

Using Molecular Tools to Establish the Type Locality and Distribution of the Endemic Taiwanese Freshwater Crab *Geothelphusa chiui* Minei, 1974 (Crustacea: Brachyura: Potamidae), with Notes on the Genetic Diversity of *Geothelphusa* from Eastern Taiwan

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Peter K.L. Ng, Hsi-Te Shih, Tohru Naruse, and Jhy-Yun Shy (2010) Using molecular tools to establish the type locality and distribution of the endemic Taiwanese freshwater crab *Geothelphusa chiui* Minei, 1974 (Crustacea: Brachyura: Potamidae), with notes on the genetic diversity of *Geothelphusa* from eastern Taiwan. *Zoological Studies* 49(4): 544-555. The potamid freshwater crab genus *Geothelphusa* reaches its highest diversity in Taiwan, and since the last major revision in 1994, substantial progress has been made in confirming the identities of the various species. Despite those efforts, the validity of the type locality of *G. chiui* Minei, 1974, from Nanpu, Hsinchu, northwestern Taiwan, has remained doubtful because repeated efforts to establish its presence at its type locality have been unsuccessful. DNA sequences of the holotype and paratype of *G. chiui* show that this taxon belongs to a subclade the members of which are found in southern Hualien County in eastern Taiwan, and that it is the sister species of *G. cinerea* Shy, Ng and Yu 1994, from central Hualien County. This study confirms that the stated type locality of *G. chiui* is incorrect, and it is accordingly revised herein. <http://zoolstud.sinica.edu.tw/Journals/49.4/544.pdf>

Key words: mtDNA sequences, 16S rRNA, Cytochrome c oxidase subunit I.

The potamid freshwater crab genus *Geothelphusa* Stimpson, 1858, is one of the largest genera in the Potamidae, with 51 species (Ng et al. 2008) from Taiwan and Japan. Taiwan has the majority of these taxa, with 37 known species (Shy et al. 1994, Shy and Ng 1998, Ng et al. 2001 2008, Shih et al. 2008, Shih and Shy 2009). In recent years, there has been an increase in studies of the biology, ecology, and phylogeny of *Geothelphusa* species (e.g., Liu and Li 2000, Shih et al. 2004 2007 2008 2009, Shih and Shy 2009), and this has resulted in the subsequent collection of most of

the species that have been described from Taiwan. Despite this, a few Taiwanese species such as *G. yangmingshan* Shy, Ng and Yu 1994, and *G. wangi* Shy, Ng and Yu 1994, are known from very few specimens, and not much is known about their biology. Their identities are nevertheless reasonably well established as they are well described with precise locations. In fact, the only species in Taiwan the taxonomy of which is still shrouded in doubt is *G. chiui* Minei, 1974 (Shy et al. 1994).

Ever since the revision of the Taiwanese

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