, smaller, higher and less ocellated than in the true or male *favosus*; caudal nearly plain; anal nearly plain; black spots along base, a dusky shade toward tip ends of rays white; pectoral and ventral plain; two dusky bars across lower side of head behind the jaws. Dr. Thompson has the following notes:

"Life color; along side 7 shiny blue-white spots with a tendency to be rectangular, tips of pectoral and caudal orange, pupil emerald, belly from vent to ventral fins silvery blue white; on second dorsal spine a black blotch; at base of spines a dot; upper parts olive brown; head and gills plain dark brown; over entire body fine speckling of red-brown dots below and dark brown above middle line. These latter are in a row from pectoral to tail.

"Space below base of dorsal spines and top rows on body is checkered dark brown and lighter."

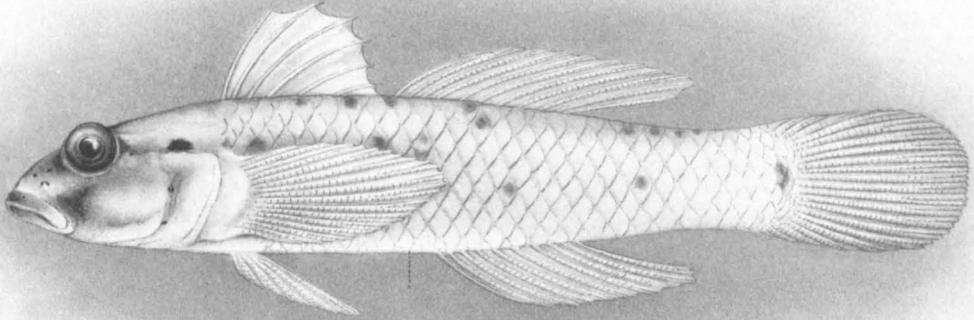
Family BROTULIDÆ.

Ogilbia cayorum Evermann & Kendall.

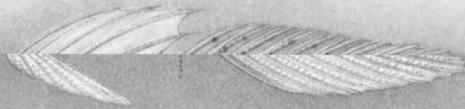
One specimen, 2 inches long, apparently belonging to this species. Scales thin and embedded, not appreciable until the fish is partly dried.

Color pale olivaceous (pale fawn in life), body everywhere closely dotted with darker olive, posterior part of dorsal, anal, and outer two-thirds of caudal rendered dusky with dark points.

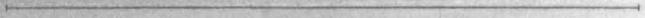
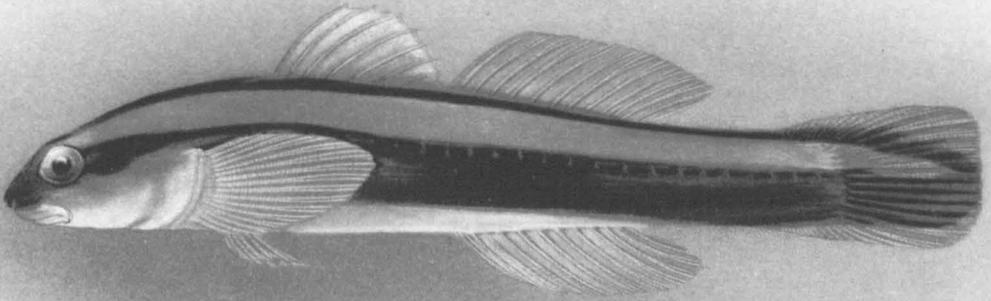
Several other specimens of this species were collected by Dr. Thompson and sent by him direct to the National Museum.



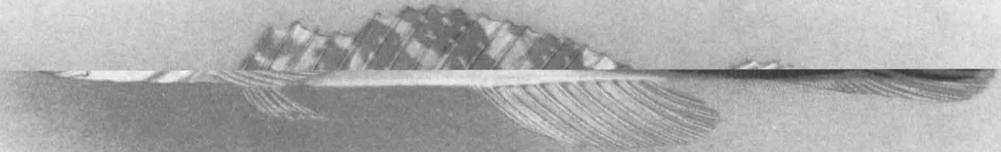
1. CTENOGBIUS TORTUGÆ. TYPE.



1. CTENOGBIUS TORTUGÆ. TYPE.



3. ELACATINUS OCEANOPS. TYPE.



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