



## Description of a new montane freshwater crab (Crustacea: Potamidae: *Geothelphusa*) from northern Taiwan

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### Abstract

A new freshwater crab is described from a montane area in northern Taiwan based on morphological characters and molecular evidence. *Geothelphusa cilan* **sp. nov.**, from the Cilan Forest, situated on the boundary of Hsinchu and Yilan (= Ilan) counties, is close to *G. monticola* Shy, Ng & Yu, 1994, and *G. takuan* Shy, Ng & Yu, 1994, but can be distinguished by its male first gonopod (G1) and the ratio of thoracic sternites. Molecular evidence from mitochondrial cytochrome oxidase subunit I (COI) also supports the identity of the new species.

**Key words:** Potamidae, freshwater crab, new species, Taiwan, DNA, COI

### Introduction

*Geothelphusa* Stimpson, 1858, is the second largest genus of the family Potamidae (Ng *et al.* 2008; Shih & Ng 2011), which is distributed in East Asian islands (Taiwan, the Ryukyus and the main islands of Japan). Fifty-five species have been reported in the genus, with 38 species in Taiwan and the adjacent islets, 15 in the Ryukyus, and three in the main islands of Japan (Shih & Ng 2011; Suzuki & Kawai 2011). Whereas most Taiwanese *Geothelphusa* species live in low to middle altitudes, six montane species, viz. *G. eurysoma* Shy, Ng & Yu, 1994, *G. gracilipes* Shy, Ng & Yu, 1994, *G. haituan* Chen, Hsu & Cheng, 2007, *G. hirsuta* Tan & Liu, 1998, *G. monticola* Shy, Ng & Yu, 1994, and *G. takuan* Shy, Ng & Yu, 1994, inhabit in the mountain region with altitudes higher than 1000 m a.s.l. (Shy & Lee 2009).

Two additional montane species from northern Taiwan, as well as *G. takuan*, *G. hirsuta* and *G. monticola*, form a clade, sister to another clade composed of species from eastern Taiwan (Ng *et al.* 2010; Shih *et al.* 2010, 2011). Specimens of an undescribed species, *G. sp. 2* in Shih *et al.* (2011), from the central region of northern Taiwan, were examined and compared with other related species. We confirm that it has distinct morphological characters different from congeners, a status that is also supported by the mitochondrial cytochrome oxidase subunit I (COI). We describe the specimens in question as a new species, *Geothelphusa cilan* **sp. nov.**

### Material and methods

Specimens collected from the Cilan region (see no. 32 in fig. 1 of Shih *et al.* 2011) were preserved in 70%–95% ethanol after collection, illustrated with the help of a drawing tube attached to a stereomicroscope, and deposited in the Zoological Collections of the Department of Life Science, National Chung Hsing University, Taichung, Taiwan (NCHUZOO). The following abbreviations are used: G1 for the male first gonopod and G2 for the second gonopod. Terminology used essentially follows Ng (1988) and Shy *et al.* (1994). Other specimens examined are deposited in the Department of Environmental Biology and Fisheries Science, National Taiwan Ocean University, Keelung, Taiwan (NTOU) and the National Taiwan Museum (TMCD).

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