

LIST OF FISHES COLLECTED IN JAPAN IN 1903, WITH
DESCRIPTIONS OF NEW GENERA AND SPECIES.

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During a brief visit to Japan in 1903 the senior author obtained a small collection of fresh-water and marine fishes from various points on the islands of Hondo, Shikoku, and Kiushiu. Having only limited facilities for preserving specimens, he was obliged to confine the collection to the smaller forms; and not being provided with a seine or other net he depended largely on the markets and on the services of local fishermen.

The principal localities from which specimens were obtained were (1) Matsushima Bay, from the fishery experiment station at Shiogama, where a number of interesting specimens were secured from the station museum; (2) Hamashima, province of Shima, from the collection of the fishery station at that place; (3) the Inland Sea in the vicinity of Onomichi; (4) Kochi and Urado, in the province of Tosa; (5) Susaki, in the same province, where there is a fishery experiment station; (6) Kagoshima, province of Satsuma; (7) Yamagawa, at the mouth of Kagoshima Bay; (8) Nigara River at Gifu; (9) Lake Biwa, near its outlet; and (10) Sendai River at Sendai, province of Satsuma.

For cooperation and active aid in making the collection, acknowledgment is due to Dr. K. Kishinouye, Dr. T. Kitahara, Dr. T. Nishikawa, Dr. K. Oku, and Dr. T. Nishimura, all of the Imperial Fisheries Bureau; their excellencies, Governor Watanabe and Governor Kawaji, of the prefectures of Kochi and Gifu; the director of the fishery experiment station at Shiogama; Mr. J. Shobu, of the fishery experiment station at Hamashima; Mr. I. Shishido, of the Imperial University at Kyoto; Mr. Y. Hosokawa, president of the Fishermen's Association of Kochi prefecture, and Mr. Y. Kida, of the Kochi Middle School; Mr. H. Niwa, director of the fishery experiment station at Susaki, Tosa; Mr. T. Sakai, of the imperial biological station at Onomichi; Mr. Yoshio Asahara, director of the fishery experiment station of Kagoshima prefecture; Mr. S. Machida, of Kagoshima, and

Mr. K. Nomaguchi, mayor of Yamagawa, as well as to numerous other officials of the various prefectures.

For assistance and suggestions in studying this collection we acknowledge our indebtedness to Dr. D. S. Jordan, Dr. B. W. Evermann, Dr. Theodore Gill, and Mr. Alvin Seale.

The extensive writings of Dr. David Starr Jordan and his associates descriptive of the fish fauna of Japan have made comparatively easy the identification of this collection. That the waters of Japan still hold many undiscovered ichthyological treasures can not be doubted, however, notwithstanding the large amount of matter which has within the past few years been added to the already very considerable literature of Japanese fishes; for the present collection, made quite incidentally, limited to specimens most easily preserved, and representing little more than the forms found here and there in the markets, contains one new family (Caristiidae), five new genera, and eleven new species, in addition to several species not previously known from Japan. In this last class are *Embolichthys mitsukurii* (Jordan and Evermann), described from Formosa; *Nealotus tripes* Johnson, not previously known from the Pacific Ocean; *Terapon jarbua* (Forskål); *Peristedion rieffeli* Kaup; and *Eleotriodes heldsdingenii* Bleeker.

The local names of the fishes in the localities where collecting was done have been supplied wherever known.

Family CARCHARIIDÆ.

TYPICAL SHARKS.

1. *MUSTELUS MANAZO* Bleeker.
KOSHINAGABUKA.

Kochi, May 7, one specimen, 324 mm. long.

Family RAJIDÆ.

SKATES.

2. *RAJA MEERDEVOORTI* Bleeker.
YEI; KUROSU.

Kochi, May 7, one specimen, 267 mm. long; Kagoshima, June 16, one specimen, 203 mm. long, 50 fathoms, rare.

Family DASYATIDÆ.

STING-RAYS.

3. *UROLOPHUS FUSCUS* Garman.

Kagoshima, June 16, two specimens, 120 and 200 mm. long.

Family PLOTOSIDÆ.

SEA CATFISHES.

4. *PLOTOSUS ANGUILLARIS* Lacépède.

Kagoshima, June 16, two specimens, 197 and 215 mm. long.

Family SILURIDÆ.

COMMON CATFISHES.

5. FLUVIDRACO RANSONNETII (Steindachner).

Kochi, May 7, one specimen, 95 mm. long.

Family COBITIDÆ.

LOACHES.

6. COBITIS TÆNIA Linnæus.

Setagawa, Lake Biwa, April 22, two specimens, 85 and 94 mm. long.

Family CYPRINIDÆ.

MINNONS AND CARPS.

7. ACHEILOGNATHUS LANCEOLATA (Temminck and Schlegel).

Setagawa, Lake Biwa, April 22, two specimens, 63 and 65 mm. long.

8. LEUCOGOBIO BIWÆ (Jordan and Snyder).

Setagawa, Lake Biwa, April 22, 1 specimen, 52 mm. long.

9. SARCOCHEILICHTHYS VARIEGATUS (Temminck and Schlegel).

HIGAI.

Setagawa, Lake Biwa, April 22, four specimens. A female 152 mm. long, in spawning condition, has a black bar across dorsal most distinct anteriorly, anal and ventrals plain, pectorals dusky. A male 178 mm. long, with nuptial tubercles on head, has no distinct bar on dorsal; anal, ventrals, and pectorals black-tipped. A young male 92 mm. long, with tubercles on head, has a rather distinct bar on dorsal; anal, ventrals, and pectorals black-tipped. A specimen 54 mm. long has fins plain, and a distinct blackish lateral stripe.

10. BIWIA ZEZERA (Ishikawa).

ENDUSO; URORE.

Setagawa, Lake Biwa, April 22, four specimens, 55 to 65 mm. long.

11. PSEUDORASBORA PARVA (Temminck and Schlegel).

MOROKO.

Setagawa, Lake Biwa, April 22, four specimens, 42 to 83 mm. long.

12. OTAKIA RASBORINA Jordan and Snyder.

Setagawa, Lake Biwa, April 22, one specimen, 115 mm. long.

13. LEUCISCUS HAKUENSIS Günther.

NIGOI.

Sendaigawa at Sendai, Kiushiu, June 10, one specimen, 265 mm. long.

14. ZACCO PLATYPUS (Temminck and Schlegel).
HAYE.

Setagawa, Lake Biwa, April 22, one specimen, 116 mm. long; Urado, May 7, one specimen, 130 mm. long; Sendaigawa at Sendai, Kiushiu, June 10, one specimen, 128 mm. long.

15. ISCHIKAUIA STEENACKERI (Sauvage).
WATAKA.

Setagawa, Lake Biwa, April 22, 1 specimen, 138 mm. long.

Family LEPTOCEPHALIDÆ.
CONGER EELS.

16. LEPTOCEPHALUS NYSTROMI Jordan and Snyder.

Kagoshima, June 16, one specimen, 226 mm. long.

Family MURÆNESOCIDÆ.

17. MURÆNESOX CINEREUS (Forskål).
HAMU.

Kochi, May 7, one specimen, 480 mm. long. Origin of dorsal slightly in advance of pectoral.

Family CLUPEIDÆ.
SHADS AND HERRINGS.

18. STOLEPHORUS JAPONICUS (Houttuyn).
OKINIROGI.

Susaki, May 8, two specimens, 78 and 80 mm. long.

Family DOROSOMATIDÆ.
GIZZARD SHADS.

19. KONOSIRUS PUNCTATUS (Temminck and Schlegel).
DOROKUI.

Urado, near Kochi, May 7, one specimen, 157 mm. long.

20. KONOSIRUS NASUS (Bloch).
DOROKUI.

Urado, May 7, three specimens, 130 to 182 mm. long. These and the foregoing caught in the interesting cast-net fishery.

Family ENGRAULIDÆ.
ANCHOVIES.

21. ANCHOVIA JAPONICA (Temminck and Schlegel).

Susaki, Tosa, May 8, one specimen, 65 mm. long.

Family ARGENTINIDÆ.

SMELTS.

22. OSMERUS DENTEX Steindachner.

Matsushima Bay, one specimen, 58 mm. long; from Fishery Experiment Station, Shiogama.

Family SALMONIDÆ.

SALMONS AND TROUTS.

23. PLECOGLOSSUS ALTIVELIS Temminck and Schlegel.
AYU.

Nigara River at Gifu. Several specimens caught by cormorants.

Family SYNODONTIDÆ.

LIZARD-FISHES.

24. TRACHINOCEPHALUS MYOPS (Forster).
GONAYESO.

Kochi, May 7, one specimen, 117 mm. long.

25. SYNODUS VARIUS (Lacépède).
SUZUME.

Kochi, May 7, one specimen, 132 mm. long; May 11, one specimen, 305 mm. long; Urado, May 10, one specimen, 134 mm. long; Yamagawa, June 16, one specimen, 86 mm. long. The specimen from Yamagawa has the markings very distinct, the irregular bands meeting across the back.

26. SAURIDA JAPONICA Houttuyn.
YESO.

Kochi, May 7, one specimen, 195 mm. long; Yamagawa, June 14, two specimens, 182 and 145 mm. long.

Family SYNGNATHIDÆ.

PIPE-FISHES.

27. SYNGNATHUS SCHLEGELI Kaup.

Matsushima Bay, one specimen, 138 mm. long; from Fishery Experiment Station, Shiogama.

Family AULORHYNCHIDÆ.

28. AULICHTHYS JAPONICUS Brevoort.

Matsushima Bay, two specimens, 90 and 142 mm. long; from Fishery Experiment Station, Shiogama.

Family FISTULARIIDÆ.

TRUMPET-FISHES.

29. FISTULARIA DEPRESSA Günther.

Near Yamagawa, June 16, three specimens, 150, 150, and 187 mm. long.

Family SPHYRÆNIDÆ.

BARRACUDAS.

30. SPHYRÆNA JAPONICA Cuvier and Valenciennes.

Yamagawa, June 14, one specimen, 105 mm. long; June 16, two specimens, 58 mm. long.

Family ATHERINIDÆ.

SILVERSIDES.

31. ATHERINA BLEEKERI Günther.

Matsushima Bay, one specimen, 113 mm. long; from Fishery Experiment Station, Shiogama.

32. ATHERINA TSURUGÆ Jordan and Starks.
TONGORO.

Susaki, May 8, two specimens, 120 and 123 mm. long.

Family TRACHICHTHYIDÆ.

DEEP-SEA BERYCOIDS.

33. HOPLOSTETHUS MEDITERRANEUS Cuvier and Valenciennes.

Kagoshima, June 12, two specimens, 63 and 70 mm. long; June 16, two specimens, 60 and 101 mm. long.

Family HOLOCENTRIDÆ.

SQUIRREL-FISHES.

34. OSTICHTHYS JAPONICUS (Cuvier and Valenciennes).

Kochi, May 7, one specimen, 114 mm. long. A beautiful crimson fish, the color deepest on back and peduncle; bluish stripes along scales on back and sides; first dorsal uniform crimson, with a narrow black edge.

Family SCOMBRIDÆ.

MACKERELS.

35. SARDA ORIENTALIS (Temminck and Schlegel).

Urado, May 10, one young specimen, 77 mm. long, doubtless referable to this species; head 2.8, depth 4.25; eye 4; snout 2.25; maxillary reaching to posterior margin of eye, 1.5 in head; depth of caudal peduncle less than 0.5 eye; gill-rakers short, 12 to 15 on lower limb;

dorsal xv-1, 12-7; anal v, 10-6; caudal small, deeply forked, the lobes not widely flaring; lateral line sinuous; color pale reddish brown, with about five dusky cross bands.

Family GEMPYLIDÆ.

36. NEALOTUS TRIPES Johnson.

Hamashima, offshore, October 8, 1902, one specimen, 240 mm. long; from Hamashima Fishery Station. This specimen is the size of the type and agrees very closely with Johnson's original description. Depth 7.3 to base of caudal, about 8.3 to end of caudal; head 3.75; eye 1.6 in snout, 4.3 in head; dorsal XXI, 19-2; anal 1-8-3. Front of upper jaw with 6 fang-like teeth 0.5 length of eye; posterior to these about 12 partly concealed, widely separated sharp-pointed teeth on the dental ridge; teeth in lower jaw sharp, compressed, much larger than the lateral teeth in upper jaw, about 10 on each side. Color, apparently silvery, underlaid with brown.

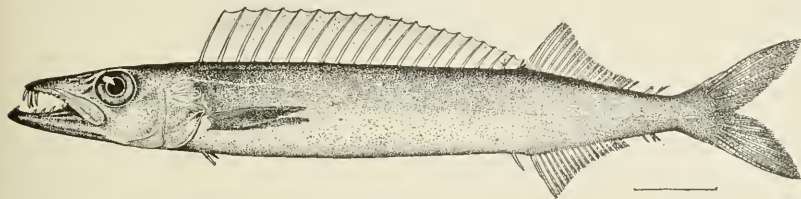


FIG. 1.—NEALOTUS TRIPES.

Günther^a gives the following history of this interesting species, of which the Japanese specimen is the third that has been taken:

This fish was known from a single example, 10 inches long, obtained at Madeira in the month of December [1864], and has been fully described by Johnson, who says that his specimen has been deposited in the British Museum. Such was undoubtedly his intention when he wrote his description, as before and afterwards he most liberally presented his ichthyological treasures to the national institution. But this specimen was never received, and from later inquiries it would appear that this valuable type is lost. The *Challenger* collection contains a very young specimen, only 33 mm. long, which agrees so well with Johnson's description that it doubtless belongs to the same species. Only the dagger-shaped postanal spine is shorter than the ventral spines, and also the separation of distinct finlets can not be clearly made out, as might be expected in so young an example. It was brought up in the dredge at Station 40, in latitude 34° 51' north, longitude 68° 30' west, where the dredge reached a depth of 2,675 fathoms. * * * It is * * * probable that this small fish entered the dredge shortly before it came to the surface.

Family CARANGIDÆ.

CREVALES, POMPANOS, ETC.

37. DECAPTERUS RUSSELLI (Rüppell).

AOAJI.

Susaki, May 8, one specimen, 146 mm. long.

^a Deep-sea Fishes, Voyage of the *Challenger*, XXII, 1887.

38. TRACHURUS JAPONICUS Temminck and Schlegel.

Shore near Yamagawa, June 16, one specimen, 92 mm. long.

39. CARANGUS EQUULA (Temminck and Schlegel.)
SHIMAJI.

Kochi, May 7, one specimen, 225 mm. long. Head 3.2, depth 2.16, eye 3.33, snout 3; dorsal VIII-I, 25; anal II-I, 24; scutes about 35; 8 or 9 obsolete dark, narrow vertical bands on back and sides; dorsal and anal fins with white margins, light green at base, and blackish between; ventrals silky white.

Family SCOMBROPIDÆ.

40. SCOMBROPS BOOPS (Houttuyn).
SHIRAGENNAI (Susaki).

Susaki, May 8, one specimen, 100 mm. long; Kagoshima and Yamagawa, shore, June 10 and 16, three specimens, 88 to 111 mm. long.

Family LEIOGNATHIDÆ.

41. LEIOGNATHUS ARGENTATUS Houttuyn.
NIROGI.

(*Equula nichalis* TEMMINCK and SCHLEGEL.)

Kochi, May 7, three specimens, 73 to 80 mm. long.

42. LEIOGNATHUS RIVULATUS (Temminck and Schlegel).
KIBINAGO.

Susaki, May 8, one specimen, 75 mm. long.

43. LEIOGNATHUS ELONGATUS Smith and Pope, new species.

Head 3.75; depth 3.75; eye 3.25; snout 3.25; dorsal VIII, 16; anal III, 14.

Body very elongate and moderately compressed, its depth not greater than length of head; dorsal and ventral profiles about evenly curved and tapering gently to the very short and slender peduncle; caudal peduncle about 0.66 diameter of eye; head acute, the upper surface weakly convex, the sides compressed to form a very narrow surface on the ventral side; mandibular but slightly concave; eye of moderate size, its diameter equal to snout; interorbital equal to eye, with a median ridge from snout to occiput and supraocular ridges inclosing triangular space; lower preopercular margin with very fine serrations; scales small, cycloid, deciduous; opercles naked, cheeks scaly; lateral line conspicuous, with about 42 tubular pores; second and third dorsal spines longest, 1.75 in depth of body and 2 in distance from origin of fin to anterior margin of eye; longest anal spine (second) less than 0.5

head; caudal deeply forked; pectorals 1.5 in head; ventrals somewhat less than 2 in head.

Color in alcohol: Yellowish-brown above, with purplish tinge below that may have been silvery in life; scales everywhere covered with fine black punctulations which are larger and more scattered on lower side of head and body; back and sides marked with a number of irregular dark purplish spots and vermiculations; a black spot at base of each dorsal and anal ray; axil of pectoral black; posterior edge of gill

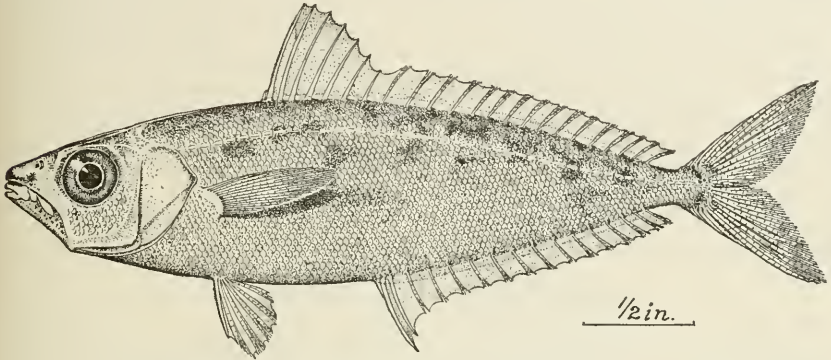


FIG. 2.—*LEIOGNATHUS ELONGATUS*. (From the type.)

cavity black, showing through opercular flap; a short black band on tip of snout above mouth; fins without definite color markings.

Described from a specimen 90 mm. long from Kagoshima, collected June 16, 1903, by H. M. Smith.

Type.—Cat. No. 55613, U.S.N.M.

This species may be easily recognized by its elongate form and mottled coloration.

Family STROMATEIDÆ.

BUTTER-FISHES.

44. *PSENOPSIS ANOMALUS* (Temminck and Schlegel.)

Matsushima Bay, one specimen 178 mm. long; from Fishery Experiment Station, Shiogama. Head 4, depth 2.5, eye 3.25, snout 4; dorsal VI-1, 28; anal III, 28.

Family APOGONICHTHYIDÆ.

CARDINAL-FISHES.

45. *APOGONICHTHYS CARINATUS* (Cuvier and Valenciennes). *OKIFUNA* (OFF SHORE CARP).

Susaki, May 8, one specimen, 85 mm. long; Urado, May 10, one specimen, 122 mm. long; Kagoshima, June 12, one specimen, 90 mm. long.

46. *AMIA NIGER* (Döderlein).
KUROGENNAI (Susaki).

Susaki, May 8, one specimen, 90 mm. long; Kagoshima, June 12, five specimens, 52 to 88 mm. long. Susaki specimen: Body reddish golden-brown, fins black, except caudal and pectorals.

47. *AMIA MARGINATUS* (Döderlein).

Kagoshima, June 12, two specimens, 67 and 70 mm. long; Yamagawa, June 16, one specimen, 75 mm. long.

48. *AMIA SEMILINEATUS* (Temminck and Schlegel).
MOTSU.

Kochi, May 7, one specimen, 105 mm. long.

49. *AMIA NOTATUS* (Houttuyn).

Kagoshima, June 12, one specimen, 100 mm. long.

50. *AMIA KIENSIS* (Jordan and Snyder).

Urado, May 10, two specimens, 65 and 70 mm. long. Color in life, silvery white with golden reflections below; head and upper parts with purplish reflections; lateral stripes black; dorsal and anal with yellow-brown markings.

Family *SERRANIDÆ*.
GROUPERS, SEA BASSES, Etc.

51. *NIPHON SPINOSUS* Cuvier and Valenciennes.

Kochi, May 11, two specimens, 150 mm. long.

52. *CHELIDOPERCA HIRUNDINACEA* (Cuvier and Valenciennes).

Kochi, May 7, one specimen, 112 mm. long; Urado, May 10, one specimen, 143 mm. long.

53. *EPINEPHELUS AREOLATUS* (Forskål).
KORO (Susaki).

Susaki, May 8, one specimen, 54 mm. long; near Yamagawa, June 16, one specimen, 89 mm. long.

54. *EPINEPHELUS EPISTICTUS* (Temminck and Schlegel).
KUYE.

Kochi, May 7, a fine specimen, 300 mm. long.

55. *EPINEPHELUS TSIRIMENARA* (Temminck and Schlegel).

Kochi, May 11, one specimen, 225 mm. long.

56. SAYONARA MITSUKURII Smith and Pope, new species.

Head 2.6 in length; depth 2.8; eye 3.5 in head; snout 5.75; inter-orbital 7; maxillary 2; dorsal x,14; anal III.7; ventrals 1,5.

Body ovate, compressed, dorsal, and ventral outlines evenly and similarly curved; head nearly equaling depth, compressed; caudal peduncle compressed, its least depth 3 in head; snout shorter than eye, convex; eye moderate, high, nearly impinging on dorsal profile; interorbital narrow, convex; mouth large, oblique; maxillary reaching below posterior edge of orbit, its distal extremity equaling length of snout; lower jaw slightly projecting; fine villiform teeth on jaws, vomer, and palatines; symphyseal notch of upper jaw without teeth; no prominent canines; tongue smooth, small; preopercle with double margin, the posterior serrated, rounded; opercle with 3 small, short spines nearly concealed by the large scales; gill-membranes free from isthmus; gill-rakers long, slender; dorsals narrowly united at base; dorsal spines

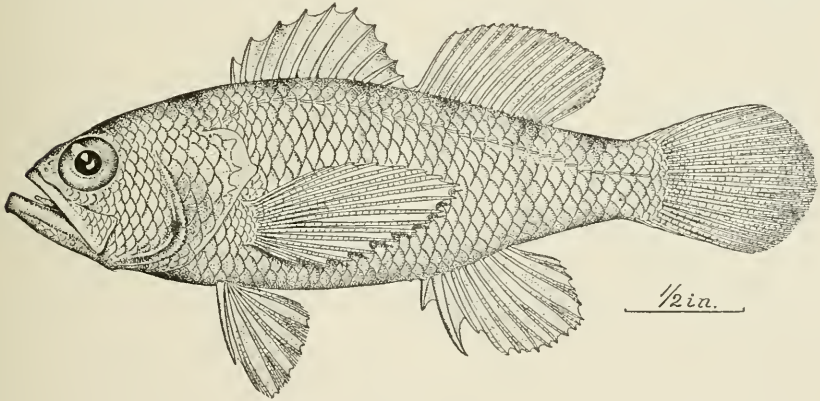


FIG. 3.—SAYONARA MITSUKURII. (From the type.)

heteracanthous, the sixth longest and contained 2.5 in head, fifth about same length as sixth, the first one-half diameter of eye; longest rays of soft dorsal contained 2 in head; second anal spine longest and strongest, 2.5 in head; soft dorsal and anal similar; caudal rounded; pectorals 1.12 in head, pointed, the middle rays longest; ventrals short, not reaching insertion of anal; head and body fully scaled; scales large, finely ctenoid, 35 in lateral line; 2 rows of scales between lateral line and origin of dorsal; about 7 rows of scales on cheek; lateral line uninterrupted, high, the tubes extending the entire length of the scales and forming an obtuse angle under middle of last rays of depressed dorsal. Color of alcoholic specimen pale yellow; 7 large irregular blotches of black on upper part of head and body at base of dorsal, suggestive of transverse bars, the first posterior to orbit, the second midway between eye and origin of dorsal, the third at base of fourth, fifth, and sixth dorsal spines, the fourth at base of last dorsal spines,

the fifth at base of anterior rays of soft dorsal, the sixth at base of posterior rays, the seventh on top of caudal peduncle; all fins plain; a blackish tinge on opercle.

Described from a single alcoholic specimen 80 mm. long collected at Kagoshima, June 16, 1903, by H. M. Smith.

Type.—Cat. No. 55617, U.S.N.M.

From *Sayonara satsumæ* Jordan and Seale^a from Kagoshima this species may be distinguished by the larger eye, longer tubules in lateral line, long and slender gill-rakers, higher dorsal fins, unbranched pectoral rays, and color.

Named for Prof. K. Mitsukuri, of the Imperial University at Tokyo.

TOSANA Smith and Pope, new genus (Serranidæ).

Body elongated, moderately compressed, with short, blunt head; dorsal single, without notch, the third spine much the longest, no rays filamentous; caudal crescentic, the lobes produced, upper lobe the longer; anal with the third spine the longest; pectoral rays undivided; scales large and strongly toothed, covering all parts of body and head; lateral line high, its tubes simple; preopercle with vertical limb evenly serrated, its lower margin entire; opercle with 3 flat spines; jaws with enlarged prominent projecting canines; outer row of teeth in upper jaw canines, inner ones fine and villiform; teeth in lower jaw canines in a single row; vomer and palatines with villiform teeth; tongue smooth; no supplemental maxillary; gill-rakers very long and slender; gill-membranes free from the narrow, carinated isthmus.

Similar to *Pseudanthias* Bleeker, but differing therefrom in the unbranched pectoral rays, larger scales, and other characters. From *Pronotogrammus* Gill it may be distinguished by the insertion of the ventrals behind axil of pectorals, the closely scaled top of head, the absence of preopercular spines, the dentition, etc.

The genus is named for Tosa, one of the four provinces of Shikoku. The ancient name for this province meant "the brave good youth," and the "province continues to justify its name for bravery and ability; no men have aided more than the Tosa men to bring about the renovation of Japan."

Type of genus.—*Tosana niwæ*.

57. TOSANA NIWÆ Smith and Pope, new species.

Head 3.65 in length; depth 3.62; eye 3 in head; snout 5; interorbital 3.5; dorsal X, 15; anal III, 7; scales in lateral line 35.

Body elongate, compressed, its greatest depth about equal to length of head; dorsal outline but gently arched, the ventral nearly straight; peduncle compressed, its least depth 2 in head; snout short and blunt,

^aProc. U. S. Nat. Mus., XXX, 1906, p. 145.

its length equal to 0.66 diameter of eye; mouth oblique; maxillary reaching to below middle of pupil, the width of its distal end more than 0.5 diameter of eye; mandible projecting; teeth in upper jaw in 2 series, the outer canine, the inner in a villiform band; on each side of the tip of the upper jaw one pair of long canines directed downward and another pair directed inward and backward; teeth in lower jaw a single row of canines, with 2 pairs of enlarged canines on each side at tip; a narrow band of small teeth on palatines, and a small patch on vomer; tongue smooth, pointed; preopercle with rounded angle, the upper limb serrated, the lower smooth; opercle with 3 flap spines, the middle longest; gill-rakers long and slender, 23 on lower limb of first arch; scales large, strongly toothed, fully covering body and head, about 6 rows on cheeks; lateral line high, concurrent with back, the tubules straight, simple, and forming an obtuse angle under posterior end of dorsal fin; dorsal fin continuous, the third spine much the longest, 0.5 in head and nearly twice length

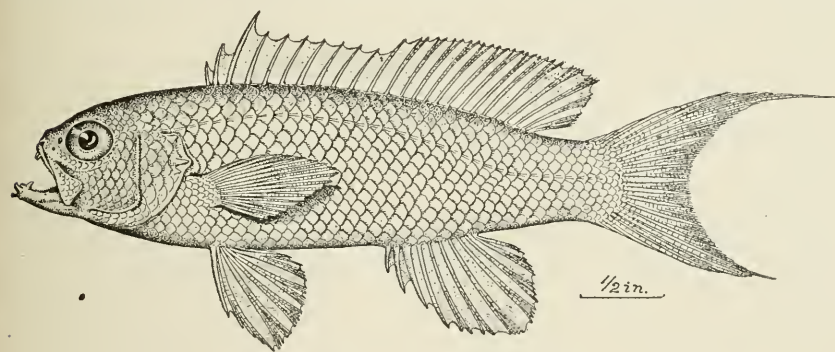


FIG. 4.—TOSANA NIWE. (From the type.)

of second, fourth to tenth subequal; soft rays of nearly equal length except last 2, the longest considerably longer than third spine; anal shorter and deeper than soft dorsal; caudal deeply and evenly concave, the outer rays much produced, upper lobe longer; pectorals and ventrals shorter than head. Color in alcohol rosy pink, lighter below; all fins yellowish.

This species resembles *Pseudanthias japonicus* (from Japan) and *Pseudanthias cichlops* (from Sumatra); from the former it is distinguished by its slender form, its more numerous gill-rakers (14 on lower arm of first arch in *japonicus*), in having the third dorsal and the third anal spines the longest, and in its deeply concave caudal; from *cichlops* it differs in its more slender body, larger scales, relative length of anterior dorsal and anal spines, shorter ventrals, and shape of caudal.

A single specimen, 110 mm. long, from Urado Bay, collected May 10, 1903, by H. M. Smith.

Type.—Cat. No. 55618, U.S.N.M.

Named for Mr. H. Niwa, director of the Fishery Experiment Station of Kochi prefecture at Susaki, Tosa.

SATSUMA Smith and Pope, new genus (Serranidæ).

Form elongate, compressed; head pointed; mouth large, with small teeth on jaws, vomer and palatines; maxillary broad posteriorly, lower jaw projecting, its symphysis sharp and dentigerous; eye very large; opercle with 2 spines, preopercle serrated; gill-opening large and continued far forward, gill-membranes not connected and free from isthmus; body covered with finely ctenoid scales; opercles, cheeks, and upper part of head scaly; snout and jaws naked; lateral line high and concurrent with back; 2 high dorsal fins, anterior with 9 strong spines; anal fin deep, with 3 spines; caudal deeply emarginate; pectorals long and pointed; ventrals with 1 long spine.

In the large eye, high dorsal spines, squamation, general form, and color this genus superficially resembles the holocentrids.

Type of genus.—*Satsuma macrops*.

58. SATSUMA MACROPS Smith and Pope, new species.

Head, 2.75 in length; depth, 2.6; eye, 2.5 in head; snout, 4; inter-orbital, 4; dorsal, IX-1, 10; anal, III, 7; ventrals, I, 5; scales, 4-40-9; pores, 38.

Body elongate, deep, much compressed, greatest depth at about origin of spinous dorsal; head compressed, a little longer than deep,

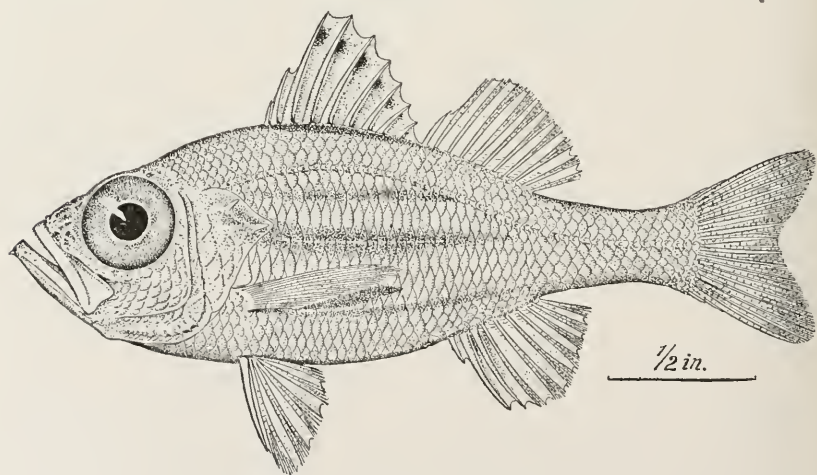


FIG. 5.—SATSUMA MACROPS. (From the type.)

its width 2.2 in its length; snout short, broad, and acute; eye very large, high, impinging upon upper profile of head, its diameter about equal to postocular part of head; mouth large, oblique; mandible

strongly projecting, bearing at the symphysis two sharp conical teeth, and reaching posteriorly to below anterior border of pupil; distal expanded extremity of maxillary 2 in eye; supplemental maxillary bone long and narrow; very fine teeth in jaws, on vomer, and on palatines; tongue elongate, rounded, free.

Nostrils close together, posterior larger and close to front rim of orbit; opercle with two short, sharp spines, the lower horizontal, the upper pointing obliquely upward; preopercle sharply and coarsely serrated; gill-opening large; gill-rakers long and slender, about 23 on lower limb of arch, the longest equaling diameter of pupil and longer than the longest gill-filament; dorsal spines slender, sharp, the third and fourth longest and 1.33 times diameter of eye; the remaining spines descend rapidly to the ninth; soft dorsal lower than spinous; anal similar to soft dorsal and opposite the latter, the depressed tips of last rays of both fins on same vertical; anal spines strong, the first contained in the third three times; third anal spine equal to eye; caudal weakly forked or deeply emarginate; ventrals inserted under origin of pectorals and not reaching vent, 2 in head, and 0.66 length of pectoral; caudal peduncle moderate and compressed, its depth 3 in head; scales of moderate size, finely ctenoid, covering entire body and head except mandible and snout; lateral line high and concurrent with dorsal outline to middle of base of caudal; head with many mucous cavities.

Color, pale yellowish with 5 longitudinal bands or dashes of crimson; the first band very narrow, running along base of dorsal; the second beginning near lateral line below origin of spinous dorsal and terminating on lateral line below middle of soft dorsal; the third and widest band extending from the upper portion of opercle on median line of side to beyond termination of band above; the fourth reaching from axil of pectoral to above base of anal; the fifth from axil of ventrals to posterior end of anal; first and fifth bands similar, second and third running parallel along middle of side and very conspicuous, while the fourth shows but faintly in the specimens secured; in one of the cotypes the third and fourth bands show evidences of a possible fusion at their anterior ends; a black spot near margin of membranes of spinous dorsal, other fins colorless; scales above lateral line with black-dotted margins, those elsewhere on body diffusely dotted with black.

The above description from a specimen measuring 65 mm., and two cotypes 65 and 69 mm. long, taken at Kagoshima, June 16, 1903, by H. M. Smith.

Type.—Cat. No. 55616, U.S.N.M.

This interesting form is easily recognized by the two prominently projecting mandibular teeth that terminate the very sharply pointed head, the large eye, the high spinous dorsal, and the brilliant crimson dashes along the sides.

Family LATILIDÆ.

TILE-FISHES.

59. *LATILUS JAPONICUS* (Houttuyn).
AMADAI (SWEET PERCH).

Kochi, May 7, one specimen, 230 mm. long. Color when fresh: Body reddish, nape bright red; dorsal pale red; anal sky blue; lower third of caudal blue, upper two-thirds blue-and-yellow striped; pectorals pale red; ventrals white.

Family CEPOLIDÆ.

BAND-FISHES.

60. *ACANTHOCEPOLA KRUSENSTERNII* (Temminck and Schlegel).

Hamashima, October 5, 1902, one specimen, 530 mm. long, from a depth of 6 to 7 fathoms; from Hamashima Fishery Station.

61. *ACANTHOCEPOLA LIMBATA* (Cuvier and Valenciennes).
KANEHIRA.

Urado, May 10, one specimen, 540 mm. long. Body golden pink; head silvery white below; iris red; dorsal with a black ocellus anteriorly and a white triangular spot at base of each membrane; anal red, edged with black, white at base. Rare at Urado and Kochi.

62. *CEPOLA SCHLEGELI* Bleeker.

Hamashima, October 5, 1902, one specimen, 270 mm. long, from a depth of 6 to 7 fathoms; from Hamashima Fishery Station.

Family PRIACANTHIDÆ.

63. *PSEUDOPRIACANTHUS NIPHONIUS* (Cuvier and Valenciennes).

Urado, May 10, one specimen, 90 mm. long.

Family LUTIANIDÆ.

SNAPPERS.

64. *LUTIANUS NISHIKAWÆ* Smith and Pope, new species.

Head 2.6; depth 2.6; eye 3.75; snout 3.25; maxillary 2.33; interorbital 5; dorsal X, 15; anal III, 8; ventrals I, 5; scales in lateral line 52.

Body moderately short and compressed: dorsal outline elevated, the greatest depth at base of third and fourth dorsal spines; profile of head from tip of snout to occiput nearly straight or but very slightly concave; ventral outline nearly horizontal; snout longer than eye, conical; eye moderate, high; jaws about equal; maxillary extending to below anterior margin of pupil; canine teeth in jaws, a pair of larger ones on premaxillaries and similar widely separated ones on mandible;

fine villiform teeth on vomer and palatines; no lingual teeth; preopercular margin finely serrated, with rounded angle and a shallow emargination; opercle terminating in a pointed flap, the spines minute and concealed; gill-rakers long, about 10 to 12 on lower limb of arch; first dorsal spine 0.5 diameter of eye, third spine the longest and equal to distance from tip of snout to middle of pupil; soft dorsal and anal rounded; second anal spine longest and strongest, more than twice the length of the first; pectorals pointed, 1.25 in head, ventrals extending to 0.75 distance to anal spines; scales small, finely ctenoid, in oblique series above lateral line, in horizontal series below; bases of anal and soft dorsal thickly scaled, lateral line continuous, concurrent with dorsal outline; 9 rows of scales between lateral line and insertion of dorsal. Color of alcoholic specimen: Green, with 4 dark longitudinal stripes, the first from upper edge of eye to end of spinous dorsal, the second through the upper part of eye to base of last dorsal rays, the third from center of eye to the upper half of the base of the caudal fin, the fourth from below eye to lower base of caudal peduncle, the second and third stripes beginning at tip of snout and running together to middle anterior margin of eye; a large black blotch on the lateral line from the twenty-second to the twenty-third scale, with the third black horizontal stripe passing through its base; a black spot in the axil of the pectorals.

Described from a single specimen 77 mm. long, collected at Hamashima, April 3, 1902, obtained from Hamashima Fishery Station by H. M. Smith.

Type.—Cat. No. 55614 U.S.N.M.

This species is without doubt the fish described and figured by Day,^a and erroneously identified as *Lutianus chrysozœnia* of Bleeker, from which it differs noticeably in the smaller number of scales in lateral line (80 in Bleeker's description, but 52 in Day's), in the shallower preopercular notch, and in the coloration. The differences in coloration are especially striking; in Bleeker's fish the color is given as bluish green with 8 or more narrow, sinuous, dark-edged bands somewhat oblique above the lateral line and horizontal below it, and many yellow spots on head; in Day's fish and the one we have here described there are but four dark or blackish bands on a green background.

Named for Dr. T. Nishikawa, formerly of the Imperial Fisheries Bureau.

65. TERAPON OXYRHYNCHUS Temminck and Schlegel.
SUMIHIKI; KOTOHIKI.

Koehi, May 7, one specimen, 171 mm. long; Matsushima Bay, one specimen, 149 mm. long; from Fishery Experiment Station, Shiogama.

^aThe Fishes of India, 1875, p. 36, pl. xi, fig. 3.

66. TERAPON JARBUA (Forskål).
KOTOHIKI.

Kochi, May 7, one specimen, 75 mm. long. Known from India, Borneo, Philippines, China, Samoa, etc., but not previously recorded from Japan.

Family HÆMULIDÆ.
GRUNTS.

67. PLECTORHYNCHUS PICTUM (Thunberg.)
SUMIYAKI.

Hamashima, April 8, 1902, two specimens, 80 and 95 mm. long; from Hamashima Fishery Station.

68. PLECTORHYNCHUS CINCTUS (Temminck and Schlegel).

Kochi, May 7, one specimen, 262 mm. long.

69. PARAPRISTIPOMA TRILINEATUM (Thunberg).

(*Pristipoma japonicum* CUVIER and VALENCIENNES.)

Urado, May 10, one specimen, 270 mm. long.

70. HAPALOGENYS NIGRIPINNIS (Temminck and Schlegel).

Kochi, May 11, one specimen, 130 mm. long.

71. HAPALOGENYS KISHINOUEI Smith and Pope, new species.

Head, 2.6; depth, 2; eye, 3; snout, 3.4; interorbital, 4; dorsal, XII, 14; anal, III, 10; scales in lateral line, 50; gill-rakers, 11+5.

Body short, high, much compressed; dorsal outline greatly arched, ventral outline nearly straight; caudal peduncle compressed, its least depth 3 in head; snout bluntly pointed; mouth moderate, horizontal, the jaws about equal; maxillary reaching to beyond anterior margin of pupil; jaws with villiform teeth, the anterior larger and sharply pointed; roof of mouth toothless, but lined with villiform membranes; symphyseal notch of upper jaw deep; 4 large pores on lower side of mandible; papillæ on mandible minute and close-set; gill-rakers short and thick; preopercle serrate, the denticulations much coarser at the rounded angle; opercle with 2 short spines, the lower the sharper; spinous dorsal preceded by a sharp procumbent spine a little shorter than the first upright spine; all the spines strong, the fourth the longest and equal to distance from tip of snout to posterior rim of orbit, the remaining spines graduated; soft dorsal short and rounded, with finely scaled base; base of spinous dorsal about twice length of soft portion; anal short and rounded, similar to soft dorsal and preceded by 3 strong spines, of which the second, the longest, is 0.5 head; caudal rounded; ventrals with outer rays the longest; scales

finely ctenoid; snout and chin naked; lateral line concurrent with dorsal profile. Color in alcohol silvery gray, with 4 reddish-brown horizontal bands, the first band running along the base of spinous dorsal, the second from midway between eye and origin of dorsal to middle of base of soft dorsal, the third from eye to end of soft dorsal at top of caudal peduncle, the fourth from cheek under eye to end of anal on caudal peduncle; dorsal, anal, and ventrals black; caudal and pectorals slightly dusky.

Described from a specimen 115 mm. long, collected by H. M. Smith, at Urado, May 10, 1903.

Type.—Cat. No. 55610, U.S.N.M.

Named for Dr. K. Kishinouye, of the Imperial Fisheries Bureau.

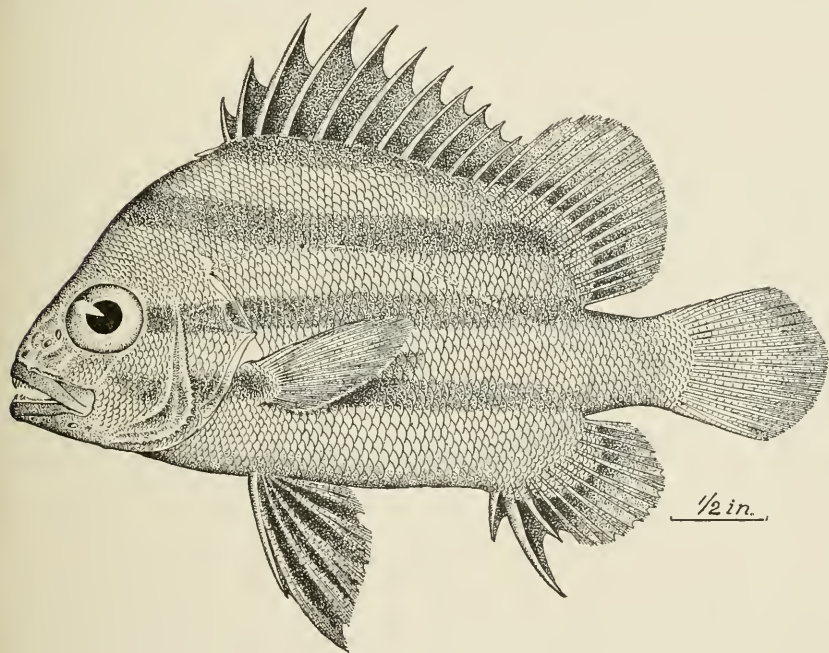


FIG. 6.—HAPALOGENYS KISHINOUEI. (From the type.)

Family SPARIDÆ.

TAI, SCUP, etc.

72. SCOLOPSIDES INERMIS (Temminck and Schlegel).

Kagoshima, June 16, two specimens, 98 and 115 mm. long.

73. LETHRINUS RICHARDSONII Günther.

KUCHIBI.

Susaki, May 8, one specimen, 100 mm. long.

74. *DENTEX HYPSELOSOMUS* Bleeker.
KODAI.

Kochi, May 7, one specimen, 150 mm. long.

75. *NEMIPTERUS SINENSIS* (Lacépède).
ITOYORI.

Kochi, May 7, one specimen, 205 mm. long.

Family KYPHOSIDÆ.
RUDDER-FISHES.

76. *GIRELLA PUNCTATA* Gray.

Matsushima Bay, one specimen, 135 mm. long; from Fishery Experiment Station, Shiogama.

Family GERRIDÆ.
MOJARRAS.

77. *XYSTÆMA JAPONICUS* (Bleeker).
AMAGI.

Kochi, May 7, one specimen, 110 mm. long; Urado, May 10, one specimen, 127 mm. long. A very common fish in the Kochi region, often taken in the cast-net fishery. Caudal pale greenish yellow; ventrals and first 2 anal membranes chrome yellow.

78. *XYSTÆMA OYENA* (Cuvier and Valenciennes).

Yamagawa, June 16, one specimen, 130 mm. long.

Family SCLENIDÆ.
DRUMS.

79. *CORVULA ARGENTATA* Houttuyn.
SHIRABU

[*Corvula schlegeli* (BLEEKER); *Sciana sinu* TEMMINCK and SCHLEGEL.]

Kochi, May 7, one specimen, 148 mm. long.

80. *PSEUDOTOLITHUS MITSUKURII* Jordan and Snyder.
GUCHI.

Kochi, May 7, one specimen, 207 mm. long.

Family SILLAGINIDÆ.

81. *SILLAGO SIHAMA* (Forskål).

Yamagawa, June 14, one specimen, 115 mm. long.

82. *SILLAGO JAPONICA* (Temminck and Schlegel).
KISUGO.

Kochi, May 7, one specimen, 145 mm. long.

Family OPLEGNATHIDÆ.

83. OPLEGNATHUS FASCIATUS (Temminck and Schlegel).

KUROME (BLACK EYE); TABAKOUWO (TOBACCO-FISH).

Hamashima, April 10, 1902, one specimen, 67 mm. long, from a depth of 6 to 7 fathoms; from Hamashima Fishery Station. Matsushima Bay, one specimen, 140 mm. long; from Fishery Experiment Station, Shiogama. The local names given are in use at Hamashima.

84. OPLEGNATHUS PUNCTATUS (Temminck and Schlegel).

Matsushima Bay, one specimen, 158 mm. long; from Fishery Experiment Station, Shiogama. Hamashima, March 7, 1902, three specimens, 55 to 80 mm. long, from a depth of 6 to 7 fathoms; from Hamashima Fishery Station.

Family PENTACEROTIDÆ.

85. HISTIOPTERUS TYPUS Temminck and Schlegel.

HIDARIMAKI.

Kochi, May 7, one specimen, 195 mm. long; May 11, one specimen, 115 mm. long.

Family MULLIDÆ.

SURMULLETS.

86. UPENEUS JAPONICUS (Houttuyn).

(*Upeneus bensasi* TEMMINCK and SCHLEGEL.)

HIMEJI (Kochi).

Matsushima Bay, one specimen, 76 mm. long; from Fishery Experiment Station, Shiogama. Kochi, May 7, two specimens, 140 and 110 mm. long; Kagoshima, June 16, one specimen, 143 mm. long.

87. UPENEUS TRAGULA Richardson.

KUROHIMEJI (Susaki).

Susaki, May 8, one specimen, 145 mm. long; Yamagawa, June 14, one specimen, 110 mm. long; June 16, three specimens, 112 to 162 mm. long.

Family EMBIOTOCIDÆ.

SURF-FISHES.

88. DITREMA TEMMINCKII Bleeker.

Matsushima Bay, one specimen, 118 mm. long; from Fishery Experiment Station, Shiogama.

Family POMACENTRIDÆ.

DEMOISELLES.

89. AMPHIPRION POLYMNUS (Linnæus).

Urado, May 10, one specimen, 110 mm. long.

Family LABRIDÆ.
LABRIDS, OR LIPPED FISHES.

90. CHÆRŌPS AZURIO Jordan and Snyder.

ISOMADAI (Kochi); TESU (Hamashima).

Kochi (fish market), May 11, one specimen, 365 mm. long. Hamashima, November 10, 1902, one specimen, 185 mm. long; from Hamashima Fishery Station. At Kagoshima, where this species is called "hachi," a number were seen.

91. DUYMÆRIA FLAGELLIFERA (Cuvier and Valenciennes).
KUROHACHI.

Kagoshima, June 16, one specimen, 170 mm. long, male, from depth of 20 fathoms; said to be rare at Kagoshima.

92. PSEUDOLABRUS GRACILIS (Steindachner).

Near Yamagawa, June 16, one specimen, 138 mm. long.

93. HALICHÆRES PÆCIOPTERUS (Temminck and Schlegel).
KUSABE.

Yamagawa, June 14, two specimens, 160 and 195 mm. long, both females.

94. INIISTIUS DEA (Temminck and Schlegel).
METESU.

Hamashima, November 10, 1902, one specimen, 180 mm. long, from offshore; from Hamashima Fishery Station.

Family ZEIDÆ.
JOHN DORIES.

95. ZEUS JAPONICUS Cuvier and Valenciennes.
MATOWO.

Susaki, May 8, one specimen, 100 mm. long.

Family CHÆTODONTIDÆ.
BUTTERFLY-FISHES.

96. CORADION DESMOTES Jordan and Fowler.

Urado, May 10, one specimen, 130 mm. long. Body white, vertical bars greenish yellow, dorsal ocellus black with a white border.

Family ACANTHURIDÆ.
SURGEON-FISHES.

97. ACANTHURUS UNICORNIS (Forskâl).

Matsushima Bay, one specimen, 80 mm. long; from Fishery Experiment Station, Shiogama. This specimen has 3 rows of small, round dark spots on sides.

Family SIGANIDÆ.

98. *SIGANUS FUSCESCENS* (Houttuyn).
ENOBA.

Kagoshima, June 16, two specimens, 136 and 140 mm. long; depth 2 to 3 fathoms; very plentiful. Back light green, below whitish green, entire body covered with pearly spots; fins green.

Family TRIACANTHIDÆ.

99. *TRIACANTHODES ANOMALUS* (Temminck and Schlegel).

Kochi and Urado, May 10, three specimens, 103 to 120 mm. long.

100. *TRIACANTHUS BREVIROSTRIS* Temminck and Schlegel.
TOGEHAGE (SPINY FILE-FISH).

Hamashima, October 2, 1902, one specimen, 98 mm. long; from Hamashima Fishery Station.

Family BALISTIDÆ.

TRIGGER-FISHES.

101. *CANTHIDERMIS ROTUNDATUS* (Procé).

Hamashima, April 10, 1902, one specimen, 100 mm. long; from Hamashima Fishery Station. This specimen seems to be referable to this species, although it differs somewhat in its proportions. Depth 1.8; head 2.66; eye 2 in snout, 4 in head; dorsal 11-25; anal 22. Body dark greenish brown, with darker narrow longitudinal stripes on every third row of scales; body with small round light spots irregularly disposed; fins bluish black.

Family MONACANTHIDÆ.

FILE-FISHES.

102. *RUDARIUS ERCODES* Jordan and Fowler.
KOMEUWO.

Yamagawa, June 14, one specimen, 52 mm. long.

103. *OSBECKIA SCRIPTA* (Osbeck).
MATSUZURAHAGI.

Hamashima, April 3, 1902, one specimen, 215 mm. long; from Hamashima Fishery Station.

Family OSTRACIIDÆ.

TRUNK-FISHES.

104. *ARACANA ACULEATA* (Houttuyn).
SUSUMEFUGU.

Urado, May 10, one young specimen, 35 mm. long, with spines lacking.

Family TETRAODONTIDÆ.

PUFFERS.

105. SPHEROIDES VERMICULARIS (Temminck and Schlegel).

Yamagawa, June 14, one specimen, 275 mm. long.

106. SPHEROIDES NIPHOBLES Jordan and Snyder.

Kochi, May 11, one specimen, 140 mm. long. Back dark green, the spots pale yellow in life.

Family CANTHIGASTERIDÆ.

SHARP-NOSED PUFFERS.

107. CANTHIGASTER RIVULATUS (Temminck and Schlegel).

FUGU.

Susaki, May 8, one specimen, 30 mm. long; not known to the fishermen. Yamagawa, June 14, one specimen, 108 mm. long; common; average size 75 mm.

Family SCORPÆNIDÆ.

SCORPION FISHES.

108. SEBASTICHTHYS OBLONGUS (Günther).

GARA.

Hamashima, March 10, 1902, one specimen, 82 mm. long; from Hamashima Fishery Station. Scales in lateral line 50 +.

109. SEBASTICUS ALBOFASCIATUS (Lacépède).

Kochi, May 10, one specimen, 167 mm. long.

110. HELICOLENUS DACTYLOPTERUS (de la Roche).

HOGO.

Kagoshima, June 16, two specimens, 127 and 135 mm. long; from a depth of about 80 fathoms; plentiful.

111. SCORPÆNA ONARIA Jordan and Snyder.

Urado, May 10, one specimen, 128 mm. long; mottled red and brown; anal with blood-red spots.

112. SCORPÆNOPSIS KAGOSHIMANA (Steindachner and Döderlein).

OKOZE.

Kagoshima, June 11 and 16, four specimens, 115 to 180 mm. long; abundant at a depth of 2 to 3 fathoms. In all these specimens the pectoral extends far beyond the ventrals, but only in the three smaller specimens (115 to 140 mm.) does the pectoral extend as far as the second anal spine; in the largest specimen the tip of the pectoral is

considerably short of the first anal spine. It appears improbable that the distinction between *S. kagoshimana* and *S. cirrhosa* can be maintained.

113. PTEROIS LUNULATA Temminck and Schlegel.
OKOZE.

Kochi and Urado, May 10 and 11, two specimens, 80 and 105 mm. long.

114. APISTUS EVOLANS Jordan and Starks.

Kagoshima, June 13, two specimens, 100 and 125 mm. long.

115. DECTERIAS PUSILLUS (Temminck and Schlegel).

Susaki, May 8, one specimen, 52 mm. long; Kagoshima, June 13, one specimen, 56 mm. long.

116. EROSA EROSA (Langsdorff).
YUWAKOZE.

Kagoshima, June 16, one specimen, 125 mm. long; from a depth of 2 to 3 fathoms; plentiful.

117. INIMICUS JAPONICUS (Cuvier and Valenciennes).

Yamagawa, June 14, two specimens, 165 and 180 mm. long.

118. PARACENTROPOGON RUBRIPINNIS (Temminck and Schlegel).

Near Yamagawa, June 16, three specimens, 51 to 62 mm. long; shore.

LYSODERMUS Smith and Pope, new genus (Scorpenidæ).

Body oblong, compressed, covered with a soft, lax skin, in which minute rudimentary scales are embedded; head very rough with spines and ridges; 2 preorbital spines, 5 preopercular spines (the upper longest), 2 concealed opercular spines; a short slit behind last gill-arch; gill-rakers short and few; gill-membranes united to isthmus; lips papillose; lower jaw with fleshy tentacles; dorsal fin single, beginning behind head and consisting of 7 stiff spines and numerous soft rays; anal fin with 2 concealed spines; caudal margin slightly convex; all but tips of dorsal, anal, and caudal fins invested with skin; pectorals with lower ray free and long; ventrals joined to abdomen by a thick fold of skin.

This genus differs from *Minous*, which it rather closely resembles, in having but 7 dorsal spines, in the origin of the fin well behind head and axil of pectorals, in the presence of minute embedded scales, in the rudimentary anal spines, and in various other characters.

Type of genus.—*Lysodermus satsumæ*.

119. *LYSODERMUS SATSUMÆ* Smith and Pope, new species.

Head, 3.5 in length without caudal; depth, 3.5; eye, 4.75 in head; maxillary, 2.25; dorsal, VII, 12; anal, II, 9.

Form elongate, compressed, especially in dorsal region, so that body in cross section is triangular; dorsal and ventral outlines similar, caudal peduncle short, its least depth equal to snout; head pointed; mouth moderate, maxillary extending as far as anterior margin of eye, lower jaw strongly projecting; minute villiform teeth in bands in jaws and in two separated patches on vomer, none on palatines; a row of six or more tentacles on cornea above pupil; numerous blunt, fleshy papillae on maxillary, mandible, cheeks, opercles, throat, and isthmus; a patch of papilliform tentacles on under side of tip of mandible, a single papilla about diameter of pupil posterior to the patch on each side, and more posteriorly another single papilla about half diameter of eye on each side; bones of head rough and deeply sculptured; interorbital

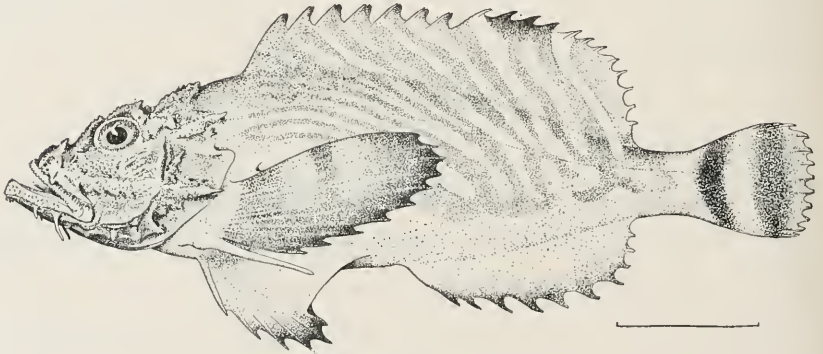


FIG. 7.—*LYSODERMUS SATSUMÆ*. (From the type.)

space deeply concave, as wide as orbit, with 2 longitudinal ridges, between which is a slight median ridge which divides and diverges posteriorly; a long, sharp preorbital spine reaching to end of maxillary and a smaller spine in front pointing downward; suborbitals wide and deeply striated; nasals ending above in produced angles, but not in spines; a transverse depression on top of head behind eye; parietals produced in wide, blunt ridges which end behind in blunt spines; a postorbital ridge extending on posttemporal and ending in a spine; opercle with 2 concealed spines; preopercle with a large, horizontal spine reaching to branchial opening and 4 shorter spines below; gill-rakers small and blunt, 9 on lower limb of first arch; skin smooth to the touch, containing rudimentary embedded scales and very loosely attached to underlying tissue and investing all the fins more or less completely except their tips; lateral line continuous but inconspicuous, only 3 small pores developed anteriorly; a single dorsal fin without notch separating the two parts, beginning posterior to head;

the spines rather low and of nearly uniform height, the longest equal to distance from pupil to end of snout; soft dorsal rays longer than spines except posteriorly, where the fin is evenly rounded; anal similar to soft dorsal, but lower, the spines wholly covered by skin; caudal slightly rounded, the margin serrate; pectorals large, extending beyond origin of anal, the rays simple; the detached ray tapering, its length more than 0.5 head; ventrals extending beyond vent, broadly adnate to abdomen.

Color white, back and sides with dark brown vermiculated oblique bands which extend on dorsal fin; between occiput and dorsal origin the bands are blended and the color is more or less uniform; a black spot on membrane behind tip of each dorsal spine; a larger black spot across tips of the second, third, and fourth dorsal rays; anal and ventrals black on distal part; pectorals black, with a light median part crossed by a black bar; free ray of pectoral yellowish; caudal crossed by 2 black bands.

Described from one specimen 140 mm. in length obtained at Kagoshima, June 16, 1903, by H. M. Smith.

Type.—Cat. No. 55615, U.S.N.M.

Family ANOPILOMATIDÆ.

120. ERILEPIS ZONIFER (Lockington).

(*Elisus sagamius* JORDAN and SNYDER.)

Matsushima Bay, one specimen 87 mm. long; from Fishery Experiment Station, Shioyama. This specimen agrees perfectly with the description of the type from Monterey Bay, California. According to Jordan and Snyder this species occasionally reaches a weight of 200 pounds in Japan, and is not rare. The single known American specimen was evidently a stray, as Doctor Jordan advises us that he saw Lockington's specimen when fresh and that it could not have come from Japan.

Family COTTIDÆ.

SCULPINS.

121. COTTUS KAZIKA Jordan and Starks.

KAMAKIRI.

Kochi, May 7, one specimen, 46 mm. long.

122. COTTUS POLLUX Günther.

Nigara River, near Gifu, May 20, three specimens, 85 to 130 mm. long; caught by cormorants.

123. MYOXOCEPHALUS RANINUS Jordan and Starks.

Matsushima Bay, one specimen, 175 mm. long; from Fishery Experiment Station, Shioyama.

124. PSEUDOBLENNIUS COTTOIDES (Richardson).

Hamashima, October 2, 1902, one specimen, 79 mm. long; from Hamashima Fishery Station.

125. PSEUDOBLENNIUS MARMORATUS (Döderlein).

Matsushima Bay, two specimens, 112 and 115 mm. long; from Fishery Experiment Station, Shiogama.

Family PLATYCEPHALIDÆ.

FLAT-HEADS.

126. PLATYCEPHALUS INDICUS (Linnæus).

MATSUJI.

Kagoshima, June 11, one specimen, 223 mm. long.

127. PLATYCEPHALUS JAPONICUS Tilesius.

KOCHI.

Kochi, May 7, one specimen, 190 mm. long; Kagoshima, June 11, one specimen, 183 mm. long.

128. PLATYCEPHALUS PUNCTATUS Cuvier and Valenciennes.

Yamagawa, June 16, one specimen, 238 mm. long.

129. INSIDIATOR RUDIS (Günther).

KOCHI.

Kochi, May 7, one specimen, 190 mm. long.

130. INSIDIATOR HOSOKAWÆ Smith and Pope, new species.

Head about 3 in length, its width 1.75 in its length; depth, 7; snout, 3.75 in head; eye slightly less than snout; interorbital, 3 in eye; scales in lateral line, 42; dorsal I, VIII-12; anal 12.

Maxillary extending to vertical through anterior margin of pupil; lower jaw projecting; fine villiform teeth on jaws, vomer, and palatines; opercle with 2 sharp spines, its flap with a strongly upturned and rounded corner; 4 spines at angle of preopercle, of which the most posterior is longest and bears a superimposed spine at its base; 4 radiating spines on preorbital; a spine on anterior rim of orbit; suborbital with a conspicuous notch below the pupil, the notch preceded by 4 sharp recurved spines and followed by a strongly serrated ridge of 11 or 12 recurved spines; snout and supraorbital, postorbital, and occipital ridges spiniferous; scales rather large, thin, ciliated; tubes of lateral line broad; 3 spines at anterior end of lateral line; nostrils with a dermal tentacle; a short tentacle on cornea posterior to pupil; origin of spinous dorsal over base of ventrals, longest spine (third) 0.5 head; longest rays of soft dorsal about length of second dorsal spine, base of soft dorsal shorter than that of anal; longest anal rays less

than 0.33 head; caudal fan-shaped; least depth of caudal peduncle 0.66 diameter of eye. Color in alcohol yellowish brown above, with faint indications of several dark bars, the edges of scales dark; lighter below; all fins except anal with rows of dusky spots on rays or membranes, or on both.

Described from a specimen 115 mm. long collected at Urado, May 10, 1903, by H. M. Smith.

Type.—Cat. No. 55611, U.S.N.M. A second specimen from same locality is exactly similar.

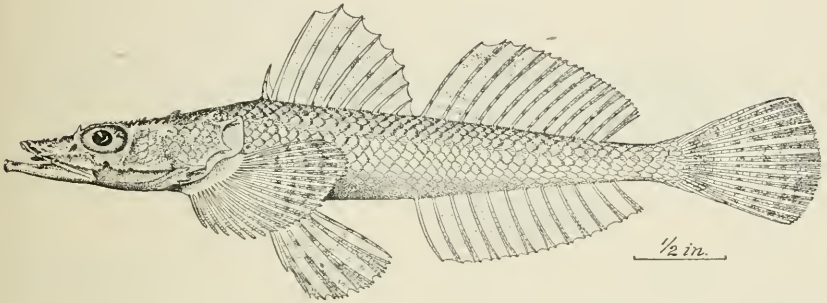


FIG. 8.—INSIDIATOR HOSOKAWAE. (From the type.)

This species is readily distinguished from *I. spinosus* and *macrolepis*, the most closely related species, by the deep notch on the strongly serrated suborbital ridge, and by the more depressed and elongate head.

Named for Mr. Y. Hosokawa, president of the Fishermen's Association of Kochi prefecture.

131. INSIDIATOR MACROLEPIS (Bleeker).

Kagoshima and Yamagawa, June 12, 13, and 16, five specimens, 67 to 118 mm. long. Ventrals extend beyond origin of anal and show 3 distinct zones of color—white at base and tip, a broad black band between; pectorals with upper rays black-spotted, lower nearly uniform black.

Family OPLICHTHYIDÆ.

132. OPLICHTHYS LANGSDORFI Cuvier and Valenciennes.

YASURI (Urado).

Urado, May 10, one specimen, 140 mm. long; Kagoshima, June 13, one specimen, 98 mm. long.

Family BEMBRADIDÆ.

133. BEMBRAS JAPONICUS Cuvier and Valenciennes.
OKIGOCHI.

Susaki, May 8, one specimen, 113 mm. long; Urado, May 10, one specimen, 117 mm. long; Kochi, May 11, two specimens, 92 and 220 mm. long.

Family LIPARIDIDÆ.

SEA-SNAILS.

134. LIPARIS AGASSIZII Putnam.

Matsushima Bay, three specimens, 40 to 225 mm. long; from Fishery Experiment Station, Shiogama.

Family TRIGLIDÆ.

GURNARDS.

135. LEPIDOTRIGLA ALATA (Houttuyn.)

Near Yamagawa. June 16, numerous specimens from 70 to 90 mm. long. Two specimens exhibit variation in the length and shape of the preorbital processes.

136. LEPIDOTRIGLA GUNTHERI Hilgendorf.

Urado, May 11, three specimens, 130 to 140 mm. long; from a depth of 350 feet.

137. LEPIDOTRIGLA MICROPTERA Günther.

Kochi, May 7, one specimen, 138 mm. long; Susaki, May 8, one specimen, 34 mm. long.

Family PERISTEDIIDÆ.

DEEP-WATER GURNARDS.

138. PERISTEDION RIEFFELI Kaup.

Urado, May 10, one specimen, 230 mm. long; Uchinoura Bay, east of Kagoshima Bay, one specimen, 325 mm. long. In May, 1901, there were taken on a long line in Uchinoura Bay at a depth of 120 fathoms two specimens of this fish, which were the only ones ever seen in that region; these dried specimens were found in the Commercial Museum at Kagoshima; one of them is mentioned above, the other, of the same size, is still in the museum. This species has not heretofore been recorded from Japan. It is easily distinguishable from *P. orientale* by the converging preorbital processes, the single spine on upper surface of snout, the presence of spines above eye and on occiput, the spottiness of the upper parts and of the dorsals, and the presence of two additional series of plates at base of caudal fin.

Family GOBIIDÆ.

GOBIES.

139. ELEOTRIODES HELSDINGENII Bleeker.

Urado, May 7, one specimen, 120 mm. long without the caudal filaments. This species, which was described by Bleeker in 1858 from a single specimen, 120 mm. long without caudal filaments, from the Sea of Goram, does not appear to have been met with since. The Japa-

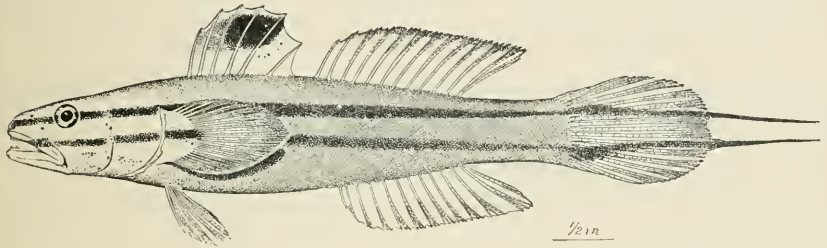


FIG. 9.—ELEOTRIODES HELSDINGENII.

nese specimen, of which a figure is here given, agrees perfectly with Bleeker's original description,^a an abridgment of which is as follows:

Dorsal vi-1, 11 or 12; anal 1, 11. Body elongated, compressed, depth one-seventh of the total length (with caudal filament); body covered with minute etenoid scales, about 130 in lateral series; head naked, depressed anteriorly, the interorbital space less, the length of the snout more, than the diameter of the eye; the maxillary extends to below middle of orbit; the two caudal rays which are nearest to the three middle ones are produced into long filaments; color above greenish rose with two brown bands from tip of snout to the caudal filaments; spinous dorsal with a broad dark violet spot on its upper portion surrounded by white border; soft dorsal with a brownish margin; ventrals, anal, and pectorals plain or yellowish; caudal with its filaments of same color as body stripes.

140. CTENOGOBIUS SIMILIS (Gill).

Setagawa, Lake Biwa. April 22, eight specimens, 45 to 58 mm. long.

141. CTENOGOBIUS HADROPTERUS Jordan and Snyder.
SHIMAHAZE.

Kochi, May 7, one specimen, 60 mm. long.

142. CTENOGOBIUS PFLAUMI (Bleeker).
YESO.

Yamagawa and Kagoshima, June 14 and 16, numerous specimens from 57 to 80 mm. long. The row of black spots along sides is quite distinct; throat and branchiostegal membrane with a dark streak; ventrals dusky; eye 0.25 head or less.

^aNatuurk. Tijd. Nederl. Indie, XV, 1858, p. 168.

143. *GLOSSOGOBIUS BRUNNEUS* (Temminck and Schlegel).
GOMO.

Sendaigawa at Sendai, June 10, one specimen, 165 mm. long.

144. *CHÆNOGOBIUS MACROGNATHOS* (Bleeker).

Kochi, May 11, one specimen, 93 mm. long.

145. *CHASMIAS MISAKIUS* Jordan and Snyder.

Kochi, May 11, one specimen, 75 mm. long.

146. *ACANTHOGOBIUS FLAVIMANUS* (Temminck and Schlegel).

Matsushima Bay, one specimen, 98 mm. long; from Fishery Experiment Station, Shiogama.

147. *SAGAMIA RUSSULA* Jordan and Snyder.

Kagoshima and Yamagawa, June 13-16, numerous specimens, 51 to 70 mm. long.

148. *CHÆTURICHTHYS HEXANEMUS* (Bleeker).

Matsushima Bay, one specimen, 125 mm. long; from Fishery Experiment Station, Shiogama.

149. *CHÆTURICHTHYS SCIISTIUS* Jordan and Snyder.
SASAGAREI; GOMO.

Kagoshima, June 12 and 16, four specimens, 68 to 75 mm. long. The specimens were obtained in the market, and the market master stated that two of them came from a depth of 80 fathoms.

150. *TRIDENTIGER OBSCURUS* (Temminck and Schlegel)
CHICHIBU.

Kochi, May 7, one specimen, 59 mm. long.

151. *TRIDENTIGER BIFASCIATUS* Steindachner.

Matsushima Bay, one specimen, 78 mm. long; from Fishery Experiment Station, Shiogama.

152. *PERIOPHTHALMUS CANTONENSIS* (Osbeck).
TOBIHAZE (JUMPING GOBY).

Onomichi (Inland Sea), June 2, two specimens, 45 and 80 mm. long; mouth of Iwata River, Bay of Ise, Tsu, two specimens, 67 and 74 mm. long, from Hamashima Fishery Station. This species was found to be very abundant in brackish tidal ditches near Onomichi. It is very difficult to catch even with dip nets. It skims over the surface touching only its tail, swims with just its head out, swims under water, jumps out on the bank, perches on stones, buries itself in the mud, hides in crab holes, and behaves in other peculiar ways.

Specimens taken June 2: Head and back olive green; sides bluish with small golden spots and black specks; the body color projected downward in twenty or more teeth-like processes with pale yellow between; abdomen bluish white; ventrals pale yellow; ten or twelve irregular blackish spots on back and sides; cheeks minutely specked with green, blue, and golden; first dorsal with pale-yellow margin; second dorsal dirty yellow, with blackish markings. The smaller examples have a light-colored body with irregular dark-brown blotches; the larger ones become darker and more uniform, but still show dark bars.

Family CARISTIIDÆ.^a

153. CARISTIUS JAPONICUS Gill and Smith.

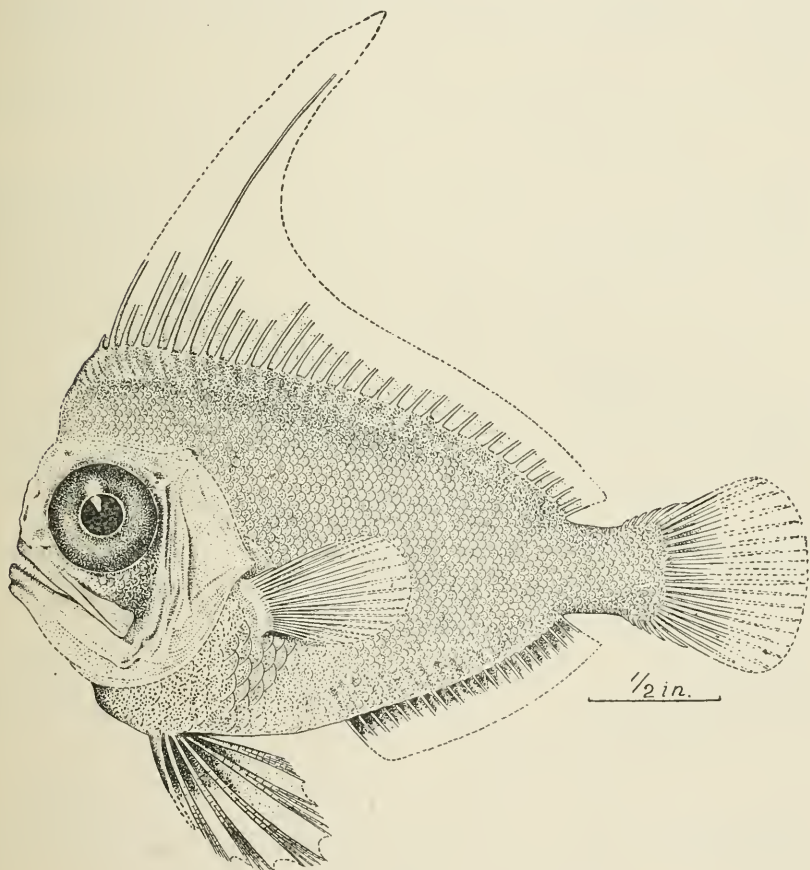


FIG. 10.—CARISTIUS JAPONICUS. (From the type.)

Kagoshima, June 12, one specimen, 75 mm. long. Body much compressed, cuneiform, covered with small, deciduous cycloid scales which

^a A new family of jugular acanthopterygians. By Theodore Gill and Hugh M. Smith. Proc. Biol. Soc. Wash., XVIII, December 9, 1905, pp. 249-250. *Caristius japonicus* described as a new genus and species.

are enlarged in the pectoral region; depth at ventrals about 1.66 length; head about 0.33 length; mouth large, oblique, the cleft extending under posterior third of eye; teeth in jaws slender, acute, and in several rows; eye very large, its diameter nearly 0.5 head; branchial opening large; no lateral line; dorsal fin single, elongate, the rays about 34, anterior rays high and crowded forward over eyes; anal rays 21; pectorals 19; ventrals nearly as long as head, inserted anterior to pectorals, the rays 1, 5; a median groove or sheath between ventrals and anal; vertebrae about 40, the vertebral column (as shown by skiagraph) singularly deflected downward near and to the occipital condyle.

A single specimen, in poor condition, was obtained in the market at Kagoshima among a miscellaneous lot of small fishes from Kagoshima Bay.

Family LEPTOSCOPIDÆ.

154. BEMBROPS CAUDIMACULA Steindachner.

Kagoshima, June 13, three specimens, 110 to 130 mm. long. This species has heretofore been known only from the type specimen, 5.33 inches long, from Nagasaki. The three specimens before us agree perfectly with Steindachner's original description.

Family PTEROPSARIDÆ.

155. PARAPERCIS PULCHELLA (Temminck and Schlegel). GOMO.

Kagoshima, June 13, three specimens, 95 to 150 mm. long.

156. PARAPERCIS OMMATURA Jordan and Snyder.

Hamashima, April 4, 1902, one specimen, 105 mm. long; from a depth of 7 to 10 fathoms; from Hamashima Fishery Station.

157. NEOPERCIS SEXFASCIATA (Temminck and Schlegel).

Kagoshima, June 13, one specimen, 125 mm. long; Kochi, May 7, one specimen, 145 mm. long.

158. NEOPERCIS MULTIFASCIATA (Döderlein). DOROHAZE (MUD GOBY).

Hamashima, October 5, 1902, one specimen, 135 mm. long; from a depth of 5 to 10 fathoms; from Hamashima Fishery Station.

159. *NEOPERCIS AURANTICA* (Döderlein).
OKAHAZE.

Urado, May 10, one specimen, 135 mm. long, in poor condition. Depth, 5.5; head, 4.33; eye, 3; dorsal, iv-23; anal, 21. Color when fresh: Body bright yellow, with brownish-yellow vertical bars and 5 horizontal lines of blue spots between bars; dorsal pale, with a series of yellow blotches along base; anal membranes and tips of rays yellow; caudal with 4 purplish crossbars.

Family *CALLIONYMIDÆ*.

DRAGONETS.

160. *CALLIURICHTHYS JAPONICUS* (Houttuyn).

Urado, May 10, one specimen, 200 mm. long; Yamagawa, two specimens, 270 and 370 mm. long. Abundant off Kochi; many caught by fishermen of Kochi and Urado at a depth of 350 feet; extensively eaten.

161. *CALLIURICHTHYS DORYSSUS* Jordan and Fowler.

Kochi, May 7, one specimen, 110 mm. long.

162. *CALLIONYMUS LUNATUS* Temminck and Schlegel.

Yamagawa, June 14, one specimen, 87 mm. long.

163. *CALLIONYMUS VALENCIENNESI* Temminck and Schlegel.
MOTOKUSARI (Kochi).

Kochi, May 7, one specimen, 190 mm. long; Yamagawa, June 14, one specimen, 130 mm. long; Kagoshima, June 13, two specimens, 97 and 120 mm. long.

Family *URANOSCOPIDÆ*.

STAR-GAZERS.

164. *URANOSCOPIUS JAPONICUS* Houttuyn.
MISHIMABU.

Susaki, May 8, one specimen, 108 mm. long; Urado, May 10, one specimen, 143 mm. long.

165. *URANOSCOPIUS BICINCTUS* Temminck and Schlegel.

Kagoshima, June 12, one specimen, 220 mm. long.

Family *BLENNIIDÆ*.

BLENNIES.

166. *AZUMA EMMNION* Jordan and Snyder.

Matsushima Bay, one specimen, 290 mm. long; from Fishery Experiment Station, Shioyama.

167. ERNOGRAMMUS HEXAGRAMMUS (Temminck and Schlegel).

Matsushima Bay, one specimen, 123 mm. long; from Fishery Experiment Station, Shiogama.

168. DICTYOSOMA BÜRGERI Van der Hoeven.
KAMISORI (RAZOR-FISH).

Hamashima, May 18, 1902, three specimens, 110 to 187 mm. long, from a depth of 2 to 3 fathoms; from Hamashina Fishery Station.

Family AMMODYTIDÆ.

169. EMBOLICHTHYS MITSUKURII (Jordan and Evermann).
OKIAYU.

Kochi, May 7, one specimen, 175 mm. long. Body brownish mottled; opercular region purplish. The tip of the lower jaw projects more strongly than in Jordan and Evermann's figure. Not previously reported from Japan. Rare at Kochi.

Family GADIDÆ.
CODS.

170. LOTELLA PHYCIS (Temminck and Schlegel).

Matsushima Bay, one specimen, 220 mm. long; from Fishery Experiment Station, Shiogama.

171. PHYSICULUS JAPONICUS Hilgendorf.

Kagoshima, June 13 and 16, two specimens, 180 and 197 mm. long.

Family MACROURIDÆ.
GRENADIERS.

172. CÆLORHYNCHUS JORDANI Smith and Pope, new species.

Head 4.5; depth 6.5 in length of body, 1.4 in length of head; snout 2.8 in head; eye equals snout; interorbital 4.5; scales in lateral line about 100; series of scales between dorsal spine and origin of anal 20; dorsal 11, 9-90; anal 90; ventrals 7; pectorals 17.

Snout short, obtuse, moderately depressed, transversely convex, its greatest width opposite front of orbit about equal to longitudinal diameter of eye, its extremity not sharply pointed; antero-lateral portions of snout with naked translucent areas; vertical diameter of orbit contained 1.4 times in longitudinal diameter; posterior nostril vertically elongate but not crescentic, anterior about 0.5 its length; ridges of head distinct; snout with a median dorsal ridge extending from its extremity to a vertical drawn through anterior margin of eye; a low curved ridge anterior to nostrils which, passing upward and posteriorly, joins an orbital ridge at its bifurcation at upper rim of eye, the upper

branch running along top of head and occiput, the lower along upper orbital rim and posteriorly to edge of opercle; mouth U-shaped, the upper lip about opposite a vertical through edge of orbit, the angle of the mouth extending to or beyond pupil; barbel short, not as long as diameter of pupil; teeth villiform; preopercular angle produced backward, rounded, and serrated; gill-membranes forming a wide free fold across isthmus; lateral line following the dorsal contour; scales with 8 to 14 spiny ridges and rather large, 4 series between dorsal spine and lateral line; scales on the breast and ventral portions with but 8 or 9 rows of spines, the rows on body scales but slightly divergent and posteriorly becoming parallel; scales on opercles with 7 strongly divergent rows of spines; ventral surface of head and gill-membranes naked; first dorsal spine minute, the second long and smooth, its length equal

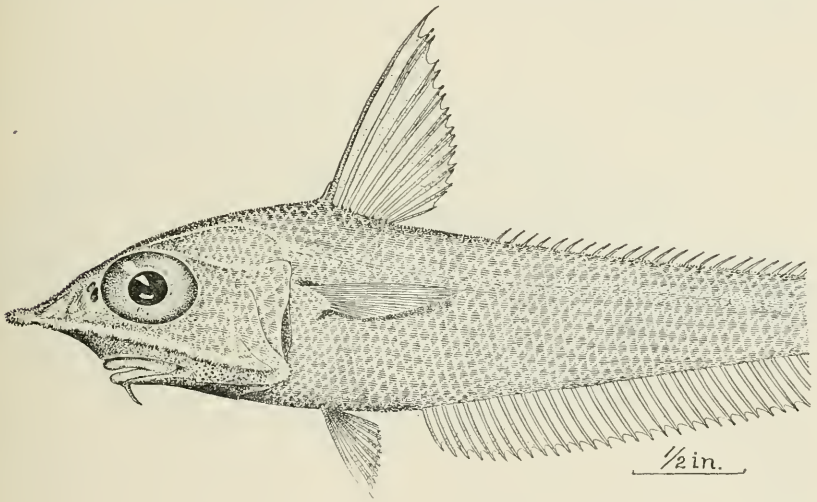


FIG. 11.—*CAELORHYNCHUS JORDANI*. (From the type.)

to distance from origin of fin to anterior margin of eye; dorsal rays successively shorter; pectoral pointed, nearly 0.5 length of head; ventrals, excluding filamentous first ray, just reach to anal. Color in alcohol light greenish; breast, branchiostegal membranes and throat finely dotted with black and purple; gill-cavity purple, mouth and nostrils colorless.

In general appearance this species approaches *C. kishinouyei* Jordan and Snyder,^a but may be distinguished from that form by the longer snout, by the smaller number of spinigerous ridges on the scales, and by other sharply defined characters given above.

Described from a specimen 170 mm. long, collected at Kagoshima, June 16, by H. M. Smith.

^a Proc. U. S. Nat. Mus., XXIII, 1901, p. 376, pl. xx.

Type.—Cat. No. 55609, U.S.N.M. Three other specimens were obtained from the same locality June 12; these measured 130, 135, and 140 mm. in length, respectively. We take pleasure in naming this species for Dr. David Starr Jordan in recognition of his prolific studies of the Japanese fish fauna.

Family PLEURONECTIDÆ.

FLOUNDERS.

173. PSEUDORHOMBUS CINNAMOMEUS (Temminck and Schlegel).
KAREI.

Kochi, May 7, one specimen, 255 mm. long.

174. PSEUDORHOMBUS PENTOPHTHALMUS Günther.

Kochi, May 11, one specimen, 175 mm. long.

175. PLEURONICHTHYS CORNUTUS (Temminck and Schlegel).

Kagoshima and Yamagawa, June 12, 14, and 16, three specimens, 120, 128, and 195 mm. long.

LAMBDOPSETTA^a Smith and Pope, new genus (Pleuronectidæ).

Body sinistral, elongate, thin, the dorsal and ventral outlines similar; both sides of body and head covered with fine cycloid scales; lateral line with a small acute arch beginning over branchial slit; mouth small, straight, oblique; fine teeth on blind side of jaws; eyes close together, separated by a high, naked ridge; gill-rakers small, triangular and few; dorsal fin beginning over anterior margin of eye, the 2 anterior rays separated from other; pectoral fins present on both sides; ventrals large and close to anal; ventral of left side with 6 rays, inserted on median ridge, that of right side smaller but with 7 rays, inserted on underside of body.

This genus resembles *Arnoglossus*, but differs from it principally in the short rudimentary gill-rakers, the length of the maxillary, and fin characters. It differs from *Monolepis*, a nearly related genus, in the presence of 2 pectoral fins and of cycloid scales on both sides of body.

Type of genus.—*Lambdopsetta kitaharæ*.

176. LAMBDOPSETTA KITAHARÆ Smith and Pope, new species.

Head 5.75 in length; depth 2.87; eye in head 2.5; pectoral of eyed side 1.4 in head, of blind side 1.6; scales in lateral line 100; dorsal 103; anal 76.

Body very thin and elongated; anterior dorsal profile but slightly stronger than that of lower; caudal peduncle equals diameter of eye; head very short; eyes narrowly separated by a high naked ridge, the

^a *Lambdopsetta*, from the Λ -shaped bend in the lateral line.

lower one slightly in advance; interorbital ridge beginning as an elevated ridge at the middle of the anterior margin of the lower eye, continued backward and upward along lower margin of the upper eye to the anterior end of lateral line; nostrils short and tubular, close together in angle formed by the union of anterior margins of orbit; mouth small, straight, oblique; maxillary reaching a little past front of lower eye; a curved bony preopercular ridge; posterior end of mandible forming a salient angle; teeth very fine and sharp, on blind side of jaws; gill-rakers few, triangular, minute, and widely separated, 5 or 6 on lower limb of arch and rudimentary ones on upper; dorsal fin beginning opposite anterior margin of upper eye, the first two rays separated from the rest of the fin by a space equal to the diameter of these rays, the first 0.66 length of second; longest dorsal rays contained 1.33 times in head; pectoral of eyed side sharp-pointed, as long as longest dorsal rays and 0.33 longer than that of blind side; caudal

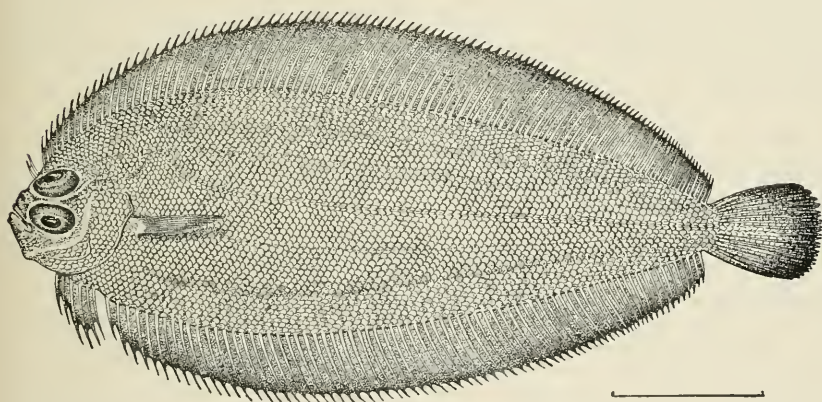


FIG. 12.—*LAMEDOPSETTA KITAHARE*. (From the type.)

broadly rounded, its median rays scaled; ventrals separate, the sinistral one of 6 long rays, upon the median ventral line, the dextral consisting of 7 rays, pushed upon blind side, its base but half length of that of its fellow; anal fin similar to the dorsal; lateral line well developed, with a short, strong, angular arch above pectoral and continuing to the base of the caudal and upon the middle rays of the fin; scales of lateral line smooth and with a deep emargination, the tube straight and extending nearly across the entire scale; scales of body smooth, cycloid, and very deciduous on both sides.

Color in alcohol greenish yellow, the blind side with a decidedly greenish hue; pectoral and ventral fins of blind side colorless, all other fins blackish.

A single specimen, 137 mm. long, from Kagoshima, collected June 16, 1903, by H. M. Smith.

Type.—Cat. No. 55612, U.S.N.M.

This species is named for Dr. T. Kitahara, zoologist of the Imperial Fisheries Bureau, in recognition of his studies of the Japanese flounders.

Family SOLEIDÆ.

SOLES.

177. *SOLEA HARTZFELDII* (Bleeker).

Kagoshima, June 16, one specimen, 125 mm. long.

178. *ASERRAGODES KOBENSIS* (Steindachner).
USHINGSHITA (Susaki).

Yamagawa, June 14 and 16, two specimens, 75 and 90 mm. long. No descriptions of this genus refer to the presence of tentacles on chin and snout and about the tubular nostrils on eyed side, which are conspicuous in these examples. A third specimen, 70 mm. long, from Susaki, May 8, differs from the foregoing in the entire absence of tentacles, in having somewhat fewer dorsal and anal rays, and in having the body marked with a few small scattered black spots inclined to form about 4 vertical lines of about 3 spots each.

179. *ZEBRIAS ZEBRINA* (Temminck and Schlegel).

Kagoshima, June 16, one specimen, 175 mm. long, from a depth of 80 fathoms. Abundant.

180. *ZEBRIAS SMITHII* Regan.

Kagoshima, June 12, one specimen, 115 mm. long.

181. *SCÆOPS GRANDISQUAMA* (Temminck and Schlegel).
BETAGARE (Susaki).

Susaki, May 8, one specimen, 82 mm. long; rare. Yamagawa, June 16, three specimens, 78 to 90 mm. long; shore.

182. *CYNOGLOSSUS QUADRILINEATUS* (Bleeker).

Kochi, May 11, one specimen, 200 mm. long; Urado, May 10, one specimen, 90 mm. long. These specimens agree very well with Bleeker's description and figure, having 2 lateral lines on each side and a black smudge on the opercle; depth, 4; head, 5; dorsal, 112; anal, 90; scales, about 100 to division of lateral line.

183. *CYNOGLOSSUS INTERRUPTUS* Günther.
USHINOSHITA (Kochi).

Kochi, May 7, one specimen, 110 mm. long; Kagoshima, June 12, one specimen, 92 mm. long.

184. *ARELISCUS JOYNERI* (Günther).

Kochi, May 11, one specimen, 180 mm. long.

Family LOPHIIDÆ.

ANGLERS.

185. LOPHIOMUS LITULON Jordan.

Kagoshima, June 16, one specimen, 170 mm. long.

Family ANTENNARIIDÆ.

FROGFISHES.

186. ANTENNARIUS TRIDENS (Temminck and Schlegel).

Susaki, May 8, two specimens, 27 and 29 mm. long; Yamagawa, June 16, three specimens, 40, 43, and 50 mm. long.

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