

A New Deep-sea Shrimp of the Genus *Paracrangon* from Central Japan

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Abstract A new species of the genus *Paracrangon* (Crustacea, Decapoda, Crangonidae) is described on two males and four females from the depths of Sagami Bay and far south of the Boso Peninsula, Central Japan. The genus *Paracrangon* is peculiar in having no second pair of leg, being represented by *P. abei* KUBO and *P. furcata* KUBO endemic to Japanese waters, *P. echinata* DANA from the Pacific coast of North America and also from the Sea of Japan and the Pacific coast of northern Japan, and *P. areolata* FAXON from off the Pacific coast of Mexico. The new species named *P. okutanii* is differentiated from the four known species in the shape of rostrum, the armature and sculpture of carapace, and some other features.

During the examination of benthic shrimps collected by the R/V *Soyo-Maru* of the Tokai Regional Fisheries Research Laboratory from Tokyo and Sagami Bays, we identified 45 species of 14 families including some new species. The results of systematic and biogeographic studies on them will be published in due time after further confirmation of some critical species. In this paper a distinctive new species of the genus *Paracrangon* DANA of the family Crangonidae is to be described under the name of *P. okutanii*.

This new species is dedicated to Dr. Takashi OKUTANI, Professor of Tokyo University of Fisheries, who carried out the deep-sea researches every year during the time holding the post in the Tokai Regional Fisheries Research Laboratory, and afterward served as the senior curator in the National Science Museum, Tokyo.

All the decapod crustaceans collected by the R/V *Soyo-Maru* including the type specimens of *Paracrangon okutanii* are at present preserved in the National Science Museum, Tokyo (NSMT) for the permanent preservation. We wish to express our hearty thanks to Dr. T. OKUTANI, who kindly placed the specimens at our disposal for study and generously encouraged us throughout this study.

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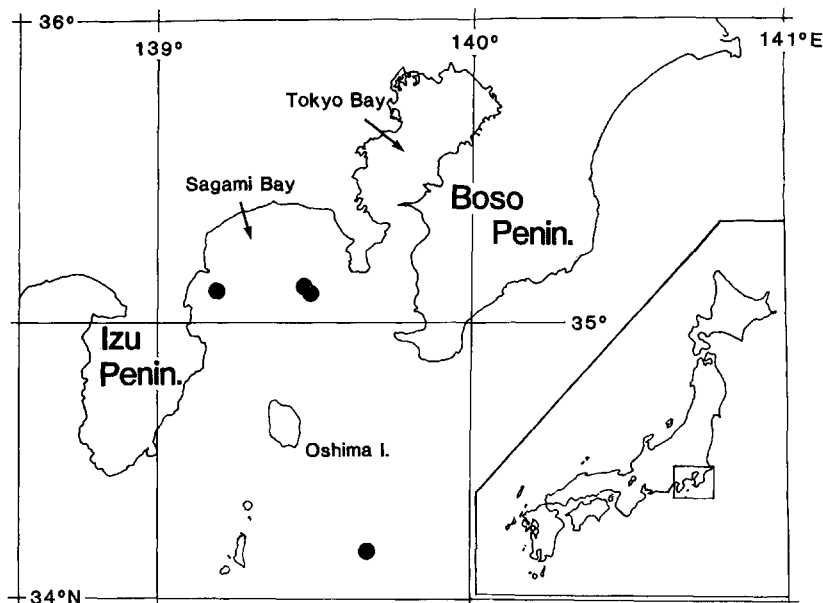


Fig. 1. Map showing the localities of *Paracrangon okutanii* sp. nov.

Family Crangonidae

Genus *Paracrangon* DANA, 1852

Paracrangon okutanii sp. nov.

(Figs. 2, 3)

Paracrangon sp., OKUTANI, 1969, pl. 1 fig. 4 (lower two specimens only).

Specimens examined. A total of two males and four females from the depths of 425–1205 m, listed in the following lines.

St. T29 (35°04.1'N, 139°28.4'E, 770–930 m deep); 1 ♂ (holotype, NSMT-Cr 9232), and 1 ♂, 1 ♀ (paratypes, NSMT-Cr 9233); Aug. 12, 1959.

St. T11 (35°05.5'N, 139°29.0'E, 690–780 m deep); 1 ♀ (paratype, NSMT-Cr 9234); Oct. 1, 1965.

St. B2 (34°22.2'N, 139°41.9'E, 1080–1205 m deep); 1 ♀ (paratype, NSMT-Cr 9235); Dec. 11, 1967.

St. T10 (35°04.8'N, 139°11.1'E, 425 m deep); 1 ♀ (paratype, NSMT-Cr 9236); Jul. 27, 1974.

Description of holotype. Rostrum compressed, obliquely erect and about 1.2 times as long as carapace; upper border unarmed; lower border with a long straight spine at its distal one-third, and a long, curved spine near the base.

Carapace with 4 unequal, procurved spines on dorsal median carina; second spine slightly smaller than the others and not equidistant; last two spines each at

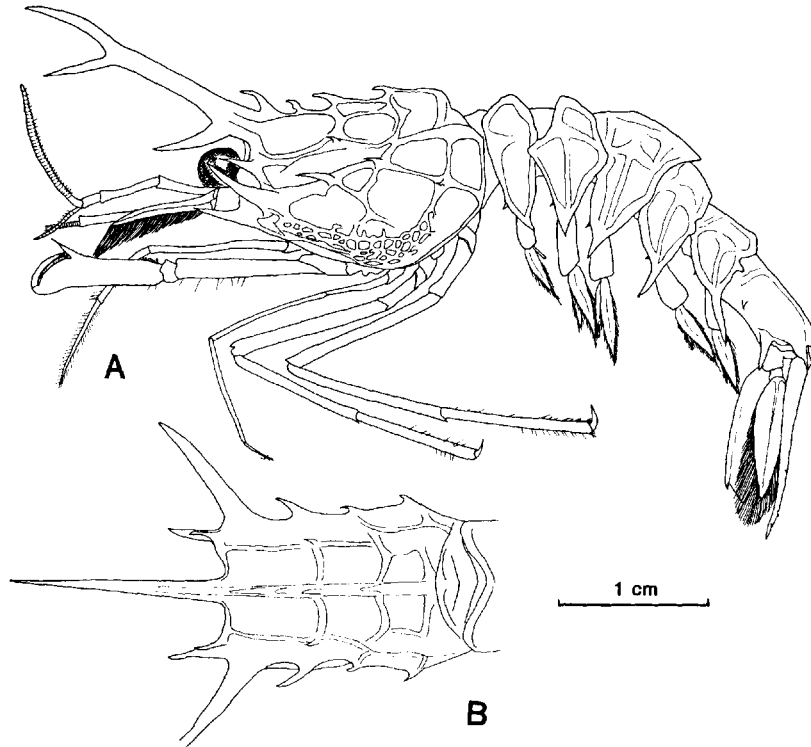


Fig. 2. *Paracrangon okutanii* sp. nov. — Holotype ♂ in lateral view (A) and its carapace in dorsal view.

intersection of dorsal carina and side carinae of carapace; side of carapace carinated in such a way as to form irregular quadrangular spaces and armed with four spines at the angles of the spaces, the hepatic spine being much the longest; lower part of carapace with many small, rugged, irregularly reticulate carinae; antennal spine slightly smaller than hepatic spine; pterygostomial angle ends in a large acute spine; branchiostegal spine large, situated a little above the pterygostomial spine, and dorso-ventrally depressed, being directed obliquely outwards.

Antennular peduncle consists of 3 segments, with a small lateral plate on the proximal outer margin of basal segment; inner flagellum with 14 segments in the right and 13 in the left; outer flagellum with 35 segments in the right and 34 in the left; antennular scale reaching the second segment of antennular peduncle. Antennular peduncle long, its tip reaching the distal margin of antennular peduncle; flagellum as long as body length without rostrum.

Third maxilliped reaching beyond antennal peduncle by entire ultimate segment, the ultimate segment being a little longer than the penultimate. First pair of leg robust, about as long as third maxilliped; carpus very short, about one-fifth the length

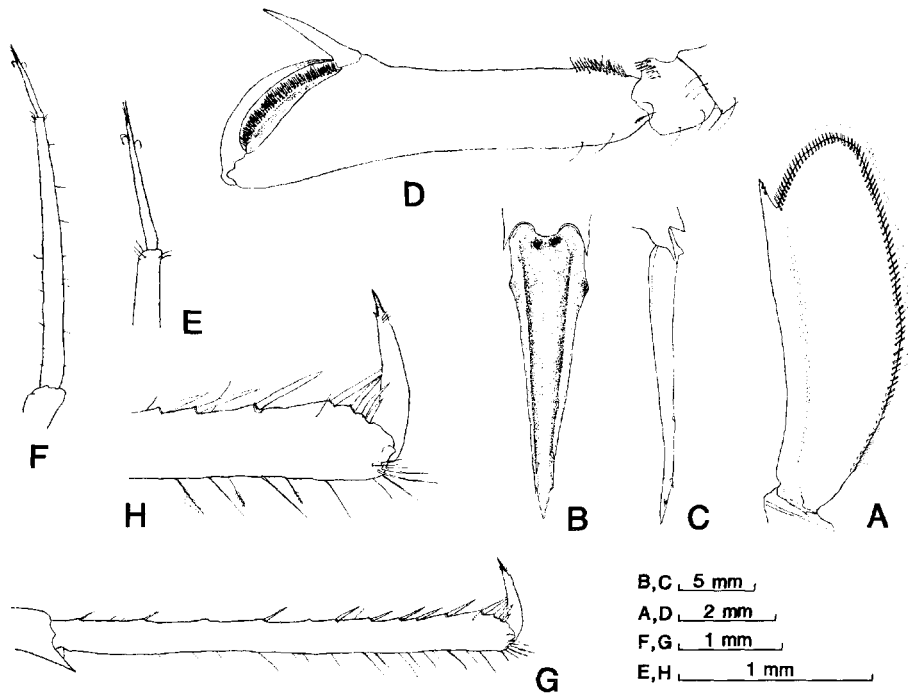


Fig. 3. *Paracrangon okutanii* sp. nov., holotype ♂. — A, Right antennal scale; B, C, telson in dorsal and lateral views; D, chela of first leg; E, F, distal segments of left third leg; G, H, distal segments of left fifth leg.

of propodus. Second pair of leg completely absent with degeneration. Third pair of leg very slender, its propodus about one-third the length of carpus; dactylus about one-fifth the length of propodus, ending in a tuft of slender hairs. Fourth and fifth pairs of legs much alike in appearance, and about equal in length; each dactylus about one-fifth as long as propodus, and furnished with serrated spines on its posterior border.

An acute spine each in the middle of fifth to seventh thoracic sterna, with that on the sixth the longest, and that on the seventh the shortest; middle part of eighth thoracic sternum is nothing but a prominent carina.

Second to sixth abdominal segments dorsally carinated, dorsal carina of third segment being especially high; those on sixth segment and telson with a median groove.

First to sixth pleurae spiniform, first to fifth pleurae each with a very small spine near the middle of anterior margin; fourth and fifth abdominal segments armed on each side of posterior margin with a blunt spine; sixth segment with one posterior and two lateral spines on each side, and a small blunt anterior spine. All abdominal segments, except for the sixth which has a paired spine, have a long, sharp spine in the middle region of each sternum.

Telson tapering, armed with a pair of blunt spines at the proximal end of upper surface, and three pairs of lateral small spines in the distal half; outer and inner uropods about equal in length, a little shorter than telson.

Notes on Paratypes. The paratypes agree with the holotype in their main characteristics, but there are some variations in the number of segments of antennular flagella, and in the presence or absence of a spine on each abdominal pleura.

Segments of antennular inner flagellum are 14 (right) and 11 (left) in a male, and 6–8 (right) and 7–9 (left) in females; those of outer flagellum are 35 (right) and 34 (left) in a male, and 18–21 (right) and 18–20 (left) in females. They are considerably variable individually and also with right or left side, but it is definitely said that the antennular inner and outer flagella are much more subdivided in male than in female.

Each of the first to fifth abdominal pleurae is usually armed with very small spine near the middle of its anterior margin like in the holotype, but in some specimens the spines are obsolete and entirely absent.

Measurements (in mm).

	Holotype	Paratypes NSMT-Cr				
	NSMT-Cr 9232	9233	9233	9234	9235	9236
	♂	♀	♂	♀	♀	♀
Rostrum	16.6	16.2	15.8	15.3	14.5	18.1
Carapace	13.4	16.1	13.0	17.3	17.0	16.4
Body length*	49.0	52.8	50.7	57.8	56.0	56.7

* Excluding rostrum and including telson.

Remarks. The genus *Paracrangon* contains only four species, viz., *P. echinata* DANA 1852, *P. areolata* FAXON 1893, *P. abei* KUBO 1937 and *P. furcata* KUBO 1937, which are geographically restricted to the North Pacific along the American and Asian coasts.

The type species, *Paracrangon echinata* [Japanese name: Kajiwara-ebi], was originally reported from Puget Sound, ranging from Port Etches, Alaska southward to La Jolla, California (cf. RATHBUN, 1904; SCHMITT, 1921). It is also known from the Sea of Japan and the Pacific coast of northern Japan from Sagami Bay northward to the Sea of Okhotsk (cf. YOKOYA, 1933; KUBO, 1937; URITA, 1942; KIM, 1977). The bathymetric records in the American and Asian coasts are fallen in the range of 20–200 m and 130–1380 m, respectively.

Paracrangon areolata is known only by the type specimens from two stations off the Pacific coast of Mexico, 1215 and 1225 m deep, described preliminary in 1893 and fully, with figures, in 1895.

Paracrangon abei [Japanese name: Yatsuashi-ebi] and *P. furcata* are both the Japanese species. The former species was originally reported from the Kumano-nada Sea in the Pacific coast, and also occurs in the Sea of Japan from Toyama Bay through the vicinity of Sado Island and off Yamagata Prefecture northward to off the Oga Peninsula. Its bathymetric range is from 150 to 310 m. As for the latter species,

on the other hand, there is no subsequent record since the original description. Its type locality is also the Kumano-nada Sea off Nagashima in Mie Prefecture, *ca.* 300 m deep, from where one male and nine ovigerous females were obtained.

The new species, *Paracrangon okutanii*, is remarkably different from three species known from Japanese waters in having the small, rugged sculpture, with a reticulate appearance, on the lower part of carapace. In this respect the new species is somewhat similar to *P. areolata*, but distinctly differs from it in some important characters as noted in the following key.

Key to the Species of the Genus *Paracrangon*

1. Rostrum curved upwards in distal half and its lower margin with a simple spine near the tip and a forked one near the basal portion *P. furcata* KUBO, 1937
- Rostrum straight, obliquely directed upwards and its lower margin with 2 simple spines 2
2. Dorsal carina of carapace with 3 flattened spines, of which the anterior two are trifid at each tip *P. abei* KUBO, 1937
- Dorsal carina of carapace with 3 or 4 unequal, sharp spines 3
3. Lower part of carapace flattened simply, without reticulate sculpture *P. echinata* DANA, 1852
- Lower part of carapace with small, reticulate sculpture 4
4. Rostrum short, about half as long as carapace, with 2 short spines on its lower margin. Pleurae of abdominal segments sharp at tips, but not spiniform. Dactylus of fifth leg about one-third as long as propodus *P. areolata* FAXON, 1893
- Rostrum long, as long as or slightly longer than carapace, with 2 long spines on its lower border. Pleurae of abdominal segments sharply pointed and spiniform. Dactylus of fifth leg about one-fifth as long as propodus *P. okutanii* sp. nov.

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