

ON THE SHORE FISHES OF GOA

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INTRODUCTION

There is very little published information on the marine ichthyofauna of Goa. Our meagre knowledge of the shore fish fauna of this region is derived mainly from the papers of Cuvier and Valenciennes (1828, 1830), Norman (1928), Koumans (1941), Haig (1950), Chandy (1953), Tandon, Menon and Sareen (1967) and Murthy (1969). The present study is based on the collections of Dr. S. W. Kemp, Dr. A. W. Herre, Mr. P. F. Jones, material donated by the Karnatak College, Dharwar (Mysore State) and on surveys undertaken by the Zoological Survey of India in recent years (1966-1969).

The study reveals the occurrence of 168 species belonging to 109 genera and 67 families. The species, mainly littoral forms of the western coast of India, are apparently representative of the more frequent forms. Although several are new distributional records and are of special taxonomic interest, none are new forms.

A systematic account of the collections giving details of the number of examples, size-range in standard length unless otherwise stated, locality, date of collection, name of collector and geographical distribution of each species, is given. Descriptive notes of the species reported for the first time from the Indian coast or the Arabian Sea, are also given with the idea of recording intra-specific variations.

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SYSTEMATIC ACCOUNT

Class I. ELASMOBRANCHII

Order 1. LAMNIFORMES

I. Family ORECTOLOBIDAE

1. *Chiloscyllium griseum* Müller & Henle

1841. *Chiloscyllium griseum* Müller & Henle, *Syst. Besch. Plagiostomen*: 19.

Material.—1 ex., 320 mm. T L., Goa, 16.x.38, A. W Herre Coll.

Distribution.—Widespread, east coast of South Africa, the Red Sea, through India, Ceylon to the Philippines, China and Japan.

2. *Chiloscyllium indicum* (Gmelin)

1789. *Squalus indicus* Gmelin in Linnaeus, *Syst. Nat.*, 1: 1503.

Material.—2 exs., 142-150 mm. T L., Calangute, 30.iii.66, K. S. Pradhan Coll.; 1 ex., 245 mm. T L., Vasco, 25.iv.69, R. C. Sharma Coll.

Distribution.—Widespread, east coast of Africa, the Red Sea, India, Ceylon, the East Indies, the Philippines and China.

II. Family LAMNIDAE

3. *Alopias vulpinus* (Bonnaterre)

1788. *Squalus vulpinus* Bonnaterre, *Tab. encyclop. Ichth.*: 9, fig. 349.

Material.—2 exs., 280-377 mm. T L., Colva, 19.xii.68, V C. Agrawal Coll.

Distribution.—Widespread, east coast of South Africa, Arabia, through India, Ceylon, the Philippines, Japan to California and Chile.

III. Family CARCHARHINIDAE

4. *Scoliodon sorrakowah* (Cuvier)

1829. *Carcharias sorrakowah* Cuvier, *Regne Animal.*, 2 (ed. 2): 388.

Material.—5 exs., 222-303 mm. T L., Calangute, 30.iii.66; 3 exs., 285-375 mm. T L., Goa, 27.xi.67, K. S. Pradhan Coll.

Distribution.—From the Mekran coast, India, Ceylon, Burma, through the East Indies to the Philippines and Japan.

Order 2. RAJIFORMES

IV. Family DASYATIDAE

5. *Dasyatis* (*Himantura*) *bleekeri* (Blyth)

1860. *Trygon bleekeri* Blyth, *J. Asiat. Soc. Beng.*, 29: 41.

Material.—1 ex., 113 mm. disc, Goa, 14.vii.35; 1 ex., 115 mm. disc, Goa, 12.xi.37, A. W. Herre Coll.

Distribution.—India, Ceylon, Burma, Malaysia, Borneo and the Philippines.

6. *Dasyatis* (*Himantura*) *uarnak* (Forsk.)

1775. *Raja uarnak* Forskal, *Descript. Animal.*: viii, 18.

Material.—1 ex., 137 mm. disc, Goa, 1938.

Distribution.—Widespread in the tropical Indian Ocean.

7 *Dasyatis* (*Amphotistus*) *imbricatus* (Schneider)

1801. *Raja imbricata* Schneider, *Syst. Ichth.*: 366.

Material.—1 ex., 172 mm. disc, Goa, 1938.

Distribution.—Western Indian Ocean, India, Ceylon, through the East Indies to the Philippines and China.

Class II. TELEOSTOMI

Order 3. CLUPEIFORMES

V. Family CLUPEIDAE

Subfamily 1. CLUPEINAE

8. *Herklotsichthys bulan* (Bleeker)

1849. *Clupalosa bulan* Bleeker, *Verh. Batav. Genootsch.*, 22: 12.

Material.—2 exs., 72-80 mm., Goa, 1938.

Distribution.—Red Sea, Zanzibar, India, the East Indies, the Philippines and China.

9. *Escualosa thoracata* (Valenciennes)

1847. *Kowala thoracata* Valenciennes, *Hist. nat. Poiss.*, 20: 363.

Material.—11 exs., 58-63 mm., Calangute, 30.iii.66; 2 exs., 70-86 mm., Baina, 9.iv.66; 3 exs., 53-54 mm., Vasco, 9.iv.66, K. S. Pradhan Coll.

Distribution.—India, Burma, Malaysia and the East Indies.

10. *Sardinella fimbriata* (Valenciennes)

1847. *Spratella fimbriata* Valenciennes, *Hist. nat. Poiss.*, 20: 359.

Material.—1 ex., 102 mm., Calangute, 30.iii.66; 15 exs., 69-72 mm., Baina, 9.iv.66; 42 exs., 67-75 mm., Vasco, 9.iv.66; 2 exs., 85-89 mm., Colva, 10.xi.67; 6 exs., 82-84 mm., Betul, 18.xi.67, K. S. Pradhan Coll.

Distribution.—Mauritius, the Red Sea, India, the East Indies, the Philippines and Taiwan.

11. *Sardinella longiceps* Valenciennes

1847. *Sardinella longiceps* Valenciennes, *Hist. nat. Poiss.*, 20: 273.

Material.—1 ex., 128 mm., Goa, 1938.

Distribution.—Widespread, the east coast of Africa, India, the East Indies and the Philippines.

Subfamily 2. ALOSINAE

12. *Hilsa ilisha* (Hamilton)

1822. *Clupanodon ilisha* Hamilton, *Fish. Ganges*: 243, pl. 19, fig. 73.

Material.—1 ex., 132 mm., Goa, 12.xi.37, A. W. Herre Coll.

Distribution.—Persian Gulf, India, Pakistan, Ceylon and Burma.

13. *Hilsa kelle* (Cuvier)

1829. *Clupea kelee* Cuvier, *Regne Animal*, 2: (2nd ed.) 320.

Material.—1 ex., 128 mm., Goa, 12.xi.37, A. W. Herre Coll.

Distribution.—East African coast, Persian Gulf, India, Thailand, Malaysia and the East Indies.

Subfamily 3. PRISTIGASTERINAE

14. *Ilisha indica* (Swainson)

1838. *Platygaster indicus* Swainson, *Nat. Hist. Anim.*, 2: 294.

Material.—1 ex., 54 mm., Calangute, 30.ii.66, K. S. Pradhan Coll.

Distribution.—India, Thailand, Malaysia, the East Indies and China.

15. *Opisthopterus tardoore* (Cuvier)

1829. *Pristigaster tardoore* Cuvier, *Regne Animal*, 2: (2nd ed.) 321.

Material.—2 exs., 43-52 mm., Calangute, 30.iii.66 ; 2 exs., 140-145 mm., Cancona, 6.iv.66 ; 1 ex., 118 mm., Goa, 27.xi.67, K. S. Pradhan Coll.

Distribution.—India, Thailand, Singapore and the East Indies.

16. *Pellona ditchela* Valenciennes

1847. *Pellona ditchela* Valenciennes, *Hist. nat. Poiss.*, 20: 314.

Material.—1 ex., 54 mm., Calangute, 30.iii.66, K. S. Pradhan Coll. ; 1 ex., 102 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—East coast of Africa, India, Singapore, the East Indies, the Philippines and Taiwan.

Subfamily 4. DOROSOMATINAE

17 *Nematalosa nasus* (Bloch)

1795. *Clupea nasus* Bloch, *Naturges. ausland. Fische*, 9: 116, pl. 429, fig. 1.

Material.—2 exs., 63-78 mm., Goa, 26.xi.38, A. W Herre Coll.

Distribution.—Gulf of Aden, Persian Gulf, India, Burma, Thailand, Singapore, the East Indies and the Philippines.

VI. Family DUSSUMIERIIDAE

18. *Dussumeria acuta* Valenciennes

1847. *Dussumeria acuta* Valenciennes, *Hist. nat. Poiss.*, 20: 407, pl. 606.

Material.—1 ex., 114 mm., Goa, 1938, A. W Herre Coll. ; 1 ex., 120 mm., Goa, 1938, ? Coll. ; 4 exs., 50-58 mm., Calangute, 30.iii.66 ; 2 exs., 108-113 mm., Goa, 27.xi.67, K. S. Pradhan Coll. ; 5 exs., 97-127 mm., Colva, 15.xii.68, V C. Agrawal Coll. ; 4 exs., 105-110 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, East coast of Africa, East Mediterranean, Red Sea, India and the Indo-Australian Archipelago.

VII. Family ENGRAULIDAE

19. *Setipinna phasa* (Hamilton)

1822. *Clupea phasa* Hamilton, *Fish Ganges*: 240, 282.

1878. *Engraulis telera* Day, *Fish India*: 627, pl. 158, fig. 2.

Material.—1 ex., 190 mm., Goa, 1938, A. W. Herre Coll.

Description.—D 14. A 72. Gill-rakers 15+18. Scutes 15+7

Depth of body 3.9, length of head 5.9; both in standard length. Eye diameter 5.1 in head length, greater than interorbital width. Mouth slightly oblique; maxilla reaches gill opening. Dorsal origin slightly behind anal, nearer snout than to caudal base. Pectoral with its upper rays elongated, reaches anterior third of anal. Caudal well forked. Colour in alcohol—pale brownish on back, sides and lower surface silvery white.

Distribution.—This species is principally an estuarine or freshwater form (*vide* Jones & Menon, 1952) and has previously been reported only from the eastern coast of India, Burma, Ceylon and the Andaman Islands. Whitehead (1967b) gives the distribution of the genus *Setipinna* Swainson as Bay of Bengal to Korea. The present record extends the range of distribution of the genus *Setipinna* to the Arabian Sea.

20. *Stolephorus heterolobus* (Rüppell)

1837. *Engraulis heteroloba* Rüppell, *Neue Wirbelth., Fische*, 79: pl. 4.

Material.—1 ex., 74 mm., Vasco, 25.iv.69, R. C. Sharma Coll.

Distribution.—East African coast, the Red Sea, India, Singapore, the East Indies, Taiwan and Japan.

21. *Stolephorus macrops* Hardenberg

1933. *Stolephorus baganensis macrops* Hardenberg, *Nat. Tijdschr. Ned. Indie*, 93 (2): 260.

Material.—3 exs., 74-83 mm., Banulia, 14.ix.69, R. C. Sharma Coll.

Distribution.—Gulf of Aden (?), India and the East Indies.

22. *Stolephorus tri* (Bleeker)

1852. *Engraulis tri* Bleeker, *Verh. Batav. Genootsch.*, 24: 40.

Material.—1 ex., 96 mm., Goa, 1938, ? Coll.; 18 exs., 27-41 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.; 9 exs., 103-143 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—India, Singapore and the East Indies.

23. *Thryssa dussumieri* (Valenciennes)

1848. *Engraulis dussumieri* Valenciennes, *Hist. nat. Poiss.*, 21: 69.

Material.—39 exs., 33-84 mm., Calangute, 30.iii.66; 2 exs., 91-100 mm., Goa, 6.iv.66, K. S. Pradhan Coll.; 20 exs., 78-116 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—India and the East Indies.

24. *Thryssa malabarica* (Bloch)

1795. *Clupea malabaricus* Bloch, *Naturges. ausland. Fische*, 9: 115, pl. 432.

Material.—5 exs., 114-136 mm., Goa, 1938, ? Coll.; 2 exs., 146-148 mm., Goa, 11.xi.67, K. S. Pradhan Coll.; 1 ex., 92 mm., Colva: 19.xii.68., V. C. Agrawal Coll.

Distribution.—According to Whitehead (1967a) this species occurs principally in Indian waters, the record by Menon (1956) from the Persian Gulf probably being referable to *Thryssa hamiltonii* (Gray)

25. *Thryssa purava* (Hamilton)

1822. *Clupea purava* Hamilton, *Fish. Ganges*: 238.

Material.—1 ex., 160 mm., Goa, 12.xi.37, A. W. Herre Coll.; 4 exs., 30-70 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.; 9 exs., 103-143 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Persian Gulf, India, Malaysia and Korea.

26. *Thryssa vitrirostris* (Gilchrist & Thompson)

1911. *Engraulis vitrirostris* Gilchrist & Thompson, *Ann. S. Afr. Mus.*, 6: 201.

Material.—9 exs., 27-87 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.

Distribution.—East coast of Africa, Madagascar, Persian Gulf, Gulf of Oman and India.

VIII. Family CHIROCENTRIDAE

27. *Chirocentrus dorab* (Forsk.)

1775. *Clupea dorab* Forskal, *Descript. Animal*: 13, 72.

Material.—1 ex., 236 mm., Goa, 27.xii.67, K. S. Pradhan Coll.

Distribution.—Widely distributed in the warm waters of

the Indo-West Pacific ranging from the Red Sea and east coast of Africa to Australia and Melanesia.

Order 4. SCOPELIFORMES

IX. Family SYNODONTIDAE

28. *Harpodon nehereus* (Hamilton)

1822. *Osmerus nehereus* Hamilton, *Fish. Ganges*: 209, 380.

Material.—1 ex., 241 mm., Goa, 26.x.38, A. W. Herre Coll.

Distribution.—Widely distributed from the east coast of Africa through India to China and Australia.

29. *Saurida tumbil* (Bloch)

1795. *Salmo tumbil* Bloch, *Naturges. ausland. Fische*, 9: 112.

Material.—1 ex., 136 mm., Calangute, 30.iii.66; 1 ex., 271 mm., Goa, 27.xi.67, K. S. Pradhan Coll; 1 ex., 100 mm., Colva, 19.xii.68., V. C. Agrawal Coll.

Distribution.—Widely distributed in the warm waters of the Indo-West Pacific, ranging from the east coast of Africa to Australia, Japan and Hawaii.

Order 5. CYPRINIFORMES

X. Family TACHYSURIDAE

30. *Tachysurus arius* (Hamilton)

1822. *Pimelodus arius* Hamilton, *Fish. Ganges*: 170, 376.

Material.—1 ex., 82 mm., Mormugoa Bay, September, 1916, S. W. Kemp Coll.

Distribution.—India and Burma.

31. *Tachysurus dussumieri* (Valenciennes)

1840. *Arui dussumieri* Valenciennes, *Hist. nat. Poiss.*, 15: 84.

Material.—2 exs., 80-82 mm., Goa, 14.vii.38, A. W. Herre Coll.

Distribution.—East coast of South Africa, India, Pakistan, Ceylon and Burma.

32. *Tachysurus falcarius* (Richardson)

1844. *Arui falcarius* Richardson, *Voy. Sulphur Ich.*: 134, pl. 59, fig. 7-9,

Material.—1 ex., 145 mm., Colva, 19.xii.68, V C. Agrawal Coll.

Distribution.—India, Burma, Singapore, the East Indies, the Philippines, China and Japan.

33. *Tachysurus jatius* (Hamilton) comb. nov.

1822. *Pimelodus jatius* Hamilton, *Fish. Ganges*: 171, 376.

Material.—1 ex., 126 mm., Mormugoa Bay, September, 1916, S. W Kemp Coll.

Description.—D.I. 7 ; A. 19 ; P. I. 10 ; G. R. 7 + 1 + 11, lanceolate.

Depth of body 4.8, length of head 3.4 ; both in standard length. Height of head at occiput 1.4, width of head 1.5 ; both in head length. Eye diameter 4.1 in head length, 1.5 in interorbital width, 1.5 in snout length. Upper jaw longer than lower jaw, extent of gape of mouth equals one-third of head length. Posterior portion of head sparsely granulated, occipital process more thickly so ; median longitudinal groove on head narrow and continued almost to base of occipital process which is keeled and reaches the narrow V-shaped basal bone of dorsal fin. Barbels—six, maxillary barbels shorter than head, reach slightly beyond base of pectoral fin ; outer mandibular reach gill opening. Teeth—villiform in a continuous band on premaxillaries, five times as long as wide. Palatal teeth in two small oval groups, globular, separated from premaxillary band by space equal to one and half times length of patch ; length of palatal group less than half eye-diameter ; vomerine teeth absent. Fins—dorsal spine strong, serrated on both sides, as long as head without snout. Pectoral spine slightly shorter than dorsal spine, serrated on both sides. Base of adipose dorsal $\frac{4}{5}$ of rayed dorsal. Caudal (broken) forked. Colour in alcohol—light brownish, silvery below. Fins yellowish, upper edge of rayed and adipose dorsals dusky.

Distribution.—According to Misra (1959) this species occurs in the seas, estuaries and tidal rivers of Orissa, West Bengal, East Pakistan, Burma and Ceylon. The present record from Mormugoa Bay extends its range of distribution to the Arabian Sea.

34. *Tachysurus maculatus* (Thunberg)

1792. *Silurus maculatus* Thunberg, *Kon. Vet. Akad. Oya. Handl. Stockholm*, 13: 31, pl. 1, fig. 2.

Material.—1 ex., 156 mm., Colva, 10.xi.67 ; 3 exs., 150-228 mm., Colva, 11.xi.67, K. S. Pradhan Coll.

Distribution.—Pakistan, India, Ceylon, Malay Archipelago, the Philippines and China.

35. *Tachysurus sagor* (Hamilton)

1822. *Pimelodus sagor* Hamilton, *Fish. Ganges*: 169, 376.

Material.—9 exs., 46-88 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.

Distribution.—India, Pakistan, Malaysia and the East Indies.

36. *Tachysurus thalassinus* (Rüppell)

1835. *Bagrus thalassinus* Rüppell, *Neue Wirebelth., Fische*: 75, pl. 20, fig. 2.

Material.—1 ex., 100 mm., Goa, 1940, ? Coll ; 1 ex., 115 mm., Calangute, 30.iii.66, K. S. Pradhan Coll. ; 1 ex., 135 mm., Banulia, 14.ix.69 ; 5 exs., 89-130 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, the Red Sea, Zanzibar through India, the East Indies, to Australia and Polynesia.

XI. Family BAGRIDAE

37. *Mystus gulio* (Hamilton)

1822. *Pimelodus gulio* Hamilton, *Fish. Ganges*: 201, 379, pl. 23, fig. 6.

Material.—1 ex., 172 mm., Goa, 26.ix.38, A. W. Herre Coll.

Distribution.—Seas, estuaries and tidal waters of India, Pakistan, Ceylon, Burma and Malay Archipelago.

Order 6. ANGUILLIFORMES

XII. Family MURAENESOCIDAE

38. *Muraenesox arabicus* (Schneider)

1801. *Muraena arabica* Schneider *Syst. Ichth.*: 488.

Material.—1 ex., 266 mm. T L., Goa, 26.x.38, A. W. Herre Coll. ; 1 ex., 406 mm. T L., Goa, 1938, ? Coll ; 1 ex., 430 mm. T L., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, east coast of Africa, Red Sea, Persian Gulf through India, the East Indies to the Philippines, China and Japan.

39. **Thyrsoidea macrurus** (Bleeker)

1854. *Muraena macrurus* Bleeker, *Nat. Tijdschr. Ned. Indie*, 7: 324.

Material.—1 ex., 494 mm. T L., Panjim, 22.ix.69; 4 exs., 626-875 mm. T L., Panjim, 26.iv.69, R. C. Sharma Coll.

Distribution.—Widespread, Natal, India, Ceylon, Taiwan, Palew Islands and Australia.

XIII. Family OPHICHTHYIDAE

40. **Pisoodonophis boro** (Hamilton)

1822. *Ophisurus boro* Hamilton, *Fish. Ganges*: 20: 363.

Material.—5 exs., 286-712 mm. T L., Panjim, 22.ix.69; 2 exs., 380-457 mm. T L., Vasco, 25.ix.69; 1 ex., 340 mm. T L., Panjim, 26.ix.69, R. C. Sharma Coll.

Distribution.—In sea, brackish and freshwaters of India, Singapore, the East Indies and China.

41 **Pisoodonophis cancrivorus** (Richardson)

1844. *Ophisurus cancrivorus* Richardson, *Voy. Erebus and Terror, Fish.*: 97, pl. 40, fig. 6-9.

Material.—1 ex., 450 mm. T L., Goa, 26.x.38, A. W Herre Coll.

Distribution.—East coast of Africa through India, Ceylon, the East Indies to Japan and Australia.

Order 7 BELONIFORMES

XIV. Family BELONIDAE

42. **Tylosurus crocodilus** (Le Sueur)

1821. *Belone crocodila* Le Sueur, *J. Acad. nat. Sci. Philad.*, 2: 129.

Material.—1 ex., 253 mm., Colva, 15.xii.68, V C. Agrawal Coll.

Distribution.—Widespread, east coast of Africa, Red Sea, through the Indian Ocean to Soloman Islands and Tahiti.

XV. Family HEMIRHAMPHIDAE

43. **Hyporhamphus dussumieri** (Valenciennes)

1846. *Hemirhamphus dussumieri* Valenciennes, *Hist. nat. Poiss.*, 19: 33.

Material.—1 ex., 151 mm., Colva, 19.xii.68, V C. Agrawal Coll.

Distribution.—Widespread, east coast of Africa, Red Sea, through India, the East Indies, the Philippines to Australia, the Micronesian and Polynesian Islands.

44. *Hyporhamphus gaimardi* (Valenciennes)

1846. *Hemirhamphus gaimardi* Valenciennes, *Hist. nat. Poiss.*, **19**: 36.

Material.—1 ex., 120 mm., Goa, 26.x.38, A. W. Herre Coll.

Distribution.—Persian Gulf, India, Ceylon, Burma, Malaysia, the East Indies, the Philippines and Australia.

45. *Hyporhamphus georgii* (Valenciennes)

1846. *Hemirhamphus georgii* Valenciennes, *Hist. nat. Poiss.*, **19**: 27.

Material.—1 ex., 212 mm., Colva, 19.xii.68, V. C. Agrawal Coll.; 14 exs., 155-180 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, Seychelles, Mauritius, Persian Gulf, through India, Ceylon, the East Indies, the Philippines to Australia, Micronesian and Polynesian Islands.

XVI. Family EXOCOETIDAE

46. *Cypselurus comatus* (Mitchill)

1815. *Exocoetus comatus* Mitchill, *Trans. Lit. Philos. Soc.*, **1**: 448.

Material.—1 ex., 158 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Western Indian Ocean, India, Ceylon and South Atlantic.

Order 8. SYNGNATHIFORMES

XVII. Family SYNGNATHIDAE

47. *Doryichthys cunculus* (Hamilton)

1822. *Syngnathus cunculus* Hamilton, *Fish. Ganges*: 12.

Material.—1 ex., 98 mm., T. L. Mormugoa Bay, September, 1916, S. W. Kemp Coll.

Distribution.—India and Ceylon.

48. *Syngnathus argyrostictus* Kaup

1856. *Syngnathus argyrostictus* Kaup, *Cat. Lophobr. Fish.*, **33**: 46.

Material.—10 exs., 72-102 mm. T. L., Mormugoa Bay, September, 1916, S. W. Kemp Coll.

Distribution.—India, Malay Peninsula, Taiwan and Japan.

Order 9. CYPRINODONTIFORMES

XVIII. Family CYPRINODONTIDAE

49. *Oryzias melastigma* (Mc Clelland)

1839. *Aplocheilus melastigmus* Mc Clelland, *Asiat. Res. Calcutta*, 19: 301, 427.

Material.—2 exs., 23-36 mm., Colva, 1966, K. S. Pradhan Coll.

Distribution.—Brackish waters and estuaries of Ceylon, Peninsula India through Lower Bengal to Burma.

Order 10. BERYCIFORMES

XIX. Family HOLOCENTRIDAE

50. *Holocentrus lacteo-guttatus* Cuvier

1829. *Holocentrum lacteo-guttatum* Cuvier, *Hist. nat. Poiss.*, 3: 214.

Material.—2 exs., 86-101 mm., Goa, 26.x.38, A. W. Herre Coll.

Description.—D. XII. 12; A IV.9; P. 2.13; Ll. 41-42; L. tr. 3/8. Depth of body 2.7-2.8, length of head 2.9-3.0; both in standard length. Snout length 4.3-4.7, eye diameter 2.5-2.8, length of maxilla 3.0, interorbital width 3.6-3.7, postorbital length 2.3-2.4; all in standard length. Snout profile convex. Maxillary extends to vertical from middle of eye. Nasalia rounded in front, without spines. Jaws equal. Origin of dorsal separated by six scales from occiput. Colour-in-alcohol-golden silvery with slightly developed lighter longitudinal bands; membrane between dorsal spines divided into small milky white upper part and much larger hyaline lower part by darkish band. Minute black spots scattered over head and body.

Distribution.—East coast of Africa, Red' Sea, Ceylon, the East Indies, the Philippines to Hawaii and Tahiti. This is the first record of this species from the Indian coast.

Order 11 MUGILFORMES

XX. Family SPHYRAENIDAE

51. *Sphyraena chrysotaenia* Klunzinger

1884. *Sphyraena chrysotaenia* Klunzinger, *Fische Rothen Meers*, 1: 128, pl. 9, fig. 3.

Material.—1 ex., 125 mm., Goa, 1938, A. W. Herre Coll.; 1 ex., 200 mm., Goa, 1938; 2 exs., 154-177 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, east coast of Africa, the Red Sea, India, the East Indies and (?) Philippines.

XXI. Family MUGILIDAE

52. *Mugil carinatus* (Ehrenberg) Valenciennes

1836. *Mugil carinatus* (Ehrenberg) Valenciennes, *Hist. nat. Poiss.*, 11: 148.

Material.—2 exs., 45-60 mm., Colva, 4.iv.66, K. S. Pradhan Coll.

Distribution.—According to Pillay (1962) this species has been recorded only from Karachi, Bombay and Malabar in the Indian sub-continent besides its original record from the Red Sea.

53. *Mugil cunnesius* Valenciennes

1836. *Mugil cunnesius* Valenciennes, *Hist. nat. Poiss.*, 11: 114.

Material.—2 exs., 37-48 mm., Colva, 10.xi.67, K. S. Pradhan Coll.

Distribution.—Widespread, the Red Sea, India through the East Indies to the Philippines, China and Australia.

54. *Mugil macrolepis* Smith

1849. *Mugil macrolepis* Smith, *Illustr. Zool. S. Africa*, 4: pl. 28, fig. 2.

Material.—1 ex., 150 mm., Colva, 4.iv.66; 1 ex., 136 mm., Colva, 11.xi.67; 2 exs., 110-116 mm., Mirampur, 26.xi.67, K. S. Pradhan Coll.

Distribution.—East coast of Africa and Madagascar through India, Ceylon, the East Indies, the Philippines to the Marshall Islands.

55. *Mugil parsia* Hamilton

1822. *Mugil parsia* Hamilton, *Fish. Ganges*: 215, pl. 17, fig. 71.

Material.—1 ex., 46 mm., Colva, 10.xi.67, K. S. Pradhan Coll.

Distribution.—Indo-West Pacific.

56. *Mugil tade* Forskal

1775. *Mugil crenilabris tade* Forskal, *Descript. Animal.*, 14: 74.

Material.—1 ex., 79 mm., Baina, 9.iv.66 ; 1 ex., 47 mm., Colva, 11.xi.67 ; 2 exs. 100-122 mm., Goa, 27.xi.67, K. S. Pradhan Coll.

Distribution.—Indo-West Pacific.

57 *Mugil* sp.

The following specimens are very young for specific identification.

28 exs., 33-38 mm., Colva, 4.iv.66 ; 1 ex., 27 mm., Colva, 10.xi.67, K. S. Pradhan Coll.

XXII. Family ATHERINIDAE

58. *Pranesus pinguis forskali* (Rüppell)

1835. *Atherina forskalii* Rüppell, *Neue Wirbelth., Fische* : 132, pl. 33, fig. 1.

Material.—52 exs., 50-74 mm., Caisua, 29.iii.66 ; 5 exs., 72-103 mm., Colva, 4.iv.66 ; 2 exs., 47-58 mm., Vasco, 9.iv.66, K. S. Pradhan Coll.

Distribution.—Widespread, the tropical Indian Ocean and Western Pacific.

Order 12. POLYNEMIFORMES

XXIII. Family POLYNEMIDAE

59. *Polynemus heptadactylus* Cuvier

1829. *Polynemus heptadactylus* Cuvier, *Hist. nat. Poiss.*, 3 : 300.

Material.—1 ex., 96 mm., 27.xi.67, K. S. Pradhan Coll. ; 1 ex., 193 mm., Vasco., 15.ix.69, R. C. Sharma Coll.

Distribution.—India and Ceylon to Malay Archipelago.

Order 13. PERCIFORMES

XXIV. Family AMBASSIDAE

60. *Ambassis commersoni* Cuvier

1828. *Ambassis commersonii* Cuvier, *Hist. nat. Poiss.*, 2 : 176, pl. 25.

Material.—6 exs., 41-102 mm., Goa, 1938 ; 6 exs., 39-53 mm., Goa, 26.x.38, A. W. Herre Coll.

Distribution.—Widespread, east coast of Africa, Red Sea, Madagascar, Mauritius, Seychelles, India, Ceylon, the Nicobar Islands, to the Malay Archipelago, the Philippines and Australia.

61. **Ambassis gymnocephalus** (Lacépède)

1802. *Lutjanus gymnocephalus* Lacépède, *Hist. nat. Poiss.*, 3: 23, pl. 23, fig. 3.

Material.—2 exs., 45-59 mm., Calangute, 30.iii.66; 21 exs., 39-58 mm., Colva, 4.iv.66, K. S. Pradhan Coll.

Distribution.—Widespread; Indo-West Pacific.

XXV. Family SERRANIDAE

62. **Cephalopholis boenack** (Bloch)

1790. *Bodianus boenack* Bloch, *Naturges. ausland. Fische*, 4: 43.

1828. *Serranus formosus* Cuvier & Valenciennes, *Hist. nat. Poiss.*, 2: 311 (Goa).

Material—2 exs., 166-18 mm., Baina, 9.iv.66, K. S. Pradhan Coll.

Distribution.—East coast of Africa to Southern Japan and North Australia.

63. **Epinephalus diacanthus** (Valenciennes)

1828. *Serranus diacanthus* Valenciennes, *Hist. nat. Poiss.*, 2: 319.

Material.—3 exs., 94-106 mm., Baina, 16.xi.67; 2 exs., 91-120 mm., Goa, 27.xi.67; 3 exs., 74-113, Calangute, 29.xi.67, K. S. Pradhan Coll.

Distribution.—East coast of Africa through India, the East Indies to the Philippines, China and Japan.

64. **Epinephelus tauvina** (Forsk.)

1795. *Perca tauvina* Forskal, *Descript. Animal.*: 39.

Material.—1 ex., 149 mm., Goa, 1938, A. W. Herre Coll.

Distribution.—Widespread, Red Sea, east coast of Africa through India, Ceylon, the East Indies, the Philippines to Australia, Hawaiian and the Ellice Islands.

XXVI. Family THERAPONIDAE

65. **Autisthes puta** (Cuvier)

1829. *Therapon puta* Cuvier, *Hist. nat. Poiss.*, 3: 131.

Material.—1 ex., 55 mm., Goa, 1938; 1 ex., 60 mm., Goa, 27.x.39, A. W. Herre Coll.; 1 ex., 102 mm., Colva, 11.xi.67; 3 exs., 85-110 mm., Betul, 18.xi.67, K. S. Pradhan Coll., 2 exs., 95-97 mm., Colva, 19.xii.68, V. C. Agrawal Coll.

Distribution.—Tropical Indian Ocean ranging from the Red Sea and the east coast of Africa, through the East Indies to Australia.

66. *Eutherapon theraps* (Cuvier)

1829. *Therapon theraps* Cuvier, *Hist. nat. Poiss.*, 3: 129, pl. 53.

Material.—1 ex., 69 mm., Goa, 1938 Coll. ? ; 1 ex., 136 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Tropical Indian Ocean ranging from the Red Sea through India, the East Indies, the Philippines to Taiwan and Australia.

67 *Therapan jarbua* (Forsk.)

1775. *Sciaena jarbua* Forskal, *Descript. Animal.*: 12, 50.

Material.—1 ex., 106 mm., Goa, 12.xi.37 ; 1 ex., Goa, 1938, A. W. Herre Coll., 2 exs., 42-48 mm., Colva, 1966 ; 4 exs., 76-96 mm., Colva, 10.xi.67 ; 2 exs., 102-118 mm., Baina, 16.xi.67, K. S. Pradhan Coll. ; 2 exs., 63-84 mm., Colva, 19.xii.68, V. C. Agrawal Coll.

Distribution.—Widespread, east coast of Africa, Red Sea through India, the East Indies to Japan, Australia and Polynesia.

XXVII. Family APOGONIDAE

68. *Lepidamia multitaeniatus* (Cuvier)

1828. *Apogon multitaeniatus* Cuvier, *Hist. nat. Poiss.*, 2: 159.

Material.—1 ex., 91 mm., Betul, 18.xi.67, K. S. Pradhan Coll.

Distribution.—Western Indian Ocean, India and the Philippines.

XXVIII. Family SILLAGINIDAE

69. *Sillago (Sillaginopodys) chondropus* Bleeker

1849. *Sillago chondropus* Bleeker, *Verh. Batav. Genootsch.*, 22: 61.

Material.—1 ex., 128 mm., Colva, 4.iv.66 ; 4 exs., 116-121 mm., Colva, November, 1967, K. S. Pradhan Coll.

Distribution.—Mckay (1968-personal communication) recorded this species from the east coast of South Africa, India, Burma, Malaysia, New Guinea and the Philippines.

70. *Sillago sihama* (Forsk.)

1775. *Atherina sihama* Forskal, *Descript. Animal.*: 13, 70.

Material.—1 ex., 100 mm., Goa, 1938, A. W. Herre Coll.; 8 exs., 55-88 mm., Colva, 4.iv.66; 34 exs., 39-94 mm., Colva, 11.xi.67; 3 exs., 76-101 mm., Betul, 18.xi.67; 1 ex., 157 mm., Calangute, 29.xi.67, K. S. Pradhan Coll.; 1 ex., 150 mm., Colva, 19.xii.68, V. C. Agrawal Coll.

Distribution.—Widespread, east coast of Africa, Red Sea through India, the East Indies to Japan, Australia and Melanesia. Günther (1860) reported this species from Nepal which, obviously, is an error.

71. *Sillaginopsis panijus* (Hamilton)

1822. *Cheilodipterus panijus* Hamilton, *Fish, Ganges*: 57, 367.

Material.—1 ex., 183 mm., Colva, 11.xi.67, K. S. Pradhan Coll.

Distribution.—India, Burma and the East Indies.

XXIX. Family CARANGIDAE

Subfamily 1. CARANGINAE

72. *Alectis indicus* (Rüppell)

1828. *Scyris indicus* Rüppell, *Atlas Reise Nordl. Afrika*: 128, pl. 33, fig. 1.

Material.—2 exs., 53-60 mm., Goa, 26.x.38, A. W. Herre Coll.; 1 ex., 78 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Western Indian Ocean, tropical and subtropical Indo-Pacific as far east as Hawaiian Islands.

73. *Atropus atropus* (Bloch)

1801. *Brama atropus* Bloch, *Syst. Ichth.*: 98.

Material.—1 ex., 94 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—India, Ceylon, Thailand, China and Samoa.

74. *Carangoides chrysophrys* (Cuvier)

1833. *Caranx chrysophrys* Cuvier, *Hist. nat. Poiss.*, 9: 77.

Material.—1 ex., 102 mm., Baina, 16.xi.67, K. S. Pradhan Coll.

Distribution.—East coast of Africa, Madagascar, Seychelles, Muscat, India, China and Australia.

75. *Carangoides malabaricus* (Schneider)

1801. *Scomber malabaricus* Schneider, *Syst. Ichth.*: 31.

Material.—1 ex., 110 mm., Goa, 1938, ? Coll. ; 1 ex., 68 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, east coast of Africa, Zanzibar, Red Sea, Persian Gulf to India, Ceylon, Burma, the East Indies, the Philippines and Japan.

76. *Caranx elacate* (Jordan & Evermann)

1903. *Carangus elacate* Jordan & Evermann, *Bull. U. S. Fish. Comm.*, 23: 190.

1958. *Caranx elacate*: Williams, *Ann. Mag. nat. Hist.*, (13) 1 (16): 383 [Revision]

Material.—5 exs., 120-133 mm., Betul, 18.xi.67, K. S. Pradhan Coll.

Description.—D. VIII + I. 20-21 ; A. II + 1.15-16 ; P.I. 20-21. Scutes on lateral line straight 30-32, strong ; Gill-rakers 6-7+16-18 = 23-25.

Depth of body 2.5-2.6, length of head 3.0-3.1 ; both in standard length. Eye diameter 3.4-3.5, snout length 3.3-3.6, inter-orbital width 3.8-3.9, postorbital distance 2.1-2.3, pectoral fin 0.9-1.0, pelvic fin 2.1-3.5 ; all in length of head. Eye diameter 0.96-1.04 in snout length. Lateral line curve in lateral line straight 1.2.

Body oblong, nape not elevated and there is a continuous curve from snout to origin of second dorsal fin. Cleft of mouth at or very slightly below level of eye, slightly oblique. Maxilla extends to posterior edge of pupil. Scales on body moderately conspicuous ; breast completely scaled. Lateral line curve joins lateral line straight under 3rd to 5th dorsal ray. Colour-in-alcohol-dusky above, yellowish at midline, silvery-brown below. Dorsal fins dusky especially at tips of spines and rays. Anal, pectorals and pelvics pale.

Distribution.—According to Williams (1958) "the coast of east Africa, Comoro Islands, ?Madagascar, Hawaiian Islands ; probably throughout tropical and subtropical Indo-Pacific Ocean." This is the first record of the species from the Indian coast.

77 *Caranx melampygus* Cuvier

1833. *Caranx melampygus* Cuvier, *Hist. nat. Poiss.*, 9: 116.

Material.—1 ex., 105 mm., Goa, 1938.

Distribution.—Widespread, east coast of Africa, Red Sea, through India, the East Indies, Japan to Tonga and Hawaiian Islands.

78. *Megalaspis cordyla* (Linnaeus)

1758. *Scomber cordyla* Linnaeus, *Syst. Nat.* (ed. 10): 298.

Material.—2 exs., 116-210 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.

Distribution.—Western Indian Ocean, tropical and subtropical Indo-Pacific as far east as Hawaiian Islands.

79. *Selar kalla* (Cuvier)

1833. *Caranx kalla* Cuvier, *Hist. nat. Poiss.*, 9: 49.

Material.—6 exs., 102-107 mm., Calangute, 30.iii.66 ; 2 exs., 95-103 mm., Goa, 27.xi.67, K. S. Pradhan Coll. ; 7 exs., 78-107 mm., Colva, 15.xii.68, V C. Agrawal Coll. ; 3 exs., 81-95 mm., Banulia, 14.ix.69 ; 3 exs., 85-87 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, east of Africa, Red Sea, through India, Ceylon, the East Indies, the Philippines to Solomon Islands and Sandwich Islands.

80. *Selar melam* Bleeker

1851. *Selar melam* Bleeker, *Nat. Tijds. Ned. Indie*, 1: 362.

Material.—1 ex., 76 mm., Colva, 15.xii.68, V C. Agrawal Coll.

Distribution.—India, the Andamans, Thailand, the East Indies, China, Taiwan and Australia.

Subfamily 2. CHORINEMINAE

81. *Chorinemus lysan* (Forsk.)

1775. *Scomber lysan* Forskal, *Descript. Animal.*: 12, 54.

Material.—1 ex., 160 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.

Distribution.—Widespread, Western Indian Ocean tropical and subtropical Indo-Pacific as far east as Tahiti.

82. *Chorinemus tol* Cuvier

1831. *Chorinemus tol* Cuvier, *Hist. nat. Poiss.*, 8: 385.

Material.—1 ex., 159 mm., Colva, 10.xi.67, K. S. Pradhan Coll. ; 1 ex., 142 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—East coast of Africa, Red Sea, through India, Ceylon, the East Indies, the Philippines to China and Japan.

Subfamily 3. *SERIOLINAE*

83. *Seriolina nigrofasciata* (Rüppell)

1831. *Nomeus nigrofasciata* Rüppell, *Atlas Reise Nordl. Afrika*: 28.

Material.—1 ex., 130 mm., Colva, 19.xii.68, V C. Agrawal Coll.

Distribution.—Widespread, east coast of Africa, Red Sea, India, Ceylon, the East Indies, the Philippines, China, Japan and Australia.

XXX. Family *RACHYCENTRIDAE*

84. *Rachycentron canadus* (Linnaeus)

1766. *Gasterosteus canadus* Linnaeus, *Syst. Nat.* (ed. 12), 1: 491.

Material.—1 ex., 191 mm., Goa, 26.x.38, A. W Herre Coll.; 1 ex., 222 mm., Colva, 11.xi.67, K. S. Pradhan Coll.

Distribution.—Widespread, in all warm seas except the eastern Pacific.

XXXI. Family *LUTIANIDAE*

85. *Lutianus argentimaculatus* (Forsk.)

1775. *Sciaena argentimaculatus* Forskal, *Descript. Animal.*: 47.

Material.—1 ex., 197 mm., Goa, 1940.

Distribution.—Widespread in the Indo-West Pacific, ranging from the Red Sea and east coast of Africa to Riu Kiu Islands and Polynesia.

86. *Lutianus johni* (Bloch)

1792. *Anthias johnii* Bloch, *Naturges. ausland. Fische*, 6: 113, pl. 318.

Material.—1 ex., 134 mm., Goa, 1940, Coll. ? ; 1 ex., 126 mm., Betul, 18.xi.67, K. S. Pradhan Coll.

Distribution.—Widespread, east coast of Africa through India, the East Indies to the Philippines, China, Australia and Polynesia.

87. *Lutianus rivulatus* (Cuvier)

1828. *Diacope rivulata* Cuvier, *Hist. nat. Poiss.*, 2: 414.

Material.—2 exs., 146-179 mm., Betul, 18.xi.67, K. S. Pradhan Coll.

Distribution.—Tropical Indian Ocean to the Philippines, China, Japan, Gilbert and Samoa Islands.

88. *Lutianus russelli* (Bleeker)

1849. *Mesoprion russellii* Bleeker, *Verh. Batav. Genootsch.*, 22: 41.

Material.—1 ex., 86 mm., Goa, 26.x.38, A. W. Herre Coll.

Distribution.—Widespread, from Madagascar and Zanzibar through India, the East Indies to the Philippines, Japan and Australia.

XXXII. Family NEMIPTERIDAE

89. *Nemipterus japonicus* (Bloch)

1791. *Sparus japonicus* Bloch, *Naturges. ausland. Fische*, 5: 110.

Material.—1 ex., 141 mm., Goa, 1938.

Distribution.—Widespread, tropical Indian Ocean, the East Indies, the Philippines, China and Japan.

XXXIII. Family GERRIDAE

90. *Gerres punctatus* Cuvier

1830. *Gerres punctatus* Cuvier, *Hist. nat. Poiss.*, 6: 480.

Material.—1 ex., 87 mm., Baina, 16.xi.67; 1 ex., 94 mm., Goa, 27.xi.67, K. S. Pradhan Coll.; 1 ex., 120 mm., Colva, 19.xii.68, V. C. Agrawal Coll.

Distribution.—Widespread, tropical Indian Ocean, the East Indies, the Philippines, China, Japan, Australia and Melanesia.

91. *Gerres setifer* (Hamilton)

1822. *Chanda setifer* Hamilton, *Fish. Ganges*: 105, 370.

Material.—1 ex., 84 mm., Goa, 1938.

Distribution.—Coasts of India, Ceylon, Burma and Malay Peninsula.

XXXIV. Family LEIOGNATHIDAE

92. *Lelognathus berbis* (Valenciennes)

1835. *Equula berbis* Valenciennes, *Hist. nat. Poiss.*, 10: 85.

Material.—3 exs., 22-52 mm., Colva, 19.xii.68, V. C.

Agrawal Coll. ; 28 exs., 54-81 mm., Vasco, 25.ix.69., *R. C. Sharma* Coll.

Distribution.—Red Sea, Zanzibar, India, Malaysia, the East Indies and Japan.

93. *Leiognathus blochi* (Valenciennes)

1835. *Equula blochii* Valenciennes, *Hist. nat. Poiss.*, 10: 84.

Material.—2 exs., 44-57 mm., Colva, 4.iv.66., *K. S. Pradhan* Coll. ; 1 ex., 57 mm., Banulia, 14.ix.69. ; 9 exs., 53-65 mm., Vasco, 25.ix.69., *R. C. Sharma* Coll.

Distribution.—India, the East Indies and the Philippines.

94. *Leiognathus daura* (Cuvier)

1829. *Equula daura* Cuvier, *Regne Animal.*, 2: 212.

Material.—1 ex., 61 mm., Calangute, 30.iv.66, *K. S. Pradhan* Coll.

Distribution.—From Arabia to India, through the East Indies to the Philippines and Australia.

95. *Leiognathus insidiator* (Bloch)

1787. *Zeus insidiator* Bloch, *Naturges. ausland. Fische*, 3: 41.

Material.—9 exs., 44-49 mm., Calangute, 30.iii.66 ; 4 exs., 71-80 mm., Goa, 6.iv.66 ; 8 exs., 18-30 mm., Colva, 10.xi.67, *K. S. Pradhan* Coll.

Distribution.—Didespread, east coast of Africa through India, the East Indies to the Philippines, China and Polynesia.

96. *Leiognathus ruconius* (Hamilton)

1822. *Chanda ruconius* Hamilton, *Fish. Ganges*: 106, pl. 12, fig. 35.

Material.—2 exs., 38-67 mm., Calangute, 30.ii.66 ; 1 ex., 75 mm., Goa, 27.xi.67, *K. S. Pradhan* Coll. ; 1 ex., 50 mm., Colva, 19.xii.68, *V. C. Agrawal* Coll. ; 1 ex., 52 mm., Banulia, 14.ix.69 ; 2 exs., 68-72 mm., Vasco, 25.ix.69, *R. C. Sharma* Coll.

Distribution.—Widespread in the Indo West Pacific, ranging from east coast of Africa through India, the East Indies, the Philippines to Australia.

97. *Leiognathus splendens* (Cuvier)

1829. *Equula splendens* Cuvier, *Regne Animal.*, 2 (ed. 2): 212.

Material.—1 ex., 84 mm., Goa, 1938, Coll ? ; 1 ex., 70 mm., Goa, 22.xi.67, *K. S. Pradhan* Coll.

Distribution.—Widespread, Red Sea, Madagascar, Mauritius, India, Ceylon through the East Indies to China, the Philippines, Australia and Polynesia.

XXXV. Family POMADASYIDAE

98. *Pomadasys hasta* (Bloch)

1790. *Lutjanus hasta* Bloch, *Naturges. ausland. Fische*, 4: 109, pl. 246, fig. 1.

Material.—2 exs., 110-127 mm., Goa, 26.x.38, A. K. Herre Coll.; 1 ex., 132 mm., Betul, 18.xi.67, K. S. Pradhan Coll.

Distribution.—Widespread, east coast of Africa through India, the East Indies to the Philippines, China, Japan and Australia.

99. *Pomadasys maculatus* (Bloch)

1797. *Anthias maculatus* Bloch, *Naturges. ausland. Fische*, 7: 9, pl. 326, fig. 2.

Material.—2 exs., 63-84 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.; 2 exs., 52-53 mm., Colva, 19.xii.68, V. C. Agrawal Coll.; 1 ex., 106 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, east coast of Africa, through India, the East Indies to the Philippines, China and Australia.

XXXVI. Family SCOLOPSIDAE

100. *Scolopsis margaritifera* (Cuvier)

1830. *Scolopsides margaritifera* Cuvier, *Hist. nat. Poiss.*, 5: 337.

1936. *Scolopsis margaritifera*: Weber and de Beaufort, *Fishes Indo-Australian Archipelago*, 7: 328.

Material.—1 ex., 170 mm., Betul, 18.xi.67, K. S. Pradhan Coll.

Description.—D. X. 9; A. III. 7; P. 2. 17; Ll. 40; Ltr. $3\frac{1}{2}/1/13$; G.R. 6+5, low tubercles.

Height of body 2.2; length of head 3.0 in standard length. Eye diameter 3.2 in head length, slightly more than snout and interorbital width. Maxillary smooth, not reaching vertical from front edge of eye. Teeth in rather broad villiform bands in jaws, outer series slightly enlarged. Preoperculum with five transverse rows of scales, hind border strongly denticulate, and scalloped above edge which is prominent and rounded. Suborbital naked with distinct long spine

reaching to hind border of pupil, with five smaller spines below it. Infraorbital with enlarged, distinct backwardly directed spine below eye. Fins—first and second dorsal spines shorter than third; third to fifth spines subequal, somewhat more than postorbital part of head; following spines slightly shorter. Soft dorsal of equal height as spinous part. First anal spine short, second longest and more robust than third; third as long as dorsal spines. Caudal forked. Colour in alcohol—reddish brown, most scales with silvery spot.

The specimen agrees well with Fowler's (1931) and Weber & de Beaufort's (1936) description of the species except in having a higher number of pectoral rays (2.17 vs. 2.14).

Distribution.—This species has hitherto been reported only from the East Indies, the Philippines, China and North Australia (*vide* Herre, 1953). This is the first record of the species from Indian waters.

XXXVII. Family SCIAENIDAE

101 *Dendrophysa albida* (Cuvier)

1830. *Corvina albida* Cuvier, *Hist. nat. Poiss.*, 5: 93.

Material.—1 ex., 294 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Remarks.—There is a considerable controversy regarding the systematic status and identity of this species and this has been discussed elsewhere (Talwar, 1970). The species is characteristic in having a pair of minute mandibular barbels and a carrot-shaped Otolithine type of gas-bladder. The species is in fact much more nearly related to the type of *Nibea* Jordan & Thompson than to the species associated with it in *Dendrophysa* Trewavas. The generic relationship of this species is under study.

Distribution.—India, Ceylon, the East Indies, China and Australia.

102. *Dhoma axillaris* (Cuvier)

1830. *Corvina axillaris* Cuvier, *Hist. nat. Poiss.*, 5: 113.

Material.—2 exs., 75-78 mm., Calangute, 30.iii.66; 2 exs., 94-112 mm., Calangute, 29.xi.67, K. S. Pradhan Coll.

Distribution.—India, Ceylon, the East Indies, the Philippines, China and Australia.

103. **Johnius belengeri** (Cuvier)

1830. *Corvina belengerii* Cuvier, *Hist. nat. Poiss.*, 5: 120.

Material.—2 exs., 25-27 mm., Mormogoa Bay, September 1916, S. W Kemp Coll.; 1 ex., 53 mm., Canacona market, 6.iv.66, K. S. Pradhan Coll.

Distribution.—Natal coast, India, the Andamans, Thailand, Malay Peninsula, the East Indies, China and the Philippines.

104. **Johnius macroptera** (Bleeker)

1853. *Umbrina macropterus* Bleeker, *Nat. Tijdschr. Ned. Indie*, 4: 254.

Material.—1 ex., 67 mm., Mormogoa Bay, September 1916, S. W Kemp Coll.

Distribution.—Coast of Natal, India, Ceylon and the East Indies.

105. **Pennahia aneus** (Bloch)

1793. *Johnius aneus* Bloch, *Naturges. ausland. Fische*, 7: 135.

Material.—4 exs., 28-43 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.; 1 ex., 107 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—India, Ceylon, the East Indies, the Philippines and China.

106. **Pama pama** (Hamilton)

1822. *Bola pama* Hamilton, *Fish. Ganges*: 79, 368, pl. 32, fig. 26.

Material.—2 exs., 15-16 mm., Mormogoa Bay, September 1916, S. W Kemp Coll.

Distribution.—India, Burma and the Malay Peninsula.

107 **Otolithes argenteus** (Cuvier)

1830. *Otolithus argenteus* Cuvier, *Hist. nat. Poiss.*, 5: 62.

Material.—2 exs., 34-35 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.

Distribution.—Widespread, east coast of Africa, Madagascar, through India, Ceylon, the East Indies, the Philippines, China and Australia.

108. **Otolithes maculatus** (Cuvier)

1830. *Otolithus maculatus* Cuvier, *Hist. nat. Poiss.*, 5: 64.

Material.—1 ex., 16 mm., Mormugoa Bay, September 1916, S. W Kemp Coll.; 6 exs., 86-115 mm., Canacona market, 6.iv.66, K. S. Pradhan Coll.

Distribution.—India, Burma and the East Indies.

109. *Wak sina* (Cuvier)

1830. *Corvina sina* Cuvier, *Hist. nat. Poiss.*, 5: 122.

Material.—1 ex., 73 mm., Mormugoa Bay, September 1916, S. W Kemp Coll.; 8 exs., 38-72 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.

Distribution.—East coast of South Africa, India, Ceylon, the East Indies, the Philippines and Japan.

110. *Wak vogleri* (Bleeker)

1853. *Otolithus vogleri* Bleeker, *Nat. Tijds. Nederland Indie*, 4: 253.

Material.—3 exs., 89-123 mm., Goa, September 1916, S. W Kemp Coll.; 2 exs., 91-117 mm., Panjim, 27.xi.67, K. S. Pradhan Coll.

Distribution.—East coast of South Africa, India, Ceylon, the East Indies and China.

111. *Wak* sp.

Specific identification is difficult in the following juveniles. 8 exs., 10-15 mm., Mormugoa Bay, September 1916, S. W Kemp Coll.

XXXVIII. Family LACTARIIDAE

112. *Lactarius lactarius* (Schneider)

1801. *Scomber lactarius* Schneider, *Syst. Ichth.*: 31.

Material.—5 exs., 82-170 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, Arabia through India, Ceylon, the Philippines and China to Australia.

XXXIX. Family SPARIDAE

113. *Acanthopagrus berda* (Forsk.)

1775. *Sparus berda* Forskal, *Descript. Animal.*: 32.

Material.—2 exs., 186-206 mm., Colva, 11.ix.67, K. S. Pradhan Coll.

Distribution.—Tropical Indo-Pacific from India, the East Indies, the Philippines, China, Japan to Solomon Islands and Australia.

XL. Family MULLIDAE

114. *Mulloidichthys vittatus* (Forsk.)

1775. *Mullus vittatus* Forskal, *Descript. Animal.*: 31.

Material.—2 exs., 67-89 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.

Distribution.—Widespread, east coast of Africa, through India, Ceylon, the East Indies, the Philippines to Melanesia, Micronesia and Polynesia.

XLI. Family DREPANIDAE

115. *Drepane punctata* (Linnaeus)

1758. *Chaetodon punctatus* Linnaeus, *Syst. Nat.* (ed. 10): 273.

Material.—1 ex., 45 mm., Goa, 1924, Coll?; 2 exs., 36-45 mm., Betul, 18.xi.67, K. S. Pradhan Coll.; 1 ex., 69 mm., Colva, 19.xii.68, V C. Agrawal Coll.

Distribution.—Widespread, east coast of Africa, Red Sea through India, Ceylon, the East Indies to Australia and Polynesia.

XLII. Family SCATOPHAGIDAE

116. *Scatophagus argus* (Linnaeus)

1766. *Chaetodon argus* Linnaeus, *Syst. Nat.* (ed. 12): 464.

Material.—1 ex., 60 mm., Goa, 26.x.38, A. W. Herre Coll.

Distribution.—India, Ceylon, Burma, Malay Archipelago, China, the Philippines, Australia, Melanesia and Polynesia.

XLIII. Family POMACANTHIDAE

117 *Pomacanthodes annularis* (Bloch)

1787. *Chaetodon annularis* Bloch, *Naturges. ausland. Fische*, 3: 114.

Material.—1 ex., 188 mm., Baina, 1966, K. S. Pradhan Coll.

Distribution.—India, Ceylon and the East Indies.

XLIV. Family CICHLIDAE

118. ***Eetroplus suratensis*** (Bloch)

1785. *Chaetodon suratensis* Bloch, *Ichth. Hist. Nat.*, Paris, pl. 217.

Material.—2 exs., 90-92 mm., Goa, 1938, Coll. ? ; 1 ex., 65 mm., Colva, 4.iv.66, K. S. Pradhan Coll.

Distribution.—India and Ceylon.

XLV. Family POMACENTRIDAE

119. ***Abudefduf bengalensis*** (Bloch)

1787. *Chaetodon bengalensis* Bloch, *Naturges. ausland. Fische*, 3: 110, pl. 213, fig. 2.

Material.—1 ex., 100 mm., Goa, 1938.

Distribution.—Indo-Pacific, from the Red Sea and Madagascar through India, the East Indies to the Philippines, China and Japan.

120. ***Abudefduf glaucus*** (Cuvier)

1830. *Glyphisodon glaucus* Cuvier, *Hist. nat. Poiss.*, 5: 475.

1960. *Abudefduf glaucus*: Smith, *Ichthyol. Bull. Rhodes Univ.*, 19: 336, pl. 29F.

Material.—1 ex., 58 mm., Goa, 1938.

Description.—D. XIII. 12 ; A. II. 12 ; P. 2. 15.

Depth of body 2.5, length of head 3.4 ; both in standard length. Eye diameter 3.3 in head length, equals interorbital width and snout length, 1.5 in postorbital length. Preopercle smooth ; single opercular spine, broad and flat. Teeth biserial. Three rows of scales on cheeks, preopercle flange naked. Caudal emarginate. Colour-in-alcohol—uniform light yellowish, margin of anal fin and anus black.

Distribution.—Over the whole Western Indian Ocean, the East Indies, the Philippines to the Marshall and Marianas Islands. Menon & Talwar 1972 recently recorded this species for the first time from the Nicobar Islands and the present record is first report from the main coast of India.

121. ***Abudefduf coelestinus*** (Cuvier)

1830. *Glyphisodon coelestinus* Cuvier, *Hist. nat. Poiss.* 5: 464, pl. 348.

Material.—3 exs., 43-46 mm., Calangute, P. F. Jones.

Distribution.—East coast of Africa, through India to the East Indies, the Philippines, Japan and Australia.

XLVI. Family LABRIDAE

122. *Halichoeres nigrescens* (Schneider)

1801. *Labrus nigrescens* Schneider, *Syst. Ichth.*: 263.

Material.—1 ex., 102 mm., Goa, 1938.

Distribution.—Widespread, Zanzibar, India, Ceylon through the East Indies, the Philippines to Australia.

XLVII. Family BLENNIIDAE

123. *Alticus bilineatus* (Peters)

1868. *Salarias bilineatus* Peters, *Monatsber. Akad. Wiss.*: 268.

Material.—1 ex., 50 mm. T. L., Mormugoa Bay, September 1916, S. W. Kemp Coll.

Distribution.—Ceylon, the Andamans, the Philippines to the Tuamotu Islands and Samoa. This is the first record of the species from the main coast of India.

124. *Blennius steindachneri* Day

1873. *Blennius steindachneri* Day, *Proc. zool. Soc. Lond.*: 110.

Material.—6 exs., 23-35 mm. T. L., Mormugoa Bay, September 1916, S. W. Kemp Coll.

Remarks.—The systematic status of this species is still uncertain. According to Weber & de Beaufort (1951) it is probable that this is the Indo-Australian representative of *Blennius cristatus* Linnaeus, which is known as *B. steindachneri* in the Indian Ocean and *B. tonganus* in Polynesia. Smith (1959), however, treated the species as distinct from *B. cristatus* Linnaeus.

Distribution.—East coast of South Africa and the Bay of Bengal. The present record from the west coast of India is, therefore, interesting.

XLVIII. Family SIGANIDAE

125. *iganus javus* (Linnaeus)

1766. *Tenthis java* Linnaeus, *Syst. Nat.* (ed. 12): 507.

Material.—1 ex., 87 mm., Goa, 1938.

Distribution.—Widespread, Muscat, India, Ceylon, Malay Peninsula, the Philippines, Australia to New Hebrides and Tahiti.

126. *Siganus oramin* (Bloch & Schneider)

1801. *Amphacanthus guttatus* var. *oramin* Bloch & Schneider, *Syst. Ichth.*: 207.

Material.—1 ex., 84 mm., Goa, 1938, A. W. Herre Coll.; 1 ex., 88 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.

Distribution.—Widespread, east coast of Africa through India, Ceylon, the East Indies, the Philippines to Australia, Fiji and Samoa.

XLIX. Family ACANTHURIDAE

127 *Ctenochaetus strigosus* (Bennett)

1828. *Acanthurus strigosus* Bennett, *Zool. Jour.*, 4: 41.

Material.—1 ex., 192 mm., Goa, 1938.

Distribution.—From the Red Sea and east coast of Africa to the East Indies, the Philippines, Japan, Hawaiian and Tuamotu Islands.

L. Family TRICHIURIDAE

128. *Trichiurus lepturus* Linnaeus

1758. *Trichiurus lepturus* Linnaeus, *Syst. Nat.* (ed. 10): 246.

Material.—1 ex., 850 mm. T L., Goa, 26.x.37; 2 exs., 353-354 mm. T L., Goa, 26.x.38; 2 exs., 34-38 mm. T L., Goa, 1938, A. W. Herre Coll.; 5 exs., 302-343 mm. T L., Calangute, 30.iii.66; 1 ex., 479 mm. T L., Goa, 27.xi.67, K. S. Pradhan Coll.; 3 exs., 445-450 mm. T L., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, east coast of Africa, Red Sea, through India, Ceylon, the East Indies, the Philippines to Australia.

LI. Family SCOMBRIDAE

129. *Rastrelliger kanagurta* (Cuvier)

1817. *Scomber kanagurta* Cuvier, *Regne Animal.*, 2: 197.

Material.—1 ex., 148 mm., Goa, 15.xi.67, K. S. Pradhan Coll.; 1 ex., 152 mm., Colva, 9.xii.68, V. C. Agrawal Coll.; 6 exs., 99-114 mm., Banulia, 14.ix.69; 5 exs., 99-118 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Red Sea, through India, the East Indies to the Philippines and Fiji.

LII. Family SCOMBEROMORIDAE

130. *Scomberomorus guttatus* (Bloch)

1801. *Scomber guttatus* Bloch, *Syst. Ichth.*: 23, fig. 5.

Material.—1 ex., 188 mm., Goa, 26.x.38, A. W. Herre Coll.; 15 exs., 98-179 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.

Distribution.—Widespread in the Indo-West Pacific, ranging from the Red Sea, east coast of Africa, through India, the East Indies to Japan, Australia, Melanesia and Polynesia.

LIII. Family STROMATEIDAE

131. *Pampus argenteus* (Euphrasen)

1788. *Stromateus argenteus* Euphrasen, *Kongl. Vetensk Akad. Stockholm*, 9: 49.

Material.—2 exs., 148-152 mm., Goa, 27.xi.67, K. S. Pradhan Coll.

Distribution.—India, Ceylon through the East Indies to China, Japan and the Philippines.

132. *Pampus chinensis* (Euphrasen)

1788. *Stromateus chinensis* Euphrasen, *Kongl. Vetensk. Handl. Stockholm*, 9: 53.

Material.—1 ex., 47 mm., Goa, 26.x.38, A. W. Herre Coll.; 3 exs., 53-98 mm., Calangute, 30.iii.66, K. S. Pradhan Coll.

Distribution.—India, Ceylon to Malaysia, the East Indies and China.

133. *Parastromateus niger* (Bloch)

1795. *Stromateus niger* Bloch, *Naturges. ausland. Fische*, 6: 93, pl. 422.

Material.—3 exs., 74-127 mm., Goa, 12.xi.37, A. W. Herre Coll.; 1 ex., 146 mm., Goa, 1938, Coll?; 3 exs., 35-46 mm., Calangute, 30.iii.66; 2 exs., 51-124 mm., Goa, 27.xi.67, K. S. Pradhan Coll.; 3 exs., 70-72 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, east coast of Africa, Persian Gulf through the East Indies to the Philippines and Japan.

LIV. Family ANABANTIDAE

134. *Anabas testudineus* (Bloch)

1795. *Anthias testudineus* Bloch, *Naturges. ausland. Fische*, 6: 121, pl. 322.

Material.—4 exs., 18-27 mm., Goa, September 1916, S. W Kemp Coll.; 2 exs., 52-90 mm., Goa, 1938, A. W Herre Coll.

Distribution.—India, Ceylon, Burma, Malay Archipelago, South China and the Philippines.

LV. Family ELEOTRIDAE

135. *Butis amboinensis* (Bleeker)

1853. *Eleotris amboinensis* Bleeker, *Nat. Tijds. Ned. Indie*, 5: 343.

1941. *Butis amboinensis*: Koumans, *Mem. Indian Mus.* 13: 318 (Goa).

Material.—1 ex., 50 mm. T L., Mormugoa Bay, September 1916, S. W Kemp Coll.

Distribution.—India and the Indo-Australian Archipelago.

136. *Eleotris fusca* (Schneider)

1801. *Poecilia fusca* Schneider, *Syst. Ichth.*: 453.

1941. *Eleotris fusca*: Koumans, *Mem. Indian Mus.*, 13: 312 (Goa).

Material.—3 exs., 40-63 mm., Mormugoa Bay, September 1916, S. W Kemp Coll.

Distribution.—Widespread, east coast of Africa, Red Sea through India, Ceylon to the West Pacific Ocean.

LVI. Family GOBIIDAE

137 *Bathygobius fusca* (Rüppell)

1828. *Gobius fuscus* Rüppell, *Atlas Reisse N. Afr. Fische*: 137.

1941. *Bathygobius fuscus*: Koumans, *Mem. Indian Mus.*, 13: 267 (Goa).

Material.—1 ex., 130 mm., Mormugoa Bay, September 1916, S. W Kemp Coll.

Distribution.—Widespread, Red Sea, the east coast of Africa through India, the East Indies, the Philippines to the Polynesian Islands.

138. *Glossogobius giurus* (Hamilton)

1822. *Gobius giurus* Hamilton, *Fish. Ganges*: 50, 366, pl. 33, fig. 15.

1941. *Glossogobius giurus*: Koumans, *Mem. Indian Mus.*, 13: 256 (Goa).

Material.—1 ex., 121 mm., Goa, 1938, Coll. ? ; 1 ex., 58 mm., Colva, 1966, K. S. Pradhan Coll.

Distribution.—Widespread, east coast of Africa through India, Ceylon, the East Indies, the Philippines to China, Japan and New Caledonia.

139. *Mugilogobius valigouva* (Deraniyagala)

1936. *Vaimosa valigouva* Deraniyagala, *Ceylon Journ. Sci.* (B), **19**: 219, fig. 1.

1941. *Mugilogobius valigouva*: Koumans, *Mem. Indian Mus.* **13**: 271 (Goa).

Material.—1 ex., 29 mm., Mormugoa Bay, September 1916, S. W Kemp Coll.

Distribution.—Ceylon and Goa.

140. *Sicyopterus griseus* (Day)

1858. *Sicydium griseus* Day, *J. Linn. Soc. Lond.*, **13**: 140.

1941. *Sicyopterus griseus*: Koumans, *Mem. Indian Mus.*, **13**: 296 (Goa).

Material.—1 ex., 15 mm. T L., Mormugoa Bay, September 1916, S. W Kemp Coll.

Distribution.—West coast of India.

141. *Stenogobius malabaricus* (Day)

1865. *Gobius malabaricus* Day, *Proc. zool. Soc. Lond.*: 27..

1941. *Stenogobius malabaricus*: Koumans, *Mem. Indian Mus.*, **13**: 217 (Goa).

Material.—1 ex., 60 mm. T L., Mormugoa Bay, September 1916, S. W Kemp Coll.

Distribution.—Backwaters of Madras, some rivers of Malabar and Mormugoa Bay (Goa).

LVII. Family TAENIOIDIDAE

142. *Ctenotrypauchen microcephalus* (Bleeker)

1860. *Trypauchen microcephalus* Bleeker, *Act. Soc. Indo-Neerl.*, **8**: 62.

1941. *Ctenotrypauchen microcephalus*: Koumans, *Mem. Indian. Mus.*, **13**: 307 (Goa).

Material.—1 ex., 97 mm. T L., Mormugoa Bay, September 1916, S. W Kemp Coll.

Distribution.—From the Persian Gulf to the Indo-Australian Archipelago.

143. *Odontamblyopus rubicundus* (Hamilton)

1822. *Gobioides rubicundus* Hamilton, *Fish. Ganges*: 37, 365, pl. 5, fig. 9.

1941. *Odontamblyopus rubicundus*: Koumans, *Mem. Indian Mus.*, **13**: 304 (Goa).

Material.—1 ex., 163 mm. T L., Goa, 1940, A. W Herre Coll.

Distribution.—India and the Indo-Australian Archipelago.

144. *Trypauchen vagina* (Bloch)

1801. *Gobius vagina* Bloch, *Syst. Ichth.*: 75.

1941. *Trypauchen vagina*: Koumans, *Mem. Indian Mus.*, 13: 305 (Goa).
Material.—2 exs., 86-115 mm. T L., Mormugoa Bay, September 1916, S. W Kemp Coll.

Distribution.—From the Persian Gulf to the Indo-Australian Archipelago.

LVIII. Family SCORPAENIDAE

145. *Dendroscorpaena cirrhosa* (Thunberg)

1793. *Perca cirrhosa* Thunberg, *Nya Handl. Ac. Stockholm*, 14: 193, pl. 7, fig. 2.

Material.—1 ex., 130 mm., Baina, 9.iv.66, K. S. Pradhan Coll.

Distribution.—Widespread, east coast of Africa, Red Sea, the Persian Gulf through India, the East Indies, the Philippines to Tahiti and Society Islands.

146. *Parascorpaena aurita* (Rüppell)

1838. *Scorpaena aurita* Rüppell, *Neue Wirbelt., Fische*: 106, pl. 37, fig. 2.

Material.—1 ex., 110 mm., Baina, 9.iv.66, K. S. Pradhan Coll.

Distribution.—The Red Sea, east coast of Africa, India, the East Indies and Japan.

LIX. Family SYNANCIIDAE

147 *Minous monodactylus* (Bloch & Schneider)

1801. *Scorpaena monodactylus* Bloch & Schneider, *Syst. Ichth.*: 194.

Material.—1 ex., 73 mm., Goa, 1938, A. W Herre Coll.

Distribution.—Seas of India, through the East Indies to China.

LX. Family PLATYCEPHALIDAE

148. *Grammoplites scaber* (Linnaeus)

1758. *Cottus scaber* Linnaeus, *Syst. Nat.* (ed. 10), 1: 264.

Material.—2 exs., 141-168 mm., Goa, 14.vii.35, A. W Herre Coll.

Distribution.—Seas of India to the East Indies.

Order 14. PLEURONECTIFORMES

LXI. Family BOTHIDAE

149. *Pseudorhombus arsius* (Hamilton)

1822. *Pleuronectes arsius* Hamilton, *Fish. Ganges*: 128.

Material.—1 ex., 143 mm., Goa, 1938, A. W. Herre Coll.

Distribution.—Widespread, Indo-West Pacific.

150. *Pseudorhombus javanicus* (Bleeker)

1853. *Rhombus javanicus* Bleeker, *Nat. Tijdschr. Ned. Indie*, 4: 502.

Material.—1 ex., 119 mm., Goa, 1938, A. W. Herre Coll.

Distribution.—India and the Malay Archipelago.

151. *Pseudorhombus triocellatus* (Schneider)

1801. *Pleuronectes triocellatus* Schneider, *Syst. Ichth.*: 145.

Material.—2 exs., 73-86 mm. T L., Goa, 12.xi.37, A. W. Herre Coll; 1 ex., 92 mm. T L., Banulia, 14.ix.69, R. C. Sharma Coll.

Distribution.—Seas of India to the Malay Archipelago.

LXII. Family SOLEIDAE

152. *Solea ovata* Richardson

1845. *Solea ovata* Richardson, *Rep. Brit. Assoc. Adv. Sci.*: 279.

1928. *Solea ovata*; Norman, *Rec. Indian Mus.*, 30: 176 (Goa).

Material.—5 exs., 8-57 mm., Mormugoa Bay, September 1916, S. W. Kemp Coll.

Distribution.—India through the Malay Archipelago to China and the Philippines.

153. *Zebrias synapturoides* (Jenkins),

1910. *Synaptura synapturoides* Jenkins, *Mem. Indian Mus.*, 3: 28, pl. 3, fig. 4.

Material.—1 ex., 149 mm. T L., Goa, 1938, A. W. Herre Coll.

Distribution.—Norman (1928) gives the distribution of this species as the Madras and Malabar coast. The present record extends the range of this species further north to the Goa coast.

LXIII. Family CYNOGLOSSIDAE

154. *Cynoglossus bilineatus* (Lacépède)

1802. *Achirus bilineatus* Lacépède, *Hist. nat. Poiss.*, 4: 569, 663.

Material.—2 exs., 137-335 mm. T L., Colva, 11.xi.67, K. S. Pradhan Coll.

Distribution.—From the Red Sea, through the Indian Ocean to Japan and Australia.

155. *Cynoglossus lida* (Bleeker)

1851. *Plagusia lida* Bleeker, *Nat. Tijdschr. Ned. Indie*, 1: 413.

Material.—6 exs., 73-187 mm., Colva, 11.xi.67, K. S. Pradhan Coll.

Distribution.—Indian Ocean.

156. *Cynoglossus lingua* Hamilton

1822. *Cynoglossus lingua* Hamilton, *Fish. Ganges*: 32, 365.

Material.—1 ex., 235 mm. T.L. Goa, 1938, A. W. Herre Coll.

Distribution.—Coast of India to the East Indies.

157 *Cynoglossus macrostomus* Norman

1928. *Cynoglossus macrostomus* Norman, *Rec. Indian. Mus.*, 30: 204, fig. 20.

Material.—2 exs., 136-140 mm. T L., Betul, 18.xi.67, 3 exs., 130-135 mm. T L., Goa, 27.xi.67, K. S. Pradhan Coll. 7 exs., 100-145 mm. T L., Mormugoa, 14.ix.69; 9 exs., 115-154 mm. T L., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Norman (1928) gave the habitat of this species as "Portuguese India (?); Orissa; Calcutta" Menon (1970) confirmed the range of distribution of this species on the Goa coast.

158. *Cynoglossus puncticeps* (Richardson)

1845. *Plagusia puncticeps* Richardson, *Rept. Brit. Ass. Adv. Sci.*: 280.

1928. *Cynoglossus puncticeps*: Norman, *Rec. Indian. Mus.*, 30: 205 (Goa).

Material.—2 exs., 70-134 mm. T L., Mormugoa Bay, September 1916, S. W. Kemp Coll.

Distribution.—From Sind (Pakistan), through the Indian Ocean to China.

159. *Paraplagusia bilineata* (Bloch)

1785. *Pleuronectes bilineatus* Bloch, *Naturges. ausland. Fische.*, 3: 29.

Material.—2 exs., 64-107 mm. T L., Colva, 10.xi.67; 1 ex., 62 mm. T L., Colva, 11.xi.67, K. S. Pradhan Coll.

Distribution.—East coast of Africa, through the Indian Ocean to China and Japan.

160. *Paraplagusia blochi* (Bleeker)

1851. *Plagusia blochii* Bleeker, *Nat. Tijdschr. Ned. Indie.*, 1: 411.

Material.—1 ex., 244 mm. T L., Panjim, 29.x.69, R. C. Sharma Coll.

Distribution.—East coast of Africa, through the Indian Ocean to Taiwan.

Order 15. TETRADONTIFORMES

Suborder 1. BALISTOIDEI

LXIV. Family ALUTERIDAE

161. *Monacanthus choirocephalus* Bleeker

1852. *Monacanthus choirocephalus* Bleeker, *Verh. Batav. Genootsch.*, 29: 19.

1955. *Paramonacanthus choirocephalus*: Munro, *Marine and Fresh-water Fishes of Ceylon*: 274.

Material.—1 ex., 74 mm., Goa, 1938, A. W. Herre Coll.

Description.—D. II, 29; A. 29; P. 12. Depth of body 2.3, length of head 2.6; both in standard length. Eye diameter 2.2 in snout and more than interorbital width. Gill opening somewhat oblique, upper end below hind border of eye, lower end below hind border of pupil. First dorsal spine below posterior half of eye, front border rough, posterior part with two rows of distinct barbs on sides. Second dorsal spine minute. Origin of anal below second dorsal. Pectoral length 2.6 in head length. Pelvic spine movable, tapering, granulated with spinules on sides and on top. Scales indistinct, skin not very rough. Caudal rounded. Colour-in-alcohol—brownish with indications of two transverse bands on caudal.

Distribution.—De Beaufort & Briggs (1962) give the range as 'eastern coast of India, Ceylon, Thailand and Cochin China'. The present record extends its range of distribution to the Arabian Sea.

LXV. Family TRIACANTHIDAE

162. *Pseudotriacanthus strigilifer* (Cantor)

1849. *Triacanthus strigilifer* Cantor, *J. Asiat. Soc. Beng.*, 18 (2): 363.

Material.—2 exs., 151-184 mm., Baina, 16.xi.67, K. S. Pradhan Coll.

Remarks.—In both the specimens the lateral line is not discernible. Munro (1955) give 'no lateral line' as a family character whereas De Beaufort & Briggs (1962) give 'lateral line conspicuous' as a generic character in this family of fishes.

Distribution.—Persian Gulf, India, Ceylon, Malay Peninsula, China and the Philippines.

163. *Triacanthus blochi* Bleeker

1852. *Triacanthus blochii* Bleeker, *Nat. Tijdschr. Ned. Indie*: 81.

1962. *Triacanthus blochi*: Briggs & de Beaufort, *Fishes Indo-Australian Archipelago*, 11: 271, fig. 72.

Material.—1 ex., 153 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Description.—D₁ V, D₂ 20; A. 1.15; P 1.11; V.I. Height of body 2.5, length of head 3.0; both in standard length. Eye oval, 2.3 in snout length, 3.4 in head length. Interorbital width almost equal to eye diameter; interorbital space concave. Upper profile of head snout slightly concave. Distance between end of first dorsal and beginning of second dorsal about equal to eye diameter. Base of anal 1.7 in second dorsal. Pectorals rounded, as long as distance between eye and origin of first dorsal. Ventral spine shorter than first dorsal spine. Pelvics between ventral spines narrow, tapering to a point posteriorly. Caudal forked. Caudal peduncle tapering to base of caudal, its length 4.7 in standard length. Colour in alcohol—light brownish above, silvery on sides and below. Fins yellowish.

Distribution.—This is the first record of this species from Indian waters; previously reported only from the East Indies (*vide* Beaufort & Briggs, 1962).

Suborder 2. TETRADONTOIDEI

LXVI. Family TETRAODONTIDAE

164. *Sphoeroides honckenii* (Bloch)

1785. *Tetrodon honckenii* Bloch, *Naturges. ausland. Fische*, 1: 133.

1962. *Sphoeroides honckeni*; de Beaufort & Briggs, *Fishes Indo-Australian Archipelago*, 11: 386.

Material.—1 ex., 74 mm., Goa, 1938.

Description.—D. 2. 10 ; A. 2. 7, P. 1. 14. Length of head 2.8, 3.7 in total length. Eye diameter 2.2 in snout length, 3.2 in interorbital width, superiorly without free orbital rim. Nostrils paired, on a short papilla. Upper lateral line running from eye along upper sides to upper half of base of caudal. Lower lateral line inconspicuous except on caudal peduncle where it runs along a feeble skin fold. Prickles on occiput, anterior part of back and upper part of sides not reaching dorsal ; underside with prickles, except chin and caudal. Origin of anal below posterior rays of dorsal. Pectorals rounded, 2.0 in head length. Caudal truncate. Colour-in-alcohol—brownish above with many large and smaller oval white spots, creamy below ; the two colours rather sharply separated. Dorsal, anal and pectorals yellowish.

Distribution.—De Beaufort & Briggs (1962) give the distribution as the Cape of Good Hope to Natal, Zanzibar, Madagascar, Mauritius, Tranquebar (?) and China. This is the first definite record from the Indian coast.

165. *Sphoeroides lunaris* (Bloch)

1801. *Tetrodon lunaris* Bloch, *Syst. Ichth.*: 505.

Material.—3 exs., 82-92 mm., Goa, September 1916, S. W. Kemp Coll. ; 1 ex., 54 mm., Goa, 1938.

Distribution.—Widespread, east coast of Africa, Red Sea, through India, Ceylon, the East Indies, the Philippines to Solomon and Fiji Islands.

166. *Sphoeroides spadiceus* (Richardson)

1844. *Tetrodon spadiceus* Richardson, *Fishes Voy. Sulphur*: 123.

Material.—1 ex., 450 mm., Goa, 25.iv.35, A. W. Herre Coll. ; 24 exs., 104-135 mm., Baina, 15/16.xi.67 ; 3 exs., 112-126 mm., Goa, 27.xi.67, K. S. Pradhan Coll. ; 5 exs., 108-140 mm., Vasco, 25.vi.69, R. C. Sharma Coll.

Distribution.—East coast of Africa, Red Sea, India, the East Indies, the Philippines, China, Japan and Australia.

167. *Chelonodon patoca* (Hamilton)

1822. *Tetrodon patoca* Hamilton, *Fish. Ganges*: 7, 363, pl. 16, fig. 2.

Material.—12 exs., 51-61 mm., Calangute, 30.iii.66, K. S. Pradhan Coll. ; 1 ex., 140 mm., Vasco, 25.ix.69, R. C. Sharma Coll.

Distribution.—Widespread, east coast of Africa, through India, Ceylon, the East Indies, the Philippines to Northern Australia and Admiralty Islands.

Order 16. BATRACHOIDIFORMES

LXVII. Family BATRACHOIDIDAE

168. *Austrobatrachus dussumieri* (Valenciennes)

1857. *Batrachus dussumieri* Valenciennes, *Hist. nat. Poiss.*, **12**: 474.

Material.—2 exs., 131-135 mm., Goa, 28.x.38, A. W. Herre Coll.

Distribution.—Seas and estuaries of India to Malay Archipelago.

SUMMARY

This study on the shore fish fauna of Goa is based on the collections of Dr. S. W. Kemp, Dr. A. W. Herre, Mr. P. F. Jones, material donated by the Karnatak College, Dharwar (Mysore) and on recent surveys (1966-69) undertaken by several parties of the Zoological Survey of India, Calcutta. In all 168 species of fish are listed belonging to 109 genera and 67 families. Descriptive notes of the new distributional records are given with a view to recording intra-specific variations.

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