

NOTES ON, AND DESCRIPTIONS OF AUSTRALIAN FISHES.*

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(Plates xxxv.-xxxvii.)

The following notes and descriptions are based on specimens which have been forwarded to the Australian Museum from various sources.

Family APLOCHITONIDÆ.

Genus LOVETTIA, gen.nov.

Body elongate, naked. Dorsal with 8-9 rays, placed a little behind the ventrals, which are submedian in position and are composed of seven rays. Adipose fin large, longer than high. Anal rather long, with 19-20 rays. Pectorals elongate, rounded, with 11-12 rays. Caudal forked. Nostrils large, remote from one another. Eye of moderate size. Teeth comparatively large, in single rows on the jaws and palatines, and on each side of the tongue. Gill-openings wide, the membranes not attached to the isthmus; gill-rakers of the first arch long and slender. Pseudo-branchiæ present. Urinogenital orifice produced into a large fleshy papilla which lies in a deep groove behind the vent.

This genus apparently only differs from *Aplochiton* Jenyns, in being much more slender, and in having the dorsal, anal, pectoral, and ventral fins differently shaped. The adipose fin is also much larger.

I associate with this genus the name of Mr. E. F. Lovett, of Hobart, to whom I am indebted for the beautifully preserved specimens described below, as well as many other interesting Tasmanian fishes.

* Contributions from the Australian Museum.

LOVETTIA SEALII Johnston.

(Plate xxxv., fig.2.)

Haplochiton sealii Johnston, Proc. Roy. Soc. Tasm., 1882(1883), p.128; *Id.*, Macleay, Proc. Linn. Soc. N. S. Wales, ix., 1884, p.54.

D. 8-9; A. 19-20; P. 11-12; V. 7; C. 16. Head 4.7 in the length to the hypural. Eye 4.2-4.36, greatest depth 2 in the head.

Body elongate, compressed, and a little quadrilateral, the back and belly being somewhat flattened: it is naked, and there are about fifty-three myomeres between the operculum and the hypural. The lateral line is marked by a series of pores in a linear depression along the middle of the sides. The head is flat above, and the bony interorbital space is equal to about two-thirds the diameter of the eye. Snout as long as, or a little longer than the eye. Nostrils large, and placed on the superolateral angle of the snout; the first is in the middle of its length, the other nearer the eye. Maxillary reaching to the anterior third or fourth of the eye, and slightly expanded behind. Lower jaw projecting well beyond the upper. Lower preopercular border free, the hinder covered with skin. Operculum with a long skinny lobe which overlaps the base of the pectoral.

Teeth proportionately large, in single rows in each jaw. A large one on each side of the symphysis of the upper jaw, followed by much smaller ones which extend along the whole premaxillary border. They are larger in the lower jaw, and increase in size backwards. There are four very large, curved ones in a row on each side of the tongue. There is a stout tooth on the anterior part of each palatine, and two or three more a little farther back below the anterior part of the eye.

Origin of the ventrals behind the middle of the distance between the tip of the snout and the hypural, and their tips do not quite reach to the vent; all the rays are divided, and the third and fourth are the longest. Origin of the dorsal behind that of the ventrals, and the base of the last ray is above or in front of their tips; the two or three anterior rays are simple, and the third or fourth is the highest. The base of the anal is long, and there is a space between its front ray and the genital papilla; the

anterior rays are simple, and the fourth is the longest, the following ones decreasing regularly in length. Pectoral with a strong fleshy base, the middle rays longest and reaching less than half their distance from the ventrals; the upper ray is not thicker than the others. Caudal deeply forked, the two outer rays broad and simple, the others divided. Adipose dorsal fin triangular, much longer than high, and placed above the hinder part of the anal.

Colour in formalin.—White, the back and upper part of the head closely speckled with minute blackish dots. A dot is present at the base of each anal ray, and there are two parallel rows on the belly which unite to form one below the pectorals. Other scattered dots are found on the sides of the body and the fins.

Described from six specimens, 49-65 mm. long, collected by Mr. Lovett in the Derwent River, Tasmania. They differ from Johnston's short description only in having the maxillary shorter, and not reaching backward to the middle of the eye. The largest example is figured.

Family SYNGNATHIDÆ.

Genus *ICHTHYOCAMPUS* Kaup.

ICHTHYOCAMPUS SCALARIS Günther.

(Plate xxxvi., fig.2.)

Ichthyocampus scalaris Günther, Brit. Mus. Cat. Fish., viii., 1870., p.177. *Id.*, Macleay, Proc. Linn. Soc. N. S. Wales, vi., 1881, p.292. *Id.*, Duncker, Faun. Südwest-Aust., ii., 1909, p.240.

Two specimens, 163-170mm. long, differ greatly in their colour-marking. One, a male, is brown, variegated with irregular bluish blotches which are largest on the back; the back is crossed by sixteen broad bars, and the sides of the abdomen are marked with curved lines of bluish dots.

The other, which is figured, is much lighter, and the cross-bands are less distinct; the sutures have a brown spot at each angle, and the abdomen is crossed by narrow brown bands. The sides and back are closely covered with reticulating brown lines, and the lower parts of the head and the breast bear numerous deep brown dots.

Loc. — Western Australia.

Genus *HIPPOCAMPUS* Rafinesque.*HIPPOCAMPUS BREVICEPS* Peters.

Hippocampus breviceps (Peters) Duncker, Faun. Südwest-Austr., ii., 1909, p. 247, references. *Id.*, McCoy, Prodr. Zool. Vict., dec. vii., 1882, Pl. lxxv., fig. 2.

Hippocampus tuberculatus Castelnau, Res. Fish. Austr. (Vict. Offic. Rec. Philad. Exhib.), 1875, p. 48.

Two specimens from Cottesloe Beach, near Perth, agree very well with Castelnau's brief description of *H. tuberculatus* from the Swan River. They are also very similar to Victorian examples of *H. breviceps*, differing only in the degree of development of the tubercles, which are usually more rounded in the Western Australian specimens. I therefore regard the two species as identical. Duncker has already recorded *H. breviceps* from Fremantle.

Family SERRANIDÆ.

Genus *THERAPON* Cuvier.*THERAPON BIDYANA* Mitchell, young.

(Plate xxxvi., fig. 1.)

Therapon ellipticus Richardson, Voy. "Erebus" and "Terror," Fishes, 1848, p. 118, Pl. lii., figs. 4-8. *Id.*, Stead, Ed. Fish. N. S. Wales, p. 73, 1908, Pl. xlii.

Therapon bidyana McCulloch, Rec. Austr. Mus., ix., 1913, p. 359.

D. xii./12; A. iii./8; P. 17; V. i./5; C. 17. L. lat. 59; scales 77. Depth 3.6 in the length from the snout to the hypural, and a little less than the length of the head, which is 3.3 in the same. Eye equal to the snout, and but little less than the interorbital width, 3.7 in the head. Fifth dorsal spine and second anal spine of equal length, 1.8 in the head; first dorsal ray 2.1 in the same. Caudal peduncle 3 in the head.

Body slender, deepest at the origin of the dorsal fin. Snout obtuse, rising rapidly to the level of the upper margin of the eye; the profile thence rises gradually to the first dorsal spine. Eye large, its greater portion in the upper half of the head, and in advance of the middle of its length. Mouth small, the maxillary

not quite reaching the anterior margin of the eye. There are about seventy-seven rows of scales above the lateral line between the suprascapular and the hypural, but its tubules are widely spaced anteriorly, there being only about fifty-nine between the same points.

Colour.—Olive-green above, silvery below; the back and sides are closely mottled with irregular, anastomosing, darker bands, which tend to become longitudinal posteriorly. The dorsal and caudal have faint indications of darker markings, the other fins colourless. Eye pale golden, cheeks silvery.

Described and figured from a single small example, 95 mm. long. It differs from the adult fish figured by Stead in having the body elongate instead of deep, the snout convex instead of pointed, and in its colour-marking. The eye is also much larger, and the proportions generally are very different, but an examination of the material available convinces me that all these features are merely juvenile characters.

I am indebted to Mr. H. K. Anderson for the opportunity of describing and figuring this specimen, which he collected in the Murrumbidgee River below the Berumbed Weir, on November 13th, 1914.

Family RACHYCENTRIDÆ.

Genus RACHYCENTRON Kaup.

RACHYCENTRON PONDICERIANUM Cuvier & Valenciennes.

Black Kingfish; Sergeant Fish.

Elacate pondiceriana Cuvier & Valenciennes, Hist. Nat. Poiss., viii., 1831, p.329.

Elacate nigra Day, Fish. India, 1878, p.256, Pl. lv., fig.2. *Id.*, Castelnau, Proc. Linn. Soc. N. S. Wales, iii., 1879, p.381. *Id.*, Macleay, Proc. Linn. Soc. N. S. Wales, v., 1881, p.560. *Id.*, Kent, "Gt. Barrier Reef," 1893, p.291.

Rachycentron canadus Stead, Ed. Fish. N. S. Wales, 1908, p.93.

The Australian Museum collection includes seven specimens of this species ranging from 356 to 1120 mm. in length. Of these, one is from Madras, and is part of the late Dr. Francis Day's collection; five others were captured in New South Wales

waters, and one is from Moreton Bay, Queensland. The number of spines and rays in their dorsal fins varies as follows:—D. vii.-ix., 3-4/27-31; A. 2-3/23-26. The proportional measurements of three local examples are given in the following table.

Length.....	1120 mm.	1020 mm.	356 mm.
Head (measured obliquely from symphysis of upper jaw to end of opercular bone) into the length.....	4.1	4.2	4
Depth at last dorsal spine, into the length	5.7	5.1	6.7
Snout, from median symphysis to anterior margin of eye, into the head.....	2.3	—	2.5
Eye into head.....	8.4	8.8	6
Eye into snout.....	3.6	—	2.3
Interorbital width into head... ..	2.3	—	2.8
Interocular width into head.....	1.9	—	2.2
Pectoral fin into head.....	1.2	1.1	1.3
Ventral fin into head.....	2.5	2.5	2.6
Highest dorsal ray into head.....	1.7	1.6	2
Highest anal ray into head.	2.1	1.9	2.5
Depth of caudal peduncle into head.....	4.7	4.2	4.5

Colour.—In large specimens, the back and sides are deep brown, this colour being sharply defined below by a narrow silvery band; the junction of the two forms a straight line from the tip of the lower jaw to the middle of the caudal peduncle. Below the silver band, is another brown one, which sharply defines an oblong patch of orange colour on the abdomen between the ventral and anal fins. In young examples, there is a light band on the upper part of the sides also, which causes the brown below it to form a median stripe as is shown in Day's figure quoted above.

There is some doubt as to whether the Sergeant Fish, *R. canadum* Linnæus, is specifically identical with the Australian Black Kingfish, though a comparison of my specimens with Jordan and Evermann's figure* of the former reveals scarcely any important differences between them. My Madras specimen and another from New South Wales of about the same size, appear to be exactly alike in all their characters, and Day's

* Jordan & Evermann, Bull. U. S. Nat. Mus., No. 47, iv. 1900, Pl. cxlviii., fig. 401.

figure represents them very accurately in all but one detail; in all my specimens, the upper caudal lobe is distinctly longer than the lower, whereas he illustrates them as subequal, though he notes variations of this character in his description.

Very little is known of the habits and migrations of the Black Kingfish in Australian waters. It is probably not uncommon near the surface along the northern portion of the New South Wales coast and southern Queensland. Examples are occasionally forwarded to the Sydney markets among other fish, but they are generally of small size, though individuals four feet long are not unknown. The two large specimens referred to above were captured with the rod by Dr. Mark C. Lidwill and Mr. C. H. Gorrick in March and April, 1914, not far from the rocks off the south head of Port Stephens. They each took a garfish bait which was trolled at a speed of about five miles an hour, and they offered but little fight when hooked, diving straight to the bottom and stopping there.

Family LABRIDÆ.

Genus HEMIGYMNUS Günther.

Hemigymnus Günther, Ann. Mag. Nat. Hist. (3), viii., 1861, p.386.

Cheilolabrus Alleyne & Macleay, Proc. Linn. Soc. N. S. Wales, i., 1877, p.345.

Alleyne and Macleay have counted the dorsal and anal fins of *Cheilolabrus* as 8/10 and 2/10 respectively, but four typical specimens of *C. magnilabris*, preserved in the Macleay Museum, have the normal 9/11 and 3/11, though the anterior anal spine is small and easily overlooked.

HEMIGYMNUS MELAPTERUS Bloch.

Hemigymnus melapterus (Bloch) Bleeker, Atl. Ichth., i., 1864, p.142, Pl. xlv., figs.2-3.

Cheilolabrus magnilabris Alleyne & Macleay, Proc. Linn. Soc. N. S. Wales, i., 1877, p.345, Pl. xvi., fig.2.

Four specimens, which are the types of *C. magnilabris*, agree very well, both in form and colour, with Bleeker's figure of *Hemigymnus melapterus*; they also do not differ from others from Port

Moresby, which have been identified by Macleay as the latter species.

Family SCOMBRIDÆ.

Genus GRAMMATORYCNUS Gill.

Grammatorycnus Gill, Proc. Acad. Nat. Sci. Philad., 1862, p.125 (*Thynnus bilineatus* Rüppell).

Nesogrammus Evermann & Seale, Bull. U. S. Fish. Bur., xxvi., 1907, p.61 (*N. piersoni* Evermann & Seale).

Nesogrammus is apparently identical with *Grammatorycnus*. The former is said to have no corselet, whereas it is formed of somewhat enlarged scales in the latter. In the species described below, it is not very well defined, and is apparently intermediate between the two extremes.

GRAMMATORYCNUS BICARINATUS Quoy & Gaimard.

Large-scaled Tunny.

(Plate xxxv., fig.1.)

Thynnus bicarinatus Quoy and Gaimard, Voy. "Uranie" and "Physicienne," 1825, p.357, Pl. lxi., fig.1.

D. xii., 10,7; A. ii.,6; P. 24; V. i., 5; C. 17. Head 4.8, depth 4.4 in the length from the tip of the snout to the pit at the base of the caudal fin. Eye 5.9, snout 2.8, interorbital space 3.1, and depth of caudal peduncle 5.3 in the head. Pectoral 1.5, ventral 2.8, second dorsal spine 3.1, and second dorsal and anal rays 2 in the head.

Body rather elongate, fusiform, somewhat compressed laterally. Dorsal and ventral profiles evenly curved, the greatest depth being in the middle of the length. Head conical, rather flat above; the jaws are pointed, and the lower is the longer. Maxillary reaching to below the middle of the eye, not covered by the preorbital; it is expanded posteriorly. Interorbital space slightly convex. Posterior margin of preoperculum smooth, the angle produced a little backwards, and broadly rounded. Opercular margin somewhat excavate above. Eye in the upper half of the head, and a little in advance of the middle of its length; it is surrounded by a semitransparent lid.

Teeth uniform in size, compressed and arranged in a single row in each jaw. A small patch of microscopic teeth on the vomer, a larger one on each palatine, and another on the tongue.

The entire body, opercles, cheeks, and top of the head as far forward as the middle of the eye, are covered with cycloid scales, the margins of which are often broken into irregular lobes. They are larger than is usual in the family, the largest being on the cheeks, where they are arranged in about eleven rows. They are small on the lower half of the operculum, and the top of the head. The corselet is small and not very well defined. There are one hundred and seventy-five rows of scales above the lateral line between the corselet and the pit at the base of the caudal; there are twelve between the middle of the spinous dorsal and the first lateral line, and probably twenty-seven more to the lower lateral line. The upper lateral line commences behind the corselet, and follows the curve of the back to the caudal peduncle; a branch descends from it a little behind the verticle of the middle of the pectoral, which is at first almost upright, then very oblique, and finally follows the curve of the ventral profile till it joins the upper line again in front of the caudal peduncle. The second dorsal, anal, and pectoral, are entirely covered with small scales, as is a space on the middle of the caudal fin.

Caudal peduncle with a strong median keel, and two smaller oblique ones on either side of it at the base of the tail. A minute pit is also present on the upper and lower surfaces before the insertion of the caudal fin.

Second dorsal spine longest, the others decreasing gradually to the last; the spines can be received into a groove in the back. Second dorsal and anal similar in form, their anterior rays forming falcate lobes. Pectorals rather short and somewhat falcate, situated a little below the median line of the body. Ventrals inserted behind the verticle of the pectorals but before that of the first dorsal spine; they are short, and can be received into grooves in the abdomen. Finlets well developed. Caudal lunate.

Colour.—Silvery in formalin, the back tinged with olive-green; a number of large dark spots are present on the belly. The fins are dark olive-green, the anterior rays of each being darker than

the others, When fresh, the fish was particularly brilliant, being shot with opalescent-blue above, and gold below. The back was faintly marbled with olive-green, and there were spots of the same colour along each side. The abdominal spots were brown, and the fins green.

Described from a specimen 925 mm. long from the snout to the end of the middle caudal rays, and weighing eighteen and three-quarter pounds; its girth is twenty inches. It is closely allied to *G. bilineatus* Rüppel,* but differs in having seven instead of six dorsal finlets, and the lateral line branches at the verticle of the middle of the pectoral instead of behind that fin. It is evidently identical with *Thynnus bicarinatus* Quoy & Gaimard, which was apparently described from a very imperfect drawing of a fish captured in Shark Bay, West Australia. The illustration published by these authors is very crude, the upper jaw being shown as longer than the lower, and the pectorals and ventrals are elongate, while no attempt has been made to preserve the structural details of the other fins. The presence of two lateral lines and seven dorsal finlets, however, suggests that the drawing represents the same species as is described above, while the fact that the original was captured in Australian waters strengthens this view.

Loc.—For the opportunity of describing and figuring this rare fish, I am indebted to Mr. C. H. Gorrick, who caught it early in June, 1914, off Cook Island, a few miles from the Tweed River Heads, New South Wales. It took a garfish bait which was being trolled at about three or four miles per hour, and was apparently one of many of the same kind, since it was hooked in the midst of a large school of feeding fish. It did not fight as hard as an ordinary Tunny does, nor did it make the long runs of a Spanish Mackerel. The water where it was hooked was about eight fathoms deep, with a bottom of rocky reefs.

The fish described and figured as *Nesogrammus piersoni*† is evidently very similar to my specimen, differing principally in

* Rüppel, Neue Wirbelth. Faun. Abyssin., 1835-40, p.39, Pl. xii., fig.2.

† Evermann & Seale, Bull. U. S. Fish. Bur., xxvi., 1907, p.61, fig.3.

having seven instead of six anal finlets and higher anterior dorsal spines.

Family LEPTOSCOPIDÆ.

Genus CRAPATALUS Günther.

Crapatalus Günther, Ann. Mag. Nat. Hist., (3), vii., 1861, p.86.

According to Günther's definition of this genus, there are no teeth on the palate, and the cleft of the mouth approaches the vertical line. Mr. C. Tate Regan has very kindly re-examined the type of *C. novæ-zelandiæ* for me, however, and informs me that both the vomer and palatine bear teeth, and that when the head is in position and the mouth closed, the cleft of the latter is not nearly vertical.

CRAPATALUS ARENARIUS, sp.nov.

(Plate xxxvii., fig.1.)

Leptoscopus macropygus Ogilby, Mem. Qld. Mus., i., 1912, p.57 (not of Richardson).

Br. 6. D. 34; A. 37; P. 21; V. i., 5; C. 10. L. lat. 47; l. tr. 5/1/5. Head, to end of opercular lobe, 3.5 in the length from the tip of the lower jaw to the hypural; depth at vent 7.4 in the same, and 2.1 in the head. Eye equal to the interorbital space, and about as long as its distance from the tip of the upper jaw, 7 in the head. Depth of caudal peduncle a little greater than the eye, 5.2 in the head. Seventh dorsal ray equal to that of the anal, 3.3 in the head. Longest pectoral ray 1.1, fourth ventral ray 2.3, and caudal fin 1.9 in the head.

Body elongate, head and shoulders depressed, the remainder compressed. Head entirely naked. Body covered with large cycloid scales extending forward to above the operculum on the back, and to behind the pectoral and ventral fins on the lower surface; they are smallest in front of the dorsal fin, and encroach on the bases of the caudal rays. Lateral line almost straight from the suprascapular along the middle of the body to the base of the caudal. Breast armed with two small spines anteriorly which project forward. Urinogenital apertures immediately in front of the origin of the anal fin, with a minute papilla protected by an overhanging sheath.

Lower jaw longer than the upper. Mouth a little oblique, the maxillary reaching backward to just behind the verticle of the eye; each lip closely covered with a row of flattened cirri. Similar cirri fringe the upper portion of the operculum. Nostrils in short tubes, in a slightly depressed area in front of the upper portion of the eye; the anterior pair somewhat closer together than the posterior. Eyes supero-lateral, covered with thick, loose skin. Interorbital space very slightly concave. Preopercular margin rounded, entire, with series of pores on its border, which extend forward on the lower jaw. Operculum without spines, thickened above, membranaceous below.

Teeth minute, cardiform, depressible: they are arranged in two or three rows on the jaws. A short, single row of similar teeth on either side of the vomer, separated by a rather wide interspace; anterior portion of each palatine similarly denticulated. Pharyngeal bones closely covered with villiform teeth.

Dorsal fin commencing above the middle of the pectorals, composed entirely of simple rays of which the tips are free; anterior rays increasing in length to about the seventh, the posterior ones becoming somewhat shorter, and the last connected with the caudal peduncle by membrane. Anal of similar form, but longer, commencing below the anterior third of the pectoral. Pectoral large: the eighth ray longest, those above it becoming abruptly shorter, while below it they decrease gradually in length; upper ray simple, the next six or seven bifurcate, and the remainder trifurcate, their tips free. Ventrals thoracic, well in advance of the pectorals, and extending almost horizontally outwards; the rays similar to those of the pectorals. Caudal subtruncate; the upper ray slightly produced, simple, the others branched.

Colour.—Whitish in formalin, with vermiculating brown lines and spots on the upper portion of the head and back. Fins colourless. In life, the colour of the fish harmonised with that of the sand in which it was found, being marbled with light reddish-brown above, and pearly-white below.

Described and figured from a specimen 85 mm. long from Narrabeen, near Sydney. Two others in the Australian Museum

scarcely differ, though the maxillary does not reach quite so far back; the much larger and less numerous scales distinguish this species from *C. novæ-zelandiæ*.

This interesting little fish was captured alive by Mr. R. J. Kinghorn on 26th January, 1915. He discovered it while digging for "Pippies" in moist sand which was washed by the waves, but above the actual tide-level. It escaped when first disturbed, and after swimming rapidly over a most erratic course, buried itself in some loose sand. It was found a second time, and was placed in a bottle with some sand, into which it disappeared so suddenly that it was supposed to have been again lost, until its slightly projecting eyes and snout were detected. Mr. Kinghorn observed that it lay flat upon the sand when burrowing, and, with a small wriggling movement, buried itself in a fraction of a second. The fringes of cirri covering the mouth and upper portions of the gill-openings doubtless serve to prevent the entry of sand into these apertures, while the lower parts of the gill-openings can be completely closed by the overlying membranes of the operculum and branchiostegals.

Locs.—Narrabeen, near Sydney; Maroubra Bay, near Sydney; Point Lookout, Stradbroke Island, Queensland. The specimen in the Australian Museum from the latter locality is one of those recorded by Ogilby as *Leptoscopus macropygus*.

Family GOBIIDÆ.

Genus CALLOGOBIUS Bleeker.

Callogobius Bleeker, Arch. Neerl. Sc. Nat., ix., 1874, p.318 (*Eleotris hasseltii* Bleeker). *Id.*, Weber, Siboga Exped., lvii., Fische, 1913, p.479.

Mucogobius McCulloch, Rec. W. Austr. Mus., i., 1912, p.93 (*Gobius mucosus* Günther).

Weber having suggested that *Gobius mucosus* belonged to the genus *Callogobius*, I have compared specimens with his figure of *C. hasseltii* (*loc. cit.*, p.480, fig.98), and find that the two species are very similar, and their generic characters identical. My name *Mucogobius*, proposed for *G. mucosus*, therefore becomes a synonym.

Family APLOACTIDÆ.

Genus PARAPLOACTIS Bleeker.

PARAPLOACTIS TRACHYDERMA Bleeker.

Paraploactis trachyderma Bleeker, Nederl. Tijdschr. Dierkunde, ii., 1865, p.169.

Aploactis lichen de Vis, Proc. Linn. Soc. N. S. Wales, ix., 1884, p.460.

Two specimens received from the Queensland Museum as *Aploactis lichen* de Vis, do not differ from Bleeker's description of *P. trachyderma*. De Vis' type came from Moreton Bay, Queensland, and the Australian Museum specimens were obtained at the same locality.

Genus APLOACTIS Schlegel.

Aploactis Schlegel, Fauna Japonica, Poiss., 1843, p.51 (*A. aspera* Richardson).

Aploactisoma Castelnau, Proc. Zool. Soc. Vict., ii., 1873, p.63 (*A. schomburgkii* Castelnau).

Castelnau separated his genus *Aploactisoma* from *Aploactis* on account of supposed differences in the dentition. He described the palatines of the typical species, *A. schomburgkii*, as covered with minute teeth, whereas they are toothless in *Aploactis*; he also found a longitudinal ridge at the symphysis of the upper jaw bearing two teeth anteriorly. I have examined several South Australian specimens which are supposed to be *A. schomburgkii*,* but find no palatine teeth in any, while the longitudinal ridge is represented only by a fleshy, toothless tubercle.

I have further compared them with a Japanese example of *Aploactis aspera*, with which they appear to be congeneric; the external cephalic structures are somewhat differently formed in the two species, but this is probably only of specific importance.

APLOACTIS MILESII Richardson.

Aploactis milesii Richardson, Proc. Zool. Soc., 1850, p.60, Pl. i., figs.1-2.

Aploactisoma schomburgkii Castelnau, Proc. Zool. Soc. Vict., ii., 1873, p.64.

* See footnote, p.273.

Castelnau distinguished *Aploactisoma schomburgkii* from *Aploactis milesii* on account of differences in their dentition and fin-formulæ, though he noted that the two species were possibly identical. If the specimens referred to below* are correctly identified as *A. schomburgkii*, as I believe, these differences do not exist, as they have no palatine teeth, and the fin-formula is variable. I count eight specimens as follows:—D 28-29(xiii.-xiv./14-15; A.12-13(i./11-12); the length of the anterior dorsal spines is variable, the second being from half to two-thirds as long as the head.

Locs.—The Australian Museum collection includes specimens from Port Jackson, New South Wales; South Australia; and Western Australia.

Family BLENNIIDÆ.

Genus CLINUS Cuvier.

CLINUS JOHNSTONI Kent.

(Plate xxxvii., fig.2.)

Clinus johnstoni Kent, Rept. Fish. Dept. Tasmania, 1886, p.13. *Id.*, Johnston, Proc. Roy. Soc. Tasm., 1890(1891), p.33.

D.2-3, 32-33/5; A.2/25-26; P.15; V.3; C.10. Length from snout to end of bony operculum 3.7-3.9, depth at origin of anal 4.1-4.6 in the length to the hypural. Eye 5.2-6.1, snout 4.6-4.7 in the head. Interorbital width 1.2-1.4 in the eye. Second dorsal spine 3-4, first dorsal ray 2, fourth last anal ray 2-2.1 in the head. Median rays of the pectoral 1.6, ventral 1.6-1.9, and caudal 1.5 in the head.

Body moderately deep and robust. Maxillary reaching beyond the hinder margin of the eye. Tentacle of anterior nostril form-

* One of these is in the old collection of the Australian Museum, and is entered in the register as a type of the species; it was purchased together with a type of *Kurtus gullivieri* Castelnau, but the vendor's name is not given, though it was possibly Castelnau himself. The other two have been received on loan from Mr. Edgar R. Waite, Director of the South Australian Museum, and belong to the old collection of that Institution. They agree with the description of *Aploactisoma schomburgkii* in all details except the dentition, which suggests that this character has been incorrectly described by Castelnau.

ing a short tube, terminated by six long cylindrical filaments, which overhang the mouth. Orbital tentacle large, with more or less numerous lobes. Head with several series of muciferous canals and open pores surrounding the eye, and extending along the margin of the preorbital and preoperculum, and the lower jaw; others cross the nape and join the lateral line. Teeth consisting of a single row of larger canines on the upper jaw, followed by two patches of villiform teeth anteriorly. They are similarly arranged on the lower jaw, but the lateral canines are much stronger, and the villiform patches smaller. Two broad patches of villiform teeth on the vomer which are united on the median line. Palatines toothless.

Body covered with minute rudimentary scales which extend forward to the base of the first dorsal spine; head naked. Lateral line nearly straight from the operculum to a point above the end of the pectoral; thence it curves downward to the middle of the body, and extends to the base of the tail. Anteriorly, the tubes and pores are large and close together, but they become smaller and widely spaced behind.

First dorsal situated about midway between the eye and the posterior margin of the preoperculum, or a little nearer the latter; its spines are subequal, and the membrane from the last extends about one-third up the first spine of the second dorsal. The latter is inserted above the hinder end of the operculum, and is about two-thirds as long as the second spine of the first dorsal; the following spines increase gradually in length to the last, which is much shorter than the rays. Rays equally spaced, the last united to the caudal peduncle or the base of the caudal rays. Anal similar in form to the dorsal, but the membrane deeply excised between the rays; the last is not connected with the caudal peduncle. Pectoral broadly rounded; the ninth ray longest, reaching the verticle of the first anal spine or not so far. Ventrals with three simple rays, the median one the longest. Caudal rounded.

Colour.—Pale yellow, with or without nine more or less distinct cross-bars, the first of which largely covers the head, and the last is on the caudal fin. These are wholly lost in one speci-

men, and very distinct in another, according to the medium of preservation.

Described from two specimens, 227-341 mm. long, in the Australian Museum collection. The smaller one is figured, but its anterior dorsal fin being malformed, this is corrected from the larger example.

I have also examined a still larger specimen in the Tasmanian Museum, which is possibly the type of the species. Kent's notes only refer to the great development of the rostral tentacle and the size of the specimen—15 inches, but Johnston later recorded the number of spines and rays in the dorsal and anal fins.

Loc.—Tamar River, Tasmania.

Genus PETRAITES Ogilby.

PETRAITES INCERTUS, sp.nov.

(Plate xxxvii., fig.3.)

D.3, 29/4; A.2/23-24; P.11; V.3; C.9. Head 3.8-4.06, depth before the anal 4.3-4.9 in the length to the hypural. Eye 5.5.1, snout 3.7-3.8 in the head. Interorbital space 1.8-2.1 in the eye. First dorsal spine 1.6-1.9, first dorsal ray 1.6, and fourth last anal ray 1.4-1.9 in the head. Median pectoral ray 1.3, median ventral ray 1.4-1.5, and median caudal rays 1.3-1.6 in the head.

Body moderately elevated, snout pointed. Maxillary reaching to below hinder margin of the eye. Tentacle of anterior nostril minute; orbital tentacle well developed, with a few small lobes. Head with several series of muciferous canals and minute pores surrounding the eyes, and extending along the margin of the preorbital and preoperculum, and beneath the lower jaw; others cross the nape and join the lateral line.

Cardiform teeth in a single row on the upper jaw, followed by two patches of villiform teeth anteriorly. They are similar in the lower jaw, but the villiform patches are smaller. Vomer with two bands of villiform teeth which are united on the median line. Palatines toothless.

Body covered with minute rudimentary scales which extend forward to the third dorsal spine; head naked. Lateral line almost straight from the operculum to a point above the end of the pectoral; thence it curves downward to the middle of the

body and extends to the base of the tail. Anteriorly, it is well developed, but the tubes become smaller and widely spaced posteriorly.

First dorsal spine situated a little behind the verticle of the posterior orbital border; it is a little longer than the second, and much longer than the third. The latter is connected with the nape or the extreme base of the first spine of the second dorsal. Origin of the second dorsal above the posterior part of the operculum; the spines increase gradually in length to the last, which is much shorter than the rays. Dorsal rays widely separated but uniformly spaced; the last is united to the end of the caudal peduncle, or the base of the upper caudal ray. Anal similar in form to the dorsal, but its membrane deeply excised between the rays; the last ray is partially connected with the caudal peduncle by membrane. Pectoral rounded, the seventh ray longest, scarcely reaching the verticle of the vent. Ventrals with three simple rays, of which the median is the longest. Caudal rounded.

Colour.—Uniform yellowish in formalin, with very indefinite traces of the usual darker cross-bars.

Described from two specimens 205-216 mm. long; the larger of the two is the specimen figured. I propose a new name for them with great hesitation, they being clearly closely related to several of the many imperfectly known species already described. They do not wholly agree with any of the descriptions, however, so I give a detailed description and figure which will enable them to be compared with the typical specimens of other species when the latter are available.

Loc.—Tamar River, Tasmania.

Genus *LEPIDOBLENNIUS* Steindachner.

LEPIDOBLENNIUS HAPLODACTYLUS Steindachner.

Lepidoblennius haplodactylus Steindachner, Sitzb. Akad. Wiss. Wien, lv. i., 1867, p.11, Pl. i., figs.2-3.

Lepidoblennius geminatus Macleay, Proc. Linn. Soc. N. S. Wales, vi., 1881, p.13.

A comparison of specimens of *L. geminatus* Macleay, from near Sydney, with Steindachner's description and figure of *L. haplodactylus* proves the two to be synonymous. The species is

very abundant in rock-pools along the coast near Sydney, and has the curious habit of leaving the water to bask in the sun on damp, weed-covered rocks. When approached, it skips rapidly into the water, and hides among the coralline sea-weeds, which it closely resembles in its colour-marking. It is extremely active in the water, and is commonly known as Jumping Joey or the Basking Blenny.

Mr. J. D. Ogilby informs me that the species occurs in Moreton Bay, Queensland, and that he has examined specimens from Cape Moreton.

Family ANTENNARIIDÆ.

Genus TATHICARPUS Ogilby.

TATHICARPUS MUSCOSUS Ogilby.

(Plate xxxvii., fig.4.)

Tathicarpus muscosus Ogilby, Proc. Roy. Soc. Q'land, xx., 1907, p.22, and Mem. Q'land Mus., i., 1912, p.64.

Three specimens in the Australian Museum do not differ from each other either structurally or in colour-marking. One was forwarded to Mr. Ogilby for comparison with his *T. muscosus*, and he informs me that there is no doubt of its identity with that species; the typical specimen is unfortunately lost, but a second example from Wide Bay, Queensland, is preserved in the Queensland Museum.

The accompanying figure represents a specimen 80 mm. long, which was collected at Shark Bay, Western Australia. The other two are from north-western Australia.

EXPLANATION OF PLATES XXXV.-XXXVII.

Plate xxxv.

Fig.1.—*Grammatorycnus bicarinatus* Quoy & Gaim.

Fig.2.—*Lovettia sealii* Johnston.

Plate xxxvi.

Fig.1.—*Therapon bidyana* Mitchell (young).

Fig.2.—*Ichthyocampus scalaris* Gthr.

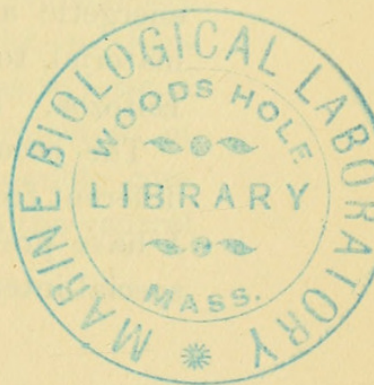
Plate xxxvii.

Fig.1.—*Crapatalus arenarius*, sp.n.

Fig.2.—*Clinus johnstoni* Kent.

Fig.3.—*Petraites incertus*, sp.n.

Fig.4.—*Tathicarpus muscosus* Ogilby.





McCulloch, Allan R. 1915. "Notes on, and descriptions of, Australian fishes."
Proceedings of the Linnean Society of New South Wales 40, 259–277.

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