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STUDIES IN ICHTHYOLOGY.

No. 1.

By

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(Plates xxiv-xxv and Figure 1.)

Under the heading " Studies in Ichthyology," I propose to contribute from time to time a series of papers dealing with fishes, mostly from Australia, as miscellaneous notes and figures accumulate.

It is a pleasure to acknowledge the courtesy of Mr. H. A. Longman, F.L.S., Director of the Queensland Museum, and of Mr. T. C. Marshall of the same institution in affording me facilities for examining many of the fishes in their custody, when recently in Brisbane. Only a few of the species then noted are dealt with here ; I intend to include my notes on the others in a paper, in course of preparation, on some North Queensland fishes.

Family Orectolobidae.

Zev *gen. nov.*

Cirrhoscyllium Smith, Proc. U.S. Nat. Mus. xlv, June 21st 1913, pp. 567, & 568. *Ex* Smith & Radcliffe MS. Orthotype *Cirrhoscyllium expolitum* Smith, *loc. cit.* Not *Cirriscyllium* Ogilby 1908, a genus in the same family.

Smith's genus *Cirrhoscyllium* must not be confused with *Cirriscyllium* Ogilby[1] (orthotype *Chiloscyllium modestum* Günther) which belongs to the same family as *Cirrhoscyllium* and also renders that name preoccupied. I propose the new name *Zev* for *Cirrhoscyllium* Smith 1913 (not *Cirriscyllium* Ogilby 1908) with *Z. expolitus* as genotype.

Cirriscyllium Ogilby is a synonym of *Brachaelurus* Ogilby 1907[2] with the same species, *Chiloscyllium modestum* Günther, as genotype. *Brachaelurus* Ogilby 1908[3] (orthotype *Brachaelurus colcloughi* Ogilby, *loc. cit.* Not *Brachaelurus* Ogilby 1907) is a synonym of *Heteroscyllium* Regan[4] (orthotype *Heteroscyllium colcloughi* Ogilby).

Family Pristidae.

Pristis zijsron *Bleeker.*

Pristis zijsron Bleeker, Nat. Tijd. Ned. Ind. ii, 1851, p. 442. Bandjermassing, Borneo. *Id.*, Whitley, Austr. Mus. Magazine, iii, 1, 1927, p. 21, 4 figs.

A female sawfish (*Pristis zijsron* Bleeker), 16 feet long, was harpooned by life-savers off the ocean beach at Manly, near Sydney, on 10th

[1]Ogilby—Proc. Roy. Soc. Qld., xxi, 1908, pp. 2 and 4.
[2]Ogilby—Proc. Roy. Soc. Qld., xx, 1907, p. 27.
[3]Ogilby—Proc. Roy. Soc. Qld., xxi, 1908, pp. 2 and 3.
[4]Regan—Ann. Mag. Nat. Hist., (8), ii, 1908, p. 455.

October, 1926. In preparing a popular article for the "Australian Museum Magazine," I accumulated certain notes, which, being of a technical character, would more appropriately appear in the pages of this journal.

The measurements of the Manly specimen were as follows. Total length 191 inches; rostrum 58½; width at pectorals 52. The weight was not ascertained. This size is not a record as two specimens from Ballina, northern New South Wales, are reported on good evidence to have measured 22-24+ feet long; 6 feet 6 inches-7 feet girth; 4 feet 4 inches-5 feet 6 inches length of rostrum.

Head of Manly specimen.—Length from posterior level of nostrils to first tooth of saw (12 inches) equal to width of head at level of eyes. Mouth to posterior level of nostrils 4⅝. Width at anterior level of nostrils 10⅜. Distance between nostrils 3⅛; olfactory laminae 2½; nostril to side of head 1⅝. Eye 1¼; interorbital width 9½, equal to width of mouth; spiracle 2⅞. 28 teeth on left, 25 on right side of rostrum.

Colour.—General colour, when fresh, greenish-grey, becoming lighter and yellowish on the sides, edges of fins and rostrum, around the eyes, and along the posterior margins of the spiracles. Ventral surface whitish. A yellowish mark in a slight pit on median line before the eyes at the origin of the rostrum. Pupil black, with a silvery ring, protected by a triangular whitish flap which overhangs it. Rest of eye greyish, darker inferiorly. Dorsals dirty yellowish-grey, the first originating above the middle of the ventrals and subequal to the second.

A search was made for external, internal, and branchial parasites, but, excepting four Sucking-fishes (*Echeneis naucrates* Linnæus) attached to the body, and a few nematodes in the stomach, no parasites were revealed.

Ovarian eggs of various sizes were present and each uterus was completely filled by five large yolk-masses or eggs, but no embryos were traceable.

Pristis zijsron is usually found in estuaries, sometimes in fresh water, in Indo-Australian waters. It is the only species of the genus so far recorded from New South Wales. The Australian Museum has a specimen from the Parramatta River, apparently the southernmost locality recorded for this species.

Family SYNODONTIDÆ.

TRACHINOCEPHALUS MYOPS (*Bloch & Schneider*).

Salmo myops Bloch & Schneider, Syst. Ichth., 1801, p. 421. *Ex* Forster MS. St. Helena.

Saurus limbatus Eydoux & Souleyet, Voy. "Bonite," Poiss., 1842, p. 199, pl. vii, fig. 3. Locality unknown (= Hawaii).

Synodus myops Bleeker, Atlas Ichth., vi, 1875, p. 153, pl. cclxxviii, fig. 3.

Goodella hypozona Ogilby, Proc. Linn. Soc. N.S. Wales, xxii, 2, 1897, p, 250. New South Wales beaches.

Trachinocephalus myops Waite, Rec. Austr. Mus., v, 4, 1904, p. 232.

A specimen, 43 mm. in total length, has the following characters:—D. 12; A. 14; P. 12; V. 8; C. 17. L. lat. 53.

Longitudinal diameter of orbit (3 mm.) twice the length of the snout

(1.5), and 3.3 in the head (10) which is 4.3 in the total length (43). Depth at base of ventrals (6) 7.1 in the same. Long sharp teeth on the maxillaries, mandible, and palatines; none on vomer.

General colour yellowish, whiter below. Eleven broken dark patches at intervals along the back, the first nine of which have lateral dark patches below and slightly behind them. A black mark on the upper opercular border. Eye opalescent greenish.

Loc.—Gunnamatta Bay, Port Hacking, New South Wales; stranded on a sand-bank, 13th February, 1926, coll. G. P. Whitley. Australian Museum Regd. No. IA.2627.

Remarks.—This specimen is of interest because it has the external characters of an adult, yet is only 43 mm. long. *Goodella hypozona* Ogilby, which has been regarded as probably the young of *Trachinocephalus myops*, retains its larval characters at least up to a length of 48 mm.; it has been found cast upon New South Wales beaches in January and February, and is said to be quite transparent when alive. It may decrease in size during metamorphosis in a manner similar to the shrinking of the *Leptocephalus* which becomes an elver.

Should later research show that there are specific differences between the *Trachinocephalus* of the Pacific and *T. myops* of the Atlantic, our form will have to be called *T. limbatus* Eydoux & Souleyet. Specimens are in the Australian Museum from various localities on the New South Wales coast, Lord Howe Island, New Hebrides, and Madras, India (Day). The species has been recorded from Houtman's Abrolhos and southern Queensland.

Family ARIIDAE.

ARIUS GAGORIDES (*Cuvier & Valenciennes*).

?Pimelodus sona Hamilton-Buchanan, Acc. Fish. Ganges 1822, pp. 172, 376 (*fide* Day).

Bagrus gagorides Cuvier & Valenciennes, Hist. Nat. Poiss., xiv, 1839, p. 441. Bengal.

Bagrus trachipomus Cuvier & Valenciennes, *Op. cit.*, p. 443. (Bengal.)

Arius gagoroides Bleeker, Verh. Batav. Genootsch. Wetensch., xxi, 1, 1846, p. 34.

Arius sona Day, Fish. India 1878, p. 462, pl. cv, fig. 2.

Arius gagorides Weber & Beaufort, Fish. Indo-Austr. Archip., ii, 1913, pp. 274 & 288.

A specimen (Austr. Mus. Regd. No. IA.2663), approximately 560 mm. in total length, agrees in detail with a Calcutta example from Day's collection, labelled as *A. sona* (B.7953), which is 345 mm. long. It was collected by Mr. David G. Stead at Bandar Maharani, Malay Peninsula.

I am not certain whether the name *sona* is applicable to this species or not because Hamilton-Buchanan's work is not available to me.

Family MURŒNESOCIDÆ.

MURŒNESOX ARABICUS (*Bloch & Schneider*).

Muraena cinerea Forskal, Descr. Anim. 1775, p. x (*nomen nudum*).

Muraena tota cinerea Forskal, *Op. cit.*, p. 22. Not binomial. Djedda, Red Sea.

Muraena myrus var. *tota cinerea* Gmelin, Linn. Syst. Nat., ed. 13, i, 3, 1789, p. 1134. *Ex* Forskal. Red Sea.

Muraena arabica Bloch & Schneider, Syst. Ichth., 1801, p. 488. Based on *Muraena cinerea* and *tota cinerea* Forskal. Red Sea.

This species has been called *Muraenesox cinereus* (Forskal) by many authors but, as Sherborn (Ind. Anim. 1902, p. 213) has pointed out, *Muraena cinerea* Forskal 1775 is a *nomen nudum*; Forskal's name should not be confused with the distinct species *Muraena cinerea* Bonaterre [Tabl. Encycl. Meth. (Ichth.) 1788, p. 35] from Guinea, based on No. 162 of Gronow's Zoophylacium, which was doubtfully referred to *Muraena helena* Linnæus by Meuschen in his index to Gronow's work (1781). Forskal's second name for his species, *tota cinerea*, is not binomial. The next writer on the species is Gmelin (1789) who regards it as a variety of *Muraena myrus* Linnæus. Its specific status is vindicated by Bloch & Schneider in 1801, and their name *Muraena arabica* is, in my opinion, the first valid one for the Red Sea species. Later synonyms have been listed by Jordan & Snyder (Proc. U.S. Nat. Mus., xxiii, 1901, p. 857). The original spelling of the generic name is *Murœnesox* (McClelland, Calcut. Journ. Nat. Hist., iv, 1844, p. 408).

Family MURAENIDAE.

MURAENA AUSTRALIAE *Richardson*.

Muraena helena australiae (on plate only) Richardson, Zool. "Erebus" & "Terror" (Fish 1848), p. 80, pl. xlix, figs. 1-6. Australia.

Muraena vorax Ogilby, Proc. Roy. Soc. Qld., xx, 1907, p. 11. New name for *Muraena helena*, Australian form.

Muraena vorax Ogilby has no validity as a specific name, and the manner in which it was proposed leads one to consider it a *nomen nudum*, no references to literature or specimens having been made. Fortunately, Ogilby was anticipated by Richardson, who separated the Australian ally of *Muraena helena* Linnæus from the European species by naming it *Muraena helena australiae* on plate xlix of the Zoology of the Erebus & Terror volume. The date of publication of the plates of this work is unknown to me, but the text concerning *Muraena helena* (p. 80) was issued in 1848. Ogilby's paper was issued as a reprint on 2nd January, 1907.

Family CENTRISCIDAE.

ÆOLISCUS STRIGATUS (*Günther*).

Amphisile strigata Günther, Cat. Fish. Brit. Mus., iii, 1861, p. 528. Java.

Æoliscus strigatus Jordan & Starks, Proc. U.S. Nat. Mus., xxvi, 1902, p. 71, fig. 3. *Id.* Weber & Beaufort, Fish. Indo-Austr. Archip., iv, 1922, p. 20, fig. 10.

Centriscus strigatus Duncker & Mohr, Mitt. Zool. Mus. Hamb., xli, 1925, p. 98, figs. 1-12.

Locomotion.—"A very small specimen was caught by Paymaster P. Stevens of H.M.S. 'Pegasus' in some weed (*Zostera ?*) in Vila Harbour, New Hebrides, 27. viii. 10. This specimen did not swim vertically, but obliquely and *snout downwards*. The jointed spine was not carried straight out normally but bent downwards at an angle to the body, though, when alarmed, the fish straightened it out and *locked* it. Swimming was

effected by an alternate movement of the pectorals and similarly right v. left movement of the dorsal and anal and *vice versa*. The tail also assisted in this movement, but appeared to be used principally for steering. The fish could dart forwards with sudden rapid movements, while its oblique position in the water would seem to be to enable it conveniently to pick up its food off the sea-bottom. When placed vertically, head upwards, it immediately regained its oblique position, but it occasionally also swam horizontally."—MS. note by the late Allan R. McCulloch.

Distribution in Australia.—Specimens are in the Australian Museum from Clarence River, New South Wales, and Innisfail, North Queensland. This is the first record of the species from New South Wales. *Æoliscus strigatus* has been noted from Cape York by Castelnau[5] and from Bribie Passage, Caloundra, Queensland by Johnston.[6]

Family SYNGNATHIDAE.

SOLEGNATHUS *Swainson.*

Solegnathus Swainson, Nat. Hist. Fish. Amphib. Rept., ii, 1839, p. 333. Haplotype, *Syngnathus hardwickii* Gray 1830. *Id.* Swain, Proc. Acad. Nat. Sci. Philad. (1882) 1883, p. 283.

Solenognathus Kaup, Arch. Naturg., xix, 1, 1853, p. 230, and Cat. Lophobr. Fish., 1856, p. 19 (*emend.*).

Solenostomus Günther, Cat. Fish. Brit. Mus., viii, 1870, p. 516 (*error*).

Solengognathus Kent, Nat. in Austr., 1897, p. 186 (*error*).

Castelnauina Fowler, Proc. Acad. Nat. Sci. Philad. (1907), 1908, p. 426. Orthotype, *Solenognathus spinosissimus* Günther 1870.

Key to Australian species.—

A. Dorsal edges of body and tail continuous; Scutes rugose, but with scarcely any spines; a blackish stripe along dorsal edges..... *dunckeri* sp. nov.

AA. Medio-lateral ridge of body continuous with dorsal edge of tail. Dorsal ridges of body and tail discontinuous.

B. Depth of tail behind dorsal 4 or more in base of that fin; depth of snout 6 or more in its length.

C. Orbit less than 4 in snout.

D. Scutes convex, intensely spiny.....*spinosissimus*[7]

DD. Scutes almost flat, one spine on each.....*fasciatus*[8]

CC. Orbit more than 4 in snout..... *guntheri*[9]

BB. Depth of tail behind dorsal about 3 in base of that fin; depth of snout 5 in its length; Scutes slightly convex, with rows of spines radiating from a stronger central spine on each ..... *robustus.*[10]

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[5]Castelnau—Res. Fish. Austr. (Vict. Offic. Rec. Philad. Exhib.), 1875, p. 33.

[6]Johnston—Sci. Australian, xxii, 4, 1917, p. 100.

[7]Günther—Cat. Fish. Brit. Mus., viii, 1870, p. 195 (*Solenognathus*). Tasmania.

[8]Günther—Voy. Challenger, Zool., i, 6, 1880, p. 30, pl. xiv, fig. B. (*Solenognathus*) Off Twofold Bay, New South Wales.

[9]Duncker—Mitt. Zool. Mus. Hamburg, xxxii, 1915, p. 65 (*Solenognathus*). Houtmans Abrolhos, W. Australia.

[10]McCulloch—Zool. Res. "Endeavour," i, 1911, p. 28, pl. ix, fig. 2. Off Flinders Island, South Australia.

SOLEGNATHUS DUNCKERI, *sp. nov.*

(Plate xxiv, fig. 1.)

Solenognathus hardwickii Waite, Proc. Linn. Soc. N.S. Wales (2) ix, 1894, p. 221, pl. xvii, figs. 2-4 & 7 ("Port Jackson" and "Maroubra" specimens only). Not *Syngnathus hardwickii* Gray 1830.

Solengognathus hardwickii Kent, Nat. in Aust., 1897, p. 186 ("Moreton Bay" record only). Not *Syngnathus hardwickii* Gray 1830.

Solegnathus hardwickii Waite, Mem. N.S.W. Nat. Club, ii, 1904, p. 19. *Id.*, McCulloch, Zool. Res. "Endeavour," i, 1911, p. 28, and Austr. Zool., ii, 2, 1921, p. 38; and Check-List Fish. N.S.W. (Austr. Zool. Handbk., i), 1922, p. 28. Not *Syngnathus hardwickii* Gray 1830.

Solegnathus guntheri McCulloch & Whitley, Mem. Qld. Mus., viii, 2, 1925, p. 137. Not *Solegnathus guntheri* Duncker 1915 (Houtmans Abrolhos specimen only).

D. 43; A. 4; P. 23; osseous rings 25 + 58.

Head (69 mm.) 6.7 in the total length when extended (463), 2.4 in the trunk (171). Tail (223) much longer than distance from vent to isthmus (172). Greatest depth (34) 2 in head. Eye (8.5) 8.1 in the same. Depth behind dorsal (12) 5.1 in the base of that fin (62). Postorbital length of head (20) 2 in snout, whose depth (5) is $\frac{1}{8}$ of its length (40) and equal to the interorbital width (5). Width of expanded caudal region (24) 3.3 in its length (80).

Head and body covered with prickly asperities except on the gill-membranes, bases of fins, and brood-area, around the vent, and under the prehensile portion of the tail. Some of the scutes, noticeably those on the nape, have a spine-like tubercle, but most of them are slightly convex and rugose. The median row of scutes along the back is not elevated.

Dorsal fin occupying a sunken area along eleven tail-rings, its radial bases elevated. Dorsal body-ridges beginning behind neck and extending without interruption to end of tail. Medio-lateral body-ridges becoming swollen outwards below the dorsal fin to form a roof-like shelter over the brood-area; they merge into the lateral scutes of the tail at the 13th tail-ring. The lower body-ridges give a V-shaped appearance to the ventral surface. The vent occupies the last body-ring, which is not as deep as the others, and is followed by the soft-skinned brood-area which extends over the ventral surface for about seventeen tail-rings and has well-marked hexagonal pits anteriorly for holding eggs. The ventral ridges of the tail are less marked where they pass over the brood-area to join the infero-lateral body-ridges. Prehensile surface of tail skinny, without excrescences.

General colour (in spirit) yellowish, darker on the tail. A blackish band extends along the scutes forming the dorsal ridges, is continued on to the nape anteriorly, and becomes diffused below the last dorsal rays posteriorly. Lower surfaces of tail, behind brood-area, smoky brown. A faint brown stripe passes obliquely through the blue eye. Fins yellowish, an ill-defined smoky band along the lower part of the dorsal.

This species is readily recognisable by its continuous dorsal and supra-caudal ridges, by the black stripe along its back, and, at least in the males, by the swollen sides below the dorsal fin.

Described and figured from the holotype, 463 mm. long when fully

extended, from Lord Howe Island, where it was collected by Mr. P. R. Pedley. Australian Museum Regd. No. I.14336.

Named in honour of Dr. Georg Duncker, the author of many valuable papers on the family Syngnathidae.

Remarks.—Besides the holotype, there are three specimens of *Solegnathus dunckeri* in the Australian Museum. Two are from Lord Howe Island, and the third is evidently the specimen figured by Waite (*loc. cit.*) as *S. hardwickii*, though it is without definite data. Unfortunately these specimens are dried and damaged so that their fin-rays cannot be counted; their osseous rings, however, vary from 24-26+57-58.

Range.—Lord Howe Island. Kent's record of the species from Moreton Bay, Queensland and Waite's New South Wales records need confirmation before the species can with confidence be regarded as a member of the Australian fauna.

Family PEGASIDAE.

PEGASUS VOLITANS *Linnaeus.*

Pegasus volitans Linnaeus, Syst. Nat., Ed. 10, 1758, p. 338. Amboina.

Zalises umitengu Jordan & Snyder, Proc. U.S. Nat. Mus., xxiv, 1901, p. 2, pls. i-ii. Wakanoura, Japan.

Pegasus pauciradiatus Ogilby, Cat. Fish. N.S. Wales in Rept. Comm. Fisher. N.S. Wales, (1886) 1887, append. a, p. 34. Port Jackson. Holotype in Australian Museum examined.

Mr. J. Bennett obtained a specimen of this species at Gunnamatta Bay, Port Hacking on the 6th June, 1923. This is the second notice of its occurrence in New South Wales, the first being Ogilby's record, quoted above, from Port Jackson. Though Ogilby's holotype of *Pegasus pauciradiatus* appears to the naked eye to have eight pectoral rays, microscopical examination reveals the presence of nine rays in each pectoral fin, and the species, which seems generally to have been overlooked, becomes a synonym of *P. volitans*.

Localities.—Garden Island, Port Jackson, New South Wales; dredged November, 1885. Holotype of *P. pauciradiatus* Ogilby; Regd. No. B.9207.

Gunnamatta Bay, Port Hacking, New South Wales; "salmon haul," June 6th, 1923. Regd. No. IA.1391.

Wilanti, south Malaita, Solomon Islands.

Family ATHERINIDAE.

CRATEROCEPHALUS FLUVIATILIS *McCulloch.*

Craterocephalus fluviatilis McCulloch, Proc. Roy. Soc. Qld., xxiv, 1912, p. 49, pl. i, fig. 1. Narrandera, New South Wales. *Id.*, Waite, Fish. S. Austr., 1923, p. 103.

Habits.—"The McIntyre River was just running, and a stream of thick greyish water from the wool-scour was coming down Middle Creek. I drew a small net below the junction at Inverell and caught a number of Hardyheads (*Craterocephalus fluviatilis*), which were examined and found to be full of roe. Just above the junction the water was perfectly clear, and thousands of Hardyheads were playing about near the surface and

darting in and out of the weeds. The surface was constantly disturbed by their movements. I picked up a specimen from the net and, with thumb and finger, stripped from it a number of eggs, less than the size of a pin's head. Finding the operation very easy, I stripped quite half a dozen, fertilizing the eggs with the milt of the male fishes similarly handled. The eggs adhered to weeds, stones, etc. I then watched closely the movements of the fishes in water that had not been disturbed—the female rubbed herself against the stones on the bottom, evidently assisting the extrusion of the ova. There were invariably three or four male fish which kept close behind the female, and repeatedly swam in beside her, performing similar rubbing movements, just where the female had done." —MS. notes by Mr. H. K. Anderson of the Fisheries Department of New South Wales dated 8th October, 1914, when these observations were made.

Part of the McIntyre (or Barwon) River is on the border of New South Wales and Queensland; *Craterocephalus fluviatilis* extends into the latter State, however, as I have identified specimens in the Queensland Museum from Ithaca Creek, near Brisbane. McCulloch[11] has suggested that this species may be distributed by wind and rain.

Family TRACHIPTERIDAE.

TRACHIPTERUS JACKSONENSIS (*Ramsay*).

(Plate xxv, fig. 2.)

Regalaecus jacksonensis Ramsay, Proc. Linn. Soc. N.S. Wales, v, 1881, p. 631, pl. xx. Manly, near Sydney, New South Wales. Holotype in Australian Museum.

Trachypterus jacksoniensis polystictus Ogilby, Proc. Linn. Soc. N.S. Wales, xxii, 3, 1898, p. 649. Newcastle, New South Wales. Holotype in Austr. Mus.

Trachypterus jacksonensis Stead, Proc. Linn. Soc. N.S. Wales, xxxvii, 3, 1913, p. 492. *Id.*, McCulloch, Austr. Mus. Mag., i, 5, 1922, p. 146.

Trachipterus jacksonensis McCulloch, Austr. Zool., ii, 2, 1921, p. 45, pl. xi, fig. 126a (after Ramsay).

Trachypterus jacksoniensis Marshall, Mem. Qld. Mus., viii, 2, 1925, p. 123.

The following description and the beautiful figure accompanying it were prepared by the late Allan R. McCulloch.

Approximate length from end of snout to tip of tail (incomplete) 1925 mm. Greatest depth 251, breadth behind shoulder 51. Length of the head when the mouth is closed, a little less than the height of the body. Diameter of eye a little less than length of snout; interorbital width about $\frac{2}{3}$ diameter of eye. 50th dorsal ray 100 mm. 8th pectoral ray 115.

Body strongly compressed. The lower profile is straight but the upper is strongly arched; it rises slightly from the nape to its highest point, which is between the first and second fourths of its length, thence it curves steadily downward to the slender tail. Entire body covered with white dermal tubercles which are flattened on the upper parts but change gradually into obtuse points on the ventral surface. They are a little enlarged and arranged in vertical rows on each side of the interneural spines and coalesce to form irregular plates along the lateral line. The lateral line slopes downward from the shoulder till it reaches the middle

[11]McCulloch—Austr. Mus. Magazine, ii, 6, 1925, p. 218.

of the body and thence extends backward to near the tail, where it bends downward to the ventral surface, Anteriorly it is formed of short plates, each bearing a rudimentary central spine, but the plates become much longer posteriorly, the length of each corresponding with those of the caudal vertebrae. The vent is a small opening almost exactly in the middle of the total length and opposite the 80th ray.

Head naked, longer than high. Maxilla and opercular bones membranaceous and striated. Upper profile of head forming an oblique line from the posterior end of the premaxillary processes to the upper lip; when the mouth is closed, the processes reach backward almost to the vertical of the hinder margin of the eye; they curve forward on each side behind the upper lip and in advance of the maxilla. A small pore near the upper surface of the snout, well in advance of the eye, apparently represents a nostril. Maxilla lamellate, more than half as wide as deep, with many striae radiating from its upper portion. Mandible with numerous ridges and grooves. Diameter of eye a little less than its distance from the upper lip when the mouth is closed. Preoperculum moveable upon exposed processes of the quadrate and hyomandibular; its greater surface is densely striated, but it has a smooth membranous border, which is rounded. Operculum, interoperculum, and suboperculum very thin and similarly striated, the latter with a broad smooth membranous border. Six branchiostegals. Four gill-arches, a slit behind the last; gill-rakers few and stout, 12 on the first gill-arch, and provided with stout spines on the inner surface of their free portion. A single irregular row of cardiform teeth on the inner edge of the premaxillary; they are directed horizontally backward. Mandible with two short rows of similar teeth on each side of symphysis. Three acute teeth are arranged in a row on a median process of the vomer, and one or two on each palatine.

Dorsal fin originating a short distance behind tips of premaxillary processes. Five very short and fine rays precede the longer portion. These are followed by 130 simple rays, after which the body is damaged. Though very imperfect, the anterior rays appear to increase in height backward as illustrated in the figure, decreasing again towards the end of the tail, though those remaining indicate that they are well developed to the last. The pectoral is formed of fourteen simple rays, the outer two of which are very short; the median ones are longest. Two tubercles in pits in the skin just behind the vertical of the posterior angle of the pectoral base represent the remains of the ventrals.

Colour.—Apparently uniformly silver with a sharply defined black stripe along the upper surface of the head. Symphyses of both jaws black. After having been rubbed about in the sand, the tubercles covering the body are pure white. Fins pink when fresh.

Described and figured from a specimen, 1925 mm. long (approx.), from Middle Harbour, Port Jackson. It appears a little deeper than the holotype, to which it is exactly similar in every other detail. This specimen was observed swimming in shallow water by Mr. C. L. Scott, who succeeded in casting a line round it and hooking it in the eye. It swam with an undulating motion, and leapt out of the water when hooked. It was in perfect condition when captured, but was unfortunately much damaged before being forwarded to the Australian Museum.

Family SERRANIDAE.

ELLERKELDIA, *gen. nov.*

This name is proposed for the Australian fish *Gilbertia annulata* (Günther), originally described as a *Plectropoma* (Cat. Fish. Brit. Mus., i, 1859, p. 158). The name *Gilbertia* Jordan & Eigenmann (Bull. U.S. Fish. Comm. viii, (1888) 1891, p. 346. *Ex* Jordan MS.) was first published on 25th March, 1891, as the following extract from a letter to me from the Commissioner of Fisheries at Washington, U.S.A., states : " The date of issuance as a separate pamphlet of the Bureau's Document No. 144, entitled ' A Review of the Genera and Species of Serranidæ Found in the Waters of America and Europe,' by David Starr Jordan and Carl H. Eigenmann, comprising pages 329 to 441 of Bulletin of the U.S. Fish Commission, Volume viii, 1888, was March 25, 1891." *Gilbertia* Jordan & Eigenmann 1891 is thus clearly preoccupied by *Gilbertia* Cossmann (Ann. Soc. Roy. Malac. Belg., xxiv, 1889, before April 1890, p. 347), a genus of Mollusca, and *Ellerkeldia* should be used in its stead.

Orthotype.—Ellerkeldia annulata (Günther).

Family CARANGIDAE.

MEGALASPIS *Bleeker.*

Megalaspis Bleeker, Nat. Tijd. Ned. Ind., ii, 1851, p. 213. Orthotype, *Caranx rotleri* Cuvier & Valenciennes = *Megalaspis cordyla* (Linnaeus). Monotypic, not *Megalaspis* Angelin 1852, a genus of trilobites.

MEGALASPIS CORDYLA (*Linnaeus*).

(Plate xxiv, fig. 2.)

Scomber cordyla Linnaeus, Syst. Nat. Ed. 10, 1758, p. 298 (description only, not synonymy). No locality ; I designate " East Indies" (" America " refers to the quoted works).

Scomber rottleri Bloch, Nat. ausl. Fische, vii, 1793, p. 88 (*fide* Sherborn), and Ichtyologie, x, 1797, pp. 39 & 74, pl. cccxlvi. Coromandel. *Id.*, Bloch & Schneider, Syst. Ichth., 1801, p. 25. *Id.*, Shaw, Gen. Zool., iv, 2, 1803, p. 598.

" *Woragoo* " Russell, Fish. Vizagapatam, ii, 1803, p. 33, pl. cxliii.

Caranx rottleri Rüppell, Atl. Reise Nordl. Afrika 1830-31, p. 102. *Id.*, Cantor, Cat. Malay. Fish. 1850, p. 124. *Id.*, Günther, Cat. Fish Brit. Mus., ii, 1860, p. 424. *Id.*, Kner, Reise " Novara," Fische, 1865, p. 150. *Id.*, Day, Fish. Malabar, 1865, p. 80. *Id.*, Day, Fish. India, i, 1878, p. 213.

Caranx rotleri Cuvier & Valenciennes, Hist. Nat. Poiss., ix, 1833, p. 29. *Id.*, Rüppell, Neue Wirbelth., Fische, 1835, pp. 48 & 52.

Megalaspis rottleri Bleeker, Nat. Tijd. Ned. Ind., ii, 1851, p. 213.

Megalaspis cordyla Jordan & Seale, Bull. U.S. Fish. Bur. xxv, 1906, p. 229. *Id.*, McCulloch, Biol. Res. " Endeavour," iii, 3, 1915, p. 139. *Id.*, Wakiya, Ann. Carn. Mus., xv, 1924, p. 147, pl. xv, fig. 1.

A specimen of this species, shown in the accompanying figure, was caught at La Perouse, Botany Bay, and is the first to be recorded from New South Wales. When fresh, its colours were as follows.

Silvery on the cheeks, maxilla, and lower jaw, above which the colour

is dark blue suffused with dark green lustre. Lower lip dark. Orbit encircled with pearly grey, tinged here and there with copper. Adipose eyelid hyaline. A black blotch over the operculum. A small faint green mark begins behind posterior edge of maxilla and stretches in an ill-defined crescent, with horns pointing upwards, to the opercular blotch.

Body silvery on sides, darker above, similar to head. Lateral scutes silvery. Scales above them dark blue-grey with greenish lustre; those below them silvery, reflecting iridescent pinks and blues in places.

First dorsal almost transparent; spines smoky grey, blacker at tips. Second dorsal yellow, rays dark-tipped; finlets yellow. Upper pectoral rays yellow, lower white; inner axil dark grey. Ventrals and anal spines, rays and finlets white. Caudal yellow with a dark grey border.

D.i, vii, i/9+9; A.ii, i/8+8; P. 21; V.i/5; C. 16. L. lat. 53.

The species is uncommon in Australia. The F.I.S. "Endeavour" trawled it off Bowen, Queensland. Specimens are in the Australian Museum from Manila, P.I. (Seale); Madras, India (Day).

Mr. David G. Stead, while Special Fisheries Commissioner and Director of Food Supplies to the Governments of the Straits Settlements, the Federated Malay States, and the Malay States not included in the Federation, made a large collection of fishes, now in the Australian Museum.

Megalaspis cordyla is represented therein by specimens from the following localities :—

Bandar Maharani (= Muar)	16 December, 1922.
Singgora, Siam	6 May, 1922.
Kuala Kurau	27 December, 1922.
Trengganu	1 May, 1922.
Malacca	25 October, 1922.
Cape Rachado	18 February, 1922.

A small specimen, gutted and dried, but with the head on, is labelled "No. 264. 1 *Caranx* sp., as dried at Besi Api, Kuala Dungun, 28/11/22."

Synonymy.—Megalaspis cordyla is readily recognisable by the numerous finlets behind its dorsal and anal fins. Linnaeus mentions them in his description of *Scomber cordyla*, but includes references to an American fish, "*Trachurus brasiliensis* Ray," which is a distinct species now called *Caranx cordylaoides* Meuschen (*infra*). Numerous authors have copied Linnaeus in mixing the American species without finlets (*Caranx*) with *cordyla*, but I am of the opinion that Linnaeus' name should be used for the finletted *Megalaspis cordyla* because he first gave an accurate description of it. His synonymy referring to the American fish should be transferred to that of *Caranx cordylaoides*.

Scomber rottleri Bloch has been much used for *Megalaspis cordyla*, because of the Linnean confusion, but is a synonym of it.

CARANX *Lacépède* 1802, *subgenus* USA, *nov.*

Selenia Bonaparte, Cat. Metod. 1843, p. 75. Type, *Caranx luna* St. Hilaire=*Scomber guara* Bonnaterre [=*Caranx* (*Usa*) *cordylaoides* Meuschen] (*fide* Jordan & Jordan, Mem. Carneg. Mus., x, 1, 1922, p.

40). Preoccupied by *Selenia* Hübner, 1816, a genus of Lepidoptera (*fide* Agassiz, Nomencl. Zool.).

Longirostrum Wakiya, Ann. Carneg. Mus., xv, 1924, pp. 164 & 202. Substitute for *Selenia*, preoccupied; but itself preoccupied by *Longirostris* S.D.W. 1836, a genus of birds.

I am obliged to Mr. T. Iredale for calling my attention to *Longirostris*, a name proposed by S.D.W[ood], Analyst, iv, 1836, p. 119, for an avian genus. Wood's name preoccupies *Longirostrum* recently proposed by Wakiya (*loc. cit.*) for *Selenia* (preocc.). I accordingly propose the new subgeneric name *Usa* as a substitute, with the American *Caranx* (*Usa*) *cordylaoides* Meuschen as orthotype.

CARANX (USA) CORDYLAOIDES (*Meuschen*).

" *Guara terebra* " Marcgrave, Hist. Brasil, 1648, p. 172 (*fide* Lacépède, Hist. Nat. Poiss., ii, 1800, p. 604, footnote). Brazil.

" *Trachurus brasiliensis* " Ray, Synops. meth. avium pisc., 1710, p. 93. Brazil.

" *Scomber linea laterali curva*," &c. Gronovius, Act. Upsala, 1744 or 1750, p. 36; Mus. Ichth. i, 1754, p. 34, No. 82; and Zoophyl., i, 1763, p. 94, No. 307 (*fide* Cuvier & Valenciennes, Hist. Nat. Poiss., ix, 1833, p. 32, footnote). No locality=America.

Scomber cordyla Linnaeus, Syst. Nat. ed. 10, 1758, p. 298; and ed. 12, 1766, p. 493 (synonymy only). *Id.*, Gmelin, *ibid.*, ed. 13, i, 3, 1789, p. 1332. *Id.*, Bloch & Schneider, Syst. Ichth., 1801, p. 23. Not *Scomber cordyla* Linnaeus 1758, descriptive part=*Megalaspis cordyla* (Linn.). America.

Scomber cordylaoides Meuschen, Index Zoophyl. Gronov., pt. iii, 1781. Based on Gronovius, Zoophyl., No. 307. (*supra*).

Scomber cordila Bonnaterre, Tabl. Encycl. Meth. Ichth., 1788, p. 139, pl. lviii, fig. 229 (" Le Guare.") [Not part describing finlets, which applies to *Megalaspis cordyla* (Linnaeus).] Based on Seba, iii, 1758, pl. 27, fig. 3 (*fide* Cuvier & Valenciennes, Hist. Nat. Poiss. ix, 1833, p. 33, footnote). America.

Scomber guara Lacépède, Hist. Nat. Poiss., ii, 1800, pp. 598 & 604. [Not part describing finlets, which applies to *Megalaspis cordyla* (Linnaeus).] South America.

Scomber dentex Bloch & Schneider, Syst. Ichth., 1801, p. 30. Brazil.

Caranx luna Geoffroy St. Hilaire, Descr. Egypt. Poiss., 1809, pl. xxiii. (*fide* Jordan & Gilbert, Proc. U.S. Nat. Mus., vi, 1884, p. 197 and Jordan & Jordan, Mem. Carneg. Mus., x, 1, 1922, p. 40). Red Sea, Egypt. *Id.*, Cuvier & Valenciennes, Hist. Nat. Poiss., ix, 1833, p. 80.

Trachurus cordyla Gray, Cat. Fish. coll. Gronow Brit. Mus., 1854, p. 124. *Ex* Gronovius.

Caranx (*Uraspis*) *guara* Jordan & Evermann, Bull. U.S. Nat. Mus., xlvii, 1, 1896, p. 926. "Habitat in Pelagico inter Tropicos."

Synonymy.—The American *Caranx* (*Usa*) *cordylaoides* has been confused in literature with the Indo-Australian *Megalaspis cordyla* (*q.v.*, *supra*); the finlets of *Megalaspis*, however, readily distinguish it from the American fish. The latter has received many names as set forth in the above synonymy. It was wrongly appended to the description of

Scomber [=*Megalaspis*] *cordyla* given by Linnaeus (1758), whose mistake has been copied by later authors. Gronovius' remarks and unqueried references in his Zoophylacium (1763) refer to the American fish, but his name is non-binomial. Meuschen (1781) remedied this deficiency by naming Gronovius' species *Scomber cordylaoides*, and his specific name, hitherto apparently overlooked, must be used in preference to later ones. Bonnaterre figured this species, which he called " Le Guare " (*Scomber cordila*), but included in his description the finlets appertaining to *Megalaspis*, and Lacépède based his name *Scomber guara* on the same species. *Scomber dentex* and *Caranx luna* appear, on good authority, to be synonyms also of *Caranx* (*Usa*) *cordylaoides*.

Family SCORPIDAE.

SCORPIS LINEOLATUS *Kner*.

(Pl. xxv, fig. 1.)

Scorpis lineolatus Kner, Reise "Novara" Zool., i, Fische, pt. i, 1865, p. 108, pl. v, fig. 3, Sydney. *Id.*, McCulloch, Rec. Austr. Mus., xi, 7, 1917, p. 178 (references and synonymy).

A young specimen, 102 mm. long from the snout to the end of the middle caudal rays, figured here, has D.x/26; A.iii/26.

Loc.—Coogee Beach, New South Wales; coll. G. P. Whitley, March 2nd, 1924.

Family POMACENTRIDÆ.

POMACENTRUS WARDI, *sp. nov.*

(Fig. 1.)

D.xiii/15; A.ii/15; P. 19; V.i/5; C. 15. Sc. 26. 19 tubes on l. lat. plus about 7 punctured scales.

Head (19 mm.) 3.2 in length to hypural joint (60); depth, including scaly dorsal sheath (32) 1.8 in same. Snout (4) 1.5 in interorbital width (6), which is less than eye (6.5). Narrowest depth of caudal peduncle (8) one-tenth of total length (80).

Head scaly except in advance of the nostrils, on the preorbital and on the throat. A row of pores along the narrow, strongly but irregularly serrated, suborbital. Other opercles entire except the upper limb of the preoperculum which is strongly denticulated. A minute opercular spine. Eye large. Interorbital convex. Maxillary not reaching vertical of anterior margin of the eye. A single series of compressed incisors in each jaw, extending along a descending lateral ramus in the upper jaw and along a similar ascending one in the lower. Gill-rakers slender; long above, very short below.

Body deep, compressed, covered with ctenoid scales, which extend over the bases of all the fins and between the spines and rays, excepting the ventrals. Long axillary scales on each side of the ventrals, and a large rounded scale with a concave inferior margin over the shoulder girdle just above the pectoral fin. Lateral line curved, originating above the operculum, where there is a modified toothed scale, and terminating beneath the soft dorsal. A few punctured scales on each side of the tail.

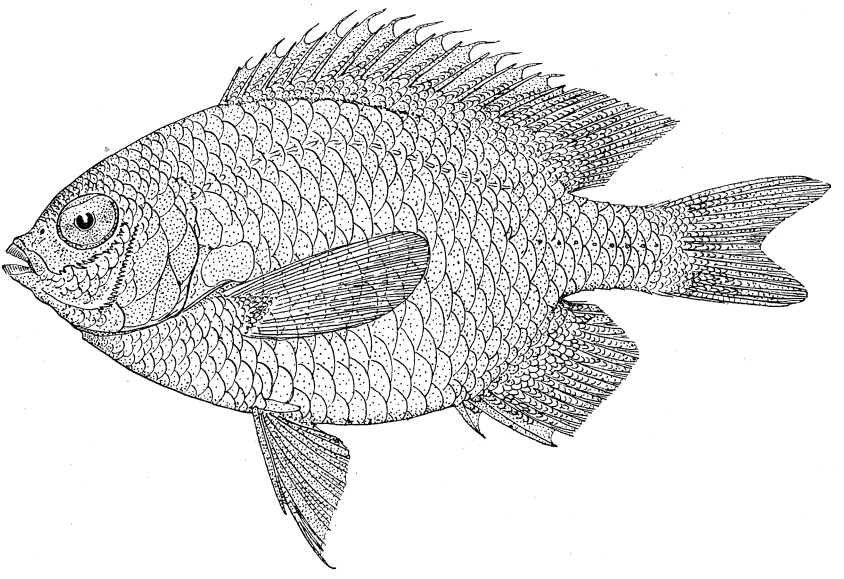
Dorsal originating in advance of the vertical of the pectoral origin

and terminating slightly behind the anal. Fins moderately pointed; caudal forked, the upper lobe longer.

Colour, in alcohol, brownish, darker on the dorsal, ventral, and anal, becoming olivaceous on the sides and breast, and to a lesser extent on the tail and pectorals; the two shades merging one into the other. Some scales with a fuscous crescentic bar.

Described and figured from the holotype, 80 mm. long, from Heron Island, Capricorn Group, Great Barrier Reef, Queensland; collected by Mr. Melbourne Ward. Australian Museum Registered No. IA.2964.

A paratype was caught with the holotype and agrees with it in detail. It has, however, a few whitish flecks on the opercular scales, whereas the holotype is plain.



Pomacentrus wardi Whitley sp. nov. Holotype, 80 mm. long, from Heron Island, Capricorn Group, Great Barrier Reef, Queensland.
G. P. WHITLEY del.

Pomacentrus wardi is near, if not identical with, *P. trilineatus* as figured by Bleeker,[12] but differs from the original description given by Cuvier & Valenciennes[13] in lacking the elaborate pattern of their four-inch specimen. The type locality of *P. trilineatus* is the Red Sea.

Two other specimens of *Pomacentrus wardi* have D.xiii-xiv/14-16, and 16 anal rays. One was collected by Dr. W. E. J. Paradice of H.M.A.S. "Geranium" at Cape Wessell, Arnheim Land, Northern Territory of Australia; the other by Dr. Lockwood of H.M.A.S. "Moresby" from the Hervey Bay District, southern Queensland.

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[12]Bleeker—Atl. Ichth., ix, 1877, pl. cccevi, fig. 5.
[13]Cuvier and Valenciennes—Hist. Nat. Poiss., v, 1830, p. 428.

Three more, collected at High Island, McCulloch Reef, and Gibson Reef, North Queensland, by Dr. Paradice, agree with the types in their fin formulae, but have a small dark opercular spot.

DAYA JERDONI (*Day*).

Pomacentrus jerdoni Day, Proc. Zool. Soc., 1873, p. 237. Madras.
Pomacentrus dolii Macleay, Proc. Linn. Soc. N.S. Wales, vi, 1881, p. 65, pl. i, fig. 1. Port Jackson. Co-types in the Macleay Museum, University of Sydney.
Daya jerdoni McCulloch, Mem. Qld. Mus., vii, 3, 1921, p. 170, pl. ix, fig. 1.
Chromis virescens Ogilby, Mem. Qld. Mus., vii, 4, 1922, p. 303, pl. xix, fig. 3. Hervey Bay, south Queensland. Holotype in Queensland Museum.

I have examined the holotype of *Chromis virescens* Ogilby in the Queensland Museum (Regd. No. I.3477) and find that it agrees in detail with specimens identified by McCulloch as *Daya jerdoni* Day in the same institution. The head of Ogilby's type has been distorted in preservation, which accounts for the discrepancies in proportions between his description and that given by McCulloch. The hinder border of the preoperculum and the rounded angle of the operculum are distinctly, though minutely, serrated, and there are two opercular spines. The dentition is that of *Daya jerdoni*. The lower part of the first gill-arch has been removed from one side of the holotype.

Family GOBIIDAE.

TRYPAUCHEN VAGINA (*Bloch & Schneider*).

Gobius vagina Bloch & Schneider, Syst. Ichth., 1801, p. 73. Tranquebar.
Trypauchen vagina Day, Fish. India, i, 1876, p. 320, pl. lxviii, fig. 2.

A specimen from Bowen in the Queensland Museum agrees excellently with Day's figure. New record for Australia.

Family TETRAODONTIDAE.

TETRAODON STELLATUS *Bloch & Schneider*.

Tetrodon lagocephalus var. *stellatus* Bloch & Schneider, Syst. Ichth., 1801, p. 503. Seas around Mauritius.
Tetraodon stellatus Day, Fish. India, i, 1878, p. 705, pl. clxxxiii, fig. 3.
Tetrodon stellatus Günther, Fische Südsee, ix, 1910, p. 465, pl. clxvi, fig. B.

A large specimen in the Queensland Museum from Townsville (Regd. No. I.4269) admits this species into the Queensland fish-fauna, as a member of which it has not hitherto been recognised.

Family CHEIMARRICHTHYIDAE.

CHEIMARRICHTHYS *Haast*.

Cheimarrichthys Haast, Trans. N.Z. Inst., vi, June, 1874, p. 103. Haplotype, *Cheimarrichthys fosteri* Haast, *loc. cit.* Not *Chimarrichthys* Sauvage 1874.

Note on priority.—Haast's name, published in June, 1874, takes precedence over *Chimarrichthys* Sauvage (Revue et Mag. Zool. (3) ii, after June, 1874, p. 332) which was proposed for a Thibetan catfish, *C. davidi* Sauvage.

Sauvage's genus and species was recently redescribed by Norman (Ann. Mag. Nat. Hist. (9) xv, 1925, p. 570) as *Euchiloglanis davidi*.

Family SCORPAENIDAE.

ABCICHTHYS *gen. nov.*

Liocranium Ogilby, Proc. Roy. Soc. Qld., xviii, 1904, p. 23. Orthotype *Liocranium praepositum* Ogilby, *loc. cit.* *Id.*, McCulloch, Biol. Res. Endeavour, iv, 4, 1916, p. 195. Not *Liocranum* Koch, 1866, a genus of Arachnida.

Liocranium Ogilby 1904, appears to be preoccupied by *Liocranum* Koch (Die Arach.-Fam. der Drassiden, 1866, p. 366), so I have re-named it *Abcichthys*, with *A. praepositus* (Ogilby) as orthotype.

Family SALARIIDAE.

SALARIAS GEMINATUS *Alleyne & Macleay.*

Salarias geminatus Alleyne & Macleay, Proc. Linn. Soc. N.S. Wales, i, March 1877, p. 336, pl. xiii, fig. 3. Torres Strait. *Id.*, McCulloch & McNeill, Rec. Austr. Mus., xii, 2, 1918, p. 20.

Salarias cristiceps Alleyne & Macleay, Proc. Linn. Soc. N.S. Wales, i, March 1877, p. 338, pl. xiv, fig. 3. Darnley Island.

The range of this species, hitherto known only from Murray and Darnley Islands, Torres Strait, Queensland, may now be extended to include New Caledonia, as Mr. A. F. Basset Hull collected a specimen there.

D.xii/23; A.ii/24. Dorsal incised, connected to caudal peduncle; posterior anal ray not thus connected. Ocular tentacle branched. Regd. No. IA.2955.

Family GOBIESOCIDAE.

DIPLOCREPIS COSTATUS *Ogilby.*

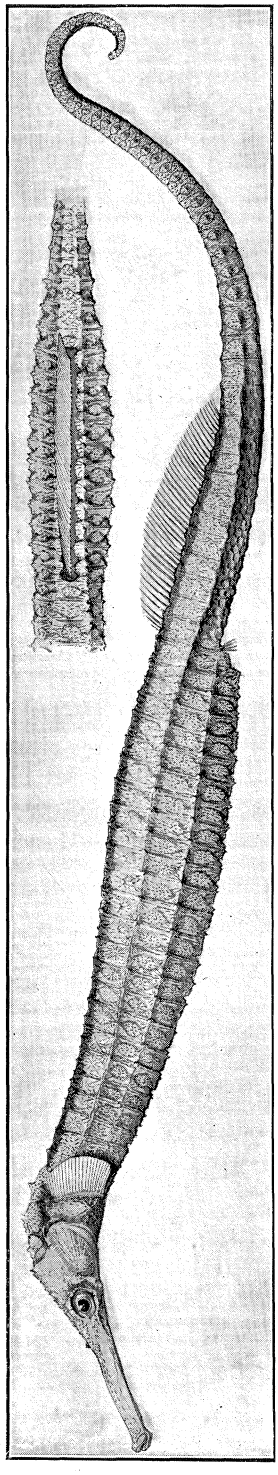
Diplocrepis costatus Ogilby, Proc. Linn. Soc. N.S. Wales, x, 2, 1885, p. 270. Port Jackson. *Id.*, Waite, Rec. Austr. Mus., v, 3, 1904, p. 179, pl. xxiv, fig. 1. *Id.*, Waite, *Op. cit.*, vi, 3, 1906, p. 203. *Id.*, McCulloch & Waite, Rec. S. Austr. Mus., i, 1, 1918, p. 66.

This species has been recorded from South Australia, Victoria, New South Wales and Lord Howe Island. Mr. A. F. Basset Hull recently collected specimens at New Caledonia, from which locality it has not hitherto been recorded. I have compared his specimens with the types, and find they are not even separable from *D. costatus* as varieties. They have the following characters:—D. 9-10; A. 8. General colour in spirits dull yellowish. A dusky ill-defined cross-band across the nape, another over the pectorals, a third between the tips of the pectorals and the origin of the dorsal, and traces of another between dorsal and anal. Top of head dusky; interorbital lighter. Vertical fins with minute punctulations, with lighter interspaces distally. One specimen has several irregularly disposed wart-like growths, mostly on the right side. Austr. Mus. Regd. No. IA.2953.

EXPLANATION OF PLATE XXIV.

Fig. 1. *Solegnathus dunckeri* Whitley, sp. nov. Holotype, 463 mm. long, from Lord Howe Island. Above, dorsal aspect of expanded medio-lateral ridges.

„ 2. *Megalaspis cordyla* (Linnaeus). A specimen, 186 mm. from snout to end of middle caudal rays, from La Perouse, New South Wales.



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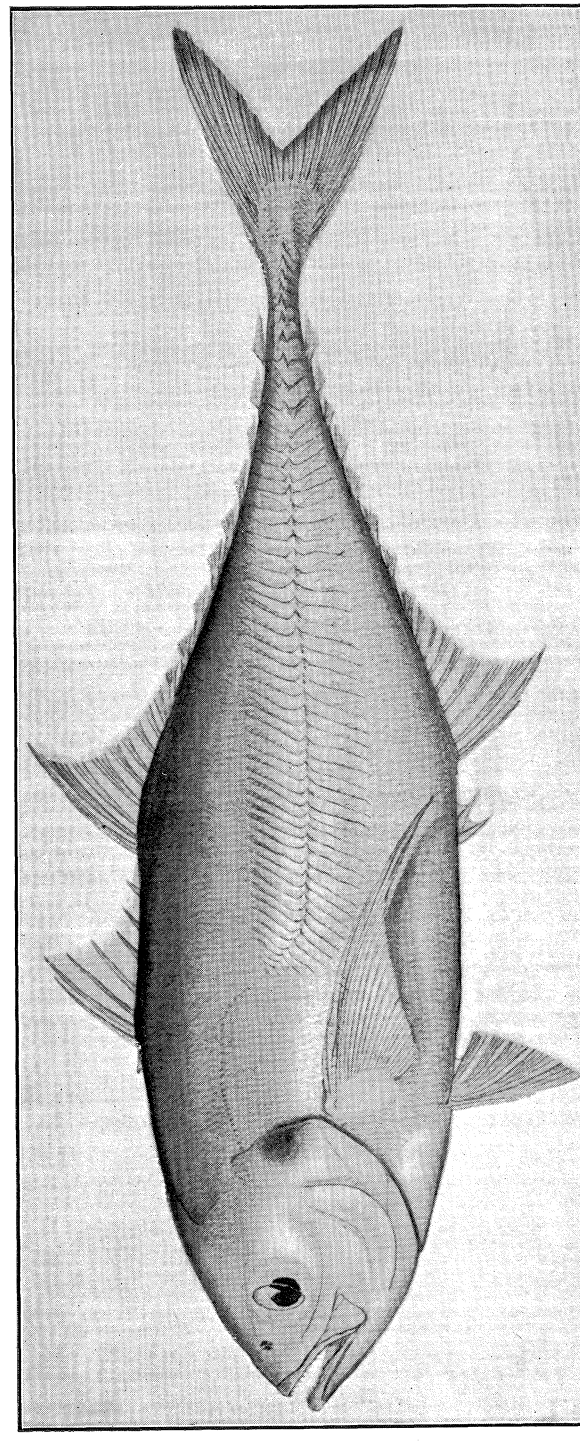

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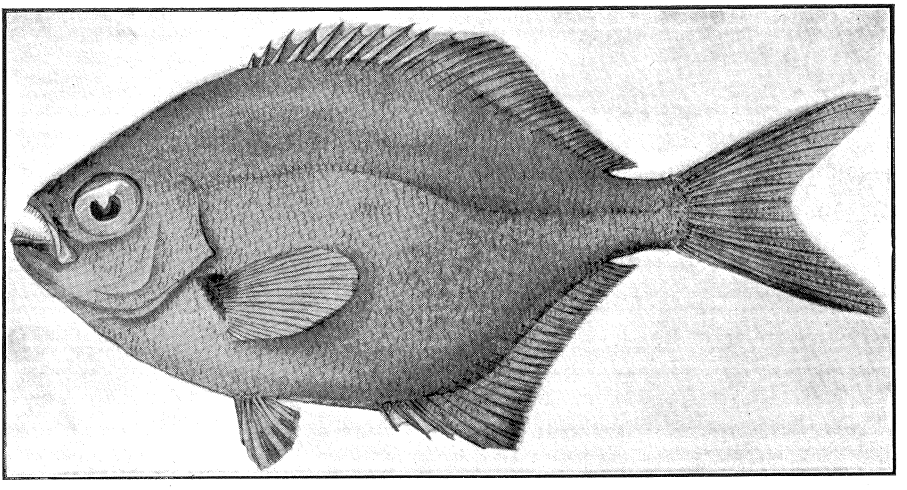
EXPLANATION OF PLATE XXV.

Fig. 1. *Scorpis lineolatus* Kner. A young specimen, 102 mm. long from snout to end of middle caudal rays, from Coogee, New South Wales.

„ 2. *Trachipterus jacksonensis* (Ramsay). A specimen, about 1925 mm. long, from Middle Harbour, Port Jackson, New South Wales.



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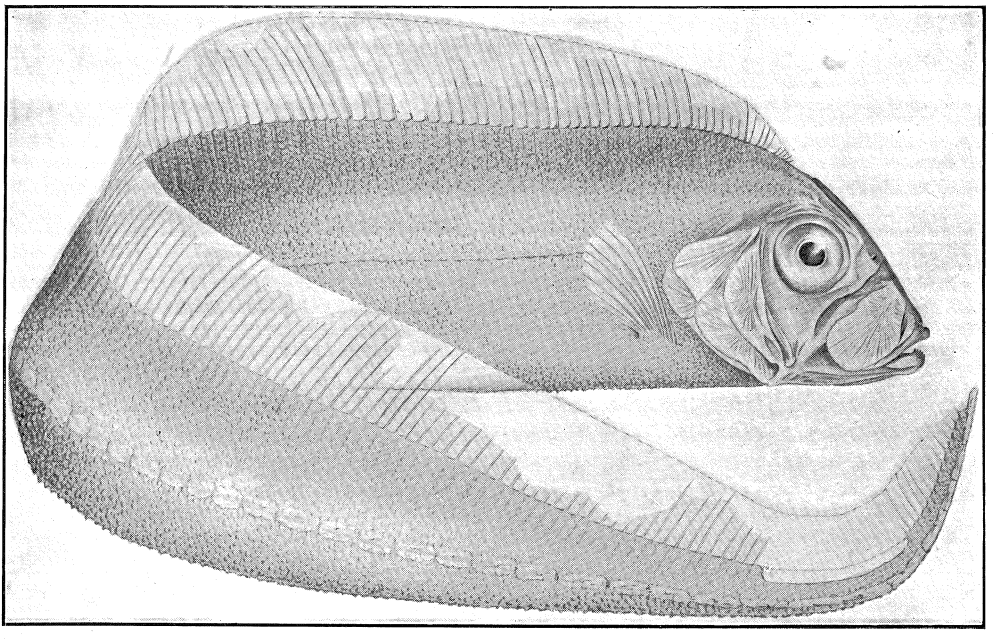

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G. P. WHITLEY, (1), del.
A. R. MCCULLOCH, (2), del.