



A new species of *Geothelphusa* Stimpson, 1857, from Taiwan (Crustacea: Brachyura: Potamidae) based on morphological and molecular evidence, with notes on species from western Taiwan

HSI-TE SHIH^{1,4}, TOHRU NARUSE² & DARREN C. J. YEO^{2,3}

¹Department of Life Science, National Chung Hsing University, 250, Kuo Kuang Road, Taichung 402, Taiwan

²Raffles Museum of Biodiversity Research, Department of Biological Sciences, National University of Singapore, 14 Science Drive 4, Singapore 117543, Republic of Singapore

³Present address: Department of Biological Sciences, University of Notre Dame, Notre Dame, IN 46556, USA

⁴Corresponding author. E-mail: htshih@dragon.nchu.edu.tw

Abstract

A new species of freshwater crab of the genus *Geothelphusa*, *G. siasiat* **sp. nov.**, is described from Hsinchu and Miaoli counties, northwestern Taiwan. The new species can be distinguished morphologically from similar and geographically close species from western Taiwan by a suite of characters of the carapace, ambulatory legs, thoracic sternum, male abdomen, and male first pleopods. Comparisons of the DNA sequences encoding parts of the mitochondrial large subunit (16S) rRNA and cytochrome oxidase subunit I (COI) genes of specimens from western Taiwan further corroborate this finding. The opportunity is taken here to discuss the taxonomy of the poorly known species, *Geothelphusa candidiensis* Bott, 1967, based on a re-examination of the holotype, and the distribution of *Geothelphusa* species from western Taiwan. The report of *G. siasiat* **sp. nov.** brings the total number of species of *Geothelphusa* species known to 52.

Key words: 16S rRNA, cytochrome oxidase I, *Geothelphusa siasiat*, *G. candidiensis*, *G. olea*, Taiwan, taxonomy

Introduction

The genus *Geothelphusa* is the most speciose group of freshwater crabs in the East Asian islands (Taiwan, the Ryukyus, and main islands of Japan). There are a total of 51 species found in this genus, of which, 35 species have been reported from Taiwan (Shy *et al.* 1994; Shy & Yu 1999; Ng *et al.* 2001, 2008; Chen *et al.* 2005, 2007; Shih 2005; Shy 2005), one species from Diaoyutai (=Senkaku) Island (Shy & Ng 1998), 15 species from the Ryukyus (Suzuki & Sato 1994; Youshigou 1999; Suzuki & Okano 2000; Kasai & Naruse 2003; Okinawa Prefectural Government 2005; Naruse *et al.* 2006, 2007; Shih 2008), and 2 species from the main islands of Japan (Suzuki & Tsuda 1994; Youshigou 1999) (see however Ng *et al.* 2001; Shih *et al.* 2004, 2007b, for some possible synonyms). A species from Vietnam, *Geothelphusa vietnamica* Dang & Ho, 2002, was recently recognised as a member of *Tiwaripotamon* Bott, 1970, based on key characters of the legs, third maxillipeds, male abdomen, and male first pleopods (Yeo & Naruse 2007).

During the course of collaborative studies on the phylogeny and the biogeography of East Asian freshwater crabs, *Geothelphusa* specimens collected from Hsinchu and Miaoli, northwestern Taiwan, were found to be morphologically and genetically distinct from its allied species. The present study describes the new species and compares it with morphologically similar species as well as geographically close species from western Taiwan. In addition, the DNA sequences of the mitochondrial 16S rRNA gene and cytochrome oxidase I (COI), which are the most commonly used genes for such studies of crustaceans (see review by Schubart *et al.*