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NEW RECORDS OR RECURRENCES OF RARE FISHES
FROM EASTERN AUSTRALIA.

No. 3.

By EDGAR R. WAITE, F.L.S., Zoologist.

(Plates xxv. and xxvi., and figures 33-34.)

Ten species are dealt with in this paper, of which three are described as new, namely:—*Neopercis binivirgata*, *Gnathagnus innotabilis* and *Schizochirus insolens*, the last named being regarded as the type of a new genus. *Glyphisodon saxatilis*, Linnæus, *G. leucozona*, Bleeker, and *Limnichthys fasciatus*, Waite, are known species, now first recorded for New South Wales. *Gnathypops jacksoniensis*, Macleay, is redescribed, and it is suggested that the genus *Goodella*, Ogilby, is founded on young examples of *Trachinocephalus myops*, Forster. The occurrence of *Mordacia mordax*, Richardson, is recorded from the Murrumbidgee River, and notes upon *Tropidostethus rhotophilus*, Ogilby, are published.

With the exception of *Mordacia*, *Glyphisodon*, and *Limnichthys*, elsewhere illustrated, all the species are figured, the plates being reproduced from drawings by Mr. A. R. McCulloch.

MORDACIA MORDAX, *Richardson*.

Petromyzon mordax, Richardson, Voy. "Ereb. and Terr.," Ichth., 1846, p. 62, pl. xxxviii., figs. 3-6.

This Lamprey was first recorded from Australia by Klunzinger¹ from near the mouth of the Murray River, and I identify examples from a New South Wales tributary of that river as also belonging to the species.

Two ammocœtal individuals were forwarded by Mr. H. G. Donaldson for identification, and were obtained from a submerged boat on the Murrumbidgee River at Hay. This appears to be the first record of a Lamprey in New South Wales, west of the dividing range; the species is known from the Hawkesbury River watershed and is apparently not uncommon.

¹ Klunzinger—Arch. für Naturg., 1872, p. 45.

In his "Monograph of the Australian Marsipobranchii," Ogilby² used the name *Mordacia* instead of *Caragola*, only in deference to the opinions of Drs. A. Günther and G. A. Boulenger, holding that the latter, occurring prior to the other, though on the same page, is entitled to be used. I also hold similar views but admit *Mordacia* under the rules indicated by Dr. L. Plate³ as governing such conditions.

"Other things being equal, the name is to be preferred which stands first in the book or article.

But in all cases, the name adopted by the first reviser of the group shall stand, even if such adoption is contrary to these conditions."⁴

Having made known⁵ the recurrence of a Lamprey from West Australia, under the name *Velasia stenostoma*, Ogilby,⁶ I may be permitted to mention that Plate⁷ regards the genus *Velasia*, Gray, as but an immature form of *Geotria*, but admits the species under the name *Geotria stenostomus*. Dendy and Margaret Olliver⁸ arrive at the same conclusion and would recognise three stages, *Ammocetes*, *Velasia*, and *Geotria*, the gular pouch being developed only in the adult, *Geotria*. Previously *Geotria australis*, Gray,⁹ was known in New Zealand only from Stewart Island, as recorded by Hutton, but these writers received it from the mainland, examples being taken in the Maitai River, South Island, which flows into Foveaux Strait, opposite to Stewart Island.

TRACHINOCEPHALUS MYOPS, Forster.

Salmo myops, Forster in Bloch and Schneider, Syst. Ichth., 1801, p. 421.

Goodella hypozona, Ogilby, Proc. Linn. Soc. N.S. Wales, xxii., 1897, p. 250.

(Plate xxv., fig. 1.)

The following notes are based upon an examination of specimens I recently collected, together with others placed in my hands by Mr. Thomas Whitelegge, who was the first to observe this form upon our coast, more than ten years ago.

² Ogilby—Proc. Linn. Soc. N.S. Wales, xxi., 1896, p. 398.

³ Plate—Zool. Jahrb. Supp., ii., 1902, p. 653.

⁴ Verh. v. Internat. Zool. Cong. Berlin, 1901, p. 968, par. 4, c. and d.

⁵ Waite—Rec. Aust. Mus., iv., 1902, p. 179.

⁶ Ogilby—*Loc. cit.*, p. 409.

⁷ Plate—*Loc. cit.*

⁸ Dendy and Olliver—Trans. N. Z. Inst., xxxiv., 1896, p. 147.

⁹ Gray—Proc. Zool. Soc., 1851, p. 238.

The author of *Goodella hypozona* concludes his paper with the following paragraph:—

“That the specimens from which the above description is taken are immature is apparent from the soft state of the bones, even the vertebral column being incompletely ossified; but the complete absence of a scaly covering* is a character of such importance that I have no hesitation in describing and naming the species and genus as new, the more so that there is no synodont fish known from our coast of which it could be the fry.

*In *Harpodon*, a partially scaleless synodont from the tropical Indo-Pacific, the ventral fin is inserted below the dorsal, not well in advance of it as in *Goodella*.”

I can fully confirm the conclusions as to the immaturity of the specimens, one example, but a trifle smaller than the others, had the yolk sac incompletely absorbed when obtained.

The statement as to the entire absence of a scaly covering is one which cannot be maintained. The scales of the lateral line are well developed but are not, at this stage, imbricate; they number fifty-six. I have not the opportunity of examining the type specimen and it is necessary to mention that it is not in the Australian Museum as stated, though it was evidently the author's intention to place it there; the matter was doubtless overlooked and the number quoted (I. 3670, 24th June, 1897) is allotted to another fish.

The ordinary series of scales are being developed on the caudal peduncle and posteriorly are well formed, though as in the case of those of the lateral line, not imbricated; more anteriorly the scales are less developed while still more in advance their position is merely indicated by pits; there can, however, be little doubt that at a later stage the body would be normally clothed.

With these facts in view one may be in a position to reconsider the question of the affinities of the species. Though I cannot, of course, be dogmatic on the matter, I have very little hesitation in pronouncing *Goodella* to be the fry of *Trachinocephalus myops*.

In the *Goodella* stage the eye is larger, the body more elongate and the bases of the vertical fins shorter than in the adult. In some examples, the type included, the base of the anal is longer than, in others equal to, or even shorter than that of the dorsal. An example exhibiting the latter character is figured, this has thirteen dorsal spines as in Schlegel's examples from Japan. Thirteen is also the normal number of rays in the pectoral.

The largest example examined measures 48 mm. in length.

TROPIDOSTETHUS RHOTHOPHILUS, *Ogilby*.

Tropidostethus rhotophilus, Ogilby, Proc. Linn. Soc. N.S. Wales, (2), x., 1895, p. 323.

(Plate xxv., fig. 2.)

As recorded by its author, this little fish was first noticed in March 1893, and was next observed from March to July of the following year. Since that time Mr. Whitelegge has made a point of watching for it during his weekly visits to Maroubra Bay with the result that he finds it to be a permanent resident, occurring at all times throughout the year.

In addition to the lateral band, the whole of the body cavity has a silvery lining. In company with Mr. Whitelegge I have watched these fishes disporting in the surf where they appear as thin grey lines which, as the fishes turn in the water, change to silvery streaks.

The original description may be augmented as follows:—

D. iv. i. 14-16; A. i. 23-27; V. i. 5; P. 15; C. 17; L. lat. 49. Vert. 15 + 28 = 43.

The ventrals are said to be situated "far behind the pectorals," this may be a little misleading, their exact position is shown in the accompanying figure.

The scales are described as being deciduous, they are in reality firmly adherent, but as they are developed on portion of the body only, the author doubtless concluded that they had fallen from the naked area.

The head and anterior part of the body are devoid of scales, the naked portion extending above, to the dorsal fin, and below, to the anal fin. Medially the scales extend forward to within the extremity of the pectoral fin, and occur over the whole posterior half of the body.

The height of the body, rendered as "five in the total length" was taken, it would appear, at the origin of the anal fin, the greatest height, three and a half, occurs at the ventral fin.

The genus *Iso*, Jordan and Starks,¹⁰ very closely approaches *Tropidostethus*, which has priority. Direct comparison of *I. flosmaris*, Jordan and Starks, with *T. rhotophilus* will, however, be advisable, for which purpose I am forwarding examples of the local species to my American *confrères*. The Japanese fish appears to be more elongate and lower in the thoracic region though it must be noted that the dimensions rendered by the respective authors agree exactly. The scales as described and figured are certainly smaller than in the Australian form, and in the latter I fail to find vomerine teeth.

¹⁰ Jordan and Starks—Proc. U.S. Nat. Mus., xxiv., 1901, p. 204.

One very important point must be referred to. Ogilby counted the vertebræ as $15 + 29$: as above indicated my figures are $15 + 28 = 43$. The Japanese fish also has forty three vertebræ but the thoracic and abdominal portions are differently divided, $18 + 25 = 43$: so significant are these numbers that one is tempted to ask if some mistake has not been made. If there is really this difference the two genera are valid, though such would never be guessed from an external examination alone. The habits of the two fishes are identical, our species has been named Surf-fish, while the Japanese form is known as the Surf-sardine, or in the poetical language of the country, "Flower of the Wave."

GLYPHISODON SAXATILIS, *Linnæus*.

Chatodon saxatilis, Linnæus, Syst. Nat., (ed. x.), 1758, p. 276.

This species, new to the fauna of the State, is added by the efforts of Mr. Allan R. McCulloch, who obtained examples at Long Bay, where he found them to be not uncommon in rock-pools.

Colours in life creamy with five dark bands, spot on pectoral blue, outer ventral ray pure white, caudal without the outer rays dark.

In their "Fishes from Formosa," Jordan & Evermann¹¹ write of an apparently identical form—"This is *Glyphisodon celestinus* (the variety with plain caudal) of Günther and Bleeker, and corresponds fairly to Bleeker's fig. 5 in Pl. ix, in Bleeker's Atlas of the Pomacentridæ. But the true *Glyphisodon celestinus* has the caudal edged above and below with blackish. Whether this character is of a distinctive value we have not the material to decide."

I recently published¹² a note on this species from Lord Howe Island, and recorded the fact that both varieties were taken together from the same pool. This clearly indicates that the name *celestinus* has no status above that of a variety.

GLYPHISODON LEUCOZONA, *Bleeker*.

Glyphisodon leucozona, Bleeker, Natuurk. Tijdschr. Nederl. Ind., xix., 1859, p. 338, and Atl. Ichth., ix., 1877, pl. ccccvii., fig. 2.

This addition to the fauna we also owe to Mr. McCulloch, who obtained a single example at Long Bay. It agrees in every way with Bleeker's description, with the exception that it possesses the dark ocellus at the base of the posterior dorsal spines, shown

¹¹ Jordan and Evermann—Proc. U.S. Nat. Mus., xxv., 1902, p. 352.

¹² Waite—Rec. Aust. Mus., v., 1904, p. 170.

in the figure. This is doubtless an indication of immaturity, the example figured being smaller than the type, while ours is smaller still, being but 35 mm. in length. The black spot behind the last dorsal rays described, and present in our specimen, is not indicated in the figure and the sub-vertical white band is shown to pass from the base of the second and third dorsal spines, whereas in our example it originates as described by both Bleeker and Günther.

The types were from Karangbollong, in Java, and the largest examples were 77 mm. in length.

NEOPERCIS BINIVIRGATA, *sp. nov.*

(Plate xxv., fig. 3.)

D. v. 23; A.i. 20; V.i. 5; P. 21; C. 17; L. lat. 68; L.tr. 5 + 20.

Length of head 4.0, height of body slightly less than the width of the head and equal to the length of the caudal 5.3; length of pectoral 4.8; of ventral 4.5 in the total length, exclusive of the caudal fin. Eye 3.4, interorbital space 9.2, snout 3.7, and height of caudal peduncle 2.5 in the length of the head.

Cleft of mouth slightly oblique, jaws equal, the maxilla reaches to beyond the centre of the eye and is not concealed. Anterior nostril a little nearer the eye than the snout, the posterior one midway between it and the eye.

Opercle with a flat spine above the root of the pectoral, and a few denticulations at the angle, preopercular border smooth.

Teeth.—An outer row of rather large spaced curved teeth, somewhat larger in the mandible, and an inner band of very small teeth in both jaws, a patch of low conical teeth on the vomer and a row on each palatine.

Fins.—Fifth dorsal spine longest and nearly equal to the length of the snout; length of highest rays 16 in the head. Anal fin slightly lower; it arises below the fifth dorsal ray and terminates evenly with that fin; both are longer posteriorly and extend beyond the base of the caudal. Pectoral evenly rounded, extending to beyond the second anal ray. Fourth ventral ray longest reaching to the second ray of the anal. Caudal slightly rounded.

Scales.—The top of the head, snout and a space around the eyes are naked, but with numerous round pores; cheeks and opercles scaly. All the scales are minutely ctenoid.

Colours.—Generally yellowish-red, lighter and yellower beneath. Upper half of head and body with fourteen bars of brown colour, arranged in pairs; the first pair occupies the head behind the eyes, the second pair is placed beneath the dorsal spines; the others are evenly arranged beneath the rays; the last bar is on the caudal peduncle and there is also a faint mark at the base of the upper caudal rays; this fin also bears about eight oblique vertical brown bars which are inclined forward below and do not traverse the lower four rays. The dorsal rays are similarly marked but the bands are inclined backwards below. Pectoral yellow with a red mark at its upper base; ventral yellow, the median part of the inner rays black; the anal is without markings.

The foregoing description, and the accompanying figure are based on the larger of two examples taken on the coast of New South Wales, one in May, 1895, the other, which measures 180 mm. in length, obtained at Coogee by Mr. H. Newcombe in April, 1902.

The genus *Neopercis* was founded by Steindachner and Döderlein¹³ on an example from St. Vincent's Gulf, which the former author¹⁴ had previously named *Parapercis ramsayi*. I have not access to the description of the species, and cannot, therefore, say that *N. binivirgata* is distinct from *N. ramsayi*. The genus is founded on the presence of teeth on the palatines and a probable though lesser character is suggested, namely the posterior spines of the dorsal fin being highest, whereas in *Percis* (= *Parapercis*), the middle spines are highest. Jordan and Snyder,¹⁵ in their "Trachinoid Fishes of Japan," accept these two characters, but I find that the latter cannot be maintained. In my *Parapercis ocellaris*¹⁶ which I have re-examined, the palatines are without teeth (*Parapercis*), but the middle spines are not highest (*Neopercis*), and I may add the two fins are connected.

Neopercis can, therefore, be maintained only on the condition of the palatines.

I have also examined *Percis novae-cambriae*, Ogilby,¹⁷ which I figured¹⁸ under the generic name *Parapercis*. Though not mentioned by the author, small teeth are present on the palatines, this species is therefore a true *Neopercis*.

¹³ Steindachner and Döderlein—Fische Japan's, iii, 1884, p. 212 (foot-note).

¹⁴ Steindachner—Ichth. Beitr., xiii., 1883, p. 1072.

¹⁵ Jordan and Snyder—Proc. U.S. Nat. Mus., xxiv., 1902, p. 463.

¹⁶ Waite—Aust. Mus. Mem., iv., 1899, p. 109.

¹⁷ Ogilby—Proc. Linn. Soc. N.S. Wales, x., 1885, p. 228.

¹⁸ Waite—*Loc. cit.*, pl. xxv.

All local species in the collection of the Australian Museum have been examined, they stand as follows:—

- Parapercis nebulosus*, Quoy and Gaimard.
 „ *ocularis*, Waite.
Neopercis novæ-cambricæ, Ogilby.
 „ *binivirgata*, Waite.

¶ *Percis allporti*, Günther,¹⁹ which I have not seen, may also belong to *Neopercis*; the dorsal spines being described as of sub-equal length. *Percis stricticeps*, De Vis,²⁰ and *P. concinna*, De Vis,²¹ are insufficiently described to enable one to form an opinion as to their generic relations.

GNATHAGNUS INNOTABILIS, *sp. nov.*

(Plate xxvi., fig. 1.)

D. 12; A. 16; V. i. 5; P. 21; C. 11 + 6.

Length of head 3·0, depth 4·4 in the total length, the width of the head is one-fourth more than its length. The eye is directed outwards and upwards, its diameter 4·3 in the head, interorbital space broad 2·2, and the snout 6·5 in the head; the depth of the caudal peduncle is 3·5 in the same.

The head is broader than the body which tapers rapidly to the tail, it is armed with bony plates, the most noticeable being a pair on the occiput, each of which bears a longitudinal ridge passing from its middle backwards, a longer broken ridge runs from above each eye and is continued towards a short ridge on the body which terminates in the humeral spine. The cheeks and opercles are rugose, the latter with a ridge which ends in a blunt prominence at the angle. The opercle has a series of ridges which extend fan-like from its articulation to the margin, and the preorbital bears three sub-imbriate curved ridges. Anterior nostril tubular with a short tentacle, posterior nostril with a skinny rim. Lower jaw with a small spine directed forwards, situated on its lower edge, nearer the posterior angle than the summit of dilatation. The humeral spine is of moderate size, fully exposed and directed upwards and backwards. Pseudobranchiæ present.

Teeth.—The teeth in both jaws are each in two rows, the inner alternate with the outer. All the teeth are strongly curved and depressible, bands of scattered villiform teeth on the vomer, those of the pharyngeals in a close cluster.

¹⁹ Günther—Ann. Mag. Nat. Hist., (4), xvii., 1876, p. 394.

²⁰ De Vis—Proc. Linn. Soc. N.S. Wales, x., 1885, p. 545.

²¹ De Vis—*Loc. cit.*, p. 546.

Scales.—Body covered with minute scales which lie in depressions resembling the pits of a thimble, breast and belly naked. The lateral line arises above the humeral spine and runs an undulated course to the middle of the caudal fin.

Fins.—No spinous dorsal fin: the base of the soft dorsal is three-fourths the length of the head, the extreme tips of the rays free. The anal is much longer, slightly more than the length of the head, the rays are shorter than those of the dorsal and the fin extends, anteriorly and posteriorly, beyond the limits of the dorsal. Pectoral rounded, its length 4.0 in the total. Ventral shorter, 5.2 in the same. The anterior rays of the dorsal and all but the last anal are undivided. Caudal sub-truncate, its length 4.3 in the body.

Colours.—Chin and upper parts of head and body brown, the latter with indistinct brown spots, under parts colourless with sand-coloured areas, below the head, at the base of the ventral fins and on the belly. Dorsal fin dusky, anal, pectoral and caudal brown, all with white margins. The anal has a median longitudinal brown band and the ventrals are without colour or markings.

Three examples are known, the largest of which measures 152 mm. in length; they were taken off Narrabeen, New South Wales.

The genus *Gnathagnus* was instituted by Gill²² in 1861 with *Uranoscopus elongatus*, Temminck and Schlegel,²³ as the type. As far as I am aware no member of the genus has been previously recorded from Australia, though Jordan and Snyder,²⁴ in their "Trachinoid Fishes of Japan," give the generic range as Japan to Australia. In their generic diagnosis these authors write "humeral spine obsolete," yet describe the species as having a "partly concealed humeral spine." In *G. innotabilis* the spine is pronounced and there is a blunt prominence at the angle of the preopercle. The plectroid dilatations of the chin are rounded and do not bear each a "free pointed tip above," as described and figured of *G. elongatus*. This latter species also, judging by the figure, has much longer and lower fins than the Australian form, the difference in the dorsal being especially marked. Jordan and Snyder give the interorbital space in *G. elongatus* as $3\frac{1}{4}$ in the head, this I think, must be an error for $2\frac{1}{4}$, otherwise the eyes are much closer together than in the Australian species, in which the space is contained $2\frac{1}{2}$ times in length of the head.

²² Gill—Proc. Acad. Nat. Sci. Philad., 1861, p. 115.

²³ Temminck and Schlegel—Fauna Japon., Pisces, 1846, p. 27, pl. ix., fig. 2.

²⁴ Jordan and Snyder—Proc. U.S. Nat. Mus., xxiv., 1902, p. 478.

GNATHYPOPS JACKSONIENSIS, *Macleay*.

Opisthognathus jacksoniensis, Macleay, Proc. Linn. Soc. N. S. Wales, v., 1881, p. 570.

(Plate xxvi., fig. 2.)

D. x. 17; A. i. 16; V. i. 5; P. 20; C. 13; Sc. lat. 50; Sc. tr. 19.

Length of head 3·5; height of body and length of caudal equal, 4·9 in the total. Diameter of eye 3·0, and snout 7·0 in the length of the head.

Head large, wider than the body, its profile rounded in front, the eyes are large, close together, the interorbital space being about one-fifth their diameter, they are directed forwards and upwards. The snout is short, the nostrils being situated rather close together, the posterior one immediately in front of the eye, the anterior one is bordered behind with a short skinny flap. The mouth is large and the maxilla extends far beyond the eye, its length 1·6 in the head, it is greatly dilated behind, its depth approaching one-third its length; a small supplemental bone on its upper edge: the premaxilla is much shorter and does not extend to below the hinder margin of the eye. Body strongly compressed.

Teeth.—Conical, sub-equal in size, none fang-like, they are in a narrow band anteriorly, uniserial behind. Two (or three) teeth at the head of the vomer, palatines and tongue edentulous.

Scales.—Head naked, the scales on the body are small and cycloid and are developed only on the posterior half; they extend forward, in the mid-line, as far as the vent, but above and below only to about the middle of the anal fin. The lateral line commences on the head, vertically above the end of the maxilla and traverses the body, near to its dorsal margin, to below the fifth or sixth last dorsal ray. With the exception of a slight wave near its termination it is quite straight.

Fins.—Dorsal fins continuous, the spinous portion lower than the rayed one; the latter increases in height to the fifth last, which is 1·8 in the length of the head. The anal commences below the second dorsal ray, its longest ray corresponds to that of the dorsal and is of the same height. When depressed both extend to nearly the same point, beyond the base of the caudal. The pectoral and ventral are equal, their length being half that of the head, the former is rounded, the two first rays of the latter are undivided.

Colours.—General colour lemon yellow, the ground tint of the head largely hidden by chocolate coloured markings, the yellow appearing as rivulate or aborescent figures. Lower posterior border of maxilla deep brown, its extremity white, branchiostegals dark brown. Naked portions of body marbled with warm brown colour, usually a bold and striking figure on the middle of the side. The scaly portion bears an irregular longitudinal median line with one to three large blotches below it, all markings brown. The dorsal fin is dark brown, posteriorly, in its upper portion, it bears about two rows of light dots and irregular light markings in its basal part which correspond more or less with those on the adjoining portions of the body; basal portion of anal fin clear, the remaining part dark brown with a median row of large clear spots; pectoral yellow, a brown band at its base and some dots along its rays; distal half of ventrals black; caudal with about three vertical brown bars, or some irregular dark marks.

Attention may be drawn to the fact that some of the proportionate measurements in the description do not agree with those of the figure; the eye may be cited as an extreme instance; the head is so rounded and the eye placed so far forward, that it must necessarily be illustrated in perspective, and therefore appears to be smaller, longitudinally, than the proportionate measurement given in the description.

Though by no means common, several examples of the species are preserved in the Museum collection, the maximum length is about 250 mm.

In connection with the suggestion that *Gnathypops* is a designation of the females, and that *Opistognathus*²⁵ is the male, I may mention that representatives of the latter genus are, so far, unknown here.

SCHIZOCHIRUS, *gen. nov.*

Family TRICHONOTIDÆ.

Head and body compressed, cleft of mouth sub-horizontal, upper jaw the longer. Eyes small, close together, directed obliquely upwards. Scales large, cycloid on head and body, lateral line continuous, one dorsal fin shorter than the anal, the latter with modified rays. Ventrals jugular with one spine and five rays which are also modified. Pectoral formed of two parts, a short upper one of divided rays, and a longer lower one of modified thickened rays, the two portions sharply contrasted. Gill openings very wide not attached to the isthmus. Branchiostegals seven. Villiform teeth in the jaws, on the vomer and palatines.

²⁵ So spelled by Cuvier—Règne. Anim. (ed. 2), ii., 1829, p. 240.

This genus is nearest allied to *Lamnichthy*, recently described from Lord Howe Island, but differs principally by the compressed head in which the cheeks and opercles are scaly, by the peculiar structure of the pectoral, the modified anal, pectoral and ventral rays, and by the presence of teeth on the vomer.

SCHIZOCHIRUS INSOLENS, sp. nov.

(Plate xxvi., fig. 3, and figs. 33-34.)

B. vii.; D. 19; A. 29; V. i. 5; P. 8 + 9; C. 12 + 5; L. lat. 37; L. tr. 3 + 3.

Length of head 4.3, height of body at the first dorsal ray 6.3, caudal 6.0 in the length. Eyes very close together, less than half a diameter apart, prominent and directed upwards 7.8 in the length of the head. Snout one-half longer than the eye. One nostril on each side only discernable, surrounded by a fleshy rim and situated midway between the end of the snout and the eye. The jaws equal and protractile, the maxilla is dilated and notched behind and extends to below the hinder edge of the eye. The head is compressed, the body is moderately elongate and compressed throughout, it is highest at the insertion of the dorsal fin.

Teeth.—The teeth extend along the entire edge of the jaws and are in a single row, with four enlarged teeth within the front margin of the upper jaw. There is a patch of teeth on the vomer and the palatines also are toothed.

Scales.—Upper part of head and snout naked, large scales on the cheeks smaller ones on the opercles. Body with large adherent cycloid scales, portion at base of pectorals and ventrals naked. The lateral line arises one scale in advance of the upper base of the pectoral and passes gradually towards the lower edge of the caudal fin. The anterior thirteen or fourteen scales are of usual conformation and each bears a simple pore in its proximal half. The following scales are trilobed, the condition being accentuated posteriorly, where the central lobe increases in length until it projects considerably beyond the limit of the scale proper. The marginal diagram (fig. 33.) illustrates the thirty-second scale, magnified eight times.

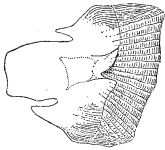


Fig. 33.

Fins.—The dorsal fin arises a little nearer the base of the caudal than the end of the snout and terminates the depth of the

peduncle in advance of the caudal; the third ray is longest and 2.3 in the length of the head, thence the rays decrease in length, the margin of the fin being sinuous. The anal fin arises seven rays in advance of the dorsal and is continued almost to the base of the caudal. Its rays are peculiarly modified and consist of an anterior shaft with branches on its posterior edge, the whole ray is enclosed in membrane and being broadened at its extremity is sub-spatulate in shape. The accom-

panying illustration (fig. 34.) shows the condition of the rays and is eight times natural size. The vent lies immediately in front of the first ray, it is normally concealed by the free edge of a longitudinal ridge or papilla which lies in the midline of the body between the ventrals and the anal, it has a length of three scales. The ventral fins are placed close together in advance

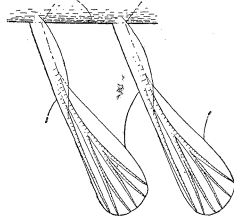


Fig. 34.

of the pectorals and are very short, being 3.5 in the head, the rays are modified similar to but in a lesser degree than those of the anal. The pectoral, which forms a very striking feature of the fish, is composed of two distinct portions; the upper part, comprising eight rays is constituted in the usual way, and is much shorter than the upper rays of the lower part; the latter consists of nine rays all of which are similar in character to those of the anal, above described. The upper spatulate ray, which is the longest, extends to beyond the second anal ray.

The caudal is sub-truncate, the height of its peduncle being less than half that of the body.

Colours.—Sandy coloured throughout, no trace of markings anywhere after preservation in formalin.

Two specimens 62 mm. and 53 mm. in length respectively.

These examples were picked up together, by my colleague, Mr. Thomas Whitelegge, who obtained them on the wave-line during stormy weather at Maroubra Bay. The gullet and stomach were crowded with small crustaceans which Mr. Whitelegge identifies as Amphipods, Copepods, and Isopods.

LIMNICHTHYS FASCIATUS, *Waite*.

Limnichthys fasciatus, Waite, Rec. Aust. Mus., v., 1904, p. 178, pl. xxiii., fig. 4.

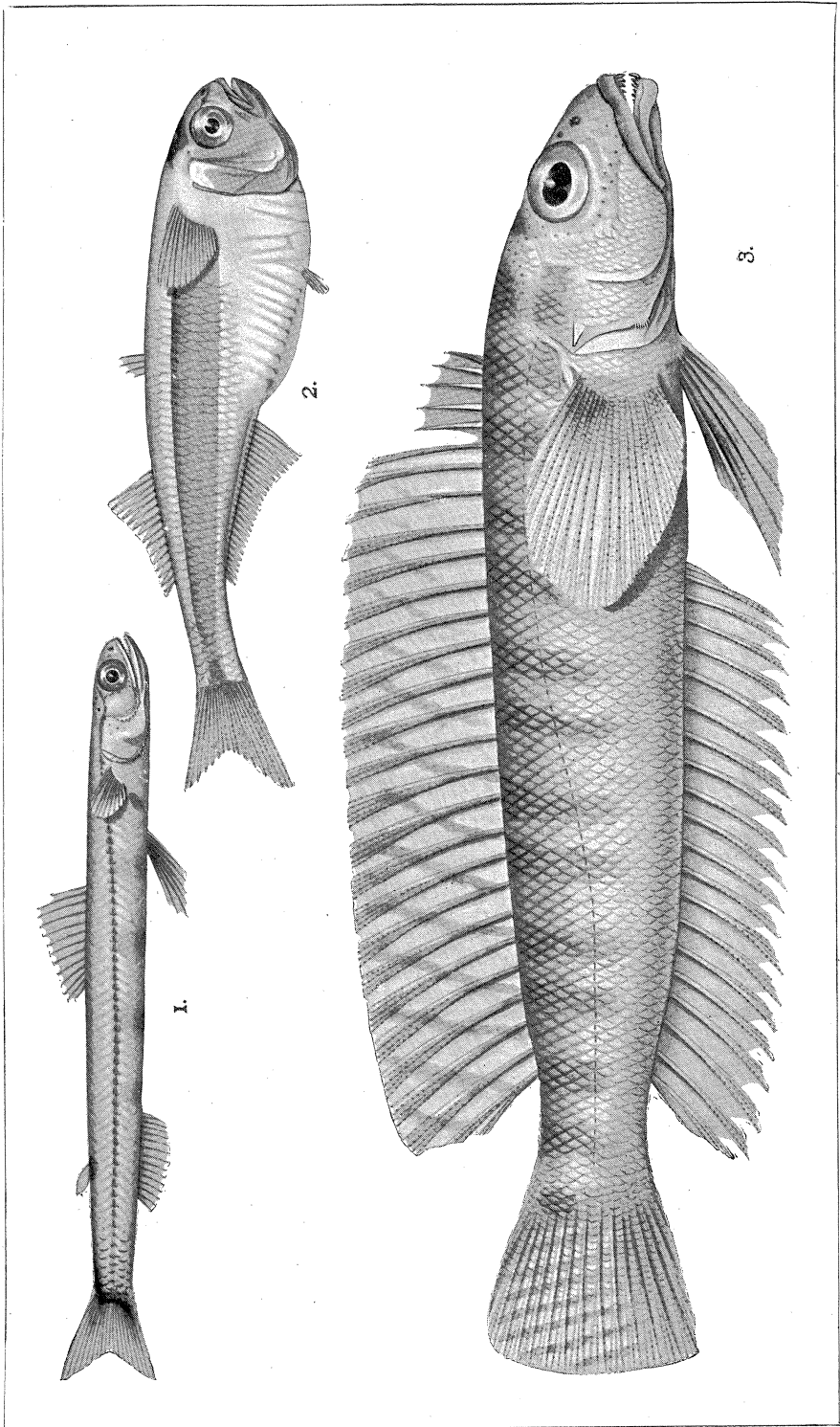
Though first described from examples taken at Lord Howe Island, this species proves to be a continental form also. During April, 1904, Mr. A. R. McCulloch obtained specimens from a

rock pool at Long Bay, near Sydney. Some of them are in breeding condition though the ova are not yet ripe, and not of the bright yellow colour found in the island examples wherein the roe were fully mature.

The colour is greenish-white with the upper parts pink; in some cases only are the markings black, in others they are brown. The dark longitudinal line also is not ventral in position, but follows the course of the lateral line, otherwise the markings are as in the typical examples.

EXPLANATION OF PLATE XXV.

- Fig 1. *Trachinocephalus myops*, Forster (young).
,, 2. *Tropidostethus rhotophilus*, Ogilby.
,, 3. *Neopercis binivirgata*, Waite.
(Figs. 1 and 2, twice natural size. Fig. 3, natural size).

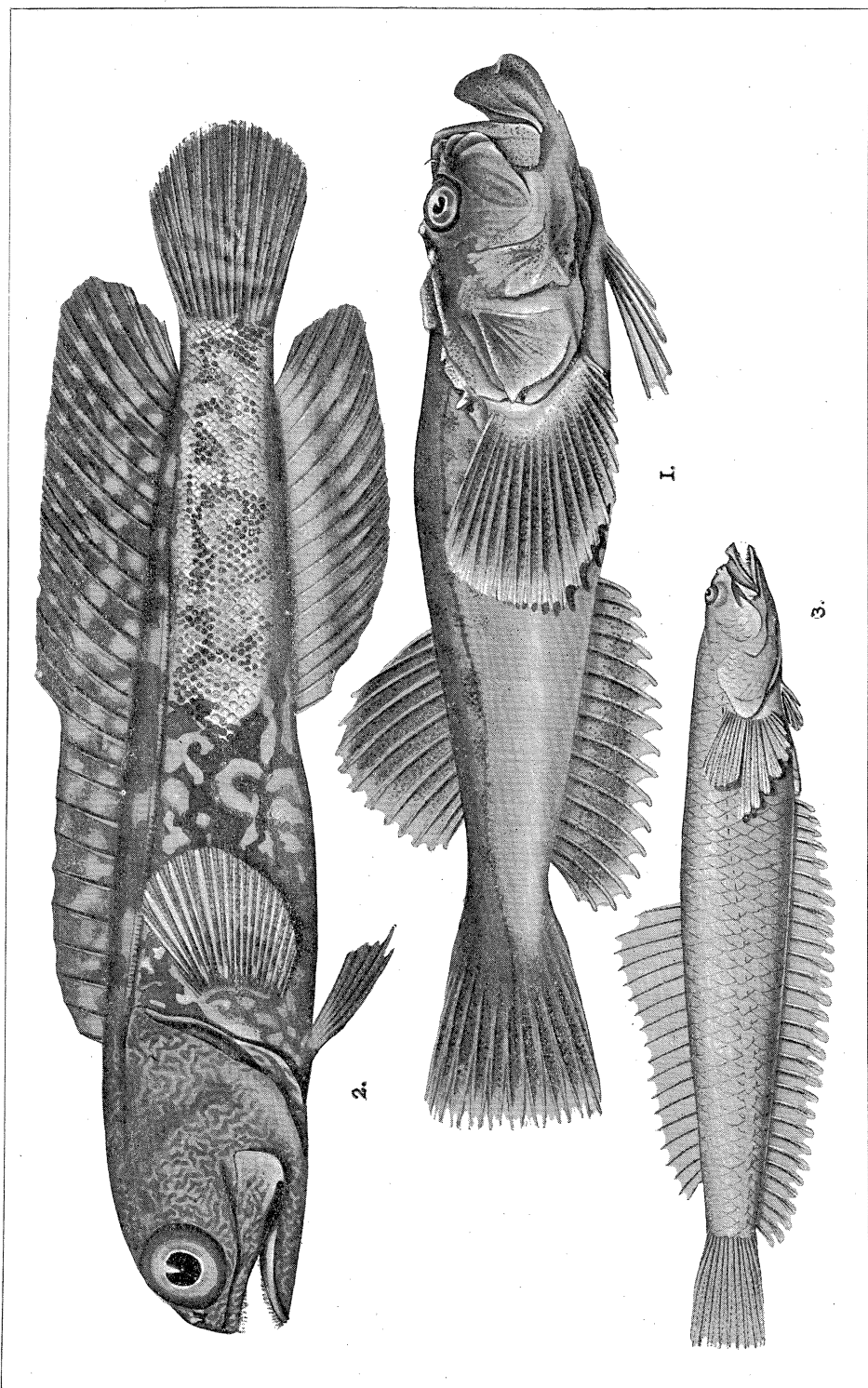


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Aust. Mus.

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Sydney.

EXPLANATION OF PLATE XXVI.

- Fig. 1. *Gnathagnus innotabilis*, Waite.
" 2. *Gnathypops jacksoniensis*, Macleay.
" 3. *Schizochirus insolens*, Waite.
(Figs. 1 and 2, natural size. Fig. 3, twice natural size.)



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NOTE, page 239.—Writing on April 27th, 1904, Dr. Jordan informs me that Australia was included in the habitat of *Gnathagnus*, on unpublished information only.

E.R.W. 27/5/04.

[The following corrections were published in Volume 5 Issue 6 and are to be read with the appropriate paper dated 18 August, 1905.—Sub-Editor, August, 2009]

CORRECTIONS.

- Page 58—for *Prosoplismus recurvirostris*, read *Pentaceropsis recurvirostris*:
(see Ann. Mag. Nat. Hist. (7), xii., 1903, p. 288.)
- „ 170—further investigation, in conjunction with Mr. McCulloch, shows that examples recorded under the name *Glyphisodon antjerius*, and *G. brownriggii* are the young of *Parma poly-lepis*, specimens recorded from the mainland under these names are the young of *Parma squammipinnis*, *Parma micro-lepis*, the tenable name of the species, being the half-grown stage.
- „ 171—for D. xiii. 9; read D. xiii. 19.
- „ 190 No. 9—for figure none, read Kner, Reise Novara, Fische, 1867, pl. xiii, fig. 2.
- „ 195 No. 33—for p. 148, read 481.
- „ 206 No. 81 *Figure*—for 1869, read 1865.
- „ 209 No. 94—delete in favour of No. 92, and see note p. 170 above.
- „ 219 No. 147—read 147 TROPIDICHTHYS CAUDOFASCIATUS, Günther. *Tetradon caudofasciatus*, Günther Cat. Fish. Brit. Mus., viii., 1870, p. 304, of which *T. callisternus* is a synonym.
- „ 234—for *Tropidostethus rhotophilus*, read *Iso rhotophilus*.
- „ 247—at third line from bottom for “elytra ‘24’” read “elytra 2·4.”
- „ 298—line 4 from bottom, for obtuse read obtuse.
- „ 303—line 20 for *m* (0110) read *m*, (0110).
- „ 304—line 10 „ *y* (102) „ *y* (102).
- „ 318—line 9, for “Inserte,” read “Incertæ”

EXPLANATION OF PLATE XIV.

For fig. 10 read fig. 9.

SCAPHITES ERUCIFORMIS, *Eth. fil.*

Fig. 10. Back of limonite cast showing sutures and sculpture.—×2.

EXPLANATION OF PLATE XL.

First and second line from bottom, for *m* 0110 read *m*, (0110).

And add Fig. 5, Plan of Fig. 4.