

ON SOME BATHYPELAGIC FISHES TAKEN FROM THE CONTINENTAL SLOPE OFF THE SOUTH WEST COAST OF INDIA*

By T. THOLASILINGAM, G. VENKATARAMAN AND K. N. KRISHNA KARTHA
Central Marine Fisheries Research Sub-Station, Ernakulam

INTRODUCTION

THE Indo-Nbrwegian Project exploratory fishing vessel M.F.V. *Kalava* carried out deep water trawling, between 160 and 200 fathoms, on the continental shelf, "off the Xeraia Coast during March/April 1963/ 24 species of deep sea fish", belonging to 23 genera and 19 families, from these catches are briefly described in the paper. Of these, 14 are new records for the Arabian Sea.

Only select references, pertaining to fish fauna of the Indian Ocean region, are cited in the paper.

The list of species described is given below. The asterisk mark denotes new record for the Arabian Sea.

List of Species

- *1. *Astronesthes lucifer* Gilbert
- , 2. *Polyipnus spinosus* Gunther.
- 3. *Argyropelecus affinis* Garman.
- #4. *Saurida undosquamis* (Richardson).
- *5. *Chlorophthalmus agassizi* Bonaparte.
- *6. *Chlorophthalmus bicornis* Norman.
- 7. *Neoscopeleus macrolepidotus* Johnson.
- *8. *Hymenocephalus lethonemus* Jordan & Gilbert.
- 9. *Malacocephalus laevis* (Lowe).
- *10. *Physiculus argyropastus* Alcock.
- *11. *Polymixia nobilis* Lowe
- 12. *Hoplostethus mediterraneus* Cuvier & Valenciennes.
- *13. *Myripristis kaianus* Gunther.

* Published with the permission of the Director, Central Marine Fisheries Research Institute.

14. *Bembrops caudimacula* Steindachner.
- *15. *Synagrops japonicus* (Steindachner & Dodarlein).
- *16. *Cubiceps natalensis* Gilchrist & von Bonde.
- *17. *Epinnula orientalis* Gilchrist & von Bonde.
- *18. *Rexea prometheoides* (Bleeker).
- *19. *Benthodesmus tenuis* (Gunther).
20. *Neobythites steaticus* Alcock.
- *21. *Hypopleuron caninum* Smith & Radcliffe.
22. *Lophiodes lugubris* (Alcock).
23. *Halieutea stellata* (Vahl).
24. *Chaunax pictus* Lowe.

DESCRIPTION

Family STOMIATIDAE

Astronesthes lucifer Gilbert (Fig. 1)

Astronesthes lucifer Gilbert, 1903. *Bull. U.S. Fish. Comm.*, 23, (2) : 605 ; Max Weber, 1913. *Siboga-Exp. Fische.*, 13 ; Weber & de Beaufort, 1913. *Fish. Indo-Austral. Archipel.*, 2 : 116-117, Fig. 42.

5 specimens : 105-125 mm. from off Alleppey (March 1963). Depth 180-185 fathoms.

D.11 ; A.18-19 ; P_x. 6 ; P₂. 7.

Height of body 6.3-6.6 and head 4.4-4.8. in standard length. Eye **4.2-4.4** in head. Body elongate, compressed, devoid of scales. Gape of mouth extends to $\frac{1}{2}$ of head. Chin with a long fleshy barbel with dilated tip extending upto middle of tip of pectoral. Ventrals midway between origin of anal and preopercle. Postocular luminous organ close to eye. Dorsal a little behind insertion of ventrals. Adipose fin opposite to anal. Intermaxilla with 4 unequally placed unequal teeth. A ventral series of 60-61 photophores from isthmus to caudal. A lateral series of 35-38 photophores from gill opening to anal. Sides of head and body greyish silvery, dark brownish above and below.

New distributional record for South West Coast of India.

∴ -General Distribution: Pacific near Hawaiian Islands ; Timor Sea; South West Coast of India, . - • . . -

Family STERNOPTYCHIDAE

Polyipnus spinosus Gunther (Fig. 2)

Polyipnus spinosus Gunther, 1887. *Challenger Rep.*, 22 : 170; Alcock, 1899. *Descr. Cat. Indian Deep Sea Fish.*, 137, Fig. 47 ; Weber & de Beaufort, 1913. *Fish. Indo-Austral. Archipel.*, 2 : 130-131. Fig. 47 ; Barnard, 1925. *Ann. S.A. Museum.*, 21, pt. 1 : 155 ; Smith, 1949. *The Sea Fishes of Southern Africa*, 107. Fig. 159; Misra, 1953. *Rec. Ind. Mus.*, 50 : 40.

4 specimens: 46-67 mm. from off AUeppay (April 1963). Depth 160-200 fathoms.

D.12 ; A.14-15 ; P., 11-12 ; P₈. 5.

Height of body 1.6-1.9 and head 2.7-3.2 in standard length. Eye 1.7-2.2 in head. Deep compressed body tapering evenly behind. The hind photophores in three distinct groups. A downward projecting spine present at the angle of opercle. A pair of backwardly projecting spines from head shield. Origin of dorsal nearer to base of caudal than tip of snout. Pelvics small, origin opposite to dorsal. Colour silvery. Back yellowish brown with a coppery shine on the sides of body.

General Distribution : Gulf of Guinea ; Seas of Malay Archipelago ; Sandwich Islands; Bay of Bengal and South West Coast of India (Arabian Sea).

Argyropelecus affinis Garman

Argyropelecus affinis Garman, 1899. *Mem. Mus. Comp. Zool.*, 24 : Regan, 1908. *Trans. Linn. Soc. Ser. 2, part 3, Zool*, 12 : 218. Barnard, 1925. *Ann. of S.A. museum*, 21 pt. 1 : 152 ; Smith, 1949. *The Sea Fishes of Southern Africa*, 107 ; Misra, 1953. *Rec. Ind. Mus.*, 50 : 400.

1 specimen: 76 mm. from off Purakkad (April 1953). Depth 180 fathoms. **D.VII**, 9 ; P., 7 ; A.7+6.

Height of body 2.2 and head 3.5 in standard length. Eye 2.1 in head. Deep compressed body, abruptly constricted behind pectoral tip and then tapers almost evenly. Photophores in a continuous series from anal to caudal. Eyes yellow, telescopic and projecting upwards. 19 photophores in lateral series between base of pectoral and origin of caudal. Origin of anal behind dorsal. Anal divided in the middle by a free interspace.

General Distribution : Atlantic Ocean ; Mediterranean ; Indo-Pacific ; Gulf of Aden ; Arabian Sea and Bay of Bengal.

Family SYNODONTIDAE

Saurida undosquamis (Richardson) (Fig. 3)

Saurus undosquamis Richardson, 1848. *Zool. Voy. Erebus and Terror*, Fishes, 138 ; Norman, 1935. *Proc. Zool. Soc. London*, 131 ; Smith, 1949. *The Sea Fishes of Southern Africa*, 113, Fig. 176 ; Misra, 1953. *Rec. Ind. Mus.*, 50 : 411.

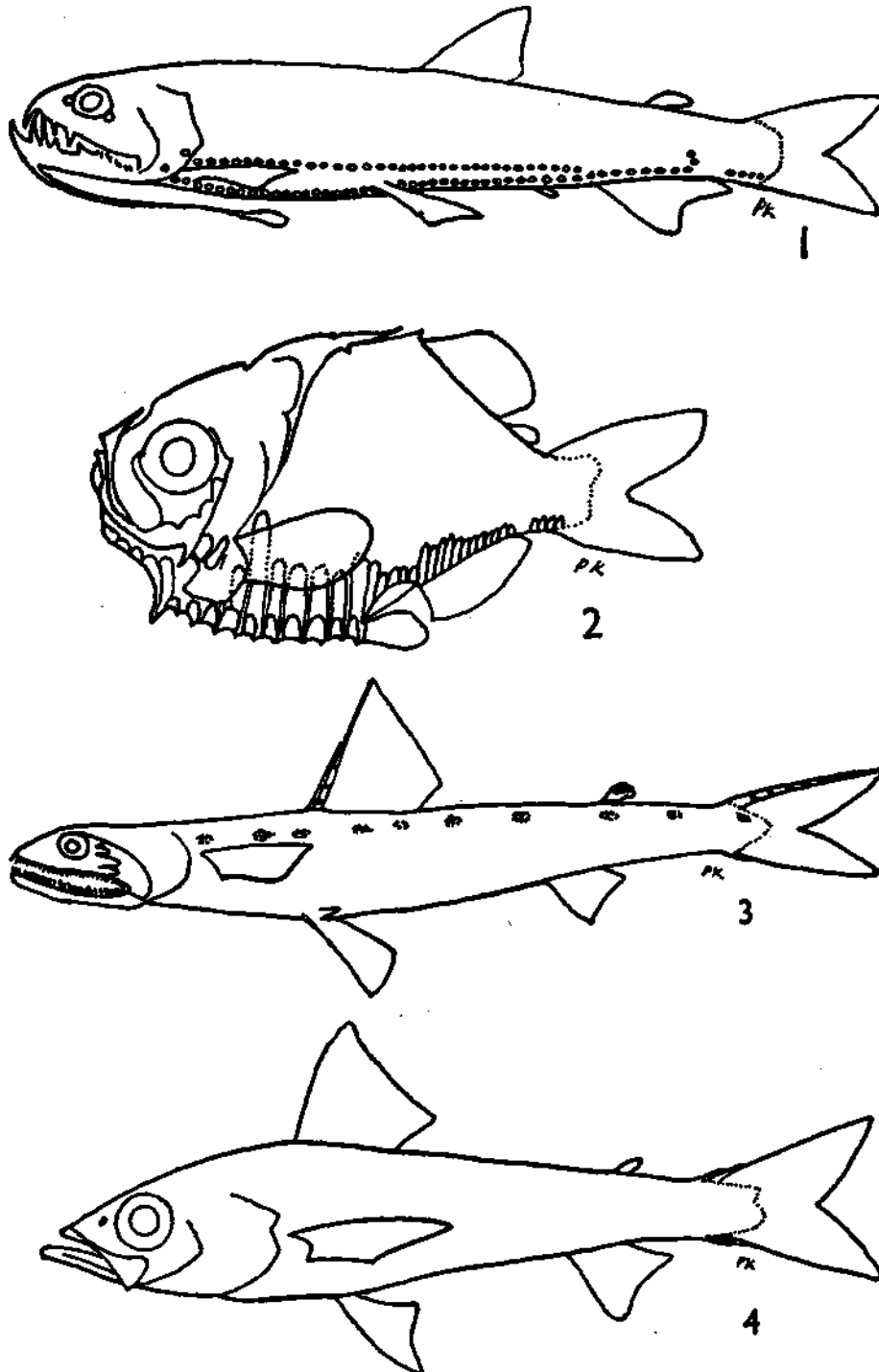


FIGURE 1. *Astronesthes lucifer* Gilb., 115 mm.
 ,, 2. *Polyipnus spinosus* Gunther, 67 mm.
 ,, 3. *Saurida undosquamis* (Richardson), 164 mm.
 ,, 4. *CMorophthalmus agassizi* Bonaparte, 157 nun.

2 specimens: 164 mm. and 222 mm. From off Alleppey (March 1963).
Depth 180 fathoms.

D.12;A.10-11;1\ 14-15 ; P₂. 9.

Height of body 7.5-8.9 and head 3.5-4.1 in standard length. Eye 4-4.9 in head. Greyish brown, light below. A series of dark blotches along side. Dark spots along front edge of dorsal and upper edge, of caudal. A dark spot on the adipose dorsal. Cylindrical body with depressed head. Large mouth with small pointed teeth, seen even when mouth is closed. Eye of moderate size, partly covered by an anterior and posterior adipose eyelid. Pectorals 1.6 to 1.7 in head. Two bands of teeth on each side of palate. Inner rays of ventrals not much longer than the outer ones. Caudal forked.

New distributional record for South West Coast of India.

General Distribution : East Africa and the Red Sea through Indian Ocean to Australia, Japan and the Pacific.

Family CHLOROPHTHALMIDAE

Chlorophthalmus agassizi Bonaparte (Fig. 4)

Chlorophthalmus agassizi Bonaparte, 1840. *Fauna Ital.* fasc, 28 : Gunther, 1887. *Challenger Rep.*, 22 : 192. *Chlorophthalmus punctatus* Barnard, 1925. *Ann. S.A. Museum* 21 : 230.

Chlorophthalmus agassizi Norman, 1939. *John Murray Exp.*, 7 : 24 ; Smith, 1949. *The Sea Fishes of Southern Africa*, U5, Fig. 184 ; Misra, 1953. *Rec. Ind. Mus.*, 50,pts. 3 & 4 : 415.

4 specimens: 157-201 mm. from off Ponnani (March 1963). "Depth j 170 fathoms.

D.11-12; A.10;P_x. 14-15 ; P₂. 9.

Height of body 3.8-4.9 and head 2.9-3.1 in standard length. Eye 3.5-4.4 in head. Elongate body with obliquely arranged scales. Maxillary extending below anterior part of eye, lower jaw terminating in a strongly projecting transverse, horizontal plate. Mouth large with small teeth on jaws. Adipose dorsal present. Origin of dorsal nearer to tip of snout than to adipose fin. Pelvic below dorsal. Caudal forked. Colour yellow brown with dark blotches. Eyes bright green.

New distributional record for South West Coast of India.

General Distribution : Mediterranean ; North East Coast of Africa ; Arabian Sea Bay of Bengal ; West Coast of Sumatra and Hawaiian Islands.

Chlorophthalmus bicornis Norman

Chlorophthalmus bicornis Norman, 1939. *John Murray Exp.*, 7 ; 25 ; Fowler, 1956. *Fishes of the Red Sea and Southern Arabia*, 95,

... 2:specimens':. 121-126 mm, from off Ponnani.iMarch 1963). Depth 170 fathoms.

D.11 ; A.10 ; P_x.16 ; P_e. 9.

. Height of body 5.2 to 5.3 and head 2.6 to 2.8 in standard length. Eye 3.0 to *3.k-in head. Lower jaw terminates in a strongly projecting transverse horizontal plate, the corners of which are produced to form two strong teeth like processes. Origin of dorsal nearer to adipose fin than to tip of snout. Silver-grey with cross bars on the body.

New distributional record for South West Coast -of India.

General Distribution, .;x Gulf of Aden ; Arabian Sea.

Family NEOSCOPELIDAE-

Neoscopeleus macrolepidotus Johnson (Fig. 5)

Neoscopeleus macrolepidotus Johnson, 1863. *Proc. Zool. Soc. London*, 44.

Scopeleus macrolepidotus Gunther, 1887. *Challenger Rep.* 22 : 196.

Neoscopeleus macrolepidotus Alcock, 1899. *Des. Catal. Indian Deep Sea Fish.*, 164 ; Rggan,~1908. *Trans Linn. Soc. Ser. 2, pt. 3, Zool.*, 12 : 219, Weber & de Beaufort, 1913. *Fish. Indo-Austral. Archipel.*, 2 : 174-175, Fig. 67 ; Barnard, 1925. *Ann. S.A. Museum*, 21 : pt. 1, 246 ; Smith, 1949. *The Sea Fishes of Southern Africa*, 118, Fig. 190; Misra, 1953. *Rec. Ind. Mus.*, 50, pts. 3 & 4 :422.

6 specimens : 88-210 mm. from off Pormani (March 1963). Depth 170-180 fathoms.

D.13 ; A.12-13 ; P_{1#} 16 ; P₂. 8.

Height of body 4.3-4.8 and head 2.8-3.4 in standard length. Eye 3.9-4.9 in head. Elongate body with scales easily shed. Origin of anal far distant from the posterior end of dorsal. Bright photophores below each scale of the lower part of the body, not in defined groups. Three photophores in front of pectoral base. Caudal forked. Body silvery with pink sheen. Violet along photophores in the lower part. Fins pink in fresh specimens.

General Distribution: West Indies; Coast of Morocco ; Maldives ; South West Coast of India; Andamans ; West Coast of Sumatra and Malay Archipelago.

Family CORYPHAENOIDIDAE

Hymenocephalus lethonemus Jordan & Gilbert (Fig. 6)

i.\Hyni&iocephaius lethonemus'Jordan & Gilbert, 1904. *U.S. Fish. Comm.*, (1902) : 167 ; Weber, 1913. *Siboga Exp. Fische.*, 167 ; Weber & de Beaufort, 1929. *Fish. Indo-Austral. Archipel.*, 5 : 60-61.

2 specimens: 83-134 mm. from off Alleppey (March 1963). Depth 180-185 fathoms.

D.II, IOJP., 12;P. 8. 11.

Height of body 7.4-7.5 and head 5.4-5.9 in length with caudal. Eye 3.1-3.5 in head. Head and lower part of body and tail slightly silvery. Dorsal surface of

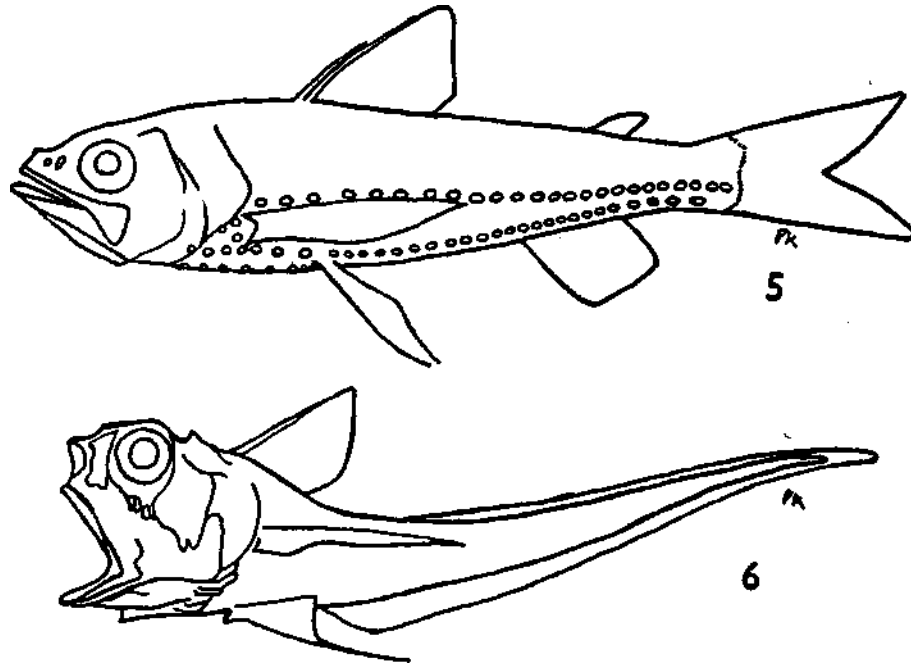


FIGURE 5. *Neoscopeleus macrolepidotus* Johnson, 149 mm.
„ 6. *Hymenocephalus lethonemus* Jordan & Gilbert, 134 mm.

body and tail light, demarcated by a longitudinal dotted line, Lower jaw, opercle and anterior part of abdomen dark.

Body slender and fragile, sharply compressed. Tail tapering to a filament. Head with wide grooves separated by thin delicate and papery bony septa and roofed over by very delicate fragile membranes. Bony crest of skull thin. Snout rounded with small projecting median tip. From this tip to the middle of the interorbital space a ridge is continued which surpasses low supraorbital ridges. Mouth large, inferior and sub-terminal with minute teeth on jaws. 7 branchiostegal rays. No mandibular barbel.

New distributional record for South West Coast of India.

General Distribution : Arabian Sea ; Indonesia ; Philippine Islands ; **China** and seas of Japan.

Malacocephalus laevis (Lowe) (Fig. 7)

Macrurus laevis Lowe, 1843. *Proc. Zool. Soc. Lond.*, 92; Gunther, 1887. *Challenger Rep.*, 22 : 148.

Macrurus (Malacocephalus) laevis Alcock, 1899. *Descr. Cat. Indian Deep Sea Fish.*, 119.

Malacocephalus laevis Barnard, 1925. *Ann. S.A. Museum*, 21 : 344; Weber & de Beaufort, 1929. *JFM. Indo-Austral. Archipel.*, 5 : 62-63, Fig. 13; Norman, 1939. *John Murray Exp.*, 7 : 51; Smith, 1949. *The Sea Fishes of Southern Africa*, 134, Fig. 239.

5 specimens : 237-294 mm. from off Alleppey (April 1963). Depth 180-200 fathoms.

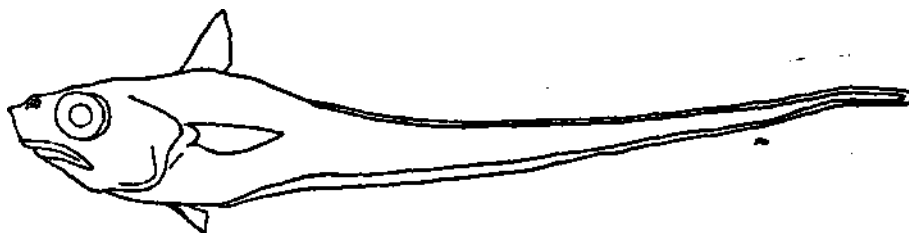


FIGURE 7. *Malacocephalus laevis* (Lowe), 260 mm.

D.12-13 ; P₁. 17-18 ; P₂.9.

Height of body 6.5-7.0 and head 5.1-5.3 in length with caudal. Eye 3.5-3.8 in head. Body elongate, tapering to tail, covered with minute rough scales. Head without ridges, covered by small rough scales. Snout blunt. 7 branchiostegal rays. Mouth wide, upper jaw reaching hind border of eye. Mandibular barbel present. Anus lies at the end of an oval naked area in the middle of the distance between the base of pelvic and origin of anal. First dorsal, pectorals, ventrals and belly blackish, the last with silvery gloss.

General Distribution : Atlantic and Indo-Pacific.

Family GADIDAE

Physiculus argyropastus Alcock.

Physiculus argyropastus Alcock, 1893. *Jour. As. Soc. Bengal*, 62, (2) : 489; Munro, 1955. *The Marine and Fresh Water Fishes of Ceylon*, 76; Fowler, 1956. *Fishes of Red Sea and South Arabian Region*, 156.

2 specimens : 193 & 201 mm. from off Alleppey (April 1963). Depth 180-200 fathoms.

D.9+55-60 ; A.57-60 ; P..20-21; P_a. 6.

Height of body 5.7-5.9 and head 3.6-3.8 in standard length. Eye 4.4-4.5 in head. Elongate body with small scales. Inconspicuous barbel on chin. Two dorsal fins. Caudal distinct from dorsal and anal. Snout broad. Mouth⁷, terminal, with minute teeth on both jaws. Ventral 6, prolonged ray reaches sixth or seventh anal ray. Colour pinkish brown, with silvery sheen. Belly, throat and gill membranes dark violet. *

New distributional record for the South West Coast of India.

' *General Distribution* : Gulf of Oman ; South West Coast of India ; Gulf of Marmar and Bay of Bengal.

, Family POLYMIXIIDAE

Polymixia nobilis Lowe (Fig. 8)

Polymixia nobilis Lowe, 1838. *Cambr. Phil. Trans.*, 6 : 198 ; Alcock, 1891. *Ann.-Mag; Nat. Hist.* ; Barnard, 1925. *Ann. S.A. Museum*, 21, pt. 1 : 359 ; Weber and de Beaufort, 1929;- *Fish. Indp^ustral^Afchipel.*, 5:215 ; Smith, 1949. *The Sea Fishes of Southern-* 4/«e% 1497Fig. 283. ~

8 specimens: 127-173 mm. from off Ttteppey- (March 1963). Depth 180 fathoms.

D.V, 32-34 ; A.IV, 1345'•; P/. 14-15-;'p;-; 7. '

Height of body 2.6-2.8 and head 2.5-2.8 in standard length. Eye 3-3.2 in head. Body with conspicuous scales. Mouth large, inferior, maxillary reaching beyond posterior part of eye. Head length almost equal to height. Chin with a pair of well developed barbels. Tail forked. Colour brown above and light below, Opercle and tip of dorsal darker.

New distributional record for the South West Coast of India.

General Distribution: Tropical and sub-tropical Atlantic; Indian Ocean, and Japan.

Family TRACHICHTHYIDAE

Hoplostethus mediterraneus Cuvier & Valenciennes

Hoplostethus mediterraneus Cuvier & Valenciennes, 1829. *Hist. Nat. Poiss.*, 4 : 469 ; Gunther, 1887. *Challenger Rep.*, 22 : 21 ; Alcock, 1899. *Cat. Ind. Deep Sea Fish.*, 34 ; Barnard, 1925. *Ann. S.A. Museum* 21, 362 ; Weber and de Beaufort., 1929. *Fish. Indo-Austral. Archipel.*, 5 : 217, Fig. 59 ; Smith, 1949. *The Sea Fishes of Southern Africa*, 151, Fig. 288 ; Munro, 1955. *The Marine, and Fresh Water Fishes of Ceylon*, 86.

• 5 specimens : 80-125 mm. from off Alleppey (March 1963). Depth 180-185 fathoms.

D.VI, 12-14 ; A.III, 9-10 ; P_{1#} 1» 17 ; P₁¹. 1., 6.

Height of body 2.1-2.3 and head 2.1-2.3 in standard length. Eye 2.9-3.3, in head. Body deep and compressed with rough scales. Head large, compressed* and with thin surface bones bearing bony ridges bordering mucous cavities. Mouth large and oblique. Eyes large. Scutes along belly between pectorals and anus. A flat spine above operculum and a larger spine at lower angle of pre-operculum. Silvery with rosy sheen. Fins reddish.

General Distribution : Atlantic ; Mediterranean ; Indo-Pacific and JapaW.

Family HOLOCENTRIDAE

Myripristis kaianus Gunther

Myripristis kaianus Gunther, 1880. *Challenger Rep. Zool.*, 1, Part VI, 39 ; Weber & de Beaufort, 1929. *Fish. Indo-Austral. Archipel*, 5 : 253.

2 specimens : 195 and 176 mm. from off Alleppey (April, 1963). Depth from 180-200 fathoms.

D.XI+I, 13 ; A.IV, 11 ; P_y 16-17 ; P₂.1,7.

Height of body 2.2-2.3 and head 2.3 in standard length. Eye 2.9-3.0 in head. Rather compressed body with highly serrated scales. Caudal peduncle slender. Eyes large; interorbital half of eye. Opercular spine strong and of moderate length. The third anal spine much larger and stronger than fourth. Colour reddish pink". Longitudinal silvery bands along each series of scales.

Gunther, in his description of the species observed that the height of body to be J of the standard length whereas in our specimens it was found to be slightly" less. He also mentions that the scales above the lateral line have acute long spines.; In our specimens, however, the spines on the scales are similar above and below the lateral line. Two small forward bony projections on either side of the pre-orbital have also been noticed in our specimens.

New distributional record for the South West Coast of India.

General Distribution : Kei Islands ; South West Coast of India.

Family BEMBROPSIDAE

Bembrops caudimacula Steindachner

Bembrops caudimacula Steindachner, 1877. *Sitzb. Akad. Wiss. Wien.*, 64 : 212 ; Alcock, 1896. *Jour. As. Soc. Bengal*, 65 : 2 ; Alcock, 1900. *Must. Zool. Investigator*, 7 : Smith, 1949. *The Sea Fishes of Southern Africa*, 178, Fig. 383a ; Munro, 1955. *The Marine and Fresh Water Fishes of Ceylon*, 199. "

4 specimens: 193-216 mm. from off Alleppey (March 1963). Depth 180 fathoms.

--: D.VJ, 14 ; A. 16> P[^] 26-27 ; E.,. 6.

Height of body 7.5-8.1 and head 2.5-2.6 in standard length. Eye 3.4-4.00 in head. Elongate body with moderate scales. Head depressed. Eyes large, dorsal, close together. Mouth large. Lower jaw projecting. A flap of skin at the end of maxilla. Fine teeth in a knob on each side of the apex of the upper jaw, also on vomer and palatines. Caudal truncate. Colour brownish yellow. Deep yellow along side. Dusky spots over the body.

General Distribution : Indian Ocean ; Gulf of Mannar.

Family APOGONIDAE

Synagrops japonicus (Steindachner & Doderlein) (Fig. 9)

Melanostoma japonicum Steindachner and Doderlein, 1883. *Denks. Akad. Wiss. Wien.*, 48 : 5.

Synagrops japonicus Gunther, 1887. *Challenger Rep.*, 22: 16; Norman, 1939. *John Murray Exp.*, 7 : 60 ; Smith, 1949. *The Sea Fishes of Southern Africa*, 205, Fig. 473.

8 specimens: 75-155 mm. from off Alleppey (March 1963). Depth 180 fathoms.

D.IX+I, 10 ; A.II, 8 ; P₁. 15 ; P₈. 1, 5.

Height of body 3.6-4.2 and head 2.8-3.1 in standard length. Eye 2.9-3.1 in head. Body rather elongate with scales easily shed. Two dorsal fins. Mouth large with two distinct canines in adults. Eyes fairly large with interorbital less than eye. The mouth extends to below the middle of eye, with a somewhat projecting lower jaw. Dark brown in adults. Young ones are dull coloured.

New distributional record for the South West Coast of India.

General Distribution : East coast of Africa ; Maldives; South West Coast of India ; Philippines; Japan and Indonesia.

Family STROMATEIDAE

Cubiceps natalensis Gilchrist & von Bonde (Fig. 10)

Cubiceps natalensis Gilchrist and von Bonde, 1924. *Fisheries & Mar. Bio. Surv. Rep.*, 3, *Spec. Rep.*, 7 ; Barnard, 1927. *Ann. S.A. Museum*, 21, pt. 2 : 892. Smith, 1949. *The Sea Fishes of Southern Africa*, 308, Fig. 858.

6 specimens : 127-170 mm. from off Alleppey (March 1963). Depth 180 fathoms.

D.XI+I, 20 ; A.III, 18-21 ; P_x. 18 ; P_a. 7.

Height of body 3.0-3.2 and head 2.7-3.1 in standard length. Eye 3.0-3.2 in head. Body rather elongate with small conspicuous scales. Lateral line pro-

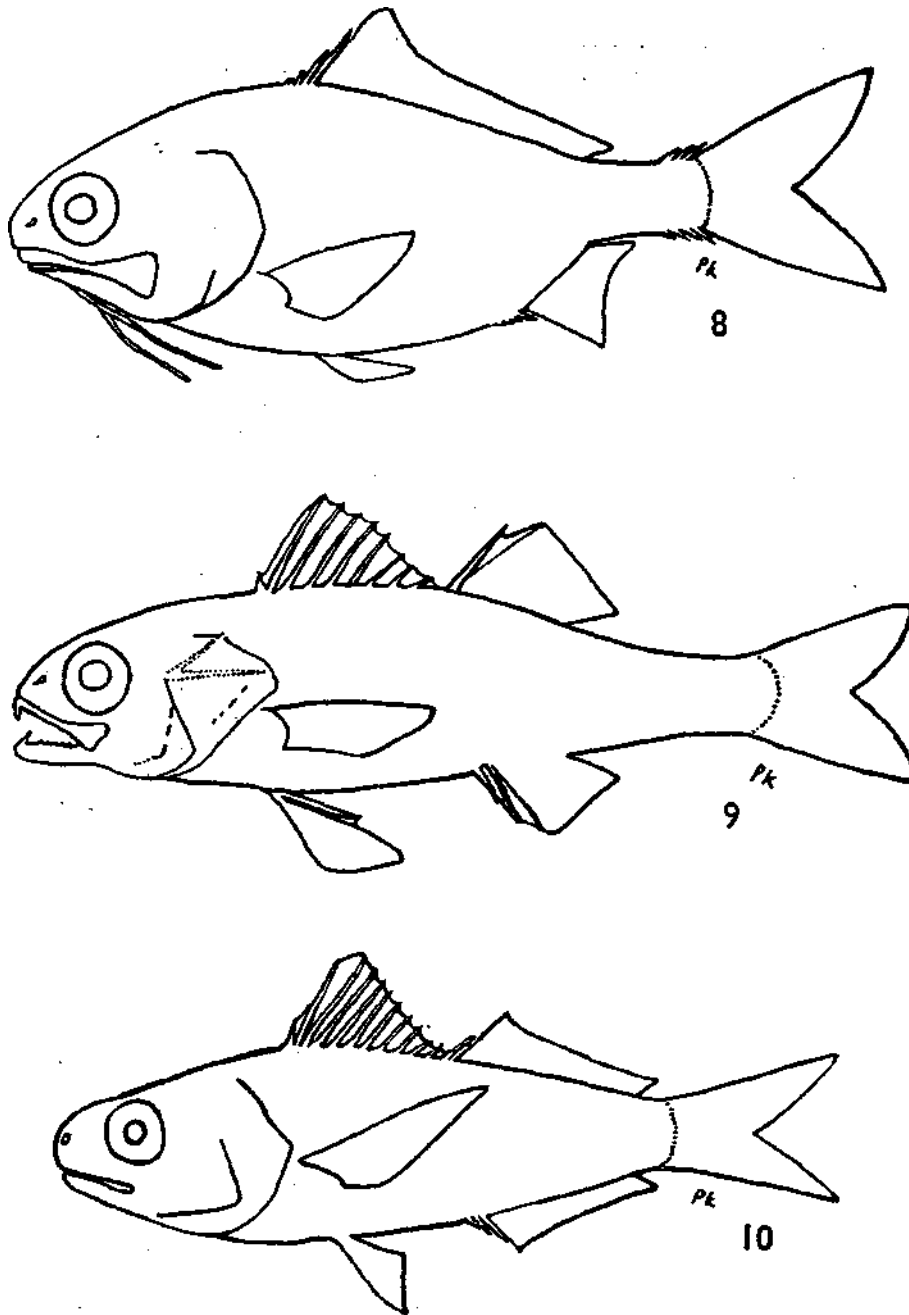


FIGURE 8. *Polymixia nobilis* Lowe, 150 mm.
,, 9. *Synogrops japonicus* Steindachner, 154 mm.
,, 10. *Cubiceps natalensis* Gilchrist & von Bonde, 134 mm.

minent. Pelvics inserted well behind pectoral base. Teeth present on tongue and vomer. Pectoral a little shorter than head. Yellowish brown, hind margin of opercle and root of pectoral purplish. Spinous dorsal black. Most of the scales with dark centres.

New distributional record for South West Coast of India.

General Distribution : Indian Ocean; off Natal and South West Coast of India.

Family GEMPYLIDAE

Epinnula orientalis Gilchrist & von Bonde

Epinnula orientalis Gilchrist & von Bonde, 1924. *Fisheries & Mar. Bio. Surv. Rep.*, 3, *Spec. Rep.* 7; Barnard, 1925. *Ann. S.A. Museum*, 21 : 790; Smith, 1949. *The Sea Fishes of Southern Africa*, 311, Fig. 865.

4 specimens : 194-242 mm. from off Alleppey (March 1963). Depth 180 fathoms.

D.XV+II, 19-20; A.III, 19-20; $\frac{P}{A}$, 13-14; P₂. 1, 5.

Height of body 4.3-4.5 and head 3.3-3.5 in standard length. Eye 5.1-5.6 in head. Body fairly elongate and rather compressed with two lateral lines; second lateral line near ventral profile. Scales minute. Mouth large with powerful canines. First dorsal is depressible in a groove. Soft dorsal shorter than spinous dorsal, with no finlets. Caudal forked. Colour dark brown.

New distributional record for South West Coast of India. Also recorded off Cannanore (by K. V. Narayana Rao, unpublished).

General Distribution : Indian Ocean; off Natal Coast Delagoa Bay and South West Coast of India.

Rexea prometheoides (Bleeker)

Thyrsites prometheoides Bleeker, 1856. *Acta. Soc. Sc. Indo. Neerl.*, 1 : 42.

Thyrsites bengalensis Alcock, 1894. *Jour. As. Soc. Bengal*, 63 : 117.

Thyrsites (Promethichthys) bengalensis Alcock, 1899. *Descri. cat. Indian Deep Sea Fish.*, 42.

Rexea prometheoides de Beaufort & Chapman, 1951. *Fish. Indo-Austral. Archipel*, 9 : 201-202, Fig. 33; Munro, 1955. *The Marine and Fresh Water Fishes of Ceylon*, 2\1.

7 specimens; 124-287 mm. from off Alleppey (March 1963). Depth 180 fathoms.

D.XVIII + II, 11-16 + 2: A.II, 11-15 + 2; P., 14; P., 1.

Height of body 6.0-6.8 and head 3.0-3.3 in standard length. Eye 3.7-4.2 in head. Body elongate and compressed, with minute scales. Younger ones have two distinct lateral lines while in the adults the upper one is absent. Mouth large with powerful canines. Lower jaw strong and prominent, bearing two anterior canines which remain outside when mouth is closed. The eyes are large and interorbital concave. The soft dorsal is much shorter than spinous; the latter is depressible in a groove. Two detached finlets each on dorsal and anal. Caudal forked. Two anal spines are noticeable in larger specimens, but in some of the smaller ones the first anal spine is not externally visible. Ventrals very minute and rudimentary. Young ones silvery, back brownish. Adults dark brown.

New distributional record for South West Coast of India.

General Distribution : Makassar Straits ; New Zealand ; Bay of Bengal ; Ceylon and South West Coast of India.

Family LEPIDOPIDAE

Benthodesmus tenuis (Gunther) (Fig. 11)

Lepidopus tenuis Gunther, 1877. *Ann. Mag. Nat. Hist.*, (4) 20 : 437.

Benthodesmus tenuis Smith, 1949. *The Sea Fishes of Southern Africa*, 312, Fig. 868.

Lepidopus tenuis de Beaufort & Chapman, 1951. *Fish, Indo-Austral. Archipel.*, 9:188-189, Fig. 30.

Benthodesmus tenuis Tucker, 1956. *Bull. Brit. Mus. (Nat. Hist.) Zool.*, 4 : 89 ; James, 1959. *J. Mar. Biol. Ass. India*, 1(2) : 139-142.

10 specimens : 350-542 mm. from off Alleppey (March 1963). Depth 180 fathoms.

Height of body 20.0-26.0 and head 5.8-6.2 in standard length. Eye 4.8-5.5 in head. Elongate compressed band-like body without scales. Caudal distinct. Dorsal and anal fins feeble, but long. Pelvics minute and rudimentary next to wanting, inserted below anterior margin of pectoral base. Pectorals slender. Mouth large with powerful fangs. Lower jaw prominent. A series of large teeth on both jaws. Interorbital less than eye. Lateral line strongly developed. Colour bright silvery.

New distributional record for South West Coast of India.

General Distribution : Indian Ocean ; off North East Coast of Africa ; and South West Coast of India ; Pacific Ocean, off Japan;

Family BROTLULIDAE

Neobythites steaticus Alcock (Fig. 12)

Neobythites steaticus Alcock, 1893. *Jour. As. Soc. Bengal*, 62 : 181 ; Alcock, 1899. *Des. Cat. Indian Deep Sea Fish.*, 82.

Neobythites malayanus Weber, 1913. *Siboga Exp. Fische.*, 544.

Neobythites steaticus Norman, 1939. *John Murray Exp. Sci. Rep.*, 7 : 76 ; de Beaufort & Chapman, 1951. *Fish. Indo-Austral. Archipel.*, 9 : 417-418, Fig. 67.

9 specimens : 135-247 mm. from off Alleppey (March 1963). Depth 180 fathoms.

- D.90-95 ; A.75-80 ; P., 26-27 ; P_a. 2.

Height of body 5.0-5.5 and head 4.2-4.3 in length with caudal. Eye 4.0-4.5 in head. Body elongate and rather compressed, tapering posteriorly. Caudal

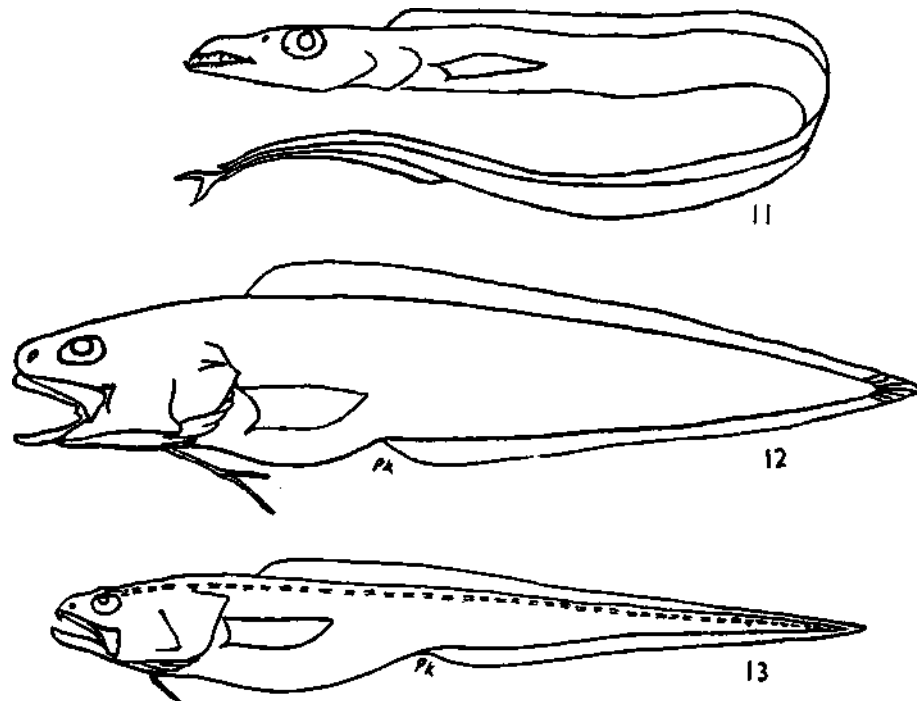


FIGURE 11. *Benthodesmus tenuis* Gwaih.tr, 380 mm.
,, 12. *Neobythites steaticus* Alcock, 223 mm.
,, 13. *Hypopleuron caninum* Smith & Radcliffe, 390 mm.

confluent with dorsal and anal. Head and body covered with small scales. Lateral line conspicuous, ending in some distance of caudal. Snout rounded. Mouth large with teeth in villiform bands on jaws, vomer and palatine. A single oper-

cular spine. Ventrals bifid, shorter than head. Eyes oval. Light brown with dark brown blotches over fins, head and body.

General Distribution : Indian Ocean ; South West Coast of India, Bay of Bengal and Malay Archipelago.

Hypopleuron caninum Smith & Radcliffe (Fig. 13)

Hypopleuron caninum Smith & Radcliffe, 1913. *Proc. U.S. Nat. Mus.*, **44** : 165 ; de Beaufort & Chapman, 1951. *Fish. Indo-Austral. Archipel.* 9 : **441-442**, Fig. 81.

6 specimens : 372-450 mm. off Ponnani (March 1963). Depth 160 fathoms.

P₁.24; P₂. 1.

Depth of body 8.5-9.3 and head 5.3-5.5 in length with caudal. Eye 5.3-6.1 in head.

Body slender and elongate tapering posteriorly to tail. Body covered with small scales. Head elongate and depressed. Mouth large and oblique, with in-curved canines on either side of symphysis of upper jaw. Mandibular teeth in narrow bands. Teeth on vomer in a fit-shaped patch. Ventrals very small. Lateral line broad and prominent anteriorly, narrowing posteriorly and disappearing on tail. The fish is very slimy and difficult to handle in fresh condition. Back and sides grey. The dorsal and anal fins with black margin which widens posteriorly to include the entire fin.

New distributional record for South West Coast of India.

General Distribution : Philippines and South West Coast of India.

Family LOPHIIDAE

Lophiodes Iugubris (Alcock)

Lophius Iugubris Alcock, 1894. *Jour. As. Soc. Bengal*, 63 : 2, 118 ; Alcock, 1895. *Must. Zool. Investigator*, 3.

Lophiodes Iugubris Munro, 1955. *The Marine and Fresh Water Fishes of Ceylon*, 286.

8 specimens: 110-200 mm. from off Alleppey (March 1963). Depth 180-185 fathoms.

D.III + I, 7-9 ; A.6 ; P[^] 15-17 ; P₂. 1.5.

Flabby fish with greatly depressed head. The mouth is enormous with large depressible canines. Cephalic disc sub-circular, width of which is half length without caudal. Knobs and spine scattered in the cephalic disc. Eyes dorsal, 6 in head. Gill opening extends to above and below pectoral base. Skin loose and granular. Black to slaty grey.

General Distribution : Ceylon and South West Coast of India.

Family OGCOEPHALIDAE

Halieutea stellata (Vahl)

Lophius stellatus Vahl, 1797. *Skr. Nat. Kjob.*, 4 : 214.

Halieutaea stellata, Day, 1878. *Fish. India*, 111; Munro, 1955.

The Marine and Fresh Water Fishes of Ceylon, 287.

4 specimens: 93-115 mm. from off Alleppey (March 1963). Depth 180-185 fathoms.

D.4; A.4; P₁. 13-14; P₂. I, 5.

Body flattened, disc shaped with slender tapering tail. Illicium with trefoil extremity. Gill openings above axilla in about the middle of total length. Body covered with distinctly placed spines, each with four or more roots. Colour pinkish.

General Distribution : Indian and Pacific Oceans.

Family CHAUNACIDAE

Chaunax picrus Lowe

Chaunax pictus Lowe, 1849. *Trans. Zool. Soc.*, 3 : 339 Gunther, 1887. *Challenger Rep.*, 22 : 58; Alcock, 1899. *Des. Cat. Indian Deep Sea Fish.*, 58; Barnard, 1927. *Ann. S.A. Museum* 21; Norman, 1939. *John Murray Exp.*, 7 : 112; Smith, 1949. *The Sea Fishes of Southern Africa*, 430; Munro, 1955. *The Marine and Fresh Water Fishes of Ceylon*, 287.

10 specimens: 51-156 mm. from off Alleppey (March 1963). Depth 180-185 fathoms.

D.I, 10-11; A.6-7; P₁. 11-12.

Skin very rough and flabby. Illicium very short, pediculate. Mouth large, almost vertical and with small teeth. Gill openings small, situated behind pectoral base. Muciferous canals very distinct, visible externally as chain of pits. Bright orange above, rosy on sides.

General Distribution : Atlantic and Indo-Pacific.

SUMMARY

24 species of deep sea fish collected from exploratory trawling operations on the continental slope off the South-west coast of India have been briefly described. 14 of these are new records for the Arabian Sea.

ACKNOWLEDGEMENTS

The authors express their sincere thanks to Dr. S. Jones, Director, Central Marine Fisheries Research Institute for critical appraisal of the work and to Dr. E.G. Silas for his valuable suggestions. Our thanks are also due to the Indo-Norwegian Project authorities, Officers & crew of M.F.V. KALAVA and Shri P. Karunakaran Nair for their help in the collection of the material.