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ADDITIONS TO THE FISH-FAUNA OF LORD HOWE  
ISLAND, No. 3. \*

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

(Plates iii.—v. and figs 1, 2.)

Towards the end of the year I hope to spend two or three weeks on Lord Howe Island, for the purpose of studying the fishes, and in a more thorough manner than was possible on the occasion of my short and unprepared visit in 1898.

In order, therefore, to clear the way, I have prepared the present paper, and believe that it contains notice of all species which may be identified without fresh material; in other words, there are now four fishes recorded from the island by genera only (in addition to an "unrecognisable scopelid"), and it is not yet possible to recover the species thus represented. The genera represented, each by an undetermined species, are as follows:—

*Atopichthys*,  
*Hyporhamphus*,  
*Canthidermis*,  
*Plagusia*<sup>a</sup>

Three species, hitherto undetermined, I have been able to identify as follows:—

*Ophisurus* sp. = *Ophichthus versicolor*, Richardson.  
*Balistes* sp. = *Pachynathus capistratus*, Shaw.  
*Gobioides* sp. = *Xiphasia setifer*, Swainson.

In addition to these, eleven known species are recorded as new to the fauna, namely:—

*Callechelys melanotænia*, Bleeker.  
*Bascanichthys pinguis*, Günther.  
*Euleptorhamphus longirostris*, Cuvier.  
*Trachinotus baillonii*, Lacépède.  
*Thalassoma janseni*, Bleeker.  
*Thalassoma dorsale*, Quoy and Gaimard.  
*Pseudolabrus nigromarginatus*, Macleay.  
*Chætodon trifasciatus*, Park.  
*Brachaluteres baueri*, Richardson.  
*Ostracion cornutus*, Linnæus.  
*Tetraodon hypselogeneion*, Bleeker.

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\* The MS. of this paper was handed in on 8th November, 1902, before Mr. Waite went on an expedition to Lord Howe Island, from which he has now returned. [Ed.]

Three new species are described:—

*Zenopsis scopus*,  
*Chætodon howensis*,  
*Cocotropus altipinnis*.

In addition to these, the following are figured for the first time:—

*Ophichthus versicolor*, Richardson.  
*Machærope latispinis*, Ogilby.  
*Pseudolabrus luculentus*, Richardson.  
*Brachaluteres baueri*, Richardson, and  
*Coris picta*, Bloch and Schneider is refigured.

The following known species are redescribed:—

*Ophichthus versicolor*, Richardson.  
*Coris picta* Bloch and Schneider.  
*Brachaluteres baueri*, Richardson.

Further notes are published of the species below named:—

*Chætodon tricinctus*, Waite.  
*Iniistius cacatua*, Waite.  
*Holacanthus conspiciatus*, Waite.  
*Holacanthus semicinctus*, Waite.  
*Monacanthus howensis*, Ogilby.

The material on which the paper is based was obtained as below, all species worthy of note, with the exception of those here included, having been previously dealt with.

1. Old collection.
2. Mr. W. E. Langley, March, 1891.
- 3-4. Mr. T. R. Icely, September, 1889; August, 1894.
- 5-9. Mrs. T. Nichols, November, 1898; January, 1900; January, February, and March, 1902.
- 10-11. Mr. W. S. Thompson, September, 1901; October, 1902.
12. Mr. F. Farnell, July, 1902.

CALLECHELYS MELANOTANIA, *Bleeker*.

*Callechelys melanotania*, Bleeker, Atl. Ichth., iv., 1864, p. 66, pl. cxciii., fig. 2.

But two specimens of this species appear to be previously known; the type, from Amboyna, and an example recorded by Klunzinger<sup>1</sup> from the Red Sea.

Though apparently very rare the species has a wide distribution, extending to Lord Howe Island, whence I now record an

<sup>1</sup> Klunzinger—Verh. k.k. Zool.-bot. Ges. Wien., xxi., 1871, p. 612.

example. This is quite similar to the type and was obtained in January 1902 by Mrs. Nichols. The length of the three known specimens is about 480 mm.

BASCANICHTHYS PINGUIS, *Günther*.

*Ophichthys pinguis*, Günther, Cruise "Curaçoa," 1873, p. 430, pl. xxxv.

Five examples of this species are known to me, namely:—the type from the Solomon Islands, two from Port Jackson, one from Lady Robinson's Beach, south of Port Jackson, and one from Lord Howe Island, this latter was obtained in March 1902 and forwarded by Mrs. Nichols.

OPHICHTHUS VERSICOLOR, *Richardson*.

*Ophisurus versicolor*, Richardson, Voy. "Ereb. and Terr.," Fish., 1848, p. 103.

(Plate iii., fig. 1).

Writing on the fishes of Lord Howe Island, Mr. J. D. Ogilby<sup>2</sup> observes:—"I have also a note of an undetermined species of *Ophisurus*." The specimen referred to, was, I find, brought from the island by Mr. T. R. Icely in September 1889, and forms the subject of the present note.

It enters the genus *Ophichthus*, Thunberg and Ahl, as understood of modern writers; characterised by having sharp teeth, no pronounced canines, the dorsal fin not arising on the head, the pectoral fin comparatively well-developed, and the end of the tail free. The following is a description of the specimen:—

The head is 13·6 times in the total length; the snout, measured to the centre of the eye, one-fourth that of the head; it is pointed and greatly depressed; the anterior nostril is tubular, the posterior simple, placed beneath the anterior margin of the eye: the latter lies near the border and a diameter in advance of the angle of the mouth. There are six teeth on the premaxillary, three on each side. The palatine teeth are arranged on each side, in a single row of six followed by a smaller series of about seven pairs continued as a single row to the angle of the mouth. The vomerine teeth form a single series, of which the anterior six are much larger and less regularly arranged than those that follow.

The lower jaw is much shorter than the upper, its tip not reaching the premaxillary teeth. The mandibular teeth are arranged uniserially, twenty or thereabouts in each ramus, separated at the symphysis. All the teeth are strongly recurved and differ little in length. The throat is distensible.

<sup>2</sup> Ogilby—Proc. Linn. Soc. N.S.W., xxiii., 1899, p. 731.

The dorsal fin arises above the anterior edge of the gill-opening and runs to within three-fourths of an inch of the end of the tail, it is low and can be completely contained in a groove running its entire length. The anal fin originates a quarter of an inch behind the vent and passes to within half an inch of the end of the tail, it is somewhat higher than the dorsal and is received into a similar groove, both fins expand slightly near their termination. The pectoral fin is twice the diameter of the eye in length.

The body is sub-circular in section, its depth one-third the length of the head, and slightly flattened below, while the tail posteriorly is a little compressed: it is one-sixth longer than the head and body together. A series of pores below and behind the eye is continued along a lateral line the entire length of the body and tail.

*Colours.*— After preservation for thirteen years the ground-colour is cream, possibly white during life: it is crossed by twenty-three dark brown bands, of which two occupy the head and thirteen the tail; on the body these bands are interrupted beneath. The end of the snout is white and the first band extends to beyond the angle of the mouth, it is varied by three white spots, one above each eye and one in the median line. The dark bands are very much wider—from five to seven times—than the interspaces, and each may be regarded as formed of two bands with lateral connections: the bands are further varied with two large white spots on each side: these are, however, absent from the last six bands. The dorsal fin is coloured throughout according to the portion of the body whence it arises, but the ventral is so marked only in correspondence with the last two body bands, otherwise it is colourless. The correct disposition of the markings will be better understood by reference to the accompanying plate.

*Dimensions*

Length of head	...	...	53 mml.
Depth of body	...	...	18 „
Length of head and body	...	...	330 „
Length of tail	...	...	390 „
Total length	...	...	720 „

Of described species, this eel is most nearly allied to *Ophichthus versicolor*, Richardson, and I am so regarding it, as only comparison with the type can definitely determine the question, from my standpoint. I venture to think, however, that with the above description and accompanying figure, those in a position to examine the type will have small difficulty in deciding the matter.

Richardson's description is not in his usually exhaustive style, but as far as dealt with, the structural details appear to represent our specimen very nearly. The teeth well coincide. The colour description reads as follows:—"The body is varied by twenty-seven purplish-brown rings, considerably broader than the intervals between them: most of the rings are further divided more or less completely by narrower white lines or imperfect circles. Tips of the snout and tail white." In the Lord Howe Island example there are twenty-three rings and the subdivision is much more regular and decided than appears to be the case with Richardson's specimen, now in the British Museum.

In making it the type of a new genus, *Elapsopsis*, Kaup<sup>3</sup> added to the original description:—"A white spot is placed on the forehead." and gave the "French Museum" as repository of a second example. Kaup's further reference<sup>4</sup> contains no additional information. Bleeker,<sup>5</sup> who had not seen a specimen, transcribes Richardson's description, and suggests that the eel resembles *Ophichthys bonapartei*. Günther,<sup>6</sup> on examination of the type specimen, gives some additional measurements and remarks that the dorsal fin is "coloured as the body underneath."

I fail to find any further reference to the specimen in the (presumably) Paris Museum: the habitat of both examples is the Moluccas. The type measures nearly twenty-one inches, the Lord Howe Island specimen over twenty-eight inches in total length.

*EULEPTORHAMPHUS LONGIROSTRIS*, Cuvier.

*Hemirhamphus longirostris*, Cuvier, Règne Anim., Ed. 2, ii., 1829, p. 286; Valenciennes in Cuvier, Règne Anim. Ill. Poiss., 1849, pl. xcvi., fig. 2.

A fine representative of this monotypic genus, (unless indeed *E. velox*, Poey, be different) we owe to Mr. Farnell, who numbered it among his collection of July 16th last.

*MACHÆROPE LATISPINIS*, Ogilby.

*Machærope latispinis*, Ogilby, Proc. Linn. Soc. N.S.W., xxii., 1899, p. 737.

(Plate iv., fig. 2).

This member of the Gempylidæ was described in 1898 from a single specimen 155 mm. in length. Since that time the Trus-

<sup>3</sup> Kaup.—Cat. Apodal Fish Brit. Mus., 1856, p. 10.

<sup>4</sup> Kaup.—Arch. f. Naturg., xxii., 1856, p. 45.

<sup>5</sup> Bleeker.—Atl. Ichth., iv., 1864, p. 50.

<sup>6</sup> Günther.—Brit. Mus., Cat. Fish, viii., 1870, p. 68.

tees have received five examples, the largest of which measures 263 mm. All these were collected by Mrs. Nichols, and on the following dates, three in November 1898, one each in January 1900 and January 1902. The following alterations and additions to the original description are to be noted:—The ventral profile is rounded, not sub-cultrate as stated, and instead of being obsolete, the lateral line is particularly well marked: it rises high above the opercle, under the origin of the dorsal fin, and, making a slightly sinuous diagonal course, passes downwards across the body to just above the anal filets, thence upwards to the centre of the caudal peduncle and to within a short distance of the tail; the scales number about ninety. Body wholly scaled; there are about sixty-five scales in the horizontal series, and five plus fifteen vertically: the head also is scaly, but the space between the frontal crests, and the area in advance of the eyes is naked. The number of anal rays should be extended from fourteen to sixteen: a specimen exhibiting this feature is illustrated on the accompanying plate.

TRACHINOTUS BAILLONII, *Lacépède*.

*Casiomorus baillonii*, Lacépède, Hist. Nat. Poiss., iii., 1802, p. 93, pl. iii, fig. 1.

Included in the latest collection from Mr. W. S. Thompson is a nice example of *Trachinotus baillonii*. It measures 430 mm.<sup>7</sup> to the central caudal rays, and is the second member of the genus recorded for the island. *T. russellii* was identified there from by Ogilby<sup>8</sup> who refers to the characters noticed by Day by which it may be distinguished from *T. baillonii*. Judged by the shortness of the ventral fins (not more than one and a fourth the diameter of the eye) and by the position and decided character of the lateral body spots, Mr. Thompson's example must unquestionably be identified with *T. baillonii*. The species is known from the mainland, southward to Port Jackson.

THALASSOMA JANSENI, *Bleeker*.

*Julis janseni*, Bleeker, Act. Soc. Reg. Sci. Ind. Nedrl., i., 1856, p. 56, and Atl. Ichth., i., 1862, p. 91, pl. xxxiv, fig. 5.

This species, not uncommon in Malaysia and the Western Pacific Islands, is to be added to the fauna of Lord Howe Island. The only example known therefrom was obtained in March 1891 by Mr. W. E. Langley, and registered as *Julis sp.* Its length is 190 mm.

<sup>7</sup> = 17 Inches. Day gives the length as 20 inches but possibly includes the caudal lobes, if so measured our specimen totals 22 inches.

<sup>8</sup> Ogilby—Edib. Fish. N.S.W., 1893, p. 89.

THALASSOMA DORSALE, *Quoy and Gaimard*.

*Julis dorsalis*, Quoy and Gaimard, Voy. "Astrolabe", Poiss., 1834 p. 713, pl. xv, fig. 5.

To Mr. Farnell belongs the credit of first securing this species from the island, an example having been forwarded in July last.

? *CORIS PICTA*, *Bloch and Schneider*.

? *Labrus pictus*, Bloch and Schneider, Systema Ichthyologiæ, 1801, p. 251, pl. lv.

*Coris semicineta*, Ramsay, Proc. Linn.Soc. N.S.W., vii., 1882, p. 301.

(Plate v., fig. 1).

In 1801 Schneider described a labroid, under the name *Labrus pictus*, and gave a coloured figure of the same. This seems to have been overlooked by Günther, though he refers to other species occurring on the same page. I do not find it noticed by Cuvier and Valenciennes, and indeed it does not appear to have been referred to since first described. The former author<sup>9</sup> places under *PlatyGLOSSUS*, *Labrus pictus*, Gronovius, an ill-defined form from the East Indies, while the latter<sup>10</sup> mention as a synonym of *Labrus mixtus* Linnæus, Willughby's *Turdus perbelle pictus*.

The original description by Schneider, published in the Systema Ichthyologiæ, reads as follows:—

"38. PICTUS tab. 55. L. capite nudo, fascia nigra ab occipite ad branchias, vertice pinnisque cinnabarinis, squamis magnis, dorso cœruleo, striis transversalibus brevibus, pinna ani longitudinali, ano pinnis ventralibus vicino.

P. 14. V.  $\frac{1}{2}$ . A.  $\frac{3}{5}$ . C. 18. D.  $\frac{8}{3}$ .

Habitat in America australi ad Novam Hollandiam, a Dr. Lathamio missus."

*Coris semicineta*, Ramsay, described in 1882, as above noted, bears such a strong resemblance to Schneider's figure and description, with certain differences, that I am inclined to regard it as the same species. The differences are to be found in the radial formula and the size of the scales. Owing to Schneider's practise of placing as the denominator, the total number of spines and rays in the vertical fins, his figures according to modern usage may be read thus:—

D. viii. 15; A. iii. 17; V. i. 5; P. 14; C. 18.

The plate distinctly shows nine dorsal spines and fourteen rays, but on the other hand four anal rays are illustrated more than described. These figures may be compared with those furnished below by myself.

<sup>9</sup> Günther—Brit. Mus., Cat. Fish iv., 1862, p. 143.

<sup>10</sup> Cuvier and Valenciennes—Hist. Nat. Poiss., xiii., 1839, p. 152.



The description and illustration are in agreement as to the size of the scales, which are large, and this is the only serious obstacle to my definitely placing the species as identical. Nevertheless I feel prompted to so regard them, and consider that if Ramsay had seen Schneider's work, *Coris semicineta*, as a name, would not have existed.

As to habitat, though South America is mentioned, it was only under the belief that New Holland was in that country, while the mention of Dr. Latham's name is sufficient guarantee that the fish came from Australia, and, in all probability, from New South Wales.

The first recent specimen known, was taken by Captain Armstrong in February, 1882, but this is not the type of *Coris semicineta* as stated in the Museum Memoir<sup>11</sup>; the type was obtained two months later near Broken Bay. Although not taken by the Museum collecting party in 1887, nor by myself in 1898, the species has been well represented in the several consignments since received.

On the mainland, since first recorded, it has been secured at Port Jackson, Maroubra Bay and Manly, from the latter locality we have the specimen which I now figure and describe. In Ramsay's notice of the species, the description is mainly of colour and markings. By a misprint the number of scales in the transverse series appear as 4-5, this should read 45. The length of the snout is stated to be "more than twice the long diameter of the eye." In all examples I have seen the eye is more than half the length of the snout.

D. ix. 12; A. iii. 12; V. i.5; P. 13; C. 7 + 6; L. lat. 83; L. tr. 7 + 35.

Length of head 4.1, of caudal 5.7, height of body 4.0 in the length. The eye is 6.6 in the length of the head, slightly more than half the length of the snout, to which the interorbital space is equal. The latter is strongly convex: the body and tail are strongly compressed: the upper profile of the head is low passing with a regular sweep into the very low curve of the dorsal profile: the ventral profile is similar. The jaws are equal and the lips not very fleshy, the cleft of the mouth extends a little more than half the distance to the anterior margin of the eye. The nostrils lie on a level with the upper edge of the eye, the posterior midway between its front edge and the anterior one. Scattered pores are found on the snout, above behind and below the eye, and also within the lower limit of the preopercle.

<sup>11</sup> Ogilby—Aust. Mus. Mem., ii., 1889, p. 70.

*Teeth.*—In the upper jaw a pair of large curved canines is followed by a smaller one on each side, also curved, then eleven conical teeth much smaller and regularly decreasing in size: a strong posterior canine is also present: within the anterior teeth is another series formed of four teeth on each side. The mandibular teeth are similar with a double series anteriorly but the lateral series is formed only of twelve pairs and there is no posterior canine.

*Fins.*—The dorsal fin commences in advance of the opercular flap, it is low, the first spine one-third longer than the diameter of the eye, the last and longest rather more than twice the same; the rays also regularly increase in length and form a sharp angle posteriorly. The anal fin commences beneath the first dorsal ray but its spines are shorter than the corresponding ones of that fin: it forms a similar posterior angle and its base is carried a little further back. The ventral is situated beneath the base of the pectoral to which it is equal, 1.4 in the length of the head, its spine is slender, its length 2.5 in the head. The caudal also equals the pectoral in length and has a slightly rounded margin; the least height of the peduncle is 1.8 in the head. The lateral line runs with a low curve along fifty-nine scales to beneath the ninth dorsal ray, thence descends suddenly by seven scales to the centre line of the tail.

*Colours.*—In a fresh specimen the colouration is as follows:—The upper part of the snout is grey followed by a scarlet patch extending from above the eye to below the first dorsal spine, thence the back is salmon coloured to the tail. Commencing on the snout, passing through the upper half of the eye and continued to the tail is a lilac band, below this, embracing the lower half of the eye, which is scarlet, and widening to one-third the depth of the fish, is a deep brown band running likewise to the tail; from its lower edge it gives off a number of short vertical bars, the first on the operculum; towards the tail they are less pronounced. The remainder of the head and body is violet, the chest excepted, which, as far as the anal fin, is lemon yellow. The dorsal fin bears three colour bands, the upper yellow, the median lilac and the lower salmon-coloured; this last carries along its centre a dark-brown line, which, expanding anteriorly, occupies nearly the whole membrane of the first three or four spines; the fin is also narrowly edged with blue. The anal is lemon yellow without markings, the pectoral ventral and caudal orange, the former with a brown triangular patch on its upper lobe, the latter narrowly edged, above and below, with blue.

Length of specimen described 223 mm.

In a small example, 135 mm. in length, the short cross bars are merely indicated, giving the lower edge of the band a wavy aspect. It thus much reminds one of *Labroides*<sup>3</sup>

PSEUDOLABRUS LUCULENTUS, *Richardson*.

*Labrus luculentus*, Richardson, Voy. "Ereb. and Terr.", Fish, 1848 p. 130.

(Plate iv., fig. 1.)

This species is subject to much variation in colour pattern, expressed mainly in the presence or absence of certain markings.

In the simplest phase I have seen, the only mark is a black blotch embracing the first two dorsal spines, though in more fully adorned examples this may be absent. For the purpose of description I have selected the best marked specimen I have seen; it must, however, be borne in mind that few exhibit all the markings here noted.

The head bears three horizontal dark purple lines, one on the temporal region with irregular marks on the occiput, another behind the eye and continued on to the body scales below the lateral line, and a third from the snout, below the eye to the opercular margin, whereon it bifurcates. On each body scale is a vertical purple mark, large below the lateral line, smaller above it. The soft dorsal fin bears a brown line along its base, some irregular marks above and has a dark margin. The anal fin is similar but the marks are more pronounced and posteriorly run parallel to the rays. Base of pectoral fin black, otherwise without markings, the ventral and caudal also are immaculate.

PSEUDOLABRUS NIGROMARGINATUS, *Macleay*.

*Labrichthys nigromarginatus*, Macleay, Proc. Linn. Soc. N.S.W., iii., 1873, p. 35, pl. iii., fig. 3.

Included in Mrs. Nichol's collection of February last is an example of this common New South Wales species, the first record of its occurrence off the island.

INIISTIUS CACATUA, *Waite*.

*Iniistius cacatua*, Waite, Rec. Aust. Mus., iv., 1901, p. 41, pl. vii.

Since this species was described, the Trustees have received two further specimens from the island, one in September 1901 obtained by Mr. Thompson and the other in February 1902 forwarded by Mrs. Nichols. An examination of these shows that the first dorsal fin has a slightly more anterior position than described and figured, the first spine being inserted above the posterior margin of the orbit. Some distortion of the head of the type renders the exact position of the fin in that specimen uncertain. None of the specimens show the black marks on the second dorsal fin found in *I. leucozonus*, Jenkins,<sup>12</sup> which, on the other hand, lacks the decided fin markings of *I. cacatua*.

<sup>12</sup> Jenkins—Bull. U.S. Fish Com., xix., 1901, p. 54, fig. 11.

*ZENOPSIS SCOPUS, sp. nov.*

(Fig. 1).

The genus *Zenopsis* was founded by Gill<sup>13</sup>, on *Zeus nebulosus* Temminck and Schlegel<sup>14</sup>, from Japan; it differs from *Zeus* mainly in having three instead of four anal spines, and by the

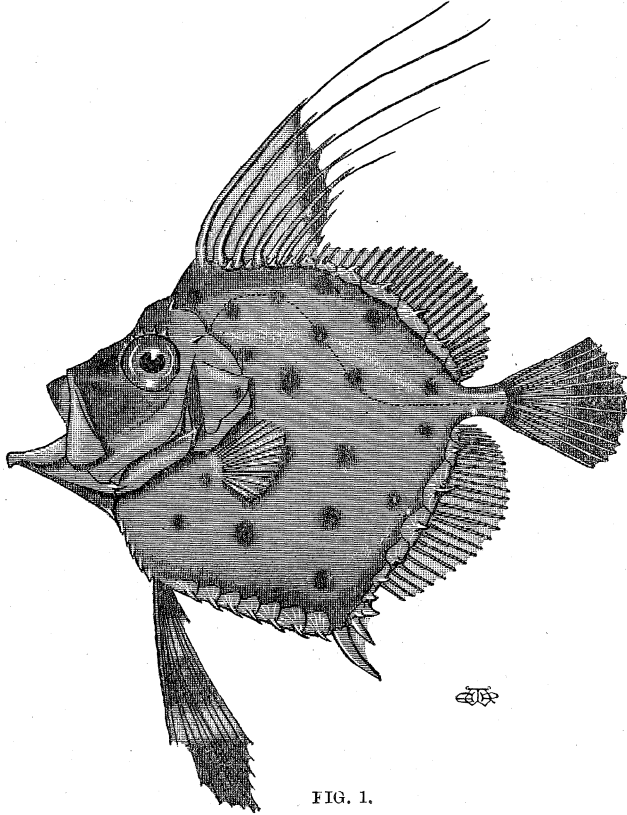


FIG. 1.

base of the spinous dorsal being armed with bony plates in addition to those of the soft dorsal and anal. Three other known species enter the genus, namely *Z. conchifer*, Lowe<sup>15</sup>, from

<sup>13</sup> Gill—Proc. Acad. Nat. Sci. Phil., 1862, p. 126.

<sup>14</sup> Temminck and Schlegel.—Fauna Japonica, Pisces, 1845, p. 123, pl. Lxvi.

<sup>15</sup> Lowe—Proc. Zool. Soc., 1850, p. 247.

Madeira, *Z. ocellatus*, Storer<sup>16</sup>, from Massachusetts, and *Z. figueirai*, Berg<sup>17</sup> from Montevideo. I now add a fifth, a small example having been obtained in October last by Mr. W. S. Thompson of Lord Howe Island.

The species of the family *Zeidæ* are known to undergo considerable changes. My example is, I think, sufficiently large to have assumed the principal adult characters, though the spinous nature of its armature indicates that it may not have wholly lost the features of the young.

The scattered black spots, recalling the appearance of a rifle-target marked by bullets, suggest the specific name *scopus*.

D. viii. 26; A. iii. 26; V. i. 7; P. 13; C. 12 + 2.

Length of head 2.3, depth of head 2.0, height of body (behind ventral fins) 1.36, length of caudal 3.57 in the total length. The eye is midway between the snout and gill opening, and though near to, does not enter the profile, it is 3.25 in the head; interorbital space slightly less, with a median ridge. The snout is one-fourth longer than the diameter of the eye, close in front of which the nostrils are situated, near together. The maxilla has a nearly vertical position, and reaches to beneath the front edge of the eye; its length is one half greater than the orbit; gill rakers short. Teeth small, on jaws and vomer only. The head and body are strongly compressed, the profile of the former forms an angle of 45 degrees, that of the dorsal is at first straight, then evenly curved. The ventral profile is formed of two angles marked by the insertion of the ventral and first anal spine respectively, the connecting lines being nearly straight.

There are five spines on the supraorbital margin, one on the temporal, and one on the occipital region on each side. Eleven spiny bucklers at the base of the dorsal fin, of which the eighth and ninth are largest; five pairs in front of the ventrals, the fifth largest; one median and seven pairs between the ventral and anal, and eight pairs along the base of the anal.

The first dorsal spine is equal in length to the head, the next two but slightly less, the produced filament of the first is a little shorter, those of the two following somewhat longer than their respective spines. From the fourth to the eighth spines the decrease in length is rapid and the last three spines are without filaments; the middle rays are the longest, the eleventh being equal to the first anal spine. The origin of the anal fin marks the lowest point of the body; the first spine is much the longest, more than twice the second or one-eighth greater than the

<sup>16</sup> Storer—Proc. Bost. Soc. Nat. Hist., vi., 1858, p. 386.

<sup>17</sup> Berg—Anal. Mus. Nac. Buenos Ayres, (2), iv., 1895, p. 43.

diameter of the eye; the third spine is small and tubercular: the rays are quite similar to those of the dorsal. The pectoral is small and rounded, its length equal to the first anal spine. The ventral spine is slightly shorter than the head, the rays are very long, the fourth being one quarter longer than the head and reaching far beyond the origin of the anal. The caudal is rounded, the peduncle small; its height equal to half the diameter of the eye, the rays of all the fins, except the ventral, are simple.

Excepting where armed, the head and body are naked. Lateral line strongly arched in front, but straight from a point midway between the opercular border and the base of the caudal rays; it is formed of about seventy-five pores.

*Colours*.—Silvery, upper part of head and back smoky brown. Body, with few large black spots. Fins, colourless, marked as follows:—filaments and upper part of membrane of spinous dorsal black, three black bars across the ventrals and one across the base of the caudal, the distal half of this fin and some of the spines of the dorsal and anal bucklers are also black.

Length, 38 mm.

CHÆTODON TRIFASCIATUS, *Park*.

*Chætodon trifasciatus*, Park, Trans. Linn. Soc., iii., 1797, p. 34.  
*Tetragonopterus trifasciatus*, Bleeker, Atl. Ichth., ix., 1878, pl. cclxxvii., fig. 1.

Apparently not recorded off the mainland, south of Cape York, we have received an example of this fish from the island, by favour of Mr. W. S. Thompson.

CHÆTODON TRICINCTUS, *Waite*.

*Chætodon tricinctus*, Waite, Rec. Aust. Mus., iv., 1901, p. 45, fig. 12.

From Mr. W. S. Thompson, in his last collection, we have a fine example of this species: it is nearly twice the size of the type being 185 mm. in length. Its colour is well preserved, and enables me to correct and supplement the original description.

The ground colour is pale yellow. The front of the head from the snout to above the eyes is brilliant orange; this also is the colour of the upper and lower terminations of the ocular band, of the skinny margin of the opercle, the adjoining part of the body and the upper base of the pectoral fin; the inner base of this fin is wholly orange. The membranes of the dorsal and anal fins, excepting where coloured like the body bands, are

of the brightest orange colour, which tint also broadly margins the dorsal and anal rays, the colour being separated from the paler basal portion by a narrow white line, more pronounced posteriorly. The caudal rays, with the exception of a grey hinder margin, are also bright orange.

The pectoral has the upper angle pointed, and is not, therefore, of the shape shown in the figure.

CHÆTODON HOWENSIS, *sp. nov.*

(Fig. 2).

Under the genus *Chætodon*, Linnæus, in his "Systema Naturæ," included all the Chætodontidæ. In 1817 Cuvier<sup>18</sup> removed therefrom *C. rostratus* as the type of his genus *Chelmon*. To this species are allied *Ch. marginalis*, Richardson<sup>19</sup> *Ch. mülleri* Klunzinger<sup>20</sup> and *Ch. tricoloratus*, Castelnau<sup>21</sup>. In 1862 Gill<sup>22</sup> proposed the name *Prognathodes* for *Ch. pelta*, Günther (= *Ch. aculeatus*, Poey). Bleeker used the name for *Ch. longirostris*, but Jordan and McGregor<sup>23</sup> regard the latter as the type of a new genus *Forcipiger*, and add a species *F. flavissimus*.

Other species have been placed in the genus *Chelmon*, but they are still more entitled to generic rank. In epitomising *Chætodon truncatus*, Kner<sup>24</sup>, Günther placed it in the genus *Chelmo* (*Chelmon*) and in 1874 added another species, *C. trochilus*<sup>25</sup>, both Australian forms. Later writers have followed Günther, with the exception of Bleeker, who recognised generic separation of the former species under the name *Chelmonops*<sup>26</sup>. I regard this genus as valid, characterised by the graduated dorsal spines regularly increasing in length followed in similar sequence by the anterior rays. Some of the rays form a pointed lobe, whence the profile is vertical to the caudal pedicle. The anal is similar, but without pointed lobe. Snout, moderately produced. Scales in regular series, about forty-five in the horizontal line. Lateral line strongly curved and continued to the base of the caudal fin.

All Australian writers have agreed in regarding our not uncommon species as *C. truncatus*, though possibly, as in my own case, without being able to consult the original description.

<sup>18</sup> Cuvier—Règne Anim., Ed. i., ii., 1817, p. 334.

<sup>19</sup> Richardson—Ann. Mag. Nat. Hist., (1), x., 1842, p. 29.

<sup>20</sup> Klunzinger—Sitzb. Akad. Wiss. Wien., lxxx., 1879, p. 361.

<sup>21</sup> Castelnau—Research Fish. Austr., 1875, p. 14.

<sup>22</sup> Gill—Proc. Acad. Nat. Sci. Phil., 1862, p. 238.

<sup>23</sup> Jordan and McGregor—Bull. U.S. Nat. Mus., No. 47, ii., 1898, p. 1671.

<sup>24</sup> Kner—Sitzb. Akad. Wiss. Wien, xxxiv, 1859, p. 442, pl. ii.

<sup>25</sup> Günther—Ann. Mag. Nat. Hist., (4), xiv., 1874, p. 368.

<sup>26</sup> Bleeker—Revis. Chætodontoides, 1877, p. 30.

The description of *C. trochilus* exactly applies to our fish but rather than consider *C. truncatus* as rare, I am inclined to regard *C. trochilus* as a synonym, more especially as Günther does not mention the former species and, seeing that it occurs only in the Appendix of the British Museum Catalogue, may indeed have overlooked it. I am not, however, in a position to determine this matter, nor can I, for similar reasons, discuss the position of *Ch. pulcher*, Steindachner, which Bleeker doubtfully places in his genus *Chætodontops*.

Not having access to Gill's paper on the Chætodontidæ, I refer to Jordan and Evermann's diagnosis of the family.<sup>27</sup> The sub-family *Chætodontinæ* is in part characterised as having "the dorsal spines not graduated, some of the median spines longer than the last spines." Such diagnosis excludes *Chelmonops* from the sub-family.

Though we may not subscribe to the great subdivision of *Chætodon* proposed by Bleeker, those species in which the lateral line is continued to the base of the caudal rays may be recognised as at least sub-generically distinct from those in which it ceases under the soft dorsal; this latter condition is a character of *C. striatus*, the type of *Chætodon*, unless *C. capistratus* be so regarded, in which I believe the lateral line also has the same character. In the work quoted, Jordan and Evermann regard *C. capistratus* as the type of the sub-genus *Chætodon*, while *C. striatus* is placed under *Chætodontops*, though in their synopsis of species both are arrayed under *Chætodon*. For the forms in which the lateral line is extended to the caudal peduncle we have *Coradion*, Kaup, and *Hemitaurichthys*, Bleeker; in the former the scales are larger, fifty in the transverse series and eight to ten dorsal spines: in *Hemitaurichthys* the scales are smaller, seventy to ninety, and the dorsal spines number ten to twelve. These differences can scarcely command full generic rank, and for present purposes I admit *Coradion* only.

Without considering the Chætodontidæ as a whole, a restatement of the characters above mentioned may be useful.

- a. Dorsal spines not graduated.
  - b. Snout produced, beak-like, lateral line ceasing under soft dorsal.
    - c. Dorsal spines nine. *Chelmon.*
    - cc. Dorsal spines twelve or thirteen.
      - d. Scales large. *Prognathodes.*
      - dd. Scales small. *Forcipiger.*
  - bb. Snout moderate or short. *Chætodon.*

<sup>27</sup> Jordan and Evermann—Bull. U.S. Nat. Mus., No. 47, ii., 1898, p. 1670.



- e. Lateral line ceasing under soft dorsal. Sub. gen. *Chætodon*.  
 ee. Lateral line continued to caudal. Sub. gen. *Coradion*.  
 aa. Dorsal spines graduated, snout long, lateral line continued to base of caudal. *Chelmonops*.

In a previous paper<sup>28</sup> I recorded *Chelmo truncatus*, from Lord Howe Island on the evidence of a beach-dried example. This was much worn and I attributed the rounding of the vertical fins to damaging agencies, the spines were dried down so that I failed to recognise their true condition. Mention was also made of an example in spirits from the old collection; this though not seen at that time, has since been recovered. The Trustees have also received specimens of the same species collected by Mrs. Nichols and I find it to be generically different from *Chelmonops* but with a colour-pattern strikingly similar to *C. truncatus*. It belongs to the sub-genus *Coradion*, as above restricted and bears resemblance to the two typical species in the markings, these consisting of broad vertical bars.

*Description*—D. xii. 25; A. iii. 18; V. i. 5; P. 16; C. 17 + 6; L. lat. 48; L. tr. 10 + 24.

Length of head 3.1, of caudal fin 5.5, height of body 1.7 in the total length. Diameter of eye 3.0, and length of snout 2.7 in that of the head. Interocular space slightly convex and nearly equal to the diameter of the eye. Preoperculum denticulated, its angle somewhat produced. Body not markedly short but strongly compressed. Upper profile of head oblique, with the snout moderately produced. Ventral profile low. Outline of dorsal spines together, much rounded, the first spine short 1.6 in the diameter of the eye; fifth the longest, more than three times the same, or 1.2 in the length of the head. The two last spines are equal, 1.9 in the same. The anterior rays are rather higher than the posterior spines, the third highest 1.6 in the head. The hinder margin of the fin is but little rounded, and the last ray is a little longer than half the diameter of the eye. The first anal spine is stouter and longer than the first dorsal: the second is the strongest, a little shorter than the third, which is equal to the dorsal or 1.6 in the head. The rayed portion is similar to, but much shorter than the soft dorsal.

The ventral spine is longer than the third anal, 1.4 in the head; the first ray one-fifth longer than the spine, extending to the vent and equal in length to the pectoral or 1.2 in the head.

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<sup>28</sup> Waite—Rec. Aust. Mus., iii., 1903, p. 203.

The caudal is feebly rounded, its peduncle very short, its least height twice the diameter of the eye. Scales in regular series, not in contrary directions. The lateral line follows the high curvature of the back and is continued along the middle of the caudal peduncle to the base of the rays.

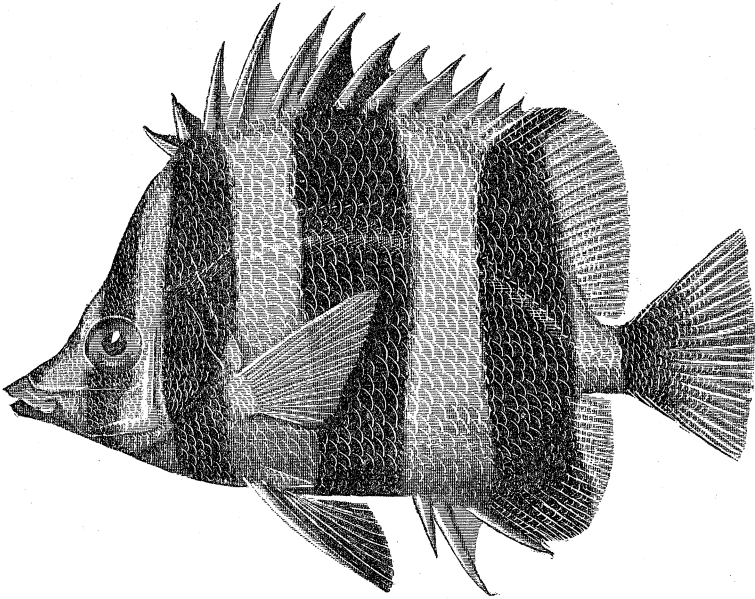


FIG. 2.

*Colours.*—Ground colour white, all the spines yellow; markings dark brown or black. A broad median line commences on the upper lip, passes between the nostrils, narrows and is lost in a point above the eyes. A broad ocular band, narrower than the eye, commences behind this point, and passes obliquely forwards and downwards to the interoperculum. Of three body bands the first arises from the base of the anterior three dorsal spines, passes across the opercle in advance of the pectoral and ventral fins: the next band, the broadest, passes from the vi.-viii. dorsal spines to the space between the ventrals and the anal fin: the third body-band connects the anterior portions of the dorsal and anal rays. The caudal band is partly on the peduncle and includes the basal portion of the rays.

The dorsal and anal fins are coloured in consonance with the body markings, the pectorals colourless, the ventrals black.

Length of specimen 157 mm.

Of four other species recorded from the Island *C. trifasciatus*,

Mungo Park, *C. aphrodite*, Ogilby, and *C. tricinctus*, Waite, satisfy the characters of *Chatodon*, but *C. strigatus*, Langsdorf, does not. If another sub-genus be considered necessary, *Microcanthus*, Swainson, should be used for this species.<sup>29</sup>

HOLACANTHUS SEMICINCTUS, *Waite*.

*Holacanthus semicinctus*, Waite, Rec. Aust. Mus., iii., 1900, p. 204, pl. xxxvi.

Included in the old collection previously mentioned, I was especially pleased to find an example of this species. It is somewhat larger than the type, measuring 205 mm. in length, and the caudal filaments are more than twice the length of those shown in my figure. The proportions and markings are in every way similar.

HOLACANTHUS CONSPICILLATUS, *Waite*.

*Holacanthus conspicillatus*, Waite, Rec. Aust. Mus., iii., 1900, p. 203, pl. xxxv.

Associated with *H. semicinctus*, was a specimen of this species, being the fourth known; this also is larger than those described, measuring 277 mm. in length. A beach-worn example obtained by Mr. T. R. Icely in 1894 is also recognised as of this species.

MONACANTHUS HOWENSIS, *Ogilby*.

*Monacanthus howensis*, Ogilby, Aust. Mus. Mem., ii., 1889, p. 25  
Waite, Rec. Aust. Mus., iv., 1901, p. 46, pl. viii.

The known distribution of the species is extended to the Sandwich Islands by Seale, who describes and figures a specimen under the name *Monacanthus albopunctatus*.<sup>30</sup>

OSTRACION CORNUTUS, *Linnæus*.

*Ostracion cornutus*, Linnæus, Syst. Nat., Ed x., i., 1758, p. 409,  
Bleeker, Atl. Ichth., v., 1865, p. 33, pl. ccii., fig. 3.

This addition to the fauna is made by Mr. W. S. Thompson, who has just (October, 1902), forwarded a large and peculiarly distorted example. *O. cubicus*, Linnæus, and *O. fornasini*, Bianconi, are the species previously known from the island.

<sup>29</sup> Swainson—Nat. Hist. Fish, ii., 1839, p. 215.

<sup>30</sup> Seale—Ber. Pa. Bishop Museum, Occ. Papers i., 1901, p. 13, fig. 6.

TETRAODON HYPSELOGENEION, *Bleeker*.

*Tetraodon hypselogeneion*, Bleeker, Nat. Tyds. Ned. Ind., iii., 1852, p. 300; Atl. Ichth., v., 1865, p. 61, pl. ccxiii., fig 5.

In September 1901 Mr. W. S. Thompson forwarded us two examples of this familiar species.

PACHYNATHUS CAPISTRATUS, *Shaw*.

*Balistes capistratus*, Shaw, Gen. Zool., v., 1804, p. 417.

The only notice of a species of the genus *Balistes* having been obtained from the island is that contained in the Museum Memoir. It is there recorded that the upper jaw of a member of the genus was picked up on the beach. There is, however, in the old collection an entire but unnamed example from Lord Howe Island. It has lost all colour markings, but is otherwise in fair condition. It belongs to the restricted genus *Pachynathus*, Swainson, and to the species *capistratus*, Shaw (= *Balistes mitis*, Bennett), as determined by the following characters, which distinguish it from its near ally *P. niger*, Mungo Park.

D. iii. 30; A. 27.

Body scales in thirty-five transverse rows.

Scales on middle of cheek rectangular.

Length of specimen, 245 mm.

BRACHALUTERES BAUERI, *Richardson*.

*Aleuterius baueri*, Richardson, Voy. "Ereb. and Terr.," Fish., 1846, p. 68.

(Plate iii., fig. 2.)

Few authors have described fishes with more care and attention to detail than Richardson, and few again so systematically figured their types. On the other hand, he was prone to accept a drawing as a type.

I strongly condemn this practice, though well aware it is followed by other writers and in other branches of Zoology and sanctioned by the American Ornithologists' Union. In its code of nomenclature the union declare<sup>31</sup> (Canon xlii.):—"The basis of a generic or subgeneric name is . . . . . a designated recognisable plate or figure," and, again (Canon xliii.):—"The basis of a specific or subspecific name is . . . . . a recognizable published figure or plate." A slight redeeming feature of this last canon is the insertion of the word<sup>3</sup> "published," but in the absence of a specimen, which a description

<sup>31</sup>Cole of Nomenclature, Amer. Ornithologists' Union, 1892, p. 52.

from a figure or plate implies, who is to know whether such figure be recognisable or not, and the publication of the original figure cannot remove the uncertainty.

Günther has expressed a similar sentiment as follows:—"It may be questioned whether it is desirable to utilize drawings, the types of which are lost, in any other way but as a help to supplement the insufficient published descriptions."<sup>32</sup>

No one but an Ichthyologist, or an artist working under his eye, can represent a fish so as to include all essential details. It is not, therefore, reasonable to produce a description from a drawing, and such description should scarcely be recognised.

Though such tenet cannot well be made retrospective, I make the suggestion for present and future workers.

Reverting to Richardson, I would also remark on descriptions made from drawings by Lieut. Emery, because they were executed from Australian fishes, and, as Richardson himself says, were unavoidably deficient in the expression of certain generic characters. The descriptions were published in the "Magazine of Natural History,"<sup>33</sup> and the author explains omissions, etc., thus:—"Lieut. Emery not being an Ichthyologist omitted to portray the minute serratures of the opercular pieces, and has not always distinguished the spinous from the articulated rays." In the following year (1843) the author published some of the drawings from which descriptions were made, remarking<sup>34</sup>:—"Verbal descriptions of them may mislead the naturalist, but the plate enables him to judge for himself." As, however, only the first fasciculus of the "Icones Piscium" was ever published, there are many fishes described from drawings which Richardson never reproduced.

This preamble is suggested by the attempt to identify with one of Richardson's species, a fish received from Lord Howe Island. It is a Monacanth, and as far as one may judge, is to be identified with *Aleuterius baueri*.<sup>35</sup>

The claims of *A. baueri* rest upon the description of a drawing which Richardson introduces as follows:—"This species is named in honour of Mr. Ferdinand Bauer, being founded on one of his admirable drawings in Dr. Brown's possession." Lest my strictures on this practice appear rather uncalled for, I quote further:—"Looking to his known scrupulous accuracy in details (Mr. Bauer's figure) may be considered as the representation of a generic form not yet described, in which the characters of several groups of *Plectognathi* are combined. It

<sup>32</sup>Günther—Zool. Record, vi., 1869, p. 127.

<sup>33</sup>Richardson—Mag. Nat. Hist., (i), ix., 1842, pp. 15, 120, 207, 384.

<sup>34</sup>Richardson—Icones Piscium, 1843.

<sup>35</sup>Richardson—Voy. "Ereb. & Terr.," Fishes, 1846, p. 68.

exhibits the undivided dental plate of *Diodon*, the inflated body and dermal spines of *Tetrodon*, and the fins of *Aleuterius*. We shall not venture upon the formation of a new generic name without having seen a specimen of the fish."

From this figure-description Günther<sup>36</sup> inclined to the belief that the species was very closely allied to his *M. oculatus*. If my conclusions as to the identity of the Lord Howe Island example with *A. baueri* are correct, it is a distinct species, while I can confidently pronounce *M. oculatus* to be a synonym of *A. trossulus*, Richardson, having a large collection showing perfect intermediate grades. It is in fact the ocellated colour-pattern of *M. oculatus*, which is described and figured by Hollard.<sup>37</sup> Günther also appears to have had very grave doubts as to correct representation of the teeth of *A. baueri*, for, though, unlike Emery, Bauer was a skilled draughtsman, he was not an Ichthyologist, and would fail to appreciate the necessary characters.

*Aluterius*, or, as Richardson also used it, *Aluteres* and its forms *Alutarius* and *Aluterus* is a synonym of *Alutera* Cuvier, of which the type is *A. monoceros*, Osbeck. From this, *A. trossulus* and *A. baueri* differ in having less than thirty rays each in the dorsal and anal fins, instead of forty or more, but agree in the absence of a pelvic spine. For *A. trossulus* Bleeker proposed the genus *Brachaluteres*, and I add *A. baueri* as a second member.

*Description*.—D. 29 ; A. 26 ; P. 11 ; C. 12.

Length of head, 3·3 ; height of body, 1·2 ; length of caudal fin 3·1 in the total. The eye, which lies nearer to the snout than to the dorsal fin is 3·0 in the head, the convex inter-orbital space one-half more. The gill opening is small and lies beneath the posterior margin of the eye. The nostrils are inconspicuous, and placed close to the front edge of the eye.

The teeth do not differ from those of the typical monacanth.

Upper profile of head slightly concave, from the spine to the commencement of the rays the contour is straight, thence curved to the caudal peduncle. The lower profile is very convex, its regularity broken by the distensible abdomen.

The dorsal spine arises above the middle of the eye, and reaches two-thirds of the distance to the first ray, its surface is granular, but without spines or barbs. The dorsal and anal fins are similar in character, the former the longer, both are highest anterior to their centres. Pelvic bone without spine or external indication, the pectoral fin is one-fourth longer than the diameter of the eye and inserted beneath its hinder margin. The caudal peduncle is compressed but thick, its

<sup>36</sup>Günther—Cat. Fish. Brit. Mus., vii., 1870, p. 235.

<sup>37</sup>Hollard—Ann. Sci. Nat., Zool., (4), iv., 1855, p. 6, pl. i., fig. 1.

height one-half more than the diameter of the eye. The fin, which is long and rounded, has its insertion narrower than the peduncle.

The skin, which is rather rough to the finger is beset with needle-like spines, smaller on the head and below, larger posteriorly especially on the caudal peduncle where they are one-third of an eye diameter in length and strongly recurved.

*Colours.*—In formaline, greenish-yellow, green at the bases of the fins, also the dorsal spine and caudal rays. The markings are longitudinal brown stripes: two pass from the base of the dorsal fin, three from the posterior border of the eye and two above the pectoral fin, all these run horizontally and parallel. Two others pass from below the eye downward and forward, then backward; they separate, and, another stripe arising between them, all run to form horizontal lines below those above described. Most of the spaces between the streaks carry short interrupted lines, which below break up into spots. There are also three or four streaks in front of the eye, the upper ones pass over the profile and unite with their fellows. One runs down to the angle of the mouth, while another behind it is continued downward, and, parallel to the profile, forms a linear series of dots, which, at the base of the anal fin, are lost in a mass of dots forming the ornamentation on this part. Similar dots exist on the caudal peduncle. The membranes of the dorsal and anal fins are damaged but show traces of spots. The caudal is spotted with brown, forming transverse bars.

Total length, 65 mm.

Collected by Mr. W. S. Thompson, September, 1901.

Since the foregoing was in type, I have received from Dr Jordan, his joint paper (issued in advance of the volume), on the Trigger-fishes of Japan<sup>83</sup>. The authors describe and figure a new species, *Brachaluteres ulvarum*, which is a close ally of *B. baueri*.

*COCOTROPUS ALTIPINNIS*, *sp. nov.*

(Plate v, fig. 2).

The known range of the genus *Cocotropus*, expressed as Japan, Andaman Isles, South-east coast of India, Pinang, Celebes and Ceram, is now extended to Lord Howe Island. In September, 1901, the Trustees received a single example collected by Mr. W. S. Thompson. This appears to be an undescribed species. The following is a description of the specimen:—

D. xiii. 10; A. ii. 8; V. i. 3; P. 13; C. 11; L.lat. 11.

Length of head 3.0; of caudal 3.0; height of body 2.7 in

<sup>83</sup>Jordan and Fowler—Proc. U.S. Nat. Mus., xxv., 1902, p. 271, fig. 5.

the length. The diameter of the eye is one-fifth less than the interorbital space and 3·7 in the length of the head; its lower margin bisects the vertical line. The snout is one-half longer than the eye.

The head and body are strongly compressed, the profile of the head very steep, and the dorsal profile of the body much more convex than the ventral. The jaws are equal, but the lower is advanced when the mouth is open: the maxilla extends to beneath the front margin of the eye. The head is strongly armed, the profile is formed of two bony ridges which terminate each in a small boss in front of the dorsal fin. A knob exists on the anterior edge of the orbital ring and another above the eye, which is continued backwards as a temporal ridge. Below this, from the hinder edge of the eye is a second ridge; both end in blunt spines, which are in vertical line with the similar preopercular spines, five in number, of which the upper is the largest, its length two-thirds the diameter of the eye. A ridge passing from the preorbital below the eye bears three small blunt spines. The preorbital carries two large spines; an upper and longer runs to beneath the centre of the eye and has its tip inclined upwards; the lower spine is directed downwards over the maxilla. On the front edge also there is a prominent knob. Two weak, flat, but sharp spines are found on the opercle; height of caudal peduncle 2·8 in the length of the head.

*Fins.*—The continuous dorsal fin has a sinuous margin, and commences a little in advance of the front edge of the eye. The first spine is strongly curved, the second less so, to which it is equal, 1·1 in the head. Having a more elevated origin, the second spine appears to be the longer; a decrease to the fifth is followed by a longer series to the eighth, whence the remainder are sub-equal and half the length of the head. The first ray is slightly longer, and the third the longest, 1·5 in the head; the last ray is half the length of the first. The anal commences beneath the twelfth dorsal spine; both fins are connected to the caudal peduncle by membrane. The pectoral has a deep base and is evenly rounded, the sixth ray equals the length of the head; the tips are free. The ventral is inserted in advance of the pectoral, and its second ray is 1·6 in the length of the head. The rays of all the fins are undivided.

*Scales.*—Top of the head, cheeks, opercles, and the whole of the body closely covered with small spinous granules, continued on to the basal portion of the pectoral and vertical fins. The lateral line follows the dorsal curvature and does not descend to the middle of the caudal peduncle; it is formed of eleven very long tubes, the first three almost in contact, the others widely spaced; the last is at the base of the caudal rays.



*Colours.*—Head and body brilliant red, the latter with a pale spot below the v.-vii. dorsal spines; eye and vertical fins red; pectoral, orange, with the lower edge lighter and crossed by some red bars.

Length of specimen, 43 mm.

The genus *Cocotropus* was formed by Kaup<sup>39</sup> in 1858 on *Corythobatus echinatus*, Cantor.<sup>40</sup> The name *Corythobatus* was proposed by Cantor as a substitute for *Minois*, Cuvier and Valenciennes ("preoccupied by *Minois*, Hübner"), with *C. woora*, Cuvier and Valenciennes, as the type. This species is not congeneric with *C. echinatus*, which Günther places in his genus *Tetraroge*.<sup>41</sup> In this he also places *Apistus dermacanthus*, Bleeker.<sup>42</sup> In 1878 Bleeker figured this species under the name *Cocotropus dermacanthus*.<sup>43</sup> The text to accompany the plate was never issued and I am unaware if Bleeker referred to the species elsewhere. Day records two species from Indian seas,<sup>44</sup> namely, *C. echinatus*, above referred to, and a new species, *C. roseus*.

Another species, *C. pottii*, is described by Steindachner<sup>45</sup> from Japan, and to these I add a fifth, *C. altipinnis* (*ante*), from Lord Howe Island.

For comparative purposes the leading characteristics of these five species may be expressed as follows:—

1. *Cocotropus echinatus*, Cantor.

D. xiii. 11; A. ii. 8; P. 11; V. i.5 (? i.3).

Length of head 3.7; height of body 2.9. Dorsal fin commences above anterior half of eye. First spine longest, 1.3 in height of body. Pectoral equal to the head in length.

*Hab.*—Andamans and Pinang.

2. *Cocotropus dermacanthus*, Bleeker.

D. xii. 9; A. iii.-ii. 7-8; P. 11; V. i.3.

Length of head 2.8; height of body 2.8. Dorsal fin commences over middle of eye. First and second spines longest and equal, 2.0 in height of body. Pectoral shorter than the head.

*Hab.*—Sea of Wahai, North Ceram.

<sup>39</sup> Kaup—Arch. Naturg., 1858, p. 333.

<sup>40</sup> Cantor—Cat. Malay Fish, 1850, p. 45.

<sup>41</sup> Günther—Cat. Fish. Brit. Mus., ii., 1860, p. 136.

<sup>42</sup> Bleeker—Nat. Tijdschr. Ned. Ind., iii., 1852, p. 268.

<sup>43</sup> Bleeker—Atl. Ichth., ix., 1878, pl. ccccxi., fig. 2.

<sup>44</sup> Day—Fishes India, 1875, pp. 159 and 160.

<sup>45</sup> Steindachner—Ann. K. K. Nat. Hofmus. Wein, xi., 1896, p. 203.

3. *Cocotropus roseus*, Day.

D. xiv-xv. 9-10; A. ii. 7-8; P. 14; V. i.3.

Length of head 2.9; height of body 3.2. Dorsal fin commences over middle of eye. Second spine longest, 2.0 in height of body. Pectoral equal to the head in length.

*Hab.*—Coromandel Coast of India.

4. *Cocotropus pottii*, Steindachner.

D. xi-xii, 13-12; A. i-ii., 10-11; P. 12; V. i. 2.

Length of head 4.0; height of body, 3.5. Dorsal fin commences behind centre of eye. First spine longest, 2.3 in height of body. Pectoral equal to the head in length.

*Hab.* Japan and Celebes.

5. *Cocotropus altipinnis*, Waite.

D. xiii. 10; A. ii. 8; P. 13; V. i. 3.

Length of head 3.0; height of body 2.7. Dorsal fin commences in advance of the eye. First and second spine longest and equal 1.1 in height of body. Pectoral equal to the head in length.

I have tried to reconcile this last species with the first-named, to which it is undoubtedly most nearly allied: its differences however, as far as one may judge, outweigh its points of similarity. From Cantor's description it differs in having the margin of the dorsal fin sinuous, though it must be noted that the account is scarcely intelligible. The author writes:—"The anterior spine. . . . . is the longest and strongest of all, its length being about  $\frac{3}{4}$  of that of the head. The succeeding spines and rays gradually decrease to the seventh ray, which is about  $\frac{2}{4}$  of the length of the head." In *C. altipinnis* the first two spines are equal in length; the pectoral has thirteen rays and the ventral three, of which the second is noticeably the longest. *C. echinatus* has eleven pectoral rays and five ventral ones, the first being described and figured as the longest. In describing an example from the Andaman Isles, Day counts but three ventral rays. This latter species appears to have a smaller head, and, as no mention is made of the large postorbital spines, a simpler armature. These spines in *C. altipinnis* are larger than those of the preopercle, which bears five spines, none of which can be said to be minute, as described of *C. echinatus*, which has but four. Cantor distinctly states that "the axilla and the space covered by the pectorals is naked;" also that "on the back, the sides of the head and body the tubercles are fewer, more distant than on the throat and

abdomen, where they are crowded." In our species the whole body is evenly covered with tubercles. Lastly, the colour markings, as recorded by both Cantor and Day, are conspicuous features, whereas in *C. altipinnis*, described from a recent example, the only markings are a light area on the back and dark bars on the lower pectoral rays.

*Hab.* Lord Howe Island.

XIPHASIA SETIFER, *Swainson*.

*Xiphasia setifer*, Swainson, Nat. Hist. Fish., ii., 1839, pp. 179 and 259; Day, Fish. India, 1876, p. 337, pl. lxxiii., fig. 1.

Though not previously recorded from the island, an example obtained by Mr. Farnell, in July, 1902, is the second known. By the kindness of the Committee of the Macleay Museum, I have had the opportunity of examining the fish referred to in the Museum Memoir as *Gobioides sp.*,<sup>46</sup> and noticed as follows:—"A single example, which has evidently been washed ashore, was presented by Dr. James Cox to the Hon. Wm. Macleay, in whose collection it now is." This is undoubtedly a *Xiphasia*, and the discovery removes one more uncertain species from the island list. *X. setifer* was first recorded from the mainland by Ramsay and Ogilby, who described specimens taken in Port Jackson, in 1886.<sup>47</sup>

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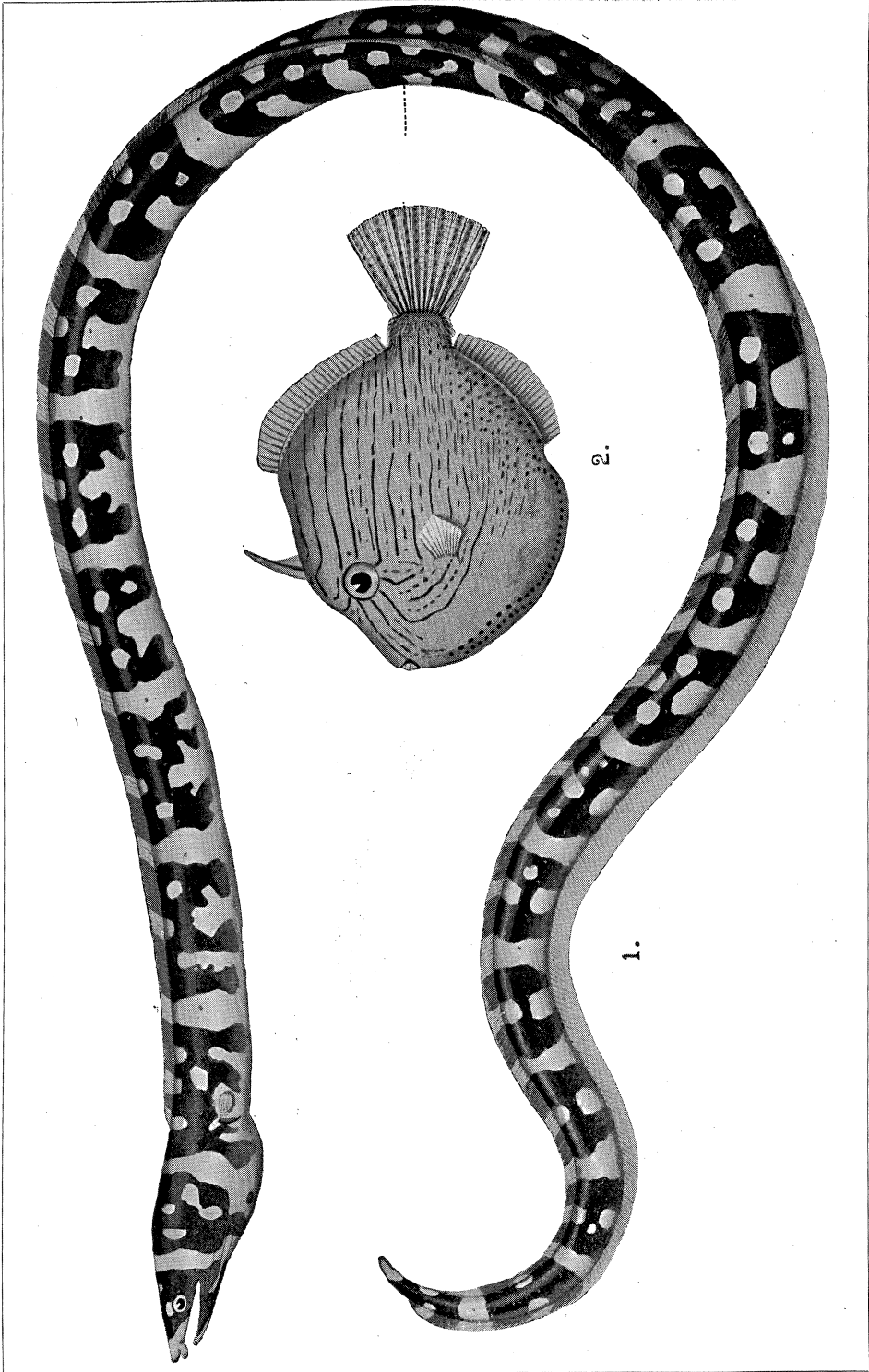
<sup>46</sup> Ogilby—Aust. Mus. Mem., ii., 1889, p. 14.

<sup>47</sup> Ramsay and Ogilby—Proc. Linn. Soc. N.S.W., (2), i., 1886, p. 582.

EXPLANATION OF PLATE III.

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- Fig. 1. *Ophichthus versicolor*, Richardson.  
(Reduced.)
- Fig. 2. *Brachaluteres baueri*, Richardson.  
(Natural size.)



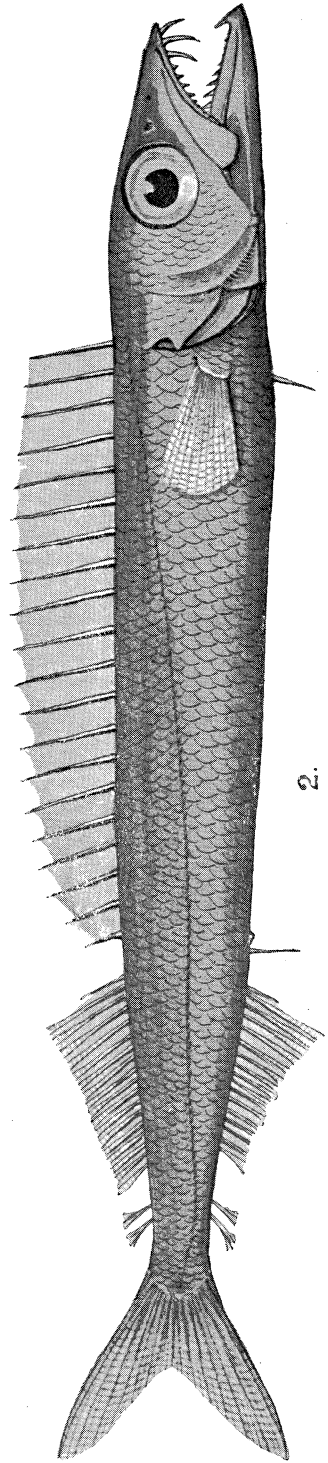
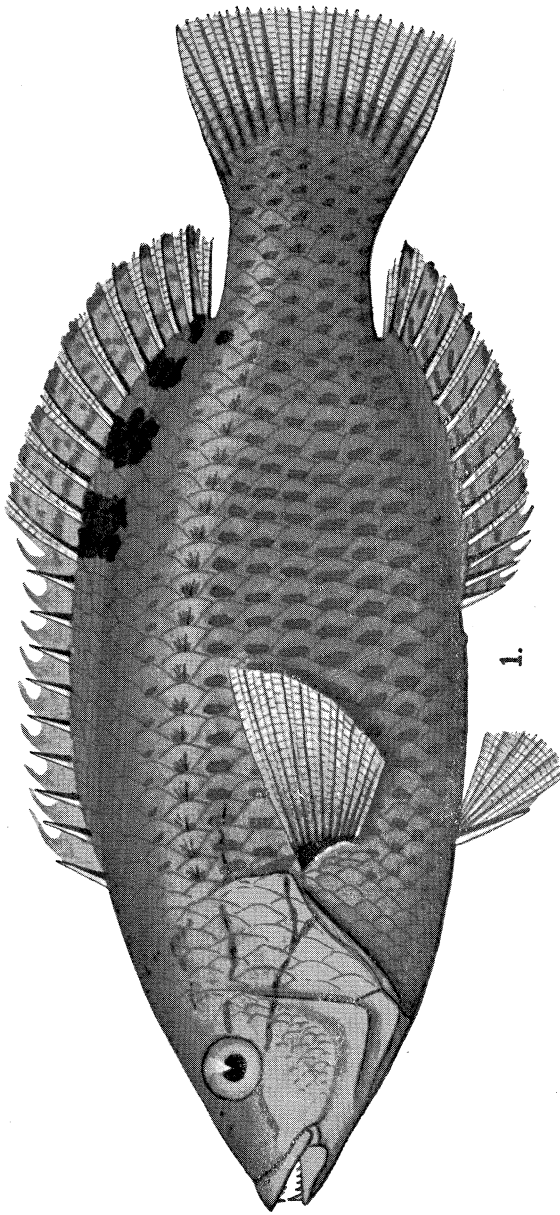
EDGAR R. WAITE, del.,  
Austr. Museum.

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Half-tone.

EXPLANATION OF PLATE IV.

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- Fig. 1. *Pseudolabrus luculentus*, Richardson.  
(Natural size.)
- Fig. 2. *Machærope latispinis*, Ogilby.  
(Reduced.)



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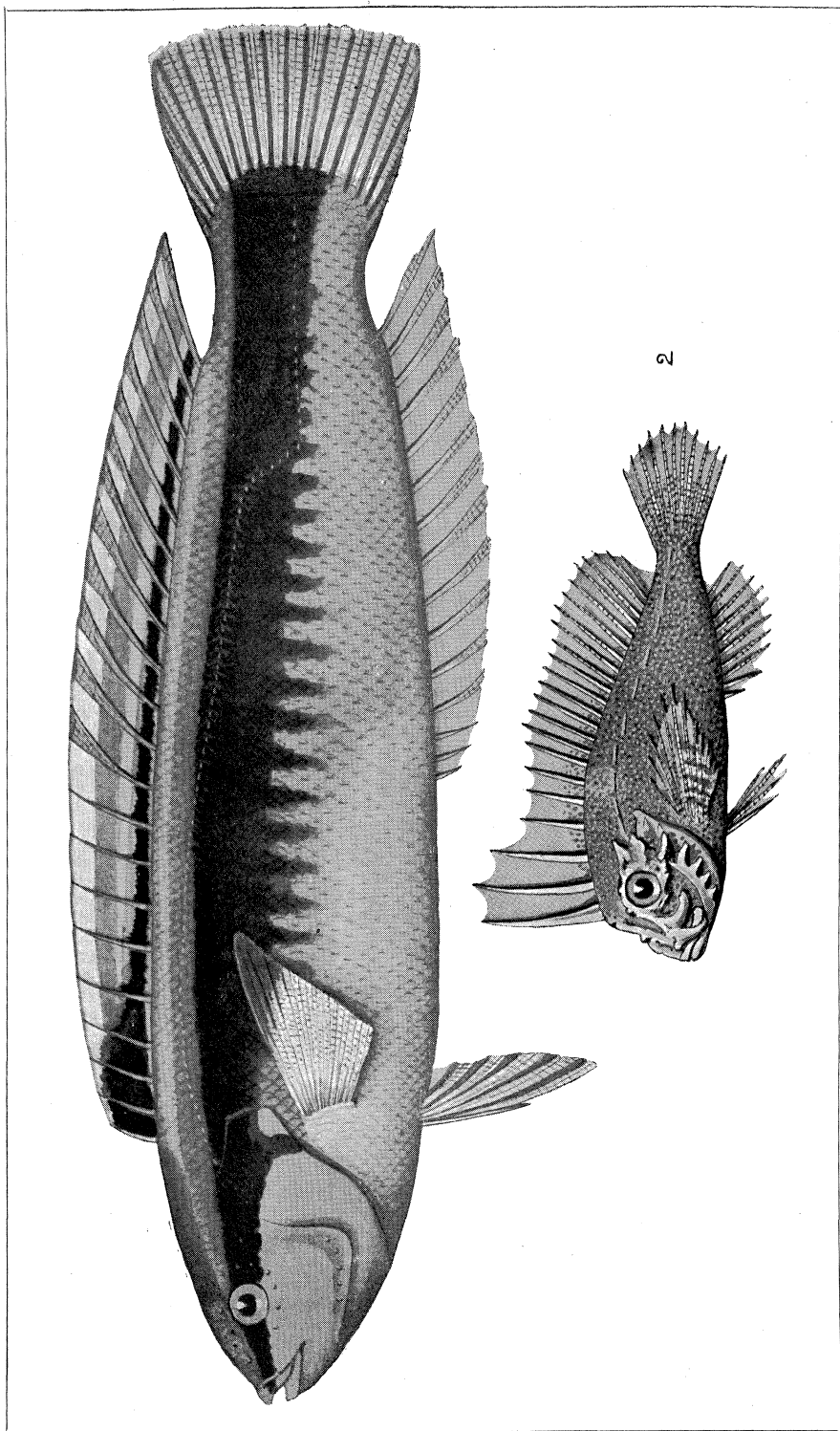
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EXPLANATION OF PLATE V.

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- Fig. 1. *Coris picta*, Bloch and Schneider.  
(Reduced.)
- Fig. 2. *Cocotropus altipinnis*, Waite.  
(Enlarged.)





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