ON THE LARVAL DEVELOPMENT OF *CARIDINA FORMOSAE* (DECAPODA, ATYIDAE) REARED IN THE LABORATORY

BY

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ABSTRACT

The larvae of the endemic, Taiwanese atyid shrimp, *Caridina formosae*, were reared in the laboratory. The species has large eggs and its larval development is of the complete suppression type. The morphology of the various larval stages is described and illustrated in detail.

RÉSUMÉ

Des larves de la crevette atyide endémique de Taiwan *Caridina formosae* ont été élevées en laboratoire. Cette espèce a de grands œufs et son développement larvaire est de type “suppression complète”. La morphologie des différents stades larvaires est décrite et illustrée en détail.

INTRODUCTION

There now are 13 species of atyid shrimps known from Taiwan (Hung et al., 1993), but the larval development of only one, viz., *Neocaridina denticulata* (De Haan, 1844) has been illustrated and described in detail thus far (Shy et al., 1992). As in palaemonid shrimps, there are three types of larval development in Atyidae, i.e., normal, abbreviated, and completely suppressed (Shokita, 1981; Shy, 1994). In the first type, the larva has to go through a long planktonic period. In the abbreviated type, the larval planktonic phase only lasts a few days. In the last type, the larva is benthic after hatching and there is no planktonic phase. *Caridina*
formosae Hung, Chan & Yu, 1993, is a small species of atyid shrimp with a body length of only 1.5-2.0 cm in the adult, and it is commonly found under stones or leaves in mountain streams and creeks in western Taiwan. As far as known, Caridina formosae is endemic to Taiwan.

In the present study, the morphological characters of the various larval stages are described and illustrated. The species has large eggs and the larvae are benthic, and so the species’ larval development belongs to the completely suppressed type. The changes in egg size and colour during hatching were also recorded. Comparisons of the larval morphology with that of other atyid genera are also made. The ex-ovigerous female specimen was preserved and is now retained in the invertebrate collections of the National Taiwan Ocean University.

MATERIAL AND METHODS

Adult males and females of Caridina formosae were collected from a small creek at the National Taiwan Ocean University, Keelung. They were reared in a 20 l (25 × 25 × 32 cm) aquarium with a water temperature of 26-28°C, and a photoperiod of 14 hours light: 10 hours darkness, in fresh water. The ovigerous female was moved to a 1 l beaker and reared in the same conditions as the other adults. The size and colour of newly spawned eggs, eggs with eye spots, and those just before hatching were measured. The female was removed after the larvae hatched. The larvae were reared in the same 1 l beaker and fed with artificial fish food powder.

Larvae and eggs were observed and measured with a Nikon Profile Projector V-12, a Nikon Digital counter CM-6S, and a Zeiss Stemi SV-6 stereomicroscope. Egg size was determined by measuring the longest and shortest axis (N = 5). Body length was measured from the orbital margin to the distal margin of the telson. Carapace length was taken from the post-orbital margin to the dorsal posterior margin of the carapace (N = 5).

RESULTS

Under the above laboratory conditions, the eggs hatched in 34-37 days after spawning. The size of newly-spawned eggs, eggs with eye spots, and eggs just before hatching, were 0.62 × 0.90 mm, 0.69 × 1.02 mm, and 0.78 × 1.21 mm, respectively. The eggs were deep brown in colour when newly spawned, then changed to light brown, and became translucent just before hatching. The larvae were benthotropic after hatching and went through four larval stages before metamorphosing into the adult. The characteristics of the various larval stages are described below.