

Collections of Crabs Dredged off Amami-Oshima Island, the Northern Ryukyu Islands

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Abstract: The crab specimens dredged off Amami-Oshima Island in the northern Ryukyu Islands are referred to 47 species of 40 genera in 14 families; a new species named *Rochinia daiyuae* is described, and *Oreotlos etor* Tan & Richer de Forges and *Praebebalia fujianensis* Chen & Fang of the Leucosiidae, *Glypachaeus hyalinus* (Alcock & Anderson) of the Majidae, *Nanocassiope tridentata* Davie of the Xanthidae, and *Rectopalicus ampiceros* Castro of the Palicidae are recorded as new to the carcinological fauna of Japan.

Key words: crabs, new species, Amami-Oshima Island, Ryukyu Islands

Introduction

Aim of the present report is to record the species dredged by the tugboat, *Daiyu Maru No. 38*, in 2002, 2003 and 2004 at the sea around Amami-Oshima Island, the northern Ryukyu Islands. The collections are composed of 48 species of 13 families, although all the specimens are not always identified to the species. Each one species of two genera, *Heteronucia* of the Leucosiidae and *Rochinia* of the Majidae, was distinguished as new to science. The former, the *Heteronucia* species, is apparently identical with a new species from southern Japan close to Amami-Oshima Island, the paper of which is now in press. Another, the *Rochinia* species, is described in this report under the name of *R. daiyuae*. The species of the family Pilumnidae not identified to the species in this report will be dealt with in the forthcoming paper.

In the following lines, synonymies and remarks are given only to the species considered to be systematically interesting, but all the specimens examined and the distribution of each species are recorded for taxonomic comparative studies hereafter and also for getting knowledge of the carcinological fauna as a whole.

All the specimens including the holotype of the new species are preserved in the National Science Museum, Tokyo, with records of the sex and size (cb, breadth and cl, length of carapace, in mm) and the registered number (NSMT-Cr).

The stations of dredging by the *Daiyu Maru No. 38* in 2002-2004 off Amami-Oshima Island are shown in Table 1.

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Table 1. Sampling data of the *Daiyu Maru No. 38* off Amami-Oshima Island.

Houl no.	Date	Position in	Position out	Depth (m)	Locality
DY-02-01	2002/6/26	28°29.62'N, 129°30.03'E	28°29.11'N, 129°30.02'E	290	Off Naze
DY-02-03	2002/6/26	28°29.22'N, 129°24.71'E	28°29.20'N, 129°24.48'E	490	Off Suriko-zaki
DY-02-04	2002/6/27	28°25.87'N, 129°22.25'E	28°25.47'N, 129°21.73'E	210	Off Miyako-zaki
DY-02-05	2002/6/27	28°27.22'N, 129°20.22'E	28°26.78'N, 129°19.45'E	520	Off Miyako-zaki
DY-02-07	2002/6/27	28°24.23'N, 129°23.03'E	28°23.97'N, 129°22.82'E	150	Off Miyako-zaki
DY-02-10	2002/6/28	28°31.10'N, 129°37.23'E	28°30.90'N, 129°37.13'E	120-122	Off Kasari Bay
DY-03-04	2003/6/17	28°25.23'N, 129°24.20'E	28°25.45'N, 129°24.55'E	137-142	Off Miyako-zaki
DY-03-06	2003/6/18	28°27.53'N, 129°27.67'E	28°28.11'N, 129°27.62'E	182-223	Off Naze
DY-03-08	2003/6/18	28°25.27'N, 129°28.39'E	28°25.49'N, 129°28.30'E	74-86	Off Naze
DY-03-10	2003/6/20	28°29.90'N, 129°33.44'E	28°30.09'N, 129°33.73'E	155-155	Off Kado
DY-04-01	2004/6/23	28°17.35'N, 129°47.41'E	28°17.80'N, 129°47.77'E	209-191	Off Myogan-saki
DY-04-02	2004/6/23	28°19.59'N, 129°46.33'E	28°20.09'N, 129°46.55'E	152-157	Off Myogan-saki
DY-04-04	2004/6/23	28°23.85'N, 129°43.30'E	28°23.99'N, 129°43.30'E	52-46	Off Myogan-saki
DY-04-06	2004/6/24	28°12.42'N, 129°39.31'E	28°13.06'N, 129°39.36'E	364-335	Off Nakahise-saki
DY-04-07	2004/6/24	28°15.95'N, 129°37.92'E	28°16.64'N, 129°38.21'E	208-195	Off Nakahise-saki
DY-04-08	2004/6/25	28°13.01'N, 129°32.09'E	28°13.47'N, 129°32.15'E	219-213	Sumiyo Bay
DY-04-09	2004/6/25	28°13.99'N, 129°30.74'E	28°14.33'N, 129°30.90'E	153-151	Sumiyo Bay
DY-04-10	2004/6/25	28°14.19'N, 129°28.88'E	28°14.45'N, 129°28.97'E	104-102	Sumiyo Bay
DY-04-12	2004/6/25	28°16.19'N, 129°35.31'E	28°16.47'N, 129°35.62'E	123-117	Off Nakahise-saki

Taxonomic Accounts

Family Raninidae de Haan, 1839

Notosceles serratifrons (Henderson, 1893) [Nokoha-asahigani]

Material examined. St. 02-04, ca. 210 m deep, 1 ♂ (cb 6.4×cl 11.6 mm), 1 ♀ (cb 7.6×cb 13.3 mm), NSMT-Cr 16126; St. 04-07, 208-195 m deep 1 juv., NSMT-Cr 16127.

Remarks. The affiliation of this species to *Notosceles* is due to Goeke (1985) who is of opinion that the genus *Notosceles* is composed of *N. chimmonis* Bourne, *N. ecuadorensis* (Rathbun), *N. serratifrons* (Henderson) and *N. viaderi* Ward, and that *Raninoides barnardi* Sakai is probably transferred to *Notosceles*.

Distribution. From Japan to off India, 20-150 m deep. The male specimen at hand was collected from the depth of 210 m.

Family Latreillidae Stimpson, 1858

Latreillopsis bispinosa Henderson, 1888 [Toge-mizuhigani]

Material examined. St. 02-07, ca. 150 m deep, 1 ♂ (cb 3.6 mm excluding lateral spines×cl 5.0 mm excluding rostral spine), NSMT-Cr 16128.

Distribution. Whole Indo-West Pacific, 50-150 m deep.

Family Dorippidae MacLeay, 1838

Ethusa izuensis Sakai, 1937 [Izu-heikegani]

Material examined. St. 04-09, 153-151 m deep, 1 ♂ (cb 8.5×cl 9.5 mm), NSMT-Cr 16129.

Distribution. Sagami Bay and the East China Sea, 30–115 m deep.

Family Leucosiidae Samouelle, 1819

Ebalia dimorphoides Sakai, 1963 [Usuheri-ebaria]

Material examined. St. 04-01, 209–191 m deep, 1 ♂ (cb 4.5×cl 5.5 mm), NSMT-Cr 16130.

Remarks. In the male at hand, the posterolateral margin of the carapace is continuous with the posterior margin without interruption unlike in the original figure, and the chelipeds are remarkably elongated.

Distribution. Previously known from Sagami Bay, 65–85 m deep.

Ebalia longimana Ortmann, 1892 [Tenaga-ebaria]

Material examined. St. 04-07, 208–195 m deep, 1 ♀ (cb 4.6×cl 4.3 mm), NSMT-Cr 16131; St. 04-08, 219–213 m deep, 1 ♂ (cb 4.0×cl 3.7 mm), NSMT-Cr 16132.

Distribution. Not uncommon in Japanese waters, 30–307 m deep, and also recorded from Australia by Campell (1971).

Ebalia nudipes Sakai, 1963 [Hadaka-ebaria] (Fig. 1A)

Material examined. St. 02-03, ca. 490 m deep, 1 ♂ (cb 11.4×cl 12.0 mm), NSMT-Cr 16133.

Remarks. The male at hand agrees with the original figure that is elaborate, but more

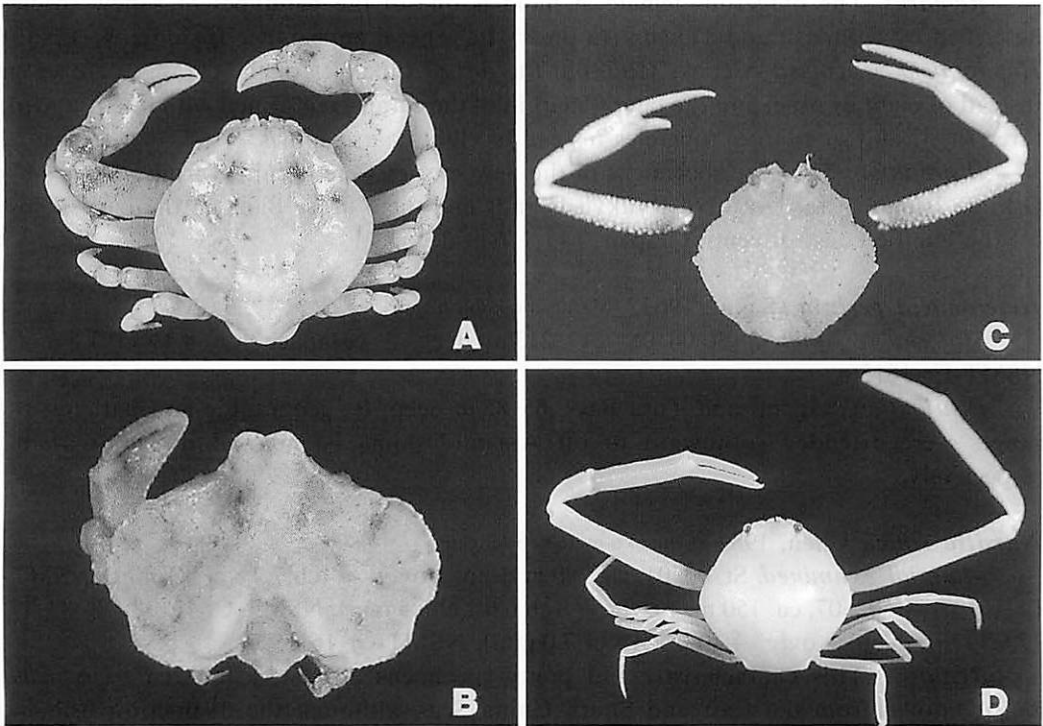


Fig. 1. A, *Ebalia nudipes* Sakai, ♂ (NSMT-Cr 16133; cl 12.0 mm); B, *Oreotlos etor* Tan & Richer de Forges, ♂ (NSMT-Cr 16140; cb 7.4 mm); C, *Praebebalia fujianensis* Chen & Fang, ♂ (NSMT-Cr 16218; cb 4.0 mm); D, *Praebebalia longidactyla* Yokoya, ♂ (NSMT-Cr 16143; cb 5.0 mm).

or less schematic in its appearance. The arrangement of dorsal tubercles on the gastric, branchial and intestinal regions may accurate in the figure, but in this specimen the tubercles are not clearly isolated from dorsal surface of the carapace, forming low mounds. As noted in the original description, the dorsal surface is thickly covered with microscopic granules that are vesiculous and worn out to be smooth to the naked eye. The dorsal regions are convex as a whole, without distinct interregional lines or furrows, and each segment of the ambulatory legs is much more thicker than the original figure.

This species has been known only by drawings, so that the photograph is reproduced in this report for the first time.

Distribution. This species has been described on one male from Tosa Bay, 100–150 m deep, but according to the original author, the record of a female of *Ebalia jordanii* Rathbun in the sea near Iro-zaki, Izu Peninsula, 187 m deep, by Yokoya (1933), is due to misidentification of this species.

***Ebalia tosaensis* Sakai, 1963 [Tosa-ebaria]**

Material examined. St. 04–12, 123–117 m deep, 1 ♂ (cb 3.5×cl 2.8 mm), NSMT-Cr 16134.

Distribution. Known from Tosa Bay (Sakai, 1963; Takeda, 2001) and the East China Sea (Takeda & Miyake, 1972), 100–198 m deep.

***Heteronucia* sp. nov.**

Material examined. St. 02–01, ca. 290 m deep, 1 ovig. ♀ (cb 10.0×cl 8.8 mm), NSMT-Cr 16078.

Remarks. The ovigerous female at hand is one of the paratypes of a new species described by Komatsu and Takeda (in press). Its general appearance is similar to that of *Heteronucia vesiculosa* Alcock, 1896, but the dorsal tubercles of the carapace are seven instead of eight or nine, and the lateral margin of the carapace is armed with one rounded, three small and one larger tubercles instead of eight coarse spines.

Distribution. The type specimens of the new species were obtained from off Amami-Oshima Island in the northern Ryukyu Islands and the Kurose Bank in the Izu Islands, off the Pacific coast of central Japan, 145–176 m deep.

***Heteronucia perlata* (Sakai, 1963) [Marutsubu-kobushigani]**

Material examined. St. 04–08, 219–213 m deep, 1 carapace (cb 8.4×cl 7.8 mm), NSMT-Cr 16136.

Distribution. Sagami and Tosa Bays, 65–85 m deep. Its geographic and bathymetric ranges were extended southward to off Amami-Oshima Island and down to 219 m, respectively.

***Nursilia sinica* Chen, 1982 [Chugoku-osate-kobushigani]**

Material examined. St. 02–01, ca. 290 m deep, 1 ovig. ♀ (cb 7.2×cl 7.1 mm), NSMT-Cr 16137; St. 02–07, ca. 150 m, 1 ovig. ♀ (cb 6.6×cl 6.5 mm), NSMT-Cr 16138; St. 04–12, 123–117 m deep, 1 ovig. ♀ (cb 7.4×cl 7.0 mm), NSMT-Cr 16139.

Remarks. This characteristic and pretty specimens are safely referred to *Nursilia sinica* known from the East and South China Seas, although the distinction from *N. dentata* Bell and *N. tonsor* Alcock is not always clear. This species may be remarkable in having the deeply depressed gastric regions, cristiform lamina at the outer border of the palm, and the male first pleopod having equally bifid tip.

Distribution. Known from the East and South China Seas, 100–174 m deep.

Oreotlos etor Tan & Richer de Forges, 1993 (Fig. 1B)

Material examined. St. 03–08, 74–86 m deep, 1 ♂ (cb 7.4×cl 6.0 mm), NSMT-Cr 16140.

Remarks. The specimen at hand agrees well with the original description and figures; the carapace is remarkably wide, 1.4 times broader than long, smooth to naked eye; each side of the deeply sunken intestinal region is swollen to form a crested oblique ridge; the hepatic margin is not convex, being followed by a closed suture; the branchial margin is strongly convex and shallowly concave at its posterolateral part. The front is strongly developed, directed obliquely upward, with distinct median cleft.

The original authors' indication that the shape of the carapace is a result of mimicry with the dead *Halimeda* fragments to avoid predation seems to be reasonable, although no *Halimeda* fragments were found in the sediment from the present station.

Distribution. This species is known only by the original description based on the specimens from the Chesterfield Islands, New Caledonia and Plateau Chesterfield-Bellona, Coral Sea, 31–78 m deep. New to Japan.

Praebebalia fujianensis Chen & Fang, 2000 (Fig. 1C)

Material examined. St. 02–01, ca. 290 m deep, 1 ♀ (cb 4.5×cl 4.0 mm), NSMT-Cr 16141; St. 03–06, 182–223 m deep, 1 ♂ (cb 4.0×cl 3.8 mm), NSMT-Cr 16218; St. 04–02, 152–157 m deep, 1 ♂ (cb 3.9×cl 3.6 mm), NSMT-Cr 16142.

Remarks. The species of the genus *Praebebalia* are small in size, typically with the remarkably long chelipeds, but the distinction from the *Ebalia* species and the specific validity of the known 14 species are not always clear.

The specimens at hand are identified with this species known by a male from the East China Sea with reservation. The original figure of the carapace is schematic and somewhat different from the direct view of the specimen, but even if so, they are generally agreeable with the description and can be distinguished from the congeners. The carapace is uniformly covered with vesicular granules in the female, but more roughly in the male, and very strongly vaulted for its most part except for the frontal and orbital regions; the dorsal regions are obsolete, only with faint longitudinal furrows along the gastric and cardiac regions which are weakly ridged; the metagastric and cardiac regions are armed each with one tubercle, the cardiac one is bigger and placed at the top of the convex carapace; the intestinal region is weakly convex, inflated laterally, and armed with an obtuse tubercle; the hepatic region is formed by a low mound obliquely behind orbit; the anterolateral margin of the carapace is more or less angulated below the hepatic region, and distinctly constricted behind the hepatic region; the lateral margin of the carapace is convex as a whole, being armed with a tuberculated granule at each side. The chelipeds are not very long, being covered with sharp granules mainly on the margins; the fingers are minutely serrated on the cutting edges, and subequal to the palm in length.

The above notes on the specimens examined are supplementary to the original description of a male. Some minor discrepancies between them may be referred to the individual variation.

Distribution. Originally reported from the East China Sea, 86 m deep. New to Japan.

Praebebalia longidactyla Yokoya, 1933 [Yubinaga-kobushigani] (Fig. 1D)

Material examined. St. 02–05, ca. 520 m deep, 1 ♂ (cb 5.0×cl 5.2 mm), 1 ovig. ♀ (cb

5.4×cl 5.4 mm), NSMT-Cr 16143; St. 04-06, 364-335 m deep, 1 ♀ (cb 5.0×cl 5.1 mm), NSMT-Cr 16144.

Remarks. This species has been recorded by Takeda and Miyake (1970) from the East China Sea and Takeda (1997) from Suruga Bay since the original description in 1933. In the close congener, *Praebebalia pisiformis* Ihle, the fingers are much shorter than the palm in the ovigerous female from the Sunda Islands, comparing with the ovigerous females from Japan, in which the fingers are as long as the palm. This species is known only by the poor original drawing, so that the photograph is reproduced in this report for further identification.

Distribution. Japan from Suruga Bay to the Goto Islands in the west of Kyushu, and the East China Sea, 123-190 m deep. Its bathymetric range was extended down to 520 m.

Raylilia mirabilis (Zarenkov, 1969) [Minami-toge-kobushigani]

Material examined. St. 04-04, 52-46 m deep, 1 ovig. ♀ (cb 10.4×cl 9.8 mm), NSMT-Cr 16145.

Remarks. This species was redescribed well by Galil (2001) who established the genus *Raylilia* to accommodate *Randallia mirabilis* Zarenkov, *Arcania gracilipes* (Bell), *A uenoi* Takeda, and new species, *Raylilia coniculifera* Galil, and also by Chen and Sun (2002). Recently Marumura and Takeda (2004) recorded this species from Ishigaki-jima Island in the southern Ryukyu Islands, 100 m deep, as new to Japan.

Distribution. From New Caledonia to the northern Ryukyu Islands recorded at present, through some intervening localities in western Pacific. The bathymetric range is from shallow water to 100 m deep.

Tokoyo eburnea (Alcock, 1896) [Chochin-kobushigani]

Material examined. St. 02-07, ca. 150 m deep, 1 ovig. ♀ (cb 13.6×cl 12.8 mm), NSMT-Cr 16146; St. 03-04, 137-142 m deep, 1 ♀ (cb 13.5×cl 13.0 mm), NSMT-Cr 16219; St. 03-10, 155-115 m deep, 1 ovig. ♀ (cb 13.1×cl 14.1 mm), NSMT-Cr 16220.

Remarks. This species, hitherto been known as a species of the genus *Randallia*, is not uncommon in Japanese waters. The specimen at hand agrees well with the original description, and also with the figures (Alcock & Anderson, 1897) and the recent important contributions such as Sakai (1976), Chen (1989), Chen and Sun (2002), and Galil (2003). There is no doubt in its specific identification, but recently Galil (2003) established four new genera, *Tanaoa*, *Tokoyo*, *Toru* and *Urashima*, for the species previously referred to *Randallia*. This species is designated as the type species of *Tokoyo*, another representative of which is *T. cirrata* Galil from Vanuatu and Queensland, 36-215 m deep.

Distribution. From Japan to Australia and the Laccadive Sea, 35-366 m deep.

Toru granuloides (Sakai, 1961) [Ibonashi-kobushigani]

Material examined. St. 02-03, ca. 490 m deep, 1 juv. (cb 6.0×cl 6.6 mm), NSMT-Cr 16147.

Remarks. The specimen at hand is still in a juvenile stage, but agrees well with the original and subsequent descriptions and figures (Sakai, 1961, 1976, as *Randallia*; Galil, 2003, as *Toru*). The dorsal surface is thickly covered with microscopic granules without any indication of regions, but in reality interspaced by further smaller granules. This species was designated as the type species of the genus *Toru* by Galil (2003). The congeneric species are *T. mesjatzevi* (Zarenkov), *T. pilus* (Tan) and *T. septimus* Galil.

Distribution. Known from Japan, Fiji, Wallis Island, Vanuatu, the Loyalty Islands

and New Caledonia, 50–550 m deep.

Family Calappidae de Haan, 1833

Mursia microspina Davie & Short, 1989

Material examined. St. 02–05, ca. 520 m deep, 1 juv. (cb 6.4 mm excluding lateral spines $\times$ cl 5.9 mm), NSMT-Cr 16148.

Remarks. The specimen at hand is small for definite identification, but generally agrees with the photograph of this species given by Galil (1993) and also with a male from the East China Sea reported by Takeda and Kubodera (1998). The narrow and strongly convex dorsal surface with very short lateral spines and the low tubercles on the outer surface of each palm are indicative of this species, but the proximalmost tubercle is not angulated, but more or less ridged.

Distribution. Known certainly from Australia, New Caledonia, the Loyalty Islands and the East China Sea, and supposedly from Sagami and Tosa Bays in the Pacific coast of Japanese mainland. The known bathymetric range is from 200–420 m, with the present record of 520 m.

Family Majidae Samouelle, 1819

Achaeus robustus Yokoya, 1933 [Bungo-akeusu]

Material examined. St. 02–07, ca. 150 m deep, 1 ♀ (cb 4.4 $\times$ cl 5.5 mm including rostral tooth), NSMT-Cr 16149; St. 04–10, 104–102 m deep, 1 ♂ (cb 2.5 $\times$ cl 3.4 mm), NSMT-Cr 16150.

Distribution. Japan, East China Sea, Indonesia, and western Australia, 39–153 m deep.

Achaeus spinosus Miers, 1879 [Toge-akeusu]

Material examined. St. 04–01, 209–191 m deep, 1 ♀ (cb 6.6 $\times$ cl 5.2 mm), NSMT-Cr 16151.

Distribution. From Sagami Bay to west of Kyushu, and also from the Maldives Islands and the Persian Gulf in the Indian Ocean. The known bathymetric range is from 5 to 30 m, with the present record of 191–209 m.

Achaeus supercilialis (Ortmann, 1893) [Akeusu-modoki]

Material examined. St. 04–01, 209–191 m deep, 1 ♀ (cb 3.8 $\times$ cl 4.9 mm) NSMT-Cr 16162.

Distribution. Sagami Bay, East China Sea, and Hawaii, 60–295 m deep (cf. Takeda & Miyake, 1969).

Cyrtomaia lamellata Rathbun, 1906 [Mitsutoge-osutongani]

Material examined. St. 02–01, ca. 290 m deep, 1 ♂ (cb 10.1 $\times$ cl 9.4 mm including frontal tooth), NSMT-Cr 16152.

Remarks. In spite of the detailed discussion with figures by Guinot and Richer de Forges (1982) who considered the specific validity of three species, *Cyrtomaia lamellata* Rathbun, *C. hispida* (Borradaile) and *C. platypes* Yokoya, Griffin and Tranter (1986) also examined many specimens including the type specimens and integrated the latter two species with *C. lamellata* which has a chronological priority.

Distribution. Hawaii, Japan, New Caledonia, and New Zealand, 106–250 m deep. The specimen in hand was collected at a depth of ca. 290 m.

Glypachaeus hyalinus (Alcock & Anderson, 1894) (Fig. 4A)

Material examined. St. 04–07, 208–195 m deep, 1 ♀ (cb 7.9 mm excluding lateral spines × cl 12.5 mm excluding rostral spines), NSMT-Cr 16153.

Remarks. This rather rare species is one of two representatives of the genus *Glypachaeus*. Another species, *G. tenuicollis* Takeda, 1978 from the southern Ryukyu Islands known only by the original description differs from the type species in the different contour of the carapace. The photograph is given for the first time in this report, although both of the original figures of *G. hyalinus* and *G. tenuicollis* are excellent.

Distribution. Off Trincomalee, Sri Lanka, 50 m deep (type locality), northwestern Indian Ocean (east of Mombasa, off Cape Guardafui, and mouth of the Gulf of Aden), 75–175 m deep, and east of Masbate Island, the Philippines, 145 m deep, as recorded by the original authors (1894) and Griffin (1974, 1976). New to Japan, and its bathymetric range was extended down to 208 m.

Naxioides robillardi (Miers, 1882) [Eda-tsunogani]

Material examined. St. 02–01, ca. 290 m deep, 1 juv. (cb 5.0 mm excluding branchial tubercle × cl 8.4 mm excluding rostral spine and including intestinal tubercle), NSMT-Cr 16157.

Remarks. *Naxioides mammillata* (Ortmann) has been reduced to a synonym of *Naxia* (*Naxioides*) *robillardi* Miers by Griffin (1974) and Griffin and Tranter (1986).

Distribution. From Japan to the western Indian Ocean, 60–260 m deep. The present juvenile specimen was obtained from a depth of ca. 290 m.

Rochinia daiyuae sp. nov. (Figs. 2, 3)

Material examined. St. 02–05, ca. 520 m deep, 1 ♀ (cb 4.5 mm × cl 7.4 mm excluding rostral spines), holotype, NSMT-Cr 16223.

Description. Carapace typically pyriform, covered uniformly with short downy hairs and with sparse longish, silky hairs mainly on branchial regions; surface smooth, provided with neither granules nor tubercles or plates; gastric region not subdivided, elevated as a low mound, convex laterally; cervical groove between gastric and cardiac regions shallow, indistinct; cardiac region convex, as high as gastric region, with a weak mound at its posterior part; posterior slope of cardiac region steep toward posterior margin of carapace, rather weakly concave at intestinal region.

Rostral spines about one fourth as long as postrostral carapace, straight, divergent widely, regularly tapering. Supraorbital cave armed with an acute preorbital spine directed obliquely forward and weakly upward; a small blunt convexity on edge of each at antorbital level; external orbital tooth sharp, separated from supraorbital cave by a narrow H-shaped hiatus, keeled, completely fused posteriorly with hepatic keeled margin. Hepatic margin nearly straight or feebly concave, as long as frontal spine, weakly divergent toward a wide concavity between hepatic and branchial margins; branchial margin not strongly convex.

Left cheliped small, with right cheliped missing. Ambulatory legs but first pair detached, hairy like carapace, with sparse longish silky hairs.

Remarks. The genus *Rochinia* A. Milne Edwards was revived by Griffin and Tranter (1984) who considered that the genus *Sphenocarcinus* A. Milne Edwards is synonymous

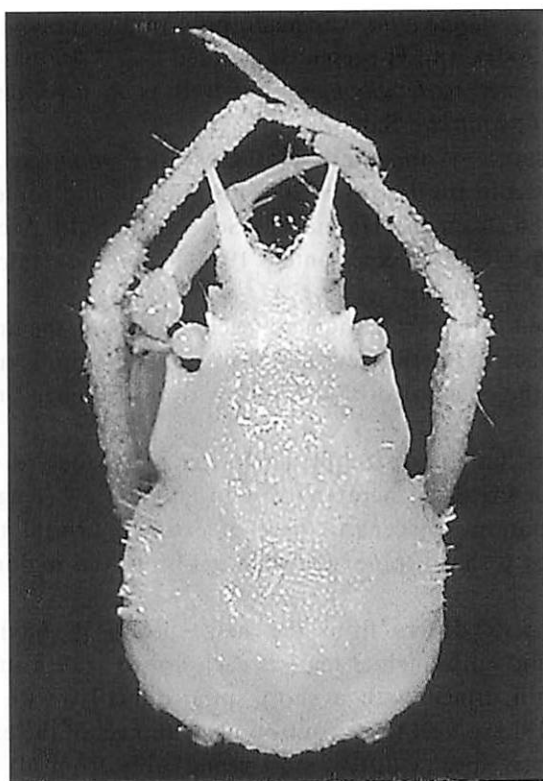


Fig. 2. *Rochinia daiyuae* sp. nov., holotype, ♀ (NSMT-Cr 16223; cl 7.4 mm in median line).

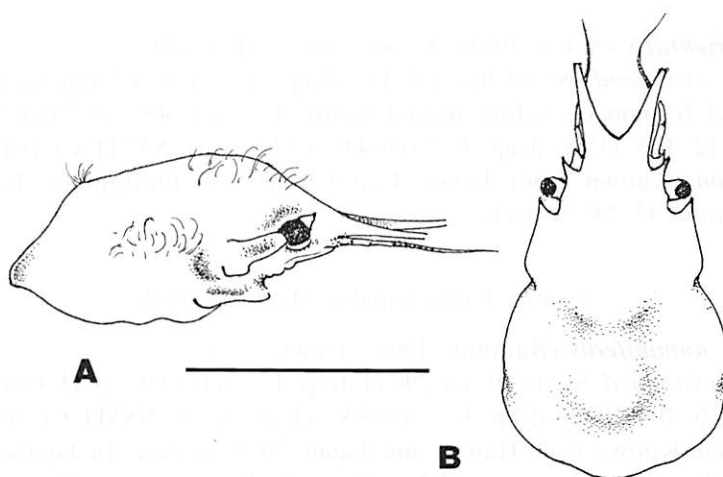


Fig. 3. *Rochinia daiyuae* sp. nov., holotype, ♀ (NSMT-Cr 16223; cl 7.4 mm in median line). Carapace in lateral (A) and dorsal (B) views. Scale=3 mm.

with *Rochinia*. However, Tavares (1991) resurrected the genus *Sphenocarcinus* which has been generally dealt as a synonym of *Rochinia*. He further established a new genus *Nasutocarcinus* to accommodate four new species having the single rostrum, but overlooked the genus *Goniopugettia* Sakai, 1986. This was perhaps inevitable, because the

original definition of *Goniopugettia* was made only in Japanese. The validity was first pointed by Ng *et al.* (2001), and at present it is noted that *Rochinia brevirostris* (Doflein, 1904) should be transferred to *Goniopugettia* as well as *R. sagamiensis* (Gordon, 1931), the type species, and *G. tanakae* Sakai.

The present new species is apparently most close to *R. moluccensis* Griffin & Tranter, 1986, from the Moluccas in the Java Sea, 200–469 m deep, and somewhat to *R. suluensis* Griffin & Tranter, 1986, from the Halmahera Sea in the Sulu Archipelago, 275–469 m deep, and *R. tomentosa* Griffin & Tranter, 1986, from the Halmahera Sea and the Makassar Straits, 11–469 m deep.

Rochinia tomentosa differs from the new species in having the orbital tooth truncated to be an ovate flat surface in lateral view, and the hepatic margin is truncated on the outer surface isolated from the external orbital tooth, with dorsal edge produced upward as a sharp angle.

Rochinia suluensis has the rostral spines longer and widely divergent outward, the external orbital lobe described as being narrow in lateral view (length about twice basal width), the hepatic margin adjacent to base of external orbital tooth anteriorly and surmounted dorsally by a sharp spine, and each epi-branchial region armed with a short spine.

Rochinia moluccensis differs from the new species in having the mesogastric, protogastric, cardiac and epibranchial regions each armed with a small conical tubercle, and the hepatic margin armed with a short spine dorsally, with its anterior margin produced forward as a sharp keel to be continuous with keel of the external orbital tooth.

As a result, the new species differs most remarkably from all of the congeners by having no distinct tubercles on the carapace and hepatic region. Even if the armature of the dorsal surface of the carapace is exposed to the sexual, developmental, individual variations, the presence or absence of the hepatic spine is considered to be specific.

Seiitaoides orientalis (Sakai, 1961) [Kofuki-tsunogani] (Fig. 4B)

Material examined. St. 04-02, 152–157 m deep, 1 ♂ (cb 4.7 mm including lateral outgrowths × cl 6.9 mm excluding frontal teeth), 1 ♀ (cb 4.8 × cl 7.0 mm), NSMT-Cr 16163; St. 04-12, 123–117 m deep, 1 ♂ (cb 4.9 × cl 6.8 mm), NSMT-Cr 16164.

Distribution. Known from Japan, East China Sea, Philippines, Indonesia, and Western Australia 45–245 m deep.

Family Parthenopidae MacLeay, 1838

Platylambrus nummiferus (Rathbun, 1906) [Hana-hishigani]

Material examined. St. 02-01, ca. 290 m deep, 1 ♀ (cb 13.9 × cl 11.9 mm), NSMT-Cr 16169; St. 04-10, 104–102 m deep, 1 ♀ (cb 9.8 × cl 10.2 mm), NSMT-Cr 16170.

Distribution. Known from Hawaii and Japan, 70–95 m deep. In Japanese waters, the previous records are from Sagami and Tosa Bays, the Pacific coast of Japanese mainland. Southward range extension to the northern Ryukyu Islands and also bathymetric range extension to depth of 290 m in this report.

Tutankhamen pteromerus (Ortmann, 1893) [Mitsukado-hishigani]

Material examined. St. 02-03, ca. 490 m deep, 1 ♀ (cb 11.3 × cl 8.5 mm), 1 juv. (cb 8.3 × cl 6.7 mm), NSMT-Cr 16171; St. 02-05, ca. 520 m deep, 1 ♂ (cb 11.3 × cl 8.2 mm), NSMT-Cr 16172.

Distribution. Japan from the Boso Peninsula in the Pacific coast and from Aomori Prefecture in the Japan Sea coast to the west of Kyushu and the East China Sea, and also from Hawaii. The bathymetric range is from 85 to 355 m in literature and extended down to 520 m at present.

Family Eumedonidae Miers, 1879

Eumedonus villosus Rathbun, 1918.

Material examined. St. 03-04, 137-142 m deep, from a sea urchin of the Cidaridae, 2 juv. (cb $3.6 \times$ cl 3.2 mm; cb $4.9 \times$ cl 4.5 mm), NSMT-Cr 16224.

Remarks. Two juvenile specimens are too small for the definite identification, but close to this species recorded by Takeda and Miyake (1972) from the East China Sea.

Distribution. Known from Queensland, 55-60 m deep, and the East China Sea, 98 m deep.

Family Portunidae Ratnesque, 1815

Brusinia elongata (Sakai, 1969) [Hime-botangazami] (Fig. 4C)

Material examined. St. 02-04, ca. 210 m deep, 1 ♂ (cb $3.0 \times$ cl 3.7 mm), NSMT-Cr 16173.

Remarks. Stevcic (1991) established a new genus to accommodate this species from

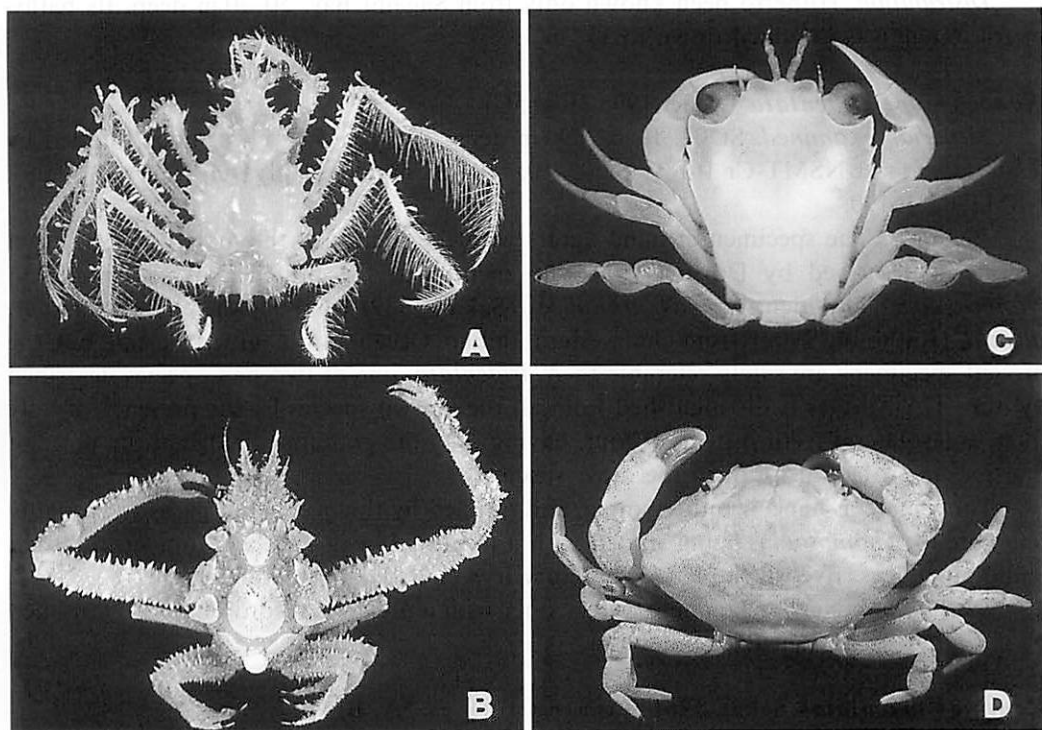


Fig. 4. A, *Glypachaeus hyalinus* (Alcock & Anderson), ♀ (NSMT-Cr 16153; cl 12.5 mm in median line); B, *Seिताoides orientalis* (Sakai), ♂ (NSMT-Cr 16163; cl 6.9 mm in median line); C, *Brusinia elongata* (Sakai), ♂ (NSMT-Cr 16173; cl 6.9 mm); D, *Liomera sagamiensis* (Sakai), ♂ (NSMT-Cr 16180; cb 9.1 mm).

Japan known as a species of the genus *Benthochascon* and a new species from Australia. The specimen at hand is still small in size, but there is no problem in its identification.

Distribution. Previously known only from the vicinity of Nii-jima Island in the Izu Islands. The original author described this species based only on a male and a photograph, and mentioned that the bathymetrical range is from 35 to 50 m. Takeda (1978b) obtained 10 specimens from the depths of 65–80 m at the sea close to the type locality. The specimen in hand was obtained from a depth of ca. 210 m.

Parathranites orientalis Miers, 1886 [Itsutsubagazami]

Material examined. St. 02-07, ca. 150 m deep, 1 ♀ (cb 13.5 mm including lateral spines×cl 9.5 mm), NSMT-Cr 16174.

Distribution. From Japan to the western Indian Ocean, 80–300 m deep.

***Portunus* sp.**

Material examined. St. 04-04, 52–46 m deep, 1 ♀ (cb 19.2 mm including epibranchial teeth×cl 12.7 mm), NSMT-Cr 16176.

Family Xanthidae MacLeay, 1838

Liomera sagamiensis (Sakai, 1939) [Sagami-beniougigani] (Fig. 4D)

Material examined. St. 04-09, 153–151 m deep, 1 ♂ (cb 9.1×cl 6.2 mm), NSMT-Cr 16186.

Distribution. Hitherto been known only from Sagami Bay, 50–70 m deep. Its bathymetric range was extended down to 151 m.

Nanocassiope tridentata Davie, 1995 (Fig. 5C)

Material examined. St. 02-01, ca. 290 m deep, 1 ♀ (cb 5.6×cl 4.2 mm) infested by *Thompsonia* sp., NSMT-Cr 16189; St. 02-10, 120–122 m deep, 1 juv. (cb 3.5×cl 2.8 mm), NSMT-Cr 16190.

Remarks. The specimen at hand agrees with the figures of the male holotype from Indonesia described by Davie (1995) who mentioned the presence of six species in *Nanocassiope*. The identity of *N. granulipes* (Sakai, 1939) from Japanese waters and *N. alcocki* (Rathbun, 1902) from the western Indian Ocean is not always clear, but the present specimens are safely referable to *N. tridentata*, one of two new species described by him. This species is distinguished from all the known species by the presence of only three anterolateral teeth instead of four, having only the granulated ridge at the place of the first anterolateral tooth in the other species.

The female at hand is rather young, and infested by rhizocephalan parasite probably referable to *Thompsonia*, being studded with a total of 14 egg sacs, viz. four on the right ambulatory legs, five on the left ambulatory legs, and five on the abdomen.

Distribution. New to Japanese waters, only with a previous record of a male obtained by dredging in Ambon Bay, Indonesia.

Xanthias maculatus Sakai, 1961 [Rurimongani] (Figs. 5A, B)

Material examined. St. 02-01, ca. 290 m deep, 1 ovig. ♀ (cb 10.7×cl 6.9 mm), NSMT-Cr 16194.

Remarks. For comparison with this specimen, at present, two males collected by the R. V. *Toyoshio Maru* at the sea off Amami-Oshima Island were examined. The size and

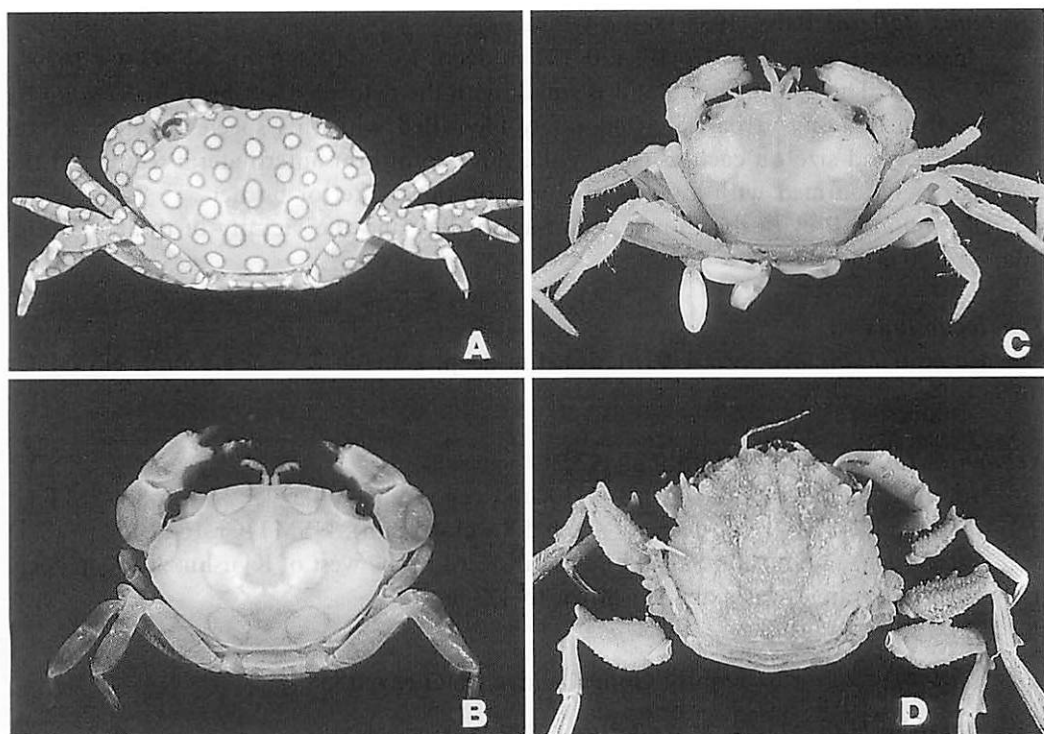


Fig. 5. A, B, *Xanthias maculatus* Sakai, ovig. ♀ (A) (NSMT-Cr 16194; cb 10.7 mm), ♂ (B) collected by the R. V. *Toyoshio Maru.*; C, *Nanocassiope tridentata* Davie, ♀ (NSMT-Cr 16189; cb. 5.6 mm) infested by a rhizocephalan parasite; D, *Rectopalicus ampiceros* Castro, ovig. ♀ (NSMT-Cr 16215; cb 8.9 mm).

number of the spots on the carapace, chelipeds, ambulatory legs and thoracic sternum seem to be exposed to individual wide variation as shown in the photographs. However, there is another possibility that they represent a species distinct from each other.

Distribution. Japan (from Sagami Bay to Tosa Bay, and from Ishigaki-jima Island in the southern Ryukyu Islands), ranging from coral reef to 85 m deep. The ovigerous female was obtained from the depth of 290 m.

Family Pilumnidae Samouelle, 1819

Heteropilumnus sp.

Material examined. St. 04-04, 52-46 m deep, 1 ♂ (cb 10.8×cl 8.6 mm), NSMT-Cr 16199.

Nanopilumnus sp.

Material examined. St. 04-12, 123-117 m deep 1 ovig. ♀ (cb 5.0 mm excluding lateral spines×cl 3.3 mm), NSMT-Cr 16201.

Parapilumnus sp.

Material examined. St. 04-09, 153-151 m deep, 1 ovig. ♀ (cb 4.5×cl 3.5 mm), NSMT-Cr 16202.

***Pilumnus dofleini* Balss, 1933 [Sagami-kebukagani]**

Material examined. St. 02-10, 120-122 m deep, 1 ♂ (cl 2.6 mm), NSMT-Cr 16204.

Remarks. The specimen at hand is small, with the deformed left branchial region by the infection of bopyrid parasite, but safely identified with this species having several granules of good size on each dorsal areola, three spiniform anterolateral teeth, and the ambulatory legs armed with a series of spines on their anterior borders.

Distribution. Previously known from Sagami Bay and the vicinity of the Kii Peninsula, 85-120 m deep.

***Typhlocarcinus* sp.**

Material examined. St. 04-09, 153-151 m deep, 1 ♀ (cb 7.5×cl 5.2 mm), NSMT-Cr 16233.

***Xenophthalmodes morsei* Rathbun, 1932 [Morusugani]**

Material examined. St. 04-10, 104-102 m deep, 1 ♂ (cb 4.5×cl 3.7 mm), NSMT-Cr 16212; St. 04-12, 123-117 m deep, 1 ♀ (cb 5.8×cl 4.5 mm), NSMT-Cr 16213.

Distribution. Japan from Sagami Bay southward to the west of Kyushu, 30-50 m deep. Its bathymetric range was extended down to 123 m.

Family Goneplacidae MacLeay, 1838***Camatopsis rubida* Alcock & Anderson, 1899 [Kamatogani]**

Material examined. St. 02-04, ca. 210 m deep, 1 ♀ (cb 5.7×cl 5.0 mm), NSMT-Cr 16206; St. 02-07, ca. 150 m deep, 1 ♀ (cb 5.5×cl 4.7 mm), NSMT-Cr 16207.

Distribution. From Japan to the Andaman Sea, 35-350 m deep.

***Carcinoplax* aff. *tomentosa* Sakai, 1969**

Material examined. St. 02-03, ca. 490 m deep, 1 ♂ (cb 8.0×cl 6.4 mm), 1 juv., NSMT-Cr 16208.

Remarks. Both of the first and second pleopods appear to be well developed, but this specimen may attain bigger size as in the congeneric species. The carapace, ambulatory legs and sternum are entirely covered with short and soft tomentum. This character is one of the specific criteria in some species, but it is possible that the light hairy coat in this specimen is referable to the younger state of the development. The external orbital angle is strongly developed, lobate, and not angulated at all, with its anterior margin having the nearly transverse or only weakly oblique inner part. In the known species including *C. tomentosa*, the external orbital angle is rather angulated as a lobular tooth, or poorly developed as a small tubercle or spiniform tooth, or obsolete. Following the excellent study of Guinot (1989) on the genus *Carcinoplax*, the specimen appears to be close to *C. tomentosa*, and also to the species such as *C. specularis* Rathbun and *C. polita* Guinot, but is too small for the definite identification.

***Goneplax megalops* Komatsu & Takeda 2004**

Material examined. St. 03-04, 52-46 m deep, 1 ♂ (cb 5.8×cl 4.1 mm; cb 6.0×cl 4.2 mm), NSMT-Cr 16209.

Remarks. The specimen at hand is not fully matured, but the general formation of the carapace is quite similar to that of *G. megalops* recently described by Komatsu and Takeda (2004); the external and anterolateral teeth are sharp, directed obliquely forward,

with the latter not exceeding the former. As mentioned in the original description, the closest congener is *G. marivenae* Komatsu & Takeda from the Philippines, but differs from it in having the thickened external orbital and anterolateral teeth, with the tip of the anterolateral tooth exceeding the tip of the external orbital tooth.

Distribution. Originally reported from the Kerama Islands in the southern Ryukyu Islands, off Kushimoto in the Kii Peninsula, some localities around Oshima Island and Omuro-dashi Bank in the Izu Islands, and Okinoyama Bank in the Sagami Sea, occurring at depths of 23–184 m deep.

***Heteroplax nitida* Miers 1879 [Kibagani]**

Material examined. St. 03–04, 137–142 m deep, 1 ♀ (cb 5.2×cl 4.5 mm), NMST-Cr 16210; St. 04–04, 52–46 m deep, 1 ovig. ♀ (cb 5.1×cl 3.7 mm), 1 ♀ (cb 7.4×cl 5.4 mm), NSMT-Cr 16211.

Remarks. The external orbital and first anterolateral teeth are obtuse and directed forward, leaving a shallow notch between them. The dorsal surface is quite smooth and strongly convex fore and aft.

Distribution. Endemic to Japanese waters from Sagami Bay southward to Tosa Bay and also known from northern Kyushu 30–60 m deep. The bathymetric range was extended down to 142 m, and geographic range was also extended to off Amami-Oshima Island.

Family Trapeziidae Miers, 1886

***Calocarcinus* sp.**

Material examined. St. 04–01, 209–191 m deep, 1 ovig. ♀ (cb 5.0×cl 3.7 mm), NSMT-Cr 16217, associated with a species of the Madreporarian Family Oculinidae.

Family Palicidae Rathbun, 1898

***Palicus kyushuensis* (Yokoya, 1933) [Ko-itoashigani]**

Material examined. St. 02–05, ca. 520 m deep, 1 ovig. ♀ (cb 4.1×cl 3.5 mm), NSMT-Cr 16214.

Remarks. According to Castro (2000) who revised the Indo-West Pacific palicid crabs, *Palicus hatusimaensis* Sakai, 1963, is a subjective synonym of *P. kyushuensis* Yokoya, 1933. He discussed the specific identity with great power of persuasion, and designated it as the type species of *Palicus*. The change of this rather well known name, *P. hatusimaensis*, is therefore unavoidable. It is impossible at present to confirm the identification of the East China Sea specimens dealt with by Takeda and Miyake (1968), whose figures disagree with the others in details.

Distribution. From Japan to Madagascar through some localities in the West and South Pacific. Bathymetric range is from 30 to 710 m. Castro (2000) recorded the depths as “known reliably between 50 and 487 m; also collected in trawls between 30–50 and 487–710 m.”

***Rectopalicus amphiceros* Castro, 2000 (Fig. 5D)**

Material examined. St. 02–07, ca. 150 m deep, 1 ovig. ♀ (cb 8.9×cl 8.2 mm), NSMT-Cr 16215; St. 04–12, 123–117 m deep, 1 ♂ (cb 5.5×cl 5.0 mm) NSMT-Cr 16216.

Remarks. The present specimens are generally very close to *Palicus microfrons* Sakai,

1963, which was transferred to the genus *Palicoides* by Takeda (1982) and then synonymized with *Rectopalicus woodmasoni* (Alcock, 1900) by Castro (2000). At present, the first male pleopod with the straight and long inner process and a row of setae illustrated by Takeda (1982) was re-examined, and its accuracy was confirmed. The figures of both authors are basically same, and their seeming difference is possibly due to somewhat different views.

The specimens at hand belong to *R. amphiceros* Castro, not to *R. woodmasoni*, because the first male pleopod is subtruncated at tip, with an angulated tooth at median part of thick shaft. In close comparison with *R. woodmasoni*, the posterior margin of the carapace is fringed with four submarginal crests instead of six and the external orbital tooth is sharply produced, elongated and directed obliquely forward. The specimens at hand are, however, somewhat different from the original descriptions and figures based on the holotype male (cb 4.8×cl 4.6 mm) and the paratype juvenile female (cb 4.5×cl 4.1 mm). In the specimens at hand, the anterolateral border of the carapace is cut into five truncated, coalescent teeth (vs. four subtruncated, isolated teeth), the dactyli of the first to third ambulatory legs are unarmed (vs. armed with thick spines), the shaft of the first male pleopod is unarmed (vs. armed with some teeth along its basal half). These differences may be exposed to the individual or developmental variation, and not of the generic value.

Distribution. Originally reported from New Caledonia, 105–110 m deep. New to Japan. The bathymetric range was extended down to ca. 150 m.

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