

## First stage zoeal descriptions of five Galatheoidea species from Western Pacific (Crustacea: Decapoda: Anomura)

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## Abstract

The first zoeal stages of the galatheids *Neonida grandis*, *Agononida squamosa* and *Munida javieri*, and the chirostylids *Eumunida annulosa* and *E. capillata* are described and illustrated from laboratory-hatched material obtained from ovigerous females collected from south western Pacific. The morphologies of the first zoeae are compared with the same larval stage of other known anomuran species. The larval characters of *Agononida squamosa* and *Neonida grandis* are similar to those described for *Agononida incerta*. *Munida javieri* exhibits features not present in other described species of *Munida* such as the setation of the endopod of the maxillule and the antennal morphology. *Eumunida annulosa* and *E. capillata* do not show abbreviated development as in other described chirostylids such as *Uroptychus* and *Gastroptychus*, and its larval morphology is equivalent to the first stage of galatheid zoeae. However, many morphological characters of *Eumunida* species are typically pagurid, such as the two terminal plumose setae of the antennal endopod, the three-segmented endopod of the maxillule, the posterior margin of the carapace without spines, and the scaphognathite with 5 plumose setae and without a posterior lobe.

**Key words:** Anomura, Galatheoidea, Galatheidae, Chirostylidae, *Neonida*, *Agononida*, *Munida*, *Eumunida*, first stage zoea, descriptions

## Introduction

The Galatheoidea Samouelle, 1819 includes five families of anomuran decapod crustaceans: Aeglididae Dana, 1852; Galatheidae Samouelle, 1819; Chirostylidae Ortmann, 1892; Kiwaidae Macpherson *et al.* 2005 and Porcellanidae Haworth, 1825 (Martin & Davis 2001, Macpherson *et al.* 2005). The Galatheidae is one of the most diverse families of anomuran decapods and many undescribed species have been discovered in the last decades (Baba 1988, 2005, Macpherson 1994, 2004, Ahyong & Poore 2004b, Macpherson & Segonzac 2005). The systematics of the family has not been fully resolved and many groups of galatheids are undergoing revision (Baba & de Saint Laurent 1996, Machordom & Macpherson 2004). Additionally, knowledge of the larval stages of Galatheoidea is scarce. The percentage of available larval descriptions in galatheid genera is about 22%, and the percentage of the species is lower than 4% (Konishi & Saito 2000, Fujita & Shokita 2005). At present, the first stage zoea morphology of galatheids is known for *Agononida* Baba & de Saint Laurent, 1996 (1 species); *Munida* Leach, 1820 (3 species); *Galathea* Fabricius, 1793 (4 species); *Cervimunida* Benedict, 1902 (1 species); *Pleuroncodes* Stimpson, 1860 (2 species); *Munidopsis* Whiteaves, 1874 (2 species) and *Sadayoshia* Baba, 1969 (1 species) (Huus 1934, Fagetti 1960, Fagetti & Campodonico 1971, Samuelson 1972, Roberts 1973, Gore 1979, Christiansen & Anger 1990, Wilkens *et al.* 1990, Konishi & Saito 2000, Fujita *et al.* 2001, Fujita *et al.* 2003, Fujita & Shokita 2005).

Chirostylidae typically occupy outer shelf and slope habitats. From numerous expeditions across the western Pacific, many unknown species of chirostylids have been