EARLY ZOEAS OF ATHANAS JAPONICUS KUBO, 1936 (DECAPODA, CARIDEA, ALPHEIDAE) REARED IN THE LABORATORY

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ABSTRACT

Early zoeas of Athanas japonicus Kubo, 1936, which had not been previously reported from Korean waters, are described and illustrated in detail for the first time, based on laboratory-reared material. Larval characters of the Alpheidae are summarized. Morphological characteristics of the first zoea of A. japonicus are compared with those of A. parvus. A key to the larvae of Alpheus and Athanas from Korean waters is provided.

INTRODUCTION

Athanas japonicus Kubo, 1936 inhabits muddy substrates under stones on lower tidal marks and foreshores interspersed with rock and mangrove roots; it has been reported from Japanese and Australian waters (Miya & Miyake, 1968; Banner & Banner, 1973). The genus Athanas Leach, 1814 is represented by 29 species in the Indo-West Pacific waters (Chace, 1988), but A. japonicus had not been reported from Korean waters previously. The only other known species from Korean waters is Athanas parvus De Man, 1910 (cf. Yang, 1999).

Since Sars (1906) first described the larvae of Athanas nitescens (Leach, 1814), the larvae of three other species of Athanas have been described: Athanas...
djiboutensis Coutière, 1897 by Gurney (1938); Athanas dimorphus Ortmann, 1894 by Gurney (1927) and Bhuti et al. (1977); Athanas parvus De Man, 1910 by Yang (1999). However, there has been no previous description of the larvae of A. japonicus.

The purpose of the present study, therefore, is to describe and illustrate in detail the early zoeas of A. japonicus for the first time, to compare larval morphological characteristics of A. japonicus with those of A. parvus, to list the larval characters of the Alpheidae, and to provide a key to the larvae of Alpheus and Athanas from Korean waters.

MATERIAL AND METHODS

On 5 July 2001, ovigerous females of Athanas japonicus were collected from a sand-muddy environment in Seungsanpo, Jeju Island, Korea. In the laboratory, they were maintained in an aquarium containing seawater at room temperature (20-25°C). Newly hatched zoeas were kept in a growth chamber at 20°C and fed daily with the microalga Isochrysis sp. The larvae were moved daily into new containers with freshly filtered seawater of 33.3‰. Specimens of each developmental stage were preserved in 7% neutral formalin. Drawings were made with the help of a camera lucida. Measurements and setal counts were based on the mean of 10 specimens for each zoeal stage. Body length (BL) was measured from the postorbital margin to the posteromedial margin of the telson, excluding posterior setae. Carapace length (CL) was determined from the postorbital margin to the posteromedial margin of the carapace. The setal armature of the appendages is described from proximal segment towards distal segment. The chromatophore patterns have been determined by observing living zoeas.

RESULTS

Three zoeal stages were obtained. The first zoeal stage is described in detail. For the subsequent stages, only the main differences with the previous stage are given.

First zoea (fig. 1)

Duration 18-20 hours. BL, 1.19 (1.18-1.20) mm; CL, 0.26 (0.25-0.28) mm.

Carapace (fig. 1A, B). Rostrum absent; anterior dorsomedial papilla present; pterygostomial spine present; anterodorsal denticles absent; fat globules present under carapace; eyes sessile.

Antennule (fig. 1C). Peduncle unsegmented; inner flagellum with long plumose seta; outer flagellum with 3 aesthetascs and long plumose seta.