

**Notes on Some Japanese Fishes,  
with Descriptions of Fourteen New Species.**

By

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*With 4 plates.*

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In this paper I beg to give notes on the following fishes,  
all from the coasts of Japan :

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| 1. <i>Tetronarcine tokionis</i> , n. sp.          | 11. <i>Anampses nagayoi</i> , n. sp.               |
| 2. <i>Catulus torazame</i> , n. sp.               | 12. <i>Halichæres nafæ</i> , n. sp.                |
| 3. <i>Chimæra ogilbyi</i> WAITE.                  | 13. <i>Pachynathus nigromarginatus</i> ,<br>n. sp. |
| 4. <i>Chimæra spilota</i> , n. sp.                | 14. <i>Tetraodon alboreticulatus</i> , n. sp.      |
| 5. <i>Acipenser multiscutatus</i> , n. sp.        | 15. <i>Liparis owstoni</i> (JORDAN &<br>SNYDER).   |
| 6. <i>Gymnothorax wakanouræ</i> , n. sp.          | 16. <i>Owstonia totomiensis</i> , n. g. n.<br>sp.  |
| 7. <i>Gymnothorax gilberti</i> , n. sp.           | 17. <i>Xiphasia setifer</i> SWAINSON.              |
| 8. <i>Alepocephalus owstoni</i> , n. sp.          | 18. <i>Trachypterus misakiensis</i> , n. sp.       |
| 9. <i>Hyporhamphus japonicus</i> (BRE-<br>VOORT). |  |
| 10. <i>Anampses ikedai</i> , n. sp.               |  |

In all 18 species, including 1 new genus and 14 new species.

The material studied by me are contained partly in

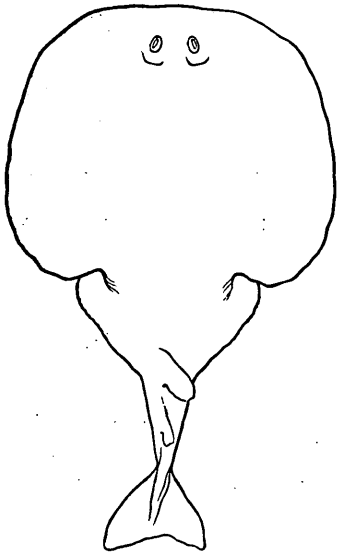
the Science College Museum and partly in Mr. ALAN OWSTON's collection (Yokohama). A few were taken from other sources.

All the measurements of the specimens in this paper are in centimetres.

I wish here to express my thanks to Dr. C. H. GILBERT, of the Leland Stanford University, to Professor K. MITSUKURI and to Professor I. IJIMA, to all of whom I am deeply indebted for many valuable help rendered me during my studies and in the preparation of the manuscript. In no less degree are my thanks due to Mr. ALAN OWSTON for the loan of his valuable specimens.

*Tetronarcine tokionis*, n. sp.

Disc roundish. Eye small. Spiracles oblong, at a distance less than their longitudinal diameter or less than twice eye length behind eye; margin of spiracle even, not fringed. Origin of first dorsal anterior to posterior end of ventral, but less than half the base of the dorsal opposite to the ventral; first dorsal more than twice the second in size. Ventrals separate. Free margin of caudal emarginate; its upper and lower lobes about equal to each other, or the former a little larger than the latter. A longitudinal fold of skin runs on the lower part of side of body from before origin of second dorsal to beyond base of caudal. Mouth small; its breadth slightly greater than its distance from tip of snout. Teeth on the jaws in several rows; each tooth with a sharp point. Anterior nasal valves confluent into a quadrangular lobe. Skin perfectly smooth.



*Tetronarcine tokionis*.  
About  $\frac{1}{15}$  natural size.

Color in formalin brown; no markings; whitish beneath, brown narrowly along the margins.

According to Dr. JORDAN and EVERMANN<sup>a)</sup>, *Tetronarcine occidentalis* occurs on the Atlantic coast of the United States, North America, from Cape Cod to Cuba, while *Tetronarcine californica* is found on the coast of California, on sandy shores, especially about San Francisco and Santa Cruz. The differences<sup>b)</sup> between these species are as follows:—

Color nearly uniformly black with obscure darker spots, first dorsal over the middle of ventrals, caudal slightly emarginate.....*occidentalis*.

Color very dark brown, usually spotted with black, first dorsal inserted behind middle of ventrals, half of the former opposite the latter, caudal truncate or very slightly rounded.....*californica*.

In *Tetronarcine tokionis*, less than half of base of first dorsal is opposite to ventrals, caudal emarginate, and back brown with no markings.

Dr. GUNTHER<sup>c)</sup> says that *Narcine timlei* occurs in Japan, but I have not as yet come across a specimen of it in this country, and I agree with JORDAN and FOWLER<sup>d)</sup> that there is no evidence that it had ever been taken in Japan.

a) JORDAN and EVERMANN, Fishes of North and Middle America, pt. 1, 1896, p. 77.

b) Op. cit. pt. 1, p. 77, pl. XI, fig. 33, pl. XII.

c) GUNTHER, British Museum, Catalogue, Fishes Vol. VIII, 1870, p. 452.

d) JORDAN and FOWLER, Proc. U. S. Nat. Mus., Vol. XXVI, p. 656, 1903.

The species described here is occasionally taken in the Sagami Bay. It is not rare, though not so common as *Astrape japonica*.

The type is a specimen 95 cm. in total length to caudal base. It was obtained in the Tokyo fish market on December 19<sup>th</sup>, 1905. It is preserved in the museum of the Zoological Institute, numbered 917.

MEASUREMENTS OF THE SPECIES.

Specimen.	A. (The type).	B.	C.
Locality .....	Tokyo fish market	Misaki, in Sagami	Odawara, in Sagami
Date .....	Dec. 19, 1905.	March 11, 1906.	March 12, 1904.
Sex .....	♀	♀	♀
Total length, exclusive of caudal .....	95.0	80.0	81.0
Axial distance from tip of snout to level of first gill opening .....	18.0	16.0	16.7
Distance from tip of snout to first gill opening .....	21.0	19.5	19.8
Axial distance from tip of snout to level of last gill opening .....	27.0	25.0	24.5
Distance from tip of snout to last gill opening .....	28.5	26.5	28.0
Snout .....	6.6	6.2	6.9
Eye .....	1.75	1.3	0.8
Distance between the eyes ...	7.3	6.2	5.8
Breadth of disc .....	62.0	64.0	58.5

Specimen.	A. (The type).	B.	C.
Axial distance from tip of snout to level of hind end of disc...	55.5	48.5	—
Longitudinal diameter of spiracle .....	3.0	2.7	2.0
Distance between spiracles...	6.7	5.2	—
Distance from spiracle to eye...	1.7	?1.6	1.2
Distance from first dorsal to tip of snout .....	69.0	59.0	62.0
Length of base of first dorsal...	6.3	5.8	5.5
Length of anterior margin of first dorsal .....	9.4	9.0	8.8
Length of posterior margin of first dorsal .....	4.7	3.2	2.6
Length of free margin of first dorsal .....	4.3	5.7	5.0
Distance from first dorsal to second dorsal .....	6.2	5.5	4.5
Length of base of second dorsal .....	3.5	3.8	3.2
Length of anterior margin of second dorsal .....	6.9	6.0	5.0
Length of posterior margin of second dorsal .....	3.7	2.6	2.2
Length of free margin of second dorsal .....	?1.6	3.0	2.2
Distance from second dorsal to origin of upper lobe of caudal .....	6.9	7.3	6.6
Length of upper lobe of caudal .....	18.6	14.7	15.8
Length of lower lobe of caudal .....	17.1	14.7	13.8

Specimen.	A. (The type).	B.	C.
Distance between both posterior ends of caudal lobes...	20.4	?19.0	?16.9
Length from origin of caudal to middle part of its free margin.....	13.5	12.8	12.5
Length from tip of snout to middle of upper lip .....	8.5	6.3	7.3
Length from nostril to tip of snout .....	5.5	5.2	5.3
Breadth of mouth .....	9.2	7.9	7.8
Distance from corner of mouth to first gill opening .....	10.0	9.5	8.3
Distance from vent to middle of mouth .....	53.0	44.0	46.0
Distance from vent to origin of lower lobe of caudal.....	26.5	24.0	24.0
Height of caudal peduncle ...	2.8	2.6	—
Width of caudal peduncle ...	3.1	3.0	—

*Catulus torazame*, n. sp.

(Pl. II., fig. 2.)

Head  $5\frac{5}{8}$  in total length to origin of lower lobe of caudal; height of body  $7\frac{1}{2}$  to  $7\frac{9}{10}$ ; length from anterior rim of eye to tip of snout  $2\frac{2}{3}$  in length of head measured from tip of snout to first gill opening; eye  $3\frac{3}{4}$  to  $4\frac{1}{2}$ ; interorbital 2; mouth width  $1\frac{1}{3}$ .

Body elongate, not compressed; caudal peduncle slightly compressed. Head small, depressed, but not so broad as long. Eye midway of length of head measured from tip of snout to first gill opening; no nictitating membrane. Interorbital broad,

almost flat. Snout moderate, depressed, the tip broadly rounded when viewed from above, rather blunt in profile. Cleft of mouth crescent-shaped; anterior tip of upper lip a little before eye; corner of mouth beneath posterior rim of eye. Teeth numerous, rather small, tricuspid, equal in size in both jaws. Labial groove runs for some distance on both lips starting from near the angle of mouth; that on lower lip is three-eighths length of eye; that on upper lip is one-third the length of that on the lower lip. Nostrils large, separate, nearer eye than tip of snout, not confluent with mouth; least internarial distance one half diameter of eye; anterior nasal valve large, occupying inner two-thirds of nostril; overlapped by it is another valve on the posterior border of nostril, about three-fourths the anterior one in the length of the longest axis. Spiracle moderate, at a distance almost equal to spiracle length behind eye. Gill openings rather small, the posterior ones a little less widely separated than the anterior; last two gill openings above pectoral. Vent a little nearer origin of lower lobe of caudal than tip of snout, but slightly nearer the latter than tip of caudal fin. Pectoral rather small, length of its outer margin a little more than half the interspace between pectoral and ventral, but its inner margin slightly less than one-third the interspace between pectoral and ventral, the posterior margin truncate. Dorsals rather small, similar in form; first dorsal much larger than second, its origin behind vent, its base nearer base of ventral than anal; origin of second dorsal before posterior end of base of anal, posterior end of its base behind the latter. Base of anal almost equal to that of first dorsal; size of anal somewhat smaller than the latter fin. Caudal not lunate; a small notch between lower portion of upper lobe and lower lobe; length of lower lobe two-thirds of the upper.

Skin very rough; densely covered with prickles, each of which has a long central cusp and a pair of short lateral cusps. Scales on the upper edge of tail behind second dorsal scarcely enlarged, not differentiated.

Color in formalin brownish or grayish, with some irregularly scattered, whitish, round spots, the diameter of each spot being about one-sixth or one-fifth diameter of eye; dark brown blotches with similar spots, somewhat cross-band-like and forming large-meshed reticulum by joining with one another. All the fins, except anal, are colored and marked in a way similar to above; the anal dusky or brownish, with very distinct markings. Under-surface pale.

The species differs remarkably from *Catulus bürgeri* (MÜLLER & HENLE) in having pale round spots instead of black ones.

The species is very common near Misaki, where it is known under the name "Torazame" or "Tiger shark" on account of its marking.

The type, a male 35.5 cm. long to caudal base, was taken at Misaki, Sagami, on March 13<sup>th</sup>, 1904. It is preserved in the museum of the Zoological Institute, Science College (Mus. No. 953).

MEASUREMENTS OF THE SPECIES.

Specimen.	A.	B. (The type).
Locality.....	Between Vries I. and Izu. Feb.	Misaki, Prov. Sagami. March
Date .....	6, 1905.	13, 1904.
Sex.....	♀	♂
Total length to origin of lower lobe of caudal...	35.0	35.5



Specimen.	A.	B. (The type).
Head measured from tip of snout to first gill opening .....	6.0	6.1
Height of body.....	4.4	4.75
Height of caudal peduncle.....	1.5	1.5
Width of caudal peduncle .....	1.1	1.05
Length from anterior rim of eye to tip of snout...	2.5	2.7
Axial distance from tip of snout to level of anterior rim of eye .....	2.15	2.4
Eye .....	1.3	1.6
Interorbital .....	2.9	3.0
Longitudinal diameter of spiracle.....	0.35	0.4
Distance between spiracles.....	3.5	3.5
Distance from eye to spiracle .....	0.2	0.4
Distance between first and last gill openings...	2.3	2.3
Width of first gill opening .....	0.7	0.8
Width of last gill opening .....	0.35	0.35
Width of body at origins of pectorals.....	5.3	5.35
Length of caudal from origin of lower lobe ...	9.9	9.4
Width of mouth .....	3.4	3.8
Shortest distance between nostrils.....	0.8	0.8
Length from tip of snout to vent.....	19.0	20.0
Length from anterior tip of lower jaw to vent...	17.0	17.5
Length from tip of snout to tip of upper jaw...	1.4	1.65
Distance between dorsals .....	4.3	5.0
Length from tip of snout to origin of first dorsal .....	22.0	23.0
Length from posterior end of base of second dorsal to tip of tail.....	12.0	12.45
Base of pectoral .....	2.7	2.5
External margin of pectoral .....	4.85	4.8
Inner margin of pectoral .....	2.1	2.9
Posterior margin of pectoral .....	3.6	3.7

Specimen.	A.	B. (The type).
Distance between origin of pectoral and that of ventral .....	9.7	10.35
Distance between origin of ventral and that of anal .....	8.5	9.1
Base of anal.....	2.9	3.3
Anterior margin of anal.....	2.6	3.1
Posterior margin of anal .....	1.0	1.1
Free margin of anal .....	1.9	2.1
Distance from posterior end of base of anal to origin of lower lobe of caudal .....	4.5	4.0
Base of first dorsal .....	2.9	2.8
Anterior margin of first dorsal.....	3.9	3.7
Posterior margin of first dorsal.....	1.3	1.15
Free margin of first dorsal .....	2.3	2.1
Base of second dorsal .....	2.0	2.0
Anterior margin of second dorsal.....	2.8	2.8
Posterior margin of second dorsal.....	1.1	1.1
Free margin of second dorsal .....	1.5	1.7
Distance from vent to tip of clasper .....	—	5.7

*Chimæra ogilbyi* WAITE.

*Chimæra ogilbyi* WAITE. Waite, Mem. Austral. Mus., IV., pt. 1, 1899, pp. 48-51, pl. VI. (Off Port Hacking, New South Wales, Australia).

In the winter of 1906, Mr. OWSTON secured two male specimens of the species; one of them came from the Suruga Bay and the other from Kagoshima in Kiushiu. Although the species very closely resembles *Chimæra phantasma*, it differs from this in having no anal notch and in having the dorsal spine

lower than the first ray of first dorsal. The species seems to be identical with *Chimæra ogilbyi* taken off Port Hacking, New South Wales, Australia, well agreeing with the description and the figure<sup>a)</sup> of it. I am pleased to have been able to examine two males of the species, since Mr. WAITE, the original describer, had access to female specimens only. I am under obligation to Mr. NAGAYO, Mr. ALAN OWSTON'S assistant, for the trouble of selecting the species for me from among numerous specimens of *Chimæra*. I will here describe the specimens in detail.

Head measured from tip of snout to gill opening contained  $4\frac{2}{3}$  in the total length excluding the parts from the end of second dorsal to the end of caudal filament. Greatest height of body in front of the posterior end of the base of first dorsal 6; snout  $2\frac{1}{2}$  in head; eye 3 to  $3\frac{1}{2}$ ; interorbital 4 to 5. Height of head behind eye almost equal to height of body. Eye large, elliptical, the diameter longer than the interorbital width. Front of eye midway in length of head; tip of snout rather acute. Spine of the first dorsal curved slightly backwards, shorter than the length of head and its tip lower than the tip of first ray of first dorsal, triangular in cross-section; its anterior surface smooth with a median keel; its posterior surface grooved; the distal half of its length with recurved spinules arranged in two rows; this spinous roughness same as in *Chimæra phantasma*; the spine when depressed reaches to the origin of second dorsal; length of the spine contained  $1\frac{1}{2}$  times in head. Anterior angle of the free margin of the soft part of first dorsal acute, the margin being almost straight. Soft portion of first dorsal and the membrane joining it to the second dorsal are contained in a deep groove. Height of the anterior ray of first dorsal exclusive of its fleshy

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<sup>a)</sup> Loc. cit.

base  $1\frac{1}{2}$  in head, inclusive of base  $1\frac{1}{2}$ . Second dorsal rises rather rapidly, reaching its greatest height behind tip of pectoral, when the height measured perpendicular to base is  $7\frac{1}{2}$  in head; its margin even, nearly straight, its posterior angle rounded where it makes a deep dorsal notch, but not cleft to base of fin.

Upper lobe of caudal slightly higher than the lower; both lobes very low and like *Chimæra phantasma* in height and form; height of the upper lobe measured perpendicular to its base 17 times in head; the lower lobe extends more posteriorly behind the upper lobe. No distinct anal fin, the fin on lower side of tail gradually diminishing in height anteriorly without a notch.

Caudal produced to a rayless filament; distance from dorsal notch to end of caudal filament (the end of filament is a little incomplete) about 2 in body exclusive of head and the parts behind dorsal notch; in this proportion agreeing with *Chimæra phantasma*.

Pectoral pointed and slightly falcate, with a deep notch at its lower insertion into the fleshy base, the lower angle of its posterior margin broadly rounded; its tip when depressed reaches to the middle part of the ventral fin. Insertion of the ventral fin midway between tip of head and dorsal notch, its posterior margin subtruncate, the external angle of the margin acute, but the inner angle of the margin rounded. Distance between origin of second dorsal and upper end of insertion of pectoral a little shorter than that between the latter and the insertion of ventral, but slightly longer than the distance between lower end of insertion of pectoral and the insertion of ventral.

Cephalic organ directed forwards and downwards, situated on snout in front of eye, its length 2 in eye, 7 in head; on its lower side about thirty-five recurved spinous denticles. Clasper

trifid, its distal parts covered with fine shagreen as usual, its length from the insertion  $1\frac{1}{2}$  in head; its division at a point one-third the length from insertion. Anterior ventral clasping organ armed with six or seven spinous denticles on the inner side.

Teeth confluent, seven rods on each anterior lamina of the upper jaw; margin of lamina sinuate.

Sensory canal system similar to that of *Chimæra phantasma*, In that system the jugular branch runs downwards from the suborbital branch below the posterior margin of eye. The lateral canal begins from the intersection of a canal from the nape with the suborbital canal, making a curve with the convexity facing downwards; the curve shows some undulations, behind it the lateral canal runs very conspicuously undulating as in *Chimæra phantasma*, the undulation growing more and more inconspicuous behind the insertion of the ventral, and finally running without undulation backwards from the parts vertical from caudal lobe; it takes its course nearer to back than to belly until just opposite the termination of dorsal fin, when it abruptly bends to the lower side, and is thus continued into and along the filament.

Color in formalin silvery, more or less dusky; some faint dark stripes run along upper part of body; free margins of dorsals blackish. Lateral line raised, brownish. Although the body shows a rather dusky coloration in the specimens preserved in formalin, yet it may be assumed that the body in fresh state shows a brilliant silvery color. Above the lateral line the body is entirely marked with narrow transverse broken lines of a brown color.

## MEASUREMENTS OF THE TWO MALE SPECIMENS.

Specimen.	A.	B.
Locality.....	Suruga Bay	Kagoshima
Date .....	Jan., 1906	March, 1906
Total length (exclusive of parts behind dorsal notch) .....	51.0	43.0
Length from dorsal notch to end of caudal ...	? 18.5	18.0
Length of head (measured from tip of snout to gill opening) .....	11.0	9.3
Height of head behind eye .....	8.3	7.3
Height of head in front of eye .....	8.0	6.5
Greatest height of body (in front of the posterior end of the base of first dorsal).....	8.5	7.2
Longitudinal diameter of eye .....	3.2	2.9
Diameter of pupil .....	1.3	1.3
Horizontal diameter of iris .....	0.9	0.9
Snout.....	4.8	4.0
Interorbital width .....	2.7	1.8
Length of dorsal spine .....	9.3	8.0
Height of anterior ray of first dorsal, exclusive of its fleshy base.....	8.1	7.3
Height of anterior ray of first dorsal, inclusive of its fleshy base.....	9.1	8.1
Height of fin ray in the highest part of second dorsal.....	1.8	1.8
Height of highest part of second dorsal, measured perpendicular to its base .....	1.4	1.3
Upper margin of pectoral, exclusive of its fleshy base .....	13.3	12.5
Upper margin of pectoral from its insertion...	15.6	13.8
Breadth of pectoral at insertion of base.....	4.2	3.1

Specimen.	A.	B.
Breadth of pectoral at a point of the hindmost part of its fleshy base .....	7.8	7.5
External margin of ventral, exclusive of its fleshy base .....	7.0	6.0
Breadth of ventral at insertion of base .....	2.5	1.6
Height of fin ray of upper lobe of caudal.....	1.1	1.3
Height of upper lobe of caudal, measured perpendicular to its base .....	0.6	0.6
Height of fin ray of lower lobe of caudal.....	?	1.4
Height of lower lobe of caudal measured perpendicular to its base .....	0.3	0.5
Length of cephalic organ .....	1.6	?
Length of clasper from its insertion .....	9.5	2.5
Length of clasper from its insertion to the point of division .....	3.9	1.3
Distance between external insertion of pectoral and that of ventral.....	13.0	11.0
Distance between insertion of dorsal spine and that of pectoral .....	7.1	6.5
Distance between external insertion of ventral and dorsal notch.....	27.0	22.5

*Chimaera spilota*, n. sp.

Two female specimens of *Chimaera* from off Miyako, Province of Rikuchiu and one male specimen from the Fishery School of Ishinomaki, Province of Rikuzen, show a very close resemblance to *Chimaera owstoni*, but differ from this in having no anal notch and in the color. The male specimen, on account of the rather bad state of preservation, is somewhat difficult to identify, but it seems highly probable that it belongs to one and the same species with the two female specimens.

The following is a detailed description of the species.

Head measured from tip of snout to gill opening contained  $4\frac{3}{4}$  in total length, excluding the parts from the end of second dorsal to the end of caudal filament; greatest height of body in front of the posterior end of the base of first dorsal 5 to 6; snout 2 in head; eye  $3\frac{1}{2}$ ; interorbital 5; height of head behind eye lower than the greatest height of body; front of eye almost midway in length of head; eye large, elliptical, its diameter longer than the interorbital width; snout rather pointed. Spine of first dorsal so damaged that it remains uncertain whether it exceeds tip of first ray of first dorsal or not; it is triangular in cross section; keeled in front, grooved behind, the lateral borders of the distal part beset with curved spines directed backwards and downwards, but the degree of the spinous roughness is uncertain on account of the rather bad state of preservation. Anterior angle of free margin of soft part of first dorsal acute, the margin being almost straight; the soft portion of the first dorsal and the membrane joining it to the second are contained in a deep groove as in all the species of *Chimaera* known in the waters of Japan; height of the anterior ray of first dorsal exclusive of its fleshy base  $1\frac{1}{2}$  to  $1\frac{5}{7}$  in head, inclusive of the base  $1\frac{1}{2}$  to  $1\frac{1}{2}$ . The second dorsal rises rapidly, reaching its greatest height behind tip of pectoral where the height measured perpendicular to base is  $4\frac{1}{7}$  to  $5\frac{3}{4}$  in head; free margin even, almost straight; posterior part of the margin rather lower, but again higher near dorsal notch; posterior angle rounded where it makes a deep dorsal notch, but is not cleft to base of fin.

Caudal produced to a rayless filament; distance from the dorsal notch to the end of caudal filament about 2 in body exclusive of head and the parts behind dorsal notch, agreeing in this



proportion with *Chimæra jordani*; upper lobe of caudal slightly lower than the lower lobe as in *Chimæra owstoni*; both lobes high as in *Chimæra mitsukurii* or *Chimæra owstoni*. Height of upper lobe measured perpendicular to base 10 to 11 times in head. Lower lobe extends more posteriorly behind upper lobe as usual; the lobe, gradually diminishing in height anteriorly, passes into the inconspicuous anal without a notch.

Pectoral pointed, not falcate, its posterior margin almost straight, its lower angle broadly rounded, its tip scarcely reaching to ventral (although the exact length of pectoral can not be determined owing to the defective state of preservation). Insertion of ventral fin midway between tip of head and dorsal notch, its posterior margin slightly rounded or rather truncated; external angle of the margin acute, but its inner angle rounded. In the median line behind the ventrals is a fatty organ, longitudinally grooved. Distance between origin of second dorsal and upper end of the insertion of pectoral a little shorter than the distance between the latter and the insertion of ventral, but almost equal to the distance between the lower end of the insertion of pectoral and the insertion of ventral.

There exists no difference in external features between the male and the female, except in the sexual characters. Cephalic organ directed downwards and forwards, situated on snout in front of eye, its length  $3\frac{2}{3}$  in head; on its lower surface about thirty-five recurved spinous denticles. Claspers trifid, its distal parts covered with fine shagreen as usual, its length from insertion  $1\frac{1}{2}$  in head, its division at a point halfway of the length. Anterior ventral clasping organ armed with four spinous denticles on the inner side.

Teeth confluent; four or five rods in each anterior lamina, sinuate, showing a columnar structure. Lateral rods behind the anterior lamina low, oblique, their tips directed towards the median part. Mandibular laminæ included within the upper laminæ; they have the margin incised by three deep clefts, one median and two lateral, leaving four rounded cusps, of which the submedian pair are smaller and more acute. The columnar structure of the mandibular laminæ is not so evident as in those of the upper jaw and is traceable only in the above-named cusps. A long low lamina containing visible white enamel rods runs backwards from behind each of the outer cusps. Peritoneum lining the body cavity unpigmented.

Below the eye the sensory canal system gives off two branches, the upper of which passes backwards toward the gill opening, the lower extending forwards below eye as in *Chimæra jordani*. From the intersection of a canal from the nape with the suborbital canal, the lateral canal begins with a curve, the convexity of which is turned downwards; it thence proceeds posteriorly in nearly a straight line, nearer back than belly, until a short distance behind or vertically below dorsal notch, where it makes an abrupt bend to the lower side of body and is thus continued into the filament.

Color in formalin blackish brown. Two rows of about nine white roundish spots, which are of about half the diameter of eye; first to fifth spots lie above the suborbital and the lateral canal; sixth to ninth spots beneath the suborbital and the lateral canal; the first spot in front of eye; the second behind eye; the third beneath dorsal spine; the fourth below first dorsal; the fifth below anterior part of second dorsal; the sixth vertically above tip of ventral and directly beneath the lateral canal; the seventh beneath the intersection of suborbital

and lateral canals; the eighth behind base of pectoral; the ninth above base of ventral near lateral line. Free margin of dorsals and of both lobes of caudal blackish; margin of ventral and pectoral also blackish. Numerous transverse broken lines above the lateral canal.

The type, a female taken off Miyako and 57 cm. long to the caudal notch, is preserved in the museum of the Zoological Institute, numbered 961.

## MEASUREMENTS OF THE SPECIES.

Specimen.	A.	B.	C.
Locality .....	off Miyako	off Miyako	?
Date.....	1903	1903	?
Sex .....	♀	♀	♂
Total length (exclusive of parts behind dorsal notch).....	60.5	57.0	50.5
Length from dorsal notch to end of caudal.....	22.0	25.5	19.0
Length of head (measured from tip of snout to gill opening)...	13.1	12.0	10.2
Height of head behind eye.....	10.7	8.5	7.0
Height of head in front of eye...	9.6	8.5	6.3
Greatest height of body (in front of posterior end of the base of first dorsal).....	12.1	8.6	? 6.3
Longitudinal diameter of eye...	3.5	3.5	? 4.5
Diameter of pupil.....	1.7	1.5	?
Horizontal diameter of iris .....	0.9	0.8	?
Snout .....	6.7	5.8	5.2
Interorbital.....	2.6	2.4	? 2.9
Dorsal spine .....	?	?	?

Specimen.	A.	B.	C.
Height of anterior ray of first dorsal, exclusive of its fleshy base .....	7.5	8.2	6.5
Height of anterior ray of first dorsal, inclusive of its fleshy base .....	8.7	9.5	7.0
Height of fin ray in the highest part of second dorsal .....	2.6	3.1	1.8
Height of the highest part of second dorsal measured perpendicular to the base .....	2.4	2.9	1.6
Upper margin of pectoral exclusive of its fleshy base.....	15.0	14.5	11.6
Upper margin of pectoral from its insertion .....	17.1	16.8	13.6
Breadth of pectoral at insertion of base .....	4.5	4.5	3.4
Breadth of pectoral at a point in the hindmost part of its fleshy base .....	9.0	8.3	6.7
External margin of ventral exclusive of its fleshy base.....	8.3	8.4	7.2
Breadth of ventral at insertion of base .....	3.0	3.4	2.9
Height of fin ray of upper lobe of caudal.....	1.7	2.2	2.3
Height of upper lobe of caudal measured perpendicular to its base .....	1.2	1.2	? 1.0
Height of fin ray of lower lobe of caudal.....	2.0	1.8	1.6
Height of lower lobe of caudal perpendicular to its base.....	1.5	1.4	1.1

Specimen.	A.	B.	C.
Length of cephalic organ.....	—	—	3.0
Length of clasper from its insertion .....	—	—	7.7
Length of clasper from its insertion to its point of division...	—	—	3.7
Distance between external insertion of pectoral and that of ventral .....	17.6	20.0	18.0
Distance between insertion of dorsal spine and that of pectoral .....	8.1	9.1	6.5
Distance between dorsal notch and external insertion of ventral.....	32.0	30.0	24.0

*Acipenser multiscutatus*, n. sp.

Pl. II., fig. 1.

Head  $4\frac{1}{2}$  in total length to base of caudal; height of body  $6\frac{5}{8}$ ; snout  $2\frac{1}{11}$  in head; eye  $17\frac{7}{9}$ ; interorbital  $11\frac{1}{8}$ ; height of highest ray of dorsal 4; length of longest ray of pectoral  $1\frac{1}{2}$ ; upper lobe of caudal  $1\frac{1}{8}$  times length of head; number of dorsal plates 15 to 16; of lateral plates 41 to 43; of ventral plates 12 to 16; of dorsal rays VII, 35; of anal rays VII, 28.

Head longitudinally concave above; its plates rugose, without sharp prickles; snout shortish, rather obtuse. Dorsal and lateral plates each with a median longitudinal ridge, without distinct spine. Dorsal plates large, rugose; a small plate lies near behind each of fourth to seventh dorsal plates. Lateral plates a little

apart from one another; anterior two plates each with a small plate in front. Four or five rugose plates behind dorsal fin; three rugose plates behind anal fin; two large rugose plates in front of anal. The skin between rows of plates soft and smooth. A large plate at scapular part; directly behind it a small plate. Cheek with fine stellate prickles. Skin covered rather sparsely with very small stellate prickles, no large prickles among these. First two-thirds of base of anal below posterior part of base of dorsal. Distance from posterior end of base of ventral to a point vertical through origin of dorsal, a little less than the distance from posterior end of base of dorsal to caudal base.

The species besides, being much larger in size than *Acipenser mikadoi*, differs from the latter in having a much greater number of dorsal and lateral plates, smaller and less prickles on the skin, and much smaller prickles on cheek. The species differs also from *Acipenser kikuchii* in having much shorter dorsal, a somewhat more prickly skin, much more numerous dorsal and lateral plates, and a slightly finer prickles on cheek.

The type of the species, 212 cm. long to caudal base, was captured seven miles off Ukedohama, Province of Iwaki, with the plaice gill-net on May 21<sup>st</sup>, 1905. It is now preserved in the stuffed state in the museum of the Zoological Institute. It is numbered 955. Two, more or less imperfect skin of the same species purchased of a fish-merchant in Tokyo, are contained in the Imperial Museum of Tokyo.

*MEASUREMENTS OF THE SPECIES.*

Total length to caudal base.....	212.0
Height of body .....	32.0
Head.....	48.0
Snout.....	16.5
Eye .....	2.7
Interorbital .....	19.0
Distance from posterior end of base of dorsal to caudal base...	13.5
Highest ray of dorsal.....	12.1
Highest ray of anal .....	24.0
Longest ray of ventral .....	17.4
Longest ray of pectoral.....	32.0
Upper lobe of caudal.....	54.0
Lower lobe of caudal.....	38.0

All the above measurements and description are taken from the mounted specimen in the Zoological Institute.

Measurements of the type, before it was mounted, were as follows :

Total length to caudal base.....	228.5
Head .....	57.0
Height of body .....	45.0
Snout .....	19.0
Eye .....	2.9
Barbel .....	6.0
Trunk (measured to vent).....	124.0
Distance from ventral to anal.....	24.0
Distance from anal to caudal .....	10.0
Distance from posterior end of base of dorsal to caudal.....	17.0
Upper lobe of caudal... ..	54.0
Lower lobe of caudal.....	37.0
Longest ray of anal .....	26.0
Longest ray of ventral .....	27.0
Longest ray of pectoral.....	32.0

*Gymnothorax wakanouræ*, n. sp.

Pl. II., fig. 4.

Snout 4 in head measured to gill opening; eye 8; interorbital  $5\frac{1}{2}$ ; length from tip of snout to corner of mouth  $1\frac{3}{4}$ .

Tail a little longer than head and trunk measured to vent. Nape elevated. Eye rather large, lateral, a little before the middle of the length from tip of snout to corner of mouth; posterior nostril roundish, not tubular, above antero-superior rim of eye; anterior nostril tubular, situated near tip of snout; corner of mouth a little behind the middle of head length measured to gill opening. The jaws not closing completely; teeth in upper jaw biserial, the outer series extending farther toward angle of mouth than the inner series, which consists of about 12 larger and depressible teeth; 3 rows of large fangs on vomer; the fangs altogether 7 in number, of which the median 3 are arranged antero-posteriorly in a line; teeth in lower jaw uniserial, about 13 on each side, those in symphyseal portion in a patch. Gill opening small.

Color in formalin: ground color brownish, with small white round or oblong spots smaller than interspace; the spots of the anterior part of body make numerous vermiculations of short length by joining together, the spots on the head smaller, those on the posterior part of body larger and not vermiculate; both lips and inner skin of lower jaw variegated as the rest of head; chin whitish. Breast and belly very finely vermiculate. Besides, some five longitudinal rows of blackish spots arranged somewhat irregularly overlie the above-mentioned marking on the body; those on upper side as large as eye; those on the lower much smaller; very few of the blackish spots, especially



those on the anterior part of body with a few white spots at the centre. Markings on dorsal like those on sides of body; the fin not white-margined. Anal also like the body in coloration, but whether its margin is white or not, can not be determined owing to the defective state of preservation.

The species resembles *Amasia lichenosa* JORDAN & SNYDER, but differs from it in the markings of body and in dentition, the teeth on lower jaw being uniserial instead of biserial.

The type is the only specimen known. It was obtained by Mr. K. NAKANISHIKI at Wakanoura, Province of Kii.

It bears the number 956 in the museum of the Zoological Institute.

MEASUREMENTS OF THE SPECIES.

Total length.....	41.0
Head (measured from tip of snout to gill opening).....	4.8
Height of body (behind gill opening) .....	3.5
Snout.....	1.2
Eye .....	0.6
Interorbital width .....	0.9
Distance from tip of snout to corner of mouth .....	2.9
Distance from posterior rim of eye to corner of mouth.....	1.35
Distance from tip of snout to vent.....	19.5

*Gymnothorax gilberti*, n. sp.

Pl. I., fig. 1.

Head  $7\frac{1}{2}$  in total length to posterior tip of body; height of body 10; snout  $4\frac{1}{2}$  in head; eye 10; interorbital  $6\frac{1}{2}$ ; maxillary  $1\frac{1}{2}$ .

Body compressed, moderate in height; tail a little longer than head and trunk to vent. Eye lateral, moderate in size,

midway of length from tip of snout to angle of mouth ; interorbital almost flat, snout moderate, the profile straight, the tip pointed ; anterior nostril tubular, much shorter than eye ; posterior nostril circular, above the antero-superior rim of eye. Mouth rather large, not closing completely, its angle midway of head length. Jaws almost equal ; teeth pointed backwards ; two large depressible fangs on vomer arranged antero-posteriorly ; in the type specimen a fang lies on the right side of the posterior fang of vomer but there is no corresponding one on the left side ; teeth on upper jaw biserial, the outer series extending farther towards angle of mouth than the inner series, which consists of about fifteen larger depressible teeth. Teeth on sides of lower jaw uniserial and smaller, those in symphyseal portion in a patch or band.

Color in formalin grayish, thickly covered with small brown spots which are roundish, elongate or curved in form and make numerous short lines by joining together ; the spots grow larger posteriorly and become equal to, or even a little larger, than interspace ; anteriorly they are smaller and become even a little smaller than interspace. Over the spots, besides, are scattered other larger and darker ones in the posterior part ; these spots posteriorly growing larger and becoming vermiculate or reticulate by confluence ; anteriorly reduced in size, and those on head and a small part following it rather indistinguishable from the first-mentioned spots. Vertical fins with same color and markings as body.

The species is allied to *Gymnothorax wakanouræ*, but differs remarkably from it in markings.

The type is the only specimen known. It came from the Bonin Islands, in May 1900, and is contained in Mr. Owston's collection.

I have dedicated the species to Prof. C. H. GILBERT in recognition of his numerous valuable works on ichthyology.

MEASUREMENTS OF THE SPECIES.

Total length.....	58.0
Length from tip of snout to vent .....	25.5
Head.....	7.5
Height of body .....	5.8
Snout.....	1.8
Eye .....	0.75
Interorbital .....	1.15
Maxillary.....	4.0

*Alepocephalus owstoni*, n. sp.

Pl. I., fig. 6.

Head  $3\frac{5}{8}$  in total length to caudal base; height of body  $4\frac{1}{4}$ ; snout  $3\frac{1}{2}$  in head; eye 4; interorbital  $6\frac{1}{7}$ . D. 18; A. 16; V. 8; P. 10; number of scales in a longitudinal series about 42; number of scales in a transverse series about 19; branchiostegals 7.

Body compressed; caudal peduncle likewise. Head higher than broad, rather large; eye rather large, lateral, high, nearer tip of snout than edge of opercle; interorbital almost flat; snout slightly concave in profile, pointed; broadly rounded when viewed from above. Mouth inferior, very near tip of snout; a row of teeth on both jaws very slender, villiform, deciduous; a row of similar teeth on palatines; none on vomer; tongue also toothless. Maxillary extending beyond anterior rim of eye, but not reaching

to below pupil. Gill rakers on first gill-arch 7+15, each raker long, lanceolate. Gills  $4\frac{1}{2}$ ; pseudobranchiæ developed; gill membranes not united, free from the isthmus. Pectoral rather small, its tip not reaching ventral; ventral small, outer end of its base midway between inner end of base of pectoral and origin of anal. Vent directly before origin of anal; origin of dorsal a short distance in front of that of anal; posterior end of base of dorsal also in front of that of anal; caudal deeply forked; both lobes of equal length.

Scales deciduous, rather large, a little elongate, the margin smooth; bases of fins with scaly sheath; head entirely naked. Lateral line runs straight a little nearer back than belly.

Color in formalin: Scales bluish gray with darker posterior edge; head and all the fins blackish.

Only a single specimen was ever obtained at Outside Okinose, Sagami sea, during October, 1906. It is contained in Mr. OWSTON'S collection.

MEASUREMENTS OF THE SPECIES.

Total length to caudal base .....	31.0
Head .....	8.6
Postorbital portion of head .....	3.8
Height of body .....	7.1
Height of caudal peduncle .....	2.7
Snout.....	2.7
Eye .....	2.2
Interorbital .....	1.4
Diameter of anterior nostril.....	0.4
Diameter of posterior nostril.....	0.7
Maxillary.....	3.8

Height of dorsal.....	3.7
Base of dorsal.....	4.3
Height of anal .....	3.9
Pectoral .....	4.1
Ventral.....	2.8
Either lobe of caudal.....	4.7
Distance from tip of snout to origin of dorsal.....	22.5
Distance from dorsal to caudal base .....	4.4
Distance from tip of snout to origin of ventral .....	16.2
Distance from upper end of base of pectoral to ventral.....	6.5
Length of gill raker on first gill arch .....	1.0

*Hyporhamphus japonicus* (BREVOORT).

*Hemirhamphus japonicus* BREVOORT, Perry's Exped. Jap., 1856, p. 280; Loo Choo, known from a figure only.

*Hyporhamphus japonicus* JORDAN and STARKS, Proc. U. S. Nat. Mus., Vol. XXVI, 1903, p. 535 (after Brevoort).

The species was described by BREVOORT, from a drawing; and as the species has not been seen since, JORDAN and STARKS<sup>a)</sup> in their "Review of the Synentognathous Fishes of Japan" say that the species is very doubtful and may not differ from *Hyporhamphus sajori*. Now I have had the good fortune of being able to examine a specimen of the species, which was taken on Hahajima, one of the Bonin Islands, and is contained in Mr. OWSTON'S collection. I believe the species should be held distinct from *Hyporhamphus sajori*. I give below a description of the specimen.

Tip of lower jaw to edge of opercle  $2\frac{3}{4}$  in length from the former to centre of margin of caudal; tip of upper jaw to edge

<sup>a)</sup> Loc. cit.

of opercle a little less than one half of length from tip of lower jaw to edge of opercle or  $4\frac{8}{10}$  in total length from tip of upper jaw to caudal base ; length from origin of dorsal to caudal base  $4\frac{1}{2}$  in the total length.

Body rather elongate, a little compressed ; caudal peduncle compressed. Head gently curved in profile ; eye large, lateral, high up, nearer tip of upper jaw than edge of opercle ; interorbital broad, gently convex ; beak of lower jaw long, stout ; teeth on both jaws minute ; no teeth on vomer and palatines. Pectoral long, pointed, its tip midway between its insertion and origin of ventral ; origin of ventral nearer that of anal than tip of pectoral, its free margin emarginate, its inner rays longer than the outer. Origin of anal a little nearer caudal base than origin of ventral, and beneath middle of dorsal base ; posterior end of base of anal very slightly behind that of dorsal. Second ray of dorsal longest, shorter than height of body, last ray quite short ; the margin of the fin emarginate. Second ray of anal long, last ray short ; the margin of the fin almost straight. Caudal deep, forked ; lower lobe longest and broadest, both pointed.

Scales cycloid ; no lateral line.

Color in formalin bluish, dark on back, lighter below ; beak of lower jaw dark ; dorsal and caudal dusky ; pectoral and ventral a little lighter ; anal whitish.

*MEASUREMENTS OF THE SPECIES.*

Locality .....	Hahajima
Date .....	Jan., 1905
Total length (measured from tip of upper jaw to caudal base)...	26.0
Head (measured from tip of upper jaw to gill opening).....	5.3
Height of body .....	3.6

Snout (measured from tip of upper jaw to anterior rim of eye)...	2.0
Eye .....	1.65
Interorbital .....	1.7
Length from corner of mouth to tip of lower jaw .....	7.6
Length from edge of opercle to tip of lower jaw.....	12.8
Maxillary.....	1.5
Length from origin of dorsal to caudal base.....	5.5
Length from edge of opercle to centre of caudal margin ...	21.0
Length from origin of ventral to centre of caudal margin...	10.4
Length from origin of ventral to caudal base .....	8.4
Length from origin of anal to centre of caudal margin.....	6.1
Length from origin of anal to caudal base .....	4.15
Length from origin of ventral to origin of anal.....	4.25
Length from edge of opercle to origin of ventral .....	10.1
Height of caudal peduncle .....	1.6
Width of caudal peduncle.....	1.0
Upper lobe of caudal.....	4.5
Lower lobe of caudal.....	? 5.8
Base of dorsal .....	3.4
Anterior ray of dorsal .....	2.7
Base of anal.....	2.0
Anterior ray of anal .....	1.8
Base of pectoral .....	1.0
Upper ray of pectoral .....	5.2
Base of ventral .....	0.7
Outer ray of ventral .....	2.3
Inner ray of ventral .....	2.55
Number of dorsal rays .....	14
Number of anal rays.....	12
Number of ventral rays .....	6
Number of pectoral rays .....	11
Number of scales in a longitudinal series to caudal base ..	54
Number of scales from origin of dorsal to insertion of ventral (counted downwards and forwards).....	6½

*Anampses ikedai*, n. sp.

Pl. I., fig. 2.

Head  $3\frac{1}{2}$  in total length to base of caudal; height of body  $3\frac{1}{2}$ ; snout  $3\frac{1}{2}$  in head; eye 6; interorbital  $3\frac{1}{2}$ . D. IX, 12; A. III, 12; P. 12; V. I, 5; pores in lateral line about 28; scales between lateral line and back, counted downwards and forwards, 3; between lateral line and belly, counted as before, 10.

Body oblong, compressed; caudal peduncle rather high, compressed; dorsal and ventral outlines about equally convex. Head moderate; eye lateral, high, moderate in size; its anterior rim a little before middle of length of head; interorbital strongly convex; snout short, the profile moderately curved, conical. Mouth small; jaws equal; two anterior canines in each jaw prominent, turned forward, compressed, with cutting edge; no posterior canine. Preopercle entire in margin; opercular flap moderate. Ventral fin beneath posterior end of base of pectoral, its free margin truncate or slightly emarginate; the first ray longest, its tip not reaching vent. Dorsal originating opposite tip of opercular flap. Height of dorsal and anal moderate, last rays of both fins on the same vertical; when depressed the tips hardly reaching caudal base. Pectoral moderate, the first ray longest, its tip being on the same vertical with tip of ventral, the free margin broadly rounded. Caudal moderate, its posterior margin very broadly rounded when opened, very slightly emarginate when closed; both lobes about equal. Scales cycloid, moderate in size; lateral line complete, abruptly bent beneath soft dorsal; head entirely naked. Scales on nape and breast much reduced in size; no scaly sheath both on dorsal and anal, but caudal with scattered scales for about the basal third of its length.



Color in formalin dark brown; each scale with bluish white spot, the spot very clear-cut and regularly round in form. Spots on throat and lower part of head dumbbell-shaped by confluence; those on upper parts of head much smaller, but distinct. Dorsal and anal similar with body in color and markings; on each fin, the spots form about 3 longitudinal rows, the basal spots being round or somewhat elongate in form, while those in the distal parts of fins are much smaller, but distinct; both fins bluish near margin, the very margin being narrowly black; the bluish band of anal slightly broader than that of dorsal; a large black ocellated spot on the last three rays of dorsal. Pectoral somewhat dusky without marking; its base dark brown like the ground color of body, but without markings; ventral with brown ground color and bluish spots, the distal part and margin of the fin bluish. Caudal and its scaly sheath reddish yellow, without markings. Lips of mouth reddish and blotched with dusky.

The species is allied to *Anampses caeruleopunctatus* of the Red Sea and the Indian Ocean, but differs from it in the head having spots instead of vertical lines. The species also differs from *Anampses cuvieri* of the Hawaiian Islands in the dorsal having spots instead of wavy lines. Moreover, it differs from both the species mentioned in having an ocellated spot near the posterior margin of dorsal.

The type is the only specimen known. It was obtained at Kagoshima, Province of Satsuma, in 1903. It is preserved in the museum of the Zoological Institute, numbered 964.

The species is named for Mr. S. Ikeda, of the Kagoshima High School, in whose collection I have found it.

## MEASUREMENTS OF THE SPECIES.

Total length to caudal base .....	10.0
Head .....	3.0
Height of body .....	2.9
Height of caudal peduncle .....	1.4
Snout .....	0.9
Eye .....	0.5
Interorbital .....	0.8
Pectoral ray (exclusive of its base).....	1.9
Ventral.....	1.7
Dorsal .....	1.25
Anal.....	1.25

*Anampses nagayoi*, n. sp.

Pl. I., fig. 3.

Head  $3\frac{1}{2}$  in total length to caudal base; height of body  $3\frac{1}{2}$ ; snout  $3\frac{1}{2}$  in head; eye 7; interorbital  $3\frac{1}{2}$ . D. IX, 12; A. III, 12; P. 12; V. I, 5; pores in lateral line 28; scales between lateral line and back counted downwards and forwards 3; between lateral line and belly counted as before 11.

Body oblong, compressed; caudal peduncle rather high, compressed; dorsal outline more convex than ventral outline. Head moderate; eye lateral, high, rather small, its posterior rim a little before middle of head length; interorbital strongly convex; snout short, the profile moderately curved, conical. Mouth small; jaws equal; two anterior canines in each jaw prominent, turned forwards, compressed, with cutting edge; no posterior canine. Preopercle entire in margin; opercular flap moderate; ventral beneath posterior end of base of pectoral, its

free margin truncate or slightly emarginate, its first ray longest, its tip beyond vent and scarcely reaching origin of anal. Dorsal originating a little in front of tip of opercular flap; height of dorsal and anal moderate, last rays of both fins on the same vertical; their tips scarcely reaching caudal base. Pectoral moderate, its free margin broadly rounded, the first ray longest, its tip not reaching tip of ventral. Caudal moderate, the posterior margin emarginate, tip of upper lobe extending a little posteriorly to that of lower lobe. Scales cycloid, moderate in size; lateral line complete, abruptly bent beneath soft dorsal; head entirely naked. Scales on nape and breast much reduced; no scaly sheath both on dorsal and anal; scaly sheath present, on caudal, occupying about basal one-third of the fin.

Color in formalin dark brown, each scale with bluish white spots; caudal scaly sheath similarly colored and with smaller spots. Spots on throat and lower part of head dumbbell-shaped by confluence; those on upper part of head much smaller and somewhat indistinct. Dorsal and anal similar with body in color and markings; the spots on their base large and elongate, those on other parts of the fins much smaller and indistinct, and arranged in two or three longitudinal rows; both fins bluish near margin, but the edge narrowly black; the bluish distal part of anal slightly broader than that of dorsal. Pectoral somewhat dusky, its uppermost ray darkest, with base dark brown like the body; without markings, though showing very small spots on one side; ventral brownish, its membrane bluish with bluish spots on proximal parts. Caudal dusky, without markings. Lips of mouth reddish and blotched with dusky.

The species is very closely allied to *Anampses ikedai*, but differs from it in having no ocellated spot on dorsal, in the dusky

caudal sheath and in the spots on body being somewhat irregular in outline and rather indistinct. It is not altogether impossible that the differences here pointed out are due only to difference of sex in one and the same species, but unless evidences are forthcoming in support of that view, the specific distinction might be maintained without impropriety.

The type is the only specimen known. It was obtained in Kagoshima, Province of Satsuma, in 1903 and is now contained in the museum of the Zoological Institute under Mus. No. 957. The species is named for Mr. K. NAGAYO, assistant to Mr. ALAN OWSTON of Yokohama.

MEASUREMENTS OF THE SPECIES.

Total length to caudal base .....	13.5
Head.....	4.2
Height of body .....	4.15
Height of caudal peduncle .....	2.0
Snout .....	1.2
Eye .....	0.6
Interorbital .....	1.2
Pectoral ray (exclusive of its base).....	2.3
Ventral.....	2.5
Dorsal .....	1.7
Anal .....	1.55

*Halichoeres nafæ*, n. sp.

Pl. II., fig. 3.

Head about 3 in total length to caudal base; height of body  $2\frac{5}{8}$ ; snout  $3\frac{5}{8}$  in head; eye  $4\frac{2}{3}$ ; interorbital  $4\frac{2}{3}$ . D. IX, 11; A. III, 11; P. I, 12 to 13; number of pores in lateral line 26

to 29; number of scales between back and lateral line counted downwards and backwards 3; same between lateral line and anal counted in the same way 9.

Body oblong, compressed; caudal peduncle rather high, compressed. Head moderate; eye lateral, high up; posterior rim of eye midway of head length to end of opercular flap; anterior two canines of each jaw large, curved, those of the lower jaw slightly smaller than those of the upper; a canine on the posterior part of upper jaw. Ventral beneath axil. Posterior margin of caudal seems to be gently rounded (though uncertain because of damage). Scales moderate; no scaly sheath on dorsal and anal, but basal part of caudal scaly; scales of breast slightly smaller than those of side of body; head naked, cheek also scaleless. Lateral line high, concurrent with back, not interrupted posteriorly, abruptly bent beneath anal rays.

Color in spirit grayish above, whitish beneath; a darker spot on each scale, forming oblique transverse lines. On the side of body there are five dark blotches located, as follows: a large blackish one on the side of body partly beneath and partly on the boundary between the posterior parts of the spinous dorsal and the anterior parts of the soft dorsal; a dark one on caudal peduncle; a blackish one on opercular flap; a black one in the part covered by opercular flap and another in the part covered by the basal part of pectoral fin. The last-mentioned two blotches are connected by a narrow line of similar color. Pectoral plain, its upper ray a little dusky; its base blotched with brownish on the inner surface and in the outer posterior half; the latter blotch continued a little downwards on the side of body. Behind eye a brownish blotch, from which two lines radiate backwards; the upper line extends to the upper part of opercle, while the lower line runs

beneath opercular flap and is nearly continuous with the blotch of pectoral base. Further, there are a line passing forwards from eye along suborbital part to tip of snout; two whitish lines on cheek fusing together on opercle; some brownish spots on interorbital space. Dorsal whitish, with somewhat oblique lines of brownish color running downwards and backwards in a somewhat rivulate manner over all parts of the fin; a small black spot between first and second spine of dorsal; a much smaller black spot on first spine of the same fin; a black white-edged ocellus between first and fourth rays of dorsal on the upper part of the rays; oblique brownish lines form by fusion a more or less regular circle around the white edge of ocellus. Caudal, anal and ventral whitish; outer ray of ventral somewhat dusky.

The type is the only specimen known. It was obtained in Nafa, Riukiu Islands, in August 1906, and is now in possession of Mr. J. HASHIMOTO.

*MEASUREMENTS OF THE SPECIES.*

Total length to caudal base .....	6.7
Height of body .....	2.4
Head (measured from tip of snout to end of opercular flap)...	2.3
Snout.....	0.6
Eye .....	0.5
Interorbital .....	0.5
First spine of dorsal .....	0.35
Last spine of dorsal .....	0.7
Third spine of anal .....	0.55
Longest ray of anal .....	0.9
Longest ray of pectoral.....	1.4
Spine of ventral.....	0.65
Outermost ray of ventral .....	1.2
Height of caudal peduncle .....	1.2

*Pachynathus nigromarginatus*, n. sp.

Pl. I., fig. 4.

Head 3 in total length to caudal base; height of body  $2\frac{1}{7}$ ; snout  $1\frac{2}{5}$  in head; eye 6; interorbital 3; first spine of first dorsal  $1\frac{1}{5}$ ; fifth ray of second dorsal 2; fourth ray of anal  $1\frac{9}{10}$ ; pectoral  $2\frac{1}{4}$ ; height of caudal peduncle  $3\frac{1}{2}$ ; width of caudal peduncle 5. D. III-26; A. 24; P. I, 14; number of scales having pore from gill opening to caudal base 29; same scales from gill opening to middle part of caudal 36; scales counted downwards and forwards in a transverse series from the origin of second dorsal to ventral spine 28.

Body rather oblong, compressed; caudal peduncle compressed. Head moderate, compressed, higher than long, a deep groove before eye beneath nostril; eye moderate, high up, slightly nearer the upper end of gill opening than origin of first dorsal; interorbital and nape elevated, the profile rather steep. Snout steep and gently curved downwards in profile, the length 2 lengths from the posterior rim of eye to origin of first dorsal;  $2\frac{2}{7}$  in length from the posterior rim of eye to the upper end of gill opening. Mouth terminal, low, small, broad, fleshy; teeth on jaws unequal, the median pair largest, inciser-like, other teeth more or less molar-like. Scales on body larger than in *Pachynathus conspicillum* or *Pachynathus capistratus*; cheek, chin as well as snout scaly, the scales being smaller than those of trunk; some still smaller scales with radiately elevated surface behind gill opening; scales of tail from the posterior part of second dorsal to the base of caudal with recurved, distinct spines in five rows, of which the uppermost row is less developed than the rest. Second dorsal and anal rather

high, with very broadly rounded outlines; the caudal double truncate, the angles scarcely produced; first spine of first dorsal strong, very rough, especially so above. Lateral line obsolete. Scales with radial rows of prickles. Color brown; both lips black; first dorsal blackish, second dorsal, anal and caudal whitish; free margin of these three fins black, the height of the black parts being slightly less than the diameter of orbit; the black border of second dorsal and anal somewhat narrower posteriorly. Base of the naked part of caudal narrowly black; first dorsal and pectoral dusky, free margin of the latter darker. The part around the mouth posteriorly to the lips very broadly whitish. Teeth white.

The species can be at once distinguished from other species by the black margin of second dorsal, anal and caudal.

The type is the only specimen known. It was obtained at Misaki in 1905. It is preserved in the museum of the Zoological Institute with the Mus. No. 958.

Mr. T. TSUCHIDA, late Assistant in the Misaki Marine Laboratory, who procured the specimen from a fisherman, informs me that the whitish parts of the second dorsal, anal and caudal, as well as the circumoral region, were decorated with a bright yellow color when the specimen was in life.

*MEASUREMENTS OF THE SPECIES.*

Total length to caudal base.....	36.0
Length of head (to upper end of gill opening) .....	12.0
Height of body .....	16.8
Height of caudal peduncle .....	3.2
Width of caudal peduncle.....	2.4



Length of caudal peduncle (measured from second dorsal to base of caudal.....)	3.2
Snout .....	8.5
Eye .....	2.0
Interorbital .....	4.0
Length of caudal (inclusive of its fleshy base).....	8.3
Length of naked part of caudal .....	5.4
Length of gill-opening .....	5.5
First spine of first dorsal .....	6.7
Second spine of first dorsal .....	3.0
Third spine of first dorsal .....	1.5
First ray of second dorsal .....	2.9
Fifth ray of second dorsal .....	6.0
Sixth ray of second dorsal .....	5.8
Last ray of second dorsal.....	2.2
Length of base of second dorsal .....	11.3
First ray of anal .....	3.2
Fourth ray of anal .....	6.2
Fifth ray of anal .....	6.0
Sixth ray of anal .....	6.1
Seventh ray of anal .....	5.9
Last ray of anal.....	2.1
Length of base of anal.....	10.1
Ray of pectoral .....	5.3
Distance from origin of dorsal to pectoral.....	10.8
Distance from origin of dorsal to tip of snout.....	13.9
Distance from the lower end of the base of pectoral to ventral spine .....	9.1
Distance from origin of ventral spine to origin of anal.....	5.5

All the measurements were taken from the mounted specimen in centimetres.

Notes taken before skinning run as follows:

Color in formalin: Body brown; lower parts of head and

circumoral parts pale; external margin of second dorsal, anal and pectoral, and external and posterior margins of caudal blackish. Caudal and lower parts of body rather pale; a broad blackish band across eye on head; iris of the same color as head with radiating narrow bands of a deeper color; both lips black.

Total length, exclusive of caudal.....	41.0 cm.
Head.....	12.0 „
Height of caudal peduncle.....	3.5 „
Width of caudal peduncle.....	1.8 „
Snout.....	10.0 „
Eye.....	2.0 „
Interorbital.....	4.3 „
Gill-slit.....	5.7 „
Caudal.....	5.6 „

*Tetraodon alboreticulatus*, n., sp.

Pl. I., fig. 5.

Head  $3\frac{2}{3}$  in total length to caudal base; height of body  $2\frac{1}{4}$ ; snout  $1\frac{6}{7}$  in head; eye  $8\frac{2}{3}$ ; interorbital 2. D. 11; A. 11; P. I, 17.

Body oblong, moderately compressed; caudal peduncle compressed. Head rather short; eye lateral, high up, a little nearer gill opening than tip of snout; interorbital broad, flat, slightly shorter than snout. Snout slightly convex and not very steep; nostrils midway between tip of snout and posterior rim of eye, with a bifid tentacle, without distinct opening. Mouth terminal, small; teeth scarcely pointed, with concave cutting edges, no conspicuous depression along suture, and no vertical ridge on either side. Length of gill opening equal to that of

base of pectoral, the inner flap exposed. Dorsal before origin of anal; both fins not falcate. Back and belly with strong prickles.

Body closely beset with numerous round, black spots, separated from one another merely by a network of gray ground-color, the spots being very distinct, not vermiculate by fusing together; under surface whitish, without spots. Spots on trunk not larger than diameter of pupil, growing larger posteriorly, those on caudal base being the largest; spots on head smaller, anteriorly somewhat still smaller, those near tip of snout being the smallest of all spots. Both lips brown, not spotted; the lower lip for some distance from mouth-angle deeply black. Dorsal and caudal with less closely set spots than body; free margin of dorsal dusky, the elevated fleshy base of dorsal with larger elliptical spots of black color. Pectoral dusky, sparsely spotted; the axil with black patch of a more or less crescent-like shape along the lower part of base of pectoral; spots around gill-opening larger. Anal dusky, sparsely spotted; a black, round spot very much larger than eye, around the vent.

The species is sharply distinguishable from all other species by the body being very closely spotted.

The type is the only specimen known. It was taken at Misaki in 1905, and is now preserved in the museum of the Zoological Institute (Mus. No. 959).

*MEASUREMENTS OF THE SPECIES TAKEN FROM  
THE MOUNTED SPECIMEN.*

Total length (to caudal base) .....	53.0 cm.
Length of head .....	15.5 "
Height of body .....	19.0 "

Height of caudal peduncle .....	6.5 cm.
Width of caudal peduncle.....	5.0 "
Eye .....	1.8 "
Interorbital .....	8.0 "
Snout .....	8.4 "
Height of dorsal.....	6.5 "
Height of anal .....	6.5 "
Length of pectoral ray.....	5.0 "

Notes on the specimen before it was skinned run as follows :

External margin of pectoral rounded ; posterior margin of caudal probably rounded.

Color in formalin: Upper parts of head and body with closely arranged blackish spots ; lower parts whitish. Side of head with a series of three spots larger than eye, the spots being faintly blackish ; on the lower lip at the corner of mouth a black spot ; lower part of pectoral base black ; a deep black spot larger than eye around vent ; caudal with black spots as on body ; only a very small space of the lower parts without spots. Iris with the same spots as those on body. Upper margin of the whitish parts of trunk and tail with a series of several grayish, more or less faintly appearing areas ; inner surface of pectoral base with several large spots ; external surface of same with one or two spots, or none ; upper side of pectoral with a few black spots ; dorsal dusky with spots ; anal also dusky, with a few spots.

Total length, exclusive of caudal .....	39.0 cm.
Height of body .....	17.5 "
Height of caudal peduncle .....	7.5 "
Width of caudal peduncle.....	3.5 "

Caudal .....	8.3 cm.
Snout .....	9.0 „
Eye .....	2.4 „
Interorbital .....	9.1 „

*Liparis owstoni* (JORDAN & SNYDER).

Pl. III., fig. 2.

*Trismegistus owstoni* JORDAN & SNYDER, Smithsonian Miscellaneous Collections, Vol. 45, 1904, p. 238, pl. LVIII., fig. 29; Enoshima, Sagami Bay.

*Liparis owstoni* SCHMIDT, Proc. U. S. Nat. Mus., Vol. XXVIII, 1904, p. 189; Nagasaki.

I have been fortunate to be able to examine in all twenty-five specimens of the species. One of these was purchased in the Tokyo fish-market, another came from Ushitsu in the Province of Noto, and all the rest were captured near Vries Island, Sagami Sea. Of the entire lot, eighteen have prickly skin and agree well with the original description given by JORDAN and SNYDER,<sup>a)</sup> but in all the rest the skin is entirely or partly naked. When the skin is partly naked, the naked part is either in the anterior or in the posterior parts. The specimen described by SCHMIDT<sup>b)</sup> was a ripe female filled with eggs and it had prickly skin. Now, one of specimens—that from Ushitsu—is likewise a female with ripe eggs, but has the skin entirely naked. It then seems clear that the prickly or non-prickly nature of the skin does not form a sexual character. I append below a table which will explain itself.

<sup>a)</sup> Loc. cit.

<sup>b)</sup> Loc. cit.

Locality.	Date.	Sex.	Total length (exclusive of caudal)	Condition of skin.
Vries I.	Spring, 1906.	?	37.5 cm.	Prickly.
Tokyo market.	Jan., 1906.	?	43.0 „	Prickly.
Vries I.	Dec., 1905.	?	31.0 „	Entirely naked.
Ushitsu.	Jan., 1905.	Mature ♀	35.5 „	Entirely naked.
Vries I.	?	?	28.5 „	Entirely naked.
Vries I.	?	?	34.5 „	Partly naked.
Vries I.	?	?	30.0 „	Partly naked.
Enoshima.*	?	?	44.0 „	Prickly.
Nagasaki.†	April, 1901.	Mature ♀	45.7 „	Prickly.

\*The specimen described by JORDAN and SNYDER.

†The specimen described by SCHMIDT.

D. 43 to 44; A. 33 to 36; P. 41 to 42; C. 10.

Color in formalin pale gray, marbled and streaked with dark gray and black; no definite maculation; an irregular streak of small blackish mottles on dorsal near base; a second streak of larger black mottles below the first; several longitudinal streaks of more or less distinct mottles run through body. The marbling on head paler than those on body; body near base of anal blackish; dorsal, anal and caudal blackish, especially along edge. Pectoral dark gray on the outer parts, blackish along edge, under or posterior side of the fin darker than the outer; projecting tip of rays of all the above fins whitish. Ventral whitish. Chin, throat, belly and lower part of pectoral rather pale.

#### *Owstonia*, n. g.

The genus is allied to *Lonchopisthus* (*micrognathus*), but

differs from it in having 3 dorsal spines (instead of 10); head larger, and without scales on cheek.

The genus is named for Mr. ALAN OWSTON, in whose collection the single specimen of the genus and species was found.

*Owstonia totomiensis*, n. sp.

Pl. III., fig. 1.

Head  $3\frac{2}{3}$  in total length to caudal base; height of body at insertion of ventral  $3\frac{1}{2}$ ; snout  $4\frac{1}{2}$  in head; eye  $2\frac{2}{3}$ ; interorbital 6; length of maxillary  $1\frac{1}{2}$ . B. 6; D. III, 21; A. I, 14; V. I, 5; P. I, 18 to 20; C. 17; number of scales in a longitudinal series to caudal base 55 to 60; same in a transverse series counted downwards and forwards from the middle of dorsal base to vent 24.

Body elongate, compressed; caudal peduncle also compressed. Head rather small; eye large, high, lateral; interorbital rather narrow, convex; snout short; the profile curved. Mouth directed obliquely upwards; jaws with slender, inwardly curved, incisor or canine teeth in one row, placed at rather wide intervals; a slightly elevated knob on lower jaw armed with teeth in two rows, fitting a depression of upper jaw; no teeth on vomer and palatines. Posterior part of maxillary broad, ending beneath posterior rim of eye. Angle of preopercle serrated. Dorsal high, slender, originating above scapular angle of opercle; anal similar to dorsal in form, originating vertical from tenth ray of dorsal; end of posterior ray of anal reaching caudal base, but that of dorsal not reaching caudal; pectoral moderate, its free margin rounded; its tip before vent; ventrals approaching each other, beneath posterior end of base of pectoral, its tip reaching fifth

ray of anal ; caudal lanceolate. Vent. immediately before anal, and slightly in front of the middle of total length to caudal base.

Scales moderate, cycloid, arranged somewhat irregularly, those on breast smaller than those on side of body ; suborbital lamina scaled ; opercles scantily scaled ; vertical fins not scaly ; caudal base scaly. Lateral line on side of body near margin of back, its anterior end uniting with that of the other side before origin of dorsal, its posterior end interrupted beneath last ray of dorsal and therefore not uniting with same of the other side. A few scales in the median part of side near posterior end of body with pores. Space between dorsal base and lateral line naked, except a small space within the loop of the latter which is scaled.

Color in formalin whitish ; skin connecting premaxillary and maxillary blackish.

During life, the body and vertical fins were presumably reddish in color, since the posterior part of dorsal preserved that color for some time after preservation.

The type is the only specimen known. It was taken on the coast of Prov. Tōtōmi in February, 1906, and is now contained in Mr. ALAN OWSTON'S collection.

MEASUREMENTS OF THE SPECIES.

Total length to caudal base .....	31.5 cm.
Head .....	8.1 "
Height of body (at insertion of ventral) .....	8.8 "
Height of caudal peduncle .....	3.4 "
Width of caudal peduncle.....	1.9 "
Snout.....	1.7 "
Eye .....	3.05 "
Interorbital .....	1.35 "



Maxillary'.....	4.7 cm.
First spine of dorsal .....	2.7 "
Second spine of dorsal .....	4.65 "
Third spine of dorsal.....	5.7 "
First ray of dorsal.....	5.6 "
Second and third ray of dorsal .....	5.25 "
Sixth and Seventh ray of dorsal.....	6.7 "
Spine of anal .....	1.7 "
First ray of anal .....	3.1 "
Second ray of anal.....	4.4 "
Tenth ray of anal .....	8.1 "
Pectoral .....	5.25 "
Spine of ventral.....	3.65 "
First ray of ventral .....	8.5 "
Second ray of ventral.....	9.25 "
Third ray of ventral .....	8.7 "
Fourth ray of ventral .....	5.65 "
Fifth ray of ventral .....	4.0 "
Middle ray of caudal (inclusive of scaly sheath).....	19.0 "
Middle ray of caudal (exclusive of scaly sheath).....	16.5 "

*Xiphasia setifer* SWAINSON.

Pl. IV., fig. 1.

*Xiphasia setifer* SWAINSON. DAY, Fish. India, 1878-1888, pp. 336-337, p. 799; Coromandel coast of India and New South Wales, possibly Madagascar, and probably the South Sea.

The specimens here referred to *Xiphasia setifer* may be said to totally well with the description of that species given in DAY'S "Fish of India,"<sup>a)</sup> though not without some points of difference. As this species has never before been recorded from our coast, I may here give a full description.

<sup>a)</sup> Loc. cit.

Head  $15\frac{5}{8}$  to  $17\frac{7}{8}$  in total length to caudal base; height of body 38 to  $47\frac{1}{2}$ ; snout  $3\frac{3}{8}$  to  $4\frac{3}{8}$  in head; eye  $3\frac{1}{2}$  to 4; interorbital  $4\frac{3}{8}$  to  $6\frac{1}{4}$ .

Body anguilliform, very elongate, slender, compressed; head and anterior parts of body of almost equal height, very gradually tapering posteriorly; head quadrate when viewed from side. Eye before middle of head length, lateral, high up, the upper margin slightly elevated, rather large in size; interorbital and nape almost flat; behind nape the upper surface of body is somewhat rounded, and distinctly so in the more posterior parts. Snout short; upper profile horizontal before eye, in front steeply curved down. Mouth large, horizontal, subinferior; corner of mouth beneath anterior rim of eye; jaws about equal; teeth comparatively large, incisor-like, set rather closely in a row; in upper jaw a fang-like backwardly curved tooth at some distance behind the row of teeth; a much larger but similar fang-like tooth directly behind the row of teeth on lower jaw, fitting to a groove in the roof of mouth situated on the inner side of the fang of upper jaw. Gill-slit subvertical, slightly shorter than vertical length of base of pectoral, and situated near pectoral, with the two-thirds of its length extending above pectoral. Ventrals very closely set, contiguous, originating from throat just behind gill slit, moderate in size, its tip below that of pectoral; pectoral moderate in size, its middle rays longest; dorsal originating from anterior margin of orbit; vent directly before anal; anal originating between 14<sup>th</sup> and 15<sup>th</sup> rays of dorsal; both vertical fins moderately high, the membrane between rays of these fins rather thin, confluent with caudal but distinct from the latter; last rays of both vertical fins at almost same vertical; middle two rays of caudal filiformly prolonged.

Body smooth, scaleless, with three lateral lines; the first

line near dorsal base from tip of snout to caudal base, the second in the middle of the side of body and the third in the lower parts of body; pores on the side and upper surface of head.

Color in formalin rather dusky in ground color, ventral side slightly paler; about fourteen broad light-colored squarish cross-bands at equal intervals, the anterior and posterior ones being rather indistinct; in touch with the band on each side are three differently colored cross-lines which fuse together side by side. The first cross-line is narrow, yellow in color and situated just outside the above-mentioned band; outside it lies the second cross-line which is somewhat broad, bluish, and more or less iridescent; the third cross-line is narrow and brownish in color. Fainter cross-bands intervene everywhere between the before-mentioned bands. Head with two, longitudinal, parallel, bluish, iridescent bands on side, the upper one of which originates from beneath tip of lower jaw near mouth-corner, crosses mouth-cleft and reaches behind the middle of the postorbital part of head; while the lower one originates behind mouth-corner, crosses lower margin of pupil and ends near gill-slit. Dorsal fin dusky, narrowly blackish near margin, the margin whitish, its rays yellowish; a deep azure, white-margined ocellus of oblong shape on 5<sup>th</sup> ray, or between 5<sup>th</sup> and 6<sup>th</sup> rays, or between 4<sup>th</sup> and 5<sup>th</sup> rays according to individuals, its longitudinal diameter longer than pupil; a longer bluish blotch with white edge extends from 10<sup>th</sup> to 15<sup>th</sup> rays of dorsal; the dorsal fin with two or three longitudinal, somewhat irregular, yellowish bands extending from origin of the fin to behind last-mentioned blotch; behind the blotch directly inside black margin a series of bluish oblong spots. Ground color of anal same as that of dorsal, with blackish margin; on it three or four, rather irregular series of bluish oblong spots, the spots growing fainter and indistinct anteriorly;

anal rays yellowish. Pores of the uppermost lateral line joined by slender, bluish, short lines. Caudal yellowish and dusky; rays yellowish; tip of caudal filament dark. Pectorals slightly dusky. Ventrals whitish, somewhat dusky, bluish at tip. Iris of eye slightly dusky.

There were four specimens in OWSTON'S collection; of these three were examined by me.

MEASUREMENTS OF THE SPECIES.

Specimen.	A.	B.	C.
Locality .....	Izu Sea	Suruga Bay	Suruga Bay
Date .....	Feb., 1903.	Dec., 1905.	Jan., 1906.
Total length without caudal ...	48.0 cm.	38.0 cm.	28.5 cm.
Head .....	2.7 "	2.4 "	1.75 "
Height of body .....	1.2 "	0.8 "	0.75 "
Height of head behind eye.....	1.2 "	1.0 "	0.8 "
Snout .....	0.8 "	0.7 "	0.4 "
Eye .....	0.7 "	0.6 "	0.5 "
Interorbital.....	0.4 "	0.5 "	0.4 "
Head and trunk .....	6.0 "	5.2 "	4.0 "
Ventral .....	1.8 "	1.3 "	0.9 "
Pectoral .....	1.5 "	1.3 "	1.1 "
Length from caudal base to tip of filament .....	4.0 "	1.8 "	0.8 cm. (filament broken off).
Number of dorsal fin-rays .....	138 "	130 "	125 cm.
Number of anal fin-rays.....	122 "	117 "	118 "
Number of pectoral fin-rays ...	13 "	13 "	13 "
Number of ventral fin-rays.....	3 "	3 "	?
Number of caudal fin-rays .....	10 "	10 "	10 "

*Trachypterus misakiensis*, n. sp.

Pl. IV., fig. 2.

Head 5 to 6½ in total length to base of caudal; height of

body at origin of ventral 3 to  $3\frac{1}{2}$ ; snout 3 to  $4\frac{3}{4}$  in head; eye  $2\frac{1}{2}$  to 3; interorbital  $3\frac{5}{8}$  to 4. D. VI, 110 to 125; V. 9; P. 13; C. 8.

Body rather oblong than elongate, strongly compressed; upper profile before and behind nape conspicuously slanting; lower outline of body declining from chin to vertical through origin of dorsal and then tapering from the latter to base of caudal; the highest part of body at origin of ventral; caudal peduncle very slender. Head short, higher than long, its profile steep, not vertical, almost straight to nape. Eye lateral, high up, a little nearer tip of snout than opercular flap; maxillary plate large, higher than long, radiately rugose, its breadth  $\frac{1}{2}$  its length. Bone of head thin as paper. Mouth small, subvertical, protractile. Teeth very few, minute and feeble. Angle of lower jaw beneath front of eye. Opercular bones thin, rugose. Dorsal beginning above pupil of eye. In two young specimens, respectively 7.5 and 8.3 cm. long as measured to base of caudal, a few anterior rays of dorsal are very high, filamentous, reaching beyond origin of ventral; but in other two specimens, about 13.8 and 17.3 cm. long as measured to caudal base, the anterior rays of dorsal are a little higher than the rest of the fin, the free margin of the former being smoothly continuous with the outline of the latter. Free margin of dorsal broadly rounded, the fin extending to near base of caudal. Ventrals inserted just behind pectorals, well developed, filamentous; not reaching base of caudal, but reaching beyond tip of caudal in young. Pectorals small, length of the fin-rays slightly longer than diameter of eye. Caudal very short; its rays unbranched, none of them filiform; the rays project from all parts of caudal base, not from the upper parts only. No anal. Lateral line distinct, runs medianly on side of body, slightly curved, its convexity facing downwards. No scales;

body smooth; belly rough, perceptibly prickly. Coloration silvery; head and body with blackish-brown round spots; the spots on median parts of side of body larger than those on head and margins of body. Anterior profile before nape, including front of snout and tip of mandible, blackish. All the fins without spots; all except pectorals pink-red.

We sometimes find the species near the shores of Misaki after stormy weather. The type, 13.8 cm. long to caudal base, is preserved in the museum of the Zoological Institute under Mus. No. 960.

MEASUREMENTS OF THE SPECIES.

Specimen.	A.	B.	C.	D.
Length to base of caudal...	17.3 cm.	13.8 cm.	7.5 cm.	8.3 cm.
Head .....	2.8 "	2.3 "	1.5 "	1.7 "
Height of body (at origin of ventral).....	4.8 "	4.4 "	2.2 "	2.8 "
Snout .....	0.6 "	0.8 "	0.4 "	0.5 "
Eye.....	1.2 "	0.9 "	0.5 "	0.7 "
Interorbital .....	0.7 "	0.6 "	0.3 "	0.4 "
Longest ray of dorsal.....	2.8 "	2.4 "	1.7 "	1.7 "
Length of ray of ventral...	8.0 "	8.4 "	5.8 "	8.0 "
Caudal .....	? 0.7 "	1.0 "	0.8 "	1.1 "

## Explanation of Plates.

### Plate I.

- Fig. 1. *Gymnothorax gilberti*, n. sp.  $\frac{2}{3}$  natural size.  
Fig. 2. *Anampses ikedai*, n. sp.  $\frac{4}{5}$  natural size.  
Fig. 3. *Anampses nagayoi*, n. sp.  $\frac{8}{9}$  natural size.  
Fig. 4. *Pachynathus nigromarginatus*, n. sp.  $\frac{1}{3}$  natural size.  
Fig. 5. *Tetraodon alboreticulatus*, n. sp.  $\frac{1}{4}$  natural size.  
Fig. 6. *Alepocephalus owstoni*, n. sp.  $\frac{2}{3}$  natural size.

### Plate II.

- Fig. 1, A & B. *Acipenser multiscutatus*, n. sp.  $\frac{1}{18}$  natural size.  
Fig. 2, A. *Catulus torazame*, n. sp.  $\frac{4}{5}$  natural size.  
Fig. 2, B. *Catulus torazame*, n. sp.  $\frac{5}{8}$  natural size.  
Fig. 3. *Halichoeres nefe*, n. sp. natural size.  
Fig. 4. *Gymnothorax wakanourae*,  $\frac{5}{7}$  n. sp. natural size.

### Plate III.

- Fig. 1. *Owstonia totomiensis*, n. g. n. sp.  $\frac{2}{3}$  natural size.  
Fig. 2. *Liparis owstoni* (JORDAN & SYNDER)  $\frac{7}{8}$  natural size.

### Plate IV.

- Fig. 1, A & B. *Xiphasia setifer* SWAINSON natural size.  
Fig. 2. *Trachipterus misakiensis*, n. sp. natural size.
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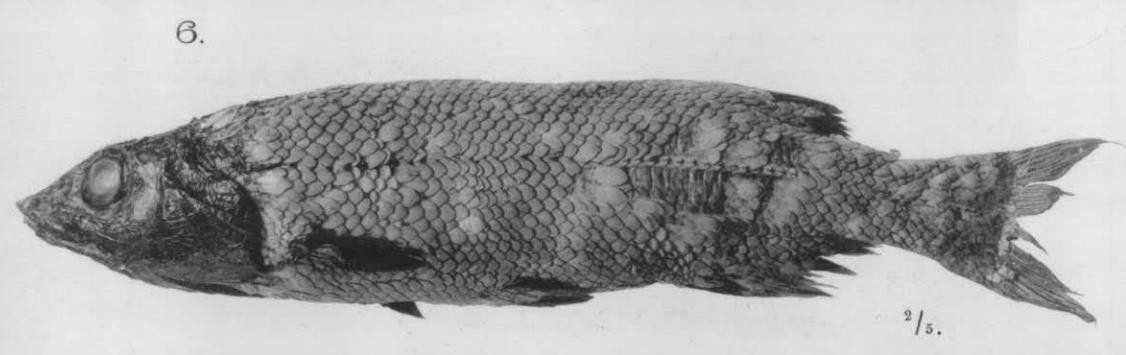
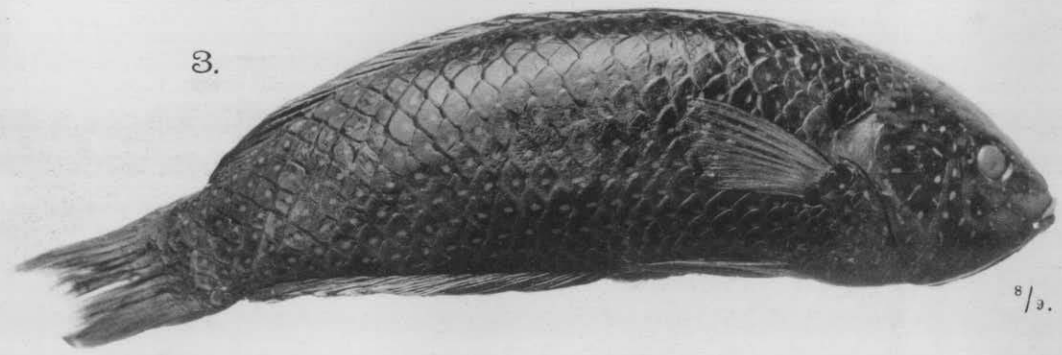
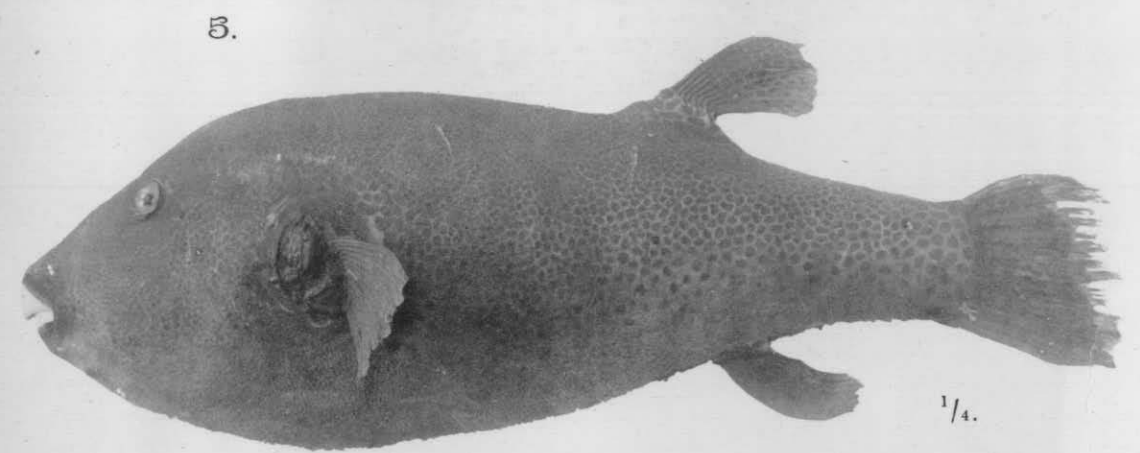
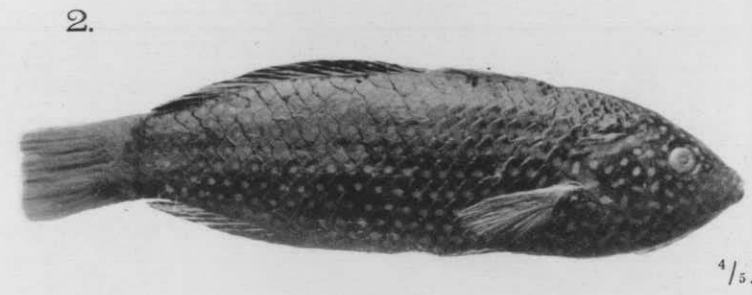
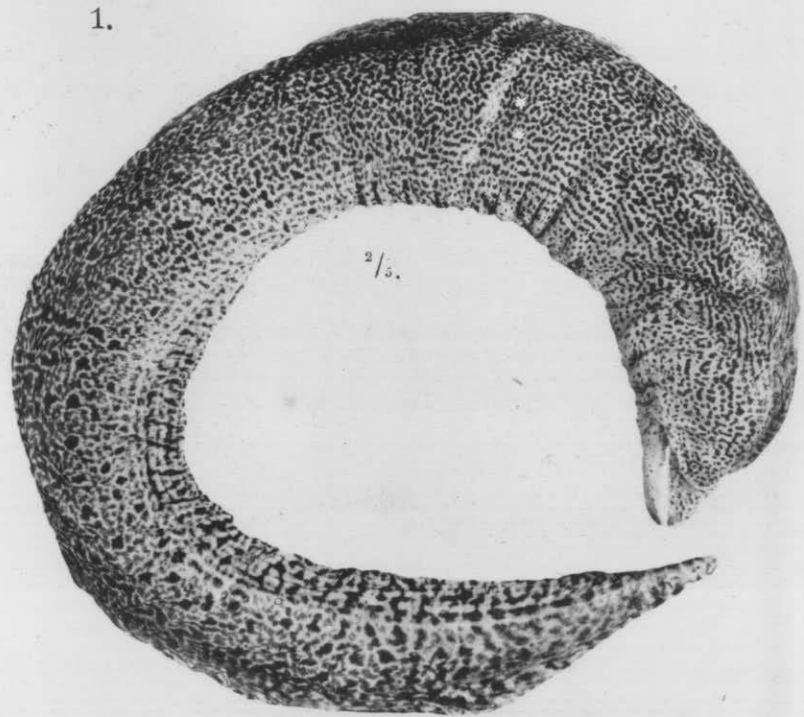
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*Jour. Sci. Coll., Vol. XXIII., Art. 7.*

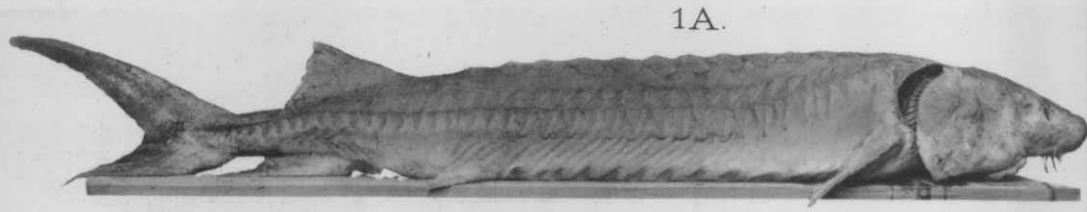
(S. TANAKA : Notes on some Japanese fishes, with descriptions  
of fourteen new species).

By inadvertence of the printer a grave error was done in the printing of Pls. I. and II. of the above mentioned paper, in that the explanations of figures at their foot were transposed. To remedy this short-coming, corrected duplicates are hereby appended, with which the faulty ones in the paper should be replaced.





1. *Gymnothorax gilberti*, n. sp. 2. *Anampses ikedai*, n. sp. 3. *A. nagayoi*, n. sp.  
4. *Pachynathus nigromarginatus*, n. sp. 5. *Tetraodon alboreticulatus*, n. sp. 6. *Alepocephalus owstoni*, n. sp.



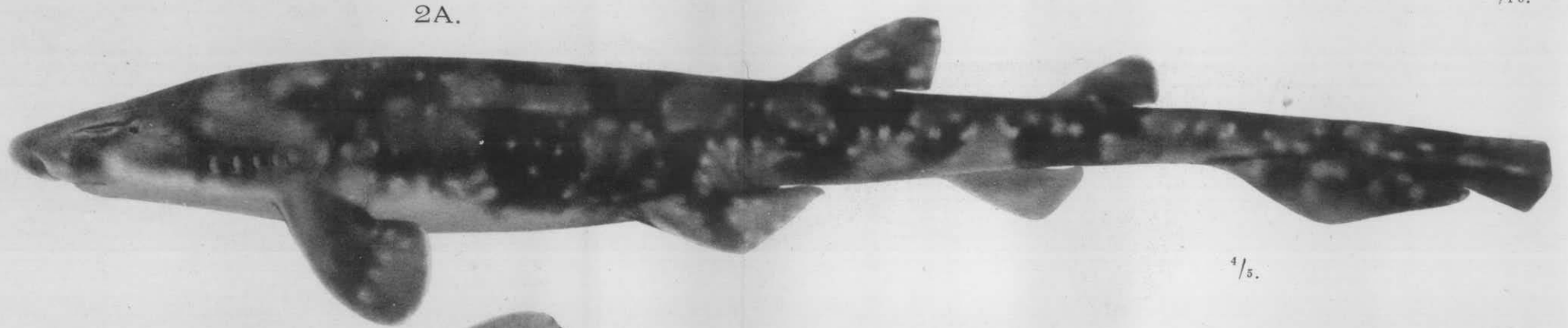
1A.

1/18.



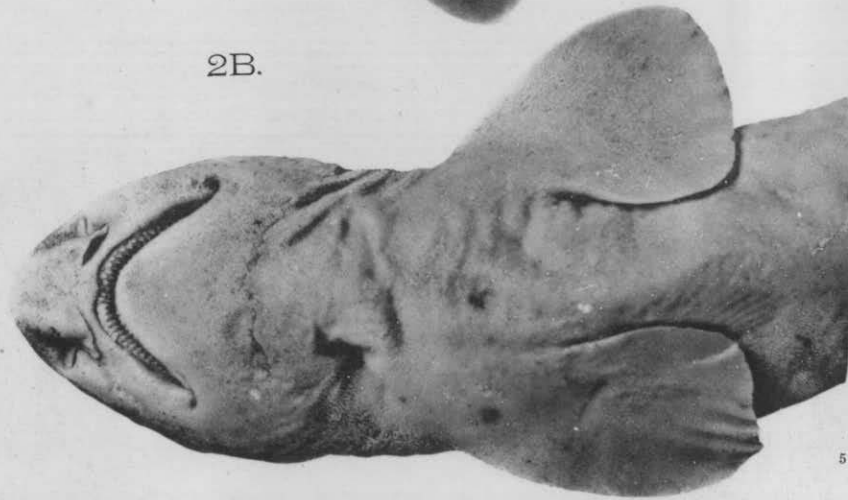
1B.

1/18.



2A.

4/5.



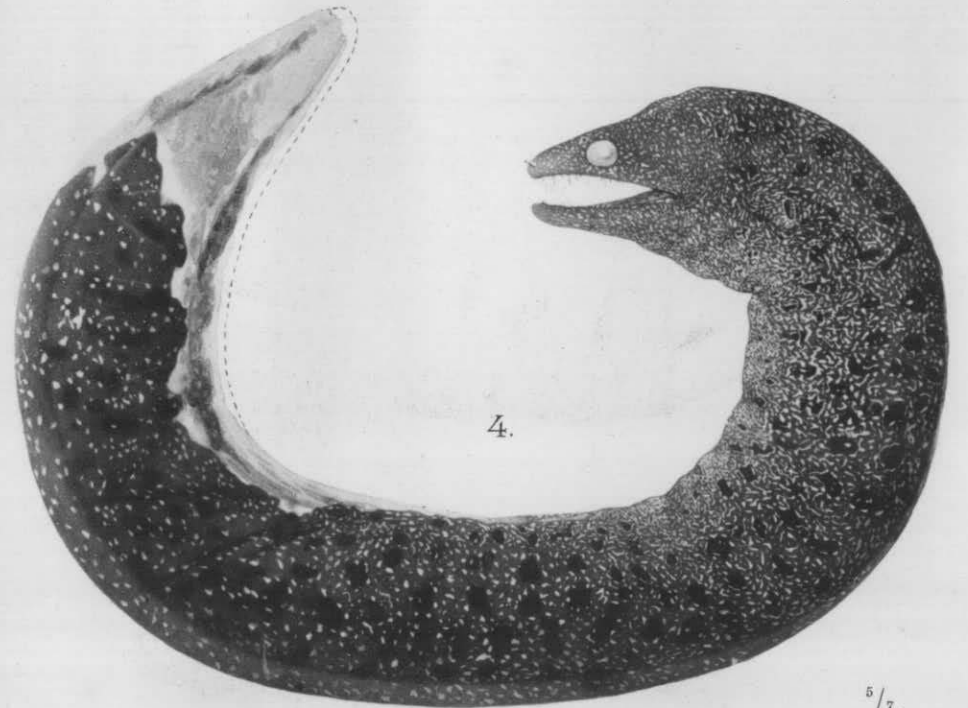
2B.

5/8.



3.

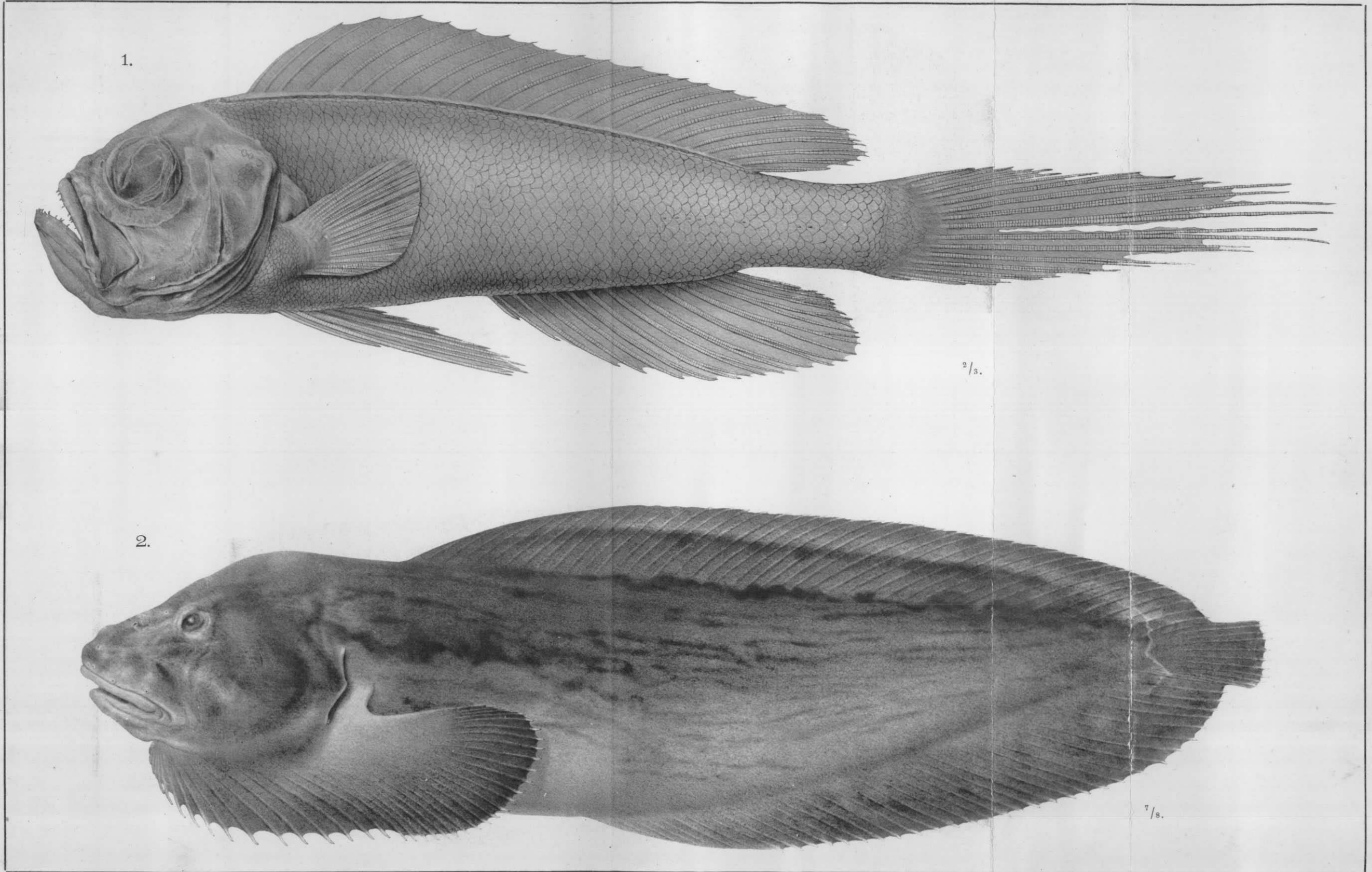
1/1.



4.

5/7.

1. *Acipenser multiscutatus*, n. sp. 2. *Catulus torazame*, n. sp. 3. *Halichæres nafæ*, n. sp. 4. *Gymnothorax wakanouræ*, n. sp.



1.

$\frac{2}{3}$ .

2.

$\frac{7}{8}$ .

1. *Owstonia totomiensis*, n. g., n. sp.

2. *Liparis owstoni* (J. & S.).

1, A.

1, B.

2.

1. A & B. *Xiphasia setifer* Swainson. 2. *Trachipterus misakiensis*, n. sp.

