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**Species of the genus *Munidopsis* Whiteaves, 1784 from the
Indian and Pacific Oceans and reestablishment of the genus
Galacantha A. Milne-Edwards, 1880
(Crustacea, Decapoda, Galatheidae)**

ENRIQUE MACPHERSON



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Abstract

Sixty-six species of the genus *Munidopsis* have been studied using specimens collected during numerous French expeditions carried out in the last decades in the deep-waters of the southwest Indian and southwest Pacific Oceans, between 140 and 4400 m. Twenty-five new species are described, and the diagnoses and illustrations of some relatively rare species (*M. africana*, *M. debilis*, *M. lenzii*, *M. moresbyi*, *M. orcina*, *M. sinclairi*, *M. stylirostris* and *M. wardeni*) are provided. The reestablishment of the genus *Galacantha* is proposed, including the descriptions/diagnoses and a key to all species. The genus contains nine species, including three new species (*G. bellis*, *G. diomedea*, *G. quiquei* n. sp., *G. rostrata*, *G. spinosa*, *G. subrostrata* n. sp., *G. subspinosa* n. sp., *G. trachynotus* and *G. valdiviae*). The number of species collected by station is very small (usually one species), probably related to their low densities. However, in some samples, as many as five species have been found. The highest number of species have been observed in the Banda Sea (Indonesia) and Solomon Islands. The new records of some species greatly extend the previously known distribution range of the species.

Key words: Crustacea, Decapoda, Anomura, Galatheidae, *Munidopsis*, *Galacantha*, new species, taxonomy

Introduction

The galatheid crabs of the genus *Munidopsis* Whiteaves, 1874, are commonly found living on the continental slope, usually deeper than 500 m, and on the abyssal plain > 2000 m (Baba 2005). The taxonomic status of the species belonging to this genus has received a remarkable improvement after the studies published in the last decades, demonstrating the existence of more than 200 species (Baba 1988, 2005, Ahyong & Poore 2004, Macpherson & Segonzac 2005, Osawa *et al.* 2006a, b, Schnabel & Bruce 2006 and references cited therein).

The first known species of the genus *Munidopsis* was described in 1853 by Loven using specimens collected on the Scandinavian coasts and under the genus *Galathea* (*G. serricornis*). Four years later (1857), this species was described by Esmark, under the name of *Galathea tridentata*. Both species were cited, as different species, by Stimpson in his *Prodromus* of 1858.

The genus *Munidopsis* was established in 1874 by Whiteaves to include a new species (*M. curvirostra*) collected in the Gulf of St. Lawrence (NW Atlantic Ocean). This species was also reported by Smith (1879) in his account of decapods of the northeastern American coasts.

The high diversity of this genus was mentioned by A. Milne-Edwards (1880) in his preliminary report on the crustaceans collected by the “Blake” during the trawling expedition into the Caribbean Sea and Gulf of Mexico. This author described briefly four new genera to include 22 new species: *Galacantha* (2 species), *Galathodes* (10), *Elasmonotus* (4), and *Orophorhynchus* (6). The formal report of the “Blake” was published some years later (A. Milne-Edwards & Bouvier 1897).

The expeditions carried out during 1878–1885 in the NW Atlantic Ocean by the “Albatross” provided numerous specimens to extend the ranges of *G. rostrata* and *M. curvirostra* to the coast of New England and to the coast of North Carolina, respectively (Smith 1882, 1884). Furthermore, Smith (1883) described a new genus *Anoplonotus* to include a new species (*A. politus*). In his report of 1884 Smith described a new species, named as *Galacantha bairdii*. In a subsequent paper Smith (1885) described two new species: *Munidopsis similis* and *Munidopsis crassa*. These species were further described and illustrated by Smith (1886).

The study of the Anomura collected by the “Challenger” Expedition from around the world was published in a preliminary report (Henderson 1885). This author synonymized the genus *Galathodes* with *Munidopsis* and created a new subgenus *Galathopsis* for species intermediate between *Munidopsis* and *Elasmonotus*. In the final report of the expedition (Henderson 1888), the genus *Orophorhynchus* was synonymized with *Munidopsis* and *Galathopsis* and *Anoplonotus* were suppressed as synonyms of *Elasmonotus*. The genus *Galacantha* was maintained, although he doubted that *G. bairdii* Smith should be included in *Galacantha*. The material collected by the “Challenger” included 9 species of *Munidopsis* (5 new species), 7 species of *Elasmonotus* (6

new species), and 2 species of *Galacantha* (1 new species).

The expeditions carried out in the eastern Pacific Ocean by the “Albatross”, in the Indian Ocean by the “Investigator” and in the eastern Atlantic Ocean by the “Talisman” and “Travailleur” provided an abundant material of these groups, including numerous new species. Faxon (1893), in his preliminary report of the eastern Pacific species, included *Galathodes*, *Orophorhynchus*, *Elasmonotus* and *Anoplomotus* in *Munidopsis*, but treated *Galacantha* separately. A. Milne-Edwards & Bouvier (1894) maintained the four genera created in 1880 and rearranged numerous species (see also A. Milne-Edwards 1883). These authors presented keys for all known genera and species and information about the morphology and distribution of the different taxa. The final report of the “Albatross” was published by Faxon (1895) including the complete description and illustration of 18 new species. He placed the four genera of A. Milne-Edwards into the genus *Munidopsis*. The results of the “Investigator” were published in numerous papers: Wood-Mason (1891), Alcock (1894, 1901), Alcock & Anderson (1894, 1899a, b), Anderson (1896), McArdle (1901), MacGilchrist (1905) and Lloyd (1907). They found numerous new species mostly from the Bay of Bengal and the Arabian Sea. However, Alcock (1901) agreed with Faxon that *Elasmonotus*, *Galathodes* and *Orophorhynchus* could not be separated into well-defined genera, distinct from *Munidopsis*. Furthermore, he considered all of them as subgenera of *Munidopsis* and created a new subgenus: *Bathyankyristes*. During these years, Ortmann (1892) described two new species from Japan: *Galacantha camelus* and *Munidopsis taurulus*. Ortmann (1898) created the subfamily *Munidopsinae* to include all known species of *Munidopsis* and allied genera and subgenera.

Benedict (1902), in his important work on the galatheids, compiled a world list of species, with synonyms, remarks and distributions, and described 14 new species of *Munidopsis*. He included *Galathodes*, *Orophorhynchus* and *Elasmonotus* in *Munidopsis* (101 species), and maintained *Galacantha* (7 species) as a separate genus.

The German deep-sea expedition of the “Valdivia” provided extensive material, including 5 new species (Doflein & Balss 1913). The taxa *Elasmonotus*, *Galathodes* and *Orophorhynchus* were considered as subgenera of *Munidopsis*. They also compiled a world list of species, including some biogeographic data, although ignoring some species listed by Benedict (1902).

Other than the description of *Munidopsis barbarae* from the Bahamas by Boone (1927), as belonging to the genus *Galacantha*, no new species were described until the works of Chace (1939, 1942) on the galatheids from the western Atlantic Ocean. In his account of this group, Chace (1942) discussed the problems encountered in subdividing the large genus into different genera or subgenera. He agreed in the existence of different groups, although the presence of intermediate species between these groups recommend the recognition of only one genus *Munidopsis*. Nevertheless, Tirmizi (1966), in her account of the “John Murray” expedition, recognized the division of subgenera established by Alcock (1901).

The interest in the genus *Munidopsis* continued with the collections made by the “Alaminos” in the Gulf of Mexico and the Caribbean Sea (Pequegnat & Pequegnat 1970, 1971, Mayo 1972, 1974, see also Navas *et al.* 2003), including some new species. Other studies have included new occurrences and descriptions in different Oceans (e.g., Sivertsen & Holthuis 1956, Kensley 1968, Bahamonde 1964, Miyake & Baba 1967, 1970, Khodkina 1973, 1981, Türkay 1975, 1976, Ambler 1980; Williams 1988, Khodkina & Duris 1989, among the others). However, the most important advances in the taxonomy of the genus occurred after the large and complete revisions made by Baba (1988, 2005), and related papers (e.g. Williams & Baba 1989, Baba & de Saint Laurent 1992, Baba & Poore 2002).

Through numerous French expeditions carried out in the last decades in the deep-waters of the Indian and Pacific Oceans, from Madagascar to French Polynesia, a large number of specimens of *Munidopsis* were collected. The present paper includes occurrences of species identified, descriptions of 25 new species, and the reestablishment of the genus *Galacantha*.

Material and methods

Most specimens studied here were collected during a large number of French cruises between 1970 and 2005 along the Indian and Pacific Oceans, and Taiwanese and German cruises in Taiwan and Gulf of Aden, respectively. The list of stations, including positions, depths and dates are listed in the Appendix. The material examined also includes some type material from the “Challenger” and “Valdivia” expeditions, as well as material from the eastern Pacific and Caribbean Sea. Furthermore, for comparative interest, some specimens from the Atlantic Ocean including one new species of the genus *Galacantha* and one of the genus *Munidopsis* are included.

The specimens, including type material, are mostly deposited in the collections of the Muséum National d'Histoire Naturelle, Paris (MNHN). The material collected during the Meteor cruise has been deposited in the Senckenberg Institute (SMF, Frankfurt, Germany). Measurements of specimens represent the postorbital carapace length. Terminology used mainly follows Zariquiey-Alvarez (1952), Baba & de Saint-Laurent (1996), and Baba (2005). The first spine of the lateral margin of the carapace, usually situated in the anterolateral angle, is named as first (anterolateral) spine, and the following spine as second (hepatic) spine. Following Baba (2005) the terms flexor and extensor borders of articles are only used for the maxillipeds and dactylus of the walking legs. The abbreviations used in the text include: Mxp (maxilliped), P1 (pereopod 1, cheliped), P2–P4 (pereopods 2–4, first to third walking legs), M (male), F (female), ovig. (ovigerous). The acronyms are: BMNH (Natural History Museum, London), ICM (Instituto de Ciencias del Mar, CSIC, Barcelona), NTOU (National Taiwan Ocean University, Keelung), RMNH (Nationaal Natuurhistorisch Museum, Leiden), USNM (National Museum of Natural History, Washington, D.C.), and ZMB (Zoologisches Museum, Zentralinstitut der Humboldt-Universität, Berlin).

Systematic account

Class Crustacea

Sub-class Eucarida

Order Decapoda

Family Galatheididae

Genus *Galacantha* A. Milne-Edwards, 1880

Type species: *Galacantha rostrata* A. Milne-Edwards, 1880, by original designation (gender: feminine).

Diagnosis. Carapace subquadrangular, slightly longer than wide, covered with small granules, simple spines, scale-like or spine-like tubercles, dorsally armed with one extremely strong laterally compressed mesogastric, and one moderately large cardiac spines. Lateral margin slightly convex, with 1 or 2 prominent anterior spines. Front margin oblique, without antennal spine. Posterior margin of carapace smooth. Rostrum with rostral spine upturned distally, and sometimes with 2 small subparallel spines or divergent well-developed spines at end of horizontal portion. Small spine ventral to front margin between ocular peduncle and antennal peduncle. Sternites smooth. Second through fourth abdominal tergites with 2 moderately elevated transverse ridges, each anterior ridge with prominent median spine. Eye movable and spineless, corneae subglobular. P1 covered with granules or small spines. P2–P4 long, slender. P2 overreaching P1. P2–P4 dactyli compressed laterally, flexor border moderately curving, bearing proximally diminishing low teeth. Epipods present on P1–P3.

Remarks. The genus *Galacantha* was described by A. Milne-Edwards in 1880, in a preliminary report on the crustaceans collected by the “Blake” during the first major trawling expedition in the Gulf of Mexico and Caribbean Sea. A. Milne-Edwards gave only a brief description, and the formal report of the “Blake” galatheids did not appear until several years later (A. Milne-Edwards & Bouvier, 1897). The genus included two species: *G. rostrata* and *G. spinosa*. *Galacantha* was used as a valid genus by numerous authors: Smith (1882), Filhol (1885), Henderson (1885, 1888), Wood-Mason (1891), Ortmann (1892), Faxon (1893, 1895), Alcock & Anderson (1894, 1896), Anderson (1896), Alcock (1901), Alcock & McArdle (1901), Benedict (1902), Hansen (1908), Stebbing (1908), Balss, 1913, Barnard (1950), Tirmizi (1966) and Kensley (1968).

The genus included numerous nominal species: *G. rostrata* A. Milne-Edwards, 1880, *G. spinosa* A. Milne-Edwards, 1880, *G. bellis* Henderson, 1885, *G. talismani* Filhol, 1884 (different from *G. talismanii* of Henderson, 1888), *G. camelus* Ortmann, 1892, *G. diomedea* Faxon, 1893, *G. investigatoris* Alcock & Anderson, 1894, *G. trachypus* Anderson, 1896, *G. areolata* Wood-Mason, 1891, *G. faxoni* Benedict, 1902, and *G. valdiviae* Balss, 1913. It also included some varieties: *G. diomedea* var. *parvispina* Faxon, 1893, *G. rostrata* var. *investigatoris* Alcock, 1901, and *G. spinosa* var. *trachynotus* Alcock, 1901.

The low number of available specimens at the first part of the last century, and some doubts about the validity of several characters, e.g., shape of spines at end of horizontal portion of rostrum, lead some authors to synonymise some species. For instance Faxon (1895) suggested that *G. bellis*, *G. talismani* and *G. areolata* should be included under *G. rostrata*. The taxonomic position of these species has been maintained until now (see Baba, 2005 and references). Benedict (1902) in his large work on galatheids recognized only seven species: *G. camelus*, *G. faxoni*, *G. investigatoris*, *G. rostrata*, *G. spinosa* and *G. trachynotus*. He considered *G. rostrata* var. *investigatoris* as a full species (*G. investigatoris*) and synonymized *G. talismani*, *G. bellis* and *G. areolata* with *G. rostrata*. Furthermore, he considered *G. spinosa* var. *trachynotus* as a full species, *G. trachynotus*. Doflein & Balss (1913) in their biogeographic revision of the family only included *G. camelus*, *G. diomedea*, *G. rostrata*, *G. spinosa*, *G. trachynotus* and *G. valdiviae*. Later, Chace (1942), in his excellent work on the galatheids from the Caribbean Sea, suggested some important changes at generic and specific levels. First, he considered that the genus *Galacantha* should be included into the genus *Munidopsis* (as the other genera created by A. Milne-Edwards, see Introduction). Chace suggested that the peculiar form of the rostrum was also found in other species: e.g. (*M. expansa* Benedict, 1902, *M. gilli* Benedict, 1902, *M. cubensis* Chace, 1942). Furthermore, *G. camelus* seemed to represent an intermediate step between the genus *Munidopsis* and *Galacantha*, indicating the absence of a clear separation between genera. Second, he synonymized *G. rostrata* with *G. talismani*, *G. bellis*, *G. areolata*, *G. investigatoris* and *G. faxoni*. Nevertheless, he recommended examination of all available specimens (ca. 40) from all oceans in order to obtain additional evidence for their taxonomic position.

After the examination of the material included in the present paper, it was concluded that the genus *Galacantha* is a valid genus, with a combination of characters that are not shared by other species, e.g., carapace with one extremely strong laterally compressed mesogastric spine, and one moderately large cardiac spine, one or two prominent anterolateral spines, rostral spine upturned distally, second through fourth abdominal tergites with anterior ridge each with prominent median spine, eye movable and spineless, P2 always overreaching P1, and epipods present on P1–P3. Additionally, the examination of numerous specimens from different localities of the Indian and Pacific Oceans indicated the constancy of some characters, previously considered as intraspecific variations (e.g. presence/absence and direction of spines at end of horizontal portion of rostrum).

Unfortunately, some taxonomic problems are not completely solved in the present work: (1) *Galacantha faxoni* described originally as *G. rostrata* by Faxon (1893) from individuals collected in the western Pacific Ocean, and named by Benedict (1902) as a new species, have not been examined (but see the Remarks in *G. rostrata*); (2) *G. talismani* was described by Filhol (1885) from individuals collected off northwest Africa. These specimens are probably lost, but the shape and armature of the rostrum and carapace indicate that the

species may be synonymized with *G. rostrata*. Henderson (1888) cited *G. talismanii* in the Banda Sea (Indonesia) from a small juvenile with a long rostral spine and minute subparallel spines at the end of the horizontal portion. Its taxonomic status is uncertain, although it could probably be identified as *G. bellis* (see also under the Remarks of *G. bellis*). Nevertheless, the name *talismani* is used for a valid species (*Munidopsis talismani* A. Milne-Edwards & Bouvier, 1894 from the NW Africa). (3) The type material of *G. areolata* from the “Investigator” has not been examined and, although the original descriptions and illustration are excellent, the status of *G. areolata* and *G. bellis* should re-examined (see under the Remarks of *G. bellis*).

In the present paper, a large number of individuals, belonging to different species, have been examined. Three new species are described (*G. subrostrata*, *G. subspinosa* and *G. quiquei*), the taxonomic position of some species is discussed and some additional data and figures for the all species collected are included.

The species considered in the genus are the following: *G. bellis* Henderson, 1885, *G. diomedae* Faxon, 1893, *G. quiquei* n. sp., *G. rostrata* A. Milne-Edwards, 1880, *G. spinosa* A. Milne-Edwards, 1880, *G. subspinosa* n. sp., *G. subrostrata* n. sp., *G. trachynotus* Anderson, 1896, and *G. valdiviae* Doflein & Balss, 1913.

Key to species of the genus *Galacantha*

1. Carapace with a single prominent spine on anterior lateral margin 2
- Carapace with 2 prominent spines on anterior lateral margin 3
2. Carapace with 2 epigastric spines *G. valdiviae* Balss, 1913
- Carapace without epigastric spines *G. quiquei* n. sp.
3. Rostrum without spines at end of horizontal portion 4
- Rostrum with 2 divergent or subparallel spines at end of horizontal portion 6
4. Abdomen smooth on tergites, tuberculate on pleura. Scale-like ridges in transverse rows on posterior half of carapace *G. diomedae* Faxon, 1893
- Abdomen tuberculate on tergites and pleura. Tubercles in transverse rows on posterior half of carapace 5
5. Mesogastric spine with posterior margin clearly convex. Carapace lateral margin with first (anterolateral) spine more than 3 times longer than second (hepatic) spine *G. spinosa* A. Milne-Edwards, 1880
- Mesogastric spine with posterior margin straight. Carapace lateral margin with first (anterolateral) spine less than 3 times length of second (hepatic) spine *G. subspinosa* n. sp.
6. Rostrum with 2 divergent spines at end of horizontal portion, clearly discernible in dorsal view 7
- Rostrum with 2 small subparallel spines, at end of horizontal portion, not discernible in dorsal view 8
7. Carapace covered with spines *G. trachynotus* Anderson, 1896
- Carapace covered with simple or scale-like tubercles *G. rostrata* A. Milne-Edwards, 1880
8. Abdominal tergite 4 with transverse groove between ridges interrupted medially. First spine (anterolateral) on anterolateral margin of carapace larger than second (hepatic) spine *G. subrostrata* n. sp.
- Abdominal tergite 4 with transverse groove between ridges not interrupted medially. First spine (anterolateral) on anterolateral margin of carapace smaller than second (hepatic) spine *G. bellis* Henderson, 1885

Galacantha bellis Henderson, 1885

(Figs. 1–4)

Galacantha bellis Henderson, 1885: 418; 1888: 167, pl. 19, fig. 6.

Galacantha areolata Wood-Mason in Wood-Mason & Alcock, 1891: 200.—Alcock & Anderson, 1894: 173.—Alcock & Anderson, 1901: pl. 55, figs. 5, 5a.

Galacantha talismanii.— Henderson, 1888: 167, pl. 20, fig. 1.

Galacantha rostrata Alcock, 1901: 275.—Tirmizi, 1966: 206, figs. 23, 24.

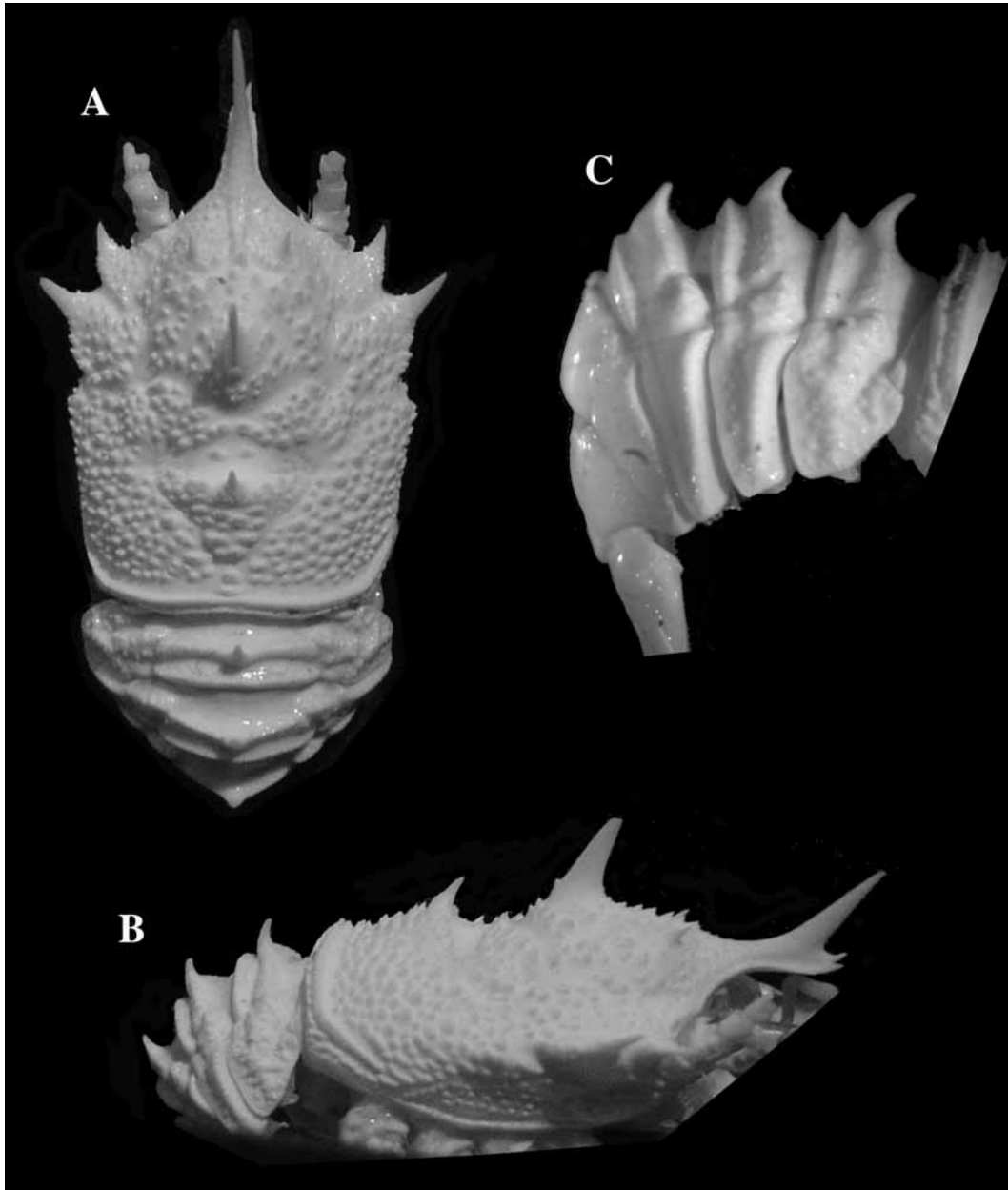


FIGURE 1. *Galacantha bellis* Henderson, 1885, lectotype, male (19.7 mm), off Juan Fernandez, CHALLENGER, Stn 300. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, abdomen, lateral.

Material examined. Chile, off Juan Fernandez, CHALLENGER, Stn 300, 2516 m: 4 M 19.8–26.0 mm, 2 ovig. F 26.6 mm and broken (type series, the male of 19.7 mm is selected as lectotype) (BMNH). Madagascar (A. Crosnier collection), Stn CH 127, 1715–1750 m: 5 M 14.4–16.5 mm, 1 ovig. F 19.9 mm (MNHN-Ga1436).—Stn CH 141, 1600–1725 m: 1 M 16.3 mm, 1 ovig. F 19.1 mm (MNHN-Ga1441). Gulf of Aden, METEOR 5, Stn 257, 2227–2250 m: 5 M 8.6–16.4 mm, 4 ovig. F 18.9–20.8 mm, 3 F 8.7–17.2 mm (SMF).—Stn 262, 1830–1837 m: 1 M 13.0 mm, 1 F 11.4 mm (SMF).—Stn 271, 2276–2282 m: 4 M 15.4–17.6 mm (SMF). W Sri Lanka, SAFARI 2, Stn 3 (CP04), 2475 m: 2 ovig. F 22.0–23.7 mm (MNHN-Ga1565).—Stn 3 (CP05), 2540 m: 10 M 15.8–19.4 mm, 4 ovig. F 15.6–20.1 mm (MNHN-Ga1563).—Stn 4 (CP06), 1035 m: 2 M 17.5–18.9 mm (MNHN-Ga1564). Central Indian Ocean, SAFARI 2, Stn 17 (CP15), 2895–3800 m: 2 males 13.5–18.3 mm (MNHN-Ga1622). Indonesia, Makassar Strait, CORINDON 2, Stn 220, 2340 m: 1 ovig. F 18.6 mm (MNHN-Ga1437). Solomon Islands, SALOMON 1, Stn 1755, 1288–1313 m: 1 F 7.3 mm (MNHN-Ga5489).—Stn 1764, 1327–1598 m: 1 M 13.5 mm (MNHN-Ga5490). New Caledonia, BIOCAL, Stn 62,

1395–1410 m: 1 M 18.2 mm, 2 ovig. F 14.4–16.5 mm, 1 F 8.5 mm (MNHN-Ga5491).—Stn 63, 2160 m: 2 F 14.0–14.2 mm (MNHN-Ga5492). BIOGEOCAL, Stn 260, 1820–1890 m: 1 M 19.0 mm, 2 ovig. F 19.5–28.0 mm (MNHN-Ga5493).—Stn 272, 1615–1710 m: 2 M 17.0–19.5 mm, 1 F 8.7 mm (MNHN-Ga5494).—Stn 317, 1620–1630 m: 10 M 7.3–18.6 mm, 4 ovig. F 16.0–19.9 mm, 3 F 7.3–13.4 mm (MNHN-Ga5495). Wallis & Futuna, MUSORSTOM 7, Stn 621, 1280–1300 m: 1 M 11.3 mm (MNHN-Ga5496).—Stn 623, 1280–1300 m: 1 ovig. F 18.0 mm, 1 F 13.0 mm (MNHN-Ga5497).

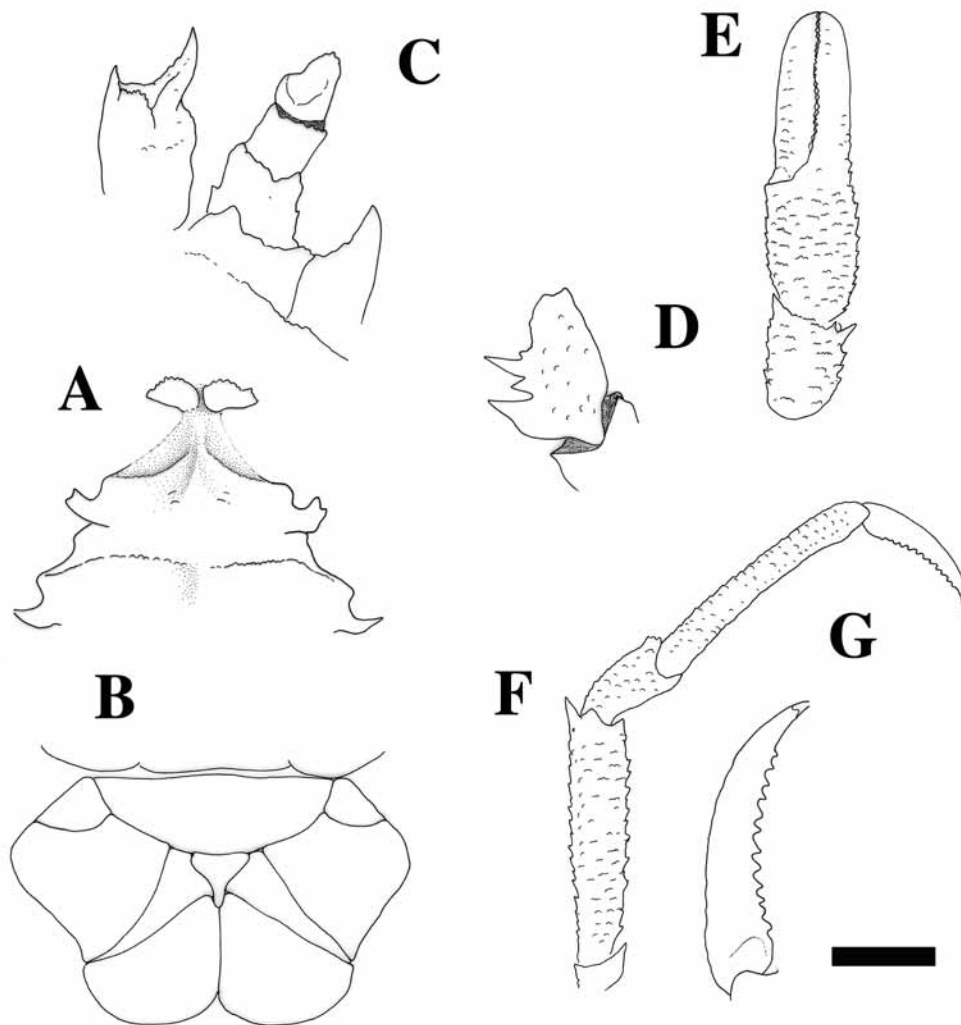


FIGURE 2. *Galacantha bellis* Henderson, 1885, lectotype, male (19.7 mm), off Juan Fernandez, CHALLENGER, Stn 300. A, sternum. B, posterior part of sixth abdominal segment and telson. C, left antennule and antenna, ventral. D, merus of left third maxilliped, lateral. E, right cheliped, lateral. F, right P2, lateral. G, dactylus of right P2, lateral. Scale: A, B, C, D, G = 2 mm; E, F = 5 mm.

Description. Carapace slightly longer than broad, covered with simple, scale-like or spine-like tubercles, dorsally armed with 2 well-developed epigastric, one extremely strong laterally compressed mesogastric, and one moderately large cardiac spines. Gastric and cardiac regions somewhat inflated. Lateral margins slightly convex, with 2 prominent anterior spines and lobe-like process at midlength, first spine (anterolateral) smaller than second spine (hepatic). Front margins oblique, without antennal spine. Posterior margin of carapace smooth. Rostrum with 2 small spines at anterior end of horizontal portion, not discernible in dorsal view, some additional granules near each spine; rostral spine slightly smaller than mesogastric spine, upturned distally, forming variable angle of 45–90° with horizontal portion; width of rostrum (measured at level of end corneae) subequal to that of corneae; horizontal portion reaching or slightly overreaching antennal peduncle.

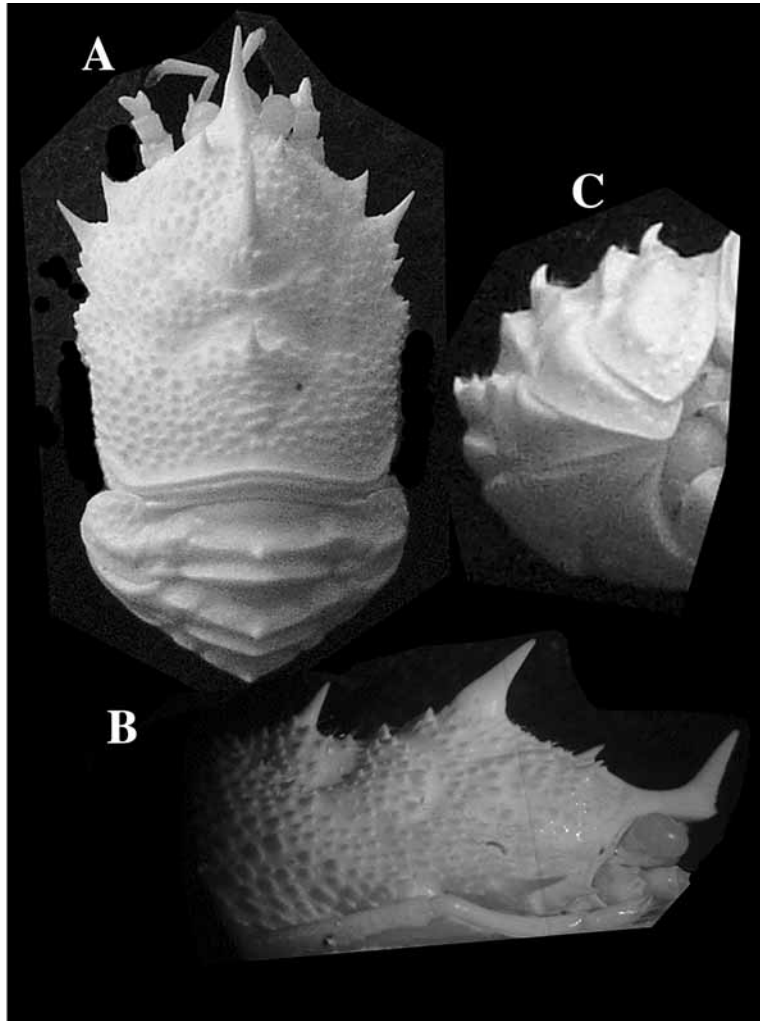


FIGURE 3. *Galacantha bellis* Henderson, 1885, ovigerous female (19.1 mm), Madagascar, CH 131. A, carapace and abdomen, dorsal. B, carapace, lateral. C, abdomen, lateral.

Sternites smooth. Sternite 3 bilobate, separated by notch, about one-third width of sternite 4; each lobe slightly wider than long, with lateral margin rounded, anterior margin granulated; ridges demarcating sternites 4–7 feebly granular; sternite 4 truncate subtriangular, relatively narrow anteriorly.

Adominal tergites 2–4 with 2 moderately elevated transverse ridges, each anterior ridge with prominent median spine, spine on tergite 4 clearly smaller than preceding spines; tergite 4 with transverse groove between ridges not interrupted medially. Pleura of tergites 2 and 3 with numerous granules of variable sizes, less numerous on tergite 4. Tergite 5 smooth, anterior ridge low, usually with a few small granules. Tergite 6 having slightly convex posterior margin, not overreaching posterolateral lobes. Telson divided into 10 plates, midlateral plates with stiff setae in male; posterior plates combined nearly twice as wide as long.

Eye movable and spineless, corneae subglobular.

Basal article of antennule with one very small distomesial, one strong distolateral, and one small dorsolateral spines, last one occasionally absent; distoventral margin with broad, thin, dentate process.

Antennal peduncle nearly spineless; basal article with small distomesial process, and slightly wider than basal article of antennular peduncle.

Mxp 3 merus with 3 or 4 spines on flexor margin, proximal spine largest extensor margin unarmed; mesial ridge of ischium bearing 16–21 denticles.

P1 covered with tubercles and granules, 1.2–1.6 (females), 1.5–1.9 (males) times carapace length, nearly

spineless; merus and carpus with a few terminal spines, carpus as long as palm, 1.3–1.6 times longer than wide; palm 1.3–1.7 times longer than wide, fingers distinctly longer than palm, distally spooned, prehensile edges crenulate.

P2–P4 long, slender, with numerous granules, subcylindrical; P2 overreaching P1, and 1.6–2.0 times carapace length. P2 merus 5–7 times longer than high, 3.0–3.5 times length of carpus, 1.5 times length of propodus, slightly longer than that of P3 and 1.3–1.4 times that of P4, slightly overreaching rostrum, having distal spine on dorsal margin; carpus with dorsolateral granulated crest; propodus 6.5–8.0 times longer than high, 1.4–1.8 times dactylus length, ventral margin unarmed; dactylus compressed laterally, flexor border moderately curving, bearing 10–13 proximally diminishing low teeth, ultimate tooth rather remote from end of dactylus and much closer to penultimate; distal half of extensor margin with numerous uniramous setae.

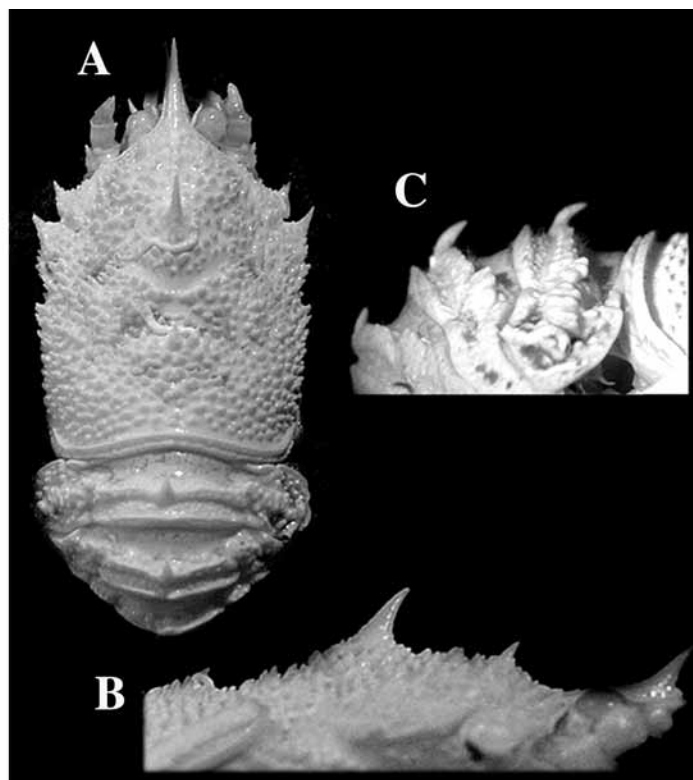


FIGURE 4. *Galacantha bellis* Henderson, 1885, male (21.6 mm), Central Indian Ocean, SAFARI 2, Stn 05. A, carapace and abdomen, dorsal. B, carapace, lateral. C, abdomen, lateral.

Variations. The rostral spine forms a variable angle of 45–90° with the horizontal portion. In the type series, as well as in the other specimens examined, the angle is 45°–60°, but in some specimens from Madagascar, the angle is nearly 90° (Fig. 3), as in the original illustrations of *G. areolata* (Alcock & Anderson, 1901). The pleura of the abdominal segments 2–5 are strongly granulated in some specimens (Fig. 4), being smoother in the type series. Furthermore, P1 and P2–P4 are often more slender in the individuals from Sri Lanka and the western Pacific than in the type series. The two small spines at anterior end of horizontal portion of the rostrum are always not discernible in dorsal view, and the first spine (anterolateral) of the carapace is also always smaller than the second spine (hepatic).

Remarks. *Galacantha bellis* belongs to the group of species with the rostrum having two small and sub-parallel spines at the end of the horizontal portion, not visible in dorsal view, the second spine (hepatic) of the carapace margin clearly longer than the first spine (anterolateral), the fourth abdominal tergite with a transverse groove between ridges not interrupted medially, and the pleura of second and third abdominal tergites with numerous granules, less numerous on the fourth tergite. The closest species is *G. subrostrata* n.sp. from

the northeast Atlantic (see below for the differences between both species).

The morphological variations among specimens from different localities are not constant, suggesting the presence of a single variable species. Unfortunately, the types of *G. areolata* have not been examined. However, the similarity with the illustrations provided by Alcock & McArdle (1901), suggests that all specimens belong to the same species. The rostrum of some small specimens, clearly longer than in large individuals, suggests that the juvenile of *G. talismanii* collected in the Banda Sea by Henderson (1888) could be referred to the present species. Therefore, the variations observed in *G. bellis* require further study, including molecular data, in order to confirm the existence of a single or several species.

Distribution. Chile, off Valparaiso (2516 m); Bay of Bengal, Laccadive Sea (1958–2397 m). The present material was collected from Madagascar, the Arabian Sea, Sri Lanka, central Indian Ocean, Makassar Strait (Indonesia), Solomon Islands, New Caledonia, and Wallis and Futuna area, between 1035 and 3800 m.

Galacantha diomedae Faxon, 1893

(Fig. 5)

Galacantha diomedae Faxon, 1893: 180; 1895: 79, pl. 25, figs. 1, 1a–d.

Munidopsis diomedae.—Haig & Wicksten, 1975: 101.—Luke, 1977: 28.—Wicksten, 1989: 315 (list).—Khodkina, 1991: 73.—Baba, 2005: 288.

Galacantha diomedae var. *parvispina* Faxon, 1893: 181; 1895: 80, pl. 25, fig. 2.

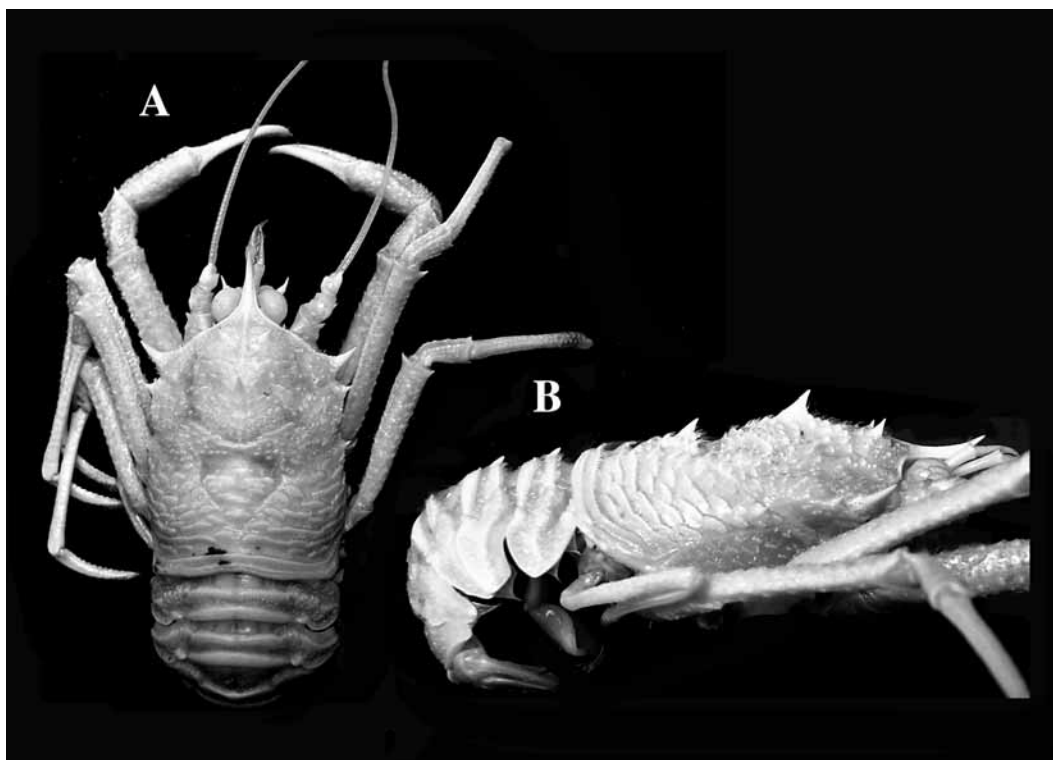


FIGURE 5. *Galacantha diomedae* Faxon, 1893, male (25.5 mm), Gulf of California (USNM). A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral.

Material examined. Gulf of California, Guaymas Basin, 1980 m: 1 M 25.5 mm (USNM).

Diagnosis. Carapace covered with small tubercles, scale-like ridges in transverse rows on posterior half of carapace; dorsally armed with 2 short epigastric, one well-developed laterally compressed mesogastric, and one short cardiac spines; posterior margin of mesogastric spine straight. Lateral margins subparallel, with 2 prominent anterior spines, and small spine at midlength, first spine (anterolateral) more than 3 times larger

than second spine (hepatic). Rostrum overreaching third antennal segment, spiniform, without additional spines, slightly upturned and without horizontal portion. Abdominal tergites 2–4 with 2 moderately elevated transverse ridges; smooth on tergites, tuberculate on pleura, each anterior ridge with short median spine, spine on fourth tergite clearly smaller than preceding spines; transverse grooves between ridges not interrupted medially. P1 covered with granules, about 1.5 times carapace length, nearly spineless; merus and carpus with a few terminal spines, carpus slightly shorter than palm, with a few terminal spines; palm as long as wide, fingers about 1.5 times longer than palm, distally spooned, prehensile edges crenulate. P2–P4 long, slender, sub-cylindrical. P2 overreaching P1.

Distribution. Eastern Pacific Ocean, from south of California to off Arica, Chile, between 768 and 3775–3790 m, including active hydrothermal sites (Khodkina 1991).

***Galacantha quiquei* n. sp.**

(Figs. 6, 7, 55A)

Material examined. Solomon Islands, SALOMON 2, Stn 2230, 837–945 m: 1 M 7.2 mm (MNHN-Ga5450).—Stn 2251, 1000–1050 m: 1 M 15.7 mm (MNHN-Ga5451). New Caledonia, BIOCAL 1, Stn 62, 1395–1410 m: 1 M 12.3 mm (MNHN-Ga5728).—Stn 68, 1430–1470 m: 2 ovig. F 18.0–18.5 mm (MNHN-Ga5452).—Stn 69, 1220–1225 m: 1 ovig. F 20.5 mm (MNHN-Ga5729). HALIPRO 2, Stn BT77, 1349–1350 m: 1 M 15.3 mm. BATHUS 1, Stn 661, 960–1100 m: 1 F 15.4 mm, 1 F 10.8 mm. NORFOLK 2, Stn 2131, 1114–1190 m: 1 M 17.5 mm, 1 ovig. F 22.4 mm (MNHN-Ga5453). Vanuatu, MUSORSTOM 8, Stn 956, 1175–1210 m: 1 M 9.7 mm.—Stn 990, 980–990 m: 1 M 17.0 mm.—Stn 1036, 920–950 m: 1 M 8.5 mm.—Stn 1037, 1058–1086 m: 1 F 19.6 mm (MNHN-Ga5454).—Stn 1126, 1210–1260 m: 1 M 9.2 mm. Fiji, MUSORSTOM 10, Stn 1361, 1068–1091 m: 1 M 8.1 mm, 1 ovig. F 16.2 mm, 1 F 10.2 mm. BORDAU 1, Stn 1458, 1216–1226 m: 2 F 6.1–9.6 mm (MNHN-Ga5455). Wallis and Futuna, MUSORSTOM 7, Stn 620, 1280 m: 1 M 20.4 mm (MNHN-Ga5549), 1 M 19.6 mm, 1 F 6.8 mm (MNHN-Ga5737).—Stn 621, 1280–1300 m: 1 M 16.0 mm.—Stn 622, 1280–1300 m: 1 M 20.4 mm, 1 ovig. F 16.0 mm.—Stn 623, 1280–1300 m: 1 M 16.0 mm, 1 ovig. F 20.0 mm.

Types. The male of 20.4 mm from MUSORSTOM 7, Stn 620 is the holotype (MNHN Ga 5549). The other specimens are paratypes.

Etymology. The species is dedicated to the phycologist Quique Ballesteros for his friendship and support to taxonomy.

Description. Carapace slightly longer than broad, covered with small setigerous granules, short setigerous scales on branchial regions; epigastric spines absent, one strong laterally compressed mesogastric, and one moderately large cardiac spines. Gastric and cardiac regions somewhat inflated. Lateral margin slightly convex, smooth, with prominent first (anterolateral) spine, second (hepatic) spine absent, and one well-developed spine at midlength. Front margin moderately oblique, without antennal spine. Posterior margin of carapace smooth. Rostrum with 2 small spines, discernible in dorsal view, at end of horizontal portion, rostral spine smaller than mesogastric spine, upturned distally, forming angle of 60° with horizontal portion; width of rostrum (measured at level of end of corneae) clearly wider than corneae; horizontal portion reaching end of antennal peduncle.

Sternites smooth. Sternite 3 bilobate, separated by notch, about one-third width of sternite 4; each lobe as wide as long, with lateral margin rounded, anterior margin granulated; ridges demarcating sternites 4–7 feebly granular. Sternite 4 truncate subtriangular, relatively narrow anteriorly.

Abdomen smooth with numerous short and uniramous setae. Abdominal tergites 2–4 with 2 low transverse ridges, posterior ridge on somite 4 absent, each anterior ridge with prominent median spine, spine on tergite 4 clearly smaller than preceding spines; each transverse groove between ridges interrupted medially.

Pleura of tergite smooth. Tergite 5 smooth. Tergite 6 having slightly convex posterior margin, not overreaching posterolateral lobes. Telson divided into 10 plates, midlateral plates with stiff setae in male; posterior plates combined nearly twice as wide as long.

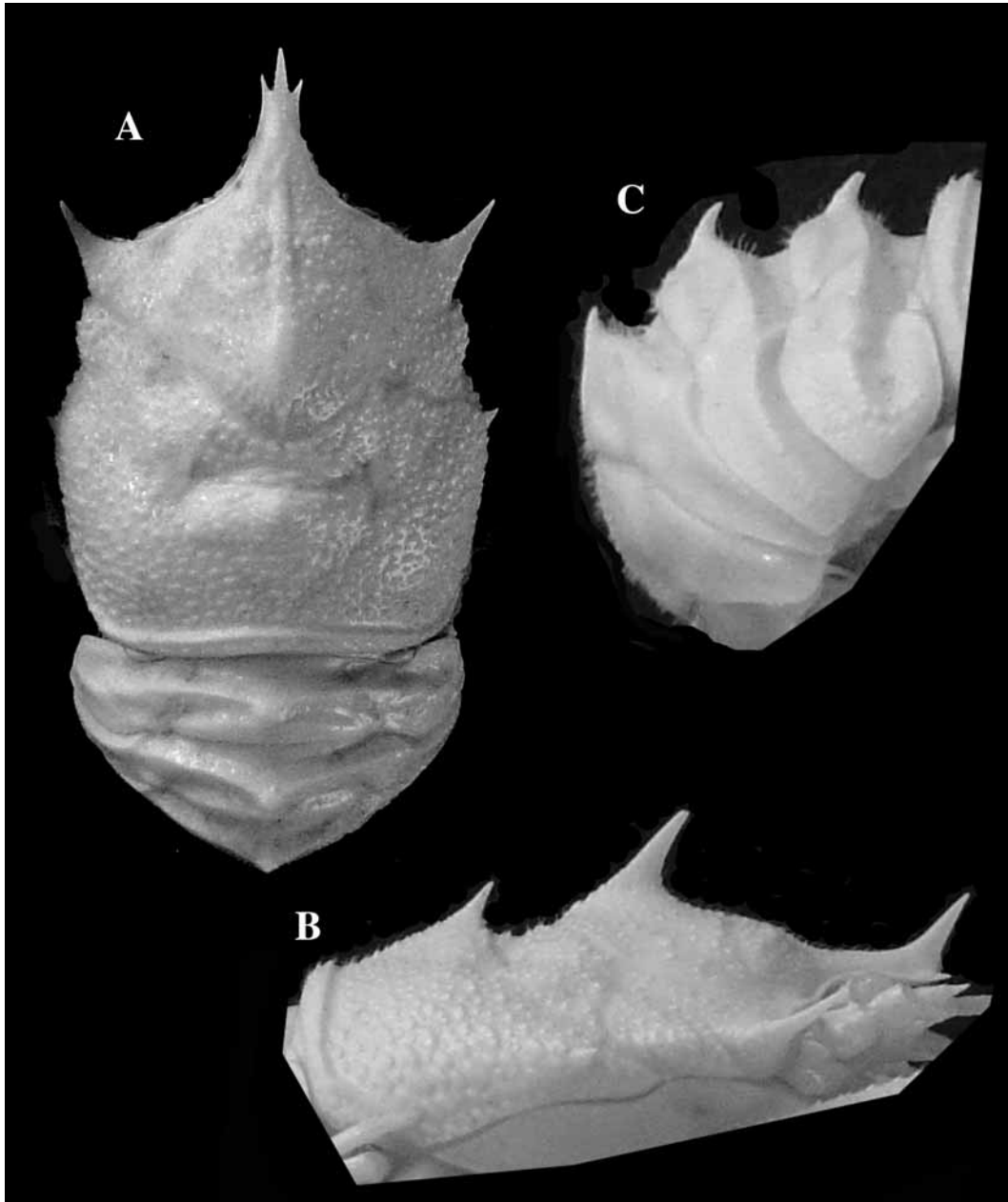


FIGURE 6. *Galacantha quiquei* n. sp., holotype, male (20.4 mm), Wallis and Futuna, MUSORSTOM 7, Stn 620. A, carapace and abdomen, dorsal. B, carapace, lateral. C, abdomen, lateral.

Eye movable and spineless, corneae subglobular.

Basal article of antennule having dorsolateral spine smaller than distolateral, distomesial margin with broad, thin, dentate process.

Antennal peduncle nearly spineless; article 1 with distomesial spine.

Mxp 3 merus with 2 spines on flexor margin, proximal spine largest, extensor margin unarmed; mesial ridge of ischium bearing 16–18 denticles.

P1 covered with small granules, nearly spineless, and 1.5–1.6 times carapace length; merus with a few terminal spines, carpus as long as palm, 1.3–1.5 times longer than wide, with several terminal spines; palm 1.2

times longer than wide, fingers 1.3–1.6 longer than palm, distally spooned, prehensile edges crenulate.

P2–P4 long, slender, with numerous granules, subcylindrical. P2 overreaching P1 and nearly twice carapace length; meri 2.5 times length of carpus, 1.4 times length of propodus and 5–6 times longer than high, slightly longer than that of P3 and 1.3 times that of P4, overreaching rostrum, having distal spine on dorsal and ventral margin; carpus having dorsolateral granulated crest, with distal spine on dorsal margin; propodus 6–8 times longer than high, 1.7 times dactylus length, ventral margin unarmed; dactyli compressed laterally, flexor border moderately curving, bearing 11–14 proximally diminishing low teeth, ultimate tooth rather remote from end of dactylus and much closer to penultimate; distal half of extensor margin with numerous uniramous setae.

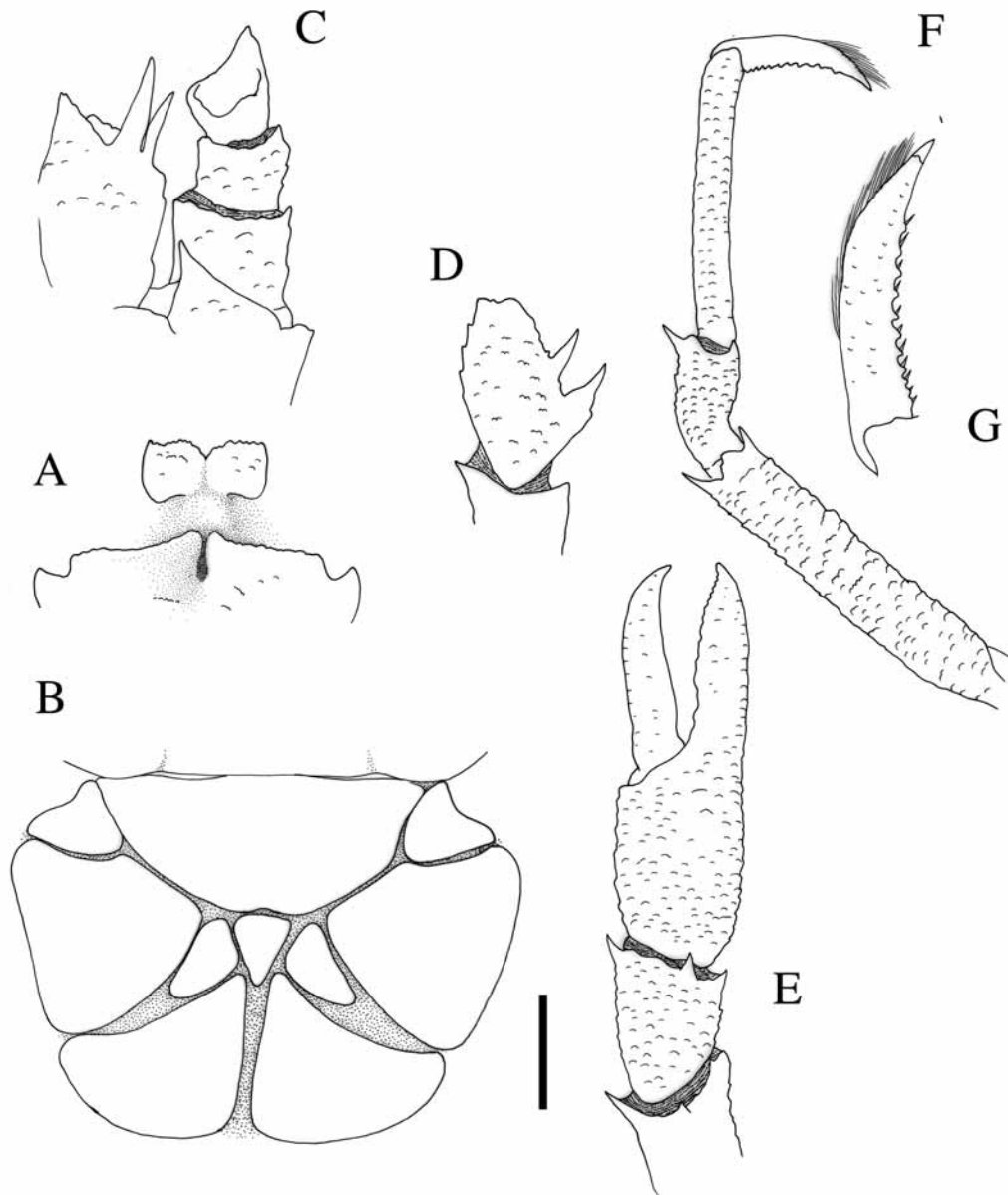


FIGURE 7. *Galacantha quiquei* n. sp., holotype, male (20.4 mm), Wallis and Futuna, MUSORSTOM 7, Stn 620. A, sternum. B, posterior part of sixth abdominal segment and telson. C, left antennule and antenna, ventral. D, merus of right third maxilliped, lateral. E, right cheliped, lateral. F, right P2, lateral. G, dactylus of right P2, lateral. Scale: A, B, C, D, G = 2 mm; E, F = 5 mm.

Colour. Carapace reddish, with a broad white transverse band at midlength; mesogastric spine white. Median portion of abdominal segments whitish, pleura reddish. P1 with mesial sides of merus, carpus and

palm reddish, dorsal and lateral sides whitish, fingers red. P2–P4 whitish, ventral margins of meri to propodi red, dactyli red.

Remarks. The new species is closely related to *G. valdiviae* Balss, 1913 (see below). Both species have the carapace covered with small setigerous granules, and short setigerous scales on branchial regions, the rostrum with 2 small divergent spines at the end of horizontal portion, discernible in dorsal view, with one strong anterolateral spine and one well-developed spine at midlength. The two species can be easily differentiated by the absence of the pair of epigastric spines in the new species, whereas these spines are always present in *G. valdiviae*. Furthermore, the lateral branchial spine is clearly longer in *G. valdiviae* than in *G. quiquei*.

Distribution. Solomon Islands, New Caledonia, Vanuatu, Fiji, Wallis and Futuna Islands, between 835 and 1470 m.

***Galacantha rostrata* A. Milne-Edwards, 1880**

(Fig. 10I, J)

Galacantha rostrata A. Milne-Edwards, 1880: 52.—Smith, 1882: 21, pl. 9, figs. 2, 2a; 1884: 355.—Milne-Edwards & Bouvier, 1894: 271.—Faxon, 1895: 78, pl. B, figs. 1, 1a.—Milne-Edwards & Bouvier, 1897: 60, pl. 4, figs. 21–24; 1900: 308, pl. 6, fig. 9.—Hansen, 1908: 35.—Stebbing, 1908: 20.—Barnard, 1950: 494, fig. 92e–f.—Kensley, 1968: 292.

Munidopsis rostrata.—Smith, 1885: 493; 1886: 45, pl. 6, figs. 1, 1.—Chace, 1942: 75.—Khodkina, 1975: 263, figs. 1, 3.—Baba, 1982: 112; 1988: 161; 1994: 18; 2005: 180, 294.—Wenner, 1982: 370.—de Saint Laurent, 1985: table 2.—Baba & Poore, 2002: 239, fig. 5.—Ahyong & Poore, 2004: 56.—Macpherson & Segonzac, 2005: 41.

Galacantha Talismani Filhol, 1885: pl. 3 (not *Galacantha talismanii* of Henderson, 1888: 167, pl. 20, fig. 1).

Galacantha investigatoris Alcock & Anderson, 1894: 173; 1895: pl. 12, figs. 4, 4a.

Galacantha rostrata var. *investigatoris*.—Alcock, 1901: 276.

Galacantha faxoni Benedict, 1902: 304 (new name for seven specimens of *M. rostrata* from “Albatross” St. 3362, 3400, 3414 reported by Faxon (1895)).

Not *Galacantha rostrata*.—A. Milne-Edwards & Bouvier, 1900: pl. 6, fig. 9 (= *G. spinosa* A. Milne-Edwards, 1880).

Not *Galacantha rostrata*.—Alcock, 1901: 275 (= *G. bellis* Henderson, 1885).—Alcock & Anderson, 1901: pl. 55, figs. 5, 5a.—Tirmizi, 1966: 206, figs. 23, 24.

Not *Munidopsis rostrata*.—Miyake, 1982: 144, pl. 48, fig. 4 (= *G. subspinosa* n. sp.) (see Baba, 1988).

Material examined. Madagascar (A. Crosnier collection), Stn 132, 1800–2000 m: 2 M 20.2–27.7 mm (MNHN-Ga1438).—Stn CH 138, 1800–2000 m: 1 M 14.0 mm, 1 F 14.2 mm (MNHN-Ga1439).—Stn 141, 1600–1725 m: 1 F 12.4 mm (MNHN-Ga1440). NE Madagascar, Mozambique Channel, BENTHEDI, Stn 13, 2300–2500 m: 1 F 17.9 mm (MNHN-Ga1574).—Stn 31, 1800 m: 1 F 27.3 mm (MNHN-Ga1575). New Caledonia, BIOGEOCAL, Stn 260, 1820–1980 m: 1 M 21.5 mm, 1 ovig. F, 28.0 mm, 1 F 26.0 mm (MNHN-Ga5456).—Stn 273, 1920–2040 m: 3 males 22.5–29.0 mm (MNHN-Ga5457).

Remarks. *G. rostrata* is clearly differentiable from the other species of the genus by the shape of the rostrum and the relative size of the lateral spines of the carapace. The rostrum has always 2 lateral divergent spines at the end of the horizontal portion, clearly discernible in dorsal view. Furthermore, the first and second lateral spines of the carapace are large and usually subequal. The specimens from New Caledonia have the mesogastric spine with the posterior margin straight, whereas this margin is slightly convex in the Atlantic material. As in *G. bellis*, additional studies, including molecular analyses, are recommended to elucidate the existence of a single or several species.

The specimens identified as *G. faxoni* by Benedict (1902) and deposited in the USNM (a figure of a male from Cocos Islands, Albatross Stn 3362, was kindly provided by K. Baba), have the first lateral (anterolateral) spine of the carapace clearly smaller than the second (hepatic) spine. Considering that most specimens of *G. rostrata* have the first and second lateral spines of the carapace subequal, the existence of a separate species from the Eastern Pacific should be considered. A more complete comparison of specimens from the Atlantic

and Pacific Oceans would clarify their taxonomic status.

Distribution. The species is known from numerous localities of the western and eastern Atlantic, Indian Ocean, and western and eastern Pacific, from low to high latitudes (see Baba 2005 for the list of localities). The species occurs between 1600 and 3294 m. The present material was collected in Madagascar (1600–2500 m) and New Caledonia (1820–2040 m).

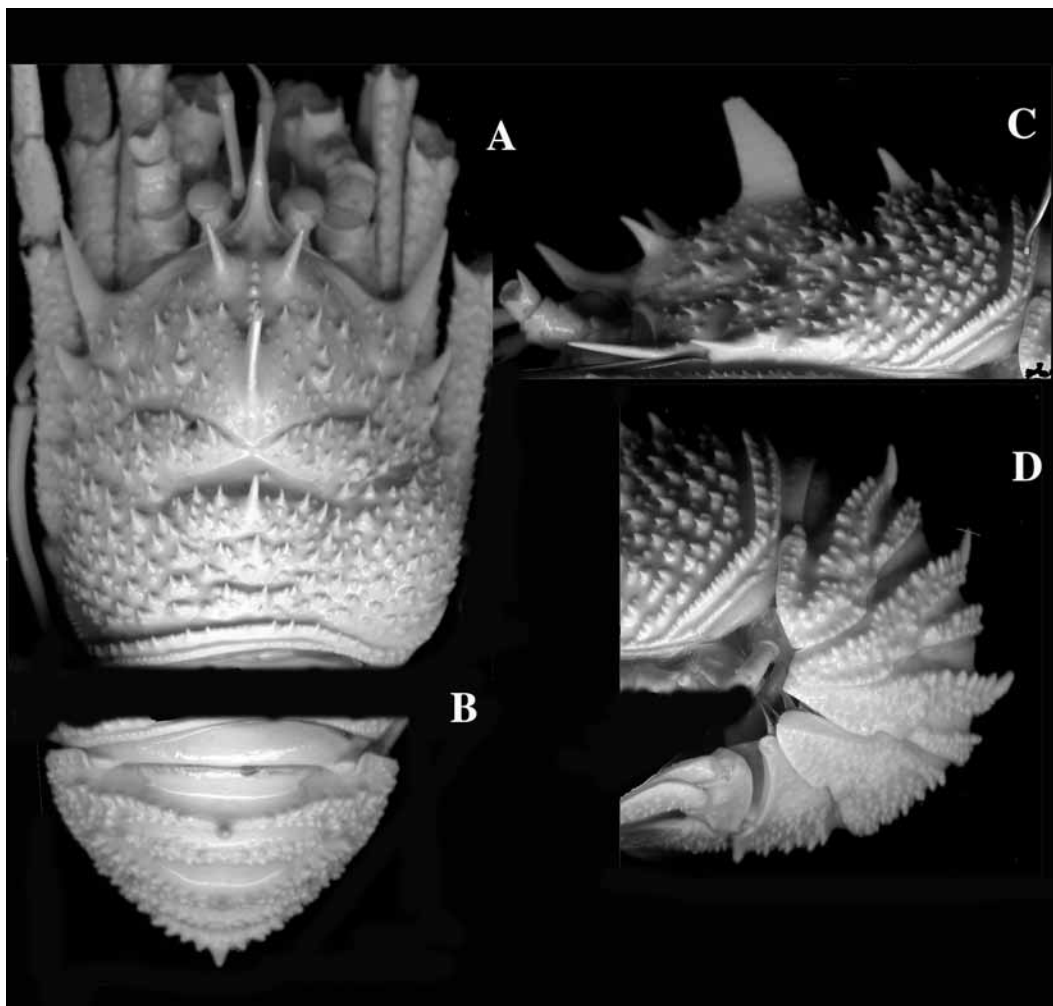


FIGURE 8. *Galacantha spinosa* A. Milne Edwards, 1880, male (27.2 mm), Off Colombia, PILSBURY, Stn 1224. A, carapace, dorsal. B, abdomen, dorsal. C, carapace, lateral. D, abdomen, lateral.

***Galacantha spinosa* A. Milne-Edwards, 1880**

(Fig. 8)

Galacantha spinosa A. Milne-Edwards, 1880: 53.—A. Milne-Edwards & Bouvier, 1897: 56, pl. 4: figs. 14–21.

Munidopsis spinosa.—Chace, 1942: 76.—Takeda, 1983: 96, with fig.—Baba, 2005: 296.

Not *Munidopsis spinosa*.—Miyake, 1982: 144, pl. 48, fig. 4.—Baba, 1988: 168, figs. 67, 68 (= *G. subspinosa* n. sp.).

Material examined. Caribbean Sea, off Colombia, PILSBURY, Stn 1224, 878–906 m: 1 M 27.2 mm, 1 F 28.7 mm (RMNH).

Diagnosis. Carapace covered with tubercles, those on posterior half forming rows; dorsally armed with 2 well-developed epigastric, one extremely strong laterally compressed mesogastric, and one moderately large cardiac spine; posterior margin of mesogastric spine convex. Lateral margins subparallel, with 2 prominent

anterior spines directed forward, and lobe-like process at midlength, first spine (anterolateral) clearly more than 3 times larger than second spine (hepatic). Rostrum overreaching third antennal segment, spiniform, without additional spines, upturned and without horizontal portion. Abdominal tergites 2–4 with 2 moderately elevated transverse ridges; ridges and pleura covered with acute tubercular processes, each anterior ridge with prominent median spine, spine on tergite 4 clearly smaller than preceding spines; transverse grooves between ridges not interrupted medially; tergites 5–6 with numerous acute tubercles, anterior border of tergite 5 slightly elevated and tuberculated. P1 covered with granules, about 1.4 (female) and 1.6 (male) times carapace length, nearly spineless; merus and carpus each with a few terminal spines, carpus as long as palm, 1.3–1.5 times longer than wide, with a few terminal spines; palm as long as wide, fingers 1.4–1.6 times longer than palm, distally spooned, prehensile edges crenulate. P2–P4 long, slender, with numerous granules, subcylindrical. P2 overreaching P1, about twice carapace length; merus 3.0–3.5 times length of carpus, 1.2 times length of propodus and about 6 times longer than high, slightly longer than that of P3 and 1.2 times that of P4, clearly overreaching rostrum, having distal spine on dorsal margin; carpus with dorsolateral granulated crest; propodus 8–9 times longer than high, about 1.5 times dactylus length, ventral margin unarmed; dactylus compressed laterally, flexor border moderately curving, bearing proximally diminishing low teeth.

Colour (from Takeda 1983): Gastric and anterobranchial regions, and gastro-cardiac furrow whitish; rostrum, border of gastric region, cardiac and branchial regions red; lateral, large mesogastric and cardiac spines of carapace red; abdomen whitish, with transverse ridges and median spines reddish; P1 with carpus and mesial part of palm whitish, lateral part of palm and fingers red; P2–P4 whitish, flexor margin of articles red.

Remarks. The species is easily differentiated from the other species of the genus by the shape and armature of the rostrum: short, spiniform, without lateral spines, upturned and without horizontal portion. The closest species is *G. subspinosa* **n. sp.** (see below for the differences between species).

Distribution. Caribbean Sea (type locality, Dominica, 600 m), off Suriname and French Guiana, 520–1007 m.

***Galacantha subrostrata* n. sp.**

(Figs. 9, 10A–H)

Material examined. Central Atlantic, WALDA, Stn CY21, 3034 m: 1 ovig. F 20.4 mm, 2 F 19.1–21.8 mm (MNHN-Ga5487).—Stn CY22, Pt. 154, 3244 m: 8 M 7.9–18.2 mm, 3 ovig. F 17.4–20.4 mm, 2 F 8.8–12.8 mm (MNHN-Ga5479). NE Atlantic, EUMELI 2, Stn CP01, 3086 m: 4 M 9.5–20.0 mm, 2 ovig. F 21.8–23.2 mm (MNHN-Ga5478).—Stn CPH02, 3134 m: 1 F 16.0 mm (ICM).—Stn CP03, 2114 m: 2 ovig. F 19.0–19.8 mm, 2 F 12.2–14.0 mm (MNHN-Ga5480). EUMELI 4, Stn CPH15, 3124 m: 1 M 17.8 mm (MNHN-Ga5481). DISCOVERY, Stn 8521-1, 3053–3058 m: 1 M 13.5 mm, 1 F 15.7 mm (MNHN-Ga5482).—Stn 8974-6, 3029–3035 m: 1 M 16.8 mm, 1 ovig. F 21.2 mm (MNHN-Ga5483).—Stn 9132-5, 3089–3109 m: 1 M 19.5 mm (MNHN-Ga5484).—Stn 9132-7, 3083–3094 m: 2 M 15.1–17.4 mm, 1 ovig. F 21.2 mm (MNHN-Ga5485).—Stn 9133-7, 2130–2191 m: 1 M 20.2 mm (MNHN-Ga5486).

Types. The male of 16.6 mm from WALDA, Stn CY22 is the holotype (MNHN Ga 5488). The other specimens are paratypes.

Etymology. The name *subrostrata* refers to its relationship with *G. rostrata*.

Description. Carapace slightly longer than broad, covered with scale-like or spine-like tubercles, dorsally armed with 2 small epigastric, one extremely strong laterally compressed mesogastric, and one moderately large cardiac spine. Gastric and cardiac regions somewhat inflated. Lateral margins slightly convex, with 2 prominent anterior spines or acute processes, and lobe-like process at midlength, first spine well-developed and directed forward, second spine or acute process smaller than first spine (of similar size in a few specimens). Front margins oblique, without antennal spine. Posterior margin of carapace smooth. Rostrum with 2

small spines at anterior end of horizontal portion, not discernible in dorsal view; several additional granules near each spine; rostral spine slightly smaller than mesogastric spine upturned distally, forming angle of ca. 50° with horizontal portion; width of rostrum (measured at level of end of corneae) narrower than corneae; horizontal portion reaching or slightly overreaching antennal peduncle.

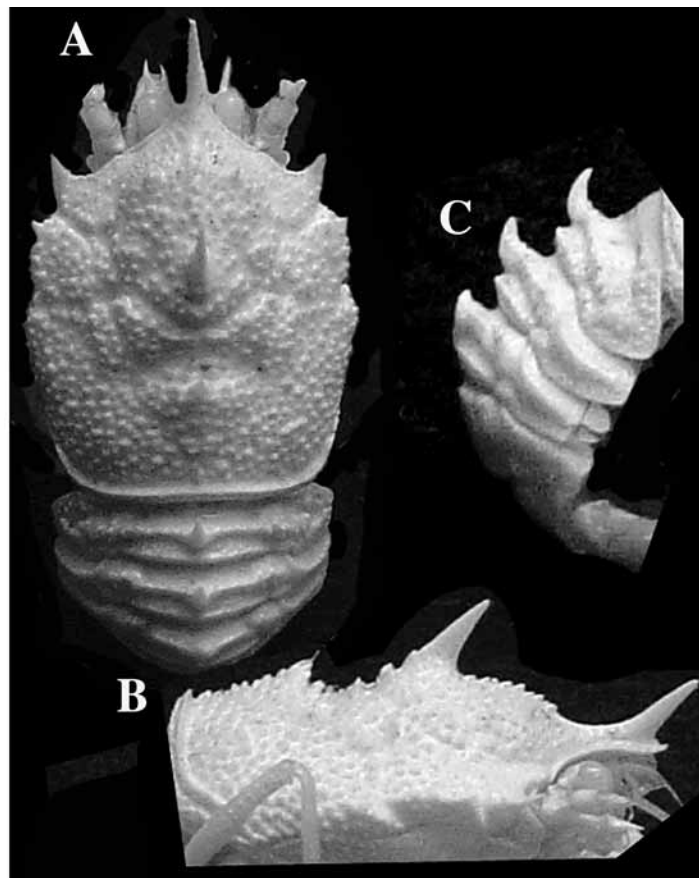


FIGURE 9. *Galacantha subrostrata* n. sp., holotype, male (16.6 mm), Central Atlantic, WALDA, Stn CY22. A, carapace and abdomen, dorsal. B, carapace, lateral. C, abdomen, lateral.

Sternites smooth. Sternite 3 bilobate, separated by notch, about one-third width of sternite 4; each lobe with lateral margin rounded; ridges demarcating sternites 4–7 feebly granular. Sternite 4 truncate subtriangular, relatively narrow anteriorly.

Abdominal 2–4 tergites with 2 moderately elevated transverse ridges, each anterior ridge with prominent median spine, spine on tergite 4 clearly smaller than preceding spines; tergite 4 with transverse groove between ridges interrupted medially; tergite 5 smooth with a few small granules. Pleura of segments 2–3 with numerous granules, less numerous granules on segment 4. Tergite 6 having slightly convex posterior margin, not overreaching posterolateral lobes. Telson divided into 10 plates, midlateral plates with stiff setae in male; posterior plates combined nearly twice as wide as long.

Eye movable and spineless, corneae subglobular. Basal article of antennule with small distomesial, strong distolateral, and small dorsolateral spines, last one occasionally absent; distal mesio-ventral margin with broad, thin, distally dentate process. Antennal peduncle spineless.

Mxp 3 merus with 2 or 3 spines on flexor margin, proximal spine largest, extensor margin unarmed; mesial ridge of ischium bearing 12–15 denticles.

P1 covered with tubercles and granules, 1.6–1.8 (males), 1.4–1.5 (females) times carapace length, nearly spineless; merus and carpus each with several terminal spines, carpus as long as palm, 1.5 times longer than wide; palm 1.5 times longer than wide, fingers distinctly longer than palm, distally spooned, prehensile edges crenulate.

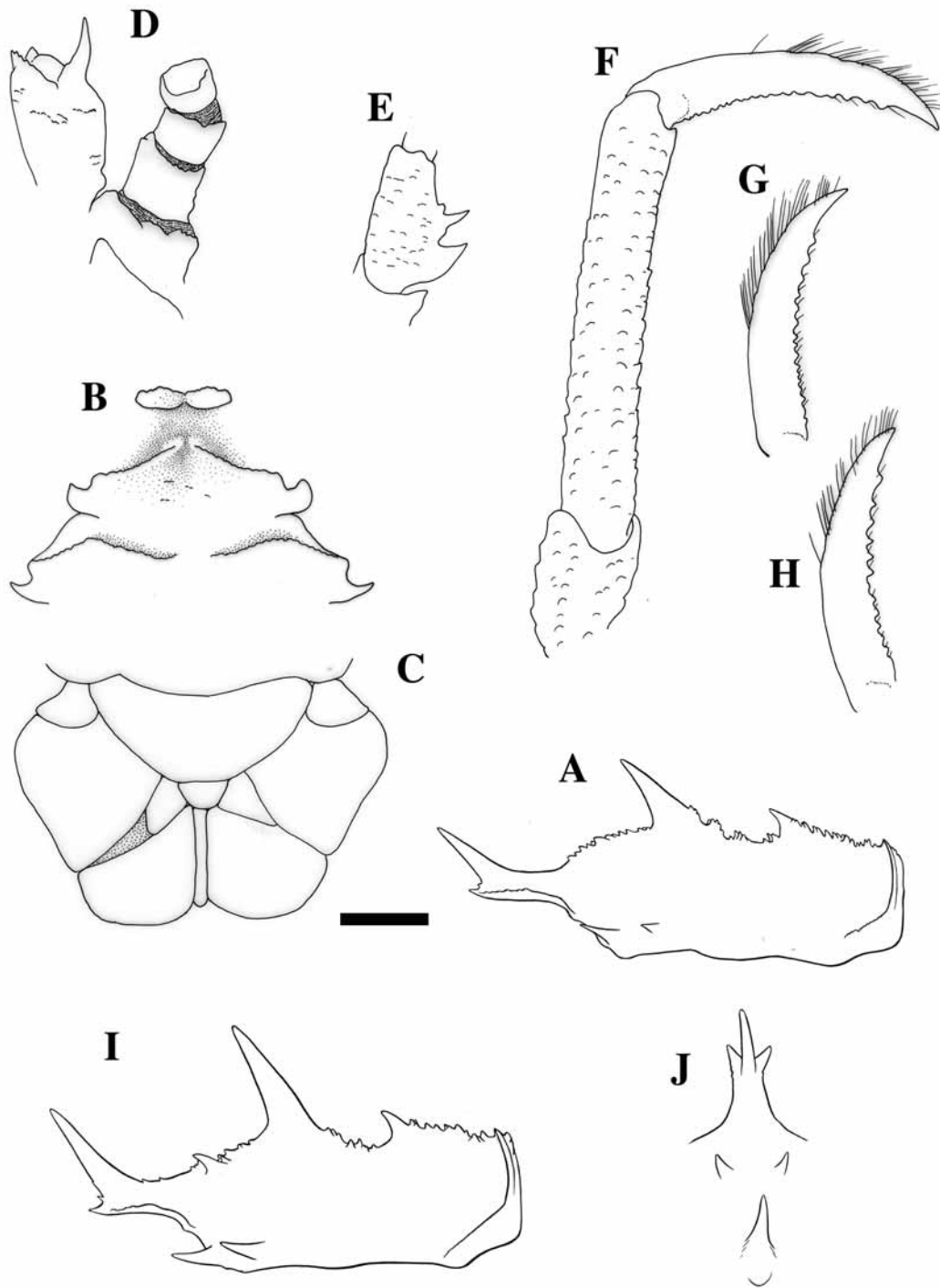


FIGURE 10. *Galacantha subrostrata* n. sp., holotype, male (16.6 mm), Central Atlantic, WALDA, Stn CY22. A, carapace, lateral. B, sternum. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. E, right P2, lateral. G, dactylus of right P3, lateral. H, dactylus of right P4, lateral. *Galacantha rostrata* A. Milne-Edwards, 1880, male (18.6 mm), North Atlantic, Azores Islands, BIOACORES, Stn 176. I, carapace, dorsal. J, rostrum, dorsal. Scale: A, I, J = 5 mm; B, C, D, E, F, G = 2 mm.

P2–P4 long, slender, with numerous granules, subcylindrical. P2 overreaching P1, twice carapace length. P2 merus 3.5 times length of carpus, 1.5 times longer than propodus and nearly 6 times longer than high, slightly longer than that of P3 and 1.2 times that of P4, slightly overreaching rostrum, having distal spine on dorsal and ventral margin; carpus having dorsolateral granulated crest; propodus 5.5 times longer than high, nearly 1.5 times dactylus length, ventral margin unarmed; dactylus compressed laterally, flexor border moder-

ately curving, bearing 12–17 proximally diminishing low teeth, ultimate tooth rather remote from end of dactylus and much closer to penultimate; distal half of extensor margin with numerous uniramous setae.

Remarks. *Galacantha subrostrata* belongs to the group of species with the rostrum having two small and subparallel spines at the end of the horizontal portion, not visible dorsally, the carapace with second lateral (hepatic) spine shorter than first (anterolateral) spine, the fourth abdominal tergite with transverse groove between ridges interrupted medially, and the pleura of second and third abdominal tergites with a few granules. *Galacantha subrostrata* is closest to *G. bellis* Henderson, 1885 (see above), differentiated by the following:

— The first lateral (anterolateral) spine longer (or subequal in a few specimens) than the second lateral (hepatic) spine in *G. subrostrata*, whereas the second spine is always larger than the first (anterolateral) spine in *G. bellis*.

— The epigastric spines are smaller in *G. subrostrata* than in *G. bellis*.

— The transverse groove of the fourth tergite is medially interrupted in *G. subrostrata*, whereas this groove is not interrupted in *G. bellis*.

Distribution. East Atlantic, off northwest Africa to the Gulf of Guinea, at 2114–3234 m.

***Galacantha subspinosa* n. sp.**

(Figs. 11, 12, 55B)

Munidopsis spinosa.— Takeda, 1983: 96, with fig.—Baba, 1988: 168, figs. 67, 68; 2005: 296 (in part) (not *G. spinosa* A. Milne-Edwards, 1880)

Munidopsis rostrata.— Miyake, 1982: 144, pl. 48, fig. 4 (not *G. rostrata* A. Milne-Edwards, 1880).

Material examined. Philippines, MUSORSTOM 1, Stn 49, 750–925 m: 2 F 12.7–13.3 mm (MNHN-Ga1443). Indonesia, Kei Islands, KARUBAR, Stn 20, 769–809 m: 1 M 30.0 mm (MNHN-Ga5441).—Stn 54, 836–869 m: 1 F 26.0 mm (MNHN-Ga5724).—Stn 73, 840–855 m: 1 M 20.0 mm (MNHN-Ga5542).—Stn 87, 1017–1024 m: 2 F 8.0–15.9 mm (MNHN-Ga5543).—Stn 91, 884–891 m: 4 M 17.5–29.0 mm, 4 F 17.0–28.0 mm (MNHN-Ga5544). Solomon Islands, SALOMON 1, Stn 1753, 1001–1012 m: 2 M 12.4–26.6 mm, 4 F 15.1–23.0 mm (MNHN-Ga5545). —Stn 1762, 396–411 m: 2 M 13.6–14.4 mm, 1 ovig. F 17.7 mm (MNHN-Ga5546). SALOMON 2, Stn 2189, 660–854 m: 1 M 28.6 mm. 15.0–20.2 mm (MNHN-Ga5726).— Stn 2251, 1000–1050 m: 4 M 13.5–16.6 mm, 3 F 12.8–19.9 mm (MNHN-Ga5727).— Stn 2252, 1059–1109 m: 3 F 15.4–20.0 mm (MNHN-Ga5547). Vanuatu, MUSORSTOM 8, Stn 1076, 1100–1191 m: 1 F 20.5 mm (MNHN-Ga5548).

Types. The female of 26.0 mm from KARUBAR, Stn 54 is the holotype (MNHN Ga5724). The other specimens are paratypes.

Etymology. The name *subspinosa* refers to its relationship with *G. spinosa*.

Description. Carapace slightly longer than broad, covered with tubercles or spine-like tubercles, those on posterior half forming rows; dorsally armed with 2 epigastric, one extremely strong laterally compressed mesogastric, and one moderately large cardiac spines; posterior margin of mesogastric spine straight. Gastric and cardiac regions convex. Lateral margins subparallel, with 2 prominent anterior spines, directed forward, and lobe-like process at midlength, first spine (anterolateral) clearly less than 3 times larger than second spine (hepatic). Rostrum not overreaching third antennal segment, spiniform, without additional spines, upturned and without horizontal portion.

Sternites smooth. Sternite 3 bilobate, separated by notch, about one-third width of sternite 4; each lobe with lateral margin rounded. Sternite 4 truncate subtriangular, relatively narrow anteriorly.

Abdominal tergites 2–4 with 2 moderately elevated transverse ridges; ridges and pleura covered with acute tubercular processes, each anterior ridge with prominent median spine, spine on tergite 4 clearly smaller

than previous spines; transverse grooves between ridges not interrupted medially. Tergites 5–6 with numerous acute tubercles, anterior border of tergite 5 slightly elevated and tuberculated. Telson divided into 10 plates, midlateral plates with stiff setae in male; posterior plates combined nearly twice as wide as long.

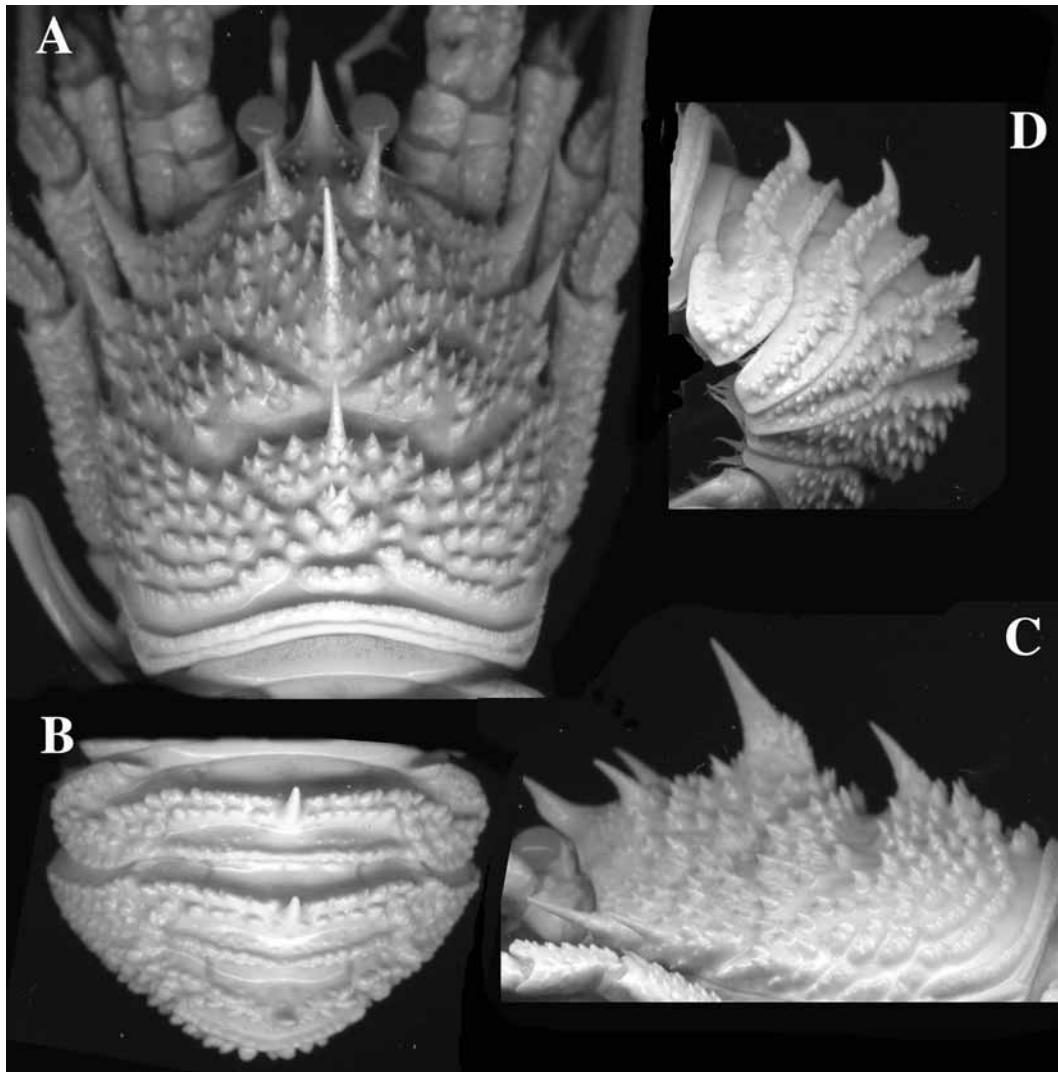


FIGURE 11. *Galacantha subspinosa* n. sp., holotype, female (26.0 mm), Indonesia, Kei Islands, KARUBAR, Stn 54. A, carapace, dorsal. B, abdomen, dorsal. C, carapace, lateral. D, abdomen, lateral.

Eye movable and spineless, corneae subglobular. Basal article of antennule with small distomesial, strong distolateral, and small dorsolateral spines; distoventral margin with broad, thin, distally dentate process. Antennal peduncle spineless.

Mxp 3 merus with 2 or 3 spines on flexor margin, proximal spine largest, extensor margin unarmed; mesial ridge of ischium bearing 13–16 denticles.

P1 covered with granules, 1.4 (female) and 1.6 (male) times carapace length, nearly spineless; merus and carpus with a few terminal spines, carpus as long as palm, 1.3–1.5 times longer than wide, with a few terminal spines; palm as long as wide, fingers 1.4–1.6 times longer than palm, distally spooned, prehensile edges crenulate.

P2–P4 long, slender, with numerous granules, subcylindrical. P2 overreaching P1, 1.7–2.0 times carapace length; merus 3.0–3.5 times length of carpus, 1.2 times length of propodus and about 5 times longer than high, slightly longer than that of P3 and 1.3 times that of P4, clearly overreaching rostrum, having distal spine on dorsal margin; carpus having granulated dorsolateral crest; propodus 6–7 times longer than high, 1.4–1.7

times dactylus length, ventral margin unarmed; dactylus compressed laterally, flexor border moderately curving, bearing proximally diminishing low teeth.

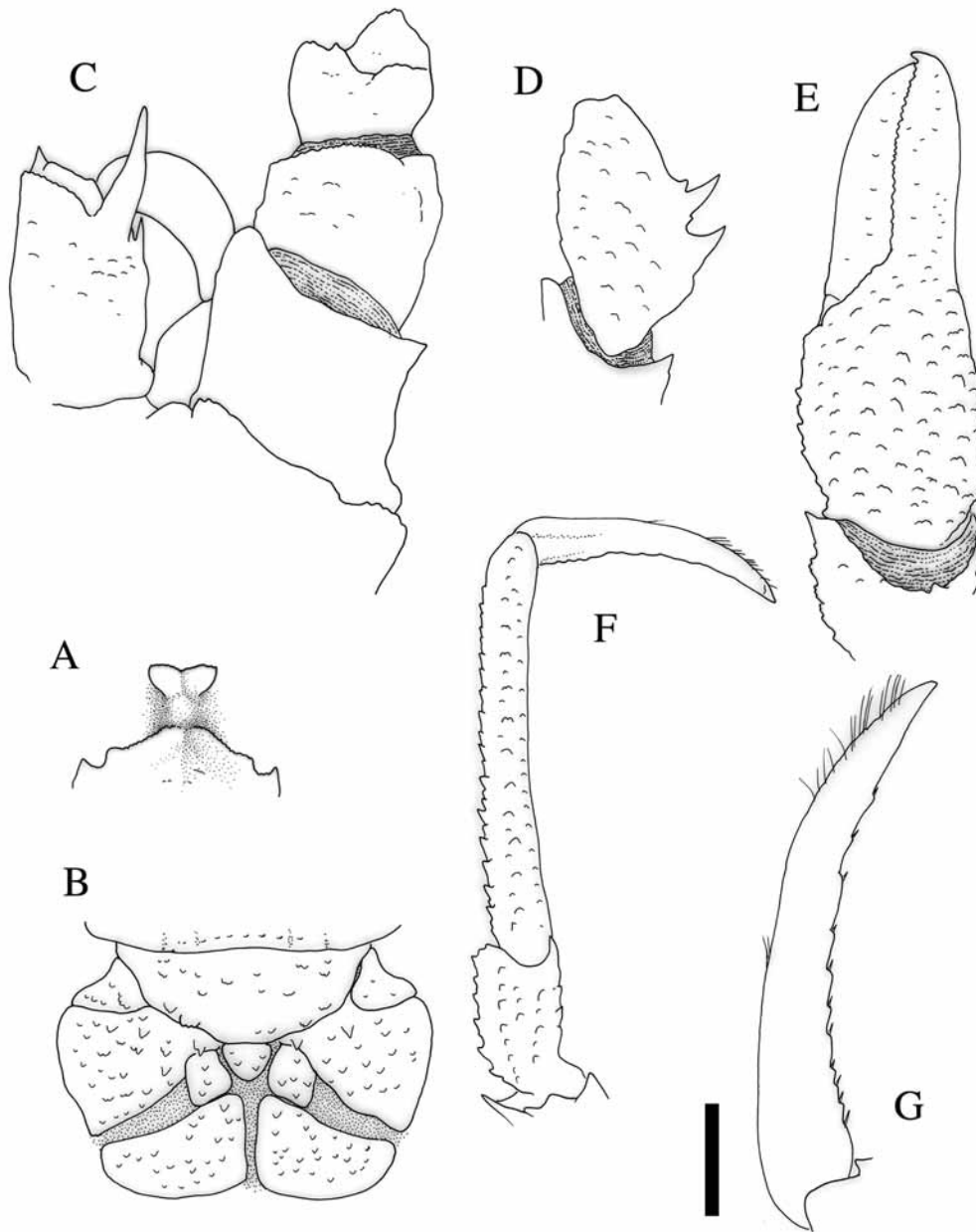


FIGURE 12. *Galacantha subspinosa* n. sp., holotype, female (26.0 mm), Indonesia, Kei Islands, KARUBAR, Stn 54. A, sternum. B, posterior part of sixth abdominal segment and telson. C, left antennule and antenna, ventral. D, merus of right third maxilliped, lateral. E, right cheliped, lateral. F, right P2, lateral. G, dactylus of right P2, lateral. Scale: C, D, G = 2 mm; A, B, E, F = 5 mm.

Colour. Body and appendages uniformly red, gastro-cardiac furrow whitish.

Remarks. *Galacantha subspinosa* belongs to the group of species with the rostrum without additional spines, and lateral carapace margin with second (hepatic) spine shorter than first (anterolateral) spine. The closest species to *G. subspinosa* is *G. spinosa* A. Milne-Edwards, 1880, from the Caribbean Sea (see above), and the following aspects can differentiate them:

— The rostrum does not reach the end of the third antennal segment in *G. subspinosa*, instead of exceeding this segment in *G. spinosa*.

— The first lateral (anterolateral) spine of the carapace is more than 3 times longer than second lateral

(hepatic) spine in *G. spinosa*, being less than 3 times in the new species.

— The posterior margin of the mesogastric spine is straight in the new species, being clearly convex in *G. spinosa*.

— The walking legs (P2–P4) are more slender in *G. spinosa* than in *G. subspinosa*. P2 merus 5 times longer than high in *G. subspinosa*, instead of 6 times longer in *G. spinosa*. P2 propodus is 6–7 times longer than high in *G. subspinosa*, instead of 8–9 times longer in *G. spinosa*.

Distribution. Philippines, Indonesia (Kei Islands), Solomon Islands, Vanuatu, at 660–1191 m.

***Galacantha trachynotus* Anderson, 1896**

(Figs. 13, 14, 55C)

Galacantha trachynotus Anderson, 1896: 100.—Alcock & Anderson, 1896: pl. 25: figs. 3, 3a.—Tirmizi, 1966: 210, figs. 25, 26.

Galacantha spinosa var. *trachynotus*.—Alcock, 1901: 277.

Munidopsis trachynotus.—Baba, 1988 171; 2005: 297.

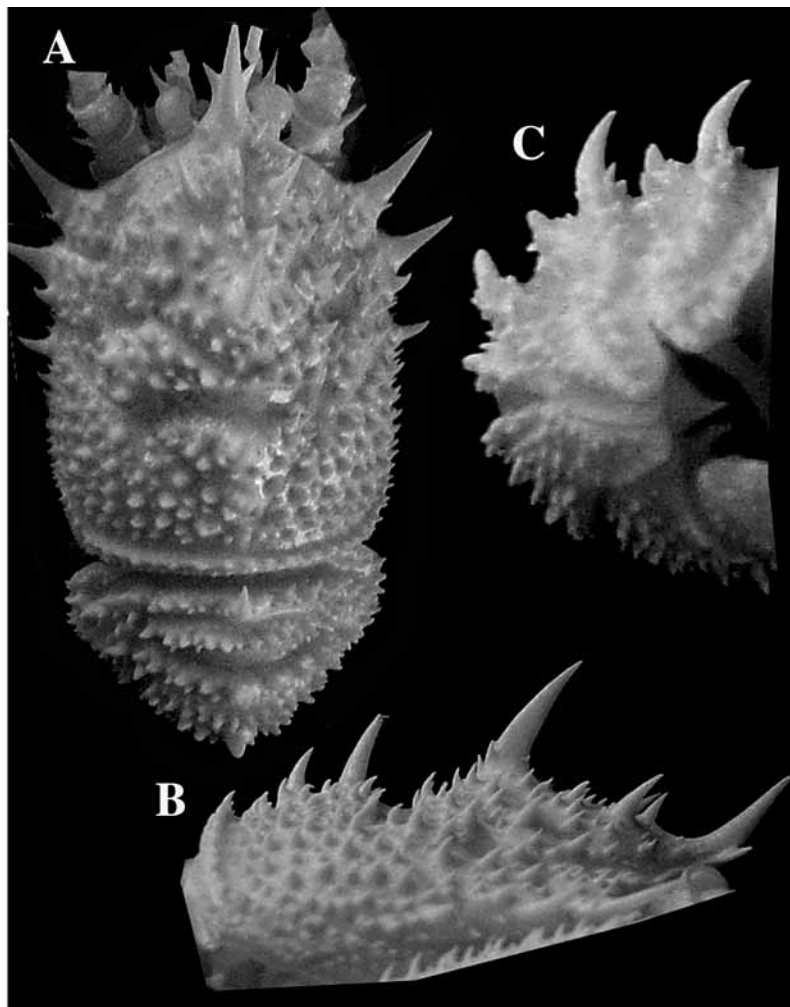


FIGURE 13. *Galacantha trachynotus* Anderson, 1896, male (22.4 mm), Solomon Islands, SALOMON I, Stn 1764. A, carapace and abdomen, dorsal. B, carapace, lateral. C, abdomen, lateral.

Material examined. Madagascar (A. Crosnier collection), Stn CH 131, 1490–1640 m: 8 M 10.3–29.6 mm, 2 ovig. F 29.6–36.7 mm, 3 F 18.2–21.7 mm (MNHN-Ga1434).—Stn CH 141, 1600–1725 m: 1 F 22.3 m

(MNHN-Ga1435). Gulf of Aden. METEOR 5, Stn 262, 1830–1837 m: 1 M 26.6 mm, 2 ovig. F 27.8–29.8 mm (SMF). Solomon Islands. SALOMON 1. Stn 1754, 1169–1203 m: 1 F 27.1 mm (MNHN-Ga5554).—Stn 1764, 1 M 22.4 mm, 1 F 18.8 mm (MNHN-Ga5498). Fiji. MUSORSTOM 10. Stn 1361, 1068–1091 m: 1 M 35.3 mm (MNHN-Ga5555). BORDAU 1. Stn 1458, 1216–1226 m: 1 F 5.9 mm (MNHN-Ga5556).

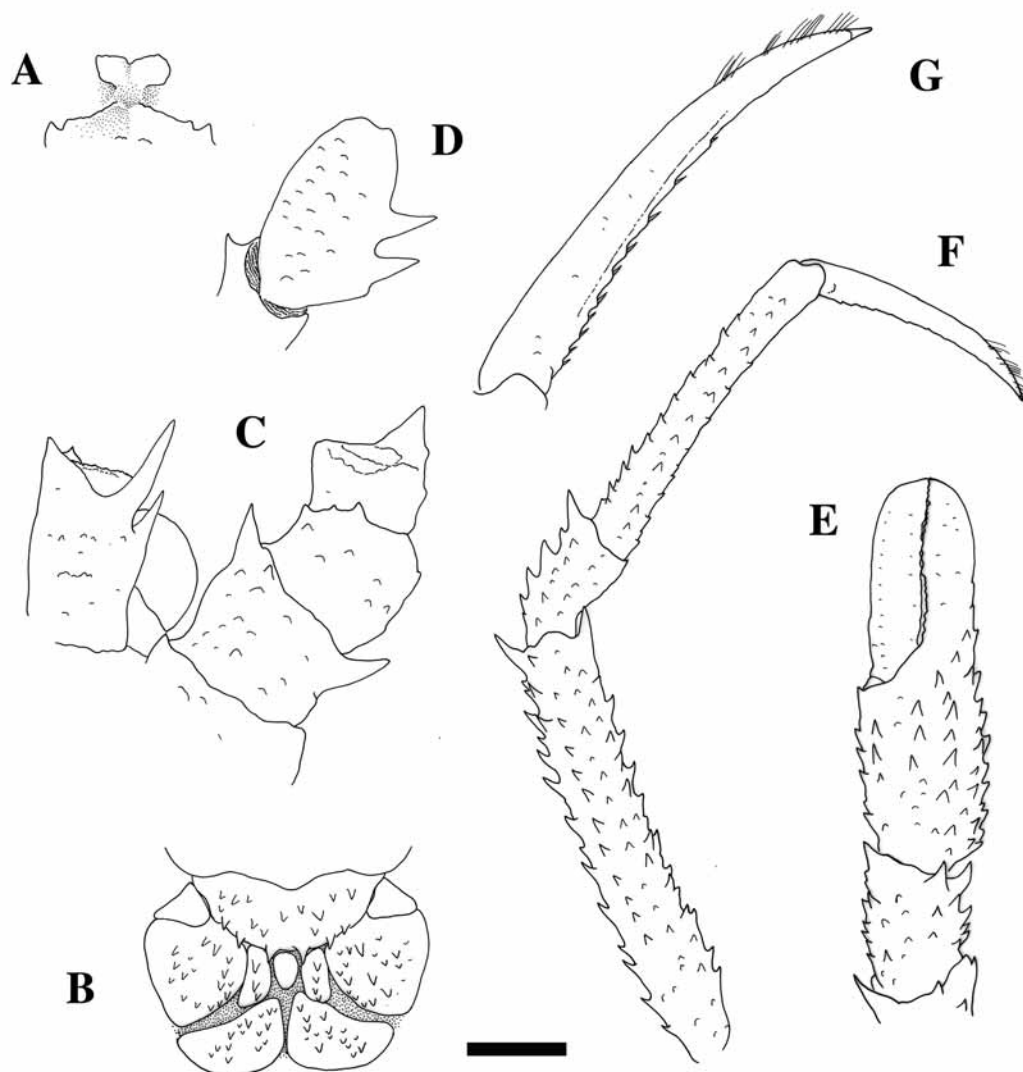


FIGURE 14. *Galacantha trachynotus* Anderson, 1896, male (22.4 mm), Solomon Islands, SALOMON 1, Stn 1764. A, sternum. B, posterior part of sixth abdominal segment and telson. C, left antennule and antenna, ventral. D, merus of right third maxilliped, lateral. E, right cheliped, lateral. F, right P2, lateral. G, dactylus of right P2, lateral. Scale: C, D, G = 2 mm; A, B, E, F = 5 mm.

Diagnosis. Carapace covered with spines of different sizes, paired well-developed epigastric spines and often one unpaired behind rostrum, one extremely strong laterally compressed mesogastric, and 2 moderately large cardiac spines, posterior smaller than anterior. Lateral margin slightly convex, with numerous spines, and 2 prominent anterior spines, first spine (anterolateral) larger than second spine (hepatic) and one well-developed spine behind cervical groove. Rostrum with 2 lateral spines, discernible in dorsal view, basal portion proximal to lateral spines slightly upturned; rostral spine smaller than mesogastric spine strongly upturned and forming angle of nearly 60° with horizontal. Abdomen spinose. Abdominal tergites 2–4 with 2 moderately elevated transverse ridges, bearing spines, each anterior ridge with prominent median spine, spine on tergite 4 clearly smaller than preceding spines; tergite 4 with transverse groove between ridges not interrupted medially; pleura of tergites 2–3 with numerous spines; tergite 5 spinose, anterior border with numerous

tubercles; tergite 6 spinose, posteriormedian lobe produced, overreaching posterolateral lobes. Telson with numerous spines. Eye movable, eyespine sometimes present, corneae subglobular. P1 covered with spines, 1.5 times carapace length; merus, carpus and palm with some well-developed distal spines, carpus slightly shorter than palm, 1.3–1.5 times longer than wide, with a few terminal spines; palm slightly longer than wide, fingers 1.4–1.7 times longer than palm, distally spooned, prehensile edges crenulate. P2–P4 long, slender, covered with numerous spines, subcylindrical. P2 overreaching P1 and about twice carapace length; merus about 3 times length of carpus, 1.3–1.4 times length of propodus and 5.5–6.5 times longer than high, slightly longer than that of P3 and 1.3 times that of P4, overreaching rostrum, having distal spine on dorsal and ventral margin; carpus having dorsolateral granulated crest, with distal spine on dorsal margin; propodus 6–8 times longer than high, nearly 1.5 times dactylus length, ventral margin unarmed; dactyli compressed laterally, slender, flexor border moderately curving, bearing small low teeth.

Colour. Spines on carapace and abdomen red, lateral margins of carapace and pleura of abdominal segments red; dorsal surface of carapace and abdomen pink; pereopods reddish.

Remarks. This species is very characteristic and clearly different from other species of the genus *Galacantha*. They are characterized by the presence of numerous spines on the carapace and abdomen, the rostrum has two lateral divergent spines at the end of the horizontal portion, clearly discernible in dorsal view; the first (anterolateral) spine of the carapace is larger than the second spine.

Distribution. Previously known from the Arabian Sea (type locality) at 1669–1893 m, Teluk Tomini (Sulawesi) at 1380 m and off Central Queensland at 1385–1403 m. The present material was collected from Madagascar, Gulf of Aden, Solomon Islands and Fiji, 1068–2000 m.

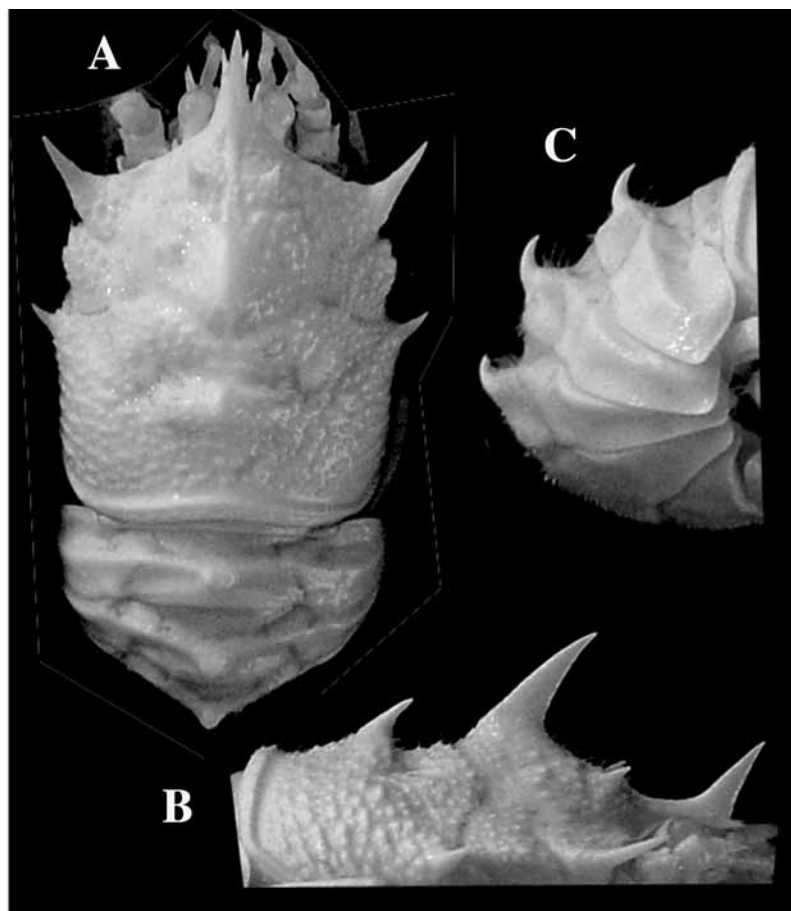


FIGURE 15. *Galacantha valdiviae* Balss, 1913, ovigerous female (16.4 mm), Madagascar, CH 131. A, carapace and abdomen, dorsal. B, carapace, lateral. C, abdomen, lateral.

***Galacantha valdiviae* Balss, 1913**

(Figs. 15, 16)

Galacantha valdiviae Balss, 1913: 224.

Munidopsis valdiviae.—Doflein & Balss, 1913: 147, fig. 15, pl. 16: fig. 2.—Baba, 1982: 112, pl. 1: fig. 1; 1988: 173, fig. 71; 1994: 19.—Tirmizi & Javed, 1993: 16, fig. 7.—Baba, 2005: 298.

Material examined. Madagascar (A. Crosnier collection), Stn CH 126, 1475–1530 m: 5 M 12.2–15.3 mm, 2 ovig. F 14.6–18.1 mm, 2 F 14.0–16.6 mm (MNHN-Ga1431).—Stn CH 131, 1490–1640 m: 6 M 9.0–14.5 mm, 3 ovig. F 15.0–19.5 mm (MNHN-Ga1432).—Stn CH 133, 1000–1525 m: 1 M 19.0 mm, 1 F 19.5 mm (MNHN-Ga1433). Solomon Islands, SOLOMON 2, Stn 2253, 1200–1218 m: 1 M 18.3 mm (MNHN-Ga5499).

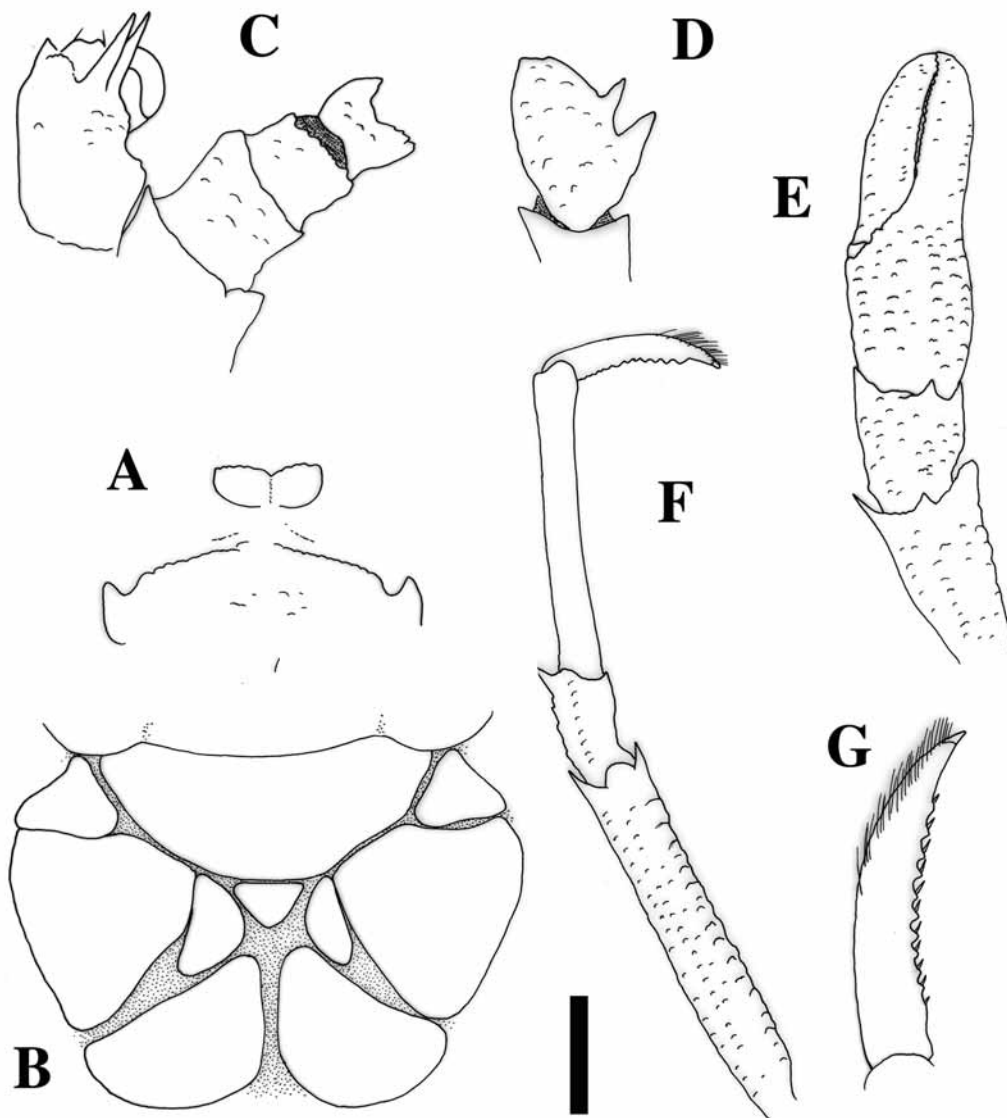


FIGURE 16. *Galacantha valdiviae* Balss, 1913, ovigerous female (16.4 mm), Madagascar, CH 131. A, sternum. B, posterior part of sixth abdominal segment and telson. C, left antennule and antenna, ventral. D, merus of right third maxilliped, lateral. E, right cheliped, lateral. F, right P2, lateral. G, dactylus of right P2, lateral. Scale: A, B, C, D, G = 2 mm; E, F = 5 mm.

Diagnosis. Carapace covered with small setigerous granules, short setigerous scales on branchial regions; armed with 2 epigastric spines, 1 strong laterally compressed mesogastric, and 1 moderately large cardiac

spine. Lateral margins slightly convex, smooth, with 1 strong first (anterolateral) spine; 1 well-developed spine at midlength. Rostrum with 2 small spines at end of horizontal portion, discernible in dorsal view; rostral spine smaller than mesogastric spine, upturned distally, forming angle of nearly 60° with horizontal portion. Abdomen smooth with numerous short and uniramous setae; abdominal tergites 2–4 with 2 low transverse ridges, posterior ridge on somite 4 nearly absent, each anterior ridge with prominent median spine, spine on tergite 4 clearly smaller than preceding spines; each transverse groove between ridges interrupted medially. Pleura of tergites smooth; tergite 5 smooth; tergite 6 having slightly convex posterior margin, not overreaching posterolateral lobes. Telson divided into 10 plates. Eye movable and spineless, corneae subglobular. P1 covered with granules, 1.5 times carapace length; merus with a few distal spines, carpus as long as palm, 1.3–1.4 times longer than wide, with a few distal spines; palm slightly longer than wide, fingers 1.3–1.4 times longer than palm. P2–P4 long, slender, with numerous granules, subcylindrical. P2 overreaching P1 and nearly twice carapace length; merus about 3 times length of carpus, 1.2–1.4 times length of propodus and 5.5–6.5 times longer than high, slightly longer than that of P3 and 1.3 times that of P4, overreaching rostrum, having distal spine each on dorsal and ventral margin; carpus having dorsolateral granulated crest, with distal spine on dorsal margin; propodus 7.5–8.5 times longer than high, 1.5–2.0 times dactylus length, ventral margin unarmed; dactylus compressed laterally, flexor border moderately curving, bearing proximally diminishing low teeth.

Remarks. This species is characterized by the carapace covered with small setigerous granules, and short setigerous scales on branchial regions, the rostrum with two small spines at the end of the horizontal portion, discernible in dorsal view, with only one strong first (anterolateral) spine on the carapace and one well-developed spine at midlength of the lateral margin. The species resembles *G. quiquei* n. sp. (see above).

Distribution. Previously known from the East African coast (type locality), Mozambique Channel, Kumanonada off Kii Peninsula, Japan, Moluccas off northwest Sulawesi, the Palawan Passage, and off Central Queensland, between 1040 and 1600 m. The present material was collected in Madagascar, at 1000–1640 m and Solomon Islands, at 1200–1218 m.

Genus *Munidopsis* Whiteaves, 1784

Type species: *Munidopsis curvirostra* Whiteaves, 1784, by original designation (gender: feminine).

Munidopsis acalipha n. sp.

(Fig. 17)

Material examined. Indonesia, Makassar Strait, CORINDON 2, Stn 210, 338 m: 1 M 6.6 mm, holotype (MNHN-Ga 1422).

Etymology. From the Greek *akaliphos*, uncovered, in reference to the nearly absence of setae in the body.

Description. Carapace slightly longer than broad; dorsal surface moderately convex from side to side, smooth, nearly devoid of setae and striae; cervical groove moderately distinct, regions well defined, gastric and cardiac regions more convex than branchial regions. Gastric region with pair of large rounded epigastric processes. Cardiac region triangular, preceded by deep transverse groove. Rostrum broad, horizontal in lateral view, 0.3 length of remaining carapace, maximum width one-quarter carapace breadth, apex rounded; dorsal surface slightly convex, smooth. Frontal margin concavely oblique behind ocular peduncle, leading to slightly produced process behind antennal peduncle, then concavely transverse toward rounded anterolateral corner of carapace. Lateral margins smooth, weakly convex, with distinct notch at end of anterior cervical groove. Posterior margin preceded by moderately elevated ridge.

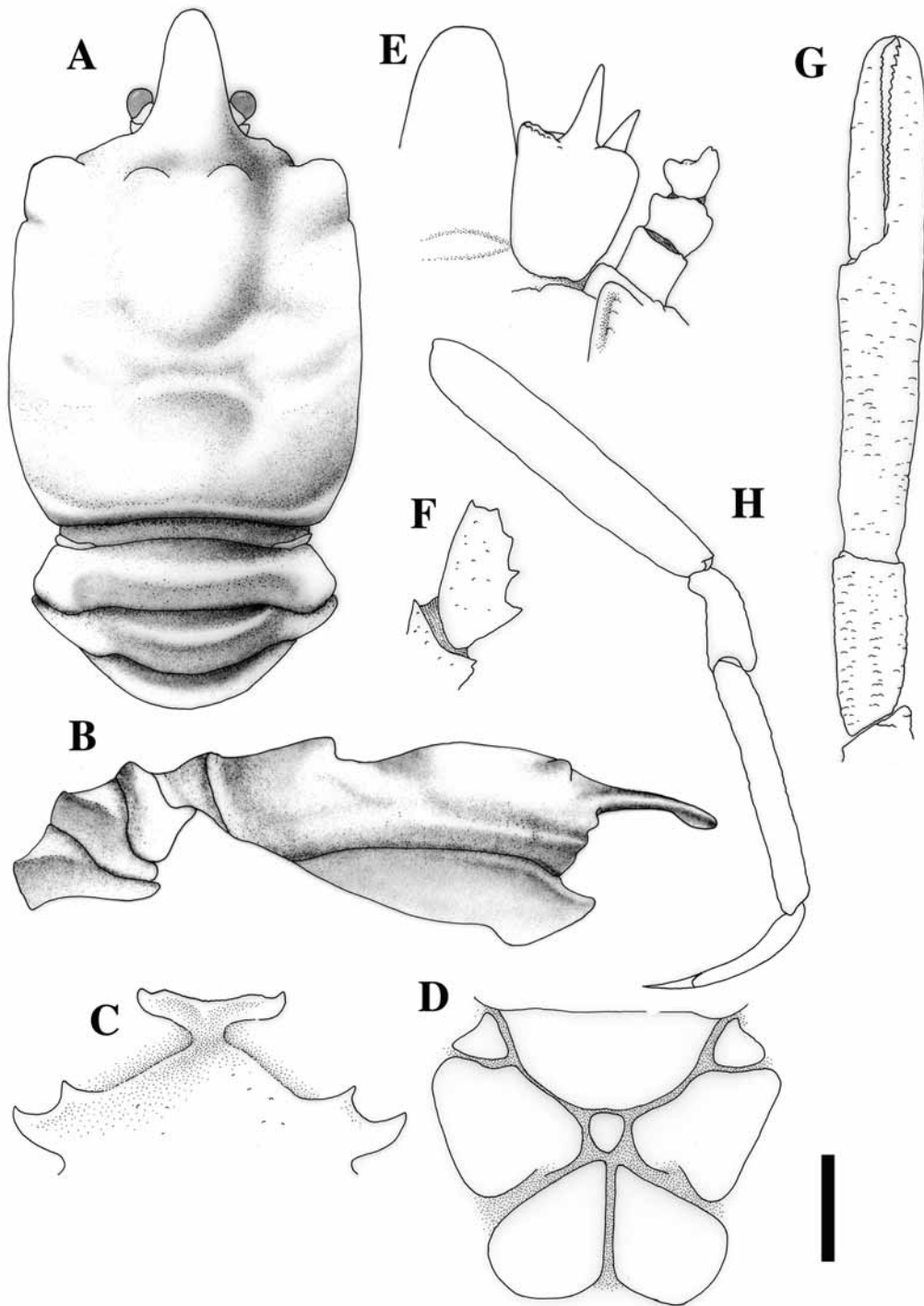


FIGURE 17. *Munidopsis acalipha* n. sp., holotype, male (6.6 mm), Indonesia, Makassar Strait, CORINDON 2, Stn 210. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum, sternites 3 and 4. D, posterior part of sixth abdominal segment and telson. E, left antennule and antenna, ventral. F, merus of right third maxilliped, lateral. G, right cheliped, lateral. H, right P2, lateral. Scale: A, B, G, H = 2 mm; C, D, E, F = 1 mm.

Pterygostomian flap smooth, anteriorly margin angular.

Sternum as long as wide, maximum width at sternite 7. Sternites smooth; sternite 3 broad, not bilobate, about 6 times wider than long; sternite 4 3.5 times wider than sternite 3.

Abdomen smooth; segments 2–4 each with produced transverse ridge followed by shallow transverse groove; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin.

Telson composed of 8 plates; posterior plates combined about 1.5 times as wide as long.

Ocular peduncle movable, without eye-spine; cornea subglobular, as long as remaining eyestalk, reaching end of antennal segment 3. Well-developed spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines; distomesial margin with small granules but no spine.

Articles 1–3 of antennal peduncle with distomesial and distolateral angles smooth; segment 4 unarmed.

Mxp 3 ischium granulated, as long as merus measured on extensor margin, flexor and extensor margins terminating in small blunt spine; 17 or 18 denticles on crista dentate; flexor margin of merus with 3 spines decreasing in size distally; extensor margin with small distal spine.

P1 long and slender, more than 3.5 times (left) longer than carapace, right P1 slightly shorter, unarmed but covered with numerous minute granules and some short setae on merus to dactylus. Merus of right P1 2.5 times length of carpus; carpus 2.5 times longer than high. Palm slender, nearly 1.5 length of carpus. Fingers 0.7 times length of palm, opposable margins nearly straight, not gaping, distally spooned; fixed finger without distolateral carina.

P2–P4 long and slender, smooth, unarmed, nearly devoid of setae, and decreasing in size posteriorly, P2 longest, clearly not reaching end of P1. P2 merus slightly shorter than carapace, 6 times longer than high, 3 times length of carpus and 1.5 length of propodus; carpus without longitudinal crest on lateral surface; propodus 7 times as long as high, ventral margin unarmed except for one minute corneous spine on distal portion; dactylus 0.7–0.8 length of propodus, curved, flexor margin curved and smooth.

Epipods absent from pereopods.

Remarks. The new species is closely related to *M. palmatus* Khodkina, 1973 from Chile to the Gulf of California (Hendrickx 2001, Baba 2005), in having epigastric processes, rostrum broad at base, abdomen spineless, eye-spine absent, P2 not reaching end of P1, and P2–4 dactyli entire on flexor margin. The following aspects can easily differentiate the two species:

— The carapace surface is smooth in *M. acalipha*, being granulated in *M. palmatus*.

— The anterolateral angle of the carapace bears a distinct spine in *M. palmatus*, whereas this spine is absent in the new species.

— The basal article of the antennular peduncle bears three distal spines in *M. palmatus*, instead of two in *M. acalipha*.

— The spines on the Mxp 3 are more developed in *M. palmatus* than in *M. acalipha*.

— The P1 merus bears mesial spines in *M. palmatus*, being unarmed in *M. acalipha*.

Distribution. Only known from Makassar Strait (Indonesia), at 338 m.

***Munidopsis africana* Balss, 1913**

(Fig. 18)

Munidopsis africana Balss, 1913: 223.—Baba, 2005: 284.

Munidopsis (Elasmonotus) africana.—Doflein & Balss, 1913: 159.

Material examined. Zanzibar, Deutschen Tiefsee-Expedition, Stn 245, 463 m: 1 ovig. F 14.0 mm (holotype, ZMB 17508).

Description. Carapace, exclusive of rostrum, nearly 1.3 times longer than broad; dorsal surface moderately convex from side to side, setose, with short striae and minute granules; regions well delineated by furrows including distinct anterior and posterior cervical grooves. Median branchial region well marked. Posterior cardiac region bluntly triangular, preceded by deep transverse depression. Posterior margin preceded by weakly elevated ridge. Rostrum triangular, compressed, directed weakly downward in lateral view, about

0.5 length of remaining carapace, maximum width about one-quarter carapace breadth, terminating sub-acutely; dorsal surface slightly convex, with some small striae but without longitudinal ridge or groove; lateral margins straight and carinated. Frontal margin slightly oblique behind ocular peduncle, leading to slightly produced region, then nearly transverse toward anterolateral corner of carapace. Lateral margins slightly convex and subparallel, left anterior corner rounded, right corner with minute tooth, end of anterior cervical groove with distinct notch, posterior cervical groove without notch at lateral end.

Pterygostomian flap smooth, with small short striae and granules, anteriorly unarmed.

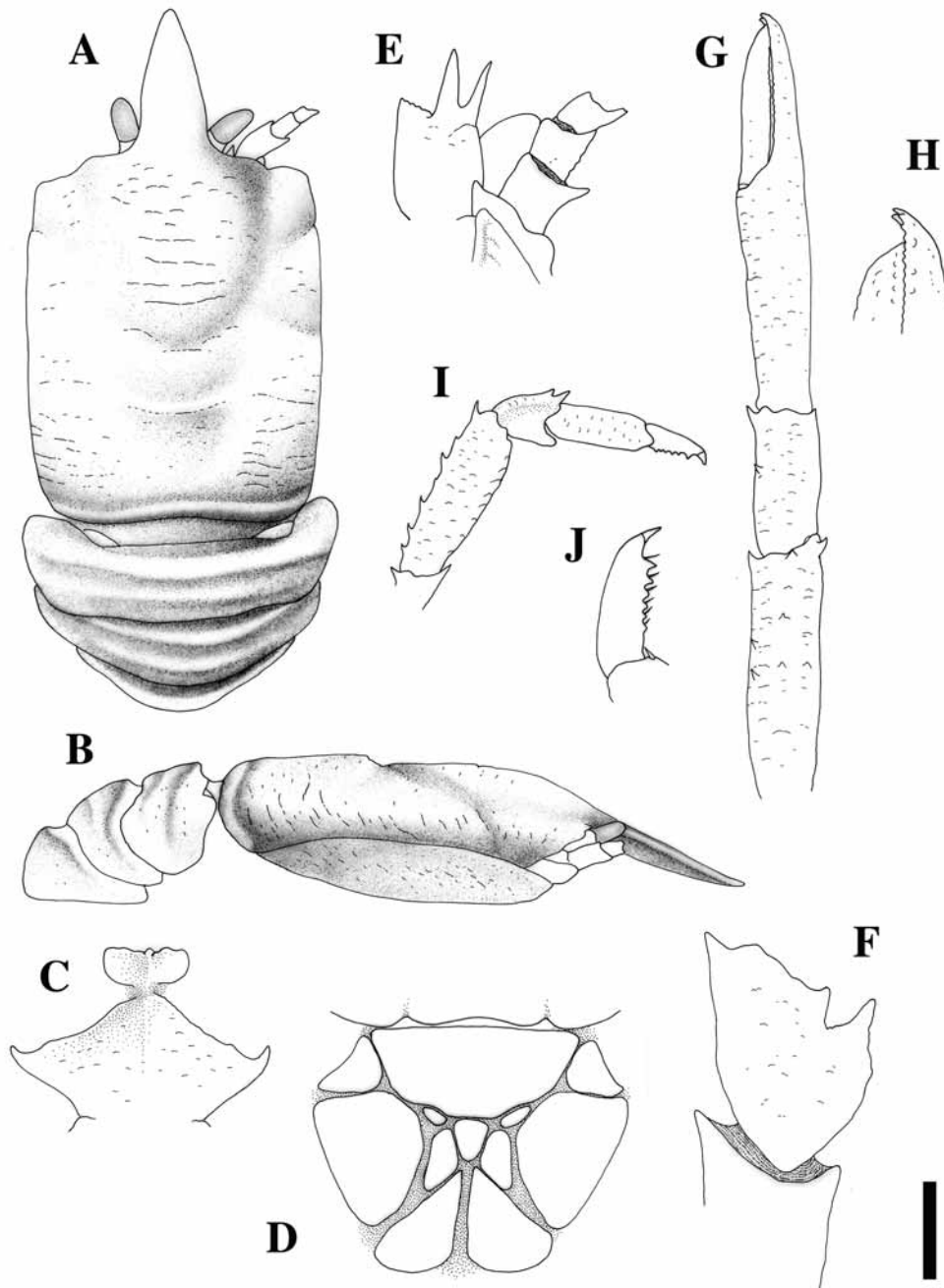


FIGURE 18. *Munidopsis africana* Balss, 1913, holotype, ovigerous female (14.0 mm), Zanzibar, Deutschen Tiefsee-Expedition, Stn 245. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum, sternites 3 and 4. D, posterior part of sixth abdominal segment and telson. E, left antennule and antenna, ventral. F, merus of right third maxilliped, lateral. G, right cheliped, lateral. H, end of fingers, right cheliped, lateral. I, right P2, lateral. J, dactylus of right P2, lateral. Scale: A, B, G, I = 5 mm; C, D, E, F, H = 2 mm.

Sternum with numerous small granules and setae, about 1.5 times longer than wide, maximum width at sternites 4 and 7. Sternite moderately narrow, nearly twice wider than long, anterior margin divided into 2 lobes by deep median notch; lateral margin of each lobe convex. Sternite 4 narrowly elongate anteriorly; surface depressed in midline; greatest width 3 times that of third sternite.

Abdomen smooth, setose, without spines; segments 2–4 each with anterior ridge slightly elevated, followed by transverse groove, segments 4–6 smooth; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 12 plates; posterior plates combined 1.7 times as wide as long.

Ocular peduncle movable; cornea unarmed, much longer than remaining eyestalk, feebly curving outward; small spine between eye and antennal peduncle.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines; distomesial margin with small granules but no dorsal spine.

Antennal peduncle overreaching tip of eye; article 1 with strong distomesial process, clearly not reaching midlength of article 2; articles 2–3 armed with blunt distolateral spine, distomesial angles rounded; article 4 unarmed.

Mxp 3 ischium as long as than merus measured on extensor margin; flexor and extensor margins terminating in blunt spine; 21 or 22 corneous denticles on crista dentata; flexor margin of merus with 2 strong spines, proximal spine much larger than distal spine, extensor margin with distal spine.

Right P1 (left P1 missing) 2.4 times longer than carapace, covered with dense soft plumose setae and small granules on merus to dactylus. Ischium with strong distal spine on dorsal crest. Merus with 3 distal spines (lateral, mesial, and dorsal), and several small spines along mesial margin and dorsal side. Carpus nearly twice longer than high, with 2 small distal spines (mesial and lateral), and one mesial spine at midlength. Palm slender, 1.5 times length of carpus, 1.3 times as long as fingers. Fingers not gaping, distally spooned; prehensile edges each with row of subtriangular teeth, proximal teeth obsolete; fixed finger longer than movable finger, with 3 large distal teeth.

P2–P4 moderately stout, with small granules and short striae on lateral sides of articles, somewhat compressed laterally, decreasing in size posteriorly; second longest, P2 merus 1.5 times P4 merus; ischium to dactylus with numerous soft plumose and simple setae, more numerous along dorsal and ventral margins. P2 clearly not reaching end of merus of P1; merus elongate, 0.5 times carapace length, 3 times longer than high, more than 2.5 times length of carpus and twice length of propodus, dorsal margin with row of well-developed spines, also present on P3 and P4, distal spine slightly longer than others, ventral margin with acute striae, without spines; carpus with 2 spines on dorsal margin, lateral side with longitudinal crest; propodus 2.5 times as long as high, unarmed except for one corneous distal spine on ventral margin; dactylus 0.7 length of propodus; distal claw short, moderately curved; flexor margin nearly straight, with 6 teeth decreasing in size proximally, each with single long seta.

Epipods absent from pereopods.

Remarks. The species is only known from the holotype and it is closely related to *M. calvata*, from Madagascar. Both species have the carapace and abdomen unarmed and smooth, the rostrum triangular, P1 longer than P2, eye with ocular peduncle movable, cornea unarmed and much longer than remaining eyestalk, and pereopods without epipods (see below under the Remarks of *M. calvata*).

Distribution. Only known from the type locality, Zanzibar Channel at 463 m.

Munidopsis analoga n. sp.

(Fig. 19)

Material examined. New Caledonia, BATHUS 1, Stn 651, 1080–1180 m: 1 M 10.0 mm (MNHN Ga5717), 2 M 7.6–9.8 mm, 2 ovig. F 9.3–11.1 mm (MNHN Ga5718). BATHUS 2, Stn 743, 713–950 m: 1 M 16.0 mm

(MNHN Ga5719). Fiji, BORDAU 1, Stn 1401, 600–648 m: 3 M 7.7–8.4 mm (MNHN Ga5720).

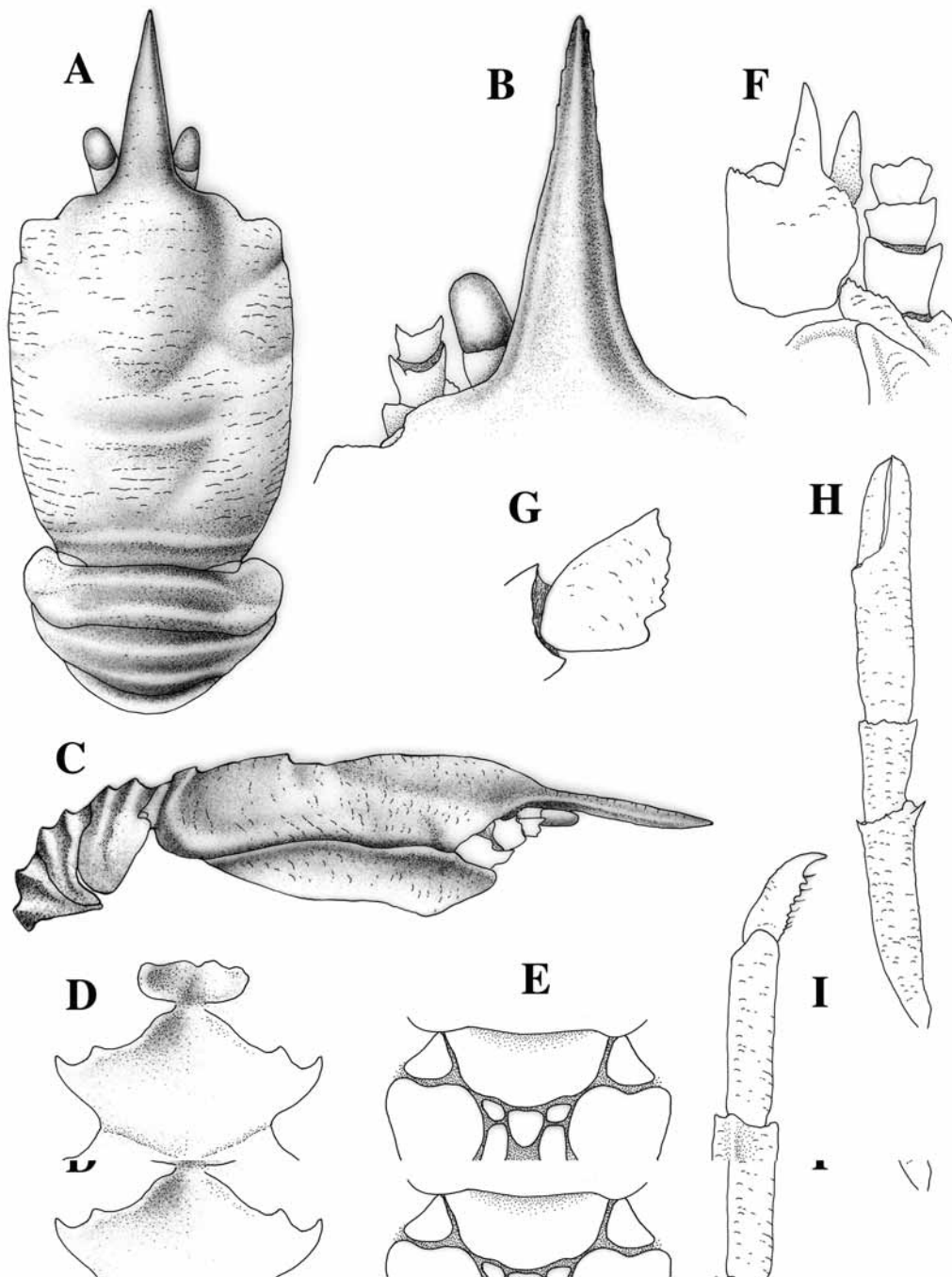


FIGURE 19. *Munidopsis analoga* n. sp., holotype, male (10.0 mm), New Caledonia, BATHUS 1, Stn 651. A, carapace and abdomen, dorsal. B, Rostrum, dorsal. C, carapace and abdomen, lateral. D, sternum. E, posterior part of sixth abdominal segment and telson. F, left antennule and antenna, ventral. G, merus of right third maxilliped, lateral. H, right cheliped, lateral. I, right P2, lateral. Scale: A, C, H, I = 5 mm; B, D, E, F, G = 2 mm.

Types. The male of 10.0 mm from BATHUS 1, Stn 651 is the holotype (MNHN Ga5717). The other specimens are paratypes.

Etymology. From the Greek *analogos*, resembling, in reference to the similarity between this species and *M. africana* and *M. calvata*.

Description. Carapace 1.3 times longer than broad; dorsal surface moderately convex from side to side, smooth, with numerous short striae having short uniramous setae; regions well delineated by furrows includ-

ing distinct anterior and posterior cervical grooves. Posterior cardiac region bluntly triangular, preceded by deep transverse depression. Posterior margin preceded by elevated ridge. Rostrum triangular, nearly horizontal in lateral view, 0.5 length of remaining carapace, maximum width one-quarter carapace breadth, terminating acutely; dorsal surface slightly convex, with some small striae but without longitudinal ridge or groove; lateral margins carinated and straight. Frontal margin slightly oblique behind ocular peduncle, leading to slightly produced region, then nearly transverse toward anterolateral corner of carapace. Lateral margins weakly convex and subparallel, anterior corner rounded, anterior end of anterior cervical groove with distinct notch, posterior cervical groove without notch at anterior end.

Pterygostomian flap smooth, with small striae, anteriorly unarmed.

Sternum nearly 1.5 times longer than broad, maximum width at sternites 4 and 7. Sternite 3 moderately broad, twice wider than long, anterior margin divided into 2 lobes by deep median notch; lateral margin of each lobe convex, with small granules. Sternite 4 narrowly elongate anteriorly; surface depressed in midline, smooth; greatest width 2.5 times that of sternite 3.

Abdomen smooth, without spines; segments 2–4 each with 2 elevated transverse ridges, but 5 and 6 segments lacking such ridges; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 12 plates; posterior plates combined 1.7 times as wide as long.

Ocular peduncle movable; cornea unarmed, much longer than remaining eyestalk, feebly curving outward; distinct spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines; distomesial margin with small granules but no dorsal spine.

Antennal peduncle not overreaching eye; article 1 with distomesial angle granulated, bluntly produced, barely reaching midlength of article 2; articles 2–3 armed with blunt distolateral spine, distomesial angle of article 3 rounded; article 4 unarmed.

Mxp 3 ischium as long as merus measured on extensor margin; flexor margin sharply ridged, terminating in small blunt spine; extensor margin also with small blunt spine; 14–16 corneous denticles on crista dentata; merus with small striae on lateral surface, flexor margin with 2 or 3 distinct spines and several smaller spines, extensor margin with distal spine.

P1 subequal, 2.4 times longer than carapace, covered with small granules and short striae on merus to dactylus; numerous soft plumose setae present on dorsodistal margins and mesial surfaces of merus, less abundant on carpus, palm and fingers. Merus with 3 distal spines (lateral, mesial, and dorsal). Carpus nearly twice longer than high, with 2 small distal spines (mesial and lateral). Palm slender, nearly 1.5 length of carpus, and 1.5 times as long as fingers. Fingers not gaping, distally spooned; prehensile edges each with row of subtriangular teeth, proximal teeth obsolete.

P2–P4 moderately stout, with small granules and short striae on dorsal surface, somewhat compressed laterally, decreasing in size posteriorly; second longest, P2 merus 1.5 times P4 merus, reaching end of P1 merus; ischium to propodus with some soft plumose and uniramous setae mesially on dorsal and ventral margins, setae on propodus dense and long; some long simple setae also present on ventral faces of merus to propodus; dactylus with tufts of short simple setae. P2 merus elongate, half length of carapace, nearly 3 times length of carpus and 1.5 times length of propodus, distal spine on dorsal margin, also present on P3 and P4; carpus with 2 prominent, blunt distal spines on dorsal and ventral borders, lateral side with longitudinal crest; propodus 3.5 times as long as high, unarmed except for 2 corneous spines on distal margin on ventral margin; dactylus 0.7 length of propodus; distal claw short, moderately curved; flexor margin nearly straight, with 8 or 9 teeth decreasing in size proximally, each with slender corneous spine.

Epipods absent from pereopods.

Remarks. *Munidopsis analoga* belongs to the group of species with the carapace unarmed and abdomen smooth, rostrum triangular, P1 longer than P2, eye with ocular peduncle movable, cornea unarmed, much longer than remaining eyestalk. The group contains *M. andamanica* MacGilchrist, 1905, *M. cylindrophthalma*

(Alcock, 1894), *M. africana* Balss, 1913, *M. calvata* **n. sp.** and *M. analoga* **n. sp.** The closest species is *M. calvata* **n. sp.** (see below) and the two species are distinguishable from each other by the shape and length of the walking legs (P2–P4). The propodi are more than three times longer than high in *M. analoga*, whereas they are less than 3 times longer than high in *M. calvata*. Furthermore, the P2 reaches the end of the P1 merus in *M. analoga*, whereas it only reaches the midlength of the P1 merus in *M. calvata*.

Munidopsis cylindrophthalma can be easily distinguishable from the other species of the group by the length of P1. In *M. cylindrophthalma* P1 is, at least, 3 times as long as carapace, whereas P1 is, at most, 2.5 times as long as carapace in the other species.

Distribution. New Caledonia between 600–1180 m.

***Munidopsis andamanica* MacGilchrist, 1905**

Munidopsis Wardeni var. *andamanica* MacGilchrist, 1905: 245.

Munidopsis andamanica.—Baba, 2005: 284 (synonymy and references).

Material examined. Philippines, MUSORSTOM 1, Stn 44, 592–610 m: 2 M 15.8–17.8 mm, 1 ovig. F 16.9 mm (MNHN-Ga1405).— Stn 47, 757–685 m: 9 M 9.9–16.6 mm, 8 ovig. F 8.1–15.6 mm, 6 F 14.5–16.6 mm (MNHN-Ga1383). MUSORSTOM 2, Stn 24, 640–647 m: 2 M 8.8–16.7 mm (MNHN-Ga1385).— Stn 25, 520–550 m: 5 M 8.3–17.3 mm, 5 ovig. F 11.4–15.5 mm, 4 F 9.6–13.6 mm (MNHN-Ga1384).—Stn 39, 1030–1190 m: 2 M 10.7–15.1 mm (MNHN-Ga1406).—Stn 79, 620–700 m: 3 M 10.0–12.4 mm, 3 ovig. F 20.0–21.1 mm (MNHN-Ga1380).—Stn 82, 550 m: 1 ovig. F 18.1 mm (MNHN-Ga1386). MUSORSTOM 3, Stn 106, 640–668 m: 1 M 8.6 mm, 2 F 9.1–12.7 mm (MNHN-Ga5346).—Stn 118, 466–488 m: 1 M 18.7 mm (MNHN-Ga5347).—Stn 123, 648–649 m: 1 M 19.7 mm (MNHN-Ga5348).—Stn 135, 486–551 m: 1 M 14.8 mm (MNHN-Ga5349). Indonesia, Makassar Strait, CORINDON 2, Stn 117, 447–470 m: 4 M 16.3–19.5 mm, 1 ovig. F 16.3 mm, 1 F 12.9 mm (MNHN-Ga1407).—Stn 209, 487–497 m: 1 M 21.7 mm (MNHN-Ga1381).— Stn 210, 338 m: 2 M 9.7–10.8 mm (MNHN).—Stn 276, 395–450 m: 4 M 12.0–24.3 mm, 1 ovig. F 14.9 mm (MNHN-Ga1382). Indonesia, Banda Sea, CORINDON 4, Stn I/1, 525–562 m: 1 M 14.6 mm (MNHN-Ga1585).—Stn I/2, 333–507 m: 2 ovig. F 15.8–20.2 mm, 1 F 15.2 mm (MNHN-Ga1584).—Stn COP II/1, 315 m: 1 M 21.4 mm (MNHN-Ga1586). Indonesia, Kei Islands, KARUBAR, Stn 20, 760–809 m: 2 M 13.2–13.8 mm; 2 ov. F 17.7–18.8 mm; 1 F 16.7 mm (MNHN-Ga5374). —Stn 21, 688–694 m: 4 M 8.8–25.0 mm; 2 ovig. F 14.2–17.6 mm; 1 F 23.7 mm (MNHN-Ga5547).— Stn 38, 620–666 m: 1 M 8.6 mm, 2 F 7.5–12.6 mm (MNHN-Ga5376).— Stn 56, 549–552 m: 2 M 14.5–17.1 mm, 1 ovig. F 19.7 mm, 1 F 11.1 mm (MNHN-Ga5377).—Stn 57, 603–620 m: 2 M 13.9–15.0 mm (MNHN-Ga5378).—Stn 71, 477–480 m: 1 ovig. F 15.4 mm (MNHN-Ga5350).—Stn 72, 676–699 m: 1 M 19.2 mm, 1 F 14.2 mm (MNHN-Ga5379).—Stn 73, 840–855 m: 1 M 10.3 mm, 1 F 11.6 mm (MNHN-Ga5351). Solomon Islands, SALOMON 1, Stn 1751, 740–790 m: 1 M 5.5 mm (MNHN-Ga5394). SALOMON 2, Stn 2176, 600–875 m: 2 M 7.4–15.5 mm, 2 F 8.0–8.5 mm (MNHN-Ga5355).—Stn 2181, 645–840 m: 1 M 15.4 mm (MNHN-Ga5346).—Stn 2188, 495–677 m: 1 M 20.4 mm, 1 F 10.7 mm (MNHN-Ga5357).—Stn 2189, 660–854 m: 1 M 12.4 mm (MNHN-Ga5358).—Stn 2195, 543–593 m: 1 ovig. F 14.6 mm (MNHN-Ga5359).—Stn 2197, 897–1057 m: 3 M 17.2–21.9 mm, 1 ovig. F 19.9 mm (MNHN-Ga5360).—Stn 2214, 550–682 m: 1 M 14.9 mm (MNHN-Ga5361).—Stn 2244, 554–586 m: 1 M 11.7 mm (MNHN-Ga5363).—Stn 2245, 582–609 m: 2 M 17.9–21.3 mm (MNHN-Ga5364).—Stn 2246, 664–682 m: 1 M 17.4 mm, 1 F 9.8 mm (MNHN-Ga5365).—Stn 2247, 686–690 m: 4 ovig. F 14.9–16.8 mm (MNHN-Ga5366).—Stn 2248, 650–673 m: 2 M 17.9–21.3 mm (MNHN-Ga5367).—Stn 2268, 632–640 m: 1 M 17.0 mm, 1 ovig. F 15.8 mm (MNHN-Ga5368).—Stn 2273, 732–839 m: 2 M 10.7–13.4 mm, 1 ovig. F 12.9 mm (MNHN-Ga5370).—Stn 2274, 750–841 mm: 2 M 10.0–19.2 mm, 1 F 8.3 mm (MNHN-Ga5371).— Stn 2276, 814–980 m: 2 M 14.1–16.3 mm, 3 F 8.2–17.6 mm (MNHN-Ga5372).—Stn 2297, 728–777 m: 1 M 14.9 mm (MNHN-Ga5373). New Caledonia, BIOGEOCAL, Stn 232, 760–790 m: 1 M 12.0 mm, 2 ovig. F

11.1–13.6 mm (MNHN-Ga5386). BATHUS 1, Stn 660, 796–800 m: 1 M 16.6 mm (MNHN-Ga5387).—Stn 661, 960–1100 m: 2 M 8.0–10.5 mm (MNHN-Ga5388). BATHUS 2, Stn 741, 700–950 m: 1 M 14.0 mm (MNHN-Ga5389).—Stn 743, 713–950 m: 1 M 10.2 mm (MNHN-Ga5390). HALIPRO 1, Stn 854, 650–780 m: 1 M 15.6 mm, 1 F 11.4 mm (MNHN-Ga5345).—Stn 867, 720–950 m: 1 M 20.0 mm, 1 ovig. F 15.1 mm, 1 F 12.4 mm (MNHN-Ga5385). BATHUS 4, Stn 913, 777–820 m: 1 M 15.0 mm, 1 ovig. F 17.2 mm (MNHN-Ga5391).—Stn 950, 705–750 m: 1 M 12.2 mm (MNHN-Ga5392). Loyalty Islands, MUSORSTOM 6, Stn 438, 780 m: 2 F 9.0–9.1 mm (MNHN-Ga5393). Vanuatu, MUSORSTOM 8, Stn 994, 641–649 m: 2 M 11.4–15.0 mm, 3 ovig. F 12.4–15.5 mm, 1 F 9.7 mm (MNHN-Ga5380).—Stn 996, 764–786 m: 2 M 14.2–17.0 mm (MNHN-Ga5381).—Stn 1007, 720–830 m: 1 M 17.8, 1 ovig. F 16.6 mm (MNHN-Ga5382).—Stn 1057, 600–625 m: 1 ovig. F 18.6 mm (MNHN-Ga5383).—Stn 1080, 799–850 m: 2 ovig. F 13.3–17.8 mm (MNHN-Ga5384). Fiji Islands, MUSORSTOM 10, Stn 1332, 640–687 m: 1 M 13.4 mm, 1 F 13.3 mm (MNHN-Ga5352).—Stn 1342, 650–701 m: 2 M 13.2–16.6 mm, 1 ovig. F 11.5 mm (MNHN-Ga5353).—Stn 1344, 588–610 m: 1 F 8.8 mm (MNHN-Ga5354).

Remarks. The present material agrees quite well with the original description and account provided by Baba (1988). The cornea is usually much longer than the remaining eyestalk in most specimens. However, a few specimens (e.g., material from Fiji) have the corneae slightly longer than the eyestalks. Furthermore, the specimens from the Philippines and Indonesia have the rostrum usually directed upward, whereas in the other material the rostrum is mostly horizontal or slightly deflexed. These differences are considered here as intraspecific variation.

Distribution. Previously known from Andaman Sea at 1041 m (MacGilchrist 1905), west coast of Sumatra at 677 m (as *M. wardeni* Doflein & Balss, 1913), Moluccas, Philippines, South China Sea from 514 to 1350 m (Baba 1988), and Taiwan (Wu *et al.* 1997). The present records extend the distribution of the species to Indonesia, Solomon Islands, New Caledonia, Vanuatu and Fiji Islands, at 333–1598 m.

Munidopsis antonii (Filhol, 1884)

Galathodes Antonii Filhol, 1884: 230, fig. 2.

Munidopsis abyssorum A. Milne-Edwards & Bouvier, 1897: 365; 1900: pl. 30, figs 15–19.

Munidopsis antonii.—Baba, 2005, 132, 284, figs. 52–54 (synonymy and references).—Macpherson & Segonzac, 2005: 14.

Material examined. W Sri Lanka, SAFARI 2, Stn 2 (CP02), 3625 m: 2 M 28.8–31.8 mm (MNHN-Ga1579).—Stn 2 (CP03), 3450 m: 1 ovig. F 33.8 mm (MNHN-Ga1578).

Distribution. Previously known from the northwestern Atlantic (58½°49'N) and Bay of Biscay to the southeastern Atlantic (off South Africa, 32½°29'S) between 3134 and 4460 m (Macpherson & Segonzac 2005), Pacific Ocean, off Juan Fernandez (Henderson 1888), Bering Sea, 3241 m (Benedict 1902, as *M. beringana*), southern part of Davis Strait, 2626 m (Hansen 1908), off Oregon, 2800–3990 m (Ambler 1980, as *M. beringana*), Japan, 3420–3960 m (Baba 1982), Tasman Sea, off Zamboanga, Costa Rica, Gulf of Panama, 366–3800 m and Indian Ocean, southwestern Australia, Mozambique, off Sri Lanka (Baba 2005). The present specimens were collected west of Sri Lanka, at 3450 and 3625 m.

Munidopsis arenula n. sp.

(Fig. 20)

Material examined. New Caledonia, BIOGEOCAL, Stn 291, 510–520 m: 1 F 4.6 mm, holotype (MNHN-Ga5557).

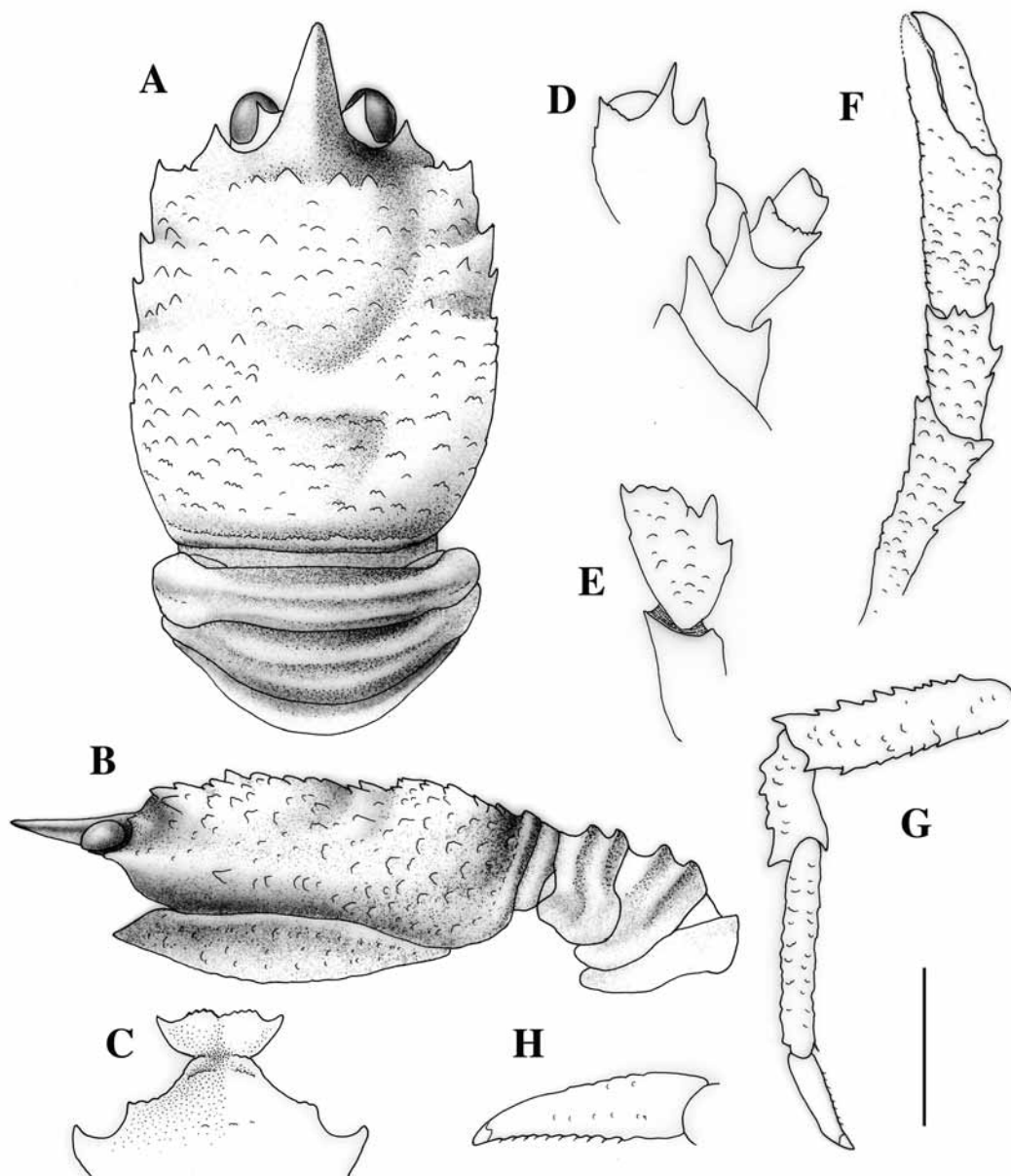


FIGURE 20. *Munidopsis arenula* n. sp., holotype, female (4.6 mm), New Caledonia, BIOGEOCAL, Stn 291. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum, sternites 3 and 4. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, left cheliped, lateral. G, left P2, lateral. H, dactylus of left P2, lateral. Scale: A, B, F, G = 2 mm; C, D, E, H = 1 mm.

Etymology. From the Latin *arenula*, grain of sand, in reference to the numerous granules on the dorsal carapace surface. The name is considered as a substantive in apposition.

Description. Carapace slightly longer than broad; dorsal surface moderately convex from side to side, covered with small acute granules, nearly devoid of setae; 4 small epigastric spines and some minute spines on anterior branchial regions; regions well delineated by furrows including distinct anterior and posterior cervical grooves. Median branchial region well marked. Posterior cardiac region bluntly triangular, preceded by deep transverse depression on each side. Posterior margin preceded by granulated ridge. Rostrum narrow triangular, horizontal in lateral view, 0.3 times length of remaining carapace, and 0.2 times as wide as carapace breadth, dorsal surface with longitudinal carina, ending at base of rostrum; lateral margins carinate. Frontal margin with antennal spine, concavely transverse behind ocular peduncle, slightly oblique between antennal

spine and anterolateral corner of carapace. Lateral margins granulated, weakly convex and subparallel, anterolateral angle with small spine, clearly smaller than antennal spine, two small spines on anterior branchial margin; end of anterior cervical groove with distinct notch, end of posterior cervical groove with shallow notch, followed by small spines.

Ptergostomian region granulated, anteriorly ending in acute angle.

Sternum as long as wide, maximum width at level of sternite 7. Sternite 3 moderately broad, 2.5 times broader than long, anterior margin divided into 2 lobes by median notch, lateral margin of each lobe convex. Sternite 4 wide anteriorly; surface depressed in midline, with some short ridges on anterior part; greatest width nearly 2.5 times that of sternite 3.

Abdomen smooth, unarmed; segments 2–4 each with 2 slightly elevated transverse ridges, but segments 5–6 lacking such ridges; segment 6 with weakly produced posterolateral lobes and nearly transverse postero-median margin. Telson composed of 7 plates; posterior plates combined nearly 1.5 times as wide as long.

Ocular peduncle scarcely movable, with short mesial spine; cornea subglobular, slightly narrower than eyestalk, without spine or tooth between eye and antennal peduncle.

Basal article of antennular peduncle with dorsolateral and distolateral spines; distomesial margin with crest of granules and small spine.

Antennal peduncle reaching tip of eye; article 1 with distomesial and distodorsal spines; article 2 with 2 small distal spines on mesial and lateral margins; article 3 with granulated distal margin; article 4 unarmed.

Mxp 3 ischium as long as merus measured on extensor margin; merus with flexor margin with 2 strong spines and several granules; extensor margin with small distal spine; 19 or 20 corneous denticles on crista dentata.

P1 moderately long and slender, nearly devoid of setae, ca. 1.5 times longer than carapace, covered with small granules on merus to dactylus, those on fingers reduced in number. Merus twice carpus length, with 2 spines at midlength and at distal part of mesial margin, a few minute spines on dorsal side. Carpus more than twice longer than high, with row of small mesial spines, and small dorsolateral distolateral spines. Palm unarmed, slender, 1.3 times length of carpus, and as long as fingers. Fingers unarmed, opposable margins nearly straight, not gaping, distally spooned.

P2–P4 slender, nearly devoid of setae, somewhat compressed laterally, decreasing in size posteriorly; P2 longest, not reaching end of P1. P2 merus moderately elongate, 0.6 times length of carapace, 3.5 times longer than high, nearly twice carpus length, dorsal margin with row of small spines, increasing in size distally; lateral surface with small granules; ventral margin serrated; carpus with serrated crest along dorsal margin and lateral surface; propodus slightly shorter than merus, 6 times longer than high and nearly twice dactylus length, covered with numerous small granules, one movable distal spinule on ventral margin; dactylus weakly curved; flexor margin straight, with 9 or 10 teeth decreasing in size proximally, each with slender corneous spinule.

Epipods absent from P1–P4.

Remarks. The new species most closely resembles *M. acutispina* Benedict, 1902, from the northeastern Atlantic and Mediterranean Sea, at 698–2030 m (Frogliia *et al.* 2002; Macpherson & Segonzac 2005). Both species are characterized by the carapace being convex from side to side, with numerous pointed tubercles, the rostrum narrow triangular, its basal width less than one-third the anterior width of carapace, the antennal spine small, segments 2 and 3 of the abdomen unarmed, the cornea well exposed, visible in dorsal view, the eye spine mesial and small, the walking legs not reaching the end of the chelipeds, and the pereopods without epipods.

A comparison with the Atlantic material of *M. acutispina* (types from the Talisman Expedition, northwestern Africa at 698 m, 2 M 5.3–8.2 mm, 1 ovig. F 7.8 mm, 2 F 4.4–5.7 mm, MNHN-Ga 275, 276, see also Macpherson & Segonzac 2005) showed that they can be easily differentiated by the armature of the dorsal surface of the carapace. In the new species, the carapace is covered with granules, bearing a few small epigastric

and anterobranchial spines, whereas the carapace surface is covered with numerous acute spines in *M. acutispina*. Furthermore, the spines along the lateral margins of the carapace are always stronger in *M. acutispina* than in *M. arenula*.

The new species is also close to *M. proales* Ahyong & Poore, 2004, from western Australia, at 513–540 m. This species is readily distinguished by the presence of epipods on P1–P3, which are absent in the new species.

Distribution. New Caledonia, at 510–520 m.

Munidopsis aries (A. Milne-Edwards, 1880)

Orophorhynchus aries A. Milne-Edwards, 1880: 58.

Munidopsis aries.—Gore, 1983: 203, fig. 2 (synonymy and references).—Macpherson & Segonzac, 2005: 15, fig. 3.

Material examined. Reunion Island, MD32, Stn 19, 3180–3480 m: 1 F 69.1 mm (MNHN-Ga5503).

Remarks. The specimen agrees quite well with the material from the Atlantic Ocean (Macpherson & Segonzac 2005). The species, as the with the closest relative *M. albatrossae* Pequegnat & Pequegnat, 1973, from the eastern Pacific, has a denticulate carina on the distolateral margin of the fixed finger of P1 (incorrectly stated as absent in Macpherson & Segonzac 2005).

Distribution. This species was previously known from the Atlantic Ocean: Bequia (Caribbean Sea) at 2912 m (A. Milne-Edwards 1880), Azores Islands, (as *M. sundi*, Sivertsen & Holthuis 1956), Middle Atlantic Bight (Wenner 1982), Colombia and Venezuela Basins and Gulf of Mexico (Pequegnat & Pequegnat 1971, Gore 1983), between 2615 and 4095 m, and Iberian Abyssal Plain, Mauritania, Angola and South Africa, between 3130 and 5320 m (Macpherson & Segonzac 2005). The present material extends the distribution to the southwest Indian Ocean.

Munidopsis austellus n. sp.

(Fig. 21)

Material examined. French Polynesia, BENTHAUS, Stn 1911, 900–1300 m: 1 M 6.5 mm (holotype, MNHN-Ga5558).

Etymology. From the Latin *austellus*, gentle south wind, in reference to the southern origin of the species. The name is considered as a substantive in apposition.

Description. Carapace 1.2 times longer than broad; dorsal surface moderately convex from side to side, covered with small granules, nearly devoid of setae; regions well delineated by furrows including distinct anterior and posterior cervical grooves. Median branchial region well marked. Posterior cardiac region bluntly triangular, preceded by deep transverse depression on each side. Posterior margin preceded by granulated ridge. Rostrum triangular, horizontal in lateral view, 0.3 length of remaining carapace, 0.3 as wide as carapace; dorsal surface with longitudinal carina; lateral margins carinate. Frontal margin with antennal spine, concavely transverse behind ocular peduncle, slightly oblique between antennal spine and anterolateral corner of carapace. Lateral margins granulated, weakly convex and subparallel, anterolateral angle with small spine, distinct notch at end of anterior cervical groove, and shallow notch at end of posterior cervical groove.

Pterygostomian region granulated, anteriorly ending in acute angle.

Sternum as long as wide, maximum width at level of sternite 7. Sternite 3 moderately broad, nearly 2.5 times broader than long, anterior margin divided into 2 lobes by deep median notch, lateral margin of each lobe convex. Sternite 4 wide anteriorly; surface depressed in midline, with some short ridges on anterior part; greatest width 2.5 times that of sternite 3.

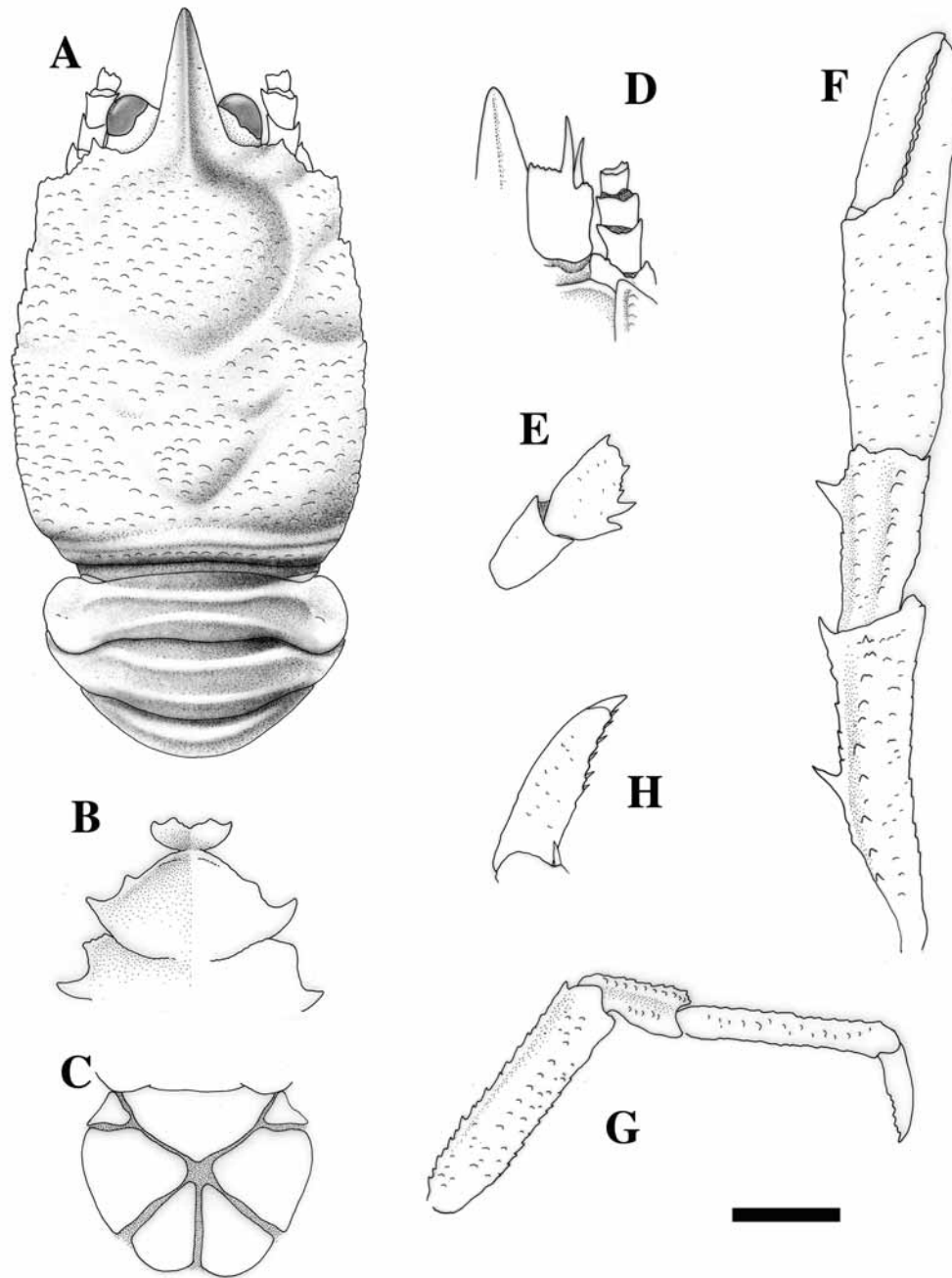


FIGURE 21. *Munidopsis austellus* n. sp., holotype, male (6.5 mm), French Polynesia, BENTHAUS, Stn 1911. A, carapace and abdomen, dorsal. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, right cheliped, lateral. G, right P2, lateral. H, dactylus of right P2, lateral. Scale: A, F, G = 2 mm; B, C, D, E, H = 1 mm.

Abdomen smooth, unarmed; segments 2–4 each with 2 slightly elevated transverse ridges, but segments 5–6 lacking such ridges; segment 6 with weakly produced posterolateral lobes and nearly transverse postero-medial margin. Telson composed of 7 plates; posterior plates combined nearly 1.5 times as wide as long.

Ocular peduncle scarcely movable, unarmed; cornea subglobular, slightly narrower than eyestalk, without spine or tooth between eye and antennal peduncle.

Basal article of antennular peduncle with long dorsolateral and distolateral spines; distomesial margin with crest of small tubercles.

Antennal peduncle overreaching tip of eye by distal margin of article 3; article 1 with distomesial and laterodistal processes; article 2 armed with 2 small distal spines on mesial and lateral margins; article 3 with minute distomesial spine; article 4 unarmed.

Mxp 3 ischium slightly shorter than merus measured on extensor margin; 19 or 20 corneous denticles on crista dentata; merus with flexor margin with 2 strong and 2 small spines; extensor margin with small distal spine.

P1 long and slender, nearly devoid of setae, left slightly longer than right; right P1 2.3 times longer than carapace, covered with small granules on merus to dactylus, those on fingers reduced in number. Merus with 2 strong spines at midlength and at distal part of mesial margin, a few minute spines on dorsal side. Carpus more than twice longer than high, with strong mesial spine. Palm unarmed, slender, 1.2 length of carpus, and slightly longer than fingers. Fingers unarmed, opposable margins nearly straight, not gaping, distally spooned.

P2–P4 slender, nearly devoid of setae, somewhat compressed laterally, decreasing in size posteriorly; P2 longest, nearly reaching end of P1 carpus. P2 merus moderately elongate, 0.6 times length of carapace, 4 times longer than high and twice carpus length, dorsal margin serrated, distal spine small; lateral surface with small granules; ventral margin serrated; carpus with granulated crest along dorsal margin and lateral surface; propodus slightly shorter than merus, 7 times longer than high and twice dactylus length, covered with numerous small granules, 1 movable distal spinule on flexor margin; dactylus moderately curved, flexor margin straight, with 6 teeth decreasing in size proximally, and situated on distal half, each with slender corneous spinule.

Epipods absent from P1–P4.

Remarks. The new species is closely related to *M. cidaris* Baba, 1974 from northeastern Australia (off Queensland), the Solomon Islands and the Philippines (see below). The two species are characterized by a triangular rostrum, dorsal carapace surface covered with small granules, without epigastric spines, abdomen unarmed, eye-spine absent, and P2 not reaching end of P1. *Munidopsis austellus* can be differentiated from *M. cidaris* by the following features:

- The epipods are absent in the new species and present in P1 in *M. cidaris*.
- The antennal spine is absent in *M. cidaris*, present in *M. austellus*.
- The rostrum bears a distinct dorsal carina in midline in *M. austellus*, whereas this carina is nearly obsolete in *M. cidaris*.
- The P1 bears a strong spine at midlength on the merus, and another near the distal end of carpus in the new species, whereas these margins are unarmed in *M. cidaris*.
- The dactyli of P2–4 have the flexor margin unarmed in *M. cidaris*, instead of bearing some teeth in the new species.

Distribution. French Polynesia (Austral Islands), between 900 and 1300 m.

***Munidopsis bairdii* (Smith, 1884)**

Galacantha Bairdii Smith, 1884: 356.

Munidopsis bairdii.—Baba, 2005: 285 (list of references).—Macpherson & Segonzac, 2005: 17, fig. 4.

Munidopsis chacei Kensley, 1968: 288, figs. 1, 3a–b.—Ambler, 1980: 18.

Material examined. W of Sri Lanka, SAFARI 2, Stn 3 (CP05), 2540 m: 1 ovig. F 28.8 mm (MNHN-Ga1562).

Remarks. *Munidopsis bairdii* is a relatively common species in the Atlantic Ocean (Macpherson & Segonzac 2005) and it belongs to the group of species having the carapace with a longitudinal row of submedian spines, the posterior-most transverse ridge with spines, the rostrum with lateral spines, the abdomen unarmed, the ocular peduncle movable and short relative to length, the eye-spine directed straight forward, the fixed fin-

ger of P1 without a denticulate carina on the distolateral margin, and P2 overreaching P1. The number of submedian spines and their arrangement on the dorsal surface of the carapace has been used to differentiate *M. bairdii* and *M. chacei* Kensley, 1968 from South Africa (see Baba 2005): 2-2-2-2-1 (submedian spines) and posterior margin of the carapace with 10 spines in *M. bairdii*, versus 2-1-2-2-2 (submedian spines) and posterior margin of the carapace with 4 spines in *M. chacei*. The numerous specimens from the Atlantic Ocean show a certain variation in this arrangement, with the second pair of gastric spines absent or reduced to one spine, and the posterior cardiac spine sometimes paired (as in *M. chacei*). Furthermore, in the Atlantic specimens the number of spines on the posterior margin ranges between 4 and 10. The present specimen has only 2-2-1-1 submedian spines and only 2 median spines on the posterior border of the carapace. Another character to differentiate both species (the ratio propodus/dactylus length with the P2 dactylus 3/4 as long as propodus in *M. bairdii*, being slightly more than half as long in *M. chacei*) also shows a certain variation. Therefore, I believe that the specific characters of *M. chacei* fall within the range of variation of *M. bairdii*, and as Ambler (1980) suggested, they can be considered as synonyms.

Distribution. Atlantic Ocean, off Delaware Bay, 2738 m (Smith 1884), off New England, Middle Atlantic Bight, 2125–2933 m (Wenner 1982), from off British Isles, 55½°07'N to Bay of Biscay (47½°30'S) between 2220 and 4262 m (de Saint-Laurent 1985, Macpherson & Segonzac 2005), west of Cape Point, South Africa, 2745 m (Kensley 1968). Pacific Ocean, from Oregon to Ecuador, between 1986 and 3243 m (Faxon 1895, Khodkina 1975, Luke 1977, Ambler 1980). The present material extends its range to the Indian Ocean (Sri Lanka), at 2540 m.

***Munidopsis bispinocolata* Baba, 1988**
(Fig. 55D)

Munidopsis bispinocolata Baba, 1988: 142, fig. 54; 2005: 137, 285 (list of occurrences).

Material examined. Madagascar (A. Crosnier collection), Stn CH107, 695–710 m: 1 ovig. F 8.3 mm (MNHN-Ga1618).—Stn CH139, 850–1125 m: 1 ovig. F 6.5 mm (MNHN-Ga1597). Philippines, MUSORS-TOM 2, Stn 55, 865–866 m: 1 M 10.3 mm (MNHN-Ga1619).—Stn 56, 970 m: 1 M 8.8 mm (MNHN-Ga1620). Indonesia, Makassar Strait, CORINDON 2, Stn 281, 1150–1120 m: 1 ovig. F 8.7 mm (MNHN-Ga1621). Indonesia, Kei Islands, KARUBAR, Stn 40, 443–468 m: 1 M 6.0 mm (MNHN).—Stn 87, 1017–1024 m: 1 F 6.5 mm (MNHN-Ga5458). Solomon Islands, SALOMON 1, Stn 1753, 1001–1012 m: 1 F 7.4 mm (MNHN-Ga1562).—Stn 1807, 1077–1135 m: 2 ovig. F 9.0–9.3 mm (MNHN-Ga5459). SALOMON 2, Stn 2182, 762–1060 m: 1 ovig. F 11.8 mm (MNHN-Ga5460).—Stn 2217, 1045–1118 m: 1 ovig. F 7.3 mm (MNHN-Ga5461).—Stn 2218, 582–684 m: 1 M 9.8 mm (MNHN-Ga5462).—Stn 2230, 837–945 m: 1 M 9.6 mm, 1 F 8.4 mm (MNHN).—Stn 2246, 664–682 m: 1 M 9.6 mm, 1 ovig. F 14.1 mm (MNHN-Ga5463).—Stn 2247, 686–690 m: 1 M 6.8 mm, 1 ovig. F 8.6 mm (MNHN-Ga5464).—Stn 2249, 782–884 m: 1 M 9.0 mm (MNHN-Ga5465).—Stn 2250, 845–970 m: 1 F 7.1 mm (MNHN-Ga5466).—Stn 2251, 1000–1050 m: 1 M 9.6 mm (MNHN-Ga5467).—Stn 2276, 814–980 m: 1 ovig. F 7.0 mm (MNHN-Ga5468). Vanuatu, MUSORSTOM 8, Stn 990, 980–990 m: 1 F 8.1 mm (MNHN-Ga5469).—Stn 991, 910–936 m: 1 ovig. F 9.5 mm, 1 F 5.0 mm (MNHN-Ga5470).—Stn 996, 764–786 m: 1 M 5.9 mm (MNHN-Ga5471).—Stn 1008, 919–1000 m: 1 ovig. F 7.5 mm (MNHN-Ga5472).—Stn 1075, 944–956 m: 1 ovig. F 8.2 mm (MNHN-Ga5473).—Stn 1076, 1100–1191 m: 1 M 10.4 mm (MNHN-Ga5474).—Stn 1126, 1210–1260 m: 1 M 10.0 mm (MNHN-Ga5475).—Fiji, MUSORSTOM 10, Stn 1309, 843–887 m: 1 M 8.9 mm (MNHN-Ga5476).—Stn 1332, 640–687 m: 1 ovig. F 8.0 mm (MNHN-Ga5477).

Remarks. The carapace surface of the specimens from Madagascar are smoother than those from other localities. No other differences were observed. The general colour pattern of the body and appendages is light

brown or grey, with the corneae orange.

Distribution. Previously known from Sulawesi, southwest coast of Halmahera, between 933 and 2363 m (Baba 1988), Mindanao Sea at 1510 m (Baba 2005) and New South Wales at 1100 m (Baba & Poore 2002). The present material largely extends the distribution range of the species to Madagascar, Philippines, Indonesia, Solomon Islands, Vanuatu and Fiji, from 443–1260 m.

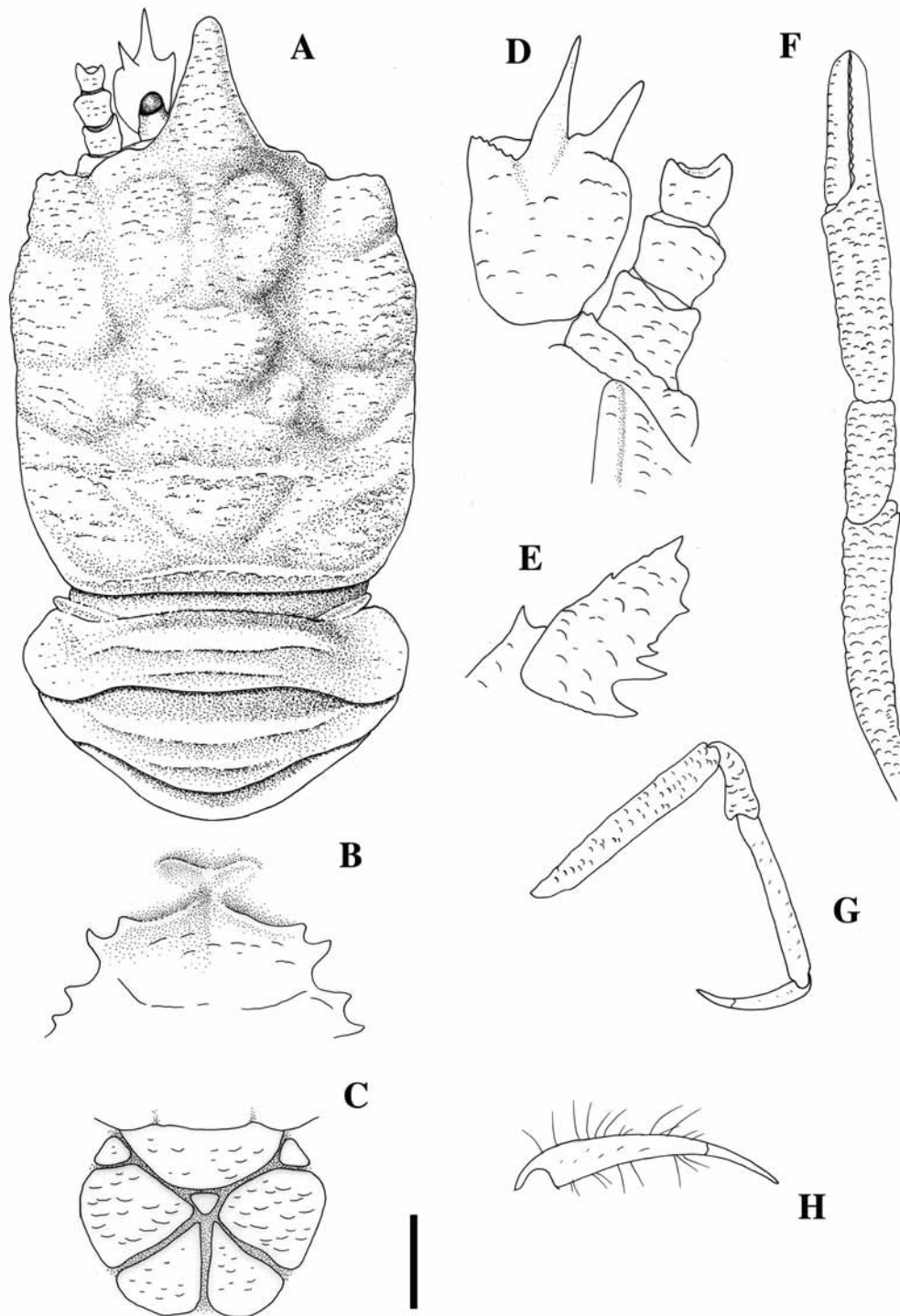


FIGURE 22. *Munidopsis bruta* n. sp. holotype, female (5.5 mm), Solomon Islands, SALOMON 2, Stn 2219. A, carapace and abdomen, dorsal. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, right cheliped, lateral. G, right P2, lateral. H, dactylus of right P2, lateral. Scale: A, B, C, H = 1 mm; D, E = 0.5 mm; F, G = 2 mm.

***Munidopsis bruta* n. sp.**

(Fig. 22)

Material examined. Taiwan, Stn 27, 329–377 m: 1 M 5.4 mm (NTOU). Indonesia, Kei Islands, KARUBAR, Stn 59, 399–405 m: 1 M 6.9 mm (MNHN Ga5721). Solomon Islands, SALOMON 1, Stn 1754, 1169–1203 m: 1 F 8.1 mm (MNHN Ga5722). SALOMON 2, Stn 2219, 650–836 m: 1 F 5.5 mm (MNHN Ga5723).

Type material. The female of 5.5 mm from SALOMON 2, Stn 2219, is the holotype (MNHN-Ga5723). The other specimens are paratypes.

Etymology. From the Latin *brutus*, rough, in reference to the armature of the carapace.

Description. Carapace quadrangular, devoid of setae, dorsal surface granulose, areas distinct. Gastric region convex, bearing pair of obtuse and granulose large epigastric processes. Cardiac region triangular, with slightly elevated ridge preceded by deep depression; granules of different sizes. Branchial regions with numerous granules, as figured. Rostrum relatively wide at base, distally bluntly spiniform, nearly horizontal, dorsal surface convex and granulate, length 0.3 times that of remaining carapace, maximum width one-fourth that of carapace. Frontal margin unarmed, oblique near rostrum, and transverse lateral to antennal peduncle. Lateral margins with obtuse processes or granulose lobes separated by well-defined furrows, lobes without spines.

Pterygostomian region smooth, anteriorly ending in acute angle.

Thoracic sternite 3 short and wide, width about half that of sternite 4.

Abdomen spineless, segments 2 and 3 each with 2 transverse ridges, each anterior ridge elevated. Segment 6 having posterolateral lobes flap-like, not overreaching transverse posteromedian margin. Telson broader than long, divided into 8 plates; posterior plates combined nearly 1.5 times as wide as long.

Eye unarmed, small, movable; cornea distal, globose, slightly narrower than eyestalk.

Basal article of antennule with 2 spines (distolateral and distodorsal), additional lateral spine in several specimens; mesial distal margin somewhat produced, granulate.

Antennal peduncle unarmed, with blunt distomesial and distolateral processes on articles 1–3.

Merus of Mxp 3 with 2 strong flexor marginal spines and 2 or 3 small spines; extensor margin with strong spine on distal end, and 1 or 2 additional small spines along extensor border.

P1 long and slender, subcylindrical, unarmed, with numerous small granules; 2.7–2.8 times as long as carapace in females (3.7–4.5 times in males), clearly longer than P2. Merus clearly overreaching end of rostrum, as long as carapace in females, more than 1.5 times in males, 2.5–2.8 times longer than carpus; palm 1.5 times as long as carpus and slightly longer than fingers in females, more than twice length of carpus and twice length of fingers in males.

P2–P4 subcylindrical, slender, spineless, with numerous granules on meri to propodi. P2–P3 meri subequal, 1.2 times longer than P4 merus. P2 merus shorter than carapace, slightly overreaching end of rostrum; length 2.7–3.0 times that of carpus, about 7 times longer than high, and about 1.5 times that of propodus; dactylus curving, very slender and sharp, with smooth margins, length about two-thirds of propodus.

Epipods absent from all pereopods.

Colour: Carapace and abdomen orange; P1–P4 pale brown.

Remarks. The spineless and granular carapace, and slender pereopods with smooth dactyli on the flexor margin link *M. bruta* to *M. truculenta* Macpherson & Segonzac, 2005 from the Gulf of Guinea, off Congo (800–900 m).

The new species is distinguished from *M. truculenta* by the armature of the merus of Mxp 3. In the new species the distal spine on the extensor margin and the 2 proximal spines on the flexor margin are clearly stronger than in *M. truculenta*. The difference is constant for all specimens examined. In *M. truculenta*, the sternite 3 is broad relative to length, and the sternite 4 bears a broad anterior margin nearly contiguous to the whole posterior margin of sternite 3. In *M. bruta*, the sternite 4 is anteriorly narrow elongate, the anterior mar-

gin is clearly narrower than sternite 3, whereas this margin is nearly as wide as sternite 3 in *M. trunculenta*.

Distribution. Taiwan, Indonesia (Kei Islands) and Solomon Islands, between 399 and 1203 m.

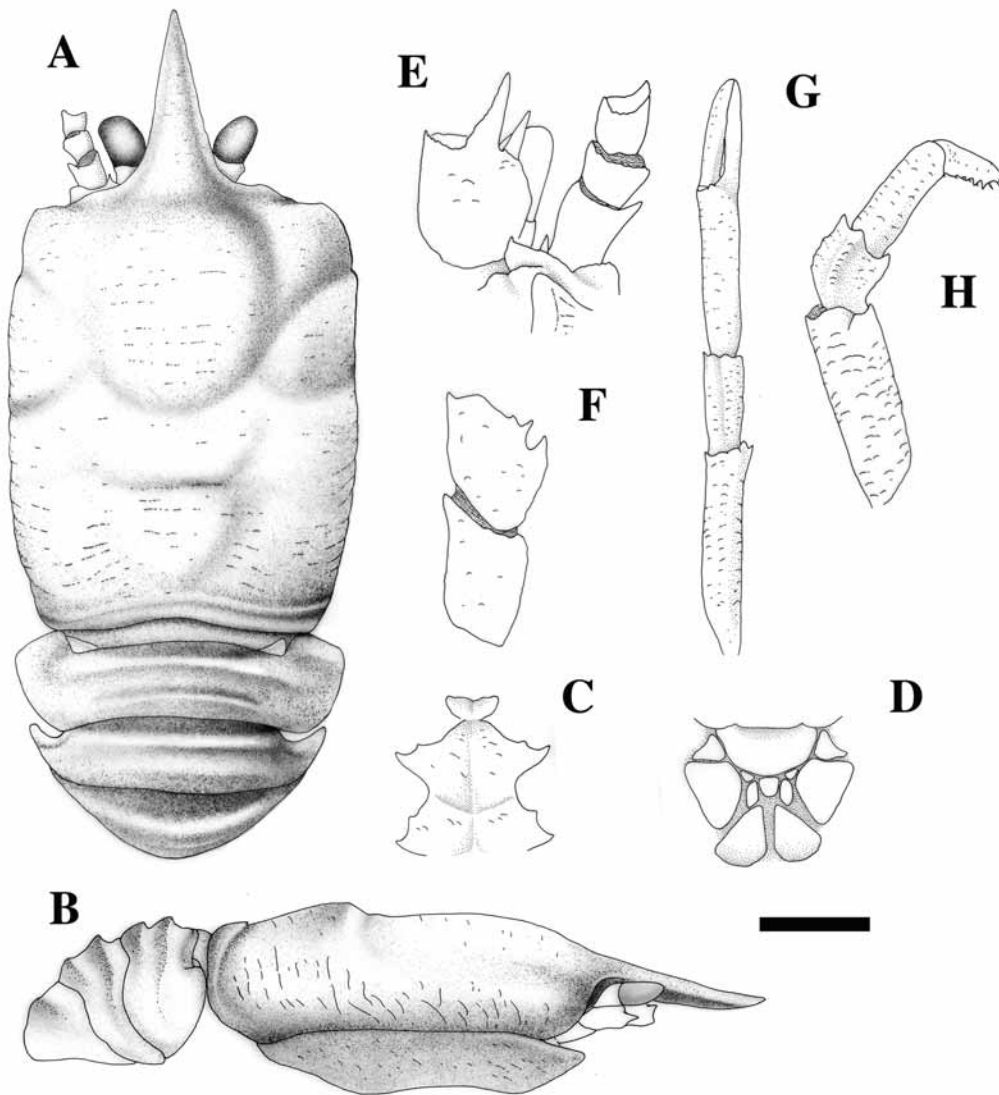


FIGURE 23. *Munidopsis calvata* n. sp., holotype, male (9.8 mm), Madagascar, Stn CH 87. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum, sternites 3–5. D, posterior part of sixth abdominal segment and telson. E, left antennule and antenna, ventral. F, merus of right third maxilliped, lateral. G, right cheliped, lateral. H, right P2, lateral. Scale: A, C, D = 2 mm; B, G, H = 5 mm; E, F = 1 mm.

***Munidopsis calvata* n. sp.**
(Fig. 23)

Material examined. Madagascar (A. Crosnier collection), Stn CH 49, 400–550 m: 1 ovig. F 8.6 mm (MNHN-Ga702).—Stn CH 54, 335–355 m: 1 ovig. F 9.1 mm, 1 F 5.0 mm (MNHN-Ga703).—Stn CH 58, 510 m: 1 M 13.8 mm (MNHN-Ga700).—Stn CH 66, 450–460 m: 2 M 10.4–15.2 mm (MNHN-Ga701).—Stn CH 87, 250 m: 1 M 9.8 mm (MNHN-Ga842).—Stn CH 89, 620 m: 1 ovig. F 9.7 mm (MNHN-Ga841).—Stn CH 90, 640–720 m: 2 M 15.8–17.8 mm, 1 ovig. F 11.4 mm (MNHN-Ga845).—Stn CH 94, 400 m: 1 M 8.2 mm (MNHN-Ga844).—Stn CH 98, 600–605 m: 1 M 14.0 mm (MNHN-Ga1388).—Stn CH 114, 470–475 m: 1 ovig. F 10.9 mm (MNHN-Ga1389).—Stn CH 115, 450 m: 1 M 17.5 mm, 1 ovig. F 12.5 mm (MNHN-Ga1390). Madagascar, Stn CH 15, 425–460 m: 1 M 13.6 mm (MNHN-Ga1752).—Stn CH 26, 450–600 m: 1

M 14.4 mm (MNHN-Ga1754).—Stn CH 28, 450 m: 1 ovig. F 12.1 mm (MNHN-Ga1751).—Stn CH 71, 525 m: 1 ovig. F 15.7 mm (MNHN-Ga4850).—Stn CH 82, 520 m: 1 ovig. F 17.6 mm (MNHN-Ga5423).—Stn CH 100, 600 m: 1 M 15.1 mm, 1 ovig. F 14.4 mm (MNHN-Ga5424).

Types. The male of 9.8 mm from Madagascar (A. Crosnier collection), stn CH 87 is the holotype (MNHN Ga842). The other specimens are paratypes.

Etymology. From the Latin *calvatus*, bare, in reference to the absence of spines and strong rugosities on the carapace and abdomen.

Description. Carapace 1.3 times as long as wide, dorsally spineless, covered with fine short setae, bearing very weak, interrupted transverse ridges more distinct on posterior half; gastric region convex, cardiac transverse ridge elevated. Rostrum 0.4 times as long as remaining carapace, maximum width one-quarter carapace breadth, narrowly triangular, dorsally convex and nearly straight horizontal; lateral margins convex and carinated. Front margin obliquely convex on mesial half, lateral half transverse, depressed below level of mesial half. Lateral margins subparallel, each constricted at end of anterior cervical groove, anterolateral angle rounded, not produced.

Sternum elongate, more than 1.5 times longer than wide, maximum width at level of sternites 4 and 7. Sternites smooth, with a few short striae; sternite 3 much wider than long, 0.3 width of sternite 4, anterior margin granulated; sternite 4 subtriangular, anteriorly narrow elongate.

Abdominal segments spineless, setose; segments 2–4 each with anterior ridge slightly elevated, followed by transverse groove; segments 5 and 6 smooth; posterolateral lobes of segment 6 reaching end of nearly transverse posteromedian margin. Telson divided into 12 plates, posterior plates each slightly longer than broad.

Eye movable; cornea unarmed, much longer than remaining eyestalk, feebly curving outward; distinct spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennule having distolateral spine larger than dorsolateral, ventromesial process granulated, with one short distal spine.

Basal article of antennal peduncle distomesially bearing one small spine, distolateral angle rounded and granulated; article 2 with well-developed distolateral spine; articles 3–4 unarmed.

Mxp 3 ischium 0.7 times as long as merus, bearing short process on flexor and extensor margins, lateral surface smooth, 17–19 corneous denticles on crista dentata; merus with 3 flexor marginal spines, distal one small, proximal spine largest, extensor margin with distal spine.

P1 subcylindrical, long and slender, 2.5–3.0 times as long as carapace, surface smooth. Merus about 2.5 times as long as carpus, with 2 terminal spines (mesial and lateral); carpus twice longer than wide and about half as long as palm, sometimes with minute distomesial and distolateral spines; palm 1.5 times as long as fingers, chela spineless, fingers not gaping, distally bearing intermeshing teeth.

P2–P4 barely setose, relatively slender, 3 distal articles subcylindrical; Meri successively shorter posteriorly, slightly depressed, dorsal margins feebly carinate, distally ending in spine, ventral margin with tubercles, distally ending in spine. P2 reaching midlength of cheliped merus, slightly longer than carapace; merus less than 3 times longer than wide, 1.7 times as long as propodus; dorsal margin of carpus with distal spine; propodus nearly 1.5 times as long as dactylus and 2.5 times longer than high, with distal movable spinule on flexor margin; dactylus curving, somewhat more so on P3 and P4, flexor margin with 6 or 7 proximally diminishing teeth, each with corneous seta-like.

Epipods absent from pereopods.

Remarks. The unarmed and smooth carapace and the abdomen, the triangular rostrum, P1 longer than P2, movable eye with unarmed cornea that is much longer than the remaining eyestalk and the absence of epipods on the pereopods link the new species to *M. africana* Balss, 1913, from Zanzibar (see above). *Munidopsis calvata* differs from *M. africana* in the following features:

— The lateral margins of the rostrum are straight in *M. calvata*, instead of being convex in *M. africana*.

— The P1 merus and carpus each bears spines along the mesial margin in *M. africana*, whereas these spines are absent in *M. calvata*.

— The dorsal margins of P2–P4 meri each bear a row of small spines in *M. africana*, instead of being unarmed (except distal spine) in *M. calvata*.

Distribution. Madagascar at 250–720 m.

***Munidopsis carinimarginata* Baba, 1988**

(Fig. 55E)

Munidopsis carinimarginata Baba, 1988: 145, fig. 55; 2005: 286.

Material examined. Indonesia, Banda Sea, CORINDON 4, Stn IV-1, 278–408 m: 1 M 14.3 mm (MNHN-Ga1583). Indonesia, Kei Islands, KARUBAR, Stn 12, 413–436 m: 1 M 13.7 mm (MNHN-Ga5504). New Caledonia, BIOCAL, Stn 109, 495–515 m: 1 M 9.5 mm (MNHN-Ga5505). MUSORSTOM 4, Stn 242, 500–550 m: 1 F 8.5 mm (MNHN-Ga5506). BATHUS 1, Stn 657, 490–537 m: 1 M 10.0 mm, 1 ovig. F 14.6 mm (MNHN-Ga5507).—Stn 658, 515–580 m: 1 M 10.7 mm (MNHN-Ga5508).—Stn 671, 450–470 m: 1 M 4.6 mm, 1 ovig. F 9.6 mm (MNHN-Ga5509).—Stn 698, 491–533 m: 1 M 8.3 mm (MNHN-Ga5510).—Stn 708, 550–580 m: 1 M 11.9 mm (MNHN-Ga5511). HALIPRO 1, Stn 866, 550–600 m: 1 M 9.4 mm, 3 ovig. F 9.6–12.0 mm (MNHN-Ga5500).—Stn 867, 720–950 m: 1 M 12.3 mm (MNHN-Ga5512). Vanuatu, MUSORSTOM 8, Stn 1050, 541–577 m: 1 M 11.6 mm (MNHN-Ga5513).—Stn 1124, 582–599 m: 1 M 11.7 mm (MNHN-Ga5514). BOA 0. Stn 2319, 482–540 m: 1 M 12.1 mm (MNHN-Ga5515). Fiji, BORDAU 1, Stn 1396, 591–596 m: 2 M 10.4–13.2 mm, 1 ovig. F 14.3 mm (MNHN-Ga5516).—Stn 1462, 556–560 m: 1 M 15.4 mm (MNHN-Ga5517). Tonga, BORDAU 2, Stn 1528, 587–592 m: 1 ovig. F 10.0 mm, 1 F 8.6 mm (MNHN-Ga5501).—Stn 1556, 589–591 m: 1 M 14.8 mm (MNHN-Ga5502).—Stn 1569, 433 m: 1 F 5.9 mm (MNHN-Ga5518).—Stn 1642, 532 m: 1 M 10.7 mm (MNHN-Ga5519).

Remarks. The specimens examined agree quite well with the original description and illustrations. The colour pattern of the body is orange or brownish; rostrum light brown; fifth and sixth abdominal segments and telson whitish; pereopods brownish, dactyli and distal part of propodi whitish.

Distribution. The species was only known from the holotype (Moluccas, off West coast off Halmehara, 545 m) (Baba 1988, 2005). The present material extends its distribution to Indonesia, New Caledonia, Vanuatu, Fiji and Tonga, between 300 and 1000 m.

***Munidopsis centrina* Alcock & Anderson, 1894**

Munidopsis centrina Alcock & Anderson, 1894: 170; 1895: pl. 11, figs. 6, 6a.—Ahyong & Poore, 2004: 47, fig. 9.—Baba, 2005, 139, 286, fig. 57.

Munidopsis (Orophorhynchus) centrina.—Alcock, 1901: 270.

Material examined. NW Madagascar, BENTHEDI, Stn CH 13, 2300–2500 m: 1 F 4.4 mm (MNHN-Ga1590).—Stn CH 82, 3450 m: 2 M 8.3–10.3 mm (MNHN-Ga1591). Reunion Island, MD32, Stn 103, 2950–2970 m: 2 M 12.1–20.2 mm (MNHN-Ga5532). New Caledonia, BIOGEOCAL, Stn 283, 2370–2375 m: 1 F 14.2 mm (MNHN-Ga5533).

Remarks. The specimens agree with the original description and the diagnoses and illustrations provided by Ahyong & Poore (2004) and Baba (2005). The gastric spines, additional to epigastric pair, range between 4 and 8. In one of the males from MD 32, the P1 does not exceed P2.

Distribution. Known from the Bay of Bengal, Tasman Sea and Mozambique Channel at 2450–3485 m

(Alcock & Anderson 1894, Alcock 1901, Ahyong & Poore 2004, Baba 2005). The present material has been collected in the SW Indian Ocean (2300–3450 m) and New Caledonia (2370–2375 m).

***Munidopsis ceres* n. sp.**

(Figs. 24, 25, 55F)

Material examined. New Caledonia, MUSORSTOM 4, Stn 221, 535–560 m: 1 M 9.0 mm (MNHN-Ga5534). CHALCAL 2, Stn 72, 527 m: 1 ovig. F 10.0 mm (MNHN-Ga5535). NORFOLK 2, Stn 2111, 500–1074 m: 1 M 12.4 mm, 1 ovig. F 11.1 mm (MNHN-Ga5550).

Types. The ovigerous female of 10.0 mm from CHALCAL 2, Stn 72 is the holotype (MNHN-Ga5535). The other specimens are paratypes.

Etymology. The species is dedicated to Ceres, the Roman goddess of grains and agriculture, in reference to the granulate aspect of the carapace. The name is considered as a substantive in apposition.

Description. Carapace as long as broad; dorsal surface moderately convex from side to side, sparsely covered with tubercles and nearly devoid of setae; cervical groove moderately distinct, regions well defined, gastric and cardiac regions more convex than branchial regions. Gastric region with pair of large epigastric processes. Cardiac region triangular, preceded by deep transverse groove. Rostrum broad, nearly horizontal or deflexed in lateral view, 0.3 length of remaining carapace, apex blunt, maximum width one-quarter carapace breadth; lateral margins strongly concave in proximal half; dorsal surface slightly convex, with numerous granules, and carinate in midline. Frontal margin concavely transverse behind ocular peduncle, leading to slightly produced process behind antennal peduncle, then concavely transverse toward anterolateral corner of carapace; lateral margins weakly convex, anterolateral corner produced into a large spine followed by 3 large acute processes, first 2 between ends of each anterior and posterior branches of cervical groove and third one behind end of posterior branch. Posterior margin preceded by elevated granulated ridge.

Pterygostomian flap with numerous granules, anteriorly angular.

Sternum as long as wide, maximum width at sternite 7; sternites 3 and 4 with numerous short striae, sternite 3 moderately broad, bilobate, separated by notch, about 3 times wider than long; lateral margin of each lobe convex; sternite 4 about 3.5 times wider than sternite 3.

Abdomen with numerous small protuberances on transverse ridges and pleura; segments 2–4 each with elevated transverse ridge, bluntly produced medially, and followed by transverse groove; segments 5–6 lacking such ridges and covered with small granules; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 8 plates; posterior plates combined more than 1.5 times as wide as long.

Ocular peduncle fixed, without eye-spine; surface with small protuberances; semicircular cornea cupped within broad-base eyestalk, broader than third antennal segment. Distinct thick spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines; distomesial margin produced, bearing small granules but no spine.

Antennal peduncle overreaching tip of cornea; article 1 with strong distomesial process barely reaching distal margin of article 2, distolateral margin produced; article 2 with blunt distolateral spine, distomesial angle slightly produced; article 3 with blunt distomesial process; article 4 unarmed.

Mxp 3 ischium granulated, as long as merus measured on extensor margin, flexor margin ridged, terminating in small blunt spine; 20 or 21 denticles along crista dentata. Merus with numerous granules on lateral surface, flexor margin with 2 strong spines, extensor margin produced. Carpus slightly crenulated on extensor surface.

P1 subequal, more than 2.5 times carapace length, covered with numerous small protuberances and granules on merus to dactylus, and some setae more dense on fingers. Merus 1.7 times length of carpus, with a few

distal blunt spines, several protuberances along mesial margin. Carpus 1.7 times longer than high, with several distal blunt spines. Palm slender, nearly 1.5 length of carpus, 1.3 (females) and 2.0 (males) times as long as high measured at bases of fingers. Fingers 0.7 times length of palm, opposable margins nearly straight, not gaping, distally spooned; fixed finger without distolateral carina.

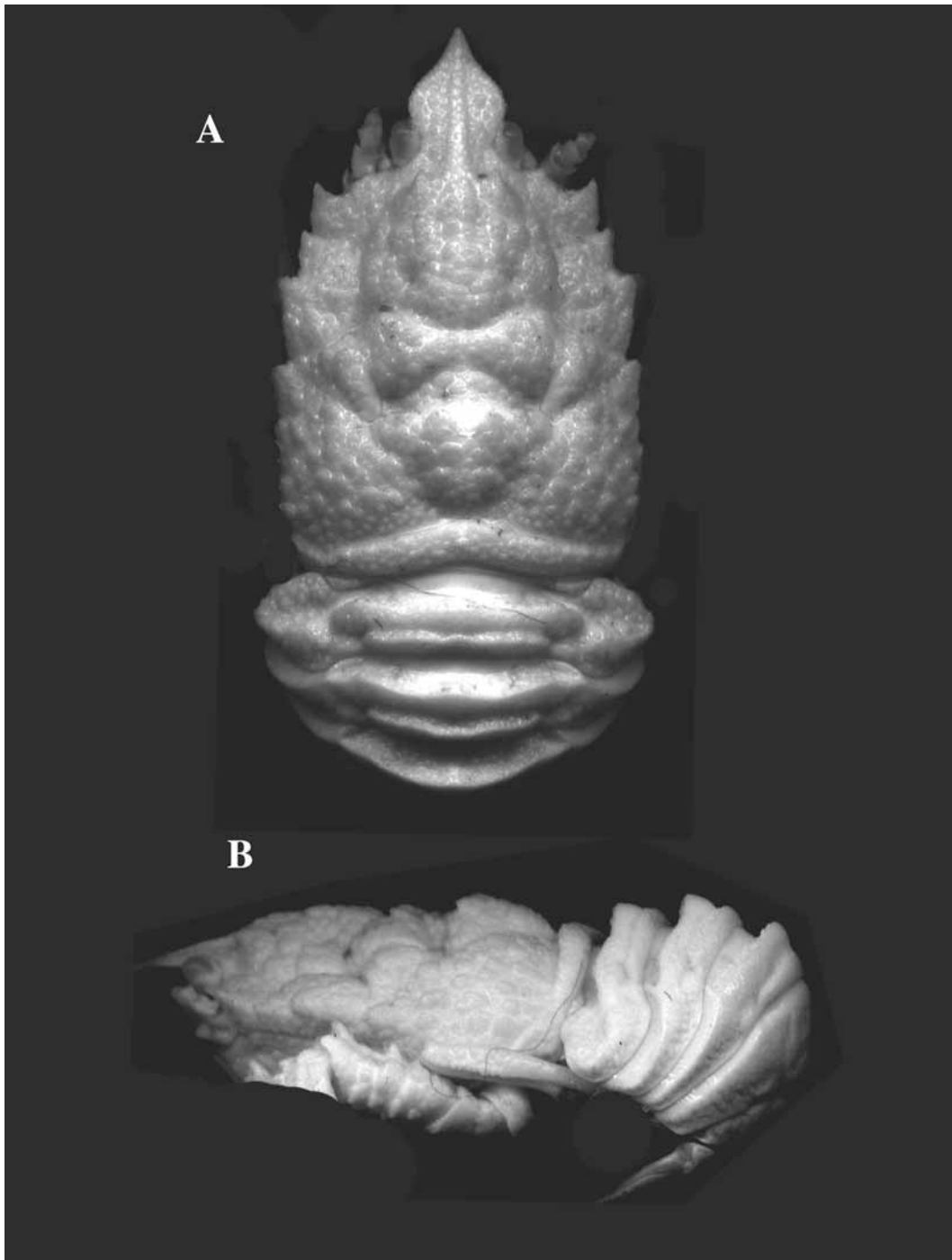


FIGURE 24. *Munidopsis ceres* n. sp., holotype, ovigerous female (10.0 mm), New Caledonia, CHALCAL 2, Stn 72. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral.

P2–P4 moderately stout, nearly devoid of setae, about 1.5 times carapace length, somewhat compressed laterally, decreasing in size posteriorly; P2 longest, barely reaching end of P1 carpus. P2 merus nearly half carapace length, about twice as long as high, 1.5 times length of carpus and 1.3 times length of propodus, dorsal margin cristate with 3 or 4 spines and some granules, ventral margin with some produced striae; carpus

with one prominent blunt spine and some smaller spines along dorsal margin, lateral crest with granules, some additional granules on mesial side; propodus 3 times as long as high, and slightly longer than dactylus, with some large granules on mesial and lateral sides, flexor margin unarmed; dactylus with terminal claw short, moderately curved, surface smooth, ventral margin nearly straight, with 16 minute teeth decreasing in sizes proximally, each with slender corneous spine, ultimate spine closer to penultimate spine rather than end of article. Length of P4 merus 0.8 times that of P2.

Epipods on P1–P3.

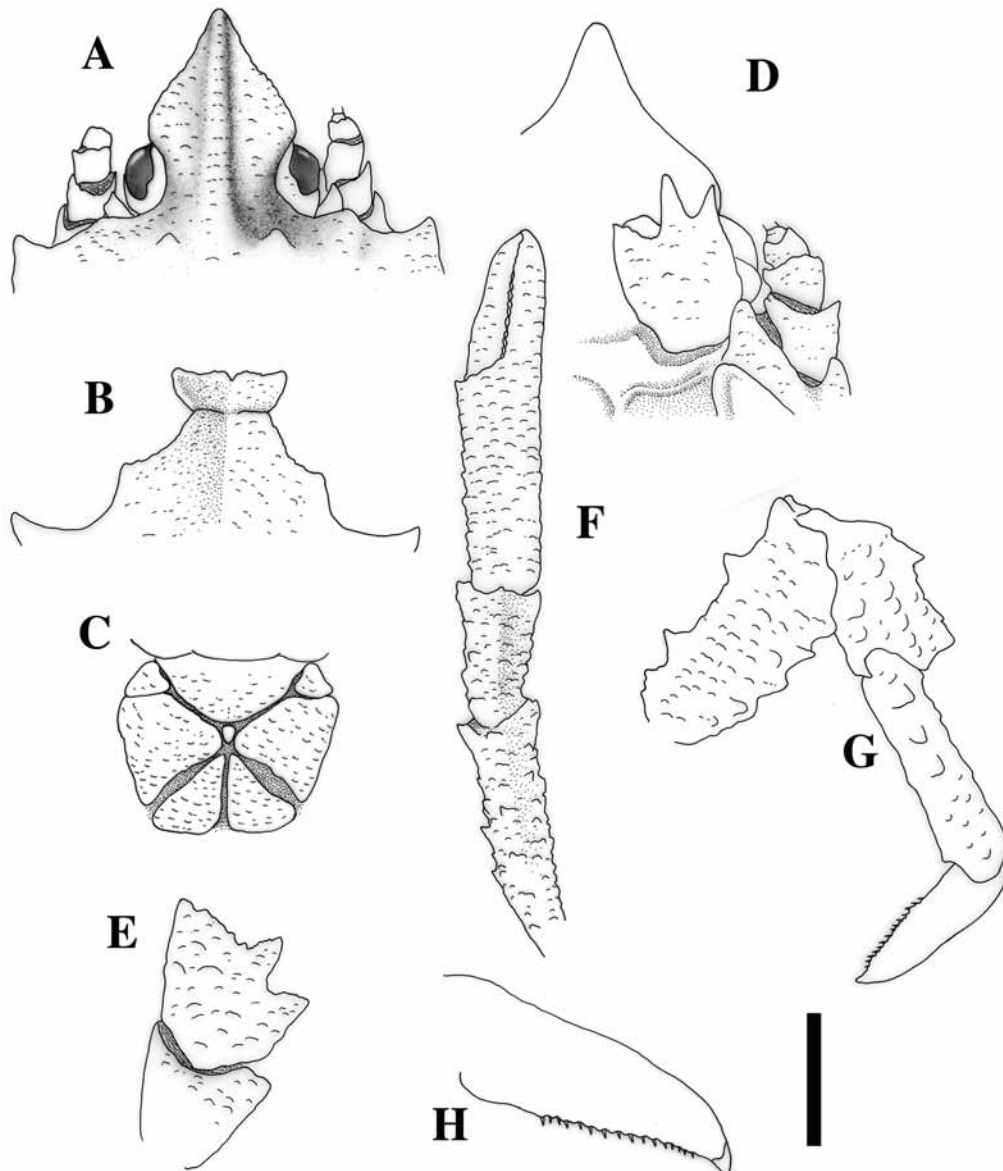


FIGURE 25. *Munidopsis ceres* n. sp., holotype, ovigerous female (10.0 mm), New Caledonia, CHALCAL 2, Stn 72. A, anterior portion of carapace, dorsal. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, right cheliped, lateral. G, right P2, lateral. H, dactylus of right P2. Scale: A, C, G = 2 mm; F = 5 mm; B, D, E, H = 1 mm.

Colour. General colour of body and pereiopods red.

Remarks. The new species is closely related to *M. papanui* Schnabel & Bruce, 2006 from New Zealand. Both species have the dorsal surface of the carapace, abdomen and pereiopods armed with numerous granules and tubercles and a blunt median process on the abdominal tergites 2 and 3. However, the following characters can differentiate them:

— The lateral margins of rostrum are proximally concave in *M. ceres*, but uniformly convergent in *M. papanui*.

— The lateral margin of basal article of antennular peduncle bears some stout spines in *M. papanui*, whereas these spines are absent in the new species.

— The merus of Mxp 3 bears three strong spines on the flexor border, instead of two spines in *M. ceres*.

— The mesial margin of the merus to palm of P1 bears numerous spines in *M. papanui*, but relatively few in *M. ceres*. Furthermore, the P1 is clearly more slender in *M. papanui* than in *M. ceres*.

— The P2–P4 are stouter in *M. ceres* than in *M. papanui*. P2 merus is three times longer than high in *M. papanui*, being twice longer in the new species. Spines along the dorsal margin of merus are thicker in *M. ceres* than in *M. papanui*.

Distribution. New Caledonia, between 500 and 1074 m.

Munidopsis cidaris Baba, 1994

Munidopsis cidaris Baba, 1994: 16, fig. 7; 2005: 286.

Material examined. Philippines, MUSORSTOM 1, Stn 54: 975–1075 m: 1 M 8.7 mm (MNHN-Ga1444). Solomon Islands, SALOMON 2, Stn 2253, 1200 m: 1 M 11.3 mm (MNHN-Ga5536).

Distribution. Previously known from the type locality, off central Queensland at 1128–1178 m (Baba 1994, 2005). The new material extends the distribution to the Solomon Islands and the Philippines, between 975 and 1200 m.

Munidopsis concava n. sp. (Fig. 26)

Material examined. Solomon Islands, SALOMON 2, Stn 2245, 582–609 m: 1 M 6.3 mm (MNHN-Ga5537). Vanuatu, BOA 0, Stn 2313, 421–482 m: 1 ovig. F 8.6 mm (MNHN-Ga538). BOA 1, Stn 2432, 630–705 m: 2 M 6.8–11.2 mm, 3 ovig. F 7.1–7.6 mm (MNHN-Ga5539).—Stn 2470, 568–591 m: 9 M 3.3–7.0 mm, 2 ovig. F 6.1–7.5 mm, 9 F 3.1–6.4 mm (MNHN-Ga5540). Fiji, MUSORSTOM 10, Stn 1337, 635–670 m: 1 ovig. F 7.2 mm (MNHN-Ga5551).

Types. The ovigerous female of 7.2 mm from MUSORSTOM 10, Stn 1337 is the holotype (MNHN-Ga5551). The other specimens are paratypes.

Etymology. From the Latin *concauus*, concave, in reference to the concave margin of the rostrum.

Description. Carapace longer than wide, moderately arched from side to side, weakly convex from anterior to posterior end; bifurcated cervical groove weakly marked. Dorsal surface pubescent, unarmed, with some small striae. Gastric region indistinctly bordered from rostrum. Rostrum lanceolate, straight horizontal, dorsal surface carinate, lateral margins finely denticulate in distal third, concave in proximal third, ventral surface flattish on proximal half, somewhat carinate in midline on distal half; length nearly one-third that of remaining carapace, maximum width about one-fourth carapace breadth. Front margin oblique, bearing strong antennal spine, leading more obliquely to minute anterolateral blunt spine. Lateral margin somewhat convex, with notch at end of anterior cervical groove, followed by large blunt spine.

Sternum as long as wide, maximum width at sternite 7. Sternite 3 roughly quadrangular, anterior margin with submedian granules and blunt lateral process on each side. Sternite 4 more than 4 times as broad as preceding sternite, lateral margin with 2–4 spines plus minute spines, anterior-most larger.

Abdomen unarmed on surface, pubescent. Segments 2–4 each with slightly elevated anterior ridge, followed by shallow transverse groove. Segment 6 having transverse posterior margin flanked by very weak lat-

eral lobe. Telson composed of 8 plates; posterior plates combined more than twice wider than long.

Pterygostomial region with strong acute projection at anterior end.

Ocular peduncle immovable. Cornea well exposed, semicircular in dorsal view. Well-developed eye-spine continuous with eyestalk, about as long as remaining eyestalk in dorsal view.

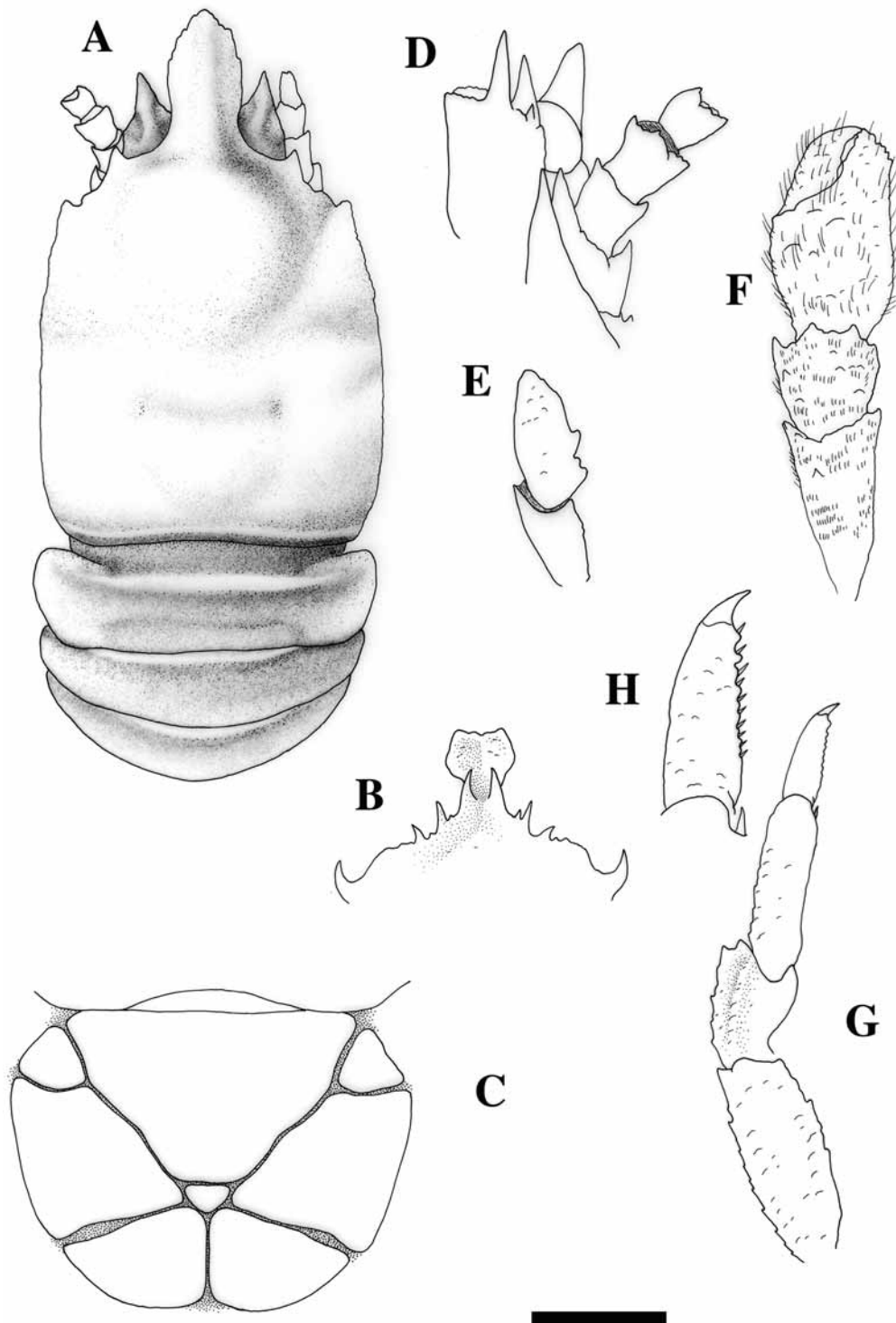


FIGURE 26. *Munidopsis concava* n. sp., holotype, ovigerous female (7.2 mm), Fiji, MUSORSTOM 10, Stn 1337. A, carapace and abdomen, dorsal. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, right cheliped, lateral. G, right P2, lateral. H, dactylus of right P2. Scale: A, F, G = 2 mm; B, C, D, E, H = 1 mm.

Basal article of antennule with distolateral and dorsolateral spines, latter smaller, two small spines at base; distomesial angle granulated.

Antennal peduncle having basal article with strong distomesial spine, nearly reaching end of article 2, distolateral spine well-developed; article 2 with small distolateral and distomesial spines; article 3 with minute distomesial, distolateral and distoventral spines.

Mxp 3 ischium slightly shorter than merus, crista dentata with 18–20 denticles. Merus with 3 blunt spines on flexor margin, extensor distal margin lacking distinct spine.

P1 short, setose, slightly longer than carapace. Merus with a few distal spines, some additional dorsal spines. Carpus as long as high, bearing some mesial and dorsal distal spines, and several small spines on dorsal side. Palm slightly longer than carpus, spineless. Fingers slightly shorter than palm, spooned at tip, prehensile edges straight, crenulate; fixed finger with denticulate carina on distolateral margin.

P2–P4 setose. P2 as long as carapace, reaching or slightly overreaching end of P1; merus triangular in section, half as long as carapace, nearly 2.5 times as long as high, about 1.5 times length of carpus and less than 1.5 times length of propodus, relatively high and compressed, dorsal crest with row of small spines increasing distally, ventral border with two serrated ridges; carpus with row of dorsal spines, with subparalleling striate ridge, terminal spines on dorsal crest strong; propodus 3 times as long as high, distal part of flexor margin ending in pair of movable spines preceded by a single spine somewhat distantly proximal to it; dactylus about two-third propodus length, ending in relatively short, strongly curved claw preceded by 9 or 10 proximally diminishing teeth on nearly straight flexor margin, corneous seta-like spine arising from each tooth, ultimate tooth closer to penultimate one than to end of terminal claw.

Epipod absent from P1–4.

Remarks. The new species is closely related to *M. pilosa* Henderson, 1885 (see below). Both species have the carapace surface smooth, usually setose, rostrum without lateral spines, lateral carapace border not crested, P2 reaching or overreaching P1, main eye-spine on median part of corneae and continuous with eye-stalk. However, the following characters can differentiate these two species:

— The lateral margins of the rostrum are straight or slightly convex in *M. pilosa*, but concave in the proximal third in *M. concava*.

— The P2–P4 bear strong spines along the dorsal margins of the meri and carpi in *M. pilosa*, whereas these spines are clearly smaller in the new species.

Distribution. Solomon Islands, Fiji and Vanuatu, between 421 and 705 m.

Munidopsis cornuata n. sp.

(Fig. 27)

Material examined. New Caledonia, BIOGEOCAL, Stn 283, 2370–2375 m: 1 F 4.4 mm, holotype (MNHN-Ga5559).

Etymology. From the Latin *cornuatus*, horn shaped, in reference to the shape of the eye-spine.

Description. Carapace slightly longer than broad; dorsal surface moderately convex from side to side, covered with sparsely setose squamae and granules; cervical groove moderately distinct, regions well defined, gastric and cardiac regions slightly more convex than branchial regions. Gastric region with pair of broad, granulated, epigastric processes. Cardiac region triangular, preceded by deep transverse groove. Rostrum triangular, broad, horizontal in lateral view, about half length of remaining carapace, maximum width 0.3 carapace breadth; apex subacute, margins serrate, dorsally carinate and sparsely granulated. Frontal margin concavely oblique behind ocular peduncle, leading to acute antennal spine, then concavely oblique toward strong anterolateral spine. Lateral margins with 4 or 5 blunt spines, weakly convex, with distinct notch at each end of anterior and posterior cervical grooves. Posterior margin preceded by moderately elevated ridge.

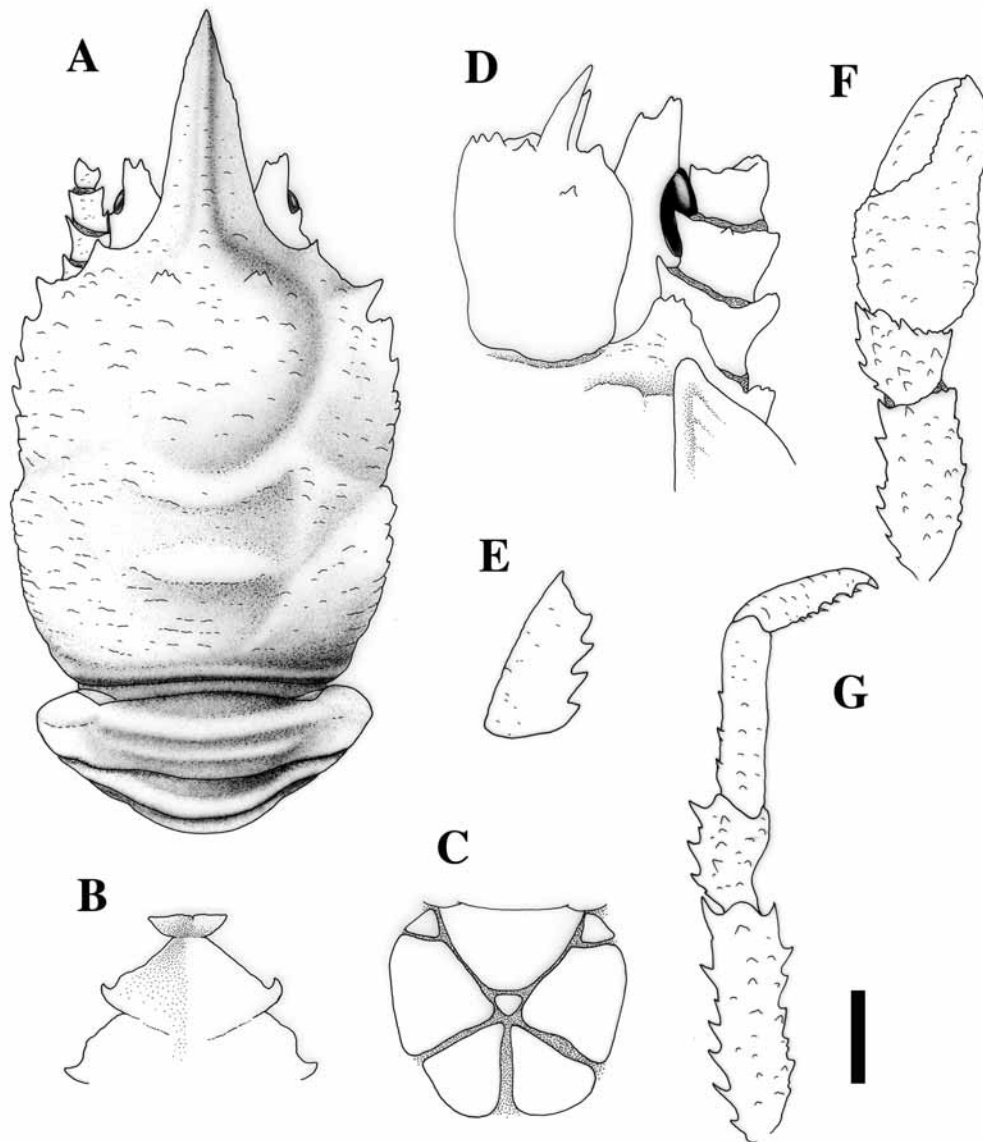


FIGURE 27. *Munidopsis cornuata* n. sp., holotype, female (4.4 mm), New Caledonia, BIOGEOCAL, Stn 283. A, carapace and abdomen, dorsal. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, right cheliped, lateral. G, right P2, lateral. Scale: A, B, C, F, G = 1 mm; D, E = 0.5 mm.

Pterygostomian flap granulated, anteriorly angular.

Sternum as long as broad, maximum width at sternite 7. Sternites smooth; sternite 3 broad, slightly bilobate, separated by median notch, about 3 times wider than long; sternite 4 about twice wider than sternite 3.

Abdomen smooth; segments 2–4 each with 2 slightly produced transverse ridges separate by shallow transverse groove; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 8 plates; posterior plates combined about twice as wide as long.

Ocular peduncle fixed, with strong mesial eye-spine ending in 2 spines overreaching cornea and antennal peduncle, lateral margin with blunt spine; cornea small, lateral, clearly narrower than eye-spine.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines, and two blunt additional spines on lateral side, distomesial margin with some teeth.

Basal article of antennal peduncle with serrated distomesial and distolateral processes; segments 2 or 3 with blunt distomesial and distolateral spines; article 4 with small distomesial spine.

Mxp 3 ischium granulated, as long as merus measured on extensor margin, flexor and extensor margins

terminating in small blunt spine; 17 corneous denticles on crista dentata. Flexor margin of merus with 4 spines decreasing in size distally; extensor margin with distal spine.

P1 subequal, short, massive, slightly longer than carapace, with sparse soft plumose setae. Merus nearly twice length of carpus, with numerous well-developed spines along mesial and lateral margins, and some small spines on dorsal surface. Carpus as long as high, with 3 well-developed spines along mesial margin, some scattered spines on dorsal surface. Palm slightly longer than carpus, with small spines along mesial margin and some scattered granules on dorsal surface and lateral margin. Fingers slightly longer than palm, opposable margins nearly straight, not gaping, distally spooned; fixed finger without distolateral carina.

P2–P4 sparsely granulated; P2 longest, overreaching end of P1, 1.5 times carapace length. P2 with merus half carapace length, more than 3 times longer than high, 2 times length of carpus and nearly 1.5 length of propodus; row of spines along dorsal and ventral margins, increasing in size distally; carpus with longitudinal crest on lateral surface, and row of 3 or 4 spines along dorsal margin; propodus more than 3 times as long as high, dorsal margin with some small spines proximally; ventral margin unarmed; dactylus slightly shorter than propodus, slightly curved, flexor margin nearly straight, with 6 teeth, proximally diminishing, each tooth with single seta.

Epipod on P1.

Remarks. *Munidopsis cornuata* belongs to the group of species with 2 epigastric carapace spines or processes only, with antennal spine, the rostrum spiniform, the abdominal segment 6 with the posteromedian margin weakly convex, not produced, the eyestalks short relative to length, the mesial eye-spine present, the P2 overreaching the end of the P1, the fixed finger without denticulate carina on the distolateral margin, the P2–P4 dactyli curved distally, the ultimate flexor marginal tooth much closer to the penultimate than to the tip of the article, and epipods on the P1. The closest species is *M. geyeri* Pequegnat & Pequegnat, 1970, from the Caribbean Sea, Gulf of Guinea and Azores Islands (Macpherson & Segonzac 2005). The following features can differentiate these two species:

— The mesial eye-spine is strong and bifurcated in *M. cornuata*, being single in *M. geyeri*. The cornea is small, narrower than eye-spine in the new species, being larger in *M. geyeri*.

— The carapace bears two well-developed epigastric spines in *M. geyeri*, but a pair of broad, granulated, epigastric processes in *M. cornuata*.

— The carapace lateral margins bear a well-developed spine on the antero-branchial region in *M. geyeri*, instead of a blunt and small spine in the new species.

Distribution. Only known from New Caledonia, at 2370–2375 m.

Munidopsis crassa Smith, 1885

Munidopsis crassa Smith, 1885: 494.— Baba, 2005: 140, 286, figs 58–60 (synonymy and references).—Macpherson & Segonzac, 2005: 20.

Material examined. NW Madagascar, BENTHEDI, Stn CH 90, 3700 m: 1 M 20.9 mm (MNHN-Ga1576).

Remarks. The specimen examined agrees with the specimens from the Atlantic Ocean (Macpherson & Segonzac 2005). However, the specimen from Madagascar has no epipods in P1, which are present in the Atlantic Ocean material. Additional specimens from the Indian Ocean may clarify the taxonomic value of this difference.

Distribution. Atlantic Ocean, from North Carolina (type locality) to the Bay of Biscay, Azores, Canary Islands, Middle Atlantic Bight, Caribbean Sea and off Namibia, between 2679 and 5315 m (Smith 1885, A. Milne-Edwards & Bouvier 1899, Bouvier 1922, Gordon 1955, Sivertsen & Holthuis 1956, Pequegnat & Pequegnat 1971, Turkay 1975, Wenner 1982, Macpherson & Segonzac 2005). Recently the species has been cited in the Tasman Sea, at 3580 m (Baba 2005). The present material is the first record in the Indian Ocean.

***Munidopsis crenatirostris* Baba, 1988**

Munidopsis crenatirostris Baba, 1988: 149, fig. 57; 2005: 144, 286, fig. 62.

Material examined. Philippines, MUSORSTOM 3, Stn 105, 398–417 m: 1 F 8.2 mm (MNHN-Ga5671).

Remarks. The specimen agrees quite well with the original description and additional comments provided by Baba (1988, 2005).

Distribution. Philippines, Bali Strait and Kei Islands, between 200–450 m

***Munidopsis cylindrophthalma* (Alcock, 1894)**

(Fig. 55G)

Elasmonotus cylindrophthalmus Alcock, 1894: 333.

Munidopsis cylindrophthalma.—Baba, 2005: 145, 287 (synonymy and references).

Material examined. Japan, Tosa Bay (T. Sakai collection), No depth recorded, 11.1963: 2 M 8.1–10.0 mm, 1 ovig. F 11.0 mm (MNHN-Ga1079).—02.1966: 3 M 12.9–16.2 mm (SMF). Philippines, MUSORSTOM 2, Stn 15, 330–326 m: 1 M 9.3 mm (MNHN-Ga1338).—Stn 26, 299–370 m: 5 ovig. F 9.8–11.2 mm (MNHN-Ga1339).—Stn 36, 569–595 m: 1 M 9.4 mm, 1 F 6.7 mm (MNHN-Ga1340).—Stn 40, 280–440 m: 2 ovig. F 11.0–12.4 mm (MNHN-Ga1341).—Stn 49: 416–425 m: 1 M 7.2 mm (MNHN-Ga5425).—Stn 78, 441–550 m: 1 M 7.5 mm (MNHN-Ga1342).—Stn 83, 318–320 m: 3 M 7.4–10.0 mm, 1 ovig. F 10.1 mm (MNHN-Ga1343). MUSORSTOM 3, Stn 122, 623–625 m: 1 M 6.8 mm (MNHN-Ga5426).—Stn 127, 430–440 m: 1 ov. F 10.1 mm (MNHN-Ga5427).—Stn 135, 486–591 m: 1 M 7.0 mm (MNHN-Ga5426). Indonesia, Makassar Strait, CORINDON 2, Stn 209, 490 m: 1 ovig. F 7.2 mm (MNHN Ga1337).—Stn 276, 395–450 m: 3 M 8.0–11.1 mm, 2 ovig. F 10.6–12.0 mm, 2 F 5.5–9.4 mm (MNHN Ga1336). Indonesia, Banda Sea, CORINDON 4, Stn III/2, 528–546 m: 1 ovig. F 9.4 mm (MNHN Ga4809). Indonesia, Kei Islands, KARUBAR, Stn 38, 620–666 m: 1 F 7.2 mm (MNHN Ga4810).—Stn 40, 443–468 m: 1 M 11.8 mm (MNHN Ga4811).—Stn 57, 603–620 m: 1 M 11.1 mm, 2 ovig. F 9.1–10.5 mm (MNHN Ga5449).—Stn 70, 410–413 m: 1 M 9.9 mm (MNHN Ga4812).—Stn 71, 477–480 m: 1 F 11.4 mm (MNHN Ga4813).—Stn 75, 451–452 m: 1 M 12.5 mm, 1 ovig. F 9.7 mm (MNHN Ga4814).—Stn 76, 400–401 m: 1 F 11.0 mm (MNHN Ga4815). Solomon Islands, SALOMON 1, Stn 1783, 399–700 m: 1 F 7.5 mm (MNHN Ga5441).—Stn 1786, 387 m: 2 M 11.2–11.5 mm, 3 ovig. F 9.2–10.3 mm, 1 F 9.8 mm (MNHN Ga4816).—Stn 1795, 442–451 m: 1 M 8.0 mm (MNHN Ga5442).—Stn 1800, 357–359 m: 3 ovig. F 10.5–11.8 mm (MNHN Ga5443).—Stn 1836, 439–486 m: 1 ovig. F 9.6 mm (MNHN Ga5444).—Stn 1837, 381–383 m: 1 M 9.8 mm (MNHN Ga4818). SALOMON 2, Stn 2175, 579–585 m: 3 M 8.5–13.3 mm, 1 ovig. F 10.5 mm, 2 F 10.0–15.3 mm (MNHN Ga5399).—Stn 2184, 464–523 m: 3 M 10.1–11.8 mm, 3 ovig. F 8.5–9.8 mm (with Bopyrid) (MNHN Ga5429).—Stn 2186, 487–541 m: 3 M 10.5–12.5 mm, 5 ovig. F 10.5–12.5 mm, 2 F 9.7–12.4 mm (MNHN Ga5400).—Stn 2187, 482–604 m: 5 M 8.7–11.9 mm, 5 ovig. F 9.3–10.9 mm (MNHN Ga5401).—Stn 2188, 495–677 m: 3 ovig. F 9.2–10.3 mm (MNHN Ga5410).—Stn 2189, 660–854 m: 1 M 10.9 mm (MNHN Ga5430).—Stn 2193, 362–432 m: 1 ovig. F 10.0 mm (MNHN Ga5411).—Stn 2194, 440–521 m: 6 M 8.4–12.1 mm, 1 ovig. F 11.0 mm (MNHN Ga5402).—Stn 2195, 543–593 m: 12 M 8.0–13.0 mm, 6 ovig. F 7.8–11.4 mm, 2 F 8.8–9.7 mm (with Bopyrid) (MNHN Ga5431).—Stn 2196, 724–765 m: 1 M 11.5 mm, 1 ovig. F 11.4 mm (MNHN Ga5403).—Stn 2206, 391–623 m: 1 M 10.1 mm, 1 F 9.3 mm (MNHN Ga5432).—Stn 2207, 336–341 m: 2 M 11.2–14.8 mm (MNHN Ga5412).—Stn 2212, 400–475 m: 1 M 12.9 mm, 1 F 10.1 mm (MNHN Ga5404).—Stn 2213, 495–650 m: 4 M 9.5–14.1 mm, 3 ovig. F 10.9–13.4 mm (MNHN).—Stn 2214, 550–682 m: 1 F 10.6 mm (MNHN Ga5413).—Stn 2226, 490–520 m: 1 M 9.1 mm, 1 ovig. F 10.4 mm, 1 F 9.9 mm (MNHN Ga5405).—Stn 2227, 508–522 m: 2 M 10.8–12.3 mm, 3 ovig. F 8.9–10.9 mm, 1 F 8.0 mm (MNHN Ga5406).—Stn

2244, 554–586 m: 1 M 9.7 mm, 6 ovig. F 7.3–10.6 mm, 1 F 10.1 mm (with Bopyrid) (MNHN Ga5433).—Stn 2245, 582–609 m: 4 M 8.5–12.3 mm, 1 ovig. F 10.0 mm, 1 F 8.2 mm (MNHN Ga5434).—Stn 2246, 664–682 m: 2 M 6.2–12.8 mm, 1 ovig. F 11.8 mm (MNHN Ga5435).—Stn 2248, 650–673 m: 1 M 13.7 mm, 2 ovig. F 9.4–10.6 mm (MNHN Ga5436).—Stn 2262, 460–487 m: 10 M 7.2–13.5 mm, 4 ovig. F 11.2–13.3 mm (MNHN Ga5407).—Stn 2263, 485–520 m: 2 M 8.8–13.2 mm, 3 ovig. F 9.8–13.2 mm, 1 F 9.3 mm (MNHN Ga5408).—Stn 2264, 515–520 m: 5 M 8.4–12.2 mm, 1 F 10.6 mm (MNHN Ga5415).—Stn 2268, 632–640 m: 2 M 7.4–11.5 mm, 1 ovig. F 11.0 mm (MNHN Ga5438).—Stn 2272, 380–537 m: 1 M 7.5 mm (MNHN Ga5409).—Stn 2273, 732–839 m: 1 M 6.7 mm, 1 F 6.3 mm (MNHN Ga5416).—Stn 2288, 509–520 m: 1 ovig. F 9.5 mm (MNHN Ga5439).—Stn 2289, 623–627 m: 1 M 12.1 mm, 1 F 10.2 mm (with Bopyrid) (MNHN Ga5440). Vanuatu. BOA 0. Stn 2307, 586–646 m: 1 ovig. F 10.5 mm (MNHN Ga5445).—Stn 2315, 465–583 m: 1 ovig. F 10.3 mm (MNHN Ga5446). New Caledonia, BATHUS 1, Stn 698, 491–533 m: 2 F 9.4–10.7 mm (MNHN Ga5417). BATHUS 2, Stn 762, 620–700 m: 2 M 10.2–11.0 mm (MNHN Ga5418).—Stn 771, 610–800 m: 1 M 12.6 mm, 1 ovig. F 11.3 mm (MNHN Ga5447). BATHUS 4, Stn 947, 470–490 m: 1 M 8.0 mm (MNHN Ga5419).—Stn 948, 533–610 m: 1 M 9.8 mm, 1 M 9.5 (with Bopyrid) (MNHN Ga5420).—Stn 949, 616–690 m: 2 M 11.5–12.6 mm, 1 ovig. F 12.6 mm, 2 F 10.0–12.1 mm (MNHN Ga5421). HALIPRO 1, Stn 854, 650–780 m: 1 M 10.9 mm (MNHN Ga5422). Fiji, CHALLENGER, Stn 173, 583 m: 1 M 5.6 mm (type series of *M. debilis*) (BMNH). MUSORSTOM 10, Stn 1316, 478–491 m: 2 M 9.2–9.7 mm, 2 ovig. F 8.9–10.0 mm (MNHN).—Stn 1368, 380–469 m: 1 M 10.2 mm (MNHN). BORDAU 1, Stn 1396, 591–596 m: 2 M 9.5–9.7 mm, 3 ovig. F 9.5–10.9 mm, 1 F 6.4 mm (MNHN).—Stn 1407, 499–527 m: 1 ovig. F 8.2 mm (MNHN).—Stn 1447, 420–513 m: 1 ovig. F 7.7 mm (MNHN).—Stn 1467, 417–427 m: 2 M 11.0–11.2 mm, 2 ovig. F 10.4–11.5 mm (MNHN Ga5448).—Stn 1468, 478–500 m: 1 ovig. F 10.6 mm (MNHN).—Stn 1504, 427–440 m: 1 M 8.1 mm (MNHN).—Stn 1505, 420–450 m: 2 M 10.3–11.6 mm, 2 ovig. F 11.0–12.2 mm (MNHN).

Colour: Body brown-orange; last abdominal segments and telson whitish; rostrum bordered by white or light brown band; pereopods light brown, dacyli whitish.

Remarks. As pointed out by Baba (1988), *M. cylindrophthalma* shows variation in the shape of the rostrum and in the length of the corneae. Furthermore, the material from Indonesia has the dorsal side of the rostrum clearly concave, and the cornea is longer than the remaining eyestalk, exceeding the third antennal article. The specimens from other localities have the rostrum dorsally convex.

Distribution. Arabian Sea, Maldives, Andaman Sea (type locality), W of Sumatra, Japan (Tosa Bay, off Akabane), Taiwan, Philippines, Indonesia (Kei Islands), between 188 and 1475 m. The present material extends the distribution range of the species to Solomon Islands, Vanuatu, New Caledonia and Fiji, between 299 and 854 m.

***Munidopsis dasypus* Alcock, 1894**

Munidopsis dasypus Alcock, 1894: 329; 1901: 252.—Baba 2005: 148, 287 (list of occurrences and references).

Material examined. Madagascar, Stn CH 103, 880–920 m: 1 M 14.3 mm (MNHN Ga1419). Indonesia, KARUBAR, Stn 87, 1017–1024 m: 1 ovig. F 14.5 mm, 2 F 17.2–20.5 mm (MNHN Ga5677).—Stn 89, 1058–1084 m: 1 M 21.0 mm, 1 ovig. F 24.5 mm (MNHN Ga5676).

Distribution. Previously known from the Philippines, South China Sea, North Sumatra, Exmouth Plateau (Western Australia), Andaman Sea (type locality), Bay of Bengal, Laccadive Sea, Arabian Sea, Gulf of Aden, between 214 and 1240 m. The new occurrences are from Madagascar (880–920 m) and Indonesia (Kei Islands) at 1017–1084 m.

***Munidopsis debilis* Henderson, 1885**

(Figs. 28, 29, 55H)

Elasmonotus debilis Henderson, 1885: 417; 1888: 165, pl. 18, figs. 4, 4a (in part, only station 210, the Philippines).

Munidopsis (Elasmonotus) debilis.—Tirmizi, 1966: 215, figs. 29c–e, 30 (selection of lectotype).

Munidopsis debilis.—Baba, 2005: 287.

Material examined. Philippines, off Mindanao, CHALLENGER, Stn 210, 694 m: 1 M ca. 7.0 mm (broken) (lectotype, BMNH). New Caledonia, BATHUS 2, Stn 741, 700–950 m: 1 ovig. F 8.9 mm (MNHN-Ga5663).—Stn 762, 620–700 m: 1 M 8.5 mm (MNHN).—Stn 764, 560–570 m: 1 M 11.3 mm (MNHN-Ga5664). HALIPRO 1, Stn 858, 1000–1120 m: 1 ovig. F 8.6 mm (MNHN-Ga5665). BATHUS 4, Stn 893, 600–620 m: 1 ovig. F 8.9 mm (MNHN-Ga5666). Vanuatu, MUSORSTOM 8, Stn 1027, 550–571 m: 1 ovig. F 11.5 mm (MNHN-Ga5667).—Stn 1076, 1100–1191 m: 1 ovig. F 8.8 mm (MNHN-Ga5668). Fiji, MUSORSTOM 10, Stn 1335, 729–753 m: 1 ovig. F 9.6 mm (MNHN).—Stn 1342, 650–701 m: 3 M 6.5–8.5 mm (MNHN-Ga5669).—Stn 1348, 353–390 m: 1 F 8.4 mm (MNHN-Ga5670). BORDAU 1, Stn 1401, 600–648 m: 3 M 7.7–8.4 mm (MNHN).

Description. Carapace dorsally spineless, bifurcated cervical groove slightly distinct, bearing weak interrupted transverse ridges more distinct on epigastric region and posterior half of carapace, ridges with fine short setae; gastric region convex, circumscribed, cardiac region slightly convex, depressed in front of slightly elevated transverse ridge. Rostrum lanceolate, barely half as long as remaining carapace, maximum width 0.3 carapace breadth, with longitudinal dorsal groove, slightly deflexed, sometimes upcurved distally, maximum width one-quarter carapace breadth; lateral margins carinated and usually convex. Front margin slightly convex on mesial half, lateral half transverse, depressed below level of mesial half. Lateral margins subparallel, not cristate, each constricted at end of cervical groove, anterolateral angle unarmed. Posterior transverse ridge slightly elevated, uninterrupted and unarmed.

Sternum elongate, slightly longer than wide, maximum width at level of sternite 7. Sternites feebly granulated; sternite 3 moderately broad, 3 times wider than long, anterior margin divided into 2 lobes by deep median notch; lateral margin of each lobe convex, with small granules, posterior border broadly contiguous with anterior margin of sternite 4; sternite 4 narrowly elongate anteriorly; surface depressed in midline, smooth; greatest width 2.3 times that of third sternite.

Abdominal segments spineless; segments 2–4 with two slightly elevated transverse ridges; posterolateral lobes of segment 6 slightly overreaching nearly transverse posteromedian margin. Telson divided into 12 plates, posterior plates each as long as broad.

Eye small, movable, not reaching midlength of rostrum; cornea subglobular, moderately small, as long as remaining eyestalk; distinct spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennular peduncle with granulated distomesial process, strong distolateral and distoventral spines.

Antennal peduncle having basal article with acute distomesial and rounded distolateral processes; article 2 with distolateral acute process; article 3 distolaterally produced.

Mxp 3 ischium slightly shorter than merus, measured along extensor margins; merus with 2 flexor marginal spines, distal one subequal to or slightly larger than proximal spine, extensor margin with distal spine.

P1 subcylindrical, setose along mesial and lateral margins, with small granules and short striae, twice as long as carapace; merus with small distomesial and distolateral spines; carpus nearly twice as long as high, with small distomesial and distolateral spines; chela spineless; palm 1.3 as long as carpus, fingers as long as palm, not gaping, distally bearing intermeshing teeth; fixed finger without denticulate carina on distolateral margin.

P2–4 barely setose, relatively slender, slightly compressed, 3 distal articles subcylindrical; meri slightly depressed and decreasing in length posteriorly, dorsal margin feebly carinate, ventral margin granulated. P2

barely reaching end of P1 carpus. P2 merus 2.8 times as long as high, nearly 3 times length of carpus and 1.5 times length of propodus; carpus with small distal spine on dorsal margin and carinated along lateral side; propodus 3.3 times as long as high and 1.5 times length of dactylus; dactylus ending in curved claw preceded by 5 or 6 proximally diminishing spines on nearly straight flexor margin, each spine bearing short seta, ultimate tooth closer to penultimate one than to end of terminal claw.

Epipods absent from P1–4.

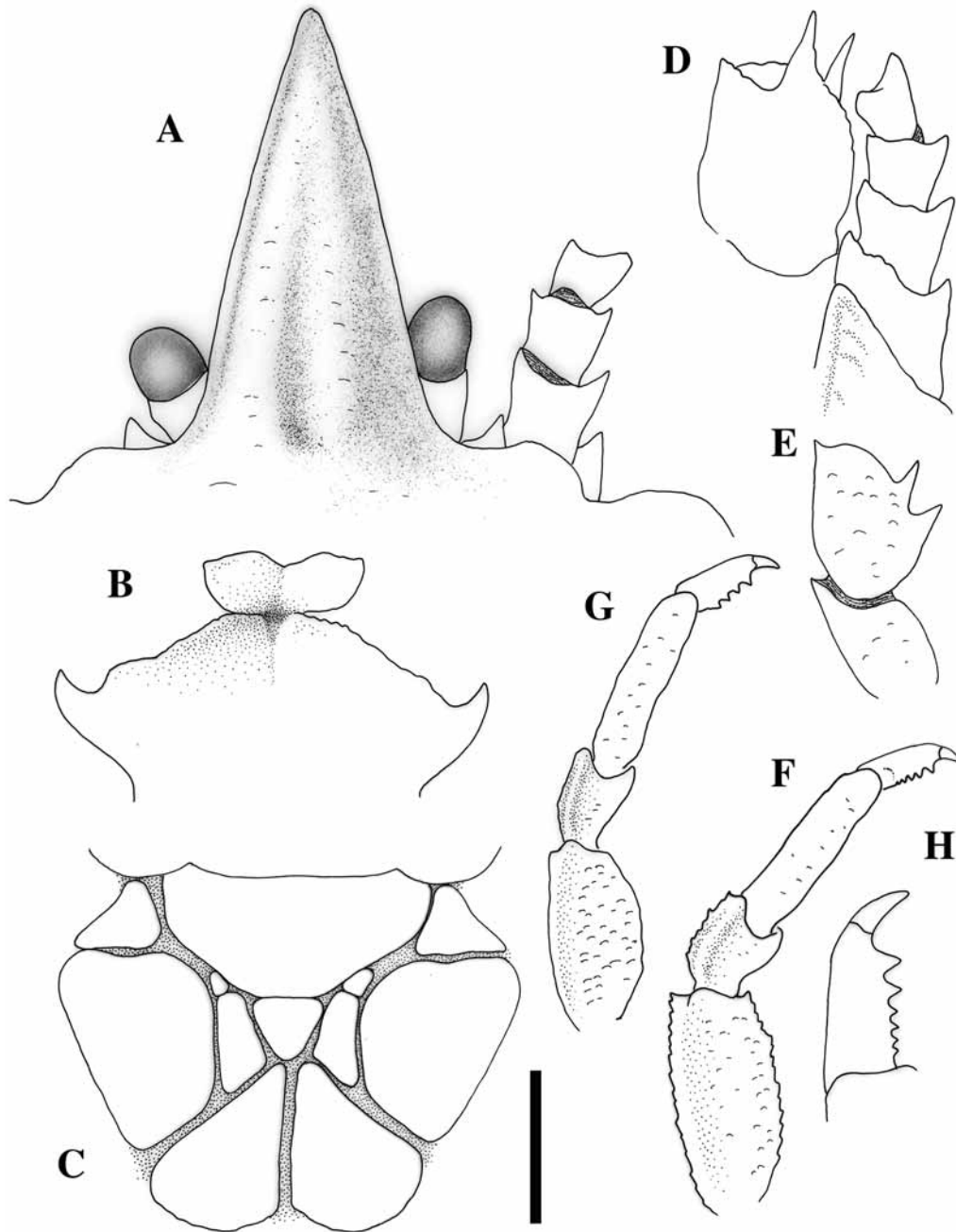


FIGURE 28. *Munidopsis debilis* Henderson, 1885, lectotype, male (broken, ca. 7.0 mm), Philippines, CHALLENGER, Stn 210. A, Anterior portion of carapace, dorsal. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, detached right walking leg, probably P2, lateral. G, detached right walking leg, probably P4, lateral. H, dactylus of detached right walking leg, probably P2, lateral. Scale: A, B, C, D, E, H = 1 mm; G, F = 2 mm.

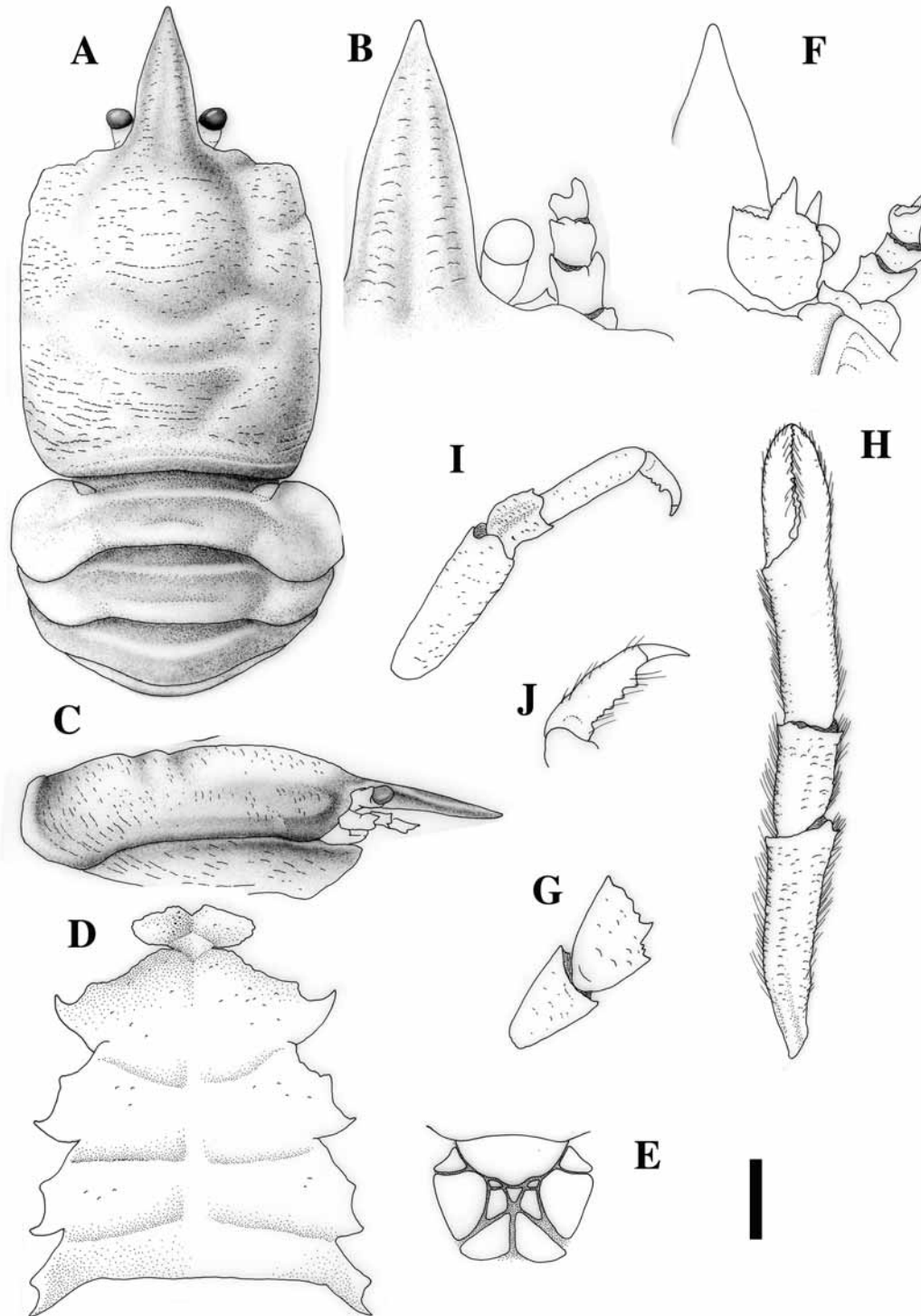


FIGURE 29. *Munidopsis debilis* Henderson, 1885, ovigerous female (11.5 mm), Vanuatu, MUSORSTOM 8, Stn 1027. A, carapace and abdomen, dorsal. B, rostrum, dorsal. C, carapace, lateral. D, sternum. E, posterior part of sixth abdominal segment and telson. F, left antennule and antenna, ventral. G, merus of right third maxilliped, lateral. H, right P1, lateral. I, right P2, lateral. J, dactylus of right P2, lateral. Scale: A, C, E, H, I = 5 mm; B, D, F, G = 2 mm.

Colour. Posterior half of carapace and abdomen light brown or grey; anterior half brown; pereiopods brown. Corneae orange.

Remarks. *Munidopsis debilis* was described by Henderson (1885, 1888) from two males, one collected in the Philippines (Stn 210) and another in the Fiji Islands (Stn 173). Tirmizi (1966) pointed out that the two

specimens belonged to different species. She selected the male from the Philippines as the lectotype, following the notes made by Henderson in the original description and illustrations.

Munidopsis debilis belongs to the group of species with the carapace unarmed and abdomen smooth, rostrum triangular or lanceolate, with longitudinal dorsal groove, P1 longer than P2, front margin without antennal spine, eye with ocular peduncle movable, corneae oval and unarmed, and carapace not cristate on lateral margin.

The closest relative is *M. cylindropus* Benedict, 1902 (see also Baba 2005), from Japan and the Philippines. The two species can be separated by the presence of a distinct mesial marginal spine proximal to midlength of the P1 merus in *M. cylindropus*, whereas this spine is absent in *M. debilis*. Furthermore, the corneae are longer than the remaining eyestalk in *M. cylindropus*, being subequal in length in *M. debilis*.

The rostrum of the specimens collected at the deepest stations (HALIPRO 1, Stn 858 and MUSORSTOM 8, Stn 1076) are more spiniform than in other material; this difference is regarded as intraspecific variation.

Distribution. The Philippines, New Caledonia, Vanuatu and Fiji, between 353 and 1191 m.

Munidopsis demeter n. sp.

(Fig. 30)

Material examined. Solomon Islands, SALOMON 2, Stn 2237, 400 m: 1 F 3.5 mm, holotype (MNHN-Ga5560).

Etymology. The species is dedicated to Demeter, the Greek goddess of grains and agriculture, in reference to the granulate aspect of the carapace. The name is considered as a substantive in apposition.

Description. Carapace granulated, nearly devoid of setae, slightly longer than broad; dorsal surface moderately convex from side to side; cervical groove moderately distinct, regions well defined, gastric and cardiac regions more convex than branchial regions. Gastric region with pair of large rounded epigastric processes. Cardiac region triangular, preceded by deep transverse groove. Rostrum broad, slightly directed downward in lateral view, 0.2 length of remaining carapace, maximum width 0.3 times carapace breadth, apex blunt; dorsal surface with longitudinal carina, ventral surface carinate in midline. Frontal margin concavely oblique behind ocular peduncle, leading to produced process behind antennal peduncle, then concavely transverse toward produced anterolateral corner of carapace; lateral margins granulated, weakly convex, with notch at end of anterior cervical groove. Posterior margin preceded by moderately elevated ridge.

Pterygostomian flap with small granules, anteriorly angular.

Sternum as long as wide, maximum width at sternite 7. Sternites smooth; sternite 3 broad, weakly bilobate, about 3 times wider than long; sternite 4 slightly more than twice width of sternite 3.

Abdomen covered with minute granules; segments 2–4 each with slightly produced transverse ridge followed by shallow transverse groove; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 8 plates; posterior plates combined more than twice as wide as long.

Ocular peduncle movable, without eye-spine; cornea subglobular, as long as remaining eyestalk, reaching end of antennal article 3. Blunt spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennular peduncle granulated, with thick distolateral spine, dorsolateral spine thick, blunt, shorter than distolateral spine, with lateral margin granulated; distomesial margin with small granules but no spine.

Basal article of antennal peduncle granulated, with strong distomesial spine, overreaching article 3, clearly longer than distolateral process; articles 2 or 3 with distolateral and distomesial margins bluntly produced.

Mxp 3 ischium granulated, as long as merus measured on extensor margin, flexor and extensor margins

terminating in blunt processes; 15 corneous denticles on crista dentata. Flexor margin of merus with 2 thick spines; extensor margin with strong distal spine.

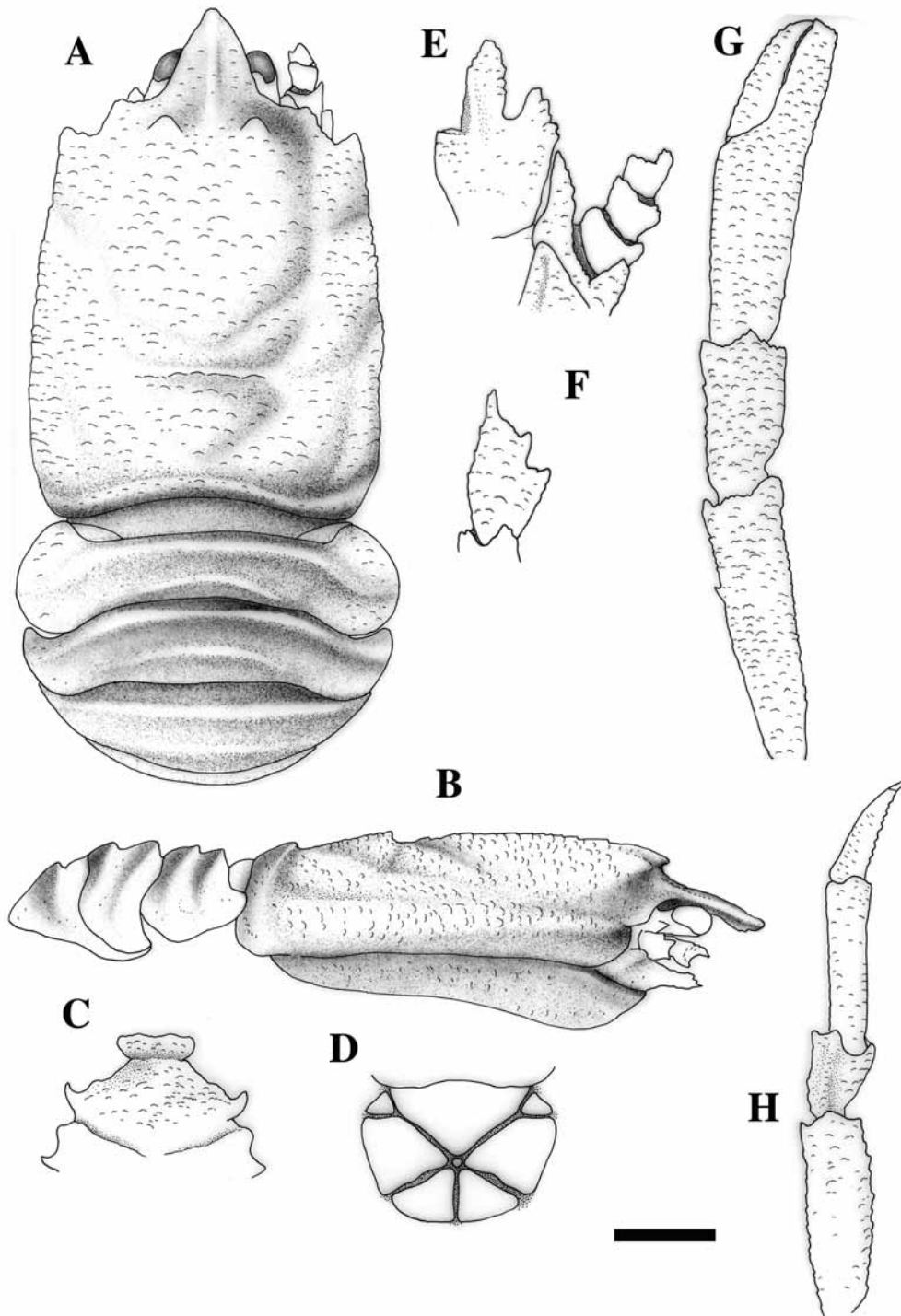


FIGURE 30. *Munidopsis demeter* n. sp., holotype, female (3.5 mm), Solomon Islands, SALOMON 2, Stn 2237. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum, sternites 3–5. D, posterior part of sixth abdominal segment and telson. E, left antennule and antenna, ventral. F, merus of right third maxilliped, lateral. G, right P1, lateral. H, right P2, lateral. Scale: A, B, C, D, G, H = 1 mm; E, F = 0.5 mm.

P1 long and slender, nearly twice carapace length, covered with numerous small granules and sparse simple setae on merus to dactylus. Merus more than 1.5 times length of carpus, with a few blunt distal spines, several protuberances along mesial margin. Carpus about twice longer than high, with several blunt distal spines.

Palm slender, longer than carpus, unarmed. Fingers nearly half length of palm, opposable margins nearly straight, not gaping, distally spooned; fixed finger with denticulate carina on distolateral margin.

P2–P4 moderately long and slender, granulated, sparsely some short simple setae, decreasing in size posteriorly; P2 longest, clearly not reaching end of P1. P2 merus half as long as carapace, about 3 times longer than high, more than twice length of carpus and nearly 1.5 length of propodus, distal blunt spine on dorsal and ventral margins; carpus with distal blunt spine on dorsal margin, and longitudinal crest on lateral surface; propodus 4 times as long as high, ventral margin unarmed except for one corneous spines on distal portion; dactylus shorter than propodus, slightly curved, flexor margin curved, with 9 or 10 minute teeth.

Epipods absent from pereopods.

Remarks. *Munidopsis demeter* resembles *M. snelliusae* Baba, 1977, from Seram, Indonesia. Both species are characterized by the rostrum broad, dorsally carinate, without lateral spines, a pair of epigastric spines or processes, lateral borders of carapace without acute spines, abdominal segments smooth, eyespine absent, P1 longer than P2, and P2–P4 dactyli spinulose on flexor margin. However, the following characters can easily differentiate the two species:

—The distal half of each lateral margin of the rostrum bears some small teeth in *M. snelliusae*, whereas these margins are smooth in *M. demeter*.

The dorsal carapace surface bears granular tubercles in *M. snelliusae*, being flattened in the new species.

—The dorsolateral spine of the first antennular article is thick, bluntly produced, and shorter than distolateral spine, with the lateral margin granulated in *M. demeter*, whereas in *M. snelliusae*, these spines are subequal, spiniform, and the lateral margin of this segment is not granulated but armed with a small spine.

—The epipods are absent on all pereopods in *M. demeter*, but present on P1 in *M. snelliusae*.

Distribution. Only known from the Solomon Islands, at 400 m.

Munidopsis denudata n. sp.

(Fig. 31)

Material examined. Solomon Islands, SALOMON 1, Stn 1783, 399–700 m: 1 F 7.9 mm (holotype, MNHN-Ga5561).

Etymology. From the Latin *denudatus*, wholly bare, in reference to the shape of the body.

Description. Carapace slightly longer than wide, dorsal surface unarmed, nearly devoid of setae, bifurcated cervical groove slightly marked. Gastric region weakly convex, indistinctly circumscribed, having 2 weak and short epigastric ridges and some short striae. Cardiac region depressed in front of slightly elevated transverse ridge. Posterior transverse ridge slightly elevated, uninterrupted and unarmed. Rostrum broadly triangular, lateral margin finely serrated, proximally subparallel, slightly deflexed, about one-third as long as remaining carapace, maximum width one-quarter carapace breadth, flattish dorsally, ventral margin cristate. Front margin different in level in mesial and lateral halves of width, each half margin transverse, lateral half depressed below level of mesial half, anterolateral corner rounded; lateral margin slightly convex, cristate, overhanging pterygostomial flap, with notch at end of anterior branch of cervical groove.

Sternum as long as wide, maximum width at level of sternite 7. Sternite 3 with 2 anterior lobes, 3 times as wide as long; anterior margin of sternite 4 wide, slightly narrower than sternite 3, lateral margins concave, more than 2.5 times wider than sternite 3.

Abdominal segments unarmed; segments 2–4 with slightly elevated anterior transverse ridge, without transverse groove; posterolateral lobes of segment 6 slightly distinct but not overreaching transverse postero-medial margin. Telson divided into 7 plates, posterior plates combined nearly twice as wide as long.

Eye small, movable, falling short of midlength of rostrum; cornea ovate, moderately small, longer than remaining eyestalk. Distinct spine ventral to front margin between ocular and antennal peduncles.

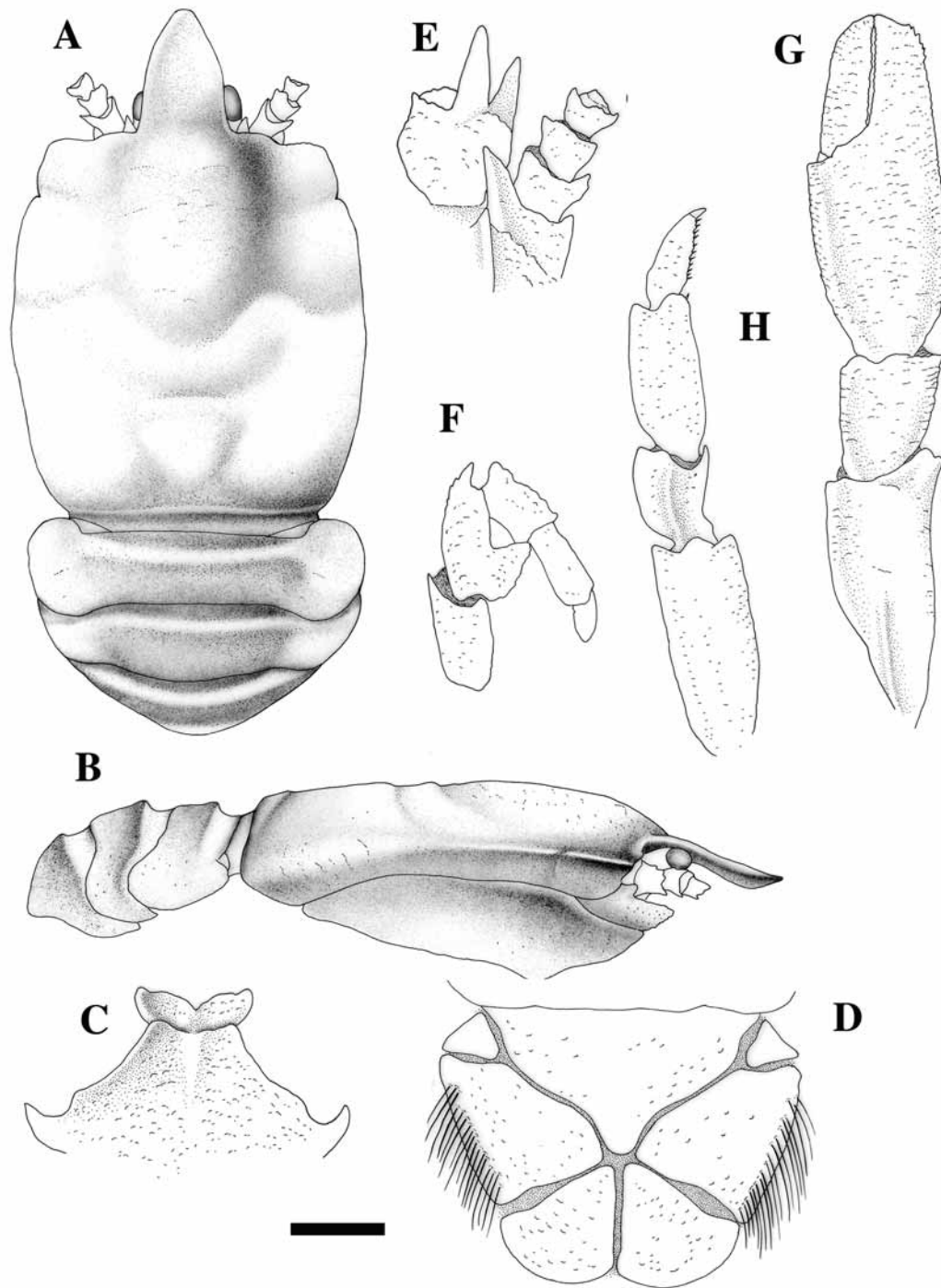


FIGURE 31. *Munidopsis denudata* n. sp., holotype, female (7.9 mm), Solomon Islands, SALOMON 1, Stn 1783. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum, sternites 3 and 4. D, posterior part of sixth abdominal segment and telson. E, left antennule and antenna, ventral. F, right third maxilliped, lateral. G, right P1, lateral. H, right P2, lateral. Scale: A, B, G, H = 2 mm; C, D, E, F = 1 mm.

Basal article of antennule with small denticulated distomesial process, strong distolateral and distodorsal spines.

Antennal peduncle having basal article with strong distomesial spine and stout distolateral process; article 2 with distolateral process; article 3 distomesially produced.

Mxp 3 ischium as long as merus measured along extensor margin; merus with strong proximal spine on

flexor margin, extensor distal margin with well-developed spine; carpus with crenulate extensor margin.

P1 nearly twice carapace length, devoid of setae, finely granulated. Merus with blunt distomesial spine, with marked carina along proximal half of dorsal side; carpus longer than wide, mesial margin carinate; palm 1.5 times carpus length, fingers 0.7 palm length, fixed finger with denticulated carina along distolateral margin.

P2–P4 moderately slender, decreasing in length posteriorly, nearly devoid of setae, finely granulated. P2 clearly not reaching end of P1; merus 2.5 times longer than high, about twice carpus length and 1.5 times longer than propodus, triangular in cross section, with one dorsal and 2 ventral crests, each ending in acute point; carpus cristate dorsally, with lateral crest; propodus cristate dorsally, ventral margin with 1 or 2 distal spinules; dactylus slightly curved, flexor margin straight, with 11 teeth, each with accompanying seta, ultimate tooth closer to penultimate tooth than end of article.

Epipods absent from pereopods.

Remarks. *Munidopsis denudata* belongs to the group of species with the carapace unarmed, abdomen smooth, rostrum triangular, P1 longer than P2, ocular peduncle movable, corneae oval and unarmed, and lateral margin of carapace cristate. The closest species in *M. lophia* n. sp. (see below). *Munidopsis denudata* can be differentiated from *M. lophia* by the armature of the Mxp 3 and the antennal peduncle. *Munidopsis denudata* has the merus of the Mxp 3 with a very strong spine on the flexor margin, and the extensor margin with a long distal spine; furthermore the carpus has the extensor margin crenulate; the basal article of the antennal peduncle with a strong distomesial spine, reaching the end of the second segment. *Munidopsis lophia* has the basal article with the distomesial angle slightly produced and rounded, furthermore the merus of the Mxp 3 with 2 short spines on the flexor margin, and a short distal spine on the extensor margin.

Distribution. Solomon Islands, at 399–700 m.

Munidopsis edwardsii (Wood–Mason, 1891)

Elasmonotus Edwardsii Wood–Mason in Wood–Mason & Alcock, 1891: 201.

Munidopsis edwardsii.—Baba & Poore, 2002: 235, fig. 3.—Baba, 2005: 149, 288 (list of occurrences and references).

Material examined. SW Sri Lanka, SAFARI 2, Stn 3, CP05, 2540 m: 2 M 21.3–22.3 mm (MNHN-Ga1592).

Remarks. The epigastric processes are scarcely discernible, but the other characters agree quite well with the previous descriptions and illustrations of the species (Alcock 1901, Alcock & McArdle 1902, Baba & Poore 2002, Baba 2005).

Distribution. Known from Bay of Bengal (type locality), and southeastern Australia, at 1300–2610 m. The new material was collected southwest of Sri Lanka at 2540 m.

Munidopsis formosa Wu & Chan, 2000

Munidopsis formosa Wu & Chan, 2000: 25, figs. 1A, C–E, 2A, C D, 3.—Baba, 2005: 288.

Material examined. Indonesia, Banda Sea, CORINDON 4, Stn I/2, 217–448 m: 1 F 16.8 mm (MNHN-Ga1588). Indonesia, Kei Islands, KARUBAR, Stn 70, 410–413 m: 1 F 10.9 mm (MNHN).

Distribution. Previously known from the type locality (Taiwan, at 500 m). The present records extend the distribution range to Indonesia, between 217 and 413 m.

***Munidopsis gladiola* n. sp.**

(Fig. 32)

Material examined. SE Atlantic, WALVIS, Stn CP13, 3590 m: 1 ovig. F 20.7 mm (MNHN-Ga1595). SW Indian Ocean (South African coast), SAFARI 1, Stn 1 (DS 01), 2608–2625 m: 1 M 12.6 mm (MNHN-Ga1423).—Stn 15 (CP08), 1 F (broken) (MNHN-Ga1425).

Types. The ovigerous female of 20.7 mm from the cruise WALVIS, stn CP13 is the holotype (MNHN Ga 1595). The other specimens are paratypes.

Etymology. From the Latin *gladiolus*, small sword, in reference to the shape of the rostrum.

Description. Carapace longer than broad, moderately convex from side to side, with numerous granules and scale-like rugosities; some short setae scattered on dorsal surface and lateral margins. Cervical grooves distinct. Gastric region distinct, posterior part delimited by shallow groove, with pair of epigastric spines and a few mesogastric spines. Rostrum spiniform and horizontal (or slightly upwards), half length of carapace, maximum width one-fifth carapace breadth, not carinated dorsally, with fine rugosities, each lateral border with minute spinules. Antennal spine absent; oblique frontal margin leading to short anterolateral spine (first spine) directed straight forward, followed by one spine (second spine), and some small spines on anterior branchial region, some small spines bordering posterior branchial region. Posterior margin with 2 median spines.

Sternum as long as wide, maximum width at level of sternite 7, sternites smooth; sternite 3 wide, more than one-third width of sternite 4, anterior margin granulated; sternite 4 subtriangular, anteriorly narrow elongate, 2.5 times broader than sternite 3.

Abdomen smooth, with a few granules on pleura; segments 2–4 each with one slightly elevated transverse ridge; segment 6 bearing posteromedian margin clearly exceeding posterolateral lobes. Telson composed of 8 plates; posterior plates combined nearly 1.8 times as wide as long.

Eye not movable; smoothly ovate cornea cupped within broad-based ocular peduncle; peduncle extended into strong but relatively short mesiodorsal spine directed upward at low angle, reaching end of corneae; cornea relatively large, clearly wider than eyespine, and slightly narrower than third article of antennal peduncle. No spine between eye and antennal peduncle.

Basal article of antennule having dorsolateral spine much smaller than distolateral, distomesial process granulated, with accompanying short spine directly dorsal to it.

Basal article of antennal peduncle distomesially bearing granulated process, with two small spines, distolateral spine well-developed; article 2 with strong distolateral spine.

Mxp 3 with weak spination; ischium with short distal spine in extensor and flexor margins, mesial crest with 21–23 denticles. Flexor margin of merus with 4–6 small spines, extensor margin with distal marginal spine.

P1 nearly twice carapace length. Merus nearly reaching end of rostrum, with several distal spines, and some scattered granules and some spines on dorsal and mesial sides; carpus 1.5 times longer than high, with several distal spines and a few mesial spines. Palm with some dorsal and mesial small spines; fingers slightly longer than palm, distally spooned, prehensile edges crenulated; fixed finger without denticulate carina on distolateral margin.

P2 slightly exceeding P1 by half length of dactylus, twice carapace length. Merus 6.5 times longer than high, 3 times carpus length and nearly 1.5 times propodus length; dorsal crest with row of small spines, lateral side with granules, ventral border with row of small spines. Carpus with row of spines along dorsal border and granulated crest along lateral side. Propodus 5 times longer than high, nearly twice as long as dactylus, unarmed. Dactylus smoothly narrowed distally, ending in curved sharp spine, flexor margin slightly curving, bearing 12–14 proximally diminishing low spines, ultimate spine rather remote from end of dactylus and much closer to penultimate. Meri of P3 and P4 progressively shorter posteriorly.

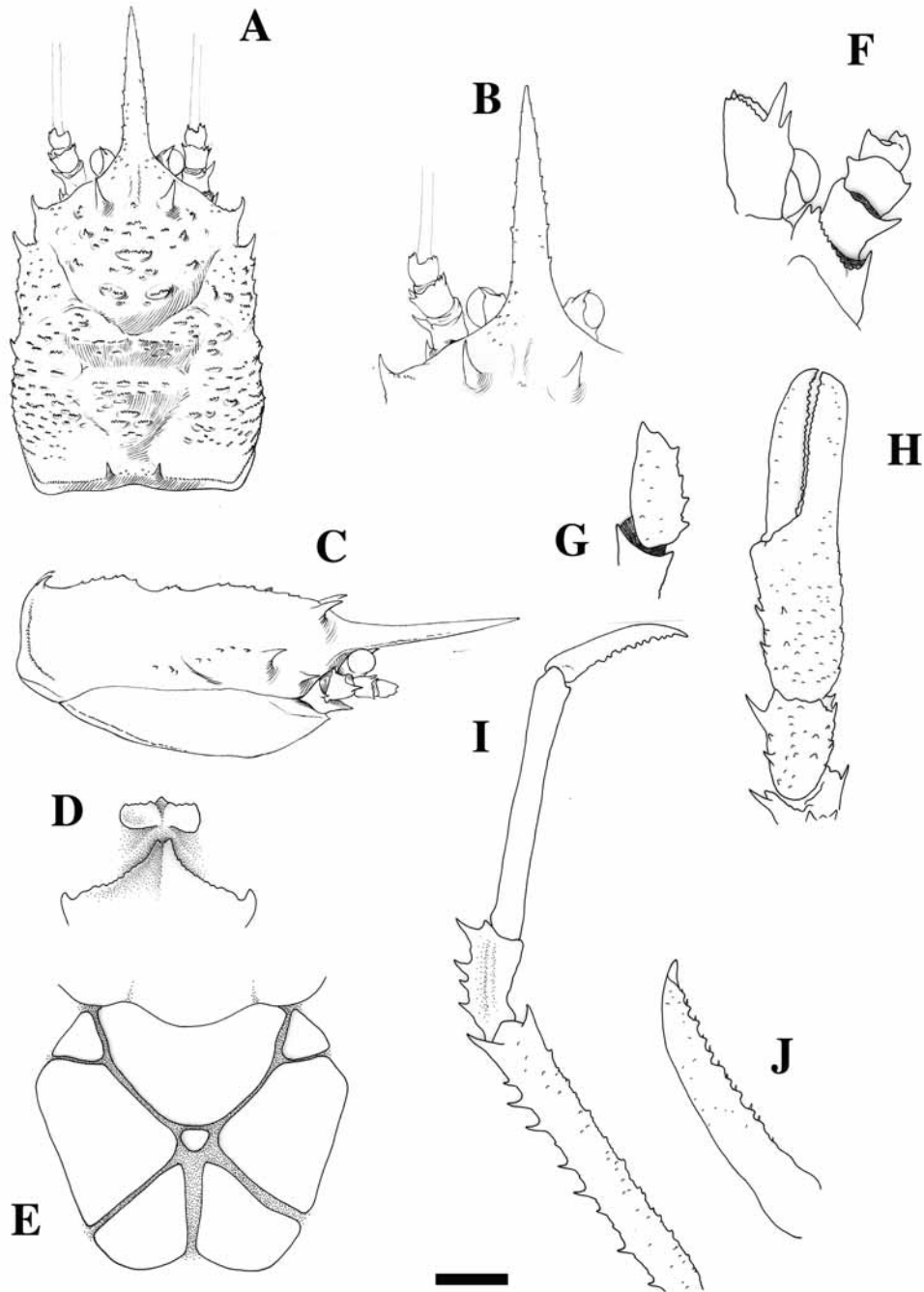


FIGURE 32. *Munidopsis gladiola* n. sp., holotype, ovigerous female (20.7 mm), SE Atlantic, WALDA, Stn CY04. A, carapace, dorsal. B, anterior portion of carapace, dorsal. C, carapace, lateral. D, sternum, sternites 3 and 4. E, posterior part of sixth abdominal segment and telson. F, left antennule and antenna, ventral. G, merus of right third maxilliped, lateral. H, right P1, lateral. I, right P2, lateral. J, dactylus of right P2. Scale: A, C = 4 mm; B = 6 mm; D, E, F, G, J = 2 mm; H, I = 5 mm.

Epipods absent from pereopods.

Remarks. *Munidopsis gladiola* closely resembles *M. abyssicola* Baba, 2005 from the Kermadec Deep, southwest Pacific (Baba 2005) and Atlantic Ocean (Macpherson & Segonzac 2005), in having the carapace with some gastric spines, rostrum without lateral spines, first walking legs slightly overreaching P1, main eyespine on mesial end of eyestalk, fixed finger of P1 without carina on distolateral margin, sixth abdominal segment with posteromedian lobe well produced and epipods absent from pereopods. *M. gladiola* is readily dis-

tinguished from *M. abyssicola* by the following differences:

—The posterior border of the carapace bears a row of small spines in *M. abyssicola*, instead of 2 median spines in *M. gladiola*. Each lateral border of the carapace bears 4 or 5 well-developed spines in *M. abyssicola*, instead of 2 well-developed spines in *M. gladiola*.

—The posteromedian lobe of sixth abdominal segment is more produced in *M. abyssicola* than in *M. gladiola*.

—The eyespine is small, only reaching the end of cornea in *M. gladiola*, whereas this spine clearly overreaches the cornea in *M. abyssicola*. Furthermore, the cornea is as wide as eyespine in *M. abyssicola*, being clearly wider in *M. gladiola*.

—The flexor borders of f P2–P4 dactyli are more curved in *M. abyssicola* than in *M. gladiola*.

Distribution. Walvis Ridge (southeast Atlantic Ocean) and the southwest Indian Ocean, at 2608–4163 m.

Munidopsis hirsutissima Balss, 1913

Munidopsis hirsutissima Balss, 1913: 223.—Baba, 2005: 289.

Munidopsis (Munidopsis) hirsutissima.—Doflein & Balss, 1913: 150, pl. 15: fig. 2.

Material examined. Solomon Islands, SALOMON 1, Stn 1754, 1169–1203 m: 1 M 17.7 mm (MNHN-Ga5678). SALOMON 2, Stn 2213, 495–650 m: 1 ovig. F 25.2 mm (MNHN-Ga5656).—Stn 2246, 664–682 m: 1 ovig. F 18.5 mm (MNHN-Ga5657).—Stn 2274, 750–841 m: 1 M 20.3 mm (MNHN-Ga5658).—Stn 2276, 814–980 m: 1 M 20.0 mm (MNHN-Ga5659).—Stn 2288, 509–520 m: 1 M 17.4 mm (MNHN-Ga5660).—Stn 2289, 623–627 m: 1 F 9.8 mm (MNHN-Ga5661). Fiji, BORDAU 1, Stn 1400, 1004–1012 m: 1 F 9.7 mm (MNHN-Ga5679).

Remarks. This species is closely related to *M. subchelata* Balss, 1913 (see below). These species can be easily distinguished by the presence or absence of the antennal spine of the carapace, absent in *M. hirsutissima*, usually present in *M. subchelata*, and the shape of the chelipeds: in *M. hirsutissima* the palm is less than twice the length of the fingers, whereas more than 4 times in *M. subchelata*.

Distribution. Only known from the type locality, west of Sumatra, 1280 m. The present material extends the range to the Solomon Islands and Fiji, between 495 and 1203 m.

Munidopsis keijii n. sp.

(Figs. 33, 34)

Material examined. Solomon Islands, SALOMON 1, Stn 1754, 1169–1203 m: holotype, 1 F 11.8 (MNHN-Ga5562).

Etymology. The species is dedicated to Keiji Baba for his friendship and exceptional contributions to the knowledge of Galatheidea.

Description. Carapace slightly longer than broad; dorsal surface moderately convex from side to side, areolations protuberant, covered with produced serrated striae; 2 serrated epigastric protuberances; regions well delineated by furrows including distinct anterior and posterior cervical grooves. Median branchial region well marked. Cardiac region more produced than other regions, preceded by deep transverse depression. Posterior margin preceded by elevated ridge. Rostrum narrow triangular, upcurved, length half that of remaining carapace, maximum width one-quarter carapace breadth; dorsal surface carinate in midline, with numerous small striae; lateral margins serrated. Frontal margin slightly oblique behind ocular peduncle, leading to minute antennal spine, then slightly oblique toward anterolateral corner of carapace, margin lateral to antennal

spine serrate. Lateral margins with protuberances, weakly convex, anterolateral angle bluntly produced.

Pterygostomian flap with small short produced striae, anteriorly unarmed.

Sternum as long as wide, maximum width at sternite 7, with numerous short setose striae. Sternite 3 narrow, nearly 2 times wider than long, anterior margin serrated, divided into 2 lobes. Sternite 4 with some short striae, narrowly elongate anteriorly; surface weakly depressed in midline; greatest width nearly 3 times that of sternite 3.

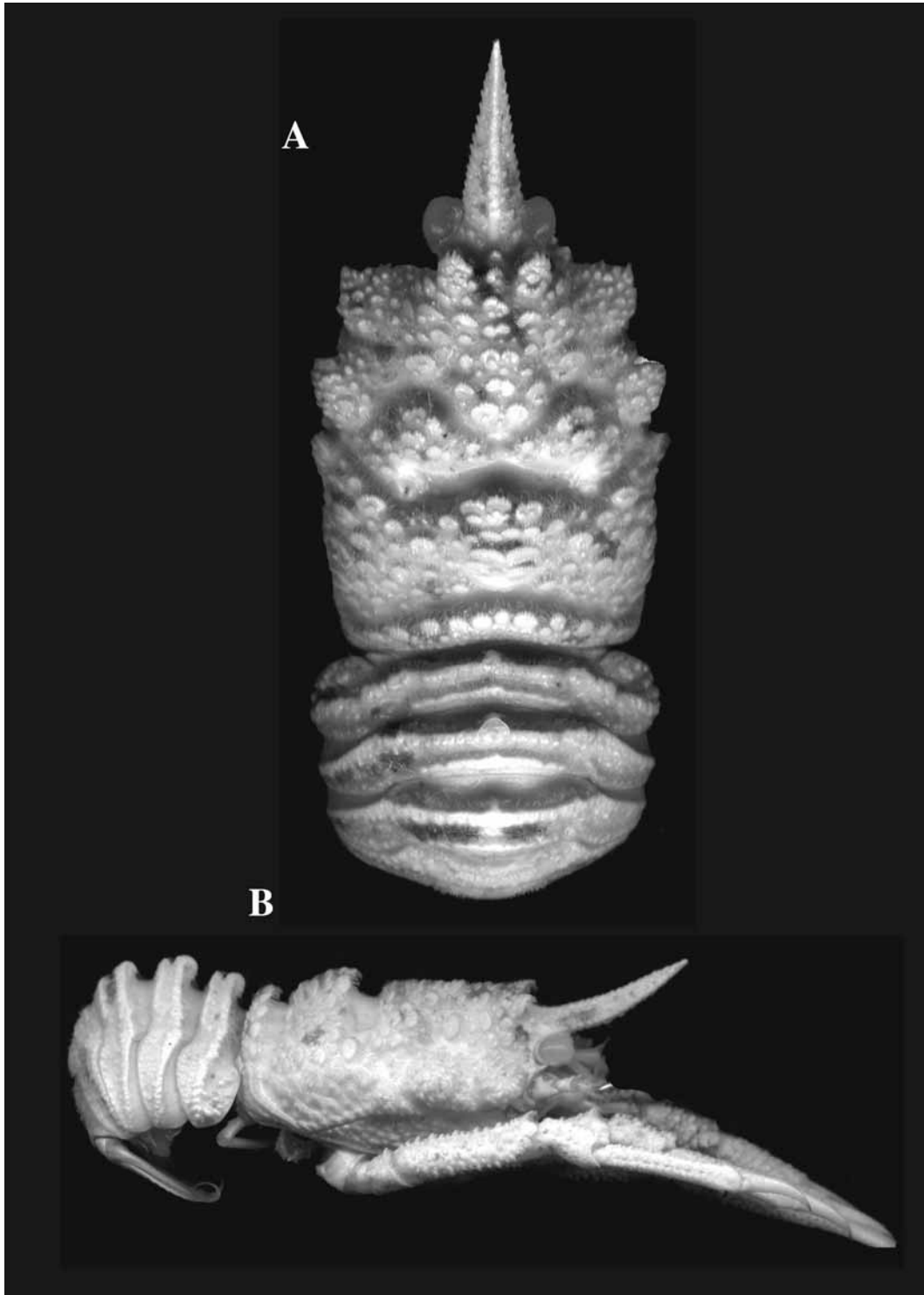


FIGURE 33. *Munidopsis keijii* n. sp., holotype, female (11.8 mm), Solomon Islands, SALOMON 1, Stn 1754. A, carapace and abdomen, dorsal. B, carapace and abdomen, dorsal.

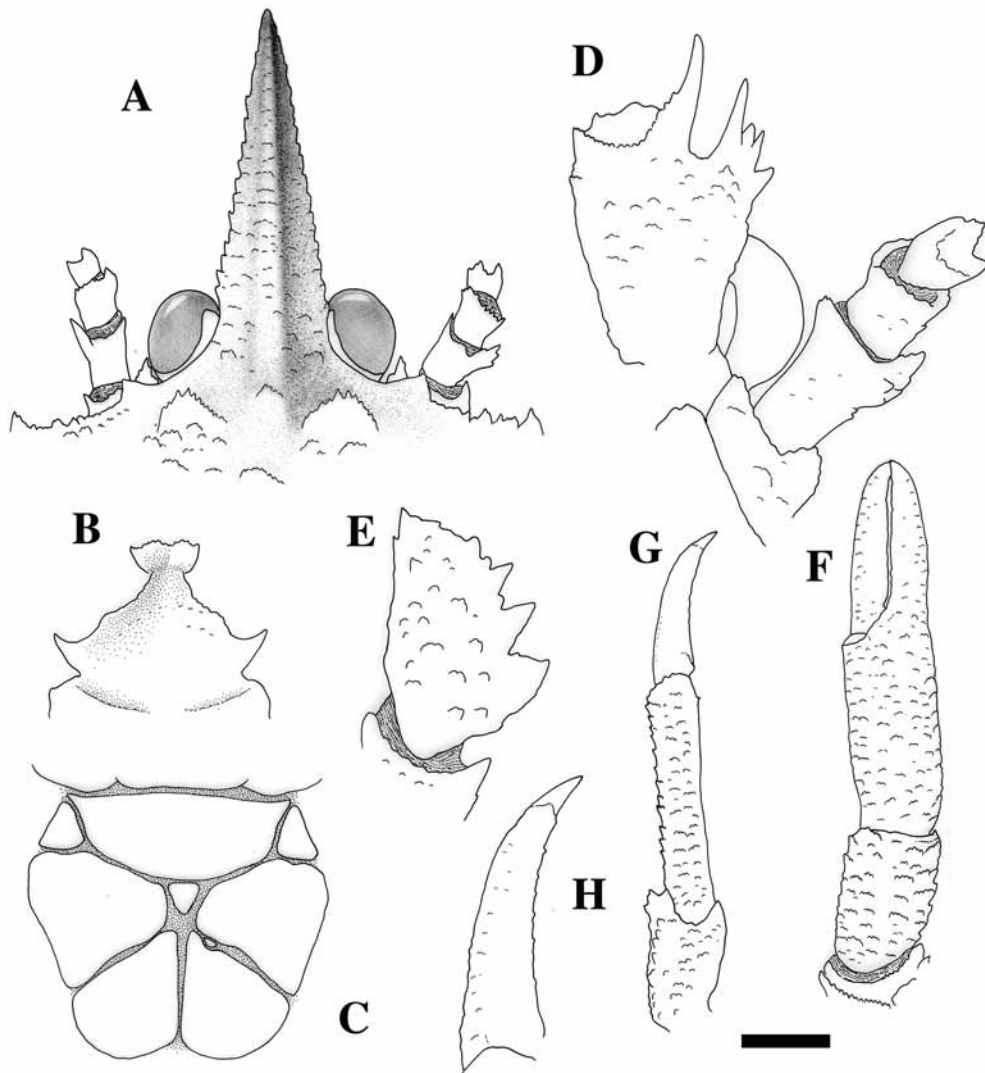


FIGURE 34. *Munidopsis keijii* n. sp., holotype, female (11.8 mm), Solomon Islands, SALOMON 1, Stn 1754. A, anterior portion of carapace, dorsal. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, right P1, lateral. G, right P2, lateral. H, dactylus of right P2. Scale: A, B, C = 2 mm; D, E, H = 1 mm; F, G = 5 mm.

Abdomen with numerous protuberances and granules; segments 2–4 each with median protuberance, anterior and posterior transverse ridges separated by groove, pleura with granules; fifth and sixth segments with numerous granules; segment 6 with weakly produced posterolateral lobes and nearly transverse postero-medial margin. Telson composed of 8 plates; posterior plates combined 1.7 times as wide as long.

Ocular peduncle movable; cornea subglobular, unarmed, shorter than remaining eyestalk, not reaching end of third antennal segment. Well-developed spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennular peduncle granulated, with strong distolateral spine accompanying 3 additional spines, distomesial margin ending in small spine.

Basal article of antennal peduncle with rounded distomesial and distolateral processes; article 2 armed with acute distolateral spine and additional small spine at base; articles 3–4 unarmed.

Mxp 3 ischium as long as merus measured on extensor margin; flexor and extensor margins terminating in blunt spine; 25 or 26 corneous denticles on crista dentata; flexor margin of merus with 3 strong spines,

decreasing in size distally, with 3 additional small spines, extensor margin with 2 distal spines; carpus with granules on extensor border; lateral surface of ischium, merus and carpus with granules.

P1 subequal, 1.5 times longer than carapace, covered with numerous short serrated striae on merus to fingers. Carpus nearly 1.5 times longer than high, unarmed. Palm moderately slender, 0.7 length of carpus, and as long as fingers. Fingers not gaping, distally spooned; prehensile edges each with row of subtriangular teeth, proximal teeth obsolete; fixed finger not dentate on distolateral margin.

P2–P4 moderately stout, with numerous short serrated striae on mesial and lateral sides of articles, decreasing in size posteriorly; P2 longest. P2 nearly reaching end of P1, 1.5 times carapace length; merus triangular in section, elongate, 0.8 times carapace length, 3.5 times longer than high, 1.5 times that of P4, 2 times length of carpus and slightly longer than propodus, dorsal and ventral margins with row of spines increasing in size distally, also present on P3 and P4; carpus with distal spine on dorsal margin, lateral side with longitudinal crest; propodus more than 4 times as long as high; dactylus 0.8 length of propodus; moderately curved; flexor margin curved, with 6–8 minute teeth.

Epipods on P1–P3.

Remarks. The new species is closely related to *M. gibbosa* Baba, 1978, from south of Hong Kong. Both species have the carapace and abdomen with numerous protuberant areolations. However, they can be readily distinguished by the following differences:

—Protuberances on the abdomen and P1–P4 are more prominent in *M. gibbosa* than in *M. keijii*.

—The rostrum bears paired spines near the midlength in *M. gibbosa*, whereas these spines are absent in *M. keijii*.

—The dorsolateral spine of the antennular basal article bears 3 additional spines in *M. keijii*, whereas these spines are absent in *M. gibbosa*.

—The sternites 3 and 4 are contiguous in *M. keijii*, being clearly separated in *M. gibbosa*.

Distribution. Only known from Solomon Islands, at 1169–1203 m.

Munidopsis kensleyi Ahyong & Poore, 2004

(Fig. 55I)

Munidopsis kensleyi Ahyong & Poore, 2004: 50, fig. 10.—Baba, 2005: 290 (synonymy and occurrences)

Material examined. Solomon Islands, SALOMON 1, Stn 1753, 1001–1012 m: 1 M 17.5 mm, 1 M 17.7 mm (MNHN-Ga4652).—Stn 1755, 1288–1313 m: 2 M 16.6–16.7 mm, 1 ovig. F 16.5 mm (MNHN-Ga4653, 5652).—Stn 1781, 1036–1138 m: 1 F 14.4 mm (MNHN-Ga5653). SALOMON 2, Stn 2197, 897–1057 m: 1 M 17.6 mm (MNHN-Ga5654).—Stn 2199, 296–304 m: 1 ovig. F 17.0 mm (MNHN-Ga5655). New Caledonia, HALIPRO 2, Stn 96, 1034–1056 m: 1 ovig. F 17.3 mm (MNHN-Ga4656). Chesterfield Islands, MUSORSTOM 5, Stn 323, 970 m: 1 ovig. F 13.7 mm (MNHN-Ga4650).—Stn 324, 970 m: 1 M 13.3 mm, 1 F 13.0 mm (MNHN-Ga4651). Vanuatu, MUSORSTOM 8, Stn 1037, 1058–1086 m: 1 F 14.5 mm (MNHN-Ga5651). Wallis and Futuna, MUSORSTOM 7, Stn 621, 1280–1300 m: 1 M 9.8 mm, 1 F 8.6 mm (MNHN-Ga4654).—Stn 622, 1280–1300 m: 1 M 12.2 mm (MNHN-Ga4655).

Remarks. The specimens agree quite well with the description provided by Ahyong & Poore (2004). The number of spines on the posterior border of the carapace ranges between 0 and 3. The colour pattern of the body and appendages is orange-brownish, darker in the first half of the carapace and P1; corneae whitish.

Distribution. Previously known from South Africa and southeastern Australia, at 476–1150 m (Kensley 1977, Baba & Poore 2002, Ahyong & Poore 2004, Baba 2005). The present material extends the distribution range to the Solomon Islands, Vanuatu, Chesterfield Islands, New Caledonia and Wallis and Futuna, between 296 and 1313 m.

***Munidopsis laciniosa* Baba, 2005**

Munidopsis laciniosa Baba, 2005: 153, fig. 68.

Material examined. Indonesia, Kei Islands, KARUBAR, Stn 14, 245–246 m: 1 M 3.6 mm (MNHN-Ga5680). Vanuatu, MUSORSTOM 8, Stn 1061, 458–512 m: 1 F 4.3 mm (MNHN-Ga5681).

Remarks. The specimens examined agree quite well with the original description provided by Baba (2005).

Distribution. Bali Sea, Indonesia, at 240 m. The present records extend the distribution to Kei Islands and Vanuatu, between 245 and 512 m.

***Munidopsis latimana* Miyake & Baba, 1966**

Munidopsis latimana Miyake & Baba, 1966: 85, figs. 3, 4.—Baba, 2005: 290 (list of occurrences).

Material examined. Japan, Tosa Bay (Sakai collection), 14.11.1964, 250–300 m: 2 ovig. F 10.6–11.1 mm (MNHN-Ga1078). Philippines, MUSORSTOM 1, Stn 5, 200–215 m: 1 M 14.8 mm (MNHN-Ga1328).—Stn 6, 182–200 m: 1 M 11.5 mm (MNHN-Ga1329).—Stn 24, 189–205 m: 2 M 7.3–10.2 mm (MNHN-Ga1330).—Stn 25, 191–200 m: 2 M 13.1–14.7 mm (MNHN-Ga1331).—Stn 40, 265–287 m: 3 M 11.1–13.5 mm (MNHN-Ga1332). MUSORSTOM 2, Stn 11, 194–196 m: 1 F 9.8 mm (MNHN-Ga1333).—Stn 68, 195–199 m: 1 M 13.0 mm (MNHN-Ga1334). Indonesia, Makassar Strait, CORINDON 2, Stn 271, 215–252 m: 1 M 17.1 mm (MNHN-Ga1335). Solomon Islands, SALOMON 1, Stn 1801, 254–271 m: 4 M 12.8–15.2 mm, 1 F 13.3 mm (MNHN-Ga5645).—Stn 1802, 245–269 m: 1 M 8.2 mm, 2 ovig. F 10.4–11.1 mm (MNHN-Ga5646).—Stn 1831, 135–325 m: 2 M 8.1–13.7 mm, 3 F 5.6–11.4 mm (MNHN-Ga5682).—Stn 1860, 620 m: 3 M 9.7–13.0 mm, 2 ovig. F 11.0–13.3 mm, 1 F 9.1 mm (MNHN-Ga5647). SALOMON 2, Stn 2286, 248–253 m: 1 M 5.9 mm (MNHN-Ga5648).—Stn 2287, 253–255 m: 1 M 9.0 mm (MNHN-Ga5649). Vanuatu, BOA 0, Stn 2326, 260–313 m: 1 M 6.4 mm (MNHN-Ga5650). New Caledonia, BATHUS 1, Stn 670 m: 394–397 m: 1 M 9.5 mm, 2 ovig. F 7.0–8.2 mm, 1 F 7.1 mm (MNHN-Ga5684).—Stn 687, 408–440 m: 1 M 8.8 mm (MNHN-Ga5685).—Stn 710, 320–386 m: 1 ovig. F 8.0 mm (MNHN-Ga5687).—Stn 711, 315–327 m: 1 M 8.4 mm (MNHN-Ga5688). HALIPRO 1, Stn 851, 314–364 m: 1 M 5.5 mm (MNHN-Ga5689).—Stn 856, 311–365 m: 2 M 9.4–10.4 mm (MNHN-Ga5644).—Stn 868, 430–550 m: 1 ovig. F 8.2 mm (MNHN-Ga5690).—Stn 869, 450–490 m: 1 M 10.6 mm (with Bopyrid) (MNHN-Ga5691). BATHUS 4, Stn 897, 305–350 m: 1 M 10.7 mm, 1 ovig. F 10.5 mm, 1 F 7.6 mm (MNHN-Ga5686).—Stn 952, 270–316 m: 1 M 6.0 mm (MNHN-Ga5683).

Distribution. Japan (Tosa Bay), Taiwan and Philippines, between 198 and 350 m (Miyake & Baba 1966, Baba 1986, 1988, 2005, Wu *et al.* 1997). The material examined here was collected in Japan (250–300 m), Philippines (182–287 m), Indonesia (215–252 m), Solomon Islands (135–620 m), Vanuatu (260–313 m) and New Caledonia (270–550 m).

***Munidopsis lenzii* Balss, 1913**

(Fig. 35)

Munidopsis lenzii Balss, 1913: 222; 2005: 290.

Munidopsis (Munidopsis) lenzii.—Doflein & Balss, 1913: 151, figs. 16–18, pl. 15: fig. 1.

Material examined. Nias, South Canal, W of Sumatra, Deutschen Tiefsee-Expedition (Valdivia), Stn 194, 614 m: 1 M 8.8 mm, holotype (ZMB 17499).

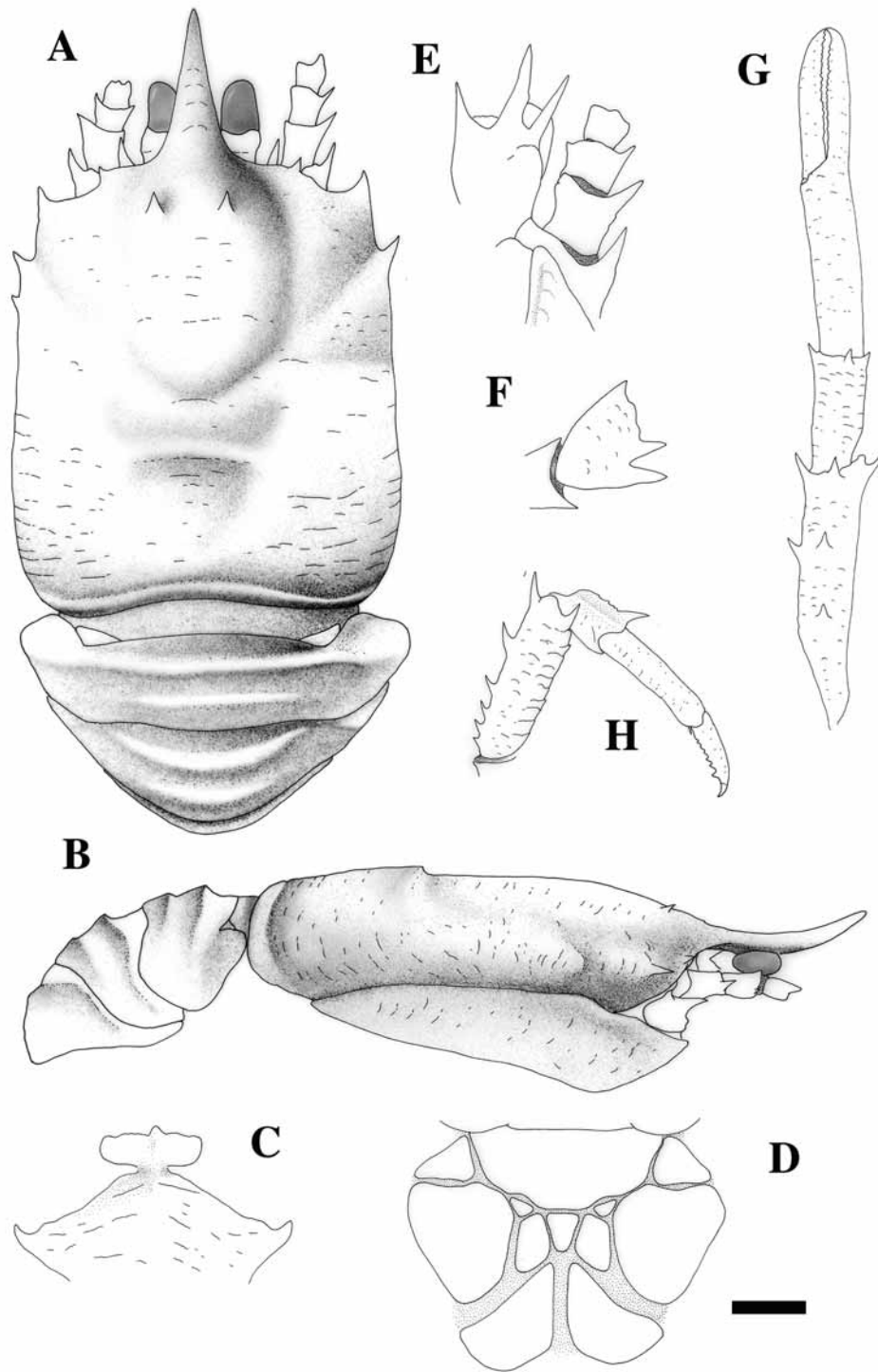


FIGURE 35. *Munidopsis lenzi* Balss, 1913, holotype, male (8.8 mm), W of Sumatra, Deutschen Tiefsee-Expedition, Stn 194. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum, sternites 3 and 4. D, posterior part of sixth abdominal segment and telson. E, left antennule and antenna, ventral. F, right third maxilliped, lateral. G, right P1, lateral. H, right P2, lateral. Scale: A, B, G, H = 2 mm; C, D, E, F = 1 mm.

Description. Carapace slightly longer than broad; dorsal surface moderately convex from side to side, sparsely setose, with numerous short striae; regions well delineated by furrows including distinct anterior and posterior cervical grooves. Two epigastric spines. Median branchial region well marked. Posterior cardiac region bluntly triangular, preceded by deep transverse depression. Posterior margin preceded by weakly ele-

vated ridge. Rostrum triangular, moderately compressed, curved and deflexed in distal half, tip upturned, 0.3 length of remaining carapace, maximum width one-fifth carapace breadth, ending in acute tip; dorsal surface slightly convex, sparsely with small striae, but without longitudinal ridge or groove; lateral margins carinated. Lateral margins weakly convex and subparallel, anterolateral spine well-developed, end of anterior cervical groove with distinct notch, anterior branchial margin with acute spine and additional small spine (on left side only), posterior cervical groove without notch at anterior end. Frontal margin nearly transverse behind ocular peduncle, leading to acute antennal spine, then slightly oblique toward anterolateral spine.

Pterygostomian flap smooth, with small short striae and granules, anteriorly unarmed.

Sternum with numerous short setiferous striae and granules, as long as wide, maximum width at sternite 7. Sternite 3 moderately narrow, nearly 3 times wider than long, anterior margin not divided into 2 lobes, without deep median notch; lateral margin of each lobe convex. Sternite 4 narrowly elongate anteriorly; surface weakly depressed in midline; greatest width nearly 3 times that of sternite 3.

Abdomen smooth, setose, without spines; segments 2–4 each with anterior ridge weakly elevated, followed by transverse groove, segments 5–6 smooth; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 12 plates; posterior plates combined twice as wide as long.

Ocular peduncle movable; cornea unarmed, much longer than remaining eyestalk. Well-developed spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines; distomesial spine well-developed.

Antennal peduncle reaching tip of eye; article 1 with blunt distomesial process, strong distolateral spine nearly reaching end of article 2; articles 2–3 armed with acute distolateral spine, distomesial angle of article 3 acute; article 4 unarmed.

Mxp 3 ischium as long as than merus measured on extensor margin; flexor and extensor margins terminating in acute spine; 18 corneous denticles on crista dentata; flexor margin of merus with 2 strong spines, extensor margin with small distal spine.

P1 subequal, twice longer than postorbital carapace, covered with dense soft plumose and simple setae and short striae on merus to dactylus. Ischium with strong distomesial and distolateral spines. Merus with 3 strong distal spines (lateral, mesial, and dorsal), and one and 2 spines on mesial margin and dorsal side, respectively. Carpus nearly twice longer than high, with 3 well-developed distal spines. Palm slender, 1.4 times length of carpus, and slightly longer than fingers. Fingers not gaping, distally spooned; prehensile edges each with row of subtriangular teeth, proximal teeth obsolete; fixed and movable fingers ending in 3 and 2 distal teeth, respectively.

P2–P4 moderately stout, with small granules and short striae on lateral side of articles, decreasing in size posteriorly; P2 longest, ischium to dactylus with numerous soft plumose and simple setae, more numerous along dorsal and ventral margins. P2 clearly not overreaching end of P1; merus elongate, 0.5 times carapace length, 1.2 times P4 merus, 3 times longer than high, more than 2.5 times length of carpus and 1.5 times length of propodus, dorsal margin with row of well-developed spines, increasing in size distally, also present on P3 and P4, ventral margin with acute striae, without spines; carpus with 1 strong distal spine on dorsal margin, dorsal side with longitudinal crest; propodus 3 times as long as high, unarmed except for 1 corneous distal spine on ventral margin; dactylus 0.7 length of propodus; distal claw short, moderately curved; flexor margin nearly straight, with 6 teeth decreasing in size proximally, each with single long setae.

Epipods absent from pereopods.

Distribution. Only known from the type locality, west of Sumatra, at 614 m.

***Munidopsis leptotes* n. sp.**

(Fig. 36)

Material examined. Gulf of Aden, SUROIT, 1400–1600 m: 1 F 5.6 mm, holotype (MNHN-Ga 1543).

Etymology. From the Greek *leptotes*, slenderness, in reference to the long chelipeds. The name is considered as a substantive in apposition.

Description. Carapace longer than broad, nearly devoid of setae, dorsal surface moderately convex from side to side, cervical groove moderately distinct, regions well defined, gastric and cardiac regions more convex than branchial regions. Gastric region with 2 pairs of epigastric and numerous small mesogastric spines. Cardiac region triangular, preceded by deep transverse groove, with two median spines; some small postcervical spines and a few additional small spines on branchial regions; some small granules scattered on all regions. Rostrum triangular, nearly horizontal in lateral view, less than 0.3 length of remaining carapace, maximum width 0.2 times carapace breadth, apex blunt, lateral margins convergent and dorsally carinate. Frontal margin transverse in mesial half, without antennal spine, oblique in lateral half; anterolateral spine small, lateral margins weakly convex, subparallel, with some small spines along branchial margins. Posterior margin with some small spines.

Pterygostomian flap smooth, anterior margin ending in spine, overhanging basal antennal segment.

Sternum as long as wide, maximum width at sternite 7. Sternite 3 broad, slightly bilobate, separated by notch, about 3 times wider than long; sternite 4 anteriorly narrowed, nearly contiguous to third, about twice wider than sternite 3.

Abdomen smooth, unarmed; segments 2–4 each with 2 transverse ridges weakly elevated, separated by shallow transverse groove, segments 5–6 lacking such ridges; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 8 plates; posterior plates combined more than 1.5 times as wide as long.

Ocular peduncle fixed, with small mesial eye-spine not reaching end of cornea; cornea subglobular. Acute spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines, distomesial angle with granules.

Antennal peduncle overreaching tip of cornea; basal article with strong distomesial and distolateral spines; article 2 with long distolateral spine; segment 3 with minute distomesial spine; article 4 unarmed.

Mxp 3 ischium shorter than merus measured on extensor margin, flexor margin with distal spine; 17 or 18 corneous denticles on crista dentata; flexor margin of merus with 2 strong spines, extensor margin with distal spine.

P1 long and slender, 3.5 times carapace length, nearly devoid of setae, covered with minute granules on merus to dactylus. Merus longer than carapace, more than twice length of carpus, with a few distal spines, and row of spines along mesial and dorsal surface. Carpus nearly 5 times longer than high, with several distal small spines. Palm slender, smooth, nearly 1.5 length of carpus. Fingers nearly 0.7 times length of palm, opposable margins nearly straight, distally spooned; fixed finger without distolateral carina.

P2–P4 slender, nearly devoid of setae, somewhat compressed laterally, decreasing in size posteriorly. P2 clearly not reaching end of P1; merus shorter than carapace, about 5 times longer than high, more than 2.5 times length of carpus and slightly longer than propodus, dorsal margin with 3 or 4 small spines and some granules, ventral margin unarmed; carpus with 1 small distal spine on dorsal margin, lateral crest with small granules; propodus 7 times longer than high, ventral margin unarmed except for 2 corneous spines on distal portion; dactylus half length of propodus; terminal claw short, moderately curved, dorsal surface smooth, ventral margin nearly straight, with 12 or 13 minute teeth decreasing in sizes proximally, ultimate spine closer to penultimate spine rather than end of article.

Epipods absent from pereopods.

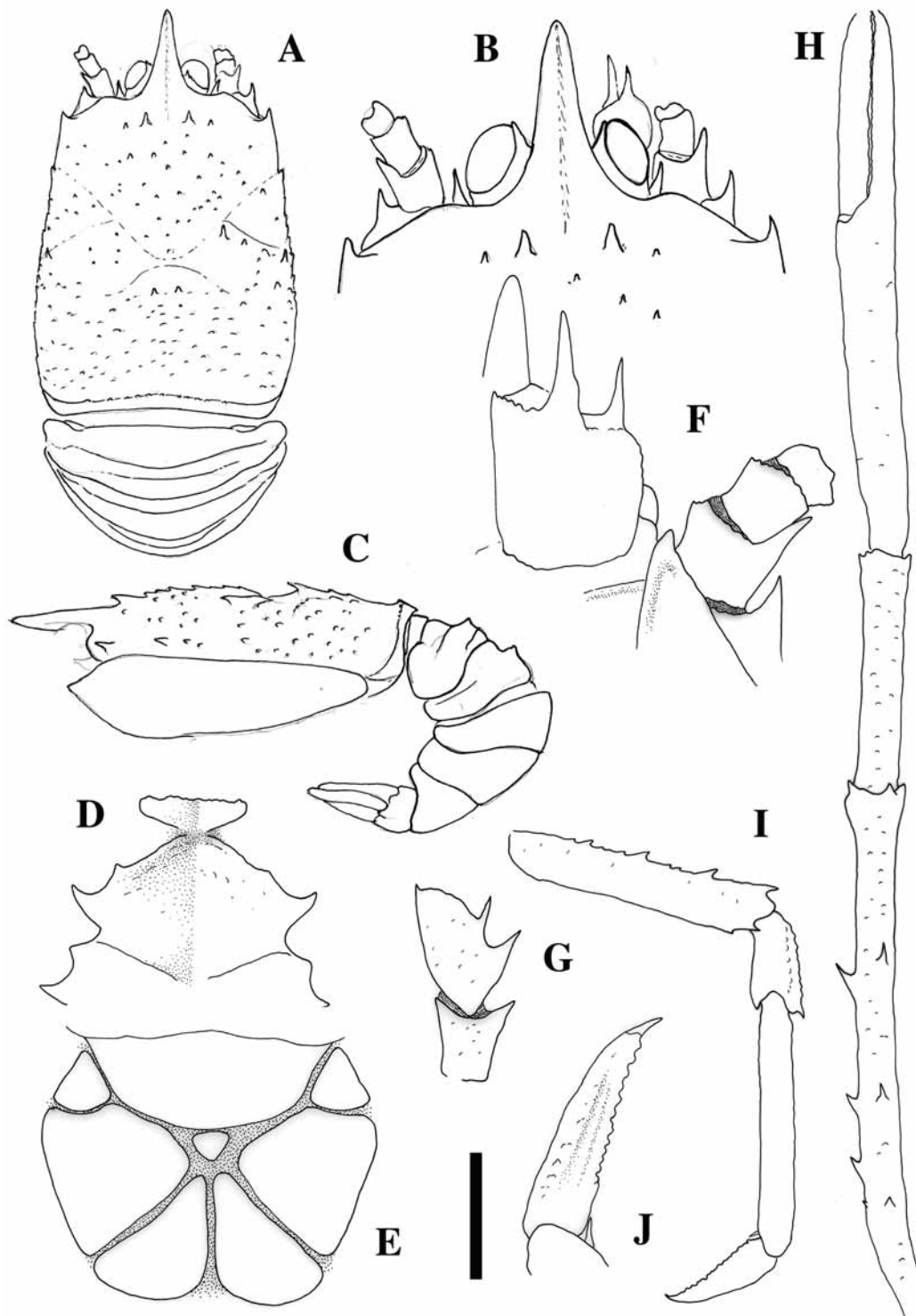


FIGURE 36. *Munidopsis leptotes* n. sp., holotype, female (5.6 mm), Gulf of Aden, SUROIT. A, carapace and abdomen, dorsal. B, anterior part of carapace, dorsal. C, carapace and abdomen, lateral. D, sternum, sternites 3 and 4. E, posterior part of sixth abdominal segment and telson. F, left antennule and antenna, ventral. G, right third maxilliped, lateral. H, right P1, lateral. I, right P2, lateral. J, dactylus of right P2, lateral. Scale: A, C, H, I = 2 mm; B, D, E, F, G, J = 1 mm.

Remarks. The new species resembles *M. unguifera* Alcock & Anderson, 1894, from the Bay of Bengal and Andaman Sea, in having the rostrum narrow triangular, frontal margin without an antennal spine, abdominal segments unarmed, small mesial eye-spine, and P2 not reaching P1. The following characters differentiate the two species:

— The dorsal carapace surface bears numerous small spines in *M. leptotes*, instead of two epigastric spines only in *M. unguifera*.

— The P1 is 3.5 times carapace length in *M. leptotes*, being twice in *M. unguifera*.

Distribution. Gulf of Aden, at 1400–1600 m.

***Munidopsis levis* (Alcock & Anderson, 1894)**

Bathyan kyristes levis Alcock & Anderson, 1894: 175.

Munidopsis levis.—Baba, 2005: 156, 290, figs. 70, 71 (synonymy and occurrences).

Material examined. Madagascar (A. Crosnier collection), Stn CH 22, 700–880 m: 1 M 24.3 mm, 1 F 27.5 mm (MNHN-Ga699).—Stn CH 65, 740–760 m: 2 M 19.6–22.0 mm (MNHN-Ga698). Philippines, MUSOR-STOM 1, Stn 44, 592–610 m: 1 M 24.4 mm, 1 ovig. F 23.2 mm (MNHN-Ga1403). Indonesia, Kei Islands, KARUBAR, Stn 39, 466–477 m: 1 F 15.0 mm (MNHN-Ga5692).—Stn 56, 549–552 m: 1 F 16.2 mm (MNHN-Ga5693).—Stn 57, 603–620 m: 1 M 13.6 mm, 1 F 8.9 mm (MNHN-Ga5694).—Stn 72, 676–699 m: 1 M 13.5 mm (MNHN-Ga5695). Solomon Islands, SALOMON 1, Stn 1859, 283–305 m: 1 M 24.8 mm, 1 F 21.7 mm (MNHN-Ga5696). SALOMON 2, Stn 2184, 464–523 m: 1 ovig. F 29.5 mm (MNHN-Ga5643).

Distribution. Previously known from Andaman Sea at 485 m and Laccadive Sea at 1164 m (Alcock & Anderson 1894), Arabian Sea at 1164 m (Alcock 1901), Zanzibar and Maldives between 640 and 797 m (Tirmizi 1966), south China Sea off SW Luzon at 454 m (Baba 1988) and Mindanao at 458 m (Baba 2005). The present material was collected off Madagascar (700–880 m), the Philippines (483–610 m), Indonesia (Kei Islands, 466–699 m) and the Solomon Islands (283–523 m).

***Munidopsis lophia* n. sp.**

(Fig. 37)

Material examined. Madagascar (A. Crosnier coll.), Stn 90, 640–720 m: 1 ovig. F 5.9 mm (Holotype, MNHN-Ga 1420).

Etymology. From the Greek *lophia*, crest, ridge, in reference to the cristate lateral margin of the carapace. The name is considered as a substantive in apposition.

Description. Carapace excluding rostrum slightly longer than wide, dorsal surface spineless, without ridges and setae, bifurcated cervical groove slightly distinct. Gastric region convex, circumscribed. Cardiac region slightly convex, depressed in front of slightly elevated transverse rugae. Posterior half of each branchial region with weak short transverse ridges. Posterior transverse ridge slightly elevated, uninterrupted and unarmed. Rostrum horizontal, triangular, 0.4 length of remaining carapace, maximum width 0.3 times carapace breadth, flattish dorsally, with weak longitudinal groove in midline, lateral margin finely serrated, ventral side flattish. Front margin slightly oblique in mesial half, transverse in lateral half, anterolateral angle rounded; lateral margin convex, cristate, overhanging pterygostomial flap; notch at end of anterior branch of cervical groove.

Sternum as long as wide, maximum width at level of sternite 7. Sternites feebly granulated. Sternite 3 with 2 anterior dentate lobes, twice as wide as long; sternite 4 twice broader than sternite 3, narrow anteriorly, anterior margin clearly narrower than sternite 3, lateral margins concave.

Abdominal segments spineless; segments 2–4 with anterior transverse ridge slightly elevated, without transverse groove; posterolateral lobes of segment 6 distinct but not overreaching transverse posteromedian margin. Telson divided into 8 plates, posterior plates combined nearly twice as wide as long.

Eye small, movable, falling short of midlength of rostrum; cornea moderately small, as long as remaining

eyestalk. Blunt spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennule with blunt distomesial process, and strong distolateral and distodorsal spines.

Antennal peduncle having basal article with blunt distomesial process and stout distolateral process; article 2 with distomesial and distolateral acute processes.

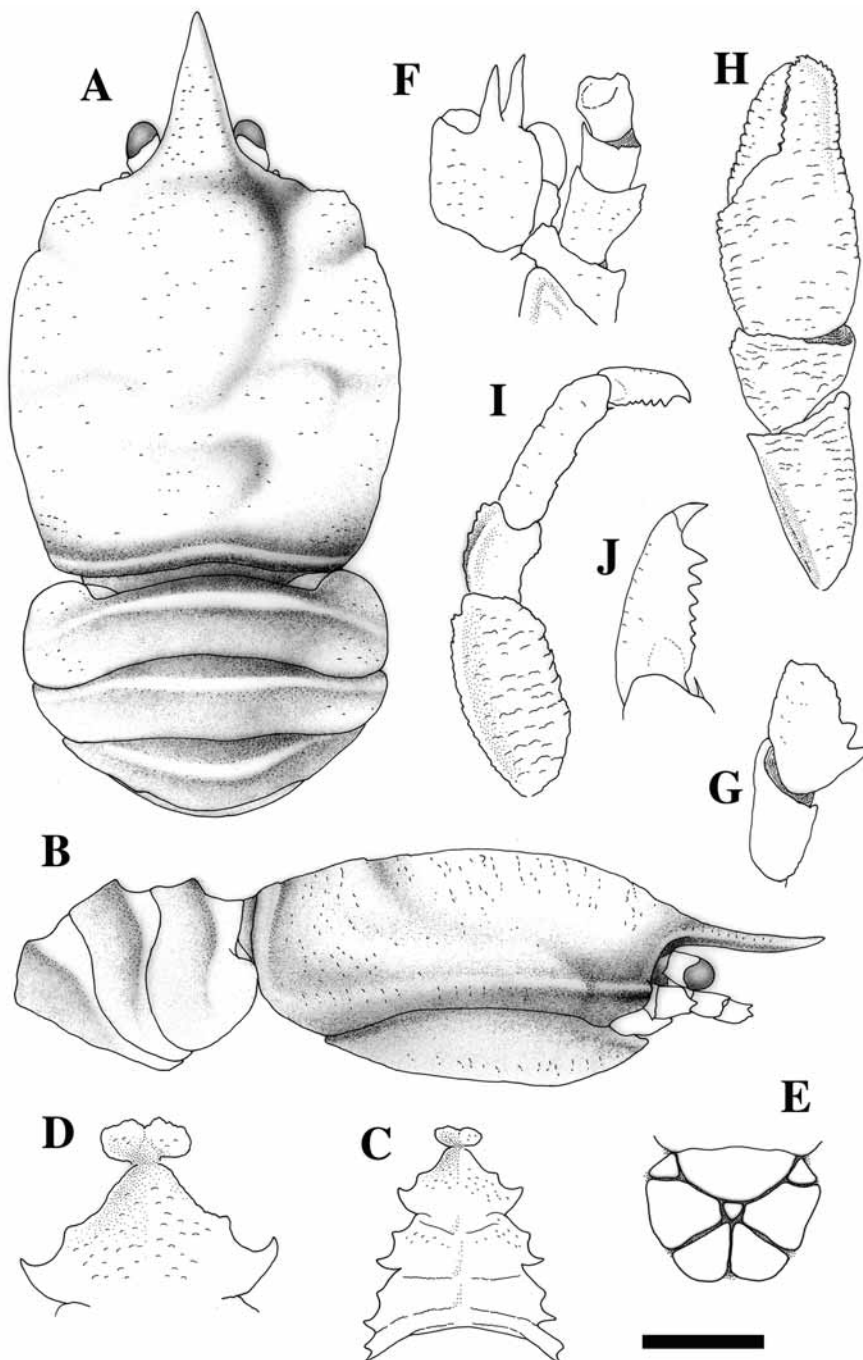


FIGURE 37. *Munidopsis lophia* n. sp., holotype, ovigerous female (5.9 mm), Indonesia, Banda Sea, CORINDON 4, Stn IV/I. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum. D, sternum, sternites 3 and 4. E, posterior part of sixth abdominal segment and telson. F, left antennule and antenna, ventral. G, merus of right third maxilliped, lateral. H, right P1, lateral. I, right P2, lateral. J, dactylus of right P2, lateral. Scale: A, B, C, E, H, I = 2 mm; D, F, G, J = 1 mm.

Mxp 3 ischium longer than merus, measured along extensor margins; merus with two strong spines on flexor margin, extensor distal margin acute, without spine.

P1 granulated, spineless, with a few setae, relatively stout, short, 1.3 times longer than carapace length. Merus with acute distolateral process. Carpus wider than long, and slightly shorter than palm. Palm as long as fingers, fixed finger with denticulate carina on distolateral margin.

P2–P4 with a few setae. P2 clearly not reaching end of P1; merus somewhat cristate along dorsal margin, ventral margin rounded, twice longer than high; dorsal margin of carpus cristate, with rounded longitudinal ridge along lateral side; propodus nearly 3.5 times longer than high, and nearly twice dactylus length, dorsal margin flattish with 2 weakly cristate ridges; dactylus ending in curved claw preceded by 6 proximally diminishing spines on nearly straight flexor margin, each spine bearing short seta, ultimate tooth closer to penultimate one than to end of terminal claw.

Epipods absent on pereopods.

Remarks. The new species is closely related to *M. denudata* n. sp. (see Remarks under that species).

Distribution. Only known from Madagascar, at 640–720 m.

***Munidopsis moresbyi* Alcock & Anderson, 1899**

(Fig. 38)

Munidopsis Moresbyi Alcock & Anderson, 1899a: 22.—Alcock, 1901: 259.

Munidopsis moresbyi.—Alcock & Anderson, 1899b: pl. 40, fig. 3.—Baba, 2005: 291.

Material examined. Indonesia, Makassar Strait, CORINDON 2, Stn 290, 779–798 m: 2 F 11.8–12.0 mm (MNHN-Ga1409).

Description. Carapace slightly longer than broad; dorsal surface moderately convex from side to side, covered with sparsely setose squamae and granules; cervical groove moderately distinct, regions well defined, gastric and cardiac regions slightly more convex than branchial regions. Gastric region without epigastric processes. Cardiac region triangular, preceded by deep transverse groove. Rostrum triangular, broad, 0.3 times as wide as carapace, about 0.3 times length of remaining carapace, horizontal, subacute at apex, directed slightly upwards, margins serrated, dorsally carinate and sparsely granulated. Frontal margin slightly oblique behind ocular peduncle, without antennal spine, then nearly transverse toward blunt anterolateral spine; lateral margins with numerous blunt spines, weakly convex, with distinct notch at each end of anterior and posterior cervical grooves. Posterior margin preceded by moderately elevated ridge.

Pterygostomian flap granulated, anteriorly angular.

Sternum as long as wide, maximum width at sternite 7. Sternites with numerous small granules; sternite 3 moderately broad, bilobate, separate by median notch, about 2.5 times wider than long; sternite 4 nearly 2.5 times wider than sternite 3.

Abdomen smooth; segments 2–4 each with 2 slightly produced transverse ridges separated by shallow transverse groove; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 8 plates; posterior plates combined about twice as wide as long.

Ocular peduncle fixed, unarmed; cornea subglobular, as wide as peduncle. One blunt granulated process ventral to front margin between ocular and antennal peduncles.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines; distomesial margin serrated.

Basal article of antennal peduncle with strong distomesial and distolateral processes; article 2 with small distolateral spine; articles 3–4 unarmed.

Mxp 3 ischium granulated, longer than merus measured on extensor margin, flexor and extensor margins terminating in small blunt spine; 20 or 21 corneous denticles on crista dentata. Flexor margin of merus with 2 granulated spines; extensor margin with blunt distal spine.

P1 subequal, moderately short and massive, nearly 1.5 times carapace length, sparsely granulated, with

numerous short plumose setae. Merus twice length of carpus, with 2 or 3 distal spines. Carpus as long as high, without spines. Palm unarmed, 1.5 times length of carpus. Fingers slightly longer than palm, opposable margins nearly straight, not gaping, distally spooned; fixed finger without distolateral carina, slightly exceeding movable finger, ending in single tip.

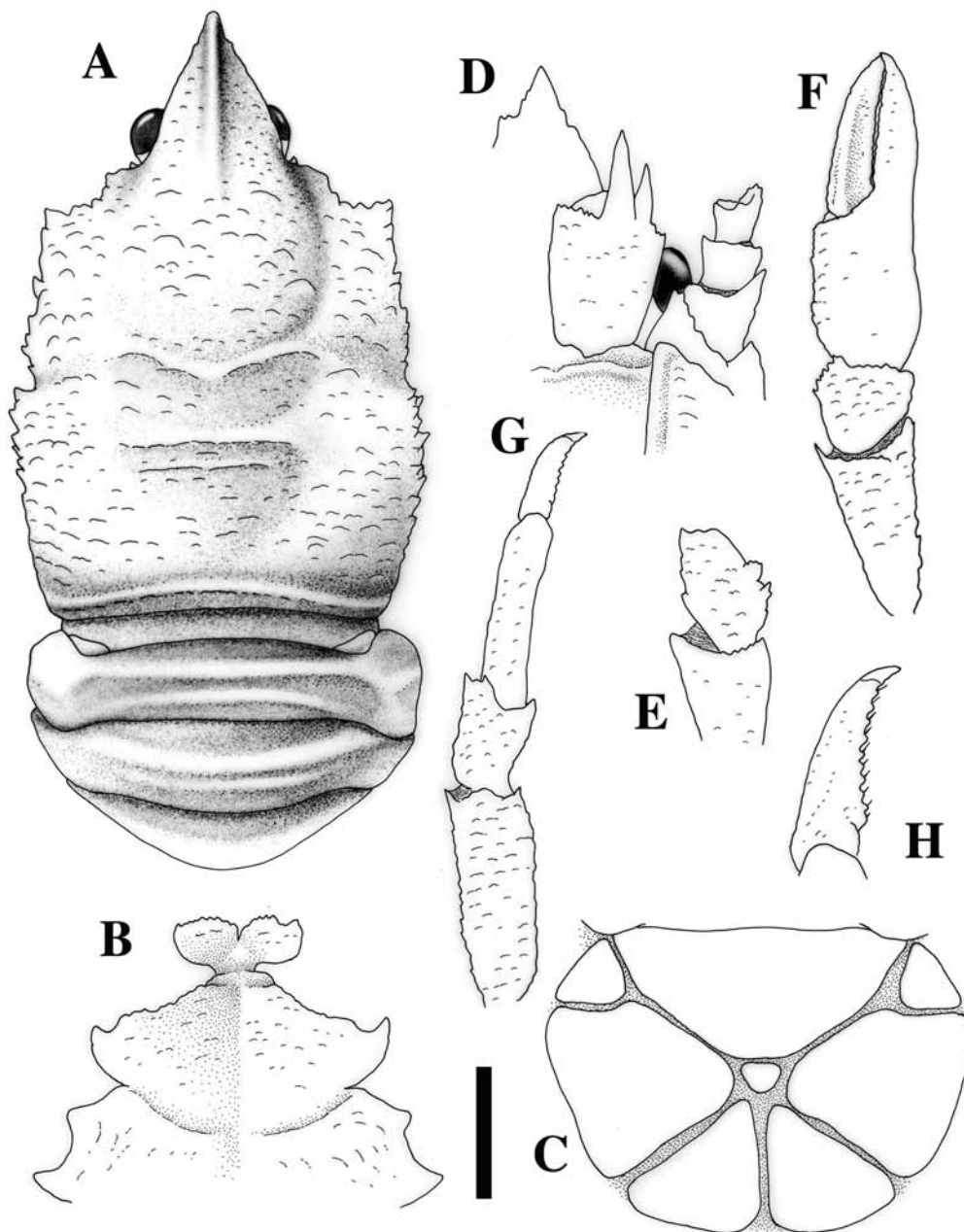


FIGURE 38. *Munidopsis moresby* Alcock & Anderson, 1899, female (12.0 mm), Indonesia, Makassar Strait, CORINDON 2, Stn 290. A, carapace and abdomen, dorsal. B, sternum, sternites 3–5. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, right P1, lateral. G, right P2, lateral. H, dactylus of right P2, lateral. Scale: A, F, G = 5 mm; B, C, D, E, H = 2 mm.

P2–P4 sparsely granulated; P2 longest, not reaching end of P1, less than 1.5 times carapace length; ischium to propodus with numerous soft plumose setae. P2 merus half carapace length, less than 3 times longer than high, 2 times length of carpus and nearly 1.5 length of propodus; distal spine on dorsal and ventral margins; carpus with longitudinal crest on lateral surface, and distal spine on dorsal margin; propodus more than 3 times as long as high, ventral margin unarmed except for 2 corneous spines on distal portion; dactylus more

than half length of propodus, flexor margin curved, with 9 or 10 proximally diminishing teeth, each tooth with single seta.

Epipods absent from pereopods.

Remarks. The specimens examined agree quite well with the description and illustrations provided by Alcock & Anderson (1899a, b) and Alcock (1901). However, the rostrum of the present material is wider than in the types (as figured by Alcock & Anderson). Furthermore, the dorsal carapace surface is more squamate in the specimens from Indonesia. Unfortunately, the types have not been examined and the present identification may be revised in the future.

Distribution. Previously known only from the type locality, Arabian Sea off Travancore coast, at 787 m. The present record extends its distribution to Banda Sea, Indonesia, at 779–787 m.

***Munidopsis nereidis* n. sp.**

(Fig. 39)

Material examined. Gulf of Aden, METEOR 5, Stn 257, 2227–2250 m: 1 M 8.7 mm (holotype) (SMF).

Etymology. The species is dedicated to Nereis, a sea nymph.

Description. Carapace slightly longer than broad; dorsal surface moderately convex from side to side, densely setose, with numerous short striae; regions well delineated by furrows including distinct anterior and posterior cervical grooves. Epigastric region without spines or processes. Posterior cardiac region bluntly triangular, preceded by deep transverse depression. Posterior margin preceded by weakly elevated ridge. Rostrum triangular, moderately compressed, horizontal and slightly upcurved distally, ending in acute tip, length nearly half that of remaining carapace, maximum width 0.3 times carapace breadth; dorsal surface with blunt longitudinal ridge; lateral margins serrate, slightly concave. Frontal margin concave behind ocular peduncle, leading to acute antennal spine, then nearly transverse toward anterolateral corner of carapace. Lateral margins weakly convex and subparallel, carinate, overhanging pterygostomial flap; anterolateral spine well-developed, as long as antennal spine, anterior end of anterior cervical groove with distinct notch, anterior branchial margin with one blunt spine and several pronounced striae, posterior cervical groove without notch at anterior end.

Pterygostomial flap smooth, with small short striae and granules, anteriorly unarmed.

Sternum with numerous short setiferous striae. Sternite 3 narrow, nearly 1.7 times wider than long, anterior margin with deep median notch; lateral margin of each lobe convex. Sternite 4 narrowly elongate anteriorly, contiguous to sternite 3; surface weakly depressed in midline; greatest width 4 times that of sternite 3.

Abdomen smooth, unarmed, setose; segments 2–4 each with anterior ridge weakly elevated, followed by transverse groove, segments 5–6 smooth; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 8 plates; posterior plates combined about twice as wide as long.

Ocular peduncle immovable, with strong mesial spine, cornea small, subglobular, clearly narrower than peduncle.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines, distomesial angle with granules.

Antennal peduncle not reaching tip of eye spine; article 1 with strong distomesial and distolateral spines, not reaching end of second article; article 2 armed with short distolateral and distomesial spines; articles 3–4 unarmed.

Mxp 3 ischium as long as merus measured on extensor margin, flexor and extensor margins terminating in blunt spine; 15 corneous denticles on crista dentata; flexor margin of merus with 2 blunt spines and several granules, extensor margin with distal spine.

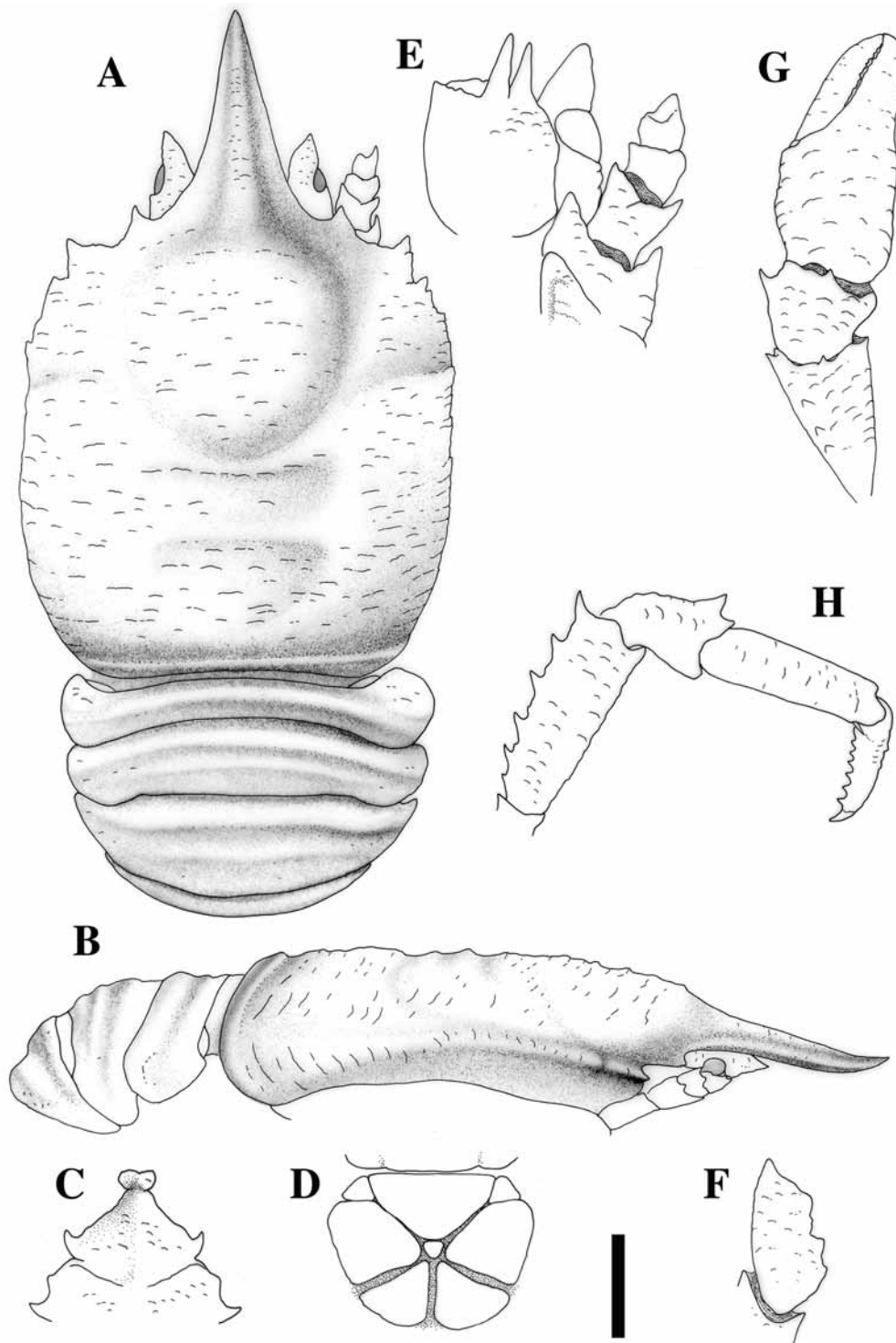


FIGURE 39. *Munidopsis nereidis* n. sp., holotype, male (8.7 mm), Gulf of Aden, METEOR 5, Stn 257. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum, sternites 3–5. D, posterior part of sixth abdominal segment and telson. E, left antennule and antenna, ventral. F, merus of right third maxilliped, lateral. G, right P1, lateral. H, right P2, lateral. Scale: A, B, C, D, G, H = 2 mm; E, F = 1 mm.

P1 stout, subequal, slightly longer than postorbital carapace, covered with dense soft plumose and simple setae and sparse short striae and granules on merus to dactylus. Ischium with small dorsal, distomesial and distolateral spines. Merus with 3 distal spines (lateral, mesial, and dorsal), and several spines along dorsal side. Carpus as long as high, with one strong mesial spine and one small dorsodistal spine. Palm slightly

longer than carpus, and slightly shorter than fingers. Fingers not gaping, distally spooned; prehensile edges each with row of subtriangular teeth, proximal teeth obsolete; fixed and movable fingers ending in several distal teeth; fixed finger with denticulate carina along distolateral margin.

P2–P4 stout, with small granules and short striae on dorsal side, decreasing in size posteriorly; P2 longest; ischium to dactylus with numerous soft plumose and simple setae, more numerous along dorsal and ventral margins. P2 exceeding end of P1; merus nearly 0.5 times carapace length, 1.4 times P4 merus, 2.5 times longer than high, more than 1.5 times length of carpus and less than 1.5 times length of propodus, dorsal margin with row of well-developed spines, increasing in size distally, also present on P3 and P4, ventral margin with acute striae, distally produced; carpus with 1 strong distal spine on dorsal margin, lateral side with longitudinal crest; propodus less than 3 times as long as high, unarmed except for one corneous distal spine on ventral margin; dactylus 0.7 length of propodus; distal claw short, moderately curved; flexor margin nearly straight, with 6 teeth decreasing in size proximally, each with single long seta.

Epipods present on P1.

Remarks. *Munidopsis nereidis* belongs to the group of species having a wide triangular rostrum, without epigastric spines or processes, main well-developed eye-spine on mesial end of eyestalk, fixed finger of P1 with denticulate carina on distolateral margin, P2 overreaching P1, and epipods on P1. The new species resembles *M. profunda* from the Celebes Sea and Taiwan (Baba 2005, Osawa *et al.* 2006b) and *M. solidissima* n. sp. from Madagascar. However, they differ in the following aspects:

— The lateral margins of the carapace bear some well-developed spines in *M. profunda* and *M. solidissima*, instead of one well-developed anterolateral spine in *M. nereidis*.

— The carpi and propodi of P2–P4 in *M. profunda* and *M. solidissima* bear a row of spines along dorsal margins, which are absent in the new species.

— The P2–P4 are more slender in *M. profunda* and *M. solidissima* than in *M. nereidis*. The P2 merus is three times longer than high in the former two species, instead of 2.5 times in *M. nereidis*.

Distribution. Only known from the type locality, Gulf of Aden, at 2227–2250 m.

***Munidopsis nitida* (A. Milne-Edwards, 1880)**

Orophorhynchus nitidus A. Milne-Edwards, 1880: 59.

Munidopsis nitida.— Baba, 2005: 158, 291, figs. 72, 73 (synonymy and occurrences).

Material examined. Madagascar (A. Crosnier collection), Stn CH 103, 880–920 m: 1 F 8.4 mm (MNHN-Ga1347).—Stn CH 127, 1715–1750 m: 1 M 25.0 mm (MNHN-Ga1350).—Stn CH 128, 1930 m: 1 M 10.8 mm (MNHN-Ga1348).—Stn CH 131, 1490–1640 m: 4 M 4.2–11.1 mm, 1 ovig. F 17.0 mm, 2 F 11.9–13.5 mm (MNHN-Ga1351).—Stn CH 138, 1800–2000 m: 1 F 9.7 mm (MNHN-Ga1349). NW Madagascar, BENTHEDI, Stn CH 31, 1800 m: 2 F 7.3–10.6 mm (MNHN-Ga1581). Reunion Island, MD32, Stn 105, 1740–1850 m: 1 F 17.6 mm (MNHN-Ga5742). Philippines, MUSORSTOM 2, Stn 55, 865 m: 1 M 20.7 mm, 1 ovig. F 20.8 mm (MNHN-Ga1344).—Stn 69, 1800–1950 m: 1 ovig. F 22.2 mm (MNHN-Ga1345). Indonesia, Makassar Strait, CORINDON 2, Stn 286, 1710–1730 m: 3 M 10.0–14.6 mm, 1 F 11.5 mm (MNHN-Ga1346). Indonesia, Kei Islands, KARUBAR, Stn 52, 1244–1266 m: 1 ovig. F 22.5 mm, 2 F 6.0–11.6 mm (MNHN-Ga5703).—Stn 53, 1026–1053 m: 1 F 22.3 mm (MNHN-Ga5704). Solomon Islands, SALOMON 1, Stn 1754, 1169–1204 m: 2 M 12.4–14.9 mm (MNHN-Ga5697).—Stn 1764, 1327–1598 m: 1 M 15.2 mm, 2 F 14.6–14.7 mm (MNHN-Ga5637).—Stn 1780, 222–228 m: 1 M 17.8 mm (MNHN-Ga5638).—Stn 1781, 1036–1138 m: 1 ovig. F 20.7 mm, 1 F 11.9 mm (MNHN-Ga5698). SALOMON 2, Stn 2197, 897–1057 m: 1 M 8.2 mm (MNHN-Ga5640, 5699).—Stn 2216, 930–977 m: 1 M 17.3 mm (MNHN-Ga5641).—Stn 2251, 1000–1050 m: 3 M 14.4–22.7 mm, 2 ovig. F 19.3–20.9 mm, 1 F 16.9 mm (MNHN-Ga5700).—Stn 2253, 1200–1218 m: 1 ovig. F 23.0 mm, 3 F 3.4–10.0 mm (MNHN-Ga5741).—Stn 2276, 814–980 m: 1 M 16.5 m (MNHN-Ga5642).

New Caledonia, BIOCAL, Stn 17, 3680 m: 1 F 4.4 mm (MNHN).—Stn 27, 1850–1900 m: 1 F 13.6 mm (MNHN-Ga5702). BIOGEOCAL, Stn 283, 2370–2375 m: 1 F 14.2 mm (MNHN). Vanuatu, MUSORSTOM 8, Stn 991, 910–936 m: 1 M 21.6 mm (MNHN-Ga5705).—Stn 1008, 919–1000 m: 1 ovig. F 20.9 mm (MNHN-Ga5706).—Stn 1036, 920–950 m: 1 ovig. F 22.4 mm (MNHN-Ga5707).—Stn 1037, 1058–1086 m: 1 F 18.1 mm (MNHN-Ga5634).—Stn 1075, 944–956 m: 1 M 13.2 mm, 1 ovig. F 17.5 mm (MNHN-Ga5708).—Stn 1076, 1100–1191 m: 1 M 14.5 mm (MNHN-Ga5635). Vanuatu, BOA 0, Stn 2311, 932–986 m: 1 F 8.3 mm (MNHN-Ga5636).

Distribution. This is one of the widespread species in *Munidopsis* (Baba 2005) (under the names of *M. ciliata* and *M. nitida*). The species has been recorded in the Gulf of Mexico, Gulf of Guinea, Mozambique, Gulf of Aden, Bay of Bengal, between Papua and the Admiralty Islands, Japan and Gulf of Panama, between 1373 and 2620 m (Baba 2005). The material examined was collected off Madagascar, southwest Indian Ocean, the Philippines, Indonesia, New Caledonia, Vanuatu and Solomon Islands, between 222 and 3680 m. The shallow record from the Solomon Islands (222–228 m) should be considered with caution, because most of the records are well below 800 m.

***Munidopsis orcina* McArdle, 1901**

(Figs. 40, 41, 55J)

Munidopsis orcina McArdle, 1901: 523.—Alcock & McArdle, 1902: pl. 56, fig. 5.—Baba, 2005: 292.

Material examined. Madagascar (A. Crosnier collection), Stn CH 138, 1800–2000 m: 1 M 12.0 mm (MNHN-Ga1418). Reunion Island, MD 32, Stn 105, 1740–1850 m: 1 M 10.7 mm (MNHN). New Caledonia, BIOCAL, Stn 5, 2340 m: 1 ovig. F 11.4 mm (MNHN-Ga5629).—Stn 72, 2100–2110 m: 1 ovig. F 10.5 mm (MNHN-Ga5630). BIOGEOCAL, Stn 260, 1820–1980 m: 2 ovig. F 11.2–12.6 mm (MNHN-Ga5631). Vanuatu, MUSORSTOM 8, Stn 1109, 1550–1620 m: 1 F 9.7 mm (MNHN-Ga5632).—Stn 1110, 1360 m: 1 F 10.1 mm (MNHN-Ga5633).

Description. Carapace longer than broad; dorsal surface moderately convex from side to side, covered with granules, nearly devoid of setae; 2 small epigastric protuberances, regions well delineated by furrows including distinct anterior and posterior cervical grooves. Posterior cardiac region triangular, preceded by deep transverse depression. Posterior margin preceded by weakly elevated ridge. Rostrum horizontal, subtriangular, granulated, slightly longer than one-third length of remaining carapace; basally broad, about one-third carapace width, margins proximally subparallel, apex blunt, dorsal surface carinate in midline. Frontal margin oblique behind ocular peduncle, without antennal spine, transverse toward rounded anterolateral angle. Lateral margins unarmed, weakly convex and subparallel, anterolateral angle rounded, ends of anterior and posterior cervical grooves each with distinct notch.

Pterygostomian flap granulated, anteriorly unarmed.

Sternum smooth, as long as wide, maximum width at sternite 7. Sternite 3 narrow, nearly twice wider than long, anterior margin divided into 2 lobes, with small median notch. Sternite 4 narrowly elongate anteriorly; surface depressed in midline; greatest width nearly 3 times that of sternite 3.

Abdomen unarmed; segments 2–4 each with 2 transverse ridges weakly elevated and granulated, separated by transverse groove, segments 5–6 without ridges; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 10 plates; posterior plates combined twice as wide as long.

Ocular peduncle fixed, blunt mesial eye-spine overreaching end of antennal peduncle, lateral margin without spine; cornea small, lateral, clearly narrower than eye-spine. Spine ventral to front margin between ocular and antennal peduncles.

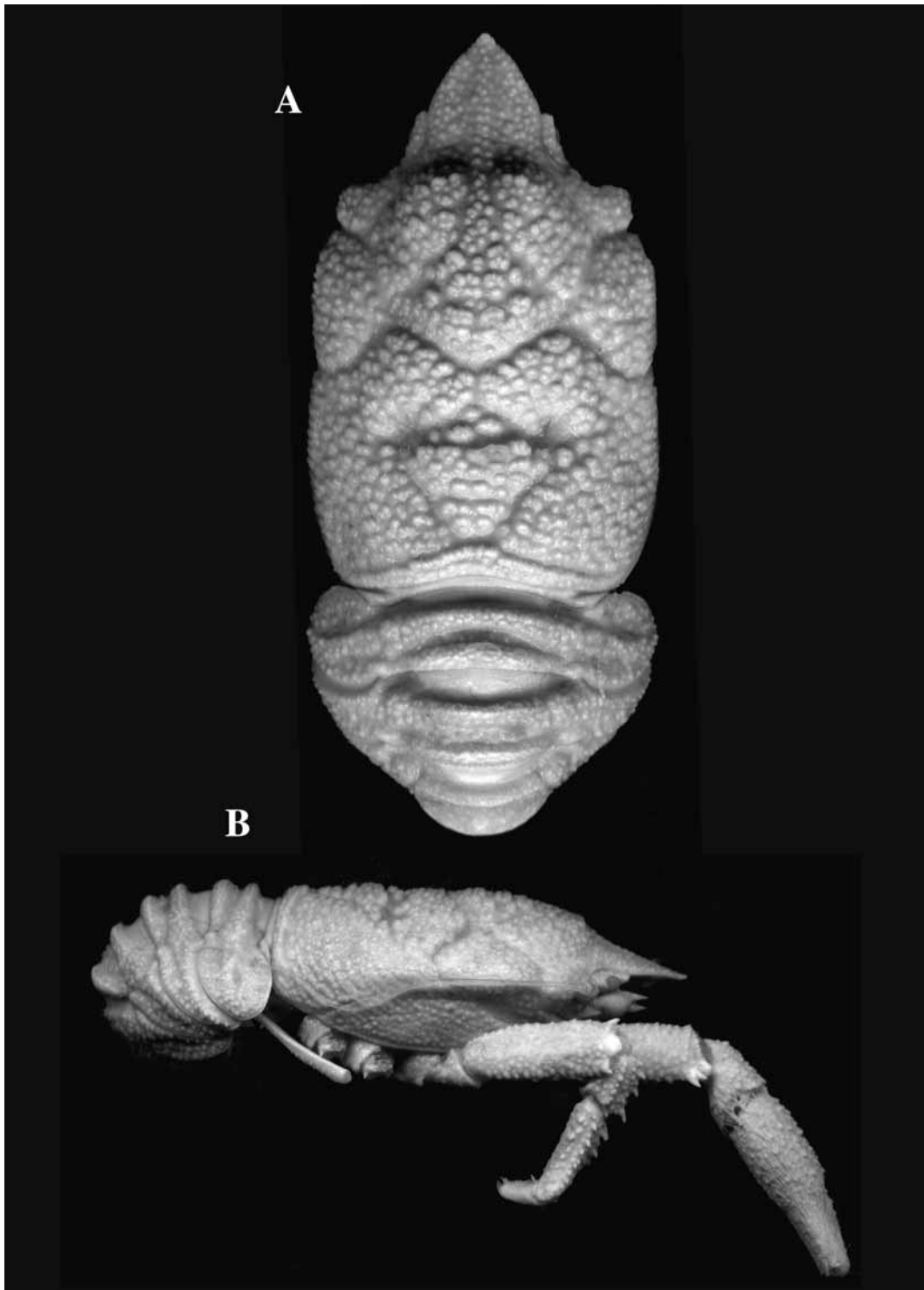


FIGURE 40. *Munidopsis orcina* McArdle, 1901, ovigerous female (12.6 mm), New Caledonia, BIOGEOCAL, Stn 260. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines, distomesial angle granulated.

Basal article of antennal peduncle with strong distomesial spine and blunt distolateral process; article 2 with short distolateral and distomesial spines; article 3 unarmed.

Mxp 3 ischium as long as merus measured on extensor margin; flexor and extensor margins terminating in blunt spine; 19 corneous denticles on crista dentata; flexor margin of merus with 4 or 5 small spines, extensor margin with distal spine.

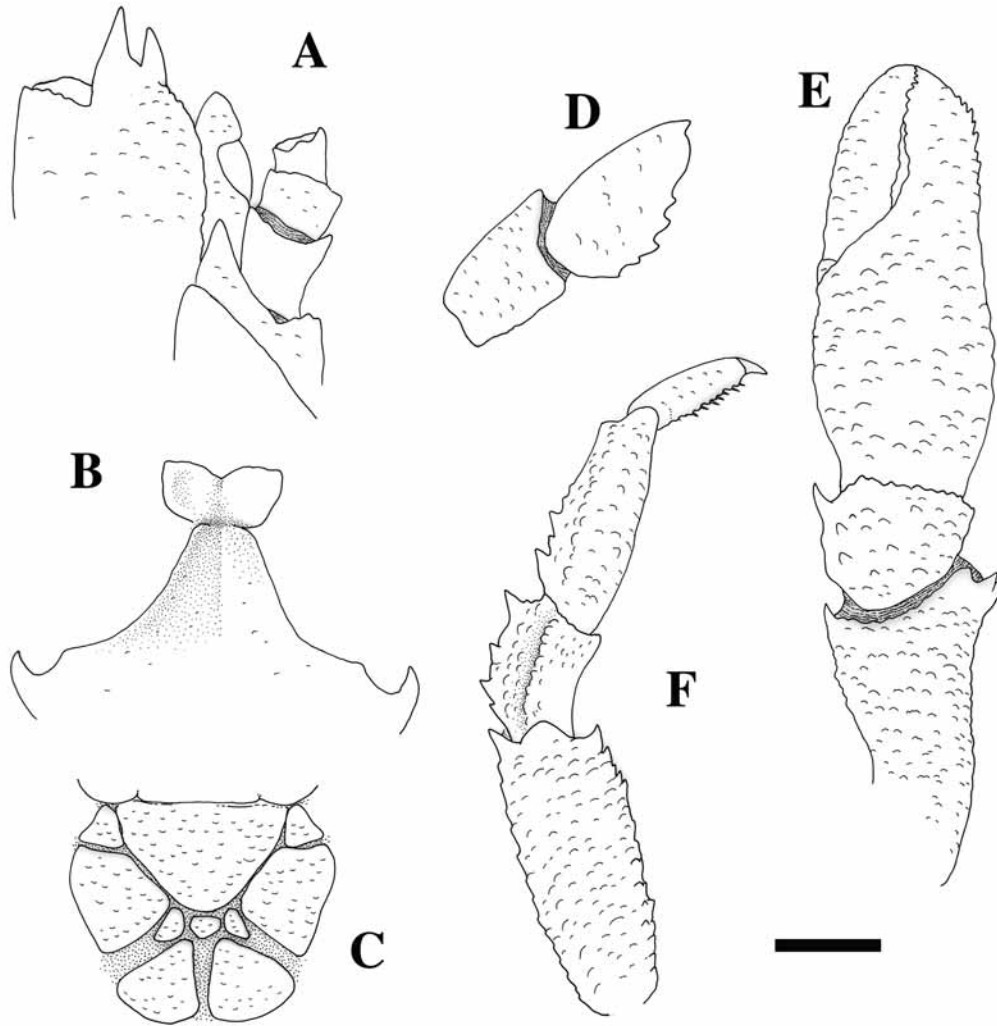


FIGURE 41. *Munidopsis orcina* McArdle, 1901, ovigerous female (12.6 mm), New Caledonia, BIOGEOCAL, Stn 260. A, left antennule and antenna, ventral. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, ischium and merus of right third maxilliped, lateral. E, right P1, lateral. F, right P2, lateral. Scale: A, B, C, D = 2 mm; E, F = 1 mm.

P1 subequal, nearly as long as carapace, granulated, with numerous short plumose setae. Merus with some distal spines. Carpus slightly higher than long, with strong mesial spine and several small spines on dorsal side. Palm stout, more than 1.5 times length of carpus, as long as fingers. Fingers distally spooned, fixed finger with denticulate carina.

P2–P4 moderately stout, with numerous small granules, decreasing in size posteriorly; P2 longest. P2 clearly not reaching end of P1, slightly shorter than carapace; merus slightly compressed, 1.2 times P4 merus, 2.5 times longer than high, about twice length of carpus and nearly 1.5 times length of propodus, dorsal margin cristate, with row of small spines, ventral margin granulated, each margin ending in acute spine; carpus with row of spines along dorsal margin, increasing in size distally, lateral side with granulated crest, a few spines proximally; propodus cylindrical, nearly 2.5 times as long as high, dorsal margin with row of spines, lateral side with granulated crest; dactylus nearly 0.8 length of propodus, distal claw short, moderately curved, flexor margin straight, with 8 or 9 teeth decreasing in size proximally, each with single long seta.

Epipods absent from pereopods.

Colour. Body and appendages light brown or grey; corneae light yellow.

Remarks. The specimens examined agree quite well with the original description and illustrations. No significant differences in morphology among specimens from different localities were observed. The original illustration of *M. orcina* by Alcock & McArdle (1902) shows that the telson is composed by 8 plates. This difference is considered here as a variation.

Distribution. Previously known from the Arabian Sea at 2105 m. The present material was collected in the southwest Indian Ocean, Madagascar and Reunion Island (740–2000 m), and southwest Pacific, New Caledonia and Vanuatu, between 1360 and 2340 m.

Munidopsis parfaiti (Filhol, 1885)

Elasmonotus parfaiti Filhol, 1885: pl. 7.

Munidopsis parfaiti.—Macpherson & Segonzac, 2005: 37, figs. 10, 11 (list of occurrences).

Material examined. NW Madagascar, BENTHEDI, Stn CH 82, 3450 m: 1 M 13.8 mm (MNHN-Ga1593). S Madagascar, SAFARI 1, Stn 13 (CP07), 4245–4400 m: 1 F 34.8 mm (MNHN-Ga1427).

Distribution. Previously known from the Atlantic Ocean, between Ireland to South Africa, at depths between 2895 and 5330 m (Macpherson & Segonzac 2005). The present records extend its distribution to the southeast Indian Ocean (3450–4400 m).

Munidopsis pectinata n. sp.

(Fig. 42)

Material examined. Reunion Island, MD32, Stn CP112, 740–780 m: 1 F 4.9 mm, holotype (MNHN-Ga5563).

Etymology. From the Latin *pecten*, comb, in reference to the characteristic spination of the antennular peduncle.

Description. Carapace slightly longer than broad; dorsal surface moderately convex from side to side, covered with numerous granules and acute tubercles; cervical grooves distinct, regions well defined, gastric and cardiac regions more convex than branchial. Gastric region with transverse row of 7 epigastric spines. Cardiac region triangular, preceded by deep transverse groove. Rostrum broad, triangular, horizontal in lateral view, less than 0.3 length of remaining carapace, maximum width one-fourth carapace width; margins of proximal half subparallel, apex acute; dorsally carinated, dorsal and lateral surfaces granulated. Frontal margin concavely oblique behind ocular peduncle, leading to strong antennal spine, then obliquely toward anterolateral corner of carapace; anterolateral spine well-developed, smaller than antennal spine. Lateral margins weakly convex, with distinct notch at end of anterior cervical groove, followed by numerous spines and granules. Posterior margin preceded by elevated spiniform ridge.

Pterygostomian flap granulated, anterior margin angular.

Sternum smooth, as long as broad, maximum width at sternite 7; sternite 3 narrow, not clearly bilobate, about 3 times wider than long; sternite 4 about 3 times wider than sternite 3.

Abdominal segments 2–4 each with 2 slightly produced transverse ridges separated by shallow groove; posterior ridge of segment 2 with some small median spines; anterior ridge of segment 3 with 2 median small spines, posterior ridge smooth; ridges on segments 4 and 5 smooth; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 7 plates; posterior plates combined about 1.5 times as wide as long.

Ocular peduncle slightly movable, with short mesial eye-spine not reaching end of cornea; cornea subglobular, longer than remaining eyestalk, reaching end of antennal peduncle. Acute spine ventral to front mar-

gin between ocular and antennal peduncles.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines, and some small spines at base; lateral margin with numerous well-developed spines; distomesial margin granulated, with some small spines.

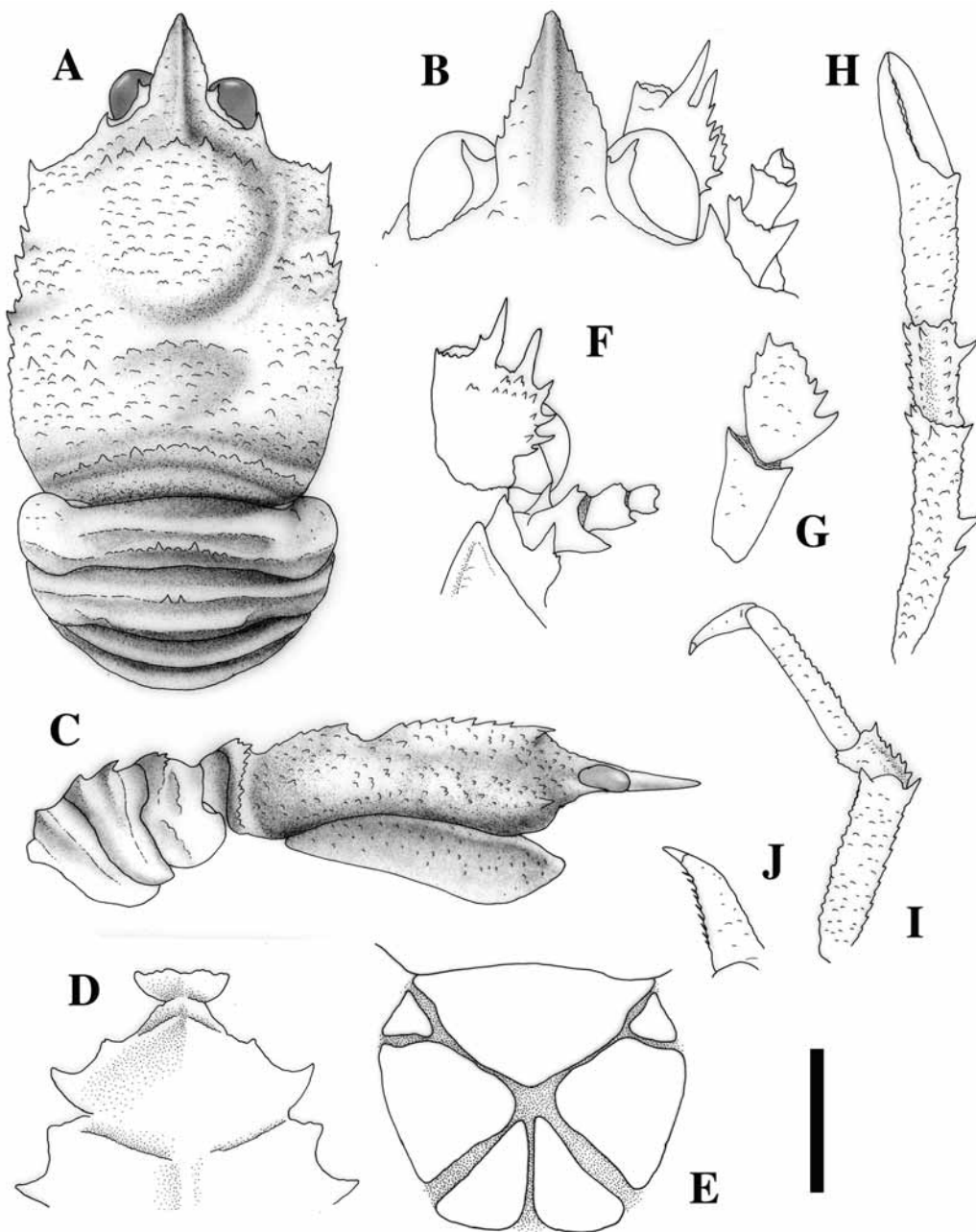


FIGURE 42. *Munidopsis pectinata* n. sp., holotype, female (4.9 mm), Reunion Island, MD32, Stn CP112. A, carapace and abdomen, dorsal. B, anterior portion of carapace. C, carapace and abdomen, lateral. D, sternum, sternites 3 and 4. E, posterior part of sixth abdominal segment and telson. F, left antennule and antenna, ventral. G, ischium and merus of right third maxilliped, lateral. H, left P1, lateral. I, left P2, lateral. J, dactylus of left P2, lateral. Scale: A, C, H, I = 2 mm; B, D, E, F, G = 1 mm.

Basal article of antennal peduncle with strong distomesial and distolateral spines; article 2 with strong distolateral and small distomesial spines; article 3 with small distolateral spine; article 4 unarmed.

Mxp 3 ischium granulated, as long as merus measured on extensor margin, flexor and extensor margins terminating in small acute spine, 16–18 corneous denticles on crista dentata. Flexor margin of merus with 3

spines decreasing in size distally, and several minute spines; extensor margin with some spines, distal spine longer than others.

Left P1 (right missing) moderately slender, more than 1.5 times longer than carapace, with numerous small granules and some soft setae on merus to fingers. Merus more than twice length of carpus, with 3 distal spines (mesial, dorsal and lateral) and 2 well-developed spines at midlength of mesial margin, some minute spines on dorsal surface. Carpus twice longer than high, with rows of spines along mesial, dorsal and lateral sides, one strong spine on mesial margin. Palm slender, nearly 1.5 times length of carpus, unarmed. Fingers as long as palm, opposable margins nearly straight, not gaping, distally spooned; fixed finger without distolateral carina.

P2–P4 moderately slender, coarsely granulated, with some setae, decreasing in size posteriorly. P2 longest, nearly 1.5 times carapace length, and not reaching end of P1; merus slightly shorter than carapace length, about 4 times longer than high, 3 times length of carpus and less than 1.5 times length of propodus; dorsal margin with row of small spines, ventral margin granules, each margin ending in well-developed spine; carpus with granulated crest on lateral surface, numerous spines along dorsal margin, ending in well-developed spine; propodus 5 times as long as high, dorsal margin with row of small spines, ventral margin unarmed except for 1 or 2 distal corneous spines; dactylus half length of propodus, curved, flexor margin slightly curved, with 8 teeth decreasing in size proximally, each tooth with seta.

Epipods absent on pereopods.

Remarks. *Munidopsis pectinata* resembles *M. margarita* Faxon, 1893, from the Galapagos Islands, in having the carapace surface granulated, rostrum triangular, without lateral spines, abdominal segments 2–3 with spines, short mesial eye-spine, antennal spine present and P2 clearly not reaching end of P1. The following characters can easily differentiate the two species:

— The rostrum is spiniform in *M. margarita*, being broadly triangular in *M. pectinata*.

— The gastric region bears some well-developed spines, in addition to epigastric spines, in *M. margarita*, whereas these spines are absent in *M. pectinata*.

— The spines along the lateral margins of the carapace are stronger and more numerous in *M. margarita* than in the new species.

— The median spines on the anterior ridge of abdominal segments 2–4 are well-developed in *M. margarita*, whereas these spines are small or absent in *M. pectinata*.

— The spines along dorsal and ventral margins of P2–P4 meri are well-developed in *M. margarita*, whereas these spines are small in the new species.

Distribution. Only known from Reunion Island, at 740–780 m.

Munidopsis pericalla n. sp.

(Figs. 43, 55K)

Material examined. Solomon Islands, SALOMON 1, Stn 1831, 135–325 m: 1 M 7.0 mm (MNHN-Ga5564), 1 ovig. F 6.3 mm (MNHN-Ga5565). Philippines, PANGLAO 2005, Stn 2381, 241–259 m: 1 ovig. F 6.3 mm.—Stn 2399, 342 m: 1 M 5.2 mm (NTOU).

Types. The male of 7.0 mm from SOLOMON 1, Stn 1831 is the holotype (MNHN Ga5564). The other specimens are paratypes.

Etymology. From the Greek *perikallos*, very beautiful, in reference to the nice colour pattern of the species.

Description. Carapace devoid of setae, as long as broad, slightly arched transversely, bifurcated cervical groove slightly distinct; dorsal surface unarmed and smooth, with numerous pits. Gastric region somewhat inflated. Cardiac region distinctly circumscribed. Rostrum broad triangular, horizontal, nearly half as long as

remaining carapace, maximum width 0.3 times carapace breadth; lateral margin carinate, smooth; dorsal surface slightly concave, ventrally convex and carinate. Front margin transverse, with strong antennal spine. Anterolateral spine smaller than antennal spine; lateral margins smooth, strongly convex, carinate and overhanging pterygostomian flap.

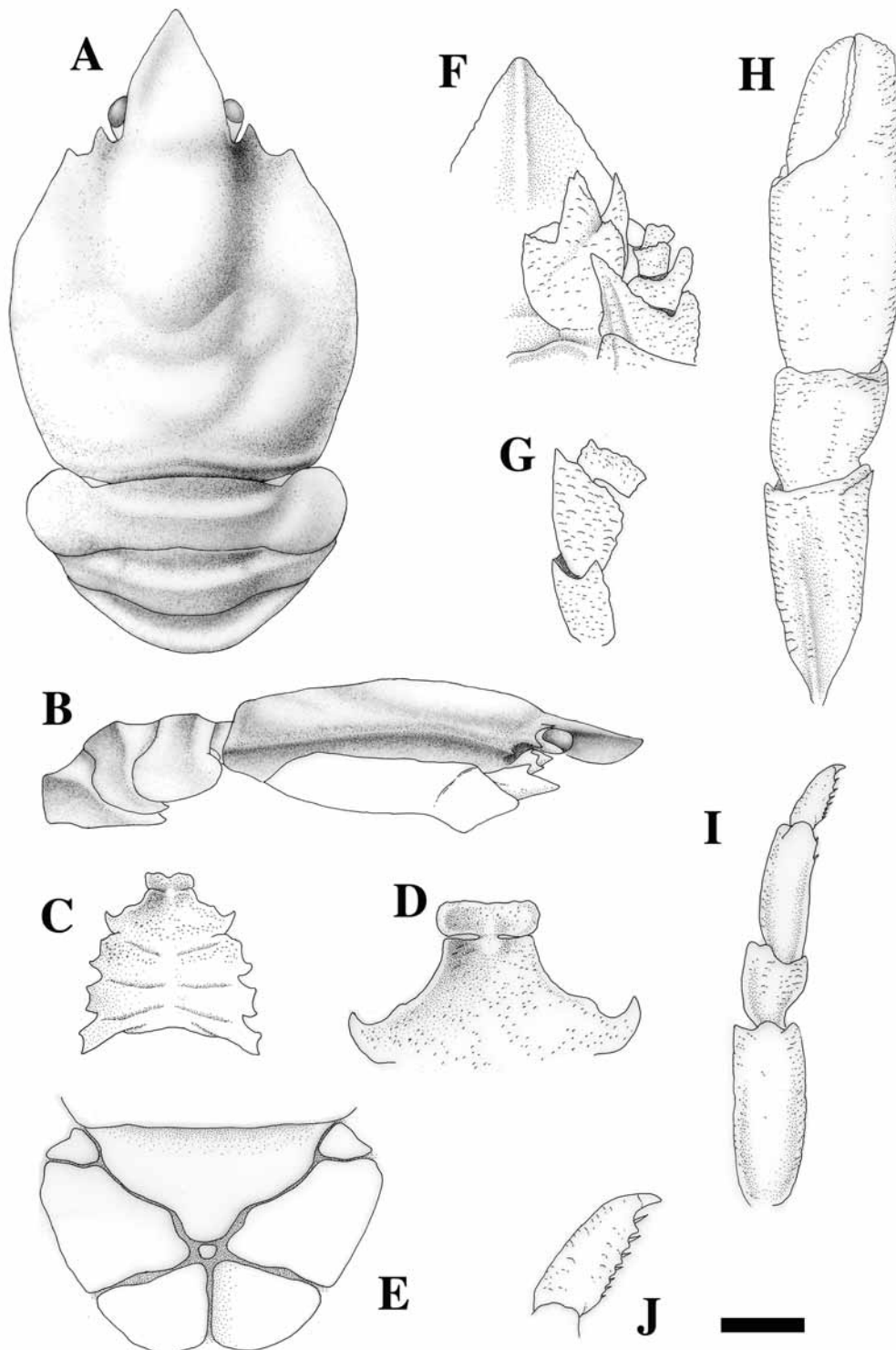


FIGURE 43. *Munidopsis pericalla* n. sp., holotype, male (7.0 mm), Solomon Islands, SALOMON 1, Stn 1831. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum. D, sternum, sternites 3 and 4. E, posterior part of sixth abdominal segment and telson. F, left antennule and antenna, ventral. G, ischium to carpus of right third maxilliped, lateral. H, right P1, lateral. I, right P2, lateral. J, dactylus of right P2, lateral. Scale: A, B, C, H, I = 2 mm; D, E, F, G, J = 1 mm.

Pterygostomian flap anteriorly ending in small spine, surface smooth.

Sternum slightly wider than long, maximum width at level of sternite 7, covered with numerous pits. Sternite 3 three times longer than broad, with or without median notch, each lobe with anterior margin transverse or slightly convex. Sternite 4 scarcely separated from preceding sternite, more than 2.5 times wider than sternite 3.

Abdomen smooth. Segments 2–4 each with slightly elevated anterior transverse ridge, without groove. Segment 6 rather smooth, posteromedian lobe nearly transverse, not overreaching lateral lobes. Telson consisting of 7 or 8 plates, posterior plates broad relative to length.

Ocular peduncle movable, unarmed, cornea as long as eyestalk. Distinct spine ventral to front margin between ocular and antennal peduncles.

Antennular basal article with strong dorsolateral and distolateral spines, with additional distolateral process.

Antennal peduncle having basal article with strong distomesial spine, exceeding article 2, distolateral corner bluntly produced; article 2 with strong blunt distolateral process.

Mxp 3 ischium with 15 or 16 denticles on crista dentata, bearing flexor and extensor margins produced; merus with well-developed distal spine on extensor margin, flexor margin with some small spines.

P1 twice carapace length, devoid of setae. Merus with blunt distomesial spine, marked carina along proximal half of dorsal side; carpus as long as high, mesial margin carinate; palm 1.5 times carpus length, mesial margin carinate; fingers 0.7 times palm length, fixed finger with denticulated carina along distolateral margin.

P2–4 legs relatively stout. P2 clearly not exceeding P1. Meri, carpi and propodi subtriangular in section, each with carina along dorsal margin and 2 subparallel carinae along ventral margin; each carina on meri and carpi distally produced; propodi with 2 or 3 small distal spines along flexor margin; dactyli slightly curved, flexor margin straight, with 7–9 teeth, each with accompanying seta, ultimate tooth closer to penultimate tooth than end of article. P2 nearly 0.7 times carapace length, merus 2.5 times as long as high, twice carpus length and 1.5 times propodus length; propodus 2.5 times longer than high and more than 1.5 times dactylus length.

Epipod present on P1, absent from P2–4.

Colour. Carapace whitish, anterolateral region between base of rostrum and midlength of lateral margin red; second and third abdominal segments whitish, first and fourth to sixth abdominal segments reddish with whitish median band. P1–P5 red.

Remarks. *Munidopsis pericalla* belongs to the group of species with carapace unarmed and abdomen smooth, rostrum triangular, P1 longer than P2, eye with ocular peduncle movable, cornea oval and unarmed, and carapace strongly cristate on lateral margin. This group contains *M. carinimarginata* Baba, 1988 (see above), and three new species *M. denudata*, *M. lophia* and *M. strigula*.

Munidopsis pericalla is distinctive in the strong convexity of the lateral margins of the carapace, strong antennal spine and the presence of epipods on P1. These characters are not observed in the other species.

Distribution. Solomon Islands, Philippines, between 135 and 342 m.

***Munidopsis pilosa* Henderson, 1885**

Munidopsis pilosa Henderson 1885: 415; 1888: 157, pl. 17: figs. 5, 5a, 5b. — Baba 1988: 155, fig. 61; 2005: 293 (list of occurrences).

Material examined. Madagascar (A. Crosnier collection), Stn CH 126, 1475–1530 m: 1 M 10.5 mm (MNHN-Ga1412).—Stn CH 131, 1490–1640 m: 1 M 7.2 mm, 1 F 4.2 mm (MNHN-Ga1413). Philippines, MUSORSTOM 2, Stn 55, 865–866 m: 2 ovig. F 10.5–10.6 mm (MNHN-Ga1414). Indonesia, Makassar Strait, CORINDON 2, Stn 231, 980–1080 m: 1 ovig. F (broken) (MNHN-Ga1415). KARUBAR, Kei Islands, Stn 52, 1244–1266 m: 1 ovig. F 11.7 mm, 1 F 9.0 mm (MNHN-Ga5618). Solomon Islands, SALOMON 1, Stn 1751,

749–799 m: 1 M 9.6 mm (MNHN-Ga5619).—Stn 1753, 1 F 8.0 mm (MNHN-Ga5620). SALOMON 2, Stn 2182, 762–1060 m: 1 ovig. F 10.4 mm (MNHN-Ga5621).—Stn 2251, 1000–1050 m: 1 M 8.9 mm (MNHN-Ga5622). Vanuatu, MUSORSTOM 8, Stn 1074, 775–798 m: 1 F 4.0 mm (MNHN-Ga5623).—Stn 1075, 944–956 m: 1 M 7.3 mm, 2 F 4.3–7.1 mm (MNHN-Ga5624).—Stn 1126, 1210–1260 m: 1 F 9.1 mm (MNHN-Ga5625). BOA 0, Stn 2311, 932–986 m: 1 M 12.5 mm (MNHN-Ga5626). BOA 1, Stn 2432, 630–705 m: 1 M 5.1 mm (MNHN-Ga5627). Tonga, BORDAU 2, Stn 1594, 971–991 m: 1 M 11.0 mm (MNHN-Ga5628).

Remarks. The material examined agrees quite well with the original description and additional diagnosis and illustrations provided by Baba (1988). The specimens collected in Vanuatu and Tonga were less setose than those collected in other areas.

Distribution. Previously known in the Philippines, Moluccas and Andaman Sea, and Makassar Strait, between 732 and 1510 m (Baba 2005). The present material has been collected in Madagascar, the Philippines, Indonesia (Kei Islands), Solomon, Vanuatu and Tonga Islands at 749–1600 m.

***Munidopsis pubescens* n. sp.**

(Fig. 44)

Material examined. Madagascar (A. Crosnier collection), Stn CH 107, 695–710 m: 1 M 12.2 mm, holotype (MNHN-Ga 1421).

Etymology. From the Latin *pubes*, pubescent, in reference to the setose aspect of the body.

Description. Carapace surface unarmed, without epigastric spines, covered by small rugosities. Short striae on anterior branchial region, longer striae on posterior branchial region, as illustrated. Rostrum distally trifid, dorsally smooth, maximum width 0.3 times carapace breadth; nearly horizontal but slightly upturned distally. Antennal spine present. Oblique frontal margin leading to well-developed anterolateral spine (first spine) slightly smaller than antennal spine, followed by 2 spines on anterior part of anterior branchial region; another small spine (fourth) behind to end of posterior branch of cervical groove.

Pterygostomian region smooth, ending in acute point.

Sternum longer than wide, maximum width at sternite 6 and 7. Anterior margin of sternite 3 with small granules, slightly wider than anterior margin of sternite 4, 1.5 times wider than long. Sternite 4 subtriangular, narrow elongate, maximum breadth 4 times breadth of sternite 3.

Abdomen smooth; segments 2–4 each with 2 slightly elevated transverse ridges, separated by shallow transverse furrow; segment 6 bearing posterolateral lobes somewhat exceeding nearly straight transverse median margin. Telson composed of 7 plates; posterior plates combined nearly 1.5 times as wide as long.

Eye movable, unarmed; smoothly ovate cornea cupped within broad-based ocular peduncle; cornea relatively large, wider than second article of antennal peduncle. Spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennule with long distolateral and dorsolateral spines; distomesial angle granulated.

Article 1 of antennal peduncle with strong distomesial and distolateral spines; article 2 with distomesial and distolateral spines; article 3 with small distomesial spine.

Mxp 3 ischium with small distal spine on flexor and extensor borders, crista dentata with 21–23 denticles; merus with strong distal spine on flexor margin, small distal spine on extensor border.

P1 moderately long and stout, with small rugae, having some short setae, twice carapace length; merus overreaching end of rostrum, with 3 strong terminal spines (dorsal, mesial, lateral), one well-developed spine on mesial margin; carpus as long as high, with 3 distal spines, one additional well-developed spine on mesial margin; palm spineless; fingers more than 0.5 times palm length, distally spooned, prehensile edges crenulated, gapping; fixed finger without crest on distolateral margin.

P2 clearly not exceeding P1. Merus triangular in section, less than 0.5 times carapace length, twice as long

as high, slightly longer than carpus and propodus, dorsally carinate, provided with row of well-developed spines, increasing in size distally; ventral margin with distal spine; carpus with well-developed spine on dorsal margin, granulated crest along lateral side not continued on to propodus; propodus unarmed, except distal movable spine on ventral margin, 2.5 times longer than high, as long as dactylus; dactylus smoothly narrowed distally, ending in curved sharp spine, flexor margin slightly curving, bearing 6 proximally diminishing teeth, each with small movable spinule, ultimate spine remote from end of dactylus and much closer to penultimate. Epipods absent from pereopods.

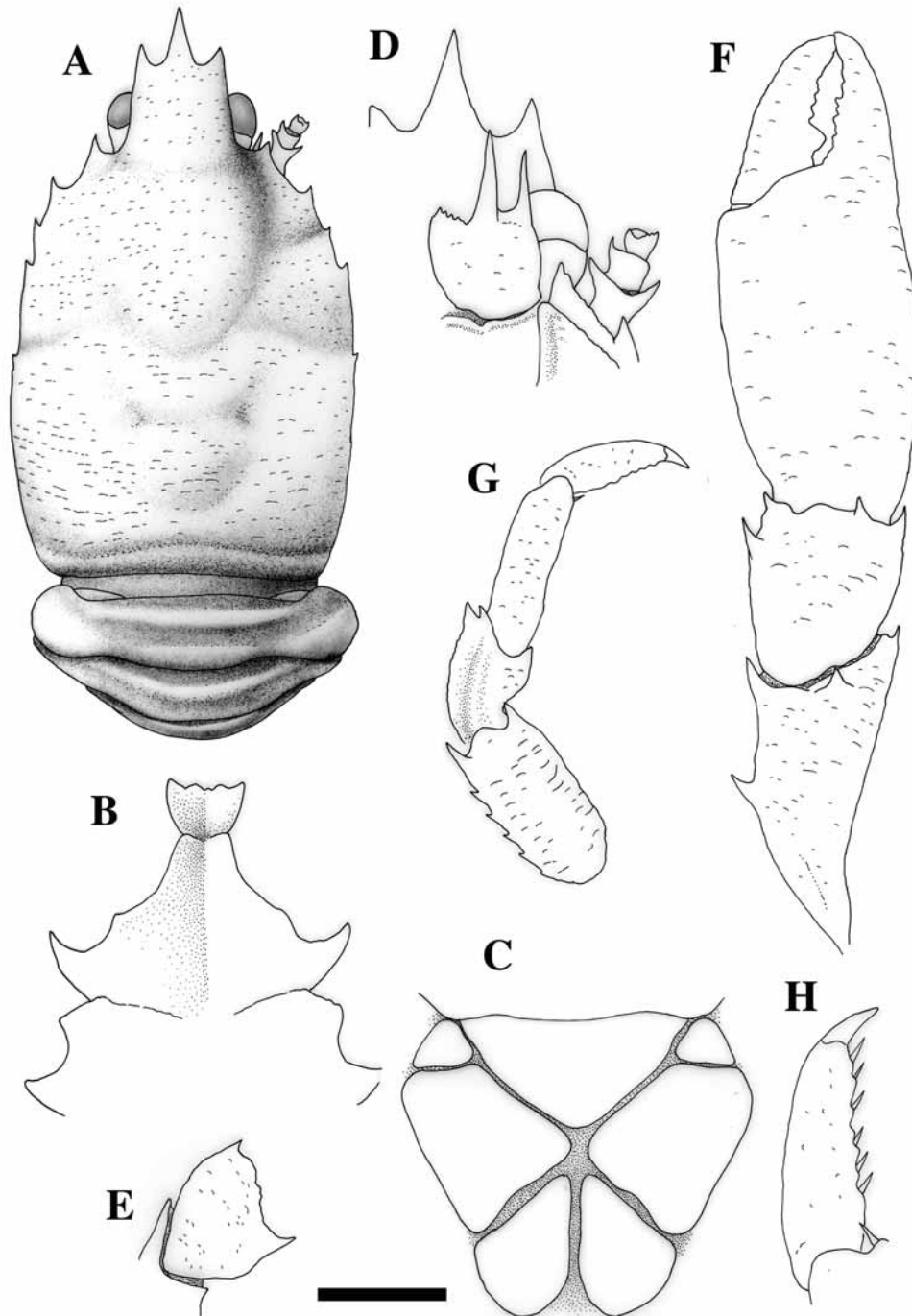


FIGURE 44. *Munidopsis pubescens* n. sp., holotype, male (12.2 mm), Madagascar, Stn CH 107. A, carapace and abdomen, dorsal. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, right P1, lateral. G, right P2, lateral. H, dactylus of right P2, lateral. Scale: A, F, G = 5 mm; B, C, D, E, H = 2 mm.

Remarks. *Munidopsis pubescens* is characterized by the presence of lateral spines of the rostrum, dorsal surface of the carapace and abdominal segments unarmed, and 4 spines along each lateral border of carapace. The new species is related to *M. acuminata* Benedict, 1902, from the northwestern Atlantic (coasts off South Carolina, 781 m) (Macpherson & Segonzac 2005). They differ in the following aspects:

— The merus and carpus of P1 each bears only one well-developed mesial spine in *M. pubescens*, whereas the merus bears a row of dorsomesial spines and the carpus is unarmed along the mesial border (except distal spine) in *M. acuminata*.

— The carpi of P2–P4 bear a row of spines along dorsal margin in *M. acuminata*, but only one distal spine in *M. pubescens*.

Distribution. Only known from Madagascar at 695–710 m.

***Munidopsis pycnopoda* Baba, 2005**

Munidopsis pycnopoda Baba, 2005: 176, fig. 84.

Material examined. Mozambique Channel, BENTHEDI, Stn 82, 3450 m: 2 M 8.8–9.4 mm, 1 ovig. F 9.7 mm (MNHN-Ga1582).

Remarks. The species was recently described from three specimens collected near Mozambique. The material examined from the same area agrees quite well with the original description. The sternite 3 in the present material is more bilobate than in the original description. No other differences were noted.

Distribution. Known from the Mozambique Channel, at 3450–3485 m.

***Munidopsis regia* Alcock & Anderson, 1894**

Munidopsis regia Alcock & Anderson, 1894: 168. — Baba, 2005: 293 (synonymy and list of occurrences).

Material examined. Philippines, MUSORSTOM 2, Stn 36, 569–595 m: 3 M 23.8–24.5 mm. MUSORSTOM 3, Stn 123, 648–649 m: 1 M 28.3 mm (MNHN-Ga5709).—Stn 128, 755–760 m: 1 M 27.5 mm (MNHN-Ga5615).—Stn 135, 486–591 m: 1 juv. 8.3 mm (MNHN-Ga5616).

Distribution. Previously known from the Philippines, west of Sumatra, Andaman Sea, Bay of Bengal, Sri Lanka, Maldives and Arabian Sea, at 260–750 m. The present material has been collected in the Philippines, between 486 and 760 m.

***Munidopsis rotundior* Baba, 2005**

Munidopsis rotundior Baba, 2005: 181, fig. 86.

Material examined. Solomon Islands, SALOMON 2, Stn 2268, 632–640 m: 1 F 7.6 mm (MNHN-Ga5614).

Remarks. The specimen from the Solomon Islands agrees quite well with the holotype collected in the Java Sea, east of Makassar.

Distribution. Previously known from the Java Sea (600 m). The present record extends its distribution to Solomon Islands, at 632–640 m.

***Munidopsis scobina* Alcock, 1894**

Munidopsis scobina Alcock, 1894: 330.— Baba, 2005: 295 (list of occurrences).

Material examined. Indonesia, Makassar Strait, CORINDON 2, Stn 209, 487–497 m: 1 M 15.1 mm (MNHN-Ga1410).—Stn 276, 395–450 m: 1 ovig. F 16.4 mm (MNHN-Ga1411). Indonesia, Banda Sea, CORINDON 4, Stn COP III/1, 528–582 m: 2 F 13.4–14.3 mm (MNHN-Ga5612). Indonesia, Kei Islands, KARUBAR, Stn 40, 443–468 m: 1 M 14.8 mm (MNHN-Ga5613).

Remarks. The descriptions and illustrations provided by Alcock (1901), Tirmizi (1966) and Baba (1988) agree quite well with the material examined. The second and third abdominal segments each have two or three spines on the anterior and posterior ridges.

Distribution. Known from Andaman Sea, Bay of Bengal, the Moluccas off the west coast of Halmahera and the South Arabian coast, between 353 and 1046 m. The present material from Indonesia was collected at 443–550 m.

***Munidopsis serricornis* (Loven, 1852)**

Galathea serricornis Loven, 1852: 22.

Munidopsis serricornis.— Baba, 2005: 185, 295 (synonymy and list of occurrences).—Macpherson & Segonzac, 2005: 42.

Material examined. Madagascar (A. Crosnier collection), Stn CH 108, 735–760 m: 1 M 8.7 mm, 1 ovig. F 7.0 mm (MNHN-Ga1426).

Remarks. The present specimens agree quite well with the northeastern Atlantic material. As Mayo (1974) pointed out, the epigastric spines are absent in *M. serricornis* (marked striae in some cases), being a good character to separate this species from other species with tridentate rostrum.

Distribution. The geographical distribution of this species may be reviewed, and some of the previously reported material could belong to recently described species (e.g., *M. treis* Ahyong & Poore, 2004 or *M. ternaria* n. sp.). The species is known from the Eastern Atlantic from Norway and Iceland to Cape Vert, between 96 and 2091 m (d'Udekem d'Acoz 1999, Macpherson & Segonzac 2005). Benedict (1902), Chace (1942), Pequegnat & Pequegnat (1970) and Mayo (1974) reported the species from the southeastern United States to Gulf of Mexico (458–1446 m). The present material was collected in the southwestern Indian Ocean, at 735–760 m.

***Munidopsis similior* Baba, 1988**

(Fig. 55L)

Munidopsis similior Baba, 1988: 164, fig. 65; 2005: 295.

Material examined. Madagascar (A. Crosnier collection), Stn CH94, 400 m: 1 M 7.8 mm (MNHN-Ga843). Madagascar, CREVETTE 1986, Stn 60, 475 m: 1 F 5.7 mm (MNHN-Ga5595). Philippines, MUSORSTOM 2, Stn 26, 299–320 m: 1 F 8.5 mm (MNHN).—Stn 83, 290 m: 1 M 6.0 mm (MNHN). Indonesia, Banda Sea, CORINDON 4, Stn I/1, 448–595 m: 1 ovig. F 7.5 mm (MNHN-Ga1600).—Stn II/1, 348–646 m: 1 ovig. F 5.5 mm (MNHN-Ga1617). Solomon Islands, SALOMON 1, Stn 1792, 477–505 m: 15 M 4.2–7.6 mm, 7 F 4.5–6.6 mm (MNHN-Ga5596).—Stn 1798: 1 M 5.5 mm (MNHN-Ga5597).—Stn 1804, 309–328 m: 4 ovig. F 5.3–6.7 m (MNHN-Ga5598). —Stn 1831, 135–325 m: 1 F 5.0 mm (MNHN-Ga5599).—Stn 1851, 297–350

m: 2 M 4.4–5.3 mm, 1 ovig. F 5.7 mm, 1 F 2.5 mm (MNHN-Ga5600).—Stn 1860, 620 m: 2 M 3.5–6.2 mm, 3 F 3.5–5.1 mm (MNHN-Ga5601). SALOMON 2, Stn 2184, 464–523 m: 1 F 8.3 mm (MNHN).—Stn 2213, 495–650 m: 3 M 7.5–8.9 mm, 2 ovig. F 7.2–8.3 mm (MNHN-Ga5602).—Stn 2245, 582–609 m: 1 ovig. F 6.1 mm, 2 F 6.4–7.3 mm (MNHN-Ga5603).—Stn 2260, 399–427 m: 1 M 5.8 mm (MNHN-Ga5604).—Stn 2263, 485–520 m: 1 ovig. F 6.2 mm (MNHN-Ga5605). Vanuatu, MUSORSTOM 8, Stn 1074, 775–798 m: 4 M 3.1–3.2 mm, 5 F 2.4–4.3 mm (MNHN). BOA 0, Stn 2313, 421–482 m: 1 ovig. F 5.5 mm (MNHN-Ga5606).—Stn 2314, 430–455 m: 1 M 5.6 mm, 2 F 6.2–6.7 mm (MNHN). BOA 1, Stn 2446, 300–360 m: 2 M 3.1–6.8 mm; 1 F 3.5 mm (MNHN-Ga5607). Fiji, MUSORSTOM 10, Stn 1317, 471–475 m: 5 M 3.0–4.1 mm, 7 F 2.3–4.2 mm, 1 juv. 2.0 mm (MNHN-Ga5608).—Stn 1327, 370–389 m: 1 M 7.5 mm (MNHN).—Stn 1332, 640–687 m: 1 ovig. F 8.0 mm (MNHN). BORDAU 1, Stn 1395, 423–500 m: 3 M 3.7–4.3 mm, 1 ovig. F 5.4 mm, 3 F 4.6–7.7 mm (MNHN-Ga5609).—Stn 1447, 420–513 m: 2 M 8.4–9.3 mm, 4 ovig. F 6.1–6.7 mm, 2 F 3.5–4.4 mm (MNHN-Ga5610).—Stn 1448, 410–500 m: 1 F 8.3 mm (MNHN-Ga5611).

Colour. Carapace and abdomen uniform brown. Rostrum and P1–P3 light brown; corneae yellow.

Remarks. The specimens examined exhibited a certain degree of variation in several characters. The specimens from Madagascar have the sternite 4 unarmed or with minute spines and the dorsal surface of the carapace with a few striae. However, some specimens from the Philippines and Indonesia also show the same.

Distribution. Previously known from the Philippines and south of China Sea, at 267–366 m (Baba 1988, 2005). These present records extend the range of the species to Madagascar, Indonesia, Solomon Islands, Vanuatu, and Fiji, between 290 and 798 m.

Munidopsis sinclairi McArdle, 1901

(Fig. 45)

Munidopsis (Elasmonotus) Sinclairi McArdle, 1901: 524.

Munidopsis sinclairi.—Baba, 2005: 295 (synonymy and list of occurrences)

Material examined. Madagascar (A. Crosnier collection), Stn CH 49, 500–550 m: 1 M 11.5 mm, 1 F 11.3 mm (MNHN).—Stn CH 103, 880–920 m: 1 M 8.9 mm, 1 ovig. F 6.9 mm (MNHN).—Stn CH 109, 1200 m: 1 ovig. F 9.0 mm (MNHN).—Stn CH 113, 990–1000 m: 1 M 10.0 mm (MNHN).—Stn 126, 1715–1750 m: 1 M 10.5 mm, 1 ovig. F 11.5 mm (MNHN).—Stn CH 131, 1490–1640 m: 3 M 9.1–9.7 mm, 4 ovig. F 9.0–11.8 mm (MNHN).—Stn CH 133, 1000–1525 m: 6 M 7.9–12.3 mm, 1 ovig. F 11.7 mm (MNHN).—Stn CH 141, 1000–1725 m: 1 ovig. F 11.2 mm (MNHN). Philippines, MUSORSTOM 2, Stn 50, 810–820 m: 2 ovig. F 7.4–7.9 mm (MNHN).—Stn 81, 856–884 m: 1 M 10.0 mm (MNHN). Indonesia, Makassar Strait, CORINDON 2, Stn 231, 980–1080 m: 2 M 8.8–9.7 mm, 2 ovig. F 9.2–11.6 mm (MNHN).—Stn 280, 715–800 m: 1 ovig. F 8.1 mm (MNHN). Indonesia, Kei Islands, KARUBAR, Stn 53, 1026–1053 m: 1 M 9.2 mm (MNHN).—Stn 87, 1017–1024 m: 1 ovig. F 10.5 mm (MNHN). Solomon Islands, SALOMON 1, Stn 1754, 1169–1203 m: 2 M 10.0–11.8 mm (MNHN).—Stn 1764, 1327–1598 m: 2 M 9.4–10.7 mm (MNHN).—Stn 1807, 1077–1135 m: 2 M 8.0–8.8 mm, 3 ovig. F 8.1–11.4 mm (MNHN). SALOMON 2, Stn 2182, 762–1060 m: 1 ovig. F 10.4 mm, 1 F 7.9 mm (MNHN).—Stn 2217, 1045–1118 m: 3 ovig. F 8.0–11.5 mm (MNHN).—Stn 2218, 582–864 m: 1 M 9.1 mm (MNHN).—Stn 2253, 1200–1218 m: 1 M 4.0 mm (MNHN). New Caledonia, BATHUS 2, Stn 751, 1300–1500 m: 1 ovig. F 10.9 mm (MNHN).—Stn 767, 1060 m: 1 M 13.3 mm, 2 ovig. F 8.5–12.2 mm (MNHN). Vanuatu, MUSORSTOM 8, Stn 990, 980–990 m: 1 F 9.7 mm (MNHN).—Stn 1076, 1100–1191 m: 1 M 7.8 mm, 1 ovig. F 8.8 mm (MNHN).

Description. Carapace longer than wide, dorsal surface unarmed, with numerous short striae and rugae having short setae. Gastric region convex, distinctly circumscribed, with numerous rippled rugae. Cardiac region depressed in front of elevated transverse ridge. Posterior transverse ridge slightly elevated, uninterrupted and unarmed. Rostrum narrowly triangular, about half as long as remaining carapace, maximum width

0.3 times carapace breadth, convex dorsally, upturned distally, lateral margins cristate, finely serrated. Front margin unarmed, different in level in mesial and lateral halves of width, mesial half margin oblique, lateral half transverse, depressed below level of mesial half, anterolateral angle rounded; lateral margins subparallel, not cristate, with notch at end of anterior branch of cervical groove.

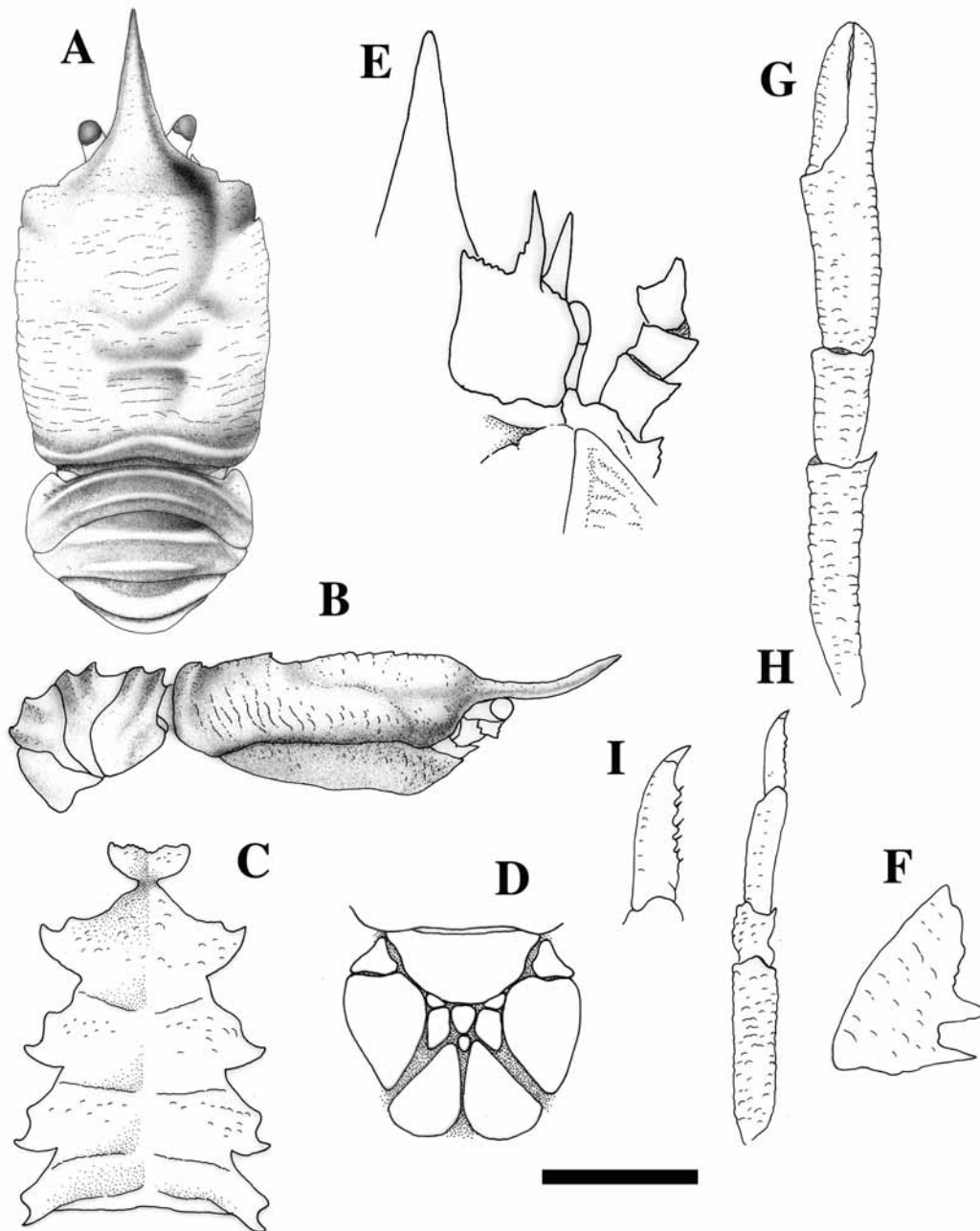


FIGURE 45. *Munidopsis sinclairi* McArdle, 1901, male (9.1 mm), Solomon Islands, SALOMON 2, Stn 2218. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum. D, posterior part of sixth abdominal segment and telson. E, left antennule and antenna, ventral. F, merus of right third maxilliped, lateral. G, right P1, lateral. H, right P2, lateral. I, dactylus of right P2, lateral. Scale: A, B, G, H = 5 mm; C, D, E, F, I = 2 mm.

Sternum clearly longer than wide, maximum width at sternites 6 and 7. Sternites feebly granulated; sternite 3 with 2 anterior lobes, separated by notch, 2.5 times as wide as long; sternite 4 narrow anteriorly, maximum width nearly 2.5 times that of sternite 3, lateral margins concave.

Abdominal segments unarmed, segments 2–4 each with sharply elevated anterior ridge and narrow transverse groove; posterolateral lobes of segment 6 distinct but not overreaching transverse posteromedian mar-

gin. Telson divided into 12 or 13 plates, posterior plates combined 1.5 times as wide as long.

Eye small, unarmed, falling short of midlength of rostrum; ocular peduncle movable; cornea moderately small, subglobular, as long as remaining eyestalk. Acute spine ventral to front margin between ocular and antennal peduncles.

Basal antennule with denticulated distomesial process, strong distolateral and distodorsal spines.

Antennal peduncle having basal article with blunt distomesial and distolateral processes; articles 2–3 with small distolateral spine.

Mxp 3 merus with 2 strong spines and a few small ones on flexor margin, extensor margin with distal spine.

P1 with numerous short setose striae, nearly spineless, twice carapace length; merus twice length of carpus, with small distolateral spine; carpus twice longer than wide, and shorter than palm; palm slightly longer than fingers, fixed finger without denticulate carina on distolateral margin.

P2–4 setose, relatively slender, 3 distal articles subcylindrical; meri triangular in cross section, decreasing in size posteriorly, dorsal margin feebly carinate, ventral margin granulated. P2 barely reaching end of P1 carpus, less than 1.5 times carapace length. P2 merus unarmed, 4 times as long as high, nearly 3.5 times length of carpus and 1.7 times length of propodus; carpus carinated along lateral side; propodus nearly 4 times as long as high and less than 1.5 times length of dactylus; dactylus ending in curved claw preceded by 5 or 6 proximally diminishing teeth on nearly straight flexor margin, each spine bearing short seta, and ultimate tooth closer to penultimate one than to end of terminal claw.

Epipods absent from P1–4.

Remarks. *Munidopsis sinclairi* was described from an ovigerous female collected off the southern coast of Sri Lanka, at 1610 m (McArdle 1901). The specimens examined agree quite well with the original description and illustration. Unfortunately, the type specimen has not been examined so a definitive identification is not possible. One of the main differences to distinguish the species from other related species, e.g. *M. debilis* (Henderson, 1885) (see above and Baba 2005), is the presence of strong rugosities on the carapace. This character is observed in most of the specimens examined. However, some individuals present weak rugosities, indicating a certain degree of intraspecific variation in this character. Nevertheless, *M. debilis* can be easily differentiable from *M. sinclairi* by the shape of the rostrum: laceolate with a longitudinal dorsal groove in *M. debilis*, whereas the rostrum is spiniform, without dorsal groove in *M. sinclairi* (see above).

Distribution. Known from off south coast of Sri Lanka, 1610 m (McArdle 1901), off the southwest coast of Halmahera, Moluccas, off the west coast of Halmahera, Teluk Tomini (Sulawesi), and off southeast Luzon, 527–1526 m (Baba 1988, 2005). The present material has been collected in Madagascar (880–1750 m), Indonesia (715–1080 m), the Philippines (810–884 m), New Caledonia (1060–1500 m), Vanuatu (980–1191 m) and Solomon Islands (582–1598 m).

Munidopsis solidissima n. sp.

(Fig. 46)

Material examined. SE Madagascar, SAFARI 1, Stn 15 (CP08), 3825 m: 1 F 24.8 mm, holotype (MNHN Ga 1428).

Etymology. From the superlative of the Latin *solidus*, thick, dense, in reference to the body shape.

Description. Carapace slightly longer than broad, covered with some fine setae, bearing short, interrupted ridges numerous on posterior half; gastric region convex without spines or blunt processes; cardiac transverse ridge preceded by shallow depression expanded laterally, anterobranchial regions with some small spines. Cardiac region faintly delineated in triangular shape, anteriorly without distinct transverse ridge but preceded by shallow concavity anterolateral to it on each side. Rostrum broadly triangular, nearly horizontal, moder-

ately carinate dorsally, bearing sparse granules, ventral surface carinate and convex on distal half; length 0.4 times that of remaining carapace, maximum width nearly 0.3 times carapace width. Front margin oblique, with small antennal spine. Lateral margins somewhat convex; anterolateral spine slightly larger than antennal spine, directed forward, and smaller than following spine; anterior branchial margin with rounded ridge overhanging pterygostomial flap, bearing 6 or 7 posteriorly diminishing spines; deep excavation between anterior and posterior branchial regions followed by expanded spiny processes.

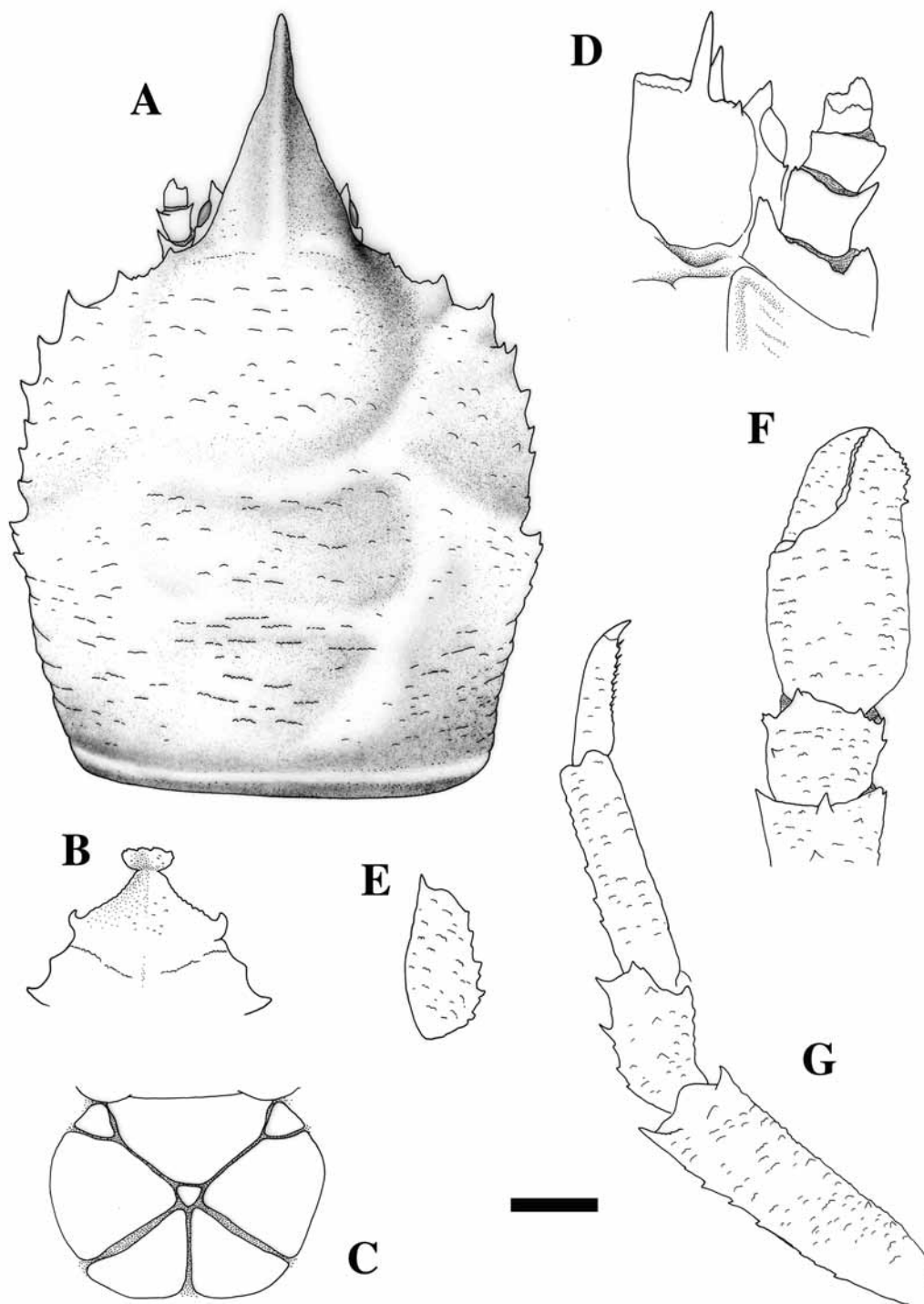


FIGURE 46. *Munidopsis solidissima* n. sp., holotype, female (24.8 mm), SE Madagascar, SAFARI 1, Stn 15 (CP08). A, carapace and abdomen, dorsal. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, right P1, lateral. G, right P2, lateral. Scale: A, B, C, F, G = 5 mm; D, E = 2 mm.

Sternum as long as wide, maximum width at sternite 7. Sternite 3 very narrow, anterior margin divided into 2 lobes by deep median notch, each lobe dentate, lateral margin convex. Sternite 4 narrowly elongate anteriorly, width 3 times that of preceding sternite.

Abdominal segments spineless, segments 2–4 each bearing rounded anterior ridge followed by shallow groove. Segment 6 without produced posteromedian lobe, not exceeding lateral lobes. Telson divided into 8 plates, posterior plates combined nearly twice wider than long.

Ocular peduncle hardly movable, relatively broad, bearing lateral and mesial eye-spines, lateral one small, mesial one strongly produced beyond cornea. Cornea small and lateral.

Basal article of antennule with long dorsolateral and distolateral spines and small distomesial granulate process; distoventral portion tuberculate, bearing small spine lateral to base of distolateral spine.

Antennal peduncle well-developed; article 1 with distomesial acute process somewhat larger than distolateral, both strong; article 2 with one well-developed distolateral and one minute distomesial spine; article 3 unarmed.

Mxp 3 ischium with 20 closely placed denticles along crista dentata, extensor margin with distinct distal spine. Merus as long as ischium; flexor margin with 5 or 6 low, obtuse processes of irregular size, extensor margin distally produced into spine.

P1 setose, slightly longer than carapace. Merus relatively short, nearly reaching tip of rostrum, bearing row of dorsal spines and several larger distal spines (dorsomesial, dorsal and lateral). Carpus as long as high, with one mesial marginal spine, a few small lateral and several dorsal distal spines. Palm as long as high, somewhat depressed, unarmed, dorsally with scattered granules. Fingers having opposable margins straight, distally spooned, bearing denticles; fixed finger with denticulate carina on distolateral margin.

P2–P4 setose, moderately short. P2 1.5 times carapace length, overreaching end of P1. P2 merus 1.3 times longer than that of P4, 3 times longer than high, twice carpus length and nearly 1.5 times propodus length, with row of low dorsal spines, ventral margin with distal spine; carpus with some spines along dorsal border, increasing in size distally, and some spines on lateral crest; propodus subcylindrical in cross section, 3.5 times longer than high, with feebly tuberculate crest on lateral face, dorsal margin with a few small spines on proximal half, 2 distal movable spinules on ventral margin; dactylus more than half of propodus, ending in sharp curved claw, flexor margin nearly straight, with row of 8 or 9 teeth diminishing in size toward base of article, ultimate tooth closer to penultimate one than to end of terminal claw, each tooth with seta.

Epipods present on P1.

Remarks. *Munidopsis solidissima* belongs to the group of species having a wide triangular rostrum, without epigastric spines or processes, main well-developed eye-spine on mesial end of eyestalk, fixed finger of P1 with denticulate carina on distolateral margin, P2 overreaching P1, and epipods on P1. The new species resembles *M. profunda* from the Celebes Sea (5163–5243 m) and Taiwan (3564–4455 m) (Baba 2005, Osawa *et al.* 2006b). However, they differ in the following aspects:

- The carapace is clearly longer than wide in *M. profunda*, instead of as long as wide in *M. solidissima*.
- Rostrum clearly broader in the new species than in *M. profunda*; the maximum width of rostrum is nearly 0.2 times that of the carapace in *M. profunda*, being 0.3 times in the new species.
- The front margin is more oblique in *M. profunda* than in *M. solidissima*.
- The meri, carpi and propodi of P2–P4 bear a row of well-developed spines along dorsal and dorsal margins in *M. profunda*, whereas these spines are clearly smaller and less numerous in the new species; ventral margins of meri bear a row of spines in *M. profunda*, being unarmed (except distal spine) in *M. solidissima*.

The new species is also close to *M. aries* A. Milne-Edwards, 1880, from the Atlantic Ocean (Macpherson & Segonzac 2005). They can be easily distinguished by the lateral margin of carapace having a crest sharply salient and carinate in *M. aries*, being rounded and not salient in the new species. Furthermore, *M. aries* has two small epigastric processes, which are absent in *M. solidissima*, and the dorsal carapace surface has clearly

more numerous granules and striae in *M. aries* than in the new species.

Distribution. Only known from the south of Madagascar, at 3825 m.

***Munidopsis spissata* n. sp.**

(Figs. 47, 48)

Material examined. NW Madagascar, BENTHEDI, Stn CH 82, 3450 m: 2 F 9.8–27.2 mm (MNHN-Ga1573).—Stn CH 87, 3760 m: 5 M 10.2–24.8 mm, 1 ovig. F 27.8 mm, 3 F 20.1–26.5 mm (MNHN-Ga1571), 1 F 28.1 mm (MNHN-Ga5566).—Stn CH 90, 3700 m: 1 M 25.0 mm, 1 ovig. F 25.1 mm, 1 F (broken) (MNHN-Ga1572). W Sri Lanka, SAFARI 2, Stn 2 (CP02), 3625 m: 1 ovig. F 29.5 mm (MNHN-Ga1568).—Stn 2 (CP03), 3450 m: 1 M 25.1 mm, 1 F 23.3 mm (MNHN-Ga1570). Central Indian Ocean, SAFARI 2, Stn 14 (CP12), 3344 m: 1 F 8.3 mm (MNHN-Ga1587).

Types. The female of 28.1 mm from BENTHEDI, Stn CH 87 is the holotype (MNHN-Ga5566). The other specimens are paratypes.

Etymology. From the Latin *spissatus*, thicken, in reference to the shape of the carapace.

Description. Carapace longer than broad, covered with short plumose setae, moderately arched from side to side, slightly so from anterior to posterior end; cervical groove slightly distinct; dorsal surface smooth, with some scattered small granules and short striae, both less dense on anterior half; branchial process absent. Pair of small epigastric spines. Rostrum triangular, wide, dorsally carinate, laterally sharply ridged, nearly horizontal but feebly upcurved; 0.3 times carapace length, maximum width 0.2 times carapace breadth. Front margin oblique, moderately crested, bearing antennal spine. Lateral margins subparallel, anterolateral spine short, but larger than antennal spine, second spine situated directly behind end of anterior cervical groove, as long as first, followed by 3 or 4 smaller, posteriorly diminishing spines on anterior branchial region, 2 or 3 short spines at midlength behind notch of posterior branch of cervical groove.

Sternum as long as wide, maximum width at level of sternite 7. Sternites smooth; sternite 3 medially notched, 0.6 times as wide as long, 0.3 width of sternite 4, anterior margin granulated; sternite 4 subtriangular, anteriorly narrow elongate.

Abdomen unarmed, rather smooth, setose. Segments 2–3 each with 2 transverse ridges, anterior ridge sharply crested, posterior ridge preceded by groove. Segment 6 with posteromedian lobe nearly straight transverse, lateral lobes weakly produced. Telson composed of 8 plates, length posterior plates combined nearly 2.5 times as wide as long.

Ocular peduncle not movable; cornea small, greatest width clearly less than width of antennal article 3 at midlength, cupped within broad-based eyestalk mesiodorsally produced into elongate spine, laterally unarmed. Spine between eye and antennal peduncle absent.

Basal article of antennule with distolateral and dorsolateral spines of subequal size; distomesial margin crenulate.

Antennal peduncle having article 1 with anteriorly produced strong distomesial spine nearly reaching end of article 2, strong distolateral spine slightly smaller than distomesial; article 2 with well-developed distolateral spine, distomesial angle rounded; articles 3 and 4 unarmed.

Mxp 3 relatively slender. Ischium as long as merus, 18–20 corneous denticles on crista dentata. Merus with small denticular spines of irregular sizes on flexor margin, extensor distal margin with small, blunt spine.

P1 short, granulated, covered with numerous plumose setae, slightly longer than carapace. Merus reaching midlength of rostrum, with some distal spines, dorsally with a few spines in longitudinal row. Carpus as long as high, terminally bearing several spines on dorsal side, 2 spines on mesial margin, ventral surface smooth. Palm as long as high, with several small mesial and dorsal spines. Fingers slightly shorter than palm, spooned at tips, fixed finger with denticulate carina on distolateral margin.

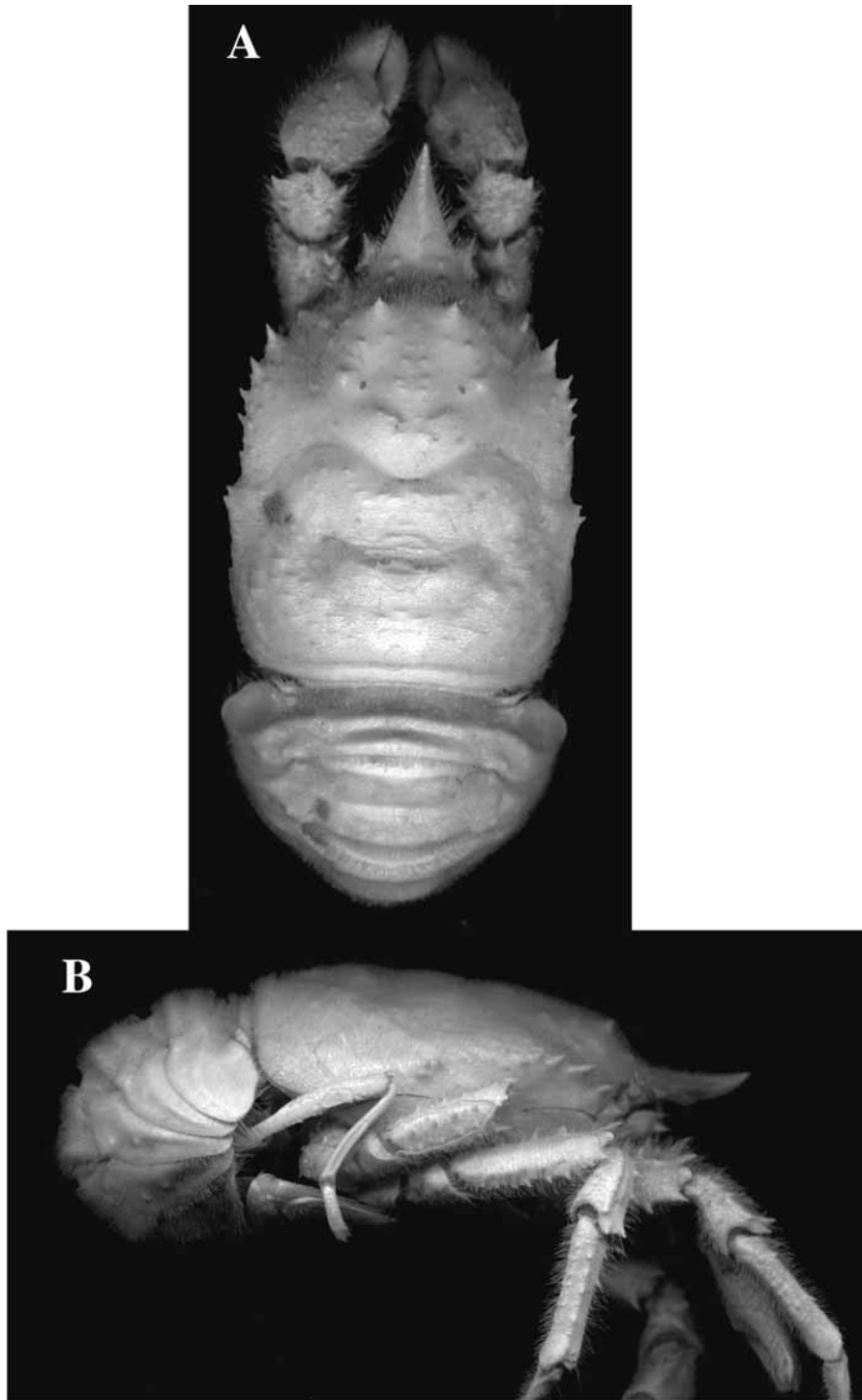


FIGURE 47. *Munidopsis spissata* n. sp., holotype, female (28.1 mm), NW Madagascar, BENTHEDI, Stn CH87. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral.

P2–4 relatively long, somewhat compressed, sparingly with long coarse setae, decreasing in length posteriorly. Meri having dorsal crest with row of spines, ventral margin with row of spines, smaller than dorsal spines, some spine on lateral side. Each carpus with 3 or 4 spines on dorsal margin, lateral ridge with short spines continued on to propodus. Each propodus with several spines on proximal half of dorsal margin, ventral border granulated with 2 small distal teeth. Each dactylus slightly more than half length of propodus, terminal claw short, curved, flexor margin nearly straight, bearing 9–11 low, proximally diminishing teeth, each

tooth with seta. P2 overreaching tip of P1 by half length of dactylus; less than 1.5 times carapace length, merus 3.5 times longer than high and more than twice carpus length, propodus 3 times longer than high. Epipods on P1, absent from P2–4.

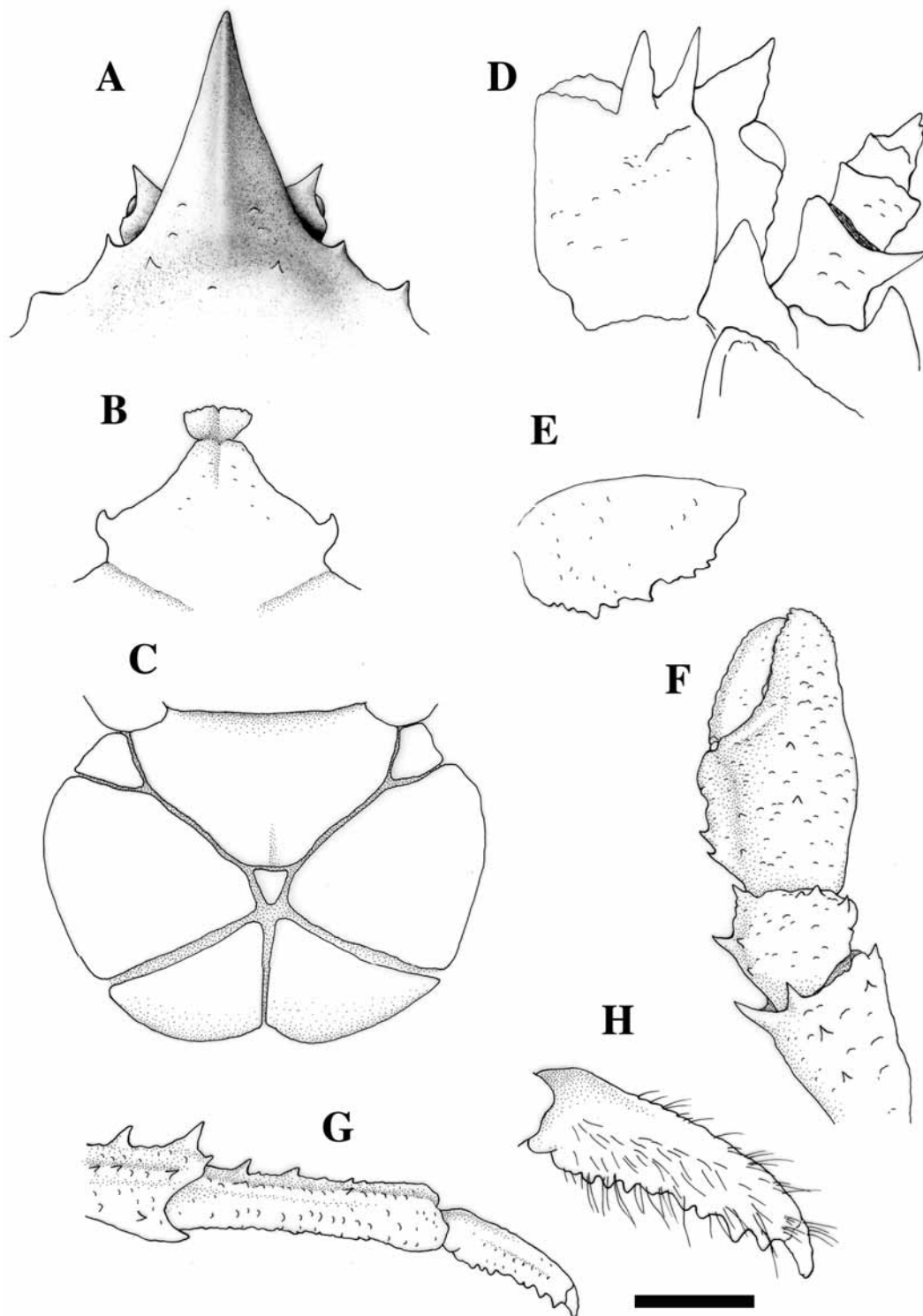


FIGURE 48. *Munidopsis spissata* n. sp., holotype, female (28.1 mm), NW Madagascar, BENTHEDI, Stn CH87. A, anterior portion of carapace. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, right P1, lateral. G, right P2, lateral. H, dactylus of right P2, lateral. Scale: A, B, F, G = 5 mm; C, D, E, H = 2 mm.

Remarks. The new species belongs to the group of species with the carapace and abdomen covered with fine plumose setae, rostrum triangular, without lateral spines, P2 overreaching P1, pair of epigastric spines or processes, main eye-spine on mesial end of eyestalk, cornea relatively small and fixed finger of P1 with denticulate carina on distolateral margin. The closest species is *M. teretis* Baba, 2005 from off Durban and Tasman Sea, at 3520–3930 m (Baba 2005) and Taiwan, at 3564–3579 m (Osawa *et al.* 2006b). However, *M. teretis* has a blunt process mesial to the midlength of each posterior half of the carapace margin. This process is always absent in the new species.

Distribution. Northwest Madagascar, western Sri Lanka, Central Indian Ocean, between 3344 and 3760 m.

***Munidopsis strigula* n. sp.**

(Fig. 49)

Material examined. Solomon Islands, SALOMON 1, Stn 1753, 1001–1012 m: 1 M 8.5 mm (MNHN-Ga5569).—Stn 1807, 1077–1135 m: 1 M 8.0 mm, 2 ovig. F 8.1–11.4 mm (MNHN-Ga5570). SALOMON 2, Stn 2182, 762–1060 m: 1 M 8.1 mm (MNHN-Ga5571).—Stn 2197, 897–1057 m: 1 M 7.5 mm, 1 ovig. F 8.2 mm, 1 F 4.3 mm (MNHN-Ga5568), 1 F 11.9 mm (MNHN-5567).—Stn 2216, 930–977 m: 1 M 8.6 mm (MNHN-Ga5572).—Stn 2230, 837–945 m: 1 M 7.4 mm, 3 ovig. F 6.8–9.6 mm (MNHN-Ga5573).—Stn 2243, 518–527 m: 1 M 8.8 mm (MNHN-Ga5574).—Stn 2251, 1000–1050 m: 2 ovig. F 9.8–11.4 mm (MNHN-Ga5575).—Stn 2252, 1059–1109 m: 1 ovig. F 10.6 mm (MNHN-Ga5576).

Types. The female of 11.9 mm from SOLOMON 2, Stn 2197 is the holotype (MNHN-Ga5567). The other specimens are paratypes.

Etymology. From the Latin *strigula*, dim, in reference to the ridges in the abdominal segments. As a substantive, in apposition.

Description. Carapace longer than wide, dorsal surface unarmed, nearly devoid of setae, regions well defined, bifurcated cervical groove slightly distinct. Gastric region convex, distinctly circumscribed, having some weak transverse ridges in anterior half. Cardiac region depressed in front of elevated transverse ridge. Posterior transverse ridge slightly elevated, uninterrupted and unarmed. Rostrum broadly triangular, about half as long as remaining carapace, maximum width one-quarter carapace breadth, flattish dorsally, slightly upturned distally, lateral margins cristate, finely serrated, subparallel in proximal half, convergent distally. Front margin slightly oblique, different in level in mesial and lateral halves of width. Lateral margins convex, cristate, overhanging pterygostomial flap, weakly notched at end of anterior branch of cervical groove.

Sternum 1.3 times longer than wide, maximum width at sternites 6 and 7. Sternites feebly granulated. Sternite 3 with 2 anterior lobes, separated by notch, about 2.5 times as wide as long; sternite 4 narrow anteriorly, maximum width 2.5 times that of sternite 3, lateral margins concave.

Abdominal segments unarmed, segments 2–4 each with sharply elevated anterior ridge and narrow median groove; posterolateral lobes of segment 6 distinct but not overreaching transverse posteromedian margin. Telson divided into 11 or 12 plates, posterior plates combined 1.7 times as wide as long.

Eye small, falling short of midlength of rostrum; ocular peduncle movable; cornea moderately cylindrical, as long as remaining eyestalk; distinct spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennular peduncle with denticulated distomesial process, strong distodorsal and distolateral spines, distodorsal spine sometimes bifurcated.

Antennal peduncle having basal article with blunt distomesial and distolateral processes; articles 2–4 distolaterally and distomesially produced.

Mxp 3 merus having 2 strong spines and a few small ones on flexor margin, extensor distal margin with small spine.

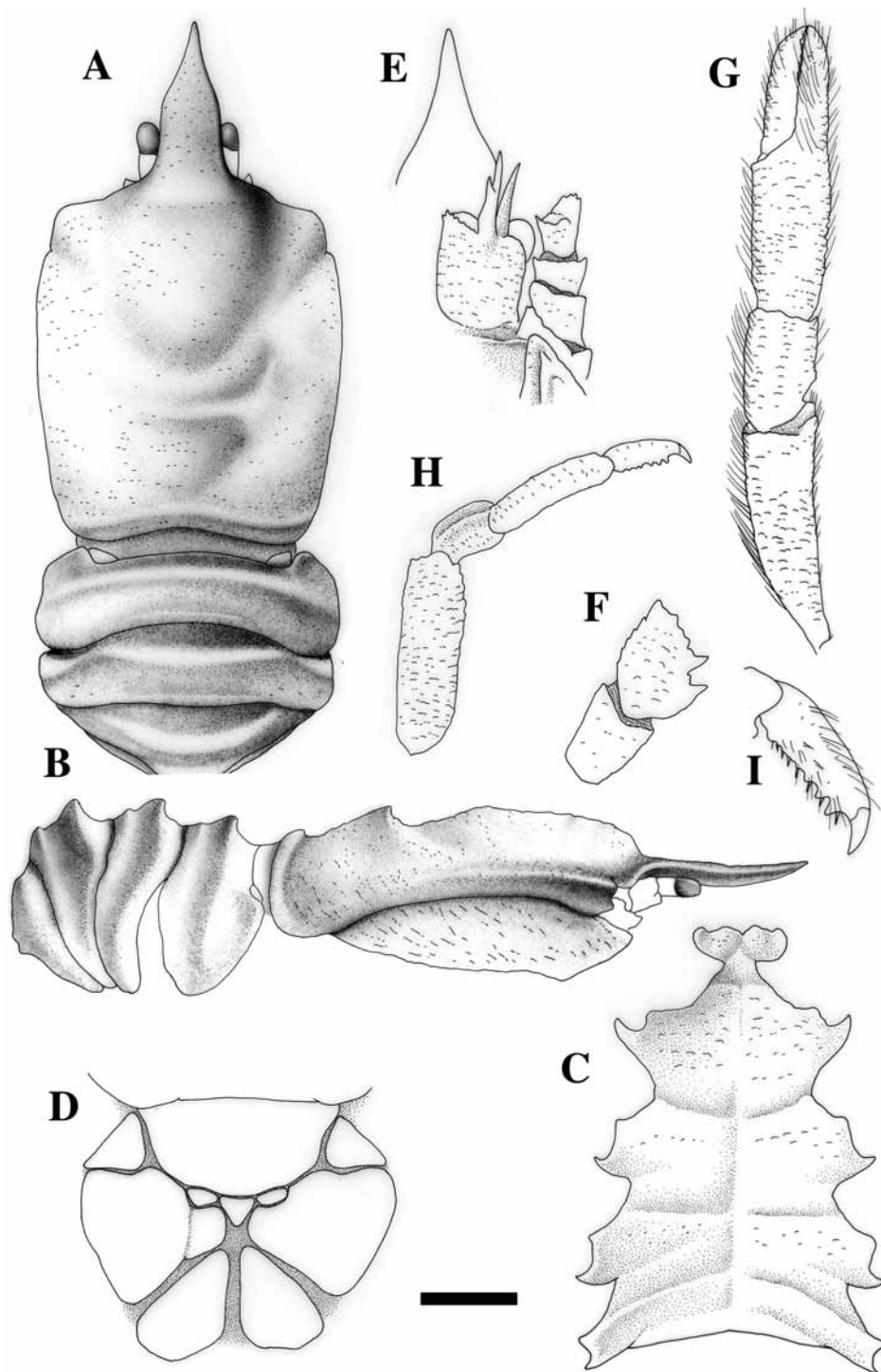


FIGURE 49. *Munidopsis strigula* n. sp., holotype, female (11.9 mm), Solomon Islands, SALOMON 2, Stn 2197. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum. D, posterior part of sixth abdominal segment and telson. E, left antennule and antenna, ventral. F, ischium and merus of right third maxilliped, lateral. G, right P1, lateral. H, right P2, lateral. I, dactylus of right P2, lateral. Scale: A, B, G, H = 5 mm; C, D, E, F, I = 2 mm.

P1 granulated, spineless, with numerous setae more dense on mesial and lateral margins, about 1.5–2.0 times carapace length; merus nearly twice length of carpus; carpus 1.5–1.8 times as long as wide, and shorter than palm; palm 1.5–2.0 times longer than high, as long as or slightly longer than fingers, fixed finger without denticulate carina on distolateral margin.

P2–4 barely setose, relatively slender; meri decreasing in length posteriorly, dorsal margin carinate, ven-

tral border rounded; carpi with lateral carina; propodi with two longitudinal ridges along dorsal border, ventral margin rounded, with distal minute spinules. P2 reaching end of P1 carpus, 1.3 times carapace length, 3 times as long as high, 2.5 times length of carpus and about 1.5 times length of propodus; propodus nearly 4 times as long as high and 1.5 times length of dactylus; dactylus ending in curved claw preceded by 5–7 proximally diminishing teeth on nearly straight flexor margin, each tooth bearing short seta, ultimate tooth closer to penultimate one than to end of terminal claw.

Epipods absent from P1–4.

Remarks. *Munidopsis strigula* is closely related to *M. carinimarginata* Baba, 1988 (see above). The following characters can distinguish the two species:

— The rostrum is slightly deflexed in *M. carinimarginata*, instead of being distally upcurved in *M. strigula*.

— The anterior ridges of abdominal segments 2–4 are clearly more produced in *M. strigula* than in *M. carinimarginata*.

— The epigastric region is more convex in *M. strigula* than in *M. carinimarginata*.

— The P1 fingers are shorter than palm in *M. carinimarginata*, being subequal to or longer in the new species; the palm is 1.5–2.0 times longer than high in *M. strigula*, being 2.5–3.5 times longer in *M. carinimarginata*.

— The P2 reaches the end of the P1 carpus in *M. strigula*, whereas it does not in *M. carinimarginata*.

Distribution. Solomon Islands, between 518 and 1109 m.

Munidopsis stylirostris Wood-Mason, 1891

(Fig. 50)

Munidopsis stylirostris Wood-Mason, 1891: 201.— Baba, 2005: 296 (list of occurrences).

Munidopsis (Munidopsis) stylirostris var. *africana* Doflein & Balss, 1913: 154, figs 19, 20.

Material examined. W of Sri Lanka, SAFARI 2, Stn 4, CP06, 1035 m: 1 F 19.8 mm (MNHN-Ga1580). Gulf of Aden, Deutschen Tiefsee Expedition (Valdivia), Stn 270, 1840 m: 1 F 13.6 mm (syntype of *M. stylirostris* var. *africana*) (ZMB). METEOR 5, Stn 249, 1299–1314 m: 2 M 9.8–13.7 mm, 2 ovig. F 10.5–10.7 mm (SMF).—Stn 262, 1830–1837 m: 4 M 9.2 mm, 13.8 mm, 1 ovig. F 16.1 mm, 3 F 16.1–16.8 mm (SMF).—Stn 268, 1654–1686 m: 4 M 12.5–15.2 mm, 3 ovig. F 13.1–15.2 mm (SMF).—Stn 271, 2276–2282 m: 1 M 10.3 mm (SMF).—Stn 277, 1552–1554 m: 14 M 6.9–14.6 mm, 8 ovig. F 11.4–18.5 mm, 5 F 7.5–16.2 mm (SMF).

Description. Carapace longer than broad, moderately convex from side to side, with short striae more numerous on branchial and cardiac regions than on gastric region; cervical groove distinct. Gastric region distinct, posterior part delimited by shallow groove; surface with 2–9 spines on epigastric and mesogastric regions (in a few specimens, without spines). Cardiac region triangular, preceded by deep transverse groove. Rostrum spiniform, upturned in distal half, not carinated dorsally, about 0.4 remaining carapace length, maximum width one-quarter carapace breadth. Antennal spine absent; oblique frontal margin leading to strong anterolateral spine directed laterad, lateral margins usually unarmed (in some specimens, with 4 or 5 small spines on anterior branchial margin). Posterior margin unarmed.

Sternum clearly longer than wide, maximum width at sternite 7, with some short setose striae; sternite 3 wide, bilobate, 3 times wider than long; sternite 4 subtriangular, anteriorly narrow elongate, about 2.5 times width of sternite 3.

Abdomen smooth, segments 2–4 each with 2 elevated transverse ridges; segment 6 bearing median margin clearly not exceeding posterolateral lobes. Telson composed of 12 plates; posterior plates combined more than twice as wide as long.

Eye movable; unarmed, corneae subglobular, slightly longer than peduncle, as wide as third article of

antennal peduncle. Well-developed spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennule having dorsolateral spine longer than distolateral, ventromesial process produced and granulated.

Basal article of antennal peduncle with blunt process on distomesial and distolateral angles; articles 2–3 with distolateral spine.

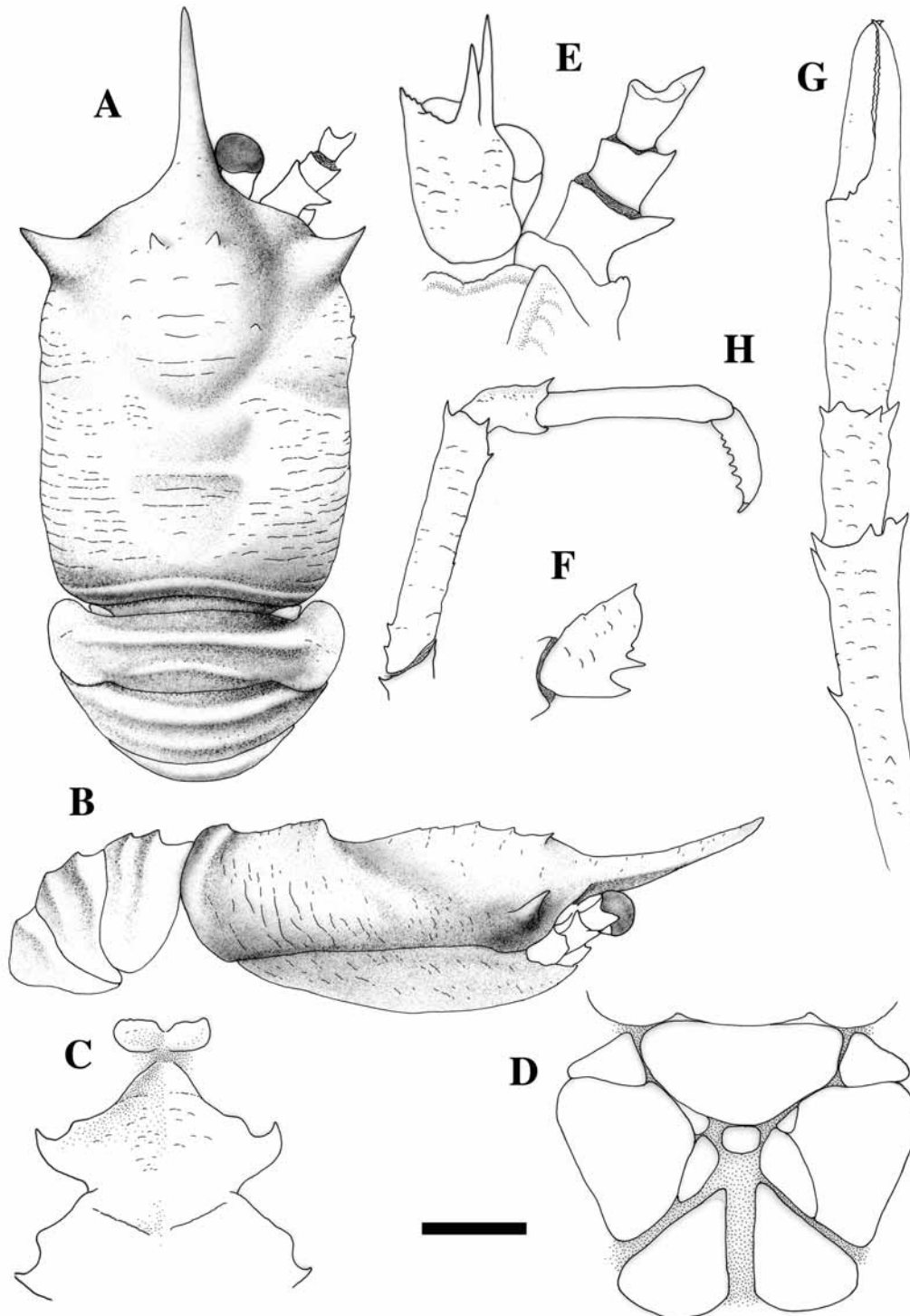


FIGURE 50. *Munidopsis stylirostris* Wood-Mason, 1891, male (15.1 mm), Gulf of Aden, METEOR 5, Stn 268. A, carapace and abdomen, dorsal. B, carapace and abdomen, lateral. C, sternum, sternites 3 and 4. D, posterior part of sixth abdominal segment and telson. E, left antennule and antenna, ventral. F, merus of right third maxilliped, lateral. G, right P1, lateral. H, right P2, lateral. Scale: A, B, G, H = 5 mm; C, D, E, F = 2 mm.

Mxp 3 ischium having blunt spine on extensor and flexor margin, crista dentata with 17 or 18 denticles; flexor margin of merus with 2 well-developed spines and 1 or 2 small spines, extensor margin with distal marginal spine.

P1 longer than carapace, with numerous scale-like elevated rugosities. Merus reaching end of rostrum, with some distal spines and 1 or 2 mesial spines at medlength of article, some additional dorsal spines on proximal half. Carpus with several distal spines, nearly twice longer than high. Palm longer than fingers, unarmed. Fingers distally spooned, prehensile edges crenulated; fixed finger without denticulate carina on distolateral margin.

P2–P4 slender, decreasing in length posteriorly, with scattered short striae more numerous on lateral side of articles. P2 not reaching end of P1; merus 6 times longer than high, 3 times carpus length and 1.5 times length of propodus, dorsal margin with several proximal spines and one distal spine, ventral margin with distal spine; carpus with distal spine on dorsal margin, granulated crest along lateral side; propodus 5.5 times longer than high, one movable distal spine on ventral margin; dactylus half as long as propodus, smoothly narrowed distally, ending in curved sharp spine, flexor margin slightly curving, bearing 6 or 7 proximally diminishing low teeth, ultimate tooth rather remote from end of dactylus and much closer to penultimate, each tooth bearing seta.

Epipods absent from pereopods.

Remarks. Examination of the type material of *M. stylirostris* var. *africana* Balss, 1913, as well as numerous specimens from the same locality (Gulf of Aden) confirms the variability in the number and shape of the spines on the gastric region and anterobranchial margin. This character was used by Balss (1913) to distinguish the new variety, but is now known to be within the range of intraspecific variation.

Distribution. Laccadive Sea, Arabian Sea, Gulf of Aden, between 1351 and 2000 m (Wood-Mason 1891, Alcock 1894, 1901, Alcock & Anderson 1894, Anderson 1896, Doflein & Balss 1913, Tirmizi 1966). The material examined here was collected in the southeastern Indian Ocean and Gulf of Aden, between 1035 and 2282 m.

***Munidopsis subchelata* Balss, 1913**

Munidopsis subchelata Balss, 1913: 222. — Baba, 2005: 296 (list of occurrences).

Munidopsis plana Baba, in Baba, Hayashi & Toriyana, 1986: 181, text-fig. 21, fig. 131.

Material examined. Indonesia, Makassar Strait, CORINDON 2, Stn 231, 1080 m: 1 F 8.8 mm (MNHN-Ga1416). Solomon Islands, SALOMON 1, Stn 1807, 1077–1135 m: 1 M 20.9 mm, 1 F 17.8 mm (MNHN-Ga5710). SALOMON 2, Stn 2181, 645–840 m: 1 M 34.4 mm (MNHN-Ga5592).—Stn 2251, 1000–1050 m: 1 M 15.6 mm (MNHN-Ga5593).—Stn 2269, 768–890 m: 1 M 34.5 mm (MNHN-Ga5594).

Distribution. W of Sumatra and Okinawa Trough, between 560 and 750 m (Doflein & Balss 1913, Baba 1986). The present material was collected in Indonesia and Solomon Islands, between 645 and 1080 m.

***Munidopsis tafrii* Osawa, Lin & Chan, 2006**

Munidopsis tafrii Osawa et al., 2006b: 420, figs. 1–3, 5A.

Material examined. New Caledonia, BIOCAL, Stn 17, 3680 m: 1 M 19.8 mm (MNHN)-Ga5591.

Remarks. The specimen agrees quite well with the species recently described by Osawa *et al.* (2006b) from Taiwan.

Distribution. Previously known from the type locality, Taiwan, at 3564–3579 m. The present record extends the range of the species to New Caledonia, at 3680 m.

***Munidopsis ternaria* n. sp.**

(Fig. 51)

Material examined. New Caledonia, VOLSMAR, Stn 5, 620–700 m: 1 M 7.8 mm (MNHN-Ga5579). NORFOLK 2, Stn 2047, 759–807 m: 1 M 3.7 mm (MNHN-Ga5578), 1 M 9.4 mm (MNHN-Ga5577). Stn 2084, 586–740 m: 1 F 8.4 mm (with bopyrid) (MNHN).

Type material. The male of 9.4 mm from NORFOLK 2 (Stn 2047) is the holotype (MNHN-Ga5577). The other specimens are paratypes.

Etymology. From the Latin *ternarius*, thrice, in reference to shape of the rostrum.

Description. Carapace slightly longer than broad; dorsal surface moderately convex from side to side, with numerous granules, each granule usually with some short simple setae; regions well delineated by furrows including distinct anterior and posterior cervical grooves. Epigastric region with 2 small spines. Posterior cardiac region preceded by deep transverse depression. Posterior margin preceded by weakly elevated ridge. Rostrum trifold, moderately compressed, horizontal and slightly upcurved distally, nearly half length of remaining carapace, maximum width 0.3 times carapace breadth, terminating acutely; dorsal surface with longitudinal ridge; lateral margins slightly convex. Frontal margin slightly concave behind ocular peduncle, leading to acute antennal spine, then nearly transverse toward anterolateral corner of carapace. Lateral margins weakly convex and subparallel (except in holotype, infested by bopyrid); anterolateral spine slightly shorter than antennal spine, without spine behind it, anterior end of anterior and posterior cervical grooves without notch.

Pterygostomian flap smooth, with small short striae and granules, anteriorly produced.

Sternum smooth, longer than wide, maximum width at sternite 7. Sternite 3 narrow, nearly 1.7 times wider than long, anterior margin not divided into 2 lobes, with deep median notch. Sternite 4 nearly contiguous to third, narrowly elongate anteriorly; surface depressed in midline; greatest width nearly 4 times that of sternite 3.

Abdomen unarmed, with some short striae; segments 2–4 each with 2 ridges weakly elevated, separated by transverse groove, segments 5–6 smooth; segment 6 with weakly produced posterolateral lobes and nearly transverse posteromedian margin. Telson composed of 8 plates; posterior plates combined nearly 1.2 times as wide as long.

Ocular peduncle movable, unarmed, cornea subglobular, as long as peduncle. Well-developed spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennular peduncle with strong dorsolateral and distolateral spines, distomesial angle with granules.

Antennal peduncle nearly reaching tip of cornea; article 1 with strong distomesial and distolateral spines; article 2 armed with short distolateral and distomesial spines; articles 3–4 unarmed.

Mxp 3 ischium as long as merus measured on extensor margin, flexor and extensor margins terminating in blunt spine; 19 or 20 corneous denticles on crista dentata; flexor margin of merus with 2 strong and 2 small spines, extensor margin with distal spine.

P1 moderately stout, subequal, twice carapace length, with numerous soft plumose and simple setae and some short striae and granules on merus to dactylus. Merus with 3 distal spines (lateral, mesial, and dorsal), and some strong spines along mesial margin. Carpus 1.5 times longer than high, with one strong mesial spine, and distomesial and dorsolateral spines. Palm 1.5 times longer than carpus, and slightly longer than fingers. Fingers distally spooned; prehensile edges each with row of subtriangular teeth; fixed and movable fingers ending in several distal teeth; fixed finger without denticulate carina along distolateral margin.

P2–P4 moderately slender, decreasing in size posteriorly, with numerous short striae on dorsal side, meri to dactyli with numerous soft plumose and simple setae more numerous along dorsal and ventral margins. P2 not reaching end of P1; merus nearly half carapace length, 2.5 times longer than high, more than 1.5 times

length of carpus and less than twice length of propodus, dorsal margin with row of short spines, with long distal spine, also present on P3 and P4, ventral margin with acute striae, distally produced; carpus with dorsal margin serrated, ending in small spine, lateral side with longitudinal crest; propodus more than 3.5 times as long as high, unarmed except for 2 corneous distal spines on ventral margin; dactylus slightly shorter than propodus, distal claw short, moderately curved; flexor margin nearly straight, with 10 teeth decreasing in size proximally, each with single short seta, ultimate tooth close to distal claw.

Epipods absent from pereiopods.

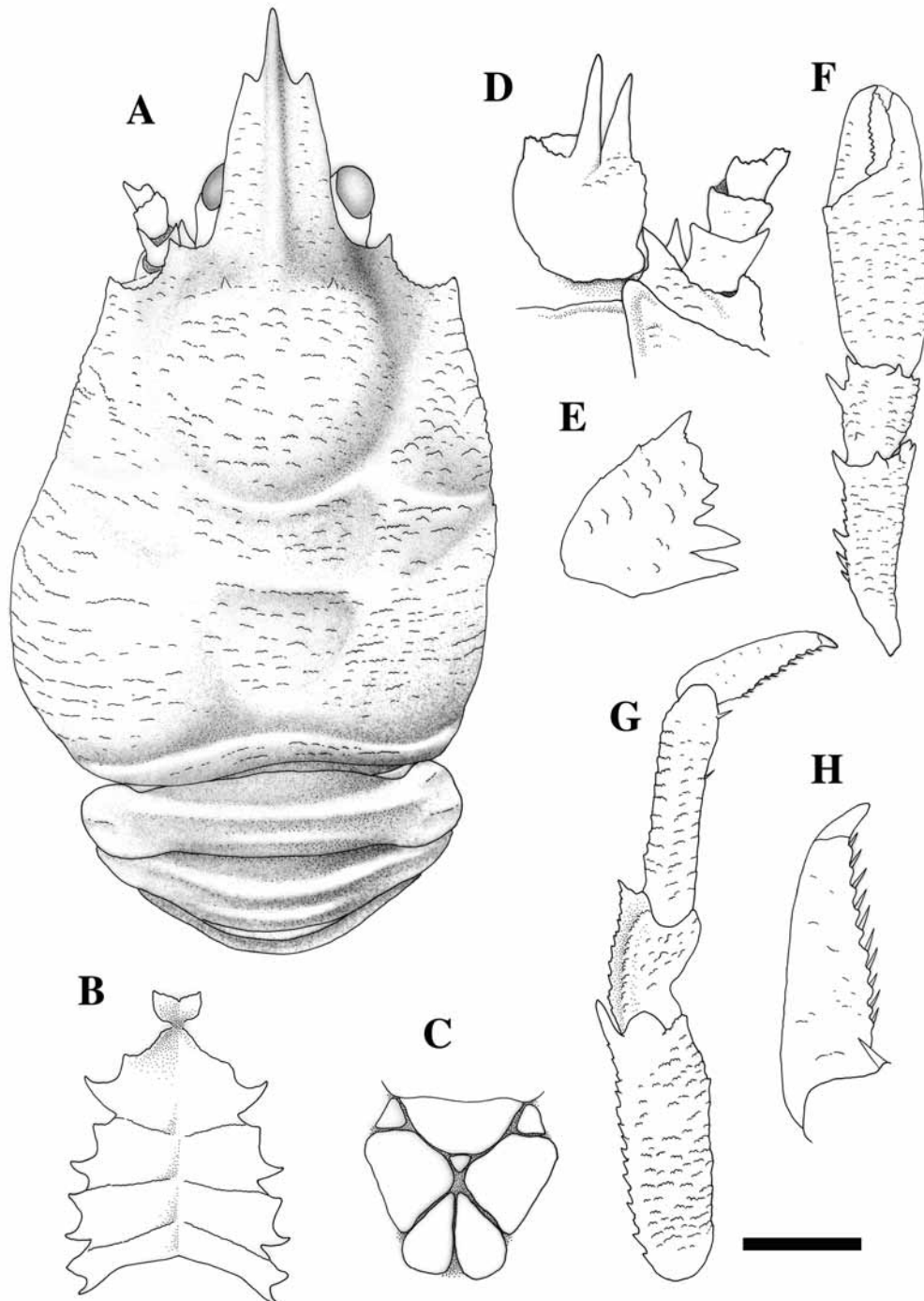


FIGURE 51. *Munidopsis ternaria* n. sp., holotype, male (9.4 mm), New Caledonia, NORFOLK 2, Stn 2047. A, carapace and abdomen, dorsal. B, sternum. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, merus of right third maxilliped, lateral. F, right P1, lateral. G, right P2, lateral. H, dactylus of right P2, lateral. Scale: A, B, C, F, G = 2 mm; D, E, H = 1 mm.

Remarks. The new species belongs to the group of species with a trifid rostrum, unarmed abdominal segments, carapace surface unarmed or at most with pair of epigastric spines, and meri and carpi of P2–P4 with row of spines along dorsal margin. This group contains *M. mina* Benedict, 1902, from the Galapagos Islands at 717 m, and *M. trifida* Henderson, 1885 (see above).

The new species is easily distinguished by the lateral margins of the carapace: 4 spines in *M. mina* and *M. trifida*, being unarmed (except anterolateral spine) in *M. ternaria*. The dorsal surface of the carapace is granulated in *M. ternaria*, being smooth in *M. mina* and *M. trifida*. Furthermore, P2–P4 meri are more slender and spinose in *M. trifida* than in *M. ternaria*.

Distribution. Only known from the type locality, New Caledonia, at 586–807 m.

Munidopsis treis Ahyong & Poore, 2004

(Fig. 55M)

Munidopsis treis Ahyong & Poore, 2004: 62, fig. 15.—Baba, 2005: 287.

Material examined. New Caledonia, BIOCAL, Stn 36, 650–680 m: 1 M 8.1 mm (MNHN-Ga5584). MUSORSTOM 4, Stn 216, 490–515 m: 1 ovig. F 6.6 mm (MNHN-Ga5585). BERYX 2, Stn 4, 600–700 m: 1 ovig. F 7.2 mm (MNHN-Ga5586). NORFOLK 1, Stn 1688, 533–544 m: 1 M 8.2 mm (MNHN-Ga5588).—Stn 1699, 581–600 m: 1 F 7.3 mm (MNHN-Ga5590). Chesterfield Islands. CHALCAL 2, Stn 72, 527 m: 1 M 4.3 mm, 1 ovig. F 6.0 mm (MNHN-Ga5589).

Colour. Carapace orange, with median longitudinal white band continued on to abdominal segments; each hepatic region with white large spot; pleura of abdominal segments 3–6 and telson white. P1 orange; P2–P4 orange, dorsal margin of meri and dactyli whitish.

Remarks. The specimens examined agree quite well with the original description and illustrations. The epigastric spines were absent in all specimens.

Distribution. Great Australian Bight and Tasmania, between 366 and 820 m (Ahyong & Poore 2004). The new material was collected in Chesterfield Islands (527 m) and New Caledonia (490–700 m).

Munidopsis trichodes n. sp.

(Fig. 52)

Material examined. Madagascar (A. Crosnier collection), Stn CH 131, 1490–1640 m: 1M 11.9 mm (MNHN-Ga5580), 2 M 4.6–8.5 mm, 1 F 4.0 mm (MNHN-Ga1408).

Type material. The male of 11.9 mm from Madagascar, Stn CH1131, is the holotype (MNHN-Ga5580). The other specimens are paratypes.

Etymology. From the Greek *trichodes*, hairy, in reference to the long setae on the carapace.

Description. Carapace slightly longer than broad, with numerous short striae, each with moderately long simple setae; gastric region moderately convex, with 2 epigastric spines; cardiac region faintly delineated in triangular shape, anteriorly without distinct transverse ridge but preceded by shallow concavity anterolateral to it on each side. Rostrum triangular, tip mucronated, nearly horizontal, not carinate dorsally, bearing sparse simple setae; length 0.3 that of remaining carapace, maximum width one-quarter carapace breadth. Front margin oblique, with strong antennal spine. Lateral margins somewhat convex, with 4 spines, anterolateral (first spine) smaller than antennal spine, directed forward, second spine larger than first, third and fourth spines small, last one at midlength of carapace; each end of anterior and posterior branches of cervical groove with notch.

Sternite slightly longer than broad, maximum width at sternite 7. Sternite 3 very narrow, anterior margin

divided into 2 lobes by deep median notch, more than 1.5 times longer than wide. Sternite 4 narrowly elongate anteriorly, width nearly 4.5 times that of preceding sternite.

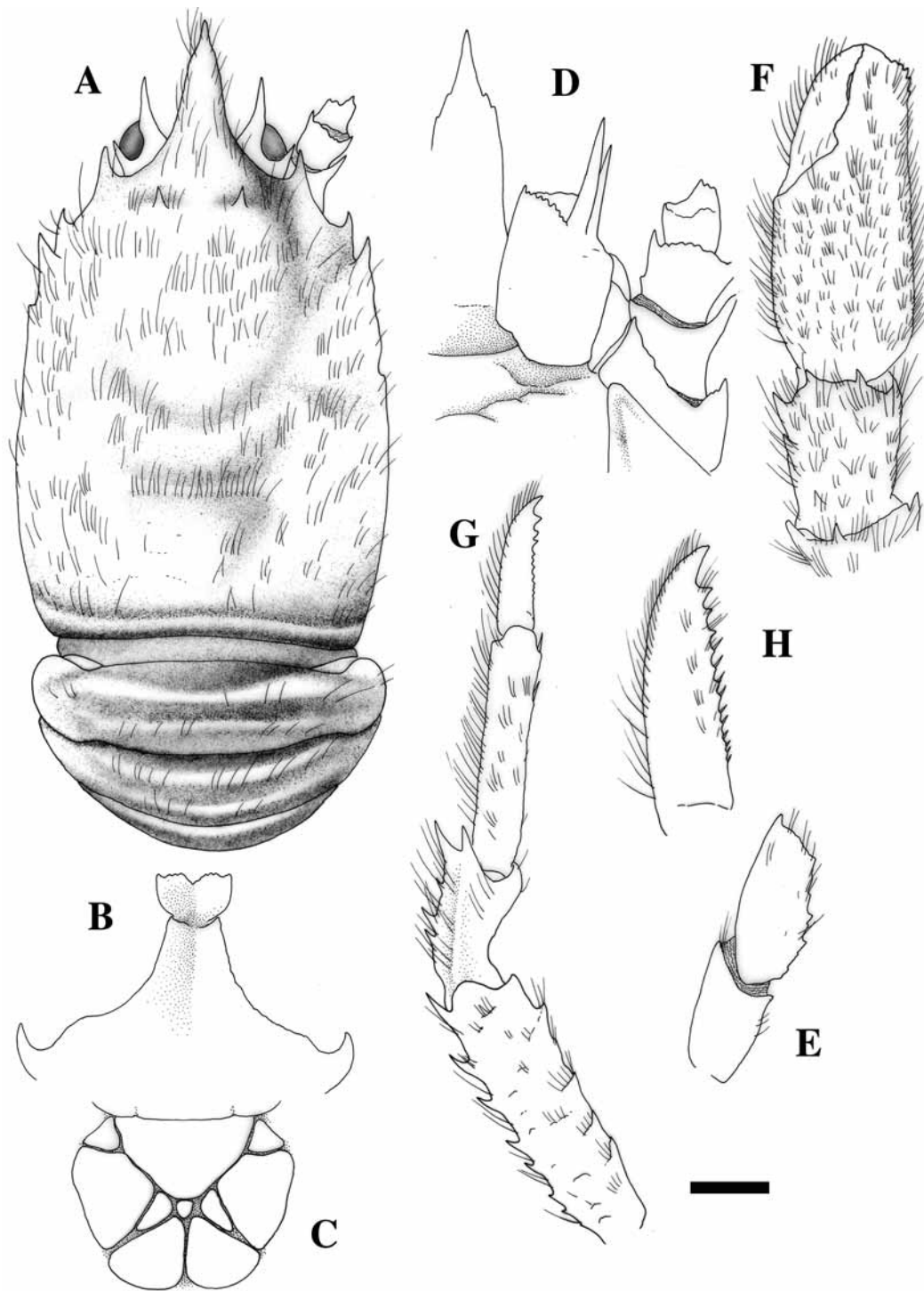


FIGURE 52. *Munidopsis trichodes* n. sp., male, holotype, (11.9 mm), Madagascar, Stn CH 131. A, carapace and abdomen, dorsal. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, ischium and merus of right third maxilliped, lateral. F, right P1, lateral. G, right P2, lateral. H, dactylus of right P2, lateral. Scale: A, C, F, G = 2 mm; B, D, E, H = 1 mm.

Abdominal segments spineless, segments 2–4 each bearing 2 ridges separated by shallow groove. Segment 6 having posterolateral lobes flap-like, not overreaching transverse posteromedian margin. Telson broader than long, divided into 10 plates; posterior plates combined twice as wide as long.

Ocular peduncle hardly movable, relatively broad, bearing lateral and mesial eye-spines, lateral one small, mesial one strongly produced beyond cornea. Cornea small and lateral, wider than eye-spine.

Basal article of antennule with long dorsolateral and distolateral spines and denticulate distomesial process.

Antennal peduncle well-developed; basal article with acute distomesial process somewhat larger than distolateral, both strong; article 2 with well-developed distolateral and 1 minute distomesial spine; article 3 with distomesial and distolateral spines.

Mxp 3 ischium with 21 or 22 closely placed denticles on crista dentata, extensor margin with distinct distal spine. Merus slightly longer than ischium; flexor margin with 7–9 low, obtuse processes of irregular size, extensor margin distally produced into spine.

P1 more than 1.5 times carapace length, with numerous short setiferous striae. Merus exceeding rostrum, bearing row of 4 mesiodorsal spines and 3 distal spines (mesial, dorsomesial, and lateral). Carpus slightly longer than high, with 3 distal spines and a few spines on mesial margin and dorsal surface. Palm longer than carpus, unarmed. Fingers shorter than palm, distally spooned; fixed finger with denticulate carina on distolateral margin.

P2–P4 slender, somewhat compressed laterally, decreasing in size posteriorly; P2 longest, not reaching end of P1; ischium to propodus with short striae; dactylus with tufts of short simple setae. P2 1.5 times carapace length, with merus moderately elongate, 0.8 times length of carapace, nearly 4 times longer than high and twice carpus length, with row of spines along dorsal crest, terminal spine long, several distal spines along ventral margin; carpus with dorsal marginal spines increasing in size distally, longitudinal crest along lateral surface; propodus 4.5 times longer than high, 2 movable distal spinules on ventral margin; dactylus less than half propodus length, moderately curved; flexor margin straight, with 11 or 12 teeth decreasing in sizes proximally, each with slender seta.

Epipod absent from pereopods.

Remarks. *Munidopsis trichodes* resembles *M. similis* Smith, 1885, from the northwestern Atlantic and *M. verrilli* Benedict, 1902, from northeastern Pacific, Makassar Strait and Tasmania (Mayo 1974, Baba & Poore 2002, Baba 2005) in having the rostrum without lateral spines, two epigastric spines, abdomen unarmed, P2 not reaching end of P1, mesial and lateral eyespines present and epipods absent from the pereopods. The new species is differentiated from these two species by the presence of a denticulate carina on the distolateral margin of the fixed finger. However, the presence or absence of this denticulate carina may be considered with caution after Baba (2005). This author indicated that the carina is present in several individuals of *M. verrilli* (absent in the holotype) and additional material would be necessary to clarify the validity of this difference. Nevertheless, the palm of P1 has some spines along the mesial margin in *M. similis* and *M. verrilli*, whereas these spines are absent in the new species.

Munidopsis trichodes is also close to *M. nitida* A. Milne-Edwards, 1880 (see above). However, P1 is shorter than P2 and epipods are present on P1 in *M. nitida*.

Distribution. Madagascar, between 1475 and 1490 m.

***Munidopsis trifida* Henderson, 1885**

Munidopsis trifida Henderson, 1885: 415.—Baba, 2005: 193, 298 (list of occurrences and synonymy).

Material examined. Madagascar (A. Crosnier collection), Stn CH 103, 880–920 m: 3 M 8.6–12.7 mm, 2 ovig. F 11.4–13.3 mm, 2 F 8.4–9.1 mm (MNHN-Ga1354).—Stn CH 104, 750–810 m: 2 M 12.3–13.8 mm, 2 ovig. F 11.3–14.5 mm, 1 F 16.6 mm (MNHN-Ga1352).—Stn CH 107, 695–710 m: 4 M 7.9–15.4 mm, 1 ovig. F 13.0 mm, 2 F 11.4–14.4 mm (MNHN-Ga1353).—Stn CH 108, 735–760 m: 13 M 10.4–15.5 mm, 3 ovig. F 10.6–13.5 mm, 3 F 11.2–13.8 mm (MNHN-Ga1355). Indonesia, Kei Islands, KARUBAR, Stn 20, 769–809

m: 11 M 8.0–21.6 mm, 2 ovig. F 18.2–20.0 mm, 12 F 7.0–20.7 mm (MNHN-Ga5552).—Stn 21, 688–694 m: 3 M 11.4–19.8 mm, 4 F 11.6–22.0 mm (MNHN-Ga5520).—Stn 38, 620–666 m: 3 M 10.2–15.2 mm, 1 F 20.7 mm (MNHN-Ga5521).—Stn 39, 466–477 m: 1 F 16.7 mm (MNHN-Ga5522).—Stn 56, 549–552 m: 2 F 15.5–17.6 mm (MNHN-Ga5523).—Stn 57, 603–620 m: 1 M 16.4 mm, 2 F 14.2–16.3 mm (MNHN-Ga5524).—Stn 69, 356–368 m: 8 M 10.4–24.7 mm, 15 F 11.6–24.3 mm (MNHN-Ga5553). Solomon Islands, SALOMON 1, Stn 1808, 611–636 m: 2 M 10.2–17.4 mm, 1 ovig. F 12.8 mm (MNHN-Ga5525). SALOMON 2, Stn 2181, 645–840 m: 1 ovig. F 11.2 mm, 1 F 6.9 mm (MNHN-Ga5526).—Stn 2197, 897–1057 m: 1 F 8.8 mm (MNHN-Ga5527). New Caledonia, CALSUB, Stn 16, 825 m: 1 F 13.7 mm (MNHN-Ga5528). NORFOLK 2, Stn 2066, 834–870 m: 1 M 8.2 mm, 1 F 9.5 mm (MNHN-Ga5529).—Stn 2069, 795–852 m: 1 ovig. F 12.3 mm (MNHN-Ga5530).—Stn 2113, 888–966 m: 1 M 5.1 mm (MNHN-Ga5531).

Remarks. The setose condition of this species presents certain variability, as pointed out by Baba (2005). The number of distal spines on the P1 carpus is also variable (1 or 2). Therefore the use of this character to separate *M. trifida* from *M. serricornis* should be considered with caution. These two species can also be differentiated by the presence of two well-developed epigastric spines in *M. trifida*, whereas these spines are always absent in *M. serricornis* (Macpherson & Segonzac 2005, see above). The specimens from Madagascar are closer to the type material (from Patagonia), having a row of mesial spines along the P1 palm. This row is usually absent in specimens from the Indo-West Pacific, in agreement with the observations of Baba (1969). As Baba (2005) suggested, the existence of two subspecies (*M. trifida trifida*, East Pacific and southern Africa, and *M. trifida tomentosa* Benedict, 1902, Indo-West Pacific) is still questionable.

Distribution. Straits of Magellan, south of Chile, East China Sea, Sagami Bay, Suruga, Bay of Bengal, Laccadive Sea, South Arabian coast and Gulf of Aden, between 280 and 1270 m (Henderson 1885, 1888, Alcock & Anderson 1894, Anderson 1896, Alcock 1901, Benedict 1902, Balss 1913, Yokoya 1933, Tirmizi 1966, Baba 1969, 1986, 2005). The present material has been collected in Madagascar (695–920 m), Indonesia (Kei Islands, 356–809 m), Solomon Islands (611–1057 m) and New Caledonia (795–966 m).

***Munidopsis wardeni* Anderson, 1896**

(Fig. 53)

Munidopsis wardeni Anderson, 1896: 99.—Baba, 2005: 299.

Munidopsis Wardeni.—Alcock, 1901: 257.

Munidopsis (Munidopsis) wardeni.—Tirmizi, 1966: 225, figs. 37A–C.

Munidopsis (Munidopsis) wardeni mabahiss Tirmizi, 1966: 226, figs. 37D–F, 38.

Munidopsis mabahiss.—Baba, 2005: 291.

Material examined. W Sri Lanka, SAFARI 2, Stn 4 (CP07), 1095 m: 1 M 17.8 mm (MNHN-Ga5583). Gulf of Aden, METEOR 5, Stn 279, 1185–1186 m: 1 M 10.1 mm, 3 ovig. F 13.6–18.1 mm, 4 F 10.6–14.7 mm (SMF).—Stn 281, 1063–1068 m: 1 M 18.2 mm (SMF).

Description. Carapace longer than broad, moderately convex from side to side, with scattered short striae more numerous on lateral portions of branchial regions; cervical groove distinct; submedian spines, 0–4 epigastric, 0–7 mesogastric, 0–5 cardiac and 0–3 on posterior border. Gastric region distinct, posterior part delimited by shallow groove. Cardiac region triangular, preceded by deep transverse groove. Rostrum spini-form, upturned in distal half, not carinated dorsally, length 0.4 times remaining carapace, width one-fifth carapace breadth. Antennal spine absent; oblique frontal margin leading to blunt anterolateral process usually ending in small spine, lateral margins usually unarmed (in some specimens, with 4 or 5 teeth on anterobran- chial margin).

Pterygostomial region smooth, ending in acute process.

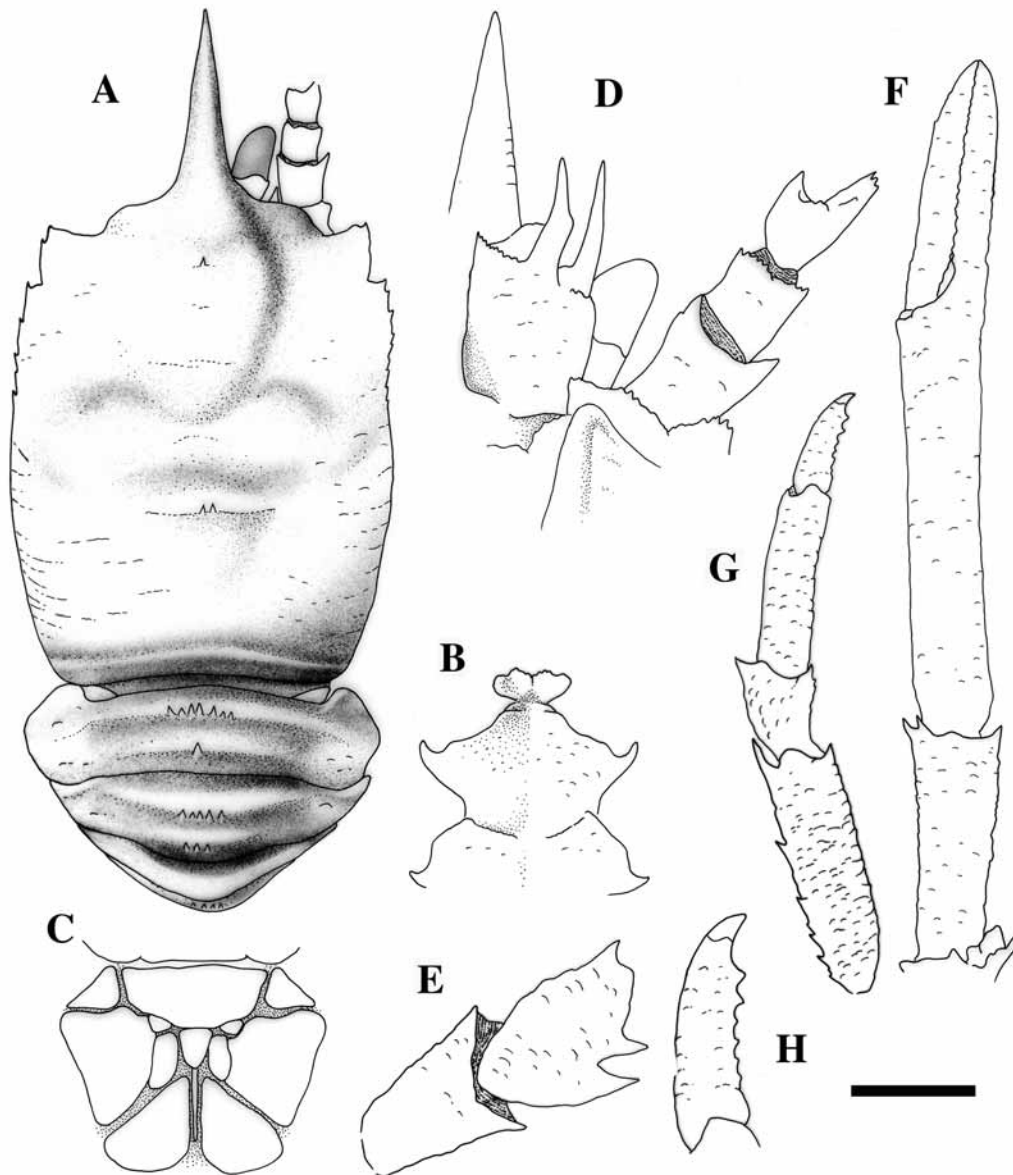


FIGURE 53. *Munidopsis wardeni* Anderson, 1896, male (17.8 mm), W of Sri Lanka, SAFARI 2, Stn 4 (CP07). A, carapace and abdomen, dorsal. B, sternum, sternites 3 and 4. C, posterior part of sixth abdominal segment and telson. D, left antennule and antenna, ventral. E, ischium and merus of right third maxilliped, lateral. F, right P1, lateral. G, right P2, lateral. H, dactylus of right P2, lateral. Scale: A, B, C, F, G = 5 mm; D, E, H = 2 mm.

Abdomen smooth, segments 2–4 each with 2 elevated transverse ridges, each ridge having 2–4 small median spines; segment 6 bearing median margin not exceeding posterolateral lobes. Telson composed of 12 plates; posterior plates combined nearly twice as wide as long.

Sternum longer than wide, maximum width at sternites 4 and 7; sternites with some short setigerous striae; sternite 3 wide, bilobate, less than 3 times wider than long; sternite 4 subtriangular, anteriorly narrow, contiguous sternite 3, more than 2.5 times width of sternite 3.

Eye movable, unarmed; corneae subcylindrical, longer than peduncle. Distinct spine ventral to front margin between ocular and antennal peduncles.

Basal article of antennule having strong dorsolateral and distolateral spines, ventromesial process produced and granulated.

Basal article of antennal peduncle with blunt denticulate process on distomesial and distolateral angles;

article 2 with distolateral spine; article 3 with small distolateral and distomesial spines.

Mxp 3 ischium having distal spine on extensor and flexor margins, crista dentata with 21–23 denticles; flexor margin of merus with 2 well-developed spines, extensor margin with distal marginal spine.

P1 slender, more than 3 times carapace length, with numerous small scale-like rugosities and setae. Merus longer than carapace, with row of 3 or 4 spines along mesial and dorsal sides and 3 distal spines (mesial, dorsal and lateral). Carpus with 2 or 3 distal spines, more than 2.5 times longer than high. Palm more than 1.5 times longer than fingers, unarmed. Fingers distally spooned, prehensile edges crenulated; fixed finger without denticulate carina on distolateral margin.

P2–P4 slender, decreasing in length posteriorly, with scattered short striae more numerous on lateral side of articles. P2 clearly not reaching end of P1; merus half carapace length, 3 times longer than high, more than 2 times carpus length and nearly 1.5 times length of propodus, dorsal margin with several spines and one long distal spine, ventral margin with distal spine; carpus with distal spine on dorsal margin, granulated crest along lateral side; propodus 3.5 times longer than high, 2 movable distal spine on ventral margin; dactylus more than half as long as propodus, smoothly narrowed distally, ending in curved sharp spine, flexor margin straight, bearing 6 or 7 proximally diminishing low teeth, ultimate tooth rather remote from end of dactylus and much closer to penultimate.

Epipods absent from pereopods.

Remarks. Tirmizi (1966) compared specimens collected in the Gulf of Aden and Maldives with the original description of *M. wardeni*, and suggested the existence of a new variety (*Munidopsis wardeni mabahiss*). However, after the examination of numerous specimens collected in the Gulf of Aden, the differences in the spinulation of the carapace, mentioned by Tirmizi (1966), seem to be within the range of intraspecific variation of *M. wardeni*. Therefore, Tirmizi's (1966) subspecies is not recognized.

Distribution. Arabian Sea, Gulf of Aden, Zanzibar, Bay of Bengal and Andaman Sea, between 412 and 1087 m. The present material was collected off western Sri Lanka and Gulf of Aden, at 1063–1186 m.

Munidopsis zarazagai n. sp.

(Fig. 54)

Material examined. Solomon Islands, SALOMON 2, Stn 2176, 600–875 m: 7 M 5.8–8.4 mm, 8 ovig. F 6.4–8.7 mm, 1 F 6.1 mm (MNHN-Ga5582). Vanuatu, MUSORSTOM 8, Stn 993, 780–783 m: 1 ovig. F 6.4 mm (MNHN-Ga5581).

Types. The ovigerous female of 6.4 mm from MUSORSTOM 8, Stn 993 is the holotype (MNHN-Ga5581). The other specimens are paratypes.

Etymology. The name is dedicated to M. A. Alonso Zarazaga, for his support to taxonomy and friendship.

Description. Carapace 1.2 times longer than wide, dorsal surface unarmed, finely granulated, with numerous short striae having small setae, bifurcated cervical groove weakly distinct. Gastric region convex, distinctly circumscribed. Cardiac region depressed in front of slightly elevated transverse ridge. Posterior transverse ridge slightly elevated, uninterrupted and unarmed. Rostrum small, broadly triangular, 0.3 times as long as remaining carapace, maximum width less than one-quarter carapace breadth, convex dorsally, slightly deflexed, lateral margins cristate, finely serrated. Front margin different in level in mesial and lateral parts of width, mesial two-thirds of margin oblique, lateral third transverse, depressed below level of mesial half; anterolateral angle with small spine, lateral margin sometimes with notch at end of anterior branch of cervical groove, slightly convex, not cristate.

Sternum as long as wide, maximum width at sternite 7. Sternite 3 with 2 anterior lobes, separated by notch, 2.7 times as wide as long, lateral margins distally produced; sternite 4 wide anteriorly, maximum width nearly 2.5 times wider than sternite 3.

Abdominal segments unarmed, segments 2–3 each with slightly elevated anterior ridge and narrow median groove; posterolateral lobes of segment 6 distinct but not overreaching transverse posteromedian margin. Telson divided into 12 plates, posterior plates combined 1.5 times as wide as long.

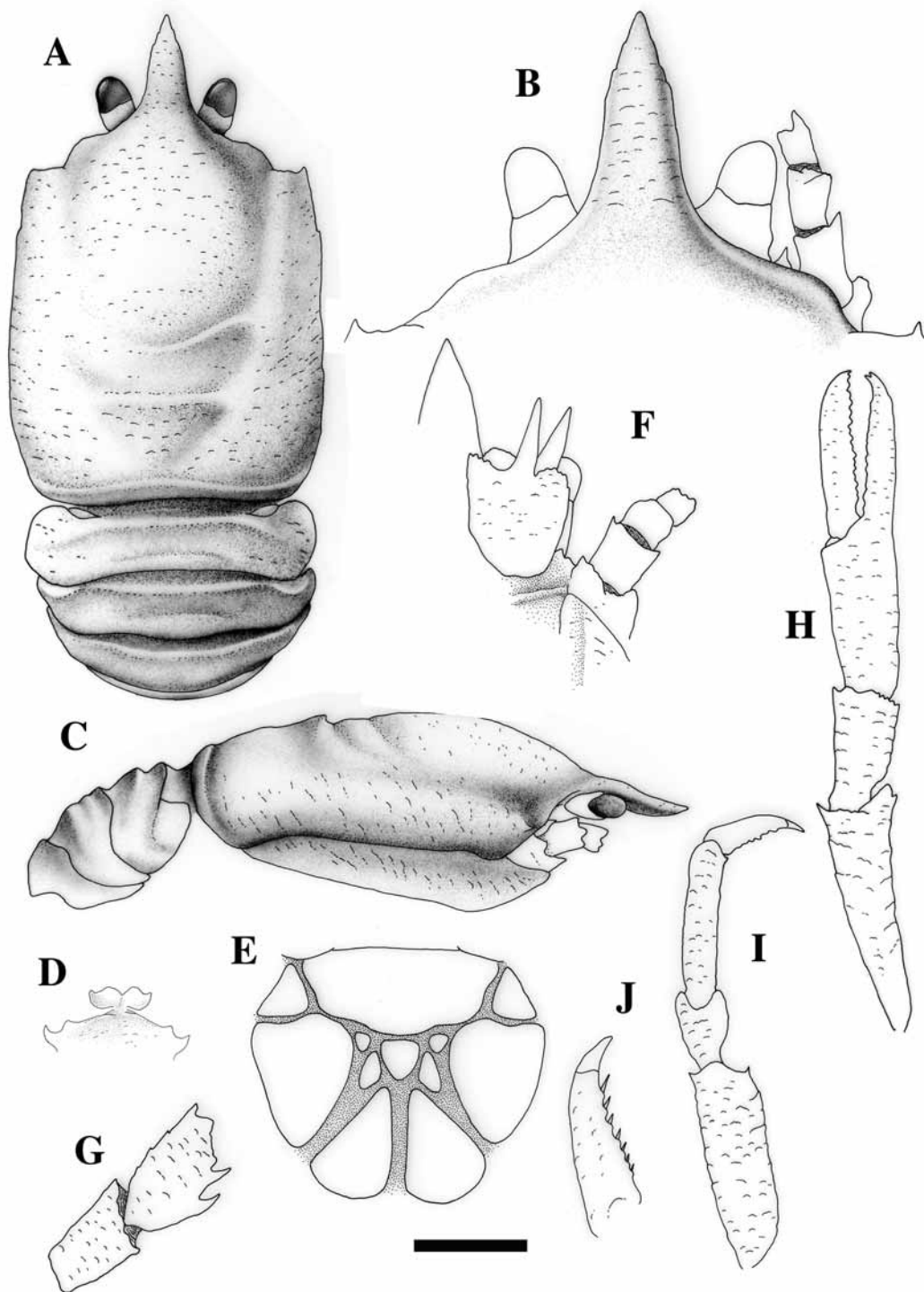


FIGURE 54. *Munidopsis zarazagai* n. sp., holotype, ovigerous female (6.4 mm), Vanuatu, MUSORSTOM 8, Stn 993. A, carapace and abdomen, dorsal. B, anterior portion of carapace, dorsal. C, carapace and abdomen, lateral. D, sternum, sternites 3 and 4. E, posterior part of sixth abdominal segment and telson. F, left antennule and antenna, ventral. G, ischium and merus of right third maxilliped, lateral. H, right P1, lateral. I, right P2, lateral. J, dactylus of right P2, lateral. Scale: A, C, D, H, I = 2 mm; B, E, F, G, J = 1 mm.

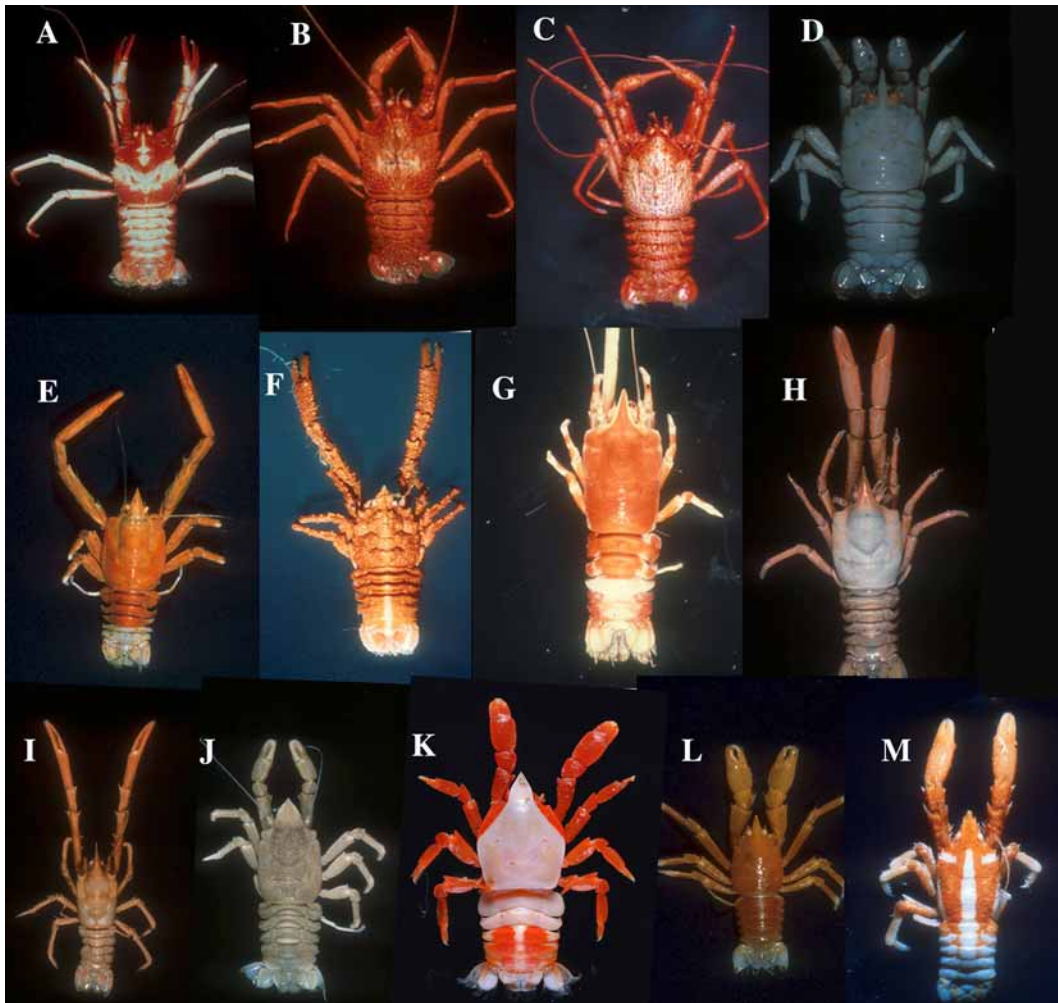


FIGURE 55. General view. A, *Galacantha quiquei* n. sp., holotype, holotype, male (20.4 mm), Wallis and Futuna, MUSORSTOM 7, Stn 620. B, *G. subspinosa* n. sp., paratype, male (29.0 mm), Indonesia, Kei Islands, KARUBAR, Stn 91. C, *G. trachynotus* Anderson, 1896, male (35.3 mm), Fiji, MUSORSTOM 10, Stn 1361. D, *Munidopsis bispinoculata* Baba, 1988, female (8.1 mm), Vanuatu, MUSORSTOM 8, Stn 990. E, *M. carinimarginata* Baba, 1988, male (13.2 mm), Fiji, BORDAU 1, Stn 1396. F, *M. ceres* n. sp., holotype, ovigerous female (10.0 mm), New Caledonia, CHALCAL 2, Stn 72. G, *M. cylindrophthalma* (Alcock, 1894), male (10.9 mm), New Caledonia, HALIPRO 1, Stn 854. H, *M. debilis* Henderson, 1885, ovigerous female (8.8 mm), Vanuatu, MUSORSTOM 8, Stn 1076. I, *M. kensleyi* Ahyong & Poore, 2004, female (14.5 mm), Vanuatu, MUSORSTOM 8, Stn 1037. J, *M. orcina* McArdle, 1901, female (9.7 mm), Vanuatu, MUSORSTOM 8, Stn 1109. K, *M. pericalla* n. sp., paratype, male (5.2 mm), Philippines, PANGLAO 2005, Stn 2399. L, *M. similior* Baba, 1988, male (9.3 mm) Fiji, BORDAU 1, Stn 1447. M, *M. treis* Ahyong & Poore, 2004, ovigerous female (6.0 mm), New Caledonia, CHALCAL 2, Stn 72.

Eye small, reaching midlength of rostrum; ocular peduncle movable; cornea moderately small, subglobular, as long as remaining eyestalk; distinct spine ventral to front margin between ocular and antennal peduncles.

Basal antennule with denticulated distomesial process, strong distolateral and distodorsal spines.

Antennal peduncle having basal article with blunt distomesial and distolateral processes; article 2 with small distolateral and distomesial spines; article 3 unarmed.

Mxp 3 merus having 2 strong spines and 1 or 2 small ones on flexor margin, extensor distal margin with well-developed spine.

P1 granulated, with numerous long setae more dense on mesial and lateral margins, about 1.7 times carapace; merus twice length of carpus, with small distomesial and distolateral spines; carpus 1.7 times as long as

wide, and slightly shorter than palm, with small distomesial and distolateral spines; palm slightly shorter than fingers, fixed finger without denticulate carina on distolateral margin.

P2–4 barely setose, relatively slender, slightly compressed, 3 distal articles subcylindrical; meri subtriangular in cross section, slightly depressed, dorsal margin feebly carinate with small distal spine, ventral margin granulated, often with small distal spine; carpi weakly carinated along lateral side; P4 merus 0.5 times length of P2 merus. P2 barely reaching midlength of P1 palm, 1.4 times carapace length; merus more than 3 times as long as high, about 2.5 times length of carpus and nearly 1.5 times length of propodus; propodus 4.5 times as long as high and 1.5 times length of dactylus; dactylus ending in curved claw preceded by 6 or 7 proximally diminishing teeth on nearly straight ventral margin, each tooth bearing short seta, ultimate tooth closer to penultimate one than to end of terminal claw.

Epipods absent from P1–4.

Remarks. *Munidopsis zarazagai* is closely related with *M. debilis* Henderson, 1885 (see above). Both species have the rostrum triangular, dorsal surface of carapace and abdomen smooth, lateral margins not carinate, frontal margin unarmed, corneae subglobular and unarmed and P2 clearly not reaching end of P1. The new species is distinguished from *M. debilis* by the following characters:

—The dorsal surface of rostrum bears a longitudinal groove in midline in *M. debilis*, whereas the groove is absent in the new species.

—The rostrum length is half as long as the remaining carapace in *M. debilis*, but 0.3 times as long in *M. zarazagai*.

—The gastric region is more convex in the new species than in *M. debilis*.

—The carapace bears a distinct anterolateral spine in *M. zarazagai*, but unarmed in *M. debilis*.

Distribution. Vanuatu and Solomon Islands, between 600 and 875 m.

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Appendix. List of stations

Gulf of Aden

Deutschen Tiefsee Expedition

Stn 270, 13°01'N, 47°10.'E, 04.04.1899, 1840 m: *M. stylirostris*

Cruise SUROIT

11°56.5'N, 43°34.5'E, 22.01.1977, 1400–1600 m: *M. leptotes*

Cruise METEOR 5

Stn 249, 12°29.5'N, 45°38.7'E, 08.03.1987, 1299–1314 m: *M. stylirostris*

Stn 257, 13°06.6'N, 47°54'E, 11.03.1987, 2227–2250 m: *G. bellis*, *M. nereidis*

Stn 262, 13°19.7'N, 47°29.2'E, 12.03.1987, 1830–1837 m: *G. bellis*, *G. trachynotus*, *M. stylirostris*

Stn 268, 13°11.2'N, 47°10.9'E, 13.03.1987, 1654–1686 m: *M. stylirostris*

Stn 271, 12°56.7'N, 47°47.0'E, 14.03.1987, 2276–2282 m: *G. bellis*, *M. stylirostris*

Stn 277, 12°37.5'N, 46°09.4'E, 15.03.1987, 1552–1554 m: *M. stylirostris*

Stn 279, 12°52.5'N, 45°53.3'E, 15.03.1987, 1185–1186 m: *M. wardeni*

Stn 281, 12°38.5'N, 45°28.5'E, 15.03.1987, 1063–1068 m: *M. wardeni*

Zanzibar

Deutschen Tiefsee-Expedition,

Stn 245, 5°27'S, 39°18'W, 22.03.1899, 463 m: *M. africana*

SW Indian Ocean

Cruise SAFARI 1,

Stn 1 (DS 01), 29°48.8'S, 34°36.8'E, 31.08.1979, 2608–2625 m: *M. gladiola*

Stn 13 (CP07), 30°47.1'S, 48°19.8'E, 31.08.1979, 4245–4400 m: *M. parfaiti*

Stn 15 (CP08), 31°52'S, 48°28.8'E, 01.09.1979, 3825 m: *M. gladiola*, *M. solidissima*

Central Indian Ocean

Cruise SAFARI 2

Stn 2 (CP02), 05°42'N, 78°56'E, 25.07.1981, 3625 m: *M. antonii*, *M. spissata*

Stn 2 (CP03), 05°48'N, 78°43'E, 25.07.1981, 3450 m: *M. antonii*, *M. spissata*

Stn 3 (CP04), 07°07'N, 79°00'E, 27.07.1981, 2475 m: *G. bellis*

Stn 3 (CP05), 06°59'N, 78°50'E, 27.07.1981, 2540 m: *G. bellis*, *M. bairdii*, *M. edwardsii*

Stn 4 (CP06), 08°11'N, 79°03'E, 28.07.1981, 1035 m: *G. bellis*, *M. stylirostris*

Stn 4 (CP07), 08°29'N, 79°19'E, 28.07.1981, 1095 m: *M. wardeni*

Stn 14 (CP12), 02°54'S, 89°43'E, 06.08.1981, 3344 m: *M. spissata*

Stn 17 (CP15), 06°17'S, 89°11'E, 09.08.1981, 2895–3800 m: *G. bellis*

Reunion Island

Cruise MD32

Stn 19, 21°18.7'S, 55°15.8'E, 14.08.1982, 3180–3480 m: *M. aries*

Stn 103, 20°42'S, 54°57'E, 29.08.1982, 2950–2970 m: *M. centrina*

Stn 105, 20°47'S, 55°04'E, 30.08.1982, 1740–1850 m: *M. nitida*, *M. orcina*

Stn 112, 20°53.3'S, 55°08.5'E, 31.08.1982, 740–780 m: *M. pectinata*

Madagascar (A. Crosnier collection)

Stn CH 22, 12°27'S, 48°10'E, 19.01.1972, 700–880 m: *M. levis*

Stn CH 49, 15°18.3'S, 46°10.3'E, 08.11.1972, 400–550 m: *M. calvata*, *M. sinclairi*

Stn CH 54, 23°21.4'S, 43°33.6'E, 26.02.1973, 335–355 m: *M. calvata*

Stn CH 58, 23°36.2'S, 43°30.5'E, 27.02.1973, 510 m: *M. calvata*

Stn CH 65, 23°35'S, 43°28.6'E, 29.02.1973, 740–760 m: *M. levis*

Stn CH 66, 23°36.4'S, 43°31.1'E, 29.02.1973, 450–460 m: *M. calvata*

Stn CH 87, 18°55'S, 43°56'E, 24.11.1973, 250 m: *M. calvata*
Stn CH 89, 21°18'S, 43°17.4'E, 26.11.1973, 620 m: *M. calvata*
Stn CH 90, 21°24.5'S, 43°13.5'E, 26.11.1973, 640–720 m: *M. calvata*, *M. lophia*
Stn CH 94, 22°18'S, 43°04'E, 27.11.1973, 400 m: *M. calvata*, *M. similior*
Stn CH 98, 22°17.3'S, 43°02.7'E, 28.11.1973, 600–605 m: *M. calvata*
Stn CH 103, 22°18.2'S, 43°02.7'E, 28.11.1973, 880–920 m: *M. dasypus*, *M. nitida*, *M. sinclairi*, *M. trifida*
Stn CH 104, 22°15.7'S, 43°01.5'E, 29.11.1973, 750–810 m: *M. trifida*
Stn CH107, 22°16.6'S, 13°01.9'E, 30.11.1973, 695–710 m: *M. bispinocolata*, *M. pubescens*, *M. trifida*
Stn CH 108, 22°18.9'S, 43°01.1'E, 30.11.1973, 735–760 m: *M. serricornis*, *M. trifida*
Stn CH 109, 22°16.9'S, 42°56'E, 30.11.1973, 1200 m: *M. sinclairi*
Stn CH 113, 22°19'S, 42°59.7'E, 01.12.1973, 990–1000 m: *M. sinclairi*
Stn CH 114, 22°14.7'S, 43°04.5'E, 02.12.1973, 470–475 m: *M. calvata*
Stn CH 115, 22°14.8'S, 43°04.7'E, 02.12.1973, 450 m: *M. calvata*
Stn CH 126, 17°50'S, 43°07'E, 16.01.1975, 1475–1530 m: *G. valdiviae*, *M. pilosa*, *M. sinclairi*
Stn CH 127, 18°00'S, 43°00'E, 16.01.1975, 1715–1750 m: *G. bellis*, *M. nitida*
Stn CH 128, 18°05'S, 42°53'E, 16.01.1975, 1930 m: *M. nitida*
Stn CH 131, 13°46'S, 47°33'E, 20.01.1975, 1490–1640 m: *G. trachynotus*, *G. valdiviae*, *M. nitida*, *M. pilosa*, *M. sinclairi*, *M. trichodes*
Stn CH 132, 13°48.8'S, 47°29.4'E, 21.01.1975, 1800–2000 m: *G. rostrata*
Stn CH 133, 13°02'S, 18°02'E, 21.01.1975, 1000–1525 m: *G. valdiviae*, *M. sinclairi*
Stn CH 138, 13°48.8'S, 47°29.4'E, 27.02.1975, 1800–2000 m: *G. rostrata*, *M. nitida*, *M. orcina*
Stn CH139, 13°50.0'S, 47°37.0'E, 27.02.1975, 850–1125 m: *M. bispinocolata*
Stn CH 141, 13°40.3'S, 47°32.5'E, 28.02.1975, 1600–1725 m: *G. bellis*, *G. rostrata*, *G. trachynotus*, *M. sinclairi*

Madagascar

Cruise BENTHEDI

Stn 13, 12°12.7'S, 46°40.8'E, 20.03.1977, 2300–2500 m: *G. rostrata*, *M. centrina*
Stn 31, 12°37.4'S, 45°25.2'E, 25.03.1977, 1800 m: *G. rostrata*, *M. nitida*
Stn 82, 11°59.8'S, 45°42.6'E, 01.04.1977, 3450 m: *M. centrina*, *M. parfaiti*, *M. pycnopoda*, *M. spissata*
Stn 87, 11°44'S, 47°35'E, 03.04.1977, 3760 m: *M. spissata*
Stn 90, 11°44'S, 47°30'E, 04.04.1977, 3700 m: *M. crassa*, *M. spissata*

Madagascar

Stn CH 15, 22°25.2'S, 43°05'E, 01.01.1986, 425–460 m: *M. calvata*
Stn CH 26, 22°19.7'S, 43°04.1'E, 15.01.1986, 450–600 m: *M. calvata*
Stn CH 28, 22°23.1'S, 43°04.8'E, 15.01.1986, 450 m: *M. calvata*
Stn CH 71, 22°13.5'S, 43°04.3'E, 22.01.1986, 525 m: *M. calvata*
Stn CH 82, 22°11'S, 43°02.9'E, 25.10.1986, 520 m: *M. calvata*
Stn CH 100, 22°22.7'S, 43°03.4'E, 09.11.1986, 600 m: *M. calvata*

Madagascar

Cruise CREVETTE 1986

Stn 60, 02°26'S, 43°06'E, 10.1986, 475 m: *M. similior*

Taiwan

Cruise TAIWAN 2000

Stn 27, 22°3.3'N, 120°23.4'E, 30.07.2000, 329–377 m: *M. bruta*

Philippines

Cruise CHALLENGER

Stn 210, 9°26'N, 123°45'E, 25.01.1875, 694 m: *M. debilis*

Cruise MUSORSTOM 1

Stn 5, 14×01'N, 120×23'E, 19.03.1976, 200–215 m: *M. latimana*
Stn 6, 14×01'N, 120×20'E, 19.03.1976, 182–200 m: *M. latimana*
Stn 24, 14×00'N, 120×18'E, 22.03.1976, 189–209 m: *M. latimana*
Stn 25, 14×03'N, 120×20'E, 22.03.1976, 191–200 m: *M. latimana*
Stn 40, 13×57'N, 120×28'E, 24.03.1976, 265–287 m: *M. latimana*
Stn 44, 13×47'N, 120×29'E, 24.03.1976, 592–610 m: *M. andamanica*, *M. levis*
Stn 47, 13×41'N, 120×30'E, 25.03.1976, 757–685 m: *M. andamanica*
Stn 49, 13×49'N, 120×00'E, 25.03.1976, 750–925 m: *G. quiquei*, *G. subspinosa*
Stn 54, 13×54'N, 119×58'E, 26.03.1976, 1075 m: *M. cidaris*

Cruise MUSORSTOM 2

Stn 11, 14×00'N, 120×20'E, 21.11.1980, 194–196 m: *M. latimana*
Stn 15, 13×55'N, 120×28'E, 21.11.1980, 326–330 m: *M. cylindrophthalma*
Stn 24, 13×37'N, 120×42'E, 22.11.1980, 640–647 m: *M. andamanica*
Stn 25, 13×39'N, 120×43'E, 22.11.1980, 520–550 m: *M. andamanica*
Stn 26, 13×50'N, 120×51'E, 22.11.1980, 299–320 m: *M. cylindrophthalma*, *M. similior*
Stn 36, 13×31'N, 121×24'E, 24.11.1980, 565–595 m: *M. cylindrophthalma*, *M. regia*
Stn 39, 13×03'N, 122×37'E, 25.11.1980, 1030–1190 m: *M. andamanica*
Stn 40, 13×08'N, 122×39'E, 25.11.1980, 280–440 m: *M. cylindrophthalma*
Stn 49, 13×38'N, 121×44'E, 26.11.1980, 416–425 m: *M. cylindrophthalma*
Stn 50, 13×37'N, 120×34'E, 27.11.1980, 810–820 m: *M. sinclairi*
Stn 55, 13×54'N, 119×58'E, 27.11.1980, 865–866 m: *M. bispinoculata*, *M. nitida*, *M. pilosa*
Stn 56, 13×54'N, 119×56'E, 28.11.1980, 970 m: *M. bispinoculata*
Stn 68, 14×02'N, 120×19'E, 29.11.1980, 195–199 m: *M. latimana*
Stn 69, 14×05'N, 120×02'E, 30.11.1980, 1800–1950 m: *M. nitida*
Stn 78, 13×49'N, 120×28'E, 01.12.1980, 441–550 m: *M. cylindrophthalma*
Stn 79, 13×45'N, 120×32'E, 01.12.1980, 620–700 m: *M. andamanica*
Stn 81, 13×36'N, 121×32'E, 01.12.1980, 856–884 m: *M. sinclairi*
Stn 82, 13×46'N, 120×28'E, 02.12.1980, 550 m: *M. andamanica*
Stn 83, 13×55'N, 120×30'E, 02.12.1980, 318–320 m: *M. cylindrophthalma*, *M. similior*

Cruise MUSORSTOM 3

Stn 105, 13×53'N, 120×30'E, 01.06.1985, 398–417 m: *M. crenatirostris*
Stn 106, 13×47'N, 120×30'E, 02.06.1985, 640–668 m: *M. andamanica*
Stn 118, 11×59'N, 121×05'E, 03.06.1985, 466–488 m: *M. Andamanica*
Stn 122, 12×20'N, 121×42'E, 04.06.1985, 673–675 m: *M. cylindrophthalma*
Stn 123, 12×11'N, 121×45'E, 04.06.1985, 648–649 m: *M. andamanica*, *M. Regia*
Stn 127, 11×48'N, 121×29'E, 04.06.1985, 464–475 m: *M. cylindrophthalma*
Stn 128, 11×50'N, 121×41'E, 05.06.1985, 755–760 m: *M. regia*
Stn 135, 11×59'N, 122×02'E, 05.06.1985, 486–551 m: *M. andamanica*, *M. regia*

Cruise PANGLAO 2005

Stn 2381, 08°41.2'N, 123°18'E, 20.05.2005, 241–259 m: *M. pericalla*
Stn 2399, 09°31.8'N, 123°41.7'E, 31.05.2005, 342 m: *M. pericalla*

Indonesia. Nias, South Canal, W of Sumatra

Deutschen Tiefsee-Expedition

Stn 194, 0×15' S, 98×08' E, 01.02.1899, 614 m: *M. lenzii*

Indonesia. Makassar Strait

Cruise CORINDON 2

Stn 209, 0°07.3'S, 117°53.8'E, 31.10.1980, 487–497 m: *M. andamanica*, *M. cylindrophthalma*, *M. scobina*
Stn 210, 02°12.6'S, 117°53.5'E, 31.10.1980, 338 m: *M. acalipha*, *M. andamanica*
Stn 217, 0°38.2'N, 117°59.6'E, 01.11.1980, 447–470 m: *M. andamanica*
Stn 220, 0°13.6'N, 118°12.3'E, 02.11.1980, 2340 m: *G. bellis*
Stn 231, 0°04.9'N, 119°47.8'E, 04.11.1980, 980–1080 m: *M. pilosa*, *M. sinclairi*, *M. subchelata*
Stn 271, 01°57.8'S, 119°15.0'E, 07.11.1981, 215–252 m: *M. latimana*
Stn 276, 01°54.6'S, 119°13.8'E, 08.11.1980, 395–450 m: *M. andamanica*, *M. cylindrophthalma*, *M. scobina*
Stn 280, 01°59.0'S, 119°09.9'E, 08.11.1980, 715–800 m: *M. sinclairi*
Stn 281, 01°57.5'S, 119°02.0'E, 08.11.1980, 1120–1150 m: *M. bispinoculata*

Stn 286, 02°04.4'S, 118°46.9'E, 09.11.1980, 1710 m: *M. nitida*
Stn 290, 02°37.6'S, 118°10.9'E, 09.11.1980, 779–798 m: *M. moresby*

Indonesia. Banda Sea

Cruise CORINDON 4

Stn I/1, 03°13.3'N, 128°06.2'E, 14.04.1981, 525–562 m: *M. andamanica*, *M. formosa*, *M. similior*
Stn I/2, 03°12.0'N, 128°06.1'E, 14.04.1981, 333–507 m: *M. andamanica*, *M. formosa*
Stn II/1, 03°18.0'N, 128°16.0'E, 15.04.1981, 315 m: *M. andamanica*, *M. similior*
Stn III/1, 03°26.6'N, 128°19.7'E, 15.04.1981, 528–582 m: *M. scobina*
Stn III/2, 03°22.8'N, 128°20.6'E, 15.04.1981, 528–546 m: *M. cylindrophthalma*
Stn IV/1, 03°28.3'N, 128°24.8'E, 15.04.1981, 278–408 m: *M. carinimarginata*

Indonesia. Kei Islands

Cruise KARUBAR

Stn 12, 05°25'23"S, 132°36'59"E, 23.10.1991, 412–434 m: *M. carinimarginata*
Stn 14, 05°18'27"S, 132°37'52"E, 24.10.1991, 245–246 m: *M. laciniosa*
Stn 20, 05°16'30"S, 132°58'20"E, 25.10.1991, 760–809 m: *G. quiquei*, *G. subspinosa*, *M. andamanica*, *M. trifida*
Stn 21, 05°16'25"S, 132°59'03"E, 25.10.1991, 688–694 m: *M. andamanica*, *M. trifida*
Stn 38, 07°38'41"S, 132°29'22"E, 28.10.1991, 620–666 m: *M. andamanica*, *M. cylindrophthalma*, *M. trifida*
Stn 39, 07°45'43"S, 132°28'22"E, 28.10.1991, 466–477 m: *M. levis*, *M. trifida*
Stn 40, 07°47'53"S, 132°28'19"E, 28.10.1991, 443–468 m: *M. bispinocolata*, *M. cylindrophthalma*, *M. scobina*
Stn 52, 08°00'34"S, 131°50'33"E, 30.10.1991, 1244–1266 m: *M. nitida*, *M. pilosa*
Stn 53, 08°14'44"S, 131°44'22"E, 30.10.1991, 1026–1053 m: *M. nitida*, *M. sinclairi*
Stn 54, 08°23'32"S, 131°41'04"E, 30.10.1991, 836–869 m: *G. quiquei*, *G. subspinosa*
Stn 56, 08°12'39"S, 132°01'15"E, 31.10.1991, 549–552 m: *M. andamanica*, *M. levis*, *M. trifida*
Stn 57, 08°15'48"S, 131°56'38"E, 31.10.1991, 603–620 m: *M. andamanica*, *M. cylindrophthalma*, *M. levis*, *M. trifida*
Stn 59, 08°20'01"S, 132°09'32"E, 31.10.1991, 399–405 m: *M. bruta*
Stn 69, 08°45'17"S, 131°51'35"E, 02.11.1991, 356–368 m: *M. trifida*
Stn 70, 08°39'14"S, 131°49'16"E, 02.11.1991, 410–413 m: *M. cylindrophthalma*, *M. formosa*
Stn 71, 08°39'39"S, 131°42'29"E, 02.11.1991, 477–480 m: *M. andamanica*, *M. cylindrophthalma*
Stn 72, 08°33'19"S, 131°35'10"E, 02.11.1991, 676–699 m: *M. andamanica*, *M. levis*
Stn 73, 08°29'46"S, 131°31'29"E, 02.11.1991, 840–855 m: *G. quiquei*, *G. subspinosa*, *M. andamanica*
Stn 75, 08°46'52"S, 131°33'37"E, 03.11.1991, 451–452 m: *M. cylindrophthalma*
Stn 76, 08°49'08"S, 131°35'36"E, 03.11.1991, 400–401 m: *M. cylindrophthalma*
Stn 87, 08°48'13"S, 130°46'37"E, 05.11.1991, 1017–1024 m: *G. quiquei*, *G. subspinosa*, *M. bispinocolata*, *M. dasypus*, *M. sinclairi*
Stn 89, 08°39'41"S, 131°05'25"E, 05.11.1991, 1058–1084 m: *M. dasypus*
Stn 91, 08°44'54"S, 131°03'10"E, 05.11.1991, 884–891m: *G. quiquei*, *G. subspinosa*

Solomon Islands

Cruise SALOMON 1

Stn 1751, 09°10.4'S, 159°53'E, 25.09.2001, 740–790 m: *M. andamanica*, *M. pilosa*
Stn 1753, 09°02.7'S, 159°49.4'E, 26.09.2001, 1001–1012 m: *G. quiquei*, *G. subspinosa*, *M. bispinocolata*, *M. kensleyi*, *M. pilosa*, *M. strigula*
Stn 1754, 09°00.1'S, 159°49.0'E, 26.09.2001, 1169–1203 m: *G. trachynotus*, *M. keijii*, *M. bruta*, *M. hirsutissima*, *M. nitida*, *M. sinclairi*
Stn 1755, 08°58.2'S, 159°41.6'E, 26.09.2001, 1288–1313 m: *G. bellis*, *M. kensleyi*
Stn 1762, 08°39.9'S, 160°03.9'E, 27.09.2001, 396–411 m: *G. subspinosa*
Stn 1764, 08°36.6'S, 160°07.4'E, 27.09.2001, 1327–1598 m: *G. bellis*, *G. trachynotus*, *M. nitida*, *M. sinclairi*
Stn 1780, 08°19.7'S, 160°33.2'E, 29.09.2001, 222–228 m: *M. nitida*
Stn 1781, 08°31.2'S, 160°37.7'E, 29.09.2001, 1036–1138 m: *M. kensleyi*, *M. nitida*
Stn 1783, 08°32.8'S, 160°41.7'E, 29.09.2001, 399–700 m: *M. cylindrophthalma*, *M. denudata*
Stn 1786, 09°21.3'S, 160°24.6'E, 30.09.2001, 387 m: *M. cylindrophthalma*
Stn 1792, 09°15.4'S, 160°08.9'E, 30.09.2001, 477–505 m: *M. similior*
Stn 1795, 09°18.8'S, 160°22.9'E, 01.10.2001, 442–451 m: *M. cylindrophthalma*

Stn 1798, 09°21.0'S, 160°29.2'E, 10.2001, 513–564 m: *M. similior*
 Stn 1800, 09°21.4'S, 160°23.9'E, 01.10.2001, 357–359 m: *M. cylindrophthalma*
 Stn 1801, 09°25.0'S, 160°25.9'E, 01.10.2001, 254–271 m: *M. latimana*
 Stn 1802, 09°31.1'S, 160°35.0'E, 02.10.2001, 245–269 m: *M. latimana*
 Stn 1804, 09°32.0'S, 160°37.4'E, 02.10.2001, 309–328 m: *M. similior*
 Stn 1807, 09°42'21S, 160°52'796E, 03.10.2001, 1077–1135 m: *M. bispinoculata*, *M. sinclairi*, *M. strigula*, *M. subchelata*
 Stn 1808, 09°45.5'S, 160°52.5'E, 02.10.2001, 636–611 m: *M. trifida*
 Stn 1831, 10°12.1'S, 161°19.2'E, 05.10.2001, 135–325 m: *M. latimana*, *M. pericalla*, *M. similior*
 Stn 1836, 10°10.3'S, 161°21.7'E, 05.10.2001, 439–486 m: *M. cylindrophthalma*
 Stn 1837, 10°12.8'S, 161°28.6'E, 05.10.2001, 381–383 m: *M. cylindrophthalma*
 Stn 1851, 10°27.6'S, 162°00'E, 06.10.2001, 297–350 m: *M. similior*
 Stn 1859, 09°32.6'S, 160°37.3'E, 07.10.2001, 283–305 m: *M. levis*
 Stn 1860, 09°22'S, 160°31'E, 07.10.2001, 620 m: *M. similior*

Cruise SALOMON 2

Stn 2175, 9°06.74'S, 159°01.06'E, 21.10.04, 579–585 m: *M. cylindrophthalma*
 Stn 2176, 9°10.6'S, 159°01.14'E, 21.10.2004, 600–875 m: *M. andamanica*, *M. zarazagai*
 Stn 2181, 8°45'S, 159°40.78'E, 22.10.2004, 645–840 m: *M. andamanica*, *M. subchelata*, *M. trifida*
 Stn 2182, 8°45.7'S, 159°39.9'E, 22.10.2004, 762–1060 m: *M. bispinoculata*, *M. pilosa*, *M. sinclairi*, *M. strigula*
 Stn 2184, 8°16.8'S, 159°57.6'E, 23.10.2004, 464–523 m: *M. cylindrophthalma*, *M. levis*, *M. similior*
 Stn 2186, 8°16.8'S, 159°57.5'E, 23.10.2004, 487–541 m: *M. cylindrophthalma*
 Stn 2187, 8°16.8'S, 159°58.03'E, 23.10.2004, 482–604 m: *M. cylindrophthalma*
 Stn 2188, 8°19.8'S, 159°59.26'E, 23.10.2004, 495–677 m: *M. andamanica*, *M. cylindrophthalma*
 Stn 2189, 8°17.7'S, 160°00.89'E, 23.10.2004, 660–854 m: *G. subspinoso*, *M. andamanica*, *M. cylindrophthalma*
 Stn 2193, 8°24.4'S, 159°26.7'E, 24.10.2004, 362–432 m: *M. cylindrophthalma*
 Stn 2194, 8°24.4'S, 159°26.7'E, 24.10.2004, 440–521 m: *M. cylindrophthalma*
 Stn 2195, 8°24.57'S, 159°26.06'E, 24.10.2004, 543–593 m: *M. andamanica*, *M. cylindrophthalma*
 Stn 2196, 8°25.09'S, 159°25.14'E, 24.10.2004, 724–765 m: *M. cylindrophthalma*
 Stn 2197, 8°23.9'S, 159°24.3'E, 24.10.2004, 897–1057 m: *M. andamanica*, *M. kensleyi*, *M. nitida*, *M. strigula*, *M. trifida*
 Stn 2199, 7°43.3'S, 158°29.6'E, 25.10.2004, 296–304 m: *M. kensleyi*
 Stn 2206, 7°43.4'S, 158°29.6'E, 25.10.2004, 391–623 m: *M. cylindrophthalma*
 Stn 2207, 7°43.18'S, 158°29.6'E, 25.10.2004, 336–341 m: *M. cylindrophthalma*
 Stn 2212, 7°36.2'S, 157°42.45'E, 26.10.2004, 400–475 m: *M. cylindrophthalma*
 Stn 2213, 7°41.06'S, 157°43.2'E, 26.10.2004, 495–650 m: *M. cylindrophthalma*, *M. hirsutissima*, *M. similior*
 Stn 2214, 7°39.8'S, 157°43.07'E, 26.10.2004, 550–682 m: *M. andamanica*, *M. cylindrophthalma*
 Stn 2216, 7°44.8'S, 157°43.49'E, 26.10.2004, 930–977 m: *M. nitida*, *M. strigula*
 Stn 2217, 7°46.8'S, 157°40.8'E, 27.10.2004, 1045–1118 m: *M. bispinoculata*, *M. sinclairi*
 Stn 2218, 7°57.47'S, 157°33.39'E, 27.10.2004, 582–864 m: *M. bispinoculata*, *M. sinclairi*
 Stn 2219, 7°56.2'S, 157°34.07'E, 27.10.2004, 650–836 m: *M. bruta*
 Stn 2226, 6°37.6'S, 156°13.15'E, 28.10.2004, 490–520 m: *M. cylindrophthalma*
 Stn 2227, 6°38.27'S, 156°13.52'E, 28.10.2004, 508–522 m: *M. cylindrophthalma*
 Stn 2230, 6°29.26'S, 156°23.6'E, 29.10.2004, 837–945 m: *G. quiquei*, *M. bispinoculata*, *M. strigula*
 Stn 2237, 6°53'S, 156°21.4'E, 30.10.2004, 400–400 m: *M. demeter*
 Stn 2243, 7°44.5'S, 156°27.9'E, 01.11.2004, 518–527 m: *M. strigula*
 Stn 2244, 7°43'S, 156°26.8'E, 01.11.2004, 554–586 m: *M. andamanica*, *M. cylindrophthalma*
 Stn 2245, 7°45.15'S, 156°26.85'E, 01.11.2004, 582–609 m: *M. andamanica*, *M. concava*, *M. cylindrophthalma*, *M. similior*
 Stn 2246, 7°40.20'S, 156°24.044'E, 01.11.2004, 664–682 m: *M. andamanica*, *M. bispinoculata*, *M. cylindrophthalma*, *M. hirsutissima*
 Stn 2247, 7°42.826'S, 156°24.449'E, 01.11.2004, 686–690 m: *M. andamanica*, *M. bispinoculata*
 Stn 2248, 7°45.212'S, 156°25.606'E, 01.11.2004, 650–673 m: *M. andamanica*, *M. cylindrophthalma*
 Stn 2249, 7°29.56'S, 156°15.78'E, 02.11.2004, 782–884 m: *M. bispinoculata*
 Stn 2250, 7°30.23'S, 156°16.95'E, 02.11.2004, 845–970 m: *M. bispinoculata*
 Stn 2251, 7°28.4'S, 156°16.12'E, 02.11.2004, 1000–1050 m: *G. quiquei*, *G. subspinoso*, *M. bispinoculata*, *M. pilosa*, *M. strigula*, *M. subchelata*
 Stn 2252, 7°27.66'S, 156°14.30'E, 02.11.2004, 1059–1109 m: *G. subspinoso*, *M. strigula*
 Stn 2253, 7°27.47'S, 156°17.30'E, 02.11.2004, 1200–1218 m: *G. valdiviae*, *M. cidaris*, *M. sinclairi*
 Stn 2260, 8°04.45'S, 156°55.87'E, 03.11.2004, 399–427 m: *M. similior*

Stn 2262, 7°57.5'S, 156°51.346'E, 03.11.2004, 460–487 m: *M. cylindrophthalma*
 Stn 2263, 7°56.27'S, 156°50.885'E, 03.11.2004, 485–520 m: *M. cylindrophthalma*, *M. similior*
 Stn 2264, 7°54.35'S, 156°50.86'E, 03.11.2004, 515–520 m: *M. cylindrophthalma*
 Stn 2268, 7°46.63'S, 156°51.65'E, 04.11.2004, 632–640 m: *M. andamanica*, *M. cylindrophthalma*, *M. rotundior*
 Stn 2269, 7°47.90'S, 156°53.90'E, 04.11.2004, 768–890 m: *M. subchelata*
 Stn 2272, 8°32.12'S, 157°44.38'E, 05.11.2004, 380–537 m: *M. cylindrophthalma*
 Stn 2273, 8°31.57'S, 157°42.97'E, 05.11.2004, 732–839 m: *M. andamanica*, *M. cylindrophthalma*
 Stn 2274, 8°31.55'S, 157°42.92'E, 05.11.2004, 750–841 m: *M. andamanica*, *M. hirsutissima*
 Stn 2276, 8°41.749'S, 157°40.717'E, 05.11.2004, 814–980 m: *M. andamanica*, *M. bispinocolata*, *M. hirsutissima*,
M. nitida
 Stn 2286, 8°39.54'S, 157°23.18'E, 06.11.2004, 248–253 m: *M. latimana*
 Stn 2287, 8°39.84'S, 157°23.505'E, 06.11.2004, 253–255 m: *M. latimana*
 Stn 2288, 8°33.22'S, 157°25.19'E, 07.11.2004, 509–520 m: *M. cylindrophthalma*, *M. hirsutissima*
 Stn 2289, 8°33.55'S, 157°27.47'E, 07.11.2004, 623–627 m: *M. cylindrophthalma*, *M. hirsutissima*
 Stn 2297, 9°05.69'S, 158°14.82'E, 08.11.2004, 728–777 m: *M. andamanica*

New Caledonia

Cruise BIOCAL

Stn 5, 21°16.49'S, 166°43.56'E, 11.08.1985, 2340 m: *M. orcina*
 Stn 17, 20°34.50'S, 167°24.70'E, 14.08.1985, 3680 m: *M. nitida*, *M. tafrii*
 Stn 27, 23°05.50'S, 166°26.40'E, 29.08.1985, 1850–1900 m: *M. nitida*
 Stn 36, 23°08.64'S, 167°10.99'E, 29.08.1985, 650–680 m: *M. treis*
 Stn 62, 24°19.06'S, 167°48.65'E, 02.09.1985, 1395–1410 m: *G. bellis*, *G. quiquei*
 Stn 63, 24°28.69'S, 168°07.72'E, 03.09.1985, 2160 m: *G. bellis*
 Stn 68, 24°00.37'S, 168°07.30'E, 03.09.1985, 1430–1470 m: *G. quiquei*
 Stn 69, 23°51.38'S, 167°58.68'E, 03.09.1985, 1220–1225 m: *G. quiquei*
 Stn 72, 22°09.00'S, 167°33.20'E, 04.09.1985, 2100–2110 m: *M. orcina*
 Stn 109, 22°10.00'S, 167°15.20'E, 09.09.1985, 495 m: *M. carinimarginata*

Cruise MUSORSTOM 4

Stn 242, 22°05.80'S, 167°10.30'E, 03.10.1985, 500–550 m: *M. carinimarginata*
 Stn 216, 22°59.50'S, 167°22.00'E, 29.09.1985, 490–515 m: *M. treis*
 Stn 221, 22°58.60'S, 167°36.80'E, 29.09.1985, 535–560 M: *M. ceres*

Cruise CHALCAL 2

Stn 72, 24°54.50'S, 168°22.30'E, 28.10.1986, 527 m: *M. ceres*, *M. treis*
 Stn 74, 24°40.36'S, 168°38.38'E, 29.10.1986, 650 m: *M. treis*

Cruise BIOGEOCAL

Stn 232, 21°33.81'S, 166°27.07'E, 12.04.1987, 760–790 m: *M. andamanica*
 Stn 260, 21°00.00'S, 167°58.34'E, 17.04.1987, 1820–1980 m: *G. bellis*, *G. rostrata*, *M. orcina*
 Stn 272, 21°00.04'S, 166°56.94'E, 20.04.1987, 1615–1710 m: *G. bellis*
 Stn 273, 21°01.53'S, 166°57.41'E, 20.04.1987, 1920–2040 m: *G. rostrata*
 Stn 283, 21°22.25'S, 166°31.07'E, 26.04.1987, 2370–2375 m: *M. cornuata*, *M. centrina*, *M. nitida*
 Stn 291, 20°34.47'S, 166°54.33'E, 27.04.1987, 510–520 m: *M. arenula*
 Stn 317, 20°48.12'S, 166°53.16'E, 02.05.1987, 1620–1630 m: *G. bellis*

Cruise CALSUB,

Stn 16, 20°37.8'S, 167°02.7'E, 07.03.1989, 825 m: *M. trifida*

Cruise VOLSMAR

Stn 5, 22°25.9'S, 171°46.5'E, 01.06.1989, 620–700 m: *M. ternaria*

Cruise BERYX 2

Stn 4, 24°54.50'S, 168°22.70'E, 24.10.1991, 600–700 m: *M. treis*

Cruise BATHUS 1

Stn 651, 21°41.80' S, 166°40.10' E, 12.03.1993, 1080–1180 m: *M. analoga*
 Stn 657, 21°14' S, 165°54' E, 12.03.1993, 490–530 m: *M. carinimarginata*
 Stn 658, 21°13' S, 165°55' E, 12.03.1993, 515–580 m: *M. carinimarginata*
 Stn 660, 21°10' S, 165°53' E, 13.03.1993, 796–800 m: *M. andamanica*
 Stn 661, 21°05' S, 165°50' E, 13.03.1993, 960–1100 m: *G. quiquei*, *M. andamanica*
 Stn 670, 20°54' S, 165°53' E, 14.03.1993, 394–397 m: *M. latimana*
 Stn 671, 20°51' S, 165°28' E, 14.03.1993, 450–470 m: *M. carinimarginata*
 Stn 687, 20°34' S, 165°07' E, 16.03.1993, 408–440 m: *M. latimana*

Stn 698, 20°34' S, 164°57' E, 17.03.1993, 491–533 m: *M. carinimarginata*, *M. cylindrophthalma*
Stn 708, 21°43' S, 166°38' E, 19.03.1993, 550–580 m: *M. carinimarginata*
Stn 710, 21°43' S, 166°36' E, 19.03.1993, 320–386 m: *M. latimana*
Stn 711, 21°43' S, 166°35' E, 19.03.1993, 315–327 m: *M. latimana*

Cruise BATHUS 2

Stn 741, 22°35' S, 166°26' E, 13.05.1993, 700–950 m: *M. andamanica*, *M. debilis*
Stn 743, 22°35.56' S, 166°26.23' E, 13.05.1993, 713–950 m: *M. analoga*, *M. andamanica*
Stn 751, 22°24' S, 166°12' E, 15.05.1993, 1300–1500 m: *M. sinclairi*
Stn 762, 22°18' S, 166°09' E, 16.05.1993, 620–700 m: *M. cylindrophthalma*, *M. debilis*
Stn 764, 22°09' S, 166°02' E, 17.05.1993, 560–570 m: *M. debilis*
Stn 767, 22°10' S, 165°59' E, 17.05.1993, 713–950 m: *M. andamanica*, *M. sinclairi*
Stn 771, 22°09' S, 166°01' E, 18.05.1993, 610–800 m: *M. cylindrophthalma*

Cruise HALIPRO 1

Stn 851, 21°43' S, 166°37' E, 19.03.1994, 314–364 m: *M. latimana*
Stn 854, 21°40' S, 166°38' E, 19.03.1994, 650–780 m: *M. andamanica*, *M. cylindrophthalma*
Stn 856, 21°44' S, 166°37' E, 20.03.1994, 311–365 m: *M. latimana*
Stn 858, 21°42' S, 166°41' E, 20.03.1994, 1000–1120 m: *M. debilis*
Stn 866, 21°26' S, 166°17' E, 22.03.1994, 550–600 m: *M. carinimarginata*
Stn 867, 21°26' S, 166°18' E, 22.03.1994, 720–950 m: *M. andamanica*, *M. carinimarginata*
Stn 868, 21°14' S, 165°55' E, 23.03.1994, 430–550 m: *M. latimana*
Stn 869, 21°14' S, 165°55' E, 23.03.1994, 450–490 m: *M. latimana*

Cruise BATHUS 4

Stn 893, 21°01' S, 164°27' E, 02.08.1994, 600–620 m: *M. debilis*
Stn 897, 20°15' S, 163°51' E, 03.08.1994, 305–350 m: *M. latimana*
Stn 913, 18°56' S, 163°04' E, 05.08.1994, 777–820 m: *M. andamanica*
Stn 947, 20°33' S, 164°57' E, 10.08.1994, 470–490 m: *M. cylindrophthalma*
Stn 948, 20°33' S, 164°57' E, 10.08.1994, 533–610 m: *M. cylindrophthalma*
Stn 949, 20°32' S, 164°56' E, 10.08.1994, 616–690 m: *M. cylindrophthalma*
Stn 950, 20°31' S, 164°56' E, 10.08.1994, 705–750 m: *M. andamanica*
Stn 952, 20°34' S, 164°58' E, 10.08.1994, 270–316 m: *M. latimana*

Cruise HALIPRO 2

Stn 77, 24°09'S, 167°47'E, 21.11.1996, 1349–1350 m: *G. quiqueti*
Stn 96, 23°59'S, 161°55'E, 25.11.1996, 1034–1056 m: *M. kensleyi*

Cruise NORFOLK 1

Stn 1688, 24°56'S, 168°22'E, 23.05.2001, 533–545 m: *M. treis*
Stn 1699, 24°40'S, 168°40'E, 24.05.2001, 581–600 m: *M. treis*

Cruise NORFOLK 2

Stn 2047, 23°43.04'S, 168°01.92'E, 23.10.2003, 759–807 m: *M. ternaria*
Stn 2066, 25°16.90'S, 168°55.11'E, 26.10.2003, 834–870 m: *M. trifida*
Stn 2069, 25°19.78'S, 168°57.37'E, 26.10.2003, 795–852 m: *M. trifida*
Stn 2084, 24°52.00'S, 168°22.00'E, 29.10.2003, 586–730 m: *M. ternaria*
Stn 2111, 23°48.56'S, 168°16.78'E, 31.10.2003, 500–1074 m: *M. ceres*
Stn 2113, 23°45.17'S, 168°17.99'E, 31.10.2003, 888–966 m: *M. trifida*
Stn 2131, 23°13.19'S, 168°11.21'E, 02.11.2003, 1114–1190 m: *G. quiqueti*

Chesterfield Islands

Cruise MUSORSTOM 5

Stn 323, 21°18.52'S, 157°57.62'E, 14.10.1986, 970 m: *M. kensleyi*
Stn 324, 21°15.01'S, 157°51.33'E, 14.10.1986, 970 m: *M. kensleyi*

Loyalty Islands

MUSORSTOM 6

Stn 438, 20°23.00'S, 166°20.10'E, 18.02.1989, 780 m: *M. andamanica*

Vanuatu

Cruise MUSORSTOM 8

Stn 956, 20°33'S, 169°35'E, 20.09.1994, 1175–1210 m: *G. quiquei*
 Stn 990, 18°52'S, 168°51'E, 24.09.1994, 980–990 m: *G. quiquei*, *M. bispinoculata*, *M. sinclairi*,
 Stn 991, 18°51'S, 168°52'E, 24.09.1994, 910–936 m: *M. bispinoculata*, *M. nitida*
 Stn 993, 18°48'S, 168°54'E, 24.09.1994, 780–783 m: *M. zarazagai*
 Stn 994, 18°47'S, 168°56'E, 24.09.1994, 641–649 m: *M. andamanica*
 Stn 996, 18°52'S, 168°56'E, 24.09.1994, 764–786 m: *M. andamanica*, *M. bispinoculata*
 Stn 1007, 18°52'S, 168°56'E, 26.09.1994, 720–830 m: *M. andamanica*
 Stn 1008, 18°53'S, 168°53'E, 27.09.1994, 919–1000 m: *M. bispinoculata*, *M. nitida*
 Stn 1027, 17°53'S, 168°39'E, 28.09.1994, 550–571 m: *M. debilis*
 Stn 1036, 18°01'S, 168°48'E, 29.09.1994, 920–950 m: *G. quiquei*, *M. nitida*
 Stn 1037, 18°03'S, 168°54'E, 29.09.1994, 1058–1086 m: *G. quiquei*, *M. kensleyi*, *M. nitida*
 Stn 1050, 16°39'S, 168°01'E, 30.09.1994, 541–577 m: *M. carinimarginata*
 Stn 1057, 16°35'S, 167°58'E, 01.10.1994, 600–625 m: *M. andamanica*
 Stn 1061, 16°14'S, 167°20'E, 02.10.1994, 458–512 m: *M. laciniosa*
 Stn 1074, 15°48'S, 167°24'E, 04.10.1994, 775–798 m: *M. pilosa*, *M. similior*
 Stn 1075, 15°53'S, 167°27'E, 04.10.1994, 944–956 m: *M. bispinoculata*, *M. nitida*, *M. pilosa*
 Stn 1076, 15°53'S, 167°30'E, 04.10.1994, 1100–1191 m: *G. subspinosa*, *M. bispinoculata*, *M. debilis*, *M. nitida*, *M. sinclairi*
 Stn 1080, 15°57'S, 167°27'E, 05.10.1994, 799–850 m: *M. andamanica*
 Stn 1109, 14°52'S, 167°18'E, 08.10.1994, 1550–1620 m: *M. orcina*
 Stn 1110, 14°49'S, 167°15'E, 08.10.1994, 1360 m: *M. orcina*
 Stn 1124, 15°01'S, 166°56'E, 09.10.1994, 532–599 m: *M. carinimarginata*
 Stn 1126, 15°58', 166°39'E, 10.10.1994, 1210–1260 m: *G. quiquei*, *M. bispinoculata*, *M. pilosa*

Cruise BOA 0

Stn 2307, 16°38.21'S, 168°00.71'E, 15.11.2004, 586–646 m: *M. cylindrophthalma*
 Stn 2311, 14°45.79'S, 167°06.6'E, 16.11.2004, 932–986 m: *M. nitida*, *M. pilosa*
 Stn 2313, 15°05.5'S, 166°55.23'E, 17.11.2004, 421–482 m: *M. concava*, *M. similior*
 Stn 2314, 15°04.49'S, 166°54.45'E, 17.11.2004, 430–455 m: *M. similior*
 Stn 2315, 15°03.58'S, 166°54.17'E, 17.11.2004, 465–583 m: *M. cylindrophthalma*
 Stn 2319, 15°04.65'S, 166°53.53'E, 17.11.2004, 482–540 m: *M. carinimarginata*
 Stn 2326, 15°39.83'S, 167°01.9'E, 18.11.2004, 260–313 m: *M. latimana*

Cruise BOA 1

Stn 2432, 15°01.42'S, 166°53.76'E, 08.09.2005, 630–705 m: *M. concava*, *M. pilosa*
 Stn 2446, 15°07.89'S, 166°53.27'E, 10.09.2005, 300–360 m: *M. similior*
 Stn 2470, 16°27.62'S, 167°53.66'E, 14.09.2005, 568–591 m: *M. concava*

Fiji

Cruise CHALLENGER,

Stn 173, 19°09'35''S, 179°41'50''E, 24.07.1874, 583 m: *M. cylindrophthalma*

Cruise MUSORSTOM 10

Stn 1309, 17°32.05'S, 178°53.37'E, 05.08.1998, 843–887 m: *M. bispinoculata*
 Stn 1316, 17°14.84'S, 178°21.99'E, 06.08.1998, 478–491 m: *M. cylindrophthalma*
 Stn 1317, 17°11.99'S, 178°14.14'E, 06.08.1998, 471–475 m: *M. similior*
 Stn 1327, 17°13.26'S, 177°51.62'E, 07.08.1998, 370–389 m: *M. similior*
 Stn 1332, 16°56.17'S, 178°07.86'E, 08.08.1998, 640–687 m: *M. andamanica*, *M. bispinoculata*
 Stn 1335, 16°52.76'S, 178°03.05'E, 09.08.1998, 729–753 m: *M. andamanica*, *M. debilis*
 Stn 1337, 17°03.44'S, 177°47.21'E, 09.08.1998, 635–670 m: *M. concava*
 Stn 1342, 16°45.98'S, 177°39.71'E, 10.08.1998, 650–701 m: *M. andamanica*, *M. debilis*
 Stn 1344, 16°45.26'S, 177°40.53'E, 10.08.1998, 588–610 m: *M. andamanica*
 Stn 1348, 17°30.29'S, 178°39.63'S, 11.08.1998, 353–390 m: *M. debilis*
 Stn 1361, 18°00.00'S, 178°53.71'E, 13.08.1998, 1068–1091 m: *G. quiquei*, *G. trachynotus*
 Stn 1368, 18°10.92'S, 178°23.47'E, 15.08.1998, 380–469 m: *M. cylindrophthalma*

Cruise BORDAU 1

Stn 1395, 16°45.13'S, 179°59.20'E, 23.02.1999, 423–500 m: *M. similior*
 Stn 1396, 16°38.98'S, 179°57.16'W, 24.02.1999, 591–596 m: *M. carinimarginata*, *M. cylindrophthalma*
 Stn 1400, 16°28.22'S, 179°50.66'W, 25.02.1999, 1004–1012 m: *M. hirsutissima*
 Stn 1401, 16°34.92'S, 179°40.66'W, 25.02.1999, 600–648 m: *M. analoga*, *M. debilis*
 Stn 1407, 16°39.67'S, 179°38.69'E, 25.02.1999, 499–527 m: *M. cylindrophthalma*

Stn 1447, 16×45.23'S, 179×59.13'E, 04.03.1999, 420–513 m: *M. cylindrophthalma*, *M. similior*
Stn 1448, 16×45.04'S, 179×58.97'E, 04.03.1999, 410–500 m: *M. similior*
Stn 1458, 17×21.52'S, 179×28.00'W, 05.03.1999, 1216–1226 m: *G. quiquei*, *G. trachynotus*
Stn 1462, 18×09.31'S, 178×44.27'W, 06.03.1999, 556–560 m: *M. carinimarginata*
Stn 1467, 18×11.80'S, 178×35.80'W, 06.03.1999, 417–427 m: *M. cylindrophthalma*
Stn 1468, 18×16.45'S, 178×41.30'W, 07.03.1999, 478–500 m: *M. cylindrophthalma*
Stn 1504, 18×13.22'S, 178×34.45'W, 13.03.1999, 427–440 m: *M. cylindrophthalma*
Stn 1505, 18×12.29'S, 178×37.34'W, 13.03.1999, 420–450 m: *M. cylindrophthalma*

Tonga

Cruise BORDAU 2

Stn 1528, 21×14'S, 174×59'W, 03.06.2000, 587–592 m: *M. carinimarginata*
Stn 1556, 20×11'S, 174×45'W, 07.06.2000, 589–591 m: *M. carinimarginata*
Stn 1569, 21×02'S, 175×19'W, 10.06.2000, 433 m: *M. carinimarginata*
Stn 1594, 19×02'S, 174×19'W, 14.06.2000, 971–991 m: *M. pilosa*
Stn 1642, 21×05'S, 175×23'W, 21.06.2000, 532 m: *M. carinimarginata*

Wallis and Futuna

Cruise MUSORSTOM 7

Stn 620, 12×34.4' S, 178×11.0' W, 28.05.92, 1280 m: *G. quiquei*
Stn 621, 12×35.0' S, 178×11.5' W, 28.05.92, 1280–1300 m: *G. bellis*, *G. quiquei*, *M. kensleyi*
Stn 622, 12×34.5' S, 178×10.9' W, 28.05.92, 1280–1300 m: *G. bellis*, *G. quiquei*, *M. kensleyi*
Stn 623, 12×34.2' S, 178×15.1' W, 28.05.92, 1280–1300 m: *G. bellis*, *G. quiquei*

French Polynesia

BENTHAUS

Stn 1911, 27×37.94'S, 144×15.23'W, 10.11.2002, 900–1300 m: *M. austellus*

Chile, off Juan Fernandez

Cruise CHALLENGER

Stn 300, 33°42'S, 78°18'W, 17.12.1875, 2516 m: *G. bellis*

Gulf of California

Guaymas Basin, 27°02.42'N, 111°22.30'W, 09.08.1980, 1980 m: *G. diomedea*

NE Atlantic

Cruise EUMELI 2

Stn CP01, 18°24'N, 21°10'W, 24.01.1991, 3086 m: *G. subrostrata*
Stn CPH02, 18°34.10'N, 20° 58.60'W, 27.01.1991, 3134 m: *G. subrostrata*
Stn CP03, 20°41'N, 18°33'W, 05.02.1991, 2114 m: *G. subrostrata*

Cruise EUMELI 4

Stn CPH15, 18°35.30'N, 21°08.40'W, 01.06.1992, 3124 m: *G. subrostrata*

Cruises DISCOVERY

Stn 8521-1, 20°46.9'N, 18°53.4'W, 25.06.1974, 3053–3058 m: *G. subrostrata*
Stn 8974-6, 32°03.5'N, 11°19.4'W, 04.08.1976, 3029–3035 m: *G. subrostrata*
Stn 9132-5, 20°50.1'N, 18°55.5'W, 24.11.1976, 3089–3109 m: *G. subrostrata*
Stn 9132-7, 20°58.8'N, 18°59.1'W, 24.11.1976, 3083–3094 m: *G. subrostrata*

Stn 9133-7, 20°09.0'N, 18°08.8'W, 26.11.1976, 2130–2191 m: *G. subrostrata*

Caribbean Sea, off Colombia

Cruise PILSBURY

Stn 1224, 17°30.2'N, 77°49.2'W, 06.07. 1970, 878–906 m: *G. spinosa*

SE Atlantic

Cruise WALDA

Stn CY04, 21°59'S, 09°20'E, 09.06.1971, 4163 m: *M. gladiola*

Stn CY21, 0°40'S, 06°48'E, 29.07.1971, 3034 m: *G. subrostrata*

Stn CY22, 0°20'S, 05°48'E, 30.07.1971, 3244 m: *G. subrostrata*

Cruise WALVIS

Stn CP13, 32°18.2'S, 13°15.9'E, 12.01.1979, 3590 m: *M. gladiola*