ON A THIRD COLLECTION OF FISH FROM MAUNGMAGAN, TAVOY DISTRICT, LOWER BURMA.

By ALBERT W. C. T. HERRE, *Stanford University, California.*

In 1937 the Director of the Zoological Survey of India sent me a collection of fishes made by Prof. F. J. Meggitt, at Maungmagan, Burma. Two previous lots of fishes collected by Prof. Meggitt at Maungmagan were reported upon by Dr. Sunder Lal Hora and Mr. D. D. Mukerji. Their report was published in Vol. XXXVIII of the *Records of the Indian Museum*, pp. 15-39, 1936. The collection sent me comprises 37 families, 52 genera, and 68 species. Nearly all the specimens are small fishes, mostly quite young, obtained from fishermen's nets operated along shore in the shallow water in front of the beach. A very few were taken in small rock pools and sandy pools. In the article cited is a description and figure of the coast and ecological conditions at Maungmagan. Almost all the fishes are common species of wide-spread occurrence in Indo-Pacific waters, and accordingly call for no special comment. Attention is therefore directed to only 6 species, of which but one is apparently a rare fish.

LIST OF FISHES COLLECTED AT MAUNGMAGAN, BURMA.

SCYLLIORHINIDAE :
Chiloscyllium plagiosum (Bennett) 1830 ; 8 young examples, 110 to 160 mm. in length.

RHINOBATIDAE :
Rhinobatus halavi (Forskål) 1775, 1 specimen, 135 mm. long.

DASYBATIDAE :
Dasybatus imbricatus (Bloch & Schneider) 1801, 10 very young foetal specimens, 71 to 108 mm. long, and 81 to 110 mm. in breadth ; the length of the tail varied from 116 to 165 mm.

TORPEDIDAE :
Narke dipterygia (Bloch & Schneider) 1801, 1 small specimen, 107 mm. long.

CHIROCENTRIDAE :
Chirocentrus dorab (Forskål) 1775, 1 young specimen, 120 mm. long.

DUSSUMIERIDAE :
Dussumieria hasselti Bleeker 1851, 44 specimens, 44 to 80 mm. in length.

CLUPEIDAE :
Clupeoides lile (Cuv. & Val.) 1847, 1 example, 50 mm. long.
Sardinella gibbosa (Bleeker) 1849, 1 specimen, 80 mm. long.
Sardinella brachysoma (Bleeker) 1852, 3 specimens, 64 to 70 mm. in length.
Harengula vittata (Cuv. & Val.) 1847, 1 specimen, 56 mm. long.
Pellona ditchoa (Cuv. & Val.) 1847, 1 specimen, 45 mm. long.

ENGRAULIDAE :
Thrissocles setirostris (Broussonet) 1782, 1 specimen, 77 mm. long.
Scutengraulis mystax (Bloch & Schneider) 1801, 5 specimens, 46 to 63 mm. in length.
Opisthopterus macrognathus Bleeker 1866, 1 example, 80 mm. long.
Stolephorus indicus (v. Hasselt) 1823, 9 specimens, from 40 to 97 mm. in length.

BAGRIDAE :
Mystus gulio (Buch. Ham.) 1822, 1 young example, 52 mm. long.

CYPRINODONTIDAE ;
Aplocheilus panchax (Buch. Ham.) 1822, several specimens.

Belonidae :
Tylosurus leiurus Bleeker 1851, 1 specimen, 335 mm. long.

Hemiramphidae :
Hemiramphus gaimardi Cuv. & Val. 1846, 6 examples, 91 to 110 mm. in length.
Hemiramphus melanurus Cuv. & Val. 1846, 2 specimens, 108 and 150 mm. in length.

Atherinidae :
Atherina duodecimalis Cuv. & Val. 1835, 1 specimen, 90 mm. long.
Atherina sp., probably *forskali* Rüppell 1835, 1 specimen, 45 mm. long, in bad condition.

Mugilidae :
Liza troscheli (Bleeker) 1858-59, 5 young specimens, 34 to 52 mm. in length.
Liza vaigiensis (Quoy & Gaimard) 1825, 15 very small to small examples, 11 to 53 mm. in length.

Polynemidae :
Polydactylus sexfilis (Cuv. & Val.) 1831, 8 young examples, 43 to 65 mm. in length.

Pampidae :
Pampus argenteus (L.) 1788, 4 specimens, 40 to 70 mm. in length.

Carangidae :
Megalaspis cordyla (L.) 1758, 4 small specimens, 49 to 54 mm. in length.
Atule djedaba (Forskål) 1775, 30 specimens from 53 to 102 mm. in length.
Atule kalla (Cuv. & Val.) 1833, 16 examples, 45 to 61 mm. in length.
Caranx malabaricus (Bl. & Schn.) 1801, 5 specimens, 59 to 70 mm. in length.
Caranx sexfasciatus (Quoy & Gaimard) 1825, 1 small example, 54 mm. long.
Atropus atropus (Bl. & Schn.) 1801, 1 specimen, 85 mm. long.
Scomberoides lysan (Forskål) 1775, 1 example, 150 mm. long.
Scomberoides tala (Cuv. & Val.) 1831, 12 specimens, 47 to 82 mm. in length.
Scomberoides tol (Cuv. & Val.) 1831, 1 specimen, 87 mm. long.

Lactariidae :
Lactarius lactarius (Bl. & Schn.) 1801, 30 young specimens, 42 to 82 mm. in length.

Leiognathidae :
Leiognathus brevirostris (Cuv. & Val.) 1835, 9 examples, 34 to 68 mm. in length; scales in the lateral line vary from 56 to 62.
Leiognathus equulus (Forskål) 1775, 120 specimens, 22 to 42 mm. in length.
Leiognathus insidiator (Bloch) 1787, 3 specimens, 27 to 30 mm. in length.
Leiognathus splendens (Cuvier) 1829, 1 specimen, 40 mm. long.
Gazza minuta (Bloch) 1797, 22 examples, 25 to 56 mm. in length.

Gerridae :
Gerres lucidus (Cuv. & Val.) 1830, 2 specimens, 55 and 63 mm. in length.

Serranidae :
Epinephelus morrhua (Cuv. & Val.) 1833, 1 juvenile specimen, 30 mm. long seems to belong here.

Theraponidae :
Therapon jarbua (Forskål) 1775, 13 specimens, 38 to 89 mm. in length.
Therapon theraps Cuv. & Val. 1829, 2 specimens, 50 and 55 mm. long.

Pomadasyidae :
Pomadasys grunniens (Bloch & Schneider) 1801, 3 specimens, 36 to 55 mm. in length.

Sciaenidae :
Johnius diacanthus (Lac.) 1802, 1 very young specimen, 29 mm. long seems to be this species.
Johnius dussumieri (Cuv. & Val.) 1830, 6 specimens, 30 to 60 mm. in length.
Sciaena dussumieri (Cuv. & Val.) 1833, 8 examples, 52 to 74 mm. in length.

Sillaginidae :
Sillago chondropus Bleeker 1849, 5 specimens, 96 to 113 mm. in length.
Sillago sihama (Forskål) 1775, 33 specimens, 42 to 75 mm. in length.

Mullidae :
Upeneus sulphureus Cuv. & Val. 1829, 18 young specimens, 46 to 60 mm. in length.

Drepanidae :
Drepane longimana (Bl. & Schn.) 1801, 9 young examples, 34 to 65 mm. in length.

Scatophagidae :
Scatophagus argus (L.) 1766, 8 specimens, 42 to 94 mm. in length.

Pomacentridae :
Abudefduf septemfasciatus (Cuv. & Val.) 1830, 1 juvenile form only 18 mm. long.

LABRIDAE :
Halichoeres nigrescens (Bl. & Schn.) 1801, 1 young specimen, 40 mm. long.

ECHENEIDAE :
Echeneis naucrates (L.) 1758, 1 example, 245 mm. long.

GOBIIDAE :
Gobius ornatus Rüppell 1828, 3 specimens, 43 to 63 mm. long.
Bathygobius fuscus (Rüppell) 1828, 119 specimens, 14 to 46 mm. in length.

BLENNIIDAE :
Salarias dussumieri Cuv. & Val. 1836, 4 specimens, 48 to 68 mm. in length.
Petroscirtes punctatus (Cuv. & Val.) 1836, 21 specimens, 23 to 46 mm. in length.

BOTHIDAE :
Pseudorhombus arsius (Buch. Ham.) 1822, 1 specimen, 94 mm. long.
Pseudorhombus triocellatus (Bl. & Schn.) 1801, 6 specimens, 35 to 72 mm. in length.

CYNOGLOSSIDAE :
Paraplagusia blochi (Bleeker) 1850, 9 specimens, 73 to 115 mm. in length.
Cynoglossus macrolepidotus (Bleeker) 1850, 1 specimen, 117 mm. long.

TRIACANTHIDAE :
Triacanthus indicus Regan, 4 specimens, 89 to 185 mm. in length.

TETRAODONTIDAE :
Spheroides oblongus (Bloch) 1786, 11 specimens, 34 to 90 mm. in length.
Spheroides lunaris (Bl. & Schn.) 1801, 25 specimens, all small.

The following fishes were taken from :—

a. Sand pools :

Aplocheilus panchax (Buch. Ham.).
Mystus gulio (Buch. Ham.).
Liza troscheli (Bleeker).
Liza vaigiensis (Quoy & Gaimard).
Sillago sihama (Forskäl).
Bathygobius fuscus (Rüppell).

b. Rock pools :

Halichoeres nigrescens (Bl. & Schn.).
Gobius ornatus Rüppell.
Bathygobius fuscus (Ruppell).
Salarias dussumieri (Cuv. & Val.)
Petroscirtes punctatus (Cuv. & Val.)

All the rest were obtained by fishermen's nets, from shallow water along shore.

RHINOBATIDAE.

Rhinobatus halavi (Forskål).

1775. *Raja halavi*, Forskål, *Descript. Anim.*, p. 19.

A young specimen 125 mm. long unquestionably belongs here. The short snout and long nostril separate it strongly from *R. granulatus*; from *R. cemiculus*, with which it is often confused, it is easily distinguished by the much greater distance of the origin of the first dorsal behind the base of the ventrals, a distance that is nearly twice that between the two dorsals.

TORPEDIDAE.

Narke dipterygia (Bloch & Schneider).

1801. *Raja dipterygia*, Bloch & Schneider, *Syst. Ichth.*, p. 359.

A single example of this electric ray, 107 mm. long, was secured by Prof. Meggitt. The single dorsal fin and broad, white edged ventrals make this easily recongnizable at sight.

SILLAGINIDAE.

Sillago chondropus Bleeker.

1849. *Sillago chondropus*, Bleeker, *Verh. Bat. Genoots.* XXII, p. 61.
1877. *Sillago chondropus*, Bleeker, *Atlas Ichth. Ind. Neerl.* IX, pl. cccxxxix, fig. 2.
1931. *Sillago chondropus*, Weber and De Beaufort, *Fishes Indo-Austr. Arch.* VI, p. 176, fig. 34.
1933. *Sillago chondropus*, Flower, *Bull. U. S. Nat. Mus.* XII, p. 430.

Dorsal XI|1/20-22 ; anal III/22-24 ; there are 69 to 70 scales in the lateral line, plus 10 or 12 more on the caudal ; predorsal scales 33 to 35 ; scales in a transverse series, 5 above and 9 below the lateral line to the anal origin ; 3 rows of ctenoid scales on the cheeks.

The depth is 6·5 to 6·66, the head 3·66 to 3·75, the caudal 5·33 times in the length. The eye is 4·5 to 5 times in the head and twice in the snout, which is 2·5 times in the head. The ventral fin is very different from that of other species of *Sillago*. The somewhat thickened and cartilaginous spine is united with the very broad and much thickened cartilaginous first ray, which is more or less bony basally.

The colour in alcohol is very pale tan, or yellowish, the top of the head more or less dusky ; the fins are all colorless. The iris has a yellow ring surrounding the black pupil.

5 specimens, 96 to 112 mm. in length, were obtained from fishermen.

This unique and rare species, which reaches a length of about 250 mm., has hitherto been known only from 3 specimens from Java, one from Nias, and 5 from the Philippines. There is also a doubtful record from South Africa.

DREPANIDAE.

Drepane longimana (Bl. & Schn.).

1801. *Chaetodon longimana*, Bloch and Schneider, *Syst. Ichth.*, p. 229.
1831. *Drepane longimana*, Cuv. and Val., *Hist. Nat. Poiss.* VII, p. 101.
1925. *Drepane longimana*, Lele, *Journ. Asiat. Soc. Bengal* (*N. S.*) XX, p. 286, pl. xii, fig. 2.
1927. *Drepane longimana*, Herre and Montalban, *Phil. Journ. Sci.* XXXIV, p. 5, pl. i, fig. 2.

This drepane is represented by a series of 9 young examples, 34 to 65 mm. in length, and is evidently common in the shallow coastal waters of the Tavoy district. It is unfortunate that many recent writers have

overlooked the admirable paper by Lele, and continue to confuse *D. longimana* with *D. punctata*, in spite of their very marked and easily recognizable differences. Weber and De Beaufort did not examine the air bladder and its diverticula, or they would have observed several striking differences for themselves. Instead, they quote Cuvier and Valenciennes, to the effect that the air bladder is the same as in *D. punctata*, and decide " this anatomical difference may be of an individual character."

I have kept both *Drepane longimana* and *Drepane punctata* in captivity, and can state that each retains its own distinctive colour marks throughout life; dissection of numerous specimens also shows that each kind has its own highly characteristic internal anatomy, which is a specific trait, and not a haphazard individual variability.

The colour in life is bright silvery, with a handsome purplish tinge on the sides, and a more or less evident golden lustre over all; 4 to 9 black cross bands descend from the back to the level of the pectoral; occasionally some may stop at the lateral line.

Preserved examples are yellowish brown to gray, with silvery reflections, the bands as in life; the fins may also be blackish on their outer part.

If we open a specimen we find the air bladder has about 15 pairs of intricately branched caeca on each side. Their character is well shown in Lele's figures. The long intestine is also much looped.

The commoner species, *Drepane punctata* (L.), has from 4 to 11 vertical rows of black spots down each side. The air bladder has but 2 pairs of caeca on each side, and the intestine is twisted into two knots, as well as being festooned in loops.

Drepane longimana occurs from the shores of Africa eastward to India and the Philippines, and southward to the coasts of tropical Australia.

GOBIIDAE.

Bathygobius fuscus (Rüppell).

1828. *Gobius fuscus*, Rüppell, *Atlas, Reise, Fische des Rothen Meeres*, p. 137.
1878. *Gobius soporator*, Day, *Fishes India*, p. 294, pl. lxiii, fig. 7.
1927. *Bathygobius fuscus*, Herre, *Gobies of the Philippines*, p. 113, pl. viii, fig. 2.

This is the commonest and most wide-spread of gobies, and is evidently very abundant at Maungmagan. 17 examples, 21 to 38 mm. in length, were taken from sand pools, and 102, from 14 to 46 mm. in length, were secured from rock pools. Among the last lot were 40 very pale specimens, without spots or marks on either fins or body. The amount of pigmentation varies greatly in this goby, specimens in shallow puddles with light-coloured sand or rock bottom, exposed to the full glare of the sun, being very pale. The species is recognizable by the more or less notched tongue, together with free upper pectoral rays, like fine threads of silk floss.

TRIACANTHIDAE.

Triacanthus indicus Regan.

1803. Russell, *Indian Fishes*, p. 14, pl. xxi.
1830. *Balistes biaculeatus*, Bennett, *Fishes of Ceylon*, pl. xv.
1847. *Triacanthus biaculeatus*, Cantor, *Malayan Fishes*, p. 360.
1854. *Triacanthus brevirostris*, Hollard, *Ann. Sci. Nat.* IV, p. 45.
1878. *Triacanthus brevirostris*, Day, *Fishes India*, p. 685, pl. clxxv, fig. 1.
1903. *Triacanthus indicus*, Regan, *Proc. Zool. Soc. London*, p. 184.

Four excellent specimens, 89 to 185 mm. in length, were secured by Prof. Meggitt. They all show very well the characters that separate this species from *T brevirostris* Schlegel, with which it has been confused. The postorbital part of the head is distinctly less in length than the diameter of the eye, and the snout is from 1·5 to 1·75 times in the head. In *T. brevirostris* the length of the postorbital part of the head equals or is more than the eye diameter, while the snout is half as long as the head.

This fish has been recorded from India and Burma in recent years as *T brevirostris*, a fish that probably does not occur west of the East Indies. *T. indicus* is known from Pinang and the Andamans to Ceylon and Karachi.