



The copepod genus *Hatschekia* Poche, 1902 (Siphonostomatoida: Hatschekiidae) from triggerfishes (Pisces: Tetraodontiformes: Balistidae) from off the Ryukyu Islands, Japan, with descriptions of eleven new species

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Abstract

Eleven new species of the genus *Hatschekia* Poche, 1902 (Copepoda: Siphonostomatoida: Hatschekiidae) are described based on female specimens from triggerfishes (Tetraodontiformes: Balistidae) caught in coastal waters of the Ryukyu Islands, Japan. These include *Hatschekia hemicyclium* n. sp. on *Rhinecanthus rectangulus* (Bloch & Schneider), *R. aculeatus* (L.) and *R. verrucosus* (L.); *H. jonesi* n. sp. on *Sufflamen bursa* (Bloch & Schneider) and *S. fraenatum* (Latreille); *H. kabatai* n. sp. and *H. izenaensis* n. sp. on *Xanthichthys lineopunctatus* (Hollard); *H. churaumi* n. sp. on *Pseudobalistes flavimarginatus* (Rüppell); *H. zanpa* n. sp. and *H. fukurubi* n. sp. on *Balistapus undulatus* (Park); *H. mongarah* n. sp. on *Balistoides conspicillum* (Bloch & Schneider); *H. nakamurai* n. sp. on *Melichthys vidua* (Richardson); *H. mihkagan* n. sp. on *Odonus niger* (Rüppell); and *H. pseudobalistesi* n. sp. on *Pseudobalistes fuscus* (Bloch & Schneider). Ten of the 11 new species, with the exception of *H. fukurubi* n. sp., share the intercoxal sclerites of legs 1 and 2 armed with 4 processes. This character differs from 87 of the known 97 species in *Hatschekia*. Of the 20 species with this character, the 10 new species are separated from each other mainly by the following morphological characters: the number of setal elements in the leg armature, on the antennule and the caudal ramus, the presence of posterior lobes on the trunk, the segmentation and form of the abdomen, and the length ratios of certain body parts.

Key words: parasitic Copepoda, new species, the Ryukyu Islands, triggerfishes

Introduction

The genus *Hatschekia* Poche, 1902 is one of the large genera of Copepoda parasitic on marine fishes. Since Jones (1985) recognized 68 species as valid, 29 new species have been described in this genus. Thus, the genus currently consists of 97 valid species which are found on the gills of nearly 140 actinopterigian fish species belonging to six orders: Anguilliformes, Beryciformes, Ophidiiformes, Perciformes, Pleuronectiformes and Tetraodontiformes (Pillai 1985; Castro & Baeza 1986; Villalba 1986; Jones & Cabral 1990; Kabata 1991; Ho & Kim 2001; Boxshall & Halsey 2004; Uyeno & Nagasawa 2009b, 2010a, 2010b). The taxonomic studies of the genus is insufficient because all of the species have featureless bodies, with a highly transformed trunk, bearing small, vestigial appendages, with males only rarely reported. Kabata (1991) suggested that the length and width of some body parts without appendages are useful for identification of species in the genus. Uyeno & Nagasawa (2009a) used some ratios of body parts and established the lengths of appendages as valuable characters for identification. They also used some distinctive morphological features (i.e., the parabasal papilla and rostral process) to identify the species. In this paper, 11 new species from triggerfishes are described.

Materials and Methods

Marine tetraodontiform fishes were collected in various localities of the Ryukyu Islands, Japan, from 2005 to 2008. Copepods attached on the hosts' gills were carefully removed and preserved in 80% ethanol. Specimens were soaked in lactophenol for 10 to 12 h before dissection. Then, the appendages of the copepods were dissected and observed using the method of Humes & Gooding (1964). The drawings were made with the aid of a drawing tube. The terminology follows Huys & Boxshall (1991). Specimens were measured according to the method of Uyeno & Nagasawa (2009a), excluding the abdomen length and the abdomen width. In the present study, these two measurements are expressed as the urosome length (excluding the caudal ramus) and the urosome width, respectively. Measurements in micrometers are shown as ranges, with means and standard deviations in parentheses. The ratios of the lengths of various body parts and appendages are shown in Tables 1–2. Type specimens are deposited in the crustacean collection of the National Museum of Nature and Science, Tokyo (NSMT) and the University of the Ryukyus Museum, Fujukan (RUMF), Okinawa. The scientific names of fishes follow the list of Hayashi (2002) and Froese & Pauly (2010). In this study, the most intact specimens were designated as holotype, and then paratype specimens were chosen based on the following criteria: specimens are intact, represent meristic validities, and were collected from the type host species caught at sites as near as possible to the type locality.