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To “bee” or not to be—on some ornamental shrimp from Guangdong Province, Southern China and Hong Kong SAR, with descriptions of three new species

WERNER KLOTZ¹ & THOMAS VON RINTELEN²

¹Wiesenweg 1, A-6063 Rum, Austria. E-mail: wklotz@aon.at

²Museum für Naturkunde, Leibniz-Institut für Evolutions- und Biodiversitätsforschung, Invalidenstr. 43, D-10115 Berlin, Germany. E-mail: thomas.rintelen@mfn-berlin.de

Abstract

Several atyid specimens were collected from hill streams in Guangdong Province, Southern China and Hong Kong during field trips between 2004 and 2013. Some of these species, most of them also sold as ornamental pet shrimp in the international aquarium trade, proved to be new to science by morphological observation and analysis of mtDNA sequences. Three new species, *Caridina logemanni* n. sp., *Caridina mariae* n. sp. and *Caridina conghuensis* n. sp., all of them members of the so called *Caridina serrata* species group (Cai & Ng 1999), are described in detail below. *Caridina tumida* Wang, Liang & Li, 2008 is synonymised with *Caridina venusta* Wang, Liang & Li, 2008. *Caridina meridionalis* Wang, Liang & Li, 2008 is moved to the genus *Paracaridina* Liang, Guo & Tang, 1999 and synonymised with *Paracaridina zijinica* Liang, 2002. New records for *Caridina trifasciata* Yam & Cai, 2003 and *Caridina serrata* Stimpson, 1860 are recorded. All species are compared to their morphologically closest congeners and the phylogenetic relationships between atyid shrimps from Southern China are shown.

Key words: Crustacea, Decapoda, *Caridina*, new species, China, Guangdong, Hong Kong, bee shrimp

Introduction

Atyid species of the genus *Caridina* have attracted worldwide attention as ornamental pet shrimp for about 20 years (Werner 1998; Gonella 1999; Werner 2003; Karge & Klotz 2008; Wang *et al.* 2008; Logemann *et al.* 2009). Particularly colourful species have been found in small hill or mountain streams of Southern China. Some of these species have been traded as ornamental pet shrimp for many years prior to their scientific description here because their natural habitats were not known. Several field trips to Guangdong Province, Southern China and Hong Kong were done between 2004 and 2012 to locate original habitats of popular ornamental shrimp called “Hong Kong diamond bee shrimp, tiger shrimp or bumblebee shrimp”. Material collected during these field trips was used to identify shrimp varieties from aquarium trade to species level. 16S and COI analyses of this material were performed to elucidate the phylogenetic relationships of atyid shrimps from this area.

Material and methods

Specimens were caught by hand net and preserved in 75–95 % ethanol during field trips to Southern China and Hong Kong in 2009 to 2012. Morphometric measurements were taken from microphotographs of at least four dissected specimens of each species using AxioVision LE photo analysis software (Zeiss, Germany). Rostral characters were taken from all specimens examined. Drawings were made from microphotographs using Adobe Illustrator following (Coleman 2003; Coleman 2006)

Larval development. Ovigerous females were collected from the type locality of *Caridina logemanni* n. sp., a small mountain stream in NO New territories, Hong Kong SAR and, for comparison, ovigerous specimens of *Caridina cantonensis* from a mountain stream at Ha Miu Tin, Hong Kong SAR on 2nd of April, 2012 by means of a hand net with a frame of 25 cm x 15 cm and a mesh size of 2 mm. In the laboratory each female was placed in an

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