REPORT ON COLLECTIONS OF FISHES MADE IN THE HAWAIIAN ISLANDS, WITH DESCRIPTIONS OF NEW SPECIES.

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The account here presented of fishes from the Hawaiian Islands is based mainly on a large collection made by me in the summer of 1889, with the help of Mr. George C. Price and Mr. Oscar Vaught, then students of De Pauw University. The greater part of the expenses of this expedition was borne by De Pauw University. This collection contained 140 genera and 238 species, of which 7 genera and 78 species are thought to be new to science.

The other collections which have come into my hands for study and which have also been used as material for this report are as follows: A small collection, consisting of 16 species, being the shore fishes taken by the U. S. Fish Commission steamer *Albatross* in 1891 at Honolulu, during the Hawaiian cable survey made by that vessel; a collection of 18 species obtained under the direction of Dr. David Starr Jordan by the *Albatross* in 1896, on the return of that vessel from the work of the Fur-Seal Commission; a collection made in 1898 by Dr. Thomas D. Wood, in the making of which Dr. Wood had the valuable assistance of Mr. Keleipio, at that time inspector of the fish market at Honolulu; a small but important collection sent to Stanford University in 1899 by Dr. A. B. Wood of Honolulu; a single specimen (*Ranzania makua*) sent to Stanford University in 1893 by Mr. C. B. Wilson of Honolulu; a collection made at Honolulu by Dr. Jordan and Mr. Snyder on their return from their expedition to Japan in 1900; and lastly, a small collection made by Mr. Richard C. McGregor in 1900 at various points among the islands.

These collections, together with my own, aggregate 147 genera and 254 species, of which 7 genera and 93 species were thought to be new. Besides the new species here given the list contains 62 species which are for the first time noted from the Hawaiian Islands, making in all 155 species added to the known fish fauna of this group.

In view of the fact that in the summers of 1901 and 1902 the U. S. Fish Commission, under the direction of Dr. David Starr Jordan and Dr. Barton Warren Evermann, made extensive collections of both the shore fishes and the deep-sea forms of the Hawaiian group, and under the direction of Dr. Jordan, in the summer of 1902, an extensive collection of the fishes of the Samoan group was made, thus adding very considerably to the material available for the discussion of all questions pertaining to the fish fauna of this group of islands; and, since the reports on these expeditions by these eminent specialists are soon to appear, it would seem obviously unwise and premature with the material of my collections to enter on the discussion of such

questions as that of distribution. In fact, as extensive and careful collecting is necessary in other of the Pacific island groups as has been made in the Hawaiian and Samoan groups to permit one to enter with confidence on the study of the facts and laws of distribution of the Pacific fishes.

Three preliminary papers have already been published based on the collections in my hands.[a]

Since the discovery of the Hawaiian Islands by Capt. Cook in 1778 there have been taken, at various times, small collections of fishes from the islands. The accounts of some of these have been noted in different publications. Many of these earlier-obtained species were described in the work of Cuvier & Valenciennes. A few of these descriptions are so incomplete as to render it impossible to identify any of the species in my hands with them. Quoy & Gaimard's account of the fishes in Le Voyage de l'Uranie and Bennett's accounts contain a number of descriptions of new species of Hawaiian fishes.

The fishes recorded from the Hawaiian group up to the time of the appearance of Günther's Catalogue of the Fishes in the British Museum, are fairly represented by the 54 species accredited in that work to the Hawaiian Islands, several of which are there described as new by Dr. Günther.

The most important accounts of Hawaiian fishes that have appeared since the publication of Günther's Catalogue are given below:

In the Proceedings of the California Academy of Sciences for the year 1863 Andrew Garrett described several new species from the Hawaiian Islands.

In 1873–1875 was published, in the Journal des Museum Godeffroy, Andrew Garrett's "Fische der Südsee, beschrieben und redigirt von Albert. C. L. G. Günther." This splendid work contains reproductions in colors of Garrett's paintings of fishes made by him through a series of many years spent in the Hawaiian Islands, the Society Islands, and in other parts of Polynesia. This work contains records of 50 species from the Hawaiian Islands.

An account of 27 species from the Hawaiian Islands is given by Dr. Günther in the "Report on the shore fishes procured during the voyage of H. M. S. *Challenger* in the years 1873–1876."

In 1875 MM. L. Vaillant and H. E. Sauvage, in the Mag. de Zool., III, pp. 278–287, published as a preliminary report on Hawaiian fishes collected by M. Ballieu, brief descriptions of 18 species thought to be new.

"Fishes of the Hawaiian Group" by Thos. H. Streets, M. D., Bulletin U. S. Nat. Museum, No. 7; Contributions to the Natural History of the Hawaiian and Fanning islands and Lower California, pp. 56–77, 1877. This paper contains the account of 39 species.

In 1900 there appeared in the Denk. Acad. Wiss. Wien a very important paper by Dr. Steindachner giving an account of 135 species, all but 4 of which were collected by Dr. Schauinsland in the Hawaiian Islands including Laysan, a small island some 800 miles northwest from Honolulu. Dr. Schauinsland spent considerable

[a] Description of a new species of Ranzania from the Hawaiian Islands, by O. P. Jenkins. <Proc. Calif. Ac. Sci., second series, vol. v, 1895 (Oct. 31), pp. 779–784, with colored plate (frontispiece).

Descriptions of new species of fishes from the Hawaiian Islands belonging to the families of Labridæ and Scaridæ, by Oliver P. Jenkins. <Bull. U. S. Fish Comm. for 1899 (Aug. 30. 1900), pp. 45–65.

Descriptions of fifteen new species of fishes from the Hawaiian Islands, by Oliver P. Jenkins. <Bull. U. S. Fish Comm. for 1899 (June 8, 1901), pp. 389–404.

time on Laysan studying the flora and fauna of that island. Four of the species in this list were not taken in the Hawaiian group, and 27 were taken from Laysan only.

In the Proceedings of the Academy of Natural Sciences of Philadelphia, for 1900, Mr. Henry W. Fowler, under the caption, "Contributions to the Ichthyology of the tropical Pacific," gives an account of 101 species contained in the collections of the Academy made mainly by Dr. John K. Townsend in 1834, later by Dr. W. H. Jones, and still later, 1893, by Dr. Benjamin Sharp.

Many of the descriptions of Hawaiian species which have been made in the past have been based on alcoholic specimens in a bad state of preservation, or have been taken from dried skins. In consequence, the color has been in many cases very meagerly or erroneously described. In making my collection color notes were taken of as many living or fresh specimens as the conditions would allow. These color notes have been included in this account.

During the time of making my collection in 1889, the fishing was still largely done by native fishermen, but in recent years the Chinese and Japanese have been rapidly encroaching upon this industry. Skilled as were the native fishermen, the newer and more aggressive methods, together with the more industrious habits of the newcomers, are making common in the market fishes before only rarely or never seen by the natives. While these fishermen are adding to the known fauna by their methods, it may be said, in passing, that some of their methods are very destructive and if not regulated by opportune and wise legislation, will soon disastrously affect the fish fauna as a food supply.

The city fish market at Honolulu, the only place where fish are allowed to be sold in the city, is a large, well-appointed, and well-administered institution. Since there comes to it the catch of all kinds of fishing pursued about Oahu, and since among the native and widely diverse foreign population almost every species of fish, as well as of other marine life, finds favor as a food with some, the market proves to be an excellent resource for the student and collector.

About the only fishes which escape the fishermen are the minute forms which make their homes in the spaces of the branching corals or in the small holes in the coral rocks. A number of new species were obtained by breaking up with a hammer coral heads over a dip-net of fine mesh. Either old, dead, or living coral heads were pried off with an iron bar, and quickly lifted up over the net and broken to pieces, the contents falling into the net.

Of all situations about the island of Oahu, the submerged reef which extends from the entrance of the harbor of Honolulu to some distance past Waikiki furnishes the most prolific supply of fishes, both as to number of species and amount of the catch. This reef at low water is from a few inches to a few feet under water and extends from 1 mile to 2 or 3 miles from the shore, where the water abruptly reaches great depths. Over the surface and along the bluff of this reef may be found representatives of most of the shore fauna of the Hawaiian Islands. This reef, so favorably situated, so accessible, and so rich in material, can not fail to be of increasing interest to naturalists who may have the good fortune to devote themselves to the study of its wonderful life.

The types of all the new species have been deposited in the United States National Museum. Cotypes and series of all the species, so far as possible, have been presented to the Leland Stanford Junior University Museum and to the United States

Fish Commission. A representative collection has been presented to the British Museum and one retained by the museum of De Pauw University.

The following list gives full descriptions of all the new genera and species not given in my previous papers or that recently published by Jordan & Evermann.[a] Since, in the forthcoming report by these authors a complete list of all the species known to be recorded in the Hawaiian Islands, with a full discussion of their synonymy, is to be given, I have included only those species of which I have examples in my collections. The synonymy given is limited to that which will give the student into whose hands this paper may fall a ready reference to the most important works treating of the species here listed, or to that which seems necessary to discuss doubtful identifications. In the synonymy, localities without parentheses are type localities; those with parentheses are localities from which the species was recorded by the author cited.

Illustrations from drawings by Mr. W. S. Atkinson are given of all new species.

Family I. CARCHARIIDÆ.

1. Carcharias melanopterus Quoy & Gaimard.

Very common at Honolulu. Three were taken by me in 1889. It has been known from the Indian Ocean and Archipelago, but this is its first record from the Hawaiian Islands.

Color in life, upper part of body a very light olive, covered with pretty thickly set fine points of brown; belly nearly white; tips of all the fins inky black; whole margin of caudal black; pupil and iris very light, almost white.

Carcharias melanopterus Quoy & Gaimard, Voy. de l'Uranie, Zool., 194, pl. 43, figs. 1 and 2, 1824, Pacific Ocean; Günther, Cat., VIII, 369, 1870; Day, Fishes of India, 715, pl. 185, fig. 3.

2. Carcharias phorcys Jordan & Evermann.

Two specimens (Nos. 245 and 546), 29 and 28 inches long, were obtained. Six examples (one of them a fœtus) were obtained at Honolulu by Jordan & Evermann in 1901.

Color in alcohol, dark gray, lighter on ventral aspect; tip of pectoral and tip of lower lobe of caudal darker; tip of dorsal and upper lobe of caudal only slightly darker than rest of fin.

Carcharias phorcys Jordan & Evermann, Bull. U. S. Fish Comm, 1902 (April 11, 1903), 163, Honolulu. (Type, No. 50612, U. S. N. M.; coll. Jordan & Evermann.)

Family II. SPHYRNIDÆ.

3. Sphyrna zygæna (Linnæus).

Thirteen specimens of this shark were obtained at Honolulu, where it is very common. It is sold for food in the market.

Squalus zygæna Linnæus, Syst. Nat., ed. x, 234, 1758, Europe; America.
Zygæna malleus, Günther, Shore Fishes, Challenger, Zool., I, part VI, 59, 1880 (reefs at Honolulu).

Family III. DASYATIDÆ.

4. Dasyatis hawaiensis Jenkins, new species.

Snout 4.5 to base of tail; eye about 3.67 in interorbital space; interorbital space broader than length of snout; width of mouth 2 in interorbital; internasal space 2 in interorbital. Body somewhat pentagonal in form; length of disk 1.42 in width, the line of greatest width passing about the length of the spiracles behind them; anterior margins nearly straight; tip of snout not projecting, very obtuse; lateral margins only slightly convex; snout very broad; eye small; mouth very small, slightly undulate; teeth very small, in about 30 oblique series in the upper jaw; upper buccal flap with a fine fringe; floor

[a] Descriptions of new genera and species of fishes from the Hawaiian Islands, by David Starr Jordan and Barton Warren Evermann. Bull. U. S Fish Comm. for 1902 (April 11, 1903) pp. 161–208.

DASYATIS HAWAIENSIS JENKINS NEW SPECIES. TYPE.

DASYATIS SCIERA JENK. NEW SPECIES. TYPE.

of mouth with 5 tentacles; nostrils large, the border of the broad nasal flap with a fine fringe; interorbital space broad, more or less flattened, gill-openings of about equal length, the fifth on a level with greatest width of disk; body and tail everywhere smooth; caudal spine broad, flattened, serrated at the sides, longer than interorbital space; tail broad and flattened anteriorly, very slender posterior to spine, its length 1.6 the disk, a cutaneous fold above and below, the latter beginning below base of dorsal spine; pectoral rounded obtusely; ventrals broad, their width but little less than their height.

Color in alcohol, dark brown above; body, upper parts of sides, pectorals and ventrals light brown, lighter toward margins; body and fins white underneath; cutaneous folds black.

Only one specimen obtained. Length of disk 6.5 inches; length of tail 10.5 inches; width of disk 8 inches.

This description is based on the type deposited in the U. S. N. M. (original No. 547), obtained by me at Honolulu.

5. Dasyatis sciera Jenkins, new species.

Tip of snout (measured to orbit) 3.5 in disk; interorbital 2.25. Body rhomboid, the width of disk greater than its length, the greatest width somewhat in front of the center of its length; head very broad, the anterior margins of the disk nearly straight, slightly convex, meeting at tip of snout at a very obtuse angle, the tip with a slightly projecting point; outer angle of disk slightly rounded, the lateral margins very slightly rounded; mouth small, slightly undulated, 2.2 in interorbital; about 30 teeth in upper jaw, in a very oblique series, about 24 in lower; upper buccal flap with broad fringe; 8 tentacles on floor of mouth, 4 median and 2 on each side; nasal flap with a fine fringe; nostrils large; interorbital space somewhat flattened, concave in the middle; gill-openings of about equal length, the fourth in line with the greatest width of disk; body everywhere smooth, with no indications of spines or plates; distal half of tail with small, sharp tubercles above and on sides (caudal spine had been removed before the specimen was received by me); length of tail more than twice that of disk, a cutaneous fold below only.

Color in alcohol, upper side of disk uniformly light brown; tail darker; under side of disk white.

The single specimen secured measures 13 inches to base of tail, the latter measuring 29 inches. A skate without the tail is in the collection made by the Fur-Seal Commission. It corresponds with the type in all particulars and is doubtless the same species.

Type deposited in the U. S. N. M. (original No. 387), Honolulu.

Family IV. MYLIOBATIDÆ.

6. Aetobatus narinari (Euphrasen).

This beautiful ray is not uncommon at Honolulu, and occasionally large examples are exposed for sale in the market. The single example obtained measured 15.5 inches to base of tail, the tail being 32.5 inches long; disk more than twice as broad as long; anterior borders slightly convex, the posterior slightly concave; outer angles pointed; origin of dorsal fin a short distance back of posterior attached margin of ventrals; ventrals nearly twice as long as broad; fontanelle on top of head gradually narrowing backward.

Color of disk, blue above, covered with numerous distinct white ocellus-like spots as large as eye; no spots on head in front of spiracles; white below; teeth in lower jaw bent, an obtuse angle projecting forward; about 5 teeth of lower jaw projecting beyond those of upper.

Raia narinari Euphrasen, Vet. Ak. Nya. Handl., XI, 1790, 217, Brazil.
Aetobatis narinari, Muller & Henle, Plagiostomen, 179, 1838; Jordan & Evermann, Fishes North and Mid. Amer., I, 88, 1896; Steindachner, Denk. Ak. Wiss. Wien, LXX, 1900, 519 (Laysan).
Goniobatis meleagris Agassiz, Proc. Bost. Soc. Nat. Hist., VI, 1858, 385, Hawaiian Islands.

Family V. LEPTOCEPHALIDÆ.

7. Leptocephalus marginatus (Valenciennes). *"Puhi-uha."*

Fairly common at Honolulu and apparently valued as food by the natives. I saw one in the market, 5 feet in length, for which $1 was asked. Four specimens were obtained, Nos. 175, 20 inches long; 2041, 21 inches; 2042, 23 inches; and 2043, 26 inches in length.

Color in life of No. 175, back to below lateral line light; under parts white; dorsal fin light brown; anal fin white anteriorly but gradually shading posteriorly to light brown; outer margin of dorsal,

caudal, and posterior of anal edged with black (in two other specimens the whole of the margin of the caudal is black, also); anterior portion of pectoral fin with a dusky spot, posterior portion reddish. Teeth in lower jaw strong, pointed, in a single series except in anterior portion; similar teeth in a single series in upper jaw except an oval patch at anterior angle.

Conger marginatus Valenciennes, Voy. Bonite, Poiss., 201, pl. 9, fig. 1, 1841, Sandwich Islands; Günther, Challenger Report, Shore Fishes, 61, 1880 (reefs at Honolulu); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 514 (Laysan).
Conger noordzicki Bleeker, Act. Soc. Sci. Ind. Neerl., II, 1857, Amboina, 86; Bleeker, Atlas, IV, Mur. 26, pl. 23, fig. 2.

8. **Congrellus bowersi** Jenkins, new species.

Head 2.83 in length to anus, 6.16 in total; depth 2.6 in head; tip of snout to anus 1.25 in distance from anus to tip of tail; snout 4.5 in head; eye 4 in head; cleft of mouth nearly 3 in head; teeth small, sharp, in many series on anterior portions of both jaws and on vomer, in 2 series on posterior portion of jaws; origin of dorsal slightly in front of gill-opening; about 47 pores in lateral line before the anus; pectoral 3.3 in head.

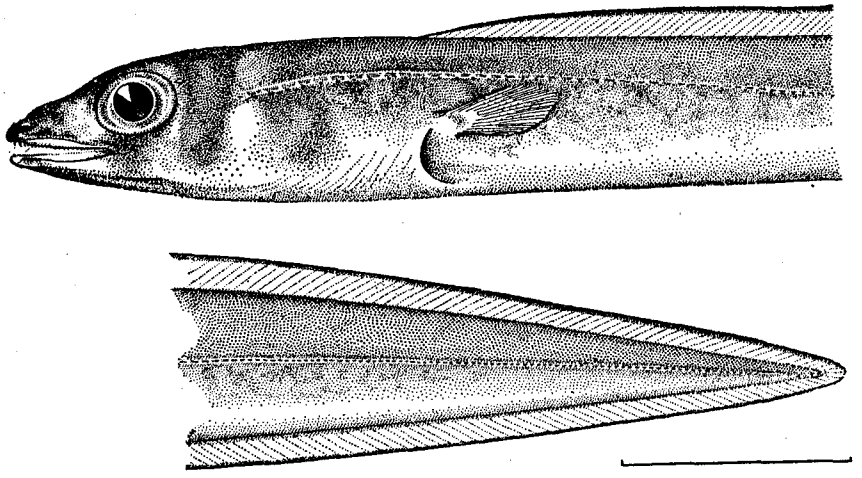


FIG. 1.—*Congrellus bowersi* Jenkins, new species. Type.

Color in life, very pale brown, white below; a narrow silvery line with golden reflections along lateral line, a broader band below this from axil to caudal fin; membrane over branchiostegals golden with dusky shade toward chin; cheeks and opercles each with a silvery patch; margins of dorsal, caudal and anal black; tip of tail white.

Similar to *C. anago* (Schlegel) from Japan, with specimens of which species in the collection made by Jordan & Snyder in Japan, in 1900, mine have been compared.

Common at Honolulu where it is used by the natives as food and is exposed for sale in the market, and where I obtained 8 specimens from 8 to 11 inches in length. The specimens are numbered 254, and 2044 to 2050.

The species is named for Hon. George M. Bowers, U. S. Commissioner of Fish and Fisheries.

Type, No. 50689, U. S. N. M. (original No. 254), Honolulu.

Family VI. OPHICHTHYIDÆ.

9. **Microdonophis macgregori** Jenkins, new species.

Head 5 in trunk; head and trunk 1.75 in tail; eye 2 in snout, and about equaling interorbital; snout 5.5 in head; gape 3 in head; pectoral 3.5 in head; body cylindrical, slender; tail tapering, ending in a blunt, horny point; head elongate, somewhat compressed; snout small, produced beyond the mandible; eye small, nearer angle of mouth than tip of snout; mandible broad, lip of upper jaw

with a fringe of short, fleshy barbels; teeth sharp, in a single series in each jaw and on vomer; anterior nostrils with conspicuous fleshy tubes on the lower surface of snout; interorbital space convex, about equaling eye; gill-opening low, space between broad; head with numerous pores; lateral line developed throughout whole length of body and tail; skin smooth; origin of dorsal fin midway between tip of snout and gill-opening; height of dorsal about half depth of body; anal about equal to dorsal.

Color in alcohol, general color, brownish yellow, lighter below, with silvery areas; the upper half of body darker by being covered with numerous minute points of black.

This description is based on a single specimen, 10.2 inches in length, obtained by Mr. R. C. McGregor, from Lahaina, Maui, in February, 1900. (Type, No. 50721, U. S. N. M.)

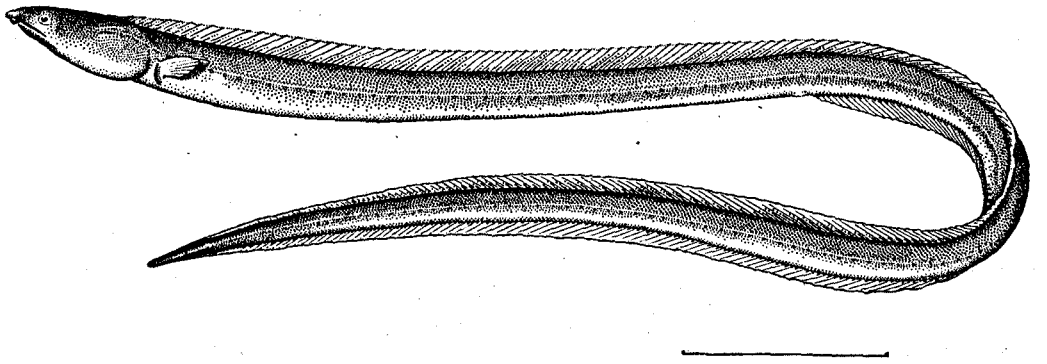


FIG. 2.—*Microdonophis macgregori* Jenkins, new species. Type.

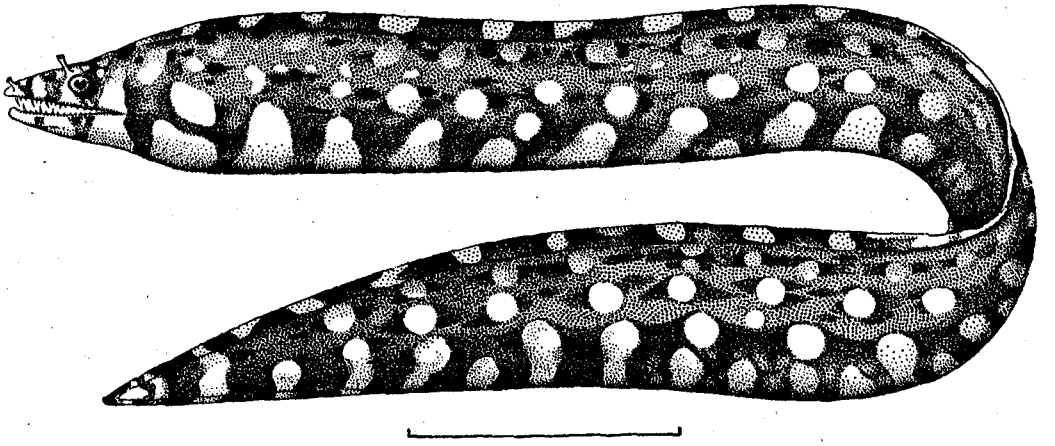


FIG. 3.—*Muræna lampra* Jenkins, new species. Type.

Family VII. MURÆNIDÆ.

10. Muræna lampra Jenkins, new species. "*Puhi-o-u.*"

Body compressed; posterior nostril with a tentacle as long as diameter of eye; head 7.2 in total length; depth slightly more than 2 in head; snout 6 in head; eye 1.65 in snout; posterior margin of eye slightly nearer angle of mouth than is anterior margin to tip of snout; vent nearer tip of snout than tip of tail by half length of head; teeth long, pointed, smaller ones interspersed in 2 series on posterior portion of upper jaw; 2 very long, pointed, depressible teeth on vomer, one behind the other, followed by a single series of smaller teeth; gill-opening a very small, narrow slit without color marking;

interorbital narrow; head with many pores; dorsal fin high, its origin considerably in advance of gill-opening, confluent with caudal and anal; anal similar to dorsal.

Color in life, very bright; ground work of light brown with conspicuous white spots, intermingled with black and brown spots; 3 longitudinal rows of white spots on body, one row on outer margin of dorsal, and about 33 spots or bars of white across the ventral aspect including anal fin; median row on body and head contains about 25 spots, each about size of eye; ventral spots in front of anus to head largest; black, as well as brown spots, small, irregularly placed, but generally following line of rows of white spots; very brilliant red on snout and jaws.

Only the type known, No. 50680, U. S. N. M. (original No. 269), a specimen 8 inches long, obtained by me from the coral rocks on the reef in front of Honolulu.

11. **Muræna kauila** Jenkins, new species. *"Puhi Kauila."*

Head 7.3 in length; depth 16; tail a little longer than head and trunk; snout 4 in head; eye 1.5 in snout; interorbital 2.25; mouth 2 in head.

Body elongate, compressed; tail tapering posteriorly; head elongate, pointed, sides swollen a little above and behind eyes; snout long, slightly convex in profile; mouth large; jaws arched, not completely closing, upper slightly the longer; teeth uniserial in jaws, compressed, long canines with intervening smaller teeth; 2 large depressible canines on vomer; 3 or 4 large depressible canines

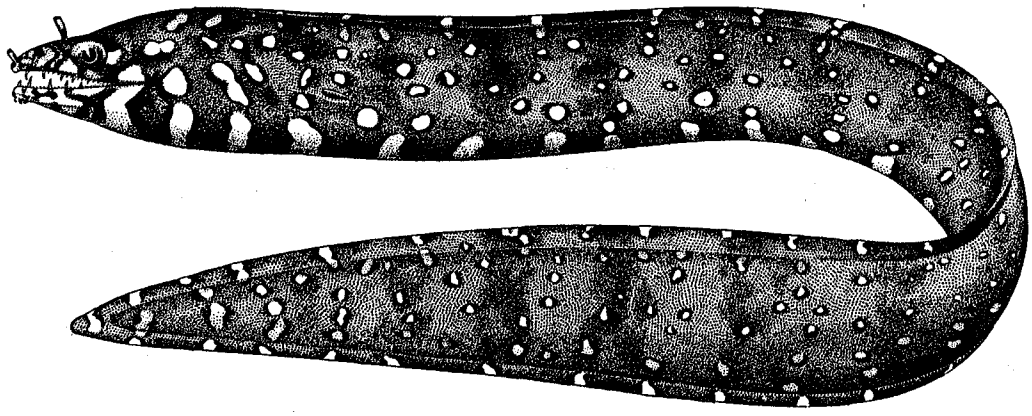


FIG. 4.—*Muræna kauila* Jenkins, new species. Type.

below eye, forming an inner series on each side of upper jaw; lips thin, not concealing teeth when mouth is closed; eye about midway in length of mouth; nostrils in long tubes, the posterior larger, equal to eye; interorbital space flattened; gill-opening small, 0.75 in eye; roof of mouth with a single median series of small teeth beginning below front margin of eye and running back well beyond its posterior margin; dorsal beginning nearly midway between corner of mouth and gill-opening; caudal small, rounded.

Color in life, light brown, with 2 longitudinal rows of dark brown spots about the diameter of snout gradually fading into one row on posterior portion of tail; many clear white spots as large or larger than pupil, over head, body, fins, and tail, many of the spots forming more or less distinct vertical rows over fins and dorsal portions, some confluent on throat and belly, each one surrounded by a dark brown margin; about 30 white spots crossing the ventral line; nasal tubes bright red; bright red bars on snout and lower jaw, and bright red undulations posterior to angle of mouth.

Color in alcohol, brown with the white and dark brown spots distinct; white spots edged with dark brown; bright red undulations posterior to angle of mouth fading out.

Only one specimen obtained, the type, No. 50684, U. S. N. M. (original No. 304), 13 inches long, taken by me from the coral rocks on the reef at Honolulu.

12. Gymnothorax laysanus (Steindachner).

Head 6.6 in total length; depth 2 in head; distance from tip of snout to vent shorter by one-fourth of itself than distance from vent to tip of tail; eye less than snout; gape 2 in head; gill-opening very small and inconspicuous, marked by no dark spot; anterior nostril tubular, near tip of snout above margin of mouth; posterior nostril round, inconspicuous, above and slightly forward of middle of upper margin of eye; origin of dorsal slightly in advance of gill-opening; teeth sharp and pointed; on sides of lower jaw in a single series, on sides of upper jaw in 3 series; on anterior portions of both jaws large, sharp, depressible teeth among the smaller ones; a large, sharp, depressible tooth on vomer.

Color in life, very dark brown over whole of head; body and fins marked everywhere with very many small white spots, with indistinct and irregular outlines, more irregular on anterior portions, being on these almost reticulations; no conspicuous markings at angle of mouth or at gill-openings; tip of tail white.

Eight specimens were obtained at Honolulu, ranging from 6 to 7.25 inches in length. The smaller ones show variation in color from the one above described in that the white spots are more distinct in outlines and more regularly placed. In the smallest they are almost definitely arranged in longitudinal rows of which there are 4 on the body exclusive of the fins. There is a gradation from this arrangement to the irregular arrangement seen in the one described. Found among the coral rocks.

Muræna laysana Steindachner, Anzeiger der Denks. Ak. Wiss. Wien, No. XVI, June 27, 1900, 177, Laysan Island (coll. Dr. Schauinsland, 1896–97); ibid, Denks. Ak. Wiss. Wien, LXX, 1900, 515, pl. VI, fig. 1 (probably not fig. 2).

Lycodontis parvibranchialis Fowler, Proc. Ac. Nat. Sci. Phila. 1900 (Nov. 6, 1901), 494, pl. XVIII, fig. 1, Hawaiian Islands. (Type, No. 16483, Ac. Nat. Sci. Phila.)

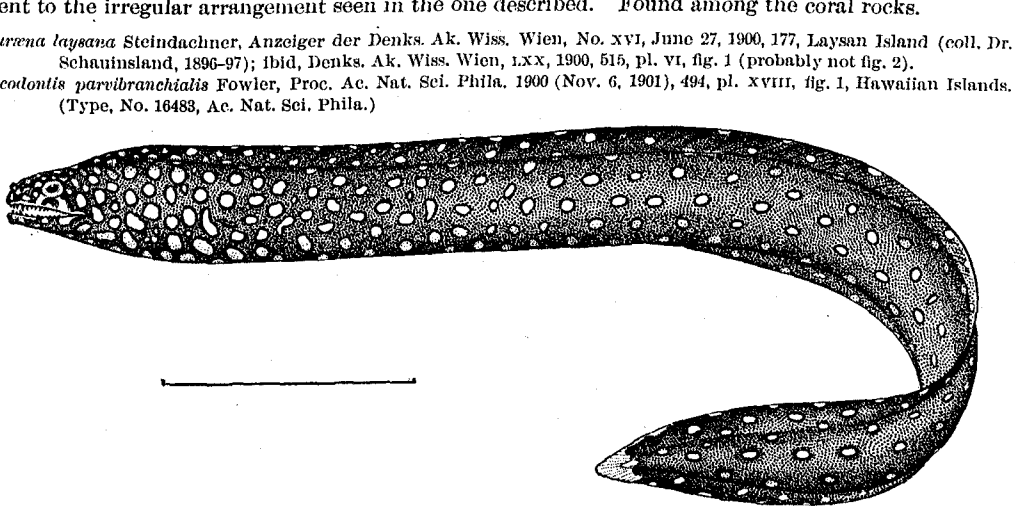


FIG. 5.—*Gymnothorax leucostictus* Jenkins, new species. Type.

13. Gymnothorax leucostictus Jenkins, new species.

Head 8 in total length; depth 0.5 in head; snout a little longer than diameter of eye, 5.5 in head; tip of snout to angle of mouth 2.5 in head; gill-opening small and inconspicuous, less than diameter of eye; body deep, compressed; tail tapering, much compressed posteriorly; head compressed; snout blunt, rounded, not projecting above the mandible; jaws even; eye small, slightly nearer corner of mouth than tip of snout; mouth horizontal; lips thin, concealing the teeth; teeth all sharp-pointed; large depressible canines in anterior parts of both jaws mingled with smaller ones, those in posterior portion of upper jaw forming wide bands, in posterior portion of lower jaw in a single series; large teeth on anterior portion of vomer followed by smaller ones in a single series; anterior nostril tubular, placed near tip of snout and above margin of lip; posterior nostril smooth, small, and well above margin of eye, somewhat in front of a vertical through center of eye; interorbital space narrow, convex; origin of dorsal fin over posterior margin of eye, fin high; anal similar, both confluent around tail.

Color in life, general color uniform dark brown; head, body, tail, and fins covered with numerous white spots, which are larger than eye on trunk, but smaller elsewhere; tip of tail white; margin of gill-opening brownish black.

This species is distinguished from *G. meleagris* (Shaw) by the more anterior insertion of the dorsal, and by the larger spots, which are fewer in number and larger on the trunk.

This description is based on 2 specimens taken from the coral reef at Honolulu, the type, 6.13 inches in length, and a cotype. These do not differ from each other in coloration.

Type, No. 50681, U. S. N. M.

14. Gymnothorax gracilicauda Jenkins, new species.

Head 9 in total length; depth 2.5 in head; tip of snout to vent 1.33 in distance from vent to tip of tail; tip of snout to angle of mouth 2.33 in head; eye 1.33 in snout; gill-opening very small, less than one-half diameter of eye, with no color marking; dorsal fin low, its origin in advance of gill-opening; body very slender and compressed; tail long and very gradually tapering to a point; teeth all long and sharp-pointed, in a single series in lower jaw, in a double series in the upper, the inner series on each side consisting of 4 longer, sharp teeth, the teeth on anterior part of each jaw and on vomer the longest; 2 teeth on the vomer; anterior nostril tubular, near tip of snout and just above margin of lip, posterior smooth and very near upper anterior margin of eye.

Color in alcohol, general color, very pale, nearly white, marked by very irregularly-formed light brown spots, arranged in about 40 ill-defined transverse bands, these lacking on ventral aspect before the vent, leaving the belly white; a very small brown spot at angle of the mouth.

The only known specimen is the type, No. 50679, U. S. N. M. (original No. 367), 8.5 inches long, obtained by me from coral rocks on the reef in front of Honolulu.

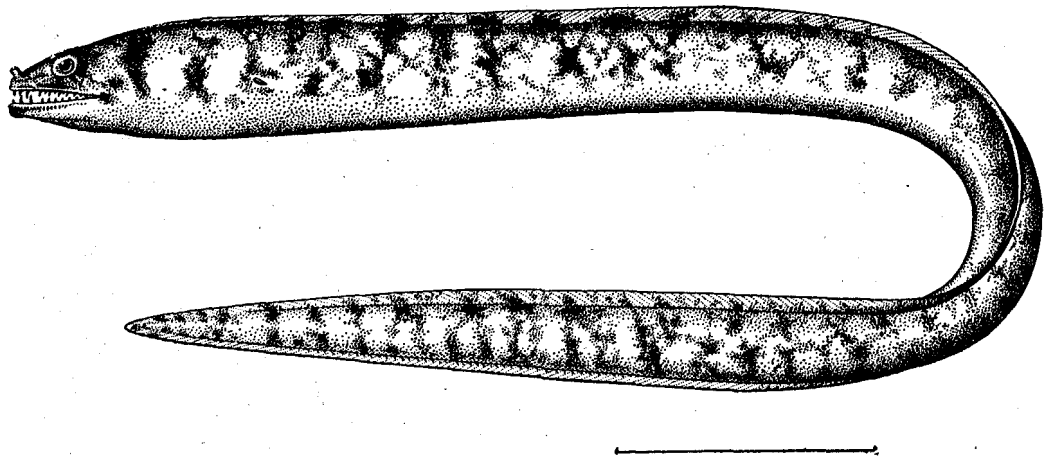


FIG. 6.—*Gymnothorax gracilicauda* Jenkins, new species. Typ

15. Gymnothorax undulatus (Lacépède).

This species seems to be the most common eel at Honolulu. It varies much in color and reaches a length of 3 feet or more. It is used as food by the natives.

Color in life (No. 132), general color drab, with many reticulations of nearly white; a yellow area on top of head, and from snout to a considerable distance behind the eyes yellow. In another specimen (No. 232) the dark ground-work was reddish-brown.

Numerous specimens, ranging from 10 to 28 inches, were taken by me at Honolulu.

Muræophis undulata Lacépède, Hist. Nat. Poiss., v, 629, 644, 1803, South Seas.

Muræna undulata Günther, Cat., VIII, 110, 1870 (Zanzibar, Cocos, East Indies, Hawaiian Islands); Streets, Bull. U. S. Nat. Mus., No. 7, 77, 1877 (Honolulu).

Thyrsoidea kaupii Abbott, Proc. Ac. Nat. Sci. Phila. 1860, 477, Hawaiian Islands.

Lycodontis kaupii Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 494, pl. XVIII, fig. 6 (Abbott's type).

Lycodontis pseudothyrsoidea Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 494 (Hawaiian Islands); not of Bleeker.

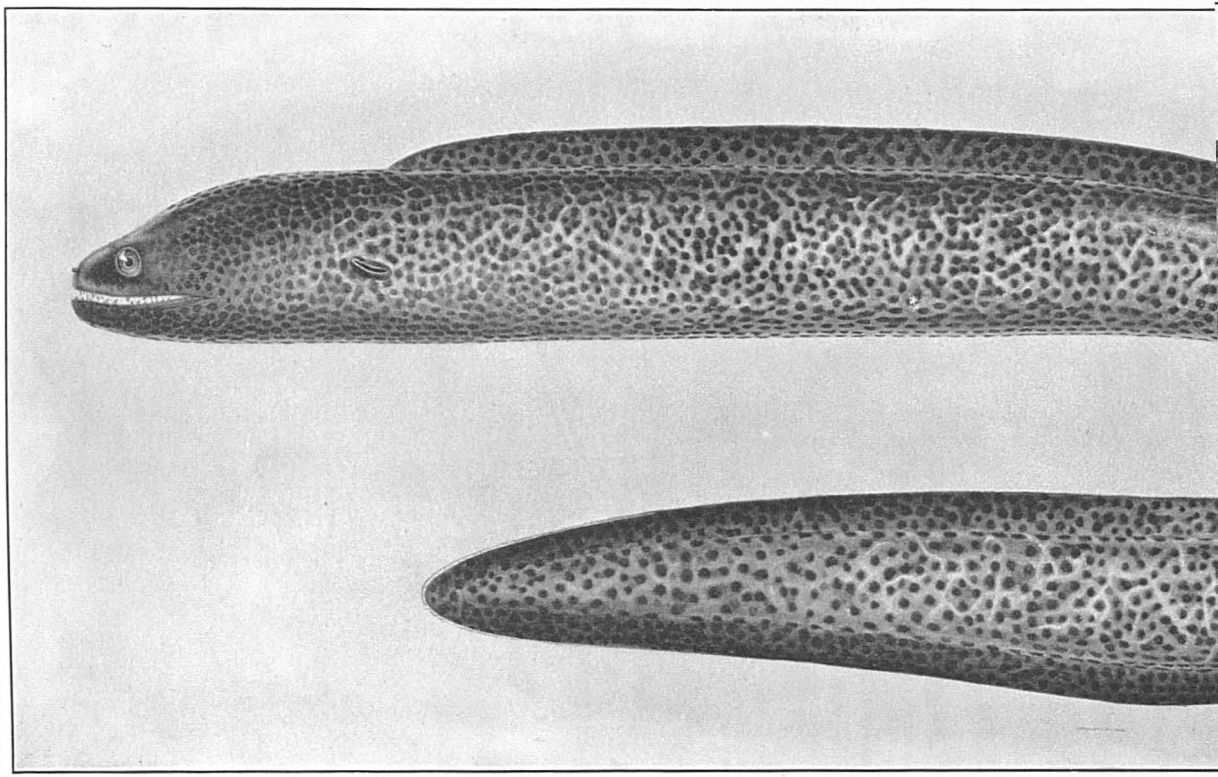
16. Gymnothorax steindachneri Jordan & Evermann.

One specimen of this eel was obtained by the *Albatross* in 1896.

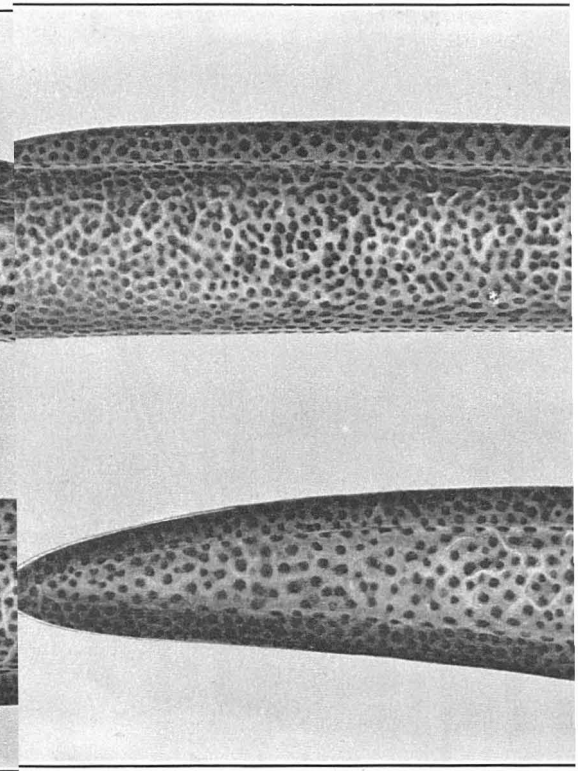
Gymnothorax steindachneri Jordan & Evermann, Bull. U. S. Fish Comm. for 1902 (April 11, 1903), 166, Honolulu. (Type No. 50616, U. S. N. M., coll. Jordan & Evermann.)

Muræna flavomarginata var., Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 32, pl. VI, fig. 3 (Laysan); not of Rüppell.

PLATE II.



GYMNOTHORAX THALASSOPTERUS JENKINS, NEW SPECIES. TYPE.



GYMNOTHORAX THALASSOPTERUS JENKINS, NEW SPECIES

Bull. U. S. F. C. 1902.

17. Gymnothorax thalassopterus Jenkins, new species.

Head 8.5 in length; depth 13.5; eye 10.5 in head; snout 5.75; interorbital 6.5; gape 2.

Body long, slender, and compressed; vent a little nearer tip of snout than tip of tail; head rather short, rather strongly compressed, broadest above; top of head strongly swollen; profile of snout nearly straight to nape, thence rather strongly elevated; interorbital space somewhat convex; mouth large, the gape long, somewhat wavy, the jaws even, closing completely; posterior edge of orbit a little nearer tip of snout than angle of mouth; teeth in jaws in a single series on each side, some of them canine-like anteriorly, those on sides compressed and directed backward, those on vomer large, fang-like, and depressible; anterior nostrils each in a short tube or papilla near tip of snout; posterior nostrils each without tube, situated just in front of line vertical from front of orbit; gill-opening a long, narrow slit, a little shorter than snout in length, its distance behind angle of mouth equaling length of gape; origin of dorsal a little in front of vertical at gill-opening; dorsal rather low, its greatest height less than snout; anal still lower, its greatest height scarcely exceeding diameter of orbit.

Color in life (No. 03548), very dark brown, nearly black, the light interspaces smoky-yellow; outer margin of vertical fins lemon yellow, below which the color is bright green, gradually losing itself in dark brown.

Color in life of No. 03375, body and fins mottled yellowish and brown, the brown forming irregular granular spots of various sizes, but all less than the pupil; fins a little darker, no pale edges; gill-opening and angle of mouth black; throat-streaks brownish and the spots on jaws smaller.

Color in life of No. 305, brown, with spots and mottlings of darker brown; black spot larger than eye about opercular opening; margins of dorsal and anal bright green; margin of caudal yellow.

Color in alcohol of the type, pale brownish, profusely covered with small, roundish or irregular darker brown spots and blotches, varying considerably in size and also in depth of color, some being

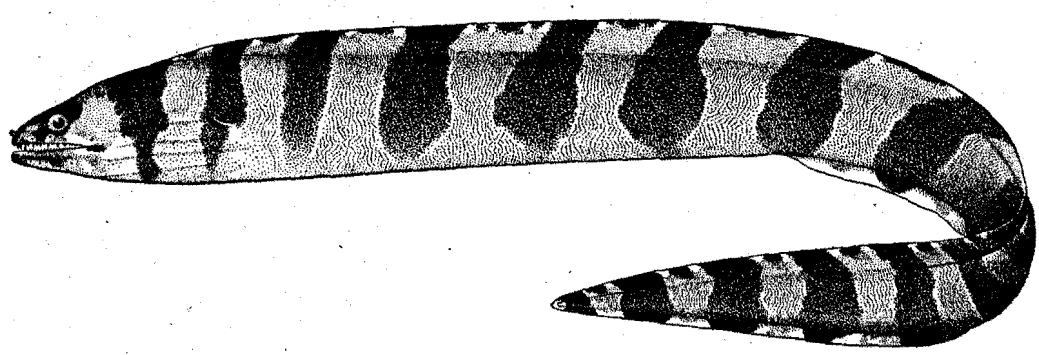


FIG. 7.—*Gymnothorax leucacme* Jenkins, new species. Type.

mere specks, others as large as the pupil, some pale brown, scarcely darker than the ground color, others almost black; blotches and spots often more or less coalescing, forming reticulations; dorsal and anal fins colored like the body, the edges dark; tip of tail narrowly white; head somewhat darker than body; angle of mouth somewhat dark, with a few white specks; gill-opening with a dark brown or blackish border. One specimen (No. 03722) has a narrow bluish-white line from angle of mouth over the nape. In many of the specimens the narrow white border on the tail extends some distance forward on the dorsal and anal fins.

This is one of the largest and most abundant eels found among the Hawaiian Islands. It reaches a length of 3 feet. One specimen (No. 305) 14 inches long, was secured by me at Honolulu, where numerous examples were taken by Jordan & Evermann. One example was obtained by them at Cocoanut Island, Hilo.

Type, No. 50619 (field No. 03772), U. S. N. M., 23 inches long, collected by Jordan & Evermann in 1901, at Honolulu.

18. Gymnothorax leucacme Jenkins, new species.

Head nearly 8 times in total length; depth 2.3 in head; snout 5.6 in head; anus nearer tip of snout than tip of tail; distance from tip of snout to anus, in the type, 9.5 inches; from tip of tail to anus nearly

11 inches; gill-opening narrow, longitudinal, length less than diameter of cornea; interorbital space equal to diameter of cornea; distance from posterior margin of cornea to angle of mouth about equal to distance from anterior margin to tip of snout; dorsal fin beginning at occiput, in height about 0.5 depth of body; height of anal about diameter of cornea; teeth all pointed, long, and in a single series in each jaw; 3 long sharp teeth on vomer.

Color in life, light brown, with 17 distinct wide, dark brown bands encircling body and fins, not much narrower across the dorsal, much narrower or interrupted on ventral aspect on forward part, less so on posterior part of tail; bands nearly equal to depth, on anterior portion quite equal to depth; a white spot on outer margin of dorsal on each side each dark brown band; between white spots a dark brown spot; spaces between dark bands on anal nearly white; area between eyes, angles of mouth, and borders of lower jaw, dark brown; from dark brown area between eyes to first dark brown band, yellow.

This species differs from *G. petelli* in the white spots on margin of dorsal and white areas on anal, in distinctness of bands, and their encircling the dorsal and anal.

Only one specimen known, type, No. 50682, U. S. N. M. (original No. 280), 21 inches long, obtained by me from the coral rocks at Honolulu.

19. **Gymnothorax ercodes** Jenkins, new species.

Head 6.6 in total length, or 3 in distance from tip of snout to vent; depth 12; snout 6.6 in head; eye 1.3 in snout; gape 2.6; tip of snout to vent 1.35 in tail; interorbital width slightly greater than eye, or nearly equal to snout. Body moderately elongate and much compressed; tail more compressed and pointed; mouth rather large, the gape reaching beyond eye a distance equal to length of snout;

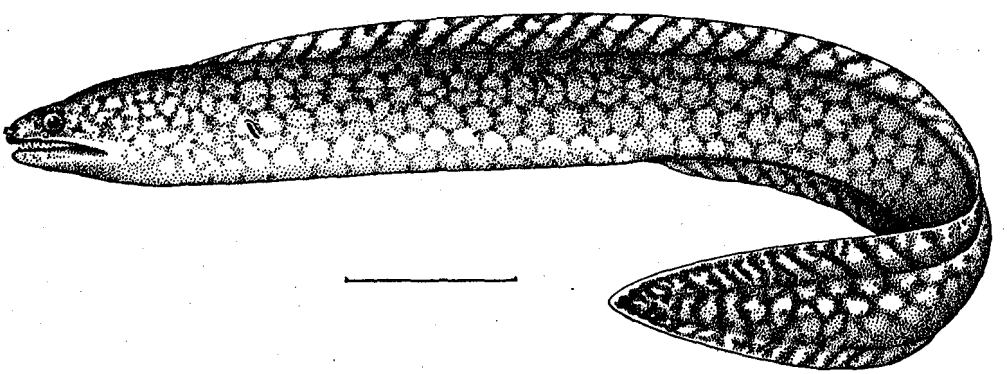


FIG. 8.—*Gymothorax ercodes* Jenkins, new species. Type.

lower jaw scarcely the shorter, not much curved; teeth all pointed, in 2 series anteriorly and 3 series posteriorly in upper jaw; lower jaw with the teeth in 2 series anteriorly, laterally and posteriorly in a single series; 2 large, sharp-pointed, depressible teeth on anterior part of vomer, followed by a series of about 6 smaller teeth on the shaft; anterior nostril in a short tube whose length is one-fourth diameter of eye, situated near tip of snout just above the lip; posterior nostril without tube, situated above margin of eye just in front of vertical through middle of eye; gill-slit moderate, its length 1.5 in eye; origin of dorsal slightly in front of gill-opening, height of fin 3.5 in head; anal similar, but lower.

Color in alcohol, body and fins light brown on a whitish background, the brown arranged in a somewhat regular net-work, giving the appearance of rows of indistinct whitish spots surrounded by polygonal brownish interspaces, which are most distinct on tail; no white border to the fins or tip of tail, and no dark area around gill-opening.

The only specimen known is the type, No. 50843, U. S. N. M. (original No. 2354), 8.5 inches long, obtained by the *Albatross* at Honolulu in 1891.

20. **Echidna leihala** Jenkins, new species.

Head 7 in total length; depth 2.1 in head; tip of snout to angle of mouth 2.5 in head; eye 10 in head; interorbital 8.5; gill-opening a very small narrow slit, 3 in eye, with no distinguishing color-marking; origin of dorsal well in advance of gill-opening, 3 in head; jaws curving away from each

other, closing only at tip; a few sharp, fixed teeth in anterior portions of jaws, the others all blunt; teeth in anterior portion of upper jaw sharp, in a single series; in the posterior portion a double series of blunt teeth, between which the roof of the mouth is crowded with blunt teeth, becoming as many as 6 series posteriorly; teeth in lower jaw in 2 series anteriorly, becoming blunt posteriorly and apparently in 3 series; anterior nostril tubular, near tip of snout above margin of lip; posterior nostril smooth, near the middle of the upper margin of the eye.

Color in life, uniform yellowish brown (not lighter on the belly), being distributed over the whole body in fine, granular markings; no transverse bands appearing in life, but evidence of bands, especially toward tip of tail, appearing some hours after death; snout white, angles of mouth brown, iris yellow; no other conspicuous markings.

The type measures 17 inches in total length; from vent to tip of tail, 8.4 inches; from tip of snout to vent, 8.7 inches. My collection contains 3 specimens, all from the reef in front of Honolulu. Type, No. 50844, U. S. N. M. (original No. 283), Honolulu; cotypes, No. 7783, L. S. Jr. Univ. Mus. (original No. 2368), 15.5 inches long, and No. 2752, U. S. F. C. (original No. 2369), 12 inches long.

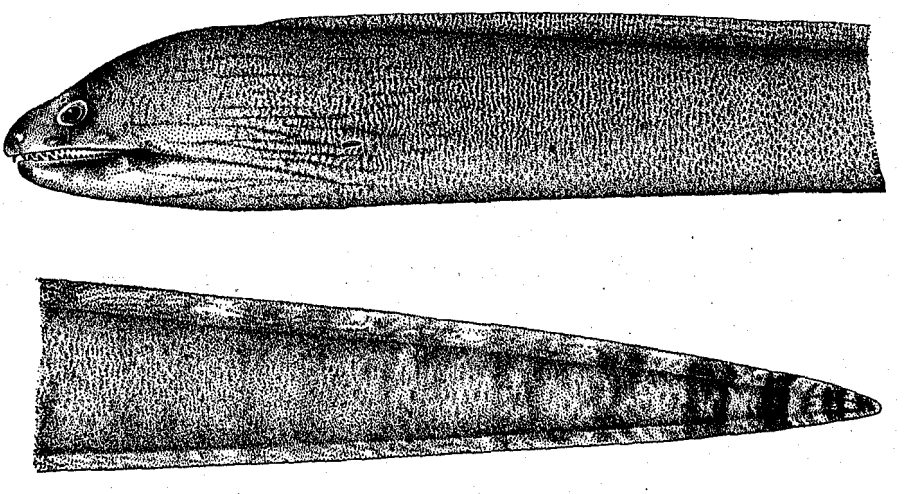


FIG. 9.—*Echidna leihala* Jenkins, new species. Type.

21. Echidna nebulosa (Ahl). "*Puhikapa.*"

Color in life, ground color white, on which is a series of about 26 black spots along sides of body and tail, these spots branching into very irregular reticulations; a bright yellow spot in the center of each black spot; the black lateral spots connected under belly with broad, black bands; on the belly are also occasional large round black spots not connected with the bands; a series of spots similar in size and shape to the lateral spots extending along dorsal fin; there is a black reticulated band around the head; iris golden; inferior nasal tubes orange. This is a brilliantly marked eel in life.

The natives report that this species "goes ashore where it catches lizards" and other prey. They regard it with some fear. I obtained but one specimen (No. 292), 22 inches in length.

Muræna nebulosa Ahl, De Muræna et Ophichtho., Thunb. Dissert., III, 5, pl. 1, fig. 2, 1789, East Indies; Günther, Cat., VIII, 130, 1870.

Echidna variegata Bleeker, Atlas, IV, 80, pl. CLXVIII, fig. 2.

Echidna zonata Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 469, pl. XVIII, fig. 2, Hawaiian Islands (Type, No. 16484, Ac. Nat. Sci. Phila.).

22. Echidna vincta Jenkins, new species.

Head 7.2 in total length, or 3.75 in distance from tip of snout to vent; vent about midway between tip of snout and tip of tail; depth about 2.2 in head; eye 10 in head, 1.6 in snout, or 1 in interorbital space; length of mouth 2.7 in head; body moderately elongate, compressed, the tail strongly compressed and pointed; head swollen; mouth moderate, gape reaching beyond eye a distance equal to length of snout; lower jaw shorter than upper, curved so that the mouth does not close completely; teeth bluntly conic, in a single series in front in upper jaw, in 2 series laterally; teeth on vomer bluntly

conic, in a single series of 3 teeth, depressible anteriorly, in a double series of molar teeth posteriorly, about 7 teeth in each series; lower jaw with a double series of bluntly conic teeth on each side, and a median series of similar teeth.

Color in life, body crossed by 25 (by error 24 in drawing) broad, reddish brown, non-reticulating bands, the width of those at middle of body exceeding snout and eye, the bands completely encircling the body and separated by somewhat narrower light bands; tip of snout yellowish-white; the first dark band through eye broadening on interorbital space; second dark band crossing side of head and very broad on nuchal region; tip of tail narrowly white. In some of the cotypes, the dark crossbands tend to break up below and form reticulations.

This species is not rare about Honolulu among the coral rocks, where I obtained 16 specimens. It does not appear to reach a large size, the examples in hand ranging from 6 to 15 inches in length.

Type, No. 50687, U. S. N. M. (original No. 231), 13.5 inches long, obtained by the *Albatross* at Honolulu. Cotypes No. 7492, L. S. Jr. Univ. Mus. (original No. 224), 15 inches long; U. S. F. C. (original No. 282); No. 2753, Field Museum (original No. 263).

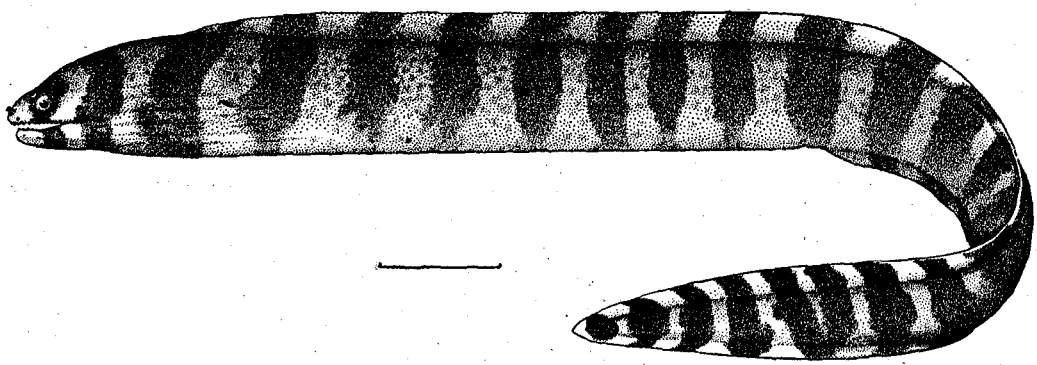


FIG. 10.—*Echidna vincta* Jenkins, new species. Type.

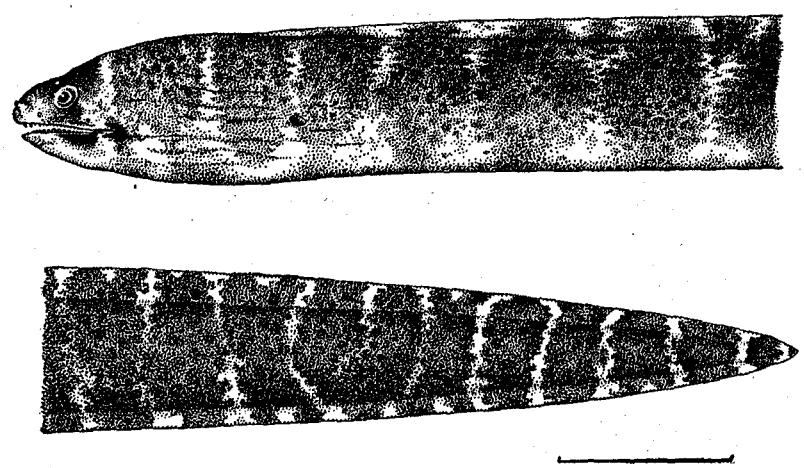


FIG. 11.—*Echidna obscura* Jenkins, new species. Type.

23. Echidna obscura Jenkins, new species.

Head 8.3 in total length; depth 17; eye 9.5 in head; snout 5.75; interorbital 5.75; gape 2.8; distance from tip of snout to vent slightly less than from vent to tip of tail; body moderately elongate, rather deep and somewhat compressed; head narrow, somewhat swollen above; mouth large, the gape

extending more than an eye's diameter beyond eye; lower jaw shorter than upper and somewhat curved; eye about midway between tip of snout and angle of mouth; interorbital equals snout; origin of dorsal in front of gill-opening a distance equal to length of mouth; dorsal fin somewhat higher than anal, its height greater than length of snout; tail compressed and moderately slender; a few short conical teeth in anterior parts of each jaw; 2 series of conical teeth in each side of upper jaw; roof of mouth paved with molars, in 2 rows anteriorly, in 4 posteriorly; molars in 2 series in each side of lower jaw; gill-opening small, narrow, length less than diameter of eye; anterior nostril tubular, near tip of snout, considerably above margin of mouth; posterior nostril round and inconspicuous, near middle of upper margin of eye.

Color in alcohol, dark brownish with about 23 dark crossbands, mostly as broad as depth of body, indistinct on middle part of body, but quite distinct anteriorly and on tail; alternating with them are white ones which are narrower than eye and which extend on anal and dorsal fins, the edges of the bands jagged, the white bands widening toward the belly; extreme tip of tail brown (in the cotypes the tip is narrowly edged with white); side of lower jaw brown, angle of mouth black with white spot in front on lower jaw; gill-opening without dark border. The 2 cotypes show some variations in color. In the larger (No. 2351), 16.5 inches long, the body is more uniformly dark brown and the light crossbands are very indistinct except on tail; in the other (No. 2353), 9.5 inches in length, the white crossbands are very distinct, all completely encircling the body except 3 or 4 anterior to vent.

Three specimens obtained, from Honolulu. Type, No. 50686, U. S. N. M. (field No. 2352), 12.5 inches long. Cotypes, No. 7725, L. S. Jr. Univ. Mus. (field No. 2351), 16.5 inches long; and No. 2754, U. S. F. C. (field No. 2353), 9.5 inches long.

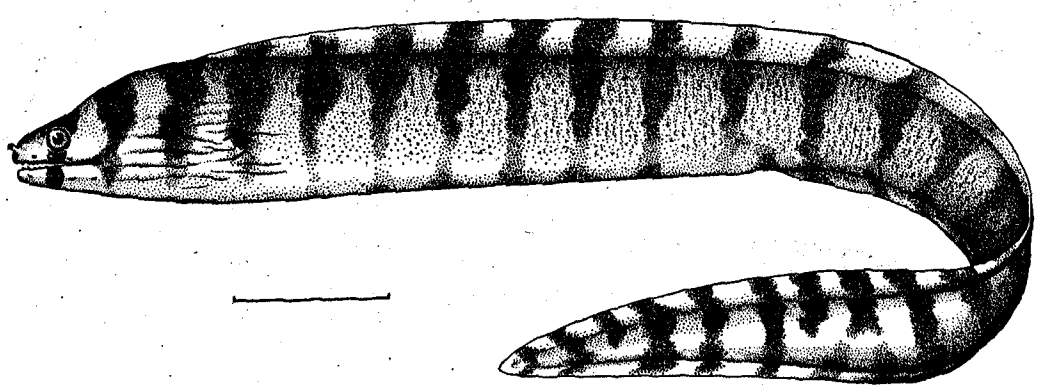


FIG. 12.—*Echidna psalion* Jenkins, new species. Type.

24. Echidna psalion Jenkins, new species.

Head 7.25 in body, or 3.4 in distance from tip of snout to vent; depth 13; snout 5.5 in head; eye slightly less than snout and slightly nearer tip of snout than angle of mouth; gape 2.5 in head; tip of snout to vent 1.2 in tail; interorbital about equal to eye; body moderately elongate and compressed posteriorly; tail slender, pointed; gill-opening very small and inconspicuous; anterior nostril tubular, about 2 in eye, near tip of snout, well above the lip; posterior nostril without tube, oval, above eye just anterior to its middle; a series of pores along upper lip and a series on each side of lower jaw; upper jaw with a single series of blunt, conic teeth in front, those on sides smaller and in a single series; roof of mouth with 2 series of large molars; vomer in front with a single series of about 3 strong, blunt, conical, depressible teeth; lower jaw with 2 series of blunt, conic teeth, the inner the larger; origin of dorsal in front of gill-opening a distance equal to one-fourth the head.

Color in alcohol, a series of 27 narrow brown bands alternating with wider light bands, the narrow bands mostly somewhat narrower than eye, the light ones mostly twice eye; a series of narrow parallel brown longitudinal lines on side of head in front of gill-opening; the anterior brown band running through eye, the second around head posterior to gape; angle of mouth brown.

Only one specimen obtained. Type, No. 50685, U. S. N. M. (original No. 2355), 13 inches long, Honolulu.

Family VIII. ELOPIDÆ.

25. Elops saurus Linnæus.

This species is very abundant; numerous examples are usually in the market, some reaching a length of 2.5 feet. It is not very highly esteemed as food.

Color in life, dorsal aspect gray with greenish and bluish reflections; belly silvery; dorsal and caudal fins dusky; pectoral, ventral, and anal yellowish brown.

Three specimens were obtained by me, 12, 13, and 11 inches in length; 3 by the *Albatross* in 1896, 11, 10, and 10 inches in length; and 1 by Jordan & Snyder in 1900, 8.5 inches in length.

Elops saurus Linnæus, Syst. Nat., ed. XII, 518, 1766, Carolina; Günther, Cat., VII, 470, 1868; Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 513 (Honolulu); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 496 (Honolulu).

Family IX. ALBULIDÆ.

26. Albula vulpes (Linnæus).

Many specimens obtained by me and two by Dr. Wood. This is a very important food-fish in the Hawaiian Islands. Examples of 3 feet or more are often seen in the market.

Color in life, bright silvery with about 7 gray streaks parallel with the lateral line.

Esox vulpes Linnæus, Syst. Nat., ed. X, 1758, 313.
Albula conorynchus, Streets, Bull. U. S. Nat. Mus., No. 7, 76, 1877 (Honolulu).
Albula glossodonta, Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 513 (Honolulu).

Family X. CHANIDÆ.

27. Chanos chanos (Forskål). "*Awa.*" The small "*Puaawa,*" the large "*Awakalamolo.*"

One of the most abundant and important food-fishes at Honolulu. I obtained several specimens.

Mugil chanos Forskål, Descript. Animal, 74, 1775, Red Sea.
Chanos salmoneus Cuvier & Valenciennes, Hist. Nat. Poiss., XIX, 201, 1846, between New Caledonia and Norfolk Island; Günther, Challenger Report, Shore Fishes, 61, 1880 (reefs at Honolulu).
Chanos cyprinella Cuvier & Valenciennes, Hist. Nat. Poiss., XIX, 198, 1846, Hawaiian Islands.
Chanos chanos, Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 514 (Honolulu).

Family XI. CLUPEIDÆ.

28. Etrumeus micropus (Schlegel). "*Makiawa.*"

This species until now only known from Japan. D. 18; A. 9.

Color in life, upper part of body greenish blue with bright metallic reflections; lower two-thirds of body bright silvery; about and in front of the eyes transparent; iris white with metallic reflections; iridescent; pectoral fins olivaceous; snout translucent.

This species is at times fairly abundant and is much esteemed as food, bringing a high price. I obtained several specimens. Two are in Dr. Wood's collection.

Clupea micropus Schlegel, Fauna Japonica, Poiss., 236, pl. 107, fig. 2, 1842, Japan.
Etrumeus micropus, Bleeker, Verh. Bat. Gen., XXV, 1853, 48 (Japan).

Family XII. ENGRAULIDIDÆ.

29. Anchovia purpurea (Fowler).

This species is very abundant about the reef of Honolulu. I obtained numerous specimens. It appears to be the species described from a specimen in the Museum of the Academy of Natural Sciences of Philadelphia, by Mr. Fowler, in 1900.

Stolephorus purpureus Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 497, pl. XIX, fig. 1, Hawaiian Islands. (Type, Nos. 23329 and 23330, Ac. Nat. Sci. Phila. Mus.; coll. W. H. Jones.)

Family XIII. SYNODONTIDÆ.

30. Trachinocephalus myops (Forster).

A specimen of this fish appears in Dr. Wood's collection. It is 7.25 inches long and is No. 2069. I did not obtain it.

Salmo myops Forster, in Schneider, Syst. Ichth., 421, 1801, St. Helena.
Saurus trachinus Schlegel, Fauna Japonica, Poiss., 231, pl. 106, fig. 2, 1842, Japan.
Synodus myops, Bleeker, Atlas Ichth., VI, 153, pl. 278, fig. 3, 1870–72.
Trachinocephalus myops, Jordan & Evermann, Fishes North & Mid. Amer., I, 533, 1896.

31. Synodus varius (Lacépède).

Two examples of this fish were obtained (field Nos. 2070 and 2071) 5 and 5.5 inches in length. There is one 4.5 inches long in Dr. Wood's collection. It is found with *Saurida gracilis* in the coral sand on the reef, and with it exposed for sale in the market.

Salmo varius Lacépède, Hist. Nat. Poiss., V, 224, pl. 3, fig. 3, 1803, Isle de France.
Synodus varius, Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 513 (Honolulu and Laysan).
Synodus sharpi Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 497, pl. XIX, fig. 2, Hawaiian Islands. (Types, Nos. 16084 to 16086, Ac. Nat. Sci. Phila. Mus.; coll. W. H. Jones.)

32. Saurida gracilis (Quoy & Gaimard).

Color in life, upper part of body drab, lower white; upper part with many pearly white, dark, and blackish spots so intermingled as to give the colors and shadings of coral sand in which the species is found; 8 or 9 groups of black spots along the lateral line. I have 8 specimens, 5.5 to 6 inches in length. I saw none larger than 6 inches. They abound in the coral sand on the reef and elsewhere and are sold in the market.

Saurus gracilis Quoy & Gaimard, Voy. de l'Uranie, Zool., 224, 1824, Timur.
Saurida nebulosa Cuvier & Valenciennes, Hist. Nat. Poiss., XXII, 504, pl. 648, 1849, Isle de France; Streets, Bull. U. S. Nat. Mus., No. 7, 76, 1877 (Honolulu).
Saurida tumbil, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 498 (Hawaiian Islands).

Family XIV. BELONIDÆ.

33. Belone platyurus Bennett.

A number of specimens of this fish were taken by me. The longest (field No. 392) is 16 inches long. It is abundant and is brought to the market.

Belone platyurus Bennett, Proc. Comm. Zool. Soc., 1830, 168.
Belone platura, Cuvier & Valenciennes, Hist. Nat. Poiss., XVIII, 451, 1846; Günther, Cat., VI, 237, 1866; Streets, Bull. U. S. Nat. Mus., No. 7, 75, 1877 (Honolulu).
Belone carinata, Cuvier & Valenciennes, Hist. Nat. Poiss., XVIII, 437, 1846 (Sandwich Islands).
Mastacembelus platurus, Bleeker, Atlas Ichthy., VI, 50, pl. 257, fig. 1, 1872 (Singapore, Amboyna).

34. Tylosurus giganteus (Schlegel).

Two specimens were obtained by me in 1889, the larger (field No. 104), 440 mm. in length, gives: D. 23; A. 22; origin of ventrals midway between base of median caudal rays and center of eye; eye 1.5 in interorbital, 2.33 in postorbital part of head. The smaller, 195 mm. long: D. 22; A. 21; origin of ventrals midway between base of median caudal rays and front of eye.

Color in life, upper parts light green; lower parts silvery white.

Belone gigantea, Schlegel, Fauna Japonica, Poiss., 245, 1846, Japan.
Belone annulata, Cuvier & Valenciennes, Hist. Nat. Poiss., XVIII, 447, 1864, pl. 550; Günther, Cat., VI, 240, 1866; Steindachner, Denks. Akad. Wiss. Wien, LXX, 512, 1900 (Honolulu and Samoa).
Mastacembelus annulatus, Bleeker, Atlas Ichthy., VI, 48, pl. 258, fig. 3, 1872 (East Indies).

35. Athlennes hians (Cuvier & Valenciennes).

Three specimens were obtained by me at Honolulu, the largest 26 inches in length. These are the first specimens of the species reported from the Pacific west of the American coast. My specimens do not differ from the description of *A. hians* nor in any way from a specimen of that species in the Stanford University collection from North Carolina, with which they have been compared.

D. 25; A. 27; greatest depth of body at base of ventrals 13 in length; head with beak 3.75 in length; snout 1.5 in head; eye 2 in postorbital part of head; interorbital slightly greater than eye; suborbital very narrow, about 7 in eye; pectoral a little greater than greatest depth of body, equal to distance from front of eye to margin of opercle; ventrals shorter, equal to distance from center of eye to margin of opercle, their bases midway between the bases of median caudal rays and front of arched part of upper mandible; front part of dorsal and anal falciform; longest rays of dorsal equaling distance from front of ventral to posterior margin of opercle; longest rays of anal equal pectoral, and equaling distance from front of eye to posterior margin of opercle; caudal forked, lower lobe the longer; posterior dorsal rays longer than the median ones.

Quite abundant, being brought in numbers to the market. It is esteemed as a good food-fish.

Belone hians Cuvier & Valenciennes, Hist. Nat. Poiss., XVIII, 432, 1846, Bahia; Havana.
Athlennes hians Jordan & Evermann, Fishes North and Mid. Amer., I, 718, 1896 (West Indies).

Family XV. HEMIRHAMPHIDÆ.

36. Hemiramphus brasiliensis (Linnæus).

Color in life, dark blue on top of head and body, silvery below; ventral side of beak red, tip orange, upper side dark.

Abundant at Honolulu, large numbers being brought to the market for sale. Several specimens were obtained by me. In comparing them with others from the West Indies, no other structural differences could be noted than the slightly longer pectoral fin, as may be seen from the table.

Comparative measurements of specimens of H. brasiliensis from West Indies and Hawaiian Islands.

	Hawaiian Islands.							West Indies.			
	No. 1308.	No. 186.						No. 10328.	No. 10332.	No. 11176.	No. 11175.
Length (from tip of upper jaw)....mm..	267	247	235	238	236	179	170	185	184	203	172
Head (from tip of upper jaw) ....mm..	24	23	23	23	22	23	24	23	24	23	25
Depth ....mm..	15½	16	14	15	14	15	14	16	15	16	16
Lower jaw (from tip of upper) ....mm..	27	28	28	25	27	29	29	.....	.....	.....	.....
Pectoral ....mm..	19	20	22	19	20	21	21	17+	18+	17+	.....
Ventral....mm..	11	11⅛	12	11	11	10½	11	.....	.....	.....	.....
Tip of snout to ventrals ....mm..	66	67	67	67	66	67	66	67	67	70	68
Ventral to last vertebra ....mm..	33	34	36	33	36	36	36	34	33	33	33
Eye....mm..	7	6	6	6	6	7	6	6	6	6	6
Interorbital....mm..	5⅛	5	5⅛	5⅛	5	6⅛	5⅛	5⅛	5⅛	5⅛	5⅛
Snout....mm..	8	8	7⅞	8	8	6⅞	8	8	8	8	8
Dorsal rays	15	14	14	13	14	14	15	14	14	14	14
Anal rays....	13	13	13	12	13	12	12	12	12	13	12
Scales in lateral line....	55	57	56	56	54	53	53	54	53	55	54

Esox brasiliensis Linnæus, Syst. Nat., ed. X, 1758, 314.
Hemiramphus depauperatus Lay & Bennett, Zoology Beechey's Voyage, Fishes, 66, 1839, Oahu, Hawaiian Islands; Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 499 (Hawaiian Islands).
Hemiramphus pleii, Cuvier & Valenciennes, Hist. Nat. Poiss., XIX, 15, 1846 (Antilles).
Hemiramphus macrochirus, Poey, Memorias Cuba, II, 299, 1856-58 (1861) (Cuba).

37. Euleptorhamphus longirostris (Cuvier).

This is the first record of *E. longirostris* from the Hawaiian Islands. It is brought to the markets in numbers and sold for food. Seven specimens, 16 to 18 inches in length.

Color in life, dark above, a longitudinal silvery band on the side; belly white; beak black.

Hemirhamphus longirostris Cuvier, Règne Animal, ed. 2, II, 286, 1829, Indies; Cuvier & Valenciennes, Hist. Nat. Poiss., XIX, 52, 1846 (Pondicherry).

Family XVI. EXOCŒTIDÆ.

38. Evolantia microptera (Cuvier & Valenciennes).

This is the first record of the species from the Hawaiian Islands. Eight specimens, 6 to 7 inches in length, were obtained.

Color in life (field No. 229), upper parts dark blue, below silvery; dorsal bluish; pectoral somewhat dusky, especially toward tip; anal and ventrals white; no definite markings on any of the fins.

Exocœtus micropterus Cuv. & Val., XIX, 127, pl. 563, 1846; Günther, Cat., VI, 279, 1866; Bleeker, Atlas Ichthy., VI, 77, pl. 249, fig. 1, 1872.
Cypsilurus micropterus, Bleeker, Nederl. Tydsch. Dierk., III, 128, 1865 (Amboyna).
Evolontia, Snodgrass & Heller, MSS.

39. Parexocœtus brachypterus (Solander). "*Malolo.*"

D. 13; A. 14; origin of dorsal just over that of anal; pectoral reaching just beyond origin of anal. Color in life, upper parts of head and body down to lateral line a brilliant indigo blue, below this silvery; dorsal with a large dark blue blotch toward tip; pectoral transparent; caudal, anal, and ventrals colorless. The Hawaiian specimens were compared with one in the Stanford University Museum from Pensacola, Fla. No differences could be detected further than the slightly shorter dorsal fin in the Florida specimen, which difference is probably only an individual variation. Very abundant, large quantities being brought to the market, where they bring a good price. Eight specimens were taken, 6 to 7 inches in length, and 2 are in Dr. Wood's collection. I observed none over 7 inches in length.

Exocœtus brachypterus Solander, in Richardson, Ichthy. China, 265, 1846, China; Günther, Cat., VI, 280, 1866 (Otaheiti and China); Streets, Bull. U. S. Nat. Mus., No. 7, 75, 1877 (Hawaiian Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 512 (Honolulu and Laysan).
Exocœtus hillianus Gosse, Nat. Sojourn Jamaica, II, 11, pl. 1, fig. 1, 1851, Jamaica; Günther, Cat., VI, 284, 1866; Poey, Mem., II, 301.
Parexocœtus mesogaster Jordan & Evermann, Fishes North and Mid. Amer., I, 728, 1896; Fowler, Proc. Nat. Ac. Sci. Phila. 1900, 500 (Hawaiian Islands); Evermann & Marsh, Fishes of Porto Rico, Bull. U. S. Fish Com. 1900, 103.

The figure of *Exocœtus mesogaster* Bloch, XII, 17, pl. 399, can not be of this species.

40. Exocœtus volitans Linnæus.

A single specimen, 5.5 inches in length, was picked up on the beach at Honolulu, and one 6 inches in length was collected by the *Albatross* in 1891, in lat. 28° 03′ N., long. 143° 10′ W.

Color in life, back very dark blue, with greenish reflections, especially along the sides; belly silvery white; pectoral rays dusky, the membrane not so dark. The pectoral reaches root of caudal.

Exocœtus volitans Linnæus, Syst. Nat., ed. X, 316, 1758; Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 500 (Hawaiian Islands).
Exocœtus evolans Linnæus, Syst. Nat., ed. XII, I, 521, 1766; Günther, Cat., VI, 282, 1866.
Halocypselus evolans, Jordan & Evermann, Fishes North and Mid. Amer., I, 729, 1896.

41. Cypsilurus simus (Cuvier & Valenciennes).

Dorsal profile gently and evenly convex from tip of snout to caudal peduncle; ventral profile straight from head to front of ventral fin; depth 5 in length; head 4.25 in length; snout wide, its anterior straight transverse border 1.3 in length of snout; length 3.5 in head; lower jaw not projecting; depth of head equaling distance from tip of snout to middle of preopercle; eye 3 in head; interorbital a little concave (varies from flat to considerably concave), 3.5 in head; teeth conical (varying from tricuspid in smaller specimens to bicuspid in larger ones and conical); gillrakers short, flat, mostly of equal length, 5 in interorbital, 16 on lower limb of arch; pectoral 15, reaching to base of caudal, first ray simple, second divided; ventrals 6, reaching past middle of anal; D. 13 (varying from 12 to 14); third and fourth rays longest, 2.5 in head; last ray longer than the penultimate ray, 4 in head; A. 8, shorter and lower than dorsal (rays varying from 7 to 9), second and third rays longest, 3 in head; lower lobe of caudal much longer than upper, length of tip from last vertebra about 3.2 in length of body; length of upper lobe of caudal about 1.6 in lower, 5 in length of body; least depth of caudal peduncle but slightly less than its length, 3 in head; 50 scales on lateral line, tube on each scale with numerous fine convoluted branches on lower half of scale only; 31 scales on mid-dorsal line in front of dorsal fin; 12 scales on oblique row between front of dorsal and anal fins, 8 from dorsal to lateral line.

Color in life, upper parts dark blue, back almost black; belly silvery white; generally a dusky area behind opercle at base of pectoral; ventrals and caudal transparent; pectoral varying much in coloration. In 1 specimen the first pectoral ray was white, the membranes of the next 7 rosy-brownish, the membranes of the rest transparent. Another had the pectoral fin nearly colorless, with only a small amount of dusky clouding and several small black spots on the membrane. In others the pectorals are closely covered with round or oval black spots, varying in different specimens from many to few. Others again have none. Since there are no discoverable structural differences between the specimens having spotted pectorals and those having no spots on those fins, and since the number of the

spots varies so greatly on those that possess them, there are no grounds on which the specimens with spotted pectorals can be separated from those without spots. Hence the synonymy given below.

Eight specimens were collected at Honolulu in 1889 (field Nos. 166, 167, 168, 191, 192, 193, 194, and 196), and 6 specimens were collected by Jordan & Snyder at Honolulu in 1900 (field Nos. 03, 04, 05, 07, 08, and 09), and 1 specimen (field No. 2943) is in Dr. Wood's collection. These specimens are 12 to 13 inches in length. Large numbers are caught about Honolulu and brought to the market.

Measurements of nine examples of Cypsilurus simus.

	Pectoral unspotted.				Pectoral spotted.				
	No. 167.	No. 08.	No. 196.	No. 168.	No. 193.	No. 05.	No. 194.	No. 192.	No. 191.
Length ..... millimeters..	250	270	215	208	261	254	247	245	242
Depth ..... do....	19	19	18	19	19	18	19	19	18
Head ..... do....	24	23	24	25	23	23	24	23	23
Snout ..... do....	6	7	6⅛	6	7	6⅛	7	7	7
Eye ..... do....	8⅛	8	8⅛	9	8⅛	8	8	8⅛	8
Interorbital ..... do....	9	8	8	8	9	8	9	9	8⅛
Eye to ventral ..... do....	46	48	45	47	47	45	45	46	47
Ventral to last vertebra ..... do....	41	43	40	36	44	44	43	40	40
Length of pectoral ..... do....	70	68	65	65	72	70	64	69	67
Length of ventral ..... do....	25	28	26	27	29	29	28	29	31
Dorsal rays	13	12	14	13	13	13	12	13	12
Anal rays	7	8	9	8	8	9	8	8	7
Scales before dorsal	32	31	28	31	30	30	30	30	30
Scales between dorsal and lateral line	8	8	8	7	8	8	8	8	8
Caudal peduncle	8	8½	8½	8	8	8½	8½	9	8

Exocœtus simus Cuvier & Valenciennes, Hist. Nat. Poiss., XIX, 105, 1846, Sandwich Islands.

? *Exocœtus pœcilopterus* Cuvier & Valenciennes, Hist. Nat. Poiss., XIX, 112, pl. 561, 1846, New Holland; Günther, Cat., VI, 291, 1866; Bleeker, Atlas Ichthy., VI, 74, pl. 251, fig. 5, 1872.

Exocœtus alatus Solander, in Cuvier & Valenciennes, Hist. Nat. Poiss., XIX, 112, 1846, Otahiti.

? *Exocœtus spilopterus* Cuvier & Valenciennes, Hist. Nat. Poiss., XIX, 113, 1846, Caroline Islands; Günther, Cat., VI, 292, 1866; Bleeker, Atlas Ichthy., VI, 74, pl. 250, fig. 2, 1872.

Exocœtus neglectus Bleeker, Esp. Exoc. Ned. Tydsch. Dierk., III, 112, 1865; Bleeker, Atlas Ichthy., VI, 71, pl. 247, fig. 2, 1872 (Sumatra, Batjan); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 512 (Hawaiian Islands).

? *Exocœtus callopterus* Günther, Cat., VI, p. 292, 1866, Panama.

42. Cypsilurus bahiensis (Ranzani).

One specimen of this fish was obtained by me in 1889, 15 inches in length (field No. 195), and one by Dr. Wood (field No. 12043) 13.5 inches; and one by Jordan & Snyder (field No. 04).

Exocœtus bahiensis Ranzani, Nov. Comm. Ac. Sci. Inst. Bonon., V, 1842, 362, pl. 38, Bahia; Bleeker, Atlas Ichthy., VI, 71, pl. 249, fig. 2, under the name *E. spilonopterus;* Jordan & Evermann, Fishes North and Mid. Amer., I, 739, 1896; Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 512 (Honolulu).

Exocœtus vermiculatus Poey, Memorias, II, 300, Cuba.

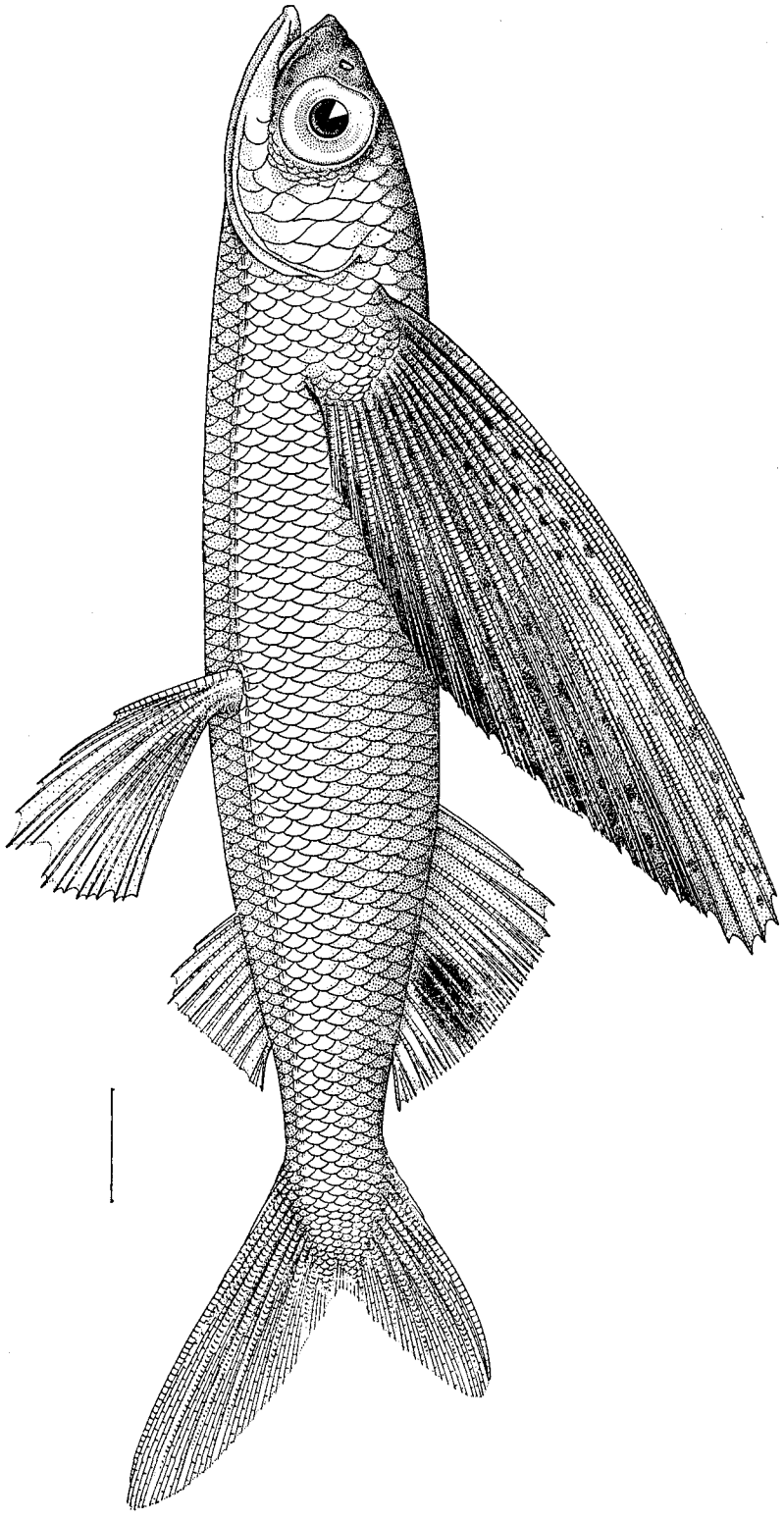
Exocœtus spilonopterus, Bleeker, Nederl. Tydsch. Dierk., III, 113, 1865 (Sumatra).

43. Cypsilurus atrisignis Jenkins, new species.

Head 4.3 in length; depth 5.5; D. 15; A. 10; P. 14; lateral line about 60; scales before the dorsal fin 34; scales between origin of dorsal and lateral line 9; body elongate, broad dorsally, narrowing ventrally, broadest just in front of base of pectorals, where it is nearly as broad as the depth; top of posterior portion of head broad, narrowing toward tip of snout, somewhat concave between the eyes; interorbital space equaling distance from posterior margin of eye to margin of opercle; eye large, its center anterior to center of head; snout less than eye, somewhat pointed, lower jaw slightly projecting; maxillary included and falling considerably short of anterior margin of eye; pectoral reaching tip of last dorsal ray; ventral reaching to one-third the base of the anal; its origin halfway between eye and base of caudal; origin of dorsal much in advance of vent, its distance from first caudal ray 1.4 times head, the longest ray, the anterior one, about .5 the head; lower lobe of caudal the longer.

Color in alcohol, dark purple above, light below; dorsal fin with black spot about 0.7 the diameter of eye between eighth and eleventh spines; caudal and ventrals colorless, unmarked; ventrals white, without spots; pectoral rays and membranes very dark purple above, the rays light below, the membranes with black spots on anterior and posterior portions.

One specimen (field No. 197) 13.5 inches in length, was taken by me in 1889 at Honolulu. Type, No. 50713, U. S. N. M.



CYPSILURUS ATRISIGNIS JENKINS, NEW SPECIES. TYPE.

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Family XVII. AULOSTOMIDÆ.

44. Aulostomus valentini (Bleeker). "*Nunu.*"

Color in life (field Nos. 165 and 179), dark brown, with light crossbars, about 17 in number, between eye and dorsal fin, 5 others posteriorly; also about 4 longitudinal whitish bands, much more distinct when the fish is alive in the water; base of dorsal and anal black, with the anterior portion of each red, posterior portion of each paler but also tinged with red; caudal olivaceous, a black spot on upper margin and one opposite on lower margin; posterior to these spots the margins are red; a black line extending forward from each eye, meeting along snout, this interrupted with about 5 whitish bars across snout; ventrals each with a spot at base. Although there were individual variations from the above, I did not see any of the bright yellow forms figured by Günther in Fische der Südsee.

This species is fairly abundant at Honolulu, where I caught four specimens with a dip-net off the wharf, ranging from 6.5 to 8 inches in length. One specimen (field No. 03583) was obtained by the *Albatross* in 1896. Three others, each 13.5 inches in length, are in Dr. Wood's collection. Others much longer were seen. They are very beautiful objects in the water. They are able to dart with great rapidity through the water and were seen frequently feeding on something at the surface.

Polypterichthys valentini Bleeker, Nat. Tyds. Ned. Indie, IV, 1853, 608, Ternate.
Aulostoma sinensis Schlegel, Faun. Japon., Poiss., 320.
Aulostoma chinense, Streets, Bull. U. S. Nat. Mus., No. 7, 74, 1877 (Honolulu); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 502 (Honolulu, Laysan); Günther, Fische der Südsee, VII, 221, pl. 123, figs. B and C, 1881 (Hawaiian Islands).
Aulostomus chinensis, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 500 (Oahu).

Family XVIII. FISTULARIDÆ.

45. Fistularia petimba Lacépède.

This species is quite abundant at Honolulu. Thirteen examples were taken by me in 1889, and 20 were collected by the *Albatross* in 1899 at Tahiti.

Fistularia petimba Lacépède, Hist. Nat. Poiss., v, 349, 1803, New Britain, Isle of Reunion, equatorial Pacific.
Fistularia depressa Günther, Rep. Shore Fishes, *Challenger*, 69, pl. 32, fig. D, 1880, Sulu Archipelago.

46. Fistularia serrata Cuvier.

Color in life, upper parts dark drab; lower white; tips of dorsal and anal and lobes of caudal rosy with dusky shades; pectoral transparent. Fifteen specimens were taken by me at Honolulu.

Fistularia serrata Cuvier, Règne Animal, ed. I, vol. II, 349, 1817, America; after Bloch; Streets, Bull. U. S. Nat. Mus., No. 7, 74, 1877 (Honolulu).
Fistularia petimba Jordan & Snyder, Proc. U. S. Nat. Mus., vol. XXVI, 67, 1902 (Japan).

Family XIX. ATHERINIDÆ. The Silversides.

47. Atherina insularum Jordan & Evermann.

Head 4 in length; depth 4.75; eye 3 in head; snout 4; interorbital 2.8; maxillary 2.5; mandible 2.2; D. VI–I, 11; A. 17; scales 46, 6 rows from anterior base of anal upward and forward to spinous dorsal. Body oblong, compressed; head triangular, the sides compressed, top flat; mouth large, oblique, maxillary reaching front of pupil, lower jaw included; teeth in rather broad villiform bands on jaws, vomer, and palatines; interorbital space very broad and flat; snout broad, truncate; origin of spinous dorsal slightly posterior to vertical at vent, slightly nearer tip of snout than base of caudal; longest dorsal spine about 2.4 in head, reaching nearly to vertical at front of anal; distance between spinous and soft dorsals equal to distance from tip of snout to middle of pupil; edge of soft dorsal concave, anterior rays somewhat produced, their length 1.9 in head; last dorsal ray about one-half longer than one preceding; base of soft dorsal 1.8 in head; origin of anal considerably in advance of that of soft dorsal, the fins similar, anterior rays about 1.7 in head, base of anal 1.3 in head; caudal widely forked, the lobes equal; ventral short, barely reaching vent; pectoral short, broad, and slightly falcate, its length about 1.4 in head. Scales large, thin, and deep, 19 in front of spinous dorsal, 6 rows between the dorsals and 9 on median line of caudal peduncle.

Color when fresh, clear olive green with darker edges to scales; lateral stripes steel blue above, fading into the silvery belly; fins uncolored.

Color in alcohol, olivaceous above, silvery on sides and below; scales of back and upper part of

side with numerous small, round, coffee-brown specks, disposed chiefly on the edges; median line of back with a darkish stripe; middle of side with a broad silvery band, plumbeous above, especially anteriorly, more silvery below; top of head and snout with numerous dark brownish or black specks; side of head silvery, opercle somewhat dusky, sides and tip of lower jaw dusky; dorsals and caudal somewhat dusky, other fins pale; pectoral without dark tip.

This small fish is common inside the reef in shallow bays everywhere in the Hawaiian Islands. Many individuals were seen off the wharf at Lahaina on Maui. Jordan & Evermann's collections of 1901 contain 20 specimens from Kailua, from 1.5 to 3.5 inches long; 43 from Hilo, 1.5 to 2.25 inches long; and 1 from Honolulu, 2.25 inches in length. Numerous specimens were obtained by the *Albatross* at Honolulu in 1902, 1 of which is taken as the type and 3 others as cotypes.

Five specimens were obtained by me in 1889.

Atherina insularum Jordan & Evermann, Bull. U. S. Fish Comm. for 1902 (April 11, 1903), 170, Honolulu. (Type, No. 50819, U. S. N. M.; coll. *Albatross*, 1902.)

Family XX. MUGILIDÆ.

48. **Mugil cephalus** Linnæus. *"Amaama"; Mullet.*

This is the most highly prized food-fish about the islands, always bringing good prices in the market. Besides being caught in nets as they run in schools, they are kept in large ponds from which they are taken to supply the market. These are portions of the sea inclosed in favorable places by walls with openings through which the fish are allowed to run, but from which they are prevented from escaping. They remain here feeding until of sufficient size to market. Many of these ponds have been maintained from times previous to the discovery of the islands by Captain Cook. Other fishes accompany the mullet into the ponds and are likewise restrained with it, notably the "Awa," *Chanos chanos*. The natives have different names for different sizes of the mullet. The very small, about 1 inch or less, is "Pua"; about 6 inches is "Pua-ama-ama"; the larger ones are "Anae."

My collection contains 70 examples from 2.5 to 7.2 inches in length. I have also examined a specimen 10 inches long, collected by Mr. R. C. McGregor, and Dr. Wood's collection contains one (field No. 6114), 9 inches. The Hawaiian specimens compared with specimens in Leland Stanford Junior University Museum identified as *Mugil cephalus*, from Naples; La Paz, Mexico; Callao, Peru; and Japan, show no structural differences. The older individuals have a greater mandibulary angle, it being more acute in the small ones.

Mugil cephalus Linnæus, Syst. Nat., ed. x, 316, 1758, Europe.
Mugil dobula Günther, Cat., III, 420, 1861, Aneiteum, Australia; Fische der Südsee, VI, 214, 1877 (Hawaiian Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 501 (Honolulu).

49. **Chænomugil chaptalii** (Eydoux & Souleyet).

Color in life, gray above, white below, golden spot on upper part of base of pectoral, upper portion of iris golden, the remainder white. Four specimens were obtained, the longest being 10 inches. It seems fairly common at Honolulu and is highly prized as a food-fish.

Mugil chaptalii Eydoux & Souleyet, Voyage Bonite, Zool., I, 171, pl. 4, fig. 1, 1841, Hawaiian Islands.
Myxus (Neomyxus) sclateri Steindachner, Sitz. Ber. Ak. Wiss. Wien, LXXVIII, 1, 384, 1878, Kingsmill and Sandwich Islands.

Family XXI. SPHYRÆNIDÆ.

50. **Sphyræna commersoni** Cuvier & Valenciennes.

This species was described by me as *S. snodgrassi* in a former paper, but an examination of a larger number of specimens has led to the decision that this is the same as the East Indian species. This species reaches a large size, individuals 5 feet in length having been brought to the market.

Sphyræna commersoni Cuvier & Valenciennes, Hist. Nat. Poiss., III, 352, 1829.
Sphyræna snodgrassi Jenkins, Bull. U. S. F. C. 1899 (June 8, 1900), 388, fig. 2, Honolulu. (Type, No. 49693, U.S.N.M.)

51. **Sphyræna helleri** Jenkins.

This comparatively small species is fairly common about Honolulu, being frequently taken in the mullet ponds, where it preys on that fish. But one specimen (16 inches long) was taken. Apparently it is not often in the market.

Sphyræna helleri Jenkins, Bull. U. S. Fish Comm. 1899 (June 8, 1900), 387, fig. 1, Honolulu. (Type, No. 49692, U.S.N.M.)

Family XXII. POLYNEMIDÆ.

52. **Polydactylus sexfilis** (Cuvier & Valenciennes). "*Moi.*"

Fairly abundant at Honolulu, where I obtained 6 specimens. Dr. Wood's collection contains one.

Polynemus sexfilis Cuvier & Valenciennes, Hist. Nat. Poiss., VII, 515, Isle de France; Günther, Shore Fishes, Challenger, 59, 1880 (Hilo, Hawaii); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 492 (Honolulu).
Polydactylus pfeifferi, Fowler, Proc. Ac. Nat. Sci. Phila, 1900, 501 (Hawaiian Islands).

Family XXIII. HOLOCENTRIDÆ.

53. **Holotrachys lima** (Cuvier & Valenciennes).

Color in life, whole body, with head and fins, bright red; iris red.

Three specimens of this beautiful fish, 4.5, 4.7, and 5.2 inches respectively, were taken at Honolulu. Dr. Wood's collection contains four, ranging from 4.2 to 5 inches, and one was taken by Jordan & Snyder 4.7 inches in length. It is common at Honolulu.

Myripristis lima Cuvier & Valenciennes, Hist. Nat. Poiss., VII, 493, 1831, Isle de France.
Myripristis (*Holotrachys*) *lima*, Günther, Fische der Südsee, 93, pl. 63, fig. A, 1873 (Mauritius, Kingsmill, Samoa, Society, and Hawaiian islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 492 (Honolulu).

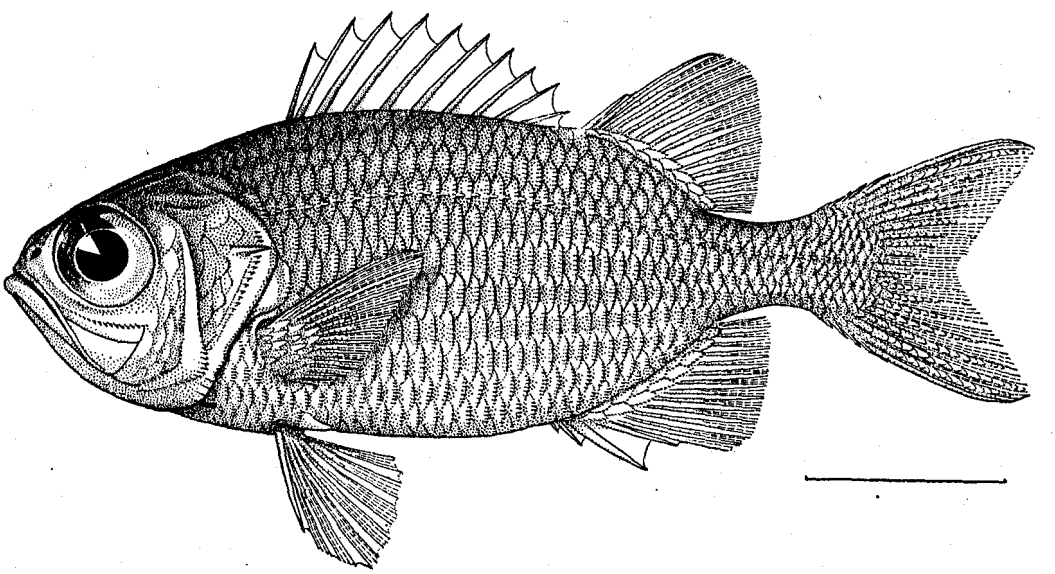


FIG. 13.—*Myripristis sealei* Jenkins, new species. Type.

54. **Myripristis multiradiatus** Günther.

Five examples obtained at Honolulu, 4.5 to 6 inches in length, and one is in Dr. Wood's collection, 3.75 inches in length. Dr. Günther has described this species from a single specimen, 6 inches in length, from Vavau. This seems to be the first record of the species since this description. It appears to be fairly abundant at Honolulu.

Myripristis multiradiatus Günther, Fische der Südsee, I, 1873, 93, Vavau.

55. **Myripristis sealei** Jenkins, new species.

Head 3 in length; depth 2.5; eye 2.5 in head; snout 5; maxillary 1.8; interorbital 4; D. X–I, 15; A. IV, 13; P. I, 15; V. I, 7; scales 4–37–8; body elongate, deep, compressed, greatest depth at about tip of pectoral; upper and lower profiles about evenly convex; head compressed, rather elongate, a little longer than deep, its width 1.8 in its length; snout short, broad, blunt, convex, steep; upper profile of head nearly straight from above nostril to occiput; eye large, high, hardly impinging upon the upper profile of head, about equal to postocular part; mouth large, oblique, mandible slightly projecting, reach-

ing below posterior rim of pupil; distal expanded extremity of maxillary 1.7 in eye; teeth sharp, minute, not enlarged on edges of jaws; teeth in jaws, on vomer and on palatines in bands; tongue elongate, rounded, free; suborbital rim narrow, finely serrate; lower posterior margin of maxillary smooth; lips rather thick, fleshy; nostrils close together, posterior very large, close to front rim of orbit; bones on head all finely serrate; opercle with well-developed spine; gill-opening large, filaments large; gillrakers long, fine, longest longer than longest gill-filaments; pseudobranchiæ very large, free for distal half; dorsal spines slender, sharp, first 3.2, second 2, third 1.9, tenth 4.6, last 3.3 in head; anterior dorsal rays elongate, bluntly pointed, second ray 1.7, last 5.5; third anal spine large, 2.5 in head; soft anal similar to soft dorsal, second ray 1.7, last 6.4; caudal elongate, forked, the lobes pointed; pectoral small, pointed, 1.5; ventral 1.5, spine 2.25 in head; scales large, finely ctenoid; lateral line slightly convex, running down obliquely to base of caudal along upper side of caudal peduncle; four slender, sharp-pointed, graduated rays above and below.

Color in alcohol, pale brown or brownish-white, fins pale or whitish; no black or brown on edges of gill-opening or in axil of pectoral.

My collection contains 12 examples of this species, all obtained at Honolulu in 1889. They range in length from 2.2 to 5.25 inches. Type, No. 50708, U. S. N. M.

Named for Mr. Alvin Seale, curator of fishes in the Bernice Pauahi Bishop Museum at Honolulu.

56. Myripristis murdjan (Forskål).

Color in life (field No. 85), body and head pale red, first dorsal pink, outer margin orange, outer margins of second dorsal, caudal, ventral and anal fins white; immediately underneath the white margin of each fin is a bright red region, the rest of each of these fins a paler red; pectoral pale red. Seven specimens were taken, ranging from 4.25 to 6.2 inches in length; three are in Dr. Wood's collection, 5.30 to 6.25 inches in length, and one 4 inches long was taken by Jordan & Snyder. Large numbers are brought to the market.

Sciæna murdjan Forskål, Descript. Animal., 48, 1775, Djidda, Red Sea.
Myripristis murdjan, Ruppell, Fische Roth. Meer, 86, pl. 23, fig. 2, 1828; Günther, Fische der Südsee, 92, plates LXI and LXII, 1873 (Hawaiian Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 492, 1900 (Honolulu); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 501 (Hawaiian Islands).

57. Flammeo sammara (Forskål).

Four specimens taken, 7.75 to 8.75 inches in length, and one 8.5 inches long is in Dr. Wood's collection. This is the first record of the species from the Hawaiian Islands. It appears to be fairly common at Honolulu.

Sciena sammara Schneider, Syst. Ichthy., 89, 1801, Red Sea.
Holocentrum sammara, Günther, Fische der Südsee, 100, 1875 (Society and Paumotu islands).

58. Holocentrus diadema Lacépède.

Color in life (field No. 114), body bright red, with about 9 white longitudinal stripes, somewhat diverging from the head and converging toward the tail; iris red; top of head and snout red; cheek white with a red stripe from pupil to preopercular spine; first dorsal a dark scarlet with a longitudinal white stripe broken at the sixth and seventh spines; outer tips of the first to eighth spines transparent; second dorsal red; caudal red; anal red, but membrane between longest spine and first soft ray bright scarlet; pectoral pale red; ventral with a narrow white line next and parallel to the spine; parallel to this a wider bright scarlet line, the remainder of the fin colorless.

I obtained 11 specimens of this brilliant fish, ranging from 4 to 6.5 inches in length. It is quite abundant about the reef.

Holocentrum diadema Lacépède, Hist. Nat. Poiss., IV, 335, 372, 374, pl. 32, fig. 3, 1802; Günther, Fische der Südsee, 97, 1875 (Samoa, Tahiti, Tonga, and Hawaiian Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 492 (Honolulu, Laysan).

59. Holocentrus microstomus Günther.

Two specimens, respectively 6 and 6.2 inches in length, of this species are in Dr. Wood's collection from Honolulu.

Holocentrum microstoma, Günther, Cat., I, 34, 1859, Amboyna; Günther, Fische der Südsee, I, 98, pl. 64, fig. B, 1875 (Amboyna, Samoa, Tonga, Society, Kingsmill, Hervey, Paumotu, and Hawaiian islands).
Holocentrus microstoma, Seale, Occasional Papers, Bishop Museum, I, No. 3, 70, 1901 (Guam).

60. **Holocentrus leo** Cuvier & Valenciennes.

One specimen of this species was taken by Jordan & Snyder. While widely distributed throughout Polynesia, this seems to be its first record from the Hawaiian Islands.

Holocentrum leo, Cuvier & Valenciennes, Hist. Nat. Poiss., III, 204, 1829, Society Islands, Waigiou.
Holocentrum spiniferum, Günther, Fische der Südsee, I, 94, 1874.
Holocentrus spinifer, Fowler, Proc. Ac. Nat. Sci. Phila. 1899, 483 (Thornton Island).

61. **Holocentrus erythræus** Günther.

One specimen of this species, 8.5 inches in length, is in Dr. Wood's collection, and one, 13.5 inches long, was taken by Jordan & Snyder at *Honolulu*.

Holocentrum erythræum Günther, Cat., I, 32, Sea of San Christoval, 1859; Günther, Fische der Südsee, 99, pl. 63, fig. B, 1875 (Kingsmill, Society, Paumotu, and Hawaiian Islands).

62. **Holocentrus diploxiphus** Günther.

Fifteen specimens, from 4 to 5.5 inches long, were obtained; three are in Dr. Wood's collection, each 5 inches in length; one was obtained by the *Albatross*, 5.2 inches, in 1896, and three by Jordan & Snyder, 4.5 to 5 inches in length. It is brought to the market in large numbers.

Holocentrum diploxiphus Günther, Proc. Zool. Soc. Lond. 1871, 660, pl. 60, 2 figs., Samoa; Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 501 (Hawaiian Islands; coll. J. K. Townsend).

Family XXIV. SCOMBRIDÆ.

63. **Auxis thazard** (Lacépède).

This important food-fish is caught by the hook and is common in the Honolulu market. It has not before been reported from the Hawaiian Islands.

Scomber thazard Lacépède, Hist. Nat. Poiss., III, 9, 1802, between 6° and 7° S. Lat., coast of Guinea.
Auxis thazard Jordan & Evermann, Fishes North and Mid. Amer., I, 867, fig. 365, pl. CXXXIII.

64. **Gymnosarda pelamis** (Linnæus).

This fish is abundant at Honolulu, where large numbers are brought to the market. One specimen, 17 inches in length, taken by me, has 6 narrow dark bands along the side, instead of 4, as given in descriptions. This seems to be its first record from the Hawaiian Islands.

Scomber pelamis Linnæus, Syst. Nat., ed. X, 297, 1758, open sea, locality unknown.
Thynnus pelamys, Günther, Cat., II, 364, 1860.
Gymnosarda pelamis, Jordan & Evermann, Fishes North and Mid. Amer., I, 868, 1896.

65. **Gymnosarda alletterata** (Rafinesque).

Common at Honolulu, although this is its first record from the Hawaiian Islands. One example (field No. 389), 15 inches in length, was taken. *G. alletterata* and the two preceding species are caught by the hook, by means of a short pole and line.

Scomber alletteratus Rafinesque, Caratteri, 46, 1810, Palermo.
Thynnus thunnina Günther, Cat., II, 364, 1860.
Gymnosarda alletterata, Jordan & Evermann, Fishes North and Mid. Amer., I, 869, 1896.

66. **Acanthocybium solandri** (Cuvier & Valenciennes). "*Omu.*"

I saw in the market one large example, 48 inches long exclusive of caudal. D. XXVII–13+9; A. 12+8; body covered with small scales; origin of anal just under soft dorsal; gape extending to middle of eye; pectoral 8 in body; strong keel on tail. This is the first record of this species for Honolulu.

Cybium solandri Cuvier & Valenciennes, Hist. Nat. Poiss., VIII, 192, 1831, open sea, locality unknown.

Family XXV. CARANGIDÆ.

67. **Scomberoides tala** (Cuvier & Valenciennes). "*Hai.*"

Color in life, upper part of body light gray, with silvery reflections, lower part silvery white; a row of about 6 very indistinct spots about as large as pupil above lateral line; a dusky blotch on first five rays of dorsal; tips of ventrals milky white; lower margin of caudal white. I obtained five

specimens, 8 to 10 inches in length. Two examples, 7.5 and 8 inches long, are in Dr. Wood's collection, and one, 6.5 inches long, was collected by the *Albatross* in 1896. This species differs from *S. sancti-petri*, as described by Cuvier & Valenciennes, in having a simple bend in the lateral line and in having a longer pectoral.

Chorinemus tala Cuvier & Valenciennes, Hist. Nat. Poiss., VIII, 377, 1831, Malabar.
Chorinemus moadetta Cuvier & Valenciennes, Hist. Nat. Poiss., VIII, 382, Red Sea.
Chorinemus moadetta, Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 495 (Honolulu).

68. Scomberoides sancti-petri (Cuvier & Valenciennes).

One specimen, 7.5 inches long, obtained by Jordan & Snyder in 1900. I did not see it in 1889.

Chorinemus sancti-petri Cuvier & Valenciennes, Hist. Nat. Poiss., VIII, 379, 1831, Malabar; Streets, Bull. U. S. Nat. Mus., No. 7, 70, 1877 (Hawaiian Islands); Günther, Fische der Südsee, v, 138, 1876; Steindachner. Denks. Ak. Wiss. Wien, LXX, 1900, 496 (Honolulu).

69. Seriola sparna Jenkins, new species.

Head 3.6 in length to base of caudal; depth equal to head; eye 1.3 in snout; D. VI, 32; A. II, 20; scales 220; head conical; body fusiform; mouth somewhat below axis of body; least depth of caudal peduncle but little greater than its width at same position; eye with adipose eyelid before and behind; interorbital strongly convex, about equal to snout and slightly less than 3 in head; premaxillary

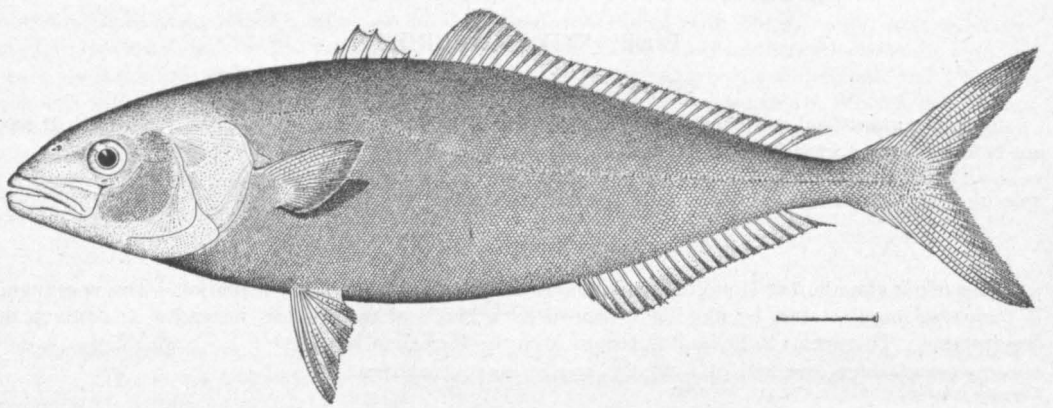


FIG. 14.—*Seriola sparna* Jenkins, new species. Type.

protractile; maxillary with supplemental bone; maxillary 2.5 in head, reaching to anterior margin of pupil, its posterior margin oblique, nearly equaling vertical diameter of eye; cheek and part of opercle scaled, remainder of head naked; teeth in villiform bands on jaws, palatines and tongue; preopercle entire; gillrakers longer than diameter of pupil, 22 on lower arm of first arch; first dorsal low, second

scales 220; head conical; body fusiform; mouth somewhat below axis of body; least depth of caudal peduncle but little greater than its width at same position; eye with adipose eyelid before and behind; interorbital strongly convex, about equal to snout and slightly less than 3 in head; premaxillary

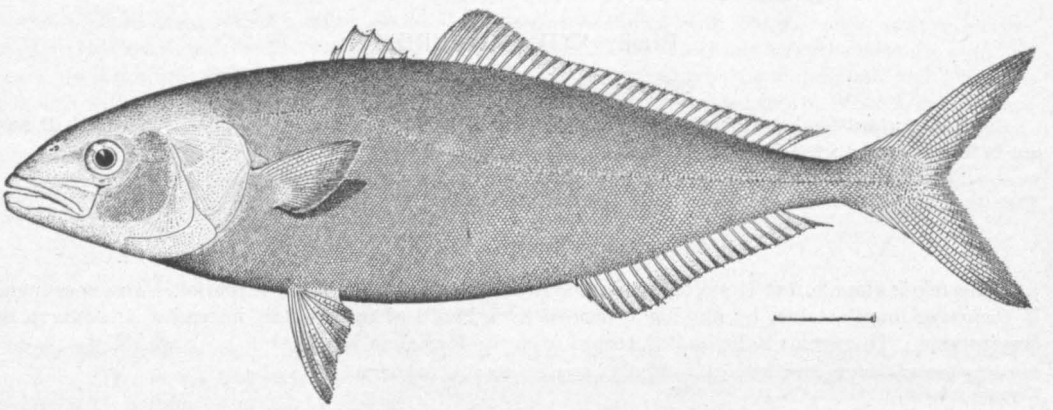
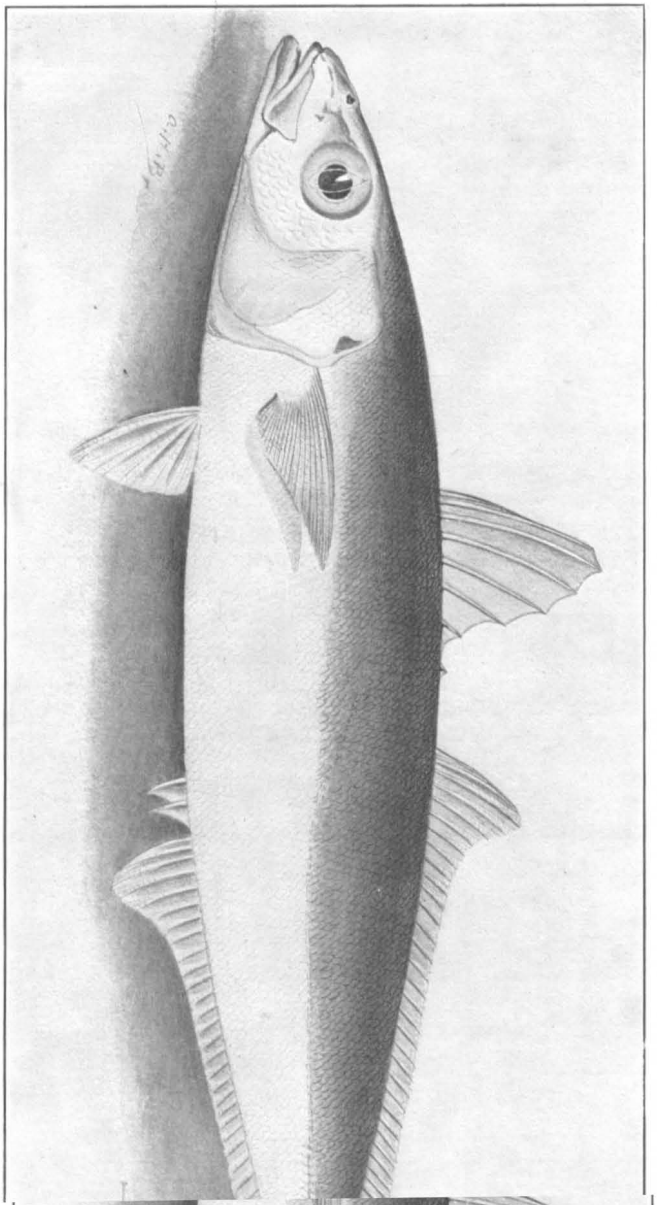
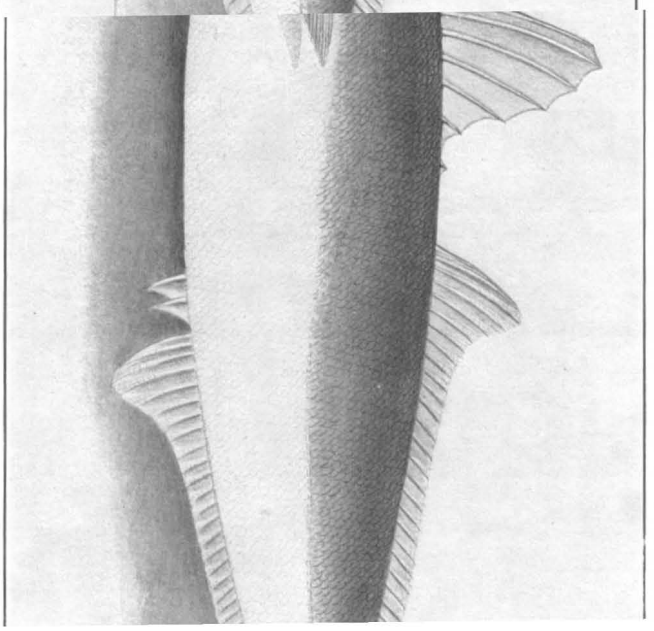


FIG. 14.—*Seriola sparna* Jenkins, new species. Type.

protractile; maxillary with supplemental bone; maxillary 2.5 in head, reaching to anterior margin of pupil, its posterior margin oblique, nearly equaling vertical diameter of eye; cheek and part of opercle scaled, remainder of head naked; teeth in villiform bands on jaws, palatines and tongue; preopercle



DECAPTERUS CANONOIDES JENKINS, NEW SPECIES. TYPE.



DECAPTERUS CANONOIDES JENKINS, NEW SPECIES. TYPE.

palatines; body completely scaled; cheeks, opercle and top of head to middle of interorbital space scaled, remainder of head naked; anterior portion of lateral line to twelfth soft dorsal only slightly curved, remainder straight, with about 27 armed scutes; width of one of largest scutes equaling half eye; origin of dorsal spines only slightly in front of tips of pectoral and ventral fins; spines slender; third spine the longest, 2 in head, its tip nearly reaching last spine, the last two spines very short, sinking into a groove; space between last dorsal spine and origin of soft dorsal equaling eye; origin of soft dorsal slightly in advance of that of soft anal; longest soft dorsal ray 3.3 in head; soft anal similar in form to soft dorsal, its base 1.3 the base of soft dorsal; space from each fin to detached finlet 1.7 in eye; caudal broadly forked, lobes about equal; pectoral 1.6 in head, its origin slightly in advance of origin of ventrals; ventrals 2.5 in head; vent half way from tip of snout to angle of fork of caudal.

Color in alcohol, dark bluish above, with silvery reflections, silvery below; black spot on opercle near its upper angle; dorsal fin somewhat dusky, with small black punctulations; soft anal lighter, the other fins pale.

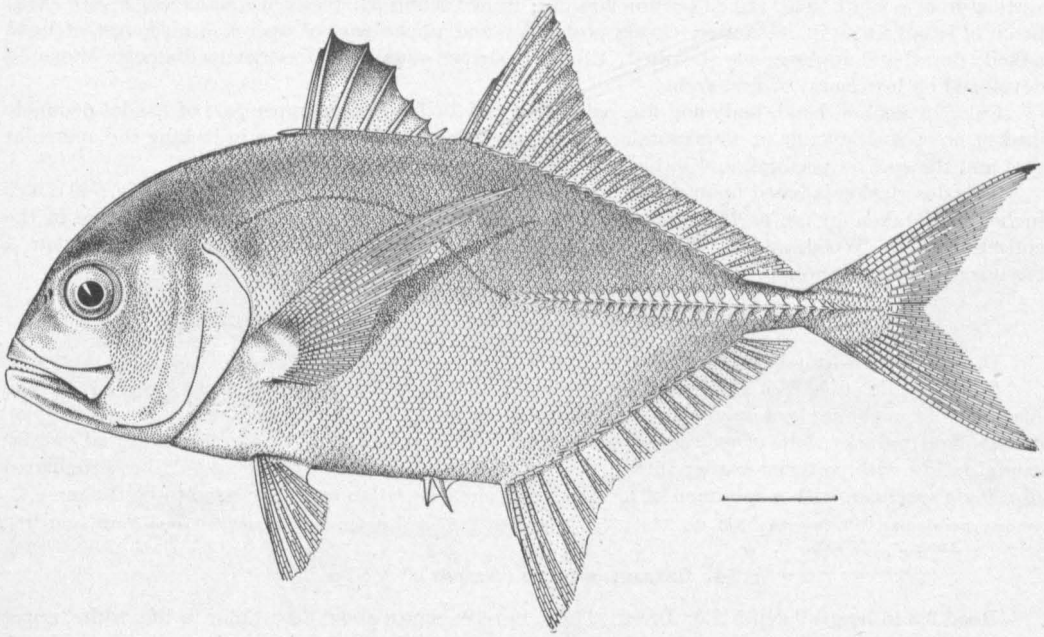
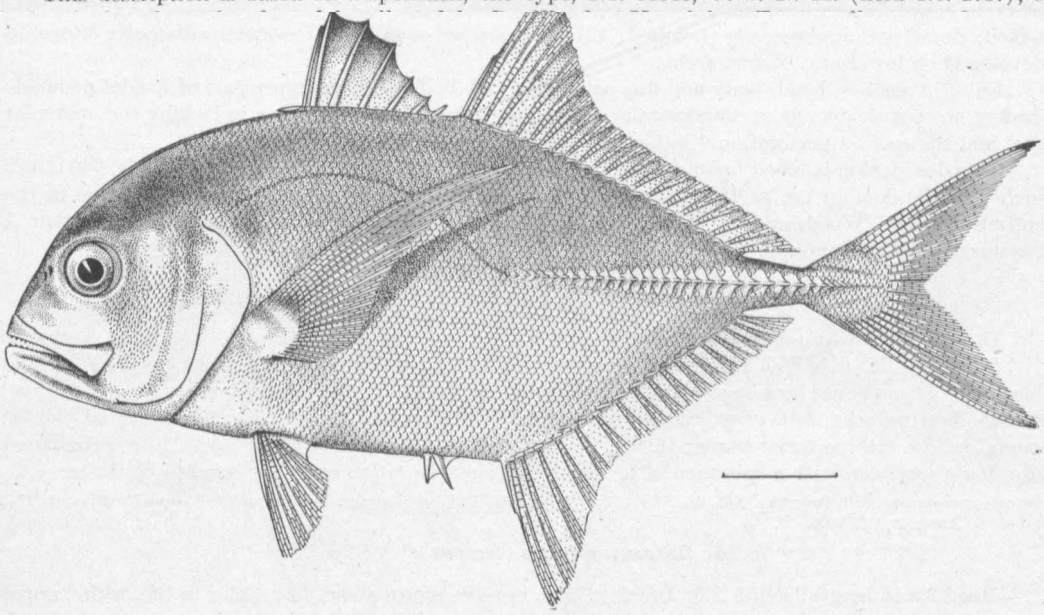


FIG. 15.—*Carangus hippoides* Jenkins, new species. Type.

This description is based on a specimen, the type, No. 50846, U. S. N. M. (field No. 2737), 9



snout to origin of second dorsal a curve somewhat more convex over the head; along the base of the soft dorsal the outline is only slightly convex; ventral outline from tip of lower jaw to origin of soft anal nearly straight, obliquely descending; base of anal similar to soft dorsal; depth of caudal peduncle less than its width; body compressed, width about 2.5 in head; interorbital equaling eye; eye mostly above axis of body, its posterior border halfway from snout to posterior border of opercle; jaws subequal, maxillary reaching to vertical through center of pupil; teeth on vomer, palatines and tongue villiform, those on jaws in a single series, conical, short, and strong; spinous dorsal with 1 procumbent spine and 8 joined spines, the third longest, somewhat more than half of head, its tip reaching tip of seventh spine, fourth spine nearly equaling third; soft dorsal and anal falcate, similar in form, the lobe about three-fourths of head, base of soft dorsal the longer, 2.5 in body to base of caudal; pectoral slender, strongly falcate, length about equaling that of soft dorsal, 1.3 in body; tip of ventrals reaching just past vent and one-half distance from origin to origin of soft dorsal; caudal deeply forked, lobes equal; anterior portion of lateral line well arched, arched portion of 55 scales reaching about to vertical from seventh anal, armed portion straight; armed scutes 32; breast naked except a very small patch of small scales in its center; cheek, postocular and upper part of opercle scaled, rest of head naked; dorsal and anal scarcely sheathed; gillrakers strong, equaling three-fourths diameter of eye, 13 developed on lower arm of first arch.

Color in alcohol, head, body and fins pale, head and body silvery; upper part of caudal peduncle dusky; no spot on opercle or on pectoral. Similar to *C. hippos*, but differing in lacking the opercular spot and the spot on pectoral, and in having a larger snout and deeper head.

This description is based upon a specimen, the type, No. 50710, U. S. N. M. (field No. 749), 9.25 inches long, taken by me at Honolulu in 1889. Another (field No. 751), 5.5 inches long, is in the collection of Dr. Wood, and another (field No. 750), 7.25 inches long, was obtained by Jordan & Snyder in 1900 at Honolulu.

73. **Carangus marginatus** (Gill). "*Ulua.*"

D. VIII–I–20; A. II–I–17; scutes about 29.

Color in life (field No. 180), nearly white, with silvery and golden reflections; iris red; a small black spot at upper angle of opercular opening; golden areas on preopercle and opercle behind the eye; dorsal slightly dusky, lobe of soft dorsal with dusky blotch, remainder of fin yellowish; anal yellow; caudal yellow with posterior border dusky; pectoral transparent; ventral fins white. I have compared my single specimen with a specimen of *C. marginatus* from Mazatlan and they seem to be the same.

Caranx marginatus Gill, Proc. Ac. Nat. Sci. Phila. 1863 (1864), 166, Panama; Jordan & Evermann, Fishes North and Mid. Amer., I, 922, 1896.

74. **Carangus latus** (Agassiz). "*Ulua.*"

Head 3.3 in length; depth 2.5; D. VIII–23; A. II–I–19; scutes about 38. Color in life, white, upper parts with steel-blue reflections, yellowish along the region of the scutes; lower parts silvery; no black on or behind opercle; iris yellow; first dorsal yellowish; second dorsal, lobe slightly dusky with bluish tinge; caudal slightly dusky with bluish tinge; membranes of anal spines milky white; lobe of anal slightly dusky; ventrals white.

I obtained ten specimens of this fish, ranging from 4 to 9 inches in length; and three, from 3 to 4.75 inches in length, were taken by the *Albatross* in 1896. These compared with specimens of *C. latus* from the west coast of Mexico and from Clarion Island show no differences. The native fishermen do not distinguish this species as different from *C. marginatus*, which, with it, is highly prized as a food-fish. Both are abundant.

Caranx latus Agassiz, Pisc. Bras., 105, pl. LVI–*b*, I, 1829, Brazil; Jordan & Evermann, Fishes North and Mid. Amer., I, 923, 1896; Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 501 (Hawaiian Islands).

Caranx hippos, Günther, Fische der Südsee, V, 131, pl. 84, 1876; ibid., Rept. Challenger, Zool., XI, 59, 1880 (Hawaiian Islands).

75. **Carangus rhabdotus** Jenkins, new species.

Head 3.5 in length; depth 2.6; eye 3.75 in head; D. I–VIII–I–20; A. II–I–16; armed scutes 32. Form of body elliptical, the dorsal outline an even curve somewhat more convex than ventral outline; greatest depth of head equaling its length; center of eye slightly above axis of body; interorbital slightly greater than eye; snout somewhat shorter than eye; maxillary with supplementary bone

reaching to vertical through center of pupil, its posterior border broad, three-fourths of eye; mouth oblique; a triangular patch of strong granular teeth on vomer, a single series on palatines, small granular teeth on tongue, an outer series of enlarged teeth on upper jaw, a single series of pointed teeth on lower jaw; body completely scaled, bases of soft dorsal and anal both sheathed; cheeks and upper part of opercle scaled, remainder of head naked; lateral line strongly arched, the arched portion ending about under fifth soft dorsal ray; armed portion of lateral line straight with 32 armed scutes, the majority of which are large, the largest being 0.65 diameter of eye; dorsal with one procumbent spine; third dorsal spine longest (broken in type), 2.2 in head; soft dorsal elevated, longest rays 1.8 in head; base of soft dorsal 2.5 in body to base of caudal; soft anal of similar form, but with shorter base and with shorter elevated rays; caudal forked, lobes about equal; pectoral falcate, length about equaling head, tip of ventral reaching just past vent and halfway to origin of soft dorsal.

Color in alcohol, bright silvery, darker above, with 5 indistinct vertical dark bands nearly as wide as eye; on upper three-fourths of body, a sixth, less distinct showing on caudle peduncle; no opercular spot; fins plain except elevated portions of soft dorsal and anal, which are tipped with black.

This description is based upon the type, No. 50711, U. S. N. M., a specimen 5.5 inches in length, collected by the *Albatross* at Honolulu in 1896.

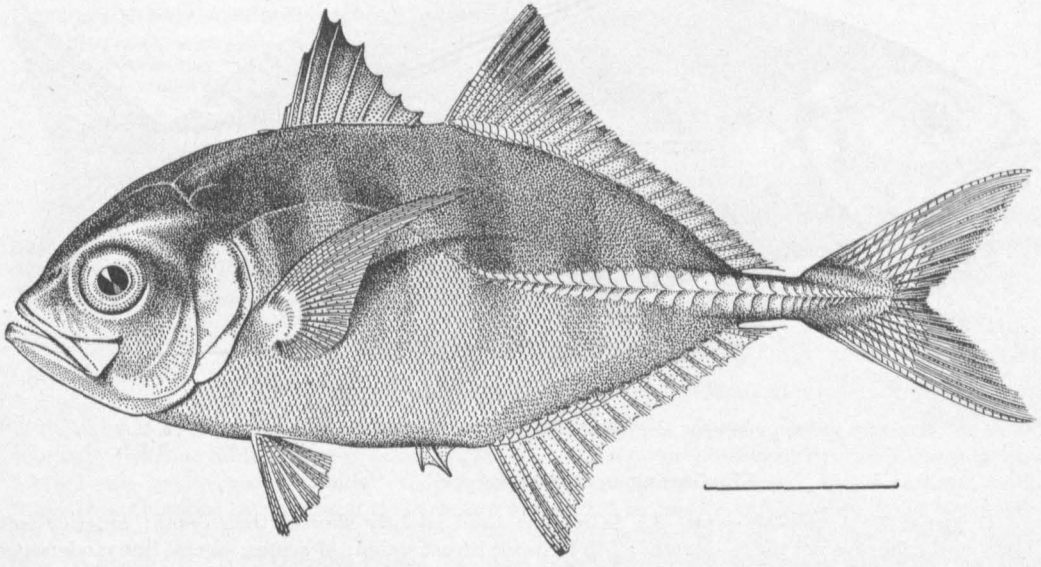


FIG. 16.—*Carangus rhabdotus* Jenkins, new species. Type.

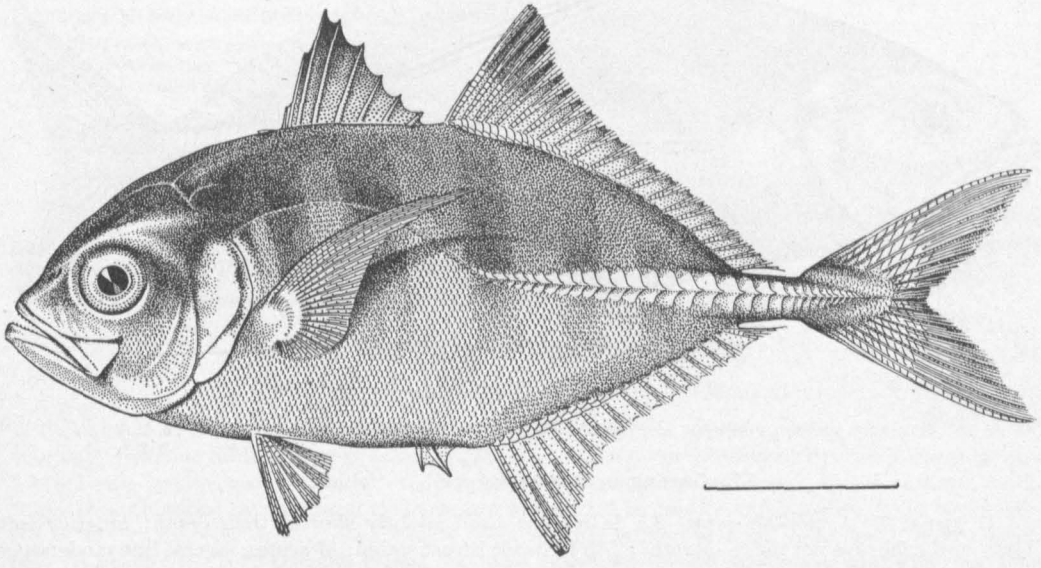


FIG. 16.—*Carangus rhabdotus* Jenkins, new species. Type.

reaching origin of soft dorsal; anterior soft dorsal elevated, longest rays 1.9 in head; soft anal similar in form, shorter and less high; pectoral slender, falcate, about equaling depth; origin close to margin of opercle; caudal obtusely forked, lobes equal; ventral 2.1 in head, its tip reaching posterior margin of vent and slightly past midway point from its origin to first anal spine; distance from snout to anus 2.4 in body to base of caudal.

Color in life, back light-greenish with 9 very indistinct bands; snout and lips dusky; margin of first dorsal yellow, second dorsal and caudal yellow; lower part of body silvery white; black spot on margin of opercle near upper angle, the black extending onto body.

This description is based on a specimen 8 inches in length (field No. 100) taken by me at Honolulu in 1889. Only one other specimen was obtained. It is 5 inches in length and does not differ from the type except in size. Type, No. 50709, U. S. N. M.

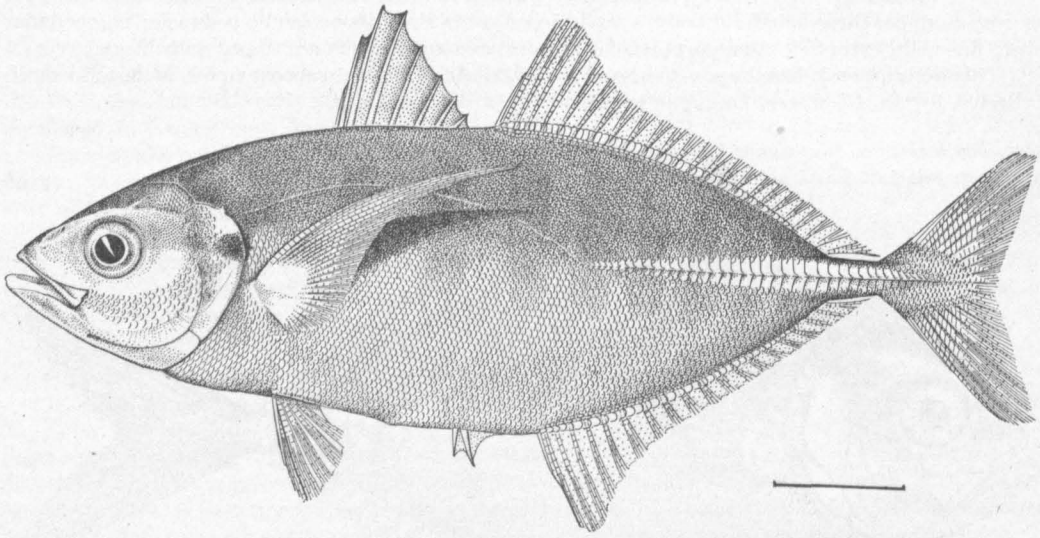


FIG. 17.—*Carangus politus* Jenkins, new species. Type.

77. Carangus affinis (Rüppell). *"Amuka."*

D. VIII–I, 23; A. II–I–20; depth 3.5 in length; head slightly shorter than depth; anterior soft dorsal and anal rays not much elevated, 2.25 in head; breast scaled; 37 scutes; lateral line moderately arched; the curved part equaling the straight part to front of caudal peduncle; teeth very small, slender, in a single series in each jaw; villiform teeth on vomer, palatines and tongue; pectoral long, somewhat

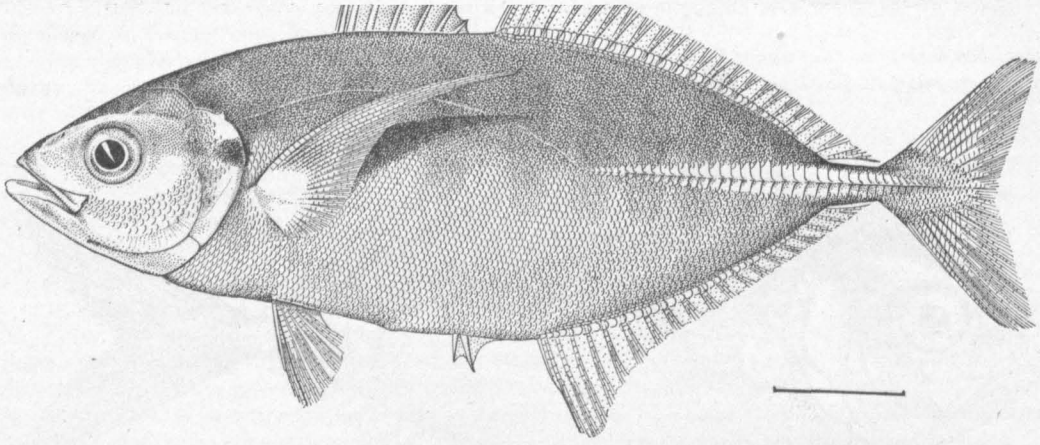


FIG. 17.—*Carangus politus* Jenkins, new species. Type.

77. Carangus affinis (Rüppell). *"Amuka."*

D. VIII–I, 23; A. II–I–20; depth 3.5 in length; head slightly shorter than depth; anterior soft dorsal and anal rays not much elevated, 2.25 in head; breast scaled; 37 scutes; lateral line moderately arched; the curved part equaling the straight part to front of caudal peduncle; teeth very small, slender,

79. Caranx speciosus (Forskål). "*Ulua Pauu.*"

Color in life (field Nos. 106 and 296, 4.5 and 5.25 inches in length), head, body and fins a bright golden yellow, the body with 11 black crossbands, narrow ones alternating with broader ones, the bands not extending on the fins. A large specimen about 20 inches in length, even when fresh, showed no trace of the bands and lacked the bright yellow color on the body. I obtained 3 specimens, and 2 are in Dr. Wood's collection, 7.75 and 8.5 inches in length, each of which shows the crossbands distinctly. The fish does not seem to be very common at Honolulu.

Scomber speciosus Forskål, Desc. Anim., p. XII, 1775, Red Sea.
Caranx speciosus, Günther, Cat., II, 444, 1860; Steindachner, Denks. Ak. Wiss. Wien, LXX, 495, 1900 (Hawaiian Islands).
Gnathanodon speciosus, Jordan & Evermann, Fishes North and Mid. Amer., I, 928, 1896.

80. Alectis ciliaris (Bloch). "*Ulua Kihikihi.*"

Color in life, lead colored above, bright silvery below; first dorsal filament white, tips of the other filaments white and black; a dusky blotch on the dorsal fin. One specimen was secured, 5.5 inches in length. Two specimens in Dr. Wood's collection, each 5.5 inches in length, have the same coloration, and in addition show about 5 indistinct crossbands on the upper part of body. One specimen (field No. 1337) 2.5 inches long, was obtained by the *Albatross* in 1896. This fish seems to be rare at Honolulu, as only occasional examples are taken.

Zeus ciliaris Bloch, Ichthyolgia, VI, 27, pl. 191, 1788, East Indies.
Caranx ciliaris, Günther, Cat., II, 454, 1860; ibid., Fische der Südsee, V, 135, pl. 89, 1876 (Hawaiian Islands).
Alectis ciliaris, Jordan & Evermann, Fishes North and Mid. Amer., I, 931, 1896.

Family XXVI. KUHLIDÆ.

81. Kuhlia malo (Cuvier & Valenciennes).

Color in life, upper parts light gray, lower part silvery. It is a good food-fish. Numerous specimens are in my collection, the largest being 8.7 inches in length. It is very common about the islands, ascending the fresh-water streams.

Dules malo Cuvier & Valenciennes, Hist. Nat. Poiss., VII, 479, 1831, Tahiti.

Family XXVII. CORYPHÆNIDÆ.

82. Coryphæna hippurus Linnæus. "*Mahihi.*"

Head 4.75 to base of caudal; depth through base of pectoral, nearly equaling head; D. 56; A. 26; maxillary reaching middle of eye; dorsal beginning over anterior portion of eye, its highest portion 1.3 in head; profile nearly vertical; ventral inserted slightly behind upper ray of pectoral, under thirty-seventh dorsal ray; pectoral 1.3 in head; ventral 1.2 in head. Color in life, body bluish-gray above, silvery on belly, with golden tinges, covered with numerous small blue spots; dorsal bright blue (in alcohol the blue becomes black). I have examined several specimens in the market, some 44 inches in length. In one the maxillary reached nearly to the vertical of posterior border of eye. The example described is 37 inches in total length, or 28.5 inches to base of caudal. This is the first record of this species in the eastern portion of Polynesia. This fish is used for food in Honolulu. One specimen was obtained and several larger ones were seen in the market from time to time.

Coryphæna hippurus Linnæus, Syst. Nat., ed. X, 261, 1758, in the open sea; Günther, Cat., II, 405; Günther, Fische der Südsee, 146, 1876.
Coryphæna japonica Schlegel, Fauna Japon., Poiss., 120, pl. 64, 1842.

Family XXVIII. APOGONIDÆ.

83. Fowleria brachygrammus Jenkins, new species.

Head 2.6 in length; depth 2.6; eye 3 in head; snout 1.5 in eye=interorbital; D. VII–I, 9; A. II, 7; C. 22; P. 11; V. I, 5; scales $1\frac{1}{2}$–22–4; dorsal and ventral outlines symmetrical; front of mouth on axis of body; cleft of mouth oblique; suborbital very narrow, 2.5 in snout; teeth minute, villiform, on jaws, vomer, and palatines; preopercular margin entire, a small flat spine at angle of opercle; angle of preopercle rounded; gillrakers of moderate length, only 7 well developed on lower half of first arch, 3 anterior ones rudimentary; first dorsal spine very short, second a little longer than half of the third,

third longest, 1.6 in head; median soft rays longest, equal to third spine; first anal spine very short, second equal to second dorsal spine; first soft anal rays longest, equal to longest soft dorsal rays; caudal mutilated, outline and length indeterminate; least depth of caudal peduncle 2 in head; pectoral 1.75 in head, somewhat longer than distance from tip of snout to posterior rim of orbit; ventral not quite equaling pectoral; scales very large, loosely inserted, ctenoid; anterior portion of lateral line with about 10 tubes ending just below front of second dorsal fin; the posterior portion continued to base of caudal as very rudimentary pores on the row of scales two scales below.

General coloration in life plain; pectoral light rosy; dorsal, caudal, and anal yellow; ventral dusky.

One specimen, 1.5 inches in length, taken by me in coral rocks at Honolulu. This is probably the species recorded by Streets as *Apogon auritus*. Type, No. 50699, U. S. N. M., Honolulu.

? *Apogon auritus*, Streets, Bull U. S. Nat. Mus., No. 7, 72, 1877(Honolulu); not of Cuvier & Valenciennes.

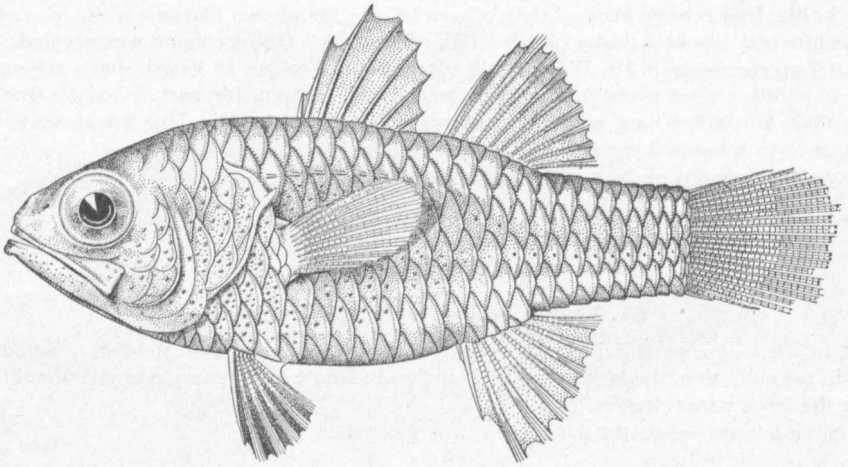


FIG. 20.—*Fowleria brachygrammus* Jenkins, new species. Type.

84. Apogon maculiferus Garrett.

Two specimens of this species, 3.75 and 4.8 inches in length, were taken by Jordan & Snyder in 1900. I did not see it in 1889. It is conspicuously marked with 6 or 7 longitudinal rows of dark dots on the sides of the body.

Apogon maculiferus Garrett, Proc. Cal. Ac. Sci., Series I, III, 105, 1863, Hawaiian Islands; Günther, Fische der Südsee, I, 20, 1873 (Sandwich Islands).

85. Apogon snyderi Jordan & Evermann.

Color in life (field No. 198) general color pale red, 2 longitudinal nearly lines on the body; iris

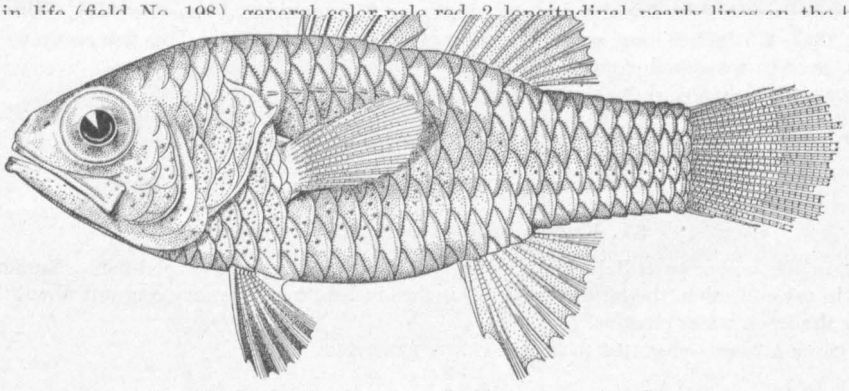


FIG. 20.—*Fowleria brachygrammus* Jenkins, new species. Type.

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Two specimens of this species, 3.75 and 4.8 inches in length, were taken by Jordan & Snyder in 1900. I did not see it in 1889. It is conspicuously marked with 6 or 7 longitudinal rows of dark dots on the sides of the body.

Apogon maculiferus Garrett, Proc. Cal. Ac. Sci., Series I, III, 105, 1863, Hawaiian Islands; Günther, Fische der Südsee, I, 20, 1873 (Sandwich Islands).

85. Apogon snyderi Jordan & Evermann.

in head, second 2 in third, seventh 2 in second, eighth spine 2.75 in head, equal to fifth; first soft ray longest, 1.6 in head; last ray equal to eighth spine; length of caudal peduncle (from end of dorsal to base of caudal rays) 3.5, slightly tapering posteriorly; caudal notched; first anal spine very short, second 3 in head, anterior soft rays longest, 1.8 in head; lateral line complete, following curvature of back; scales finely ciliated; opercle and preopercle scaled; rest of head naked.

Color in life (field No. 303), general color pale red, finely punctate with black, brown, and deeper red; black longitudinal line from snout through eye just below edge of pupil; first dorsal with a black bar on anterior border, second dorsal and anal each with a black longitudinal band near the base, the band of the dorsal with a white band below it, that of the anal with a white band above and one below; basal part of caudal brown; a submarginal black band on dorsal and one on ventral border of caudal fin, these connected near base of fin by a transverse, crescent-shaped, black band; ventral with anterior margins black distally, olive basally; pectoral pale red. In alcohol there appears to be a narrow pale band along the lateral line.

This description is based on the type, No. 50700, U. S. N. M. (field No. 675), 5 inches in length, and eleven cotypes ranging from 5 to 6 inches in length collected by me in 1889, and five from 5 to 6 inches collected by Jordan & Snyder in 1900, all at Honolulu.

This species is quite abundant at Honolulu, where it is sold in the market.

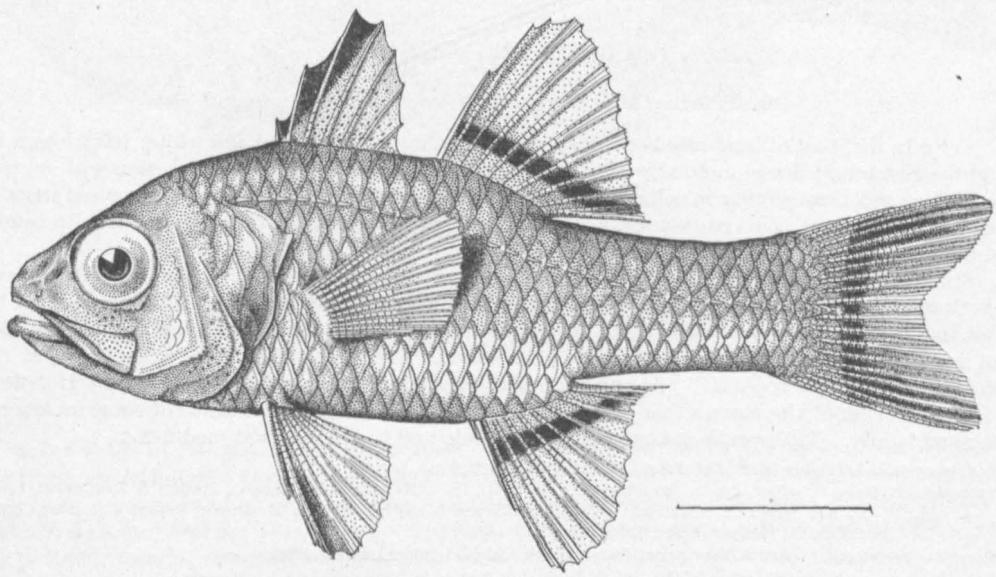

FIG. 19.—*Apogon menesemus* Jenkins, new species. Type.

This species is quite abundant at Honolulu, where it is sold in the market.

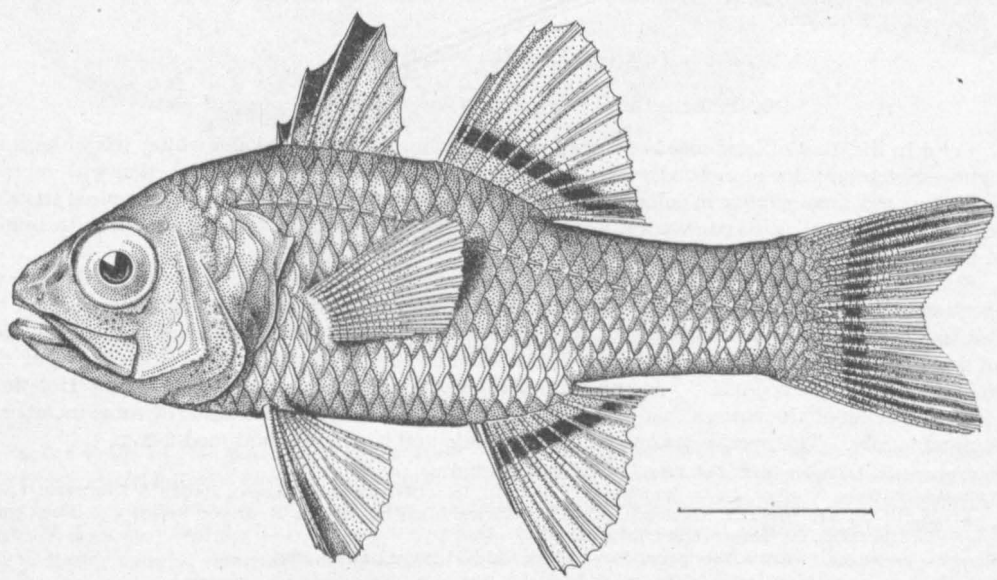

FIG. 19.—*Apogon menesemus* Jenkins, new species. Type.

interorbital 2 in snout; eye elliptical, longer diameter horizontal; posterior nostril oval; maxillary naked; mouth only a little oblique; maxillary with a narrow elongate supplemental bone; small canines in front of upper jaw; smaller depressible teeth in a band of several rows in upper jaw, widest in front, some of the anterior ones enlarged; an outer row of larger fixed teeth; teeth on vomer and palatines; dorsal fin continuous; third and fourth dorsal spines longest, 2.2 in head; first spine short, 2.5 in the third; soft dorsal higher than spinous dorsal, longest rays 2 in head; soft anal similar to soft dorsal; second and third anal spines of equal length, the second thickest; lateral line continuous.

Color in alcohol, head and body light brown, clouded with blackish-brown in irregular pattern; lips, gill-membranes, and fins black.

Two specimens of this species, 3.8 and 12 inches in length respectively, are in Dr. Wood's collection. It was not seen by me.

Epinephelus fuscoguttatus, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 502 (Honolulu); not of Forskål.
Epinephelus quernus, Seale, Occasional Papers, Bishop Museum, I, No. 4, 3, fig. 1, 1901, Honolulu. (Type No. 481, B. P. B. M.)

89. Anthias fuscipinnis Jenkins.

Three specimens, 7.5, 8, and 9.5 inches in length, respectively, are in Dr. Wood's collection.

Anthias fuscipinnis, Jenkins, Bull. U. S. Fish Comm. for 1899 (June 8, 1901), 389, fig. 3, Honolulu. (Type, No. 49695, U. S. N. M.; coll. O. P. Jenkins.)

Family XXX. PRIACANTHIDÆ.

90. Priacanthus cruentatus (Lacépède). "*Aweoweo.*"

Color in life, that of head and body made up of mottlings of bright red and white; iris white, with bright-red blotches; dorsal mottled with red and white and covered on posterior portion with more or less distinct red; anal similar in color to dorsal; caudal red with rows of distinct darker red spots on membranes; pectoral pale red; ventral white with red mottlings; inside of mouth white with bright-red blotches.

Six specimens, ranging from 9.25 to 11 inches in length, were obtained; one is in Dr. Wood's collection and one in that made by Jordan & Snyder. These I have compared with examples of the West Indian species *P. cruentatus* and with specimens collected by Snodgrass & Heller at the Galapagos, and find they can not be distinguished by either color or structural differences. The young of this fish is known as the "red-fish." At various times it has occurred in immense numbers at Honolulu. It is an old belief of the natives that this phenomenon is a precursor of the death of some member of the royal family. This species is abundant at Honolulu and is an important food-fish.

Labrus cruentatus Lacépède, Hist. Nat. Poiss., III, 522, 1801, Martinique.
Priacanthus carolinus, Günther, Fische der Südsee, 17, pl. XVIII, 1873 (Otaheiti and Raiatea); Jordan & Evermann, Fishes North and Mid. Amer., III, Addenda, 2858, 1898 (Clarion Island); Jordan & McGregor, Report U. S. Fish Comm. for 1898 (1899), 278 (Socorro and Clarion islands).
Priacanthus cruentatus, Jordan & Evermann, Fishes North and Mid. Amer., I, 1238, 1896.

91. Priacanthus meeki Jenkins, new species.

Head 3.4 in length; depth 2.6; eye 2.2 in head; snout 3.75; D. X, 14; A. III, 15; scales 120; body compressed, somewhat elliptical in outline; mouth very oblique, lower jaw projecting, ending in a hook; maxillary reaching well beyond anterior border of eye; interorbital somewhat more than half eye; both limbs of preopercle finely serrated, its angle terminating in a small free spine; margin of opercle entire, the flap with 2 keels ending at margin as short, blunt spines; anterior nostril small, with a raised margin; posterior nostril a long, narrow slit, one-third diameter of eye; teeth in bands on vomer, palatines, and jaws, somewhat strong, hooked; dorsal and anal fins high, longest soft dorsal ray 1.3 in head, longest soft anal somewhat shorter; caudal deeply lunate, upper lobe the longer; pectoral 1.6 in head; ventral nearly as long as head, its tip reaching slightly beyond origin of anal; head and body completely covered with small rough scales, the roughened portion of each scale forming a triangular or crescent-shaped patch on posterior portion of the scale; lateral line ascending abruptly from gill-opening, then curving gently to caudal peduncle, upon which it is straight; gillrakers 23 on lower arm of first arch, strong, longest one 3 in eye.

Color in life, uniformly red; iris bright red; inside of mouth and gillrakers bright red; tips of ventrals, soft dorsal and anal and posterior margin of caudal dusky; no spots on the fins.

Priacanthus meeki resembles *P. hamrur* somewhat, but differs from it in the much shorter head, deeper body, larger eye, higher soft dorsal and anal, and in the coloration of the dorsal and anal fins.

The description is based on the type, No. 50847, U. S. N. M., 12 inches in length, and two cotypes, 4 and 4.5 inches long, in Dr. Wood's collection, all from Honolulu. The smaller examples agree with the description of the larger one, except that the spine at the angle of preopercle is more distinct.

This species is named for Dr. Seth Eugene Meek, assistant curator of zoology, Field Columbian Museum.

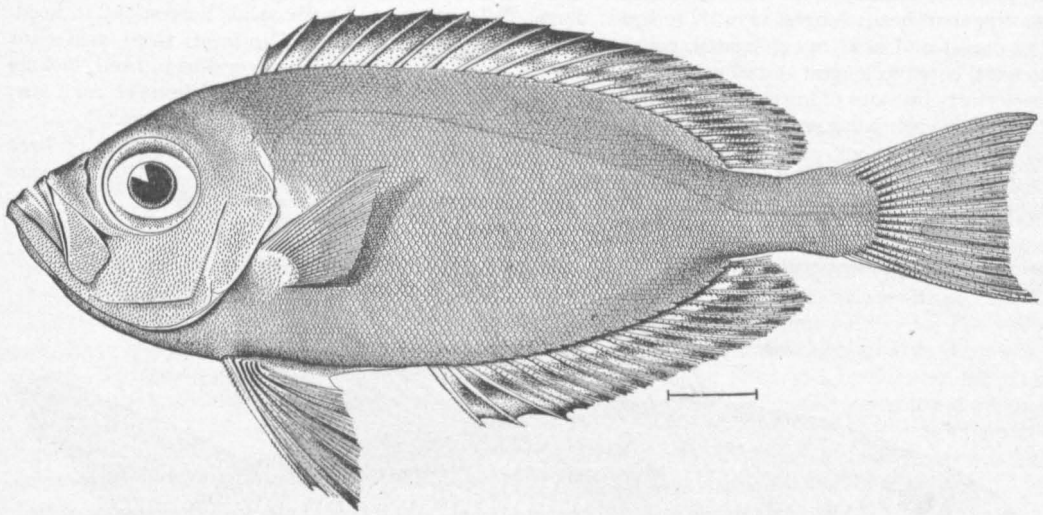

FIG. 20.—*Priacanthus meeki* Jenkins, new species. Type.

Family XXXI. LUTIANIDÆ.

92. Aphareus flavivultus Jenkins.

Color notes of the type taken when fresh (1889), overlooked when the species was originally described, are as follows: General color light-bluish; end of lower jaw, snout, face, and top of head covered by a broad band of bright yellow, the yellow band extending less broad and less distinct to origin of dorsal; dorsal fin with lower portion rosy, outer yellowish; anal yellow; caudal yellow with rosy posterior margin; ventrals yellowish with white anterior margin; pectoral rosy.

One specimen, 12.5 inches long, taken off the coast of Kona, Hawaii. The two young (Nos. 1 and 2) in the table given with the description, identified with this species, are evidently of another

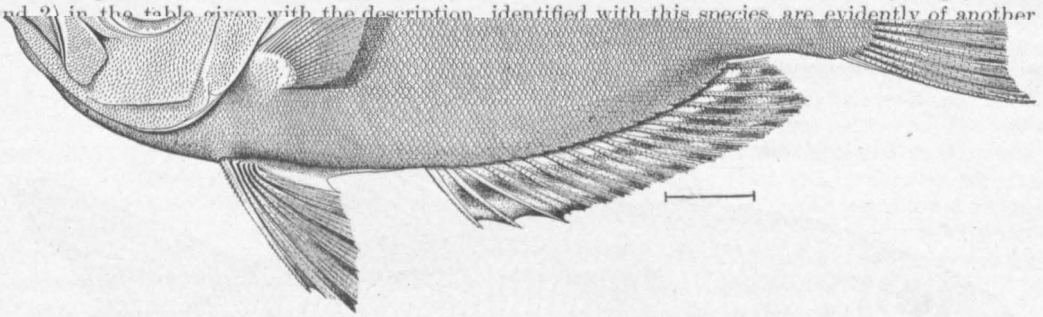

FIG. 20.—*Priacanthus meeki* Jenkins, new species. Type.

Family XXXI. LUTIANIDÆ.

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Color notes of the type taken when fresh (1889), overlooked when the species was originally described, are as follows: General color light-bluish; end of lower jaw, snout, face, and top of head covered by a broad band of bright yellow, the yellow band extending less broad and less distinct to origin of dorsal; dorsal fin with lower portion rosy, outer yellowish; anal yellow; caudal yellow with rosy posterior margin; ventrals yellowish with white anterior margin; pectoral rosy.

One specimen, 12.5 inches long, taken off the coast of Kona, Hawaii. The two young (Nos. 1

95. Apsilus brighami (Seale).

Head 3 in length; depth 2.8; eye 3.6 in head; snout 2.6; suborbital 2.3; interorbital 4; D. x, 11; A. III, 8; scales 7–66–15; snout wide; lips thick; lower jaw not projecting; profile rising from tip of snout to occiput at angle of about 45°, angulated at occiput, profile rising from here at a gentler slope to front of first dorsal; length of caudal peduncle 2 in head, depth of peduncle 3; interorbital flat, occipital ridges prominent upon it; 6 rows of scales on cheek; 8 rows on opercle; preopercle naked, its posterior limb almost vertical, scarcely notched below, both limbs finely serrated; pectoral a little shorter than head; longest rays 1.2 in head; dorsal fin continuous, fourth spine longest, 3.2 in head; last dorsal and anal ray elongated, equal to length of caudal peduncle, 3 in head; third anal spine longest, equal to longest dorsal spine; fine teeth in bands in each jaw, bands widest in front, lacking posteriorly on sides of lower jaw; an outer series of enlarged teeth along sides and front of each jaw; in front of each jaw a series of less enlarged innermost teeth; teeth on vomer and palatines.

Color in alcohol, pale silvery yellowish; a faint indication of 4 wide oblique crossbands on back and upper part of sides—the first on the occiput, the second through front of dorsal fin, third through middle of spinous dorsal, fourth through soft dorsal, a fifth on end of caudal peduncle.

One example of this species is in Dr. Wood's collection.

Serranus brighami Seale, Occasional Papers, Bishop Museum, vol. 1, No. 4, 7, 1901, Honolulu (type, No. 625 B. P. B. M.).

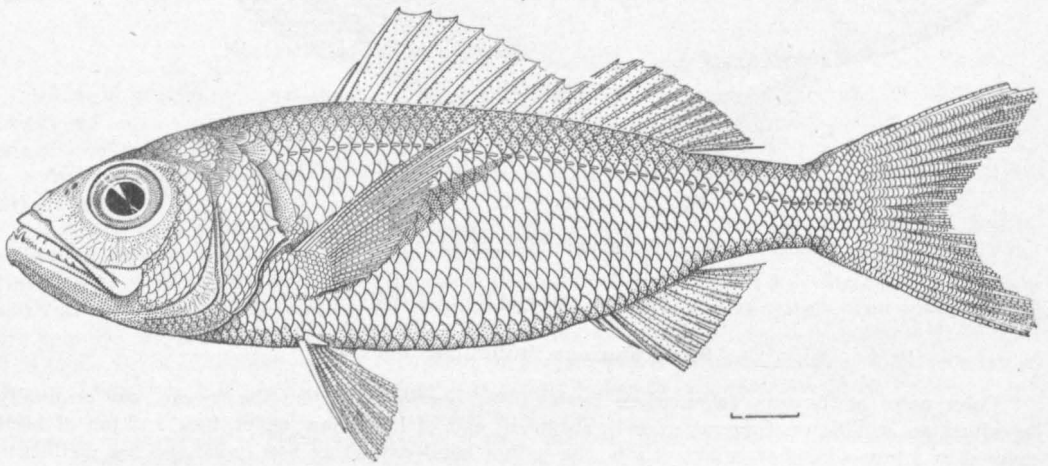


FIG. 21.—*Eteliscus marshi* Jenkins, new species. Type.

96. Aprion virescens Cuvier & Valenciennes.

One example of this species is in Dr. Wood's collection.

Serranus brighami Seale, Occasional Papers, Bishop Museum, vol. 1, No. 4, 7, 1901, Honolulu (type, No. 625 B. P. B. M.).

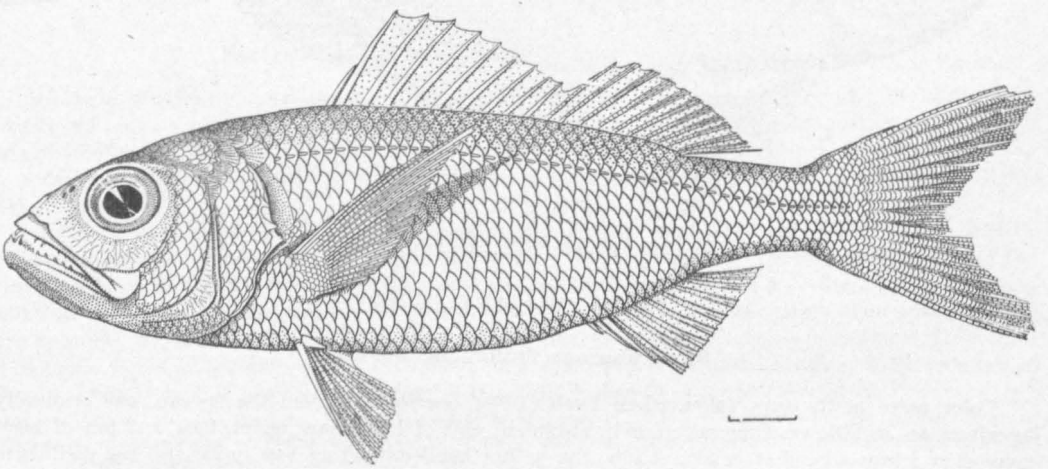


FIG. 21.—*Eteliscus marshi* Jenkins, new species. Type.

96. Aprion virescens Cuvier & Valenciennes.

Color in life, whole body and head pale blue, lighter on belly; dusky blotches between the

longest, 2.6 in head; first short, 2.5 in second, equal to last; first soft dorsal rays abruptly longer than the last spines, 1.3 in second spine; anal spines slender, third longest, equaling eighth spine; last soft ray each of dorsal and anal elongated, equaling first soft ray; caudal deeply forked; lateral line continuous.

Color in alcohol, plain pale yellowish, a little darker above (probably rosy or red in life); very faint indications of light longitudinal bands formed by a light spot on the base of each scale.

This description is based on a specimen 15 inches long, in Dr. Wood's collection from Honolulu. Type, No. 50714, U. S. N. M.

This species is named for Mr. Millard C. Marsh, of the U. S. Fish Commission.

Family XXXII. SPARIDÆ.

98. **Monotaxis grandoculis** (Forskål). "*Mu.*"

The color markings vary in distinctness and character with the age of the fish. Color in life of No. 260, 6.75 inches in length, body light, almost white, with three broad dusky bands across back to middle of body; width of first band from head to first dorsal spine; second band, from fourth dorsal spine to past ninth; third band from in front of eleventh spine to last ray; dusky areas on dorsal, a distinct black area from last spine to fourth soft ray; posterior margin of caudal olivaceous; outer margin of anal olivaceous; anterior margin of pectoral yellow, rest of fin pale pinkish; ventrals white with rosy shadings; lips yellow; iris white, yellowish area about the eye. In another specimen, No. 323, 14 inches in length, outer margin of dorsal bright red; pectorals and ventrals red; upper lips yellow.

Four specimens, 6.75, 7.5, 9, and 14 inches in length, respectively, were obtained at Honolulu in 1889. This series shows well the variations in form and coloration remarked by Bleeker, which has led him to regard the species of authors as one. This species, while frequently seen, is not abundant at Honolulu. At the time of my visit it was not easy to obtain specimens, as from some superstition connected with it, it was in high estimation by the native fishermen, on which account when taken it was either retained to be eaten "with a friend," or an exorbitant price was asked for it.

Sciæna grandoculis Forskål, Desc. Anim., 53, 1775.
Monotaxis indica Bennett, Life of Raffles, Cat. Fish., Sumatra, 683, 1830.
Spherodon grandoculis Rüppell, Neue Wirbe. des Rothen Meeres, 113, tab. 28, fig. 2, 1835 (March, 1838): Günther, Cat., I, 465; ibid, Fische der Südsee, 67, 1873 (Sandwich, Society, Friendly, Samoa, Kingsmill, Hervey, and Pelew islands).
Spherodon heterodon Günther, Cat., I, 465; Bleeker, Atlas, VIII, Taf. 299, 1876; Day, Fishes of India, I, 138, 1876 (Ceylon and Malay Arch.).
Monotaxis grandoculis, Bleeker, Atlas, VIII, 105, pl. 299, fig. I, 1876.

Family XXXIII. KYPHOSIDÆ.

99. **Kyphosus elegans** (Peters).

Color in life (field No. 161), a golden band on lower part of premaxillary and maxillary extending from angle of mouth horizontally back on preopercle to behind eye; a golden spot on nostril, and one behind eye; membranes of opercles golden; axil golden; longitudinal golden stripes on side between rows of scales. I have compared the 4 specimens taken at Honolulu with examples of *K. elegans* from Mazatlan and can detect no structural differences.

Pimelepterus elegans Peters, Berliner Monatsberichte K. Preuss., Ak. Wiss., 707, 1869, Mazatlan.
Kyphosus elegans, Evermann & Jenkins, Proc. U. S. N. M. 1891, 155 (Guaymas).

Family XXXIV. MULLIDÆ.

100. **Mulloides samoensis** Günther. "*Weke.*"

Color in life (field No. 134), general color white, with light-green shadings on the back; belly white with yellowish tinges; a bright yellow line from eye to base of caudal, wider than pupil; yellow stripes under eye; 2 faint yellow lines along side beneath the large one; first and second dorsals and caudal yellow, the other fins white; irregular rosy blotches on anterior portion of body; barbels white.

Six specimens, 7.5 to 13 inches in length, were collected by me, and 2 examples, each 11 inches in length, were taken by the *Albatross* in 1896. At times this fish is very abundant in the market, and is regarded by the natives as being "as good as the mullet."

Mulloides samoensis Günther, Fische der Südsee, 57, taf. XLIII, fig. B, 1873, Apia, Samoa.

101. Mulloides auriflamma (Forskål). *"Weke."*

Color in life (field No. 203), red with yellowish border to each scale; a bright yellow band extending from each eye; margins of opercle and preopercle yellow; iris white, with red inner border; dorsal fins red toward body, yellow outwardly; caudal bright yellow; ventrals and anal reddish toward body, bright yellow outwardly; pectoral red; barbels white.

I obtained 10 examples of this species, from 7.24 to 9.62 inches in length; a 10-inch example is in Dr. Wood's collection; and 2 examples, each 7 inches long, are in the collection made by the *Albatross*. This is a common and much valued food-fish at Honolulu.

Mullus auriflamma Forskål, Descript. Anim., 30, 1775, Djidda, Arabia.
Mullus flavolineatus Lacépède, Hist. Nat. Poiss., III, 406, 1801.
Upeneus flavolineatus, Cuvier & Valenciennes, Hist. Nat. Poiss., III, 456, 1829.
Mulloides flavolineatus, Bleeker, Nat. Tyjdsch. Ned. Ind., III, 1852, 697 (Wahai); Günther, Cat., I, 403, 1859; Günther, Fische der Südsee, I, 56, 1873; Bleeker, Revision Insul. Mulloides, 15, 1874; Bleeker, Atlas, pl. 394 (Mull., pl. 4), fig. 3, 1877; Streets, Bull. U. S. Nat. Mus., No. 7, 89, 1877 (Fanning Islands).

102. Pseudupeneus chryserydros (Lacépède).

Color in life (field No. 243), dark lead color with violet and golden shadings; blue lines alternating with golden, radiating from the eye; longitudinal golden lines on the cheek; anterior portion of first dorsal golden, rest of fin violet with dusky shades; second dorsal with oblique blue lines alternating with golden; large bright orange area on upper portion of caudal peduncle; anal marked as second dorsal but less dark; caudal dusky violet; ventral rays blue, membranes golden; barbels tipped with yellow. Another example (field No. 121) was much lighter in color, with rosy tinges; first dorsal rosy with dusky shades; the first and second spines olivaceous and with olivaceous markings along outer margin; second dorsal with oblique whitish and yellow stripes; caudal dusky with areas of olive; anal fin pale with yellow stripes; ventral rays white, membrane yellow; a large bright, light orange area on upper part of caudal peduncle extending half way down its sides; tips of barbels orange.

Four specimens of this species, 8.7 to 9.5 inches in length, were taken; three, 6.5 to 11 inches in length, are in Dr. Wood's collection, and one 9 inches long was collected by Jordan & Snyder. This fish is brought in great numbers to the market.

? *Mullus cyclostomus* Lacépède, Hist. Nat. Poiss., III, 404, pl. 14, fig. 3, 1801, Isle de France.
Upeneus chryserydros Lacépède, Hist. Nat. Poiss., III, 406, 1801; Cuvier & Valenciennes, Hist. Nat. Poiss., III, 470, 1829 (Isle de France, Sandwich Islands, Isle of Bourbon, Coromandel).
Upeneus oxycephalus Bleeker, Act. Soc. Neerl., I, 45, 1856, Manado en Macassar; Günther, Cat., I, 409, 1859.
Parupeneus cherserydros Bleeker, Revision Insul. Mulloides, 35, 1874; Bleeker, Atlas, IX, pl. 393 (Mull., pl. 3), fig. 2, 1877.
Upeneus chryserythrus Günther, Fische der Südsee, I, 60, pl. 45, fig. A, 1873, Polynesia.
Parupeneus cyclostomus, Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 486 (Honolulu).

103. Pseudupeneus chrysonemus Jordan & Evermann.

Four specimens, 5.5 to 8 inches in length, were obtained by me, and one, 5.5 inches long, was collected by Jordan & Snyder. Many specimens were obtained by Jordan & Evermann.

Pseudupeneus chrysonemus Jordan & Evermann, Bull. U. S. Fish. Comm. for 1902 (April 11, 1903), 186, Hilo, Hawaii Island. (Type, No. 50666, U. S. N. M.; coll. Jordan & Evermann.)

104. Pseudupeneus porphyreus Jenkins, new species.

Head 3.3 in length; depth 3; eye 4 in head; snout 2; D. VIII–I, 8; A. II, 6; C. 19; P. 15; V. 1.5; scales 2½–30–6; pectoral 1.4 in head; ventral 1.25; caudal 1.2; longest dorsal spine 1.5; longest soft dorsal ray 2; longest anal ray equal to longest soft dorsal ray; length of caudal peduncle equal to length of ventral fin, 1.25; least depth equal to 2.4 in head; greatest width of body at bases of pectorals, a little greater than half of head; width of middle of caudal peduncle equal to 3.5 in head; preorbital deep, 3 in head; maxillary 2.5 in head, reaching almost to vertical from posterior nostril; distance between nostrils a little less than diameter of eye; interorbital 3.5 in head; teeth in single series, present only in jaws, short, blunt, conical, rather widely separated and of unequal sizes; gillrakers 5+25, the uppermost and lowermost ones very short, uppermost ones of lower arm of arch longest, 2 in eye, gradually increasing in length downward; lowermost ones of upper arm about 0.6 length of uppermost of lower arm; snout blunt, almost truncate; dorsal profile of head straight, rising at angle of about 45° to nape, profile of back horizontal from here to front of second dorsal, then descending in a gentle curve to caudal fin; ventral profile of head and body almost straight from snout to middle

of belly, then forming a gentle concave curve symmetrical with corresponding part of dorsal profile; mouth only very slightly oblique; posterior limb of preopercle almost vertical, lower limb horizontal, angle rounded; eye almost circular, anterior rim slightly before middle of head; center of pupil on level with opercular spine; interorbital convex; scales on snout extending a little below nostrils, several large ovate ones about nostrils; preorbital, lower part of snout, jaws, and maxillaries naked; first dorsal spine very short; third and fourth longest; third flexible at tip, not pungent, 1.8 in head; spines back of fourth regularly decreasing in length to last which is 0.3 of second; distance between last dorsal spine and first ray of second dorsal 2.5 in head; spine of second dorsal equal to sixth spine, 2.8 in head; first branched ray longest, a little less than half of head, rays gradually decreasing in length to last, which is 3.5 in head; caudal deeply forked, lobes about equal, upper of 10 rays, lower of 9; first anal spine very short, concealed within membranes about base of second, second equal to first branched ray of dorsal; others gradually decreasing in length to last, which equals last dorsal ray; pectoral pointed, upper rays longest; ventral pointed, second branched ray longest; lateral line parallel with dorsal profile, beginning above upper end of gill-slit; scales large, ctenoid, those of ventral parts

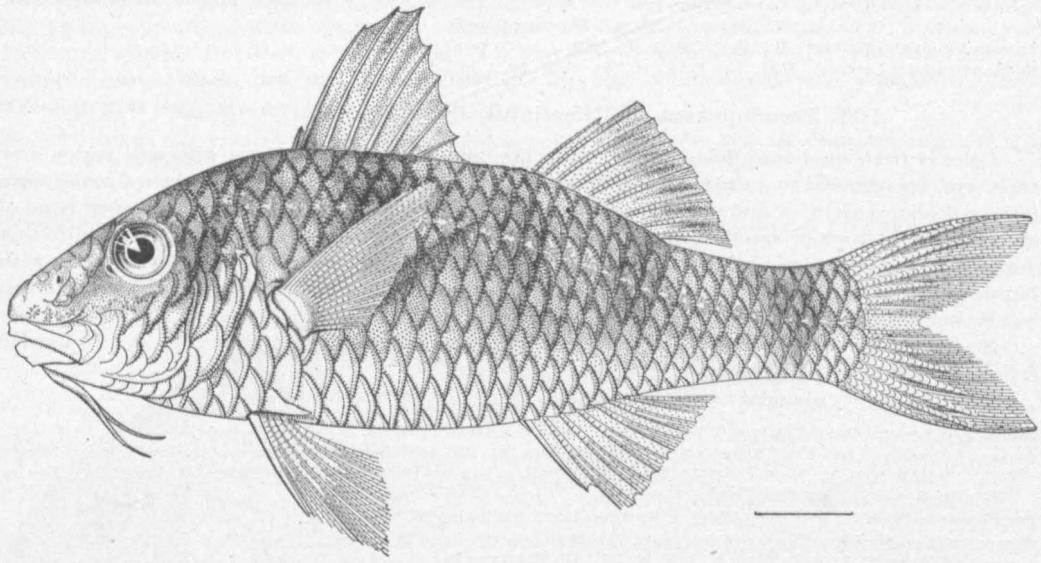


FIG. 22.—*Pseudupeneus porphyreus* Jenkins, new species. Type.

rather larger than those of back; basal half of caudal scaled; other fins naked; dorsal depressible in a groove; tubes of lateral line with numerous (13 in largest examples) radiating branches on each scale; scale before upper end of base of pectoral with large lobe overhanging base of pectoral; scale above

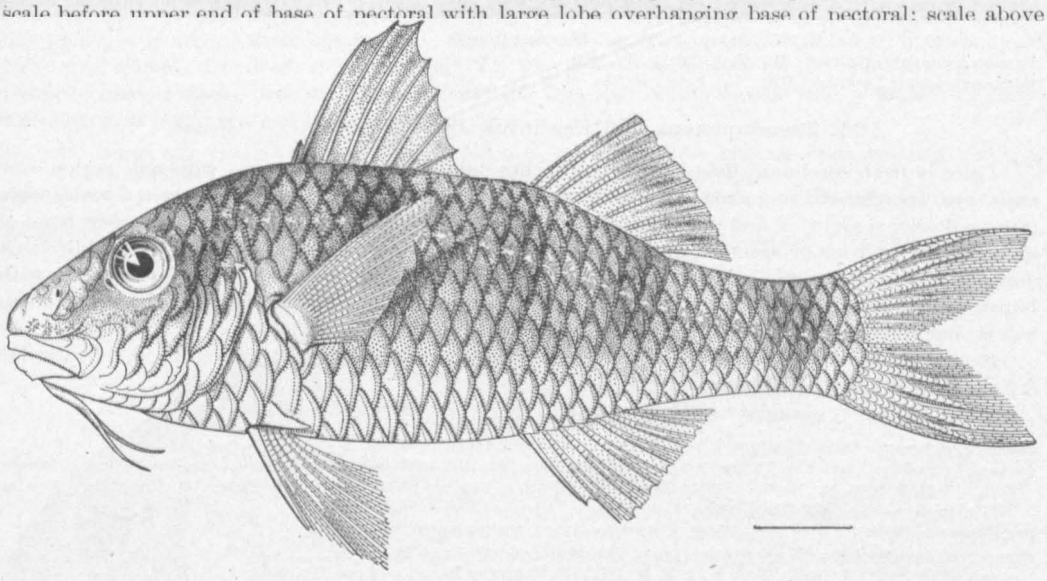


FIG. 22.—*Pseudupeneus porphyreus* Jenkins, new species. Type.

Variations: In most of the specimens the second spine of the dorsal is stiff and pungent. The barbels, although generally not reaching the posterior margin of preopercle, do so in some cases. In most cases the scales of the head do not extend below nostrils from top of head.

This description is based on the type (field No. 212) 10.6 inches in length, and 17 cotypes, 5 with the type collected by me in 1889, 4 by Dr. Wood, 3 by Jordan & Snyder, and 4 by the *Albatross*. These examples range from 5 to 12 inches in length. (Type, No. 50705, U. S. N. M., Honolulu; coll. O. P. Jenkins.)

105. Pseudupeneus bifasciatus (Lacépède).

One specimen, 8.5 inches in length, was taken by me, and one, 9 inches in length (field No. 1339), by the *Albatross* in 1896. This species is so much confused with *P. multifasciatus* that its range is not well known. Günther had specimens from Rarotonga, Savaii, and Solomon Islands. It was first described from the island of Bourbon, and is now certainly known to occur at the Hawaiian Islands.

Mullus bifasciatus Lacépède, Hist. Nat. Poiss., III, 404, pl. 14, fig. 2, 1801.
Upeneus bifasciatus, Cuvier & Valenciennes, Hist. Nat. Poiss., III, 468, 1829 (Isle of Bourbon); Günther, Fische der Südsee, I, 59, pl. 44, fig. A., 1873 (Rarotonga, Savaii, Solomon Islands).
Upeneus trifasciatus (in part), Günther, Cat., I, 407, 1859.
Mullus trifasciatus Lacépède, Hist. Nat. Poiss., III, 404, pl. 15, fig. 1, 1801.

106. Pseudupeneus multifasciatus (Quoy & Gaimard). "*Moano.*"

Color of fresh specimen (field No. 82), 8.5 inches long, whole body suffused with red; region over nape, eye, opercle, and to a short distance behind pectoral fin dusky; dusky band about 7 scales wide from posterior margin of first dorsal to middle of second dorsal (this band split by narrow band of ground-color at front of second dorsal); dusky band around caudal peduncle, back of middle; first dorsal red with dusky spot at tip; margin of second dorsal black; pectoral yellow; anal black with bluish blotches; ventrals dusky, suffused with red and with about 6 rather distinct light-bluish cross-bands; barbels red, with white tips; iris red.

Seventeen examples, 4.25 to 8.25 inches in length, were taken by me, 4 by Dr. Wood, 4 by Jordan & Snyder, and 2 by the *Albatross* in 1896.

This fish is very abundant at Honolulu and is a very important food-fish.

Mullus multifasciatus Quoy & Gaimard, Voy. Uranie, Poiss., 330, Atlas, pl. 59, fig. 1, 1824, Oahu.
Upeneus trifasciatus, Cuvier & Valenciennes, Hist. Nat. Poiss., III, 468, 1829 (Sandwich Islands, Caroline Islands); Streets, Bull. U. S. N. M., No. 7, 71, 1877 (Honolulu); Günther, Voyage Challenger, Shore Fishes, 59 (Honolulu); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 520 (Tahiti).
Parupeneus multifasciatus (in part) Bleeker, Revision Insul. Mulloides, 20, 1874.
Parupeneus multifasciatus, Bleeker, Atlas, IX, pl. 394 (Mull., pl. IV), fig. 4, 1877.
Upeneus velifer Smith & Swain, Proc. U. S. N. M. 1882, 130, Johnston Island. (Type, No. 26822, U. S. N. M.)

107. Pseudupeneus pleurostigma (Bennett).

Color in life, upper part of body red, lower white; first dorsal, pectoral, caudal, and ventral red; second dorsal with a dusky spot on front portion, and with about 6 bright yellow lines running across fin parallel to axis of body when the fin is extended; a dusky spot, as large as eye, on body one scale below the dorsal line and just behind the vertical from posterior margin of first dorsal.

Three specimens of this species, 6, 7.2, and 7.8 inches in length, were taken by me in 1889; four, 5 to 6 inches, by Dr. Wood; and two, 5.5 and 6.25 inches, by Jordan & Snyder.

Upeneus pleurostigma Bennett, Proc. Lond. Zool. Soc., I, 59, 1833; Günther, Fische der Südsee, I, 58, 1873 (Otaheiti, Apamana); Bleeker, Atlas, IX, pl. 393 (Mull., pl. III), fig. 3.
Upeneus brandesii Bleeker, Nat. Tijds. Ned. Ind., II, 1851, 236, Banda Neira; Günther, Cat., I, 407, 1859 (Sea of Banda Neira).
Parupeneus pleurostigma, Bleeker, Revision Insul. Mulloides, 29, 1874; Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 486 (Laysan).

108. Upeneus arge Jordan & Evermann.

Body white, 2 brown longitudinal stripes on body above lateral line; one orange-yellow stripe from eye to base of caudal, another similar from base of pectoral to base of caudal, reddish line from eye to nostril; first dorsal transparent with dusky blotches along outer margin; second dorsal same, the dusky blotches forming 3 oblique bars on the fin; caudal fin with white bars alternating with dark bars (black and brown); barbels bright yellow.

Four examples of this species, 8, 8, 9, and 10.5 inches in length, were obtained. It is abundant at Honolulu and is highly valued as a food-fish.

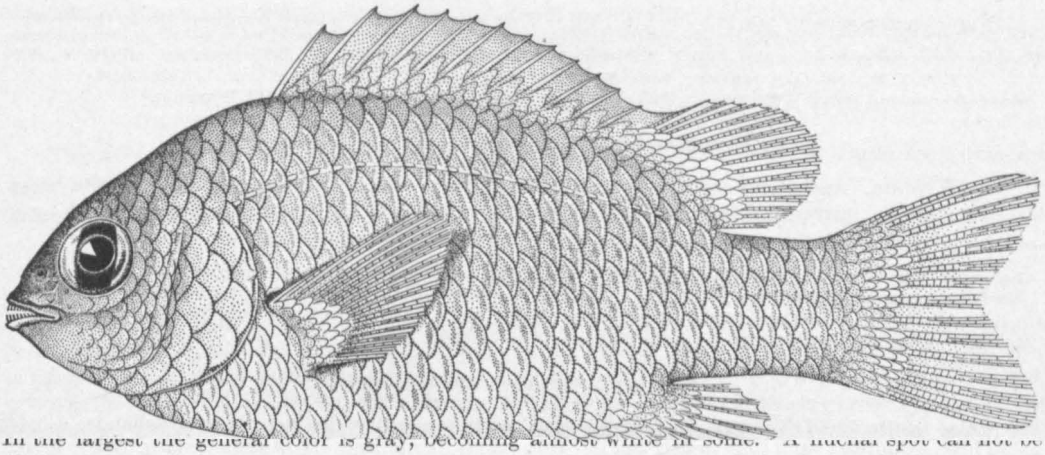
Upeneus argo Jordan & Evermann, Bull. U. S. Fish Comm. 1902 (April 11, 1903), 187.
Upenoides vittatus, Streets, Bull. U. S. Nat. Mus., No. 7, 71, 1877 (Honolulu).

Family XXXV. POMACENTRIDÆ.

109. Dascyllus albisella Gill.

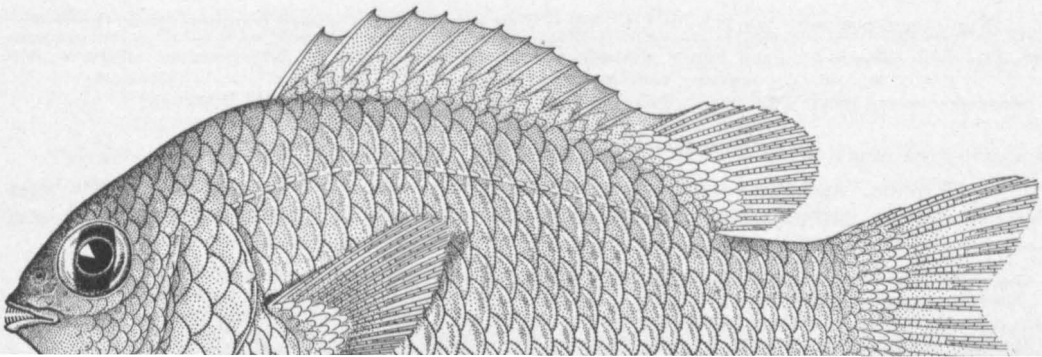
Eighteen examples of this species were taken by me, the majority being caught by means of a dip-net, on the reef in front of Honolulu. They range from 1.3 to 4.7 inches in length. In the smallest the white spot on the side of the body is 0.7 as broad as the head and extends from near the dorsal down the side more than 0.7 of its width, the remainder of the body being black. These specimens form a complete series, which show in the smallest the white spot relatively large and distinct, being very conspicuous; in the largest it gradually becomes less distinct and relatively smaller. In the largest the general color is gray, becoming almost white in some. A nuchal spot can not be distinguished in any of these specimens. The series also shows a gradation in length of second and last dorsal spines. One fresh specimen (field No. 259) showed each scale on the body pale blue with posterior margin black; head and fins all black; iris pale blue; white spot on side, 5 scales wide and 6 scales deep, is under bases of sixth to tenth spines.

Dascyllus albisella Gill, Proc. Ac. Nat. Sci. Phila. 1862, 149, note, Sandwich Islands; Günther, Challenger Report, Zool., I, Part VI, 61, 1879 (1880), (Honolulu); Günther, Fische der Südsee, VII, 236, 1881 (Honolulu).
Dascyllus trimaculatus, Günther, Fische der Südsee, VII, 236, 1881 (Sandwich Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 503, 1900 (Honolulu).
Tetradrachmum trimaculatum, Bleeker, Atlas, IX, Taf. 409, fig. 8, 1879; Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 503 (Oahu).



In the largest the general color is gray, becoming almost white in some. A nuchal spot can not be distinguished in any of these specimens. The series also shows a gradation in length of second and last dorsal spines. One fresh specimen (field No. 259) showed each scale on the body pale blue with posterior margin black; head and fins all black; iris pale blue; white spot on side, 5 scales wide and 6 scales deep, is under bases of sixth to tenth spines.

Dascyllus albisella Gill, Proc. Ac. Nat. Sci. Phila. 1862, 149, note, Sandwich Islands; Günther, Challenger Report, Zool., I, Part VI, 61, 1879 (1880), (Honolulu); Günther, Fische der Südsee, VII, 236, 1881 (Honolulu).
Dascyllus trimaculatus, Günther, Fische der Südsee, VII, 236, 1881 (Sandwich Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 503, 1900 (Honolulu).
Tetradrachmum trimaculatum, Bleeker, Atlas, IX, Taf. 409, fig. 8, 1879; Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 503 (Oahu).



the upper somewhat obscure; teeth conical, in a single series in each jaw; third dorsal spine the longest, 1.8 in head; longest dorsal rays somewhat longer than third dorsal spine; soft dorsal rounded somewhat higher than spinous portion; soft anal rounded 1.4 in head; caudal deeply emarginate, the upper lobe slightly the longer, the longest rays scarcely equaling the head; pectoral broad, 1.3 in head; ventrals nearly reaching vent; all parts of the body and head, except portion of snout anterior to nostril and tip of lower jaw, covered with scales; lateral line developed; tubes on 20 scales, reaching to within 3 scales of base of last dorsal ray, where it ceases; bases of all fins scaled.

Color in alcohol, body and head a pale brown, lighter toward the ventral region; on the lower third of body faint traces of longitudinal rows of pearly dots corresponding to the scales; fins pale and without markings, no spot on anterior spinous dorsal and none at base of pectoral.

This description is based on the type, No. 50703, U. S. N. M., 2.5 inches long, and 8 smaller cotypes taken by me in 1889. They were caught in the coral rocks in the reef in front of Honolulu.

111. Chromis ovalis (Steindachner).

Three examples, each 6 inches in length, were taken by me, and one of same length by Dr. Wood. This species appears to be the one described by Steindachner, although in his description the measurement of the body-height as 3.3 in the body-length must be an error. My description of this species was in the hands of the printer at the time Steindachner's paper appeared, and his paper did not reach me until after my paper was published.

Heliastes ovalis Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 502, Honolulu.
Chromis velox Jenkins, Bull. U. S. Fish Comm. 1899 (June 8, 1901), 393, fig. 6, Honolulu. (Type, No. 49698, U. S. N. M.; coll. O. P. Jenkins.)

112. Pomacentrus jenkinsi Jordan & Evermann.

Numerous specimens taken by me in 1889. This small species is very common about the reef.

Eupomacentrus marginatus Jenkins, Bull. U. S. Fish Comm. for 1899 (June 8, 1901), 391, fig. 5, Honolulu. (Type, No. 49700, U. S. N. M.; coll. O. P. Jenkins): name preoccupied.
Pomacentrus jenkinsi Jordan & Evermann, Bull. U. S. Fish Comm. for 1902 (April 11, 1903), 189, Honolulu.

113. Glyphisodon abdominalis Cuvier & Valenciennes.

Color in life, bands distinct to lower two-thirds of body, yellow between the bands; white below.

This fish is fairly abundant at Honolulu. Ten examples, 4.4 to 8.25 inches in length, were obtained; and two, 5.25 and 7.6 inches, are in the collection of Jordan & Snyder.

Glyphisodon abdominalis Cuvier & Valenciennes, Hist. Nat. Poiss., v, 457, 1830, Hawaiian Islands.
Glyphidodon saxatilis, Streets, Bull. U. S. Nat. Mus., No. 7, 66, 1877 (Honolulu); Günther, Fische der Südsee, 229, Taf. CXXVI, 1881 (Sandwich Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 502 (Honolulu and Laysan).
Abudefduf sexfasciatus, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 504 (Oahu Island).

114. Glyphisodon sordidus (Forskål).

Color in life (field No. 163, 5.8 inches), gray, with 5, not very distinct, dark crossbands; a black spot on upper part of base of pectoral; black spot on caudal peduncle next to posterior part of dorsal fin; upper part of spinous dorsal yellow.

Two adults, 5.5 and 5.8 inches long, and six from 0.8 to 1.3 inches in length, were obtained at Honolulu. Mr. McGregor obtained one 1.6 inches long at Lahaina, Maui. This species is not as frequently seen in the market as the preceding.

Chætodon sordidus Forskål, Desc. Animal., 62, 1775, Djidda, Red Sea.
Glyphidodon sordidus, Günther, Cat., IV, 41, 1862 (China); Bleeker, Atlas, Taf. 410, fig. 5, 1877; Günther, Fische der Südsee, 231, VII, 1881 (Red Sea, east coast Africa; East Indian Archipelago; Tahiti, Raiatea, Samoa; and Bonham Island).
Abudefduf sordidus, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 504 (Oahu Island).

Family XXXVI. LABRIDÆ.

115. Lepidoplois bilunulatus (Lacépède). "*A'awa.*"

Color in life (field No. 122), general color white with pinkish shades, many horizontal brown stripes crowded together along top of head and back; a brown stripe from angle of mouth to angle of preopercle; chin and throat white, overlaid with red spots; colors of body posteriorly gradually giving

way to yellow, which becomes on the caudal fin a bright yellow; a black area on body at base of posterior part of soft dorsal, extending on caudal peduncle; iris black with red inner margin; pectoral rosy; ventrals white, with rosy and yellow shadings; a black spot nearly as large on first dorsal between first and third spine; tips of dorsal spines yellow; soft dorsal and anal bright yellow. Another specimen showed the brown lines of above red, and the caudal was orange.

Five specimens of this beautiful fish, 6.6, 7.2, 7.7, 7.8, 9.4 inches in length, respectively, were taken. It is common in the market, where it is conspicuous for its brilliant coloration.

Labrus bilunulatus Lacépède, Hist. Nat. Poiss., III, 454,.526, pl. 31, 1801.
Cossyphus bilunulatus, Cuvier & Valenciennes, Hist. Nat. Poiss., XIII, 121, 1839 (Isle de France); Günther, Fische der Südsee, VII, 240, pl. CXXX, 1881 (Mauritius, Zanzibar, Amboyna, Misol, Sandwich Islands).
Harpe bilunulata, Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 503 (Honolulu).

116. **Anampses cuvier** Quoy & Gaimard.

Color in life (field No. 71, 6 inches in length), general color dark brown, becoming a bright red on the belly; a bright pearly spot on each scale half as large as pupil, making about 17 longitudinal rows; upper part of head dark with many small pearly spots, lower part blue with bright red spots; throat and breast blue with many bright spots; iris yellow; dorsal fin dark red with blue border and with 4 or 5 rows of bright pearly blue spots; anal fin bright red, with bright blue margin and bright blue base, with 3 wavy lines of blue running whole length of fin, the blue crossing in places from one line to another; caudal reddish-brown, upper and lower margins blue. One small specimen, about 2 inches in length, showed the same coloration, with the exception of having a black ocellated spot on the posterior portion of soft dorsal.

This species is common at Honolulu. I obtained eight examples, 5.25 to 10 inches in length; one 8.25 inches long was taken by the *Albatross* in 1896, and one 7 inches long by Jordan & Snyder.

Anampses cuvier Quoy & Gaimard, Voy. de l'Uranie, Zool., 276, pl. 55, fig. 1, 1824, "de l'île Mowi."
Anampses cuvieri, Cuvier & Valenciennes, Hist. Nat. Poiss., 14, 11, 1839; Günther, Cat., IV, 136, 1862 (Hawaiian Islands); ibid., Fische der Südsee, 251, pl. 136, fig. A, 1881 (Hawaiian Islands); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 506 (Honolulu).

117. **Anampses evermanni** Jenkins.

This fish is not uncommon at Honolulu. Four specimens, 11 to 12 inches in length, were obtained by me; one, 10.5 inches, by the *Albatross* in 1896; and two, 10.5 and 12 inches, by the *Albatross* in 1891.

Anampses evermanni Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 57, fig. 14, Honolulu. (Type, No. 6136 L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

118. **Stethojulis axillaris** (Quoy & Gaimard).

Color in life (field No. 308, 4.4 inches long), upper parts dusky, covered with numerous minute green dots; lower parts lighter, reddish; bright orange spot on body just behind opercular flap; base of pectoral black; black ocellated spot on base of caudal; orange area behind angle of mouth; iris red.

Another specimen (field No. 126) shows, ground color olivaceous, thickly covered with bright green dots; throat and belly greenish silvery; iris bright green; base of pectoral and axil as in No. 308; 3 black spots on caudal peduncle on lateral line, the third on base of caudal fin; dorsal fin olivaceous with brownish spots, a black spot at base of last 2 rays; anal olivaceous, base green.

Fourteen specimens of this beautiful little fish, 2 to 4.25 inches in length, were obtained by me from the coral rocks on the reef in front of Honolulu, and 3 are in Dr. Wood's collection.

Julis axillaris Quoy & Gaimard, Voyage de l'Uranie, Zool., 272, 1824, Maui, Hawaiian Islands.
Stethojulis axillaris, Streets, Bull. U. S. Nat. Mus., No. 7, 65, 1877 (Honolulu); Günther, Fische der Südsee, VII, 254, taf. CXXXVI, fig. C, 1881 (Pelew, Solomon, Fiji, Navigator, Society, Hawaiian, New Hebrides, Ponape); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 508 (Hawaiian Islands).

119. **Stethojulis albovittata** (Kölreuter).

Color in life, upper parts green, lower lighter; a bright blue line from middle of snout to upper part of iris through iris, then upward and backward along base of dorsal fin for its whole length; another bright blue line from eye back and just below lateral line to about sixth or seventh scale; another such line from mouth just above the angle running backward just below eye over opercular flap, ending at middle of base of caudal; another bright blue line below chin curving upward and

around to lower angle of preopercle (this portion of the line violet) and past it, thence to base of pectoral, which interrupts it, continuing downward and backward, ending at lower part of base of caudal; between these last 2 lines posterior to base of pectoral, a bright orange band; dorsal and caudal fins orange; anal transparent, but blue toward base; ventrals transparent; iris orange.

Twenty-one examples of this brilliantly colored and very beautiful little fish, from 4.5 to 5 inches in length, were taken. It is quite abundant about the reef.

Labrus albovittatus Kölreuter in Bonnaterre, Ichthyol., 108, fig. 399, 1788.
Stethojulis albovittata, Günther, Fische der Südsee, VII, 256, taf. CXLI, fig. B, 1881 (Zanzibar, Madagascar, Hawaiian Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 504 (Honolulu); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 508 (Hawaiian Islands).

120. Halichœres lao Jenkins. "*Lao.*"

Two specimens, 3.8 and 4.25 inches in length. Description and color in reference given below.

Halichœres lao Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 48, fig. 3, Honolulu. (Type, No. 6132, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

121. Halichœres iridescens Jenkins. "*Ohua Paawela.*"

Three specimens, 5, 5.4, and 5.56 inches long, respectively, taken by me. Description and color given in paper referred to.

Halichœres iridescens Jenkins, Bull. U. S. Fish Comm. 1899 (August 30, 1900), 47, fig. 2, Honolulu. (Type, No. 6131, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

122. Macropharyngodon geoffroy (Quoy & Gaimard). "*Hinalea Akilolo.*"

Five examples of this beautiful fish were taken. They measure 3.5, 4.2, 4.2, and 4.75 inches in length. This was thought to be a new species by me, but recently having access to Voy. Uranie, Zool., containing Quoy & Gaimard's description and figure based on a specimen taken at Maui, there remains no doubt that my specimens are of their species.

Julis geoffroy Quoy & Gaimard, Voy. de l'Uranie, Zool., 270, pl. 56, fig. 3, 1824, Maui; Cuvier & Valenciennes, Hist. Nat. Poiss., 13, 479, 1839 (Hawaiian Islands).
Platyglossus geoffroyii, Günther, Cat., IV, 145, 1862 (Hawaiian Islands).
Macropharyngodon aquilolo Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 46, fig. 1, Honolulu. (Type, No. 6130, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

123. Julis gaimard (Quoy & Gaimard).

Color in life, bright red, with bright blue dots on the body, more numerous posteriorly; bands on head and chin green; greenish transverse area on body about region of tip of pectoral.

This fish is fairly common at Honolulu. Three specimens, 9, 10.8, and 11.5 inches in length; also one 11.7 inches long taken by the *Albatross* in 1896.

Julis gaimard Quoy & Gaimard, Voy. de l'Uranie, Zool., 265, pl. 54, fig. 1, 1824, "de l'île Mowi."
Coris gaimardi, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 510 (Sandwich Islands).

124. Julis pulcherrima Günther. "*Akilolo.*"

Color in life (field Nos. 96 and 99, 8.6 and 10.5 inches long), head red with bright, wavy green, longitudinal stripes, 1 from snout to eye; 1 from angle of mouth to opposite base of pectoral fin; 1 from chin to base of ventral; 1 on middle of forehead; 2 from eye, the upper to base of dorsal, where it becomes a row of bright blue spots, 1 spot at base of each spine and ray; lower stripe from eye extending to opercular flap; ground color of anterior part of body reddish brown, the remainder of body through first third of caudal with dark cloudings; dorsal fin red, outer third bright red, separated from inner two-thirds by a blue line; outer margin black, inner two-thirds with many small blue spots; anal fin similar to dorsal but brighter, margin blue instead of black, with delicate shadings difficult to indicate; a bright blue spot at base of each soft ray; outer two-thirds of caudal bright yellow; pectoral rays red, membranes colorless; axil dark blue surrounded by rings of dark green; many bright spots on posterior third of body; ventral fins, outer margin dark blue, next bright red, next light blue.

This is one of the most beautiful of the brilliantly colored fishes seen at Honolulu. It is fairly common. I obtained 10 examples in 1889 from 7 to 10.5 inches in length, and 2, each 6.4 inches, were taken by the *Albatross* in 1896.

Coris pulcherrima Günther, Cat., IV, 200, 1862, Amboyna, Celebes, Tahiti, New Hebrides; Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 507 (Honolulu).

125. Julis lepomis (Jenkins).

One specimen of this beautiful fish, 17.5 inches in length, was taken by me. Description in paper referred to below.

Coris lepomis Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 48, fig. 4, Honolulu. (Type, No. 12141, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

126. Julis eydouxii Cuvier & Valenciennes.

Color in life (field No. 256, 11.3 inches long), upper parts dark brown, lower parts pink; a band running along back just below base of dorsal fin, beginning on head behind vertical from posterior border of eye, running on to caudal, wavy and blue in front, nearly white posteriorly; a yellowish-white band becoming blue posteriorly from tip of snout on middle line on top of head to origin of dorsal, then running upon dorsal as a blue anterior margin; from this band just back of tip of snout, a band (one on each side) branching and running back just along upper margin of eye and ending at a vertical from fourteenth dorsal spine, blue in front and almost white posteriorly; another band blue in front, running from mouth along lower margin of eye through opercular flap, which has a blue spot, straight back to tail; this band dividing the upper brown color from the pink below; between these bands, the brown color on body gradually changing to red on the head; pectoral and ventrals pink; dorsal dusky, almost black, outer margin bluish-white; a conspicuous yellow longitudinal band along the central portion of the fin, anterior portion with a black spot on second spine and membrane between second and third spines; caudal fin outer margin and base white, between which is a broad black band; anal black, outer margin bluish-white.

Six examples, from 6.6 to 11.3 inches in length, were obtained by me, and two, 10.75 and 12.75 inches, by the *Albatross*.

Julis eydouxii Cuvier & Valenciennes, Hist. Nat. Poiss., XIII, 455, Sandwich Islands.

127. Hemicoris baillieui (Vaillant & Sauvage).

One specimen of this fish, 9.2 inches in length, which shows well the markings shown in Dr. Steindachner's figure, is in Dr. Wood's collection.

Coris baillieui Vaillant & Sauvage, Rev. Mag. Zool., III, 1875, 285, Sandwich Islands.
Coris schauinslandii Steindachner, Anzeiger, No. XVI, Denks. Ak. Wiss. Wien, June 21 (June 27), 1900, 177, Honolulu; Steindachner, Denks. Ak. Wiss. Wien, 1900, taf. V, fig. 1, 508, Honolulu.

128. Hemicoris argenteo-striata (Steindachner).

One specimen of this species was taken by Dr. Wood. My description of this fish was published before Dr. Steindachner's paper reached me.

Coris argenteo-striatus Steindachner, Anzeiger, No. XVI, Denks. Ak. Wiss. Wien, June 21 (June 27), 1900, 176, Honolulu; Steindachner, Denks. Ak. Wiss. Wien, 1900, LXX, 507, taf. III, fig. 1, Honolulu.
Hemicoris keleipionis Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 51, fig. 6, Honolulu. (Type, No. 6049, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

129. Hemicoris remedia Jenkins.

Twelve examples of this species, 5 to 6.6 inches in length, were taken by me. Dr. Steindachner has identified this fish with *Coris multicolor* (Rüppell), a species described from the Red Sea. This differs from Rüppell's species in not having the anterior dorsal spine produced, in the absence of a dark blotch on anterior dorsal, and in coloration of the head.

This very brilliant fish is fairly common at Honolulu.

Coris multicolor Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 507, pl. V, fig. 2 (Honolulu, Laysan); not of Rüppell.
Hemicoris remedius Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 49, fig. 5, Honolulu. (Type, No. 6133, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

130. Cheilio inermis (Forskål).

This fish is very common at Honolulu and varies much in color and form. Twelve examples, 7.5 to 16 inches in length, were taken by me, and one, 10.25 inches long, was taken by the *Albatross* in 1896.

Color in life (field No. 279, 16 inches long), leaden, darker above, lighter below; margin of each scale faint golden; line of golden spots backward from angle of jaw, spreading into golden reticulations on opercle and preopercle; dorsal fin with golden reticulations; membranes of anal with a series of golden crossbars; membranes of caudal with faint brown spots; on the body, at a vertical from fourth and fifth dorsal spines, is an orange blotch running into a black one about the lateral line, which extends as a dark blue band about the belly.

Another example (field No. 290, 13.25 inches long) shows, general color reddish-brown; a dark longitudinal band from opercular flap to caudal; each scale with a spot, which below the lateral line is pearly; rays of dorsal brown; rays of anal greenish; reddish-brown spots on throat and chin; reticulations of the same color on sides of head, cheek, preopercles and opercles; rays of caudal greenish.

Another example (field No. 101, 9.5 inches long), body light brown, lighter on belly; each scale with a pearly spot; throat with light orange reticulations; rays of dorsal and anal light yellow.

Labrus inermis Forskål, Descript. Anim., 34, 1775, Red Sea.
Cheilio auratus Quoy & Gaimard, Voy. de l'Uranie, Zool., 274, pl. 54, fig. 2, 1824 (Maui, Hawaii).
Cheilio inermis Streets, Bull. U. S. Nat. Mus. No. 7, 65, 1877 (Honolulu); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 511 (Sandwich Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 507 (Honolulu).

131. Thalassoma purpureum (Forskål).

Color in life (field No. 330, 10.5 inches long), general color light red, shading into orange forward and below; two rows of quadrangular blocks of color on the side, each block a bright blue shading to a bright green at center; 4 green crossbars connecting base of dorsal fin with upper row; outer margins of dorsal and anal fins bright blue, the portions of the fins next the body golden; pectoral indigo blue with the proximal region bright yellow; caudal with alternating longitudinal bands of blue and golden; no distinct markings on head; iris bright green with inner margin orange.

Two specimens of this very brightly colored fish, 5 and 10.5 inches in length, were obtained by me. This is the first record from the Hawaiian Islands.

Labrus purpureus Forskål, Descript. Animal., 27, 1775, Red Sea.
Julis trilobata Günther, Cat., IV, 187, 1862 (var. *a*, 188, South Africa).
Julis quadricolor Bleeker, Atlas, I, 93, pl. 34, fig., 3, 1862 (in part, including specimen shown in fig. 3).

132. Thalassoma quadricolor (Lesson).

General color (field No. 138, 9.25 inches long), bright green; irregular, dark red, longitudinal band along upper part of body; vertical lines projecting from this at right angles; a bright red stripe from just above opercular flap to base of caudal, with vertical branches at each scale; another bright red band from near axil to base of caudal; a complex figure made by red bands on the face; a bright green band across lower part of snout; upper lip green, lower blue; chin and throat blue; cheek bright yellow; a double bright red band, somewhat reticulated, from eye obliquely downward to margin of opercle; dorsal fin, with longitudinal bands of red and green, margin blue, dark blue spot on anterior portion; anal fin with a longitudinal band next body of red, next to this a band of blue-green blotches, outer edge of band with color scalloped, next band red, scalloped; the outer band blue; caudal rays red, membranes blue, upper and lower margins green, posterior margin greenish-yellow; pectoral, base red, then line of blue, then greenish, remainder transparent except dusky blotch on tip; ventrals green. Another specimen (field No. 265, 11 inches long) recognized as different by fishermen, has stripes and bands bright red, and spaces between on both body and head green above, blue below; the markings on the fins red and green.

I obtained the two specimens just described; in addition, one, 11 inches in length, was taken by the *Albatross* in 1896, and one, 8.75 inches, by Jordan & Snyder.

Julis quadricolor Lesson, Voy. Coquille, Zool., III, 139, pl. 35, fig. 1, 1826–1830, Otaheite; Cuvier & Valenciennes, Hist. Nat. Poiss., XIII, 443, 1839 (Tahiti); Bleeker, Atlas, I, 93, 1862 (in part; not the plate, which is of *T. purpureum*).
Thalassoma immanis Fowler, Proc. Ac. Nat. Sci. Phila. 1899, 488, pl. 18, fig. 2, Caroline Island.
Thalassoma berndti Seale, Occasional Papers, Bishop Museum, I, Nos. 4, 15, fig. 7, 1901, Honolulu. (Type, No. 681, B. P. B. M., 1901.)

133. Thalassoma umbrostigma (Rüppell). *"Olali."*

Color in life (field No. 118, 4.5 inches in length), general color brown; side of body with 2 longitudinal rows of light-green oblong patches, of which the vertical length of each is greater, breadth of each less than diameter of eye; 2 bright blue stripes from upper margin of eye, the anterior meeting its fellow from other eye, the posterior not quite meeting its fellow; chin blue; blue spot on opercle; blue stripe around snout; belly blue; dorsal brown, with greenish-blue longitudinal stripe; anal similar to dorsal; caudal with alternating stripes of brown and green.

Another example (field No. 154, 7.25 inches in length), colors of body bright green and red, the red on head broken up into spots instead of in bands; blue spot on anterior dorsal.

Another example (field No. 155, 7 inches long) shows an arrangement of color much like that of No. 154, with the exception that it has bright blue where the other is green, and has no dots and bands on the head. The difference in color from No. 154 is so great that the native fishermen call this form by a different name. Specimens Nos. 156 and 157 form, however, a gradation in color pattern intermediate between Nos. 154 and 155.

Quite abundant at Honolulu. Eleven examples, 5.5 to 11.5 inches in length, were taken.

Julis umbrostigma Rüppell, Neue Wirbe., Fische, II, Taf. 3, fig. 2, 1835, Mohila and Djetta.
Julis umbrostigma Bleeker, Atlas, I, 92, Taf. 34, fig. 2, 1862; Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 506 (Honolulu).

134. Thalassoma duperrey (Quoy & Gaimard). *"Hinalea Lauli."*

Thirty specimens of this fish, the longest 7 inches, were taken by me; 3 by Dr. Wood, 3 by the *Albatross* in 1896, and 4 by Jordan & Snyder. An examination of Quoy & Gaimard's description and figure, based on a specimen from the Hawaiian Islands, leaves no doubt of the identity of my specimens with this species. Many young of this species were taken in the coral rocks which show no evidence of the color markings of the adult, but series of sufficient completeness shows the gradual development of the adult color pattern. The following is a description of an example 2.75 inches in length.

Head 3.4 in length; depth 3.5; eye 4.75 in head; snout 3.5; interorbital about equal eye; D. VIII, 12; A. II, 11; scales 3-28-8, 20 pores before the bend. Body short, moderately compressed; dorsal and ventral outlines evenly convex; head small, longer than deep; snout moderate, pointed; mouth small, horizontal, entirely below axis of body; lips broad, the upper overhanging the lower in the closed mouth; preorbital narrow and oblique; eye small, lower edge touching axis of body; interorbital moderately broad, little convex; caudal peduncle much compressed, its least depth 2 in head; dorsal spines low, the last the longest, 3 in head; soft dorsal somewhat higher, about 2 in head; anal similar to soft dorsal, slightly higher; caudal truncate or very slightly rounded; ventrals short, reaching half-way to origin of anal; pectoral broad, reaching slightly past tips of ventrals, its length about 1.3 in head; scutes large, firm, with thin, flexible edges; scales on nape and breast but little reduced; head naked, except a patch of 6 or 7 scales on upper angle of opercle; head with numerous conspicuous pores and tubes, a series radiating from orbit on its under side, and 3 conspicuous ones on opercle; lateral line complete, beginning at upper end of gill-opening parallel with the dorsal outline to beneath fourth dorsal ray from last, where it curves downward 2 rows and continues to base of caudal; pores on upper portion mostly 3-branched, lower portion mainly single.

Color in alcohol, dark olive brown on head, back, and sides, paler below; spinous dorsal pale dusky with black on membranes between first and fourth spines; edge of dorsal pale with a narrow marginal dark line; anal dusky; caudal dusky; ventral paler; pectoral pale, somewhat dusky; the upper rays with a long dark blotch, less distinct than in most species, obsolete in some specimens; axil with a dusky spot. In some specimens the boundary between the dark of upper parts and the pale of belly is more marked.

This is perhaps the most abundant labroid at Honolulu.

Julis duperrey Quoy & Gaimard, Voy. de l'Uranie, Zool., 268, pl. 56, fig. 2, 1824, Sandwich Islands.
Thalassoma pyrrhovinctum Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 51, fig. 7, Honolulu. (Type, No. 6138, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

135. Thalassoma obscurum (Günther).

Color in life, dark brown, with a purple tinge, each scale with dark-blue vertical bar, otherwise plain. Abundant at Honolulu. Nineteen specimens, 4.4 to 9.75 inches in length, were obtained.

Julis obscura Günther, Report Shore Fishes, Challenger, Zool., Part VI, 61, pl. 26, figs. A and B, 1880, Honolulu.
Julis verticalis Smith & Swain, Proc. U. S. Nat. Mus. 1882 (July 8), 135, Johnston Island.

136. Gomphosus varius Lacépède.

Color in life (field No. 214), from eye to end of produced snout dark orange; cheek and under side of head rosy; behind the eye 2 rows of dark brown spots; groundwork of body drab, belly light rosy; base of each scale with a dark brown spot, small anteriorly, gradually increasing in size posteriorly, where they become quite dark; dorsal fin dark brown with a very narrow white edge; anal dark brown, with a white edge, and with a row of golden spots along middle of fin, one on each membrane between the rays; caudal dark brown, with posterior margin yellow, then white; pectoral nearly transparent, with shades of yellowish and rosy.

Fairly common at Honolulu. Eight examples, 6.5 to 9.2 inches in length, were obtained by me in 1889; and two, 5 and 5.2 inches, were taken by Jordan & Snyder at the same place in 1900.

Gomphosus varius Lacépède, Hist. Nat. Poiss., III, 104, pl. 5, fig. 2, 1801; Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 507 (Honolulu); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 510 (Sandwich Islands).
Gomphosus pectoralis Quoy & Gaimard, Voyage de l'Uranie, Zool., 282, 1824, "de l'île Mowi."

137. Gomphosus tricolor Quoy & Gaimard. "*Hinalea.*"

Color in life (field No. 95, 10 inches long), a very bright dark blue over whole of body; the portions of the dorsal, caudal and anal fins projecting beyond the scales, a bright light blue; a dark violet bar on anterior part of each scale; pectoral fin with base and axil green, middle portion blue, posterior third black; green of axil extending upward on body; ventral fins blue.

Another example (field No. 242, 10.2 inches long) appeared with body a very dark green, with other markings the same as in No. 95.

Common in the Honolulu market, where its conspicuous color and odd form attract attention. Ten specimens, 6.75 to 10.6 inches in length, were taken by me; three, 6.5, 7.25 and 9.7 inches, by the *Albatross* in 1896; and four, 6.6, 6.8, 7 and 8.2 inches long, by Jordan & Snyder.

Gomphosus tricolor Quoy & Gaimard, Voy. de l'Uranie, Zool., 280, pl. 55, fig. 2, 1824, "de l'île Mowi"; Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 506 (Honolulu); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 510 (Sandwich Islands).

138. Pseudocheilinus octotænia Jenkins.

One example, 4 inches in length, is in Dr. Wood's collection, and was taken by Jordan & Snyder. Description in paper referred to.

Pseudocheilinus octotænia Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 64, fig. 22, Honolulu. (Type, No. 6122, L. S. Jr. Univ. Mus.; coll. Dr. Wood.)

139. Cheilinus zonurus Jenkins.

Four examples, 6, 8.6, 9, and 9.5 inches in length, were obtained by me; and one, 10.25 inches, by the *Albatross* in 1896.

Cheilinus zonurus Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 56, fig. 13, Honolulu. (Type, No. 6134, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

140. Cheilinus bimaculatus Cuvier & Valenciennes.

This beautiful little species shows most delicate coloring. From Dr. Bleeker's description of the East Indian species, *C. ceramensis*, it would appear that it can not be separated from the Hawaiian form.

Cheilinus bimaculatus Cuvier & Valenciennes, Hist. Nat. Poiss., XIV, 96, 1839, Sandwich Islands.
Cheilinus ceramensis, Bleeker At. p. 69, Taf. 28, fig. 4.

141. Hemipteronotus umbrilatus Jenkins.

One specimen, 4.75 inches in length, was obtained by me; and one, 7.5 inches long, by Jordan & Snyder.

Hemipteronotus umbrilatus Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 58, fig. 10, Honolulu. (Type, No. 6135, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

142. Novaculichthys hemisphærium (Quoy & Gaimard.)

Two specimens, 7.5 and 8.25 inches in length, were taken by Dr. Wood, and two, 5.75 and 9.25 inches, by Jordan & Snyder.

Julis vanicorensis Quoy & Gaimard, Voy. Astrot., Poiss., 704, pl. 20, fig. 1.
Novacula vanicolensis, Steindachner Denks. Ak. Wiss, Wien, LXX, 504, 1900 (Honolulu).

143. **Novaculichthys woodi** Jenkins.

Three specimens, 5.6, 6, and 6 inches long, are in Dr. Wood's collection. In the paper referred to below, I recognized 2 distinct species. However, an examination of a large series of fresh specimens seems to prove that both these and the one described by Mr. Seale are of one species.

Novaculichthys woodi Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 52, fig. 8, Honolulu. (Type, No. 6029, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

Novaculichthys entargyreus Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 53, fig. 9, Honolulu. (Type, No. 5984, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

Novaculichthys tatoo Seale, Occasional Papers, Bishop Museum, vol. I, No. 4, 5, fig. 2, 1901, Honolulu. (Type, No. 611, Bishop Museum; coll. A. Seale.)

144. **Iniistius pavoninus** (Cuvier & Valenciennes).

General color in life, pale drab; light blue wavy lines downward and backward from eye; ventrals white; pectoral pale olivaceous; dorsal with wavy blue reticulations; a longitudinal light blue band near outer margin of anal; caudal with shade of olivaceous, posterior margin light blue; black spot on scale a short distance below the fourth spine of second portion of dorsal, just above the lateral line.

Four examples of this species, 7.5, 7.5, 9, and 9.5 inches in length, were obtained by me; and three, 5, 5.75, and 5.75 inches in length, by Jordan & Snyder. This species is quite abundant. It was recognized as distinct from *I. pavo* by Cuvier & Valenciennes, who received specimens at different times from the Hawaiian Islands. Other authors have regarded it as a synonym of *I. pavo*, but a study of a large number of examples and these alcoholic specimens seems to justify retaining *I. pavoninus* for the Hawaiian form. A comparison of these specimens with a specimen of *I. mundicorpus* Gill, No. 824, in the L. S. Jr. Univ. Mus., from Cape St. Lucas, seems to prove them identical in structure and color. This being true, this species becomes one of those few shore fishes which are common to the Hawaiian Islands and the Pacific coast of North America.

Xyrichthys pavoninus Cuvier & Valenciennes, Hist. Nat. Poiss., XIV, 63, 1839, Hawaiian Islands.

Novacula (Iniistius) pavo Steindachner. Denks. Ak. Wiss. Wien, LXX, 1900, 505 (Honolulu); not of Cuvier & Valenciennes.

Iniistius mundicorpus Gill, Proc. Ac. Nat. Sci. Phila. 1862, 145, Cape St. Lucas (coll. by John Xantus); Jordan & Evermann Fishes North and Mid. Amer., II, 1620, 1898.

145. **Iniistius leucozonus** Jenkins.

Two specimens, 4.5 and 5 inches in length, were taken by me.

Iniistius leucozonus Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 54, fig. 11, Honolulu. (Type, No. 6137, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

146. **Iniistius niger** (Steindachner).

Two specimens of this fish are in Dr. Wood's collection. My description was published soon after Dr. Steindachner's paper was printed and before his paper reached me.

Novacula (Iniistius) nigra Steindachner, Anzeiger für Denks. Ak. Wiss. Wien, 1900, No. XVI, 176 (June 27, 1900), Honolulu; Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 505, pl. 4, Honolulu.

Iniistius verater Jenkins, Bull. U. S. Fish. Comm. for 1899 (August 30, 1900), 55, fig. 12, Honolulu. (Type, No. 5990, L. S. Jr. Univ. Mus.; coll. Dr. Wood.)

147. **Cymolutes lecluse** (Quoy & Gaimard).

One specimen, 5 inches in length, was taken by the *Albatross* in 1896; and five, 5, 5.5, 5.5, 6, and 6.25 inches in length, by Jordan & Snyder.

Xyrichthys lecluse Quoy & Gaimard, Voy. de l'Uranie, Zool., 284, pl. 65, fig. 1, 1824, Hawaii.

Xyrichthys microlepidotus Cuvier & Valenciennes, Hist. Nat. Poiss., 14, 52, 1839, Owhyhee (Hawaii). (Coll. Quoy & Gaimard.)

Cymolutes leclusii Günther, Cat., IV, 207, 1862 (Hawaiian Islands).

Family XXXVII. SCARIDÆ.

148. **Calotomus cyclurus** Jenkins, new species.

Head 3.1 in length; depth 2.5; eye 5.7 in head; snout 2.2; interorbital 4.2; D. IX, 11; A. I, 11; scales 2-24-5. Body somewhat elongate, compressed; dorsal outline rising in a gently sloping, nearly straight line to origin of dorsal, from this point descending in a nearly straight line to caudal penducle; ventral outline about evenly convex; head length a little greater than depth; snout long, bluntly conic; mouth large, horizontal, about in axis of body; lips thin, double for about two-thirds the side, lower

double only a short distance; lower jaw just included; interorbital slightly convex, considerably broader than eye; caudal peduncle, least height a little less than half head; dorsal spines flexible, rather high, nearly half head; soft dorsal 2 in head; anal similar, but less high, longest ray 2.3 in head; caudal rounded, no rays produced; ventrals 1.5 in head, reaching halfway to base of third soft anal ray; pectoral broad, its tip reaching to or slightly past vertical through tip of ventral, its length 1.4 in head (in the type there are 12 rays on right side and 9 on left, which is doubtless deformed); distal border convex (on left side); origins of dorsal, pectoral, and ventral about in same vertical; scales large, firm, those on breast not reduced; those at base of dorsal hardly forming sheath; no sheath at base of anal; large scales on upper and posterior portion of opercle; 1 row of about 7 scales below and behind eye; remainder of head naked; lateral line complete, portion to bend parallel to dorsal outline, straight portion beginning below base of fourth from last soft dorsal ray; 2 or 3 supernumerary scales with tubes extending from upper portion on row just above straight portion; tubes much branched, the branching covering well the exposed portion of the scale; teeth in anterior portion of jaws distinct, pointed, imbricated, in several series; 2 posterior canines; lateral teeth in upper jaw small, distinct, in a single series; lateral teeth in lower jaw large, in a single series; 2 conical teeth within outer teeth at symphysis of upper jaw, other small teeth within outer ones at sides of upper jaw.

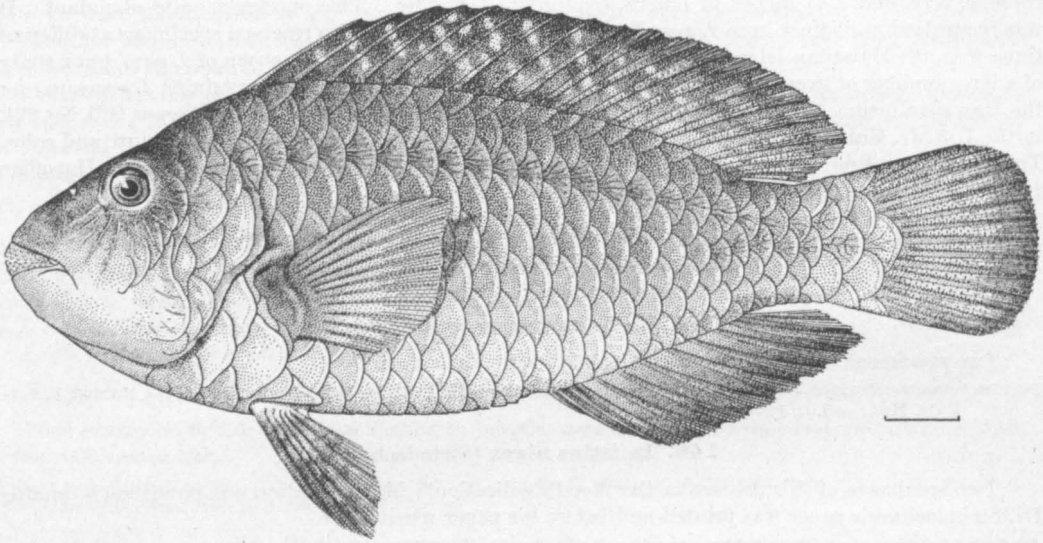
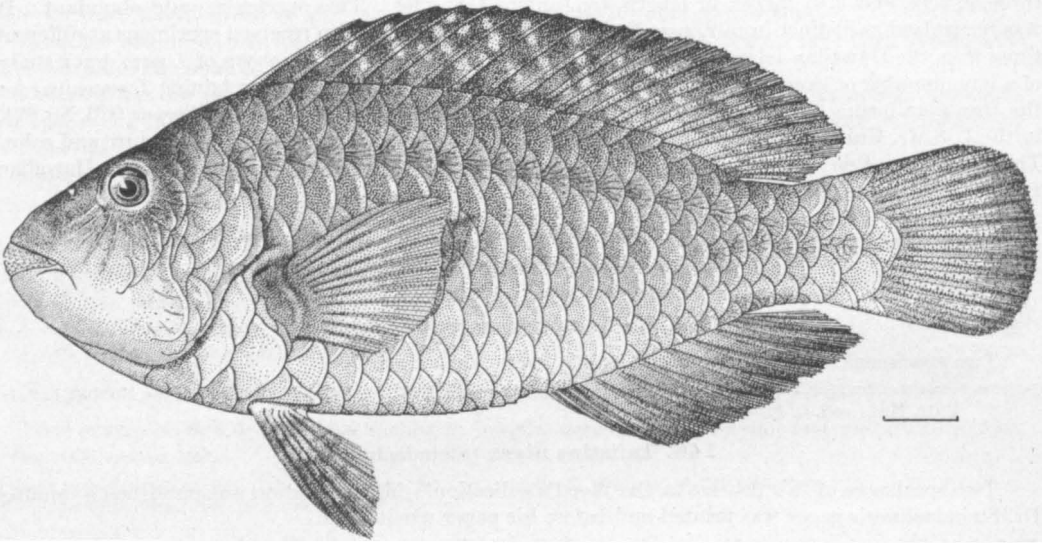


FIG. 24.—*Calotomus cyclurus* Jenkins, new species. Type.

Color in alcohol, head and body a uniform brown, with some indications of dots of lighter on some of the scales, and a wide margin of the posterior border of each scale shows paler than the base; teeth within outer teeth at symphysis of upper jaw, other small teeth within outer ones at sides of upper jaw.



149. Calotomus irradians Jenkins.

One specimen (field No. 306, 17 inches in length) of this beautiful fish was obtained by me; and one (field No. 1298, 17 inches in length) by the *Albatross* in 1896. This species does not appear to be common, but is highly prized by the native fishermen for virtues which it is supposed to possess.

Calotomus irradians Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 58, fig. 15, Honolulu. (Type, No. 12142, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

150. Calotomus sandvicensis Cuvier & Valenciennes.

Color in life, dusky brown, with dark mottlings; base of pectoral black; chin light brown; no other distinct markings. This is a dull-colored fish not recognized by native fishermen as different from at least 2 or 3 other distinct species. Cuvier & Valenciennes's description of *C. sandvicensis*, based on a specimen from the Sandwich Islands in Quoy & Gaimard's collection, is very meager, and Guichenot's redescription is not more complete, and this identification may prove incorrect.

Very common at Honolulu. Thirteen specimens, 5 to 13 inches in length, were obtained by me.

Callyodon sandvicensis Cuvier & Valenciennes, Hist. Nat. Poiss., XIV, 295, 1839, Sandwich Islands; Guichenot, Cat., Scarides, 62, 1865 (Cuvier & Valenciennes's type).

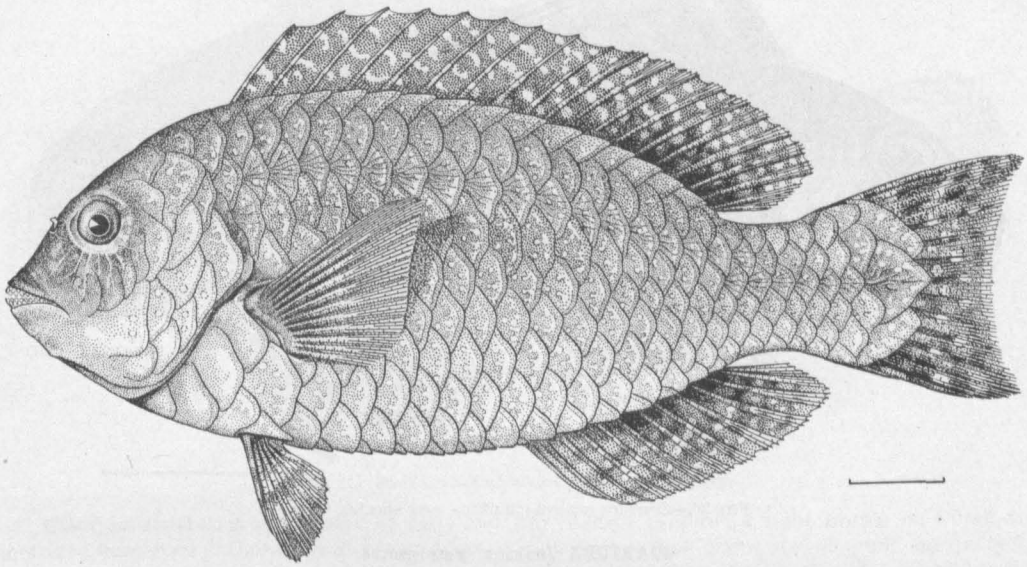
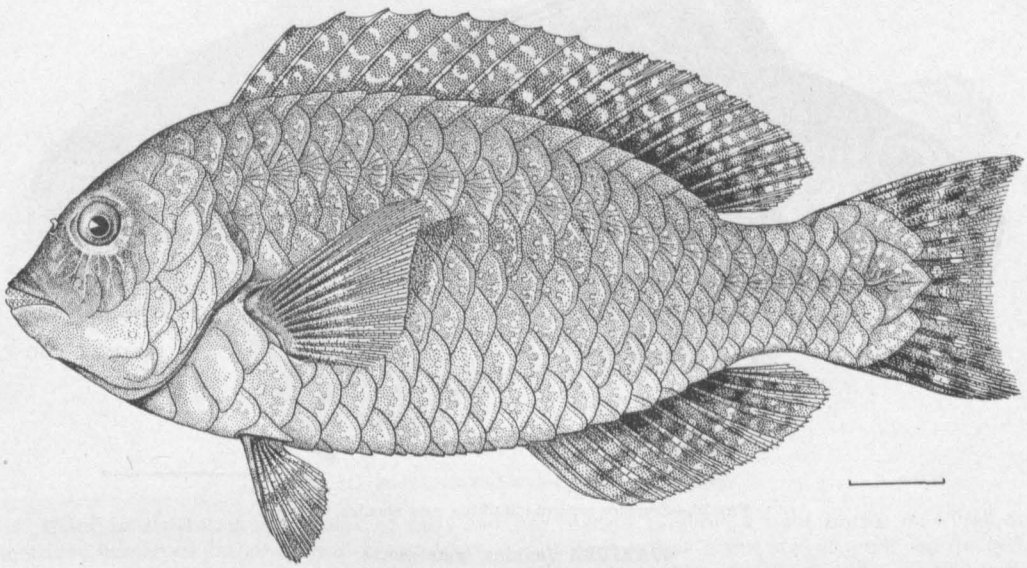


FIG. 25.—*Calotomus snyderi* Jenkins, new species. Type.

62, 1865 (Cuvier & Valenciennes's type).



the longest about equaling snout; soft dorsal somewhat elevated, the longest rays equaling distance from tip of snout to pupil; anal similar to soft dorsal; caudal somewhat lunate, the upper lobe the longer, about 1.8 in head; ventral short, reaching barely halfway to origin of anal; pectoral broad, reaching past tips of ventrals, its length 1.3 in head.

Color in alcohol, dirty yellowish-brown on head and body, marbled with light and darker; side above lateral line with a series of about 5 roundish white spots as large as pupil, and numerous smaller, irregular, less distinct white spots; side below lateral line with about 10 or 12 large, rounded, white spots and numerous small white specks and irregular markings, these especially distinct in pectoral region; head with similar white specks and markings; dorsal fin brown, with irregular paler spots; membrane between first and second dorsal spines black; soft dorsal with a large brownish-black spot at base of last 5 or 6 rays; anal similar to soft dorsal, blotches not so distinct; a series of black blotches at bases of rays, the one on last ray larger than others, covering base of last membrane; ventrals brownish, dusky at tip, a paler interspace; pectoral dusky, dark at base and in axil, pale on tip.

The only specimen known is the type, No. 50850, U. S. N. M. (field No. 1369), 10.5 inches long, obtained at Honolulu by me in 1889.

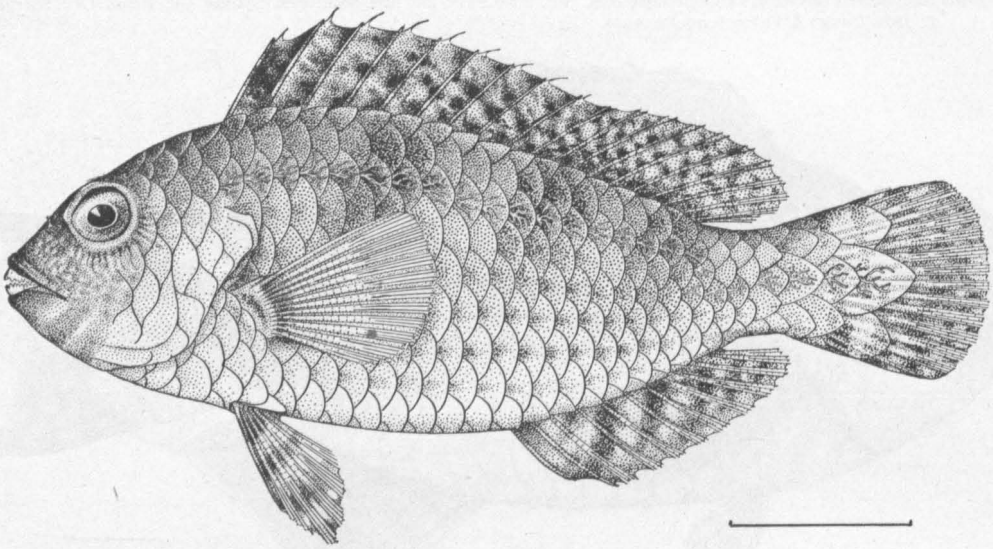


FIG. 26.—*Scaridea zonarcha* Jenkins, new species. Type.

SCARIDEA Jenkins, new genus.

Scaridea Jenkins, new genus of *Scaridæ* (*zonarcha*).

Jaws subequal, the lower just included; dorsal spines pungent; gill-membranes broadly joined to

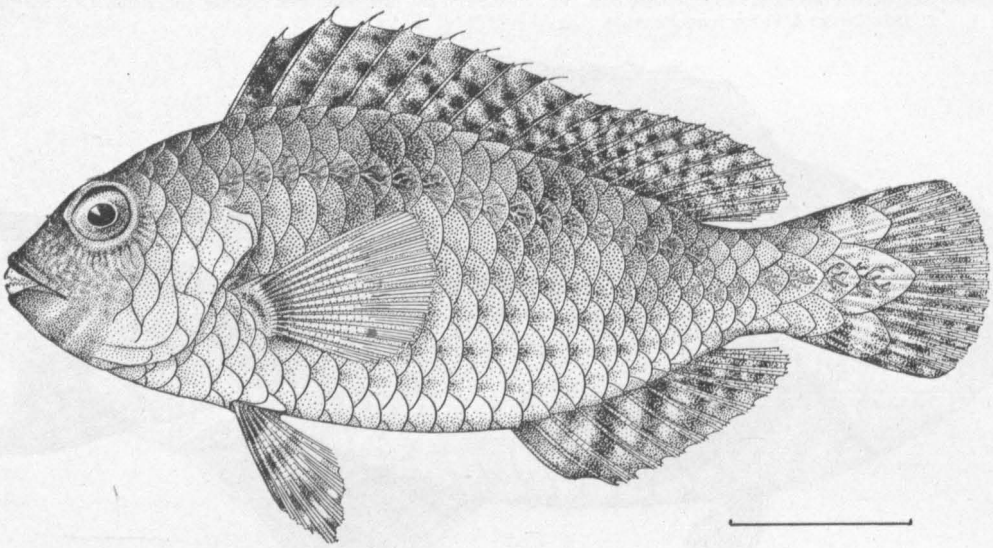


FIG. 26.—*Scaridea zonarcha* Jenkins, new species. Type.

half its length, the lower double only very short distance; lips covering base of teeth; eye moderate, its lower border above axis of body; interorbital somewhat less than eye, slightly concave (in alcohol); caudal peduncle 2.6 in head; dorsal spines pungent, about equal, the first being the shortest, the longest about 2.1 in head; soft dorsal slightly higher; anal similar to dorsal, but a little less high; caudal truncate, or slightly rounded; pectoral reaching 0.7 of distance to vent, its length 1.4 in head; pectoral reaching slightly beyond tips of ventrals, its length 1.6 in head; origins of dorsal, pectoral, and ventral about in same vertical line; scales large, firm, those on nape and breast not reduced; 3 scales in front of origin of dorsal; one row of 2 or 3 scales on cheek; large scales on upper posterior portion of opercle, 1 scale showing on lower limb; rest of head naked; sheath of scales at base of dorsal; none at base of anal; lateral line complete; 19 scales with tubes to the bend which occurs just below last ray of dorsal; the tubes on the portion to the bend are very much branched; jaws subequal, lower slightly included; teeth white, distinct, on anterior portions of both jaws in more than 1 series, irregularly imbricated; lateral teeth in upper jaw small, in a single series, outer extremities free, bases coalesced; lateral teeth in lower jaw large, in single series, distinct, crowded together at base; 2 developed posterior canines on one side, 1 on the other in the type, present but small in the small cotypes.

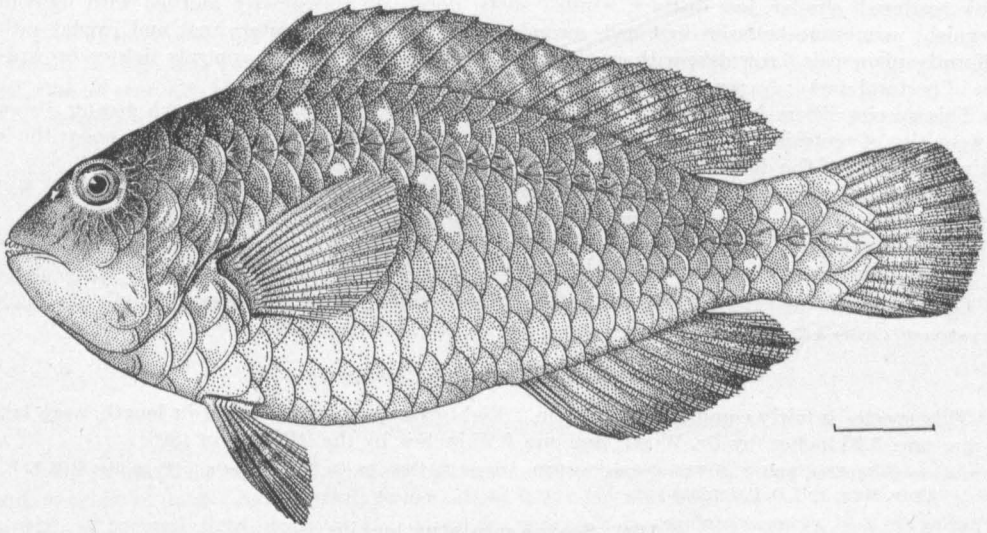


FIG. 27.—*Scaridea balia* Jenkins, new species. Type.

Color in alcohol, ground color of body and fins, except pectoral, a light brown on which are scattered numerous darker reddish-brown spots of indistinct outline about size of pupil; on the body the spots frequently correspond with the scales and show within their area small light points; on the

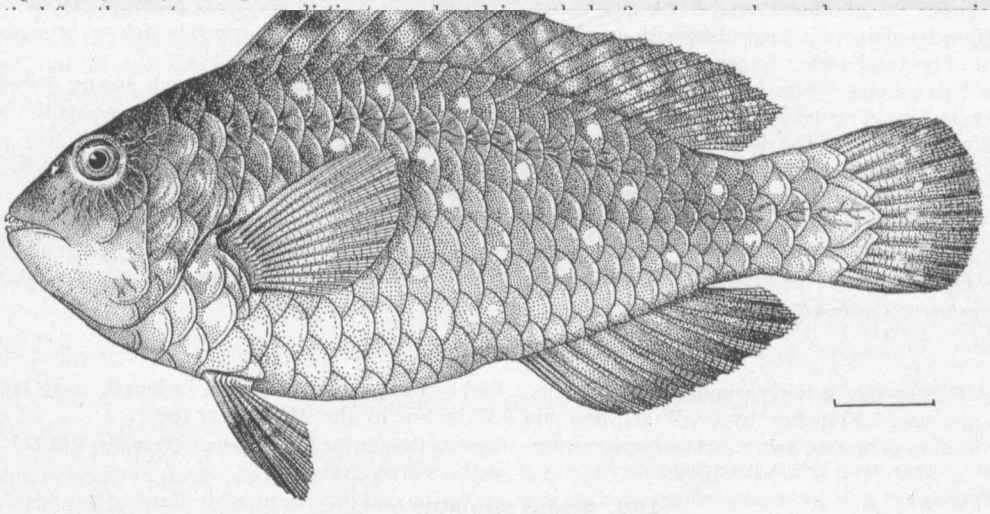


FIG. 27.—*Scaridea balia* Jenkins, new species. Type.

Color in alcohol, ground color of body and fins, except pectoral, a light brown on which are scattered numerous darker reddish-brown spots of indistinct outline about size of pupil; on the body the spots frequently correspond with the scales and show within their area small light points; on the
vertical fins the spots are more distinct; on dorsal irregularly, 3 or 4 on each membrane; a conspicu-

in 2 irregular series; upper jaw with 2 posterior canines directed backward; lateral teeth of upper jaw distinct, small, and in a single series; each side of lower jaw with about 5 distinct, blunt, incisor-like teeth in a single series; no teeth inside of front series of upper jaw; preorbital rather narrow; interorbital rather narrow, little convex, somewhat concave anteriorly; dorsal spines stiff and pungent, length of longest about equal to snout; soft dorsal somewhat elevated, the longest rays 2.1 in head; anal similar to soft dorsal, slightly lower; caudal rounded, 1.6 in head; ventrals short, their tips reaching scarcely half way to origin of anal; pectoral short, free edge rounded, its length a little greater than that of ventrals; scales large; lateral line continuous from upper end of gill-opening to posterior end of dorsal fin, where it curves downward 2 rows and continues to base of caudal fin; tubes of lateral line numerously and widely branched, the branches 4 to 6 or 7 in number; a few additional tubes at the bend of lateral line; 1 series of about 4 scales on cheek between which and eye are several long tubes; opercle with a series of large scales on basal portion; 4 scales on median line in front of dorsal fin.

Color in spirits, dirty rusty brown, paler below; upper part of side above lateral line with a series of about 6 roundish whitish spots larger than pupil; a similar series of about 4 spots on first row of scales below lateral line; lower part of side with 2 or more similar spots; side of head and body with a few scattered, similar, less distinct, whitish spots; dorsal fin indistinctly mottled with light and brownish; membrane between first and second spines blackish at center; anal and caudal rather uniformly plain pale brownish, without distinct markings; pectoral and ventrals lighter brownish; base of pectoral darker brown.

This species differs from *Scaridea zonarcha* in greater depth of body, the much greater distance between tips of ventrals and origin of anal, the greater distinctness of the white spots on body, the less distinct mottling of the dorsal fin, and the entire absence of mottlings on anal and caudal.

This description is based on a single specimen 10 inches in length, type, No. 50852, U. S. N. M. (field No. 1985), obtained by the *Albatross* at Honolulu in 1896.

154. **Scarus bennetti** Cuvier & Valenciennes.

One specimen (field No. 2081) is in Dr. Wood's collection. It is 5.25 inches in length.

Scarus bennetti Cuvier & Valenciennes, Hist. Nat. Poiss., XIV, 270, 1839, Sandwich Islands.

155. **Scarus brunneus** Jenkins.

This species is fairly common at Honolulu. Eight examples, 5 to 9 inches in length, were taken by me; one, 8.25 inches, by Dr. Wood; and one, 7.25 inches, by the *Albatross* in 1896.

Scarus brunneus Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 59, fig. 16, Honolulu. (Type, No. 6139, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

156. **Scarus miniatus** Jenkins.

Two specimens of this large species, 5.5 and 17 inches in length, were taken by me at Honolulu; and two, 6.75 and 17.5 inches, by the *Albatross* in 1896. It does not seem to be common, but is highly esteemed by the natives as food, a high price being asked for it in the market.

Scarus miniatus Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 62, fig. 20, Honolulu. (Type, No. 12144, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

157. **Scarus ahula** Jenkins. *"Uhuula"; "Pauuhumuhu."*

Three examples of this species, 6, 7.5, and 8.75 inches in length, were obtained by me; and two, 4.6 and 9.5 inches, are in Dr. Wood's collection. This species does not seem to be common at Honolulu. It is not distinguished from *S. brunneus* nor from *S. paluca* by the native fishermen.

Scarus ahula Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 61, fig. 19, Honolulu. (Type, No. 6142, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

158. **Scarus perspicillatus** Steindachner.

Color in life, each scale on anterior part of body with many blue dots, on posterior part, each scale with a vertical curved line of violet on its anterior part, the posterior part of each scale blue; head with bright blue band on violet ground; one band across forehead passing down in front of eye and bending around under it and backward a short distance; 2 short bands radiating from posterior border of eye; a band including a quadrilateral area across snout; a band or area on chin; irregular bands and

dots on lower side of head and throat; opercular flap and region in front of it green, and with many green dots; dorsal pink, with outer margin blue, and a blue longitudinal bar on middle portion of posterior half; a bright blue line on body a short distance below base of dorsal parallel to it; anal colored similarly to dorsal, caudal blue; pectoral blue, upper border bright blue, lower portion dark blue.

This large scaroid is one of the most beautifully colored fishes seen at Honolulu. One specimen, 19 inches in length, was taken by me; and one, 17.5 inches, by the *Albatross* in 1896. It does not seem to be common, and brings a high price in the market.

Scarus (Scarus) perspicillatus Steindachner, Denks. Ak. Wiss. Wien, XLI, 16, Taf. IV, fig. 1, 1879, Sandwich Islands; Smith & Swain, Proc. U. S. Nat. Mus. 1882, 134 (Johnston Island).

159. Scarus paluca Jenkins.

One specimen, 7 inches in length, was obtained by me at Honolulu.

Scarus paluca Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 60, fig. 18, Honolulu. (Type, No. 6141, L. S. Jr. Univ. Mus., field No. 297.; coll. O. P. Jenkins.)

160. Scarus gilberti Jenkins.

Five examples of this species, from 8 to 14 inches in length, were obtained by me; one by the *Albatross* in 1896; and two, 10 and 11.5 inches, by the *Albatross* in 1891. Fairly common at Honolulu and, like all scaroids, highly esteemed as food by the natives.

Scarus gilberti Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 59, fig. 17, Honolulu. (Type, No. 6140, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

161. Pseudoscarus jordani Jenkins.

One specimen of this species, 35 inches in length, was obtained. This is the largest and one of the most beautifully colored of the scaroids that I have yet seen in the Hawaiian Islands. It is not common, but is highly esteemed by the natives as food, as its high price in the market shows.

Pseudoscarus jordani Jenkins, Bull. U. S. Fish Comm. for 1899 (August 30, 1900), 63, fig. 21, Honolulu. (Type, No. 12143, L. S. Jr. Univ. Mus.; coll. O. P. Jenkins.)

Family XXXVIII. CHÆTODONTIDÆ.

162. Forcipiger longirostris (Broussonet).

Color in life (field No. 294, 6.4 inches in length), upper part of snout, face, upper part of head and back to origin of dorsal, light brown; under side of lower jaw and lower side of head and as far back as origin of pectoral, light, nearly white; dorsal fin, side of body, caudal peduncle, base of caudal, and anal fin, yellow, the color growing brighter from above downward toward anal fin, where it is a very bright yellow; outer border of posterior portion of soft dorsal white; posterior two-thirds of caudal white; a jet-black spot on outer and posterior angle of anal fin; ventrals yellow; pectoral rays dusky, membranes transparent.

Fairly common at Honolulu. Four examples, 5.2, 5.7, 5.75, and 6.4 inches in length, were taken.

Chætodon longirostris Broussonet, Desc. Ichth., 1, 23, pl. 7, 1782 (Society and Sandwich islands).

Chelmo longirostris, Günther, Cat., II, 38, 1860 (Amboyna); Günther, Fische der Südsee, I, 48, 1874 (Sandwich, Society, Paumotu, Friendly, and Kingsmill islands).

Chelmon (Forcipiger) longirostris, Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 489 (Honolulu).

Forcipiger longirostris, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 512 (Sandwich Islands).

163. Chætodon setifer Bloch.

Life colors, very complex and conspicuous; general ground color of body white; on upper anterior portion of body 5 narrow, dusky, nearly parallel lines, running from head region upward and somewhat backward on to the dorsal fin, the most posterior of these lines from angle of opercle upward and backward to margin of dorsal; running at right angles to this posterior one and joining it are 6 similar narrow, dusky lines, which extend downward and backward, curving slightly, ending somewhat short of base of anal; in the angle formed by upper of this last group and last of first group of dusky lines, the ground color is brownish-yellow, which becomes a bright yellow toward and on the soft dorsal; in the angle of this area are 2 parallel bands of light yellow, parallel with the borders of the

angle mentioned; soft dorsal bright yellow with a narrow black margin, the produced ray yellow, a large oval black spot on upper anterior portion; caudal peduncle and fin bright yellow, its outer margin ornamented with a band of 4 successive colors from within outward, light yellow, brown, orange, and white; anal fin bright yellow, with a narrow outer border of 3 colors, inner black, middle white, outer yellow; ventrals white; pectoral transparent; head white; ocular band wide as eye through eye, broader below and black, narrower above and dusky; 4 narrow orange lines across forehead from one ocular band to the other, 3 from near margin of eye, 1 above; above these on forehead a small circle of orange.

Three specimens of this beautiful fish, 6.5, 7, and 7 inches in length, were taken at Honolulu, where it is fairly common.

Chætodon setifer Bloch, Ichth., VI, taf. 426, fig. 1; Günther, Fische der Südsee, I, 36, taf. XXVI, fig. B, 1873 (Sandwich Islands); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 512 (Hawaiian Islands).

164. Chætodon multicinctus Garrett.

Color in life, body white, the white extending on dorsal and anal fins as far as the black line running lengthwise on these fins; each scale with a brown spot; the black line on dorsal and anal varying in distance from outer margins of fins, but at about one-third height of fin from margin on soft dorsal and anal; a narrow white line just outside the black line; outside of these lines the dorsal fin is yellow and the anal is white; dark line on anal fin extending on the belly as far as base of ventral as a yellow line; side of body crossed by 5 crossbands of light brown about as wide as eye; an ocular band brown below eye, black above, as wide as pupil from lower margin of opercle ending above eye in an acute angle; just above this a black spot in front of spinous dorsal; yellow at borders of upper portion of opercle and preopercle; a dark ring including brown spots around the base of caudal; a black crescent extending across caudal fin at its middle; ventrals white; pectoral transparent.

This is a very delicately colored fish. One example (field No. 318, 3.75 inches in length) was taken in 1889; and one, 3.9 inches, by the *Albatross* in 1896. Mr. Garrett states that he had found only 2 examples. These are all that have thus far been seen.

Chætodon multicinctus Garrett, Proc. Cal. Ac. Sci., III, 1863, 65 (Sandwich Islands); Günther, Fische der Südsee, II, 44, taf. XXXIV, fig. B, 1874 (Sandwich Islands). (Günther's colored plate is from Garrett's drawing.)

165. Chætodon ornatissimus Solander.

Color in life (field No. 321, 6.5 inches in length), sides of body white, the white extending on dorsal to a black line running lengthwise of fin near outer margin; breast and belly yellow; 6 bands of orange on side of body running obliquely backward, the upper 3 slightly convex toward dorsal outline, the lower 3 slightly convex toward ventral outline; head yellow, with black bands, the most posterior being vertical on opercle and joining the upper orange band; the next anterior vertical on side of head just behind eye, above joining the black band on dorsal fin; the next (ocular band) which is as narrow as pupil at eye, broadens above and below eye; a black band around mouth; upper lip yellow; chin black; spinous and soft dorsal fin outside the black line yellow, posterior margin of soft dorsal with a narrow black line; base of caudal white, a black band across its middle, exterior to this a yellow band, then a black crescent-shaped band, posterior margin white; base of anal white, inner portion dark brown, outer portion yellow, margin black, spinous portion yellow; ventrals bright yellow.

Two examples of this brilliantly colored fish, 6.5 and 7.25 inches in length, were obtained by me in 1889; and two, 6 and 7 inches in length, by the *Albatross* in 1896. It is not uncommon at Honolulu.

Chætodon ornatissimus Solander, in Cuvier & Valenciennes, Hist. Nat. Poiss., VII, 22, 1831; Tahiti, Günther, Cat., II, 15, 1860 (Sandwich Islands, Amboyna); Günther, Fische der Südsee, II, 38, taf. XXX, fig. B, 1874 (Sandwich Isiands); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 513 (Sandwich Islands).

166. Chætodon miliaris Quoy & Gaimard.

Color and description in paper referred to below. In describing this as a species distinct from *C. miliaris* Quoy & Gaimard, I was led into error by the description and figure given by Günther in the Fische der Südsee, and by Bleeker in the Atlas. An examination of the original description of *C. miliaris* Quoy & Gaimard, which was based on a specimen from the Hawaiian Islands, shows that my examples are that species, and that the species referred to and figured by Günther in Fische der Südsee and by Bleeker is not the same. In Günther's figure and description and in that of Bleeker a blue spot is assigned to each scale on the sides of the body as far as the belly. In Quoy & Gaimard's

figure and in each of a large number of fresh and preserved examples the spots are on the upper parts alone, mostly anterior, and are in vertical rows on about every third row of scales; in some, intercalary, faint vertical rows appear between the dense black conspicuous ones, making a characteristic pattern.

Common at Honolulu. I obtained nine examples, 3 to 4.8 inches in length, and examined a large number of others.

Chætodon miliaris Quoy & Gaimard, Voy. de l'Uranie, Zool., 380, pl. 62, fig. 6, 1824 (Sandwich Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 489 (Honolulu, Laysan); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 512 (Sandwich Islands); not of Günther and not of Bleeker.

Chætodon mantelliger Jenkins, Bull. U. S. Fish Comm. for 1899 (June 8, 1901), 394, fig. 7, Honolulu. (Type, No. 49699, U. S. N. M.; coll. O. P. Jenkins.)

167. Chætodon fremblii Bennett.

Life color, body bright yellow with 7 longitudinal light blue bands on side directed slightly upward, some of these extending on posterior portion of dorsal fin, second band interrupted; a bluish-black spot in front of dorsal; a black area on caudal peduncle extending up on posterior part of soft dorsal, this area with blue border anteriorly; dorsal bright yellow, with two longitudinal bands; caudal peduncle black, base of caudal fin white, posterior to this a yellow crossband, posterior to this (the margin) white.

Fairly common at Honolulu, where 8 examples, 3.6 to 5.75 inches in length, were obtained.

Chætodon fremblii Bennett, Zool. Jour., IV, 42, 1828 (Sandwich Islands); Günther, Fische der Südsee, II, 39, taf. XXIX, fig. B, 1874 (Sandwich Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 488 (Laysan).

168. Chætodon lunula (Lacépède).

Color in life (field No. 149, 5 inches long), prevailing color yellow; black ocular band broader than eye extending over head, including both eyes and reaching down on each side as far as lower edge of preopercle; front margin of this band bordered by a whitish line; immediately posterior to ocular band, not extending so far down as it, is a broad white band; space in front of ocular band to mouth yellow; tips of jaws red; a large black area on back including base of first 5 dorsal spines; a broad black band, lower portion as broad as length of caudal fin, extending from humeral region upward and backward to about origin of seventh and eighth dorsal spines, this black band bordered anteriorly and posteriorly by a bright orange yellow band; posterior and below this on the side and belly and breast, shading to olivaceous above, to bright yellow below; side with longitudinal narrow bands of orange, made by rows of orange dots, 1 on each scale; breast with orange dots; dorsal fin mostly yellow, with a narrow brown border, a yellow band running from body just in front of caudal peduncle upward on to the dorsal and along it; a long black area on middle of posterior portion of soft dorsal; caudal peduncle black, the black extending on base of caudal posterior to this, caudal yellow for nearly half its area; posterior to this a dusky crossband, then yellow, then a dusky band and most posteriorly white (the border); anal base and inner two-thirds yellow, outside of this a dusky longitudinal narrow band, then yellow, next this the brown border of the fin; ventrals bright yellow; pectoral transparent. This species varies much in the degrees of development of this pattern with age.

Another specimen, young, 1.25 inches in length, gives the following coloration: Snout red; ocular band black, next to this a broad white band followed by a broad black one; body yellow, darker above, brighter below, black spot on caudal peduncle covering whole of peduncle; white crossband on base of caudal fin, posterior to this a narrow black line, behind this dusky; black spot on soft dorsal surrounded by bright yellow line which behind becomes white.

Quite common in the market. Nine specimens, 1.3 to 6.25 inches in length, were obtained.

Pomacentrus lunula Lacépède, Hist. Nat. Poiss., IV, 507, 510, 513, 1802.

Chætodon lunula Cuvier & Valenciennes, Hist. Nat. Poiss., VII, 59, pl. 173, 1831; Günther, Fische der Südsee, II, 42, taf. XXXIII, 1874 (Tahiti, Sandwich Islands, Society Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 489 (Honolulu).

Chætodon tau-nigrum, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 513 (Sandwich Islands).

169. Chætodon sphenospilus Jenkins.

Twelve specimens were obtained. In a large number of fresh examples seen by me since the description was published, each one shows the wedge-shaped dusky area projecting from the spot on the side; in some the point of the wedge-shaped area extends nearly to the ventral outline.

Chætodon sphenospilus Jenkins, Bull. U. S. Fish Comm. for 1899 (June 8, 1901), 395, fig. 8, Honolulu. (Type, No. 49765, U. S. N. M.; coll. O. P. Jenkins.)

170. Chætodon trifasciatus Park.

Color in life (field No. 183, 5.75 inches in length), general color of sides of body orange, with numerous longitudinal lines of dark brown, those above the middle line of body slightly convex toward dorsal line, those below slightly convex toward ventral outline; ocular band black, narrower than eye, with narrow bright yellow borders, the band continuous around the head above and below; in front of ocular band is a bright yellow band, continuous above and below; tips of jaws black; behind ocular band is a bright yellow band, adjoining this a narrow black band; the opercle and preopercle behind this are yellow; an orange patch on middle line of body just in front of origin of spinous dorsal; breast yellow; anterior portion of spinous dorsal orange with light green border; beginning on the body parallel with base of soft dorsal fin and including the whole of the fin are 7 bands of color; first (innermost) yellow; next black, wedge-shaped, broadest end on caudal peduncle, narrow end on posterior portion of spinous dorsal; third band bright yellow, fourth yellow, fifth dusky; sixth yellowish-green, on posterior portion round dots of orange; seventh reddish-brown (the outer); caudal base (except black of above-mentioned band) light with violet tinge, exterior to this a series of crossbands; the first about the middle, a narrow orange; next a broader black; next a narrow bright yellow; and the next, the outermost, a broader white; just above anal on body parallel to base a yellow band, exterior to this and on base of fin also a black band, then (on soft portion) next a narrow orange, then a broad, brownish-red band; last (the extreme border of soft anal) a narrow bright yellow; area covering the first 2 anal spines a bright reddish-orange; ventrals bright yellow; base of pectoral bright orange, fin transparent.

Two specimens of this most beautifully marked species, 5.6 and 5.75 inches in length, were taken by me in 1889; and one, 4.8 inches long, by the *Albatross* in 1896 at Honolulu, where it does not seem to be common. This seems to be the first record of this species from the Hawaiian Islands.

Chætodon trifasciatus Mungo Park, Trans. Linn. Soc., III, 34, 1797, shores of Sumatra; Lacépède, Hist. Nat. Poiss., IV, 462, 494, 1802.

Chætodon vittatus, Günther, Cat., II, 23, 1860; Günther, Fische der Südsee, II, 41, 1874 (east coast of Africa to Paumotu group).

171. Chætodon quadrimaculatus Gray.

Color in life (field No. 293), the upper half of side of body dark brown, almost black; lower half orange, with each scale with a brown spot; 2 white areas on the upper brown portion; ocular band wide as eye, dark brown above eye, orange below, bordered on both sides through its whole length by white borders; before and behind ocular band on head orange; tip of snout brown; base of dorsal dark brown, the brown extending about half its height on soft dorsal; a white longitudinal band above this on soft dorsal, extending a distance on to the spinous dorsal; this band is bordered above by a narrow line of dark brown, above this the fin is orange, with a very narrow outer margin of dark brown, outer portion of spinous dorsal orange; caudal peduncle orange; dark-brown crossband at base of caudal fin, the fin a bright orange, with narrow posterior border of white; inner portion of anal bright orange, a curved white band, convex outwardly, extending on it from base of first spine to near posterior outer angle of soft portion; bordering this band exteriorly a narrow brown band; exterior to this both spinous and soft portions are bright orange; ventrals bright orange; pectoral transparent.

This is a very common form about the reefs at Honolulu. Nineteen examples were obtained, 3 to 5 inches in length.

Chætodon quadrimaculatus Gray, Zool. Miscell., 33, 1831–42, Sandwich Islands. Günther, Cat., II, 13, 1860, Sandwich Islands (type); Günther, Fische der Südsee, II, 38, taf. XXX, fig. A, 1874, Sandwich Islands; Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 489 (Honolulu, Laysan); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 512 (Sandwich Islands).

172. Microcanthus strigatus (Cuvier & Valenciennes).

Sides with 6 dark brown longitudinal bands, spaces between white to gray.

This species appears only rarely at Honolulu. Three examples were obtained, 3.3, 4.1, and 4.3 inches in length.

Chætodon strigatus Cuvier & Valenciennes, Hist. Nat. Poiss., VII, 25, pl. 170, 1831, Japan. Günther, Fische der Südsee, II, 47, 1874 (Sandwich Islands).

173. Heniochus macrolepidotus (Linnæus).

Color in life (field No. 213, 4.5 inches in length), 2 broad, black crossbands on side of body, the first including above, the first dorsal spine to base of produced spine and below the origin of ventral to origin of anal; second black band including above, most of spinous dorsal behind the produced spine, descending downward and obliquely backward, covering from lower side of caudal peduncle to tip of lobe of caudal; space in front of first black band, including head, nape, and breast, white, except a black band on forehead from one eye to the other; space between the black bands white extending on anal; just behind second black band a white band extending on soft dorsal above, below spreading from base of caudal to lower tip; the space on the soft dorsal and caudal behind this white band, yellow; anal spines black; ventrals black; pectoral transparent.

I obtained one specimen of this fish 4.5 inches in length. It seems to be rare at Honolulu, and this seems to be the first record from the Hawaiian Islands.

Chætodon macrolepidotus Linnæus, Syst. Nat., ed. x, 274, 1758, Indies.
Heniochus macrolepidotus, Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 93, 1831; Günther, Fische der Südsee, 48, taf. xxxvii, 1874.

Family XXXIX. ZANCLIDÆ.

174. Zanclus canescens (Linnæus). "*Kihikihi.*"

Color in life (field No. 78), front part of body and posterior portion of head included in a broad black band, the front margin of which is just in front of eye, down to throat, the posterior margin from origin of produced rays of dorsal down a point nearly half way from ventral to origin of anal; on this area are some nearly vertical narrow light blue streaks, one running up from origin of ventral, one running from base of pectoral, a short one behind the eye; face light blue; an orange area on each side of snout surrounded by black border; chin black; a broad space behind this broad black band extending above and below on portions of the dorsal and anal fins; front part of this space is light blue, shading into a sulphur yellow below, extending on the produced dorsal as light blue and on the spinous anal as a light blue; just back of this space a black crossband running across dorsal above and anal below; just bordering this black crossband a narrow light blue, this followed by narrow bands of yellow, next light blue, then black; caudal peduncle and base of caudal sulphur yellow, bordered posteriorly by a narrow cross-line of light blue, remainder of caudal fin black, with light blue posterior margin; anterior and posterior parts of iris golden, upper and lower dark. This complex pattern is gradually developed, consequently the young show variations. In the adult it is quite constant.

Forty-five examples of this very brilliantly colored fish, from 3.2 to 6 inches in length, were obtained by me, and 2 by the *Albatross* in 1896 at Honolulu, where it is very common.

Chætodon canescens Linnæus, Syst. Nat., ed. x, 272, 1758, Indies; after Artedi; young.
Chætodon cornutus Linnæus, Syst. Nat., ed. x, 273, 1758, Indies; after Artedi; adult.
Zanclus cornutus Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 102, pl. 177, 1831 (Caroline, Sandwich Islands, Tongataboo, Vanicolo, Celebes); Günther, Cat., ii, 493, 1860 (Amboyna, Ceram, Sandwich Islands); Jordan & Evermann, Fishes North and Mid. Amer., ii, 1687, 1898 (Honolulu); Steindachner, Denks. Ak. Wiss. Wien, lxx, 489, 1900, (Honolulu); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 513 (Sandwich Islands).

Family XL. TEUTHIDIDÆ.

175. Teuthis achilles (Shaw).

Color in life (No. 295, 10.2 inches in length), head, body and fins, except the lines and areas to be described below, a very dark brown varying to black; the other colors very bright and look as if put on with thick paint; a narrow, bright blue band under chin; opercular flap white; 2 narrow lines of color on body at base of dorsal, the upper orange red, lower bright blue; 2 similar lines at base of anal, the outer orange red, inner bright blue; a large oval area of orange red including and in front of caudal spine; anterior two-thirds of caudal fin orange-red, followed by narrow crossband of black, this followed by blue which shades into white on margin; upper and lower margins blue, with next to them, above and below, narrow line of black; iris blue; ventral black, blue area on anterior margin.

Fifteen examples of this species, 4.2 to 10.2 inches long, were obtained by me; and one, 4.2 inches long, by Dr. Wood.

Acanthurus achilles Shaw, Gen. Zool., iv, 383, 1803; Steindachner, Denks. Ak. Wiss. Wien, lxx, 1900, 493 (Honolulu).
Teuthis achilles Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 513 (Sandwich Islands).

176. Teuthis olivaceus (Bloch & Schneider).

Color in life (field No. 311), body dark brown, nearly black; fins black, with show of blue; horizontal orange bar about as wide as eye and long as head, extending from upper angle of opercular opening, straight backwards; this bar with a wide border of black; chin dark blue; posterior margin of caudal between upper and lower produced rays white; an orange line along base of dorsal, a similar one along base of anal. Eleven examples, 6.5 to 10.6 inches long, were obtained by me; and one, 9.5 inches long, by Jordan & Snyder.

Acanthurus olivaceus Bloch & Schneider, Syst. Ichthy., 213, 214, 1801, Tahiti; Günther, Cat., III, 336, 1861 (Otaheiti, Feejee Islands); ibid., Fische der Südsee, IV, 113, 1875; Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 493 (Honolulu).
Acanthurus humeralis Cuvier & Valenciennes, Hist. Nat. Poiss., X, 231, 1835, Caroline and Society Islands.

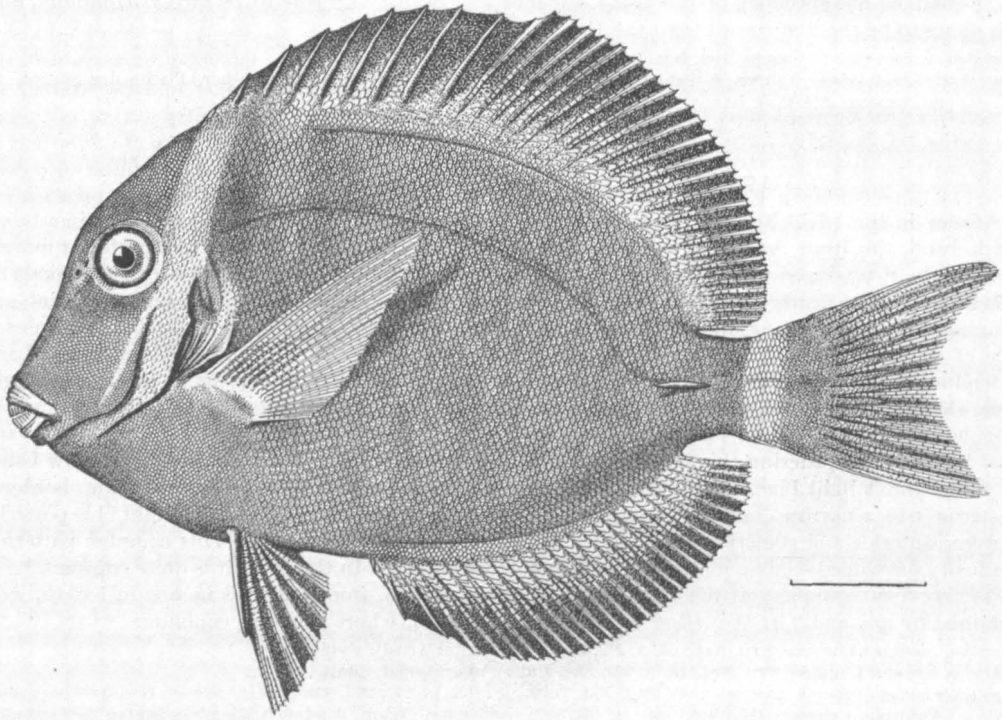


FIG. 28.—*Teuthis leucopareius* Jenkins, new species. Type.

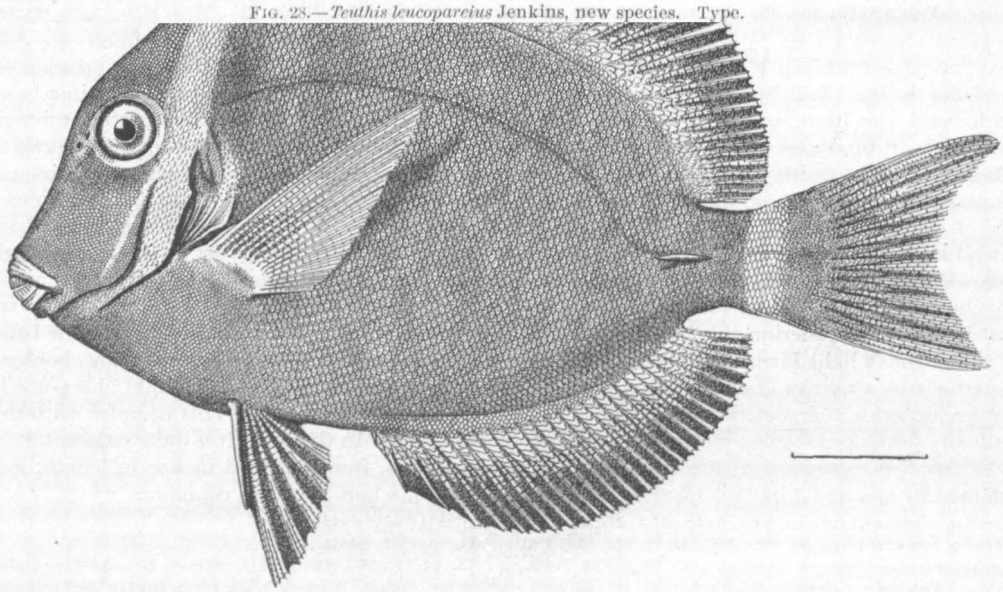


FIG. 28.—*Teuthis leucopareius* Jenkins, new species. Type.

177. Teuthis leucopareius Jenkins, new species.

base of first two dorsal spines, downward, behind the eye, over opercle, to its lower margin; a light brown transverse band on caudal peduncle.

The above description is based upon the type, No. 50712, U. S. N. M. (field No. 324), and 8 cotypes, all obtained by me at Honolulu.

178. Teuthis umbra Jenkins, new species.

Head 3.8 in length; depth 1.7; eye 3.75 in head; snout 1.2; interorbital 2.65; D. IX, 27; A. III, 25. Body deeply ovoid, greatest depth at pectoral region; head deep; upper profile nearly straight from tip of snout to interorbital space, then convex to origin of dorsal; jaws low, lower inferior; mouth small; interorbital width broad, convex; nostrils small, round, close together, anterior larger, with small, thin, fleshy flap; last dorsal spine 1.7 in head, anterior spines graduated to posterior; fifth dorsal ray 1.25; third anal spine longest, 2 in head; eighth anal ray 1.5; caudal rather broad, emarginate; pectoral broad, a trifle longer than head; ventrals sharply pointed, a trifle less than pectoral, or about equal to head; caudal peduncle compressed, 2 in head; caudal spine small, sharp, about 5 in head, depressible in a groove; scales small, finely ctenoid, very small on top of head, breast, and basal portions of vertical fins; lateral line irregular, arched at first, then sloping down to caudal spine, a good portion of it more or less straight, from below anterior portion of spinous dorsal to below middle of soft dorsal.

Color in alcohol, more or less uniform dark chocolate brown, outer portions of the fins blackish; pectoral pale olivaceous brown; ventrals blackish on outer portion.

The above description is based upon type, No. 50841, U. S. N. M. (field No. 05363), 7.5 inches long, obtained at Honolulu in 1901 by Jordan & Evermann. Only small specimens were secured by me.

179. Teuthis dussumieri (Cuvier & Valenciennes).

Color in life (field No. 140, 6.2 inches long), general color brown with very many narrow longitudinal wavy lines, olivaceous alternating with light lines; dorsal fin bright; bright light line running along its base, below which is a bright golden line; signs of indistinct longitudinal lines parallel with body on posterior part of fin; anal fin similar to dorsal but darker in color; ventrals dusky, with whitish markings; pectoral olivaceous; caudal dusky with darker spots; a ring of golden around eye.

Seven examples, 6.2 to 11.75 inches in length, were taken by me; five, 4.5 to 6.7 inches, by the *Albatross;* two, 6 and 6.25 inches, by Jordan & Snyder; and four, 4.43 to 6.86 inches, by Dr. Wood. This is a common fish at Honolulu.

Acanthurus dussumieri Cuvier & Valenciennes, Hist. Nat. Poiss., X, 201, 1835, Isle de France; Günther, Cat., III, 335, 1861 (Mauritius); Günther, Fische der Südsee, IV, 112, pl. 72, 1875 (Sandwich Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 493 (Honolulu).

180. Teuthis xanthopterus (Cuvier & Valenciennes).

A single specimen, 7.25 inches in length, was obtained.

Acanthurus xanthopterus Cuvier & Valenciennes, Hist. Nat. Poiss., X, 215, 1835, Seychelles.

181. Teuthis güntheri Jenkins, new species.

Head 4 in length; depth 1.8; eye 3.5 in head; snout 1.4; interorbital 2.7; D. IX, 26; A. III, 24. Body deeply ovoid, greatest depth at origin of anal; head deep, compressed, upper profile obliquely convex from tip of snout to spinous dorsal; eye rather large, high, in last third of head; nostrils small, close together, anterior the larger, rounded, with thin fleshy flap; mouth small, low, inferior; jaws blunt, slightly produced, lower inferior; interorbital space broad, elevated, convex; margin of preopercle forming an angle below anterior rim of orbit; dorsal spines slender, graduated to last, which is 1.25 in head; soft dorsal and anal not pointed behind; eighth dorsal ray 1.2 in head; third anal spine longest, 1.9; eighth anal ray 1.25; caudal long, emarginate; pectoral longer than head, 3.5 in body; ventrals sharp-pointed, 1.2 in head; ventral spine 1.9; caudal peduncle compressed, its least depth 2.2; caudal spine short, 1.5 in eye; scales small, crowded, ctenoid; very minute scales on basal portions of vertical fins; lateral line nearly concurrent with dorsal profile of back, straight from anterior dorsal spines to below middle of soft dorsal, then running down above edge of caudal spine to base of caudal.

Color in alcohol, dark brown, vertical fins darker; side plain or uniform brown, without any

lines; soft dorsal and anal grayish posteriorly; both dorsals and anal with 4 broad, deep brown, longitudinal bands; caudal deep brown, apparently without spots, base of fin pale; pectoral brown on basal portion, marginal portion broadly yellowish-white.

Color in life (field No. 199), general color brown; an orange-yellow band along the back just below the base of dorsal, just above golden band a blue line; 4 golden longitudinal bands on dorsal fin, with an intercalary band which in some examples makes 5 bands; anal with 4 similar ones; pectoral yellow; yellow area through eye; yellow line over snout.

This description is based on the type, No. 50842, U. S. N. M. (field No. 199, 8.6 inches in length), and 11 cotypes ranging from 5.5 to 8 inches in length, all obtained by me at Honolulu.

Acanthurus blochi, Günther, Fische der Südsee, IV, 109, LXIX, fig. B (copy of Garrett's drawing); (not of Cuvier & Valenciennes): Streets, Bull. U. S. Nat. Mus., No. 7, 68, 1877 (Honolulu).

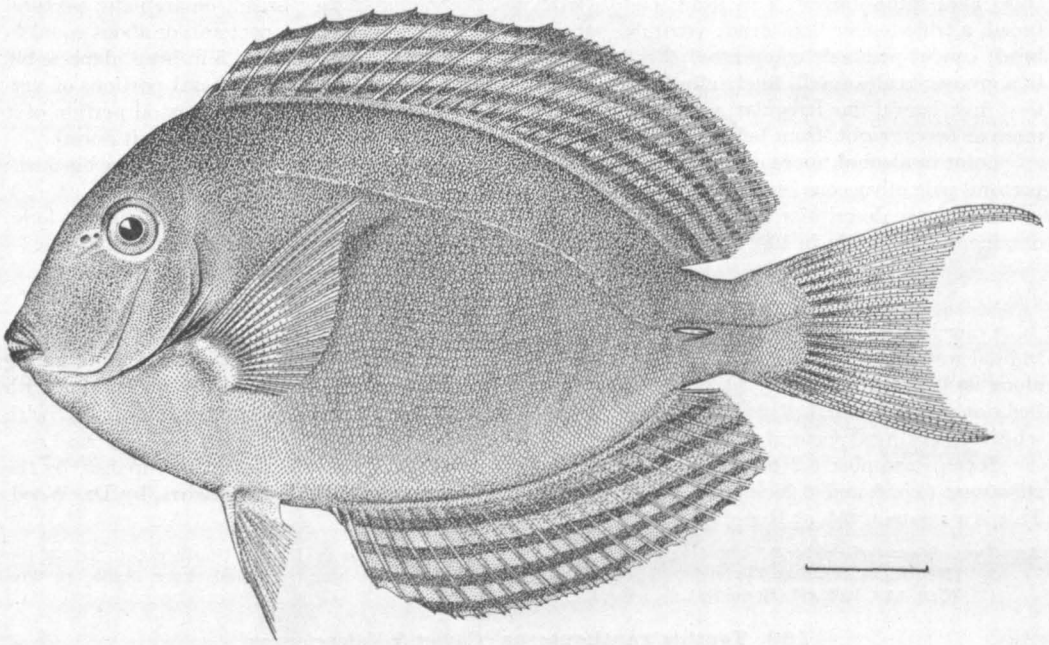


FIG. 29.—*Teuthis guntheri* Jenkins, new species. Type.

182. Teuthis matoides (Cuvier & Valenciennes).

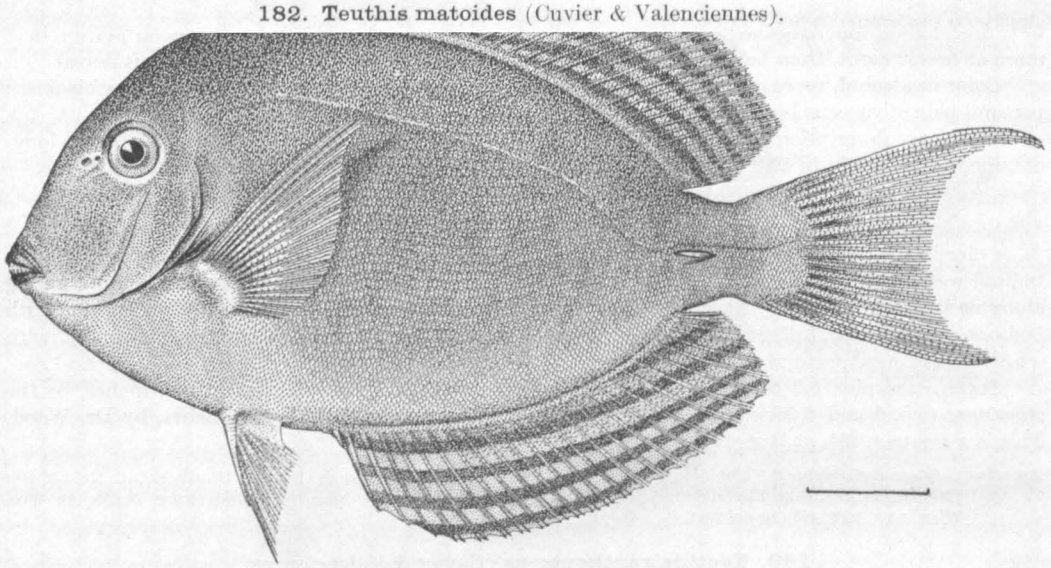


FIG. 29.—*Teuthis guntheri* Jenkins, new species. Type.

182. Teuthis matoides (Cuvier & Valenciennes).

One specimen obtained.

184. Teuthis bipunctatus (Günther).

Color in life (field Nos. 74, 75, 4.4 and 5.5 inches in length), dark brown; face, throat and belly with many small inconspicuous spots of dark yellow.

Fairly common at Honolulu. Eleven examples, 4.4 to 7 inches in length, were taken by me, and two by Dr. Wood.

Acanthurus bipunctatus Günther, Cat., III, 331, 1861 (Sea of China, Fiji Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 494, 1900 (Honolulu).

Acanthurus nigros, Günther, Cat., III, 332, 1861 (New Hebrides); ibid., Fische der Südsee, IV, 110, 1875 (Sandwich Islands, New Hebrides, Pelew Islands, Tahiti).

185. Teuthis sandvicensis (Streets). "*Manini.*"

Color in life, general ground color drab, with yellowish cloudings; belly, chin, throat, and body along base of anal white, or nearly so; side with 5 black vertical bars as wide as pupil, first on head through pupil extending slightly forward to branchiostegals; second from front of dorsal to axil of pectoral, continued by a bar originating on base of pectoral and extending obliquely backward to belly; third from about sixth dorsal spine to a point about midway between anus and anal fin; fourth from about the first soft dorsal ray to first or second soft anal ray; fifth from seventh soft dorsal ray to ninth soft anal ray; a black spot on top of caudal peduncle extending to lateral line on each side; vertical fins dusky, anal with a white margin; pectoral fins colorless; ventral fins white with dusky under surface.

One of the most common fishes about the reefs; 8 adults and a large number of young were taken. An examination of a large number of specimens of different ages shows a constancy in coloration.

Acanthurus triostegus, Günther (in part), Cat., III, 327, 1861; ibid., Fische der Südsee, IV, 108, 1875 (Sandwich Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 493, 1900 (Honolulu and Laysan); not of Linnæus.

Teuthis triostegus, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 513 (Hawaiian Islands).

Acanthurus triostegus sandvicensis Streets, Bull. U. S. Nat. Mus., No. 7, 67, 1877 (Hawaiian Islands). (Type, No. 15398, U. S. N. M.)

186. Teuthis guttatus (Schneider).

Color in life (field No. 328), general color brown; a light band from short distance in front of dorsal, downward over opercle to its lower margin; another from about fifth dorsal spine to space between anus and anal fin; another narrower, not so light nor so distinct, from third soft ray of dorsal nearly to third soft ray of anal; dorsal fin, anal fin, posterior half of body including caudal peduncle, covered with white spots; ground color of dorsal and anal darker than that of body; a broad yellow band across base of caudal; posterior portion of caudal dark, nearly black; ventrals bright yellow with narrow dark margin; pectoral brown; chin, throat, and breast as far back as base of ventrals white; iris brown.

I obtained three examples of this species, 9, 10.75, and 11.5 inches in length; and two, 8 and 10.3 inches long, were taken by Jordan & Snyder. It seems to be rare at Honolulu.

Acanthurus guttatus Schneider, Syst. Ichth., 215, 1801, Tahiti; Günther, Cat., III, 329, 1861; Günther, Fische der Südsee, IV, 109, taf. LXIX, fig. A, 1875 (Sandwich Islands).

Harpurus guttatus, Forster, Descrip. Animal., Ed. Licht., p. 218, 1844.

Teuthis guttatus, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 513 (Hawaiian Islands).

187. Zebrasoma hypselopterum (Bleeker). "*Kihikihi.*"

Color in life (field No. 189, 3.1 inches in length), 6 chestnut-brown bands across body, running somewhat obliquely backwards, the first 4 edged with light blue, between the bands and in front of the first band yellow, which color anteriorly is brighter; caudal black; second and third yellow bands extending on dorsal and below on anal, following direction of rays on fins; remaining parts of anal and caudal chestnut brown; ventrals yellow, the color on these fins being a prolongation of the yellow of the first yellow band; pectoral anteriorly orange-yellow, posteriorly transparent; lips reddish.

Seven specimens of this beautiful species, 3.1 to 9 inches in length, were obtained. It seems to be fairly common at Honolulu.

Acanthurus hypselopterus Bleeker, Nat. Tijds. Ned. Ind., VI, 313, 1854, Floris; Günther, Cat., III, 344, 1861; ibid., Fische der Südsee, IV, 117, 1875 (Feejee Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 494 pl. IV, fig. 1, (Honolulu).

188. Scopas flavescens (Bennett).

Color in life (field No. 172, 3.2 inches in length), body, head, and fins uniformly sulphur-yellow; tips of ventral orange; lips red.

One specimen of this species, 3.2 inches long, was taken. It seems to be rare at Honolulu.

Acanthurus flavescens Bennett, Zool. Journ., IV, 40, 1828; Günther, Fische der Südsee, IV, 116, pl. 76, 1875 (Sandwich Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 493 (Honolulu).

Acanthurus rhombeus, Günther, Cat., III, 342, 1861 (Sandwich Islands).

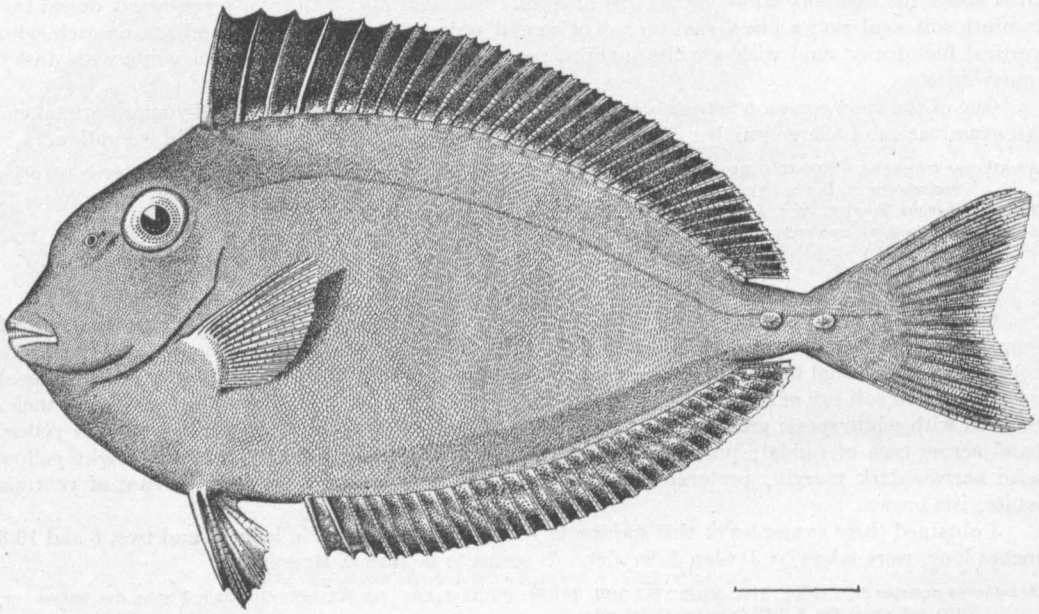
189. Ctenochætus strigosus (Bennett).

Color in life (field No. 205, 5.6 inches in length), dark reddish-brown, with numerous narrow, blue, longitudinal lines on body and vertical fins, those on body narrowest; pectoral brownish-orange.

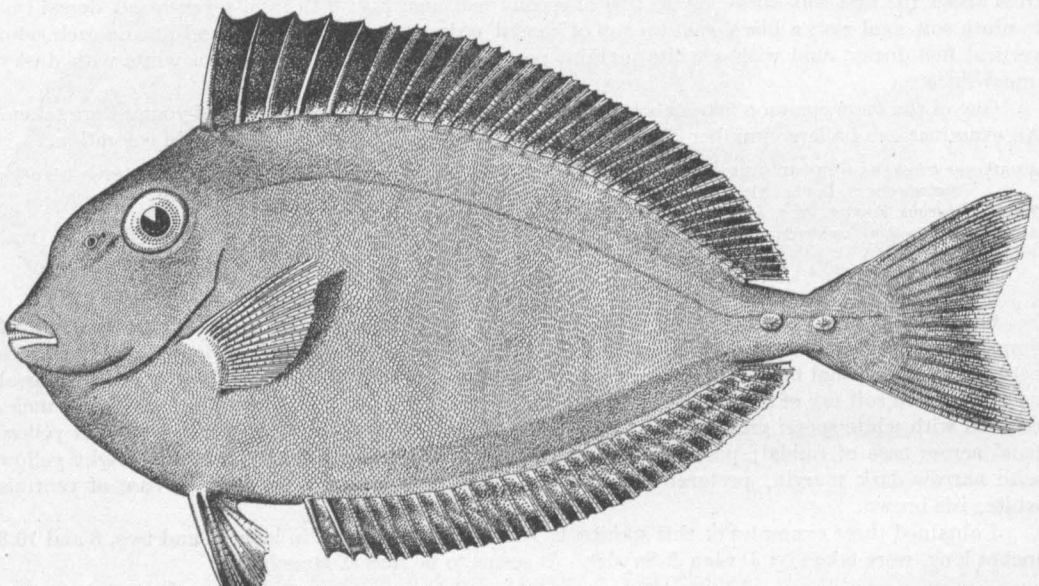
Seven examples, 4.4 to 6.2 inches in length, were taken. It appears to be fairly common at Honolulu.

Acanthurus strigosus Bennett, Zoological Journal, IV, 41, 1828 (Sandwich Islands); Cuvier & Valenciennes, Hist. Nat. Poiss., X, 243, 1835; Günther, Cat., III, 342, 1861 (Sandwich Islands); ibid., Fische der Südsee, IV, 116, pl. 79, figs. B and C, 1875 (Sandwich Islands).

Acanthurus (Ctenodon) strigosus, Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 494 (Honolulu).



Acanthurus (Ctenodon) strigosus, Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 494 (Honolulu).



1.7 in head; other dorsal spines smoother and more slender, the fifth 2 in head; soft dorsal not high, the rays of about uniform length, the longest about 2.5 in head; anal spines rather short and slender, the second equal to diameter of orbit; soft anal similar to dorsal, equally high; caudal deeply emarginate, the free edge of the 2 lobes forming a broad angle; upper lobe of caudal somewhat the longer, its length nearly equaling head; ventral spines moderate, reaching base of first anal spine, their length 2 in head; pectoral short, its length a little less than snout.

Color in alcohol, pale dusky olivaceous, lower parts palest; dorsal and anal with pale purplish brown, mottled with lighter; edge of dorsal and anal each with a narrow, blackish border tipped along the posterior portion with whitish; caudal dirty brownish, narrowly edged with white; ventrals whitish, dusky tipped; pectoral dusky at base, lighter at tip.

Only 2 examples of this species were obtained. Type, No. 50707, U. S. N. M. (field No. 382), a specimen 8.25 inches in length, obtained by me in Honolulu in 1889; cotype, No. 7726, L. S. Jr. Univ. Mus. (field No. 12048), 11 inches long, obtained by the *Albatross* in 1896, at Honolulu.

191. Acanthurus brevirostris (Cuvier & Valenciennes).

Color in life (field No. 244, 7.25 inches in length), head, body, dorsal and anal fins uniformly dark; outer margin of caudal yellow, central area light orange.

Four specimens, 7.25, 7.75, 8.25, and 8.75 inches in length, were obtained. This is the first record of the species from the Hawaiian Islands. It appears to be fairly common at Honolulu.

Naseus brevirostris Cuvier & Valenciennes, Hist. Nat. Poiss., X, 277, pl. 291, 1835; Günther, Cat., III, 349, 1861; ibid., Fische der Südsee, IV, 121, pl. LXXIX, fig. A, 1875 (Kingsmill Island, Tahiti).

192. Acanthurus unicornis (Forskål).

Nine examples of this species, from 5 to 12 inches in length, were obtained. It is very abundant at Honolulu, where it is exposed for sale as food with all others of the *Teuthididæ*.

Chætodon unicornis Forskål, Descript. Animal., 63, 1775.

Naseus unicornis, Günther, Cat., III, 348, 1861 (Polynesia); ibid., Fische der Südsee, IV, 118, pl. 78, figs. 1 to 4, 1875 (Sandwich Islands); Streets, Bull. U. S. Nat. Mus., No. 7, 68, 1877 (Honolulu); Steindachner, Denks. Ak. Wiss. Wien, LXX, 495, 1900 (Honolulu).

Monoceros unicornis, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 513 (Hawaiian Islands).

193. Callicanthus lituratus (Forster).

Color in life (field No. 160, 8.5 inches in length), body dark drab, with darker mottlings; a bright yellow area around eye, the color extending as a curved line of bright yellow down the side of the snout to angle of mouth, where it spreads out, then extends a short distance backward; the area about the eye backward and upward to opposite base of second dorsal spine yellow, the yellow area of each eye connected by a broad band between the eyes; lips rosy; caudal spines and the area around them bright orange; dorsal inky black, soft part with white border, edged outwardly with dark; a bright blue line on body along base of dorsal; base of anal yellow, outer part orange with black edging; ventrals olive; pectoral dusky, with inner surface yellow; caudal dark drab, with posterior border white, just within which is a crossband of yellow.

Common at Honolulu. Eight specimens, 6.5 to 10 inches in length, were taken by me; one, 11 inches long, by Dr. Wood; and three, 7, 8, and 10.5 inches long, by the *Albatross* in 1896.

Acanthurus lituratus Bloch & Schneider, Syst. Ichth., 216, 1801.

Harpurus lituratus, Forster, Descript. Animal., 218.

Naseus lituratus, Cuvier & Valenciennes, Hist. Nat. Poiss., X, 282, 1835 (Otahiti); Günther, Cat., III, 353, 1861 (Polynesia); Günther, Fische der Südsee, IV, 124, pl. 82, 1875 (Sandwich Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 495 (Honolulu).

194. Callicanthus metoposophron Jenkins, new species.

Head 4 in length; depth 2.5; eye 3.5 in head; snout 1.9; interorbital 3; D. VI, 29; A. II, 30. Body rather oblong, greatly compressed, the greatest depth under last dorsal spine; anterior dorsal profile without protuberance of any kind, strongly and evenly convex from tip of snout to about fourth dorsal ray, thence less convex to caudal peduncle; ventral outline similar, but less convex; snout rather short; mouth small, horizontal, slightly below axis of body; teeth small, slender, close-set, and pointed, in a single row in each jaw; a short lunate groove in front of eye, its length equaling that of maxillary;

gill-opening long and oblique, the lower arm extending far forward, the upper end on a level with lower edge of orbit and directly above upper base of pectoral; interorbital space moderately broad, the 2 sides meeting at a broad, rounded angle; entire body and head finely granulated or velvety; each side of caudal peduncle with two, weak, keeled, horny plates, the distance between which is 1.4 in eye; first dorsal spine strong, roughened laterally, inserted above gill-opening; other dorsal spines slender, smooth, and pointed, the third longest, its length nearly equaling that of snout; dorsal rays slender and weak, shorter than the spines, the longest about 2.8 in head; anal spines slender and pointed, the second slightly the longer, its length equaling diameter of eye; anal similar to soft dorsal, but somewhat lower; caudal deeply lunate, the lobes not greatly produced, the upper slightly the longer; ventral spines long, rather strong, reaching base of second anal spine, their length equaling that of longest dorsal spine; pectoral of moderate length, 1.4 in head.

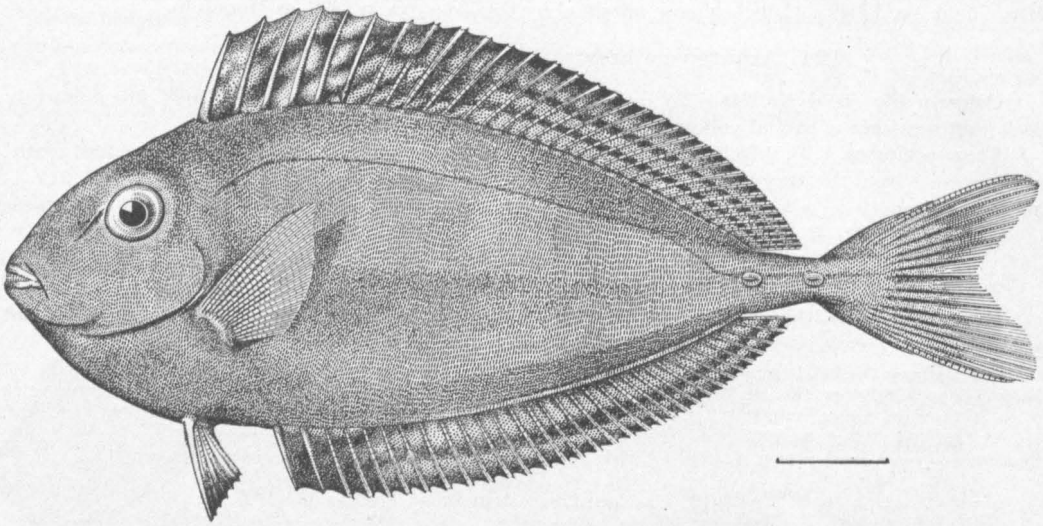


FIG. 31.—*Callicanthus metoposophron* Jenkins, new species. Type.

Color in alcohol, nearly uniform olivaceous brown; pale below; dorsal fin darker brown, crossed by 3 broad, longitudinal lighter bands; on the spinous portion the lighter and darker markings are broken up into more or less vertical bars; membrane between first and second dorsal spines with a pale or transparent area distally, edge of fin narrowly black; anal similar to dorsal, but with less distinct bands; caudal uniform dusky; pectoral dusky, paler at tip; ventral dusky.

Only 2 examples of this species were obtained by me and none has been secured by any subsequent collector. Type, No. 50706 U. S. N. M. (field No. 268), 9.25 inches long, obtained at Honolulu; cotype, No. 7727, L. S. Jr. Univ. Mus. (field No. 461), 9.5 inches long, from same place.

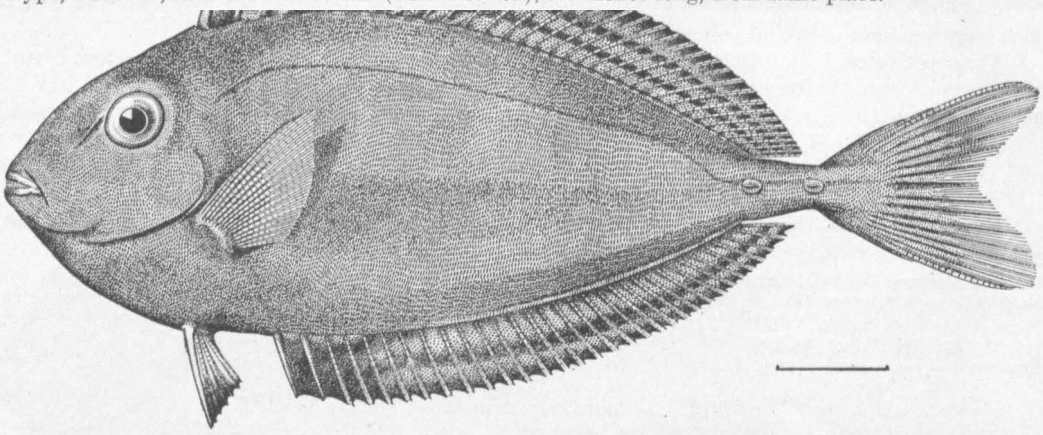


FIG. 31.—*Callicanthus metoposophron* Jenkins, new species. Type.

Color in alcohol, nearly uniform olivaceous brown; pale below; dorsal fin darker brown, crossed by 3 broad, longitudinal lighter bands; on the spinous portion the lighter and darker markings are broken up into more or less vertical bars; membrane between first and second dorsal spines with a pale or transparent area distally, edge of fin narrowly black; anal similar to dorsal, but with less distinct bands; caudal uniform dusky; pectoral dusky, paler at tip; ventral dusky.

196. Pachynathus capistratus (Shaw). "*Humuhumu meemee.*"

Color in life (field Nos. 116 and 228), body uniform light brown, fins same color, plain; rosy line beginning slightly behind and below angle of mouth, extending backward and slightly downward to vertical from eye, this joined by another of same color extending under chin. In No. 116, membrane of first dorsal olivaceous, with a black blotch; scaled skin pushed back from the chin shows bright orange-yellow; outer margins of soft dorsal and anal light.

Five examples taken by me at Honolulu, where it is common. The longest is 11 inches in length.

Balistes capistratus Shaw, General Zoology, v, 417, 1804.
Balistes mitis Bennett, Proc. Comm. Zool. Soc., I, 1831, 109; Günther, Cat., VIII, 218, 1870 (Indian and Pacific oceans).
Balistes frenatus Bleeker, Atlas, v, 114, pl. 223, fig. 2, 1865.
Pachynathus capistratus, Jordan & Evermann, Fishes North and Mid. Amer., II, 1704, 1898 (Tropical Pacific).

197. Pachynathus bursa (Lacépède).

General color, light drab, with darker cloudings; a narrow distinct white line from near angle of mouth to near origin of soft anal, which returns along base of spinous anal to base of ventral spine; an olivaceous dash extending in a curve from upper part of base of pectoral upward and backward toward middle of, but not quite reaching, the first dorsal fin; another from above and through the eye downward and backward to lower part of base of pectoral; throat and belly below white line light; first dorsal olivaceous with white; second dorsal and second anal transparent, first anal black; caudal dusky; inside of mouth black.

I have 11 specimens, from 5 to 8.5 inches in length. It seems to be abundant and is sold in the market as food.

Baliste bourse Lacépède, Hist. Nat. Poiss., I, 335, 375, 1798.
Balistes bursa, Bloch & Schneider, Syst. Ichthy., 476, 1801 (Indian Ocean); Bleeker, Atlas, v, 116, pl. 223, fig. 3, 1865; Günther, Cat., VIII, 219, 1870 (Indian and Pacific oceans).
Balistapus bursa, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 514 (Hawaiian Islands).

198. Balistapus rectangulus (Bloch & Schneider). "*Humuhumu Nukunuku Apua'a.*"

Very brilliantly colored in life; ground of upper part of body and head light brown becoming lighter toward snout; 3 black bands reaching from one eye to the other, the borders and the spaces between these bands green; the most posterior green band on head passing downward and backward, where, after an abrupt bend backward, it becomes a violet line running along middle of body to a vertical from tip of third dorsal spine, where it forms an acute-angled fork, each prong a brilliant yellow line, the upper ending at about base of third from last soft dorsal ray, the lower ending at corresponding position at base of anal; within the fork are 2 other bright yellow lines parallel with the prongs of fork, forming anteriorly an acute angle on a vertical through first third of dorsal.

Twelve specimens of this very brilliant fish were obtained by me at Honolulu, the longest 9.5 inches in length. It is very abundant at Honolulu where it is conspicuous in the market on account of its colors.

Balistes rectangulus Bloch & Schneider, Syst. Ichthy , 465, 1801, Indian Ocean; Günther, Cat., VIII, 225, 1870.
Balistes cinctus Bleeker, Atlas, v, 119, pl. 228, fig. 1, 1865.
Balistapus rectangulus, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 514 (Hawaiian Islands).

199. Melichthys radula Solander. "*Humuhumu Eleele.*"

Color in life, uniformly black with slight show of bluish; axil bluish; a very distinct, conspicuous, narrow line of light blue running longitudinally on base of dorsal; a similar one on base of anal.

Apparently abundant at Honolulu, where I obtained 7 specimens, the longest being 11 inches.

Balistes radula Solander, in Richardson, Voy. H. M. S. Samarang, Fishes, 21, 1848.
Melichthys ringens Bleeker, Atlas, v, 108, pl. 220, fig. 2, 1865; not of Linnæus.
Balistes buniva Günther, Cat., VIII, 227, 1870; Streets, Bull. U. S. Nat. Mus., No. 7, 56, 1877 (Honolulu); not of Lacépède nor of Risso.
Balistes (Melanichthys) buniva, Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 517 (Honolulu and Laysan).
Melichthys bispinosus Gilbert, Proc. U. S. Nat. Mus. 1890, 125, Clarion and Socorro islands.

Family XLII. MONACANTHIDÆ.

200. Cantherines sandwichensis (Quoy & Gaimard).

Color in life, uniformly black; dorsal, anal, and pectoral golden, the color mostly confined to the rays, the membranes being transparent; caudal rays black, membranes dusky olivaceous; dorsal spine black, membrane behind it olivaceous.

My collection contains 5 specimens, from 6 to 6.5 inches in length, and there are in the collection made by Dr. Wood 4 examples, from 6 to 10.5 inches in length. It is used as food by the natives.

Balistes sandwichensis Quoy & Gaimard, Voy. de l'Uranie, Zool., 214, 1824, Hawaiian Islands.
Monacanthus pardalis Rüppell, Neue Wirb. Fische, 57, pl. 15, fig. 3, 1835 (March, 1838); Günther, Cat., VIII, 230, 1870 (Indian and Pacific oceans).
Cantherines nasutus Swainson, Nat. Hist. Fishes, etc., II, 327, 1839, substitute for *B. sandwichiensis* Quoy & Gaimard.
Liomonacanthus pardalis Bleeker, Atlas Ichthy., V, 1865, 136, pl. 130, fig. 7.
Cantherines carolæ Jordan & McGregor, Rept. U. S. Fish Comm. for 1898, 281, pl. 6, Socorro Island.
Cantherines sandwichensis, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 514 (Hawaiian Islands).

201. Stephanolepis spilosomus (Lay & Bennett).

Color in life, face bluish, body olivaceous; face and cheeks with dark wavy lines; sides of body covered with dark spots as large as pupil; membrane behind dorsal spine orange; soft dorsal and anal with many very narrow longitudinal yellow lines alternating with light blue; caudal very brilliant, its ground color yellow, the distal margin orange, within which is a broad transverse band of black; remainder of fin with transverse rows of black dots. My collection contains fifteen specimens from 2.36 to 5.14 inches in length, taken on the reef at Honolulu, where it is abundant in the coral; and five, 3.25 to 4 inches in length, were taken by the *Albatross* in 1896.

Monacanthus spilosoma Lay & Bennett, Zoology, Capt. Beechey's Voyage, in H. M. S. Blossom, 70, pl. 22, fig. 1, 1839, Hawaiian Islands; Günther, Cat., VIII, 243, 1870 (Sandwich Islands); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 514 (Hawaiian Islands).

202. Osbeckia scripta (Osbeck).

One specimen, a skin 23 inches in length, was obtained by Jordan & Snyder in 1900 at Honolulu. This species has been taken by Jordan & Evermann, Check-List of Fishes of North America, page 424, as the type of the new subgenus *Osbeckia*. This seems to be its first record from the Hawaiian Islands.

Balistes scriptus Osbeck, Inter. Chin., I, 144, 1757, China.
Aleutera scripta, Jordan & Evermann, Fishes North and Mid. Amer., II, 1719, 1898.

Family XLIII. TETRAODONTIDÆ.

203. Tetraodon hispidus (Linnæus).

Color in life varies considerably. Upper parts (field No. 302) golden olive, lower parts white; bluish white spots over tip of head and back, becoming smaller on caudal peduncle and caudal fin; 2 bluish white concentric rings around eye; 1 distinct and 1 or 2 other not so distinct rings of white around base of pectoral fin, the white bands with olive interspaces; base of pectoral and region below black; some black blotches anterior to the lower of these; dorsal dusky yellow; pectoral bright yellow; anal orange-yellow; caudal dusky, membranes yellowish with bluish white spots.

Three specimens of this species were obtained at Honolulu, the longest being 9.7 inches. There is a great range in the distinctness of the markings and in the amount of roughness given the skin by the spines. It is offered for sale as food in the market at Honolulu, but is considered very poisonous if not cooked in a certain manner.

? *Tetraodon hispidus* Linnæus, Syst. Nat., ed. x, I, 333, 1758, India.
Tetraodon perspicillaris Rüppell, Atlas, Reise Nord Africa, 63, 1828, Red Sea.
Tetrodon hispidus, Günther, Cat., VIII, 297, 1870.
Tetrodon implutus, Streets, Bull. U. S. Nat. Mus., No. 7, 1877, 56 (Honolulu).
Ovoides erethizon Jordan & Gilbert, Proc. U. S. Nat. Mus. 1882, 631, Panama. (Type, No. 29679, U. S. N. M.)

204. Ovoides latifrons Jenkins.

One specimen, 9.4 inches in length, was obtained.

Ovoides latifrons Jenkins, Bull. U. S. Fish Comm. for 1899 (June 8, 1901), 398, fig. 10, Honolulu. (Type, No. 49696, U. S. N. M. Coll. O. P. Jenkins.)

Family XLIV. TROPIDICHTHYIDÆ.

205. Tetraodon jactator (Jenkins).

Two specimens, 1.5 and 2.5 inches long, were taken on coral rocks on the reef in front of the city.

Tropidichthys jactator Jenkins, Bull. U. S. Fish Comm. for 1899 (June 8, 1901), 399, fig. 11, Honolulu. (Type, No. 49703, U. S. N. M.; coll. O. P. Jenkins.)

206. Tropidichthys oahuensis Jenkins, new species.

Head 4 in length; depth 1.9; eye 4 in head; snout 1.4; interorbital 3; D. xi; A. xi.

Body short, deep, and greatly compressed; dorsal profile rising in a nearly straight line from tip of snout to occiput, thence descending in a small regular curve to base of caudal fin; ventral outline nearly uniformly convex; interorbital space broad, nearly flat; snout long, conic; mouth small, slightly below axis of body; eyes small, high up, the supraorbital rim prominent; occiput prominent, with a distinct knob at highest point; caudal peduncle compressed, its least width about 3 in its least depth; gill-opening shorter than orbit, somewhat oblique; pectoral short, the anterior rays longest, about 2 in head, the others gradually shorter, the bases considerably exceeding diameter of orbit; origin of dorsal midway between upper end of gill-opening and base of caudal, the anterior ray longest, about 2.2 in

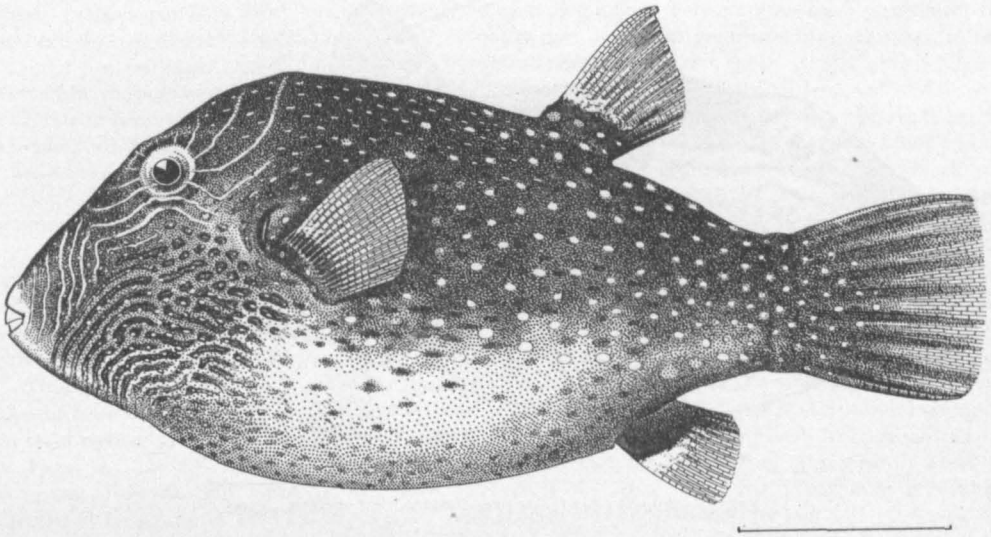


FIG. 32.—*Tropidichthys oahuensis* Jenkins, new species. Type.

head, the base of the fin about 3 in head; anal short, rounded, the anterior rays somewhat the longer head, the others gradually shorter, the bases considerably exceeding diameter of orbit; origin of dorsal midway between upper end of gill-opening and base of caudal, the anterior ray longest, about 2.2 in

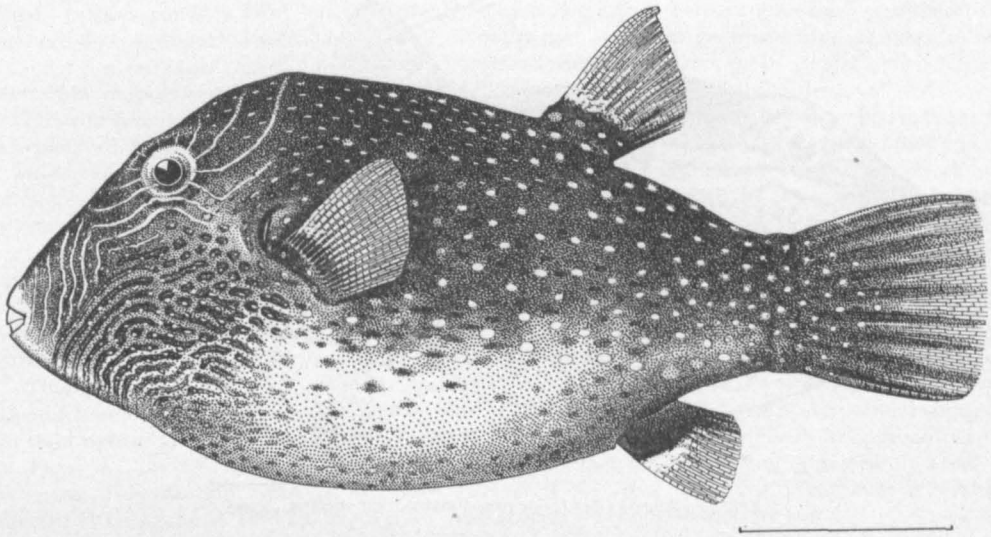


FIG. 32.—*Tropidichthys oahuensis* Jenkins, new species. Type.

strong, convex, meeting in a produced point at the center; eye high up, the supraorbital rim prominent; interorbital space concave; anterior profile from tip of snout to occiput nearly straight; caudal peduncle compressed and deep, its depth 2.25 in head; gill-opening vertical, its length less than diameter of eye; nostril small, perforate, not in a projecting tube; body chiefly smooth on sides and caudal peduncle; dorsal region between eyes and dorsal fin with small, sharp prickles; a similar patch on lower part of cheek and belly; snout and interorbital region naked; lower jaw naked; posterior part of body and caudal peduncle naked; fins moderate; dorsal with the anterior rays longest, the free edge oblique, nearly straight, height of fin 2 in head; anal pointed, its length about 2.8 in head; caudal truncate, its length 1.3 in head; pectoral broad, little oblique, its length 2.6 in head.

Color in alcohol, pale brownish above, paler on sides and belly; a large blackish area on side below base of dorsal; cheek and entire body covered with small roundish brown spots; 2 dark brown lines on cheek under eye; 2 or 3 similar lines radiating backward from eye and 2 others running forward from eye; 5 narrow dark lines across head between eyes; a dark median line from tip of lower jaw to vent; side of snout with 2 vertical and 2 horizontal brown lines; fins all pale, the caudal with converging light brown lines on base.

This species is known only from the type, a specimen 3.5 inches long, collected near Kihei, Maui, by Mr. Richard C. McGregor. Type, No. 50853, U. S. N M.

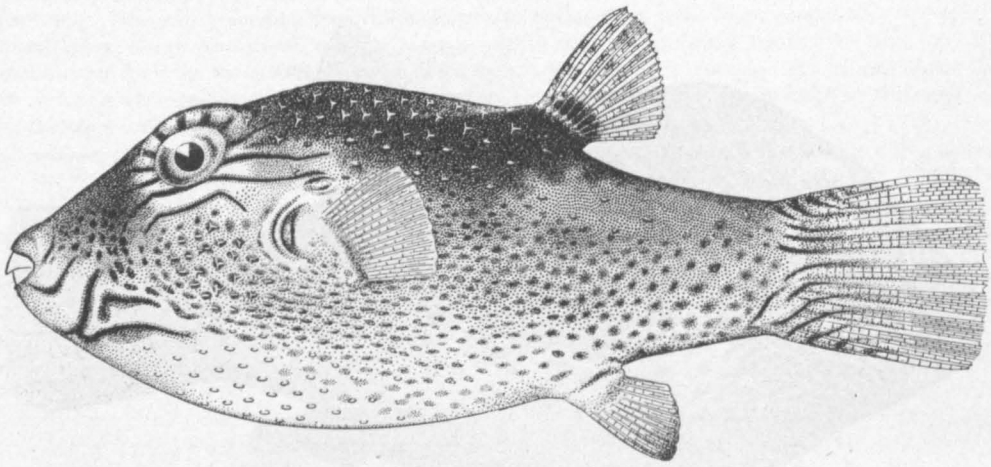


FIG. 33.—*Tropidichthys epilamprus* Jenkins, new species. Type.

208. Tropidichthys bitæniatus Jenkins.

One specimen of this species, 2 inches in length, is in Dr. Wood's collection.

This species is known only from the type, a specimen 3.5 inches long, collected near Kihei, Maui, by Mr. Richard C. McGregor. Type, No. 50853, U. S. N M.

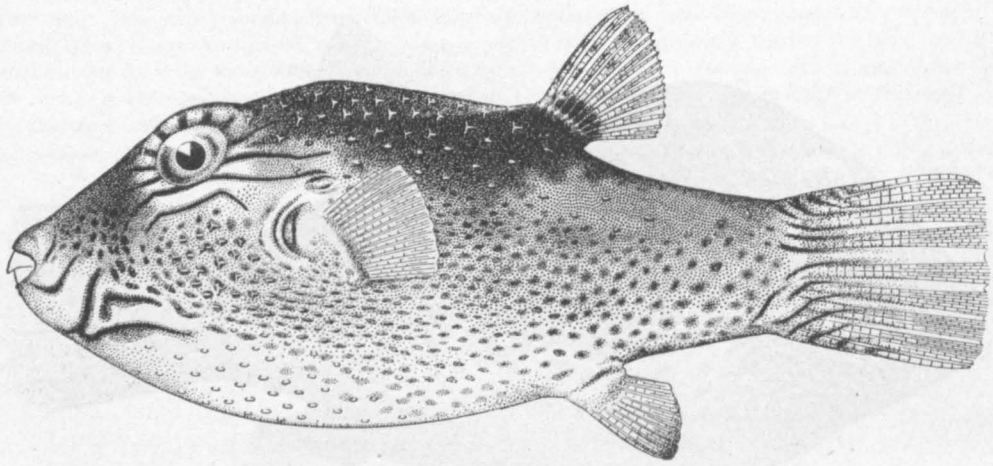


FIG. 33.—*Tropidichthys epilamprus* Jenkins, new species. Type.

211. Ostracion oahuensis Jordan & Evermann. "*Momoauaa.*"

Head 3.9 in length; depth 2.9; eye 2.9 in head; snout 1.2; preorbital 1.6; interorbital 1; D. 9; A. 9; P. 10; C. 10. Body 4-sided; dorsal side of carapace evenly convex, its greatest width one-fourth greater than head; lateral dorsal angles not trenchant, slightly convex anteriorly, then evenly convex; snout blunt, the anterior profile ascending abruptly, then strongly convex in front of eyes; interorbital space nearly flat; cheek flat; side of body concave, its width about equal to head; ventral keel prominent, evenly convex; ventral surface nearly flat posteriorly, but little convex anteriorly, its greatest width 1.4 times length of head, its length just twice its width; gill-opening short, not exceeding two-thirds diameter of eye; least width of anterior opening of carapace 1.75 in interorbital or 1.5 times diameter of orbit, the depth nearly twice orbit; mouth small; teeth rich brown; least depth of posterior opening of carapace much less than width of anterior opening, equaling distance from lower edge of preorbital to pupil; length of caudal peduncle less than that of head, its depth 2.2 in its length; no spines anywhere; dorsal fin high, its edge obliquely rounded, its length 1.3 in head; anal similar to dorsal, the edge rounded, its length 1.2 in dorsal; caudal slightly rounded, its rays nearly equal to head; pectoral with its free edge oblique, the rays successively shorter, length of fin equal to height of dorsal.

Color in life, dark brown with blue tinges; interorbital space showing more or less golden; small whitish spots profusely covering entire dorsal surface; no spots on side of body or on face; no spots on ventral surface except a faint one of a slightly darker color than general gray color of surface; one longitudinal row of golden spots on each side of upper part of caudal peduncle from carapace to base of caudal fin; pectoral, anal and dorsal fins with transverse rows of faint spots; caudal bluish black at base, white on posterior half; a broad light or yellowish area below eye; iris golden.

Color in life, upper parts dark brown, with shades of olive; belly brown; sides of body, back, tail and caudal fin covered with bright blue spots, mingled with which are dark brown spots; face and top of head and snout with bright blue lines, between which in region of the eyes is golden; cheeks and below with close-set dark blue lines and with dots, the color of which is nearly white; base of anal blue; outer portions of dorsal, anal and pectorals transparent, with golden tinge, a very brightly colored fish.

Color in alcohol, rich brown above, sides darker, ventral surface paler, brownish about margins, dusky yellowish within; entire back with numerous small, roundish, bluish-white spots; upper half of caudal peduncle with similar but larger spots; forehead and snout dark brown; lips brownish-black; cheek dirty yellowish; sides and ventral surface wholly unspotted; base of caudal blackish, paler distally, the dark extending farthest on outer rays; other fins dusky, with some obscure brownish spots.

This species is related to *O. camurum* Jenkins, from which it differs in the smaller, more numerous spots on back, the entire absence of spots on side, the smaller size of the spots on the caudal peduncle, and the brighter yellow of the suborbital region. Only 2 specimens known, both from Honolulu.

Type, No. 50668, U. S. N. M. (field No. 03443), a specimen 5.6 inches long, obtained by Jordan & Evermann, July 25, 1901. Cotype, No. 7478, L. S. Jr. Univ. Mus. (field No. 2156), 5.25 inches long, collected at Honolulu in 1898 by Dr. Wood. The species was not obtained by me.

Ostracion oahuensis Jordan & Evermann, Bull. U. S. Fish Comm. for 1902 (April 11, 1903), 200, Honolulu.

212. Ostracion lentiginosum Bloch & Schneider.

Two specimens (5 and 5.43 inches in length) obtained by me on the coral reef at Honolulu.

Ostracion lentiginosum Bloch & Schneider, Syst. Ichthy., 501, 1801, Indies.
Ostracion punctatus Steindachner, Denks. Ak. Wiss. Wien, LXX, 517, 1900 (Honolulu).

213. Lactoria galeodon Jenkins, new species.

Head 2.8 in length; depth 2; eye 2 in head; snout 4.5; interorbital 1.2; D. 9; P. 11; A. 8. Carapace 4-sided; a pair of long, slender, slightly divergent spines, their direction slightly upward; a similar pair terminating the lateral ventral angles, horizontal and not divergent; middle of back with a strong, compressed, triangular spine, notched on posterior border, projecting slightly backward, and resembling a shark tooth; snout short, the anterior profile concave; dorsal lateral angles little convex, the ventral angles more convex; 12 plates along its edge from snout to spine; 8 plates in lateral dorsal angle, no spine at its middle; ventral surface with 11 or 12 plates in longitudinal median series, 7 in transverse series.

Color in alcohol, dirty yellowish or olivaceous above; middle of side with an oblong dark or blackish area; ventral surface yellowish.

Closely related to the East Indian species *O. diaphanus* Bloch & Schneider, from which it is readily distinguished by the entire absence of median spines on the lateral ventral keel, by the longer and straighter frontal and ventral spines, the character of dorsal spine, and the opaque carapace.

A single specimen was obtained by me in 1889. It is 1.3 inches in total length and is taken as the type, No. 50717, U. S. N. M. The specimens recorded from Laysan and Hawaii by Steindachner probably belong to this species.

Ostracion diaphanus Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 517 (Laysan and Hawaii); probably not of Lacépède.

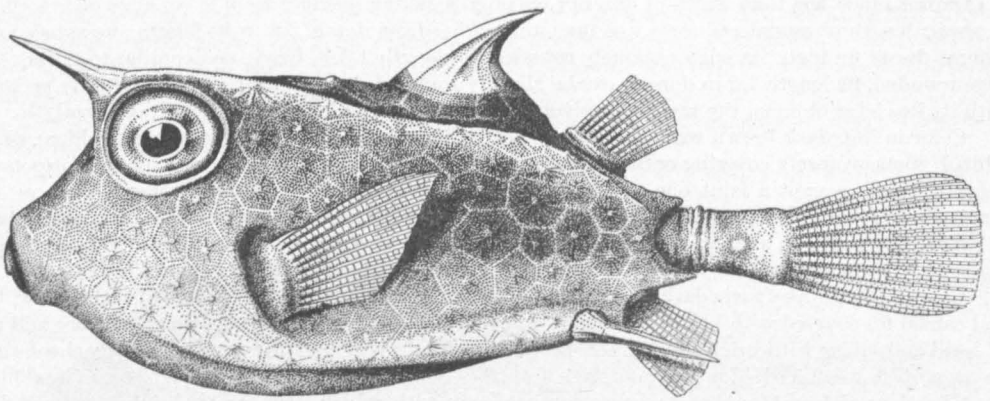


FIG. 34.—*Lactoria galeodon* Jenkins, new species. Type.

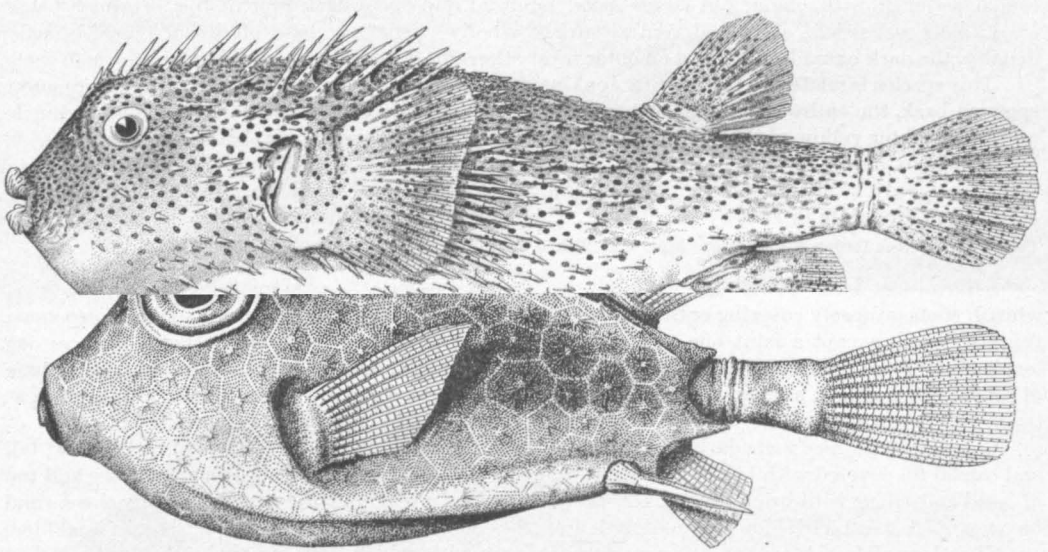
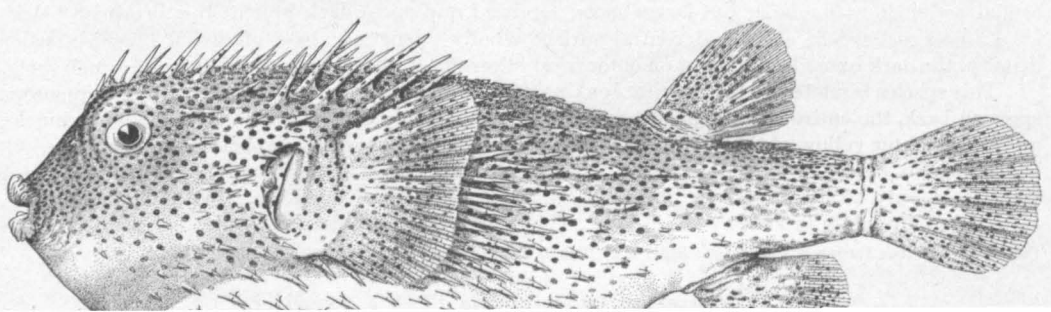


FIG. 34.—*Lactoria galeodon* Jenkins, new species. Type.



brown band from below gill-opening forward along lower angle of head to below eye, then across throat continuous with corresponding band of opposite side. Known only from one specimen, 21 inches long, obtained by me at Honolulu. Type, No. 50854, U. S. N. M.

215. Diodon hystrix Linnæus.

One large specimen, 25 inches in length, was obtained fresh, and one smaller specimen was obtained by the *Albatross* in 1896. It is not very common at Honolulu where the natives use it as food, but regard it as poisonous unless receiving certain treatment in cooking.

Diodon hystrix Linnæus, Syst. Nat., ed. x, 335, 1758, India; Günther, Cat., viii, 306, 1870.

Family XLVIII. CIRRHITIDÆ.

216. Cheilodactylus vittatus Garrett. "*Kikakapu.*"

This interesting form was described by Garrett in 1868 from a single specimen which now seems to be lost. A copy of Garrett's painting is given in Günther's Fische der Südsee. The species had not been seen again until a single specimen was taken by Professor Schauinsland in 1897, and recorded by Steindachner. The specimen here recorded was collected by Dr. Rosenstern and presented to the California Academy of Sciences. It agrees fairly well with Garrett's figure reproduced in Fische der Südsee.

Head 3 in length; depth 2.6; eye 3.2; D. xvii, 29; A. iii, 7; lateral line 1.63; maxillary not reaching anterior margin of eye; no teeth on vomer or palatines; bands of villiform teeth on jaws; opercle and preopercle entire, the angle of opercle ending in a weak, flat spine; dorsal outline rising abruptly from interorbital space to base of fourth dorsal spine, to a height about three-fifths the length of head above the eye. Since the fourth dorsal spine is very high, about equaling length of head, when the fin is raised the fish has a peculiarly deformed appearance. Length of specimen, 5 inches.

The alcoholic specimen shows 4 black bars across the head, the most anterior a small black area over the anterior end of snout, the second not complete, passing over forehead along anterior margin of eye on the cheek, ending near angle of preopercle; third across head, running obliquely backward through posterior portion of eye and ending just below middle of opercle, the black at base of pectoral and in axil in line with this as if an extension of it; two broad bands on body slightly broader than eye, the first including the first 3 dorsal spines and base of fourth and running obliquely backward, ending on belly just behind origin of pectoral; the second beginning at tips of fourth, fifth, and sixth, reaching body at base of ninth spine, running along dorsal side of body covering remainder of dorsal spines except tips, coming to lie almost wholly on body below soft dorsal, just including bases of its rays, the band covering caudal peduncle except a narrow space on ventral side and extending on lower lobe of caudal; pectoral black. The parts of the body and fins not included in the bands described are white in alcohol.

Cheilodactylus vittatus Garrett, Proc. Calif. Ac. Sci. 1863, 103, Hawaiian Islands; Günther, Fische der Südsee, 73, taf. li, fig. B, 1873 (Sandwich Islands, Garrett, one specimen); Steindachner, Denks. Ak. Wiss. Wien, lxx, 490, 1900 (Honolulu).

CIRRHITOIDEA Jenkins, new genus.

Cirrhitoidea Jenkins, new genus of *Cirrhitidæ* (*bimacula*).

No palatine teeth; teeth on vomer; jaws with narrow band of small canine-like teeth; intermaxillary denticulate; preopercle finely toothed; dorsal single of 10 spines and 12 rays; the 5 lower rays of pectoral simple, the upper of which is elongate, 1.8 in head; snout long, pointed, 3 in head.

This genus is allied to *Oxycirrhites* Bleeker, from which it differs chiefly in the shorter snout.

217. Cirrhitoidea bimacula Jenkins, new species.

Head 2.6 in length; depth 3; eye 4.6 in head; snout 3.8; maxillary 2.7; D. x, 12; A. iii, 6; scales 3–37–7. Body short, deep and compressed, the dorsal profile strongly arched from tip of snout to base of first dorsal spines; back very narrow, trenchant, ventral outline nearly straight; head rather long, pointed; snout long and pointed; mouth moderate, slightly oblique, the jaws equal; maxillary reaching pupil; jaws with small, close-set, canine-like teeth, small teeth on vomer, none on palatines; preopercle serrate; opercle ending in a long flap; fins rather large; dorsal spines slender, weak, their length equal

to distance from tip of snout to middle of pupil; dorsal rays somewhat shorter; second anal spine longest, about equal to longest dorsal spine; anal spines similar to those of soft dorsal; caudal slightly rounded; ventrals rather long, reaching past vent; pectoral moderate, the middle rays longest, about 1.2 in head; scales rather large, lateral line complete, beginning at upper end of gill-opening and running a little nearer dorsal outline posteriorly; scales on nape, breast, cheek and opercle.

Color in life, about 10 red crossbands, some running into each other, whitish between; iris bright red; black spot on opercle, black spot on body extending somewhat on dorsal fin at base of eighth, ninth, and tenth soft rays, the crossbands on body extending on dorsal; pectoral, ventrals, and anal reddish; ventrals and anal with dusky tips.

Color in alcohol, dusky; body crossed by about 7 rather broad, darker, vertical bars, the first at origin of dorsal, second under middle of spinous dorsal, third under beginning of soft dorsal, last two on caudal peduncle; head dusky yellowish; a large brownish-black spot on opercle; another large, round, brownish-black spot on side above lateral line and under posterior third of soft dorsal; fins somewhat dusky, the anal darkest.

This description is based on the type, No. 50702, U. S. N. M. (field No. 275), 2 inches in length, and one cotype, both taken by me in living coral at Honolulu.

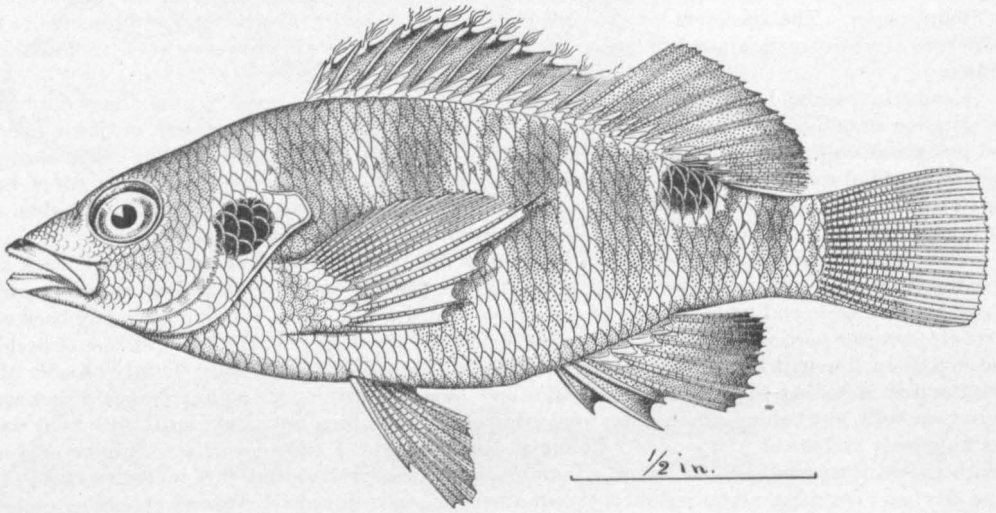


FIG. 36.—*Cirrhitoidea bimacula*, new species. Type.

218. Paracirrhites forsteri (Schneider). *"Hilupilikoa"; "Pilikoa."*

and one cotype, both taken by me in living coral at Honolulu.

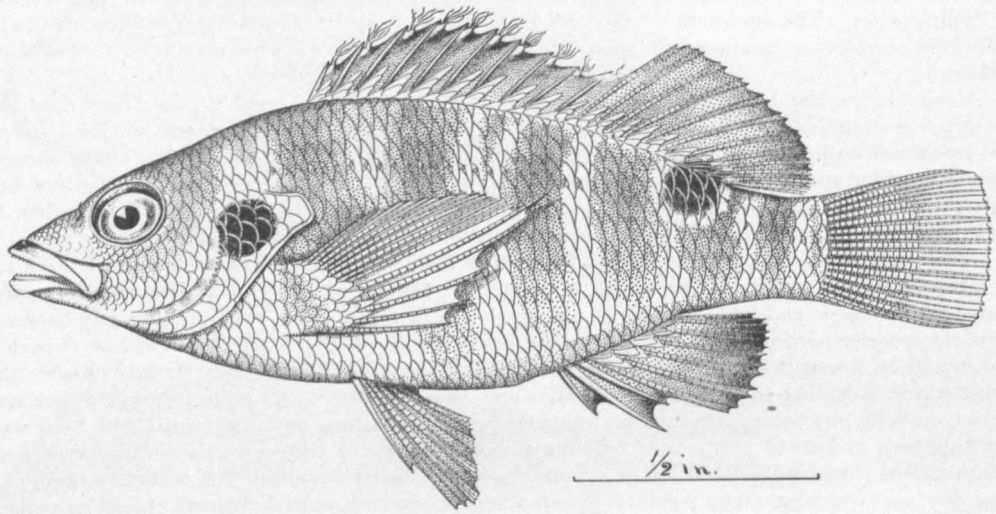


FIG. 36.—*Cirrhitoidea bimacula*, new species. Type.

219. Paracirrhites cinctus Günther. *"Pilikoa"; "Oopuka haihai."*

Color in life, upper part of head dark with many small blue dots, lower part with large blue and red dots; body back of fourth spine with 4 broad, bright-red crossbands, anterior one mingled with brown, the spaces between the bands white; dorsal fin red, membranes at tips of spines transparent, except the filaments, which are bright red; breast white with golden-brown spots; caudal red; anal transparent, with olive and red markings; ventral rays red, membranes white; pectoral rays with brown spots, membranes transparent.

Thirteen examples, from 3.6 to 4 inches in length, were obtained. Jordan & Snyder collected five, 3.5 to 4 inches long. This very beautiful little fish is quite abundant at Honolulu, some specimens being almost always present in the market.

Cirrhites cinctus Günther, Cat., II, 73, 1860, Hawaiian Islands, Madagascar, Isle de France; Günther, Fische der Südsee, II, 72, pl. 52, figs. A and B, 1874 (Hawaiian Islands and Mauritius); Steindachner, Denks. Ak. Wiss. Wien, LXX, 490, 1900 (Honolulu).

220. Paracirrhites arcatus (Cuvier & Valenciennes).

Color in life (field No. 92), body suffused with red, becoming brighter toward the dorsal and posterior portion; spinous dorsal bright red; lower part of soft dorsal red, membranes half-way out dusky, the outer portions colorless; caudal red, pectoral and ventral pinkish; the anal fin and anterior border of ventrals olivaceous; lips bright red; a small area behind eye bordered by an irregular line made up of 3 colors, very bright, the outer blue, middle red, inner orange; nostrils orange; 3 or 4 bright-yellow orange spots on subopercle.

Another from which the one described above can not be distinguished structurally is of much lighter general color and bears on the posterior portion of body and on caudal peduncle a white longitudinal band. The two forms are constantly found together, and are doubtless, as Günther thinks, of the same species.

Cirrhites arcatus Cuvier & Valenciennes, Hist. Nat. Poiss., III, 74, 1829, Isle de France; Günther, Fische der Südsee, II, 70, pl. 49, figs. B and C, 1874.

Cirrhites (Amblycirrhites) arcatus Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 490 (Honolulu).

221. Cirrhites marmoratus (Lacépède).

Color in life (field No. 76), general color light, nearly white; belly white with dark cloudings over upper part of body; golden yellow vertical bars on upper lip and wavy stripes of same color on head; golden spots on the posterior part of body; spots on posterior portion of body and on vertical fins bright red; pectoral and ventral fins pale pink; iris red.

This species is caught with *C. forsteri*, and, like it, is an abundant and important food-fish. I obtained fourteen specimens, 4.8 to 8.5 inches in length; three, 5.8 to 6.6 inches in length, are in Dr. Wood's collection; and one was obtained by Jordan & Snyder.

Labrus marmoratus Lacépède, Hist. Nat. Poiss., III, 492, pl. 5, fig. 3, 1801.

Cirrhites maculatus Lacépède, V, 3, 1803; Günther, Fische der Südsee, III, 71, pl. 51, fig. A, 1874 (Red Sea, east coast Africa, Hawaiian Islands, Society Islands, Cook Island).

Cirrhitichthys maculatus Günther, Cat., II, 74, 1860 (Hawaiian Islands, India, Polynesia, Isle de France).

Cirrhites (Cirrhitichthys) maculatus Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 490 (Honolulu, Laysan).

Cirrhitus alternatus Gill, Proc. Ac. Nat. Sci. Phila. 1862, 122 (Hawaiian Islands).

Cirrhitus marmoratus Gill, Proc. Ac. Nat. Sci. Phila. 1862, 107 (Hawaiian Islands).

Family XLIX. CARACANTHIDÆ.

222. Caracanthus maculatus (Gray).

Head 2.6 in length; depth 1.6 to 2 in length; snout 2.25 in head; eye 4.3 in head, suborbital equals eye; D. VIII, 12. Body deep, short, compressed; profile from tip of snout to before center of eye almost vertical in largest specimens, forming a conspicuous angle before eyes with profile of head above eyes, which rises sharply to a gentle curve to front of dorsal fin. In small specimens (1.1 inches long), profile much more inclined from tip of snout to before eye, forming a continuous curve with part of profile above eye from tip of snout to front of dorsal fin; some of intermediate sizes have profile below eye inclined but forming angle with part above; greatest depth through front of dorsal fin;

mouth below mid-longitudinal line of body, so that ventral profile of head is much less convex than dorsal; back of front of body, dorsal and ventral outlines almost symmetrically converging in gentle curves to base of caudal peduncle; dorsal curvature meeting peduncle in advance of ventral curvature, so that posterior end of body is unsymmetrical and the peduncle in most specimens is bent somewhat upward; depth of caudal peduncle at base 7 in length of body; 4 in greatest depth of body; mouth short and somewhat oblique; lips rectangular, being straight in front and on sides; teeth in jaws in bands in front, villiform in upper jaw and an outer series of very slightly enlarged teeth; no teeth on vomer or palatines; posterior margin of opercle running from above downward and forward, not reaching to posterior margin of gill-opening and leaving branchiostegals exposed on side of head, 2 flat spines at its angle near upper end of gill-slit; posterior limb of preopercle with 5 flat, short, wide spines, the lower two more slender, elongate and curved upward; interopercle with a long, strong spine directed backward; preorbital with a large, flat spine directed downward and backward, lying in groove above maxillary and close to it; eye almost circular, or elliptical, with longer diameter vertical; horizontal length of space back of eye 1.8 in length from tip of snout to angle of opercle, which is a very oblique line, angle of 45° with line from middle of caudal peduncle to middle of greatest depth of body; interorbital flat, narrow, three-fifths of eye; nostrils of equal size, posterior above anterior, each with slightly raised margins forming very short tubes, anterior with elongate flap on upper margin; head and body scaleless; skin of body everywhere roughened by numerous minute warty elevations; top of head covered with small rough ossifications, specially large ones reaching from between eyes to nape; other parts of head and body, especially fore part of back, finely villous, villi in some very small and inconspicuous, in others comparatively large and prominent; lateral line beginning above upper end of gill-opening, descending with gentle convexity upward to middle of base of caudal peduncle, obsolete on peduncle in some, in others extending in straight line to end of peduncle; dorsal spines all short, the fifth longest, 3.6 in head; the first very short, second to fifth abruptly longer and of almost equal height, the next 3 regularly descending again to size of first; soft dorsal higher than spinous, middle rays longest, 2.6 in head. The degree of separation of the two parts of dorsal fin varies considerably. In some specimens the two are definitely discontinuous and in some distinctly continuous, while most of them are intermediate in this regard, so that probably the types of the species *M. maculatus* Gray and *M. unipinna* Gray are simply two extremes of the same species, since otherwise they do not differ. Caudal fin rounded, median rays 5 in length of body; base of fin covered by skin of peduncle; pectoral rays directed upward and backward at angle of 45°, middle ones longest, 6.8 in length of body.

Color in life, head and body drab, lighter below, covered with small, bright red spots; fins unmarked.

Nine specimens, 1.5 to 1.75 inches in length, were taken from coral heads on the reef in front of Honolulu. This species is quite common among the branches of coral, where they are so able to hide and fasten themselves that they are dislodged with difficulty.

Micropus maculatus Gray, Zool. Miscellany, 20, 1831 (Owaihi and Hao); Günther, Cat., II, 147, 1860 (Owaihi and Hao); Fische der Südsee, III, 86, 1874 (Otaheite and Sandwich Islands).

Micropus unipinna Gray, Zool. Miscellany, 20, 1831, Pacific; Günther, Cat., II, 147, 1860; Fische der Südsee, II, 86, 1874 (Sandwich Islands, Otaheite, Vavau, Fiji, Pelew, Maduro).

Caracanthus typicus Kröyer, Naturhist. Tidssks., I, 264 and 267, 1844.

Amphiprionichthys apistis Bleeker, Nat. Tyds. Ned. Sud., VIII, 170, 1855 (Cocos Islands); Günther, Cat., II, 144, 1860 (Kokos Islands); Kner, Sitzb. Ak. Wiss. Wien, 1868, 17, pl. III, fig. 8.

Centropus staurophorus, Kner, Sitzb. Ak. Wiss. Wien, 1860, 3 (Zanzibar).

Caracanthus apistis, Bleeker, Atlas Ichthy. Ind. Neer., IX, pl. 416 (Scap., pl. VI), fig. 5, 1877.

Family L. SCORPÆNIDÆ.

223. Sebastopsis kelloggi Jenkins, new species.

Head 2.5 in length; depth 2.7; eye 3.3 in head; snout 4 in head; interorbital about half eye; D. XII–I, 9; A. III, 5; P. 19; lateral line with 23 tubes, about 28 scales in transverse series. Body moderately elongate, compressed posteriorly, greatest depth about under sixth and seventh spines; snout blunt; jaws subequal; mouth large, oblique, below axis of body; maxillary broad, reaching to posterior border of eye; eye large, its lower border above axis of body; interorbital space narrow, deeply concave without ridges; a large, broad, dermal flap on upper border of anterior nostril, a thin cirrus on anterior upper margin of eye; a conspicuous tentacle as long as half the eye diameter at posterior upper margin of eye; slender cirri along lateral line. Spines on head as follows: a short, sharp, conical

nasal spine above and within anterior nostril, 3 supraocular, 1 anterior, 2 close together, posteriorly; no coronal spine; behind the last supraocular spine, a row of 3 spines in an irregular line with it, just within the last a small spine; a tubercle on the posterior border of orbit, behind which is a row of 3 spines, the last at the angle of the gill-slit; upper angle of opercle with 2 diverging flattish sharp spines (the lower on right side double in the type); end of preopercle with 4 spines, the upper and lower larger than the middle ones; preorbital with a tubercle near border of eye; suborbital ridge with 5 spines, the last abutting against the upper of the preorbital spines, below the fourth on the ridge a small spine; spinous dorsal low, longest spine equal to eye; soft dorsal higher, 2.6 in head; second anal spine longest, 2.2 in head, its tip reaching tip of third spine; soft anal 2 in head; caudal rounded, 2 in head; pectoral 1.3 in head, the middle rays longest; scales moderate; body, top of head, cheeks, opercles, and preopercles scaled; fins naked except base of caudal and proximal half of anterior surface of pectoral, which have fine scales; lateral line evident and in a nearly straight line from upper angle of gill-slit to base of caudal.

Very bright in coloration in life, but unfortunately details of color were not taken.

Color in alcohol, body and head gray, well covered with dark-brown mottlings, gathered on sides into 3 indistinctly outlined areas or broad bands; 2 indistinct brown bands from lower border of eye,

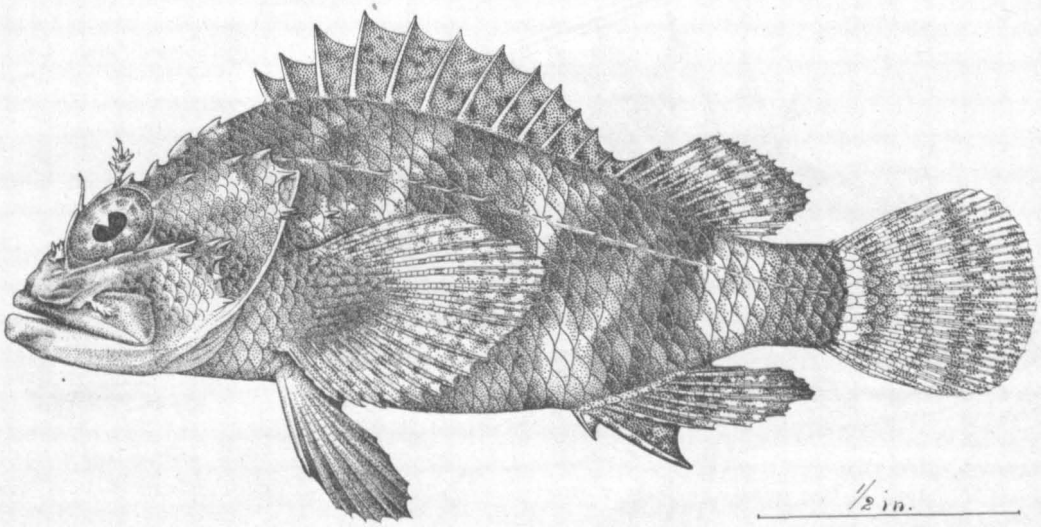


FIG. 37.—*Sebastopsis kelloggi* Jenkins, new species. Type.

1 from middle of border toward posterior end of maxillary, the other from posterior border to margin of opercle across bend of preopercle; spinous dorsal dark brown; base of soft dorsal dark brown; distal

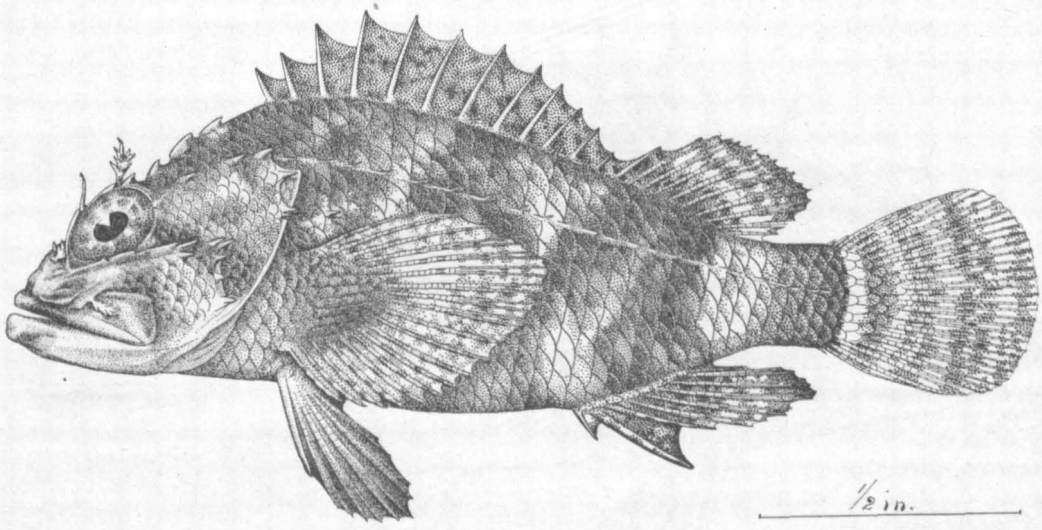


FIG. 37.—*Sebastopsis kelloggi* Jenkins, new species. Type.

1 from middle of border toward posterior end of maxillary, the other from posterior border to margin of opercle across bend of preopercle; spinous dorsal dark brown; base of soft dorsal dark brown; distal

rupted at front; teeth on vomer in a V-shaped patch, in bands on the palatines equal in length to width of vomerine patch; suborbital 1.5 in eye; a pit below anterior lower angle of eye; anterior nostril transversely oval, with a tentacle in the inner posterior part of rim, posterior nostril simple, circular; snout with a triangular median elevation, the apex between the anterior nostrils; between each anterior nostril and apex of rostral elevation is a strong short spine; 6 spines on the upper half of ocular rim, first at upper anterior angle, second on upper rim over center of pupil, third over posterior margin of the pupil, fourth on level with upper edge of pupil, fifth back of center of pupil, sixth on level of lower edge of pupil; sixth bifid on each side, fifth bifid on right; occipital depression with 2 spines at each angle, at the anterior angles one is laterad to the other, at the posterior angles one is caudad to the other; a strong spine at upper end of opercle; posterior to this spine and a little above it 2 smaller spines just before upper end of gill-slit; posterior to these a single spine at upper end of gill-slit; two large diverging spines on opercle; suborbital with a bony ridge without spines except a small one on its posterior end; preorbital with 3 spines, 2 directed downward over upper edge of maxillary, the other forward over edge of premaxillary; at angle of preopercle an upper small and a lower larger spine, below these on arm of preopercle are 4 decreasingly smaller spines; supraorbital

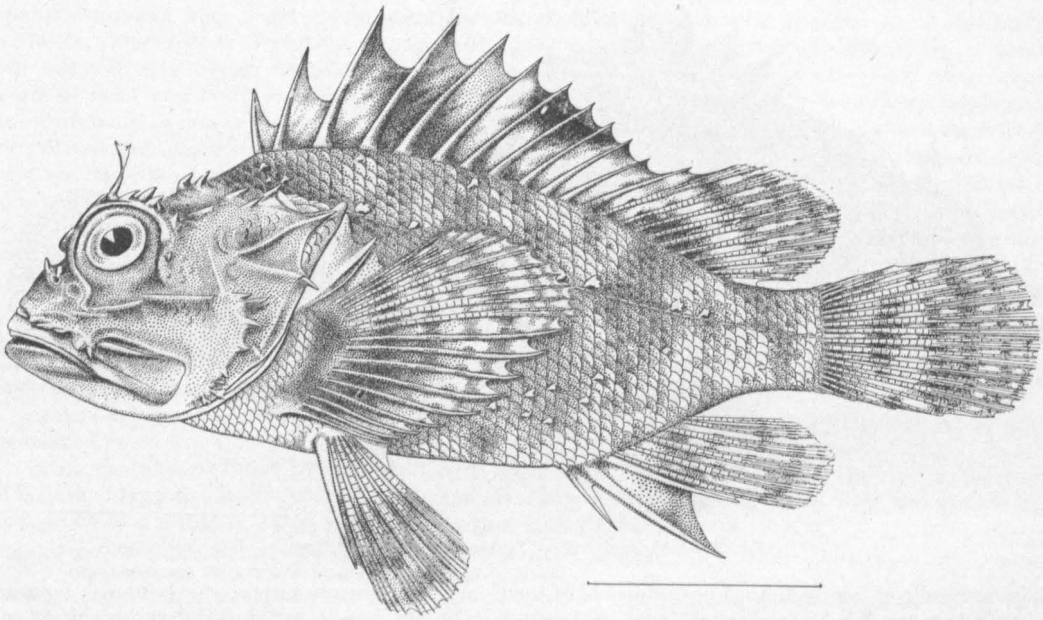
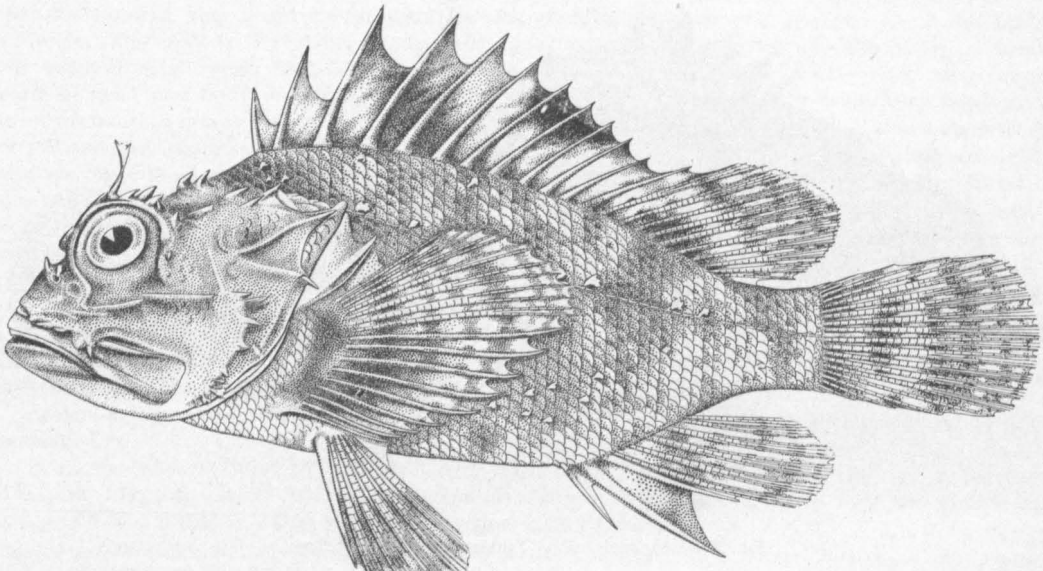


FIG. 38.—*Sebastapistes corallicola* Jenkins, new species. Type.



Characters very constant. In smaller specimens the posterior spines of orbital rim not so evident as in type and in most the humeral spine smaller. Size of supraorbital tentacle varies much, in some very small or absent, in others very large, fringed, length greater than eye, equal to second dorsal spine.

In alcohol the color varies considerably; in some, fins distinctly banded, in others, fins plain. Some lack the black blotch on posterior part of spinous dorsal, others have it present but small, others have it well developed and reaching from sixth to eleventh spine. A series of dermal flaps along lateral line, also a number of smaller ones on lower half of sides; lateral line simple, slightly convex downward posteriorly.

Color of type (field No. 236) in alcohol, head and body mottled with lighter and darker shades of brown, plain pale below; a wide pale transverse band on nape (very indistinct); spinous dorsal with dusky blotch from seventh to tenth spines on distal half of fin; other fins mottled with brown in triangular transverse bands; a dusky rim above margin of eye on eye membrane; dermal flaps white.

Color of fresh specimen (field No. 223), whitish, with brownish cloudings and many bright red spots on head, body, and fins; black blotch on dorsal fin on eighth to tenth spines, fin clouded with dark bars; dermal flaps white.

Another fresh example (field No. 206), golden brown on body and fins, with many very bright red spots; a black blotch on spinous dorsal on seventh and ninth spines longer than eye but not so deep.

Closely related to *Scorpæna* Jordan & Snyder from Japan, but differs in lacking knob at symphysis of lower jaw, in having no spine on suborbital except on its end, in having 2 spines instead of only one at each anterior angle of occipital depression, in greater length of maxillary, not reaching beyond posterior rim of orbit in *S. onaria;* in having vomerine teeth both V-shaped and not V-shaped. Otherwise very similar.

Close to *Scorpæna nuchalis* Günther, from Raratonga Island (Fische der Südsee, I, 76, 1873); differs from this species in having maxillary reaching past the posterior rim of eye; in having the third, fourth, and fifth spines largest, instead of the fourth to the seventh largest; in having the black blotch on the posterior part of the spinous dorsal (7–10 spines) instead of on the fore part.

My collection contains 3 specimens, all from Honolulu. Type, No. 50691, U. S. N. M. (field No. 236); cotype, No. 7729, L. S. Jr. Univ. Mus. (field No. 223); and cotype, No. 2756, U. S. F. C. (field No. 206).

225. Sebastapistes coniorta Jenkins, new species.

Head (to end of bony opercle) 2.5 in length; depth 2.5; eye 2.75 in head; snout 3.3; interorbital 2 in eye = suborbital; pectoral 3.6 in length; ventral 4; caudal equal to ventral; D. XII, 9; A. III, 5; C. 19; P. 15 (lower 9 simple); V. I, 5; lateral line 8–46–10. Head and body compressed, greatest width through base of pectorals, 4.25 in length of body, 1.6 in depth; dorsal profile of body very convex, greatest depth through base of third dorsal spine; ventral profile of body only gently convex; profile of snout steep, forming an angle before eye with very gently rising part of profile of head behind eye; interorbital area deeply concave, with 2 well-developed longitudinal ridges, diverging posteriorly behind, but not ending in a spine, although a spine arises just behind the posterior end of each; back of each of these are 2 occipital spines; 5 supraocular spines, a row of 5 postocular spines, the last above the upper end of gill-slit, a spine just above penultimate spine of postocular row of spines, 2 flat spines at angle of opercle, upper the larger; 6 spines on lower limb of preopercle; suborbital stay mostly small, with 2 small spines posteriorly; preorbital with 4 spines—2 directed forward, 1 posteriorly, and 1 downward and posteriorly; no dermal appendages on head, except a short wide flap on upper edge of anterior nostril; teeth in jaws in bands, widest in front, in short narrow bands on palatines, in V-shaped patch on vomer; 2 strong flat spines at humeral angle above base of pectoral, lower the larger; nasal spine at inner edge of each anterior nostril; fourth dorsal spine longest, 2 in head; first short, 2.5 in fourth; eleventh spine slightly greater than first; twelfth 3 in head, longer than tenth, slightly larger than second dorsal spine; second dorsal rays abruptly longer than last spine, first rays longest, 2.2 in head; last ray connected by membrane with caudal peduncle; caudal slightly rounded; pectoral broad with wide base, border rounded, median rays longest; ventrals rather broad, first and second rays longest, spines strong; second anal spine longest and thickest, 1.6 in head, longer than longest dorsal spines and equal to caudal fin; first spine short and slender, a little less than half length of second spine; third spine slender, equal to third dorsal spine; first soft anal rays longest, equal to second anal spine, longer than longest dorsal rays; gillrakers 4–10, the lowermost one on lower arm of arch rudimentary, all short, upper ones of lower arm of arch longest but less than half length of pupil; branchiostegals 7; lateral line beginning at last postocular spine, above

upper end of gill-slit, ending at middle of base of caudal, slightly convex anteriorly, slightly concave posteriorly; scales ctenoid, entire body at posterior part of head scaled.

Color of fresh specimen (field No. 278), light olive, with dark-brown mottlings; body, head, and fins covered thickly with small brown spots; posterior margin of caudal red; fins color of body.

Color in alcohol, brown, clouded with darker dusky brown; head and spinous dorsal covered with very small round dusky spots.

This description is based on the type, 2 inches in length, and numerous cotypes taken in the coral rocks on the reef in front of Honolulu. (Type, No. 50693, U. S. N. M.)

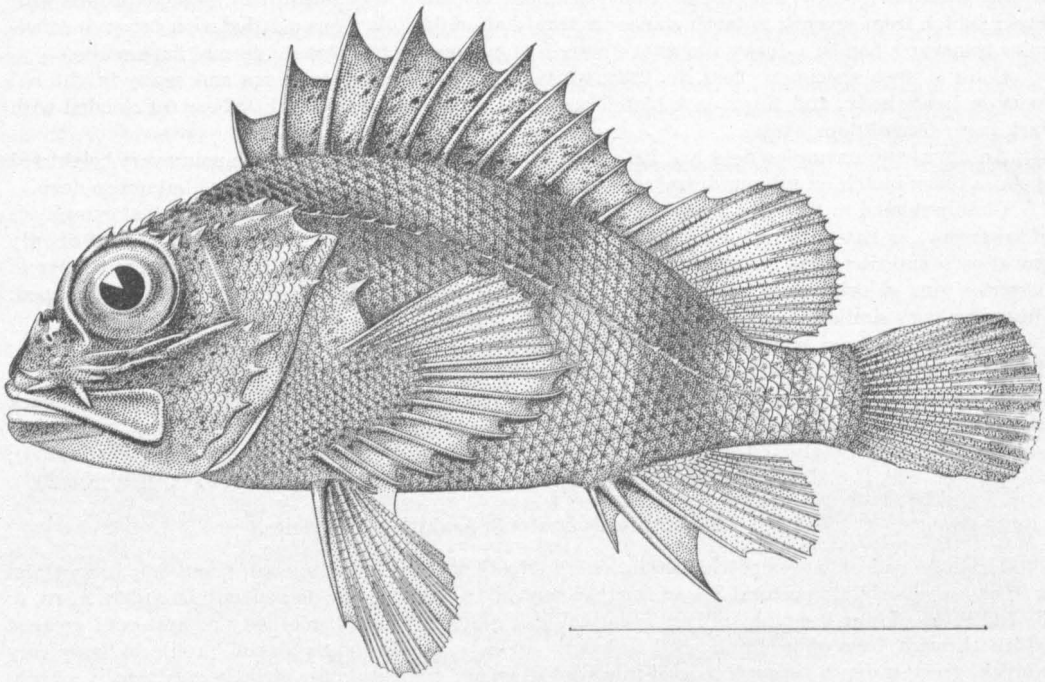


FIG. 39.—*Sebastapistes coniorta* Jenkins, new species. Type.

226. Sebastapistes galactacma Jenkins, new species.

Head 2.3 in length; depth 2.6; eye 3.1 in head; snout 3.5; interorbital 2 in eye; D. XII, 9; A. III, 5; P. 16; lateral line with 23 tubes. Head and body compressed; dorsal outline convex, its highest point at about base of fifth spine, 2 prominences in outline of head, 1 at snout and 1 at the

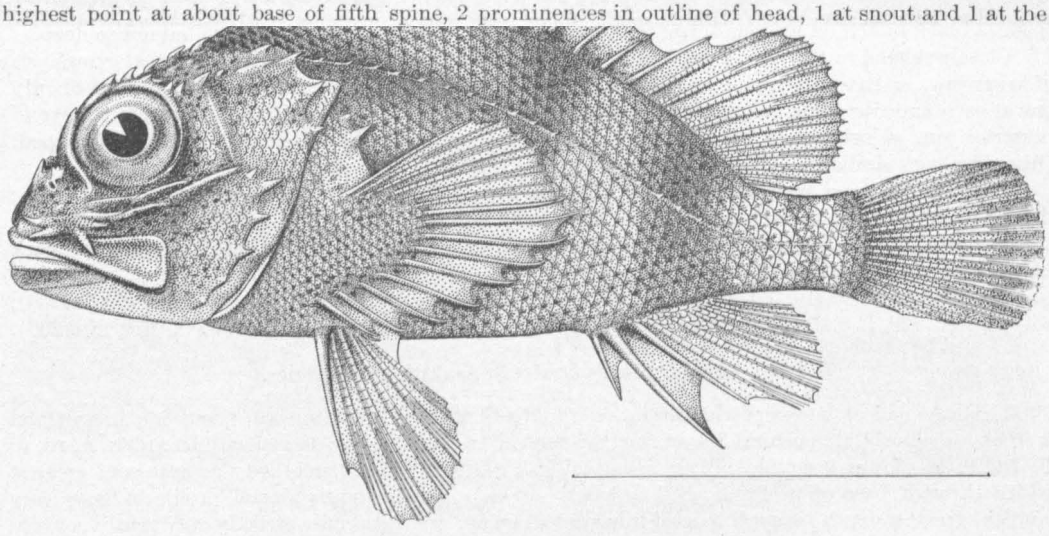


FIG. 39.—*Sebastapistes coniorta* Jenkins, new species. Type.

226. Sebastapistes galactacma Jenkins, new species.

of eye at base of middle supraocular spine; no dermal appendage apparent on other portions of body; a strong spine at the humeral angle above base of pectoral; fourth dorsal spine longest, 2 in head; first the shortest, 2 in fourth, 1.5 in eleventh; soft dorsal rounded, its longest rays nearly equaling the fourth spine, membrane of last adhering its whole length to caudal peduncle; caudal very convex, its middle rays 1.4 in head; third anal spine longest, 1.6 in head, strong, curved; first spine half second; third slender, 0.8 of second; soft portion rounded, 2 in head; ventrals 1.5 in head, reaching halfway between vent and origin of anal; pectoral with rounded outline, broad, its middle rays the longest; teeth villiform, in bands, wide anteriorly, narrow posteriorly, in both jaws, in a V-shaped band on vomer and in a narrow band on palatines; gillrakers 4+9, short, rounded, the most anterior rudimentary; branchiostegals 7; lateral line beginning at the last postocular spine and running nearly straight to vertical of last soft dorsal where it bends slightly, ending at middle of base of caudal; head naked, body completely scaled, scales smooth, entire.

Color in alcohol, general effect a light gray, with brown mottlings; white under chin, throat, and belly; head and body covered with thickly-set, minute, bright white points, which are more numerous and more minute on head and anterior part of body, being equally distributed over the gray and

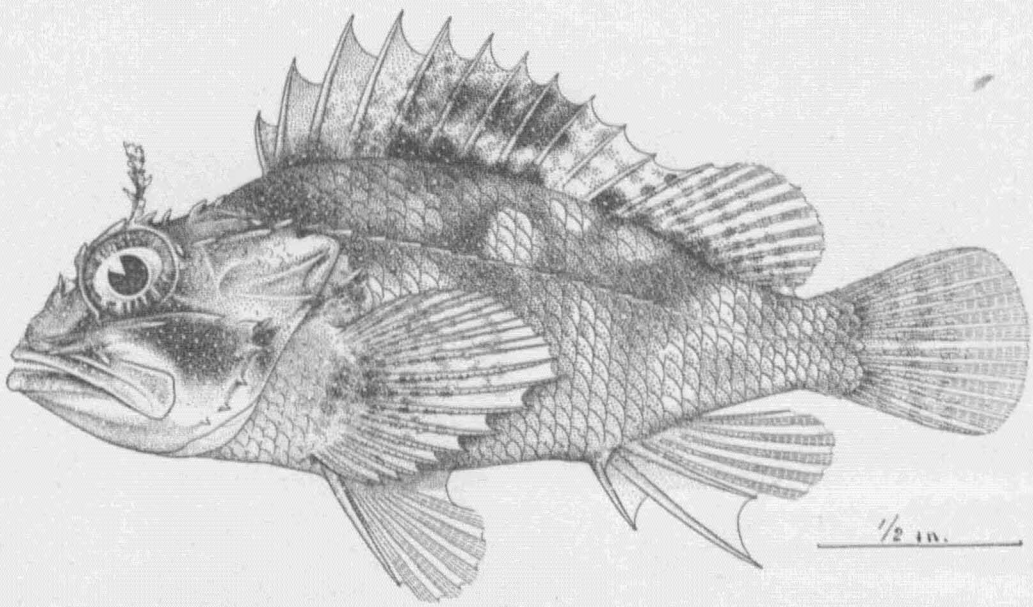


FIG. 40.—*Sebastapistes galactacma* Jenkins, new species. Type.

brown; preopercle dark brown, upper part of opercle a lighter brown; a dark brown area between base of pectoral and humeral spine; middle and upper part of body with brown mottlings; the white points showing to a greater or less extent on all the fins except the caudal; spinous dorsal white, with a blackish area at bases of fifth, sixth, seventh spines, another on distal portion of membrane between sixth and ninth spines; dusky spots on soft dorsal; caudal colorless with faint show of dusky spots near base; anal colorless except white points on the rays; ventrals white, with bright white points on rays; pectoral white, with white points and dusky spots on rays, dark area at base.

This description is based on the type, No. 50692, U. S. N. M. (field No. 2175), 2.6 inches in length, the longest in the collection, and 80 cotypes, all taken by me from the coral rocks on the reef at Honolulu.

227. Scorpænopsis cacopsis Jenkins.

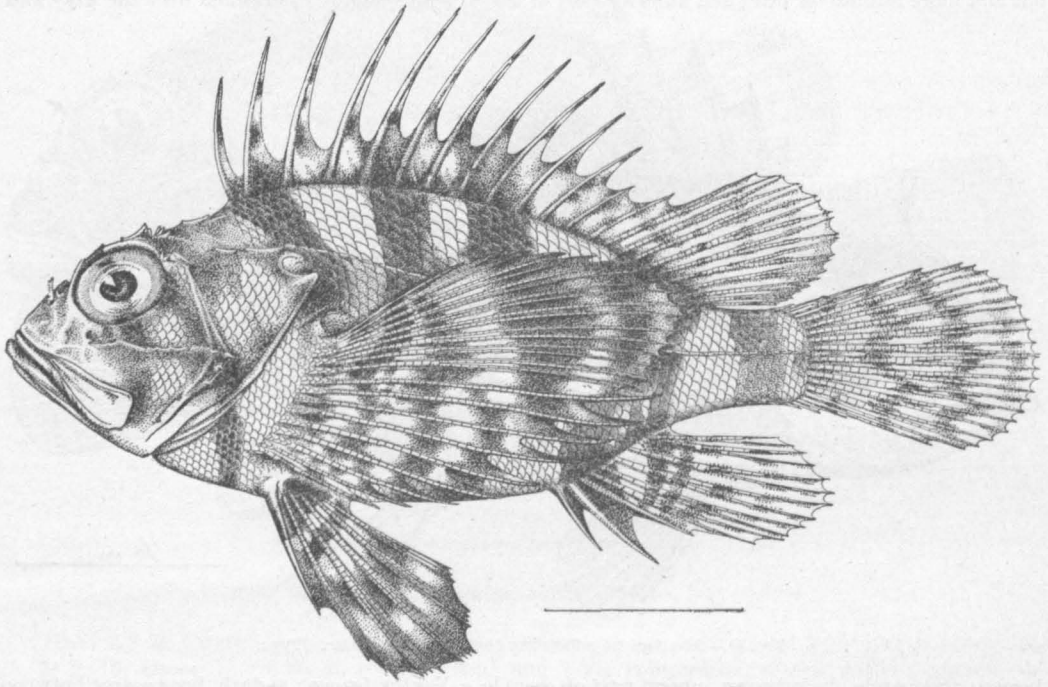
Only one specimen obtained.

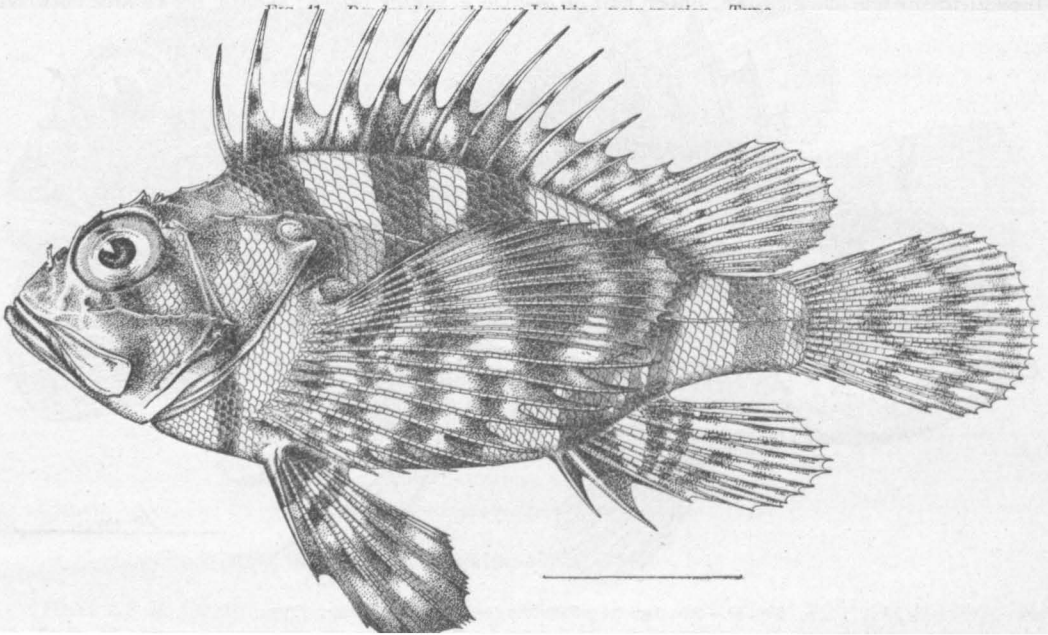
Scorpænopsis cacopsis Jenkins, Bull. U. S. Fish Comm. for 1899 (June 8, 1901), 401, figs. 13 and 14, Honolulu. (Type, No. 49690, U. S. N. M.; coll., O. P. Jenkins.)

Scorpænopsis cacopsis, Seale, Occasional Papers, Bishop Museum, I, part IV, fig. 5, 1901 (Honolulu).

228. Dendrochirus chloreus Jenkins, new species.

Head (to end of bony operculum) 3 in length; depth 2.5; pectoral 2.25; ventral 3; caudal 3.2; D. XIII, 9; A. III, 5; C. 19; P. 18; V. I, 5; scales 8–38–13. Head and body much compressed, greatest width through bases of pectorals, 5 in length, 2 in greatest depth; dorsal profile a little more convex than ventral, greatest depth at vertical through base of fifth spine; eye oval, longest diameter horizontal, 3 in head; interorbital deeply concave, 2 in horizontal diameter of eye; profile of snout almost straight, inclined at angle of 45°; length of snout equal to vertical diameter of eye; suborbital 5 in head; maxillary reaching to posterior margin of pupil, 2 in head; tip of upper jaw with a toothless depression between inner ends of premaxillaries which receives a slight knob on the upper surface of the symphysis of the lower jaw; teeth very fine, in bands in jaws, in reniform patch on vomer; no palatine teeth; posterior nostril large, simple, round, close to rim of orbit; anterior nostrils smaller, each with flat tentacle on posterior margin; spines on head all small, a small movable spine at outer corner of each posterior nostril; several small spines on upper margin of orbit, unsymmetrical on the 2 sides;





lowermost ray shorter, four-fifths of uppermost; first ray and lower 9 rays unbranched; ventral equal to caudal, second ray longest; spine rather strong, 2 in head; base of innermost ray connected by membrane with body; scales mostly ctenoid, those of base of pectoral, belly, and head cycloid; lateral line beginning a little above end of gill-slit, running backward and downward to middle of end of caudal peduncle; slightly arched anteriorly, slightly convex toward ventral line, posteriorly.

Color in alcohol, light brown, with 6 indistinct dark brown vertical bands on body, and with transverse bands on fins. Color of a fresh specimen (field No. 301), vertical green band on head below eye; 6 olive-green vertical bands on side of body, the first three extending upon dorsal fin; the first at base of first two spines, the last on caudal peduncle; spinous dorsal olive-green with red spots; soft dorsal with oblique bands of alternating red and white; anal fin anteriorly with 2 olive bands crossing lower end of 2 bands of same color on body which extend upon anal fin, posterior part of fin with alternating red and white bands; caudal with alternating crossbands of red and white (posterior part of dorsal and of anal and caudal with alternating red and white bands); ventrals mottled with dark olive; pectoral proximally with 3 bands of dark olive, distally with spots of same color; dark spots just beneath opercular flap; another similar spot just behind the 2 preopercular spines; 2 dusky patches on breast; parts dark in alcoholic specimen were green in life.

The coloration is very similar to that of *Pterois barberi* Steindachner, but differing from that species in the number and arrangement of cephalic spines and in the absence of the conspicuous tentacle on the head.

Probably most closely related to *Pterois brachyptera* Cuvier & Valenciennes; known from Zanzibar to Samoa.

This description is based on the type, No. 50701, U. S. N. M., 5.25 in length, and 8 cotypes, 3.5 to 2.2 inches in length, all obtained by me at Honolulu. This fish is found among the coral rocks and is not common.

Family LI. CEPHALACANTHIDÆ.

229. **Cephalacanthus orientalis** (Cuvier & Valenciennes). "*Lolohau.*"

Color in life (field No. 255), body drab above, white below, upper part of body with darker and greenish mottlings and with many chestnut brown spots as large as pupil; dermal fringes on lower lip red; lower surface of preopercular spine red; upper surface of pectoral fin dark, with brown spots at the base and around margins, especially anterior margin; a blue spot on distal margin; 4 or 5 bright yellow spots in middle of fin about one-third the distance from the base, lighter yellow beyond; under surface dark bluish without markings; ventrals red and yellow; first spine and filament of dorsal fin black, the remainder of the spinous portion dusky, with dark brown spots; soft dorsal, membranes transparent, rays with dark brown spots; caudal similar; anal transparent, with dark spot at base of last 2 rays. In alcohol the red and yellow disappear.

One specimen of this species was secured.

Dactylopterus orientalis Cuvier & Valenciennes, Hist. Nat. Poiss., IV, 134, pl. 76, 1829, Indian Ocean; Günther, Fische der Südsee, VI, 169, 1877 (Sandwich, Society, and Paumotu islands).

Family LII MALACANTHIDÆ.

230. **Malacanthus parvipinnis** Vaillant & Sauvage.

Two specimens are in Dr. Wood's collection from Honolulu, where it seems to be fairly common.

Malacanthus parvipinnis Vaillant & Sauvage, Rev. Mag. Zool. (3), III, 1875, 283, Sandwich Islands.

Malacanthus hoedtii Günther, Fische der Südsee, V, 160, taf. XCVIII, fig. B, 1876 (Tahiti, Yap, and Sandwich Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 497 (Honolulu); not of Bleeker.

Family LIII. GOBIIDÆ.

231. **Eleotris sandwichensis** Vaillant & Sauvage.

Head 3.25 in length; depth 4.5; eye 6.5 in head; D. VI, 9; A. I, 8; scales 80–21; head wide, depressed, width greater than the depth, 1.5 in length; body anteriorly wide, rapidly becoming compressed posteriorly; caudal peduncle very flat; width of body at middle of second dorsal equals 0.5 width through pectorals; dorsal profile of snout convex, profile above eye concave, profile from

eye to front of dorsal rising in a gentle curve; depth of caudal peduncle 2 in head; eye lateral, = bony interorbital, 2 in snout from tip of lower jaw; maxillary reaching to below center of pupil; least width of preorbital 0.6 of eye; teeth in rather wide bands in each jaw, an outer series of enlarged teeth in each; vomer and palatines toothless; entire head, except jaws, scaled; fourth and fifth dorsal spines longest, a little less than 2 in head; membrane from last spine reaching to front of second dorsal fin; sixth soft ray longest, a little greater than 2 in head; A. I–8, length of base only 0.8 that of soft dorsal; pectoral rounded, median rays 1.5 in head; third and fourth rays of ventral longest, 2 in head; space between ventrals 0.6 of eye; branchiostegals 6; gillrakers very short.

Color in alcohol, brown, paler below; vertical fins spotted with small dusky brown spots, a dusky brown spot on upper part of base of pectoral. Large specimens 6 inches in length are plain dark brown, with the fins dusky. Small specimens, the size of the type, are much paler especially along the sides of the body and head. Several dusky brown bands radiating backward from eye; side of body with small dusky brown spots. Still smaller specimens (2 inches long) are much paler, side of body mottled with dark brown, and side and lower part of head punctate with minute dusky spots; vertical fins pale with distinct dark crossbars.

One fresh specimen was olivaceous with 6 dark bands over the body. A spine on angle of preoperculum directed downward and forward.

I obtained examples, 1.5 to 9 inches in length, in fresh-water streams and in salt water along shore and in marshes about Honolulu, and some at Hilo. Two examples are in Dr. Wood's collection, and 7 were obtained by the *Albatross* in 1896 from Honolulu.

Eleotris sandwichensis Vaillant & Sauvage, Mag. de Zool., III, 1875, 280.

Eleotris fusca Günther, Rept. Shore Fishes Challenger, 60, 1880 (Honolulu); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 516 (Honolulu).

Culius fusca, Streets, Bull. U. S. Nat. Mus., No. 7, 57, 1877 (Oahú).

232. Asterropteryx semipunctatus Rüppell.

Head 3.25 in length; depth 2.6; eye 4 in head=snout; D. VI, 11; A. 10; C. 22; P. 19; V. I, 5; scales 25–7; least depth of caudal peduncle 2 in head; depth of base of pectoral 2.3; teeth in upper jaw in a band, outer row enlarged, others small, villiform; teeth of lower jaw similar to those in upper, but no enlarged teeth in back part of sides of jaw; lower pharyngeals with the lower ends triangularly expanded, having villiform teeth; third dorsal spine filamentously prolonged, reaching to base of third ray of second dorsal; second dorsal spine longest of rest, 1.6 in head; posterior dorsal rays increasing slightly in length, tenth longest, 2 in head; caudal rounded; anal similar to second dorsal, next to last ray longest, equaling second dorsal spine, 1.6 in head; median rays of pectoral longest, upper 4 unbranched; fourth ray of ventral longest; inner very slender, unbranched; dorsal profile of head and body a little more convex than the ventral; upper profile of head sloping upward at angle of about 45° from snout to front of first dorsal, gently rounded, descending in gentle curve to posterior end of base of second dorsal; upper profile of caudal peduncle straight, horizontal; mouth but little oblique, lower profile with less inclination than upper, mouth on level of lower third of pectoral fin; ventral profile of body very gently and regularly curved from base of ventrals to base of caudal fin; greatest depth of body at front of first dorsal; interorbital very narrow, width less than half diameter of pupil; entire head and body scaled except interorbital, top and sides of snout and jaws; scales all large, those of head scarcely smaller than those of body; scales below eye cycloid, the rest ctenoid; preorbital narrow, less than diameter of pupil; body somewhat compressed, width of head 1.75 in length, widest part of body very slightly narrower than head.

Color in alcohol, body faded, general color brown, about 6 unequally defined, dusky, vertical bars on side back of pectoral, a similar band over nape midway between eyes and front of first dorsal spine; traces of pale blue spots on side; dorsal and anal fins dusky, other fins pale.

Color in life (field No. 221), uniform dark with rows of minute blue dots.

Many specimens were obtained at Honolulu, where it is abundant.

Asterropteryx semipunctatus Rüppell, Atlas Fisch., 138, pl. 34, fig. 4, 1828, Red Sea; Klunzinger, Fische des Rothen Meeres, 484, Verh. K. K. Zool.-bot. Gesell. Wien, 1871.

Eleotris cyanostigma Bleeker, Tyds. Ned. Ind., VIII, 452, 1855, Cocos Islands.

Eleotroides cyanostigma, Bleeker, Enum. Spec. Pisc. Arch. Ind., 112, 1859.

Eleotris cyanostigma, Günther, Cat., III, 119, 1861 (Sea of Booroo and Kokos Islands).

Brachyeleotris cyanostigma, Bleeker, Arch. Neer. Sci., IX, 306, 1874; X, 106, 1875. Streets, Bull. U. S. N. M., No. 7, 58, 1877 (Oahu).

EVIOTA Jenkins, new genus.

Eviota Jenkins, new genus of *Gobiidæ* (*epiphanes*).

Related most closely to *Oxymetopon* Bleeker, from which it is distinguished by the following characters: Body not greatly elongate, head not compressed into a keel, dorsal fins separate, neither dorsal nor anal elongate.

233. Eviota epiphanes Jenkins, new species.

Depth 4 in length; head a little greater than the depth; eye 3 in head; snout shorter than eye, about 4 in head; D. VI, 10; A. 9; scales 25–6. Body not elongate, not compressed; head not compressed and without keel; inferior pharyngeal bones not united with each other, each enlarged toward its lower end, making a triangular expansion, each armed for almost its entire length with rather long, slender, tapering villiform teeth; teeth in upper jaw in a band, widest in front; teeth villiform, short, conical, and a little curved inward; in front of side of each half of jaw in outer series and more prominently curved inward, several large canine-like teeth; teeth in lower jaw, villiform, straight, slender, tapering, in band widest in front, where there is a group of enlarged, backward-curved, canine-like teeth; vomer and palatines toothless; branchiostegals 5; pectoral 17 rays; the second to seventh (from

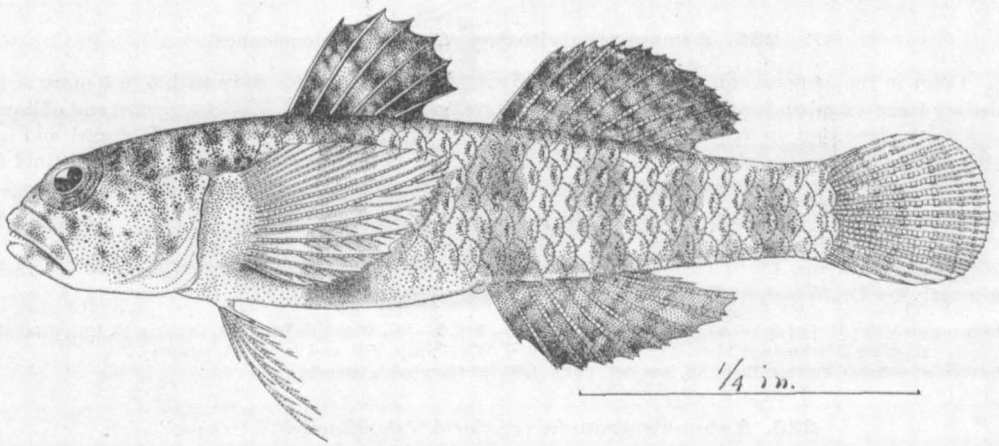


FIG. 42.—*Eviota epiphanes* Jenkins, new species. Type.

the lower edge) inclusive, branched, the others simple, the seventh longest; a group of about 6 long, slender, bristle-like spines projecting from the segments of tips of the rays, and extending basally through

teeth; third; band; villiform; palatines; toothless; branchiostegals 5; pectoral 17 rays; the second to seventh (from

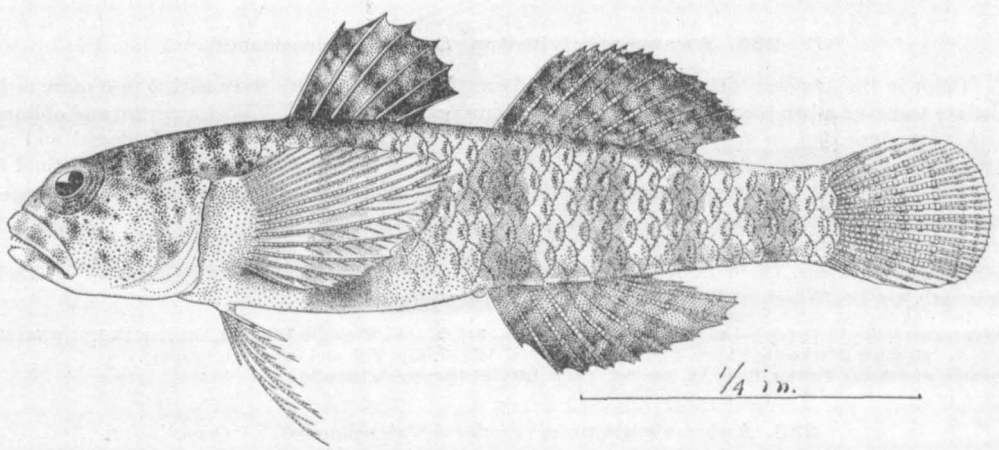


FIG. 42.—*Eviota epiphanes* Jenkins, new species. Type.

the lower edge) inclusive, branched, the others simple, the seventh longest; a group of about 6 long, slender, bristle-like spines projecting from the segments of tips of the rays, and extending basally through second third terminal segments of ray, as in *Electris;* ventrals close together, of one short spine and

dots on base of pectoral; on sides of body are small crescentic groups of dots on each scale; dorsal and anal fins punctate dusky; other fins colorless.

This description is based on the type and 20 cotypes taken by me at Honolulu in 1889. The largest of these is 15 mm. in length. This is the smallest vertebrate that has up to this time been described. This minute species was obtained by breaking up heads of coral over a dip net. (Type, No. 50720, U. S. N. M.)

234. Gobius albopunctatus Cuvier & Valenciennes.

Color in life, whitish, with shades of pale brown and dark cloudings; head and body covered with many small, pearly, white spots; coloration of dorsal, caudal, and pectoral same as body; ventral milky white with some dusky marking; anal white with dusky margin; belly and throat white. When seen from above, the cloudings make 3 rather distinct broad bands across the back.

One hundred and thirty specimens were obtained at Honolulu, ½ inch to 4 inches in length. It is very abundant at Honolulu along the shores, in marshes and mouths of streams.

Gobius albopunctatus Cuvier & Valenciennes, Hist. Nat. Poiss., XII, 57, 1837, Isle de France; Günther, Cat., III, 25, 1861; Günther, Fische der Südsee, VI, 172, pl. CX, fig. A, 1877 (Fiji and Society Islands).
Gobius nebulo-punctatus Rüppell, Neuewirb., Fische, 139, 1835.
Gobius punctillatus Rüppell, l. c., p. 138.

235. Awaous genivittatus (Cuvier & Valenciennes).

Color in life, general color pale; sides of belly with shades of pink; body with 5 or 6 more or less distinct transverse bands and mottlings of dark along back; broad black band downward and obliquely backward; dark spot on upper part of base of pectoral; caudal transversely barred; dorsal and anal with longitudinal bars. Another specimen was very pale, with about 11 crossbars, less distinct forward, more distinct posteriorly; an indistinct, dark, longitudinal band along middle of side; dorsal fin transparent, with black spots; caudal tinged with olive; a broad black band from eye downward and backward. All these colors fade more or less quickly on being taken out of water.

Seven specimens, 1.8 to 5.7 inches in length, were obtained by me; and two, 5.1 and 5.4 inches in length, by Dr. Wood, at Honolulu. It occurs in fresh waters.

Gobius genivittatus Cuvier & Valenciennes, Hist. Nat. Poiss., XII, 64, 1837, Otahaiti; Günther, Cat., III, 13, 1861 (Otaheite); Günther, Fische der Südsee, VI, 170, taf. CX, fig. C, 1877 (Tahiti, Fiji, and Sandwich Islands).
Awaous genivittatus, Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 517 (Sandwich Islands).

236. Awaous stamineus (Cuvier & Valenciennes). "*Oopu.*"

Color in life, body yellow, but somewhat transparent; pectorals and ventrals plain; caudal with 4 bars of black; first dorsal with black dots; second dorsal with 4 longitudinal rows of black dots and reticulations; body covered with black dots and reticulations; a black spot at base of caudal; belly white; golden spot on upper branchiostegal and opercle.

Thirty-two specimens of this species, 1 to 9 inches in length, were obtained by me in fresh water at Honolulu, 4 by the *Albatross* in 1896, 2 by Dr. Wood from Honolulu, and 4 by Mr. McGregor from a small ditch at Hilo in 1900. The largest of all of these is 9 inches in length.

Gobius stamineus Eydoux & Souleyet, Voy. Bonite, Poiss., 179, pl. 5, fig. 5, 1841, Sandwich Islands; Günther, Shore Fishes, Challenger, Zool., I, part VI, 59, 1880 (fresh waters of Honolulu and Hawaii).
Awaous crassilabris, Streets, Bull. U. S. Nat. Mus., No. 7, 59, 1877 (Oahu); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 517 (Sandwich Islands).

237. Sicyopterus stimpsoni (Gill).

One specimen, 3.4 inches in length, was taken by me from fresh-water streams at Honolulu.

Sicydium stimpsoni Gill, Proc. Ac. Nat. Sci. Phila. 1860, 101, Hilo, Hawaii, in fresh water; Günther, Cat., III, 93, 1861; Günther, Fische der Südsee, VI, 183, 1877 (Gill's description).
Sicyopterus stimpsoni, Streets, Bull. U. S. Nat. Mus., No. 7, 59, 1877 (Oahu, in fresh water).
Sicydium nigrescens Günther, Challenger, Zool., vol. I, part VI, 60, pl. XXVI, fig. C, 1880 (Hawaii, fresh water; Honolulu, fresh water).

CHLAMYDES Jenkins, new genus.

Chlamydes Jenkins, new genus of *Gobiidæ* (*laticeps*). Distinguished from the genus *Gobius* by the presence of scales on the sides of the head.

238. Chlamydes laticeps Jenkins, new species.

Head 3 in length; depth 4; width of head 0.8 of its length, depth 1.5 in its length; D. VI–I, 9; A. I, 8; C. 17; ventral fins united I, 5; scales 38,–14; head depressed; ventral profile almost straight; dorsal profile rising in very gentle curve from tip of snout to nape; dorsal and ventral outlines of body straight and parallel from base of first dorsal to front of anal, from here slightly converging to base of caudal fin; height of caudal peduncle 2.25 in head; 1.6 in height of body at front of dorsal fin; mouth almost horizontal; snout flat, broad, equal to eye, 3.5 in length of head; interorbital very narrow, less than diameter of pupil; eyes inclined at angle of 45° on sides of head; snout bluntly rounded from above; top and sides of head scaled to posterior border of pupils; branchiostegals 4; teeth villiform in bands on each jaw; an outer series of enlarged teeth in the upper jaw; fourth dorsal spine longest, 2.5 in head; rays of second dorsal of nearly uniform height, slightly longer than fourth spine, 2.3 in head; caudal rounded; median rays 1.5 in head; middle rays of anal longest, 2 in head; median pectoral rays longest, 1.8 in head, the lower 14 rays normal, above these numerous fine silk-like rays; median rays

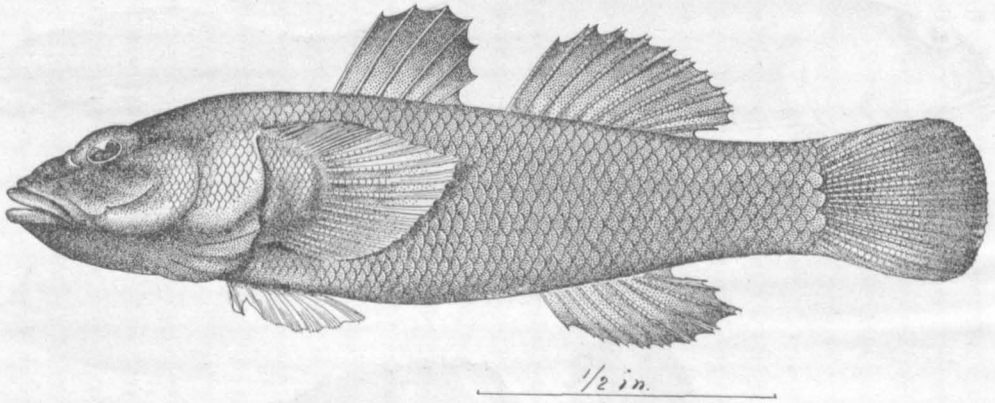


FIG. 43.—*Chlamydes laticeps* Jenkins, new species. Type.

of ventral 2 in head; basal membrane with a well-developed lobe on each side; scales ctenoid, covering body and top and sides of head; those on posterior part of body and on caudal peduncle but little enlarged; those on head smaller than body scales.

Color in alcohol, plain chestnut brown, pale below; a few darker mottlings on side of body; ventral and pectoral fins dusky brown, ventral pale.

caudal rounded; median rays 1.5 in head; middle rays of anal longest, 2 in head; median pectoral rays longest, 1.8 in head, the lower 14 rays normal, above these numerous fine silk-like rays; median rays

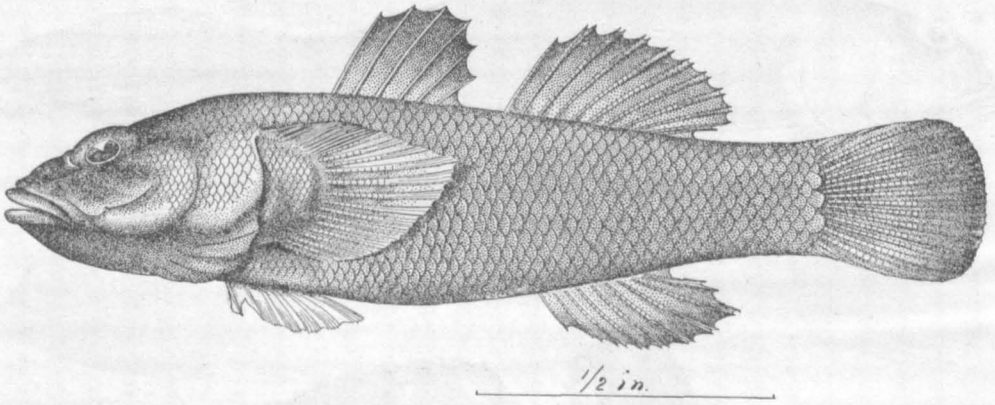


FIG. 43.—*Chlamydes laticeps* Jenkins, new species. Type.

of ventral 2 in head; basal membrane with a well-developed lobe on each side; scales ctenoid, covering body and top and sides of head; those on posterior part of body and on caudal peduncle but little enlarged; those on head smaller than body scales.

Color in alcohol, plain chestnut brown, pale below; a few darker mottlings on side of body; ventral

of body; pectoral pointed, median rays longest, very slightly greater than head; ventrals equal to head; branchiostegals 4; gillrakers very small and soft, about 6 on lower arm of arch; scales apparently very small and very deciduous, only a few preserved on any of the specimens.

Color in life, pale translucent, with the markings very indistinct, these brought out by the alcohol.

Color in alcohol, brown; about 10 vertical darker brown bars on side, indistinct in older, darker examples; a transverse band of same color on nape just back of eyes; another band of dark brown running downward from middle of lower border of eye to back of angle of mouth; a large, vertically elongate, oval spot on base of pectoral; soft dorsal and caudal fins finely banded transversely with darker; do not show on larger specimens.

This description is based on the type, 4.3 inches in length, and several cotypes, all from Honolulu. They were caught in great numbers by the Chinese and sold in the market, where they are salted and eaten without cooking. (Type, No. 50698, U. S. N. M.)

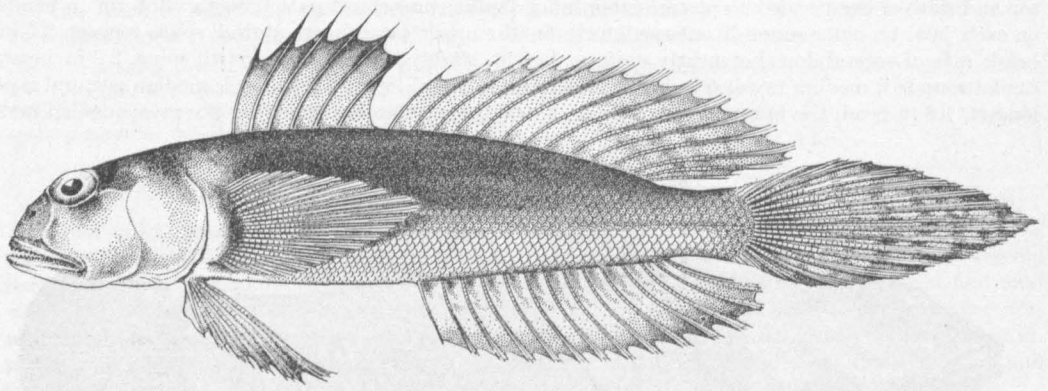


FIG. 44.—*Gobionellus lonchotus* Jenkins, new species. Type.

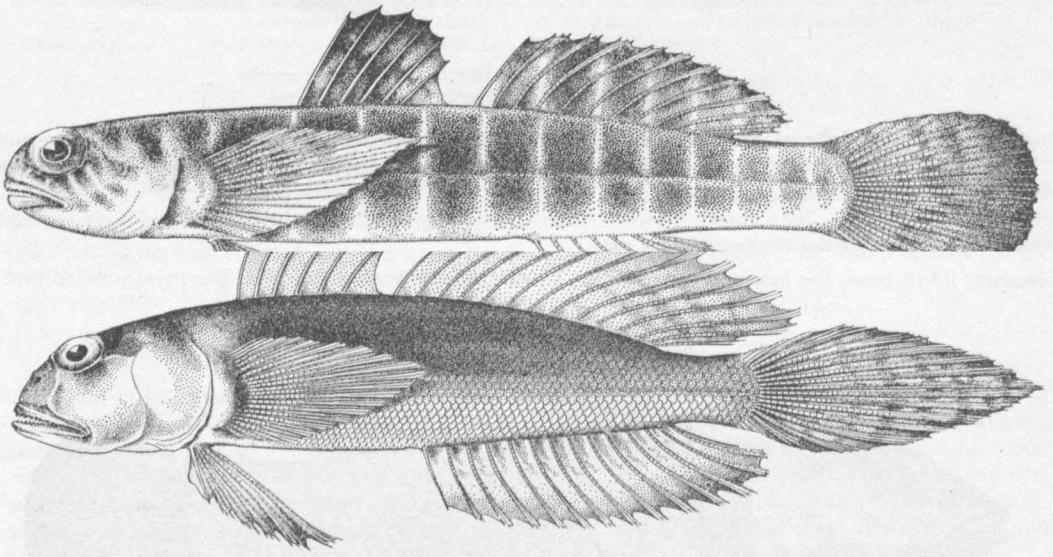
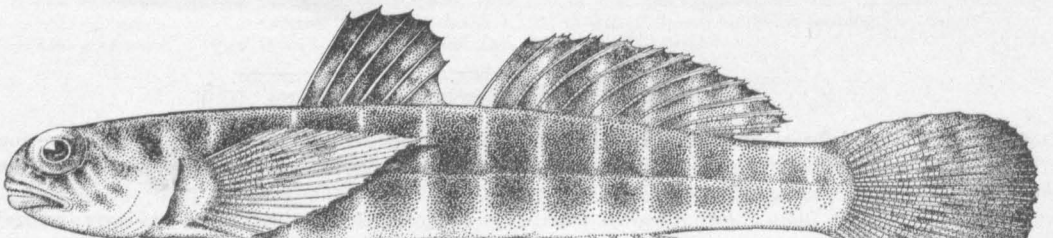


FIG. 44.—*Gobionellus lonchotus* Jenkins, new species. Type.



equal to dorsal; middle rays of pectoral the longest, 0.25 longer than head; ventral fin about equals head; caudal fin somewhat longer; teeth in lower jaw large, in a wide band anteriorly, in a single series posteriorly, inner ones slender, straight; outer enlarged, notably serial toward front of sides of jaw, which are canine-like and bent backward; teeth in upper jaw similar but with fewer canine-like teeth; vomer and palatines toothless; body apparently scaleless with the exception of a few very minute scales on the posterior portion.

Color in alcohol, plain brown, minutely punctate with black; about 12 dark brown vertical bars on sides of body, those on caudal peduncle very indistinct; generally 1 or 2 poorly defined similar bands across nape; generally several short radiating bands from lower border of eye; the brown bands on side of body much wider than pale narrow interspaces.

This description is based on the type and 12 cotypes, each about 1.2 inches long, caught by breaking up coral rocks on the reef in front of Honolulu. (Type, No. 50715, U. S. N. M.)

Family LIV. PTEROPSARIDÆ.

241. Osurus schauinslandi (Steindachner).

Two specimens obtained by Dr. Wood. My description of this fish as a new species was published before I received Dr. Steindachner's paper. It seems to be fairly common at Honolulu.

Percis schauinslandii Steindachner, Anzeiger, No. XVI, June 27, 1900, for Denks. Ak. Wiss. Wien, LXX, 1900, 496, pl. III, fig. 5, Honolulu.

Parapercis pterostigma Jenkins, Bull. U. S. Fish Comm. for 1899 (June 8, 1901), 402, fig. 15, Honolulu. (Type, No. 49701, U. S. N. M.; coll. Dr. Wood.)

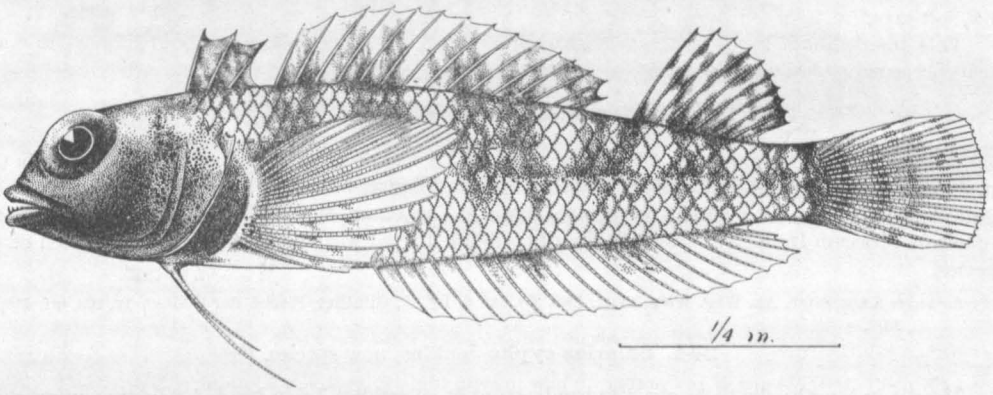


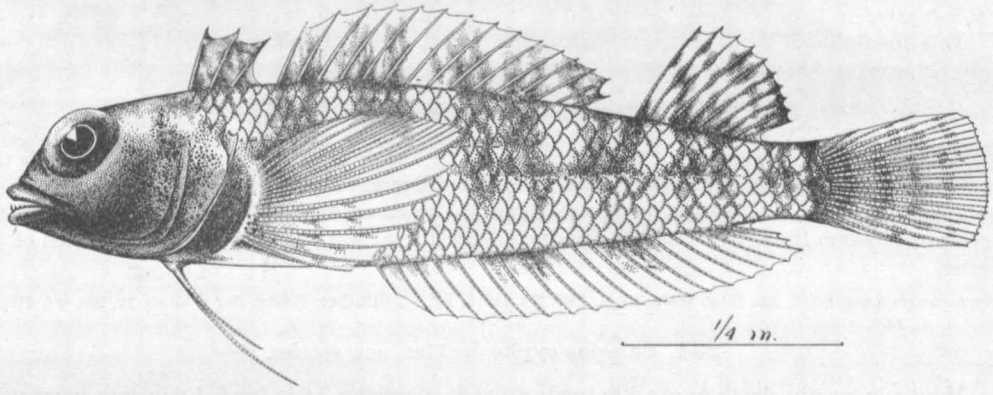
FIG. 46.—*Tripterigion atriceps* Jenkins, new species. Type.

Family LV. BLENNIIDÆ.

Two specimens obtained by Dr. Wood. My description of this fish as a new species was published before I received Dr. Steindachner's paper. It seems to be fairly common at Honolulu.

Percis schauinslandii Steindachner, Anzeiger, No. XVI, June 27, 1900, for Denks. Ak. Wiss. Wien, LXX, 1900, 496, pl. III, fig. 5, Honolulu.

Parapercis pterostigma Jenkins, Bull. U. S. Fish Comm. for 1899 (June 8, 1901), 402, fig. 15, Honolulu. (Type, No. 49701, U. S. N. M.; coll. Dr. Wood.)



very slightly oblique; both interorbital and suborbital very narrow; interorbital but slightly wider than pupil; suborbital a little greater than interorbital; spines of first dorsal of nearly equal length, about equal to eye; anterior and middle spines of second dorsal longest, 1.75 in head; anterior rays of third dorsal again abruptly longer than last rays of second, slightly longer also than longest rays of second, 1.6 in head; secondary rays rapidly shorter to last, which is of about same length as last rays of second dorsal, slightly shorter than spines of first fin; anal fin of approximately uniform height, rays equal to spines of first dorsal; posterior border of caudal straight, upper and lower 3 rays much smaller than others, tips free from posterior edge of fin; pectoral pointed, middle rays longest, lower 6 simple, others bifid toward tip; teeth small, simple, in bands in each jaw, widest in front; an outer series in each of enlarged teeth; no canines; a V-shaped patch on vomer.

Color in alcohol, general color pale reddish brown, paler and more yellowish below; snout, sides, and ventral surface of head, gill-membranes, humeral region at base of pectoral fin, covered with close-set black dots; top of head mottled with dusky; on side of body about 8 irregular vertical dusky bands, split below with the ground color, giving them an irregular Y-shape; 2 bands on caudal peduncle, simple, apparently produced by entire splitting of a single band; caudal fin finely and irregularly crossbanded with dusky; dorsals similarly marked; other fins plain; black color of head and of black lateral bands on body not continuous coloring, but formed of numerous closely, evenly distributed, small, round, black dots. Considerable variations in color are noted. Some have no black area on head or shoulders, except small, scale-like, black spots.

Scales rather large, fine ciliated; lateral line straight, with tubes on first 19 scales, ending a little behind middle of body, here dropping to second scale row below and going farther backward for 4 more scales.

T. atriceps is related to *T. hemimelas* but differs in the number of dorsal spines and of dorsal and anal soft rays.

This description is based on the type, No. 50719, U. S. N. M., a specimen about 1 inch long, and 9 cotypes caught by me at Honolulu, by breaking up heads of coral over a dip net.

243. Salarias brevis Kner.

One specimen of this species, 4.6 inches in length, is in Dr. Wood's collection. Structurally this specimen seems to correspond to Kner's description and figure, but the grouping of the spots in my example differs from that shown in Kner's figure. The example described by Kner was from the Godeffroy Museum from Savaii, and to the time of this record was the only known specimen of the species.

Salarias brevis Kner, Sitzb. Ak. Wiss. Wien, LVIII, 1868, 334, taf. 6, fig. 18; Günther, Fische der Südsee, IV, 203, taf. 118, fig. C, 1877.

244. Salarias cypho Jenkins, new species.

Head 5 in length; depth 5; eye 4 in head; snout 4; suborbital 7.6 in head, 1 6 in eye; interorbital 3.5; D. XII, 22; A. 24; C. 17; P. 14; depth of apex of caudal peduncle 2.25 in head; width of body at bases of pectorals 1.6 in head; middle of apex of caudal peduncle equal to one-half diameter of eye; profile of top of head straight horizontal, before eyes sloping downward very sharply to mouth; lower jaw included; lower profile of head inclined gently downward from symphysis; mouth horizontal; dorsal profile almost straight and horizontal from origin of dorsal to middle of soft dorsal, inclined slightly downward from here to base of caudal fin; belly distended; profile from front of anal fin to base of caudal straight, gently inclined upward; a simple filamentous tentacle on middle of eye equal to diameter of eye; a large dermal crest on occiput, equal to snout in length, 2.4 in head; no canine teeth in either jaw, single series of comb-like teeth in margin of each jaw, upper forming a semicircle; dorsal beginning above upper end of gill-slit; anterior spines somewhat curved backward; first spine 1.75 in head; second, third, and fourth spines longest, 1.3 in head, the following regularly decreasing, last 2.75 in head; first ray of second dorsal abruptly longer than last of first dorsal, separated from it by a greater interval than that between connected spines of first dorsal; membrane between the two fins deeply notched; first soft ray very slightly shorter than first spine; rays increasing slightly in length to fifth, which is 1.3 in head, equal to longest spine; succeeding rays about equal to fifth, except posteriorly, where last short ray equals 2 in head; first anal ray hidden in membrane, weak, one-half diameter of eye, second anal ray 3 in head; succeeding rays gradually but slightly increasing in length

to sixth from end, which is a little greater than half head; last anal ray a little longer than first, 3 in head; border of membrane notched between each 2 rays; tips of rays curved backward; last anal ray opposite antepenultimate dorsal ray; anal fin not connected with caudal; last dorsal ray connected by membrane with upper edge of caudal peduncle and base of upper caudal ray; posterior border of caudal rounded; pectoral pointed; tenth ray from above longest, equal to head; median caudal rays 4.3 in length; ventral of 2 simple rays; inner slightly the longer, 1.5 in head; upper nostril simple, below center of pupil and close to anterior rim of eye; anterior nostril below posterior, before middle of lower half of eye, with a fringed tentacle on upper margin.

Color in alcohol, plain dark brown above, paler brown below; dorsal fins brown with darker margins; second dorsal with numerous small, oblique, dusky brown streaks between the rays; anal brown, pale at base, becoming dusky brown at margin; tips of rays colorless; caudal fin dusky brown; pectoral brown like side; ventral pale brown; very indistinct indications of veiled dusky bands on side of body. Specimens vary much in color. Some have a ground color of pale gray, except top and front of head, which in such specimens is light brown. The fins in all pale brown; marked as in the type. On each side, however, are about 8 distinct veiled brown bands. Generally all but the last 2 are more or less distinctly split vertically into a pair of bands. In many such specimens the brown color is found on the back and the pale ground color appears as a series of 7 pale spots along the side of the dorsal fin, corresponding in position with the pale interspaces between the lateral vertical bands. There is every gradation in color between the specimens thus marked and those that are almost

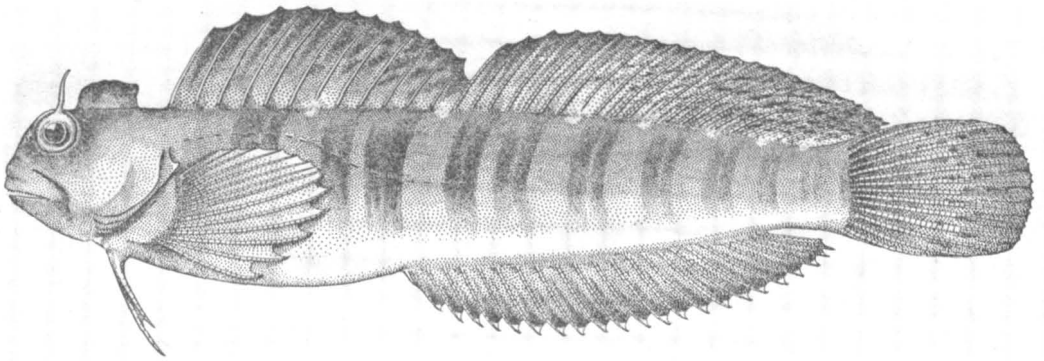


FIG. 47.—*Salarias cypho* Jenkins, new species. Type.

plain. The largest specimens are always plain brown, and in general it is the smaller specimens that have the pale and banded coloration, but many of the smaller ones are almost plain brown with but slight indication of lateral bands.

of the dorsal fin, corresponding in position with the pale interspaces between the lateral vertical bands. There is every gradation in color between the specimens thus marked and those that are almost

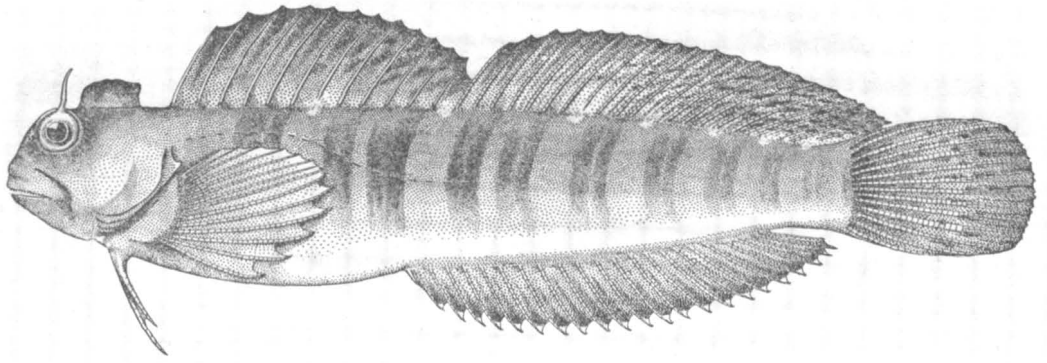


FIG. 47.—*Salarias cypho* Jenkins, new species. Type.

plain. The largest specimens are always plain brown, and in general it is the smaller specimens that have the pale and banded coloration, but many of the smaller ones are almost plain brown with but slight indication of lateral bands.

This description is based on the type, No. 50697, U. S. N. M., a specimen about 4 inches in length, and 54 cotypes, all from Honolulu, where they were collected by me in 1889.

247. Salarias saltans Jenkins, new species.

Head 4.75 in length; depth 5.5; eye 3.6 in head; snout 5; D. XII, 20; A. I, 21; ventral 8 in length; pectoral 5.5. Body elongate, slender, compressed, width through pectorals 2 in head; profile of snout rising vertically to below eye, then bulging slightly forward, curving upward and backward around eye; profile of top of head horizontal, continuing in straight line with profile of back to posterior end of second dorsal; from here both dorsal and ventral profiles converging to base of caudal; ventral profile of head descending from mouth to posterior edge of gill-membrane; from head to foot of anal slightly convex; mouth inclined slightly upward posteriorly; eye placed in upper anterior angle of side of head, close to profile; posterior nostril simple, placed above and somewhat lateral to the anterior, before center of pupil; anterior nostril with a soft, short, branched tentacle on its upper rim; eye circular; a single, filamentous, tapering tentacle above eye over anterior half of pupil, not quite as long as diameter of eye; eyes inclined, looking laterally and upward; interorbital space very narrow, less than diameter of pupil; suborbital 6 in head; length of head behind eye contains eye 2.5 times; gill-openings large, membranes broadly united; teeth movable, forming a fine comb along margin of each jaw; well within these in back of lower jaw, a small, backward curved, canine tooth in each jaw; branchiostegals 6; dorsal fin deeply notched; dorsal spines low, first of same length as last, 2.5 in head; spines gradually increasing toward middle of fin, there longest, 4.8 in head; first soft ray a little longer than longest spine, 1.75 in head; soft rays of uniform length, from fourth to fourteenth, being 1.3 in

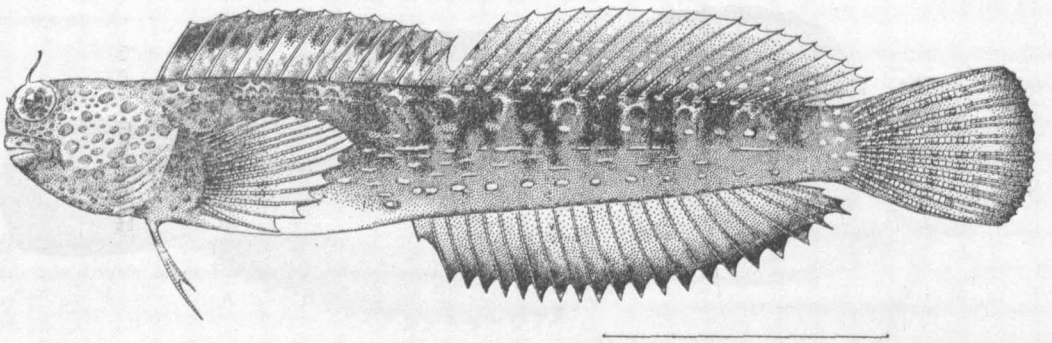


FIG. 48.—*Salarias saltans* Jenkins, new species. Type.

head; the soft dorsal being considerably more elevated than anterior dorsal, rays back of fourteenth decreasing in size, last equal to last spine; anal similar in shape and size to soft dorsal; caudal slightly rounded; median rays a little longer than head; pectoral pointed with 14 rays, median ones longest, all simple; ventral inserted before base of pectoral, below posterior ends of branchiostegals, of 2 simple rays of which the inner is the longer; caudal of 17 rays; lateral line present on anterior half of body,

spines gradually increasing toward middle of fin, there longest, 4.8 in head; first soft ray a little longer than longest spine, 1.75 in head; soft rays of uniform length, from fourth to fourteenth, being 1.3 in

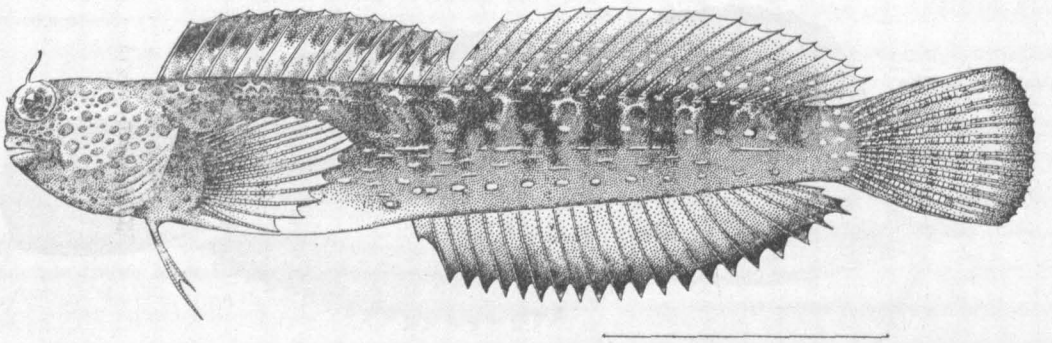


FIG. 48.—*Salarias saltans* Jenkins, new species. Type.

head; the soft dorsal being considerably more elevated than anterior dorsal, rays back of fourteenth decreasing in size, last equal to last spine; anal similar in shape and size to soft dorsal; caudal slightly rounded; median rays a little longer than head; pectoral pointed with 14 rays, median ones longest, all simple; ventral inserted before base of pectoral, below posterior ends of branchiostegals, of 2 simple rays of which the inner is the longer; caudal of 17 rays; lateral line present on anterior half of body,

248. Salarias rutilus Jenkins, new species.

Head 4.3 in length; depth 5.3; eye 3 in head; D. XII, 20; A. I, 21; C. 15; P. 14. Profile of head and body almost identical with that of *Salarias saltans;* profile of back and head from eye to base of soft dorsal straight and horizontal; dorsal and ventral profile of body from base of soft dorsal and anal fins slightly converging to apex of caudal peduncle, whose depth is 2 in depth of body through pectoral, or 10 in length; body compressed, width decreasing posteriorly; width of apex of caudal peduncle less than diameter of pupil; profile of snout slightly receding from eye to mouth; profile before and above eye prominently bulging; eye at upper anterior angle of side of head, front of head forming an isosceles triangle; interorbital very narrow, less than diameter of pupil; suborbital 6 in head; branchiostegals 5, upper ones projecting beyond posterior end of opercle; a small, backward curved, canine tooth in back part of each side of lower jaw well within the outer teeth which form a border to each jaw of 5 small teeth; a fine, slender, simple tentacle over the eye; mouth inclined slightly upward posteriorly; chin sloping backward and downward from mouth; gill-openings large, members united, fused with isthmus; lower jaw included; dorsal spines of nearly uniform height, median one longest, 2 in head; last one considerably shorter, about 3 in head; a deep incision between first and second dorsals; first ray of second dorsal slightly shorter than longest ray of first dorsal; last soft ray of same length as last spine of first dorsal; other rays slightly elongated toward middle of fin; soft dorsal not united with the caudal; anal similar in size and shape to soft dorsal; last ray opposite penultimate dorsal ray; caudal slightly rounded, median rays nearly equal to length of head; pectoral

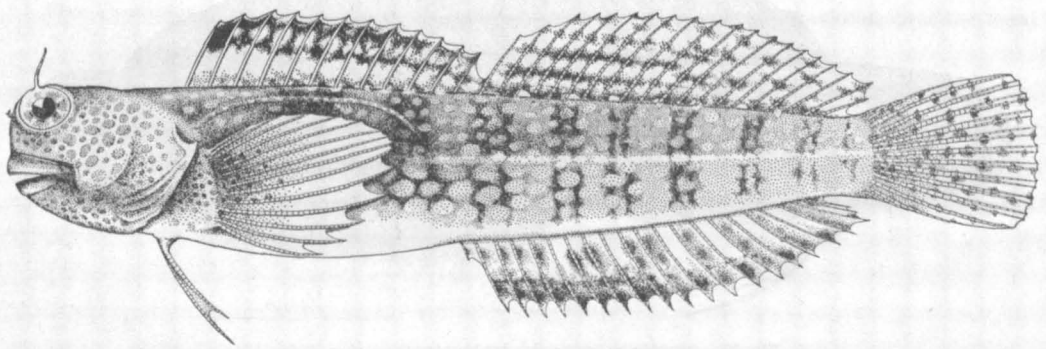


FIG. 49.—*Salarias rutilus* Jenkins, new species. Type.

bluntly pointed, median rays longest, equal to caudal, nearly equal to head; lateral line forming a gentle curve over pectoral from upper end of gill-slit to middle of side of body; ventral of 2 simple rays; inner ray a little the longer, 1.5 in head. Structure and form almost identical with that of *Salarias saltans,* the chief differences being in coloration.

soft dorsal not united with the caudal; anal similar in size and shape to soft dorsal; last ray opposite penultimate dorsal ray; caudal slightly rounded, median rays nearly equal to length of head; pectoral

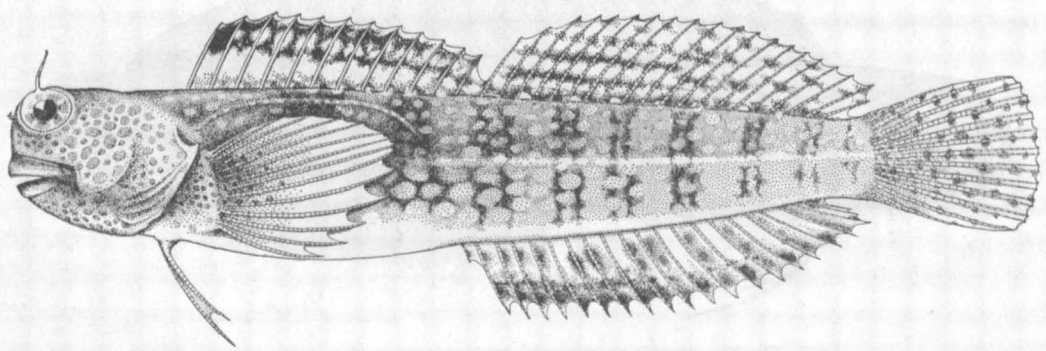


FIG. 49.—*Salarias rutilus* Jenkins, new species. Type.

bluntly pointed, median rays longest, equal to caudal, nearly equal to head; lateral line forming a gentle curve over pectoral from upper end of gill-slit to middle of side of body; ventral of 2 simple rays; inner ray a little the longer, 1.5 in head. Structure and form almost identical with that of *Salarias saltans,* the chief differences being in coloration.

Color in alcohol, ground color pale reddish brown; lower part of opercle and lower surface of head including the gill-membranes with numerous small reddish dark brown spots; spots extending

249. Aspidontus brunneolus Jenkins, new species.

Head 4.3 in length; depth 5; eye 3 in head; snout 5; D. 31; A. 19; P. 14; C. 13; V. 2. Body somewhat elongate, deepest at anterior end, compressed, widest anteriorly; head compressed but slightly wider than body; profile from snout to top of head about a fourth of a circle, from this point gently rising to about middle of dorsal; profile of chin and breast convex; belly slightly bulging; from vent both dorsal and ventral outlines gradually converge to caudal peduncle; depth of caudal peduncle about 3 in depth of body; beginning slightly in front of pectoral, dorsal fin highest at about twenty-third ray, length 5 in body, 1.8 in head; last ray united by membrane along its whole length to caudal fin; caudal rounded, 1.2 in head; anal fin lower than the dorsal, middle rays the longest, about 2 in head, the last ray joined to caudal by a membrane its whole length; pectoral somewhat pointed, middle rays longest, 1.3 in head; ventrals about equal to depth of body, outer ray the longer, falling considerably short of the vent, about half its length; teeth rather long, close set, in a single series in each jaw; a backwardly curved canine tooth in the side of each jaw, the lower the larger; entire head and body scaleless; skin with numerous small warty elevations.

Color in alcohol, dark brown, fins blackish; in life uniformly black.

This description is based on the type, No. 50718, U. S. N. M., 1.25 inches long, and 18 cotypes, collected by me from the coral rocks at Honolulu.

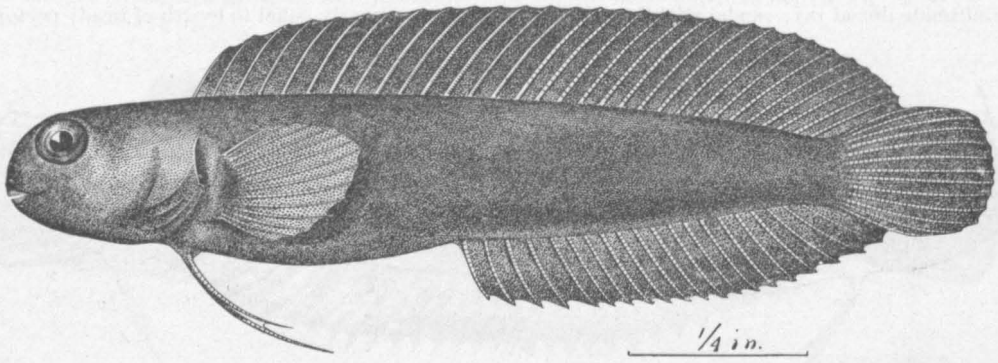


FIG. 50.—*Aspidontus brunneolus* Jenkins, new species. Type.

Family LVI. BROTULIDÆ.

250. Brotula marginalis Jenkins.

One example, the type, is in Dr. Wood's collection of 1898.

Brotula marginalis Jenkins, Bull. U. S. F. C. 1899 (June 8, 1901), 403, fig. 16, Honolulu. (Type, No. 49694, U. S. N. M.)

This description is based on the type, No. 50718, U. S. N. M., 1.25 inches long, and 18 cotypes, collected by me from the coral rocks at Honolulu.

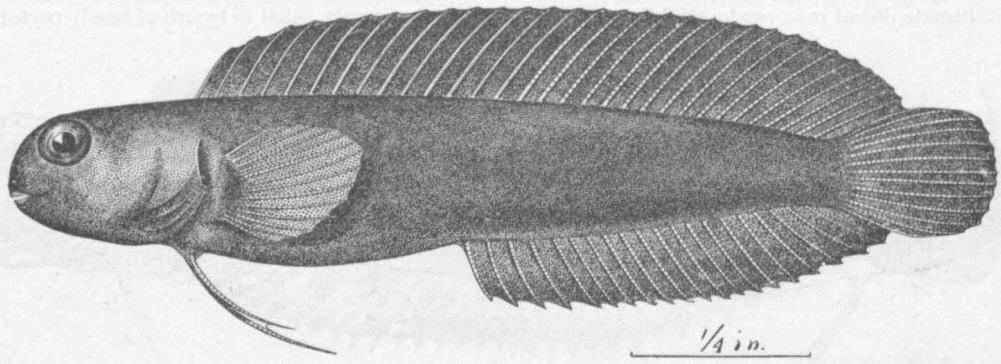


FIG. 50.—*Aspidontus brunneolus* Jenkins, new species. Type.

Family LVI. BROTULIDÆ.

250. Brotula marginalis Jenkins.

Family LVIII. ANTENNARIDÆ.

252. Antennarius commersoni (Lacépède).

One specimen is in my collection; it was not seen fresh. In alcohol it is dark brown, almost black; side with black spot; a black spot on base of posterior rays of anal and of dorsal, a whitish spot above base of pectoral. It corresponds fairly well with the figure in Günther, Südsee, plate 103, fig. B.

Lophius commersoni Lacépède, Hist. Nat. Poiss., I, 327, 1801, South Seas.
Antennarius commersonii, Günther, Fische der Südsee, v, 163, taf., 100 to 104, 1876 (Raiatea, Bonham, Tahiti, Sandwich, Society, Zanzibar, Huahue, Navigator Islands); Steindachner, Denks. Ak. Wiss. Wien, LXX, 1900, 497 (Laysan); Fowler, Proc. Ac. Nat. Sci. Phila. 1900, 519 (Sandwich Islands).
Chironectes niger Garrett, Proc. Cal. Ac. Sci., III, 1868, 107, Sandwich Islands.

253. Antennarius bigibbus (Lacépède).

Color in life (field No. 274, and 4 others), general color bright yellow, with brown reticulations on most examples, one yellow without the reticulations on the body; in another, the reticulations very indistinct, while on one they are very distinct; pectoral, ventral, and anal fins each with a dark brown band, also outer margin of each of these dark brown; near base of caudal 2 dark brown, almost black, crossbands; posterior margin of caudal dark brown; dorsal with a very narrow dark brown line on the outer margin; very narrow brown lines radiating from the eye.

Five examples of this small fish were obtained by me at Honolulu, by breaking heads of coral over a dip net.

Lophius bigibbus Lacépède, Hist. Nat. Poiss., I, 325, 1798.
Antennarius bigibbus Günther, Cat., III, 199, 1861 (Madagascar); Günther, Fische der Südsee, v, 165, taf. 100 v, fig. A, 1876 (Paumotu, Sandwich, Huahue Islands).

254. Antennarius rubrofuscus (Garrett).

One specimen, 5.1 inches in length, was obtained by me in Honolulu, and I saw one of about the same size in alcohol in a "curio" shop, for which the owner asked a large price.

Chironectes rubrofuscus Garrett, Proc. Cal. Ac. Sci., III, 1868, 64, Sandwich Islands.