



Groundwater, spring and interstitial Ostracoda (Crustacea) from Shiga Prefecture, Japan, including descriptions of three new species and one new genus

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Abstract

During surveys of a variety of groundwater, spring and interstitial habitats (e.g. in river bars, domestic wells, springs, and seeps) in Shiga Prefecture, Japan, a total of 15 ostracod species were recovered and identified. Three species and one genus are described for the first time herein, *Undulacandona spinula* n. gen & n. sp., *Cryptocandona tsukagoshii* n. sp. and *Cavernocypris cavernosa* n. sp.. *Microdarwinula zimmeri* (Menzel, 1916) is reported for the first time from Japan. *Dolerocypris ikeyai* Smith & Kamiya, 2006, *Eucypris pigra* (Fischer, 1851) and *Cryptocandona brehmi* (Klie, 1934) are new records for Shiga Prefecture.

Key words: taxonomy, spring, seep, well, interstitial, Cypridoidea, Darwinuloidea

Introduction

While the rice field ostracod fauna is relatively well documented in Japan (e.g. Okubo 2000; 2004), other freshwater habitats remain poorly studied. For example, only one lake in Japan, Lake Biwa, has been extensively surveyed for ostracods, and very few records of ostracods from marshes exist (Smith & Janz 2008, 2009; Smith et al. 2011; Smith & Hiruta 2004; Matzke-Karasz et al. 2004). Studies on Japanese groundwater ostracods are also few in number: Broodbakker (1988) recorded 13 ostracod species from 39 groundwater sites (i.e. wells, caves and springs) in southwestern Honshu and the Ryukyu Islands. Five of these were identified to the species level (*Stenocypris major* (Baird, 1859), *Dolerocypris sinensis* (Sars, 1903), *D. fasciata* (O. F. Müller, 1776), *Cypris* sp. (as *Cypris subglobosa* Sowerby, 1840), and *Heterocypris incongruens* (Ramdohr, 1808)), five species were unidentified, belonging to the genera *Cypria* (two species), *Cypridopsis*, *Cypretta* and *Darwinula*, and three were of unknown genera of the subfamily Candoninae. Seven species in the genera *Stenocypris* (two species), *Dolerocypris*, *Cypria*, *Schellencandona*, *Vestalenula* and *Darwinula* found associated with groundwater were recovered from Yakushima, an island in south-west Japan, six of which were previously undescribed (Smith & Kamiya 2006; Smith et al. 2006). Work on the ostracod fauna of Lake Biwa has also yielded an additional four species from interstitial samples taken from holes dug into sandy beaches along the lakeshore, three of which are *Vestalenula* species and one a *Fabaeformiscandona* species (Smith & Janz 2008, 2009).

For the purposes of this study, groundwater, spring and interstitial habitats in Shiga Prefecture, Japan, were sampled for ostracods. These included interstitial samples from river bars, domestic wells, springs, and seeps. A total of 15 species were recovered, of which three are new and herein described.

Material, methods and terminology

Specimens were collected by sieving sediment from various habitats through a 125 micrometers sieve. The resulting sediment was transferred to the laboratory in sample pots, and the specimens picked while alive. For storage, specimens were transferred to 70% ethanol. Latitudes and longitudes were recorded with a handheld GPS unit. Appendages were dissected and mounted in glycerine and drawn with the aid of a camera lucida. Carapaces are