



Three new species of the family Pennellidae (Copepoda: Siphonostomatoida) from gobiid fishes (Actinopterygii: Perciformes) in coastal waters of the western Pacific Ocean

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Abstract

Three new species of pennellid copepods are described based on specimens taken from gobiid fishes. *Creopelates nohmijimensis* n. sp. was found on *Priolepis boreus* (Snyder) in the Seto Inland Sea, Japan. This new species is distinguishable from its sole congener, *C. floridus* Shiino, 1958, by the presence of four finely digitate lobes on the cephalothorax and in having four pairs of legs occurring closely together at the anterior end of the neck. Two new species of *Cardiodectes*, *C. asper* n. sp. and *C. bertrandi* n. sp., were collected, from *Trimma grammistes* (Tomiya) off Izu-Oshima Island, Japan and *Eviota* sp. off the Loyalty Islands, New Caledonia, respectively. *Cardiodectes asper* n. sp. is distinguished from its 12 congeners by the absence of the abdomen, by having a trunk not longer than twice of its width, a cephalothorax with three pairs of lateral lobes, and a pair of neck lobes carrying leg 3 on the posterior surface of their bases. *Cardiodectes bertrandi* n. sp. is identifiable by the presence of two pairs of lateral cephalothoracic lobes, with smaller anterior pairs; a trunk twice as long as wide; and leg 3 located at the posterior end of the anterior neck lobe.

Key words: parasitic Copepoda, pennellid, *Creopelates*, *Cardiodectes*, mesoparasite, Gobiidae, *Priolepis boreus*, *Trimma grammistes*, *Eviota* sp.

Introduction

The family Pennellidae Burmeister, 1835 (Copepoda: Siphonostomatoida) contains 20 genera (Boxshall & Halsey 2004), most of which are known as mesoparasites (Kabata 1979). As several species in this family have negative impacts on commercially important fishes, they have been well studied by previous researchers (e.g. Kabata 1970, 1981). Pennellids have also been described from non-commercial, deep-sea fishes (e.g. Shiino 1958; Izawa 1970, 1977; Boxshall 1986, 1989) but there is little information on pennellids infecting fishes in coastal, shallow waters. Recently, SCUBA diving has become popular, and the number of cases of pennellids being found on coastal marine fishes increased in the Pacific Ocean. In this paper, we describe three new pennellid species, *Creopelates nohmijimensis* n. sp., *Cardiodectes asper* n. sp. and *Cardiodectes bertrandi* n. sp., from three gobiid species collected by SCUBA divers in the coastal waters of the Pacific Ocean off Japan and New Caledonia.

Material and methods

All of the gobiid fishes examined in this study were collected by snorkeling and SCUBA diving. Parasitic copepods (Figs. 1, 4, 8) were carefully removed from the hosts and preserved in 80% ethanol. Copepods were subsequently soaked in lactophenol for 2 days, dissected and examined using the wooden slide method of Humes & Gooding (1964). Drawings were made with the aid of a drawing tube. The terminology follows Huys & Boxshall (1991). The copepod body parts were measured using an ocular micrometer and are given in micrometers as the range followed by the mean and standard deviation in parentheses. Type specimens are