

**OBSERVATIONS ON THE BREEDING, LARVAL DEVELOPMENT
AND TAXONOMIC STATUS OF *MACROBRACHIUM EQUIDENS*
(DANA, 1852)**

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ABSTRACT

Macrobrachium equidens collected from Cochin Backwaters (Kerala) is represented by two forms, striped and non-striped. Separate studies carried out on the breeding and larval development of these two forms indicated that no inter-breeding between them take place. Further the distinct colour pattern characteristic of these forms became discernible as the post-larvae grew to a size of 20-25 mm. The observations lend support for the consideration of these two forms as distinct species.

Macrobrachium equidens is widely distributed in the Indo-West Pacific from South and East Africa, through India, Andaman Nicobar Islands to South China, Riu Kiu Islands and Malay Archipelago (Holthuis, 1950; Tiwari and Pillai, 1973; Jagadisha, 1977). This species is represented by two forms, one having greenish longitudinal stripes along the entire length of the body and the other without stripes but bearing blotches throughout the body. Besides, certain morphological differences, such as rostral length with reference to antennal scale, number and position of dorsal and ventral rostral teeth, relative length of carpus and chaela as well as the velvety nature of fingers of second pereopod in adult males, between these two forms have also been recorded by Jagadisha (1977). Because of these differences the taxonomic status of the species has been a subject of controversy. To solve this, breeding and larval development of the two forms have been studied.

Berried females of both the forms (50-68 mm in size) were collected from the Cochin Backwaters (Kerala) during July-October. The number of eggs in the berry varied from 2,700 to 7,500. Berried females with advanced stage of berry (eggs with clearly visible eye spots of the developing embryo) were isolated and kept individually in 60 litre glass aquarium tanks containing brackish water of 10-15‰ salinity for breeding. Hatching of eggs was observed during early morning hours. When hatching was complete, the prawn was removed to another tank where mature male of the same form was provided. The female prawn moulted within 3-6 days, mated with the male and acquired berry under the laboratory condition. The incubation period of the berry in both the forms varied from 16-17 days. One non-striped female measuring 62 mm in total length moulted and acquired berry giving viable eggs six times over a period of 123 days.

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An experiment was conducted to verify whether these two forms interbreed. Females of non-stripped form with ripe head roe were kept with adult males of striped form in aquarium tanks containing brackish water of 10-15‰ salinity. Similar condition as that of normal breeding programme were provided. They were maintained for six days under close observation. As in the normal case, the females moulted and subsequently transferred the ovarian eggs onto pleopods on the third or fourth day. However, these eggs were found to be not fertilized and were discarded after three days. Similarly, no mating behaviour either before or after moulting was observed. However, when the striped males and females and non-stripped males and females were kept separately they moulted and bred readily producing viable eggs.

Freshly hatched zoeae of both striped and non-stripped forms were reared separately in containers following the procedure described by Pillai and Mohamed (1973). Larvae were fed from the first day onwards with freshly hatched *Artemia* nauplii twice a day.

During metamorphosis, first zoeae of both striped and non-stripped forms, passed through ten well defined stages before developing to the first post-larva (Plate I, c). Each zoeal stage took two to four days to moult to the next stage. From third zoeal stage onwards the moulting of the larvae was not regular. From sixth zoea onwards, although the larvae resumed moulting regularly within two to three days, it was seen that often the same stage remained without developing into the succeeding stage. Sixth zoeal stage seemed to be the critical stage in the development of this species. Generally the duration for completing the larval development from

first zoea to first post-larva was 35-40 days, the minimum period was found to be 25 days.

The postlarvae of striped and non-stripped forms measuring 5.9 to 6.3 mm were reared separately. The characteristic colour pattern was seen clearly as the post-larvae grew to a size of 20-25 mm (Plate I, A & B). By about 90-95 days they grew to a size of 45-50 mm. Females became mature at this size with fully developed ovary visible through the body. Throughout this growth period, the colour pattern of the striped and non-stripped form was distinct and no mixing of the same was observed between the two morphotypes.

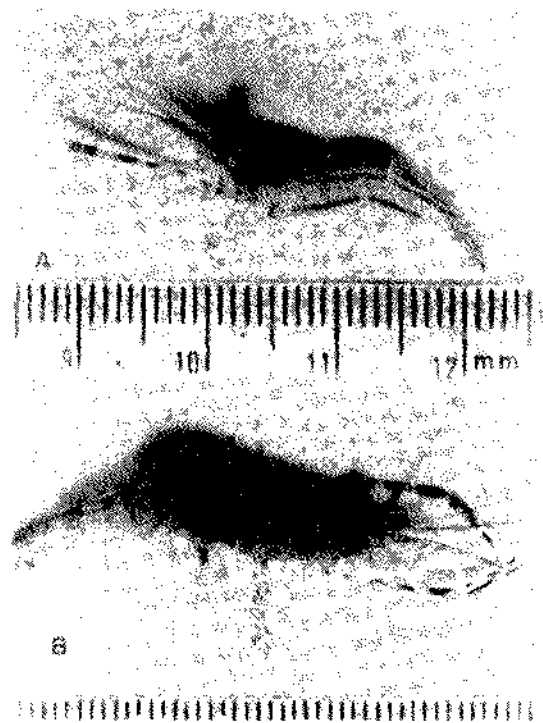


Fig. 1. *Macrobrachium equidens*: A. Advanced post-larva of striped form of *M. equidens*. B. Advanced post-larva of non-stripped form of *M. equidens*.

NOTE

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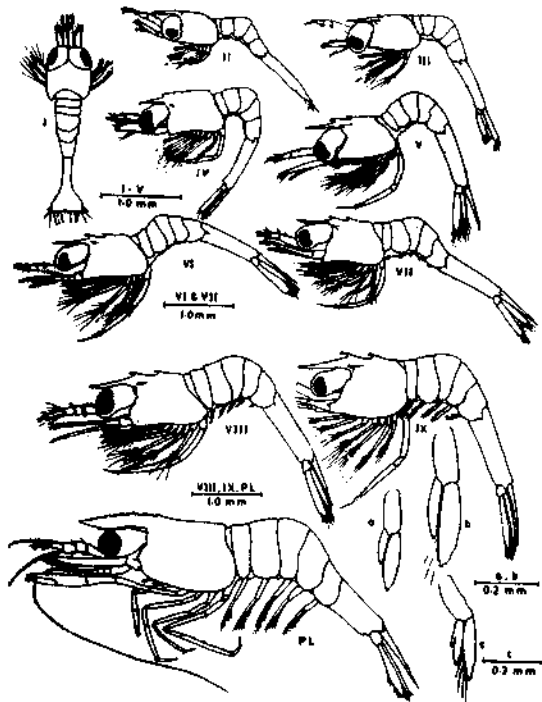


Fig. 2. (striped form) : I to IX - Zoea I to Zoea IX; PL - postlarva I; a-second pleopod of Zoea VIII; b-second pleopod of Zoea IX; c- second pleopod of Zoea X.

The results of the present study thus indicate that no interbreeding between the striped and non-striped forms is taking place and the distinct colour pattern characteristic of each of the forms becomes discernible as the post-larvae grew to a size of 20-25 mm. These observations together with the differences observed in the morphological features by Jagadisha (1977) lend support for the consideration of these two forms as distinct species. A detailed account of the larval development of these two forms and its comparison with the earlier works on the species (Nguyen, 1976 and Jagadisha, 1977) and other related forms are being published elsewhere.