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BIOLOGICAL RESULTS OF THE SNELLIUS EXPEDITION XXVIII.

THE GALATHEID CRUSTACEA OF THE SNELLIUS EXPEDITION

by

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With 2 text-figures

During a visit of three weeks to the Rijksmuseum van Natuurlijke Historie, Leiden in 1974, I examined, through the courtesy of Prof. L. B. Holthuis, unidentified galatheid specimens collected by the Snellius Expedition. According to Boschma (1936) collections of biological material were made mostly on shore in order to avoid interference with the principal aim of the expedition which was hydrological and geological investigation in the eastern part of the East Indian Archipelago. Therefore the present material consists mainly of common reef-dwellers; however, a few were collected by dredging. There were also several additional unidentified galatheids in the Museum which were collected from New Guinea, the Maldives and the Seychelles. On examination they proved to be reef-inhabitants and have been included in this report. A total of 17 species are dealt with here, including a new species of *Munidopsis*. For the biological data of the Snellius Expedition the reader is referred to Boschma (1936) which also provides extensive notes on topography.

I am grateful to Dr. L. B. Holthuis for offering me the opportunity and facilities to study these interesting specimens, and to Dr. H. Boschma for encouragement. I thank Miss Janet Haig of the University of Southern California who at my request compared the Ryukyu specimen of *Galathea subsquamata* with the Australian *G. aculeata* and confirmed that they are conspecific. Dr. Fenner A. Chace, Jr. of the Smithsonian Institution kindly reviewed the manuscript.

ACCOUNT OF THE SPECIES

Galathea aegyptiaca Paulson, 1875

Galathea aegyptiaca Paulson, 1875: 94, pl. 12 figs. 1, 1a, 1b; Nobili, 1906: 126, fig. 8, pl. 7 fig. 3; Paulson, 1961: 100, pl. 12 figs. 1, 1a, 1b; Lewinsohn, 1969: 98, fig. 18; Haig, 1974: 447.
Galathea australiensis: Ortmann, 1892: 251, pl. 11 figs. 8, 8a, 8i; Borradaile, 1900: 421; De Man, 1902: 710; Melin, 1939: 56, figs. 32-35; Miyake & Baba, 1966: 60, figs. 3-5.

Material. — "Snellius": Kera, near Timor, 11-13 November 1929 — 3 ♂♂, 1 ovigerous ♀; Obi latoe, northwest of Obi major, 23-27 April 1930 — 3 ♂♂; Talaud Is., 6-10 m deep, 14-21 June 1930 — 2 ♂♂.

Hollandia Bay, New Guinea, 1954, clear water — 1 ♂.

Measurements. — Males 6.8-4.0 mm, ovigerous female 6.4 mm in carapace length, including rostrum.

Diagnosis. — A pair of gastric spines. Second stria on carapace produced forward at middle, with spine somewhat inside of its outer extremity. Pronounced plumose setae on dorsal surface of rostrum, around gastric pair of spines, and on anterior fourth and sixth transverse ridges of carapace. Rostrum as long as broad, with four acute lateral teeth. Basal segment of antennule with three spines distally; more or less pronounced tuft of setae on terminal segment. Merus of third maxilliped with two inner marginals of equal size; one or two spinules on outer margin; if two, proximal sometimes obsolete. Anterior margin of third thoracic sternite rounded, with distinct median notch. Cheliped and walking legs stout, spinose, furnished with plumose setae. Epipod present on cheliped only.

Remarks. — Lewinsohn (1967) was the first to point out that the specimens reported by Ortmann (1892), Melin (1939), Miyake & Baba (1966), etc. as *G. australiensis* should be called *G. aegyptiaca*. *G. australiensis* is apparently a cool-temperate water form and restricted to the Australian waters, whereas the present species appears to be exclusively a tropical-subtropical reef-dweller.

Laurie (1926) mentioned that one of the specimens examined, an ovigerous female from Saya de Malha Bank, has strongly developed rostral setae on the dorsal surface. This may be one of the characteristics of *G. aegyptiaca*, and therefore the specimen should in all probability be referred to the present species.

Distribution. — This species is one of the commonest reef-inhabitants. Previously recorded from the Red Sea, Ternate, Loyalty Islands, Western Australia, Ryukyu Islands and Bonin Islands.

Galathea ternatensis De Man, 1902

Galathea orientalis var. *ternatensis* De Man, 1902: 714.

Galathea ternatensis: Melin, 1939: 67, figs. 39-42; Miyake & Baba, 1963: 405, figs. 1, 2; Haig, 1974: 447.

Galathea providentia Laurie, 1926: 125, pl. 8 figs. 1-4.

Material. — One mile northeast of Roemwakon, Aoeri Group, Geelvink Bay, Dutch New Guinea Exp., 20-25 fms., 21 February 1956 — 1 ♀; 2 miles north of Matas I., Aoeri Is., Geelvink Bay, 18-20 fms., 26 February 1956 — 1 ovigerous ♀.

Suvadiva Atoll, lagoon, Maldive Is., 4 May 1929 — 1 ♀.

Measurements. — Ovigerous female 5.5 mm, non-ovigerous females 4.9-2.7 mm.

Diagnosis. — No gastric spine. A spinule, in most cases, near outer extremity of second stria. A small but distinct spine between anterolateral and above-mentioned spines. Coarse setae sparsely distributed on carapace. Rostrum about twice as long as broad; four rather shallowly separated lateral teeth. Basal segment of antennule with three distal spines; terminal segment with tuft of setae distally. Merus of third maxilliped with three inner marginals and one or two outer marginals. Anterior margin of third thoracic sternite moderately produced with median notch. Distal two claws of dactylus of walking leg pronounced. Epipod on cheliped only.

Remarks. — It is most probable that *Galathea providentia* Laurie originally known from Providence, Indian Ocean is conspecific with this species. As has been pointed out by Miyake & Baba (1963) the only differences between these two species lie in the general arrangement of transverse ridges on the carapace, the ornamentation of long setae on the cheliped, and the armature of the inner (posterior) margin of the merus of the walking legs; these, however, seem to be of no systematic importance.

Distribution. — Ternate, Providence Island, Western Australia, Bonin Islands, and Kyushu, Japan.

Galathea pilosa De Man, 1888

Galathea pilosa De Man, 1888: 460, pl. 19 fig. 4; Miyake & Baba, 1966: 72, figs. 11, 12. *Galathea pilosa*? : Edmondson, 1951: 196, fig. 7.

Material. — "Snellius": Obi latoe, northwest of Obi major, 23-27 April 1930 — 1 ovigerous ♀.

Measurements. — Carapace 8.2 mm long in the ovigerous female.

Diagnosis. — Carapace more or less swollen laterally; transverse ridges distinct and somewhat raised. Two to four gastric spines. A spine near outer

extremity of second stria. Outer orbital angle rounded. Anterolateral spine well developed. Postcervical spine and distinct additional spine behind bifurcation of cervical groove. Rostrum broad, truncated, and dorsally setose; distalmost of lateral teeth small, not exceeding penultimate; proximal situated rather anteriorly. Basal segment of antennule with four distal spines, outermost strong; tuft of setae present on distal segment. Merus of third maxilliped with three inner marginals, all well developed. Anterior margin of third thoracic sternite distinctly produced, with median notch. Cheliped short, massive, thickly covered with plumose setae; palm as long as wide; wrist wider than long. Walking legs stout, short; propodus with two spines on proximal portion of anterior margin. Epipod absent from cheliped and walking legs.

Remarks. — This species is characterized by the peculiar shape of the truncate rostrum. It seems to be restricted to coral reefs but does not occur in large populations. It has been reported from three localities considerably distant from one another, with a few specimens in all.

Distribution. — Previously known from Amboina, Christmas Islands, and Ryukyu Islands.

***Galathea platycheles* Miyake, 1953**

Galathea platycheles Miyake, 1953: 205, figs. 5, 6; Miyake & Baha, 1966: 65, figs. 6, 7.

Material. — "Snellius": Amboina, 0-2 m deep, 6 May 1930 — 1 ♂; Lembah Strait, 25 September 1930 — 1 ♂, 1 ♀; Obi latoe, northwest of Obi major, 23-27 April 1930 — 1 ♂.

Measurements. — Males 3.2-2.5 mm, non-ovigerous female 3.1 mm.

Diagnosis. — Carapace moderately convex dorsally, swollen laterally. No gastric spine. Second stria usually with two pronounced setae at middle. Outer orbital angle pyramidal. Rostrum one and a half times as long as broad; lateral teeth small and shallowly separated. Basal segment of antennule with three terminal spines; no tuft of setae on distal segment. Merus of third maxilliped with two inner marginals and an outer distal marginal. Third thoracic sternite broad and comparatively long, anterior margin distinctly produced with a small median notch. Cheliped short and stout. Epipod present on cheliped only.

Remarks. — This small species, not exceeding 5 mm in carapace length, has previously been found on coral reefs. The male from Amboina here recorded bears a sacculinid parasite.

Distribution. — Known from Formosa and the Ryukyu Islands. The present record extends the known range southward.

Galathea affinis Ortmann, 1892

Galathea affinis Ortmann, 1892: 252, pl. 11 figs. 9a, 9i; Borradaile, 1898: 463; Borradaile, 1900: 421; De Man, 1902: 711; Nobili, 1905: 3; Nobili 1907: 375, pl. 1 figs. 11, 11a; Miyake & Baba, 1966: 57, figs. 1, 2; Lewinsoln, 1969: 112, fig. 21.

?*Galathea affinis*: Gordon, 1935: 4, figs. 1, 3c.

Galathea mauritiana Bouvier, 1915: 23, figs. 10, 11; Laurie, 1926: 125.

Material. — "Snellius": Kera, Timor, 22-23 November 1929 — 1 ovigerous ♀.

Reef near Navy barracks, west of native village of Sorido, Biak I., New Guinea, April 1952 — 2 ovigerous ♀♀; February 1955 — 16 ♂♂, 21 ovigerous ♀♀; 2 May 1955 — 5 ♂♂, 7 ovigerous ♀♀; May 1955 — 7 ♂♂, 3 ovigerous ♀♀; 6 December 1954 — 2 ♂♂, 2 ovigerous ♀♀.

Shore near Base G, coast of Pacific Ocean, north of Hollandia, New Guinea, 12 November 1954 — 2 ♂♂, 1 ovigerous ♀.

Measurements. — Males 5.5-3.0 mm, ovigerous females 5.6-3.6 mm, non-ovigerous females 3.9-2.7 mm.

Diagnosis. — Pair of gastric spines. Outer orbital angle rounded. Rostrum one and one-half times as long as broad; lateral spines acute. Pterygostomian flap with one or two spines on anterior upper margin near pleural suture. Basal segment of antennule with three terminal spines; no tuft of setae on distal segment. Merus of third maxilliped with well-developed spine on inner margin. Anterior margin of third thoracic sternite distinctly produced with usual median notch. Cheliped stout, spinose; outer margin of chela particularly spinose. Epipod absent from cheliped and walking legs.

Distribution. — This is one of the most typical reef-inhabitants; its range is much greater than that of *G. aegyptiaca*. Previously known from the Fiji Islands, Tuamotu Islands, Rotuma Island, Funafuti, Ellice Islands, Ternate, Banda Neira, Loyalty Islands, Red Sea, Farquhar Islands, Coëtivy Islands, Saya de Malha Bank, Chagos Archipelago, and Ryukyu Islands.

Galathea subsquamata Stimpson, 1858

Galathea subsquamata Stimpson, 1858: 252; Henderson, 1888: 118, pl. 12 fig. 4; Stimpson, 1907: 233; Yokoya, 1933: 58; Miyake, 1938: 40, figs. 3A-B.

Galathea aculeata Haswell, 1882a: 761; Haswell, 1882b: 162; Grant & McCulloch, 1906: 48, pl. 4 figs. 4, 4a; McNeill, 1968: 33; Haig, 1973: 280; Haig, 1974: 447.

Material. — "Snellius": Anchorage off Bongao, near Tawitawi, Sulu Is., east side of Sibutu Strait, dredge, ca. 27 m deep, 10-14 September 1929 — 1 ovigerous ♀; Ternate, pier, diving hood, 4 m deep, 1 April 1930 — 1 sp.

Measurements. — Ovigerous female 6.8 mm in carapace length.

Diagnosis. — See diagnosis of *Galathea aculeata* by Haig (1973).

Remarks. — The presence of epipods on the first three pairs of pereopods is one of the characteristics of this species. The smaller specimen, the sex of

which is indeterminable, measures 3.3 mm long. It possesses a small epipod on the first walking leg in addition to the normal one on the cheliped, but no traces of epipods are evident on the second walking leg.

The present material agrees well with the diagnosis of *G. aculeata* given by Haig (1973). Due to insufficient information on the Australian species it was difficult at first to determine whether or not these two species are identical. At my request Miss Janet Haig compared our Ryukyu Islands material of *G. subsquamata* (this selection of material was made because the type-locality of *G. subsquamata* is Amami-ohshima, Ryukyus; and because presumably the type-specimen is no longer available) with the Australian specimen of *G. aculeata*. She concluded, "There is no doubt that *Galathea subsquamata* and *G. aculeata* are conspecific. In some Australian specimens the merus of the third maxilliped is more strongly spined on the outer margin than it is in the Ryukyu specimen; but this is probably subject to variation" (pers. comm.).

Distribution. — Previously taken from Japanese waters, Ryukyu Islands, Philippines, Queensland, and Western Australia. I have also examined a number of specimens from Japanese waters, Palau Islands, and Boucaut Bay, Northern Territory, Australia in the collection of the Zoological Laboratory, Kyushu University; these will be reported elsewhere.

***Galathea algae* Baba, 1969**

Galathea algae Baba, 1969a: 11, fig. 2.

Galathea longimana: Lewinsohn, 1969: 107, fig. 20.

Material. — "Snellius": Obi latoe, 23-27 April 1930 — 1 ovigerous ♀, 2 ♀♀; Ternate, 2-4 m deep, 6 June 1930 — 1 ovigerous ♀; Kera near Timor, 11-13 November 1929 — 2 ovigerous ♀♀; Ternate, pier, diving hood, 4 m deep, 1 April 1930 — 3 ♂♂, 2 ovigerous ♀♀, 2 ♀♀.

Baie Ternay, Mahé I., Seychelles, 70 feet deep, among pieces of coral, end of August 1971 — 1 ovigerous ♀.

Measurements. — Males 3.5-3.0 mm, ovigerous females 4.8-3.2 mm, non-ovigerous females 3.9-3.2 mm.

Diagnosis. — Pair of gastric spines. Three spinules on hepatic region. Outer orbital angle unarmed, with distinct spine just outside of it. Anterior branchial striations subsquamate. Rostrum broad, flat, fully 1.5 times as long as broad. Basal segment of antennule with three terminal spines; no tuft of setae on distal segment. Merus of third maxilliped with two inner marginal spines of large size and two to three small outer marginal spines. Anterior margin of third thoracic sternite with distinct median notch. Propodus of

walking leg with four spines on proximal part of outer (anterior) margin. Epipod present on cheliped only.

Remarks. — There is no doubt that *Galathea longimana* of Lewinsohn (1969) and *G. algae* Baba, 1969 are identical. Originally *G. longimana* was defined by its rostrum more than twice as long as broad, the merus of the third maxilliped with two inner and one outer marginal spines, the long cheliped, and the position of the spines on the carapace (Paulson, 1875). Lewinsohn, on examination of the Red Sea material, mentioned that the specimens before him agreed well with Paulson's, with only a few differences that were outweighed by the characters that were alike. Comparison with Paulson's description and illustration, however, poses a question about the proportional length of the rostrum, a matter not mentioned by Lewinsohn. Both in Lewinsohn's and our material the rostrum is barely 1.5 times as long as broad, when measured from rostral tip to between basal rostral teeth; in Paulson's material it is twice as long as broad. This problem should be left for further study of much more numerous specimens.

The hepatic spinules, usually three in number, are variable; the spinule near the extremity of the second stria is wanting in 5 of the 14 specimens examined; likewise that behind and inside of the outer orbital angle is missing in two specimens. The merus of the third maxilliped is nearly as described by Lewinsohn; however, in two specimens, the distal of the usual two subequal spines on the inner margin is obsolete.

Distribution. — Previously recorded from the Red Sea and Tosa Bay, Japan.

Galathea formosa De Man, 1902

Galathea formosa De Man, 1902: 717, pl. 23 figs. 40, 40a-40f.

Material. — "Snellius": Obi latoe, northwest of Obi major, 23-27 April 1930 — 3 ♂♂, 2 ovigerous ♀♀, 1 ♀.

Measurements. — Males 5.0-3.8 mm, ovigerous females 3.7-3.4 mm, and non-ovigerous female 5.2 mm.

Diagnosis. — No gastric spines. Cervical groove distinct in large specimens. Lateral margins subparallel, with 6 spines. Small spine behind outer orbital angle. Four complete transverse ridges behind cervical groove, other ridges interrupted. Outer orbital angle not produced but armed with spinule. Rostrum broad at base, only slightly longer than broad; basal lateral tooth smaller, other three teeth deeply incised and subequal in length. Basal segment of antennule with three spines distally; pronounced tuft of setae on distal segment. Merus of third maxilliped with one or two minute spines on inner

margin; ischium unarmed on inner distal margin. Cheliped comparatively short, stout, strongly spinose, and sparsely furnished with coarse setae; fingers distally touching each other with three or four teeth. Propodus of walking leg with outer marginal proximal spine; dactylus short, distally bent strongly inwards and clawed. Epipod present on cheliped only.

Remarks. — A trace of the longitudinal broad stripe, originally described as white, remains on the carapace.

Distribution. — Originally known only from Ternate. This is the first subsequent record.

***Galathea ohshimai* Miyake & Baba, 1967**

Galathea ohshimai Miyake & Baba, 1967: 207, fig. 3.

Material. — "Snellius": Obi latoe, northwest of Obi major, 23-27 April 1930 — 1 ♂; Talaud Is., 6-10 m deep, 14-21 June 1930 — 1 ovigerous ♀.

Measurements. — Male 3.7 mm, ovigerous female 3.8 mm.

Diagnosis. — See Miyake & Baba (1967).

Remarks. — The lateral margin of the carapace is usually armed with 6 spines, but in the ovigerous female examined the last (hindmost) is missing on either side. The merus of the third maxilliped is characteristic; the inner margin is armed with two spines, the proximal strong, the distal small; the outer margin bears a distal spine of small size, which is likely to be obsolete. Chelipeds and walking legs are much more thickly furnished with long coarse setae and much stronger in spinosity than they are in the type from the Palau. The dactylus of the walking leg is distally sharp and much more strongly curved inwards than in the type.

Distribution. — This species has only been known from the Palau Islands. Presumably it is confined to tropical reefs.

***Coralliogalathea humilis* (Nobili, 1905)**

Galathea humilis Nobili, 1905: 396; Nobili, 1906: 124, pl. 8 figs. 8, 8a; Riddell, 1911: 262; Lewinsohn, 1969: 117, fig. 22.

Galathea megalochira Nobili, 1907: 376, pl. 1 figs. 12, 12a, 12b.

Galathea tridentirostris Miyake, 1953: 202, figs. 3, 4.

Coralliogalathea humilis: Baba & Javed, 1974: 62, fig. 1.

Material. — Reef near Navy barracks, west of native village of Sorido, Biak I., New Guinea, 2 May 1955 — 1 ♂; from *Seriatopora* sp., 23 March 1955 — 1 ♂, 1 sp.; from *Pocillopora* sp., 22-23 March 1955 — 1 ♂; February 1955 — 1 ♂, 3 ovigerous ♀♀; January 1955 — 1 ♂, 2 ovigerous ♀♀.

Measurements. — Males 3.2-2.8 mm, ovigerous females 2.6-2.4 mm.

Diagnosis. — See Baba & Javed (1974) for diagnosis of the monotypic genus.

Remarks. — Although the present material was included in Lewinsohn's paper (1969), the opportunity is here taken to provide details of information on sex and measurements. At the time of establishing this genus, Baba & Javed (1974) noted: "The first pleopod in male is absent in this genus [*Coralliogalatea*], as is known in *Lauriea* and *Allogalatea*....." "*Allogalatea*" should be replaced with "*Phylladorhynchus*." This is a careless mistake, the fact having been mentioned earlier by Baba (1971).

Distribution. — Recorded from Djibouti, Red Sea, Ryukyu Islands, Madagascar, and Polynesia.

***Lauriea gardineri* (Laurie, 1926)**

Galathea gardineri Laurie, 1926: 131, pl. 9 figs. 1-5; Tirmizi, 1966: 177, fig. 2; Lewinsohn, 1969: 112; Haig, 1974: 447.

Galathea biunguiculata Miyake, 1953: 199, figs. 1, 2.

Lauriea gardineri: Baba, 1971: 53, fig. 1a.

Material. — "Snellius": Beo, Talud Is., 6-10 m deep, 14-21 June 1930 — 1 ovigerous ♀.

Measurements. — Carapace 3.2 mm long in ovigerous female.

Diagnosis. — See diagnosis of the genus (Baba, 1971).

Remarks. — This genus is monotypic. The absence of the first pleopod in the male and the posterior margin of the endopod of the uropod being what is usually the lateral margin are both characteristic of the genus.

Distribution. — Providence Island, Seychelles, Red Sea, Palau Islands, Western Australia, and Kyushu, Japan.

***Phylladorhynchus serrirostris* (Melin, 1939)**

Galathea serrirostris Melin, 1939: 72, figs. 43-47; Miyake & Baba, 1965: 590, figs. 5, 6; Miyake & Baba, 1966: 67, fig. 8.

Phylladorhynchus serrirostris: Baba, 1969a: 4.

Material. — "Snellius": Ternate, 2-4 m deep, 6 June 1930 — 1 ovigerous ♀.

Measurement. — Carapace 3.1 mm long in ovigerous female.

Diagnosis. — Rostrum leaflet-like with one large lateral tooth at base and small one near apex of each side. Carapace rather smooth above, with 8 complete transverse ridges; pair of gastric spines. Outer orbital angle pyramidal. Basal segment of antennule with five terminal spines; distal segment furnished with tuft of setae. Merus of third maxilliped with strong inner

marginal and well-developed outer distal marginal spine. Third thoracic sternite triangular. Epipod absent from pereopods.

Distribution. — Taken from the Bonin Islands and the Ryukyus.

Phylladorhynchus ikedai (Miyake & Baba, 1965)

Galathea ikedai Miyake & Baba, 1965: 588, figs. 3, 4.

Phylladorhynchus ikedai: Baba, 1969a: 5.

Material. — Suvadiva Atoll, lagoon, Maldives, 4 May 1929 — 3 ♂♂, 5 ovigerous ♀♀.

Measurements. — Males 3.0-2.6 mm, ovigerous females 3.0-2.4 mm.

Diagnosis. — Five gastric spines on first stria. Outer orbital angle spined. Basal antennular segment with five terminal spines; tuft of setae on distal segment. Merus of third maxilliped with one or two inner marginals and one outer distal marginal spine well-developed. Third thoracic sternite not quadrate but subtriangular. Epipod absent from all pereopods.

Remarks. — A minute spine near the apex of the rostrum is not mentioned in the original description. In the type it is broken, but in all the specimens recorded here, a slightly developed spine is located near the apex as in the preceding species.

Distribution. — Previously known from the Bonin Islands only.

Allogalatea elegans (Adams & White, 1848)

For synonymy see Haig (1973).

Material. — "Snellius": Amboina, 17 September 1930 — 1 ovigerous ♀; 11-17 Sept. 1930 — 1 ♂; Anchorage off Bongao, near Tawitawi, Sulu Is., dredge, 27 m deep, 9 September 1929 — 1 ♀.

Measurements. — Male 7.3 mm, ovigerous female 9.0 mm, and non-ovigerous female 7.3 mm.

Diagnosis. — Refer to Haig (1973).

Remarks. — The type of *Allogalatea elegans* as well as all specimens examined from Japanese waters have an epipod on the cheliped only; however, epipods were found on the first three pairs of pereopods in a certain specimen from the Palau Islands (Baba, 1969a). The absence of epipods from the first and second walking legs (P₂ and P₃) was confirmed by Haig (1973) in the Eastern and Western Australian specimens. However, the female recorded above from the Sulu Islands, has epipods on the first two pairs of pereopods. I also encountered the same condition in a female from the Philippines, while studying the galatheid collection made by the U.S. "Albatross" Expedition. Both specimens have the rostrum distinctly longer

than the remaining carapace length. However I am at a loss to discover other distinguishing characters between these two forms, i.e., the one having P₁ with epipod and the other having P₁ and P₂ with epipods, and therefore the latter recorded here is merged with *A. elegans* for the time being. Fortunately additional material of this group collected from Eniwetok Atoll, Marshall Islands, was made available to me by C. A. Child of the Smithsonian Institution, as also was the South Pacific material, all commensal with crinoids, collected by David L. Meyer of the University of Cincinnati, Ohio. Results of future studies on this subject will be reported elsewhere.

Distribution. — This species has been taken from the Red Sea, east coast of Africa, Philippines, Japan from Sagami Bay and southward, Bonin Islands, East China Sea, and Eastern and Western Australia.

***Munida elegantissima* De Man, 1902**

Synonymy as given by Haig (1973).

Material. — "Snellius" Sta. 253, 2°51.0'S 128°48.0'E, dredge, 200 m deep, 28 April 1930 — 1 ovigerous ♀.

Measurements. — Carapace 12.5 mm long in ovigerous female.

Diagnosis. — See Haig (1973).

Remarks. — This is one of the two species known to have epipods on the first three pairs of pereopods. The other species, *Munida bellior* Miyake & Baba, is reported from Japanese waters.

Distribution. — Known from the Malay Archipelago, Amirantes, Providence Island, Zanzibar, Gulf of Mannar, Western Australia, and Japan.

***Munida japonica* Stimpson, 1858**

Synonymy as given by Haig (1973).

Material. — "Snellius" Sta. 60, 6°58.0'N 121°52.5'E, dredge, 72-80 m deep, 5 September 1929 — 1 ovigerous ♀.

Measurements. — Carapace 18.7 mm long.

Diagnosis. — See Haig (1973).

Remarks. — This species is said to be highly variable. In the present specimen the following peculiarities are noted: 1) long eye lashes; 2) a transverse row of 13 gastric spines; 3) six spines on the second abdominal segment; 4) antenna with a small inner marginal spine on the second segment; 5) merus of the third maxilliped with four inner marginal and one outer distal marginal spines.

I have had access to the type of Benedict's *Munida honshuensis* (type-locality: off Honshu, Japan) now deposited in the collection of the National Museum of Natural History, Smithsonian Institution, examination of which confirmed to my satisfaction that it is identical with *M. japonica*, as has already been pointed out.

Distribution. — Previously known from the Red Sea, Zanzibar, Mauritius, Providence Island, Western Australia, Bonin Islands, East China Sea, and Japan.

***Munidopsis snelliusae* n. sp.**

Material. — "Snellius" Sta. 253, 2°51.0'N 128°48.0'E, dredge, 200 m deep, 28 April 1930 — 1 ♂ (holotype, RMNH, reg. no. Crust. D. 30350).

Description of holotype. — Carapace longer than broad excluding rostrum, covered with granular tubercles; convexities and borders well developed. Gastric region markedly raised and well defined; pair of pronounced tubercles just behind rostral base. Cardiac area also well defined with deep and wide groove just anterior to area. Posterior transverse ridge raised. Lateral margins subparallel, with distinct notch at usual ending of cervical groove, and feebly developed notch between anterior and posterior branchial regions.

Rostrum broad with lateral margins subparallel and smooth on proximal half; distally triangular with 6 small lateral teeth on either side. Dorsal surface moderately concave; distal half with few fine setae; mesial carina on proximal half provided with tubercles, extending backward to between paired gastric tubercles. Ventral surface carinated longitudinally, with three tubercular teeth on anterior portion.

Abdomen smooth, devoid of granules and tubercles. Second and third segments with two transverse ridges, both well raised. Fourth segment ridged in median portion; no ridges on following segments. Telson consisting of eight plates.

Basal antennular segment stocky, with three terminal spines; dorsal one developed but rather slender, mid-ventral strong, and outer-ventral only slightly produced. Antennal peduncle consisting of four segments. Basal (first) segment produced both on inner and on outer distal margins; inner stronger. Prominent second segmental spine present only on outer distal margin. Following two segments unarmed.

Ischium of third maxilliped shorter than merus, greatly produced at inner distal margin; cutting edge heavily ridged, armed with 16 sharp denticles. Merus widest at proximal third, narrowing distally; blunt inner marginal spine at widest portion; outer distal margin bluntly spined. Few moderately developed tubercular teeth on proximal portion of carpus.

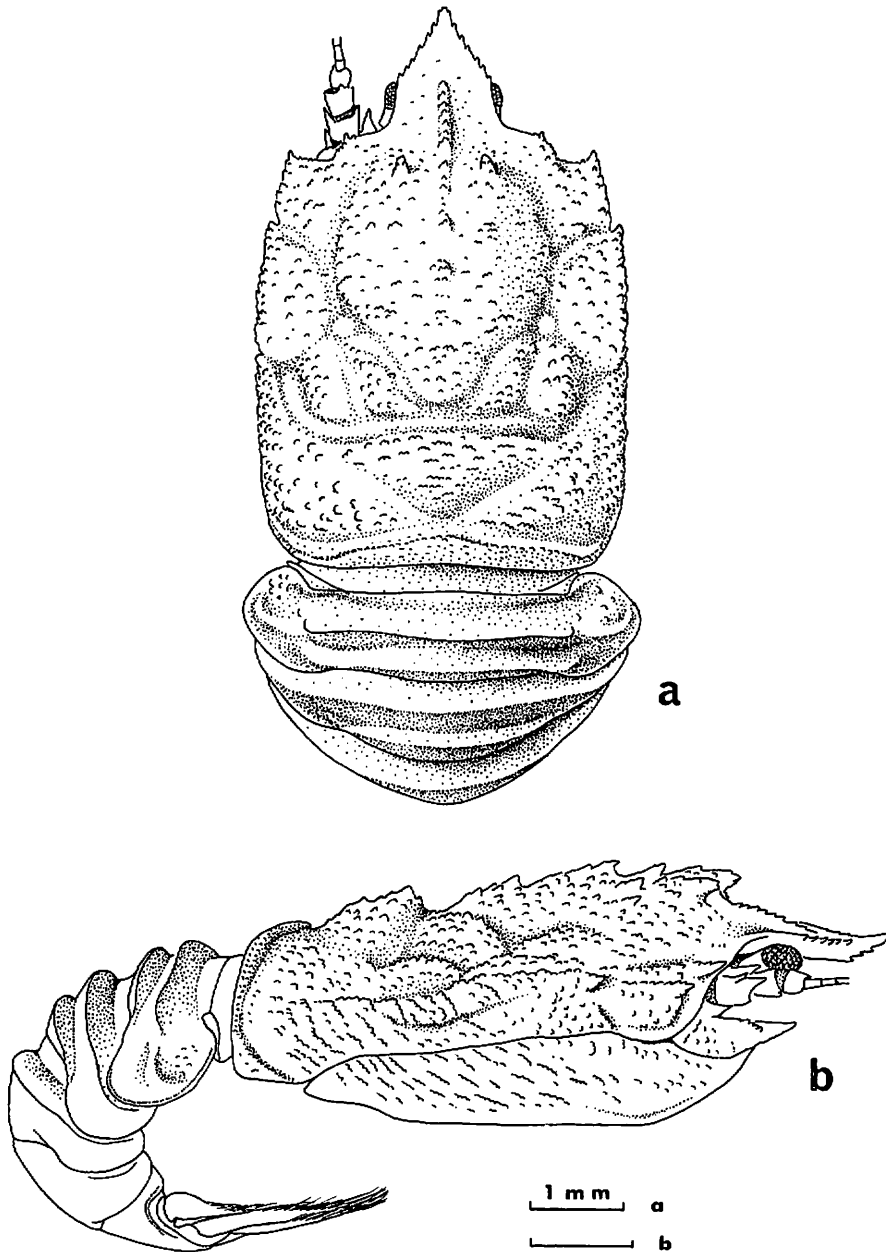


Fig. 1. *Munidopsis snelliusae* n. sp., holotype; a, carapace and abdomen, dorsal view; b, the same, lateral view.

Sternal segments comparatively broad. Third thoracic sternite bearing third maxilliped broader than long; anterior margin slightly sinuous but not distinctly produced.

Chelipeds twice as long as carapace, moderately depressed distally, covered with tubercles; left cheliped only slightly longer. Palm more or less massive, distinctly longer than fingers; outer margin rounded, inner margin weakly ridged. Fingers subequal to wrist in length; immovable finger carinated on outer margin, with small but distinct serration distally. Movable finger slightly ridged laterally. Both fingers carinated weakly on ventral surface, providing deep hollow inside; cutting edges almost straight, and touching each other with tubercular teeth. Distal portions of fingers sparsely furnished with short setae, each armed with 5 pronounced teeth. Arm very granular; distal margin produced where four spines occur in spinous species, i.e., inner, outer and two dorsals.

Walking legs similar and depressed; granulated or tuberculated dorsal surface feebly convex, almost flat. Anterior and posterior margins also tuberculated. Carpus with dorsal longitudinal convexity; outer (anterior) margin armed with more pronounced tubercles. Dorsal convexity of propodus nearer anterior margin. Dactylus weakly bent inwards distally, ending in sharp point; posterior margin armed with 9-10 teeth decreasing in size toward basal portion of segment; short seta arising from base of each tooth.

Epipod present on cheliped.

Measurements of holotype (mm). — Length of carapace including rostrum, 6.2. Breadth of carapace, 4.1. Length of cheliped, 12.9 (left), 12.5 (right). Length of wrist, 2.4 (left), 2.2 (right). Length of palm, 2.7 (left), 2.5 (right). Breadth of palm, 1.6 (left), 1.3 (right). Length of movable finger, 2.2 (left), 2.2 (right).

Remarks. — The new species is closely related to *Munidopsis orcina* McArdle known from the Arabian Sea, from which it differs in having an epipod on the cheliped. Another close relative is *M. latifrons* Faxon, originally known as *M. latirostris* Henderson, but later renamed because of homonymy (Faxon, 1895). Faxon's species is characterized by a short cheliped and the eyestalk fused to the rostrum. As described above, however, the new species has a long cheliped and the eyestalk free and movable.

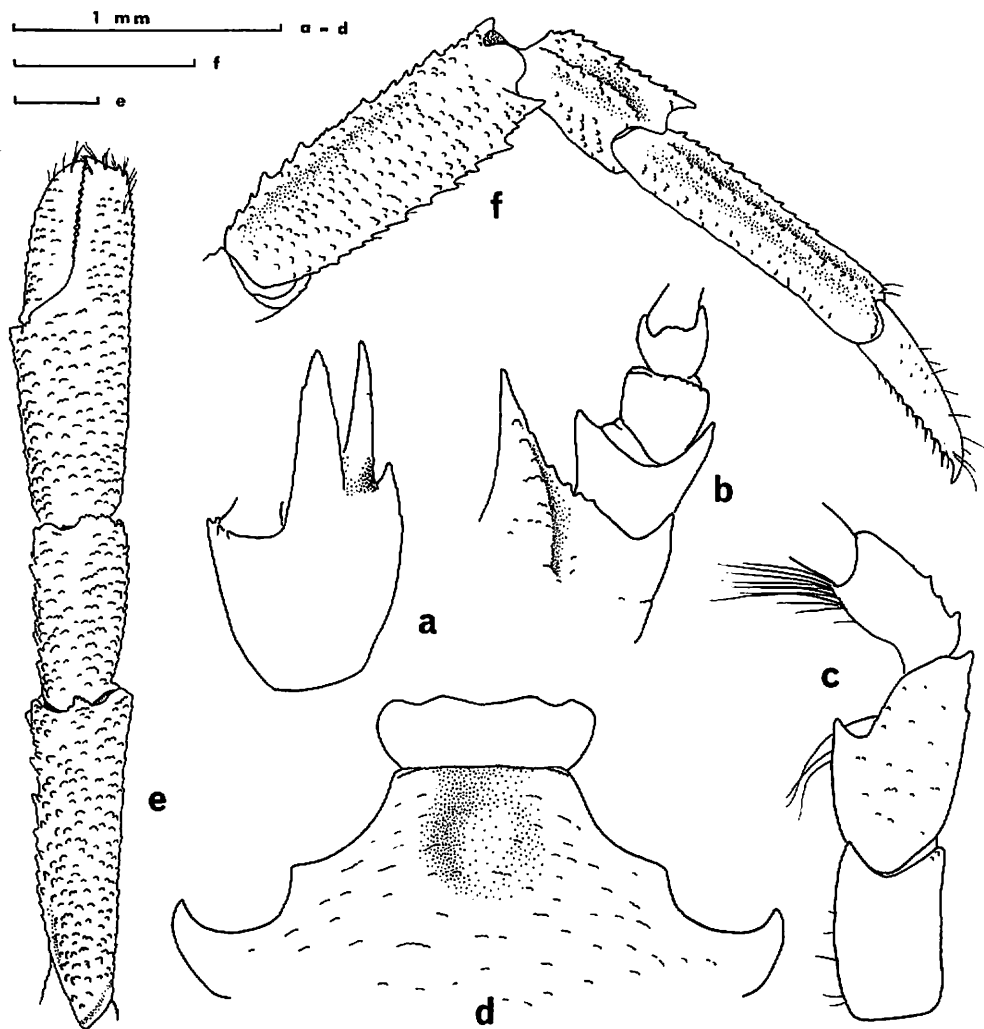


Fig. 2. *Mumidopsis snelliusae* n. sp., holotype; a, basal segment of left antennule; b, left antennal peduncle; c, endopod of left third maxilliped; d, anterior part of sternal segments; e, right cheliped; f, right first walking leg.

REFERENCES

- ADAMS, A. & A. WHITE, 1848. Crustacea. The zoology of the voyage of H.M.S. Samarang 1843-1846: i-viii, 1-66, pls. 1-13. (London).
- BABA, K., 1969a. Four new genera with their representatives and six new species of the Galatheidae in the collection of the Zoological Laboratory, Kyushu University, with redefinition of the genus Galathea. — Ohmu, 2 (1): 1-32.
- , 1969b. New addition to the galatheid fauna of Japan (Crustacea, Anomura). — Ohmu, 2 (2): 33-40.
- BABA, K. & W. JAVED, 1974. Coralligalathea, a new genus of Galatheidae (Crustacea, Anomura) with further notes on its type-species. — Annot. Zool. Jap., 47 (1): 61-64.
- BENEDICT, J. E., 1902. Descriptions of a new genus and forty-six new species of crustaceans of the family Galatheidae, with a list of the known marine species. — Proc. U. S. Nat. Mus., 26: 243-334.
- BORRADAILE, L. A., 1898. On some crustaceans from the South Pacific. — Part II. *Macrura anomala*. — Proc. Zool. Soc. London, 1898: 457-468, pl. 36.
- , 1900. On the Stomatopoda and *Macrura* brought by Dr. Willey from the South Seas. Zoological results based on material from New Britain, New Guinea, Loyalty Islands and elsewhere, collected during the years 1895, 1896 and 1897, by Arthur Willey, 4: 395-428, pls. 36-39.
- BOSCHMA, H., 1936. Biological data. The Snellius-Expedition in the eastern part of the Netherlands East Indies 1929-1930, 6: 1-29, 1 chart.
- BOUVIER, E. L., 1915. Décapodes marcheurs (Reptantia) et Stomatopodes recueillis à l'île Maurice par M. Paul Carié. — Bull. Sci. France Belgique, (7) 48 (3): 178-318, pls. 12-17.
- EDMONDSON, C. H., 1951. Some central Pacific crustaceans. — Occ. Pap. Bishop Mus., Honolulu, 20 (13): 183-243.
- FAXON, W., 1895. Reports on an exploration off the west coasts of Mexico, Central and South America, and off the Galapagos Islands, etc. XV. The stalk eyed Crustacea. — Mem. Mus. Comp. Zool. Harvard, 18: 1-292, pls. A-K, 1-56.
- GORDON, I., 1935. Anomura (excluding Paguridea). Résultats scientifiques du voyage aux Indes Orientales Néerlandaises de LL.AA.RR. le Prince et la Princesse Léopold de Belgique. — Mém. Mus. Roy. Hist. Nat. Belgique, (hors sér.), 3 (17): 1-12.
- GRANT, F. E. & A. R. McCULLOCH, 1906. On a collection of Crustacea from the Port Curtis district, Queensland. — Proc. Linnean Soc. New S. Wales, 31: 2-53, pls. 1-4.
- HAIG, J., 1973. Galatheidea (Crustacea, Decapoda, Anomura) collected by the F.I.S. Endeavour. — Rec. Aust. Mus., 28 (14): 269-289.
- , 1974. The anomuran crabs of Western Australia: Their distribution in the Indian Ocean and adjacent seas. Journ. Mar. Biol. Ass. India, 14 (2): 443-451.
- HASWELL, W. A., 1882a. Description of some new species of Australian Decapoda. — Proc. Linnean Soc. New S. Wales, 6: 750-763.
- , 1882b. Catalogue of the Australian stalk- and sessile-eyed Crustacea: i-xxiv, 1-326, pls. 1-4. (Sydney).
- HENDERSON, J. R., 1888. Report on the Anomura collected by H.M.S. Challenger during the years 1873-76. — Rep. Sci. Res. Voy. H.M.S. Challenger, Zool., 27: i-xi, 1-221, pls. 1-21.
- LAURIE, R. D., 1926. Anomura collected by Mr. J. Stanley Gardiner in the western Indian Ocean in H.M.S. "Sealark."—Trans. Linn. Soc. London, (2) (Zool.) 19 (1): 121-167, pls. 8, 9.
- LEWINSOHN, C., 1967. Beitrag zur Kenntnis und Verbreitung von Galathea australiensis Stimpson, 1858, (Crustacea Decapoda, Anomura, Galatheidae) nebst Beschreibung eines Neotypus. — Zool. Meded. Leiden, 42 (18): 175-187.
- , 1969. Die Anomuren des Roten Meeres (Crustacea Decapoda: Paguridea, Galatheidea, Hippidea). — Zool. Verhand. Leiden, 104: 1-213, pls. 1, 2.

- MCARDLE, A. F., 1901. Natural history notes from the R.I.M.S. ship Investigator. Series III. No. 5. An account of the trawling operations during the surveying-season of 1900-1901. — *Ann. Mag. Nat. Hist.*, (7) 8: 517-526.
- MCNEILL, F. A., 1968. Crustacea, Decapoda & Stomatopoda. — *Sci. Rep. Gt. Barrier Reef Exped.*, 7 (1): 1-98, pls. 1-2.
- MAN, J. G. DE, 1888. Bericht über die von Herrn Dr. J. Brock im indischen Archipel gesammelten Decapoden und Stomatopoden. — *Arch. Naturg.*, 53 (1): 215-600, pls. 7-22a.
- , 1902. Die von Herrn Prof. W. Kükenthal im Indischen Archipel gesammelten Dekapoden und Stomatopoden. — *Abh. Senckenb. Naturf. Ges.*, 25: 467-929, pls. 19-27.
- MELIN, G., 1939. Paguriden und Galatheiden von Prof. Dr. Sixten Bocks Expedition nach den Bonin-Inseln 1914. — *Kungl. Svenska Vetensk.-Akad. Handl.*, (3) 18 (2): 1-119.
- MIYAKE, S., 1938. Galatheids obtained from Oshima, Prov. Kii. — *Annot. Zool. Jap.*, 17 (1): 37-42, pl. 2.
- , 1953. On three new species of Galathea from the western Pacific. — *Journ. Fac. Agr. Kyushu Univ.*, 10: 199-208.
- MIYAKE, S. & K. BABA, 1963. A new record for Galathea ternatensis de Man from Kyushu, Japan. — *Journ. Fac. Agr. Kyushu Univ.*, 12 (4): 405-409.
- , 1965. Some galatheids obtained from the Bonin Islands. — *Journ. Fac. Agr. Kyushu Univ.*, 13 (3): 583-593.
- , 1966. Descriptions of galatheids collected from coral reefs of the Ryukyu Islands. — *Journ. Fac. Agr. Kyushu Univ.*, 14 (1): 57-79.
- , 1967. Descriptions of new species of galatheids from the western Pacific. — *Journ. Fac. Agr. Kyushu Univ.*, 14 (2): 203-212.
- NOBILI, G., 1905. Crostacei de Zanzibar. — *Bull. Mus. Zool. Anat. Comp. Torino*, 20 (506): 1-12.
- , 1906. Faune carcinologique de la Mer Rouge. Décapodes et Stomatopodes. — *Ann. Sci. Nat. Zool.*, (9) 4: 1-347, pls. 1-11.
- , 1907. Ricerche sui Crostacei della Polinesia. Decapodi, Stomatopodi, Anisopodi e Isopodi. — *Mem. Accad. Sci. Torino*, (2) 57: 351-430, pls. 1-3.
- ORTMANN, A., 1892. Die Decapoden-Krebse des Strassburger Museums IV. Die Abtheilungen Galatheidea und Paguridea. — *Zool. Jahrb., Syst.*, 6: 241-326, pls. 11, 12.
- PAULSON, O., 1875. Izsledovanija rakoobraznykh Krasnago Morja s zametkami otnositel'no rakoobraznykh drugikh morei. Chast I. Podophthalmata i Edriophthalmata (Cumacea): i-xv, 1-144, pls. 1-21. (Kiev).
- , 1961. Studies on Crustacea of the Red Sea with notes regarding other seas. Part I. Podophthalmata and Edriophthalmata (Cumacea): i-iv, 1-164, pls. 1-21 (English translation of the original Russian publication 1875).
- RIDDELL, W., 1911. The Anomura. Reports on the marine biology of the Sudanese Red Sea, from collections made by Cyril Crossland XVII. — *Journ. Linn. Soc. London, (Zool.)*, 31: 260-264.
- STIMPSON, W., 1858. Prodromus descriptionis animalium evertibratorum, ... Pars 7. Crustacea, Anomura. — *Proc. Acad. Nat. Sci. Philadelphia*, 10: 225-252.
- , 1907. Report on the Crustacea (Brachyura and Anomura) collected by the North Pacific Exploring Expedition, 1853-1856. — *Smiths. Misc. Coll., Washington*, 49: 1-240, pls. 1-26.
- TIRMIZI, N. M., 1966. Crustacea: Galatheidae. — *Sci. Rep. John Murray Exped.*, 11 (2): 167-234.
- YOKOYA, Y., 1933. On the distribution of decapod crustaceans inhabiting the continental shelf around Japan, chiefly based upon the materials collected by S.S. Sôyo-Maru during the years 1923-30. — *Journ. Coll. Agr. Tokyo Imp. Univ.*, 12: 1-226.