

V NOTES ON INDIAN FISH

By R. B. SEYMOUR SEWELL, B.A., Capt., I.M.S., Surgeon-Naturalist to the Marine Survey of India; Hon. Assistant, Zoological Section, Indian Museum, Calcutta.

(Plate VIII.)

I.—NOTES ON THE GENUS *Malthopsis*.

This genus was created by Wood-Mason and Alcock for a new species of deep-sea fish obtained by the R.I.M.S.S. "Investigator" in the Andaman Sea.

As has previously been pointed out (Lloyd, 1909-10, p. 171), the collection in the Indian Museum, Calcutta, contains two forms which differ very considerably in size and other characters, and the original description by Wood-Mason and Alcock (1891) applies only to the larger form; possibly they thought that the smaller form was merely an immature stage. Further examples of the smaller form were subsequently obtained from the same region and a full description was published by Lloyd (loc. cit., 1909-10) under the name *Malthopsis triangularis*: in the second part of the same paper, however, this author assumes that both these forms are in reality members of the same species and, arguing on this assumption, proceeds to demonstrate "supposed evidence of mutation." Recently Lloyd (1912) has reiterated his views on this supposed evidence: as he himself shows, the individuals of this genus in the present collection can be divided into two groups by the difference in the arrangement of the dermal scutes and the form and degree of development of the opercular spine—groups that he terms "orderly" and "disorderly" respectively. In both forms very considerable differences are to be found in the breadth of the disc proportionally in proportion to the total length, but such differences are only to be expected in cases where the disc is, as in the present case, supported by flexible bony arches and must largely depend on the degree of external pressure and muscular contraction existing at the time of death. As I have elsewhere shown (Sewell, *Rec. Ind. Mus.*, vol. VII, p. 8, Calcutta, 1912), similar variations are to be found in examples of the closely-allied species *Halicmetus ruber*, Alcock.

I have recently had occasion to re-examine the collection and I have no doubt that it contains two absolutely distinct species, the chief structural characters of which I give below:—

Malthopsis luteus, Wood-Mason & Alcock.

(Plate viii, fig. 1.)

Malthopsis luteus, Wood-Mason and Alcock, 1891, p. 26, pl. viii, figs. 2, 2a.*Malthopsis luteus*, Goode and Bean, 1895, p. 53, fig. 411.*Malthopsis lutea*, Alcock, 1899, p. 64.*Malthopsis luteus*, A. Brauer, 1908, p. 326.*Malthopsis* (in part), Lloyd, 1909-10, p. 171, pls. xlviii, xlix, l.*Malthopsis* (in part), Lloyd, 1912, pp. 140-148, fig. 7.*Malthopsis lutea*, Ill. Zool. Invest., Fishes, pl. xix, fig. 4.

In this form "the body is covered with hard, granular, adherent plates, each with a large radially striated conical tubercle in its centre. On the dorsal surface of the disc they are of moderate size, in contact along the middle line, but distant and slightly sunken laterally. On the ventral surface of the cephalic disc they are small, distant and sunken" (Alcock). "The space between the pelvic fins and vent is covered with about thirty minute plates which are widely separated from one another by naked skin" (Lloyd). Lloyd described this state of affairs by the term "dermal disorder."

"The subopercular spine is relatively small and irregular" (Lloyd).

In this form the nasal spine takes its origin from the anterior end of the snout, in line with the middle of the eye, and projects forwards and, in some cases, slightly upwards. Immediately behind the spine the dorsal profile rises upwards, to a point above the centre of the eye, and then slopes gradually downwards and backwards.

Below the spine is the tentacular pit, the floor of which also slopes downwards and backwards, so that in a ventral view the pit is easily visible.

The interorbital region narrows considerably about the middle of its length.

In the Indian Museum collection are six specimens obtained at the following "Investigator" stations:—

Station 115: 11° 31' 40" N., 92° 46' 40" E. 188-220 fathoms.

Station 222: 13° 27' 00" N., 93° 14' 30" E. 405 fathoms.

Station 233: 13° 17' 15" N., 93° 10' 25" E. 185 fathoms.

Malthopsis triangularis, Lloyd.

(Pl. viii, fig 2.)

Malthopsis triangularis, Lloyd, 1909-10, p. 169, pl. xlv, figs. 1, 1a.*Malthopsis* (in part), Lloyd, 1909-10, p. 171, pls. xlviii, xlix, l.*Malthopsis* (in part), Lloyd, 1912, pp. 140-148, fig. 7.

In this species the dermal plates are arranged according to a very definite pattern, a condition that Lloyd terms "dermal order."

"On the dorsal surface is a median row of four or five large plates. On either side of the median row is an area of naked skin,

which is bounded externally by an oblique row of plates converging in the direction of the base of the tail. On the ventral surface the space between the pelvic fin and vent is occupied by seven large plates, a central one surrounded by the six others. The plates are in contact. The subopercular spine is relatively large and tetrafid" (Lloyd).

The nasal spine arises, in this species, from a point opposite the upper border of the eye, at the junction of the dorsal surface and snout, and points strongly upwards and somewhat forwards; from its point of origin the dorsal profile at once slopes downwards and backwards.

The floor of the tentacular pit, below the spine, is vertical as also is the line of profile of the snout, so that when the animal is viewed from below, the pit cannot be seen.

The interorbital region narrows only very slightly, if at all.

In the Indian Museum there are fifteen specimens obtained at the following "Investigator" stations:—

- Station 115: 11° 31' 40" N., 92° 46' 40" E. 188–220 fathoms.
- Station 222: 13° 27' 00" N., 93° 14' 30" E. 405 fathoms.
- Station 233: 13° 17' 15" N., 93° 10' 25" E. 185 fathoms.
- Station 332: 10° 21' 00" N., 92° 46' 15" E. 279 fathoms.

Further differences between these two species can be seen by comparing their measurements and ratios:—

	<i>Malthopsis luteus.</i>	<i>Malthopsis triangularis.</i>
Total length (less caudal fin)	from 39 to 65 mm. Specimens which have been subsequently caught by the 'Siboga' and the 'Valdivia' are even larger. Siboga' examples 68, 80 mm. Valdivia' example 92.5 mm.	from 27 to 42 mm.
Ratio: $\frac{\text{Breadth} \times 100}{\text{Length}}$...	{ from 49 to 73 : average 58.3	from 53 to 93 : average 75.9.
" $\frac{\text{Total length}}{\text{Length of spine}}$...	{ from 11.1 to 12.5 : average 12.86	from 8.6 to 11.1 : average 10.0
" $\frac{\text{Total length}}{\text{diam. of eye}}$...	{ from 6.1 to 6.5 : average 6.325	from 5.0 to 6.3 : average 5.5.
" $\frac{\text{Total length}}{\text{Interorbital diam.}}$...	{ from 12.25 to 14.6 : average 13.4.	from 8.4 to 9.5 : average 8.85.
" $\frac{\text{Length of spine} \times 100}{\text{diam. of eye}}$...	{ from 50 to 57 : average 51.1.	from 50 to 87 : average 54.7.

From the above statement it would seem to be fairly evident that we have here two absolutely distinct species.

BIBLIOGRAPHY.

- Alcock, 1899. A descriptive catalogue of the Indian Deep-sea Fishes in the Indian Museum. Calcutta.
- Brauer, 1908. Die Tiefsee Fische. Wiss. Ergebn. der Deutschen Tiefsee. Exped. "Valdivia," vol. XV Jena.
- Goode and Bean, 1895. Oceanic Ichthyology. Smithsonian Institute. Special bulletin. Washington.
- Illustrations of the Zoology of the "Investigator," Fishes, pl. xix, fig 4. Calcutta.
- Lloyd, 1909-10. A description of the Deep-sea Fish caught by the R.I.M.S. Ship 'Investigator' since the year 1900, with supposed evidence of mutation in *Malthopsis*. Mem. Ind. Mus., vol. II, p. 139. Calcutta.
- Lloyd, 1912. The growth of groups in the Animal Kingdom. Longmans, Green & Co. London.
- Max Weber, 1913. Die Fische der Siboga Expedition, vol. LVII. Leiden.
- Wood-Mason and Alcock, 1891. Natural History Notes from H.M. Indian Marine Survey Steamer 'Investigator' series II, No. 1. "On the results of Deep-sea Dredging during the season 1890-91. Ann. Mag. Nat. Hist. (6th series), vol. VIII, p. 16. London.

II.—A NEW SPECIES OF *Cryptocentrus*.***Cryptocentrus rubropunctatus*, sp. nov.**

(Pl. viii, fig 3.)

A single example of what appears to be a new species of *Cryptocentrus* was discovered at "Investigator" Station 414: Fisher Bay in Port Owen, Tavoy Island on the coast of Burma. The animal was found concealed beneath a large stone between tide-marks.

The chief structural characters are as follows:—

D.VI.I/10.	A.I/10	C. 17.	P. 17.	V 5.	Ll. 75.
					mm.
Total length (less caudal fin)					55.0
Length of caudal fin					16.0
Length of head					16.0
Length of snout					4.5
Diameter of eye					4.0
Interorbital space					1.0
Height of body					11.0
Ratio of height of body to length					1 : 5
„ „ length of head to total length					1 : 34
„ „ diameter of eye to length of head					1 : 4

The body is covered with small cycloid scales which increase somewhat in size towards the posterior extremity; the depth of the body is greatest at the insertion of the spinous portion of the dorsal fin and from that point it tapers gradually to the caudal peduncle.

The head is nearly as wide as it is deep: the measurements of width and height being 11.5 mm. and 12.5 mm. respectively.

The mouth is wide and is somewhat oblique; the jaws are equal and the maxilla extends back to a point situated vertically below the centre of the eye: the jaws are furnished with numerous teeth of unequal size and the lower jaw bears a pair of lateral canines. The head is naked and the cheeks and operculum are traversed with rows of minute warts.

The lateral line, as in the case of *C. filifer* (Cuv. and Val.), is represented by a series of vertical rows of small pores; there appear to be eighteen such rows in all, of which the first is separated by a fairly wide interval from the remainder, of these latter the more anterior are about 2 mm. apart but posteriorly the distance is somewhat less than this.

Fins.—The spinous portion of the dorsal fin is completely separate from the posterior rayed part and is also somewhat greater in height; the 3rd spine is the longest and measures 15 mm. in length, the rayed part of the fin is 10.5 mm. in height. The anal fin is 9 mm. in height. Both caudal and pectoral fin are sharply rounded.

In colouration the specimen was of a pale green on the dorsal aspect fading to a dull white below: the body and tail were crossed by a series of eight nearly vertical bands of a pale mauve colour. The tail was dotted with a series of small ocelli of a bright blue colour, while the cheeks and operculum were marked with scattered crimson spots, each spot being surrounded by a dark circle; a single similar spot was situated on the muscular base of each pectoral fin. The caudal and ventral fins were marked by faint longitudinal stripes of alternate pale green and mauve.

As is usually the case, the spots on the head and tail have completely lost their colour in spirit and the former are now a dull white.

A very closely allied species has been described by Tate Regan¹, but the present specimen differs from it in several particulars and is, I think, a new species. I, therefore, propose the name *Cryptocentrus rubropunctatus* for it.

¹ Tate Regan, 1907-09. "Report on the Marine fishes collected by Mr. J. Stanley Gardiner in the Indian Ocean." *Trans. Linn. Soc.*, 2nd Ser., Vol. XII, p. 241, pl. 29, fig. 2. London.

