



## Larval stages of *Areopaguristes japonicus* (Miyake, 1961) (Decapoda: Anomura: Diogenidae) described from laboratory reared material\*

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### Abstract

*Areopaguristes japonicus* (Miyake, 1961) is recorded from South Korean waters for the first time with the collection of an ovigerous female. The zoeal and megalopal stages of this species are described from laboratory reared material and compared to larvae of eight other described Diogenidae species from the northwestern Pacific. The larvae of *A. japonicus* are distinguished from those of other diogenids by mediodorsal spines on zoeal pleomeres 3 and 4 and having a spine on the mediodorsal margin of the megalopal pleomere 2. A provisional key for identifying diogenid zoeas from the northwestern Pacific is provided.

**Key words:** larval stages, *Areopaguristes japonicus*, Diogenidae, Pacific

### Introduction

Currently, there are 16 recognized species of Diogenidae recorded from Korea (Kim 1973; Kim & Kim, 1997; Kim & Son, 2006; Komai, 2009): one species of *Areopaguristes* (*A. nigroapiculus* Komai, 2009), two species of *Ciliopagurus* [*C. krempfi* (Forest, 1952) and *C. strigatus* (Herbst, 1804)], one species of *Clibanarius* [*C. virescens* (Krauss, 1843)], four species of *Dardanus* [*D. arrosor* (Herbst, 1796), *D. crassimanus* (H. Milne-Edwards, 1836), *D. impressus* (De Haan, 1849), and *D. pedunculatus* (Herbst, 1804)], three species of *Diogenes* [*D. edwardsii* (De Haan, 1849), *D. nitidimanus* Terao, 1913, and *D. penicillatus* Stimpson, 1858], and five species of *Paguristes* (*P. acanthomerus* Ortmann, 1892, *P. digitalis* Stimpson, 1858, *P. ortmanni* Miyake, 1978, *P. seminudus* Stimpson, 1858, and *P. versus* Komai, 2001). During a survey of Korean indigenous species by the National Institute of Biological Resources (NIBR) in 2011, an ovigerous specimen of *Areopaguristes japonicus* (Miyake, 1961) was collected from the southern part of Korea by SCUBA diving. This is the first time this species has been reported from Korea, although *A. japonicus* has a reported distribution in Japan and China from the subtidal zone to a depth of 25 m (Komai, 2009).

Larval descriptions of the Diogenidae are limited to eight species in the northwestern Pacific: *P. digitalis* by Kurata (1968b), *P. ortmanni* by Quintana and Iwata (1987), *D. edwardsii* by Kim *et al.* (2007), *D. nitidimanus* by Baba and Fukuda (1985) and Korn *et al.* (2008), *C. virescens* by Tirmizi and Siddiqui (1979), *D. arrosor* by Kurata (1968a), *D. crassimanus* by Imahara (1989, 1999) and *A. nigroapiculus* by Kornienko and Korn (2011). However, the larval stages of *A. japonicus* are unknown, therefore, the purpose of this study was to describe the complete developmental stages of this species and compare its morphology with larvae of the other described species in the family from the northwestern Pacific. Digital camera images of live larvae are also provided.

### Materials and Methods

An ovigerous female of *A. japonicus* was collected by SCUBA diving at a depth of 10 m on June 6, 2011 from Kongseom Island (34°42.16'N, 128°04.05'E), Namhae-gun, Gyeongsangnam-do, Korea. On June 8, the larvae hatched in the laboratory and 36 zoeas were reared using methods described by Oh and Ko (2010) at water