

NEW RECORDS OF FISHES FROM THE SEAS AROUND INDIA—
PART IV

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IN the first three parts of the present series which have appeared in this Journal [6(2) 1964 ; 285-308, 7(1), 1965 ; 108-123 and 7(2), 1965 ; 381-400] 66 species of fishes belonging to 22 genera from the Laccadives have been described as new records from the seas around India. In this paper 20 species belonging to 15 families not hitherto recorded from the Central Indian Ocean are described and figured. Of these eight species are new records for the Indian Ocean.

Reference is invited to fig. 28 in part I of the series for information regarding the localities of collection mentioned in the text.

Family : MYCTOPHIDAE

1. *Myctophum aurolaternatum* Garman (Fig. 1)

Myctophum aurolaternatum Garman, 1899, *Mem. Mus. Comp. Zool. Harvard*, 24 : 264, Pl. 55, Fig. 3.

Myctophum (Myctophum) aurolineatus Bolin, 1939, *Stanford Ichth. Bull.*, 1 : 108, Fig. 10.

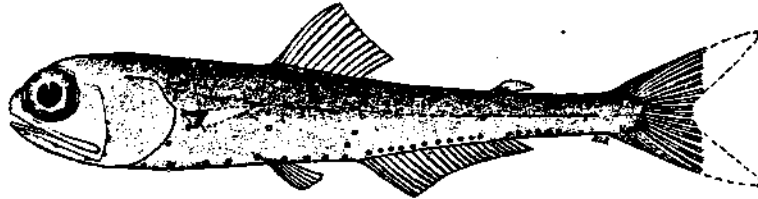


FIG. 1. *Myctophum aurolaternatum* Garman, 39 mm.

D. 13 ; A. 23 ; P. 13 ; V. 8. Ll. 44. Gr. 5+1+11.

Head 3.6 and depth of body 5.2, both in standard length. Eye 3.1 in head and 0.35 in bluntly rounded snout. End of maxillary slightly dilated, reaching 1/3 diameter of eye behind eye. Dorsal origin midway between hind border of eye and origin of adipose fin and behind insertion of ventral. Ventral origin nearer to hind border of operculum than to origin of anal fin. Anal origin slightly behind a level from the end of dorsal base. Scales cycloid, deciduous. Photophores : an antorbital at the lower anterior margin of eye ; 2 operculars, the dorsal one below level of the lower margin of eye, the lower smaller one opposite the hind end of upper jaw ; 3 branchiostegals ; PLO midway between the lateral line and insertion of pectoral ; 2 PVO, the posterior before the lower base of pectoral, the anterior above

the second PO ; VLO slightly behind the insertion of ventral, between ventral and lateral line ; 5 PO between isthmus and ventral, the third and fourth closer than others ; 4 VO in a straight series between ventral and vent ; the anterior group of 11 AO above the first $\frac{3}{4}$ of anal fin, the posterior group of 6 begins above the last anal ray ; 2 Prc obliquely behind each other ; 3 SAO in almost a straight line, the first above and slightly behind fourth VO and the uppermost near lateral line above insertion of anal ; POL near lateral line slightly behind the last organ of the anterior group of AO. Colour : Brownish on back, slightly lighter below.

Material : Laccadive Sea, Long. 74° 10'E., Lat. 10°03'N., 1 specimen, 39 mm.*

Distribution : Previously recorded from off the coast of Panama and Gulf of California in the Eastern Pacific. This is the first record of this species from the Indian Ocean.

2. *Myctophum evermanni* Gilbert (Fig. 2)

Myctophum evermanni Gilbert, 1905, *Bull. U.S. Fish. Comm.*, 23 : 597 ; Weber and de Beaufort, 1913, *Fishes Indo-Australian Archipelago*, 2 : 162, Fig. 63.

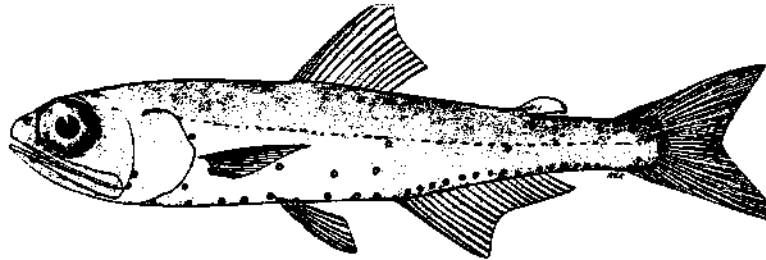


FIG. 2. *Myctophum evermanni* Gilbert, 58 mm.

D. 13-15 ; A. 20-21 ; P. 14-15 ; V. 8. Ll. 38-39. Gr. 5+1+13.

Head 3.2-3.5 in standard length, 4.1-4.4 in total length. Depth of body 4.4-4.8 in standard length, 5.5-6 in total length. Eye 3.1-3.5 in head and 0.4-0.5 in snout. End of maxillary slightly dilated, reaching $\frac{1}{2}$ eye diameter behind eye. Pectoral equal to postorbital length of head and about $\frac{1}{2}$ eye diameter together. Origin of dorsal slightly behind a level from the origin of ventral and midway between hind border of eye and adipose fin. Origin of ventral nearer to operculum than to insertion of anal. Anal origin opposite to or slightly behind last ray of dorsal. Scales cycloid, deciduous. Photophores : A dorsal and ventral antorbital ; 2 operculars ; 3 branchiostegals ; 2 PVO ; PLO between lateral line and origin of pectoral ; VLO between lateral line and base of ventral ; 5 PO equidistant between isthmus and ventral ; 4 VO equidistant between ventral and vent ; 7-9 organs in the anterior group of AO above anterior $\frac{3}{4}$ of anal, posterior AO of 4-6, the first one of which is above the last ray of anal ; 2 Prc, the posterior slightly at a higher level ; 3 SAO sharply angulate, the first above or slightly behind the second VO and slightly lower than the VLO, the second above the fourth VO, the third just below the lateral line in a vertical through insertion of anal ; one Pol just below the lateral line above the last AO

* Unless otherwise stated, length mentioned is standard except for Carapidae.

of the anterior group. Colour : Brownish on back becoming lighter below ; sides of head whitish.

Material : Laccadive Sea, Long. 73°10'E., Lat. 10°05'N., 1 specimen, 58 mm. Long. 74°10'E., Lat. 10°03'N., 9 specimens, 39 to 70 mm. Long. 75°03'E., Lat. 10°24'N., 4 specimens, 24 to 57 mm.

Distribution : Previously recorded from Halmahera Sea, Banda Sea, Manipa Strait, around Hawaiian Islands and near Japan in the Pacific. This is the first record of this species from the Indian Ocean.

Family : SPHYRAENIDAE

3. *Sphyraena novaehollandiae* Günther (Fig. 3)

Sphyraena novae-hollandiae Günther, 1860, *Cat. Fishes British Mus.*, 2 : 335.

Australuzza novaehollandiae Smith, 1956, *Ichth. Bull.*, 3 : Fig. 1.

? *Sphyraena helleri* Jenkins, 1901, *Bull. U.S. Bur. Fish.*, 19 : 387, Fig. 1 ; Schultz, 1953, *Bull. U.S. Nat. Mus.*, 202(1) : 287.

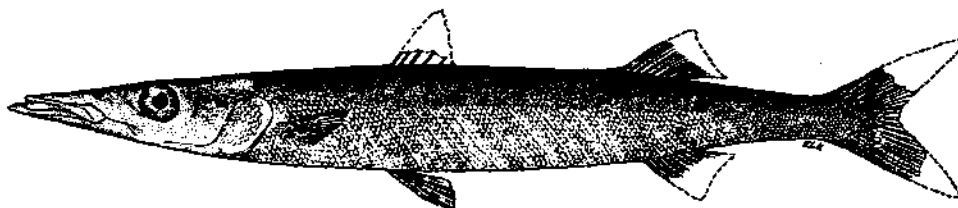


FIG. 3. *Sphyraena novaehollandiae* Günther, 425 mm.

D₁. V ; D₂. I, 9 ; A. II, 8 ; P. ii, 11 ; V. I, 5. Ll. 130 ; Ltr. 14+1+21.

Head 3.1-3.2 in standard length. Depth of body 7.7-8 in standard length. Eye 5.6-6.2 in head, 2.6-2.8 in snout and 1.1 in almost flat interorbital space. Maxillaries reaching 3/4 eye diameter before eye, 2.8-2.9 in head. Lower jaw projecting with an elongate fleshy tip. Lower margin of preopercle somewhat rounded. An elongate gill raker at angle of first gill arch. First dorsal origin far behind tip of pectoral, slightly behind insertion of ventral and midway between hind border of eye and origin of soft dorsal. Base of second dorsal 2.8 in interdorsal distance. Ventral midway between eye and vent. Pectoral much shorter than postorbital length of head. Upper jaw with a single row of small teeth and a pair of canines on each side in front. Lower jaw with a backwardly directed symphyseal canine and a single row of vertically directed teeth behind, those posteriorly larger. Palatines with a series of 7-8 teeth ; those anteriorly slightly larger. Colour : Blackish on back, whitish or silvery below lateral line. Median fins slightly dusky.

Note : Schultz (1953) distinguished *helleri* from *novaehollandiae* mainly due to the absence of an elongated gill raker at the angle of the first gill arch in the latter. Smith (1956) reports that an elongate raker is present in *novaehollandiae* from Australia and considered the above two species as identical. He believes that a

specimen captured near the islands of northern Mozambique which he was not able to secure for detailed study was this species.

Material : Bangaram, 1 specimen, 143 mm. Minicoy, 1 specimen, 425 mm.

Distribution : Previously recorded from Australia, Honolulu and Marshall Islands in the Pacific. This is the first authentic record of this comparatively rare species from the Indian Ocean.

Family : ATHERINIDAE

4. *Allanetta barnesi* (Schultz) (Fig. 4)

Hypoatherina barnesi Schultz, 1953, *Bull. U.S. Nat. Mus.*, 202(1) : 304, Fig. 47.

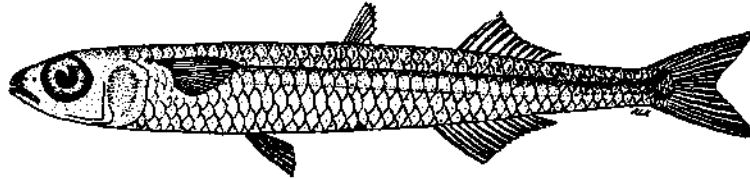


FIG. 4. *Allanetta barnesi* (Schultz), 48 mm.

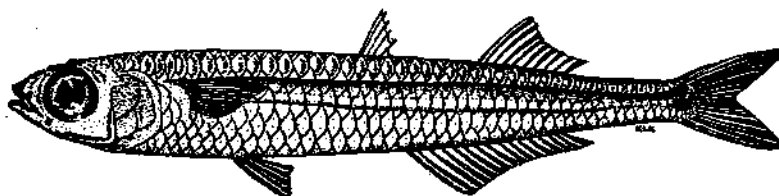
D_1 , VI-VII; D_2 , I, i, 8-9; A, I, i, 11-13; P, i, 13-14; V, I, 5. L.lat. 43-45; Ltr. 6. Gr. 4-5+1+16-18.

Body slightly compressed, snout bluntly conical. Head 4-4.4 in standard length, 4.8-5.3 in total length. Depth of body 5.8-6.7 in standard length, 7-8 in total length. Eye 2.7-3 in head, about 0.6 in snout and equal to interorbital space. Maxillary reaches a vertical from front of eye. Median premaxillary process short, scarcely reaching above front margin of eye. Lateral process present on side of maxillary. Rami of mandibles distinctly elevated posteriorly. Hind border of preopercle with a concavity. Teeth minute in jaws, vomer and pterygoid. First dorsal origin nearer to base of caudal than to tip of snout and opposite to or slightly anterior to a vertical from vent. Vent 1 or 2 scales behind tip of ventrals. Pectoral 6.8-7.8 in total length. Scales thin, entire and deciduous. 17-18 predorsal scales. Colour : Translucent to slightly whitish with a broad silvery lateral band edged with dark above. Scale pockets on back with dusky edges ; tip of snout, occiput, lower lip and base of pectoral dusky. Fins hyaline.

Note : *Allanetta klunzingeri* Smith from the Western Indian Ocean appears to be closely related to this species. The main difference is in having I, i, 12-15 rays in the anal fin as against I, i, 11-13 in *A. barnesi*. The origin of first dorsal fin in the former is stated to be opposite to or slightly behind a vertical from vent.

Material : Agathi, 18 specimens, 34 to 50 mm. Bitra, 6 specimens, 38 to 45 mm. Kavarathi, 4 specimens, 33 to 46 mm. Minicoy, 7 specimens, 35 to 48 mm.

Distribution : Previously recorded only from the Marshall Islands in the Pacific. This is the first record from the Indian Ocean.

5. *Atherion africanus* Smith (Fig. 5)*Atherion africanus* Smith, 1965, *Ichth. Bull.*, 31 : 607, Fig. 2.FIG. 5. *Atherion africanus* Smith, 31 mm.

D₁. V; D₂. I, i, 8-9; A. I, i, 14-16; P. i, 9-11; V. I, 5. L. lat. 41-43; Ltr. 6.
Gr. 2-3+1+10-11.

Body fairly compressed, snout bluntly pointed. Head 4.3-4.6 in standard length, 5-5.4 in total length. Depth of body 5.7-6.2 in standard length, 6.7-7.4 in total length. Eye 2.8-3.1 in head, about 0.7 in snout and equal to or slightly less than interorbital space. Maxillary short, not reaching to below front margin of eye. The ascending premaxillary process short. Mandibles slightly elevated posteriorly. Hind margin of preopercle broadly concave. A single series of teeth in jaws and a few on vomer and pterygoid. Rows of spinules on snout, undersides of lower jaw, chin, preorbital, above the eye, interopercle and hind and lower border of preopercle. First dorsal origin midway between base of caudal and tip of snout. Vent below or slightly behind base of first dorsal and much nearer to insertion of anal than to tip of ventrals. Posterior edges of scales smooth. 16-18 predorsal scales. Colour: Pale whitish to translucent with a silvery lateral stripe which is dark spotted. Snout, chin and dorsal side of head and back with blackish spots. A row of black spots above base of anal and along lower side of caudal peduncle.

Note: According to Smith (1965) vomerine teeth are absent in this species. We find that this character is highly variable as a few minute teeth are present on the vomer in some specimens. This species appears to be nearest to *Atherion emylus* Jordan and Starks of the Pacific in all important characters and probably merits only subspecific rank of the same.

Material: Kalpeni, 11 specimens, 28 to 35 mm. Kavarathi, 13 specimens, 22 to 33 mm. Minicoy, 9 specimens, 22 to 34 mm.

Distribution: Previously known only from Zululand, Inhaca Island and Mozambique in the Western Indian Ocean.

Family: ANTHIIDAE

6. *Anthias cichlops* (Bleeker) (Fig. 6)*Serranus cichlops* Bleeker, 1853, *Nat. Tijds. Ned.-Ind.*, 4 : 245.*Anthias cichlops* Weber and de Beaufort, 1931, *Fishes Indo-Australian Archipelago*, 6 : 105.*Anthias taeniatus* Smith, 1961, *Ichth. Bull.*, 21 : 362, Fig. 1.

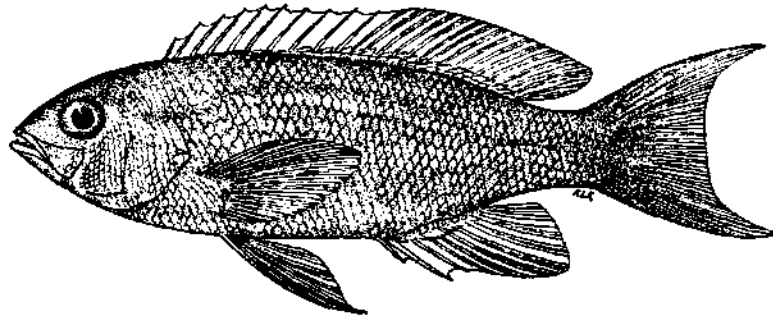


FIG. 6. *Anthias cichlops* (Bleeker), 68 mm.

D. X, 16; A. III, 7; P. ii, 17; V. I, 5. LL. 50; Ltr. 3+1+14; GR. 9+1+23.

Head 3.2 in standard length, 4.3 in total length. Depth of body 3 in standard length, 4.1 in total length. Eye 3.5 in head, 0.8 in snout and 1.1 in interorbital space. Maxillary reaching below middle of eye. Hind border and angle of preopercle serrated, that at angle larger and 3 points on lower margin near angle. Suboperculum and interoperculum finely serrated. Three opercular spines. Outer row of teeth in upper jaw slightly larger and with two short canines in front, inner row of teeth villiform; teeth in lower jaw small with an antero-lateral canine on each side and a pair of short canines in front; a triangular patch of teeth on vomer and a narrow band of teeth on palatines. Posterior dorsal spines subequal, slightly longer than anterior spines. Second anal spine slightly longer and stronger than the third. Pectoral equal to ventral, slightly shorter than head. Caudal lunate, lobes pointed. Colour of fresh specimen reddish with greenish tinge above, becoming yellowish below. Fins yellowish hyaline. Colour: Preserved specimen yellowish grey with three light stripes along the body, the first from above eye along the side, the second from behind the eye, slightly curves down and runs to the base of caudal and the third from below pectoral base to caudal peduncle.

Material: Minicoy, 1 specimen, 68 mm.

Distribution: Previously recorded from the Red Sea, Mozambique, Aldabra, Sumatra and the Philippines. This is the first record from the Central Indian Ocean.

7. *Anthias squamipinnis* (Peters) (Fig. 7)

Serranus (Anthias) squamipinnis Peters, 1855, *Monatsber. Akad. Wiss. Berlin*, 429.

Anthias squamipinnis Weber and de Beaufort, 1931, *Fishes Indo-Australian Archipelago*, 6: 104, Fig. 15; Smith, 1949, *Fishes of Southern Africa*: 201, Pl. 20, Fig. 459; Smith, 1961, *Ichth. Bull.*, 21: 362, Pl. 34, B, C and E.

D. X, 17; A. III, 7; P. ii, 15; V. I, 5. Ll. 40; Ltr. 3+1+15-16.
Gr. 9+1+24.

Head 3.1-3.3 in standard length, 4.3-4.6 in total length. Depth of body 2.8-2.9 in standard length, 3.9-4.1 in total length. Eye 3.3-3.5 in head, 0.7 in snout and 1-1.1 in interorbital space. Maxillary reaching to below hind border of iris.

Posterior border and angle of preoperculum serrated, lower margin smooth. Subopercle and interopercle denticulate. Operculum with 2 spines. Outer row of

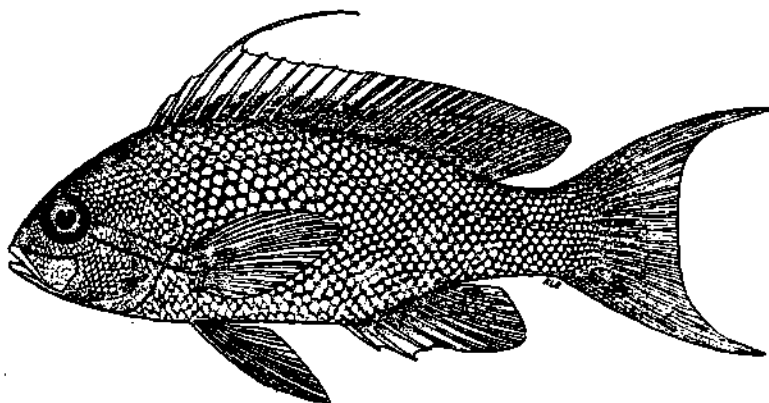


FIG. 7. *Anthias squamipinnis* (Peters), 63 mm.

teeth in upper jaw conical with two short canines in front, inner row of teeth small with two small canines in front; a single row of small teeth in lower jaw with a strong antero-lateral canine on each side and a pair of canines near symphysis. Small patch of teeth on vomer and palatines. First dorsal spine shorter than second and half as long as last and third spine produced into a filament. Second and third anal spines subequal. Pectoral slightly shorter than head. Caudal lunate, outer rays produced with age. Colour: Yellowish with reddish tinge in life. A broad light band edged grey from eye to base of pectoral. Dorsal, anal and pectoral yellowish hyaline, posterior rays of dorsal and anal and median rays of caudal with dusky markings; median rays of ventral slightly dusky.

Material: Minicoy, 2 specimens, 51 and 63 mm.

Distribution: Previously recorded from the Red Sea, east coast of Africa and neighbouring islands, Indonesia and the Philippines. This is the first record from the Central Indian Ocean.

Family: PSEUDOCHROMIDAE

8. *Pseudochromis tapeinosoma* Bleeker (Fig. 8)

Pseudochromis tapeinosoma Bleeker, 1853, *Nat. Tijds. Ned.-Ind.*, 4: 115.

Pseudochromis (Leptochromis) tapeinosoma Weber and de Beaufort, 1931, *Fishes Indo-Australian Archipelago*, 6: 135, Fig. 23.

D. II-III, 21-23; A. II-III, 13-14; P. 17-18; V. I, 5. LI. 25-29+9-11;
Ltr. 2+1+11-12. Gr. 4-5+1+7-9.

Head 3.3-3.6 in standard length, 4-4.3 in total length. Depth of body 3.5-3.7 in standard length, 4.2-4.5 in total length. Eye 3.3-3.6 in head, 0.6-0.7 in snout and 0.5-0.6 in interorbital space. Maxillary reaching to below anterior third of eye.

Teeth in jaws minute ; outer series conical, anteriorly 3-4 upper and 2-3 lower caninoid. Vomer and palatines with minute teeth. All rays of dorsal and anal branched.

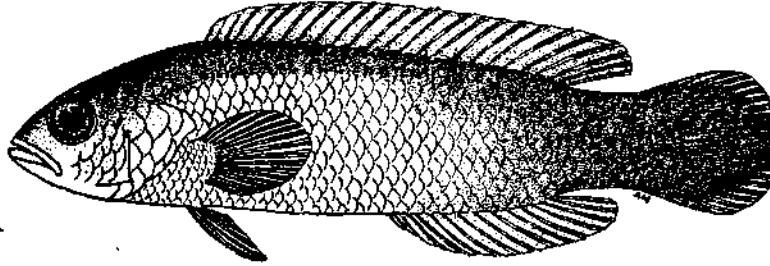


FIG. 8. *Pseudochromis tapeinosoma* Bleeker, 48 mm.

Pectoral shorter than head without snout. Ventral equal to or slightly longer than postorbital length of head. Scales ctenoid, 33-35 in lateral series. Preoperculum with 3 rows of scales. Upper lateral line runs obliquely upwards and then parallel to the base of dorsal and terminates below 17th or 18th ray of dorsal. Lower lateral line median. Colour : Head and body above and posteriorly dark brown in male with lower sides of head and body upto above middle of anal fin pale yellowish. Dorsal brownish, anal light brownish, caudal dark brown with outer edges yellowish, pectoral and ventral yellowish. Female light brownish on back, lighter below ; fins pale yellowish.

Material : Kavarathi, 19 specimens, 24 to 45 mm. Kiltan, 6 specimens, 31 to 39 mm. Minicoy, 11 specimens, 32 to 52 mm.

Distribution : From Sumatra in Indonesia to the Philippines and Queensland. This is the first record from the Indian Ocean proper.

Family : PSEUDOGRAMMIDAE

9. *Pseudogramma polyacanthus* (Bleeker) (Fig. 9)

Pseudochromis polyacanthus Bleeker, 1856, *Nat. Tijds. Ned.-Ind.*, 10 : 375.

Pseudogramma polyacanthus Weber and de Beaufort, 1931, *Fishes Indo-Australian Archipelago*, 6 : 120, Fig. 21 ; Smith and Smith, 1963, *Fishes of Seychelles* : 13, Pl. 9, J.

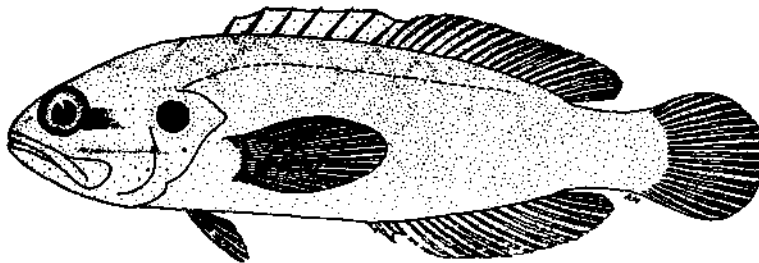


FIG. 9. *Pseudogramma polyacanthus* (Bleeker), 34 mm.

D. VII, 20 ; A. III, 16 ; P. 18 ; V. I, 5. Ll. 33 ; Ltr. 5+1+20.

Head 2.9 in standard length, 3.5 in total length. Depth of body 3.4 in standard length, 4.2 in total length. Eye 4.2 in head, 0.7 in snout and 0.5 in interorbital space. Mouth large, maxillary reaching well beyond eye. A small spine at upper angle of preopercle. Teeth fine, in narrow bands in jaws, on vomer and palatines. Dorsal spines stout, fifth or sixth longest, lower than soft rays. Anal spines pungent, the second spine considerably longer than the other two. Pectoral longer than post-orbital part of head. Ventral insertion slightly in advance of pectoral base, its length about equal to snout and eye together. Scales on head, chest and nape cycloid ; scales on posterior part of body ctenoid. About 50 scales in lateral series. A single lateral line ending below behind middle of dorsal rays. Base of dorsal, anal and interorbital scaly. Colour : Brownish, rarely lighter below. A dark brown blotch on opercle and a dark streak behind eye. Vertical fins somewhat dusky. Pectoral and ventral pale.

Material : Kiltan, 1 specimen, 34 mm.

Distribution : Previously known from east coast of Africa, Seychelles, Indonesia, Philippines, Hawaiian, Fiji and Tahiti Islands. This is the first record from the Central Indian Ocean.

Family: CARANGIDAE

10. *Caranx lugubris* Poey (Fig. 10)

Caranx lugubris Poey, 1861, *Mem. Hist. Nat. Cuba*, 2 : 222 ; Woods, 1953, *Bull. U.S. Nat. Mus.*, 202(1) : 514, Pl. 46, A.

Caranx ascensionis Cuvier and Valenciennes, 1833, *Hist. Nat. Poissons*, 9 : 102 (nec Osbeck).

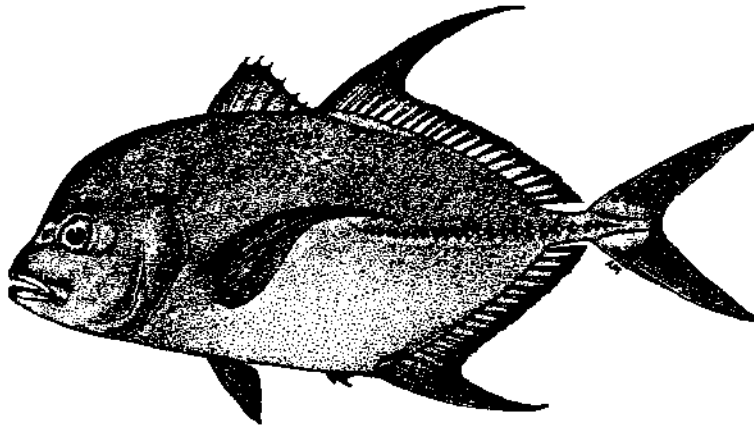


FIG. 10. *Caranx lugubris* Poey, 265 mm.

D₁. VIII ; D₂. I, 22 ; A. II ; I, 18 ; P. ii, 19 ; V. I, 5. Ll. 86 ; Gr. 6+1+19.

Head 3.2-3.3 in standard length, 4.2-4.3 in total length. Depth of body 2.3 in standard length, 2.8 in total length. Dorsal profile of head steeply descending to bluntly pointed snout with slight concavity before eyes. Eye with posterior adipose lid, eye diameter 4.5-4.6 in head, 1.5-1.6 in snout and 1.3 in interorbital space. Maxillary reaching below middle of eye. A narrow band of teeth anteriorly in upper jaw with the outer series enlarged, a single series of conical teeth in lower jaw; vomer, palatines and tongue toothed. Anterior rays of soft dorsal produced into a lobe, equal to or longer than head; anterior lobe of anal shorter than that of dorsal. Pectoral longer than head. Breast completely scaled. Lateral line arched, curved part about $1\frac{1}{2}$ in straight part which begins below about 5th dorsal ray; 31-32 scutes occupying the entire straight part of lateral line. Colour: Dark brown on sides of head and back becoming slightly lighter below. An indistinct spot at upper edge of gill opening; spinous dorsal blackish; base of soft dorsal and anal pale, lobes and distal margin blackish, pectoral greyish with dark base; ventral blackish especially towards extremity, and caudal blackish.

Material: Minicoy, 2 specimens, 265 and 277 mm.

Distribution: This species is widely distributed in the tropical Atlantic and has been recorded from the Tuamotu, Marshall and Kingsmill Islands in the Pacific. This is the first record of this species from the Indian Ocean.

Family: PEMPHERIDAE

11. *Parapriacanthus guentheri* (Klunzinger) (Fig. 11)

Pempherichthys guntheri Klunzinger, 1871, *Verh. Zool., bot. Ges. Wien*, 21: 470.

Parapriacanthus guentheri Smith, 1949, *Fishes of Southern Africa*: 247, Fig. 640.

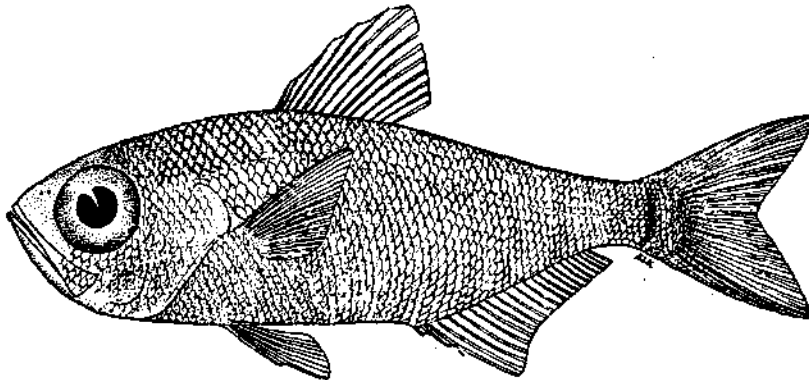


FIG. 11. *Parapriacanthus guentheri* (Klunzinger), 50 mm.

D. V, 9; A. II-III, 21-22; P. 15-16; V. I, 5. Ll. 68-74; Ltr. 6+1+16-17.
Gr. 5+1+14-16.

Body moderately deep, ovate, compressed. Head 2.7-2.9 in standard length, 3.4-3.6 in total length. Depth of body 2.9-3 in standard length, 3.6-3.7 in total length. Eye 2.5-2.7 in head, 0.5-0.6 in snout and about 0.7 in slightly convex inter-

orbital space. Preopercle without spines. Maxillary reaches to below or slightly beyond middle of eye. Teeth small, uniserial in jaws and on palatines and V-shaped on vomer. Pectoral equal to or slightly shorter than head without snout. Lateral line not extending to middle of caudal fin rays. Colour: Rosy to light tan, head and lower sides of abdomen yellowish to silvery, tip of lower jaw brownish. Base of caudal fin with a vertical dark line.

Material: Agathi, 13 specimens, 41 to 58 mm. Ameni, 9 specimens, 35 to 48 mm. Androth, 5 specimens, 53 to 60 mm. Minicoy, 19 specimens, 34 to 51 mm.

Distribution: Red sea and east coast of South Africa. The present record from the Laccadives extends its distribution to the Central Indian Ocean.

Family: CARAPIDAE

12. *Jordanicus gracilis* (Bleeker) (Fig. 12)

Oxybeles gracilis Bleeker, 1856, *Nat. Tijds. Ned.-Ind.*, 11: 105.

Carapus gracilis de Beaufort, 1951, *Fishes Indo-Australian Archipelago*, 9: 453, Fig. 87.

Encheliophis (Jordanicus) gracilis Arnold, 1956, *Bull. British Mus.*, 4(6): 299, Fig. 20.

Jordanicus gracilis Smith, 1949, *Fishes of Southern Africa*: 360; Smith, 1955, *Ann. Mag. Nat. Hist.*, (12)8: 404, Fig. 1.



FIG. 12. *Jordanicus gracilis* (Bleeker), 215 mm.

Head 9.2 in total length, depth of body 16.8 in total length. Eye 4.2 in head, 0.8 in snout and also in interorbital space. Width of head about half length of head. Maximum width of body 1.4 in height. Mouth almost horizontal, maxilla not free and completely covered by skin, reaching slightly behind hind border of eye. Gill opening not extending above base of pectoral. Origin of vent slightly before a level from base of pectoral. Dorsal lower than anal, its origin $1\frac{1}{2}$ head length behind head. A single series of teeth in jaws; two large recurved canines on vomer with a smaller teeth on each side; palatines with a single row of teeth. Colour: Light yellowish, head and body except chest and abdomen with brown spots, hind part of tail darker.

Material: Chetlat, 1 specimen, 215 mm., collected from a holothurian (*Holothuria marmorata*).

Distribution: Previously known from the Red Sea and east coast of Africa and from Indonesia to Samoa, Fiji, Tonga, Solomon, Palau and Hawaii Islands. This is the first record from the Central Indian Ocean.

Family : BROTULIDAE

13. *Dinematichthys ilucoeteoides* Bleeker (Fig. 13)

Dinematichthys ilucoeteoides Bleeker, 1855, *Nat. Tijds. Ned.-Ind.*, 8 : 319 ; de Beaufort, 1951, *Fishes Indo-Australian Archipelago*, 9 : 438, Fig. 79.

Dinematichthys ilucoeteoides Smith and Smith, 1963, *Fishes of Seychelles* : 52, Pl. 3, J.

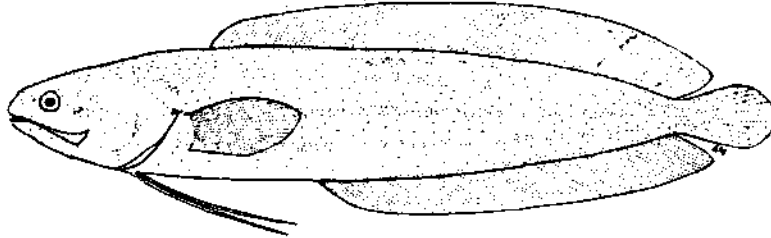


FIG. 13. *Dinematichthys ilucoeteoides* Bleeker, 53 mm.

D. 92 ; A. 68 ; P. 22.

Head 3.8 in standard length, 4.3 in total length. Depth of body 4.9 in standard length, 5.6 in total length. Pectoral equal to post-orbital length of head. Ventral with a single ray, slightly longer than head. Eye 8 in head, 1.8 in snout and about 1.7 in interorbital space. Upper jaw twice in head. Body posteriorly compressed. Dorsal origin about twice eye diameter behind head. Dorsal and anal fins extending to base of caudal fin. Scales minute, cycloid. Snout and chin finely papillate. Minute teeth in rows in jaws and in narrow band on vomer and palatines. Colour : Plain orange with three lighter longitudinal bands on sides.

Material : Agathi, 1 specimen, 53 mm.

Distribution : Previously known from Mauritius and Seychelles in the Western Indian Ocean and Malaysia, Indonesia, Philippines, Marshall, Caroline, Samoan and Society Islands. This is the first record from the Central Indian Ocean.

Family : SOLEIDAE

14. *Liachirus melanospilus* (Bleeker) (Fig. 14)

Achirus melanospilos Bleeker, 1854, *Nat. Tijds. Ned.-Ind.*, 7 : 257.

Liachirus melanospilus Weber and de Beaufort, 1929, *Fishes Indo-Australian Archipelago*, 5 : 158, Figs. 42 and 43.

D. 62-65 ; A. 43-45 ; V. 5. LI. 68-73.

Head 3.7-4 in standard length, 4.4-4.6 in total length. Depth of body 2.2-2.4 in standard length, 2.7-2.9 in total length. Eyes on the right side. Eye 4.8-5.2

in head, the lower one about $1/2$ a diameter behind the upper which is about 1.2 in snout. Interorbital space slightly concave. Cleft of mouth reaching to below front

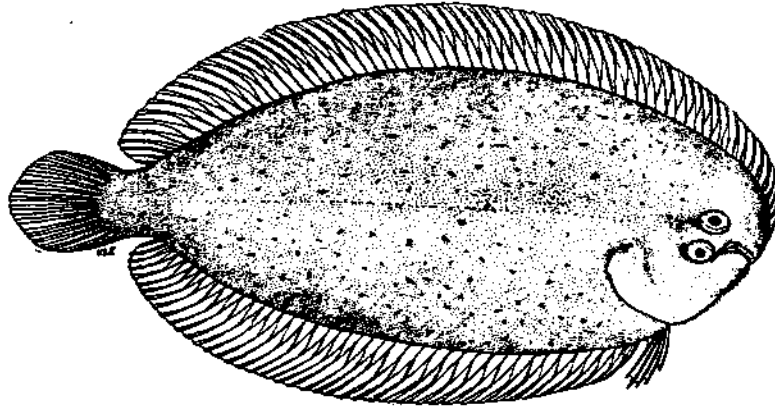


FIG. 14. *Liachirus melanospilus* (Bleeker), 83 mm.

border of eye. Nasal tentacle short, not reaching front border of lower eye. Dorsal origin near tip of snout. Dorsal and anal ending close to caudal. Base of right ventral slightly more than that of left ventral and originating anterior to the latter. Ventrals free from anal. Pectorals absent. One lateral line on each side and another along dorsal profile of head on the blind side from snout to nape. Short barbels along lower profile on the left side of head. Colour: Pale yellowish with small dark spots.

Material: Ameni, 1 specimen, 57 mm. Minicoy, 3 specimens, 62 to 83 mm.

Distribution: Previously known from Singapore, Indonesia, Philippines, China, Formosa and Japan. This is the first record from west of Singapore and Indian Ocean proper.

Family: ECHENEIDAE

15. *Phtheichthys lineatus* (Menzies) (Fig. 15)

Echeneis lineata Menzies, 1791, *Trans. Linn. Soc., London*, 1: 187, Pl. 17, Fig. 1.

Phtheichthys lineatus Smith, 1949, *Fishes of Southern Africa*: 341, Fig. 945. de Beaufort, 1962, *Fishes Indo-Australian Archipelago*, 11: 436, Fig. 95.

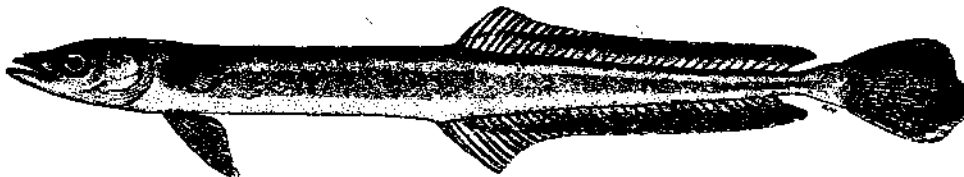


FIG. 15. *Phtheichthys lineatus* (Menzies), 215 mm.

D. 35; A. 35; P. 18; V. I. 5. GR. 1+1+10.

Body very slender, subcylindrical. Head 5.8 in standard length, 6.8 in total length. Depth of body 11.2 in standard length, 13.2 in total length. Eye 5.3 in head and 1.8 in snout. Maxillary reaching to below nostrils. Lower jaw produced in a flap. Jaws with 3-4 rows of strong conical teeth; palatines with a band of small teeth. Sucking disc with 11 transverse laminae, slightly longer than head, its breadth 2.1 in its length, its posterior end above middle of pectoral. Origin of soft dorsal midway between eye and base of caudal, its longest rays more than twice in head. Longest anal rays 1.8 in head. Pectoral pointed with flexible rays, its length equal to head without snout. Ventral narrowly adnate to abdomen, slightly longer than pectoral. Body covered with minute scales. Colour: Dark brown above, lighter below with a blackish band from snout through eye to middle of base of caudal. Dorsal and anal dark brown with white outer border which becomes increasingly narrower posteriorly. Caudal black with white upper and lower edges. Pectoral blackish, the outer border lighter. Ventral brown.

Material: Agathi, 1 specimen, 215 mm., found attached to a sailfish.

Distribution: Occasionally recorded from the tropical Indian, Pacific and Atlantic Oceans. This is the first record from this area.

16. *Remora osteochir* (Cuvier) (Fig. 16)

Echeneis osteochir Cuvier, 1829, *Régne Animal.*, ed. 2, 2: 348; de Beaufort, 1962, *Fishes Indo-Australian Archipelago*, 11: 442.

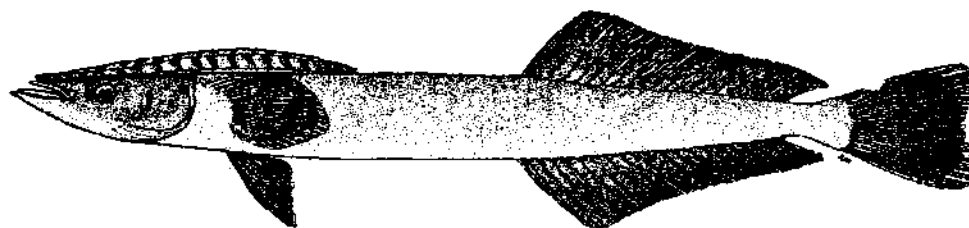


FIG. 16. *Remora osteochir* (Cuvier), 96 mm.

D. 22-25; A. 22-24; P. 21-23; V. I, 5. GR. 1+1+10-11.

Body moderately elongate, covered with minute scales. Head 4.2-4.7 in standard length, 5-5.6 in total length. Depth of body 7.4-8 in standard length, 8.9-9.8 in total length. Eye 6.4-6.7 in head, 2.6-2.8 in snout. Maxillary reaches to below nostrils. Lower jaw not produced in a flap. Upper jaw with an outer row of flexible close set small teeth and a narrow band of teeth within. Lower jaw with a narrow band of teeth, some posterior teeth of the outer row slightly larger. Vomer and palatines with a band of minute teeth. Sucking disc elongate, 1.8-2 times of head, with 18-19 transverse laminae, its breadth 2.2-2.3 in its length, its posterior end extending well beyond tip of pectoral. Longest dorsal rays slightly shorter than those of anal. Longest anal rays almost equal to head without snout. Pectoral rounded, rays stiff and multibranching; half length of snout shorter than head. Ventral broadly adnate to the abdomen, equal to head without snout. Caudal fin emarginate. Colour: Uniform brownish, rarely lighter below. Fins brownish to dark brown especially towards the edges.

Material : Agathi, 1 specimen, 96 mm. Bitra, 1 specimen, 64 mm. Minicoy, 1 specimen, 94 mm. All juveniles; collected from sailfish.

Distribution : Atlantic, and New Guinea in the Pacific. This comparatively rare species does not seem to have been recorded from the Indian Ocean previously.

Family : MONACANTHIDAE

17. *Paraluteres prionurus* (Bleeker) (Fig. 17)

Alutarius prionurus Bleeker, 1851, *Nat. Tijds. Ned.-Ind.*, 2 : 260.

Paraluteres prionurus de Beaufort, 1962, *Fishes Indo-Australian Archipelago*, 11 : 342, Fig. 79 ; Smith and Smith, 1963, *Fishes of Seychelles* : 59, Pl. 53, I.

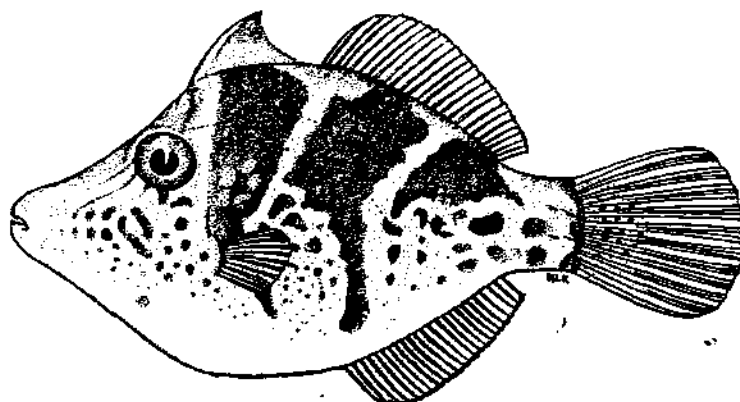


FIG. 17. *Paraluteres prionurus* (Bleeker), 39 mm.

D₁. 1 ; D₂. 26 ; A. 24 ; P. 11.

Somewhat elongate and compressed. Head 3 in standard length, 3.8 in total length. Depth of body 1.9 in standard length, 2.4 in total length. Eye high up, 3 in head, 1.8 in snout and 1.2 in almost flat interorbital space. Gill opening a vertical slit above base of pectoral. First dorsal spine slender and not fully erectile, 1.7 times eye diameter, its membrane reaching nearly to insertion of soft dorsal. Dorsal and anal fins slightly elevated anteriorly. Pectoral slightly longer than diameter of eye. Teeth not coalesced, the anterior pair larger than others. Two rows of two elongated spines each on caudal peduncle. Colour : Slightly greenish grey on back, creamy on sides and below with four dark brown bands, the first from insertion of first dorsal to eye, the second from below first dorsal towards base of pectoral and extending as a narrow line behind pectoral, the third from anterior half of soft dorsal narrowing and ending above insertion of anal and the fourth below hind rays of soft dorsal. Sides of head, body and tail with irregular dark brown spots. A brown blotch on membrane behind tip of first dorsal spine. Soft dorsal and anal hyaline, tips of rays dusky. Caudal brownish basally, pale distally.

Material : Minicoy, 1 specimen, 39 mm.

Distribution : Previously known from east coast of Africa to Seychelles and from Indonesia to Japan, New Hebrides and Marshall Islands. This is the first record from the Central Indian Ocean.

18. *Paramonacanthus oblongus* (Temminck and Schlegel) (Fig. 18)

Monacanthus oblongus Temminck and Schlegel, 1846, *Fauna Japonica, Pisces* : 291, Pl. 130, Fig. 2.

? *Monacanthus curtiorhynchus* Bleeker, 1855, *Nat. Tijds. Ned.-Ind.*, 8 : 430 ; de Beaufort, 1962, *Fishes Indo-Australian Archipelago*, 11 : 322.

? *Paramonacanthus barnardi* Fraser-Brunner, 1941, *Ann. Mag. Nat. Hist.*, (11)8 : 193, Fig. 6 ; Smith, 1949, *Fishes of Southern Africa* : 402, Pl. 88, Fig. 1139.

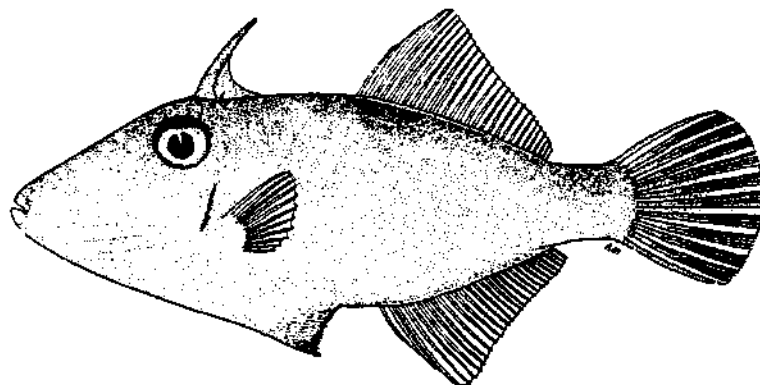


FIG. 18. *Paramonacanthus oblongus* (Temminck and Schlegel), 77 mm.

D₁. II ; D₂. 28 ; A. 28 ; P. 11.

Dorsal profile of head almost straight. Head 3 in standard length, 3.7 in total length. Depth of body 2.8 in standard length, 3.4 in total length. Eye 3.5 in head, 2.5 in snout and 0.9 in convex interorbital space. Gill opening below hind border of eye, its upper edge less than an eye diameter from eye. First dorsal spine originating behind middle of eye, about twice in head, its anterior surface with granulations, the postero-lateral edges with 6 downwardly directed short barbs. Second spine minute. Dorsal and anal falcate, longest rays of dorsal about 1.8, longest rays of anal about twice in head. Pectoral 2.3 in head. Pelvic shield short. Pelvic spine slender and movable with small spinules. Middle rays of caudal longest. Scales with basal plate bearing 2-4 spinules. Colour : Brown with darker areas below anterior half of second dorsal and on caudal peduncle. Dorsal, anal and pectoral pale hyaline. Caudal pale at base and margin, brownish at middle.

Material : Kavarathi, 1 specimen, 77 mm.

Distribution : Previously known from the east coast of Africa, Persian Gulf, Seychelles, Indonesia, Japan, Marshall Islands and Queensland. This is the first record from the Central Indian Ocean.

Family : CANTHIGASTERIDAE

19. *Canthigaster amboinensis* (Bleeker) (Fig. 19)

Pylonotus amboinensis Bleeker, 1865, *Ned. Tijds. Dierk.*, 2 : 180.

Canthigaster amboinensis Smith, 1949, *Fishes of Southern Africa* : 421 ; de Beaufort, 1962, *Fishes Indo-Australian Archipelago*, 11 : 364 ; Smith and Smith, 1963, *Fishes of Seychelles* : 61, Pl. 56, E.

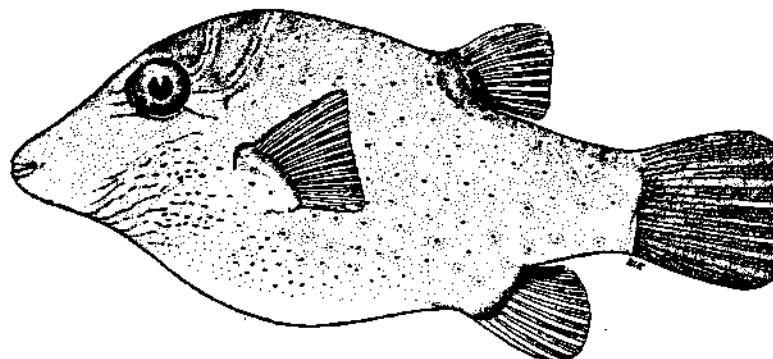


FIG. 19. *Canthigaster amboinensis* (Bleeker), 52 mm.

D. i, 10 ; A. i, 9 ; P. 15.

Moderately compressed, back slightly keeled. Head 2.7 in standard length, 3.4 in total length. Depth of body 2.1 in standard length, 2.6 in total length. Eye 4 in head, 2.3 in snout and 1.6 in slightly concave interorbital space. Nostrils minute with a low rim. Minute spines on head, those on body inconspicuous. Caudal somewhat rounded. Colour : Dark olive above, somewhat lighter below. Sides of snout with some oblique narrow dark stripes breaking up into spots below eye. Some dark stripes radiating from eye. Back, sides of body and tail with pale spots each with a small black dot in the centre. Bases of dorsal, anal and pectoral dark, the fins hyaline. Caudal dark.

Material : Minicoy, 1 specimen, 52 mm.

Distribution : Previously known from Natal and Seychelles in the Western Indian Ocean and from Indonesia to Philippines, Japan, Gilbert Islands, Fiji, Samoa, Marshall and Hawaiian Islands. This is the first record from the Central Indian Ocean.

Family : ANTENNARIIDAE

20. *Antennarius coccineus* (Lesson) (Fig. 20)

Chironectes coccineus Lesson, 1830, *Voy. Coquille, Poissons*, 143, Pl. 16, Fig. 1.

Antennarius coccineus Smith, 1949, *Fishes of Southern Africa* : 431, Pl. 98, Fig. 1238 ; de Beaufort, 1962, *Fishes Indo-Australian Archipelago*. 11 : 203.

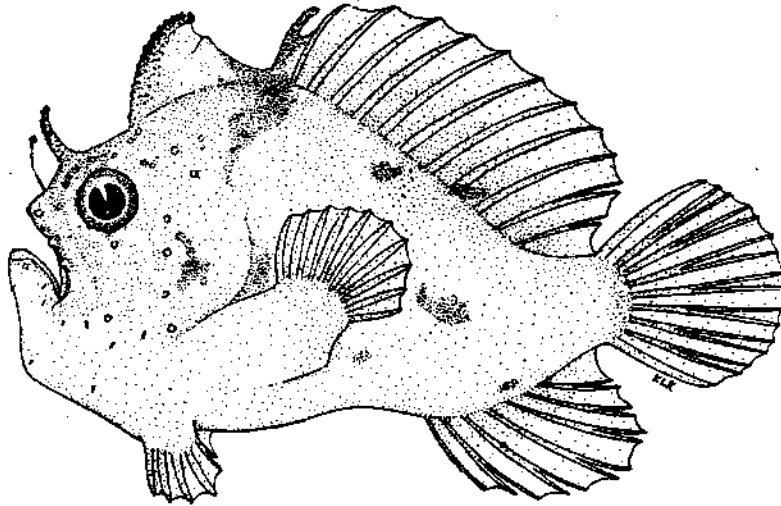


FIG. 20. *Antennarius coccineus* (Lesson), 37 mm.

D. 1+1+1+12; A. 7; P. 10; V. 5.

Head 1.9 in standard length, 2.4 in total length. Depth of body 1.7 in standard length, 2.2 in total length. Eye 6.7 in head, slightly more than snout and 1.5 in interorbital space. First dorsal spine slender, equal to curved second spine in length, with bulbous tip consisting of tentacles. A smooth pit behind second spine. Two posterior dorsal rays forked. First anal ray simple, others forked. Inner ray of ventral deeply forked. Dorsal and anal attached very close to base of caudal. Skin rough, covered with minute denticles; those on upper part of head, on second and third dorsal spines and on first ray prominent. Cutaneous filaments on sides of head. Colour: Pinkish with indistinct dark blotches above and behind pectoral and at origin of soft dorsal.

Material: Bitra, 1 specimen, 33 mm. Minicoy, 1 specimen, 37 mm.

Distribution: Previously known from Red Sea, coast of Natal, Reunion, Chagos Islands, Cocos Keeling Islands and from Indonesia to Philippines, Australia, Tonga, Samoan and Marshall Islands. This is the first record from the northern part of the Central Indian Ocean.