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A first record of *Pugettia* Dana (Crustacea: Decapoda: Brachyura) from the Pliocene of Japan

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Abstract

A new majoid crab, *Pugettia yamafui*, is described from the upper Pliocene Kakegawa Group in Shizuoka Prefecture, Honshu, Japan. Recognition of this species extends the geologic range for the genus back to the late Pliocene.

Key words: Crustacea, Decapoda, Brachyura, Majoidea, *Pugettia*, Pliocene, Japan

Introduction

The genus *Pugettia* Dana, 1851 (Majoidea: Epialtidae) occurs mostly in the north Pacific, and comprises 12 species from the northwest Pacific, six species from the northeast Pacific, and only one species from the Tasman Sea (Garth, 1958; Griffin & Tranter, 1986; Richer de Forges, 1993). Among these, *Pugettia producta* (Randall, 1839) and *P. richi* Dana, 1851, from the Pleistocene of California (Rathbun, 1926) are known in the fossil record.

The purpose of the present paper is to describe a new species of *Pugettia* from the late Pliocene of Japan. The specimen was c ollected from sandstone of the Tenno silty sandstone Member of the Dainichi Formation exposed at Kamisaigo, Kakegawa City, Shizuoka Prefecture. *Pugettia* occurred in the deposits, in association with decapods, *Pagurus* spp., *Dardanus* spp., and *Carcinoplax longimanus* (De Haan, 1833) (Kitamura unpubl.). Shiba et al. (2001) indicated that the geologic age of the Dainichi Formation was the latest Pliocene (about 2 Ma) based upon the fission-track dating. Shiba et al. (2001) gave detailed discussions of the Dainichi Formation of the present locality.

The specimen is housed in the Mizunami Fossil Museum, Yamanouchi, Akeyo, Mizunami, Gifu, Japan.

Systematics

Family Epialtidae MacLeay, 1838

Genus *Pugettia* Dana, 1851

Type species: *Pugettia gracilis* Dana, 1851 by subsequent designation of Miers (1879).

Geologic range: L. Pliocene-Recent.

***Pugettia yamafui*, new species**
(Fig. 1)



Fig. 1. *Pugettia yamafui*, new species. MFM39019 (holotype), dorsal view of carapace, ×2.0.

Material examined: MFM39019 (holotype).

Diagnosis: Moderate sized *Pugettia*. Postorbital spine and hepatic lobe fused, forming wing-like plate. Dorsal surface well areolated. Gastric region with four tubercles. Cardiac region with large,

median tubercle. Each epibranchial region with three tubercles set in inverted triangle.

Etymology: Named by an arbitrary combination of letters.

Description: Carapace moderate in size, pyriform, much longer than wide. Rostrum bifid, rostral spines broken. Praeorbital spine prominent, directed forward. Postorbital spine and hepatic lobe fused, forming wing-like plate. Lateral branchial tubercle small, slightly directed posteriorly. Posterior half of posterolateral and posterior margins not preserved. Dorsal surface strongly convex, well areolated. Epigastric ridge weakly developed. Gastric region strongly inflated with four tubercles; two on mid-line, posterior one largest; tubercle on each posterior protogastric region. Cardiac region strongly ridged with large, median tubercle. Intestinal region not preserved. Epibranchial region strongly inflated with three tubercles set in inverted triangle. Each mesobranchial region with short, oblique ridge.

Discussion: *Pugettia yamafui* is most similar to the extant *Pugettia incisa* (De Haan, 1839) among known Recent species by having a fused postorbital spine and hepatic lobe, but differs in that there are four tubercles on the gastric region and three on the epibranchial region. Hitherto, known fossil members of *Pugettia* have been recorded from the Pleistocene of California (Rathbun, 1926). The discovery of the new species extends the geologic range for the genus back to the late Pliocene.

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