ON THE BREEDING OF A PENAEID PRAWN, *METAPENAEUS DOBSONI* IN THE BRACKISH WATER MEDIUM

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Laboratory spawning of a mature female *Metapenaeus dobsoni* obtained from the Cochin Backwater and kept in the brackish water medium (salinity 30.22‰, temperature 27.8°C) is reported. The eggs reared in the brackish water medium hatched out into nauplii, but none of them developed further. On transferring a few nauplii to the sea water (salinity 34.02‰) after two days, they transformed into abnormally developed protozoeae. The importance of this observation in the context of breeding of Indian penaeid prawns and from the point of view of their culture in the coastal estuaries is pointed out.

On 12-3-1971, a few live mature female specimens of *Metapenaeus dobsoni* caught by try net from the Thopumpady region in Cochin Backwater (Lat. 9°58'N and Long. 76°15'E), were brought to the laboratory of the Central Marine Fisheries Research Institute. These prawns were kept in the glass aquarium tank (60 cm x 30 cm x 30 cm) containing the brackish water collected from the surface region of the same area from where they were caught. The salinity and temperature of the water in the tank were 30.2‰ and 27.8°C respectively. On the following morning (13-3-1971), one of the prawns measuring 69 mm total length spawned in the aquarium. The eggs were carefully drained out of the aquarium and were kept in beakers containing the same brackish water medium. They started hatching out into nauplii by 11.30 hours. These nauplii were reared further in the laboratory for two days, but none of them moulted into Nauplius II substage, although a few of them survived. On 15-3-1971, a few healthy nauplii were transferred to sea water collected from the adjacent inshore sea and having a salinity of 34.02‰. These nauplii in the following morning transformed into abnormally developed protozoeae, which survived only for a few hours in the laboratory.

Diameter of the viable eggs (Fig. 1A) varied from 0.300 mm to 0.336 mm and that of the embryonic mass from 0.240 mm to 0.256 mm. These eggs were, thus, slightly smaller than those obtained and described by Menon (1951). However, the total length (measured from the front border of the body to the posterior end excluding the spines) of the freshly hatched out nauplii (Fig. 1B) was comparatively larger, being 0.304 mm. The greatest width of the body was 0.208 mm. The setation of the usual three pairs of

naupliar appendages, namely antennules, antenna and mandibles was similar to those described by Menon (1951). The abnormal protozoea (Fig. 1C) measured 0.448 mm in total length. The typical morphological features such as the presence of carapace, absence of the 2 rami of the mandible and differentiation of the thorax and abdomen, of the normal protozoea, were found in

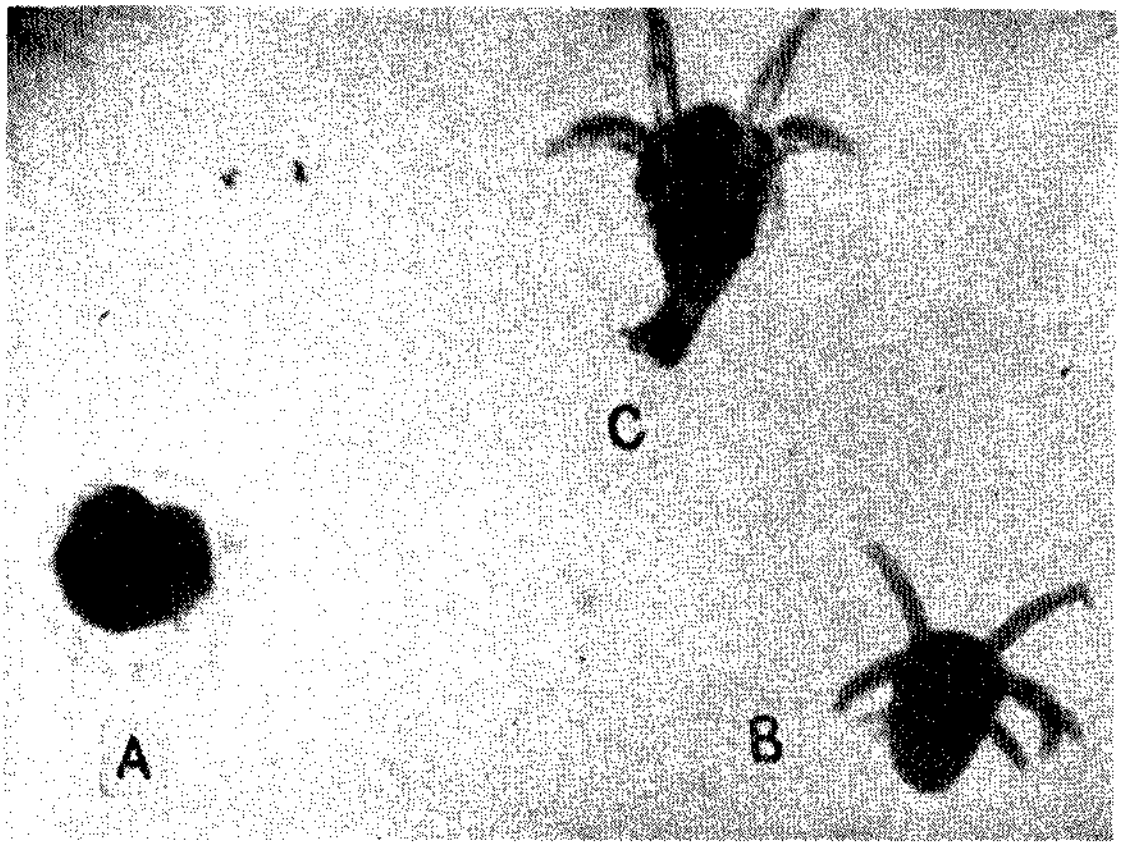

FIG. 1. *Metapenaeus dobsoni*
A. Egg, B. Freshly hatched out Nauplius and C. Abnormal Protozoea.

these protozoeae. But the setation of the appendages and the telson lobes were only partially developed and not fully stretched out as in the case of the normal protozoea. The thorax and the abdomen were also comparatively short and appeared almost similar to those of the final nauplius sub-stage.

The larval development of *M. dobsoni* and other allied species have been described by Menon (1951) and Rao (1971). All the commercially important

penaeid prawns of India are known to breed and undergo early development in the open sea. Although these prawns enter the estuaries and backwaters in mysis and post-larval stages and attain almost all the adult characters including the development of secondary sexual organs in this environment, it is believed that the maturation of the ovary and subsequent spawning take place only in the sea. Probably, the environmental factors such as high salinity, lower bottom temperature and greater pressure of the deeper waters of the sea play an important role in this phenomenon. The occurrence of mature female specimens of *M. dobsoni* in the backwater recorded during the present study and its breeding in the backwater medium under controlled conditions indicate the possibility of these prawns growing in the more saline coastal estuaries, attaining maturity and spawning here, as in the case of *Metapenaeus bennettae* that breeds in the coastal lake of New South Wales (Muriel and Bennett, 1951). It may also be mentioned here that during January-April, the upper reaches of the estuary become merely an extension of the adjoining sea with an environmental features almost similar to those of the coastal waters (Sankaranarayanan and Qasim, 1969). Although the breeding and hatching of nauplii were successful in the brackish water medium, the failure of further development of the nauplii in the same medium may be due to a combination of various factors, one of which is the lesser salinity of the medium. However, the present observations are significant from the point of view of prawn culture in the higher saline regions of estuaries and backwaters, and in the collection and stocking of spawners.

The authors are thankful to Mr. P. Dhandapani for the photomicrograph of the eggs and larvae.

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