

AUSTRALIAN MUSEUM SCIENTIFIC PUBLICATIONS

McCulloch, Allan R., 1918. Some Australian blennioid fishes. *Records of the Australian Museum* 12(2): 9–25, plates iii–iv. [4 February 1918].

doi:10.3853/j.0067-1975.12.1918.877

ISSN 0067-1975

Published by the Australian Museum, Sydney

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SOME AUSTRALIAN BLENNOID FISHES.

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(Plates iii.-iv.)

Owing to the kindness of Professor W. A. Haswell, M.A., D.Sc., we have been enabled to examine the typical examples of the various Blennies described by Sir William John Macleay, which are preserved in the Macleay Museum at the University of Sydney. Some of these can be identified with earlier described species, while we have redescribed and figured the others. We are also indebted to the Acting-Director of the Queensland Museum for the loan of the types of three species described by Mr. Charles W. de Vis, and to Mr. J. Douglas Ogilby for valuable notes upon them.

The Australian Museum collection is rich in good series of various species of *Salarias* from many localities, which have enabled us to revise those recorded from Australian waters. A large collection was made at Murray Island, Torres Strait, by Messrs. C. Hedley and A. R. McCulloch in October, 1907. Others were secured by Messrs. C. Hedley and E. A. Briggs near Cape Bedford, Queensland, in August, 1916, and at Cairns Reef and Masthead Island, Queensland, by A. R. McCulloch at various times. A particularly valuable series was obtained by Dr. A. D. C. Cummins and Staff Paymaster P. B. Stevens, R.N., in the New Hebrides, while we are fortunate in having Indian specimens for examination which were part of the collection made by Dr. Francis Day. Finally, the Australian Museum collection includes several co-types of species described from Australia which prove to belong to allied genera.

SALARIAS, Cuvier.

Salarias, Cuvier, Règne Anim., ii., 1817, p. 251 (*S. quadripennis*, Rüppell).

The presence of canine teeth has been used to separate *Alticus*, Lacepède, from *Salarias*, but we find intermediate species in which they are occasionally present or absent. Further, some species, such as *S. fasciatus*, which are described as lacking canines, are found to have a small one on each side of the mandible.

Key to the Australian species :—

- a. Dorsal fin not or scarcely notched between the spines and rays.
 - b. No occipital crest.
 - c. Nuchal tentacles large, fringed; body and fins variegated.....*fasciatus*.
 - cc. No nuchal tentacles; body and fins nearly black.....*fuscus*.
 - bb. An occipital crest.....*spaldingi*.
- aa. Dorsal fin incised between the spines and rays.
 - d. Mandibular canines large; about 17 dorsal and 19 anal rays.....*irroratus*.
 - dd. Mandibular canines small or absent; 19-23 dorsal and 19-24 anal rays.
 - e. Ocular tentacle simple; 19-20 dorsal rays.....*rivulatus*.
(*S. mulleri*, Klunzinger, apparently enters this section).
 - ee. Ocular tentacles branched.
 - (*S. kingii*, Cuv. and Val., apparently enters this section).

- f. Upper lip crenulate; 19-20 dorsal rays; body with small, light ocelli.....
meleagris.
- ff. Upper lip not crenulate; 21-23 dorsal rays; body without light ocelli.
- g. Body with thin, dark, longitudinal lines; caudal plain.....*lineatus.*
- gg. Body without longitudinal lines.
 (*S. belemnites*, de Vis, apparently enters this section).
- h. No occipital crest; soft dorsal and caudal without dark borders.....
dussumieri.
- hh. An occipital crest; soft dorsal and caudal with dark borders.....
geminatus.

SALARIAS FASCIATUS, Bloch.

- Blennius gattorugine*, Forskal, Descr. Anim., 1775, p. 23 (not of Linne).
- Blennius fasciatus*, Bloch, Ansl. Fisch., ii., 1786, p. 110, pl. clxii., fig. 1.
- Id.*, Bonnaterre, Encycl. Méth., Ichth., 1788., p. 53, pl. xxxi., fig. 114. *Id.*, Bloch and Schneider, Syst. Ichth., 1801, p. 167.
- Salarias fasciatus*, Cuvier and Valenciennes, Hist. Nat. Poiss., xi., 1836, p. 324. *Id.*, Günther, Brit. Mus. Cat. Fish., iii., 1861, p. 244. *Id.*, Day, Fish. India, 1876, p. 330. *Id.*, Günther, Fische Südsee, vi., 1877, p. 201, pl. cxv., fig. h. *Id.*, Alleyne and Macleay, Proc. Linn. Soc. N.S.Wales, i., 1877, p. 336. *Id.*, Macleay, Proc. Linn. Soc. N.S.Wales, vi., 1881, p. 10. *Id.*, Ogilby, Mem. Qld. Mus., i., 1912, p. 60.
- Erpichthys fasciatus*, Swainson, Nat. Hist. Class. Fish. Amph. Rept., ii., 1839, p. 275.
- Salarias quadripennis*, Rüppell, Atl. Reise Nordl. Afrika, 1828, p. 112, pl. xxviii., fig. 2. *S. quadripennis* (emend.), Cuvier and Valenciennes, Hist. Nat. Poiss., xi., 1836, p. 318.
- Salarias priamensis*, Bleeker, Nat. Tijd. Ned. Ind., iv., 1853, p. 268.
- Salarias semilineatus*, Kner, Sitzb. Akad. Wiss. Wien, lvi., 1867, fig. 5.
- Salarias lineolatus*, Alleyne and Macleay, Proc. Linn. Soc. N.S.Wales, i., 1877, p. 336, pl. xiii., fig. 2. *Id.*, Jouan. Mem. Soc. Nation. Sci. Nat. Cherbourg, xxi., 1877, p. 332.
- Salarias griseus*, de Vis, Proc. Linn. Soc. N.S.Wales, viii., 1884, p. 450.
- Salarias pauper*, de Vis, *Loc. cit.*, ix., 1884, p. 695.
- Salarias sublineatus*, de Vis, *Ibid.*, p. 695.
- Salarias furvus*, de Vis, *Ibid.*, p. 696.
- Alticus griseus*, Jordan and Seale, Bull. U.S. Fish. Bur., xxv., 1906, p. 424. *Id.*, Ogilby, Mem. Qld. Mus., iii., 1915, p. 135.
- Alticus pauper* and *A. sublineatus*, Ogilby, *Ibid.*
- D. xii-xiii/18-19; A. ii/20; P. 14; V. 2; C. 11 vel 13. Depth at the vent 4 in the length to the hypural joint; head 4.2-4.9 in the same. Eye 3.3-3.6 in the head. Penultimate dorsal spine 1.6-1.8, median dorsal rays 1.05-1.2, third anal ray 1.1-1.4 in the head.
- Head about as high as long, with the forehead vertical and projecting slightly before the eyes. Interocular space concave. No occipital crest. A large branched ocular tentacle, and a smaller one at each anterior nostril; nuchal tentacles approximate, broad and fringed. A very small internal canine is present on each side of the mandible. Margin of upper lip entire, maxilla reaching slightly beyond the hinder orbital border.

Dorsal fin not notched, though the last spine does not reach its margin; the length of the spinous portion is less than that of the soft, and its margin is a little rounded. Median dorsal rays highest, the last united with the basal portion of the caudal by membrane. Anal commencing below the posterior dorsal spines; its anterior rays are a little produced, and the succeeding ones are subequal in length; the last is united by membrane to the caudal peduncle. Pectoral rounded, the sixth lowest ray longest, reaching the vertical of the tenth or eleventh dorsal spine. Ventrals inserted well before the first dorsal spine, the inner ray longest, and reaching half its distance from the vent. Caudal slightly rounded or subtruncate.

Colour marking.—Light brown in alcohol, with eight broad darker cross-bands, which are distinct in the young and indefinite in larger specimens; they may enclose lighter spots towards the ventral surface. Anteriorly the body is ornamented with many dark brown dots towards the back, which give place to thin undulating lines on the sides; posteriorly there are about two rows of rounded blue spots on the upper half of the side, and some larger brown spots on the caudal peduncle. Head with brown dots above, and a dark mark from the eye to the mouth, and others across the preopercular and opercular borders; a broad bluish brown cross-band covers the throat and is separated from another before the ventrals by a narrow, light interspace; these may be indistinct, particularly in older specimens. Dorsal fin with dark blotches basally, which are continuations of the cross-bands of the body; each of these divides into two broad, darker bands, which curve upwards and forwards; narrow dark lines cross the fin in the opposite direction and end in dark spots near the margin; on the spinous dorsal the broader bands are formed of anastomosing darker lines, which enclose light, rounded spots, and form a characteristic chequered pattern on the fin. Anal fin dusky, with some dark blotches basally, caudal plain. Pectorals and ventrals light coloured, with well defined brown spots on the rays; broad brown markings enclosing lighter spots are present on the base of the pectoral.

Described from two specimens 81 and 125 mm. long. The younger differs from the older specimen only in having its markings much better defined, which is characteristic of smaller specimens of this species.

Variation.—A good series of specimens exhibits considerable variation in the details of the colour marking, and in the relative lengths of the fin rays and spines. The anal may be very light in colour, or dark grey, with lighter and darker spots. The caudal is either plain or closely speckled with grey dots, or with larger darker spots. In very small examples the darker spots and lines on the anterior portion of the body are wanting. The junction of the spinous and soft portions of the dorsal is indicated by a very slight emargination in some specimens, and the anterior anal rays may be either greatly produced or of equal length to the others. Finally, the tentacles of very young specimens are less branched than in older examples.

Synonymy.—The identity of *S. lineolatus*, Alleyne and Macleay, with *S. fasciatus*, has already been noted by Ogilby, and an examination of the holotype proves his conclusion to be correct. The holotypes of *S. pauper*, de Vis, and *S. sublineatus*, de Vis, are completely bleached, but are

identical with *S. fasciatus* in all structural details. Two cotypes of *S. griseus*, de Vis, retain some of the blue spots on the hinder portion of the body, while the pectorals, ventrals, and caudal show vestiges of their colour marking; they likewise are identical with *S. fasciatus*. The holotype of *S. furvus* is badly stuffed, and retains but few of its distinguishing characters, but agrees with *S. fasciatus* in all that remain.

We are indebted to Mr. J. Douglas Ogilby for much assistance in the compilation of the above synonymy, and for valuable notes on variation, etc. He also enabled us to examine the types of *S. griseus*, *S. sublineatus* and *S. pauper*, while that of *S. furvus* was seen by the senior author at an earlier date.

Locs.—We have examined Australian specimens from the following localities:—Murray Island, Torres Strait; coll. Hedley and McCulloch. Darnley Island, Torres Strait; holotype of *S. lineolatus*. Cape Grenville, Queensland; coll. "Chevert" Expedition. Two Isles, off Cape Bedford, Queensland; coll. Hedley and Briggs. Dunk Island, Queensland; coll. E. J. Banfield. Cardwell, Queensland; holotypes of *S. pauper* and *S. sublineatus*. Masthead Island, Queensland; coll. A. R. McCulloch.

S. fasciatus ranges from the Red Sea and east coast of Africa to the Pacific, reaching Samoa and Tonga.

SALARIAS FUSCUS, Rüppell.

Salarias fuscus, Rüppell, Neue Wirbelth., Fische, 1835, p. 135, pl. xxxii., fig. 2. *Id.*, Günther, Brit. Mus. Cat. Fish., iii., 1861, p. 245. *Id.*, Day, Fish. India, 1876, p. 330, pl. lxx., fig. 2, and Supplement, 1888, p. 797. *Id.*, Günther, Fische Südsee, vi., 1877, p. 202, pl. cxvi., fig. c. *Id.*, Weber, "Siboga" Exped., Fische, 1913, p. 530.

Salarias ruficaudus, Cuvier and Valenciennes, Hist. Nat. Poiss., xi., 1836, p. 328.

Salarias phaiosoma, Bleeker, Nat. Tijdschr. Ned. Ind., viii., 1855, p. 317.

Salarias holomelas, Günther, Ann. Mag. Nat. Hist. (4), x., 1872, p. 399.

Id., Jordan and Seale, Bull. U.S. Fish. Bur., xxv. 1906, p. 431.

Specimens from Queensland do not differ from one received from Dr. Francis Day, which was collected at Sind, India. Jordan and Seale have suggested that the black colour of the caudal fin distinguishes *S. holomelas* from *S. fuscus*, but the Queensland examples include both forms, and thereby indicate that this character is not of specific value.

Though this species is described as without canines, a very small internal tooth is present on each side of the mandible.

Locs.—Murray Island, Torres Strait; coll. Hedley and McCulloch. Masthead Island, off Port Curtis, Queensland; coll. Dene B. Fry, 1910. Sind, India; Dr. Day's Collection. Friendly Islands and New Hebrides, South Pacific.

SALARIAS SPALDINGI, Macleay.

(Plate iii., fig. 1.)

Salarias spaldingi, Macleay, Proc. Linn. Soc. N.S.Wales, ii., 1878, p. 359, pl. ix., fig. 4, and *Loc. cit.*, vi., 1881, p. 12.

Salarias punctillatus, Klunzinger, Sitzb. Akad. Wiss. Wien, lxxx. i., 1879, p. 389. *Id.* Macleay, Proc. Linn. Soc. N.S.Wales, ix., 1884, p. 37.

D. xii/19; A. ii/20; P. 14; V. 2; C. 13. Depth equal to the length of the head, and nearly 5 in the length to the hypural joint. Eye 3.1 in the head. Last dorsal spine 2, sixth dorsal ray 1.1, and the fifth last anal ray 1.5 in the head.

Head about as high as long, with the forehead subvertical. Eyes close to the upper anterior profile, separated by a narrow concave inter-orbital space. A crest is present on the occiput. Nasal, ocular and nuchal tentacles present, all short and simple. A single row of fine teeth in each jaw, and a stout, curved, internal canine is present on each side of the mandible.

Dorsal fin not notched, but the spinous portion lower than the soft. The spines increase slightly in length backwards, and the base of the spinous portion of the fin is shorter than that of the soft dorsal. The rays are subequal in height, and the last is joined to the base of the caudal by membrane. Anterior anal rays a little produced, filamentous; the others subequal, and the last united to the caudal peduncle by membrane. Pectoral obtusely pointed, fifth lowest ray longest, but not reaching the vertical of the vent. Inner ventral ray longest, reaching almost half its distance from the vent. Caudal a little rounded, most of its rays bifurcate.

Colour marking.—Light greyish brown after long preservation in alcohol, with eight broad brown cross-bands which are much broken up by lighter spots anteriorly. Base of pectoral and breast with broad brown markings enclosing lighter spots. Head mottled with rounded lighter spots and brown markings, which extend across the throat. Small blue ocelli are present on the upper portion of the dark cross-bands posteriorly. Dorsal fin with dark blotches, which are continuations of the cross-bands of the body; these curve forward and tend to form two horizontal bands on the outer half of the spinous dorsal. Anal dusky, darker towards its margin; the other fins plain, the caudal with two dark basal blotches.

Described and figured from a cotype preserved in the Macleay Museum, 76 mm. long. Twelve others, 34-84 mm. long, do not exhibit any marked variation, though the cross-bands are more distinct in some than in others.

Synonymy.—Klunzinger suggested the identity of his *S. punctillatus* with *S. spaldingi*, but Macleay believed the two to be distinct. Klunzinger's description agrees with Macleay's specimens quite well in all structural details, and the slight differences in the colour marking is evidently due to variation.

Loc.—Port Darwin, Northern Territory.

SALARIAS IRRORATUS, *Alleyne and Macleay.*

(Plate iii., fig. 2.)

Salarias irroratus, Alleyne and Macleay, Proc. Linn. Soc. N.S.Wales, i., 1877, p. 337, pl. xiii., fig. 4. *Id.*, Macleay, *Loc. cit.*, vi., 1881, p. 12. *Id.*, Ogilby, Mem. Qld. Mus., i., 1912, p. 60.

Salarias calvus de Vis, Proc. Linn. Soc. N.S.Wales, ix., 1884, p. 697.

D. xii/17; A. 19; P. 14; V. 2; C.13. Depth 4.7 in the length to the hypural joint; head 5 in the same. Eye 3.2 in the head. Median dorsal spines 2.3, and median dorsal rays 1.4 in the head. Third anal ray 0.2 longer than the head.

Orbit forming the anterior profile of the head, and projecting beyond the jaws. A very low obtuse ridge on the occiput and nape. Maxillary reaching beyond the vertical of the hinder margin of the eye. A single row of fine teeth in each jaw, and a small incurved internal canine on each side of the mandible. Head with series of simple pores around the eyes, across the nape, around the preoperculum, and on each side of the mandible. A simple tentacle behind the anterior nostril and another surmounting the eye, while a shorter broader one is present on each side of the neck.

Dorsal fin originating above the operculum, distinctly notched, the spinous portion a little shorter than the soft; the spines increase in height towards the middle, but the longest is not so high as the rays, and the last is much shorter than the penultimate. Soft dorsal a little rounded, median rays longest, and the last united by membrane to the extreme base of the caudal. Anal ray somewhat produced and filiform anteriorly, the third the longest, the others decreasing backwards; the last is connected by membrane to the peduncle. Pectoral rounded, and formed wholly of simple rays, the sixth lowest being the longest. Ventrals of two simple rays, inserted before the pectorals, but behind the vertical of the dorsal origin; the inner is the longer, and reaches about half its distance from the vent. Caudal rounded, its inner rays bifurcate.

Colour marking.—Brown in alcohol, closely mottled on the anterior half with white spots and reticulating lines. Head brown, with white stellate dots, which are largest on the throat, where they combine to form streaks. Two large brown (blue) spots are present on the throat. A dark streak defines the preoperculum. Base of the pectoral and breast with three large white spots on each side enclosed in brown lines. Body closely covered with white spots, which are largest on the sides of the abdomen, and there are about four broad brown bands anteriorly; on the posterior half of the trunk the marking gives place to brownish dots, which are enlarged above the anal fin, and are arranged in groups along the base of the dorsal. Spinous dorsal with a few darker dots, the rest of the fin almost hyaline. Caudal with irregular rows of dark dots crossing its lower half. Anal with a grey dot at the base of each ray, and a broad submarginal darker band of microscopic dots.

The above description is based upon the holotype of the species, 63 mm. long, in the Macleay Museum. It is not so well preserved as a cotype of *S. calvus* in the Australian Museum, which has, therefore, been used to supplement the description of the colour marking. The accompanying figure is based on de Vis' specimen.

Alleyne and Macleay counted the number of fin-rays incorrectly in their only specimen, and they overlooked the small internal mandibular canines. The cotype of *S. calvus* differs from its brief description in having nasal, ocular and nuchal tentacles, and internal mandibular canines. A critical comparison of these two specimens leaves no doubt that they represent the same species.

Variation.—The occipital ridge is not always developed, and is generally absent in smaller specimens. The anterior anal rays are produced in most larger specimens, but they may be shorter than the succeeding ones, as in the holotype of *S. calvus*. Specimens preserved in formaline do not show the white stellate markings which form such a striking feature in the alcohol examples, their markings consisting principally of darker spots arranged in the manner illustrated.

Locs.—Low Island, Torres Strait; holotype of *S. irroratus*. Murray Island, Torres Strait; cotype of *S. calvus*. Murray Island, Torres Strait; coll. Hedley and McCulloch. Two Isles, near Cape Bedford, Queensland; coll. Hedley and Briggs. New Hebrides, South Pacific.

SALARIAS RIVULATUS, Rüppell.

(Plate iii., figs. 3-4.)

Salarias rivulatus, Rüppell, Atlas Reise Nordl. Afrika, 1828, p. 114 and Neue Wirbelth., Fische, 1835, pp. 134-135, pl. xxxii., fig. 1. *Id.*, Jordan and Seale, Bull. U.S. Fish. Bur., xxv., 1906, p. 429.

Salarias quadricornis, Cuvier and Valenciennes, Hist. Nat. Poiss., xi., 1836, p. 329, pl. cccxxix. *Id.*, Day, Fish. India, 1876, p. 331, pl. lxx., fig. 4 (references).

D. xiii/19-20; A. ii/21-22; P. 14; V.3; C.13. Depth at the vent 4.8 in the length to the hypural joint; head 4.1-4.2 in the same. Eye 4.1-4.4 in the head. Second dorsal spine 1.7-1.8, median dorsal rays 1.3-1.4, longest anal ray 1.7-1.8 in the head.

Head much longer than high, the forehead subvertical. Eye separated by a very narrow interorbital space. Occipital crest present in one sex, wanting in the other. A small branched tentacle at the anterior nostril, a larger simple one above the eye, and a simple one on each side of the neck. No mandibular canines. Margin of the upper lip entire; maxilla reaching behind the vertical of the eye.

Dorsal fin deeply notched, commencing above the operculum; the spinous portion is much shorter than the soft. Median dorsal rays longest, the last united with the base of the caudal fin. Anal commencing beneath the posterior dorsal spines and increasing in height backwards, the last ray not united to the caudal peduncle by membrane. Pectoral rounded, the fifth or sixth lowest ray longest, and reaching to below the tenth or eleventh dorsal spine. Median ventral ray longest, reaching less than half its distance from the vent; the inner ray is slender, and closely adpressed to the second. Caudal slightly rounded.

Colour marking—Male:—Dark grey in alcohol, with about six paired darker cross-bands, which are most distinct towards the middle of the body; intermediate irregular markings are also present. A dark stripe extends from the eye across the mouth on each side, and a blackish spot is present behind the eye. First dorsal with about five broad, dark bands disposed more or less horizontally, the basal ones broader than those towards the margin. Second dorsal with oblique dusky bands, separated by narrow light bands; these form darker spots on the rays, and combine to form a dusky margin to the fin. Anal dusky, with narrow, longitudinal, light stripes. Caudal and pectoral almost plain, the latter with some indefinite cross-bars. Female:—Light grey in alcohol, with

well defined, paired cross-bands, which are of irregular form and much interrupted by intermediate markings; the posterior half with rounded, dark spots. Head markings similar to those of the male. Dorsal fins closely covered with dark spots, which tend to form horizontal rows on the spinous portion, and oblique ones on the soft. Anal with dark spots in longitudinal rows. Caudal and pectorals almost plain, the former with some dark spots basally.

Described and figured from two specimens 114-120 mm. long, from Masthead Island. Though differing in the colour marking, they are evidently sexual forms of the same species, since we find the same characters in series of specimens from several localities. Those in which the fins are spotted lack the occipital crest, while specimens in which it is present have the fins striped; smaller specimens exhibit characters which are intermediate between the two adult forms.

Locs.—Masthead Island, off Port Curtis, Queensland (figured specimens); coll. A. R. McCulloch. Murray Island, Torres Strait; coll. Hedley and McCulloch. Lord Howe Island, New Hebrides, Samoa and Funafuti.

SALARIAS MULLERI, Klunzinger.

Salarias mulleri, Klunzinger, Sitzb. Akad. Wiss. Wien, lxxx., 1879, p. 388.

Id., Weber, "Siboga" Exped., lvii., 1913, p. 535.

The specimens on which this species was based were said to have been obtained in Hobson's Bay, Victoria, but no species of the genus is known to occur so far south. Specimens from the Indo-Australian Archipelago have been identified by Weber as *S. mulleri*. The species is unknown to us.

SALARIAS MELEAGRIS, Cuvier and Valenciennes.

Salarias meleagris, Cuvier and Valenciennes, Hist. Nat. Poiss., xi., 1836, p. 332. *Id.*, Günther, Brit. Mus. Cat. Fish., iii., 1861, p. 256 and Fische Südsee, vi., 1877, p. 208. *Id.*, Steindachner, Sitzb. Akad. Wiss. Wien, lvi. i., 1867, p. 316. *Id.*, Günther, Ann. Mag. Nat. Hist. (3), xx., 1867, p. 62. *Id.*, Klunzinger, Sitzb. Akad. Wiss. Wien, lxxx. i., 1879, p. 388. *Id.*, Macleay, Proc. Linn. Soc. N.S. Wales, vi., 1881, pp. 11 and 13.

Salarias biseriatus, Alleyne and Macleay, Proc. Linn. Soc. N.S. Wales, i., 1877, p. 336 (not *S. biseriatus*, Cuvier and Valenciennes.)

D. xii-xiii/19-20; A. i-ii/19-20; P. 14; V. 3; C. 13. Depth 4.6-5.4 in the length to the hypural joint; head 4.4-4.8 in the same. Eye 3.09-4.2 in the head. Third dorsal spine 1.9-2, thirteenth dorsal ray 1.3-1.7, seventeenth anal ray 1.6-2.1 in the head.

Head longer than high, with the forehead subvertical. Eyes separated by a very narrow concave interorbital space. Occipital crest present or absent. A large ocular tentacle, which is fringed on both sides; nasal tentacle palmate; a simple nuchal tentacle present or absent, occasionally developed on one side only. No mandibular canine. Upper lip with a crenulate margin. Maxillary reaching well beyond the eye.

Dorsal fin deeply notched, the second or third spine highest, but much lower than the rays; the length of the spinous portion is a little shorter than that of the soft. Dorsal rays increasing slightly in length

to about the hinder fourth of the fin, the last united to the caudal peduncle, but the membrane does not reach the rays. Anal commencing beneath or in advance of the incision of the dorsal; its rays increase in length towards the hinder part of the fin, and the last is not joined to the caudal peduncle by membrane. Pectoral obtusely pointed, sixth lowest ray longest, and reaching to below the ninth dorsal spine. Ventral with two thick and one slender inner ray, the median the longest, and extending backwards a little more than one third of its distance from the vent. Caudal slightly rounded or subtruncate.

Colour marking.—Brown in alcohol, with about seven more or less distinct darker cross-bands; these are very angular, and are defined on the back by paired blackish spots. Sides with irregular rows of silvery ocelli, which are most distinct towards the tail. Head with small light ocelli, and some darker markings on the throat, which may be indistinct; a bluish black spot behind the eye. First dorsal with about five broad, dark bars running upwards and backwards. Second dorsal with oblique dark stripes, separated by narrow light lines, which tend to break up into spots towards the margin. Anal with two or more rows of light spots tending to form horizontal stripes, or closely speckled with light dots; the margin may be dark or light-edged. Caudal nearly plain in specimens, without crests, closely dotted and streaked with light markings between the rays in those in which it is present. Pectorals plain, or with one or two broad cross-bands near the base.

The above definition is based on eleven specimens, 46-124 mm. long, which were taken together at Eagle Island, Northern Queensland. They agree very well with the original description of the species and also with Günther's figure of a Cape York specimen in "Fische Südsee," though the latter illustrates the last dorsal ray as wholly free from the caudal peduncle. A large number secured at the same time exhibit some little variation in the intensity and exact form of their colour marking, which, however, is essentially as described above.

Variation.—A single example from Masthead Island is remarkable for its dark colouration, which almost hides its characteristic markings. It is greyish brown in alcohol, with only obscure traces of the darker cross-bands; the whole body is flecked with blackish pencillings, through which the light ocelli are but little apparent. First dorsal nearly uniform brown, with oblique light lines posteriorly. Second dorsal brown, with narrow, interrupted, oblique, light lines. Anal with several rows of light spots, caudal with light lines and spots between the rays.

Locs.—Eagle Island and Two Isles, Northern Queensland; coll. Hedley and Briggs. Rat Island, Port Curtis, and Masthead Island, Queensland; coll. A. R. McCulloch. Caloundra, Southern Queensland. Port Darwin, Northern Territory; coll. H. W. Christie.

This species was said to have been originally obtained by Peron in Tasmania, but no species of the genus occurs so far south. Johnston¹ noted that it was common in Tasmanian waters, but his reference doubtless applied to *Bleinnius tasmanianus*.

¹ Johnston—Proc. Roy. Soc. Tasm., 1882 (1883), p. 121.

SALARIAS LINEATUS, Cuvier and Valenciennes.

(Plate iv., fig. 1.)

Salarias lineatus, Cuvier and Valenciennes, Hist. Nat. Poiss., xi., 1836, p. 314. *Id.*, Bleeker, Verh. Bat. Genootsch., xxii., 1849, Blenn. Gobioid, p. 18. *Id.*, Günther, Brit. Mus. Cat. Fish., iii., 1861, p. 254. *Id.*, Day, Fish. India, 1876, p. 332, pl. lxx., fig. 8. *Id.*, Jordan and Seale, Bull. U.S. Fish. Bur., xxv., 1906, p. 426.

D. xiii/23; A. ii/24; P. 14; V. 2; C. 13. Depth 6 in the length to the hypural joint; head 5 in the same. Eye 4.2 in the head. Fourth dorsal spine 1.1, seventeenth dorsal ray 1.2, third last anal ray 1.5 in the head.

Head longer than high, the forehead subvertical; a high occipital crest present in one sex, wanting in the other. A broad palmate tentacle above the eye, and a shorter one at the anterior nostril; no nuchal tentacle. Mouth reaching well beyond the vertical of the hinder orbital margin. A single row of teeth in each jaw; no canines.

Dorsal fin deeply notched, commencing above the hinder part of the operculum, the spinous portion much shorter than the soft; the spines are subequal in length in the anterior and median portions of the fin, shorter posteriorly. Dorsal rays increasing slightly in length towards the posterior portion of the fin, the last joined by membrane to the base of the caudal. Anal rays increasing a little in length backwards, the last not joined by membrane to the peduncle. Pectoral a little pointed, formed of simple rays, the fifth lowest the longest and not nearly reaching the vertical of the vent. Inner ventral ray longest, reaching backward more than one-third its distance from the vent. Caudal rounded, the inner rays bifurcate.

Colour marking.—Light brown in alcohol, with thin darker longitudinal lines extending along the sides; about six pairs of blackish spots on the back, descending obliquely forward. Head with vertical wavy lines. Dorsal fins with oblique darker lines, which on the soft portion form a submarginal series of zig-zag lines; the outer portion of both fins greyish. The other fins plain, the anal with a somewhat darker margin.

Described and figured from a specimen 103 mm. long, from the New Hebrides, which is apparently a male. Others taken with it and supposed to be females differ in lacking the occipital crest, while the second dorsal has no submarginal band of zig-zag lines. These differ from an Indian specimen only in having the lines on the side of the body narrower.

Locs.—Murray Island, Torres Strait; coll. C. Hedley and A. R. McCulloch. Andaman Islands; Dr. Francis Day's Collection. New Hebrides; coll. Cummins and Stevens.

SALARIAS DUSSUMIERI, Cuvier and Valenciennes.

(Plate iv., fig. 2.)

Salarias dussumieri, Cuvier and Valenciennes, Hist. Nat. Poiss., xi., 1836, p. 310. *Id.*, Günther, Brit. Mus. Cat. Fish., iii., 1861, p. 251. *Id.*, Day, Fish. India, 1876, p. 333, pl. lxx., fig. 7.

Salarias auridens, Alleyne and Macleay, Proc. Linn. Soc. N.S. Wales, i., 1877, p. 338, pl. xiv., fig. 2. *Id.*, Macleay, *Loc. cit.*, vi., 1881, p. 12.

Salarias cheverti, Macleay, Proc. Linn. Soc. N.S. Wales, vi., 1881, p. 12.

D. xiii/21; A. i/22; P. 14; V. 2; C. 13. Depth 5 in the length to the hypural joint; head 5 in the same. Eye 3.5 in the head; interorbital space 4 in the eye. Median dorsal spines 2, median dorsal rays 1.5, posterior anal rays 2 in the head.

Head longer than high, with a subvertical forehead; no occipital crest. A large arborescent ocular tentacle, and a small one at each anterior nostril; no nuchal tentacle. Mouth reaching well beyond the vertical of the hinder orbital margin. Teeth very small, in a single row in each jaw; no canines present in either.

Dorsal fin deeply notched, commencing above the posterior part of the operculum, the spinous portion a little shorter than the soft; the median spines are the longest, and the margin of the fin is slightly rounded. Dorsal rays subequal, highest in the middle of the fin, and longer than the spines; the last is joined by membrane to the extreme base of the caudal. Anal rays increasing in length slightly backwards, the last not united to the peduncle by membrane. Pectoral obtusely pointed, the fifth lowest ray the longest and not quite reaching the vertical of the vent. Inner ventral ray longest, reaching less than half its distance from the vent. Caudal rounded, the inner rays bifurcate.

Colour marking.—General colour, dark brown in alcohol, lighter posteriorly, with some obscure darker cross-bands on the hinder portion of the back, and dark brown spots on the tail region. The head is obscurely mottled on the operculum and throat, and three dark bars descend from the eyes across the lips. Dorsal fins with rows of angular dark brown spots, connected by lines, and together forming a more or less zig-zag pattern which runs parallel to their margins; soft dorsal with oblique lines on its basal half. Caudal with irregular transverse rows of dark spots on the rays. Pectoral and posterior portion of anal obscurely spotted, the latter fin with an indefinite darker submarginal band.

The above description is based upon the holotype of *S. auridens*, 84 mm. long, and supplemented with notes on the colour marking of additional specimens from Murray Island which agree in all details with Alleyne and Macleay's example. One of the latter, 94 mm. long, is figured.

Another specimen from Two Isles, off Cape Bedford, is much lighter in colour and shows the transverse body-bars and head markings much more definitely than the others.

Synonymy.—We have compared these specimens with an example from the Andaman Islands, which was identified by Dr. Day as *S. dussumieri*, and find no differences between them.

S. cheverti, Macleay, is represented in the Macleay Museum collection by several cotypes, all of which differ from the very imperfect description of that species in having more numerous spines and rays in the dorsal and anal fins, and in their colouration. But they are clearly labelled, and are evidently the specimens upon which the species is based. They are covered with a light bluish sediment, but when this is removed they are found to have the same colour marking as the holotype of *S. auridens*, to which they are similar in all details.

Locs.—Darnley Island, Torres Strait; holotype of *S. auridens*. Murray Island, Torres Strait; coll. C. Hedley and A. R. McCulloch. Two Isles, off Cape Bedford, Queensland; coll. C. Hedley and E. A. Briggs.

SALARIAS GEMINATUS, *Alleyne and Macleay.*

(Plate iv., fig. 3.)

Salarias geminatus, Alleyne and Macleay, Proc. Linn. Soc. N.S.Wales, i., 1877, p. 336, pl. xiii., fig. 3.

Salarias cristiceps, Alleyne and Macleay, *Ibid.*, p. 338, pl. xiv., fig. 3.

D. xii/22; A. ii/23; P. 14; V. 3; C. 13. Depth 5.7 in the length to the hypural joint; head 5.2 in the same. Eye 3.8 in the head; inter-orbital space 4.2 in the eye. Median dorsal spines 1.6, median dorsal rays 1.2, median anal rays 1.5 in the head.

Head longer than high, with a subvertical forehead. Occipital crest well developed. A large branched ocular tentacle; nasal tentacle minute, feebly branched; no nuchal tentacle. Mouth reaching well beyond the vertical of the hinder orbital margin. A minute internal canine is present on each side of the mandible.

Dorsal fin deeply notched, commencing above the hinder portion of the operculum, the spinous portion much shorter than the soft. The median spines are slightly longer than the others, but are lower than the rays. Dorsal rays subequal, the median one slightly longer than the others, the last united to the base of the caudal. Median anal rays longest, the last not connected to the caudal peduncle by membrane. Pectoral obtusely pointed, the fifth lowest ray longest, and reaching the vertical of the ninth dorsal spine. Median ventral ray longest, reaching less than half its distance from the vent; the inner ray slender and closely adpressed to the second.

Colour marking.—Body with broad, dark, paired cross-bands, which are most distinct beneath the soft dorsal. On the back there are corresponding paired, blackish spots, with light interspaces between them. Towards the caudal peduncle there are some indefinite dark spots. Spinous dorsal with some broad, sinuous, subhorizontal dark stripes. Second dorsal with oblique stripes, separated by narrow light lines; these are expanded and darker in the basal portion of the fin, and they form undulating lines on a dark submarginal band; extreme margin white. Caudal with a broad, submarginal band, similar to that of the second dorsal. Anal dusky, darker towards its margin.

Described from the holotype of the species, 101 mm. long; it is much faded, but exhibits most of the characteristic colour marking described above. The accompanying figure represents a specimen 107 mm. long from Murray Island, Torres Strait.

Variation.—The very small canine tooth is not always easily detected in this species, and is apparently present in larger examples only, but is wanting in those of smaller size. The posterior anal ray is usually free from the caudal peduncle, but may be joined to it by membrane. In eight specimens we find xiii/21-22 dorsal rays, and i-ii/22-24 anal rays; Macleay wrongly counted the number of dorsal and anal rays in the holotype.

Synonymy.—The holotype of *S. cristiceps*, 54 mm. long, is much discoloured, but exhibits distinct markings which are similar to those of *S. geminatus*, to which it is also similar in all structural details.

This species is allied to *S. meleagris*, but differs in having more numerous dorsal and anal rays, and in lacking nuchal tentacles; the colour marking also is different.

It is not improbable that *S. geminatus* is merely the male form of *S. dussumieri*. The two species are similar in all structural details, and the differences in the colour marking are not more pronounced than those we find in the sexual forms of *S. rivulatus*.

Locs.—Torres Strait; holotype of *S. geminatus*. Darnley Island, Torres Strait; holotype of *S. cristiceps*. Murray Island, Torres Strait; coll. Hedley and McCulloch.

CIRRIPECTES *Swainson.*

* *Cirripectes*, Swainson, Nat. Hist. Classific. Fish. Amph. Rept., ii., 1839, pp. 182, 275 (*Salarias variolosus*, Cuvier and Valenciennes). *Cirripectus*, *Id.*, *Ibid.*, p. 79. *Id.*, Weber, "Siboga" Exped., lvii., 1913, p. 536.

? *Ewallias*, Jordan and Evermann, Bull. U.S. Fish. Bur., xxiii. i., 1905, p. 503 (*Salarias brevis*, Kner).

This genus includes the species of *Salarias* which have a row of cirri crossing the neck to the opercular lobes, and the upper lip fringed with short tentacles; a curved internal canine is present on each side of the mandible. In addition to the genotype, *S. variolosus*, C. and V., this genus includes *S. variolatus*, Cuvier and Valenciennes (= *S. cuvieri*, Günther), *S. sebae*, Cuvier and Valenciennes and *S. alboapicalis*, Ogilby, Weber regards *Ewallias* as synonymous with *Cirripectes*, but its genotype, *E. brevis*, Kner, apparently lacks mandibular canines.

CIRRIPECTES FILAMENTOSUS, *Alleyne and Macleay.*

Salarias filamentosus, Alleyne and Macleay, Proc. Linn. Soc. N.S. Wales, i., 1877, p. 337, pl. xiv., fig. 1. *Id.*, Macleay, *Ibid.*, vi., 1881, p. 12. *Salarias alboapicalis*, Ogilby, Mem. Qld. Mus., ii., 1913, p. 90 (not of Ogilby, 1899).

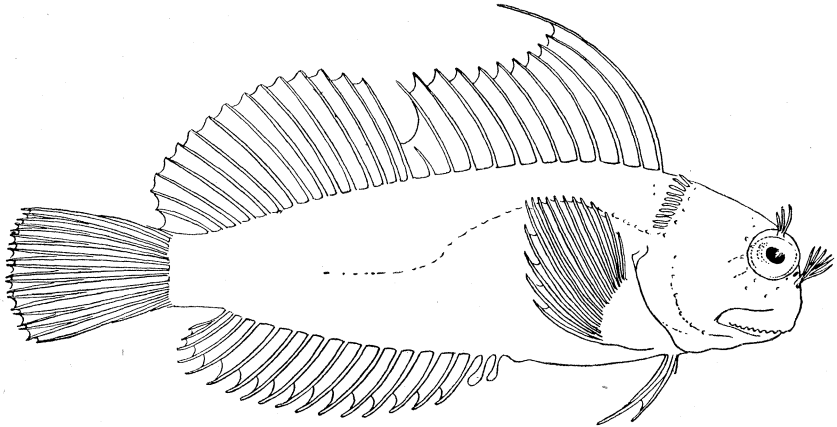


Fig. 1.—*Cirripectes filamentosus*, Alleyne and Macleay. Holotype, 70 mm. long, from Cape York.

D. xii/15; A. ii/16; P. 15; V. i/3; C. 13. Depth 3.1 in the length to the hypural joint; head 3.6 in the same. Eye 3.4 in the head; inter-orbital space about 4.5 in the eye. First dorsal spine 0.4 longer than the head. Third dorsal ray 1.2, eighth anal ray 1.9 in the head.

Head rounded, about as high as long. No occipital crest. A branched tentacle, divided into several filaments, is present at each anterior nostril and above the eyes; a row of simple tentacles extends from the nape on each side towards the gill-opening, but is slightly interrupted on the median line. Upper lip fringed with obtuse lobules. A single row of fine teeth in each jaw, and a rather large, curved, internal canine on each side of the mandible.

Dorsal fin deeply notched, originating above the operculum, the spinous a little longer than the soft; the anterior spines are filamentous* and decrease backwards, but the penultimate is as long as the anterior ray, and as long as the postorbital portion of the head. Dorsal rays highest in the anterior portion of the fin, decreasing slightly backwards, the last united with the base of the caudal. Anal spines surmounted by thickened, globular, and fleshy appendages; the rays increasing in length towards the posterior portion of the fin, the last not united with the peduncle by membrane. Pectoral obtusely pointed, the rays simple, the fifth lowest longest. Median ventral ray longest, reaching more than half its distance from the vent, the inner ray slender and closely adpressed to the second. Caudal subtruncate, the inner rays bifurcate.

Colour.—Uniform brown after long preservation. Some minute light spots behind the pectorals are possibly the remnants of colour marking.

Described from the holotype of the species 70 mm. long, which proves its original description to be inaccurate in several important details. The dorsal and anal rays number 15 and 16 respectively, instead of 20 and 20. Large curved mandibular canines are present, but are difficult to detect owing to the shrivelled condition of the specimen. Nasal tentacles are present on the anterior nostrils only, instead of on every nostril as described. Notwithstanding these discrepancies, the specimen is clearly that upon which the name was based.

This species is very similar to, and possibly identical with *C. variolosus* (Cuvier and Valenciennes) Günther, but the holotype has the anterior dorsal spines longer than is usual in that species.

Loc.—Cape York; holotype. Mr. Ogilby has very kindly re-examined the specimens which he recorded from Darnley Island, Torres Strait, as *Salarias alboapicalis*, and informs us that they are really *C. filamentosus*.

CIRRIPECTES ALBOAPICALIS, *Ogilby*.

(Plate iv., fig. 4.)

Salarias variolosus, Ogilby, Mem. Austr. Mus., ii., 1889, p. 62 (not *S. variolosus*, Cuvier and Valenciennes).

Salarias alboapicalis, Ogilby, Proc. Linn. Soc. N.S. Wales, xxiii., 1899, p. 742. *Id.*, Waite, Rec. Austr. Mus., v. 3, 1904, p. 224.

This species has been considered synonymous with *S. variolosus* (? Cuvier and Valenciennes), Günther² but a comparison of seventeen specimens from Lord Howe Island, with six of *C. variolosus* from the New Hebrides, shows that they differ consistently in the following details:—

² Günther—Fische Südsee, vi., 1877, p. 203, pl. cxvi., fig. a.

- D. xi-xii/15-16; A. ii/16-17. Eleventh dorsal spine shorter than the postorbital portion of the head; membrane of the last ray not reaching the caudal rays..... *alboapicalis*.
 D. xii/14-15; A. ii/15. Eleventh dorsal spine as long as the postorbital portion of the head; membrane of the last ray united with the base of the upper caudal ray..... *variolosus*
 In none of our specimens do we find D. xiii/19; A. 21, as counted by Ogilby, which counting is apparently incorrect.

Locs.—Specimens of *C. alboapicalis* are in the Australian Museum from Lord Howe Island and Kermadec Islands; two small examples from the latter locality have been recorded by Waite as *Salarias* sp.³ The specimens recorded as this species from Darnley Island, Torres Strait, by Ogilby, prove to be *C. filamentosus*, Alleyne and Macleay.

PETROSCIRTES, Rüppell.

Petroscirtes, Rüppell, Atl. Fische Reise Nordl. Afrika., 1828, p. 110 (*P. mitratus*, Rüppell).

Salarias decipiens, de Vis⁴ is apparently a species of *Petroscirtes*. It has canines in both jaws, the lower being very large and received into the upper jaw. Dorsal fin slightly emarginate, and no crest or tentacles on the head.

Salarias furcatus, de Vis⁵, is possibly also a *Petroscirtes*. It differs from *Salarias* in having the caudal fin deeply forked. Dorsal fin not notched; no occipital crest or ocular tentacles; canines present.

PETROSCIRTES VIPERIDENS, de Vis.

Salarias viperidens, de Vis, Proc. Linn. Soc. N.S.Wales, ix., 1884, p. 697.

Cotypes of this species preserved in the Australian Museum, prove it to be a *Petroscirtes*.

PETROSCIRTES LUPUS, de Vis.

Salarias lupus, de Vis, Proc. Roy. Soc. Qld., ii., 1886, p. 58.

The holotype of this species is preserved in the Queensland Museum. It has lost all trace of its colour marking. D. 30; A. 20; V. 2; C. 11. It is a species of *Petroscirtes*.

ASPIDONTUS, Quoy and Gaimard.

Aspidontus, Quoy and Gaimard, Voy. "Astrolabe.", iii., 1834, p. 719 (*A. taeniatus*, Quoy and Gaimard).

ASPIDONTUS MAROUBRÆ, Ogilby.

Aspidontus maroubrae (Ogilby), McCulloch, Austr. Zool., i.4, 1917, p. 92, pl. x., fig. 1.

Two specimens, 40-42 mm. long, agree well with the holotype of the species in all details, but have the colour marking of the dorsal and anal fins darker and more sharply defined. The body is nearly uniform brown, with traces of darker cross-bands.

Locs.—New Hebrides; coll. Cummins and Stevens. The only other specimen hitherto recorded is the holotype, which was washed up on Maroubra Beach, near Sydney.

³ Waite—Trans N.Zeal. Inst., xlii, p. 380.

⁴ De Vis—Proc. Linn. Soc. N.S.Wales, ix., 1884, p. 694.

⁵ De Vis—*Ibid.*, p. 696.

LEPIDOBLENNIUS, *Steindachner*.

Lepidoblennius, Steindachner, Sitzb. Akad. Wiss. Wien, lv. i., 1867, p. 11
L. haplodactylus, Steindachner).

Body rather elongate, covered with small or moderate sized scales, which may be wholly cycloid or largely ctenoid; lateral line curved downward to the middle of the body, formed of simple tubes on enlarged scales. Head naked, eyes large, snout conical, with an oblique profile. A broad patch of teeth in the front of the premaxillaries, the anterior ones largest, curved and subulate; mandible with similar but larger teeth, and some curved canines or subcaniniform teeth on the sides; a narrow curved band of teeth across the vomer. Dorsal fin commencing on the neck, with about 3/14-16 spines, the three anterior ones separated from the others; second dorsal with about twelve simple rays. Anal long, with about 21-23 rays. Pectoral well developed, with thick simple rays in the lower half. Ventrals jugular, with two thick and one slender ray. Caudal rounded. Gill-membranes forming a free fold across the isthmus, with six branchiostegals; pseudobranchiae present.

The inclusion of *Tripterygium marmoratum*, Macleay, in this genus necessitates the expansion of its characters relating to the squamation and dentition. The scales are wholly cycloid in *L. haplodactylus* and largely ctenoid in *T. marmoratum*, while the latter species has larger and more numerous teeth than the genotype. The two are so similar in all major characters, however, that they are evidently congeneric.

- a. Scales small, cycloid. Teeth smaller, the lateral premaxillary ones not extending much behind the level of the median patch; small caniniform teeth on sides of mandible.....*haplodactylus*.
 aa. Scales larger, ctenoid above, cycloid below. Teeth larger, lateral premaxillary ones extending well behind the level of the median patch; mandible with curved canines laterally.....*marmoratus*.

LEPIDOBLENNIUS HAPLODACTYLUS, *Steindachner*.

Lepidoblennius haplodactylus, Steindachner, Sitzb. Akad. Wiss. Wien, lv. i., 1867, p. 12, pl. i., fig. 2-3. *Id.*, Günther, Ann. Mag. Nat. Hist. (3), xx., 1867, p. 62, and Zool. Rec., 1867 (1868), p. 165. *Id.*, Macleay, Proc. Linn. Soc. N.S. Wales, vi., 1881, p. 13. *Id.*, McCulloch, Proc. Linn. Soc. N.S. Wales, xl., 1915, p. 276.

Lepidoblennius geminatus, Macleay, Proc. Linn. Soc. N.S. Wales, vi., 1881, p. 13. *Id.*, Ogilby, Cat. Fish. N.S. Wales, 1886, p. 39. *Id.*, Waite, Mem. N.S. Wales Nat. Club, ii., 1904, p. 52.

The identity of *L. geminatus* and *L. haplodactylus* has already been noted by McCulloch. The holotype of Macleay's species agrees in all details with Steindachner's description and figure.

Hab.—Steindachner's type was said to have been obtained at Rockhampton, Queensland. Ogilby has recognised the species in Moreton Bay, and it extends southward to Port Jackson, where it is very common.

LEPIDOBLENNIUS MARMORATUS, *Macleay*.

Tripterygium marmoratum, Macleay, Proc. Linn. Soc. N.S. Wales, iii., 1878, p. 34, pl. iii., fig. 2, and vi., 1881, p. 26. *Id.*, Klunzinger, Sitzb. Akad. Wiss. Wien, lxxx. i., 1879, p. 389.

D. iii/xiv-xvi/11-12; A. 23; P. 14-16; V. 3; C. 13. Head 4 in the length to the hypural joint; depth of the head 5.1 in the same. Orbit 4

in the head, and 1.5 in the snout, which is 2.6 in the head. Interorbital width 3 in the orbit. Second dorsal spine 1.6 in the head, and subequal to most of the spines of the second dorsal and the anterior rays. Fourth last anal ray 2, median ventral ray 1.3, and caudal 1.1 in the head. Pectoral 0.2 longer than the head.

Head naked, much longer than high, with an obtusely pointed snout; anterior profile oblique. Eyes large, cutting the profile, and separated by a narrow concave interorbital space. A minute nasal tentacle. Mouth nearly horizontal, maxilla reaching to below the posterior portion of the eye; mandible shorter than the upper jaw. A band of villiform teeth in the front portion of the premaxillaries, the outer ones enlarged and subulate anteriorly, and extending backward well behind the villiform patch; a group of larger teeth on each side of the mandibular symphysis, the anterior ones large and subulate, and some spaced curved canines on the sides; about two rows of small teeth form a curved series across the vomer, palatines toothless. Tongue thick, obtusely pointed anteriorly, only the tip free. Gill-opening very wide, the exposed edge of the shoulder-girdle smooth.

Body elongate, covered with scales of moderate size which are ctenoid on the back and sides and cycloid towards the ventral surface; they extend forward to the nape before the dorsal fin, but leave the breast and abdomen naked. The lateral line curves downward from the shoulder to the middle of the body, and extends to the tail; it is formed of simple tubes placed on enlarged scales.

First dorsal spine inserted just behind the vertical of the preopercular margin; the first three spines are separated by an interspace from the succeeding ones, but are connected to them by membrane; the third is the longest. Spines of the second portion of the fin subequal in height to the third, decreasing a little posteriorly; the last is separated from the soft dorsal. Dorsal rays simple, highest anteriorly, the last not united with the peduncle by membrane. Anal commencing below the middle of the second dorsal, its rays simple and increasing in height to about the fourth last; their tips are curved and free. Pectorals large and pointed, reaching to above the sixth anal ray; the lower rays are thick and simple, the upper ones bifurcate. Ventrals with two thick rays and one thin one, the median ones reaching about two-thirds of their distance from the vent. Caudal subtruncate, with rounded angles, the rays bifurcate.

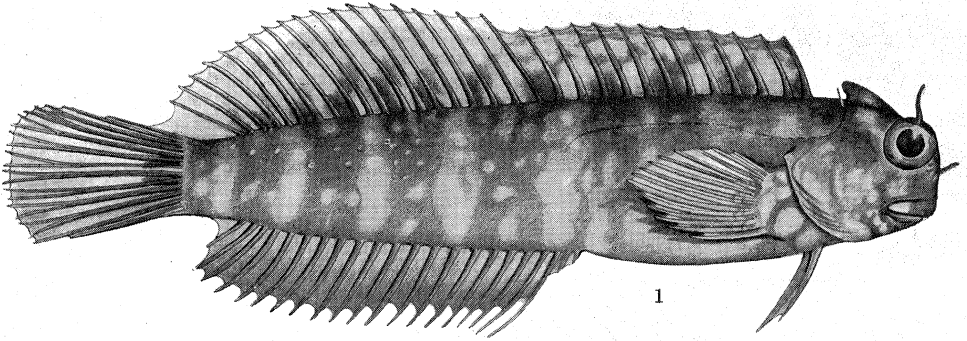
Colour marking.—Brown above, white below, with dark saddle-like markings on the back, from which blackish bars descend obliquely backwards. A broad dark-edged bar descends from the eye on each side of the snout, another covers most of the cheek, and a less distinct one crosses the operculum. Dorsal fins with rows of dark spots, which are most distinct on the rays. Caudal with irregular rows of brown spots. Anal obscurely spotted, with a dark submarginal band. Pectoral spotted, and with large dark markings on the basal portion.

Described from three cotypes, 101-118 mm. long, preserved in the Macleay Museum, which are in very bad condition. The proportions are those of the largest specimen.

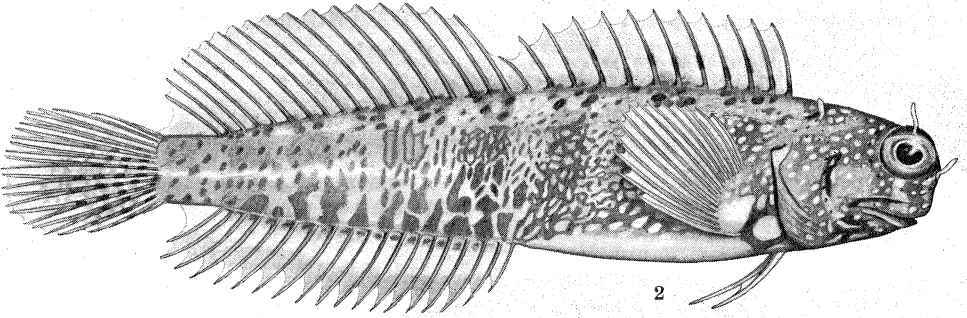
Loc.—King George Sound, South-western Australia.

EXPLANATION OF PLATE III.

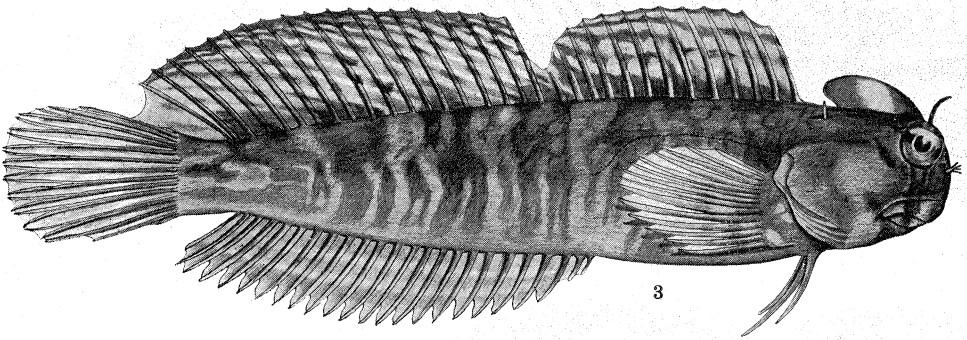
- Fig. 1. *Salaria spaldingi*, Macleay. Cotype 76 mm. long, from Port Darwin.
2. *Salaria irroratus*, Alleyne and Macleay. Cotype of *S. calvus*, de Vis, 55 mm. long, from Murray Island, Torres Strait.
3. *Salaria rivulatus*, Rüppell. A male example 120 mm. long, from Masthead Island, Queensland.
4. *Salaria rivulatus*, Rüppell. A female example, 114 mm. long, from Masthead Island, Queensland.



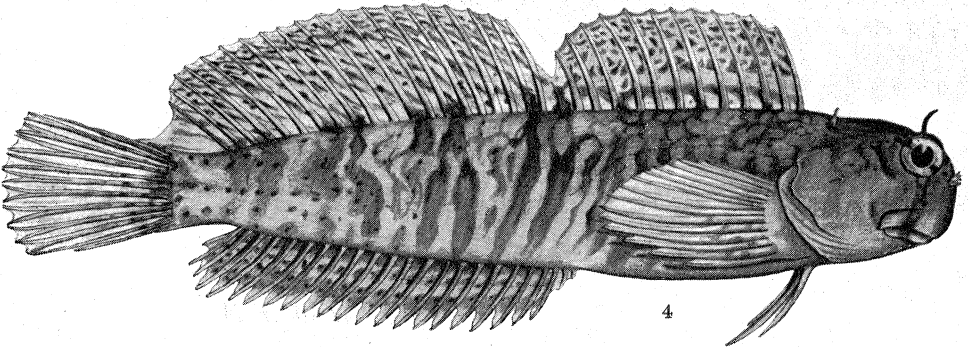
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EXPLANATION OF PLATE IV.

- Fig. 1. *Salaris lineatus*, Cuvier and Valenciennes. A specimen 103 mm. long, from the New Hebrides.
2. *Salaris dussumieri*, Cuvier and Valenciennes. A specimen 94 mm. long, from Murray Island, Torres Strait.
3. *Salaris geminatus*, Alleyne and Macleay. A specimen 107 mm. long, from Murray Island, Torres Strait.
4. *Cirripectes alboapicalis*, Ogilby. A specimen 75 mm. long from Lord Howe Island.

