



Mud shrimp associated with burrows from the Oligocene Ashiya Group, northern Kyushu, Japan, with description of a new species of *Upogebia* (Decapoda: Gebiidea)

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Abstract

Upogebia hibiki **sp. nov.** (Gebiidea: Upogebiidae) is described from the Oligocene of northern Kyushu, Japan. The new species closely resembles *U. mizunamiensis* Karasawa 1989, but differs in having an arched ridge on the dorso-distal mesial surface of the palm of pereopod 1. Additionally, the new species has a triangular rostrum and a narrow gastric region. The specimens are associated with fossil burrows assigned to the ichnogenus *Psilonichnus* Fürsich, 1981. Therefore, *Psilonichnus* described herein is thought to be formed by *U. hibiki* **sp. nov.**

Key words: Mud shrimp, *Upogebia hibiki* **sp. nov.**, Burrow morphology, *Psilonichnus*, Paleoecology

Introduction

Upogebia, a burrowing mud shrimp genus of the family Upogebiidae (Gebiidea), has a robust record in the present oceans (Sakai 2007). However, only twenty-one species are known from the fossil record (Fraaije *et al.* 2007; Garassino *et al.* 2009). The Japanese fossil records of *Upogebia* comprises six species, *Upogebia mizunamiensis* Karasawa 1989, *U. striata* Karasawa & Kishimoto 1996, *U. tanegashimensis* Karasawa & Inoue 1992, *U. cf. imperfecta* Sakai (Kato 2001), *U. sp.* (Kato 1996), and *U. sp.* (Kato & Koizumi 1992). Among these, *U. cf. imperfecta* Sakai, and *U. sp.* (Kato & Koizumi 1992) are known from Pleistocene deposits whereas the others are of Miocene age.

During our field work in 2008 and 2009, the authors collected numerous specimens of *Upogebia* from the Oligocene Ashiya Group, northern Kyushu. Interestingly, these specimens are associated with abundant fossil burrows in these strata. The previously known records lack data on burrow morphology associated with *Upogebia*. The purpose of the present paper is to describe a new species of *Upogebia* as well as these burrows, and to discuss paleoecology of the species.

The described specimens are deposited in the Mizunami Fossil Museum (MFM).

Locality and geological Setting

The specimens described here were collected from the Honjo Formation of the Ashiya Group in Sakamizu, Wakamatsu-ku, Kitakyushu City, Fukuoka Prefecture, Japan (Fig. 1). The fossil-bearing horizon is the uppermost part of the Honjo Formation (Fig. 2). This formation consists of sandy mudstone, mudstone, and sandstone, which yield shallow-marine mollusks (Sakakura 2002), decapod crustaceans (Kato & Karasawa 1994), and calcareous nannoplankton (Okada 1992). Ozaki *et al.* (1993) showed the geologic age of the Honjo Formation to be late Oligocene, based upon fission track data and calcareous nannoplankton. The specimens