

ON TWO POSTLARVAL STAGES OF THE SHAD
HILSA KELEE (CUVIER)

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ABSTRACT

Two postlarvae of *H. kelee* measuring 5.68 mm and 7.92 mm, collected from Gulf of Mannar off Mandapam, are described. In the smaller larva the larval finfold was prominent and there were 34 preanal and 9 postanal myomeres. In the larger one the finfold was almost absent; all the fins except the pelvic had been developed and there were 27 preanal and 16 postanal myomeres. Pigmentation in both the stages was sparse. The differences in features between present postlarvae and similar stages of allied clupeids from Indian region are discussed.

Eggs and early larvae of *Hilsa kelee* [= *H. kanagurta* (Bleeker)] were described by Delsman (1926) from Java coast and Rao (1973) from Madras. While studying fish eggs and larvae in the seas around Mandapam, two postlarvae have been collected from Gulf of Mannar on 29-6-1985, which are identified as of *H. kelee*, and, since this is the first report of the postlarvae of this species, a description of them is given, and are compared with the postlarvae of an allied species, *Hilsa ilisha*, described by Nair (1939) and Jones and Menon (1951).

The postlarvae were collected from about 5 km off Mandapam, from a depth of about 3 m. The smaller one measured 5.68 mm (Fig. 1, A). This was

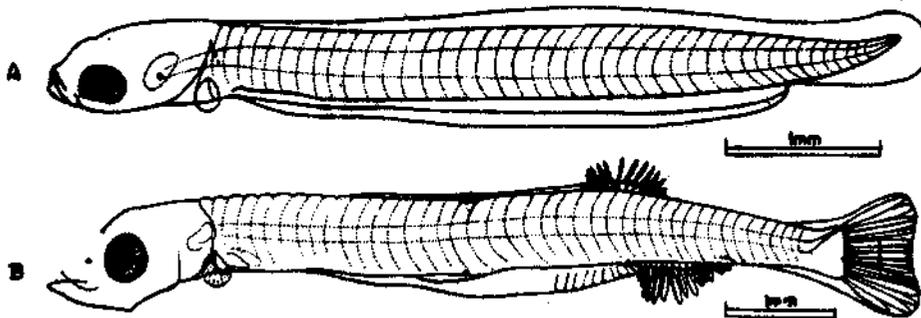


FIG 1. Two postlarval stages of *Hilsa kelee*. A: 5.68 mm; B: 7.92 mm.

typically clupeoid, with an elongated body, long and straight alimentary canal and a hinder location of the vent. Pigmentation consisted of two black spots above the pectoral fin, another two spots around 1/3rd distance from head and a single spot above the midgut. Larval finfold was prominent and, except for the pectoral, there was no indication of a fin. The pectoral was membraneous and fan-shaped, without indication of rays. There were 43 myomeres, of which 34 were preanal and 9 postanal. From the structure of the material it is obvious that this was an early postlarva.

In the larger larva, of 7.92 mm length (Fig. 1, B), the body had become much more organised. The larval finfold was reduced to a remnant in the front aspect of the dorsal fin. Both the upper and lower jaws were prominent and somewhat pointed, the lower jaw being much longer than the upper and bearing a few minute conical teeth. Dorsal fin appeared above the 25th-30th myomeres and the anal fin below the 28th-35th myomeres. Thus, the origin of anal fin was at a level below the base of the dorsal fin, precisely at a level below the third myomere from the hind end of the dorsal-fin base. Caudal fin showed the beginning of bifurcation. There were 12 dorsal, 14 anal and 16 caudal rays. The middle six rays of the caudal fin alone showed a bisegmented condition. Pectoral fin was still membraneous, but showed the appearance of a few rays. Pigmentation was in the form of two black spots in the midgut, one above the vent and six behind the anal fin. There were 43 myomeres, of which 27 were preanal and 16 were postanal, a condition almost similar to the adult vertebral disposition of 25-26 preanal and 17-18 postanal.

Identification of the present postlarvae as those of *H. kelee* is based on the simultaneous occurrence of spent adults in the local catches and of postlarvae in the plankton, as well as confirming the characters which distinguished them from similar stages of allied fishes reported from India, such as *Hilsa ilisha*, *Sardinella*, *Thryssa*, *Stolephorus*, etc. Rao (1973) has described the eggs and early larvae of *H. kelee*, of which the 5.36 mm postlarva is comparable with the 5.68 mm larva presently described. Though in general features there are resemblances between the two, there are 34 preanal and 9 postanal myomeres in the present material as against 36 preanal and about 7 postanal myomeres in Rao's, obviously due to the present larva being in more advanced stage of development. This has resulted in forward movement of the vent, as has been observed in the early development of clupeiform fishes. In the number of oil globules present in the eggs assigned to this species by Delsman (1926) and by Rao (1973), there is a major difference, namely a single oilglobule in the former but six or seven oilglobules in the latter. Rao (1973), however, substantiated his identification by showing that in the intraovarian eggs of this species many oil globules were present. From this it appears that the eggs assigned by Delsman (1926) to *H. kelee* do not belong to it, but to another clupeid with 43 vertebrae, possibly a species of *Sardinella*.

Nair (1939) described a few postlarvae of *Hilsa ilisha* of 14 mm and above. Subsequently, smaller stages of *H. ilisha* were described by Jones and Menon (1951). Between the present 5.68 mm postlarva and the 6.5 mm stage of *H. ilisha* described by Jones and Menon (1951) there are many common features. But the two can be easily distinguished from one another by the numbers of preanal and total myomeres, namely 34 and 43 in *H. kelee* and 41 and 46 in *H. ilisha*. The 7.92 mm stage of *H. kelee* is comparable to the 8 mm stage of *H. ilisha* (Jones and Menon 1951). Evidently, the two are almost in the same stage of development, but the significant difference is the more advanced development of fins in the former and the number and disposition of myomeres.

In the total number of myomeres, the postlarvae of *H. kelee* may be said to resemble those of the engraulids *Thryssa* and *Stolephorus*, in which also the total myomeres/vertebrae vary from 42 to 46. But, the postlarvae of *H. kelee* can easily be distinguished from those of the engraulids by the difference in the disposition of myomeres. In the newly hatched larvae of *Thryssa* and *Stolephorus*, the preanal myomeres are 25 to 30 only (Delsman, 1929, 1931, Vijayaraghavan 1957). But, in the present material, the preanal myomeres are as much as 34 even in a postlarva of 5.68 mm. In later stages of *Thryssa* and *Stolephorus* (Delsman, 1929, 1931), the number of preanal myomere further gets reduced, becoming 19 to 22 and reaching the adult vertebral condition. But, in the 7.92 mm postlarva of *H. kelee* the preanal myomeres are still 27. Another prominent feature which is of value in separating the postlarvae of *H. kelee* from those of *Thryssa* and *Stolephorus* is the nature of the jaws. In the postlarvae of *H. kelee* the lower jaw has become considerably longer than the upper in the 7.92 mm stage. But, in the postlarvae of the engraulids, it is the upper jaw which becomes longer than the lower, approaching the adult condition of inferior mouth and prominent snout. Both these characters are prominent enough to distinguish the present material from the postlarvae of *Thryssa* and *Stolephorus*. Postlarva of *Chanos chanos* which also has about 43 myomeres can be separated from the postlarva of *H. kelee* in that in the former the muscle fibres have a parallel arrangement whereas in the latter they have a crossed arrangement.

Difference in the disposition of myomeres is also useful in separating the postlarvae of *H. kelee* from those of sardines having the same vertebral number. In the 10.2 mm stage of *Sardinella clupeioides* and the 10.4 mm stage of *S. sirm* described by Bensam (1983), which are in the same stage of development as the 7.92 mm postlarva of *H. kelee*, the numbers of preanal myomeres are still 38 and 31 whereas in *H. kelee* the number is 27. However, in the 6.6 and 5.68 mm postlarvae of *S. albella* described by Bensam (1983) and *H. kelee* in the present account the disposition of myomeres is identical, but, in *S. albella*, perhaps being in a more advanced stage, the caudal finfold is highly reduced, whereas in *H. kelee* it is very prominent. Also, there are 34 preanal and 9 postanal in *S. albella*, but 27 preanal and 16 postanal in *H. kelee*.

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