THE EARLY DEVELOPMENT OF MACROPTHALMUS DEPRESSUS RUPPELL AND M. TRAVANCORENSIS PILLAI (CRUSTACEA: BRACHYURA)

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ABSTRACT

The early and late first zoeae of Macrophthalmus depressus Rüppell and M. travancorensis Pillai of the family Ocypodidae, hatched in the University Laboratory, Waltair, have been described in detail. The differences between the first zoea larva of M. depressus Rüppell and M. diatatus de Haan are enumerated. The early development in the species Macrophthalmus travancorensis Pillai has been described for the first time. The key for the species described is given. Origin of Macrophthalminae of the family Ocypodidae from the family Grapsidae has been discussed.

INTRODUCTION

The present knowledge concerning the larvae of the crabs of the family Ocypodidae has been summarised and discussed by Wear (1968) elaborately. In the genus Macrophthalmus, Aikawa (1929) described with figures, the first zoea of M. diatatus de Haan in detail. He gave figures of the first zoea, its first and second antenna and the abdomen of M. depressus Rüppell and added that the zoea of this form and that of M. japonicus de Haan are similar to that of M. diatatus de Haan. Since there are differences between the first zoeae of M. depressus and M. diatatus, the larva (of M. depressus) has been redescribed here in detail. In the literature perused there is no information on the early development of M. travancorensis Pillai and hence this account.

MATERIAL

An ovigerous Macrophthalmus depressus, with carapace 27 mm long and 20 mm broad, was collected on the 10th December 1953 from the backwaters of the Harbour area of Visakhapatnam in a fishing net. Another ovigerous crab of the same dimensions was collected on the 15th February 1954. A
single specimen of *M. travancorensis* in berry, of carapace length 7.5 mm and breadth 9 mm, was caught below small stones in the single bed of the Lawson's Bay, Visakhapatnam on the 28th April 1954. This was the only berried female that could be secured despite intense search for more specimen spread over a period of about 5 years (Rajabai, 1971).

The definition of the larval stages is the same as used in an earlier account (Rajabai, 1959).

**Observations**

In both the ovigerous specimens of *Macrophthalmus depressus*, the eggs were in advanced stages of development, the larvae being easily visible through the transparent egg membranes. The eggs were gray in colour, spherical and 286 to 316 µ in diameter and hatched amongst the pleopods in the early first zoea stage and were liberated in the same stage. Within half an hour of liberation, the exopod setae of the maxillipeds were extended and the larvae swam about vigorously. This stage was designated as the late first zoea stage. The last batch of larvae lived for 4 days and died without moulting. In the case of *M. travancorensis*, four days after the capture (2-5-1954) the crab, which appeared sluggish at first, displayed sudden activity and on examination it was discovered that the eggs which had changed in colour from light gray to dark were about to hatch (diameter of the eggs 250 µ) for the twitching movement of the larvae could be clearly seen through the transparent egg membranes. Two days later (about 4 A.M.), the larvae which were presumably liberated past midnight were observed swimming on the surface of the water and these were in the late first zoea stage. On examination of the pleopods only the empty egg membranes were found adhering to the endopodites of the pleopods. Hence it was evident that the eggs hatched amongst the pleopods. A dozen of the larvae survived under the laboratory conditions for three days and died without moulting further.

*Early development of Macrophthalmus depressa Rüppell* (Figs. 1-16)

*Early first zoea.*—The zoea has the dorsal and the rostral carapace spines only; they are bent close to the body; the laterals are absent.

The abdomen consists of five segments excluding the telson. The second and the third have a pair of small knobs laterally placed, the knobs of the second segment are turned upwards whereas those of the third are turned downwards. The forks of the telson are rudimentary and between these are six setae (Fig. 7).