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Two new species of the "*Heterocarpus gibbosus* Bate, 1888" species group (Crustacea: Decapoda: Pandalidae) from the western Pacific and north-western Australia*

CHIEN-HUI YANG[1], TIN-YAM CHAN[1, 3] & KA HOU CHU[2]

[1] *Institute of Marine Biology, National Taiwan Ocean University, Keelung, Taiwan*
[2] *Department of Biology, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong SAR, China*
[3] *Corresponding author. E-mail: tychan@ntou.edu.tw*

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Abstract

The widely distributed deep-sea caridean shrimp *Heterocarpus gibbosus* Bate, 1888 was previously believed to exhibit considerable variations in the development of the basal rostral crest. Based on the comparison of abundant material from the western Pacific, combined with a molecular genetic analysis using partial sequences of the mitochondrial COI and 16S rRNA genes, three distinct species could be recognized. The true *H. gibbosus* has a moderately high basal rostral crest and appears to have a more eastern distribution from the South China Sea to the Indian Ocean. Both forms with a very low or very high basal rostral crest are currently undescribed and mainly distributed along the western coast of the Pacific from Japan to Fiji. The low basal rostral crest form, *H. abulbus* sp. nov., is unique in the genus by lacking a distinct abdominal boss and appears to be restricted to Japan, Taiwan and NE Philippines. The very high basal rostral crest form, *H. corona* sp. nov., occurs in the western Pacific down to NW Australia.

Key words: *Heterocarpus*, new species, West Pacific, COI, 16S rRNA

Introduction

Shrimps of the genus *Heterocarpus* A. Milne-Edwards, 1881 are rather common in deeper waters. Given their large size, some species are of commercial value or fishery potential (Holthuis 1980; Chan 1998). Twenty-eight species are currently recognized in *Heterocarpus* (Crosnier 1988, 1999; Monterrosa 1988; Timofeew 1993; Allen & Butler 1994; Tavares 1999; Cleva & Crosnier 2006; Li 2006; excluding those species of the "*Heterocarpus/Plesionika laevis* A. Milne-Edwards, 1883" group, see Chan & Crosnier 1997), with the most recent taxonomic work focused on the "*H. gibbosus* Bate, 1888" group (Li 2006; Li *et al.* 2007). Material previous identified as *H. gibbosus* has been found to contain more than one species. As the holotype of *H. gibbosus* from the Philippines is in a very poor state and the original illustrations provided by Bate (1888) are not detailed enough for modern taxonomic characters, a neotype was established for the species (Li *et al.* 2007; ICZN Opinion 2217). A closely related species, *H. chani* Li, 2006, which has a very short exopod at the third maxilliped, and also occurs in the Philippines, was recently described. Furthermore, material previously identified as *H. gibbosus* from various localities exhibits large variations in the height of the basal rostral crest (De Man 1920; Chace 1985; Chan & Yu 1987; Crosnier 1988).

The abundant specimens of the "*H. gibbosus*" species group collected during recent expeditions in the western Pacific (e.g. Taiwan, Philippines, Solomon Islands, Vanuatu, Kiribati, Fiji) and deposited in the collections of the National Taiwan Ocean University and Muséum national d'Histoire naturelle, Paris allow for a careful comparison of the various forms, revealing that the different heights of the basal rostral crest actually represent three different species. For example, the Taiwanese specimens either have exceptionally high or nearly leveled basal rostral crest and no intermediate form could be found. On the other hand, material

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