



## Description of *Gnathia maculosa* and a new record of *Gnathia trimaculata* (Crustacea, Isopoda, Gnathiidae), ectoparasites of elasmobranchs from Okinawan coastal waters

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### Abstract

*Gnathia maculosa* sp. nov. is described from males reared in a laboratory from larvae that were collected as ectoparasites on elasmobranchs, caught off Okinawa Island in the Ryukyu Archipelago, southwestern Japan. The species is most similar to *G. trimaculata* but it is distinguished from *G. trimaculata* by deeper and narrower dorsal sulcus, a narrower body, and the wider pylopod. *Gnathia trimaculata*, previously recorded from Great Barrier Reef, Australia, was also collected from elasmobranchs caught off Okinawa Island. The record of *G. trimaculata* from Okinawa indicates a wide range of the distribution of the gnathiids inhabiting elasmobranchs.

**Key words:** Gnathiids, new species, ectoparasite, elasmobranchs, distribution range

### Introduction

Gnathiid isopods exhibit morphological differences among larvae (known as praniza larvae), adult males, and adult females. Adults are non-feeding and occur among sponges, in dead corals, barnacle nests, and in polychaete worm tubes (Seed, 1979; Holdich & Harrison, 1980; Cohen & Poore, 1994; Tanaka & Nishi, 2008). The praniza larvae are ectoparasites of fishes. After feeding, praniza larvae dwell in the benthic substrata to rest and molt (Smit & Davis, 2004).

Currently, over 180 species in 12 genera are known worldwide; about 30 species in six genera have been reported from Japan and adjacent areas (Monod 1926; Cohen & Poore 1994; Tanaka 2005; Shimomura *et al.* 2008; Shimomura & Tanaka 2008; Hadfield & Smit 2008). Species descriptions of gnathiids are traditionally based on the morphology of adult males (Monod 1926; Cohen & Poore 1994), while descriptions of females and larvae are insufficient or lacking for most species. Consequently, identification of larval gnathiids is difficult. Although cleaning interactions among tropical fishes and ectoparasitic gnathiids have been extensively studied, the gnathiid larvae were not identified in most studies (Grutter 1995, 1999, 2000, 2003; Arnal & Côté 2000; Grutter *et al.* 2000; Sikkil *et al.* 2006).

Gnathiid larvae are often collected alive from host fish (Smit & Davis, 2004) and some larvae metamorphose into adults in the laboratory. This allows for identification of the larvae and the adults of the same species. However, only five species have described from gnathiids reared in the laboratory, i.e. *Gnathia pantherina* and *G. pilosus* from South Africa, *G. grandilaris* and *G. trimaculata* from the Great Barrier Reef (GBR) and *G. capillata* from Japan (Smit & Basson, 2002; Nunomura & Honma, 2004; Hadfield *et al.*, 2008; Coetzee *et al.*, 2008, 2009).

We investigated gnathiid larvae ectoparasites of elasmobranchs caught in the fishery off Okinawa Island in the Ryukyu Archipelago, southwestern Japan. In the laboratory some gnathiid larvae metamorphosed into