

**MICROGNATHUS BREVIROSTRIS (RUPPELL) (FAMILY
SYNGNATHIDAE : PISCES)—A NEW RECORD FROM THE
INDIAN SEAS WITH OBSERVATIONS ON ITS EARLY
DEVELOPMENT**

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INTRODUCTION

PIPE-FISHES (Family Syngnathidae) collected among sea-weeds mainly consisting of *Halimeda opuntia* from coral rocks at depths ranging from 0.5 to 1.5 metres in the Gulf of Mannar and the Palk Bay in the vicinity of Mandapam included six specimens of *Micrognathus brevirostris* (Rüppell) hitherto not reported from the Indian Seas. As this is the first report of the genus as well as the species from this region, a detailed description and some observations on the early development of *M. brevirostris* are given in this paper.

The present material, deposited in the Reference Collections of the Central Marine Fisheries Research Institute (Registered number CMFRI-F55/612) consists of one female, 53 mm. standard length collected from the Palk Bay on 18-7-66 and three males, 56, 59 and 65 mm. and two females, 53 and 58 mm. collected from the Gulf of Mannar in April 1968. Two of the males, 59 and 65 mm. had well developed brood pouches with eggs, the latter specimen with eggs in advanced stages of development, the progress of which was followed. Earlier works on the development of Indian pipe-fishes include those of Jones and Menon (1953), Padmanabhan (1961) and Sudarsan (1968). Other important references to the breeding habits or early development of pipe-fishes include those of Düncker (1910) and Takai & Mizokami (1959) and Jones and Bensam (1968).

OBSERVATIONS

Description : Body stout, short and somewhat compressed. Dermal appendages sometimes present. Rings on the body and tail prominent (Fig. 1, A). Head 8.6-10.8 in S.L. ; snout small with a smooth crest, 2.4-3.2 and eye 4.0-6.5 in head ; trunk 1.3-1.6 in tail. Operculum inflated with a prominent ridge in line with anterior end of median cristae of trunk. Another ridge above it radiates towards dorsal side. Superior trunk and tail ridges present but not prominent. Median cristae of trunk bent on last trunk ring, continuous with inferior cristae of tail. Inferior cristae of trunk and tail discontinuous.

Dorsal, pectoral, anal and caudal fins present. Ventral fins absent. Dorsal fin base not raised. Colour of body in fresh condition, brown to dark brown, with white bands encircling the dorsal side and descending to sides, four on trunk and

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TABLE I

Meristic counts, morphometric measurements (mm.) and proportions of Micrognathus brevirostris

Sl. No.	Character	53 mm. S.L. Female, 18-7-66 Palk Bay	58 mm. S.L. Female, 22-4-68 Gulf of Mannar	59 mm. S.L. Male, 22-4-68 Gulf of Mannar	53 mm. S.L. Female, 26-4-68 Gulf of Mannar	56 mm. S.L. Male, 26-4-68 Gulf of Mannar	65 mm. S.L. Male, 27-4-68 Hare Island (Gulf of Mannar)	Herald 1953
1.	Lateral trunk ridge bent on last trunk ring and continuous with inferior tail ridge							
2.	No. of fin rays:							
	(a) Dorsal	18	18	18	18	18	19	17-22
	(b) Pectoral	12	13	13	13	14	12	9-12
	(c) Anal	3	3	3	3	4	3	2-4
	(d) Caudal	10	10	10	10	10	10	10
3.	No. of trunk rings	16	16	16	16	16	16	15-17
4.	No. of tail rings	30	28	28	29	29	29	28-32
5.	Dorsal fin occurs on:							
	(a) Trunk rings	1	1	2	1	1	1	0-2
	(b) Tail rings	4½	4	3	4	4	4	3-5
	(c) Total rings	5½	5	5	5	5	5	..
6.	Dorsal fin base	not raised	not raised	not raised	not raised	not raised	not raised	
7.	No. of tail rings involved in formation of brood pouch	9	9	16	9	15	14	10-17
8.	Length of head/Head in standard length ..	6/8.8	6.5/8.9	6.5/9.0	6.0/8.8	6.5/8.6	6.0/10.8	± 8.0*
9.	Length of snout/Snout in head length ..	2/3.0	2.5/2.6	2.5/2.6	2.0/3.0	2.0/3.2	2.5/2.4	± 2.79*
10.	Length of dorsal fin base/Dorsal fin base in head length ..	5.0/1.2	5.0/1.3	5.0/1.3	5.0/1.2	5.0/1.3	5.5/1.0	± 1.4*

* Proportions.

six on tail, the first of the latter across dorsal. Tip of snout white. Caudal fin brown to dark grey with white posterior edge. Pectoral colourless. Females paler in colour than males. Colour fades on preservation.

Meristic counts and some typical morphometric measurements and proportions are given in Table I. The data given by Herald (1953, Table 22, p. 261) for this species are also included in Table I for comparison.

Distribution : The genus is composed of 10 species of which three are limited to Atlantic American region and the other 7 to the Indo-Pacific (Herald, 1953). The distribution of *M. brevisrostris*, according to him, extends from West Africa to the Fiji and Tonga Islands and from Japan to Australia. Weber and de Beaufort (1922) reported this species and *M. mataafae* from the Indo-Australian Archipelago and Smith (1949) reported *M. brevisrostris* as the only representative of the genus from South Africa.

Brood pouch, eggs and hatching : One mature male, 59 mm. collected on 22-4-68 had four rows of about 17 eggs each in the brood pouch which was fully packed. Evidently no embryos hatched out, but they were in an advanced stage of development. The brood pouch (Fig. 1, B) is caudal, formed by the ventral folds of body wall, extending to about one-third length of body (the first half behind vent). The cavity is fairly spacious. The eggs are attached to one another in a row, along their long axis.

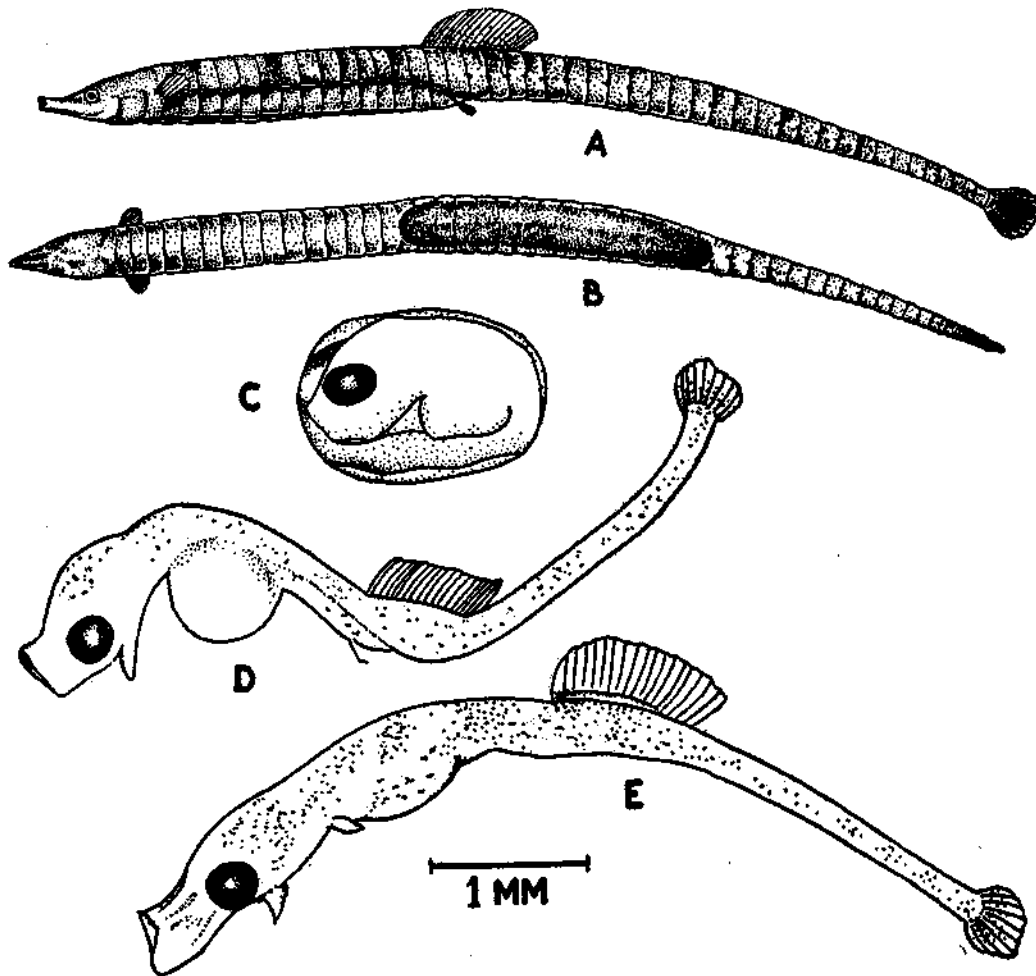
Another mature male, 65 mm. with a few advanced embryos in the brood pouch collected on 27-4-68 from the Gulf of Mannar was kept alive in sea water in a glass tank. On 29-4-68 two post-larvae were found swimming in the water, one of which was preserved the same day. On 30-4-68 the fish was found dead and the larva disintegrated. From the brood pouch of this specimen, 11 eggs with advanced embryos and one pro-larva were recovered. As only a total number of 14 advanced embryos and larvae were obtained from this male compared to about 68 eggs in the other male referred to above, it appears that majority of the young ones already hatched out and that hatching takes place at different times. Details of three different stages of development obtained from this fish are given below.

Developing embryo : The egg with fairly advanced embryo measured 1.48 mm. long and 1.00 mm. wide. The large, round head and long body of the embryo are well differentiated with a large, round, golden-yellow yolk-sac. The body curved over to the dorsal side forming one and half coils round the yolk-sac (Fig. 1, C). The snout is very short and blunt. Eyes are well developed, large and black in colour. None of the fins are developed at this stage except for slight indication of the caudal. The head and yolk-sac are devoid of any pigment while the rest of the body bears black pigment spots. There are no oil-globules in the yolk.

Pro-larva (5.80 mm. total length) : The pro-larva has a prominent head and a long body (Fig. 1, D). The dorsal and caudal fins are well developed with the rays faintly visible. Pectorals are not yet developed. The snout is short and blunt with a small concavity in front of the eye, on the dorsal side. The yolk-sac is reduced in size, yellow in colour. Black pigment spots are spread all over the body and caudal fin but are restricted on the head to the dorsal side. A conical fleshy projection is present on the ventral side opposite to eye. There is no trace of formation of body rings.

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Post-larva (6.43 mm. total length) : The post-larva has well differentiated trunk and tail regions (Fig. 1, E). Rudiments of pectorals and anal have just developed while the dorsal and caudal fins are well developed with the full compliment of 19



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FIG. 1, A. Lateral view of male. B. Ventral view of same. C. Developing embryo. D. Pro-larva. E. Post-larva.

and 10 rays respectively, the base of the former distinctly raised. Rudiments of body rings are also clearly seen with about 16 on the trunk and 28 on the tail. The snout is elongated, with the dorsal concavity noticed in the pro-larval stage retained. The conical projection opposite the eye on ventral side is also retained. The pigment spots on the body attained a stellate appearance and extend on to the snout also. While occupying more or less the entire surface of the body, they are concentrated and arranged in three bands on predorsal and four bands on the post-dorsal regions. The caudal fin alone is pigmented grey, other fins being hyaline. The post-larva was observed to swim in a vertical position with jerking movements.

Remarks : As indicated by Herald (1953, p. 260), *Micrognathus brevirostris*, because of its wide distribution, has been described as new on at least six different occasions. It can however be distinguished from all other members of the genus by the smooth snout crest as well as by the combination of trunk and tail rings. He also reported on a male, 25 mm., with eggs in pouch and a female, 26 mm. (both from Bikini Atoll, Bikini Island, Ocean reef, August 16, 1947), the former representing a size as small as sexual maturity is known to occur in the genus and nearly as small as it is known to occur in the family. The largest known specimens were reported to be 75 mm. in length.

SUMMARY

Micrognathus brevirostris (Rüppell) (Family Syngnathidae : Pisces) is reported for the first time from the Indian Seas. It is also the first record of the genus from this region. A detailed description of the species and some observations on its early development are given.

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