

## A New Species of the Spider Crab Genus *Rochinia* (Decapoda, Brachyura, Epialtidae) from the Izu Islands, Central Japan

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**Abstract** A new spider crab of the genus *Rochinia* A. Milne-Edwards, 1875 of the family Epialtidae is described based on the specimens from offshore depths of Miyake Island in the Izu Islands, central Japan. The new species named *R. miyakensis* is most characterized and readily distinguished from the congeners by having the long and widely divergent rostral spines, the smooth and sparsely setose dorsal surface of the carapace, a sharp hepatic tubercle, a sharp epibranchial tubercle, and a rounded postorbital lobe.

**Key words:** New species, spider crab, *Rochinia*, Epialtidae, Izu Islands, Japan.

### Introduction

During re-examination of the crabs collected by the late Mr. Seiji Nagai and donated to the Wakayama Prefectural Museum of Natural History, we encountered some characteristic specimens of a spider crab species referred to the genus *Rochinia* A. Milne-Edwards, 1875 from off Miyake Island in the Izu Islands, south of Tokyo Metropolitan, central Japan.

In the monographic work on the family Majidae *s.l.* in the Siboga Collections, Griffin and Tranter (1986) broadened the definition of the genus *Rochinia* to synonymize the genus *Oxypleurodon* Miers, 1886. By the recent general consensus after the redefinition by Tavares (1991), however, both genera are valid and some related genera such as *Nasutocarcinus* Tavares, 1991 and *Sphenocarcinus* A. Milne-Edwards, 1875 are established or resurrected. As for the genus *Rochinia*, Ng and Richer de Forges (2007) and Ng *et al.* (2008) enumerated 24 species from

the Indo-West Pacific and 10 species from the western Atlantic and eastern Pacific.

Takeda and Komatsu (2005) was of opinion that *Rochinia brevirostris* (Doflein, 1904) closely related to *Goniopugettia sagamiensis* (Gordon, 1930) should be transferred to *Goniopugettia* Sakai, 1986. Then, Richer de Forges and Ng (2009) transferred *R. carinata* Griffin and Tranter, 1986 to the new genus *Laubierinia* as the type species. Recently, since some important contributions mentioned above, *R. daiyuuae* Takeda and Komatsu, 2005 from off Amami-Oshima Island, ca. 520m deep, *R. annae* Richer de Forges and Poore, 2008 from western Australia, 252–414m deep, *R. planirostris* Takeda, 2009 from Japan, 135–211m deep, and *R. ahyongi* McLay, 2009 from New Zealand, 772–951m deep were described. At present, thus, the genus *Rochinia* is represented by 26 Indo-West Pacific species and 10 western Atlantic and eastern Pacific species.

In this paper *Rochinia miyakensis* sp. nov. is

described on the holotype male, the allotype female and two paratype females, with two non-type females, as 37th species in the genus. Of the type and non-type specimens, only the allotype female was transferred to the collections of the National Museum of Nature and Science, Tsukuba (NSMT-Cr), and the others are kept in the Wakayama Prefectural Museum of Natural History, Kainan (WMNH-Na-Cr).

Abbreviations used to indicate the size are as follows: BC for the greatest breadth of carapace between the branchial regions of both sides, LC for the length of carapace in median line from the base of rostral spines to the posterior margin of carapace, and LR for the length of each rostral spine.

Family EPIALTIIDAE

Genus *Rochinia* A. Milne-Edwards, 1875

*Rochinia miyakensis* sp. nov.

[New Japanese name: Izu-tsunogani]

(Figs. 1–3)

*Rochinia suluensis* — Nagai and Tsuchida, 1995: 111, pl. 1 fig. 6.

*Rochinia* aff. *suluensis* — Marumura and Kosaka, 2003: 33 (in list).

*Material examined.* Off east of Miyake I., 320 m deep, Izu Is., south of Tokyo, Oct. 1, 1984, S. Nagai leg. — 1 ♂ (holotype, WMNH-Na-Cr 0340), 1 ♀ (allotype), 2 ♀ ♀ (paratypes, WMNH-Na-Cr 0340-1), 2 ♀ ♀ (non-types, WMNH-Na-Cr 0340-2). The allotype specimen was transferred to the National Museum of Nature and Science, with registration number, NSMT-Cr 22989.

*Description of holotype.* Male (BC 7.2 mm, LC 10.0 mm, LR 4.5 mm). Carapace (Fig. 1A) typically pyriform in its outline, with dorsally convex gastric and cardiac regions and laterally convex branchial regions; dorsal surface of carapace (Figs. 1A, 2B–C) covered uniformly with short tomentum and sparsely with setae of variable length, without granules or tubercles except for a sharp tubercle at posterolateral part of each

branchial region; gastric region undivided, as high as cardiac region, not distinctly separated laterally from hepatic region, isolated posterolaterally from branchial region by shallow oblique furrow and posteriorly from cardiac region by a transverse distinct furrow; cardiac region rounded, surrounded by a shallow furrow, accompanied a small longitudinal areolet at each side; intestinal region weakly convex dorsally and posteriorly as a median part of posterior margin of carapace; submarginal carapace surface in front of posterior margin depressed to form a furrow for its whole length; hepatic region weakly inflated, armed with a long tubercle that is directed a little forward and upward; an epibranchial tubercle similar and subequal to hepatic tubercle, but directed a little more upward and posterolaterally.

Rostral spines (Figs. 1A, 2A–C) sharp, widely apart, about half as long as carapace, weakly depressed for its basal part, becoming cylindrical distally; basal half fringed with long setae on both margins.

Supraorbital eave (Figs. 1A, 2B–C, 3A) armed with a sharp preorbital tubercle that is directed obliquely forward and upward, slightly shorter than hepatic tubercle; supraorbital eave weakly developed behind preorbital tubercle, followed by a U-shaped hole, with a well developed postorbital lobe; upper margin of postorbital lobe thin, weakly sinuate in dorsal view (Figs. 1A, 2B), outer surface truncated to form a subcircular flattened surface in lateral view (Figs. 2C, 3A).

Ventral surface of antennal basal segment smooth, weakly concave for its whole surface, with thickened margins armed with a sharp tubercle directed obliquely outward at its anterolateral angle. A small boss just lateral to green gland opening. Pterygostomial region smooth with three, subequal, subacute bosses or tubercles along outside of posterior half of buccal flange.

Both chelipeds (Figs. 1A–B, 2A–B) heavy, equal in size and shape; upper margin of merus (Fig. 3C) strongly developed as a thin crest for its whole length; margin of crest (Fig. 3B) irregu-

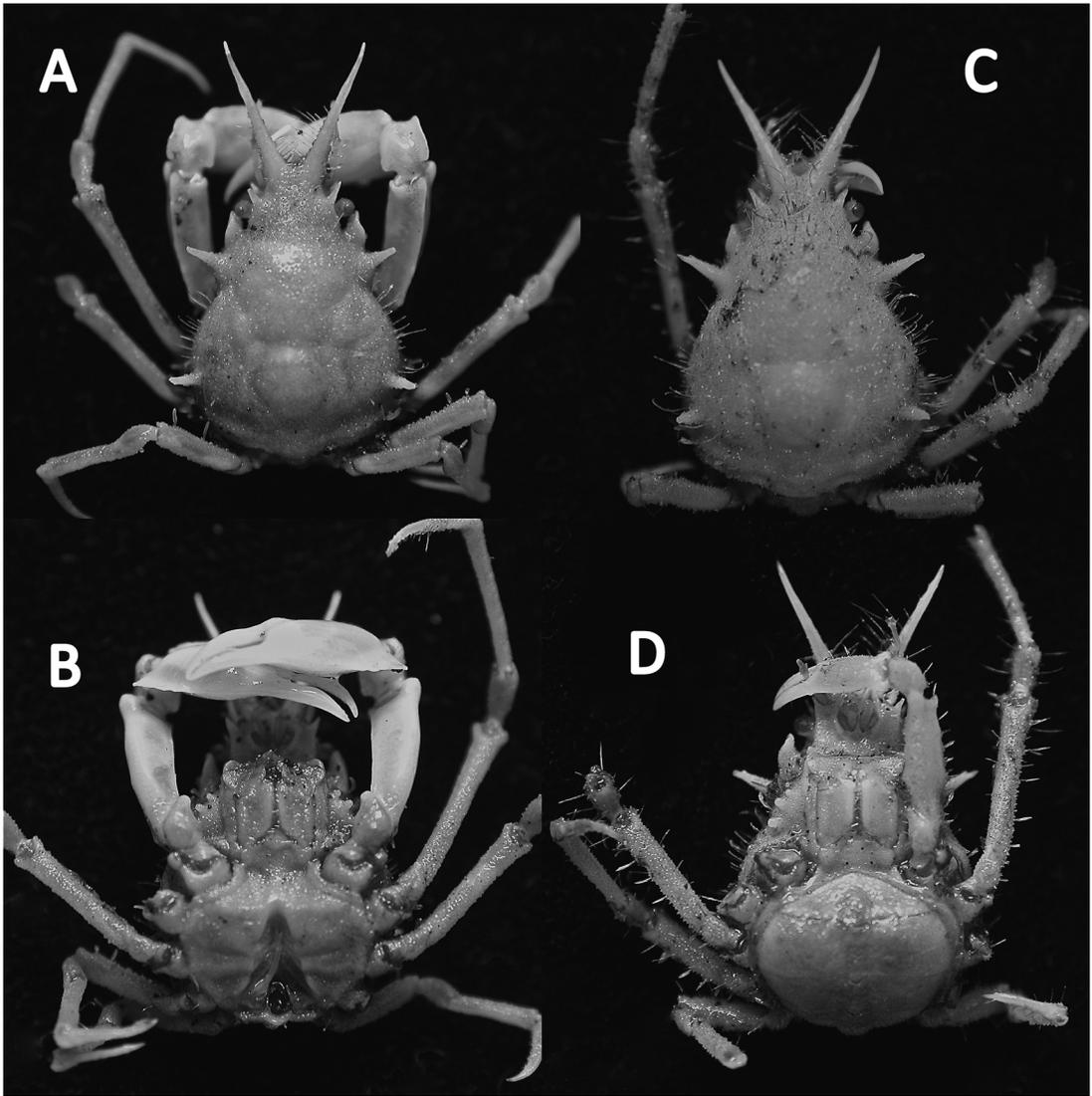


Fig. 1. *Rochinia miyakensis* sp. nov., holotype ♂ (A–B) and allotype ♀ (C–D).

larly waved, but not toothed; carpus (Fig. 3C) ornamented with a longitudinal high crest; outer surface of carpus outside of crest truncated and flattened; palms of both chelae (Figs. 1B, 2A–B) not inflated, smooth, with sharply crested upper margin and strongly crested basal half of lower margin.

Of ambulatory legs left third missing, left fourth and right first detached, and second of both sides imperfect without two or three distal segments. First two pairs (Figs. 1A–B, 3D) long,

tubular, last two pairs (Figs. 1A–B, 3F) distinctly shorter; each dactylus armed with one or two small, conical teeth at subdistal part of posterior margin in first pair (Fig. 3E), with five or six teeth along whole length in last two pairs (Fig. 3G).

Abdomen and left pleopods missing. Right first pleopod as figured (Fig. 3H–J), straight, simple, not tapering distally, with a weak depression at subdistal part of inner margin.

*Notes on allotype.* Female (BC 8.2 mm, LC



Fig. 2. *Rochinia miyakensis* sp. nov., holotype ♂ (A–C) and allotype ♀ (D).

11.2 mm, LR 5.4 mm) (Figs. 1C–D, 2D). The general outline of the carapace is pyriform, but seemingly narrower than the holotype male. In dorsal view, the carapace is elongate triangular rather than pyriform probably due to the weakly developed gastric and hepatic regions. The branchial tubercles of both sides are only slightly shorter than the hepatic tubercles. The postorbital lobe is oval, with weakly pointed median part of distal margin.

The right cheliped, the left second and third ambulatory legs, and the right first ambulatory leg are missing. The remaining left cheliped is small, with weak development of crests of the merus, carpus and palm, although the basic structure is quite similar to that of the holotype male.

*Notes on paratypes and non-type specimens.* Paratypes, 1 ♀ (BC 7.0 mm, LC 8.8 mm, LR 5.4 mm), 1 ♀ (infested by a sacculinid parasite

inside the abdomen) (BC 5.5 mm, LC 7.7 mm, LR 4.0 mm). Both specimens agree well with the allotype in all respects. The carapace is strongly vaulted, with indistinct interregional furrows. The hairiness may be somewhat variable, with club-shaped setae along both margins of the ambulatory legs.

*Non-type specimens.* 1 ♀ (BC 7.0 mm, LC 8.8 mm, RC 5.4 mm), 1 subadult ♀ (BC 5.5 mm, LC 8.0 mm, LR 4.3 mm). One of the non-type specimens, the smaller female, is quite different from the paratype female of similar size in having the flattened, not marsupial abdomen. In the larger female, both branchial tubercles are apparently shorter, with the right being broken off at its basal part.

*Remarks.* The new species is without doubt the closest to *Rochinia suluensis* Griffin and Tranter, 1986, in the pyriform carapace, the long

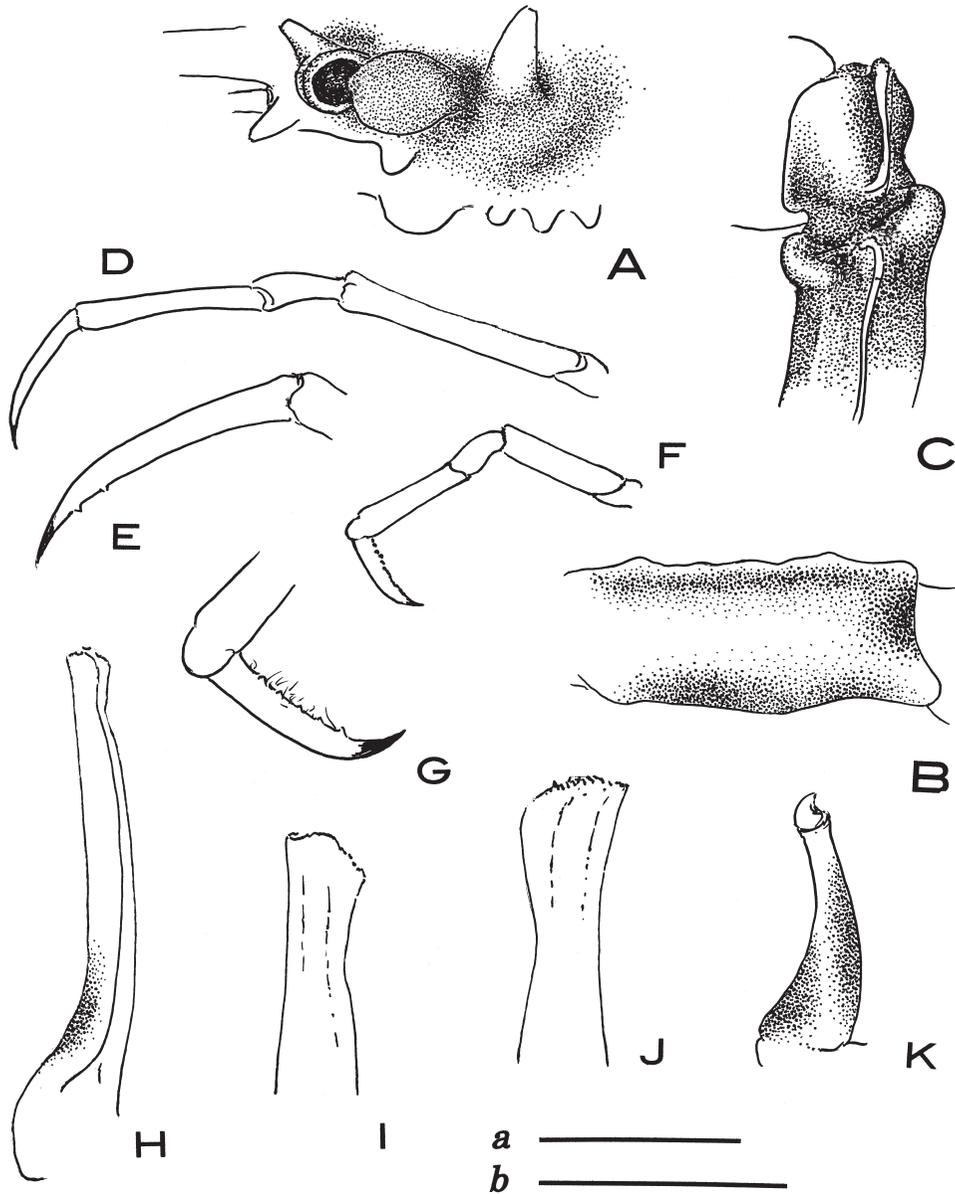


Fig. 3. *Rochinia miyakensis* sp. nov., holotype ♂. A, Left orbital region to show armature around orbit; B, outer surface of merus of right cheliped; C, carpus and distal part of merus of right cheliped, in dorsal view; D, right first ambulatory leg, in ventral view; E, dactylus of the same leg, enlarged; F, left third ambulatory leg, in dorsal view; G, dactylus of the same leg, enlarged; H, right first pleopod, in ventral view; I–J, distal part of the same pleopod, in lateral (outer) view (I) and sternal view (J); K, right second pleopod, in ventral view. Scale  $a = 5$  mm for D and F; 1 mm for H; 0.5 mm for I–K. Scale  $b = 3$  mm for A–C, E and G.

and widely divergent rostral spines, and the unarmed dorsal surface of the carapace except for the branchial tubercle at each side. In *R. suluensis*, however, the branchial tubercle is

described and figured as to be small, and the postorbital lobe is narrow in lateral view (length about twice basal width) (Griffin and Tranter, 1986: 190). Williams and Eldredge (1994) men-

tioned that the branchial tubercle of the paratype male (AMS-P34659) of *R. suluensis* is more prominent than those depicted in the original description (fig. 60e). In the new species, however, the branchial tubercle is strongly developed to be nearly as long as the hepatic tubercle, and the postorbital lobe is distinctly rounded and quite different from the narrow postorbital lobe of *R. suluensis*.

*Rochinia decipiata* Williams and Eldredge, 1994 from Guam was described as a close relative of *R. suluensis* and also of *R. moluccensis* Griffin and Tranter, 1986. As mentioned in the original description, the rostral spines of *R. decipiata* are short and not strongly divergent just like those of *R. moluccensis*, but the branchial region is unarmed in *R. decipiata* and armed with a vestigial tubercle in *R. moluccensis*. Otherwise in *R. moluccensis* the narrow postorbital lobe is characteristic in a lateral keel that is confluent with the anterior margin of the hepatic tubercle. The rounded postorbital lobe of *R. decipiata* is similar to that of the new species, but the other characters such as the short rostral spines, the armature of the supraorbital eave and the basal antennal segment, and the unarmed branchial regions are quite different from those of the new species.

*Etymology.* Named after the type locality, Miyake Island in the Izu Islands, south of Tokyo.

*Distribution.* Known only from the type locality in central Japan.

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