

Descriptions of New Zealand Fishes.

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Family MURAENIDAE.

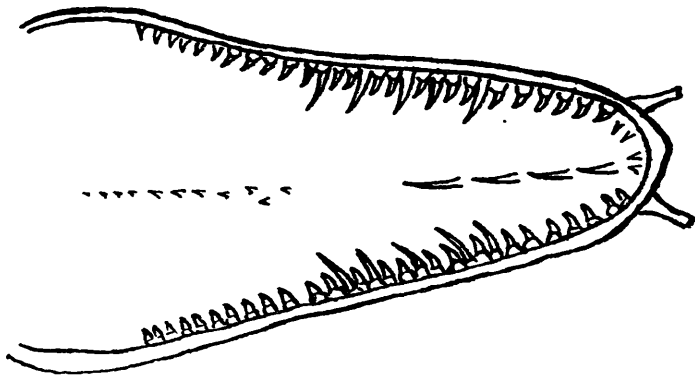
Genus MURAENA Linn.

***Muraena tuhua* n. sp. (Plate 24).**

Head 8.98, height of body 12.44 in the total length. Eye three in snout or 16.36 in length of head, gape 2.47 in same. Gill-opening rather longer than diameter of eye. Anterior nasal tube little longer than .5 diameter of eye. Teeth in jaws 24 above, 21 below. Palatine teeth two, vomerine four.

Body moderately compressed, gradually becoming more so from about midway between vent and tip of tail. Occiput much elevated, firm, fleshy. Snout broadly convex, flattened on sides before the eye. Cleft of mouth extending almost the length of snout behind eye.

An outer series of fixed compressed, subtriangular, acute teeth in both jaws, with a few longer subulate depressable teeth forming an inner series. All the outer series have their bases well covered by grisly membrane. Vomerines subulate, the first fixed, those following depressable. The outer teeth at the apex in each jaw are very small, arranged in pairs. Palatine teeth subequal, small, acute. Tongue immovable.



Muraena tuhua. Upper jaw. Nat. size.

A series of four rather large open pores on the upper jaw, and five on the lower margin of the ramus. Anterior nasal tube short, much thickened at base, tips flattened. Posterior nostril in a low tube situated a short distance before the eye. Branchiostegal sac little developed, almost subequal with anterior part of body. Origin of dorsal fin only slightly in advance of gill-opening. It is low anteriorly, gradually becoming higher, reaching its highest point above the vent,

thence continuing fairly straight to tip of tail which it surrounds. Anal fin very much lower. Both fins are thick and fleshy, showing no trace of rays.

Colour.—Body, uniform light chocolate profusely covered with pale cream spots of a great variety of sizes and forms, none of which is margined with a deeper colour. The spots are smaller and more crowded on the head, abdominal region, and tail, less so along the dorsal from the gill-opening to three-quarters the length of the fish. No fine lines or streaks are present on any part of the body, and the branchiostegal sac is also entirely free from any lines indicating the internal structure. Eye dull gold and blue-black.

Described and figured from a fine specimen which is 1617 mm. long from tip of snout to tail. Head 180 mm.; snout 37 mm.; mouth to angle 73 mm.; eye 11 mm.; tip of snout to middle of vent 767 mm.; middle of vent to tip of tail 850 mm.; greatest height of body 130 mm.

Affinities.—I cannot find any eel that fully agrees with this large and powerful specimen, the nearest to it being an equally large species named *Uropterygius obesus* figured in the *Rec. Austr. Mus.*, Vol. XVIII, Pl. XXXIX, Fig. 1, but a critical examination discloses important differences between the two.

In *M. tuhua* the much more advanced position of the dorsal and anal fins are particularly noticeable, and both completely surround the tail. There is also considerable difference in the arrangement of the teeth, while the posterior nostrils are short but well-defined tubes.

It is interesting to note that this is the first occasion a true *Muraena* has been recorded from New Zealand seas, *M. shirleyi*, also described in this paper, being the second member of the genus to turn up. The differences between the two are so obvious as to require no further remarks here.

Locality.—Caught on the hook in 80 fathoms of water 15 miles south-east of Mayor Island (Tuhua, after which I have specifically named this fish). Presented by Mr McLachlan, of Auckland, in August, 1928.

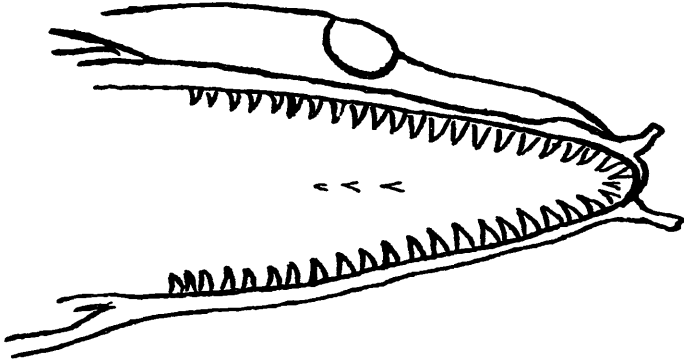
Holotype in the Auckland Museum.

***Muraena shirleyi* n. sp. (Plate 24).**

Head 7.36, height of body 10.3 in total length. Eye 14, gape 2.15 in the head. Gill-opening equal to the diameter of the eye. Length of anterior nasal tube three-quarters diameter of the eye. Teeth in jaws 20 above, 24 below. Palatine teeth four. Vomerine two.

Body moderately compressed for three-fourths of length, thence becoming much more so to tip of tail. Occiput moderately elevated, fleshy. Snout broadly convex, somewhat flattened on sides. Cleft of mouth extends well behind eye, nearly equalling the length of snout.

Teeth in jaws uniserial, compressed, subtriangular, acute, directed slightly backwards, becoming smaller towards the angle. Vomerine teeth, subulate, depressable. Palatine teeth few in number, the anterior one largest, separated somewhat from the second. None of the teeth is serrated. Tongue immovable.



Muraena shirleyi. Upper jaw. Nat. size.

A series of three small pores on the ramus, with four on the margin of the upper jaw. Anterior nasal tube short and stout. The posterior nostril is a short tube situated almost above the anterior quarter of eye. Branchiostegal sac only moderately developed. Origin of dorsal fin nearly halfway between the gill-opening and eye. It is very thick and fleshy throughout its entire length, highest and thickest just before the vent. Anal very low and fleshy. Both fins surround the tail.

Colour.—Pale chocolate over all, slightly tinged with purple-brown on the ventral surface. Margin of dorsal and anal dark chocolate.

Body covered with a moderate number of opalescent bluish-white spots of irregular shapes and sizes, none of which are numerous. They are smaller on top of head, fewest in number on trunk, becoming more crowded and larger on the tail, where they are also brighter in colour. The dorsal portion of the fish has the greater number of spots, while the anal fin has six only very small rounded ones. All the spots are margined in dark chocolate brown. Numerous fine wavy lines of a darker colour than the general body colour are present, reaching from the dorsal to the ventral surface, while the folds of the gill membrane are very distinctly marked with several dark-brown zig-zag lines extending from the angle of the mouth to gill-opening. The latter is also splashed with dark brown and small streaks.

Angle of mouth similar to gill-opening. Top of snout and tips of nasal tubes dark brown. Eye, dark golden and blue-black.

Described and figured from an adult which is 1030 mm. long from tip of snout to tail. Head 140 mm.; snout 30 mm.; mouth 65 mm. to angle; eye 10 mm.; trunk 495 mm.; tail 535 mm.; greatest height of body 100 mm.

Affinities.—An extensive examination of the characters of a large number of marine eels fails to agree with those of the specimen here described. At first sight it might be taken for a pale variety of *G. prionodon*, but there are marked differences when closely examined. Apart from its very light colour and arrangement of the spots the teeth are greater in number, the origin of the dorsal fin is much in advance of that found in *G. prionodon*, while the eye is also much smaller, going as much as 13 in the head, and the posterior nostril formed as a low tube entirely disposes of its belonging to the genus *Gymnothorax*. I therefore feel safe in regarding this eel as a new species, and have named it after its captor, Mr J. S. Shirley, who has often enriched the Museum collections with new and interesting forms of our fish fauna.

Locality.—Mokohinau Islands, June, 1931.

Holotype in the Auckland Museum.

Family TRICHONOTIDAE.

Key to the genera of the Trichonotidae found in New Zealand:—

A. Origin of dorsal behind that of anal.

- (1) Eyes normal; interorbital of moderate width; no spine on end of maxillary.
- (2) Operculum and interoperculum scaleless, but with well-developed striae. Preoperculum denticulated. A flattened spine crossing the operculum.
- (3) Lateral line very low on body.
- (4) Whole of rays of dorsal and anal simple, articulated.

Tewara n. g.

B. Origin of dorsal in advance of the anal.

- (1) Eyes large; interorbital very narrow; a spine on end of maxillary.
- (2) Operculum and interoperculum covered with scales; preoperculum not denticulated; no spine crossing the operculum.
- (3) Lateral line in middle of the height of body.
- (4) Dorsal rays simple articulated, anal rays branched.

Hemerocoetes.

Tewara cranwelli n.g. et sp. (Plate 25). D. XXXV; A. XLII; P. XV; C. XIII $\frac{1}{2}$; V. i/V.

Depth 8.14, head 5.7 in the length to end of caudal peduncle. Eye 10 in head.

Head depressed anteriorly, broadest over operculum, covered with moderate cycloid scales excepting the top of snout, operculum, and interoperculum, the two latter bearing well-defined striae. Margin of preoperculum finely denticulated. Operculum with a flattened adherent spine crossing its upper half. Eye moderate, high in

head, cutting the profile. Interorbital space half diameter of eye, with a slight ridge mesially. Nostrils nearer tip of snout than eye, with a very low tube.

Mouth oblique, reaching backward beyond the posterior border of the eye, upper jaw slightly the longer, lower jaw extremely thin and weak.

Maxilla reaching somewhat beyond the posterior margin of eye, very thin and scaleless.

Minute, slightly hooked villiform teeth present in both jaws in a single series, and a small cluster still more minute on the vomer. Tongue free, elongate, pointed.

Gills four; gill-rakers nine approximately on lower half of the anterior limb.

Body sub-cylindrical, elongate, becoming compressed towards the caudal, the dorsal and ventral surfaces subequal, gradually tapering towards the peduncle, covered with small cycloid scales which extend forward to the interorbital. Lateral line, commencing at upper angle of operculum, descends abruptly behind the pectoral, and thence follows an almost straight course to end of peduncle; it is situated very low on the body, about quarter the distance from the anal base, well defined as a continuous series of small triangular spines directed forward.

Dorsal fin with its origin at the vertical from the third anal ray, composed entirely of simple articulated rays. Anal in every way similar to the dorsal, but the rays are somewhat shorter and greater in number. Caudal and pectoral similar in form to the dorsal and anal.

Colour.—Body pale golden brown, with a continuous series of dark brown blotches extending along top of back as far as end of peduncle. A smaller and more crowded series of blotches extends from top of operculum all along the middle line of body, and there are two conspicuous dark brown bands, narrowly joined in the centre, at the base of caudal.

The lateral line is slightly lighter than the body colour. Head with a dark mottled patch on the nape, and mottled brownish before the eyes and on snout. A blackish margin at the apex of both jaws. Operculum pale bluish and transparent. Eye mottled, the pupil blue-black. All fins immaculate.

Described and figured from a specimen which is 57 mm. long from tip of snout to end of caudal peduncle. Height of body 7 mm.; length of head 10 mm.

Since describing this specimen I have obtained another from Parengarenga, captured by the Museum collecting party while dredging at the entrance to Parengarenga Harbour on sandy bottom, February, 1932, and a third specimen was dredged about 1000 yards off Mount Maunganui, Ocean Beach, in the Bay of Plenty, from a clean, coarse, sandy bottom in March by Mr A. W. B. Powell. A critical examination of the three discloses no difference whatever, even the measurements are identical.

Localities.—Smugglers' Bay, Whangarei Heads, 2/11/31 (type), Parengarenga Harbour, North Auckland, February, 1932, and Mount Maunganui, Tauranga.

The type was brought to me by Miss Lucy Cranwell, after whom I have specifically named this fish. Holotype in the Auckland Museum.

Family GOBIDAE.

Genus CALLOGOBIUS Bleeker.

Callogobius atratus n. sp. (Plate 25). Br. 4; D. vi/I/X; A. i/X; P. XIII; V. 1/V; C. xvi/ $\frac{8}{5}$

Depth before the ventrals 6.1 in the length to base of caudal rays, head 3.6 in the same. Eye 5 in head, subequal with the snout, and about $1\frac{1}{2}$ in the interorbital space. Depth of caudal peduncle $2\frac{1}{2}$ in the head, breadth of body before the pectorals $2\frac{1}{4}$ in the same.

Head depressed, much broader than deep, cheeks and opercles scaleless, having ridges of mucigerous papillae arranged as shown in the drawing accompanying this description. Eyes small, high in the head, slightly cutting the profile. Interorbital space flat, nostrils rather wide apart, tubular, the anterior with a tiny flap on the posterior margin.

Snout somewhat elevated. Mouth oblique, the jaws equal when closed. Maxilla almost reaching the vertical of the orbital margin. A band of very fine villiform teeth in both jaws, the inner series being the longer, all directed backward. Tongue free, rounded anteriorly. Gill-opening lateral, not so broad as the separating isthmus. Shoulder girdle and base of pectoral quite smooth.

Body rounded anteriorly, gradually becoming compressed towards the caudal, where it is markedly so; it is covered with moderate cycloid scales adhering firmly to the skin. Scales completely cover the nape, and extend as far as the posterior margin of the maxillary. They are also present, but somewhat smaller on the breast and abdomen; those of the lateral line largest. Lateral line commencing at the shoulder-girdle quite straight throughout its entire length. Genital papilla prominent.

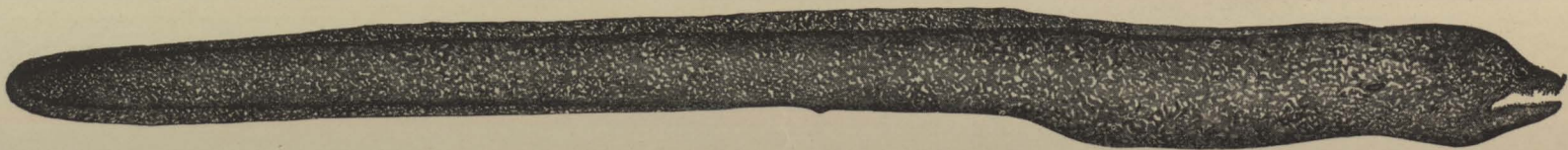
First dorsal fin originating above the anterior quarter of the pectoral, the rays being subequal in length.

Origin of second dorsal is the vertical from the third anal ray. It increases in length gradually backward, the fifth-seventh rays being longest, the last subequal with the first. Anal similar in form to the second dorsal, the rays are much longer, but its basal length is somewhat shorter than the former. Pectorals and caudal broadly rounded. Ventrals united at their base with a moderately broad membrane; they gradually increase in length to the fifth ray, which is longest.

Colour.—Uniform dull purple-brown below the lateral line, with lighter patches above, separated by darker lines. Cheeks and opercles with numerous very pale brown patches and mottling. Scales of

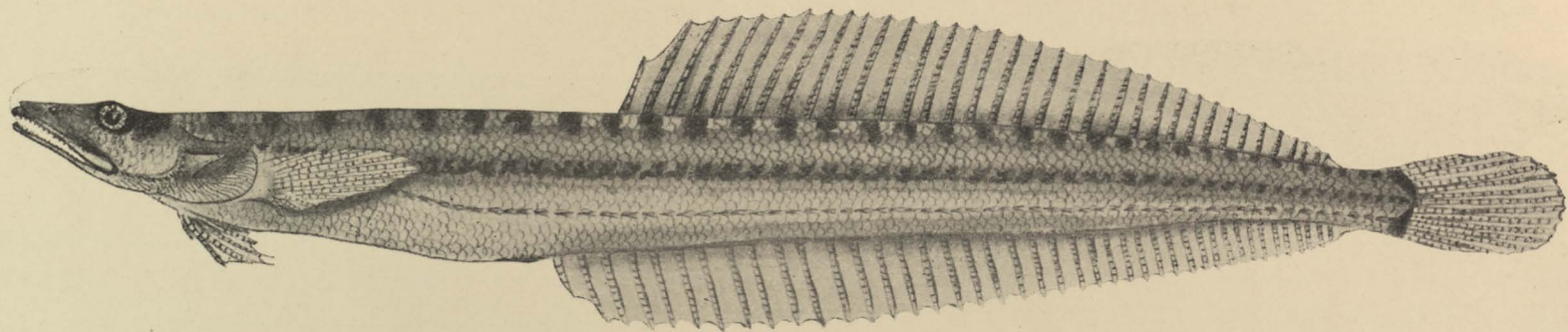


Muraena shirleyi n. sp

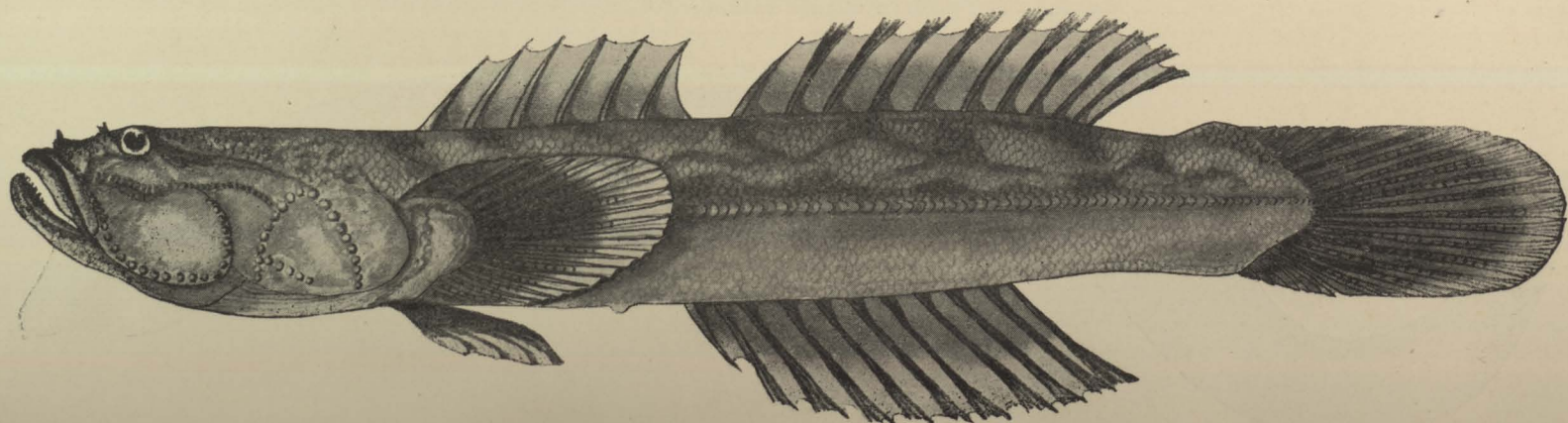


Muraena tuhua n. sp.

L. T. Griffin del.



Tewara cranwelli. N. gen. et sp.



Callogobius atratus n. sp.

L. T. Griffin del.

lateral line with light brown margins. Vertical fins similar to the paler parts of the body, the tips darker. Caudal, pectorals, and ventrals with pale margins, dark brown from the base to more than half their length.

Described and figured from a specimen which is 55 mm. long, from tip of snout to base of caudal rays.

Variation.—Only four specimens of this fish have so far been obtained, and a careful comparison fails to show any variation whatever.

It is apparently a scarce species, as many hours of searching the locality from which these specimens came failed to produce more. It is also interesting to note that this is the first occasion the genus has been recognised from New Zealand. Several species of *Callogobius* are known from Australian seas, and Mr Gilbert P. Whitley, the zoologist to the Australian Museum, informs me that none is like the one here described. He points out that the Australian form *Callogobius hasseltii* differs in having larger scales, different disposition of papillae on head, and lighter colour. It also differs from *Metagobius sclateri*, which has the ventrals more separated, larger scales, and less elongate body, while from *Callogobius (Mucogobius) mucosus* it differs in having darker pectorals, and differently disposed ridges on the head.

Locality.—Four specimens from rock-pools, Cable Bay, Mangonui County, March, 1931.

Holotype and paratypes in the Auckland Museum.