

THE EGGS AND EARLY DEVELOPMENTS OF TWO EELS FROM VIZHINJAM.

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The eggs and early developments of an Ophichthyid and a Muraenid eels of Vizhinjam nearshore waters are recorded. The eggs, which were in the early stage of development on the day of collection, began to hatch out on the fourth day. Details of the different stages along with observations made by earlier workers are given.

Eel eggs were fairly prevalent in the plankton collections from the near-shore waters of Vizhinjam during January-March 1982. They were easily recognizable by their large size, the segmented yolk and the wide perivitelline space. There were two types of eggs, but the most common were those with an oil globule (Ophichthyid). Information on the eggs and early development of eels from Indian waters are mainly from the contributions of Aiyar et al 1944; Gopinath 1949; Nair 1952; Jones and Pantulu 1955, Bapat 1955; Ganapati and Raju 1960; Nair and Dharmamba 1960 and Sudha 1982. Delsman (1933) described seven kinds of eggs and their larvae in the Java Sea.

The collections were made between 6 and 7 a.m. by surface tows with a net of 50cm mouth diameter and made of nylobolt (400 μ m, mesh size). The two types of eel eggs collected were reared in the laboratory long enough to get the stages described here. The live eggs were kept in large glass troughs containing filtered seawater which was changed twice a day. The larvae did not feed on microplanktonic organisms or on the artificial feed provided.

Ophichthys Sp

Egg (Plate I 1a): All the seven eggs (including two dead ones) collected on 7-1-1982 may have been spawned in the early hours of the morning as the blastoderm cells had been covering about a third of the yolk surface when they were observed at 9 a.m. These eggs measured 2.7mm to 2.8mm in diameter. The yolk was frothy and segmented and measured 1.9mm in diameter. An yellow oil globule of 0.4mm diameter was present opposite to the blastoderm. The perivitelline space was very large.

The egg 24 h after capture (Plate I 1b): The embryo was completely formed with well-developed eyes. The oil globule was in the yolk.

The egg 48 h after capture (Plate I 1c): The embryo had grown considerably in size and occupied nearly two-thirds the circumference of the egg. Most of the yolk was absorbed and the posterior part was free from the yolk mass. The eyes, auditory vesicles and oesophageal pouch were well developed and the heart was pulsating. The myotomes were quite distinct. Minute brownish black chromatophores were on the ventral side of the embryo behind the yolk mass and on the tail region. In the evening the embryo reached the advanced stage of development, the tail end reaching the head of the embryo. The larval finfold was quite distinct and the embryo made wriggling movements.

Newly hatched larva (Plate I 2a and 2b): On the fourth day (10-1-82) of observation the egg hatched out during the early hours of the day, and this prolarva measured 9.42mm in length and was perfectly transparent. The head and the eye were round in shape. The tail was pointed and the yolk extended from the 7th to the 55th myotome. The heart was very clear and pulsated about 180 times | min. The alimentary canal ended at the 107th myotome. Seven ventral pigment groups (melanophores) were formed, of which six were preanal and the seventh at the tip of the tail; these were located above the alimentary canal and at the base of the myotome 12-13, 22-26, 36-41, 46-55, 69-75 and 96-105. In the tail region 5 pairs of branched chromatophores were also observed.

One-day-old larva (Plate I 3a and 3b): At this stage the larva was 11.02 mm in length and the mouth was subterminal in position. The teeth were slender and pointed. The auditory vesicles were very distinct. The eyes developed brown pigment cells. The yolk mass became smaller and had broken up into oval yolk pockets situated below the alimentary canal (ie., between 2-6; 19-26 and 47-55 myotomes). The head was longer than in the previous stage with well developed mouth and jaws. The pigment patches on the ventral side were more prominent and black in colour. These were situated on myotomes 11-13, 21-25, 36-39, 48-53, 70-76 and 95-105. A small group was present on myotome 86-88. Xanthophores were also noticed around the eyes and a pair on the trunk and tail.

Muraena Sp.

Egg: The eggs ranged from 3.06mm to 3.28mm in diameter. Oil globule was absent and there were no chromatophores; but there was a large perivitelline space.

The egg 24 h after capture (Plate II 4a): The embryo appeared fairly large and occupied half the circumference of the yolk mass. The eyes were completely formed with lense but no pigment was developed. The myotomes were quite distinct and heart was pulsating.

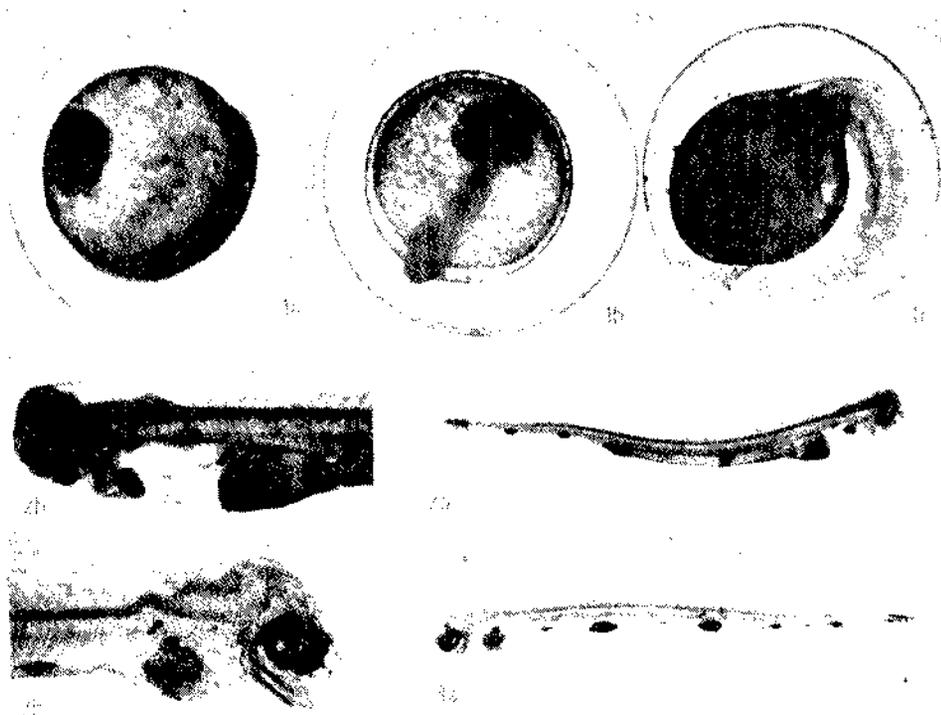


PLATE I. Eggs and early larvae of *Ophichthys* sp. 1a - The egg at the time of capture; 1b - The egg 24 hours after capture; 1c - The egg 48 hours after capture; 2a and 2b - Newly hatched larva; 3a and 3b - One-day-old larva.

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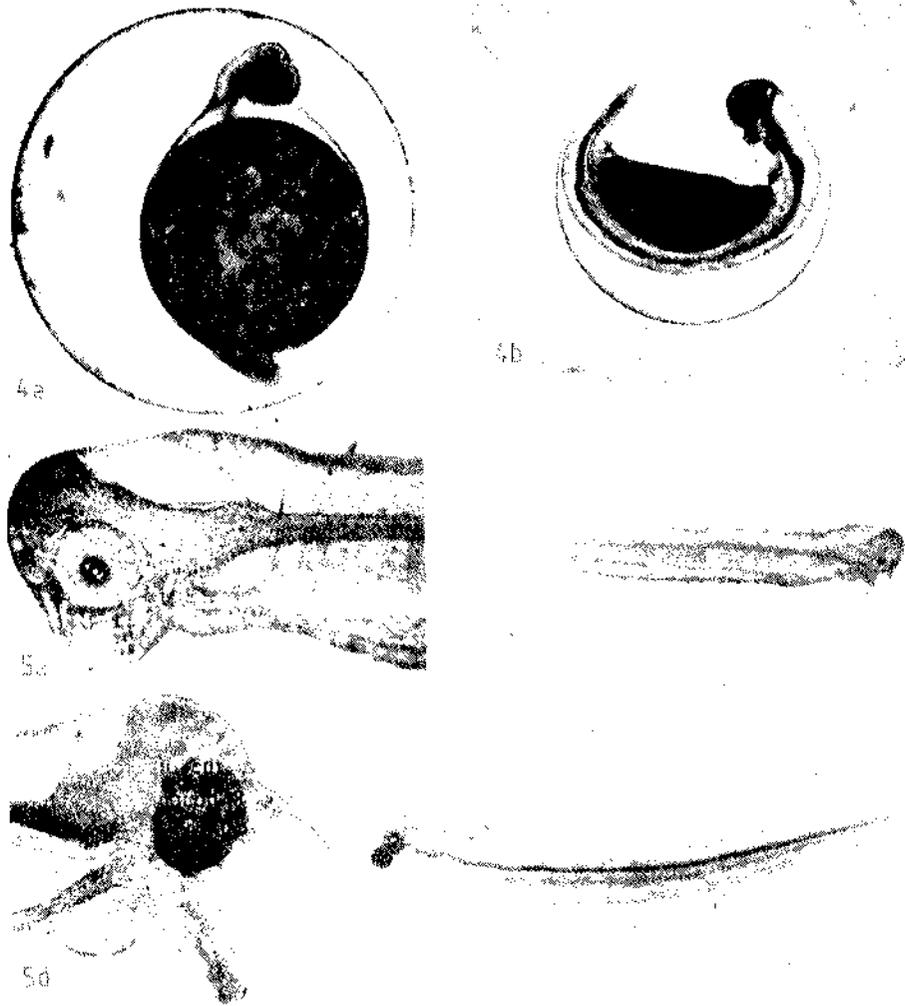


PLATE II. Early development of *Murasit* sp. 4a - The egg 24 hours after capture. 4b - The egg 48 hours after capture. 5a and 5b - Newly hatched larva. 5c and 5d - One-day-old larva.

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The egg 48 h after capture (Plate II 4b): The embryo grew over almost the entire circumference of the yolk mass. Thus the embryo was ring-like, the coiling being in one plane, and the yolk appeared as a crescent. A tubular heart was well formed and was pulsating 150 times | min. The alimentary extended behind the yolk. No chromatophores were seen.

Newly hatched larva (Plate II 5a and 5b): The eggs hatched at 7.30 a.m. on the fourth day of collection and the hatchling measured 7.35mm in length. The head was conical and the mouth was open. The teeth were seen as small elevations. The alimentary canal was a straight tube without any chromatophore or swelling. It extended as far as the 66th myotome but did not open to the exterior. The eyes were without pigmentation.

One-day-old larva (Plate II 5c and 5d): This larva was actively swimming and measured 8.13mm in length. The eyes had become brown. The two jaws had grown forwards, with the upper jaw longer than the lower; the former producing into a beak-like structure. Teeth were more prominent, slender and pointed. The alimentary tube extended as far as the 66th myotome with a very narrow bulge at its end.

The morphometric details of the Ophichthyid and Muraenid larvae are given in Table 1.

Specific identification of the eggs and early larvae was impossible in the absence of older larval stages as well as the details relating to the vertebral number of the common eels, particularly of Trivandrum coast, where several species occur. However, the number of preanal myotomes of the ophichthyid larvae in the present account tallies with that of *Leptocephalus* I described by

TABLE I: *Measurements (mm) of the preleptocephaline larval stages*

	Ophichthyid		Muraenid	
	Newly hatched larva	One-day-old larva	Newly hatched larva	One-day-old larva
Total length	9.42	11.02	7.35	8.13
Preanal distance	8.64	9.22	5.68	6.51
Length of head	0.65	1.16	0.65	0.90
Diameter of eye	0.39	0.39	0.32	0.32
Preanal myotomes	107	107	66	66

Jones and Pantulu (1955), also from around this area. It is therefore reasonable to conclude that it belongs to the same species. Also, the characters of Ophichthyid egg show some resemblance to the egg (Type I) recorded by Sudha and Nair (1982) from the Trivandrum Coast.

The Muraenid eggs and larvae are quite different from those observed by Ganapati and Raju (1960), and also do not agree with those of Gopinath (1949) and Sudha (1982) from the Trivandrum Coast.

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