



***Ponotus shirahamensis*, a new genus and species of raninid crab (Decapoda, Brachyura) from the Miocene Tanabe Group of Japan**

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Abstract

Ponotus shirahamensis, a new genus and species of the crab family Raninidae (Decapoda: Brachyura) is described from the lowermost middle Miocene Tanabe Group in Wakayama Prefecture of central Japan. *Ponotus shirahamensis* represents the second record for the family Raninidae from the Miocene deposits of Japan. *Ponotus* is most similar to *Notopus*, an extant monotypic genus of the Notopodinae, but is characterized by the absence of a spinose transverse ridge between the hepatic spines on the dorsal carapace.

Keywords: Crustacea, Decapoda, Japan, Miocene, Raninidae.

Resumen

Ponotus shirahamensis, un nuevo género y especie de la familia Raninidae de cangrejos (Decapoda: Brachyura) es descrita para el mioceno medio más inferior del Grupo Tanabe, en la Prefectura Wakayama de Japón central. *Ponotus shirahamensis* representa el segundo registro de la familia Raninidae en depósitos del Mioceno de Japón. *Ponotus* es muy similar a *Notopus*, un género monotípico existente de los Notopodinae, pero se diferencia por la ausencia de un pliegue transversal espinoso, entre las espinas hepáticas del caparazón dorsal.

Palabras clave: Crustacea, Decapoda, Japón, Mioceno, Raninidae.

1. Introduction

The robust Miocene decapod crustacean fauna from Japan has been well documented (Karasawa, 1993, 1997, 1999; Kato, 1996). It consists of at least 113 species in 71 genera (Karasawa, unpublished data). Among these, the raninids are poorly known and only *Macroacaena fudoujii* (Karasawa, 2000) has been recorded from the early Miocene.

The purpose of this paper is to describe a new genus and species of raninid crab from the middle Miocene of Japan. The specimens were collected from fine-grained sandstone of the Shirahama Formation of the Tanabe Group exposed in beach of Migusazaki, Tsubaki, Shirahama-cho, Wakayama Prefecture (33°37'7.2" N; 135°23'22.1" E). Macrofossils from the present locality are extremely rare and Ohara *et al.* (2001) only recorded pelecypods, *Pholadomya turunagai* Tan and *Atrina* sp. The ichnofossil *Thalassinoides* sp. is most common in the sediments (Ohara *et al.*, 2001). Tanabe Research Group (1984) assigned the Tanabe Group to Zone N8b (earliest middle Miocene) of Blow's scale of planktonic foraminifera. Ohara *et al.* (2001) suggested that the sedimentary environments in which the rocks were deposited were the upper shoreface to inner shelf based upon lithological analysis.

The described specimens are deposited in the Wakayama Prefectural Museum of Natural History (WMNH-Ge) and the Mizunami Fossil Museum (MFM).

2. Systematics

Superfamily Raninoidea de Haan, 1839

Family Raninidae de Haan, 1839

Subfamily Notopodinae Serène and Umali, 1972

Genus *Ponotus* new genus

Type species. *Ponotus shirahamensis* new species, by monotypy.

Diagnosis. As for species.

Etymology. *Ponotus* is an anagram of *Notopus* de Haan, 1841; masculine gender.

Geologic range. Early Middle Miocene.

Discussion. See species discussion.

Ponotus shirahamensis new species

Figure 1

Diagnosis. Carapace moderate-sized for Notopodinae, ovoid, much longer than wide. Fronto-orbital margin wide, about 75% maximum width; rostrum simple, short, broadly triangular, with median dorsal carina; orbital margin with shallow orbital fissure outside intra-orbital spine and 2 orbital spines; intra-orbital spine slightly directed anterolaterally; outer-orbital spine directed anteriorly.

Anterolateral margin slightly sinuous with short hepatic spine. Posterolateral margin gently convex, weakly rimmed. Posterior margin slightly convex, weakly rimmed. Dorsal surface strongly convex transversely, gently convex longitudinally; regions not defined; anterior surface with coarse granules, anterolateral portion rugose, and other surfaces punctate; transverse ridge between hepatic spines absent; weak median longitudinal carina present. Chelipeds similar in size and shape; lateral surfaces of merus, carpus, and propodus terraced ridges; propodus subtriangular, compressed laterally, about as long as high; fixed finger short; dactylus narrow, long, strongly curved ventrally, without teeth or spines on dorsal and occlusal margins.

Etymology. The trivial name notes the occurrence of the specimens in Shirahama-cho.

Description. Moderate-sized notopodine. Carapace ovoid, much longer than wide, maximum width about 67 % maximum length, maximum width as measured between anterolateral spines. Fronto-orbital margin wide, about 75 % carapace width. Rostrum short, simple, triangular, slightly downturned, with dorsal carina marked by lateral grooves. Orbital margin concave, smooth, bearing shallow fissure outside intra-orbital spine. Intra-orbital spine triangular, directed slightly anterolaterally. Outer-orbital spine directed anteriorly, slightly longer than intra-orbital spine. Anterolateral margins short, slightly sinuous, subparallel, with short, anterolaterally directed hepatic spine. Posterolateral margins much longer than anterolateral margins, gently convex, weakly rimmed, divergent posteriorly. Posterior margin slightly convex, weakly rimmed, about 47 % carapace width.

Dorsal surface strongly convex transversely, gently convex longitudinally. Dorsal regions not defined. Anterior surface with coarse granules, anterolateral portion rugose, and other surfaces punctate. Median longitudinal carina present, weak, extending from rostral carina to cardiac region.

Anterior thoracic sternites preserved, nearly flattened ventrally. Sternites 1-3 fused, small, with strongly convex lateral margins. Sternal sutures 3/4 and 4/5 absent. Sternite 4 broad; anterior margin nearly straight; lateral margin concave. Sternite 5 poorly known with shallow median sulcus.

Chelipeds similar in size and shape. Merus much longer than high; dorsal and lateral surfaces with terraced ridges. Carpus slightly shorter than merus; lateral surface with terraced ridges. Propodus subtriangular, compressed laterally, about as long as high, about as long as carpus; lateral surface with terraced ridges; dorsal margin short, convex, smooth; ventral margin sinuous, smooth; proximal margin deeply concave; distal margin sharp with irregular, broad teeth. Fixed finger short, poorly preserved. Dactylus narrow, long, strongly curved downward, without teeth or spines on dorsal and occlusal margins.

Some pereopods known, but poorly preserved.

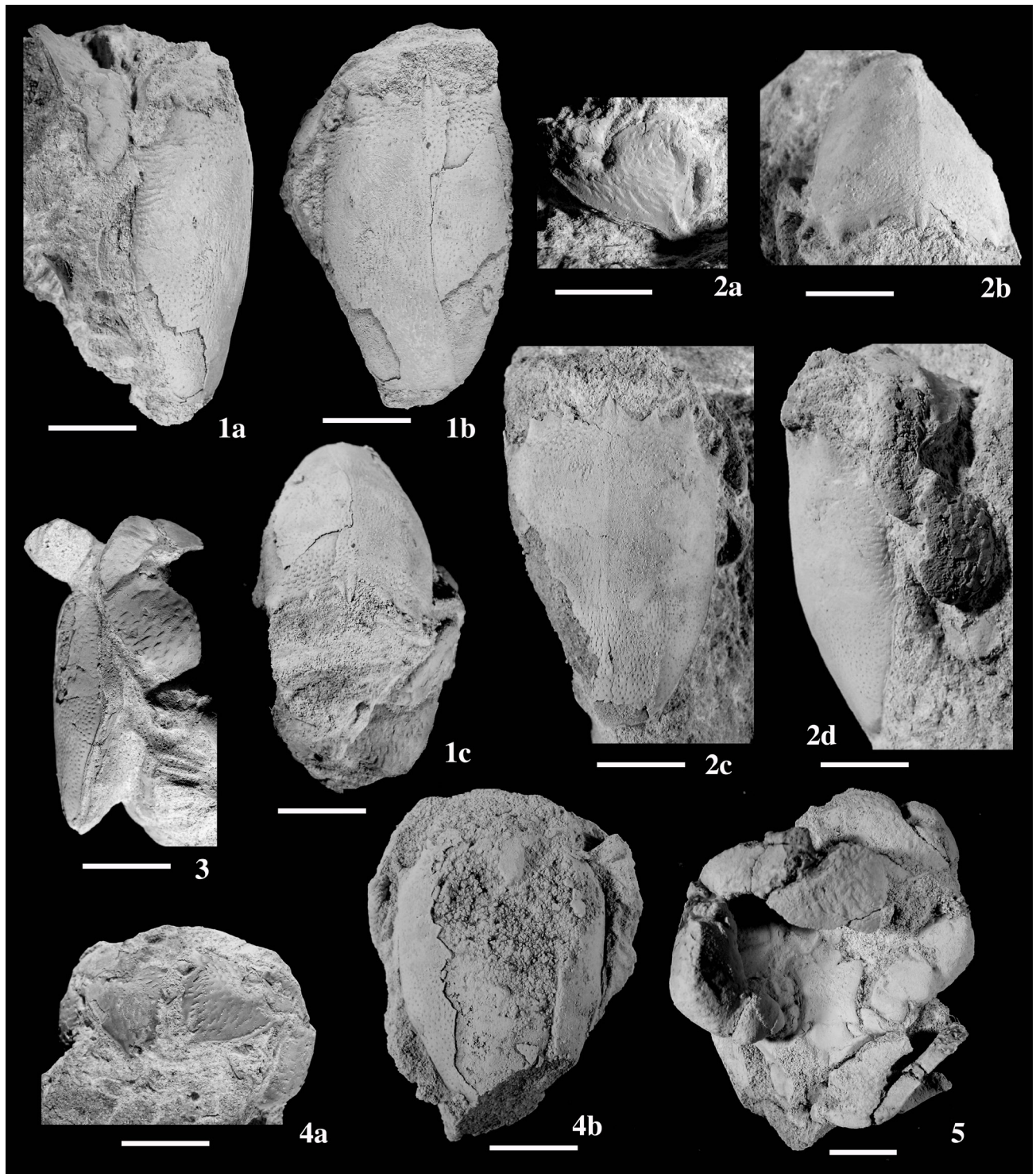


Figure 1. *Ponotus shirahamensis* new genus and species. 1a-c, MFM83067 (paratype), carapace and chelipeds, 1a, lateral; 1b, dorsal; 1c, frontal view. 2a-d, WMNH-Ge-112012007 (holotype), 2a, right chelipeds, lateral view; 2b, carapace, frontal view; 2c, carapace, dorsal view; 2d, carapace and right cheliped, lateral view. 3, WMNH-Ge-112012024 (paratype), carapace and right cheliped, lateral view. 4a, b, MFM83068 (paratype), 4a, chelipeds, lateral view; 4b, carapace and chelipeds, dorsal view. 5, WMNH-Ge-112012006 (paratype), thoracic sternum, chelipeds, and pereopods, ventral view. Bar equal to 10 mm.

3. Discussion

There is, in the general outline of the carapace, similarity between the present new genus and *Notopus* de Haan, 1841, an extant monotypic genus of the Notopodinae. However, the new genus lacks a spinose, transverse ridge between hepatic spines on the dorsal carapace, which is a diagnostic character of *Notopus*. Additionally, in the new genus the upper orbital margin is smooth and an anterior region of the dorsal carapace is covered with coarse granules, while *Notopus* has a spinose upper orbital margin and spinose anterior dorsal carapace regions. The new genus also resembles the other notopodine genus *Ranilia* Milne Edwards, 1837, but differs in the presence of two pairs of orbital spines, a short, broad rostrum, and a median dorsal carina of the carapace. *Ranilia* possesses three pairs of orbital spines, a long, narrow rostrum, and lacks a median dorsal carina of the carapace.

4. Material examined

Holotype, WMNH-Ge-112012007; paratypes, WMNH-Ge-112012006, WMNH-Ge-112012024, MFM83067, MFM83068.

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