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STUDIES IN AUSTRALIAN FISHES.

No. 2*.

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(Plates xc.-xci., and fig. 18.)

MUSTELUS ANTARCTICUS, *Gunther*.

(Plate xc, fig. 3.)

Mustelus antarcticus, Gunther, Brit. Mus. Cat. Fish., viii., 1870, p. 387. *Id.*, McCoy, Prod. Zool. Vict., I., 9, 1884, pl. lxxxvii., fig. 1.

Galeus antarcticus, Waite, Rec. Austr. Mus., iv., 1902, p. 176, fig. 19 *(fetus)*.

Head, to last gill opening, 5·1 in the length; depth, 11·1. Width of head, 1·9 in its length. Snout, 3 in the head, and not quite as long as the mouth is wide, including the supra-labial folds. Eye, 6·5 in the head, and 2·1 in the interorbital space, which is almost equal to the length of the snout.

Form slender, tail tapering, not quite as long as the head and body. Breadth of the head greater than the height of the body. Snout, long and depressed, somewhat rounded in front. Eyes, elongate, lateral, and placed midway between the tip of the snout and the first gill-opening. Mouth angular, the tip of the mandible reaching a little farther forward than the eye. Teeth small, pavement-like, in many rows, each with a median, obtusely angular, horizontal ridge. A long longitudinal fold at either angle of the mouth; posterior labial folds very narrow, and equal to a little more than a third of each ramus of the lower lip. Nostrils very large, and nearer the mouth than the tip of the snout, the inner with a large simple lobe. Spiracles very small, rather oblique, and placed behind the posterior angle of the eye. Gill-openings decreasing in size backwards, the last placed over the base of the pectoral.

Scales minute, angular. Lateral line distinct.

Origin of the first dorsal almost midway between the tip of the snout and that of the ventral, and a little behind the inner pos-

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* For No. 1, see p. 36.

terior angle of the pectorals; its height is less than the depth of the body, and the posterior lobe is greatly produced. Second dorsal similar to the first, though smaller, the hinder end of its base placed over the middle of the anal, and a little nearer the origin of the ventrals than the tip of the tail. Anal smallest, similar to the second dorsal, and nearer the caudal than the ventrals. Pectorals a little larger than the first dorsal, their hinder margins emarginate. Ventrals small, their origins much nearer that of the anal than of the pectorals.

Total length, 895 mm.

Obs.—The above description was drawn up from a fine female example presented to the Trustees by Mr. J. Blair, who caught it near Manly, Port Jackson. The only figure of the adult published being very inaccurate, and the several descriptions either too short or unsatisfactory, I take this opportunity of supplementing them.

CHEILOBRANCHUS PARVULUS, *sp. nov.*

(Fig. 18.)

Head nearly one-ninth of the total length, or 1·8 in the distance between the gill opening and the vent, and equal to the height of the body. The distance between the end of the snout and the vent is 1·7 to 2·1 in the remaining portion. Eye large, one-fourth the length of the head, and covered by a transparent membrane. Snout longer than the eye, the maxillary not quite reaching its anterior margin. Nostrils placed on the upper surface of the head, the anterior tubular, and placed just before the eye, the posterior simple, and anterior to the middle of the eye.

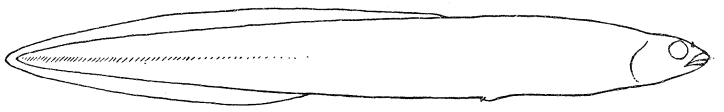


Fig. 18.

The dorsal fin originates a little behind the vertical of the vent, and is highest above the commencement of the last quarter of the fish. The anal arises behind the middle of the length, and is similar in form to the dorsal. Both are united to the caudal, which is distinguished by the presence of a few minute rays, no traces of which are present in the other fins.

The gill-opening is a very small semi-circular opening situated below the hinder margin of the head, and its posterior margin is slightly raised, though there is no trace of the free lobes of *C. dorsalis* and *C. rufus*.

The vent is followed by a minute papilla.

Colours.—Darkest anteriorly, often with a series of about fourteen broad brown bands on the back, which are lost on the dorsal fin. Sides of abdomen with more or less numerous vertical narrow brown bars, while anteriorly it is crossed with four or five broad carmine bars below. Colourless behind the vent except for a prominent brown vertebral band.

In many specimens the dorsal bars are absent, and the abdominal markings are represented by brown spots only. There are others in which all the markings are wanting.

Total length, 47· mm.

Obs.—This species is sometimes found in small numbers in rock-pools near Sydney. When first collected, I supposed it to be the larval form of some larger species, but a number of females only 37· mm. in length, and distended with eggs, have since been procured for me by Mr. Basset Hull, Junr., to whom I am indebted for many interesting rock-pool fishes and crustaceans.

C. parvulus differs in the form of the gill-opening from that of *C. dorsalis* as described by Richardson[1] by the absence of the supplementary free lobes to the posterior margin. These lobes are very distinct in *C. rufus*, Macleay, and are regarded by Waite[2] as being rudimentary ventral fins. Whatever may be their function, I think it probable that their presence or absence is of specific value only, especially as in all other characters the three species are very similar.

Urocampus carinirostris, *Castelnau.*

(Plate xc., fig. 2).

Urocampus carinirostris, Castelnau, Proc. Zool. Soc. Vict., i., 1872, p. 200. *Id.*, Stead, Proc. Linn. Soc. N.S.Wales, xxxi., 1906, p. 428.

D. 14. Body-rings. 8-9. Caudal 50-53 (rarely 43).

Form elongate and very slender. Body with nine ridges; two on the back, four on the sides and three below. The upper pair on the

[1] Richardson—Voy. Ereb. & Terr., 1845, p. 50, pl. xxx., figs. 1-5.
[2] Waite—Rec. Austr. Mus., vi., 1906, p. 195, pl. xxxvi., fig. 1.

sides are continuous with the lower margins of the tail, which is quadrangular, though a fifth ridge is sometimes indicated on the back near the base of the dorsal fin. Head moderate, varying from less than half to two-thirds the length of the trunk. Snout short and thick, equal to or more than one-third the head, and with a very strong median ridge above; from this, two other ridges pass backwards over and behind the eyes, while there is a fourth median one on the occiput. A small blunt spine on the side of the snout in front of the eye. Operculum with a distinct transverse ridge. The length of the head and body as compared with the tail is very variable, it equalling in some examples one-third, and in others nearly one-half of that member. Branched or simple tentacles may be distributed more or less abundantly over the head, body and tail, or they may be altogether absent.

Pectoral and dorsal fins well developed, the latter commencing on the seventh segment behind the vent and extending over the three following. Caudal and anal fins present, but minute.

General colour, greenish with darker and lighter spots and cross-bands.

Obs.—Most of the discrepancies between this description and that of Castlenau may be accounted for by the great variation in the characters of the species. In his measurements of the snout, however, he writes that it is "contained once and a half in the diameter of the eye." This should be once and a half as long as the eye. Of the operculum also he says that it is "almost carinated," whereas really it has a very distinct ridge.

Hab.—Twelve specimens collected by Mr. Dene Fry far up Middle Harbour, Port Jackson, where they are common in the sea-grass *Zostera*. They agree perfectly with three others in the collection received from Castlenau, taken at Melbourne.

Ichthyocampus filum, *Gunther*.

(Plate xc., fig. 1).

Ichthyocampus filum, Gunther, Brit. Mus. Cat. Fish., viii., 1870, p. 178.

D. 14; Body-rings, 13-14; Tail-rings, 46-47.

Form elongate and slender; body with seven very obscure ridges, tail with four, those on the sides continuous with the lower margins of the tail. Head very short, equal to about two-fifths of the distance between it and the vent. Snout turned upwards, one-third the length of the head. Operculum without a trans-

verse ridge. There is a small tubercle over the eye, and another on the occiput, besides several minute ones scattered over the upper part of the head. Length of the head and body 2·50 to 2·75 in that of the tail. The rings of the body and tail have each above and below on either side a minute tubercle at their hinder ends. There is a row of minute tentacles on the mid-line of the body, and there are others on the dorsal ridges of the tail and on the sides of the egg-pouch.

Dorsal, pectoral, and caudal fins well developed, and in the female specimens there is also a minute anal. Dorsal placed opposite to the vent, its base covering three segments, and the rays equal to about three-fourths the depth of the body. Egg pouch of the males equal to the trunk in length.

Colours of preserved examples various, but generally with broad darker cross bands on the sides, and a chain-like pattern of lighter markings on the back. In life they are most brilliant. Some are bright blue along the sides, with broad dark-brown vertical bars, which are more or less in pairs. Back either pure white or variegated with lighter and darker chain-like circles. Opercles scarlet. Others have a similar pattern, but the blue ground is more or less broken by yellow and pink areas.

Hab.—Seven specimens taken in rock-pools on the coast near Sydney. They appear to differ from Gunther's description only in having fourteen instead of sixteen body-rings.

Caranx hullianus, *sp. nov.*

(Plate xci.)

D. viii. 30; A. 24; P. 2 + 22; V. i. 5; C. 17.

Body ovate, compressed, the dorsal profile more arched than the ventral. Length of head 3·1, height of body 2·3 in length to base of caudal fin. Snout 3.4 in the head, shorter than the eye, which is 3·0 in the head and placed almost wholly above the level of the snout. Nostrils close together and placed nearer the eye than the end of the snout; the anterior a simple round opening, the posterior a lunate slit and closed by a small flap. Jaws of equal length, the maxillary reaching to below the middle of the eye. Vomer, palatines, and tongue without teeth; those of the jaws of moderate size and arranged in two or three irregular rows. Opercles weak and unarmed, bordered by skinny flaps. Gill-rakers of the first arch very long and slender, extending forwards alongside the tongue; those of the other arches short and blunt.

Body, with the exception of the breast, covered with minute scales which extend forwards to the first dorsal spine, and thence downwards and forwards to above the hinder margin of the eye, leaving the top of the head and the nape bare. The cheeks are also minutely scaly. Lateral line strongly arched anteriorly, its straight portion armed with about thirty plates, which are large posteriorly and with broad blade-like spines directed forwards.

First dorsal originating over the operculum, its spines very weak and flexible, the fourth the longest, a little longer than the eye. No recumbent spine in front. Second dorsal very high and rounded, the tenth to fourteenth rays longest, 1·19 in the head; the bases of the rays are enclosed in a thin skinny sheath. Anal similar to the second dorsal, but with its rays shorter; the anterior spines are very weak and entirely hidden in the skin. Margin of pectoral rounded, the fifth ray the longest. Ventrals very large, the fourth ray reaching to the base of the fifth anal ray. Caudal emarginate, the tips of the lobes rounded.

Colours.—Brownish, with ten darker vertical bars, the first over the eye, the second in front of the first dorsal, six more below the dorsal fins, and two on the caudal peduncle. The bars are indistinctly continued on to the dorsal and anal fins, which are also blotched with white posteriorly. Ventrals dark brown. Total length 112 mm.

Obs.—This is doubtless the young form of some large species of *Caranx* or allied genus, though just which of the several closely-related divisions of the Carangidæ I am unable to decide. The great development of the fins and the pronounced colour markings at once distinguishes this species from all others that are known to me.

Hab.—Found stranded on the beach at Freshwater, near Sydney, by Mr. A. T. Basset Hull.

Diretmus argenteus, *Johnson.*

Diretmus argenteus, Johnson, Proc. Zool. Soc., 1863, p. 403, pl. xxxvi., fig. 1.

Obs.—In June, 1908, the Trustees received from Mr. H. E. Lane a specimen of this rare species, 85 mm. in length, which he found floating dead upon the surface of the sea to the south-east of Cape Howe, N.S. Wales. It agrees perfectly with Goode & Bean's[3]

[3] Goode & Bean—Oceanic Ichthyology (Spec. Bull. U.S. Nat. Mus., ii., 1895, p. 211, pl. lxv., fig. 234).

description and figure, and therefore supports Gunther's suggestion that *D. aureus*, Campbell, known only from Hokitika Beach, on the west coast of New Zealand, is identical with Johnson's species.

NEOSEBASTES SCORPÆNOIDES, *Guichenot.*

Neosebastes scorpænoides (Guichenot), McCoy, Prod. Zool. Vict., ii., 20, 1890, pl. cxciii.

Obs.—A fine specimen of this species was caught off Coogee Bay, near Sydney, in October, 1908, by some local fishermen, who presented it to the Trustees. It agrees in every particular with others from Victoria, and constitutes a new record for this State.

CREEDIA HASWELLI, *Ramsay.*

Hemerocœtes haswelli, Ramsay, Proc. Linn. Soc. N. S. Wales, vi., 1881, p. 575.

Creedia clathrisquamis (Ogilby), Waite, Austr. Mus. Mem., iv., 1899, p. 63, fig. 6.

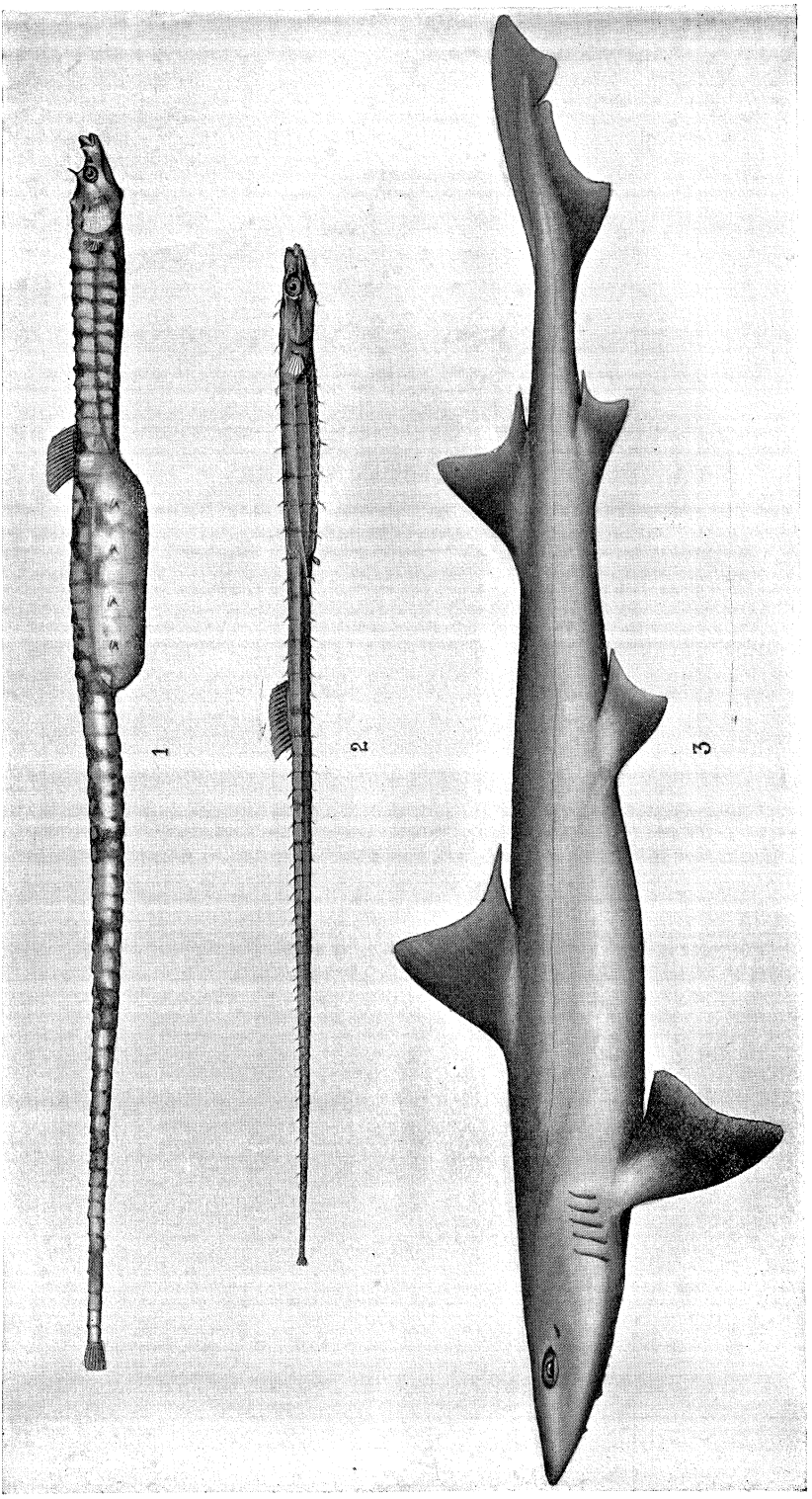
A large specimen, 70 mm. long, was dredged in Western Port, Victoria, by Mr. J. Gabriel. This rare species has been previously known only from the vicinity of Sydney and Newcastle, N. S. Wales.

EXPLANATION OF PLATE XC.

AUSTRALIAN FISHES.

Fig. 1. *Ichthyocampus filum*, Gunther.
,, 2. *Urocampus carinirostris*, Castlenau.
,, 3. *Mustelus antarcticus*, Gunther.

Figs. 1 and 2 enlarged. Fig. 3 reduced.



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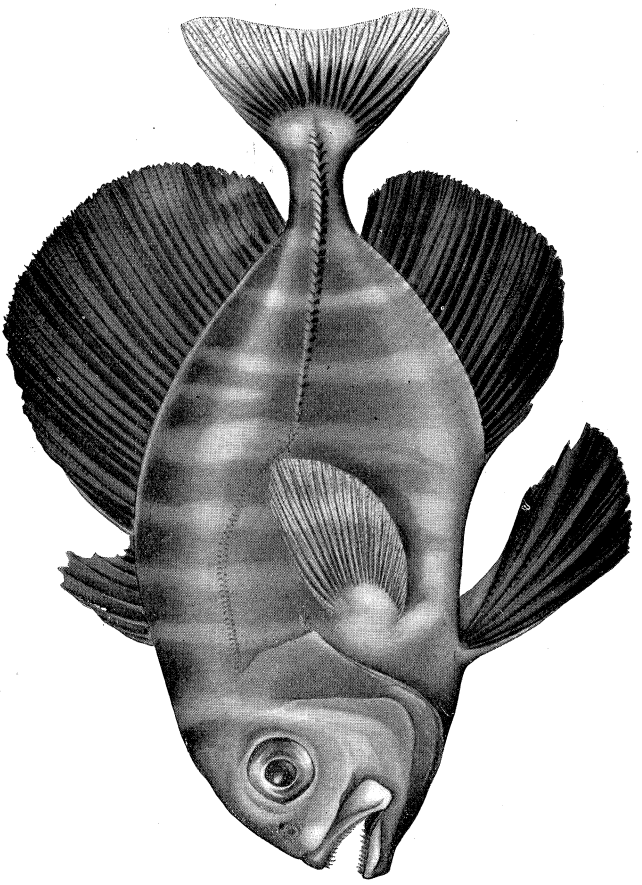
EXPLANATION OF PLATE XCI.

AUSTRALIAN FISHES.

Caranx hullianus, McCulloch, natural size.



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