



Cryptic diversity of the semi-terrestrial amphipod *Platorchestia japonica* (Tattersall, 1922) (Amphipoda: Talitrida: Talitridae) in Japan and Taiwan, with description of a new species

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Abstract

The talitrid amphipod *Platorchestia* Bousfield, 1982 is common in sandy beaches, estuarine marshes, shores of lakes and rivers. They are detritivores, and being prey for birds and other animals, they play an important role in the food chain. In the present study, we identified a new *Platorchestia* from Guan-du, Taiwan, based on morphological (light microscopy and scanning electron microscopy) and molecular approach (sequence divergence in the mitochondria DNA, COI) and described herein. *Platorchestia paludosus* **sp. nov.** from the Guan-du was morphologically different from all reported *Platorchestia* species, but it was very close to *P. japonica* (Tattersall, 1922). The distribution pattern of setae in the lateral margin of the telson and sharpness of ramus tip of uropod 3, however, exhibit diagnostic differences between the two species. From sequence divergence in COI, *Platorchestia paludosus* differed from *P. japonica* 13.3% in average, values that are comparable to inter-specific differences in other amphipod taxa.

Key words: Marsh, Amphipoda, Talitridae, *Platorchestia*, Beach fleas, Taiwan

Introduction

Talitrid amphipods inhabit a wide range of habitats including forests, marshes and coastal environments (Bousfield 1982). Bousfield (1984) subdivided the Talitridae into four systematic-ecological groups, (1) palustral talitrids (marsh-hoppers), (2) beach fleas (beach-hoppers), (3) sand hoppers and (4) land hoppers. Beach fleas do not modify their substrate but occupy semi-terrestrial to terrestrial habitats in supralittoral and coastal forests. The beach fleas are represented by the genus *Platorchestia*, which includes seventeen species (Serejo & Lowry 2008 and the new species described here). In the N.W. Pacific, *P. japonica* (Tattersall, 1922) was reported to be widely distributed in the W. Pacific region including China, Japan and Taiwan (Tattersall 1922; Morino & Dai 1990; Morino 1999; Miyamoto & Morino 2004). *Platorchestia japonica* inhabits leaf litter found at the waterfront of rivers, lakes and paddy fields (Tattersall 1922; Iwasa 1965; Morino & Dai 1990; Morino 1999; Hou & Li 2003; Miyamoto & Morino 2004; Hou & Li 2005), playing important ecological roles in the detritus food chains (Friend & Richardson 1986; Richardson & Morton 1986; Morrill & Spicer 1998; Graça *et al.* 2000).

Platorchestia japonica was first described from Lake Biwa, Japan by Tattersall (1922), and descriptions of *P. japonica* from previous studies mainly relied on light microscopy, which can only reflect limited morphological details (see Miyamoto & Morino 2004). Recent advances in using Scanning Electron Microscopy (SEM) can reflect more sophisticated morphological details (see Lowry & Springthorpe 2009), especially the types of setae (also see Miyamoto & Morino 2004 for the importance of setae in *Platorchestia* taxonomy based on light microscopy), allowing identification of individual species from species complexes (Lowry & Springthorpe 2009; Zimmer *et al.* 2009). Recent SEM studies have started in the family Dogielinotidae, reporting seven groups of setae which can be used for taxonomic studies (Zimmer *et al.* 2009).