

GALATHEA REPORT

Volume 20

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of The Danish Deep-Sea Expedition
Round the World 1950-52*



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DEEP-SEA CHIROSTYLID AND GALATHEID CRUSTACEANS (DECAPODA: ANOMURA) FROM THE INDO-PACIFIC, WITH A LIST OF SPECIES

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ABSTRACT

Deep-sea chirostylid and galatheid crustaceans collected during the “Galathea” Expedition 1950–52, Kei Islands Expedition 1922, and by Th. Mortensen, and others now in the collection of the Zoological Museum, Copenhagen constitute the basis of this paper. They comprise 864 specimens, 105 of which are distributed among 38 species in five genera of Chirostylidae (one in *Chirostylus* Ortmann, 1982; five in *Eumunida* Smith, 1883; three in *Gastroptychus* Caullery, 1896; one in *Pseudomunida* Haig, 1979; three in *Uroptychodes* Baba, 2004; and 25 in *Uroptychus* Henderson, 1888).

The remaining 759 specimens belong to Galatheidae, with 94 species in 13 genera, including two new genera (three in *Agononida* Baba & de Saint Laurent, 1996; two in *Bathymunida* Balss, 1914; one in *Enriquea* n. gen.; eight in *Galathea* Fabricius, 1793; one in *Heteronida* Baba & de Saint Laurent, 1996; one in *Leiogalathea* Baba, 1969; 29 in *Munida* Leach, 1820; 38 in *Munidopsis* Whiteaves, 1874; six in *Paramunida* Baba, 1988; two in *Phylladorhynchus* Baba, 1969; one in *Raymunida* Macpherson & Machordom, 2000; one in *Sadayoshia* Baba, 1969; and one in *Torbenia* n. gen.).

Twenty-nine new species are described: one of *Gastroptychus*, nine of *Uroptychus*, three of *Galathea*, five of *Munida*, 10 of *Munidopsis*, and one of *Torbenia*.

Three species (two of *Munida* and one of *Raymunida*) that have depth records exceeding 200 m,

but which in the present collection are available from the continental shelf, are incorporated in this report.

Chirostylus ciliatus van Dam, 1933 and *Gastroptychus chacei* Baba, 1986, are transferred to *Uroptychus*, *Munida leviantennata* Baba, 1988 is transferred to *Enriquea*, as also is *Agononida insolita* Macpherson, 2004 to *Torbenia*. Examination of the type material of *Munida quinquespinosa* Balss, 1913 reveals that it belongs to *Galathea*.

All species are diagnosed and if new, the holotype is described. In order to clarify the identity of some species, type material and/or comparative material from repositories other than the Copenhagen Museum is included in the report (for *Uroptychus latirostris*, *U. tridentatus*, and *Munidopsis subsquamosa*). Color notes are given when available, and geographic and depth distributions are summarized for the species included in the collection.

A list of 580 deep-sea species (161 species in six genera of Chirostylidae and 419 species in 26 genera of Galatheidae) known or supposed to occur at depths exceeding 200 m in the Indo-Pacific, including the Southern Ocean, is provided, along with a key to species of each genus where necessary. For each species, synonymy including reference(s), locality and depth records, and the repository and registration number of the type material are given where possible. Brief comments on vertical and horizontal distributions of species are given for multi-species genera.

CONTENTS

INTRODUCTION	8	Genus <i>Agononida</i> Baba & de Saint Laurent, 1996	68
Historical overview	9	<i>Agononida analoga</i> (Macpherson, 1993)	69
Terminology and presentation	12	<i>Agononida incerta</i> (Henderson, 1888)	69
ACKNOWLEDGMENTS	14	<i>Agononida squamosa</i> (Henderson, 1885)	70
SYSTEMATIC ACCOUNT	14	Genus <i>Bathymunida</i> Balss, 1914	71
Family CHIROSTYLIDAE Ortmann, 1892	14	<i>Bathymunida polae</i> Balss, 1914	71
Key to genera	15	<i>Bathymunida sibogae</i> Van Dam, 1933	72
Genus <i>Chirostylus</i> Ortmann, 1892	15	Genus <i>Enriquea</i> n. gen.	72
<i>Chirostylus dolichopus</i> Ortmann, 1892	16	<i>Enriquea leviantennata</i> (Baba, 1988)	72
Genus <i>Eumunida</i> Smith, 1883	17	Genus <i>Galathea</i> Fabricius, 1793	74
<i>Eumunida ampliata</i> de Saint Laurent &		<i>Galathea anepipoda</i> Baba, 1990	74
Poupin, 1996	17	<i>Galathea hispida</i> n. sp.	75
<i>Eumunida balssi</i> Gordon, 1930	18	<i>Galathea kuboi</i> Miyake & Baba, 1967	77
<i>Eumunida capillata</i> de Saint Laurent &		<i>Galathea lumaria</i> n. sp.	78
Macpherson, 1990	18	<i>Galathea orientalis</i> Stimpson, 1858	81
<i>Eumunida funambulus</i> Gordon, 1930	18	<i>Galathea pubescens</i> Stimpson, 1858	83
<i>Eumunida pacifica</i> Gordon, 1930	19	<i>Galathea robusta</i> Baba, 1990	84
Genus <i>Gastroptychus</i> Caullery, 1896	19	<i>Galathea tropis</i> n. sp.	85
<i>Gastroptychus brachyterus</i> n. sp.	20	Genus <i>Heteronida</i> Baba & de Saint Laurent, 1996	87
<i>Gastroptychus laevis</i> (Henderson, 1885)	23	<i>Heteronida barunae</i> Baba & de Saint Laurent,	
<i>Gastroptychus sternoornatus</i> (van Dam,		1996	88
1933)	25	Genus <i>Leiogalathea</i> Baba, 1969	88
Genus <i>Pseudomunida</i> Haig, 1979	25	<i>Leiogalathea laevirostris</i> (Balss, 1913)	88
<i>Pseudomunida fragilis</i> Haig, 1979	25	Genus <i>Munida</i> Leach, 1820	88
Genus <i>Uroptychodes</i> Baba, 2004	26	<i>Munida agave</i> Macpherson & Baba, 1993	89
<i>Uroptychodes albatrossae</i> Baba, 1988	26	<i>Munida andamanica</i> Alcock, 1894	90
<i>Uroptychodes mortenseni</i> (van Dam, 1939)	26	<i>Munida benguela</i> de Saint Laurent &	
<i>Uroptychodes spinimarginatus</i> (Henderson,		Macpherson, 1988	95
1885)	27	<i>Munida caesura</i> Macpherson & Baba, 1993 ..	96
Genus <i>Uroptychus</i> Henderson, 1888	27	<i>Munida carinata</i> n. sp.	96
<i>Uroptychus alcocki</i> Ahyong & Poore, 2004 ..	28	<i>Munida compressa</i> Baba, 1988	99
<i>Uroptychus alius</i> n. sp.	30	<i>Munida curvirostris</i> Henderson, 1885	99
<i>Uroptychus altus</i> n. sp.	32	<i>Munida disgrega</i> n. sp.	103
<i>Uroptychus ciliatus</i> (van Dam, 1933),		<i>Munida gracilis</i> Henderson, 1885	106
n. comb.	33	<i>Munida haswelli</i> Henderson, 1885	108
<i>Uroptychus crassipes</i> van Dam, 1933	35	<i>Munida inornata</i> Henderson, 1885	108
<i>Uroptychus gracilimanus</i> (Henderson, 1885) .	36	<i>Munida japonica</i> Stimpson, 1858	109
<i>Uroptychus inclinis</i> n. sp.	36	<i>Munida keiensis</i> n. sp.	110
<i>Uroptychus joloensis</i> van Dam, 1939	39	<i>Munida kuboi</i> Yanagita, 1943	112
<i>Uroptychus latirostris</i> Yokoya, 1933	39	<i>Munida latior</i> n. sp.	113
<i>Uroptychus longior</i> n. sp.	43	<i>Munida major</i> Baba, 1988	115
<i>Uroptychus mauritius</i> n. sp.	46	<i>Munida microps</i> Alcock, 1894	116
<i>Uroptychus nanophyes</i> McArdle, 1901	48	<i>Munida militaris</i> Henderson, 1885	117
<i>Uroptychus naso</i> van Dam, 1933	49	<i>Munida nesaea</i> Macpherson & Baba, 1993	117
<i>Uroptychus nigricapillis</i> Alcock, 1901	50	<i>Munida notialis</i> n. sp.	117
<i>Uroptychus paenultimus</i> n. sp.	51	<i>Munida pilorhyncha</i> Miyake & Baba, 1966 ..	120
<i>Uroptychus pilosus</i> Baba, 1981	53	<i>Munida prominula</i> Baba, 1988	121
<i>Uroptychus pronus</i> n. sp.	53	<i>Munida punctata</i> Macpherson, 1997	122
<i>Uroptychus remotispinatus</i> Baba & Tirmizi,		<i>Munida quadrispina</i> Benedict, 1902	122
1979	55	<i>Munida rhodonia</i> Macpherson, 1994	123
<i>Uroptychus sagamiae</i> n. sp.	56	<i>Munida rufiantennulata</i> Baba, 1969	124
<i>Uroptychus scambus</i> Benedict, 1902	58	<i>Munida semoni</i> Ortmann, 1892	125
<i>Uroptychus scandens</i> Benedict, 1902	58	<i>Munida sphinx</i> Macpherson & Baba, 1993 ..	126
<i>Uroptychus sibogae</i> van Dam, 1933	59	<i>Munida striola</i> Macpherson & Baba, 1993 ..	127
<i>Uroptychus simiae</i> Kensley, 1977	59	<i>Munida zebra</i> Macpherson, 1994	128
<i>Uroptychus tridentatus</i> (Henderson, 1885)	61	Genus <i>Munidopsis</i> Whiteaves, 1874	128
<i>Uroptychus wolffi</i> n. sp.	62	<i>Munidopsis abyssicola</i> n. sp.	128
<i>Uroptychus zezuensis</i> Kim, 1972	64	<i>Munidopsis antonii</i> (Filhol, 1884)	132
Family GALATHEIDAE Samouelle, 1819	66	<i>Munidopsis arietina</i> Alcock & Anderson,	
Key to genera	67	1894	137

<i>Munidopsis bispinooculata</i> Baba, 1988	137	Key to species	207
<i>Munidopsis carinipes</i> Faxon, 1893	138	Genus <i>Eumunida</i> Smith, 1883	208
<i>Munidopsis centrina</i> Alcock & Anderson, 1894	139	Genus <i>Gastroptychus</i> Caullery, 1896	211
<i>Munidopsis crassa</i> Smith, 1885	140	Key to species from the Indo-Pacific	212
<i>Munidopsis crenatirostris</i> Baba, 1988	144	Genus <i>Pseudomunida</i> Haig, 1979	214
<i>Munidopsis cylindrophthalma</i> (Alcock, 1894)	145	Genus <i>Uroptychodes</i> Baba, 2004	214
<i>Munidopsis cylindropus</i> Benedict, 1902	146	Key to species	214
<i>Munidopsis dasyopus</i> Alcock, 1894	147	Genus <i>Uroptychus</i> Henderson, 1888	216
<i>Munidopsis edwardsii</i> (Wood-Mason, 1891) ..	149	Key to species from the Indo-West Pacific including southern Ocean	217
<i>Munidopsis granosa</i> Alcock, 1901	149	Key to species from the eastern Pacific including southern part of South America ..	223
<i>Munidopsis hamata</i> Faxon, 1893	150	Family Galatheidae Dana, 1852	232
<i>Munidopsis hendersoniana</i> Faxon, 1893	152	Genus <i>Agononida</i> Baba & de Saint Laurent, 1996 ..	232
<i>Munidopsis laciniosa</i> n. sp.	153	Key to species in the Indo-Pacific	233
<i>Munidopsis latirostris</i> Faxon, 1895	155	Genus <i>Alainius</i> Baba, 1991	237
<i>Munidopsis levis</i> Alcock & Anderson, 1894 ..	156	Genus <i>Allomunida</i> Baba, 1988	237
<i>Munidopsis nitida</i> (A. Milne Edwards, 1880) ..	158	Genus <i>Anoplionida</i> Baba & de Saint Laurent, 1996	237
<i>Munidopsis pallida</i> Alcock, 1894	161	Key to species	237
<i>Munidopsis palmatus</i> Khodkina, 1973	164	Genus <i>Bathymunida</i> Balss, 1914	238
<i>Munidopsis panamae</i> n. sp.	165	Key to species	238
<i>Munidopsis petila</i> n. sp.	167	Genus <i>Cervimunida</i> Benedict, 1902	240
<i>Munidopsis plumatisetigera</i> Baba, 1988	170	Genus <i>Coralliogalatea</i> Baba & Javed, 1974	240
<i>Munidopsis producta</i> n. sp.	171	Genus <i>Crosnierita</i> Macpherson, 1998	240
<i>Munidopsis profunda</i> n. sp.	173	Key to species	240
<i>Munidopsis pycnopoda</i> n. sp.	176	Genus <i>Enriquea</i> n. gen.	241
<i>Munidopsis recta</i> n. sp.	178	Genus <i>Fennerogalatea</i> Baba, 1988	241
<i>Munidopsis rostrata</i> (A. Milne Edwards, 1880)	180	Key to species	241
<i>Munidopsis rotundior</i> n. sp.	181	Genus <i>Galatea</i> Fabricius, 1793	241
<i>Munidopsis sericea</i> Faxon, 1893	184	Key to deep-sea species from the Indo-West Pacific	242
<i>Munidopsis serricornis</i> (Lovén, 1852)	185	Genus <i>Heteronida</i> Baba & de Saint Laurent, 1996	246
<i>Munidopsis subsquamosa</i> Henderson, 1885 ...	186	Key to species	246
<i>Munidopsis taurulus</i> Ortmann, 1892	190	Genus <i>Janetogalatea</i> Baba & Wicksten, 1997 ...	246
<i>Munidopsis teretis</i> n. sp.	190	Genus <i>Leiogalatea</i> Baba, 1969	246
<i>Munidopsis trifida</i> Henderson, 1885	193	Genus <i>Munida</i> Leach, 1820	246
<i>Munidopsis verrilli</i> Benedict, 1902	194	Key to species from the Indo-West Pacific, including the central Pacific and Southern Ocean	247
<i>Munidopsis vicina</i> Faxon, 1893	194	Key to species from the eastern Pacific	257
<i>Munidopsis villosa</i> Faxon, 1893	196	Genus <i>Munidopsis</i> Whiteaves, 1784	277
Genus <i>Paramunida</i> Baba, 1988	197	Key to species from the Indo-Pacific	278
<i>Paramunida belone</i> Macpherson, 1993	197	Genus <i>Neonida</i> Baba & de Saint Laurent, 1996 ...	299
<i>Paramunida evexa</i> Macpherson, 1993	198	Genus <i>Onconida</i> Baba & de Saint Laurent, 1996 ..	299
<i>Paramunida polita</i> Macpherson, 1993	198	Key to species	299
<i>Paramunida proxima</i> (Henderson, 1885)	199	Genus <i>Paramunida</i> Baba, 1988	300
<i>Paramunida scabra</i> (Henderson, 1885)	199	Key to species	300
<i>Paramunida setigera</i> Baba, 1988	200	Genus <i>Phylladorhynchus</i> Baba, 1969	304
Genus <i>Phylladorhynchus</i> Baba, 1969	200	Key to species	304
<i>Phylladorhynchus ikedai</i> (Miyake & Baba, 1965)	200	Genus <i>Plesionida</i> Baba & de Saint Laurent, 1996	305
<i>Phylladorhynchus pusillus</i> (Henderson, 1885)	201	Key to species	305
Genus <i>Raymunida</i> Macpherson & Machordom, 2000	201	Genus <i>Pleuroncodes</i> Stimpson, 1860	306
<i>Raymunida bellior</i> (Miyake & Baba, 1967) ...	202	Genus <i>Raymunida</i> Macpherson & Machordom, 2000	306
<i>Raymunida elegantissima</i> (de Man, 1902)	202	Genus <i>Sadayoshia</i> Baba, 1969	307
Genus <i>Sadayoshia</i> Baba, 1969	203	Genus <i>Shinkaia</i> Baba & Williams, 1998	307
<i>Sadayoshia edwardsii</i> Miers, 1884	203	Genus <i>Torbenia</i> n. gen.	308
Genus <i>Torbenia</i> n. gen.	204	Key to species	308
<i>Torbenia orbis</i> n. sp.	204	REFERENCES	308
A LIST OF INDO-PACIFIC DEEP-SEA SPECIES OCCURRING IN DEPTHS EXCEEDING 200 M	207		
Family Chirostylidae Ortmann, 1892	207		
Genus <i>Chirostylus</i> Ortmann, 1892	207		

INTRODUCTION

The crustacean families Chirostylidae and Galatheidae are grouped together with Aeglidae Dana, 1852 and Porcellanidae Haworth, 1825 in the superfamily Galatheoidea (Balss, 1957; Martin & Davis, 2001). These two families are most diverse among decapod crustaceans, the first often associated with soft corals such as antipatharians, alcyonaceans and gorgonaceans, and the second represented by lobster krill, craylets and squat lobsters, occurring in the surface of the sea to depths of more than 5,000 m. Through the courtesy of Torben Wolff I have been given the privilege of conducting a study of the chirostylids and galatheids collected by the “Galathea” Expedition 1950–52, the names of the crustacean group and the expedition coinciding with each other.

The aim of this paper was primarily to provide systematic accounts of deep-sea chirostylid and galatheid crustaceans occurring below 200 m now in the collection of the Zoological Museum, Copenhagen. In order to have this paper match the purpose of the Galathea Report, I intended to give a list of all the known deep-sea species. However, due to lack of sufficient material and knowledge of Atlantic species, this paper is limited to Indo-Pacific species. In this introductory note, brief historical overviews of the studies on both the Atlantic and the Indo-Pacific deep-sea species are given.

The present collection has been assembled largely by the “Galathea” Deep-Sea Expedition 1950–52, the Kei Islands Expedition 1922 and Th. Mortensen’s collecting trips during 1899–1930. Station data may be consulted in Bruun (1959) and Wolff (1964) for the “Galathea” Expedition, and Mortensen (1923) for the Kei Islands Expedition. A mimeographed list of stations worked by Mortensen has also been very useful (Wolff, T., Dr. Th. Mortensen’s Expeditions 1899–1930, List of Stations, 30 pp., 4 maps, unpublished).

During the “Galathea” Expedition, a total of 779 stations from the surface to a depth of about 10,000 m were worked (Wolff, 1964 for station data for 0–400 m; Bruun, 1959 for 400–10,000 m). The deep-sea material (>200 m) studied came from 31 stations from East Africa between Natal and Kenya, SW of Sri Lanka, Bay of Bengal, Andaman Sea, Indonesia and Philippines, Tasman Sea, Kermadec Deep, and eastern Pacific off Costa Rica and Panama, comprising 509 specimens in 76 lots, distributed among 48 species (six chirostylids and 42 galatheids). Another seven lots containing five species (one chirostylid and four

galatheids) were taken from West Africa, two of which are incorporated in the present paper because of worldwide occurrence of the species identified. Some of the deep-sea galatheids in the “Galathea” collection have been incorporated in previous reports; *Munida speciosa* from Station 92 off River Congo (Miyake & Baba, 1970) and *Munidopsis albatrossae* from Station 716 off the Pacific coast of Central America (Pequegnat & Pequegnat, 1973). Two hundred and two specimens, in 83 lots, collected by the Kei Islands Expedition, included 49 species (15 chirostylids and 34 galatheids). Four species of chirostylids obtained by the expedition have been reported by van Dam (1939). The collections made by Th. Mortensen, during his trips to Pacific islands, South Africa, and the Kei Islands, include 227 specimens in 92 lots, and contained 50 species (11 chirostylids and 39 galatheids). The other material accumulated in the collection of the Zoological Museum was largely donated by a Danish telegraph company and comprises 45 specimens in 13 lots, distributed among 10 species (eight chirostylids and two galatheids). Also available are two lots containing two species of galatheids collected from New Caledonia by the Danish “Dana” Expedition 1928–30.

Shallow water benthic stations were also worked by the “Galathea” Expedition (Wolff, 1964). The collections, in depths less than 100 m in the Philippines and Indonesia, Singapore, Gulf of Siam, New Guinea, Coral Sea, Tonga, Samoa, Mozambique and Great Australian Bight includes 44 specimens in 20 lots that are identified in 11 species (exclusive of one unidentifiable specimen without carapace). These will also be published elsewhere in a report now in preparation on other collections of the Museum at Copenhagen.

Available in the present collection are a number of species that were taken only on the continental shelf but have depth records exceeding 200 m. These species are incorporated in this report as deep-sea species.

The present material has been gathered widely from various localities, but an analysis of the geographical distribution is still not practical, because the number of species is still increasing, especially thanks to extensive works by Enrique Macpherson (see below). In addition, more than 50 new species of *Uroptychus* Henderson, 1888 (Chirostylidae) are being described from New Caledonia and vicinity (Baba, unpublished). A brief comment on the zoogeography of the Indo-Pacific species can be found in Baba (1988).

In order to establish the systematic status of some

problematic species, type and comparative materials in the collections of the National Museum of Natural History, Smithsonian Institution, the Natural History Museum, London, the Muséum national d'Histoire naturelle, Paris, and the Museum für Naturkunde an der Humboldt-Universität zu Berlin, are included in this report.

Historical overview

Atlantic deep-sea species

From the western Atlantic, 17 species of chirostylids are now known and 72 species of galatheids (exclusive of five shallow-water species occurring in depths <200 m). Most of these were largely made known by the “Blake” (A. Milne Edwards, 1880; Milne Edwards & Bouvier, 1897), the “Albatross” (Smith, 1883, 1885; Benedict, 1902), and the “Challenger” (Henderson, 1885, 1888) cruises. A comprehensive study by Chace (1942) on the collection made by the “Atlantis” Expeditions to the West Indies listed all the species known at that time from the western Atlantic, and provided keys to species of known genera. This was complemented by Williams (1965, 1984) with his monographs of decapod crustaceans from the eastern United States. Türkay (1968) recorded a species of *Munida* from Venezuela. Pequegnat & Pequegnat (1970, 1971) reported chirostylids and galatheids from the Gulf of Mexico and the Caribbean Sea, describing eight species of *Munidopsis*. Mayo (1972) described three new species of galatheids (one of *Phylladio-rhynchus*, one of *Munida*, one of *Munidopsis*) from the Caribbean Sea, one of which was from shallow waters (*P. caribbensis* was later transferred to *Anomoeomunida* (see Baba, 1993)). Laird *et al.* (1976) reported two species (one of *Munida*, and one of *Munidopsis*) taken in the Chesapeake Bight. Wenner (1982) reported the distribution and biology of one species of Chirostylidae and 12 species of Galatheidae in the Middle Atlantic Bight. Gore (1983) made a systematic analysis of four species of *Munidopsis* taken in bathyal and abyssal depths in the Venezuela Basin. Takeda (1983) provided color photographs, along with descriptive remarks, of five species of *Munida* and five species of *Munidopsis* taken by trawling off Suriname and French Guiana. Baba & Camp (1988) noted two species of Galatheidae new to Florida, including a new species of *Munidopsis*. De Saint Laurent & Macpherson (1988) described a new species of *Munida* from South Africa, and also two new species of *Eumunida* from South Africa (de Saint Laurent &

Macpherson, 1990b). Rice & Miller (1991) reported four species (two chirostylids and two *Munidopsis*, including a new species of *Gastroptychus*) from deep-waters off Bahamas, all associated with echinoderms. De Melo-Filho & de Melo (1992a) studied the “Blake” material from Brazil and described a new species of *Munida*, also they examined the “Challenger” material from Brazil (de Melo-Filho & de Melo (1992b) and in 1994 they described three new species of *Munida* from Brazil. Pequegnat & Williams (1995) described two new species of *Munidopsis*, one from the northwestern Gulf of Mexico and the other from both the northwestern Gulf of Mexico and off Georgia. De Melo-Filho (1996) described a new species of *Munida* from Brazil. Tavares & Campinho (1998a) recorded two species of *Munidopsis* new to Brazil, and in another paper they re-described a species of *Munidopsis* from the Caribbean Sea (Tavares & Campinho, 1998b). De Melo (1999) provided keys to Brazilian species of *Uroptychus*, *Munida* and *Munidopsis*, and diagnoses, geographic distributions and habitats, along with illustrations for each species. De Melo-Filho & de Melo (2001) studied 16 species of *Munida* occurring on the Brazilian coast, discussing their distribution, and providing a key to the species.

The number of eastern Atlantic deep-sea species now known is estimated to be nine of Chirostylidae and 47 of Galatheidae. Many species were described based upon the collections made by the “Talisman” and “Travailleur” Expeditions (Milne Edwards, 1881, 1882; Milne Edwards & Bouvier, 1900). Prior to these only one species, *Galathea* [= now *Munidopsis*] *serricornis* had been described by Lovén (1852) from Swedish coast. Barrois (1888) described *Galathea machadoi* from an unknown depth off the Azores, which later was found in deeper waters (A. Milne Edwards & Bouvier, 1899; de Saint Laurent, 1971). Milne Edwards & Bouvier (1899) reported 10 species (one chirostylid and nine galatheids) occurring in transitional-bathyal depths in the northeastern Atlantic and the Mediterranean. Hansen (1908) reported two chirostylids and nine galatheids from the North Atlantic Ocean including the Davis Strait based on the collection largely made by the “Ingolf” Expedition and partly by the “Thor” Expedition. Selbie (1914) reported two species of *Uroptychus*, two species of *Munida* and two species of *Munidopsis* collected from the coast of Ireland mostly by the “Helga.” Zariquiey Alvarez (1952) revised five species (including three subspecies) of *Munida* from the eastern Atlantic and the Mediterranean, and in his 1968 monograph of the

Iberian Decapoda he reported three species of Chirostylidae and 17 species (seven of which are shallow-water forms) of Galatheidae. Sivertsen & Holthuis (1956) reported four species of *Munidopsis* (including a new species) in their report on decapod Crustacea collected by the “Michael Sars” North Atlantic Deep-Sea Expedition 1910. Miyake & Baba (1970) reported galatheids including seven deep-sea species collected by the Danish “Atlantide” Expedition, providing a list of species of the West African Galatheidae. Türkay (1975, 1976) provided records of deep-sea species including two new species (one *Uroptychus* and one *Munidopsis*) collected by the “Meteor” from NW Africa. De Saint Laurent (1985) gave distribution records for deep-sea species occurring in the Gulf of Gascogne. Rice & de Saint Laurent (1986) revised four northeastern Atlantic species of *Munida* that had been confused in nomenclature. Abello & Valladares (1988) reported one *Munidopsis* and one *Munida* in bathyal depths in the northwest Mediterranean. Khodkina & Duris (1989) described a new species of *Munidopsis* from the northeast Atlantic. De Saint Laurent & Macpherson (1990b) described a new species of *Eumunida* from the west coast of Africa and a new species of *Munida* from western South Africa. Galil & Goren (1994) recorded a species of *Munidopsis* in the Mediterranean off Israel. Pohle & Macpherson (1995) provided a range extension of a species of *Gastroptychus* to the northern Atlantic off southern Greenland. Tiefenbacher (2001) reported two rare species of *Munidopsis* from the southern West Europe Basin. Recently Frogliia *et al.* (2002) recorded a species of *Munidopsis* new to the Mediterranean, which had been known from off Cape Bojador and off Azores.

Indo-Pacific deep-sea species

As in the Atlantic Ocean, the knowledge of deep-sea species in the Indo-Pacific is largely based on the great expeditions: “Challenger” for worldwide (Henderson, 1885, 1888), “Investigator” for the Indian Ocean, particularly around the Andaman Islands (Alcock, 1894, 1901; Wood-Mason in Wood-Mason & Alcock, 1891; Alcock & Anderson, 1894, 1895, 1896, 1899a, 1899b; Anderson, 1896; McArdle, 1901; Alcock & McArdle, 1901, 1902; MacGilchrist, 1905; Alcock & MacGilchrist, 1905), “Albatross” for the eastern and western Pacific (Benedict, 1902; Baba, 1977b, 1988; Baba & Tirmizi, 1979) and for the eastern Pacific around the Gulf of Panama (Faxon, 1893, 1895), “Valdivia” for the eastern and western Indian Ocean

(Balss, 1913a; Doflein & Balss, 1913), and “John Murray” for the Indian Ocean (Tirmizi, 1964, 1966). Deep-sea species were listed by Doflein & Balss (1913), and the Indo-West Pacific species were summarized in Baba (1988).

With recent surveys conducted under French MUSORSTOM projects around Indonesia, New Caledonia and vicinity, Vanuatu, the SW Pacific, the Marquesas Islands, Fiji Islands and Tonga, an enormous number of new taxa have been described (de Saint Laurent & Macpherson, 1990a; Baba, 1991a, 1991b; Macpherson, 1991, 1993a, 1993b, 1994, 1996a, 1996b, 1997, 1998, 1999a, 2000, 2004; Macpherson & Baba, 1993; de Saint Laurent & Poupin, 1996; Baba & de Saint Laurent, 1996; Macpherson & Machordom, 2001; Macpherson, 2004). Nine new genera of the Galatheidae were established (*Agononida* Baba & de Saint Laurent, 1996; *Alainius* Baba, 1991; *Anoplionida* Baba & de Saint Laurent, 1996; *Crosnierita* Macpherson, 1998; *Heteronida* Baba & de Saint Laurent, 1996; *Neonida* Baba & de Saint Laurent, 1996; *Onconida* Baba & de Saint Laurent, 1996; *Plesionida* Baba & de Saint Laurent, 1996; *Raymunida* Macpherson & Machordom, 2000). Thanks to the works by Macpherson and his collaborators in particular (see above), considerable numbers of new species were described: nine in Chirostylidae (one in Chirostylus, six in *Eumunida*, two in *Gastroptychus*) and 113 in Galatheidae (12 in *Agononida*, one in *Alainius*, one in *Anoplionida*, seven in *Bathymunida*, four in *Crosnierita*, one in *Heteronida*, 91 in *Munida*, one in *Neonida*, five in *Onconida*, 15 in *Paramunida*, one in *Plesionida*, and four in *Raymunida*).

In addition to the above-mentioned works, the galatheidean fauna (exclusive of Porcellanidae) of the western Pacific including the Hawaiian Islands and Tuamotu Archipelago has been enhanced by the following: Khodkina (1981), Haig (1973, 1974, 1979), Baba (1977a, 1977b, 1977c, 1978, 1981a, 1981b, 1982a, 1994, 1995, 2000, 2001), Zarenkov & Khodkina (1981), Williams & Van Dover (1983), Baba in Baba *et al.* (1986), Baba & Yu (1987), Williams (1988b), Williams and Baba (1990), Baba & Macpherson, 1991; Macpherson & de Saint Laurent (1991), Baba & Türkay (1992), Baba & de Saint Laurent (1992), Wu *et al.* (1997), Baba & Williams (1998), Wu & Chan (2000), Chan *et al.* (2000), Osawa & Okuno (2002), Baba & Poore (2002), and Lin *et al.* (2004). Very recently Ah Yong & Poore (2004a, 2004b) described 34 new species from southern and southeastern Australia: one of *Gastroptychus*, 20 of *Uroptychus*, one

of *Agononida*, seven of *Munida*, four of *Munidopsis*, and one of *Paramunida*. In total, 77 species (39 of Chirostylidae and 38 of Galatheidae) have been described as new species, including a galatheid *Shinkaia crosnieri* Baba & Williams, 1998 from active thermal vent systems in the Bismarck Archipelago and Okinawa Trough that constitutes the subfamily Shinkaiinae Baba & Williams, 1998.

Deep-sea species of the Indian Ocean including the Red Sea and South Africa are well known through the collections of the “Investigator” and “Valdivia” (see above). Owing to subsequent contributions, the total number of deep-sea species now known in this region is 124: 2 of *Chirostylus*, three of *Gastroptychus*, six of *Eumunida*, 39 of *Uroptychus*, three of *Agononida*, one of *Bathymunida*, four of *Galathea*, 27 of *Munida*, and 39 of *Munidopsis* (Lloyd, 1907; Laurie, 1926; Gordon, 1930; Barnard, 1950; Tirmizi, 1964, 1966, 1980; Lewinsohn, 1969; Haig, 1974; Tirmizi & Javed, 1976; Kensley, 1968, 1977, 1981a; Baba & Tirmizi, 1979; Baba, 1986a, 1986b, 1990; Türkay, 1986; de Saint Laurent & Macpherson, 1988; Macpherson, 1991, 1999; Tirmizi & Javed, 1993; Galil, 1999; Macpherson & de Saint Laurent, 2002). Stebbing (1910) described *Hapaloptyx defacilis* n. gen., n. sp. in the Uroptychidae [= Chirostylidae] from South Africa, but it was not placed in the correct systematic position (Family incertae sedis; Baba, 1988). Kensley (1981b) discussed the zoogeography of southern African decapod crustaceans including six species of chirostylids and 11 species of galatheids (including three shallow species of *Galathea*).

On the other hand, the eastern Pacific galatheidean fauna has received little attention since the publications of Faxon (1893, 1895) and Benedict (1902) who described four species of Chirostylidae and 37 species of Galatheidae. South eastern Pacific species were listed by Haig (1955), and the occurrence of some deep-sea chirostylids and galatheids off California was noted by Haig (1956, 1968) and Haig & Wicksten (1975). Subsequently, the following were reported: a new species of *Munida* and a new species and a new subspecies of *Munidopsis* from Chile (Bahamonde & López, 1962; Bahamonde, 1964); new record of one *Munida* and one *Munidopsis* species from Peru (Garth & Haig, 1971); occurrence of two *Munida* and three *Munidopsis* species off Oregon (McCauley, 1972); a new species of *Munidopsis* off California (Pequegnat & Pequegnat, 1973); *Munidopsis* from north and south eastern Pacific, including four new species (Khodkina, 1973, 1975, 1991); a new species of *Gastroptychus*

off Ecuador and northern Peru (Baba, 1977d); a list of species taken from the eastern Pacific and kept in the collection of the Scripps Institution of Oceanography (Luke, 1977); *Munidopsis* off north western United States, including three new species (Ambler, 1980); *Galathea* (= now *Janetogalatea* Baba & Wicksten, 1997), *Munida* and *Munidopsis* off California (Wicksten, 1982); one *Munida* and one *Munidopsis* species from British Columbia (Hart, 1982); a new species of *Munidopsis* off southern Baja California (Williams & van Dover, 1983); a new species of *Munidopsis* from hydrothermal vents off northwestern United States (Williams, 1988); distributions of eastern Pacific decapods including chirostylids and galatheids (Wicksten, 1989); a new species of *Gastroptychus* off Baja California (Baba & Haig, 1990); two new *Munidopsis* species from the East Pacific Rise and off Strait of Juan de Fuca (Baba & Williams, 1990); a checklist of anomuran crabs from the eastern Tropical Pacific, including five species of Chirostylidae and 40 species of Galatheidae (Hendrickx, 1999). Recently Hendrickx has extensively studied eastern Pacific Galatheidae, reporting 12 species of *Munida* from the eastern tropical Pacific, including two new species (Hendrickx, 2000); four species of *Munidopsis* from deep-waters in the southeastern Gulf of California (Hendrickx, 2001); six species of *Munida* from the temperate region of the east Pacific, including a new species and a key to species of *Munida* from the eastern Pacific (Hendrickx, 2003).

Including species that have so far been reported from the continental shelf, but may be taken in depths below 200 m, a total of 580 deep-sea species are known from the Indo-Pacific including the Southern Ocean: 161 species in six genera of Chirostylidae and 419 species in 26 genera of Galatheidae. (see below under list of species).

Thermal vent species

Active thermal vent systems, first explored in 1976 around the Galapagos Rift using the DSRV Alvin, and then around 12–13°N on the East Pacific Rise, the Guaymas Basin in the Gulf of California, and the Juan de Fuca Ridge and Explorer Ridge, in the northeast Pacific, were found to yield numerous new taxa, including galatheids (Jones, 1985; van Dover *et al.*, 1986; Williams, 1988). Decapod crustaceans taken by the above expeditions and extensive surveys conducted around Mariana Back Arc Basin, Bismarck Archipelago, Lau and Fiji Basins, Gulf of California, Okinawa Trough, and Taiwan, etc. include three new

species of Chirostylidae (three of *Uroptychus*) and 10 new species of Galatheidae (one of *Munida*, eight of *Munidopsis*, one of *Shinkaia*) (Williams, 1988; Williams & Baba, 1990; Khodkina, 1991; Baba & de Saint Laurent, 1992; Baba, 1995; Baba & Williams, 1998; Chan *et al.*, 2000; Watabe, 2000; Fujikura *et al.*, 2002). Chevaldonné & Olu (1996) reviewed occurrence of anomuran crabs in hydrothermal vent and cold-seep communities in both the Pacific and the Atlantic Oceans.

Terminology and presentation

Terminology: The general terminology employed largely follows Zariquiey (1952), Baba in Baba *et al.* (1986), and Baba & de Saint Laurent (1996). The terminology for sternal plates follows Baba (2004). The main terms used in the keys and descriptions are shown in Fig. 1. Oceanic areas used in the text are cited from Holthuis & Rosa (1965: 20–21).

Presentation: Genera and species are placed in alphabetical order. Measurements of carapace lengths including rostral spines are indicated in parentheses under “Material” and pertinent places in the text.

Keys to all known genera of Chirostylidae and Galatheidae including shallow water forms are given. Provided under the account of each species are diagnosis, description of holotype where newly described, variations where observed, color when information is available (notes taken by T. Wolff on board the “Galathea”), remarks for relationships and/or additional notes on systematics and ecology, and horizontal and vertical ranges.

Included in the list of deep-sea species are synonymy, locality records, location of type material and registration number for each species. A key to species of each genus is given where necessary. Depth and geographic distributions are discussed under multi-species genera.

The abbreviations used in the text include:

G1, G2	Gonopod 1 (first male pleopod), Gonopod 2 (second male pleopod)
Mxp(s)	Maxilliped(s)
P1	Pereopod 1 (cheliped)
P2–4	Pereopods 2–4 (first to third walking legs)

Repository acronyms:

AHF	Allan Hancock Foundation, Los Angeles
AM	Australian Museum, Sydney
BLIH	Biological Laboratory, Imperial

	Household, Tokyo
BMNH	Natural History Museum, London
BMH	Bishop Museum, Honolulu
EMU	Estación Mazatlán, Universidad Nacional (UNAM), Mazatlán
LACM	Los Angeles County Museum of Natural History, Los Angeles
MCSNM	Museo Civico di Storia Naturale, Milano
MCZ	Museum of Comparative Zoology at Harvard University, Massachusetts
MNHN	Muséum National d’Histoire Naturelle, Paris
MNHNC	Museo Nacional de Historia Natural, Chile, Santiago
MZS	Muséum Zoologique, Strasbourg
NFUS	National Fisheries University, Shimono-seki
NHMIC	Natural History Museum and Institute, Chiba
NMV	Museum Victoria, Melbourne
NMW	Naturhistorisches Museum, Vienna
NSMT	National Science Museum, Tokyo
NTOU	National Taiwan Ocean University, Keelung
OIRAS	Oceanology Institute, Russian Academy of Sciences, Moscow
QMW	Queensland Museum, Brisbane
RMNH	Nationaal Natuurhistorisch Museum, Leiden
SAMA	South Australian Museum, Adelaide
SAMC	South African Museum, Cape Town
SCSFRI	South China Sea Fisheries Research Institute, Guangzhou
SMF	Senckenberg Museum, Frankfurt a.M.
SMNH	Swedish Museum of Natural History, Stockholm
SNU	Seoul National University, Seoul
SUM	State University of Moscow, Moscow
TAM	Texas A&M University, Department of Oceanography, Texas
USNM	National Museum of Natural History, Washington, D.C.
ZLKU	Kitakyushu Museum of Natural History, Kitakyushu
ZMA	Zoological Museum, Amsterdam
ZMB	Zoologisches Museum, Zentralinstitut der Humboldt-Universität, Berlin
ZMUC	Zoological Museum, University of Copenhagen, Copenhagen
ZSIC	Zoological Survey of India, Calcutta
ZSM	Zoologische Staatssammlung, Munich

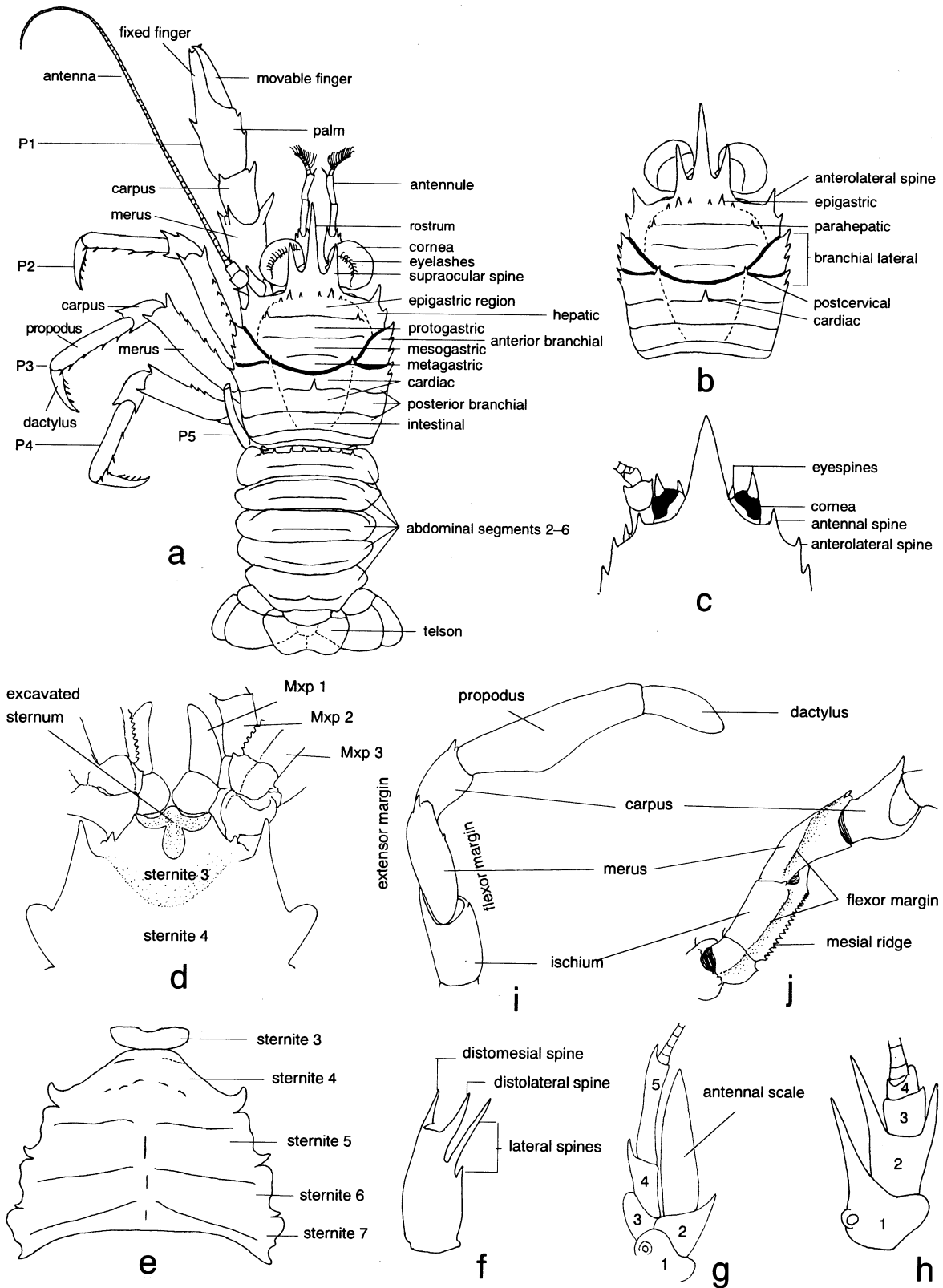


Fig. 1. Selected figures illustrating terms used in descriptive accounts: a, b, e, f, h, based on *Munida*; c, based on *Munidopsis*; d, g, i, j, based on *Uroptychus*: a, entire animal, right appendages omitted, dorsal view; b, carapace, spines; c, anterior part of carapace, including ocular peduncles; d, excavated sternum and anterior part of sternal plastron, including Mxps 1, 2, 3; e, sternal plastron; f, antennular basal article, ventral; g, antennal peduncle consisting of 5 articles; h, antennal peduncle consisting of 4 articles; i, endopod of Mxp 3, lateral; j, endopod of Mxp 3, including basal 2 articles, distal articles omitted, central.

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Munidopsis depressa, as also did Rafael Lemaitre the type material of *Munida* species in the USNM collection. Rodolfo Quintana then of Hokkaido University, Sapporo translated the Spanish article of Bahamonde (1964), and I. V. Khodkina of the University of Moscow, Moscow provided me with station data for her publication of 1975. Arthur Anker of the University of Alberta, Edmonton translated a Russian article of Khodkina (1973). Paul Clark, Charles Oliver Coleman, Nguyen Ngoc-Ho of the Muséum national d’Histoire naturelle, Paris, Dirk Platvoet, Rafael Lemaitre and Karen Reed of the Smithsonian Institution, and Karin Sindemark of the Swedish Museum of Natural History, Stockholm helped me by locating type materials under their care. Tin-Yam Chan of the National Taiwan Ocean University, Keelung, Gustavo A. S. de Melo and Marcos Tavares of the University of Sao Paulo, and Rafael Lemaitre helped me with references inaccessible to me. The manuscript was reviewed by Shane T. Ah Yong of the Australian Museum, Sydney, Enrique Macpherson of the Centro de Estudios Avanzados de Blanes, Gerona, Colin L. McLay of the University of Canterbury, Christchurch, and Gary C. B. Poore of Museum Victoria, Melbourne. The manuscript also benefited from discussions with Enrique Macpherson and Shane Ah Yong. Alain Crosnier allowed me to include part of the collections made by MUSORSTOM projects in the present report. Michel E. Hendrickx of the Instituto de Ciencias del Mar y Limnología, Mazatlan, helped me with checking some characters of eastern Pacific species of *Munida*. To all of them I wish to express my sincere appreciation.

SYSTEMATIC ACCOUNT

Family CHIROSTYLIDAE Ortmann, 1892

Diptycinés A. Milne Edwards & Bouvier, 1894: 296, 312.

Chirostylidae Ortmann, 1892: 241. — Balss, 1957: 1594. Davie, 2002: 29.

Uroptychidae Alcock, 1901: 278.

Diagnosis: Carapace with or without transverse striae, rostrum and supraocular spines present or absent. Sternal plastron consisting of sternites 3–7, no sternal

plate for thoracic somite 8. Tailfan folded beneath preceding abdominal segment, telson transversely divided into 2 lobes. Antennal peduncle consisting of 5 articles, antennal acicle present or absent. Mandible with incisor ridge serrated. Mxp 3 lacking epipod.

Remarks: The thoracic sternites in the Chirostylidae are divided into anterior and posterior parts. The anterior part is usually depressed in ventral view. In the genera *Chirostylus* Ortmann, 1892 and *Uroptychus* Henderson, 1888 and one of two groups of species in

Gastroptychus Caullery 1896 (including *G. brachyterus* n. sp., for example; see below under the “Remarks” of *Gastroptychus*), it is excavated or strongly depressed from the level of the sternal plastron in order to accommodate distal segments of the Mxps 3 when folded. When the Mxps 3 are extended forward, this part and corresponding appendages, the Mxps 1–3, are visible by careful examination in a ventral aspect. Apparently, the Mxps 3 arise from the excavated part directly anterior to the anterior-most part of the sternal plastron. In *Eumunida* Smith, 1883 and another group of species in *Gastroptychus* (including *G. rogeri* Baba, 2000, for example), the anterior-most part of the sternal plastron is gradually sloping down anteriorly (in ventral aspect), smoothly continuous to the excavated sternum without cliff between submedian processes or lobes. In *Eumunida* and *Pseudomunida* the excavated sternum anteriorly terminates between the closely placed Mxps 2. In *Chirostylus* and one of two groups in *Gastroptychus*, it reaches between Mxps 1 that are widely separated.

The family contains six genera: *Chirostylus* Ortmann, 1892; *Eumunida* Smith, 1883; *Gastroptychus* Caullery, 1896; *Pseudomunida* Haig, 1979; *Uroptychodes* Baba, 2004; *Uroptychus* Henderson, 1888.

Key to genera

1. Posterolateral margin of carapace strongly excavated. Anterior margin of sternite 3 straight transverse. Basal articles of ocular peduncles visible in dorsal view by short rostral base *Chirostylus* Ortmann, 1892
 - Posterolateral margin of carapace not distinctly defined or slightly excavated. Anterior margin of sternite 3 concave or sinuous. Basal articles of ocular peduncles barely visible in dorsal view by presence of well-developed rostrum 2
2. Supraocular spines present 3
 - Supraocular spines absent 4
3. Lateral and mesial supraocular spines well developed. Oblique row of hepatic spines *Eumunida* Smith, 1883
 - Lateral supraocular spine very small or barely discernible. Oblique row of hepatic spines absent *Pseudomunida* Haig, 1979
4. Rostrum spiniform. Anterior margin of sternal plastron representing two forms: one with somewhat concave anterior margin with row of spines; another one with sinuous anterior

- margin without median cliff bordering sternal plastron and excavated sternum, bearing pair of accompanying spines on anterior surface *Gastroptychus* Caullery, 1896
- Rostrum flattish, narrowly or broadly triangular. Anterior margin of sternal plastron bearing distinct cliff with or without pair of submedian spines 5
- 5. P2 more slender than P3, dactylus entire on flexor margin *Uroptychodes* Baba, 2004
 - P2 as broad as P3, dactylus with spines on flexor margin *Uroptychus* Henderson, 1888

Genus *Chirostylus* Ortmann, 1892

Chirostylus Ortmann, 1892: 246. — Miyake & Baba, 1968: 379. — Osawa & Nishikiori, 1998: 386.

Diagnosis: Carapace dorsally rather smooth, with a number of spines or covered with numerous small spines. Pair of epigastric spines usually present. Lateral margin strongly excavated on posterior portion. Rostral base short (so as to allow basal articles of ocular peduncles visible in dorsal view), convex, with or without median spine. Anterior margin of sternal plastron nearly transverse, with row of spines; excavated sternum anteriorly terminating between Mxps 1. Abdomen lacking transverse ridges, segment 2 without anterolateral spine on pleura. G1 and G2 present. Ocular peduncles elongate, cornea barely or slightly dilated. Antennal acicle absent. Mxps 2, as well as Mxps 3 widely separated from each other. P1–4 very slender, spinose. P2–4 propodi very long relative to dactyli.

Remarks: The genus now contains five species, all from the Indo-West Pacific: *C. dolichopus* Ortmann, 1892 (35–140 m); *C. micheleae* Tirmizi & Khan, 1979 (75–140 m); *C. novaecaledoniae* Baba, 1991 (236–270 m); *C. ortmanni* Miyake & Baba, 1968 (10–90 m); *C. rostratus* Osawa & Nishikiori, 1998 (180 m). An unnamed species, very possibly new to science, was illustrated in color by Minemizu (2000) from a specimen taken from Iriomote-jima of the Ryukyu Islands. The members of the genus may be found on soft corals: *C. ortmanni* lives with alcyonaceans, gorgonaceans and antipatharians (Kato & Okuno, 2001; Minemizu, 2000) and *C. sp.* is found on gorgonaceans and antipatharians (Minemizu, 2000).

Osawa & Nishikiori (1998) noted that the diagnosis

of the genus given by Miyake & Baba (1968) should be modified to accommodate *C. rostratus*: the species bears a distinct rostral spine which is much smaller and often absent in the other species. However, the rostral structure of *Chirostylus* including *C. rostratus* is not exactly the same as that of *Gastroptychus*, the rostral base being much smaller as diagnosed above. They also suggested that a generic character of *Chirostylus* is the strongly excavated posterolateral portion of the carapace that exposes the coxa of the P4 in dorsal view. This feature, however, is also applicable to some species of *Gastroptychus* in which the excavation is not strong but the coxa of the P4 is visible dorsally.

The genus is close to one of two groups in *Gastroptychus* (see below under "Remarks" of *Gastroptychus*). *Chirostylus* is differentiated from *Gastroptychus* by the following: 1) the rostral base in *Chirostylus* is very short subtriangular or convex with or without a relatively small median spine so as to allow the basal articles of ocular peduncles visible in a dorsal view, whereas the basal articles of ocular peduncles in *Gastroptychus* are usually not visible in a dorsal view, being placed under the subtriangular rostral base with a well developed rostral spine; 2) the posterolateral margin of the carapace is strongly excavated instead of being barely or weakly so as in *Gastroptychus*; 3) the anterior margin of the sternal plastron is nearly straight and transverse with a row of spines, instead of being concave with a row of spines or sinuous with a pair of accompanying spines (see Fig. 3).

The present collection includes *C. dolichopus* only.

***Chirostylus dolichopus* Ortmann, 1892**

Figs. 2, 3a

Synonymy: see p. 208.

Material:

Th. Mortensen's Java-South Africa Expedition 1929-30, "Maurice" St. 38, off Tombeau Bay, Mauritius, 40 fm (73 m), sand, corals, swab, 08 Oct 1929: 1 ov. ♀ (5.7 mm), ZMUC CRU-11107.

Th. Mortensen's Java-South Africa Expedition 1929-30, "Maurice" St. 47, N of Port Louis, Mauritius, ca. 238 m, mud & corals, Sigsbee trawl, 6 Nov 1929: — 3 ♂ (2.6-5.1 mm), 1 ov. ♀ (3.7 mm), ZMUC CRU-11124.

Diagnosis: Carapace with pair of spines behind ocular peduncles, and 1 or 2 spines near anterior extremity of

branchial region. Rostrum not produced, rounded, with or without spine. Anterior margin of sternal plastron with 6 spines on transverse anterior margin. Basal article of antennular peduncle with distolateral process bearing 3-4 spines. Pterygostomian flap with a few to several spines. P2-4 dactyli having flexor margin with 6-8 spines, penultimate one stronger than ultimate.

Eggs: Eight eggs, measuring 1.02-1.40 x 1.08-1.10 mm.

Remarks: The size of the penultimate of the dactylar flexor marginal spines of the P2-4 seems to be a consistent character distinguishing *C. dolichopus* from *C. ortmanni* (see Miyake & Baba, 1968: 386, figs. 1, 2). This was verified by examination of the holotype (♂, 5.6 mm) of *C. dolichopus* now in the collection of the Musée Zoologique, Strasbourg (MZS 347) and specimens to hand of *C. ortmanni* (2 ♂, 6.1, 6.3 mm) found in association with a gorgonacean coral taken from Kagoshima Bay, Japan, in 25 m.

Ogawa & Matsuzaki (1993: 65) believed that *C. dolichopus* and *C. ortmanni* were identical, a conclusion drawn from the wide variations in spination of the carapace, pterygostomian flap and sternal plastron that they found on 14 specimens. They claimed that the variations fully encompass the differences between the two species noted by Miyake & Baba (1968). In the illustration provided by Ogawa & Matsuzaki (1993: fig. 2), however, no specimens bear a spine on the anterior branchial region directly behind the cervical groove, a feature characteristic of *C. dolichopus*. Conversely, the presence of a spine slightly posterior to the mid-branchial margin shown in their figure is typical of *C. ortmanni*. Further, they noted the number of anterior marginal spines of the sternite 3 ranges from two to four, but none of their material bears six as in *C. dolichopus*. Although their discussion does not include the dactylar spination of the P2-4, all these features suggest that their material is referable to *C. ortmanni* Miyake & Baba, 1968.

Masayuki Osawa read the above part in the manuscript of this paper, examined the material reported by Ogawa & Matsuzaki (1993), and confirmed that it could be referred to *C. dolichopus* (see Osawa & Nishikiori, 1998).

Range: Sulu Archipelago, Western Australia, off Tanzania, Mauritius and Japan; 35-238 m. This species seems to be a shallow-water inhabitant, but one of the present lots was taken from a transitional depth.

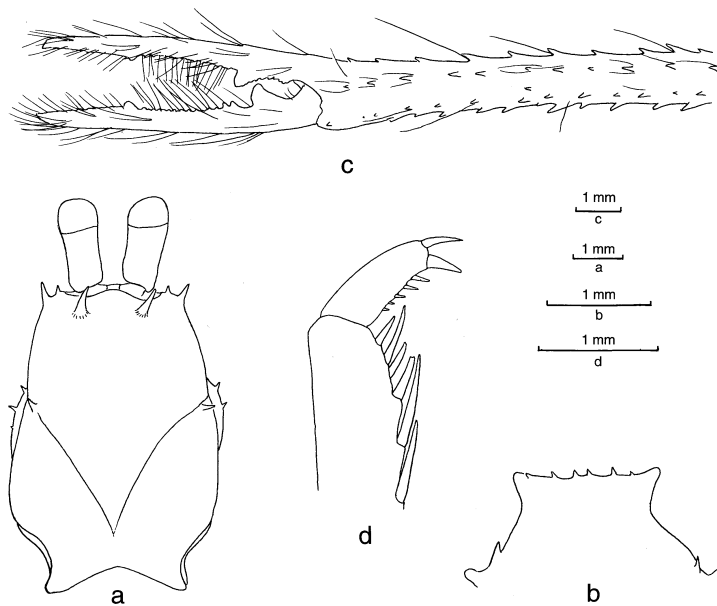


Fig. 2. *Chirostylus dolichopus* Ortmann, 1892, holotype, ♂, MZS 347: a, carapace, dorsal; b, anterior part of sternal plastron; c, distal articles of P1, right, dorsal; d, distal part of P4, left, mesial.

Genus *Eumunida* Smith, 1883

Eumunida Smith, 1883: 44. — Henderson, 1888: 168.
— A. Milne Edwards & Bouvier, 1894: 308.

Diagnosis: Carapace with oblique, posteriorly diverging row of 3 spines on hepato-gastric border; transverse striae usually distinct, rarely obsolete. Rostrum spiniform. Two supraocular spines well developed. Sternal plastron with 2 submedian processes or spines on anterior margin. Pleuron of abdominal segment 2 produced into spine. G1 absent, G2 reduced to small size or absent. Antennal peduncles with distal spine on each of articles 2–5, antennal acicle spiniform. Mxps 1, as well as Mxps 2 close to each other. P1 carpus with 2 or 3 terminal spines, palm often with ventral pad of velvet-like setae. P2–4 meri armed with row of spine on dorsal crest continued on to carpus.

Type species: *Eumunida picta* Smith, 1883, by monotypy.

Remarks: De Saint Laurent & Poupin (1996) revised the Indo-West Pacific species of the genus, described six new species, and provided a key to species from the Indo-West Pacific. They divided the species of the genus into two subgenera, *Eumunida* (= Group A of Gordon, 1930) and *Eumunidopsis* (Group B of Gordon, 1930), the former defined by the presence of a pair of well-developed spines on the sternite 4 and the latter by absence of the spines. In this paper the subgenera

are not used.

The present collection includes the following five species.

Eumunida ampliata de Saint Laurent & Poupin, 1996

Synonymy: see p. 208.

Material:

Manado Bight, 1°31'N, 124°47'E, 458 m, 12 Mar 1913, Great Northern Telegraph Co., Capt. Christiansen: — 1 ♂ (25.0 mm), 3 ♀ (8.3, 24.0 mm, largest specimen broken), ZMUC CRU-11596.

W of Nagasaki, Japan, 32°25'N, 128°33'E, 366 m, 1 Apr 1913, Great Northern Telegraph Co., Capt. Christiansen: — 2 ♂ (27.3, 35.3 mm), 1 ov. ♀ (16.8 mm), ZMUC CRU-11593.

Diagnosis: Carapace dorsally with 6 uninterrupted transverse ridges on posterior half, laterally with 3 spines in front of posterior cervical groove. Sternite 3 with 2 acute submedian spines on anterior margin, sternite 4 without lateral spines. P1 relatively massive, carpus with 3 distal spines; palm covered with soft fine setae; ventrally bearing row of spines and pad of setae. Pleopods wanting on abdominal segments 2–5 in male.

Remarks: De Saint Laurent & Poupin (1996) recently found that part of the material previously reported under *E. smithii* [material from S of Timor (Gordon,

1930; Baba, 1988) and from "Siboga" St. 251 and 253 off the Kei Islands (van Dam (1933)] was a distinct species that they named *E. ampliata*. *Eumunida smithii* is characterized by the Mxps 3 lacking a distolateral spine on the merus, rudimentary pleopods present on the abdominal segments 2–5, the P1 palm lacking a ventral pad of setae, the carapace bearing two lateral spines in front of the posterior cervical groove, and the sternite 4 unarmed anterolaterally.

Range: South of Timor, Kei Islands, Manado Bight, South China Sea off SW Formosa, and Japan; 204–458 m.

***Eumunida balssi* Gordon, 1930**

Synonymy: see p. 209.

Material:

W of Nagasaki, Japan, 32°22'N, 128°42'E, 311 m, 25 Dec 1900, coll. Suenson: — 2 ♀ (14.1, 18.0 mm), ZMUC CRU-11529.

W of Nagasaki, Japan, 32°26'N, 128°37'E, 249 m, bottom temp. 13°C, sand, rock, Great Northern Telegraph Co., 17 Jul 1933: — 1 ♀ (13.2 mm), ZMUC CRU-11239.

32°21' N, 128°41' E, 98–110 fm, coral-sand, rock, 08 Jul 1928 — 2 ♂ (13.2, 13.4 mm), 2 ov. ♀ (12.5, 12.6 mm), ZMUC CRU-11205.

12 Miles W of Nagasaki, 32°2' N, 128°45' E, 105 fm, 12 May 1898, Suenson: — 7 ♂ (10.6–19.9 mm), 3 ov. ♀ (14.2–18.5 mm), ZMUC CRU-11131, 11214.

Th. Mortensen's Pacific Expedition 1914–16, Sagami Bay, 732 m, 7 Jun 1914: — 1 ♀ (5.7 mm), ZMUC CRU-11545.

Diagnosis: Carapace with distinct transverse striae, lacking gastric spines between oblique rows of hepatic spines. Mxp 3 merus with 1 distolateral and 1 flexor median marginal spine. Sternite 3 with 2 acute anterior spines, sternite 4 unarmed laterally. P1 palm thickly covered with fine setae, bearing line of ventral spines near mesial margin, lacking ventral pad or any of its rudiment. Dorsal margins of P2–4 propodus with spines proximally but occasionally absent. [Pleopods absent from abdominal segments in male (de Saint Laurent & Poupin, 1996)].

Remarks: De Saint Laurent & Macpherson (1990a) noted that other than morphological differences, bathymetric ranges help to discriminate between *E.*

balssi (600 m) and its closest relative *E. minor* de Saint Laurent & Macpherson, 1990 (230–270 m). However, the present records indicate a wider range of *E. balssi* that overlaps that of the latter species.

Range: Restricted to Japan in Sagami Bay and W of Nagasaki; between 179–201 m and 732 m.

***Eumunida capillata* de Saint Laurent & Macpherson, 1990**

Synonymy: see p. 209.

Material:

Th. Mortensen's Java-South Africa Expedition 1929–30, "Dog" St. 16, Bali Sea, Indonesia, 7°35'S, 114°42'E, ca. 200 m, mud, 10 Apr 1929: — 1 ♂ (24.0 mm), ZMUC CRU-11080.

Diagnosis: Carapace strongly broadened posteriorly, with 2 spines in front of posterior cervical groove. Sternite 3 with pair of submedian spines on anterior margin, sternite 4 unarmed laterally. Mxp 3 merus with small but distinct spine somewhat distal to midlength of flexor margin. P1 palm unarmed, with ventral pad of setae, carpus with 3 terminal spines. Pleopods absent in males.

Remarks: The "Albatross" material of *E. smithii* reported by Baba (1988) was identified with this species (de Saint Laurent & Poupin, 1996). In *E. smithii*, the pad of densely packed hairs is absent from the ventral side of the P1 palm and rudimentary pleopods in males are present on the abdominal segments 2–5.

Range: New South Wales, New Caledonia, Chesterfield Islands, Bali Sea, Kei Islands, and South China Sea off Taiwan; 200–650 m.

***Eumunida funambulus* Gordon, 1930**

Synonymy: see p. 209.

Material:

San Bernardino Strait between Luzon and Samar, 12°27'N, 124°03'E, 50–100 fm (92–183 m), bottom temp, 61°F, 03 Aug 1911, Suenson: — 7 ♂ (15.0–33.5 mm), 5 ov. ♀ (22.7–28.3 mm), 9 ♀ (11.3–27.2 mm), ZMUC CRU-11595.

Diagnosis: Carapace with 5 complete striae on posterior half, 3 lateral marginal spines in front of cervical groove; pair of epigastric spines; hepatic spines (b of Gordon (1930) often absent. Sternite 4 with pair of well-developed spines anteriorly. Mxp 3 merus with 1 distolateral and 2 flexor marginal spines. P1 carpus with 3 terminal spines; palm massive, covered with short soft setae, bearing 2 rows of spines (dorsomesial and ventromesial, latter pronounced), ventral pad of setae small but distinct. Abdominal segments 2–5 lacking pleopods in male.

Range: Gulf of Aden, Socotra Channel between Aden and Bombay, Philippines, N. Celebes, Madura Strait (Java); South China Sea off SW Luzon, Sahul Bank (S of Timor), 130–732 m.

Eumunida pacifica Gordon, 1930

Synonymy: see p. 210.

Material:

Manado Bight, 1°31'N, 124°47'E, 458 m, 12 Mar 1913, Great Northern Telegraph Co., Capt. Christiansen: — 4 ♂ (13.0–19.3 mm), ZMUC CRU-11598.

Off N Mindoro, 13°37'00"N, 120°52'00"E, 525 m, from cables, mud and rock, 10 May 1930, Great Northern Telegraph Co.: — 1 ♀ (13.0+ mm), ZMUC CRU-11599.

W of Nagasaki, Japan, 32°25'N, 128°33'E, 366 m, 1 Apr 1913, Great Northern Telegraph Co., Capt. Christiansen: — 1 ♂ (20.8 mm), ZMUC CRU-11594.

Diagnosis: Carapace with 6 distinct striae on posterior half, without gastric spines between mesial hepatic spines; lateral margin with 3 spines in front of posterior cervical groove; mesial of 3 hepatic spines somewhat larger than median one. Sternite 4 with pair of well-developed spines anteriorly. P1 palm with 2 rows of spines: 1 dorsal near mesial margin, 1 ventral near mesial margin, latter usually prominent; ventral surface lacking pad of setae. Pleopods absent in males.

Remarks: The female examined here has an additional row of dorsal spines on the P1 palm near the mesial margin, which seems at variance with the definition of *E. pacifica* given by de Saint Laurent & Poupin (1996). One male and one female of the specimens from the Kyushu-Palau Ridge reported under *E. pacifica* by

Baba in Baba *et al.* (1986) were named *E. depressa*, and one ovigerous from the same source was named *E. macphersoni* (de Saint Laurent & Poupin, 1996). The male from Japan examined here lacks all pereopods but may in all probability be referred to *E. pacifica*.

The species is very close to *E. keijii* de Saint Laurent & Macpherson, 1990. According to de Saint Laurent & Macpherson (1990a) and de Saint Laurent & Poupin (1996), the two species differ from each other in: 1) mesial pair of hepatic spines is well developed and stronger than the others in *E. pacifica*, while it is small in *E. keijii*; 2) the anterior spines on the sternite 3 are shallowly separated in *E. pacific*, deeply separated in *E. keijii*; 3) the P1 palm bears well-developed dorsomesial spines in *E. pacifica*, instead of reduced spines in *E. keijii*; the P4 propodus is at most three times longer than the dactylus in *E. pacifica*, while less than three times longer in *E. keijii*. These morphological differences are very slight but their coloration helps distinguish the two species. In *E. pacifica*, the carapace is orange red with supraocular spines darker, and abdominal tergites evenly orange red; in *E. keijii*, the carapace is orange red, rostral spines white, abdominal tergites 2–4 bear red and white transverse bands (de Saint Laurent & Poupin, 1996).

Range: Off N Mindoro, Savu Sea off Roti, Ceram Sea off Obi Island, and W of Nagasaki, Japan; 293–1320 m.

Genus *Gastroptychus* Caullery, 1896

Ptychogaster A. Milne Edwards, 1880: 63. — Henderson, 1888: 170.

Gastroptychus Caullery, 1896: 390 [replacement name for *Ptychogaster* A. Milne Edwards, 1880 (junior homonym of *Ptychogaster* Pomel, 1847: fossil Reptilia Chelonia). — Miyake & Baba, 1968: 379.

Diagnosis: Carapace with spines laterally and dorsally, dorsal surface lacking transverse striae; posterior lateral margin weakly or barely excavated. Rostrum spini-form, basal part subtriangular. Supraocular spines absent. Sternal plastron with lateral spine on each side at least on sternite 4, anterior margin somewhat concave with row of spines, widely separating Mxps 3 in one of two groups of species, or medially produced and ridged, sloping down to anterior sternite, bearing Mxps 3 rather close to each other in another group of species. Segment 2 of abdomen without anterolateral

spine on pleura, G1 and G2 present. Antennal acicle present or absent. Mxps 2 distinctly separated, Mxps 1 close to each other. P1–4 with numerous spines usually arranged in longitudinal rows.

Remarks: Bouvier (1896) believed that *Gastroptychus* Caullery, 1896, a replacement name for *Ptychogaster* A. Milne Edwards, 1880, is identical with *Chirostylus* Ortmann, 1892. This was followed by Doflein & Balss (1913), van Dam (1933), Chace (1942), Tirmizi (1964), and Haig (1968). Now *Gastroptychus* is regarded as a distinct genus clearly separate from *Chirostylus* (see Miyake & Baba, 1968). *Gastroptychus ciliatus* (van Dam, 1933) and *G. spinirostris* Ahyong & Poore (2004) are transferred to *Uroptychus*, according to a newly defined diagnosis of *Uroptychus* in the present paper (see below). The genus now contains 21 species, including a new species described in this paper, 13 from the Indo-West Pacific, 4 from the eastern Pacific, 3 from the western Atlantic and 1 from the eastern Atlantic.

Two groups can be recognized in the genus. One of these is characterized by having the sternal plastron with a somewhat concave anterior margin bearing a row of spines and the Mxps 3 widely separated at base from each other (Fig. 3b). This group includes *G. brachyterus* n. sp.; *G. breviproodus* Baba, 1991; *G. laevis* (Henderson, 1885); *G. novaezelandiae* Baba, 1974; *G. paucispina* Baba, 1991; *G. sternoornatus* (van Dam, 1933), *G. valdiviae* (Balss, 1913) [confirmed by examination of the type material now registered under ZMB 17479] and *G. affinis* (Chace, 1942), the last species being from the western Atlantic. The other group has the anterior end of the sternal plastron medially ridged, produced and anteriorly sloping down, followed by a pair of spines directly behind it on the ventral surface, and the Mxps 3 close to each other (Fig. 3c, d). This group includes *G. cavimurus* Baba, 1977, *G. defensa* (Benedict, 1902), *G. hawaiiensis* Baba, 1977, *G. hendersoni* (Alcock & Anderson, 1899), *G. iaspis* Baba & Haig, 1900, *G. investigatoris* (Alcock & Anderson, 1899), *G. milneedwardsi* (Henderson, 1884), *G. perarmatus* (Haig, 1968), and *G. rogeri* Baba, 2000, all from the Indo-Pacific, and *G. formosus* (Filhol, 1884), *G. salvadori* Rice & Miller, 1991, and *G. spinifer* (A. Milne Edwards, 1880), from the Atlantic. The groups are definitely worthy of generic importance, with the latter group being referred to *Gastroptychus* in the strict sense. This will be discussed later elsewhere.

Gastroptychus may be defined by the following

characters that separate it from *Chirostylus*: 1) the rostral base is triangular, extending anteriorly into upcurved spine distinctly overreaching the ocular peduncle; 2) the posterolateral margin of the carapace is not excavated at all, or somewhat excavated but not strongly so as in *Chirostylus*; 3) the sternal plastron bears the anterior margin somewhat concave with a row of spines or is medially produced anteriorly into a rounded process followed by a pair of spines on the anterior part of ventral surface.

The members of the genus seem to be associated with other marine invertebrates, although information is available only on a few species: *Gastroptychus iaspis* Baba & Haig, 1990, from the eastern Pacific, is found in association with gorgonaceans and antipatharians at 600–1189 m; *Gastroptychus salvadori* Rice & Miller, 1991, from Bahamas, was found on the starfish *Novodinia antillensis* (A.H. Clark) taken at 874 m depth.

The present collection includes the following three species.

***Gastroptychus brachyterus* n. sp.**

Figs. 3b, 4

Material:

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E, 345 m, 10 May 1922: — 1 ♀ (8.8 mm), holotype, ZMUC CRU-11331.

Diagnosis: Carapace covered with spinules in moderate density, with pair of prominent epigastric spines followed by 3 strong spines in midline. Sternite 3 with somewhat concave anterior margin bearing 8 small spines, sternite 4 with strong lateral spine on each side. Abdomen covered with small spines. Cornea dilated, eyestalk constricted on mesial margin. Distal 2 articles of antennal peduncle with distinct spine distoventrally; acicle absent. Mxp 3 merus with 3–5 lateral spines, distal-most strong, carpus with 2 lateral spines distally. P1 slender, palm 2.5 times as long as fingers, bearing 5 rows of spines (3 rows visible in dorsal view). P2–4 propodi short, relatively broad, about 3 times length of dactyli, 1/7 length of carpi, dactyli very short, extensor margin strongly convex, flexor margin nearly straight, with 7–8 spines, penultimate strongest.

Description: Carapace excluding rostrum, 1.3 times as long as its greatest width. Dorsal surface covered with

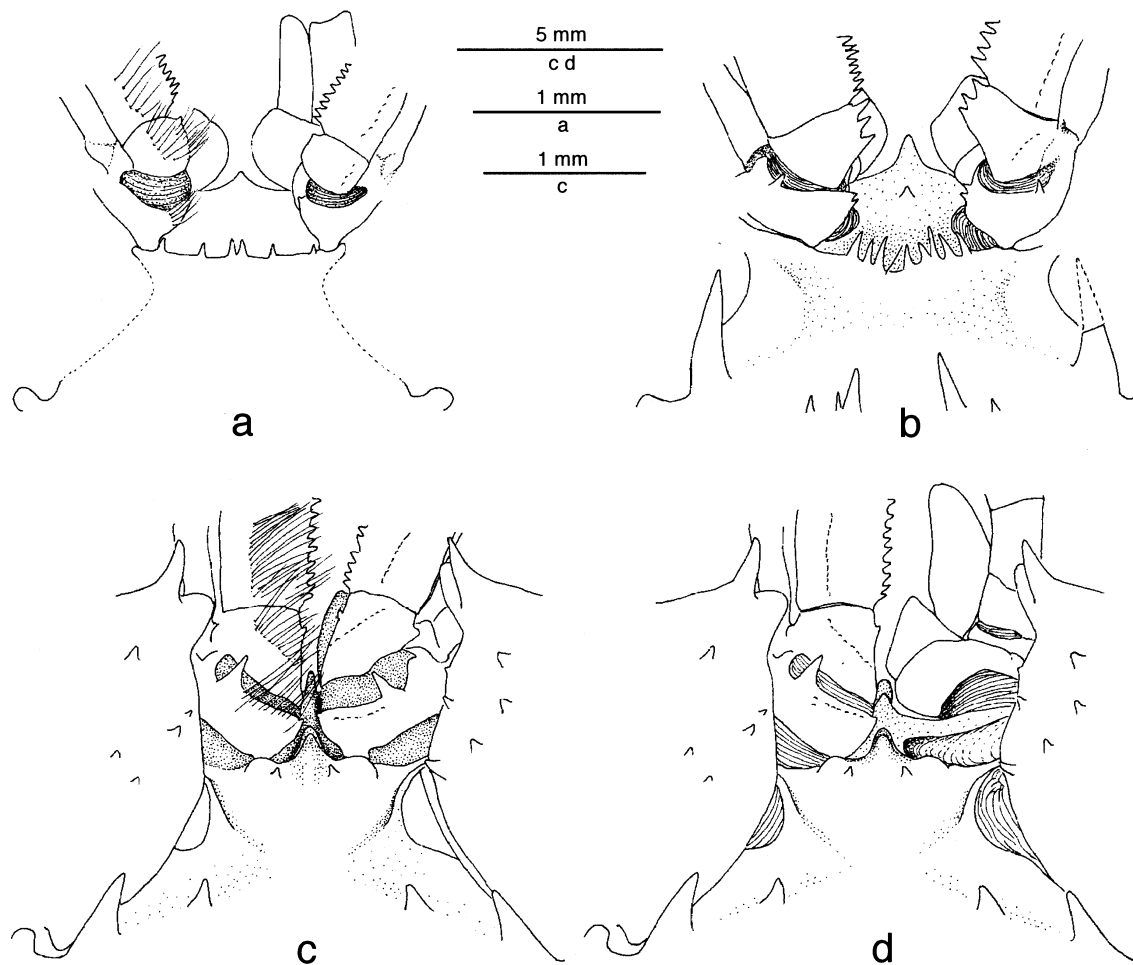


Fig. 3. Anterior part of sternal plastron, including proximal parts of Mxps and P1: a, *Chirostylus dolichopus* Ortmann, 1892, ov. ♀ (5.7 mm), ZMUC CRU-11107; b, *Gastroptychus brachyterus* n. sp., holotype, ♀, ZMUC CRU-11331; c, *Gastroptychus rogeri* Baba, 2000, holotype, ♂, TM G3497; d, same, right Mxp 3 removed.

prominent and small spines, as illustrated (Fig. 4a, b); 5 prominent spines: 2 behind ocular peduncles and 3 in midline — 1 posterior gastric, 1 anterior cardiac, 1 posterior cardiac; 4 spines directly anterior to posterior margin somewhat larger than remaining scattered spines. Gastric region moderately convex, separated from cardiac region by deep groove slightly anterior to midpoint of postorbital carapace length; not distinctly bordered from hepatic and branchial regions. Lateral limit of orbit with small spine. Lateral margins of carapace convex on branchial region, anterolateral spine relatively remote from and larger than lateral orbital spine. Rostrum 1/5 postorbital carapace length; basal portion broad, rostral spine sharp, curving dorsad. Pterygostomian flap anteriorly ending in rounded margin, surface with very small scattered spines.

Sternal plastron posteriorly broad. Sternite 3 having anterior margin with 8 spines (3 on right side, 5 on left

side), width less than half that of last sternite. Sternite 4 with strong lateral spine on each side, bearing 2 pairs of spines between (mesial pair larger than lateral), followed by another pair. Sternite 5 also with a few moderate-sized lateral spines on each side and 2 small submedian spines between. Sternites 6 and 7 with spinulose lateral margins.

Abdominal segments covered with small spines. Pleura of segments 2–4 tapering.

Eyestalk strongly constricted on mesial margin. Corneas dilated.

Basal article of antennular peduncle with well-developed distolateral spine. Article 2 of antennal peduncle with small distolateral spine; distal 2 articles each with sharp, moderate-sized spine on distoventral margin, article 5 more than twice as long as article 4 when measured along lateral margin. Antennal acicle absent.

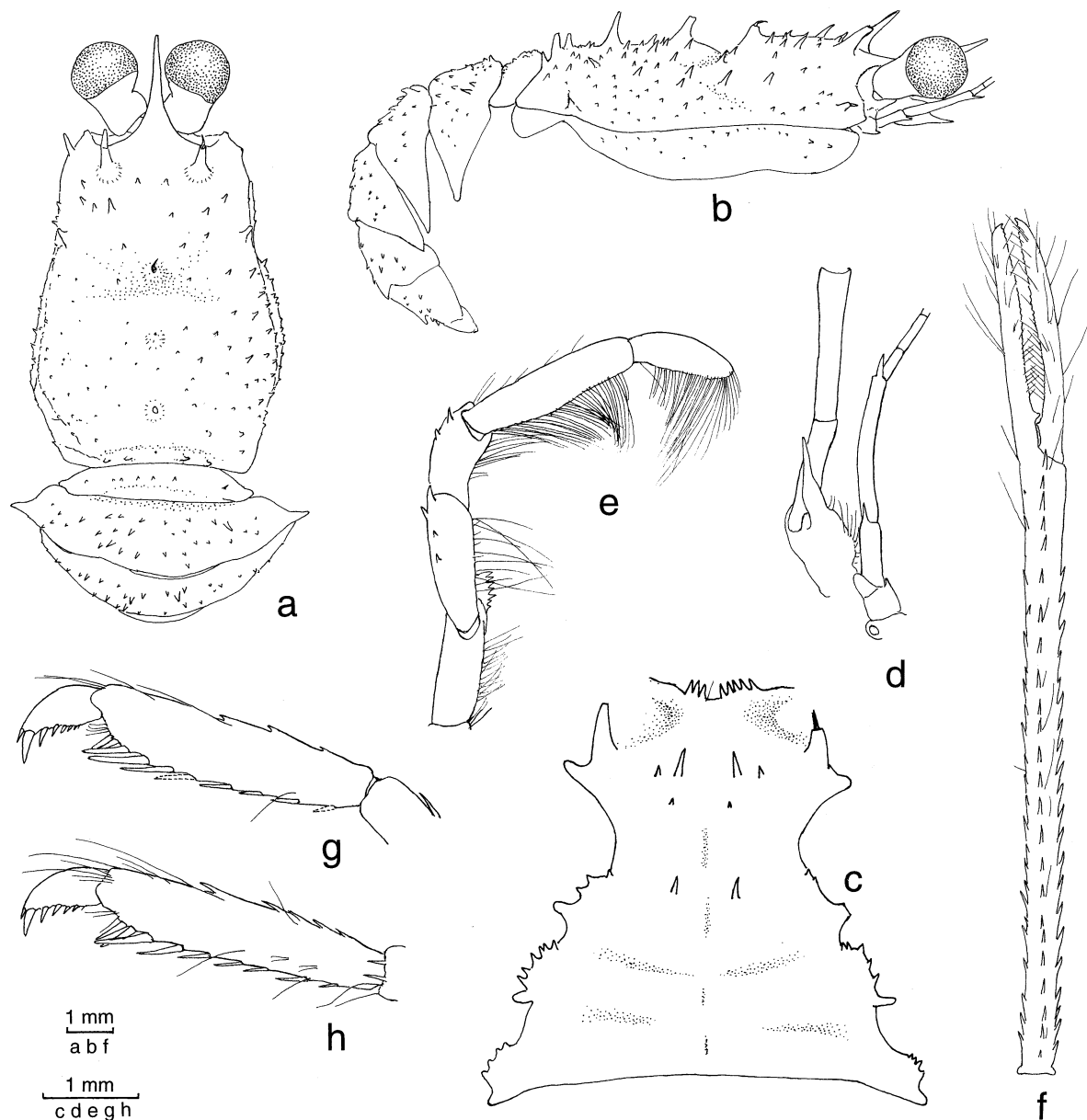


Fig. 4. *Gastroptychus brachyterus* n. sp., holotype, ♀, ZMUC CRU-11331: a, carapace and abdomen, dorsal; b, same, lateral; c, sternal plastron; d, antennule and antenna, left, ventral; e, endopod of Mxp 3, right, lateral; f, chela, left, dorsal; g, distal articles of P3, left, lateral; h, distal articles of P4, left, lateral.

Endopod of Mxp 3 slender. Ischium with 18–20 denticles on mesial ridge. Merus with 3–5 lateral spines, distal one strongest. Carpus also with 2 lateral spines distally. Propodus unarmed.

P1 6.8 times as long as carapace including rostrum, subcylindrical, sparsely setose, covered with spines in 7 rows on merus, 6 rows on carpus, 5 rows on palm. Merus 1.5 times as long as carpus. Carpus 1.25 times as long as palm. Palm about 20 times as long as broad, 2.5 times as long as movable finger. Fingers more

setose than other articles, moderately gaping, distally ending in small, slightly incurved spine; each opposable margin with proximal process of moderate size.

P2–4 slender, spinose, sparsely with coarse setae; successively diminishing in size posteriorly. Merus slightly shorter than carpus, spines along dorsal margin larger. Carpus 7 times as long as propodus, with numerous inclined slender spines along dorsal margin, less numerous spines along ventral margin. Propodus

relatively short, 3.3 times as long as dactylus excluding spines, dorsal margin with several inclined spines, ventral margin with row of 8–10 movable slender spines along whole length, distal 2 subequal and much smaller than antepenultimate. Dactylus very short, flexor margin with 7–8 spines, ultimate small and slender, penultimate strongest, remaining spines slender and proximally diminishing. P2 reaching end of P1 carpus.

Remarks: The short P2–4 propodi link the species to *G. breviproodus* Baba, 1991, from the Loyalty and Chesterfield Islands, and *G. novaezealandiae* Baba, 1974, from New Zealand. However, *G. breviproodus* has the abdominal segments smooth without spines, the distolateral process of the antennular basal article bearing accompanying spines, and the sternite 3 bearing 3 pairs of spines on the anterior margin. In *Gastroptychus novaezealandiae*, an antennal acicle is present, the abdominal segments 1–5 bear pronounced spines, and the Mxp 3 propodus is unarmed.

Etymology: From the Greek *brachyteros* (shorter), in reference to relatively short P2–4 propodi.

***Gastroptychus laevis* (Henderson, 1885)**

Fig. 5

Synonymy: see p. 213.

Material:

Kei Islands Expedition St. 42, 5°35'S, 132°29'E, 225 m, mud, trawl, 26 Apr 1922: — 1 ♂ (4.8 mm), ZMUC CRU-11434.

Diagnosis: Carapace with pair of strong spines directly behind ocular peduncles, laterally with 5 sharp spines. Sternite 3 with 5–6 small spines on anterior margin, sternite 4 with small lateral spine on each side. Abdominal segments smooth and glabrous. Ocular peduncles relatively narrow and elongate, cornea slightly broader than remaining eyestalk. Antennal peduncle with distoventral spine on article 5, unarmed on article 4, antennal acicle reaching end of article 5. P1 palm less than twice as long as fingers. P2–4 propodi slightly longer than carpi, distinctly more than twice length of dactyli; dactyli with somewhat convex flexor margin bearing 9 slender spines nearly perpendicular to margin, ultimate spine much smaller, nearly contiguous to penultimate one, remaining spines

diminishing in size toward base of article.

Description: Carapace somewhat longer than broad. Dorsal surface smooth, glabrous, moderately convex. Gastric region separated by deep groove from cardiac and branchial regions; anteriorly bearing 4 spines in transverse row, 2 lateral prominent, 2 submedian very small; also laterally with small spine near left anterior branchial region. Lateral margin convex on branchial region, bearing 5 sharp spines, other than smaller one at lateral limit of orbit, situated on anterior 2/3 of length; ridge distinct along posterior third. Rostrum less than half as long as remaining carapace, distally spine-like, directed antero-dorsad.

Pterygostomian flap also smooth, glabrous, anteriorly rounded.

Sternal plastron with rows of long coarse setae, as illustrated; greatest width much more than greatest length. Sternite 3 moderately depressed, anterior margin shallowly excavated, with 5 small spines: 3 on right side, 2 on left side. Sternite 4 with distinct lateral spine on each side.

Abdominal segments smooth and glabrous. Pleura of segments 2–5 not tapering, rounded.

Ocular peduncles elongate, slightly overreaching end of rostrum. Cornea slightly dilated, length less than 1/3 that of remaining eyestalk.

Basal article of antennular peduncle with distally bifurcate distolateral process. Antennal peduncles slender, overreaching end of cornea; article 5 3.5 times as long as article 4, bearing well-developed distoventral spine; article 4 unarmed. Antennal acicle slender, almost reaching end of article 5 excluding spine.

Mxp 3 ischium with 23 (right) or 24 (left) denticles on mesial ridge. Merus elongate, bearing distinct distolateral spine. Carpus unarmed.

Right P1 missing. Left P1 5.9 times as long as carapace including rostrum; with sparse long setae; covered with small spines roughly in 7 rows on merus and carpus, 6 rows on palm (proximally 7 rows). Merus 1.3 times length of carpus. Palm 0.89 times length of carpus, 1.7 times that of movable finger. Fingers more setose than elsewhere, gaping proximally, slightly incurved distally; opposable margins fitting each other when closed on distal 1/3; truncate process on gaping portion of movable finger proximal to level of opposing process on fixed finger.

Left P2–3 present, others missing; both with sparse long setae, P3 shorter; P2 ending in midlength of P1 carpus. Meri with row of spines on dorsal margin and distal spine on ventral margin. Carpi slightly shorter

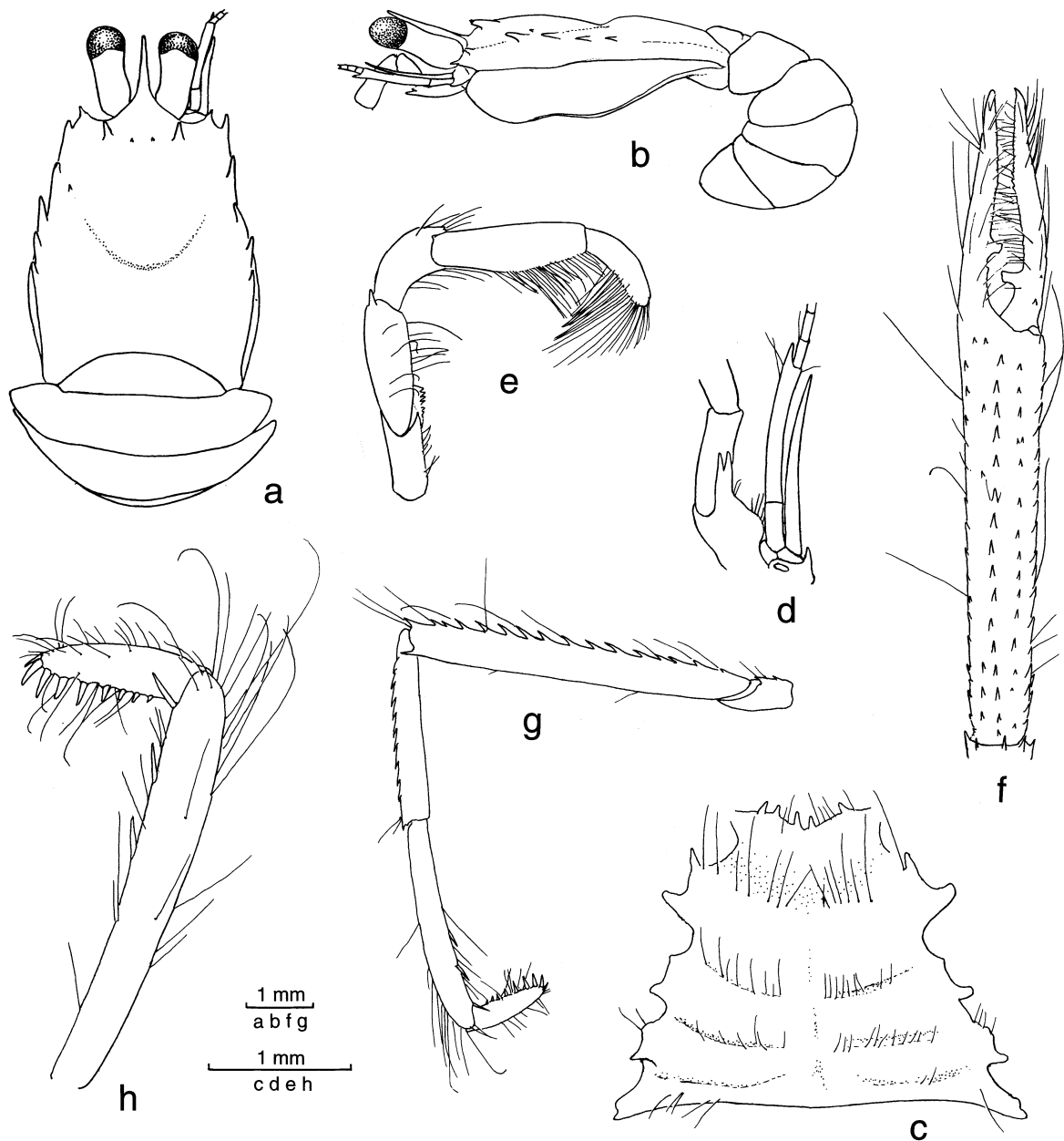


Fig. 5. *Gastroptychus laevis* (Henderson, 1885), ♂ (4.8 mm), ZMUC CRU-11434: a, carapace and abdomen, dorsal; b, same, lateral; c, sternal plastron; d, antennule and antenna, left, ventral; e, endopod of Mxp 3, right, lateral; f, chela, left, dorsal; g, P2, left, lateral; h, same, distal articles, lateral.

than propodi, dorsal margin with 11 spines on P2, 7 on P3. Each propodus distinctly more than twice length of dactylus excluding spines; ventral margin ending in pair of spines preceded by 3 (on P2) or 2 (on P3) slender, movable spines. Dactyli nearly straight, flexor margin with 9 spines, ultimate spine very slender, much shorter than and almost contiguous to penultimate, other spines more or less distant from one another, proximally diminishing in size, and subperpendicular

to flexor margin.

Remarks: Owing to the brevity of the description of the species given by Henderson (1885, 1888), a full description is provided above. To verify this identification the type material (BMNH 1888:33), which is now in poor condition, was examined. The illustration provided by Henderson (1888) inaccurately shows the ocular peduncles of the type to be extremely

slender, rather than as illustrated for the present material (Fig. 5a).

Range: This is the first record since the holotype taken by the "Challenger" from the Kei Islands, Indonesia, in 236 m.

***Gastroptychus sternoornatus* (van Dam, 1933)**

Synonymy: see p. 214.

Material:

Th. Mortensen's Pacific Expedition 1914–16, off Victoria, 38°5' S, 149°45' E, 128–146 m, sand, mud, trawl, on board "Endeavour," 11 Sep 1914: — 1 ♂ (5.8 mm), ZMUC CRU-11070.

Th. Mortensen's Pacific Expedition 1914–16, off Victoria, Australia, 37°45' S, 150°10' E, 275–476 m, on board "Endeavour," 14 Sep 1914: — 1 ♀ (5.8 mm), ZMUC CRU-11516.

Th. Mortensen's Pacific Expedition 1914–16, NE of Flinders Island, Furneaux Group, 39°10' S, 149°55' E, 366–458 m, ring trawl, on board "Endeavour," 15 Sep 1914: — 1 ♂ (6.9 mm), ZMUC CRU-11552.

Diagnosis: Carapace covered with spines of small and good size in moderate density; pair of prominent spines behind ocular peduncles, followed posteriorly by 3 large spines in midline, and another strong spine at anterior lateral margin of branchial region. Sternite 3 with 6 spines on concave anterior margin, sternite 4 with strong spine on each side and 1 or 2 pairs of spines in transverse row. Abdomen smooth and glabrous. Ocular peduncles relatively large, strongly concave on mesial margin; cornea moderately dilated. Article 5 of antennal peduncle with strong distoventral spine, article 4 unarmed, antennal acicle overreaching midlength of but falling far short of end of article 5. P1 palm about twice as long as fingers. P2–4 propodi distinctly longer than carpi, more than twice as long as dactyli, ventral margin with pair of distal spines preceded by a number of spines on P2, 0 or 1 on P3 and P4; dactyli sharp, ending in corneous curved claw preceded by 4–5 spines nearly perpendicular to flexor margin, diminishing toward base of article.

Remarks: Recently Ahyong & Poore (2004) reported the species from New South Wales and Victoria, in 329–512 m. No additional characters of significance

were noted.

Range: Off the Kei Islands, vicinity of Mindoro (Philippines), Loyalty Islands, New South Wales, and Victoria; in 128–512 m.

Genus *Pseudomunida* Haig, 1979

Pseudomunida Haig, 1979: 89.

Diagnosis: Carapace with very weak, interrupted transverse striae. Dorsal surface unarmed. Rostrum spiniform. Mesial supraocular spines well developed, lateral supraocular spines vestigial or barely discernible. Anterior margin of sternal plastron with submedian processes. Segment 2 of abdomen having pleura each ending in strong spine. Antennal peduncles having each article with distal spines, antennal acicle distinct. Mandible with a few teeth on incisor margin. Mxps 3 somewhat separated from each other to make Mxps 2 visible but Mxps 1 not visible. Mxps 2 close to each other. P1 carpus with 2 ventrodorsal spines. P2–4 meri and carpi with row of spines on dorsal crest.

Remarks: The genus is differentiated from *Eumunida* Smith, 1883, by having only one pair of supraocular spines and absence of a oblique row of hepatic spines. Males are presently unknown. Haig (1968) suggested that gonopods may be absent in the genus, as in *Eumunida*.

***Pseudomunida fragilis* Haig, 1979**

Synonymy: see p. 214.

Material:

Bonin Islands, 1370 m, sandy bottom, Great Northern Telegraph Co., 14 May 1957: — 1 ♀ (18.3 mm), ZMUC CRU-11528.

Diagnosis: Rostrum spiniform, mesial supraocular spines distinct, lateral supraocular spines very reduced in size or barely discernible. Carapace with very feeble transverse ridges, all interrupted; unarmed on dorsal surface; lateral margin with 5 spines, anterior 2 located in front of posterior cervical groove. Abdominal segment 2 with strongly produced spine on anterolateral angle of each of left and right pleura. Sternite 4 unarmed. P1 slender, subcylindrical, palm fully twice as long as fingers, with 1–3 ventral spines,

lacking ventral pad of densely packed setae. P2–4 meri and carpi each with row of spines on dorsal margin, propodi with row of about 10–13 slender movable spines on ventral margin.

Remarks: The genus is monotypic. The present specimen bears a vestigial lateral supraocular spine on each side.

Range: The present specimen from the Bonin Islands constitutes the first record since the type material was collected (holotype and 1 paratype) from the Hawaiian Islands off Oahu, in 969–1280 m.

Genus *Uroptychodes* Baba, 2004

Uroptychodes Baba, 2004: 98.

Diagnosis: Body and appendages usually covered with fine setae. Carapace armed with row of lateral spines. Rostrum basally broad but elongate, often more than length of remaining carapace, ventral surface carinate in midline. Supraocular spines absent. Excavated sternum bearing longitudinal ridge in midline. Abdominal segment 2 having pleuron anterolaterally rounded, not produced into spine. Antennal flagellum very short, not extending beyond end of rostrum. Mxp 3 ischium with distinct spine lateral to rounded flexor distal margin. P1 relatively slender, spinose or covered with denticular small spines. P2 definitely more slender than P3–4, dactylus usually unarmed on flexor margin; carpus longer than that of P3. P3–4 dactyli with row of spines on flexor margin, penultimate usually pronounced; carpus much shorter relative to that of P2, about half as long as propodus.

Remarks: In a recent paper (Baba, 2004), *Uroptychodes* has been proposed to accommodate the *Uroptychus spinimarginatus* group (Baba, 1977b). The genus now contains 11 species, including *Uroptychus nowra* (Ahyong & Poore, 2004) described from New South Wales.

The genus is differentiated from *Uroptychus* Henderson, 1888 by the combination of the following characters: the long, broad rostrum is carinate in midline on the ventral surface and the P2 is much more slender than the P3–4, with the dactylus entire on the flexor margin. *Uroptychus naso* van Dam, 1933 possesses the long, broad rostrum but the P2 dactylus is similar to those of P3–4.

The present collection includes three species.

***Uroptychodes albatrossae* Baba, 1988**

Synonymy: see p. 215.

Material:

Th. Mortensen's Java-South Africa Expedition 1929–30, "Dog" St. 3, Bali Sea, Indonesia, 7°42'S, 114°00'E, 450 m, mud with corals, Sigsbee trawl, 4 Apr 1929: — 1 ♀ (6.6 mm), ZMUC CRU-11574. Off Nagasaki, Japan, 32°48'N, 129°37'E, 73 m, 23 Apr 1913, coll. H. Christiansen: — 1 ♂ (7.5 mm), ZMUC CRU-11206.

Diagnosis: Carapace with 7 strong lateral spines on branchial region and a few small spines on hepatic region, anterolateral spine distinct but smaller than those on brachial region. Cervical groove very deep between gastric and cardiac regions. Rostrum fully as long as remaining carapace, ventral surface carinate, dorsal surface excavated longitudinally, bearing scattered denticular spines laterally; lateral margin with 8–12 spinules. Pterygostomian flap covered with spinules. Anterior margin of sternite 3 with broad median sinus separating 2 small submedian spines. Distal 2 articles of antennal peduncle each with strong distomesial spine, antennal scale reaching end of article 5. Mxp 3 merus with well-developed distolateral spine, and a few small flexor marginal spines at midlength, carpus with distinct spine on extensor distal margin. P2 more slender than P2–4, carpus longer than those of P3 and P4, dactylus unarmed; P3–4 dactyli each with 8 or 9 flexor marginal spines, penultimate broader than ultimate, remaining spines more slender than ultimate.

Remarks: The specimen agrees well with the type of *U. albatrossae*. The spination of the P3–4 dactyli seems constant in the species. The penultimate spine is much broader than the ultimate, and the others proximal to it are more slender than the ultimate.

Range: Indonesia in the Bali Sea and the Philippines off N Mindanao, between Negros and Siquijor, and between Cebu and Bohol; 73–510 m.

***Uroptychodes mortenseni* (van Dam, 1939)**

Synonymy: see p. 216.

Material:

Th. Mortensen's Pacific Expedition 1914–16, 25 miles

E by S of Zamboanga, trawl, 293–366 m, hard bottom, 3 Mar 1914: — 1 ov. ♀ (10.5 mm), ZMUC CRU-11519.

Diagnosis: Body and appendages thickly covered with fine setae. Lateral margin with anterolateral spine of moderate size, followed by 3 small spines and 1 larger one along hepatic region, prominent spines along branchial region, anterior-most largest. Rostrum horizontal in profile, narrowly triangular, relatively long, slightly less than postorbital carapace length; dorsal surface flattish, ventral surface carinate. Sternite 3 semicircularly concave on anterior margin, bearing small median notch. Ocular peduncles partly concealed beneath rostrum. Antennal peduncle having distal 2 articles subequal in length, each with terminal spine; antennal scale laterally setose, slightly overreaching midlength of article 5. Mxp 3 ischium with 2 spines directly lateral to flexor distal margin; merus with distolateral spine and 3 spines on flexor margin; carpus with distolateral spine. P1 slender, merus and carpus with small spines; no spines elsewhere. P2 more slender than P3–4, dactylus unarmed. P3–4 similar; meri and carpi with small spines; flexor marginal spines of dactyli obscured by setae, ultimate slender, penultimate broad at base, preceded by slender, inclined spines distinctly smaller than ultimate.

Eggs: About 30 eggs carried, measuring 0.89 x 0.90 – 1.03 x 0.96 mm.

Remarks: Two very small spines flanking a median notch on the anterior margin of the sternite 3 are present in one of the type specimens and the present material but absent in the lectotype, the “Albatross” Philippine specimen and the “Karubar” specimen (Baba, 1988; 2004).

Range: Kei Islands, Celebes Sea off N Sulawesi, off Zamboanga and South China Sea off SW Luzon; 250–366 m.

***Urotychodes spinimarginatus* (Henderson, 1885)**

Synonymy: see p. 216.

Material:

Manado Bight, 1°31'N, 124°47'E, 458 m, 12 Mar 1914, Great Northern Telegraph Co., Capt. Christiansen: — 1 ov. ♀ (11.7 mm), ZMUC CRU-

11191.

Diagnosis: Carapace covered with fine setae, spineless on surface; lateral margin with 6 strong spines on branchial region, preceded by anterolateral spine of moderate-size and 2 small spines on hepatic region. Rostrum with 3–5 small spines on distolateral margin. Sternite 3 with broad V-shaped excavation on anterior margin. Antennal peduncle having article 4 with small distoventral spine, article 5 unarmed; antennal scale slightly overreaching midlength of article 5. Mxp 3 ischium with 3 or 4 small spines lateral to rounded flexor distal margin, mesial ridge with obsolescent denticles. P1 with setiferous scale-like ridges.

Eggs: Size, 0.95 x 1.14 – 1.09 x 1.19 mm.

Remarks: The P2–5 are missing in the specimen examined. Their dactylar spination is as displayed by most of the species in the genus: the penultimate of the flexor marginal spines is broad whereas the ultimate and other spines proximal to the penultimate are much more slender (Baba, 1988, 2004). It is in *C. musorstomi* Baba, 2004 that the penultimate spine is not pronouncedly larger than the other spines. No additional characters of significance were noted.

Range: Off Kermadec Islands, Kepulauan Talaud S of Mindanao, Palawan Passage, and Manado Bight (N Sulawesi); 458–952 m.

Genus *Urotychus* Henderson, 1888

Diptychus A. Milne Edwards, 1880: 63.

Urotychus Henderson, 1888: 173 [replacement name for *Diptychus* A. Milne Edwards, 1880 (junior homonym of *Diptychus* Steindachner, 1866, Pisces). — Alcock, 1901: 281. — Baba, 1988: 17.

Diagnosis: Carapace dorsally smooth or with spines. Rostrum narrowly or broadly triangular, mostly flattish, rarely with ridge in ventral midline. Supraocular spines absent. Anterior margin of sternal plastron distinctly concave, with or without submedian spines, with or without median notch. Excavated sternum anteriorly ending between bases of Mxps 1. Mxps 2 broadly separated. Mxps 3 also widely separated, with distal parts accommodated in excavated sternum when folded, propodus elongated. Antennal peduncle having distinct antennal acicle, flagellum of no great length, never overreaching P1. P1 spinose or unarmed. P2–4

dactyli with flexor marginal spines of various arrangement.

Remarks: The members of this genus are usually found in association with gorgonacean and pennatulacean corals in deep waters. With this mode of life, their legs vary markedly, such that spination of P2–4 dactyli and propodi is diagnostic for species.

Since the publication of Baba (1988), in which 62 species and two subspecies including seven species transferred to *Uroptychodes* are recognized in the Indo-West Pacific, 28 additional species have been described (Baba, 1990, 2000; Baba & de Saint Laurent, 1992; Baba & Williams, 1998; Ah Yong & Poore, 2004a). According to the definitions proposed in this paper for *Chirostylus* and *Gastroptychus* (see above), it is suggested that *Chirostylus ciliatus* van Dam, 1933, *Gastroptychus chacei* Baba, 1986, and *Gastroptychus spinirostris* Ah Yong & Poore, 2004 be transferred to *Uroptychus*. *Uroptychus zezuensis* Kim, 1972, synonymized with *U. tridentatus* (Henderson, 1885) by Baba (1988), is revived. *Uroptychus tridentatus*, *U. zezuensis* and *U. inclinis* n. sp. are very closely related so *U. tridentatus* is described here based upon the holotype and additional material in the collection of the Paris Museum. The material reported under *U. granulatus* Benedict, 1902 from Madagascar (1990), the identity of which was questioned during my study, was described as *U. babai* Ah Yong & Poore (2004). *Uroptychus alcocki* Ah Yong & Poore, 2004, *U. mauritius* n. sp., *U. latirostris* Yokoya, and *U. cavirostris* Alcock and Anderson, 1899 constitute a species complex. In order to settle the systematic status of *U. latirostris*, a neotype was chosen. The morphology of *U. cavirostris* is still not well known. In this paper, nine new species are described. Overall, 104 species are known from the Indo-Pacific including Southern Ocean, four of which are confined to the eastern Pacific (for more about the distribution, see under the list of species).

The characters that distinguish *Uroptychus* from other genera are: 1) the rostrum is usually subtriangular (rarely very narrow), dorsally flattish or excavated; 2) the sternite 3 is distinctly excavated on the anterior margin usually with median notch separating submedian spines (without median notch and submedian spines in some species).

The Mxps 3 in *Uroptychus* are widely separated at the base as in *Chirostylus* whereas they are close to each other in one of the two groups in *Gastroptychus* but widely separated in the other group of that genus

(see above under *Gastroptychus*).

The present collection includes 25 species, other than *U. tridentatus* that is incorporated in this report to settle its systematic status on the basis of the holotype and additional material from the Paris Museum.

Uroptychus alcocki Ah Yong & Poore, 2004

Fig. 6

Synonymy: see p. 223.

Material:

Japan, 12 miles W of Nagasaki, 32°02' N, 128°45' E, 105 fm (192 m), 12 May 1898, Suenson: — 1 ♂ (6.5 mm), 1 ov. ♀ (8.5 mm), 1 ♀ (8.2 mm), ZMUC CRU-11067.

Formosa Canal, 35 fm (64 m), Suenson: — 1 ♀ (4.5 mm), ZMUC CRU-11045.

Diagnosis: Carapace smooth, glabrous; lateral margin with 2 spines, first anterolateral, second somewhat larger than first, placed at anterior end of branchial region. Rostrum nearly horizontal, broad triangular, dorsally excavated, breadth at proximal third 0.5 distance between lateral orbital spines. Excavated sternum anteriorly ending in spine between close Mxps 1; sternite 3 strongly depressed, anterior margin deeply concave with pair of distinct submedian spines. Telson having posterior lobe relatively long and narrow, about 2.5 times that of anterior lobe. Ocular peduncles very slender, length more than twice width, cornea less than half length of remaining eyestalk. Antennal peduncle having article 5 more than 4.5 times as long as broad; flagellum consisting of 17–20 segments barely reaching end of P1 merus; antennal scale barely reaching end of article 5. Mxp 3 merus 2.5 times as long as ischium, bearing small distolateral spine; carpus with small distolateral spine and small extensor marginal spine proximally. P1 basi-ischium with strong dorsal spine; merus and carpus with tubercles on ventral surface, smooth elsewhere; merus more than postorbital carapace length. P2–4 meri each about as long as carpus and propodus combined; propodi slightly more than twice as long as dactyli, flexor margin ending in pair of spines preceded by 6–8 spines; dactyli curving at proximal third, flexor margin with 8 or 9 relatively broad, somewhat inclined spines successively diminishing toward base of article.

Remarks: The species strongly resembles *U. latirostris*

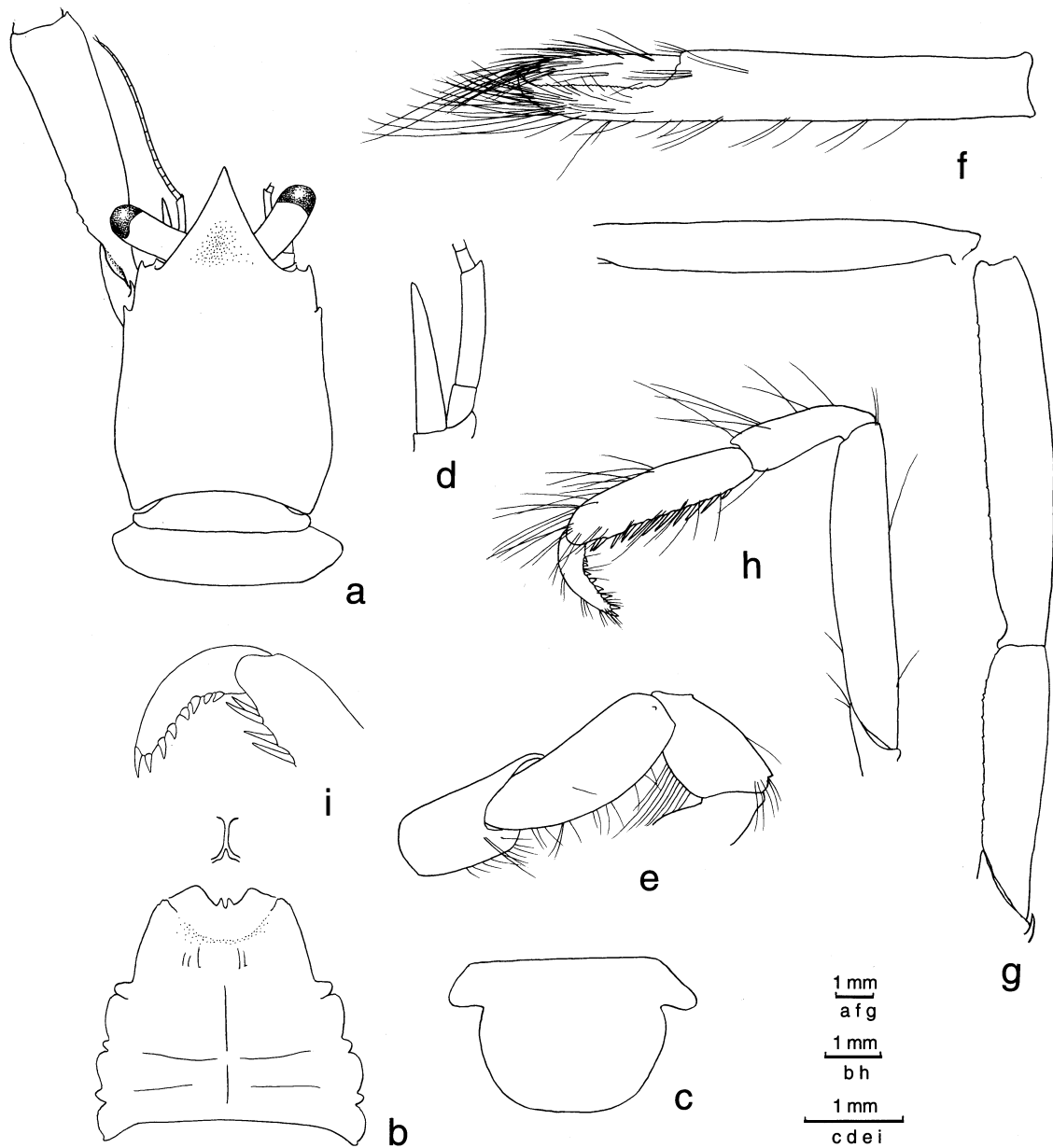


Fig. 6. *Uroptychus alcocki* Ahyong & Poore, 2004, ov. ♀ (8.5 mm), ZMUC CRU-11067: a, carapace and anterior part of abdomen, proximal part of left P1 included, dorsal; b, sternal plastron; c, telson; d, antenna, right, ventral; e, endopod of Mxp 3, distal part omitted, right, lateral; f, P1, distal part, left, dorsal; g, same, fingers and setae omitted, lateral; h, P2, left, lateral; i, same, distal part, setae omitted, lateral.

Yokoya, 1933 in nearly all aspects (see below). However, I believe the combination of the following characters distinguish *U. alcocki* from *U. latirostris*: the sternite 3 bears a broad V-shaped anterior margin with a pair of submedian spines in *U. alcocki*, whereas the anterior margin is narrowly V-shaped, bearing obsolescent submedian spines in *U. latirostris*; the P1 bears small tubercles at least on the ventral surface of the carpus and merus (those on the palm are wanting

in the present specimens) in *U. latirostris*, instead of being smooth as in *U. latirostris*; and the anterolateral extremity of the sternite 5 in *U. alcocki* laterally expands more strongly than does that of *U. latirostris* (see Fig. 11).

Range: New South Wales, Queensland, and Tasman Sea, Formosa Channel, and Japan; 64–419 m.

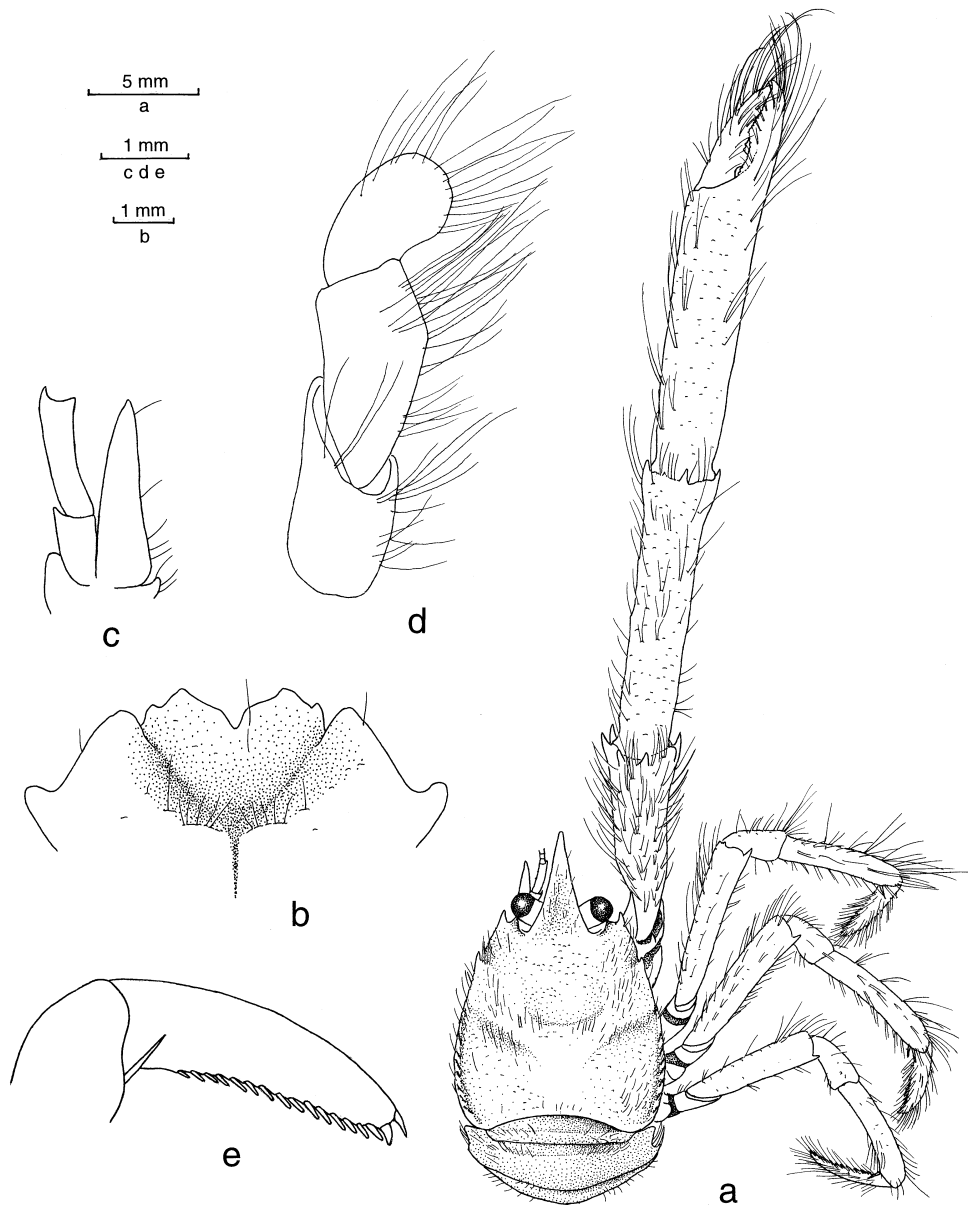


Fig. 7. *Uroptychus alius* n. sp., holotype, ♂, ZMUC CRU-11484: a, dorsal; b, anterior part of sternal plastron; c, antenna, left, ventral; d, endopod of Mxp 3, distal articles omitted, right, lateral; e, distal article of P2, fine setae omitted, right, lateral.

***Uroptychus alius* n. sp.**

Fig. 7

Material:

“Galathea” Sta. 302, Bay of Bengal, 19°42’N, 86°48’E, 1210–1240 m, clay, 25 Apr 1951: — 1 ♂ (12.7 mm), holotype, ZMUC CRU-11484.

Diagnosis: Carapace finely granulose and setose on dorsal surface, lateral margins with well-developed anterolateral spine and another smaller one directly

behind cervical groove. Rostrum sharply triangular, somewhat excavated on dorsal surface. Sternite 3 strongly depressed, anterior margin with V-shaped median notch, lacking submedian spines; sternite 4 unarmed laterally. Cornea as long as remaining eyestalk. Distal 2 articles of antennal peduncle with small but distinct terminal spine, antennal scale relatively broad, reaching end of peduncle. P1 finely granulose, subcylindrical but palm and fingers somewhat depressed; merus and carpus with 5 acute terminal spines; merus more than postorbital carapace

length; palm spineless; fingers barely half as long as palm. P2–4 slender and setose; meri with distinct spine on ventral distal margin, P2 merus as long as postorbital carapace length; propodi with pair of distoventral spines; dactyli gently curving, relatively broad distally, flexor margin with row of 17–20 short, inclined spines obscured by dense setae, ultimate sharp slender, penultimate broad, remaining spines truncate.

Description: Carapace, excluding rostrum, broader than long, dorsal surface finely granulose and sparsely provided with fine setae; distinct ridge present along posterior half of lateral margin, provided with short, oblique, finely granulated and elevated striae. Gastric region moderately convex, distinctly separated from cardiac region by distinct depression. Cervical groove indistinct between gastric and anterior branchial regions; shallow but distinct depression between anterior and posterior branchial regions. Lateral margins convexly divergent posteriorly, bearing 2 distinct spines: larger one at anterolateral angle and smaller one directly behind cervical groove. Lateral angle of orbit ending in small spine. Rostrum broadly triangular, its length more than half that of remaining carapace, dorsal surface slightly excavated, feebly granulose and sparsely setose.

Pterygostomian flap finely granulose like carapace, sparsely with fine setae, deeply excavated directly below second lateral marginal spine of carapace, anteriorly produced into small spine.

Excavated sternum roundly produced between bases of Mxps 1. Sternite 3 strongly depressed below level of sternite 4, anterior margin moderately concave, with V-shaped median notch, lacking submedian spines. Sternite 4 unarmed on lateral margin.

Abdominal segments smooth, spineless, and sparsely setose. Segment 1 with transverse ridge provided with setae. Segment 2 also with anterior transverse ridge fringed with setae. Telson slightly less than twice as broad as long, posterior part 1.5 times as long as anterior part; posterior margin distinctly concave medially.

Ocular peduncles short, barely reaching midlength of rostrum. Cornea not dilated, about as long as remaining eyestalk.

Articles 4 and 5 of antennal peduncle each with small but distinct distomesial spine; article 4 slightly more than half that of article 5. Antennal scale broader than peduncle, reaching end of article 5. Article 2 with blunt process at distolateral margin.

Endopod of Mxp 3 setose. Ischium with about 32

denticles on mesial ridge. Merus and carpus spineless.

P1 fully 3 times as long as carapace including rostrum, with finely granulate ridges supporting setae, subcylindrical on merus and carpus but somewhat depressed on palm and fingers, merus and fingers markedly setose, setae on fingers coarse and long. Ischium with short but sharp dorsal spine. Merus as longer than postorbital carapace length, with 5 acute terminal spines. Carpus also with 5 or 6 terminal spines. Palm somewhat broadened distally, 7 times as long as greatest width, equally long as carpus, lacking spines. Fingers barely half as long as palm, slightly gaping in proximal half, distally crossing. Movable finger with prominent tooth at base of opposable margin.

P2–4 slender, slightly compressed laterally, markedly setose distally. Meri with terminal spine on ventral margin, dorsal margin with small distal spine on P2, no spine on P3 and P4. P2 merus as long as postorbital carapace length. Carpi nearly spineless, but small distodorsal spine discernible on P2, length less than that of dactylus. Propodi with pair of terminal spines only on ventral margin. Each dactylus about half as long as propodus, gently curving, flexor margin with row of 17–18 slender, truncate spines on P2, 19 on P3, 20 on P4, penultimate largest; all obscured by dense setae.

Remarks: *Uroptychus alius* n. sp. closely resembles *U. occultispinatus* Baba, 1988 [= *U. granulatus japonicus* Balss, 1913] previously known from Japan and the Philippines in the sternite 3 having the anterior margin without submedian spines and the P2–4 dactyli bearing a row of numerous flexor marginal spines usually obscured by dense setae. However, they differ from each other in: the carapace in *U. alius* bears two spines on the lateral margin, i.e., one at the anterolateral angle and the other present directly behind the cervical groove; in *U. occultispinatus*, it bears additional two or three spines, though irregular in size, in one of the syntypes examined (Baba, 1988); the terminal spines on the distal two articles of the antennal peduncle are very small in *U. alius*, instead of being very strong as in *U. occultispinatus*; and the P1 is comparatively slender, with the merus and carpus bearing terminal spines in *U. alius*, instead of being unarmed as in *U. occultispinatus*.

Etymology: From the Latin *alius* (= another, different) alluding to the differences between the new species and *Uroptychus occultispinatus* Baba, 1988.

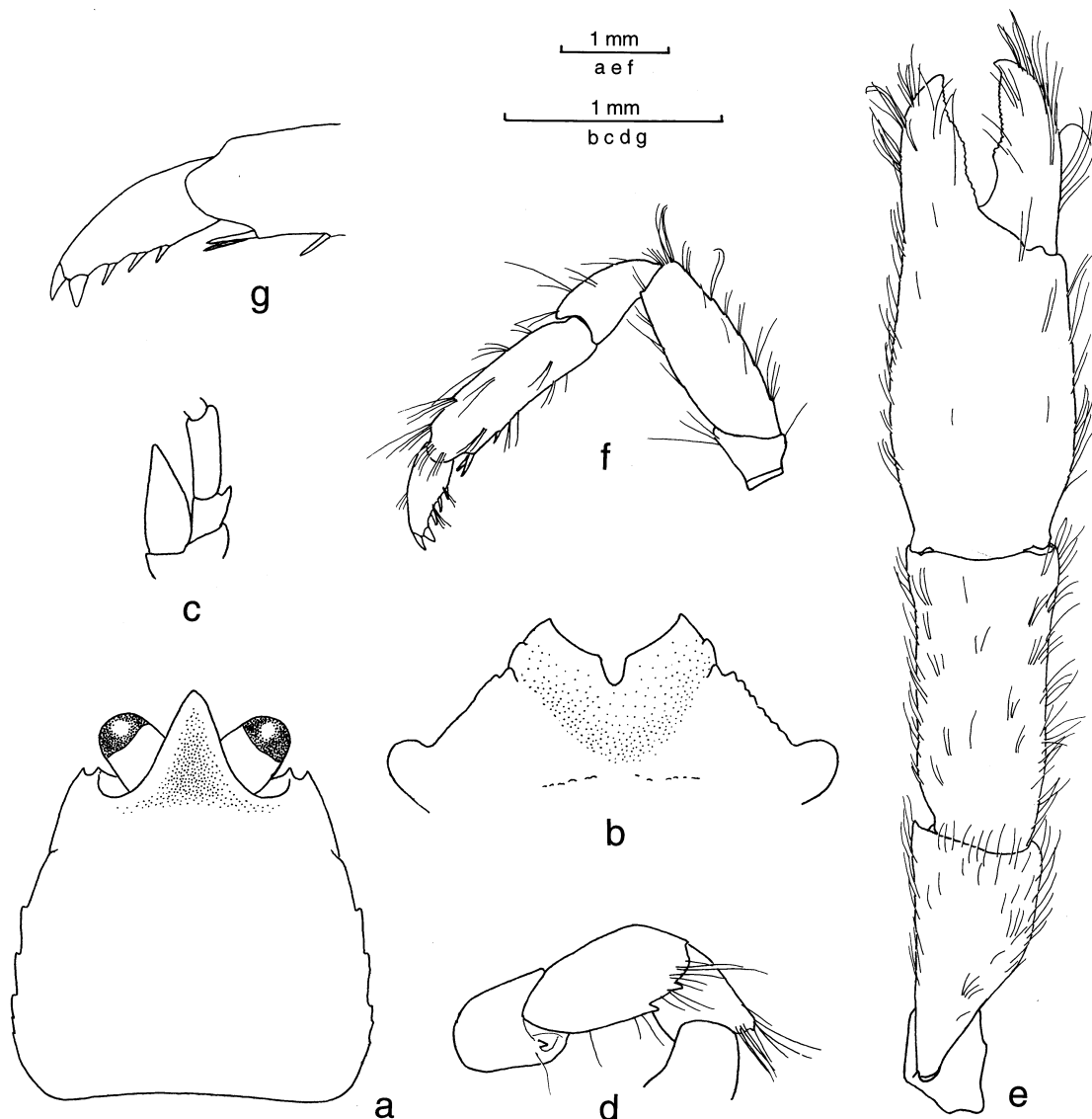


Fig. 8. *Uroptychus altus* n. sp., holotype, ♂, ZMUC CRU-11446: a, carapace, dorsal; b, anterior part of sternal plastron; c, antenna, right, ventral; d, endopod of Mxp 3, distal articles omitted, right, lateral; e, P1, left, dorsal; f, P2, left, lateral; g, same, distal articles, setae omitted, lateral.

***Uroptychus altus* n. sp.**

Fig. 8

Material:

Kei Islands Expedition St. 12, 5°30'S, 132°35'E, 325 m, sand, shells, corals, trawl, 9 Apr 1922: — 1 ♂ (3.7 mm), holotype, ZMUC CRU-11446.

Diagnosis: Cephalothorax very high. Carapace posteriorly broadened, convex from anterior to posterior end, lateral margin convexly divergent, anterolateral spine small, followed by 5 very reduced, posteriorly diminishing spines on branchial region.

Rostrum triangular, broad at base, dorsally excavated. Excavated sternum anteriorly ending in convex margin separating bases of Mxps 1. Sternite 3 depressed, anterior margin with V-shaped median notch. Cornea not broader than peduncle; article 5 of antennal peduncle unarmed, twice as long as article 4; article 4 with distinct terminal spine; antennal scale falling short of end of article 5. Mxp 3 ischium with small spine lateral to distal end of flexor margin; merus with 1 small distolateral and 2 small flexor marginal spines. P1 massive, merus with row of 4 ventral spines. P2–4 propodi each with pair of distoventral spines preceded by another spine; dactylus distally narrowed, ending

in spine of moderate-size, preceded by larger spine and 3 smaller spines.

Description: Carapace markedly high, convex from anterior to posterior end, without distinct groove, posteriorly broadened, 1.2 times as broad as long, exclusive of rostrum. Dorsal surface smooth and glabrous. Lateral margins moderately convex somewhat divergent posteriorly, anterolateral spine small, followed by 5 posteriorly diminishing short spines located on branchial margin. Rostrum broad triangular, dorsal surface excavated, length 0.35 that of remaining carapace. Outer orbital angle produced, ending in small spine.

Pterygostomian flap high relative to length, anteriorly ending in very small spine.

Excavated sternum anteriorly ending in convex margin separating bases of Mxps 1. Sternal plastron strongly widened posteriorly. Sternite 3 with V-shaped median notch on concave anterior margin, anterolateral angle sharp, posterior limit of sternite deeply convex posteriorly. Lateral margin of sternite 4 nearly straight, anteriorly with small blunt processes, anterior-most one somewhat larger.

Abdominal segments smooth. Pleura of segment 2 with subparallel lateral margins. Pleura of segments 3 and 4 each posteriorly diverging, ending in rounded posterolateral corner. Telson slightly less than twice as broad as long, posterior part 1.5 times as long as anterior part, posterior margin feebly emarginate.

Ocular peduncles barely reaching end of rostrum, relatively broad, somewhat narrowed distally, cornea slightly shorter than remaining eyestalk when measured in dorsal view (invisible portion omitted).

Article 5 of antennal peduncle spineless, twice as long as article 4. Article 4 with short, stout spine at distomesial margin. Flagellum consisting of 7 or 8 segments. Antennal scale relatively short and broad, overreaching midlength of but falling short of end of article 5. Article 2 barely produced at distolateral angle.

Mxp 3 ischium with row of very small denticles, about 23 in number, on mesial ridge and small spine lateral to distal end of flexor margin. Merus more than twice as long as ischium when measured in midlateral row, bearing very small distolateral spine and 2 flexor marginal spines distal to midlength.

Right P1 missing. Left P1 2.7 times as long as carapace including rostrum, rather massive, moderately setose. Basi-ischium with well-developed subterminal spine on mesial margin, followed proximally with posteriorly diminishing tubercle-like spines, dorsally

with short, sharp spine. Merus with 4 ventromesial spines along whole length and 1 small ventrolateral spine distally, length much less than postorbital carapace length. Carpus slightly shorter than palm, 2.3 times as long as broad when measured at midlength, bearing 2 distoventral spines, one mesial and other lateral. Palm moderately depressed, 1.9 times as long as broad. Fingers broad relative to length, 0.65 as long as palm, distally ending in short sharp point, curving and crossing; low process on each opposable margin, that of movable finger somewhat proximal to level of opposing one on fixed finger.

Right P2–4 missing. Left P2–4 detached from body, all nearly similar, short and broad, moderately setose. Meri with convex dorsal and ventral margins, dorsal margin with 4 or 5 eminences, P2 merus much shorter than postorbital carapace length, length 3 times breadth. Carpi as long as dactyli. Propodi 3.5 times as broad as long when measured on lateral face, twice as long as dactyli, ventral margin with pair of terminal spines preceded by another spine. Dactyli sharply narrowed distally, feebly curving, ending in moderate-sized spine preceded by 1 much broader and 3 smaller spines.

Remarks: *Uroptychus altus* is closely related to *U. convexus* Baba, 1988 from the Philippines in the carapace ornamentation and massive P1 but they differ in the following particulars: in *U. altus*, the distal two of the flexor marginal spines on P2–4 dactyli are prominent especially the penultimate one, whereas in *U. convexus*, the ultimate is slender and the penultimate and antepenultimate spines both are prominent; the P2–4 propodi in *U. altus* bear an extra spine proximal to the pair of terminal spines on the ventral margin, which is absent in *U. convexus*; the Mxp 3 ischium in *U. altus* bears a distinct terminal spine lateral to the distal end of the flexor margin, whereas such a spine is absent in *U. convexus*, a fact confirmed by re-examination of the type material of *U. convexus*.

Etymology: From the Latin *altus* (= high) in reference to the high cephalothorax, characteristic of the species.

Uroptychus ciliatus (van Dam, 1933), n. comb.

Fig. 9

Synonymy: see p. 225.

Material:

Kei Islands Expedition St. 50, 5°54'S, 132°25'40"E,

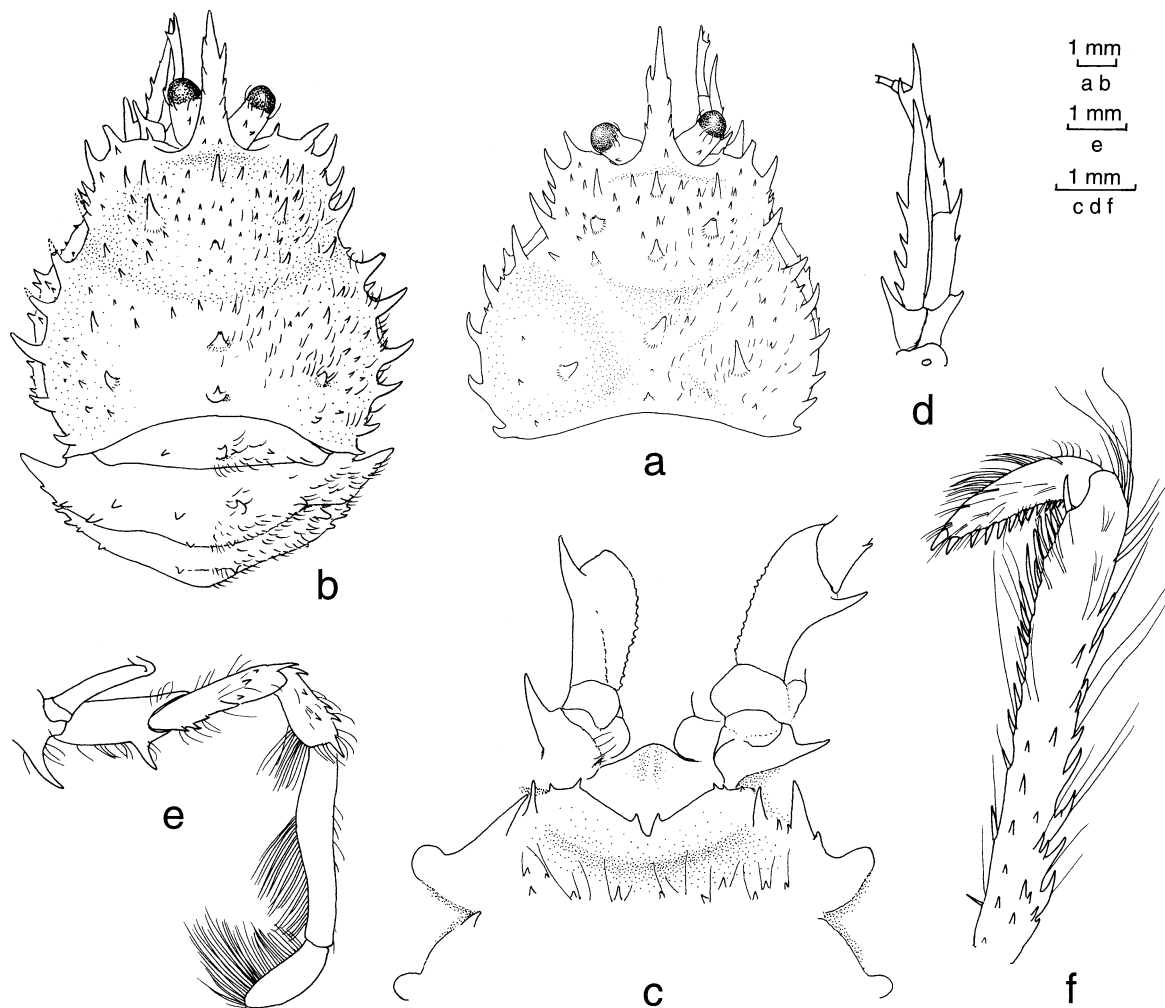


Fig. 9. *Uroptychus ciliatus* (van Dam, 1933), a, ov. ♀ (9.4 mm), ZMUC CRU-11336; b-f, ov. ♀ (9.8 mm), ZMUC CRU-332: a, carapace, dorsal; b, carapace and abdomen, dorsal; c, anterior part of sternal plastron and proximal parts of Mxps 3, ventral; d, antenna, right, ventral; e, Mxp 3, right, lateral; f, distal articles of P2, left, lateral.

233 m, sand, 4 May 1922: — 1 ov. ♀ (9.4 mm), ZMUC CRU-11336.

Kei Islands Expedition St. 58, 5°29'S, 132°37'E, 290 m, mud, 12 May 1922: — 1 ov. ♀ (9.8 mm), ZMUC CRU-11332.

Diagnosis: Carapace broader than long, covered with pronounced and small spines and short setae moderate in density; pronounced spines about 10 in number along lateral margin, 5 or 6 of these situated on convex branchial margin, posterior-most situated at posterior end of lateral margin; 6 prominent spines on gastric region and a few on branchial region. Rostrum narrow and flattish, laterally with a few to several small spines. Orbit well defined, lateral limit not produced. Excavated part of sternites anterior to sternal plastron

ridged in midline, anterior margin convex, anteriorly ending between bases of Mxps 1. Sternite 3 having somewhat concave anterior margin with 2 submedian spines separated by small notch; sternite 4 with 2 lateral spines on each side, posterior larger, ventral surface with transverse row of tubercle-like spines. Abdomen covered with small spines sparse on tergites, numerous on pleura, and short setae: segment 1 with prominent median spine flanked by small spine; segment 2 with spines in 2 rows, anterior row of 2 pair of spines, posterior row of pair of submedian spines flanked by stronger one somewhat lateral to lateral limit of tergite; segments 3–6 each with anterior and posterior pairs of 2 submedian spines, often additional pair on segment 6, posterior pair obsolescent on segment 3; those on segment 6 larger than others. Ocular peduncles

elongate, terminating in midlength of rostrum, bearing 1 or 2 small dorsal spines and coarse distal setae; cornea not dilated, length about half that of remaining eyestalk. Antennal peduncles slender, distal 2 articles each with strong mesioventral terminal spine, article 5 with additional spine on opposite angle of distolateral margin and a few small spines along ventral margin; antennal scale elongate, terminating in distal end of peduncle; article 3 with distinct distomesial spine; article 2 strongly produced on distolateral margin. Mxp 3 having very strong lateral spine on coxa, at distal part of ischium and midpoint of merus; merus with a few additional small spines along lateral margin and 1 well-developed spine on distal end of extensor margin; carpus with well developed distolateral spine and a few small spines on flexor margin. P1 with small spines arranged in longitudinal rows on merus, carpus and palm, not on fingers. P2–4 also spinose; propodus nearly as long as carpus, more than twice length of dactylus, dorsally and laterally with fixed spines, ventral margin with inclined slender spines rather distant from one another in proximal half, close to one another in distal half, more distally arranged in 2 rows; each dactylus about 1/3 as long as propodus, flexor margin with 13–14 proximally diminishing spines, terminal spine largest.

Eggs: Diameter, 0.90 mm.

Remarks: The gastric region and rostrum in the present material bear more numerous spines than in the type material. This is the first record of the species since the female holotype was taken from the “Siboga” St. 251. This species can not be placed in *Chirostylus* or *Gastroptychus* as defined in this paper (see above), and the flattish rostrum and the deeply excavated anterior margin of the sternite 3 displayed by the species are characteristic of *Uroptychus*. It is worthy of note that the Mxps 3 bear strong spines, especially on the coxa, ischium, and merus; all of the spines are directed laterad so as to be visible in ventral view. No males are known.

Uroptychus ciliatus and *U. spinirostris* (Ahyong & Poore, 2004) possess the spinose body and appendages but they are distinguished by the following: 1) the rostrum in *U. ciliatus* bears a few to several small spines on the lateral margins and dorsal surface, instead of two pairs of distinct spines on the lateral margin as in *U. spinirostris*; 2) the dorsal surface of the carapace in *U. ciliatus* bears very small spines in addition to well-developed spines, instead of well-developed spines only as in *U. spinirostris*; 3) the antennal scale

in *U. ciliatus* is much longer, only slightly falling short of the end of the article 5, whereas slightly overreaching the end of the article 4 in *U. spinirostris*; and 4) the P2–4 dactyli are about one-third as long as propodi in *U. ciliatus*, about half as long in *U. spinirostris*.

Range: Kei Islands; 204–290 m.

Uroptychus crassipes van Dam, 1933

Synonymy: see p. 225.

Material:

Kei Islands Expedition St. 58, 5°29'S, 132°37'E, 290 m, mud, trawl, 12 May 1922: — 2 ♂ (4.7, 5.7 mm), 1 ov. ♀ (10.6 mm), 2 ♀ (3.8, 5.1 mm), ZMUC CRU-11424.

Diagnosis: Carapace and P1–4 covered with long fine setae. Carapace lateral margin convex, with 7 spines, first anterolateral, well-developed, second and third small, located on hepatic region, fourth to seventh acute, well developed, located on branchial region. Rostrum triangular, with small subterminal spine on each lateral margin; dorsal surface excavated. Excavated part anterior to sternal plastron with convex anterior margin separating bases of Mxps 1. Sternite 3 with deep median notch separating 2 spines. Sternite 4 with straight oblique lateral margin. Ocular peduncles very elongate, about twice as long as broad, cornea not dilated. Distal 2 articles of antennal peduncle with strong distomesial spine; flagellum of about 16–18 segments overreaching P1 merus; antennal scale overreaching end of peduncle. Mxp 3 ischium with rounded distal corner on flexor distal margin; well-developed distolateral spine on merus and carpus. P1 comparatively massive, merus and carpus with distal spines. P2–4 propodi with pair of distoventral spines, preceded by a few spines in large specimens; dactyli distinctly more than half length of propodi; ultimate spine on flexor margin slender, penultimate broad, preceded by slender, moderately inclined spines.

Eggs: Diameter, 0.90–1.00 mm.

Remarks: In small specimens, the carapace is less setose, as also are the P2–4. The non-ovigerous female has additional subterminal spine on the rostral lateral margin of left side.

Range: Kei Islands and Philippines off E coast of

Mindoro; 290–518 m.

***Urotychus gracilimanus* (Henderson, 1885)**

Synonymy: see p. 226.

Material:

Th. Mortensen's Pacific Expedition 1914–16, 25 miles E of Zamboanga, ca. 458 m, trawl, 4 Mar 1914: — 1 ov. ♀ (8.0 mm), ZMUC CRU-11577.

Diagnosis: Carapace glabrous and smooth, without dorsal spines; lateral margin with ridge along posterior half; anterolateral spine small. Rostrum triangular, dorsally flattish, length less than half that of remaining carapace. Lateral limit of orbit with very small process. Cornea of eye not dilated. Sternite 3 with narrow median notch separating 2 submedian spines; sternite 4 having anterolateral margin convex, with a few small spines anteriorly. Ocular peduncles less than twice as long as broad. Antennal peduncle unarmed on distal 2 articles, antennal scale falling short of end of article 5. Mxp 3 unarmed on merus and carpus. P1 slender, unarmed, and smooth, merus longer than carapace. P2 merus shorter than carapace; P2–4 carpi more than half length of propodi, longer than dactyli; propodi with slender movable spines on distal third of ventral margin on P2, more distal on P3 and P4, ultimate one located near distal end, single, not paired; dactyli with 8–10 proximally diminishing spines on flexor margin.

Eggs: Number of eggs, 17; size, 1.10–1.20 mm.

Remarks: Identification was verified by examination of the ovigerous female holotype (BMNH 88:33) from Port Jackson. The type and the present material bear P2–4 broken at the tip. Other material (5 ♂, 13 ♀) at hand from the Kei Islands (KARUBAR Expedition St. 19, 20, 21), in the collection of the MNHN, shows that the flexor marginal spines of the P2–4 dactyli are diminishing in size toward the base of the article, the terminal one being the largest.

Reexamination of the specimens from Madagascar reported earlier (Baba, 1990) discloses that they belong to another species apparently new to science, the differences being distinct in that the P2–4 bear relatively long carpi and have different spination of the propodi: the distal of the ventral marginal spines of each propodus is located near the juncture with the dactylus in *U. gracilimanus*, whereas it is considerably

distant from the juncture in the Madagascar specimens. This material will be described elsewhere.

One of the specimens from “Valdivia” St. 250 off the south coast of Somali Republic, 1668 m, now in the collection of the Musée Zoologique, Strasbourg (1 ovigerous female, MZS 349), is referred to *U. remotispinatus* Baba & Tirmizi, 1979. One male from the “Valdivia” St. 245 in Zanzibar Canal, reported by Doflein & Balss (1913) and now in the collection of the Senckenberg Museum at Frankfurt a. M. (SMF 4549), was synonymized with *U. vandamae* Baba, 1988 for a unique armature of the dactyli of the P2–4 (Baba, 1990). The identity of the other specimens reported from “Valdivia” St. 191, 246, 252, 253 in the Mozambique Channel, off S Somali Republic, and off W coast of Sumatra, in 638–1019 m, remains questionable.

Range: Zanzibar, W coast of Sumatra, Moluccas, off Zamboanga, New South Wales, East China Sea, and Japan; 421–1668 m.

***Urotychus inclinis* n. sp.**

Fig. 10

Material:

Kei Islands Expedition St. 3, 5°32'S, 132°36'E, 245 m, sand, 31 Mar 1922: — 1 ♂ (4.3 mm), 1 ♀ (5.6 mm, holotype), ZMUC CRU-11334.

Diagnosis: Carapace with relatively long sparse setae; lateral margins convex bearing 7 spines, first anterolateral, moderate in size, second and third much smaller than following 4 spines. Rostrum narrowly triangular, deeply excavated dorsally, laterally bearing small subapical spine on each side. Lateral limit of orbit angular, ending in small spine. Pterygostomian flap with small spines on anterior half. Excavated sternum with distinct ridge in midline, anterior margin broadly triangular, separating Mxps 1 rather distantly; sternite 3 shallowly depressed, anterior margin weakly concave, with narrow U-shaped median notch. Ocular peduncles elongate, cornea about half as long as remaining eyestalk. Distal 2 articles of antennal peduncle each with very strong distomesial spine; flagellum of 7–10 segments barely reaching end of P1 merus; antennal scale overreaching tip of distal spine of article 5. Mxp 3 ischium with small spine directly lateral to rounded distal corner of flexor margin, denticles on mesial ridge rather small; merus short

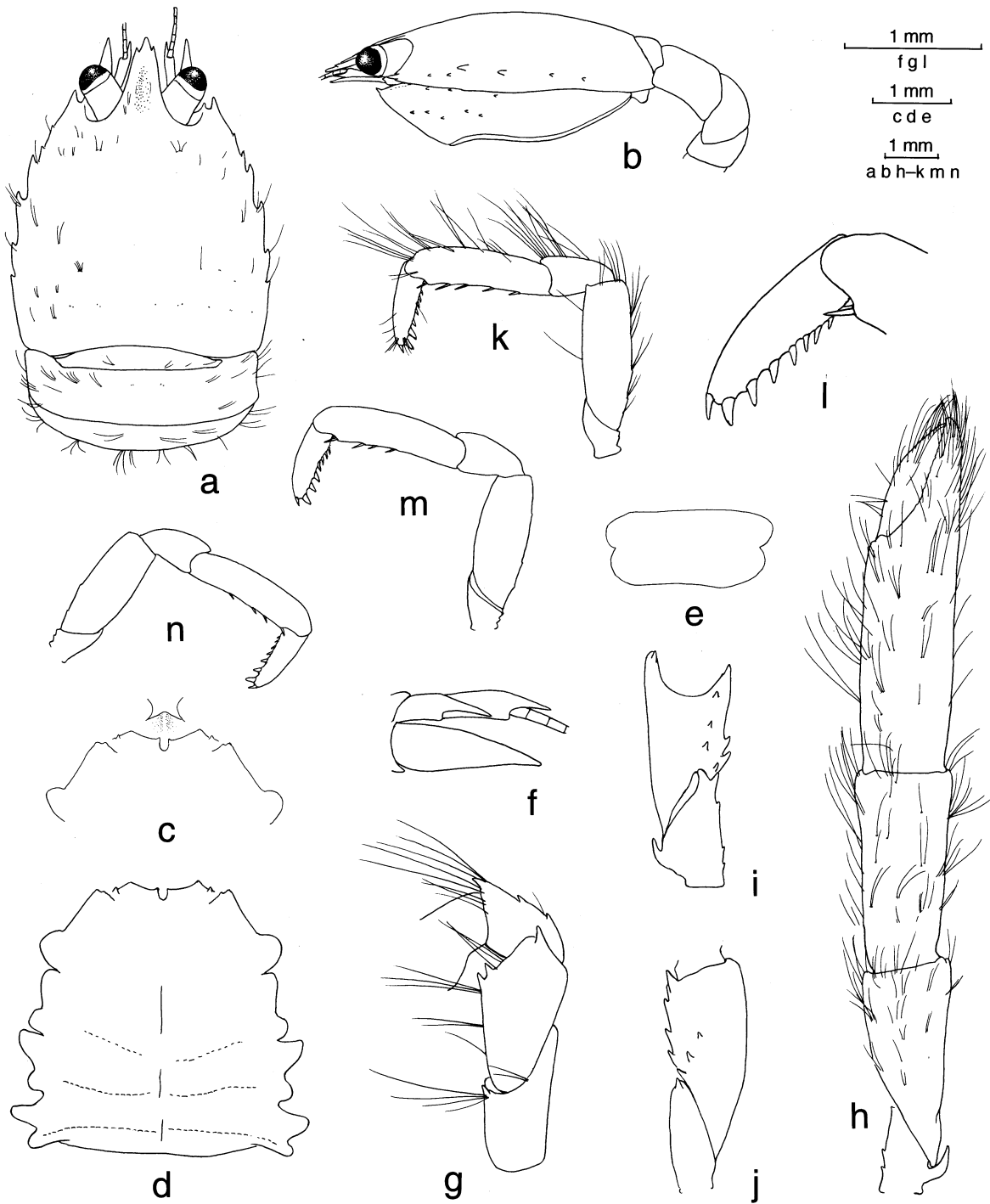


Fig. 10. *Uroptychus inclinis* n. sp., holotype, ♀, ZMUC CRU-11334: a, carapace and anterior part of abdomen, dorsal; b, same, setae omitted, lateral; c, excavated sternum and sternite 3; d, sternal plastron; e, telson; f, antenna, left, ventral; g, endopod of Mxp 3, distal part omitted, left; h, P1, right, dorsal; i, same, proximal part, ventral; j, same, mesial; k, P2, left, lateral; l, same, distal part, setae omitted, lateral; m, P3, left; n, P4, right.

relative to length, with 1 distolateral and 1 or 2 small spines on distal 1/3 of flexor margin; carpus with distolateral spine and 1 or 2 extensor marginal spines. P1 with distally softened long setae; basi-ischium with 2 dorsal spines; merus with row of 3 spines on proximal

part of ventromesial surface and 3 spines on ventral surface. P2–4 moderately broad in lateral view, bearing long, distally softened setae; meri having dorsal crest with a few proximal spines or eminences distinct on P2, obsolete on P3 and P4; P2 merus much shorter

than postorbital carapace length; propodi having ventral margin with pair of terminal spines preceded by 3 or 4 spines (2 on P3, 1 on P4 in paratype); each dactylus slightly less than half length of propodus, flexor margin nearly straight, bearing slender terminal spine preceded by 7 (6 on P4 in paratype) proximally diminishing spines somewhat inclined, not perpendicular to margin.

Description of holotype: Carapace smooth, with scattered, relatively long setae on surface, slightly broader than long. Dorsal surface convex from anterior to posterior end, without distinct groove. Lateral margins convex, with 7 spines, first anterolateral, reaching proximal end of antennal scale, second and third small and somewhat ventral to level of fourth, fourth and fifth as large as first, sixth and seventh smaller. Rostrum narrow triangular, with somewhat concave lateral margin bearing subapical spine. Dorsal surface deeply excavated. Lateral angle of orbit with small spine rather close to anterolateral spine of carapace.

Pterygostomian flap produced anteriorly, ending in small spine, anterior half of surface with small spines, a few of these located directly below linea anomurica.

Excavated sternum having anterior margin broadly subtriangular, surface with longitudinal ridge in midline. Sternite 3 shallowly depressed, anterior margin slightly concave between well produced anterolateral angles, with U-shaped median notch separating very small submedian spines. Sternite 4 having anterolateral margin nearly straight, anteriorly not strongly produced, bearing 2 denticles.

Abdomen smooth, sparingly setose. Segment 1 without transverse ridge. Segment 2 relatively long, pleural margins feebly concave and subparallel. Pleura of segments 3 and 4 laterally not angular, ending in rounded margin. Telson about 2.4 times as broad as long, posterior lobe 1.5 times as long as anterior lobe, posterior margin somewhat concave.

Ocular peduncles overreaching midlength of rostrum, distally narrowed; cornea half as long as remaining eyestalk.

Ultimate article of antennular peduncle 3 times as long as broad. Antennal peduncles overreaching end of ocular peduncle, distal 2 articles each with strong ventral distomesial spine, article 5 1.3 times as long as article 4, breadth 4/5 that of ultimate article of antennule. Antennal scale slightly overreaching end of ultimate article including spine. Flagellum consisting of 8 or 9 segments falling short of end of P1 merus.

Article 2 with strong lateral spine.

Mxps 1 widely separated. Mxp 3 sparingly with long setae on lateral face. Ischium with distal spine lateral to rounded distal corner of flexor margin, mesial ridge with about 20 denticles distally diminishing. Merus strongly compressed mesio-laterally, distolateral spine distinct; flexor margin sharply ridged, bearing 2 small close spines on angularly produced portion at distal third. Carpus with distolateral spine and 2 extensor marginal spines.

Pereopods smooth, with distally softened long setae. P1 slender, 4.5 times length of carapace, somewhat massive distally. Ischium dorsally with 2 spines, distal one strong, proximal one small, ventrally with subterminal spine on mesial margin. Merus slightly shorter than carapace, bearing 2 distoventral spines (1 large mesial, 1 lateral), 1 distodorsal spine (mesial), 3 ventromesial spines in oblique line on proximal portion, and 3 ventral spines. Carpus with distomesial and distolateral spines ventrally. Palm slightly longer than carpus. Movable finger slightly more than half as long as palm, opposable margin with low median process fitting to opposing concavity of fixed finger when closed.

P2–4 relatively short and broad, somewhat compressed. Meri subequal on P2 and P3, that of P4 shorter; dorsally with 2–5 eminences provided with setae. P2 merus much shorter than carapace. Carpus shorter than dactylus. Propodus subequal on P2–4, about twice as long as carpus, 3.4–3.8 times as long as broad, flexor margin ending in pair of spines preceded by 4 slender spines on P2, 3 spines on P3–4. Each dactylus distinctly more than half length of propodus, tapering distally, flexor margin nearly straight, bearing 8 spines, ultimate slender, others somewhat inclined, proximally diminishing, penultimate broader than ultimate.

Paratype: Antennal articles 4 and 5 on the right side are much shorter than those on the left side, so that the antennal scale extends far beyond the end of the distomesial spine of the article 5. Those on the left side is normal, about the same as those of the holotype. Telson 0.43 times as long as broad, posterior lobe 1.5 times as long as anterior lobe, posterior margin not concave. P2 merus with 2 or 3 spines instead of eminences as in the holotype.

Remarks: The lateral marginal spination and dorsal setation of the carapace, and the shape of the rostrum strongly link the species to *U. tridentatus* (Henderson,

1885). The new species is distinguished from that species by the antennal scale that overreaches the tip of the distal spine of the article 5 or the end of the proximal second segment of the antennal flagellum rather than falling short of end of the distal spine of the article 5 or terminating in the end of the first segment of the antennal flagellum as in *U. tridentatus*, and the P2–4 dactyli that bear eight somewhat inclined flexor marginal spines whereas there are six spines, of which the distal second, third and fourth are perpendicular to the flexor margin in *U. tridentatus*.

Etymology: From the Latin *inclinis* (= inclined), referring to the inclined flexor marginal spines of the P2–4 dactylus that are not perpendicular to the margin as in *U. tridentatus*.

***Uroptychus joloensis* van Dam, 1939**

Synonymy: see p. 227.

Material:

Kei Islands Expedition St. 5, 5°31'30"S, 132°38'E, 250–90 m, sand, stones, 4 Apr. 1922: — 1 ♂ (2.3 mm), ZMUC CRU-11368.

Diagnosis: Carapace dorsally unarmed, laterally with 3 spines: first anterolateral, of moderate-size, second small, more close to third than to first; third prominent, anterior to midlength of lateral margin, followed by distinct ridge leading to posterior end. Rostrum subtriangular, somewhat deflexed, dorsally excavated, length slightly less than half that of remaining carapace. Lateral orbital spine close to anterolateral spine of carapace. Anterior margin of sternite 3 with narrow U-shaped median sinus flanked by very small spine. Ocular peduncles distally narrowed. Distal 2 articles of antennal peduncle each with distinct distomesial spine; flagellum of 8 segments falling short of end of P1 merus; antennal scale barely reaching end of article 5. Mxp 3 ischium with rounded corner at flexor distal margin; merus with well-developed distolateral spine and 1 or 2 small spines on flexor margin; carpus also with 1 distal and 1 proximal spine. P1 nearly spineless but two well-developed dorsal spines on basi-ischium; with plumose setae more numerous distally. P2–4 short relative to P1 length, P2 merus shorter than postorbital carapace length; propodus with pair of movable spines on distal end of ventral margin; dactylus relatively stout, straight, less than half length of propodus, flexor margin with 5 spines, ultimate slender, penultimate and

antepenultimate prominent, nearly perpendicular to flexor margin, proximal 2 much slender.

Remarks: The subapical spines of the rostrum, characteristic of the species (van Dam, 1939), are missing in the present specimen, as well as in other material at hand (see below). Such a suppression of spines is also observed in Japanese specimens of *U. occultispinatus* Baba, 1988 (unpublished).

Three specimens available to me, taken on soft corals (unidentified) at Kushimoto, Kii Peninsula, the Pacific coast of Central Japan by K. I. Hayashi, are without doubt referable to *U. kudayagi* by the characteristic color spots as originally described (Miyake, 1961: fig. 1). With these specimens, it is apparent that *U. kudayagi* should be merged with *U. joloensis*. The lateral angle of the orbit is distinctly spine-like and a ridge is present behind the posterior-most lateral spine of the carapace, characters not mentioned by Miyake. The smaller of the lateral spines of the carapace as seen in the type of *U. joloensis* is absent at least on one side in two of the three specimens examined, and it is barely discernible in the remaining specimen. The subapical spines of the rostrum as described for the type of *U. joloensis* are distinct in one (female) of the three specimens, vestigial in another female and absent on the left side in the remaining male.

This species is very closely related to *U. amabilis* Baba, 1977 from New Caledonia, in dactylar spination of the P2–4. However, *U. amabilis* has no lateral spine on the carapace other than the anterolateral spine and the antennal article 5 unarmed.

Minemizu (2000) noted that the typical red spots around ocular peduncles and joints of the P1–4 fit in well with spots of the same color of host alcyonacean polyps.

Range: Jolo, Kei Islands, and Japan; 56.7–250 m. Presumably this species may be a continental shelf form but it is included here in this report based on the present depth record. Associated with the alcyonacean *Siphonogorgia dipsacea* (Wright & Studer) and *Siphonogorgia dofleini* Kükenthal (see Miyake, 1982; Minemizu, 2000).

***Uroptychus latirostris* Yokoya, 1933**

Figs. 11, 12

Synonymy: see p. 227.

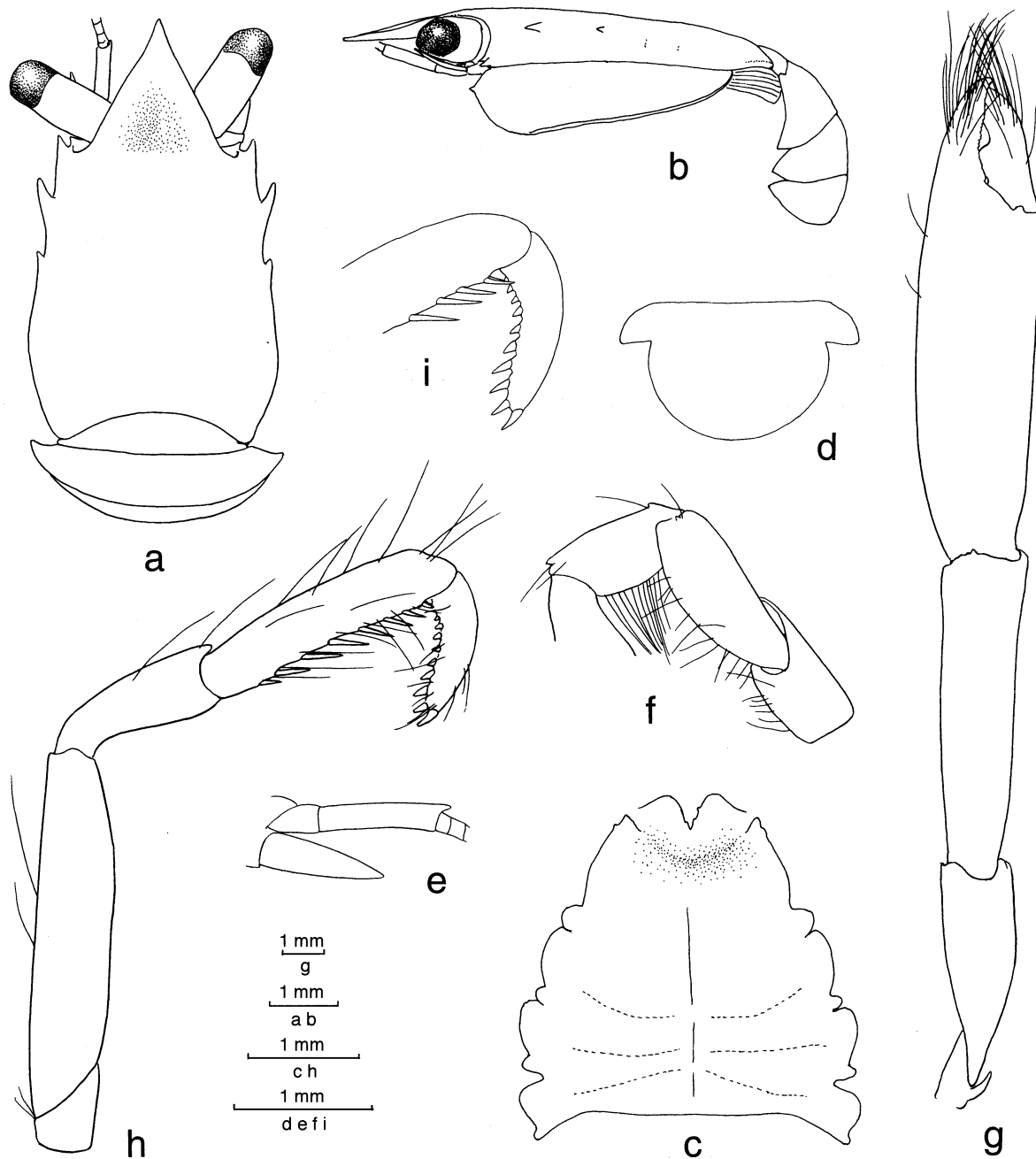


Fig. 11. *Uroptychus latirostris* Yokoya, 1933, neotype, ♂, ZLKU 12993: a, carapace and anterior part of abdomen, dorsal; b, same, lateral; c, sternal plastron; d, telson; e, antenna, left, ventral; f, endopod of Mxp 3, distal articles omitted, left, lateral; g, P1, left, dorsal; g, P3, right, lateral; h, same, distal part, setae omitted, lateral.

Material:

Japan, Ashizuri-zaki, Tosa Bay, 150 m, 29 Sept. 1965, coll. T. Habe: — 1 ♂ (5.9 mm), neotype, ZLKU 12993.

Japan, Tosa-shimizu, Tosa Bay, 9–27 m, 28 Sept. 1960, coll. K. Kurohara: — 1 ♂ (5.0 mm), 1 ♀ (6.4 mm), ZLKU 8009-10.

Hachijo-jima, Izu Islands, 200 m, 15 Aug. 1952: — 2 ov. ♀ (5.9, 6.5 mm), 1 sp. (sex indet., 5.0 mm), ZLKU 4697-99.

Th. Mortensen's Pacific Expedition 1914–16, Okinose, Sagami Bay, 100 fm (183 m), hard bottom, swabs, 25 Jun 1914, Th Mortensen: — 1 ov. ♀ (7.8 mm), ZMUC CRU-11005.

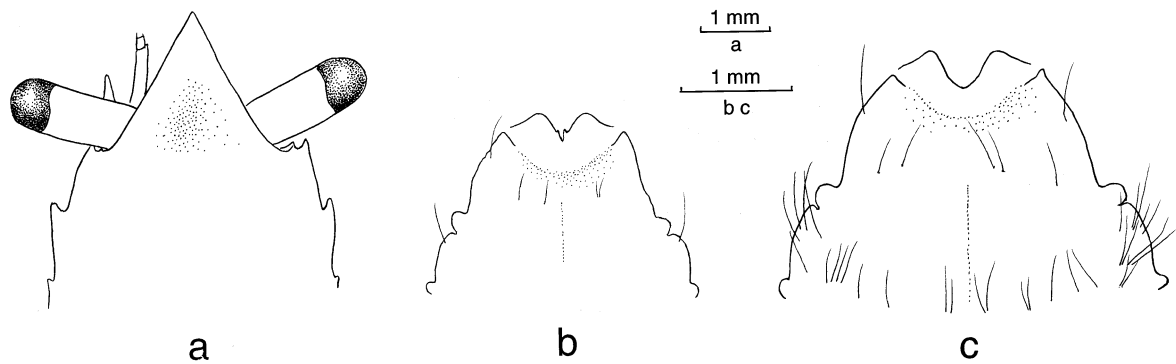


Fig. 12. *Urotychus latirostris* Yokoya, 1933: a, ♀ (6.4 mm); b, ♂ (5.0 mm), ZLKU 8009-10: a, anterior part of carapace, dorsal; b, c, anterior part of sternal plastron.

Neotype: The male, ZLKU 12993, is selected as a neotype.

Diagnosis: Carapace dorsally smooth and glabrous. Lateral margin with moderate-sized anterolateral spine followed by large spine placed at anterior end of branchial region and another spine located somewhat anterior to midlength. Rostrum broadly triangular, slightly deflexed, dorsally excavated; breadth at proximal third 0.65 distance between lateral limits of orbits. Sternal plastron posteriorly broader; excavated sternum with triangularly produced sharp anterior end between close bases of Mxps 1; sternite 3 strongly depressed, bearing narrowly excavated, V-shaped anterior margin with obsolescent submedian spinules. Telson with semicircular posterior margin. Ocular peduncles about twice as long as broad, cornea slightly less than half that of remaining eyestalk. Article 5 of antennal peduncle with small ventral distomesial process; flagellum consisting of more than 20 segments reaching end of P1 merus; antennal scale terminating in or slightly overreaching midlength of article 5. Mxps 1 close to each other at base. Mxp 3 merus 2.5 times as long as ischium, with very small distolateral spine; carpus with distolateral spine and 1 spine on extensor proximal margin, both very small. P1 nearly glabrous but fingers with thick setae; basi-ischium with well developed distodorsal spine; merus ventrally with distomesial spine and fine granules on proximal portion, length greater than postorbital carapace length; palm smooth. P2–4 slender, P2 merus slightly longer than postorbital carapace length; meri unarmed, length subequal to that of carpus and propodus combined; carpi more than half as long as propodi; P2–4 propodi ending in pair of terminal spines preceded by 7–9 spines (fewer on P4); dactyli with 9 or 10 somewhat

inclined, relatively broad spines successively diminishing toward base of article.

Description of neotype: Carapace slightly longer than broad, dorsal surface smooth and glabrous. Lateral margin convex on posterior branchial region, anterolateral spine of moderate size directed anteroventrad, followed by 2 spines: larger spine placed at anterior end of branchial region and smaller spine located somewhat anterior to midlength. Rostrum broadly triangular, slightly deflexed, dorsally excavated; breadth at proximal third 0.65 distance between lateral limits of orbits. Lateral orbital spine short, relatively broad at base, directed anterolaterad and close to anterolateral spine of carapace.

Pterygostomian flap anteriorly ending in very small spine, surface unarmed.

Sternal plastron posteriorly broadened, greatest breadth subequal to greatest length. Excavated sternum with triangularly produced sharp anterior end between close bases of Mxps 1, surface with obsolescent ridge in midline. Sternite 3 strongly depressed, bearing narrowly excavated anterior margin with obsolescent submedian spinules. Sternite 4 having anterolateral margins convexly divergent, relatively long, length 0.69 width of sternite 3.

Abdominal segment 1 without transverse ridge. Segment 2 with pleural lateral margins concavely divergent posteriorly, posterolaterally angular. Pleura of segments 3 and 4 with angular lateral margin. Telson with semicircular posterior margin, 1.7 times as broad as long, posterior lobe 2.6 times as long as anterior lobe.

Ocular peduncles elongate, about twice as long as broad, nearly reaching end of rostrum, cornea not dilated, length slightly less than half that of remaining

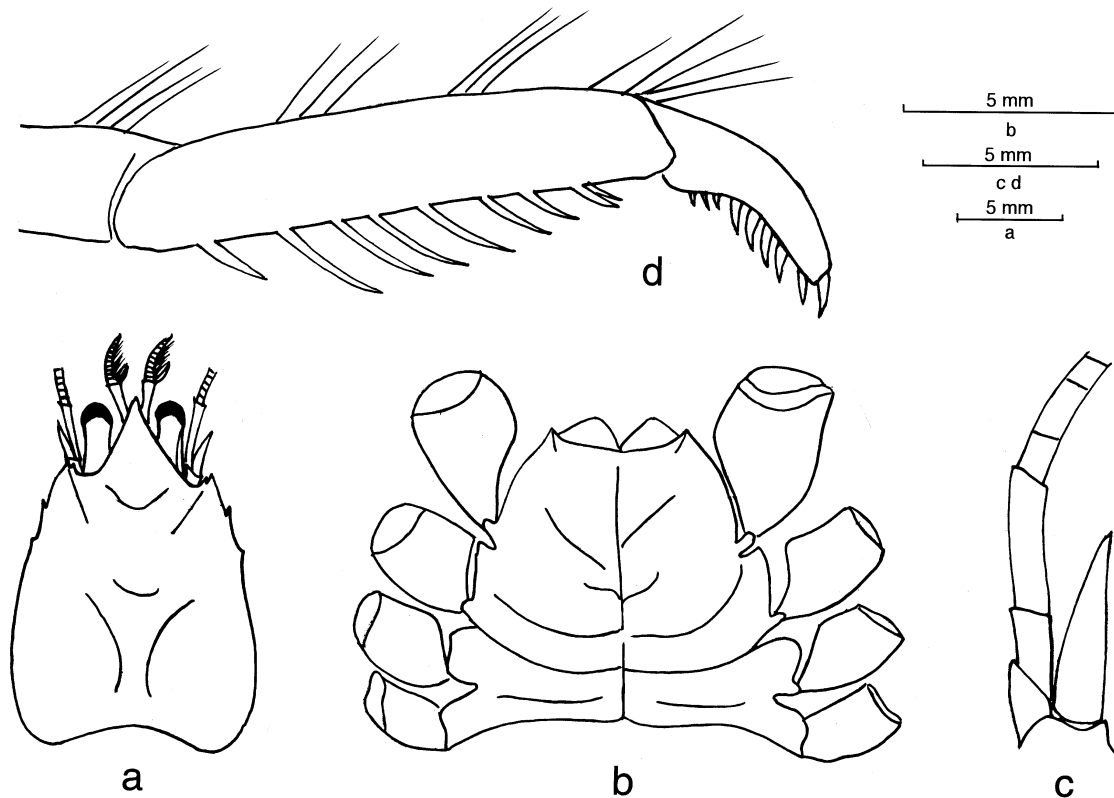


Fig. 13. *Uroptychus cavirostris* Alcock & Anderson, 1899, holotype, ♀, ZSIC 2672/10: a, carapace, dorsal; b, sternal plastron, including basal parts of P1–4; c, antenna, left, ventral; d, walking leg, distal articles, lateral.

eyestalk.

Article 5 of antennal peduncle 4.7 times as long as broad, breadth slightly less than half that of ultimate article of antennule; ventral distomesial process small. Flagellum consisting of more than 20 segments reaching end of P1 merus. Antennal scale terminating in midlength of article 5. Article 2 barely produced on distolateral angle.

Mxps 1 close to each other at base. Mxp 3 ischium with 27 or 28 denticles on mesial ridge. Merus 2.5 times as long as ischium, with very small distolateral spine. Carpus with distolateral spine and 1 spine on extensor proximal margin, both very small.

P1 nearly glabrous but fingers with thick setae. Basischium with well developed distodorsal spine, unarmed on mesial margin. Merus ventrally with distomesial spine and fine granules on proximal portion, length more than postorbital carapace length. Carpus slightly shorter than palm, smooth. Palm moderately depressed, surface smooth, length 2.5 times that of movable finger. Fingers gaping, distally crossing, opposable margin of movable finger with low

broad process at proximal third.

P2–4 slender, moderately compressed, P2 merus slightly longer than postorbital carapace length. Meri successively shorter posteriorly, distally narrowed, unarmed, length subequal to that of carpus and propodus combined. Carpi more than half as long as propodi. Propodi longer on P4 than on P2 and P3, length twice as long as dactyli, ventral margin with pair of terminal spines preceded by 7 (on P2 and P3), 6 (on P4) slender spines. Dactyli curving proximally, flexor margin with 9 or 10 somewhat inclined, relatively broad spines successively diminishing toward base of article.

Eggs: Number of eggs carried 28; size, 0.96 x 1.03–1.06 x 1.08 mm.

Variations: The third spine of the carapace lateral margin is rather reduced in small specimens (♂, ZLKU 8009-10; 1 sp. sex indet., ZLKU 4697-99). The specimen from Sagami Bay, which is much larger than the other specimens, has the third spine reduced to very

small size and another spine between the second and third. One of the ovigerous females (ZLKU 4697–99) and the female from Tosa Bay (ZLKU 8009–10) have the anterior margin of the sternite 3 somewhat widely concave without submedian spines (Fig. 12c), as illustrated by Baba (1973). Possibly the spines there may have been broken during the life time. Pleura of abdominal segments 2–4 are somewhat angular on the posterolateral margin in the neotype, rather rounded in the other specimens.

Remarks: *Uroptychus alcocki* Ahyong & Poore, 2004, *U. cavirostris* Alcock & Anderson, 1899, *U. latirostris*, *U. mauritius* sp. nov., and *U. yokoyai* Ahyong & Poore, 2004, are very similar to one another and constitute a species complex. The original description of *U. latirostris* is very brief, and the type material is no longer extant, so that a neotype is selected and described here.

The rostrum in *U. latirostris* is broader, its basal width being 0.82–0.83 the distance between the lateral margins of the anterolateral spine of the carapace measured at level of the orbital margin (frontal margin), rather than being 0.64 in *U. mauritius* n. sp. The anterior margin of the sternal plastron in *U. latirostris* lacks submedian spines or bears at most obsolescent submedian spines, instead of bearing a distinct pair as in *U. mauritanus* sp. nov. and *U. alcocki*. *Uroptychus yokoyai* is characterized by the P1 merus that is narrowed distally and proximally, representing a shape of bowling pin instead of being distally not narrowed, and the telson that bears a long posterior lobe (about as long as broad instead of being at most half as long as broad in the other related species).

Uroptychus cavirostris Alcock & Anderson, 1899, the problematic species among the species complex, is not well described and its systematic status is still not well established. In 1980, K. K. Tiwari then of the Zoological Survey of India, sent me drawings of the holotype (♀, 5.4 mm, ZSIC 2672/10) of that species (see Fig. 13). The anterior margin of the sternite 3 is narrowly excavated like that of *U. latirostris* but has no submedian spines. The posterior margin of the telson is apparently emarginate (Alcock & Anderson, 1899: pl. 44: fig. 3), not semicircular as in *U. latirostris*. Reexamination of this holotype is needed.

Ahyong & Poore (2004a) questioned the identification of the “John Murray” material of *U. cavirostris* by Tirmizi (1994) and considered it to be a young stage of *U. longioculus* Baba, 1990. However, I believe *U. longioculus* has a different spination of

the carapace lateral margin, which character is apparent in specimens of *U. longioculus* with the same size as the Tirmizi’s specimen.

Range: Tosa Bay and Sagami Bay, Japan; between 9–27 m and 200 m.

Uroptychus longior n. sp.

Fig. 14

Material:

Kei Islands Expedition St. 59, 5°28’S, 132°36’E, 385 m, corals & sponges, trawl, 12 May 1922: — 1 ov. ♀ (9.1 mm), 1 ♀ (8.0 mm), ZMUC CRU-11524.

Th. Mortensen’s Java-South Africa Expedition 1929–30, “Dog” Sta. 15, Bali Sea, Indonesia, 7°29’S, 114°49’E, ca. 240 m, sand and mud with concretions, trawl, 10 Apr 1929: — 1 ♂ (9.9 mm, holotype), 1 ♀ (9.3 mm), ZMUC CRU-11075.

Diagnosis: Carapace with 8 spines on lateral margin, first anterolateral, second and third smaller (third very small in holotype), placed on hepatic region, and 5 acute, posteriorly diminishing spines on branchial region. Rostrum narrow triangular, dorsally flattish. Sternite 3 having anterior margin with semicircular notch separating incurved submedian spines; sternite 4 with anterolaterally directed anterior spines not reaching anterior end of preceding sternite. Ocular peduncles somewhat elongate; cornea not dilated, much shorter than remaining eyestalk. Antennal peduncle having strong distomesial spine on distal 2 articles; antennal scale overreaching distomesial spine of article 5. Mxp 3 ischium with rounded corner on flexor distal margin; merus and carpus each with distolateral spine, flexor margin of merus with 2 spines on distal half. P1 basi-ischium with strong distodorsal and distoventral spine, merus and carpus with spines, those on carpus small. P2–4 meri and carpi with spines on dorsal margin; propodi with pair of spines preceded by row of spines; dactyli bearing 12 or 13 spines on straight flexor margin, ultimate slender, penultimate broad, remaining spines slender, inclined, and contiguous to one another.

Description of holotype: Carapace, excluding spines, somewhat broader than long, posteriorly broadened. Dorsal surface very weakly convex from side to side, without distinct grooves, smooth and sparsely setose, with scattered small spines on hepatic and lateral protogastric regions. Lateral margin with anterolateral

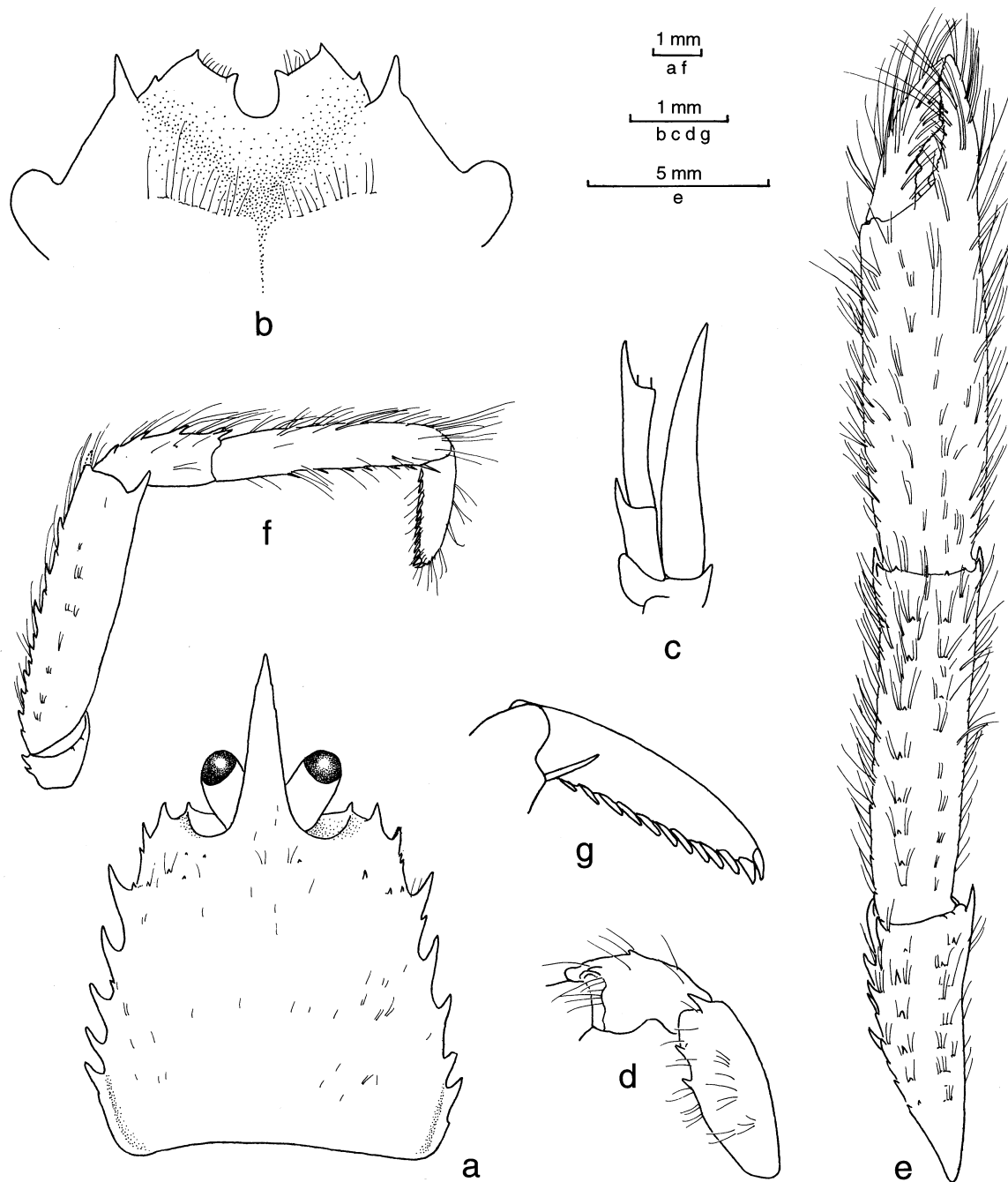


Fig. 14. *Uroptychus longior* n. sp., holotype, ♂, ZMUC CRU-11075: a, carapace, dorsal; b, anterior part of sternal plastron; c, antenna, left, ventral; d, merus and carpus of Mxp 3, left, lateral; e, P1, right, dorsal; f, P2, right, lateral; g, same, distal article, fine setae omitted.

spine small but distinct, followed by 1–3 smaller spines on hepatic region, 5 stout, posteriorly diminishing spines on branchial region (right first and left second of latter followed by spinule in holotype), last spine followed by salient margin leading to posterior end. Lateral orbital angle with small spine. Rostrum narrowly triangular, length slightly more than half that of remaining carapace, dorsal surface flattish, lateral

margin with 2 small denticles distally.

Excavated sternum with subtriangular anterior margin, bearing ridge in midline on surface. Sternal plastron slightly broadened posteriorly. Sternite 3 depressed well, anterior margin concave with semicircular median excavation separating 2 small submedian processes, anterolateral angle sharply produced, lateral margin with small spine near

proximal end. Sternite 4 with prominent anterolateral spine directed slightly anterolaterad.

Abdomen smooth and glabrous. Segment 1 transversely ridged. Pleura of segment 2 convexly divergent posteriorly, anterolateral and posterolateral corners angular. Pleura of segments 3 and 4 also angular on posterolateral margin. Telson 2.3 times as broad as long, posterior part 1.5 times as long as anterior part, posterior margin somewhat concave.

Ocular peduncles more or less elongate, ending in midlength of rostrum. Cornea not dilated.

Antennal peduncles having distal 2 articles each with strong distomesial spine, article 5 more than 1.5 times as long as article 4. Flagellum of 15 segments not reaching end of P1 merus. Antennal scale slightly wider than opposite peduncle, sharply narrowed distally, somewhat curving laterad, distinctly overreaching end of peduncle including distal spine. Article 2 sharply produced distolaterally.

Mxp 3 ischium denticulate on mesial ridge, 9 denticles rather loose on proximal half, 17 or 18 close to one another on distal half, flexor distal margin rounded. Merus with 2 small flexor marginal and 1 strong distolateral spine on left appendage, additional one dorsal to distolateral one on right appendage. Carpus with mid-dorsal and distolateral spines.

P1 covered with soft setae of moderate length, 3.6 times as long as carapace including rostrum. Merus and carpus granulate. Basi-ischium dorsally with strong curved spine, ventromesially with strong subterminal spine followed by a few proximally diminishing, small spines. Merus with spines arranged in roughly 4 rows, in addition to prominent distolateral spine: 2 dorsal rows of spines much smaller and rather obsolescent; mesial row of 5 prominent spines accompanied proximally by 1 or 2 small spines; ventromesial row of 3 prominent spines, terminal one accompanying small spine near base; length more than postorbital carapace length. Carpus as long as palm, with tubercular small spines roughly in 3 rows on dorsal surface and mesial margin; 4 terminal spines (2 mesial and 2 lateral) more or less pronounced. Palm medially somewhat depressed, spineless, slightly less than 3 times as long as broad when measured at midlength. Fingers half as long as palm, gaping, cutting edges on distal third nearly straight, opposable margin of fixed finger with low process at proximal third on right appendage, very reduced one on left appendage; opposing margin with basally broad, low, tuberculate process (lobe-like in dorsal aspect) at distal third, and additional small smooth process at proximal third on

right appendage.

P2–4 similar, moderately compressed, with fine setae in moderate density; relatively broad in lateral view, but spines of meri and carpi posteriorly diminishing. P2 merus with 11 (left) or 13 (right) spines on dorsal margin, and 1 distolateral and 1 distomesial spine on ventral surface, distolateral larger; length less than postorbital carapace length. Carpus shorter than dactylus, with 6 (left) or 4 (right) spines on dorsal margin and 2–3 spinules on dorsolateral surface. Propodus twice as long as dactylus, ventral margin with pair of terminal spines preceded by 6 or 7 spines. Dactylus nearly straight on flexor margin, distally not strongly narrowed, flexor margin with 12 or 13 spines including terminal one, ultimate spine slender, penultimate one basally broad, remaining spines slender, ending in blunt tip, inclined and nearly contiguous. P3–4 having meri without spine on mesial margin of ventral surface.

Variations: Hepatic dorsal spines that are distinct in the holotype tend to be reduced in all paratypes, but a small spine dorsal and mesial to the first branchial marginal spine is usually present, only except for the female from the Bali Sea in which they are absent. Fingers of the P1 in all female paratypes are not gaping; tuberculate opposable margins are sinuous, each bearing 2 lobe-like processes, the proximal lobe on the movable finger being more distinctly process-like.

Eggs: Number of eggs, 9; size, 1.00 x 1.08 mm.

Parasites: One of the ovigerous females taken from the Kei Islands bears an externa of a rhizocephalan parasite.

Remarks: The slender rostrum and carapace ornamentation of *U. longior* are similar to those of *U. nanophyes* McArdle, 1901. The two species are very close to each other but I am inclined to believe that the following differences are consistent: the antennal scale distinctly overreaches the distomesial spine of the antennal article 5 in *U. longior*, whereas it reaches the article 5, not overreaching the distomesial spine in *U. nanophyes*; the sternite 4 has the anterolateral spine directed anterolaterad in *U. longior*, straight forward in *U. nanophyes*; the P2 merus bears only one distomesial spine on the ventral face in *U. longior*, instead of a row of spines on mesial margin of the ventral face in *U. nanophyes*.

The P1, antennae, Mxps 3 and carapace in *U. longior*

are very much like those of *U. undecimspinosa* Kensley, 1977 from South Africa. However, the latter species is distinct in that the carapace bears 11 anterior gastric spines in a transverse row; the lateral marginal spines on the branchial region that are less prominent than in *U. longior*; the anterior median sinus of the sternite 3 that is V-shaped, not widely U-shaped as in *U. longior*; and there are 12–23 closely spaced dactylar flexor marginal spines on the P2–4 of *U. longior* instead of 9 distinctly spaced spines in Kensley's species.

Etymology: From the Latin *longior* (= longer), in reference to the longer antennal scale of the species, one of the characteristics to separate the species from *U. nanophyes*.

***Uroptychus mauritius* n. sp.**

Fig. 15

Material:

Th. Mortensen's Java-South Africa Expedition 1929–30, "Maurice" St. 43, Tombeau Bay, Mauritius, 238 m, swab, 11 Oct 1929: — 2 ♂ (6.1, 7.7 mm), 1 ov. ♀ (8.7 mm), ZMUC CRU-11109.

Th. Mortensen's Java-South Africa Expedition 1929–30, "Maurice" St. 47, N of Port Louis, Mauritius, ca. 238 m, mud, corals, Sigsbee trawl, 6 Nov 1929: — 1 ov. ♀ (7.0 mm), holotype, ZMUC CRU-11128.

Diagnosis: Carapace dorsally smooth and glabrous except for a few small tubercles behind each ocular peduncle, lateral margin having anterolateral spine of moderate size followed by larger spine placed at anterior end of branchial region and 2 small spines behind it. Rostrum broadly triangular, dorsally excavated. Sternal plastron posteriorly broader; excavated sternum with triangularly produced sharp anterior end between close bases of Mxps 1; sternite 3 strongly depressed, with pair of submedian spines on deeply excavated anterior margin. Ocular peduncles elongate, about twice as long as broad, cornea length slightly less than half that of remaining eyestalk. Ultimate article of antennal peduncle fully 4 times as long as broad, breadth half that of ultimate article of antennule; ventral distomesial process small and obsolescent; flagellum of more than 20 segments not reaching end of P1 merus; antennal scale barely reaching end of antennal article 5, article 2 bluntly produced on distolateral angle. Mxp 3 merus with very small distolateral spine; carpus unarmed. P1 basischium with well developed distodorsal spine; merus

ventrally with distomesial spine and fine granules on proximal portion, length greater than postorbital carapace length; palm with fine granules on dorsal surface, length 2.5 times that of movable finger. P2–4 slender, P2 merus slightly longer than postorbital carapace length; meri unarmed; carpi more than half as long as propodi; propodus fully twice as long as dactyli, ventral margin with pair of terminal spines preceded by 7–9 slender spines; dactyli curving, flexor margin with 11 somewhat inclined, relatively broad spines successively diminishing toward base of article.

Description of holotype: Carapace longer than broad, dorsal surface spineless and glabrous except for a few very small tubercles behind each ocular peduncle. Lateral margins subparallel but convexly convergent on posterior branchial region; anterolateral spine of moderate size directed anteroventrad, followed by large spine placed at anterior end of branchial region and again 2 small spines behind it. Rostrum broadly triangular, slightly deflexed, dorsally excavated, breadth at proximal third 0.48 distance between lateral limits of orbits. Lateral orbital spine small, directed anterolaterad, rather close to anterolateral spine of carapace.

Pterygostomian flap anteriorly ending in very small spine, surface unarmed.

Sternal plastron posteriorly broader, greatest breadth subequal to greatest length. Excavated sternum with triangularly produced sharp anterior end between close bases of Mxps 1, surface with obsolescent ridge in midline. Sternite 3 strongly depressed, with pair of submedian spines on deeply excavated anterior margin. Sternite 4 having anterolateral margins gently divergent, relatively long (length 0.87 width of sternite 3).

Abdominal segment 1 without transverse ridge. Segment 2 with pleural lateral margin concavely divergent posteriorly. Pleura of segments 3 and 4 with rounded lateral margin. Telson 1.7 times as broad as long, posterior lobe 1.5 times as long as anterior lobe, posterior margin rounded.

Ocular peduncles elongate, about twice as long as broad, distinctly overreaching midlength but barely reaching end of rostrum, cornea not dilated, length slightly less than half that of remaining eyestalk.

Article 5 of antennal peduncle fully 4 times as long as broad, breadth half that of ultimate article of antennular peduncle; ventral distomesial process small and obsolescent. Flagellum of more than 20 articles relatively long, not reaching end of P1 merus. Antennal

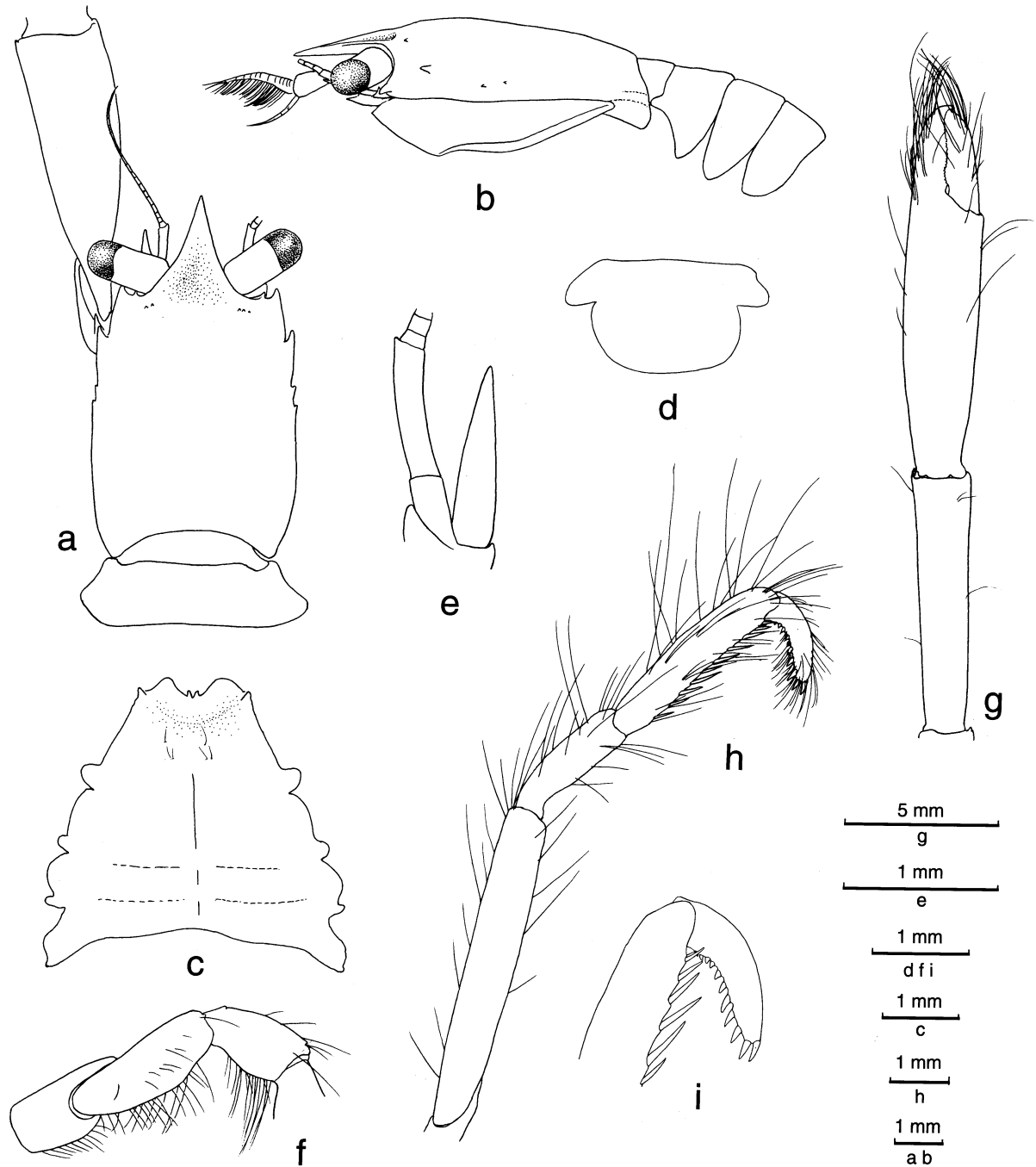


Fig. 15. *Uroptychus mauritius* n. sp., holotype, ov. ♀, ZMUC CRU-11128: a, carapace and anterior part of abdomen, including proximal part of P1, dorsal; b, same, lateral; c, sternal plastron; d, telson; e, antenna, left, ventral; f, endopod of Mxp 3, distal part omitted, right, lateral; g, P1, left, dorsal; h, P2, right, lateral; i, same, distal part, setae omitted, lateral.

scale overreaching midlength, barely reaching end of article 5. Article 2 bluntly produced on distolateral angle.

Mxps 1 close to each other at base. Mxp 3 ischium with 28 denticles on mesial ridge. Merus 2.5 times as long as ischium (when measured in lateral midline), with very small distolateral spine. Distolateral spine

and extensor proximal marginal spine of carpus very small.

P1 sparsely setose but fingers with thicker setae. Basi-ischium with well developed distodorsal spine, ventrally without spine on mesial margin. Merus ventrally with distomesial spine and fine granules on proximal portion, length greater than postorbital

carapace length. Palm moderately depressed, dorsal surface with fine granules discernible under high magnification, length 2.5 times that of movable finger. Fingers not gaping, distally crossing, opposable margin of movable finger with low process proximally.

P2–4 slender, moderately compressed, P2 merus slightly longer than postorbital carapace length. Meri successively shorter posteriorly, unarmed, length subequal to that of carpus and propodus combined. Carpi more than half as long as propodi. Propodus longer on P4 than on P2 and P3, length fully twice that of dactylus, ventral margin with pair of terminal spines preceded by 8 or 9 (P2), 7 (P3 and P4) slender spines. Dactyli curving proximally, flexor margin with 11 somewhat inclined, relatively broad spines successively diminishing toward base of article.

Eggs: Number of eggs, 12–18; size, 1.16 x 1.33–1.30 x 1.55 mm.

Variations: The larger male from the “Maurice” St. 43 has obsolescent submedian spines on the anterior margin of the sternite 3, the condition showing that the spines may have been injured. The smaller male from the same station bears two additional small spines behind the second lateral spine of the carapace. The posterior margin of the telson varies from being slightly concave to barely so.

Remarks: The species is distinguished from *U. alcocki* Ah Yong & Poore, 2004 by bearing tubercles behind each ocular peduncle, lacking tubercles on the P1, the shape of the ocular peduncles that is less slender, about twice as long as broad instead of being more slender, distinctly more than twice as long in *U. alcocki*, and the telson that is rounded, not narrowed on the posterior margin as in *U. alcocki*.

The species is also separated from *U. latirostris* Yokoya, 1933 by the presence of epigastric tubercles, the antennal scale slightly falling short of the end of the antennal article 5 instead of being terminating at the midlength of that article as in *U. latirostris*, the rostrum being narrower than that of *U. latirostris*, and the sternite 3 bearing a pair of submedian spines.

Etymology: Named for the locality; noun in apposition.

***Uroptychus nanophyes* McArdle, 1901**

Fig. 16

Synonymy: see p. 228.

Material:

Kei Islands Expedition St. 46, 5°47'20"S, 132°13'E, 300 m, clay, mud, 2 May 1922: — 1 ov. ♀ (13.2 mm), ZMUC CRU-11323.

Kei Islands Expedition St. 71, 5°40'S, 106°08'E, 54 m, sand, stones, 28 July 1922: — 1 ♂ (12.5 mm), ZMUC CRU-11322.

Diagnosis: Carapace with 8 principal lateral spines, fourth and seventh spines each accompanying spine anterior or posterior to it and even another tiny spine dorsomesial to it; dorsal surface granulate, bearing small ridges; 2 dorsal spines mesial to third lateral spine on each side. Rostrum triangular, lateral margin with several small spines on distal half. Excavated sternum anteriorly subtriangular, bearing ridge in midline; sternite 3 with U-shaped median excavation separating incurved submedian spines; anterolateral angle of sternite 4 with strong spine directed forward or somewhat anteromesad. Abdomen glabrous, first segment transversely ridged. Antennal peduncle slender, distal 2 articles each with distomesial spine; flagellum of 19–21 segments not reaching end of P1 merus; antennal scale much broader than opposite peduncle, distally rather wide, fully reaching end of article 5 but not its distomesial spine. Mxp 3 ischium with numerous (ca. 30) denticles on mesial ridge, flexor margin distally rounded; merus with small distolateral spine, flexor margin sharply ridged, bearing a few small spines on distal half; carpus with strong distolateral spine. P1 granulose or rather tuberculous; basi-ischium with strong distodorsal spine and 2 rows of mesial spines; merus with 3 rows of spines, mesioventral one pronounced; carpus granulate, with obsolescent spines; palm unarmed. P2–4 moderately setose, with row of spines on dorsal margins of meri and carpi; P2 merus shorter than postorbital carapace length; propodal ventral margin with pair of terminal spines preceded by several spines rather distant from one another; dactylus with 12–13 spines obscured by setae, ultimate slender, penultimate pronouncedly broad at base, remaining spines inclined, slender, blunt, contiguous to one another.

Eggs: About 50 eggs, measuring 0.95 x 0.97 – 1.09 x 1.09 mm.

Remarks: Van Dam (1940) reported the species from a rather shallow depth (66 m) while the other records are from deeper parts (440–926 m). This record seems to present a problem in either its identification or depth

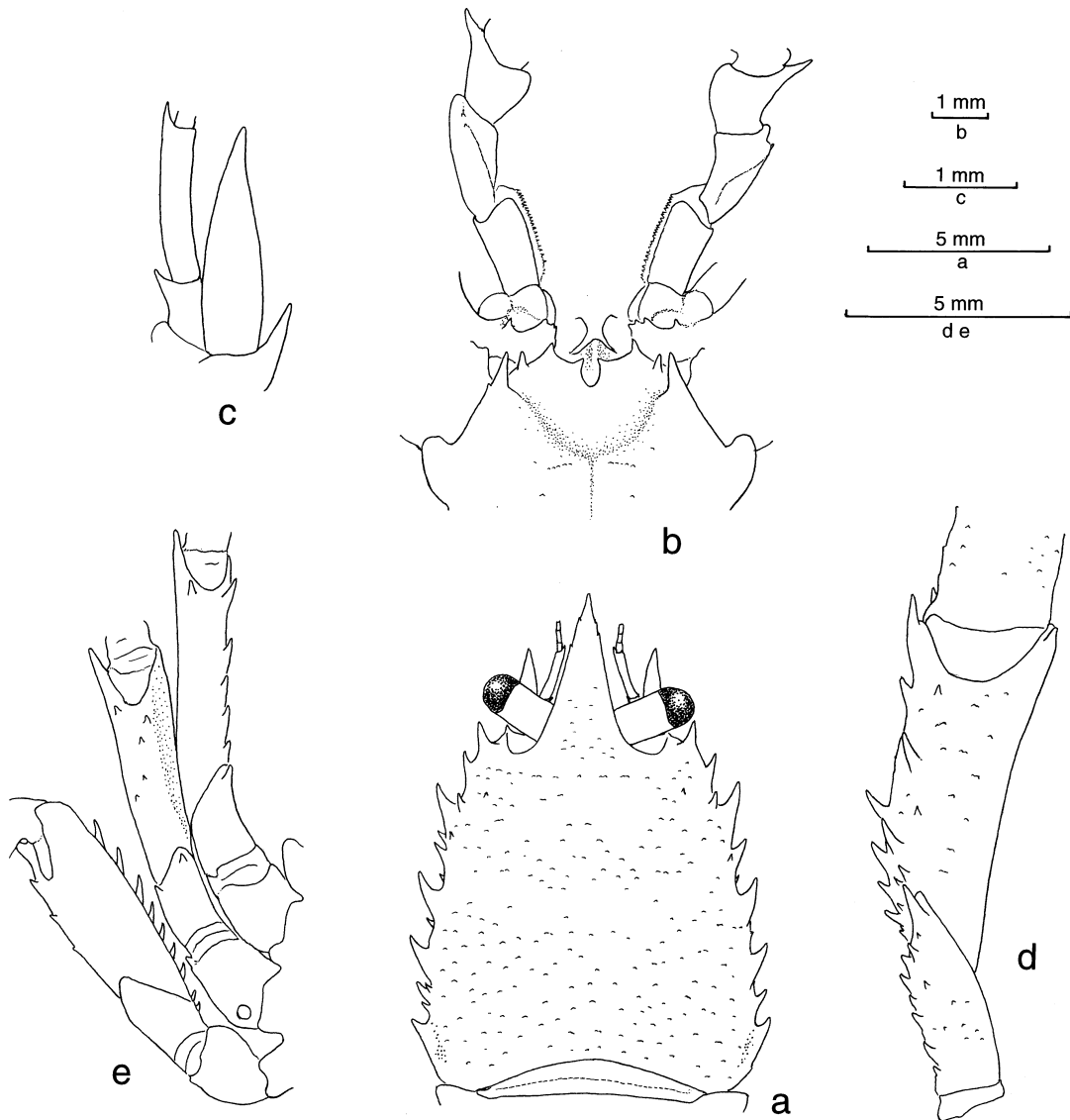


Fig. 16. *Uroptychus nanophyes* McArdle, 1901, ov. ♀ (13.2 mm), ZMUC CRU-11323: a, carapace, dorsal; b, anterior part of sternal plastron and Mxps 3, ventral; c, antenna, left, ventral; d, proximal articles of P1, left, ventral; e, proximal articles of P2-4, right, ventral.

record. However, one of the lots here examined is likewise from shallow-water. Therefore, a wide bathymetric range can now be accepted.

The species is very close to *U. longior* n. sp. Their relationships are discussed under the "Remarks" of that species (see above).

Range: NE coast of Sri Lanka, Java Sea, Kei Islands, and Izu Shoto, Japan; 54–926 m.

Uroptychus naso van Dam, 1933

Synonymy: see p. 228.

Material:

Hirado, Nagasaki, Japan, Sueuson 1900: — 1 ♂ (9.3 mm), ZMUC CRU-11200.

Kei Islands Expedition St. 44, 268 m, mud, 30 Apr 1922: — 1 ♀ (16.9 mm), ZMUC CRU-11335.

Kei Islands Expedition St. 49, 5°37'10"S, 132°24'E, 245 m, sand, 3 May 1922: — 1 ♂ (13.6 mm), ZMUC CRU-11333.

Diagnosis: Carapace dorsally granulate, bearing tubercles on lateral portion, with deep groove bordering gastric and cardiac regions. Lateral margins divergent posteriorly, anterolateral spine small, followed by tubercular processes and 2 small blunt spines on hepatic

region, 7 large spines on branchial region. Rostrum broad and long triangular, granulate like carapace, moderately excavated dorsally, carinate ventrally, lateral margin with small spines. Pterygostomial flap with scattered small spines. Excavated part anterior to sternal plastron anteriorly convex, bearing longitudinal ridge in midline; sternite 3 with U-shaped median notch on anterior margin, lacking submedian spines. Ocular peduncles short, partly hidden under rostrum, cornea not dilated. Distal 2 articles of antennal peduncle each with terminal spine, flagellum short, as long as distal 2 articles combined of peduncle, antennal scale relatively broad, falling short of end of antennal peduncle. Mxp 3 ischium with spine directly lateral to rounded corner of flexor distal margin, mesial ridge with obsolescent denticles; merus with 1 distolateral spine and 5–6 flexor marginal spines on distal half. P1 covered with small spines and tubercles, palm and fingers strongly depressed. P2–4 granulate, broad relative to length in lateral view; meri and carpi with row of spines on dorsal margin; merus with row of ventral marginal spines proximally diminishing, as equally large as those on dorsal margin; propodi with pair of distal spines preceded by smaller spines about in 2 rows; dactyli less than half length of propodi, flexor margin with row of corneous spines, ultimate slender, penultimate broad, remaining spines slender and moderately inclined.

Remarks: The bundles of setae on the distal two articles of the P2 observed in the material from the Tosa Bay (Baba, 1969c) are visible in both the male from Hirado and the female from St. 44 off the Kei Islands, but barely discernible on the male from St. 49.

The female examined from the Kei Islands bear an externa of a rhizocephalan parasite.

Range: Java Sea, Kei Islands, Moluccas off W coast of Halmahera (Sulu Archipelago), Taiwan, East China Sea, and Japan; 68–439 m.

***Uroptychus nigricapillis* Alcock, 1901**

Synonymy: see p. 228.

Material:

“Galathea” Sta. 241, off Kenya, 4°00’S, 41°27’E, 1551 m, globigerina, 15 Mar 1951: — 1 ♂ (14.3 mm), 1 ov. ♀ (12.2 mm), ZMUC CRU-11279.

Diagnosis: Carapace distinctly longer than broad, dorsally glabrous and smooth, bearing pair of epigastric spines. Lateral margins slightly diverging posteriorly, anterolateral (first) spine small; second spine small, situated at anterior end of branchial region, followed by a few small tubercle-like spines. Lateral angle of orbit with very small spine. Rostrum narrow triangular, dorsally flattish. Excavated sternum produced anteriorly into spine, bearing a spine in center; sternite 3 strongly depressed, anterior margin deeply excavated, with 2 submedian spines separated by shallow notch, ventral surface with distinct process near each of lateral and anterior ends. Ocular peduncles comparatively long, moderately concave on mesial margin. Distal 2 articles of antennal peduncle spineless, article 5 more than 2.5 times as long as article 4, flagellum of 14 segments falling short of end of P1 merus, antennal scale overreaching midlength of, but not reaching end of article 5. Mxp 3 unarmed, ischium with 14 denticles on mesial ridge. P1 subcylindrical but palm moderately depressed; fingers distally more setose than elsewhere. P2–4 similar, slender; with long coarse setae especially on distal 2 articles; propodi with slender spines on ventral margin, ultimate not paired, single, somewhat distant from junction of propodus and dactylus; dactyli relatively slender, gently curving, barely half as long as propodi, flexor margin with row of relatively broad spines diminishing in size toward base of article, penultimate closer to ultimate than to antepenultimate and subequal to it or slightly smaller.

Egg: Diameter, 1.90 x 2.00 mm.

Remarks: The branchial lateral spines of the carapace in the male of the present material are much smaller than those of the female holotype (Alcock, 1901: pl. 3: fig. 3), and in the ovigerous female these spines are much smaller than in the male, being reduced to small tubercles that are discernible under high magnification. A few small tubercle-like spines are also present on the hepatic region in the male. This is one of the eurybathic species in the Chirostyliidae, as reported earlier (Baba, 1981b).

Range: Zanzibar, South Arabian coast, Madagascar, Saya de Malha Bank, Maldives, Andaman Sea, Java Sea, Flores Sea, Philippines between SW Luzon and Bohol, and Japan; 66–2000 m. Most of the previous records are from the transitional to upper bathyal depths, but only one is from the shelf in 66 m (van Dam, 1940).

Uroptychus paenultimus n. sp.

Fig. 17

Material:

Kei Islands Expedition St. 12, 5°30'S, 132°35'E, 320 m, sand, 9 Apr 1922: — 1 ov. ♀ (4.6 mm), holotype, ZMUC CRU-11318.

Diagnosis: Carapace unarmed dorsally, lateral margins convex, bearing small denticles; anterolateral spine small, close to lateral orbital spine but somewhat posterior and lateral to it. Rostrum broadly triangular, dorsally concave. Excavated sternum having anterior margin weakly convex, widely separating bases of Mxps 1; sternite 3 shallowly depressed, anterior margin with narrow U-shaped median notch. Cornea shorter than remaining eyestalk. Article 4 of antennal peduncle with short, blunt distomesial spine ventrally, antennal scale slightly overreaching midlength of article 5. Mxp 3 ischium with tuft of long setae lateral to rounded flexor distal margin, mesial ridge with very small denticles; merus short relative to width, bearing 1 or 2 denticular spines distal to midlength flexor margin and 1 small distolateral spine. P1 very setose, unarmed but merus with flattish short dorsal spine. P2–4 meri having dorsal margin with several small spines on proximal half distinct on P2 and P3, obsolescent on P4; propodi with pair of distal spines on ventral margin; dactyli with 8–9 spines on flexor margin, ultimate slender and short; penultimate strong, remaining spines slender, inclined, not contiguous, diminishing toward base of article.

Description of holotype: Carapace, excluding rostrum, slightly wider than long. Dorsal surface moderately convex from side to side, slightly so from anterior to posterior end, without distinct groove, sparsely bearing fine setae. Lateral margins moderately convex, with finely denticulate short ridges, as illustrated, anterolateral spine small, relatively close to but somewhat posterior and dorsal to level of lateral orbital spine; distinctly ridged along posterior fifth of length. Rostrum broadly triangular, barely half as long as remaining carapace, dorsal surface moderately excavated, with sparse fine setae, lateral margins smooth. Orbit delimited laterally by spine subequal to anterolateral spine of carapace.

Pterygostomian flap with scattered denticles, anteriorly ending in small spine.

Excavated sternum having weakly convex anterior margin widely separating bases of Mxps 1, surface with

weak ridge in midline. Sternite 3 shallowly depressed, anterior margin with narrow U-shaped median notch.

Abdominal segments moderately setose, smooth. Segment 1 without transverse ridge. Pleura of segment 2 concavely divergent posteriorly, ending in rounded corner. Pleura of segments 3 and 4 convexly divergent posteriorly, ending in rounded corner. Telson slightly less than twice as broad as long, posterior lobe 1.3 times as long as anterior lobe, posterior margin feebly concave.

Ocular peduncles ending in anterior fourth of rostrum, lateral and mesial margins somewhat convex. Cornea not dilated, length about half that of remaining eyestalk.

Antennal peduncle relatively broad. Article 5 1.5 times as long as article 4, article 4 with short, blunt distoventral spine. Flagellum of 10 segments barely reaching end of P1 merus. Antennal scale wider than peduncle at base, slightly overreaching midlength of article 5. Article 2 with sharp distolateral spine.

Mxp 3 ischium bearing long setae lateral to rounded distal corner of flexor margin, mesial ridge with more than 25 very small denticles. Merus relatively short, sharply ridged along flexor margin, bearing small distolateral spine and 1 or 2 denticular spines distal to midlength of flexor margin.

P1 dissimilar, right one smaller, possibly regenerated; left P1 3 times as long as carapace including rostrum; unarmed; very setose, setae simple, non-plumose. Basi-ischium with flattish short dorsal spine. Merus distinctly longer than postorbital carapace length. Carpus slightly shorter and narrower than palm. Palm 3 times as long as broad, slightly more than twice as long as movable finger. Fingers not crossing when closed; opposable margins denticulate, with 2 low processes as illustrated.

P2–4 moderately setose. Meri relatively high (broad in lateral view), dorsal margin with 4–5 denticular teeth on proximal half on P2 and P3, a few obsolescent ones on third. P2 merus much shorter than postorbital carapace length. Carpi unarmed, shorter than dactyli, less than half as long as propodi. Propodi shorter on P2 than on P3 and P4, ventral margin with pair of movable spines distally (mesial one not visible in lateral view). Dactyli slightly curving, more than half as long as propodi even on P3 and P4, extensor margin with plumose setae on proximal half, sparse simple setae on distal half; flexor margin with 8–9 spines rather obsolescent with simple fine setae, ultimate slender, penultimate very strong, rather close to ultimate, remaining spines slender, inclined, not

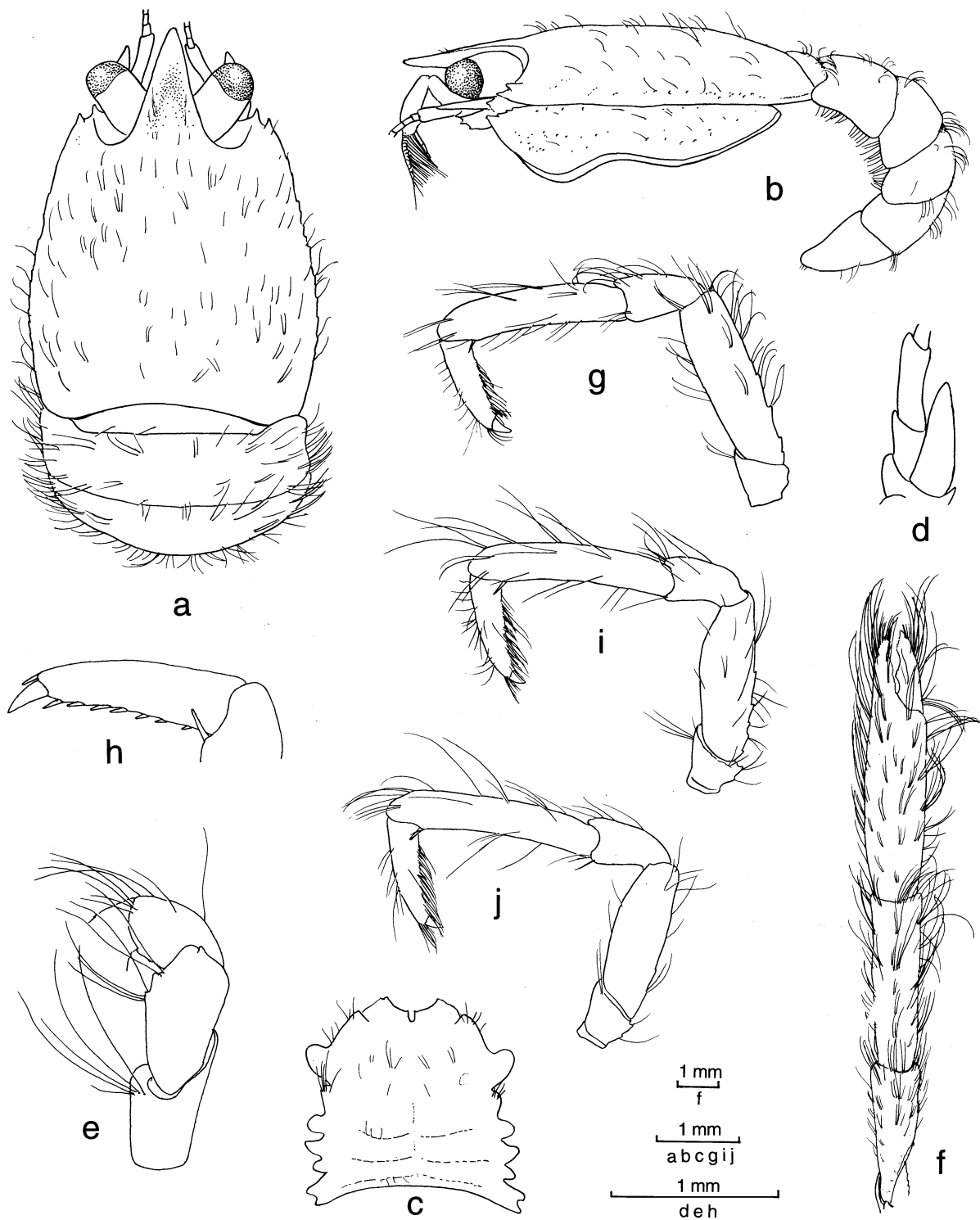


Fig. 17. *Uroptychus paenultimus* n. sp., holotype, ov. ♀, ZMUC CRU-11318: a, carapace and abdomen, dorsal; b, same, lateral; c, sternal plastron; d, antenna, left, ventral; e, endopod of Mxp 3, distal articles omitted, left, lateral; f, P1, left, dorsal; g, P2, left, lateral; h, same, distal article, setae omitted; i, P3, left, lateral; j, P4, left, lateral.

contiguous to one another, diminishing toward base of article.

Egg: Only one egg, ready to hatch, 1.16 x 1.26 mm.

Remarks: The new species resembles *U. gordonae* Tirmizi, 1964 and *U. siraji* Tirmizi, 1964, both from the Maldives, in the carapace ornamentation. These two relatives are not well diagnosed so their type materials were examined on loan. *Uroptychus gordonae* is characterized by the anterolateral spine of the carapace being situated at the same level as the lateral orbital spine, the P2–4 propodi being nearly as long as dactyli, with a pair of terminal spines preceded by a few spines (not indicated in Tirmizi's figure); dactyli of the same appendages bearing proximally diminishing spines (not so slender as illustrated by Tirmizi (1966: fig. 13)) rather distant from one another and only slightly oblique, all to mention the distinctive differences from the new species. *Uroptychus siraji* is characterized by the anterolateral spine much like that of *U. gordonae*, the P2–4 propodi being much longer than the dactyli, with a pair of terminal spines preceded by five spines; dactyli strongly curving with relatively broad, subtriangular spines, distal four of which are subequal.

Etymology: From the Latin *paenultimus* (penultimate) in reference to the penultimate being the strongest among flexor marginal spines of the P2–4 dactyli.

***Uroptychus pilosus* Baba, 1981**

Synonymy: see p. 230.

Material:

"Galathea" Sta. 491, Makassar Strait, 04°56'S, 117°39'E, clay, 1600 m, 14 Sep 1951: — 1 ♀ (6.0 mm), ZMUC CRU-11508.

Diagnosis: Body and appendages thickly covered with soft fine setae. Carapace excluding rostrum wider than long, nearly spineless only excepting a small spine on rounded anterolateral corner. Gastric region convex, anteriorly bordered from excavated dorsal surface of rostrum. Lateral margins convex on branchial region. Rostrum short triangular, horizontal, excavated on dorsal surface. Sternite 3 shallowly depressed, anterior margin with U-shaped median notch, submedian spines obsolete. Ocular peduncles elongate, distally narrowed; cornea less than half that of remaining eyestalk. Distal

2 articles of antennal peduncle spineless, flagellum of 13–14 segments not reaching end of P1 merus, antennal scale short, slightly overreaching article 4. Mxp 3 ischium with 14–16 denticles on mesial ridge; merus sharply ridged on distal half of flexor margin bearing a few small tubercles. P1 slender, spineless; palm relatively long, more than 3 times as long as movable finger. P2–4 meri with row of small dorsal spines on proximal half of length on P2 and P3, more proximal on P4; propodi with pair of very small spines on ventral distal margin; dactyli less than half length of propodi, with 2 pronounced terminal spines only.

Remarks: This specimen differs from the types of *Uroptychus pilosus* in the following particulars: the rostrum is more broadly triangular; the ocular peduncles are not so strongly elongate as in the types; the antennal scale is longer, and less spinose laterally, bearing a single proximal lateral spine on the left appendage; distal two of the flexor marginal spines on the P2–4 dactyli are not subequal, the penultimate one being somewhat larger; dorsal marginal spines on meri of the same are fewer and rather obsolete. I believe, however, that these differences fall within the limits of variation.

The presence of a pair of spines on the distoventral margin of the P2–4 propodi, apparent in the present specimen, has been confirmed by reexamination of the type material.

Range: Japan S of Kyushu and off the E coast of Kii Peninsula, Makassar Strait, and New South Wales; between 987–1025 m and 1120–1600 m.

***Uroptychus pronus* n. sp.**

Fig. 18

Material:

Kei Islands Expedition St. 46, 5°47'20"S, 132°13'E, 300 m, clay, mud, 2 May 1922: — 1 ♂ (6.6 mm), holotype, ZMUC CRU-11317.

Diagnosis: Carapace dorsally unarmed, laterally with row of spines, hepatic marginal spines small, branchial marginal spines well-developed, posteriorly diminishing. Rostrum subtriangular, lateral margin with 1 or 2 small subterminal spines. Excavated sternum convex anteriorly, widely separating Mxps 1, surface with weak ridge in midline; sternal plastron having anterior margin weakly convex, with broad,

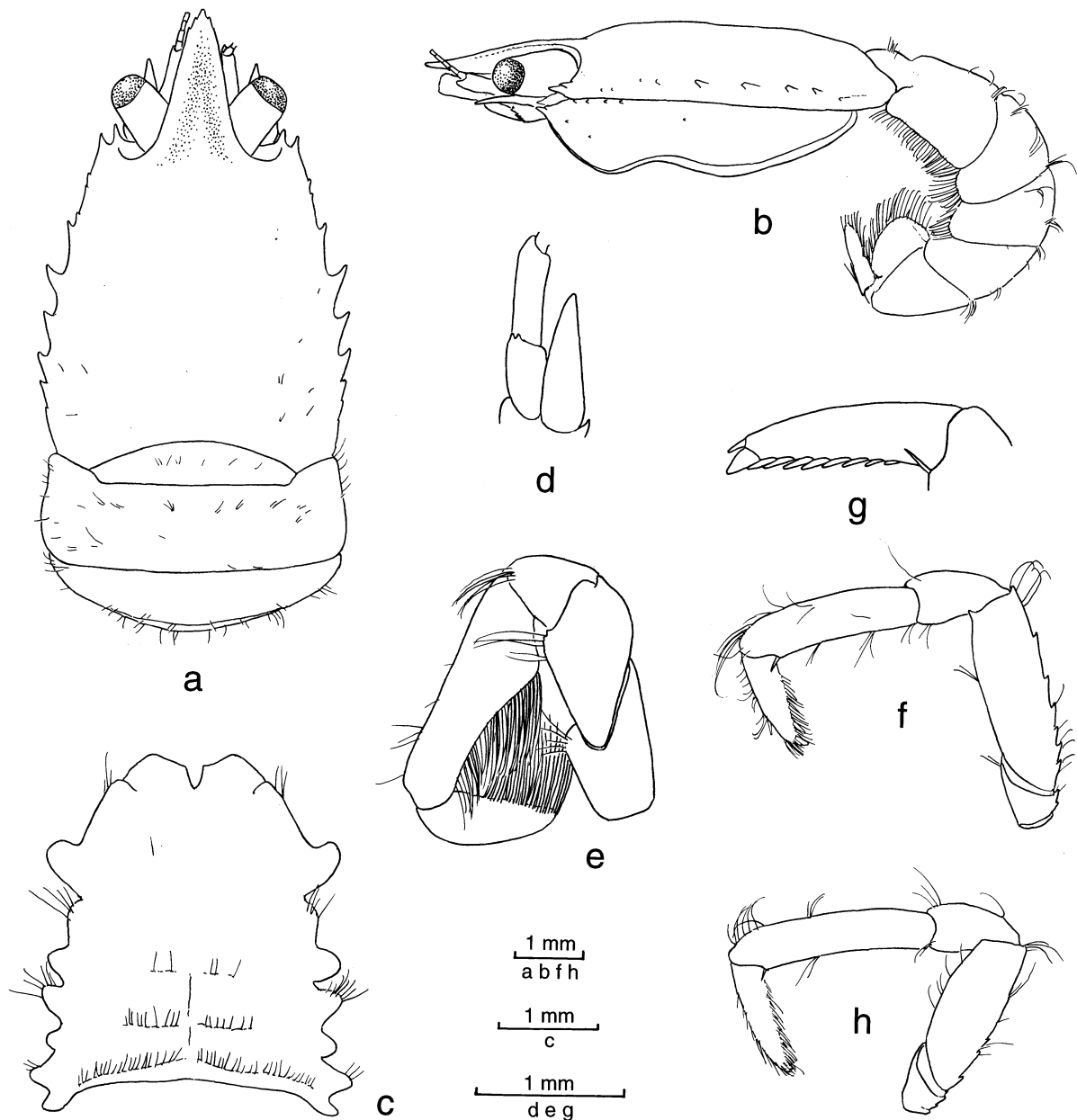


Fig. 18. *Uroptychus pronus* n. sp., holotype, ♂, ZMUC CRU-11317: a, carapace and abdomen, dorsal; b, same, lateral; c, sternal plastron; d, antenna, left, ventral; e, endopod of Mxp 3, left, lateral; f, P2, left, lateral; g, same, distal article, fine setae omitted; h, P4, left, lateral.

deep excavation medially. Pterygostomian flap with scattered small spines. Ocular peduncles somewhat elongate, cornea much shorter than remaining eyestalk. Antennal peduncle having 2 distal articles each bearing small distoventral spine; flagellum relatively short, composed of 10 segments; antennal scale overreaching midlength of article 5. P2–4 having meri with spines on dorsal margin, carpi shorter than dactyli, propodi with pair of terminal spines on ventral margin, each dactylus more than half as long as propodus, bearing

10 flexor marginal spines obscured by dense setae, ultimate slender, penultimate spine very strong, remaining spines slender, inclined, contiguous to one another.

Description of holotype: Carapace, excluding rostrum, slightly broader than long. Dorsal surface moderately convex from side to side, with very sparse short setae on posterior portion; areas not delimited. Lateral margins posteriorly divergent to point behind last

lateral spines, then convergent; bearing about 10 spines, first (anterolateral) small, close to but somewhat posterior to level of lateral orbital spine, 2–3 very small spines in front of ordinary end of cervical groove; other 6 spines behind it, first of these subequal to anterolateral, second to fourth much larger than first, last 2 very small; ridge distinct between posterior-most spine and posterior end. Rostrum broadly subtriangular, length slightly more than half that of remaining carapace; lateral margin with 1–2 denticular spines near apex; dorsal surface excavated. Lateral limit of orbit sharply produced into spine subequal to anterolateral spine of carapace.

Pterygostomian flap anteriorly ending in distinct spine, bearing scattered small spines, several of these spines arranged in row along anterior dorsal border near linea anomurica.

Excavated sternum having anterior margin convex, widely separating bases of Mxps 1. Sternal plastron relatively long, lateral extremities between fourth and seventh sternites subparallel. Sternite 3 moderately depressed, anterior margin weakly convex, with relatively broad median notch. Sternite 4 with rounded anterolateral margin.

Abdominal segments smooth, bearing short sparse setae. Pleura of segment 2 slightly divergent posteriorly, pleura of segments 3 and 4 ending in rounded margin. Telson 2.3 times as long as broad, posterior part nearly as long as anterior part, posterior margin very feebly concave.

Ocular peduncles somewhat elongate, overreaching midlength of rostrum; cornea not dilated, length about 1/3 that of remaining eyestalk.

Antennal peduncles relatively short, article 5 1.5 times that of article 4; both articles with small distomesial spine; flagellum of 10 segments, relatively short (possibly not reaching end of P1 merus); antennal scale slightly overreaching midlength of article 5; greatest width somewhat more than that of peduncle.

Mxp 3 ischium with very small, rather reduced denticles on mesial ridge, tuft of setae lateral to rounded corner of flexor distal margin. Merus relatively short, ridged along flexor margin, bearing distolateral spine and a few denticles distal to midlength of flexor margin.

P1 missing.

P2–4 relatively high (broad in lateral view), sparsely setose. Meri posteriorly shorter; dorsal margin with 7 small spines along entire length on P2 and P3, 3 on proximal half on P4; ventral margin with distal spine on P2 and P3, unarmed on P4. P2 merus 3 times as long as broad, much shorter than postorbital carapace

length. Carpi unarmed, subequal on all legs, length about half that of propodi. Propodus slightly longer on P4 than on P2 and P3; ventral margin with pair of terminal spines. Dactyli more than half length of propodi, slightly curving; flexor margin with thick setae obscuring row of 10 spines, ultimate slender, penultimate prominent, remaining spines slender, inclined, contiguous to one another, and proximally diminishing in size.

Eggs: About 25 eggs, measuring 0.73 x 0.74 mm.

Remarks: The new species is closely related to *U. tridentatus* Henderson, in the shape of the carapace including the rostrum. However, *U. tridentatus* differs in having the distal two articles of the antennae each bearing a prominent distoventral spine, the antennal scale distinctly overreaching the end of the peduncle, and the P2–4 dactyli having loosely arranged, more erect spines on the flexor margin, in which the penultimate spine is not as prominent as in *U. pronus* (see below for *U. tridentatus*).

Etymology: From the Latin *pronus* (inclined), alluding to inclined slender spines on the flexor margins of the P2–4 dactyli, by which the new species is differentiated from *U. tridentatus* Henderson.

***Uroptychus remotispinatus* Baba & Tirmizi, 1979**

Synonymy: see p. 230.

Material:

“Galathea” Sta. 491, Makassar Strait, 04°56’S, 117°39’E, 1600 m, clay, 14 Sep 1951: — 1 ov. ♀ (12.0 mm), ZMUC CRU-11509.

Diagnosis: Carapace dorsally smooth and glabrous, bearing ridges along posterolateral margin. Lateral margins with very feeble granules, posterolaterally diverging. Anterolateral spines small. Rostrum barely half as long as remaining carapace, basally broad, distally narrowed, curving dorsad. Sternite 3 shallowly depressed, short relative to width, anterior margin widely concave, with pair of small submedian spines; sternite 4 having anterolateral margin as long as posterolateral margin. Ocular peduncles overreaching midlength of rostrum, comparatively broad (widest at proximal end of cornea), cornea as long as remaining eyestalk. Antennal peduncles slender, distal 2 articles unarmed; antennal scale slightly overreaching end of

article 4. Endopod of Mxp 3 spineless, mesial ridge of ischium with about 18 denticles. P2–4 very slender, moderately depressed, surface smooth, with long coarse setae numerous on carpi and propodi; each carpus relatively long, 0.6 as long as propodus; propodus with 4 long movable spines on distal half of ventral margin, distal-most remote from distal end of article; dactyli strongly curved at proximal third, flexor margin with 2 groups of spines remotely separated from each other on P2–3, distal group consisting of 2 subequal-sized spines, proximal group consisting of 4–5 spines; P4 with additional spine interspersed between.

Eggs: Diameter, 1.30–1.50 mm.

Remarks: That the P2–4 dactyli bear two groups of flexor marginal spines is one of the characteristics of this species, for which the species is named (Baba & Tirmizi, 1979; Baba, 1988; 1990). The propodal spination of the P2–4 also suggests use of this name: the distal-most of the flexor marginal spines is very remote from the juncture of propodus and dactylus.

Range: Japan, Makassar Strait, Madagascar, off Mozambique, off Durban; in 850–2000 m.

***Uroptychus sagamiae* n. sp.**

Fig. 19

Material:

Th. Mortensen's Pacific Expedition 1914–16, Sagami Bay, Okinose, 732 m, 7 Jul 1914: — 1 ♀ (12.1 mm), holotype, ZMUC CRU-11521.

Diagnosis: Carapace smooth on surface; pair of small epigastric spines. Lateral margin with small anterolateral spine, no spines elsewhere. Excavated sternum anteriorly triangular, surface with small spine in center; sternite 3 strongly depressed, anterior margin deeply excavated, with pair of submedian spines; sternite 4 with convexly divergent lateral margin. Ocular peduncles moderately elongate, cornea slightly more dilated than remaining eyestalk. Antennal peduncle unarmed on distal articles, antennal scale overreaching article 5. Mxps 1 close to each other at base; Mxp 3 ischium with 15 denticles on mesial ridge, merus and carpus unarmed, flexor margin of merus not cristate but rounded. P1 almost spineless but small distodorsal spine on basi-ischium; merus, carpus and

palm ventrally granulate. P2–4 relatively broad in lateral view; with long setae especially thick on mesial surface; meri and carpi unarmed; P2 merus much shorter than postorbital carapace length; carpi much longer than dactylus; propodi more than twice as long as dactylus, ventral margin with pair of spines slightly distant from juncture with dactylus and preceded by row of spines; dactyli with broad, short, distally sharp, successively diminishing spines on flexor margin, penultimate much closer to ultimate than to antepenultimate.

Description: Carapace smooth, barely setose on surface, moderately convex from side to side, weakly so from anterior to posterior end; pair of small epigastric spines. Lateral margins divergent posteriorly, with small anterolateral spine, no spine elsewhere but very small denticles on anterior end of indistinct branchial region. Rostrum subtriangular but distally narrowed, dorsal surface flattish, ventral surface horizontal, length distinctly less than half that of remaining carapace.

Pterygostomial flap anteriorly ending in small spine.

Sternal plastron with lateral margins posteriorly diverging. Excavated sternum anteriorly triangular, surface with small spine in center; sternite 3 strongly depressed, anterior margin deeply excavated, with pair of submedian spines; sternite 4 with convexly divergent lateral margin.

Abdominal segment 1 without transverse ridge. Telson about 3/4 as long as broad, posterior lobe 1.5 times length of anterior lobe, posterior margin medially emarginate.

Ocular peduncles long relative to width, slightly narrowed proximally, cornea somewhat dilated, length more than half that of remaining eyestalk.

Antennal peduncles relatively slender, unarmed on articles 4–5; article 5 2.8 times length of article 4. Flagellum of 16 segments falling short of end of P1 merus. Antennal scale overreaching opposite peduncle. Article 2 with small distolateral spine.

Mxp 3 ischium and merus barely setose laterally, sparingly so mesially. Ischium with 15 distally diminishing denticles on mesial ridge, flexor distal margin not rounded. Merus unarmed, relatively long, not flattish but moderately thick mesiolaterally, flexor margin rounded, not cristate.

Left P1 missing. Right P1 3.5 times as long as carapace; setose distally; subcylindrical on proximal articles but somewhat depressed on palm; granulate

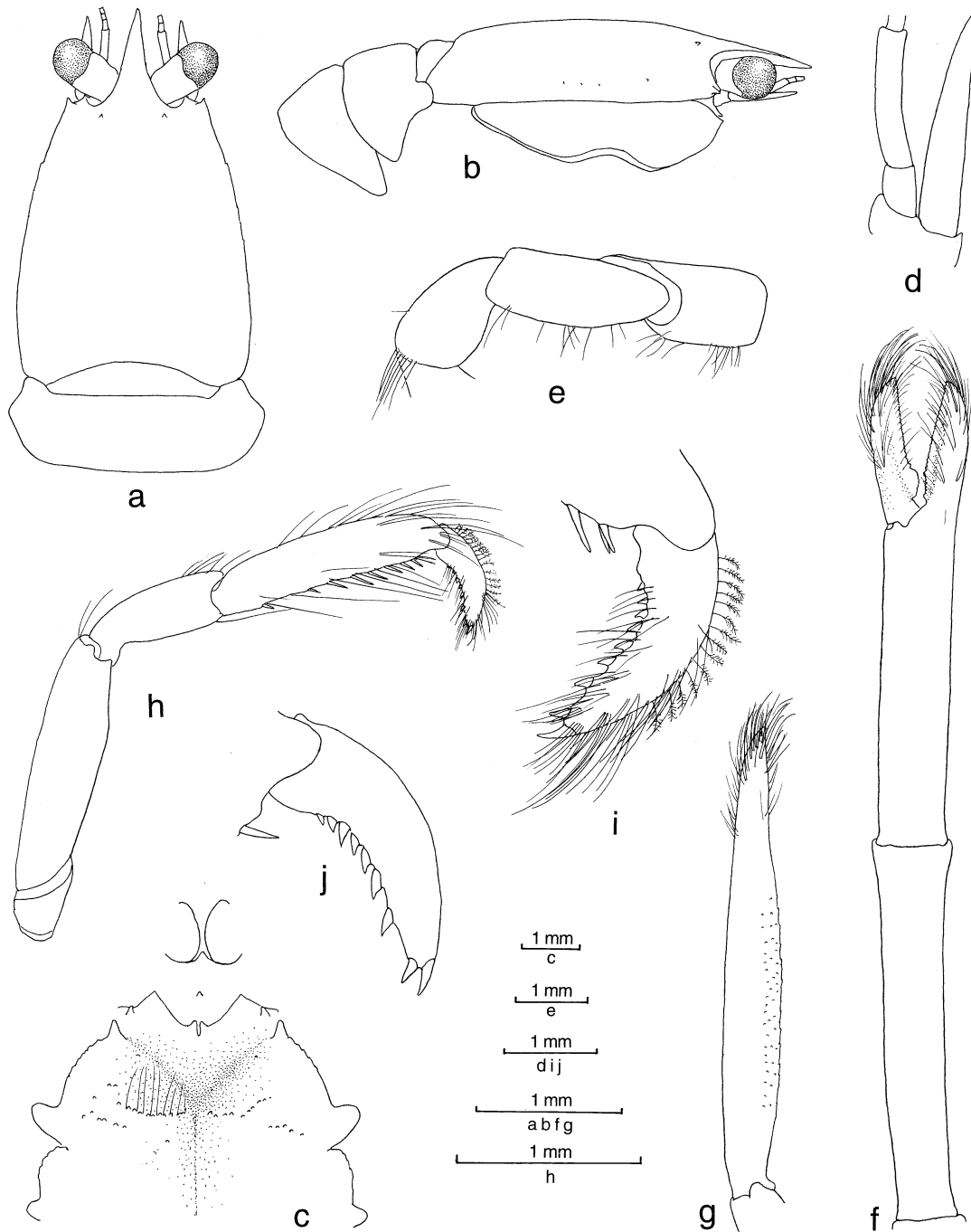


Fig. 19. *Uroptychus sagamiae* n. sp., holotype, ♀, ZMUC CRU-11521: a, carapace and anterior part of abdomen, dorsal; b, same, lateral; c, anterior part of sternal plastron; d, antenna, left, ventral; e, endopod of Mxp 3, distal articles omitted, left, lateral; f, P1, proximal articles omitted, left, dorsal; g, same, chela, lateral; h, P2, right, lateral; i, same, distal article, lateral; j, distal article of P3, setae omitted, right, lateral.

ventrally; basi-ischium with small distodorsal spine; carpus longer than palm.

P2–4 relatively broad in lateral view, with long setae especially thick on mesial face; P2–3 similar in shape and size, P2 merus much shorter than postorbital

carapace length. Propodus longer on P2 than on P3, P4 much shorter. Meri and carpi unarmed. Propodi more than twice length of dactyli, ventral margin with pair of spines somewhat proximal to junction of propodus and dactylus, preceded by row of 8 or 9

spines. Dactylus strongly curving at proximal fourth, flexor margin with relatively broad, short, successively diminishing spines, penultimate very close to ultimate, rather distant from antepenultimate.

Remarks: The presence of a pair of epigastric spines on the carapace links the species to *U. nigricapillis* Alcock, 1901 and *U. vandamae* Baba, 1988. From *U. nigricapillis*, the new species differs in the more elongate ocular peduncles, longer antennal scales, much broader P2–4 bearing pair of ventral spines on the propodus near the juncture with the dactylus. *Uroptychus vandamae* is characterized by 1) the P2–4 propodi bearing the distal-most of the ventral marginal spines single, not paired and somewhat distant from the juncture with the dactylus and considerably distant from the penultimate, 2) the P2–4 dactyli bearing two groups of spines, and 3) the antennal scale being much shorter, terminating at the midlength of the antennal article 5.

Etymology: For the collection locality of the species, a noun in the genitive.

***Uroptychus scambus* Benedict, 1902**

Synonymy: see p. 230.

Material:

“Galathea” Sta. 453, Makassar Strait, 03°56’S, 118°26’E, 2084 m, clay, 24 Aug 1951: — 2 ♂ (4.5, 7.3 mm), ZMUC CRU-11506.

Diagnosis: Carapace very broad relative to length, dorsal surface smooth, glabrous; lateral margin strongly convex posteriorly, anterolateral spine well-developed, directed straight forward. Excavated sternum anteriorly sharp triangular between bases of Mxps 3; sternite 3 having anterior margin widely and shallowly excavated, with median notch separating submedian spines. Rostrum short, broadly or narrowly triangular, tapering. Ocular peduncles medially inflated, proximally and distally narrowed, cornea as broad as proximal portion of remaining eyestalk. Antennal peduncle unarmed, flagellum of 10 segments somewhat overreaching midlength of P1 palm; antennal scale barely reaching end of antennal article 4. Mxp 3 ischium with obsolete denticles on mesial ridge. P2–4 slender, carpi long, slightly shorter than propodi on P2–3, much shorter on P4; distal 2 articles subprehensile, gaping when folded, margins bearing

plumose setae; flexor margin of dactylus with 15–16 spines nearly perpendicular to margin, all spines obscured by dense setae.

Remarks: The synonymy of *U. scambus* with *U. edwardi* Kensley was discussed in a previous paper (Baba, 1988). The two male specimens here examined are rather different from each other but are undoubtedly referable to *U. scambus*, by its unique sternal plastron, broad carapace, and setose distal two articles of the P2–4. Several major differences noted below may represent age variations. In the larger specimen, the carapace lateral margin bears a distinct low process at a point one-fifth from the anterior end, but such a process is not discernible in the smaller specimen or, in previously examined material including the type of *U. scambus* (see Baba, 1988). The palm of the P1 in the larger male is distinctly ridged and cristiform on the mesial margin, as in the males from Japan and the Philippines (Baba, 1981b; 1988); however, in the smaller male such a cristate margin is barely discernible. The carpus in the larger male is middorsally ridged and trigonal in cross section, the mesial margin bearing about 10 distinct spines. Such spination was not noted in earlier descriptions. The holotype of *U. scambus* that I have examined has no such spination; but in a specimen reported from the Philippines (Baba, 1988), a few spines are present on the distal third of the article. Also, Kensley’s illustration suggests the presence of such spination. Terminal spines on both the carpus and merus are rather conspicuous in the larger male here examined, as mentioned by MacGilchrist (1905) for *U. glyphodactylus* which had been synonymized with *U. scambus* (see Doflein & Balss, 1913; van Dam, 1933; Baba, 1981b), while rather obsolete in the smaller male, and slightly produced in the type of *U. scambus*.

Range: Off E coast of South Africa, Andaman Sea, Nicobar Islands, Solor Strait, Sulawesi, Makassar Strait, and Japan; between 296–805 m and 2084 m.

***Uroptychus scandens* Benedict, 1902**

Synonymy: see p. 230.

Material:

Th. Mortensen’s Pacific Expedition 1913–1916, 25 miles E by S of Zamboanga, 293–366 m, trawl, hard bottom, 3 Mar 1914: — 1 ov. ♀ (6.1 mm), 1 ♀ (4.2 mm), ZMUC CRU-11590.

Th. Mortensen's Pacific Expedition 1914–16, off NW Kyushu, Japan, 33°41'N, 128°50'E, 50 fm (137 m), sand, 17 May 1914: — 1 ♂ (6.1 mm), ZMUC CRU-11264.

Kei Islands Expedition St. 50, 5°34'S, 132°25'40"E, 233 m, sand, trawl, 4 May 1922: — 1 ♂ (4.9 mm), ZMUC CRU-11394.

Diagnosis: Carapace convexly divergent, dorsally with soft fine setae, anteriorly and laterally covered with spinules, anterolateral spine small but distinctly larger than those on lateral margin. Rostrum narrow, feebly serrated laterally, terminating in or slightly overreaching end of ocular peduncle. Excavated sternum with transverse or slightly convex anterior margin widely separating bases of Mxps 1, sternite 3 having anterior margin with deep, widely U-shaped median sinus bearing 2 small submedian spines without notch between. Ocular peduncles elongate, mesial margin concave at midlength. Antennal peduncles overreaching rostrum, distal 2 articles each with distomesial spine, that of article 5 smaller; flagellum of 9 segments falling short of end of P1 merus; antennal scale barely reaching midlength of article 5, bearing 1–3 lateral spines. Mxp 3 ischium with distal spine directly lateral to distal corner of flexor margin, mesial ridge with obsolete denticles; merus with a few spinules on distal half of flexor margin. P1 unarmed, slender, subcylindrical, bearing long setae. P2–4 also with long setae particularly thick on mesial surface, propodi with pair of small spines on ventral distal margin; dactyli very short, straight and truncate, flexor margin with 7–8 slender spines obscured by dense setae, 4 of them located on truncate terminal margin.

Eggs: Diameter, 0.90 x 1.00 mm.

Remarks: This species is rather common in Japanese waters, usually found in the dorsal grooves of the pennatulacean *Leiopterus fimbriatus* (Herklots).

Range: Japanese waters from off E Boshu, Sagami Bay, Suruga Bay, Izu Islands, Bungo Strait and off SW Kyushu, Jeju Island, East China Sea, off Zamboanga, Java Sea, Banda Sea; 68–495 m.

***Uroptychus sibogae* van Dam, 1933**

Synonymy: see p. 231.

Material:

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E,

345 m, mud, 10 May 1922: — 2 ov. ♀ (8.5, 10.0 mm), ZMUC CRU-11320.

Th. Mortensen's Java-South Africa Expedition 1929–30, "Dog" St. 15, Bali Sea, 7°29' S, 114°49' E, ca. 240 m, sand & mud with concretions, 10 Apr 1929: — 1 ♂ (7.0 mm), ZMUC CRU-11077.

NW Kyushu, Japan, 32°12' N, 128°10' E, 183 m, 20 Oct 1897, Suenson 1900: — 1 ov. ♀ (7.8 mm), ZMUC CRU-11193.

Diagnosis: Carapace dorsally smooth, convexly diverging posteriorly, anterolateral spine distinct, followed by smaller spine directly behind end of indistinct cervical groove, and several obsolescent denticles on branchial margin. Rostrum triangular, ending in sharp point, dorsally excavated. Lateral limit of orbit produced. Excavated sternum with sharp spine on anterior margin; sternite 3 strongly depressed, anterior margin deeply excavated, with 2 submedian spines separated by V- or U-shaped notch, anterolateral corner rounded. Ocular peduncles elongate, cornea somewhat dilated. Antennal peduncle slender, unarmed on distal articles; flagellum nearly reaching end of P1 merus; antennal scale reaching end of article 5. Mxp 3 ischium with about 20 denticles on mesial ridge, flexor margin not rounded distally; merus with ridged flexor margin. P1 massive, unarmed. P2–4 with long setae especially thick on distal 3 articles; each carpus more than half of propodus, longer than dactylus; propodal ventral margin ending in pair of spines preceded by row of spines; each dactylus curving at proximal fourth, flexor margin with 8–9 relatively broad spines diminishing toward proximal end of article.

Eggs: Size, 0.96 x 1.02 – 1.42 x 1.46 mm.

Range: W of Manado, Moluccas off W coast of Halmahera, and Japan; between 430–495 and 1901 m.

***Uroptychus simiae* Kensley, 1977**

Synonymy: see p. 231.

Material:

"Galathea" St. 196, off Durban, 29°55'S, 30°20'E, 460–445 m, sandy mud and stones, 14 Feb 1951: — 1 ♂ (5.1 mm), ZMUC CRU-11272.

Th. Mortensen's Java-South Africa Exp. 1929–30, "Pickle" St. 25, off Durban, 29°56'S, 31°19'30" E, 412 m, sandy mud, 26 Aug 1929: — 7 ♂ (3.8–6.0 mm), 5 ov. ♀ (5.0–6.0 mm), ZMUC CRU-11525.

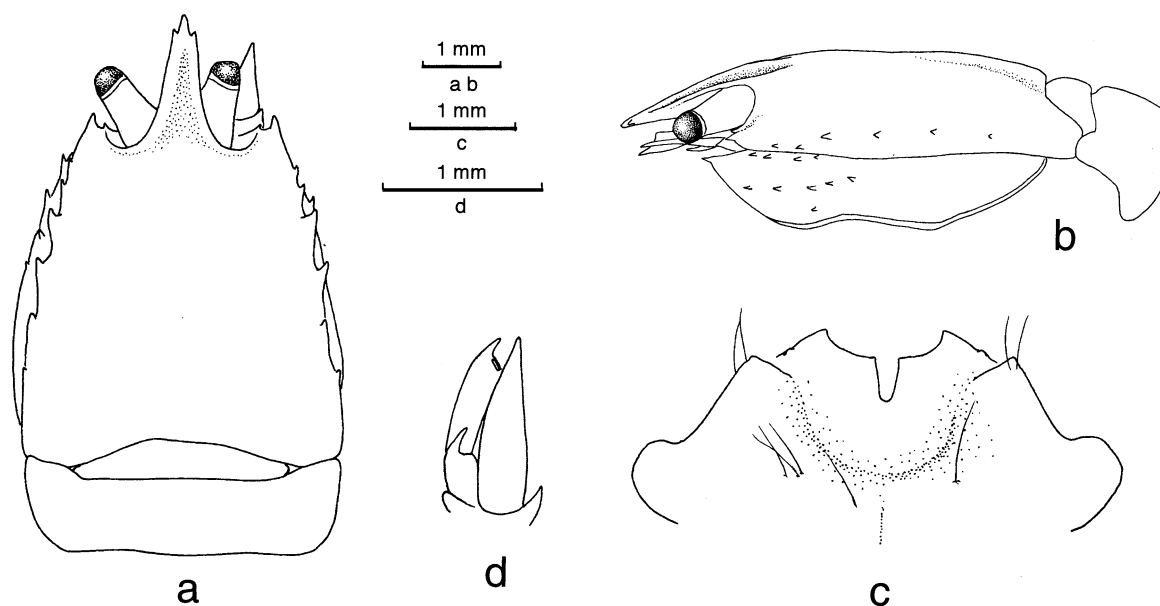


Fig. 20. *Uroptychus tridentatus* (Henderson, 1885), holotype, ov. ♀, BMNH 1888:33: a, carapace and anterior part of abdomen, dorsal; b, same, lateral; c, anterior part of sternal plastron; d, antenna, left, ventral.

Diagnosis: Carapace as long as broad, dorsally spineless and setaless, lateral margin somewhat convex, anterolateral spine well developed, another strong spine present at 1/3 from anterior end, mostly small but distinct, occasionally strong, rarely very small, occasionally followed by a few obsolescent denticles. Rostrum broadly triangular, very short, ending or overreaching opposite midlength of ocular peduncle but falling short of end of cornea, dorsal surface concave somewhat. Ocular peduncles somewhat elongate, proximally narrowed, cornea shorter than remaining eyestalk. Excavated sternum anteriorly produced between close bases of Mxps 1, sternite 3 strongly depressed below level of sternite 4, anterior margin deeply excavated, with pair of submedian spines, lateral margin with 2–3 denticles. Pterygostomial flap with row of 3–5 small spines or tubercular processes directly below linea anomurica. Distal 2 articles of antennal peduncle lacking terminal spine; flagellum of 14–16 segments barely reaching end of P1 merus; antennal scale terminating in or overreaching midlength of article 5 but falling short of end of peduncle; article 2 strongly produced at distolateral margin. Mxp 3 ischium with 20–25 denticles on mesial ridge, flexor distal margin not rounded; merus relatively long, spineless, flexor

margin ridged along whole length. P1 smooth and spineless, distally setose; basi-ischium with strong distoventral and distodorsal spines; palm moderately depressed, about as long as carpus, fingers half as long as palm. P2–4 meri and carpi unarmed; propodi about twice as long as dactyli, ventral margin with pair of terminal spines preceded by 7–8 slender spines; dactyli relatively slender, somewhat curved, flexor margin with 8–9 relatively broad corneous spines diminishing toward base of article.

Eggs: Number of eggs, 4–6, measuring 1.20–1.50 mm; the smaller eggs are yolky and the larger ones are in advanced stages.

Remarks: Kensley (1977) believed that the shape of the teeth on the opposable margin of the P1 movable finger represents a sexual distinction: a triangular tooth and an accompanying small proximal one for the males, and a broad, low, truncate tooth for the females. In the present specimens, however, Kensley's 'female' character was also observed in the males. In the smallest male (cl 3.8 mm) both the left and right P1s bear a broad, low, truncate tooth. Two of the seven males examined that are much larger (4.6, 5.3 mm) have Kensley's male character on one P1 and the

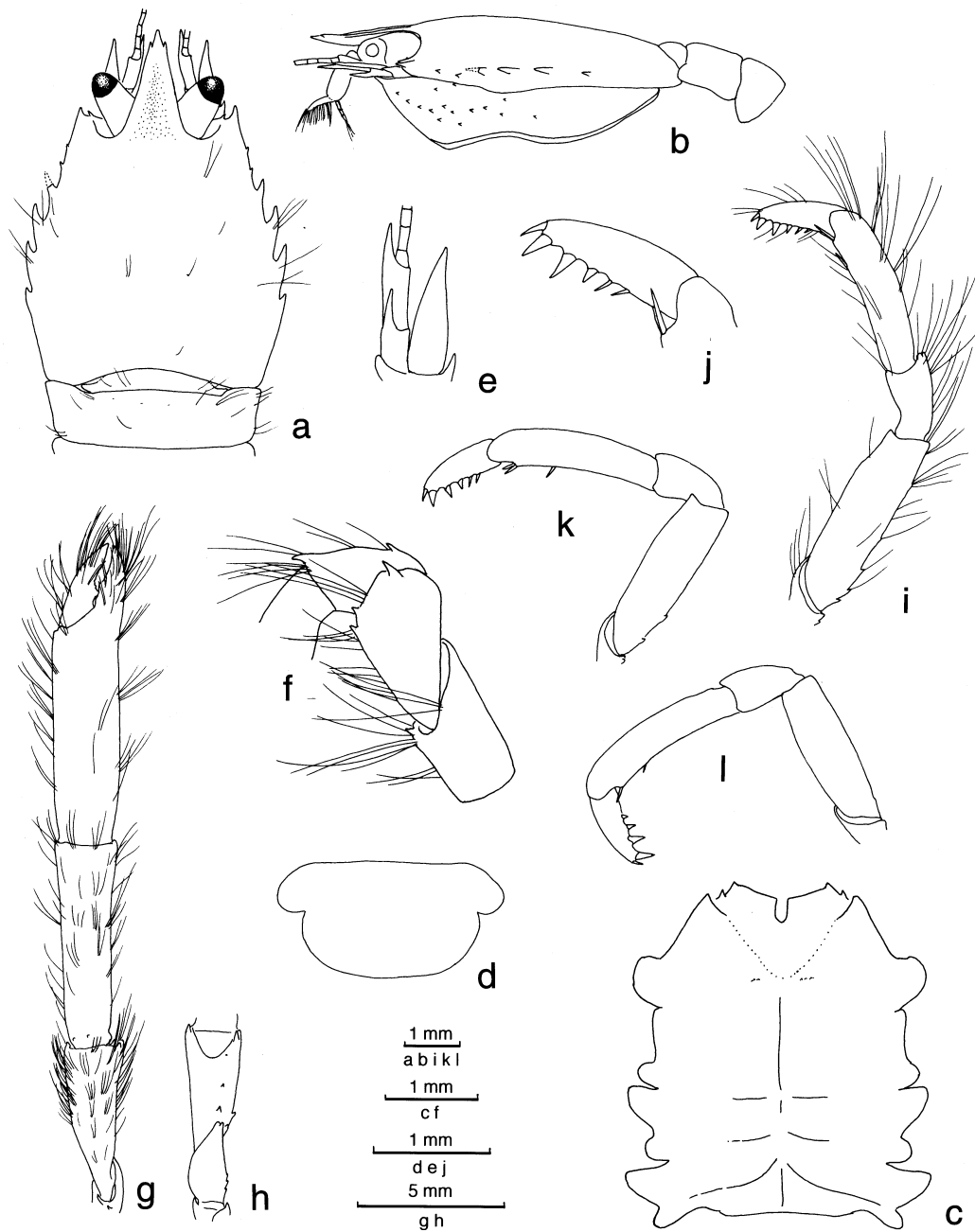


Fig. 21. *Uroptychus tridentatus* (Henderson, 1885), ♂ (6.0 mm), MNHN Ga-4612: a, carapace and anterior part of abdomen, dorsal; b, same, lateral; c, sternal plastron; d, telson; e, antenna, left, ventral; f, endopod of Mxp 3, left, distal part omitted, lateral; g, P1, right, dorsal; h, same, proximal articles, setae omitted, ventral; i, P2, lateral; j, same, distal part, setae omitted, lateral; k, P3, setae omitted, lateral; l, P4, setae omitted, lateral.

‘female’ character on the other. None of the females examined show Kensley’s male character. It is only in the largest male (cl 6.0 mm) of the specimens examined that both P1s bear a full ‘male’ character. A P1 in one of the males (cl 5.0 mm) has a much broader process with a deep median concavity that seems to approach Kensley’s typical male character.

Range: Off St. Mary’s Hill and Durban, eastern South Africa, in 400–450 m.

***Uroptychus tridentatus* (Henderson, 1885)**

Figs. 20, 21

Synonymy: see p. 232.

Material:

“Challenger,” Indonesia (Ambon), 15 fms (27 m): —
1 ov. ♀ (5.4 mm), holotype, BMNH 1888: 33.

“Azteque” St. 1, New Caledonia, 23°16.7'S,
168°04.7'E, 290–460 m, 12 Feb. 1990: — 1 ♂ (6.0
mm), MNHN Ga-4612.

“Norfolk 1” St. 1671, Norfolk Islands, DW 1671,
23°41'S, 168°00'E, 320–397 m, 21 Jun. 2001: —
1 ov. ♀ (5.8 mm), MNHN Ga 4613.

Diagnosis: Carapace with sparse, relatively long setae; lateral margins convex or convexly divergent posteriorly, bearing 7 spines, first anterolateral, moderate in size, second and third much smaller, fourth to sixth acute, much larger than first, last one smaller than sixth. Rostrum narrowly triangular, deeply excavated dorsally, laterally bearing small subapical tooth on each side. Lateral limit of orbit angular, ending in small laterally inclined spine. Excavated sternum with distinct ridge in midline, anterior margin widely convex or sub-triangular, separating Mxps 1 rather distantly; sternite 3 shallowly depressed, anterior margin weakly concave, with narrow U-shaped median notch. Pterygostomial flap with spinules on anterior half surface. Telson about twice as broad as long, posterior lobe convex, not emarginate on posterior margin, length slightly less than 1.5 times that of anterior lobe. Ocular peduncles elongate, distally narrowed, cornea about half as long as remaining eyestalk. Distal 2 articles of antennal peduncle relatively short, each with very strong distomesial spine; flagellum of 10 segments barely reaching end of P1 merus; antennal scale overreaching end of article 5 (excluding distoventral spine). Mxp 3 ischium with small spine directly lateral to rounded distal corner of flexor margin, denticles on mesial ridge rather reduced to small size; merus short relative to length, with 1 distolateral and 1 or 2 small spines on distal third of flexor margin; carpus with distolateral spine and 1 or 2 extensor marginal spines. P1 sparingly setose, thickly so on fingers and merus; basi-ischium with strong dorsal spine; merus and carpus usually with distomesial and distolateral spines ventrally, merus with 2 spines on proximal part of mesial surface and 2 spines (distal one may be obsolescent) on ventral surface. P2–4 moderately broad in lateral view, bearing long, distally soft setae; meri having dorsal crest with 2 or 3 proximal spines distinct on P2 and P3, obsolete on P4; P2 merus much shorter than postorbital carapace length; propodi having ventral margin with pair of terminal spines preceded by 1–3 spines; each dactylus slightly less than

half length of propodus, flexor margin nearly straight, bearing slender terminal spine preceded by 3 proximally diminishing spines perpendicular to flexor margin and 2 slender, somewhat oblique proximal spines.

Eggs: Number of eggs carried, 13; size, 0.93 x 0.87 mm.

Remarks: The ovigerous female holotype of *U. tridentatus* (BMNH 1888:33), in which all pereopods are missing, was examined (see Fig. 20). Two additional specimens examined here agree well with the type material so the diagnosis given above helps to distinguish the species from *U. zezuensis* (see below) and *U. inclinis* n. sp. (see above).

In my earlier papers (Baba, 1988; 1990), *U. zezuensis* Kim, 1972 was considered to be identical with *U. tridentatus*. However, careful examination of specimens referable to each species has led to conclude that Kim's species is valid (see below under the “Remarks” of *U. zezuensis*).

Range: Madagascar, N of the Sulu Islands, Taam Island of the Kei Islands, Ambon, Solor Strait, New Caledonia, Norfolk Islands, Yaeyama Group of the Ryukyus, off Hachijo-jima (Izu Islands), and near Muko-jima of the Bonin Islands; 290[?27]–460 m. The depth record at Ambon, 27 m, for the “Challenger” material was doubted by Henderson (1888).

***Uroptychus wolffi* n. sp.**

Fig. 22

Material:

Kei Islands Expedition St. 59, 5°28'S, 132°36'E, 385
m, corals & sponges, trawl, 12 May 1922: — 2 ♂
(6.1, 6.3 mm [smaller, holotype]), 1 ov. ♀ (5.8 mm),
2 ♀ (6.1, 6.2 mm), ZMUC CRU-11518.

Diagnosis: Carapace covered with fine setae moderate in density, dorsal surface unarmed, lateral margin convex, with 4–7 small spines. Rostrum short triangular, dorsally excavated, slightly overreaching ocular peduncle. Excavated sternum with convex anterior margin widely separating Mxps 1; sternite 3 depressed, anterior margin shallowly excavated, with U-shaped narrow median sinus. Telson half as broad as long, posterior lobe less than 1.5 times as long as anterior lobe, posterior margin barely or feebly

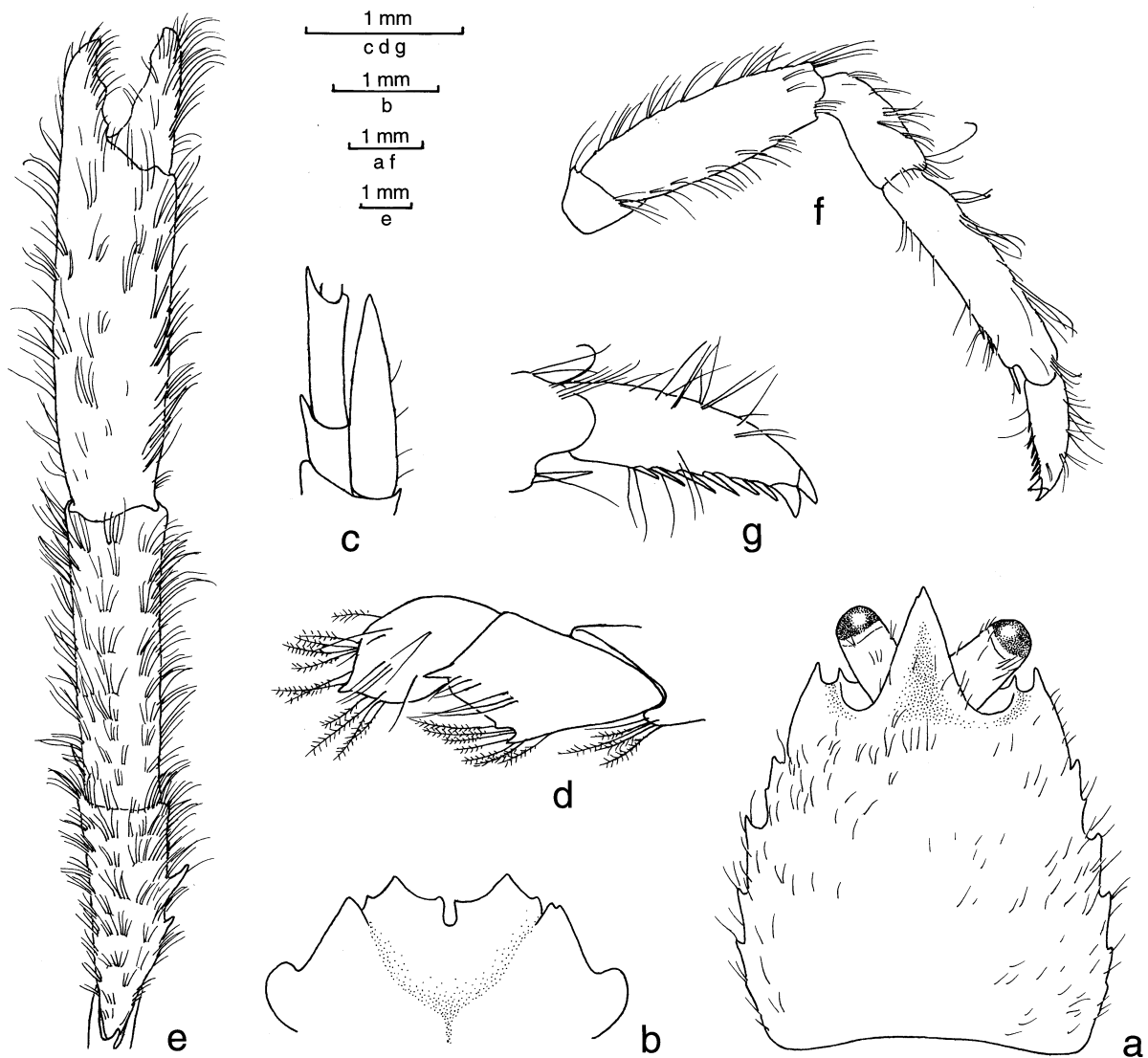


Fig. 22. *Uroptychus wolffi* n. sp., holotype, ♂, ZMUC CRU-11518: a, carapace, dorsal; b, anterior part of sternal plastron; c, antenna, left, ventral; d, merus and carpus of Mxp 3, left, lateral; e, P1, left, dorsal; f, P2, right, lateral; g, same, distal article.

emarginate. Ocular peduncles somewhat elongate, cornea not dilated, much shorter than remaining eyestalk. Antennal peduncle nearly reaching rostral tip; distal 2 articles each with distomesial spine; flagellum of 11–12 segments almost reaching end of P1 merus; antennal scale terminating in end of article 5. Mxp 3 ischium with many small denticles on mesial ridge, flexor distal margin not rounded; merus with well-developed distolateral spine and somewhat smaller spine at midlength of flexor margin; carpus with distolateral spine. P1 setose, merus with 2 mesial marginal and 1 distomesial spine. P2–4 relatively stout, moderately setose; P2 merus shorter than postorbital carapace length; meri and carpi unarmed; propodi with

pair of terminal spines preceded by 2 spines on ventral margin; dactyli with straight flexor margin bearing 8 spines, distal 2 prominent, penultimate much larger than ultimate, remaining 6 slender and inclined.

Description of holotype: Carapace, exclusive of rostrum, moderately high, distinctly broader than long, dorsally unarmed, sparsely setose, and convex in profile. Lateral margin with 6 spines, first anterolateral and well developed, second smaller than and distantly separated from first, present directly behind ordinary end of cervical groove, third very small, closer to second than to fourth, fourth and fifth subequal to second in size, fourth equidistant between second and

fifth, sixth very small. Lateral limit of orbit with distinct spine straight mesial to anterolateral spine of carapace. Rostrum broad relative to length, dorsally excavated, less than half that of remaining carapace.

Pterygostomian flap anteriorly not strongly narrowed, ending in small spine, surface unarmed.

Excavated sternum ridged in midline, anterior margin convex between separated bases of Mxps 1; sternite 3 widely and shallowly convex on anterior margin, with narrow U-shaped median sinus, anterolateral corner sharply angular, laterally with small process on proximal portion; sternite 4 anterolaterally produced on left side, ending in biramous, low, small processes on right side.

Abdomen sparsely setose. Segment 1 without transverse ridge. Pleura of segment 2 with somewhat concave lateral margin not strongly divergent posteriorly. Pleura of segments 3–4 ending in blunt end, not sharply produced. Telson half as broad as long, posterior lobe 1.2 times as long as anterior lobe, posterior margin not emarginate.

Ocular peduncles long relative to length, cornea not dilated, less than half as long as remaining eyestalk, barely reaching end of rostrum.

Antennal peduncles nearly reaching end of rostral tip; article 5 about twice as long as article 4, both articles with strongly produced distomesial spine; flagellum of 11 segments almost reaching end of P1 merus; antennal scale reaching end of peduncle excluding spine. Article 2 with small, sharp distolateral spine.

Mxp 3 ischium with very small, distally diminishing denticles on mesial ridge, flexor distal margin not rounded. Merus having flexor margin strongly carinate on distal half, bearing sharp median spine accompanied by 1 or 2 small denticles distal to it, distolateral spine distinct. Carpus also with distolateral process.

P1 3.3 times as long as carapace including rostrum, covered with fine setae. Basi-ischium with sharp distodorsal and distoventral spine; merus with 1 distomesial and 1 distolateral spine ventrally and 2 mesial marginal spines: distal one prominent, situated at distal third of length; carpus slightly shorter than palm, bearing 1 distomesial spine ventrally. Palm somewhat depressed, about 3 times as long as broad, somewhat narrowed proximally, 2.4 times as long as movable finger. Fingers relatively broad, ending in blunt point, opposable margins sinuous, not gaping.

P2–4 relatively thick, not strongly compressed. Meri and carpi unarmed. P2 merus much shorter than postorbital carapace length. Propodi nearly 5 times as

long as broad, twice as long as dactyli, ventral margin with pair of terminal spines preceded by 2 slender spines. Dactyli nearly straight, relatively thick, flexor margin with 8 spines, distal 2 spines prominent, ultimate one somewhat smaller than penultimate, remaining 6 spines slender, inclined.

Variations: The number of lateral marginal spines of the carapace vary from four to seven, the ovigerous female, which has four, lacks the hind-most one as in the holotype, and the larger male, which has seven, bears additional small spines: one between the first and second or between the first spine and the one directly behind the ordinary end of the cervical groove, and the other between the third and fourth. This larger male has another small spine posterior to the anterolateral and dorsal to the additional anterior spine. The posterior margin of the telson is feebly or barely concave. Flexor marginal spines of the Mxp 3 merus are reduced to two or three denticles in the male and two non-ovigerous female paratypes. The P1 has one to four spines on the mesial margin of the merus.

Remarks: The arrangement of the lateral marginal spines of the carapace, the shapes of the P1–4, and elongate ocular peduncles suggest that the species is close to *U. convexus* Baba, 1988 from the Philippines. The new species is distinguished from that species by: 1) the article 5 of the antennal peduncle is unarmed in *U. convexus*, strongly produced on the distomesial margin in *U. wolffi*; 2) the hepatic region directly anterior to the typical end of the cervical groove is markedly depressed in *U. convexus*, indistinctly so in *U. wolffi*; 3) the P2–4 dactyli in *U. convexus* bear six flexor marginal spines including terminal one, with the penultimate and antepenultimate being distinctly larger, while those in *U. wolffi* bear eight spines, with the distal two being pronounced and remaining six slender and inclined.

Etymology: It is a pleasure to dedicate this species to Torben Wolff, deputy leader of the “Galathea” Expedition.

Uroptychus zezuensis Kim, 1972

Fig. 23

Synonymy: see p. 232.

Material:

Japan, 100 miles W of Nagasaki, 32°22'N, 128°42'E,

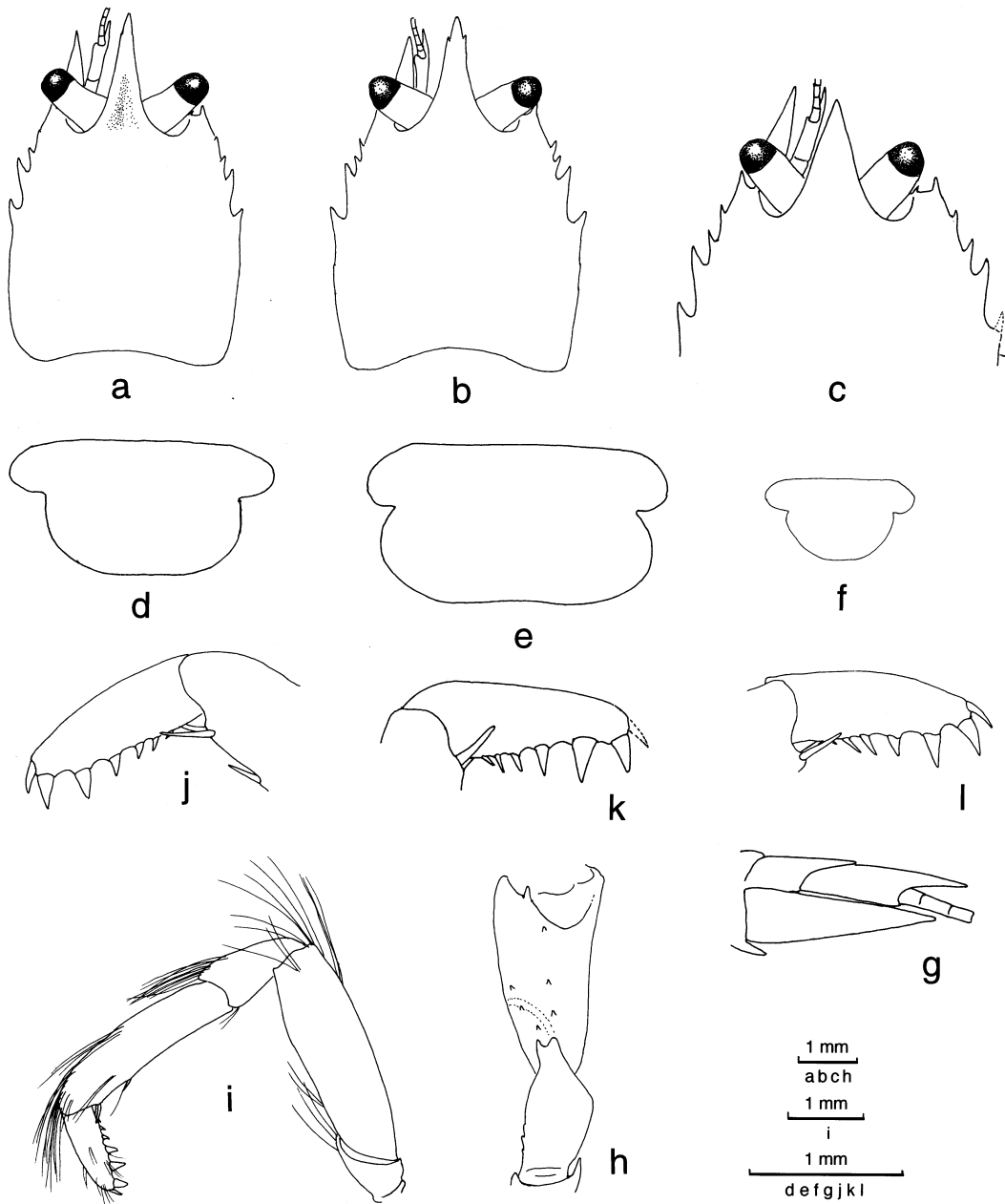


Fig. 23. *Uroptychus zeuensis* Kim, 1972; a, d, g, h, i, j, l, ♂ (5.7 mm), ZMUC CRU-11198; b, e, k, ov. ♀ (5.6 mm), ZMUC CRU-11532; c, ov. ♀ (7.0 mm), ZMUC CRU-11532; f, ♀ (3.4 mm), ZMUC CRU-11532: a, b, carapace, dorsal; c, same, anterior part; d–f, telson; g, antenna, left, ventral; h, P1, proximal part, left, ventral; i, P2, left, lateral; j, same, distal part, setae omitted, lateral; k, P3, distal part; l, P4, distal part.

311 m, 25 Dec 1900, coll. Suenson: — 1 ♂ (4.0 mm), 2 ov. ♀ (5.6, 7.0 mm), 1 ♀ (3.4 mm), ZMUC CRU-11532.

Japan, 12 miles W of Nagasaki, 32°02'N, 128°45'E, 192 m, 12 May 1898, Suenson: — 1 ♂ (5.7 mm), ZMUC CRU-11198.

“Musorstom 1” St. 27, Philippines, 13°59.8'N, 120°18.6'E, 192–188 m, 22 Mar. 1976: — 1 ♂ (5.0

mm), MNHN Ga-4614.

“Musorstom 1” St. CP63, Philippines, 14°00.8'N, 120°15.8'E, 191–195 m, 27 Mar. 1976: — 1 ♂ (4.9 mm), 1 ov. ♀ (5.2 mm), MNHN Ga-4615.

Diagnosis: Carapace sparsely setose; lateral margins convex, bearing 5 spines on anterior half, first anterolateral, moderate in size, second and third small,

third distinctly larger than second, fourth and fifth acute, subequal, both much larger than first. Rostrum narrowly triangular, deeply excavated dorsally, lateral margin with or without small subapical spine on each side. Lateral limit of orbit angular, ending in small, laterally inclined spine. Excavated sternum with distinct ridge in midline, anterior margin broadly subtriangular, with blunt tip, broadly separating Mxps 1; sternite 3 shallowly depressed, anterior margin weakly concave, with narrow or relatively broad U-shaped median notch. Pterygostomian flap with spinules on surface. Telson about twice as broad as long, posterior lobe slightly concave on posterior margin, length about 1.5 times that of anterior lobe. Ocular peduncles elongate, distally narrowed, cornea about half as long as remaining eyestalk. Distal 2 articles of antennal peduncle each with very strong ventral distomesial spine; flagellum of 10–15 segments barely reaching end of P1 merus; antennal scale overreaching end of article 5 but not tip of its distal spine. Mxp 3 ischium with small spine directly lateral to rounded distal corner of flexor margin, denticles on mesial ridge reduced to small size; merus short relative to length, with 1 distolateral spine and 1 small spine on distal third of flexor margin; carpus with distolateral spine and 1 extensor marginal spine. P1 setose; basi-ischium with strong dorsal spine often with accompanying smaller spine proximal to it; merus and carpus usually with distomesial and distolateral spines ventrally, merus with row of 3 spines arranged obliquely on proximal part of ventromesial surface and row of 3 spines on ventral surface. P2–4 moderately broad in lateral view, bearing long, distally softened setae; meri having dorsal crest smooth, without spines; P2 merus much shorter than postorbital carapace length; propodi having ventral margin with pair of terminal spines preceded by 1 spine; each dactylus slightly less than half length of propodus, flexor margin nearly straight, bearing slender terminal spine preceded by 2 strong subequal spines perpendicular to flexor margin and 4 proximally diminishing spines, proximal-most inclined.

Eggs: Number of eggs carried 18; size, 0.83 x 0.85 – 0.95 x 1.05 mm

Remarks: The telson of the smallest female specimen from Nagasaki is strongly narrowed posteriorly (see Fig. 23f). This may be an age associated variation.

Uroptychus zezuensis is characterized by the absence of strong spines on the posterior branchial lateral margin. In previous papers (Baba, 1988, 1990),

U. zezuensis was considered to be a variant of *U. tridentatus* because the last two of the carapace lateral spines as in *U. tridentatus* seemed to be subject to variation. However, such variation is not found in any of the present material as well as other material at hand from the Philippines in the MNHN collection. These two species also differ from each other in the following particulars: the anterior second and third of the carapace lateral spines in *U. zezuensis* are larger than those of *U. tridentatus*, especially the third being larger than the second; the P1 merus in *U. zezuensis* bears a row of three spines arranged obliquely on the proximal part of ventromesial surface, instead of two spines as in *U. tridentatus*.

Range: Nagasaki (Japan), Jeju Island (Korea) and the Philippines; 60–311 m.

Family GALATHEIDAE Samouelle, 1819

Galatheidae Dana, 1852: 1431. — Alcock, 1901: 236.
— Balss, 1957: 1595.

Diagnosis: Carapace dorsally with transverse striae or tubercles. Rostrum well developed, subtriangular or spiniform, supraocular spines present or absent. Sternal plate of thoracic somite 8 distinct, separated from preceding sternal plastron. Tailfan well developed, not folded beneath preceding segment, telson distinctly or indistinctly subdivided into several plates. Antennal peduncle consisting of 4 articles (second and third of 5 articles fused). Mandible having incisor edge entire. Mxp 3 with epipod.

Remarks: The family now contains 30 genera as listed below, including two new genera (*Enriquea* and *Torbenia*) proposed in this paper:

- Agononida* Baba & de Saint Laurent, 1996
- * *Alainius* Baba, 1991
- * *Allogalatea* Baba, 1969
- * *Allomunida* Baba, 1988
- * *Anomoeomunida* Baba, 1993
- * *Anoplonida* Baba & de Saint Laurent, 1996
- Bathymunida* Balss, 1914
- Cervimunida* Benedict, 1902
- * *Coralliogalatea* Baba & Javed, 1974
- * *Crosnierita* Macpherson, 1998
- Enriquea* n. gen.
- * *Fennerogalatea* Baba, 1988
- Galatea* Fabricius, 1793

- Heteronida* Baba & de Saint Laurent, 1996
Janetogalatea Baba & Wicksten, 1997
 * *Lauriea* Baba, 1971
Leiogalatea Baba, 1969
Munida Leach, 1820
Munidopsis Whiteaves, 1874
 * *Nanogalatea* Tirzimi & Javed, 1980
 * *Neonida* Baba & de Saint Laurent, 1996
 * *Onconida* Baba & de Saint Laurent, 1996
Paramunida Baba, 1988
Phylladorhynchus Baba, 1969
 * *Plesionida* Baba & de Saint Laurent, 1996
 * *Pleuroncodes* Stimpson, 1860
Raymunida Macpherson & Machordom, 2000
Sadayoshia Baba, 1969
 * *Shinkaia* Baba & Williams, 1998
Torbenia n. gen.
 (The genera with an asterisk are not included in the present collection).

The following five genera are so far known from shallow-waters: *Allogalatea* Baba, 1969 from the Indo-West Pacific; *Anomoeomunida* Baba, 1993 restricted to the Caribbean Sea; *Coralliogalatea* Baba & Javed, 1974 and *Lauriea* Baba, 1971, both from the Indo-West Pacific, and *Nanogalatea* Tirzimi & Javed, 1980 from the Indian Ocean. *Nanogalatea* is excluded from the key to genera (see below), because its male characters are not known. It strongly resembles *Phylladorhynchus* Baba, 1969, especially in the rostrum that is broad and triangular, the antennular basal article that bears double spines on the distolateral end and the Mxp 3 that has the short merus with a strong submedian spine on the flexor margin. *Nanogalatea* is differentiated from *Phylladorhynchus* by the rostrum without lateral teeth.

Key to genera

1. Eyes reduced. Mxp 1 exopod without lash 2
 - Eyes well-developed. Mxp 1 exopod with lash (subfamily Galatheinae) 3
2. Mxp 3 with well-developed epipod. Ventral aspect of cephalothorax without mat of long silky setae (Subfamily Munidopsinae) *Munidopsis* Whiteaves, 1874
 - Mxp 3 with rudimentary epipod. Ventral aspect of cephalothorax with mat of long silky setae (subfamily Shinkainaie) *Shinkaia* Baba & Williams, 1998
3. Male lacking G1, bearing G2 only 4
 - Male with G1 and G2 16
4. Rostrum triangular, dorsally flattish 5
 - Rostrum with spiniform median spine flanked by supraocular spine on each side 7
5. Endopod of uropod extremely broad *Lauriea* Baba, 1971
 - Endopod of uropod normal, about as broad as long 6
6. Rostrum with tiny subterminal and distinct basal teeth on each side *Phylladorhynchus* Baba, 1969
 - Rostrum with 3 distinct teeth on each side *Coralliogalatea* Baba & Javed, 1974
7. P5 with brush of plumose setae on flexor face of chela 8
 - P5 without brush of plumose setae on chela. 12
8. Abdominal segments 2–3 each with strong median hump-like process *Heteronida* Baba & de Saint Laurent, 1996
 - Abdominal segments 2–4 without hump-like process, unarmed or with spines 9
9. P5 dactylus with barb-like process *Onconida* Baba & de Saint Laurent, 1996
 - P5 dactylus without barb-like process 10
10. Basal article of antennule with 2 spines, one above the other, at distolateral angle *Neonida* Baba & de Saint Laurent, 1996
 - Basal article of antennule with a single spine at distolateral angle 11
11. Mxp 3 merus very short, less than 1.5 times as long as broad. Telson subdivision complete *Plesionida* Baba & de Saint Laurent, 1996
 - Mxp 3 merus more than twice as long as broad. Telson subdivision incomplete *Bathymunida* Balss, 1914
12. Orbit with mound mesial to lateral limit of orbit *Torbenia* n. gen.
 - Orbit without mound mesial to lateral limit or orbit 13
13. Carapace without dorsal spines *Anoplionida* Baba & de Saint Laurent, 1996
 - Carapace with dorsal spines or processes 14
14. Front margin deeply concave. Mxp 3 merus subrhomboidal, at most 1.5 times as long as broad *Crosnierita* Macpherson, 1998
 - Front margin not concave but transverse or oblique. Mxp 3 merus at least twice as long as broad 15
15. Carapace with clear transverse striae. P2–4 dactyli usually with row of corneous spines *Agononida* Baba & de Saint Laurent, 1996

- Carapace without distinct transverse striae, mostly with scale-like or very short striae, tubercles, or small spines. P2–4 dactyli usually entire on flexor margin
..... *Paramunida* Baba, 1988
 - 16. Rostrum spiniform 17
 - Rostrum triangular and flattish 23
 - 17. Rostrum with dorsal and ventral spines
..... *Cervimunida* Benedict, 1902
 - Rostrum lacking dorsal and ventral spines .. 18
 - 18. Rostral spine flanked by 2 lateral spines on each side *Sadayoshia* Baba, 1969
 - Rostral spine flanked by supraocular spine on each side 19
 - 19. Pterygostomian flap largely visible in dorsal view *Pleuroncodes* Stimpson, 1860
 - Pterygostomian flap not visible in dorsal view 20
 - 20. Epipods present on P1–3. Mxp 3 carpus with spine at flexor distal margin
Raymunida Macpherson & Machordom, 2000
 - Epipods absent from P1–3. Mxp 3 carpus unarmed on flexor margin 21
 - 21. Lateral angle of orbit produced. P2–4 meri unarmed dorsally, dactyli smooth on flexor margin *Anomoeomunida* Baba, 1993
 - Lateral angle of orbit ill defined. P2–4 meri armed with dorsal spines, dactyli with seta-like spines on flexor margin 22
 - 22. Antennular basal article without lateral spine proximal to distolateral spine. Antennal peduncle slender, articles 1 and 2 spineless
..... *Enriquea* n. gen.
 - Antennular basal article with lateral spine proximal to distolateral spine. Antennal peduncle relatively broad, articles 1 and 2 each with distomesial spine ... *Munida* Leach, 1820
 - 23. Carapace lacking setiferous striae. Eyestalks narrow and elongate
..... *Fennerogalatea* Baba, 1988
 - Carapace bearing setiferous striae. Eyestalks relatively broad and short 24
 - 24. Article 2 of antennal peduncle unarmed. P2–4 unarmed on dorsal crests of meri and carpi
..... *Allomunida* Baba, 1988
 - Article 2 of antennal peduncle with distomesial and distolateral spines. P2–4 with spines on dorsal crests of meri and carpi 25
 - 25. Orbit not excavated. Article 1 of antennal peduncle fused with body
..... *Janetogalatea* Baba & Wicksten, 1997
 - Orbit excavated. Article 1 of antennal peduncle articulated with body 26
 - 26. Rostrum dagger-shaped, with distinct supraocular spine on each side
..... *Alainius* Baba, 1991
 - Rostrum subtriangular, without supraocular spines, bearing a few to 9 small lateral spines or teeth 27
 - 27. Rostrum extremely elongate, ventrally carinate, with 5–9 lateral spines
..... *Allogalatea* Baba, 1969
 - Rostrum moderate in length, usually flattish, with 2–5 lateral teeth 28
 - 28. Rostrum with reduced lateral spines. Carapace with obsolescent transverse striae bearing coarse setae *Leiogalatea* Baba, 1969
 - Rostrum with distinct lateral spines. Carapace with transverse striae bearing fine setae
..... *Galatea* Fabricius, 1793
- Genus *Agononida* Baba & de Saint Laurent, 1996**
Agononida Baba & Saint Laurent, 1996: 441.
- Diagnosis: Carapace with distinct transverse striae. Rostrum spiniform, remote from supraocular spines. Pair of epigastric spines. Cardiac region with transverse ridge elevated, often armed with spine(s). Abdominal segments 2–4 each with 2 elevated transverse ridges, each anterior ridge with 4 spines (rarely 6), posterior ridge of segment 4 with or without median spine. Telson subdivision incomplete. Cornea dilated. Antennal article 1 with distomesial process strong or of moderate size. Mxp 3 merus with strong submedian spine on flexor margin. P1 slender. P2–4 relatively long and slender, dactyli flattened mesio-laterally, flexor margin with row of seta-like movable spine each arising from very low, small process. G1 absent. Eggs small and numerous.
- Remarks: The genus is characterized by the absence of G1. Since the establishment of *Agononida* Baba & de Saint Laurent, 1996, five new species have been described (Macpherson, 1997, 1998; Ahyong & Poore, 2004b). *Agononida insolita* Macpherson, 2004, which was provisionally placed in the genus, is transferred to *Torbenia* n. gen. (see below).
- The present collection includes the following three species.

***Agononida analoga* (Macpherson, 1993)**

Synonymy: see p. 234.

Material:

Kei Islands Expedition St. 8, 5°39'S, 132°26'E, 300 m, mud, trawl, 5 Apr 1922: — 2 ♂ (22.8, 22.4+ mm), ZMUC CRU-11398.

Kei Islands Expedition St. 44, 5°39'S, 132°23'E, 268 m, mud, trawl, 30 Apr 1922: — 1 ♂ (27.7 mm), 1 ov. ♀ (22.5 mm), ZMUC CRU-11418.

Kei Islands Expedition St. 48, 5°40'10"S, 132°21'E, 263 m, sandy mud, 3 May 1922: — 2 ♂ (24.0, 25.9 mm), ZMUC CRU-11453.

Diagnosis: Carapace with numerous transverse ridges, armed with 2 epigastric, 1 postcervical (on each side) and 1 cardiac spine, and 2 spines on posterior transverse ridge. Supraocular spines widely separated from rostral spine, slightly divergent anterolaterally, distinctly overreaching cornea. Orbital margin somewhat concavely transverse. Lateral margin with 6 spines, 2 in front of, and, 4 behind anterior cervical groove. Sternal plastron with numerous arcuate striae. Abdominal segments 2, 3, 4 with 4, 4, 2 spines respectively on anterior ridge; posterior ridge with median spine on segment 4. Distomesial spine of antennular basal article reduced to very small size, distolateral one well developed; 2 lateral spines, proximal one much smaller. Antennal peduncles having article 1 with moderate-sized distomesial process ending in small spine, article 2 unarmed on distomesial margin, article 3 with sharp slender distomesial spine. Mxp 3 merus with median spine on flexor margin, distal spine on extensor margin. P1–4 squamous. P2–4 dactyli slender and curving, each with more than 30 small seta-like spines on proximal half on P2, more proximally on P3 and P4 (on proximal 1/4 on P4).

Remarks: *Agononida analoga* strongly resembles *A. squamosa* Henderson, 1885, in the ornamentation of the carapace and abdomen. This species is distinguished from that species by lacking a spine on the distomesial margin of the antennal article 2 and longer and more slender P2–4 dactyli with more numerous spines on the flexor margin, and the sternal plastron bearing numerous striae.

The "Albatross" specimens identified by Baba (1988) as *Munida squamosa* were referred to this species (Macpherson, 1993a).

Range: Philippines and Indonesia (including Kei

Islands); between 170–200 m and 415–510 m.

***Agononida incerta* (Henderson, 1888)**

Synonymy: see p. 235.

Material:

"Galathea" St. 197, off Durban, 29°57'N, 31°26'E, 500–545 m, 14 Feb 1951: — 16 ♂ (18.2–40.0 mm), 8 ov. ♀ (5.3–31.2 mm), 3 ♀ (20.8–25.2 mm), ZMUC CRU-11273, 11274.

Th. Mortensen's Pacific Expedition 1914–16, 25 miles E by S of Zamboanga, trawl, 293–366 m, hard bottom, 3 Mar 1914: — 2 ♂ (32.4, 50.2 mm), 3 ♀ (21.3–29.2 mm), 1 spec. (18.6 mm), ZMUC CRU-11555.

Th. Mortensen's Pacific Expedition 1914–16, 25 miles E of Zamboanga, 458 m, trawl, 4 Mar 1914: — 1 ♂ (15.7 mm), ZMUC CRU-11576.

Th. Mortensen's Java–South Africa Expedition 1929–30, "Dog" St. 11, Bali Strait, Indonesia, 8°30'S, 114°38'E, ca. 450 m, trawl, 7 Apr 1929: — 1 ♂ (32.8 mm), ZMUC CRU-11551.

Th. Mortensen's Java–South Africa Expedition 1929–30, "Dog" St. 15, Bali Sea, Indonesia, 7°29'S, 114°49'E, ca. 240 m, sand and mud with concretions, trawl, 10 Apr 1929: — 1 ♀ (17.0 mm), ZMUC CRU-11090.

Kei Islands Expedition St. 8, 5°39'S, 132°26'E, 300 m, mud, trawl, 5 Apr 1922: — 1 ov. ♀ (25.5 mm), ZMUC CRU-11399.

Kei Islands Expedition St. 12, 5°30'S, 132°35'E, 325 m, sand, shells, corals, trawl, 9 Apr 1922: — 4 ov. ♀ (27.3–32.3 mm), ZMUC CRU-11402.

Kei Islands Expedition St. 22, 5°30'40"S, 132°51'E, 340 m, sandy mud, trawl, 15 Apr 1922: — 1 ♂ (27.0 mm), 3 ov. ♀ (29.7 mm), ZMUC CRU-11397.

Kei Islands Expedition St. 32, 5°32'20"S, 132°34'E, 260 m, sand, trawl, 22 Apr 1922: — 1 ♂ (24.5 mm), 1 ov. ♀ (31.3 mm), 1 ♀ (27.3 mm), ZMUC CRU-11415.

Kei Islands Expedition St. 41, 5°28'40"S, 132°28'E, 245 m, mud, trawl, 25 Apr 1922: — 1 ♂ (28.3 mm), 5 ov. ♀ (24.1–28.5 mm), 1 ♀ (29.8 mm), ZMUC CRU-11413.

Kei Islands Expedition St. 44, 5°39'S, 132°23'E, 268 m, mud and shells, trawl, 30 Apr 1922: — 2 ov. ♀ (28.8, 29.6 mm), ZMUC CRU-11411.

Kei Islands Expedition St. 51, 5°46'30"S, 132°51'E, 348 m, mud, trawl, 7 May 1922: — 12 ♂ (10.5–30.4 mm), 6 ov. ♀ (25.8–32.3 mm), 2 spec. (sex

indet., 13.2, 13.6 mm), ZMUC CRU-11582.

Kei Islands Expedition St. 52, 5°46'S, 132°49'35"E, 352 m, mud, trawl, 7 May 1922: — 2 ♂ (29.0+, 39.2 mm), 4 ov. ♀ (26.6–28.6 mm), ZMUC CRU-11414.

Kei Islands Expedition St. 57, 5°32'S, 132°49'25"E, ca. 200 m, shells, trawl, 10 May 1922: — 2 ♂ (26.6+, 35.3 mm), 1 ov. ♀ (30.2), ZMUC CRU-11410.

Diagnosis: Carapace with numerous transverse striae; 2 epigastric spines and 1–3 spines on branchiocardiac boundary (usually 3, anterior first constant, second and/or third occasionally missing); no spine on posterior ridge; lateral margin with 4 spines behind cervical groove. Abdominal segments 2–4 each with 4 spines on anterior ridge, posterior ridge of segment 4 with median spine. Antennular basal article with distomesial spine distinctly longer than distolateral. Antennal peduncle with strong anterior prolongation on article 1, article 2 with small but distinct spine proximal to well-developed distomesial spine. Mxp 3 merus with distal spine on extensor margin, median spine on flexor margin. P2–4 dactyli unarmed and smooth on flexor margin.

Color in life: Fairly pale pink, female with light blue eggs and 2 light blue spots shining through carapace at each side of elevation behind rostral spine. Spines and stripes reddish yellow, bristles yellow iridescent.

Remarks: This species is the type species of *Agononida* (Baba & de Saint Laurent, 1996).

None of the male specimens examined from off Zamboanga, the type locality of this species, bear a prominent process on the anterior lateral expansion of the telson that is present in specimens from deeper parts off Central Queensland (Baba, 1994). As is suggested earlier (Baba, 1994; Macpherson, 1994), the latter specimens may represent a new species.

Range: East African coast between Durban and Zanzibar, Madagascar, Philippines, Indonesia, New South Wales, Queensland, New Caledonia, Loyalty Islands, Chesterfield Islands, Kiribati, SW Pacific (Wallis Islands, Tuscaroa Bank, Waterwitch Bank, Field Bank, Bayonnaise Bank), Fiji, Tonga, East China Sea, and off the Pacific coast of Japan; 170–720 m. Further studies would be desirable to confirm the identity of the previously reported specimens.

Agononida squamosa (Henderson, 1885)

Synonymy: see p. 237.

Material:

Th. Mortensen's Pacific Expedition 1914–16, 3 miles SW of Tucuran, Moro Gulf, 7°30'N, 123°30'E, 549 m, trawl, 10 Mar 1914: — 1 ♀ (15.8 mm), ZMUC CRU-11197.

Th. Mortensen's Java–South Africa Expedition 1929–30, "Dog" St. 2, Bali Sea, Indonesia, 7°33' N, 114°36' E, 200 m, mud, 03 Apr 1929: — 1 ♂ (7.8 mm), ZMUC CRU-11085.

Th. Mortensen's Java–South Africa Expedition 1929–30, "Dog" St. 3, Bali Sea, Indonesia, 7°42'S, 114°35'E, 450 m, mud with corals, Sigsbee trawl, 4 Apr 1929: — 1 ♂ (6.2 mm), ZMUC CRU-11573.

Th. Mortensen's Java–South Africa Expedition 1929–30, "Dog" St. 7, Bali Strait, 8°29'S, 114°40'E, 200 m, mud, 5 Apr. 1929: — 11 ♂ (9.0–15.0 mm), 3 ♀ (10.4–15.0 mm), 7 sp. (sex indet., 7.1–9.4 mm), ZMUC CRU-11096.

Kei Islands Expedition St. 41, 5°28'40"S, 132°28'E, 245 m, mud, trawl, 25 Apr 1922: — 1 ov. ♀ (21.2 mm), ZMUC CRU-11427.

"Dana" St. 3609, New Caledonia, 20°45'S, 164°13'E, 350 m, 26 Nov 1928: — 1 ♂ (19.7 mm), ZMUC CRU-11631.

Diagnosis: Carapace with numerous granulate transverse striae. Two epigastric, 1 cardiac and 2 postcervical (1 on each side) spines, and 2 spines on posterior ridge. Lateral margin with 4 spines behind cervical groove. Abdominal segments 2–4 each with 4 spines on anterior ridge; additional spine on posterior ridge of segment 4. Rostrum longer than but equally broad as supraocular spines. Antennular basal article with distomesial spine reduced to small size, distolateral spine well developed. Article 1 of antennal peduncle with distomesial process, article 2 with distinct distomesial spine. Mxp 3 ischium strongly depressed, thin, with strong spine on flexor distal margin; merus with well-developed spine on flexor median margin and small spine on extensor distal margin. P2–4 dactyli having flexor margin unarmed on distal half, bearing at most 25 seta-like spines on proximal half on P2, less numerous spines (10–15) on P3 and P4.

Remarks: In the specimens from "Dog" St. 7, the

distomesial spine of the antennal article 2 is very small, but the P2–4 dactyli are typical of the species. The male specimen from “Dog” St. 3 bears less numerous striae on the carapace, stronger spines on the P1, and a few reduced spines on the flexor margin of the P2–4 dactyli, the features being different from the other specimens examined. However, these features are here considered to be age related variation.

The specimens reported by Baba (1988) under the name of *Munida squamosa* are referable to *Agononida analoga* (see Macpherson, 1993a). The relationships between *A. squamosa* and *A. analoga* are discussed under the “Remarks” of the latter (see above).

Agononida squamosa var. *prolixa* (Alcock 1894) was shifted to a full species by Ahyong & Poore (2004b). It is differentiated from *M. squamosa* by the three branchial marginal spines and a blunt distomesial spine on the antennal article 2.

Range: Admiralty Islands, Bali, Kei Islands, off Central Queensland, New South Wales, New Caledonia, Loyalty Islands, Wallis Islands, Tonga, Fiji, Taiwan and Japan; 156–752 m.

Genus *Bathymunida* Balss, 1914

Bathymunida Balss, 1914: 137; 1915: 4. — van Dam, 1938: 194. — Baba, 1988: 53; Baba & de Saint Laurent, 1996: 446 (redefinition).

Diagnosis: Carapace with transverse striae usually interrupted, often reduced. Pair of epigastric spines small. Keel-like process on gastric and cardiac regions. Rostral base broad, rostral and supraocular spines widely separated. Sternite 4 with broad, concave anterior margin contiguous to entire posterior margin of sternite 3. Abdominal segments 2–4 each having anterior ridge with pair of submedian spines; papilla-like lateral spines often on segment 2, rarely on segment 3, none on segment 4. Telson subdivision incomplete. Cornea dilated. Basal article of antennule with distolateral spine larger than distomesial; lateral spine small. Mxp 3 having distal 2 articles reduced in size; ischium with distinct spine on flexor distal margin; merus very short, bearing submedian spine on flexor margin and distal spine on extensor margin. P2–4 dactyli slender, curving, flexor margin entire or with a few seta-like movable spines. P5 having flexor face of palm with brush of plumose setae often continued on to part of fixed finger. Movable finger of male usually

with a set of ribbon-like setae on proximal portion. G1 absent.

Remarks: The genus was revised by Baba & de Saint Laurent (1996). *Bathymunida aspinirostris* Khodkina, 1981 was transferred to *Heteronida* Baba & de Saint Laurent, 1996, and *B. inermis* Baba, 1994 to *Anoplionida* Baba & de Saint Laurent, 1996.

The present collection includes the following two species.

Bathymunida polae Balss, 1914

Synonymy: see p. 239.

Material:

Th. Mortensen’s Java-South Africa Expedition 1929–1930, “Maurice” St. 43, off Tombeau Bay, Mauritius, 238 m, swab, 11 Oct 1929: — 1 ♂ (5.3 mm), ZMUC CRU-11117.

Th. Mortensen’s Java-South Africa Expedition 1929–1930, “Maurice” St. 47, N of Port Louis, Mauritius, ca 238 m, mud and corals, Sigsbee trawl, 6 Nov 1929: — 2 ♂ (3.7, 5.5 mm), 1 ♀ (4.9 mm), ZMUC CRU-11106.

Kei Islands Expedition 1922, Ambon Bay, ca. 128 m, stones, dredge, 25 Feb 1922: — 1 ♂ (6.3 mm), ZMUC CRU-11325.

Diagnosis: Carapace with distinct transverse striae, relatively broad, strongly narrowed posteriorly, lateral margins of branchial regions expanded laterally. Rostrum with weak mid-dorsal ridge, rostral spine moderate in length, varying from slightly overreaching to slightly falling short of well-developed supraocular spines. Abdominal segment 5 with scale-like ridges more distinct than on segment 6. Eyelashes relatively long, usually reaching corneal margin. Mxp 3 merus very short relative to width, nearly rhomboidal in lateral view. P2–4 dactyli slender, about as long as propodus on P2, distinctly longer on P3–4, flexor margin with 1 or 2 seta-like movable spines; merus slightly twisted on P2. Male P5 with ribbon-like setae on distal portion of propodus.

Range: Red Sea, La Réunion, Madagascar, Mauritius and Kei Islands; 76–255 m. Previously known only from the Indian Ocean. This is the first record from the Malayan region.

***Bathymunida sibogae* Van Dam, 1933**

Synonymy: see p. 239.

Material:

Kei Islands Expedition St. 2, 5°32'S, 132°27'E, 220 m, sand, 31 Mar 1922: — 1 ov. ♀ (4.7 mm), ZMUC CRU-11327.

Diagnosis: Carapace with distinct striae, moderately dense on branchial regions. Rostral spine well developed, barely or almost reaching anterior level of cornea, supraocular spines small, never reaching midlength of rostral spine, often short (probably due to injury). Lateral margins of carapace behind cervical incision gently convergent posteriorly. Eyelashes long, occasionally reaching corneal margin. Abdominal segment 5 with distinct striae, segment 6 with fine striae laterally. Mxp 3 merus sub-rhomboidal in lateral view, flexor marginal spine rather distal in position. P2–4 dactyli slender, curving, flexor margin bearing 1 (rarely 2) seta-like movable spine proximal to midlength. Male P5 with several fine setae on distal portion of propodus.

Range: Seram Sea, Kei Islands, New Caledonia, Chesterfield Islands and Japan; 118–345 m.

Genus *Enriquea* n. gen.

Diagnosis: Carapace with distinct rugosity; prominent anterolateral spines directed straight forward, reaching midlength of ocular peduncle; anterior cervical groove ending about at anterior third of lateral margin. Rostrum spiniform, flanked by well-developed supraocular spine on each side. Abdominal segments 2–4 each with anterior and posterior transverse ridges, both with spines. Basal article of antennular peduncle elongate, with 2 terminal spines and another small spine at midlength of lateral margin, unarmed elsewhere. Antennal peduncles slender, spineless, article 2 more than twice as long as broad, distomesially ending in rounded margin. Mxp 3 merus with strong spine on flexor median margin. P1 carpus relatively long, about as long as palm. P2–4 meri each with row of ventral spines much larger than dorsal spines. G1 and G2 present in males. Eggs small and numerous.

Type species: *Munida leviantennata* Baba, 1988, by monotypy.

Gender: Feminine.

Remarks: *Enriquea* n. gen. and *Munida* Leach, 1820 share the carapace with distinct rugosity and spines, the rostral spine flanked on each side by a well-developed supraocular spine, and the presence of G1 and G2. However, the new genus is easily distinguished from *Munida* by the following characters: 1) the antennular basal article in *Enriquea* lacks a lateral spine between the distolateral spine and another at midlength of the lateral margin, which are usually well developed and longest among the spines on this article in *Munida*; 2) the antennal peduncles in *Enriquea* are unarmed, with the distal two articles very slender, instead of bearing at least a distinct spine on each of the articles 1 and 2, with the distal articles relatively broad as in *Munida*; 3) the anterolateral spine of the carapace in *Enriquea* is extremely strong, reaching the midlength of the ocular peduncle, whereas it is of moderate size, at most reaching or slightly overreaching the level of the sinus between rostral and supraocular spines in *Munida*; 4) the carapace branchial margin in *Enriquea* bears only one spine located directly behind the anterior cervical groove, while in *Munida* there are usually four or five (rarely three) spines; 5) the abdominal segments 2–3 in *Enriquea* bear spines on the anterior and posterior striae, whereas the posterior stria is unarmed in *Munida*; 6) the P2–4 meri in *Enriquea* bear ventral spines (other than distal spine) much larger than dorsal spines, instead of smaller and fewer ventral spines as in *Munida*.

Etymology: Dedicated to Enrique Macpherson who has contributed much to the knowledge of Galatheidae, *Munida* and its relatives in particular.

***Enriquea leviantennata* (Baba, 1988)**

Fig. 24

Synonymy: see p. 241.

Material:

Th. Mortensen's Pacific Expedition 1914–16, 25 miles E off Zamboanga, 458 m, hard bottom, trawl, 4 Mar 1914: — 1 ♂ (19.8 mm), ZMUC CRU-11579.

Kei Islands Expedition St. 52, 5°46'S, 132°49'35"E, 352 m, 7 May 1922 — 1 ♀ (15.1 mm), ZMUC CRU-11417.

Diagnosis: Carapace with minutely tuberculate transverse striae, armed with spines on epigastric, protogastric, mesogastric (often absent), metagastric,

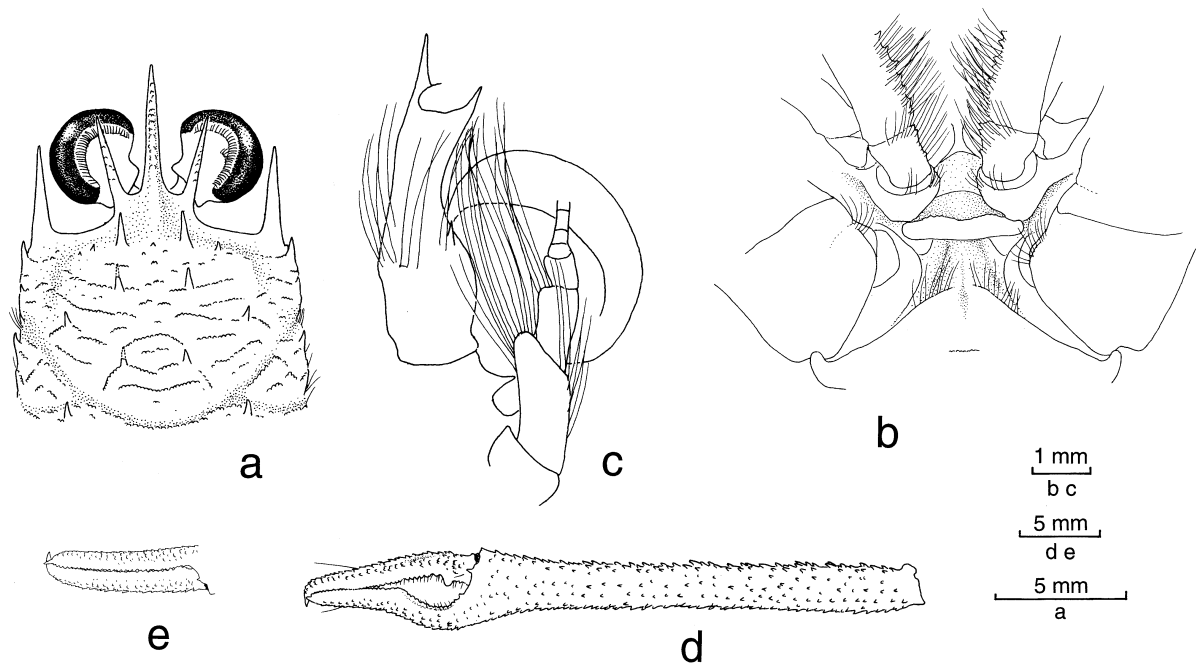


Fig. 24. *Enriquea levantennata* (Baba, 1988), ♂ (19.8 mm), ZMUC CRU-11579: a, anterior half of carapace, dorsal; b, anterior part of sternal plastron, including proximal parts of Mxps and P1; c, antennule and antenna, ocular peduncle included, left, ventral; d, chela, left, dorsal; e, P1 fingers, right, dorsal.

cardiac, postcervical regions and on posterior ridge. Lateral margin with 3 spines; first anterolateral, very strong, directed straight forward; second small, close to first; third subequal to second, situated directly behind end of anterior cervical groove. Supraocular spines divergent anterolaterally. Abdominal segments 2–4 with 6, 4, 2 spines respectively on anterior ridge, 2 each on posterior ridge. Sternite 4 with anterior margin much narrower than sternite 3. Cornea large, depressed, eyelashes short. Antennular basal article elongate, constricted at distal third, distomesial and distolateral spines subequal, distal one of lateral spines absent. Antennal peduncle unarmed, bearing long setae on distal 2 articles; articles 2 and 3 long relative to width, article 2 with rounded distomesial margin bearing tuft of long setae. Mxps 3 widely separated at base from each other, merus with prominent spine on flexor median margin. P1 having carpus very long relative to width (more than 6 times as long as broad). P2–4 meri with sharp spines on dorsal and ventral margins, ventral spines larger; dactyli nearly straight on P2–3, distally curving on P4, flexor margin with inclined movable spines on median third. Male with G1 and G2.

Remarks: The base of the rostrum from which rostral

and supraocular spines are produced forward is comparatively long in the type as well as one of specimens examined (female 15.1 mm, from Kei Islands Expedition St. 52). However, the male 19.8 mm, from off Zamboanga, is also somewhat different in other aspects: 1) the rostral base is much shorter; 2) the distomesial spine of the antennular basal article is distinctly longer than the distolateral, whereas they are subequal in the type and the female here examined; 3) the P1 is covered with more numerous tubercular teeth than in the holotype (P1 is missing in the female), and is comparatively long and slender, being 4.4 times as long as the carapace including the rostrum, instead of being 2.6 times as long in the holotype; and 4) the right and left P1 are dissimilar; with the right as described for the holotype in general, while the left one has strongly gaped fingers (Fig. 24d, e). I believe, however, that these differences do not warrant description of a new species.

Range: Off Zamboanga, off SW Luzon, Makassar Strait, Moluccas off W coast of Halmahera, Kei Islands, Arafura Sea, off central Queensland, New Caledonia, Vanuatu, Chesterfield Islands, Wallis Islands (SW Pacific), Fiji and Tonga; between 300–320 m and 1210–1250 m.

Genus *Galathea* Fabricius, 1793

Galathea Fabricius, 1793: 471. — Stimpson, 1858: 76.
— Haswell, 1882: 161. — Henderson, 1888: 117.
— Mile Edwards & Bouvier, 1894: 249; 1897: 13.
— Makarov, 1938: 79 (1962: 81). — Baba, 1969a:
9. — Tirmizi & Javed, 1993: 41.

Diagnosis: Carapace dorsally with setiferous transverse striae, laterally with row of spines. Cardiac region not prominent. Rostrum dorsoventrally flattened, triangular, with 4 (rarely 2 or 5) lateral teeth. Abdomen unarmed on tergites. Telson subdivision incomplete. Ocular peduncles short, cornea somewhat dilated and well pigmented. Orbit delimited ventrally by a denticulate crest. Basal antennular article with 2 or 3 distal spines, distodorsal and distolateral usually present, distomesial often reduced or absent. Article 1 of antennal peduncle usually with strong distomesial spine. Mxp 3 ischium subtriangular in cross section, merus armed with spines on flexor margin. P1 relatively short and spinose. P2–4 with row of spines on dorsal crests of merus and carpus. Flexor margin of dactylus with row of distinct teeth each bearing stiff corneous seta, ultimate tooth usually prominent. Male with G1 and G2.

Remarks: The majority of 52 Indo-Pacific species are shelf forms but 16 are known from depths exceeding 200 m (see below under the list of species).

Munida quinquespinosa Balss, 1913, reported from the Nicobar Islands in 296 m, is transferred to *Galathea* in this paper (see below under *G. lumaria* n. sp.). The present collection contains eight species including three new species.

Galathea anepipoda Baba, 1990

Synonymy: see p. 243.

Material:

Th. Mortensen's Pacific Expedition 1914–16, Sagami Bay, 732 m, swab, 1–7 Jun 1914: — 2 ♂ (5.2, 6.1 mm), ZMUC CRU-11542.

Th. Mortensen's Pacific Expedition 1914–16, Okinose, Sagami Bay, 549 m, hard bottom, swabs, 29 Jun 1914: — 1 ♀ (4.5 mm), ZMUC CRU-11548.

Th. Mortensen's Pacific Expedition 1914–16, N of Misaki Biological Station, Sagami Bay, hard bottom, swabs, 366 m 30 Jun 1914: — 1 ♀ (5.9 mm), ZMUC CRU-11531.

Kei Islands Expedition St. 3, 5°32'S, 132°36'E, 245 m, sand, trawl, 31 Mar 1922: — 1 ♂ (6.4 mm), ZMUC CRU-11449.

Diagnosis: Carapace dorsally armed with 2 small epigastric spines; anterior third stria short, located medially, bearing a few long stiff setae; lateral margin with 5–6 spines (1 in front of, 4–5 behind cervical groove). Rostrum sharply triangular, length more than half that of remaining carapace, lateral margin with 4 shallowly incised teeth. Pterygostomian flap with blunt anterior end, without spine on surface. Basal article of antennule with distomesial spine subequal to distolateral spine; distal article without tuft of setae. Antennal peduncles having article 1 with distoventral process overreaching article 2, article 2 with distolateral spine not reaching end of and subparalleling lateral margin of article 3, distomesial spine about as large as distolateral spine, directed anteromesad. Mxp 3 merus with 2 spines on flexor margin, distal smaller; extensor margin with 2 small spines or processes. P1 carpus more than 2/3 as long as palm. P2–4 meri about 1.5 times as broad as propodi; propodi with 4–5 movable spines on ventral margin, other than spine mesial to ventral midline; dactyli strongly curved distally, ending in strong spine, flexor margin with 7 proximally diminishing teeth. Epipod absent from P1–4.

Remarks: The absence of a spine between the anterolateral spine and the end of anterior cervical groove, the antennular basal article bearing three terminal spines and the Mxp 3 merus having two spines on the flexor margin (the proximal larger) and two spinules on the extensor margin, link the species to *G. ohshimai* Miyake & Baba, 1967. The latter, however, is distinguished by the presence of an epipod on the P1 and a distinct spine on the anterior part of the pterygostomian flap.

The "John Murray" material of *G. orientalis* Stimpson (Tirmizi, 1966) will possibly be referred to *G. anepipoda* (see below under the "Remarks" of *G. orientalis*). The material reported under *G. balssi* by Tirmizi & Javed (1993) will in all probability be identical with *G. anepipoda*. Most of the characters in the two species are very much alike, but *G. balssi* has a much broader rostrum and the second transverse stria bearing a distinct spine near each lateral extremity.

Range: Previously known from Madagascar, in 85–150 m. The records by Tirmizi & Javed (1993) reported

under *G. balssi* (now considered to be identical with *G. anepipoda*) are from off Somali Republic, Mozambique Channel, and central part of Indian Ocean, between 47–49 m and 165 m. The vertical range is now extended to Japan where it is found in greater depths (366–732 m), via Indonesia (245 m).

***Galathea hispida* n. sp.**

Fig. 25

Material:

Kei Islands Expedition St. 50, 5°34'S, 132°25'40"E, 233 m, sand, trawl, 4 May 1922: — 1 ♀ (7.8 mm), holotype [with externa of rhizocephalan parasite], ZMUC CRU-11393.

Diagnosis: Carapace dorsally with long setae on median protogastric and cardiac striae; lateral margin with small spine behind well-developed anterolateral spine. Pair of epigastric spines. Rostrum sharply triangular, with 4 deeply incised lateral teeth on each side. Pterygostomian flap unarmed, anterior margin not produced into spine. Sternite 3 relatively narrow, with 2 lobes on anterior margin. Abdomen with long setae like those on protogastric and cardiac regions but more numerous. Distomesial spine of antennular basal article reduced, ultimate article with a number of setae on distodorsal margin. Article 1 of antennal peduncle with distomesial spine barely reaching end of article 2, article 2 with distolateral spine falling short of end of and paralleling lateral margin of article 3, distomesial spine much shorter, directed anteromesad. Mxp 3 merus with 3 spines on flexor margin (proximal strong, distal 2 small) and 1 small spine on extensor distal margin; carpus unarmed. P1 spinose, thickly with fine plumose setae; carpus 3/4 as long as palm. P2–4 also with plumose setae on meri and carpi, simple setae on propodi and dactyli; meri 1.5 times as broad as propodi; propodi with 6–7 slender movable spines on ventral margin other than distal spine mesial to ventral midline; dactyli ending in sharp curved claw, flexor margin with 7–8 proximally diminishing spines. Epipod present on P1, absent from P2–4.

Description: Carapace, excluding rostrum and spines, distinctly longer than broad; dorsal surface much rugose, bearing 2 gastric spines on first stria, long setae on median protogastric and median cardiac striae, also on lateral portions of median transverse ridge. Lateral margin moderately convex, with 7 spines: 2 in front of

and 5 behind cervical groove, first anterolateral and well developed, second small, fourth and fifth prominent, last (seventh) very small; another spine ventral and somewhat posterior to anterolateral spine and dorsal to anterior end of linea anomurica. Cervical groove distinct. Orbit produced into small spine at lateral angle, infraorbital margin with acute triangular process bearing 2–3 lateral denticles. Rostrum sharply triangular, 1.8 times as long as broad when measured between basal lateral incisions, dorsally with fine setae; lateral margin with 4 deeply incised spines; length more than half that of remaining carapace.

Pterygostomian flap spineless on surface, anteriorly ending in rounded corner, not sharply produced.

Sternite 3 twice as broad as long, anterior margin tuberculate and bilobed; sternite 4 3.3 times as long as preceding sternite, anteriorly relatively narrowed, grooved in anterior midline.

Abdominal segments each with 2 setiferous uninterrupted ridges, those on segments 2 and 4 elevated, bearing long setae.

Basal article of antennule with well-developed distodorsal and distolateral spines, distodorsal larger; distomesial spine very small and blunt. Ultimate article with several terminal setae not in tuft. Article 1 of antennal peduncle with sharp distomesial spine barely reaching end of article 2. Article 2 with 2 terminal spines, distolateral one barely reaching end of and nearly paralleling lateral margin of article 3, distomesial one directed rather mesially.

Mxp 3 ischium with distal spine on each of flexor and extensor margins; mesial ridge with 17–19 denticles. Merus with 3 spines on flexor margin, proximal one located somewhat proximal to midlength and very strong, distal one terminal and small, median one small and closer to proximal one than distal one, extensor margin with small but distinct distal spine. Extensor margin of carpus with a few rugae.

Left P1 slightly smaller than right, possibly regenerated. Right P1 2.1 times as long as carapace including rostrum; spinose and moderately setose; setae mostly plumose. Carpus relatively long, 0.77 times as long as palm; distal second of 3 mesial marginal spines prominent. Fingers as long as carpus, opposable margins slightly gaping proximally, fitting each other when closed, with denticles on distal 2/3.

P2–4 setose on mesial surfaces of distal 2 articles. P2 merus with 6 spines on dorsal crest and 1 on distoventral margin, all acute; sparsely provided with plumose setae; breadth 1.5 times that of propodus. Carpus with 5 dorsal marginal and 2 small dorsolateral

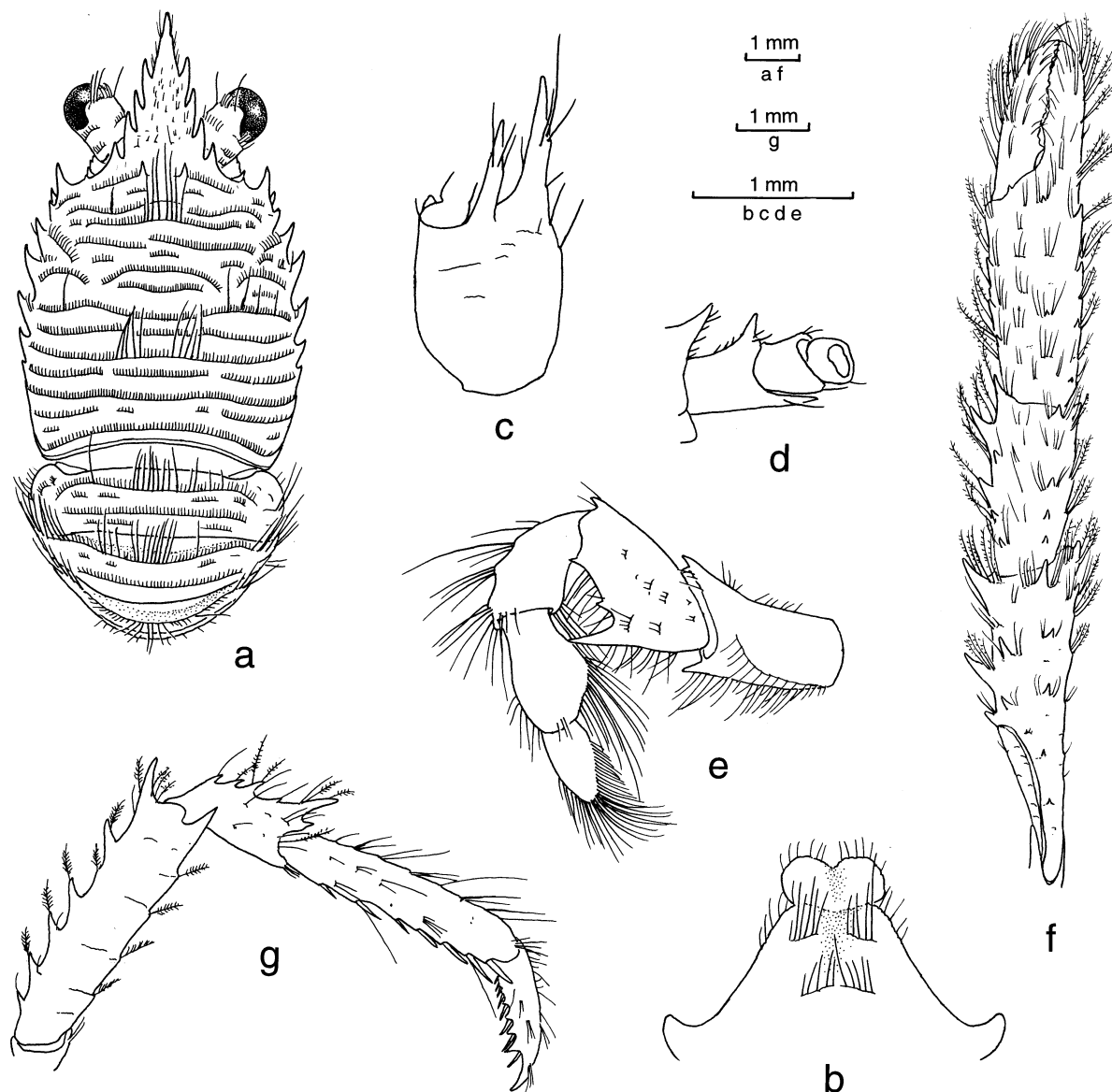


Fig. 25. *Galathea hispida* n. sp., holotype, ♀, ZMUC CRU-11393: a, carapace and abdomen, dorsal; b, anterior part of sternal plastron; c, basal article of antennule, left, ventral; d, antenna, left, ventral; e, endopod of Mxp 3, left, lateral; f, P1, right, dorsal; g, P2, right, lateral.

spines distally. Propodus 1.7 times as long as dactylus, ventral margin with 7 movable spines other than distal spine mesial to ventral midline. Dactylus gently curving, ending in curved sharp claw preceded by 8 proximally diminishing teeth on flexor margin, each with stiff, corneous seta. P3 very similar to P2, propodus with 6 ventral marginal spines; dactylus with 8 teeth on left appendage, 7 on right. P4 with reduced spination on merus and carpus but terminal spines distinct.

Epipod present on P1, absent from P2–4.

Remarks: Long coarse setae on the carapace and abdomen, deeply incised lateral teeth of the rostrum and two spines on the epigastric region suggest that this species approaches *G. consobrina* de Man from the Philippines and Malay Archipelago (de Man, 1902; Baba, 1988). Examination of the holotype of that species (SMF 4556) discloses that these two species are differentiated by the following characters: 1) the epipod is present on the P1 in *G. hispida*, absent from P1–4 in *G. consobrina*; 2) the small spine between the anterolateral spine and the spine at the lateral extremity

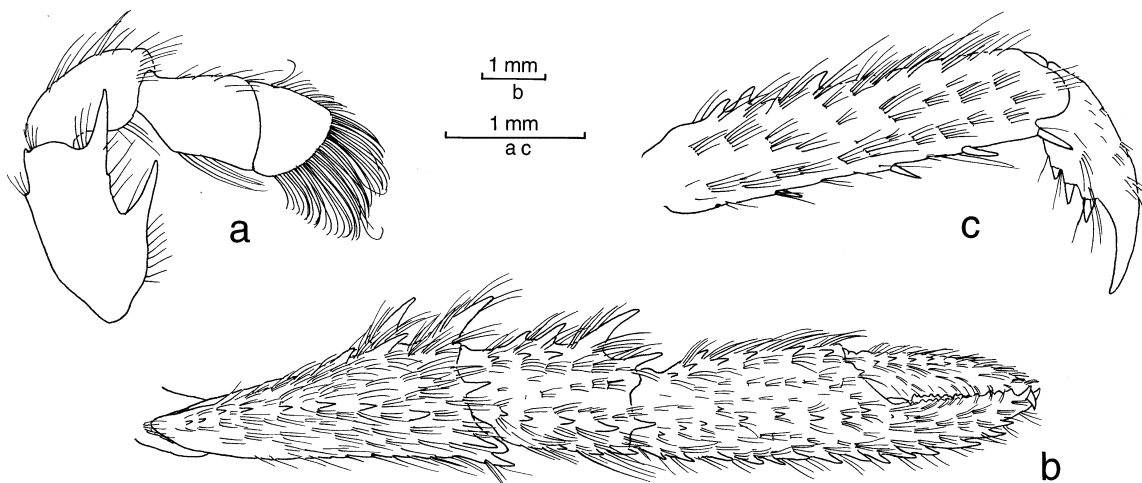


Fig. 26. *Galathea kuboï* Miyake & Baba, 1967, ov. ♀ (8.9 mm), ZMUC CRU-11422: a, endopod of Mxp 3, ischium omitted, right, lateral; b, P1, right, dorsal; c, P2, distal articles, right, lateral.

of the second transverse stria on the carapace is present in *G. consobrina*, absent in *G. hispida*; 3) the scale-like stria bearing long setae behind the epigastric spines is present in *G. consobrina*, absent in *G. hispida*; 4) in *G. hispida*, long setae are present on the median portion of the uninterrupted transverse stria somewhat posterior to the level of the scale-like stria as in *G. consobrina*; 5) the distomesial spine on the antennular basal article is much more reduced in *G. hispida* than in *G. consobrina*; and 6) the P2–4 propodi and dactyli have more numerous spines and teeth (6–7, 7–8 respectively) on the flexor margin in *G. hispida*, than in *G. consobrina* (4, 4 respectively).

Etymology: The Latin *hispida* (hairy) alludes to the hairy carapace and abdomen, especially having long coarse setae.

***Galathea kuboï* Miyake & Baba, 1967**

Fig. 26

Synonymy: see p. 244.

Material:

Kei Islands Expedition St. 58, 5°29'S, 132°37'E, 290 m, mud, trawl, 12 May 1922: — 1 ov. ♀ (8.9 mm), ZMUC CRU-11422.

Diagnosis: Carapace covered with fine setae, lacking distinct transverse striae, anterior gastric region with transverse row of several small spines. Rostrum

dorsally flattish, with 4 acute lateral teeth. Anterolaterally directed spine directly lateral to lateral limit of orbit. Pterygostomian flap sharp triangular on anterior end, unarmed on surface. Basal article of antennule with distomesial spine smaller than distolateral but well developed, terminal article with tuft of setae on distodorsal margin. Article 1 of antennal peduncle with distomesial process dorsoventrally flattened, tapering, reaching end of article 2; article 2 with distomesial and distolateral spines both overreaching article 3, diverging anteriorly, distolateral one slightly shorter. Mxp 3 merus with 2 strong spines on flexor margin; dactylus truncate. Pereopods very setose. P1 with acute spines; carpus 3/5 as long as palm; palm twice as long as broad, somewhat longer than movable finger; fingers with 3–4 intermeshing teeth distally. P2–4 meri relatively broad, breadth 1.7–1.8 times that of propodi; propodi with several spines on proximal portion of dorsal margin; dactyli distally curving, ending in very acute strong spine, flexor margin with 3 proximally diminishing spines on proximal half. Epipods absent from P1–4.

Remarks: This is the first intact specimen to bear all pereopods. The species is characterized by the lack of transverse striae on the carapace, the P2–4 dactyli ending in strong, curved spine, with three flexor marginal spines, and the truncate dactylus of the Mxp 3. The last-mentioned character is unique among species of the genus and may in all probability be associated with feeding habits. To my knowledge, such a truncate article is not known in any other genera of

the Galatheidae.

Range: Kei Islands, off N Mindanao, South China Sea off SW Luzon and Pacific coast of Honshu, Japan; 290–392 m.

***Galathea lumaria* n. sp.**

Figs. 27, 29a

Material:

Th. Mortensen's Java–South Africa Expedition 1929–30, RV "Pickle" St. 25, sandy mud, trawl and dredge, 26 Aug 1929: — 3 ov. ♀ (5.3, 6.3, 6.7 mm; largest, holotype), ZMUC CRU-11527.

Diagnosis: Carapace with transverse striae bearing coarse (relatively broad) setae relatively remote from one another and spines particularly numerous on anterior half. Rostrum with 2 slender, very long lateral spines, distal spine longer, overreaching cornea; bearing additional small spine at midlength of median process. Pterygostomial flap anteriorly ending in rounded corner; no spine on surface. Abdominal segments 2 and 3 each with 3 or 4 setiferous transverse striae. Eyelashes of relatively broad setae. Basal article of antennular peduncle with distomesial spine very reduced, ultimate article lacking tuft of setae. Article 1 of antennal peduncle with sharp distomesial spine overreaching article 2, article 2 with distomesial and distolateral spines both very strong, overreaching article 3, distomesial slightly larger, directed anteromesad. Mxp 3 ischium with strong distodorsal and smaller distoventral spines; merus with 2 or 3 spines on flexor margin, 2 spines on extensor margin. P1 slender subcylindrical; carpus long relative to width; length more than that of movable finger, slightly more than 3/4 that of palm; fingers spooned on prehensile face, bearing crenulate edges. P2–4 meri about 1.5 times as long as propodi; propodi with row of a few small spines paralleling another row on dorsolateral surface, both rows placed on proximal half, ventral margin ending in pair of spines preceded by 3 spines; dactyli ending in strong, curved spines preceded by 7 proximally diminishing teeth on flexor margin. Epipod on P1, not on P2–4.

Description of holotype: Carapace with transverse striae mostly uninterrupted, fringed with relatively broad setae separated rather remotely by denticles; small dorsal spines particularly numerous on anterior

half. Lateral margins convex, with row of about 6 sharp spines, first anterolateral, followed by a few very small spines, second to sixth on branchial region, bearing additional small spines between third and fourth, and fourth and fifth. Rostrum basally broad, distally narrow, dorsally with small spines at base; lateral margin with 2 prominent proximal spines, distal larger, distinctly overreaching cornea, ending in midlength of median rostral process; additional rudimentary spine about at midlength of median process. Orbit having lateral limit with small spine curving anterolaterad, subparalleling strongly produced infraorbital spine.

Pterygostomial flap anteriorly ending in rounded corner without spine, surface with uninterrupted striae, unarmed.

Sternite 3 narrow, less than 1/3 width of sternite 4; anterior margin with 2 lobes; sternite 4 having ventral surface medially depressed, bearing 2 transverse striae, anterior one medially interrupted.

Abdominal segments 2 and 3 with 4 distinct striae provided with stiff setae; 3 striae on segment 4; segment 5 bearing 2 striae fringed with posteriorly directed setae.

Ocular peduncles broad relative to breadth, with eyelashes of broad setae overreaching cornea.

Basal article of antennular peduncle with very small distomesial spine, distolateral and distodorsal spines well developed, distodorsal larger, bearing small proximal lateral spine followed further proximally by 2 small spines; ultimate article with several terminal setae not in tuft. Article 1 of antennal peduncle with prominent distomesial spine overreaching article 2, barely reaching end of article 3. Article 2 with 2 strong terminal spines, both overreaching article 3; mesial margin with small but distinct spine proximal to distomesial spine. Articles 3 and 4 unarmed.

Mxp 3 ischium with prominent spine on extensor distal margin and smaller one on flexor distal margin, mesial ridge with 18 denticles. Merus having flexor margin with 2 spines, proximal one prominent, extensor margin with 2 spines, distal one larger. Extensor margin of carpus with a few eminences bearing stiff setae.

P1 missing.

Left P3 present, others missing. Merus moderately setose, slightly shorter than propodus, dorsal crest bearing row of spines of irregular sizes, distal-most prominent; lateral face with small spines roughly in longitudinal row, ventral margin ending in terminal spine distinctly smaller than dorsodistal one. Carpus with rows of spines continued from merus on dorsal

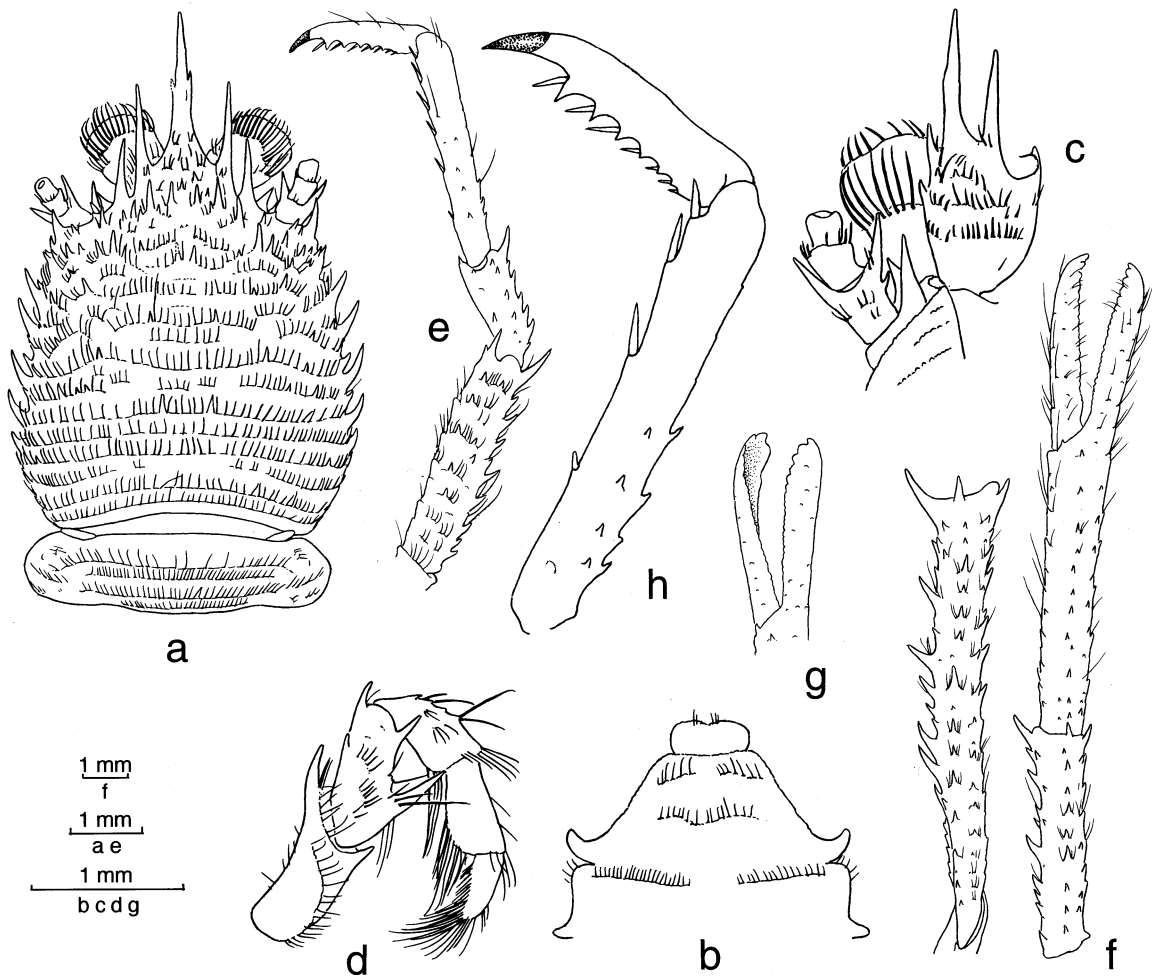


Fig. 27. *Galathea lumaria* n. sp., a–e, holotype, ♀, ZMUC CRU-11527; f–h, detached appendages: a, carapace and anterior part of abdomen, dorsal; b, anterior part of sternal plastron; c, anterior part of cephalothorax, showing ocular peduncle, antennule and antenna, left, ventral; d, endopod of Mxp 3, right, lateral; e, P3, left, lateral; f, P1, right, dorsal; g, same, distal part, setae omitted, dorsolateral; h, distal articles of walking leg (possibly P4), lateral.

crest and lateral face, with a few additional small spines further ventral to the row on lateral surface. Propodus slightly less than twice length of dactylus; row of 4 spines on proximal half of dorsal crest subparalleling another row on dorsolateral surface; ventral margin ending in pair of slender movable spines preceded by 3 similar spines in row. Dactylus slender, ending in strongly curved, sharp spine; flexor margin nearly straight, bearing 7 relatively large but proximally diminishing teeth.

Epipod on P1, not on P2–4.

Detached pereopods: Pair of P1, smaller left P1, and left P4 detached from bodies and present in jar. P1 subcylindrical, relatively slender, bearing spines roughly in 6 rows on merus, 5 rows in carpus, 3 rows

on palm. Merus about twice as long as carpus. Carpus about 5 times as long as broad, length 0.76–0.78 that of palm, no prominent spine on mesial margin. Palm slightly more than 5 times as long as broad, 1.5 times as long as movable finger, spines present on dorsal surface, absent on ventral surface. Fingers distally broad (high) in lateral view, prehensile face spooned distally, edges crenulate.

Variations: Carapace ornamentation of holotype in general agreement with paratypes. Abdominal segments 2 and 3 each with 4 setiferous transverse striae in holotype and larger paratype; in smaller paratype, second of 4 striae on segment 2 vestigial, and posterior one of 3 striae on segment 4 medially interrupted. Small mesial marginal spine proximal to

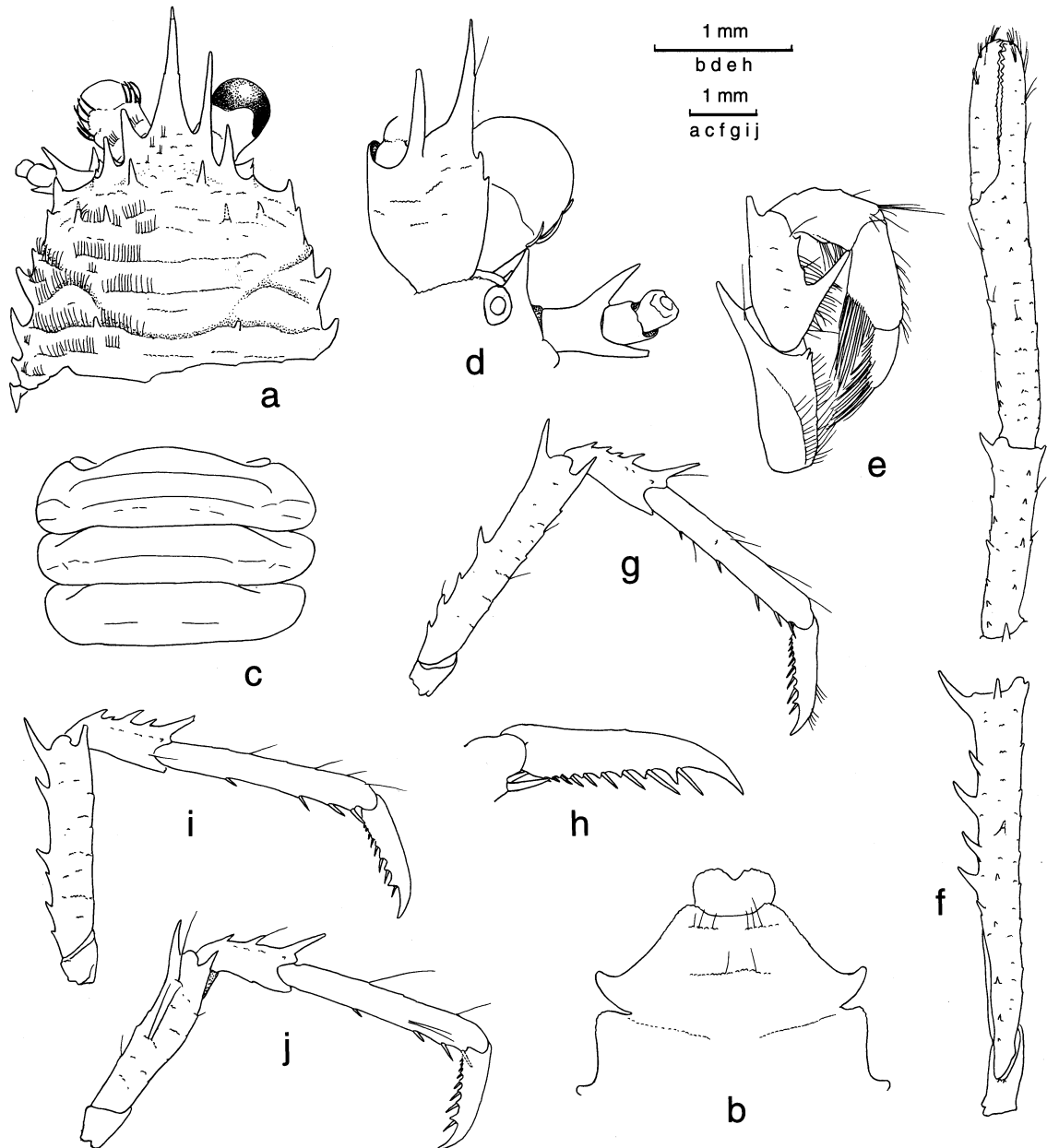


Fig. 28. *Galathea quinquespinosa* (Balss, 1913), holotype, ♀, ZMB 17493: a, anterior part of carapace, dorsal; b, anterior part of sternal plastron; c, abdominal segments 2-4, dorsal; d, antennule and antenna, ocular peduncle included, left, ventral; e, endopod of Mxp 3, right, lateral; f, P1, right, dorsal; g, P2, right, lateral; h, distal part of same, setae omitted; i, P3, right, lateral; j, P4, right, lateral.

distomesial spine of antennal article 2 present in holotype and larger paratype, absent in smaller paratype; distolateral spine occasionally ending in distal margin of article 3. Mxp 3 merus with 2 spines on flexor margin in holotype, on right appendage on larger paratype; 3 spines on left appendage in larger paratype and on both appendages in smallest paratype; median spine usually smaller than distal one.

Remarks: *Munida quinquespinosa* Balss, 1913,

reported from the Nicobar Islands in 296 m, is very close to the present species. Doflein & Balss (1913) enumerated characters that could separate the species from *Eumunida*, a genus of the Chirostylidae. The main reason for their placement of the species in *Munida* is the presence of two supraocular spines. The small additional lateral spine on the rostrum in the specimens examined here, and two rudimentary spines shown in the illustration by Doflein & Balss (1913: fig. 9, pl. 13: fig. 1) suggest that the two prominent spines may

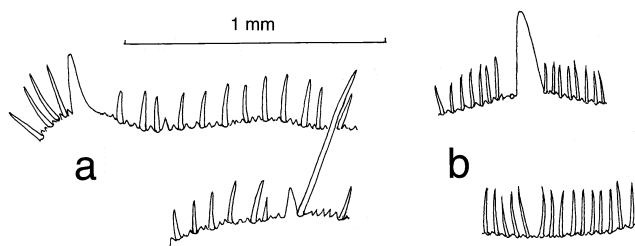


Fig. 29. Setae on transverse striae of carapace: a, *Galathea lumaria* n. sp., holotype, ♀, ZMUC CRU-11527; b, *Galathea quinquespinosa* (Bals, 1913), holotype, ♀, ZMB 17493).

be considered part of the four lateral spines of the rostrum characteristic of *Galathea*. In fact, the other characters of *M. quinquespinosa*, i.e., the shapes of sternal plastron, antennules, antennae, Mxps 3, and P1–4 (especially the spination of the P2–4 dactylar flexor margin) represent typical features of *Galathea*.

On the other hand, the illustration provided by Doflein & Bals (1913: pl. 13, fig. 1) shows that *M. quinquespinosa* differs from the present species in that the carapace has less numerous spines on the anterior part, the rostrum is ridged in midline, and the abdominal segments bear only two setiferous transverse striae. Examination of the holotype (ZMB 17493) discloses that the rostrum is rather flat, not longitudinally ridged (Fig. 28). It is true that the carapace and pereopods in the type material are more spinose; the distomesial spine of the antennal article 1 terminates at the distal end of the article 2, not overreaching that end as in *G. lumaria*; the Mxp 3 ischium bears a distoventral spine much smaller than that of *G. lumaria*; the setae on the transverse striae of the carapace are more slender and numerous than on *G. lumaria*, the number being about twice that of *G. lumaria* (see Figs. 28, 29b). The sizes of the carapace are nearly the same between *M. quinquespinosa* and the present material, so the above differences are considered to be of specific importance.

In my earlier paper (Baba, 1972), *Munida quinquespinosa* was placed in *Sadayoshia* Baba, 1969, noting that *Sadayoshia* may include *Galathea*-like and *Munida*-like species. However, it was a hasty conclusion. *Munida quinquespinosa* is now transferred to *Galathea*. On the other hand, the monotypic *Janetogalatea* Baba & Wicksten, 1997, from the eastern Pacific, approaches *Munida quinquespinosa* but they can not be placed in the same genus because *Janetogalatea* has the very small basal rostral tooth, the relatively short P1 carpus, the laterally expanded sternite 3, and the article 1 of the antennal peduncle is fused with the orbit.

The ornamentation of the carapace, especially the

numerous small spines on the anterior part of the carapace, the spination of the antennule, (distomesial spine very reduced), the relatively long P1 without prominent spines, the curved, strong terminal spine on the P2–4 dactyli, link the species to *Galathea pubescens* Stimpson, 1858. However, the new species is differentiated from that species by the rostrum that bears two unusually elongate basal spines on each side, the antennular peduncles that bear no tuft of setae on the distal article, and the antennal peduncles that bear pronounced spines, especially the distomesial and distolateral spines of the article 2 distinctly overreaching the article 3.

Etymology: From the Latin *lumarius* (= of thorn), alluding to the two strong rostral lateral spines of the species.

Galathea orientalis Stimpson, 1858

Synonymy: see p. 244.

Material:

Th. Mortensen's Pacific Expedition 1914–16, Sagami Bay, 549 m, hard bottom, 28 Jun 1914: — 2 ♂ (6.2, 6.7 mm), 1 ov. ♀ (5.8 mm), 2 ♀ (5.2 mm, other specimen lacking carapace), ZMUC CRU-11543.

Th. Mortensen's Pacific Expedition 1914–16, Sagami Bay, Okinose, 549 m, hard bottom, 29 Jun 1914: — 1 ♂ (5.3 mm), 2 ov. ♀ (5.0, 5.7 mm), ZMUC CRU-11547.

Th. Mortensen's Pacific Expedition 1914–16, N of Misaki Biological Station, Sagami Bay, hard bottom, 366 m, 30 Jun 1914: — 1 ♂ (5.0 mm), 2 ov. ♀ (5.2, 6.1 mm), ZMUC CRU-11530.

Th. Mortensen's Pacific Expedition 1914–16, Misaki, Japan, 24 Apr 1914: — 1 ♂ (7.2 mm), ZMUC CRU-11269.

Th. Mortensen's Pacific Expedition 1914–16, Okinose, Sagami Bay, 100 fm (183 m), hard bottom, swabs,

- 23 Jun 1914: —1 ♂ (6.9 mm), 2 ov. ♀ (5.2, 5.6 mm), 1 ♀ (6.5 mm), ZMUC CRU-11009.
- Th. Mortensen's Pacific Expedition 1914–16, Misaki, under stone, shore, 28 Apr 1914: — 2 ♂ (5.5, 9.5 mm), 1 ov. ♀ (9.5 mm), ZMUC CRU-11007.
- Th. Mortensen's Pacific Expedition 1914–16, Misaki, ca. 10 fm (18 m), gravel, 30 Apr 1914: — 1 ♂ (7.5 mm), ZMUC CRU-11270.
- Th. Mortensen's Pacific Expedition 1914–16, Misaki, Sagami Bay, 10 fm (18 m), 30 Apr 1914: — 1 ov. ♀ (5.6 mm), ZMUC CRU-11268.
- Th. Mortensen's Pacific Expedition 1914–16, Misaki, Sagami Bay, ca. 3 fm (5 m), dredge, 21 Apr 1914: — 3 ♂ (4.7–7.0 mm), 3 ov. ♀ (5.6–6.3 mm), ZMUC CRU-11008.
- Th. Mortensen's Pacific Expedition 1914–16, Misaki, Sagami Bay, 3 fm (5 m), 26 Apr 1914: — 1 ♂ (7.4 mm), 2 ov. ♀ (6.1, 6.6 mm), ZMUC CRU-11267.
- Th. Mortensen's Pacific Expedition 1914–16, Misaki, Sagami Bay, 24 Apr 1914: — 2 ♂ (10.6, 11.9 mm), 4 ov. ♀ (8.8, 10.8 mm), ZMUC CRU-11010.
- Th. Mortensen's Pacific Expedition 1914–16, off N Kyushu, Japan, 34°20' N, 130°10' E, 60 fm (110 m), sand, shells, dredge, 18 May 1914: — 3 ♂ (5.8, 5.9, 6.3+ mm), 2 ov. ♀ (5.2, 5.7), ZMUC CRU-11012, 11265.
- Th. Mortensen's Pacific Expedition 1914–16, off N Kyushu, Japan, 34°20' N, 130°00' E, 50 fm (92 m), sand, shells, dredge, 18 May 1914: — 1 ov. ♀ (5.5 mm), ZMUC CRU-11263.
- Th. Mortensen's Pacific Expedition 1914–16, off N Kyushu, Japan, 34°11' N, 130°2' E, 56 fm (102 m), sand, shells, dredge, 18 May 1914: — 1 ♂ (5.5 mm), 1 ov. ♀ (5.1 mm), ZMUC CRU-11017.
- Th. Mortensen's Pacific Expedition 1914–16, NW Kyushu, Japan, 33°41' N, 128°50' E, 75 fm (137 m), sand, 17 May 1914: — 1 ov. ♀ (5.7 mm), ZMUC CRU-11003.
- NW Kyushu, Japan, 33°10' N, 129°18' E, 44 fm (81 m), Nov 1895, Schonan: — 2 ♂ (6.4, 7.5 mm), 2 ov. ♀ (5.9, 6.5 mm), ZMUC CRU-11013.
- NW Kyushu, Japan, 33°10' N, 129°18' E, 40 fm (73 m), 7 Sept 1897, Suenson 1900: — 1 ♀ (6.3 mm), ZMUC CRU-11111.
- NW Kyushu, Japan, 33°09' N, 129°18' E, 40 fm (73 m), May 1898, Schonan: — 1 ♀ (5.3 mm), ZMUC CRU-11194.
- NW Kyushu, Japan, 32°59' 15 N, 129°23' 50 E, 40 fm (73 m), rock, 06 Aug 1933, Great Northern Telegraph Co.: — 1 ♂ (6.2 mm), ZMUC CRU-11100.
- NW Kyushu, Japan, 32°48' N, 129°37' E, 40 fm (73 m), 23 Apr. 1913, H. Christiansen: — 13 ♂ (5.0–7.2 mm), 9 ov. ♀ (5.2–6.9 mm), 6 ♀ (5.8–6.7 mm), ZMUC CRU-11217.
- NW Kyushu, Japan, 32°42'54"N, 129°44'20"E, 31 fm (57 m), rock & sand, 31 Aug 1931, Great Northern Telegraph Co.: — 1 ♂ (5.0 mm), ZMUC CRU-11157.
- NW Kyushu, Japan, 32°12' N, 128°15' E, 80 fm (146 m), 20 Oct 1897, Suenson 1900: — 1 ♂ (6.1 mm), ZMUC CRU-11215.
- N of Taiwan, 26°42' N, 121°19' E, 43 fm (79 m), Mar 1869: — 1 ♂ (6.1+ mm), ZMUC CRU-11142.
- North of Taiwan, 26°30' N, 121°10' E, 42 fm (77 m), 14 Mar 1896, Schonan: — 1 ♂ (5.3 mm), 1 ov. ♀ (4.7 mm), 1 ♀ (5.1 mm), ZMUC CRU-11195.
- Formosa Strait, 25°28' N, 120°29' E, 36 fm (66 m), 75°F, Apr 1897, Schonan: — 3 ♂ (3.9–4.5 mm), 3 ov. ♀ (4.0–4.9 mm), ZMUC CRU-11089.
- Formosa Strait, 24°22' N, 119°11' E, 32 fm (59 m), Apr 1897, Schonan: — 2 ♂ (5.3, 7.0 mm), 1 ov. ♀ (7.0 mm), ZMUC CRU-11189.
- Formosa Strait, 23°57' N, 118°33' E, 28 fm (51 m), Apr 1897, Schonan: — 2 ♂ (3.4, 6.1 mm), 3 ♀ (2.9–3.1 mm), 3 sp. (sex indet., 1.8, 1.9 mm), ZMUC CRU-11196.
- Formosa Strait, 23°20' N, 118°30' E, 17 fm (31 m), Andris 1869: — 17 ♂ (2.9–7.9 mm), 21 ov. ♀ (3.4–6.3 mm), 4 ♀ (2.9–4.3 mm), ZMUC CRU-11208.
- Formosa Strait, 23°15' N, 117°40' E, 26 Jul 1912, Great Northern Telegraph Co., Capt. Christiansen: — 1 ov. ♀ (5.5 mm), ZMUC CRU-11228.
- Formosa Strait, 23°8' N, 117°30' E, 24 fm (44 m), 23 Jan 1912, Suenson: — 5 ♂ (3.0–4.7 mm), 8 ov. ♀ (4.5–6.8 mm), 2 ♀ (3.2, 3.4 mm), ZMUC CRU-11212.
- Formosa Strait, 25 fm (46 m), 23 May 1897, Suenson 1900: — 7 ♂ (5.3–7.3 mm), 2 ov. ♀ (5.3, 5.8 mm), ZMUC CRU-11202.
- Formosa Strait, 23–25 fm (42–46 m), 23 May 1897, Suenson: — 2 ♂ (6.2, 6.3) mm, 1 ov. ♀ (5.0 mm), ZMUC CRU-11078.
- Formosa Strait, 30 fm (55 m), 23 May 1897, Suenson: — 1 ♂ (8.1 mm), ZMUC CRU-11250.
- Formosa Strait, 35 fm (64 m), Suenson, — 2 ♂ (5.5, 5.9 mm), ZMUC CRU-11034.
- South China Sea, 22°13' N, 115°4' E, 25 fm (46 m), 19 June 1896, Schonan: — 18 ♂ (3.0–5.7 mm), 12 ov. ♀ (3.5–5.0 mm), 1 ♀ (3.1 mm), ZMUC CRU-11211.
- South China Sea, 22°10.7' N, 114°30' E, 17 fm (32

m), 10 Oct 1917, Suenson 1882: — 2 ♂ (6.0, 6.2 mm), 3 ov. ♀ (4.5–5.7 mm), ZMUC CRU-11203. South China Sea, 21°30'N, 113°8'E, 20 fm (37 m), 6 Apr 1890, Schonan: — 3 ♂ (6.3–7.5 mm), 1 ov. ♀ (6.3 mm), ZMUC CRU-11210. Amoy-Hong Kong, 22°13' N, 115°43' E, 31 fm (57 m), 14 Nov 1895: — 1 ov. ♀ (5.5 mm), ZMUC CRU-11602.

Diagnosis: Carapace with 2 epigastric and 7 lateral marginal spines; anterior second of lateral marginal spines small, located in front of cervical groove and slightly dorsal in position, accompanying larger spine ventral to it. Rostrum with 4 acute lateral teeth. Pterygostomian flap anteriorly produced, ending in sharp spine; distinct spine on anterior surface. Basal article of antennule with distolateral and distomesial spines of subequal size, ultimate article with tuft of setae distally. Distomesial spine of antennal article 1 fully reaching end of peduncle; article 2 with distomesial spine directed anteromesad, not reaching end of article 3, distolateral spine subparalleling lateral margin of article 3. Mxp 3 merus with 2 well-developed flexor marginal and 2 small extensor marginal spines; carpus with 2 or 3 (rarely 1 or 4) spines on extensor margin. P1 carpus 4/5 as long as palm, much longer than fingers. P2–4 meri about 1.5 times as broad as propodi; propodi with a few spines on proximal dorsal margin (often obsolescent, especially on P4), 5–6 movable spines on ventral margin other than spine mesial to ventral midline; dactyli with sharp terminal claw preceded by 6–7 proximally diminishing teeth on flexor margin. Epipod present on P1, not on P2–4.

Remarks: Tirmizi (1966) recorded *G. orientalis* from the Red Sea and South Arabian Sea in 16–100 fm (29–182 m). However, the unarmed Mxp 3 carpus and lack of spine between the anterolateral spine of the carapace and the cervical groove, and presence of the scale-like stria on the anterior gastric region, apparent on the illustration provided by Tirmizi (1966: figs. 6–8), suggest that it approaches *G. anepipoda* Baba, 1990. In order to confirm its identity, examination of the “John Murray” material is needed.

Haig (1974) recorded the species from western Australia; however, its identity is questioned because of the lack of morphological information and because there are some close relatives of *G. orientalis*: *Galathea anepipoda* Baba, 1990; *G. coralliophilus* Baba & Oh, 1990; and *G. ohshimai* Miyake & Baba, 1967.

The specimens reported under *G. coralliophilus* by

Wu *et al.* (1997) from Taiwan belong to *G. orientalis*. The characteristics of *G. orientalis* that differentiate the species from *G. coralliophilus* (see Baba & Oh, 1990) are apparent in their illustration.

Range: South China Sea, East China Sea including Taiwan, Korea, Japan, Bonin Islands, and Western Australia; usually intertidal to 200 m. Three of the present records (from Sagami Bay, Japan) go down to transitional depths (366–549 m).

Galathea pubescens Stimpson, 1858

Fig. 30

Synonymy: see p. 245.

Material:

“Galathea” St. 500, Arafura Sea, 07°34'S, 132°44'E, 390 m, coralline sand, 25 Sep 1951: — 1 ♀ (5.5 mm), ZMUC CRU-11477.

Th. Mortensen's Pacific Expedition 1914–16, 33°41'N, 128°50'E, 75 fm (137 m), sand, 17 May 1914: — 1 ♂ (7.4 mm), ZMUC CRU-11271.

Th. Mortensen's Pacific Expedition 1914–16, off Misaki, Sagami Bay, 146–238 m, 10–19 Jun 1914: — 1 ♂ (8.3 mm), 1 ov. ♀ (6.8 mm), ZMUC CRU-11022.

Th. Mortensen's Pacific Expedition 1914–16, off W Kyushu, Japan, 32°49'N, 128°14'E, 210 m, sand, trawl, 14 May 1914: — 3 ♂ (4.8–6.2 mm), 3 ov. ♀ (5.8–6.5 mm), 1 ♀ (6.6 mm), ZMUC CRU-11028.

Th. Mortensen's Pacific Expedition 1914–16, N of Goto I., Nagasaki, 33°41'N, 128°50'E, 137 m, sand, 17 May 1914: — 1 ♂ (7.4 mm), ZMUC CRU-11271.

Th. Mortensen's Pacific Expedition 1914–16, NE of Iki-shima, Nagasaki, 34°11'N, 130°2'E, 102 m, sand, 18 May 1914: — 1 ♂ (6.8 mm), 1 ov. ♀ (6.9 mm), ZMUC CRU-11019.

Th. Mortensen's Java–South Africa Expedition 1929–30, “Dog” St. 3, Bali Sea, Indonesia, 7°42'S, 114°35', 450 m, mud with corals, Sigsbee trawl, 4 Apr 1929: — 3 ♂ (4.0–7.5 mm), ZMUC CRU-11571.

Th. Mortensen's Java–South Africa Expedition 1929–30, “Dog” St. 7, Bali Strait, Indonesia, 8°29'S, 114°40'E, 200 m, mud, 5 Apr. 1929: — 3 ♂ (9.3–10.3 mm), ZMUC CRU-11097.

Th. Mortensen's Java–South Africa Expedition 1929–30, “Dog” St. 15, Bali Sea, Indonesia, 7°29'S,

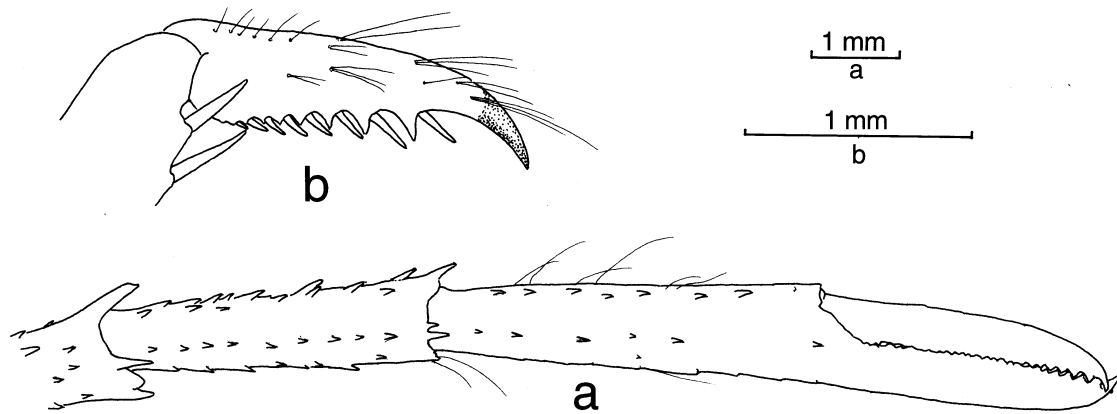


Fig. 30. *Galathea pubescens* Stimpson, 1858, ov. ♀ (6.8 mm, ZMUC CRU-11022): a, right P1, dorsal, proximal part omitted; b, P2, distal part, right, lateral.

114°49'E, ca. 240 m, sand and mud with concretions, trawl, 10 Apr 1929: — 1 ov. ♀ (10.9 mm), ZMUC CRU-11076.

Kei Islands Expedition St. 2, 5°32'S, 132°27'E, 180–220 m, sand, 31 Mar 1922: — 1 ♂ (7.1 mm), ZMUC CRU-11330.

“Dana” St. 3609, New Caledonia, 20°45'S, 164°13'E, 350 m, 26 Nov 1929: — 1 ♂ (8.7 mm), ZMUC CRU-11218.

Diagnosis: Carapace pubescent, with dorsal spinules on anterior half. Lateral margin convex, bearing 7 or 8 spines. Rostrum sharply triangular, lateral margin with 4 sharply incised, acute teeth, dorsal surface finely granulate. Pterygostomian flap anteriorly not produced, ending in tiny spine often obsolete. Distomesial spine of basal article of antennule reduced and barely discernible; pronounced tuft of setae on ultimate article. Article 1 of antennal peduncle with sharp distomesial spine overreaching end of article 2; article 2 with distomesial spine somewhat larger than distolateral, slightly overreaching article 3, directed anteromesad, distolateral spine not reaching end of article 3. Mxp 3 ischium with strong spine on extensor distal margin; merus with 3 spines on flexor margin, proximal one very strong, distal and median spines smaller, occasionally obsolete; extensor margin with 2 small spines, distal one consistent, proximal one often obsolete. P1 relatively slender; carpus slightly longer than dactylus, 3/4 or less than length of palm, without prominent spine; fingers distally spooned, prehensile edges with intermeshing teeth. P2–4 meri about 1.5 times as broad as propodi; propodi with a few obsolescent spines on proximal dorsal margin, about

5–7 (usually 6) movable spines on ventral margin; dactyli with strong, curved terminal spine preceded by 7–9 (usually 7) proximally diminishing teeth. Epipod on P1, not on P2–4.

Range: Japan from Hakodate to Amami-oshima, Korea, East China Sea, Philippines, New Caledonia, Java Sea, Arafura Sea, Western Australia, Madagascar, and Zanzibar; 40–494 m.

Galathea robusta Baba, 1990

Fig. 31

Synonymy: see p. 245.

Material:

Th. Mortensen's Java-South Africa Expedition 1929–30, “Maurice” St. 43, off Tombeau Bay, Mauritius, ca. 238 m, swabs, 11 Oct 1929: — 1 ♂ (4.6 mm), ZMUC CRU-11119.

Th. Mortensen's Java-South Africa Expedition 1929–30, “Maurice” St. 47, N of Port Louis, Mauritius, ca. 238 m, mud and corals, Sigsbee trawl, 6 Nov 1929: — 1 ♂ (4.9 mm), 1 ♀ (7.2 mm), ZMUC CRU-11123.

Th. Mortensen's Pacific Expedition 1914–16, Japan off Suno-saki, in 37–146 m, 12 Jun 1914: — 1 ov. ♀ (8.8 mm), ZMUC CRU-11006.

Diagnosis: Carapace with scattered small spines, usually on epigastric, protogastric, and cardiac regions, occasionally on mesogastric and posterior branchial regions; sparse plumose setae on carapace. Rostrum

sharply triangular, with 4 lateral teeth. Pterygostomial flap with blunt anterior corner; no spine on surface. Ocular peduncles elongate, concave on mesial margin, bearing plumose setae proximal to cornea. Appendages with plumose setae especially thick on P1–4. Distomesial spine of antennular basal article very small, ultimate article with several terminal setae not in tuft. Distomesial spine of antennal article 1 falling short of or reaching end of article 2; article 2 with distolateral spine barely reaching end of and subparalleling lateral margin of article 3, distomesial spine much shorter, directed anteromesad. Mxp 3 merus with 3 distally diminishing spines on flexor margin, 1 distal spine on extensor margin. P1 carpus as long as fingers, about 3/4 as long as palm. P2–4 meri 1.2–1.5 times as broad as propodi; propodi with several dorsal spines proximally (fewer on P4), and 5 or 6 movable spines ventrally (fewer on P4); dactyli ending in curved spine preceded by 6 proximally diminishing flexor marginal teeth. Epipod present on P1, absent from P2–4.

Remarks: This is the first record of *G. robusta* since the unique male holotype was described from Madagascar (Baba, 1990). The rostrum in the holotype is broken at the distal portion, but in the specimens here examined, it is sharply produced. The P1 of the female from “Maurice” St. 47 is slender and subcylindrical, as illustrated in Fig. 31b.

Range: Madagascar, Mauritius and Japan; between 37–146 and 238 m.

***Galathea tropis* n. sp.**

Fig. 32

Material:

Th. Mortensen’s Java-South Africa Expedition 1929–1930, “Maurice” St. 47, N of Port Louis, Mauritius, ca. 238 m, mud and corals, Sigsbee trawl, 6 Nov 1929: — 1 ♂ (4.3 mm), holotype, ZMUC CRU-11125.

Diagnosis: Carapace unarmed dorsally; scale-like setiferous stria behind second transverse stria. Rostrum broad, lateral margins convex, with 5 shallowly incised teeth. Pterygostomial flap anteriorly produced into sharp spine; no spine on surface. Ocular peduncles partly concealed beneath rostrum. Antennular basal article carinate laterally, with strong distodorsal and much smaller distolateral spines, both depressed;

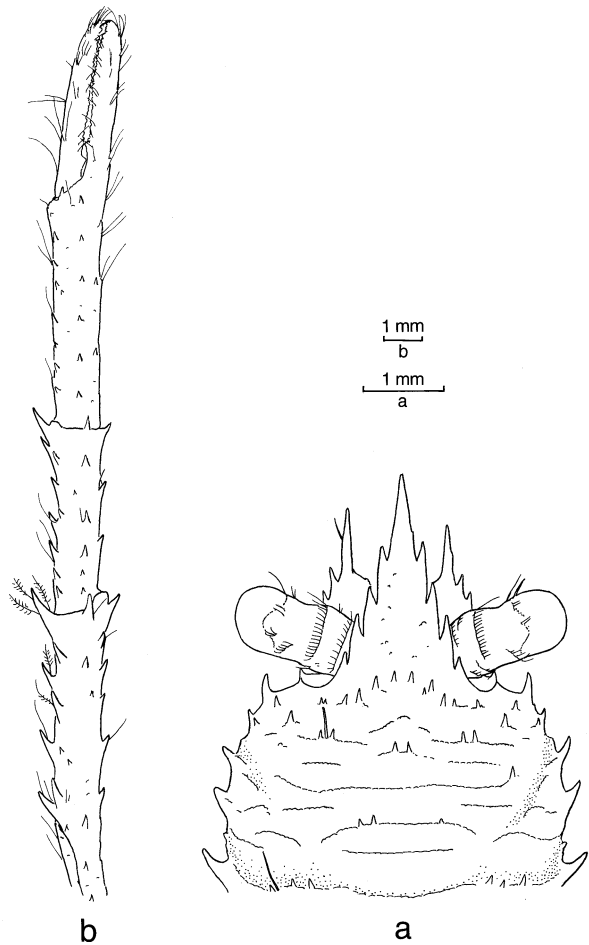


Fig. 31. *Galathea robusta* Baba, 1990, ♀ (7.2 mm), ZMUC CRU-11123: a, anterior part of carapace, dorsal; b, P1, proximal portion omitted, right, dorsal.

distomesial margin with very reduced process; ultimate article with tuft of terminal setae. Distomesial spine of antennal article 1 sharp, reaching end of article 2; article 2 with distolateral and distomesial spines, both small, distomesial one directed anteromesad. Mxp 3 merus with 2 flexor marginal spines, distal larger, extensor margin with small distal spine. P1 broad relative to length; carpus as long as fingers, slightly shorter than palm; palm and fingers depressed. P2–4 meri relatively broad, width 1.8 times that of propodi; propodi with 4 ventral spines in addition to distal pair; dactyli ending in strongly curved, sharp spine preceded by 5 proximally diminishing teeth. Epipods absent from P1–4.

Description: Carapace with sharply ridged lateral margin expanding laterally over pterygostomial region, equally long as broad, dorsally with distinct

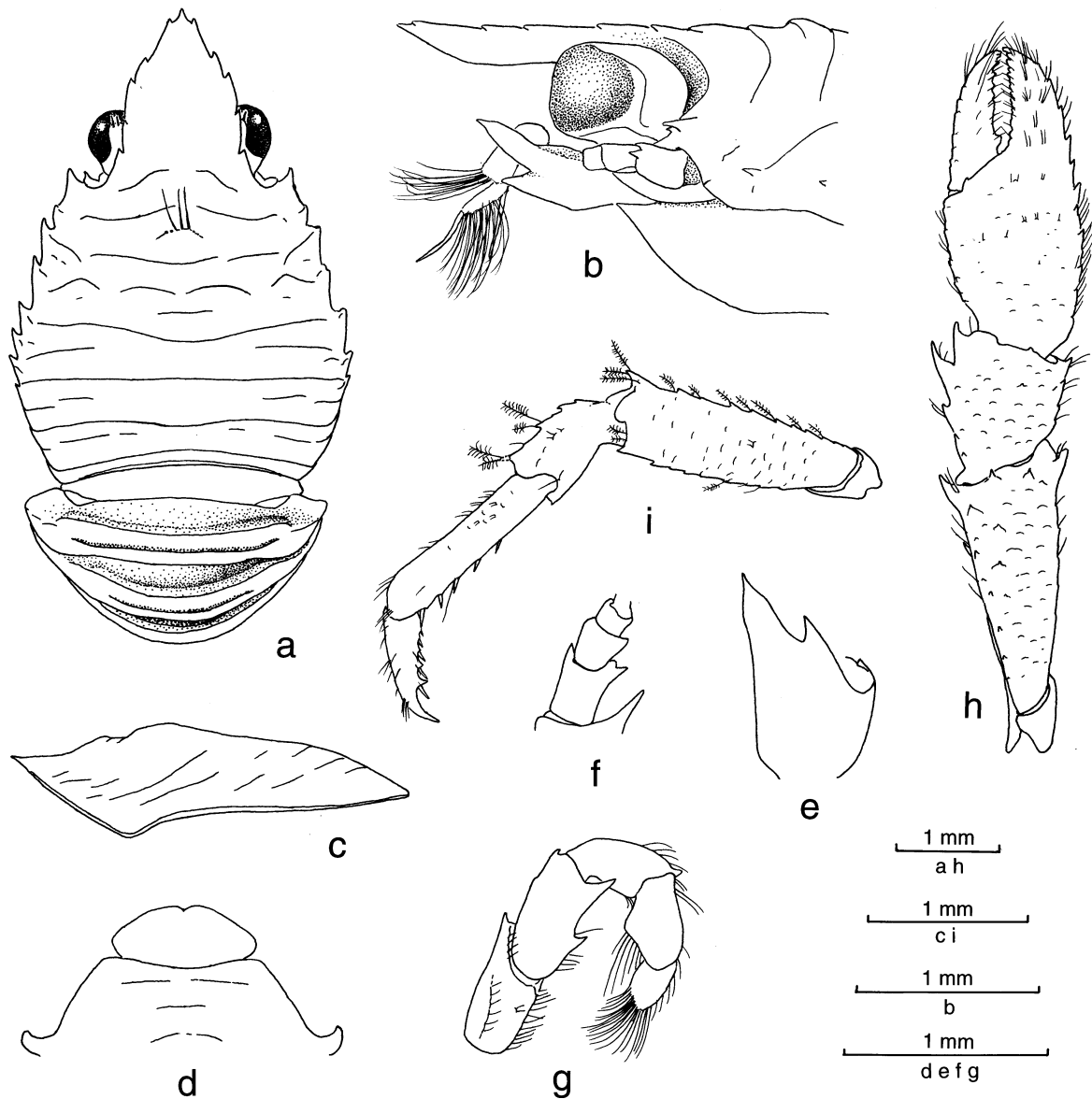


Fig. 32. *Galathea tropis* n. sp., holotype, ♂, ZMUC CRU-11125: a, carapace and abdomen, dorsal; b, anterior part of cephalothorax, lateral; c, pterygostomian flap; d, anterior part of sternal plastron; e, basal article of antennule, right, ventrolateral; f, antenna, right, ventral; g, endopod of Mxp 3, right, lateral; h, P1, right, dorsal; i, P2, left, lateral.

striae; anterior first stria medially interrupted, without spines, third stria scale-like, placed medially, with several long coarse setae; 4 uninterrupted striae on posterior half of carapace, interspersed by laterally placed striae. Lateral margins strongly convex, each armed with 7 or 8 spines, 2 in front of, and 5 (right) or 6 (left) behind cervical groove; first anterolateral and moderate-sized, second almost rudimentary and somewhat dorsal in position, last very small. Lateral limit of orbit rounded, accompanied by very small spine slightly mesial and ventral to it; infraorbital

margin with broadly triangular process. Rostrum broadly triangular, more or less truncate, feebly deflexed; length about half that of remaining carapace. Dorsal surface somewhat excavated, covered with very short fine setae discernible under high magnification. Lateral margins convex, with 5 shallowly incised teeth, anterior-most one subapical and remote from second; ventral surface with longitudinal ridge in midline.

Pterygostomian flap sharply produced anteriorly, spineless on surface.

Sternite 3 relatively broad, 0.44 times breadth of

sternite 4, roundly produced laterally, anterior margin convex with small median sinus. Sternite 4 with broad anterior margin.

Two striae on abdominal segments 2–4, those on segments 2 and 3 elevated.

Ocular peduncles relatively short, largely concealed beneath rostrum.

Basal article of antennule with lateral carina leading distally to strong, flattish distodorsal spine much stronger than distolateral spine; distomesial margin with very reduced process. Ultimate article of peduncle with tuft of setae on extensor distal margin. Antennal peduncle relatively slender. Article 1 with sharp distoventral spine extending to end of article 2. Article 2 with very small distomesial and distolateral spines, distomesial one directed anteromesad. Article 3 unarmed.

Mxp 3 ischium with distinct spine on extensor distal margin, mesial ridge with 18 or 19 denticles. Merus having flexor margin subparalleling extensor margin, with 2 spines, proximal one small, located at midlength, distal one present at terminal end and prominent; extensor margin with small terminal spine.

Right P1 slightly longer than left one, 1.7 times as long as carapace including rostrum, relatively broad, strongly depressed, especially palm and fingers, finely granulate dorsally and ventrally, sparsely provided with fine plumose setae. Fingers with coarse setae; spination as illustrated. Ventral distomesial and distomedian spines of carpus and ventral distomesial one of merus invisible in dorsal aspect. Carpus as long as movable finger, about 4/5 that of palm. Palm dorsally flattish, ventrally convex; lateral and mesial margins convex; lateral marginal spines continued onto fixed finger. Fingers slightly gaping, opposable margins tuberculate, that of movable finger with proximal process, cutting edges distal, touching each other with several intermeshing teeth when closed.

Detached walking leg, possibly P3. Merus and carpus sparsely with fine plumose setae. Merus relatively high, dorsal and ventral margins with reduced spines, but each terminal one distinct. Carpus with small dorsal marginal spines. Propodus 1.7 times as long as dactylus, ventral margin with pair of terminal spines preceded by 4 slender spines. Dactylus ending in strong curved spine, flexor margin with 5 proximally diminishing teeth each with slender corneous seta.

Epipods absent from P1–4.

Remarks: *Galathea tropis* n. sp. resembles *G. multilineata* Balss, 1913, in bearing five lateral marginal

teeth on the broad rostrum, lacking gastric spines, and in bearing a reduced distomesial spine on the antennular basal article. However, the latter is readily distinguished from the new species by the carapace that bears numerous transverse striae, the P1 that is slender and very setose, bearing an epipod, the antennular basal article that is not carinate laterally. The combination of the broad rostrum and relatively short chela also links the species to *G. cymbulaerostris* Tirmizi, 1966, from the South Arabian coast. The latter species, however, has the carapace with a pair of epigastric spines and the antennular basal article not keeled marginally, bearing three distal spines including a well-developed distomesial spine.

Etymology: From the Greek *tropis* (keel) alluding to the strongly carinate lateral margin of the antennular basal article, characteristic of the species.

Genus *Heteronida* Baba & de Saint Laurent, 1996

Heteronida Baba & de Saint Laurent, 1996: 474.

Diagnosis: Carapace finely granulate, without distinct transverse striae. Gastric region with laterally compressed, anteriorly bluff strong process. Pair of epigastric spines obsolescent. Rostral base broad, rostral spine rudimentary, supraocular spines blunt. Sternite 4 having anterior margin narrower than posterior margin of sternite 3. Abdominal segments 2 and 3 each with strong median process flanked by low process at lateral end of tergite. Telson subdivision complete. Ocular peduncles short, cornea somewhat dilated. Basal article of antennule with 2 terminal and 1 lateral spine, all small. Article 2 of antennal peduncle slender, flagellum short, terminating in end of antennular flagellum. Mxp 3 ischium ending in lobe-like process on flexor distal margin; merus short, lobe-like on flexor margin, with strong spine on extensor distal margin. P2–4 dactyli with row of seta-like, spines on flexor margin. Male P5 with brush of plumose setae on flexor face of chela. G1 absent.

Remarks: The genus was recently established to accommodate two species (*H. aspinirostris* and *H. barunae*) that differ from *Bathymunida* in the absence of both rostral and cardiac spines, in bearing a short antennal flagellum, abdominal segments with a single strong median and low lateral processes at least on the segments 2 and 3 and the distinct telson subdivision.

***Heteronida barunae* Baba & de Saint Laurent,
1996**

Synonymy: see p. 246.

Material:

Kei Islands Expedition St. 46, 5°40'20"S, 132°13'E, 250 m, clay, mud, 2 May 1922: — 1 ov. ♀ (3.2 mm), ZMUC CRU-11435.

Diagnosis: Carapace with slightly granulate dorsal surface, without elevation on branchial region. Front narrowed anteriorly, somewhat elevated laterally, middorsally without dorsal ridge. Epigastric spines rudimentary, papilla-like, flanking anterior median ridge never extending anteriorly onto front. Sternite 3 and 4 not strongly depressed. Abdomen with weak sculptures, segment 4 without median processes. Pereopods moderately granulose. P2–4 dactyli relatively slender, flexor margin with 6 spines, ultimate one remote (about at 1/5 point) from distal end.

Remarks: This species is differentiated from *H. aspinirostris* (Khodkina, 1981) known from New Caledonia, Loyalty Islands, Chesterfield Islands, Norfolk Ridge and Vanuatu, by a smooth dorsal surface of the carapace without elevation on the branchial region, and the absence of an anterior ridge proximal to the rostral spine.

Range: Known only from the Kei Islands; 205–425 m.

Genus *Leiogalatea* Baba, 1969

Leiogalatea Baba, 1969a: 2.

Diagnosis: Carapace dorsally with a few uninterrupted transverse striae and coarse setae, laterally with a few spines. Rostrum flattish, triangular, lateral teeth obsolescent. Lateral limit of orbit not angular. Spine directly behind antennal peduncle and somewhat mesial to rounded anterolateral corner. Sternite 3 relatively short, laterally produced, anterior margin of sternite 4 much narrower than posterior margin of preceding sternite. Abdomen unarmed; G1 and G2 present. Telson subdivision nearly complete. Ocular peduncles short, cornea not dilated. Basal article of antennule with distolateral spine and 1 lateral spine only. Mxp 3 merus with strong spine on flexor median margin and distinct spine on extensor distal margin. P1 spinose. P2–4 dactyli with row of distinct teeth,

ultimate tooth prominent.

Remarks: The genus contains only one species.

***Leiogalatea laevirostris* (Balss, 1913)**

Synonymy: see p. 246.

Material:

Kei Islands Expedition St. 49, 5°37'S, 132°23'E, 245 m, sand, trawl, 3 May 1922: — 2 ♂ (4.2, 4.7 mm), 1 ov. ♀ (4.8 mm), ZMUC CRU-11440.

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E, 345 m, mud, trawl, 10 May 1922: — 1 ov. ♀ (9.6 mm), ZMUC CRU-11561.

Kei Islands Expedition St. 59, 5°28'S, 132°36'E, 385 m, corals and sponges, trawl, 12 May 1922: — 1 ♂ (9.0 mm), ZMUC CRU-11522.

Diagnosis: Carapace dorsally with long coarse setae, transverse striae poorly developed but uninterrupted median stria distinct; lateral margins with 3–6 spines (usually 3 on anterior half). Lateral limit of orbit not angular. Rostrum triangular, flattish, lateral spines obsolescent. Sternite 3 relatively short, widened, produced anterolaterally; anterior margin somewhat convexly transverse. Ocular peduncles short, relatively broad, somewhat depressed, cornea as broad as remaining eyestalk. Basal article of antennule with 2 stout lateral terminal spines, distomesial margin with very small process. Mxp 3 merus having flexor margin with strong median spine, extensor margin with small but distinct distal spine. P1 relatively massive and very spinose, with long setae, fingers longer than palm. Epipods absent from P1–4.

Range: Madagascar, Amirante, Nicobar Islands, Kei Islands, New Caledonia, Loyalty Islands, Hunter and Matthew Islands, Sagami Bay (Japan), and Tuamotu Archipelago; 160–805 m.

Genus *Munida* Leach, 1820

Munida Leach, 1820: 52 (part). — Henderson, 1888: 123 (part). — Alcock, 1901: 237 (part). — Schmitt, 1922: 164 (part). — Tirmizi & Javed, 1993: 89 (part).

Diagnosis: Carapace with distinct setiferous transverse striae. Pair of epigastric spines directly behind ocular peduncles usually flanked by spines. Lateral margins with spines, anterolateral spine distinct; 3 to 5 spines

on branchial region. Rostral base with spiniform rostral spine flanked by supraocular spines. Abdominal segments with setiferous transverse striae; G1 and G2 present. Telson subdivision incomplete. Ocular peduncles freely movable, cornea small, large or of moderate size, usually with eyelashes. Antennular basal article with 2 terminal and 2 lateral spines. Antennal flagellum relatively long. Mxp 3 slender, ischium elongate, merus with spine(s) on flexor margin. P2–4 spinose, relatively slender; dactyli with row of seta-like spines each arising from very low, small process. Eggs small and numerous.

Remarks: *Munida* as employed by previous authors included two groups: one having G1 and G2 and the other lacking G1 (Alcock, 1901). The latter group has been transferred to *Agononida* (see Baba & de Saint Laurent, 1996). Also *Raymunida* Macpherson & Machordom, 2000 (see below) was recently proposed for aberrant species. *Munida leviantennata* Baba, 1988, another aberrant species in the genus, is placed in *Enriquea* n. gen. in this paper.

Thanks to recent works by Macpherson & de Saint Laurent (1991, 2002), Macpherson & Baba (1993), Macpherson (1993a, 1994, 1996a, 1996b, 1997, 1996b, 1999a, 1999b, 2000), the number of Indo-Pacific species is more than twice that recorded in Baba (1988) and new taxa are still increasing (Macpherson, personal comm.). Now 176 species are known in the Indo-Pacific, excluding problematic species (see below).

The systematic status of *Munida quinquespinosa* Balss, 1913 from SW of Great Nicobar, in 296 m (Balss, 1913a; Doflein & Balss, 1913: 144, figs. 9–12, pls. 13: fig. 1) has been solved by examination of the type material. The presence of two supraocular spines on each side suggests that it approaches *Sadayoshia* (see Baba, 1969a), but the shapes of antennule, antenna, sternal plastron, and P1–4 are the same as those of *Galathea*. This species is transferred to *Galathea* (see above under the “Remarks” of *Galathea lumaria* n. sp.).

Munida sagamiensis Doflein, 1902 from Japan was described very briefly, so its identity remains questionable. *Phylladorhynchus antonbruuni* Tirmizi & Javed, 1980 was transferred to *Munida* (see Baba, 1991b). Tirmizi & Javed (1993) redescribed it as *M. antonbruuni* but its systematic status can not be established because of the very small size of the type specimen now in poor condition. *Munida sinensis* Zhong & Wang, 1989, described from the South China Sea in 504–558 m, is hardly accepted, because of its

brief description and poor illustration that do not warrant the status of the species. Reexamination of the type material is recommended. The identity of *Munida microphthalmalma* reported by Faxon (1893) from the eastern Pacific remains questionable (Hendrickx, 2000) so that this record is removed from this report.

The present collection contains 29 species including three new species.

Munida agave Macpherson & Baba, 1993

Synonymy: see p. 258.

Material:

Th. Mortensen’s Pacific Expedition 1914–16, Okinose, Sagami Bay, 549 m, hard bottom, swabs, 29 Jun 1914: — 1 ov. ♀ (8.4 mm), ZMUC CRU-11549.

Kei Islands Expedition, Amboina Bay, ca. 183 m, rock, dredge, 21 Feb 1922: — 1 ♂ (9.6 mm), 3 ♀ (11.4–14.5 mm), ZMUC CRU-11469.

Diagnosis: Carapace with 6 pairs of epigastric spines followed by first stria medially interrupted; hepatic region with small spine on mesial end of dorsal surface directly lateral to first stria; 1 parahepatic, 1 anterior branchial (directly behind midlength of anterior cervical groove) and 1 postcervical spine on each side. Striae on intestinal region not interrupted. Rostrum spiniform; supraocular spines subparallel, barely reaching midlength of rostrum. Sternites 4–5 with arcuate striae. Abdominal segment 2 with 3 pairs of spines on anterior ridge. Distomesial spine of antennular basal article longer than distolateral. Article 1 of antennal peduncle having distomesial spine overreaching article 2 but barely reaching end of article 3; article 2 having distomesial spine extending beyond end of peduncle, accompanying small mesial marginal spine proximal to it. Mxp 3 merus having extensor margin ending in distinct spine, flexor margin with 3 sharp spines, proximal one pronounced. Movable finger of P1 longer than palm, mesially bearing a few small spines in proximal half between subterminal and basal spines. Dactyli of P2–4 having flexor margin with 6 spines on proximal 2/3.

Remarks: Macpherson & Baba (1993) tentatively included the male paratype (MNHN Ga 2290) from the Philippines in *M. agave* owing to its unusual

characters: absence of spines on the abdominal segment 2, presence of a scale-like stria on the intestinal region, and the sternal plastron bears fewer striae. The problem of its systematic status has still not been resolved.

Range: Previously known from Japan, Philippines, and Indonesia, in 89–305 m. The bathymetric range now goes down to 549 m.

***Munida andamanica* Alcock, 1894**

Figs. 33–35

Synonymy: see p. 258.

Material:

“Galathea” St. 490, Java Sea E of Makassar, 05°25’S, 117°03’E, 600 m, sand and clay, 14 Sep 1951: — 1 ♂ (14.3 mm), ZMUC CRU-11510.

Th. Mortensen’s Pacific Expedition 1914–16, 25 miles E of Zamboanga, 458 m, trawl, 4 Mar 1914: — 3 ♂ (17.3–19.5 mm), 1 ♀ (14.2 mm), ZMUC CRU-11575.

Th. Mortensen’s Pacific Expedition 1914–16, Moro Gulf off W Mindanao, 7°25’N, 123°14’E, 458 m, Sigsbee trawl, 9 Mar 1914: — 2 ♂ (7.0, 11.2 mm), ZMUC CRU-11566.

Th. Mortensen’s Java–South Africa Expedition 1929–30, “Dog” St. 16, Bali Sea, Indonesia, 7°35’ N, 114°42’ E, ca. 200 m, mud, Sigsbee trawl, 10 Apr 1929: — 3 ♂ (19.5–23.4 mm), 4 ov. ♀ (24.9–27.1 mm), ZMUC CRU-11095.

Diagnosis: Epigastric region with 6 spines in 3 pairs, median pair directly behind ocular peduncles larger than mesial and lateral pairs; additional 1 or 2 small spines or tubercle-like processes lateral to each of lateral-most spines. Anterolateral spine of carapace not reaching sinus between rostral and supraocular spines. Front margin oblique. Rostrum spiniform, curving dorsad distally. Sternite 4 anteriorly narrowed subtriangular, narrowly fitting to preceding sternite, surface with a few to several striae; sternite 4 nearly smooth. Abdominal segments 2 and 3 each with 2 transverse striae in young specimens, additional secondary striae in large specimens; segment 2 with 4 pairs of spines. Ocular peduncles with short eyelashes. Terminal spines of antennular basal article subequal in size. Antennal article 1 with distomesial spine not reaching end of article 2; article 2 with distolateral spine falling short of end of article 3, distomesial spine

nearly reaching end of article 4, bearing 1 or 2 (usually 1) small spine proximal to it. Mxp 3 merus with 2 spines on flexor margin, distal spine small and terminal in position, proximal spine prominent and submedian; extensor margin unarmed. Both fine plumose and coarse iridescent setae along mesial margin of P1 and along dorsal margins of P2–4. P1 with more prominent spination in small specimens than in large ones; merus with prominent distomesial spine; palm with mesial, lateral and dorsal rows of spines; fixed finger with 2 small subterminal spines, unarmed elsewhere; movable finger with proximal mesial marginal spine usually small, often obsolete or absent. P2–4 carpi having dorsal crest with 4 spines, proximal 2 occasionally very small; dactyli with 9–16 teeth on flexor margin, each tooth bearing seta-like corneous spine, ultimate tooth much remote from terminal end of article and nearer to penultimate one. Dactylus-propodus length ratio 0.64–0.70.

Color: According to Miyake (1982) and Baba in Baba *et al.* (1986), the carapace, anterior part of the abdomen (segments 1–3), and appendages are reddish pink, while the posterior half of the abdomen including the tail fan is white; P1 fingers are white with reddish tips and P2–4 are white on the proximal half, reddish on the distal half; the base of the rostrum are deep red. Alcock (1894) briefly described “cephalothorax and appendages pink, abdominal region white.”

Remarks: The female holotype of *M. curvatura* Benedict, 1902 (USNM 25466), which was said to be identical with *M. andamanica* (see Balss, 1913b; Baba, 1982b), is illustrated (Fig. 36). This specimen perfectly fits the illustration of *M. andamanica* (see Alcock & Anderson, 1895: pl. 13, fig. 2).

Here examined was the additional material covering from small to large sizes: 1 ♂ (29.9 mm), Andaman Sea, 173 fm (317 m), coll. “Investigator” (USNM 19017); 1 sp. (8.3 mm, sex indet.), off Shiono-misaki, S Kii Peninsula, Japan, 420 m, 3 May 1996, coll. E. Izuka & S. Nagai; 1 ♂ (16.7 mm), 5 ov. ♀ (23.3–30.2 mm), 3 ♀ (18.3–31.1 mm), ZLKU 14277, Tosa Bay, 250–300 m, 17–24 Mar. 1964, coll. K. Sakai; 4 ♂ (19.1–32.0 mm), 2 ov. ♀ (29.4, 30.7 mm), 5 ♀ (19.7–23.4 mm), ZLKU 10982, Tosa Bay; 1 ov. ♀ (22.6 mm), 1 ♀ (19.6 mm), Tosa Bay, 200–250 m, 6 Jun. 1985; 1 ♂ (20.2 mm), ZLKU 14276, Tosa Bay, 20 Jun. 1964; 1 ov. ♀ (21.1 mm), Kagoshima Bay, Japan, 7 Oct. 1976, coll. Kagoshima Fish. Exp. Station; 2 ♀ (25.9, 26.1 mm), ZLKU 8402, 13–14 miles off Totoro, Miyazaki,

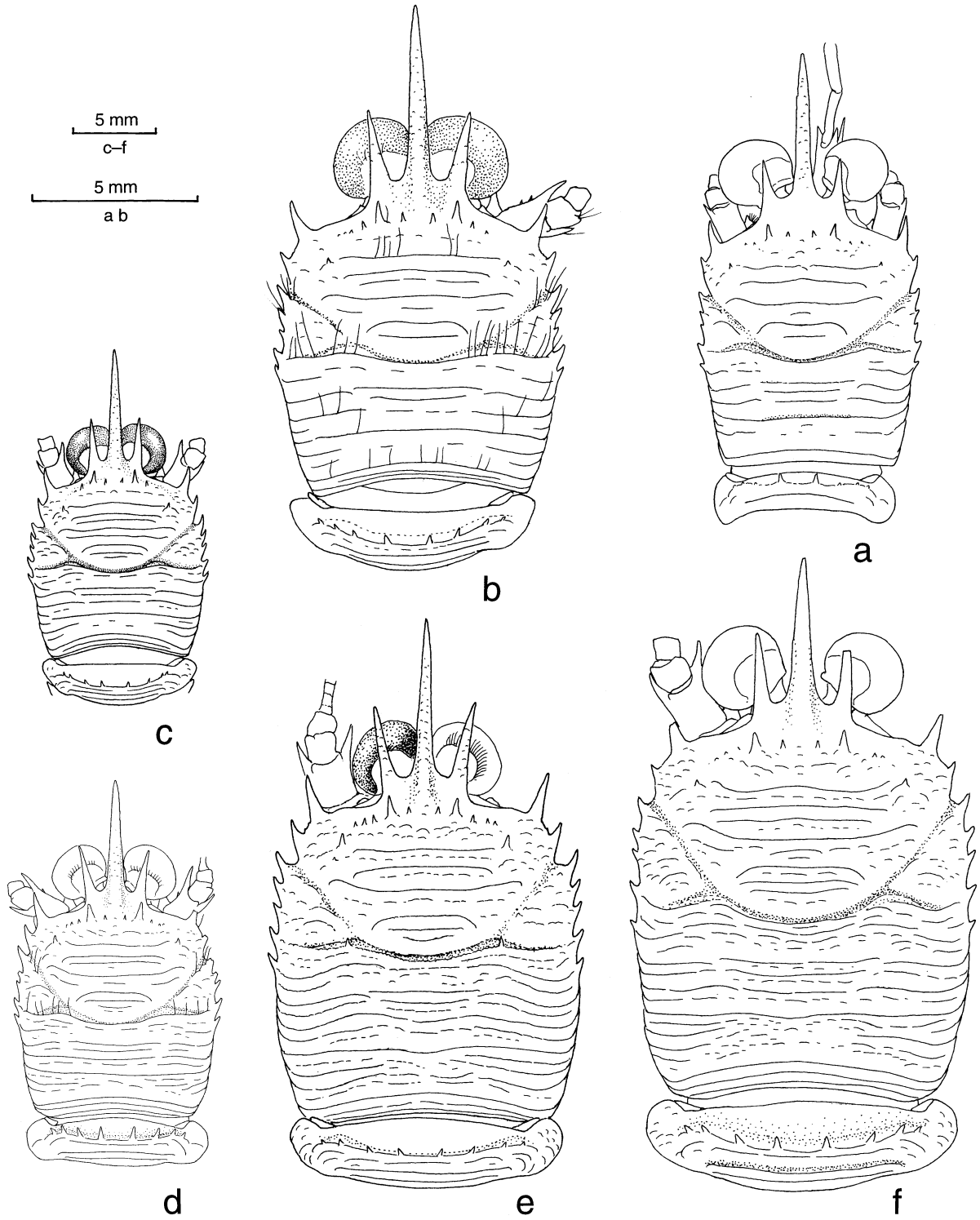


Fig. 33. *Munida andamanica* Alcock, 1894, carapace and anterior part of abdomen: a, ♂ (29.9 mm), USNM 19017; b, sex indet. (8.3 mm), off Shiono-misaki, Japan; c, ♂ (14.3 mm), ZMUC CRU-11510; d, ♂ (17.8 mm), BMNH 1888:3, from "Challenger" St. 200; e, ♀ (20.2 mm), ZLKU 10982; f, ♂ (32.0 mm), ZLKU 10982.

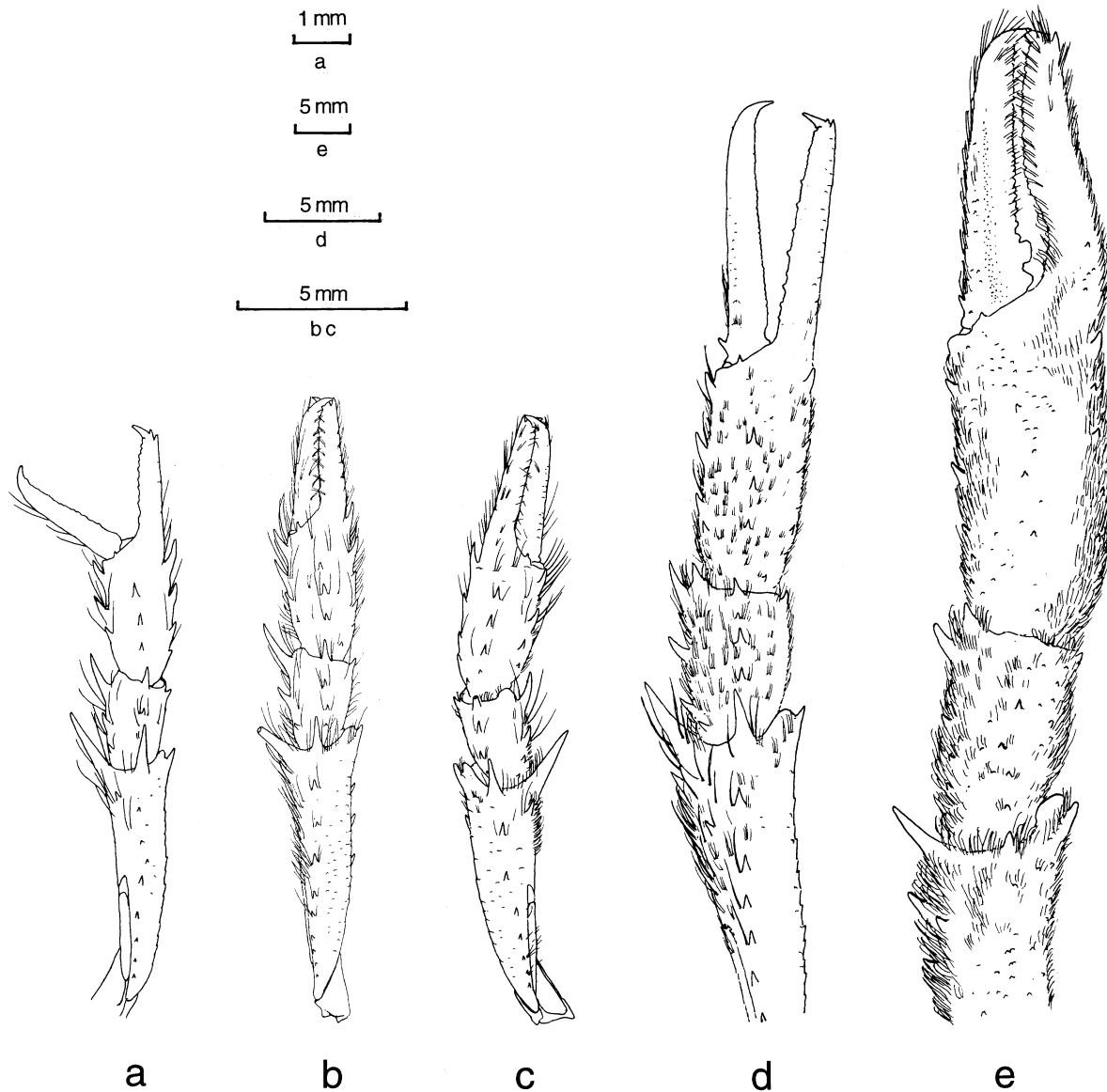


Fig. 34. *Munida andamanica* Alcock, 1894, P1: a, sex indet. (8.3 mm), from Shiono-misaki, Japan; b, ♂ (14.3 mm), ZMUC CRU-11510; c, ♂ (17.8 mm), BMNH 1888:33), from “Challenger” St. 200; d, ♂ (29.9 mm), USNM 19017; e, ♂ (32.0 mm), ZLKU 10982.

230–250 m, 2 Apr. 1961, coll. M. Kimura; 2 ♀ (26.0, 29.2 mm), ZLKU 5592, Tosa Bay, 20 Nov. 1958, coll. K. Kurohara; 1 ♂ (32.0 mm), ZLKU, no. reg. number, Tosa Bay between Muroto and Kannoura, 1962, coll. K. Sakai.

Most of these specimens and the material from the Zoological Museum are without doubt referred to *M. andamanica*. However, the male from the Andaman Sea (USNM 19017) and another male (32.0 mm) from the lot ZLKU 10982 bear longer P1s with less conspicuous spines and much denser soft setae (Fig. 34d, e). These two specimens are much larger than the

largest male of the type series, which is recorded to be 54 mm from the tip of the rostrum to the end of the telson [= tl] (Alcock, 1894). None of the females examined bear such P1s, even the largest one. These specimens are also somewhat different from the others: the carapace and abdomen bear more numerous secondary striae mostly beaded; the P2–4 are relatively broad, and their propodal ventral spines are likely to be reduced. On the contrary, in the specimens smaller than 16.7 mm, the rostrum is relatively long and P1–4 are much slender and P2–4 have distinct spines on the ventral ridge of the propodus. The above-mentioned

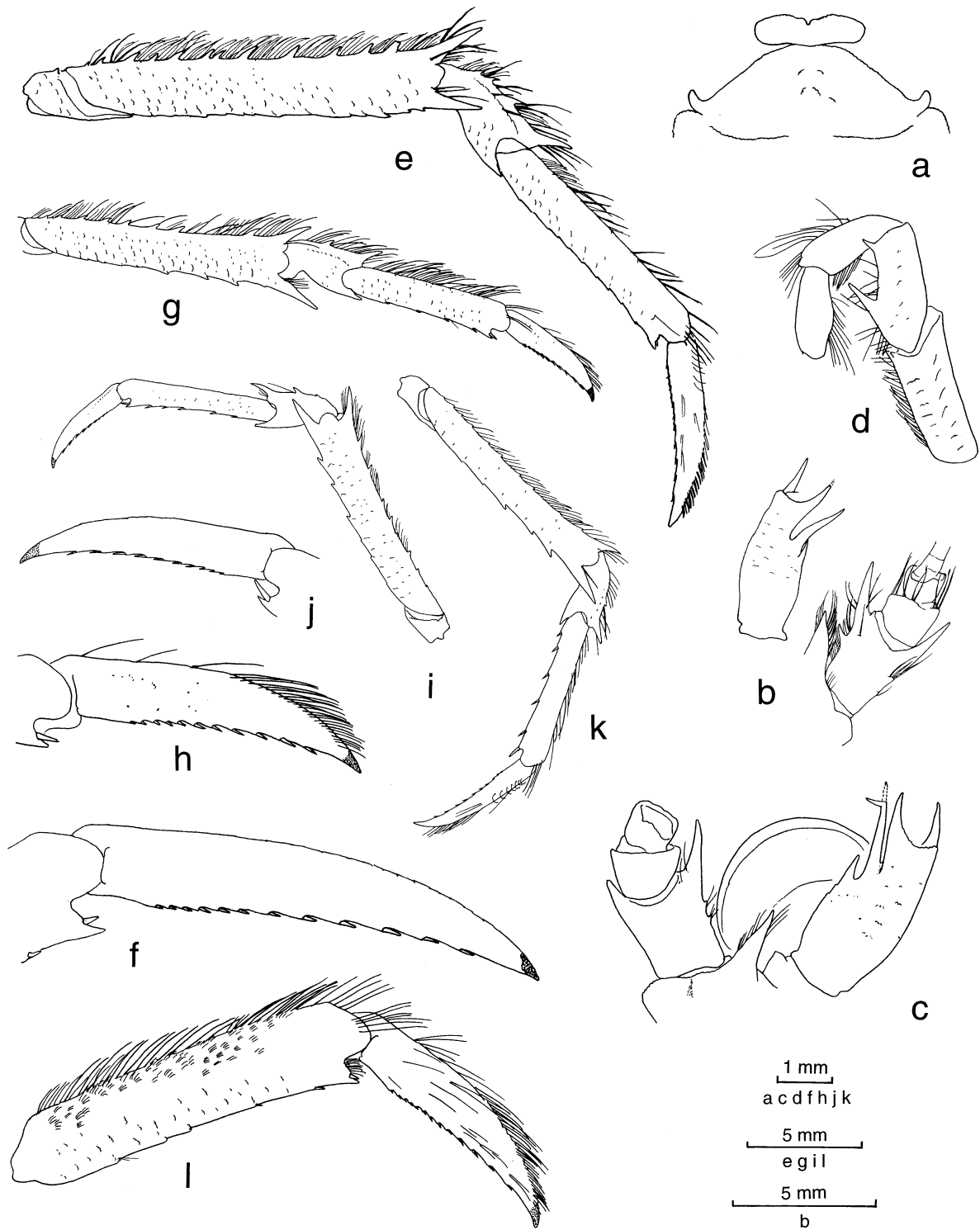


Fig. 35. *Munida andamanica* Alcock, 1894; a, c, d, i, j, ♂ (17.8 mm), BMNH 1888:33, from "Challenger" St. 200; b, e, f, ♂ (29.9 mm), USNM 19017; g, h, ov. ♀ (22.6 mm), from Tosa Bay, Japan; k, sex indet. (8.3 mm), from Shiono-misaki, Japan; l, ♂ (32.0 mm), ZLKU 10982: a, anterior part of sternal plastron; b, antennule and antenna, left, ventral; c, same, ocular peduncle included, right, ventral; d, endopod of Mxp 3, distal article omitted, left, lateral; e, P2, right, lateral; f, same, distal part; g, P2, right, lateral; h, same, distal part; i, P2, left, lateral; j, same, distal part; k, P2, right, lateral; l, distal articles of P2, right, lateral.

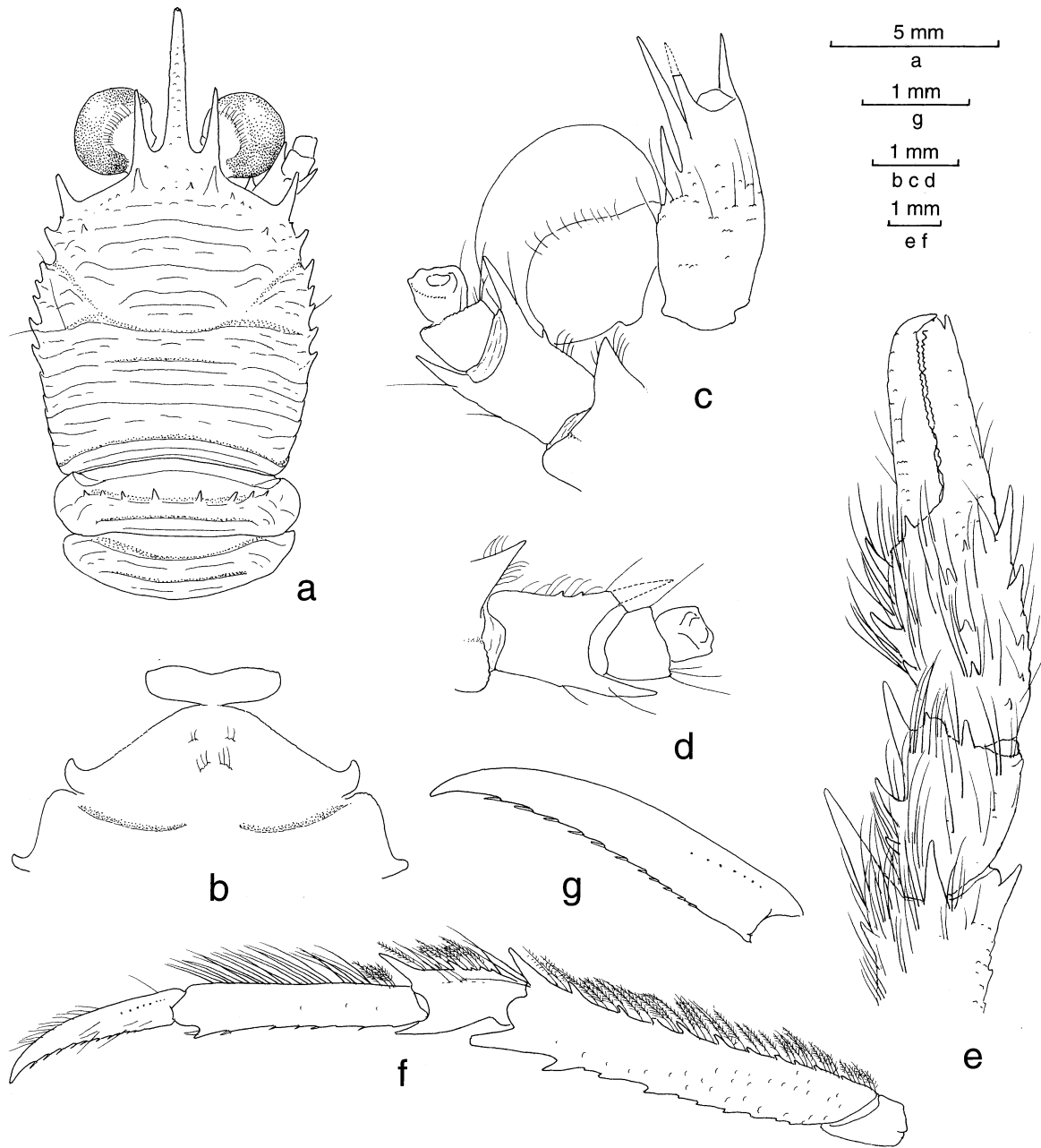


Fig. 36. *Munida curvatura* Benedict, 1902, holotype, ♀, USNM 25466: a, carapace and abdomen, dorsal; b, anterior part of sternal plastron; c, antennule, antenna and ocular peduncle, right, ventral; d, antenna, left, ventral; e, P1, right, dorsal; f, P2, left, lateral; g, same, dactylus, setae omitted, lateral.

differences are here considered to be age related variation.

Consistent through all sizes, independent of sex, is the arrangement of the flexor marginal teeth on the P2–4 dactyli: the ultimate tooth is considerably distant from the distal end of the article and rather close to the penultimate tooth (Fig. 35e–l). Also consistent is the relative length of the anterolateral spine of the carapace,

which falls short of the level of the sinus between the rostral and supraocular spines.

Munida andamanica is closely related to *M. curvirostris* Henderson, 1885. Examination of the “Challenger” material of *M. curvirostris* taken at “Challenger” St. 200 discloses that it is referable to *M. andamanica* (see below under *M. curvirostris*). The relationships between *M. andamanica* and *M.*

curvirostris is discussed under the “Remarks” of the latter (see below).

A number of species closely related to *M. andamanica* and *M. curvirostris* have recently been described: *M. congesta* Macpherson, 1999, *M. compacta* Macpherson, 1997, *M. rhodonia* Macpherson, 1994, *M. rosula* Macpherson, 1994, and *M. spissa* Macpherson, 1996. All of these species share with *M. andamanica* the spiniform, not laterally compressed rostral spine, the Mxps 3 lacking spine on the extensor distal margin of the merus, the P1 merus with a prominent distomesial spine and the fixed finger being smooth on the lateral margin other than two subterminal spines, the abdominal segment 2 bearing a row of eight spines. However, *M. andamanica* is distinguished from the relatives by the following characters: *Munida compacta*, *M. rhodonia* and *M. spissa* have more numerous striae on the carapace and abdomen even in small specimens; *M. congesta* has the distomesial spine of the antennular peduncle distinctly smaller than the distolateral spine; *M. punctata* has the sternal plastron with numerous arcuate striae and the sternite 3 narrower relative to sternite 4.

Munida rosula Macpherson, 1994 seems to be identical with *M. andamanica*. However, the following features interpreted from the illustration given by Macpherson (1994) for *M. rosula* shows that they should be separate species. The P2 dactylus is relatively shorter in *M. rosula* than in *M. andamanica* (the dactylus-propodus length ratio being 0.54 in *M. rosula*, 0.64–0.70 in *M. andamanica*); the carpus of the same appendage has a terminal spine only on the dorsal crest in *M. rosula*, instead of 4 spines in *M. andamanica*; and the color patterns are also different (see Miyake, 1982: pl. 50, fig. 2; Baba in Baba *et al.*, 1986: fig. 119; Macpherson, 1994: fig. 82).

The material from Zanzibar reported by Tirmizi (1966) under *M. andamanica* was identified as *M. africana* Balss, 1913 by Macpherson & de Saint Laurent (2002). The identity of the other material from the Gulf of Aden and Maldives taken by the John Murray Expedition (Tirmizi, 1966) remains questionable.

Range: Off E coast of Somali Republic, Arabian Sea, Andaman Sea, W of Sumatra, Central Queensland, Indonesia, Philippines, Okinawa Trough, Kyushu-Palau Ridge, Japan from E of Kyushu northward to Bungo Strait, Tosa Bay, off Owase, Suruga Bay, Sagami Bay, and Izu Shoto; in 141–1360 m.

***Munida benguela* de Saint Laurent & Macpherson, 1988**

Synonymy: see p. 260.

Material:

“Galathea” St. 197, off Durban, 29°57’S, 31°26’E, 500–545 m, 14 Feb 1951: — 12 ♂ (14.1–30.3 mm), 8 ov. ♀ (20.4–28.5 mm), 2 ♀ (18.1, 18.2 mm), ZMUC CRU-11280.

“Galathea” St. 202, off Natal, 25°20’S, 35°17’E, 610–580 m, sand, 21 Feb 1951: — 37 ♂ (16.7–34.9+ mm), 16 ov. ♀ (18.0–28.7 mm), 33 ♀ (12.3–26.5 mm), ZMUC CRU-11278.

“Galathea” St. 203, off Natal, 25°20’S, 35°17’E, 680–730 m, sand, 21 Feb 1951: — 1 ♀ (18.5 mm), ZMUC CRU-11281.

Diagnosis: Carapace rugose, with 3–6 (mostly 4) pairs of epigastric spines and pair of lateral protogastric spines; postcervical spine usually present; anterior branchial dorsal spines occasionally absent. Lateral margins with 7 spines, 5 of them behind cervical groove. Front margin more or less oblique. Rostrum spiniform, distally curving dorsad, length less than half that of remaining carapace. Sternal plastron smooth but a few arcuate striae on median portion of sternite 3. Abdominal segment 2 with 7–10 (mostly 8) spines on anterior ridge. Cornea dilated, eyelashes short. Two terminal spines of antennular basal article subequal. Antennal peduncles having article 1 with distomesial spine slightly overreaching end of article 2, article 2 with distomesial spine overreaching end of peduncle. Mxp 3 merus with 2 flexor marginal spines, distal one smaller, extensor margin unarmed. P1 relatively massive, thickly provided with fine plumose setae, sparsely with long, coarse, iridescent setae; terminal spines of merus moderate-sized, movable finger usually with spine at proximal portion of mesial margin and a few spines slightly dorsal to median portion of mesial margin; mesial subterminal spine rarely absent; fixed finger with 5 spines on lateral margin, 2 of them subterminal. P2–4 rather stout, somewhat depressed, dorsal margins with fine plumose and coarse iridescent setae; ventral margin of propodus with 5–11 (usually 7 or 8) spines on P2, 5–11 (usually 6 or 7) on P3, 4–8 (usually 5 or 6) on P4; dactyli more than half length of propodus, relatively slender, slightly curved, flexor margin with 7 teeth each accompanied by seta-like spine, ultimate one much distant from tip of finger.

Color in life: Brick red.

Remarks: *Munida benguela* is closely related to *M. militaris* Henderson, 1885. Their relationships were discussed in a previous paper (Baba, 1990).

One of the males (21.2 mm) from "Galathea" St. 202 is infested by the rhizocephalan *Cyphosaccus cornutus* Reinhard, 1958 (the host reported under the name *M. militaris* Henderson). Also three males and 11 females, from the same station, are infested by bopyrids.

Range: South African coast between S Namibia and Natal, and Madagascar; 460–1000 m.

***Munida caesura* Macpherson & Baba, 1993**

Synonymy: see p. 260.

Material:

Th. Mortensen's Pacific Expedition 1914–16, 25 miles E by S of Zamboanga, trawl, 293–366 m, hard bottom, 3 Mar 1914: — 1 ♂ (23.1 mm), ZMUC CRU-11589.

Th. Mortensen's Java–South Africa Expedition 1929–30, "Dog" St. 15, Bali Sea, Indonesia, 7°29'S, 114°49'E, ca 240 m, sand and mud with concretions, Sigsbee trawl, 10 Apr 1929: — 1 ov. ♀ (19.5 mm), 1 ♀ (23.3 mm), ZMUC CRU-11093.

Kei Islands Expedition St. 49, 5°37'10"S, 132°23'E, 245 m, sand, trawl, 3 May 1922: — 2 ov. ♀ (11.3, 18.5 mm), ZMUC CRU-11444.

Kei Islands Expedition St. 51, 5°46' 30" S, 132°51' E, 348 m, mud, trawl, 7 May 1922: — 1 ov. ♀ (17.0 mm), ZMUC CRU-11584.

Kei Islands Expedition St. 52, 5°46'S, 132°49'35"E, 352 m, mud, trawl, 7 May 1922: — 1 ♂ (28.1 mm), ZMUC CRU-11419.

Diagnosis: Carapace with numerous transverse striae, intestinal region with scale-like stria; 4–6 pairs of epigastric spines. Front margin oblique in small specimens, less so in large specimens. Anterolateral spines nearly reaching sinus between rostral and supraocular spines. Sternal plastron with numerous striae, those on fifth and sixth sternites arcuate; no granules on seventh sternite. Abdominal segments unarmed. Terminal spines of antennular basal article subequal. Article 1 of antennal peduncle having distomesial spine overreaching article 3; article 2 with

small mesial marginal spine, in addition to well-developed distomesial and distolateral spines, distomesial spine overreaching article 4. Mxp 3 merus with 2 spines on flexor margin (distal smaller, proximal prominent) and distal spine on extensor margin. Fixed finger of P1 with a few lateral marginal spines other than 2 subterminal spines; movable finger with a few mesial marginal spines between proximal and subterminal spines. P2–4 dactyli proximally stout, flexor margin convex, with 8–12 seta-like spines, unarmed on distal fourth of length but a subterminal spine arising from base of distal corneous portion of article.

Remarks: All the specimens here examined bear numerous striae on the carapace (18 behind the protogastric stria, 7 on the cardiac region) and abdomen (5+5 on segments 2 and 3), as described for the type material from the Philippines (Macpherson & Baba, 1993).

The subterminal spine on the flexor margin of the P2–4 dactyli possessed by the material examined is also confirmed to be present in one of the paratypes (ZLKU 4324).

Range: Japan, Philippines, Bali Sea, and Kei Islands; 240–390 m.

***Munida carinata* n. sp.**

Fig. 37

Material:

Th. Mortensen's Java–South Africa Expedition 1929–30, "Dog" St. 3, Bali Sea, Indonesia, 7°42'S, 114°35'E, 450 m, mud with corals, Sigsbee trawl, 4 Apr 1929: — 2 ♂ (6.1, 7.5 mm; larger, holotype), ZMUC CRU-11570.

Th. Mortensen's Pacific Expedition 1914–16, 3 miles SW of Tucuran, Moro Gulf, Mindanao, 7°30'N, 123°30'E, 549 m, Sigsbee trawl, 10 Mar 1914: — 1 ♂ (8.8 mm), ZMUC CRU-11563.

Diagnosis: Epigastric region with 5 pairs of spines. Front margin somewhat oblique. Lateral margins with 5 spines behind cervical groove. Rostrum laterally ridged, ventrally keeled. Abdominal segment 2 with 8 spines on anterior stria. A few arcuate striae on sternites 4 and 5; sternite 4 with broad anterior border. Two terminal spines of antennular basal article subequal.

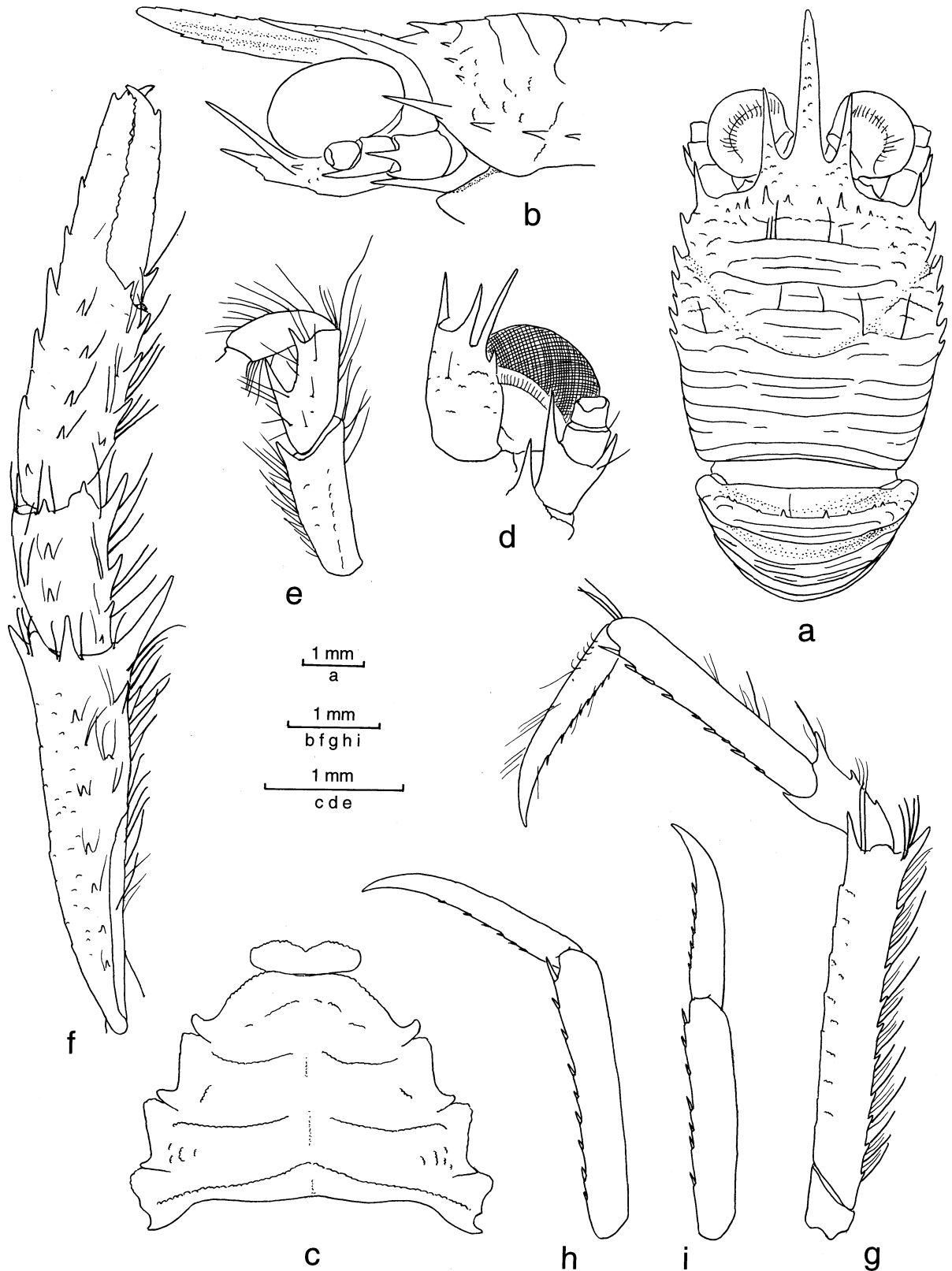


Fig. 37. *Munida carinata* n. sp., holotype, ♂, ZMUC CRU-11570: a, carapace and abdomen, dorsal; b, anterior part of carapace, lateral; c, sternal plastron; d, antennule, antenna, and ocular peduncle, left, ventral; e, endopod of Mxp 3, distal articles omitted, left, lateral; f, P1, left, dorsal; g, P2, left, lateral; h, P3, distal articles, setae omitted, left, lateral; i, P4, distal articles, setae omitted, left, lateral.

Article 1 of antennal peduncle with distomesial spine reaching end of article 2; article 2 with distomesial spine reaching end of article 4. Mxp 3 merus with 2 spines on flexor margin (strong submedian and small terminal). P1 with iridescent setae denser mesially; merus with strong distomesial spine overreaching midlength of carpus; carpus 1.5 times as long as broad; palm as long as fingers; fixed finger with 4 lateral spines including 2 subterminal; movable finger with 1 proximal and 1 subterminal spine. P2–4 also with iridescent setae numerous on dorsal crest of meri; each dactylus relatively slender and curved distally, length 4/5 that of propodus; flexor margin with 6–8 seta-like spines on P2, 6 on P3, 5 or 6 on P4, unarmed on distal third of length.

Description of holotype: Carapace laterally convex, secondary transverse striae relatively few; epigastric region with 5 pairs of spines, but lateral-most spine of right side obsolete. Few iridescent setae on anterior and median transverse striae. Front margin slightly oblique. Lateral margin with 7 spines, 2 in front of, and 5 behind, cervical groove; first anterolateral, barely reaching sinus between rostrum and supraocular spine; second much smaller than first, present at midlength between first and third spines. Rostrum laterally ridged, ventrally keeled, straight, directed slightly dorsad. Supraocular spines subparalleling rostrum in profile, reaching end of cornea.

Sternal plastron with a few striae on each of sternites 4 and 5; sternite 3 anteriorly bilobed, posterior margin widely contiguous to anterior border of sternite 4.

Segment 2 of abdomen with 3 transverse striae, anterior-most bearing 4 pairs of spines.

Cornea well dilated, width slightly less than half distance between anterolateral spines of carapace; eyelashes short.

Terminal spines of antennular basal article subequal. Article 1 of antennal peduncle having distomesial spine slightly overreaching end of article 2; article 2 with distomesial spine reaching end of article 4.

Mxp 3 ischium with well-developed spine on flexor distal margin; merus with 2 spines (prominent submedian and small terminal) on flexor margin, unarmed on extensor margin.

P1 1.5 times as long as carapace including rostrum; iridescent setae moderate in density especially along mesial margin. Spinination as illustrated; 4 terminal spines of merus strong, especially distomesial one. Carpus with dorsal and mesial rows of spines, length 1.5 times breadth. Palm ventrally convex, dorsally

slightly convex, nearly as long as fingers, bearing 3 rows of spines (mesial, lateral, dorsal). Fixed finger with 2 lateral spines other than 2 small subterminal spines; movable finger with 1 proximal and 1 subterminal spine on mesial margin.

P2–4 relatively slender, dorsal margins with iridescent and plumose setae thickly along meri, sparsely along carpi and propodi. Meri with small spines on dorsal margin, terminal spine subequal to dorsal marginal spine. Propodus having ventral margin with 9 slender movable spines on P2 and P3, 7 on P4. Each dactylus slender, distally curved, about 4/5 as long as propodus; flexor margin with 8 seta-like spines on P2, 6 on P3 and P4, unarmed on distal third of length.

Variations: In the smaller male paratype, the distomesial spine of the antennular basal article is distinctly smaller than the distolateral and the distomesial spine of the antennal article 2 does not reach the end of the article 4; also the lateral two of the four pairs of spines on the abdominal segment 2 are obsolete although discernible under high magnification. These differences are considered as age related variations.

Remarks: The male paratype from Moro Gulf, which lacks P2–4, is somewhat different from other specimens in having the sternal plastron with more numerous arcuate striae and the distomesial spine of the antennal article 1 much longer but barely reaching the end of the article 3. However, this specimen is considered to be referable to *M. carinata*.

The ornamentation of the carapace and abdomen, the P1 bearing a prominent distomesial spine on the merus, and the Mxps 3 having no spine on the extensor distal margin as displayed by the new species are also possessed by *M. andamanica* Alcock, 1894, *M. curvirostris* Henderson, 1885 and their relatives (see above under “Remarks” of the two species). The new species is distinctive in the rostrum that is ventrally ridged in midline instead of being convex from side to side in the other species, the sternite 4 that bears the anterior margin broadly contiguous to the sternite 3, and the P2–4 dactyli that bear the ultimate tooth on the flexor margin considerably distant from the tip of the article (more than distal third of the flexor margin being unarmed).

The new species keys out in couplets with *M. semoni* Ortman, 1894. Details of the morphology of *M. semoni* are insufficient with the type material (Baba &

Macpherson, 1993). However, the present collection includes a number of number of specimens from shallow waters (see below under the systematic account of *M. semoni*). In *M. semoni* (see Fig. 49), the P1 is squamous, with the merus bearing a small distomesial spine and the carpus more than twice as long as broad, the abdominal segment 2 bears three pairs of spines, the Mxp 3 merus bears two flexor marginal spines, and the rostrum is not carinate ventrally.

Type locality: Bali Sea, Indonesia, 7°42'S, 124°35'E, 450 m.

Etymology: From the Greek *carinatus* (= keeled), alluding to the ventrally ridged rostrum.

***Munida compressa* Baba, 1988**

Synonymy: see p. 261.

Material:

“Galathea” St. 500, Arafura Sea, 07°34'S, 132°44'E, 390 m, coralline sand, 25 Sep 1951: — 1 ♀ (11.3+ mm), ZMUC CRU-11505.

Th. Mortensen's Pacific Expedition 1914–16, 25 miles E by S of Zamboanga, trawl, 293–366 m, hard bottom, 3 Mar 1914: — 1 ov. ♀ (15.1 mm), ZMUC CRU-11588.

Diagnosis: Carapace with iridescent stiff setae usually on cardiac transverse stria and around end of cervical groove; lateral margin with 7 spines (5 on branchial region). Postcervical spine absent. Rostrum strongly compressed laterally, curving dorsally. Abdominal segment 2 with 8 spines. Cornea dilated with short eyelashes. Basal article of antennule with subequal terminal spines. Mxp 3 merus with 2 spines on flexor margin, distal smaller. P1 short and massive, merus with 4 prominent terminal spines, mesial one largest; palm slightly shorter than fingers, lateral margin with at least 2 spines distally, distal-most strong. Propodus with 5–6 dorsal spines on P2 and P3, 4–5 on P4.

Remarks: *Munida rubridigitalis* Baba, 1994, reported from the eastern Australia (Baba, 1994), New Caledonia and Loyalty Islands (Macpherson, 1994), shares with the present species the compressed rostrum bearing a red distal mark and the short P1 bearing a prominent spine on the distolateral portion of the palm. However, *M. rubridigitalis* has the carapace and

abdominal segments with more numerous striae, the P2–4 propodi with more numerous spines on the ventral margin, and the rostrum being markedly higher dorsoventrally.

Range: Arafura Sea, Moluccas, off Zamboanga, S of Mindoro, South China Sea between SW Luzon and SW Formosa, and Tosa Bay, Japan; between 180 and 640–668 m.

***Munida curvirostris* Henderson, 1885**

Figs. 38, 39

Synonymy: see p. 261.

Material:

“Challenger” St. 210, off SE Cebu, 686 m: — 1 sp. (sex indet., 14.7 mm), holotype, BMNH 1888:33.

“Galathea” St. 423, E of Cebu, 10°27'N, 124°18'E, 836 m, mud, 25 Jul 1951 — 1 ♂ (12.8 mm), ZMUC CRU-11480.

“Galathea” St. 436, E of Cebu, 10°12'N, 124°14'E, 780 m, green mud, 9 Aug 1951: — 1 ♂ (13.4 mm), 3 sp. (sex indet., 5.4–10.4 mm), ZMUC CRU-11475.

Diagnosis: Carapace with 2 well-developed epigastric spines flanking small submedian spines, occasionally with additional 1 or 2 spines lateral to each of these. Front margin oblique. Branchial region with 5 lateral spines. Rostral spine distally curving dorsad, equally long as distance between midpoint of cervical groove and sinus between rostral and supraocular spines. Supraocular spines overreaching cornea, falling short of midlength of rostrum. Sternite 4 relatively broad anteriorly, bearing a few short striae. Abdominal segments 2 and 3 each with 2 transverse striae, segment 2 with 4 pairs of spines on anterior stria, median pair much larger, lateral-most and lateral third occasionally absent. Corneas dilated, eyelashes short. Terminal spines of antennular basal article subequal. Article 2 of antennal peduncle relatively slender (length-breadth ratio 1.23–1.31), with small mesial marginal spine proximal to pronounced distomesial spine barely reaching end of article 4. Mxp 3 merus with 2 spines on flexor margin, distal one smaller, extensor margin unarmed. P1 relatively slender; 2 terminal spines on merus very strong, particularly mesial terminal one; fixed finger lacking lateral spines except for 2 small subterminal spines; movable finger without spine on

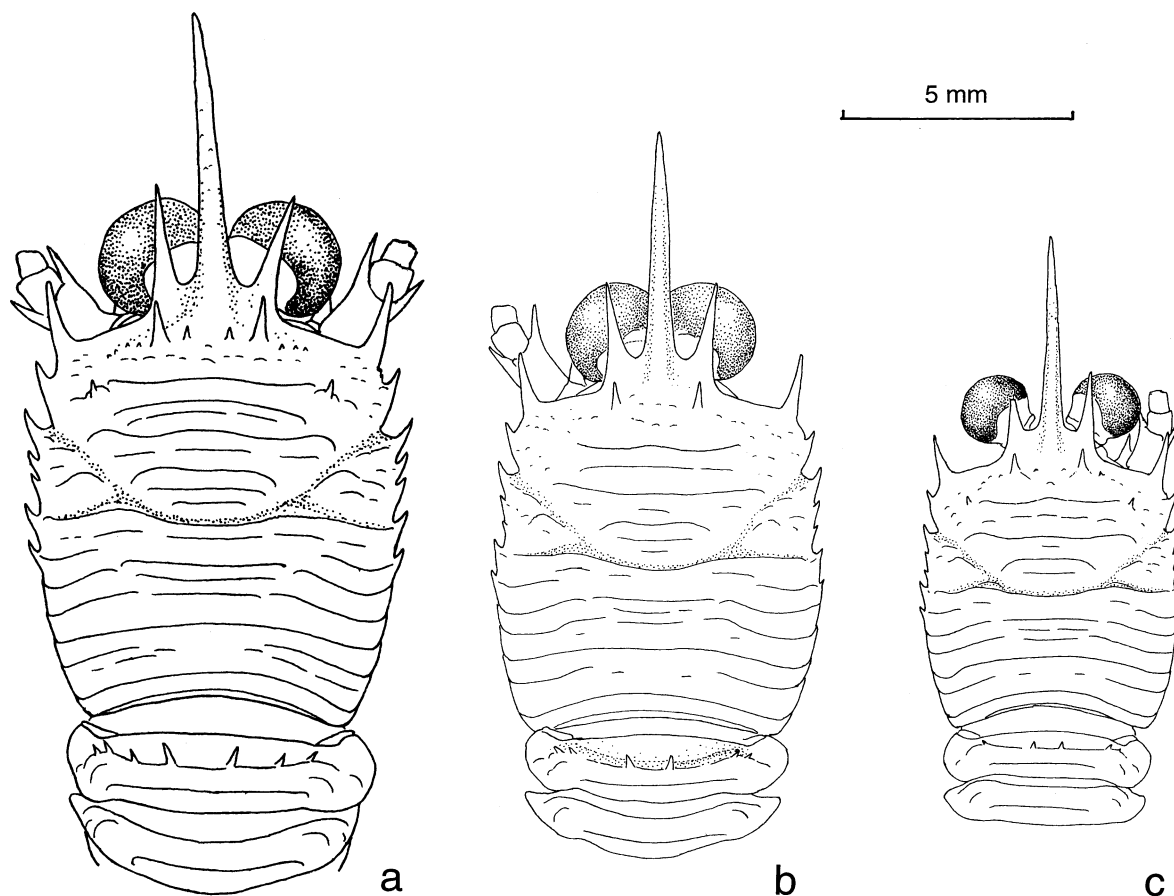


Fig. 38. *Munida curvirostris* Henderson, 1885, carapace and anterior part of abdomen: a, holotype, sex indet., BMNH 1888:33; b, ♂ (12.8 mm), ZMUC CRU-11480; c, sex indet. (10.4 mm), ZMUC CRU-11475.

mesial margin. Iridescent setae sparse or absent on P1–4. P2–4 relatively slender, P2 distinctly overreaching end of P1 palm when extended forward, terminal spines on dorsal and ventral crests of meri prominent; carpi usually with 4 spines on dorsal crest; dactyli moderately curving on P2–3, strongly so on P4, flexor margin with 13–20 seta-like spines along whole length on P2, 11–17 on P3, 7–11 on P4, ultimate one much remote from penultimate, or nearly equidistant between penultimate one and terminal end of article.

Remarks: Prior to the publication of Alcock (1894) in which he described *Munida militaris* var. *andamanica* from the Andaman Sea in 188–220 fm (344–403 m), Henderson (1885) described *Munida curvirostris* based upon a single female specimen taken by the “Challenger” at St. 210 off SE Cebu in 375 fm (686 m). This species, however, was shifted down to a subspecific level, *M. militaris* var. *curvirostris*, in his 1888 publication, on examination of additional material

(one male) from “Challenger” St. 200 off Zamboanga in 250 fm (458 m). Later in his list of species, Benedict (1902) shifted it to specific level. Since then *M. curvirostris* has not received any attention until Baba & Macpherson (1991). On the other hand, *Munida andamanica*, a distinct species as proposed by Alcock (1901), has been widely reported (Balss, 1913b; Doflein & Balss, 1913; Yokoya, 1933; Yanagita, 1943; Tirmizi, 1966; Baba, 1982a; Miyake, 1982; Baba in Baba *et al.*, 1986; Baba, 1988). *Munida curvirostris* is characterized by a short P1 having strongly developed spines, in particular, the pair at the distal end of the merus, as also is *M. andamanica* (see Alcock, 1894; 1901; Baba in Baba *et al.*, 1986; Baba, 1988). Fewer spines on the palm as well as lack of lateral spines on the fingers which I believe are characteristic of *M. andamanica*, are clearly depicted by Henderson (1888: Pl. 3: fig. 7) for *M. militaris* var. *curvirostris*. On examination of the type of *M. curvirostris*, Baba & Macpherson (1991) considered that *M. curvirostris* and

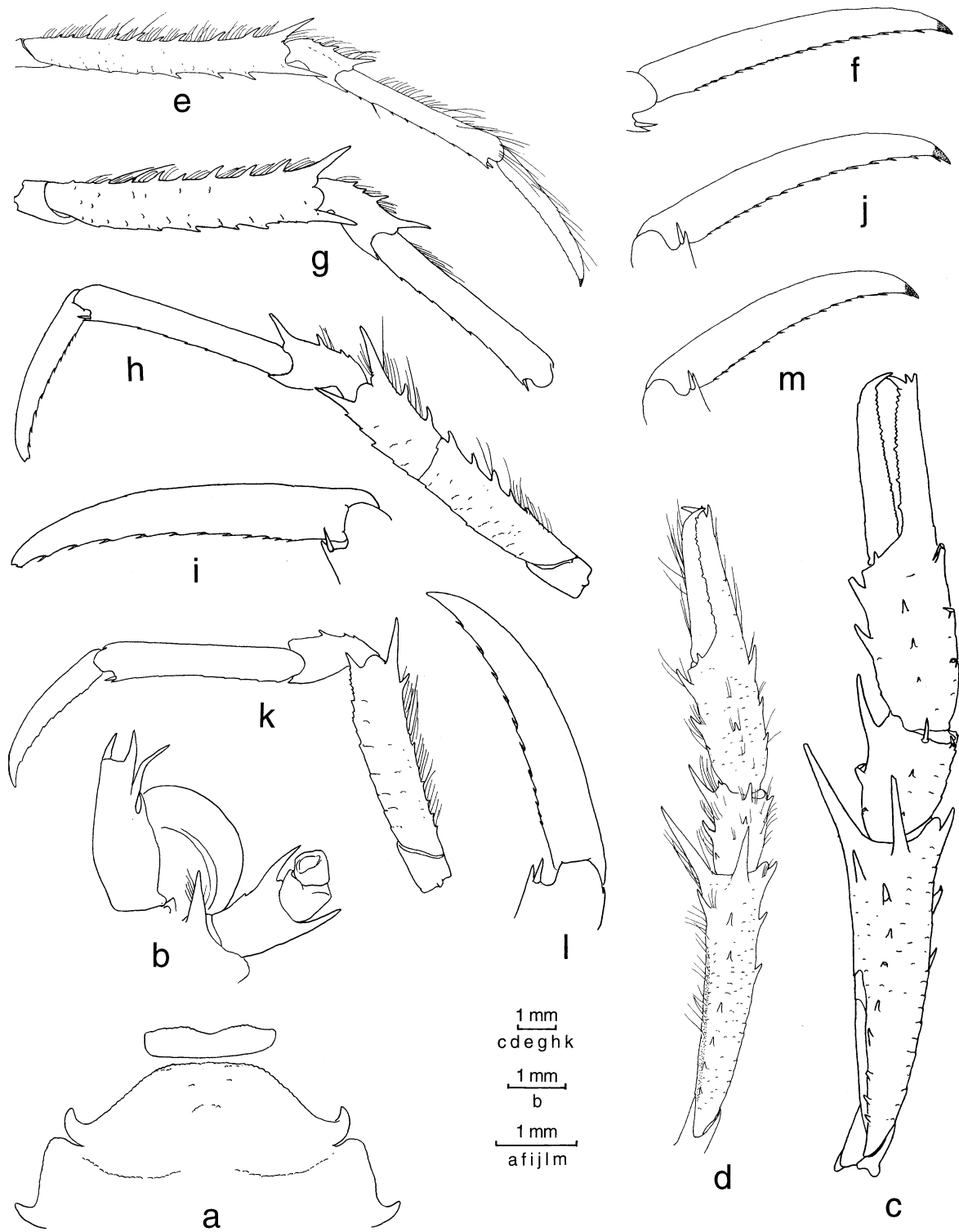


Fig. 39. *Munida curvirostris* Henderson, 1885, a–c, g–i, k, l, holotype, sex indet., BMNH 1888:33; d–f, j, m, ♂ (12.8 mm), ZMUC CRU-11480: a, anterior part of sternal plastron; b, anterior part of cephalothorax, showing antennule, antenna and ocular peduncle, left, ventral; c, P1, right, dorsal; d, same; e, P2, right, lateral; f, same, dactylus, lateral; g, walking leg (possibly P2), dactylus missing, right, lateral; h, walking leg (possibly P2), left, lateral; i, same, dactylus, lateral; j, P3, dactylus, lateral; k, P4, left, lateral; l, same, dactylus, lateral; m, P4, dactylus, right, lateral.

M. andamanica are identical.

For this paper the relationships between *M. curvirostris* and *M. andamanica* were restudied, and it is suggested that the two species are distinct (see below for relationships). According to R. W. Ingle (personal communication), the holotype of *M. curvirostris* (see Henderson, 1885) and the specimen of *M. militaris* var. *curvirostris* from “Challenger” St. 210 figured in Henderson (1888) are the same specimen.

The holotype of *M. curvirostris* is noted to be an adult female, 27 mm in length (Henderson, 1885) or 20 mm (not including rostrum) [total length] (Henderson, 1888). On examination of that specimen registered under BMNH 1888: 33, however, I found that the specimen is immature (sex indeterminate) because of absence of Pls, presence of small genital pores on P3, slender P1 2, and Pls 3–5 representing a male character. The specimen is no longer intact: the right P1 is distally broken, the left one missing; the left P2 (dactylus missing), right P2–3, and left P4 (Fig. 39g, h, i, k, l) are available, all detached from the body.

The male from “Challenger” St. 200 measures 17.8 mm in carapace length (rostrum included). Left and right P1, left P2 (complete) and P3 (dactylus missing), and right P2 (dactylus missing) and P4 (complete) remain detached from the body and the other legs are missing (Figs. 33d, 34c, 35a, c, d, i, j). This specimen differs from the holotype in the following details: 1) the carapace bears more numerous striae, as also does the abdomen on the segments 2 and 3; 2) a pair of large epigastric spines each is flanked by a small spine (3 or 4 tubercular processes in the holotype); 3) supraocular spines are subparallel (distinctly divergent anteriorly in the holotype); 4) the rostrum is shorter (rostrum-carapace length ratios, 0.60 in this specimen, 0.68 in the holotype); 5) the anterolateral spine of the carapace falls short of the level of the sinus between rostral and supraocular spines (fully reaches that level in the holotype); 6) the P1 is shorter relative to width, bearing more numerous iridescent and plumose setae; and 7) the P2 dactylus is broader (slender in the holotype), having the flexor margin with the ultimate denticle separated from the distal end of the article by twice the distance between the ultimate and penultimate teeth (nearly equidistant between the penultimate tooth and terminal end of the dactylus in the holotype). This specimen is now identified as *M. andamanica* Alcock, 1894.

Two of the three “Galathea” Stations from which specimens of this species were taken are very close to the type locality of *M. militaris curvirostris*. The

“Galathea” specimens are rather small and very similar to the size of the holotype of *M. curvirostris*. In the three specimens (sex indeterminate) smaller than 10.6 mm, the mid-dorsal spines on the P1 palm are reduced to one in number or barely discernible. Also in these specimens the P2 propodus is very slender, about 8.0 times as long as the dactylus, as also are those of the male (13.4 mm) from “Galathea” St. 436.

The characters of *M. curvirostris* corresponding to what are consistent in *M. andamanica* (see above under the “Remarks” of the species), are distinctive: the sternite 4 has the broad anterior margin; the ultimate of the flexor marginal teeth on the P2–4 dactyli is equidistant between the penultimate tooth and the distal end of the article; the anterolateral spine of the carapace fully reaches the level of the sinus between the rostral and supraocular spines. These are the most useful characters to distinguish the species from *M. andamanica*.

Macpherson (1993a) reported *M. curvirostris* from numerous localities in Indonesia and the Philippines in the belief that *M. curvirostris* and *M. andamanica* are identical. His material should be reexamined on the basis of the present conclusion.

Munida curvirostris is very closely related to *M. militaris* Henderson, 1885. However, they are readily distinguished by the P1 that has the merus with an extremely developed terminal spine in *M. curvirostris* instead of a moderate-sized one in *M. militaris*, and that has the fixed finger lacking lateral spines except for two small subterminal spines in *M. curvirostris*, instead of bearing additional one or two lateral spines in *M. militaris*. Also distinctive between the two is the arrangement of flexor marginal teeth of the P2–4 dactyli: in *M. militaris*, the ultimate tooth is much closer to the penultimate than to the end of the article, while equidistant between in *M. curvirostris*. This unique feature also helps to distinguish *M. curvirostris* from *M. congesta* Macpherson, 1999, *M. compacta* Macpherson, 1997, *M. punctata* Macpherson, 1997, *M. rhodonia* Macpherson, 1994, *M. rosula* Macpherson, 1994, and *M. spissa* Macpherson, 1996. All of these species share the spiniform rostral spine, the Mxp 3 bearing two spines only on the mesial margin of the merus, the P1 bearing a pronounced distomesial spine on the merus and no spine other than two subterminal spines on the fixed finger, and the abdominal segment 2 bearing a row of eight spines.

Range: Off E and SE Cebu; 686–836 m.

Munida discrega n. sp.

Figs. 40, 41

Material:

- Th. Mortensen's Pacific Expedition 1914–16, off E Victoria, 38°05'S, 150°00'E, 366–476 m, trawl, 12 Sep 1914, on board "Endeavour": — 2 ♀ (10.1, 10.8 mm; smaller, holotype), ZMUC CRU-11558.
- Th. Mortensen's Pacific Expedition 1914–16, off E Victoria, 37°45'S, 150°10'E, 275–476 m, trawl, 14 Sep 1914, on board "Endeavour": — 1 ♀ (13.7 mm), ZMUC CRU-11517.
- Th. Mortensen's Pacific Expedition 1914–16, NE of Flinders Island, Furneaux Group, 39°10'S, 149°55'E, 366–458 m, ring trawl, 15 Sep 1914, on board "Endeavour": — 1 ♂ (13.0 mm), ZMUC CRU-11553.

Diagnosis: Carapace with 4 spines on second transverse stria other than epigastric row, and additional small spines on hepatic region and vicinity. No scale on intestinal region. Branchial margin with 5 spines. Rostral spine more than distance between rostral base and mid-cervical groove, overreaching cornea. Sternite 4 with broad anterior margin about as broad as posterior margin of sternite 3, bearing a few short striae; other sternites smooth. Abdominal segments 2 and 3 with 8 and 2 spines respectively. Distomesial spine of antennular basal article longer than distolateral spine. Distomesial spine of antennal article 1 barely reaching end of article 2; article 2 with distomesial spine overreaching article 4, bearing small accompanying spine proximal to its mesial base. Mxp 3 merus as long as ischium, bearing 2 flexor marginal spines, proximal one at midlength larger than terminal one, extensor margin unarmed. P1 slender, especially palm; merus as long as carpus and palm combined, mesially with strong spines, especially distal one; carpus 3.5 times as long as broad; palm slightly longer than fingers; movable finger with 1 subterminal and 1 basal spine on mesial margin; fixed finger unarmed other than 2 small subterminal spines on lateral margin. P2–4 slender, propodi with 11–12 movable spines on P2–3, 9 on P4, ultimate located usually at 1/5 from distal end.

Description of holotype: Carapace, excluding rostrum, longer than broad. Dorsal surface with feebly granulate transverse striae. Gastric region with interrupted striae between main uninterrupted striae. Main transverse striae on cardiac region interruptedly continued to

lateral one. No scale on intestinal region. Epigastric region with 2 large spines each directly behind supraocular spine and accompanying smaller spines mesial and lateral to it; a few small spines on hepatic region and vicinity; protogastric transverse stria with 4 spines, median 2 located behind epigastric pair, lateral 2 each at lateral extremity, accompanying 1 or 2 small spines posterolateral to it. Anterior branchial region with 2 dorsal spines behind anterior cervical groove. Postcervical spine on each side. Lateral margins slightly convergent posteriorly. Anterolateral spine well developed but barely reaching level of sinus between rostral and supraocular spines, followed by a single spine equidistant between anterolateral spine and end of anterior cervical groove. Branchial margin with 5 spines. Rostrum spiniform, nearly horizontal but distally curving dorsad; length more than half that of remaining carapace, subequal to distance between base of rostral spine and mid-cervical groove. Supraocular spines overreaching cornea, barely reaching midlength of rostral spine.

Sternal plastron with a few striae on sternite 4, smooth elsewhere. Sternite 3 laterally expanded (broad relative to length), having anterior margin tuberculate and feebly bilobed. Sternite 4 with anterior margin nearly as broad as posterior margin of sternite 3. No granules and carinae on lateral parts of sternites 6 and 7.

Abdominal segment 2 with 3 transverse striae, anterior-most stria with row of 8 spines. Segment 3 with 2 uninterrupted and 2 alternating interrupted striae, anterior-most stria with 2 submedian spines.

Cornea dilated, greatest breadth 2/5 distance between anterolateral spines of carapace. Eyelashes short.

Basal article of antennule with distomesial spine distinctly longer than distolateral spine; distal one of two lateral spines reaching tip of distomesial spine, proximal one with accompanying small spine proximal to it. Article 1 of antennal peduncle with distomesial spine overreaching midlength of but falling short of end of article 2. Article 2 with distomesial spine overreaching article 4, with small accompanying spine proximal to its mesial base, distolateral spine reaching end of article 4. Articles 3 and 4 unarmed.

Mxp 3 ischium with small spine on flexor distal margin. Merus as long as ischium; flexor margin with 2 spines, proximal one larger, located about at midlength, distal one very small, located near distal end; extensor margin unarmed. Dactylus slender, length slightly more than half that of propodus.

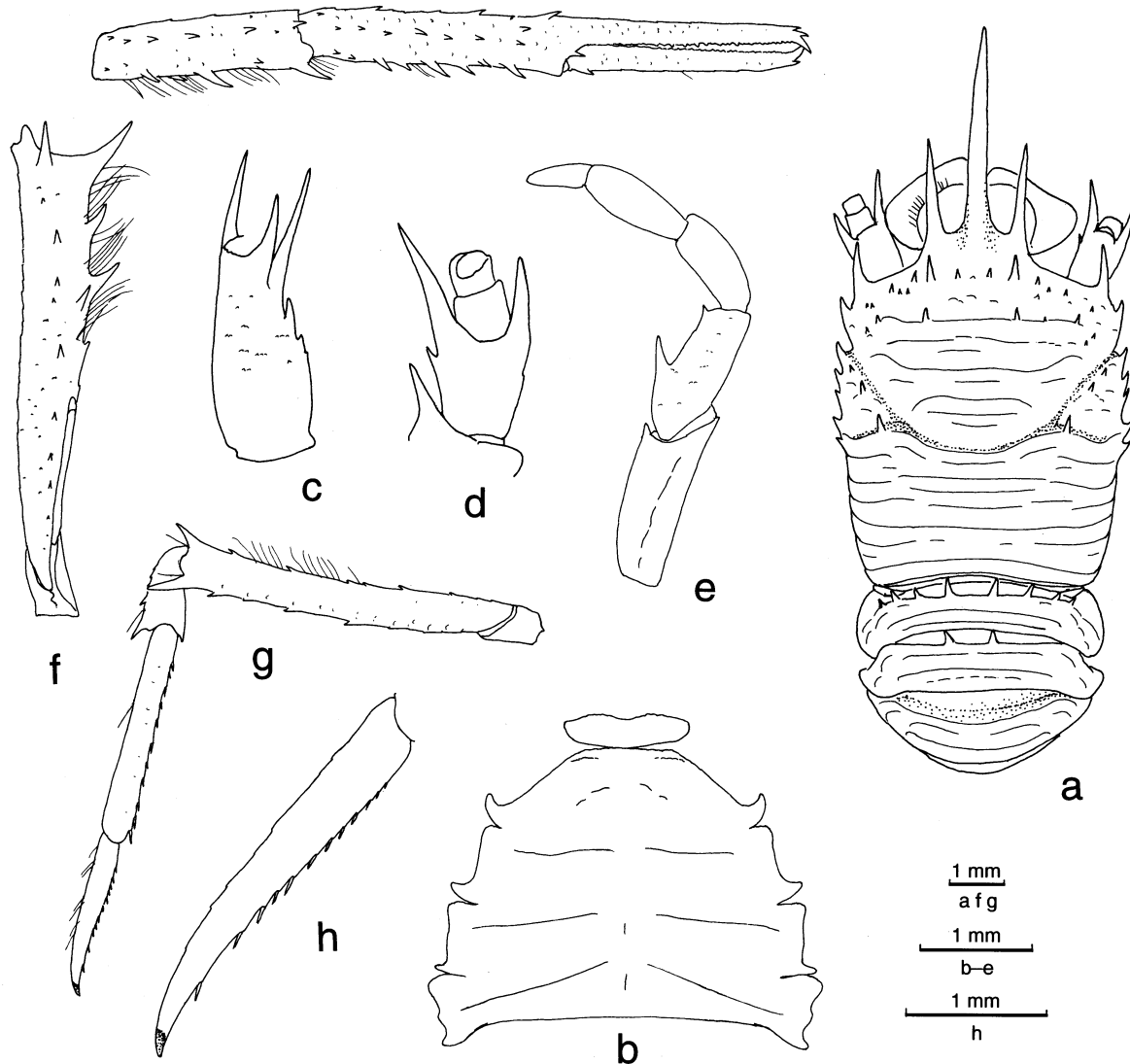


Fig. 40. *Munida disgrega* n. sp., a–e, holotype, ♀, ZMUC CRU-11558; f–h, appendages present in a lot containing holotype and female paratype: a, carapace and anterior part of abdomen, dorsal; b, sternal plastron; c, antennule, left, ventral; d, antenna, left, ventral; e, endopod of Mxp 3, left, setae omitted, lateral; f, P1, left, dorsal; g, walking leg (possibly P2), left, lateral; h, same, dactylus, setae omitted, lateral.

Left P1 and left walking leg (possibly P2) present in a lot containing holotype and female paratype. P1 more convex on ventral surface than on dorsal surface, ventrally feebly squamous, more feebly so on dorsal surface. Merus about as long as carpus and palm combined, and distinctly broader; mesially with strong spines in 2 rows: dorsomesial row of 3 spines (distal-most spine very strong), ventromesial row of 2 spines; row of small dorsal spines and another row of ventral spines. Carpus 3.5 times as long as broad, broader than palm, bearing spines roughly in 3 rows, dorsomesial row of 3 spines larger. Palm slightly longer than

movable finger, bearing 4 rows of spines, dorsomesial row of 5 spines, ventromesial row of 2 spines, middorsal row of 7 spines and lateral row of 4 spines. Fingers not gaping, opposable margins straight, with denticles of irregular sizes. Movable finger with 1 subterminal and 1 basal spine only, fixed finger without spine other than 2 subterminal spines.

Walking leg (possibly P2) relatively slender, covered with feebly scale-like ridges except for dactyli. Merus as long as carapace excluding rostral spine, dorsal crest with row of small spines, distally ending in strong spine, ventral margin distally ending in spine much

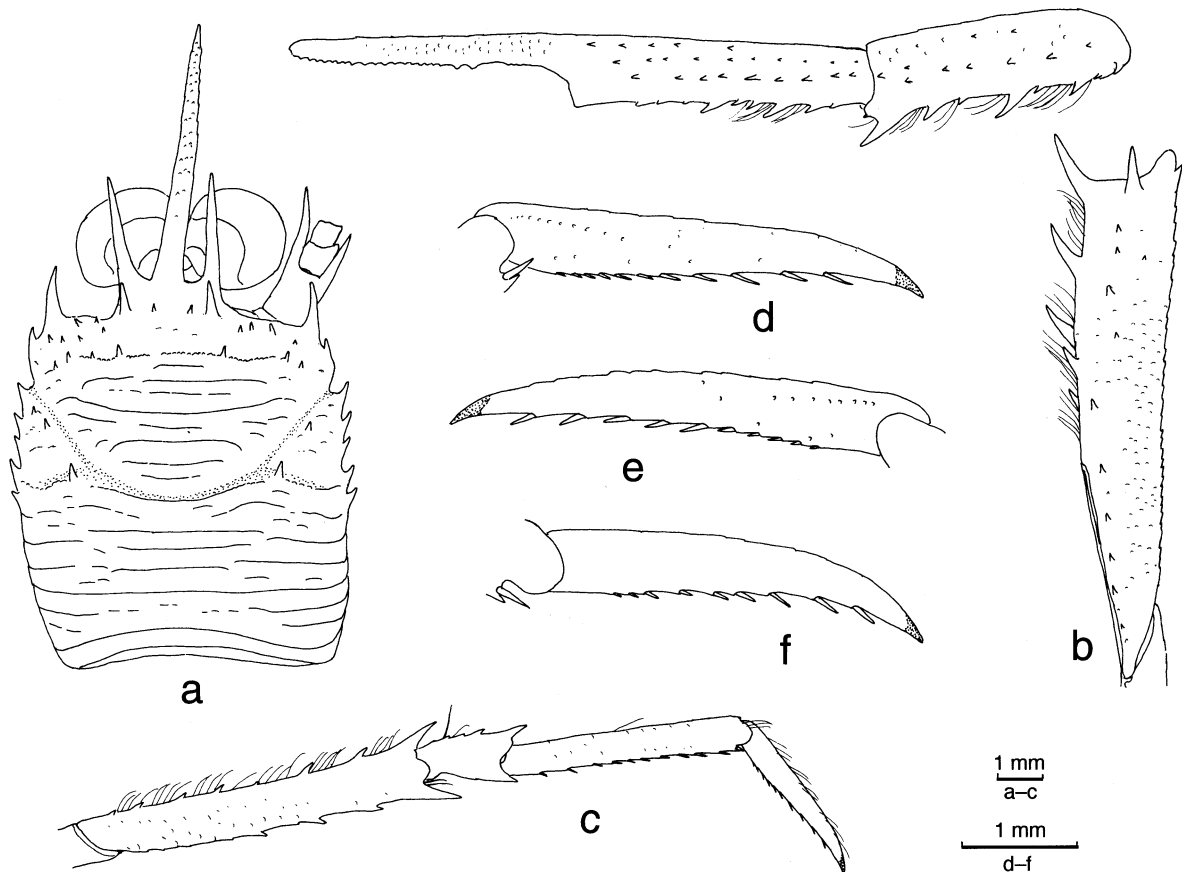


Fig. 41. *Munida disgrega* n. sp., paratype, ♂ (13.0 mm), ZMUC CRU-11553: a, carapace, dorsal; b, P1, right, movable finger missing, distal part of fixed finger broken, dorsal; c, P2, right, lateral; d, same, distal part, setae omitted, lateral; e, P2, distal part, left, lateral; f, P4, distal part, right, setae omitted, lateral.

larger than dorsodistal spine, with 3–4 small spines on distal half. Carpus with dorsal crest bearing 4 spines, distal one sharp and strong, remainder small, ventral margin distally produced into spine smaller than distodorsal one. Propodus 8.5 times as long as broad, ventral margin distally produced into small spine bearing movable spine contiguously distal to it, preceded by 10 spines. Dactylus somewhat curving, flexor margin with 12 movable spines, distal-most located at point 1/5 from distal end.

Paratypes: In the two female specimens including the holotype, from off E Victoria, the right P1 and one walking leg are present but other appendages are lost; in the other female from the same locality, all appendages are missing; and in the male from NE of Flinders Island, the carapace is not well calcified so that the rostral base is somewhat withered, and the sternal plastron is broken.

In the female paratype (13.7 mm), the distal-most

of flexor marginal spines of the dactylus is more remote from the terminal claw on the right P2 (situated at point one-fourth from distal end) than on the other appendages (situated at point one-fifth). The P4 merus is about half that of P2, bearing terminal spine only on each of dorsal and ventral margins.

Remarks: The carapace spination, the long rostrum, the shapes of antennules, antennae, and the number of spines on the abdominal segments 2–3 strongly links the species to *M. chydaea* Ahyong & Poore, 2004 from southeastern and southern Australia and *M. gracilis* Henderson, 1885 from the Tasman Sea W of New Zealand. *Munida disgrega* is distinguished from *M. chydaea* by the following differences: the sternites 4 bears the broad anterior margin and a fewer striae instead of a sub-triangular anterior margin and several striae; the sternite 5 is smooth instead of bearing several striae; the corneal width is two-fifths distance between basal parts of the carapace anterolateral spines instead

of being one-third; the Mxp 3 dactylus is shorter in the new species, if the illustration of *M. chydaea* is correctly depicted; the length being about half that of the propodus instead of being 0.7 times.

The sternal plastron is similar between *M. gracilis* and the new species, but the P2 dactylus in *M. disgrega* is unarmed on the distal fourth or fifth of the flexor margin, instead of being unarmed on the distal third; the P1 is short relative to breadth (the palm is 5.3–5.4 times as long as broad instead of being 8.1–9.3 times as long, and the carpus is 2.6–3.3 times as long as broad instead of being 5.0–6.0 times as long) (see below under *M. gracilis*).

Etymology: From the Latin *disgregus* (= unlike, different) referring to the new species being different from the related species *M. chydaea* Ah Yong & Poore, 2004.

***Munida gracilis* Henderson, 1885**

Fig. 42

Synonymy: see p. 263.

Material:

“Galathea” St. 626, Tasman Sea, 42°10'S, 170°10'E, 610 m, globigerina ooze, 20 Jan 1952: — 36 ♂ (11.4–35.5 mm), 37 ♀ (12.3–36.9 mm), 2 sp. (sex indet., 7.0, 7.0 mm), ZMUC CRU-11633.

Diagnosis: Carapace slightly longer than broad; small spines on epigastric, protogastric and hepatic regions variable in number; pair of epigastric spines directly behind supraocular spines followed by pair of median protogastric spines, lateral protogastric spine near each hepatic region usually distinct; postcervical spine also prominent; a few branchial spines directly behind anterior cervical groove usually very small, occasionally pronounced, rarely absent. No spine on posterior transverse ridge. Front margin somewhat oblique or nearly transverse. Lateral margins subparallel, bearing 7 spines: 2 in front of and remaining 5 behind cervical groove; first prominent, present at anterolateral angle. Rostrum spiniform, nearly horizontal or directed somewhat dorsad, length distinctly more than half that of remaining carapace. Supraocular spines not reaching midlength of rostrum. Sternite 3 wider than anterior border of sternite 4; sternite 4 with a few striae; other sternites smooth. Abdominal segment 2 with 8 spines on anterior stria,

segment 3 with 2 submedian spines, often with additional one lateral to each. Cornea dilated, eyelashes short. Distomesial spine of antennular basal article much longer than distolateral. Distomesial spine of antennal article 1 not reaching end of article 2; distomesial spine of article 2 overreaching end of peduncle. Endopod of Mxp 3 slender, merus with 2–3 spines on flexor margin, distal one small and terminal in position, proximal one prominent, situated at midlength; no spine on extensor margin. P1 slender, subcylindrical, bearing relatively large spines; thickly setose in large specimens, less so in small specimens; carpus 5–6 times as long as broad (slightly less than 5 times as long in large specimens); palm much narrower than merus, 8.1–9.3 times as long as broad, 1.4–1.5 times as long as movable finger; fingers with straight opposable margins fitting each other when closed, each distally ending in incurved sharp spine; occasionally gaping in large males; movable finger mesially with prominent spine at base and 1–3 (usually 1) small subterminal spines, fixed finger laterally with 2–3 (usually 2) subterminal spines only. P2–4 slender, well compressed, bearing relatively large spines; meri and carpi with dense soft plumose setae along dorsal margin; meri with 7–9 dorsal marginal spines on P2–3, 1 or 2 on distal portion on P4, ventral margin with 4 or 5 spines; propodi subequal on P2–3, much shorter on P4, ventral margin with row of 9–13 movable slender spines; dactyli ending in short corneous spine; length more than 2/3 that of propodus, gently curving, flexor margin with row of 12–18 spines along proximal 2/3 of length, unarmed on distal 1/3.

Color in life: Carapace and abdomen grayish red-yellow, with reddish-yellow transverse striae. P1 with reddish yellow spots at both proximal and distal ends of basis, at distal ends of merus, carpus and palm, and at base of movable finger. Smaller specimens with strong reddish-yellow, almost brown patterns on carapace.

Remarks: The specimens of *M. gracilis* collected by the “Kaiyo Maru” from New Zealand waters (Baba, 1974: 381) and now deposited in the collection of Kitakyushu Museum of Natural History, Kitakyushu (ZLKU) were examined: 4 ♂, 6 ♀ from “Kaiyo Maru” St. 29, 43°17.3'S, 177°48.5'E, 386–430 m, mud and pebbles, 14 Jul 1968, ZLKU 15523; 13 ♂, 7 ♀ from “Kaiyo Maru” St. 31, 43°00.1'S, 177°02.5'E, 365 m, mud, 14 Jul 1968, ZLKU 15529.

The spination of the gastric region and lack of

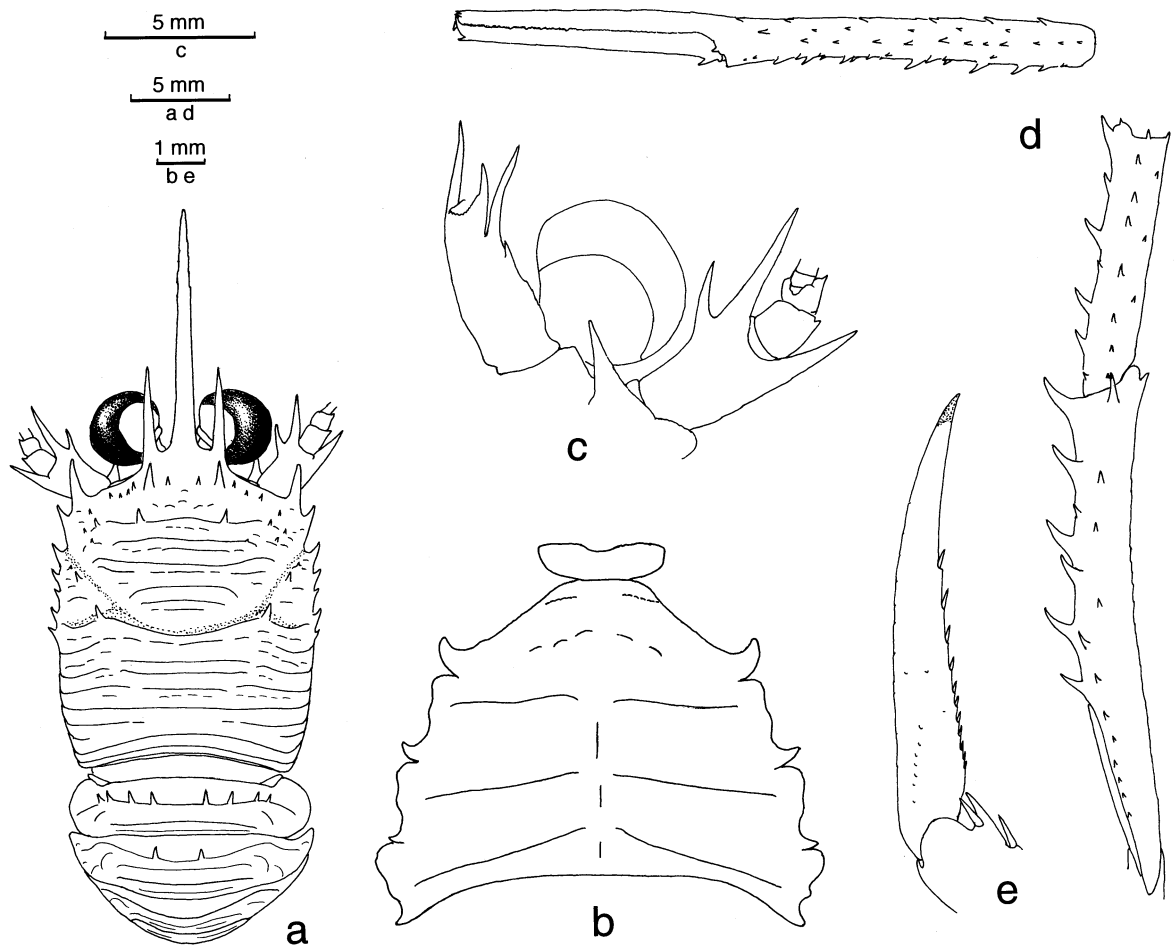


Fig. 42. *Munida gracilis* Henderson, 1885, ♀ (27.5 mm), ZMUC CRU-11633: a, carapace and anterior part of abdomen, dorsal; b, sternal plastron; c, antennule, antenna and ocular peduncle, left, ventral; d, P1, right, setae omitted, dorsal; e, P2, distal part, right, setae omitted, lateral.

hepatic spines as noted by Henderson (the latter is not mentioned by Henderson but distinct in his figure) are discernible even in small specimens, but in larger specimens additional small spines are present on the hepatic, protogastric and lateral mesogastric regions. The terminal spine on the flexor margin of the Mxp 3 merus is consistently present in all the specimens examined and the male syntype (Macpherson, 1994), while absent in one of the two syntypes (Henderson, 1888); this may be due to small size of the latter. Henderson believed the larger of the syntypes to be an adult; however, the largest of the “Galathea” material further grows up to twice the size of it.

Balss (1915) doubtfully identified the specimens in the “Pola” collection from the Red Sea as *Munida gracilis*. This was repeatedly questioned by Lewinsohn (1969) from a viewpoint of zoogeography. The short supraocular spines, spination of the abdominal

segments 2–4, and absence of spines behind the row of epigastric spines, as illustrated in Balss (1915: fig. 1), indicate that the “Pola” specimens will in all probability be referable to *M. babai* Tirmizi & Javed previously known from off Natal (Tirmizi & Javed, 1976). The “Albatross” material reported under *M. babai* from the Philippines and off Hong Kong (Baba, 1988) was transferred to *M. gillii* Macpherson, 1993 by the antennule having a distomesial spine smaller than the distolateral spine and lack of spine on the lateral margin of the fixed finger of the P1 (Macpherson, 1993).

Two females (15.6, 29.2 mm) from “Galathea” St. 626 were reported under *M. gracilis* Henderson to bear rhizocephalan externae, that of the smaller female was identified as *Triangulus* sp., and those of the larger specimen are referred to *Boschmaia munidicola* Reinhard, 1958 (see Lützen, 1985).

This species seems to be gregarious, for considerable numbers of specimens were found in a catch in New Zealand waters (Baba, unpublished).

Range: Previously known from W of New Zealand, in 503 m. "Galathea" St. 626 from which the present material was collected, is very near the type locality of the species. The "Soyo Maru" material from east of New Zealand here included constitutes new locality records. The bathymetric range is now between 365 m and 610 m.

***Munida haswelli* Henderson, 1885**

Synonymy: see p. 264.

Material:

Th. Mortensen's Pacific Expedition 1914–16, New South Wales, 37°05' S, 150°05' E, 30–50 fm (55–92 m), sand and mud, dredge, on board "Endeavour," 30 Sep 1914: — 3 ♂ (9.2–10.9 mm), 1 ov. ♀ (8.0 mm), ZMUC CRU-11069.

Th. Mortensen's Pacific Expedition 1914–16, New South Wales, 36°00' S, 150°20' E, 36–65 fm (66–119 m), sandy mud, on board "Endeavour," 28 Sep 1914: — 1 ov. ♀ (9.0 mm), 1 ♀ (6.0 mm), ZMUC CRU-11071.

Diagnosis: Carapace with secondary striae. Epigastric row of spines followed by row of 4 spines on second transverse stria; several spines on lateral parts of protogastric and mesogastric regions; postcervical spine consistent. Front margin somewhat oblique. Lateral margin with 6 spines, 4 of them behind anterior cervical groove. Rostral spine flanked by widely separated supraocular spines reaching end of cornea. Sternal plastron with arcuate striae; sternite 4 with broad anterior margin contiguous to most part of posterior margin of sternite 3. Abdominal segment 2 with 8 spines. Cornea dilated; eyelashes long, reaching end of cornea. Distomesial spine of antennular basal article well developed, much larger than distolateral. Distomesial spine of antennal article 1 slightly overreaching article 2; distomesial spine of article 2 extending beyond end of antennal peduncle, accompanying distinct mesial marginal spine proximal to it. Mxp 3 merus with 3 spines on flexor margin, extensor margin with tubercular processes, distally ending in distinct spine. P1 carpus fully 3 times as long as broad; movable finger unarmed between basal and 2 subterminal spines, fixed finger with 2 subterminal

spines only. P2–4 dactyli slightly more than half length of propodus, flexor margin unarmed on distal third.

Remarks: The present material was taken from the shelf but previous records are from transitional depths down to 448 m.

In the present specimens, the frontal margin is not strongly oblique as illustrated for the male syntype (Macpherson, 1994: fig. 21c), and the spine proximal to the distomesial spine on the antennal article 2 is less pronounced. The same features are also seen in additional two specimens made available through Yukio Hanamura: 1 ♂ (8.9 mm), 1 ov. ♀ (8.3 mm), New South Wales, 37°43.4'S, 150°06.6'E, 140–142 m, sledge net, 8 Dec. 1996, coll. V. Waddley.

Range: New South Wales, Victoria, Tasmania, and Great Australian Bight; between 46–55 m and 448 m.

***Munida inornata* Henderson, 1885**

Synonymy: see p. 265.

Material:

Th. Mortensen's Pacific Expedition 1914–16, 3 miles SW of Tucuran, Moro Gulf, SW Mindanao, 7°30'N, 123°30'E, 549 m, trawl, 10 Mar 1914: — 1 ♀ (9.8 mm), ZMUC CRU-11604.

Th. Mortensen's Java–South Africa Expedition 1929–30, "Dog" St. 3, Bali Sea, Indonesia, 7°42'S, 114°00'E, 450 m, mud with corals, Sigsbee trawl, 4 Apr 1929: — 2 ♂ (4.7, 7.3 mm), 1 ♀ (9.5 mm), ZMUC CRU-11569.

Kei Islands Expedition St. 50, 5°34'S, 132°25'40"E, 233 m, sand, trawl, 4 May 1922: — 2 ♂ (11.4, 13.0 mm), ZMUC CRU-11437.

Kei Islands Expedition St. 2, 5°32'S, 132°27'E, 220 m, sand, 31 Mar 1922: — 1 ♂ (9.8 mm), 1 ov. ♀ (11.7 mm), ZMUC CRU-11324 (male with rhizocephalan parasite).

Diagnosis: Carapace with numerous transverse striae, armed with 6–7 pairs of epigastric spines, pair directly behind supraocular spines much larger; no postcervical spine. Front margin transverse or slightly oblique. Branchial margin with 5 spines. Rostrum laterally ridged, directed somewhat anterodorsally in straight line, length at least half that of remaining carapace. Supraocular spines subparallel, extremely short, about proximal quarter of rostral spine, rather close to

rostrum. Sternite 3 wider than anterior border of sternite 4; sternites 5 and 6 with a few arcuate striae laterally. Abdominal segment 2 with pair of submedian spines. Ocular peduncles dilated distally, eyelashes long. Terminal spines of antennular basal article subequal. Article 1 of antennal peduncle with ventromesial spine reaching or slightly overreaching end of article 2; article 2 with distomesial spine fully reaching end of peduncle, accompanying small mesial marginal spine proximal to it. Mxp 3 ischium with well-developed spine on flexor distal margin; merus with 2 prominent spines on flexor margin, proximal one larger, dorsal margin with distinct terminal spine. P1–4 squamous on surface. Fixed finger laterally bearing 4 spines, 2 of them subterminal and small, movable finger with 1 subterminal and 1 proximal spine on mesial margin. P2–4 propodi with more than 10 spines on ventral margin; each dactylus relatively long, 4/5 length of propodus, unarmed on distal 1/3 of flexor margin.

Remarks: The smaller male from “Dog” St. 3 bears the rostrum nearly horizontal but its distal portion curves somewhat dorsad. In the other specimens the rostrum is straight, directed somewhat dorsad, not straight horizontal as noted by Macpherson & Baba (1933). Also the front margin of the carapace in the specimens other than those from the Kei Islands is somewhat oblique, not transverse as reported earlier. However, there is no character to separate the present material from those defined earlier (Macpherson & Baba, 1993).

The smaller of the two females of *M. militaris* from the “Challenger” St. 192 off Little Ki [Kei] Island (Henderson, 1888) was referred to this species (Baba & Macpherson, 1991).

The identity of the “Albatross” material from the Sulu Archipelago (Baba, 1988) is questioned because of lack of spines on the abdominal segment 2 (Macpherson & Baba, 1993).

Range: Bali Sea, Kei Islands, Moro Gulf off SW Mindanao, New Caledonia, off Admiralty Islands; 220–549 m.

***Munida japonica* Stimpson, 1858**

Synonymy: see p. 265.

Material:

Th. Mortensen’s Pacific Expedition 1914–16, W of Nagasaki, 32°49’N, 128°14’E, 210 m, sand, trawl,

14 May 1914: — 9 ♂ (5.2–7.8 mm), 4 ov. ♀ (6.0–7.3 mm), 7 ♀ (5.4–10.0 mm), ZMUC CRU-11026.

Th. Mortensen’s Pacific Expedition 1914–16, Sagami Bay, 732 m, swab, 1–7 Jun 1914: — 1 ov. ♀ (12.7 mm), ZMUC CRU-11544.

Th. Mortensen’s Pacific Expedition 1914–16, off Misaki, 146–238 m, swabs, 10–19 Jun. 1914, Th Mortensen: — 1 ♂ (9.3 mm), 1 ov. ♀ (13.8 mm), ZMUC CRU-11025.

Th. Mortensen’s Pacific Expedition 1914–16, Sagami Bay, 549 m, hard bottom, swabs, 28 Jun 1914: — 1 ♀ (8.7 mm), ZMUC CRU-11554.

Th. Mortensen’s Pacific Expedition 1914–16, Okinose, Sagami Bay, 549 m, hard bottom, swabs, 29 Jun 1914: — 2 ♂ (10.0, 17.0 mm), ZMUC CRU-11436.

Th. Mortensen’s Pacific Expedition 1914–16, off NW Kyushu, Japan, 33°41’ N, 128°50’ E, 75 fm (137 m), sand, 17 May 1914: — 1 ♂ (10.2 mm), ZMUC CRU-11004.

Kei Islands Expedition St. 4, 5°31’40”S, 132°26’E, 250 m, sand, trawl, 3 Apr 1922: — 1 ov. ♀ (11.7 mm), ZMUC CRU-11429.

Kei Islands Expedition St. 42, 5°35’S, 132°29’E, 225 m, mud, trawl, 26 Apr 1922: — 1 ♂ (12.9 mm), ZMUC CRU-11433.

Kei Islands Expedition St. 46, 5°47’20”S, 132°13’E, 300 m, clay and mud, 2 May 1922: — 1 ♂ (7.2 mm), ZMUC CRU-11408.

Kei Islands Expedition St. 49, 5°37’10”S, 132°23’E, 245 m, 3 May 1922 — 2 ov. ♀ (16.0, 18.6 mm), ZMUC CRU-11416.

Kei Islands Expedition St. 50, 5°34’S, 132°25’40”E, 233 m, sand, trawl, 4 May 1922: — 1 ov. ♀ (16.5 mm), ZMUC CRU-11438.

Kei Islands Expedition St. 58, 290 m, mud, 12 May 1922: — 1 sp. (12.6 mm), ZMUC CRU-11426.

Diagnosis: Carapace with 12 spines in transverse row usually flanking small median spine on epigastric region; parahepatic spine on each side; branchial region with 5 lateral spines and 1 small spine directly behind midlength of anterior cervical groove; postcervical spine distinct. No scale-like or short stria on intestinal region. Rostrum spiniform. Supraocular spines terminating in midlength of rostrum. Front margin somewhat oblique. Sternal plastron with a few striae on sternite 4, barely rugose elsewhere, without granules on seventh sternite; sternite 4 having anterior margin contiguous to median part of posterior margin of sternite 3. Abdominal segment 2 with 2 spines on each side of anterior transverse stria. Terminal spines of

antennular basal article subequal. Article 1 of antennal peduncle with distomesial spine overreaching article 3; article 2 bearing small mesial marginal spine proximal to prominent distomesial spine overreaching end of peduncle. Mxp 3 merus with distinct spine on extensor distal margin; flexor margin bearing prominent proximal and 1 or 2 smaller distal spines. Fixed finger of P1 as long as palm, bearing 2 proximal spines somewhat dorsal between subterminal and basal spines. P2–4 dactyli having flexor margin with 5–6 movable spines, unarmed usually on distal third.

Remarks: There had been so much confusions over the identification of *Munida japonica* that careful study of the *M. japonica* complex yielded many new findings including many new species (Macpherson & Baba, 1993). Since the type material of Stimpson (1858) was lost and since there was much confusion regarding the identity of *M. japonica*, an ovigerous female (MNHN Ga 2337) from Kagoshima, Japan, was selected as the neotype (Macpherson & Baba, 1993).

The Red Sea material reported by Türkay (1986: 130) was referred to *M. dispar* Macpherson & Baba, 1993; the Madagascar specimens reported by Baba (1990) proved to include two species, *M. limura* Macpherson & Baba, 1993, and *M. sphinx* Macpherson & Baba, 1993. The “Pola” material reported by Balss (1915) and Lewinsohn (1968) under *M. japonica* might be identical with *M. dispar* Macpherson & Baba, 1993. One male from “Pola” St 51 and two males from “Pola” St. 168 in the ZSM collection were examined at the Senckenberg Museum: The three specimens differ from the type description of *M. dispar* in the following, possibly size-related ways: the abdominal segment 2 bears eight spines instead of six spines and the distomesial spine of the antennular basal article is subequal to instead of shorter than the distolateral spine. The material reported by Miyake & Baba (1967c) from the East China Sea proved identical with *M. japonica*. Most of the other specimens so far recorded await reexamination for confirmation of their identity.

One of the five syntypes of *M. militaris* Henderson, 1885 from “Challenger” St. 173, which was identified as *M. japonica* by Baba & Macpherson (1991), is probably referable to *M. sphinx* Macpherson & Baba, 1993. Its sternite 4 bears a broad anterior margin totally contiguous to the posterior margin of the sternite 3, a character to separate *M. sphinx* from *M. japonica*.

Range: Indonesia, Philippines, Taiwan, East China Sea,

and Japan; 98–732 m.

Munida keiensis n. sp.

Fig. 43

Material:

Kei Islands Expedition St. 28, 5°37'S, 132°54'E, 400 m, mud, trawl, 17 Apr 1922: — 1 ♀ (9.4+ mm), holotype, ZMUC CRU-11557.

Diagnosis: Carapace with 4 spines on branchial margin behind cervical groove; 5 pairs of epigastric spines. Front margin nearly straight transverse. Sternite 3 relatively short and broad, sternite 4 with a few short striae, remaining sternites smooth; no carinae and granules on posterior sternites. Abdominal segment 2 with 4 transverse striae, anterior-most stria bearing 4 spines; segments 3 and 4 each with 3 transverse striae. Distomesial spine of antennular basal article slightly smaller than distolateral. Article 1 of antennal peduncle having distomesial spine falling short of end of article 2, distomesial spine of article 2 not reaching end of peduncle. Mxp 3 merus with 2 spines (prominent proximal and small distal) on flexor margin, unarmed on extensor margin. P1 relatively short, with iridescent setae especially thick along mesial margin; merus with prominent distomesial spine; movable finger with proximal spine only on mesial margin; fixed finger with 4 lateral spines, distal 2 subterminal. P2–4 relatively slender, dactyli with 8–9 seta-like spines along whole length of flexor margin.

Description: Carapace with interrupted secondary striae; 5 pairs of epigastric spines; 1 lateral protogastric, 1 postcervical, and 1 anterior branchial spine on each side. Front margin straight transverse. Lateral margins slightly convex, with 6 spines, 2 in front of and 4 behind cervical groove, first anterolateral, well developed, slightly overreaching sinus between rostral and supraocular spines; second smaller than first, subequal to third. Rostrum horizontal, very slightly arched in profile. Supraocular spines subparallel in dorsal view, directed slightly dorsad, ending in midlength of rostrum, far falling short of end of cornea.

Sternite 3 broad relative to length; sternite 4 narrowly contiguous to preceding sternite, bearing a few short striae; following sternites smooth.

Abdominal segment 2 with 4 transverse striae (2 major and 2 secondary), anterior-most stria with 4 spines; segments 3 and 4 each with 3 transverse striae.

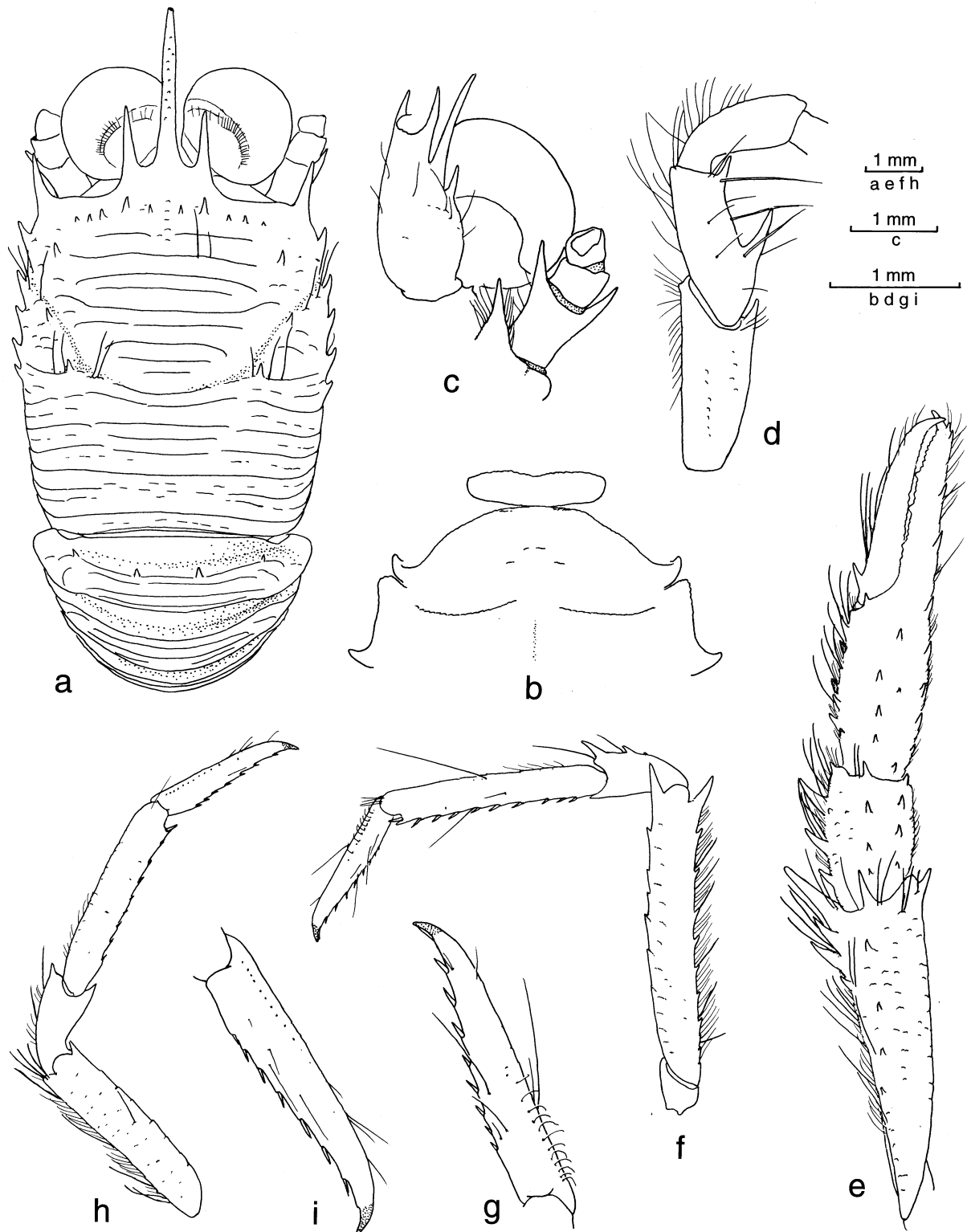


Fig. 43. *Munida keiensis* n. sp., holotype, ♀, ZMUC CRU-11557: a. carapace and anterior part of abdomen, dorsal; b. anterior part of sternal plastron; c. anterior part of cephalothorax, showing antennule and antenna, left, ventral; d. endopod of Mxp 3, distal articles omitted, right, lateral; e. P1, right, dorsal; f. P2, left, lateral; g. same, dactylus, lateral; h. P4, right, lateral; same, dactylus, lateral.

Cornea strongly dilated, width slightly less than half distance between anterolateral spines of carapace; eyelashes short.

Basal article of antennule having distomesial spine somewhat shorter than distolateral. Antennal peduncle having article 1 with distomesial spine not reaching end of article 2, article 2 with distomesial spine subequal to distolateral, reaching end of article 3.

Mxps 3 having ischium with prominent spine on flexor distal margin. Merus with prominent median and smaller distal spines on flexor margin, unarmed on extensor margin.

Left P1 missing. Right P1 1.6 times as long as carapace including rostrum, bearing both coarse iridescent and fine soft plumose setae along mesial margin; spination in dorsal view as illustrated. Merus with prominent distomesial spine. Fingers somewhat longer than palm. Fixed finger with 4 lateral spines including 2 small subterminal. Movable finger with proximal spine only.

P2–4 meri posteriorly diminishing in size; both iridescent and fine plumose setae present densely along whole length of each merus, less so on carpus and proximal half or more of propodus. Meri having dorsal crest with row of small spines and well-developed terminal spine on P2–3, obsolescent spines on P4. Carpi with 3 dorsal spines proximally diminishing on P2–3, unarmed on P4. Propodal ventral margin distally ending in spine-like process, bearing 10 movable slender spines distinct on P2–3, much reduced in size and number on P4. Dactyli ending in curved spine, relatively slender, 0.66 times as long as propodus on P2–3, 0.69 on P4, flexor margin with 9 seta-like spines along whole length on P2–3, 8 on P4, ultimate one nearly contiguous to corneous terminal claw.

Remarks: This species is closely related to *M. albiapicula* Baba & Yu, 1987, *M. erato* Macpherson, 1994, and *M. zebra* Macpherson, 1994, in carapace ornamentation. However, the new species is readily distinguished from the other species by the following: the abdominal segment 2 bears four spines in the new species, eight spines in the others; the distomesial spine of the antennular basal article is somewhat shorter than the distolateral spine in the new species whereas they are subequal in the others; the distomesial spine of the antennal article 1 falls short of the end of the article 2 in *M. keiensis* instead of overreaching as in the articles 1 and 2 in the congeners; the P1 in the new species is shorter, having the movable finger lacking a subterminal spine, which is present in the other species.

The new species keys out in the couplets (see below a key to species) with *M. psamathe* Macpherson, 1994 in having the distomesial spine of the antennal article 2 falling short of end of the article 4. However, the latter species has the Mxp 3 that bears a distinct spine on the extensor distal margin of the merus rather than being unarmed as in the new species, and the abdominal segment 2 bears two submedian spines instead of four spines as in the new species.

Etymology: Named for the type locality.

Munida kuboi Yanagita, 1943

Synonymy: see p. 266.

Material:

Th. Mortensen's Pacific Expedition 1914–16, Sagami Bay, 146–220 m, sand, 6–19 Jun 1914: — 1 ♂ (8.0 mm), ZMUC CRU-11015.

Th. Mortensen's Java–South Africa Expedition 1929–30, “Dog” St. 3, Bali Sea, Indonesia, 7°42'S, 114°00'E, 450 m, mud with corals, Sigsbee trawl, 4 Apr 1929: — 1 ♀ (15.2 mm), ZMUC CRU-11568.

Th. Mortensen's Java–South Africa Expedition 1929–30, “Dog” St. 7, Bali Strait, Indonesia, 8°29'S, 114°40'E, 200 m, mud, 5 Apr. 1929: — 1 ♂ (16.7 mm), ZMUC CRU-11099.

Th. Mortensen's Java–South Africa Expedition 1929–30, “Dog” St. 15, Bali Sea, Indonesia, 7°29'S, 114°49'E, ca 240 m, sand and mud with concretions, Sigsbee trawl, 10 Apr 1929: — 1 ♀ (13.6 mm), ZMUC CRU-11092.

Th. Mortensen's Java–South Africa Expedition 1929–30, “Pickle” St. 25, off Durban, 29°56'S, 31°19'30"E, 412 m, sandy mud, Sigsbee trawl and dredge, 26 Aug 1929: — 2 ♂ (8.2, 10.6 mm), 1 ov. ♀ (10.0 mm), ZMUC CRU-11526.

Diagnosis: Carapace with subparallel lateral margins, relatively long, postorbital carapace length 1.5 times width; 4 pairs of epigastric spines; 1 lateral protogastric spine and 1 postcervical spine on each side. Lateral margins subparallel, bearing 2 spines in front of and 5 spines behind anterior cervical groove. Rostrum slightly arched in profile, distally slightly upturned. Front margin oblique. Sternal plastron nearly without striae; sternite 3 much wider than anterior border of sternite 4. Abdominal segments 2 and 3 with 8 and 2

spines respectively. Eyelashes short. Distomesial spine of antennular basal article smaller than distolateral. Antennal peduncle having article 1 with sharp distomesial spine reaching or slightly overreaching end of article 2, distomesial spine of article 2 overreaching end of article 3 but falling short of end of article 4. Mxp 3 ischium with well-developed spine on flexor distal margin; merus with 2 flexor marginal spines, distal small. P1 slender and subcylindrical, fingers usually gaping proximally in large specimens. P2–4 slender, merus with row of pronounced spines on each of dorsal and ventral margins at least on P2–3, P2–3 dactyli slightly shorter than propodi, somewhat curved, with a few to several inclined seta-like short spines remotely separated from one another on flexor margin, P4 dactylus equally long as propodus, strongly curved, with fewer flexor marginal spines.

Color: A fresh male specimen from the Sea of Japan off Niigata Prefecture in 150 m, recently made available through H. Kato of the Niigata Aquarium, shows that the body and appendages are totally reddish, with thicker red transverse striae on the carapace. The photograph provided by Wu *et al.* (1997: fig. 26H) shows that the rostral spine is much more reddish than elsewhere without thicker red ridges.

Remarks: The smallest of the specimens examined, male from Sagami Bay, has the rostrum nearly horizontal but slightly upturned distally. In the other specimens, however, it is directed somewhat dorsad; the distomesial spine of the antennal article 1 does not reach the end of the article 3, and the distomesial spine of the article 2 falls short of the end of the article 3. These may be due to its small size.

Macpherson & de Saint Laurent (2002) recently described *M. shaula* from La Reunion and Zanzibar, including the material reported under the name of *M. kubo*i by Baba (1900) from Madagascar. *Munida shaula* is characterized by the distomesial spine of the antennal article 2 overreaching the end of the peduncle, instead of only reaching the end of the article 3 in *M. kubo*i. On the basis of its location, one of the present specimens from off Durban was thought to belong to *M. shaula*. However, it bears the spine terminating in midlength of the article 4, not overreaching the peduncle. This feature is also true in specimens of *M. kubo*i from Japan (Sea of Japan, off Niigata, 120 m, 1 ov. ♀, ZLKU 10939; off Yamagata, 94 m, 3 ov. ♀, ZLKU 10936), as well as the present material other than the smallest material from Sagami Bay. The

illustration of *M. kubo*i provided by Wu *et al.* (1997: 117, figs. 25) agrees with the definition by Macpherson & de Saint Laurent (2002). Macpherson & de Saint Laurent (2002) noted that the abdominal segment 3 in *M. shaula* bears 3–4 spines but all the material examined here has two spines.

Range: Off Durban, Bali Sea, between Cebu and Bohol, Illana Bay off SW Mindanao, N of Sulawesi, S of Mindoro, South China Sea off SW Luzon, Taiwan, and the Sea of Japan and Sagami Bay, Japan; 78–450 m.

Munida latior n. sp.

Fig. 44

Material:

Th. Mortensen's Java–South Africa Expedition 1929–30, "Maurice" St. 43, off Tombeau Bay, Mauritius, 238 m, swab, 11 Oct 1929: — 1 ♂ (10.7 mm), 1 ♀ (15.8 mm), ZMUC CRU-11116.

Th. Mortensen's Java–South Africa Expedition 1929–30, "Maurice" St. 47, N of Port Louis, Mauritius, 238 m, mud, corals, Sigsbee trawl, 6 Nov 1929: — 6 ♂ (7.9–18.6 mm; holotype, 11.2 mm), 1 ♀ (12.3 mm), 1 sp. (sex indet., 3.8 mm), ZMUC CRU-11121.

Diagnosis: Carapace with few secondary striae, no scale on intestinal region; dorsal surface with 6 pairs of epigastric spines, 1 hepatic, 1 lateral protogastric, 1 postcervical and 1 anterior branchial spine; branchial lateral margin with 5 spines. Front margin slightly oblique. Sternal plastron with moderate number of striae, sternite 4 anteriorly broad, fitting to large part of posterior margin of sternite 3. Abdominal segment 2 with 6–9 spines. Two terminal spines of antennular basal article subequal. Article 1 of antennal peduncle having distomesial spine barely reaching end of article 3; article 2 with small spine on mid-mesial margin, distomesial spine overreaching end of peduncle. Mxp 3 merus with 3 flexor marginal spines, proximal strongest; extensor margin with small distal spine. Movable finger of P1 mesially with 2–3 spines somewhat dorsal in position between 1 proximal and 2 subterminal spines; fixed finger with 3 lateral spines other than 2 subterminal spines. P2–4 dactyli with seta-like spines on proximal 3/5 of flexor margin, and another spine at base of corneous claw.

Description of holotype: Carapace slightly longer than

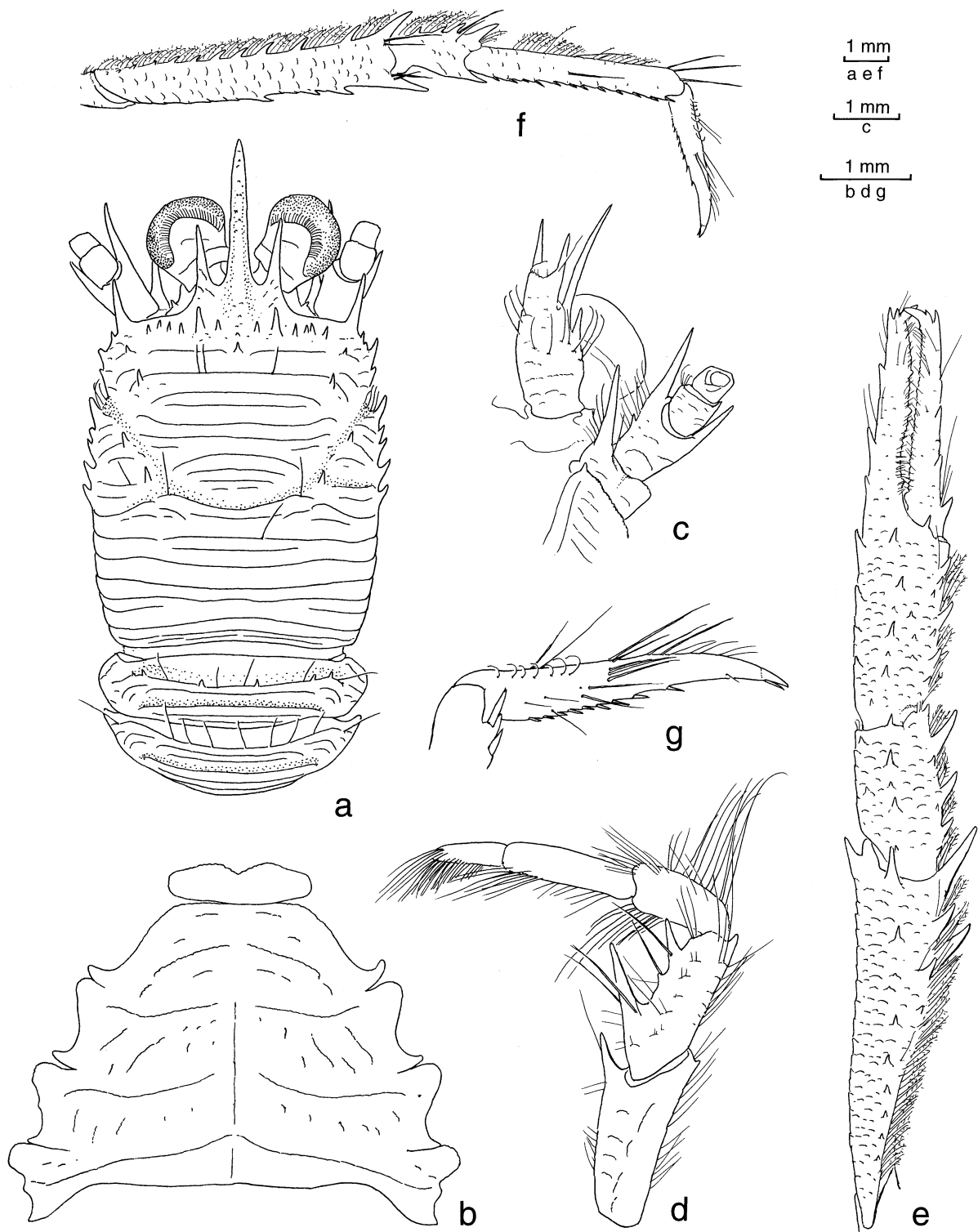


Fig. 44. *Munida latior* n. sp., holotype, ♂, ZMUC CRU-11121: a, carapace and anterior part of abdomen, dorsal; b, sternal plastron; c, anterior part of cephalothorax, showing antennule and antenna, left, ventral; d, endopod of Mxp 3, left, lateral; e, P1, left, dorsal; f, P2, right, lateral; g, same, dactylus, lateral.

broad; dorsal surface with few secondary striae; row of 6 pairs of epigastric spines followed by median spine flanked by small hepatic spine; 1 lateral protogastric, 1 postcervical and 1 anterior branchial (dorsal) spine on each side. No scale on intestinal region. Lateral margins subparallel, first spine anterolateral, strong, divergent anterolaterally, reaching sinus between rostral and supraocular spines, followed by 3 or 4 small spines in front of and 5 spines behind anterior cervical groove. Front margin somewhat oblique. Rostral spine about half as long as remaining carapace, distally somewhat curving dorsad. Supraocular spines somewhat divergent anterolaterally, length barely half that of rostral spine. Pterygostomial flap with scattered small spines, anteriorly ending in small spine.

Sternal plastron with striae moderate in density. Sternite 4 relatively broad, contiguous to most part of posterior margin of sternite 3. No granules on lateral part of sternite 7.

Abdominal segment 2 with 6 spines on anterior ridge; 5 striae on segment 2, 6 on segment 3.

Two terminal spines of antennular basal article subequal (lateral one slightly shorter than mesial one). Antennal article 1 with sharp distomesial spine barely reaching end of article 3. Article 3 with distomesial spine distinctly overreaching end of peduncle, distolateral spine slightly overreaching end of article 3, mesial margin with small spine at midlength.

Mxp 3 ischium with flexor distal marginal spine very strong, extensor distal marginal spine small. Merus 1.2 times as long as ischium, flexor margin with 3 spines, proximal one prominent, median often smaller than distal one; extensor margin with small distal spine. Carpus unarmed. Dactylus half as long as propodus.

P1 finely squamous, moderately spinose; spination as illustrated. Fixed finger with 3 lateral marginal spines other than 2 subterminal spines. Movable finger with 2 spines slightly dorsal in position between 1 proximal and 2 subterminal spines.

P2–4 somewhat squamous on surface except for dactyli, bearing plumose setae along dorsal margins of meri, carpi, proximal half of propodi. P2 reaching end of P1 palm. P2–3 meri with row of spines on entire length of dorsal margin, and on distal half of ventral margin, distal spine on ventral margin strongest. Carpi with 4 dorsal marginal spines and 1 distoventral spine. Each propodus with 9–13 movable spines on ventral margin. Dactylus slightly less than 2/3 length of propodus, somewhat curving on P2, more strongly so on P3–4, flexor margin with 7–8 seta-like inclined spines on proximal 3/5 of length, and another seta-

like spine present at base of corneous terminal claw.

Remarks: The new species is closely related to *M. nesaea* Macpherson & Baba, 1993 and *M. sphinx* Macpherson & Baba, 1993 in the ornamentation of carapace and abdomen. *Munida latior* differs from *M. nesaea* in having 1) more numerous striae on the carapace and sternal plastron, 2) the sternite 4 having the anterior border much wider, not narrowed as in *M. nesaea*, 3) the movable finger of the P1 bearing two subterminal spines, not a single spine as in *M. nesaea*. *Munida latior* and *M. sphinx* are so similar that it may not be unlikely that they are identical, also on the basis of its location. However, I believe the following differences are consistent. In *M. latior*, the supraocular spines are apparently more remote from the rostral spine (the distance between the sinus formed by rostral and supraocular spines being distinctly more than half breadth of the cornea, instead of being less than that in *M. sphinx*), and the P2–4 dactyli bears a seta-like spine at the base of the terminal claw, which is absent in *M. sphinx*.

The smallest specimen (sex indeterminate) has the antennal peduncles with a very short distomesial spine on the article 1, a very short rostrum, and the P2–4 bearing fewer spines (five each on the propodus and dactylus). However, the spination of both the carapace and the P1 fingers, the shape of the sternite 4, and the unarmed dactylar flexor margin of the P2–4 on the distal two-fifths of length, are as in the large specimens.

Etymology: From the Latin *latior* (= broader), in reference to the sternite 4 anteriorly much broader than that of *Munida nesaea* Macpherson & Baba, 1993, a close relative of this species.

***Munida major* Baba, 1988**

Synonymy: see p. 267.

Material:

“Galathea” St. 443, Mindanao Sea, 8°48’N, 124°09’E, 1510 m, mud, 16 Aug 1951: — 3 ♂ (18.7–25.2 mm), 1 ♀ (23.3 mm), ZMUC CRU-11474.

Diagnosis: Carapace with 2 strong epigastric spines each directly behind ocular peduncles, occasionally with another small or obsolescent spine either mesial or lateral to it. Branchial lateral margin with 5 spines, third one occasionally obsolete. Supraocular spines stout, barely half as long as rostral spine. Sternite 3

broad relative to length; sternite 4 anteriorly narrowed; no carinae on lateral part of posterior sternites. Abdominal segments 2 and 3 with 6 and 2 spines respectively. Cornea dilated, eyelashes short. Basal article of antennule with distolateral spine somewhat larger than distomesial one. Antennal peduncle having article 1 with strong distomesial spine, article 2 with 1 (rarely 2) small spine proximal to distomesial spine. Mxp 3 ischium with small spine at flexor distal margin; merus with prominent median and very small distal spines on flexor margin, distal one occasionally absent. P1 relatively massive, with dense plumose setae, mesially in particular; movable finger unarmed on mesial margin; fixed finger with 2 subterminal spines only. P2–4 relatively slender; each carpus having dorsal margin ending in strong spine, bearing 1 small spine at midlength; propodal ventral margin ending in small fixed spine flanked mesio-laterally by movable spine; each dactylus gently curving, proportionately broad, flexor margin with 7–12 small spines rather distantly separated from one another on whole length.

Color in life: Body reddish, with faint blue-red tinge.

Remarks: The terminal spines of the antennular basal article are not subequal as described originally; the distolateral spine is larger, a fact to be emended here by examination of the present material as well as by reexamination of the type material. No additional characters of significance were noted.

Range: Sulu Sea, E Mindanao Sea, and S of Luzon; 906–1660 m.

***Munida microps* Alcock, 1894**

Fig. 48a

Synonymy: see p. 268.

Material:

“Galathea” St. 324, Andaman Sea off N Sumatra, 06°06’N, 96°00’E, 1130 m, globigerina ooze, 9 May 1951: — 1 ♂ (21.3 mm), ZMUC CRU-11507.

Diagnosis: Carapace without secondary striae; 4 pairs of epigastric spines, median pair occasionally absent, lateral-most pair very small and obsolescent; 1 lateral protogastric, 1 postcervical and 1 anterior branchial spine on each side. Lateral margin with 2 large spines in front of anterior cervical groove (second slightly smaller), 5 small ones behind it. Supraocular spines

divergent anterolaterally, less than half as long as rostral spine. Sternite 3 distinctly wider than anterior border of sternite 4; no striae on sternites 4–5. Abdominal segment 2 with 2 transverse striae, anterior stria with 8 spines. Cornea relatively small. Antennular basal article extending far beyond cornea, distomesial spine much smaller than distolateral. Article 1 of antennal peduncle with distomesial spine barely reaching end of article 2; article 2 with distomesial spine slightly overreaching peduncle. Mxp 3 ischium with small spine on flexor distal margin; merus with 2 spines on flexor margin, distal one terminal, small. P1 with dense plumose setae; movable finger with proximal mesial marginal spine only, fixed finger with 2 subterminal and 2 or 3 other spines on lateral margin. P2–4 with plumose setae along dorsal margin except for dactyli, propodal ventral margin ending in small fixed spine contiguously supporting movable spine, bearing another smaller spine mesial to it, preceded by 8 slender movable spines on P2–3, 6 on P4; dactyli slender, distally sharp, slightly curving on P2–3, more distinctly curving on P4; flexor margin with inclined seta-like spines (12 on P2–3, less numerous on P4), with distal-most one located at point 1/5 from end.

Remarks: The present specimen perfectly agrees with a male (cl 28.0 mm) collected by the “Investigator” from the Andaman Sea in 480–640 fm (878–1170 m), now in the collection of the National Museum of Natural History, Smithsonian Institution.

At first Alcock (1894) separated “*lasiocheles*” from *M. microps* as a “variety” (= subspecies), both collected from the same locality, but later he questioned that it might be a dimorphic male of *M. microps* (see Alcock, 1901). Although Haig (1973) considered it a distinct species, it was my conclusion that *M. lasiocheles* is not different from *M. microps* (see Baba, 1988).

Macpherson (1994) mentioned that the John Murray material reported by Tirmizi (1966) differed from his material from the Philippines, New Caledonia and Chesterfield Islands: the John Murray material from Maldives in its smaller cornea and longer antennular basal article, features that he believed of specific importance.

Munida asprosoma, *M. endeavourae* and *M. isos*, three of the seven new species described by Ahyong & Poore (2004b) from the eastern Australia, are close to *M. microps*. The larger one of the two specimens reported by Haig (1973) under *M. microps* was synonymized with *M. endeavourae* (see Ahyong & Poore, 2004b). As was recommended by Macpherson

(2002), the specimens previously reported under *M. microps* require verification. Ahyong & Poore (2004b) suggested that Macpherson's (1994) *M. microps* probably represents an undescribed species and that Baba' (1994) *M. microps* may be referable to *M. asprosoma*. The "Albatross" specimen (Baba, 1988) may be a different species, because of bearing two spines on the abdominal segment 2.

Range: Arabian Sea, Maldives, off Colombo, Andaman Sea, Sulawesi, South China Sea off SW Luzon, New Caledonia, Chesterfield Islands, and Vanuatu, Fiji and Tonga; between 495–498 m and 1210–1260 m.

***Munida militaris* Henderson, 1885**

Synonymy: see p. 268.

Material:

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E, 345 m, mud, trawl, 10 May 1922: — 1 ♂ (19.7 mm), ZMUC CRU-11451.

Diagnosis: Carapace with 10 epigastric spines; lateral protogastric, postcervical and anterior branchial (dorsal) spines on each side. Supraocular spines stout, divergent distolaterally, barely overreaching cornea. Abdominal segment 2 with 8 spines. Ocular peduncles with short eyelashes. Antennular basal article with subequal terminal spines. Antennal peduncle having article 1 with strong distomesial process nearly reaching end of article 2; article 2 with distomesial spine overreaching article 4, with 1–2 accompanying small spine proximal to it. Mxp 3 merus with 2 flexor marginal spines, distal one smaller. P1 merus with strong distomesial spine; fingers distally incurved, with proximal spine only. P2–4 dactyli relatively massive, distally curving, ending in corneous claw, flexor margin with 8–9 movable spines, distal-most situated at proximal end of corneous distal claw.

Remarks: The specimen agrees well with the lectotype selected by Baba & Macpherson (1991), differing only in that the antennal peduncle has the article 2 with a distomesial spine stronger than that of the lectotype, overreaching the article 4 and one or two additional small spines proximal to it, and the P1 merus bears a pronounced distomesial spine.

Range: Ambon, Kei Islands, Queensland, Vanuatu,

New Caledonia, and SW Pacific (Combe Bank, Wallis Islands, Field Bank, Bayonnaise Bank), and Fiji Islands; 183–750 m.

***Munida nesaea* Macpherson & Baba, 1993**

Synonymy: see p. 269.

Material:

Th. Mortensen's Pacific Expedition 1914–16, W of Goto I., Kyushu, Japan, 32°49'N, 128°14'E, 210 m, sand, 14 May 1914: — 1 ♀ (7.9 mm), ZMUC CRU-11027.

Diagnosis: Carapace with moderate number of striae; no scale-like stria on intestinal region; epigastric region with 6 pairs of spines; 1 lateral protogastric and 1 postcervical spine on each side. Sternal plastron with numerous arcuate striae. Segment 2 of abdomen with 4 pairs of spines on anterior stria; 6 (3 + 3) striae on segment 2; 8 (4 + 4) striae on segment 3. Distolateral and distomesial spines of antennular basal article subequal. Distomesial spine of antennal article 1 reaching end of article 3, distomesial of article 3 overreaching article 4. Mxp 3 merus with 2 flexor marginal spines, distal small; extensor margin with very small distal spine. Movable finger of P1 with 1 proximal and 1 subterminal spine (interspersed by median spine in the type); fixed finger with 4 lateral marginal spines including 2 subterminal; P2–4 dactyli relatively slender, unarmed on distal 1/3 of length.

Remarks: The P2–5 are missing but this specimen can be identified as *M. nesaea*. The following characters displayed by the specimen examined are considered here as variations: an additional spine present on the anterior branchial region directly behind the middle of the anterior cervical groove; the movable finger of the P1 unarmed between the proximal and subterminal spines on the mesial margin.

Range: Previously known from the Philippines in depths between 178–205 m and 804–812 m. The range is now extended north to Japan.

***Munida notialis* n. sp.**

Fig. 45

Material:

"Galathea" St. 616, Milford Sound, SW New Zealand,

44°37'S, 167°53'E, 290 m, mud, 19 Jan 1952: —
94 ♂ (13.1–36.5 mm; holotype, 28.6 mm), 34 ♀
(14.8–25.5 mm), ZMUC CRU-11626.

Diagnosis: Carapace with 2 pairs of epigastric spines, mesial pair directly behind supraocular spines larger; pair of metagastric spines; each anterior branchial region with small spine behind midlength of anterior cervical groove; 4 spines on mid-transverse stria (postcervical spine on each side flanking 2 submedian spines). Branchial margin with 5 spines. Rostral spine about 1/3 length of remaining carapace; supraocular spines much shorter, barely reaching end of cornea. Front margin nearly transverse. Sternal plastron with granulate striae, lacking granules and carinae on posterolateral portions; sternite 4 widely contiguous to posterior margin of sternite 3. Abdominal segments 2, 3, 4 with 4, 4, 2 spines respectively on anterior striae, segment 4 with additional 2 submedian spines on median stria. Ocular peduncles with dilated cornea more than 1/3 distance between anterolateral spines of carapace, eyelashes very short. Distomesial spine of antennular basal article much longer than distolateral. Antennal peduncle relatively small, article 1 fused with cephalothorax, laterally granulate, basally broad in dorsal view, ending in small spine overreaching article 2 but not reaching midlength of article 3; article 2 with small distolateral spine, with or without distomesial spine (if present, much smaller than distolateral). Mxp 3 merus having flexor margin with single spine proximal to midlength, extensor margin ending in strong spine, with accompanying small spine distantly proximal to it; carpus as long as propodus, with tubercle-like small spines on extensor surface; propodus distally expanded; dactylus very slender, slightly longer than propodus. P1 merus strongly carinate dorsally in proximal half; carpus twice as long as broad; movable finger without spine between basal and subterminal spines on mesial margin; fixed finger with subterminal spine only on lateral margin. P2 merus as long as carapace excluding rostrum; P2–4 dactyli curving, flexor margin with 13–14 very small seta-like spines on P2, 8 on P3, 5–7 on P4, at most on proximal 2/3, unarmed on distal 1/3 or more, length much more than half that of propodus.

Description of holotype: Carapace, excluding rostrum, longer than broad; dorsal surface with feebly granulate transverse striae. Epigastric region with 2 pairs of spines, median pair directly behind supraocular spines larger; metagastric region with pair of small spines.

Anterior branchial region with small dorsal spine directly behind midlength of anterior cervical groove. Four spines on mid-transverse ridge: each postcervical spine lateral to 2 submedian spines. Lateral margins subparallel; first (anterolateral) spine nearly reaching sinus between rostral and supraocular spines, followed by 1 (right) or 2 (left) small spines equidistant between first spine and anterior cervical groove; branchial margin with 5 spines. Rostrum spiniform, finely tuberculate dorsally, slightly arched in profile, ending in dorsoventrally bifurcate tip (presumably broken and regenerated), length less than half that of remaining carapace. Supraocular spines barely overreaching cornea, curving more upward than rostral spine.

Sternal plastron with arcuate granulate striae. Sternite 3 having anterior margin tuberculate, with 2 submedian lobes anteriorly produced into short spine and laterally excavated. Sternite 4 with broad anterior margin nearly contiguous to posterior margin of preceding sternite. Sternite 7 without granules and carinae.

Abdomen having segment 2 with 5 transverse striae, segment 3 with 6 striae; anterior-most stria of segments 2, 3, 4 with 4, 4, 2 spines respectively; median stria of segment 4 with additional 2 submedian spines.

Cornea dilated, greatest width more than 1/3 distance between anterolateral spines of carapace; eyelashes very short.

Basal article of antennule with distomesial spine strong, much longer than distolateral spine, ventrally bearing tubercle-like small spines of irregular sizes; distal one of two lateral spines relatively short, nearly as long as proximal spine. Article 1 of antennal peduncle fused with cephalothorax, laterally granulate, broad distal margin ending in small spine overreaching article 2, not reaching midlength of article 3. Article 2 with small distolateral spine, distomesial margin unarmed. Articles 3 and 4 unarmed.

Mxp 3 ischium with small spine on each of extensor and flexor distal margins. Merus fully 1.5 times as long as ischium; lateral face with a few tufts of iridescent setae near median part of flexor margin; flexor margin with well-developed spine slightly proximal to midlength; extensor margin distally ending in strong spine, bearing small tubercle-like spine at point 1/3 from distal end. Carpus relatively slender, nearly as long as propodus, bearing tubercle-like spines along extensor margin. Propodus expanded and lobe-like on flexor distal margin. Dactylus very slender, length more than that of propodus.

P1 sqmamous, equally broad on merus, carpus and

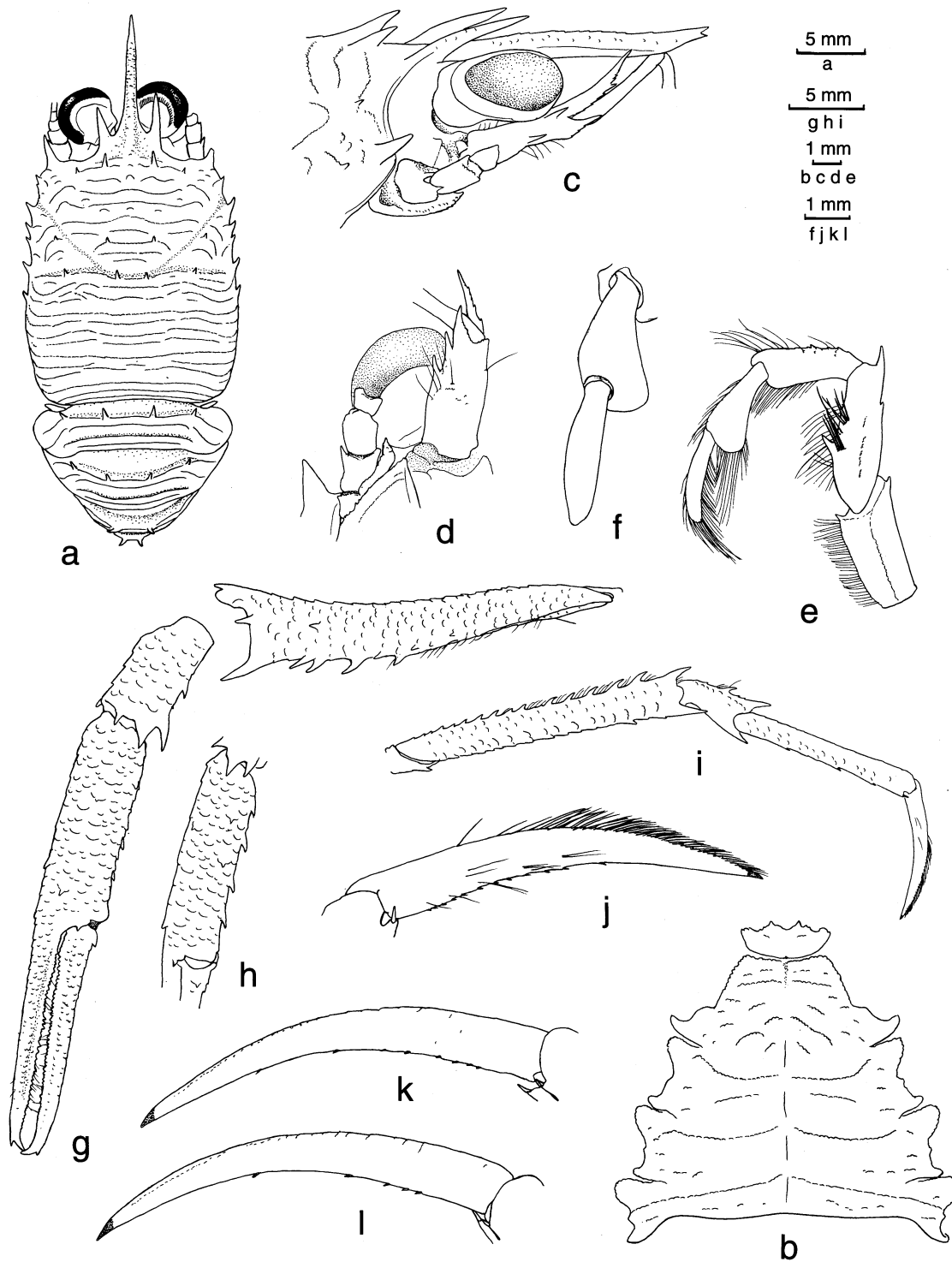


Fig. 45. *Munida notialis* n. sp., holotype, ♂, ZMUC CRU-11626: a, carapace and anterior part of abdomen, dorsal; b, sternal plastron; c, anterior part of cephalothorax, showing anterior part of carapace including rostrum, ocular peduncle, antennule and antenna, right, lateral; d, same, rostrum omitted, right, ventral (slightly lateral); e, endopod of Mxp 3, left, lateral; f, distal articles of same, setae omitted, dorsal; g, P1, right, dorsal; h, palm of same, dorsomesial; i, P2, right, lateral; j, same, dactylus, lateral; k, P3 dactylus, setae omitted, lateral; l, P4 dactylus, setae omitted, lateral.

palm. Merus relatively long, slightly more than carpus and palm combined, having sharp dorsomesial crest on proximal half with row of mesial spines subparalleling another row of smaller spines dorsolateral to it; lateral margin with terminal spine only; dorsal surface with a few distal spines somewhat lateral to midline. Carpus about twice as long as broad, terminal and subterminal spines on mesial margin not pronounced, subequal in length. Palm slightly shorter than movable finger, mesially with 2 rows of a few spines, one dorsomesial, one ventromesial, laterally with a subterminal spine accompanying another small spine mesial and distal to it. Fingers not gaping. Movable finger with 1 subterminal and 1 basal spine only; Fixed finger without spine other than subterminal spine.

P2–4 relatively slender, squamous except for dactyli. Meri with row of proximally diminishing spines on dorsal crest, ventral margin distally ending in strong spine much larger than dorsodistal spine, with 1–3 small spines proximal to it. Carpus with dorsal crest distally ending in sharp spine as large as distodorsal spine of merus, bearing smaller spine at midlength, and a few very small spines between distodorsal and median spines and proximal to median spine, ventral margin distally produced into strong spine smaller than distodorsal one. Propodus 8.7 times as long as broad, ventral margin with rather reduced movable spines: 3 or 4 on P2, 3 or 5 on P3, 3 on P4. Dactylus somewhat curving on P2, more strongly so on P3 and P4, extensor margin with stiff setae on distal half, flexor margin with 13 (right) or 14 (left) reduced movable spines on P2, 8 on P3, 5 (right) or 7 (left) on P4, length about 0.7 that of propodus. P2 reaching midlength of P1 palm, merus as long as carapace excluding rostrum.

Variations: Carapace spination rather constant, but branchial dorsal spines often obsolescent. Article 2 of antennal peduncle with very small distomesial spine often obsolescent or absent.

Parasites: One male from “Galathea” St. 616, was reported under the name *Munida subrugosa* (White) to be infested by a rhizocephalan *Tortugaster discoidalis* Lützen, 1985.

Remarks: The species is very close to *M. gregaria* (Fabricius, 1793) in the carapace spination and the shapes of sternal plastron, antennule and antenna. The abdominal segment 3 bears two spines on the median stria other than a pair of spines on the anterior-most

transverse stria in *M. notialis*, whereas no spine on the median stria in *M. gregaria*; the basal article of antennule bears two lateral spines other than two terminal spines in *M. notialis*, whereas the proximal one of these lateral spines are usually absent in *M. gregaria*; and the Mxp 3 merus bears a distinct spine on the flexor median margin and a strong spine on the extensor distal margin in *M. notialis*, instead of being unarmed in *M. gregaria*. These characters of *M. gregaria* are clearly shown by Hendrickx (2003) and also confirmed by examination of specimens in the ZLKU collection: 8 ov. ♀ (17.5–19.5 mm), 5 ♀ (16.6–20.9 mm), “Kaiyo Maru” St. 19, 44°34.9’S, 172°37.5’E, 138–126 m, sand, 1 Jul. 1968, coll. K. Baba, ZLKU 15377 (Fig. 46a, c, f). The Mxp 3 in small specimens and the juvenile phase of *M. gregaria* bears foliaceous endopods as shown by specimens at hand (4 ♂, 11.7–13.0 mm), W of Penas Bay, 46°S, 76°W, Chile, surface, coll. O. Tabeta, ZLKU, no reg. no.) (Fig. 46b, d, e), whereas it is not strongly so in small specimens of *M. notialis*.

Etymology: From the Latin *notialis* (= southern), referring to the geographical distribution of the species.

Munida pilorhyncha Miyake & Baba, 1966

Synonymy: see p. 271.

Material:

Kei Islands Expedition St. 51, 5°46’30”S, 132°51’E, 348 m, mud, trawl, 7 May 1922: — 1 ♂ (20.0+ mm), 1 ov. ♀ (27.7 mm), ZMUC CRU-11585.

Diagnosis: Carapace with numerous transverse striae; 5 pairs of epigastric spines; 1 protogastric, 1 anterior branchial (dorsal), 1 postcervical spine on each side. Lateral margin with 2 spines in front of and 5 smaller spines behind anterior cervical groove. Rostrum arched in profile, dorsally bearing long, coarse, iridescent setae. Front margin oblique. Supraocular spines somewhat divergent anterolaterally, reaching end of cornea. Arcuate striae present on sternite 3 and 4, and even on sternite 5 but less numerous, placed laterally. Abdominal segment 2 with 8 spines. Cornea dilated, eyelashes of moderate length. Two terminal spines of antennular basal article subequal. Article 1 of antennal peduncle with distomesial spine slightly overreaching end of article 2; distomesial spine of article 2 reaching end of peduncle. Mxp 3 merus with 2–3 spines. P1

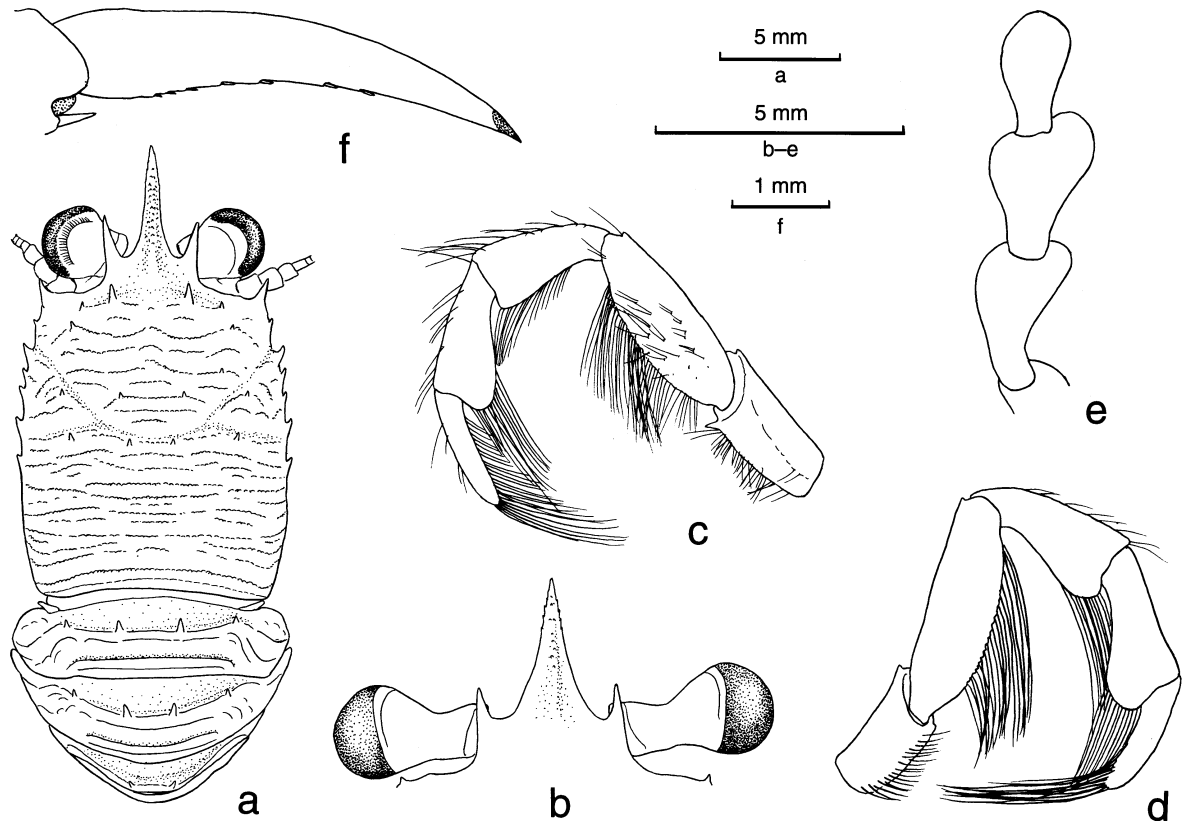


Fig. 46. *Munida gregaria* (Fabricius, 1793), a, c, f, ov. ♀ (18.1 mm), ZLKU 15377; b, d, e, ♂ (12.8 mm) from west of Penas Bay, Chile: a, carapace and anterior part of abdomen, dorsal; b, anterior part of carapace including ocular peduncles, dorsal; c, endopod of Mxp 3, left, lateral; d, same, right, lateral; e, distal articles of same, setae omitted, dorsal; f, P2 dactylus, right, setae omitted, lateral.

with numerous sharp spines, densely covered with short soft plumose setae, iridescent setae moderate in density; movable fingers with 5–10 dorsal spines along mesial margin, in addition to 1 proximal and 2 subterminal spines on mesial margin. P2–4 with both plumose and iridescent setae along dorsal margin; meri with ventral spines much larger and less numerous than dorsal marginal spines P2–3, almost spineless on P4; propodi broad relative to length; dactyli slender, slightly curving distally on P2–3, strongly so on P4, flexor margin with 5–6 movable spines on P2–3, 3–4 on P4; unarmed on distal 1/3.

Remarks: As suggested by the specific name, this species is unique in having long setae on the dorsal surface of the rostrum. The spination of the P1 is pronounced as noted for the “Albatross” Philippine specimens (Baba, 1988). The dactylus-propodus ratio of the P1 in the present material is much greater than that of the type material; the movable finger is about as long as, or, slightly longer than the palm.

The coloration of a fresh specimen was provided

by Miyake (1982: pl. 50: fig. 3) and Wu *et al.* (1997: fig. 35C).

Range: Kei Islands, South of Mindoro, South China Sea off SW and NW Luzon, Taiwan, and Japan in Tosa Bay and off SW Kyushu; between 200–250 and 340–366 m.

Munida prominula Baba, 1988

Synonymy: see p. 271.

Material:

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E, 345 m, mud, trawl, 10 May 1922: — 2 ♂ (14.2, 16.8 mm), ZMUC CRU-11431.

Diagnosis: Carapace dorsally with 5 pairs of epigastric spines, mesial second pair prominent; lateral protogastric and postcervical spines small but distinct. Lateral margin with a few small spines in front of and

5 spines behind anterior cervical groove. Front margin slightly oblique. Sternal plastron without striae; sternite 3 broader than anterior border of sternite 4. Abdominal segments 2 and 3 with 8 and 2 spines respectively. Distomesial spine of antennule smaller than distolateral. Article 1 of antennal peduncle with small distomesial process; article 2 having distomesial spine overreaching article 4, accompanying another spine proximal to it. Mxp 3 ischium with small spine on flexor distal margin; merus with 2 spines on flexor margin, distal smaller; extensor margin unarmed. P2–4 meri having ventral margin with row of pronounced spines, dorsal margin with row of small spines on P2, a few small spines on P3 and none on P4; each propodus with 11–14 movable spines on ventral margin; each dactylus with row of inclined movable spines, unarmed on more than distal 1/3 of length.

Remarks: The specimens differ from the type in the antennal peduncle: the article 1 in the present specimens bears a blunt process at the distomesial margin instead of a sharp one as in the type; the article 2 lacks a mesial spine proximal to the prominent distomesial spine as present in the type. These differences are considered here as variations.

Range: Taiwan, S of Mindoro, N of Sulawesi, and Kei Islands; between 320–337 m and 448–466 m.

***Munida punctata* Macpherson, 1997**

Synonymy: see p. 272.

Material:

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E, 345 m, mud, trawl, 10 May 1922: — 1 ov. ♀ (15.2 mm), ZMUC CRU-11562.

Diagnosis: Carapace and abdomen with numerous transverse striae. Epigastric region with 5 pairs of spines, median pair and lateral 3 pairs very small. Rostrum distally compressed, directed dorsad. Sternal plastron with scale-like striae. Abdominal segment 2 with 4 pairs of spines. Antennular basal article with subequal terminal spines. Article 1 of antennal peduncle with distomesial spine short, not reaching end of article 2; article 2 with small spine on mid-mesial margin, distomesial spine reaching end of peduncle. Mxp 3 ischium with small spine on flexor distal margin; merus unarmed on extensor margin, armed with 2

spines (proximal one larger) on flexor margin. P1 massive, short, mesially with iridescent setae; carpi relatively broad; palm with a few spines on mesial margin, distal-most prominent; fixed finger with small subterminal spine; movable finger unarmed. P2–4 with iridescent setae along dorsal margins of meri, carpi and propodi; propodus with 8–10 ventral marginal spines on P2, 8 on P3 and 7 on P4; dactylus distally sharpened and curved, more so on P4, flexor margin with 7 or 8 seta-like spines, unarmed on distal 1/4.

Remarks: The material examined agrees well with the description of *M. punctata* Macpherson, 1997, except for more numerous striae on the carapace and abdomen.

The numerous transverse striae of the carapace, the row of spines on the abdominal segment 2, the antennular basal article having the terminal spines subequal in size, and the short P1 bearing a prominent spine at the distolateral portion of palm, link the species to *M. compacta* Macpherson, 1997, *M. rhodonia* Macpherson, 1994, *M. rubridigitalis* Baba, 1994, *M. spissa* Macpherson, 1996. All of these species also share the antennal peduncles bearing a relatively short distomesial spine on the article 1 and a small spine proximal to the distomesial spine of the article 2. *Munida rubridigitalis* is remote from the other species in having a strongly compressed, dorsoventrally high rostrum. The other three related species have the antennal article 2 with the distomesial spine terminating at the end of the article 4, not overreaching as in *M. punctata*, and at least the sternites 6 and 7 are smooth without striae. The movable finger in *M. spissa* and *M. compacta* bears a proximal spine on the mesial margin, which is absent in *M. punctata* and *M. rhodonia*.

Range: Kei Islands, Indonesia; between 336–346 m and 390–502 m.

***Munida quadrispina* Benedict, 1902**

Fig. 47

Synonymy: see p. 272.

Material:

Th. Mortensen's Pacific Exp. 1914–16, Strait of Georgia, ca 70 fm (128 m), mud, trawl, 23 June 1915: — 2 ♂ (11.9, 20.5 mm), ZMUC CRU-11129, 11138.

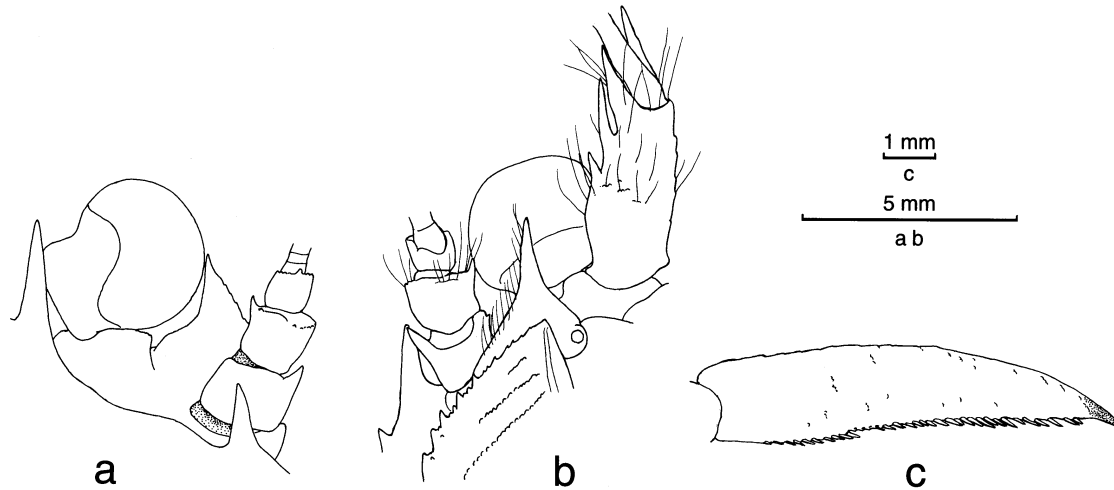


Fig. 47. *Munida quadrispina* Benedict, 1901, ♂ (29.5 mm), ZMUC CRU-11130: a, anterolateral part of carapace, showing orbit, ocular peduncle and antenna, right, dorsal; b, same, showing antennule and antenna, right, ventral; c, P2 dactylus, setae omitted, right, lateral.

Th. Mortensen's Pacific Exp. 1914–16, Strait of Georgia, ca. 100 fm (183 m), mud, 11 June 1915: — 2 ♂ (14.7, 29.5 mm), 1 sp. (sex indet., 9.3 mm), ZMUC CRU-11130.

Th. Mortensen's Pacific Exp. 1914–16, Departure Bay, Nanaimo, 20 fm (37 m), mud, stone, 8 June 1915: — 1 ♂ (11.7 mm), 2 ♀ (8.6, 10.0 mm), ZMUC CRU-11137.

Diagnosis: Carapace with 2 pairs of epigastric spines, lateral pair small; parahepatic spine and anterior branchial spine directly behind midlength of anterior cervical groove; no postcervical spine. Lateral margin with 8–11 spines, 2 in front of cervical groove (posterior one small), 6 (in small specimens)–9 spines on branchial region. Rostrum short. Front margin strongly oblique. Sternite 3 with anterolateral angle produced anteriorly; short striae moderate in density on sternites 4–5; no granules on sternite 7. Abdominal segments unarmed. Cornea dilated. Basal article of antennule having distomesial spine distinctly larger than distolateral spine. Article 1 of antennal peduncle fused with cephalothorax, bearing basally broad, dorsoventrally depressed, distally narrowed process on ventromesial margin; distomesial spine of article 2 very small or obsolete. Mxp 3 ischium with small spine on flexor distal margin; merus with 4 spines on flexor margin, median 2 usually small; extensor margin with distinct distal spine. P1 covered with tubercles in largest specimen examined, carpus longer than broad, subterminal spine on mesial margin moderately

developed; movable finger with proximal spine on mesial margin, fixed finger unarmed laterally. P2–4 dactyli each with row of 9–33 spines along entire length of flexor margin; less numerous and widely separated from each other on distal portion in small specimens, more numerous and close to one another in large specimens.

Remarks: The present material was taken from the shelf but the previous records were from bathyal depths (Benedict, 1902). The species is unique in having numerous (6–9) spines on the branchial margin of the carapace, instead of five or less spines in other species of the genus; the article 1 of the antennal peduncle is fused with the cephalothorax, as is known in *M. speciosa* von Martens, 1878, *M. debilis* Benedict, 1902 and *Anomoeomunida caribensis* (Mayo, 1972) (see Baba, 1993).

Range: Washington, Oregon, California, Sitka; 37–1280 m.

Munida rhodonia Macpherson, 1994

Synonymy: see p. 272.

Material:

Th. Mortensen's Pacific Expedition 1914–16, 25–26 miles E of Zamboanga, 366–458 m, dredge, 4 Mar 1914: — 1 ♂ (18.4 mm), ZMUC CRU-11578.

Kei Islands Expedition St. 51, 5°46'30"S, 132°51'E,

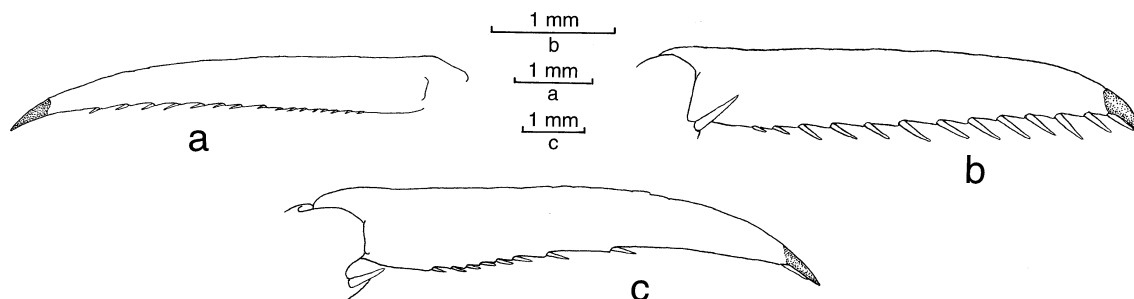


Fig. 48. Distal part of P2, lateral: a, *Munida microps* Alcock, 1894, ♂ (21.3 mm), ZMUC CRU-11507; b, *M. rufiantennulata* Baba, 1969, ♂ (13.4 mm), ZMUC CRU-11481; c, *M. striola* Macpherson & Baba, 1993, ♂ (24.3 mm), ZMUC CRU-11094.

348 m, mud, trawl, 7 May 1922: — 1 ov. ♀ (21.2 mm), ZMUC CRU-11583.

Diagnosis: Numerous transverse striae on carapace and abdominal segments. Five pairs of epigastric spines, lateral 2 pairs obsolete. Lateral margin with 2 spines in front of and 5 behind anterior cervical groove. Rostrum spiniform, directed slightly dorsad. Sternal plastron smooth, with a few short striae on sternite 4. Four pairs of spines on abdominal segment 2, other segments unarmed. Cornea well dilated, eyelashes short. Terminal spines of antennular basal article subequal. Article 1 of antennal peduncle having distomesial spine nearly reaching end of article 2; article 2 with distomesial spine barely reaching end of peduncle, bearing small spine on mesial margin. Mxp 3 merus with 2 spines on flexor margin, distal one small, extensor margin unarmed. P1 massive, short, with iridescent setae mesially; merus with prominent distomesial spine; carpus very short, about as long as broad; palm longer than fingers; fixed finger laterally with 2 subterminal spines only, distal one of these small or obsolete; movable finger with small basal spine on mesial margin. P2–4 with iridescent setae along dorsal margin except for dactyli; ventral margin of merus with spines fewer than those on dorsal margin on P2–3; carpi with dorsal marginal spine other than 2 strong terminal spines; propodi relatively broad, with 5–6 movable slender spines on ventral margin; dactyli having flexor margin nearly straight on P2–3, somewhat curved on P4, bearing seta-like spines along whole length of flexor margin.

Remarks: The numerous striae on the carapace and abdomen, and the prominent distomesial spine of the P1 carpus unite the species with *M. rubridigitalis* Baba, 1988. However, the latter species is distinctive in the

laterally compressed rostrum, bearing arcuate striae on the sternites 4–7, and in the P2–4 dactyli being sharper and curved distally, with no spines on the distal fourth of the flexor margin.

Range: Kei Islands, New Caledonia, Loyalty Islands, Chesterfield Islands, and Vanuatu; 348–705 m.

Munida rufiantennulata Baba, 1969

Fig. 48b

Synonymy: see p. 273.

Material:

“Galathea” St. 423, E of Cebu, 10°27'N, 124°18'E, 836 m, mud, 25 Jul 1951: — 2 ♂ (6.7, 13.4 mm), 1 ♀ (13.3 mm), ZMUC CRU-11481.

“Galathea” St. 436, E of Cebu, 10°12'N, 124°14'E, 780 m, green mud, 9 Aug 1951: — 2 ♂ (8.2, 15.3 mm), ZMUC CRU-11476.

Th. Mortensen’s Java–South Africa Expedition 1929–30, “Maurice” St. 43, off Tombeau Bay, Mauritius, 238 m, swab, 11 Oct 1929: — 1 ♂ (7.2 mm), ZMUC CRU-11118.

Th. Mortensen’s Java–South Africa Expedition 1929–30, “Maurice” St. 47, N of Point Louis, Mauritius, ca 238 m, mud, corals, Sigsbee trawl, 6 Nov 1929: — 1 sp. (6.7 mm), ZMUC CRU-11127.

Kei Islands Expedition St. 49, 5°37'10"S, 132°23'E, 245 m, sand, trawl, 3 May 1922: — 2 ov. ♀ (5.9, 11.2 mm), 1 ♀ (6.9 mm), ZMUC CRU-11443.

Diagnosis: Carapace usually with 4 pairs of epigastric spines; 1 lateral protogastric, 1 postcervical, and 1 anterior (dorsal) branchial spine on each side; lateral margin with 2 spines in front of and 3 behind anterior

cervical groove. Front margin oblique. Sternite 3 broader than anterior border of sternite 4; a few striae on sternite 4, nearly smooth elsewhere; distinct carinae on lateral parts of sternites 6 and 7. Abdominal segment 2 with 8 spines on anterior stria; 2 transverse striae on segment 3, 1 on segment 4, none on segment 5. Antennular basal article elongate, especially distal half, distomesial spine very small. Article 1 of antennal peduncle with sharp distomesial spine slightly overreaching end of article 2; distomesial spine of article 2 nearly reaching or slightly falling short of end of peduncle. Mxp 3 ischium with well-developed spine on flexor distal margin; merus with 2 flexor marginal spines, distal one small. P1 palm shorter than fingers; fixed finger with 2 subterminal spines on lateral margin, movable finger with 1 proximal and 1 subterminal spine on mesial margin. P2–4 slender; each merus having ventral margin with strong terminal spine occasionally accompanied by small one directly proximal to it; each dactylus less than 3/4 as long as propodus, nearly straight but terminal claw slightly curving, flexor margin with 8–15 seta-like spines along entire length, distal-most very close to end, inclined and paralleling corneous terminal claw.

Parasites: The non-ovigerous female from the Kei Islands (St. 49) bears two externae of rhizocephalan parasites.

Remarks: In the smaller male specimen from the “Galathea” St. 423, the abdominal segment 2 bears two tubercle-like processes instead of spines. The larger male from St. 436 has an additional small spine inside and posterior to the anterior branchial dorsal spine directly behind midlength of anterior cervical groove. The infraorbital margin bears a spine directly mesial to the antennal peduncle which is relatively small and directed anterolaterally in the specimens from the “Galathea” St. 423 and 436, but in the specimens obtained by the “Maurice” it is relatively strong and directed straight forward. No additional differences were noted.

Illustrated here is the P2 dactylus: the distal-most of the flexor marginal spines is nearly contiguous to the distal corneous part of the article. The character is consistent, also confirmed by examination of the type material.

The color illustration was provided by Macpherson (1994: fig. 83).

Range: Mauritius, Indonesia including the Kei and

Tanimbar Islands, the Philippines between Mindanao and Luzon and E of Cebu, Vanuatu, New Caledonia, Loyalty Islands, Matthew–Hunter Islands, Chesterfield Islands, and Japan from W coast of Kyushu and the Ryukyu Islands; in 45–836 m.

Munida semoni Ortmann, 1894

Fig. 49

Synonymy: see p. 274.

Material:

“Doona” Dan. Exp. 1961–62, Blanche Bay, Rabaul, 135 m, 21 Jul 1962: — 1 ♂ (15.4 mm), ZMUC CRU-11255.

Kei Islands Expedition, Ambonina, c. 128 m, stones, sand, dredge, 22 Feb 1922: — 1 ♂ (12.2 mm), ZMUC CRU-11315; same locality, 70 fm (128 m), stones, 25 Feb 1922: — 1 ♀ (10.3+ mm, rostrum totally broken), ZMUC CRU-11337; same locality, 128 m, stones, dredge, 23 Feb 1922: — 1 sp., sex indet. (8.7 mm), ZMUC CRU-11353; same locality, ca. 50 fm (92 m), rock, sand, dredge, 22 Feb 1922: — 1 ♂ (12.5 mm), ZMUC CRU-11470; same locality, ca. 70 fm (128 m), dredge, 21 Feb 1922: — 1 ♂ (13.5 mm), ZMUC CRU-11471.

Diagnosis: Carapace without scale-like stria on intestinal region; 6 pairs of epigastric spines flanking 2 small spine in midline; 1 hepatic, 1 parahepatic, 1 anterior branchial (directly behind anterior cervical groove), and 1 postcervical spine on each side. Lateral margin with anterolateral spine well developed but barely reaching sinus between rostral and supraocular spines; 2 or 3 small spines between anterolateral spine and anterior cervical groove, and 5 spines on branchial margin. Supraocular spines not reaching midlength of rostrum. Sternite 4 with relatively broad anterior margin contiguous to nearly whole length of posterior border of sternite 3; sternite 5 often with a few faint striae, sternites 6–7 smooth. Abdominal segment 2 with 6 spines on anterior ridge followed by 4 striae, third stria interrupted. Distomesial and distolateral spines of antennular basal article subequal. Article 1 of antenna with distomesial spine slightly overreaching article 2; distomesial spine of article 2 overreaching article 4. Mxp 3 merus with 3 spines on flexor margin, proximal strongest, extensor distal margin without distinct spine. P1 carpus 2.5 times as long as broad; movable finger with several small spines between (and

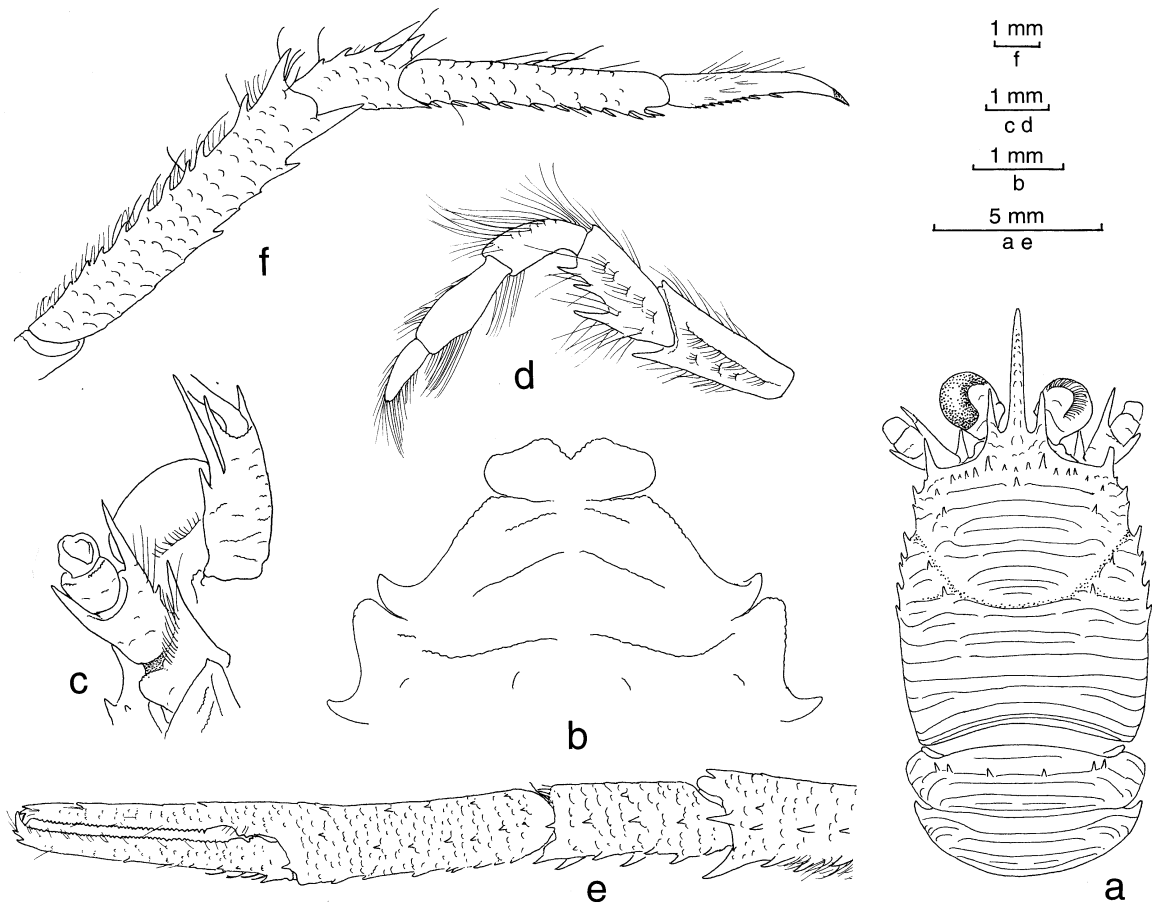


Fig. 49. *Munida semoni* Ortmann, 1894, ♂ (13.5 mm), ZMUC CRU-11471: a, carapace and anterior part of abdomen, dorsal; b, anterior part of sternal plastron; c, anterior part of cephalothorax, showing antennule, antenna and ocular peduncle, right, ventral; d, endopod of Mxp 3, left, lateral; e, P1, right, dorsal; f, P2, right, lateral.

somewhat dorsal to level of) 1 proximal and 2 subterminal spines on mesial margin; fixed finger with 2 spines on lateral margin, other than 2 subterminal spines. P2 dactylus with 6–8 slender, movable spines, unarmed on distal third.

Remarks: Six of the above listed specimens are from the type locality, and all agree well with the lectotype described by Macpherson & Baba (1993). The P1 in the original description is illustrated to bear the movable finger without spines on the mesial margin but this appendage is no longer with the lectotype. Macpherson (1994, 1996a) felt hesitation in identifying his specimens because of having a row of spines there. With the present topotypic material the records provided by Macpherson (1994, 1996a, 2004) are fully accepted.

Range: Indonesia (Ambon), Rabaul, New Caledonia,

SW Pacific (Futuna Island), Fiji, Tonga; between 92 m and 245–440 m.

Munida sphinx Macpherson & Baba, 1993

Synonymy: see p. 274.

Material:

Th. Mortensen's Java–South Africa Expedition 1929–30, "Maurice" St. 34, off Tombeau Bay, Mauritius, ca. 366 m, hard bottom with sand, Sigsbee trawl, 26 Sep 1929: — 3 ♂ (8.5–18.1 mm), 1 ov. ♀ (17.6 mm), 1 sp. (sex indet., 5.8+ mm), ZMUC CRU-11559.

Th. Mortensen's Java–South Africa Expedition 1929–30, "Maurice" St. 38, Off Tombeau Bay, Mauritius, 40 fm (73 m), sand, corals, swab, 08 Oct 1929: — 1 ♀ (12.1 mm), ZMUC CRU-11108.

Th. Mortensen's Java–South Africa Expedition 1929–30, “Dog” St. 18, Bali Sea, 7°15' S, 114°45' E, ca. 100 m, sand, mud, trawl, 11 Apr 1929: — 1 ♂ (8.8 mm), 1 ♀ (10.0 mm), ZMUC CRU-11087.

Diagnosis: Carapace without scale-like stria on intestinal region. Dorsal surface with 6 pairs of epigastric spines flanking 1–3 small spines in midline; 1 hepatic, 1 lateral protogastric, 1 postcervical, 1 anterior branchial (dorsal) spine on each side. Front margin slightly oblique. Supraocular spines not reaching midlength of rostrum. Sternite 4 with relatively broad anterior border contiguous to nearly whole length of posterior border of sternite 3; a few striae present on lateral portions of sternites 5–6. Abdominal segment 2 with 6–9 spines on anterior stria. Terminal spines of antennular basal article subequal. Article 1 of antennal peduncle reaching (large specimens) or barely reaching (small specimens) end of article 3; article 2 having distomesial spine overreaching end of peduncle, bearing small mesial marginal spine proximal to it. Mxp 3 merus with 2–3 (usually 3) spines on flexor margin and small but distinct spine on extensor distal margin. Movable finger of P1 with 2–3 (rarely 5) spines between (and somewhat dorsal to level of) 1 proximal and 2 subterminal spines on mesial margin; fixed finger with 3–4 spines on lateral margin including 2 subterminal. Dactyli with 12 spines on P2, 8 or 9 on P3, 6 or 7 on P4, unarmed on distal third or more of length.

Remarks: In large specimens, the sternal plastron bears somewhat more numerous striae than in the type series and small specimens examined here. Also the distomesial spine of the antennal article 1 in large specimens fully reaches the end of the article 3, while in small specimens it terminates at the midlength of the article 3.

Range: Zanzibar, Madagascar, Reunion Island, Mauritius, Bali Sea, and Makassar Strait; 73–366 m.

***Munida striola* Macpherson & Baba, 1993**

Fig. 48c

Synonymy: see p. 275.

Material:

Th. Mortensen's Java–South Africa Expedition 1929–30, “Dog” St. 7, Bali Strait, Indonesia, 8°29' S,

114°40' E, 200 m, mud, 5 Apr. 1929: — 1 ♀ (15.0 mm), ZMUC CRU-11098.

Th. Mortensen's Java–South Africa Expedition 1929–30, “Dog” St. 15, Bali Sea, Indonesia, 7°29' S, 114°49' E, ca 240 m, sand and mud with concretions, trawl, 10 Apr 1929: — 1 ♂ (24.3 mm), 2 ♀ (15.8, 17.7 mm), ZMUC CRU-11094.

Kei Islands Expedition St. 48, 5°40'10" S, 132°21' E, 263 m, sandy mud, trawl, 3 May 1922: — 1 ♂ (16.0 mm), ZMUC CRU-11428.

Kei Islands Expedition St. 50, 5°34' S, 132°25'40" E, 233 m, sand, trawl, 4 May 1922: — 1 ov. ♀ (19.7 mm), ZMUC CRU-11439.

Diagnosis: Carapace with numerous striae. Dorsal surface with 6 pairs of epigastric spines flanking small spine in midline; 1 lateral protogastric, 1 anterior branchial (dorsal) and 1 postcervical spine on each side, all small when present but mostly obsolete. Sternal plastron with numerous striae. Abdominal segment 2 having median groove preceded by 3 striae, followed by 4 striae, anterior-most stria with 8 spines; segment 3 with additional stria in front of median groove. Two terminal spines of antennular basal article subequal. Distomesial spine of antennal article 1 overreaching end of article 3, not reaching end of peduncle; article 2 lacking mesial marginal spine, distomesial spine reaching end of peduncle. Mxp 3 merus with 2 flexor marginal spines, distal small; extensor margin unarmed. Movable finger of P1 without spine between 1 proximal and 2 subterminal spines; fixed finger with 3–4 lateral spines including 2 subterminal. Dactyli with 7–8 seta-like spines on proximal half to 2/3 of length on P2–3, 6–7 spines on P4, unarmed on remaining distal portion.

Remarks: Macpherson & Baba (1993) noted that the supraocular spines in the paratypes from Indonesia overreach the cornea whereas in the other type material from Japan including the holotype they are rather short. This is true in the present material. In addition, the distomesial spines of the antennal articles 1 and 2 in the present specimens, the largest male in particular, are much longer than those illustrated for the holotype. The P2–4 dactyli that are noted to be slender in the paratypes from Indonesia, are not distinctly so in the present material. I believe these differences are too slight to warrant specific discrimination between the Japanese and Indonesian populations.

Range: Bali, Makassar Strait, Kei Islands, and Japan;

between 200 m and 250–300 m.

***Munida zebra* Macpherson, 1994**

Synonymy: see p. 277.

Material:

Kei Islands Expedition St. 49, 5°37'10"S, 132°23'E, 245 m, sand, trawl, 3 May 1922: — 1 ov. ♀ (22.6 mm), ZMUC CRU-11441.

Diagnosis: Carapace with scale-like stria on intestinal region; dorsal surface with 5 pairs of epigastric spines; 1 lateral protogastric, 1 anterior branchial, and 1 postcervical spine on each side; lateral margin with 2 spines in front of and 4 behind anterior cervical groove. Sternal plastron nearly smooth but sternite 4 with a few striae; sternite 3 much broader than anterior border of sternite 4. Abdominal segment 2 with 4 transverse striae, anterior-most stria with 8 spines; segments 3 and 4 each with 3 striae. Terminal spines of antennular basal article subequal. Article 1 of antennal peduncle with well-developed distomesial spine nearly reaching end of article 3; article 2 with strong distomesial spine overreaching article 4. Mxp 3 merus with 2 flexor marginal spines, distal one small; extensor margin unarmed. P1 having movable finger with 1 small subterminal and 1 proximal spine on mesial margin; fixed finger with 2 lateral spines in addition to 2 subterminal spines. P2–4 propodi about twice as long as dactyli; dactyli with about 8 corneous spines along entire flexor margin.

Remarks: This species is close to *M. albiapicula* Baba & Yu, 1987, from Taiwan, in the ornamentation of the carapace and abdomen. In addition to the differences noted by Macpherson (1994) in spination of the P1 and coloration, *M. albiapicula* is distinctive in having much broader anterior border of the sternite 4, more numerous spines on the ventral margin of the P2–4 meri, and the distal-most of the flexor marginal spines of the P2 dactylus being located at the point in the distal third to quarter from the tip.

Range: Kei Islands, New Caledonia and Loyalty Islands; 200–610 m.

Genus *Munidopsis* Whiteaves, 1874

Munidopsis Whiteaves, 1875: 212. — Henderson,

1888: 148. — Faxon, 1895: 81. — A. Milne Edwards & Bouvier, 1897: 63. — Alcock, 1901: 247.

Galacantha A. Milne Edwards, 1880: 52. — Henderson, 1888: 166. — A. Milne Edwards & Bouvier, 1897: 55. — Alcock, 1901: 274.

Diagnosis: Carapace mostly rugose, sometimes spinulose, occasionally smooth, anterolateral margin spinose, dentate or entire; regions usually well defined. Rostrum triangular or styliform. Antennal spines present or absent. Sternal plastron relatively broad, mostly smooth on surface. Abdominal segments transversely grooved and ridged, with or without spines; segment 6 with lateral lobes often well produced, median margin transverse or convex, occasionally produced posteriorly, overreaching lateral lobes. G1 and G2 present. Telson subdivided. Ocular peduncles movable or fixed, occasionally with eyespines. Antennal flagellum usually overreaching P1. Epipods present on Mxp 2 and Mxp 3, sometimes on P1 and even on P2–3. P2–4 dactyli having flexor margin entire or with row of fixed spines diminishing in size toward proximal end of article, rarely subchelate with distal part of propodus. No flagellum on Mxp 1. Eggs large, not numerous.

Remarks: Chace (1942) noted that genera or subgenera proposed to split this large group (*Elasmonotus* A. Milne Edwards, 1880, *Orophorhynchus* A. Milne Edwards, 1880, *Galathodes* A. Milne Edwards, 1880, *Bathyankyristes* Alcock & Anderson, 1894, and *Munidopsis* Whiteaves) and cited by other authors could not be defined, even the genus *Galacantha* A. Milne Edwards, 1880. For the sake of convenience, however, these groups are employed in the key to species in this paper (see below under the list of species).

Now 122 species are known from the Indo-Pacific. The present collection contains 38 species, including 10 new species. *Munidopsis subsquamosa* Henderson, 1885, which is not included in the collection, is redescribed below based upon the type material in order to clarify relationships with closely related species.

***Munidopsis abyssicola* n. sp.**

Figs. 50, 51

Material:

“Galathea” St. 663, Kermadec Deep, 36°31'S,



Fig. 50. *Munidopsis abyssicola* n. sp., holotype, ov. ♀, ZMUC CRU-11632, dorsal.

178°38'W, 4520 m, brown sandy clay, 24 Feb 1952:
— 1 ov. ♀ (55.1 mm), holotype, ZMUC CRU-11632.

Diagnosis: Carapace with subparallel straight lateral margins each armed with strong spines on anterior half; dorsal surface with spines and tubercles on anterior half, rugae on posterior half; moderate-sized spines on gastric and cardiac regions, small spines on anterior

branchial region, and row of small spines on ridge directly anterior to posterior margin. Rostrum narrow and elongate, slightly upturned, dorsally carinate, ventrally flattish. Front margin oblique, antennal spine absent. Ocular peduncles with strongly produced distomesial eye-spine. Abdominal segments spineless, segment 6 with strongly produced posteromedian flap overhanging telson. Telson consisting of 8 plates. Pereopods tuberculate. P1 spinose on merus and

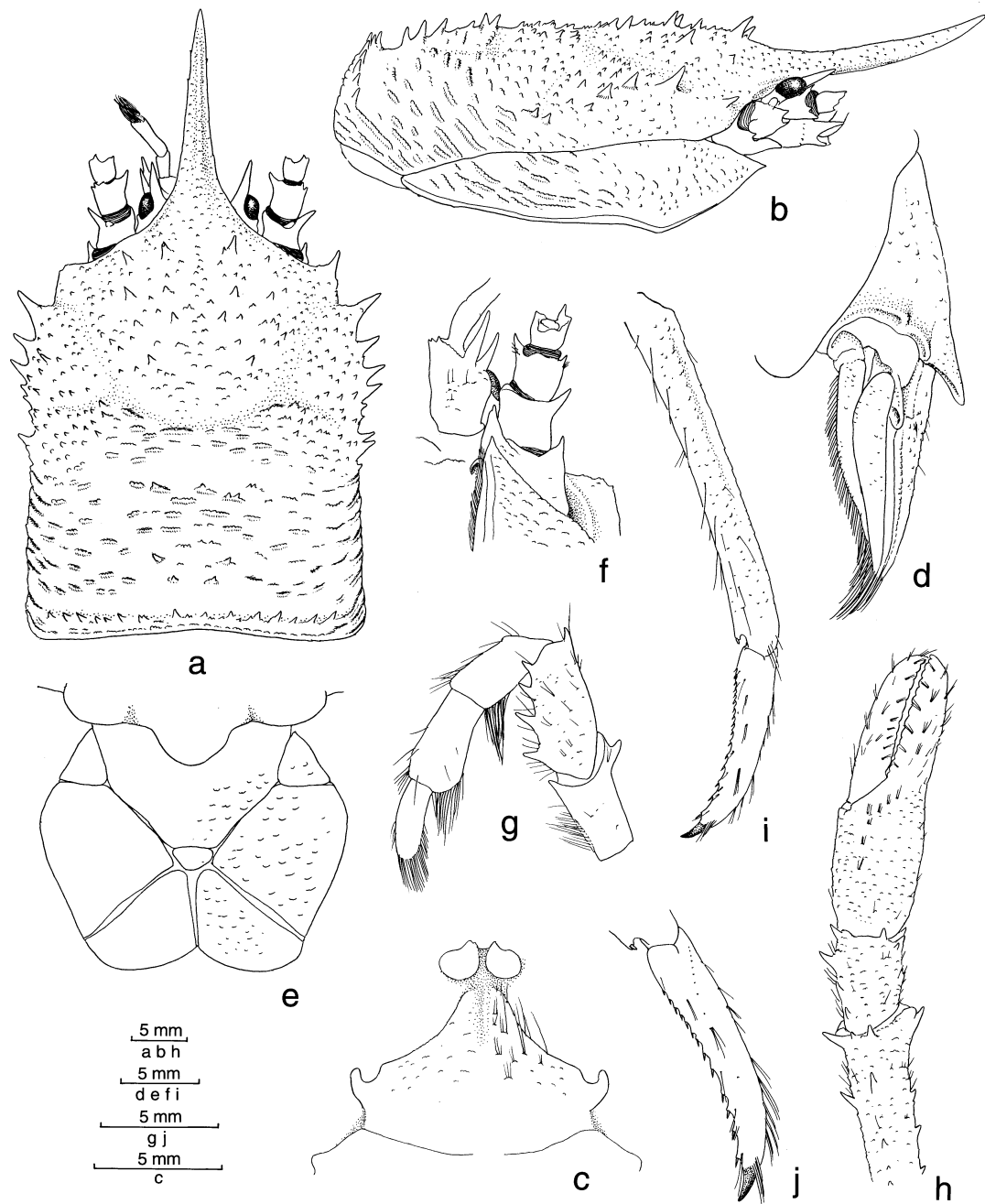


Fig. 51. *Munidopsis abyssicola* n. sp., holotype, ov. ♀, ZMUC CRU-11632: a, carapace, dorsal; b, same, lateral; c, anterior part of sternal plastron; d, posterior part of abdomen, lateral; e, posterior part of abdominal segment 6 and telson; f, anterior part of cephalothorax, showing antennule and antenna, ventrolateral; g, endopod of Mxp 3, left, lateral; h, P1, proximal part omitted, right, dorsal; i, distal articles of P2, right, lateral; j, same, dactylus, lateral.

carpus, palm spineless, slightly shorter than movable finger, lacking denticulate carina on distolateral margin. P2–4 slender and subcylindrical, dorsal crest spinose on merus and carpus, barely so on propodus, subparalleling another crest lateral to it on carpus and propodus; propodus about twice as long as dactylus; each dactylus relatively slender, moderately curved,

bearing very low process diminishing toward base of segment. P2 overreaching P1 by full length of dactylus. Epipod absent from P1–4.

Description of holotype: Carapace exclusive of rostrum slightly longer than broad, anterior and posterior cervical grooves distinct but not deep. Gastric region

moderately convex, with both small and moderate-sized spines and tubercles as figured, lacking elevated rugae. Hepatic region with tubercles. Anterior half of branchial region also with small spines. Posterior half of carapace bearing elevated, interrupted transverse ridges, those on cardiac region with both small and moderate-sized spines. Frontal margin oblique, slightly convex. Antennal spine absent. Posterior margin preceded by row of spines. Lateral margins nearly straight and subparallel, bearing strong spines on anterior half, first anterolateral, smaller than second, somewhat divergent anteriorly, located distinctly mesial to level of remaining spines, second spine largest, directed more laterad than preceding, third and fourth, and even fifth on right side smaller than second but subequal to first, followed by a few small spines and again bearing 1 or 2 small spines on anterior part of posterior branchial region. Rostrum narrow, without middorsal ridge, somewhat upturned, length more than half that of remaining carapace.

Pterygostomian flap anteriorly ending in acute tip.

Sternite 3 narrow, forming apposed lobe bearing anteromedian process at either side of deep median groove, depressed below level of, and, separated by deep groove from, anteriorly narrowed sternite 4.

Abdomen spineless. Segments 2 and 3 each with 2 moderately elevated transverse ridges, somewhat granulate. No ridge on segments 4–6; segment 6 with posteromedian lobe strongly produced, overhanging anterior part of telson. Telson consisting of 8 plates, length-width ratio 1.23; anteromedian plate rather produced posteriorly.

Ocular peduncles slightly movable dorsoventrally, bearing distomesial eye-spine strongly produced forward. Cornea small and lateral.

Basal article of antennular peduncle with strong distodorsal and distolateral spines, distomesially with a few tubercle-like spines. Article 1 of antennular peduncle bearing sharp, basally flattish distomesial spine and small distolateral spine. Article 2 with sharp distolateral spine only. Article 3 narrower than article 2, with distomesial spine distinctly larger than 2 distolateral spines.

Mxp 3 ischium more than half as long as merus, bearing strong spine on extensor distal margin and small one on flexor distal margin, mesial crest with row of 20 denticles. Merus with 4 sharp flexor marginal spines and 1 sharp extensor distal marginal spine. Carpus unarmed. Propodus relatively slender.

Right P1 larger than left one presumably regenerated. Right P1 covered with small rugae, 1.9

times as long as postorbital carapace length or 1.2 times as long as total carapace length including rostrum. Basischium unarmed on mesial margin, distodorsally with strong spine, distoventral margin bearing several small spines at juncture with merus. Merus terminating in midlength of rostrum, armed with spines in 3 rows (5 dorsal, 4 lateral and 2 mesial spines), distomesial spine strongest. Carpus slightly overreaching end of rostrum, bearing row of 4 mesial spines (second from distal end largest, proximal 2 somewhat dorsal), 1 distodorsal spine near lateral margin, 1 distolateral spine flanked by 1 ventral and 1 dorsal spine. Palm unarmed, slightly shorter than fingers, less than twice as long as broad. Fingers unarmed, not gaping, distally spooned, prehensile edge crenulate. Movable finger falling short of end of fixed finger. Left P1 1.7 times as long as postorbital carapace length, slightly longer than carapace including rostrum, surface rather smooth, with less numerous rugosities; merus bearing 7 dorsal, 1 distomesial and 1 distolateral spine.

P2–4 rather long, slender, subcylindrical; P2 overreaching P1. Meri subequal on P2–3, shorter on P4 than on preceding legs, each bearing dorsal crest with row of spines continued on to corresponding crest on carpus, ventral margin with distal spine. Each carpus having dorsolateral crest without spines, continued on to corresponding crest on propodus. Each propodus with dorsomesial crest with a few small proximal spines, ventromesially with elevated, rounded longitudinal ridge; length 1.86–1.94 times that of dactylus. Dactyli slender, gently but distinctly curved, terminating in acute corneous spine preceded by row of 18 (left) or 16 (right) very low, proximally diminishing processes on P2, 15 (left) or 16 (right) on P3, 14 on P4, each process supporting corneous spine, ultimate process slightly more remote from tip of dactylus than from penultimate process.

Epipods absent from P1–4.

Eggs: Diameter, 2.8 mm.

Remarks: The P2 overreaching the tip of the P1, ocular peduncles bearing a well-developed, anteriorly directed distomesial eye-spine, and the P1 lacking denticulate carina on the distolateral margin of the fixed finger, link the species to *M. crassa* Smith, 1883, *M. pallida* Alcock, 1894, *M. panamae* n. sp., *M. petila* n. sp., *M. producta* n. sp., *M. recta* n. sp., *M. subsquamosa* Henderson, 1885, and *M. tuftsi* Ambler, 1980 (see below). The well-produced posteromedian lobe of the telson as in this new species is also possessed by *M.*

crassa, *M. producta* and *M. tuftsi*. However, *M. abyssicola* is distinctive in the absence of epipod from the P1 and the presence of a row of spines along the ridge directly anterior to the posterior margin of the carapace.

Etymology: Derived from the Latin *abyssus* (= the deep sea) and *colo* (= to inhabit), in reference to the habitat of the species.

***Munidopsis antonii* (Filhol, 1884)**

Figs. 52–54

Synonymy: see p. 284.

Material:

“Galathea” St. 217, Mozambique Channel, 14°20’S, 45°09’E, 3485 m, 27 Feb 1951: — 1 ♂ (47.0 mm), ZMUC CRU-11282.

“Galathea” St. 281, SW of Sri Lanka, 03°38’ N, 78°15’E, 3450–3580 m, globigerina ooze, 10 Apr 1951: — 1 ♂ (11.7 mm), ZMUC CRU-11482.

“Galathea” St. 575, Tasman Sea, 40°11’S, 163°34’E, 3710 m, pteropod ooze, 19 Dec 1951: — 1 ov. ♀ (56.6 mm), ZMUC CRU-11629.

“Galathea” St. 607, Tasman Sea, 44°18’S, 166°46’E, 3580 m, 17 Jan 1952: — 1 ♂ (45.0 mm); 1 sp. (sex indet., 9.1 mm), ZMUC CRU-11628.

“Galathea” St. 716, W of Costa Rica, 09°23’N, 89°32’W, 3680 m, dark muddy clay, 6 May 1952: — 1 ♀ (45.0 mm), ZMUC CRU-11616.

“Galathea” St. 726, Gulf of Panama, 05°49’N, 78°52’W, 3800 m, clay, 13 May 1952: — 3 ♂ (25.9–45.2+ mm), 1 ♀ (54.7 mm), ZMUC CRU-11613.

Th. Mortensen’s Pacific Expedition 1914–16, 25–26 miles E of Zamboanga, dredge, 366–458 m, 4 Mar 1914: — 1 ♂ (54.2 mm), ZMUC CRU-11586.

Diagnosis: Carapace covered with small tubercle-like processes and often scale-like, elevated ridges on posterior half, markedly on cardiac region. Gastric region with 2 anterior spines followed by scattered small spines or simply tubercle-like processes occasionally obsolete or absent. Front margin oblique, antennal spine absent. Lateral margins with 2–4 spines on each side: first at anterolateral angle, second and third on anterior branchial region, fourth at anterior end of posterior branchial region or at midlength of carapace, third and fourth occasionally absent, second

situated directly behind cervical groove. Rostrum strongly or moderately upturned, dorsally somewhat carinate, ventrally flattish. Abdominal segments spineless; segment 6 posteriorly bearing lateral lobes prominently flared, exceeding far beyond nearly straight or slightly convex posteromedian margin. Telson composed of 8–10 plates, midlateral plates in male bearing stiff lateral setae. Ocular peduncles mesioventrally fused with body, relatively long, distally narrowed, bearing acute mesial eye-spine extending beyond cornea. Basal article of antennule with distolateral spine; distodorsal spine absent. Article 1 of antennal peduncle with flattish distomesial process. Mxp 3 merus with 2–3 short, laciniate (mostly in large specimens) or non-laciniate (in small specimens) spines on flexor margin, extensor margin bearing acute terminal spine rarely accompanying 1–2 small processes proximal to it. Pereopods tuberculous on surface and thickly covered with short setae. P1 relatively short; basi-ischium with prominent distodorsal spine; merus with 4 terminal and 5–6 middorsal spines; carpus also spinose, bearing 4–5 prominent spines on mesial margin; palm shorter than fingers, usually with a few spines or processes on mesial proximal margin; movable finger shorter than fixed finger, both fingers with smooth surface. P2–4 subcylindrical and slender; merus with row of 6–7 spines on dorsal margin on P2–3, fewer but sometimes more numerous, smaller spines on P4; dactylus gently curving, slightly shorter than propodus; mesial and lateral margins carinate, fringed with stiff setae; flexor margin with denticles in large specimens, rather distinct acuminate teeth in small specimens, bearing spine-like setae. P2 fully reaching end of P1 when extended forward. Epipod present on P1.

Eggs: Diameter, 2.6–2.8 mm.

Remarks: Identification of the species was verified by examination of one of the syntypes (ov. ♀, 43.5 mm, USNM 22909) taken by the “Talisman 1883” from NE of the Azores in 4010 m (see Baba, 1982a). I believe that the following differences that were observed in the “Galathea” material may be of less than specific importance. The relative length of the rostrum is variable; its ratio to the remaining carapace (rostrum-carapace length ratio) ranges from 0.25 to 0.58; the longer rostrums are limited in small specimens. The direction of the rostrum is also variable; it is directed straight upward, at an angle of 45° in three specimens from St. 217, 575 and 607, at an angle of 30–35° in



Fig. 52. a, syntype of *Munidopsis antonii* Filhol, 1884, ov. ♀, USNM 22909; b, syntype of *M. beringana* Benedict, 1902, ♀, USNM 20557.

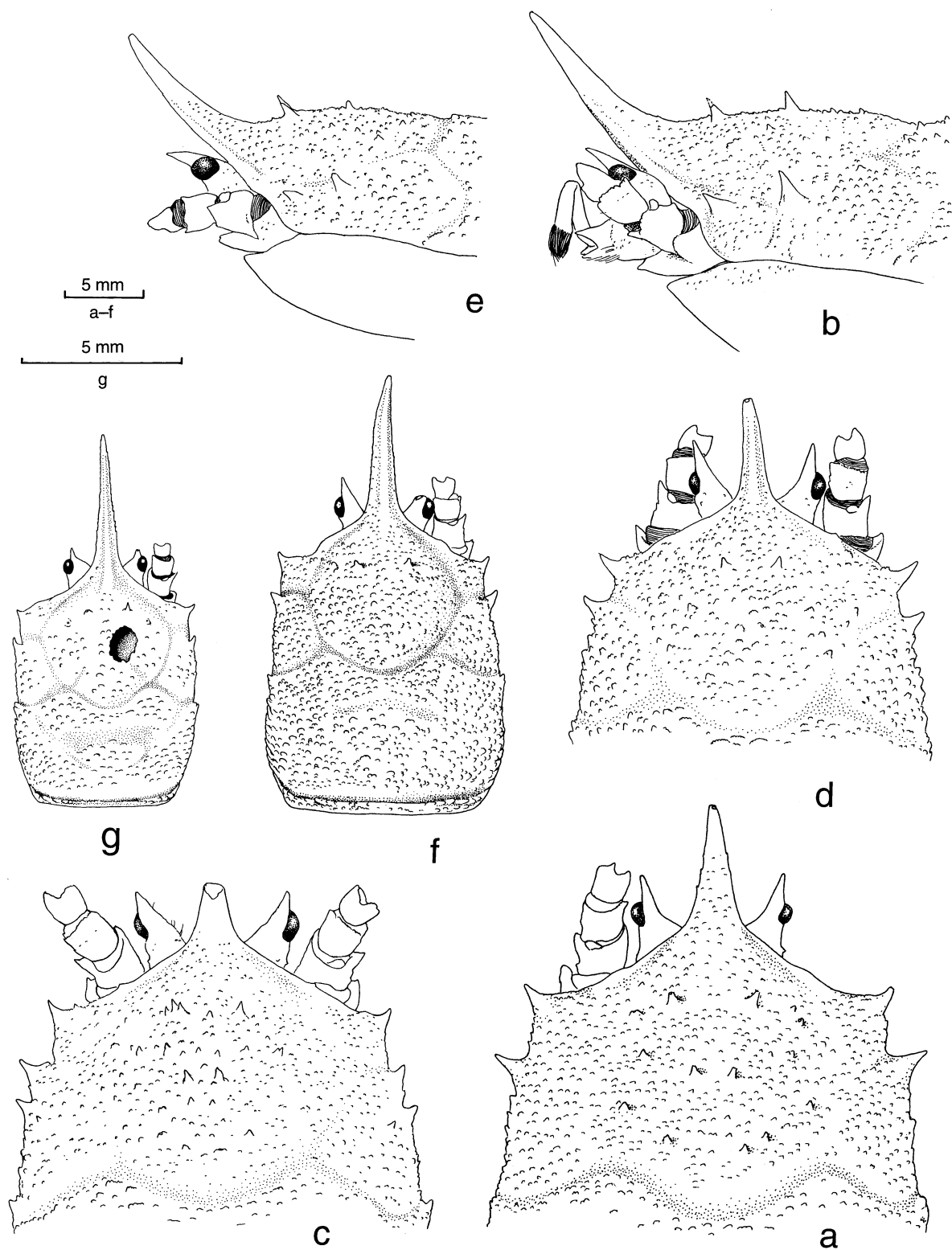


Fig. 53. *Mumidopsis antonii* Filhol, 1884, carapace: a, syntype of *M. antonii*, ov. ♀ (43.5 mm), USNM 22909, anterior part, dorsal; b, same, lateral; c, syntype of *M. beringana*, ♀ (37.3+ mm), USNM 20557, anterior part, dorsal; d, ♂ (33.2 mm), USNM 134659, identified by J. Ambler (1980) as *M. beringana*, anterior half, dorsal; e, same, lateral; f, ♂ (27.2 mm), ZMUC CRU-11613; g, ♂ (11.7 mm), ZMUC CRU-11482.

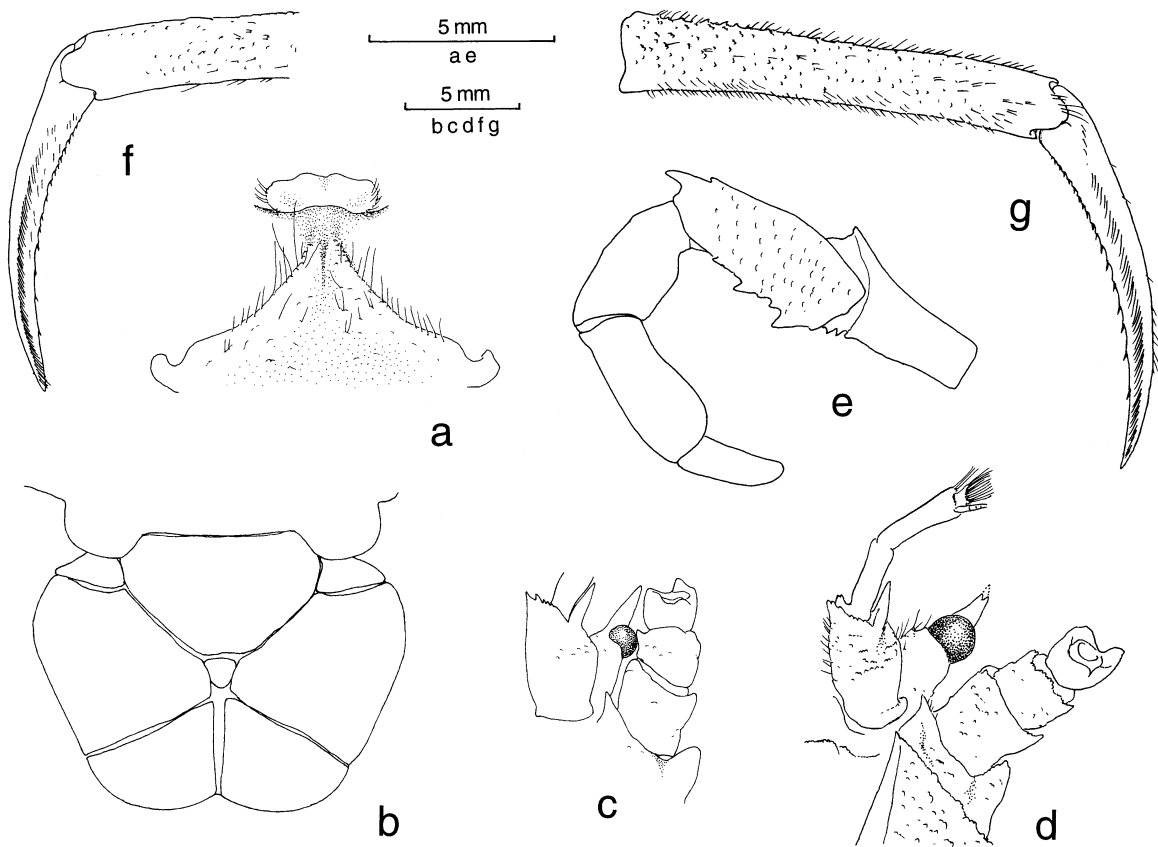


Fig. 54. *Munidopsis antonii* Filhol, 1884, a, b, c, e, f, syntype, ov. ♀ (43.5 mm), USNM 22909; d, g, syntype of *Munidopsis beringana*, ♀ (37.3 + mm), USNM 20557: a, anterior part of sternal plastron; b, posterior part of abdominal segment 6 and telson; c, antennule, antenna and ocular peduncle, left, ventral; d, same, anterior part of pterygostomian flap included; e, endopod of Mxp 3, setae omitted, left, lateral; f, distal part of P2, left, lateral; g, distal part of P3, right, lateral.

four specimens from St. 607, 716 and 726, and at an angle of 15° in a specimen from St. 726; in two of the 10 specimens from St. 281 and 726, the rostrum is not strictly straight but somewhat curved at an angle of 30–35°. The gastric region consistently bears a pair of epigastric spines or processes, but scattered spine-like or tubercle-like processes behind the epigastric spines that are recognizable in the syntype as well as most of the specimens examined are barely discernible in the following three “Galathea” specimens: a male from St. 281 in the Indian Ocean SW of Sri Lanka, a male from St. 726 in the Gulf of Panama, and a small specimen (sex indeterminate) from St. 607 in Tasman Sea. The smaller of the two female specimens reported earlier from Japanese waters (Baba, 1982a) also lacks such processes. Of four lateral marginal spines of the carapace, the first two (the first anterolateral and the second directly behind the cervical groove) are consistently present, their direction being mostly oblique, rarely directed straight laterad, as seen in the

syntype examined as well as in the larger female of the Japanese specimens mentioned in my earlier paper (Baba, 1982a); the third lateral spine on the anterior branchial region is present only in one (ovigerous female) of the Tasman Sea specimens from St. 575 and in a male from St. 217 in Mozambique Channel; the fourth at midlength of the lateral margin is absent in five of the “Galathea” specimens as well as in the syntype and the two Japanese specimens. In the specimen from the Mozambique Channel the tubercles on the hepatic and cardiac regions as well as on the posterior transverse ridge are more spine-like. The number of telson plates is also not constant, i.e., 8 plates in six of the 11 specimens here examined, 9 plates in two specimens, and 10 plates in three specimens; it is variable even within four specimens in the lot from the “Galathea” St. 726, ranging from 8 to 10. Two of the three “Challenger” specimens (Henderson, 1888: 151) (♂, cl 27.5 mm, from “Challenger” St. 300 (BMNH 1976: 3) and ov. ♀, cl 34.4+ mm, from

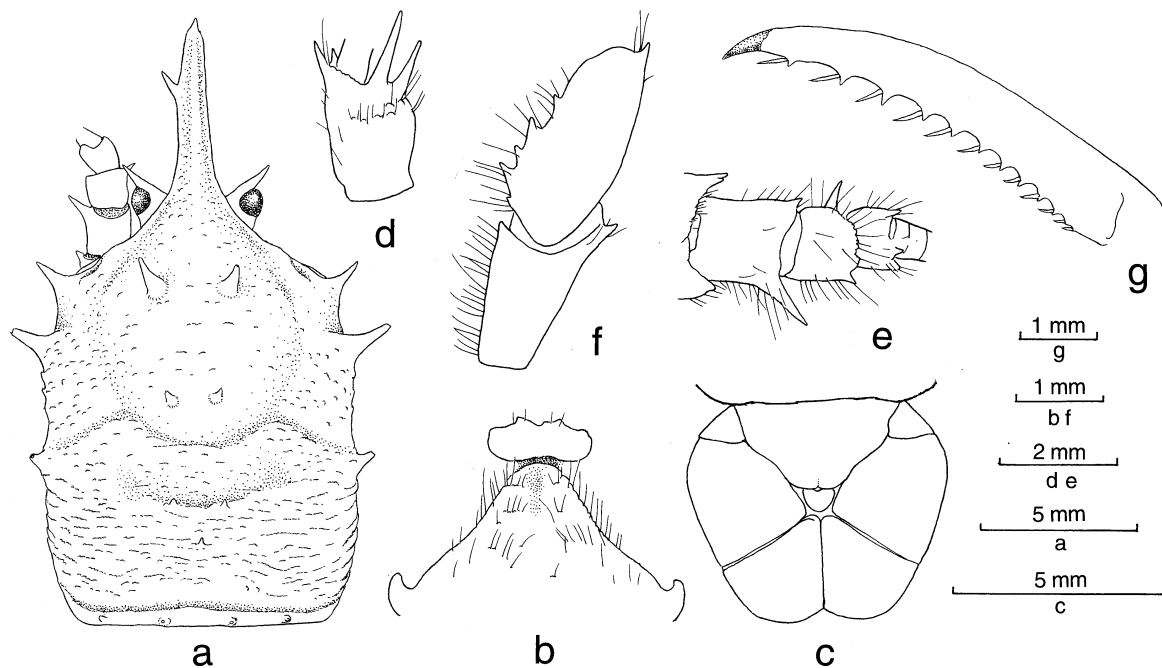


Fig. 55. *Munidopsis arietina* Alcock & Anderson, 1894, ♂ (19.0 mm), ZMUC CRU-11485: a, carapace, dorsal; b, anterior part of sternal plastron; c, telson; d, basal article of antennule, left, ventral; e, antenna, left, ventral; f, merus and ischium of Mxp 3, left, lateral; g, P2 dactylus, left, lateral.

“Challenger” St. 158 (BMNH 88: 33) that I have examined, bear 10 telson plates, and the remaining one (♂, cl 14.8+ mm, from “Challenger” St. 158 (BMNH 88: 33) has eight plates.

Other essential characters, such as antennules, antennae and pereopods are nearly alike in all the specimens examined.

The systematic status of the close relative *Munidopsis beringana* Benedict (1902) from the Bering Sea and subsequently reported by Ambler (1980) from off Oregon seems to remain unsettled. The variability displayed by the present material of *M. antonii* as well as that reported by Ambler (1980) for *M. beringana* suggests that the differences between *M. antonii* and *M. beringana* (see Benedict, 1902) are not constant and it is not unlikely that the two species are identical, as supposed from the illustrations provided here of *M. beringana* and *M. antonii* (Figs. 52–54). The flap-like upturned lobes, on each side of the posterior margin of the abdominal segment 6, distinct in the ovigerous female syntype of *M. antonii* (USNM 22929) and all the material here examined, are recognizable in the illustration of *M. beringana* (see Benedict, 1902: fig. 23), the fact also confirmed by examination of three female syntypes (19.7, 36.5, 37.3+ mm, USNM 20557) and the specimens identified

by Ambler (1980) (USNM 134659) of *M. beringana*. The rostrum in the smallest syntype of *M. beringana* is relatively long, as in the small specimens of the present material. All the essential features including sternal plastron, eyestalks and all appendages are about the same between the types of *M. antonii* and *M. beringana*. In conclusion, it is my opinion that *M. antonii* and *M. beringana* are identical. This will support Luke (1977) who recorded *M. antonii* from off the west coast of Baja California and Peru in his list of species in the collection of the Scripps Institution of Oceanography.

The female from St. 726 bears rhizocephalan *Cyphosaccus jensi*, the parasites identified and reported by Lützen (1985).

Eggs: Diameter, 2.6–2.8 mm.

Range: Worldwide. From the Atlantic in the southern part of Davis Strait, both NE and N of Azores, and Bay of Biscay; from the Pacific Ocean in the Sea of Okhotsk, Bering Sea, off Oregon, off W coast of Baja California, off W Costa Rica, Gulf of Panama, off Peru, off Juan Fernandez W of Chile, SE of Australia, and SE of Hachijo-jima, Japan; 2516–4010 m.

***Munidopsis arietina* Alcock & Anderson, 1894**

Fig. 55

Synonymy: see p. 285.

Material:

“Galathea” St. 299, Bay of Bengal, 17°10' N, 84°30'E, 2935 m, mud, 24 Apr 1951: — 1 ♂ (19.0 mm), ZMUC CRU-11485.

Diagnosis: Body covered with fine stiff setae. Carapace moderately granulate on anterior half, bearing short granulate ridges on posterior half. Gastric region rather well defined, convex, bearing 2 pairs of spines: anterior pair of large spines and posterior pair of small spines. Cervical groove distinct. Cardiac region with anterior ridge preceded by distinct groove, bearing pair of spines followed by another spine in midline. Posterior margin preceded by 4 spines and elevated ridge. Front margin strongly oblique; antennal spine absent. Lateral margins subparallel, each with 3 spines: first slender, present at anterolateral angle, directed anterolaterad, second strong, situated at end of cervical groove, directed more laterad than first, third short, situated at midlength. Rostrum curving dorsad, dorsally moderately carinate, bearing 0–2 lateral teeth (1 on left side only in the present specimen) about at anterior end of horizontal portion. Abdomen unarmed; segment 6 having well-developed posterolateral lobes distinctly overreaching nearly transverse posteromedian margin. Telson divided into 8 plates, but fissures between midlateral and posterior plates obscured. Ocular peduncles slender, slightly movable, with well-produced, anterolaterally directed eye-spine. Antennular basal article with strong distolateral and distodorsal spines and 2 small distomesial spines. Article 1 of antennal peduncle with distomesial and distolateral spines, both short, somewhat depressed, article 2 with strong distolateral and small distomesial spines, article 3 with small distolateral spine. Mxp 3 merus with 2–4 spines on flexor margin and 1 distinct spine on extensor distal margin. Pereopods covered with short setae nearly perpendicular to surface. P1 merus with 1 dorsal and 1 lateral marginal rows of spines, and 4 acute terminal spines; carpus with 2 terminal and 3 mesial marginal spines; palm barely as long as fingers, mesial margin with 1 or 2 spines; fingers distally fitting each other with few intermeshing teeth, distolateral margin of fixed finger smooth, not serrate. P2–4 subcylindrical; meri spinose along dorsal and ventral margins; carpi with spines on dorsal

margin; each dactylus 3/4 as long as propodus, gently curving, flexor margin with 10–12 distinct teeth, each supporting stiff seta. P2 overreaching end of P1. Epipod absent from P1–4.

Remarks: This is the first record for the species since the female holotype taken by the “Investigator” from the Bay of Bengal. The rostrum in this specimen is truncate, lacks a spine on the right side, and is barely two-thirds as long as the remaining carapace. This may be the result of injury.

The arrangement of spines on the carapace is very similar in *M. arietina*, *M. bairdii* (Smith, 1884) and *M. chacei* Kensley, 1968. *Munidopsis arietina* is distinguished from the other two species by the ocular peduncle: it is elongate and slender, with the eye-spine directed anterolaterad in *M. arietina*, whereas it is short, with the eye-spine directed straight forward in *M. bairdii* and *M. chacei*. Ambler (1980) considered that *M. bairdii* and *M. chacei* are identical. In this paper, they are treated as distinct species (see below under list of species and key to species of *Munidopsis* from the Indo-Pacific).

Range: Known only from the Bay of Bengal; 2782–2935 m.

***Munidopsis bispinoculata* Baba, 1988**

Synonymy: see p. 285.

Material:

“Galathea” St. 443, Mindanao Sea, 08°48'N, 124°09'E, 1510 m, mud, 16 Aug 1951: — 1 ♂ (10.2 mm), ZMUC CRU-11493.

Diagnosis: Carapace with very weak transverse striae, gastric region anteriorly delimited by transverse stria medially interrupted; lateral margins subparallel, each with 2 small anterior spines. Front margin oblique, bearing small but distinct antennal spine. Rostrum comparatively narrow, dorsally carinate, barely 1/3 as long as remaining carapace. Sternite 4 with 2 (3 in type material) acute spines in anterior half of lateral margin. Abdomen smooth and polished on surface; segments 2 and 3 each with 2 elevated, spineless transverse ridges; segment 6 having posterior margin nearly transverse, posteromedian margin and posterolateral lobes separated by distinct convexity. Telson composed of 8 plates. Ocular peduncles immovable, cornea well

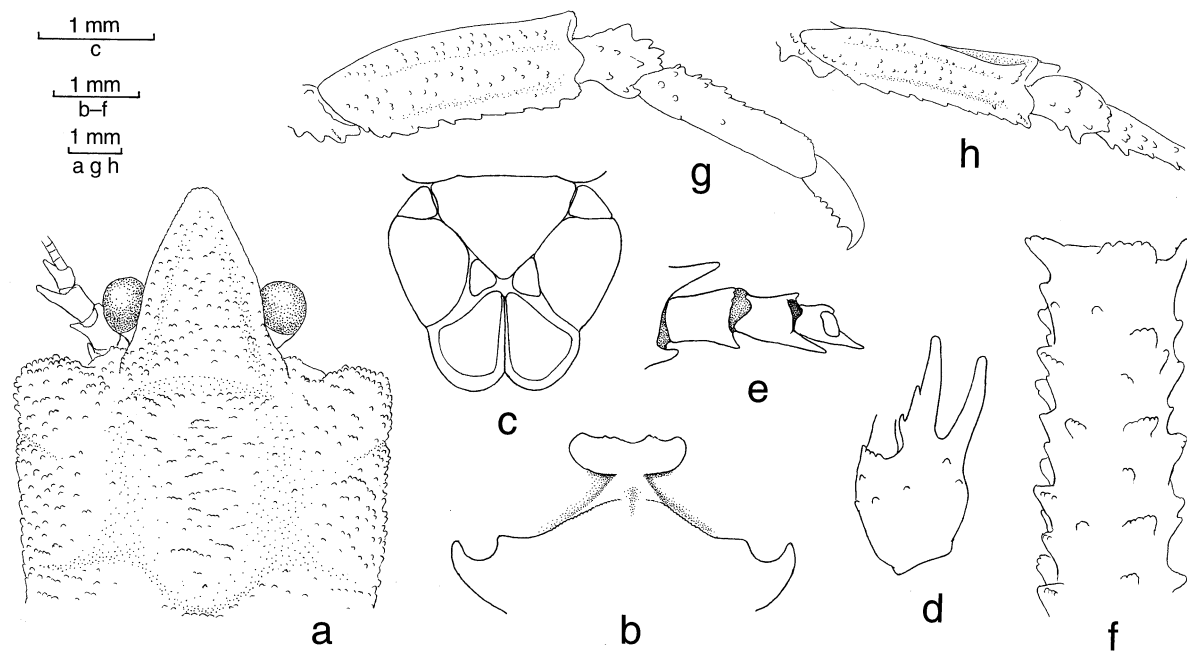


Fig. 56. *Munidopsis carinipes* Faxon, 1893, ov. ♀ (11.7 mm), ZMUC CRU-11625: a, anterior half of carapace, dorsal; b, anterior part of sternal plastron; c, telson; d, basal article of antennule, left, ventral; e, antenna, left, ventral; f, P1, distal part of merus, right, dorsal; g, P2, right, lateral; h, same, distal articles omitted, dorsal.

developed, broad relative to length, distally narrowed, bearing eye-spine directed straight forward, arising from end of cornea and another smaller eye-spine arising from mesioventral end of ocular peduncles. Mxp 3 merus with several spines of irregular size on flexor margin and 1 small spine on extensor distal margin. P1 short, fixed finger with denticulate carina on distolateral margin. P2–4 meri and carpi with spines on dorsal crest, dactyli relatively broad in lateral view, strongly curving distally, bearing 9 flexor marginal spines successively diminishing toward base of article. P2 distinctly overreaching P1. Epipod absent from P1–4.

Remarks: The present male specimen is somewhat larger than the male holotype, having the P1 relatively long and massive, provided with coarser setae more densely on the carpus and chela.

As noted for the material from New South Wales (Baba & Poore, 2002), the present material also bears more numerous weak striae on the anterior carapace and less pronounced anterior spines on the sternite 3.

Range: New South Wales, Sulawesi, off SW Halmahera and Mindanao Sea; 600–2363 m.

Munidopsis carinipes Faxon, 1893

Fig. 56

Synonymy: see p. 286.

Material:

“Galathea” St. 739, Gulf of Panama, 07°22’N, 79°32’W, 915–975 m, green clay, 15 May 1952: — 1 ♂ (11.5 mm), 3 ov. ♀ (11.7–12.1 mm), ZMUC CRU-11625.

“Galathea” St. 745, Gulf of Panama, 07°15’N, 79°25’W, 915 m, green clay, 16 May 1952: — 1 ♀ (6.3 mm), ZMUC CRU-11609.

Diagnosis: Carapace quadrangular, dorsal surface finely granular, longitudinally convex in midline, cardiac region anteriorly cleft transversely. Lateral margins subparallel, anterolateral corner rounded. Rostrum broad, strongly depressed and thin, slightly upturned distally, dorsal surface flattish but feebly concave, granulose like carapace. Abdomen nearly smooth, segments 3–4 each with prominent median process ending in somewhat procurved, denticulate margin, segments 2 and 5 with rudimentary process;

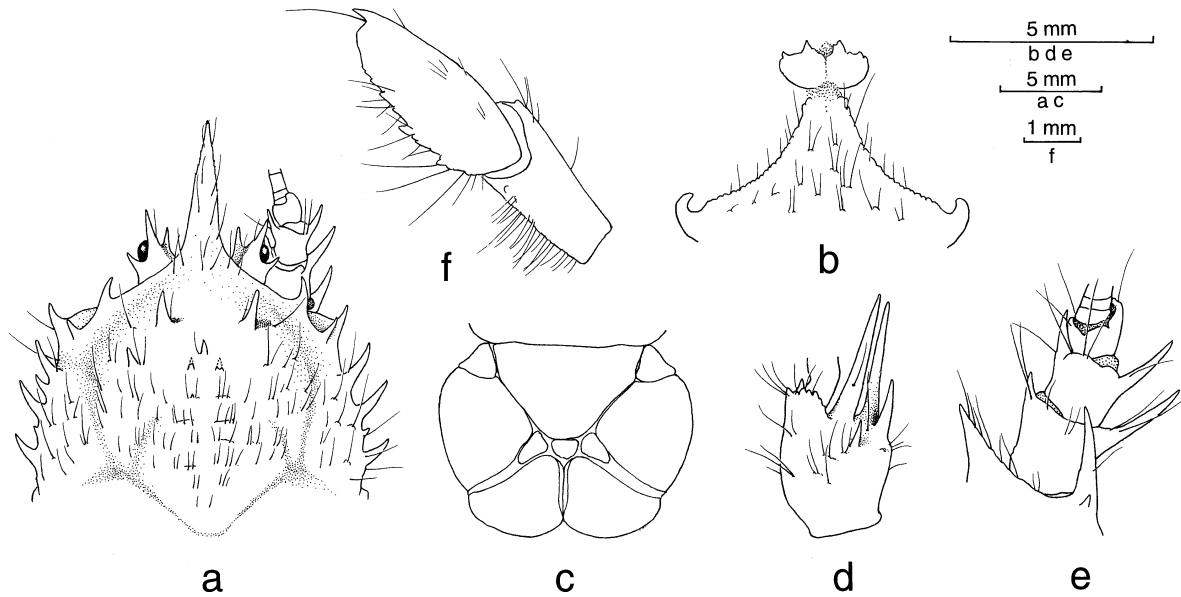


Fig. 57. *Munidopsis centrina* Alcock & Anderson, 1894, ♂ (28.3 mm), ZMUC CRU-11486: a, anterior part of carapace, dorsal; b, anterior part of sternal plastron; c, posterior part of abdominal segment 6 and telson; d, basal article of antennule, left, ventral; e, antenna, left, ventral; f, merus and ischium of Mxp 3, left, lateral.

segment 6 having posterolateral lobes well developed, overreaching posteromedian margin. Telson divided into 9 plates, midlateral plates in male bearing coarse lateral setae, posterior plates long relative to width. Ocular peduncles movable, cornea not elongate, eye-spines absent. Antennular basal article with strong distolateral and distomesial spines, both truncate. Antennal peduncles slender, distolateral spine on each article, especially that of article 3 strong, distomesial spine of article 1 also prominent. Mxp 3 merus with 2 strong processes on flexor margin, 1 sharp distal spine and 0–3 spine-like tubercles on extensor margin; carpus with a few spiniform tubercles on extensor margin. P1 slender, covered with spiniform tubercles often large, depressed, with denticulate tip; palm somewhat flattish dorsally, ventrally convex, less tuberculous than elsewhere, marginally with spiniform tubercles, lateral margin strongly ridged; fingers shorter than palm, opposable margins fitting each other with tuberculate teeth when closed, mesial face of movable finger flattish and vertical. P2–4 meri extremely broad, strongly compressed, bearing unarmed dorsal crest, dorsolateral surface granulate, flattish but longitudinal furrow mesial to midline, ventral margin entire, slightly or distinctly tuberculate; carpi short relative to width; propodi slender; each dactylus barely half as long as propodus, strongly curving distally, ending in strong claw, flexor margin with 5 acute marginal teeth

diminishing toward base of article. P2 terminating in distal end of P1 merus when extended forward. Epipod absent from P1–4.

Eggs: Diameter, 1.1 mm.

Remarks: There is no close relative in the Indo-Pacific. This species is comparable to the Atlantic *M. longimana* (A. Milne Edwards, 1880) from the West Indies (A. Milne Edwards, 1880; A. Milne Edwards & Bouvier, 1897; Chace, 1942). The shapes of the carapace and abdomen in these two species are very much alike, notably in bearing a prominent median process on each of the abdominal segments 3 and 4. *Munidopsis carinipes*, however, is characterized by the P2–4 meri being strongly compressed, very broad, and strongly carinate on the dorsal and ventral margins.

Range: Gulf of Panama; 938 and 1272 m.

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

Fig. 57

Synonymy: see p. 286.

Material:

“Galathea” St. 217, Mozambique Channel, 14°20’S,

45°09'E, 3485 m, 27 Feb 1951: — 1 ♂ (13.4 mm), ZMUC CRU-11277.

“Galathea” St. 299, Bay of Bengal, 17°10' N, 84°30'E, 2935 m, mud, 24 Apr: — 1 ♂ (28.3 mm), ZMUC CRU-11486.

“Galathea” St. 314, Bay of Bengal, 15°54'N, 90°17'E, 2610 m, brownish ooze, 3 May 1951: — 1 ♂ (carapace broken), ZMUC CRU-11489.

Diagnosis: Carapace and appendages markedly spinose, with coarse, stiff setae. Carapace distinctly longer than broad, excluding rostrum. Gastric region convex, with 3 groups of spines: 2 strong epigastric spines, 1 lateral protogastric (on each side) and 3 small median protogastric spines. Posterior half of carapace very faintly rippled, cardiac region anteriorly with distinct transverse ridge. Front margin oblique, leading to strong, incurved antennal spine; distinct ridge between base of antennal spine and hepatic dorsal spine. Lateral margins convex, anterolateral spine moderate in size; 3–5 spines on anterior branchial region, 1–4 on posterior branchial region. Rostrum nearly spiniform, distally curving dorsad. Abdomen unarmed; segment 6 transverse on posterior margin, posterolateral lobes rather indistinctly separated from posteromedian margin. Telson divided into 10 plates. Ocular peduncles slightly movable, broader than cornea, with 3 eye-spines, median one strong, far exceeding cornea. Antennular basal article with 4 spines, but unarmed on distomesial margin. Antennal peduncles having prominent distolateral spines on articles 1–3. Mxp 3 merus with 2 or 3 small spines plus accompanying denticles on flexor margin, distal spine on extensor margin distinct. P1 short; palm as long as fingers, mesial margin with 1 or 2 spines; fingers hollowed out on ventral side near opposable margins, distally hoof-shaped, fitting each other with small intermeshing teeth when closed; distolateral margin of fixed finger with denticulate carina. P2–4 long and spinose; each merus with rows of dorsal and ventral spines; each carpus and propodus also spinose, 2 or 3 dorsal spines well-developed, mesial faces of these articles with plumose setae, in addition to stiff ones. P2 overreaching P1. Epipods absent from P1–4.

Remarks: This is the first record for the species since that of the type from the Bay of Bengal. The anterior part of the carapace, especially the oblique front margin leading to a strong, incurved antennal spine is very characteristic (Fig. 57a). In addition to the trispinose ocular peduncle, the ridge extending between antennal

and hepatic dorsal spines on each side is consistent in the specimens examined, as also illustrated by Alcock & Anderson (1895, pl. 11, fig. 6).

The specimen from “Galathea” St. 217 at the Mozambique Channel is smaller than the others; the P2 terminates at the end of P1; the submedian protogastric spines are not 3 but 2 and very small, placed side by side, the left one being obsolescent, and both are located between the two lateral spines; the small ventral spine proximal to the distolateral spine of the antennular basal article (Fig. 57d) is present on the left appendage, absent on the right; the distolateral spine of the antennal article 1 slightly overreaches the midlength of the article 2 and the distomesial spine is equally sharp as the distolateral spine; the P1 palm bears 2 mesial spines on the right appendage but none on the left side.

Range: Mozambique Channel, Bay of Bengal, and Tasman Sea; 2450–3485 m.

Munidopsis crassa Smith, 1885

Figs. 58–60

Synonymy: see p. 286.

Material:

“Galathea” St. 607, Tasman Sea, 44°18'S, 166°46'E, 3580 m, clay, 17 Jan 1952: — 1 ♀ (44.5 mm), ZMUC CRU-11634.

Diagnosis: Carapace with group of spines on gastric region, small spines on anterior branchial region. Rostrum broad triangular, dorsally ridged in midline. Front margin oblique, with antennal spine. Second lateral spine of carapace directly behind anterior cervical groove larger than anterolateral spine, directed anterolaterad, followed by 5–6 posteriorly diminishing spines. Sternite 4 relatively short. Abdominal segments unarmed; segment 6 bearing posteromedian lobe convex, exceeding lateral lobes. Telson composed of 10 plates. Ocular peduncles immovable, broad at base, produced into anteriorly directed spine mesiodorsally. P1 having fingers spooned at tip. P2 overreaching tip of P1; each dactylus not smoothly tapering but rather broad distally, ending in relatively short, curved spine, flexor margin slightly curving, having ultimate spine closer to penultimate spine rather than end of article. Epipod on P1, not on P2–4.



Fig. 58. *Munidopsis crassa* Smith, 1885, ♀ (44.5 mm), ZMUC CRU-11634, dorsal.

Description: Carapace, exclusive of rostrum, 1.2 times as long as broad, strongly arched transversely, bifurcated cervical groove distinct. Gastric region somewhat inflated, bearing group of small and moderate-sized spines as figured but no rugae. Anterior branchial region with small spines. Posterior part of carapace with small spines behind cervical groove, followed by elevated, discontinuous ridges. Cardiac region distinctly circumscribed. Lateral margins subparallel behind anterior cervical groove; first (anterolateral) spine small, second directly behind anterior cervical groove much larger than first, accompanying small spines, directed anterolaterad, followed by 5–6 posteriorly diminishing spines on anterior branchial region. Rostrum moderately broad

triangular, slightly upturned distally, nearly half as long as remaining carapace; lateral margin with a few denticles on distal half; dorsal surface with fine tubercles, longitudinally carinate. Antennal spine distinct, directed anterolaterad, followed ventrally by oblique margin leading to anterolateral spine subequal in size to antennal spine.

Pterygostomian flap anteriorly ending in small spine, surface bearing tubercles on anterior third, elevated ridges on posterior 2/3.

Sternite 3 laterally crested, medially depressed, anterior margin with apposed submedian lobes bearing tubercles. Sternite 4 separated from preceding sternite, relatively short, lateral margin concave, surface grooved anteriorly, deeply excavated posteriorly,

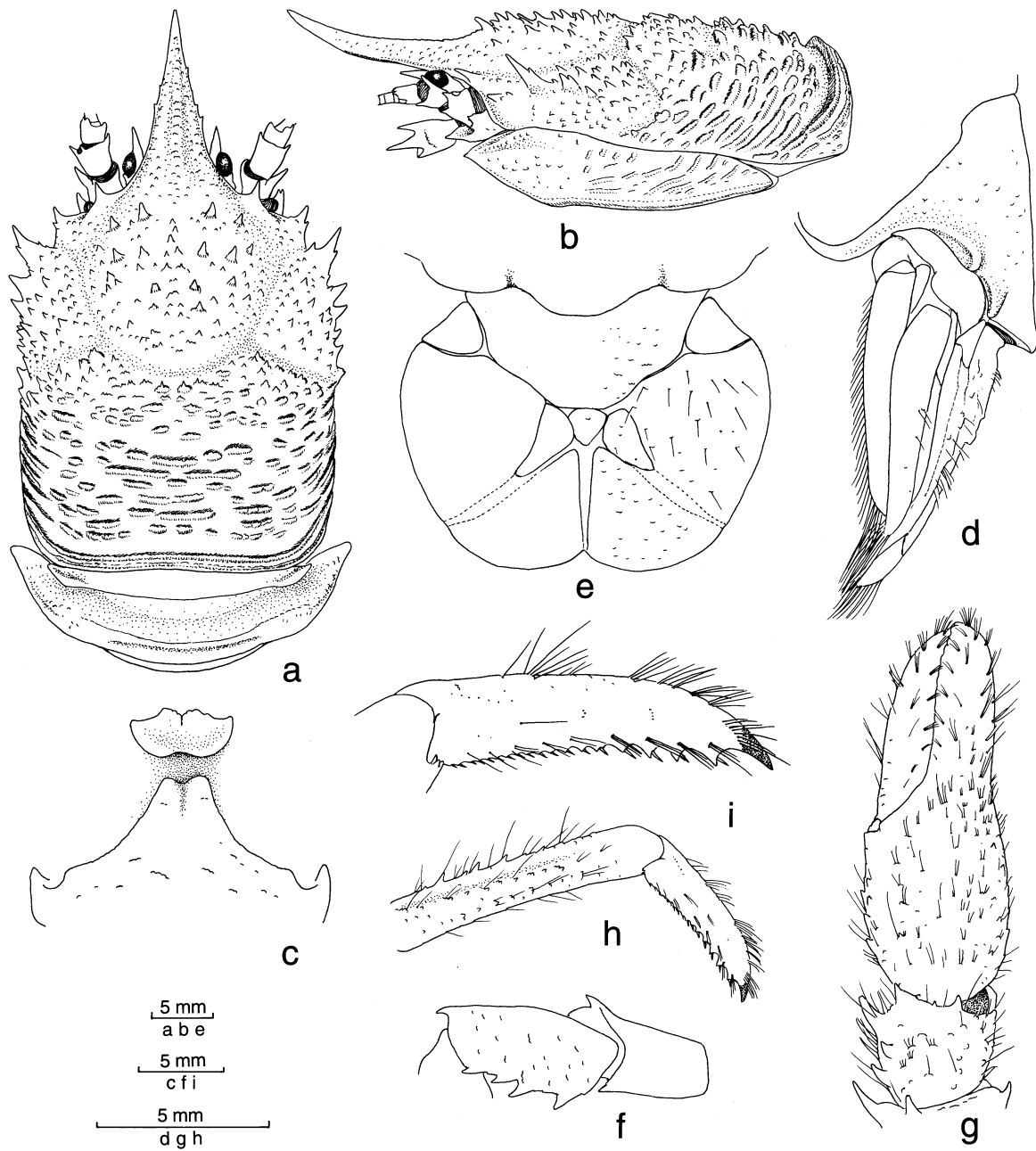


Fig. 59. *Munidopsis crassa* Smith, 1885, ♀ (44.5 mm), ZMUC CRU-11634: a, carapace and abdomen, dorsal; b, same, abdomen omitted, lateral; c, anterior part of sternal plastron; d, posterior part of abdomen, showing posterior end of abdominal segment 6, lateral; e, telson and posterior part of abdominal segment 6; f, ischium and merus of Mxp 3, left, lateral; g, P1, proximal articles omitted, right, dorsal; h, distal articles of P2, right, lateral; i, same, dactylus, lateral.

bearing scattered setiferous ridges. Sternites 4–5 with less pronounced arcuate ridges laterally.

Abdomen weakly granulate. Segments 2–3 each with 2 elevated transverse ridges, anterior ridge continued onto pleura. Segment 4 with anterior ridge only. Segment 6 rather smooth, posteromedian lobe convex, distinctly overreaching lateral lobes. Telson

consisting of 10 plates, length-breadth ratio 0.79.

Ocular peduncles hardly movable; broad at base, mesiodorsally produced into strong spine directed straight forward, without spine mesioventrally.

Antennal peduncles having article 1 with distomesial corner depressed, triangularly produced. Article 3 with 3 small terminal spines (distomesial,

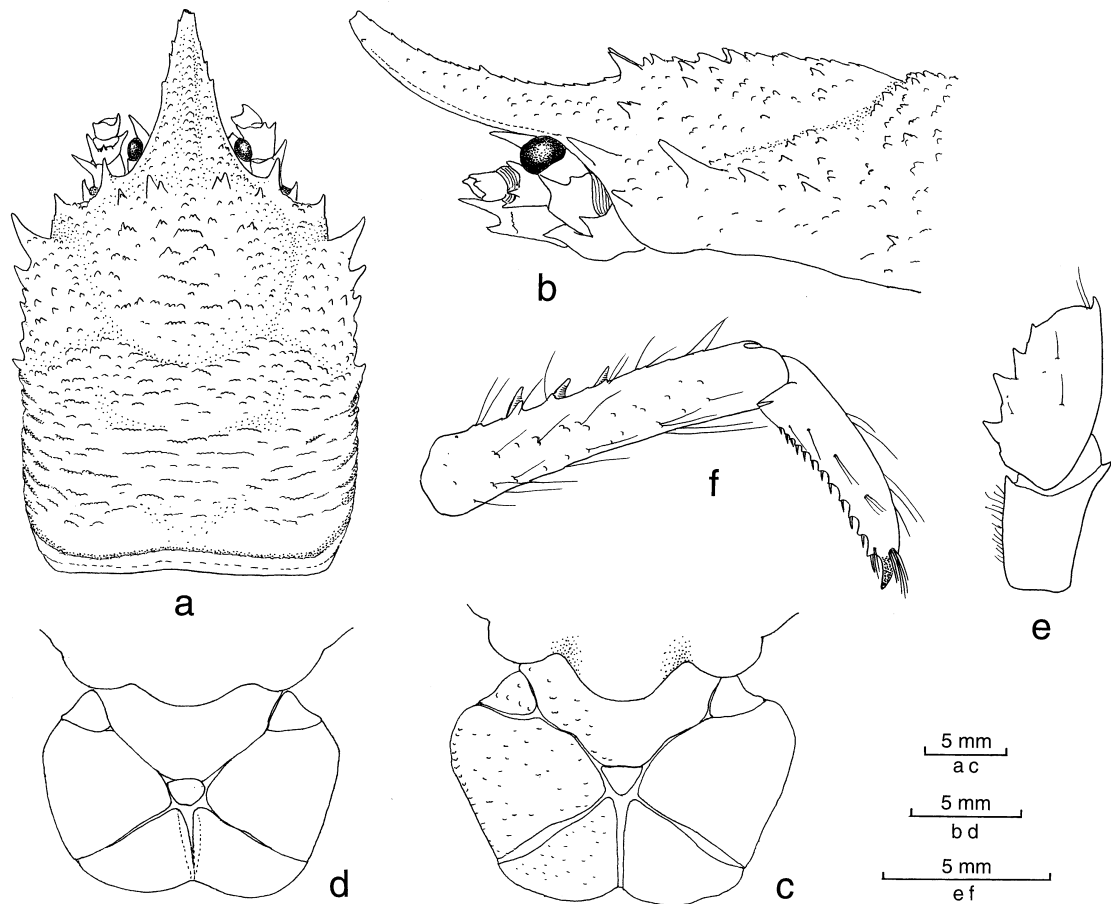


Fig. 60. *Munidopsis crassa* Smith, 1885; a, b, d–f, ♀ (35.9 mm), USNM 231328; c, holotype, fragmented, sex indet., USNM 8563: a, carapace, dorsal; b, same, anterior half, lateral; c, posterior part of abdominal segment 6 and telson; d, same; e, ischium and merus of Mxp 3, left, lateral; f, distal articles of P2, right, lateral.

distolateral, distodorsal).

Mxp 3 ischium is with 23 denticles on mesial ridge, bearing strong spine at distodorsal margin, smaller spine on distoventral margin. Merus with well-developed distal spine on extensor margin, 4 distinct spines on flexor margin.

P1 slightly longer than carapace including rostrum. Basi-ischium with strong dorsal spine equally large as distal-most of a few mesial spines; ventral surface with scattered small spines and rugosities. Merus with 4 terminal spines (mesial, lateral, middorsal, mesiodorsal), middorsal one followed proximally by row of 5–6 spines; tubercular processes and small spines scattered laterally and ventrally. Carpus reaching end of rostrum, slightly broader than long, ventrally unarmed, dorsally and marginally bearing spines as figured. Palm moderately inflated, less spiny than proximal articles, mesially and laterally bearing small spines, shorter than movable finger, length 0.71 times

width. Fingers having prehensile edges closely fitting, distally spooned, with crenulations, movable finger not reaching end of fixed finger.

P2–4 legs relatively stout. P2 slightly overreaching P1, merus terminating in distal end of P1 merus. Corresponding articles of respective legs subequal except for meri decreasing posteriorly. Meri having dorsal crests each with row of proximally diminishing spines, ventral surface flattish, bearing spines in 3 rows (lateral, mesial, and another mesial to lateral) on P2–3, spines tending to be tubercles on P4. Carpi with dorsolateral ridge bearing small spines and tubercles paralleling dorsal crest bearing spines. Propodi with 2 ridges continued from corresponding ridges on carpi, each bearing spines on P2–3, only tubercles on P4; spines on dorsal crest much larger than those on dorsolateral crest; small spines in longitudinal row on dorsolateral face near ventral margin; dorsal crest mesioventrally accompanied by deep groove; length

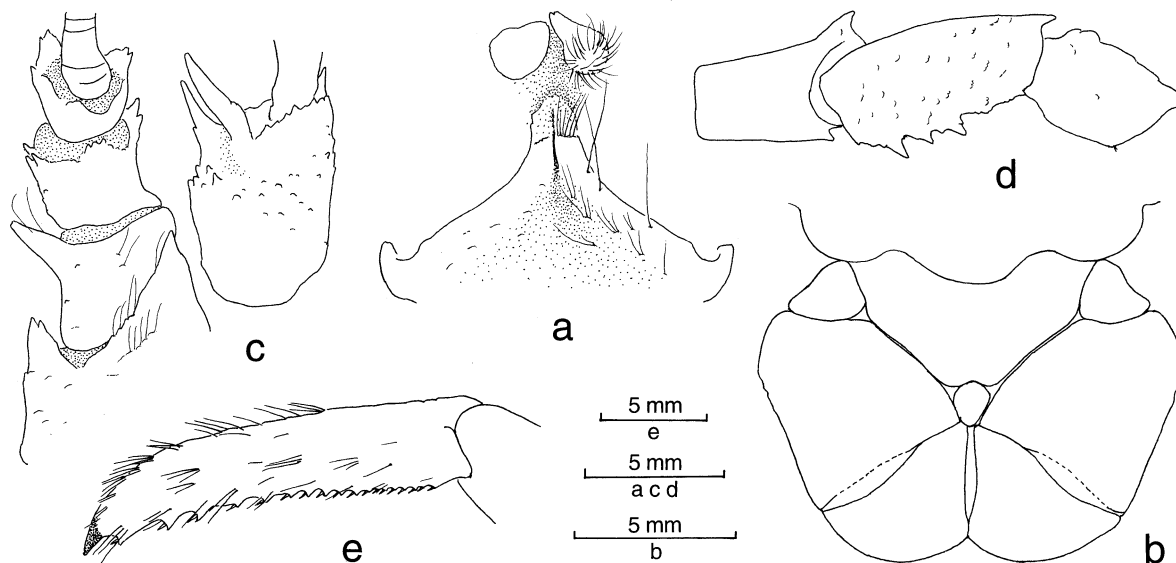


Fig. 61. *Munidopsis tuftsi* Ambler, 1980, holotype, ♂, USNM 171336: a, anterior part of sternal plastron; b, posterior part of abdominal segment 6 and telson; c, antennule and antenna, left, ventral; d, endopod of Mxp 3, distal articles and setae omitted, right, lateral; e, distal part of P2, left, lateral.

1.6–1.7 times that of dactylus. Dactyli not smoothly tapering but rather uniformly broad distally, ending in corneous, relatively short spine; flexor margin slightly curving, bearing proximally diminishing spines (18 on P2, 15 or 17 on P3, 18 on P4), each accompanying stiff short seta, ultimate spine closer to penultimate spine rather than end of article.

Epipod present on P1, absent from P2–4.

Remarks: The present specimen is identified with *M. crassa* Smith, 1885 from the Atlantic Ocean, though with some hesitation from a viewpoint of geographical distribution. The type material (USNM 8563) examined is now in poor condition, with the tail fan only left visible so the following comparative material of *M. crassa* was examined: 1 ♂ (37.5 mm), 1 ♀ (35.9 mm), USNM 231238, North Atlantic Ocean, 190 mi SE of Woods Hole, Mass., 38°18.24'N, 69°35.36'W, 3506 m, 3 Aug. 1977, coll. R. D. Turner. Their main features are illustrated (Fig. 60). The specimen from “Galathea” St. 607 and the north Atlantic specimens examined are so similar to each other that I am at a loss to discover clear differences.

The presence of a group of gastric carapace spines, small spines on the anterior branchial region, antennal spines on the front margin, and the abdominal segment 6 with a strongly produced posteromedian lobe link the species to *M. tuftsi* Amber, 1980. *Munidopsis tuftsi* is distinguished from *M. crassa* by the relatively large

cornea and the P2–4 dactyli that have the ultimate flexor marginal spine closer to the tip of the terminal claw than to the penultimate spine (see Fig. 61).

Range: Previously known from the Atlantic: in the western Atlantic off North Carolina, Colombian Basin and Yucatan Basin, and Venezuelan Basin (Caribbean Sea), 2574–5060 m; in the eastern Atlantic NE of Azores, off Canary Islands, West Europe Basin, and Bay of Biscay, 3992–5315 m; and from hydrothermal active sites in the Mid-Atlantic Ridge, 3480 m. Olu *et al.* (1996) reported the species from cold seeps off Peru in the eastern Pacific in 3520 m. The present material constitutes the first record from the western Pacific.

Munidopsis crenatirostris Baba, 1988

Fig. 62

Synonymy: see p. 286.

Material:

Th. Mortensen’s Java–South Africa Expedition 1929–30, “Dog” St. 7, Bali Strait, Indonesia, 8°29' S, 114°40' E, 200 m, mud, 05 Apr 1929: — 1 ♀ (10.5 mm), ZMUC CRU-11101.

Th. Mortensen’s Java–South Africa Expedition 1929–30, “Dog” St. 11, Bali Strait, Indonesia, 8°30' S, 114°38' E, ca. 450 m, small fish trawl and Sigsbee

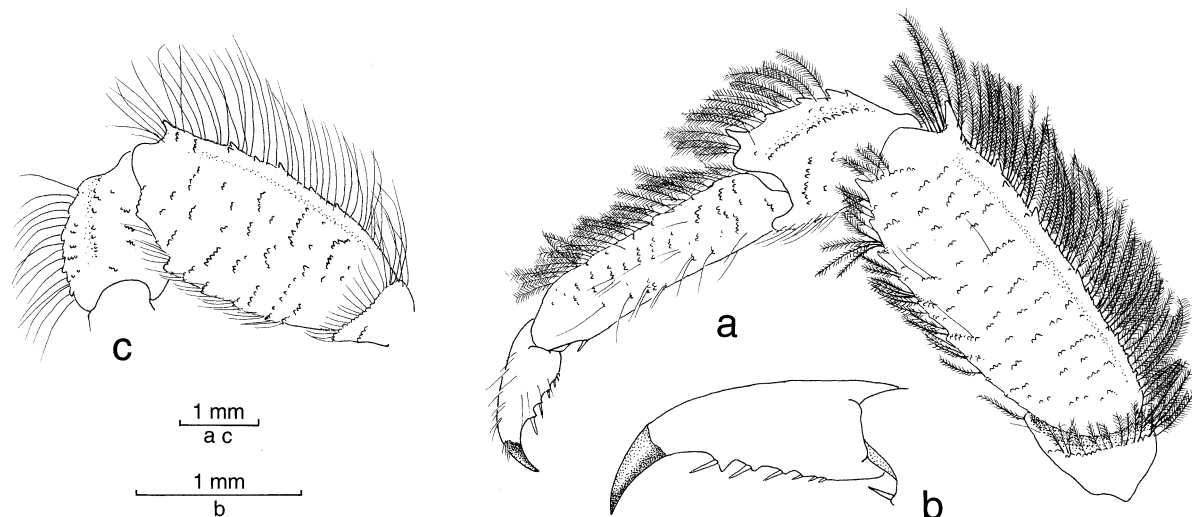


Fig. 62. *Munidopsis crenatirostris* Baba, 1988: ov. ♀ (12.8 mm), ZMUC CRU-11409: a, P2, left, lateral; b, same, dactylus, setae omitted, lateral; c, merus and carpus of P4, left, lateral.

trawl, 7 Apr 1929: — 1 ♀ (9.8 mm), ZMUC CRU-11600.

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E, 345 m, mud, trawl, 10 May 1922: — 1 ov. ♀ (12.8 mm), ZMUC CRU-11409.

Diagnosis: Carapace convex from side to side and from anterior to posterior end; dorsal surface with moderately elevated rugae; lateral margins convexly diverging posteriorly, with very fine setae, occasionally with very small denticles; anterolateral spine small. Front margin concave, lateral orbital angle produced. Rostrum less than half as long as remaining carapace, broadly triangular, dorsal surface with crenulated, medially excavated convexity, lateral margin with row of small spines occasionally reduced. Abdominal segments unarmed, segments 2 and 3 each with elevated transverse ridge followed by short groove; posterior margin of segment 6 transverse, posterolateral lobes indistinctly separated from posteromedian margin. Telson divided into 12 plates. Ocular peduncles relatively small, movable. Sternite 3 relatively narrow, 1/3 as broad as sternite 4, anterolateral margin deeply excavated. P1 barely 1.5 times as long as carapace, moderately depressed and tuberculate dorsally, with thick plumose setae especially marginally, fingers relatively broad, as long as palm or somewhat longer. P2–4 comparatively short, minutely tuberculate on lateral surface, furnished with plumose setae along dorsal margin; merus very broad and short, particularly on P4, dorsolateral face convex, dorsal margin cristate,

with small spines; each dactylus short, ending in strong curved claw, flexor margin with 4–6 proximally diminishing spines each with corneous spine. P2 terminating in distal end of P1 carpus when extended forward. Epipods absent from P1–4.

Eggs: Size, 1.3 x 1.5 mm.

Remarks: There is another lot in the collection of the Zoological Museum: 1 / (4.9 mm) from the Kei Islands Expedition St. 110, –5°25'S, 105°53'E, 12 m, sandy mud, 5 Aug 1922. This depth record suggests that the specimen may have been mistakenly labeled since no such shallow habitat is known in this genus only except for *M. polymorpha* Koelbel, 1892, from the subterranean caves in the Canary Islands (in 2–8 m).

Range: Bali, Kei Islands, and NW of Sombrero Island off SW Luzon; 200–450 m.

Munidopsis cylindrophthalma (Alcock, 1894)

Synonymy: see p. 287.

Material:

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E, 345 m, mud, trawl, 10 May 1922: — 1 ♂ (11.7 mm), ZMUC CRU-11450.

Diagnosis: Carapace longer than broad, totally

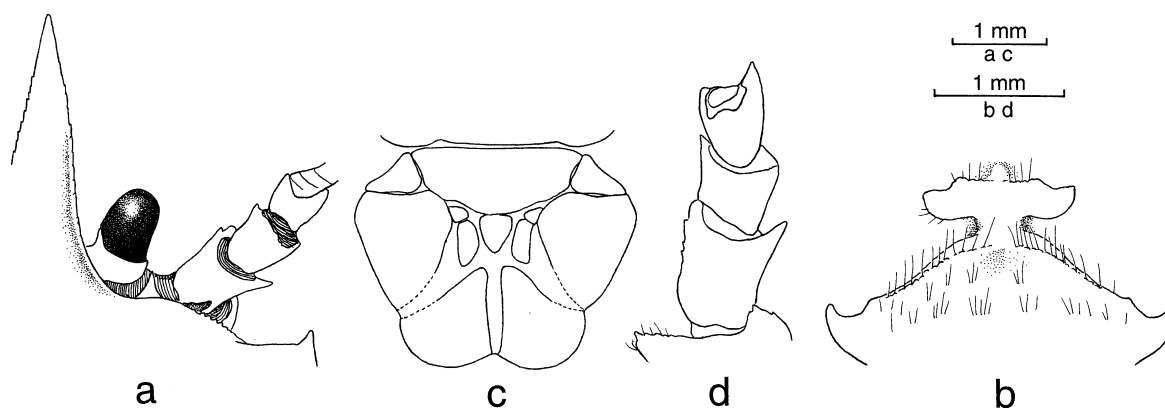


Fig. 63. *Munidopsis cylindropus* Benedict, 1902, ♂ (10.1 mm), ZMUC CRU-11495: a, anterior part of cephalothorax, showing rostrum, eye and antenna, left half omitted, dorsal; b, anterior part of sternal plastron; c, posterior part of abdominal segment 6 and telson; d, antenna, left, ventral.

spineless, medial and cardiac transverse grooves distinct, lateral margins subparallel, anterolateral angle rounded. Rostrum triangular, comparatively broad, dorsally flattish or concave, slightly upcurved distally. Abdomen spineless; 2 transverse ridges distinctly elevated on segments 2–4. Telson divided into 12 plates, paired posterior plates relatively elongate, midlateral plates in male with coarse setae on lateral margin. Ocular peduncles movable, cornea elongate, much longer than remaining eyestalk and cylindrical. P1 slender, cylindrical, spineless, fully 3 times as long as carapace. P2–4 very short; each merus carinate along dorsal margin; each dactylus ending in sharp point, preceded by prominent spines on flexor margin. Epipods absent from P1–4 (from Baba (1988)).

Range: Arabian Sea, Maldives, Andaman Sea, off W Sumatra, Kei Islands, Moluccas, the Philippines between Mindanao Sea and SW Luzon, Taiwan, and Japan; 200–743 m.

***Munidopsis cylindropus* Benedict, 1902**

Figs. 63, 64

Synonymy: see p. 287.

Material:

“Galathea” St. 443, Mindanao Sea, 08°48’N, 124°09’E, 1510 m, mud, 16 Aug 1951: — 1 ♂ (10.1 mm), ZMUC CRU-11495.

Diagnosis: Carapace dorsally spineless, covered with fine setae, bearing very weak, interrupted transverse ridges more distinct on posterior half; gastric region convex, cardiac transverse ridge elevated. Front margin obliquely convex on mesial half, lateral half transverse, depressed below level of mesial half; distinct spine ventral to front margin between ocular and antennal peduncles. Lateral margins subparallel, each constricted at end of cervical groove, anterolateral angle produced into small spine. Rostrum barely half as long as remaining carapace, narrowly triangular, dorsally convex, nearly straight horizontal but slightly upturned distally. Sternal plastron elongate, sternite 3 much wider than long. Abdominal segments spineless; posterolateral lobes of segment 6 overreaching nearly transverse posteromedian margin. Telson divided into 12 plates, posterior plates each as long as broad. Cornea much longer than remaining eyestalk, feebly curving outward. Small spine ventral to front margin between ocular and antennal peduncles. Mxp 3 merus with 2 flexor marginal spines, distal one small, situated at midlength between much larger proximal spine and slightly produced distal end, extensor margin with distal spine. P1 subcylindrical, very sparsely setose, fully twice as long as carapace; merus with 4 terminal spines and distinct mesial marginal spine proximal to midlength; carpus with small distomesial and distolateral spines; chela spineless; fingers not gaping, distally bearing intermeshing teeth. P2–4 barely setose, relatively slender, 3 distal articles subcylindrical; meri slightly depressed, dorsal margin feebly carinate, ventral margin with tubercles. P2 barely reaching end

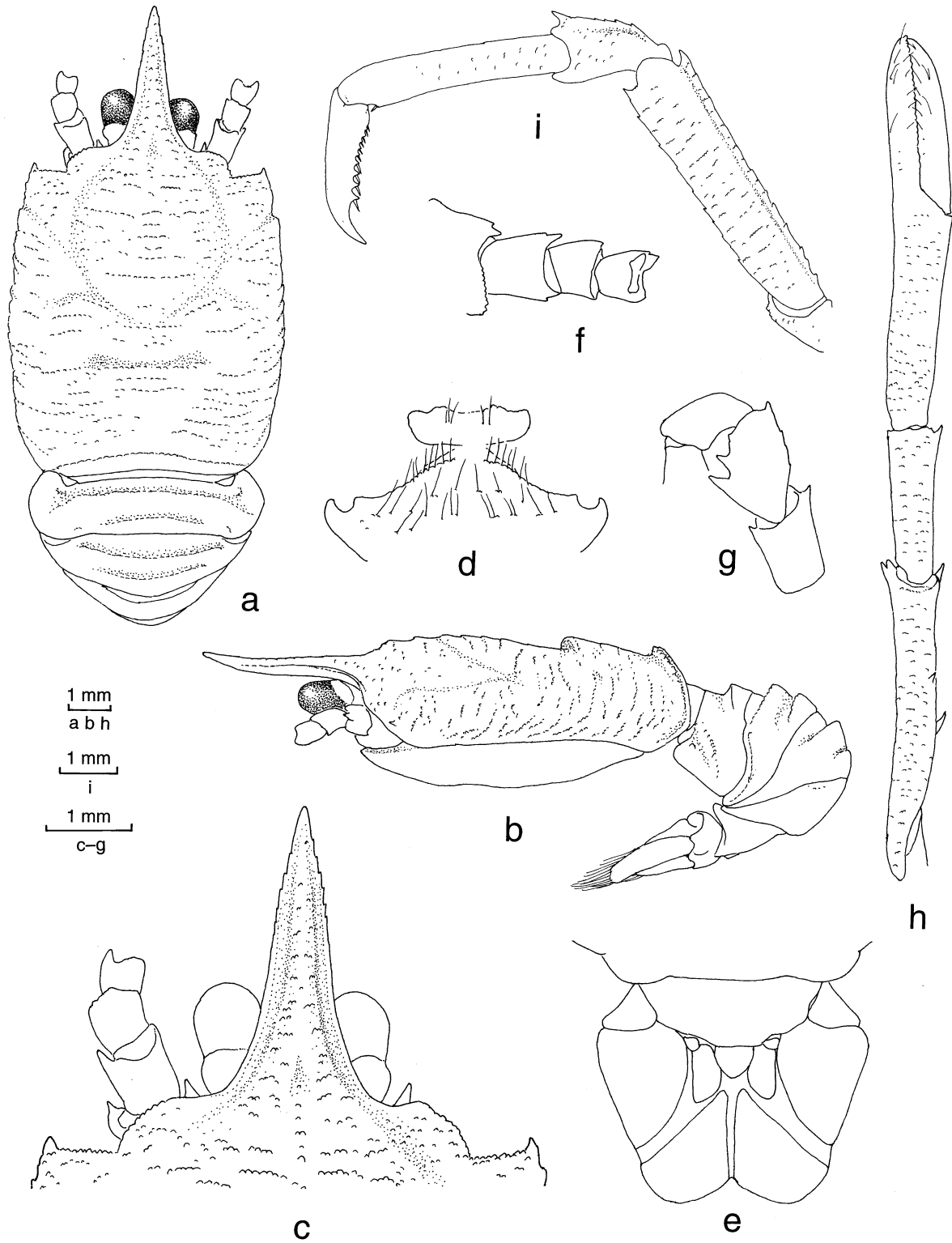


Fig. 64. *Munidopsis cylindropus* Benedict, 1902, holotype, ♀, USNM 26163: a, carapace and abdomen, dorsal; b, same, lateral; c, anterior part of carapace, showing rostrum and ocular and antennal peduncles, dorsal; d, anterior part of sternal plastron; e, posterior part of abdominal segment 6 and telson; f, antenna, right, ventral; g, endopod of Mxp 3, distal articles omitted, left, lateral; h, P1, left, dorsal; i, P2, left, lateral.

of P1 merus. Epipods absent from P1–4.

Color in life: Body white, corneas faintly yellow.

Remarks: The present specimen agrees well with the female holotype (USNM 26163) of *M. cylindropus* from “Albatross” St. 3697 (Fig. 64).

The species is so close to *M. debilis* (Henderson, 1885) that it is hard to discriminate the two species, because of the imperfect condition of the type of *M. debilis*.

Tirmizi (1966) believed that one of the syntypes of *M. debilis* from “Challenger” St. 173 (see Henderson, 1885, 1888) might be referred to *M. cylindrophthalma* and she selected the male from St. 210 in the Philippines as the lectotype of *M. debilis*. Consulting with her descriptive remarks of *M. debilis* from the Gulf of Aden, I am inclined to believe that *M. cylindropus* may be separated from that species by the distinct mesial marginal spine proximal to midlength of the P1 merus, and the cornea being longer relative to the remaining eyestalk.

Range: Japan off Honshu, Okinawa Trough and Mindanao Sea; 220–1510 m.

***Munidopsis dasypus* Alcock, 1894**

Synonymy: see p. 287.

Material.

“Galathea” St. 302, Bay of Bengal, 19°42'N, 86°48'E, 1210–1240 m, clay, 25 Apr 1951: — 2 ♂ (26.7, 29.4 mm), 1 ov. ♀ (31.4 mm), ZMUC CRU-11494.
“Galathea” St. 324, Andaman Sea off N Sumatra, 06°06'N, 96°00'E, 1130 m, 9 May 1951: — 1 ♂ (16.7 mm), 1 ♀ (16.7 mm), ZMUC CRU-11492.

Diagnosis: Carapace covered with fine setae, posterior half surface with transverse ripples, posterior transverse ridge elevated, with 3–9 spines. Gastric and cardiac regions distinctly convex. Lateral margins subparallel, each bearing 3 spines anteriorly (posterior-most very small or tubercle-like in small specimens, anterior-most one largest, situated at anterolateral angle). Front margin oblique. Rostrum dorsally carinate, straight horizontal or distally curving dorsad, fully half as long as remaining carapace. Small spine ventral to front margin between bases of ocular and antennal peduncles. Abdominal segments spineless; posterior

margin of segment 6 nearly transverse, posterolateral lobes bordered from posteromedian margin by very feebly convexity. Telson divided into 8 plates, midlateral plates in male with coarse setae laterally, posterior plates relatively long. Ocular peduncles slender, setose, cornea curving laterad. Antennal peduncles with prominent distolateral spine on article 2 only. Mxp 3 merus widened proximally, flexor margin with 2 spines on proximal half, proximal one situated on broadest portion, distal one closer to proximal spine than distal end, extensor margin with small distal spine. P1–4 covered with fine, long setae; P1 merus and carpus with sharp spines, palm spineless, fingers directed slightly outward, gaping in male, not gaping in female. Meri and carpi of P2–4 each with a few prominent spines on dorsal margin, terminal one largest. P2 terminating in distal end of P1 merus. Epipod present on P1.

Eggs: Diameter, 1.4 mm.

Remarks: The mid-lateral plates of the telson show a sex related difference: coarse lateral marginal setae are present in the male, absent in the female, as in *M. regia* (see Baba, 1988: fig. 63f).

Ahyong & Poore (2004b) believe that the materials reported by Kensley (1977) from South Africa and by Baba & Poore (2002) from southeastern Australia belong to *M. kensleyi* Ahyong & Poore, 2004. The major difference between the two species is that *M. kensleyi* has no spine behind the anterolateral spine of the carapace, instead of two spines as in *M. dasypus*. The present material has the typical spination of the species, although the last one is very small or tubercle-like in the specimens from “Galathea” St. 324. The P1 has the spination much like that of the “Investigator” material, unlike those noted to be less spinose by Kensley (1977) and illustrated by Baba & Poore (2002) and Ahyong & Poore (2004b). However, the material from “Albatross” St. 5275, 5630 and 5631 (Baba, 1988) does not accept this definition. The carapace lateral margin bears a single spine there on both the left and right sides in the larger female from St. 5630 and on the left side in the male from St. 5275, but no spine on both sides in the smaller female from St. 5630 and the male from St. 5631, on the right side in the male from St. 5275. The P1 of these specimens shows the typical feature of *M. dasypus*. The deep excavation at the anterior median portion of the sternite 4 as illustrated by Baba (1988: 60b) is not clearly seen on the present material. In this paper, *M. kensleyi* Ahyong & Poore,

2004 is cited in the key to species (see below), but more study would be desirable for Philippine material.

Range: Gulf of Aden, Arabian Sea, Laccadive Sea, Bay of Bengal, Andaman Sea, Indonesia off SE Halmahera, and South China Sea off SW Luzon; 214–1939 m.

***Munidopsis edwardsii* (Wood-Mason, 1891)**

Synonymy: see p. 288.

Material:

“Galathea” St. 314, Bay of Bengal, 15°54’N, 90°17’E, 2610 m, brownish ooze, 3 May 1951: — 2 ♂ (22.5, 24.0 mm), 1 ♀ (26.9 mm), ZMUC CRU-11490.

Diagnosis: Body and appendages covered with very fine plumose setae. Carapace moderately convex, with very weak, interrupted ridges on both gastric region and posterior half surface, bearing borders separating gastric, anterior and posterior branchial, cardiac and intestinal regions; epigastric region with pair of eminences. Front margin oblique, antennal spine distinct. Anterolateral angle sub-acute; lateral margins of branchial regions bilobed, anterior lobe with salient cristiform margin, bearing small processes or denticles, overhanging pterygostomian flap, posterior lobe with small or obsolescent spine at anterior end. Rostrum broadly triangular, horizontal, dorsally carinate. Abdomen spineless; segment 6 having posterolateral lobes distinct, slightly overreaching nearly transverse posteromedian margin. Telson broad relative to length, divided into 8 plates. Ocular peduncles slightly movable, vertically compressed, produced beyond cornea, ending in coarse spine; cornea small and lateral. Basal article of antennule with distodorsal and distolateral spines, both small. Article 1 of antennal peduncle with strong distomesial and distolateral spines, distomesial one basally depressed; article 2 with distolateral spine; articles 3 and 4 unarmed. Mxp 3 merus with about 5 obtuse small spines on flexor margin, extensor margin ending in small spine. Pereopods with granulose small processes obscured by setae, setose condition more pronounced than on carapace. P1 merus with strong terminal spines and row of dorsal spines; palm as long as fingers, spineless; fingers distally spoon-shaped, denticulate, edge of fixed finger overlapping that of movable finger when closed, movable finger slightly shorter; fixed finger with denticulate carina on distolateral margin. P2–4

relatively long; each merus with row of stout dorsal marginal spines continued on to carpus; each carpus and propodus longitudinally carinate on dorsolateral face; each dactylus distinctly shorter than propodus, distally ending in curved claw, bearing non-plumose, stiff, long setae, flexor margin with row of 7–9 acuminate teeth diminishing toward base of article. P2 overreaching P1. Epipod present on P1.

Remarks: The sexual dimorphism in setation of the telson plates as displayed by *M. dasyptus* is not evident in the present species.

Range: Bay of Bengal, New South Wales, and off Durban; 1896–3520 m.

***Munidopsis granosa* Alcock, 1901**

Fig. 65

Synonymy: see p. 289.

Material:

“Galathea” St. 217, Mozambique Channel, 14°20’S, 45°09’E, 3485 m, 27 Feb 1951: — 3 ♂ (16.0–20.0 mm), 2 ♀ (15.6, 17.8 mm), ZMUC CRU-11275.

“Galathea” St. 299, Bay of Bengal, 17°10’N, 84°30’E, 2935 m, 24 Apr 1951: — 1 ov. ♀ (20.4 mm), ZMUC CRU-11483.

“Galathea” St. 314, Bay of Bengal, 15°54’N, 90°17’E, 2610 m; brownish ooze, 3 May 1951: — 1 ♀ (23.6 mm), ZMUC CRU-11491.

Diagnosis: Carapace, abdomen and P1–4 spineless, covered with tubercles, those on carapace mostly confluent. Carapace nearly devoid of setae, areas well delineated and convex. Lateral margins subparallel on hepatic region, convex on branchial region. Rostrum very broadly triangular, about 1/3 as long as remaining carapace, dorsal carina continued onto anterior half gastric region. Abdominal segments 2–4 each with blunt, low median process; posterolateral lobes of segment 6 distinct but not overreaching somewhat convex transverse posteromedian margin. Telson divided into 8 plates, posterior plates combined more than twice as broad as long. Ocular peduncles slightly movable, vertically compressed and sub-laminar, bearing strong ridge along rostro-frontal margin; cornea lateral. P1 about as long as carapace in both sexes, spineless; fingers fully or barely as long as palm, distally hoof-shaped, each with 8–10 small but sharp

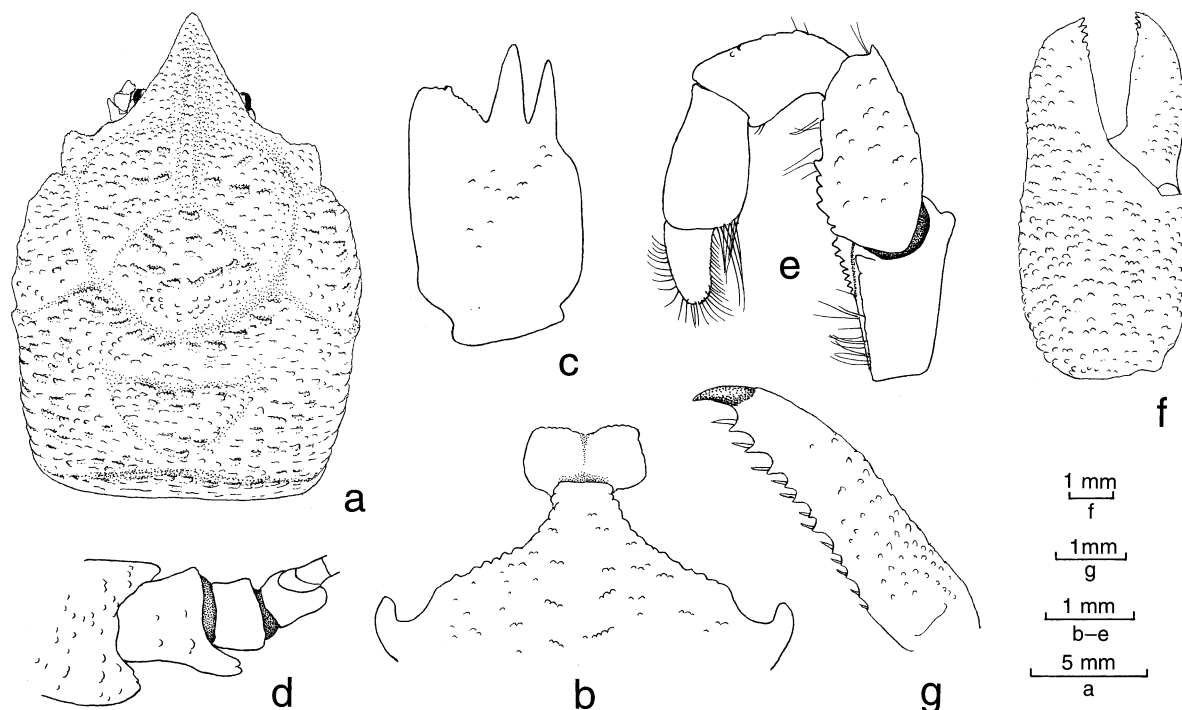


Fig. 65. *Munidopsis granosa* Alcock, 1901, ov. ♀ (20.4 mm), ZMUC CRU-11483: a, carapace, dorsal; b, anterior part of sternal plastron; c, basal article of antennule, left, ventral; d, antenna, left, ventral; e, endopod of Mxp 3, left, lateral; f, P1, proximal articles omitted, left, dorsal; g, dactylus of P2, left, lateral.

teeth, movable finger shorter than fixed finger. P2–4 subcylindrical, relatively stout; each dactylus nearly as long as propodus, distally curving, ending in strong spine, flexor margin with 8–12 teeth (each with accompanying seta-like spine) diminishing toward base of article; propodi and often carpi with plumose setae on mesial face. P2 reaching distal end of P1. Epipods absent from P1–4.

Eggs: Diameter, 2.3–2.5 mm.

Remarks: The female from “Galathea” St. 314 bears a rhizocephalan parasite, which was described as a new species, *Lernaeodiscus triangularis*, by Lützen (1985). The sexual dimorphism as noted on the midlateral plates of the telson in *M. dasypus* (see above) is not displayed by this species.

Range: Bay of Bengal and Mozambique Channel; 2610–3485 m.

Munidopsis hamata Faxon, 1893

Fig. 66

Synonymy: see p. 289.

Material:

“Galathea” St. 739, Gulf of Panama, 07°22’N, 79°32’W, 915–975 m, 15 May 1952: — 3 ♂ (12.9–23.1+ mm), 5 ♀ (13.5–25.0 mm), ZMUC CRU-11621.

“Galathea” St. 745, Gulf of Panama, 07°15’N, 79°25’W, 915 m, 16 May 1952: — 8 ♂ (14.1–24.0 mm), 2 ov. ♀ (26.9, 27.7 mm), 3 ♀ (15.3–22.3 mm), ZMUC CRU-11620.

Diagnosis: Carapace quadrangular, dorsally rather flattish, with strong transverse trough anterior to cardiac transverse elevation and smaller depression on mesial portion of anterior branchial region; provided with small spines markedly numerous on lateral portion; row of spines in midline on gastric and cardiac regions and posterior transverse ridge, anterior-most of cardiac spines strong; posterior transverse ridge with numerous small spines. Front margin convex, bearing small spines. Rostrum fully or barely half as long as remaining carapace, moderately curving upward, dorsal surface somewhat convex, feebly excavated longitudinally in proximal half, bearing tubercles or small spines lateral to median furrow; lateral margin with 5–7 small spines. Abdominal segments 2–5 each

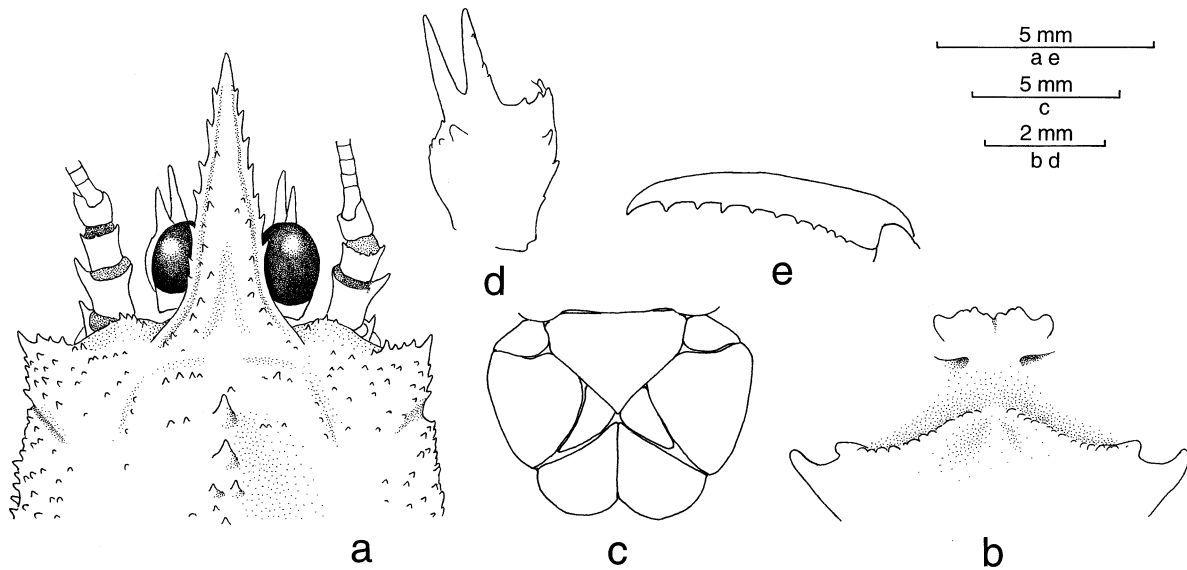


Fig. 66. *Munidopsis hamata* Faxon, 1893: a, ♂ (18.0 mm), ZMUC CRU-11620; b–f, ♀ (22.3 mm), ZMUC CRU-11620: a, anterior part of carapace, dorsal; b, anterior part of sternal plastron; c, posterior part of abdominal segment 6 and telson; d, basal article of antennule, right, ventral; e, P2 dactylus, left, lateral.

with prominent, procurved median spine and scattered small spines; segment 6 having posterolateral lobes well developed, overreaching nearly transverse posteromedian margin. Telson divided into 9 plates, central plate absent, midlateral plates with coarse setae in male. Ocular peduncles relatively large, movable; cornea well-developed, dilated distoventrally, eyespines absent. Antennal peduncle slender, article 1 terminally provided with 2 spines, distomesial one smaller; article 2 with well developed distolateral spine. Mxp 3 ischium flattish on lateral face, relatively broad, about 1.5 times as broad as merus, extensor distal margin with prominent spine; merus with 3 strong spines on flexor margin and 2 or 3 spines on extensor margin; carpus with 3 (rarely 4) extensor marginal spines. P1 slender, spinose, fingers spineless. P2–4 also slender and spinose, each dactylus 0.7 times as long as propodus, with row of small, acuminate spines on entire length of flexor margin. P2 fully or barely reaching midlength of palm of P1. Epipods absent from P1–4.

Eggs: Size, 1.0–1.2 mm in diameter.

Remarks: All the present specimens perfectly agree with two male syntypes of *M. hamata* (USNM 21280) from “Albatross” St. 3395 in the Gulf of Panama. In Faxon’s illustration, however, the telson is not precisely depicted; it is imperfectly calcified, hence, Faxon might have overlooked a suture dividing two small plates

mesial to the midlateral plates and posterior to the anteromedian plate. Also, the anteromedian plate is, in fact, sharply produced posteriorly in the syntypes as well as in the “Galathea” specimens.

The rostrum and the front margin of the carapace are very similar to those of *M. depressa* (see Faxon, 1895: pl. 22, fig. 2; Smith & Weldon, 1904: fig. 114; this paper: fig. 66a). It seemed not unlikely that *M. depressa* is a less spiny form of the present species. At my request the late Janet Haig examined specimens of *M. depressa* from California and those of *M. hamata* from Mexico and Peru in the collection of the Allan Hancock Foundation. She informed that “in *M. depressa* the carapace bears four large median spines (2 gastric, 1 cardiac and 1 on posterior margin of the carapace) which are more or less equally spaced; in *M. hamata* the anterior second gastric spine is located immediately behind the first.” In the “Galathea” specimens the carapace spines in the midline are more numerous, on both the gastric and the cardiac regions. Haig also wrote that in none of her specimens of *M. hamata* the armature of the Mxp 3 carpus is as strong as it appears in Faxon’s illustration; on the other hand, the unarmed condition of that article as in *M. depressa* (see Faxon, 1895: pl. 22, fig. 2a) is not observed in *M. hamata*. More study would be desirable to establish the systematic status of these two species.

The illustration of this species, prepared possibly from one of the types, is adopted in the textbook of Smith & Weldon (1904).

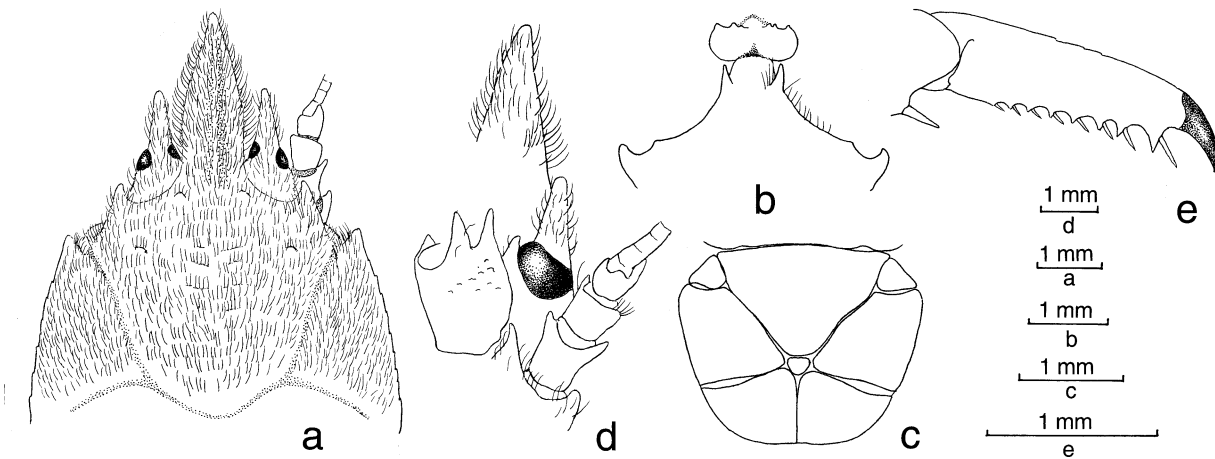


Fig. 67. *Munidopsis hendersoniana* Faxon, 1893; a, c, e, ♂ (9.0 mm), ZMUC CRU-11624; b, d, ov. ♀ (13.0 mm), ZMUC CRU-11608: a, anterior half of carapace, dorsal; b, anterior part of sternal plastron; c, telson; d, anterior part of cephalothorax, showing left antennule, antenna, ocular peduncle, and rostrum, ventral; e, distal part of P2, right, lateral.

Range: Gulf of Panama and off SW Baja California; 935–1336 m. Records from off Chigualoco (Chile) and N Peru provided by Retamal (1981) are removed for the time being, since his paper does not provide any information that indicates a correct identification.

***Munidopsis hendersoniana* Faxon, 1893**

Fig. 67

Synonymy: see p. 289.

Material:

“Galathea” St. 739, Gulf of Panama, 07°22’N, 79°32’W, 915–975 m, 15 May 1952: — 1 ov. ♀ (13.0 mm), ZMUC CRU-11608.

“Galathea” St. 745, Gulf of Panama, 07°15’N, 79°25’W, 915 m, 16 May 1952: — 2 ♂ (9.0, 10.8 mm), 3 ov. ♀ (10.0–12.0 mm), 2 ♀ (5.0, 9.2 mm), ZMUC CRU-11624.

Diagnosis: Body and appendages thickly covered with short, plumose setae. Carapace dorsally flattish and spineless, gastric region somewhat convex, Cervical groove distinct. Lateral margins convex, strongly crested, overhanging pterygostomial flap, anterolateral spine relatively broad but short and obtuse. Front margin oblique, with well-developed antennal spine. Rostrum less than half length of carapace, acute, horizontal, dorsal surface carinate in midline. Sternite

4 with acute anterolateral spine on each side. Abdominal segments spineless; posterior margin of segment 6 nearly transverse, with feeble convexity separating posteromedian margin and posterolateral lobe. Telson rounded in outline, divided into 8 plates, midlateral plates in male with coarse setae on lateral margin. Ocular peduncles immovable, produced into sharp spine extending beyond cornea and fully reaching midlength of rostrum; cornea dorsally divided into mesial and lateral parts by ocular peduncle, ventrally continuous, guarded by small spine at distomesial end of ocular peduncles. Antennular basal article with distodorsal and distolateral spines, both ending in blunt tip, distomesial margin with mesio-laterally compressed, short spine. Mxp 3 merus with 4 or 5 small processes on flexor margin. P1 short, merus and carpus with spines, palm spineless, fixed finger with denticulate carina on distolateral margin; fingers not gaping, distal portion spoon-shaped, fitting each other with intermeshing teeth when closed. P2–4 spinose on dorsal and ventral margins of meri (5–6 spines on each margin) and on dorsal margins of carpi, all spines stout, ending in blunt tip; each dactylus half as long as propodus, distally curving, flexor margin with row of 8–9 short, acute spines. P2 overreaching P1. Epipods absent from P1–4.

Eggs: Diameter, 1.4–1.6 mm.

Remarks: There are two close relatives of this species; one of them is *M. ramahtaylorae* Pequegnat &

Pequegnat, 1971 from the Gulf of Mexico. The differences between *M. hendersoniana* and *M. ramahtaylorae* are clear, notably the P2–4 meri being spineless in *M. ramahtaylorae*. *Munidopsis pilosa* Henderson, 1885, the other relative from the Andaman Sea and the Philippines (Henderson, 1885; 1888; Baba, 1988) is closer to this species. However, its carapace is not so strongly crested on the lateral margin as in *M. hendersoniana* and the sternite 4 bears more than two spines on the anterolateral margin.

Three of the seven specimens from “Galathea” St. 745 were found in holes in a sunken tree trunk (Wolff, 1979).

Range: Gulf of Panama; 938–1867 m.

***Munidopsis laciniosa* n. sp.**

Fig. 68

Material:

Th. Mortensen’s Java–South Africa Expedition 1929–30, “Dog” St. 15, Bali Sea, Indonesia, 7°29' S, 114°49' E, ca. 240 m, sand & mud with concretions, 10 Apr 1929: — 1 ♂ (5.6 mm), holotype, ZMUC CRU-11083.

Diagnosis: Very spinous species. Body covered with numerous spines, those on abdomen antero-posteriorly depressed, procurved, truncate and lacinate. Rostrum subtriangular, lateral margin with small spines at least on distal half. Ocular peduncles immovable, with 4 eye-spines, cornea not dilated. P2 reaching end of P1 carpus. Epipods present on P1–3.

Description: Body and appendages very spinose. Carapace, excluding rostrum and spines, slightly longer than broad, covered with numerous curved, mostly lacinate spines, each spine flanked by plumose setae. Lateral margins somewhat convex. Cervical groove distinct. Front margin concavely oblique behind ocular peduncle, leading to antennal spine directed anterolaterad, then depressed and nearly transverse toward anterolateral spine of carapace. Rostrum nearly horizontal and triangular; dorsal surface somewhat excavated; lateral margins with row of small, acute spines on distal half.

Sternal plastron as figured. Sternite 3 relatively broad, with 2 convexities on anterior margin, lateral margins convergent. Sternite 4 short relative to width.

Abdominal segments with spines transversely

arranged, antero-posteriorly compressed, procurved, and lacinate; 3 spines on segment 4 very broad. Pleura of segments 2–4 marginally crested; posterior margin of segment 4 also crested. Posterolateral lobes of segment 6 distinct but not overreaching posteromedian margin. Telson divided into 7 plates, central plate absent, midlateral plate with coarse lateral setae, posterior plates broad relative to length.

Pterygostomial flap with small spines on surface.

Ocular peduncles relatively small, immovable, bearing 4 distal spines accompanied by soft plumose setae.

Basal article of antennule unarmed on distomesial margin; prominent distolateral and distodorsal spines plus a few dorsal and ventral spines. Article 1 of antennal peduncle with strong distolateral and distomesial spines; distomesial one overreaching end of article 2. Articles 2–3 each bearing distinct distolateral spine with accompanying small spine proximal to it.

Mxp 3 ischium with flexor distal marginal spine of moderate-size, mesial ridge with 18–20 denticles. Merus with 3–4 spines on flexor margin, proximal 2 strong, proximal-most in particular; extensor margin with distal spine. Carpus with 4 small spines on extensor margin.

P1 2.2 times as long as carapace, spinose as illustrated. Carpus 1.8 times as long as broad. Palm twice as long as broad. Fingers 4/5 length of palm, nearly spineless except for proximal half of mesial margin of movable finger bearing very small spines; distally not crossing, fitting each other with intermeshing teeth; opposable margins denticulate and nearly straight.

Left and right P2 present, other legs missing; totally spinose as illustrated but not spinose on mesial surface; dorsal marginal spines pronounced on meri and carpi. Each dactylus about half as long as propodus, nearly straight including terminal claw, flexor margin with 12 proximally diminishing low teeth, ultimate tooth equidistant between penultimate tooth and tip of terminal claw; lateral face with small spines. P2 reaching end of P1 carpus.

Epipods present on P1–3.

Remarks: The new species is very close to *M. taurulus* Ortmann, 1892, in the carapace covered with spines, and the rostrum bearing lateral spines. It can be differentiated from that species by 1) the epipods present on the P1–3, 2) the ocular peduncles bearing four spines proximal to the cornea (according to

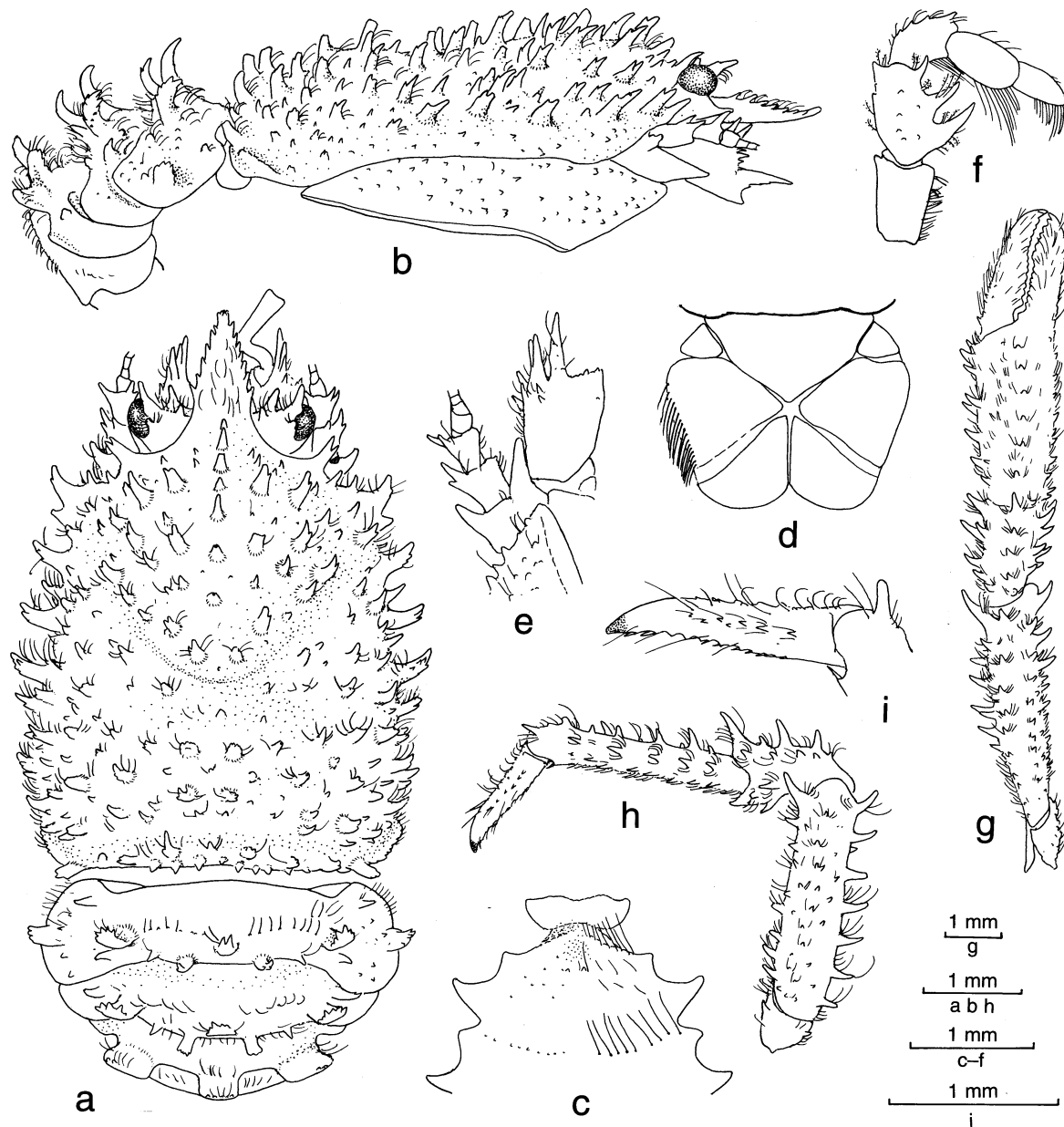


Fig. 68. *Munidopsis laciniosa* n. sp., holotype, ♂, ZMUC CRU-11083: a, carapace and abdomen, dorsal; b, same, lateral; c, anterior part of sternal plastron; d, posterior part of abdominal segment 6 and telson; e, anterior part of cephalothorax, showing right antennule and antenna, ventral; f, endopod of Mxp 3, distal article omitted, right, lateral; g, P1, right, dorsal; h, P2, left, lateral; i, same, distal part, lateral.

Enrique Macpherson (person. comm.), fourth spine barely discernible in some of his specimens), 3) the carapace bearing more numerous, sharp spines, 4) the abdominal segments bearing much wider, antero-posteriorly compressed, laciniate spines, and 5) the antennal peduncle bearing a well-developed spine on the distomesial margin of the article 1. The spinose body and appendages, carapace spines flanked by plumose setae, shapes and ornamentation of the

antennular basal article and Mxp 3, link the species also to *M. spinihirsuta* Lloyd, 1907 (see Tirmizi, 1966: 221). However, the latter species is characterized by the lack of epipods on the P1–4, the spination of the carapace and abdomen being much less pronounced, the rostrum bearing a few lateral spines distally, the ocular peduncles bearing only one small spine proximal to the cornea, all the obvious differences from the new species.

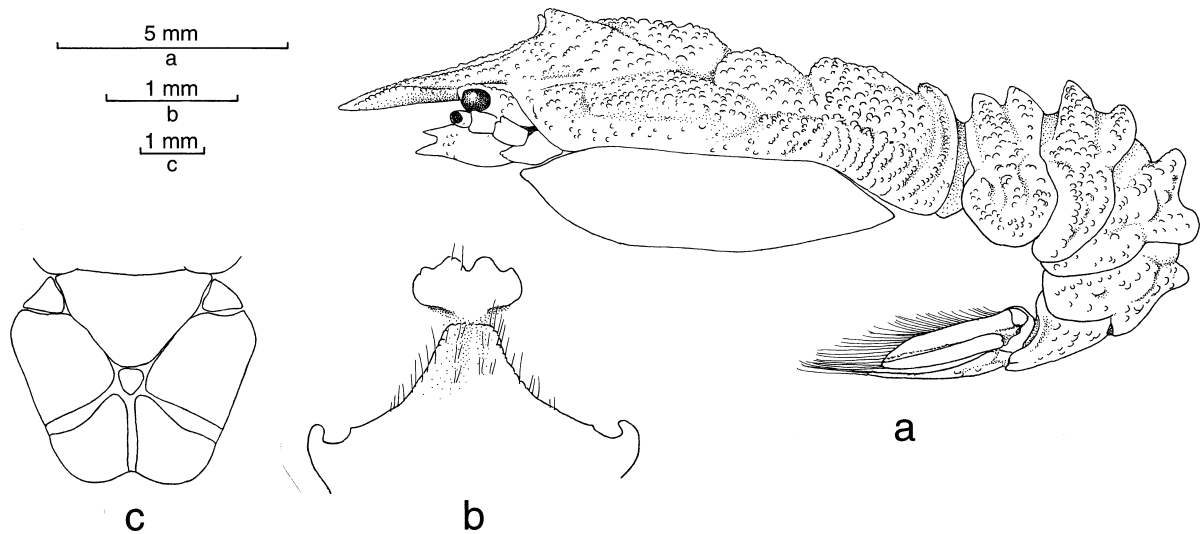


Fig. 69. *Munidopsis latirostris* Faxon, 1895, ♀ (12.7 mm), ZMUC CRU-11606: a, carapace and abdomen, lateral; b, anterior part of sternal plastron; c, posterior part of abdominal segment 6 and telson.

Etymology: The Latin *lacinosus* (= lacinate) alluding to the lacinate spines on the carapace and abdomen.

***Munidopsis latirostris* Faxon, 1895**

Fig. 69

Synonymy: see p. 290.

Material:

“Galathea” St. 727, Gulf of Panama, 06°23’N, 78°43’W, 3800 m, 13 May 1952: — 1 ♀ (12.7 mm), ZMUC CRU-11606.

Diagnosis: Body and appendages covered with tubercular granules. Carapace devoid of dorsal and lateral spines but pair of obtuse epigastric processes, posteriorly narrowed, greatest width measured between anterior branchial regions; areas well delineated; gastric region convex; triangular posterior portion clearly delimited; triangular elevation of cardiac region preceded by deep transverse trough. Lateral margins subparallel between hepatic regions, posteriorly convergent behind it; anterior branchial region moderately crested. Front margin transverse. Rostrum broad, flattish, somewhat constricted at base, ending in sharp point, feebly deflexed, bearing rounded ridge in midline, lateral margins convex, length barely half that of remaining carapace. Abdomen spineless, segments 2–4 each with 2 transverse elevations medially bearing blunt low process; posterolateral

lobes of segment 6 not exceeding nearly transverse posteromedian margin. Telson divided into 8 plates, posterior plates narrow relative to greatest width between midlateral plates. Ocular peduncles hardly movable, granulose; cornea small and lateral. Basal article of antennule with 2 short, stout terminal spines, mesially unarmed. Antennal peduncle relatively slender, bearing stout, blunt distomesial process on article 1. Mxp 3 merus with 3–4 denticles on proximal 2/3 of flexor margin. Sternite 3 narrow, 1/3 as broad as sternite 4, anterior margin with 2 rounded lobes; sternite 4 elongate subtriangular. P1 mesially and laterally with soft plumose setae, particularly thick on fingers; fingers distally rounded and denticulate, not completely intermeshing, movable finger slightly shorter; fixed finger with weakly denticulate, low carina on distolateral margin. P2–4 bearing plumose setae on mesial face; each merus mesio-laterally depressed, relatively broad in lateral view, dorsal margin cristate, bearing blunt spines much smaller than those on ventrolateral margin; each propodus with pronounced tubercles and spines arranged in 3 rows; each dactylus 3/4 as long as propodus or slightly longer, with strongly curved distal claw, flexor margin with 6–7 proximally diminishing spines. P2 terminating in midlength of P1 fingers. Epipod present on P1.

Remarks: The carapace of this specimen perfectly fits the figure provided by Ambler (1980). The specimen seems at variance with the holotype of *Elasmonotus latifrons* [= *M. latirostris*] now deposited in the



Fig. 70. *Munidopsis levis* Alcock & Anderson, 1894, ♀ (24.0 mm), ZMUC CRU-11580, dorsal.

collection of the Natural History Museum, London (BMNH 88: 33) in the following details: 1) the epigastric processes are distinct in the “Galathea” specimen, very reduced in the holotype; 2) the terminal spines on the merus and carpus of the P1 are distinct in the holotype, absent in the “Galathea” specimen; 3) the Mxp 3 merus bears 3–4 blunt flexor marginal spines in the “Galathea” specimen, 6–7 denticular spines in the holotype; and 4) the telson is subdivided into 8 plates in the “Galathea” specimen, 10 in the “Challenger” holotype. The flexor marginal teeth on P2–4 dactyli were noted to be a few in number in the holotype (Henderson, 1888), but in actual fact, they are about seven as in the “Galathea” specimen. More material would be desirable to determine these differences warrant description of a new species.

Range: Eastern Pacific off Panama and off Oregon, eastern Pacific between Papua New Guinea and Loyalty Islands, and Coral Sea off S Papua New Guinea; 280–3800 m.

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

Figs. 70, 71

Synonymy: see p. 290.

Material:

Th. Mortensen’s Pacific Expedition 1914–16, 25 miles E of Zamboanga, 458 m, hard bottom, trawl, 4 Mar 1914: — 1 ♀ (24.0 mm), ZMUC CRU-11580.

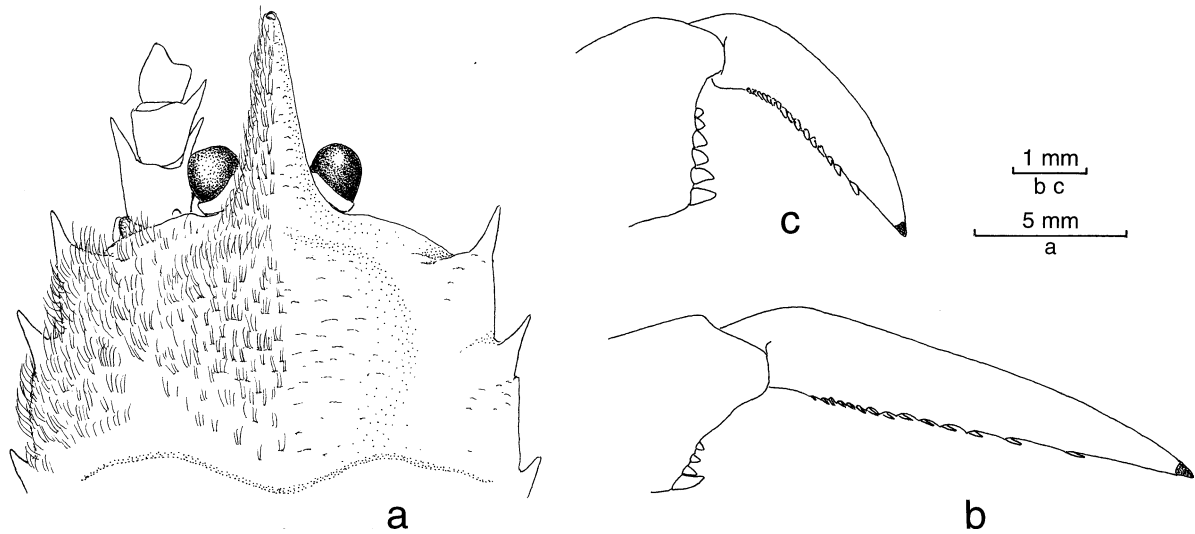


Fig. 71. *Munidopsis levis* Alcock & Anderson, 1894, ♀ (24.0 mm), ZMUC CRU-11580: a, anterior part of carapace, right half denuded, dorsal; b, distal part of P2, right, lateral; c, distal part of P4, right, lateral.

Diagnosis: Body and pereopods covered with fine plumose setae. Carapace dorsally spineless, gastric region slightly convex, anterior cervical groove indistinct, posterior transverse ridge distinct, cardiac transverse ridge elevated; short rugae on gastric region, much longer, more distinct rugae on branchial and cardiac regions. Lateral margins with 2 lobes in front of posterior cervical groove; bearing 3 acute spines, first anterolateral, second directly behind end of anterior branchial region, third at midlength bordering anterior and posterior branchial regions. Front margin feebly oblique on mesial half, lateral half distinctly depressed below level of mesial half; antennal spine absent. Small spine ventral to front margin between ocular and antennal peduncles. Rostrum pilose, relatively broad at base, dorsally convex, distally upturned, about half as long as remaining carapace. Abdominal segments unarmed, bearing elevated transverse ridge on segments 2–4, smooth elsewhere; segment 6 having posterior margin nearly transverse, continued on to lateral lobe of same level. Telson divided into 7 plates, anteromedian plate posteriorly produced. Ocular peduncles movable, cornea and part of remaining eyestalk visible from above. Antennal peduncles having sharp spines, distomesial on article 1, distomesial and distolateral on article 2, distomesial and distoventral on article 3; article 2 with small rounded dorsal process contiguous to front margin. Mxp 3 merus with strong spine on flexor median margin and prominent spine on extensor distal margin. P1 merus and carpus spinose, palm spineless, fingers

distally crossing. Meri with ca. 5 dorsal marginal spines on P2–3, 2–4 on P4, and another spine at distal 1/5 of mesial face; carpi also with 2 spines on dorsal crest and another smaller one between and mesial in position (not visible in dorsal and lateral views); each propodus distally widened and subchelate with dactylus, pronouncedly so on P4. P2 fully reaching end of P1 palm. Epipods absent from P1–4.

Remarks: *Munidopsis levis* is said to be different from *M. tenax* with the rostrum being broader, shorter and more depressed, the ocular peduncles other than the corneas invisible in dorsal aspect, the P1 much less spiny, and the P2–4 meri and carpi unarmed except for distal spines on the dorsal and ventral margins, and abdominal tergites being in close contact (Alcock & Anderson, 1894; Alcock, 1901). In this definition, however, the ocular peduncles are mistakenly described (Tirmizi, 1966; Baba, 1988); also, the P2–3 carpi bear additional spines on the dorsal crest in Alcock & McArdle (1901: pl. 55: fig. 2). In the present specimen, the rostrum is as defined for *M. levis*; the P1 bears a distinct distolateral spine on the carpus as in *M. tenax*; the P2–3 meri bear five spines on the dorsal crest, usually with one or two accompanying spines mesioventral and distal to the distal second of these spines; in the P4, dorsal spines on the merus are reduced to two or four in number. Because any of the given differences is not clear in the illustrations by Alcock & McArdle (1901: pl. 55: figs. 1, 2), it is unlikely that the proposed discrimination characters are consistent.

Range: Zanzibar, Arabian Sea in the vicinity of Laccadives, Maldives, Andaman Sea, off Zamboanga, South China Sea off SW Luzon; 454–1164 m.

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

Figs. 72, 73

Synonymy: see p. 291.

Material:

“Galathea” St. 52, Gulf of Guinea between San Tome and Victoria, 01°42’N, 07°51’E, 2620 m, muddy clay, 30 Nov 1950: — 1 ♂ (12.7 mm), ZMUC CRU-11639.

“Galathea” St. 453, Makassar Strait, 03°56’S, 118°26’E, 2084 m, clay, 24 Aug 1951: — 1 ♂ (13.0 mm), ZMUC CRU-11503.

“Galathea” St. 491, Makassar Strait, 04°56’S, 117°39’E, 1600 m, clay, 14 Sep 1951: — 1 ♂ (18.8 mm), ZMUC CRU-11501.

“Galathea” St. 739, Gulf of Panama, 07°22’N, 79°32’W, 915–975 m, 15 May 1952: — 2 ♂ (20.0, 22.1 mm), 2 ov. ♀ (20.7, 24.0 mm), 2 ♀ (16.7+ mm, carapace missing in other specimen), ZMUC CRU-11612.

“Galathea” St. 745, Gulf of Panama, 07°15’N, 79°25’W, 915 m, 16 May 1952: — 1 sp. (sex indet., 22.0 mm), ZMUC CRU-11614.

Diagnosis: Body and appendages with coarse setae long and thick but often less so. Carapace with interrupted, setiferous striae; pair of epigastric spines prominent; lateral margin with 4 or 5 spines including small anterolateral one, anterior second strongest. Front margin oblique, with distinct antennal spine. Rostrum narrowly acute, slightly upturned distally, dorsal surface usually weakly carinate. Abdomen spineless, segments 2–4 each with 2 elevated transverse ridges; segment 6 having posterolateral lobe not produced beyond nearly transverse posteromedian margin. Telson divided into 10 plates. Ocular peduncles movable, 2 eye-spines, both relatively slender, inner one larger; cornea broad relative to remaining eyestalk. Antennular basal article with 2 spines distolaterally. Articles 1–3 of antennal peduncle each with sharp terminal spines, but distomesial one of article 2 reduced in size or completely absent. Mxp 3 merus having flexor marginal spines varying from a few distinct spines to several small denticular processes. P1 shorter than P2; merus and carpus with spines; palm spineless;

fingers distally hoof-shaped, bearing small intermeshing teeth, distolateral margin of fixed finger with denticulate carina. P2–4 meri and carpi with acute spines on dorsal crest; propodi unarmed, bearing longitudinal ridge on lateral face; dactyli nearly straight, distally ending in curved spine, flexor margin bearing about 10 teeth. Epipod present on P1, not on P2–4.

Eggs: Diameters, 1.8–1.9 mm.

Remarks: Faxon (1895) noted that *M. nitida* is a less heavily sculptured and less hairy form than *M. ciliata*, suggesting that these minor differences between the two seemed less than specific and that *M. nitida* and *M. ciliata* might eventually prove to be identical. The specimen from “Galathea” St. 52 in the Gulf of Guinea is very similar to those from “Galathea” St. 453 and 491 in the Makassar Strait in the less hairy carapace and more setose appendages, but carapace lateral spines in the male from St. 491 are somewhat more pronounced than those of the others. The P1 carpus bears an additional mesial marginal spine proximal to a terminal one in the male from St. 52; this spine is very reduced and barely discernible in the male from St. 453. The specimen from St. 745 in the Gulf of Panama is very setose on the whole body including appendages, bearing a distinct additional spine on the P1 carpus. The lot from “Galathea” St. 739 contains a less setose specimen (smaller male); in the remainder the carapace is moderately or less setose although the P1–4 are very setose; in the larger ovigerous female the additional carpal spine is missing on the left P1. In four of the seven specimens from the Gulf of Panama, the carapace bears another lateral marginal spine, in addition to the usual five. In order to elucidate the relationships between *M. nitida* and *M. ciliata*, and especially to evaluate Faxon’s conclusion, I examined specimens of *M. nitida* collected by the “Alaminos” from the SW Gulf of Mexico and identified by Pequegnat & Pequegnat (1970) that were made available on loan through Julie W. Ambler. All the “Galathea” specimens, as well as the “Alaminos” specimens of *M. nitida* (TAM 2-0589, 2-0590, 2-0591), share nearly all essential details similar to each other, in carapace spinations, shapes of eye-spines, antennules, antennae, telson, Mxps 3, sternite 3, etc. (Figs. 72, 73). It is true that *M. nitida* is less setose and less heavily sculptured, but such specimens are also found in the Makassar Strait. Inasmuch as the presence or absence of an extra mesial marginal spine on the P1

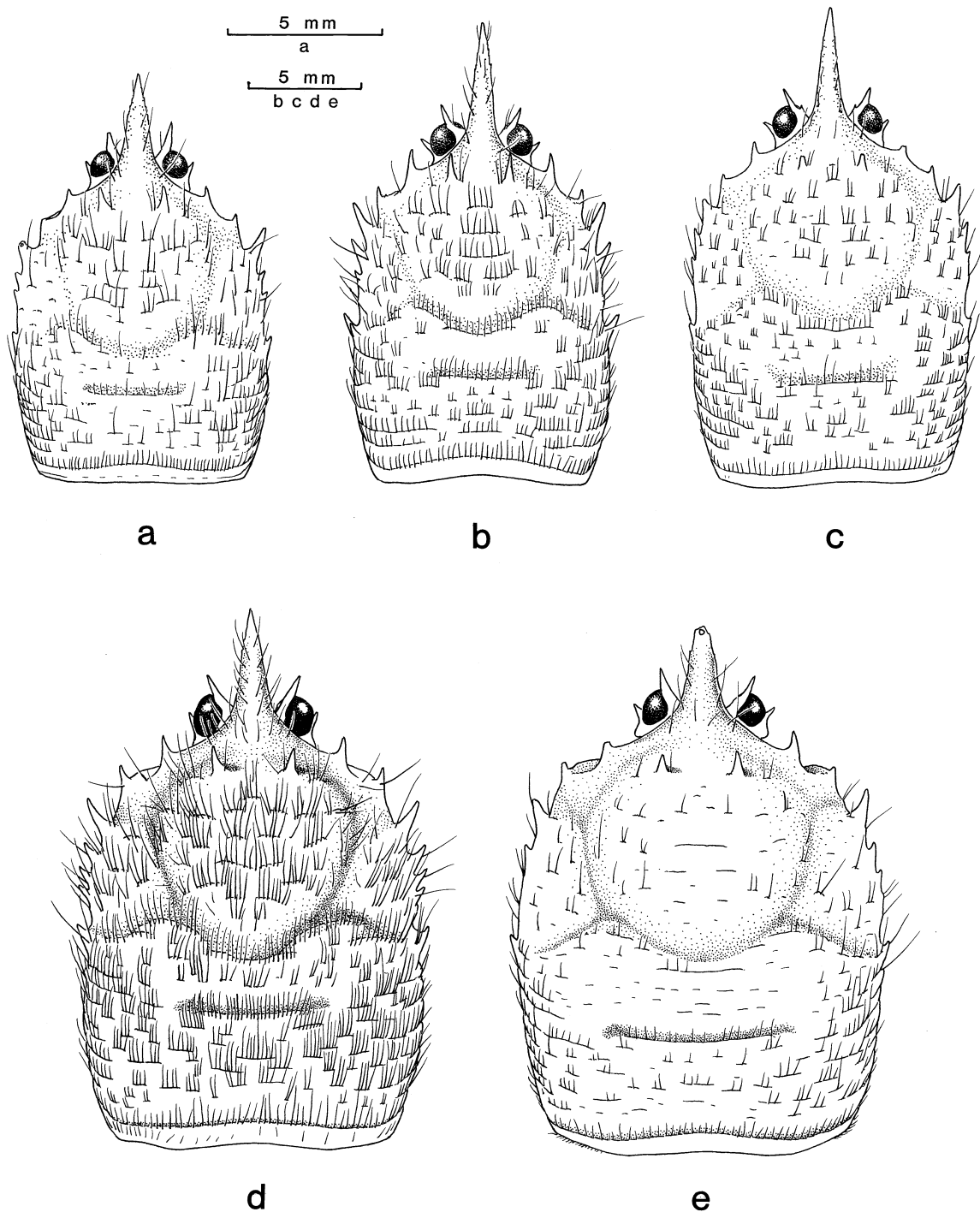


Fig. 72. *Munidopsis nitida* (A. Milne Edwards, 1880), carapace: a, ♂ (12.7 mm), ZMUC CRU-11639; b, ♂ (18.8 mm), ZMUC CRU-11501; c, ♂ (20.1 mm), TAM 2-0590; d, sex indet. (22.0 mm), ZMUC CRU-11614; e, sex indet. (22.1 mm), TAM 2-0591.

carpus that seemed to me to separate *M. ciliata* from *M. nitida* is also not consistent in the Pacific specimens, I believe that *M. nitida* and *M. ciliata* are identical.

In the specimen from St. 745, genital openings are absent from both the P3 and P5, pleopods are missing

on the abdominal segment 1 and the simple, uniramous pleopods are present on the segment 2 but smaller than those on the segment 3. The similar specimen was also found in one of the lots in the Texas A&M collection (TAM 2-0591), whose abdomen bears a rhizocephalan

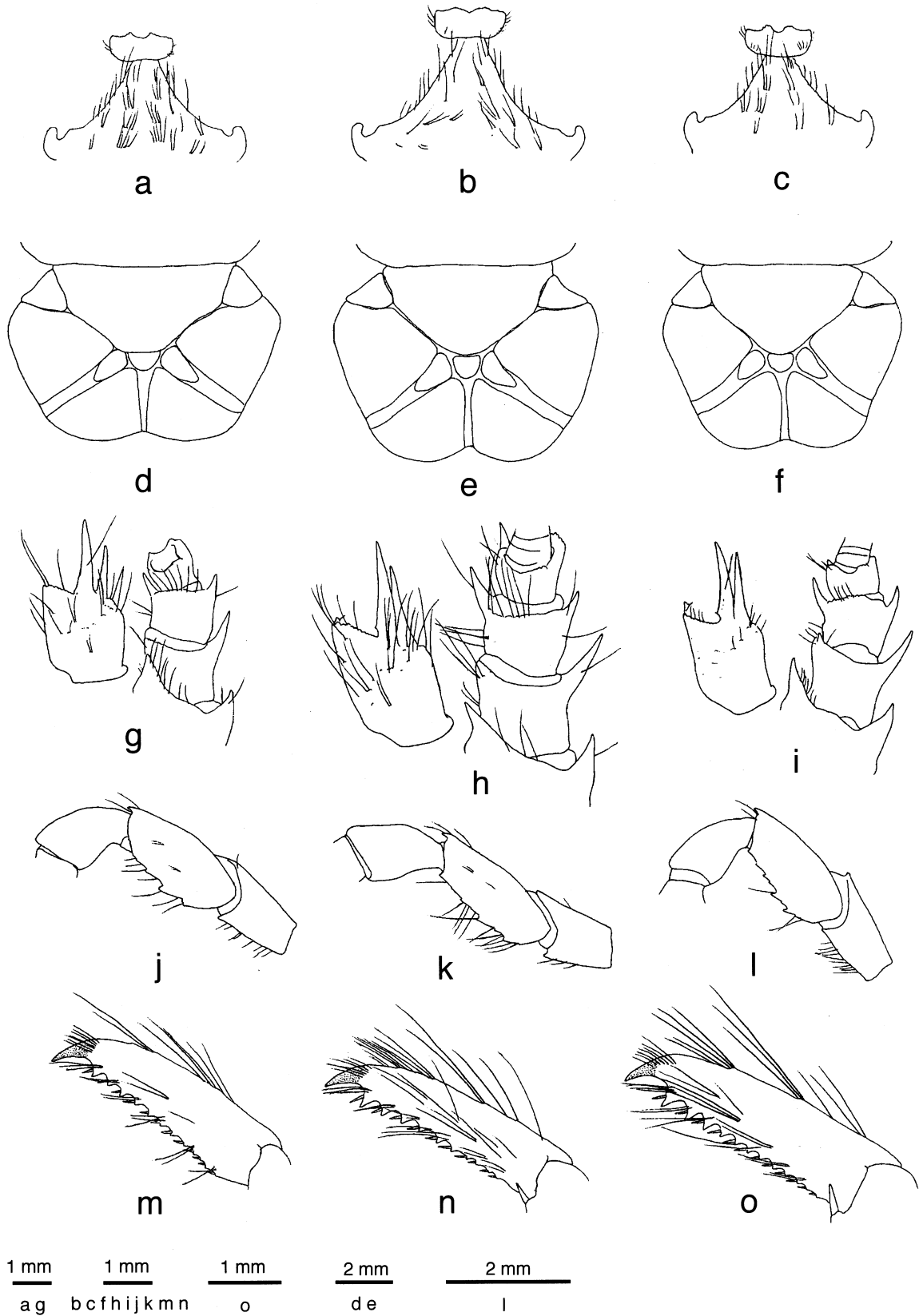


Fig. 73. *Munidopsis nitida* (A. Milne Edwards, 1880); a, d, g, j, m, sex indet. (22.1 mm), TAM 2-0591; b, n, sex indet. (22.0 mm), ZMUC CRU-11614; e, h, k, ♂ (22.1 mm), ZMUC CRU-11612; c, f, i, l, o, ♂ (18.8 mm), ZMUC CRU-11501: a–c, anterior part of sternal plastron; d–f, posterior part of abdominal segment 6 and telson; g–i, antennule and antenna, ventral; j–l, endopod of Mxp 3, distal articles omitted, lateral; m–o, distal part of P2, left, lateral.

externa.

Range: Previously known as *M. ciliata* from Mozambique Channel, the Gulf of Aden, the Bay of Bengal, off Kepulauan Aru, between Papua and the Admiralty Islands, Japan, and off Panama; 933–2393 m. Under the name *M. nitida* this species has been recorded from the western Atlantic in the West Indies, Gulf of Mexico, and SE Brazil, in 1373–2123 m. The “Galathea” materials constitute new locality records, notably the present eastern Atlantic record from the Gulf of Guinea shows that this species is one of the widespread species. The deepest record is now 2620 m.

***Munidopsis pallida* Alcock, 1894**

Figs. 74, 75

Synonymy: see p. 292.

Material:

“Galathea” St. 314, Bay of Bengal, 15°54’N, 90°17’E, 2610 m, brownish ooze, 3 May 1951: — 1 ov. ♀ (46.8 mm), ZMUC CRU-11487.

Diagnosis: Carapace with scale-like, setiferous rugae on anterior half, longer scale-like and longer transverse rugae on posterior half; pair of epigastric spines distinct. Frontal margin oblique, with antennal spine. Anterolateral spine of carapace larger than antennal spine, directed straight forward. Rostrum broad at base, dorsally carinate, distally upturned. Abdominal segments with distinct rugosities; segments 2–4 each with 2 transverse sculptures; segment 6 with distinct posterolateral lobes not exceeding nearly transverse or slightly concave posteromedian margin. Telson divided into 8 plates. P1 with reduced spination. P2–4 also with reduced spination; each dactylus more than half as long as propodus, distally relatively broad, somewhat curving, flexor margin nearly straight, with low process (not spine), ultimate process slightly more remote from tip of corneous distal claw than from penultimate process. P2 overreaching end of P1. Epipod on P1, absent from P2–4

Description: Carapace, exclusive of rostrum, longer than broad, moderately convex from side to side. Cervical groove distinct. Gastric region distinct, posterior part delimited in triangle by shallow groove; surface with pair of small spines anteriorly, covered by scale-like rugosities much larger on posterior

triangle than on remainder. Anterior branchial region also with scale-like rugosities. Posterior half of carapace with transverse rugosities moderately elevated, mostly interrupted, relatively long as illustrated. Rostrum broad at base, distally narrowed and upturned, dorsally carinate, with fine rugosities; antennal spine short. Oblique frontal margin leading to short anterolateral spine (first lateral spine) directed straight forward, followed by 2 spines on anterior branchial region, anterior of these (second lateral spine) strong, directed anterolaterad at angle of 45°, much lateral to level of first spine, posterior (third spine) much smaller, followed by a few eminences; another small spine (fourth) bordering anterior and posterior branchial regions. Lateral margin posteriorly convergent behind second spine.

Sternal plastron with arcuate setiferous ridges moderate in number. Sternite 3 posteriorly narrowed, anterior margin with 2 submedian spines and small anterolateral spine on each side. Sternite 4 subtriangular, not anteriorly elongate.

Abdomen covered with scale-like ridges more pronounced on pleura. Segments 2–4 each with 2 elevated transverse ridges. Segment 6 bearing posterolateral lobes somewhat exceeding nearly straight transverse median margin. Telson composed of 8 plates; length-width ratio 0.72; midlateral plate markedly convex on distolateral margin.

Ocular peduncles slightly movable, with strong but relatively short mesiodorsally placed eye-spine directed upward at low angle; smoothly ovate cornea cupped within broad-based eyestalk.

Basal article of antennule having distodorsal spine distinctly shorter than distolateral. Article 1 of antennal peduncle distomesially bearing flattish process rather straight laterally, somewhat convex mesially.

Mxp 3 with weak spination. Ischium with distodorsal and distoventral spines, both small, latter in particular; mesial crest with 22–23 denticles. Meral spination very weak and obsolescent, extensor distal marginal spine small.

P1 1.25 times as long as carapace including rostrum. Merus reaching end of rostrum, with 4 terminal spines (2 dorsal, 1 mesial, 1 lateral), unarmed elsewhere, covered with scale-like elevated rugosities. Carpal spination also weak; spine at distal third of mesial margin small but distinct. Palm spineless, slightly longer than broad. Fingers 1.35 times as long as palm, distally spooned, opposable margins not gaping.

P2 exceeding P1 by half length of dactylus. Meri posteriorly diminishing, distal end falling short of end



Fig. 74. *Munidopsis pallida* Alcock, 1894, ov. ♀ (46.8 mm), ZMUC CRU-11487, dorsal.

of P1 merus; covered with scale-like elevated rugae, without distinct spines. Carpi with dorsal crest paralleling dorsomesial crest without spines, each crest continued on to propodi. Propodus 1.54 times as long as dactylus on P2, 1.56 on P3, 1.47 on P4, length 8 times width. Dactyli relatively broad distally, slightly curving, ending in corneous claw preceded by row of 11–12 teeth, each accompanied by short seta-like spine, ultimate tooth equally or slightly more remote from end of article than from penultimate tooth.

Epipods on P1, not on P2–4.

Eggs: Diameter, 2.7–2.8 mm.

Remarks: The specimen examined fits the definition of *M. subsquamosa* var. *pallida* by Alcock (1894, 1901). The species is differentiated from *M. subsquamosa* by the P2–4 dactyli that are considerably narrowed distally and curved in *M. subsquamosa* (Fig. 88g–j), while relatively broad distally and only slightly curved in *M. pallida* (Fig. 75h; Alcock and Anderson, 1895: pl. 13, fig. 7), the gastric region that bears several spines in addition to a pair of anterior spines in *M. subsquamosa*, in stead of nothing other than the anterior pair in *M. pallida*, and the anterolateral spine of the carapace that is relatively small and directed straight forward in *M. pallida*, instead of being relatively large

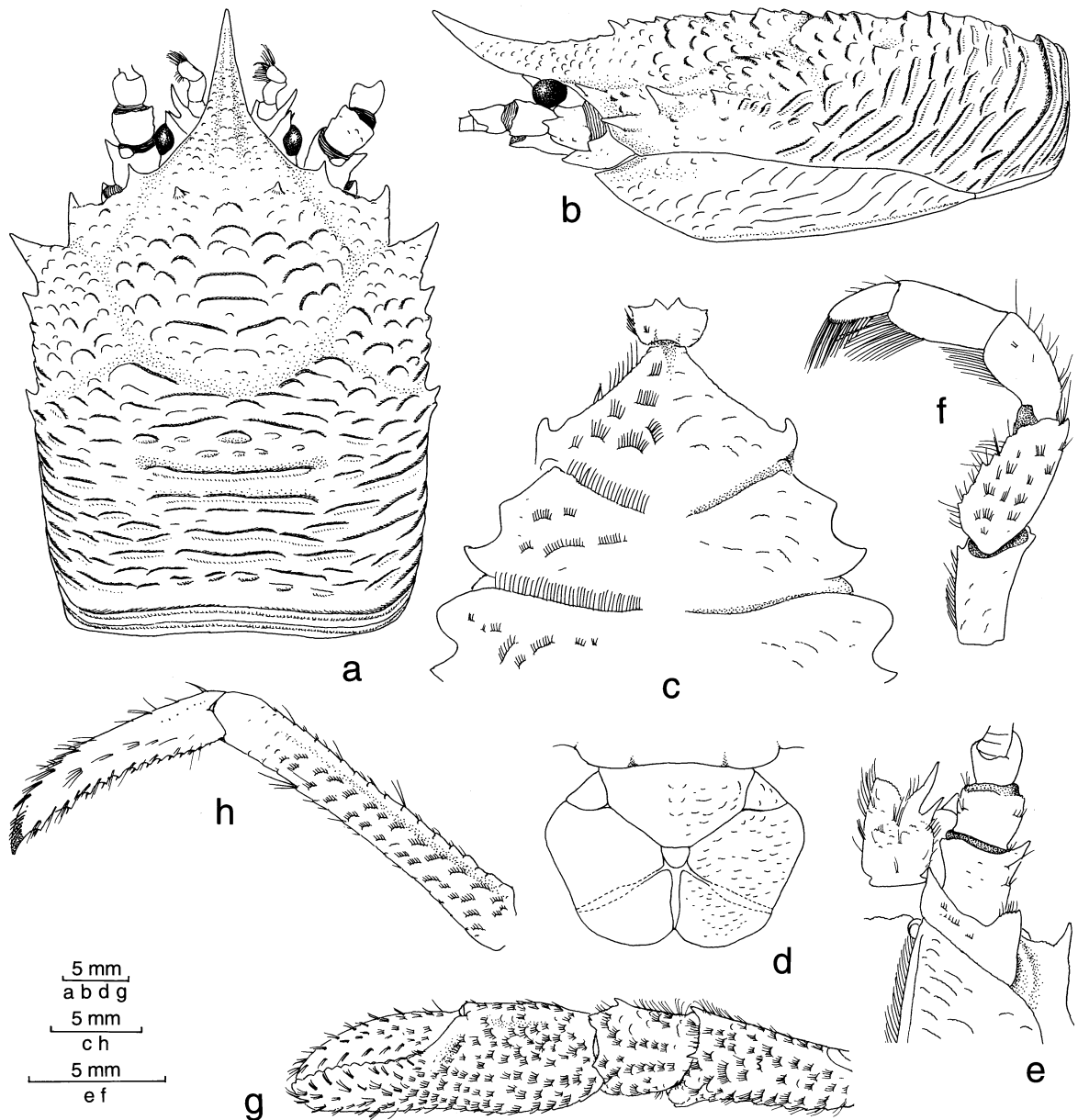


Fig. 75. *Munidopsis pallida* Alcock, 1894, ov. ♀ (46.8 mm), ZMUC CRU-11487: a, carapace, dorsal; b, same, lateral; c, sternal plastron, posterior part omitted; d, posterior part of abdominal segment 6 and telson; e, anterior part of cephalothorax, showing left antennule and antenna, ventral; f, endopod of Mxp 3, left, lateral; g, P1, left, dorsal; h, distal articles of P2, left, lateral.

and directed distinctly anterolaterad in *M. subsquamosa*.

As has been pointed out by Gore (1983), *M. pallida* and *M. geyeri* Pequegnat & Pequegnat, 1970, are very close to each other, also in the small, anteriorly directed anterolateral spine of the carapace, and the less spinose branchial margin. However, the direction of the carina of the antennal spine, one of the two differences between the two species stressed by Gore (1983), is not sufficient to support the specific difference between

the two. The holotype of *M. geyeri* examined on loan shows that the P2–4 dactyli are more distinctively different (Fig. 76): in *M. geyeri*, it is strongly curved distally, having the ultimate flexor marginal process much closer to the penultimate than to the tip of the article; in *M. pallida*, the article is slightly curved distally, having the ultimate flexor marginal process equidistant between the tip of the terminal claw and the penultimate process or slightly closer to the terminal claw.

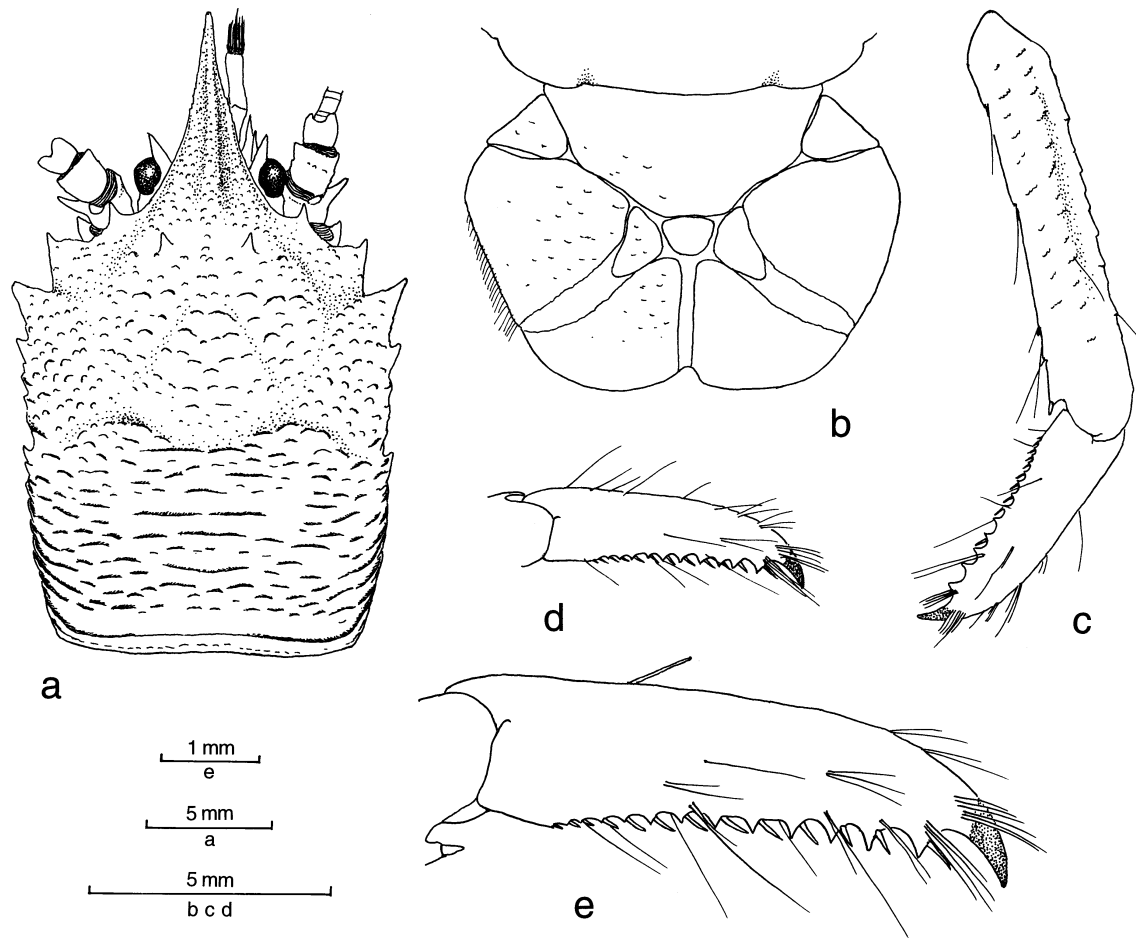


Fig. 76. *Munidopsis geyeri* Pequegnat & Pequegnat, 1970, holotype, ♂, USNM 128812: a, carapace, dorsal; b, posterior part of abdominal segment 6 and telson; c, distal articles of P2, right, lateral; d, dactylus of P3, right, lateral; e, dactylus of P4, right, lateral.

The specimen reported under *M. subsquamosa* var. *pallida* by Doflein and Balss (1913) from Zanzibar seems to be a different species because the P2–4 dactyli illustrated is much more slender distally and strongly curved.

Range: Bay of Bengal, 2610–3299 m.

***Munidopsis palmatus* Khodkina, 1973**

Fig. 77

Synonymy: see p. 292.

Material:

“Galathea” St. 739, Gulf of Panama, 07°22’N, 79°32’W, 915–975 m, green clay, 15 May 1952: — 1 ♂ (10.3 mm), 1 ov. ♀ (8.8 mm), ZMUC CRU-11605.

Diagnosis: Carapace quadrangular, dorsal surface sparsely granulate, areas distinct. Gastric region anteriorly elevated from level of rostrum, bearing pair of obtuse, large epigastric processes. Cardiac region with elevated transverse ridge preceded by deep depression. Front margin oblique behind and transverse lateral to antennal peduncle. Lateral margins bilobed in front of anterior cervical groove, anterior lobe with sharp anterolateral spine directed somewhat laterad, posterior lobe anteriorly ending in blunt low process. Rostrum relatively broad at base, distally spiniform, nearly horizontal, dorsal surface convex and granulate, length barely half that of remaining carapace. Sternite 3 very short and broad, width about half that of sternite 4. Abdomen spineless, segments 2–4 each with 2 transverse ridges, each anterior ridge elevated; segment 6 with posterolateral lobes not distinctly bordered from nearly transverse posteromedian margin. Telson divided into 8 plates, midlateral plates in male with

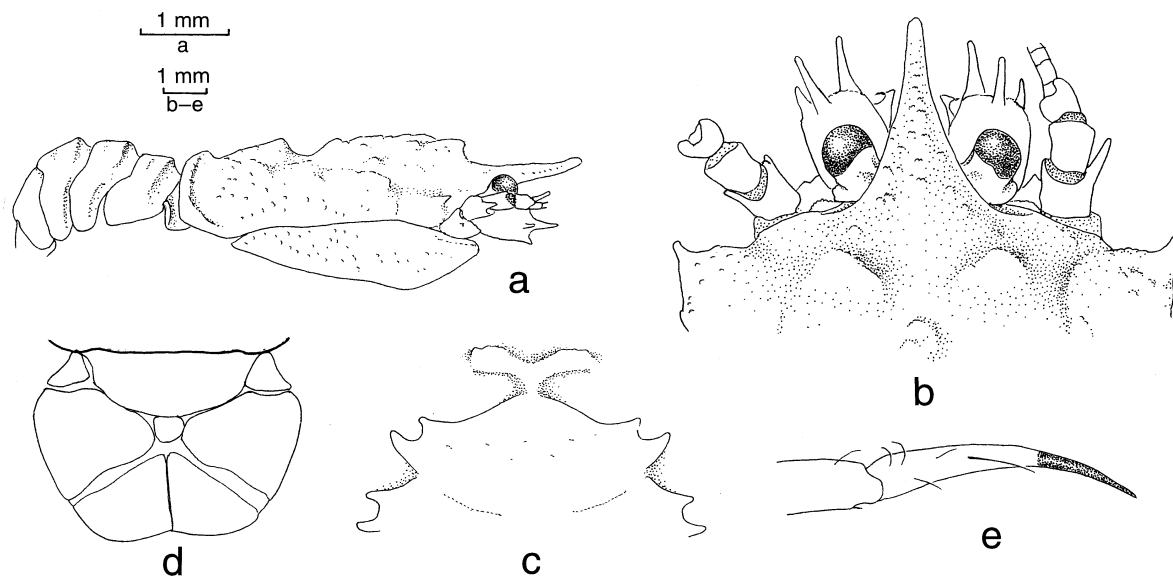


Fig. 77. *Munidopsis palmatus* Khodkina, 1973, ov. ♀ (8.8 mm), ZMUC CRU-11605: a, carapace and anterior part of abdomen, lateral; b, anterior part of carapace, dorsal; c, anterior part of sternal plastron; d, posterior part of abdominal segment 6 and telson; e, distal part of P2, right, lateral.

coarse setae on lateral margin. Ocular peduncles small, movable, cornea distal. Basal article of antennule with 3 spines (distolateral, distodorsal, lateral), mesial distal margin somewhat produced, laciniate. Antennal peduncle with strong distolateral spine on article 2 only. Mxp 3 merus with 2 flexor marginal spines, proximal one larger, distal one occasionally absent; extensor margin strongly produced on distal end. P1 slender, subcylindrical; merus with 2 rows of spines: 2–3 dorsomesial spines on median 1/3 of length and 5 ventromesial spines; fingers shorter than palm, distal margins rounded, fitting each other with a few intermeshing teeth when closed. P2–4 similar, very slender, nearly spineless but several tubercular processes or short, blunt spines variably distinct or indistinct on meral dorsal margins; dactyli curving, very slender and sharp, with smooth margins, length about 2/3 of propodus; P2 overreaching end of P1 carpus but barely reaching midlength of palm. Epipod absent from P1–4.

Eggs: Diameter, 1.3 mm.

Remarks: The specimens examined agree well with the description of *M. palmatus* from off the Pacific coast of South America (Khodkina, 1973). The spineless, granular carapace and slender P1–4 having dactyli smooth on the flexor margin link the species to the western Pacific *M. granulata* (see Miyake & Baba,

1967b; Takeda, 1983). The latter species, however, is characterized by the carapace lacking epigastric processes, the P1 lacking spines on the meral mesial margin, the P2–4 each bearing a row of distinct spines (about six in number) on the dorsal margin of the merus, the article 2 of the antennal peduncle bearing a small spine on each of the distolateral and distomesial margins, and the Mxp 3 bearing spines on the carpus.

Range: SE Pacific off Longotoma, Chile, SE Gulf of California, and Gulf of Panama, between 660–700 m and 1240–1245 m.

***Munidopsis panamae* n. sp.**

Fig. 78

Material:

“Galathea” St. 726, Gulf of Panama, 05°49’N, 78°52’W, 3800 m, clay, 13 May 1952: — 1 ♀ (28.0 mm), holotype, ZMUC CRU-11615.

Diagnosis: Carapace with small spines on anterior half other than group of distinct spines on gastric region. Rostrum broadly triangular, nearly horizontal, dorsally and laterally ridged. Front margin oblique, with distinct antennal spine larger than anterolateral spine of carapace. Abdominal segments unarmed; segment 6 having posteromedian margin produced, exceeding

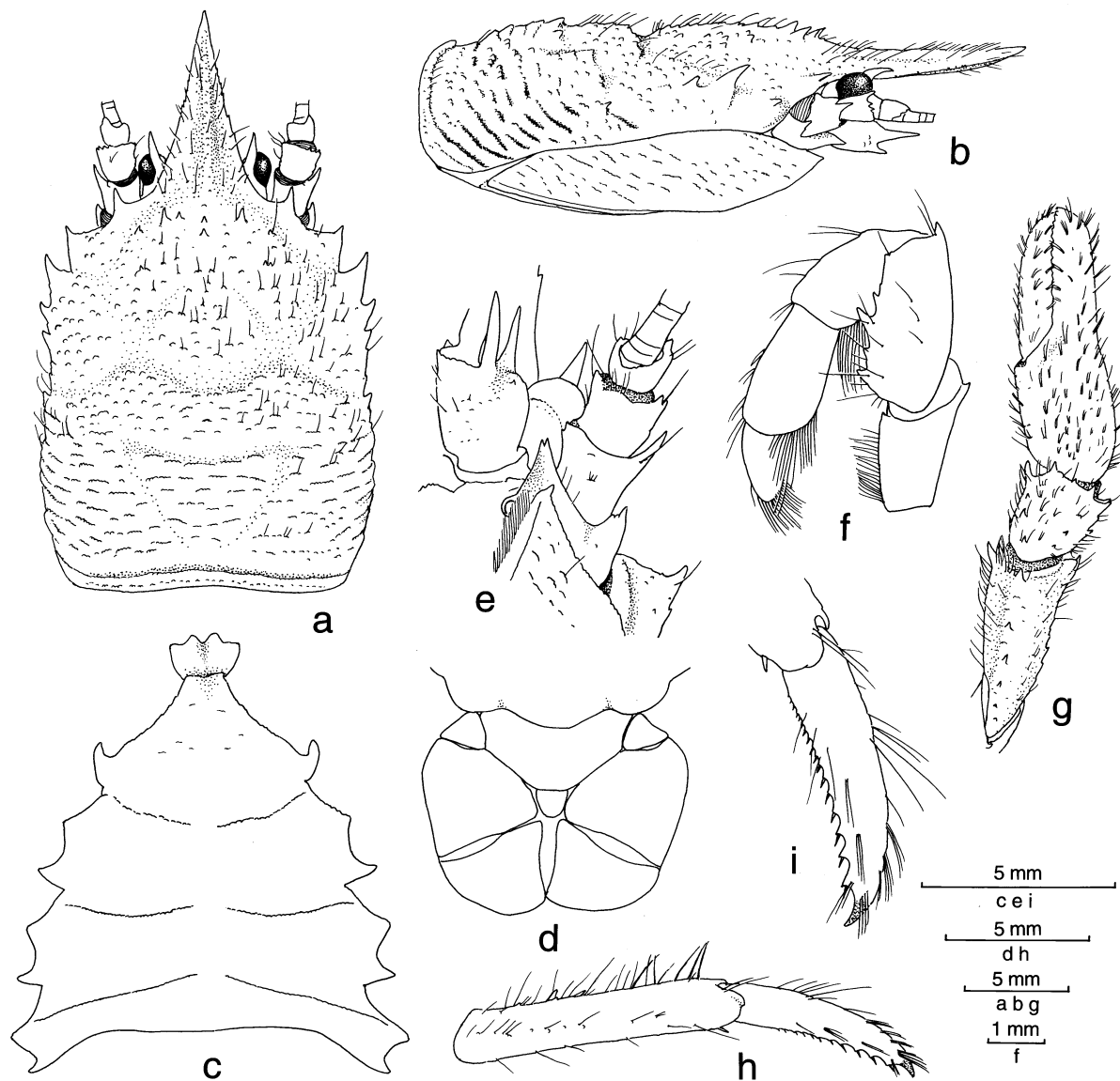


Fig. 78. *Munidopsis panamae* n. sp., holotype, ♀, ZMUC CRU-11615: a, carapace, dorsal; b, same, lateral; c, sternal plastron; d, posterior part of abdominal segment 6 and telson; e, anterior part of cephalothorax, showing left antennule, antenna and ocular peduncle, ventral; f, endopod of Mxp 3, left, lateral; g, P1, right, dorsal; h, distal articles of P2, right, lateral; i, same, dactylus, lateral.

lateral lobes. Telson composed of 10 plates, not strongly narrowed posteriorly. Ocular peduncles slightly movable, broad at base, distomesial eye-spine well developed, cornea moderately exposed. P2 slightly overreaching end of P1; dactylus relatively slender, slightly curving, distal claw preceded by ultimate flexor marginal spine much closer to penultimate than to distal end of terminal claw. Epipods present on P1, not on P2–4.

Description: Carapace, excluding rostrum, slightly

longer than broad. Gastric region somewhat convex, separated from cardiac and anterior branchial regions by cervical groove, surface with group of 10 small spines on anterior portion (pair of spines each directly behind eye larger) and small tubercles elsewhere, with sparse setae; similar tubercles also on anterior branchial region and behind posterior cervical groove. Cardiac, intestinal and branchial regions with tuberculate ridges as figured. Lateral marginal spine of carapace directly behind anterior cervical groove strong, directed somewhat upward and anterolaterad, followed by 3

spines, last one situated at end of posterior cervical groove. Rostrum broad triangular, straight and horizontal, length more than half that of remaining carapace, dorsal surface ridged in midline, provided with sparse fine tubercles and setae moderate in density; lateral margin ridged, bearing denticles distally. Antennal spine sharp, moderate-sized, followed laterally by oblique crest diminishing at midway between antennal spine and smaller anterolateral spine.

Pterygostomial flap anteriorly ending in sharp point.

Sternal plastron as illustrated; nearly smooth except for sternite 4. Sternite 3 depressed from level of sternite 4, posteriorly narrowed, anterior margin with 2 submedian lobes. Sternite 4 relatively short triangular but anteriorly truncate.

Abdominal segments 2–4 feebly granulate on tergites, distinctly so on pleura, each bearing 2 transverse ridges, posterior ridge preceded by shallow groove bearing setae; segment 6 with posteromedian lobe not strongly elevated but overreaching well-developed posterolateral lobes. Telson gently narrowed posteriorly, consisting of 8 plates, length-width ratio 0.77.

Ocular peduncles slightly movable, broad at base, mesiodorsally produced into strong spine; no spine on mesioventral end bordering cornea. Cornea moderately exposed.

Antennules, antennae, Mxps 3 as in *M. subsquamosa*.

P1 slightly longer than carapace including rostrum. Merus and carpus with spines as figured. Palm unarmed. Fingers distally spooned, prehensile edges crenulate.

P2 slightly overreaching end of P1. Merus feebly granulate, dorsal crest with row of spines continued on to carpus and propodus, ventrolateral margin with row of smaller spines; ventral surface with 2 rows of small spines. Carpus and propodus bearing 2 additional crests bearing spine-like tubercles on dorsolateral surface; dorsal crest of propodus bearing 3–4 somewhat larger spines proximally, accompanying pronounced groove mesioventral to it. Dactylus relatively slender, slightly curving, flexor margin with 16 low teeth proximally decreasing in size, each with seta-like spine, distal claw corneous, spiniform and curved, preceded by ultimate flexor marginal tooth much closer to penultimate than to tip of article; dactylus-propodus length ratio 0.64. P3 similar to P2, P4 shorter.

Epipod present on P1, absent from P2–4.

Remarks: The ornamentation of the dorsal surface of the carapace, slender dactyli of the P2–4 and shapes of both the abdominal segment 6 and the telson suggest that the species is close to *M. producta* n. sp. (see below). However, *M. panamae* is readily distinguished by the broad triangular and horizontal rostrum, the P2–4 dactyli being shorter relative to the propodi (dactylus-propodus length ratio being 0.64 in *M. panamae*, 0.68–0.75 in *M. producta*), and the abdominal segment 6 having a much wider and less elevated posteromedian lobe.

Etymology: For the Gulf of Panama, a noun in the genitive.

Munidopsis petila n. sp.

Figs. 79, 80

Material:

“Galathea” St. 450, Celebes Sea, 01°50’N, 119°20’E, 5243–5163 m, bluish clay, 21 Aug 1951: — 1 ♂ (60.2 mm), holotype, ZMUC CRU-11498.

Diagnosis: Carapace with numerous small spines on anterior half and directly behind sinuous mid-transverse groove; pair of epigastric spines larger; anterolateral spine small, second lateral marginal spine relatively small, situated directly behind end of anterior cervical groove. Rostrum long triangular, dorsally carinate, upcurved at 45°. Front margin oblique, with antennal spine. Abdominal segment 6 with posteromedian lobe produced, exceeding lateral lobes. Cornea ovate, cupped within slightly movable, broad-based eyestalk mesiodorsally produced into strong eye-spine. P2–4 dactyli relatively long, each at least 0.7 as long as propodus, not sharply narrowed but relatively broad distally, moderately curving, ultimate flexor marginal tooth closer to end of article than to penultimate tooth. P2 extending beyond end of P1. Epipod on P1, not on P2–4.

Description: Carapace longer than broad, width about equal to distance between level of anterior end of branchial region and posterior margin of carapace measured in midline. Cervical groove distinct. Transverse depression in anterior part of cardiac region. Gastric region moderately inflated, bearing posteriorly divergent groove defining meso-metagastric region; pair of larger spines among small spines; small spines



Fig. 79. *Munidopsis petila* n. sp., holotype, ♂, ZMUC CRU-11498, dorsal.

also on anterior branchial region and directly behind mid-transverse groove (posterior cervical groove). Interrupted transverse ridges on posterior half of carapace elevated and tuberculate. Lateral margin having first spine equally small as antennal spine; second spine directly behind anterior cervical groove somewhat larger than first, followed by several short, smaller spines on somewhat convex anterior branchial

region and again by another spine directly behind posterior cervical groove. Rostrum long triangular, upcurved at 45°, terminating in end of P1 merus; lateral margin ridged, dorsal surface finely tuberculate, bearing longitudinal carina distally sharp, proximally sweeping into gastric region. Front margin oblique, with antennal spine followed by tuberculate ridge.

Sternite 3 ventrally with apposed, ovate ventral

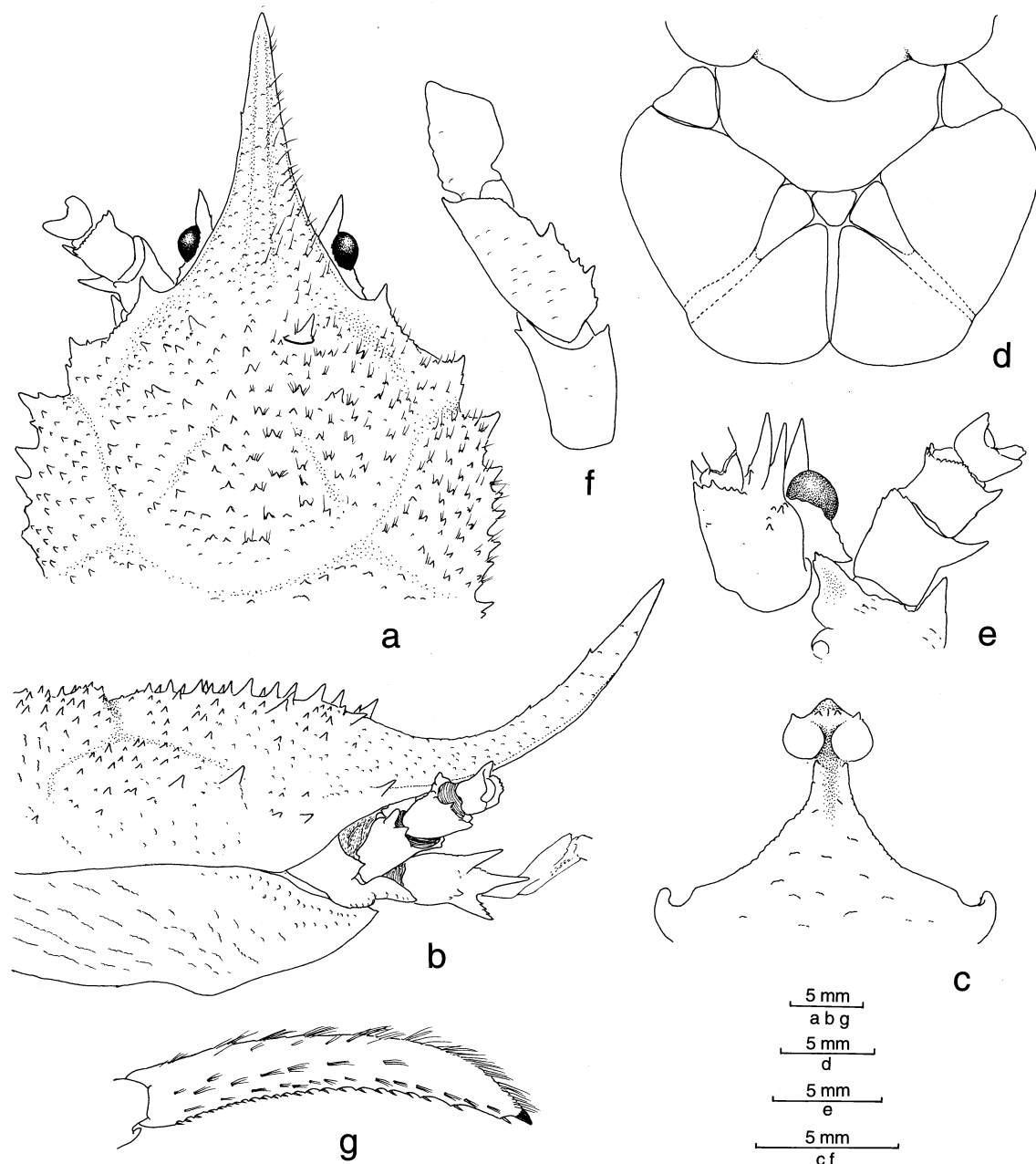


Fig. 80. *Munidopsis petila* n. sp., holotype, ♂, ZMUC CRU-11498: a, carapace, anterior half, dorsal; b, same, lateral; c, anterior part of sternal plastron; d, posterior part of abdominal segment 6 and telson; e, antennule, antenna and ocular peduncle, left, ventral; f, endopod of Mxp 3, distal articles and setae omitted, right, lateral; g, P2 dactylus, right, lateral.

inflations each bearing anterior process flanking 2 submedian spines. Sternite 4 anteriorly narrow elongate and strongly depressed in midline, bearing short, elevated, setiferous ridges; greatest width 3.75 times that of sternite 3.

Abdominal segments tuberculate except for smooth segment 1; 2 elevated transverse ridges on segments 2 and 3, anterior ridge sharp; posterior ridge absent on

segment 4. Segment 6 with produced posteromedian lobe exceeding lateral lobes.

Cornea ovate, cupped within slightly movable, broad-based eyestalk mesiodorsally produced into strong eye-spine about as long as distance between proximal and distal ends of cornea measured along lateral margin, mesioventrally bearing another small eye-spine.

Basal article of antennule bearing distodorsal spine about as large as distolateral. Article 1 of antennal peduncle having depressed distomesial process distally not sharp but with small spines, distolateral spine broad-based.

Mxp 3 ischium laterally flattish, flexor margin sharply ridged, distally ending in small spine, extensor margin with small distal spine; 25 (left) or 23 (right) denticles on mesial ridge. Merus having lateral face with short ridges, flexor margin bearing 2 or 3 spines and several small denticular spines, distally unarmed; extensor margin ending in small, distinct spine.

P1 longer than carapace including rostrum, tuberculate. Merus with row of relatively short dorsal spines, mesially spineless, laterodorsally and lateroventrally with tubercle-like short spines. Spines on carpus relatively small. Palm spineless, shorter than fingers. Fingers distally spooned, with crenulate ridges; movable finger slightly shorter.

P2–4 relatively slender, length 0.7 times that of propodus; small spines in rows on meri, carpi and propodi; propodus 1.29 times as long as dactylus on P2, 1.34 on P3 and P4; each dactylus not sharply narrowed but relatively broad distally, moderately curving, flexor margin with 23–27 (mostly 25) low teeth, each accompanying short seta-like spine, ultimate tooth closer to end of terminal claw than to penultimate tooth. P2 overreaching end of P1 by slightly more than half-length of dactylus. Epipods on P1, not on P2–4.

Remarks: The unique specimen is broken on the left posterolateral portion of the carapace. The new species is very closely related to *M. tuftsi* Ambler, 1980 from the western Pacific off Oregon, especially in the ornamentation of the carapace, the abdominal segment 6 bearing a strongly produced posteromedian lobe, and spination of the pereopods. Examination of the male holotype of *M. tuftsi* (USNM 171336) (Fig. 61) discloses that the new species may be differentiated by the following: the rostrum is strongly upturned (moderately so in *M. tuftsi*); the eye-spine is about as long as the distance between the distal and proximal limits of cornea measured along the lateral margin (distinctly shorter in *M. tuftsi*); the P2–4 are slender relative to the width, especially the dactyli, i. e., length-breadth ratios (in lateral view, the width is measured at midlength) being 6.9 (5.2 in *M. tuftsi*); in addition, dactylus-propodus length ratio is greater in the new species (0.71–0.72 in *M. petilus* versus 0.62 in *M. tuftsi*); and the telson is composed of 10 plates (eight plates in

M. tuftsi).

Etymology: From the Latin *petilus* (= slender), referring to the slender P2–4.

Munidopsis plumatisetigera Baba, 1988

Synonymy: see p. 293.

Material:

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E, 345 m, 10 May 1922: — 1 ov. ♀ (21.8 mm), ZMUC CRU-11464.

Kei Islands Expedition St. 59, 5°28'S, 132°36'E, 385 m, corals and sponges, trawl, 12 May 1922: — 1 ov. ♀ (22.7 mm), ZMUC CRU-11512.

Diagnosis: Body and appendages thickly covered with soft plumose setae. Carapace with obsolescent striae on posterior half; gastric region with pair of epigastric spines followed by 1–3 spines in midline; elevated cardiac transverse ridge with 1–2 median spines; posterior-most ridge with 5–6 small spines. Lateral margin convex, with 4 spines of subequal size on anterior half. Front margin with antennal spine at midlength, lateral half depressed from level of mesial half. Prominent spine ventral to front margin between antennal spine and ocular peduncle. Rostrum comparatively broad throughout length, dorsally convex, trifold distally, median spine upturned. Sternite 3 having lateral margin strongly convergent posteriorly; sternite 4 short relative to width. Abdominal segments 2 and 3 bearing 4–6, 2–4 spines respectively on anterior ridge; posterolateral lobes of segment 6 indistinctly separated from nearly transverse posteromedian margin. Telson divided into 10 plates. Ocular peduncles small, movable. Article 1 of antennal peduncle with strong distomesial spine nearly reaching end of article 2. Mxp 3 merus with 2 prominent flexor marginal (proximal larger) and 1 strong extensor marginal spine. P1 relatively slender, merus with strong spines mesially; palm spineless, as long as fingers. Meri having 5 dorsal marginal spines on P2, 2–4 on P3, distal one terminal, distal second usually about at midlength, all spines but terminal one obscured by dense setae; dorsal margins of carpi with terminal spine only; dactylus distally curving moderately, length about half that of propodi, flexor margin with 11–14 minute erect teeth obscured by plumose setae, each tooth accompanied by seta-like spine. P2 reaching end of P1 carpus. Epipod absent from pereopods.

Eggs: Size, 1.4 x 1.6 mm.

Remarks: This species was described from the male holotype collected by the "Albatross" from off the west coast of Halmahera (Baba, 1988).

The spination of the carapace and abdomen shows variation: the gastric region in the specimen from Kei Islands Expedition St. 56 bears three spines in midline on the posterior half while a single median spine in the type as well as the other specimen examined. The abdominal segment 2 bears six spines in the present specimens but four in the type. Also, the abdominal segment 4 bears four spines in the type while left lateral of these is absent in the specimen from St. 59, both the left and right lateral spines are missing in the other specimen from St. 56.

The ornamentation of the carapace and rostrum suggests that the species is close to *M. camelus* Ortmann, 1892 and *M. formosa* Wu & Chan, 2000. However, *M. camelus* is distinctive in having the rostrum more carinate dorsally and distally strongly upturned, the abdominal segments 2–3 each bearing a pair of submedian spines, and the presence of epipods on the P1–3. The rostrum in this species is much more like that of *M. formosa*, but the latter bears an epipod on the P1, and paired submedian spines in midline (on the posterior-most transverse ridge of the carapace, and abdominal segments 2 and 3).

Range: Kei Islands and Moluccas off W coast of Halmahera, in 345–485 m.

***Munidopsis producta* n. sp.**

Fig. 81

Material:

"Galathea" St. 716, W of Costa Rica, 09°23'N, 89°32'W, 3680 m, 6 May 1952: — 2 ov. ♀ (41.9, 45.0 mm; smaller, holotype), 1 ♀ (25.8 mm), ZMUC CRU-11617.

"Albatross" St. 3382, S of Azuero Peninsula, Gulf of Panama, 06°2. 00'N, 80°41.00'W, 1793 fm (3260 m), green mud: — 1 ♂ (39.5 mm), USNM 21277.

Diagnosis: Carapace with spines and elevated scale-like ridges on anterior half, elevated interrupted ridges on posterior half. Rostrum triangular, distally narrow and strongly upcurved, lateral margin smooth or with a few very small spines. Antennal spine small in large specimens, relatively strong in small specimens.

Abdomen with 2 transverse ridges on segments 2, 3, 4; posteromedian lobe of segment 6 strongly produced, overhanging telson. Telson composed of 8 or 10 plates. Ocular peduncles broad at base, bearing mesiodorsal eye-spine shorter than diameter of cornea; cornea laterally circular, broad relative to remaining eyestalk. P2–4 dactyli relatively long, 3/4 as long as propodi, slightly curving, flexor margin with ultimate tooth equidistant between penultimate tooth and tip of terminal claw. P2 slightly overreaching end of P1. Epipod on P1, not on P2–4.

Description of holotype: Carapace, exclusive of rostrum, slightly longer than broad, cervical groove distinct. Gastric region with group of spines (pair directly behind ocular peduncles large) and elevated scale-like, setiferous tubercles, several of these tubercles produced into spines; anterior branchial region also with elevated setiferous scales often produced into spines; posterior half of carapace with elevated ridges scale-like behind posterior cervical groove, more elongate elsewhere. Cardiac region of reverse triangle preceded by transverse depression more or less deep on each side. Lateral margins of anterior branchial regions subparallel, each bearing 4 posteriorly diminishing spines, first of these larger than anterolateral spine, directed at angle of 45° in dorsal view, almost straight upward in lateral view; posterior branchial region somewhat convex, anterior end bearing spine with accompanying small spine dorsal to it. Rostrum sharply triangular, upturned at angle of 45° in distal half; dorsal surface ridged in midline; ventral surface smooth, flattish on proximal half, somewhat convex on distal half; lateral margins with a few small spines distally; length 1/3 that of remaining carapace. Antennal spine small, directed antero-laterally, followed by concavely oblique frontal margin leading to larger anterolateral spine directed antero-laterad and dorsad.

Sternal plastron as illustrated; short setiferous rugae on sternites 3–5.

Abdominal segments granulate, bearing depressed tubercles with fringe of setae anteriorly. Segments 2–4 with 2 elevated transverse ridges preceded by depression; segment 6 with posteromedian lobe pronouncedly produced. Telson divided into 8 plates, length-width ratio, 0.74.

Ocular peduncles slightly movable, broad at base, mesiodorsally produced into spine less than half length of diameter of cornea, bearing small spine proximal to lateral base of cornea on right side only; cornea large

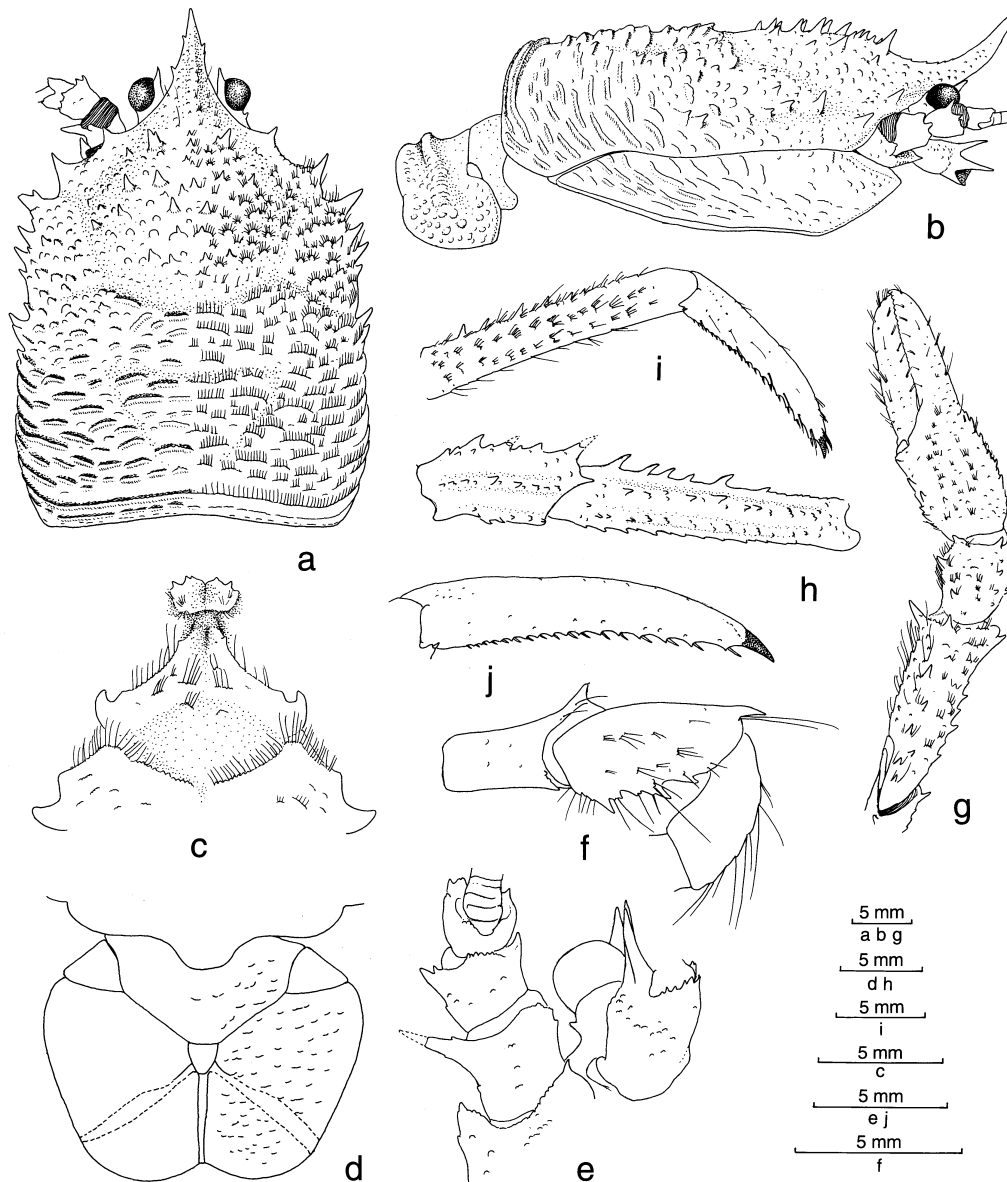


Fig. 81. *Munidopsis producta* n. sp., holotype, ov. ♀, ZMUC CRU-11617: a, carapace, dorsal; b, same, anterior part of abdomen included, lateral; c, anterior part of sternal plastron; d, posterior part of abdominal segment 6 and telson; e, antennule, antenna and ocular peduncle, right, ventral; f, endopod of Mxp 3, distal articles omitted, right, lateral; g, P1, right, dorsal; h, P2 carpus and propodus, right, dorsolateral; i, same, propodus and dactylus, lateral; j, same, dactylus, setae omitted, lateral.

relative to eye-spine and remaining eyestalk, lateral margin semicircular.

Antennular basal article with distolateral and distodorsal spines both sharp elongate, subequal. Antennal peduncles having article 1 produced into lobe on distomesial corner, bearing denticles and 1 small spine. Mxp 3 as illustrated.

P1 1.3 times as long as carapace including rostrum, spination as illustrated, relatively pronounced. Basischium with strong dorsal spine. Merus reaching or

slightly falling short of end of rostrum. Palm distinctly shorter than movable finger, covered with setiferous elevated ridges, bearing spines along mesial and lateral margins, mesial spines larger. Fingers weakly spooned distally.

P2–4 with more or less pronounced spination. Meri with elevated scale-like ridges often with tubercles or spines, dorsal crest with row of spines, ventrolateral margin also with spines; ventral surface with 2 rows of spines mixed with tubercles. Carpi with dorsal crest

subparalleling dorsolateral crest, both bearing spines, and another row of tubercles further lateral to dorsolateral crest. Propodus with 2 crests and 1 row of tubercles continued from carpus, dorsal crest with spines larger than those on dorsolateral crest. Dactylus relatively slender, 0.74 as long as propodus on P2–3; gently curving, ending in sharp corneous spine; flexor margin with 18 proximally diminishing low teeth, ultimate tooth equidistant between penultimate one and end of terminal spine. P2 overreaching end of P1 by less than half length of dactylus, merus reaching end of P1 merus.

Epipods on P1, absent from P2–4.

Eggs: Size, 2.9 x 3.0 mm – 3.1 x 3.3 mm.

Variations: Gastric region with group of spines including pair of larger spines directly behind ocular peduncles; number of spines, 21 in holotype, 14 in larger paratype, 9 in smaller paratype. Small lateral eye-spine present on right side only in holotype, on both sides in larger paratype, absent in smaller paratype; mesiodorsal eye-spine less than half diameter of cornea in holotype and larger paratype, longer but distinctly less than full diameter of cornea in smaller paratype. Telson composed of 8 plates in holotype, 10 plates in small paratype, obscurely 10 in larger paratypes (suture visible under careful lighting). Spines along lateral margin of P1 palm present in holotype and small paratype, absent in larger paratype.

Remarks: One (male) of the three specimens (two males, one female) reported under *Munidopsis subsquamosa aculeata* from the Gulf of Panama by Faxon (1895) and now in the collection of the Smithsonian Institution (USNM 21277) is undoubtedly referred to this species. Faxon (1895) is correct to point out the unusual feature of his specimens, i. e. the abdominal segment 6 in males bearing a strongly produced posteromedian lobe, a feature also apparent in the material collected from “Galathea” St. 716. The female examined by Faxon could not be located. Very possibly it belongs to another species. Faxon’s male is definitely identical with the present material, and they are differentiated from *M. subsquamosa* by this unique abdominal segment and the cornea being large relative to remaining eyestalk.

The posteriorly produced abdominal segment 6 and the relatively well-exposed cornea are also present in *M. tufisi* Ambler, 1980 off the west coast of the United States. However, they are readily distinguished by 1)

the carapace bearing no spine behind the mid-transverse groove in *M. producta* whereas many small spines in *M. tufisi*; and 2) the P2–4 dactyli terminating in a slightly curved sharp spine in *M. producta* instead of a curved broad short spine as in *M. tufisi*.

Etymology: From the Latin *productus* (lengthened) in reference to the produced posteromedian lobe of the abdominal segment 6 which separates the new species from *M. subsquamosa*.

***Munidopsis profunda* n. sp.**

Figs. 82, 83

Material:

“Galathea” St. 450, Celebes Sea, 01°50’N, 119°20’E, 5243–5163 m, bluish clay, 21 Aug 1951: — 3 ♂ (26.3–34.1 mm; smallest, holotype), ZMUC CRU-11497.

Diagnosis: Body covered with short fine setae, bearing interrupted rugae more distinct on posterior half. Carapace dorsally spineless, gastric region convex. Cervical groove not deep but distinct. Lateral margin with 8 spines, first anterolateral, ventral to level of remainder, second largest, sixth to eighth on anterior part of posterior branchial region. Rostrum broadly triangular, dorsally carinate, strongly curving dorsad. Front margin oblique, with antennal spine larger than anterolateral spine. Sternite 3 narrow; sternite 4 more than 3 times as broad as preceding sternite, anteriorly narrow elongate. Abdomen spineless; posterolateral lobes of segment 6 flap-like, not overreaching nearly transverse posteromedian margin. Telson divided into 8 plates, posterior plates relatively broad. Ocular peduncles hardly movable, with 2 eye-spines, mesial one strongly produced forward but slightly incurved distally, cornea small and lateral. Basal article of antennule with distodorsal and distolateral spines. Mxp 3 merus with distinct spine on extensor distal margin and spines of irregular size on flexor margin. P1 short and stout; fingers spooned at tips, prehensile edges crenulate; fixed finger with denticulate carina on distolateral margin. P2–4 spinose on meri, carpi and propodi; each carpus with 2 paralleling rows of spines continued on to propodus; each dactylus nearly straight, terminal claw moderately curving. P2 overreaching P1. Epipod present on P1.

Description of holotype: Carapace covered with fine

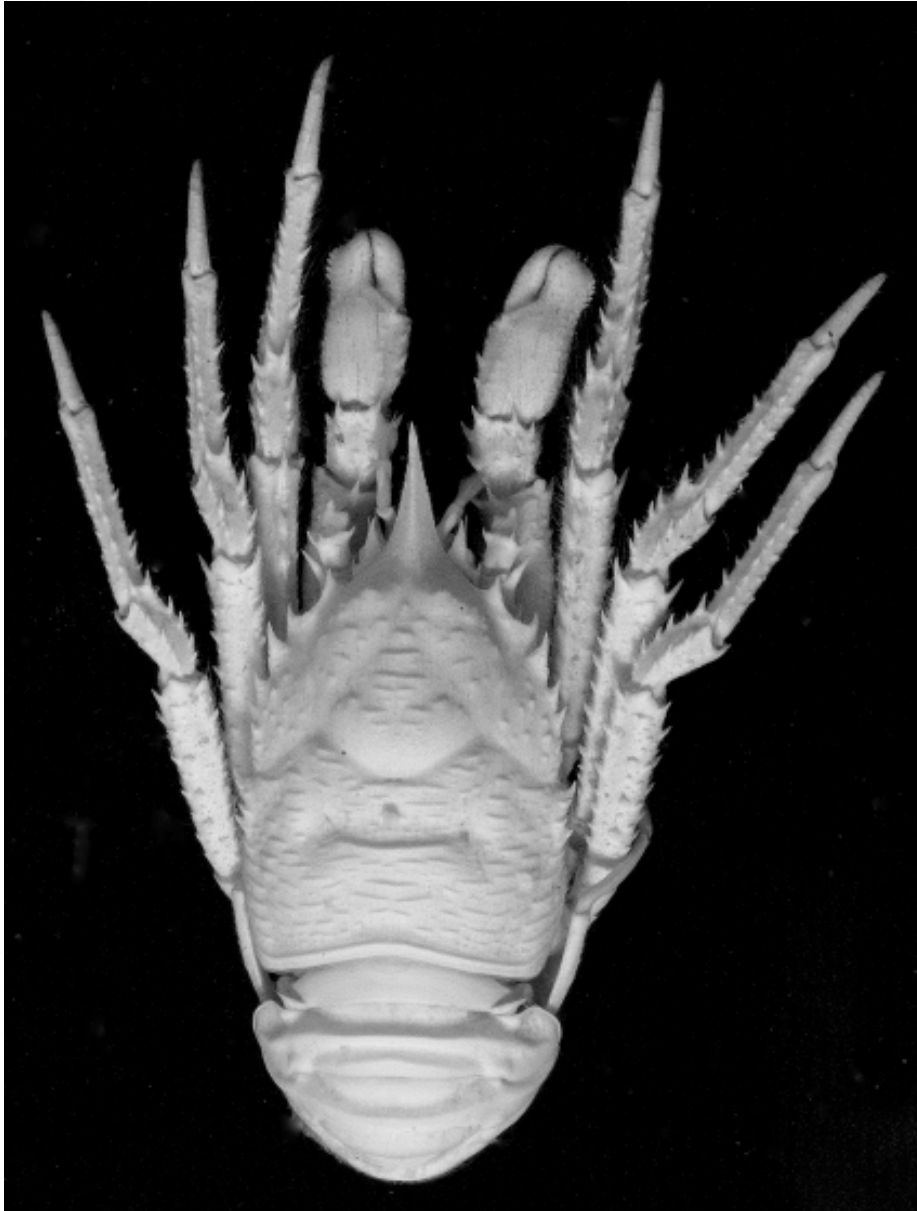


Fig. 82. *Munidopsis profunda*, n. sp., holotype, ♂, ZMUC CRU-11497, dorsal.

setae, bearing short, interrupted ridges numerous on posterior half but anterior branchial region with tubercles instead, dorsal spines absent; gastric region convex, posteriorly with faint triangular border; cardiac transverse ridge preceded by shallow depression somewhat expanded laterally. Lateral margins subparallel; anterior half margin with 5 spines, anterior-most situated at anterolateral angle, ventral to level of remainder and smaller than antennal spine; second largest, directly behind end of cervical groove; third and fourth smaller, fifth much reduced in size, with accompanying spinule dorsal to it on left side; posterior

half margin with 3 spines anteriorly, posterior 2 small. Rostrum broadly triangular, strongly curving dorsad, dorsal surface carinate, bearing a few spinules on distal fourth of length, ventral surface flattish, length less than half that of remaining carapace. Front margin oblique, with antennal spine larger than anterolateral spine.

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 more than 3 times that of preceding sternite.

Abdomen covered with fine setae; 2 transverse

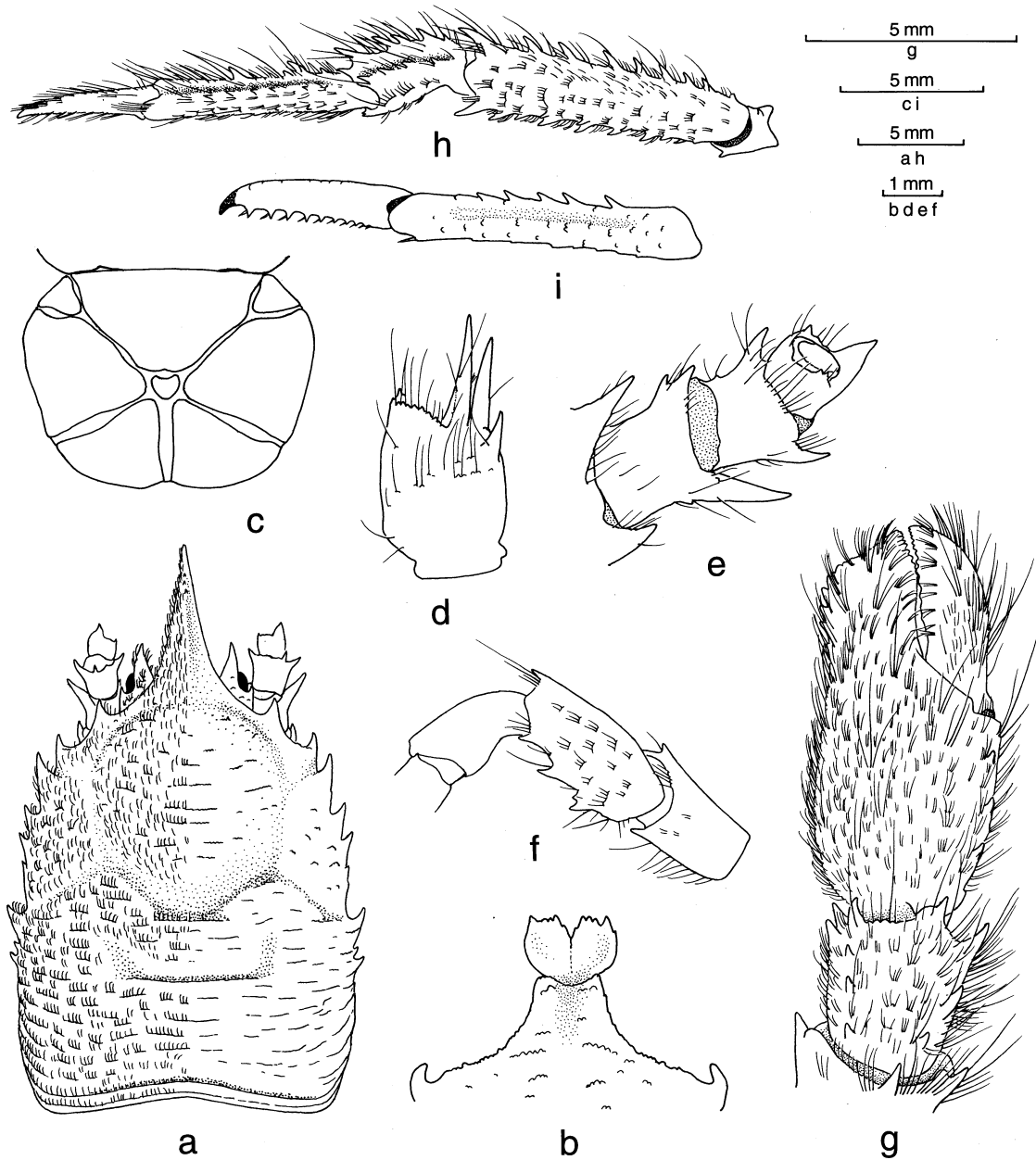


Fig. 83. *Munidopsis profunda*, n. sp., holotype, ♂, ZMUC CRU-11497: a, carapace, dorsal; b, anterior part of sternal plastron; c, telson; d, basal article of antennule, left, ventral; e, antenna, left, ventral; f, endopod of Mxp 3, distal articles omitted, left, lateral; g, P1, proximal part omitted, left, dorsal; h, P2, left, dorsolateral; i, same, distal articles, setae omitted, lateral.

sculptures on each of segments 2–4, anterior one sharply ridged. Segment 6 having posterolateral lobes flap-like, not overreaching transverse posteromedian margin. Telson broader than long, divided into 8 plates, midlateral plates with coarse, short lateral setae.

Ocular peduncles 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 distomesial and distolateral spines and another smaller one proximal to distolateral spine. Antennal peduncle well developed; article 1 with distomesial spine somewhat larger than distolateral, both strong; article 2 with 1 well-developed distolateral and 1 small distomesial spine, latter with accompanying spinule proximal and slightly dorsal to it; article 3 with mesial, lateral and middorsal spines on terminal margin, dorsal one

smaller.

Mxp 3 ischium with small spine on each of flexor and extensor distal margins; mesial ridge with 20 denticles. Merus having flexor margin with 5 irregular-sized spines on right side, 3 (proximal one bifid) on left side, extensor margin distally produced into small, sharp spine.

P1 about as long as carapace, bearing granulate, elevated ridges supporting short plumose setae and long setae numerous along mesial margin. Merus with row of 6–7 dorsal spines and 1 distolateral plus 1 distomesial spine. Carpus slightly longer than broad, bearing 4 terminal spines and dorsal spines roughly in 2 rows. Palm massive, moderately depressed, slightly longer than broad, lateral and mesial margins somewhat convex, mesial margin with 3 spines. Fingers relatively broad, about as long as palm, opposable margins not gaping, distally spooned, prehensile edge denticulate, fixed finger with denticulate carina on distolateral margin.

P2–4 with short fine setae and sparse long coarse setae. P2–3 meri spinose on both dorsal and ventrolateral margins, ventral surface with small spines in 2 rows: 1 near ventrolateral row, the other along ventromesial margin. Each propodus with 5 distinct spines on dorsal crest and another row on lateral face, both continued on to propodus. Each dactylus more than half as long as propodus, nearly straight, ending in short, curved claw, flexor margin with row of 10 teeth, each bearing much slender seta-like spine. P4 shorter than P2–3, lateral face of merus with row of a few small spines and tubercles. P2 overreaching P1 by whole dactylus and 1/3 length of propodus.

Epipod present on P1, absent from P2–4.

Paratypes: Two male paratypes in close agreement with holotype. Rostrum lacking distodorsal spinules; P2–4 propodi less pronounced in spination: lateral row of spines as present in holotype replaced mostly by tubercles. Carapace somewhat widened posteriorly in larger male. Basal article of antennule lacking spinule at base of distolateral spine and distolateral spine of antennal article 3 reduced to blunt, low process in small specimen.

Remarks: The ornamentation of the carapace, the P1 exceeded by the P2 when extended forward, the fixed finger bearing a denticulate carina on the distolateral margin, and an epipod present only on P1, suggest that the species approaches *M. teretis* n. sp. (see below). However, they are readily distinguished by the

following differences: the rostrum is strongly curving dorsad in *M. profunda*, straight horizontal in *M. teretis*; The lateral eye-spine is distinct in *M. profunda*, absent in *M. teretis*.

Etymology: The specific name is derived from the Latin *profundus* (= deep), alluding to the deep-sea habitat from which this species was taken.

***Munidopsis pycnopoda* n. sp.**

Fig. 84

Material:

“Galathea” St. 217, Mozambique Channel, 14°20' S, 45°09' E, 3485 m, 27 Feb 1951: — 1 ♂ (10.5 mm), 1 ov. ♀ (holotype, 13.2 mm), 1 ♀ (19.3+ mm), ZMUC CRU-11276.

Diagnosis: Carapace with pair of epigastric spines. Rostrum narrow or broad triangular, laterally ridged, ventrally flattish. Front margin oblique, bearing well-developed antennal spine. Carapace lateral margin convex, with 6 spines, first one anterolateral, close to second. Abdominal segments spineless; posteromedian lobe of segment 6 nearly straight transverse, lateral lobes weakly produced. Telson composed of 8 or 10 plates. Ocular peduncles dorso-ventrally movable, bearing 3 eye-spines; mesiodorsal one strong, directed forward, mesioventral one tiny, lateral one also small. P1 short, fingers spooned at tip, fixed finger with denticulate carina on distolateral margin. P2–4 dactyli not slender but relatively broad, with flexor margin nearly straight. P2 distinctly overreaching P1. Epipod present on P1, absent from P2–4.

Description of holotype: Carapace longer than broad, moderately arched from side to side, slightly so from anterior to posterior end; cervical groove distinct; dorsal surface with setiferous (bearing short setae) transverse ridges short, arced on anterior half, longer on posterior half, those on median gastric region longer than those on anterior branchial region; all these ridges not distinctly elevated in profile. Pair of epigastric spines. Lateral margins convex, bearing 6 spines; first anterolateral, small; second situated directly behind end of anterior cervical groove and rather close to first, followed by 3 smaller, posteriorly diminishing spines on anterior branchial region, sixth (last) placed at midlength, rather distant from fifth, smaller than second. Rostrum narrow triangular, dorsally carinate,

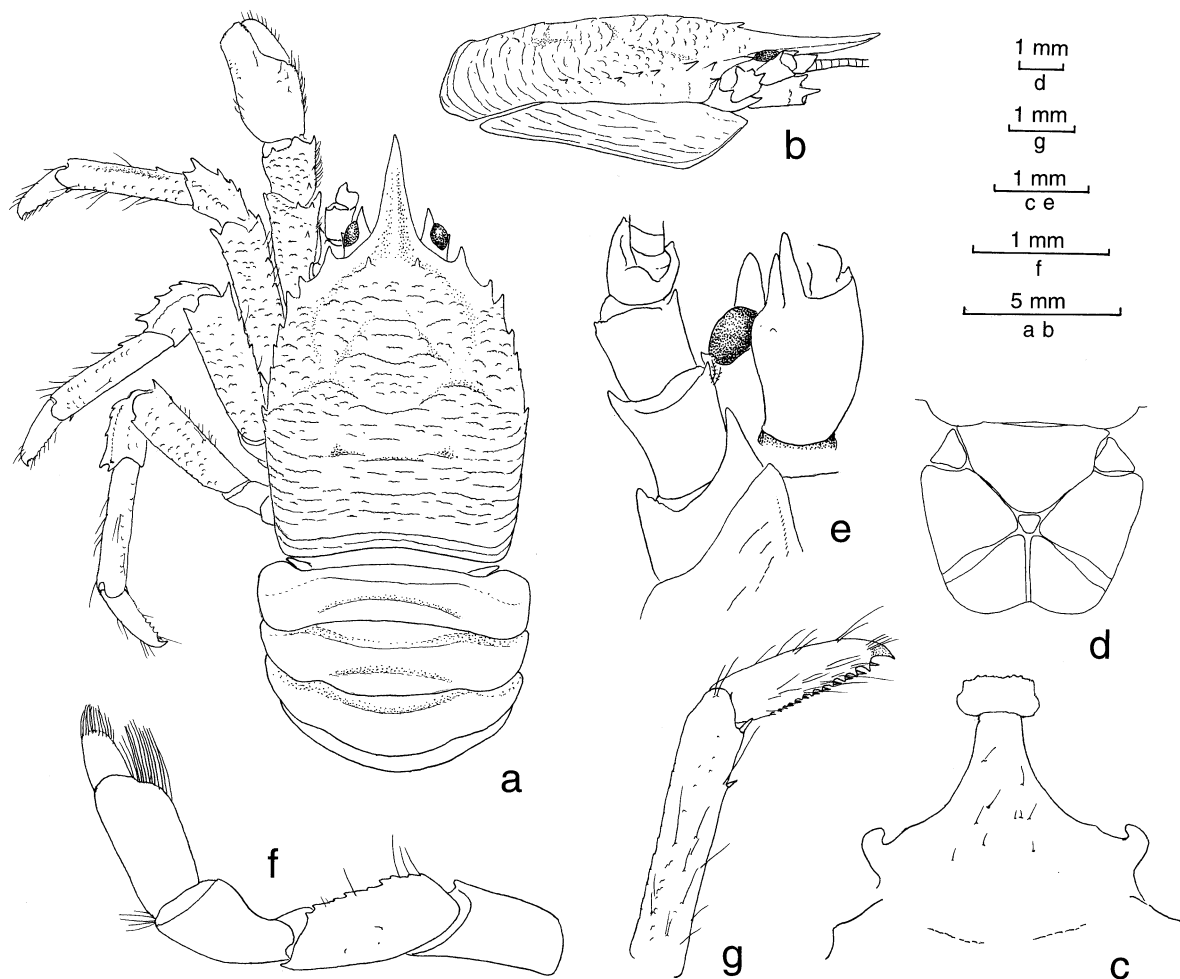


Fig. 84. *Munidopsis pycnopoda* n. sp., holotype, ov. ♀, ZMUC CRU-11276: a, dorsal, right appendages omitted; b, carapace, lateral; c, anterior part of sternal plastron; d, telson; e, antennule, antenna and ocular peduncle, part of pterygostomian flap included, right, ventrolateral; f, endopod of Mxp 3, right, lateral; g, distal articles of P2, right, lateral.

laterally sharply ridged, nearly horizontal but feebly upcurved. Front margin oblique, moderately crested, bearing antennal spine broad at base, much larger than anterolateral spine.

Sternal plastron long relative to width. Sternite 3 sub-quadrangular, anterior margin nearly transverse, with minute denticles. Sternite 4 narrow elongate anteriorly.

Abdomen rather smooth. Segments 2–3 each with 2 transverse ridges without spine, 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-breadth ratio 0.85.

Ocular peduncles dorsoventrally movable; cornea cupped within broad-based eyestalk mesiodorsally produced into elongate spine, laterally with small spine

directly proximal to cornea, mesioventrally with much smaller, obsolescent spine.

Basal article of antennule with distolateral and distodorsal spines, former larger; distal margin crenulate, mesiodorsally ending in small spine. Antennal peduncles having article 1 with anteriorly produced distomesial spine ending in midlength of article 2, distolateral spine small. Article 2 with small distolateral spine and much smaller distomesial spine.

Mxp 3 relatively slender. Ischium 0.6 times as long as merus, bearing short spine on flexor distal margin, lateral surface bold, smooth, flattish. Merus with small denticular spines of irregular sizes on flexor margin, extensor distal margin with small, acute spine. Carpus unarmed.

Pereopods with short arched ridges bearing short setae. P1 short, about as long as postorbital carapace

length. Merus ending in midlength of rostrum, terminally bearing 5 spines, mesioventral one hardly visible in dorsal view, dorsally with a few spines in longitudinal row. Carpus slightly longer than broad, terminally bearing 2 spines on dorsal side, dorsally 2 spines on mesial margin, ventral surface smooth; palm slightly longer than broad. Fingers shorter than palm, spooned at tips, fixed finger with denticulate carina on distolateral margin.

P2–4 relatively long, somewhat compressed, sparingly with long coarse setae. Merus having dorsal crest with row of spines on P2 and P3, obsolescent spines on P4 but terminal spine distinct. Each carpus with 4 spines on dorsal crest subparalleling dorsolateral ridge continued on to propodus. Each propodus with dorsal crest with single spine at proximal third, ventrolaterally with small movable terminal spine preceded by 1 or 2 similar spines, ventromesially with distal spine. Each dactylus more than half length of propodus, relatively broad distally (width at midlength/length = 0.25), terminal claw short, curved, flexor margin nearly straight, bearing 10–11 low, proximally diminishing teeth. P2 overreaching tip of P1 by length of dactylus. Epipods on P1, absent from P2–4.

Variations: Rostrum broad triangular in female and male paratypes, narrow triangular in ovigerous female holotype; lateral margin bearing a row of several denticles on distal fourth in male, a few in female. P2–4 propodi without spine on dorsomesial crest in female, bearing 2 remote spines in male, 1 spine in ovigerous female holotype. Telson consisting of 8 plates in male and ovigerous female holotype, 10 plates in female paratype; length-breadth ratios, 0.85 in ovigerous female holotype, 0.73 in female, 0.71 in male paratype; midlateral plates with coarser marginal setae in male than in females. Dorsal ridges on carapace with short setae in ovigerous female holotype and male paratype, relatively long, coarse setae in female paratype.

Eggs: Number of eggs carried, 6; size, 1.00 x 2.06 mm.

Remarks: The new species is very close to *M. lignaria* Williams & Baba, 1990 in all respects but I am inclined to believe that the following difference is constant. The P2–4 are less spinose on the meri and propodi, and the dactyli are straight on the flexor margin, broad and thick especially distally (width at midlength/length = 0.25) in *M. pycnopoda*. In *M. lignaria*, the P2–4 dactyli are somewhat curving on the flexor margin and apparently slender (width at midlength/length = 0.19).

Etymology: From the Greek *pyknos* (= thick, strong) and *pous* (genitive, *podos* = foot), referring to the stout P2–4 dactyli.

Munidopsis recta n. sp.

Fig. 85

Material:

“Galathea” St. 724, Gulf of Panama, 05°44’N, 79°20’W, 2950–3190 m, dark clay and stones, 12 May 1952: — 1 ♂ (31.7 mm), holotype, ZMUC CRU-11618.

Diagnosis: Carapace with group of spines and scale-like ridges on gastric region. Rostrum broad at base, distally narrowed, upcurved at 40°, dorsal surface ridged in midline. Front margin oblique, lacking antennal spine. Anterolateral spine small, directed somewhat laterad. Abdominal segment 6 having posteromedian margin slightly convex, not exceeding lateral lobes. Telson composed of 10 plates, relatively short. Ocular peduncles broad at base, distomesially with eye-spine less than half width of cornea; cornea large relative to remaining eyestalk, lateral margin semicircular. P1 exceeded by P2, palm spineless, shorter than fixed finger; fingers spooned at tip. P2–4 dactyli smoothly narrowed distally, ending in curved spine, flexor margin nearly straight, bearing proximally diminishing low teeth, ultimate tooth rather remote from end of dactylus and much closer to penultimate tooth. Epipod present on P1, not on P2–4.

Description: Right branchial region swollen by infestation of bopyrid isopod. Carapace relatively long (1.2 times as long as broad when the swollen right branchial region is ignored). Gastric region somewhat inflated with weak triangular demarcation on posterior portion; 9 small spines on anterior half and scale-like ridges elsewhere, pair of spines behind ocular peduncle much larger than remainder. Anterior branchial region with elevated scale-like ridges. Posterior half of carapace with interrupted, somewhat elevated ridges. Antennal spines absent. Carapace lateral margin somewhat convex on left side, strongly inflated on posterior branchial region by bopyrid infestation; first spine anterolateral, small; second situated behind anterior cervical groove, strong, directed anterolaterad and anterodorsad, followed by 1 (left) or 2 (right) smaller spines; and another small short spine at anterior end of posterior branchial region. Rostrum broad at

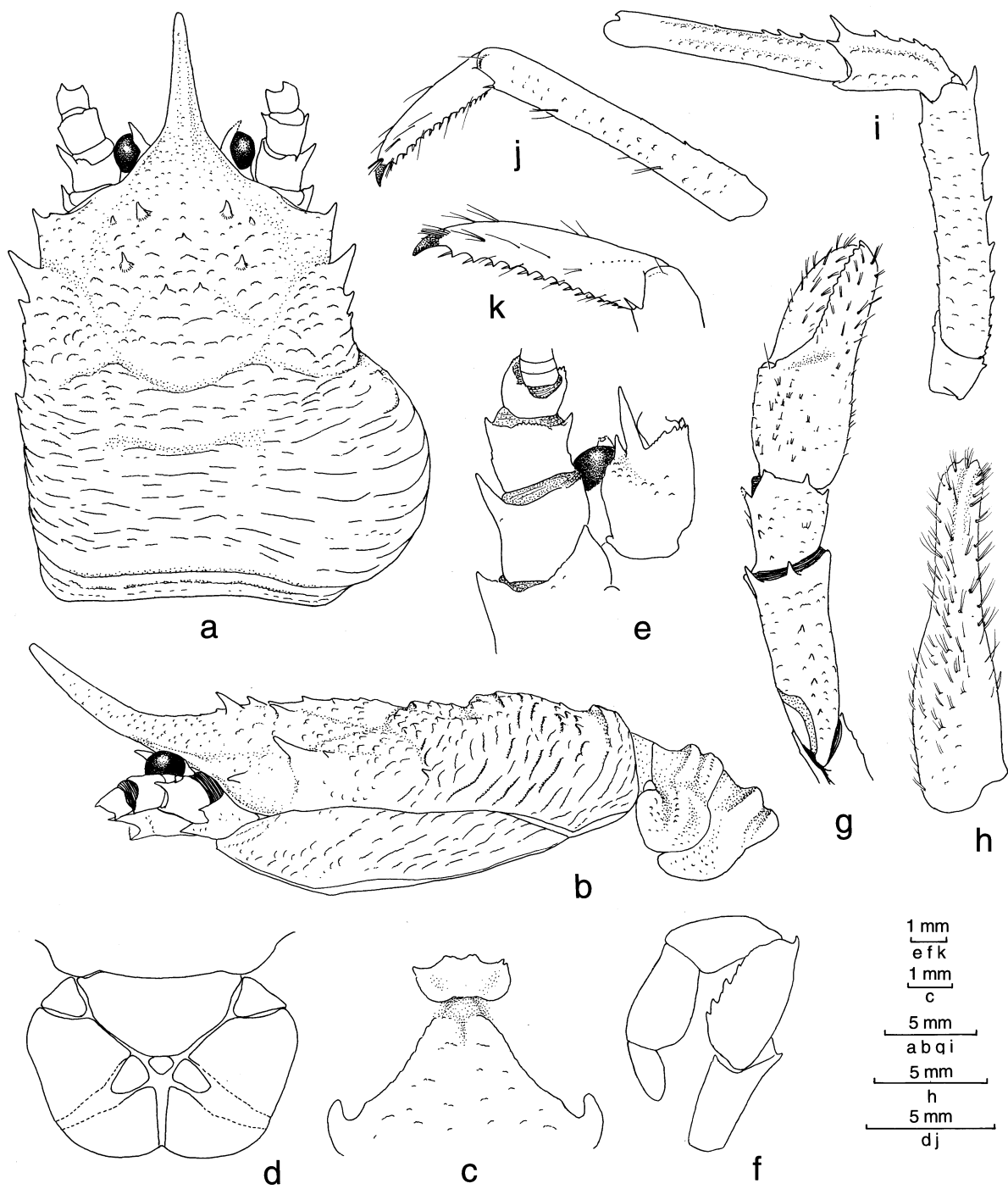


Fig. 85. *Munidopsis recta* n. sp., holotype, ♂, ZMUC CRU-11618: a, carapace, dorsal; b, same, anterior part of abdomen included, lateral; c, anterior part of sternal plastron; d, posterior part of abdominal segment 6 and telson; e, antennule, antenna and ocular peduncle, right, ventral; f, endopod of Mxp 3, setae omitted, left, lateral; g, P1, right, dorsal; h, same, proximal articles omitted, lateral; i, P2, dactylus omitted, left, dorsolateral; j, same, distal articles, lateral; k, same, dactylus, lateral.

base, narrowed distally, strongly upturned, dorsally ridged, length less than half that of remaining carapace. Frontal margin oblique but somewhat convex behind antennal peduncle; antennal spine absent.

Small, scale-like setiferous ridges on sternites 4–5. Sternite 3 more than 1/3 width of sternite 4. Sternite 4 truncate subtriangular, relatively broad anteriorly.

Abdominal segments weakly tuberculate laterally. Segments 2–4 each with 2 moderately elevated transverse ridges. Segment 6 having posteromedian margin slightly convex, not extending beyond posterolateral lobes. Telson divided into 10 plates, length-breadth ratio 0.70.

Ocular peduncles slightly movable, broad at base, mesiodorsally produced into spine less than half distance between proximal and distal ends of corneal lateral margin; cornea large relative to width of remaining eyestalk, lateral margin semicircular.

Basal article of antennule having dorsolateral spine much smaller than ventrolateral. Article 1 of antennal peduncle with flattish, well-produced distomesial process. Endopod of Mxp 3 as illustrated; mesial ridge of ischium bearing 20–21 denticles.

P1 slightly longer than carapace including rostrum. Merus and carpus with spines as figured; mesioventral and lateroventral terminal spines on merus invisible in dorsal view. Palm unarmed but small tubercles along mesial margin. Fingers distinctly longer than palm, distally spooned, prehensile edges crenulate; fixed finger moderately ridged along distal half of lateral margin.

P2–4 with rather weak rugosities. Dorsal crests of meri each with row of spines, ventrolateral margin with row of tuberculate elevated ridges. Each carpus with dorsal crest bearing row of spines paralleling row of tubercles lateral to it, both continued on to propodus, length about twice that of dactylus. Each dactylus smoothly narrowed distally, ending in curved sharp spine, flexor margin nearly straight, bearing 14 proximally diminishing low teeth, distal 6 or 7 teeth equidistant, ultimate tooth rather remote from end of dactylus and much closer to penultimate tooth. P2 slightly overreaching P1.

Epipod present on P1, not on P2–4.

Remarks: The new species is grouped together with *M. subsquamosa* Henderson, 1885, *M. pallida* Alcock 1894 and *M. geyeri* Pequegnat & Pequegnat, 1970, by the abdominal segment 6 with the posteromedian margin slightly convex, not strongly produced as in the other group including *M. crassa* Smith, 1885, *M.*

tufisi Ambler, 1980, *M. producta* n. sp., *M. panamae* n. sp., *M. marianica* Williams & Baba, 1990, and *M. petila* n. sp. (see above). *Munidopsis pallida* and *M. geyeri* are characterized by a pair of spines only on the gastric region, and the anterolateral spine of the carapace being small and directed straight forward, whereas *M. subsquamosa* (see below) and *M. recta* bear additional gastric spines other than the anterior pair, and the anterolateral spine being of good size, directed anterolaterad. *Munidopsis recta* is differentiated from *M. subsquamosa* by the P2–4 dactyli that are straight on the flexor margin (strongly curved in *M. subsquamosa*), the ocular peduncles that have the cornea relatively large and distinctly broader than the eye-spine (relatively small and about as broad as the cornea in *M. subsquamosa*).

Etymology: From the Latin *rectus* (= straight), referring to the straight flexor margin of the P2–4 dactyli, which character differentiates the species from *M. subsquamosa*.

***Munidopsis rostrata* (A. Milne Edwards, 1880)**

Synonymy: see p. 294.

Material:

“Galathea” St. 52, between San Tome and Cameroon, 01°42’N, 07°51’E, 2550 m, muddy clay, 30 Nov 1950: — 1 ♂ (36.5 mm), ZMUC CRU-11642.

“Galathea” St. 314, Bay of Bengal, 15°54’N, 90°17’E, 2610 m, brownish ooze, 3 May 1951: — 9 ♂ (16.5–24.3 mm), 2 ov. ♀ (20.8–23.4 mm), 3 ♀ (13.8–15.7 mm), ZMUC CRU-11488.

“Galathea” St. 453, Makassar Strait, 03°56’S, 118°26’E, 2084 m, clay, 24 Aug 1951: — 1 ♂ (22.0 mm), 1 ♀ (22.6 mm), ZMUC CRU-11499.

“Galathea” St. 491, Makassar Strait, 04°56’S, 117°39’E, 1600 m, clay, 14 Sep 1951: — 2 ♀ (19.2 mm, carapace broken in the other specimen), ZMUC CRU-11502.

Diagnosis: Carapace covered with simple, scale-like or spine-like tubercles, dorsally armed with 2 epigastric spines, 1 extremely strong, laterally compressed mesogastric, and 1 moderately large cardiac spine; lateral margin with 2 prominent anterior spines and lobe-like process at midlength. Front margin oblique, without antennal spine. Rostrum with lateral spine on each side at anterior end of horizontal portion, upturned distally. Small spine ventral to front margin between

ocular and antennal peduncles. Abdominal segments 2–4 each with prominent median spine; segment 6 having slightly convex posterior margin, not overreaching posterolateral lobes. Telson divided into 10 plates, midlateral plates with stiff setae in male. Ocular peduncles movable and spineless. Basal article of antennule with 1 very small distomesial, 1 strong distolateral, and 1 small distodorsal spine, last one occasionally absent; distoventral margin with broad, thin, distally dentate process. Antennal peduncle nearly spineless, article 2 with small semispherical dorsal process nearly contiguous to front margin. Mxp 3 merus with 2–3 spines on flexor margin, proximal one larger, extensor margin unarmed. Pereopods covered with tubercles, nearly spineless; P1 merus occasionally with 1–3 terminal spines, carpus also occasionally with 2 terminal spines. P2–4 subcylindrical; dactyli compressed laterally, moderately curving, flexor margin with 13–19 denticles. P2 overreaching end of P1 by dactylus. Epipods present on P1–3.

Eggs: Diameters, 2.6–2.8 mm.

Remarks: Two males from St. 314 bear rhizocephalan parasites which were identified with *Pirusaccus socialis*, new genus and new species, by Lützen (1985).

In addition to the present material, I have examined several specimens of *M. rostrata* from the western Atlantic, as well as from the Pacific from Japan and the Philippines, and one male of *Galacantha faxoni* Benedict from the “Albatross” St. 3362 off Cocos Island (Baba, 1982a; 1988). The direction of the lateral marginal spines of the carapace, smoothness of the abdomen, and size of the median spine of the abdominal segment 4, for which Faxon (1895) and Benedict (1902) stressed the differences between the eastern Pacific and the West Indies forms, are not sufficiently consistent to allow such discrimination, as was suggested by Chace (1942).

The ovigerous female recorded under the name of *M. rostrata* by Miyake (1982) from the Kyushu-Palau Ridge in 520 m is removed from synonymy; it was identified with *Munidopsis spinosa* (see Baba, 1988).

Range: This is one of the widespread species; in the western Atlantic from off New Jersey to Bequia in the Lesser Antilles; in the northern Atlantic W of Iceland, in the eastern Atlantic off Morocco and between San Tome and Cameroon; off Cape Point, South Africa; in the Indian Ocean from the Gulf of Aden, Arabian Sea and Bay of Bengal; in the western Pacific from Victoria

and New South Wales, Banda Sea off Seram, Teluk Tomini in Sulawesi, Makassar Strait and Japan off Izu Shoto; and in the eastern Pacific off W coast of Baja California, off the Galapagos Islands, Juan Fernandez, off Ecuador and off northern Chile; 1600–3294 m.

Munidopsis rotundior n. sp.

Fig. 86

Material:

“Galathea” St. 490, Java Sea E of Makassar, 5°25’S, 117°03’E, 600 m, sand and clay, 14 Sep 1951: — 1 ov. ♀ (13.2 mm), holotype, ZMUC CRU-11500.

Diagnosis: Carapace with distinct rugosities, median and cardiac transverse ridges somewhat more elevated than the others. Rostrum narrow triangular, horizontal, dorsally weakly carinate. Front margin oblique, bearing well-developed antennal spine. Anterolateral spine of carapace small, spine directly behind anterior cervical groove as large as antennal spine, no spine elsewhere on lateral margin. Abdominal segment 6 having posterior margin not produced but nearly transverse, posterolateral lobes weakly produced. Telson composed of 8 plates. Sternite 3 with pair of submedian spines on anterior margin. Sternite 4 with spines of irregular size on lateral margin, 2 (on right) or 4 (on left) larger spines located anteriorly. Ocular peduncles immovable; cornea distally rounded, bearing well-developed eye-spine arising from its end, mesioventral eye-spine very small. P1 relatively short, moderately setose; merus with 4 terminal spines, and row of dorsal spines; palm as long as broad, spineless; fingers spooned at tip, with prehensile edges crenulate; fixed finger with denticulate carina on distolateral margin. P2–4 moderately setose, dorsal crests of merus and carpus spinose, terminal spines prominent; each dactylus half as long as propodus, distally ending in curved claw, flexor margin nearly straight, bearing about 10 proximally diminishing spines. P2 overreaching P1 by length of dactylus. Epipod absent from all pereopods.

Description: Carapace moderately arched from side to side, weakly convex from anterior to posterior end. Cervical groove not clear between gastric and anterior branchial regions. Distinct setiferous rugae on surface. Gastric region indistinctly bordered from rostrum, bearing somewhat concentric arcs of rugae but those on epigastric region nearly transverse. Anterior

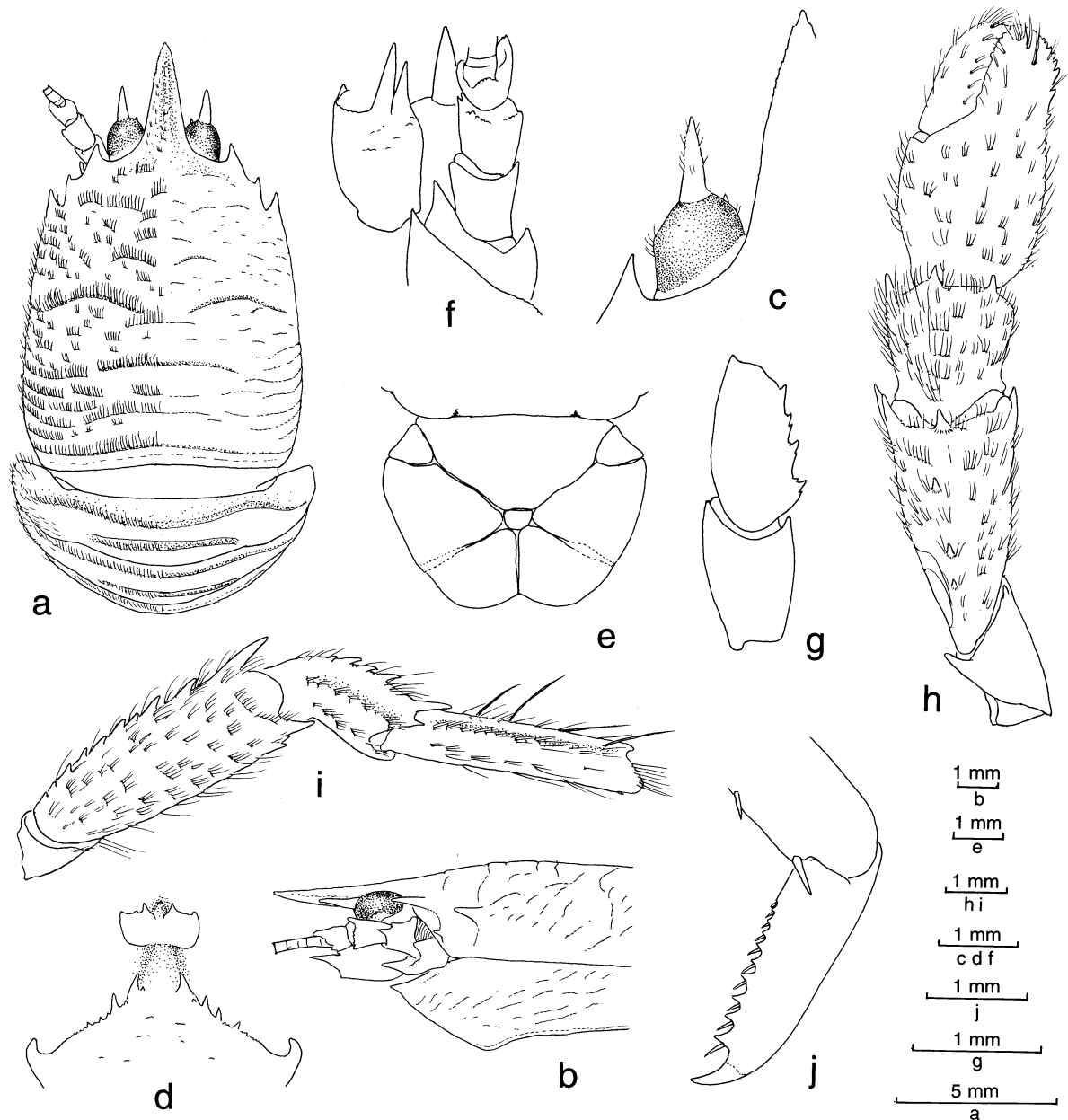


Fig. 86. *Munidopsis rotundior* n. sp., holotype, ov. ♀, ZMUC CRU-11500: a, carapace and abdomen, dorsal; b, anterior part of carapace, lateral; c, anterior part of carapace, left, showing ocular peduncle, dorsal; d, anterior part of sternal plastron; e, posterior part of abdominal segment 6 and telson; f, antennule, antenna and ocular peduncle, left, ventral; g, ischium and merus of Mxp 3, left, lateral; h, P1, right, dorsal; i, P2, dactylus omitted, right, dorsolateral; j, same, distal part, setae omitted, lateral.

branchial region with short rugae. Posterior half of carapace bordered from anterior half by sinuous, somewhat elevated ridge; cardiac region with slightly convex, somewhat elevated transverse ridge followed by interruptedly continuous transverse rugae. Posterior margin preceded by transverse ridge without spine. Rostrum narrow triangular, straight horizontal, dorsal surface granulate and weakly carinate, lateral margin finely denticulate in distal third, ventral surface flattish

on proximal half, somewhat carinate in midline on distal half; length less than half that of remaining carapace. Front margin oblique, bearing strong antennal spine directed slightly mesad, leading more obliquely to very small anterolateral spine. Lateral margin somewhat diverging posteriorly; first spine on anterior branchial margin about as large as antennal spine, directed straight forward, and horizontal.

Sternite 3 roughly quadrangular, anterior margin

with pair of submedian spines and blunt lateral process on each side. Sternite 4 more than 3 times as broad as preceding sternite, lateral margin with 2 (right) or 4 (left) spines plus small spines, anterior-most somewhat larger.

Abdomen unarmed on surface, bearing fine setae laterally and on anterior and posterior transverse ridges of segments 2–4, both transverse ridges elevated, posterior ridge preceded by trough. Segment 6 having transverse posterior margin flanked by very weak lateral lobe. Telson composed of 8 plates; length-breadth ration 0.74; posterior plates broad relative to length.

Ocular peduncles immovable. Cornea well exposed, semicircular in dorsal view, laterally and mesially with a few setae. Well-developed eye-spine about as long as remaining eyestalk in dorsal view, arising from distal end of cornea, sparsely bearing short setae; small eye-spine arising from mesioventral end of eyestalk.

Basal article of antennule with distolateral and distoventral spine, latter smaller. Antennal peduncles having article 1 with distolateral and distomesial spines, latter sharply produced, almost reaching end of article 2. Article 2 with distolateral spine only. Article 3 with 2 small distomesial spines.

Mxp 3 ischium slightly broader than merus, flattish on lateral surface, bearing distinct spine on flexor distal margin, no spine on extensor distal margin; mesial ridge with 21–22 denticles. Merus with 4 small lacinate spines on flexor margin, extensor distal margin lacking distinct spine.

P1 short, broad relative to length, bearing fine setae moderate in density. Ischium with distodorsal and distoventral spines, both well developed. Merus with 4 terminal spines (dorsal, lateral and mesiodorsal, mesioventral), mesioventral spine pronounced, dorsal spine joined proximally into longitudinal row of 3 other spines on dorsal crest. Carpus as long as broad, bearing 2 dorsal terminal and 1 mesial (somewhat proximal to distal end) spine. Palm as long as broad, spineless. Fingers spooned at tip, prehensile edges straight, crenulate; fixed finger with denticulate carina on distolateral margin; movable finger as long as palm.

P2–4 moderately setose, a few setae on propodus coarse and long. Each merus relatively broad and compressed, dorsal crest with row of distally stronger spines, ventrodistally with spine as large as dorsodistal spine, accompanying small spine proximal to it. Each carpus with row of spines, subparalleling striate ridge continued on to propodus, terminal spine on dorsal crest strong, accompanying smaller spine lateral to it;

propodus about twice as long as dactylus, ventral margin ending in pair of movable spines preceded by a single spine somewhat distantly proximal to it. Dactylus ending in relatively short, strongly curved claw preceded by ca. 10 proximally diminishing teeth on nearly straight flexor margin, corneous seta-like spine arising from each tooth. P2–4 overreaching end of P1 by full length of dactylus.

Epipod absent from P1–4.

Color in life: White, with yellow eyes.

Remarks: The anteriorly directed eye-spine arising from the anterior end of cornea, ornamentation of the carapace, and the denticulate carina on the distolateral margin of the chela link the species to *M. bispinoculata* Baba, 1988 and *M. similior* Baba, 1988, and more closely to *M. spinoculata* (A. Milne Edwards, 1880) from the western Atlantic in the rugose condition of the carapace, especially the median and cardiac transverse ridges being nearly the same as in *M. rotundior*.

Munidopsis bispinoculata has the cornea distally narrowed, the eye-spine smaller, rugae on the carapace very weak, the rostrum relatively broad, the antennal spine very small, the sternite 4 bearing three lateral spines on each side, the Mxp 3 ischium having no spine on the extensor distal margin, and the P1 having no distinct middorsal row of spines, all to mention the obvious differences from the new species.

Munidopsis similior differs from *M. rotundior* in that the front breadth is much greater (distance between lateral margins of antennal spines being 0.62 that of the greatest carapace breadth, instead of 0.54 as in *M. rotundior*); the dorsal surface of the carapace is almost smooth on the anterior half; the ventromesial eyespine is fully visible, much remote from the mesial eyespine and located at the level outside the cornea in dorsal view, rather than being discernible only under high magnification, close to the mesial eyespine and located directly below the cornea as in *M. rotundior*; the sternite 3 bears only a pair of spines anteriorly, instead of additional spines on the lateral margin as in *M. rotundior*; the P2–4 meri and carpi each bears only a terminal spine on the dorsal crest, rather than a row of spines as in *M. rotundior*.

Munidopsis spinoculata differs from *M. rotundior* in the cornea being similar to that of *M. bispinoculata*, the antennal spine being small, the sternite 4 bearing two lateral spines on each side, the P2–4 meri and carpi having reduced spination, bearing only a terminal spine

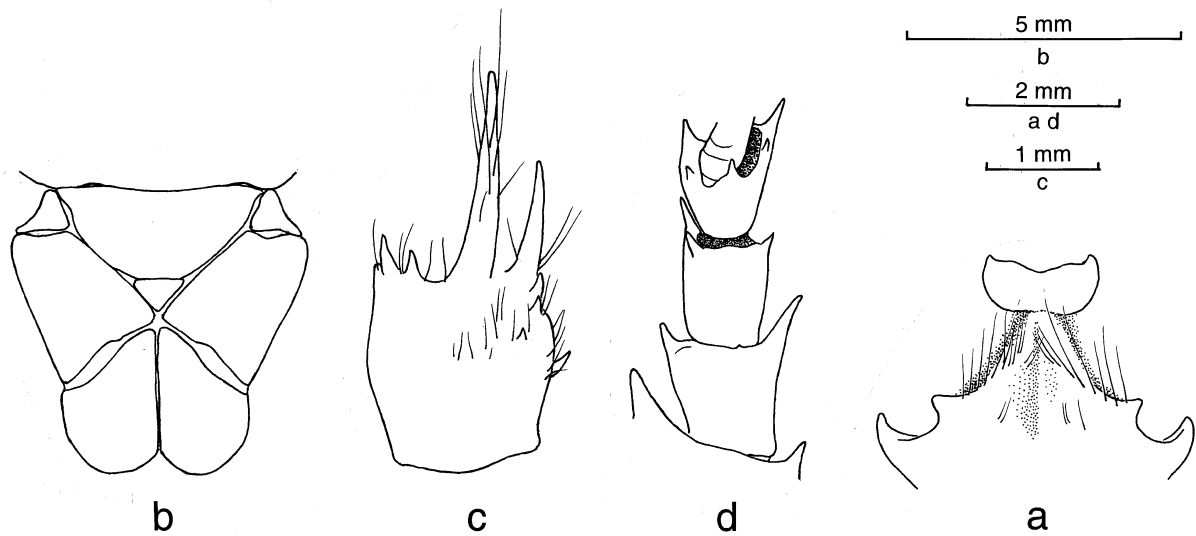


Fig. 87. *Munidopsis sericea* Faxon, 1893, ♂ (19.0 mm), ZMUC CRU-11611: a, anterior part of sternal plastron; b, telson, coarse setae omitted from mid-lateral plates; c, basal article of antennule, left, ventral; d, antenna, setae omitted, left, ventral.

on each dorsal crest. These features are as noted by Baba (1988) in the specimen of *M. spinoculata* from “Albatross” St. 2140 near Jamaica in 1768 m.

The shape of the anterior carapace, rostrum and ocular peduncles also ally the species with *M. victoriae* Baba & Poore, 2002 from Victoria, Australia. However, the new species is somewhat more remote from that species than it is from the above-mentioned three species. In *M. victoriae*, the carapace is covered with short fine setae, the spine directly behind the cervical groove is closer and more lateral to the anterolateral spine of the carapace, the cornea is much shorter, the sternite 4 bears a single spine on each side, and the P2–4 meri bear a row of spines on the ventral margin.

Eggs: Diameter, 1.2–1.3 mm.

Etymology: From the Latin *rotundior* (= more circular, more spherical), referring to the cornea more spherical in the new species rather than distally narrowed in the relative *M. bispinoculata*.

***Munidopsis sericea* Faxon, 1893**

Fig. 87

Synonymy: see p. 295.

Material:

“Galathea” St. 739, Gulf of Panama, 07°22’N,

79°32’W, 915–975 m, green clay, 15 May 1952: — 1 ♀ (17.9 mm), ZMUC CRU-11619.

“Galathea” St. 745, Gulf of Panama, 07°15’N, 79°25’W, 915 m, 16 May 1952: — 2 ♂ (18.5, 19.0 mm), ZMUC CRU-11611.

Diagnosis: Body and appendages covered with fine plumose setae. Carapace longer than broad, dorsal surface with scattered small spines, 2 epigastric spines pronounced. Cervical groove not deep but recognizable. Gastric region convex. Cardiac region with elevated transverse ridge usually with a few small spines, preceded by deep groove. Posterior transverse ridge with row of small spines. Front margin oblique, antennal spine very small but distinct. Small spine ventral to front margin between ocular and antennal peduncles. Lateral margins subparallel, slightly convex, or slightly convergent posteriorly, anterolateral spine prominent, directed obliquely outward, followed by smaller spines along nearly whole length. Rostrum about half length of remaining carapace, dorsally convex, curved dorsad or horizontal, armed with pair of pronounced lateral spines at midlength, bearing a few small dorsal spines at base. Abdominal segment 2–4 each with 2 transverse rows of spines continued on to pleura, median pair of anterior row prominent; segment 6 having posteromedian margin somewhat convex but not overreaching posterolateral lobes. Telson divided into 8 plates, posterior plates elongate, midlateral plates fringed with coarse setae in male.

Ocular peduncles movable, with a few small dorsal spines; cornea rounded. Antennular basal article with strong distolateral and distodorsal spines, a few small distoventral spines between distomesial angle and distolateral spine, and several small spines proximal to distodorsal spine. Antennal peduncles long relative to width; article 1 with distomesial spine larger than distolateral spine; article 2 with distolateral spine larger than distomesial one; article 3 with 3 terminal spines, article 4 with 4–6 terminal spines. Mxp 3 merus with 3–4 prominent spines on flexor margin, extensor margin with strong distal spine occasionally accompanying a few small spines proximal to it. P1 relatively slender, spinose, fingers as long as palm, distally spooned, each prehensile edge with intermeshing teeth, distal 3 stronger. P2–4 relatively slender, very spinose except for dactyli; each dactylus more than half length of propodus, flexor margin nearly straight, bearing 7–8 teeth, terminal corneous claw moderately curved. P2 reaching midlength of palm of P1. Epipod absent from pereopods.

Remarks: The “Galathea” specimens perfectly fit the description of *M. sericea*. Some details that are not mentioned originally are illustrated (Fig. 87).

Range: Gulf of Panama and SW Baja California; 915–1229 m.

Munidopsis serricornis (Lovén, 1852)

Synonymy: see p. 295.

Material:

“Galathea” St. 443, Mindanao Sea, 08°48’N, 124°09’E, 1510 m, mud, 16 Aug 1951: — 5 ♂ (6.9–9.9 mm), 2 ♀ (8.6, 9.7 mm), ZMUC CRU-11496.

Diagnosis: Carapace scarcely setose, bearing pair of epigastric spines, tubercle-like processes or merely elevated very short ridge; dorsal rugosity very weak. Lateral margins convex, armed in anterior half with 4 spines, first anterolateral, very small, second to fifth much smaller or rather obsolescent. Front margin transverse mesial to small antennal spine, oblique between antennal and anterolateral spines. Rostrum broad, dorsally carinate, distally trifid, nearly horizontal but slightly upturned distally. Abdomen unarmed, rather smooth dorsally; segments 2–4 each with elevated anterior ridge followed by another ridge very weak on segment 2, obsolescent on segments 3

and 4; segment 6 having posteromedian margin transverse or slightly convex, not exceeding lateral lobes. Telson divided into 8 plates, midlateral plates fringed with coarse setae in male. Ocular peduncles small and movable, lacking eye-spines. Small spine ventral to front margin between ocular and antennal peduncles. Article 1 of antennal peduncle with distomesial and distolateral spines, both directed forward, distomesial larger; article 2 with distolateral spine only. Mxp 3 merus with 2 prominent spines (proximal larger) on flexor margin, occasionally with additional smaller spine distally; extensor margin very small distal spine. P1 moderately setose, merus relatively long, bearing 1–2 prominent dorsomesial and ventromesial spines other than terminal spines; carpus relatively elongate, prominent spine directly proximal to distomesial spine; palm spineless, distinctly longer than movable finger; fingers gaping in proximal 2/3 of length in males as well as large females. P2–4 meri with row of small dorsal spines; dactyli nearly straight along flexor margin, bearing row of teeth each with seta-like spine, terminal claw accompanying slender seta-like spine arising from its base and subparalleling flexor margin. P2 barely overreaching end of P1 carpus. Epipods absent from all pereopods.

Remarks: This species has long been known as *Munidopsis tridentata* (Esmark, 1857), but there is a good account of that species under the name of *Galathea serricornis* Lovén, 1852 which had not received any attention since its publication. This name was recently cited by d’Udekem d’Acoz (1999).

Differences between the eastern Atlantic and the Philippine specimens in the spination of the carapace lateral margin and P2–4 meri were noted in a previous paper (Baba, 1988). Recently more details of morphological variations in the carapace, telson, P1–4 observed among specimens from Tasmania, Indonesia (“Valdivia” St. 198; Doflein & Balss, 1913) and Trondheim Fjord (Ortmann, 1892) were presented (Baba & Poore, 2002).

Samuelsen (1972) reported that the species has three zoeal stages before molting to the megalopa stage, by rearing larvae obtained from an ovigerous female in the laboratory: the egg size is recorded to be 1.65 mm and the first zoea measures 5.81 mm (mean) in total length including rostrum and abdomen.

Range: Widely distributed in both the Atlantic and the Indo-Pacific. Previously known from the eastern Atlantic from off the coast of Iceland, off Norway, in

the Bay of Biscay, NW Mediterranean, off the Azores, and off the west coast of Africa from Morocco to Cape Bojador and the Cape Verde Islands; the western Atlantic off the north coast of Cuba and NW Gulf of Mexico; and in the Indo-Pacific from Indonesia off southern Obi, from the Philippines in Sulu Sea, between Siquijor and Bohol, Palawan Passage, Tasmania and Victoria, W of Sumatra, Nicobar Islands, Bay of Bengal off Sri Lanka, Maldives, off Kerala State of India, Saya de Malha Bank, and off the E coast of Somali Republic. The bathymetric range is from 100 to 2165 m.

***Munidopsis subsquamosa* Henderson, 1885**

Figs. 88, 89

Synonymy: see p. 296.

Material:

“Challenger” St. 237, off Yokohama [= SE of Nojima-zaki, Boso Peninsula, Japan]; 1875 fm (3431 m): — 1 ♂ (29.1 mm), lectotype of *M. subsquamosa*, BMNH: 88:33.

“Challenger” St. 146, between Marion Island and the Crozets, 1375 fm (2516 m): — 1 ♂ (43.9 mm), syntype of *Munidopsis subsquamosa* var. *aculeata*, BMNH 1888:33.

“Challenger” St. 302, W of Chile; 1450 fm (2654 m): — 1 ♂ (45.5 mm), syntype of *Munidopsis subsquamosa* var. *aculeata*, BMNH 1888:33.

Diagnosis: Gastric region with pair of spines flanked by another spine on each side and even additional tubercular spines on scale-like ridges. Lateral margin having first spine distinctly larger than antennal spine, directed anterolaterad at 45°, second spine stronger than first. Rostrum subtriangular in proximal half, distally narrowed, slightly upcurved, dorsal surface ridged in midline. Front margin oblique, antennal spine small. Abdominal segment 6 having posteromedian margin slightly convex. Telson composed of 10 plates, midlateral plate produced on anterolateral margin. Ocular peduncles broad at base, distomesially with eye-spine distinctly longer than cornea. P1 exceeded by P2; palm shorter than fixed finger, bearing a few spines along mesial margin; fingers spooned at tip. P2–4 dactyli smoothly narrowed distally, well curved, flexor margin bearing ultimate denticle equidistant between penultimate denticle and end of article. Epipods present on P1, not on P2–4.

Description of lectotype: Carapace, excluding rostrum, distinctly longer than broad. Cervical groove distinct. Transverse depression in anterior part of cardiac region. Gastric region somewhat inflated; 2 spines in pair directly behind ocular peduncles, each accompanying smaller spine lateral to it; followed by nearly concentric arcs of ridges; a few of these on anterior portion bearing tubercular spines. Anterior branchial region with blunt tubercles. Posterior half of carapace bearing interrupted short ridges. Lateral margins subparallel or slightly convex on branchial regions, first spine anterolateral, sharp, larger than antennal spine, directed anterolaterad at about 45°; second spine much larger, directed in same direction as first spine, followed by 4 (left) or 5 (right) smaller spines, last separated from preceding smaller spine by posterior cervical groove. Rostrum subtriangular in proximal half, narrowed distally; dorsal surface ridged in midline; slightly upcurved. Front margin moderately oblique, bearing small antennal spine directed anterolaterad.

Sternite 3 depressed in midline, having anterior margin with 2 submedian processes; sternite 4 3.2 times as broad as sternite 3, anteriorly nearly contiguous to posterior margin of sternite 3, surface with short setiferous striae.

Abdominal segments granulate on surface; elevated transverse ridges without spine on segments 2–4. Segment 6 having posterior margin slightly convex, not produced. Telson composed of 10 plates, midlateral plate with strongly convex anterolateral margin; length-breadth ration 0.68.

Ovate cornea cupped within slightly movable broad-based eyestalk mesiodorsally produced into strong spine distinctly longer than distance between distal and proximal ends of cornea.

Basal article of antennular peduncle having distodorsal spine smaller than distolateral spine. Antennular peduncle having article 1 with distomesial process basally depressed, sharply produced distally. Article 2 with distomesial spine only, unarmed on distolateral margin.

Mxp 3 ischium 2/3 as long as merus, bearing small spine on each of flexor and extensor distal margins; mesial ridge with 23 denticles. Merus with distinct spine on extensor distal margin and a few short spines of irregular size on flexor margin.

P1 tuberculate on surface, length equally long as carapace including rostrum. Merus spineless on mesial margin other than distal spine. Palm with a few small spines along mesial margin, spineless elsewhere. Fingers 1.3 times as long as palm, distally spooned,

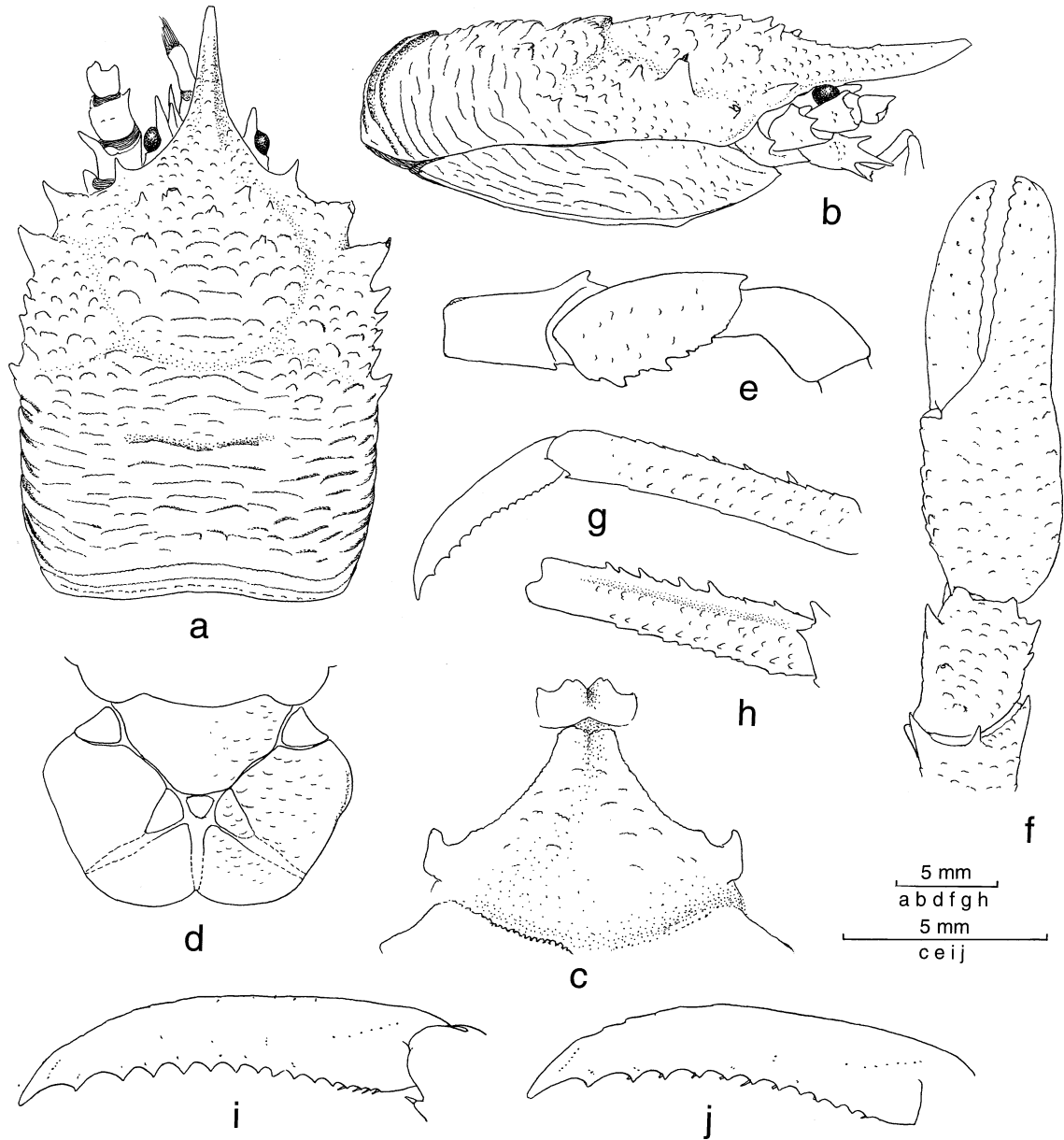


Fig. 88. *Munidopsis subsquamosa* Henderson, 1885, lectotype, ♂, BMNH 1888:33: a, carapace, dorsal; b, same, lateral; c, anterior part of sternal plastron; d, posterior part of abdominal segment 6 and telson; e, endopod of Mxp 3, distal articles omitted, right, lateral; f, P1, proximal part omitted, right, dorsal; g, P2, distal articles, left lateral; h, same, propodus dorsolateral; i, same, dactylus, lateral; j, P3 dactylus, lateral.

having prehensile edge crenulate.

P2–4 with spines arranged in longitudinal rows usually on dorsal crest and lateral face. Each dactylus distinctly curving, smoothly narrowed distally, terminating in sharp claw, length 0.61 that of propodus; flexor margin bearing 12–15 denticles successively diminishing toward base of article, ultimate one equidistant between end of terminal claw and penultimate denticle. P2 somewhat overreaching P1. Epipod on P1, absent on P2–4.

Remarks: Two syntypes of *M. subsquamosa aculeata*, one from “Challenger” St. 146 and the other from St. 302, have most of the characters similar to the lectotype of *M. subsquamosa*, in particular, the P2–4 dactyli being curved, smoothly narrowed, with similar indentations of the flexor margin. In both of the syntypes, the gastric spines are more numerous and the rostrum is slightly more upturned than in the lectotype of *M. subsquamosa*. The antennal spine is absent in the syntype from “Challenger” St. 146. The telson in the

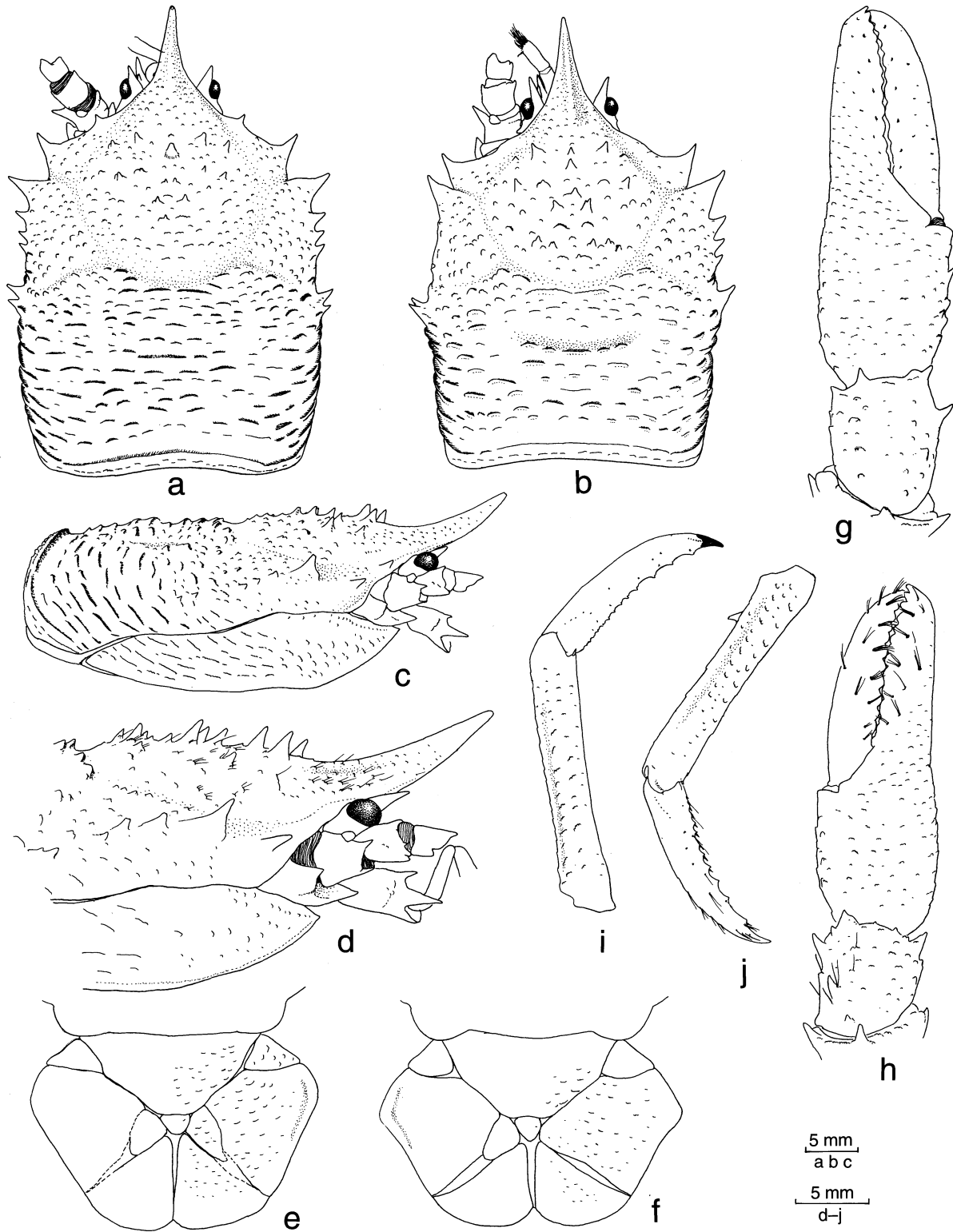


Fig. 89. *Munidopsis subsquamosa* var. *aculeata* Henderson, 1885; a, c, e, g, i, syntype, ♂, BMNH 1888:33, from "Challenger" St. 302; b, d, f, h, j, syntype, ♂, BMNH 1888:33, from "Challenger" St. 146; a, b, carapace, dorsal; c, same, lateral; d, same, anterior half, lateral; e, f, posterior part of abdominal segment 6 and telson; g, P1, left, dorsal; h, P1, right, dorsal; i, distal articles of P2, right, lateral; j, same of P2, left, lateral.

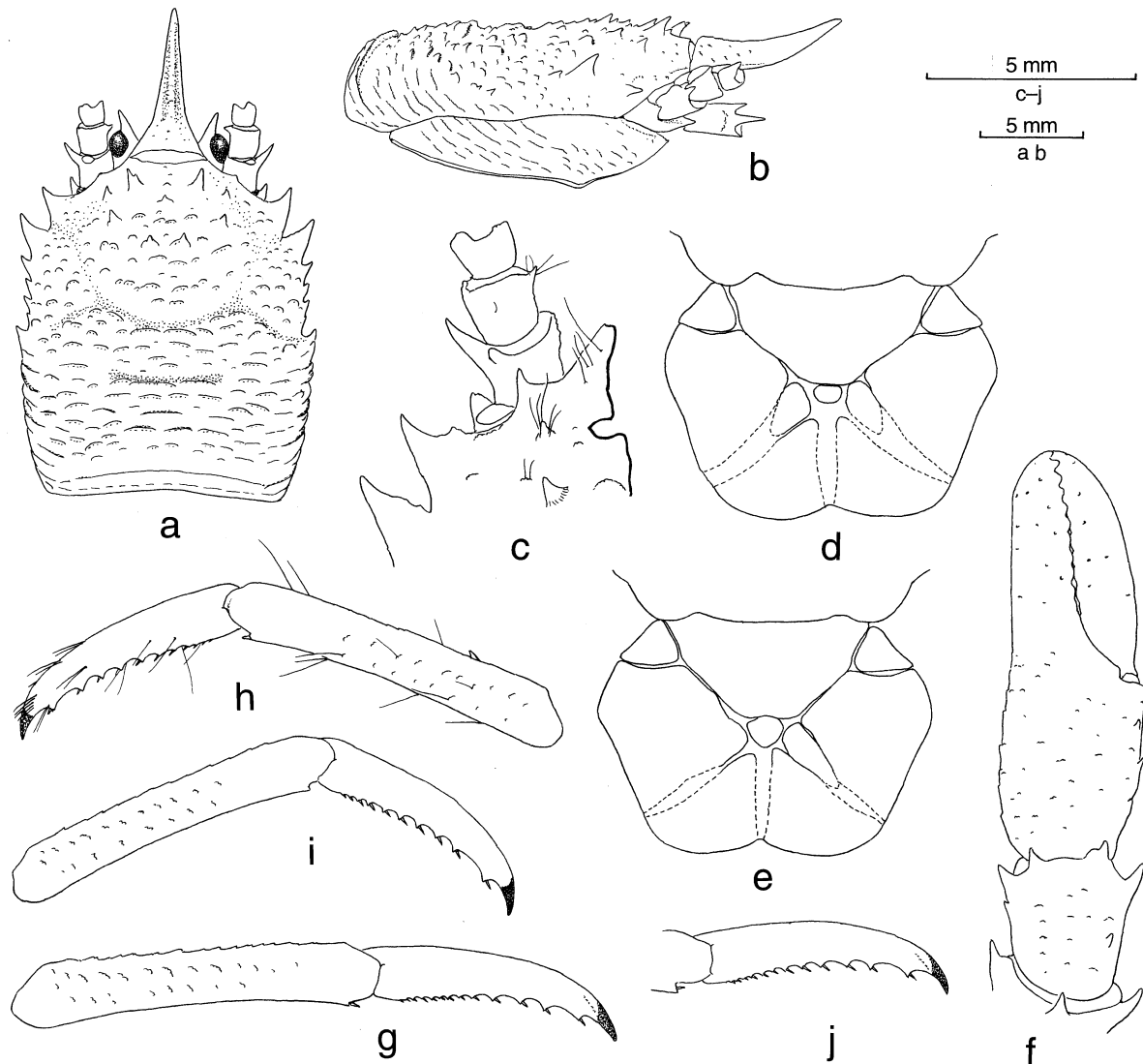


Fig. 90. *Munidopsis barnardi* Kensley, 1968, a, b, e, f, h, i, paratype, ♂ (23.0 mm), SAF A10497; c, d, g, i, holotype, ♀, SAF A12636: a, carapace, dorsal; b, same, lateral; c, anterolateral part of carapace (broken), left, dorsal; d, posterior part of abdominal segment 6 and telson; e, same; f, P1, proximal part omitted, left, dorsal; g, distal articles of P2, right, lateral; h, same, left; i, distal articles of P4, right, lateral; j, P4 dactylus, right, lateral.

specimen from "Challenger" St. 302 is about the same as that of the lectotype from St. 237. On the other hand, the specimen from St. 146 has a telson more strongly produced laterally, with the length-breadth ratio of 0.63; the telson subdivision is incomplete, the small plate lateral to the central plate being present on the left side, absent on the right side. The differences between *M. subsquamosa* and *M. subsquamosa aculeata* thus are so slight that they are considered identical at the specific level.

The material reported under *Munidopsis subsquamosa aculeata* by Faxon (1895) from the Gulf of Panama is shifted to a full, different species, *M.*

producta n. sp. (see above).

Kensley (1968) described *M. barnardi* from W of Cape Point, South Africa in 2708–2965 m, comparing his species with *M. crassa* Smith, 1885. The differences he listed are very slight and his species rather looks like *M. subsquamosa*. For confirmation the holotype (SAF A12636) and one of the paratypes, male (SAF A10497), were examined. As shown in Fig. 90, the holotype is now in poor condition but I do not find any distinctive characters to discriminate between *M. barnardi* and *M. subsquamosa*.

Munidopsis subsquamosa latimana Birstein & Zarenkov, 1970 is apparently a different species,

characterized by the broad rostrum and the absence of spines on the gastric region. However, the name *latimana* is preceded by *M. latimana* Miyake & Baba, 1966, hence, proposed here is a replacement name, *M. petalorhyncha*, derived from the Greek *petalos* (= broad) plus *rhynchos* (= rostrum).

The material reported under *Munidopsis subsquamosa* by van Dover *et al.* (1985) from the Galapagos Rift, eastern Pacific 13°N and 21°N areas is different from the true *M. subsquamosa* in having the P2–4 dactyli that are straight on the flexor margin instead of being curved, a fact confirmed by examination of the material now in the USNM collection. It is near *M. recta* n. sp. Further details will be discussed elsewhere.

The following records are removed from the synonymy for the time being until their identity is confirmed: *M. subsquamosa*: de Saint Laurent, 1985: table 2 (Bay of Biscay; 2775–4260 m); *M. subsquamosa*: Faxon, 1895: 85 (between Mariato Point and Cocos Island; 1471–1672 fm (2692–3060 m)); *M. subsquamosa*: Ambler, 1980: 26 (off Oregon and off Panama, between 2692 m and 2736–3000 m).

Range: Japan, Queensland, New South Wales, off Chile, between Marion Island and the Crozets, and South Africa; 2516–3960 m.

***Munidopsis taurulus* Ortmann, 1892**

Synonymy: see p. 297.

Material:

Th. Mortensen's Pacific Expedition 1914–16, Sagami Bay, ca. 942 m, hard bottom, swabs, 26 Jun 1914: — 1 ov. ♀ (7.3 mm), ZMUC CRU-11511.

Diagnosis: Small species. Carapace with distinct areas, each with small, tubercle-like, compressed spines procurved especially on posterior branchial region; pair of epigastric spines prominent; cardiac region with transverse, elevated ridges bearing median spine; posterior margin preceded by elevated transverse ridge with 4 procurved spines. Lateral margin moderately convex, provided with small spines. Front margin concave behind eye leading to antennal spine, then to anterolateral angle first obliquely then transversely. Rostrum laterally arcuate, somewhat constricted at base, serrate on anterior half, dorsal surface with longitudinal carina. Abdominal segments 2–3 each with procurved spines in 2 transverse rows; posterolateral

lobes of segment 6 somewhat overreaching nearly transverse posteromedian margin. Telson divided into 7 plates, central plate absent, anteromedian plate posteriorly produced. Ocular peduncles slightly movable, cornea broad, eye-spine papilla-like, placed middorsally. Mxp 3 merus with 4 flexor marginal and 4–5 extensor marginal spines; carpus with 6–7 extensor marginal spines. Epipods absent from all pereopods.

Eggs: One egg carried, measuring 1.00 x 1.18 mm.

Remarks: The present specimen has all the pereopods detached from the body and missing but it is apparently referable to *M. taurulus*. *Munidopsis hastifer* Benedict, 1902 was synonymized with this species (Baba, 2001).

Range: Known from Sagami Bay, Japan. The holotype is from Sagami Bay in 200 fm (366 m), and the syntypes of *M. hastifer* are from off Honshu Island, Japan, 60 miles E of Manazuru Zaki, Kanagawa, Sagami Bay, 120–265 fm (219–485 m). The present bathymetric record goes further down to 942 m.

***Munidopsis teretis* n. sp.**

Fig. 91

Material:

“Galathea” St. 192, off Durban, 32°00'S, 32°41'E, 3520 m, globigerina ooze, 5 Feb 1951: — 1 ♀ (27.1 mm), holotype, ZMUC CRU-11283.

“Galathea” St. 607, Tasman Sea, 44°18'S, 166°46'E, 3930 m, 17 Jan 1952: — 1 ♂ (16.4 mm), ZMUC CRU-11630.

Diagnosis: Body and appendages covered with short fine setae. Carapace with scattered tubercles and faint rugae, bearing pair of epigastric tubercles or very small spines. Lateral margin with anterolateral spine directed somewhat anterolaterad, followed by posteriorly diminishing spines on anterior branchial region and more laterally expanded posterior branchial region anteriorly bearing distally pointed process followed by smaller process. Rostrum broadly triangular, less than half length of remaining carapace. Front margin oblique, antennal spine small. Sternite 3 narrow, sternite 4 subtriangular. Abdomen spineless; posterior margin of segment 6 nearly transverse, posterolateral lobes feebly bordered from posteromedian margin. Telson divided into 8 plates, midlateral plates with coarse setae in male. Ocular peduncles hardly movable,

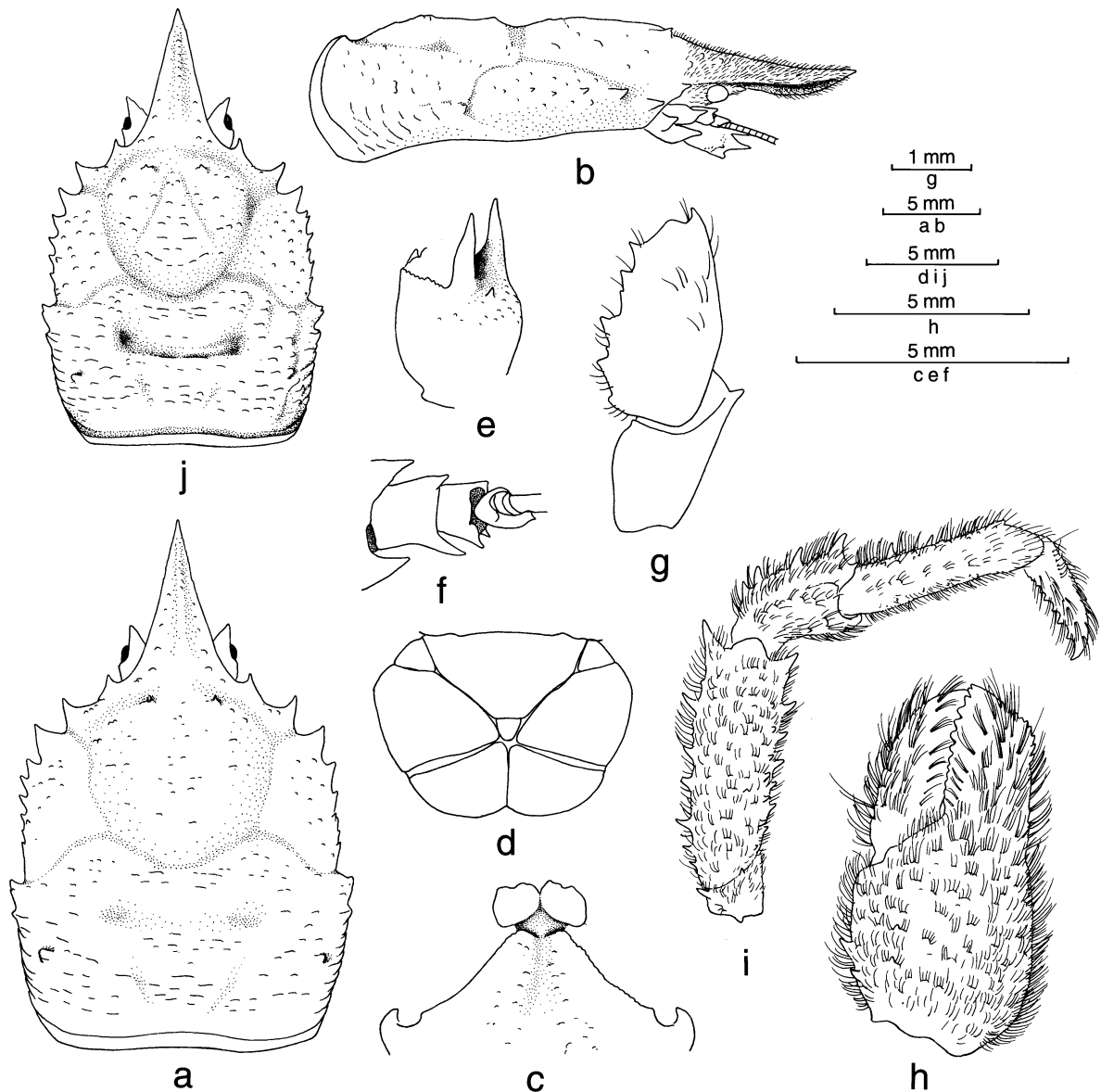


Fig. 91. *Munidopsis teretis*, n. sp.; a–i, holotype, ♀, ZMUC CRU-11283; j, paratype, ♀ (16.4 mm), ZMUC CRU-11630: a, carapace, denuded, dorsal; b, same, lateral; c, anterior part of sternal plastron; d, telson; e, basal article of antennule, left, ventral; f, antenna, left, ventral; g, merus and carpus of Mxp 3, left, lateral; h, P1, proximal articles omitted, right, dorsal; i, P2, right, lateral; j, carapace, setae omitted, dorsal.

basally broad, with stout eye-spine produced distomesially; cornea small and lateral. Mxp 3 merus relatively long, flexor margin with 2–5 spines of irregular size, extensor margin bearing distinct distal spine. P1 shorter than carapace, palm with scattered tubercles and small spines; fixed finger with denticulate carina on distolateral margin. P2–4 relatively short, tuberculate; each merus with rows of dorsal and ventral spines; each propodus with 2 dorsal marginal spines, 2 lateral crests with row of tubercles; each dactylus more than half as long as propodus, terminal claw

strongly curving, flexor margin nearly straight. P2 slightly overreaching end of P1. Epipod present on P1, absent from P2–4.

Description of holotype: Body and appendages covered with short fine setae. Carapace nearly as long as broad, dorsally somewhat convex, bearing scattered tubercles and faint rugae. Sinuous mid-transverse groove distinct. Gastric region somewhat convex, anteriorly bearing pair of tubercle-like processes distally minutely spiniform. Cardiac region faintly delineated in

triangular shape, anteriorly without distinct transverse ridge but preceded by shallow concavity anterolateral to it on each side. Posterior branchial region with blunt, low process mesial to midlength of lateral margin. Front margin oblique, with small antennal spine. Lateral margins somewhat convex; anterolateral spine larger than antennal spine, directed somewhat anterolaterad; anterior branchial margin with rounded ridge overhanging pterygostomial flap, bearing 5 posteriorly diminishing processes each ending in small spine, anterior-most of these slightly larger than anterolateral spine, preceded by deep excavation between; posterior branchial region more expanded laterally, bearing distally pointed process at anterior end followed by another smaller process. Rostrum broadly triangular, nearly horizontal, moderately carinate dorsally, bearing sparse tubercles, ventral surface carinate and convex on distal half; length (when measured from mesial base of antennal spine to tip of rostrum) 0.44 that of remaining carapace.

Anterior part of sternal plastron as figured (Fig. 91c). Sternite 3 relatively narrow, medially depressed, forming apposed lobe at either side of midline, each lobe posterolaterally expanded. Sternite 4 subtriangular.

Abdominal segments spineless, segments 2–4 each bearing rounded anterior ridge followed by shallow groove; posterior margin of segment 6 nearly transverse, posterolateral lobes feebly separated from posteromedian margin. Telson relatively short, 1.4 times as broad as long, consisting of 8 plates.

Ocular peduncles hardly movable, moderately depressed, basally broad, distomesially produced into stout spine. Cornea small and lateral.

Basal article of antennule short, with short, stout distodorsal and distolateral spines and small distomesial process; distoventral portion tuberculate, bearing small spine lateral to base of distolateral spine. Antennal peduncles comparatively reduced in size. Article 1 with distomesial and distolateral spines, both stout and acute. Article 2 with prominent distolateral and small distomesial spines. Article 3 with 3 small terminal (mesial, lateral and dorsal) spines.

Mxp 3 ischium with 21 closely placed denticles on mesial ridge, extensor margin with distinct distal spine. Merus twice as long as ischium; flexor margin with 5 low, obtuse processes of irregular size, extensor margin distally produced into spine.

P1 shorter than carapace, tuberculate. Merus relatively short, terminating in midlength of rostrum, bearing row of 6 dorsal spines and 2 larger terminal

spines (dorsomesial and dorsoventral). Carpus with pronounced mesial marginal spine at point 1/3 from distal end, and a few lateral and several dorsal spines. Palm as long as broad, somewhat depressed, dorsally with scattered tubercles and a few small spines, mesially with 2 short spines proximally. Fingers having opposable margins straight, distally spooned, bearing denticles; fixed finger with denticulate carina on distolateral margin; movable finger shorter than fixed finger.

P2–4 short and tuberculate. P2 slightly overreaching end of P1. Merus with row of dorsal spines and 2 rows of ventral spines, mesial row of the latter with tendency to be more like tubercles, lateral face tuberculate, bearing row of both very small spines and tubercular processes (5 in number) near ventrolateral margin. Carpus with 4–5 dorsal marginal spines and a few tubercles on dorsolateral face. Propodus with feebly tuberculate crest on lateral face, dorsal margin with 2 stout spines on proximal 1/3 of length. Dactylus more than half of propodus, ending in sharp curved claw, flexor margin nearly straight, with row of 8 teeth diminishing in size toward base of article, ultimate tooth closer to penultimate one than to end of terminal claw. P3 very similar to P2 but somewhat shorter, bearing fewer spines and tubercles on merus. P4 much shorter, markedly merus, bearing fewer spines (3 pronounced spines on distal half of dorsal crest of merus).

Epipod present on P1, not on P2–4.

Paratype: Male paratype in general agreement with female holotype, differing in carapace and P2–4 more strongly tuberculate, cardiac region preceded by deeper groove, P2–4 more spinose; each merus with stouter spines, propodus with stronger tubercles and spines in 2 rows on lateral face.

Remarks: The new species generally agrees with the extensive description of *Munidopsis bermudezi* (see Chace, 1942), but differs from that species in the following particulars: the gastric spines as distinct in *M. bermudezi* are reduced to tubercular processes in *M. teretis*; a blunt process is present on the branchial region of each side in *M. teretis*, absent in *M. bermudezi*, and a ridge along the posterior half of the carapace margin is recognizable in *M. bermudezi* (Chace, 1942: fig. 29; Sivertsen & Holthuis, 1956: pl. 4, fig. 3; Pequegnat & Pequegnat, 1970: figs. 5–8), indistinct in *M. teretis*. These differences were confirmed by examination of two specimens of *M.*

bermudezi collected by the “Alaminos” and reported by Pequegnat & Pequegnat (1970, 1971) (“Alaminos” Field No. 69A11–17, NW Gulf of Mexico, 1800 fm (3294 m): 1 ♀ (cl 15.0 mm), TAM2–0534; Field No. 70A10–58, NE Gulf of Mexico, 1775 fm (3248 m): 1 ♂ (cl 29.7 mm), TAM 2–0535), and 12 specimens in the collection of the Nationaal Natuurhistorisch Museum, Leiden (“Bartlett” St. 93, eastern Caribbean Sea, 13°32.3’N, 64°40.9’W, 28 Nov 1981: 1 ♂ (32.0 mm), 1 ov. ♀ (29.8 mm), 1 ♀ (27.4 mm), 1 spec. (sex indet., 36.0 mm) (RMNH 35772); “Bartlett” St. 94, eastern Caribbean Sea, 13°32.2’N, 64°42’W, 28–29 Nov 1981: 4 ♂ (22.5–39.0 mm), 1 ov. ♀ (32.4 mm), 1 ♀ (34.5 mm) (RMNH 35773)). The anterior branchial region in *M. bermudezi* is flattish, marginally somewhat elevated and obviously crested toward the lateral margin, whereas in *M. teretis* the carapace lateral margin is rounded and indistinctly elevated.

Khodkina (1975) reported *M. bermudezi* from the eastern Pacific Ocean (57°48’N, 148°40’W) in 2400 m. However, the known range of the species is otherwise only in the eastern and western Atlantic (Chace, 1939, 1942; Gore, 1983; Laird *et al.*, 1976; Pequegnat & Pequegnat, 1970, 1971; Sivertsen & Holthuis, 1956; Wenner, 1982). Reexamination of this material is desirable.

The new species is also very close to *M. thieli* Türkay, 1975 from the Iberian Basin in 5315–5330 m in the carapace ornamentation, shapes of the telson, antennule, antenna, and Mxp 3. However, in two paratypes (♂ 26.4 mm, ♀ 34.0 mm) of that species (SMF 4805) examined on loan, the epigastric tubercles or spines are absent, the process on each posterior branchial region is absent, the rostrum is distally more upcurved, with the length about one-third the postorbital carapace length, the P1 palm is unarmed on the mesial margin, and the P2–4 meri have no row of distinct spines along the ventral margin.

Etymology: Derived from the Latin *teres* (rounded), alluding to the non-carinate lateral margin of the carapace by which this species is distinguished from *M. bermudezi*.

***Munidopsis trifida* Henderson, 1885**

Synonymy: see p. 298.

Material:

South China Sea, 21°10’N, 117°30’E, 705 m, 7.2°C, 22 May 1911, coll. Suenson: — 1 ♀ (36.0 mm),

ZMUC CRU-11514.

Diagnosis: Body and appendages covered with fine setae. Carapace weakly strigose on posterior half, median and cardiac transverse ridges elevated; 2 epigastric spines present. Lateral margins each with 4 acute spines on anterior half. Front margin oblique, antennal spine absent. Anteriorly directed small spine ventral to front margin between ocular and antennal peduncles. Rostrum basally broad and horizontal, bearing paired lateral spines at distal end of horizontal portion, dorsally carinate distally, ventrally flattish, distal portion anterior to level of lateral spines spiniform and somewhat upturned. Abdominal segments spineless; segments 2–4 each with transverse ridge bearing sharp edge followed by shallow transverse groove; posterior margin of segment 6 sinuous, posteromedian margin slightly overreaching posterolateral lobes. Telson divided into 8 plates. Ocular peduncles lacking eye-spine, movable, somewhat elongate. Basal article of antennule with 2 terminal spines, distomesial spine absent. Article 1 of antennal peduncle with strong distomesial spine; article 2 lacking distomesial spine; article 3 with distomesial spine only. Mxp 3 merus with 2 prominent spines on flexor margin, proximal one more proximal to midlength and larger, extensor margin with 2 small spines. P1 relatively long; palm as long as movable finger, with or without lateral marginal spine slightly proximal to midlength. P2–4 relatively slender, subcylindrical, each merus with row of dorsal spines continued on to carpus; carpus with row of spines on dorsal crest at least on P2–3; propodus having ventral margin ending in pair of movable spines preceded by single similar spine; each dactylus with curved terminal claw, flexor margin straight, bearing row of at most 13 teeth. P2 reaching end of P1 carpus. Epipod absent from P1–4.

Remarks: The present specimen is in a very setose condition. As has been mentioned earlier (Baba in Baba *et al.*, 1986). The specific or subspecific distinction between the Indo-West Pacific and the eastern Pacific populations suggested by Benedict (1902) and Baba (1969c), on the basis of setation of the body and appendages and of geographical isolation, still remains questionable. It seems worth noting that the P1 palm bears a distinct row of sharp spines on the mesial margin in the eastern Pacific specimens and an Indian Ocean specimen (Henderson, 1888; Alcock & MacGilchrist, 1905; Baba, 1969c), whereas unarmed

in the East China Sea material (Baba, 1969c) and in the present material from the South China Sea.

Range: Laccadive Sea, Andaman Sea, South China Sea SW of Taiwan, East China Sea, Okinawa Trough, Sagami Bay and Suruga Bay, and off Chile; 280–1100 m.

***Munidopsis verrilli* Benedict, 1902**

Synonymy: see p. 298.

Material:

“Galathea” St. 453, Makassar Strait, 3°56’S, 118°26’E, 2084 m, clay, 24 Aug 1951: — 1 ♂ (20.5 mm), ZMUC CRU-11504.

Diagnosis: Body and appendages with long coarse setae. Carapace longer than broad; dorsal surface with 2 epigastric spines, bearing somewhat elevated interrupted ridges, supporting setae; cardiac transverse ridge somewhat elevated, preceded by distinct depression. Front margin oblique, antennal spine pronounced. Lateral margins somewhat convex, each bearing 5 spines, anterior second largest, posterior-most situated at anterior end of posterior branchial region. Rostrum narrowly triangular, distally upturned, carinate on dorsal surface. Abdomen spineless, segments 2–4 each with elevated transverse ridge followed by shallow transverse groove; smooth elsewhere; posteromedian margin of segment 6 nearly transverse, posterolateral lobes distinct, ending in same level as posteromedian margin. Telson divided into 10 plates, midlateral plates with stiff lateral setae in male. Ocular peduncles movable, bearing 2 distinct eye-spines (mesial one larger) and another very small one mesial and ventral to larger eye-spine. Basal article of antennule with 2 terminal spines, distomesial angle unarmed. Article 1 of antennal peduncle bearing strong distomesial and distolateral spines, article 2 with distolateral spine only. Mxp 3 merus with 2 small flexor marginal spines, extensor margin with small distal spine. P1 spinose; merus with 3 rows of spines (dorsal, mesial, and mesioventral); palm somewhat depressed along mesial margin, with 2 mesial marginal spines; fingers distally fitting each other with a few intermeshing teeth when closed; denticulate carina on distolateral margin of fixed finger absent (present in holotype). P2–4 slender; meri and carpi with row of spines on dorsal margin; each propodus twice as long

as dactylus, ventral margin ending in pair of spines preceded by single spine on P2–3 but none on P4; each dactylus having straight flexor margin with row of low teeth, corneous terminal claw with seta-like spine at base. P2 barely reaching end of P1. Epipod absent from pereopods.

Remarks: At first when this specimen was compared with the holotype of *M. verrilli* from “Albatross” St. 2923 off San Diego, California in 1500 m (USNM 20656), it seemed that the lack of denticulate carina on the distolateral margin of the fixed finger separates this specimen from *M. verrilli*, because complete loss of such denticles within a species of *Orophorhynchus* group has not been known. However, examination of other specimens of *M. verrilli* in the collection of the Natural History Museum, London (“Albatross” St. 4425, 21.8 miles NW of East Point, San Nicolas Island, California, 1100 fm (2010 m), 3 Apr 1904: 2 ♂, 2 ov. ♀ (identified by W. L. Schmitt); Santa Cruz (California) Basin, 952–1052 fm (1740–1930 m): 3 ♂, 1 ♀ (identified by Carl Boyd)) discloses that the above-mentioned difference is merely a variable character. In the material from Tasmania (Baba & Poore, 2002) the denticulate carina is obsolescent. In addition, a blunt but distinct spine on the dorsal margin of the P2 pro-podus, that is not mentioned by Benedict (1902) but present in the male syntype I examined, is absent in this specimen. This spine is also variably present or absent in the specimens in the Natural History Museum, London, even on the left and right appendage in one individual.

Range: Eastern Pacific off Oregon, San Nicolas Island, Santa Cruz Basin, from Monterey Bay to off Cerros Island, off San Diego; and western Pacific in the Makassar Strait and Tasmania; 732–4169 m.

***Munidopsis vicina* Faxon, 1893**

Fig. 92

Synonymy: see p. 298.

Material:

“Galathea” St. 726, Gulf of Panama, 05°49’N, 78°52’W, 3800 m, clay, 13 May 1952: — 3 ♂ (9.5–13.1 mm), 4 ov. ♀ (13.5–16.0 mm), 5 ♀ (5.8–12.0 mm), ZMUC CRU-11610.

Diagnosis: Carapace with interrupted, elevated ridges,

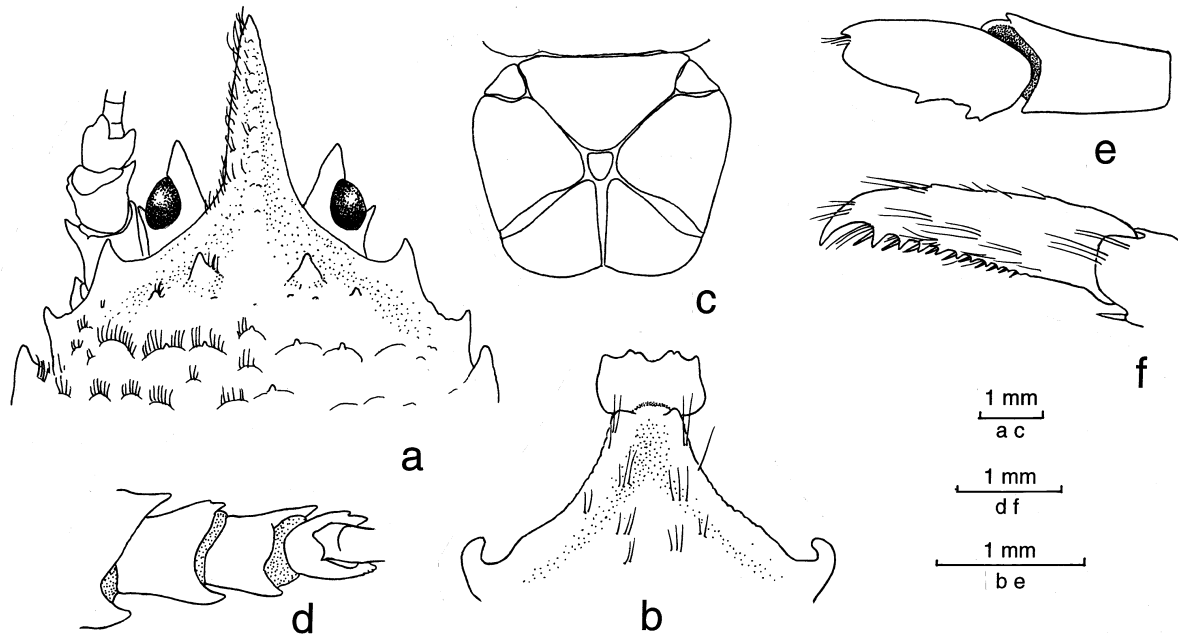


Fig. 92. *Munidopsis vicina* Faxon, 1893; a, ov. ♀ (13.5 mm); b–g, ♂ (11.1 mm); ZMUC CRU-11610: a, anterior part of carapace including ocular and antennal peduncles, dorsal; b, anterior part of sternal plastron; c, posterior part of abdominal segment 6 and telson; d, antenna, left, ventral; e, merus and ischium of Mxp 3, left, lateral; f, distal part of P2, left, lateral.

those on anterior half scale-like, occasionally with very small tubercles. Two epigastric spines short and stout. Cardiac transverse elevation distinct. Front margin oblique, antennal spine short, basally broad and depressed, directed somewhat upward, laterally bearing eaves-like ridge concavely reaching to anterolateral spine. Lateral margins feebly convex, anterolateral spine small, distinctly ventral to level of following spines, second spine situated behind cervical groove, usually blunt but moderately strong, followed by tubercular processes, hind-most process often pronounced, situated at midlength. Rostrum acute, strongly carinate dorsally, nearly horizontal, length less than half that of remaining carapace. Sternite 3 relatively narrow; sternite 4 slightly more than 3 times as broad as preceding sternite, elongate triangular. Abdominal segments spineless, smooth, segments 2–3 each with 2 elevated transverse ridges; posteromedian margin of segment 6 slightly concave, posterolateral lobes distinct but not overreaching lateral part of posteromedian margin. Telson short relative to width, divided into 8 plates, midlateral plates in male with marginal setae somewhat more stiff than those in female but not pronounced. Ocular peduncles dorso-ventrally movable, bearing strong mesial and small lateral eye-spines. Basal article of antennule with

distolateral and distodorsal spines. Mxp 3 merus with 2–5 short, blunt spines on flexor margin, extensor margin with small terminal spine. P1 short, terminating in distal end of P2 propodus; merus and carpus tuberculate, armed with blunt short spines; palm with 1 or 2 mesial marginal spines proximally; fingers distally spooned, prehensile edges denticulate, fixed finger with denticulate carina on distolateral margin. P2–4 tuberculate, markedly on meri; each merus spinose along dorsal margin; each carpus with 4 dorsal marginal spines, dorsolateral face with longitudinal crest continued on to propodus, usually bearing tubercles, occasionally small spines; each propodus with 2 stout dorsal marginal spines on proximal half, longitudinal crest bearing 3–4 small spines often reduced to tubercular processes; each dactylus more than half as long as propodus, terminal claw curving, flexor margin nearly straight, bearing row of 10–12 small, proximally diminishing teeth. Epipod present on P1, absent from P2–4.

Eggs: Diameter, 2.0–2.2 mm.

Remarks: Three of the 12 specimens examined were obtained from the crevices of sunken tree trunk (Wolff, 1979).

Range: Gulf of Panama and off Alaska Peninsula; 2400–3800 m.

***Munidopsis villosa* Faxon, 1893**

Fig. 93

Synonymy: see p. 299.

Material:

“Galathea” St. 739, Gulf of Panama, 07°22’N, 79°32’W, 915–975 m, 15 May 1952: — 1 ♂ (39.3 mm), 5 ♀ (15.0–33.3 mm), ZMUC CRU-11622.

“Galathea” St. 745, Gulf of Panama, 07°15’N, 79°25’W, 915 m, 16 May 1952: — 1 ♀ (27.1 mm), ZMUC CRU-11623.

Diagnosis: Body thickly covered with short plumose setae. Two epigastric spines usually with accompanying blunt process lateral and somewhat posterior to each. Cardiac transverse ridge preceded by groove of moderate depth. Hepatic and anterior branchial regions granulate. Gastric region and posterior half of carapace with interrupted, elevated, sometimes scale-like ridges. Front margin oblique, antennal spine small, directed obliquely laterad. Lateral margins convex, bearing 2 spines; first anterolateral, small, directed obliquely forward, second directly behind anterior cervical groove, smaller than first, occasionally reduced to small blunt process; low process often rudimentary on anterior end of posterior branchial region. Rostrum triangular, distally spiniform and upturned, dorsal surface carinate, often roundly ridged in midline on distal half, somewhat convex and granulate on proximal half, ventral surface naked on proximal half. Sternite 4 anteriorly narrowed, elongate. Abdominal segments 2–5 each with 2 elevated transverse ridges, anterior ridge with median spine; posterolateral lobes of segment 6 flap-like, not overreaching nearly transverse posteromedian margin. Telson divided into 10 plates, midlateral plates in male with coarse lateral setae; elongate, oblique plates lateral to central plate or mesial to midlateral plates. Ocular peduncles movable, lacking eye-spines. Small spine ventral to front margin between ocular and antennal peduncles. Article 2 of antennal peduncle with prominent distolateral spine, articles 3 and 4 spineless. Mxp 3 merus with 2 strong median spines on flexor margin, distal one smaller, equidistant between distal end of article and proximal spine, extensor margin with short, sharp terminal spine. P1 robust, granulate,

moderately depressed distally; merus with 1 mid-mesial and 4 terminal spines; carpus with terminal spines only; palm unarmed; fingers not gaping in both sexes, distally fitting each other with a few intermeshing teeth. P2–4 relatively slender, finely granular markedly on meri; each merus with distoventral spine; carpus with 2 dorsal terminal spines; each dactylus slightly shorter than propodus, relatively slender, gently curving, distally very sharp, flexor margin with 8–11 teeth obscured by dense setae on more than proximal half of length. All pereopods with plumose setae longer than those on carapace. P2 slightly falling short of end of P1 palm. Epipods present on P1–3.

Remarks: The differences between *M. villosa* from the Gulf of Panama and *M. villosa chilensis* from Chile that Bahamonde (1964) believed to exist are discussed below. The dorsal surface of the rostrum in *M. villosa* which was noted to be “slightly carinate in the median line on the posterior half” (Faxon, 1893), is distinctly carinate in the illustration of Faxon (1895: pl. 19, fig. 2). By contrast, most of the “Galathea” specimens and very possibly Bahamonde’s specimens have a somewhat convex, granular, non-carinate rostrum. Bahamonde regarded this difference as one of the discrimination characters. In the smallest of the “Galathea” specimens, however, a very weak ridge is recognizable. The anterior branchial region of *M. villosa* which Bahamonde (1964) interpreted to be squamous and which he believed to be different from that of *M. villosa chilensis* is, in actual fact, depicted by Faxon (1895: pl. 19, fig. 2) as tuberculous or granulose on the right side (in denuded condition) and with oblique interrupted lines of hairs or setae on the other side. All our specimens are about as figured by Faxon. Bahamonde noted that the presence of spines on the P3–4 carpi in *M. villosa chilensis* is a distinctive character. Faxon’s figure (1893: pl. 19, fig. 2) shows, however, that those spines are distinct on the right appendages but the distal one is absent on the left appendages. Very possibly the right appendages might have mistakenly been illustrated. The rudimentary spine on either side of the branchial margin that is noted to be present in the “Blake” specimens but absent in Chilean specimens (Bahamonde, 1964) is discernible only on the right side in the figure of Faxon (1895). Careful examination of the “Galathea” specimens discloses that this spine is a kind of tubercle on the oblique ridge on the branchial region therefore it is likely to be occasionally obsolescent or absent. The

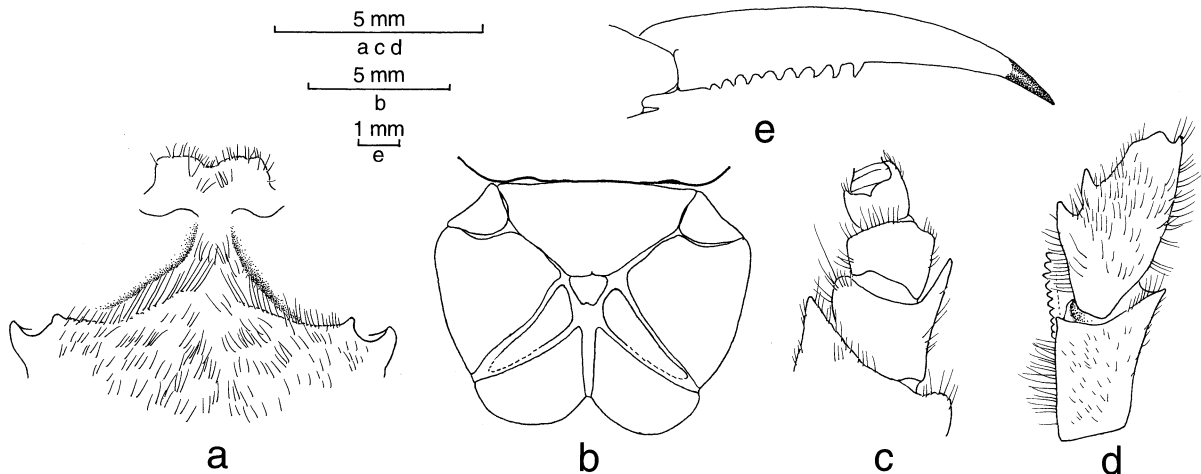


Fig. 93. *Munidopsis villosa* Faxon, 1893: a, c, d, ♂ (39.3 mm); b, e, ♀ (31.0 mm); ZMUC CRU-11622: a, anterior part of sternal plastron; b, telson; c, antenna, left, ventral; d, merus and ischium of Mxp 3, left, lateral; e, P2 dactylus, denuded, right, lateral.

character that Bahamonde believed to be important in discriminating between *M. villosa* and *M. villosa chilensis* is that the abdominal segment 4 bears a well-developed median spine in the Chilean specimens, instead of a rudimentary one in the “Blake” specimens. In our specimens, spines are present consistently on the abdominal segments 2–5.

In conclusion, the above-mentioned fact suggests that there is little possibility of subspecific differentiation between populations from the Gulf of Panama and Chile.

The illustration of *M. villosa chilensis* provided by Retamal (1981) indicates that his specimen belongs to another species, because of the absence of dorsal spines on the carapace and the presence of dorsal marginal spines on the P2–4 meri, both characteristic of *M. villosa*.

Range: Gulf of Panama and Chile; 768–975 m. According to Wicksten (1989), the species is also known from a depth of 1773 m off Arika, Chile.

Genus *Paramunida* Baba, 1988

Paramunida Baba, 1988: 175. — Tirmizi & Javed, 1993: 131.

Diagnosis: Carapace covered with spinules or granules, transverse striae indistinct. Rostrum short, basally subtriangular, distally ending in spine. Supraocular spines short and stout, usually remote from rostral

spine. Abdominal segments with 2 main transverse ridges, each with spines in regular arrangement. Basal article of antennule with distomesial and distolateral spines, both small; lateral spines obsolescent. Antennal peduncle with strong anterior prolongation on article 1, flagellum of no great length. P1–4 squamous; P2–4 propodi successively longer posteriorly; dactyli slender, curved and somewhat twisted, with flexor margin entire. G1 absent in male.

Remarks: Thanks to the recent works by Macpherson (1993b, 1996a, 1996b, 2000, 2004), the number of species in the genus increased to 20, all from the Indo-West Pacific (see below under the list of species). The present collection contains six species.

Paramunida belone Macpherson, 1993

Synonymy: see p. 302.

Material:

Th. Mortensen’s Java–South Africa Expedition 1929–30, “Dog” St. 3, Bali Sea, Indonesia, 7°42’S, 114°35’E, 450 m, mud with corals, trawl, 4 Apr 1929: — 1 ♂ (6.8 mm), ZMUC CRU-11572.

Diagnosis: Carapace covered with small spines, lacking scaly ridges. Pair of epigastric spines and 1 or 2 mesogastric spines followed by row of 3 spines on well defined cardiac region in midline, and 2 spines on each branchiocardiac boundary. Rostrum basally sub-

triangular, dorsally excavated, with ridge in midline, distally spiniform and upturned. Supraocular spines ending in base of rostral spine. Sternite 4 with a few striae; following sternites smooth, without striae. Basal article of antennule distally narrow elongate, distomesial spine very small. Antennal peduncles having article 2 more than twice as long as broad, with distomesial spine rather stout, distally slender, mucronated, exceeding beyond end of article 4; distolateral spine reaching end of article 3. P2–4 rather slender, especially dactyli.

Remarks: Only one walking leg remains detached from the body: the dactylus is four-fifths the length of the propodus, and the keels along the extensor margin are obsolete.

Range: Bali Sea, Loyalty Islands and Futuna Island; in 245–450 m.

***Paramunida evexa* Macpherson, 1993**

Synonymy: see p. 302.

Material:

Kei Islands Expedition, Ambon Bay, 128 m, stones, dredge, 25 Feb 1922: — 1 ♂ (12.5 mm), 1 ov. ♀ (12.3 mm), 2 ♀ (12.5+, 14.0 mm), ZMUC CRU-11309

Kei Islands Expedition, Ambon Bay, ca. 183–238 m, stones, 25 Feb 1922: — 2 ♂ (9.3, 11.8 mm), 1 ov. ♀ (12.1 mm), 1 ♀ (9.3 mm), ZMUC CRU-11310.

Diagnosis: Carapace covered with very small spines mostly on scaly striae; pair of epigastric spines relatively small; row of spines in midline: 3 on meso-meta gastric region, 3–4 on cardiac region, 1 on ridge directly anterior to posterior margin; branchiocardiac region with 2–4 spines. Rostrum triangular, dorsally depressed and carinate, distally upturned. Supraocular spines barely reaching midlength of rostrum. Sternal plastron with arcuate striae moderate in number. Basal article of antennule slightly overreaching cornea, distomesial spine obsolescent. Article 2 of antennal peduncle 1.5 times as long as broad, distomesial spine relatively stout, rather truncate with blunt apex slightly overreaching article 3; distolateral spine very small or obsolescent; article 3 more than half width of article 2. P2 having propodus 7–9 times as long as broad, dactylus 2/3–4/5 as long as propodus.

Remarks: The article 2 of the antennal peduncle with a stout distomesial spine ending in a truncate, blunt apex is unique among the species of the genus. The specific name, meaning “rounded at the apex,” was chosen to reflect this. Also characteristic of the species is the triangular rostrum; in the other species it is usually tapering, ending in a sharp spine.

Range: Indonesia; 174–225 m.

***Paramunida polita* Macpherson, 1993**

Synonymy: see p. 303.

Material:

Th. Mortensen's Pacific Expedition 1914–16, 25 miles E by S of Zamboanga, 275–366 m, hard bottom, trawl, 3 Mar 1914: — 1 ♀ (15.7 mm), ZMUC CRU-11556.

Kei Islands Expedition St. 51, 5°46'30"S, 132°51'E, 348 m, mud, trawl, 7 May 1922: — 5 ♂ (11.3–16.9 mm), 5 ov. ♀ (12.2–16.0 mm), 1 sp. (sex indet., 9.0 mm), ZMUC CRU-11581.

Kei Islands Expedition St. 22, 5°30'40"S, 132°51'E, 340 m, sandy mud, trawl, 15 Apr 1922: — 3 ♂ (11.9–15.8 mm), 8 ov. ♀ (14.3–16.6 mm), 1 ♀ (14.1+ mm), ZMUC CRU-11405.

Kei Islands Expedition St. 57, 5°32'S, 132°49'25"E, ca. 200 m, shells, trawl, 10 May 1922: — 3 ov. ♀ (14.5–15.1 mm), ZMUC CRU-11404.

Kei Islands Expedition St. 58, 5°29'S, 132°37'E, 290 m, mud, 12 May 1922: — 2 ♂ (8.5, 9.7 mm), ZMUC CRU-11466.

Diagnosis: Carapace covered with very small spines on scaly striae on anterior half, arranged in interrupted transverse striae on posterior half; pair of epigastric spines of moderate size; 1 median mesogastric spine followed by row of 3–4 spines on cardiac region; 3 spines on each branchiocardiac boundary. Rostrum narrow, elongate, dorsally and laterally ridged, nearly horizontal in profile. Supraocular spines reaching or overreaching midlength of rostrum. A few striae on sternite 4, sternites 5–7 smooth, without striae. Basal article of antennule relatively long, distomesial spine very small but distinct. Article 2 of antennal peduncle slender, 1.5 times as long as broad, with slender distomesial and distolateral spines, distomesial spine terminating in midlength of article 4, distolateral one slightly falling short of, occasionally fully reaching end

of article 3; article 3 0.85 times as broad as article 2. P2 propodus relatively broad in lateral view, 8–10 times as long as broad, dactylus 2/3–3/5 as long as propodus.

Remarks: The species is well defined by Macpherson (1993). No additional characters of significance were noted.

Range: Indonesia; 281–502 m.

***Paramunida proxima* (Henderson, 1885)**

Synonymy: see p. 303.

Material:

Th. Mortensen's Pacific Expedition 1914–1915, 25 miles E by S of Zamboanga, trawl, 293–366 m, hard bottom, 3 Mar 1914: — 1 ♂ (11.6 mm), 1 ♀ (15.4 mm), ZMUC CRU-11587.

Diagnosis: Carapace covered with small spines on scaly ridges on anterior half, arranged in transverse lines on posterior half; pair of spines on epigastric region, 1 on median mesogastric region, 3 or 4 on cardiac region, and 3 on each branchiocardiac boundary. Rostrum subtriangular in proximal half, spiniform in distal half. Supraocular spines ending in midlength of rostrum. Sternal plastron with numerous striae. Posterior transverse ridge of abdominal segment 4 with median spine. Basal article of antennule, excluding spines, relatively narrow, exceeding cornea, distomesial spine very small. Article 2 of antennal peduncle more than twice as long as broad, 1.5 times as broad as article 3, distomesial spine exceeding beyond end of article 4, ending in midlength of anterior prolongation of article 1. Pereopods slender. P2 propodus about 12 times as long as broad, dactylus 4/5 as long as propodus.

Remarks: The specimens reported under *M. proxima* by Baba (1982) and Baba in Baba *et al.* (1986) from Japan belong to a different species. The discrepancies noted between the female lectotype of *M. proxima* and the specimens from Izu-Shoto (Baba, 1982a) are not strong enough to warrant a description of new species. However, it was noted in the other paper (Baba in Baba *et al.*, 1986) that the posterior ridge of the abdominal segment 4 is unarmed in the specimens from both the Kyushu-Palau Ridge and Amami-ohshima of the Ryukyu Islands. This was also true in the specimens

reported by Baba (1982), while in syntypes examined (3 /, BMNH 1888:33) as well as the present specimens a median spine is evident there. In addition, the article 2 of the antennal peduncle in the Japanese material bears the distomesial spine distinctly extending beyond the midlength of the anterior prolongation of the article 1, and the distal two articles much narrower, distinctly less than half as broad as the article 2. These features agree well with the description and illustration of the specimen reported under *P. proxima* from Taiwan by Wu *et al.* (1997: 143). This species will be described later elsewhere as a new species.

Range: North of the Admiralty Islands, Philippines and Indonesia; 275 and 430 m.

***Paramunida scabra* (Henderson, 1885)**

Synonymy: see p. 303.

Material:

Th. Mortensen's Pacific Expedition 1914–16, W of Nagasaki, Japan, 32°49'N, 128°14'E, 210 m, sand, trawl, 14 May 1914: — 1 ♂ (5.5 mm), 1 ov. ♀ (9.4 mm), 2 ♀ (6.1, 7.8 mm), ZMUC CRU-11030.

Th. Mortensen's Pacific Expedition 1914–16, W Kyushu, Japan, 32°15' N, 128°12' E, 165 m, hard bottom, swab, 15 May 1914: — 1 ♂ (8.3 mm), 2 ov. ♀ (8.2, 8.5 mm), 1 ♀ (6.1 mm), ZMUC CRU-11020, 11031.

Kei Islands Expedition, St. 2, 5°32'S, 132°27'E, 180–220 m, sand, 31 Mar 1922: — 1 ♂ (9.1 mm), 1 ov. ♀ (9.3 mm), ZMUC CRU-11308.

Kei Islands Expedition St. 12, 5°30'S, 132°35'E, 325 m, sand, shells, corals, trawl, 9 Apr 1922: — 1 ov. ♀ (15.4 mm), ZMUC CRU-11400.

Kei Islands Expedition St. 32, 5°30'20"S, 132°34'E, 260 m, sand, trawl, 22 Apr 1922: — 1 ♂ (10.9 mm), ZMUC CRU-11420.

Kei Islands Expedition St. 33, 5°31'S, 132°34'E, 285 m, sand, 22 Apr 1922, trawl: — 1 ♀ (10.4 mm), ZMUC CRU-11473.

Kei Islands Expedition St. 46, 5°47'20"S, 132°13'E, 300 m, clay and mud, 2 May 1922: — 3 ♂ (9.8–12.9 mm), 1 ov. ♀ (15.4 mm), 1 ♀ (11.8 mm), 1 sp. (sex indet., 7.5 mm), ZMUC CRU-11407.

Kei Islands Expedition St. 48, 5°40'10"S, 132°21'E, 263 m, sandy mud, 3 May 1922: — 1 ♂ (13.5 mm), 1 ov. ♀ (13.7 mm), ZMUC CRU-11307.

Kei Islands Expedition St. 49, 5°37'10"S, 132°23'E,

245 m, sand, 3 May 1922: — 2 ♂ (13.0, 14.8 mm), 3 ov. ♀ (12.5–15.0 mm), 1 ♀ (14.6 mm), ZMUC CRU-11311 (1 ? with rhizocephalan parasite).

Kei Islands Expedition St. 50, 5°54'S, 132°25'40"E, 233 m, 4 May 1922, trawl: — 3 ♂ (10.2–14.7 mm), 1 ♀ (11.0 mm), 1 sp. (sex indet., 8.2 mm), ZMUC CRU-11312 (larger with rhizocephalan parasite).

Kei Islands Expedition St. 62, 5°29'25"S, 132°50'E, 290 m, sand, shells, 15 May 1922: — 1 ov. ♀ (14.9 mm), 1 ♀ (9.7 mm), ZMUC CRU-11306.

Diagnosis: Carapace covered with very small spines and granules; paired epigastric spines, 1 or 2 median mesogastric spines followed by 3 spines in midline on cardiac region and 1 spine on ridge preceding posterior margin, and 3–4 spines on each branchiocardiac boundary. Rostrum relatively acute distally and stout, dorsally ridged, moderately upturned distally. Supraocular spines nearly half as long as rostrum. Sternal plastron with numerous striae. Basal article of antennular peduncle with 2 small terminal spines, mesial much smaller, often obsolete. Article 2 of antennal peduncle having distomesial margin ending in sharp spine overreaching end of article 3 but barely reaching end of article 4; article 3 slightly longer than broad, about 0.8 times as broad as article 2. P1–4 stout, squamous, with fine setae along mesial and dorsal margins. P2 propodus 8.5–10.0 times as long as broad, dactylus slightly more than 2/3 length of propodus.

Range: Kei Islands, off N Borneo, Philippines, South China Sea, East China Sea, Japan, and off Central Queensland; 70–1630 m.

***Paramunida setigera* Baba, 1988**

Synonymy: see p. 303.

Material:

Th. Mortensen's Java-South Africa Expedition 1929–30, "Dog" St. 2, Bali Sea, Indonesia, 7°33'S, 114°36'E, 200 m, mud, 3 Apr 1929: — 7 ov. ♀ (8.6–11.2 mm), 4 ♀ (7.1–9.0 mm), ZMUC CRU-11082.

Diagnosis: Carapace covered with small spines and granules mostly on scaly ridges; 2 epigastric spines; metogastric region distinct; 1 median cardiac spine and 1 postcervical spine on each side. Rostrum broad triangular, distal spine very short, smaller than supraocular spines. Sternal plastron with numerous striae. Basal article of antennule distally narrow,

distolateral spine sharp, distomesial spine very small. Article 2 of antennal peduncle elongate, more than 2.5 times as long as broad, distomesial spine overreaching end of article 4, terminating in midlength of anterior prolongation of article 1, distal 2 articles 2/3 as broad as article 2, article 3 twice as long as broad. P1 slender, carpus with group of iridescent setae proximally at least on lateral margin. P2–4 also slender, dactyli in particular; carpi with at most 2 spines on extensor margin; P2 propodus 18 times as long as broad, dactylus 7/10 as long as propodus.

Range: Philippines, Indonesia, and New Caledonia; between 134–186 m and 866 m.

Genus *Phylladorhynchus* Baba, 1969

Phylladorhynchus Baba, 1969a: 3.

Diagnosis: Carapace dorsally with distinct transverse ridges and epigastric spines, laterally with row of spines. Rostrum dagger-shaped, with well-developed supraocular basal tooth and small subapical tooth on each side. Lateral limit of orbit strongly produced. Ocular peduncles movable, cornea not dilated, as broad as remaining eyestalk. Basal article of antennule with double spines on distolateral margin. Antennal peduncle with strong ventral distomesial process on article 1. Sternite 3 having posterior margin entirely contiguous to sternite 4. G1 absent.

Remarks: The genus now contains four species, all from the Indo-Pacific, two of which are known from deep sea below 200 m (Baba, 1991b). *Phylladorhynchus caribensis* Mayo, 1972, from the Caribbean Sea was transferred to *Anomoeomunida* Baba, 1993, as also was *P. antonbruuni* Tirmizi & Javed, 1980, from the Indian Ocean, to *Munida* (see Baba, 1991b, 1993). A key to species of the genus was provided by Baba (1991b).

***Phylladorhynchus ikedai* (Miyake & Baba, 1965)**

Synonymy: see p. 304.

Material:

Kei Islands Expedition St. 46, 5°47'20"S, 132°13'E, 300 m, clay and mud, trawl, 2 May 1922: — 1 ♂ (3.2 mm), 1 ov. ♀ (4.5 mm), ZMUC CRU-11406. Kei Islands Expedition St. 49, 5°37'10"S, 132°23'E,

245 m, sand, trawl, 3 May 1922: — 1 ♂ (3.9 mm), ZMUC CRU-11445.

Kei Islands Expedition St. 24, 5°37'S, 132°56'E, 100 m, hard bottom, trawl, 15 Apr 1922: — 1 ♂ (3.9 mm), ZMUC CRU-11395.

Th. Mortensen's Pacific Expedition 1914–16, 34°20'N, 130°10'E, 110 m, sand, 18 May 1914: — 3 ♂ (4.1–4.8 mm), ZMUC CRU-11011, 11256.

Diagnosis: Carapace with 5 epigastric spines. Rostrum, dagger-shaped, distally ending in spine, lateral margin with acute basal tooth and very small subterminal tooth. Basal article of antennule with 5 terminal spines. Mxp 3 merus with 2 (rarely 1) flexor marginal and 1 extensor distal marginal spine. Sternite 3 subtriangular, anterior margin convex.

Range: This species is widely distributed in the Indo-West Pacific from the Red Sea, Maldives, Kei Islands, New Caledonia, Loyalty Islands, and Bonin Islands; shallow-water (lagoon, Maldives) to 510 m.

Phylladorhynchus pusillus (Henderson, 1885)

Synonymy: see p. 305.

Material:

“Galathea” St. 562, Great Australian Bight, 37°01' S, 138°38' E, 60 m, bryozoan sand, 12 Jun. 1951: — 1 ♂ (5.3 mm), ZMUC CRU-11300.

31°58' N, 126°39' E, 60 fm (110 m), Suenson 1882: — 3 ov. ♀ (5.3–5.9 mm), ZMUC CRU-11122.

Th. Mortensen's Pacific Expedition 1914–16, Okinose, Sagami Bay, Japan, 549 m, hard bottom, 29 Jun 1914: — 2 ov. ♀ (4.6, 4.7 mm), 1 ♀ (4.2 mm), ZMUC CRU-11546.

Th. Mortensen's Pacific Expedition 1914–16, Sagami Bay, 146–220 m, sand, 6–19 Jun 1914: — 1 ♂ (5.7 mm), ZMUC CRU-11014.

Th. Mortensen's Pacific Expedition 1914–16, N of Misaki Biological Station, Sagami Bay, Japan, hard bottom, 366 m, 30 Jun 1914: — 1 ov. ♀ (6.8 mm), 1 ♀ (4.5 mm), ZMUC CRU-11520.

Th. Mortensen's Pacific Expedition 1914–16, W of Nagasaki, Japan, 32°49'N, 128°14'E, 210 m, sand, trawl, 14 May 1914: — 2 ♂ (3.2, 3.3 mm), 1 ov. ♀ (5.8 mm), 1 ♀ (5.2 mm), ZMUC CRU-11029.

China Sea, 32° N, 126°50' E, Suenson 1882: — 1 ov. ♀ (6.1 mm), ZMUC CRU-11192.

Kei Islands Expedition St. 56, 5°30'20"S, 132°51'E,

345 m, mud, trawl, 10 May 1922: — 1 ov. ♀ (5.7 mm), ZMUC CRU-11560.

Kei Islands Expedition St. 58, 5°29'S, 132°37'E, 290 m, mud, trawl, 12 May 1922: — 1 ♂ (5.5 mm), 1 ov. ♀ (7.1 mm), ZMUC CRU-11425.

Kei Islands Expedition St. 59, 5°28'S, 132°36'E, 385 m, corals and sponges, trawl, 12 May 1922: — 1 ♂ (7.5 mm), ZMUC CRU-11523.

Th. Mortensen's Pacific Expedition 1914–16, off Victoria, 37°05' S, 150°05' E, 30–50 fm (55–92 m), sand, mud, on board “Endeavour,” 30 Sep 1914: — 2 ♂ (4.1, 6.6 mm), 2 ov. ♀ (6.3, 7.0 mm), ZMUC CRU-11066.

Diagnosis: Transverse row of 4 epigastric spines. Rostrum dagger-shaped, distally spiniform, lateral margin with 1 strong basal and 1 very small subterminal tooth. Basal article of antennule with 5 terminal spines. Mxp 3 merus truncate, relatively broad, about as long as broad, bearing 1 median spine on flexor margin and 1 distal spine on extensor margin, both well developed. Sternite 3 sub-rectangular, anterior margin with blunt median process.

Range: Widespread species in the Indo-Pacific: the Indo-West Pacific from Red Sea, Providence, eastern Australia between Queensland and Victoria, and Tasmania, Chesterfield Islands, New Zealand, East China Sea, Japan from off Kagoshima northward to Tsugaru Strait; in pool on reef to a depth of 580 m; in the eastern Pacific from Juan Fernandez Islands in 130–160 m, and San Felix Island in 75 m. *Phylladorhynchus integrirostris*, a shallow-water species, also has the same distribution from the eastern Indian Ocean including Red Sea to Juan Fernandez Islands and Eastern Island, via the Bonin Islands, Marshall Islands, and Hawaiian Islands.

Genus *Raymunida* Macpherson & Machordom, 2000

Raymunida Macpherson & Machordom, 2000: 253; 2001: 707.

Diagnosis: Carapace with 4 spines on branchial lateral margin. Rostrum spiniform. Supraocular spines well developed. Front margin with spine mesial to anterolateral spine of carapace (rarely absent). Abdominal segments unarmed; endopod of uropod with small, basally articulate spines on posterior

margin. Telson subdivision incomplete. Epipods on P1–3. Mxp 3 carpus with spine on flexor distal margin. P2 merus more slender than those of P3–4.

Remarks: Macpherson & Machordom (2001) revised species of *Raymunida*, using morphological characters and the mitochondrial cytochrome oxidase subunit I sequences. They believe that other than differences of color patterns, the species of the genus can be identified by slight differences of the following morphological characters: length of the mesial spine (distoventral) of the antennal article 1; presence or absence of a distal spine of the Mxp 3 merus; spination and setal type of the P1; length of the P2–4; and number of striae on the abdominal segments 2–3. The genus now contains eight species, five of which are from depths exceeding 200 m: *R. bellior*, *R. confundens* Macpherson & Machordom, 2001 (400 m), *R. dextralis* Macpherson & Machordom, 2001 (285 m), *R. erythrina* Macpherson & Machordom, 2001 (between 180–210 m and 224–252 m), *R. formosanus* Lin, Chan & Chu, 2004 (300 m). The key to species of the genus provided by Macpherson & Machordom (2001) is modified to include *R. formosanus* by Lin *et al.* (2004).

The present collection includes the following two species.

***Raymunida bellior* (Miyake & Baba, 1967)**

Synonymy: see p. 306.

Material:

Kei Islands Expedition St. 46, 5°47'20"S, 132°13'E, 300 m, clay and mud, 2 May 1922: — 1 ♀ (9.1 mm), ZMUC CRU-11403.

Hirado-seto, Nagasaki, Suenson 1900: — 1 ♀ (8.3 mm), ZMUC CRU-11210.

Th. Mortensen's Pacific Expedition 1914–16, Okinose, Sagami Bay, 549 m, hard bottom, swab, 29 Jun 1914: — 1 ♀ (5.7 mm), ZMUC CRU-11550.

Diagnosis: Carapace devoid of long iridescent setae on dorsal surface; 4 or 5 pairs of epigastric spines; 1 parahepatic, 2 or 3 anterior branchial (directly behind anterior cervical groove), 1 postcervical spine on each side. Sternites 4–5 nearly smooth. Ventromesial process of antennal article 1 fully or barely reaching end of antennular basal article (spines excluded). Abdominal segments 2–3 devoid of secondary striae. Mxp 3 merus unarmed on extensor distal margin. P1 with plumose long setae; fixed finger unarmed on distal 1/3–1/2 of

lateral margin, other than subterminal spine. P2–4 with plumose setae usually along dorsal crests of meri, very sparsely with long setae; propodi each with 4 movable slender spines on ventral margin. Mero-carpal articulation of P4 overreaching frontal margin of carapace and reaching sinus between rostral and supraocular spines.

Remarks: The identity of the female from Sagami Bay is somewhat questionable, because it lacks all pereopods (that would provide specific characters) and because the ventromesial spine of the antennal article 1 falls far short of the end of the antennular basal article. This will suggest that the specimen approaches *R. erythrina* Macpherson & Machordom, 2001. However, it is referred to *R. bellior* for the time being on the basis of the species's distribution and the absence of a spine on the front margin mesial to the anterolateral spine of the carapace, which character is also shared by the other specimens here examined as well as the specimen reported previously from the Philippines (Macpherson & Machordom, 2001: fig. 1A).

Macpherson & Machordom (2001) stressed the consistency of the relative length of the distomesial spine of the antennal article 1 in species of *Raymunida*. However, the specimen from Hirado, Nagasaki bears this spine slightly falling short of the end of the antennular basal article, whereas in the other specimen from the Kei Islands, it is as described by Macpherson & Machordom (2001).

The color illustration was provided by Macpherson (1994: fig. 66).

Range: Philippines between Masbate and Leyte, Kei Islands, Loyalty Islands, Chesterfield Islands, and Japan; 80–549 m.

***Raymunida elegantissima* (de Man, 1902)**

For synonymy, see p. 306.

Material:

Kei Islands Expedition, Amboina [Ambon] Bay, ca. 70 fm, stones, 23 Feb 1922: — 1 sp. (5.5, sex indet.), ZMUC CRU-11349.

Kei Islands Expedition, Amboina [Ambon] Bay, ca. 100 fm (183 m), rock, 2 Mar 1922: — 1 ov. ♀ (10.1 mm), ZMUC CRU-11462.

Diagnosis: Long iridescent setae on carapace, abdomen and P1–4; 5 pairs of epigastric spines; 1 parahepatic, 2

anterior branchial (directly behind anterior cervical groove), 1 postcervical spine on each side. Sternites 5–6 with faint short ridge on each side. Abdominal segments 2–3 with secondary stria between anterior and median transverse ridges, that of segment 2 interrupted and rather faint. Article 1 of antenna with distomesial spine overreaching end of article 4, barely reaching end of basal antennular article. Mxp 3 merus with small but distinct spine on extensor distal margin. P1 fixed finger with row of lateral marginal spines continued from palm, distal 1/3 other than subterminal spine unarmed. Mero-carpal articulation of P4 overreaching first branchial marginal spine but barely reaching frontal margin of carapace.

Remarks: The present material was taken from the continental shelf but the species holds depth records down to the transitional zone (Macpherson, 1996a). The smaller specimen from Ambon bears a very short distomesial spine of the antennal article 1 ending at most in the distal margin of the article 4, lacks secondary stria on the abdominal segments 2–3, and has no spine on the frontal margin mesial to the anterolateral spine of the carapace. These features may be due its small size.

Recently, the identity of *R. elegantissima* reported by Kato & Okuno (2001) was questioned by Lin *et al.* (2004) on the basis of color differences. They believed that it is a different species. The color pattern displayed by Kato & Okuno's specimen is nearly the same as the one reported by Baba (1969b). The Indian Ocean records by Tirmizi (1966) and Tirmizi & Javed (1993) require verification, as also does the northern Australian record by Haig (1973:271) (see Ahlyong & Poore, 2004b).

Range: Malay Archipelago, Seram Sea, Borneo, Sibuyan Sea, Chesterfield Islands, New Caledonia, Bellona Island (Solomon Islands), SW Pacific (Futuna Island), Vanuatu, and Western Australia; 50–220 m.

Genus *Sadayoshia* Baba, 1969

Sadayoshia Baba, 1969a: 18.

Diagnosis: Carapace dorsally with distinct transverse striae, laterally with spines. Rostral base broad, rostral spine spiniform, flanked by 2 supraocular spines. Lateral limit of orbit well formed but not produced. Sternite 3 having posterior margin totally contiguous to anterior margin of sternite 4. Abdomen with distinct

transverse ridges, unarmed. Telson subdivision incomplete. Ocular peduncles having cornea somewhat dilated. Basal article of antennule with distolateral spine doubled, distal of 2 lateral spines well developed. P1 relatively short, stout, spinose. P2–4 dactyli having flexor margin with seta-like spines each arising from low tooth.

Remarks. The genus contains a single species. *Munida quinquespinosa* Balss, 1913, previously placed in *Sadayoshia* (Baba, 1969a), is transferred under *Galathea* (see above under the "Remarks" of *Galathea lumaria* n. sp.).

Sadayoshia edwardsii Miers, 1884

Synonymy: see p. 307.

Material:

Th. Mortensen's Java–South Africa Expedition 1929–30, "Maurice" St. 44, North of Mauritius, 25 fm (46 m), corals, 15 Oct 1929: — 1 ov. ♀ (6.7 mm), ZMUC CRU-11103.

Th. Mortensen's Java–South Africa Expedition 1929–30, "Maurice" Sta. 45, between Gunner's Quoin and Flat Is., Mauritius, ca. 30 fm (55 m), sand, coral, 16 Oct 1929: — 3 ♂ (5.2–8.1 mm), ZMUC CRU-11110.

Th. Mortensen's Java–South Africa Expedition 1929–30 "Maurice" St. 47, N of Port Louis, Mauritius, ca 238 m, mud and corals, Sigsbee trawl, 6 Nov 1929: — 1 ♂ (6.9 mm), ZMUC CRU-11126.

Kei Islands Expedition St. 16, 5°32'20"S, 132°37'E, 50 m, sand with *Lithothamnion*, dredge, 12 Apr 1922: — 1 ♂ (5.2 mm), ZMUC CRU-11448.

Banda Sea, 25 m, sand, coral, diver, 11 Jun 1922, Th. Mortensen: — 1 ♂ (7.6 mm), 1 ♀ (4.0 mm), ZMUC CRU-11134.

Diagnosis: Carapace rather smooth, with distinct transverse striae. Cervical groove distinct. Four pairs of epigastric spines followed by uninterrupted transverse stria bearing parahepatic spine on each side; small spine directly behind midlength of anterior cervical groove. Lateral margin with 7 spines, first anterolateral, moderate in size, second small, equidistant between first spine and cervical groove, third to seventh on anterior branchial region. Rostrum broad at base; 2 supraocular spines on each side, lateral one smaller than mesial, rostral spine stout and spiniform. Lateral limit of orbit rounded, unarmed.

Sternite 3 relatively narrow, convex anterior margin denticulate. Basal article of antennule with 5 spines (dorsal, dorsoventrally doubled distolateral, distodorsal, and lateral). Article 1 of antennal peduncle with small sharp distomesial spine; article 2 with distomesial and distolateral spines both small and subequal. Mxp 3 merus with 3 spines on flexor margin, extensor margin unarmed. P1 relatively massive, short, spinose. P2–4 rather smooth, stout, setose, dorsal crest with spines on merus and carpus and proximal part of propodus at least on P2, tending to be obsolescent on P3; each propodus with row of spines on flexor margin; each dactylus gently curving distally, preceded by seta-like spines arising from successively diminishing low teeth. Epipods absent from P1–4.

Range: Mozambique Channel, Madagascar, Aldabra Islands, Amirante Islands, Mauritius, Bay of Bengal, Moluccas, Banda Sea, Kei Islands, Sibuyan Sea, between Burias and Luzon, off N Luzon, Japan (Ryukyu Islands, W of Tanegashima, and Hachijo Islands), Tuamotu Archipelago; subtidal to 410 m.

Genus *Torbenia* n. gen.

Diagnosis: Carapace with distinct transverse ridges; small spines on epigastric and hepatic regions, median gastric and cardiac regions unarmed. Supraocular spines widely separated from relatively short rostral spine not reaching end of cornea. Orbit visible in dorsal view, bearing rounded mound mesial to indistinctly defined lateral limit. Abdomen with 2 spines on each anterior ridge of segments 2–4. G1 absent. Telson subdivision indistinct. Cornea strongly dilated and depressed. Antennular basal article elongate, without lateral spines. Antennal peduncles having article 1 with very strong distomesial process reaching or overreaching end of cornea; articles 2–4 narrower than distomesial process of article 1, article 4 much narrower than article 3. Mxp 3 ischium with flexor distal marginal spine well developed, merus shorter than ischium, flexor margin with median spine, extensor margin unarmed. P1 carpus long relative to width (more than 2.5 times as long as broad). P2–4 dactyli somewhat twisted; dorsal face with coarse setae; mesial ridge sharp, lateral ridge rounded; flexor margin entire or with movable spinules.

Type species: *Torbenia orbis* n. sp. (gender: feminine).

Remarks: *Torbenia* is linked to *Onconida* Baba & de Saint Laurent, 1996, *Paramunida* Baba, 1988, and *Plesionida* Baba & de Saint Laurent, 1996 on the basis of the antennal peduncle bearing a well-developed anterior prolongation on the article 1, the supraocular spines being widely separated from the rostrum, the orbit being visible in a dorsal view, and the absence of G1. The new genus, however, is distinctive because the carapace bears distinct, rather continuous transverse striae, and the orbit laterally bears a mound mesial to the lateral end.

The genus also resembles *Crosnierita* Macpherson, 1998 in lacking G1 and the general ornamentation of the carapace and abdomen. However, it is much more remote from that genus than the above-mentioned three genera: In *Crosnierita*, the mound in the orbit as seen in *Torbenia* is absent; the antennular basal article bears two terminal and two lateral spines as in *Munida*, instead of bearing no lateral spines as in *Torbenia*; the article 1 of the antennal peduncle bears a distomesial spine never reaching the end of the article 2, whereas this spine is prolonged, overreaching the cornea or the end of the antennular basal article in *Torbenia*.

Agononida insolita Macpherson, 2004 from New Caledonia, which was provisionally placed in *Agononida*, is now transferred to the present genus.

Etymology: The genus is dedicated to Torben Wolff, deputy leader of the “Galathea” Expedition. This work would have never been completed without his support, encouragement and patience.

Torbenia orbis n. sp.

Fig. 94.

Material:

Kei Islands Expedition St. 32, 5°32'20"S, 132°34'E, 260 m, sand, trawl, 22 Apr 1922: — 3 ♂ (7.1, 11.5, 12.3 mm; largest, holotype), ZMUC CRU-11421.

Kei Islands Expedition St. 45, 5°48'30"S, 132°14'E, 270 m, mud, trawl, 1 May 1922: — 1 ov. ♀ (9.2+ mm), ZMUC CRU-11430.

Norfolk 1, St. CP 1719, Norfolk Islands, 23°22'S, 168°01'E, 390–407 m, 26 Jun. 2001: — 1 ♂ (12.3 mm) (MNHN Ga 4584).

Description of holotype: Carapace moderately convex from side to side, breadth more than postorbital carapace length. Dorsal surface with distinct transverse

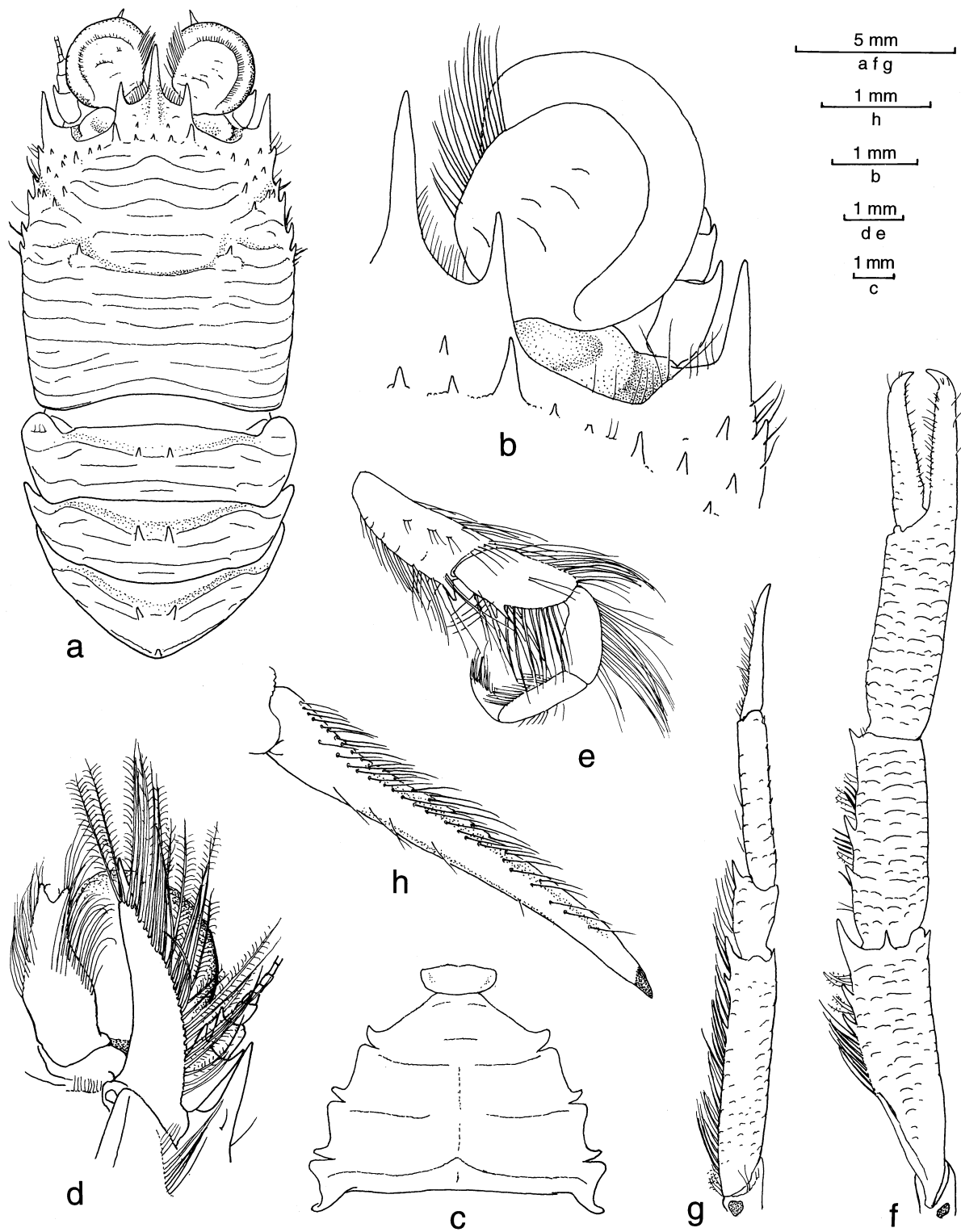


Fig. 94. *Torbenia orbis* n. sp., holotype, ♂, ZMUC CRU-11622421: a, carapace and abdomen, dorsal; b, anterior part of carapace, showing ocular peduncle and orbit, right, dorsal; c, sternal plastron; d, anterior part of cephalothorax, showing left antennule, antenna and ocular peduncle, ventral; e, endopod of Mxp 3, right, lateral; f, P1, right, dorsal; g, P2, right, lateral; h, same, distal article, dorsal.

striae, armed with spines on epigastric, hepatic and anterior branchial regions as figured; pair of epigastric spines each directly behind supraocular spines strong. Lateral margins slightly convex, with 6 spines (2 in front of, 4 behind cervical groove) and sparse iridescent setae on anterior half; first spine anterolateral, prominent, directed straight forward, distinctly overreaching sinus between rostral and supraocular spines; second small, equidistant between first spine and end of cervical groove. Rostral spine 1/4 postorbital carapace length, dorsally with sharp ridge continued posteriorly onto rostral base, directed somewhat upward. Supraocular spines nearly horizontal, remote from rostrum, barely reaching midlength of rostral spine. Front margin concave around lateral end of orbit.

Orbit visible in dorsal view, bearing rounded mound mesial to unarmed, not produced lateral end.

Abdominal segments 2–4 each with 4 ridges; first (anterior-most) ridge uninterrupted between tergite and pleura, bearing 2 submedian spines; second ridge on tergite medially interrupted, not continued to anteriorly placed short ridge on each pleura; third ridge on tergite preceded by groove, interruptedly continued onto pleura; fourth rather short, located medially. Segment 4 with median spine on third ridge, fourth ridge obsolescent. Iridescent short stiff setae arising from striae on pleurae of segments 2–4 and on tergite of segment 4.

Cornea strongly dilated and depressed, mesially setose, width nearly half distance between left and right anterolateral spines of carapace.

Sternal plastron as illustrated; almost glabrous, but a few striae on sternite 4. Sternite 3 less than half width of sternite 4, relatively long, anterior margin weakly bilobed, lateral margin convexly convergent posteromesially. Sternite 4 with anterior margin narrower than sternite 3.

Basal article of antennule elongate, setose especially along lateral and mesial margins, spineless. Antennal peduncles having article 1 with distomesial ventral process relatively broad, curved, overreaching cornea, fringed laterally with long stiff plumose seta. Articles 2–4 relatively small. Article 2 with distomesial and distolateral spines subequal, ending in midlength of article 3. Article 3 with distomesial spine. Article 4 much narrower than article 3, less than half breadth of article 2.

Mxp 3 ischium comparatively thin, with 14–16 widely interspersed denticles on mesial ridge; flexor margin with moderate-sized distal spine. Merus

slightly shorter than ischium; flexor margin convex, with moderate-sized spine somewhat proximal to midlength; extensor margin unarmed. Distal 3 articles comparatively slender, especially dactylus.

P1 2.6 times as long as carapace including rostrum; scarcely setose but with both iridescent and plumose fine setae along mesial margins of merus and carpus; surface squamous. Merus with 3 distodorsal, 1 distolateral, 3 mesial marginal, and 2–4 ventromesial spines. Carpus nearly as long as palm, slightly less than 3 times as long as broad, bearing 3 small mesial spines, median one more distant from distal one than proximal one. Palm slightly less than 3 times as long as broad, unarmed. Fingers unarmed, about 4/5 as long as palm, distally incurved, ending in sharp spine; opposable margins finely dentate, without gaping.

P2–4 strongly compressed, squamous on lateral surface, dorsal crests with both coarse iridescent and fine plumose setae especially thick on meri. Meri flattish on lateral face, dorsal crest sharply ridged, with 2–3 spines other than prominent terminal spine on P2, none on P3–4; ventral face rounded, bearing lateral terminal spine; length less than postorbital carapace length. Carpi with moderate-sized terminal spine on dorsal margin, unarmed elsewhere. Propodi slightly longer on P2 than P3 and P4, ventral margin ending in pair of movable spines preceded by 7 slender similar spines. Dactyli moderately twisted, slightly curved, distally relatively broad, length about 2/3 that of propodus; extensor face flattish, bearing coarse setae, mesial ridge relatively sharp, lateral ridge rounded; flexor margin smooth and unarmed. P2 merus barely reaching end of P1 merus. P5 fingers about half as long as palm; thick long setae on flexor face of palm and lateral face of fingers.

Eggs: Size, 0.47 x 0.51 – 0.47 x 0.57 mm.

Parasites: The holotype male bears numerous externae of rhizocephalan parasites on the ventral surface of the abdomen, as also does the other male (MNHN Ga-4584).

Variations: Spinacion on carapace and abdomen nearly constant in all specimens. Dorsal spines on P2–4 meri largely variable; smallest male bearing 0 or 1 spines (excluding terminal one) on P2 and P3, none P4; medium-sized male bearing 8 or 9 on P2, 0 on P3 and P4; female having 9 or 10 spines on P2, 1 on P3, 0 on P4.

Remarks: The holotype has a non-calcified circular spot on the dorsal surface of each ischium of P1–3, but it is absent from the other specimens. This spot is different from that of the ventral surface of the P1 fixed finger in *Munidopsis lentigo* Williams and van Dover, 1983, and thus awaits histological studies.

Torbenia insolita (Macpherson, 2004) is characterized by the following features that separate it from the new species: the abdominal segment 4 bears no spine on the posterior ridge; the basal antennular article bears a small distomesial and a pronounced

distolateral spine; the distomesial spine of the antennal article 2 is strong, overreaching the midlength of the article 4, and the P2–4 dactyli bears spinules on the flexor margin.

Range: Kei Islands and Norfolk Islands; between 260 m and 390–407 m.

Etymology: The specific name is a noun in apposition from the Latin *orbis* (circle, orbit) referring to the orbit visible from dorsal view.

A LIST OF INDO-PACIFIC DEEP-SEA SPECIES OCCURRING IN DEPTHS EXCEEDING 200 M

This list includes species that lack depth records but are considered to be deep-sea inhabitants, as well as those that are known on the continental shelf but supposed to go down to transitional depths and/or deeper. Such species are placed in brackets. Truly deep-sea species are in bold face. Species transferred to different genera are in ordinary type, as also are species relegated to synonym. Species hardly acceptable because of brief description are given an asterisk. Locality and depth records are provided for each reference. The repository and registration number of the type material are given where possible. Station data of the “Investigator” material are complemented by Anonymous (1914). Generic and specific names are in alphabetical order. Brief notes on vertical and horizontal distributions are provided for each multispecies genus. A key to species for each genus is provided where necessary.

Family Chirostylidae Ortmann, 1892

Genus *Chirostylus* Ortmann, 1892

Chirostylus Ortmann, 1892: 246 (gender: masculine).

Type species: *Chirostylus dolichopus* Ortmann, 1892, by monotypy.

Distribution: One of the five known species (*C. novaecaledoniae* Baba, 1991) occurs in transitional depths below 200 m. *Chirostylus dolichopus* Ortmann, 1892 ranges between the continental shelf and transitional depths, and the other three species are so

far known from shallow waters but may be found in depths <200 m. Known only from the Indo-West Pacific.

Key to species

1. Abdominal segment 4 with posteromedian projection
 - *C. michelae* Tirmizi & Javed, 1979
 - Abdominal segment 4 smooth on posterior margin 2
2. Rostral base short subtriangular, with median spine extending to between distal articles of ocular peduncles. Anterior margin of sternite 3 with small median sinus
 - *C. rostratus* Osawa & Nishikiori, 1998
 - Rostral base convex on anterior margin, with or with very small median spine barely reaching distal articles of ocular peduncles. Anterior margin of sternite 3 without median sinus 3
3. Gastric region unarmed other than pair of epigastric spines. Penultimate spine of P2–4 dactyli distinctly stronger than ultimate
 - *C. dolichopus* Ortmann, 1892
 - Gastric region with spine on posterior portion in addition to pair of epigastric spines. Penultimate and ultimate spines of P2–4 dactyli subequal 4
4. Spine on anterior part of cardiac region; row of 3 spines along posterior branchial margin anterior to posterolateral excavation
 - *C. novaecaledoniae* Baba, 1991
 - No spine on cardiac region; 1 spine on

posterior branchial region dorsal to beginning of posterolateral excavation

..... *C. ortmanni* Miyake & Baba, 1968

Chirostylus ciliatus van Dam, 1933

Transferred to *Uroptychus* Henderson, 1888.

***Chirostylus dolichopus* Ortmann, 1892**

Chirostylus dolichopus Ortmann, 1892: 246, pl. 11: figs. 2, 2b, 2c, 2e, 2i, 2o, 2z (type locality: Kadsiyama [= Katsuyama], Sagami Bay, shallow water [holotype, ♂, MZS 347]). — Miyake, 1960: 97, pl. 48: fig. 8 (no record). Miyake & Baba, 1968: 381, figs. 1b, 2 (Sagami Bay, 63–70 m). — Haig, 1974: 447 (Western Australia). — Tirmizi & Khan, 1979: 86, fig. 6 (E coast of Somali Republic & Mozambique Channel, 88–140 m). — Miyake, 1982: 143, pl. 48, fig. 1 (Kushimoto, S Kii Peninsula, Japan). — Takeda, 1982: 49, fig. 147 (no record). — Baba, 1988: 5 (Sulu Archipelago, 35–42 m); this paper (Mauritius, 73–238 m).

Not *Chirostylus dolichopus*: Ogawa & Matsuzaki, 1993: 65, fig. 2 (= *U. ortmanni* Miyake & Baba, 1968).

[*Chirostylus micheleae* Tirmizi & Khan, 1979]

Chirostylus micheleae Tirmizi & Khan, 1979: 78, figs. 1–5 (E coast of Somali Republic and Mozambique Channel, 75–140 m; type locality: NE coast of Somali Republic, 75 m [holotype, ♂, USNM 171609]).

***Chirostylus novaecaledoniae* Baba, 1991**

Chirostylus novaecaledoniae Baba, 1991a: 464, figs. 1, 8a (Loyalty and Chesterfield Islands, 236–270 m; type locality: Loyalty Islands, 20°42.18'S, 167°00.40'E, 270 m [holotype, ♂, MNHN Ga 2069]).

[*Chirostylus ortmanni* Miyake & Baba, 1968]

Chirostylus ortmanni Miyake & Baba, 1968: 383, figs. 1c, 3 (type locality: N Kyushu, Japan, 90 m [holotype, ♀, ZLKU 13761]).

Chirostylus dolichopus: Ogawa & Matsuzaki, 1933: 65, fig. 2 (Miyake-jima, Kushimoto (Wakayama Pref.), Sakurajima (Kagoshima), and Akajima (Okinawa), Japan, 10–40 m [not *C. dolichopus* Ortmann, 1892]).

[*Chirostylus rostratus* Osawa & Nishikiori, 1998]

Chirostylus rostratus Osawa & Nishikiori, 1998: 382,

figs. 1, 2 (type locality: Ogasawara Islands, 180 m [holotype, ♂, NSMT-Cr 12028]).

Genus *Eumunida* Smith, 1883

Eumunida Smith, 1883: 44 (gender: feminine).

Type species: *Eumunida picta* Smith, 1883, by monotypy.

Distribution: The genus now contains 26 species, 24 from the Indo-West Pacific (see below) and two (*E. bella* de Saint Laurent & Macpherson, 1990 and *E. picta* Smith, 1885) from the Atlantic.

Twenty-two species are known from the western Pacific, two of which occur also in the Indian Ocean, and one of which occurs in the Southern Ocean. Indian Ocean species are two in number, both from Madagascar. The majority of the species have been taken from transitional depths (200–700 m); seven of these further go down to upper bathyal depths and three of these go up to the continental shelf. One species is so far known from a lower part of the shelf only, and another one from a depth >700 m.

A key to Indo-West Pacific species was given by de Saint Laurent & Poupin (1996: 342).

***Eumunida ampliata* de Saint Laurent & Poupin, 1996**

Eumunida smithii: Gordon, 1930: 749 (part), fig. 10b–c (Sahul Bank S of Timor). — Van Dam, 1933: 11 (South of Kei Islands, 204–304 m). — Baba, 1988: 13 (part), fig. 3e (reexamination of type material of *E. smithii* from S of Timor) (not fig. 3a–d, South China Sea off SW Formosa, 421 m = *E. capillata* de Saint Laurent & Macpherson, 1990).

Eumunida (Eumunidopsis) ampliata de Saint Laurent & Poupin, 1996: 368, figs. 7a–e, 8a–e, 12c (Indonesia S of Timor and Kei Islands, 204–304 m; type locality: S of Timor, Sahul Bank, 10°30'S, 126°35'E, depth unknown [holotype, ♀, BMNH 1919.9.1.6–10]).

Eumunida ampliata: Baba, this paper (Manado Bight, N Sulawesi and Japan, 366–458 m).

***Eumunida annulosa* de Saint Laurent & Macpherson, 1990**

Eumunida annulosa de Saint Laurent & Macpherson, 1990a: 249, figs 1b, 8a, b, 9a–j (New Caledonia, Chesterfield Islands, 375–650 m; type locality:

- New Caledonia, 24°54.96'S, 168°21.91'E, 500 m [holotype, ♂, MNHN Ga 1781]).
- Eumunida (Eumunida) annulosa*: de Saint Laurent & Poupin, 1996: 364 (no record).
- Eumunida australis* de Saint Laurent & Macpherson, 1990**
- Eumunida picta*: Gordon, 1930: 742 (part), fig. 1b (Tasman Sea, 685 m).
- Eumunida* sp. de Saint Laurent & Macpherson, 1990a: 249, fig. 6d (N of Australia; Tasman Sea, material reported by Gordon (1930)).
- Eumunida australis* de Saint Laurent & Macpherson, 1990b: 664, figs. 2d, 4d, 5d, 6d, 8d, 8h, 10d, 11 (type locality: Tasman Sea, 38°13'S, 168°42.5'E, 685 m [holotype, ♂, BMNH 1907.16.10]).
- Eumunida (Eumunida) australis*: de Saint Laurent & Poupin 1996: 364 (off Southport, SE Queensland, 590 m). — Shane & Poore, 2004: 5 (New South Wales, 300–436 m).
- Eumunida balssi* Gordon, 1930**
- Eumunida smithii*: Balss, 1913b: 21 (part), fig. 16 (Sagami Bay, 600 m).
- Eumunida balssi* Gordon, 1930: 752 (type locality: Sagami Bay, 600 m [holotype, ♂, ZSM 103/1]). — Baba, 1988: 11 (Sagami Bay and W of Kyushu, 249 m). — de Saint Laurent & Macpherson, 1990a: 266, fig. 13b, f, h, m (reexamination of type material). — Baba, this paper (Japan W of Nagasaki and Sagami Bay, between 179–201 m and 732 m).
- Eumunida (Eumunidopsis) balssi*: de Saint Laurent & Poupin, 1996: 375, figs. 13a–b (reexamination of type material).
- Not *Eumunida balssi*: van Dam, 1933: 10 (= *E. smithii* Henderson, 1885).
- Eumunida bispinata* Baba, 1990**
- Eumunida bispinata* Baba, 1990: 925, fig. 1 (type locality: Madagascar, 12°39.5'S, 48°15.6'E, 450 m [holotype, ♂, MNHN Ga 1506]).
- Eumunida (Eumunidopsis) bispinata*: de Saint Laurent & Poupin, 1996: 373 (no record).
- Eumunida capillata* de Saint Laurent & Macpherson, 1990**
- Eumunida smithii*: Baba, 1988: 12 (part), fig. 3a–d (South China Sea off SW Formosa, 421 m) (not fig. 3e, South of Timor = *E. ampliata* de Saint Laurent & Poupin, 1996).
- Eumunida capillata* de Saint Laurent & Macpherson, 1990a: 254, figs. 1c, 8c–d, 10a–k, 15, 17b (New Caledonia and Chesterfield Islands, 418–650 m; type locality: New Caledonia, 23°38.60'S, 167°43.12'E, 418 m [holotype, ♂, MNHN Ga 1783]). — Baba, this paper (Bali Sea, 200 m).
- Eumunida (Eumunidopsis) capillata*: de Saint Laurent & Poupin, 1996: 374 (New Caledonia (examination of type material), Chesterfield Islands, Indonesia, China Sea off S Taiwan), between 356–368 m and 439–459 m). — Shane & Poore, 2004: 6 (New South Wales, 366–377 m).
- Eumunida debilistriata* Baba, 1977**
- Eumunida debilistriata* Baba, 1977c: 154, fig. 9 (type locality: off Midway Island, 700–800 m [holotype, ♂, NSMT-Cr. 4360]).
- Eumunida (Eumunidopsis) debilistriata*: de Saint Laurent & Poupin, 1996: 372 (no record).
- Eumunida depressa* de Saint Laurent & Poupin, 1996**
- Eumunida funambulus*: Miyake, 1982: 144, pl. 48: fig. 3 (Kyushu-Palau Ridge, 520 m).
- Eumunida pacifica*: Baba in Baba *et al.*, 1986: 165, 287 (part), fig. 116 (Kyushu-Palau Ridge, 520–1320 m). — Miyake, 1991: 144, pl. 48: fig. 3 (Kyushu-Palau Ridge, 520 m).
- Eumunida (Eumunida) depressa* de Saint Laurent & Poupin, 1996: 356, figs. 3a–h (type locality: Kyushu-Palau Ridge, 520–1320 m [holotype, ♂, MNHN Ga 3558]).
- Eumunida dofleini* Gordon, 1930**
- Eumunida smithii*: Balss, 1913b: 21 (part) (Sagami Bay) (not *Eumunida smithii* Henderson, 1885). — Parisi, 1917: 6 (Sagami Bay).
- Eumunida dofleini* Gordon, 1930: 750, figs. 11a, 12a (type locality: Sagami Bay, Japan [holotype, ov. ♀, ZSM No 1113]). — Baba, 1981b: 112, fig. 1 (Izu Shoto, Japan, 425–870 m). — Baba in Baba *et al.*, 1986: 165, 287, fig. 115 (Kyushu-Palau Ridge and Okinawa Trough, 680–1320 m).
- Eumunida (Eumunidopsis) dofleini*: de Saint Laurent & Poupin, 1996: 371, fig. 12d (Sagami Bay, Japan [material examined by Balss (1913b) and Parisi (1917)]).
- Systematic status not yet resolved:
- Eumunida dofleini*: Miyake in Miyake & Nakazawa, 1947: 735, fig. 2126. — Miyake, 1965: 634, fig. 1041.
- Eumunida funambulus* Gordon, 1930**
- Eumunida funambulus* Gordon, 1930: 744, figs. 1c, 2a,

- 2b, 3b, 4b, 5 (Gulf of Aden, Philippines, Sahul Bank S of Timor, Socotra Channel between Aden and Bombay, and Madura Strait, Java, 70–400 fm (128–730 m); type locality: Gulf of Aden, 12°45'N, 45°17'E, 260 fm (476 m) [holotype, ♀, BMNH 1924.2.4.1]). — van Dam, 1933: 10 (no record). — van Dam, 1937: 102 (Kwandang Bay, N. Celebes, 376 m). — Baba, 1973: 121, fig. 3, pl. 4: fig. 2 (E coast of Kyushu, Japan, 130–150 m); 1988: 6 (off N Mindanao, between Cebu and Bohol, South China Sea off SW Luzon, 209–309 m); this paper (between Luzon and Samar, 92–183 m). — Wu *et al.*, 1997: 79, figs. 4, 12A (Taiwan).
- Eumunida (Eumunida) funambulus*: de Saint Laurent & Poupin, 1996: 350 (reexamination of type material).
- Not *Eumunida funambulus*: Miyake, 1982: 444, pl. 48, fig. 3 (= *E. depressa* de Saint Laurent & Poupin, 1996).
- [*Eumunida gordonae* Baba, 1976]**
Eumunida gordonae Baba, 1976: 15, fig. 1 (type locality: Tori-shima, Japan, 180 m [holotype, ♀, NSMT-Cr. 4983]).
- Eumunida (Eumunidopsis) gordonae*: de Saint Laurent & Poupin, 1996: 373 (no record).
- Eumunida karubar* de Saint Laurent & Poupin, 1996**
Eumunida karubar de Saint Laurent & Poupin, 1996: 379, figs. 9b–f, 10b (type locality: Kei Islands, 5°18'S, 133°01'E, 205–212 m [holotype, ♀, MNHN Ga 3500]).
- Eumunida keijii* de Saint Laurent & Macpherson, 1990**
Eumunida keijii de Saint Laurent & Macpherson, 1990a: 240, figs. 4a–b, 5a–i (New Caledonia, 490–550 m; type locality: 18°51.3'S, 163°21'E, 550 m [holotype, ov. ♀, MNHN Ga 1778]). — Poupin, 1996: 24, 25 (fig. h) (Tuamotu Archipelago, 460 m).
- Eumunida (Eumunida) keijii* de Saint Laurent & Poupin, 1996: 359 (New Caledonia (reexamination of type material), Wallis Island, and French Polynesia, 420–460 m).
- Eumunida laevimana* Gordon, 1930**
Eumunida laevimana Gordon, 1930: 751, figs. 11b, 12 b–c (W of Roti and S of Nicobar Islands, 350–560 fm (640–1025 m); type locality: W of Roti, 11°5'S, 121°30'E, 400 fm (732 m) [holotype, ♀, BMNH 1916.6.19.1–5]).
- Eumunida (Pareumunida) laevimana*: de Saint Laurent & Poupin, 1996: 366, figs. 6a–b, 12b (reexamination of holotype; Arafura Sea and Savu Sea, between 620–666 m and 730 m).
- Eumunida macphersoni* de Saint Laurent & Poupin, 1996**
 ? *Eumunida smithii*: Balss, 1913b: 21 (part), fig. 17 (Japan).
 ? *Eumunida* sp. Gordon, 1930: 748, fig. 8a–b (Japan; No. 114 reported by Balss (1913b)).
- Eumunida pacifica*: Baba in Baba *et al.*, 1986: 165, 287 (part) (Kyushu-Palau Ridge, 520–1320 m [not fig. 116 = *E. depressa* de Saint Laurent & Poupin, 1996]).
- Eumunida (Eumunida) macphersoni* de Saint Laurent & Poupin, 1996: 362, fig. 5a–g (type locality: Kyushu-Palau Ridge, 520–1320 m [holotype, ov. ♀, MNHN Ga 3559]).
- Eumunida marginata* de Saint Laurent & Macpherson, 1990**
Eumunida marginata de Saint Laurent & Macpherson, 1990a: 267, figs. 12d, 14a–g (New Caledonia, 180–330 m; type locality: 21°30.72'S, 166°21.72'E, 335–330 m [holotype, ♀, MNHN Ga 1777]).
- Eumunida (Eumunidopsis) marginata*: de Saint Laurent & Poupin, 1996: 373 (no record).
- Eumunida minor* de Saint Laurent & Macpherson, 1990**
Eumunida minor de Saint Laurent & Macpherson, 1990a: 263, figs. 2b–c, 13a, c–e, g, i–l (New Caledonia, 230–275 m; type locality: 20°42.10'S, 167°00.40'E, 270 m [holotype, ♂, MNHN Ga 1863]). — Baba, 1990: 928 (Madagascar, 250 m).
- Eumunida (Eumunidopsis) minor*: de Saint Laurent & Poupin, 1996: 374 (New Caledonia, Loyalty Islands, Vanuatu, and Bikini Atoll, between 230 m and 250–315 m).
- Eumunida multilineata* de Saint Laurent & Poupin, 1996**
Eumunida (Eumunida) multilineata de Saint Laurent & Poupin, 1996: 348, figs. 1a–i, 11a, b (E coast of Australia, 380–522 m; type locality: 23°07'S, 153°19'E, 400 m [holotype, ♀, QM-W 15801]).
- Eumunida pacifica* Gordon, 1930**
Eumunida pacifica Gordon, 1930: 746, figs. 6, 7 (type

- locality: off S Timor, 160 fm (293 m) [holotype, ♀, BMNH 1916.3.29.4]). — Baba, 1988: 7, fig. 1. (off S Obi, 602 m); this paper (Manado Bight (N Sulawesi), off N Mindoro, and Japan, 366–525 m). — de Saint Laurent & Macpherson, 1990a: 244, fig. 4a–d (reexamination of type material).
- Eumunida (Eumunida) pacifica*: de Saint Laurent & Poupin, 1996: 359, figs. 4a–b, 12a (Moluccas S of Obi and Timor, 293–602 m (reexamination of material reported by Gordon (1930) and Baba (1988); Kei Islands, 575–605 m).
- Not *Eumunida pacifica*: Baba in Baba *et al.*, 1986: 165, 287 (part), fig. 116 (= *E. depressa* de Saint Laurent & Poupin, 1996).
- Eumunida parva* de Saint Laurent & Macpherson, 1990**
- Eumunida parva* de Saint Laurent & Macpherson, 1990a: 257, figs. 2a, 11a–k, 12b–c (New Caledonia, 428–545 m; type locality: 18°52'S, 163°21.7'E, 545 m [holotype, ♂, MNHN Ga 1782]).
- Eumunida (Eumunidopsis) parva*: de Saint Laurent & Poupin, 1996: 376, fig. 9h (reexamination of type material).
- Eumunida propior* Baba, 1988
See under *E. smithii* Henderson, 1885.
- Eumunida similior* Baba, 1990**
- Eumunida similior* Baba, 1990: 928, figs. 2, 3 (type locality: Madagascar, 12°50.0'S, 48°09.1'E, 580–585 m [holotype, ♂, MNHN Ga 729]).
- Eumunida (Eumunida) similior*: de Saint Laurent & Poupin, 1996: 352, fig. 3i (reexamination of type).
- Eumunida smithii* Henderson, 1885**
- Eumunida smithii* Henderson, 1885: 413 (type locality: off Ki [Kei] Islands, 129 fm (236 m) [holotype, ♂, BMNH 1888:33]); 1888: 169, pl. 5: fig. 5a, b (off Little Ki [Kei] Island, 140 fm (256 m)). — Gordon, 1930: 749 (part), figs. 9a, 10a (holotype from the Kei Islands, 236 m) (not 2 / from Sahul Bank S of Timor = *E. ampliata* de Saint Laurent & Poupin, 1996). — de Saint Laurent & Macpherson, 1990a: 261 (no record).
- Eumunida balsi*: Van Dam, 1933: 10 (NE of Sulu Islands, S of the Kei Islands, 204–275 m).
- Eumunida propior* Baba, 1988: 9, fig. 2 (off N Mindanao and South China Sea off SW Luzon, 214–366 m; type locality: off N Mindanao, 8°46'N, 123°32'30"E, 320 m [holotype, ♀, USNM 150333]).
- Eumunida (Eumunidopsis) smithii*: de Saint Laurent & Poupin, 1996: 376, figs. 9a, g, 1a (Kei Islands, Indonesia, 315–349 m; including reexamination of holotype, and material reported by van Dam (1933) and Baba (1988)).
- Not *Eumunida smithii*: Balss, 1913b: 21 (= *E. dofleini* Gordon, 1930 + *E. balsi* Gordon, 1930 + ?*E. macphersoni* de Saint Laurent & Poupin, 1996). — Parisi, 1917: 6 (= *E. dofleini* Gordon, 1930). — Gordon, 1930: 749 (part), fig. 10b, c (= *E. ampliata* de Saint Laurent & Poupin, 1996). — van Dam, 1933: 11 (= *E. ampliata* de Saint Laurent & Poupin, 1996). — Baba, 1988: 12 (fig. 3a–d = ?*E. capillata* de Saint Laurent & Macpherson, 1990; fig. 3e = *E. ampliata* de Saint Laurent & Poupin, 1996).
- Systematic status not yet resolved:
- Eumunida smithii* Yokoya, 1933: 67 (E of Shimoda and S of Goto I., 137–324 m).
- Eumunida sternomaculata* de Saint Laurent & Macpherson, 1990**
- Eumunida sternomaculata* de Saint Laurent & Macpherson, 1990a: 244, figs. 1a, 6a,b, 7a–k, 16, 17a, c. (New Caledonia, 418–650 m; type locality: 23°40.5'S, 167°45.2'E, 470 m [holotype, ♂, MNHN Ga 1780]).
- Eumunida (Eumunida) sternomaculata*: de Saint Laurent & Poupin, 1996: 365 (no record).
- Eumunida treguieri* de Saint Laurent & Poupin, 1996**
- ? *Eumunida picta*: Titgen, 1988: 143 (Hawaii, 365 m).
- Eumunida (Eumunida) treguieri* de Saint Laurent & Poupin, 1996: 352, figs. 2a–h, 3j, 11c–d (French Polynesia, 560–710 m; type locality: Mururoa Atoll, Tuamotu Archipelago, 21°46.2'S, 138°54.0'W, 600 m [holotype, ♂, MNHN Ga 2360]).
- Eumunida treguieri*: Poupin, 1996: 26, 27 (fig. a) (Austral Islands and Society Islands, Tuamotu Archipelago, 560–710 m).
- Genus *Gastroptychus* Caullery, 1896**
- Ptychogaster* A. Milne Edwards, 1880: 63 (junior synonym of *Ptychogaster* Pomel, 1847 (Reptilia: Chelonia; fossil)).
- Gastroptychus* Caullery, 1896: 390 (replacement name for *Ptychogaster* A. Milne Edwards, 1880).
- Type species of *Ptychogaster* A. Milne Edwards, 1880:

Ptychogaster spinifer A. Milne Edwards, 1880, by monotypy.

Remarks: *Gastroptychus spinirostris* Ahyong & Poore, 2004 is transferred to *Uroptychus* Henderson, 1888, according to the new definition of the genera proposed in the present paper (see above under the systematic account).

Distribution: Sixteen species are known from the Indo-Pacific. Eight of these occur in the western Pacific (including the Hawaiian Islands and vicinity), two of which were originally known from the Bay of Bengal. Only one is solely from the Indian Ocean. Four species are confined to the eastern Pacific. Five species are known from the Southern Ocean, three of which are confined there, and two of which are common to the western Pacific.

Twelve species occur in transitional depths, one of which also inhabits the continental shelf, and four of which go down to the transitional zone. Four species are limited in depths between 700m and 1500 m. The shallowest record 128–146 m is for *G. sternoornatus* (van Dam, 1933), and the deepest 1500 m is for *G. investigatoris* (Alcock & Anderson, 1899).

Key to species from the Indo-Pacific

1. Anterior margin of sternite 3 concave with row of spines. Mxps 3 widely separated 2
 - Anterior margin of sternite 3 with median ridge anteriorly produced and sloping down in ventral view. Mxps 3 close to each other . 8
2. P2–4 propodi very short, length at most 1/7 that of carpi 3
 - P2–4 propodi much longer than carpi 5
3. Abdomen totally smooth, unarmed *G. brevipropodus* Baba, 1991
 - Abdomen covered with spines 4
4. Rostrum without dorsal spine. Abdomen without prominent spines. Antennal acicle absent *G. brachyterus* n. sp.
 - Rostrum with dorsal spine. Abdomen with pair of prominent spines on segments 1–4. Antennal acicle small but distinct *G. novaezelandiae* Baba, 1974
5. Gastric region with or without metagastric spine only, other than pair of epigastric spines 6
 - Gastric region with numerous spines, other than pair of epigastric spines 7

6. Cardiac spine present. Antennal acicle falling short of end of antennal peduncle *G. paucispina* Baba, 1991
 - Cardiac spine absent. Antennal acicle reaching end of antennal peduncle *G. laevis* (Henderson, 1885)
7. Anterolateral corner of carapace rounded and unarmed. Abdominal segment 6 with pair of spines each near lateral extremity of tergite. Mxp 3 carpus with a few extensor marginal spines other than distolateral one [confirmed by examination of 3 syntypes (ZMB 17479)] *G. valdiviae* Balss, 1913
 - Anterolateral corner of carapace with small but distinct spine. Abdominal segment 6 unarmed. Mxp 3 carpus with distolateral spine only *G. sternoornatus* van Dam, 1933
8. Abdomen totally covered with spines 9
 - Abdomen partly with spines 12
9. Gastric region with numerous spines, including pair of strong epigastric spines, not in hexagonal arrangement *G. cavimurus* Baba, 1977
 - Gastric region with strong spines in hexagonal arrangement 10
10. Gastric region without spine in center of hexagonally arranged spines. Mxp 3 propodus spineless *G. hawaiiensis* Baba, 1977
 - Gastric region with spine in center of hexagonally arranged spines. Mxp 3 propodus with distinct spines on extensor margin 11
11. Cornea globular and strongly dilated. Abdominal segment 1 with a single row of spines *G. mileedwardsi* (Henderson, 1885)
 - Cornea somewhat dilated. Abdominal segment 1 with 2 rows of spines . *G. rogeri* Baba, 2000
12. Carapace with many small spines interspersed among prominent ones. Mid-cervical groove distinctly anterior to midlength of carapace *G. perarmatus* (Haig, 1968)
 - Carapace with prominent spines and few interspersed ones. Gastric region with prominent spines in hexagonal arrangement with central spine. Mid-cervical groove about at midlength of carapace 13
13. Abdominal tergites 3–4 with spines at least on lateral extremities near pleura. Sternite 4 without spine between first lateral spines *G. defensa* (Benedict, 1902)
 - Abdominal tergites 3–4 spineless. Sternite 4

- with 2 anterior spines between first lateral spines 14
14. Pleura of abdominal segment 3 with spines
..... *G. hendersoni* (Alcock & Anderson, 1899)
- Pleura of abdominal segment 3 without spines 15
15. Abdomen thickly covered with fine setae. Antennal acicle lappet-like
.. *G. investigatoris* (Alcock & Anderson, 1899)
- Abdomen sparsely setose. Antennal acicle rudimentary *G. iaspis* Baba & Haig, 1990

***Gastroptychus brachyterus* n. sp.**

Gastroptychus brachyterus Baba, this paper (type locality: Kei Islands, 345 m [holotype, ♀, ZMUC CRU-11331]).

***Gastroptychus breviproodus* Baba, 1991**

Gastroptychus breviproodus Baba, 1991a: 466, figs. 2–3 (Loyalty Islands Basin and Chesterfield Islands, 435–580 m; type locality: Loyalty Islands Basin, 22°11'S, 167°16'E, 495–515 m [holotype, ov. ♀, MNHN Ga 2074]).

***Gastroptychus cavimurus* Baba, 1977**

Gastroptychus cavimurus Baba, 1977d: 202, figs. 1–3 (off Ecuador and N Peru, 388–500 m, type locality: off N Peru, 3°43'S, 81°07'W, 388 m [holotype, ov. ♀, RMNH Crust. D. 31282]).

Gastroptychus chacei Baba, 1986

Transferred to *Uroptychus* Henderson, 1888.

***Gastroptychus defensus* (Benedict, 1902)**

Ptychogaster defenza Benedict, 1902: 299, fig. 44 (type locality: Galapagos Islands [between Santa Cruz and San Cristobal Islands, 00°29'00"S, 89°54'30"W], 392 fms (717 m) [type, USNM 20563]). — Wicksten, 1989: 315 (list).

Gastroptychus defenza: Baba & Haig, 1990: 856, fig. 3 (reexamination of syntypes).

Not *Gastroptychus defenza*: Zhong & Wang, 1989: 67, fig. 4 (South China Sea, 510 m) (different species, possibly *G. hendersoni* (Alcock & Anderson, 1899)).

***Gastroptychus hawaiiensis* Baba, 1977**

Gastroptychus hawaiiensis Baba, 1977c: 141, figs. 1, 2 (type locality: off Midway Island, 700–800 m

[holotype, ♂, SNMT-Cr. 4354]).

***Gastroptychus hendersoni* (Alcock & Anderson, 1899)**

Ptychogaster Hendersoni Alcock & Anderson, 1899a: 23 (type locality: off Travancore coast (Kerala), 430 fm (787 m) [holotype, ♀, ZSIC 2348/10]); 1899b: pl. 45: fig. 2 (no record). — Alcock, 1901: 280 (off Travancore coast [Kerala], 430 fm (787 m)).

Chirostylus hendersoni: Tirmizi, 1964: 389, fig. 3 (South Arabian coast, 1415 m).

Gastroptychus hendersoni: Baba in Baba *et al.*, 1986: 167, 288, fig. 117 (Kyushu-Palau Ridge, 910 m). — Baba, 1988: 14, fig. 4. (off S coast of Minahassa Peninsula, Sulawesi, 1469 m); 1991a: 469 (Loyalty Islands Basin, 760–790 m). — Shane & Poore, 2004: 8 (Tasmania, 1050–1170 m).

Possibly *Gastroptychus defenza*: Zhong & Wang, 1989: 67, fig. 4 (South China Sea, 510 m).

***Gastroptychus iaspis* Baba & Haig, 1990**

Gastroptychus iaspis Baba & Haig, 1990: 854, figs. 1, 2 (off Mexico and California, 600–1189 m; type locality: Jasper seamount off Baja California, 30°25.6'N, 122°43.7'W, 950–840 m [holotype, ov. ♀, AHF 861]).

***Gastroptychus investigatoris* (Alcock & Anderson, 1899)**

Ptychogaster investigatoris Alcock & Anderson, 1899a: 24 (type locality: Andaman Sea, 405 fm (741 m) [holotype, ♀, ZSIC 1378/10]); 1899b: pl. 45: fig. 1 (no record). — Alcock, 1901: 281 (Andaman Sea, 405 fm (741 m)). — Alcock & McArdle, 1902: pl. 58: fig. 4 (no record).

Chirostylus investigatoris: Doflein & Balss, 1913: 132, figs. 1, 2 (W of Sumatra (SE of Nias), 646 m). — Tirmizi, 1964: 386, figs. 1, 2 (Maldives, 914–1463 m).

Gastroptychus investigatoris: Zarenkov & Khodkina, 1981: 86, fig. 3 (Marcus-Necker Rise, 1360–1500 m). — Baba, 1988: 15, fig. 5 (between Cebu and Leyte, and Moluccas off W coast of Halmahera, 479–503 m).

***Gastroptychus laevis* (Henderson, 1885)**

Ptychogaster laevis Henderson, 1885: 418 (type locality: off Little Ki [Kei] Island, 129 fm (236 m) [holotype, BMNH 1888:33]); 1888: 172, pl. 20: fig. 3, 3a, 3b, 3c (Kei Islands, 129 fm (236 m)).

Gastroptychus laevis: Baba, this paper (Kei Islands,

225 m).

***Gastroptychus milneedwardsi* (Henderson, 1885)**

Ptychogaster Milne-Edwardsi Henderson, 1885: 418 (type locality: Straits of Magellan, 400 fm (732 m) [holotype, BMNH 1888:33]).

Ptychogaster milne-edwardsi: Henderson, 1888: 171, pl. 20: figs. 2, 2a, 2b, 2c (Sarmiento Channel, Chile, 400 fm (732 m)).

Chirostylus milneedwardsi: Haig, 1955: 31 (no record). — Wicksten, 1989: 315 (list).

***Gastroptychus novaezelandiae* Baba, 1974**

Gastroptychus novaezelandiae Baba, 1974: 381, figs. 1, 2 (off E coast of South Island, New Zealand, 410–440 m, found in a dorsal groove of pennatulacean *Balticina willemoesii* (Kölliker); type locality: 43°14.5'S, 174°43'W, 440 m [holotype, ♂, ZLKU 15123]).

***Gastroptychus paucispina* Baba, 1991**

Gastroptychus paucispina Baba, 1991a: 469, figs. 4–6, 8b (Chesterfield Islands, New Caledonia, and Loyalty Islands, 430–520 m; type locality: Chesterfield Islands, 22°09.27'S 159°24.42'E, 430–440 m [holotype, ♂, MNHN Ga 2078]).

***Gastroptychus perarmatus* (Haig, 1968)**

Chirostylus perarmatus Haig, 1968: 272, figs. 1–3 (type locality: N of Anacapa Island, California, 125 fms (229 m) [holotype, ♀, AHF 6138]). — Wicksten, 1989: 315 (list).

***Gastroptychus rogeri* Baba, 2000**

Gastroptychus rogeri Baba, 2000: 246, figs. 1, 2 (Southern Tasmania, 850–1000 m; type locality: Pedra Branca, S. Tasmania, 1000 m [holotype, ♂, TM G3497]). — Shane & Poore, 2004: 8 (New South Wales, between 476–512 m and 801 m).

Gastroptychus spinirostris Ah Yong & Poore, 2004
Transferred to *Uroptychus* Henderson, 1888.

***Gastroptychus sternoornatus* (van Dam, 1933)**

Chirostylus sterno-ornatus van Dam, 1933: 15, figs. 21–23 (type locality: Kei Islands, 310 m [holotype, ♀, ITZA De. 101.664]).

Gastroptychus sternoornatus: Baba 1988: 16, fig. 6 (vicinity of Marinduque off SW Luzon, and off SE Mindoro, 265–353 m); 1991a: 473, fig. 7 (Loyalty Islands, 480 m); this paper (Victoria, Australia,

between 128–146 m and 366–458 m). — Ah Yong & Poore, 2004a: 12 (New South Wales and Victoria, 329–512 m).

***Gastroptychus valdiviae* (Balss, 1913)**

Ptychogaster valdiviae Balss, 1913a: 225 (type locality: SW of Great Nicobar, 296 m [3 syntypes, 1 ♂, 1 ov. ♀, 1 ♀, ZMB 17479]).

Chirostylus valdiviae: Doflein & Balss, 1913: 133, figs. 3, pl. 17: fig. 1 (SW of Great Nicobar, 6°54'N, 93°28'E, 296 m).

Genus *Pseudomunida* Haig, 1979

Pseudomunida Haig, 1979: 89 (gender: feminine).

Type species: *Pseudomunida fragilis* Haig, 1979, by monotypy.

***Pseudomunida fragilis* Haig, 1979**

Pseudomunida fragilis Haig, 1979: 89, figs. 1, 2 (type locality: off Waianae, Oahu, Hawaii, 21°25.4'N, 158°16.78'W, 969–1280 m [holotype, ov. ♀, BMH S7996]). — Baba, this paper (Bonin Islands [Ogasawara Islands], 1370 m).

Genus *Uroptychodes* Baba, 2004

Uroptychodes Baba, 2004: 98 (gender: masculine).

Type species: *Uroptychodes epigaster* Baba, 2004, by original designation.

Distribution: The genus contains 11 species. Most of the species, 10 in number, are restricted to the Western Pacific, and the remaining one occurs in the Southern Ocean (SE Australia). Ten of these are from transitional depths, four of which also occur on the continental shelf, and three of which go down to upper bathyal depths. The deepest record is 1100 m for *U. nowra* (Ah Yong & Poore, 2004).

Key to species

1. Carapace covered with denticles or small spines 2
- Carapace dorsally spineless or bearing denticular spines on anterior portion 3
2. Abdominal segments unarmed. Excavated sternum produced forward, reaching end of Mxp 1 basal article. *U. benedicti* (Baba, 1977)
- Abdominal segments 1–2 with small spines. Excavated sternum sharp triangular, terminating in midlength of Mxp 1 basal

- article *U. spinulifer* (van Dam, 1940)
3. Rostral lateral margin with row of small spines extending from anterior part on to not all but part of proximal half 4
 - Rostral lateral margin smooth at least on proximal half 6
 4. Branchial marginal spines of carapace very broad (basal width of largest spine 2/3 length), nearly contiguous to one another at base *U. grandirostris* (Yokoya, 1933)
 - Branchial marginal spines of carapace slender (basal width of largest spine distinctly less than half length), separated from one another by their basal width 5
 5. Rostrum with tubercular spines on dorsal surface. Antennal scale overreaching end of antennal article 5. P3 propodus with tubercular spines irregularly arranged along extensor margin *U. albatrossae* (Baba, 1988)
 - Rostrum without tubercular spines on dorsal surface. Antennal scale reaching at most midlength of antennal article 5. P3 propodus with row of spines on proximal half of extensor margin *U. barunae* Baba, 2004
 6. Carapace with distinct spine behind lateral limit of orbit *U. epigaster* Baba, 2004
 - Carapace lacking spine behind lateral limit of orbit 7
 7. Article 5 of antennal peduncle much longer (1.8 times) than article 4 8
 - Article 5 of antennal peduncle as long as article 4 10
 8. Branchial margin with 8 small spines (largest spine distinctly less than corneal breadth) *U. okutanii* (Baba, 1981)
 - Branchial margin with 4 or 5 strong spines (largest spine distinctly more than corneal breadth) 9
 9. Branchial margin with 4 strong spines. Rostrum with proximal-most lateral spine situated about at midlength *U. nowra* (Ahyong & Poore, 2004)
 - Branchial margin with 5 (rarely 6) strong spines. Rostrum with proximal-most lateral spine situated at distal 1/3 *U. spinimarginatus* (Henderson, 1885)
 10. Carapace lateral marginal spines on branchial region distinctly longer than those on anterior region. P2 carpus distinctly longer than propodus *U. mortenseni* (van Dam, 1939)
 - Carapace lateral marginal spines on branchial

region not distinctly longer than those on branchial region. P2 carpus slightly shorter than propodus *U. musorstomi* Baba, 2004

***Uroptychodes albatrossae* (Baba, 1988)**

Uroptychus albatrossae Baba, 1988: 22, fig. 8 (off N Mindanao, between Negros and Siquijor, between Cebu and Bohol, 265–510 m; type locality: off N Mindanao, 8°47'N, 123°31'15"E, 333 m [holotype, ov. ♀, USNM 150302]).

Uroptychodes albatrossae: Baba, 2004: 100, fig. 1 (Japan (Kii Peninsula) and Indonesia (Tanimbar Island), between 184–186 m and 225–223 m); this paper (Bali Sea and Japan, 73–450 m).

***Uroptychodes barunae* Baba, 2004**

Uroptychus barunae Baba, 2004: 100, figs. 2, 3 (Indonesia (Tanimbar Island), 184–186 m and 206–210 m; type locality: 7°59'S, 133°02'E, 184–186 m [holotype, ov. ♀, MNHN Ga 4167-1]).

***Uroptychodes benedicti* (Baba, 1977)**

Uroptychus benedicti Baba, 1977b: 123, fig. 1 (type locality: off Omae-zaki, Honshu, Japan, 30 m [holotype, ♂, USNM 150307]).

Uroptychodes benedicti: Baba, 2004, 104, fig. 4 (Kei Islands and Tanimbar Islands, Indonesia, 124–850 m).

***Uroptychodes epigaster* Baba, 2004**

Uroptychodes epigaster Baba, 2004: 104, fig. 5 (New Caledonia, between 410–440 m and 680–700; type locality: 22°57.6'S, 167°33.0'E, 410–440 m [holotype, ♀, MNHN Ga 4581]).

***Uroptychodes grandirostris* (Yokoya, 1933)**

Uroptychus grandirostris Yokoya, 1933: 68, fig. 29 (part) (type localities: Japan (S of Nagasaki, SW of Goto, S of Goto, W of Sata-misaki, W of Muroto-zaki, W of Tanabe, W of Shio-misaki), 165–223 m [types no longer extant]). — van Dam, 1939: 403, figs. 4, 4a, 5 (examination of one of the type-series). — Miyake, in Miyake & Nakazawa, 1947: 735, fig. 2125 (no record). — Miyake, 1965: 633, fig. 1038 (no record). — Miyake & Baba, 1967c: 225, fig. 1 (East China Sea, 196 m).

Uroptychodes grandirostris: Baba, 2004: 106, fig. 6 (off Daio-zaki and Tosa Bay, Japan, and East China Sea, depth not recorded [selection of neotype, ♂, ZLKU 4879]).

***Urotychodes mortenseni* (van Dam, 1939)**

Urotychus mortenseni van Dam, 1939: 398, figs. 3, 3a (type localities: Kei Islands and Manado [Manado] Bight, 250–352 m [syntypes, ZMC]). — Baba, 1988: 38 (South China Sea off SW Luzon, 366 m [designation of lectotype: ov. ♀, Kei Islands, 5°46'S, 132°49'35"E, 352 m, ZMUC]).

Urotychodes mortenseni: Baba, 2004, 109, fig. 7 (Kei Islands, 296–299 m); this paper (off Zamboanga, 293–366 m).

***Urotychodes musorstomi* Baba, 2004**

Urotychodes musorstomi Baba, 2004: 110, fig. 8 (SE New Caledonia, between 335 m and 314–364 m; type locality: 21°43'S, 166°37'E, 314–364 m [holotype, ♀, MNHN Ga 4313]).

***Urotychodes nowra* (Ahyong & Poore, 2004)**

Urotychus nowra Ahyong & Poore, 2004a: 63, fig. 18 (type locality: off Nowra, New South Wales, 35°00.00'S, 151°16.30'E, 1100 m [holotype, ♀, NMV J17064]).

Urotychodes nowra: Baba, this paper (new combination).

***Urotychodes okutanii* (Baba, 1981)**

Urotychus okutanii Baba, 1981b: 113, figs. 2, 3 (off E coast of Hachijo-jima, Japan, 455–510 m; type locality: 33°00.5'N, 140°03.5'E, 510 m [holotype, ♂, NSMT-Cr. 6170]).

Urotychodes okutanii: Baba, 2004: 112, fig. 9a (reexamination of holotype).

***Urotychodes spinimarginatus* (Henderson, 1885)**

Diptychus spinimarginatus Henderson, 1885: 419 (type localities: off Kermadec Islands and off the Philippines, 500–520 fm (915–952 m) [syntypes, BMNH 1888:33]).

Urotychus spinimarginatus: Henderson, 1888: 176, pl. 21: figs. 2, 2a (off Kermadec Islands, and off Meangis Islands S of Philippines [= Kepulauan Talaud S of Mindanao], 500–520 fm (915–952 m)). — Thomson, 1899: 196 (list). — Baba, 1988: 46, figs. 18, 19. (Palawan Passage, 686 m [designation of lectotype: ov. ♀, BMNH 1888:33, Kermadec Islands, 520 fm (952 m)]).

Urotychodes spinimarginatus: Baba, 2004: 112, fig. 9b, c (Hunter and Matthew Islands, and Kei Islands, between 605–576 m and 751–755 m); this paper (Manado Bight, N Sulawesi, 458 m).

***Urotychodes spinulifer* (van Dam, 1940)**

Urotychus spinulifer van Dam, 1940: 100, fig. 3 (type locality: Java Sea, 5°39' S, 111°19' E, 68–71 m [holotype, ♀, ZMA De. 101.669]). — Baba, 1988: 48, fig. 20 (Moluccas off S coast of Halmahera, 240 m).

Urotychodes spinulifer: Baba, 2004: 113, fig. 10 (Kei Islands, 315–349 m).

Genus *Urotychus* Henderson, 1888

Diptychus A. Milne Edwards, 1880: 61 (junior synonym of *Diptychus* Seindachner, 1866) (Pisces)).

Urotychus Henderson, 1888: 173 (gender: feminine) (replacement name for *Diptychus* A. Milne Edwards, 1880).

Type species of *Diptychus* A. Milne Edwards, 1880: not designated.

Distribution: Other than *U. gracilimanus bidentatus* Doflein & Balss, 1913, the identity of which remains uncertain, 104 species are known from the Indo-Pacific, including a species of worldwide distribution. Fifty-five of these are from the western Pacific, five of which are also known in the Indian Ocean, three of which occur widely in the Indian and Southern Oceans, and two of which occur in the Southern Ocean. Twenty-four species have been recorded solely from the Indian Ocean, and 21 in the Southern Ocean. Three species are confined to the eastern Pacific.

Fifty-four of the Indo-Pacific species are known in transitional depths (200–700 m), 11 of which also occur on the continental shelf, and five of which go down to upper bathyal depths. Thirty-nine species occur between 700 and 1500 m. Eight species have been recorded from lower bathyal depths below 1500 m, two of which widely ranges from lower bathyal depths to the continental shelf. The reliable deepest record is for *U. bicavus* Baba & de Saint Laurent, 1992 taken in 2750 m. The “John Murray” material of *U. cavirostris* Alcock & Anderson, 1899 was recorded from 4229 m (Tirmizi, 1966). However, its identity remains questionable (see above under the “Remarks” of *U. latirostris* Yokoya, 1933).

Three species have been recorded from active hydrothermal vent systems in the North Fiji Basin and Bismarck Archipelago, in 1492–2750 m (Baba & Türkay, 1992; Baba & de Saint Laurent, 1992; Baba & Williams, 1998).

Recently Ahyong and Poore (2004a) described 20 new species from southeastern Australia, one of which is transferred to *Uroptychodes* Baba, 2004. In addition, about 40 new species are being described from New Caledonia and vicinity (Baba, unpublished). The genus is, thus, apparently more diverse than expected from previous studies. The key to Indo-West Pacific deep-sea species provided below is provisional and will be revised in the near future.

Key to species from the Indo-West Pacific including southern Ocean

1. Carapace lateral margin without distinct spine, other than anterolateral spine where present . 2
 - Carapace lateral margin with distinct spine(s), other than anterolateral spine 44
2. Epigastric spines or tubercles on dorsal surface of carapace 3
 - No spine on dorsal surface of carapace 8
3. Carapace dorsally granulose 4
 - Carapace dorsally smooth 5
4. P2–4 propodi having flexor margin with terminal spine very remote from distal second; dactyli having strong terminal and smaller subterminal spines distinctly distant from groups of very small, inclined spines on proximal third of flexor margin (confirmed by examination of male and female syntypes, BMNH 1966.2.3.21-22) *U. sternospinosus* Tirmizi, 1964
 - P2–4 propodi having flexor margin with row of regularly arranged spines; dactyli having flexor margin with row of spines diminishing toward proximal end of article *U. soyomaruae* Baba, 1981
5. P2–4 dactyli with flexor marginal spines (other than distal 2) strongly inclined, nearly contiguous to flexor margin [Type material includes three species (Baba, unpublished; see Davie (2002: 31); one of three syntypes (1 ♂, 1 ov. ♀, 1 ♀, BMNH 1888:33) from Challenger St. 164 is selected as a lectotype)] *U. australis* (Henderson, 1885)
 - P2–4 dactylus with flexor marginal spines not contiguous to flexor margin 6
6. Sternite 4 rounded on anterolateral corner. Antennal scale barely reaching midlength of antennal article 5. P2 propodus slightly longer than carpus *U. bicavus* Baba & de Saint Laurent, 1992
 - Sternite 4 with distinct process on anterolateral corner. Antennal scale overreaching end of antennal article 5. P2 propodus almost twice as long as carpus 7
7. Antennal article 2 with sharp spine on distolateral margin. P1 basi-ischium with curved dorsal spine; merus with tubercles on ventral surface *U. litosus* Ahyong & Poore, 2004
 - Antennal article 2 with very small distolateral spine. P1 basi-ischium with short flattened spine (as long as broad); merus, carpus and palm granular on ventral surface *U. sagamiae* n. sp.
8. P2–4 propodi entire on flexor margin 9
 - P2–4 propodi with spines on flexor margin. 14
9. Rostrum short, at most slightly overreaching end of ocular peduncle. Anterior margin of sternite 3 widely and shallowly excavated *U. scambus* Benedict, 1902
 - Rostrum long triangular, extending far beyond ocular peduncle. Anterior margin of sternite 3 deeply excavated 10
10. P2–4 dactyli gently curving, flexor margin with a number of spines (ca. 6) (confirmed by examination of holotype, BMNH 1966.2.3.17-18) *U. gordonae* Tirmizi, 1964
 - P2–4 dactyli strongly curving, flexor margin with numerous spines (more than 17) 11
11. Lateral orbital angle rounded 12
 - Lateral orbital angle angular 13
12. P2–4 dactyli with flexor marginal spines slender and longer than broad, ultimate spine larger than penultimate *U. longvae* Ahyong & Poore, 2004
 - P2–4 dactyli with flexor marginal spines short and about as long as broad, ultimate spine somewhat smaller than penultimate *U. patulus* Ahyong & Poore, 2004
13. P1 fingers directed anterolaterad. P2–4 propodi curving on flexor margin; dactylus more than 3/4 as long as propodus (confirmed by examination of holotype, BMNH 1966.2.3.41) *U. onychodactylus* Tirmizi, 1964
 - P1 fingers directed straight forward. P2–4 propodi nearly straight on flexor margin, dactylus 2/3 as long as propodus *U. setosidigitalis* Baba, 1977
14. P2–4 propodi with 2 spines only on middle portion of flexor margin

- *U. bispinatus* Baba, 1988
- P2–4 propodi with spines restricted to distal portion of flexor margin or arranged regularly along large part of flexor margin 15
 - 15. Flexor margin of P2–4 propodi with pair of distal spines at most preceded by 1 spine 16
 - Flexor margin of P2–4 propodi with row of spines, distal-most spine single or paired with another spine placed mesially 24
 - 16. P2–4 dactyli with 2 terminal spines only *U. pilosus* Baba, 1981
 - P2–4 dactyli with row of spines 17
 - 17. P2–3 merus denticulate at least on proximal half of dorsal crest; dactylus having penultimate of flexor marginal spines extremely strong *U. paenultimus* n. sp.
 - P2–3 merus smooth on dorsal crest; dactylus having penultimate one of flexor marginal spines broader, somewhat longer than remainder 18
 - 18. Flexor margin of P2–4 dactylus bearing more than 10 spines close to one another 19
 - Flexor margin of P2–4 dactylus bearing 6–7 loosely arranged spines 20
 - 19. Antennal scale distinctly overreaching end of antennal article 5. Mxp 3 merus smooth on flexor margin *U. babai* Ah Yong & Poore, 2004
 - Antennal scale slightly overreaching midlength of antennal article 5. Mxp 3 merus with blunt process distal to midlength of flexor margin *U. brevipes* Baba, 1990
 - 20. Carapace with squamous pitting on dorsal surface [characters of the type material informed by K. K. Tiwari, personal comm.] *U. bacillimanus* Alcock & Anderson, 1899
 - Carapace with smooth dorsal surface, with or without fine setae 21
 - 21. Mxp 3 merus spineless 22
 - Mxp 3 merus with spines on flexor margin and distolateral end 23
 - 22. P2–4 dactyli narrow relative to length, more than half length of propodus, flexor margin with ultimate and penultimate spines subequal *U. glaber* Baba, 1981
 - P2–4 dactyli broad relative to length, less than half length of propodus, flexor margin with ultimate spine smaller than penultimate, subequal to antepenultimate *U. tomentosus* Baba, 1974
 - 23. Rostrum narrow triangular, anterolateral spine of carapace prominent, produced straight forward. P2–4 propodi with pair of terminal spines only, dactylus with penultimate spine subequal to antepenultimate *U. amabilis* Baba, 1977
 - Rostrum broad triangular, anterolateral spine of carapace small. P2–4 propodi with pair of terminal spines preceded by 1 extra spine, dactylus having penultimate spine prominent, pronouncedly larger than antepenultimate (confirmed by examination of syntypes, ZMA De. 101.693) *U. suluensis* van Dam, 1933
 - 24. Rostrum short, broad, equilateral triangular *U. brevirostris* van Dam, 1933
 - Rostrum narrow triangular 25
 - 25. P2–4 propodi with convex flexor distal margin 26
 - P2–4 propodi without convex flexor distal margin 27
 - 26. Carapace lateral margin serrate. P2–4 meri with spines on dorsal crest *U. hesperius* Ah Yong & Poore, 2004
 - Carapace lateral margin not serrate. P2–4 meri unarmed on dorsal crest *U. edisonicus* Baba & Williams, 1998
 - 27. Carapace granulose on dorsal surface (confirmed by examination of holotype, BMNH1917.1.29.116) *U. maori* Borradaile, 1916
 - Carapace smooth on dorsal surface 28
 - 28. P2 dactylus with 2 distal spines remotely separated from proximal group of spines ... 29
 - P2 dactylus with regularly arranged row of spines (distal third often more distant from second than from fourth, but not distantly as in above) 31
 - 29. Flexor marginal spines of P2–4 propodi equidistant *U. remotispinatus* Baba & Tirmizi, 1979
 - Flexor marginal spines of P2–4 propodi not equidistant, distal-most remotely separated from distal second 30
 - 30. P2–4 having distal-most of propodal flexor marginal spines located at juncture with dactylus; dactylus with 2 distal spines separated from each other, proximal group of spines very small, only discernible under high magnification ... *U. thermalis* Baba & de Saint Laurent, 1992
 - P2–4 having distal-most of propodal flexor marginal spines somewhat but distinctly

- proximal to juncture with dactylus; dactylus with 2 distal spines close to each other, proximal group of spines distinct
..... *U. vandamae* Baba, 1988
31. P2–4 propodi with a single terminal spine preceded by row of spines 32
– P2–4 propodi with pair of terminal spines preceded by row of spines 33
32. Anterolateral spine of carapace stout. Antennal article 2 strongly produced at distolateral margin; antennal scale more than 1.5 times as broad as opposite antennal peduncle. P2–4 dactyli with very small, inclined spines on flexor margin .. *U. brevisquamatus* Baba, 1988
– Anterolateral spine of carapace small. Antennal article 2 with small spine at distolateral margin; antennal scale equally broad as or slightly wider than opposite antennal peduncle. P2–4 dactyli with relatively broad, somewhat inclined spines on flexor margin
..... *U. gracilimanus* (Henderson, 1885)
33. P2–4 dactyli with small, inclined spines on flexor margin *U. setosipes* Baba, 1981
– P2–4 dactyli with sharp triangular spines on flexor margin 34
34. Corneal width distinctly less than half length of ocular peduncle. P2–4 dactyli with fringe of plumose setae along median 3/4 of extensor margin *U. brucei* Baba, 1986
– Corneal width distinctly more than half length of ocular peduncle. P2–4 dactyli without fringe of plumose setae along extensor margin 35
35. Anterior margin of sternite 3 without pair of submedian spines. Antennal articles 4–5 each with distal spine 36
– Anterior margin of sternite 3 with pair of submedian spines. Antennal articles 4–5 unarmed 37
36. Antennal article 2 lacking spine
..... *U. laperousazi* Ahyong & Poore, 2004
– Antennal article 2 with small spine
..... *U. latus* Ahyong & Poore, 2004
[The differences between the two species are so slight that they are probably identical. The presence or absence of the small (not large) spine at the antennal article 2 tends to be variable in species of *Uroptychus*. The rounded rostral apex as in *U. latus*, another character to separate it from *U. laperousazi*, may be due to damage, such a case having been observed in *U. occultispinatus* from the Philippines as well as in a new species from New Caledonia (Baba, unpublished)]
37. Sternite 4 with strongly produced anterolateral process reaching level of anterior end of sternite 3 *U. acostalis* Baba, 1988
– Sternite 4 with anterolateral angle not reaching anterior end of sternite 3 38
38. Sternite 4 tuberculate on ventral surface 39
– Sternite 4 smooth on ventral surface other than feebly tuberculate transverse ridge 40
39. Carapace sparsely tuberculate on dorsal surface, with distinct ridge along posterior part of lateral margin *U. comptus* Baba, 198
– Carapace nearly smooth except for irregular tubercles behind ocular peduncles, without ridge along posterior part of lateral margin
..... *U. empheres* Ahyong & Poore, 2004
40. Sternite 3 posteriorly delimited by weakly convex depression
..... *U. politus* (Henderson, 1885)
– Sternite 3 posteriorly delimited by strongly convex depression 41
41. Carapace lateral margin with irregular tubercles. Antennal scale reaching end of antennal article 5
..... *U. litosus* Ahyong & Poore, 2004
– Carapace lateral margin smooth. Antennal scale falling short of end of antennal article 5
..... 42
42. Anterolateral angle of carapace somewhat posterior to level of lateral orbital angle
..... *U. nitidus* (A. Milne Edwards, 1880)
– Anterolateral angle of carapace directly lateral to level of lateral orbital angle 43
43. Anterolateral angle of carapace not sharp spiniform but angular. Sternite 4 without prominent process at anterolateral corner
..... *U. similis* Baba, 1977
– Anterolateral angle of carapace with distinct spine. Sternite 4 with distinct process on anterolateral corner (confirmed by examination of ov. ♀, ZSIC 9328/9)
..... *U. indicus* Alcock, 1901
44. Carapace unarmed on dorsal surface 45
– Carapace armed with spines on dorsal surface 79
45. Carapace lateral margin with at most 1–2 spines or processes other than anterolateral spine 46

- Carapace lateral margin with more than 3 distinct spines other than anterolateral spine 59
- 46. Carapace with only 1 spine or process at midlength of lateral margin 47
 - Carapace with 1–2 spines on anterior part of branchial region 48
- 47. Carapace with prominent midlateral spine, anterolateral spine strongly produced. Antennal flagellum slightly more than half length of rostrum *U. raymondi* Baba, 2000
 - Carapace with midlateral process not spiniform, anterolateral corner angular, not produced. Antennal flagellum twice length of rostrum *U. valdiviae* Balss, 1913
- 48. P2–4 dactyli with row of inclined, slender spines very close to one another *U. alius* n. sp.
 - P2–4 dactyli with row of somewhat inclined, sharp triangular spines moderately or rather widely interspaced one another 49
- 49. Carapace covered with granulate short ridges. P2–4 propodi expanded on distal portion of flexor margin *U. brachydactylus* Tirmizi, 1964
 - Carapace smooth on dorsal surface. P2–4 propodi not expanded on flexor margin 50
- 50. Rostrum very short, far falling short of end of ocular peduncle *U. simiae* Kensley, 1977
 - Rostrum slightly or largely overreaching or slightly falling short of end of ocular peduncle 51
- 51. Rostrum broad triangular (at least about as long as broad) 52
 - Rostrum narrow triangular (distinctly longer than broad) 56
- 52. Sternite 3 without pair of submedian spines on anterior margin 53
 - Sternite 3 with pair of submedian spines on anterior margin 54
- 53. Carapace with tubercles behind each ocular peduncle. P1 smooth on dorsal and ventral surface *U. mauritius* n. sp.
 - Carapace without tubercles behind each ocular peduncle. P1 with tubercles at least on ventral surface of merus, carpus and palm *U. alcocki* Ah Yong & Poore, 2004
- 54. P1 granular at least on ventral surface of merus, carpus and palm; merus narrowed distally and proximally, representing shape of bowling pin. Posterior lobe of telson relatively long, about as long as broad *U. yokoyai* Ah Yong & Poore, 2004
 - P1 nearly smooth except for squamous granules on ventral proximal part of merus; merus not narrowed distally, lateral and mesial margins subparallel on distal half. Posterior lobe of telson at most half as long as broad. 55
- 55. Telson distinctly emarginate on posterior margin *U. cavirostris* Alcock & Anderson, 1899
 - Telson semicircular or slightly convex on posterior margin ... *U. latirostris* Yokoya, 1933
- 56. P2–4 propodi with pair of terminal spines only on ventral margin *U. joloensis* van Dam, 1939
 - P2–4 propodi with row of spines on ventral margin 57
- 57. Anterior margin of sternite 3 shallowly concave with V-shaped median notch, no submedian spines. Cornea less than 1/5 length of remaining eyestalk. Antennal article 4 with strong distal spine *U. novaezealandiae* Borradaile, 1916
 - Anterior margin of sternite 3 deeply concave with pair of submedian spines. Cornea at most slightly less than half length of remaining eyestalk. Antennal article 4 unarmed 58
- 58. Postorbital carapace length subequal to width of carapace. Submedian spines of anterior margin of sternite 3 separated by U-shaped notch. Mxp 3 merus unarmed *U. sibogae* van Dam, 1933
 - Postorbital carapace length distinctly smaller than width of carapace. Submedian spines of anterior margin of sternite 3 nearly contiguous at base. Mxp 3 merus with distolateral spine *U. flindersi* Ah Yong & Poore, 2004
- 59. Carapace very granulose on whole dorsal surface *U. naso* van Dam, 1933
 - Carapace smooth or at most feebly granulose on anterior half of dorsal surface 60
- 60. P2–4 propodi with marked projection on flexor distal margin 61
 - P2–4 propodi without marked projection on flexor margin 63
- 61. P2–4 meri unarmed on dorsal crest 62
 - P2–4 meri armed with spines at least on proximal portion of dorsal crest *U. hamatus* Khodkina, 1981
- 62. Sternite 3 without median notch on anterior margin. Sternite 4 not serrate on lateral margin.

- P1 fingers directed anterolaterad (confirmed by examination of holotype, ZMA De. 101.666)..... *U. xipholepis* van Dam, 1933
- Sternite 3 with V-shaped median notch on anterior margin. Sternite 4 serrate on lateral margin. P1 fingers directed straight forward *U. subsolanus* Ah Yong & Poore, 2004
63. P2–4 dactyli having penultimate spine extremely broader than (more than 3 times as broad as) ultimate 64
- P2–4 dactyli having penultimate spine smaller or somewhat larger than, or subequal to ultimate spine 74
64. P2–4 dactyli with loosely arranged flexor marginal spines 65
- P2–4 dactyli with closely arranged (nearly contiguous to one another) flexor marginal spines 71
65. Penultimate spine of P2–4 dactyli much broader than antepenultimate 66
- Penultimate spine of P2–4 dactyli nearly as large as or slightly larger than antepenultimate 67
66. Anterolateral spine of carapace closely lateral and posterior to lateral orbital spine. Second and fifth of carapace lateral marginal spines largest .. *U. longicheles* Ah Yong & Poore, 2004
- Anterolateral spine of carapace remote from lateral orbital spine, both placed at same level. Second and fifth carapace lateral marginal spines smaller than third *U. belos* Ah Yong & Poore, 2004
67. Carapace lateral margin with 2 small spines between anterolateral spine and spine at anterior end of branchial margin 68
- Carapace lateral margin without spine between anterolateral spine and spine at anterior end of branchial margin 70
68. Carapace lateral margin with 2 strong spines on anterior branchial region (no spine behind midlength) *U. zezuensis* Kim, 1972
- Carapace lateral margin with 4 spines on branchial region (2 spines behind midlength) 69
69. P2–4 dactyli with 8 somewhat inclined spines on flexor margin *U. inclinis* n. sp.
- P2–4 dactyli with 6 flexor marginal spines, distal third, fourth, fifth spines perpendicular to flexor margin *U. tridentatus* (Henderson, 1885)
70. Carapace with anterolateral (first) spine much stronger than other spines on lateral margin. Antennal scale overreaching antennal peduncle by length of antennal article 5 *U. crassior* Baba, 1990
- Carapace with anterolateral (first) spine subequal to or smaller than second. Antennal scale barely reaching end of antennal article 5 *U. convexus* Baba, 1988
71. P2–4 propodi having flexor margin with pair of terminal spines preceded by row of more than 5 spines *U. levicrustus* Baba, 1988
- P2–4 propodi having flexor margin with pair of terminal spines only or preceded by another 1 or 2 spines 72
72. P2–4 meri armed with spines on dorsal crest. Antennal peduncle having very small spine on each of distal 2 articles, antennal scale falling short of end of antennal peduncle *U. pronus* n. sp.
- P2–4 meri unarmed on dorsal crest. Antennal peduncle with strong spine on each of distal 2 articles, antennal scale fully reaching end of antennal peduncle 73
73. Rostrum with subterminal spine on each side. Lateral spines of carapace strong and acute on branchial region. Anterior margin of sternite 3 with median notch separating submedian spines *U. crassipes* van Dam, 1939
- Rostrum unarmed on lateral margin. Lateral spines of carapace posteriorly diminishing. Anterior margin of sternite 3 with widely V-shaped, without median notch and submedian spines *U. occultispinatus* Baba, 1988
74. Anterior margin of sternite 3 widely V-shaped, without median notch 75
- Anterior margin of sternite 3 convex with median notch with or without submedian spines 76
75. P2–4 dactyli with sharp, strong, somewhat inclined spines on flexor margin *U. foulisii* Kensley, 1977
- P2–4 dactyli with small spines nearly perpendicular to flexor margin *U. crosnieri* Baba, 1990
76. P2–4 propodi ending in a single spine on flexor margin (confirmed by examination of holotype, BMNH 1966.2.3.19) *U. murrayi* Tirmizi, 1964
- P2–4 propodi ending in pair of terminal spines on flexor margin 77

77. P2–4 propodi with row of spines; ultimate one of flexor marginal spines on dactylus smaller than penultimate
..... *U. multispinosus* Ahyong & Poore, 2004
– P2–4 propodi with pair of terminal spines only or preceded by 1 or 2 additional spines; distal 2 spines of flexor marginal spines on dactylus distinctly larger than remainder (ultimate somewhat smaller) 78
78. P2–4 dactyli having 2 distal spines preceded by 6 inclined, slender spines on flexor margin. Article 5 of antennal peduncle 3.5 times as long as broad, with strong distal spine; antennal scale reaching end of article 5
..... *U. wolffi* n. sp.
– P2–4 dactyli having 2 distal spines preceded by 3 inclined slender spines. Article 5 of antennal peduncle 2.5 times as long as broad, unarmed; antennal scale barely reaching end of article 5 *U. altus* n. sp.
79. P2–4 dactyli truncate distally
..... *U. scandens* Benedict, 1902
– P2–4 dactyli tapering distally 80
80. Carapace with dorsal spines distributed on entire surface 81
– Carapace with dorsal spines restricted to anterior part of carapace 86
81. P1 palm with rows of spines continued from merus and carpus 82
– P1 palm smooth 85
82. Abdominal segments unarmed
..... *U. spinimanus* Tirmizi, 1964
– Abdominal segment armed with spines 83
83. Excavated anterior margin of sternite 3 without median notch. P2–4 propodi strongly expanded on flexor distal margin
..... *U. chacei* (Baba, 1986)
– Excavated anterior margin of sternite 3 with median notch separating small submedian spines. P2–4 propodi not strongly expanded on flexor distal margin 84
84. Rostrum with 2 prominent lateral spines on each side. Antennal scale slightly overreaching end of antennal article 4. P2–4 dactyli more than half length of propodi
..... *U. spinirostris* Ahyong & Poore, 2004
– Rostrum with several small lateral spines on each side. Antennal acicle slightly falling short of end of article 5. P2–4 dactyli about 1/3 length of propodi
..... *U. ciliatus* (van Dam, 1933)
85. P2–4 with spines on dorsal crests of merus and carpus. Antennal scale overreaching end of antennal peduncle
..... *U. sexspinosus* Balss, 1913
– P2–4 unarmed on merus and carpus. Antennal scale terminating in end of antennal peduncle
..... *U. fusimanus* Alcock & Anderson, 1899
86. P2–4 dactyli with row of flexor marginal spines gradually increasing in size toward apex 87
– P2–4 dactyli with penultimate flexor marginal spine prominent, preceded by inclined, slender spines 94
87. P2–4 propodi with rounded projection on flexor distal margin 88
– P2–4 propodi without rounded projection on flexor distal margin 90
88. Carapace lateral spine directly behind indistinct cervical groove successively followed by row of distinct spines
..... *U. zeidleri* Ahyong & Poore, 2004
– Carapace lateral spine directly behind indistinct cervical groove rather distantly separated from posterior branchial marginal spines apparently diminishing posteriorly ... 89
89. Anterior margin of sternite 3 deeply concave, representing broad V-shape. Antennal peduncle with distal spine on each of articles 4–5 *U. insignis* (Henderson, 1885)
– Anterior margin of sternite 3 deeply concave with U-shaped median notch. Antennal peduncle unarmed on articles 4–5
..... *U. ensirostris* Parisi, 1917 [Differences between *U. ensirostris* Parisi, 1917 and *U. insignis* Henderson, 1885) are very slight. The only difference between the two that can be led by previous descriptions and illustrations (Henderson, 1885, 1888; Parisi, 1917; Froglija, 1987) is the relative length of the antennal flagellum: it extends far forward as the end of P1 carpus in *U. insignis* (see Henderson, 1888: pl. 21, fig. 1), whereas it slightly overreaches the end of P1 merus in *U. ensirostris* (see Parisi, 1917: fig. 1). Two specimens (1 ♂ 18.0 mm, 1 ♀ 8.9 mm, MNHN) at hand from the Crozet Islands referable to *U. insignis* bear 16-segmented flagella that overreach the end of but not the midlength of the P1 carpus].
90. P2–4 propodi with single, unpaired terminal spine *U. nigricapillis* Alcock, 1901

- P2–4 propodi with pair of terminal spines 91
- 91. Carapace with convexly divergent lateral margins. P2–4 armed with spines on dorsal crest of merus
..... *U. triangularis* Miyake & Baba, 1967
- Carapace with subparallel or convex lateral margins. P2–4 unarmed on merus 92
- 92. Anterior margin of sternite 3 with pair of submedian spines .. *U. longiocularis* Baba, 1990
- Anterior margin of sternite 3 without submedian spines 93
- 93. Antennal scale reaching end of antennal article 5. P1 merus and carpus dorsally with sharp distal spines. P2–4 dactyli with spines nearly perpendicular to flexor margin
..... *U. magnispinatus* Baba, 1977
- Antennal scale terminating in midlength of antennal article 5. P1 merus and carpus lacking distal spines. P2–4 dactyli with spines obliquely inclined along flexor margin
..... *U. calcar* Ah Yong & Poore, 2004
- 94. Anterior margin of sternite 3 without submedian spines 95
- Anterior margin of sternite 3 with pair of submedian spines separated by notch 96
- 95. Anterior margin of sternite 3 deeply concave representing broad V-shape. Mxp 3 merus and carpus unarmed. Epigastric row of small spines *U. dentatus* Balss, 1913
- Anterior margin of sternite 3 deeply concave, with U-shaped median notch. Field of spines on anterior gastric region
..... *U. cardus* Ah Yong & Poore, 2004
- 96. Sternite 4 produced into prominent spine on anterolateral corner. Flexor marginal spines of P2–4 dactyli closely arranged 97
- Sternite 4 with small spine(s) on anterolateral corner. Flexor marginal spines of P2–4 dactyli loosely arranged 98
- 97. Antennal scale terminating in end of antennal peduncle. P2 merus with row of spines on mesioventral margin
..... *U. nanophyes* MacArdle, 1901
- Antennal scale distinctly overreaching end of antennal peduncle. P2 merus without row of spines on mesioventral margin
..... *U. longior* n. sp.
- 98. Carapace lacking spine between anterolateral spine and anterior-most of branchial marginal spines. P2–4 propodi with pair of terminal spines preceded by at most 1 spine. Antennal

- scale falling short of end of antennal peduncle
..... *U. japonicus* Ortmann, 1892
- Carapace with 2 spines between anterolateral spine and anterior-most of branchial marginal spines. P2–4 propodi with pair of terminal spines preceded by 3 spines. Antennal scale overreaching end of antennal peduncle
..... *U. undecimspinosus* Kensley, 1977

Key to species from the eastern Pacific including southern part of South America

1. Carapace lateral margin with anterolateral spine, smooth elsewhere
..... *U. nitidus* (A. Milne Edwards, 1880)
- Carapace lateral margin with row of spines .. 2
2. P2–4 subchelate on dactylus and distal part of propodus *U. bellus* Faxon, 1893
- P2–4 not subchelate 3
3. Transverse row of spines on anterior gastric region *U. pubescens* Faxon, 1893
- No transverse row of spines on anterior gastric region 4
4. P2–4 having dactyli each with broad penultimate flexor marginal spine preceded by inclined spines close to one another, ultimate subequal to antepenultimate
..... *U. granulatus* Benedict, 1902
- P2–4 dactyli each with 6–8 stout spines, ultimate smaller than penultimate (confirmed by examination of syntypes, BMNH 1888:33)
..... *U. parvulus* (Henderson, 1885)

Uroptychus albatrossae Baba, 1988
See *Uroptychodes albatrossae* (Baba, 1988).

***Uroptychus alcocki* Ah Yong & Poore, 2004**

Uroptychus alcocki Ah Yong & Poore, 2004a: 15, fig. 2 (New South Wales, Queensland, and Tasman Sea, 137–419 m; type locality: SE of Ballina, New South Wales, 29°02'S, 153°48'E, 137 m [holotype, ♀, AM P31412]). — Baba, this paper (Formosa Channel and Japan, 64–192 m).

***Uroptychus acostalis* Baba, 1988**

Uroptychus acostalis Baba, 1988: 20, fig. 7 (Makassar Strait, 732–1650 m; type locality: 10.6 miles NW of Mamuju Island, 2°28'15"S, 118°40'00"E, 1650 m [holotype, ♂, USNM 150312]); 1990: 932 (Madagascar, 580–810 m).

***Uroptychus alius* n. sp.**

Uroptychus alius Baba, this paper (type locality: Bay of Bengal, 19°42'N, 86°48'E, 1210–1240 m [holotype, ♂, ZMUC CRU-11484]).

***Uroptychus altus* n. sp.**

Uroptychus altus Baba, this paper (type locality: Kei Islands, 5°30'S, 132°35'E, 325 m [holotype, ♂, ZMUC CRU-11446]).

[*Uroptychus amabilis* Baba, 1979]

Uroptychus amabilis Baba, 1979a: 522, figs. 1, 2 (off Noumea, New Caledonia, 30 m [holotype, ♂, RMNH Crust. D. 31506]).

***Uroptychus australis* (Henderson, 1885)**

Diptychus australis Henderson, 1885: 420 (type localities: off Port Jackson, N of the Kermadec Islands, off Banda Island, 410–600 fm (750–1098 m) [syntypes, BMNH 1888:33; the type material includes 3 different species (Baba, unpublished)]).

Uroptychus australis: Henderson, 1888: 179, pl. 21: figs. 4, 4a–4c (off Kermadec Islands, Port Jackson, and off Banda, 360–600 fm (659–1098 m)). — Thomson, 1899: 197 (list). — Ahyong & Poore, 2004a: 18, fig. 3 (New South Wales, Victoria and Tasmania, between 458–476 m and 951–1150 m). [The material from “Challenger” St. 164 (Port Jackson) and part of the material from Station 194 (off Banda) agree well with the species account by Ahyong & Poore (2004a). The lectotype is now assigned to the male from “Challenger” St. 164].

***Uroptychus babai* Ahyong & Poore, 2004**

Uroptychus granulatus: Baba, 1990: 923, fig. 9 (Madagascar, 880–920 m) (not *U. granulatus* Benedict, 1902).

Uroptychus babai Ahyong & Poore, 2004a: 22, fig. 4 (New South Wales, between 905–914 m and 1115–1152 m; type locality: E of Broken Bay, 33°31'–34°S, 152°02'–04'E, 905–914 m [holotype, ♂, AM P26782]).

***Uroptychus bacillimanus* Alcock & Anderson, 1899**

Uroptychus bacillimanus Alcock & Anderson, 1899a: 25 (type localities: off Travancore coast (Kerala, India) and off Sri Lanka, 320–430 fm (586–787 m) [syntypes, ZSIC 2340–2350/10]); 1899b: pl. 45, figs. 3, 3a (no record). — Alcock, 1901: 285 (off Travancore coast [Kerala] and off Sri Lanka, 296–

820 fm (531–1501 m)).

***Uroptychus bellus* Faxon, 1893**

Uroptychus bellus Faxon: 1893: 193 (type localities: “Albatross” St. 3354 [SW point of Azuero Peninsula, Panama, 07°09.45'N, 080°50.00'W, 322 fm (589 m)] [syntype, 1 ♀, USNM 29166]; “Albatross” St. 3355 [SW point of Azuero Peninsula, Panama, 07°12.20'N, 080°55.00'W] [syntype, 1 ♂, not located]); 1895: 102, pl. 26, figs. 2, 2a, 2b (off Mariato Point, Panama, 182–322 fm (333–589 m)).

***Uroptychus belos* Ahyong & Poore, 2004**

Uroptychus belos Ahyong & Poore, 2004a: 25, fig. 5 (type locality: Britannia Seamount, SE of Brisbane, Tasman Sea, 28°17.47'S, 158°37.89'E, 419 m [holotype, ♀, AM P65830]).

***Uroptychus benedicti* Baba, 1977**

See *Uroptychodes benedicti* (Baba, 1977).

***Uroptychus bicavus* Baba & de Saint Laurent, 1992**

Uroptychus bicavus Baba & de Saint Laurent, 1992: 323, fig. 1 (type locality: North Fiji Basin, 18°50'S, 173°29'W, active thermal vent, 2750 m [holotype, ♂, MNHN Ga 2350]).

***Uroptychus bispinatus* Baba, 1988**

Uroptychus bispinatus Baba, 1988: 25, fig. 9. (type locality: Moluccas between Halmahera and N Sulawesi, 2013 m [holotype, ♀, USNM 150311]).

***Uroptychus brachydactylus* Tirmizi, 1964**

Uroptychus brachydactylus Tirmizi, 1964: 399, fig. 19 (type locality: “John Murray” St. 42, South Arabian coast, 1415 m [holotype, ♂, BMNH 1966.2.3.20]).

***Uroptychus brevipes* Baba, 1990**

Uroptychus brevipes Baba, 1990: 932, fig. 4 (type locality: Madagascar, 22°15.7'S, 42°01.5'E, 750–810 m [holotype, ♂, MNHN Ga 1529]).

***Uroptychus brevirostris* van Dam, 1933**

Uroptychus brevirostris van Dam, 1933: 20, figs. 29–32 (type locality: Sulu Archipelago, 5°43.5'N, 119°40'E, 522 m [holotype, ♂, ZMA De. 101.694]). — van Dam, 1940: 96 (Java Sea, 6°15'S, 110°50'E, 41–52 m). — Baba, 1973: 117 (Yaeyama Group, Ryukyu Islands, Japan, depth

- unknown).
- Uroptychus brevisquamatus* Baba, 1988**
Uroptychus brevisquamatus Baba, 1988: 28, fig. 10. (type locality: off S Obi, 732 m [holotype, ov. ♀, USNM 150319]).
- Uroptychus brucei* Baba, 1986**
Uroptychus brucei Baba, 1986b: 1, figs. 1, 2 (NW Australia, 406–458 m; type locality: 17°59.4'S, 118°18.4'E, 406–416 m [holotype, ♂, NTM Cr. 000604]).
- Uroptychus calcar* Ah Yong & Poore, 2004**
Uroptychus calcar Ah Yong & Poore, 2004a: 28, fig. 6 (New South Wales and Victoria, between 202 m and 458–461 m; type locality: E of Sydney, 33°42'S, 151°52'E, 380–390 m [holotype, ♂, AM P65829]).
- Uroptychus caldus* Ah Yong & Poore, 2004**
Uroptychus caldus Ah Yong & Poore, 2004a: 31, fig. 7 (Tasmania, 987–1200 m; type locality: J1 Seamount, 82.5 km SSE of SE Cape, 44°14.4'S, 147°21.6'E, 1200 m [holotype, ♀, NMV J44744]).
- Uroptychus cavirostris* Alcock & Anderson, 1899**
Uroptychus cavirostris Alcock & Anderson, 1899a: 26 (type locality: off E coast of N Andaman Island, 13°16'N, 93°8'E, 75–60 fm (137–110 m). [type, ov. ♀, ZSIC 2672/10]); 1899b: pl. 44: fig. 3 (no record).
 Identity questionable:
Uroptychus cavirostris: van Dam, 1933: 22, figs. 33–34 (S of Kur Island, Kei Islands, 204 m). — Tirmizi, 1964: 408, figs. 34–39 (Maldives, 4229 m).
- Uroptychus chacei* (Baba, 1986)**
Gastroptychus chacei Baba, 1986a: 625, figs. 1, 2 (type locality: Andaman Sea off S Thailand, 7°08'N, 98°05.1'E, 267–283 m [holotype, ♂, USNM 231661]).
Uroptychus chacei: Baba, this paper (new combination).
- Uroptychus ciliatus* (van Dam, 1933)**
Chirostylus ciliatus van Dam, 1933: 12, figs. 17–19 (type locality: Kur Island, Kei Islands, 204 m [holotype, ♀, ZMA De. 101.696]).
Uroptychus ciliatus: Baba, this paper (Kei Islands,
- 233–290 m; new combination).
- Uroptychus comptus* Baba, 1988**
Uroptychus comptus Baba, 1988: 30, fig. 11 (type locality: off NE Borneo, 635 m [holotype, ♂, USNM 150458]).
- Uroptychus convexus* Baba, 1988**
Uroptychus convexus Baba, 1988: 32, fig. 12. (type locality: between Cebu and Bohol, 265 m [holotype, ♀, USNM 150320]).
- Uroptychus crassior* Baba, 1990**
Uroptychus crassior Baba, 1990: 935, fig. 5 (type locality: Madagascar, 15°19.0'S, 46°11.8'E, 405 m [holotype, ♀, MNHN Ga 1466]).
- Uroptychus crassipes* van Dam, 1939**
Uroptychus crassipes van Dam, 1939: 392, fig. 1 (type locality: Kei Islands, 5°29'S, 132°27'E, 290 m [holotype, ♂, ZMC]). — Baba, 1988: 35 (E coast of Mindoro, 518 m); this paper (Kei Islands, 290 m).
- Uroptychus crosnieri* Baba, 1990**
Uroptychus crosnieri Baba, 1990: 937, fig. 6 (type locality: Madagascar, 23°36.4'S, 43°31.3'E, 450–460 m [holotype, ♀, MNHN Ga 1468]).
- Uroptychus dentatus* Balss, 1913**
Uroptychus dentatus Balss, 1913a: 225 (type locality: E African coast, 1079 m [2 syntypes, ZMB 17485; 1 / syntype, MZS 349]). — Doflein & Balss, 1913, 137, fig. 5 (off E coast of Somali Republic, 1079 m). — Baba, 1990: 939, fig. 7 (Madagascar, 695–810 m).
- Uroptychus edisonicus* Baba & Williams, 1998**
Uroptychus edisonicus Baba & Williams, 1998: 145, figs. 1, 2 (type locality: Bismarck Archipelago, Papua New Guinea, 3°19.07'S, 152°34.92'E, active thermal vent, 1492 m [holotype, ov. ♀, USNM 251479]).
- Uroptychus edwardi* Kensley, 1981
 See under *Uroptychus scambus* Benedict, 1902
- Uroptychus empheres* Ah Yong & Poore, 2004**
Uroptychus empheres Ah Yong & Poore, 2004a: 34, fig. 8 (type locality: “Andys” Seamount, Tasmania,

44°10.8'S, 147°00.0'E, 800 m [holotype, ♂, NMV J52864]).

[*Uroptychus ensirostris* Parisi, 1917]

Uroptychus ensirostris Parisi, 1917: 4, fig. 1 (type locality: Sagami Bay, depth unknown [holotype, ♂, MCSNM 46]). — Froglija, 1987: 148, fig. 1 (Sagami Bay (redescription of type)). — Froglija & Grippa, 1986: 261 (list).

***Uroptychus flinders* Ah Yong & Poore, 2004**

Uroptychus flinders Ah Yong & Poore, 2004a: 37, fig. 9 (Tasmania and Western Australia, between 520 m and 620–714 m; type locality: 47 km W of Richardson Point, Tasmania, 41°14'S, 144°07'E, 520 m [holotype, ov. ♀, SAMA C6071]).

***Uroptychus foulisi* Kensley, 1977**

Uroptychus foulisi Kensley, 1977: 168, fig. 5 (type locality: off NE South Africa, 28°37.8'S, 32°38.4'E, 1000–1200 m [holotype, ♂, SAMC A15336]).

***Uroptychus fusimanus* Alcock & Anderson, 1899**

Uroptychus fusimanus Alcock & Anderson, 1899a: 26 (type locality: off Travancore coast (Kerala), 430 fm (787 m) [syntypes, ZSIC 2339–2345/10]); 1899b: pl. 44: fig. 4 (no record). — Alcock, 1901: 283 (off Travancore coast [Kerala], 430 fm (787 m)).

***Uroptychus glaber* Baba, 1981**

Uroptychus glaber Baba, 1981b: 123, figs. 8, 9 (type locality: off E coast of Hachijo-jima, Izu Islands, Japan, 33°10.0'N, 140°02.7'E, 470 m [holotype, ♂, NSMT-Cr. 6177]).

Uroptychus glyphodactylus MacGilchrist, 1905

See under *Uroptychus scambus* Benedict, 1902.

***Uroptychus gordonae* Tirmizi, 1964**

Uroptychus gordonae Tirmizi, 1964: 397, figs. 10–13 (type locality: “John Murray” St. 158, Maldives, 786–1170 m [holotype, ♂, BMNH 1966.2.3.17-18]).

***Uroptychus gracilimanus* (Henderson, 1885)**

Diptychus gracilimanus Henderson, 1885: 420 (type locality: off Port Jackson, 410 fm (750 m) [holotype, ov. ♀, BMNH 1888:33]).

Uroptychus gracilimanus: Henderson, 1888: 181, pl.

21: figs. 5, 5a, 5b (Port Jackson, 410 fm (750 m)).

— Parisi, 1917: 3 (Sagami Bay). — Tirmizi, 1964: 392, figs. 6–9 (Zanzibar, 421–457 m). — Baba, 1969c: 45, figs. 3, 4 (East China Sea, 570–740 m); 1988: 35 (Moluccas off W coast of Halmahera, 763–796 m); this paper (off Zamboanga, 458 m).

Not *Uroptychus gracilimanus*: Doflein & Balss, 1913: 134 (part) (one of the specimens from “Valdivia” St. 250 off S coast of Somali Republic, 1668 m, now in the collection of the Musée Zoologique, Strasbourg (1 ov. ♀, MZS 349) is referred to *U. remotispinatus* Baba & Tirmizi, 1979 (Baba, unpublished); one of the specimens from “Valdivia” St. 245 off S Somali Republic is identified with *U. vandamae* Baba, 1988 (see Baba, 1990); identity of the other specimens reported from “Valdivia” St. 191, 246, 252, 253 in the Mozambique Channel, off S Somali Republic, and off W coast of Sumatra, in 638–1019 m, remain questionable). — Baba, 1990: 941, figs. 8a, b (Madagascar, 695–1300 m (= new species, Baba (unpublished))). — Ah Yong & Poore, 2004a: 40, fig. 10 (New South Wales, Victoria and Tasmania, between 458–476 m and 1115–1152 m (= different species)).

***Uroptychus gracilimanus bidentatus* Doflein & Balss, 1913**

[because of brief description, the identity of this species remains questionable]

Uroptychus gracilimanus var. *bidentatus* Doflein & Balss, 1913: 135 (type localities: two different locations off E coast of Somali Republic, 1242–1289 m [1 syntype, ZMB 17483]).

Uroptychus grandirostris Yokoya, 1933

See *Uroptychodes grandirostris* (Yokoya, 1933).

***Uroptychus granulatus* Benedict, 1902**

Uroptychus granulatus Benedict, 1902: 293, fig. 37 (type locality: Galapagos Islands [between Santa Cruz and San Cristobal Islands, 00°29'00"S, 89°54'30"W], 392 fms (717 m) [3 syntypes, USNM 20567]). — Baba, 1988: fig. 16 (reexamination of type). — Wicksten, 1989: 315 (list).

Not *Uroptychus granulatus*: Baba, 1990: 943, fig. 9 (= *Uroptychus babai* Ah Yong & Poore, 2004).

***Uroptychus hamatus* Khodkina, 1981**

Uroptychus hamatus Khodkina in Zarenkov & Khodkina, 1981: 87, fig. 4 (type locality: Marcus-Necker Rise, 1700–2300 m [holotype, ♂, SUM

MA-2244]).

***Uroptychus hesperius* Ahyong & Poore, 2004**

Uroptychus hesperius Ahyong & Poore, 2004a: 44, fig. 11 (type locality: off Cape Arid, Western Australia, 34°03'S, 125°31'E, 1011–1020 m [holotype, ♀, SAMA C6083]).

***Uroptychus inclinis* n. sp.**

Uroptychus inclinis Baba, this paper (type locality: Kei Islands, 5°32'S, 132°36'E, 245 m [holotype, ♀, ZMUC CRU-11334]).

***Uroptychus indicus* Alcock, 1901**

Uroptychus australis var. *indicus* Alcock, 1901: 284 (type localities: Arabian Sea off Cape Comorin and Bay of Bengal off Sri Lanka, 459–805 fm (840–1473 m) [syntypes, ZSIC]).

Identity not yet settled:

Uroptychus australis indicus, Van Dam, 1937, 101 (Solor Strait, 86 m).

Uroptychus australis var. *indicus*, Van Dam, 1933, 18, figs. 24–27 (W of Donggala (Sulawesi), Kei Islands, S of Timor, and near Rotti Island, 560–918 m). — Miyake in Miyake & Nakazawa, 1947, 734, fig. 2122 (no record). — Tirmizi, 1964, 394 (Zanzibar, 914 m).

Uroptychus indicus: Miyake 1965: 633, fig. 1039.

***Uroptychus insignis* (Henderson, 1885)**

Diptychus insignis Henderson, 1885: 419 (type locality: off Prince Edward Island, southern Indian Ocean, 310 fm (567 m) [syntypes, BMNH 1888:33]).

Uroptychus insignis: Henderson, 1888: 175, pl. 21: figs. 1, 1a, 1c [maybe not 1b, 1d] (off Prince Edward Island, 310 fm (567 m)).

***Uroptychus japonicus* Ortmann, 1892**

Uroptychus japonicus Ortmann, 1892: 248, pl. 11: figs. 3, 3b, c, f, g, h, i, z. (type locality: Sagami Bay, 200 fm (366 m) [3 ♂, 2 ♀, syntypes (one of the three male syntypes is not present with this lot), MZS 348 (see below)]). — Baba, 2001: 147, fig. 1 (redescription of type [2 ♂, 1 ov. ♀, 1 ♀, MZS 348; ov. ♀ was designated as lectotype, the others as paralectotypes]).

***Uroptychus joloensis* van Dam, 1939**

Uroptychus joloensis van Dam, 1939: 395, figs. 2, 2a, 2b, 2c (type locality: Jolo Sea, 37.8–56.7 m

[holotype, ♂, ZMC]). — Baba, this paper (Kei Islands, 250–90 m).

Uroptychus kudayagi Miyake, 1961: 237, figs. 1, 2 (E Sagami Bay and W coast of Kyushu, 30–80 m (type locality: Kannonzuka-dashi, Amadaiba, E Sagami Bay, 70–80 m [holotype, ♂, BLIH 899]). — Miyake, 1982: 143, pl. 48, fig. 2 (Kushimoto, S Kii Peninsula).

Uroptychus kudayagi Miyake, 1961

See under *Uroptychus joloensis* van Dam, 1939.

***Uroptychus laperousazi* Ahyong & Poore, 2004**

Uroptychus laperousazi Ahyong & Poore, 2004a: 47, fig. 12 (Great Australian Bight, between 984–1015 m and 999–1110 m; type locality: S of Eucla, Great Australian Bight, 33°45'S, 129°17'E, 999–1110 m [holotype, ov. ♀, SAMA C6084]).

***Uroptychus latirostris* Yokoya, 1933**

Uroptychus latirostris Yokoya, 1933: 69, fig. 30 (type locality: near Ashizuri-zaki, Japan, 102 m [type no longer extent]). — Baba, 1973: 118, fig. 1 (Japan from Tosa Bay, Sagami Bay, Izu Islands, and Bonin Islands 100–200 m); this paper (Tosa Bay, Izu Islands, Sagami Bay, between 9–27 m and 200 m; designation of neotype: Ashizuri-zaki, Tosa Bay, Japan, 150 m [♂, ZLKU 12993]).

***Uroptychus latus* Ahyong & Poore, 2004**

Uroptychus latus Ahyong & Poore, 2004a: 49, fig. 13 (type locality: S of Point Hicks, Bass Strait, Victoria, 38°22.66'S, 149°18.41'E, 1073 m [holotype, ov. ♀, NMV J17059]).

***Uroptychus levicrustus* Baba, 1988**

Uroptychus levicrustus Baba, 1988: 36, fig. 13 (type locality: off S Obi, 1°54'00"S, 127°36'00"E, 602 m [holotype, ov. ♀, USNM 150309]).

***Uroptychus litosus* Ahyong & Poore, 2004**

Uroptychus litosus Ahyong & Poore, 2004a: 52, fig. 14 (Tasmania, between 800 m and 1050–1120 m; type locality: “Andys” Seamount, 65.5 km SSE of SE Cape, 44°10.8'S, 147°00.0'E, 800 m [holotype, ♂, NMV J52862]).

***Uroptychus longiocularis* Baba, 1990**

Uroptychus longiocularis Baba, 1990: 944, fig. 10 (Madagascar, 240–410 m; type locality: 12°42.4'S, 48°14.1'E, 375–380 m [holotype, ♂, MNHN Ga

1460]).

***Uroptychus longicheles* Ah Yong & Poore, 2004**

Uroptychus longicheles Ah Yong & Poore, 2004a: 55, fig. 15 (type locality: Gifford Guyot, Tasmania, 306 m [holotype, ov. ♀, AM P65826]).

***Uroptychus longior* n. sp.**

Uroptychus longior Baba, this paper (Kei Islands and Bali Sea, 240–385 m; type locality: Bali Sea, 7°29'S, 114°49'E, ca. 240 m [holotype, ♂, ZMUC CRU-11075]).

***Uroptychus longvae* Ah Yong & Poore, 2004**

Uroptychus longvae Ah Yong & Poore, 2004a: 58, fig. 16 (type locality: W of Cape Wiles, Great Australian Bight, 34°56'S, 133°20'E, 805–816 m [holotype, ov. ♀, SAMA C6064]).

***Uroptychus magnispinatus* Baba, 1977**

Uroptychus magnispinatus Baba, 1977c: 144, figs. 3, 4 (type locality: off Midway Island, 700–800 m [holotype, ov. ♀, NSMT-Cr. 4359]).

[*Uroptychus maori* Borradaile, 1916]

Uroptychus maori Borradaile, 1916: 92, fig. 6 (type locality: off Three Kings Islands, New Zealand, 183 m [holotype, ♂, BMNH 1917.1.29.116]).

***Uroptychus mauritius* n. sp.**

Uroptychus mauritius Baba, this paper (Mauritius: Tombeau bay and N of Port Louis, 238 m; type locality: N of Port Louis, Mauritius, ca. 238 m [holotype, ov. ♀, ZMUC CRU-11128]).

Uroptychus mortenseni van Dam, 1939

See *Uroptychodes mortenseni* (van Dam, 1939).

***Uroptychus multispinosus* Ah Yong & Poore, 2004**

Uroptychus multispinosus Ah Yong & Poore, 2004a: 60, fig. 17 (Queensland, 318–364 m; type locality: E of Southport, 27°55'–58'S, 153°55'E, 318 m [holotype, ♀, AM P31415]).

[*Uroptychus murrayi* Tirmizi, 1964]

Uroptychus murrayi Tirmizi, 1964: 397, figs. 14–18 (type locality: Indian Ocean (“John Murray” collection, station not known) [holotype, ♀, BMNH 1966.2.3.19]).

***Uroptychus nanophyes* MacArdle, 1901**

Uroptychus nanophyes MacArdle, 1901: 525 (type

locality: NE coast of Ceylon, “Investigator” St. 284 [7°55'N, 81°47'E], 506 fms (926 m) [type, ZSIC]).

— Alcock & McArdle, 1902: pl. 57: figs. 1, 1a (no record). — van Dam, 1940: 96, fig. 1 (Java Sea, 66 m). — Baba, 1981b: 117, fig. 5 (Izu Shoto, Japan, 440–510 m); this paper (Kei Islands, 54–300 m).

***Uroptychus naso* van Dam, 1933**

Uroptychus naso van Dam, 1933: 23, figs. 35–37 (type localities: Kur Island and Taam Island, Kei Islands, 204–304 m [2 ♂ syntypes (Siboga St. 253, 304 m), ZMA De. 101.692; 1 ♂ and 1 ♀ syntypes (Siboga St. 251, 204 m), ZMA De. 101.667]); 1939: 402 (Kei Islands and W coast of Kyushu, Japan, 153–363 m); 1940: 97 (Java Sea, 68–71 m). — Baba, 1969c: 42, figs. 1, 2 (East China Sea and Tosa Bay, Japan, 152–330 m); 1988: 39. (Moluccas off W coast of Halmahera, Sulu Archipelago, 240–439 m); this paper (Kei Islands and Japan, 245–268 m). — Wu *et al.*, 1997: 81, figs. 5, 12B (Taiwan).

***Uroptychus nigricapillis* Alcock, 1901**

Uroptychus nigricapillis Alcock, 1901: 283, pl. 3: fig. 3 (type locality: Andaman Sea, 669 fm (1224 m) [holotype, ♀, ZSIC 3443/10]). — Alcock & McArdle, 1902: pl. 56: fig. 3 (no record). — Laurie, 1926: 123 (Saya de Malha Bank, 145 fm (265 m)). — van Dam, 1933: 26 (W of Makassar, 450 m); 1940: 98, fig. 2 (Java Sea, 66 m). — Tirmizi, 1964: 390, figs. 4, 5 (South Arabian coast, Zanzibar, and Maldives, 914–1939 m). — Baba, 1981b: 116, fig. 4 (off SE Kyushu, Japan, 1125 m); 1988: 40 (Flores Sea off S Sulawesi, between Siquijor and Bohol, South China Sea off SW Luzon, 717–1266 m); 1990: 947 (Madagascar, 1200–2000 m); this paper (off Kenya, 1551 m).

***Uroptychus nitidus* (A. Milne Edwards, 1880)**

Diptychus nitidus A. Milne Edwards, 1880: 62 (part) (type localities: West Indies from NW of Cuba, Frederickstadt, Santa Cruz, St. Kitts, Guadeloupe, Dominique, Martinique, Ste. Lucie, St. Vincent, Cariacou, Grenada, and Barbados, 88–734 fm (161–1343 m) [syntypes, MCZ?]). — A. Milne Edwards & Bouvier, 1899: 87 (Azores, 1022 m).

Uroptychus nitidus occidentalis Faxon, 1893: 192 (type locality: “Albatross” St. 3384 [Gulf of Panama, 07°31.30'N, 079°14.00'W, 458 fm (838 m) [syntypes, 2 ♂, 2 ov. ♀, not located]); 1895: 101, pl. 26, figs. 1, 1a (Gulf of Panama, 458 fm (838 m)). — Balss, 1913b: 27 (Sagami Bay, 730 m). —

- Parisi, 1917: 3 (Sagami Bay). — Yokoya, 1933: 67 (Tosa Bay, Suruga Bay, Kurose Bank near Hachijo, E of Kagoshima, E of Ashizuri-zaki, W of Murotozaki, W of Tanabe, Kii Strait, near Shio-misaki, SE of Toba (Mie), S of Atsumi, S of Hamana Lake, 91–609 m). — Baba, 1973: 120, fig. 2, pl. 4: fig. 1 (Sagami Bay).
- Urotychus nitidus*: Alcock & Anderson, 1894: 173 (Laccadive Sea, 636 fm (1160 m)). — Henderson, 1888: 174, pl. 21: figs. 6, 2a (West Indies: off Sombrero Island and off Culebra Island, 390–450 fm (714–824 m)). — Anderson, 1896: 101 (*Investigator* St. 201, 320–296 fm (586–542 m)). — Caullery, 1896: 393, pl. 17, figs. 1, 2 (Golfe de Gascogne, 1710 m). — Bouvier, 1922: 49 (Cape Verde Islands, and Pres de Madere, 875–1968 m). — Barnard, 1950: 495, fig. 92, g–i (off Cove Rock (East London), 80 fm (146 m)). — Kensley, 1977: 167, fig. 4 (off NE South Africa, 560–1200 m).
- Diptychus nitidus* var. *concolor* A. Milne Edwards & Bouvier, 1900: 360, pl. 4, fig. 4, pl. 32, figs. 15–19 (Golfe de Gascogne, Les Pilones (25°39'N, 18°22'W), between cap Bojador and cap Blanc, off Spanish Sahara, N of banc d'Auguin (17°12'N, 19°27'W), Cape Verde Islands, de Faya a St. Michel, Morocco, 495–1480 m). — Hansen, 1908: 39 (SW of Iceland, 633 fm (1158 m)).
- Urotychus nitidus concolor*: Bouvier, 1922: 49 (NE of l'île Maio (15°15'N, 23°04'05W), SW of l'île Sal (16°34'N, 23°03'45W), vicinity of l'île S. Antao (16°55'N, 25°31'45W), off Bretagne (47°36'N, 7°38'W), and Azores, 628–1642 m). — Türkay, 1976: 30, figs. 6, 8, 10 (coast of Morocco, 1300 m).
- Urotychus nitidus* (typical form): Chace, 1942: 11, fig. 3 (N coast of Cuba, NW of Dry Tortugas (Fla.), off Cayo Lobos (Campeche), off St. Croix, off Guadeloupe, off Dominica, off Martinique, off St. Lucia, off St. Vincent, 88–734 fm). — Pequegnat & Pequegnat, 1970: 159, fig. 5–15 (NW and SW Gulf of Mexico, 425–720 fm (778–1318 m)).
- Urotychus nitidus* (variety A): Chace, 1942: 14, fig. 4 (N coast of Cuba, and E of St. Augustine, Fla., 360–500 fm). — Pequegnat & Pequegnat, 1970: 159, fig. 5–15 (NW and SW Gulf of Mexico, 425–720 fm (778–1318 m)).
- Urotychus nitidus* (variety B): Chace, 1942: 15, fig. 5 (N coast of Cuba, 250–400 fm).
- Urotychus nitidus* (variety C): Chace, 1942: 17, fig. 6 (N coast of Cuba, 145–240 fm).
- [*Urotychus novaezealandiae* Borradaile, 1916]**
Urotychus novaezealandiae Borradaile, 1916: 93, fig. 94 (type locality: off North Cape, New Zealand, 128 m [holotype, BMNH 1917.1.29.117]).
- Urotychus nowra* Ahyong & Poore, 2004
 Transferred to *Urotychodes* Baba, 2004.
- Urotychus occultispinatus* Baba, 1988**
Urotychus granulatus var. *japonicus* Balss, 1913b: 25, fig. 18 (type locality: Sagami Bay [syntypes, not located]). — Miyake in Miyake & Nakazawa, 1947: 735, fig. 2124 (no record).
- Urotychus granulatus japonicus*: Parisi, 1917: 3 (Tokyo Bay).
- Urotychus occultispinatus* Baba, 1988: 41, figs. 14, 15 (between Siquijor and Bohol, 807 m [new name proposed for *U. granulatus japonicus*]).
- Urotychus okutanii* Baba, 1981
 See *Urotychodes okutanii* (Baba, 1981).
- Urotychus onychodactylus* Tirmizi, 1964**
Urotychus onychodactylus Tirmizi, 1964: 411, figs. 40–42 (Maldives, 786–1463 m; type locality: “John Murray” St. 158, 786–1170 m [holotype, ov. ♀, BMNH 1966.2.3.41]).
- Urotychus paenultimus* n. sp.**
Urotychus paenultimus Baba, this paper (type locality: Kei Islands, 5°30'S, 132°35'E, 320 m [holotype, ov. ♀, ZMUC CRU-11318]).
- Urotychus paracrassior* Ahyong & Poore, 2004**
Urotychus paracrassior Ahyong & Poore, 2004a: 66, fig. 19 (Queensland, 364–380 m; type locality: NE of Tweed Heads, 28°02'–05'S, 153°57'E, 364 m [holotype, ov. ♀, AM P31408]).
- Urotychus parvulus* (Henderson, 1885)**
Diptychus parvulus Henderson, 1885: 420 (type locality: Straits of Magellan, 400 fm (732 m) [syntypes, BMNH 1888:33]).
- Urotychus parvulus*: Henderson, 1888: 177, pl. 21: figs. 3, 3a (Sarmiento Channel, Chile, 400 fm (732 m)). — Haig, 1955: 31 (no record).
- Urotychus patulus* Ahyong & Poore, 2004**
Urotychus patulus Ahyong & Poore, 2004a: 69, fig. 20 (Victoria and Tasmania, 970–1190 m [holotype

ov. ♀, NMV J21045]).

***Uroptychus pilosus* Baba, 1981**

Uroptychus pilosus Baba, 1981b: 126, figs. 10, 11 (Japan from Kumanonada off E coast of Kii Peninsula and off SE Kyushu, 1120–1160 m; type locality: Kumanonada off E coast of Kii Peninsula, 33°53.2'N, 136°51.2'E, 1120–1160 m [holotype, ♂, NSMT-Cr. 6172]); this paper (Makassar Strait, 1600 m). — Ahyong & Poore, 2004a: 71, fig. 21 (New South Wales, 987–1025 m).

***Uroptychus politus* (Henderson, 1885)**

Diptychus politus Henderson, 1885: 420 (type locality: N of Kermadec Islands, 600 fm (1098 m) [1 ♂, 1 ov. ♀ syntypes, BMNH 1888:33]).

Uroptychus politus: Henderson, 1888: 178, pl. 6: figs. 2, 2a, 2b (N of Kermadec Islands, 600 fm (1098 m)). — Thomson, 1899: 196 (list). — Baba, 1974: 387, fig. 5 (reexamination of holotype).

***Uroptychus pronus* n. sp.**

Uroptychus pronus Baba, this paper (type locality: Kei Islands, 5°47'20"S, 132°13'E, 300 m [holotype, ♂, ZMUC CRU-11317]).

***Uroptychus pubescens* Faxon, 1893**

Uroptychus pubescens Faxon, 1893: 192 (type localities: “Albatross” St. 3354 [SW point of Azuero Peninsula, Panama, 07°09.45'N, 080°50.00'W, 322 fm (589 m)] [syntypes, 3 ov. ♀, not located]; “Albatross” St. 3355 [SW point of Azuero Peninsula, Panama, 07°12.20'N, 080°55.00'W] [syntype, 1 ov. ♀, USNM 29173]); 1895: 101, pl. 26, figs. 3, 3a, 3b (off Mariato Point, Panama, 182–322 fm (333–589 m)).

***Uroptychus raymondi* Baba, 2000**

Uroptychus raymondi Baba, 2000: 250, fig. 3 (type locality: Off St. Helens, Tasmania, 645 m [holotype, ov. ♀, TM G3517]). — Ahyong & Poore, 2004a: 73, fig. 22 (Victoria and Tasmania, 644–650 m).

***Uroptychus remotispinatus* Baba & Tirmizi, 1979**

Uroptychus gracilimanus: Doflein & Balss, 1913: 134 (part) (1 ov. ♀ (MZS 349) from “Valdivia” St. 250 off S coast of Somali Republic, 1668 m) (not *U. gracilimanus* (Henderson, 1885)).

Uroptychus remotispinatus Baba & Tirmizi, 1979: 52, fig. 1, 2 (Japan, off Durban, and off Mozambique, 1320–1600 m; type locality: Bungo Strait between

Kyushu and Shikoku, Japan, 1320 m [holotype, ov. ♀, USNM 150318]). — Baba, 1990: 947 (Madagascar, 850–2000 m); this paper (Makassar Strait, 1600 m).

***Uroptychus sagamiae* n. sp.**

Uroptychus sagamiae Baba, this paper (type locality: Sagami Bay, Japan, 732 m [holotype, ♀, 521]).

***Uroptychus scambus* Benedict, 1902**

Uroptychus scambus Benedict, 1902: 297, fig. 41 (type locality: off Honshu, Japan, 337 fms (617 m) [Entr. Port Heda, N. 86d, E. 2 M] [holotype, ov. ♀, USNM 26165]). — Doflein & Balss, 1913: 134 (SW of Great Nicobar and W entrance of Sombrero Channel, 296–805 m). — van Dam, 1937: 100, fig. 1 (Solor Strait). — Baba, 1981b: 120 (Kumanonada and Izu-shoto, Japan, 1120–1830 m); 1988: 43 (Teluk Tomini (Sulawesi), S of Bungo Strait, SW of Omae Zaki, 741–1184 m); this paper (Makassar Strait, 2084 m).

Uroptychus glyphodactylus MacGilchrist, 1905: 249 (type locality: E of the Andamans, “Investigator” St. 331 [11°46'30"N, 93°16'E], 569 fm (1041 m) [2 syntypes, ZSIC]). — Alcock & MacGilchrist, 1905: pl. 70, fig. 4; pl. 71: figs. 1, 1a, 1b, 1c, 1d (no record).

Uroptychus edwardi Kensley, 1981a: 69, figs. 6, 7 (type locality: off between Durban and East London, 900 m [holotype, ov. ♀, SAF A16033]).

***Uroptychus scandens* Benedict, 1902**

Uroptychus scandens Benedict, 1902: 298, fig. 42 (type locality: off Honshu, Japan [Ose Zaki, S. 56d, W. 1.6 M], 68–65 fms (124–119 m) [holotype, ov. ♀, USNM 26166]). — Balss, 1913b: 27, fig. 20 (Sagami Bay, 150 m). — Yokoya, 1933: 68 (Japan (E of Boshu, Suruga Bay, and Bungo Strait), 110–393 m). — van Dam, 1933: 27, fig. 38 (S of Kur Island of the Kei Islands, 204 m). — van Dam, 1937: 102 (Banda Sea); 1940: 97 (Java Sea, 68–71 m). — Miyake, 1960: 97, pl. 48: fig. 7 (no record); 1965: 634, fig. 1040 (no record). — Miyake in Miyake & Nakazawa, 1947: 734, fig. 2123 (no record). — Miyake & Baba, 1967c: 227, fig. 2 (East China Sea, 145 m). — Baba, 1969c: 47 (East China Sea, 120 m); 1981b: 132 (off SW Kyushu, and Izu Shoto, Japan, 310–495 m); this paper (Kei Islands, off Zamboanga and Japan, between 137 m and 293–366 m). — Kim & Choe, 1976: 43, fig. 1 (Jeju Island, Korea). — Takeda, 1982: 50, fig. 148 (no

- record).
- Uroptychus setosidigitalis* Baba, 1977**
Uroptychus setosidigitalis Baba, 1977c: 148, figs. 5, 6 (type locality: off Midway Island, 700–800 m [holotype, ov. ♀, SNMT-Cr. 4357]).
- Uroptychus setosipes* Baba, 1981**
Uroptychus setosipes Baba, 1981b: 120, fig. 7 (S of Kyushu, Japan, 770–1010 m; type locality: E of Tokara-gunto, 29°24.5'N, 129°59.0'E, 1000–1010 m [holotype, ♂, NSMT-Cr. 6175]).
- Uroptychus sexspinosus* Balss, 1913**
Uroptychus sexspinosus Balss, 1913b: 27, fig. 21 (type locality: Okinose, Sagami Bay, Japan, 500 m [type, not located]).
- Uroptychus sibogae* van Dam, 1933**
Uroptychus sibogae van Dam, 1933: 28, figs. 39–41 (type locality: W of Manado, 1901 m [holotype, ♂, ZMA De. 101.665]). — Baba, 1981b: 119, fig. 6 (Izu Shoto, Japan, 430–495 m); 1988: 45. (Moluccas off W coast of Halmahera, 498 m); this paper (Kei Islands, Bali Sea and Japan, 183–345 m).
- Uroptychus simiae* Kensley, 1977**
Uroptychus simiae Kensley, 1977: 170, figs. 6–7 (off NE South Africa, 400–550 m; type locality: 27°44.4'S, 32°42.8'E, 400–450 m [holotype, ♂, SAMC A15341]). — Baba, this paper (off Durban, between 412 m and 445–460 m).
- Uroptychus similis* Baba, 1977**
Uroptychus similis Baba, 1977c: 150, figs. 7, 8 (type locality: off Midway Island, 700–800 m [holotype, ov. ♀, NSMT-Cr. 4355]).
- Uroptychus siraji* Tirmizi, 1964**
Uroptychus siraji Tirmizi, 1964: 413, fig. 43 (type locality: “John Murray” St. 159, Maldives, 914–1463 m [holotype, ov. ♀, BMNH 1966.2.3.41]).
- Uroptychus soyomaruuae* Baba, 1981**
Uroptychus soyomaruuae Baba, 1981b: 129, figs. 12, 13 (type locality: SE of Miyake-jima, Izu Islands, Japan, 33°55.1'N, 140°00.5'E, 860–870 m [holotype, ov. ♀, NSMT-Cr. 6178]); 1990: 948 (Madagascar, 925–975 m). — Zarenkov & Khodkina, 1981: 89, fig. 5 (Marcus-Necker Rise, 1360–2300 m).
- Uroptychus spinimanus* Tirmizi, 1964**
Uroptychus spinimanus Tirmizi, 1964: 405, figs. 28–33 (type locality: “John Murray” St. 54, South Arabian coast, 1046 m [syntypes, 2 ♂, 2 ♀, BMNH 1966.2.3.23-26]).
- Uroptychus spinimarginatus* (Henderson, 1885)
 [Originally *Diptychus spinimarginatus* Henderson, 1885]
 See *Uroptychodes spinimarginatus* (Henderson, 1885).
- Uroptychus spinirostris* (Ahyong & Poore, 2004)**
Gastroptychus spinirostris Ahyong & Poore, 2004a: 9, fig. 1 (type locality: NE of Tweed Heads, Queensland, 28°02–05'S, 153°57'E, 364 m [holotype, ♂, AM P31418]).
- Uroptychus spinulifer* van Dam, 1940
 See *Uroptychodes spinulifer* (van Dam, 1940).
- Uroptychus sternospinosus* Tirmizi, 1964**
Uroptychus sternospinosus Tirmizi, 1964: 403, figs. 20–27 (type locality: “John Murray” St. 159, Maldives, 914–1463 m [syntypes, 1 ♂, 1 ov. ♀, BMNH 1966.2.3.21-22]).
- Uroptychus subsolanus* Ahyong & Poore, 2004**
Uroptychus subsolanus Ahyong & Poore, 2004a: 75, fig. 23 (Victoria and South Australia, 999–1110 m; type locality: S of Point Hicks, Bass Strait, Victoria, 38°22.66'S, 149°18.41'E, 1073 m [holotype, ov. ♀, NMV J17067]).
- Uroptychus suluensis* van Dam, 1933**
Uroptychus suluensis van Dam, 1933: 29, figs. 42–44 (type locality: N of Sulu Islands, 275 m [syntypes, 1 ♂, 1 ♀, ZMA De. 101.693]).
- Uroptychus thermalis* Baba & de Saint Laurent, 1992**
Uroptychus thermalis Baba & de Saint Laurent, 1992: 324, fig. 2 (type locality: North Fiji Basin, 16°59.50'S, 173°55.47'W, hydrothermal vent, 2000 m [holotype, ♂, MNHN Ga 2351]). — Ahyong & Poore, 2004a: 77, fig. 24 (Queensland, 1497 m).
- Uroptychus tomentosus* Baba, 1974**
Uroptychus tomentosus Baba, 1974: 384, figs. 3, 4 (E coast of South Island, New Zealand, 116–382 m;

type locality: 45°14.3'S, 171°29.2'E, 116 m [holotype, ♂, ZLKU 15125]).

[*Uroptychus triangularis* Miyake & Baba, 1967]

Uroptychus triangularis Miyake & Baba, 1967a: 203, fig. 1 (type locality: near Muko-jima, Bonin Islands, depth unknown [holotype, ov. ♀, ZLKU 4883]).

***Uroptychus tridentatus* (Henderson, 1885)**

Diptychus tridentatus Henderson, 1885: 421 (type locality: East Indian Archipelago, 15 fm (27 m), depth record questioned by the author [holotype, ov. ♀, BMNH 1888:33]).

Uroptychus tridentatus: Henderson, 1888: 181, pl. 6: figs. 1, 1a (Ambon, 15 fm (27 m) [depth record questioned by author]). — van Dam, 1933: 30, figs. 45–46 (N of Sulu Islands, Taam Island (Kei Islands), 275–305 m). — van Dam, 1937: 99 (Solor Strait). — Baba, 1973: 117 (Japan: Yaeyama Group of the Ryukyus, off Hachijo-jima of Izu Shoto, and near Muko-jima of the Bonin Islands, 200 m); 1990: 948 (Madagascar, 250–255 m); this paper (New Caledonia and Norfolk Islands, 290–460 m; reexamination of holotype).

***Uroptychus undecimspinosus* Kensley, 1977**

Uroptychus undecimspinosus Kensley, 1977: 173, figs. 8, 9 (type locality: off NE South Africa, 360–420 m [holotype, ♂, SAMC A15315]).

***Uroptychus valdiviae* Balss, 1913**

Uroptychus valdiviae Balss, 1913a: 225 (type locality: Sombrero Canal, Nicobars, 805 m [syntypes: 1 ♂ and 1 ♀, ZMB 17484]). — Doflein & Balss, 1913: 136, fig. 4 (W entrance of Sombrero Channel, Nicobars, 805 m).

***Uroptychus vandamae* Baba, 1988**

Uroptychus gracilimanus: Doflein & Balss, 1913: 134 (part) (Zanzibar, 463 m) (not *U. gracilimanus* (Henderson, 1885)).

Uroptychus vandamae Baba, 1988: 49, fig. 21 (Moluccas off W coast of Halmahera, and Makassar Strait, 655–732 m; type locality: Moluccas off W coast of Halmahera, 0°21'30"N, 127°16'45"E, 655 m [holotype, ♂, USNM 150316]); 1990: 949, fig. 8c (Madagascar, 450–1200 m).

***Uroptychus wolffi* n. sp.**

Uroptychus wolffi Baba, this paper (Kei Islands, 5°28'S, 132°36'E, 385 m [holotype ♂, ZMUC

CRU-11518]).

***Uroptychus xipholepis* van Dam, 1933**

Uroptychus xipholepis van Dam, 1933: 32, figs. 47–50 (Banda Sea, 5°26.6'S, 127°36.5'E, 1595 m [holotype, ♂, ZMA De. 101.666]).

***Uroptychus yokoyai* Ah Yong & Poore, 2004**

Uroptychus yokoyai Ah Yong & Poore, 2004a: 79, fig. 25 (Tasman Sea, 295–306 m; type locality: Gifford Guyot, E of Brisbane, 26°44.27'S, 159°28.93'E, 306 m [holotype, ♂, AM P65827]).

***Uroptychus zeidleri* Ah Yong & Poore, 2004**

Uroptychus zeidleri Ah Yong & Poore, 2004a: 82, fig. 26 (type locality: W of Richardson Point, Tasmania, 41°15'S, 144°08'E, 520 m [holotype, ov. ♀, SAMA C6066]).

***Uroptychus zezuensis* Kim, 1972**

Uroptychus zezuensis Kim, 1972: 53, figs. 1, 2 (type locality: off Seogwipo, Jeju Island, 60 m [holotype, ov. ♀, SNU]). — Kim, 1973: 171, fig. 17, pl. 64: fig. 4a, 4b (off Seogwipo, Jeju Island). — Baba, this paper (Nagasaki, Japan and Philippines, between 188–192 m and 311 m).

Species not determined:

Uroptychus sp. Haig, 1974: 447 (Western Australia).

Family Galatheidae Dana, 1852

Genus *Agononida* Baba & de Saint Laurent, 1996

Agononida Baba & de Saint Laurent, 1996: 441 (gender feminine).

Type species: *Agononida incerta* Henderson, 1888.

Remarks: *Agononida squamosa* var. *prolixa* Alcock, 1894, previously known only from the eastern Indian Ocean, was shifted to a distinct species by Ah Yong & Poore (2004b).

Distribution: Now 25 species are known from the Indo-Pacific, all occurring in the western Pacific. Three of these also occur in the Indian Ocean, and another one in the Southern Ocean. Twenty-four species inhabit transitional depths, five of which go down to upper bathyal depths, and other three of which are known on the continental shelf. *Agononida fortiantennata* (Baba, 1988) is the only one to occur solely in depths below

700 m.

Key to species in the Indo-Pacific

1. Abdominal segment 4 lacking spine on posteriotransverse ridge 2
 - Abdominal segment 4 armed with spine on posterior transverse ridge 7
2. Two spines on posterior-most transverse ridge of carapace 3
 - No spine on posterior-most transverse ridge of carapace 5
3. Mxp 3 merus with distal spine on extensor margin. Distomesial spines of antennal articles 2–3 exceeding far beyond end of peduncle. One postcervical spine on each side *A. laurentae* (Macpherson, 1994)
 - Mxp 3 merus unarmed on extensor margin. Distomesial spines of antennal articles 2–3 terminating in end of peduncle. Two postcervical spines on each side 4
4. Frontal margin oblique. Sternal plastron with numerous striae *A. ocyrhoe* (Macpherson, 1994)
 - Frontal margin transverse. Sternal plastron with striae moderate in density *A. pilosimanus* (Baba, 1969)
5. Branchial region of carapace with 4 lateral marginal spines. Abdominal segment 2 armed with 4 spines on anterior transverse ridge *A. sabatesae* (Macpherson, 1994)
 - Branchial region of carapace with 3 lateral marginal spines. Abdominal segment 2 armed with 6 spines on anterior ridge 6
6. Sternite 3 with distinctly bilobate anterior margin. Distomesial spine of antennal article 1 distinctly overreaching end of peduncle *A. tenuipes* (Miyake & Baba, 1967)
 - Sternite 3 with weakly bilobate anterior margin. Distomesial spine of antennal article 1 barely reaching end of article 3 *A. sphecia* (Macpherson 1994)
7. Supraocular spines overreaching rostral tip *A. longispinata* (Baba, 1988)
 - Supraocular spines falling short of rostral tip. 8
8. Article 1 of antennal peduncle with extremely long process extending far beyond end of article 4 at least by length of articles 2–4 combined 9
 - Article 1 of antennal peduncle with moderate-sized process, not overreaching article 4 17
9. Cardiac spines absent 10
 - Cardiac spine(s) present 11
10. Basal article of antennular peduncle with distomesial spine shorter than distolateral one. Carapace with a few secondary setae *A. andrewi* (Macpherson, 1994)
 - Basal article of antennular peduncle with distomesial spine longer than distolateral one. Carapace with numerous secondary setae *A. incerta* (Henderson, 1888)
11. Only one postcervical spine on each side. Distomesial spine of antennal article 2 distinctly overreaching end of article 4 *A. fortiantennata* (Baba, 1988)
 - Postcervical spine followed by 2 spines on each side. Distomesial spine of antennal article 2 reaching end of article 3 12
12. Gastric region without spine other than pair of epigastric spines ... *A. eminens* (Baba, 1988)
 - Gastric region with spines in addition to pair of epigastric spines 13
13. Mxp 3 merus unarmed on flexor distal margin. Posterior transverse ridge of carapace with 3–9 (usually 4) spines *A. variabilis* (Baba, 1988)
 - Mxp 3 merus with spine on flexor distal margin. Posterior transverse ridge of carapace with 0 or 1 spine 14
14. Branchial lateral margin with 3 spines *A. marini* (Macpherson, 1994)
 - Branchial lateral margin with 4 spines 15
15. Carapace without row of spines in midline, without spine on posterior ridge *A. emphereia* Macpherson, 1997
 - Carapace with row of spines in midline including spine on posterior ridge 16
16. Carapace with row of 4 spines in midline (1 mesogastric, 2 cardiac, 1 on posterior-most ridge). Distomesial spine of antennal article 2 reaching end of article 4 *A. callirrhoe* (Macpherson, 1994)
 - Carapace with row of 6 spines in midline (2 mesogastric, 3 cardiac and 1 on posterior-most ridge). Distomesial spine of antennal article 2 terminating in distal end of article 3, accompanying distinct spine directly proximal to it *A. alisae* Macpherson, 1999
17. Pair of protogastric spines behind pair of epigastric spines 18
 - No protogastric spines 19
18. P2–4 propodi 12–13 times as long as broad, dactyli with spinules on median 1/3 of flexor

- margin *A. soelae* (Baba, 1986)
- P2–4 propodi 18–19 times as long as broad, dactyli with spinules on distal 3/4 of flexor margin *A. procera* Ahyong & Poore, 2004
19. Branchial lateral margin with 3 spines *A. proluxa* (Alcock, 1894)
- Branchial lateral margin with 4 spines 20
20. Transverse row of small spines on cardiac region *A. normani* (Henderson, 1885)
- Prominent median spine on cardiac region.. 21
21. Distomesial margin of antennal article 1 with spine reaching end of article 4. P2–4 dactyli entire on flexor margin *A. spinicordata* (Henderson, 1885)
- Distomesial margin of antennal article 1 produced bluntly or with spine overreaching at most end of article 2, falling short of end of article 3. P2–4 dactyli with spinules on flexor margin 22
22. Sternites 4–6 smooth, without striae *A. garciai* Macpherson, 2004
- Sternites 4–6 with striae 23
23. Rostrum more slender than supraocular spines. Article 3 of antennal peduncle unarmed *A. similis* (Baba, 1988)
- Rostrum about as broad as supraocular spines. Article 3 of antennal peduncle with slender sharp spine on distomesial margin 24
24. Article 2 of antennal peduncle with distinct spine on distomesial margin *A. squamosa* (Henderson, 1885)
- Article 2 of antennal peduncle unarmed on distomesial margin *A. analoga* (Macpherson, 1993)

***Agononida alisae* Macpherson, 1999**

Agononida alisae Macpherson, 1999a: 410, fig. 1 (Vanuatu, between 385–410 m and 400–440 m; type locality: Vanuatu, 20°20'S, 16949'E, 400–440 m [holotype, ♂, MNHN Ga 4373]).

***Agononida analoga* (Macpherson, 1993)**

Munida squamosa: Baba, 1988: 133. (Philippines between Davao Gulf (Mindanao) and South China Sea off NW Luzon, 176–567 m) (not *A. squamosa* (Henderson, 1885).

Munida analoga Macpherson, 1993a: 424, fig. 1a–g (Philippines and Indonesia, 170–200 m and 415–510 m; type locality: Philippines, 12°05.6'N, 121°15.6'E, 219–220 m [holotype, ♂, MNHN Ga 2441]).

Agononida analoga: Baba & de Saint Laurent, 1996: 442. — Baba, this paper (Kei Islands, 263–300 m).

***Agononida andrewi* (Macpherson, 1994)**

Munida andrewi Macpherson, 1994: 445, fig. 5 (New Caledonia, 580–590 m and –745–825 m; type locality: 22°58.00' S, 167°20.00' E, 530 m [holotype, ♂, MNHN Ga 2934]).

Agononida andrewi: Baba & de Saint Laurent, 1996: 442.

***Agononida callirrhoe* (Macpherson, 1994)**

Munida callirrhoe Macpherson, 1994: 453, figs. 9, 91 (New Caledonia, Loyalty Islands, and Chesterfield Islands, between 330–335 m and 575 m; type locality: New Caledonia, 22°02.55'S, 167°05.68'E, 335 m [holotype, ov. ♀, MNHN Ga 2581]).

Agononida callirrhoe: Baba & de Saint Laurent, 1996: 442. — Macpherson, 2004: 238 (Fiji and Tonga, between 310–420 m and 483–509 m).

***Agononida eminens* (Baba, 1988)**

Munida eminens Baba, 1988: 95, fig. 35 (Palawan Passage, off SE Luzon, 564–686 m; type locality: off SE Luzon, 12°43'51"N, 124°58'50"E, 564 m [holotype, ♂, USNM 150339]); 1994: 11 (off Central Queensland, 958–964 m). — Macpherson, 1994: 466, fig. 72 (Philippines, Indonesia, New Caledonia, Loyalty Islands, and Chesterfield Islands, 675–970 m); 1996a: 392 (SW Pacific (Combe Bank, Tuscaroa Bank, Rotumah Bank), between 650–700 m and 786–800 m).

Agononida eminens: Baba & de Saint Laurent, 1996: 442. — Macpherson, 1997: 600 (Indonesia, 676–699 m); 1999a: 412 (Vanuatu, between 690–750 m and 919–1000 m); 2004: 239 (Fiji and Tonga, between 750–767 m and 824 m). — Ahyong & Poore, 2004b: 7 (Queensland, between 714–732 m and 1051 m).

***Agononida emphereia* Macpherson, 1997**

Agononida emphereia Macpherson, 1997: 599, fig. 1 (type locality: Indonesia, 5°14'S, 133°00'E, 688–694 m [holotype, ♂, MNHN Ga 3974]).

***Agononida fortiantennata* (Baba, 1988)**

Munida fortiantennata Baba, 1988: 101, fig. 37 (type locality: Moluccas off W coast of Halmahera, 763 m [holotype, ♀, USNM 150378]). — Macpherson, 1993a: 428 (SW of Luxon, Philippines, 750–925 m).

Agononida fortiantennata: Baba & de Saint Laurent,

- 1996: 442. — Macpherson, 1999a: 413, fig. 3a (Vanuatu, between 1014–1050 m and 1100–1191 m).
- Agononida garciai* Macpherson, 2004**
Agononida garciai Macpherson, 2004: 239, fig. 1 (Fiji, 353–390 m and 478–500 m; type locality: Fiji, 18°13.22'S, 178°34.45'W, 427–440 m [holotype, ♂, MNHN Ga 4556]).
- Agononida incerta* (Henderson, 1888)**
Munida incerta Henderson, 1888: 130, pl. 13: figs. 4, 4a (type locality: off Sibago Island (off Zamboanga), Philippines, 250 fm (458 m) [holotype, ♀, BMNH 1888:33]). — Yanagita, 1943: 15, figs. 1, 2 (off Miya, Aichi Prefecture, and Kumanonada. 360 m). — Tirmizi, 1966: 205, fig. 22 (Zanzibar, 421–658 m). — Miyake, 1982: 146, pl. 49, fig. 5 (Kumanonada (Japan), 200–300 m). — Baba in Baba *et al.*, 1986: 171, 290, fig. 121 (Okinawa Trough and Tosa Bay, 325–440 m). — Baba, 1988: 106 (Moluccas off W coast of Halmahera, Sulu Archipelago, off NE Borneo, off N Mindanao, and South China Sea off SW Luzon and off NW Luzon, 70–558 m); 1990: 963 (Madagascar, 394–700 m). — Tirmizi & Javed, 1993: 100, figs. 43, 44 (eastern Indian Ocean, depth, unknown). — Macpherson, 1994: 478, fig. 74 (Japan, Philippines, Kiribati, New Caledonia, Loyalty Islands, Chesterfield Islands, between 170–200 m and 700–720 m); 1996a: 394 (SW Pacific (Wallis Islands, Tuscaroa Bank, Waterwitch Bank, Field Bank, and Bayonnaise Bank), 105–600 m). — Wu *et al.*, 1997: 113, figs. 23, 26D, E (Taiwan, depths unknown).
- Agononida incerta*: Baba & de Saint Laurent, 1996: 442. — Macpherson, 1997: 600 (Indonesia, between 217–273 m and 390–502 m); 1999a: 413 (Vanuatu, between 281–288 m and 650–691 m); 2004: 241 (Fiji and Tonga, between 327–420 m and 650–701 m). — Ahyong & Poore, 2004b: 8 (New South Wales and Queensland; two forms are included but depth record for *A. incerta* s. s. is not indicated). — Baba, this paper (off Durban, Bali Sea, Kei Islands, and off Zamboanga, 200–458 m).
- Identity not yet fixed:
- Munida incerta*: Barnard, 1950: 492, fig. 92, a (Portuguese East Africa, 25°56'S, 32°52'E, 17 m).
- Not ?*Munida incerta*: Baba, 1994: 12 (off Central Queensland, 497–503 m (= different species, Baba (unpublished))). — Ahyong & Poore, 2004b: 8 (Queensland and New South Wales; depth record for this form is not indicated).
- Agononida insolita* Macpherson, 2004
 Transferred to *Torbenia* n. gen.
- Agononida laurentae* (Macpherson, 1994)**
Munida laurentae Macpherson, 1994: 483, figs. 25, 92 (New Caledonia, Loyalty Islands, Matthew & Hunter Islands, Chesterfield Islands, between 260 m and 570–610 m; type locality: New Caledonia, 24°54.96'S, 168°21.91'E, 500–580 m [holotype, ♂, MNHN Ga 2761]).
- Agononida laurentae*: Baba & de Saint Laurent, 1996: 442. — Macpherson, 1999a: 413 (Vanuatu, between 408–410 m and 475–480 m); 2004: 244 (Tonga, 570–573 m).
- Agononida longispinata* (Baba, 1988)**
Munida longispinata Baba, 1988: 114, figs. 43, 44 (off N Mindanao, E coast of Mindoro, vicinity of Marinduque off SW Luzon, and South China Sea off SW Luzon, 392–619 m; type locality: South China Sea off SW Luzon, 392 m [holotype, ♂, USNM 150361]). — Macpherson, 1993a: 431 (Philippines, between 214–246 m and 700–702 m).
- Agononida longispinata*: Baba & de Saint Laurent, 1996: 442.
- Agononida marini* (Macpherson, 1994)**
Munida marini Macpherson, 1994: 492, figs. 30, 77 (New Caledonia, Loyalty Islands, and Chesterfield Islands, 463–600 m; type locality: New Caledonia, 24°55.44'S, 168°21.55'E, 500 m [holotype, ov. ♀, MNHN Ga 2830]).
- Agononida marini*: Baba & de Saint Laurent, 1996: 442. — Ahyong & Poore, 2004b: 9 (Queensland, 467–548 m).
- Agononida normani* (Henderson, 1885)**
Munida Normani Henderson, 1885: 408 (type locality: S of Fiji Islands, 300 fm (549 m) [8 ♂, 3 ♀, syntypes, BMNH 88:33]).
- Munida normani* Henderson, 1888: 129, pl. 13: fig. 5 (off Matuku, Fiji Islands, 19°9'35"S, 179°41'50"E, 315 fm (576 m)). — Macpherson, 1994: 500 (New Caledonia, and examination of type material from Fiji Islands, 583–590 m); 1996a: 400, fig. 20 (SW Pacific (Waterwitch Bank, Tuscarora Bank, Field Bank, Bayonnaise Bank), between 320 m and 580–600 m).

- Agononida normani*: Baba & de Saint Laurent, 1996: 442. — Macpherson, 1999a: 414 (Vanuatu, 550–668 m); 2004: 244 (Tonga, 589–593 m).
- Agononida ocyrhoe* (Macpherson, 1994)**
Munida ocyrhoe Macpherson, 1994: 503, figs. 35, 79 (New Caledonia and Chesterfield Islands, 470–650 m; type locality: New Caledonia, 23°00.4'S, 167°21.8'E, 540 m [holotype, ov. ♀, MNHN Ga 2914]); 1996a: 402, fig. 21 (SW Pacific (Wallis Islands), 420–430 m).
- Agononida ocyrhoe*: Baba & de Saint Laurent, 1996: 442. — Macpherson, 1999a: 414 (Vanuatu, 480–544 m); 2004: 245 (Fiji, 423–500 m).
- Agononida pilosimanus* (Baba, 1969)**
Munida pilosimanus Baba, 1969a: 26, figs. 8, 9 (type locality: Tosa Bay, 250 m [holotype, ♂, ZLKU 7591]). — Baba in Baba *et al.*, 1986: 173, 291, fig. 123 (Kyushu-Palau Ridge and Okinawa Trough, 295–520 m). — Baba, 1988: 123 (Sulu Archipelago, 582 m); 1994: 13 (off Central Queensland, 490–512 m). — Wu *et al.*, 1997: 125, figs. 30, 35D (Taiwan).
- Munida* nr. *pilosimanus*: Poupin, 1996: 24, 25, fig. e (Society Islands, 430–500 m).
- Agononida pilosimanus*: Baba & de Saint Laurent, 1996: 442.
- Agononida procera* Ah Yong & Poore, 2004**
Agononida procera Ah Yong & Poore, 2004b: 10, fig. 1 (Queensland and New South Wales, 675–824 m; type locality: E of Broken Bay, New South Wales, 33°32'S, 152°03'E, 823 m [holotype, ♀, AM P25095]).
- ?*Munida* cf. *solae* [sic]: Poupin, 1996: 24, 25, fig. f (Austral Islands, 680 m) (not *A. solae* (Baba, 1986); see Ah Yong & Poore, 2004b: 13).
- Agononida prolixa* (Alcock, 1894)**
Munida squamosa var. *prolixa* Alcock, 1894: 322 (Andaman Sea, “Investigator” St. 115 [11°31'40"N, 92°46'6"E], 188–220 fms (344–403 m) [syntypes, ZSIC 6892–6893/9]). — Alcock & Anderson, 1894: 166 (Gulf of Mannar, 142–400 fms (260–732 m)). — Alcock & Anderson, 1895: pl. 13, fig. 3 (no record). — Alcock, 1901: 244 (Andaman Sea and Arabian Sea off Sri Lanka, 130–400 fm (238–732 m)). — Doflein & Balss, 1913: 142 (SW of Nicobar Island, 296–752 m). — Macpherson, 1993a: 425, fig. 1h, i (examination of type material); 1994: 537, fig. 96 (New Caledonia, Loyalty Islands, and Admiralty Islands, 278–575 m); 1996a: 406 (Wallis Islands, between 335–340 m and 430 m).
- Agononida prolixa*: Ah Yong & Poore, 2004b: 14 (Arabian Sea, 1232 m; “Investigator” St. 204).
- Agononida sabatesae* (Macpherson, 1994)**
Munida sabatesae Macpherson, 1994: 525, fig. 48 (New Caledonia and New Hebrides Islands, between 350 m and 500–610 m; type locality: New Caledonia, 18°35.8'S, 163°06.4'E, 575 m [holotype, ♂, MNHN Ga 3010]).
- Agononida sabatesae*: Baba & de Saint Laurent, 1996: 442. — Macpherson, 2004: 245 (Tonga, between 371–437 m and 436–442 m).
- Agononida similis* (Baba, 1988)**
Munida similis Baba, 1988: 129, figs. 49, 50 (off N Mindanao, between Cebu and Bohol, between Cebu and Leyte, and vicinity of Marinduque off SW Luzon, 291–494 m; type locality: between Cebu and Leyte, 10°40'15"N, 124°15'E, 291 m [holotype, ♀, USNM 150372]).
- Agononida similis*: Baba & de Saint Laurent, 1996: 442. — Macpherson, 1997: 602 (Indonesia, between 146–233 m and 413–436 m).
- Agononida soelae* (Baba, 1986)**
Munida sp. Baba in Baba *et al.*, 1986: 175, 292, fig. 126 (Kyushu-Palau Ridge, depth unknown).
- Munida soelae* Baba, 1986: 2, fig. 3 (SW Australia, 501–550 m; type locality: 18°52.2'S, 116°09.4'E, 501–502 m [holotype, ♀, NTM Cr. 000655]). — Macpherson, 1994: 530 (New Caledonia, 530–650 m). — Wu *et al.*, 1997: 129, figs. 32, 35F (Taiwan).
- Agononida soelae*: Baba & de Saint Laurent, 1996: 442. — Macpherson, 1997: 602 (Indonesia, between 576–605 m and 603–620 m); 2004: 245, Fiji, 450–620 m).
- Maybe not: *Munida* cf. *solae* [sic]: Poupin, 1996: 24, 25, fig. f (Austral Islands, 680 m) (?= *A. procera* Ah Yong & Poore, 2004).
- Agononida sphecia* (Macpherson 1994)**
Munida sphecia Macpherson, 1994: 531, figs. 50, 95 (New Caledonia, Loyalty Islands, and Chesterfield Islands, 59–520 m; type locality: New Caledonia, 22°51.3'S, 167°12.0'E, 405–430 m [holotype, ♂, MNHN Ga 3050]).
- Agononida sphecia*: Baba & de Saint Laurent, 1996: 442. — Macpherson, 2004: 246 (Fiji and Tonga,

310–420 m).

***Agononida spinicordata* (Henderson, 1885)**

Munida spinicordata Henderson, 1885: 413 (type locality: off the Fiji Islands, 210 fm (384 m) [holotype, ♂, BMNH 1888:33]); 1888: 146, pl. 15: figs. 3, 3a, 3b (off Kandavu, Fiji 210 fm (384 m)). — Macpherson, 1994: 534, fig. 52 (examination of holotype from Fiji Islands, 390 m).

Agononida spinicordata: Baba & de Saint Laurent, 1996: 442.

***Agononida squamosa* (Henderson, 1885)**

Munida squamosa Henderson, 1885: 409 (type locality: N of the Admiralty Islands, 150 fm (275 m) [syntypes, BMNH 1888:33]); 1888: 131. pl. 13: figs. 1, 1a, 1b (N of Papua, 150 fm (275 m)). — Macpherson, 1993a: 425, fig. 1h, i (examination of type material); 1994: 537, fig. 96 (New Caledonia, Loyalty Islands, and examination of type material, 278–580 m); 1996a: 406 (SW Pacific (Wallis Islands), between 335–340 m and 420–430 m). — Baba, 1994: 16 (off Central Queensland, 497–503 m). — Wu *et al.*, 1997: 131, figs. 33, 35G (Taiwan).

?*Munida squamosa*: Yanagita, 1943: 18, figs. 3, 4 (off Miya, Aichi Prefecture, Japan, 360 m).

Agononida squamosa: Baba & de Saint Laurent, 1996: 442. — Macpherson, 1997: 603 (Indonesia, between 210–268 m and 336–346 m); 1999a: 414, fig. 3b–c (Vanuatu, between 324–360 m and 480–544 m); 2004: 246 (Fiji and Tonga, between 350–365 m and 589–591 m). — Ahyong & Poore, 2004b: 13 (New South Wales, between 156 m and 421–503 m). — Baba, this paper (Bali, Kei Islands, Moro Gulf off W Mindanao, and New Caledonia, 200–549 m).

Not *Munida squamosa*: Baba, 1988: 133 (= *A. analoga* (Macpherson, 1993)).

[*Agononida tenuipes* (Miyake & Baba, 1967)]

Munida tenuipes Miyake & Baba, 1967a: 209, fig. 4 (type locality: off Heta, Suruga Bay, Japan, depth unknown, possibly from a depth below 200 m [holotype, ♂, ZLKU 7606]). — Wu *et al.*, 1997: 133, figs. 34, 35H (Taiwan).

Agononida tenuipes: Baba & de Saint Laurent, 1996: 442.

***Agononida variabilis* (Baba, 1988)**

Munida variabilis Baba, 1988: 134, figs. 51, 52. (off

N Mindanao, between Cebu and Leyte, E coast of Mindoro, and vicinity of Marinduque off SW Luzon, 514–924 m; type locality: SE of Tayabas Lt., off SW Luzon, 619 m [holotype, ov. ♀, USNM 150350]). — Macpherson, 1993: 441. (Philippines S and SW of Luzon, S of Mindoro and N of Panay, between 445–520 m and 760–820 m).

Agononida variabilis: Baba & de Saint Laurent, 1996: 442.

Genus *Alainius* Baba, 1991

Alainius Baba, 1991: 480 (gender: masculine).

Type species: *Alainius crosnieri* Baba, 1991, by monotypy.

***Alainius crosnieri* Baba, 1991**

Alainius crosnieri Baba, 1991b: 480, figs. 1, 2, 5 (Loyalty Islands, New Caledonia, 90–600 m; type locality: Loyalty Islands, 460 m [holotype, ♀, MNHN Ga 2037]).

Genus *Allomunida* Baba, 1988

Allomunida Baba, 1988: 54 (gender: feminine).

Type species: *Allomunida magnicheles* Baba, 1988, by monotypy.

***Allomunida magnicheles* Baba, 1988**

Allomunida magnicheles Baba, 1988: 55, figs. 22, 23 (Sulu Archipelago, Tanon Strait between Negros and Cebu, 22–472 m; type locality: Sulu Archipelago, 22 m [holotype, ♂, USNM 150328]).

Genus *Anoplonida* Baba & de Saint Laurent, 1996

Anoplonida Baba & de Saint Laurent, 1996: 442 (gender: feminine).

Type species: *Bathymunida inermis* Baba, 1994.

Remarks: Two species are known from the western Pacific. *Anoplonida cracentis* Baba & de Saint Laurent, 1996, is from deeper part of the continental shelf and will very possibly be found in transitional depths.

Key to species (from Baba & de Saint Laurent, 1996)

1. Carapace lateral margin without distinct spine on branchial region. Abdominal segment 4 unarmed

- ... *A. cracentis* Baba & de Saint Laurent, 1996
 — Carapace lateral margin with a few distinct spines on branchial region. Abdominal segment 4 with at least 2 distinct spine
 *A. inermis* (Baba, 1994)

[*Anoplionida cracentis* Baba & de Saint Laurent, 1996]

Anoplionida cracentis Baba & de Saint Laurent, 1996: 443, figs. 5a–c, 6 (Philippines, 189–195 m; type locality: NE of Lubang Island, Philippines, 189 m [holotype, ♂, MNHN Ga 3561]).

***Anoplionida inermis* (Baba, 1994)**

Bathymunida inermis Baba, 1994: 1, fig. 1 (type locality: off Central Queensland, 17°21.77'S, 146°48.52'E, 296–303 m [holotype, ov. ♀, QMW 19702]).

Anoplionida inermis: Baba & de Saint Laurent, 1996: 446, fig. 3a–c (New Caledonia, between 394–397 m and 500–600 m).

Genus *Bathymunida* Balss, 1914

Bathymunida Balss, 1914: 5 (gender: feminine).

Type species: *Bathymunida polae* Balss, 1914, by monotypy.

Distribution: The genus now contains 13 species, all occurring in the western Pacific. One of these is also known in the Indian Ocean. Four of these are truly deep-sea species, occurring solely in transitional depths below 200 m. Nine species are known from the continental shelf, three of which further go down to transitional depths.

Key to species (after Baba & de Saint Laurent (1996))

1. Rostral and supraocular spines separated by oblique margins
 ... *B. nebulosa* Baba & de Saint Laurent, 1996
- Rostral and supraocular spines separated by concave or straight transverse margins 2
2. Supraocular spines extending far beyond rostral spine 3
- Supraocular spines shorter, slightly longer than, or subequal to rostral spine 8
3. Rostral spine papilla-like or obsolescent
 *B. frontis* Baba & de Saint Laurent, 1996
- Rostral spine small but distinct 4
4. Rostrum with elevated ridge in midline

- ... *B. dissimilis* Baba & de Saint Laurent, 1996
- Rostrum without distinct ridge in midline 5
5. Mxp 3 merus gently narrowed distally
 *B. longipes* Van Dam, 1938
- Mxp 3 merus rather truncate 6
6. P2–4 dactyli without spine-like seta on flexor margin *B. balssi* Van Dam, 1938
- P2–4 dactyli with 1–2 spine-like setae on flexor margin 7
7. Ocular peduncles with tubercles along distal end proximal to cornea
 *B. ocellaris* Baba & de Saint Laurent, 1996
- Ocular peduncles without tubercles
 *B. brevirostris* (Yokoya, 1933)
8. Rostral spine of small or moderate-size, about as large as, or only slightly larger than, supraocular spines 9
- Rostral spine much longer than supraocular spines 12
9. Branchial region with clear transverse ridges
 *B. polae* Balss, 1914
- Branchial region with tubercles or scale-like ridges 10
10. Carapace with tubercles and elevated scale-like ridges; lateral marginal spines on branchial region sharp and prominent. Rostral and supraocular spines of moderate size
 *B. rudis* Baba & de Saint Laurent, 1996
- Carapace with scale-like granulated ridges, lateral marginal spines on branchial region relatively small. Rostral and supraocular spines small 11
11. Anterolateral spine of carapace divergent anteriorly. Male P5 with fine setae on distal portion of propodus
 *B. eurybregma* Baba & de Saint Laurent, 1996
- Anterolateral spine of carapace directed straight forward. Male P5 with ribbon-like setae on distal portion of propodus
 *B. recta* Baba & de Saint Laurent, 1996
12. Anterior margin of rostrum straight between rostral and supraocular spines. Carapace with scale-like ridges
 *B. quadratiostrata* Melin, 1939
- Anterior margin of rostrum concave between rostral and supraocular spines. Carapace with distinct transverse ridges
 *B. sibogae* Van Dam, 1938

[*Bathymunida balssi* van Dam, 1838]

Bathymunida balssi van Dam, 1938: 199, fig. 4 (type

- locality: Ceram Sea, 2°28.5'S, 131°3.3'E, 118 m [3 ♂ syntypes, ZMA De. 102.130]). — Baba & de Saint Laurent, 1996: 449, fig. 7 (reexamination of type material, and New Caledonia, 110–195 m).
- [*Bathymunida brevis* (Yokoya, 1933)]**
Munida brevis Yokoya, 1933: 64, fig. 28 (type locality: N of Goto Island, Japan, 106 m [type no longer extant]).
Bathymunida brevis: Baba, 1970: 59, figs. 1, 2 (E coast of Tsushima Island, Japan, 105 m). — Baba & de Saint Laurent, 1996: 450, fig. 8 (no record).
- [*Bathymunida dissimilis* Baba & de Saint Laurent, 1996]**
Bathymunida dissimilis Baba & de Saint Laurent, 1996: 451, fig. 9 (type locality: Futuna Island, 100–110 m [holotype, ♂, MNHN Ga 3576]).
- Bathymunida eurybregma* Baba & de Saint Laurent, 1996**
Bathymunida eurybregma Baba & de Saint Laurent, 1996: 453, figs. 2g–h, 10 (Chesterfield Islands and Loyalty Islands, 270–382 m; type locality: Loyalty Islands, 20°47.19'S, 167°05.65'E, 380 m [holotype, ♂, MNHN Ga 3569]).
- [*Bathymunida frontis* Baba & de Saint Laurent, 1996]**
Bathymunida frontis Baba & de Saint Laurent, 1996: 455, fig. 11 (type locality: Kei Islands, Indonesia, 05°22'S, 133°01'E, 85–124 m [holotype, ♂, MNHN Ga 3574]).
- Bathymunida inermis* Baba, 1994
 See *Anoplionida inermis* (Baba, 1994)
- [*Bathymunida longipes* Van Dam, 1938]**
Bathymunida longipes Van Dam, 1938: 195, figs. 1, 2 (type locality: Bali Sea near Kangean Group, 100 m [holotype, ♂, ZMA De. 102.131]). — Baba, 1988: 58 (Sulu Archipelago, 140 m). — Baba & de Saint Laurent, 1996: 457 (Indonesia (reexamination of the type) and Philippines (reexamination of Baba (1988) material), 100–139 m).
- Bathymunida nebulosa* Baba & de Saint Laurent, 1996**
Bathymunida nebulosa Baba & de Saint Laurent, 1996: 457, fig. 2e, 13 (Chesterfield Islands, and Hunter-Matthew Islands, 300–610 m; type locality: Chesterfield Islands, 22°09.27'S, 159°24.42'E, 430–440 m [holotype, ♂, MNHN Ga 3578]).
- Bathymunida ocellaris* Baba & de Saint Laurent, 1996**
Bathymunida ocellaris Baba & de Saint Laurent, 1996: 460, fig. 14 (type locality: Loyalty Islands, 21°06.00'S, 167°26.20'E, 240 m [holotype, ♂, MNHN Ga 3581]).
- Bathymunida polae* Balss, 1914**
Bathymunida polae Balss, 1914: 138 (type locality: Red Sea, Pola sta. 143, 212 m [3 ♂ and 2 ♀ syntypes, NMW 7029]). — Balss, 1915: 5, figs. 2–5 (Red Sea, 212 m). — Lewinsohn, 1969: 132 (no record). — Baba, 1990: 950, fig. 11 (Madagascar, 150–255 m). — Baba & de Saint Laurent, 1995: 463, figs. 2a–d, 15, 16 (Red Sea, including reexamination of type material, La Réunion, and Madagascar, 76–212 m [designation of lectotype and paralectotypes, NMW 7029]). — Baba, this paper (Mauritius and Ambon (Indonesia), 128–238 m).
- Bathymunida quadratirostrata* Melin, 1939**
Bathymunida quadratirostrata Melin, 1939: 92, figs. 59–61 (type locality: Bonin Islands, 70–100 fm (128–183 m) [1 ♂ and 2 ♀ syntypes, SMNH Type No. 435a–q and 2296]).
Bathymunida quadratirostrata: Baba & de Saint Laurent, 1996: 464, figs. 17, 18 (Bonin Islands (type material) and Indonesia (Kei Islands), 105–305 m [ov. ♀, SMNH Type No. 2296, from NE of Ototo-jima, 105 m, was designated as lectotype]).
- Bathymunida recta* Baba & de Saint Laurent, 1996**
Bathymunida recta Baba & de Saint Laurent, 1996: 466, figs. 19, 32a, b (type locality: Futuna Island (SW Pacific), 14°14'S, 178°11'W, 280–370 m [holotype, ♂, MNHN Ga 3583]).
- [*Bathymunida rudis* Baba & de Saint Laurent, 1996]**
Bathymunida rudis Baba & de Saint Laurent, 1996: 469, fig. 20 (New Caledonia, 110–155 m; type locality: Norfolk Ridge, New Caledonia, 22°31.70'S, 167°32.40'E, 155 m [holotype, ♂, MNHN Ga 3585]).
- Bathymunida sibogae* van Dam, 1938**
Bathymunida sibogae van Dam, 1938: 197, figs. 2 (lower fig.), 3 (type locality: Ceram Sea, 2°28.5'S,

131°3.3'E, 118 m [syntypes, 1 ♂ and 1 ♀, ZMA De. 102,129]). — Baba & de Saint Laurent, 1996: 470, figs. 2f, 21, 22, 32c (Chesterfield Islands, New Caledonia, Indonesia (reexamination of type material), and Japan, 205–350 m [lectotype and paralectotype designated, ZMA De. 102,129]). — Baba, this paper (Kei Islands, 220 m).

Genus *Cervimunida* Benedict, 1902

Cervimunida Benedict, 1902: 249 (gender: feminine).

Type species: *Cervimunida princeps* Benedict, 1902, by monotypy.

Remarks: Two species are known; the other species, *C. johni* (Porter, 1903) from Chilean coast, is a shallow-water inhabitant (Haig, 1955); for biology of the species see Bahamonde *et al.* (1986).

***Cervimunida princeps* Benedict 1902**

Cervimunida princeps Benedict, 1902: 249, fig. 3 (type locality: off Honshu, Japan [Manazuru Zaki, N. 8d, W. 4.5 M], 153 fms (280 m)), [syntypes, USNM 25464]). — Balss, 1913b: 18, fig. 15, pl. 1: fig. 1 (Sagami Bay, 180 m). — Parisi, 1917: 2 (Sagami Bay). — Yokoya, 1933: 65 (off Inuboe-zaki, Tosa Bay, Sagami Bay, Bungo Strait, near Shimoda, E of Owase, off river-mouth of Tenryu, N of Sado, and off Yamagata Pref., 76–452 m). — Makarov, 1938: 100, fig. 37 (no record). — Miyake in Miyake & Nakazawa, 1947: 733, fig. 2120 (no record). — Miyake, 1960: 97, pl. 48: fig. 6 (no record); 1965: 635, fig. 1047 (no record); 1982: 149, pl. 50, fig. 4 (off Koshiki-jima, Kagoshima, Japan, 300–350 m). — Baba, 1969c: 50 (East China Sea, 285–430 m). — Takeda, 1982: 51, fig. 153 (no record). — Baba in Baba, *et al.*, 1986: 167, 288, fig. 118 (Tosa Bay, Japan, 170–400 m). — Baba, 1988: 59 (off N Luzon, 410 m). — Wu *et al.*, 1997: 85, figs. 7, 12D (Taiwan).

Munida sp. Nakazawa, 1927: 1036, fig. 1994 (Misaki, 100 m).

Genus *Corallioagalthea* Baba & Javed, 1974

Corallioagalthea Baba & Javed, 1974: 61 (gender: feminine).

Type species: *Galathea humilis* Nobili, 1905, by monotypy.

***Corallioagalthea humilis* (Nobili, 1905)**

Galathea humilis Nobili, 1905: 397 (type locality:

Djibouti, Gulf of Aden [type not located]). — Nobili, 1906: 124, pl. 8, fig. 4 (Red Sea). — Lewinsohn, 1969: 117, fig. 22 (Red Sea, 0–3 m). *Galathea tridentirostris* Miyake, 1953: 202, figs. 3, 4 (type locality: Ishigaki-jima, Ryukyu Islands, Japan, on shore (coral reef) [holotype, ♂, ZLKU 105, not found in ZLKU collection]).

Corallioagalthea humilis: Baba & Javed, 1974: 62, fig. 1 (Miyako-jima and Ishigaki-jima of the Ryukyu Islands and Tulear, Madagascar, subtidal). — Baba, 1977a: 250 (Biak I., New Guinea); 1982: 61 (Palau Islands, subtidal); 1990: 952 (list). — Tirmizi & Javed, 1993: 36, fig. 16 (Madagascar, 298 m).

Genus *Crosnierita* Macpherson, 1998

Crosnierita Macpherson, 1998: 352 (gender: feminine).

Type species: *Crosnierita dicata* Macpherson, 1998, by original designation.

Remarks: The genus is characterized by the deeply excavated front margin and the short merus of the Mxp 3, the features separating the genus from *Agononida* Baba & de Saint Laurent (1996). The small size of the antennal articles 3 and 4 that Macpherson (1998) included to characterize the genus does not seem to be clear in *Crosnierita dicata* Macpherson, 1998.

Distribution: The genus now contains four western Pacific species. All occur in transitional depths, one of which is also known from the continental shelf.

Key to species

1. Cardiac region with spine(s). Distal 2 articles of antennal peduncle relatively broad, width of article 3 at least 2/3 that of article 2 2
 - No spine on cardiac region. Distal 2 articles of antennal peduncle much slender, width of article 3 about half that of article 2 3
2. Cardiac region with spines on crest in midline *C. dicata* Macpherson
 - Cardiac region with median spine *C. tucanae* Macpherson, 2004
3. Gastric region with spine on metagastric region, in addition to pair of epigastric spines. P2–4 dactyli unarmed on distal half of flexor margin *C. urizae* (Macpherson, 1994)
 - Gastric region with no spine other than pair of epigastric spines. P2–4 dactyli with spines along entire length of flexor margin

..... *C. yante* (Macpherson, 1994)

***Crosnierita dicata* Macpherson, 1998**

Crosnierita dicata Macpherson, 1998: 353, fig. 1 (Loyalty Islands and Vanuatu, 283–440 m; type locality: Loyalty Islands, 20°41.65'S, 167°03.70'E, 283 m, [holotype, ♂, MNHN Ga 4241]); 2004: 247 (Fiji and Tonga, 281 m and 316–323 m).

***Crosnierita tucanae* Macpherson, 2004**

Crosnierita tucanae Macpherson, 2004: 247, fig. 3 (Fiji, between 80–120 m and 244–417 m; type locality: Fiji, 17°31.07'S, 178°38.79'E, 244–252 m [holotype, ♂, MNHN Ga 4558]).

***Crosnierita urizae* (Macpherson, 1994)**

Munida urizae Macpherson, 1994: 551, figs. 61, 88 (New Caledonia, Matthew and Hunter Islands, and Chesterfield Islands, between 230–300 m and 487–610 m; type locality: New Caledonia, 24°44.60'S, 168°09.30'E, 230–300 m [holotype, ♂, MNHN Ga 3170]).

Agononida urizae: Baba & de Saint Laurent, 1996, 442.

Crosnierita urizae: Macpherson, 1998: 353.

***Crosnierita yante* (Macpherson, 1994)**

Munida yante Macpherson, 1994: 555, figs. 62, 97 (type locality: New Caledonia (23°45.1'S, 168°17'E), 400 m [holotype, ♀, MNHN Ga 3555]).

Agononida yante: Baba & de Saint Laurent, 1996: 442 (list).

Crosnierita yante: Macpherson, 1998: 353. — Macpherson, 2000: 417 (Marquesas Islands, between 95–305 m and 416–460 m); 2004: Tonga, 440–487 m).

Genus *Enriquea* n. gen.

Enriquea Baba, this paper (gender: feminine).

Type species: *Munida leviantennata* Baba, 1988, by monotypy.

***Enriquea leviantennata* (Baba, 1988)**

Munida leviantennata Baba, 1988: 111, figs. 41, 42 (type locality: Moluccas off W coast of Halmahera, 485 m [holotype, ♀, USNM 150338]); 1994: 12, fig. 5 (off Central Queensland, 458–512 m). — Macpherson, 1994: 491 (Philippines, Indonesia, New Caledonia, and Chesterfield Islands, between 300–320 m and 560–660 m); 1996a: 395 (SW Pacific (Wallis Islands), between 455–515 m and

510–520 m); 1997: 608 (Kei Islands and Arafura Sea, between 336–346 m and 390–502 m); 1999a: 419 (Vanuatu, between 360–371 m and 1210–1250 m); 2004: 263 (Fiji and Tonga, 370–389 m and 567–699 m).

Enriquea leviantennata: Baba, this paper (Kei Islands and Moro Gulf off Zamboanga, 352–458 m).

Genus *Fennerogalatea* Baba, 1988

Fennerogalatea Baba, 1988: 60 (gender: feminine)

Type species: *Fennerogalatea chacei* Baba, 1988, by monotypy.

Remarks: The genus contains two species, one from the continental shelf in the western Pacific and the other from lower a bathyal depth in the Indian Ocean.

Key to species

1. Abdominal segments 2–4 each with prominent tuft of setae on median part of anterior transverse ridge *F. chacei* Baba, 1988
- Abdominal segments 2–4 without tuft of setae on anterior transverse ridge
..... *F. chirostyloides* Tirmizi & Javed, 1993

[*Fennerogalatea chacei* Baba, 1988]

Fennerogalatea chacei Baba, 1988: 60, figs. 24, 25 (off SW Luzon, 152–165 m; type locality: vicinity of Marinduque off SW Luzon, 152 m [holotype, ov. ♀, USNM 150324]).

[The Zoological Museum holds a specimen referable to this species: 1 ♂ (4.1 mm), “Dog” St. 1, Bali Sea, 7°34' S, 114°18' E, 100 m, sand, mud, trawl, 03 Apr 1929, Th Mortensen].

***Fennerogalatea chirostyloides* Tirmizi & Javed, 1993**

Fennerogalatea chirostyloides Tirmizi & Javed, 1993: 20, fig. 9 (type locality: Bay of Bengal, 17°55'N, 86°31'E, 2417 m [holotype, ♂, not located]).

Genus *Galathea* Fabricius, 1793

Galathea Fabricius, 1793: 47 (gender: feminine).

Type species: *Cancer strigosus* Linnaeus, 1761.

Distribution: Fifty-two species are known in the genus from the Indo-Pacific. The majority are usually inhabitants of shallow-waters, 19 species of which, however, go down to transitional depths or at most the

upper bathal zone. Seven species have been recorded from transitional depths only. *Galathea whiteleggii* Grant & McCulloch, 1906, a species common to shallow waters on the east coast of Australia, was recorded from the Indian Ocean in 2417 m (Tirmizi & Javed, 1993). This identification is questionable because of its depth record and the brief description. This species is not included in the key to species provided below.

Of the 19 species so far known to occur in depths below 200 m in the Indo-Pacific, one is solely from the eastern Pacific. Two (*G. dispersa* Bate, 1859 and *G. intermedia* Lilljeborg, 1851) are common shore species in the eastern Atlantic but rarely taken in transitional depths and even in bathyal depths. It seems that they extend their ranges to the southeast coast of Africa via South Africa where they are found on the shelf. Twelve species are known from the western Pacific, four of which are also recorded in the Indian Ocean. The other four are known solely from the Indian Ocean. Since there seems to be a geographical barrier for the known species between the eastern and western Pacific regions, a key to species is provided for the Indo-West Pacific species.

Key to deep-sea species from the Indo-West Pacific

- 1. Telson subdivision complete *G. bidens* Baba, 1988
- Telson subdivision incomplete 2
- 2. Epipods present on P1–3 3
- Epipods present only on P1 or absent from P1–4 4
- 3. Basal article of antennular peduncle with 3 strong terminal spines (distomesial, distolateral, and distodorsal) *G. subsquamata* Stimpson, 1858
- Basal article of antennular peduncle with 2 strong terminal spines (distomesial and distodorsal) *G. dispersa* Bate, 1859
- 4. Epipod on P1 only 5
- Epipod absent from P1 15
- 5. No spine on gastric region *G. multilineata* Balss, 1913
- Spines on gastric region 6
- 6. Rostrum with 2 long spines on lateral margin 7
- Rostrum with 4 or 5 teeth on lateral margin .. 8
- 7. Carapace dorsally with 2 epigastric, 4 protogastric, 2 postcervical spines only. Abdominal segments 2–4 with 2 transverse ridges. P2–4 spineless on lateral surface

- *G. quinquespinosa* (Balss, 1913)
- Carapace dorsally with numerous spines other than 2 epigastric, 4 protogastric and 2 postcervical spines. Abdominal segments 2–4 with 2 transverse ridges. P2–4 with spines on lateral surface of meri, carpi and propodi *G. lumaria* n. sp.
- 8. Rostrum with 5 teeth on lateral margin *G. tropis* n. sp.
- Rostrum with 4 teeth on lateral margin 9
- 9. Pterygostomial flap with spine on anterior surface *G. orientalis* Stimpson, 1858
- Pterygostomial flap without spine on surface 10
- 10. Mxp 3 merus extremely elongate, about 3 times as long as ischium when measured in lateral midline *G. intermedia* Lilljeborg, 1851
- Mxp 3 merus at most 1.5 times as long as ischium or little more shorter 11
- 11. Gastric region with pair of epigastric spines only 12
- Gastric region with extra spines other than pair of epigastric spines 13
- 12. Basal article of antennular peduncle with 2 strong terminal spines, distomesial spine rudimentary *G. hispida* n. sp.
- Basal article of antennular peduncle with 3 strong terminal spines *G. spinosorostris* Dana, 1852
- 13. Cardiac region with spines in transverse row. Ocular peduncles distally narrowed, with concave mesial margin proximal to cornea *G. robusta* Baba, 1990
- Cardiac region without spine. Ocular peduncles not narrowed distally, with lateral margin subparallel to mesial margin or slightly concave 14
- 14. Carapace strongly pubescent. Rostrum relatively broad triangular *G. pubescens* Stimpson, 1858
- Carapace hardly pubescent. Rostrum very narrow triangular *G. inconspicua* Henderson, 1885
- 15. No spine on gastric region 16
- Pair of anterior gastric spines 17
- 16. Carapace lacking transverse striae other than median one. Mxp 3 dactylus truncate *G. kuboii* Miyake & Baba, 1967
- Carapace with distinct transverse striae. Mxp 3 dactylus narrowed distally

- *G. rubromaculata* Miyake & Baba, 1967
17. Second transverse stria of carapace with spine near each hepatic region
 *G. balssi* Miyake & Baba, 1964
 – Second transverse stria of carapace without spines 18
18. Basal article of antennular peduncle with 3 well-developed terminal spines
 *G. anepipoda* Baba, 1990
 – Basal article of antennular peduncle with 2 well-developed terminal spines, distomesial spine reduced to small size
 *G. yamashitai* Miyake & Baba, 1967

Galathea algae Baba, 1969

See under *Galathea spinosorostris* Dana, 1852

***Galathea anepipoda* Baba, 1990**

Galathea anepipoda Baba, 1990: 953, fig. 12 (Madagascar, 85–150 m; type locality: 15°21.0'S, 16°12.5'E, 150 m [holotype, ♂, MNHN Ga 710]); this paper (Sagami Bay, Japan, 366–732 m).

Galathea balssi: Tirmizi & Javed, 1993: 47, fig. 21 (off Somali Republic, Mozambique Channel, and central part of Indian Ocean, between 47–49 m and 165 m) (not *Galathea balssi* Miyake & Baba, 1967).

Possibly *Galathea orientalis*: Tirmizi, 1966: 182, figs. 6–8 (Red Sea, South Arabian Sea, 29–100 m).

***Galathea balssi* Miyake & Baba, 1964**

Galathea australiensis: Balss, 1913b: 13, figs. 13 (Uraga Canal, Sagami Bay, and Nagasaki, 150 m) (not *G. australiensis* Stimpson, 1858).

Galathea balssi Miyake & Baba, 1964: 205, figs. 1, 2 (type locality: East China Sea, 27°01.2'N, 122°56'E, 120–122 m [holotype, ♂, ZLKU 8513]); 1967c: 228 (East China Sea, 84–130 m). — Haig, 1973: 278, fig. 2a–f (E of Rockhampton, Queensland, 17 fm (31 m)). — Baba, 1988: 69 (Sulu Archipelago, E of Masbate, and South China Sea off SW Luzon, 140–216 m).

Not *Galathea balssi*: Tirmizi & Javed, 1993: 47, fig. 21 (= *Galathea anepipoda* Baba, 1990).

***Galathea bidens* Baba, 1988**

Galathea bidens Baba, 1988: 71, figs. 28, 29 (type locality: between Cebu and Bohol, 265 m [holotype, ov. ♀, USNM 150326]).

***Galathea dispersa* Bate, 1859**

Galathea dispersa: Bate, 1859: 3 (type localities:

Plymouth and Moray Firth, Scotland [type not located]). — Bonnier, 1888a: 1688 (coast of France); 1888b: 124 (coast of France). — A. Milne Edwards & Bouvier, 1899: 72 (off Dartmouth and Azores, 5–63 m); 1900: 278, pl. 29, figs. 2, 3 (Marseille, N of Spain, Canary Islands, Madeira, and golfe de Cadix, 30–500 m). — Henderson, 1888: 119, pl. 12: figs. 6, 6a (off Tenerife, Canary Islands, 75 fm (137 m)). — Bouvier, 1922: 42 (Rade de Rorvig, en Norvege, Mouillage de Selsovik, a l'est des Orcades, pres de Monaco, devant le Cap 'Ail, Golfe de Gascogne, Parages de la Corse, Pres de Belle-Ile, l'ouest de Tarifa, 25–950 m). — Bull, 1937: 46, pl. 1: figs. 4–6, pl. 3: fig. 3, pl. 4: figs. 1, 4, pl. 5: figs. 5–8, pl. 6: figs. 2, 3, 6 (British Isles, 20–200 fm (37–370 m)). — Barnard, 1950: 486, fig. 91, f-h (False Bay and Agulhas Bank to Natal and Zululand, 13–62 fm (24–113 m)). — Nunes-Ruivo, 1961: 4 (Portuguese coast, 15–170 m). — Turkey, 1976: 28 (Portuguese coast, 150–170 m). — Tirmizi & Javed, 1993: 67, fig. 29 (western Indian Ocean between S. Mozambique and South Africa (24–29°S), 69–165 m). — d'Udekem d'Acoz, 1999: 161 (list).

***Galathea hispida* n. sp.**

Galathea hispida Baba, this paper (type locality: Kei Islands, 233 m [holotype, ♀, ZMUC CRU-11393]).

***Galathea intermedia* Lilljeborg, 1851**

Galathea intermedia Lilljeborg, 1851: 21 (type locality: Norway [type probably lost]). — Lovén, 1852: 21 (Sweden). — Barrois, 1888: 21, pl. 2, fig. 1 (Azores). — Bonnier, 1888a: 1687 (coast of France). — Bonnier, 1888b: 123 (coast of France). — Ortmann, 1892: 250, pl. 11: fig. 5a, 5i (Nice, Mediterranean). — A. Milne Edwards & Bouvier, 1899: 74 (Bay of Biscay, Azores and off Monaco, 10–240 m); 1900: 277 (Golfe de Gascogne, off Marseille, off Bonifacio (Corsica), Tenerife, Golfe de Cadix, Canary Islands, off Spanish Sahara, Saint Vincent, Cape Verde Islands, Azores, 9–318 m). — Appelloef, 1906: 138 (Alvaerstroemmen, Jondal (Hardangerfjord), 4–120 m). — Hansen, 1908: 30 (Thorshavn and N end of Naalso (both at the Faeroes), 100 fm (183 m)). — Selbie, 1914: 66, pl. 11: figs. 1–12 (Ireland, 8–50 fm (15–92 m)). — Balss, 1916: 40 (Senegal, 22 m). — Bouvier, 1922: 41 (Porto Conte and a l'est des Orcades, 88 m). — Barnard, 1950: 483, fig. 91, a-e (Simon's Bay, Agulhas Bank, Algoa Bay, and East London, 20–

42 fm (37–77 m)). — Holthuis, 1961: 36, fig. 11b (S coast of Turkey near Selimiye, 15–20 m). — Nunes-Ruivo, 1961: 6 (Portuguese coast, 20–100 m). — Zariquiey Alvarez, 1968: 279, figs. 97c, 98c,f,g, 99b, 100b (Iberian Peninsula: Portugal, Mediterranean). — Lewinsohn & Holthuis, 1986: 33 (Cyprus, 30–82 m). — Miyake & Baba, 1970: 62 (Cape Verde Islands, off French Guinea, off Sierra Leone, off Liberia, off Ivory Coast, off Gold Coast, off Gabon, off Angola, off Gambia, off Senegal, Ilha das Rolas, Gran Canaria, Canary Islands, 3.6–160 m). — Tirmizi & Javed, 1993: 69, fig. 30 (western Indian Ocean off South Africa, 68–70 m).

Galathea intermedia intermedia: d'Udekem d'Acoz, 1999: 161 (list).

***Galathea inconspicua* Henderson, 1885**

Galathea inconspicua Henderson, 1885: 408 (type locality: off Banda Island, 360 fm (659 m) [holotype, ♂, BMNH 1888:33]); 1888: 122, pl. 12: fig. 2 (off Banda Island, 4°31'0"S, 129°57'20"E, 360 fm (659 m)). — Baba, 1994: 4, fig. 2 (off Central Queensland, 296–303 m).

***Galathea kuboi* Miyake & Baba, 1967**

Galathea kuboi Miyake & Baba, 1967a: 205, fig. 2 (type locality: off Daiozaki, Pacific coast of Japanese mainland [holotype, ♂, ZLKU 13248]). — Baba, 1988: 75 (off N Mindanao and South China Sea off SW Luzon, 366–392 m); this paper (Kei Islands, 290 m).

***Galathea lumaria* n. sp.**

Galathea lumaria Baba, this paper (type locality: off Durban, 412 m [holotype, ov. ♀, ZMUC CRU-11527]).

***Galathea multilineata* Balss, 1913**

Galathea multilineata Balss, 1913: 9, figs. 6–8 (Sagami Bay, Japan, 120 m; type locality: Yagoshima [= Jogashima], Sagami Bay, 120 m [holotype, ♀, ZSM No 1161]). — Yokoya, 1933: 56 (W of Muroto-zaki, 210 m). — Miyake & Baba, 1967c: 231, fig. 4 (East China Sea, 196 m). — Baba, 1988: 76 (off E Mindanao, Sulu Archipelago, E coast of Mindoro, and South China Sea off SW Luzon, 198–393 m). — Wu *et al.*, 1997: 93, figs. 11, 12H (Taiwan).

***Galathea orientalis* Stimpson, 1858**

Galathea orientalis Stimpson, 1858: 252[90] (type

locality: Ly-i-moon Passage near Hong Kong, 25 fm (46 m) [type material no longer extant]; 1907: 231 (Ly-i-moon Passage, near Hong Kong, 25 fm (46 m)). — Miers, 1879: 51 (Korea Strait, 12–50 fm (22–92 m)). — Ortmann, 1892: 252, pl. 11: figs. 10, 10a, 10i (Kadsiyama [= Katsuyama], Sagami Bay, Maizuru, Tanagawa [= Kanagawa], Kagoshima, shallow-water to 50 fm (92 m)). — Doflein, 1902: 644 (Sagami Bay). — Nakazawa, 1927: 1035, fig. 1993 (Misaki, Japan, intertidal). — Melin, 1939: 63, figs. 36–38 (between Chichijima and Hahajima, and Chichijima, Bonin Islands, 35 fm (64 m)). — Nakazawa in Miyake & Nakazawa, 1947: 732, fig. 2115 (no record). — Utinomi, 1956: 63, pl. 32: fig. 5 (no record). — Miyake, 1960: 97, pl. 48: fig. 5 (no record); 1965: 634, fig. 1042 (no record); 1982: 145, with 1 fig., pl. 49, fig. 1 (S Kii Peninsula, 45 m). — Miyake & Baba, 1967c: 232, fig. 5 (East China Sea, Chejudo, 50–101 m). — Lewinsohn, 1969: 110 (no record). — Kim, 1973: 175, fig. 19, pl. 64: figs. 5a, 5b (Korea). — Takeda, 1982: 50, fig. 149 (no record). — Baba, 1989: 130 (Oshima Strait, Amami-oshima, 40–70 m); this paper (Japan and East China Sea and Hong Kong, shore–549 m).

Galathea longimana: Stimpson, 1907: 232 (China Sea, Oushima [Amami-Oshima], and Kagoshima Bay).

Galathea acanthomera Stimpson, 1858: 90 (type locality: Bonin Islands, 1 fm (1.8 m) [type lost]); 1907: 232 (Port Lloyd, Bonin Islands). — Balss, 1913b: 2, fig. 1 (Japan: Boshu, Misaki, Dsushi, Aziro near Misaki, Uraga Canal, Nagasaki, 20–200 m). — Yokoya, 1933: 55 (Japan: E of Omae-zaki, SW coast of Shikoku, W of Tanabe, S coast of Atsumi (Aichi Pref.), NE of Iki I., and coast of Tottori Pref., 18–154 m). — Miyake, 1938: 39, fig. 2 (Kii Peninsula, Japan, 100 m). — Makarov, 1938: 85 (no record).

Galathea coralliophilus: Wu *et al.*, 1997: 90, figs. 9, 42F (Taiwan) (not *G. coralliophilus* Baba & Oh, 1990).

Identity questioned:

Galathea orientalis: Haig, 1974: 447 (Western Australia).

Not *Galathea orientalis*: Tirmizi, 1966: 182, figs. 6–8 (possibly = *G. anepipoda* Baba, 1990).

***Galathea paucilineata* Benedict, 1902**

Galathea paucilineata Benedict, 1902: 249, fig. 2 (type locality: Galapagos Islands [00°29'00"S, 89°54'30"], 392 fms (717 m) [holotype, ♀, USNM

20552]).

***Galathea pubescens* Stimpson, 1858**

Galathea pubescens Stimpson, 1858: 90 (type localities: Hakodate and Amami-oshima, Japan, 25–33 fm (46–60 m) [type lost]); 1907: 233 (E coast of Amami-oshima and Hakodate, Hokkaido, 25–33 fm (46–60 m)). — Balss, 1913b: 11, figs. 11, 12 (Sagami Bay, 120–150 m). — Yokoya, 1933: 57 (W of Muroto-zaki, Japan, 234 m). — Makarov, 1938: 88, fig. 32, 33 (no record). — Miyake in Miyake & Nakazawa, 1947: 732, fig. 2116 (no record). — Miyake, 1965: 634, fig. 1043 (no record); 1982: 145, pl. 49, fig. 3 (S Kii Peninsula, 45 m). — Tirmizi, 1966: 187 (Zanzibar, 421–457 m). — Baba, 1969c: 48, fig. 5 (East China Sea, 120 m); 1988: 76 (off N Mindanao, between Cebu and Bohol, between Cebu and Leyte, E coast of Mindoro, and South China Sea off SW Luzon, 198–494 m); 1990: 956 (Madagascar, 150–350 m); this paper. (Japan, Bali Sea, Kei Islands, Arafura Sea and New Caledonia, 137–450 m). — Kim, 1973: 176, fig. 20, pl. 65: figs. 6a, 6b (Korea.). — Haig, 1974: 447 (Western Australia). — Tirmizi & Javed, 1993: 72, fig. 31 (Durban, South Africa, 138 m). — Baba, 1994: 4 (off Central Queensland, 296–303 m). — Wu *et al.*, 1997: 97, figs. 14, 21A (Taiwan).

***Galathea quinquespinosa* (Balss, 1913) n. comb.**

Munida quinquespinosa Balss, 1913a: 221 (type locality: Great Nicobar, 296 m [holotype, ♀, ZMB 17493]). — Doflein & Balss, 1913: 144, figs. 9–12, pl. 13: fig. 1 (SW of Great Nicobar, 296 m).
Galathea quinquespinosa: Baba, this paper (new combination; reexamination of holotype, see under the systematic account of *G. lumaria* n. sp.).

***Galathea robusta* Baba, 1990**

Galathea robusta Baba, 1990: 956, fig. 13 (type locality: Madagascar, 25°13.1'S, 47°17.8'E, 105–115 m [holotype, ♂, MNHN Ga 712]); this paper (Mauritius, 238 m).

***Galathea rubromaculata* Miyake & Baba, 1967**

Galathea rubromaculata Miyake & Baba, 1967c: 236, figs. 7, 8 (type locality: East China Sea, 32°24.8'N, 129°24.7'E, 173 m [holotype, ♂, ZLKU 8744]). — Baba, 1988: 77 (off N Mindanao, 333 m).

***Galathea spinosorostris* Dana, 1852**

Galathea spinoso-rostris Dana, 1852: 480 (type locality: Sandwich Islands (Hawaiian Islands) [type lost]); 1855: pl. 30, figs. 9a, 9b, 9c.

Galathea spinosirostris [sic]: Henderson, 1893: 431 (Muttuwar Par and Gulf of Martaban).

Galathea spinosorostris: Laurie, 1926: 124 (Providence, Seychelles, Amiante, Saya de Malha Bank, Cargados Carajos, Chagos, 13–81 m). — Tirmizi, 1966: 181, figs. 4B, 5 (Zanzibar, 73–165 m). — Lewinsohn, 1969: 110 (no record). — Baba, 1988: 78 (South China Sea off SW Luzon, off N Luzon, Waikiki Reef, and Honolulu, 22–410 m); 1990: 959 (Madagascar, 14–340 m). — Tirmizi & Javed, 1993: 59, fig. 26 (Andaman Sea and N Madagascar, between 1.5–3.0 m and 772 m). — Wu *et al.*, 1997: 9, figs. 15, 21B (Taiwan).

Galathea algae Baba, 1969a: 11, fig. 2 (type locality: Tosa Bay, 27 m [holotype, ♂, ZLKU 7046]); 1977a: 248 (Obi latoe, Ternate, and Seychelles, 0–4 m); 1979b: 646 (Gorong Island and Marsegu Island, Moluccas, subtidal); 1982b: 59 (Palau Islands and Yap Island, subtidal).

Galathea longimana: Lewinsohn, 1969: 107, fig. 20 (Red Sea, 0–3 m).

Identity questioned:

Galathea spinosorostris: de Man, 1888: 456 (Ambon). — Miers, 1884: 560 (Marie-Louise Island, Ile des Neufs, and Providence Island, 15–19 fm (27–35 m)). — Johnson, 1970: 6, fig. 1b (Singapore, low tide to 2 fm (3.6 m) (see Baba, 1988: 780)).

***Galathea tropis* n. sp.**

Galathea tropis Baba, this paper (type locality: Mauritius, 238 m [holotype, ♂, ZMUC CRU-11125]).

****Galathea whiteleggii* Grant & McCulloch, 1906**

Galathea whiteleggii Grant & McCulloch, 1906: 31 (off Wata Mooli, N.S.W. and Port Jackson, 54–59 fm (99–108 m; type locality: off Wata Mooli, N.S.W., 54–59 fm (99–108 m) [3 syntypes, AM G2394]). — Haig, 1973: 278, fig. 2g (off Dunwich, Moreton Bay Queensland, 4 fm (7.3 m)).

Galathea whiteleggeri: Tirmizi & Javed, 1993: 57, fig. 25 — Bay of Bengal; 2417 m. [This depth record is so unusual that either the identity of the material or the label note remains questionable; Haig (1973: 278) suggested that it is near *G. balssi* Miyake & Baba, 1964].

Not *Galathea whiteleggei*: Tirmizi, 1966: 186, fig. 9 — South Arabian Sea; 38 m [Haig (1974) questioned this identification and referred this to *G. balssi* with some hesitation. It seems most likely that it is identical with *G. albatrossae* Baba, 1988].

***Galathea yamashitai* Miyake & Baba, 1967**

Galathea yamashitai Miyake & Baba, 1967c: 239, figs. 9, 10 (East China Sea, 31°31.7'N, 127°27.4'E, 128 m [holotype, ♂, ZLKU 9661]). — Tirmizi & Javed, 1993: 43, fig. 19 (Gulf of Oman and Bay of Bengal, between 92–95 m and 241 m).

Genus *Heteronida* Baba & de Saint Laurent, 1996

Heteronida Baba & de Saint Laurent, 1996: 474 (gender: feminine).

Type species: *Bathymunida aspinirostris* Khodkina, 1981, by original designation.

Distribution: Two species are known from the western Pacific. Both are common in transitional depths but one of the them also occurs in upper bathyal depths.

Key to species (After Baba & de Saint Laurent, 1996)

1. Branchial region of carapace with distinct elevation. Rostrum with longitudinal ridge in midline *H. aspinirostris* (Khodkina, 1981)
- Branchial region of carapace without elevation. Rostrum without ridge in midline *H. barunae* Baba & de Saint Laurent, 1996

***Heteronida aspinirostris* (Khodkina, 1981)**

Bathymunida aspinirostris Khodkina, 1981: 1261, figs. 1–5 (type locality: Norfolk Islands Ridge, 29°46'S, 167°59'E, 510 m [holotype, ov. ♀, SUM MA-2241]).

Heteronida aspinirostris: Baba & de Saint Laurent, 1996: 475, figs. 3d–e, 23, 32d–f. (New Caledonia, Loyalty Islands, Isle of Pines, Norfolk Ridge, Chesterfield Islands, and Vanuatu, 345–930 m).

***Heteronida barunae* Baba & de Saint Laurent, 1996**

Heteronida barunae Baba & de Saint Laurent, 1996: 478, figs. 3f, 24 (type locality: Kei Islands, 5°18'S, 133°01'E, 205–212 m [holotype, ♂, MNHN Ga 3640]). — Baba, this paper (Kei Islands, 250 m).

Genus *Janetogalathea* Baba & Wicksten, 1997

Janetogalathea Baba & Wicksten, 1997: 38 (gender:

feminine).

Type species: *Galathea californiensis* Benedict, 1902, by monotypy.

***Janetogalathea californiensis* (Benedict, 1902)**

Galathea californiensis Benedict, 1902: 247, fig. 1 (type locality: Channel Islands off Los Angeles, 33°58'N, 119°30'45W, 150 fms (275 m) [syntypes, USNM 20551]). — Schmitt, 1921: 164, fig. 104 (between Monterey and Cer[sic?]ros (?= Cedros) Island, Baja California, 104–3993 m). — Luke, 1977: 30 (list; off La Jolla and San Diego, between 110–200 m and 230 m; from gorgonaceans and in stomach of rock cod). — Wicksten, 1982: 245 (between Pt. Conception and Anacapa Island, 165–500 m). — Wicksten, 1987: 50 (California and Gulf of California, 101–104 m); 1989: 315 (list).

Janetogalathea californiensis: Baba & Wicksten, 1997: 40, figs. 1, 2 (between Monterey and Channel Islands, Gulf of California, 89–1015 m) [designation of lectotype (ov. /), USNM 20551]).

Genus *Leiogalathea* Baba, 1969

Leiogalathea Baba, 1969a: 2 (gender: feminine).

Type species: *Galathea laevirostris* Balss, 1913, by monotypy.

***Leiogalathea laevirostris* (Balss, 1913)**

Galathea laevirostris Balss, 1913a: 221 (type locality: Sombrero Canal, 805 m [syntypes: 1 ♂, 1 ♀, ZMB 17488]). — Doflein & Balss, 1913: 140, fig. 7, pl. 12: fig. 1 (W entrance of Sombrero Channel, Nicobar Islands, 805 m). — Laurie, 1926: 135 (Amirante, 280 fm (502 m)).

Galathea imperialis Miyake & Baba, 1967b: 213, figs. 1, 2 (type locality: WSW of Jogashima, Sagami Bay, 160–230 m [holotype, ov. ♀, BLIH 205a]).

Leiogalathea imperialis: Baba, 1969a: 3 (Sagami Bay, 160–230 m).

Liogalathea [lapsus] *laevirostris*: Baba, 1990: 961 (Madagascar, 675–705 m).

Leiogalathea laevirostris: Baba, 1991b: 487 (New Caledonia, Hunter and Matthew Islands, Tuamotu Archipelago, 398–700 m). — Poupin, 1996: 20, 21 (fig. h) (Tuamotu Archipelago, 398 m). — Baba, this paper (Kei Islands, 245–385 m).

Genus *Munida* Leach, 1820

Munida Leach, 1820: 52 (gender: feminine).

Type species: *Pagurus rugosus* Fabricius, 1775, by monotypy. (Baba, 1994).

Remarks: Since the key to Indo-West Pacific species given by Baba (1988), keys to species were provided for *Munida japonica* and its relatives by Macpherson & Baba (1993), for species from New Caledonia and vicinity by Macpherson (1994), for the Indian Ocean species by Macpherson & de Saint Laurent (2002), for the eastern Pacific species by Hendrickx (2003), and for the Australian species by Ah Yong & Poore (2004b). The problematic species (see above under the systematic account of *Munida*) are excluded from the present key to species, as also is *Munida comorina* Alcock & Anderson, 1899 because of the brief description.

Distribution: Excluding the problematic species, 176 species are known from the Indo-Pacific. Fifteen of these (8.5%) are confined to the eastern Pacific, and 12 (6.8%) to the Southern Ocean (around New Zealand and southern Australia, and southern Indian Ocean including Crozet Islands and Prince Edwards Islands). The Indo-West Pacific region accommodates 152 species (86.4%), which number is more than twice that estimated by Baba (1988). One hundred and thirty-two of these are from the western Pacific, five of which also occur in the Indian Ocean. Twenty-one species (11.9%) occur solely in the Indian Ocean. Two species occur both in the Indian Ocean and Southern Ocean, including a species that further extends its range to the western Pacific.

Bathymetrically, 141 species (80%) are found in transitional depths, 25 of which go down to upper bathyal depths between 700 m and 1500 m (two of these further go deeper to lower bathyal depths around 1700 m), 37 of which are found on the continental shelf, and seven of which range between the shelf and upper bathyal zone. Eleven species (6.2%) have been taken in depths < 700 m, four of which are also from depths >1500 m; *Munida perlata* has the deepest record, 3292–1920 m (Luke, 1977) but this does not show that it exceeds 3000 m. Twenty-four species (13.6%) are known only from the continental shelf but it is not unlikely that they are found in depths >200 m by extensive surveys.

Munida magniantennulata Baba & Türkay, 1992 is the only one in the genus to be found in the active thermal vent systems (Baba & Türkay, 1992; Baba & de Saint Laurent, 1992). However, the species is also recorded from a non-vent site off Central Queensland

Key to species from the Indo-West Pacific, including the central Pacific and Southern Ocean

1. Three or 4 spines on branchial margin of carapace 2
 - Five spines on branchial margin of carapace 35
2. Abdominal segments unarmed 3
 - Abdominal segment 2 with spines on anterior ridge 13
3. Dorsal surface of carapace with numerous small spines on anterior half 4
 - Dorsal surface of carapace with row of epigastric spines and 1 parahepatic spine on each side of anterior half, branchial spine present or absent 5
4. P1 fingers more than 2.5 times as long as palm. Antennular basal article with distomesial spine as long as distolateral spine *M. brucei* Baba, 1974
 - P1 fingers barely 2.0 times as long as palm. Antennular basal article with distomesial spine shorter than distolateral spine *M. hystrix* Macpherson & de Saint Laurent, 1991
5. Distinct carinae on lateral portion of sternites 6–7 6
 - No carinae on sternites 6–7 7
6. Distomesial spine of antennal article 2 overreaching end of article 4. P1 fixed finger lacking spine on lateral margin, other than subterminal spines *M. psylla* Macpherson, 1994
 - Distomesial spine of antennal article 2 terminating in end of article 4. P1 fixed finger with row of spines on lateral margin .. *M. muscae* Macpherson & de Saint Laurent, 2002
7. Distomesial and distolateral spines of antennular basal article differing in size. Granules on lateral portion of sternite 7 8
 - Distomesial and distolateral spines of antennular basal article subequal. No granules on lateral portion of sternite 7 9
8. Distomesial spine of antennular basal article distinctly smaller than distolateral spine. P1 movable finger without spines between basal and subterminal spines *M. hyalina* Macpherson, 1994
 - Distomesial spine of antennular basal article

- slightly or moderately longer than distolateral spine. P1 movable finger with spines between basal and subterminal spines
..... *M. kawamotoi* Osawa & Okuno, 2002
9. Whole posterior margin of sternite 3 contiguous to sternite 4 10
 - Median part of sternite 3 contiguous to sternite 4 11
 10. Mxp 3 merus with spine on extensor distal margin *M. minuta* Macpherson, 1993
 - Mxp 3 merus unarmed on extensor distal margin *M. javieri* Macpherson, 1994
 11. Branchial lateral margin with 4 spine
..... *M. sentai* Baba, 1986
 - Branchial lateral margin with 3 spines 12
 12. Carapace with numerous striae (ca. 14 on posterior half, including interrupted striae). Anterolateral spine of carapace reaching level of sinus between rostral and supraocular spines. P2 carpus with 1 spine on dorsal crest, other than terminal one
..... *M. callista* Macpherson, 1994
 - Carapace with striae in moderate density (ca. 10 on posterior half, including interrupted striae). Anterolateral spine of carapace falling short of level of sinus between rostral and supraocular spines. P2 carpus with 3 spines on dorsal crest, other than terminal one
M. plexaura Macpherson & de Saint Laurent, 1991
 13. Granules or carinae on posterolateral part of sternal plastron 14
 - No granules and carinae on posterolateral part of sternal plastron 22
 14. Granules on lateral parts of sternites 6–7
..... *M. volantis* Macpherson, 2004
 - Carinae on posterolateral part of sternal plastron 15
 15. Distomesial and distolateral spines of antennular basal article subequal
M. lenticularis Macpherson & de Saint Laurent, 1991
 - Distomesial spine of antennular basal article much smaller than distolateral spine 16
 16. Carapace branchial margin with 3 spines
..... *M. kapala* Ahyong & Poore, 2004
 - Carapace lateral margin with 4 spines 17
 17. P1 fixed finger with spines on proximal half of lateral margin 18
 - P1 fixed finger unarmed on lateral margin, other than 2 subterminal spines 20
 18. Width of cornea about 1/4 distance between anterolateral spines of carapace
M. ocellata Macpherson & de Saint Laurent, 1991
 - Width of cornea more than 1/3 distance between anterolateral spines of carapace 19
 19. Second spine of carapace lateral margin well developed, slightly shorter than first (anterolateral), subequal to third. Carinae on lateral parts of sternites 5–7
M. pulchra Macpherson & de Saint Laurent, 1991
 - Second spine of carapace lateral margin much smaller than first (anterolateral) and third. Carinae on lateral parts of sternites 6–7
..... *M. ommata* Macpherson, 2004
 20. Distomesial spine of antennal article 2 not overreaching end of article 4
..... *M. rufiantennulata* Baba, 1969
 - Distomesial spine of antennal article 2 overreaching end of article 4 21
 21. Anterolateral spine of carapace reaching level of sinus between rostral and supraocular spines. P2 propodus more than twice length of dactylus
.. *M. polynoe* Macpherson & de Saint Laurent, 1991
 - Anterolateral spine of carapace falling short of level of sinus between rostral and supraocular spines. P2 propodus less than twice length of dactylus
M. longicheles Macpherson & de Saint Laurent, 1991
 22. Granules on posterolateral part of sternal plastron 23
 - No granules on posterolateral part of sternal plastron 28
 23. Distomesial spine of antennular basal article slightly or distinctly longer than distolateral spine 24
 - Distomesial spine of antennular basal article slightly shorter than or subequal to distolateral spine 26
 24. Sternite 3 anteriorly produced, subtriangular with median sinus, breadth-length ratio 2.4
M. evarne Macpherson & de Saint Laurent, 1991
 - Sternite 3 with anterior margin somewhat convex or feebly sinuous, breadth-length ratio 3.8 25
 25. Mxp 3 merus with 2 subequal spines on flexor margin. P1 fingers about as long as or slightly

- shorter than palm *M. barbeti* Galil, 1999
- Mxp 3 merus with distal one of flexor marginal spines much smaller than proximal spine. P1 fingers distinctly longer than palm *M. leptosyne* Macpherson, 1994
26. P1 fingers each with row of spines on proximal half of margin . *M. gordoae* Macpherson, 1994
- P1 fingers each with row of spines along whole margin 27
27. Width of cornea 1/4 distance between anterolateral spines of carapace *M. rogeri* Macpherson, 1994
- Width of cornea 1/3 distance between anterolateral spines of carapace . *M. pasithea* Macpherson & de Saint Laurent, 1991
28. Abdominal segment 3 with pair of spines *M. major* Baba, 1988
- Abdominal segment 3 unarmed 29
29. Distomesial spine of antennal article 2 falling short of end of article 4 30
- Distomesial spine of antennal article 2 overreaching article 4 31
30. Distomesial spine of antennal article 2 short, not reaching end of article 3. Mxp 3 merus with spine on extensor distal margin *M. psamathe* Macpherson, 1994
- Distomesial spine of antennal article 2 slightly overreaching end of article 3. Mxp 3 merus unarmed on extensor distal margin *M. keiensis* n. sp.
31. P2–4 dactyli unarmed at least on distal 1/3 of flexor margin 32
- P2–4 dactyli with movable spines along whole length of flexor margin 33
32. Abdominal segment 2 with 4 pairs of spines. Mxp 3 merus unarmed on extensor distal margin. P1 fixed finger with 1 proximal and 1 subterminal spine only *M. albiapicula* Baba & Yu, 1987
- Abdominal segment 2 with 3 pairs of spines. Mxp 3 merus with spine on extensor distal margin. P1 fixed finger with a few spines between proximal and subterminal spines *M. masi* Macpherson, 1994
33. Antennular basal article narrow elongate, distal portion anterior to dorsolateral spine more than half length of remaining proximal portion *M. erato* Macpherson, 1994
- Antennular basal article not elongate, distal portion anterior to dorsolateral spine less than half length of remaining proximal portion .. 34
34. Distomesial spine of antennular basal article distinctly shorter than distolateral spine. P2 merus with several spines on distal half of ventral margin *M. nesiotetes* Macpherson, 1999
- Distomesial and distolateral spines of antennular basal article subequal. P2 merus with terminal spine only on ventral margin *M. zebra* Macpherson, 1994
35. Corneal width equal to or less than distance between sinus formed by supraocular and rostral spines 36
- Corneal width distinctly more than distance between sinus formed by supraocular and rostral spines 41
36. Width of cornea 1/3 distance between anterolateral spines of carapace *M. pumila* Macpherson, 2004
- Width of cornea 1/5–1/6 distance between anterolateral spines of carapace 37
37. Distomesial spine of antennal article 1 reaching or overreaching midlength of article 2 38
- Distomesial spine of antennal article 1 very small, never reaching midlength of article 2 40
38. Antennular basal article relatively slender on distal portion (distance between distal end of article and base of dorsolateral spine more than half length of remaining proximal portion) *M. endeavourae* Ahyong & Poore, 2004
- Antennular basal article not slender on distal portion (distance between distal end of article and base of dorsolateral spine 1/4–1/5 length of remaining proximal portion) 39
39. Anterior second spine of carapace lateral margin much smaller than first anterolateral spine. Article 3 of antennal peduncle unarmed. P2 dactylus distinctly more than half that of propodus *M. typhle* Macpherson, 1994
- Anterior second spine of carapace lateral margin well developed, slightly smaller than first anterolateral spine. Article 3 of antennal peduncle with distinct distomesial spine. P2 dactylus about half as long as propodus *M. parvioculata* Baba, 1982
40. Anterolateral spine of carapace much mesial to level of and subequal in size to second lateral spine *M. tiresias* Macpherson, 1994
- Anterolateral spine of carapace somewhat

- mesial to level of much smaller second lateral spine
 *M. magniantennulata* Baba & Türkay, 1992
41. Abdominal segment 2 unarmed or with spines restricted to lateral parts of anterior ridge .. 42
 – Abdominal segment 2 with pair of submedian spines or additional spines distributed along anterior ridge 77
42. Granules on lateral portions of sternite 7
 *M. stigmatica* Macpherson, 1994
 – No granules on sternal plastron 43
43. Distal spines of antennular basal article subequal 44
 – Distal spines of antennular basal article unequal in size 63
44. Distomesial spine of antennal article 2 overreaching article 4 45
 – Distomesial spine of antennal article 2 not overreaching end of article 4 57
45. Mxp 3 merus unarmed on extensor margin . 46
 – Mxp 3 merus with spine on extensor distal margin 49
46. Distomesial spine of antennal article 1 relatively short, terminating in distal end of article 2 *M. alia* Baba, 1994
 – Distomesial spine of antennal article 1 relatively long, reaching or overreaching distal end of article 3 47
47. Width of cornea slightly less than half distance between anterolateral spines of carapace
 *M. leagora* Macpherson, 1994
 – Width of cornea 1/3 distance between anterolateral spines of carapace 48
48. Whole posterior margin of sternite 3 contiguous to sternite 4
 *M. pseliophora* Macpherson, 1994
 – Median part of posterior margin of sternite 3 contiguous to sternite 4
 *M. moliae* Macpherson, 1994
49. Front margin strongly oblique
 *M. clinata* Macpherson, 1994
 – Front margin transverse or slightly oblique .. 50
50. Carapace with epigastric spines only on dorsal surface. P1 fixed finger unarmed on lateral margin except for subterminal spine
 *M. runcinata* Macpherson, 1994
 – Carapace with extra spines other than epigastric spines on dorsal surface. P1 fixed finger with row of spines on lateral margin . 51
51. P2–4 dactyli with spines along entire length of flexor margin
 *M. spilota* Macpherson, 1994
 – P2–4 dactyli unarmed at least on distal 1/3 of flexor margin 52
52. Abdominal segment 2 with 2 spines on each side of anterior ridge
 *M. japonica* Stimpson, 1858
 – Abdominal segment 2 unarmed on anterior ridge 53
53. Sternites 5–6 smooth, devoid of striae on surface 54
 – Sternites 5–6 with striae 55
54. Whole posterior margin of sternite 3 contiguous to sternite 4. Movable finger with spines between basal and subterminal spines
 *M. galaxaura* Macpherson, 1996
 – Median part of sternite 3 contiguous to sternite 4. Movable finger without spines between basal and subterminal spines
 *M. laevis* Macpherson & Baba, 1993
55. Sternite 3 with anterior margin weakly bilobed, posterior margin broader than anterior margin of sternite 4
 *M. caesura* Macpherson & Baba, 1993
 – Sternite 3 with anterior margin produced into 2 distinct lobes, posterior margin narrower than anterior margin of sternite 4 56
56. Distomesial spine of antennal article 1 fully reaching end of article 3, distomesial spine of article 2 overreaching antennal peduncle by twice length of article
 *M. sao* Macpherson, 1994
 – Distomesial spine of antennal article 1 not reaching end of article 3, distomesial spine of article 2 overreaching antennal peduncle by length of article 4
 *M. pherusa* Macpherson & Baba, 1993
57. Front margin transverse 58
 – Front margin oblique 60
58. P2–4 dactyli unarmed on distal 1/3 of flexor margin *M. brachytes* Macpherson, 1994
 – P2–4 dactyli with movable spines along entire length of flexor margin 59
59. Ocular peduncles narrowed proximally. Sternite 4 contiguous to half length of posterior margin of sternite 3. P1 fingers with proximal and subterminal spines only on mesial margin
 *M. limatula* Macpherson, 2004
 – Ocular peduncles not narrowed proximally. Sternite 4 contiguous to entire length of posterior margin of sternite 3. P1 fingers with

- row of spines on mesial margin
..... *M. glabella* Macpherson, 2000
60. P1 fingers shorter than palm 61
– P1 fingers distinctly longer than palm 62
61. Sternite 3 with anterior margin nearly transverse bearing median notch
..... *M. arabica* Tirmizi & Javed, 1992
– Sternite 3 with anterior margin produced into 2 lobes *M. roshanei* Tirmizi, 1966
62. P1 broad relative to length (palm less than twice as long as broad), fixed finger with spines on lateral margin. Mxp 3 merus with 2 spines on flexor margin (distal slightly smaller) *M. pusiola* Macpherson, 1993
– P1 long relative to width (palm more than 2.5 times as long as broad), fixed finger without row of spines on lateral margin. Mxp 3 merus with 3 spines on flexor margin
..... *M. janetae* Tirmizi & Javed, 1992
63. Antennular basal article with distomesial spine longer than distolateral 64
– Antennular basal article with distomesial spine shorter than distolateral 69
64. Front margin transverse or slightly oblique. Distomesial spine of antennal article 1 reaching or overreaching end of article 3, distomesial spine of article 2 overreaching article 4 65
– Front margin strongly oblique. Distomesial spine of antennal article 1 reaching at most end of article 2, distomesial spine of article 2 not overreaching article 4 67
65. P2 dactylus unarmed on distal 1/3 of flexor margin *M. notata* Macpherson, 1994
– P2 dactylus with spines on nearly entire flexor margin 66
66. Anterolateral spine of carapace reaching level of sinus between rostral and supraocular spines. Mxp 3 merus unarmed on extensor distal margin *M. abelloi* Macpherson, 1994
– Anterolateral spine of carapace distinctly overreaching level of sinus between rostral and supraocular spines. Mxp 3 merus with small but distinct spine on extensor distal margin *M. acantha* Macpherson, 1994
67. Supraocular spines nearly reaching distal end of eyestalk without cornea. P1 merus with distomesial spine relatively small, far falling short of midlength of carpus
..... *M. pavonis* Macpherson, 2004
– Supraocular spines ending at most in midlength of eyestalk without cornea. P1 merus with distomesial spine strong, reaching midlength of carpus 68
68. Supraocular spines relatively narrow (basal breadth 1/3 that of rostral spine). P2 dactylus with 5–6 movable spines, ultimate one located at base of corneous terminal claw
..... *M. olivarae* Macpherson, 1994
– Supraocular spines relatively broad (basal breadth 1/2 that of rostral spine). P2 dactylus with 8 movable spines, ultimate one equidistant between base of corneous terminal claw and antepenultimate spine
..... *M. foresti* Macpherson & de Saint Laurent, 2002
69. Rostral spine distinctly more than distance between mid-cervical groove and sinus formed by rostral and supraocular spines
..... *M. barangei* Macpherson, 1994
– Rostral spine shorter than distance between mid-cervical groove and sinus formed by rostral and supraocular spines 70
70. Mxp 3 merus unarmed on extensor margin . 71
– Mxp 3 merus with distinct spine on extensor distal margin 72
71. P1 carpus 5 times as long as broad. P2 more than 2.5 times length of carapace
..... *M. offella* Macpherson, 1996
– P1 carpus about twice as long as broad. P2 less than twice length of carapace
..... *M. micula* Macpherson, 1996
72. P1 relatively broad, carpus slightly longer than broad 73
– P1 relatively slender, carpus more than twice as long as broad 74
73. P1 movable finger with row of spines on mesial margin. P2–4 dactyli unarmed at least on distal 1/3 of flexor margin
..... *M. stia* Macpherson, 1994
– P1 movable finger with basal spine only on mesial margin. P2–4 dactyli with movable spines along entire length of flexor margin
..... *M. leptitis* Macpherson, 1994
74. P1 fingers and palm unarmed
..... *M. alonsoi* Macpherson, 1994
– P1 fingers and palm with spines 75
75. P2 merus with row of spines (ca. 6) on distal half of ventral margin
..... *M. proto* Macpherson, 1994
– P2 merus with at most 1–3 spines on distal portion of ventral margin 76
76. P2 dactylus unarmed on distal 1/3. P1 fixed

- finger armed with a few spines other than subterminal spines on lateral margin
..... *M. apodis* Macpherson, 2004
- P2 dactylus armed with spines on distal 1/4. P1 fixed finger unarmed on lateral margin
..... *M. parvula* Macpherson, 1993
77. Granules on posterolateral part of sternal plastron 78
- No granules on posterolateral part of sternal plastron 90
78. Granules on sternites 6–7 79
- Granules on sternite 7 only 83
79. Mxp 3 merus unarmed on flexor distal margin 80
- Mxp 3 merus with spine on flexor distal margin 81
80. Distomesial and distolateral spines of antennular basal article subequal
..... *M. lineola* Macpherson, 1994
- Distomesial spine of antennular basal article longer than distolateral spine
..... *M. pontoporea* Macpherson, 1994
81. Distomesial spine of antennular basal article distinctly longer than distolateral spine. Granules on posterolateral part of sternal plastron very small and numerous
..... *M. taenia* Macpherson, 1994
- Distomesial spine of antennular basal article subequal to or slightly larger than distolateral spine. Granules on posterolateral part of sternal plastron coarse and moderate in number 82
82. Sternite 3 as broad as anterior margin of sternite 4. Distomesial spine of antennular article 1 terminating in end of article 3
..... *M. tyche* Macpherson, 1994
- Sternite 3 broader than anterior margin of sternite 4. Distomesial spine of antennular article 1 overreaching antennal peduncle
..... *M. idyia* Macpherson, 1994
83. Distomesial spine of antennular basal article longer than distolateral spine. Sternite 5 with striae 84
- Distomesial spine of antennular basal article shorter than or subequal to distolateral spine. Sternite 5 smooth, without striae 89
84. Mxp 3 merus with spine on extensor distal margin 85
- Mxp 3 merus unarmed on extensor distal margin 88
85. Distomesial spine of antennular article 2 not overreaching antennal peduncle
..... *M. limula* Macpherson & Baba, 1993
- Distomesial spine of antennular article 2 overreaching antennal peduncle 86
86. Sternite 4 with a few striae, sternites 5–6 smooth
..... *M. spinicruris* Ahyong & Poore, 2004
- Sternite 4–7 with arcuate striae 87
87. Coarse granules on lateral parts of sternite 7
..... *M. guttata* Macpherson, 1994
- Fine granules on lateral part of sternite 7
..... *M. honshuensis* Benedict, 1902
88. Distomesial spine of antennular article 2 overreaching end of article 4 by length of 2 distal articles combined
..... *M. distiza* Macpherson, 1994
- Distomesial spine of antennular article 2 terminating in end of article 4
M. ducoussoi Macpherson & de Saint Laurent, 1991
89. Distomesial spine of antennular article 2 distinctly overreaching end of article 4. P2 dactylus with movable spines on entire length of flexor margin
..... *M. armilla* Macpherson, 1994
- Distomesial spine of antennular article 2 terminating in end of article 4. P2 dactylus unarmed on distal half of flexor margin
..... *M. heteracantha* Ortmann, 1892
90. Rostrum laterally compressed 91
- Rostrum spiniform 93
91. Ventral margin of rostrum weakly convex in profile. Abdominal segment 2 with 2 transverse ridges. Distomesial spine of antennular article 2 falling short of end of article 4 *M. compressa* Baba, 1988
- Ventral margin of rostrum strongly convex in profile. Abdominal segment 2 with more than 4 transverse ridges. Distomesial spine of antennular article 2 reaching or overreaching article 4 92
92. Sternal plastron smooth, without striae. Abdominal segment 2 with 4 transverse ridges
..... *M. cornuta* Macpherson, 1994
- Sternal plastron with arcuate striae. Abdominal segment 2 with secondary striae in addition to 4 transverse ridges
..... *M. rubridigitalis* Baba, 1994
93. Distomesial and distolateral spines of antennular basal article subequal in size 94
- Distomesial and distolateral spines of

- antennular basal article distinctly unequal in size 120
94. Abdominal segment 2 with pair of submedian spines on anterior transverse ridge 95
- Abdominal segment 2 with 6 or more spines on anterior transverse ridge 96
95. Rostral spine spiniform and horizontal. Each sternite with a few arcuate striae *M. inornata* Henderson, 1885
- Rostral spine somewhat compressed distally and directed dorsad. Each sternite with numerous arcuate striae *M. philippinensis* Macpherson & Baba, 1993
96. Distomesial spine of antennal article 1 overreaching article 3 97
- Distomesial spine of antennal article 1 not overreaching article 3 100
97. Mxp 3 merus with spine on extensor distal margin. Movable finger with spines between basal and subterminal spines on mesial margin 98
- Mxp 3 merus unarmed on extensor distal margin. Movable finger without spines between basal and subterminal spines 99
98. Sternal plastron with numerous arcuate striae. P2–4 dactyli relatively broad (length-breadth ratio ca. 4.2) *M. eudora* Macpherson & Baba, 1993
- Sternal plastron less strigose, no striae on sternite 6. P2–4 dactyli slender (length-breadth ratio ca. 6.5) *M. melite* Macpherson & Baba, 1993
99. P2 dactylus unarmed on nearly distal half of flexor margin *M. striola* Macpherson & Baba, 1993
- P2 dactylus unarmed on distal 1/4 of flexor margin ... *M. oritea* Macpherson & Baba, 1993
100. Mxp 3 merus with distinct spine on extensor distal margin 101
- Mxp 3 merus unarmed on extensor distal margin 105
101. Abdominal segments 3–4 with spines 102
- Abdominal segments 3–4 unarmed 103
102. P1 carpus about 4.5 times as long as broad *M. gili* Macpherson, 1993
- P1 carpus 2.7 times as long as broad *M. babai* Tirmizi & Javed, 1976
103. Sternite 7 with striae, sternite 4 contiguous to median part of posterior margin of sternite 3 *M. nesaea* Macpherson & Baba, 1993
- Sternite 7 without striae, sternite 4 contiguous to most part of posterior margin of sternite 4 104
104. Supraocular spines rather remote from rostral spine (distance between sinus formed by rostral and supraocular spines distinctly more than half width of cornea). P2–4 dactyli with corneous spine at base of terminal claw *M. latior* n. sp.
- Supraocular spines rather close to rostral spine (distance between sinus formed by rostral and supraocular spines distinctly less than half width of cornea). P2–4 dactyli without corneous spine at base of terminal claw *M. sphinx* Macpherson & Baba, 1993
105. Abdominal segment 3 with pair of submedian spines on anterior transverse ridge *M. armata* Baba, 1988
- Abdominal segment 3 unarmed 106
106. P2 dactylus unarmed on distal 1/3 of flexor margin 107
- P2 dactylus with movable spines nearly along entire flexor margin 111
107. P1 fingers spineless, carpus as long as broad *M. punctata* Macpherson, 1997
- P1 fingers with spines, carpus more than 1.5 times as long as broad 108
108. Sternite 4 anteriorly narrowed, contiguous to median part of sternite 3. P1 movable finger with spines between basal and subterminal spines on mesial margin 109
- Sternite 4 with broad anterior margin contiguous to entire posterior margin of sternite 3. P1 movable finger without spine between basal and subterminal spines 110
109. Sternal plastron smooth but a few arcuate striae on sternite 3 *M. benguela* de Saint Laurent & Macpherson, 1988
- Sternal plastron with numerous arcuate striae but a few striae on sternite 6, smooth on sternite 7 . *M. aequalis* Ah Yong & Poore, 2004
110. Rostrum carinate ventrally. Abdominal segment 2 with 4 pairs of spines. P1 not squamous, merus with strong distomesial spine overreaching midlength of carpus, carpus 1.5 times as long as broad *M. carinata* n. sp.
- Rostrum not carinate ventrally. Abdominal segment 2 with 3 pairs of spines. P1 squamous, merus with distomesial spine far falling short of midlength of carpus, carpus 1.5 times as

- longas broad *M. semoni* Ortmann, 1894
111. P1 fixed finger with subterminal spine(s) only on lateral margin 112
- P1 fixed finger with spine(s) in addition to subterminal spine(s) on lateral margin 116
112. Abdominal segment 2 with more than 7 transverse ridges 113
- Abdominal segment 2 with at most 4 transverse ridges 114
113. Second lateral marginal spine of carapace directly behind anterolateral spine very small. Anterior margin of sternite 4 relatively broad *M. rhodonia* Macpherson, 1994
- Second lateral marginal spine of carapace directly behind anterolateral spine well developed. Anterior margin of sternite 4 very narrow *M. compacta* Macpherson, 1997
114. Sternite 4 with relatively broad anterior margin. P2–4 dactyli having ultimate flexor marginal spine (movable) equidistant between penultimate spine and tip of terminal claw *M. curvirostris* Henderson, 1885
- Sternite 4 with narrow anterior margin. P2–4 dactyli having ultimate flexor marginal spine (movable) much closer to penultimate spine than to tip of terminal claw 115
115. P2–4 carpi each with 4 spines on dorsal ridge. Dactyli much more than half length of propodi *M. andamanica* Alcock, 1894
- P2–4 carpi each with terminal spine only on dorsal ridge. Dactyli about half as long as propodi *M. rosula* Macpherson, 1994
116. P1 carpus distinctly more than twice as long as broad 117
- P1 carpus distinctly less than twice as long as broad 118
117. Anterior margin of sternite 4 relatively broad and transverse. P2 merus with terminal spine only on ventral margin *M. thoe* Macpherson, 1994
- Anterior margin of sternite 4 very narrow. P2 merus with row of spines on ventral margin *M. amathea* Macpherson & de Saint Laurent, 1991
118. Supraocular spines short, terminating in midlength of ocular peduncle. Sternite 3 laterally expanded, anterior margin shallowly emarginate *M. elachia* Macpherson, 1994
- Supraocular spines reaching end of cornea. Sternite 3 bilobed on anterior margin 119
119. Four or 5 pairs of epigastric spines. Distomesial spine of antennal article 2 reaching end of article 4 *M. militaris* Henderson, 1885
- Three pairs of epigastric spines. Distomesial spine of antennal article reaching end of article 3 *M. masoae* Macpherson, 1996
120. Distomesial spine of antennular basal article much longer than distolateral spine 121
- Distomesial spine of antennular basal article much shorter than distolateral spine 128
121. Flexor margin of Mxp 3 merus unarmed *M. gregaria* (Fabricius, 1793)
- Flexor margin of Mxp 3 with 1 or 2 spines 122
122. Abdominal segment 4 with pair of submedian spines on each of anterior and posterior transverse ridges *M. notialis* n. sp.
- Abdominal segment 4 unarmed 123
123. Abdominal segment 3 with more than 2 spines on anterior ridge 124
- Abdominal segment 3 unarmed 126
124. Arcuate striae on sternites 4–5 *M. chydrea* Macpherson, 2004
- A few striae on sternite 4, no striae on sternite 5 125
125. P2 dactylus unarmed on distal 1/3. P1 palm 8.1–9.3 times as long as broad, carpus 5.0–6.0 times as long as broad *M. gracilis* Henderson, 1885
- P2 dactylus unarmed on distal 1/4–1/5. P1 palm 5.3–5.4 times as long as broad, carpus 2.6–3.3 times as long as broad *M. disgrega* n. sp.
126. Rostral spine with pronounced setae on dorsal surface. *M. pilorhyncha* Miyake & Baba, 1966
- Rostral spine smooth, without pronounced setae on dorsal surface 127
127. P1 movable and fixed fingers each without spines between basal and subterminal spines *M. haswelli* Henderson, 1885
- P1 movable and fixed fingers each with spines between proximal and subterminal spines *M. agave* Macpherson & Baba, 1993
128. Abdominal segment 3 with 1 or 2 pairs of spines on anterior ridge 129
- Abdominal segment 3 unarmed 134
129. Sternite 4 with anterior margin nearly transverse, broadly contiguous to sternite 3 *M. spinulifera* Miers, 1884
- Sternite 4 subtriangular, with anterior margin narrowly contiguous to sternite 3 130

130. Distomesial spine of antennal article 1 falling short of midlength of article 2; distomesial spine of article 2 with accompanying spine proximal to it *M. prominula* Baba, 1988
- Distomesial spine of antennal article 1 reaching end of article 2; distomesial spine of article 2 without accompanying spine 131
131. Supraocular spines overreaching end of cornea. P1 movable finger with mesio-proximal spine only *M. asprosoma* Ah Yong & Poore, 2004
- Supraocular spines barely reaching proximal end (in midline) of cornea. P1 movable finger with spines between mesio-proximal spine and distal end 132
132. Distomesial spine of antennal article 2 not reaching end of article 4 *M. kuboi* Yanagita, 1943
- Distomesial spine of antennal article 2 overreaching end of article 4 133
133. Parahepatic spine present on each side. Abdominal segment 3 with 3–4 spines. P2–4 dactyli with easily recognizable, movable spines on flexor margin
M. shaula Macpherson & de Saint Laurent, 2002
- No parahepatic spines. Abdominal segment 3 with 2 spines. P2–4 dactyli with very fine, movable spines on flexor margin (confirmed by examination of male syntype (13.8 mm, ZSIC) *M. vigiliarum* Alcock, 1901
134. Tubercle-like small spines on anterior branchial region. Antennal peduncle reduced in size *M. tuberculata* Henderson, 1885
- No spine or at most 1 or 2 spines on anterior branchial region. Antennal peduncle well developed 135
135. Distomesial spine of antennal article 2 never reaching end of article 4 136
- Distomesial spine of antennal article 2 reaching or overreaching end of article 4 .. 148
136. P2 dactylus unarmed at least on distal 1/3 of flexor margin 137
- P2 dactylus with movable spines along entire length of flexor margin 138
137. Supraocular spines short, less than quarter length of, and close to, rostral spine. P1 movable finger without spine between basal and subterminal spines on mesial margin *M. parca* Macpherson, 1996
- Supraocular spines 1/3 length of, moderately remote from, rostral spine. P1 movable finger with spines between basal and subterminal spines on mesial margin *M. declivis* Baba, 1994
138. P2 dactylus at most half as long as propodus 139
- P2 dactylus much more than half length of propodus 140
139. P1 movable finger with basal spine only on mesial margin. P2 merus with row of spines on ventral margin, carpus with 2 spines on dorsal ridge
... *M. rubella* Macpherson & de Saint Laurent, 1991
- P1 movable finger with a few proximal spines and small subterminal spines on mesial margin. P2 merus with 2 spines on distal part of ventral margin, carpus with 4–5 spines on dorsal ridge ... *M. insularis* Macpherson, 1999
140. P1 carpus more than 2.5 times as long as broad 141
- P1 carpus at most 1.7 times as long as broad 144
141. Gastric region with scattered small spines in addition to epigastric and parahepatic spines *M. chathamensis* Baba, 1974
- Gastric region with epigastric and parahepatic spines only 142
142. P1 movable finger unarmed on mesial margin, fixed finger with 2 subterminal spines only on lateral margin. P2 carpus with 1 median spine and distal spine on dorsal crest *M. remota* Baba, 1990
- P1 movable finger with spines on mesial margin, fixed finger with spines along lateral margin other than 2 subterminal spines. P2 carpus with at least 3 spines on dorsal crest other than distal one 143
143. Sternite 4 smooth. Antennal article 3 with distolateral spine
M. spicae Macpherson & de Saint Laurent, 2002
- Sternite 4 with a number of short striae. Antennal article 3 without distolateral spine *M. isos* Ah Yong & Poore, 2004
144. P1 fixed finger with 2 small subterminal spines only 145
- P1 fixed finger with 1 or 2 distinct spines other than subterminal spines 146
145. Numerous transverse ridges on carapace. Abdominal segment 2 with 7 transverse ridges. Numerous arcuate striae on sternites 3–4

- *M. spissa* Macpherson, 1996
- Less numerous transverse ridges on carapace. Abdominal segment 2 with 2 transverse ridges. No striae on sternal plastron
..... *M. congesta* Macpherson, 1999
146. Cornea small, width much less than 1/3 distance between anterolateral spines of carapace *M. crassa* Baba, 1982
- Cornea large, width much more than 1/3 distance between anterolateral spines of carapace 147
147. Carapace with numerous striae. Abdominal segment 2 with 6 transverse ridges. Sternite 4 convex on anterior margin, with arcuate striae
..... *M. miniata* Macpherson, 1996
- Carapace with less numerous striae. Abdominal segment 2 with 2 transverse ridges. Sternite 4 subtriangular, without arcuate striae
..... *M. pygmaea* Macpherson, 1996
148. P2 dactylus unarmed at least on distal 1/4 of flexor margin 149
- P2 dactylus with spines along entire length of flexor margin 155
149. Sternite 4 transverse on anterior margin, widely contiguous to sternite 3
..... *M. dispar* Macpherson & Baba, 1993
- Sternite 4 subtriangular, anterior margin narrowly contiguous to sternite 3 150
150. Abdominal segment 2 with 8–10 spines. Sternite 5 with arcuate striae 151
- Abdominal segment 2 with 2–4 spines. Sternite 5 smooth 153
151. Sternites 4–5 with arcuate striae
..... *M. pagesi* Macpherson, 1994
- Sternite 4 with a few short striae, sternite 5 smooth 152
152. Distomesial spine of antennal article 2 distinctly overreaching end of article 4. P1 carpus about twice as long as broad. P2 dactylus unarmed on distal half
..... *M. delicata* Macpherson, 2004
- Distomesial spine of antennal article 2 not overreaching end of article 4. P1 carpus more than 3 times as long as broad. P2 dactylus unarmed on distal 1/3
..... *M. angusta* Macpherson, 2004
153. Distomesial spine of antennal article 2 terminating in distal end of article 4
..... *M. dissita* Macpherson, 1999
- Distomesial spine of antennal article 2 extending far beyond article 4 154
154. Abdominal segment 2 with 4 spines. Antennular basal article narrow elongate, distomesial spine slender, relatively long but distinctly shorter than distolateral spine. P2–4 very slender, propodus 10 times as long as broad *M. sacksi* Macpherson, 1993
- Abdominal segment 2 with 2 spines. Antennular basal article relatively short, distomesial spine reduced to very small size. P2–4 moderately broad, propodus 5 times as long as broad . *M. amblytes* Macpherson, 1994
155. P1 fixed finger with small subterminal spines only on lateral margin. Mxp 3 merus with single spine on flexor median margin
M. profunda Macpherson & de Saint Laurent, 1991
- P1 fixed finger with 1–3 spines, in addition to subterminal spines on lateral margin. Mxp 3 merus with 2 spines on flexor margin 156
156. P1 carpus much less than twice as long as broad (1.5–1.7 times longer), distomesial spine of merus very strong 157
- P1 carpus much more than twice as long as broad (2.3–3.6 times longer), distomesial spine of merus of good size but not prominent 158
157. Sternite 4 convex anteriorly. P2–4 broad relative to length, propodus ca. 5 times as long as broad *M. eclipsis* Macpherson, 1994
- Sternite 4 subtriangular anteriorly, with very narrow anterior margin. P2–4 slender, propodus ca. 9 times as long as broad on P2
..... *M. rubiesi* Macpherson, 1991
158. Second lateral spine of carapace relatively small, with accompanying small spines anterior and posterior to it. Sternite 4 with relatively broad anterior margin. P1 carpus 2.3 times as long as broad
M. rubrovata Macpherson & de Saint Laurent, 1991
- Second lateral spine of carapace well developed, without accompanying spine. Sternite 4 with relatively narrow anterior margin. P1 carpus at least 3 times as long as broad 159
159. Front margin somewhat oblique. Second lateral spine of carapace directed anterolaterad
..... *M. microps* Alcock, 1894
- Front margin strongly oblique. Second lateral spine of carapace directed anteriorad
..... *M. africana* Balss, 1913

Key to species from the eastern Pacific

1. Abdominal segments unarmed 2
 - Abdominal segment 2 armed with spines 6
2. Distomesial spine of antennular basal article subequal to distolateral spine. Short marked carinae on lateral surfaces of sternites 6–7 *M. mexicana* Benedict, 1902
 - Distomesial spine of antennular basal article distinctly longer than distolateral spine. No carinae on lateral surfaces of sternites 6–7 3
3. Supraocular spines at least 1/4 length of, and widely separated from rostral spine. P2–4 dactyli having spinules along whole length of flexor margin 4
 - Supraocular spines very small, 1/5 to 1/6 length of, and rather close to rostral spine. P2–4 dactyli having spinules on proximal half of flexor margin 5
4. Front margin strongly oblique. Sternal plastron distinctly broader than long. Antennular basal article with distomesial process reaching or slightly overreaching end of antennal peduncle *M. quadrispina* Benedict, 1902
 - Front margin nearly transverse or slightly oblique. Sternal plastron distinctly longer than broad. Antennular basal article with distomesial process extending far beyond end of antennal peduncle, reaching tip of supraocular spine *M. macrobrachia* Hendrickx, 2003
5. Rostrum with lateral spines. P2–4 dactyli about half length of propodi *M. refulgens* Faxon, 1893
 - Rostrum without lateral spines. P2–4 dactyli distinctly more than half length of propodi *M. debilis* Benedict, 1902
6. Granules on lateral surface of sternite 7 7
 - No granules on lateral surface of sternite 7 ... 9
7. Posterior-most transverse ridge of carapace unarmed *M. propinqua* Benedict, 1902
 - Posterior-most transverse ridge of carapace with row of spines 8
8. Carapace dorsally covered with numerous small spines. Abdominal segment 4 with pair of spines *M. hispida* Benedict, 1902
 - Carapace dorsally armed with gastric and postcervical spines other than row of spines on posterior-most transverse ridge. Abdominal segment 4 unarmed *M. bapensis* Hendrickx, 2000
9. Distomesial spine of antennular basal article much longer than distolateral spine 10
 - Distomesial spine of antennular basal article subequal to or smaller than distolateral spine 12
10. Anterolateral spine of carapace distinctly overreaching sinus between rostral and supraocular spines. Rostrum with lateral spines or spinules ... *M. tenella* Benedict, 1902
 - Anterolateral spine of carapace falling short of or nearly reaching sinus between rostral and supraocular spines. Rostrum laterally unarmed 11
11. Mxp 3 merus with 3 spines on flexor margin. P1 slender, carpus fully twice as long as broad *M. williamsi* Hendrickx, 2000
 - Mxp 3 merus unarmed on flexor margin. P1 broad relative to length, carpus less than 1.5 times as long as broad *M. gregaria* (Fabricius, 1793)
12. Carapace with cardiac spine. Abdominal segment 4 with spines *M. gracilipes* Faxon, 1893
 - Carapace without cardiac spine. Abdominal segment 4 unarmed 13
13. Cornea small, not dilated *M. perlata* Benedict, 1902
 - Cornea large, dilated 14
14. Abdominal segment 3 with 1 or 2 pairs of spines on anterior ridge. Mxp 3 merus with single spine on flexor median margin *M. obesa* Faxon, 1893
 - Abdominal segment 3 unarmed. Mxp 3 merus with 2 spines on flexor margin 15
15. Abdominal segment 2 with 3 pairs of spines. Mxp 3 ischium about as long as merus *M. curvipes* Benedict, 1902
 - Abdominal segment 2 with 4 pairs of spines. Mxp 3 ischium much longer than merus *M. montemaris* Bahamonde & López, 1962

Munida abelloi Macpherson, 1994

Munida abelloi Macpherson, 1994: 438, fig. 1 (type locality: Kiribati, 400 m [holotype, ♂, MNHN Ga 2528]); 1996a: 390, fig. 11 (Futuna Island, 105–160 m).

Munida acantha Macpherson, 1994

Munida acantha Macpherson, 1994: 440, figs. 2, 64 (New Caledonia, Loyalty Islands, and Surprise

- Atoll, 59–460 m; type locality: New Caledonia, 18°55.0'S, 163°23.7'E, 460 m [holotype, ♂, MNHN Ga 2532]).
- Munida aequalis* Ah Yong & Poore, 2004**
Munida aequalis Ah Yong & Poore, 2004b: 17, fig. 2 (Queensland and New South Wales, 150–548 m; type locality: NE of Tweed Heads, Queensland, 27°57'S, 154°03'E, 548 m [holotype, ♂, AM P42267]).
- Munida africana* Balss, 1913**
Munida africana Balss, 1913a: 221 (type locality: E coast of Africa, 863 m [syntypes: 1 ♂, 1 ♀, ZMB 17494]). — Doflein & Balss, 1913: 145, figs. 13, 14, pl. 14: fig. 1 (off E coast of Somali Republic, 863 m). — Macpherson, 1991: 555, fig. 2 (reexamination of type material [designation of lectotype, ov. /, ZMB 17494]). — Macpherson & de Saint Laurent, 2002: 467 (Zanzibar, 421–457 m).
Munida andamanica: Tirmizi, 1966: 198 (part) (Zanzibar area, 640 m) (not *M. andamanica* Alcock, 1894).
- Munida agave* Macpherson & Baba, 1993**
Munida agave Macpherson & Baba, 1993: 387, figs. 1, 2 (Japan and Philippines, between 89 m and 170–187 m; type locality: Philippines, 130–137 m [holotype, ov. ♀, MNHN Ga 3221]). — Macpherson, 1997: 603 (Indonesia, 156–305 m). — Baba, this paper (Sagami Bay, Japan, 549 m).
- Munida albiapicula* Baba & Yu, 1987**
Munida albiapicula Baba & Yu, 1987: 331, figs. 1, 2 (type locality: NE coast of Taiwan, 50–450 m [holotype, ♂, NTOU]). — Wu *et al.*, 1997: 103, figs. 17, 21D, E (Taiwan).
- Munida alia* Baba, 1994**
Munida alia Baba, 1994: 6, fig. 3 (type locality: off Central Queensland, 18°04.16'S, 147°17.17'E, 490–512 m [holotype, ov. ♀ QMW 19705]).
- Munida alonsoi* Macpherson, 1994**
Munida alonsoi Macpherson, 1994: 443, fig. 3 (New Caledonia and Chesterfield Islands, between 448 m and 650–680 m; type locality: New Caledonia, 23°37.70' S, 167°41.50' E, 470 m [holotype, ♂, MNHN Ga 2547]).
- Munida amathea* Macpherson & de Saint Laurent, 1991**
Munida amathea Macpherson & de Saint Laurent, 1991: 389, fig. 5 (Tuamotu and Tubuai Islands, 300–800 m; type locality: Fangataufa, Tuamotu Islands, 22°15'S, 138°47.3'W, 600–800 m [holotype, ♂, MNHN Ga 1868]). — Poupin, 1996: 22, 23, fig. a (Austral Islands and Gambier Islands, Tuamotu Archipelago, 300–800 m).
- Munida amblytes* Macpherson, 1994**
Munida amblytes Macpherson, 1994: 443, fig. 4 (New Caledonia, 525–1000 m; type locality: New Caledonia, 22°58.00' S, 167°20.00'E, 530 m [holotype, ♂, MNHN Ga 2554]); 2004: 249 (Tonga, 627–656 m).
- Munida analoga* Macpherson, 1993**
 See under *Agononida* Baba & de Saint Laurent, 1996.
- Munida andamanica* Alcock, 1894**
Munida militaris var. *andamanica* Alcock, 1894: 321 (type locality: Andaman Sea, “Investigator” St. 115 [11°31'40"N, 92°46'6"E], 188–220 fms (344–403 m) [syntypes, ZSIC 6896–6900/9]). — Alcock & Anderson, 1895: pl. 13, fig. 2 (no record).
Munida militaris var. *curvirostris*: Henderson, 1888: 139 (part) (? from off Zamboanga taken in 250 fm (458 m)).
Munida andamanica: Alcock, 1901: 242 (Andaman Sea and Arabian Sea in the neighborhood of the Laccadives and Maldives, 178–405 fm (326–741 m)). — Balss, 1913b: 17 (Sagami Bay, 800 m). — Doflein & Balss, 1913: 143 (W of Sumatra, off E coast of Somali Republic, 141–1079 m). — Parisi, 1917: 1 (Sagami Bay). — Yokoya, 1933: 63 (Bungo Strait, Tosa Bay, off Owase, and Suruga Bay, 180–457 m). — Takeda, 1982: 51, fig. 152 (no record). — Miyake, 1982: 149, pl. 50, fig. 1 (off Ashizurizaki, Tosa Bay, 500 m). — Baba, 1982a: 103 (Izu Shoto, Japan, 450 m); 1988: 85 (Philippine and Indonesia, 340–1360 m); this paper (Java Sea E of Makassar, Moro Gulf off Zamboanga, off W Mindanao and Japan, 200–600 m). — Baba in Baba *et al.*, 1986: 169, 289, fig. 119 (Tosa Bay, Kyushu-Palau Ridge, and Okinawa Trough, 200–520 m). — Tirmizi & Javed, 1993: 115, figs. 50–53 (off S Mozambique, 600–665 m).
- Munida curvatura* Benedict, 1902: 253, fig. 5 (type locality: off Honshu, Japan [Manazuru Zaki, N. 8d,

- W. 4.5 M], 153 fms (280 m) [holotype, ♀, USNM 25466]).
- Munida curvirostris*: Baba & Macpherson, 1991: 538 (part) (reexamination of the “Challenger” material). — Baba, 1994: 9 (off Central Queensland, 689–704 m).
- Not *Munida andamanica*: Tirmizi, 1966: 198 (material from Zanzibar area, 640 m = *M. africana* Balss, 1913; the identity of the other material from the Gulf of Aden in 457–1022 m and Maldives in 456 m remains questionable; see Macpherson & de Saint Laurent, 2002: 467).
- Munida andrewi* Macpherson, 1994
See *Agononida andrewi* (Macpherson, 19946).
- Munida angusta* Macpherson, 2004**
Munida angusta Macpherson, 2004: 250, figs. 4, 16 (New Caledonia, Fiji and Tonga, between 350–357 m and 500–600 m; type locality: Tonga, 21°07.83'S, 175°22.38'W, 384–402 m [holotype, ♂, MNHN Ga 4559]).
- *[*Munida antonbruuni* (Tirmizi & Javed, 1980)]
Phylladiorhynchus antonbruuni Tirmizi & Javed, 1980: 256, fig. 1 (type locality: off Mozambique, 19°51'S, 36°21'E, 62 m [holotype, USNM 180386]).
Munida antonbruuni Tirmizi & Javed, 1980: 126, fig. 56 (redescription of holotype).
[Because of the very small size (young stage) of the holotype, the systematic status of this species can not be fixed. In addition, the type is now in poor condition].
- Munida apodis* Macpherson, 2004**
Munida apodis Macpherson, 2004: 252, fig. 5 (Fiji and Tonga, between 353–390 m and 383–393 m; type locality: Tonga, 19°52.32'S, 174°39.24'W, 371–387 m [holotype, ov. ♀, MNHN Ga 4560]).
- Munida arabica* Tirmizi & Javed, 1992**
Munida arabica Tirmizi & Javed, 1992: 312, fig. 1 (type locality: off Somalia, 59–61 m [holotype, ♂, USNM]). — Tirmizi & Javed, 1993: 95, fig. 41 (redescription of holotype).
- Munida armata* Baba, 1988**
Munida armata Baba, 1988: 86, fig. 31 (South China Sea off SW Luzon, 183–216 m; type locality: 14°N, 120°22'30"E, 216 m [holotype, ov. ♀, USNM 150380]). — Macpherson, 1993a: 427 (Philippines, between 182–200 m and 192–209 m); 1997: 603 (Indonesia, between 174–176 m and 214–215 m). — Wu *et al.*, 1997: 105, figs. 18, 21F (Taiwan).
- Munida armilla* Macpherson, 1994**
Munida armilla Macpherson, 1994: 446, figs. 6, 65 (New Caledonia and Matthew–Hunter Islands, 233–700 m; type locality: New Caledonia, 24°54.96'S, 168°21.91'E, 500–580 m [holotype, ♂, MNHN Ga 2558]); 1996a: 390 (SW Pacific (Tuscarora Bank), 547–552 m); 2004: 255 (Tonga, 500–580 m).
- Munida asprosoma* Ahyong & Poore, 2004**
Munida militaris: Jones & Morgan, 2002: 135 (Australia) (not *M. militaris* Henderson, 1894).
Munida asprosoma Ahyong & Poore, 2004b: 20, fig. 3 (New South Wales and Queensland, between 823 m and 990–1053 m; type locality: E of Broken Bay, New South Wales, 33°35–33'S, 152°00–02'E, 823 m [holotype, ♀ AM P26795]).
? *Munida microps*: Baba, 1994: 13 (off Central Queensland, 956–1006 m) (not *M. microps* Alcock, 1894; see Ahyong & Poore, 2004b: 23).
- Munida babai* Tirmizi & Javed, 1976**
? *Munida gracilis*: Balss, 1915: 4, fig. 1 (Red Sea, 212–341 m).
Munida gracilis: Lewinsohn, 1969: 132 (no record).
Munida babai Tirmizi & Javed, 1976: 81, figs. 1–3 (off Natal, 118–150 m; type locality: 29°35' S, 31°38' E, 150 m [holotype, ♂, USNM 181103]). — Baba, 1990: 962 (Madagascar, 185–210 m). — Tirmizi & Javed, 1993: 122, figs. 54, 55 (off Durban, 118–150 m).
Not *Munida babai*: Baba, 1988: 89, fig. 32 (= *M. gillii* Macpherson, 1993). — Wu *et al.*, 1997: 107, figs. 19, 21G (possibly = *M. gillii* Macpherson, 1993).
[The Zoological Museum holds one lot of the species: 1 ov. ♀ (8.8 mm), 5 Thai-Dan. Exp. St. 1170, West Malay Peninsula, 9°13' N, 97°50' E, 70 m, mud with many large shells, 07 Mar 1966].
- Munida bapensis* Hendrickx, 2000**
Munida bapensis Hendrickx, 2000: 165, fig. 3 (type locality: Gulf of California, 27°52.5'N, 112°31.5'W, 620 m [holotype, ♂, EMU 5370]).
- Munida barangei* Macpherson, 1994**
Munida barangei Macpherson, 1994: 449, fig. 7 (New Caledonia, between 410–440 m and 475–500 m; type locality: New Caledonia, 23°38.60'S,

167°43.12'E, 418 m [holotype, ♂, MNHN Ga 2575]).

[*Munida barbeti* Galil, 1999]

Munida barbeti Galil, 1999: 59, fig. 1 (type locality: Flic en Flac, Mauritius, 55 m [holotype, ♀, SAMC A43262]). — Macpherson & de Saint Laurent, 2002: 468 (La Réunion, NW Madagascar, and Aldabra, between 28–41 m and 95–115 m).

***Munida benguela* de Saint Laurent & Macpherson, 1988**

Munida benguela de Saint Laurent & Macpherson, 1988: 106, figs. 1, 2a, 2c, 3a, 3d, 3f–i (South Africa, 450–825; type locality: South Africa, 29°15'S, 14°37'E, 467 m [holotype, ♂, MNHN Ga 1766]). — Baba, 1990: 962 (Madagascar, 480–710 m); this paper (off Durban and off Natal, between 500–545 m and 680–730 m).

***Munida brachytes* Macpherson, 1994**

Munida brachytes Macpherson, 1994: 450, fig. 8 (type locality: New Caledonia, 22°19.8'S, 168°42.8'E, 320 m [holotype, ♂, MNHN Ga 2580]).

[*Munida brucei* Baba, 1974]

Munida brucei Baba, 1974: 55, figs. 1, 2 (type locality: off E coast of Kenya, 65 fm (119 m) [holotype, ♂, BMNH 1973:203]).

[The Zoological Museum holds 1 ♂ (14.4 mm) taken from Maroon Point, Mauritius, 20–25 fm (37–46 m), sand, dredge, 07 Oct 1929, Th Mortensen].

***Munida caesura* Macpherson & Baba, 1993**

Munida caesura Macpherson & Baba, 1993: 388, fig. 3 (Japan and Philippines, between 250–300 m and 334–390 m; type locality: Tosa Bay, Japan, between 250–300 m [holotype, ♂, MNHN Ga 2329]). — Macpherson, 1997: 603 (Indonesia, between 156–305 m and 336–346 m). — Wu *et al.*, 1997: 108, figs. 20, 21H (Taiwan). — Baba, this paper (off Zamboanga, Bali, and Kei Islands, between 240 m and 293–366 m).

***Munida callirrhoe* Macpherson, 1994**

See under *Agononida* Baba & de Saint Laurent, 1996.

***Munida callista* Macpherson, 1994**

Munida callista Macpherson, 1994: 454, figs. 10, 67 (New Caledonia and Chesterfield Islands, between 400 m and 510–590 m; type locality: New

Caledonia, 22°16.28'S, 167°14.86'E, 445 m [holotype, ♂, MNHN Ga 2940]); 1996a: 391 (SW Pacific (Willis Islands) and Tonga, 327–360 m).

***Munida carinata* n. sp.**

Munida carinata Baba, this paper (Bali Sea and Mindanao, 450–549 m; type locality: Bali Sea, 7°42'S, 114°35'E, 450 m [holotype, ♂, ZMUC CRU-11570]).

***Munida chathamensis* Baba, 1974**

Munida chathamensis Baba, 1974: 388, figs. 6, 7 (type locality: Chatham Rise, New Zealand, 44°44.0'S, 175°42.0'W, 995–1110 m [holotype, ♀, ZLKU 15553]).

***Munida chydaea* Ah Yong & Poore, 2004**

Munida haswelli: Haig, 1973: 273 (part) (not *M. haswelli* Henderson, 1885; localities not shown by Ah Yong & Poore, 2004: 24).

Munida chydaea Ah Yong & Poore, 2004b: 24, fig. 4 (New South Wales, Victoria, Tasmania, and Great Australian Bight, 146–700 m; type locality: E of Brush Island, New South Wales, 35°28–34'S, 150°48–45'E, 467–448 m [holotype, ♀, AM P20669]).

[*Munida clinata* Macpherson, 1994]

Munida clinata Macpherson, 1994: 457, fig. 11 (New Caledonia, Philippines, and Chesterfield Islands, between 28–36 m and 245 m; type locality: New Caledonia, 22°48.2'S, 167°02.3'E, 80 m [holotype, ♂, MNHN Ga 2598]); 1996a 391, fig. 13 (SW Pacific (Futuna Island), between 100–110 m and 105–160 m); 1997: 605 (Indonesia, 85–124 m); 1999a: 415 (Vanuatu, between 100–110 m and 128–150 m); 2004: 255 (Fiji and Tonga, between 102–104 m and 160–177 m).

[The Zoological Museum holds 1 ♂ (13.6 mm), 2 ov. ♀ (6.8, 10.2 mm) and 2 ♀ (5.7, 7.2 mm) taken from the Kei Islands Expedition St. 53, 5°36'S, 132°55'E, 85 m, ZMUC CRU-11313].

***Munida comorina* Alcock & Anderson, 1899**

Munida comorina Alcock & Anderson 1899a: 18 (type locality: off Travancore coast (Kerala), 430 fm (787 m) [syntypes, ZSIC 2315–2329/10]). — Alcock & Anderson 1899b: pl. 43, fig. 3 (no record). — Alcock 1901: 239 (Arabian Sea off Travancore coast, 430–459 fm (787–840 m)). — Laurie 1926: 135 (Providence, 58 fm (106 m)).

***Munida compacta* Macpherson, 1997**

Munida compacta Macpherson, 1997: 605, fig. 2 (Indonesia, between 246–253 m and 685–694 m; type locality: Indonesia, 8°42'S, 131°53'E, 356–368 m [holotype, ov. ♀, MNHN Ga 3949]).

***Munida compressa* Baba 1988**

Munida compressa Baba, 1988: 91, figs. 33, 34 (Moluccas off W coast of Halmahera, South China Sea off SW Luzon, off Hong Kong, off SW Formosa, and Japan (Tosa Bay), 180–545 m; type locality: Moluccas off W coast of Halmahera, 545 m [holotype, ♂, USNM 150347]); this paper (off Zamboanga and Arafura Sea, between 293–366 m and 390 m). — Macpherson, 1993a: 427 (SW of Luzon and S of Mindoro, between 224 m and 640–668 m); 1997: 606 (Indonesia, 439–459 m). — Wu *et al.*, 1997: 111, figs. 22, 26A–C (Taiwan).

***Munida congesta* Macpherson, 1999**

Munida congesta Macpherson, 1999a, 415, figs. 2, 3d, 4a (type locality: Vanuatu, 19°23'S, 169°29'E, 536–566 m [holotype, ov. ♀, MNHN Ga 4374]); 2004: 256 (Fiji and Tonga, between 464–507 m and 777–507 m).

***Munida cornuta* Macpherson, 1994**

Munida cornuta Macpherson, 1994: 459, figs. 12, 13c (type locality: Kiribati, 600 m [holotype, ♂, MNHN Ga 2620]); 2004: 256 (Fiji and Tonga, between 371–437 m and 558–586 m).

***Munida crassa* Baba, 1982**

Munida crassa Baba, 1982a: 107, fig. 3 (East China Sea W of Tokara-gunto and W of Osumi-gunto, 770–950 m; type locality: East China Sea W of Osumi-gunto, 770–800 m [holotype, ov. ♀, NSMT-Cr. 6180]). — Baba in Baba *et al.*, 1986: 169, 289, fig. 120 (Okinawa Trough, 680–770 m).

***Munida curvipes* Benedict, 1902**

Munida curvipes Benedict, 1902: 254, fig. 6 (type locality: off Port Otway, Chile [off Archipelago de los Chonos, Chile, 45°35'00"S, 75°55'00"W], 1050 fms (1922 m) [holotype, ♂, USNM 20533]). — Haig, 1955: 38 (no record). — Wicksten, 1989: 315 (list). — Hendrickx, 2003: 118, fig. 1 (redescription of holotype).

Munida curvatura Benedict, 1902

See *Munida andamanica* Alcock, 1894.

***Munida curvirostris* Henderson, 1885**

Munida curvirostris Henderson, 1885: 412 (type locality: off Cebu, 375 fm (686 m) [holotype, ♀, BMNH 1888:33]). — Baba, this paper (E of Cebu, Philippines, 780–836 m; including examination of holotype).

Munida militaris, Henderson, var. *curvirostris*, Henderson, 1888: 139 (part), pl. 3, figs. 7, 7a, 7b (type material; ♂ from off Zamboanga taken in 250 fm (458 m) is referred to *M. andamanica* Alcock, 1894; see above under the “Remarks” of *M. andamanica*).

Not *Munida curvirostris*: Baba, 1994: 9 (= *M. andamanica* Alcock, 1894).

The followings are removed from the synonymy until its systematic status is fixed by reexamination of the material:

Munida militaris var. *curvirostra*: Zarenkov & Khodkina, 1981: 91 (Marcus-Necker Rise, 1000–1350 m).

Munida curvirostris: Macpherson, 1993a: 428 (Philippines, 280–440 m and 1030–1190 m); 1997: 606 (Indonesia, between 688–694 m and 769–809 m).

[*Munida debilis* Benedict, 1902]

Munida debilis Benedict, 1902: 256, fig. 7 (type locality: S Baja California, 22°52'N, 109°55'W, 31 fm (57 m) [type, USNM 20534]). — Luke, 1977: 30 (list; Gulf of California, 75–64 m). — Hendrickx, 2000: 168, fig. 4 (S Gulf of California, 30–57 m).

[The Zoological Museum holds the following lots from shallow waters. Th. Mortensen's Pacific Expedition 1914–16, S of San José, Isl. Perlas, 25 fm (46 m), mud, sand, dredge, 25 Jan. 1916: 1 ♂ (3.5 mm); S of San José, Isl. Perlas, 25 fm (46 m), mud shells, 27 Jan. 1916: 1 ov. ♀ (9.9 mm)].

***Munida declivis* Baba, 1994**

Munida declivis Baba, 1994: 9, fig. 4 (off Central Queensland, 295–309 m; type locality: 17°21.77'S, 146°48.52'E, 303–296 m [holotype, ♀, QMW 19708]).

***Munida delicata* Macpherson, 2004**

Munida sacksi Macpherson, 1993a: 438 (part) (specimens from New Caledonia, 300–330 m); 1999a: 424 (Vanuatu, between 486–494 m and 532–599 m) (not *M. sacksi* Macpherson, 1993).

Munida delicata Macpherson, 2004: 257, fig. 6 (New Caledonia, Vanuatu, Fiji and Tonga, between 303–365 m and 592–622 m; type locality: New Caledonia, 23°03'S, 166°56'E, 592–622 m [holotype, ♂, MNHN Ga 4561]).

***Munida disgrega* n. sp.**

Munida disgrega n. sp., Baba, this paper (off Victoria and NE of Flinders Island, between 275–476 m; type locality: off E Victoria, 38°05'S, 150°00'E, 366–476 m [holotype, ♀, ZMUC CRU-11558]).

***Munida dispar* Macpherson & Baba, 1993**

Munida japonica: Balss, 1915: 3 (Red Sea, 212–900 m). — Lewinsohn, 1969: 131, fig. 26 (reexamination of specimen taken by *Pola* Expedition, Red Sea, 690 m). — Türkay, 1986: 130 (Red Sea, 212–900 m).

Munida dispar Macpherson & Baba, 1993: 390, fig. 4 (Red Sea, between 363–383 m and 880–884 m; type locality: Red Sea, 20°52.5'N, 37°25.2'E, 490–588 m [holotype, ♀, SMF 21168]).

***Munida dissita* Macpherson, 1999**

Munida dissita Macpherson, 1999b, 477, fig. 2 (type locality: Seychelles Islands, 4°35.2'S, 56°24.9'E, 400 m [holotype, ♂, MNHN Ga 4342]).

***Munida distiza* Macpherson, 1994**

Munida distiza Macpherson, 1994: 459, figs. 14, 68, 69 (New Caledonia, Philippines, Loyalty Islands, and Matthew & Hunter Islands, between 150–210 m and 400 m; type locality: New Caledonia, 24°42.85'S, 168°09.73'E, 271 m [holotype, ♂, MNHN Ga 2625]). — Poupin, 1996: 22, 23 (figs. b, c) (Tuamotu Archipelago, 290 m).

***Munida ducoussoi* Macpherson & de Saint Laurent, 1991**

Munida ducoussoi Macpherson & de Saint Laurent, 1991: 382, fig. 3 (Tuamotu and Tubuai Islands, 280–550 m; type locality: Austral Island, Tubuai Islands, 23°50'S, 147°43.4'W, 550 m [holotype, ♂, MNHN Ga 1893]).

***Munida eclepsis* Macpherson, 1994**

Munida eclepsis Macpherson, 1994: 463, figs. 15, 70 (New Caledonia, 515–520 m; type locality: New Caledonia, 24°55.0'S, 168°22.0'E, 515 m [holotype, ♀, MNHN Ga 2632]); 2004: 259 (Fiji and Tonga, 400–460 m and 591–593 m).

***Munida elachia* Macpherson, 1994**

Munida elachia Macpherson, 1994: 465, figs. 16, 71 (New Caledonia, 573–650 m; type locality: New Caledonia, 24°39.90'S, 168°18.10'E, 573 m [holotype, ♀, MNHN Ga 2633]); 2004: 260 (Fiji, 240–319 m).

Munida eminens Baba, 1988

See under *Agononida* Baba & de Saint Laurent, 1996.

***Munida endeavourae* Ah Yong & Poore, 2004**

Munida microps: Haig, 1973: 271, fig. 1 (part) (larger specimen; off Green Cape, New South Wales, 470 fm (860 m)).

Munida endeavourae Ah Yong & Poore, 2004b: 29, fig. 5 (New South Wales, 620–1700 m; type locality: SE of Green Cape, New South Wales, 37°30'S, 150°33'E, 860 m [holotype, ♂, AM E3142]).

***Munida erato* Macpherson, 1994**

Munida erato Macpherson, 1994: 466, fig. 17 (New Caledonia and Chesterfield Islands, between 400 m and 420–450 m; type locality: New Caledonia, 400 m [holotype, ♂, MNHN Ga 2658]).

***Munida eudora* Macpherson & Baba, 1993**

Munida eudora Macpherson & Baba, 1993: 391, fig. 5 (Red Sea, between 214–237 m and 276–296 m; type locality: Red Sea, 12°43.7'N, 43°15'E, 228–235 m [holotype, ♀, SMF 21171]).

Possibly *Munida japonica*: Tirmizi & Javed, 1993: 109, fig. 47 (western Indian Ocean off Tanzania, S Mozambique and South Africa, 100–165 m).

[*Munida evarne* Macpherson & de Saint Laurent, 1991]

Munida evarne Macpherson & de Saint Laurent, 1991: 415, fig. 13 (type locality: Tubuai Islands, 100–130 m [holotype, ♂, MNHN Ga 1908]).

Munida exigua Baba, 1988

See under *Munida heteracantha* Ortmann, 1892.

[*Munida foresti* Macpherson & de Saint Laurent, 2002]

Munida foresti Macpherson & de Saint Laurent, 2002: 468, fig. 1 (type locality: La Réunion, 58–70 m [holotype, ♂, MNHN Ga 4570]).

Munida fortiantennata Baba, 1988

See *Agononida fortiantennata* (Baba, 1988).

***Munida galaxaura* Macpherson, 1996**

Munida galaxaura Macpherson, 1996a: 392, fig. 1 (SW Pacific (Futuna Island and Wallis Islands), between 210–245 m and 260–300 m; type locality: Futuna Island, 14°13.5'S, 178°10.8'W, 260–300 m [holotype, ov. ♀, MNHN Ga 3643]); 2004: 260 (Fiji, between 230–251 m and 389–400 m).

***Munida gillii* Macpherson, 1993**

Munida babai: Baba, 1988: 89, fig. 32 (between Samar and Leyte, and South China Sea off Hong Kong, 112–113 m) (not *M. babai* Tirmizi & Javed, 1976).

Munida gillii Macpherson, 1993a: 429, fig. 2 (Philippines, 122–127 m and 129–134 m; type locality: 13°53.1' N, 120°08.9'E, 129–134 m [holotype, ♂, MNHN Ga 2479]); 1996b: 424 (New Caledonia, between 100–120 m and 270–290 m); 2004: 260 (Fiji, between 102–104 m and 210–282 m).

Possibly *Munida babai*: Wu *et al.*, 1997: 107, figs. 19, 21G (Taiwan) [not *M. babai* Tirmizi & Javed, 1976; discrimination character (of P1) absent in description].

[*Munida glabella* Macpherson, 2000]

Munida glabella Macpherson, 2000: 417, fig. 1 (type locality: Marquesas Islands, 09°48.9'S, 139°09.5'E, 117 m [holotype, ov. ♀, MNHN Ga 4356]).

***Munida gordoae* Macpherson, 1994**

Munida gordoae Macpherson, 1994: 469, fig. 18 (New Caledonia, Loyalty Islands, Matthew & Hunter Islands, and Chesterfield Islands, between 80–120 m and 500 m; type locality: Chesterfield Islands, 19°33.95'S, 158°27.34'E, 95 m [holotype, ♂, MNHN Ga 2661]); 1999a: 419 (Vanuatu, 100–110 m); 2004: 261 (Fiji, 300–307 m).

***Munida gracilipes* Faxon, 1893**

Munida gracilipes Faxon, 1893: 179 (type locality: “Albatross” St. 3391 [Gulf of Panama, 07°33.40'N, 079°43.20'W, 153 fm (280 m)] [4 syntypes, not located]); 1895: 77, pl. 16, figs. 2, 2a, 2b (Gulf of Panama, 153 fm (280 m)). — Wicksten, 1989: 315 (list). — Hendrickx, 2000: 173, fig. 5 (Herradura Island, Costa Rica, 183–219 m); 2003: 137 (off Isla Harradura, Costa Rica and off Peru, 180–225 m).

***Munida gracilis* Henderson, 1885**

Munida gracilis Henderson 1885: 412 (type locality:

off New Zealand, 275 fm (503 m) [1 ♂, 1 ♀, syntypes, BMNH 1888:33]); 1888: 143, pl. 14: figs. 4, 4a, 4b (W of New Zealand, 275 fm (503 m)). — Thomson, 1899: 196 (list). — Macpherson 1994: 471, fig. 19 (New Zealand, 503 m (reexamination of type material)). — Baba, this paper (Tasman Sea and off E coast of South Island of New Zealand, 365–610 m).

***Munida gregaria* (Fabricius, 1793)**

Galathea gregaria Fabricius, 1793: 473 (type locality: Patagonia in Oceano Americano Patagonium (S Atlantic 37°30'S) [type lost]).

Munida subrugosa Dana, 1852: 479 (Hermite Island).

— Dana, 1855: pl. 30, figs. 7a, 7b, 7c. — Henderson, 1888: 124 (Port Otway, Patagonia, 46°53'15S, 75°12'00W, 45 fm (82 m)). — Thomson, 1899: 194 (Otago Harbor, Paterson Inlet). — Chilton, 1909: 612 (Subantarctic). — Haig, 1955: 38, fig. 10 (Chile, 0–250 m); 1973: 274 (off Mt. Cann (Victoria), Bass Strait, Entrance to Oyster Bay (Tasmania), and Maria I. (Tasmania), 70 fm (128 m)). — Garth, Haig & Yaldwyn, 1967: 176 (Isla Wellington, S Chile, 6–18 m). — Hendrickx, 2003: 133, fig. 10 (Chile (Golfo de Ancud) and Argentina (Tierra del Fuego), 5–6 m).

Grimothea gregaria: Dana, 1852: 483 (Orange Bay). — Dana, 1855: pl. 31, figs. 1a, 1b, 1c.

Munida subrugosa australiensis Henderson, 1888: 125, pl. 13: figs. 3, 3a, 3b (type-locality: off E Moncoeur Island, Bass Strait, 38–40 fm (70–73 m) [syntypes, BMNH 1888:33]).

Munida gregaria: Chilton, 1911: 301 (New Zealand). — Haig, 1955: 36, fig. 9 (S of Punta Arenas (53°11'S, 70°55'W), and near Agua Fresca (53°22'S, 70°57'W, tidal). — Williams, 1973: 197, figs. 1–16 (Otago Harbor, New Zealand). — Hendrickx, 2003: 120, figs. 2, 3 (Magellan Strait, between Ushuaia, Argentina and Puerto Williams, Chile, off Buenos Aires, shore to 300 m). — Ahyong & Poore, 2004b: 32 (New South Wales and Tasmania, 120–128 m). — Baba, this paper (E coast of New Zealand and Chile, surface and 138–126 m).

Not *Munida gregaria*: Boone, 1938: 267, pls. 106, 107 (Ton Gay Peninsula, Port Lagunas, and Chiquiso Channel (Chile), 7–90 fm (13–165 m)) (= *Cervimunida johni* Porter, 1903).

***Munida guttata* Macpherson, 1994**

Munida guttata Macpherson, 1994: 471, figs. 20, 73

(New Caledonia and Loyalty Islands, 170–320 m; type locality: New Caledonia, 24°42.85'S, 168°09.73'E, 271 m [holotype, ♂, MNHN Ga 2673]); 1996a: 394 (SW Pacific (Futuna Island), 224–252 m); 2004: 261 (Fiji and Tonga, between 230–251 m and 316–340 m).

***Munida haswelli* Henderson, 1885**

Munida Haswelli Henderson, 1885: 411 (type locality: off New South Wales coast, 120 fm (220 m) [depth record was changed to 150 fm in 1888 (see below)], [4 syntypes, BMNH 1888:33]).

Munida haswelli: Henderson, 1888: 139, pl. 3: figs. 5, 5b (off Twofold Bay, Australia, 150 fm (275 m)). — Haig, 1973: 273 (part) (off Gabo I. (Victoria), off Mt. Cann, Gippsland (Victoria), off Maria I. (Tasmania), off Bruny I. (Tasmania), and Great Australian Bight, 60–230 fm (110–421 m)). — Macpherson, 1994: 474, fig. 21 (reexamination of type material). — Ahyong & Poore, 2004b: 33 ((New South Wales, Tasmania, Great Australian Bight, and Western Australia, between 46–55 m and 448 m). — Baba, this paper (New South Wales, between 55–92 m and 140–142 m).

Munida hawaiiensis Baba, 1981

See *Paramunida hawaiiensis* (Baba, 1981).

***Munida heteracantha* Ortmann, 1892**

Munida heteracantha Ortmann 1892 255, pl. 11: figs. 12, 12i, 12k (Kadsiyama [= Katsuyama] and Sagami Bay, shallow water [syntypes, MZS 354]). — Macpherson & Baba, 1993: 393, fig. 6 (Japan, Philippines, and Indonesia, between 120 m and 208–222 m [lectotype designated, ov. ♀, MZS 354]); 1994: 11 (off Central Queensland, 296–303 m). — Macpherson, 1996b: 42 (New Caledonia, 170 m); 2004: 261 (Fiji, between 144–150 m and 282–322 m).

Munida exigua Baba, 1988: 98, fig. 36 (E of Masbate, vicinity of Marinduque off SW Luzon, and South China Sea off Hong Kong, 110–198 m; type locality: off SW Luzon, 13°42'50"N, 121°51'30"E, 165 m [holotype, ♂, USNM 150395]).

[The Zoological Museum holds the following lot: 1 ov. ♀ (9.9 mm), “Dog” St. 18, Bali Sea, 7°15' S, 114°45' E, ca. 100 m, sand, mud, trawl, 11 Apr 1929, Th. Mortensen, ZMUC-CRU-11088].

Not *Munida heteracantha*: Baba, 1988: 104, fig. 38 (= *M. oritea* Macpherson & Baba, 1993). — Tirmizi & Javed, 1993: 111, figs. 48, 49 (?= *Munida orithea*

Macpherson & Baba).

Identity questioned:

Munida heteracantha: Doflein, 1902: 644. — Baba, 1969c: 49 (East China Sea, 310 m).

Munida japonica heteracantha: Balss, 1913b: 15 (Sagami Bay, 110–350 m). — Yanagita, 1943: 27, fig. 8 (off Fukuura and Yoshihama, Izu Peninsula, 30–130 m).

Munida japonica var. *heteracantha*: Melin, 1939: 89, fig. 58 (E of Chichijima, Bonin Islands, 100 m).

***Munida hispida* Benedict, 1902**

Munida hispida Benedict, 1902: 259, fig. 10 (Galapagos Islands and off Lower California, 313–496 m; type locality: Galapagos Islands [between Santa Cruz and San Cristobal Islands, 00°46'00"S, 89°42'00"W], 271 fm (496 m) [type, USNM 20535]). — Schmitt, 1921: 166, fig. 106 (reexamination of type material). — Luke, 1977: 29 (list; Channel Islands, NE Guadalupe, and W Baja California, between 329–311 m and 823–540 m). — Wicksten, 1982: 245 (Pt. Conception–Northern Islands and Southern islands and banks (Santa Barbara, Santa Catalina, San Nicolas, and San Clemente Islands, Tanner and Cortez Banks, 165–500 m); 1987: 50 (California, 185 m); 1989: 315 (list). — Hendrickx, 2000: 173, fig. 6 (reexamination of type material); 2003: 136 (Baja California and California off Gull Island, off New Port Pier, N of San Clemente Island, between 190–215 m and 1080 m).

***Munida honshuensis* Benedict, 1902**

Munida honshuensis Benedict, 1902: 261, fig. 11 (type locality: off Honshu, Japan [Ose Zaki, S. 55d, W., 2.25 M], 60–70 fms (110–128 m) [holotype, ♀, USNM 25472]). — Macpherson & Baba, 1993: 396, fig. 7 (Japan, between 111–130 m and 250–300 m).

Munida japonica: Ortmann, 1892: 254, pl. 11: figs. 11, 11i, 11k (Sagami Bay, 50–100 fm (92–183 m)).

[The Zoological Museum holds one lot from shallow waters: 1 ♀ (9.4 mm), 34°20' N, 130°10' E, 60 fm (110 m), sand, shells, dredge, 18 May 1914, Th. Mortensen].

***Munida hyalina* Macpherson, 1994**

Munida hyalina Macpherson, 1994: 477, fig. 22 (Chesterfield Islands and New Caledonia, between 310–315 m and 700–720 m; type locality: Chesterfield Islands, 19°39.00'S, 158°49.00'E, 700–720 m [holotype, ♂, MNHN Ga 2683]); 1997:

607 (Indonesia, 205–212 m); 2004: 261 (Fiji and Tonga, between 229–246 m and 523–806 m).

***Munida hystrix* Macpherson & de Saint Laurent, 1991**

Munida hystrix Macpherson & de Saint Laurent, 1991: 376, fig. 1, pl. 1A (type locality: Mururoa, Tuamotu Islands, 21°51.1'S, 138°58.7'W, 100 m [holotype, ♂, MNHN Ga 1917]). — Poupin, 1996: 22, 23 (fig. e) (Tuamotu Archipelago, 290 m).

***Munida idyia* Macpherson, 1994**

Munida idyia Macpherson, 1994: 477, fig. 23 (type locality: New Caledonia, 18°57.0'S, 163°12.6'E, 485 m [holotype, ♂, MNHN Ga 2648]); 1999a: 419 (Vanuatu, between 360–371 m and 469–525 m); 2004: 262 (Fiji, between 244–252 m and 478–500 m).

Munida incerta Henderson, 1888

See *Agononida incerta* (Henderson, 1888).

***Munida inornata* Henderson, 1885**

Munida inornata Henderson, 1885: 411 (type locality: off the Admiralty Islands, 150 fm (275 m) [3 syntypes (1 ♂, 2 ♀), BMNH 1888:33]); 1888: 140, pl. 14: figs. 6, 6a, 6b (N of Papua, 150 fm (275 m)). — Macpherson & Baba, 1993: 398, fig. 8 (New Caledonia; reexamination of type material from Admiralty Islands, 330–335 m); this paper (off SW Mindanao, Bali Sea, and Kei Islands, 220–549 m).

Munida militaris: Henderson, 1885: 410 (part) (off the Ki [Kei] Island, 129 fm (236 m)).

?*Munida inornata*: Baba & Macpherson, 1991: fig. 3a, c, e, g, i, k, n (“Challenger” St. 192 off Little Ki [Kei] Island, Indonesia).

Identity questioned:

Munida inornata: Baba, 1988: 106, fig. 39 (Sulu Archipelago, 340 m).

***Munida insularis* Macpherson, 1999**

Munida insularis Macpherson, 1999b: 474, fig. 1 (type locality: Seychelles Islands, 4°59.8'S, 56°48.8'E, 300 m [holotype, ♂, MNHN Ga 4340]).

***Munida isos* Ahyong & Poore, 2004**

Munida isos Ahyong & Poore, 2004b: 34, fig. 6 (Tasmania and New South Wales, 640–1700 m; type locality: off St. Patricks Head, Tasmania, 41°35'S, 148°14'E, 1100 m [holotype, ♂, AM

P81818]).

[*Munida janetae* Tirmizi & Javed, 1992]

Munida janetae Tirmizi & Javed, 1992: 317, fig. 2 (off Somali Republic and off Durban, between 78–82 m and 118 m; type locality: off Somalia, 09°36'N, 51°01'E, 78–82 m [holotype, ♀, USNM]); 1993: 98, fig. 42 (redescription of type material).

***Munida japonica* Stimpson, 1858**

Munida japonica Stimpson, 1858: 252 (type locality: Kagoshima Bay, Japan, 20 fm (36 m) [type material no longer extant]); 1907: 235 (Kagoshima, Japan, 12 fm (22 m)). — Miyake & Baba, 1967c: 240, figs. 11, 12 (East China Sea, 98–196 m). — Baba & Macpherson, 1991: figs. 3b, d, f, h, j, l, m (“Challenger” St. 192, off Little Ki Island, Indonesia, 140 fm (256 m)); not fig. 2 (“Challenger” St. 173 off Matuku, Fiji Islands (= *M. agave* Macpherson, & Baba, 1993)). — Macpherson & Baba, 1993: 399, fig. 9 (Japan and Philippines, between 102 m and 192–220 m [selection of neotype, ov. ♀, MNHN Ga 2337, Makura-zaki, Kagoshima Pref., Japan, 145 m]). — Macpherson, 1997: 607 (Indonesia, between 170–206 m and 206–209 m). — Wu *et al.*, 1997: 115, figs. 24, 26F, G (Taiwan). — Komai *et al.*, 2002: 57 (off Tsushima Island, Japan, 133 m). — Baba, this paper (Japan and Kei Islands, between 137–732 m).

Munida militaris Henderson, 1885: 410 (part) (off the Ki [Kei] Island, 129 fm (236 m)); 1888: 137 (part) (off Little Ki [Kei] Island, 140 fm (256 m)).

Not *Munida japonica*: Ortmann, 1892: 254, pl. 11: figs. 11, 11i, 11k (= *M. honshuensis* Benedict, 1902). — Balss, 1915: 3 (= *M. dispar* Macpherson & Baba, 1993). — Lewinsohn, 1969: 131, fig. 26 (= *M. dispar* Macpherson & Baba, 1993). — Tirmizi & Javed, 1993: 109, fig. 47 (possibly = *M. eudora* Baba & Macpherson, 1993). — Minemizu, 2000: 168 (= *Raymunida* sp.)

Identity questioned:

Munida japonica: Miers, 1879: 51 (Korea Strait, 40 fm (73 m)). — Borradaile, 1900: 422 (Talili Bay, New Britain). — de Man, 1902: 724 (Halmahera). — Doflein, 1902: 644 (Sagami Bay). — Parisi, 1917: 1 (Sagami Bay). — Yokoya, 1933: 58 (Tanega-shima northward to Tsugaru Strait via Sea of Japan, and to Inuboe-zaki in the Pacific coast, 62–543 m). — Melin, 1939: 85, figs. 54–57 (E of Chichijima, Bonin Islands, 100 m). — Miyake,

1965: 635, fig. 1046 (no record); 1982: 146, pl. 49, fig. 4 (E of Koshiki-jima, Kagoshima, 300 m). — Tirmizi, 1966: 195, figs. 15, 16 (Red Sea, and Zanzibar, 55–194 m). — Kim, 1973: 178, pl. 65: fig. 7 (Korea). — Haig, 1973: 271 (between Freemantle and Geraldton, Western Australia, 80–120 fm (146–220 m)). — Haig, 1974: 447 (Western Australia). — Baba, 1977a: 253 (Sulu Archipelago off Zamboanga, 72–80 m). — Takeda, 1982: 51, fig. 151 (no record). — Baba in Baba *et al.*, 1986: 171, 290, fig. 122 (Tosa Bay, 150–190 m). — Baba, 1988: 108 (Flores Sea off S Sulawesi, Davao Gulf off SE Mindanao, off N Mindanao, off NE Palawan, between Samar and Leyte, between Masbate and Leyte, South China Sea off SE and SW & NW Luzon, 51–333 m); 1989: 131 (Oshima Strait, Amami-oshima, 40–60 m). — Tirmizi & Javed, 1993: 109, fig. 47 (western Indian Ocean off Tanzania, S Mozambique and South Africa, 100–165 m).

Munida japonica typica: Balss, 1913b: 15, fig. 14 (Sagami Bay and Takao, Formosa, 50–130 m).

Munida militaris variety *andamanica*: Boone, 1935: 42, pl. 10 (Solor Strait, Duch East Indies).

Munida japonica japonica: Yanagita, 1943: 24, fig. 7 (Japan: Izu Peninsula, off Manazuru, off Hatsushima, Kumanonada, off Kabane of Aichi Prefecture, and Toyama Bay, 25–200 m).

***Munida javieri* Macpherson, 1994**

Munida javieri Macpherson, 1994: 480, figs. 24, 75 (New Caledonia, Matthew & Hunter Islands, and Chesterfield Islands, between 280 m and 430–440 m; type locality: New Caledonia, 24°45.7'S, 168°08.4'E, 320 m [holotype, ♂, MNHN Ga 2740]); 2004: 262 (Fiji, 390–405 m and 450–460 m).

***Munida kapala* Ahyong & Poore, 2004**

Munida kapala Ahyong & Poore, 2004b: 38, fig. 7 (Queensland and New South Wales, between 244 m and 403–549 m; type locality: NE of Tweed Heads, Queensland, 28°02–05'S, 153°57'E, 364 m [holotype, ♂, AM P31425]).

[*Munida kawamotoi* Osawa & Okuno, 2002]

Munida kawamotoi Osawa & Okuno, 2002: 134, figs. 3, 4, 5C, D (Ryukyu Islands, 25–35 m; type locality: Kume-jima, Ryukyu Islands, 25 m [holotype, ♂, NHMIC ZC 617]).

***Munida keiensis* n. sp.**

Munida keiensis Baba, this paper (type locality: Kei Islands, 400 m [holotype, ♀, ZMUC CRU-11557]).

***Munida kuboi* Yanagita, 1943**

Munida kuboi Yanagita, 1943: 20, figs. 5, 6 (type localities: Toyama Bay, S of Oga, and NW of Niigata, 78–148 m [types lost]). — Baba, 1988: 109, fig. 4 (Illana Bay off SW Mindanao, between Cebu and Bohol, South China Sea off SW Luzon, 216–366 m). — Macpherson, 1993a: 431 (Philippines and Indonesia, 150–159 m and 300–330 m); 1997: 607 (Indonesia, between 239–250 m and 285–297 m). — Wu *et al.*, 1997: 117, figs. 25, 26H (Taiwan). — Macpherson & de Saint Laurent, 2002: 475, fig. 3D (Philippines). — Baba, this paper (Japan, Bali Sea and off Durban, 94–412 m).

Not *Munida kuboi*: Baba, 1990: 964 (= *M. shaula* Macpherson & de Saint Laurent, 2002).

***Munida laevis* Macpherson & Baba, 1993**

Munida laevis Macpherson & Baba, 1993: 402, fig. 10 (type locality: Philippines, 14°09.3'N, 120°26.2'E, 174–204 m [holotype, ov. ♀, MNHN Ga 2334]).

The Zoological Museum holds the following lot from shallow waters: 1 ♀ (4.7 mm), Kei Islands Expedition St. 16, 5°32'20"S, 132°37'E, 50 m, sand with *Lithothamnion*, dredge, 12 Apr 1922.

***Munida latior* n. sp.**

Munida latior Baba, this paper (Mauritius, 238 m; type locality: Mauritius, “Maurice” St. 47, 238 m (holotype, ♂, ZMUC CRU-11121)).

Munida laurentae Macpherson, 1994

See *Agononida laurentae* (Macpherson, 1994).

***Munida leagora* Macpherson, 1994**

Munida leagora Macpherson, 1994: 485, figs. 26, 76 (New Caledonia, Loyalty Islands, and Chesterfield Islands, 265 m and 487–610 m; type locality: New Caledonia, 22°16.28'S, 167°14.86'E, 445 m [holotype, ♂, MNHN Ga 2795]); 1996a: 394 (SW Pacific (Bayonnaise Bank), 400–420 m); 1999a: 419 (Vanuatu, between 344–366 m and 462–498 m); 2004: 262 (Fiji and Tonga, between 240–249 m and 420–508 m).

***Munida lenticularis* Macpherson & de Saint Laurent, 1991**

Munida lenticularis Macpherson & de Saint Laurent, 1991: 399, fig. 8; pl. 1F (type locality: Mururoa, Tuamotu Islands, 21°46.8'S, 138°52.1'W, 200 m [holotype, ♂, MNHN Ga 1903]). — Poupin, 1996: 22, 23 (fig. f) (Tuamotu Archipelago, 200–290 m).

***Munida leptitis* Macpherson, 1994**

Munida leptitis Macpherson, 1994: 487, fig. 27 (Loyalty Islands and New Caledonia, 21–440 m; type locality: Loyalty Islands, 20°22.25'S, 166°10.00'E, 21 m [holotype, ♀, MNHN Ga 2810]); 1996a: 394, fig. 14 (SW Pacific (Waterwitch Bank, Combe Bank, Wallis Islands), between 275–295 m and 370 m); 1997: 607 (Indonesia, between 206–210 m and 296–299 m); 1999a: 419 (Vanuatu, between 258–265 m and 475–480 m); 2004: 263 (Fiji and Tonga, between 348–402 m and 567–699 m).

[*Munida leptosyne* Macpherson, 1994]

Munida leptosyne Macpherson, 1994: 489, fig. 28 (Loyalty Islands and Chesterfield Islands, between 6–10 m and 100 m; type locality: Loyalty Islands, 20°53.76'S, 167°16.86'E, 80 m [holotype, ov. ♀, MNHN Ga 2812]). — Osawa & Okuno, 2002: 130, figs. 1, 5A (Kume-jima, Ryukyu Islands, Japan, 35 m).

Munida leviantennata Baba, 1988

Transferred to *Enriquea* n. gen.

***Munida limatula* Macpherson, 2004**

Munida limatula Macpherson, 2004: 264, fig. 7 (Tonga, between 385–405 m and 444–447 m; type locality: Tonga, 22°11.46'S, 175°27.42'W, 385–405 m [holotype, ov. ♀, MNHN Ga 4562]).

[*Munida limula* Macpherson & Baba, 1993]

Munida japonica: Baba, 1990: 964 (Madagascar, 42–115 m).

Munida limula Macpherson & Baba, 1993: 402, fig. 11 (Madagascar, between 42 m and 105–115 m; type locality: 25°11.2'S, 47°14.7'E, 85–90 m [holotype, ov. ♀, MNHN Ga 2335]).

[*Munida lineola* Macpherson, 1994]

Munida lineola Macpherson, 1994: 491, fig. 29 (type locality: New Caledonia, 22°02'S, 165°57'E, 135–150 m [holotype, ♂, MNHN Ga 3215]).

***Munida longicheles* Macpherson & de Saint Laurent, 1991**

Munida longicheles Macpherson & de Saint Laurent, 1991: 409, fig. 11 (type locality: Mururoa, Tuamotu Islands, 21°51.45'S, 139°01.98'W, 439 m [holotype, ♂, MNHN Ga 1998]). — Poupin, 1996: 22, 23 (fig. g) (Tuamotu Archipelago, 439 m).

Munida longispinata Baba, 1988

See under *Agononida* Baba & de Saint Laurent, 1996.

***Munida macrobrachia* Hendrickx, 2003**

Munida macrobrachia Hendrickx, 2003: 123, figs. 4, 5C, 4D (off S California, 540–612 m; type locality: off Point Vicente, Los Angeles County, California, 540–612 m [holotype, ♂, LACM Cr 1976-349.1]).

***Munida magniantennulata* Baba & Türkay, 1992**

Munida magniantennulata Baba & Türkay, 1992: 205, figs. 2, 3 (Valu-Fa-Ridge, Lau Basin, hydrothermal active sites, 1806–2003 m; type locality: East side of Valu-Fa-Ridge, Lau Basin, 2003 m [holotype, ♂, SMF 20355]). — Baba & de Saint Laurent, 1992: 326 (Lau Basin, hydrothermal active site, 1750 m). — Baba, 1994: 12 (off Central Queensland, 1223–1609 m).

***Munida major* Baba, 1988**

Munida major Baba, 1988: 118, figs. 45, 46 (Sulu Sea off Cagayan I., between Leyte and Mindanao, 906–1350 m; type locality: between Leyte and Mindanao, 1350 m [holotype, ♀, USNM 150384]). — Macpherson, 1993a: 432 (Philippines, 1650–1660 m). — Baba, this paper (Mindanao Sea, 1510 m).

Munida marini Macpherson, 1994

See *Agononida marini* (Macpherson, 1994).

***Munida masi* Macpherson, 1994**

Munida masi Macpherson, 1994: 495, fig. 31 (type locality: New Caledonia, 19°02.5'S, 163°18.8'E, 250–290 m [holotype, ♂, MNHN Ga 2857]); 1999a: 421, fig. 4b (Vanuatu, between 150–250 m and 464–472 m).

***Munida masoae* Macpherson, 1996**

Munida masoae Macpherson, 1996a: 395, figs. 2, 15 (type locality: SW Pacific (Bayonnaise Bank), 11°54.0'S, 179°31.5' W, 595–600 m [holotype, ♀,

MNHN Ga 3645]).

[*Munida melite* Macpherson & Baba, 1993]

Munida melite Macpherson & Baba, 1993: 405, fig. 12 (type locality: Philippines, 13°49.4'N, 120°04.2'E, 170–200 m [holotype, ♂, MNHN Ga 2320]).

[*Munida mexicana* Benedict, 1902]

Munida mexicana Benedict, 1902: 264, fig. 13 (off Galapagos Islands and W coast of Mexico, 9.5–79 fm (17–144 m); type locality: Galapagos Islands, 01°17'00"S, 90°31'30"W, 79 fm (144 m) [type, USNM 20536]). — Hendrickx, 2000: 175, figs. 7, 8 (off Punta Piaxtla, off San Miguel Cape, Tepoca Bay, off Estero Tastiota, off Gorda Bank, San Marcial Point, 33–35 m and 102–110 m); 2003: 137 (Gulf of California, W coast of Baja California, Mexico (Guadalupe Island), Panama (off Medidor Island), Colombia (between Gorgona and Gorgonilla Islands), between 11 m and 108–198 m).

***Munida microps* Alcock, 1894**

Munida microps Alcock, 1894: 326 (Andaman Sea and off Colombo, 561–675 fms (1027–1235 m); type locality: Andaman Sea, “Investigator” St. 112 [13°47'30"N, 92°36'E], 561 fm (1027 m) [syntypes, 6894–6895/9]). — Alcock & Anderson, 1895: pl. 13, fig. 5 (no record). — Anderson, 1896: 99 (“Investigator” St. 197, 406 fm (743 m)). — Alcock, 1901: 240 (Andaman Sea, Arabian Sea off Travancore and Ceylon [Sri Lanka] coasts, 459–675 fm (840–1235 m)). — Tirmizi, 1966: 194, fig. 14 (Maldives, 686–1170 m). — Haig, 1973: 271, fig. 1 (part) (smaller specimen; off Green Cape, New South Wales, 470 fm (860 m)). — Baba, 1988: 122 (Teluk Bone, Sulawesi, 988 m). — Macpherson, 1996a: 397 (SW Pacific (Tuscarora Bank), 1015–1020 m); 1997: 608 (Indonesia, between 769–809 m and 1017–1024 m); 1999a: 421 (Vanuatu, between 495–498 m and 1210–1260 m); 2004: 266 (Fiji and Tonga, between 869–880 m and 1216–1226 m). — Macpherson & de Saint Laurent, 2002: 471 (Saint Paul, New Amsterdam Islands, and Maldives, between 686–1170 m and 1065–1125 m). — Baba, this paper (Andaman Sea off N Sumatra, 1130 m).

Munida microps var. *lasiocheles* Alcock, 1894: 327 (type locality: Andaman Sea, 480 fms (878 m) [syntypes, ZSIC 132–133/7]). — Alcock, 1901: 241

(Andaman Sea, 480 fm (878 m)).

Munida lasiocheles: Alcock & Anderson, 1895: pl. 13, fig. 8 (no record).

Identity questionable:

Munida microps: Baba, 1994: 13 (off Central Queensland, 956–1006 m) (?= *M. asprosoma* Ahyong & Poore, 2004). — Macpherson, 1994: 496, fig. 32 (Philippines, New Caledonia, and Chesterfield Islands, between 970 and 1230–1240 m).

***Munida micula* Macpherson, 1996**

Munida micula Macpherson, 1996a: 397, fig. 3 (type locality: SW Pacific (Futuna Island), 14°19.6, 178°04.5'W, 300–390 m [holotype, ♂, MNHN Ga 3646]).

***Munida militaris* Henderson, 1885**

Munida militaris Henderson, 1885: 410 (part) (S of the Fijis and Ambon, 100–300 fm (183–549 m); type locality: off Matuku, Fiji Islands, 576 m [syntypes, BMNH 1888:33]) [not non-ov. female from *Challenger* St. 173, S of Fiji Islands, 300 fm (549 m) (?= *M. sphinx* Macpherson & Baba, 1993); not *Challenger* St. 192 off Little Ki Island, 129 fm (236 m) (= *M. japonica* Stimpson, 1858 and possibly *M. inornata* Henderson, 1885); 1888: 137 (part), pl. 14: figs. 2,2a,2b,5,5a,5b (off Matuku, Fiji and Ambon, 100–315 fm (183–576 m); not non-ov. female from *Challenger* St. 173 off Matuku, Fiji, 315 fm (576 m)) (? = *M. sphinx* Macpherson & Baba, 1993); not *Challenger* St. 192 off Little Ki Island, 140 fm (256 m)) (= *M. japonica* Stimpson, 1858 and possibly *M. inornata* Henderson, 1885)). — Baba & Macpherson, 1991: 539, fig. 1 (off Matuku (Fiji Islands), Ambon (Indonesia), 183–576 m). — Macpherson, 1994: 496 (New Caledonia, 720 m); 1996a: 399, fig. 16 (SW Pacific (Combe Bank, Wallis Islands, Field Bank, Bayonnaise Bank, between 597–600 m and 640–730 m); 1999a: 421 (Vanuatu, between 647 m and 690–750 m); 2004: 266 (Fiji and Tonga, 281 m and 650–696 m). — Ahyong & Poore, 2004b: 41 (Queensland, 549–732 m). — Baba, this paper (Kei Islands, 345 m).

Munida vitiensis Henderson, 1885: 410 (type locality: S of the Fiji Islands, 300 fm (549 m) [type not found, very possibly combined with the type of *M. militaris* from “Challenger” St. 173 by Henderson]).

***Munida miniata* Macpherson, 1996**

Munida miniata Macpherson 1996a: 399–400, figs 4, 17 (SW Pacific (Futuna Island, Tuscarora Bank, Field Bank, 440–500 m; type locality: Field Bank, 12°31.8'S, 174°18.2'W, 500 m [holotype, ♀, MNHN–Ga 3647]).

[*Munida minuta* Macpherson, 1993]

Munida minuta Macpherson, 1993: 432, fig. 3 (type locality: Philippines (12°31.2'N, 120°39.3'E), 92–97 m [holotype, ♂, MNHN Ga 2514]); 1997: 608 (Indonesia, 85–124 m).

***Munida moliae* Macpherson, 1994**

Munida moliae Macpherson, 1994: 499, fig. 33 (New Caledonia and Loyalty Islands, between 335–340 m and 575 m; type locality: New Caledonia, 18°54'S, 163°18.8'E, 530 m [holotype, ♂, MNHN Ga 2863]); 1996a: 400, fig. 18 (SW Pacific (Combe Bank and Wallis Islands), 372–430 m); 2004: 267 (Fiji and Tonga, between 263–320 m and 420–508 m).

***Munida montemaris* Bahamonde & López, 1962**

Munida montemaris Bahamonde & López, 1962: 85 (type locality: off Punta Angeles, 7 miles off Valparaiso, Chile, 400 m [holotype, ♂, MNHNC 10079]). — Hendrickx, 2003: 126, fig. 6 (redescription of holotype).

***Munida muscae* Macpherson & de Saint Laurent, 2002**

Munida muscae Macpherson & de Saint Laurent, 2002: 471, fig. 2 (Reunion Island and NW Madagascar, between 250 m and 605–620 m; type locality: Reunion Island, 605–620 m [holotype, ♂, MNHN Ga 4571]).

***Munida nesaea* Macpherson & Baba, 1993**

Munida nesaea Macpherson & Baba, 1993: 406, fig. 13 (Philippines, between 178–205 m and 804–812 m; type locality: Philippines, 13°45.1'N, 120°37.7'E, 178–205 m [holotype, ov. ♀, MNHN Ga 2319]). — Baba, this paper (Kyushu, Japan, 210 m).

***Munida nesiotes* Macpherson, 1999**

Munida nesiotes Macpherson, 1999b: 480, fig. 3 (type locality: Seychelles Islands, 4°46.5'S, 56°38.4'E, 200 m [holotype, ov. ♀, MNHN Ga 4339]).

Munida normani Henderson, 1885

See *Agononida normani* (Henderson, 1885).

***Munida notata* Macpherson, 1994**

Munida notata Macpherson, 1994: 500, figs. 34, 78 (Loyalty Islands, New Caledonia, and Chesterfield Islands, 59–850 m; type locality: Loyalty Islands, 20°41.80'S, 167°00.20'E, 282 m [holotype, ov. ♀, MNHN Ga 2882]); 1996a: 402 (SW Pacific (Futuna Island and Wallis Islands), between 224–252 m and 245–440 m); 1999a: 421 (Vanuatu, between 281–288 m and 360–419 m); 2004: 267 (Fiji and Tonga, between 220–249 m and 439 m).

***Munida notialis* n. sp.**

Munida notialis Baba, this paper (SW coast of New Zealand and SE coast of Australia, between 55–92 and 290 m; type locality: SW New Zealand and off SE Australia, 290 m [holotype, ♂, ZMUC CRU-11626]).

***Munida obesa* Faxon, 1893**

Munida obesa Faxon, 1893: 176 (type localities: “Albatross” St. 3389 [Gulf of Panama, 07°16.45'N, 079°56'30'W, 210 fm (384 m)] [syntypes, 4 ♀, USNM 25490]; “Albatross” St. 3355 [SW point of Azuero Peninsula, Panama, 07°12.20'N, 080°55.00'W, 182 fm (333 m)] [syntypes, 5 young, not located]); 1895: 73, pl. 16, figs. 1, 1a (Gulf of Panama and off Mariato Point, 182–210 fm (333–384 m)). — Wicksten, 1989: 315 (list). — Hendrickx, 2000: 179, fig. 10 (reexamination of female syntype); 2003: 137 (Peru (Banco de Mancora) and Costa Rica (off Isla Herradura), 117 m).

***Munida ocellata* Macpherson & de Saint Laurent, 1991**

Munida ocellata Macpherson & de Saint Laurent, 1991: 403, fig. 9; pl. 1G, H (Society, Tuamotu and Tubuai Islands, 200–380 m; type locality: Tuamotu, 22°00.9'S, 136°12.5'W, 380 m [holotype, ♂, MNHN Ga 1909]). — Poupin, 1996: 22, 23, fig. h (Austral Islands, Gambier Islands, Society Islands, Tuamotu, 200–380 m).

Munida ocyrhoe Macpherson, 1994

See *Agononida ocyrhoe* (Macpherson, 1994).

***Munida offella* Macpherson, 1996**

Munida offella Macpherson, 1996a: 402, fig. 5 (Futuna Island and Combe Bank, between 210–245 m and 580 m; type locality: Futuna Island, 14°19.5'S, 178°04.5'W, 245–440 m [holotype, ♂, MNHN Ga

3648]); 2004: 268 (Fiji and Tonga, between 240–319 m and 232–295 m).

[*Munida olivarae* Macpherson, 1994]

Munida olivarae Macpherson, 1994: 505, figs. 36, 80 (New Caledonia, Loyalty Islands, and Matthew & Hunter Islands, between 6–10 m and 190 m; type locality: Loyalty Islands, 20°20.27'S, 166°07.49'E, 33 m [holotype, ♂, MNHN Ga 2919]); 2004: 268 (Tonga, 79–82 m). — Osawa & Okuno, 2002: 132, figs. 2, 5B (Ryukyu Islands and Bonin [Ogasawara] Islands, 10–30 m).

***Munida ommata* Macpherson, 2004**

Munida ommata Macpherson, 2004: 268, fig. 8 (Chesterfield Islands, New Caledonia, Loyalty Islands, Indonesia, Fiji and Tonga, between 205–212 m and 480–610 m; type locality: Chesterfield Islands, 22°06.90'S, 159°24.60'E, 480–610 m [holotype, ♂, MNHN Ga 4563]).

***Munida oritea* Macpherson & Baba, 1993**

Munida heteracantha: Baba, 1988: 104, fig. 38 (Philippines, 216–511 m) (not *M. heteracantha* Ortmann, 1892).

Munida oritea Macpherson & Baba, 1993: 407, fig. 14 (Philippines, between 174–223 m and 299–320 m; type locality: 13°59.2'N, 120°20.3'E, 208–222 m [holotype, ov. ♀, MNHN Ga 2294]). — Wu *et al.*, 1997: 120, figs. 27, 35A (Taiwan).

***Munida pagesi* Macpherson, 1994**

Munida pagesi Macpherson, 1994: 507, fig. 37 (New Caledonia and Loyalty Islands, between 250–300 m and 600 m; type locality: New Caledonia, 22°05.8'S, 167°10.3'E, 500–550 m [holotype, ov. ♀, MNHN Ga 2925]); 1999a: 422 (Vanuatu, 486–494 m); 2004: 271 (Fiji and Tonga, 429–440 m and 469–520 m).

***Munida parca* Macpherson, 1996**

Munida parca Macpherson, 1996b: 424, fig. 1 (New Caledonia, between 350–400 m and 408–440 m; type locality: 21°02'S, 165°37'E, 350–400 m [holotype, ov. ♀, MNHN Ga 3779]); 2004: 271 (Fiji, 327–420 m and 353–390 m).

***Munida parvioculata* Baba, 1982**

Munida parvioculata Baba, 1982a: 104, figs. 1, 2b (Izu

Islands, Japan, 430–1400 m; type locality: SE of Miyake-jima, 34°00.6'N, 140°02.4'E, 1105 m [holotype, ♀, NSMT-Cr. 6182]).

[*Munida parvula* Macpherson, 1993]

Munida parvula Macpherson, 1993: 434, fig. 4 (type locality: Philippines, 12°08.3'N, 121°17.3'E, 73–84 m [holotype, ♂, MNHN Ga 2515]).

***Munida pasithea* Macpherson & de Saint Laurent, 1991**

Munida pasithea Macpherson & de Saint Laurent, 1991: 418, fig. 14 (type locality: Tubuai Islands, 300 m [holotype, ♂, MNHN Ga 1905]).

***Munida pavonis* Macpherson, 2004**

Munida pavonis Macpherson, 2004: 271, fig. 9 (type locality: Tonga, 21°18.78'S, 175°99.29'W, 229–232 m [holotype, ♂, MNHN Ga 4564]).

***Munida perlata* Benedict, 1902**

Munida perlata Benedict, 1902: 266, fig. 15 (type locality: off Galapagos Islands [00°36'30"S, 89°19'00"W], 634 fms (1160 m) [holotype, ov. ♀, USNM 20538]). — Luke, 1977: 30 (list; entrance of Gulf of California, 3292–1920 m). — Wicksten, 1989: 315 (list). — Hendrickx, 2000: 181, fig. 11 (reexamination of type material).

[*Munida pherusa* Macpherson & Baba, 1993]

Munida pherusa Macpherson & Baba, 1993: 408, fig. 15 (Japan, Philippines and Indonesia, between 73–84 m and 136–152 m; type locality: Philippines, 13°56.5'N, 120°20.7'E, 136–152 m [holotype, ♂, MNHN Ga 2338]). — Wu *et al.*, 1997: 122, figs. 28, 35B (Taiwan). — Komai *et al.*, 2002: 57 (Sea of Japan off Yamaguchi Prefecture, between 79–83 m and 84 m).

[The Zoological Museum holds the following lot: 1 ♂ (7.0 mm), 1 ♀ (8.7 mm), W of Kyushu, Japan, 32°15' N, 128°12' E, 90 fm, hard bottom, dredge, 15 May 1914, Th Mortensen].

***Munida philippinensis* Macpherson & Baba, 1993**

Munida philippinensis Macpherson & Baba, 1993: 410, fig. 16 (Philippines, between 150–159 m and 219–220 m; type locality: Philippines, 14°00.5'N, 120°16.3'E, 194–195 m [holotype, ♂, MNHN Ga 3312]). — Macpherson, 1997: 608 (Indonesia, between 146–233 m and 285–297 m).

***Munida pilorhyncha* Miyake & Baba, 1966**

Munida pilorhyncha Miyake & Baba, 1966b: 81, figs. 1, 2 (type locality: Tosa Bay, Japan, 200–250 m [holotype, ♂, ZLKU 8988]). — Miyake, 1982: 149, pl. 50, fig. 3 (off Aose, Kagoshima, Japan, 300 m). — Baba, 1988: 122 (South China Sea off SW and NW Luzon, 340–366 m); this paper (Kei Islands, 348 m). — Macpherson, 1993a: 436 (Philippines, 318–320 m). — Wu *et al.*, 1997: 124, figs. 29, 35C (Taiwan).

Munida pilosimanus Baba, 1969

See *Agononida pilosimanus* (Baba, 1969).

***Munida plexaura* Macpherson & de Saint Laurent, 1991**

Munida plexaura Macpherson & de Saint Laurent, 1991: 396, fig. 7; pl. 1E (Tuamotu and Tubuai Islands, 350–398 m; type locality: Fakarava, Tuamotu Islands, 16°07.33'S, 145°49.16'W, 398 m [holotype, ov. ♀, MNHN Ga 1906]). — Poupin, 1996: 24, 25 (fig. a) (Austral Islands, Tuamotu, 350–398 m). — Macpherson, 2000: 419 (Marquesas Islands, between 163–245 m and 416–460 m).

***Munida polynoe* Macpherson & de Saint Laurent, 1991**

Munida polynoe Macpherson & de Saint Laurent, 1991: 412, fig. 12 (type locality: Fakarava, Tuamotu Islands, 16°07.33'S, 145°49.16'W, 398 m [holotype, ♂, MNHN Ga 1987]).

***Munida pontoporea* Macpherson, 1994**

Munida pontoporea Macpherson, 1994: 509, fig. 38 (type locality: New Caledonia, 19°46.24'S, 158°25.67'E, 203–208 m [holotype, ov. ♀, MNHN Ga 2994]).

***Munida profunda* Macpherson & de Saint Laurent, 1991**

Munida profunda Macpherson & de Saint Laurent, 1991: 379, fig. 2, pl. 1B (type locality: Fangataufa, Tuamotu Islands, 22°16.7'S, 138°42.8'W, 1050 m [holotype, ov. ♀, MNHN Ga 1997]). — Poupin, 1996: 24, 25 (fig. b) (Tuamotu Archipelago, 1000–1050 m).

***Munida prominula* Baba, 1988**

Munida prominula Baba, 1988: 124, fig. 47 (type

locality: South China Sea off SW Formosa, 421 m [holotype, ♀, USNM 150382]); this paper (Kei Islands, 345 m). — Macpherson, 1993a: 436 (Philippines, between 320–337 m and 448–466 m). — Wu *et al.*, 1997: 127, figs. 31, 35E (Taiwan).

***Munida propinqua* Faxon, 1893**

Munida propinqua Faxon, 1893: 178 (type localities: “Albatross” St. 3384 [Gulf of Panama, 07°31.30'N, 079°14.00'W, 458 fm (838 m)] [syntypes, 11 ♂, 6 ♀ (1 ov.), USNM 25492]; “Albatross” St. 3394 [Gulf of Panama, 07°21.00'N, 079°35.00'W, 511 fm (935 m)] [1 ♂ syntype, not located]; “Albatross” St. 3404 [Galapagos Islands, 01°03.00'S, 089°28.00'W, 385 fm (704 m)] [syntype, 1 ♂ juvenile, USNM 25491]); 1895: 76, pl. 18, figs. 1, 1a (Gulf of Panama and Galapagos Islands, 385–511 fm (705–935 m)). — Garth & Haig, 1971: 6.6 (off Peru, 907–935 m). — Wicksten, 1989: 315 (list). — Hendrickx, 2000: 181, fig. 12 (reexamination of ov. ♀ syntype, USNM 25492); 2003: 137 (Peru, 650 m).

***Munida proto* Macpherson, 1994**

Munida proto Macpherson, 1994: 509, fig. 39 (Loyalty Islands, New Caledonia, and Chesterfield Islands, between 155 m and 487–610 m; type locality: Loyalty Islands, 21°21.85'S, 167°50.30'E, 300 m [holotype, ov. ♀, MNHN Ga 2945]).

***Munida psamathe* Macpherson, 1994**

Munida psamathe Macpherson, 1994: 513, figs. 40, 93 (New Caledonia, and Matthew–Hunter Islands, between 500–550 m and 700 m; type-locality: New Caledonia, 24°39.90'S, 168°18.10'E, 573 m [holotype, ♂, MNHN Ga 2949]); 1996a: 404 (SW Pacific (Waterwitch Bank, Combe Bank, Bayonnaise Bank), 580–600 m).

***Munida pseliophora* Macpherson, 1994**

Munida pseliophora Macpherson, 1994: 515 m, figs. 41, 94 (Loyalty Islands and Chesterfield Islands, 283–300 m; type locality: Loyalty Islands, 20°41.65'S, 167°03.70'E, 283 m [holotype, ♂, MNHN Ga 2955]).

***Munida psylla* Macpherson, 1994**

Munida psylla Macpherson, 1994: 517, fig. 42 (New Caledonia and Loyalty Islands, 380–573 m; type locality: New Caledonia, 24°55.44'S, 168°21.55'E, 500 m [holotype, ov. ♀, MNHN Ga 2960]).

***Munida pulchra* Macpherson & de Saint Laurent, 1991**

Munida pulchra Macpherson & de Saint Laurent, 1991: 406, fig. 10 (type locality: Rurutu, Tubuai Islands, 22°26.5'S, 151°23.1'W, 300 m [holotype, ov. ♀, MNHN Ga 2031]).

***Munida pumila* Macpherson, 2004**

Munida pumila Macpherson, 2004: 273, fig. 10 (Tonga, 476–478 m and 869–880 m; type locality: Tonga, 20°57.65'S, 175°15.62'W, 869–880 m [holotype, ov. ♀, MNHN Ga 4565]).

***Munida punctata* Macpherson, 1997**

Munida punctata Macpherson, 1997: 608, fig. 3 (Indonesia, between 336–346 m and 390–502 m; type locality: Kei Islands, 6°08'S, 132°45'E, 390–502 m [holotype, ♂, MNHN Ga 3950]). — Baba, this paper (Kei Islands, 345 m).

[*Munida pusiola* Macpherson, 1993]

Munida pusiola Macpherson, 1993: 436, fig. 5 (type locality: Philippines, 92–97 m [holotype, ♂, MNHN Ga 2521]).

[The Zoological Museum holds the following lot: 1 ov. ♀ (4.6 mm), Kei Islands Expedition St. 18, c. 40 m, sand, coral, 12 Apr 1922].

***Munida pygmaea* Macpherson, 1996**

Munida pygmaea Macpherson, 1996b: 426, fig. 2 (New Caledonia, between 635–680 m and 735–755 m; type locality: New Caledonia, 24°52'S, 168°22'E, 635–680 m [holotype, ♀, MNHN Ga 3782]); 2004: 275 (Fiji and Tonga, between 220–249 m and 824 m).

***Munida quadrispina* Benedict, 1902**

Munida quadrispina Benedict, 1902: 269, fig. 17 (Washington, Oregon, California, and Sitka (Alaska), 50–559 fm (91–1022 m); type locality: West of mouth of Strait of Juan De Fuca, Washington, 48°37.00'N, 125°32.00'W, 66 fm (120 m) [syntypes, USNM 20537]) (According to Hendrickx (2003), the label for the material from “Albatross” St. 2878 indicates “off Cape Beale, Vancouver island, British Colombia, 66 fm (120 m)” so that he cited this as the type locality. However, in the list of the “Albatross” stations (database available at the Smithsonian Institution), the depth record of 66 fm around this sea area is only for St. 2878 W of the mouth of Strait of Juan

de Fuca). — Schmitt, 1921: 165, fig. 105 (reexamination of type material). Hart, 1982: 168, fig. 66 (British Columbia). — McCauley, 1972: 414 (list; Columbia River estuary, off Oregon, 146–674 m). — Luke, 1977: 29 (list; Puget Sound, Washington, and between Pta. Piedras Blancas and San Diego Trough, between 256 m and 732–1280 m). — Wicksten, 1989: 315 (list). — Hendrickx, 2003: 128, figs. 5A, 5B, 7, 8, 9 (“Albatross” Sts. 2878, 3454 (Strait of Juan de Fuca), St. 4223 (SE Alaska), Petersburg (Alaska), Puget Sound (Washington), off San Diego, off Coos Bay (Oregon), Punta Piedras Blancas (California), 86–603 m [designation of lectotype, ♂, USNM 20537]). — Baba, this paper (Departure Bay and Strait of Georgia, 37–183 m).

***Munida quinquespinosa* Balss, 1913**

Transferred to *Galathea* Fabricius, 1793.

***Munida refulgens* Faxon, 1893**

Munida refulgens Faxon, 1893: 177 (type localities: “Albatross” St. 3367 [Cocos Island, 05°31.30'N, 086°52.30'W, 100 fm (183 m)] [syntypes, 13 ♂, 18 ♀, not located]; “Albatross” St. 3378 [Malpelo Island, Colombia, 03°58.20'N, 081°36.00'W, 112 fm (205 m)] [syntypes, 15 ♂, 19 ♀, USNM 25513]; “Albatross” St. 3379 [Malpelo Island, Colombia, 03°59.40'N, 081°35.00'W, 52 fm (95 m)] [syntype, 1 young, USNM 29154]; “Albatross” St. 3427 [Maria Magdalena Island, Marias Islands, Mexico, 80 fm (146 m)] [syntype, 1 young, USNM 29153]; 1895: 75, pl. 17 (off Cocos Island, off Malpelo Island, and near Las Tres Marias Island, 52–112 fm (95–205 m)). — Luke, 1977: 30 (list; entrance of Gulf of California, 97–199 m). — Wicksten, 1989: 315 (list). — Hendrickx, 2000: 184, fig. 13 (off Gorda Bank, 38–100 m); 2003: 137 (Costa Rica and Mexico (Islas Marias), between 37–74 m and 128 m).

***Munida remota* Baba, 1990**

Munida remota Baba, 1990: 965, fig. 14 (type locality: Madagascar, 13°45.6'S, 47°34.2'E, 1250–1300 m [holotype, ♂, MNHN Ga 1489]).

***Munida rhodonia* Macpherson, 1994**

Munida rhodonia Macpherson, 1994: 517, figs. 13a, 43, 81 (New Caledonia, Loyalty Islands, and Chesterfield Islands, between 475–500 m and 700–705 m; type locality: New Caledonia, 18°49.4'S,

- 163°18.8'E, 590 m [holotype, ♂, MNHN Ga 2963]); 1999a: 422, fig. 4c, d (Vanuatu, between 459–488 m and 624–668 m); 2004: 276 (Fiji and Tonga, between 395 m and 729–753 m). — Baba, this paper (off Zamboanga and Kei Islands, between 348 m and 366–458 m).
- Munida rogeri* Macpherson, 1994**
Munida rogeri Macpherson, 1994: 518, fig. 44 (New Caledonia, Loyalty Islands, and Chesterfield Islands, between 245–275 m and 360–390 m; type locality: Chesterfield Islands, 24°05.40'S, 159°36.30'E, 270 m [holotype, ♂, MNHN Ga 2976]); 1999a: 422 (Vanuatu, 370–400 m). — Ahyong & Poore, 2004b: 41 (Western Australia, 146–220 m).
- Munida roshanei* Tirmizi, 1966**
Munida roshanei Tirmizi, 1966: 192, fig. 13 (Gulf of Oman and Gulf of Aden, 106–528 m; type locality: Gulf of Oman, 106 m [holotype, ♂, BMNH 1966.2.4:50]). — Lewinsohn, 1969: 127, fig. 25 (Red Sea, 36–42 m). — Baba, 1988: 126, fig. 48 (Sulu Archipelago, N Balabac Strait off N Borneo, and E of Masbate, 16–146 m). — Tirmizi & Javed, 1993: 104, figs. 45, 46 (Andaman Sea and Mozambique Channel, between 77 m and 150–300 m).
- Munida* cf. *roshanei*: Türkay, 1986: 131 (Red Sea, 490–588 m).
- Munida rosula* Macpherson, 1994**
Munida rosula Macpherson, 1994: 521, figs. 45, 82 (New Caledonia, Loyalty Islands, and Chesterfield Islands, between 465–470 m and 825–860 m; type locality: Chesterfield Islands, 24°05.40'S, 159°36.30'E, 270 m [holotype, ♂, MNHN Ga 2989]); 1996a: 404 (SW Pacific (Combe Bank, Bayonnaise Bank), between 625–650 m and 786–800 m); 1999a: 422 (Vanuatu, between 602–620 m and 799–850 m); 2004: 276 m (Fiji and Tonga, between 650–701 m and 824 m).
- Munida rubella* Macpherson & de Saint Laurent, 1991**
Munida rubella Macpherson & de Saint Laurent, 1991: 392, fig. 6; pl. 1D (Society, Tuamotu and Tubuai Islands, 500–700 m; type locality: Tuamotu Islands, 22°16.4'S, 138°43.8'W, 510 m [holotype, ♂, MNHN Ga 2026]). — Poupin, 1996: 24, 25, fig. c (Austral and Society Islands, Tuamotu Archipelago, 500–700 m).
- Munida rubiesi* Macpherson, 1991**
Munida rubiesi Macpherson, 1991: 552, fig. 1 (Gulf of Aden, 359–1186 m; type locality: Gulf of Aden, 12°52.5'N, 45°53.3'E, 1185–1186 m [holotype, ov. ♀, SMF]).
- Munida rubridigitalis* Baba, 1994**
Munida rubridigitalis Baba, 1994: 13, fig. 6 (type locality: off Central Queensland (17°51.76'S, 147°07.95'E), 497–503 m [holotype, ♂, QMW 19726]). — Macpherson, 1997: 610 (Kei Islands, Indonesia, between 285–297 m and 336–346 m). — Ahyong & Poore, 2004b: 41 (New South Wales, 156–549 m).
- Munida* sp. Macpherson, 1994: 558, figs. 13b, 90 (New Caledonia and Loyalty Islands, between 470–475 m and 650 m).
- Munida rubrodigitalis* [lapsus]: Macpherson, 1999a: 423, fig. 4e (Vanuatu, between 425–455 m and 536–563 m).
- Munida rubrovata* Macpherson & de Saint Laurent, 1991**
Munida rubrovata Macpherson & de Saint Laurent, 1991: 385, fig. 4; pl. 1C (Society, Tuamotu and Tubuai Islands, 300–700 m; type locality: Rimitara, Tubuai Islands, 550–700 m [holotype, ♂, MNHN Ga 1899]). — Poupin, 1996: 24, 25 (fig. d) (Austral and Society Islands, Tuamotu Archipelago, 300–700 m).
- Munida rufiantennulata* Baba, 1969**
Munida rufiantennulata Baba, 1969a: 23, fig. 7 (type locality: near Danjo Islands, W of Kyushu, Japan, 167 m [holotype, ♀, ZLKU 14297]); 1988: 128 (off N Mindanao, between Negros and Siquijor, between Cebu and Siquijor, between Cebu and Bohol, between Cebu and Leyte, E coast of Mindoro, vicinity of Marinduque off SW Luzon, and South China Sea off SW Luzon, 214–705 m); 1989: 131 (Amami-oshima, Ryukyu Islands, 44 m); this paper (E of Cebu, Mauritius, and Kei Islands, 238–836 m). — Macpherson 1994: 523 (part), figs. 46, 83 (Japan, Philippines, New Caledonia, Loyalty Islands, Matthew & Hunter Islands, and Chesterfield Islands, between 167 and 569–595 m; 1 specimens from New Caledonia = *M. ommata* Macpherson, 2004); 1999a: 423 (Vanuatu, 372–466 m); 2004: Fiji, Tonga and New Caledonia, between

420–513 m and 570–573 m).
Not *M. rufiantennulata*: Macpherson, 1997: 610 (Kei Islands, Indonesia, 205–212 m) (= *M. ommata* Macpherson, 2004).

***Munida runcinata* Macpherson, 1994**

Munida runcinata Macpherson, 1994: 525, fig. 47 (New Caledonia and Loyalty Islands, 320–500 m; type locality: Loyalty Islands, 21°02.30'S, 167°31.60'E, 430 m [holotype, ♂, MNHN Ga 3006]); 1996a: 405, fig. 19 (SW Pacific (Futuna Island and Wallis Islands), 245–440 m); 1999a: 423 (Vanuatu, between 282–375 m and 372–466 m); 2004: 277 (Fiji and Tonga, between 309–400 m and 483–509 m).

Munida sabatesae Macpherson, 1994
See under *Agononida* Baba & de Saint Laurent, 1996.

***Munida sacksi* Macpherson, 1993**

Munida sacksi Macpherson, 1993a: 438 (part), fig. 6 (New Caledonia, between 300–330 m and 500–550 m; type locality: Philippines, 13°50.5'N, 120°30.3'E, 300–330 m [holotype, ov. ♀, MNHN Ga 2522]; not material from New Caledonia, 470–480 m and 500–550 m = *M. delicata* Macpherson, 2004).

Not *Munida sacksi*: Macpherson, 1999a: 424 (Vanuatu, between 486–494 m and 532–599 m) (= *M. delicata* Macpherson, 2004).

****Munida sagamiensis* Doflein, 1902**

Munida sagamiensis Doflein, 1902: 623, pl. 3: fig. 9 (type locality: Sagami Bay).

[The description is brief and the type is probably lost so the identity of this species remains questionable].

***Munida sao* Macpherson, 1994**

Munida sao Macpherson, 1994: 529, fig. 49 (New Caledonia, 165–275 m; type locality: New Caledonia, 19°07'S, 163°21'E, 195 m [holotype, ov. ♀, MNHN Ga 3021]); 1999a: 424 (Vanuatu, between 182–215 m and 494–516 m).

***Munida semoni* Ortmann 1894**

Munida semoni Ortmann, 1894: 24, pl. 1: figs. 4, 4i (type locality: Ambon, Indonesia [2 syntypes, MZS 354]). — Macpherson & Baba, 1993: 411, fig. 17 (reexamination of type material [designation of lectotype, ♂, MZS 354]). — Macpherson, 1994:

530 (New Caledonia, 335 m); 1996a: 405 (SW Pacific (Futuna Island), between 245–400 m and 245–440 m); 1999a: 424 (Vanuatu, between 180–191 m and 250–315 m); 2004: 279 (Fiji and Tonga, between 135–151 m and 241–417 m). — Baba, this paper (Rabaul and Ambon, 92–135 m).

Systematic status not settled.

Munida semoni: Borradaile, 1900: 422 (Talili Bay, New Britain). — Barnard, 1950: 491, fig. 92, c (off Scottburgh and Umhlangakulu River, Natal 50–92 fm (92–168 m)).

***Munida sentai* Baba, 1986**

Munida sentai Baba, 1986a: 628, figs. 3, 4 (type locality: Andaman Sea off S Thailand, 7°08'N, 98°05.1'E, 267–283 m [holotype, ♂, USNM 231659]).

***Munida shaula* Macpherson & de Saint Laurent, 2002**

Munida vigiliarum: Tirmizi, 1966: 201, fig. 20 (Zanzibar, 421–457 m) (not *M. vigiliarum* Alcock, 1901).

Munida kuboi: Baba, 1990: 964 (Madagascar, 280–405 m) (not *M. kuboi* Yanagita, 1943).

Munida shaula Macpherson & de Saint Laurent, 2002: 474, fig. 3A–C, E–H (La Réunion and Zanzibar, between 280–340 m and 510 m; type locality: Reunion Island, 410 m [holotype, ♂, MNHN Ga 4573]).

Munida similis Baba, 1988

See *Agononida similis* (Baba, 1988).

****Munida sinensis* Zhong & Wang, 1989**

Munida sinensis Zhong & Wang, 1989: 65, fig. 1 (type locality: South China Sea, 504–558 m [holotype, ♀, SCSFRI]).

[The description and illustration are very brief, so it would be desirable to reexamine the type material].

Munida soelae Baba, 1986

See *Agononida soelae* (Baba, 1986)

Munida sphecia Macpherson, 1994

See *Agononida sphecia* (Macpherson, 1994).

***Munida sphinx* Macpherson & Baba, 1993**

Munida japonica: Baba, 1990: 964 (Madagascar, 50–250 m) (not *M. japonica* Stimpson, 1858).

Munida sphinx Macpherson & Baba, 1993: 414, fig.

18–19 (Madagascar and Indonesia, between 90–130 m and 300 m; type locality: Madagascar, 15°20.0'S, 46°11.5'E, 170–175 m [holotype, ♂, MNHN Ga 2324]). — Macpherson & de Saint Laurent, 2002: 477 (Réunion Island and Zanzibar, between 183–194 and 290–300 m). — Baba, this paper (Mauritius and Bali Sea, 100–366 m).

?*Munida japonica*: Baba & Macpherson, 1991: 543, fig 2 (female syntype of *M. militaris* Henderson, 1885 from “Challenger” St. 173, Fiji).

***Munida spicae* Macpherson & de Saint Laurent, 2002**

Munida spinosa Henderson, 1885: 408 (part) (off Prince Edward Island, 310 fm (567 m) [not off the mouth of the Rio de la Plata, 600 fm (1098 m) [syntypes, BMNH 1888:33]]; 1888: 128 (part) (same as above). [According to E. Macpherson (pers. comm.), the material from the Indian Ocean is different from the Atlantic material; the illustrations of *M. spinosa* by Henderson (1888: figs. 3, 3a, 3b) are apparently based upon the material from off the mouth of the Rio de la Plata so that a lectotype of *M. spinosa* should be selected from the eastern Atlantic material].

Munida spicae Macpherson & de Saint Laurent, 2002: 477, fig. 4 (Crozet Islands, Saint Paul, and New Amsterdam Islands, between 500–562 and 940–1680 m; type locality: Crozet Islands, 46°23'S, 49°09'E, 1025 m [holotype, ♂, MNHN Ga 4572])

***Munida spilota* Macpherson, 1994**

Munida spilota Macpherson, 1994: 533, figs. 51, 84 (Matthew & Hunter Islands, and New Caledonia, between 220–235 m and 400 m; type locality: Matthew & Hunter Islands, 22°26'S, 171°4.1'E, 400 m [holotype, ♂, MNHN Ga 3075]).

Munida spinicordata Henderson, 1885

See under *Agononida* Baba & de Saint Laurent, 1996.

[*Munida spinicruris* Ahyong & Poore, 2004]

Munida spinicruris Ahyong & Poore, 2004b: 42, fig. 8 (type locality: Gascoyne Seamount, Tasman Sea, 143 m [holotype ♂, AM P67297]).

****Munida spinosa* Henderson, 1885**

See under *Munida spicae* Macpherson, 2002.

[According to Macpherson (personal comm.), the syntypes of *M. spinosa* include two species. The material from off the mouth of the Rio de la Plata, 600

fm (1098 m) seems to fit the illustrations by Henderson (1888: pl. 3: figs. 3, 3a, 3b), so that it must be the true *M. spinosa*. The other syntypes are referable to *M. spicae* Macpherson, 2002].

***Munida spinulifera* Miers, 1884**

Munida spinulifera Miers, 1884: 279, pl. 31: fig. A (type locality: Arafura Sea, 32–36 fm (59–66 m) [syntypes, 1 ♂ and 2 ov. ♀, BMNH 1882.7]). — Henderson, 1888: 128 (Ambon, 15 fm (27 m)); 1893: 432 (Muttuwar Par and Gulf of Martaban). — Haig, 1974: 447 (Western Australia). — Tirmizi & Javed, 1976: 85, fig. 4 (reexamination of ov./syntype). — Macpherson, 1993a: 440 (Indonesia, 200 m).

***Munida spissa* Macpherson, 1996**

Munida spissa Macpherson, 1996a: 405, fig. 6 (SW Pacific (Tuscarora Bank, Wallis Islands, Bayonnaise Bank), between 400–420 m and 510–600 m; type locality: Tuscarora Bank, 547–552 m [holotype, ov. ♀, MNHN 3649]).

Munida squamosa Henderson, 1885

See *Agononida squamosa* (Henderson, 1885).

***Munida stia* Macpherson, 1994**

Munida stia Macpherson, 1994: 537, fig. 53 (New Caledonia and Chesterfield Islands, between 360 m and 487–610 m; type locality: New Caledonia, 22°59.74'S, 167°15.31'E, 360 m [holotype, ♂, MNHN Ga 3095]).

***Munida stigmatica* Macpherson, 1994**

Munida stigmatica Macpherson, 1994: 538, figs. 54, 85 (New Caledonia, Matthew & Hunter Islands, and Chesterfield Islands, between 233–360 m and 400 m; type locality: New Caledonia, 23°41.50'S, 167°59.40'E, 338 m [holotype, ♂, MNHN Ga 3105]).

***Munida striola* Macpherson & Baba, 1993**

Munida striola Macpherson & Baba, 1993: 416, fig. 20 (Japan and Indonesia, between 215 m and 250–300 m; type locality: Tosa Bay, Japan [holotype, ♂, ZLKU 11018]). — Macpherson, 1997: 610 (Kei and Tanimbar Islands, Indonesia, between 146–233 m and 368–389 m). — Baba, this paper (Bali Sea and Kei Islands, 200–263 m).

***Munida taenia* Macpherson, 1994**

Munida taenia Macpherson, 1994: 541, figs. 55, 86

(New Caledonia and Chesterfield Islands, 200–400 m; type locality: New Caledonia, 23°20.6'S, 168°05.2'E, 260 m [holotype, ♂, MNHN Ga 3120]).

[*Munida tenella* Benedict, 1902]

Munida tenella Benedict, 1902: 274, fig. 20 (type locality: off St. Josephs Island, Gulf of California, 39–71 fm (71–130 m) [syntypes, USNM 20540]). — Luke, 1977: 29 (list; Gulf of California, between 73–82 m and 283–265 m). — Hendrickx, 2000: 186, fig. 14 (Carmen Island, off Cape San Miguel, off Gorda Bank, Tiburon Island, off Tepoca Cape, off Estero Tastiota, off Rio Fuerte, off Santa Maria Bay, off Angel de la Guarda Island, between 26–28 m and 112 m).

Munida tenuipes Miyake & Baba, 1967

See under *Agononida* Baba & de Saint Laurent, 1996.

***Munida thoe* Macpherson, 1994**

Munida thoe Macpherson, 1994: 542, figs. 56, 87 (New Caledonia, and Matthew & Hunter Islands, between 260 m and 500–610 m; type locality: New Caledonia, 24°54.96'S, 168°21.91'E, 500–580 m [holotype, ♂, MNHN Ga 3131]); 1996a: 408 (SW Pacific (Bayonnaise Bank), between 355–360 m and 420–430 m). — Wu *et al.*, 1997: 135, figs. 36, 42A, B (Taiwan).

***Munida tiresias* Macpherson, 1994**

Munida tiresias Macpherson, 1994: 545, fig. 57 (New Caledonia, between 1140 m and 1753–2049 m; type locality: New Caledonia, 24°00.30'S, 168°07.03'E, 1430–1470 m [holotype, ♂, MNHN Ga 3146]).

***Munida tuberculata* Henderson, 1885**

Munida tuberculata Henderson, 1885: 413 (type locality: S of the Fiji Islands, 240–315 fm (439–576 m) [3 syntypes, BMNH 1888:33]); 1888: 145, pl. 15: figs. 2, 2a, 2b (off Nukalofa, Tongatabu (26°56'S, 175°11'W) and off Matuku, Fiji, 240–315 fm (439–576 m)). — Macpherson, 1994: 547, fig. 58 (New Caledonia and Matthew and Hunter Islands; examination of type material from Fiji, 435–650 m); 1996a: 408 (SW Pacific (Waterwitch Bank, Tuscarora Bank, Field Bank, Wallis Islands), 350–608 m); 1999a: 424 (Vanuatu, between 492–520 m and 550–571 m); 2000: 419 (Marquesas Islands, between 200–240 m and 416–460 m); 2004: 279 (Fiji and Tonga, between 455–460 m and

456–510 m).

***Munida tyche* Macpherson, 1994**

Munida tyche Macpherson, 1994: 549, fig. 59 (Chesterfield Islands and New Caledonia, 127–235 m; type locality: Chesterfield Islands, 19°25.49'S, 158°37.96'E, 215–217 m [holotype, ♂, MNHN Ga 3160]); 1996a: 408, fig. 22 (SW Pacific (Futuna Island), between 200–240 m and 245–440 m); 1999a: 424 (Vanuatu, between 140–175 m and 370–400 m).

***Munida typhle* Macpherson, 1994**

Munida typhle Macpherson, 1994: 549, fig. 60 (New Caledonia, between 1395–1410 m and 1430–1470 m; type locality: 24°00.30'S, 168°07.03'E, 1430–1470 m [holotype, ♂, MNHN Ga 3166]); 1999a: 425 (Vanuatu, 1210–1250 m); 2000: 420 (Marquesas Islands, between 850–905 m and 1000 m).

Munida urizae Macpherson, 1994

See *Crosnierita urizae* (Macpherson, 1994).

Munida variabilis Baba, 1988

See under *Agononida* Baba & de Saint Laurent, 1996.

***Munida vigiliarum* Alcock, 1901**

Munida vigiliarum Alcock, 1901: 243 (type locality: Bay of Bengal off W coast of Andamans near Sentinel Islands, 173–290 fm (317–531 m) [syntypes, ZSIC 517/7]).

Not *Munida vigiliarum*: Doflein & Balss, 1913: 147, pl. 13: fig. 2 (SW of Great Nicobar, 362 m (= different species, confirmed by examination of type material of *M. vigiliarum* (Baba, unpublished)). — Tirmizi, 1966: 201, fig. 20 (= *M. shaula* Macpherson & de Saint Laurent, 2002).

***Munida volantis* Macpherson, 2004**

Munida volantis Macpherson, 2004: 280, fig. 12 (Fiji, between 327–420 m and 420–513 m; type locality: Fiji, 16°45.13'S, 179°59.29'E, 423–500 m [holotype, ov. ♀, MNHN Ga 4566]).

[*Munida williamsi* Hendrickx, 2000]

Munida williamsi Hendrickx, 2000: 188, fig. 15 (Upper Gulf of California, 29–103 m; type locality: off Willard Point, Baja California, 29°54.9'N, 114°19.3'W, 79–80 m [holotype, ♂, EMU 5359]).

Munida yante Macpherson, 1994
See *Crosnierita yante* (Macpherson, 1994).

***Munida zebra* Macpherson, 1994**

Munida zebra Macpherson, 1994: 556, figs. 63, 89 (New Caledonia and Loyalty Islands, between 200 m and 500–610 m; type locality: New Caledonia, 24°55.0'S, 168°22.0'E, 515 m [holotype, ♂, MNHN Ga 3196]). — Baba, this paper (Kei Islands, 245 m).

The following records are questionable:

Munida microphthalmia: Henderson, 1888: 127 (N of Kermadec Islands, 600 fm (1098 m)). — Faxon, 1893: 179 (off Cocos Island, 134 fm (245 m)); 1895: 78 (off Cocos Island, 134 fm (245 m)).

[Hendrickx (2000: 178, fig. 9) questioned the identity of the ovigerous female reported by Faxon (1983: 179) from off Cocos Islands, Costa Rica. *Munida microphthalmia* A. Milne Edwards, 1889 is known from the eastern and western Atlantic].

Munida perarmata: Zhong & Wang, 1989, 66, fig. 3 (South China Sea).

[In all probability the species may not be the true *Munida perarmata* A. Milne Edwards & Bouvier, 1894, previously known from the eastern Atlantic including the Mediterranean].

Species not determined:

Munida sp., McCauley, 1972: 414 (list; Columbia River estuary off Oregon, 100–885 m; list).

Munida sp. Tirmizi & Javed, 1993: 128, fig. 57 (Mozambique Channel, 62 m).

Genus *Munidopsis* Whiteaves, 1874

Munidopsis Whiteaves, 1874: 212 (gender: feminine).

Type species: *Munidopsis curvirostra* Whiteaves, 1874, by monotypy.

Distribution: This genus is one of the most diverse groups in the decapod crustaceans. Now 122 species are known in the Indo-Pacific. Four species show a worldwide distribution, occurring in both the Indo-Pacific and the Atlantic (*M. antonii*, *M. nitida*, *M. rostrata*, *M. serricornis*). Thirty-six species (30.3%) are restricted to the eastern Pacific, 25 (20.5%) to the western Pacific, 21 (17.2%) to the Indian Ocean, and nine (7.4%) to the Southern Ocean including southern

Australia, vicinity of New Zealand, southern Indian Ocean, and South Africa. Thirteen species (10.7%) have been recorded from both the western Pacific and the Indian Ocean. A few species occur in more than two major regions: western Pacific and Southern Ocean (*M. bispinoculata*, *M. subquamosa*); Indian Ocean and Southern Ocean (*M. centrina*, *M. edwardsi*, *M. teretis*); western Pacific and eastern Pacific (*M. latirostris*); western Atlantic and western Pacific (*M. spinosa*), Indian Ocean, western Pacific and Southern Ocean (*M. trifida*); western Pacific, eastern Pacific and Southern Ocean (*M. verrilli*). Disjunct distribution is known in the following: northern and eastern Pacific, and the eastern and western Atlantic (*M. bermudezi*, *M. bairdii*); western Pacific and southwestern Atlantic (*M. spinosa*); eastern Pacific, southern Ocean, eastern and western Atlantic (*M. crassa*), western Atlantic, north Atlantic and western Pacific (*M. curvirostra*). More extensive surveys will prove that the ranges of the above species should be more contiguous, if they have been correctly identified.

Bathymetrically, *Munidopsis* ranges between lower continental shelf and abyssal depths. Twenty-six species (21.3%) are from abyssal depths below 3000 m, 14 of which are genuine abyssal, and 75 species (61.5%) occur in depths below 700 m. Forty-five species (36.8%) have been taken in transitional depths, seven of which go down to lower bathyal depths (two of these further go down to depths >3000 m). Only two are known from lower parts of the shelf, and other two ranges between the shelf and upper bathyal depths. The deepest records are for *M. petila* n. sp. and *M. profunda* n. sp. (5163–5243 m), both from “Galathea” St. 450 in the Celebes Sea.

Eight of the Indo-Pacific species are known from active hydrothermal vent systems (Williams, 1988; Williams & Baba, 1990; Khodkina, 1991; Baba & de Saint Laurent, 1992; Baba, 1995): four from the eastern Pacific between about 12°N and 50°N, in lower bathyal depths (1545–2600 m), including *M. subsquamosa* reported by Van Dover *et al.* (1985), the species being different from the true *M. subsquamosa* Henderson, 1885 (see Baba & de Saint Laurent, 1992); four from the western Pacific in the North Fiji Basin and Mariana Bac Arc Basin, in lower bathyal to abyssal depths (1750–3727 m). Segonzac (1992) reported *M. crassa* from hydrothermally active sites in the Mid-Atlantic Ridge (23°N), which species is widely known from non-vent sites in the western and eastern Atlantic. This species was also recorded from the cold seep off Paita, Peru (Olu *et al.*, 1996), as well as from the Tasman

Sea (Baba, this paper).

Key to species from the Indo-Pacific

1. Carapace with prominent median gastric spine 2
 - Carapace without prominent median gastric spine 6
2. Carapace with a single prominent spine on anterior lateral margin *M. valdiviae* (Balss, 1913)
 - Carapace with 2 prominent spines on anterior lateral margin 3
3. Rostrum without lateral spines 4
 - Rostrum with lateral spines 5
4. Abdomen smooth on tergites, tuberculate on pleura. Scale-like ridges in transverse rows on posterior half of carapace *M. diomedea* (Faxon, 1893)
 - Abdomen tuberculate on tergites and pleura. Tubercles in transverse rows on posterior half of carapace *M. spinosa* (A. Milne Edwards, 1880)
5. Carapace covered with spines *M. trachynotus* (Anderson, 1896)
 - Carapace covered with simple or scale-like tubercles *M. rostrata* (A. Milne Edwards, 1880)
6. Rostrum with pair of lateral spines at anterior end of horizontal portion 7
 - Rostrum without pair of lateral spines 22
7. No spines on abdominal segments 8
 - Spines present at least on abdominal segments 2–3 14
8. Carapace covered with small spines *M. trachypus* Alcock & Anderson, 1894
 - Carapace unarmed or at most with pair of gastric spines only on dorsal surface 9
9. Carapace lateral margin with 3 spines, last one situated near hepatic region *M. treis* Ahyong & Poore, 2004
 - Carapace lateral margin with 4 spines, last one at midlength 10
10. P2–4 meri entire on dorsal crest *M. crinita* Faxon, 1893
 - P2–4 meri with row of spines on dorsal crest 11
11. Mesial margin of P1 carpus with 2 distal spines, proximal larger *M. serricornis* (Lovén, 1852)
 - Mesial margin of P1 carpus with 1 distal spine only 12
12. P2–3 carpi with row of spines on dorsal crest *M. trifida* Henderson, 1885
 - P2–3 carpi with terminal spine only on dorsal crest 13
13. Pair of epigastric spines present *M. mina* Benedict, 1902
 - Gastric region without spines *M. modesta* Benedict, 1902
14. No epipods on P1–4 15
 - Epipods at least on P1 18
15. Ocular peduncle with small dorsal eye-spine not reaching end of cornea *M. agassizii* Faxon, 1893
 - Ocular peduncle without eye-spine 16
16. Carapace with scattered small spines other than pair of epigastric spines *M. sericea* Faxon, 1893
 - Carapace without scattered small spines 17
17. Abdominal segment 4 with 2 submedian spines *M. barrerai* Bahamonde, 1964
 - Abdominal segment 4 unarmed *M. plumatisetigera* Baba, 1988
18. Epipods absent from P3 19
 - Epipods present on P3 20
19. Rostrum relatively narrow, median spine upturned. Abdominal segments 2, 3, 4 with 1, 2, 2 submedian spines respectively *M. regia* Alcock & Anderson, 1894
 - Rostrum relatively broad, median spine nearly horizontal. Abdominal segments 2–3 each with pair of submedian spines, no spine on segment 4 *M. formosa* Wu & Chan, 2000
20. Carapace and abdomen covered with blunt, tuberculate, prominent processes *M. gibbosa* Baba, 1978
 - Carapace and abdomen not covered with prominent processes 21
21. Small spines directly behind median part of cervical groove. Posterior branchial margin with several spines *M. poseidonia* Alcock & Anderson, 1894
 - No spines directly behind median part of cervical groove. Posterior branchial margin with a single spine on anterior extremity *M. camelus* Ortmann, 1892
22. P2 reaching or overreaching end of P1 23
 - P2 not reaching end of P1 63
23. Main eye-spine on median part of cornea 24
 - Main eye-spine (rarely small or obsolescent) on mesial end of eyestalk 29
24. Main eye-spine continuous with eyestalk 25

- Main eye-spine not continuous with eyestalk, arising from end of cornea 26
- 25. Carapace lateral margin strongly crested. Sternite 4 with pair of anterior spines *M. hendersoniana* Faxon, 1893
- Carapace lateral margin not crested. Sternite 4 with at least 2 pairs of anterior spines *M. pilosa* Henderson, 1885
- 26. Second lateral spine of carapace very close to and about lateral to first lateral spine *M. victoriae* Baba & Poore, 2002
- Second lateral spine of carapace relatively remote from and posterior to first lateral spine 27
- 27. Cornea distinctly narrowed distally *M. bispinoculata* Baba, 1988
- Cornea rather rounded 28
- 28. Main (lateral) eye-spine at midpoint of anterior margin of cornea. Mesioventral eye-spine very small and near to lateral eye-spine *M. rotundior* n. sp.
- Main (lateral) eye-spine rather lateral on anterior margin of cornea. Mesioventral eye-spine relatively large, rather distantly separated from lateral eye-spine *M. similior* Baba, 1988
- 29. Fixed finger with denticulate carina on distolateral margin 30
- Fixed finger without denticulate carina on distolateral margin 39
- 30. Pair of anterior gastric spines or processes.. 31
- No distinct spine on gastric region 38
- 31. Carapace with additional spines behind pair of gastric spines (distinct spine mesial to anterolateral spine of carapace) *M. centrina* Alcock & Anderson, 1894
- Carapace without spines other than pair of gastric spines or processes (no spine mesial to anterolateral spine of carapace) 32
- 32. Cornea relatively broad, maximum breadth clearly more than breadth of rostrum at midlength *M. nitida* (A. Milne Edwards, 1880)
- Cornea relatively narrow, maximum breadth distinctly less than breadth of rostrum at midlength 33
- 33. Body and appendages with very fine plumose setae. Carapace without scaly ridges on anterior half 34
- Body and appendages without fine plumose setae. Carapace with scaly ridges on anterior half 36
- 34. Blunt process mesial to midlength of posterior half of carapace lateral margin *M. teretis* n. sp.
- No process mesial to midlength of posterior half of carapace lateral margin 35
- 35. Anterior lobe of carapace lateral margin very sharply carinate and salient, bearing obsolescent spines *M. edwardsii* (Wood-Mason, 1891)
- Anterior lobe of carapace lateral margin moderately carinate, not salient, bearing distinct, posteriorly diminishing spines *M. bermudezi* Chace, 1939
- 36. Pair of epigastric spines followed by arced ridges usually bearing tubercles. P2–4 meri with tubercles on lateral surface *M. vicina* Faxon, 1893.
- Pair of epigastric spines followed by arced ridges without tubercles. P2–4 meri without tubercles on lateral surface 37
- 37. P2–4 dactyli with somewhat curving flexor margin, slender (width at midlength/length = 0.19) *M. pycnopoda* n. sp.
- P2–4 dactyli with straight flexor margin, stocky (width at midlength/length = 0.25) *M. lignaria* Williams & Baba, 1990
- 38. Epipods absent from P1–3. Carapace lateral margin with 2 anterior spines, including anterolateral spine *M. ceratophthalma* Alcock, 1901
- Epipod on P1. Carapace lateral margin with additional spines behind 2 anterior spines *M. profunda* n. sp.
- 39. No distinct spines on gastric region 40
- Distinct spines on gastric region 48
- 40. Lateral eye-spine present 41
- No lateral eye-spine 42
- 41. Rostrum very broad triangular. Row of spines on carapace lateral margin *M. petalorhyncha* n. n.
- Rostrum narrow triangular. A few spines on carapace lateral margin (2 anterior, 1 at midlength) *M. cochlearis* Khodkina, 1973
- 42. Epipod on P1 43
- No epipod on P1 44
- 43. Pereopods with prominent crests (mesially on P1, dorsally on P2–4) *M. yaquinensis* Ambler, 1980
- Pereopods without prominent crests *M. verrucosus* Khodkina, 1973

44. Cornea relatively large. Carapace without granules or tubercles 45
- Cornea relatively small. Carapace covered with granules or tubercles at least on anterior half 46
45. Eye-spine small relative to cornea. P2–4 dactylus gradually narrowed distally, terminal corneous claw gently curved
.... *M. lauensis* Baba & de Saint Laurent, 1992
- Eye-spine large relative to cornea. P2–4 dactyli rather stocky distally, terminal corneous claw strongly curved
..... *M. alvisca* Williams, 1988
46. Rostrum with straight lateral margins. Main eye-spine on mesial end of eyestalk small or obsolescent *M. granosa* Alcock, 1901
- Rostrum with distinctly convex lateral margins. Main eye-spine on mesial end of eyestalk well produced 47
47. Ocular peduncle immovable. Branchial margin of carapace with distinct lobe on anterior half, anterolateral corner of carapace angular *M. marginata* (Henderson, 1885)
- Ocular peduncles movable. Branchial margin of carapace posteriorly convergent, anterolateral corner of carapace not angular
M. albatrossae Pequegnat & Pequegnat, 1973
48. Carapace with longitudinal row of submedian spines 49
- Carapace without longitudinal row of submedian spines 51
49. Ocular peduncle relatively slender, slightly movable, eye-spine directed anterolaterad
..... *M. arietina* Alcock & Anderson, 1894
- Ocular peduncle short relative to length, fairly movable, eye-spine directed straight forward
..... 50
50. Carapace with submedian spines arranged 2-2-2-2-1, posterior-most transverse ridge with 10 spines. P2 dactylus 3/4 as long as propodus
..... *M. bairdii* (Smith, 1884)
- Carapace with submedian spines arranged 2-1-2-2-2, posterior-most transverse ridge with 4 spines. P2 dactylus slightly more than half as long as propodus .. *M. chacei* Kensley, 1968
51. Eyestalk slender. P2–4 dactyli with cristiform ridge fringed with setae on each of lateral and mesial faces *M. antonii* (Filhol, 1884)
- Eyestalk short relative to length. P2–4 dactyli not cristate on mesial and lateral faces 52
52. Epipod absent on P1 53
- Epipod present on P1 54
53. Abdominal segment 6 having posteromedian lobe strongly produced, exceeding beyond lateral lobes *M. abyssicola* n. sp.
- Abdominal segment 6 having posteromedian margin nearly transverse, exceeded by lateral lobes
.... *M. starmer* Baba & de Saint Laurent, 1992
54. Abdominal segment 6 with strongly produced posteromedian flap 55
- Abdominal segment 6 with posteromedian margin weakly convex, not produced 60
55. Cornea relatively large, its greatest width subequal to width of antennal article 3 at midlength 56
- Cornea relatively small, its greatest width clearly less than width of antennal article 3 at midlength 57
56. Carapace with setiferous scale-like ridges behind mid-transverse ridge. P2–4 dactyli each terminating in slightly curved, sharp elongate spine *M. producta* n. sp.
- Carapace with small but distinct spines behind mid-transverse groove. P2–4 dactyli each terminating in curved broad, short spine
..... *M. tuftsi* Ambler, 1980
57. Rostrum strongly upcurved. P2–4 dactyli with length-breadth ratio 6.9, flexor margin having ultimate tooth closer to tip of terminal claw than to penultimate tooth *M. petila* n. sp.
- Rostrum horizontal or somewhat upcurved. P2–4 dactyli with length-breadth ratio at most 5.0, flexor margin having ultimate tooth closer to penultimate tooth than to tip of terminal claw 58
58. Rostrum somewhat upcurved. Distinct spines numerous on gastric and anterior branchial regions *M. crassa* Smith, 1985
- Rostrum horizontal. Spines on gastric region, tubercles on anterior branchial region 59
59. Lateral eye-spine present. Flexor margin of P2–4 dactyli nearly straight
..... *M. marianica* Williams & Baba, 1990
- Lateral eye-spine absent. Flexor margin of P2–4 dactyli concavely curving
..... *M. panamae* n. sp.
60. Gastric region with 2 anterior spines only. Anterolateral spine small, subequal to antennal spine in size, directed straight forward 61
- Gastric region with group of spines including 2 epigastric spines. Anterolateral spine

- markedly larger than antennal spine, directed anterolaterad 62
61. Scale-like ridges on gastric region pronounced. P2–4 dactyli weakly curved distally, having ultimate flexor marginal tooth equidistant between penultimate tooth and tip of article *M. pallida* Alcock, 1894
- Scale-like ridges on gastric region not pronounced. P2–4 dactyli strongly curved distally, ultimate flexor marginal tooth much closer to penultimate tooth than to tip of article *M. geyeri* Pequegnat & Pequegnat, 1970 (western Atlantic species; included here to show that this is a valid species)
62. Cornea relatively large, distinctly broader than eye-spine. P2–4 dactyli nearly straight on flexor margin *M. recta* n. sp.
- Cornea relatively small, as broad as eye-spine. P2–4 dactyli considerably curving *M. subsquamosa* Henderson, 1885
63. P2–4 propodi distally broadened and subchelate with dactyli *M. levis* (Alcock & Anderson, 1894)
- P2–4 propodi of uniform width, not subchelate with dactyli 64
64. Eye-spine(s) present, including papilla-like and tubercle-like process 65
- Eye-spine absent 81
65. Cornea ventral in position, hardly visible in dorsal view 66
- Cornea well exposed, visible in dorsal view 67
66. Carapace with antennal spine. Cornea not visible in dorsal view *M. subchelata* Balss, 1913
- Carapace lacking antennal spine. Cornea partly visible in dorsal view *M. hirsutissima* Balss, 1913 (characters confirmed by examination of specimens from Fiji and Solomon Islands in MNHN, Macpherson, unpublished)
67. Lateral eye-spine present *M. verrilli* Benedict, 1902
- Lateral eye-spine absent 68
68. Three or 4 small eye-spines *M. laciniosa* n. sp.
- One or 2 eye-spines 69
69. Eye-spine stout, strongly produced beyond cornea 70
- Eye-spine(s) small, often tubercle-like or papilla-like 71
70. Cornea depressed, shielded by projecting flat dorsal spine and ventral plate
- *M. lentigo* Williams & van Dover, 1983
 - Cornea small, lateral in dorsal view *M. cascadia* Ambler, 1980
71. Abdominal segments 2–3 unarmed 72
- Abdominal segments 2–3 with spines 77
72. Rostrum broad triangular, its basal width much greater than 1/3 anterior width of carapace *M. orcina* MacArdle, 1901
- Rostrum narrow triangular, its basal width smaller than 1/3 anterior width of carapace. 73
73. Front margin smoothly oblique, without any lobe or spine behind antennal peduncle *M. unguifera* Alcock & Anderson, 1894
- Front margin transverse or concave in mesial half delimited by lobe or spine behind antennal peduncle 74
74. Carapace covered with pointed tubercles. Antennal spine distinct 75
- Carapace with squamous tubercles. Antennal spine obsolescent or absent 76
75. Carapace convex from side to side, with numerous pointed tubercles. Antennal spine small. P2–4 propodi with distinct spines *M. scabra* Faxon, 1893
- Carapace rather flattish on dorsal surface, with squamous tubercles not produced, only a few pointed tubercles on gastric region. Antennal spine relatively long. P2–4 propodi without developed spines *M. tanneri* Faxon, 1893
76. Spines on dorsal crest of meri at least on P2–3. Rostrum with serrate lateral margin *M. ornata* Faxon, 1893
- No spines on dorsal crest of P2–4 meri, other than terminal one. Rostrum with smooth lateral margin *M. hemingi* Alcock & Anderson, 1899
77. Carapace lacking antennal spine 78
- Carapace with antennal spine 80
78. Compressed, procurved spines on carapace and abdomen *M. taurulus* Ortmann, 1892
- Normal spines on carapace and abdomen 79
79. Rostrum with finely serrate lateral margin. Spines on carapace with long setae *M. spinihirsuta* Lloyd, 1907
- Rostrum with smooth lateral margin. Spines on carapace without long setae *M. iridis* Alcock & Anderson, 1899
80. Rostrum with 2–4 distinct lateral spines. Antennal and lateral orbital spines on front margin small *M. hystrix* Faxon, 1893
- Rostrum with minutely spinulose lateral

- margin. Antennal and lateral orbital spines well developed *M. margarita* Faxon, 1893
81. Spines or spinules present at least on abdominal segments 2–3 82
- No spines on abdominal segments 94
82. Cornea subcylindrical 83
- Cornea oval 84
83. Rostrum styliform. Branchial lateral margin with distinct spines *M. mabahiss* Tirmizi, 1966
- Rostrum narrow triangular. Branchial lateral margin spineless ... *M. wardeni* Anderson, 1896
84. P2–4 meri broad, strongly keeled dorsally *M. carinipes* Faxon, 1893
- P2–4 meri relatively slender, not keeled dorsally 85
85. Carapace without row of spines in dorsal midline 86
- Carapace with row of spines in dorsal midline 89
86. Carapace with squamiform, rippled rugae *M. villosa* Faxon, 1893
- Carapace covered with granules and/or tubercles 87
87. Anterolateral margin of carapace rounded. Rostrum broad triangular. Front margin transverse *M. quadrata* Faxon, 1893
- Anterolateral margin of carapace angular. Rostrum narrow triangular. Front margin produced behind antennal peduncle 88
88. Rostrum finely granulate, extending far beyond cornea. Carapace lateral margin irregular *M. aspera* (Henderson, 1885)
- Rostrum with tubercular granules, extending a little beyond cornea. Carapace lateral margin nearly straight ... *M. townsendi* Benedict, 1902
89. Pair of epigastric spines or processes 90
- No pair of epigastric spines 93
90. Carapace lateral margin with anterolateral spine only. Cornea about half or slightly more than half length of ocular peduncle 91
- Carapace lateral margin with spines on branchial region, other than anterolateral spine. Cornea occupying most part of ocular peduncle 92
91. Abdominal segments 2–3 each with numerous small spines arranged in 2 transverse rows, segment 4 with same spines in 1 row. P1 merus with dorsal and mesial spines, other than distal spines *M. kaiyoe* Baba, 1974
- Abdominal segments 2 and 3 each with median spine only, segment 4 unarmed. P1 merus lacking spines, other than distal spines *M. curvirostra* Whiteaves, 1874
92. Rostrum with lateral spines. P2–4 meri with row of spines on dorsal crest *M. opalescens* Benedict, 1902
- Rostrum without lateral spines. P2–4 meri with terminal spine only on dorsal crest *M. scobina* Alcock, 1894
93. Mxp 3 carpus unarmed *M. depressa* Faxon, 1893
- Mxp 3 carpus with spines on extensor margin *M. hamata* Faxon, 1893
94. Pair of anterior gastric spines or processes.. 95
- No spine or processes on gastric region 106
95. P2–4 dactyli entire on flexor margin *M. palmatus* Khodkina
- P2–4 dactyli spinulose on flexor margin 96
96. Front margin convexly oblique 97
- Front margin concavely transverse or slightly oblique on mesial part, depressed and transverse lateral to antennal peduncle 98
97. Anterolateral angle of carapace with laterally (slightly anteriorly) directed strong spine *M. stylirostris* Wood-Mason, 1891
- Anterolateral angle of carapace rounded, not produced *M. latirostris* Faxon, 1895
98. Pair of gastric processes strongly compressed, truncate and broad 99
- Pair of gastric processes not compressed, spiniform or tubercle-like 101
99. Carapace lateral margin without well-defined spines. Basal article of antennule with several small spines on dorsolateral crest *M. sonne* Baba, 1995
- Carapace lateral margin with 4 distinct processes or spines. Basal article of antennule with distinct dorsolateral spine 100
100. Carapace dorsal surface with relatively broad, elevated squamae. Front margin with narrow antennal process *M. proales* Ahyong & Poore, 2004
- Carapace dorsal surface with small, low squamae. Front margin with large blunt antennal process *M. tasmaniae* Ahyong & Poore, 2004
101. Rostrum very broad, with serrated lateral margin *M. snelliuae* Baba, 1977
- Rostrum narrow or of moderate width, with smooth lateral margin 102
102. Carapace lateral margin armed with

- anterolateral spine only
..... *M. miersii* (Henderson, 1885)
- Carapace lateral margin with anterolateral spine followed by additional spine(s) 103
103. Ocular peduncles movable. Cornea long oval. Carapace rather smooth on dorsal surface
..... *M. lenzii* Doflein & Balss, 1913
- Ocular peduncles immovable. Cornea not elongate, semi-oval. Carapace with distinct rugosity or a few spines 104
104. P2–4 meri with spines restricted to proximal part of dorsal crest
..... *M. goodridgii* Alcock & Anderson, 1899
- P2–4 meri with spines on whole length of dorsal crest 105
105. Carapace with no spine other than pair of gastric spines ..*M. spinipes* MacGilchrist, 1905
- Carapace with pair of spines directly posterior to gastric pair, and 3 pairs on posterior half (2 pairs distinct on boundary between cardiac and branchial regions) *M. milleri* Henderson, 1885
106. Anterolateral spine of carapace followed by 4–8 small but sharp spines on branchial region
..... *M. latimana* Miyake & Baba, 1966
- Anterolateral angle of carapace rounded, angular or produced into spine followed by no spine or at most 1 or 2 spines on anterior end of branchial region 107
107. Carapace strongly granulose or tuberculose
..... 108
- Carapace comparatively smooth or rugose 111
108. Rostrum elongate, with concave lateral margin around eye *M. follirostris* Khodkina, 1973
- Rostrum triangular, with straight lateral margin 109
109. Epipods absent from P1–3. Ocular peduncles movable .. *M. granulata* Miyake & Baba, 1967
- Epipods on P1–3. Ocular peduncles immovable 110
110. Carapace strongly convex from side to side, gastric region with anterior cliff bordering rostral base. Sternite 3 very broad relative to length (3.5 times as broad as long)
..... *M. granosicorium* Williams & Baba, 1990
- Carapace moderately convex from side to side, no distinct border between gastric region and rostrum. Sternite 3 narrow relative length (2.5 times as broad as long). *M. cidaris* Baba, 1994
111. Anterior end of branchial lateral margin with distinct spine. P1 short, nearly as long as carapace *M. laevigata* (Henderson, 1885)
- Anterior end of branchial lateral margin unarmed. P1 distinctly longer than carapace 112
112. P2–4 dactyli entire on flexor margin
..... *M. inermis* Faxon, 1893
- P2–4 dactyli with distinct serration or small spines 113
113. Ocular peduncles more than twice as long as cornea 114
- Ocular peduncles nearly as long as or shorter than cornea 115
114. Carapace lateral margin with anterolateral spine only
..... *M. kensleyi* Ahyong & Poore, 2004
- Carapace lateral margin with anterolateral spine followed by 1 or 2 spines
..... *M. dasypus* Alcock, 1894
115. Cornea cylindrical 116
- Cornea nearly oval or semi-oval 118
116. Anterolateral angle of carapace produced into spine *M. andamanica* MacGilchrist, 1905
- Anterolateral angle of carapace rounded ... 117
117. P1 spineless. P2–4 meri and carpi unarmed
..... *M. cylindrophthalma* (Alcock, 1894)
- P1 with spines on carpus and merus. P2–4 meri and carpi with spines on dorsal crest
..... *M. africana* Balss, 1913
118. Front margin with blunt tooth or sharp spine behind antennal peduncle 119
- Front margin without any process or spine behind antennal peduncle 120
119. Rostrum dorsally carinate. P2–4 meri and carpi without spines on dorsal crest
..... *M. moresbyi* Alcock & Anderson, 1899
- Rostrum dorsally with crenulated, medially excavated convexity. P2–4 meri and carpi with spines on dorsal crest
..... *M. crenatirostris* Baba, 1988
120. Carapace with strong rugosities. Rippled rugae on gastric region . *M. sinclairi* McArdle, 1901
- Carapace weakly rugose. No distinct rippled rugae on gastric region 121
121. Carapace strongly cristate on lateral margin
..... *M. carinimarginata* Baba, 1988
- Carapace not cristate on lateral margin 122
122. P1 merus with mesioventral spine proximal to midlength ... *M. cylindropus* Benedict, 1902
- P1 merus without mesioventral spine
..... *M. debilis* (Henderson, 1885)

***Munidopsis africana* Balss, 1913**

Munidopsis africana Balss, 1913a: 223 (type locality: Zanzibar Canal, 463 m [holotype, ♀, ZMB 17508]).

Munidopsis (Elasmonotus) africana: Doflein & Balss, 1913: 159 (Zanzibar, 5°27'N, 39°18'E, 463 m).

***Munidopsis abyssicola* n. sp.**

Munidopsis abyssicola Baba, this paper (type locality: Kermadec Deep, 4520 m [holotype, ov. ♀, ZMUC CRU-11632]).

***Munidopsis agassizii* Faxon, 1893**

Munidopsis agassizii Faxon, 1893: 182 (type locality: "Albatross" St. 3389 [Gulf of Panama, 07°16.45'N, 079°56.30'W, 210 fm (384 m)] [syntypes, 1 ♂, 1 ♀, not located]); 1895: 88, pl. 18, figs. 4, 4a (Gulf of Panama, 210 fm (384 m)). — Khodkina, 1975: 261, fig. 2-1 (off Peru, 560–580 m). — Wicksten, 1989: 315 (list).

***Munidopsis albatrossae* Pequegnat & Pequegnat, 1973**

Munidopsis sp. Wolff, 1961: 148, fig. 16 ("Galathea" St. 716 [W of Costa Rica, 09°23'N, 89°32'W, 3680 m]).

Munidopsis albatrossae Pequegnat & Pequegnat, 1973: 163, figs. 1, 2 (Eastern Pacific S of Madalena Bay, Baja California, Mexico and off Central America, 3219–3570 m; type locality: S of Madalena Bay, Baja California, 23°23.5'N, 112°30'W, 3219 m [holotype, ♀, USNM 141453]).

Munidopsis aries: Ambler, 1980: 17 (off Oregon, 2850–3025 m) (not *M. aries* (A. Milne Edwards, 1880)). — Wicksten, 1989: 315 (list).

***Munidopsis alvisca* Williams, 1988**

Munidopsis alvisca Williams, 1988b: 279, fig. 8 (Guaymas Basin (Gulf of California), Explorer Ridge (Magic Mountain, and Juan de Fuca Ridge (Limbo Vent), active thermal vent sites, 1545–2008 m; type locality: Guaymas Basin, Gulf of California, 27°00'N, 111°25'W, 2,008 m [holotype, ♀, USNM 234301]). — Khodkina, 1991: 71, with fig. (Gulf of California, hydrothermal areas, 1967–1987 m).

***Munidopsis andamanica* MacGilchrist, 1905**

Munidopsis Wardeni: Alcock, 258 (part): Andaman Sea, 500 fm (915 m) [not *M. wardeni* Anderson, 1896).

Munidopsis Wardeni var. *andamanica* MacGilchrist,

1905: 245 (type locality: E of Andamans, "Investigator" St. 331 [11°46'30"N, 93°16'E], 569 fm (1041 m) [2 syntypes, ZSIC]).

Munidopsis (Munidopsis) Wardeni: Doflein & Balss, 1913: 153, pl. 14: fig. 2 (W of Sumatra, 0°16' S, 98°07' E, 677 m).

Munidopsis andamanica Baba, 1988: 140, fig. 53 (Teluk Bone (Sulawesi), Moluccas off W coast of Halmahera, between Leyte and Mindanao, East coast of Mindoro, and South China Sea off SW Luzon, 514–1350 m). — Wu *et al.*, 1997: 137, figs. 37, 42C (Taiwan).

***Munidopsis antonii* (Filhol, 1884)**

Galathodes antonii Filhol, 1884: 230, fig. 2 (type locality: NE of Azores, 3975–4010 m [2 ? syntypes, MNHN Ga 277 and 278; 1 ov. ♀ syntype, USNM 22909]).

Munidopsis antonii: Henderson, 1888: 151, pl. 18: figs. 1, 1a (SW of Australia, and off Juan Fernandez, 1375–1800 fm (2516–3294 m)). — Luke, 1977: 28 (list; Baja California, Basin off Bahia Magdalena, and off St. San Juan, Peru, between 3427–3621 m and 3599–3676 m). — Baba, 1982a: 113, pl. 1: fig. 2 (Izu Shoto, Japan, 3420–3960 m); this paper (Mozambique Channel, off Sri Lanka, Tasman Sea, off Zamboanga, W of Costa Rica, and Gulf of Panama, between 366–458 m and 3800 m). — de Saint Laurent, 1985: table 2 (Bay of Biscay, 3992–4510 m). — d'Udekem d'Acoz, 1999: 166 (list).

Munidopsis Antonii: A. Milne Edwards & Bouvier, 1900: 321, pl. 4: fig. 2, pl. 30: figs. 20–24 (N and NE of Azores, 3975–4010 m). — Hansen, 1908: 38, pl. 3: figs. 3a, 3b (southern part of Davis Straits, 1435 fm (2626 m)). — Bouvier, 1922: 47 (Bay of Biscay, 3910 m).

Munidopsis beringana Benedict, 1902: 279, fig. 23 (type locality: Bering Sea, [55°23'00"N, 170°31'00"W], 1771 fms (3241 m) [3 ♀ syntypes, USNM 20557]). Makarov, 1938: 98, fig. 36 (Sea of Okhotsk, 3500 m). — Ambler, 1980: 24 (Cascadia Basin and Tufts Plain off Oregon, 2800–3990 m). — Wicksten, 1989: 315 (list).

Munidopsis antoni [lapsus]: Haig, 1955: 40 (no record).

***Munidopsis areolata* (Wood-Mason, 1891)**

[Originally *Galacantha areolata* Wood-Mason, 1891] See under *Munidopsis rostrata* (A. Milne Edwards, 1880).

***Munidopsis arietina* Alcock & Anderson, 1894**

Munidopsis arietina Alcock & Anderson, 1894: 171 (type locality: Bay of Bengal, 1520 fm (2782 m) [holotype, ♀, ZSIC 78/7]); 1895, pl. 12, fig. 3 (no record). — Alcock, 1901: 269 (Bay of Bengal, 1520 fm (2782 m)). — Baba, this paper (Bay of Bengal, 2935 m).

***Munidopsis aspera* (Henderson, 1885)**

Elasmonotus asper Henderson, 1885: 416 (type locality: Straits of Magellan, 245 fm (448 m) [syntypes, BMNH 1888:33]) (The locality record from off the coast of Brazil (Challenger St. 107, 1500 fm) was included, but in the subsequent account of the species (see below) it was deleted, also from the list of stations; very possibly this may have been mistakenly included in this original account); 1888: 163, pl. 19: figs. 4, 4a (off Port Charruca, Chile, 245 fm (448 m)).

Munidopsis aspera: Faxon, 1893: 188 (off Mariato Point, off Cocos Islands and Galapagos Islands, 134–782 fm (245–1431 m)); 1895: 96 (off Mariato Point, off Cocos Islands and Galapagos Islands, 134–782 fm (245–1431 m)). — Schmitt, 1921: 171, pl. 31: fig. 1 (off Santa Catalina and San Clemente Islands, California to Straits of Magellan and Galapagos Islands, 57–782 fm (104–1431 m)). — Haig, 1955: 41 (no record). — Luke, 1977: 27 (list; between off Pta. Piedras Blancas and San Diego Trough, and off Arica, Chile, between 556–586 m and 1398 m). — Wicksten, 1989: 315 (list).

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

Galacantha bairdii Smith, 1884: 356 (type locality: offshore of Delaware Bay, 37°41.3'N, 73°3.3'W, 2738 m [holotype, ♀, USNM 5717]).

Munidopsis bairdii: Faxon, 1895: 83 (Gulf of Panama, 1772 fm (3243 m)). — Benedict, 1902: 317, fig. 47 (no new record). — Luke, 1977: 28 (list; off Mazatlan, and off San Quintin, Baja California, between 1986–2008 m and 3292–1920 m). — Khodkina, 1975: 262, fig. 2-2 (off Ecuador, 1°46'7S, 82°58'0W, 2150 m). — Ambler, 1980: 18 (off Oregon, 2377–2940 m). — Wenner, 1982: 367 (off New England and Middle Atlantic Bight, 2125–2933 m). — de Saint Laurent, 1985: table 2 (Bay of Biscay, 3992–4260 m). — d'Udekem d'Acoz, 1999: 166 (list). — Wicksten, 1989: 315 (list).

Munidopsis barnardi Kensley, 1968

See under *Munidopsis subsquamosa* Henderson, 1885.

***Munidopsis barrerae* Bahamonde, 1964**

Munidopsis barrerae Bahamonde, 1964: 166, pl. 1, figs. A, B (type locality: Ritoque, Chile, 420 m [holotype, ♀, MNHNC D10.065]).

Munidopsis bellis (Henderson, 1885)

[Originally *Galacantha bellis* Henderson, 1885]

See under *M. nitida* (A. Milne Edwards, 1880).

Munidopsis beringana Benedict, 1902

See under *M. antonii* Filhol, 1884.

***Munidopsis bermudezi* Chace, 1939**

Munidopsis bermudezi Chace, 1939: 46 (N and S coasts of Cuba, 1330–1650 fm (2434–3020 m); type locality: off Bahia de Guantanamo, Oriente Prov., Cuba, 19°43.30'N, 74°57.30'W, 1330–1650 fm (2434–3020 m) [holotype, ov. ♀, MCZ 10231]); 1942: 83, figs. 29, 30 (N and S coasts of Cuba, 1330–1650 fm (2434–3020 m)). — Sivertsen & Holthuis, 1956: 44, pl. 4: fig. 3 (N of Azores, 3120 m). — Pequegnat & Pequegnat, 1970: 145, fig. 5–8 (NW Gulf of Mexico, 1800 fm (3294 m)); 1971: 22 (NE Gulf of Mexico, 3246 m). — Khodkina, 1975: 263 (Gulf of Alaska, 57°48'0N, 148°40'W, 2400 m). — Türkay, 1975: 68, figs. 4a, 4b (locality not noted). — Laird *et al.*, 1976: 642 (near Norfolk Canyon off coast of Virginia, 2620–2955 m). — Wenner, 1982: 367 (Middle Atlantic Bight, 2575 m). — Gore, 1983: 204 (Venezuelan Basin, Caribbean Sea, 3411–4064 m).

[It is questionable that Khodkina's (1975) species is the true *M. bermudezi* Chace, 1939, because of her brief account of the species. *Munidopsis teretis* n. sp., a very close relative of *M. bermudezi* from off Durban and Tasman Sea is described in the present paper].

***Munidopsis bispinocolata* Baba, 1988**

Munidopsis bispinocolata Baba, 1988: 142, fig. 54 (Teluk Bone (Sulawesi), Teluk Tomini (Sulawesi), and off SW coast of Halmahera, 933–2363 m; type locality: SE of Doworra Island, off S Halmahera, 1040 m [holotype, ov. ♀, USNM 150424]); this paper (Mindanao Sea, 1510 m). — Baba & Poore, 2002: 232, fig. 1 (New South Wales, 1100 m).

Munidopsis brevimana Henderson, 1885

[not *M. brevimana* (A. Milne Edwards, 1880)]

See under *M. nitida* (A. Milne Edwards, 1880).

***Munidopsis camelus* (Ortmann, 1892)**

Galacantha camelus Ortmann, 1892: 257, pl. 11: figs. 14, 14a, 14i (type locality: Sagami Bay, 170 fm (311 m) [holotype, ♀, MZS 358]).

Munidopsis camelus: Miyake & Baba, 1967b: 221, figs. 7, 8 (Sagami Bay, 200–500 m). — Wu & Chan, 2000: figs. 1b, 2b (off Hayama, Sagami Bay).

***Munidopsis carinimarginata* Baba, 1988**

Munidopsis carinimarginata Baba, 1988: 145, fig. 55 (type locality: Moluccas off W coast of Halmahera, 545 m [holotype, ♂, USNM 150418]).

***Munidopsis carinipes* Faxon, 1893**

Munidopsis carinipes Faxon, 1893: 189 (type locality: “Albatross” St. 3353 [off Azuero Peninsula, Panama, 07°06.15'N, 080°34.00'W, 695 fm (1272 m)]) [syntypes, 2 ♂, 1 ov. ♀, not located]; 1895: 97, pl. 24, figs. 1, 1a, 1b (off Mariato Point, 695 fm (1272 m)). — Wicksten, 1989: 315 (list). — Baba, this paper (Gulf of Panama, 915–975 m).

***Munidopsis cascadia* Ambler, 1980**

Munidopsis cascadia Ambler, 1980: 21, fig. 6 (Cascadia Basin off Oregon), 2743–2926 m; type locality: 44°35.5' N, 125°35.4' W, 2810 m [holotype, ♀, USNM 171338]). — Wicksten, 1989: 315 (list).

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

Munidopsis centrina Alcock & Anderson, 1894: 170 (type locality: Bay of Bengal, 1520 fms (2782 m) [holotype, ♀, ZSIC 80/7]); 1895: pl. 11, figs. 6, 6a (no record). — Ahyong & Poore, 2004b: 47 (Tasman Sea, 2450 m). — Baba, this paper (Mozambique Channel and Bay of Bengal, 2610–3485 m).

Munidopsis (Orophorhynchus) centrina. Alcock, 1901: 270 (Bay of Bengal, 1520 fm (2782 m)).

***Munidopsis ceratophthalma* Alcock, 1901**

Munidopsis (Orophorhynchus) ceratophthalmus Alcock, 1901: 271, pl. 3: fig. 2 (type locality: Andaman Sea, 480 fm (878 m) [holotype, ♂, ZSIC 140/7]). — Alcock & McArdle, 1902: pl. 57, fig. 2 (no record). — Doflein & Balss, 1913: 156 (W of Sumatra, 677 m).

***Munidopsis chacei* Kensley, 1968**

Munidopsis chacei Kensley, 1968: 288, figs. 1, 3a, 3b (type locality: W of Cape Point, South Africa, 2745 m [holotype, ov. ♀, SAMC A10470]).

[Ambler (1980) synonymized *M. chacei* Kensley, 1968 with *M. bairdii*.]

***Munidopsis cidaris* Baba, 1994**

Munidopsis cidaris Baba, 1994: 16, fig. 7 (type locality: off central Queensland, 17°18.73'S, 147°37.20'E, 1128–1178 m [holotype, ♂, QMW 19712]).

***Munidopsis ciliata* Wood-Mason, 1891**

See under *M. nitida* (A. Milne Edwards, 1880).

***Munidopsis cochlearis* Khodkina, 1973**

Munidopsis cochlearis Khodkina, 1973: 1159, fig. 2(2), 3 (type locality: off Chile, 23°49'8"S, 71°06'54"W, 4550 m [holotype, ♂, SUM]).

***Munidopsis crassa* Smith, 1885**

Munidopsis crassa Smith, 1885: 494 (type locality: off North Carolina, 36°16'30N, 68°21'W, 2574 fm (4710 m), [type, fragments, sex indet., USNM 8563]). — A. Milne Edwards & Bouvier, 1899: 82 (NE of Azores, 4360 m). — Bouvier, 1922: 47 (Bay of Biscay, 46°17'30N, 5°42'W, 4380 m). — Gordon, 1955: 239, figs. 1A, 2A, 2A', 3A, pl. 1 (off Canary Islands (29°48'N, 17°39'W), 4255–4267 m). — Sivertsen & Holthuis, 1956: 46, pl. 4: fig. 1 (Bay of Biscay (45°26'N, 9°20'W), 4700 m). — Zariquiey Alvarez, 1968: 269, fig. 95b (Bay of Biscay, coast of Portugal). — Pequegnat & Pequegnat, 1971: 18 (Colombian Basin and Yucatan Basin, 4150–4554 m). — Türkay, 1975: 67, fig. 2 (Iberian deep sea (West Europe Basin), 5315 m). — Wenner, 1982: 367 (Middle Atlantic Bight, 2679 m). — Gore, 1983: 206 (Venezuelan Basin, 3934–5060 m). — De Saint Laurent, 1985: table 2 (Bay of Biscay, 3992–4510 m). — Segonzac, 1992: 596 (Snake Pit, Mid-Atlantic Ridge, 23°N, hydrothermal active site, 3480 m). — Olu *et al.*, 1996: 115 (off Paita, Peru, cold seep, 3520 m). — d'Udekem d'Acoz, 1999: 167 (list). — Tiefenbacher, 2001: 63 (West Europe Basin, 4635–4723 m). — Baba, this paper (Tasman Sea, 3580 m and North Atlantic Ocean, 3506 m).

***Munidopsis crenatirostris* Baba, 1988**

Munidopsis crenatirostris Baba, 1988: 149, fig. 57 (type locality: NW of Sombrero Island, off SW

- Luzon, 432 m [holotype, ov. ♀, USNM 150421]); this paper (Bali Strait and Kei Islands, 200–450 m).
- Munidopsis crinita* Faxon, 1893**
Munidopsis crinita Faxon, 1893: 185 (type locality: “Albatross” St. 3384 [Gulf of Panama, 07°31.30'N, 079°14.00'W, 458 fm (838 m)] [holotype, ♀, not located]); 1895: 92, pl. 20, fig. 3, 3a (Gulf of Panama, 458 fm (838 m)). — Wicksten, 1989: 315 (list).
- Munidopsis curvirostra* Whiteaves, 1874**
Munidopsis curvirostra Whiteaves, 1874: 212 (type locality: mouth of St. Lawrence River between Anticosti and south shore (Gulf of St. Lawrence), 180–220 fm (146–403 m) [type not located]). — Hansen, 1908: 36, pl. 3, figs. 2a–2e (Davis Straits, SW of Iceland and S of Iceland, 349–975 fm (662–1784 m)). — Selbie, 1914: 84, pl. 13: figs. 1–4 (Ireland (ca 51°N), 982 fm (1797 m)). — Sivertsen & Holthuis, 1956: 47 (SE of Newfoundland, 42°59'W, 51°15'W, 1100 m). — Khodkina, 1981: 1263 (SW Pacific [Lord Howe Ridge], 30°25.5'S, 161°48'E, 1210 m). — Wenner, 1982: 368 (Middle Atlantic Bight, 636–2200 m). — d'Udekem d'Acoz, 1999: 167 (list).
- Munidopsis curvirostris* [sic]: de Saint Laurent, 1985: table 2 (Bay of Biscay, 1845–2430 m).
- Munidopsis curvirostris* [sic]: Türkay, 1976: 30 (between Portugal and Morocco, 1912–1716 m).
- Munidopsis cylindrophthalma* (Alcock, 1894)**
Elasmonotus cylindrophthalmus Alcock, 1894: 333 (type locality: Andaman Sea, “Investigator” St. 115 [11°31'40"N, 92°46'6"E], 188–220 fms (344–403 m) [holotype, ov. ♀, ZSIC 6906/9]). — Alcock & Anderson, 1895: pl. 13, fig. 4 (no record). — Anderson, 1896: 100 (“Investigator” St. 197, 806 fm (1475 m)).
- Munidopsis (Orophorhynchus) cylindrophthalmus*: Alcock, 1901: 272 (Andaman Sea and Arabian Sea, 188–406 fm (344–723 m)).
- Munidopsis (Elasmonotus) cylindrophthalma*: Doflein & Balss, 1913: 159 (W of Sumatra, 0°15'N, 98°08'E, 614 m). — Tirmizi, 1966: 213, figs. 28, 29A, 29B (Maldives, 494 m).
- Munidopsis okadai* Yanagita, 1942: 93, 2 figs. (type locality: off Akabane, Aichi Pref., Japan, 200 m [type lost]).
- Munidopsis cylindrophthalma*: Baba in Baba *et al.*, 1986: 177, 293, fig. 127 (Tosa Bay, 200–350 m). — Baba, 1988: 151, figs. 58, 59 (Moluccas off W coast of Halmahera, off N Mindanao, between Negros and Siquijor, between Cebu and Leyte, off SE Mindoro, E coast of Mindoro, vicinity of Marinduque off SW Luzon, and South China Sea off SW Luzon, 291–619 m); this paper (Kei Islands, 345 m). — Wu *et al.*, 1997: 139, figs. 38, 42D (Taiwan).
- Munidopsis cylindropus* Benedict, 1902**
Munidopsis cylindropus Benedict, 1902: 281, fig. 24 (type locality: off Honshu, Japan [Manazuru Zaki, 26d, W], 120–265 fm (220–485 m) [holotype, ♀, USNM 26163]). — Baba, this paper (reexamination of holotype; Mindanao Sea, 1510 m).
- Munidopsis debilis*: Baba in Baba *et al.*, 1986: 177, 293, fig. 128 (Okinawa Trough, 815 m) (not *M. debilis* (Henderson, 1885)).
- Munidopsis dasypus* Alcock, 1894**
Munidopsis dasypus: Alcock, 1894: 329 (type locality: Andaman Sea, 561 fms (1027 m) [syntypes, ZSIC 6901/9]); 1901: 252 (Bay of Bengal off Andamans, Andaman Sea, and Arabian Sea, 480–636 fm (878–1164 m)). — Alcock & Anderson, 1894: 167 (Laccadive Sea, 636 fms (1164 m)). — Alcock & Anderson, 1895: pl. 13, fig. 9 (no record). — Alcock & MacGilchrist, 1905: pl. 70, fig. 3 (no record). — MacGilchrist 1905: 245 (E of Andamans, 569 fm (1041 m)). — Baba 1988: 154, fig. 60 (off SW coast of Halmahera, and South China Sea off SW Luzon, 214–1480 m); this paper (Bay of Bengal and Andaman Sea off N Sumatra, between 1130 m and 1210–1240 m). — Ah Yong & Poore, 2004b: 50 (Exmouth Plateau and off Andaman Islands, between 878–911 m and 913–914 m).
- Munidopsis (Munidopsis) dasypus*: Tirmizi, 1966: 218, fig. 32 (South Arabian coast and Gulf of Aden, 1270–1939 m).
- Munidopsis debilis* (Henderson, 1885)**
Galathopsis debilis Henderson, 1885: 417 (type localities: Fiji Islands and Philippines, 300–375 fm (549–686 m) [2 ♂ syntypes, BMNH 1888:33]).
- Elasmonotus debilis*: Henderson, 1888: 165, pl. 18: figs. 4, 4a (off Mindanao, Philippines and off Matuku Island, Fiji, 315–375 fm (549–686 m)).
- Munidopsis (Elasmonotus) debilis*: Tirmizi, 1966: 215, figs. 29C–29E, 30 (Gulf of Aden, 1270 m).

***Munidopsis depressa* Faxon, 1893**

Munidopsis depressa Faxon, 1893: 189 (type locality: “Albatross” St. 3425 [off Las Tres Marias Island, Mexico, 21°19.00’N, 106°24.00’W, 680 fm (1244 m) [holotype, MCZ?]); 1895: 96, pl. 22, figs. 2, 2a, 2b (near Las Tres Marias Island, Mexico, 680 fm (1244 m)). — Haig, 1956: 79 (between Santa Catalina Island and the mainland, off S California, 400–450 fm (732–824 m)). — Luke, 1977: 28 (list; S of Isle San Pedro, Gulf of California, 931–952 m). — Wicksten, 1989: 315 (list). — Hendrickx, 2001: 100, fig. 2 (south eastern Gulf of California, 870–1240 m).

***Munidopsis diomedea* (Faxon, 1893)**

Galacantha diomedea Faxon, 1893: 180 (type localities: “Albatross” St. 3357 [S of Coiba Island, Panama], 782 fm (1430 m) [syntype, 1 ♀ juvenile, USNM 29108]; “Albatross” St. 3363 [Cocos Island], 978 fm (1789 m) [syntypes, 3 ♂, 3 ♀, MCZ?]; “Albatross” St. 3364 [Cocos Island], 902 fm (1650 m) [syntype, 1 ♀, USNM 42621]; “Albatross” St. 3366 [Cocos Islands], 1067 fm (1952 m) [syntypes, 3 ♂, 1 ov. ♀, USNM 29104]; “Albatross” St. 3371 [Cocos Island], 770 fm (1408 m) [syntypes, 3 ♂, 1 ♀, USNM 29107], note: 1 exchange with Indian Museum [now the Zoological Survey of India], 1911; “Albatross” St. 3373 [W of Malpelo Island, Colombia], 1877 fm (3435 m) [syntype, 1 ♂, USNM 42622]; “Albatross” St. 3393 [Gulf of Panama], 1020 fm (1866 m) [syntypes, 3 ♂, USNM 29105]; “Albatross” St. 3407 [Galapagos Islands], 885 fm (1619 m) [syntypes, 1 ♂, 1 ♀, USNM 29106]; “Albatross” St. 3429 [SW of Mazatlan, Mexico], 919 fm (1681 m) [syntype, 1 ♂, not located]; 1895: 79, pl. 25, figs. 1, 1a, 1b, 1c, 1d (off Mexico, Gulf of Panama, Cocos Island, W of Colombia, and Galapagos Islands, 770–1877 fm (1409–3435 m)).

Munidopsis diomedea: Haig & Wicksten, 1975: 101 (off San Clemente Island, California, 1719–1738 m). — Luke, 1977: 28 (list; between East Cortez Bank and N of tip of Cedros Is., Gulf of California, S of Punta Guiones, Costa Rica, and off Arica, Chile, between 768–968 m and 3775–3790 m). — Wicksten, 1989: 315 (list). — Khodkina, 1991: 73 (Gulf of California, hydrothermal active sites, 1994–2026 m).

Galacantha diomedea var. *parvispina* Faxon, 1893: 181 (type localities: “Albatross” St. 3418 [off Acapulco, Mexico, 16°33.00’N, 099°52.30’W, 660

fm (1207 m)] [syntype, 1 ♂, USNM 29110]; “Albatross” St. 3419 [off Acapulco], 772 fm [?672 fm] (1423 m) [syntype, 1 ov. ♀, not located]; “Albatross” St. 3424 [Marias Islands], 676 fm (1236 m) [syntype, 1 ♂, not located]; “Albatross” St. 3429 [SW of Mazatlan, Mexico], 919 fm (1681 m) [syntype, 1 ♂, USNM 29102]; “Albatross” St. 3435 [Concepcion Bay, Baja California], 859 fm (1571 m)] [syntypes, 16 ♂, 12 ♀, 4 ov. ♀, USNM 29101]; “Albatross” St. 3436 [San Marcos, Baja California], 905 fm (1655 m)] [syntypes, 6 ♂, 4 ♀, not located]; 1895: 80, pl. 25, fig. 2 (off Acapulco, near Las Tres Marias Island, off Mazatlan, and Gulf of California, 660–905 fm (1208–1656 m)).

***Munidopsis edwardsii* (Wood–Mason, 1891)**

Elasmonotus edwardsii Wood–Mason in Wood–Mason & Alcock, 1891: 201 (Bay of Bengal, “Investigator” St. 97 [[18°26’N, 85°24’E],], 1310 fm (2397 m) [holotype, ♂, ZSIC 6010/9]).

Munidopsis (Orophorhynchus) edwardsii: Alcock, 1901: 265 (Bay of Bengal, 1300–1310 fm (1379–2397 m)).

Munidopsis (Orophorhynchus) edwardsii: Alcock & McArdle, 1902: pl. 56, fig. 2 (no record).

Munidopsis edwardsii: Baba & Poore, 2002: 235, fig. 3 (New South Wales, 1896 m). — Baba, this paper (Bay of Bengal, 2610 m).

***Munidopsis follirostris* Khodkina, 1973**

Munidopsis follirostris Khodkina, 1973: 1161, fig. 4 (type locality: off Chile, 30°13’9”S, 78°47’3”W, 1280 m [holotype, ♂, SUM]).

***Munidopsis formosa* Wu & Chan, 2000**

Munidopsis formosa Wu & Chan, 2000: 25, figs. 1A, C–E, 2A, C D, 3 (type locality: Taiwan, NE coast, Tai-Shi fishing port, 500 m [holotype, ♂, NTOU-H 1998-08]).

***Munidopsis gibbosa* Baba, 1978**

Munidopsis gibbosa Baba, 1978: 31, fig. 1, 2 (type locality: S of Hong Kong, 19°20.0’N, 114°13.2’E, 520–560 fms (952–1025 m) [holotype, ♂, NSMT-Cr. 5655]).

***Munidopsis goodridgii* Alcock & Anderson, 1899**

Munidopsis Goodridgii Alcock & Anderson, 1899a: 21 (type locality: off Travancore coast (Kerala), 430 fm (787 m) [holotype, ♀, ZSIC 2354/10]). —

- Alcock, 1901: 258 (off Travancore coast, 430 fm (787 m)).
- Munidopsis goodridgii*: Alcock & Anderson, 1899b: pl. 44, fig. 2 (no record).
- Munidopsis granosa* Alcock, 1901**
Munidopsis (Orophorhynchus) granosa Alcock, 1901: 266, pl. 3: fig. 1 (type locality: Bay of Bengal, 1520 fm (2782 m) [holotype, ZSIC 77/7]). — Alcock & McArdle, 1902: pl. 56, fig. 1 (no record). — Baba, this paper (Mozambique Channel and Bay of Bengal, 2610–3485 m).
- Munidopsis granosicorium* Williams & Baba, 1990**
Munidopsis granosicorium Williams & Baba, 1990: 907, figs. 2i, 5 (type locality: Eastern Pacific Ocean, W of Vancouver Island, 48°38.7'N, 126°57.6'W, 2020 m [holotype, ov. ♀, USNM 240205]).
- Munidopsis granulata* Miyake & Baba, 1967**
Munidopsis granulata Miyake & Baba, 1967b: 219, figs. 5, 6 (type locality: off Nagai, Sagami Bay, 110–200 m [holotype, ♀, BLIH 153]). — Takeda, 1982: 52, fig. 154 (Suruga Bay).
- Munidopsis hamata* Faxon, 1893**
Munidopsis hamata Faxon, 1893: 187 (type locality: “Albatross” St. 3394 [Gulf of Panama, 07°21.00'N, 079°35.00'W, 511 fm (935 m)] [syntypes, 13 ♂, 16 ov. ♀, MCZ?]; “Albatross” St. 3395 [Gulf of Panama, 07°30.36'N, 078°39.00'W, 730 fm (1335 m)] [syntypes, 2 ♂, USNM 21280]); 1895: 95, pl. 21, figs. 2, 2a, 2b (Gulf of Panama, 511–730 fm (935–1335 m)). — Smith & Weldon, 1904: fig. 114 (no record). — Luke, 1977: 28 (list; off SW Baja California, 1147–1229 m). — Wicksten, 1989: 315 (list). — Baba, this paper (Gulf of Panama, 915–975 m).
- Identity questionable:
Munidopsis hamata: Retamal, 1981: 23 (off Chigualoco, Chile and Peru).
- Munidopsis hastifer* Benedict, 1902
 See under *M. taurulus* Ortmann, 1892.
- Munidopsis hemingi* Alcock & Anderson, 1899**
Munidopsis Hemingi Alcock & Anderson 1899a: 19 (type locality: off Travancore coast (Kerala), 430 fm (787 m) [syntypes, ZSIC 2355/10]). — Alcock 1901: 251 (off Travancore coast, 430 fm (787 m)).
- Munidopsis hemingi*: Alcock & McArdle 1901: pl. 55, fig. 4 (no record).
- Munidopsis hendersoniana* Faxon, 1893**
Munidopsis hendersoniana Faxon, 1893: 190 (type locality: “Albatross” St. 3393 [Gulf of Panama, 07°15.00'N, 079°36.00'W, 1020 fm (1866 m). [syntypes, 3 ♂, 1 ♀, not located]); 1895: 100, pl. 24, figs. 2, 2a, 2b, 2c (Gulf of Panama, 1020 fm (1867 m)). — Wicksten, 1989: 315 (list). — Baba, this paper (Gulf of Panama, 915–975 m).
- Munidopsis hirsutissima* Balss, 1913**
Munidopsis hirsutissima Balss, 1913a: 223 (type locality: W of Sumatra, 1280 m [holotype, ♀, ZMB 17498]).
- Munidopsis (Munidopsis) hirsutissima*: Doflein & Balss, 1913: 150, pl. 15: fig. 2 (W of Sumatra, 0°58'S, 99°43'E, 1280 m).
- Munidopsis hystrix* Faxon, 1893**
Munidopsis hystrix Faxon, 1893: 183 (type localities: “Albatross” St. 3417 [Acapulco, 16°32.00'N, 099°48.00'W, 493 fm (902 m)] [syntypes, 1 ♂, 2 ov. ♀, USNM 29161]; “Albatross” St. 3424 [Marias Islands, 21°15.00'N, 106°23.00'W, 676 fm (1236 m)] [syntypes, 4 ♀ (2 ov.), USNM 21284]; “Albatross” St. 3425 [Marias Islands, 21°19.00'N, 106°24.00'W, 680 fm (1244 m)] [syntypes, 7 ♂, 5 ♀ (2 ov.), not located]); 1895: 89, pl. 19, figs. 1, 1a (off Acapulco and near Las Tres Marias Island, 493–680 fm (902–1244 m)). — Schmitt, 1921: 168, fig. 107 (examination of type material). — Garth & Haig, 1971: 6.6 (off Peru, 907–935 m). — Luke, 1977: 28 (list; San Diego Trough and off SW Baja California, between 732–860 m and 1229–1147 m). — Wicksten, 1989: 315 (list).
- Munidopsis inermis* Faxon, 1893**
Munidopsis inermis Faxon, 1893: 191 (type locality: “Albatross” St. 3354 [SW point of Azuero Peninsula, Panama, 07°09.45'N, 080°50.00'W, 322 fm (589 m)] [holotype, ♂, not located]); 1895: 98, pl. 23, figs. 2, 2a (off Mariato Point, 322 fm (589 m)). — Wicksten, 1989: 315 (list).
- Munidopsis investigatoris* (Alcock & Anderson, 1894) [Originally *Galacantha investigatoris* Alcock & Anderson, 1894]
 See under *M. rostrata* (A. Milne Edwards, 1880).

***Munidopsis iridis* Alcock & Anderson, 1899**

Munidopsis iridis Alcock & Anderson, 1899a: 20 (type locality: off Travancore coast (Kerala), 430 fm (787 m). [syntypes, ZSIC 2183–2201/10]); 1899b: pl. 44, figs. 1, 1a, 1b (no record). — Alcock, 1901: 255 (off Travancore coast, 430 fm (787 m)).

***Munidopsis kaiyoae* Baba, 1974**

Munidopsis kaiyoae Baba, 1974: 390, figs. 8, 9 (type locality: off E coast of South Island, New Zealand, 44°20.5'S, 179°17.5'W, 750 m [holotype, ♀, ZLKU 15554]). — Khodkina 1981: 1263 (off South Island of New Zealand, 44°27'S, 174°29'E, 720 m).

***Munidopsis kensleyi* Ah Yong & Poore, 2004**

Munidopsis dasyopus: Kensley, 1977: 176, fig. 10 (off NE South Africa, 900 m). — Baba & Poore, 2002: 233, fig. 2 (New South Wales, 1100 m).

Munidopsis kensleyi Ah Yong & Poore, 2004b: 50, fig. 50 (New South Wales, between 476 m and 951–1150 m; type locality: E of Broken Bay, 33°34'–31'S, 152°02'–04'E, 905–914 m [holotype, ♂, AM P26780]).

***Munidopsis laciniosa* n. sp.**

Munidopsis laciniosa Baba, this paper (type locality: Bali Sea, Indonesia, 7°29'S, 114°49'E, ca. 240 m [holotype, ♂, ZMUC CRU-11083]).

***Munidopsis laevigata* (Henderson, 1885)**

Galathodes laevigata Henderson, 1885: 417 (type locality: off the Admiralty Islands, 150 fm (275 m) [holotype, BMNH 1888:33]).

Elasmonotus laevigatus: Henderson, 1888: 164, pl. 18: figs. 3, 3a (N of Papua, 150 fm (275 m)).

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

Munidopsis latimana Miyake & Baba, 1966b: 85, figs. 3, 4 (type locality: Tosa Bay, Japan, 250–350 m [holotype, ♂, ZLKU 11041, now registered under USNM 150468]). — Baba in Baba *et al.*, 1986: 179, 294, fig. 129 (Tosa Bay, 250–350 m). — Baba, 1988: 154 (between Cebu and Bohol, E coast of Mindoro, South China Sea off SW Luzon, 198–265 m). — Wu *et al.*, 1997: 141, figs. 39, 42E (Taiwan).

***Munidopsis latirostris* Faxon, 1895**

Elasmonotus latifrons Henderson, 1885: 416 (type

locality: off the Admiralty Islands, 1070 fm (1958 m) [holotype, BMNH 1888:33]) (not *Munidopsis latifrons* (A. Milne Edwards, 1880)); 1888: 160, pl. 19: figs. 1, 1a (between Papua and the Admiralty Islands, 1070 fm (1958 m)).

Munidopsis latirostris Faxon, 1895: 99 (Gulf of Panama, 153–1772 fm (280–3243 m)). — Ambler, 1980: 28, fig. 8 (off Oregon and off Panama (reexamination of “Albatross” specimens), 280–3243 m). — Khodkina, 1981: 1263 (Coral Sea off S Papua New Guinea, 11°30.5'S, 152°11.7'E, 3083 m). — Wicksten, 1989: 315 (list). — Baba, this paper (Gulf of Panama, 3800 m).

***Munidopsis lauensis* Baba & de Saint Laurent, 1992**

Munidopsis lauensis Baba & de Saint Laurent, 1992: 326, fig. 3 (Lau Basin, and North Fiji Basin, hydrothermal active sites, 1750–2000 m; type locality: Valu-Fa-Ridge, Lau Basin, 22°32'S, 176°43'E, 1750 m [holotype, ♂, MNHN Ga 1924]).

***Munidopsis lentigo* Williams & van Dover, 1983**

Munidopsis lentigo Williams & van Dover, 1983: 481, figs. 1–3 (type locality: East Pacific Rise S of Baja California, 20°49.6'N, 109°06'W, active thermal vent area, 2600 m [holotype, ♂, USNM 191160]).

***Munidopsis lenzii* Balss, 1913**

Munidopsis lenzii Balss, 1913a: 222 (type locality: Nias, South Canal, 614 m [holotype, ♂, ZMB 17499]).

Munidopsis (Munidopsis) lenzii: Doflein & Balss, 1913: 151, figs. 16–18, pl. 15: fig. 1 (W of Sumatra, 0°15' S, 98°08' E, 614 m).

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

Bathyankristes spinosus Alcock & Anderson, 1894: 174, pl. 9: fig. 2 (type locality: Andaman Sea, 265 fm (485 m) [holotype, ♀, ZSIC 3129/9]) (not *M. spinosa* (A. Milne Edwards, 1880). — Alcock & McArdle, 1901: pl. 55: fig. 2 (no record).

Bathyankristes levis Alcock & Anderson, 1894: 175 (type locality: Laccadive Sea, “Investigator” St. 177 [13°47'49"N, 73°7'E], 636 fms (1164 m) [holotype, ♂, ZSIC 9329/9]). — Alcock & McArdle, 1901: pl. 55, fig. 3 (no record).

Munidopsis (Bathyankristes) tenax Alcock, 1901: 273 [replacement name of *Bathyankristes spinosus* Alcock & Anderson, 1894 preoccupied by *Galacantha spinosa* A. Mile Edwards, 1880 (now *Munidopsis spinosa*). — Tirmizi, 1966: 211, fig.

- 27 (Zanzibar and Maldives, 640–797 m).
- Munidopsis (Bathyankyristes) levis*: Alcock, 1901: 274 (Arabian Sea in the vicinity of Laccadives, 636 fm (1164 m)).
- Munidopsis tenax*: Baba, 1988: 170, fig. 69 (South China Sea off SW Luzon, 454 m).
- Munidopsis levis*: Baba, this paper (Moro Gulf off Zamboanga, Mindanao, 458 m).
- Munidopsis lignaria* Williams & Baba, 1990**
- Munidopsis ciliata*: Ambler, 1980: 19, fig. 4 (off Oregon, 1867–2875 m) (not *M. ciliata* Wood-Mason in Wood-Mason & Alcock, 1891 = now *M. nitida* A. Milne Edwards, 1880). — Wicksten, 1989: 315 (list).
- Munidopsis lignaria* Williams & Baba, 1990: 904, figs. 2f, 4 (Eastern Pacific Ocean off Oregon, 2030–2875 m, from piece of submerged wood; type locality: 44°39.8'N, 125°36.4'W, 2875 m [holotype, ♂, USNM 240242]).
- Munidopsis mabahiss* Tirmizi, 1966**
- Munidopsis (Munidopsis) wardeni mabahiss* Tirmizi, 1966: 226, figs. 37D–37F, 38 (type localities: Gulf of Aden. 1022 m [syntypes, 5 ♂ and 5 ♀, BMNH 1966.2.4.168-177]; Maldives, 797 m [syntypes, 4 ♂ and 1 ♀, BMNH 1966.2.4.178-182]).
- Munidopsis margarita* Faxon, 1893**
- Munidopsis margarita* Faxon 1893: 184 (type locality: “Albatross” St. 3404 [Galapagos Islands, 01°03.00'S, 089°28.00'W, 385 fm (704 m) [syntypes, 1 ♂, 1 ♀, not located]]; 1895: 91, pl. 20: fig. 2 (Galapagos Islands, 385 fm (705 m)). — Wicksten, 1989: 315 (list).
- Munidopsis marginata* (Henderson, 1885)**
- Elasmonotus marginatus* Henderson 1885: 416 (type locality: off New Zealand, 40°28'S, 177°43'E, 1100 fm (2013 m) [2 ov. ♀ syntypes, BMNH 1888:33]); 1888: 161, pl. 19: figs. 2, 2a (E of New Zealand, 1100 fm (2013 m)). — Thomson 1899: 196 (list).
- Munidopsis marginata*: Doflein & Balss, 1913: 176 (list). — Baba & Poore, 2002: 237, fig. 4 (New South Wales, 1750 m).
- Munidopsis marianica* Williams & Baba, 1990**
- Munidopsis marianica* Williams & Baba, 1990: 899, figs. 1, 2a, 3a, b (Mariana Back Arc Basin, hydrothermal vent, 3620–3727 m; type locality: Burke Field, 18°11'N, 144°43'E, 3680 m [holotype, ov. ♀, USNM 240198]).
- Munidopsis miersii* (Henderson, 1885)**
- Elasmonotus Miersii* Henderson, 1885: 416 (type locality: off Fiji Islands, 300 fm (549 m) [holotype, ♂, BMNH 1888:33]); 1888: 162, pl. 19: figs. 3, 3a (off Matuku Island, Fiji, 315 fm (576 m)).
- Munidopsis milleri* Henderson, 1885**
- Munidopsis Milleri* Henderson, 1885: 415 (type locality: off the Philippines, 700 fm (1281 m) [3 syntypes, 2 ♂, 1 ov. ♀, BMNH 1888:33]).
- Munidopsis milleri*: Henderson, 1888: 155, pl. 17: figs. 3, 3a (off Tablas Island, Philippines, 700 fm (1281 m)).
- Munidopsis milleri* var. MacGilchrist, 1905: 246 (W of Andamans, 568 fm (1039 m)).
- Munidopsis mina* Benedict, 1902**
- Munidopsis mina* Benedict, 1902: 285, fig. 29 (type locality: off Galapagos Islands [between Santa Cruz and San Cristobal Islands, 00°29'00"S, 89°54'30"W], 392 fms (717 m) [holotype, USNM 20557]).
- Munidopsis modesta* Benedict, 1902**
- Munidopsis modesta* Benedict, 1902: 286, fig. 30 (type locality: off Galapagos Islands [between Santa Cruz and San Cristobal Islands, 00°29'00"S, 89°54'30"W], 392 fms (717 m) [syntypes, USNM 20553]).
- Munidopsis moresbyi* Alcock & Anderson, 1899**
- Munidopsis Moresbyi* Alcock & Anderson, 1899a: 22 (off Travancore coast (Kerala), 430 fm (787 m) [syntypes, ZSIC 2346–2347/10]). — Alcock, 1901: 259 (Arabian Sea off Travancore coast, 430 fm (787 m)).
- Munidopsis moresbyi*: Alcock & Anderson, 1899b: pl. 40, fig. 3 (no record).
- Munidopsis nitida* (A. Milne Edwards, 1880)**
- Orophorhynchus nitidus* A. Milne Edwards, 1880: 59 (type locality: Guadeloupe, 769–878 fm (1407–1607 m) [type, MCZ?]).
- Orophorhynchus spinosus* A. Milne Edwards, 1880: 58 (Dominica, 982 fm (1797 m) [type, MCZ?]).
- Munidopsis brevimana* Henderson, 1885: 414 (type locality: off the Admiralty Islands, 1070 fm (1958 m) [syntypes, BMNH 1888:33] (not *M. brevimana*

(A. Milne Edwards, 1880)); 1888: 154, pl. 17: figs. 1, 1a, 2, 2a (off Arou Islands (= Aru), and between Papua and Admiralty Islands, 800–1070 fm (1464–1958 m)).

Munidopsis ciliata Wood-Mason, in Wood-Mason & Alcock, 1891: 200 (type locality: Bay of Bengal, “Investigator” St. 97 [18°26’N, 85°24’E], 1310 fm (2397 m) [holotype, ♀, ZSIC 6011/9]). — Alcock & Anderson, 1895: pl. 11, fig. 3 (no record). — Faxon, 1895: 84, pl. 18, fig. 3 (off Mariato Point, off Cocos Island, and Gulf of Panama, 695–1270 fm (1272–2324 m)). — A. Milne Edwards & Bouvier, 1897: 74, pl. 6, figs. 6, 7 (Guadeloupe, 769 fm (1407 m); Dominica, 982 fm (1797 m) [redescription]). — Ambler, 1980: 19 (Gulf of Panama [“Albatross” St. 3392, 3393], 1866–2324 m) (not material off Oregon, 2030–2875 m = *Munidopsis lignaria* Williams & Baba, 1990). — Wicksten, 1989: 315 (list). — Baba, 1982a: 114, pl. 2: fig. 1 (Izu Shoto, Japan, 1940–1980 m); 1988: 147, fig. 56. (Teluk Bone (Sulawesi), Makassar Strait, Teluk Tomini (Sulawesi), off SW coast of Halmahera, Moluccas between Halmahera and N Sulawesi, 933–2363 m). — Tirmizi & Javed, 1993: 13, fig. 6 (Mozambique Channel, 1510–1600 m). — Hendrickx, 2001: 100 (south eastern Gulf of California, 1245–1240 m).

Munidopsis (Orophorhynchus) ciliata: Alcock, 1901: 267 (Bay of Bengal, 1310 fm (2397 m)). — MacGilchrist, 1905: 248 (Bay of Bengal, 1100 fm (2013 m)). — Tirmizi, 1966: 216, fig. 31 (Gulf of Aden, 2312 m).

Munidopsis nitida: Pequegnat & Pequegnat, 1970: 153, fig. 5–12 (SW Gulf of Mexico, 750–1160 fm (1373–2123 m)). — Tavares & Campinho, 1998a: 91, figs. 3, 4 (Brazil, between 592–610 m and 830 m). — Baba, this paper (Gulf of Guinea, Makassar Strait, Gulf of Panama, 915–2620 m).

Munidopsis okadai Yanagita, 1942

See under *M. cylindrophthalma* (Alcock, 1894).

***Munidopsis opalescens* Benedict, 1902**

Munidopsis opalescens Benedict, 1902: 287, fig. 31 (type localities: off Chile, “Albatross” St. 2781 [West mouth of Strait of Magellan, 51°52.00’S, 073°41.00’W, 348 fm (636 m)], St. 2785 [Mesier Canal, Serrano Island, 48°09.00’S, 074°36.00’W, 449 fm (821 m)] [syntypes, USNM 20558]). — Haig, 1955: 41 (no record). — Wicksten, 1989: 315 (list).

***Munidopsis orcina* McArdle, 1901**

Munidopsis orcina McArdle, 1901: 523 (type locality: Arabian Sea, “Investigator” St. 274 [10°33’N, 74°45’15’’E], 1150 fm (2105 m). [holotype, ♀, ZSIC]). — Alcock & McArdle, 1902: pl. 56, fig. 5 (no record).

***Munidopsis ornata* Faxon, 1893**

Munidopsis ornata Faxon, 1893: 186 (type locality: “Albatross” St. 3404 [Galapagos Islands, 01°03.00’S, 089°28.00’W, 385 fm (705 m)] [holotype, ♂, MCZ?]); 1895: 87, pl. 20, figs. 1, 1a (Galapagos Islands, 385 fm (705 m)). — Wicksten, 1989: 315 (list).

***Munidopsis pallida* Alcock, 1894**

Munidopsis subsquamosa var. *pallida* Alcock, 1894: 331 (type locality: Andaman Sea, “Investigator” St. 118 [12°20’N, 85°8’E], 1803 fm (3299 m) [holotype, ♂, ZSIC 6907/9]). — Alcock & Anderson, 1895: pl. 13: fig. 7 (no record).

Munidopsis (Orophorhynchus) subsquamosa var. *pallida*: Alcock, 1901: 268 (Bay of Bengal, 1803 fm (3299 m)).

Munidopsis pallida: Gore, 1983: 209 (discussion). — Baba, this paper (Bay of Bengal, 2610 m).

Not *Munidopsis (Orophorhynchus) subsquamosa* var. *pallida*: Doflein & Balss, 1913: 155, figs. 21, 22 (Zanzibar, 2959 m = different species; see above, under the systematic account of *M. pallida*).

***Munidopsis palmatus* Khodkina, 1973**

Munidopsis palmatus Khodkina, 1973: 1164, figs. 5, 6 off (type locality: off Chile, 32°11’6’’S, 71°46’3’’W, 660–700 m [holotype, ♂, SUM]). — Hendrickx, 2001: 101, fig. 3 (SE Gulf of California, 1240–1245 m). — Baba, this paper (Gulf of Panama, 915–975 m).

***Munidopsis panamae* n. sp.**

Munidopsis panamae Baba, this paper (type locality: Gulf of Panama, 05°49’N, 78°52’W, 3800 m [holotype, ♀, ZMUC CRU-11615]).

***Munidopsis petalorhyncha* n. n.**

Munidopsis subsquamosa latimana Birstein & Zarenkov, 1970: 423, figs. 1, 2 (type locality: Kuril Trench, 5035–5210 m [holotype, ♂, OIRAS]) (replacement name; preceded by *M. latimana* Miyake & Baba, 1966; see above under the “Remarks” of *M. subsquamosa* Henderson, 1885).

***Munidopsis petila* n. sp.**

Munidopsis petila Baba, this paper (type locality: Celebes Sea, 01°50'N, 119°20'E, 5243–5163 m [holotype, ♂, ZMUC CRU-11498]).

***Munidopsis pilosa* Henderson, 1885**

Munidopsis pilosa Henderson 1885: 415 (type locality: off Gilolo Island [Moluccas S of Batjan], 825 fm (1510 m) [holotype, ♂, BMNH 1888:33]); 1888: 157, pl. 17: figs. 5, 5a, 5b (near Philippines [Molucca Sea off Batjan, Halmahera], 825 fm (1510 m)). — Alcock & Anderson 1894: 171 (Andaman Sea, 480 fms (878 m)). — Baba 1988: 155, fig. 61 (Makassar Strait, 732 m).

Munidopsis plana Baba, 1986

See under *Munidopsis subchelata* Balss, 1913

***Munidopsis plumatisetigera* Baba, 1988**

Munidopsis plumatisetigera Baba, 1988: 158, fig. 62 (type locality: NE of Kayoa Island, off SW coast of Halmahera, 485 m [holotype, ♂, USNM 150431]); this paper (Kei Islands, 345–385 m).

***Munidopsis poseidonia* Alcock & Anderson, 1894**

Munidopsis poseidonia Alcock & Anderson, 1894: 167 (type locality: Bay of Bengal, “Investigator”, St. 163 [13°45'38"N, 80°29'37"E], 210 fms (384 m) [holotype, ♂, ZSIC 4225/7]); 1895: pl. 12: fig. 2 (no record).

Munidopsis (Galathodes) posidonia: Alcock, 1901: 263 (Bay of Bengal off Madras coast, 210 fm (384 m)).

***Munidopsis proales* Ahyong & Poore, 2004**

Munidopsis proales Ahyong & Poore, 2004b: 54, fig. 12 (type locality: ESE of Cape Arid, Western Australia, 34°13'S, 124°37.9'E, 513–540 m [holotype, ♂, SAMA C6087]).

***Munidopsis producta*, n. sp.**

Munidopsis subsquamosa aculeata: Faxon, 1895: 86 (Gulf of Panama, 1793 fm (3281 m)) (not *M. subsquamosa* Henderson, 1885).

Munidopsis aculeata: Amber, 1980: 26 (USNM 21277 [Gulf of Panama, 3281 m]).

Munidopsis producta Baba, this paper (W of Costa Rica and Gulf of Panama, 3260–3680 m; type locality: W of Costa Rica, 09°23'N, 89°32'W, 3680 m [holotype, ov. ♀, ZMUC CRU-11617]).

***Munidopsis profunda* n. sp.**

Munidopsis profunda Baba, this paper (type locality: Celebes Sea, 01°50'N, 119°20'E, 5243–5163 m [holotype, ♂, ZMUC CRU-11497]).

***Munidopsis pycnopoda* n. sp.**

Munidopsis pycnopoda Baba, this paper (type locality: Mozambique Channel, 14°20' S, 45°09' E, 3485 m [holotype, ov. ♀, ZMUC CRU-11276]).

***Munidopsis quadrata* Faxon, 1893**

Munidopsis quadrata Faxon, 1893: 188 (type localities: “Albatross” St. 3424 [Maria Cleofas Island, Mexico, 21°15.00'N, 106°23.00'W, 676 fm (1236 m) [syntypes, 2 ♂, USNM 21301]; “Albatross” St. 3425 [Maria Magdalena Island, 21°19.00'N, 106°24.00'W, 680 fm (1244 m)] [syntype, 1 ♂, MCZ?]); 1895: 97, pl. 23: figs. 1, 1a, 1b, 1c (near Las Tres Marias Island, Mexico, 676–680 fm (1237–1244 m)). — Schmitt, 1921: 170, fig. 109 (reexamination of type material). — McCauley, 1972: 414 (list; Columbia River estuary off Oregon, 1097–1189 m). — Luke, 1977: 26 (list; between Santa Cruz Basin and San Diego Trough, and off Arica, Chile, between 446 m and 2469–2487 m). — Hart, 1982: 170, fig. 67 (British Columbia). — Ambler, 1980: 17 (off Washington and Oregon, 950–2189 m). — Wicksten, 1982: 245 (Southern Islands and Banks (Santa Barbara, Santa Catalina, San Nicolas, and San Clemente Islands; Taner and Cortez Banks, 500–1000 m); 1989: 315 (list). — Hendrickx, 2001: 102 (southeastern Gulf of California, 1225–1240 m).

***Munidopsis recta* n. sp.**

Munidopsis recta Baba, this paper (type locality: Gulf of Panama, 05°44'N, 79°20'W, 2950–3190 m [holotype, ♂, ZMUC CRU-11618]).

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

Munidopsis regia Alcock & Anderson, 1894: 168 (type locality: Gulf of Mannar, “Investigator” St. 151 [13.5 miles N 64° W of Colombo Lt.], 142–400 fms (260–732 m) [holotype, ♂, ZSIC 8815/9]); 1895: pl. 11: fig. 1 (no record). — Baba, 1988: 160, fig. 63 (Off N Mindanao, E coast of Mindoro, vicinity of Marinduque off SW Luzon, 348–750 m).

Munidopsis triaena Alcock & Anderson, 1894: 168 (type locality: Andaman Sea, 240–375 fms (439–

- 686 m) [syntypes, ZSIC 6261–6263/9]; 1895: pl. 11: fig. 5 (no record).
- Munidopsis (Galathodes) regia*: Alcock, 1901: 261 (Arabian Sea off Colombo and Andaman Sea, 142–405 fm (260–741 m)). — Doflein & Balss, 1913: 156, fig. 23 (W of Sumatra, 470–614 m). — Tirmizi, 1966: 228, fig. 39 (Maldives, 494 m).
- Munidopsis (Galathodes) triaena*: Alcock, 1901: 261 (Bay of Bengal off Andaman coast, 240–375 fm (439–686 m)).
- Munidopsis rosacea* (A. Milne Edwards, 1881)
[Originally *Galathodes rosaceus* A. Milne Edwards, 1881]
See under *M. serricornis* (Lovén, 1852).
- Munidopsis rostrata* (A. Milne Edwards, 1880)**
Galacantha rostrata A. Milne Edwards, 1880: 52 (type locality: Bequia, 1591 fm (2912 m) [type material in MCZ?]). — Faxon, 1893: 180 (between Mariato Point and Cocos Island, between Galera Point and Galapagos Islands, and between Galapagos Islands and Acapulco, 1175–1360 fm (2150–2489 m)); 1895: 78, pl. B, figs. 1, 1a (between Mariato Point and Cocos Island, between Galera Point and Galapagos Islands, and between Galapagos Islands and Acapulco, 1175–1360 fm (2150–2489 m)). — A. Milne Edwards & Bouvier, 1897: 60, pl. 4: figs. 21–24 (Bequia, 1591 fm (2912 m) [redescription]); 1900: 308, pl. 6: fig. 9 (Cap Ghir and Morocco, 2075–2200 m). — Alcock, 1901: 275 (Bay of Bengal and Arabian Sea, 1022–1520 fm (1870–2782 m)). — Hansen, 1908: 35 (W of Iceland, 1300 fm (2379 m)). — Stebbing, 1908: 20 (Cape Point, South Africa, 900 fm (1647 m)). — Barnard, 1950: 494, fig. 92, e, f (off Cape Point, 900 fm (1647 m)). — Tirmizi, 1966: 206, figs. 23, 24 (Gulf of Aden, N area of Arabian Sea and Zanzibar, 1789–2312 m). — Kensley, 1968: 292 (W of Cape Point, South Africa, 2269–2782 m).
- Galacantha bellis* Henderson, 1885: 418 (type locality: off Juan Fernandez, 1375 fm (2516 m) [syntypes, BMNH 1888:33]); 1888: 167, pl. 19: figs. 6, 6a, 6b (W of Valparaiso, Chile, 1375 fm (2516 m)).
- Galacantha talismanii* Filhol, 1885: pl. 3. (type locality: Cap Ghir [N of the Canary Islands], 2075–2085 m [see Milne Edwards & Bouvier (1900)] [type not located]. — Henderson, 1888: 167, pl. 20: figs. 1, 1a, 1b (off Banda, 1425 fm (2608 m)).
- Galacantha areolata* Wood-Mason in Wood-Mason & Alcock, 1891: 200 (type locality: Bay of Bengal, “Investigator” St. 97 [18°26’N, 85°24’E], 1310 fm (2397 m) [holotype, ♂, ZSIC]). — Alcock & Anderson, 1894: 173 (Laccadive Sea, 1070 fms (1958 m)). — Alcock & McArdle, 1901: pl. 55, figs. 5, 5a (no record).
- Galacantha investigatoris* Alcock & Anderson, 1894: 173 (type locality: Laccadive Sea, “Investigator” St. 127 [off Minicoy I., Arabian Sea], 1200 fms (2200 m) [holotype, ♀, ZSIC 8816/9]); 1895: pl. 12, figs. 4, 4a (no record).
- Galacantha rostrata* var. *investigatoris*: Alcock, 1901: 276 (Arabian Sea off Minikoy, 1200 fm (2196 m)).
- Munidopsis rostrata*: Chace, 1942: 75 (S coast of Cuba, 1600–1800 fm (2928–3294 m)). — Haig, 1955: 39 (no record). — Khodkina, 1975: 263, figs. 1, 2–3 (eastern part of the Pacific Ocean off Chile and Ecuador, 1800–2265 m). — Luke, 1977: 28 (list; off San Quintin, Baja California, 1986–2008 m). — Wenner, 1982: 370 (Middle Atlantic Bight 1876–2767 m). — Baba, 1982a: 112 (Izu Shoto, Japan, 1940–2800 m). — de Saint Laurent, 1985: table 2 (Bay of Biscay, 1920–3800 m). — Baba, 1988: 161 (Teluk Tomini (Sulawesi), Makassar Strait, 1998–2161 m); 1994: 18 (off Central Queensland, 1517–1539 m); this paper (between San Tome and Cameroon, Bay of Bengal, and Makassar Strait, 1600–2610 m). — Wicksten, 1989: 315 (list). — d’Udkem d’Acoz, 1999: 168 (list). — Baba & Poore, 2002: 239, fig. 5 (New South Wales and Victoria, 1642–1986 m). — Watabe, 2000: 30 (Hatoma Knoll off Iriomote-jima, Ryukyu Islands, ca. 1500 m). — Ahyong & Poore, 2004b: 56 (New South Wales, 2984–3058 m).
- Munidopsis rotundior* n. sp.**
Munidopsis rotundior: Baba, this paper (type locality: Java Sea E of Makassar, 5°25’S, 117°03’E, 600 m [holotype, ov. ♀, ZMUC CRU-11500]).
- Munidopsis scabra* Faxon, 1893**
Munidopsis scabra Faxon, 1893: 186 (type locality: “Albatross” St. 3424 [Marias Islands, 21°15.00’N, 106°23.00’W, 676 fm (1236 m)] [syntypes, 2 ♂, 1 ov. ♀, not located]; “Albatross” St. 3425 [Marias Islands, 21°19.00’N, 106°24.00’W, 680 fm (1244 m)] [syntypes, 1 ♂, 1 ov. ♀, USNM 21304]); 1895: 93, pl. 21, fig. 1, 1a (near Las Tres Marias, 676–680 fm (1237–1244 m)). — Garth & Haig, 1971: 6.6 (off Peru, 907–935 m). — Haig & Wicksten, 1975: 101 (off Santa Catalina Island, California, 567–640 m). — Luke, 1977: 28 (list; San Diego

- Trough, 732–1280 m). — Wicksten, 1989: 315 (list).
- Munidopsis scobina* Alcock, 1894**
Munidopsis scobina Alcock, 1894: 330 (type locality: Andaman Sea, “Investigator” St. 120 [15°56'5"N, 81°30'30"E], 240 fms (439 m) [syntypes, ZSIC 6902–6903/9]). — Alcock & Anderson, 1894: 167 (Bay of Bengal, 145–250 fms (265–458 m)); 1895: pl. 13: fig. 1 (no record). — Alcock 1901: 254 (Northern end of Bay of Bengal, 193–409 fm (353–748 m)). — Baba, 1988: 162, fig. 64 (Moluccas off W coast of Halmahera, 503 m).
- Munidopsis (Munidopsis) scobina*: Tirmizi, 1966: 222, fig. 35 (South Arabian coast, 1046 m).
- Munidopsis sericea* Faxon, 1893**
Munidopsis sericea Faxon, 1893: 184 (type locality: “Albatross” St. 3394 [Gulf of Panama, 07°21.00'N, 079°35.00'W, 511 fm (935 m)] [holotype, ♂, not located]); 1895: 90, pl. 19, figs. 3, 3a (Gulf of Panama, 511 fm (935 m)). — Luke, 1977: 28 (list; off SW Baja California, 1229–1147 m). — Wicksten, 1989: 316 (list). — Baba, this paper (Gulf of Panama, 915–975 m).
- Munidopsis serricornis* (Lovén, 1852)**
Galathea serricornis Lovén, 1852: 22 (type locality: Sweden [type probably lost]).
Galathea tridentata Esmark, 1857: 239 (type locality: Lofoten, W coast of Norway [type no longer extant]).
Galathodes rosaceus A. Milne Edwards, 1881: 932 (type locality: N coast of Spain, 900 m [type not located]); 1882: 43 (N coast of Spain, 900 m).
Munidopsis tridentatus: Ortmann, 1892: 256 (Thronhjems Fjord [Trondheim Fiord], Norway).
Galathodes tridentatus: Caullery, 1896: 390 (Golfe de Gascogne, 1200–1400 m). — Appelloef, 1906: 149 (Osterfjord, Norway).
Munidopsis ? rosacea: Alcock & Anderson, 1899a 19 (off Travancore coast (Kerala), India, 430 fm (787 m)).
Munidopsis rosacea: Alcock & Anderson, 1899b: pl. 40: fig. 4 (no record).
Galathodes tridentata: A. Milne Edwards & Bouvier, 1899: 83 (Azores, 845 m). — A. Milne Edwards & Bouvier, 1900: 331, pl. 31: figs. 5–7 (Bay of Biscay, coast of Morocco, off Cape Bojador, off Spanish Sahara, Cape Verde Islands, Azores, 593–1480 m). — Bouvier, 1922: 48 (off Morocco and Azores, 1250–2165 m).
- Munidopsis (Galathodes) ? tridentata*: Alcock, 1901: 264 (Arabian Sea off Travancore coast, off N. Maldive Atoll, and Bay of Bengal off Ceylon, 210–430 fm (384–800 m)).
Munidopsis (Galathodes) tridentata: Doflein & Balss, 1913: 158 (W of Sumatra, Nicobar Islands, off E coast of Somali Republic, 646–1242 m). — Selbie, 1914: 81, pl. 12: figs. 1–5 (Ireland (ca 51°N), 627–893 fm (1147–1634 m)).
Munidopsis tridentata: Laurie, 1926: 139 (Saya de Malha Bank, 450 fm (824 m)). — Chace, 1942: 88 (N coast of Cuba, 370–665 fm (677–1217 m)). — Zariquiey Alvarez, 1968: 269, fig. 95a (Atlantic coast of Iberian Peninsula). — Pequegnat & Pequegnat, 1970: 158, fig. 5–14 (NW Gulf of Mexico, 431 fm (789 m)). — Samuelsen, 1972: 91 (S of Bergen (Norway), 145–150 m). — Baba, 1988: 172, fig. 70 (off S Obi, Sulu Sea off Cagayan, between Siquijor and Bohol, Palawan Passage, Hardangar Fjord (Norway). off Norway, off Cape Bojador (Talisman specimen), 686–1470 m). — Abello & Valladares, 1988: 99, fig. 3 (Catalan Sea, Spain, 1545–1580 m).
Munidopsis serricornis: d’Udkem d’Acoz, 1999: 168 (list). — Baba & Poore, 2002: 241 (part), figs. 6a, b, d, e, 7a, c, d, 8, a, c, d, 9a, b, e–g (Tasmania and Victoria, between 600–700 m and 1083 m). — Ahyong & Poore, 2004b: 57 (Tasmania, 1100 m). — Baba, this paper (Mindanao Sea, 1510 m).
- Munidopsis similior* Baba, 1988**
Munidopsis similior Baba, 1988: 164, fig. 65 (off N Mindanao, off SE Luzon, South China Sea off SW Luzon, 267–366 m; type locality: NE of Legaspi Lt., off SE Luzon, 131°2'N, 123°49'18"E, 267 m [holotype, ♂, USNM 150429]).
- Munidopsis sinclairi* McArdle, 1901**
Munidopsis (Elasmonotus) sinclairi McArdle, 1901: 524 (off S coast of Sri Lanka, “Investigator” St. 277 [5°48'15"N, 80°56'E], 880 fm (1610 m) [holotype, ov. ♀, ZSIC]).
Munidopsis (Elasmonotus) sinclairi: Alcock & McArdle, 1902: pl. 56: fig. 4 (no record).
Munidopsis sinclairi: Baba, 1988: 166, fig. 66 (off SW coast of Halmahera, Moluccas off W coast of Halmahera, Teluk Tomini (Sulawesi), off SE Luzon, 527–1526 m).

***Munidopsis snelliusae* Baba, 1977**

Munidopsis snelliusae Baba, 1977a: 254, figs. 1, 2 (type locality: Seram, Indonesia, 2°51'S, 128°48'E, 200 m [holotype, ♂, RMNH Crust. D. 30350]).

***Munidopsis sonne* Baba, 1995**

Munidopsis sonne Baba, 1995: 188, figs. 1, 2 (type locality: North Fiji Basin, 16°59.49'S, 173°54.83'E, active thermal vent, 1992 m [holotype, ov. ♀, SMF 23041]).

***Munidopsis spinihirsuta* Lloyd, 1907**

Munidopsis spinihirsuta Lloyd, 1907: 12 (type locality: off SE coast of Arabia, 492 fm (900 m) [type not located, maybe in ZSIC]).

Munidopsis (Munidopsis) spinihirsuta: Tirmizi, 1966: 221, figs. 33, 34 (South Arabian coast, 1046 m).

***Munidopsis spinipes* MacGilchrist, 1905**

Munidopsis spinipes MacGilchrist, 1905: 247 (type locality: Bay of Bengal, "Investigator" St. 310 [13°29'30"N, 95°29'E], 960 fm (1757 m) [syntypes, ZSIC]). — Alcock & MacGilchrist, 1905: pl. 70: fig. 2 (no record).

***Munidopsis spinosa* (A. Milne Edwards, 1880)**

Galacantha spinosa A. Milne Edwards, 1880: 53 (type locality: Dominica, 333 fm (609 m) [2 syntypes, MCZ?]). — A. Milne Edwards & Bouvier, 1897: 56, pl. 4: figs. 14–21 (Dominica, 333 fm (609 m)).

Munidopsis spinosa: Chace, 1942: 76 (N and S coasts of Cuba, 475–550 fm (869–1007 m)). — Takeda, 1983: 96, with fig. (off Surinam and French Guiana, 720–968 m). — Baba, 1988: 168, figs. 67, 68 (off NE Borneo, 759 m).

Munidopsis rostrata: Miyake, 1982: 144, pl. 48, fig. 4 (Kyushu-Palau Ridge, 520 m) (not *M. rostrata* (A. Milne Edwards, 1880)).

***Munidopsis starmer* Baba & de Saint Laurent, 1992**

Munidopsis starmer Baba & de Saint Laurent, 1992: 328, fig. 4 (type locality: North Fiji Basin, 18°50'S, 173°29'E, active thermal vent site, 2750 m [holotype, ♀, MNHN Ga 1926]).

***Munidopsis stylirostris* Wood-Mason, 1891**

Munidopsis stylirostris Wood-Mason in Wood-Mason & Alcock, 1891: 201 (type locality: Laccadive Sea, "Investigator" St. 105 [15°2'N, 72°34'E], 740 fm (1354 m) [2 ♀ syntypes, ZSIC 543/7]). — Alcock, 1894: 328 (Laccadive Sea, 738 fms (1351 m));

1901: 256 (Arabian Sea, 738–947 fm (1351–1733 m)). — Alcock & Anderson, 1894: 166 (Laccadive Sea, 636 fms (1164 m)); 1895: pl. 13: figs. 6, 6a (no record). — Anderson, 1896: 99 (Arabian Sea, 947 fm (1733 m)).

Munidopsis (Munidopsis) stylirostris: Tirmizi, 1966: 224, fig. 36 (Gulf of Aden, 2000 m).

Identity not fixed:

Munidopsis (Munidopsis) stylirostris var. *africana* Doflein & Balss, 1913: 154, figs. 19, 20 (type locality: Gulf of Aden, 1840 m [2 syntypes, ZMB 17501]).

***Munidopsis subchelata* Balss, 1913**

Munidopsis subchelata Balss, 1913a: 222 (type locality: W of Sumatra, 0°39' S, 98°52' E, 750 m [holotype, ♀, ZMB 17496]).

Munidopsis (Munidopsis) subchelata: Doflein & Balss, 1913: 149, pl. 16: fig. 1 (W of Sumatra, 750 m).

Munidopsis plana Baba in Baba *et al.*, 1986: 181, text-fig. 21, fig. 131 (type locality: Okinawa Trough, 560–692 m Okinawa Trough, 560–692 m [holotype, ♀, NFUS]).

***Munidopsis subsquamosa* Henderson, 1885**

Munidopsis subsquamosa Henderson 1885: 414 (type locality: off the Japanese coast [= SE of Nojima-zaki, Boso Peninsula, Japan], 1875 fm (3431 m) [syntypes, ♂ and softened remains of another specimen, BMNH 1888:33]); 1888: 152, pl. 17: figs. 4, 4a (off Yokohama [= SE of Nojima-zaki, Boso Peninsula, Japan], 1875 fm (3431 m)). — Gordon, 1955: 244, figs. 1B, 2C, 2C', 3D (designation and reexamination of male lectotype [BMNH 1888:33]). — Baba, 1982a: 114, fig. 5, pl. 2: fig. 2 (Izu Shoto, Japan, 2670–3960 m). — Ahyong & Poore, 2004b: 58, fig. 13 (Queensland and New South Wales, between 1789–1876 m and 2984–3058 m). — Baba, this paper (reexamination of type material of *M. subsquamosa* and *M. subsquamosa aculeata*).

Munidopsis subsquamosa var. *aculeata* Henderson, 1888: 153, pl. 16: figs. 1, 1a (type localities: between Marion Island and the Crozets and off Chile, 1375–1450 fm (2516–2654 m), 2 ♂ syntypes, BMNH 1888:33). — Gordon, 1955: 244, figs. 1C, 1D, 2B, 2B', 3B, 3C (reexamination of syntypes).

Munidopsis barnardi Kensley, 1968: 290, figs. 2, 3c, 3d (West of Cape Point, 2708–2965 m; type locality: W of Cape Point, 2745 m [holotype, ♀,

- SAMC A12636]).
- Not *Munidopsis subsquamosa aculeata*: Faxon, 1895, 86 (= *M. producta* n. sp., see above).
- Not *Munidopsis subsquamosa*: van Dover *et al.*, 1985: 224 (Galapagos Rift, eastern Pacific 13°N and 21°N areas, active thermal vent sites [= different species, Baba, unpublished]).
- Identity questionable:
- Munidopsis subsquamosa*: Faxon, 1895: 85 (Panama, 1471–1672 fm (2692–3060 m)). — Luke, 1977: 29 (list; off Arica, Chile, 1097–1152 m). — Ambler, 1980: 26 (off Oregon and off Panama 2692–3000 m). — de Saint Laurent, 1985: table 2 (Bay of Biscay, 2775–4260 m). — Wicksten, 1989: 316 (list).
- Munidopsis subsquamosa latimana* Birstein & Zarenkov, 1970
See *M. petalorhyncha* n. n. (replacement name; preceded by *M. latimana* Miyake & Baba, 1966).
- Munidopsis tanneri* Faxon, 1893**
Munidopsis tanneri Faxon, 1893: 187 (type localities: “Albatross” St. 3396 [Gulf of Panama, 07°32.00’N, 078°36.30’W, 259 fm (474 m) [syntypes, 2 ♂, 1 ♀]; “Albatross” St. 3397 [Gulf of Panama, 07°33.00’N, 078°34.20’W, 85 fm (155 m)] [syntype, 1 ♂, USNM 21315]); 1895: 94, pl. 22, fig. 1, 1a (Gulf of Panama, 85–259 fm (156–474 m)). — Wicksten, 1989: 316 (list).
- Munidopsis tasmaniae* Ah Yong & Poore, 2004**
Munidopsis serricornis: Baba & Poore, 2002: 241, figs. 6c, 7b, 8b, 9c, d (part) (Tasmania, 820 m) (not *M. serricornis* (Lovén, 1852)).
Munidopsis tasmaniae Ah Yong & Poore, 2004b: 59, fig. 14 (Tasmania, 1100–1135 m; type locality: off St. Patricks Head, Tasmania, 41°35’S, 148°14’E, 1100 m [holotype, ♂, AM P67287]).
- Munidopsis taurulus* Ortmann, 1892**
Munidopsis taurulus Ortmann, 1892: 256, pl. 11: figs. 13, 13a, 13i (type locality: Sagami Bay, 200 fm (366 m) [holotype, ov. ♀, MZS 354]). — Baba, 2001: 150, figs. 2, 3 (reexamination of type material of *M. taurulus* and *M. hastifer*); this paper (Sagami Bay, Japan, ca. 942 m).
Munidopsis hastifer Benedict, 1902: 248, fig. 28 (type locality: off Honshu Island, Japan [Manazuru Zaki, 26d, W. 6.0 M, gray mud and volcanic sand], 120–265 fm (219–485 m) [3 ♂ syntypes, USNM 26164]).
- Munidopsis tenax* Alcock, 1901
[Originally *Munidopsis (Bathyanstyristes) tenax* Alcock, 1901]
See under *Munidopsis levis* (Alcock & Anderson, 1894).
- Munidopsis teretis* n. sp.**
Munidopsis teretis Baba, this paper (off Durban and Tasman Sea, 3520–3930 m; type locality: off Durban, 32°00’S, 32°41’E, 3520 m [holotype, ♀, ZMUC CRU-11283]).
- Munidopsis townsendi* Benedict, 1902**
Munidopsis townsendi Benedict 1902 290, fig. 33 (type locality: Galapagos Islands [between Santa Cruz and San Cristobal Islands, 00°29’00”S, 89°54’30”W], 392 fms (717 m) [holotype, ov. ♀, USNM 26167]).
- Munidopsis trachynotus* (Anderson, 1896)**
Galacantha trachynotus Anderson, 1896: 100 (type localities: Arabian Sea, “Investigator” St. 184 [22°14’25”N, 67°8’55”E], 947 fm (1733 m), St. 192 [15°11’N, 72°28’45”E], 912–931 fm (1669–1703 m), St. 193 [15°11’N, 72°28’45”E], 931 fm (1703 m) [syntypes, ZSIC]). — Alcock & Anderson, 1896: pl. 25: figs. 3, 3a (no record). — Tirmizi, 1966: 210, figs. 25, 26 (N area of Arabian Sea, 1893 m).
Galacantha spinosa var. *trachynotus*: Alcock, 1901: 277 (Arabian Sea, 912–947 fm (1669–1733 m)).
Munidopsis trachynotus: Baba, 1988: 171 (Teluk Tomini, Sulawesi, 1380 m); 1994: 19 (off Central Queensland, 1385–1403 m).
- Munidopsis trachypus* Alcock & Anderson, 1894**
Munidopsis trachypus Alcock & Anderson, 1894: 169 (type locality: Laccadive Sea, “Investigator” St. 177 [13°47’49”N, 73°7’E], 636 fms (1164 m) [holotype, ♀, ZSIC 9325/9]); 1895: pl. 11: fig. 2 (no record).
Munidopsis (Galathodes) trachypus: Alcock, 1901: 262 (Arabian Sea N of the Laccadives, 636 fm (1164 m)).
- Munidopsis treis* Ah Yong & Poore, 2004**
Munidopsis treis Ah Yong & Poore, 2004b: 62, fig. 15 (Great Australian Bight and Tasmania, between 366–549 m and 820 m; type locality: W of Cape Catastrophe, Great Australian Bight, 34°58’S, 132°32’E, 800 m [holotype, ov. ♀, SAMA C6091]).

Munidopsis triaena Alcock & Anderson, 1894
See under *M. regia* Alcock & Anderson, 1894.

Munidopsis tridentata Esmark, 1857
[Originally *Galathea tridentata* Esmark, 1857]
See under *Munidopsis serricornis* (Lovén, 1852).

***Munidopsis trifida* Henderson, 1885**

Munidopsis trifida Henderson, 1885: 415 (type locality: Straits of Magellan, 400 fm (732 m) [holotype, ♀, BMNH 1888:33]); 1888: 156, pl. 17: figs. 2, 2a (Sarmiento Channel, Chile, 400 fm (732 m)). — Alcock & Anderson, 1894: 168 (Laccadive Sea, 636 fm (1164 m)); 1899a: 18 (Andaman Sea, 498 fm (911 m)). — Anderson, 1896: 99 (Investigator St. 201, 296–320 fm (542–586 m)). — Benedict, 1902: 329 (off W coast of Chile, 348–449 fm (289–584 m)). — Yokoya, 1933: 66 (Suruga Bay, 280 m). — Miyake in Miyake & Nakazawa, 1947: 734, fig. 2121 (no record). — Haig, 1955: 40 (no record). — Baba, 1969c: 52, figs. 6a, 7 (reexamination of syntypes); this paper (South China Sea, 705 m). — Baba in Baba *et al.*, 1986: 179, 294, fig. 130 (Okinawa Trough, 545–770 m). — Wicksten, 1989: 316 (list).

Munidopsis (Galathodes) trifida: Alcock, 1901: 260 (Arabian Sea N of the Laccadives, Bay of Bengal off Andamans, and Andaman Sea, 480–636 fm (878–1164 m)). — Alcock & MacGilchrist, 1905: pl. 70, fig. 1 (no record). — Balss, 1913b: 20 (Sagami Bay). — Tirmizi, 1966: 229, fig. 40 (South Arabian coast and Gulf of Aden, 1046–1270 m).

Munidopsis tomentosa Benedict, 1902: 329 (name proposed for Indian Ocean material).

Munidopsis trifida tomentosa: Baba, 1969c: 50, figs. 6b, 8 (East China Sea, 570–740 m).

***Munidopsis tuftsi* Ambler, 1980**

Munidopsis tuftsi Ambler, 1980: 24, fig. 7 (Tufts Plain off Oregon, 3500–3858 m; type locality: 44°40.8' N, 133°26.3' W, 3717 m [holotype, ♂, USNM 171336]). — Wicksten, 1989: 316 (list).

***Munidopsis unguifera* Alcock & Anderson, 1894**

Munidopsis unguifera Alcock & Anderson, 1894: 172 (type locality: Bay of Bengal, “Investigator” St. 162 [13°51'12"N, 80°28'12"E], 145–250 fm (265–458 m) [syntypes, ZSIC 4226–4231/7]); 1895: pl. 11: fig. 4 (no record). — Alcock, 1901: 253 (Bay of Bengal and Andaman Sea, 145–490 fm (265–897

m)).

***Munidopsis valdiviae* (Balss, 1913)**

Galacantha valdiviae Balss, 1913a: 224 (type locality: E African coast, 1°48'N, 45°42'E, 1644 m [holotype, ♂, ZMB17496]).

Munidopsis valdiviae: Doflein & Balss, 1913: 147, fig. 15, pl. 16: fig. 2 (off E coast of Somali Republic, 1644 m). — Baba, 1982a: 112, pl. 1: fig. 1 (Kumanonada off Kii Peninsula, Japan, 1120–1160 m); 1988: 173, fig. 71 (Moluccas off NW Sulawesi, and Palawan Passage, 1330–1400 m); 1994: 19 (off Central Queensland, 1040–1059 m). — Tirmizi & Javed, 1993: 16, fig. 7 (Mozambique Channel, 1510–1600 m).

***Munidopsis verrilli* Benedict, 1902**

Munidopsis verrilli Benedict, 1902: 291, fig. 34 (off S California, (1500–1800 m); type locality: “Albatross” St. 2923 [off San Diego, 32°40.30'N, 117°31.30'W, 822 fm (1500 m)] [holotype, USNM 20656]). — Schmitt, 1921: 169, fig. 108 (reexamination of type). — McCauley, 1972: 414 (list; Columbia River estuary off Oregon, 1829 m). — Luke, 1977: 26 (list; between Santa Cruz Basin and Cedros Trough, between 732–1280 m and 4133–4169 m). — Wicksten, 1982: 245 (Southern islands and banks: Santa Barbara, Santa Catalina, San Nicolas, San Clemente Islands, Tanner and Cortez Banks, 1000+ m); 1989: 316 (list). — Baba & Poore, 2002: 245, fig. 10 (Tasmania, 1580–1700 m). — Baba, this paper (Makassar Strait, 2084 m).

***Munidopsis verrucosus* Khodkina, 1973**

Munidopsis verrucosus Khodkina, 1973: 1156, figs. 1, 2-1 (off Chile, 4300–4880 m; type locality: 23°47'7"S, 71°03'9"W [holotype, ♂, SUM]); 1975: 269 (off Aleutian Islands, 2150 m). — Ambler, 1980: 27 (off Oregon: Tufts Plain and Gorda Ridge off California, 3932–4194 m). — Wicksten, 1989: 316 (list).

***Munidopsis vicina* Faxon, 1893**

Munidopsis vicina Faxon, 1893: 181 (type localities: “Albatross” St. 3360 [SW of Ciba Island, 06°17.00'N, 082°05.00'W, 1672 fm (3058 m)] [syntype, 1 ♀, not located], “Albatross” St. 3382 [S of Azuero Peninsula, 06°21.00'N, 080°41.00'W, 1793 fm (3279 m)] [syntype, 1 ov. ♀, not located]); 1895: 85, pl. 18, figs. 2, 2a (Gulf of Panama, 1672–

1793 fm (3060–3281 m)). — Khodkina, 1975: 266 (Gulf of Alaska, 2400 m). — Wicksten, 1989: 316 (list). — Baba, this paper (Gulf of Panama, 3800 m).

***Munidopsis victoriae* Baba & Poore, 2002**

Munidopsis victoriae Baba & Poore, 2002: 247, fig. 11, 12 (type locality: Victoria, 38 km SW of Cape Bridgewater, near Portland, 38°38'S– 141°04'E, 990 m, mud [holotype, ov. ♀ (NMV J21035)]).

***Munidopsis villosa* Faxon 1893**

Munidopsis villosa Faxon, 1893: 182 (type locality: “Albatross” St. 3394 [Gulf of Panama, 07°21.00'N, 079°35.00'W, 511 fm (935 m)] [holotype, ♂, not located]); 1895: 86, pl. 19, fig. 2 (Gulf of Panama, 511 fm (935 m)). — Luke, 1977: 28 (list; off Arica, Chile, 768–968 m). — Wicksten, 1989: 136 (list). — Baba, this paper (Gulf of Panama, 915–975 m).

Munidopsis villosa chilensis Bahamonde, 1964: 162, pl. 1, fig. C, D (type locality: Frente a Algarrobo, Chile, 800 m [holotype, ♂, MNHNC D-10.063]). Not *Munidopsis villosa chilensis*: Retamal, 1981: 23, fig. 101 (Chile) (= different species; see above, under the systematic account of *M. villosa*).

***Munidopsis wardeni* Anderson, 1896**

Munidopsis wardeni Anderson, 1896: 99 (“Investigator” St. 197 and 30 miles W of Middle Andaman Island, 406–500 fm (743–915 m); type locality: “Investigator” St. 197 [Laccadive Sea, 9°34'57"N, 75°36'30"E], 406 fm (743 m) [syntypes, ZSIC 116–117/10]). — Alcock & McArdle, 1901: pl. 55: fig. 1 (no record).

Munidopsis Wardeni: Alcock, 1901: 257 (part) (Arabian Sea and Bay of Bengal, 225–594 fm (412–1087 m); two specimens from the Andaman Sea are referred to *M. andamanica* MacGilchrist, 1905).

Munidopsis (Munidopsis) wardeni: Tirmizi, 1966: 225, figs. 37A–37C (Zanzibar and Maldives, 732–797 m).

Munidopsis wardeni mabahiss Tirmizi, 1966

Shifted to *Munidopsis mabahiss* Tirmizi, 1966 (see above).

***Munidopsis yaquinensis* Ambler, 1980**

Munidopsis yaquinensis Ambler, 1980: 20, fig. 5 (off Oregon, 2377–2763 m; type locality: 45°57.1' N, 127°32.9' W, 2763 m [holotype, ♀, USNM 171340]). — Wicksten, 1989: 316 (list).

Munidopsis sp. Fujikura *et al.*, 1995

See under *Shinkaia crosnieri* Baba & Williams, 1998

Species not determined:

Munidopsis sp., McCauley, 1972: 414 (list; Columbia River estuary off Oregon, 2600–4260 m, list).

Munidopsis sp., Ambler, 1980: 18, fig. 3 (off Oregon, 1829 m).

Munidopsis sp., Watabe, 2000: 30 (Hatoma Knoll off Iriomote-jima, Ryukyu Islands, ca. 1500 m).

Genus *Neonida* Baba & de Saint Laurent, 1996

Neonida Baba & de Saint Laurent, 1996: 479 (gender: feminine).

Type species: *Neonida grandis* Baba & de Saint Laurent, 1996, by monotypy

***Neonida grandis* Baba & de Saint Laurent, 1996**

Neonida grandis Baba & de Saint Laurent, 1996: 480, figs. 3g–h, 25, 34a (type locality: New Caledonia, 15°05.64'S, 167°15.31'E, 397–402 m [holotype, ♂, MNHN Ga 3771]).

Genus *Onconida* Baba & de Saint Laurent, 1996

Onconida Baba & de Saint Laurent, 1966: 482 (gender: feminine).

Type species: *Onconida alaini* Baba & de Saint Laurent, 1996, by original designation.

Remarks: The genus now contains five species, all from transitional depths between 200 and 700 m in the western Pacific Ocean.

Key to species (after Baba & de Saint Laurent (1996))

1. Carapace with widely separated transverse ridges. Rostral spine with 2 uninterrupted longitudinal ridges dorsally
.. *O. prostrata* Baba & de Saint Laurent, 1996
- Carapace with numerous transverse ridges. Rostral spine with 2 longitudinal rows of successive oblique scale-like ridges dorsally 2
2. Abdominal segment 4 unarmed
..... *O. tropis* Baba & de Saint Laurent, 1996
- Abdominal segment 4 with pair of submedian spines 3
3. Gastric process low; height less than 1/5 that of carapace (measured in lateral view between dorsal surface and linea anomurica).

Distolateral spine of antennal article 2 strong, reaching end of article 3

..... *O. modica* Baba & de Saint Laurent, 1996

- Gastric process relatively high, more than 1/4 that of carapace. Distolateral spine of antennal article 2 small, not overreaching midlength of article 3 4
- 4. Gastric process very high, anteriorly produced. P2–4 dactyli with a few (usually 4) spine-like setae on flexor margin
..... *O. alaini* Baba & de Saint Laurent, 1996
- Gastric process moderately high, with anterior extremity straight, vertical in profile. P2–4 dactyli with 7–8 (usually 8) spine-like setae on flexor margin
..... *O. gemini* Baba & de Saint Laurent, 1996

***Onconida alaini* Baba & de Saint Laurent, 1996**

Onconida alaini Baba & de Saint Laurent, 1996: 483, figs. 4a–c, 26, 33a–b (New Caledonia, Chesterfield Islands, and Loyalty Islands, 200–575 m; type locality: New Caledonia, 18°56.8'S, 163°17.7'E, 440 m [holotype, ov. ♀, MNHN Ga 3601]).

***Onconida gemini* Baba & de Saint Laurent, 1996**

Onconida gemini Baba & de Saint Laurent, 1996: 492, figs. 30, 34d (type locality: Vanuatu, 20°58.5'S, 170°03.4'E, 450 m [holotype, ov. ♀, MNHN Ga 3604]).

***Onconida modica* Baba & de Saint Laurent, 1996**

Onconida modica Baba & de Saint Laurent, 1996: 486, figs. 27, 33c–d (SW Pacific (Wallis Island and Bac Waterwitch), 325–450 m; type locality: Willis Island, 13°21'S, 176°08'W, 420–430 m [holotype, ov. ♀, MNHN Ga 3605]).

***Onconida prostrata* Baba & de Saint Laurent, 1996**

Onconida prostrata Baba & de Saint Laurent, 1996: 488, figs. 28, 34b (Field Banc, SW Pacific, 469–505 m; type locality: 12°31'S, 174°20'W, 495–505 m [holotype, ♀, MNHN Ga 3608]).

***Onconida tropis* Baba & de Saint Laurent, 1996**

Onconida tropis Baba & de Saint Laurent, 1996: 491, fig. 29, 34c (Indonesia (Kei Islands) and New Caledonia, 210–480 m; type locality: Kei Islands, 06°05'S, 132°44'E, 210–268 m [holotype, ov. ♀, MNHN Ga 3611]).

Genus *Paramunida* Baba, 1988

Paramunida Baba, 1988: 175 (gender: feminine).

Type species: *Munida scabra* Henderson, 1885, by original designation.

Remarks: *Paramunida aliena* Macpherson, 1996 has been transferred to *Plesionida* Baba & de Saint Laurent, 1996 (see Macpherson, 2004).

The key to species provided below is largely cited from Macpherson (unpublished).

Distribution: Now the genus contains 22 species, all from the Indo-West Pacific. The majority are from the western Pacific (20 species), one of which also occurs in the Indian Ocean. *Paramunida tricarinata* (Alcock, 1894) is the only one to occur solely in the Indian Ocean. All of the species are found in transitional depths, five of which are known also from the continental shelf, three of which are from upper bathyal depths, and one of which ranges between the shelf and a lower bathyal depth down to 1630 m.

Key to species

1. Rostral spine smaller than supraocular spines 2
- Rostral spine larger than supraocular spines . 3
2. Base of rostrum strongly excavated. Basal article of antennule gradually narrowed distally, with 2 more or less reduced terminal spines. No bundle of setae at base of carpus of P1 *P. hawaiiensis* (Baba, 1981)
- Base of rostrum moderately excavated. Basal article of antennule narrowed in distal 1/3, with 2 distinct terminal spines. Carpus of P1 with bundle of setae at base 3
3. Margin between rostral and supraocular spines convex. Margin between lateral limit of orbit and anterolateral spine of carapace convex *P. curvata* Macpherson, 2004
- Margin between rostral and supraocular spines straight. Margin between lateral limit of orbit and anterolateral spine of carapace straight *P. setigera* Baba, 1988
4. Distomesial spine of antennal article 2 almost reaching end of anterior prolongation of article 1 *P. granulata* (Henderson, 1885)
- Distomesial spine of antennal article 2 far falling short of end of anterior prolongation

- of article 1 5
5. P2–4 propodi particularly slender, about 20 times as long as broad ... *P. longior* Baba, 1988
- P2–4 propodi 7–14 times as long as broad 5
6. Sternal plastron with numerous striae 7
- Sternal plastron with few striae, sternites 5–7 without striae 13
7. Article 2 of antennal peduncle bluntly produced distomesially *P. evexa* Macpherson, 1993
- Article 2 of antennal peduncle with well-developed distomesial spine 8
8. Median gastric region with a row of 3–4 distinct spines 9
- Median gastric region with 1 (rarely 2) spine 10
9. Basal antennular article exceeding cornea by distal 1/3 of length. Article 3 of antennal peduncle twice as long as broad. P2–4 propodi slightly longer than dactyli *P. thalie* Macpherson, 1993
- Basal antennular article exceeding cornea by distal 1/5 of length at most. Article 3 of antennal peduncle slightly longer than broad. P2–4 propodi more than 1.5 times as long as dactyli *P. tricarinata* (Alcock, 1894)
10. Median cardiac region with 1 spine *P. prone* Macpherson, 1993
- Median cardiac region with a row of 3–4 spines 11
11. Article 2 of antennal peduncle relatively slender, length distinctly more than that of articles 3–4 combined *P. proxima* (Henderson, 1885)
- Article 2 of antennal peduncle as long as articles 3–4 combined 12
12. Rostrum with thick dorsal carina *P. cristata* Macpherson, 2004
- Rostrum with thin dorsal carina *P. scabra* (Henderson, 1885)
13. Mesiodistal spine of antennal article 2 spiniform 14
- Mesiodistal spine of antennal article 2 mucronated 18
14. Article 3 of antennal peduncle 2 times longer than broad *P. amphitrita* Macpherson, 1996
- Article 3 of antennal peduncle as long as broad 15
15. Article 2 of antennal peduncle long, about 2 times longer than broad *P. pictura* Macpherson, 1993
- Article 2 of antennal peduncle moderately short, about as long as broad 16
16. Mesiodistal spine of antennal article 2 clearly overreaching end of article 3. Median gastric region with 1 spine of moderate size *P. polita* Macpherson, 1993
- Mesiodistal spine of antennal article 2 reaching or slightly overreaching end of article 3. Median gastric region with 2–4 well-developed spines 17
17. Rostrum triangular *P. luminata* Macpherson, 1996
- Rostrum spiniform *P. cretata* Macpherson, 1996
18. Mesiodistal spine of antennal article 2 overreaching end of article 4 19
- Distomesial spine of antennal article 2 falling short of end of article 3 20
19. Median gastric region with 1 spine of moderate size. Mesiodistal spine of antennal article 2 reaching end of basal article of antennule (excluding distal spines) *P. belone* Macpherson, 1993
- Median gastric region with 2–4 well-developed spines. Mesiodistal spine of antennal article 2 falling short of end of basal article of antennule (excluding distal spines) *P. stichas* Macpherson, 2000
20. Rostrum triangular *P. echinata* Macpherson, 2000
- Rostrum spiniform 21
21. Median gastric region with 3 spines in midline *P. labis* Macpherson, 1996
- Median gastric region with 1 spine *P. antipodes* Ah Yong & Poore, 2004
- Paramunida aliena* Macpherson, 1996
See *Plesionida aliena* (Macpherson, 1996).
- Paramunida amphitrita* Macpherson, 1996**
Paramunida amphitrita Macpherson, 1996a: 409, fig. 7 (type locality: Futuna Island, Vanuatu, 14°13.4'S, 178°10.4'W, 233–235 m [holotype, ♀, MNHN Ga 3650]); 2004: 282 (Fiji and Tonga, between 327–360 m and 400–410 m).
- Paramunida antipodes* Ah Yong & Poore, 2004**
Paramunida antipodes Ah Yong & Poore, 2004b: 65, fig. 16 (Queensland and New South Wales, 420–549 m; type locality: NE of Tweed Heads, Queensland, 28°05'S, 153°58'E, 420 m [holotype,

♂, AM P31419]).

***Paramunida belone* Macpherson, 1993**

Paramunida belone Macpherson, 1993b: 448, figs. 1, 12 (Loyalty Islands, 250–437 m; type locality: 21°02.3'S, 167°31.6'E, 430 m, [holotype, ♂, MNHN Ga 4853]); 1996a: 410 (Futuna Island, 245–395 m); 2004: 282 (Fiji and Tonga (between 321–420 m and 487 m). — Baba, this paper (Bali Sea, 450 m).

***Paramunida cretata* Macpherson, 1996**

Paramunida cretata Macpherson, 1996a: 411, figs. 8, 23 (SW Pacific (Waterwitch Bank and Wallis Islands), 300–365 m; type locality: Waterwitch Bank, 12°30.0'S, 176°51.2'W, 300–305 m [holotype, ov. ♀, MNHN Ga 3651]); 2004: 283 (Tonga, 371–437 m and 461–497 m).

***Paramunida cristata* Macpherson, 2004**

Paramunida cristata Macpherson, 2004: 283, fig. 13 (Fiji and Vanuatu, between 390–403 m and 420–513 m; type locality: Fiji, 16°05.47'S, 179°27.83'W, 390–403 m [holotype, ♂, MNHN Ga 4567]).

***Paramunida curvata* Macpherson, 2004**

Paramunida curvata Macpherson, 2004: 285, fig. 14 (Fiji, between 229–370 m and 241–417 m; type locality: Fiji, 241–417 m [holotype, ♂, MNHN Ga 4568]).

***Paramunida echinata* Macpherson, 2000**

Paramunida echinata Macpherson, 2000: 420, fig. 2 (Marquesas Islands, between 102 m and 420–430 m; type locality: Marquesas Islands, 07°58.5'S, 140°43.7'E, 102 m [holotype, ov. ♀, MNHN Ga 4356]).

***Paramunida evexa* Macpherson, 1993**

Paramunida evexa Macpherson, 1993b: 450, fig. 2 (Indonesia, between 174–176 m and 222–226 m; type locality: 09°23'59"S, 131°14'29"E, 222–226 m [holotype, ♀, MNHN Ga 3214]). — Baba, this paper (Ambon, Indonesia, between 128 m and 183–238 m).

***Paramunida granulata* (Henderson, 1885)**

Munida granulata Henderson, 1885: 409 (type locality: S of the Fiji Islands, 300 fm (549 m) [syntypes,

BMNH 1888:33]); 1888: 133, pl. 14: figs. 3, 3a, 3b (off Matuku, Fijis, 315 fm (576 m).

Paramunida granulata: Baba, 1988: 176, fig. 72 (Moluccas off W coast of Halmahera, 545 m). — Macpherson, 1993b: 452, figs. 3, 13 (New Caledonia, Loyalty Islands and Indonesia; reexamination of type material; between 439–459 m and 650 m); 1996a: 412 (SW Pacific (Futuna Island, Wallis Islands, Bayonnaise Bank), 400–450 m); 2004: 287 (Fiji and Tonga, between 395 m and 587–592 m). — Ahyong & Poore, 2004b: 68 (Queensland, 548 m).

***Paramunida hawaiiensis* (Baba, 1981)**

Munida hawaiiensis Baba, 1981a: 288, figs. 1, 2 (Hawaiian Islands between Laysan and Hawaii Island, 115–439 m; type locality: off Kauai Island, Hawaiian Islands, 233–240 fm (426–439 m) [holotype, ♀, USNM 150452]).

***Paramunida labis* Macpherson, 1996**

Paramunida labis Macpherson 1996a: 413, figs. 9, 24 (SW Pacific (Futuna Island and Wallis Islands), 245–440 m; type locality: Futuna Island, 14°19.5'S, 178°04.3'W, 245–400 m [holotype, ov. ♀, MNHN-Ga 3652]); 2004: 287 (Fiji and Tonga, between 229–370 m and 407–443 m).

***Paramunida longior* Baba, 1988**

Paramunida longior Baba, 1988: 177, fig. 73 (Moluccas off W coast of Halmahera and South China Sea off SW Luzon, 340–485 m; type locality: NW of S. Fernando Pt Lt, W Luzon, 16°38' N, 119°57'18"E, 340 m [holotype, ♂, USNM 150403]). — Macpherson, 1993b: 454, figs. 3, 13 (New Caledonia and Indonesia, between 250–290 m and 390–502 m); 2004: 287 (Fiji and Tonga, between 384–402 m and 469–520 m).

***Paramunida luminata* Macpherson, 1996**

Paramunida luminata Macpherson, 1996a: 415, figs. 10, 25 (SW Pacific (Tuscarora Bank, Wallis Islands, Alofi Bank, Bayonnaise Bank), between 400–420 m and 440 m; type locality: Wallis Islands, 13°21.4'S, 176°08.3'W, 420–430 m [holotype, ♂, MNHN Ga 3653]).

***Paramunida pictura* Macpherson, 1993**

Paramunida pictura Macpherson, 1993b: 454, figs. 4, 14 (Chesterfield Islands, New Caledonia, Loyalty Islands, and Matthew & Hunter Islands, 205–600

m; type locality: Chesterfield Islands, 22°11.1'S, 159°24.1'E, 350–345 m [holotype, ♂, MNHN Ga 3235]; 1996a: 416 (SW Pacific (Wallis Islands), between 255 m and 335–340 m); 2004: 289 (Fiji and Tonga, between 310–420 m and 630–710 m).

***Paramunida polita* Macpherson, 1993**

Paramunida polita Macpherson, 1993b: 456, fig. 5 (Indonesia, between 281–311 m and 390–502 m; type locality: Indonesia, 05°47'11"S, 132°20'40"E, 286–306 m [holotype, ♀, MNHN Ga 3354]). — Baba, this paper (Kei Islands and Moro Gulf off Zamboanga, between 200 m and 275–366 m).

***Paramunida pronoe* Macpherson, 1993**

Paramunida pronoe Macpherson, 1993b: 458, fig. 6 (type locality: New Caledonia, 22°13.0'S, 167°14.0'E, 500–510 m [holotype, ♀, MNHN Ga 3410]); 2004: 289 (Tonga, between 439 m and 461–497 m).

***Paramunida proxima* (Henderson, 1885)**

Munida proxima Henderson, 1885: 410 (type locality: N of the Admiralty Islands, 150 fm (275 m) [3 ♀ syntypes, BMNH 1888:33]); 1888: 135, pl. 13: figs. 2, 2a, 2b (N of Papua, 150 fm (275 m)). — Tirmizi, 1975: 305, figs. 1–8 (selection and description of lectotype, ov. ♀ [BMNH 1888:33]). — Macpherson, 1993b: 460, fig. 7 (Philippines and Indonesia; reexamination of syntypes (= 2 paralectotypes), between 210–268 m and 286–306 m). — Baba, this paper (Moro Gulf off Zamboanga, Mindanao, 293–366 m).

Not *Munida proxima*: Baba, 1982a: 110, fig. 4 (Izu Shoto, 33°05.4' N, 139°58.7' E, 430 m) (= new species; see above, under the systematic account of *M. proxima*). — Baba in Baba *et al.*, 1986: 173, 291, fig. 124 (Kyushu-Palau Ridge and off Amami-oshima of the Ryukyus, 320–400 m) (= new species, identical with above). — Wu *et al.*, 1997: 143, figs. 40, 42F (Taiwan) (= new species, identical with above).

***Paramunida scabra* (Henderson, 1885)**

Munida scabra Henderson, 1885: 409 (type locality: off the Ki [Kei] Island, 129 fm (236 m) [15 syntypes, BMNH 1888:33]); 1888: 134, pl. 15: figs. 4, 4a, 4b (off Little Ki [Kei] Island, 140 fm (256 m)). — Yokoya, 1933: 63 (S of Inuboe-zaki, Sagami Bay, E of Miyazaki, W of Muroto-zaki, Bungo Strait, vicinity of Goto I., E of Chejudo, S of Tsushima,

106–393 m). — Yanagita 1943: 30, figs. 9, 10 (off Miya, Aichi Prefecture, 360 m). — Miyake & Baba, 1967c: 242, fig. 13 (East China Sea, 100–158 m). — Baba, 1969c: 49 (East China Sea, 310 m). — Kim, 1973: 178 (no record). — Miyake, 1982: 149, pl. 50, fig. 2 (E of Koshiki-jima, Kagoshima, 300–350 m). — Baba in Baba *et al.*, 1986: 175, 292, fig. 125 (Okinawa Trough and Tosa Bay, 150–550 m).

Paramunida scabra: Baba, 1988: 180 (off NE Borneo, Balabac Strait off N Borneo, Sulu Archipelago, off N Mindanao, off Pacific coast of S Luzon, South China Sea off SW Luzon and off Hong Kong and off SW Formosa, 70–1630 m); 1990: fig. 15a (reexamination of type material); 1994: 19 (off Central Queensland, 497–503 m); this paper (Japan and Kei Islands, between 180–220 m and 325 m). — Macpherson, 1993b: 462, fig. 8 (Philippines and Indonesia, between 143–178 m and 975–1075 m). — Tirmizi & Javed, 1993: 131, figs. 58, 59 (off Tanzania and off Mozambique, 100 m–112 (or 347) m). — Wu *et al.*, 1997: 145, figs. 41, 42G (Taiwan).

Identity not fixed:

Munida scabra: Borradaile, 1900: 422 (Talili Bay, New Britain).

Munida scabra var. *longipes* Borradaile, 1900: 422 (Talili Bay, New Britain Talili Bay, New Britain).

***Paramunida setigera* Baba 1988**

Paramunida setigera Baba, 1988: 181, figs. 74, 75 (Balabac Strait off N Borneo, Davao Gulf off SE Mindanao, Illana Bay off SW Mindanao, between Cebu and Leyte, E coast of Mindoro, South China Sea off SW Luzon, vicinity of Marinduque off SW Luzon, 183–289 m; type locality: NW of Sombrero Island off SW Luzon, 13°52'22", 120°46'22", 216 m [holotype, ov. ♀, USNM 150405]); this paper (Bali Sea, 200 m). — Macpherson, 1993b: 464 (Philippines, Indonesia, and New Caledonia, between 134–186 m and 866 m); 2004: 289 (Fiji, between 210–282 m and 499–527 m).

***Paramunida stichas* Macpherson, 1993**

Paramunida stichas Macpherson, 1993b: 465, figs. 9, 15 (New Caledonia, Indonesia, Philippines, Fiji, and Japan, between 210–268 m and 590 m; type locality: New Caledonia, 29°39.9'S, 168°38.1'E, 573 m [holotype, ov. ♀, MNHN Ga 3473]); 1996a: 417 (SW Pacific (Field Bank, Wallis Islands, and Bayonnaise Bank), 400–430 m); 2004: 290 (Fiji and Tonga, between 371–437 m and 589–591 m).

Paramunida thalie Macpherson, 1993

Paramunida thalie Macpherson, 1993b: 467, figs. 10, 16 (Loyalty Islands, 245–283 m; type locality: 20°41.8'S, 167°03.6'E, 283 m [holotype, ♀, MNHN Ga 3478]); 2004: 290 (Fiji, 310–420 m). — Ah Yong & Poore, 2004b: 68 (Queensland, 210 m).

Paramunida tricarinata (Alcock, 1894)

Munida tricarinata Alcock, 1894: 324 (type locality: Andaman Sea, 112 fms (205 m) [syntypes, ZSIC 155/7]); 1901: 246 (Andaman Sea and Arabian Sea off N. Maldive Atoll, 112–210 fm (205–384 m)). — Alcock & Anderson, 1895: pl. 12: fig. 1 (no record). — Laurie, 1926: 138 (Providence and Saya de Malha Bank, 70–145 fm (281–275 m)). — Tirmizi, 1966: 202, fig. 21 (Zanzibar and Maldives, 183–457 m).

Paramunida tricarinata: Baba, 1990: 968, fig. 15b (Madagascar, 308–444 m). — Macpherson, 1993b: 469, fig. 11 (Maldives Islands and Madagascar, between 238 m and 420–428 m).

Species not determined:

Paramunida sp. Tirmizi & Javed, 1993: 136, fig. 60 (off Tanzania and off Mozambique, 100–347 m).

Genus Phylladorhynchus Baba, 1969

Phylladorhynchus Baba, 1969a: 3 (gender: masculine).

Type species: *Galathea pusilla* Henderson, 1885, by original designation.

Distribution: The genus contains four species, all occurring in the Indo-West Pacific. One (*P. bengalensis*) is confined to the Indian Ocean. The other three are known from the western Pacific, two of which (*P. integrirostris* and *P. pusillus*) are also known to occur in the eastern Pacific around the Juan Fernandez Islands and vicinity (*P. pusillus* further extends the range to the Southern Ocean around Victoria, Australia and New Zealand; *P. integrirostris* occurs in the Indian Ocean). One of the three species occurring in the western Pacific (*Phylladorhynchus ikedai*) is also known in the Indian Ocean. All are common on the continental shelf but two of these go down to transitional depths.

Key to species (after Baba (1991b)).

- 1. Two epigastric spines
..... *P. integrirostris* (Dana, 1852)

- More than 4 epigastric spines 2
- 2. Four epigastric spines
..... *P. pusillus* (Henderson, 1885)
- Five epigastric spines 3
- 3. Anterior margin of sternite 3 nearly transverse with median and lateral projections
..... *P. bengalensis* Tirmizi & Javed, 1980
- Anterior margin of sternite 3 moderately convex with feeble median excavation
..... *P. ikedai* (Miyake & Baba, 1965)

Phylladorhynchus antonbruuni Tirmizi & Javed, 1980
Transferred to *Munida* Leach, 1820 (see Baba, 1991b: 484).

[Phylladorhynchus bengalensis Tirmizi & Javed, 1980]

Phylladorhynchus bengalensis Tirmizi & Javed, 1980: 258, fig. 2 (type locality: Andaman Sea, 7°34'N, 98°00'E, 77 m [holotype, ♂, USNM 180387]); 1993: 31, fig. 14 (redescription).

Phylladorhynchus ikedai (Miyake & Baba, 1965)

Galathea ikedai Miyake & Baba, 1965: 588, figs. 3, 4 (type locality: near Muko-jima, Bonin Islands [holotype, ov. ♀, ZLKU 4886]).

Galathea pusilla: Tirmizi, 1966: 175, fig. 1 (Red Sea, 55 m).

Phylladorhynchus ikedai: Baba, 1969a: 5 (reexamination of type material); 1977a: 252 (Maldives); 1991b: 485, fig. 4a–b (New Caledonia, Loyalty Islands, 200–510 m); this paper (Kei Islands, 245–300 m).

[Phylladorhynchus integrirostris Dana, 1852]

Galathea integrirostris Dana, 1852: 482 (type locality: Sandwich Islands (Hawaiian Islands) [type lost]); 1855: pl. 30: figs. 12a, 12b.

Galathea integra: Laurie, 1926: 135 (Providence, 58 fm (106 m) (not *G. integra* Benedict, 1902).

Galathea serrirostris Melin, 1939: 72, figs. 43–47 (type locality: Port Lloyd, Tokinoura, Hatsume, E of Chichijima (Bonin Islands), shallow to 70 fm (128 m) [syntypes, SMNH Type No. 2295]). — Miyake & Baba, 1965: 590, figs. 5, 6 (Bonin Islands); 1966a: 67, fig. 8 (Amami-oshima, Ryukyu Islands, Japan, intertidal).

Phylladorhynchus serrirostris: Baba, 1969a: 4 (W of Tanegashima, S Kyushu, Japan, 35–40 m); 1977a: 251 (Ternate, 2–4 m); 1979b: 644 (Marsegu Island,

subtidal). — Tirmizi & Javed, 1980: 260, fig. 3 (Mozambique Channel, off South Africa, off Somalia Republic, and Andaman Sea, 38–138 m). — Baba, 1989: 61 (Palau Islands, subtidal); 1990: 969 (Madagascar, 60 m).

Phylladorhynchus integrirostris: Lewinsohn, 1982: 295, fig. 1 (Gulf of Aqaba, N Red Sea). — Baba, 1991b: 485, 487, fig. 4c, d (Chesterfield Islands and New Caledonia, Juan Fernández Islands, Easter Island, between 0–9 m and 32–160 m). — Tirmizi & Javed, 1993: 33, fig. 15 (Mozambique Channel, W of Durban, off Somali Republic, and Andaman Islands, 38–138 m).

***Phylladorhynchus pusillus* (Henderson, 1885)**

Galathea pusilla Henderson, 1885: 407 (off New South Wales coast, 120 fm (220 m) [syntypes, 1 ♀, 2 ♂, BMNH 1888:33]); 1888: 121, pl. 12: figs. 1, 1a, 1b (Twofold Bay, Australia, 150 fm (275 m)). — Thomson, 1899: 193, pl. 21, fig. 7 (Cook Strait, Paterson Inlet, 8 fm (14.6 m)). — Chilton, 1906: 267 (Channel Islands, Auckland, 25 fm (46 m)). — Grant & McCulloch, 1906: 49, pl. 4: figs. 5, 5a (Port Phillip Heads, Victoria). — Chilton, 1911: 303 (New Zealand). — Borradaile, 1916: 92 (off Three Kings Islands and off North Cape, 183–128 m). — McNeill, 1926: 305 (Capricorn Group, Queensland, pool on reef). — Miyake, 1965: 635, fig. 1044 (no record). — Miyake & Baba, 1967c: 234, fig. 6 (East China Sea, 102–196 m). — Lewinsohn, 1969: 116 (no record).

Galathea integra Benedict, 1902: 248 (type locality: off Honshu, Japan [Ose Zaki, S. 55d, W. 2.25 M], 60–70 fms (110–128 m) [syntypes, USNM 26168]). — Yokoya, 1933: 55 (Japan (off Shiwoya, S of Inuboe-zaki, E coast of Aomori Pref., Sagami Bay, Suruga Bay, E of Omae-zaki, N of Tanegashima, E of Kagoshima, N of Goto I. N of Noto, N of Oga W of Aomori Pref. W of Tsugaru Strait, Tsugaru Strait), 71–307 m). — Makarov, 1938: 87, fig. 31 (no record. — Miyake, in Miyake & Nakazawa, 1947: 732, fig. 2117 (no record).

Galathea lenzi Rathbun, 1907: 49, pl. 3: fig. 1 (type locality: Corral, Chile [2 ov. ♀ syntypes, USNM 32261]). — Haig 1955: 31, fig. 6 (Juan Fernandez).

Phylladorhynchus pusillus: Baba, 1969a: 4 (Sagami Bay, 200–300 m). — Haig, 1973: 282 (S of Cape Everard (Victoria), S and SW of Mt Cann (Victoria) and off St. Helens Point, Tasmania, 60–100 fm (110–183 m)). — Baba, 1991b: 486, fig. 4e–f (Chesterfield Islands, 580 m; Juan Fernandez

Islands, 130–160 m; San Felix Island, 75 m); this paper (Kei Islands and Japan (Sagami Bay and W of Nagasaki), between 146–220 m and 549 m).

Not *Galathea integra*: Laurie, 1926: 135 (Providence, 58 fm (106 m) (= *P. integrirostris* (Dana, 1852))).

Not *Galathea pusilla* Tirmizi, 1966: 175, fig. 1 (= *P. ikedai* (Miyake & Baba, 1965))).

Species not determined:

Phylladorhynchus sp.: Haig, 1974: 447 (Western Australia).

Genus *Plesionida* Baba & de Saint Laurent, 1996

Plesionida Baba & de Saint Laurent, 1996: 494 (gender: feminine).

Type species: *Plesionida psila* Baba & de Saint Laurent, 1996, by monotypy.

Remarks: Macpherson (2004) proposed to transfer *Paramunida aliena* Macpherson, 1996 to *Plesionida*. The inclusion of the species in this genus needs to modify the original definition of the genus: the presence of carapace dorsal spines (median gastric, cardiac postcervical spines) is now regarded to be a specific character. The genus contains two species, both from transitional depths in the western Pacific.

Key to species

1. Carapace with median gastric and cardiac spines. No spine on posterior ridge of abdominal segment 4
..... *P. psila* Baba & de Saint Laurent, 1996
- Carapace lacking median gastric and cardiac spines. Median spine on posterior ridge of abdominal segment 4
..... *P. aliena* (Macpherson, 1996)

***Plesionida aliena* (Macpherson, 1996)**

Paramunida aliena Macpherson, 1996b: 429, fig. 3 (type locality: New Caledonia, 18°53.8'S, 163°14.1'E, 545 m [holotype, ov. ♀, MNHN Ga 3778]).

Plesionida aliena: Macpherson, 2004: 290 (Fiji and Toga, between 445–447 m and 488–500 m).

***Plesionida psila* Baba & de Saint Laurent, 1996**

Plesionida psila Baba & de Saint Laurent, 1996: 494, figs. 4d–e, 31 (New Caledonia, 18°54.3'S, 163°11.2'E, 590 m [holotype, ♂, MNHN Ga

3642]).

Genus *Pleuroncodes* Stimpson, 1860

Pleuroncodes Stimpson, 1860: 245 (gender: masculine).

Type species: *Pleuroncodes planipes* Stimpson, 1860.

Remarks: Two species are known in the genus. *Pleuroncodes planipes* Stimpson, 1860, is known to be pelagic, occurring off the west coast of the United States. Luke (1977: 30) reported this species, without description, from depths between 1750 m and surface, the deepest at San Clemente Basin.

Pleuroncodes monodon (H. Milne Edwards, 1837)

Galathea monodon H. Milne Edwards, 1837: 276 (type locality: shore of Chile [Pepo Kalma] [type (one specimen, probably holotype), MNHN Ga 526]).

Grimothea duperreii H. Milne Edwards, 1837: 277.

Pleuroncodes monodon? Faxon, 1893: 176 (Gulf of Panama and off Acapulco, 94–286 fm (172–523 m)); 1895: 72, pl. 15, figs. 3, 3a, 3b, 3c (Gulf of Panama and off Acapulco, 94–286 fm (172–523 m)).

Munida cokeri Rathbun, 1910: 559, pl. 53: fig. 5 (type locality: Callao Bay, Peru [holotype, male, USNM 40484]).

Pleuroncodes monodon: Haig, 1955: 32, fig. 7 (Peru (Callao) and Chile (Antofagasta, Talfal and Coquimbo), 16 fm (29 m)); 1968: 22 (SW of Isla de San Lorenzo, Peru, 160 m). — Baba, 1993: 103, fig. 2c (off Panama, 474 m).

Genus *Raymunida* Macpherson & Machordom, 2000

Raymunida Macpherson & Machordom, 2000: 253 (gender: feminine).

Type species: *Raymunida cagneteei* Macpherson & Machordom, 2000, by original designation.

Distribution: The genus now contains eight species, all from the Indo-West Pacific: seven from the western Pacific and one from the Indian Ocean. Six species occur in transitional depths, three of which are also found on the continental shelf. Two species have so far been known only from the continental shelf.

For key to species, see Macpherson & Machordom (2001) and Lin *et al.* (2004).

Raymunida bellior (Miyake & Baba, 1967)

Munida bellior Miyake & Baba, 1967b: 216, figs. 3, 4 (Sagami Bay, 80–190 m; type locality: S of Jogashima, Sagami Bay, 80–90 m [holotype, ♂, BLIH 183]). — Baba, 1988: 90 (between Masbate and Leyte, 209 m).

Raymunida bellior: Macpherson & Machordom, 2001: 698, fig. 1A–D (reexamination of material reported by Baba (1988: 90). — Baba, this paper (Kei Islands and Sagami Bay, Japan, 300–549 m).

Not *Munida bellior*: Macpherson, 1994: 450 (Chesterfield Islands, 330 m (= *R. confundens* Macpherson & Machordom, 2001); fig. 66, Loyalty Islands, 285 m (= *R. dextralis* Macpherson & Machordom, 2001)); Chesterfield Islands, 80–120 m (= *R. elegantissima* (de Man, 1902)); 1996: 390, fig. 12 (Futuna Island, 105–160 m (= *R. elegantissima* (de Man, 1902)); fig. 12, Futuna Island, 224–252 m (= *R. erythrina* Macpherson & Machordom, 2001)).

[*Raymunida cagneteei* Macpherson & Machordom, 2000]

Raymunida cagneteei Macpherson & Machordom, 2000: 254, figs. 1, 2 (Marquesas Islands, French Polynesia, between 53–57 and 109–110 m; type locality: 8°45.1'S, 140°14.1'W, 108–112 m [holotype, ov. ♀, MNHN Ga 4344]).

Raymunida confundens Macpherson & Machordom, 2001

Munida bellior: Macpherson, 1994: 450 (part) (Chesterfield Islands, 330 m) (not *R. bellior* (Miyake & Baba, 1967)).

Raymunida confundens Macpherson & Machordom, 2001: 701, fig. 2 (New Caledonia and Chesterfield Islands, 330–400 m; type locality: New Caledonia, holotype, ♀, MNHN Ga 4376]).

Raymunida dextralis Macpherson & Machordom, 2001

Munida bellior: Macpherson, 1994: 450 (part), fig. 66 (Loyalty Islands, 285 m) (not *R. bellior* (Miyake & Baba, 1967)).

Raymunida dextralis Macpherson & Machordom, 2001: 701, fig. 3 (type locality: Loyalty Islands, 285 m [holotype, ov. ♀, MNHN Ga 2578]).

Raymunida elegantissima (de Man, 1902)

Munida elegantissima de Man, 1902: 726, pl. 24: figs.

- 42, 42a, 42b (type locality: Malay Archipelago [holotype, ♂, SMF 4639]). — Haig, 1973: 270 (part) (between Fremantle and Geraldton, Western Australia; a specimen from NE of Cape Moreton, Queensland needs verification). — Baba, 1977a: 253 (Seram Sea, 200 m); 1988: 94 (off NE Borneo, and Sibuyan Sea, 68–70 m). — Macpherson, 1994: 465 (Philippines, New Caledonia, and Bellona Island, between 50–80 m and 179–194 m); 1996a: 391 (Futuna Island, SW Pacific, 245–440 m); 1999a: 418 (Vanuatu, between 128–150 m and 180–210 m). — Ah Yong & Poore, 2004b: 69 (Western Australia, 146–220 m).
- Munida bellior*: Macpherson, 1994: 450 (part) (Chesterfield Islands, 80–120 m); 1996a: 390 (part) (SW Pacific (Futuna Island), 105–160 m).
- Raymunida elegantissima*: Macpherson & Machordom, 2001: 703, fig. 1E–H (Philippines, New Caledonia, Chesterfield Islands, Belona Island, Futuna Island, Vanuatu, 50–194 m).
- Not *Raymunida elegantissima*: Baba, 1969b: 37, figs. 3, 4 (off Miyake-jima, Izu Shoto and off Mage-jima W of Tanegashima, 35–85 m); 1989: 131 (Oshima Strait, Amami-oshima, 40 m) (identical with the material of Kato & Okuno (2001)). — Kato & Okuno, 2001: 89 (Hachijo Island, Japan, 25 m) (= different species, see Lin *et al.*, 2004: 154).
- Identity questionable:
- Munida elegantissima*: Laurie, 1926: 138 (Providence and Amirante, 39–78 fm (71–143 m)). — Tirmizi, 1966: 190, fig. 12 (Zanzibar, 113 m). — Haig, 271 (NE of Cape Moreton, Queensland, 60–70 fm (110–128 m); 1974: 447 (Western Australia). — Tirmizi & Javed, 1993: 93, fig. 40 (eastern Indian Ocean, depth unknown). — Poupin, 1996: 22, 23 (fig. d) (Marquesas, 55 m).
- Raymunida erythrina* Macpherson & Machordom, 2001**
- Munida bellior*: Macpherson, 1996a: 390 (part), fig. 12 (Futuna Island, 224–252 m).
- Raymunida erythrina* Macpherson & Machordom, 2001: 703, fig. 4 (Futuna Island and Vanuatu, 180–252 m; type locality: Futuna Island, 224–252 m [holotype, ♀, MNHN Ga 3657]).
- Raymunida formosanus* Lin, Chan & Chu, 2004**
- Raymunida formosanus* Lin, Chan & Chu, 2004: 149, figs. 1–3 [type locality: Taiwan, 300 m [holotype, ♂, NTOU H-1999-2]]. — Ah Yong & Poore, 2004b: 70, fig. 17 (New South Wales, 104 m).
- [*Raymunida insulata* Macpherson & Machordom, 2001]**
- Raymunida insulata* Macpherson & Machordom, 2001: 705, fig. 5 (type locality: Seychelles Islands, 200 m [holotype, ♀, MNHN Ga 4377]).
- Genus *Sadayoshia* Baba, 1969**
- Sadayoshia* Baba, 1969a: 18 (gender: feminine).
- Type species: *Sadayoshia miyakei* Baba, 1969, by monotypy.
- Sadayoshia edwardsii* (Miers, 1884)**
- Munida edwardsii* Miers, 1884: 560, pl. 51: fig A and a (type locality: Ile des Neufs [Noeufs Island], Amirante Islands, 15 fm (27 m) [type not located]).
- Munida Edwardsii* de Man, 1888: 453 (Ambon).
- Galathea balica* Boone, 1935: 46, pl. 11. (type locality: Bali [syntypes, recorded under Vanderbilt Marine Museum Cat. No. 692; not located]).
- Sadayoshia miyakei* Baba, 1969a: 19, figs. 5, 6 (type locality: off Mage-jima W of Tanegashima, S. Kyushu, 35–40 m [holotype, ♂, ZLKU 14245]); 1988: 185 (Sibuyan Sea, off N Luzon, between Burias and Luzon, 37–410 m). — Kamezaki *et al.*, 1988: 100, with fig. (Ryukyu Islands, reefs).
- Sadayoshia acroporae* Baba, 1972: 43, figs. 1, 2 (type locality: Kabira, Ishigaki-jima, Ryukyus Ishigaki-jima of the Ryukyus, subtidal [holotype, ♂, to be moved to ZLKU]; 1979b: 644 (Marsegu Island, Moluccas, subtidal). — Tirmizi, 1980: 108, figs. 1–7 (Bay of Bengal, 80 m; Mozambique Channel, 1225 m).
- Sadayoshia edwardsii*: Baba, 1990: 970 (Madagascar and Aldabra, 170–175 m); this paper (Mauritius, 46–238 m; Kei Islands, 50 m; Banda Sea, 25 m).
- Sadayoshia* aff. *edwardsii*: Poupin, 1996: 24, 25 (fig. g) (Tuamotu Archipelago, 140 m).
- Genus *Shinkaia* Baba & Williams, 1998**
- Shinkaia* Baba & Williams, 1998: 148 (gender: feminine).
- Type species: *Shinkaia crosnieri* Baba & Williams, 1998, by monotypy.
- Shinkaia crosnieri* Baba & Williams, 1998**
- Munidopsis* sp. Fujikura *et al.*, 1995: 233 (Minami-Ensei Knoll, Okinawa trough, 600–740 m,

[Fujikura, pers. comm.].

Shinkaia crosnieri Baba & Williams, 1998: 148, figs. 1, 3–6 (Bismarck Archipelago and Okinawa Trough, 1330–1483 m; type locality: Bismarck Archipelago, 3°18.85'S, 152°34.92'E, 1483 m, hydrothermal active sites [holotype, ♂, USNM 251480]). — Chan *et al.*, 2000: 800, figs. 1, 2 (off NE Taiwan, 1200m). — Watabe, 2000: 31 (Hatoma Knoll off Iriomote-jima, Ryukyu Islands, ca. 1500 m, hydrothermal vent). — Fujikura *et al.*, 2002: 24 (Minami-Ensei Knoll, Okinawa Trough, 600–740 m, hydrothermal active sites [station data, Fujikura, pers. comm.]).

Genus *Torbenia* n. gen.

Torbenia Baba, this paper (gender: feminine).

Type species: *Torbenia orbis* Baba, n. sp., by monotypy.

Distribution: The genus contains two species, both from transitional depths in the western Pacific. One of these is also known from the continental shelf.

Key to species

1. Posterior ridge of abdominal segment 4 without spine. Antennal article 2 with

distomesial spine overreaching midlength of article 4. P2–4 dactyli with row of spinules on flexor margin

- *T. insolita* Macpherson, 2004
- Posterior ridge of abdominal segment 4 with median spine. Antennal article 2 with distomesial spine terminating in midlength of article 3. P2–4 dactyli smooth on flexor margin
- *T. orbis* n. sp.

Torbenia insolita (Macpherson, 2004)

Agononida insolita Macpherson, 2004: 242, fig. 2 (New Caledonia and Tonga, 266–276 m and 382–386 m; type locality: New Caledonia, 23°39.449'S, 167°59.336'E, 382–386 m [holotype, ov. ♀, MNHN Ga 4557]).

Torbenia insolita: Baba, this paper (new combination).

Torbenia orbis n. sp.

Munida sp. Macpherson, 1997: 611 (Kei Islands, Indonesia, 156–305 m).

Torbenia orbis Baba, this paper (Kei Islands and Norfolk Islands, between 260 m and 390–407 m; type locality: 5°32'20"S, 132°34'E, 260 m [holotype, ♂, ZMUC CRU-11421]).

REFERENCES

- Abello, P. & F. J. Valladares, 1988: Bathyal decapod crustaceans of the Catalan Sea (Northwestern Mediterranean). — *Mésogée*, 48: 97–102.
- Ahyong, S. T. & G. C. B. Poore, 2004a: The Chirostylidae of southern Australia (Crustacea: Decapoda: Anomura). — *Zootaxa*, 436: 1–88.
- & —, 2004b: Deep-water Galatheididae (Crustacea: Decapoda: Anomura). from southern and eastern Australia. — *Zootaxa*, 472: 1–76.
- Alcock, A., 1894: Natural history notes from H.M. Indian Marine Survey Steamer "Investigator," commander R.F. Hoskyn, R.N., commanding. — Series II, No. 1. On the results of deep-sea dredging during the season 1890–91 (continued). — *Ann. Mag. nat. Hist.* (6) 13: 321–334.
- 1901: A Descriptive Catalogue of the Indian Deep-Sea Crustacea Decapoda and Anomala in the Indian Museum: Being a Revised Account of the Deep-Sea Species Collected by the Royal Indian Marine Survey Ship Investigator. — Indian Museum, Calcutta, 286 + iv pp., 3 pls.
- & A. R. S. Anderson, 1894: Natural history notes from H.M. Indian marine survey steamer "Investigator," commander C.F. Oldham, R.N., commanding. Series II, No. 14. An account of a recent collection of deep sea Crustacea from the Bay of Bengal and Laccadive Sea. — *J. Asiat. Soc. Bengal* 63(II-Nat. Sci.): 141–185, pl. 9.
- & —, 1895: Crustacea, Part III. Illustrations of the Zoology of the Royal Indian Marine Surveying Steamer Investigator, under the Command of Commander A. Carpenter, R.N., D.S.O., of the Late Commander R.F. Hoskyn, R.N., and of Commander C.F. Oldham, R.N. — Calcutta, pls. 9–15.
- & —, 1896: Crustacea, Part IV. Illustrations of the Zoology of the Royal Indian Marine Surveying Steamer "Investigator." — Calcutta, pls. 16–27.
- & — 1899a: Natural history notes from H.M. Royal Indian marine survey ship "Investigator," commander T. H. Heming, R.N., commanding. — Series III, No. 2. An account of the deep-sea Crustacea dredged during the surveying season of 1897–98. — *Ann. Mag. nat. Hist.* (7) 3: 1–27.
- & —, 1899b: Crustacea, Part VII. Illustrations of the Zoology of the Royal Indian Marine Surveying Steamer "Investigator." — Calcutta, pls. 36–45.
- & A. C. MacGilchrist, 1905: Crustacea, Part XI. Illustrations of the Zoology of the Royal Indian Marine Surveying Steamer "Investigator." — Calcutta, pls. 68–76.
- & A. F. McArdle, 1901: Crustacea, Part XIX. Illustrations of the Zoology of the Royal Indian Marine Surveying Steamer "Investigator." — Calcutta, pls. 49–55.
- & —, 1902: Crustacea, Part X. Illustrations of the Zoology of the Royal Indian Marine Surveying Steamer "Investigator." — Calcutta, pls. 56–67.

- Ambler, J. W., 1980: Species of *Munidopsis* (Crustacea, Galatheidae) occurring off Oregon and in adjacent waters. — Fish. Bull. 78: 13–34.
- Anderson, A.R.S., 1896: An account of the deep-sea Crustacea from the Bay of Bengal and Laccadive Sea. — J. Asiat. Soc. Bengal, 65, pt II (Nat. Hist., &C), no. 2: 88–106.
- Anonymous, 1914: Biological Collections of the R.I.M.S. “Investigator.” List of Stations, 1884–1913. — Indian Museum, Calcutta, 35 pp.
- Appelloef, A., 1906: Die Dekapoden Crustaceen. — Meeresfauna von Bergen, 2–3: 113–233, pls. 1, 2, charts 1–3.
- Baba, K., 1969a: Four new genera with their representatives and six new species of the Galatheidae in the collection of the Zoological Laboratory, Kyushu University, with redefinition of the genus *Galathea*. — Ohmu, Occ. Pap. Zool. Lab. Fac. Agr. Kyushu Univ., 2: 1–32.
- 1969b: New addition to the galatheid fauna of Japan (Crustacea, Anomura). — Ohmu, Occ. Pap. Zool. Lab. Fac. Agr. Kyushu Univ., 2(2): 33–40.
- 1969c: Chirostyliids and galatheids from dredgings and trawlings operated in the East China Sea by the Japanese Fisheries Research Vessel “Kaiyo Maru” in 1967. — Ohmu, Occ. Pap. Zool. Lab. Fac. Agr. Kyushu Univ., 2: 41–57.
- 1970: Redescription of *Bathymunida brevirostris* (Yokoya, 1933) (Crustacea, Decapoda, Galatheidae). — Mem. Fac. Educ., Kumamoto Univ., Sect. 1 (Nat. Sci.), 18: 59–62.
- 1971: *Lauriea*, a new genus proposed for *Galathea gardineri* Laurie (Crustacea, Anomura, Galatheidae). — Mem. Fac. Educ., Kumamoto Univ., Sect. 1 (Nat. Sci.), 19: 51–53.
- 1972: A new species of galatheidean Crustacea from the Ryukyu Islands (Decapoda, Anomura). — Mem. Fac. Educ., Kumamoto Univ., Sect. 1 (Nat. Sci.), 20: 43–48.
- 1973: Remarkable species of the Chirostyliidae (Crustacea, Anomura) of Japanese waters. — Mem. Fac. Educ. Kumamoto Univ. Sec. 1 (Nat. Sci.), 22: 117–124, pl. 4.
- 1974: Four new species of galatheidean Crustacea from New Zealand waters. — J. roy. Soc. N. Z., 4(4): 381–393.
- 1977a: The galatheid Crustacea of the Snellius Expedition. In: Biological results of the Snellius Expedition XXVIII. — Zool. Meded., Leiden, 50(15): 243–259.
- 1977b: A new species of *Uroptychus* (Crustacea, Anomura, Chirostyliidae) from off Honshu, Japan. — Annot. zool. Japon., 50(2): 123–126.
- 1977c: Five new species of chirostyliid crustaceans (Decapoda, Anomura) from off Midway Island. — Bull. natl. Sci. Mus., Tokyo (A-Zool.) 3(3): 141–156.
- 1977d: *Gastroptychus cavimurus* sp. nov., a new chirostyliid (Crustacea, Decapoda, Anomura) from off the west coast of South America. — Zool. Meded., Leiden, 52(16): 201–207.
- 1978: A new deep-sea galatheid (Crustacea, Anomura) from northern South China Sea. — Proc. Jap. Soc. syst. Zool., 15: 31–35.
- 1979a: First records of chirostyliid and galatheid crustaceans (Decapoda, Anomura) from New Caledonia. — Bull. Mus. natn. Hist. nat., Paris, (4) Sect. A, 1(2): 521–529.
- 1979b: Galatheid crustaceans (Decapoda, Anomura). In: Expéditions Rumphius II (1975). Crustacés parasites, commensaux, etc. (Th. Monod et R. Serène, éd.) VII. — Bull. Mus. natn. Hist. nat., Paris, (4) Sect. A, 1(3): 643–657.
- 1981a: A new galatheid crustacean (Decapoda, Anomura) from the Hawaiian Islands. — J. Crust. Biol. 1(2): 288–292.
- 1981b: Deep-sea galatheidean Crustacea (Decapoda, Anomura) taken by the R/V Soyo-Maru in Japanese waters. I. Family Chirostyliidae. — Bull. natn. Sci. Mus., Tokyo (A-Zool.) 7: 111–134.
- 1982a: Deep-sea galatheidean Crustacea (Decapoda, Anomura) taken by the R/V Soyo-Maru in Japanese waters. II. Galatheidae. — Bull. natn. Sci. Mus., Tokyo, (A. Zool.) 8: 103–118, pls. 1, 2.
- 1982b: 1982. Galatheids and pagurids of the Palau Islands (Crustacea: Anomura). — Proc. Jap. Soc. syst. Zool., 23: 56–70.
- 1986a: Two new species of anomuran crustaceans (Decapoda: Chirostyliidae and Galatheidae) from the Andaman Sea. — J. Crust. Biol., 6: 625–632.
- 1986b: Two new anomuran Crustacea (Decapoda: Anomura) from North-West Australia. — The Beagle, 3(1): 1–5.
- 1988: Chirostyliid and galatheid crustaceans (Decapoda: Anomura) of the “Albatross” Philippine Expedition, 1907–1910. — Res. Crust., spec. no. 2: v + 203 pp.
- 1989: Anomuran crustaceans obtained by dredging from Oshima Strait, Amami-Oshima of the Ryukyu Islands. — Mem. natn. Sci. Mus., Tokyo, 22: 127–134.
- 1990: Chirostyliid and galatheid crustaceans of Madagascar (Decapoda: Anomura). — Bull. Mus. natn. Hist. nat., Paris, (4), section A, (1989) 11(4): 921–975.
- 1991a: Crustacea Decapoda: *Chirostylyus* Ortmann, 1892, and *Gastroptychus* Caullery, 1896 (Chirostyliidae) from New Caledonia. In: A. Crosnier, (ed.), Résultats des Campagnes MUSORSTOM, Volume 9. — Mém. Mus. natn. Hist. nat., Paris, Zool., 152: 463–477.
- 1991b: Crustacea Decapoda: *Alainius* new genus, *Leiogalathea* Baba, 1969, and *Phylladorhynchus* Baba, 1969 (Galatheidae) from New Caledonia. In: A. Crosnier, (ed.), Résultats des Campagnes MUSORSTOM, Volume 9. — Mém. Mus. natn. Hist. nat., Paris, Zool., 152: 479–491.
- 1993: *Anomoeomunida*, a new genus proposed for *Phylladorhynchus caribensis* Mayo, 1972 (Crustacea: Galatheidae). — Proc. biol. Soc. Wash., 106(1): 102–105.
- 1994: Galatheid crustaceans (Anomura: Galatheidae) collected by the “Cidaris I” Expedition off the Central Queensland Shelf. — Mem. Queensland Mus., 35(1): 1–21.
- 1995: A new squat lobster (Decapoda: Anomura: Galatheidae) from an active thermal vent area in the North Fiji Basin, southwestern Pacific. — Crust. Res., 24: 188–193.
- 2000: Two new species of chirostyliids (Decapoda: Anomura: Chirostyliidae) from Tasmania. — J. Crust. Biol., 20, spec. no. 2: 246–252.
- 2001: Redescriptions of two anomuran crustaceans, *Uroptychus japonicus* Ortmann, 1892 (Chirostyliidae) and *Munidopsis taurulus* Ortmann, 1892 (Galatheidae), based upon the type material. — Crust. Res., 30: 147–153.
- 2004: *Uroptychodes*, new genus of Chirostyliidae (Crustacea: Decapoda: Anomura), with description of three new species. — Sci. Mar., 68(1): 97–116.
- & D. K. Camp, 1988: Two species of galatheid crustaceans (Decapoda: Anomura) new to Florida, *Munida spinifrons* Henderson, and *Munidopsis kucki*, new species. — Proc. biol. Soc. Wash., 101(2): 414–422.
- & J. Haig, 1990: A new species of chirostyliid crustacean

- (Decapoda: Anomura) from off the west coast of North America. — Proc. biol. Soc. Wash., 103(4): 854–860.
- , K. Hayashi & M. Toriyama, 1986: Decapod Crustaceans from Continental Shelf and Slope Around Japan. Japan Fisheries Resource Conservation Association, 336 pp., Tokyo.
- & E. Macpherson, 1991: Redescription of the type material of *Munida militaris* Henderson, 1885 (Crustacea: Decapoda: Galatheidae), with the selection of a lectotype. — Proc. biol. Soc. Wash., 104(3): 538–544.
- & S.-C. Oh, 1990: *Galathea coralliophilus*, a new decapod crustacean (Anomura: Galatheidae) from Singapore, Gulf of Thailand, and West Irian. — Proc. biol. Soc. Wash., 103(2): 358–363.
- & G. C. B. Poore, 2002: *Munidopsis* (Decapoda, Anomura) from south-eastern Australia. — Crustaceana, 75(3–4): 231–252.
- & M. de Saint Laurent, 1992: Chirostyliid and galatheid crustaceans (Decapoda: Anomura) from active thermal vent areas in the southwest Pacific. — Sci. Mar., 56(4): 321–332.
- & — 1996: Crustacea Decapoda: Revision of the genus *Bathymunida* Balss, 1914, and description of six new related genera (Galatheidae). In: A. Crosnier (ed.), Résultats des Campagnes MUSORSTOM, Volume 15. — Mém. Mus. natn. Hist. nat., 168: 433–502.
- & N. M. Tirmizi, 1979: A new chirostyliid (Crustacea, Decapoda, Anomura) from deeper parts of the Japanese waters and off the east coast of Africa. — Proc. Jap. Soc. syst. Zool. 17: 52–57.
- & M. Türkay, 1992: *Munida magniantennulata*, a new deep-sea decapod crustacean from active thermal vent areas of Valu-Fa-Ridge in the Lau Basin, SW-Pacific (Anomura: Galatheidae). — Senckenbergiana marit., 22: 203–210.
- & A. B. Williams, 1998: New Galatheoidea (Crustacea, Decapoda, Anomura) from hydrothermal systems in the West Pacific Ocean: Bismarck Archipelago and Okinawa Trough. — Zoosystema, 20: 143–156.
- & H. Yu, 1987: *Munida albiapicula*, a new species of galatheid crustacean (Decapoda: Anomura) from Taiwan. — Bull. Inst. Zool., Acad. Sinica, Taipei, 26(4): 331–335.
- Bahamonde, N., 1964: Dos nuevos *Munidopsis* en aguas Chilenas. — Bol. Mus. Nac. Hist. Nat. 28: 157–170.
- , G. Henriquez, A. Zuleata, H. Bustos & R. Bahamonde, 1986: Population dynamics and fisheries of squat lobsters, family Galatheidae, in Chile. — Canad. Spec. Publ. Fish. Aquat. Sci., 92: 254–268.
- & M. T. López, 1962: Un galatheid nuevo para Chile. *Munida montemaris* n. sp. (Crustacea Decapoda, Anomura). — Rev. Chilena de Hist. nat., 55: 85–91.
- Balss, H., 1913a: Neue Galatheiden aus der Ausbeute der deutschen Tiefsee-Expedition ‘Valdivia.’ — Zool. Anz., 41(5): 221–226.
- 1913b: Ostasiatische Decapoden I. Die Galatheiden und Paguriden. In: Doflein, F., Beiträge zur Naturgeschichte Ostasiens. — Abh. math.-phys. Kl. K. Bayer. Akad. Wiss. München, 2 (suppl.) (9): 1–85, pls. 1, 2.
- 1914: Ueber einige interessante Decapoden der ‘Pola’-Expeditionen in das Rote Meer. — Sitz. Kaiserl. Acad. Wiss., math.-naturw. Kl., 1914: 133–139.
- 1915: Die Decapoden des Roten Meeres. II. Anomuren, Dromiaceen und Oxystomen. Expeditionen S.M. Schiff Pola in das Rote Meer. Nördliche und südliche Hälfte 1895/96–1897/98. Zoologische Ergebnisse XXXI. Berichte der Kommission für ozeanographische Forschungen. — Denkschr. kaiserl. Akad. Wiss. Wien, math.-naturw. Kl., 92: 1–20.
- 1916: Crustacea II: Decapoda Macrura und Anomura (ausser Fam. Paguridea). — In: Michaelsen, W., Beiträge zur Kenntniss der Meeresfauna Westafrikas, 2: 13–46.
- 1957: Decapoda. VIII. Systematik. — Bronns Klassen und Ordnungen des Tierreichs, Band 5, Abteilung 1, Buch 7, Lieferung 12: 1505–1672.
- Barnard, K.H., 1950: Descriptive catalogue of South African decapod Crustacea. — Ann. S. Afr. Mus., 38: 1–837.
- Barrois, Th., 1888: Catalogue des Crustacés marins recueillis aux Açores durant les mois d’Août et Septembre 1887. — Lille, 110 pp., 4 pls.
- Bate, S., 1859: On the importance of an examination of the structure of the integument of Crustacea in the determination of doubtful species. — Application to the genus *Galathea*, with the description of a new species of that genus. — J. Proc. Linn. Soc. London, 3: 1–4.
- Benedict, J. E., 1902: Descriptions of a new genus and forty-six new species of crustaceans of the family Galatheidae, with a list of the known marine species. — Proc. U. S. Nat. Mus. 26: 243–334.
- Birstein, J. A. & N. A. Zarenkov, 1970: On bottom decapods (Crustacea, Decapoda) of the Kurile-Kamchatka Region. In: Bogorov, V.G. (ed.), Fauna of the Kurile-Kamchatka Trench and its environment. — Mem. Inst. Ocean., Acad. Sci., U.S.S.R., 86: 420–426.
- Bonnier, J., 1888a: Sur les espèces de *Galathea* des cotes de France. — C. R. Acad. Sci., 106: 1686–1689.
- 1888b: On the species of *Galathea* found on the coasts of France. — Ann. Mag. nat. Hist., (6) 2: 123–125.
- Boone, L., 1935: Scientific results of the world cruise of the Yacht ‘Alva’ 1931, William K. Vanderbilt, commanding. Crustacea: Anomura, Macrura, Euphausiacea, Isopoda, Amphipoda and Echinodermata: Asteroidea and Echinoidea. — Bull. Vanderbilt Mar. Mus. Huntington, N.Y., 6: 1–264, 96 pls.
- 1938: Crustacea. — In: Scientific results of the world cruises of the yachts ‘Alva’ 1928–9 and ‘Alva’ 1931–1932, ‘Alva’ Mediterranean cruise 1933 and ‘Alva’ South American cruise 1935, William K. Vanderbilt, commanding. Bull. Vanderbilt Mar. Mus. Huntington, N.Y., 7: 197–281, 39 pls.
- Borradaile, L.A., 1916: Crustacea. Part I. — Decapoda. British Antarctic (Terra Nova) Expedition, 1910. — Nat. Hist. Rep. Zool., 3(2): 75–110.
- Bouvier, E. L., 1896: Sur la famille des Chirostyliidae, Ortmann, et sur la classification des Galatheoidea [Crust.]. — Bull. Soc. entom. France, 65: 307–312.
- 1922: Observations complémentaires sur les Crustacés Décapodes (Abstraction faite des Carides) provenant des Campagnes de S.A.S. le Prince de Monaco. — Rés. Camp. sci. Yacht Albert I Monaco, 62: 1–106, pls. 1–6.
- Bruun, A., 1959: General introduction to the reports and list of deep-sea stations. — Galathea Rep., 1: 7–48.
- Bull, H.O., 1937: Notes on the British species of the genus *Galathea* Fab. — Rep. Dove Mar. Lab. Armstrong Coll., (3), 4: 38–52, pls. 1–6.
- Caullery, M., 1896: Crustacés Schizopodes et Décapodes. — In: Koehler, R., Résultats scientifiques de la Campagne du ‘Caudan’ dans le Golfe de Gascogne, août-septembre, 1895. Ann. Univ. Lyons, 26: 365–419, pls. 13–17.
- Chace, F. A., Jr., 1939: Reports on the scientific results of the first Atlantis Expedition to the West Indies, etc. Preliminary descriptions of one new genus and seventeen new species of decapod and stomatopod Crustacea. — Mem. Soc. Cubana Hist. Nat., 13(1): 31–54.
- 1942: The Anomuran Crustacea. I. Galatheoidea. Reports on the scientific results of the Atlantis Expeditions to the West Indies,

- under the joint auspices of the University of Havana and Harvard University. — *Torrea*, 11: 1–106.
- Chan, T. Y., D. A. Lee & C. S. Lee, 2000: The first deep-sea hydrothermal animal reported from Taiwan: *Shinkaia crosnieri* Baba and Williams, 1998 (Crustacea: Decapoda: Galatheidae). — *Bull. mar. Sci.*, 67(2): 799–804.
- Chevaldonné, P. & K. Olu, 1996: Occurrence of anomuran crabs (Crustacea: Decapoda) in hydrothermal vent and cold-seep communities: a review. — *Proc. Biol. Soc. Wash.*, 109(2): 286–298.
- Chilton, C., 1906: Report of some Crustacea dredged off the coast of Auckland. — *Trans. Proc. Roy. Soc. N.Z. Inst.*, 38: 265–269.
- 1909: The Crustacea of the subantarctic islands of New Zealand. — *The Subantarctic Islands of New Zealand*, The Philosophical Institute of Canterbury, 2: 601–671.
- 1911: Scientific results of the New Zealand government trawling expedition, 1907. Crustacea. — *Rec. Canterbury Mus.*, 1: 285–312, pl. 58.
- Dana, J. D., 1852: Crustacea. — In: United States Exploring Expedition, During the Years 1838, 1839, 1840, 1841, 1842, Under the Command of Charles Wilkes, U.S.N., 13(1): viii + 685 pp., Philadelphia.
- 1855: Crustacea, Atlas. — In: United States Exploring Expedition, During the Years 1838, 1839, 1840, 1841, 1842, Under the Command of Charles Wilkes, U.S.N., 14: 24 pp., 96 pls., Philadelphia.
- Davie, P. J. F., 2002: Crustacea: Malacostraca: Eucarida (Part 2): Decapoda – Anomura, Brachyura. — In: Wells, A. & Houston, W. W. K. (eds.), *Zoological Catalogue of Australia*, Volume 19.3B. xiv + 641 pp., CSIRO Publishing, Melbourne.
- Doflein, F. & H. Balss, 1913: Die Galatheiden der Deutschen Tiefsee-Expedition. — *Wiss. Ergebn. Deutsch. Tiefsee-Exped. Dampfer "Valdivia"*, Jena, 20: 125–184, pls. 12–17.
- d'Udekem d'Acoz, C., 1999: Inventaire et distribution des crustacés décapodes de l'Atlantique nord-oriental, de la Méditerranée et des eaux continentales adjacentes au nord de 25°N. — *Muséum national d'Histoire naturelle*, Paris, x + 383 pp.
- Esmark, 1857: Om *Galathea tridentata*. — *Forh. skand. naturf.*, 7 møde, 1, (1856): 239–240.
- Fabricius, J.C., 1793: *Entomologia systematica emendata et aucta secundum classes, ordines, genera, species ajectis synonymis, locis, observationibus, descriptionibus*. — Volume 2, viii + 519 pages. Hafniae.
- Faxon, W., 1983: Reports on the dredging operations off the west coast of central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried on by the U.S. Fish Commission Steamer "Albatross," during 1891, Lieut. Commander Z.L. Tanner, U.S.N., commanding. VI. Preliminary descriptions of new species of Crustacea. — *Bull. Mus. Comp. Zool. Harvard Coll.* 24: 149–220.
- 1895: Reports on an exploration off the west coasts of Mexico, Central and South America, and off the Galapagos Islands, etc. XV. The stalk eyed Crustacea. — *Mem. Mus. Comp. Zool. Harvard Coll.*, 18: 1–292, pls. A–K, 1–56.
- Filhol, H., 1884: Explorations sous-marines. Voyage du Talisman. — *La Nature*, Paris 12: 119–122, 134–138, 147–151, 161–164, 182–186, 198–202, 230–234, 278–282, 326–330, 391–394.
- Frogliola, C., 1987: Redescription of *Uroptychus ensirostris* Parisi, 1917 (Decapoda, Anomura, Chirostylidae). — *Crustaceana*, 53(2): 148–151.
- & G. B. Grippa, 1986: A catalogue of the types kept in the collections of Museo Civico de Storia Naturale di Milano. VIII. Types of decapod Crustacea (Annotated catalog). — *Atti Soc. ital. Sci. nat. Museo civ. Stor. nat. Milano*, 127(3–4): 253–283.
- , M. Mura & A. Bonfitto, 2002: First record of *Munidopsis actutispina* Benedict, 1902 (Decapoda, Anomura, Galatheidae) in the Mediterranean Sea. — *Crustaceana*, 75(3–4): 375–382.
- Fujikura, K., J. Hashimoto, Y. Fujiwara & T. Okutani, 1995: Community ecology of the chemosynthetic community at off [sic] Hatsushima site, Sagami Bay, Japan. — *JAMSTEC J. Deep Sea Res.*, 11: 227–241. (Japanese with English summary)
- , — & T. Okutani, 2002: Estimated population densities of megafauna in two chemosynthesis-based communities: a cold seep in Sagami Bay and a hydrothermal vent in the Okinawa Trough. — *Benthos Res.*, 57: 21–30.
- Galil, B. S., 1999: A new species of the genus *Munida* Leach 1819 (Decapoda, Galatheidae) from Mauritius. — *Crustaceana*, 72(1): 59–62.
- & M. Goren, 1994: The deep sea Levantine fauna. — New records and rare occurrences. — *Senckenbergiana marit.*, 25(1/3): 41–52.
- Garth, J. S. & J. Haig, 1971: Decapod Crustacea (Anomura and Brachyura) of the Peru-Chile Trench. — *Anton Bruun Rept.* 6: 6.3–6.20.
- Gordon, I., 1930: On the species of the galatheid genus, *Eumunida* (Crustacea, Decapoda). — *Proc. zool. Soc. London*, (1929): 741–753.
- 1955: Crustacea Decapoda. — *Rep. Swed. Deep-Sea Exped.* 2: 237–245, pl. 1.
- Gore, R. H., 1983: Notes on rare species of *Munidopsis* (Anomura: Galatheidae) and *Ethusina* (Brachyura: Dorippidae) collected by the USNS Bartlett in the Venezuela Basin, Caribbean Sea. — *Proc. Acad. nat. Sci. Philad.* 135: 200–217.
- Grant, F. E. & A. R. McCulloch, 1906: On a collection of Crustacea from the Port Curtis district, Queensland. — *Proc. Linn. Soc. N.S.W.*, 31: 2–53, pls. 1–4.
- Haig, J., 1955: Reports of the Lund University Chile Expedition. 20. The Crustacea Anomura of Chile. — *Acta Univ. Lund. Avd.* 2 N.S. 51: 1–68.
- 1956: Notes on two anomuran crustaceans new to California waters. — *Bull. S. Calif. Acad. Sci.*, 55(2): 79–82.
- 1968: First report of the crab family Chirostylidae off California, and description of a new species of *Chirostylus*. — *Calif. Fish Game*, 54(4): 270–277.
- 1973: Galatheidea (Crustacea, Decapoda, Anomura) collected by the F.I.S. *Endeavour*. — *Rec. Austr. Mus.*, 28(14): 269–289.
- 1974: The anomuran crabs of Western Australia: their distribution in the Indian Ocean and adjacent seas. — *J. mar. biol. Assoc. India*, 14(2): 443–451.
- 1979: A new genus and species of Chirostylidae (Decapoda, Anomura, Galatheidea) from the Hawaiian Islands. — *Crustaceana*, Suppl., 5: 89–94.
- & M. K. Wicksten, 1975: First records and range extensions of crabs in California waters. — *Bull. south. Calif. Acad. Sci.*, 74(3): 100–104.
- Hansen, H. J., 1908: Crustacea Malacostraca. I. — *Dan. Ingolf Exped.* 3: 1–120, pls. 1–5.
- Hart, J. F. L., 1982: Crabs and their relatives of British Columbia. — *British Columbia Provincial Museum Handbook* 40, iii + 267 pp.
- Haswell, W. A., 1882: Catalogue of the Australian stalk and sessile-eyed Crustacea. — *Sydney*, xxiv + 324 pp., 4 pls.
- Haworth, A. H., 1825: A new binary arrangement of the macrurus

- Crustacea. — Phil. Mag. J., 65: 183–184.
- Henderson, J. R., 1885: Diagnoses of the new species of Galatheidea collected during the “Challenger” Expedition. — Ann. Mag. nat. Hist. (5) 16: 407–421.
- 1888: Report on the Anomura collected by H.M.S. Challenger during the years 1873–76. — Rept. Sci. Res. Voy. H.M.S. Challenger, Zool. 27: vi + 221 pp., 21 pls.
- 1893: A contribution to Indian carcinology. — Trans. Linn. Soc. (2-Zool.) 5: 325–458, pls. 36–40.
- Hendrickx, M. E., 1999: Checklist of anomuran crabs (Crustacea: Decapoda) from the eastern tropical Pacific. — Belg. J. Zool., 129: 363–389.
- 2000: The genus *Munida* Leach (Crustacea, Decapoda, Galatheidae) in the eastern tropical Pacific, with description of two new species. — Bull. Inst. roy. Sci. nat. Belgique, 70: 163–192.
- 2001: Occurrence of a continental slope decapod crustacean community along the edge of the minimum oxygen zone in the south eastern Gulf of California, Mexico. — Belg. J. Zool., 131 (suppl. 2): 95–109.
- 2003: The temperate species of the genus *Munida* Leach (Crustacea, Decapoda, Galatheidae) in the east Pacific, with the description of a new species and additional records for tropical-subtropical species. — Bull. Inst. roy. Sci. nat. Belgique, 73: 117–138.
- Holthuis, L. B., 1961: Report on a collection of Crustacea Decapoda from Turkey and the Balkans. — Zool. Verh. Leiden, 47: 67 pp., 2 pls.
- Holthuis, L.B. and Rosa, H., Jr., 1965: List of species of shrimps and prawns of economic value. — FAO Fisheries Technical Paper, No. 52: 1–21.
- Johnson, D. S., 1970. The Galatheidea (Crustacea Decapoda) of Singapore and adjacent waters. — Bull. natn. Mus. Singapore, 35(1): 1–44.
- Jones, D. & G. Morgan, 2002: A Field Guide to Crustaceans of Australian Waters. — Reed New Holland, Sydney, 224 pp.
- Jones, M. L., 1985: Hydrothermal vents of the eastern Pacific: an overview. — Bull. biol. Soc. Wash., No. 6: vii + 543 pp.
- Kamezaki, N., K. Nomura, T. Hamano & H. Omae, 1988: Encyclopedia of Marine Life in Okinawa, Crustacea. — Shinsei-tosho Publishing, Okinawa, 232 pp. (Japanese)
- Kato, S. & J., Okuno, 2001: Shrimps and crabs of Hachijo Island. — TBS-Britannica, Tokyo, 157 pp., with color illustrations. (Japanese)
- Kensley, B., 1968: Deep sea decapod Crustacea from west coast of Cape Point, South Africa. — Ann. S. Afr. Mus. 50: 283–323.
- 1977: The South African Museum’s Neiring Naude cruises. Part 2. Crustacea, Decapoda, Anomura and Brachyura. — Ann. S. Afr. Mus., 72: 161–188.
- 1981a: The South African Museum’s Meiring Naude cruises. Part 12. Crustacea Decapoda of the 1977, 1978, 1979 cruises. — Ann. S. Afr. Mus., 83: 49–78.
- 1981b: On the zoogeography of southern African decapod Crustacea, with a distributional checklist of the species. — Smiths. Contr. Zool., 338: iii + 64 pp.
- Khodkina, I. V., 1973: New species of the genus *Munidopsis* (Decapoda, Anomura) from the east Pacific. — Zool. Zh. 52: 1156–1167. (In Russian with English summary)
- 1975: [Decapods of the genus *Munidopsis* Whiteaves (Decapoda Anomura) from the eastern part of the Pacific Ocean]. — Komplexn. Issled. Prirody Okeana, 5: 261–271. (In Russian)
- 1981: A contribution to the fauna of the family Galatheidae (Decapoda) of the south-west Pacific. — Zool. Zh., 60: 1261–1264. (In Russian with English summary)
- 1991: Deep-sea decapods of genus *Munidopsis* (Decapoda, Anomura, Galatheidae) from the hydrothermal waters of east Pacific. — Zool. Zh., 70(8): 71–76. (In Russian with English summary)
- & Z. Duris, 1989: A new species of the genus *Munidopsis* (Crustacea: Anomura, Galatheidae) from the north-east Atlantic. — Zool. Zh., 68(8): 135–138. (In Russian with English summary)
- Kim, H.S., 1972: A new species of family Chirostylidae (Crustacea: Anomura) from Jeju Island, Korea. — Korean J. Zool., 15(2): 53–56.
- 1973: Illustrated Encyclopedia of Fauna and Flora of Korea, Vol. 14, Anomura and Brachyura. — Seoul, 694 pp.
- & B. L. Choe, 1976: A report on four unrecorded anomuran species (Crustacea, Decapoda) from Korea. — Korean J. Zool., 19(1): 43–49.
- Komai, T., S. Ohtsuka, K. Nakaguchi & A. Go, 2002: Decapod crustaceans collected from the southern part of the Sea of Japan in 2000–2001 using TRV Toyoshio-maru. — Nat. Hist. Res., 7(1): 19–73.
- Laird, C., E.G. Lewis, & P.A. Haefner, Jr., 1976: Occurrence of two galatheid crustaceans, *Munida forceps* and *Munidopsis bermudezi*, in the Chesapeake Bight of the western north Atlantic Ocean. — Fish. Bull., 74(2): 462–463.
- Laurie, R. D., 1926: Anomura collected by Mr. J. Stanley Gardiner in the western Indian Ocean in H.M.S. “Sealark.” — In: Reports of the Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the leadership of Mr. J. Stanley Gardiner, M.A. Vol. 8, No. VI. Trans. Linn. Soc. London, (2-Zool.) 19: 121–167, pls. 8, 9.
- Leach, W. E., 1820: Galatédadées. — Dictionnaire des Sciences Naturelles, Paris, 18: 48–56.
- Lewinsohn, C., 1969: Die Anomuren des Roten Meeres (Crustacea Decapoda: Paguridea, Galatheidea, Hippidea). — Zool. Verh. Leiden, 104: 213 pp., 2 pls.
- & L. B. Holthuis, 1986: The Crustacea Decapoda of Cyprus. — Zool. Verh. Leiden, No. 230: 64 pp.
- Lin, C., T. Chan, & K. H. Chu., 2004: A new squat lobster of the genus *Raymunida* (Decapoda: Galatheidae) from Taiwan. — J. Crust. Biol., 24(1): 149–156.
- Lloyd, R.E., 1907: Contributions to the fauna of the Arabian Sea, with descriptions of new fishes and Crustacea. — Rec. Ind. Mus., 1: 1–12.
- Lovén, S., 1852: De svenska arterna af slägtet *Galathea*. [The Swedish species of the genus *Galathea*]. — Oefv. kungl. Vetensk.-Akad. Förhandl., 9: 20–23.
- Luke, S. R., 1977: Catalog of the benthic invertebrate collections. I. Decapod Crustacea and Stomatopoda. — Scripps Institution of Oceanography Reference No. 77-9: 1–72.
- Lützen, J., 1985: Rhizocephala (Crustacea: Cirripedia) from the deep sea. — Galathea Rep., 16: 99–112.
- MacGilchrist, A. C., 1905: Natural history notes from the R.I.M.S. “Investigator,” Capt. T.H. Heming, R.N. (retired), commanding. — Series III., No. 6. An account of the new and some of the rarer decapod Crustacea obtained during the surveying seasons 1901–1904. — Ann. Mag. nat. Hist. (7) 15: 233–268.
- Macpherson, E. 1991: A new species of the genus *Munida* Leach, 1819 (Crustacea, Decapoda, Anomura, Galatheidae) from the Western Indian Ocean, with the redescription of *M. africana* Doflein and Balss, 1913. — Sci. Mar., 55: 551–556.
- 1993a: Crustacea Decapoda: Species of the genus *Munida* Leach, 1820 (Galatheidae) collected during the MUSORSTOM and

- CORINDON cruises in the Philippines and Indonesia. — In: A. Crosnier, (ed.), Résultats des Campagnes MUSORSTOM, Volume 10. Mém. Mus. natn. Hist. nat., Paris, Zool., 156: 421–442.
- 1993b: Crustacea Decapoda: Species of the genus *Paramunida* Baba, 1988 (Galatheidae) from the Philippines, Indonesia and New Caledonia. — In: A. Crosnier, (ed.), Résultats des Campagnes MUSORSTOM, Volume 10. Mém. Mus. natn. Hist. nat., Paris, Zool., 156: 443–473.
- 1994: Crustacea Decapoda: Studies on the genus *Munida* Leach, 1820 (Galatheidae) in New Caledonian and adjacent waters with descriptions of 56 new species. — In: A. Crosnier, (ed.), Résultats des Campagnes MUSORSTOM, Volume 12 Mém. Mus. natn. Hist. nat., Paris, Zool., 161: 421–569.
- 1996a: Crustacea Decapoda: Species of the genera *Munida* Leach, 1820 and *Paramunida* Baba, 1988 (Galatheidae) from the seas around the Wallis and Futuna Islands. — In: A. Crosnier (ed.), Résultats des Campagnes MUSORSTOM, Volume 15. Mém. Mus. natn. Hist. nat., Paris, 168: 387–421.
- 1996b: Crustacea Decapoda: New records of species of the genera *Munida* Leach, 1820 and *Paramunida* Baba, 1988 (Galatheidae) from New Caledonia, with the description of three new species. — In: A. Crosnier (ed.), Résultats des Campagnes MUSORSTOM, Volume 15. Mém. Mus. natn. Hist. nat., Paris, 168: 423–431.
- 1997: Crustacea Decapoda: Species of the genera *Agononida* Baba & de Saint Laurent, 1996 and *Munida* Leach, 1820 (Galatheidae) from the KARUBAR Cruise. — In: A. Crosnier & P. Bouchet (eds.), Résultats des Campagnes MUSORSTOM, Volume 16. Mém. Mus. natn. Hist. nat., Paris, 172: 597–612.
- 1998: A new genus of Galatheidae (Crustacea, Anomura) from the Western Pacific Ocean. — *Zoosystema*, 20(2): 351–355.
- 1999a: Crustacea Decapoda: Species of the genera *Agononida* Baba & de Saint Laurent, 1996 and *Munida* Leach, 1820 (Galatheidae) collected during the MUSORSTOM 8 cruise in Vanuatu. — In: A. Crosnier (ed.), Résultats des Campagnes MUSORSTOM, Volume 20. Mém. Mus. natn. Hist. nat., Paris, 180: 407–426.
- 1999b: Three new species of the genus *Munida* Leach, 1820 (Decapoda, Galatheidae) from the Seychelles Islands (Indian Ocean). — *Zoosystema*, 21(3): 473–482.
- 2000: Crustacea Decapoda: Species of the genera *Crosnierita* Macpherson, 1998, *Munida* Leach, 1820, and *Paramunida* Baba, 1988 (Galatheidae) collected during the MUSORSTOM 9 cruise to the Marquesas Islands. — In: A. Crosnier (ed.), Résultats des Campagnes MUSORSTOM, Volume 21. Mém. Mus. natn. Hist. nat., Paris, 184: 415–423.
- 2004: Species of the genus *Munida* Leach, 1820 and related genera from Fiji and Tonga (Crustacea: Decapoda: Galatheidae). — In: Marshall, B. & B. Richer de Forges (eds), Tropical Deep-Sea Benthos, volume 23. Mém. Mus. natl. Hist. nat., 191: 231–292.
- & K. Baba, 1993: Crustacea Decapoda: *Munida japonica* Stimpson, 1858, and related species (Galatheidae). — In: A. Crosnier, (ed.), Résultats des Campagnes MUSORSTOM, Volume 10. Mém. Mus. natn. Hist. nat., Paris, Zool., 157: 381–420.
- & A. Machordom, 2000. *Raymunida*, new genus (Decapoda: Anomura: Galatheidae) from the Indian and Pacific Oceans. — *J. Crust. Biol.*, 20, spec. no. 2: 253–258.
- & — 2001: Phylogenetic relationships of species of *Raymunida* (Decapoda: Galatheidae) based on morphology and mitochondrial cytochrome oxidase sequences, with the recognition of four new species. — *J. Crust. Biol.*, 21(3): 696–714.
- & M. de Saint Laurent, 1991: Galatheid crustaceans of the genus *Munida* Leach, 1818, from French Polynesia. — *Bull. Mus. natn. Hist. nat.*, Paris, (4), 13, sect. A (3–4): 373–422.
- & — 2002: On the genus *Munida* Leach 1820 (Decapoda, Galatheidae) from the western and southern Indian Ocean, with the description of four new species. — *Crustaceana*, 75(3–4): 465–484.
- Makarov, V.V., 1938: Crustacés. Decapodes anomures. — In: Faune de l'U.S.S.R., No. 16: x + 324 pp., 5 pls. Moscow and Leningrad. (Original in Russian. Printed 1962, with different pagination, by the Israel Program for Scientific Translations, Jerusalem)
- Man, J. G. de, 1888: Bericht ueber die von Herrn Dr. J. Brock im indischen Archipel gesammelten Decapoden und Stomatopoden. — *Arch. Naturges.*, Berlin, 53: 215–600, pls. 7–22a.
- 1902: Die von Herrn Professor Kükenthal im Indischen Archipel gesammelten Dekapoden und Stomatopoden. — *Abh. Senckenberg. Naturf. Ges.*, 25: 467–929, pls. 19–27.
- Martin, J. W. & G. E. Davis, 2001: An Updated Classification of the Recent Crustacea. — Natural History Museum of Los Angeles County, Contributions in Science, No. 39: vii + 124.
- Mayo, B. S., 1972: Three new species of the family Galatheidae (Crustacea, Anomura) from the Western Atlantic. — *Bull. mar. Sci.*, 22(2): 522–535.
- McArdle, A. F., 1901: Natural history notes from the R.I.M.S. Ship Investigator. Series III, No. 5. An account of the trawling operations during the surveying-season of 1900–1901. — *Ann. Mag. nat. Hist.* (7) 8: 517–526.
- McCauley, J. E., 1972: A preliminary checklist of selected groups of invertebrates from otter-trawl and dredge collections off Oregon. — Pp. 409–443 in: A. T. Pruter & D. L. Alverson (eds.), The Columbia River Estuary and Adjacent Ocean Waters. Bioenvironmental Studies. University of Washington Press, Seattle.
- McNeill, F.A., 1926: The biology of North-West Islet, Capricorn Group. — *Aust. Zool.*, 4(5): 299–318, pl. 41.
- Melin, G., 1939: Paguriden und Galatheiden von Prof. Dr. Sixten Bocks Expedition nach den Bonin-Inseln 1914. — *Kungl. Sv. Vetensk. Handl.*, (3), 18(2): 1–119.
- Melo, G. A. S. de, 1999: Manual de identificação dos Crustacea Decapoda do litoral Brasileiro: Anomura, Thalassinidea, Palinuridea, Astacidea. — Sao Paulo, Plêiade/FAPESP, 551 pp.
- Melo-Filho, G. A. S. de, 1996: Descrição de *Munida victoria* sp. n. e comparação com *M. microphthalma* A. Milne-Edwards, 1880, em sua primeira ocorrência na costa brasileira (Crustacea: Decapoda: Galatheidae). — *Papéis Avuls Zool.*, Sao Paulo, 39(14): 271–280.
- & G. A. S. de Melo, 1992a: Designation of lectotypes for the species of *Munida* (Crustacea: Anomura: Galatheidae) collected by the U.S. coast survey steamer Blake (1877–1879) and the description of a new species. — *Proc. biol. Soc. Wash.*, 105(3): 512–520.
- & — 1992b: Reexamination of the material of *Munida* Leach (Crustacea: Anomura: Galatheidae) collected by the H.M.S. Challenger (1872–1876) along the Brazilian coast. — *Proc. biol. Soc. Wash.*, 105(4): 760–774.
- & — 1994: Three new species of *Munida* (Crustacea: Anomura: Galatheidae) from the Brazilian coast. — *Papéis Avuls Zool.*, Sao Paulo, 39(5): 49–60.
- & — 2001: Espécies do gênero *Munida* Leach (Crustacea,

- Decapoda, Galatheidae), distribuídas na costa do Brasil. — *Revta bras. Zool.* 18(4): 1135–1176.
- Miers, E.J., 1879: On a collection of Crustacea made by Capt. H.C. St. John, R.N., in the Corean and Japanese seas. Part 1. Podophthalmia. — *Proc. zool. Soc. London*, (1879): 18–59, pls. 1–3.
- 1884: Crustacea. — In: Report on the Zoological Collections made in the Indo-Pacific Ocean During the Voyage of H.M.S. Alert 1881–2: 178–322, 513–575, plates 18–34, 46–52. London: British Museum.
- Milne Edwards, A., 1880: Reports on the results of dredging under the supervision of Alexander Agassiz, in the Gulf of Mexico and in the Caribbean Sea, etc. VIII. Etudes préliminaires sur les Crustacés. — *Bull. Mus. Comp. Zool. Harvard Coll.* 8: 1–68, pls. 1, 2.
- 1881: Compte rendu sommaire d'une exploration zoologique faite dans l'Atlantique, a bord du navire le Travailleur. — *C. R. Acad. Sci. Paris*, 93: 931–936.
- 1882: Summary report upon a zoological exploration made in the Mediterranean and the Atlantic on board the 'Travailleur.' — *Ann. Mag. nat. Hist.*, (5) 9: 37–46.
- & E. L. Bouvier, 1894: Considerations générales sur la famille des Galathéidés. — *Ann. Sci. nat. Zool.*, (7) 16: 191–327.
- & — 1897: XXXV. Description des Crustacés de la famille des Galathéidés recueillis pendant l'Expédition. In: Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico (1877–78), in the Caribbean Sea (1878–79) and along the Atlantic coast of the United States (1880), etc. — *Mem. Mus. Comp. Zool. Harvard Coll.*, 19: 1–141, pls. 1–12.
- & — 1899: Crustacés Décapodes provenant des campagnes de l'Hirondelle (supplément) et de la Princesse-Alice (1891–1897). — *Rés. Camp. sci. Monaco*, 13: 1–106.
- & — 1900: Crustacés Décapodes. Première partie. Brachyures et Anomoures. — *Expéditions scientifiques du Travailleur et du Talisman*, Paris, 396 pp., 32 pls.
- Milne Edwards, H., 1837: Histoire naturelle des Crustacés, comprenant l'anatomie, la physiologie et la classification de ces animaux. — Volume 2: 532 pp., 32 atlas, 42 pls., Paris.
- Minemizu, R., 2000: Marine Decapod and Stomatopod Crustaceans Mainly from Japan. — *Bun-ichi-sogo-shuppan*, Tokyo, 344 pp., with figs.
- Miyake, S., 1938: Galatheids obtained from Oshima, Prov. Kii. — *Annot. Zool. Japon.*, 17(1): 37–42, pl. 2.
- 1953: On three new species of *Galathea* from the Western Pacific. — *J. Fac. Agr., Kyushu Univ.*, 10: 199–208.
- 1960: Decapod Crustacea, Anomura. — In: Okada, Y.K. and Uchida, T., *Encyclopedia Zoologica Illustrated in Colours*, 4: 89–97, pls. 44–48, Hokuryukan, Tokyo. (Japanese)
- 1961: Three new species of Anomura from Japan (Decapoda, Crustacea). — *J. Fac. Agr. Kyushu Univ.*, 11(3): 237–247.
- 1965: Crustacea, Anomura. — In: Okada, Y.K., S. Uchida and T. Uchida, *New Illustrated Encyclopedia of the Fauna of Japan*, 2: 630–652, Hokuryukan, Tokyo. (Japanese)
- 1982: Japanese Crustacean Decapods and Stomatopods in Color. Vol. 1. Macrura, Anomura and Stomatopoda. — First edition, Hoikusha, Osaka, vii + 261 pp., 56 pls. [Second printing (1991) includes name changes of some species] (Japanese)
- & K. Baba, 1964: Two new species of *Galathea* from Japan and the East China Sea. — *J. Fac. Agr. Kyushu Univ.*, 13(1): 205–211.
- & — 1965: Some galatheids obtained from the Bonin Islands (Crustacea, Anomura). — *J. Fac. Agr. Kyushu Univ.*, 13(3): 585–593.
- & — 1966a: Descriptions of galatheids collected from coral reefs of the Ryukyu Islands (Crustacea, Anomura). — *J. Fac. Agr. Kyushu Univ.*, 14(1): 57–79.
- & — 1966b: Two new species of the family Galatheidae from the Tosa Bay, Japan. — *J. Fac. Agr. Kyushu Univ.*, 14(1): 81–88.
- & — 1967a: Descriptions of new species of galatheids from the Western Pacific. — *J. Fac. Agr. Kyushu Univ.*, 14(2): 203–212.
- & — 1967b: New and rare species of the family Galatheidae (Crustacea, Anomura) from the Sagami Bay in the collection of the Biological Laboratory, Imperial Household, Japan. — *J. Fac. Agr. Kyushu Univ.*, 14(2): 213–224.
- & — 1967c: Galatheids of the East China Sea (Chirostylidae and Galatheidae, Decapoda, Crustacea). — *J. Fac. Agr., Kyushu Univ.*, 14(2): 225–246.
- & — 1968: On the generic characters of *Chirostylus*, with description of two Japanese species (Crustacea, Anomura). — *J. Fac. Agr., Kyushu Univ.*, 14(3): 279–387.
- & — 1970: The Crustacea Galatheidae from the tropical-subtropical region of West Africa, with a list of the known species. — *Atlantide Rep.*, 11: 61–97.
- & K. Nakawaza, 1947: Crustacea, Anomura. — *Illustrated Encyclopedia of the Fauna of Japan (exclusive of insects)*, revised edition, pp. 731–750, figs. 2115–2171, Hokuryukan, Tokyo. (Japanese)
- Mortensen, T., 1923: The Danish Expedition to the Kei Islands 1922. — *Vidensk. Meddr. Dansk naturh. Foren.*, 76: 55–99, pls. 1–3.
- Nakazawa, K., 1927: Crustacea Decapoda. — In: Uchida, S. *et al.*, *Figuraro de Japanaj Bestoj*, pp. 992–1124, figs. 1910–2166, Hokuryukan, Tokyo.
- & S. Miyake, 1947: Crustacea, Anomura. — In: Uchida, S., *Illustrated Encyclopedia of the Fauna of Japan (Exclusive of Insects)*, Revised Edition, pp. 731–750, figs. 2115–2171, Hokuryukan, Tokyo.
- Nunes-Ruivo, L., 1961: Crustacea Decapoda (I—Galathea et Brachyura). — *Rés. sci. Camp. N.R.P. "FAIAL"* (1957), No. 4: 1–36, 2 pls.
- Olu, K., A. Duperret, M. Sibuet, J.-P. Foucher, & A. Fiala-Médioni, 1996: Structure and distribution of cold seep communities along the Peruvian active margin: relationship to geological and fluid patterns. — *Mar. Ecol. Prog. Ser.*, 132: 109–125.
- Ortmann, A., 1892: Die Decapoden-Krebse des Strassburger Museums IV. Die Abtheilungen Galatheaidea und Paguridea. — *Zool. Jahrb. Syst.* 6: 241–326, pls. 11, 12.
- 1894: Crustaceen. — In: Semon, R., *Zoologische Forschungsreisen in Australien und dem malayischen Archipel. Denkschr. med.-naturw. Gesel. Jena*, 8: 3–80, pls. 1–3.
- Osawa, M. & K. Nishikiori, 1998: A new species of the genus *Chirostylus* Ortmann, 1892 (Crustacea: Decapoda: Anomura: Chirostylidae) from the Ogasawara Islands, southern Japan. — *Proc. biol. Soc. Wash.*, 111(2): 382–388.
- & J. Okuno, 2002: Shallow-water species of the genus *Munida* (Crustacea, Decapoda, Anomura, Galatheidae) from the Ryukyu and Ogasawara Islands, southern Japan. — *Bull. natn. Sci. Mus., Tokyo*, 28(3): 129–141.
- Parisi, B., 1917: I Decapodi Giapponesi de Museo de Milano, V. Galatheaidea e Reptantia. — *Atti Soc. Ital. Sci. Nat.*, 56: 1–24.
- Pequegnat, L. H. & W. E. Pequegnat, 1970: Deep-sea anomurans of superfamily Galatheoidea with description of three new species. Part 5 in Contributions on the Biology of the Gulf of Mexico. — *Texas A&M Univ. oceanogr. Stud.*, 1: 125–170.

- & — 1971: New species and new records of *Munidopsis* (Decapoda: Galatheidae) from the Gulf of Mexico and Caribbean Sea. — Texas A&M Univ. oceanogr. Stud., 1 (supplement): 1–24.
- & — 1973: *Munidopsis albatrossae*, a new species of deep-sea Galatheidae (Decapoda, Anomura) from the eastern Pacific Ocean. — Crustaceana, 24: 163–168.
- & A. B. Williams, 1989: Two new species of *Munidopsis* (Decapoda: Anomura: Galatheidae) from the western Atlantic Ocean. — J. Crust. Biol., 15(4): 786–792.
- Pohle, G. & E. Macpherson, 1995: *Gastroptychus formosus* (Filhol, 1884) (Decapoda, Anomura, Chirostylidae): taxonomic history and first record from the western Atlantic. — Crustaceana, 68(4): 484–488.
- Pomel, A., 1847: Note sur des animaux fossiles découverts dans le département de l'Allier (addition au mémoire sur la géologie paléontologique, etc. — Bull. Soc. Géol. France, (2) 4: 378–385.
- Porter, C. E., 1903: Carcinología Chilena. Descripción de un nuevo Galatéido. — Rev. Chilena Hist. nat., 7: 274–277, pl. 17.
- Poupin, J., 1996: Atlas des Crustacés marins profonds de Polynésie française récoltes du navire MARARA (1986/1996). — Service Mixte de Surveillance radiologique et biologique, v + 59 pp., Montlhéry.
- Rathbun, M.J., 1907: South American Crustacea. — Rev. Chilena Hist nat., 11: 45–50, pls. 2, 3.
- 1910: The stalk-eyed Crustacea of Peru and the adjacent coast. — Proc. U. S. Nat. Mus., 38: 531–620, pls. 36–56.
- Retamal, M. A., 1981: Catalogo ilustrado de los Crustaceos Decapodos de Chile. — Gayana, Zool., 44: 1–110.
- Rice, A. L. & M. de Saint Laurent, 1986: The nomenclature and diagnostic characters of four north-eastern Atlantic species of the genus *Munida* Leach: *M. rugosa* (Fabricius), *M. tenuimana* G.O. Sars, *M. intermedia* A. Milne Edwards and Bouvier, and *M. sarsi* Huus (Crustacea, Decapoda, Galatheidae). — J. nat. Hist., 20: 143–163.
- & J. E. Miller, 1991: Chirostylid and galatheid crustaceans associates of coelenterates and echinoderms collected from the *Johnson-Sea-Link* submersible, including a new species of *Gastroptychus*. — Proc. biol. Soc. Wash., 104 (2): 299–308.
- Saint Laurent, M. de, 1985: Remarques sur la distribution des Crustacés Décapodes. — Pp. 469–478 in: Laubier, L. and C. Monniot (eds.), Peuplements profonds du Golf de Gascogne campagnes biogas, Institut Français de Recherche pour l'Exploitation de la Mer, iii + 629 pp.
- & E. Macpherson, 1988: *Munida benguela*, espèce nouvelle d'Afrique du Sud. Comparaison avec *Munida sanctipauli* Henderson, 1885 (Crustacea: Decapoda: Galatheidae). — Bull. Mus. natn. Hist. nat., Paris, Zool., ser. 4, 10(1): 105–115.
- & — 1990a: Crustacea Decapoda: le genre *Eumunida* Smith, 1883 (Chirostylidae) dans les eaux néocalédoniennes. — In: A. Crosnier (ed.), Résultats des campagnes MUSORSTOM, Volume 6. Mém. Mus. natn. Hist. nat., Paris, (A), 145: 227–288.
- & — 1990b: Les espèces atlantiques du genre *Eumunida* Smith, 1883 (Crustacea Decapoda Chirostylidae). — J. nat. Hist., 24: 647–666.
- & J. Poupin, 1996: Crustacea, Anomura: Les espèces indo-ouest pacifiques du genre *Eumunida* Smith, 1880 (Chirostylidae). Description de six espèces nouvelles. — In: A. Crosnier (ed.), Résultats des Campagnes MUSORSTOM. Volume 15. Mém. Mus. natn. Hist. nat., Paris, 168: 337–385.
- Samouelle, G., 1819: The Entomologist's Useful Compendium; or an Introduction to the Knowledge of British Insects. — Thomas Boys, London, 496 pp.
- Samuelsen, T.J., 1972. Larvae of *Munidopsis tridentata* (Esmark) (Decapoda, Anomura) reared in the laboratory. — Sarsia, 48: 91–98.
- Schmitt, W. L., 1921: The marine decapod Crustacea of California with special reference to the decapod Crustacea collected by the United States Bureau of Fisheries Steamer Albatross in connection with the biological survey of San Francisco Bay during the years 1912–1913. — Univ. Calif. Publ. Zool., 23: 1–359, pls. 1–50.
- Segonzac, M., 1992: Les peuplements associés à l'hydrothermalisme océanique du Snake Pit (dorsale médio-atlantique; 23°N, 3480 m): composition et microdistribution de la mégafaune. — C. R. Acad. Sci. Paris, ser. 3, 314: 593–600.
- Selbie, C. M., 1914: The Decapoda Reptantia of the coasts of Ireland. Part 1. Palinura, Astacura and Anomura (except Paguridea). — Fish. Ireland, Sci. Invest. 1: 1–116, pls. 1–15.
- Sivertsen, E. & L. B. Holthuis, 1956: Crustacea Decapoda (The Penaeidea and Stenopodidea excepted). — Rept. Sci. Res. "Michael Sars" N. Atl. Deep-sea Exped. 5: 1–54, pls. 1–4.
- Smith, G. & W. F. R. Weldon, 1904: Crustacea. — In: Harmer, S. F. and A. E. Shipley, The Cambridge Natural History, 4: xi–xviii, 1–217. Macmillan and Co.
- Smith, S. I., 1883: Preliminary report on the Brachyura and Anomura dredged in deep water off the south coast of New England by the United States Fish Commission in 1880, 1881, and 1882. — Proc. U. S. Nat. Mus., 6: 1–57, pls. 1–6.
- 1884: Report on the decapod Crustacea of the "Albatross" dredgings off the east coast of the United States in 1883. — U. S. Comm. Fish. Fish., Rep. Comm. 10: 345–426, pls. 1–10.
- 1885: On some new or little known decapod Crustacea, from recent fish commission dredging off the east coast of the United States. — Proc. U.S. Nat. Mus., 7: 493–511.
- Stebbing, T. R. R., 1908: South African Crustacea (Part IV). — Ann. S. Afr. Mus. 6: 1–96, pls. 1–15.
- 1910: General catalogue of South African Crustacea (Part V of S.A. Crustacea, for the marine investigations in South Africa). — Ann. S. Afr. Mus. 6: 281–599, pls. 15–22.
- Stimpson, W., 1858: Prodromus descriptionis animalium evertibratorum, quae in Expeditione ad Oceanum Pacificum Septentrionalem a Republica Federata missa, Cadwaladaro Ringgold et Johanne Rodgers Ducibus, observavit et descripsit. Pars VII. Crustacea Anomura. — Proc. Acad. nat. Sci. Philad., 10: 225–252.
- 1860: Notes on North American Crustacea, in the Museum of the Smithsonian Institution, No. II. — Ann. Lyceum nat. Hist. N. Y., 7: 177–246.
- 1907: Report on the Crustacea (Brachyura and Anomura) collected by the North Pacific Exploring Expedition, 1853–1856. — Smiths. Misc. Coll., 49: 240 pp., 26 pls.
- Takeda, M., 1982: Keys to the Japanese and Foreign Crustaceans Fully Illustrated in Colors. — Hokuryukan, Tokyo, 284 pp.
- 1983: Crustaceans. — Pp. 19–180 in: Takeda, M. & Okutani, T. (eds). Crustaceans and Molluscs Trawled off Suriname and French Guiana. Tokyo: Japan Marine Fishery Resource Research Center, 354 pp.
- Tavares, M. & P. Campinho, 1998a: Three new records of deep-sea squat lobsters of the genus *Munidopsis* Whiteaves from the southwestern Atlantic Ocean (Decapoda: Galatheidae). — Crust. Res., 27: 88–100.
- & — 1998b: *Munidopsis reynoldsi* (A. Milne Edwards, 1880) (Crustacea, Decapoda, Galatheidae): lectotype designation and

- redescription. — *Zoosystema*, 20(2): 411–417.
- Thompson, G. M., 1899: A revision of the Crustacea Anomura of New Zealand. — *Trans. Proc. N.Z. Inst.*, 31: 169–197, pls. 20, 21.
- Tiefenbacher, L., 2001: Recent samples of mainly rare decapod Crustacea taken from the deep-sea floor of the southern West Europe Basin. — *Hydrobiologia*, 449: 59–70.
- Tirmizi, N. M., 1964: Crustacea: Chirostylidae (Galatheida). — *Sci. Rept. John Murray Exp.* 10: 385–415.
- 1966: Crustacea: Galatheidae. — *Sci. Rept. John Murray Exped.* 11: 167–234.
- 1980: An Indian Ocean record for *Sadayoshia acroporae* Baba (Decapoda, Anomura). — *Crustaceana*, 38(1): 108–110.
- & W. Javed, 1976: A new species of *Munida* from the Indian Ocean with a redescription of a syntype of *Munida spinulifera* Miers, 1884 (Decapoda, Galatheida). — *Crustaceana*, 31(1): 81–89.
- & — 1980: *Nanogalatea raymondi*, a new genus and species of Galatheidae (Decapoda, Anomura) from the Bay of Bengal. — *Crustaceana*, 38(2): 127–130.
- & — 1993: Indian Ocean galatheids (Crustacea: Anomura). — University Grants Commission, Islamabad, Pakistan, iv + 147 pp.
- & B. Khan, 1979: Two species of *Chirostylus* from the Indian Ocean with observations on the generic characters (Decapoda, Chirostylidae). — *Crustaceana*, Suppl. 5: 77–88.
- Titgen, R. H., 1988: New decapod records from the Hawaiian Islands (Crustacea Decapoda). — *Pacif. Sci.*, 41(1–4) (1987): 141–147.
- Türkay, M., 1968: Decapoden von den Margarita-Inseln (Venezuela) (Crustacea). — *Senckenbergiana biol.*, 49(3/4): 249–257.
- 1975: Decapoda Reptantia aus den Iberischen Tiefseebecken Auswertung der Fahrten 3(1966) und 15 (1968) von F.S. "Meteor." — "Meteor" Forschungsergeb., Reihe D, 20: 66–70.
- 1976: Decapoda Reptantia von der portugiesischen und marokkanischen Küste. Auswertung der Fahrten 8, 9c (1967), 19 (1970), 23 (1971) und 36 (1975) von F.S. "Meteor." — "Meteor" Forschungsergeb., Reihe D, 23: 23–44.
- 1986: Crustacea Decapoda Reptantia der Tiefsee des Roten Meeres. — *Senckenbergiana marit.*, 18: 123–185.
- Utinomi, H., 1956: Coloured Illustrations of Seashore Animals of Japan. — Hoikusha, Osaka, xvii + 168 pp., 64 + XII pls.
- Van Dam, A. J., 1933: Die Decapoden der Siboga-Expedition. VIII. Galatheida: Chirostylidae. — *Siboga-Exped.*, 39a7: 46 pp.
- 1937: Einige neue Fundorte von Chirostylidae. — *Zool. Anz.*, 120(5/6): 99–103.
- 1938: Die Gattung *Bathymunida* Balss. — *Zool. Anz.*, 121: 194–202.
- 1939: Ueber einige *Uroptychus*-Arten des Museums zu Kopenhagen. — *Bijdr. Dierk.* 27: 392–407.
- 1940: Anomura, gesammelt vom Dampfer "Gier" in der Java-See. — *Zool. Anz.* 129: 95–104.
- Van Dover, C. L., J. R. Factor, A. B. Williams & C. J. Berg, Jr., 1985: Reproductive patterns of decapod crustaceans from hydrothermal vents. — In: Jones, M. L. (ed.), *Hydrothermal vents of the eastern Pacific: an overview*. *Bull. biol. Soc. Wash.*, No. 6: 223–227.
- Watabe, H., 2000: Decapod fauna of the hydrothermally active and adjacent fields on the Hatoma Knoll, southern Japan. — *JAMSTEC. J. Deep Sea Res.*, 17: 29–34. (Japanese with English summary)
- Wenner, E. L., 1982: Notes on the distribution and biology of Galatheidae and Chirostylidae (Decapoda: Anomura) from the Middle Atlantic Bight. — *J. Crust. Biol.* 2: 360–377.
- Whiteaves, J. F., 1874: On recent deep-sea dredging operations in the Gulf of St. Lawrence. — *Amer. J. Sci.*, series 3, 7: 210–219.
- Wicksten, M., 1982: Crustaceans from baited traps and gill nets off southern California. — *Calif. Fish Game*, 67(4): 244–248.
- 1987: Range extensions of offshore decapod crustaceans from California and western Mexico. — *Calif. Fish Game*, 73(1): 54–56.
- 1989: Ranges of offshore decapod crustaceans in the eastern Pacific Ocean. — *Trans. San Diego Soc. nat. Hist.*, 21(19): 291–316.
- Williams, A. B., 1965: Marine decapod crustaceans of the Carolinas. — *Fish. Bull.*, 65(1): xi + 298 pp.
- 1984: Shrimps, lobsters, and crabs of the Atlantic coast of the eastern United States, Maine to Florida. — *Smithsonian Institution Press*, xvii + 550 pp.
- 1988a: Notes on decapod and euphausiid crustaceans, continental margin, western Atlantic, Georges Bank to Western Florida, USA. — *Fish. Bull.*, 86(1): 67–76.
- 1988b: New marine decapod crustaceans from waters influenced by hydrothermal discharge, brine, and hydrocarbon seepage. — *Fish. Bull.*, 86(2): 263–287.
- & K. Baba, 1989: New squat lobsters (Galatheidae) from the Pacific Ocean: Mariana Back Arc Basin, East Pacific Rise, and Cascadia Basin. — *Fish. Bull.*, 87(4): 899–910.
- & C. L. Van Dover, 1983: A new species of *Munidopsis* from submarine thermal vents of the East Pacific Rise at 21°N (Anomura: Galatheidae). — *Proc. biol. Soc. Wash.*, 96(3): 481–488.
- Williams, B. G., 1973: The effect of the environment on the morphology of *Munida gregaria* (Fabricius) (Decapoda, Anomura). — *Crustaceana*, 24: 197–210, pl. 1.
- Wolff, T., 1961: Animal life from a single abyssal trawling. — *Galathea Rep.*, 5: 129–162.
- 1964: The Galathea Expedition 1950–52. List of benthic stations from 0–400 metres, near-surface stations, and land stations. — *Vidensk. Meddr. Dansk naturh. Foren.*, 127: 195–258.
- 1979: Macrofaunal utilization of plant remains in the deep sea. — *Sarsia*, 64: 117–136.
- Wood-Mason, J. & A. Alcock, 1891: Natural history notes from H.M. Indian Marine Survey Steamer "Investigator," commander R.F. Hoskyn, R.N., commanding. — No. 21. Note on the results of the last season's deep-sea dredging. — *Ann. Mag. nat. Hist.*, (6) 7: 186–202.
- Wu, M.-F. & T.-Y. Chan, 2000: A new squat lobster of the genus *Munidopsis* Whiteaves, 1874 (Crustacea: Decapoda: Galatheidae) from Taiwan. — *Proc. biol. Soc. Wash.*, 113(1): 24–29.
- , — & H.-P. Yu, 1997: On the Chirostylidae and Galatheidae (Crustacea: Decapoda: Galatheida) of Taiwan. — *Ann. Taiwan Mus.*, 40: 75–153.
- Yanagita, I., 1942: Description of a new species of *Munidopsis* (Anomuran Crustacea) from Enshyunada, Japan. — *Bull. biogeogr. Soc. Japan* 12: 93–95.
- 1943: Revision of *Munida*, a genus of decapod crustaceans found in Japanese waters. — *Bull. biogeogr. Soc. Japan* 13: 13–32.
- Yokoya, Y., 1933: On the distribution of decapod crustaceans inhabiting the continental shelf around Japan, chiefly based upon the materials collected by S.S. Soyo-Maru during the years 1923–30. — *J. Coll. Agr. Tokyo imp. Univ.* 12: 1–226.

- Zarenkov, N. A. & I. V. Khodkina, 1981: Benthos of the submarine mountains Marcus-Necker and adjacent Pacific regions. — [Acad. Sci. USSR, Inst. Oceanol.]: 83–93. (in Russian)
- Zariquiey Alvarez, R., 1952: Estudio de las especies Europeas del gen. *Munida* Leach 1818. — Eos, 28: 143–31.
- 1968: Crustaceos Decapodos Ibericos. — Investigacion Pesquera, 32: xv + 510 pp.
- Zhong, Z. & F. Wang, 1989: A new species and three new records of squat-lobsters (Crustacea, Anomura) from China. — J. Fish. China, 13(1): 65–69.