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GEMPYLID LARVAE FROM THE BAY OF BENGAL*

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ABSTRACT

Sixty-one Gempylid larvae ranging in size from 2.4 mm to 17.1 mm in standard length referable to *Gempylus* B type described by Voss from Florida Current were found in the plankton collections of 21 stations (R/V Anton Bruun Cruise I and I.N.S. Kistna Cruise XV) in the Bay of Bengal. Body measurements and the description of the larvae are given and compared with published accounts.

INTRODUCTION

GEMPYLID fishes are very rarely caught and very little is known about them in Indian waters. *Rexea promothoides*, *Epinnula orientalis* and *Gempylus serpens* are known to occur in waters around India (Munro, 1955; Rao, 1965; Jones, 1969; Sriramachandramurthy, 1969; Silas, 1969). Voss (1954) has reviewed the earlier studies on the larva and development of gempylid fishes and described in detail the postlarval development of *Nesiarchus nasutus* and *Gempylus* sp. from the Florida Current. Jones (1960) while describing the occurrence of *Gempylus serpens* in Laccadive Sea, reported the collection of larvae of *Gempylus serpens* from the Laccadive Sea.

The present study records the occurrence of Gempylid larvae in the plankton samples collected by the author while he was a visiting scientist on board R/V Anton Bruun Cruise I and I.N.S. Kistna Cruise XV in the Bay of Bengal. Plankton collections were made using a non-standard net of 30 mesh size from 25 metre to surface in R/V Anton Bruun Cruise I and from the surface in I.N.S. Kistna Cruise XV. 58 specimens ranging in size from 2.4 mm to 8.0 mm in standard length are from the plankton collections of R/V Anton Bruun Cruise I and 3 specimens ranging in size from 14.67 to 17.11 mm are from I.N.S. Kistna Cruise XV. Table 1 summarises the details of collection of gempylid larvae from the Bay of Bengal and Table 2 gives the body measurements of the larvae. All measurements are given in millimetres. Indices are expressed as a percentage of the standard length.

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DESCRIPTION OF LARVAE

The smallest specimen in the collection is 2.44 mm and it is from station 60. It resembles the 3.11 mm larvae shown in Pl. I A except that in 2.44 mm and 2.67 mm larvae teeth and opercular spines are not present on the jaws. The myotomes are clearly seen and there are about 20 preanal and 25 postanal myotomes. 3.11 mm larva shown in Pl. I A is from station 72 and shows small minute teeth on the jaws and opercular spines are just visible as small minute projections on the surface.

TABLE 1. *Details of Gempylid larvae collected from the Bay of Bengal*

Station No.	Date	Day or Night	Latitude °N	Longitude °E	No. of specimens	Size range in mm
Anton Bruun Cruise I						
55	8-4-63	N	18.20	90.06	1	3.89
56	8-4-63	D	18.15	89.20	1	6.44
58	9-4-63	N	18.11	88.04	1	3.11
60	9-4-63	D	17.54	86.31	3	2.44-3.56
63	10-4-63	D	17.56	84.37	4	3.33-5.78
67	15-4-63	N	16.30	85.32	1	5.56
70	16-4-63	N	15.17	87.50	3	3.56-4.89
71	17-4-63	D	14.53	88.40	1	6.44
72	17-4-63	D	14.23	89.23	5	3.11-4.56
74	18-4-63	D	13.36	90.48	1	3.67
82	20-4-63	N	17.06	90.17	1	3.67
83	21-4-63	D	17.48	89.43	6	2.67-5.22
92	29-4-63	N	16.40	83.58	1	8.00
94	29-4-63	D	15.09	84.54	1	4.33
95	30-4-63	N	14.22	85.20	4	3.00-5.56
96	30-4-63	D	13.43	85.47	1	3.67
98	1-5-63	D	13.03	85.21	20	2.44-5.78
101	2-5-63	D	13.09	82.22	1	4.11
102	3-5-63	N	13·10	81.17	2	4.78, 6.44
I.N.S. Kistna Cruise XV						
368	15-6-64	N	10.00	82.00	1	15.56
374	18-6-64	D	12.00	86.15	2	14.67, 17.11

3.56 mm larva resembles very much the earlier stages in general appearance. The opercular spines are well formed and 3 spines can be clearly marked out. First and second spines are slender, elongate and subequal in length. The third spine is quite small and is about ½ the length of the previous spine. 3.89 mm larva also resembles the 3.56 mm larvae in general appearance and in the

presence of 3 opercular spines. A small ridge is seen at the beginning of the dorsal fin, above the pectoral base. Gempylid larvae measuring 2.44 mm to 3.89 mm in standard length are slender and compressed. The vertebral column is straight. The outline of dorsal, caudal and anal fins are ragged and there are no indications of rays or spines. They appear pale brown in colour and the vertebral column is seen as white streak.

4.00 mm larva from station 98 is also similar in general appearance to 3.89 mm larva from station 55 but traces of dorsal spines are seen at the origin of the dorsal fin (Pl. I B). In 4.11 mm larva from station 101 (Pl. I C) the dorsal spines are clearly visible and distinct. Five dorsal spines are seen. Second and third dorsal spines are longer than the rest. Four opercular spines are present. First and second opercular spines are slender, long and subequal. Visually they appear to be equal in length but actually first spine is slightly longer than the second spine. Third and fourth spines are quite small and are about 1/3 the length of the second spine.

In 4.22 mm to 5.78 mm larvae the dorsal spines increase in count and in 5.78 mm larva they number 15 (Table 2; Pl. I D-F). The vertebral column is still straight. Brown pigmentation appear above pectoral base and on the abdominal wall. A few large patches are seen on the dorsal spine (Pl. I E, F). Serrations on the pelvic spine start appearing in 4.44 mm larva. Serrations on the dorsal spine appear in 5.78 mm larva. One soft ray is present in the pelvic fin from 4.44 mm to 5.22 mm larvae. Two soft rays in the pelvic fin are present in 5.56 and 5.78 mm larvae (Table 2). There are indications of soft rays on the dorsal and caudal fins in 5.11 to 5.78 mm larvae. Four opercular spines are present. First and second spines are slender, elongate and subequal in length. In a few larvae first and second opercular spines are equal in length. Small protruding teeth are present from the tip of the lower and upper jaws from 4.67 mm to 5.78 mm larvae.

In 6.44 mm larva (Pl. I G) from station 102, the vertebral column is still straight. But larvae from stations 56 and 71 show the formation of urostyle elements and vertebral column is not straight. Protruding teeth from the tip of the jaws are present and they are larger in size. Myotomes are still visible. About 25 preanal and 25 postanal myotomes are discernable. 20 spines are present on the dorsal fin. Three soft rays are present on the pelvic spine. Soft rays on the dorsal and anal fins are not well developed.

8.0 mm larva from stations 92 differs from the other larvae in general appearance in being round and not compressed (Pl. I H). Myotomes are not clearly visible. A dark streak dorsally extends from the head to the end of spinous dorsal. A similar streak starting from the pectoral base to the end of anal fin is present below vertebral column. Abdominal wall is also dark brown in colour. Four opercular spines are seen and first spine is slightly longer than the second spine, the rest being quite small. Twenty dorsal spines are present. Urostyle is formed and caudal rays are clearly visible. 10 and 8 soft rays are seen respectively on the dorsal and anal fins. 2 spines are also present in the anal fin. Small curved teeth resembling fangs are also present on the lower and upper jaws.

Three larvae ranging in size from 14.67 to 17.11 mm are from stations 368 and 374 of I.N.S. Kistna Cruise XV. They look like juveniles. There is increase in the dorsal spines and soft rays. The two preanal spines are well developed. The second

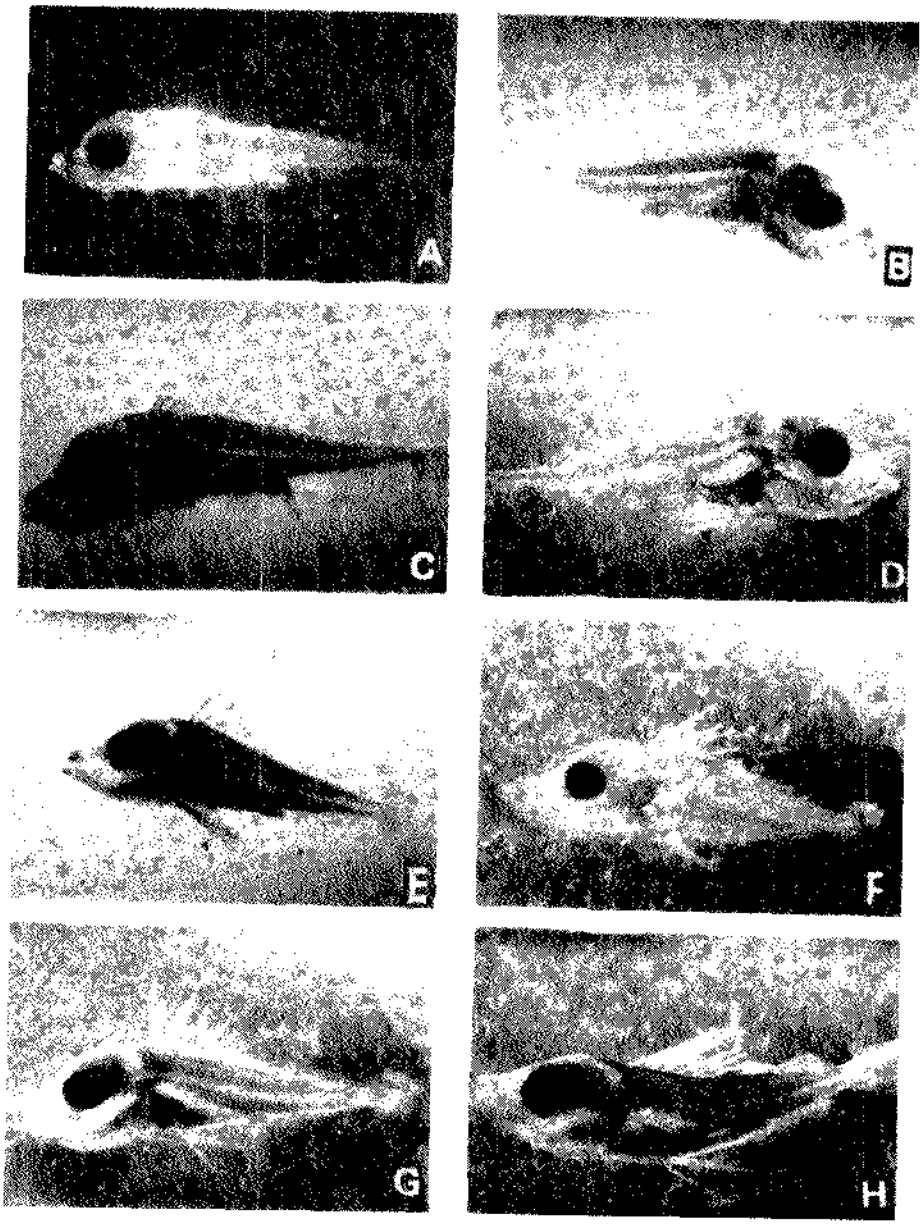

PLATE 1. *Gempylid larvae from the Bay of Bengal*. A. 3.41 mm larva from station 72, B. 4.8 mm larva from station 98, C. 4.4 mm larva from station 101, D. 4.89 mm larva from station 70, E. 5.13 mm larva from station 98, F. 5.78 mm larva from station 63, G. 6.4 mm larva from station 102 and H. 8.0 mm larva from station 92.

TABLE 2. *Body measurements (mm) of Gempylid larvae from the Bay of Bengal*

No. of specimens	Standard length	Head index	Snout index	Eye index	Depth index	Pelvic spine index	Dorsal spine index	Dorsal fin	Pelvic fin	Anal fin
2	2.44	27.46	9.02	7·00	18.03					
1	2.67	25.09	12.35	8.23	20.97					
1	3.00	29.67	11.00	11.00	20.00					
3	3.11	32.15	10.61	10.61	22.72					
1	3.22	31.05	10.24	10.24	20.80					
4	3.33	33.3	9.9	10.80	22.77					
5	3.56	33.02	11.11	11.11	22.73					
7	3.67	33.24	10.49	11.06	22.74					
2	3.89	32.77	11.31	10.82	25.7					
1	4.00	33.25	8.25	8.25	19.5					
3	4.11	35.03	10.7	10.7	20.76	8.51	8.51	V	—	—
5	4.22	35.50	10.42	10.42	21.61	11.56	11.04	VIII	—	—
1	4.33	36.02	10.16	9.23	23.09	15.47	15.47	VIII	—	—
2	4.44	35.13	12.61	9.9	23.85	13.81	16.40	VIII	—	—
2	4.56	32.88	12·28	11.62	23.13	18.30	18.30	VIII	I, 1	—
1	4.67	33.4	11.99	10.7	21.41	14.34	14.34	VIII	I, 1	—
1	4.78	32.63	10.46	10.46	23.22	14.01	16.31	IX	I, 1	—
1	4.89	34.15	11.45	11.45	24.94	13.49	15.95	IX	I, 1	—
2	5.11	30.52	15.26	12.03	21.72	14.19	14.19	X	I, 1	—
1	5.22	31.99	17.04	10.72		12.83	12.83	X	I, 1	—
5	5.56	34.39	11.40	11.40	24.31	19.96	19·96	XII	I, 2	—
3	5.78	34.6	11.21	11·21	24.28	22.37	23.01	XV	I, 2	—
3	6.44	36·85	13.24	12.11	24.72	21.82	21.82	XX	I, 3	—
1	8.00	37.5	12.5	11.11	22.87	20.87	20.87	XX, 10	I, 3	II, 8
1	14.67	37.9	13.64	9.81	15.88	13.64	13.64	XXIV, 14	I, 3	II, 12
1	15.56	37.79	12.85	8.57	13.56	13.56	13.56	XXVI, 15	I, 3	II, 13
1	17.11	35.71	12.97	9.11	14.26	12.97	12.97	XXVIII, 16	I, 3	II, 14

preanal spine is much stouter and twice as long as the first spine. The second is strongly serrated than the first. There are three soft rays present in the pelvic fin. The caudal fin is distinctly forked and the rays are well developed. No finlets are evident. There is an increase in dark brown pigmentation on the dorsal body surface and on the spinous dorsal (fine) as well as along the sides of the body. The body is relatively long and the preopercular spine pattern is not seen clearly. The jaw processes are well developed and the fangs are larger on both jaws.

The larvae collected from the Bay of Bengal in R/V Anton Bruun Cruise I form a continuous series from 2. 44 mm to 6.44 mm in standard length and they show a remarkable similarity in general appearance. The smallest gempylid larva described earlier was by Voss (1954) and measured 3.5 mm in standard length. The larvae from the Bay of Bengal described above resemble the *Gempylus* B larvae described by Voss (1954) in the similarity of opercular spine pattern and in the presence of pelvic soft rays, but differs in the dorsal spine and soft ray counts. In some of the larvae from the Bay of Bengal the first and second opercular spine are seen to be equal in length also. In the absence of connecting series of postlarvae and juveniles, specific identification of the larvae was also not possible. Hence the larvae collected from the Bay of Bengal in R/V Anton Bruun Cruise I and I.N.S. Kistna cruise XV are referrable only as *Gempylus* B type described by Voss.

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