J. mar. biol. Ass. India, 1976, **18** (3) : 509-515

BROTULID FISHES OF THE NERITIC WATERS OF THE NORTH CENTRAL INDIAN OCEAN*

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ABSTRACT

So far six species of brotulid fishes, *Brotula jerdoni* Day, *Brotula maculata* Day, *Brotula multibarbata* Schlegel, *Dinematichthys iluocoeteoides* Bleeker, *Dinematichthys piger* Alcock and *Sirembo imberbis* (Schlegel), have been reported from the neritic waters of the North Central Indian Ocean. A taxonomic treatment of the above-mentioned neritic brotulids have revealed that *B. maculata* is conspecific with *B. multibarbata* ; the species *B. jerdoni* and *S. imberbis* Rahimullah (*nec* Schlegel) are also conspecific and belong to the genus *Sirembo* Bleeker. A brief account of the four valid species, *B. multibarbata*, *S. jerdoni*, *Dinematichthys iluocoeteoides* and *D. piger*, with their photographs is given in the paper.

INTRODUCTION

MAJORITY of the brotulid fishes are deep sea forms and a few are known from neritic waters. Little is known about the neritic brotulids due to their stray occurrences and lack of material in the museums all over the world. Any attempt to collect these fishes as well as to study them is of great significance for the better understanding of world neritic brotulids. Keeping this in view, the author made a number of surveys along the coasts of India and as a result of which a reasonable collection of neritic brotulids were accumulated. In the present paper an attempt is made to review the neritic brotulids known from North Central Indian Ocean.

I am highly indebted to Dr. Daniel M. Cohen, Laboratory Director, National Centre for Systematics, U.S. National Museum, Washington, D.C. 20560 for going through the manuscript and offering valuable suggestions. My thanks are also due to Dr. A. G. K. Menon, Head, Fish Division, Zoological Survey of India, Calcutta for facilities and encouragement.

HISTORICAL RESUME

Day (1868, 1877, 1888, 1889) reported the occurrence of three species, *Brotula maculata* Day, *B. jerdoni* Day and *B. multibarbata* Schlegel from Madras (Bay of Bengal) and the last mentioned species from Saddle Island, off Kyoukhpyoo, Arracan Coast, Burma (Bay of Bengal). Boulenger (1889) considered *B. maculata* Day as conspecific with *B. multibarbata* Schlegel. Alcock (1890, 1896, 1899, 1905)

* Presented at the 'Symposium on Indian Ocean and Adjacent Seas—Their Origin, Science and Resources' held by the Marine Biological Association of India at Cochin from January 12 to 18, 1971.

reported *Dinematichthys piger* Alcock from rock pools and coral reefs of Great Coco Island (Andaman Archipelago). Gunther (1909) recorded *B. maculata* Day from New Guinea. Cockerell (1913, 1916) described the scales of *Brotula maculata* Day and remarked that they are quite distinct from those of all other brotulids seen. Rahimullah (1943) reported the occurrence of *Sirembo imberbis* Schlegel from Madras (Bay of Bengal) and studied the pyloric caeca. Hubbs (1944) while revising the genus *Brotula* Cuvier on a World-wide basis, pointed out that *B. maculata* Day is based on young specimens of *B. multibarbata* Schlegel. De Beaufort (1951) included *B. multibarbata* Schlegel and *B. maculata* Day in his *Fishes of the Indo-Australian Archipelago* and remarked that both Boulenger (1889) and Hubbs (1944) considers them as synonyms. Menon and Rao (1963) reported *B. jerdoni* from Madras (Bay of Bengal) and discussed its systematic position. Jones and Kumaran (1966) recorded *Dinematichthys iluocoeteoides* Bleeker from Agathi (Laccadive Archipelago). Rao (1970) redescribed *Sirembo jerdoni* (Day) (= *B. jerdoni* Day) basing on his specimens collected from Visakhapatnam Coast (Bay of Bengal). Menon and Rao (1971) pointed out that the species *B. jerdoni* Day and *S. imberbis* Rahimullah (*nec* Schlegel) are conspecific and belong to the genus *Sirembo* Bleeker. Menon and Rao (1972) reported *Brotula multibarbata* Schlegel and *Dinematichthys iluocoeteoides* Bleeker for the first time from the Andaman waters.

Key to the Genera and Species

Three genera, *Brotula* Cuvier, *Sirembo* Bleeker and *Dinematichthys* Bleeker and four species, *B. multibarbata* Schlegel (= *B. maculata* Day), *S. jerdoni* (Day) (= *S. imberbis* Rahimullah, (*nec* Schlegel), *D. iluocoeteoides* Bleeker and *D. piger* Alcock have been recognized.

I. Dorsal and anal fins united with caudal fin.

A. Snout and lower jaw with well developed barbels, ventral fins behind the eyes.....*Brotula* (*B. multibarbata*)

B. Snout and lower jaw without barbels, ventral fins below the eyes..... ..... *Sirembo* (*S. jerdoni*)

II. Dorsal and anal fins free from Caudal fin.....*Dinematichthys*

A. Scales minute, non-distinct and embedded.....*D. iluocoeteoides*

B. Scales small, distinct and deciduous.....*D. piger*

Brotula multibarbata Schlegel (Fig. 1 a)

Brotula multibarbate Schlegel (in Temminck and Schlegel) 1846 : 251-253 pl. III, fig. 2 (original description, Simbara Bay, Japan); Day, 1888; 804 (Saddle Island, Kyoukhpyoo, Arracan; Madras); 1889 : 435-436 (records repeated); Hubbs, 1944 : 162-178 (world revision of the genus *Brotula*); De Beaufort, 1951 : 403-404, fig. 60 (Celebes; Buru; Ambon; Banda; Timor; New Guinea;—Red Sea, Arabian Sea, coasts of India, Christmas Island, Japan, Riu Kiu Islands, Formosa Paumotu Island, Hawaii); Herre, 1953 : 814; Smith, 1956 : 889 (Aldabra); Smith and Smith, 1963 : 52; pl. 33, K (Seychelles); Whitley, 1964 : 191-192 (Lord Howe Island); Smith, 1965 : 361, fig. 1014 (South Africa); Menon and Rao (Andamans).

Brotula ensiformes Gunther, 1862 : 372 (original description, Aneiteum, New Hebrides) ; Day, 1868 : 196 (comparison) ; 1877 : 419 (comparison).

Brotula maculata Day, 1868 : 196 (original description, Madras) ; 1877 : 419, pl. 91, fig. 2 (description, Madras) ; 1889 ; 434 fig. 152 (record repeated) ; Gunther, 1909 : 332-333 (description, Madras ; New Guinea) ; Cockerell, 1913 : 76 ; 1916 : 319-320 (scales ; Madras) ; Fowler, 1928 : 445 (description, after Gunther ; range) ; De Beaufort, 1951 : 404-405 (listed as a valid species with remarks, New Guinea, coasts of India) ; *nec Brotula maculata* Evermann and Radcliffe, 1917 : 151-152, Paita, Peru (= *Brotula clarkae* Hubbs, 1944).

Geneiates ferruginosus Tickell, MS, in Day, 1888 : 804 (in synonymy of *Brotula multibarbata* : comparison ; Saddle Island, off Kyoukhpyoo, Arracan, Burma) ; Myers, 1951 : 26 (on manuscript name of Col. Tickell on Tanasserim fishes).

Discussion on synonymy : Day (1868) described and figured *Brotula maculata* from Madras and deposited the type specimens in the British Museum. In the year 1862 colonel Tickell procured a brotulid specimen measuring 4.9 inches long at Saddle Island off Kyoukhpyoo, Arracan and described it as a new genus and new species *Geneiates ferruginosus* in an unpublished manuscript on Tenasserium fishes. Day (1888) identified *Geneiates ferruginosus* Tickell as *Brotula multibarbata* Schlegel and also pointed out its occurrence off Madras Coast. Hubbs (1944) synonymised *Brotula maculata* Day with *B. multibarbata* Schlegel as the former being the young of the latter and also remarked that Day properly referred the manuscript name, *Geneiates ferruginosus* to *B. multibarbata.* Schultz (1960) remarked that *Brotula maculata* Day may be a distinct species, as its described colour does not agree with *multibarbata* or *townsendi* and it has an intermediate number of fin rays, dorsal 115, anal 107. Even though, *Brotula maculata* Day is treated here as a synonymy of *B. multibarbata* Schlegel, which is limited to the Indo-Pacific, following Hubbs (1944), the subject of their synonymy is still open for discussion as the problem of speciation in the Indo-Pacific is yet to be settled.

Material examined : Two specimens, 140.0-170.0 mm in total length, Madras, 15-8-1924, Madras Government Museum collections. One specimen, 225.0 mm in total length, from a rock pool, south of Aerial Bay Jetty, Digilipur, North Andamans, 24.2.1970, A. G. K. Menon and Party collections.

Diagnosis : Vertical fins confluent ; twelve barbels, three on the snout and three on the mandible, on each side ; scales cycloid and relatively large ; ventral fins behind the eyes ; dorsal rays 100-145 and anal rays 71-111 ; pectoral rays 22-26 (meristic counts are after Hubbs, 1944 and Schultz, 1960).

Colour when alive (based on Andaman specimen) : Iris blue ; upper half of the body brownish, lower half pinkish ; vertical fins brownish, edged with black and with a red margin ; basal half of pectoral brownish, the remaining pinkish.

Colour in alcohol : Body brownish, with black edged vertical fins ; pectoral pinkish and iris hyaline.

Distribution : It occurs along the shores of the Indian Ocean and throughout Indonesia, Southern Japan, and Oceania.

Strembo jerdoni (Day) (Fig. 1 b)

Brotula jerdoni Day, 1888 : 804 (original description, Madras) ; 1889 : 435 (record repeated) ; Menon and Rao, 1963 : 47 (report from Madras, discussion).

Sirembo imberbis : Rahimullah (*nec* Schlegel), 1943 : 55 (pyloric caeca, Ennur, Madras).

Sirembo jerdoni : Rao, 1970 : 114-117 (redescription of *Sirembo jerdoni*, Visakhapatnam); Menon and Rao, 1971 : 47-50 (Systematic position of *B. jerdoni*).

Discussion on Synonymy : Day (1888) described *Brotula jerdoni* from Madras. Rao (1970) referred *B. jerdoni* Day correctly to the genus *Sirembo* Bleeker. Menon and Rao (1971) reidentified, *Sirembo imberbis* Rahimullah (*nec* Schlegel) as *Sirembo jerdoni* (Day).

Material examined : Z.S.I. 13202/1, one specimen, 138.0 mm in total length, Ennur, Madras, 12-1-1940, M. Rahimullah collection. Two specimens, 130.0-150.0 mm in total length, Madras, 15-8-1924, Madras Government Museum collections.

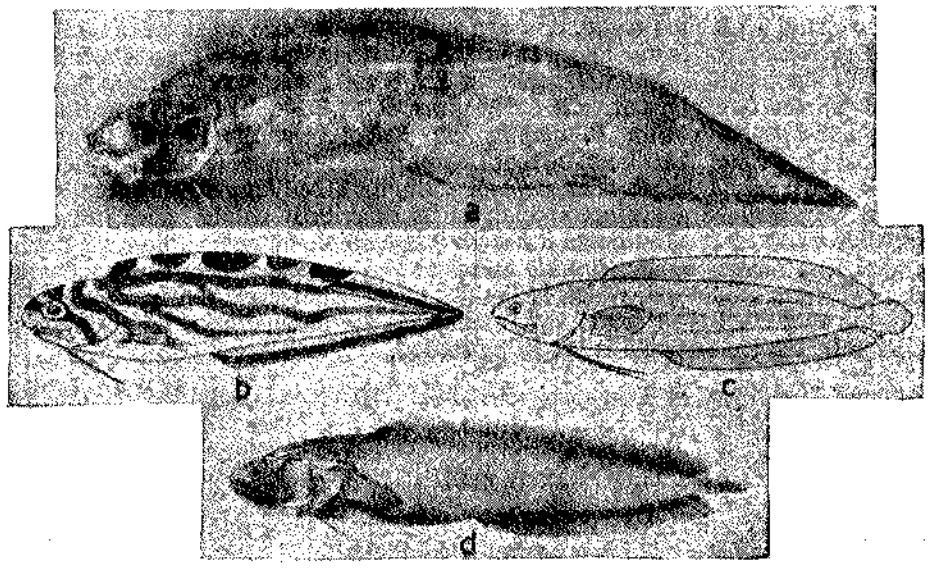

Fig. 1 a. *Brotula multibarbata* Schlegel, measuring 225.0 mm in total length, from a rock pool, South of Aerial Bay Jetty, Diglipur, North Andamans, b. *Sirembo jerdoni* (Day) (after Rao), c. *Dinematichthys iluocoeteoides* Bleeker (after Jones and Kumaran) and d. *Dinematichthys piger* Alcock (after Alcock).

Diagnosis : Dorsal and anal fins confluent with caudal ; snout and lower jaw without barbels ; ventral fins below the eyes ; scales cycloid, small and deciduous ; dorsal 89-92 ; anal 61-63 ; and pectorals 23 (meristic counts are after Rao, 1970) ; and characteristic colour pattern as given in the figure.

Colour in alcohol (after Ennur specimen) : Body greenish with blackish bands ; fins yellowish ; the dorsal fin with black bloches ; the margins of dorsal and anal fins being black (see fig. 1 b for characteristic colour pattern). The specimens available in the Madras Government Museum collections have lost the characteristic colour pattern completely and became pinkish brown.

Distribution : An endemic species restricted to Bay of Bengal (Madras, Visakhapatnam).

Dinematichthys iluocoeteoides Bleeker (Fig. 1 c)

Dinematichthys iluocoeteoides Bleeker, 1855 : 319 : (original description, Batu Archipelago) ; De Beaufort, 1951 : 438, fig. 79 (Singapore; Batu Island ; Nias; Sumatra; Java; Celebes); Sulu Island ; Halmahara ; Goram ;—Mauritius, Philippines, Torres Strait, Ponape, Samoa and Tahiti) ; Herre, 1953 : 816 ; Smith, 1956 : 889 (Aldabra Atoll) ; Inger, 1957 : 401 (North Borneo) ; Schultz, 1960 : 388, pl. 111, A (Marshall and Marianas Islands) ; Mees, 1960 : (Western Australia) ; Smith and Smith, 1963 : 52, pl. 33, J (Seychelles); Jones and Kumaran, 1966: 174, fig. 13 (Agathi, Laccadives) ; Menon and Rao (Andamans).

Discussion on Synonymy : The specimens from Agathi (Laccadives) and Andamans possessed minute scales embedded in the body whereas the typical *D. iluocoeteoides* Bleeker is characterised by small and distinct scales. *D. piger* Alcock, known from Andaman Islands resembles the typical *iluocoeteoides* by possessing small distinct scales. The author came to this conclusion after a comparison of the type of *D. piger* Alcock with the typical figure of *D. iluocoeteoides* Bleeker drawn after the type specimen (De Beaufort, 1951) and suggests further study in the speciation of the genus *Dinematichthys* Bleeker. The specimens from Laccadives and Andamans which need further study are provisionally assigned here to *D. iluocoeteoides* Bleeker following Jones and Kumaran (1966).

Material examined : One specimen, 55 mm total length, Aves Island, North Andamans, 12-2-1970, A. G. K. Menon and party collections. Two specimens 28.0-38.0 mm total length, Smith Island, North Andamans, 22-2-1970, A. G. K. Menon and Party collections.

Diagnosis : Vertical fins not confluent ; Snout and Chin finely papillate ; scales minute and embeded ; Dorsal 80-85 ; and anal 56-69 ; and pectoral 22-23 (after De Beaufort, 1951 : 438).

Colour when alive : Orange with three lighter longitudinal bands on sides.

Colour in alcohol : Body pinkish with three light longitudinal groove like bands on sides ; dorsal and anal fins hyaline with a white band all along their basal portion and having a narrow transparent margin ; pectoral and caudal pinkish, the caudal with a transparent edge.

Distribution : This species is known from Aldabra and Seychelles in the Western Indian Ocean ; Laccadives and Andamans in the Central Indian Ocean ; Malaysia, Indonesia and Western Australia in the Eastern Indian Ocean ; Philippines and Oceania in the West Pacific.

Dinematichthys piger Alcock (Fig. 1 d)

Dinematichthys piger Alcock, 1890 : 432 (Original description, under rocks in pools in coral reefs of Great Coco Island, Andaman Archipelago) ; 1896 : 322 (record repeated) ; 1899: 78 (listed) ; 1905 : pl. 37, fig. 3.

Discussion on synonymy : Probably a synonym of *D. iluocoeteoides* Bleeker as discussed earlier.

Material examined : Z.S.I. 12939 (Holotype), 58.0 mm SL, coral reefs of Great Coco Island, Andamans, *R.I.M.S. Investigator* collections (caudal broken). One specimen, from Sound Island, Andamans, 11-2-1970, A. G. K. Menon and Party collections.

Diagnosis : Vertical fins not confluent ; scales cycloid, small but distinct and deciduous ; drosal 75 and anal 55.

Colour when alive : Uniform dark brown, almost black (Alcock, 1890).

Colour in alcohol : Head dark brown, body brownish, fins whitish with light brown tinge.

Distribution : An endemic species to Andamans.

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