LEPTOCEPHALI OF THE GULF OF MANAAR*

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In view of the scanty records of Indian Leptocephali (Kaup, 1856; Southwell and Prashad, 1919; Deraniyagala, 1934; Gopinath, 1946 and Nair, 1946 and 1947), a thorough and systematic study of these larvæ together with a knowledge of their distribution is an important and necessary prelude to the study of the biology of the Indian eels of which we know so little while great advances have been made in the study of their European counterpart.

During the course of a three days' visit to Krusadai Island, Gulf of Manaar, early in July, 1947, numerous specimens of Leptocephali were collected each day from the shore seines operated by fishermen from Kutikal Point of Rameswaram Island. On the 8th July 1947, the larvæ occurred in enormous numbers composed of two varieties of *Congrellus anago* and *Uroconger lepturus*. It may be mentioned here that *Stolephorus commersonii* and *Chirocentrus dorab* formed the predominant catch of fish in the shore seines during these days. As may be expected while using such nets, all the specimens were unfortunately taken in a dead or dying condition and consequently no observations on their metamorphosis could be made.

Congrellus anago (Schlegel)

6th July 1947	..	10 specimens.
7th July 1947	..	11 specimens.
8th July 1947	..	72 specimens.

The Leptocephalus of *Congrellus anago* was recorded recently by Gopinath (1946) from the Trivandrum Coast. Apparently the identification of the larva is based on circumstantial evidence afforded by the presence of the elvers of *Congrellus anago* along with the Leptocephalus and, therefore, confirmation of Gopinath's correlation appears to be necessary.

Measurements.—Total length 142 mm.; length of head 4 mm.; length of trunk 110 mm.; length from anus to tip of tail 28 mm.; length from tip of snout to origin of dorsal fin 120 mm.; maximum height 13·5 mm.

The Leptocephalus is transparent, long and flattened with 116 relatively broad myotomes 1·5 mm. wide near the middle region of the body. A

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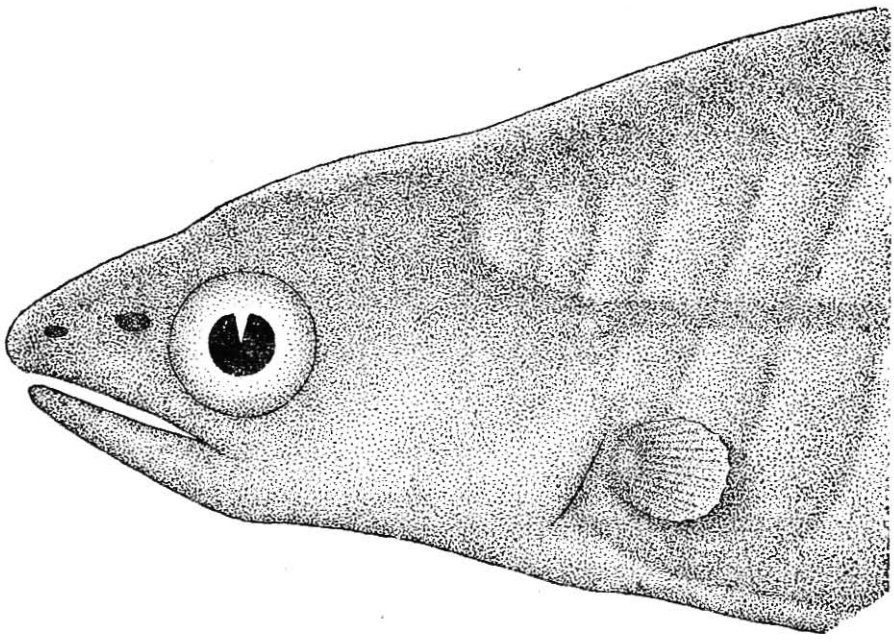
narrow transparent region to which the myotomes do not extend is present on the ventral side above the alimentary canal. The small, triangular head has a bluntly pointed snout (Fig. 1). The upper jaw is slightly longer than



TEXT-FIG. 1. Head region of the Leptocephalus of *Congrellus anago*. × *ca* 18.

the lower and in all the specimens the larval teeth have fallen off. No indication of the formation of the adult set of teeth is seen in any of the larvæ. The cleft of the mouth is straight and extends posteriorly to the level of the centre of the eye. The alimentary canal is very long and straight and forms a prominent gradually broadening region between its commencement and the 24th myotome. While in a few of the specimens the anus is placed below the 82nd myotome, in the majority, however, it has shifted anteriorly, and this fact taken in conjunction with the absence of the larval set of teeth suggests that the larvæ have reached their limit of full growth and have just begun to metamorphose into the elvers. It is possible that in the fully grown larva, before the onset of metamorphosis, the anal opening may be situated under a still posterior myotome. The dorsal fin is very short with closely-set developing fin-rays while the anal is slightly longer with the rays well developed and prominent. The caudal fin is confluent with the vertical fins whose rays indistinguishably merge with those of the former.

The head is devoid of pigmentation. The presence of black stellate chromatophores at the bases of all but a few of the anteriormost rays of the anal

fin and of the caudal fin appears to be a distinguishing feature of the larva of *Congrellus anago*, and this pigmentation is clearly visible even to the naked eye. Similar chromatophores are present at the bases of the better developed posterior fin-rays of the dorsal fin. Elongated irregularly arranged black chromatophores are present along the dorsal side of the alimentary canal. In some specimens, a row of black chromatophores is found along the ventral half of the myocommas of the posterior half of the body. These groups of pigment cells become prominent towards the caudal end.

It is known that the Leptocephalus of *Congrellus anago* occurs in good numbers from the beginning of November till the end of February along the Trivandrum Coast (Gopinath, 1946). This larva, which appears to be the common Leptocephalus of the Gulf of Manaar, has not so far been recorded along the Madras Coast in the regular plankton collections made at the University Zoological Research Laboratory, Madras, during the last ten years. But we know that the recorded habitat of the adult is from the Coromandel Coast of India to Malay Archipelago (*Congromuræna anago*, Day, 1889). We are thus confronted with certain interesting problems about the distribution of the larva and the adult of *Congrellus anago*.

Uroconger lepturus (Richardson)

6th July 1947	..	3 specimens.
7th July 1947	..	11 specimens.
8th July 1947	..	21 specimens.

An account of the Leptocephalus of *Uroconger lepturus* occurring in the Madras plankton and the correlation between myotome and vertebral counts of the larva and the adult respectively has already been given (Nair, 1946).

All the larvæ in the present collection are edentulous with great reduction in the length of the alimentary canal and the height of the larva which varied from 8–9 mm. These changes indicate that the larvæ are in a more advanced stage of metamorphosis than those collected from the Madras plankton. This is corroborated by the appearance of new chromatophores in the head region consequent on the commencement of metamorphosis. Five to six black stellate chromatophores are present in a horizontal line near the heart region with one or two stray pigment cells above them. Two or three similar chromatophores occur at the middle region of the upper jaw.

The Leptocephalus of *Uroconger lepturus* can, therefore, now be taken as common on the East Coast of India. *Leptocephalus acuticaudatus* was collected by Kaup (1856) from Malabar and though the descriptive account of the larva is meagre and unsatisfactory, Kaup's figure of it bears a strong

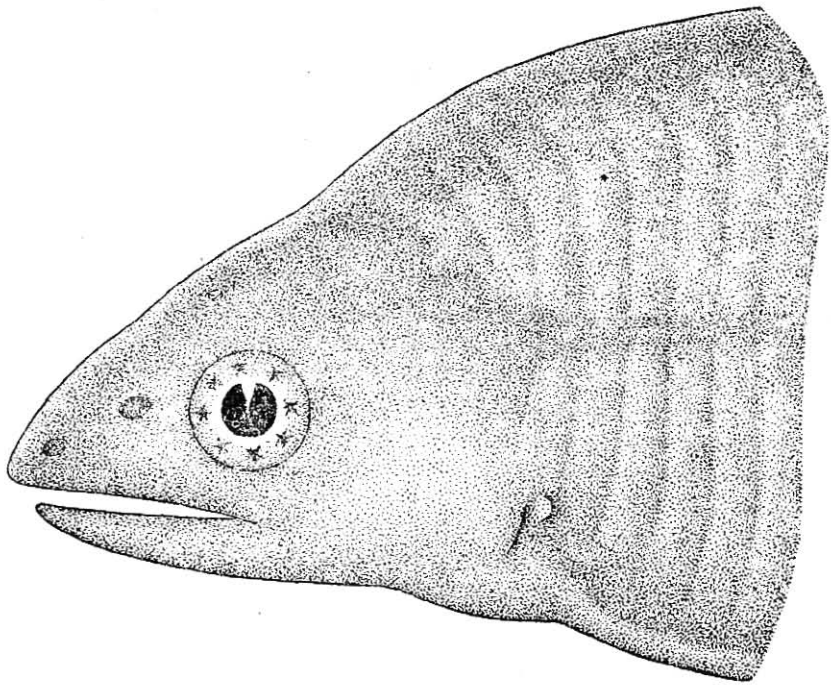
resemblance to the present larva in certain features. Therefore, it is possible that *Leptocephalus acuticaudatus* may belong to the genus *Uroconger*.

Muræna sp.

6th July 1947 .. 1 specimen.

Measurements.—Total length 66 mm.; length of head 4 mm.; length of trunk 43 mm.; length from anus to tip of tail 19 mm.; length from tip of snout to origin of dorsal fin 38 mm.; maximum height 9 mm.

The relatively small, flattened and leaf-like larva has 210 myotomes. The head is conical with a pointed snout (Fig. 2). The gape of the mouth



TEXT-FIG. 2. Head region of the Leptocephalus of *Muræna* sp. × *ca* 18.

is straight and extends to a level with the middle of the eye. The larval set of teeth has fallen off and no indication of the formation of the adult set is present. The course of the alimentary canal is straight with the anal opening below the 126th myotome. The pectoral fin is present as a very small and rudimentary structure.

The eye is tinged yellow with eight black stellate chromatophores round the pupil. The body is devoid of chromatophores except for the presence of a few minute black ones at the bases of the posterior region of the anal and the caudal fins.

The larva very closely resembles that of *Muræna macrura* described by the author (1947) from the Madras plankton; the coloration of the eye particularly is very striking, and it is probable that the larva belongs to a species of *Muræna* not unrelated to *Muræna macrura*. Deraniyagala (1934) has recorded two larvæ belonging to Murænidæ from Ceylon waters. Kaup's (1856) figure of *Leptocephalus dussumieri* which was collected from Malabar and imperfectly described by him reminds one of a Murænid larva. Many Murænid larvæ which look alike not only in appearance but also in other characters should be expected from the Indian Seas where many species are known to occur.

Murænesox cinereus (Forskål)

Three specimens of the Leptocephalus of *Murænesox cinereus* collected on the 3rd May 1947, by my colleague, Mr. P. R. Sadasivan Tampi, from a shore seine worked from Kutikal Point were handed over to me with the information that *Dussumieria hasseltii* formed the bulk of the catch in the net.

An account of the larva of *Murænesox cinereus* together with the changes undergone by it during metamorphosis into the adult has previously been given by the author (1947).

The Leptocephalus of *Murænesox cinereus*, like that of *Uroconger lepturus*, can also now be considered as common on the East Coast of India.

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