ON THE OCCURRENCE OF THE LEPTOCEPHALUS OF THE RARE DEEP-SEA EEL GAVIALICEPS TAENIOALA ALCOCK IN THE GULF OF MANNAR

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GAVIALICEPS taeniola is a very rare muraenesocid deep-sea eel recorded from the Andaman Sea, Bay of Bengal\(^2\) and north eastern Indian Ocean\(^3\). Recently Castle\(^4\) identified the larva of this rare eel with Leptocephalus arabicus described by D’Ancona\(^5\) from the Gulf of Aden as the holotype. There are very few references dealing with the larval forms of muraenesocid eels and Nair\(^6\) was the first to describe the larva of Muraenesox cinereus. This was followed by the accounts of the leptocephalus of Paraxenomystax\(^7,8\) and Xenomystax\(^9\). This is the first record of the leptocephalus of G. taeniola from Indian waters.

Two leptocephali of this species were obtained on 22-2-1972 from a deep-sea trawl collection made at a depth of 150 fathoms off Mandaapam, Gulf of Mannar. The larva is very thin, transparent and elongated with the anterior and posterior regions tapering imperceptibly into a small head and a very finely pointed tail. The larvae measure 116 mm and 118 mm in total length and the first specimen is described here. The maximum width of 7 mm is found in the middle third of the larva and it is 16.5 times in total length. The head is elongated, acutely pointed and measures 6.5 mm which is 17.8 times in total length. The long and strongly pointed snout measuring 3 mm is 2.2 times in head. The eye is circular and 1.1 mm in diameter and it is 5.9 times in head. In the second specimen the head is longer and measures 9 mm. Consequently it is only 13.1 times in total length. Proportionately the snout is also longer and measures 4.2 mm; but its proportion to head length is more or less similar to that of the first specimen. The myotomes are very distinct and could easily be counted in the tail region also and they are 206 in the type specimen and 217 in the other specimen with 145 and 121 pre-anal myomeres respectively. The pre-dorsal myotome number is 93 and 78 respectively in the two specimens. The lower number of pre anal and pre-dorsal myomeres in the second specimen obviously suggests an anterior shifting of the vent and the origin of the dorsal fin which are related to transformation. The dentition is characteristic of the larva and the teeth are short and pointed. The upper jaw carries a short, curved and outwardly directed grasping tooth followed by a series of 9 uniformly sized, short, pointed teeth constituting the first group of teeth. This is followed by the second group of 12 teeth which are very minute and situated in the posterior third of the upper jaw. The dentition of the lower jaw follows a similar pattern in the size and arrangement of teeth. But the number in the two groups is 9 and 7 respectively. In the second larva, the dentition is not complete since some of the teeth have been shed, especially those of the upper jaw, indicating the commencement of metamorphosis. However, it is seen that there are 14 teeth in the second group of the upper jaw which apparently shows that the number of teeth is likely to vary in this species.

![Figure 1. Leptocephalus of G. taeniola showing the characteristic pigmentation.](image)

![Figure 2. Head region of the leptocephalus of G. taeniola.](image)

The alimentary canal is very long and straight with the anus situated close to the caudal fin. The blood vessels are not distinguishable in the two specimens. The fins are not clearly seen owing to the filamentous nature of the caudal fin. The dorsal fin is short and the pre-dorsal distance is 1.4 times in total length. The anal fin is also very short and the pre-anal distance is 1.1 times in total length. The caudal fin is distinctly seen, confluent with the dorsal and anal fins; but the rays could not be counted. The caudal rays are very long and filamentous when compared to those of the other two vertical fins. The pectoral fin is very rudimentary and its position is indicated by a thickened region behind the gill cleft.

The pigmentation pattern is very interesting and unlike the condition found in the other families like...
Muraenidae, Ophichthidae, Congridae, etc., the head and body are completely devoid of pigment cells. On the other hand, in the type specimen, the alimentary canal is pigmented with five pairs of pigment spots placed equi-distant from one another. The first and second pigment spots extend over two myotomes each (28-29, 42-43). The first spot is elongate and diffuse while the second is linear and constituted by a few irregularly scattered pigment cells. The third pigment spot, situated in the 58th myotome, is punctate and the fourth and the fifth spots, placed in the 70th and 82nd myotomes, are slightly branched i.e., puncto-stellate. In the second specimen there are only four pairs of pigment spots. Apparently, this shows that the number of pigment spots on the alimentary canal is not constant while the pattern of pigmentation remains the same.

The larva described here shows a remarkable similarity to that of G. taeniola described by Castle not only in general appearance but also in total and pre-anal myotome numbers. It is seen that the size of the larva, especially the fully-grown, is smaller in the Gulf of Mannar specimens while Castle records a maximum size of 196 mm prior to metamorphosis. The most important similarity is in the pattern of pigmentation which according to him is in the form of "a pair of series of about seven, relatively large, ocellate, somatic melanophores, along the length of the gut". He has found the number varying from 6 to 7 while in the present specimen the variation is 4 to 5. It may be mentioned here that Castle's collection comprising of 21 specimens, was obtained by Research Vessels Dana, Galathea, Albatross and Diamantina from widely separated places in the Indo-West Pacific region. It is seen that the leptcephalus of G. taeniola has a wide distribution even though the adults are known to have a restricted distribution only.

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A NEW SPECIES OF HELIOCOCCUS SULC (COCCOIDEA: PSEUDOCOCCIDAE) FROM SOUTH INDIA

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The genus Helicoecoc us Sulc is reported for the first time from India. H. singularis sp. n. is described in the present paper. It runs close to H. caucasicus Borschensin in the key to species of Helicoecus, but can be separated by its having small marginal protuberances and numerous multilocular pores irregularly distributed on dorsum.

Helicoecoc us singularis sp. n. (Figs. A-N)

Adult female (A) : Mounted specimen oval in shape, more than one and a half times longer than wide (3-05 : 1-83 mm), anal lobes well developed. Dorsum with small spinose setae (B). Trilocular pores (C) numerous and evenly distributed. Quinque-locular pores absent. Multilocular pores (D) in groups on thoracic and segmentally arranged on abdominal regions. Crateriform ducts sparsely distributed and are of two sizes, large size (F) with 4-5, small size (E) with 1-3 minute setae attached to the base of the ducts prominence. Ostioles well developed. Body with 12 pairs of cerarii which are devoid of auxiliary setae; anal lobe cerarii (G) without area of sclerotization, each with a pair of stout conical spines, a pair of large tubular ducts and few trilocular pores; cerarii anterior to anal lobe placed on the marginal protuberances, each cerarii with 2 conical spines and 2-3 trilocular pores. Anal ring with 6 setae which are longer than the greatest diameter of ring.

Venter with numerous hair-like setae of variable lengths, few setae (I) as those on dorsum confined submarginally. Trilocular pores (K) confined submarginally. Quinque and locular pores (H) numerous, irregularly distributed except lateral areas. Multilocular pores (M) numerous arranged segmentally posterior to circulus and in groups throughout body anterior to circulus. Oral-collar tubular ducts (N) sparsely distributed, segmentally arranged on abdomen posterior to circulus in 4-5 groups marginally anterior to anal lobe; few crateriform ducts of small size (J) irregularly distributed. Eyes well developed. Antennae 9-segmented, 0.76 mm in length, segment 2nd longest. Rostrum dimerous. Spiracles well developed. Circulus large, constructed medially. Legs elongate; claws (L) with distinct denticle, digitules slightly longer than claw and clubbed at apices; dimensions of fore, mid and hind legs : trochanter + femur (0.37 : 0.4 : 0.43 mm), tibia (0.3 : 0.33 : 0.39 mm) and tarsus (0.09 : 0.1 : 0.11 mm) respectively.