

G P N : 1009801580
定 價 : 1200元

臺灣鎧甲蝦類誌

CRUSTACEAN FAUNA OF TAIWAN:
SQUAT LOBSTERS (CHIROSTYLIDAE AND GALATHEIDAE)

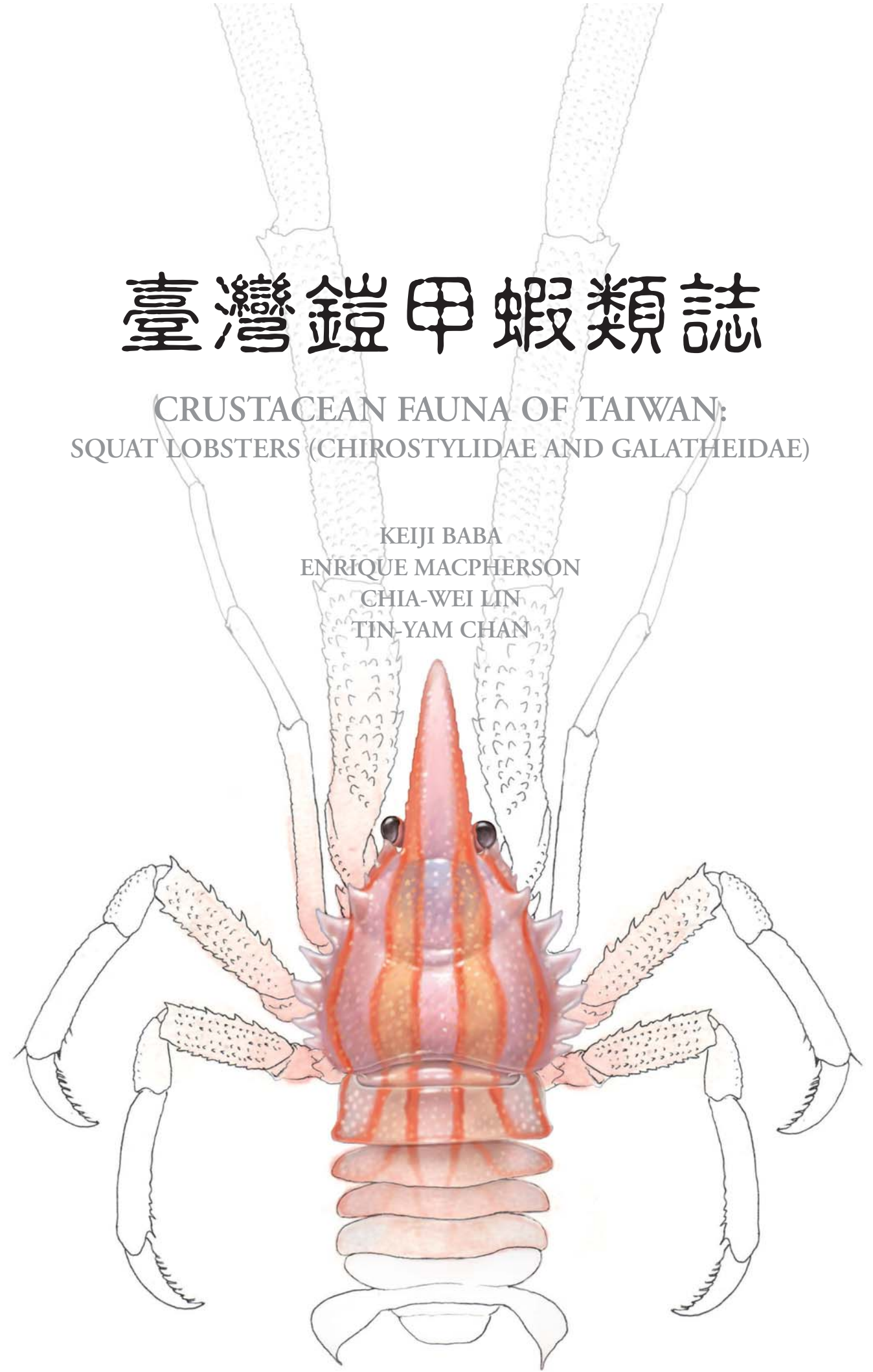
K. BABA, E. MACPHERSON,
C. W. LIN & T. Y. CHAN

國立臺灣海洋大學

臺灣鎧甲蝦類誌

CRUSTACEAN FAUNA OF TAIWAN:
SQUAT LOBSTERS (CHIROSTYLIDAE AND GALATHEIDAE)

KEIJI BABA
ENRIQUE MACPHERSON
CHIA-WEI LIN
TIN-YAM CHAN



國立臺灣海洋大學
National Taiwan Ocean University



臺灣鎧甲蝦類誌

CRUSTACEAN FAUNA OF TAIWAN: SQUAT LOBSTERS (CHIROSTYLIDAE AND GALATHEIDAE)

KEIJI BABA

Kumamoto University, Faculty of Education,
2-40-1 Kurokami, Kumamoto 860-8555, Japan

ENRIQUE MACPHERSON

Centro de Estudios Avanzados de Blanes (CSIC), C. acc. Cala Sant Francesc 14,
17300 Blanes, Girona, Spain

CHIA-WEI LIN

Institute of Marine Biology, National Taiwan Ocean University,
2 Pei Ning Road, Keelung 20224, Taiwan, R.O.C.

TIN-YAM CHAN

Institute of Marine Biology, National Taiwan Ocean University,
2 Pei Ning Road, Keelung 20224, Taiwan, R.O.C.

國立臺灣海洋大學

National Taiwan Ocean University
Keelung

2009年7月

序

鎧甲蝦類是指劣柱蝦科和鎧甲蝦科的甲殼十足類，牠們同屬與寄居蟹較為接近的異尾類，但因其身體縱扁，腹部伸長，且有一對大鉗，故常被視為“蝦”類，而其英文俗名更以“Squat Lobsters”稱之。鎧甲蝦類雖然具有高多樣性且廣佈於海洋，但因其體型普遍較小或是多棲息於深海，故較容易被忽略。雖然臺灣在1913年便有鎧甲蝦的報導，但在上世紀末以前，僅記錄到3種。近年來行政院國家科學委員會大力支持國內研究人員積極調查臺灣的深海生物多樣性，發現臺灣的深海底棲生物中，鎧甲蝦是主要的類群，在過去短短的十幾年間便自臺灣及東沙多記錄出70種鎧甲蝦類，其中更有多達18種為世界新種。除此之外，目前臺灣最深的生物記錄也是由鎧甲蝦保持(水深 5,011公尺)，且臺灣近來相繼發現目前全球十分重視的深海熱泉和冷泉生態，其中的優勢生物亦為鎧甲蝦，可見鎧甲蝦類在臺灣的海洋生態尤其是深海生態中是十分重要。經由行政院國家科學委員會補助的研究計劃『編撰臺灣無脊椎動物誌-臺灣甲殼類』，邀請國際著名的鎧甲蝦類分類專家共同深入研究近年來在臺灣和東沙採獲的鎧甲蝦類標本，並編撰臺灣鎧甲蝦類誌，共整理出2科19屬116種，包括臺灣113種、東沙13種，其中11種為臺灣特有，1種是東沙特有。而臺灣的新記錄則有6屬41種，東沙的新記錄為3屬9種。誌中對臺灣及東沙發現的每種鎧甲蝦類皆提供型態描述、完整分類文獻資料、重要特徵線繪圖和檢索等，大部分(107種)亦附有彩色標本照以利參考鑑別。在過去，鎧甲蝦類屬於較鮮為人知的一群海洋生物，但由於近年來的研究發現，其多樣性其實十分之高，目前已引起國際海洋生物學家特別重視，在多項國際推動的生物多樣性研究中都以鎧甲蝦為模式物種，如國際海洋生物普查的深海調查(COMARGE)和世界海洋物種資料庫(WoRMS)，都首選鎧甲蝦類為研究主題。臺灣有一半沿岸屬深海區，離岸不遠便有過千公尺的水深，並棲息有十分多樣的深海生物。臺灣目前發現的鎧甲蝦類已達全世界的八分之一，且有十分之一為臺灣特有，希望藉本誌讓國人更深入了解臺灣的深海生物，並在國際間突顯臺灣豐富的海洋生物多樣性。本誌之編輯及印刷為行政院國家科學委員會補助(NSC96-2621-B-019-008-MY2)，由國立臺灣海洋大學水產生物科技頂尖研究中心協助出版，謹致上由衷謝意，並感謝林芝君小姐在編輯上的協助。

INTRODUCTION

“Squat lobster” is the common name for members of the three anomuran families Chirostylidae, Galatheidae and Kiwaidae, including the genera *Uroptychus*, *Galathea*, *Munida*, and *Munidopsis*, among others. They are lobster-like but are not actually closely related to true lobsters. Their abdomen is carried tucked under the thorax, giving a “crouching or squatting” appearance. Squat lobsters are usually grouped together with the families Aeglidae and Porcellanidae in the superfamily Galatheoidea, sharing the body plan with bilateral symmetry and having the fifth pair of pereopods much smaller than the others, chelate, folded and usually hidden under the carapace. Chirostylids occur mostly in deep-seas, the majority of which are found associated with alcyonarian, antipatharian and gorgonian corals. Galatheids range from shallow to deep-waters, commonly occurring on coral reefs, rocky, sandy or muddy substrates. They are sometimes commensal with crinoids, echinoids and holothurians, or associated with sunken wood. The sole species of the Kiwaidae was recently found in active thermal vent sites on the South East Pacific Rise.

Except for a few species from the eastern Pacific and eastern Atlantic that are of commercial importance, most squat lobsters are small or inhabit deep-waters, so they are not familiar to non-scientists. Recently, however, underwater photographers have been competitively displaying photographs of marine life including squat lobsters on web-sites, sharing their interest in the beauty of nature.

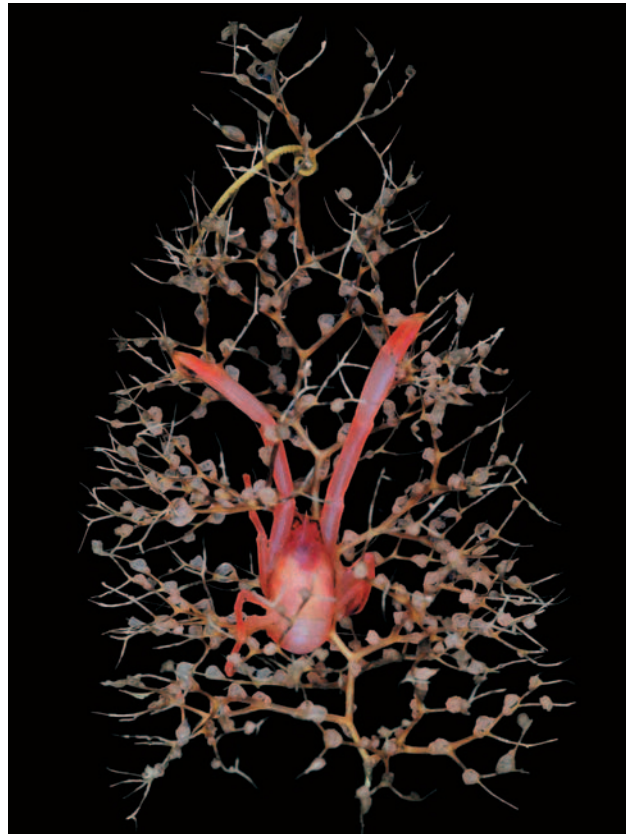
In Taiwan, squat lobsters were first reported by Balss in 1913, but before the last decade only three species in two genera were recorded (Balss, 1913b; Miyake, 1953; Baba & Yu, 1987). Huang (1994, 2008) cited *Galathea formosa* De Man, 1902 (as *G. formosus*) from Taiwan after a list of Chinese galatheids provided by Wang (1989). *Galathea formosa* is so far known only from Indonesia (Baba *et al.*, 2008). No further information other than a translation of “Taiwan squat lobster” was given to the record of *G. formosa* by these authors. It is very likely that they mistakenly interpreted the specific name “*formosa*” as representing the old name of Taiwan. The Latin “*formosus*” means “beautiful” and this is likely the original meaning given by De Man (1902). Thus, the Taiwanese record of *G. formosa* is considered as invalid.

A recent revival of large scale deep-sea expeditions in the Indo-West Pacific (see Richer de Forges & Justine, 2006; Bouchet *et al.*, 2008; Baba *et al.*, 2008) has disclosed a very high diversity of squat lobsters in the deep-sea. Taiwan is surrounded by a narrow, shallow continental shelf, but the eastern and southern coasts descend rapidly into deep water. However, this deep-sea region had been left unexplored, even by the great deep-sea expeditions, such as “Challenger,” “Albatross,” “Galathea,” etc. Since the mid-1980’s squat lobster specimens from Taiwan have accumulated in the collection of the National Taiwan Ocean University (NTOU) by shore collecting and by-catch from local deep sea commercial trawlers operated to about 500 m deep, and more extensively by recent surveying expeditions “TAIWAN 2000–2008” that have so far conducted 449 stations, mostly bottom trawlings and dredgings, around Taiwan, with the deepest trawl down to 5011 m. Based on these collections, 11 more genera and 69 more species of squat lobsters were reported from Taiwan, including 17 species new to science (Wu *et al.*, 1997; Wu & Chan, 2000; Chan *et al.*, 2000; Komai, 2000; Lin *et al.*, 2004, Lin & Chan, 2005; Osawa *et al.*, 2006a, b, 2007; Lin *et al.*, 2007; Macpherson, 2007; Osawa *et al.*, 2008a, b; Baba & Lin, 2008; Macpherson & Baba, 2009). The deepest animals reported from Taiwan thus far

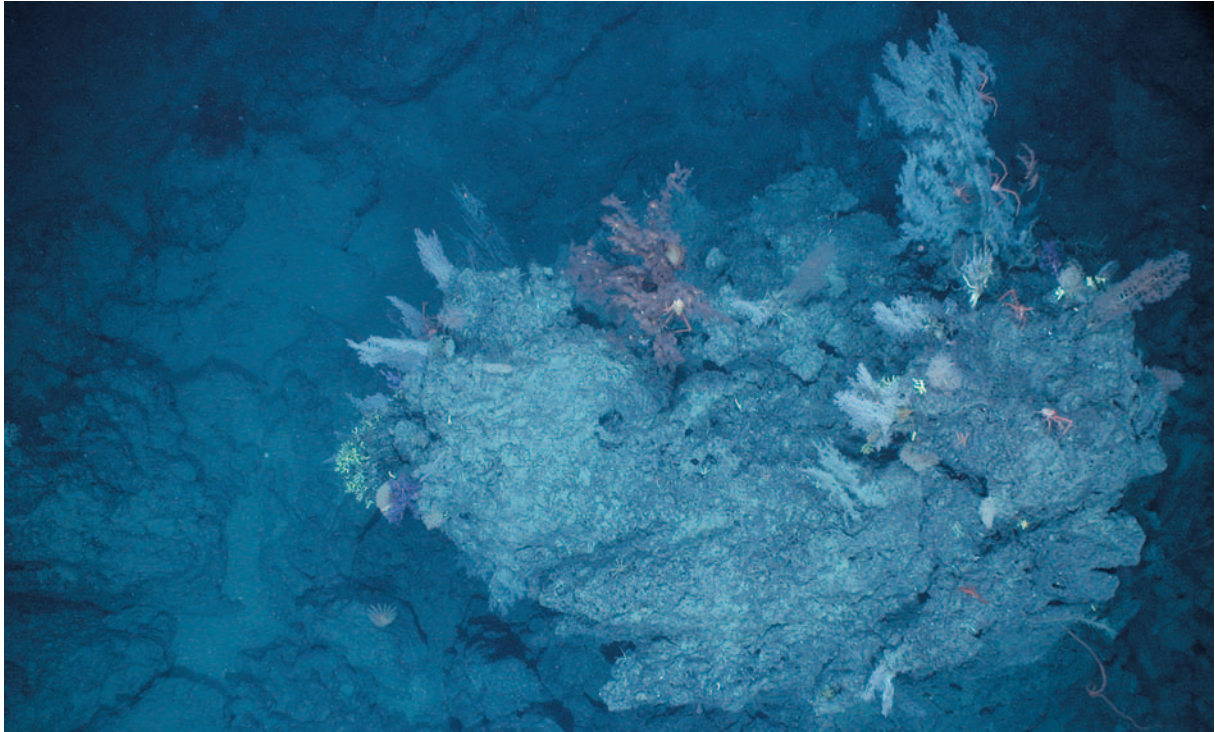
are also squat lobsters (*i.e.* *Munidopsis profunda* Baba, 2005 and *M. taiwanica* Osawa, Lin & Chan, 2008 from 5011 m; Osawa *et al.*, 2008b). There are still many species yet to be reported from the island.

Through projects supported by the Taiwan National Science Council, Taiwan, R.O.C., the present work compiles a catalog of all squat lobsters known from Taiwan. A total of 113 species in 19 genera are reported from Taiwan, including new records of 6 genera and 41 species. The number of species now found in Taiwan is slightly more than one-eighth of all known species (887 species, see Baba *et al.*, 2008; Baba & Lin, 2008; Osawa *et al.*, 2008b; Baba & Fujita, 2008; Macpherson & Baba, 2009; Schnabel, 2009; Baba, 2009). Moreover, 11 species or about 10% of the species known from Taiwan have not been found elsewhere. They are: *Eumunida chani* Baba & Lin, 2008, *Uroptychus anacaena* Baba & Lin, 2008, *U. orientalis* Baba & Lin, 2008 (see next paragraph on Dongsha), *U. singularis* Baba & Lin, 2008, *Munida albiapicula* Baba & Yu, 1987, *M. rupicola* Lin & Chan, 2005, *Munidopsis latiangulata* Osawa, Lin & Chan, 2006, *M. sarissa* Lin, Osawa & Chan, 2007, *M. echinata* Osawa, Lin & Chan, 2008, *M. taiwanica* and *M. tuberosa* Osawa, Lin, & Chan, 2008. Six other species, though now known outside Taiwan, have their respective holotypes based on Taiwanese specimens. These species include: *Galathea platycheles* Miyake, 1953, *Raymunida formosanus* Lin, Chan & Chu, 2004, *Munidopsis formosa* Wu & Chan, 2000, *M. tafrii* Osawa, Lin & Chan, 2006, *Agononida rubrizonata* Macpherson & Baba, 2009, and *Paramunida leptotes* Macpherson & Baba, 2009. The squat lobsters of Taiwan thus prove to be unexpectedly diverse, particularly in the deep-sea. This high diversity may reflect sampling efforts in numerous stations, as has been shown by the collections made by the recent French cruises to New Caledonia and vicinity (e.g. Macpherson, 1994). The high diversity of deep-sea squat lobsters in Taiwan contributes significantly to the knowledge of taxonomy and biogeography of these animals. On the other hand, local collecting efforts in coral and rocky reefs in Taiwan are still far from comprehensive, so it is very likely that more species will be discovered in shallow waters. In addition, the diversity of the genera *Chirostylus*, *Galathea* and *Munida* in Taiwan is underestimated, and some genera such as *Coralligalathea*, *Gastroptychus*, *Lauriea* and *Sadayoshia*, will in all probability be found in Taiwan (e.g. the TowCam photograph of this page).

Dongsha Island (Pratas, approximately 400 km southwest of Taiwan) in the South China Sea is under the



SW Taiwan, 982–999 m (PCP445) *Uroptychus nigricapillis* associated with gorgonian corals.



Yung-An Ridge, SW Taiwan, 925m. Showing many chirostylids (likely *Eumunida* and *Gastroptychus*) living on gorgonian corals.

jurisdiction of Taiwan. Four species of squat lobsters have been reported from Dongsha by Baba (1988) based upon the “Albatross” material. These species were said to be from southwestern Formosa but actually they were from a locality near Dongsha. This region has been briefly surveyed by Taiwan research vessels and additional species were collected from there, namely *Eumunida depressa* de Saint Laurent & Poupin, 1996, *Galacantha valdiviae* Balss, 1913, *Munida caesura* Macpherson & Baba, 1993, *M. militaris* Henderson, 1885, *Munidopsis kensleyi* Ahyong & Poore, 2004, *M. nitida* (A. Milne Edwards, 1880), *M. pallida* Alcock, 1894, and two recently described species, *Uroptychus orientalis* Baba & Lin, 2008 and *Uroptychus anatonus* Baba & Lin, 2008. Thus, 6 genera and 13 species are now known from Dongsha, with *Eumunida depressa*, *E. capillata* de Saint Laurent & Poupin, 1996 (reported as *E. smithii*) and *Uroptychus anatonus* still only known from there and not yet from Taiwan proper. All of these species are incorporated in the catalog making a total number of 116 species. There are additional records of squat lobsters from the Taiwan Strait (= Formosa Canal or Formosa Strait) such as *Uroptychus alcocki* Ahyong & Poore, 2004 and *Galathea orientalis* Stimpson, 1858 (Baba, 2005; Schnabel, 2009). These records were either from the mainland China side of the Taiwan Strait or without precise locality data, and therefore, they are not considered as valid Taiwanese records.

In this catalog, full synonymies and diagnoses are given for each taxon. Line drawings illustrating distinguishing characters are provided for all the species based on Taiwanese and Dongsha specimens except for *Shinkaia crosnieri* Baba & Williams, 1998. The Taiwanese specimens of this species reported in Chan *et al.* (2000) were returned to the collector and were not available for study at the time of writing. Thus, a specimen from the Okinawa Trough is used for the line-drawings of *Shinkaia crosnieri*. Color photographs are provided

for 107 species, all based on Taiwanese and Dongsha material. The coloration of some species is very distinctive and can be of help for their identification. The majority of specimens reported are housed in the National Taiwan Ocean University, Keelung (NTOU). Some specimens studied are deposited in the National Museum of Natural History, Smithsonian Institution (USNM), the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), and the Zoological Museum, Copenhagen (ZMUC). The terminology used is as illustrated under **Morphological Terms**. Sizes of specimens shown in parentheses in the text indicate the postorbital carapace length measured along the dorsal midline from the posterior margin of the orbit to the posterior margin of the carapace. Other abbreviations used are: G1 (gonopod 1 in males), G2 (gonopod 2 in males), Mxp1 (maxilliped 1), Mxp3 (maxilliped 3), P1 (pereopod 1 or cheliped), P2–4 (pereopods 2–4 or walking legs 1–3), P5 (pereopod 5). For specimens collected by the “TAIWAN” cruises, gear types are abbreviated as CP, PCP, OCP, CD and DW, and indicated before the station number. The abbreviations for gear types refer to the 4 m French beam trawl (CP), the 2.5 m French beam trawl (PCP), the 3 m ORE beam trawl (OCP), the Otter Trawl Le Drezen type Solo Hard Bottom 12.4 m (CD) and the Warén Dredge (DW).

We gratefully acknowledge Shinji Tsuchida of JAMSTEC for loaning us specimens of *Shinkaia crosnieri*, Katsunori Fujikura of JAMSTEC and Saul-Wood Lin of the National Taiwan University for allowing us to use the underwater photographs of *S. crosnieri*, S. W. Lin for letting us use the TowCam photograph from SW Taiwan, Ming-Feng Wu and Masayuki Osawa for preparing some of the line-drawings, Ping-Ho Ho for taking the photograph of *Agononida soelae*, Javier Macpherson for the cover design, Shane T. Ahyong for reading the English, and Chih-Chun Lin for her efforts in editing the manuscripts. We sincerely thank the Center for Marine Bioscience and Biotechnology of the National Taiwan Ocean University for support in publishing this work. This catalog is a contribution from a project (NSC96-2621-B-019-008-MY2) granted by the National Science Council, Taiwan, R.O.C.



Table of Contents

Systematics	1
Morphological Terms	2
Chirostylidae	7
<i>Chirostylus</i>	8
<i>Chirostylus rostratus</i>	9
Eumunida	11
<i>Eumunida capillata</i>	12
<i>Eumunida chani</i>	14
<i>Eumunida depressa</i>	16
<i>Eumunida funambululus</i>	18
<i>Eumunida macphersoni</i>	21
<i>Eumunida parva</i>	23
Uroptychodes	25
<i>Uroptychodes barunae</i>	26
<i>Uroptychodes grandirostris</i>	28
<i>Uroptychodes spinimarginatus</i>	30
Uroptychus	32
<i>Uroptychus anacaena</i>	34
<i>Uroptychus anatonus</i>	36
<i>Uroptychus babai</i>	38
<i>Uroptychus bispinatus</i>	40
<i>Uroptychus ciliatus</i>	42
<i>Uroptychus gracilimanus</i>	44
<i>Uroptychus naso</i>	47
<i>Uroptychus nigricapillis</i>	50
<i>Uroptychus orientalis</i>	54
<i>Uroptychus remotispinatus</i>	57
<i>Uroptychus scambus</i>	59
<i>Uroptychus singularis</i>	62
<i>Uroptychus triangularis</i>	64
<i>Uroptychus zezuensis</i>	66
Galatheidae	69
Agononida	71
<i>Agononida analoga</i>	72

<i>Agononida eminens</i>	74
<i>Agononida incerta</i>	76
<i>Agononida pilosimanus</i>	79
<i>Agononida rubrizonata</i>	81
<i>Agononida soelae</i>	83
<i>Agononida tenuipes</i>	85
Allogalatea	87
<i>Allogalatea elegans</i>	88
Cervimunida	91
<i>Cervimunida princeps</i>	92
Crosnierita	95
<i>Crosnierita yante</i>	96
Fennerogalatea	98
<i>Fennerogalatea chacei</i>	99
Galacantha	101
<i>Galacantha valdiviae</i>	102
Galathea	105
<i>Galathea aegytiaca</i>	107
<i>Galathea albatrossae</i>	109
<i>Galathea genkai</i>	111
<i>Galathea inflata</i>	113
<i>Galathea mauritiana</i>	115
<i>Galathea multilineata</i>	118
<i>Galathea orientalis</i>	120
<i>Galathea platycheles</i>	123
<i>Galathea pubescens</i>	125
<i>Galathea tanegashimae</i>	127
Heteronida	130
<i>Heteronida barunae</i>	131
Leiogalatea	133
<i>Leiogalatea laevirostris</i>	134
Munida	137
<i>Munida agave</i>	139
<i>Munida albiapicula</i>	140
<i>Munida andamanica</i>	142
<i>Munida armata</i>	144
<i>Munida asprosoma</i>	146
<i>Munida caesura</i>	149

<i>Munida compressa</i>	152
<i>Munida crassa</i>	156
<i>Munida distiza</i>	159
<i>Munida gili</i>	161
<i>Munida japonica</i>	163
<i>Munida kuboi</i>	169
<i>Munida leptitis</i>	171
<i>Munida militaris</i>	173
<i>Munida oritea</i>	176
<i>Munida pherusa</i>	178
<i>Munida pilorhyncha</i>	180
<i>Munida prominula</i>	182
<i>Munida psamathe</i>	184
<i>Munida punctata</i>	186
<i>Munida rufiantennulata</i>	188
<i>Munida rupicola</i>	190
<i>Munida spilota</i>	192
<i>Munida striola</i>	194
<i>Munida thoe</i>	196
<i>Munida tiresias</i>	198
<i>Munida typhle</i>	200
Munidopsis	202
<i>Munidopsis analoga</i>	205
<i>Munidopsis andamanica</i>	207
<i>Munidopsis arietina</i>	210
<i>Munidopsis bispinoculata</i>	212
<i>Munidopsis bruta</i>	214
<i>Munidopsis centrina</i>	216
<i>Munidopsis ceratophthalma</i>	218
<i>Munidopsis cidaris</i>	220
<i>Munidopsis cylindrophthalma</i>	222
<i>Munidopsis dasypus</i>	225
<i>Munidopsis echinata</i>	227
<i>Munidopsis edwardsii</i>	229
<i>Munidopsis formosa</i>	231
<i>Munidopsis granosa</i>	234
<i>Munidopsis hirsutissima</i>	236
<i>Munidopsis kensleyi</i>	238

<i>Munidopsis latiangulata</i>	240
<i>Munidopsis latimana</i>	242
<i>Munidopsis nitida</i>	244
<i>Munidopsis pallida</i>	246
<i>Munidopsis panamae</i>	248
<i>Munidopsis pilosa</i>	250
<i>Munidopsis profunda</i>	253
<i>Munidopsis sarissa</i>	255
<i>Munidopsis serricornis</i>	257
<i>Munidopsis similior</i>	260
<i>Munidopsis sinclairi</i>	262
<i>Munidopsis subchelata</i>	264
<i>Munidopsis tafrii</i>	266
<i>Munidopsis taiwanica</i>	268
<i>Munidopsis teretis</i>	270
<i>Munidopsis trifida</i>	271
<i>Munidopsis tuberosa</i>	273
<i>Munidopsis verrilli</i>	275
Paramunida	277
<i>Paramunida cristata</i>	278
<i>Paramunida leptotes</i>	279
<i>Paramunida scabra</i>	281
<i>Paramunida tricarinata</i>	283
Phylladorhynchus	286
<i>Phylladorhynchus pusillus</i>	287
Raymunida	290
<i>Raymunida formosanus</i>	291
Shinkaia	293
<i>Shinkaia crosnieri</i>	294
Literature Cited	297
Map of Taiwan	310
List of Localities in English and Chinese	311

SYSTEMATICS

Infraorder Anomura MacLeay, 1838

Superfamily Galatheoidea Samouelle, 1819

In this book, the classification of squat lobsters follows that of Martin & Davis (2001). Five families are known in the superfamily Galatheoidea: Aeglidae Dana, 1852; Kiwaidae Macpherson, Jones & Segonzac, 2005; Chirostylidae Ortmann, 1892; Galatheidae Samouelle, 1819, and Porcellanidae Haworth, 1825. However, some authors (McLaughlin *et al.*, 2007) include Aeglidae and Kiwaidae in different superfamilies, Aeglidea and Kiwaidea, respectively. The “squat lobsters” are the common name for members of the Chirostylidae, Galatheidae and Kiwaidae, sometimes also for Aeglidae. Chirostylids are mostly from deep-waters, the majority of which are found associated with antipatharian and gorgonian corals. Galatheids range from the surface of the sea to abyssal depths. The sole species of the Kiwaiidae called “Yeti crab” is known in an active thermal vent site in the South East Pacific Rise. Members of Aeglidae are all freshwater and only distributed in South America.

As mentioned in Baba *et al.* (2008), taxonomic placement of squat lobsters is being reviewed. According to phylogenetic studies by Chu *et al.* (2009) and Ahyong *et al.* (2009), the Chirostylidae and Kiwaidae are more closely related to hermit crabs than to the Galatheidae, and Galatheidae are more close to Porcellanidae (Baba *et al.*, 2008).

Three families are known in Taiwanese waters.

Key to families of Galatheoidea in Taiwan

1. Abdomen folded against thorax. Body crab-like **Porcellanidae**
 - Abdomen bent but not folded against thorax. Body lobster-like 2
2. Telson divided into anterior and posterior lobes by distinct or indistinct suture, folded beneath preceding abdominal somites. Sternal plate absent between last pereopods. Antennal peduncle of 5 segments **Chirostylidae**
 - Telson distinctly or indistinctly divided into several plates, not folded beneath preceding abdominal somites. Sternal plate between last pereopods, separated from preceding sternal plastron. Antennal peduncle of 4 segments **Galatheidae**

Morphological Terms

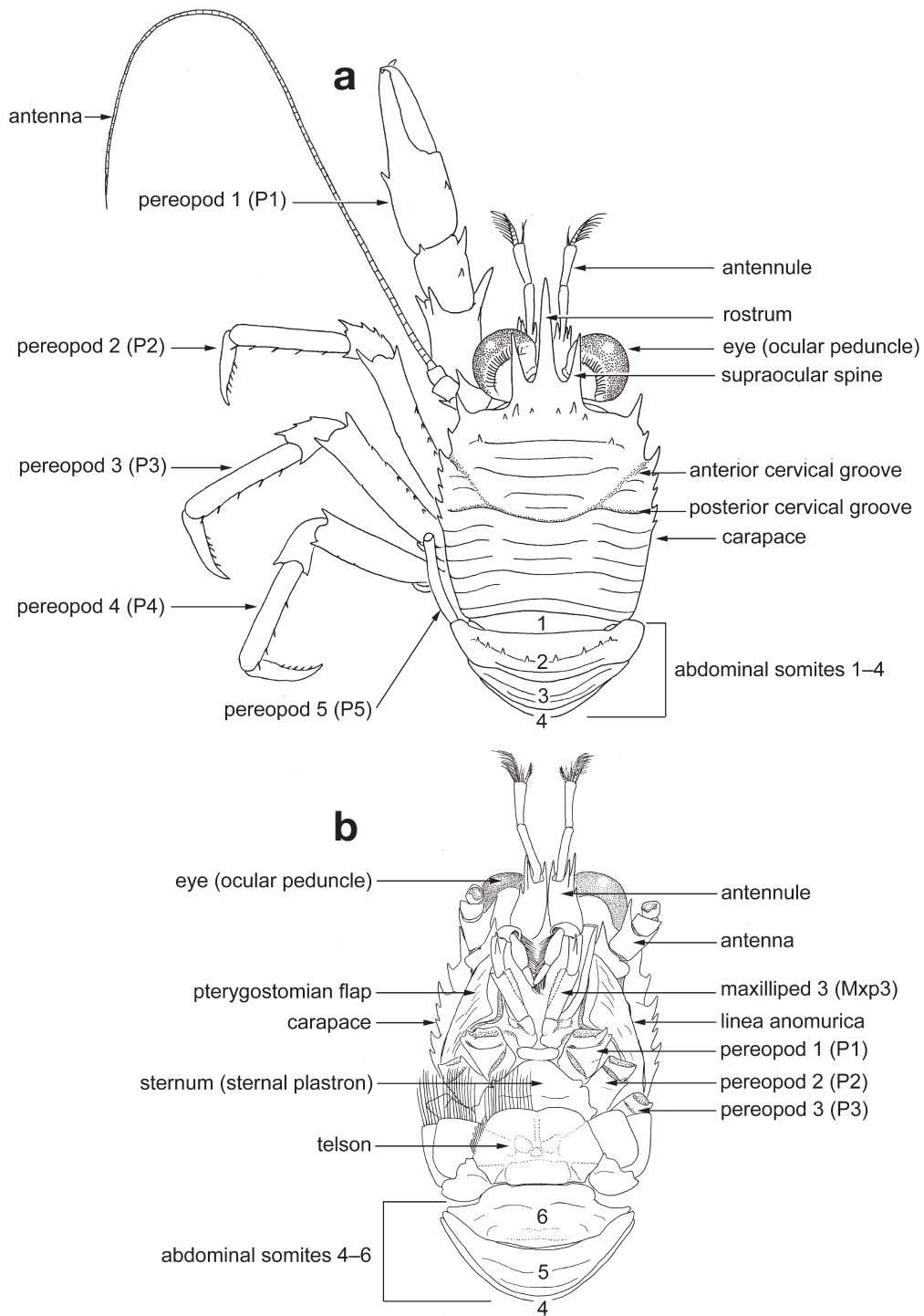


Fig. 1. Descriptive terms: **a**, general, dorsal; **b**, ventral.

Morphological Terms

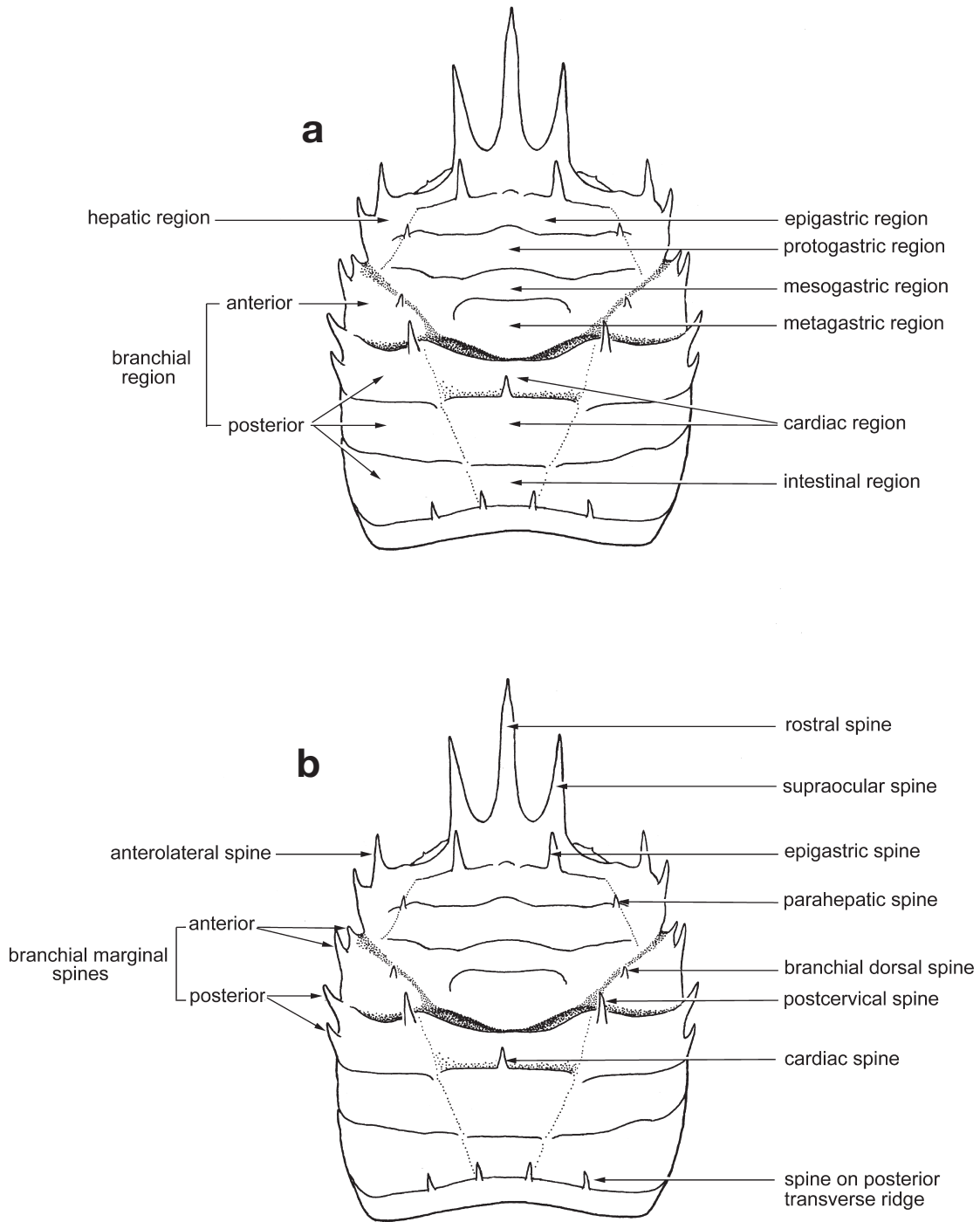


Fig. 2. Descriptive terms: **a**, carapace regions; **b**, carapace spines.

Morphological Terms

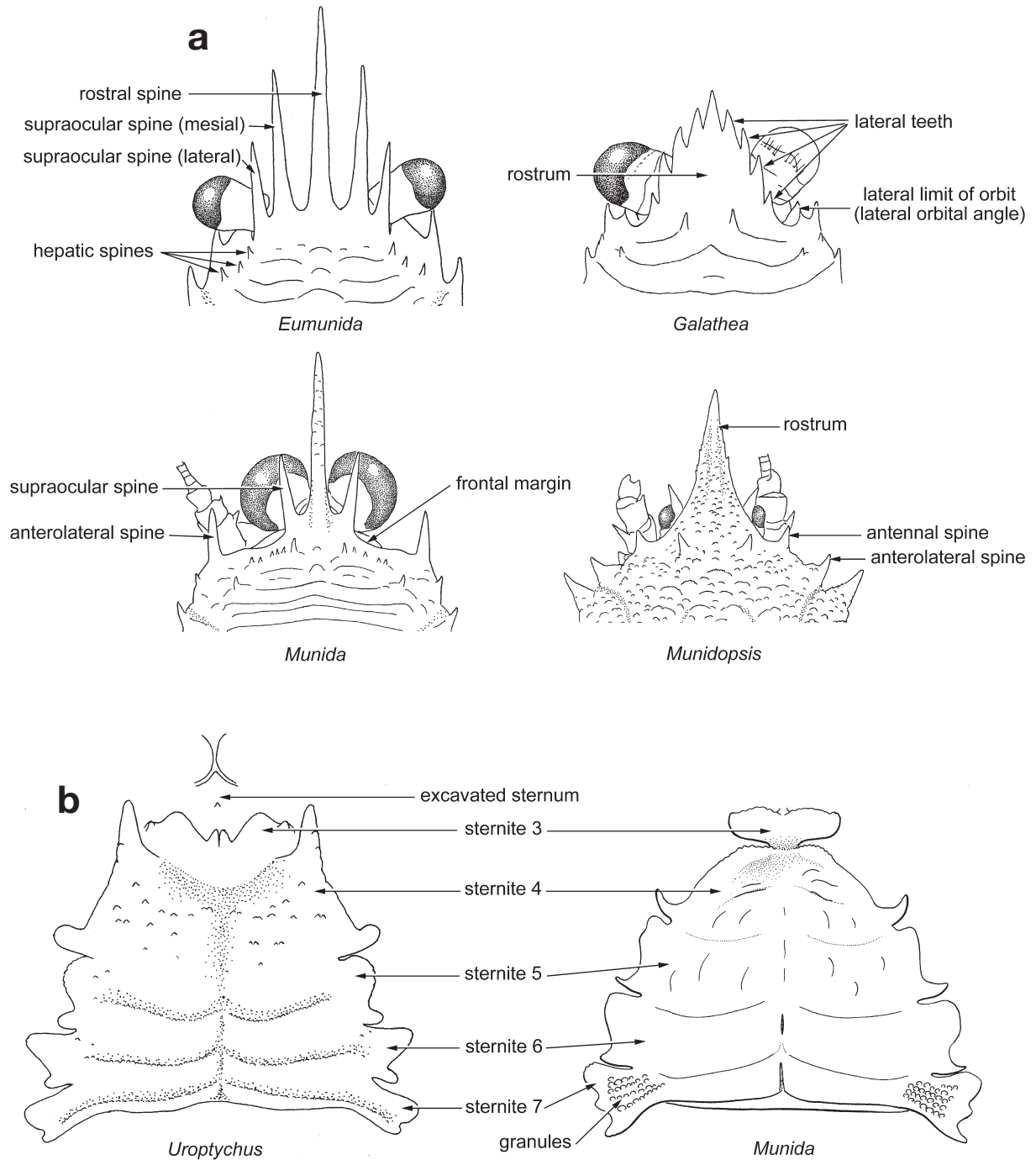


Fig. 3. Descriptive terms: **a**, anterior part of carapace; **b**, thoracic sternum.

Morphological Terms

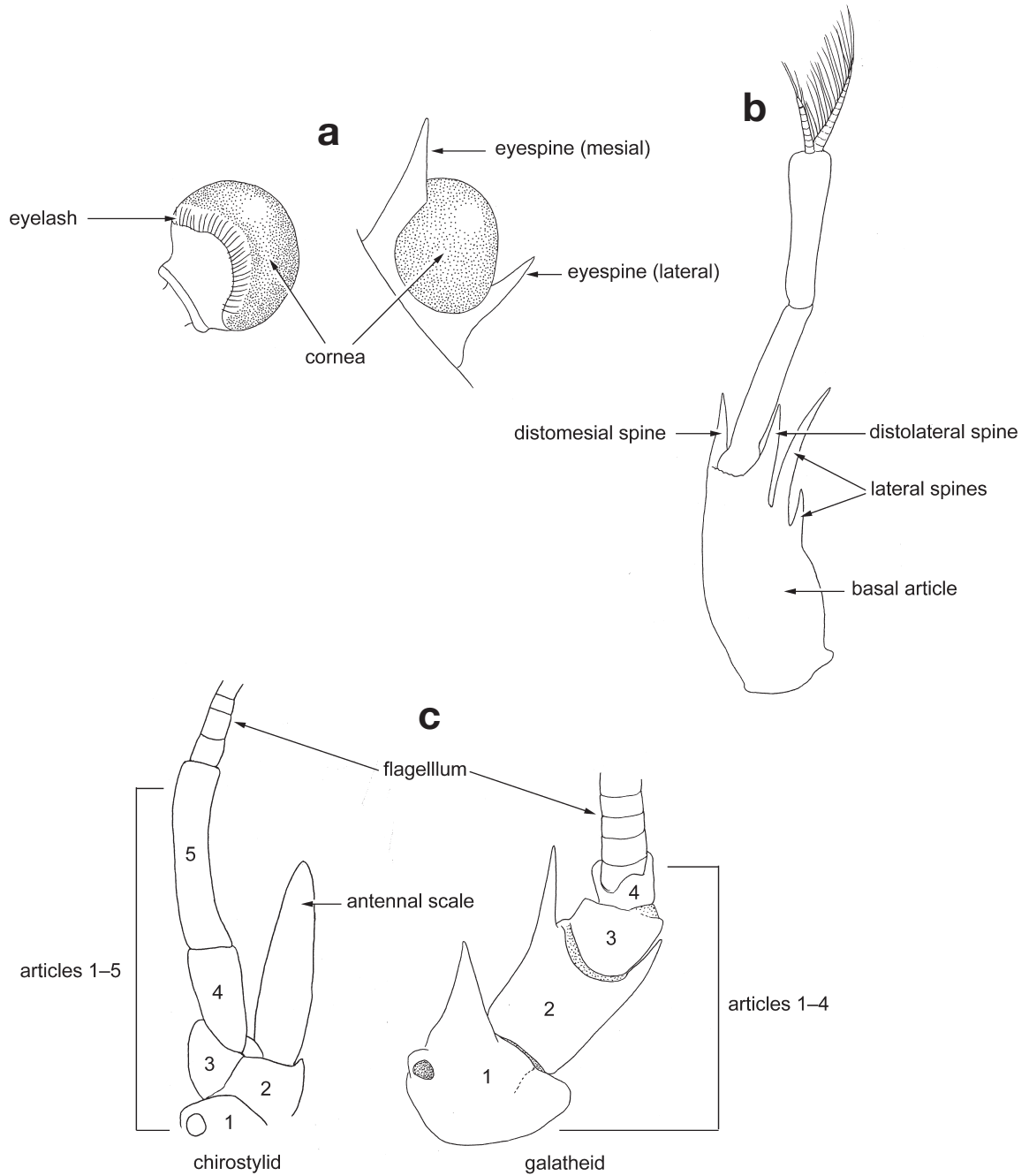


Fig. 4. Descriptive terms: **a**, eye (ocular peduncle), dorsal; **b**, antennule, ventral; **c**, antenna, ventral.

Morphological Terms

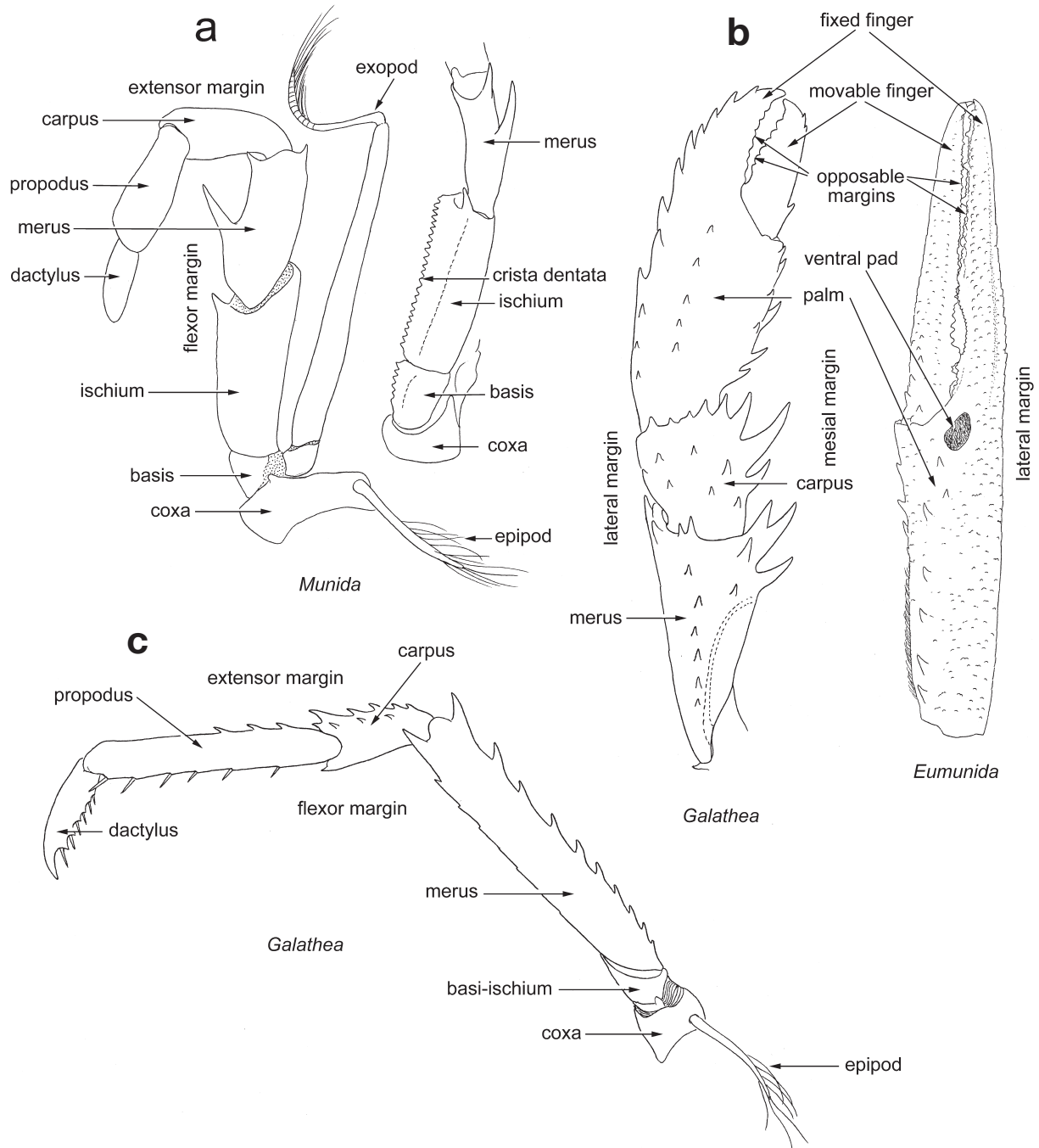


Fig. 5. Descriptive terms: **a**, maxilliped 3 (Mxp3), lateral (left) and ventral (right); **b**, pereopod 1 (P1), dorsal (left) and ventral (right); **c**, pereopod 2 (P2), lateral.

Family Chirostylidae Ortmann, 1892

劣柱蝦科

Chirostylidae Ortmann, 1892: 246.—Bouvier, 1896: 307.—Ortmann, 1898: 1149.—Alcock, 1901: 278.—Barnard, 1950: 495.—Balss, 1957: 1594.—Zariquiey Álvarez, 1968: 261.—Davie, 2002: 29.—Poore, 2004: 220.

Diptycinés A. Milne Edwards & Bouvier, 1894: 296, 312-313.

Diptycinae.—Bouvier, 1896: 312.—A. Milne Edwards & Bouvier, 1897: 116.—A. Milne Edwards & Bouvier, 1899: 71.

Uroptychidae Alcock, 1901: 236, 278.

Type genus: *Chirostylus* Ortmann, 1892.

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.

Remarks.—Seven genera and 204 species are currently known for this family (Baba *et al.*, 2008; Baba & Lin, 2008; Schnabel, 2009; Baba, 2009). Only nine species in three genera (one in *Chirostylus*, three in *Eumunida*, five in *Uroptychus*) have been reported from Taiwan and Dongsha (Baba, 1998; Wu *et al.*, 1998; Baba & Lin, 2008; Osawa *et al.*, 2008b), of which two are recorded only from Dongsha. In this catalog, 15 additional species in four genera are newly recorded from Taiwan and Dongsha: three in *Eumunida* (with one only from Dongsha), three in *Uroptychodes* (also new genus record for Taiwan) and nine in *Uroptychus*.

Key to genera of Chirostylidae from Taiwan

1. Posterolateral margin of carapace strongly excavated. Basal segments of ocular peduncles visible in dorsal view by short rostral base *Chirostylus*
- Posterolateral margin of carapace entire or slightly excavated. Basal segments of ocular peduncles barely visible in dorsal view by presence of well-developed rostrum 2
2. Supraocular spines present *Eumunida*
- Supraocular spines absent 3
3. P2 more slender than P3, P2 dactylus unarmed on flexor margin *Uroptychodes*
- P2 as broad as P3, P2 dactylus with spines on flexor margin *Uroptychus*

Genus *Chirostylus* Ortmann, 1892

劣柱蝦屬

Chirostylus Ortmann, 1892: 246 [type species: *Chirostylus dolichopus* Ortmann, 1892, by monotypy. Gender: masculine].—Miyake & Baba, 1968: 379.—Zariquiey Álvarez, 1968: 261.—Osawa & Nishikiori, 1998: 386.—Baba, 2005: 15.

Diagnosis.—Carapace dorsally smooth, with a number of spines or covered with numerous small spines. Pair of epigastric spines present. Lateral margin strongly excavated on posterior portion. Rostral base short, convex, with or without median spine. Anterior margin of sternal plastron usually transverse, rarely concave, with row of spines. Abdomen without transverse ridges, somite 2 without anterolateral spine on pleura. Two pairs of male gonopods present. Ocular peduncles elongate, basal segment visible in dorsal view, cornea barely or slightly dilated. Antennal acicle absent, flagellum short. Mxp3 with bases broadly separated from each other. P1–4 very slender, subcylindrical and spinose. P2–4 propodi very long relative to dactyli.

Remarks.—The genus contains seven species from the Indo-West Pacific. From Taiwan, only one species is known.

Chirostylus rostratus Osawa & Nishikiori, 1998
顯額劣柱蝦

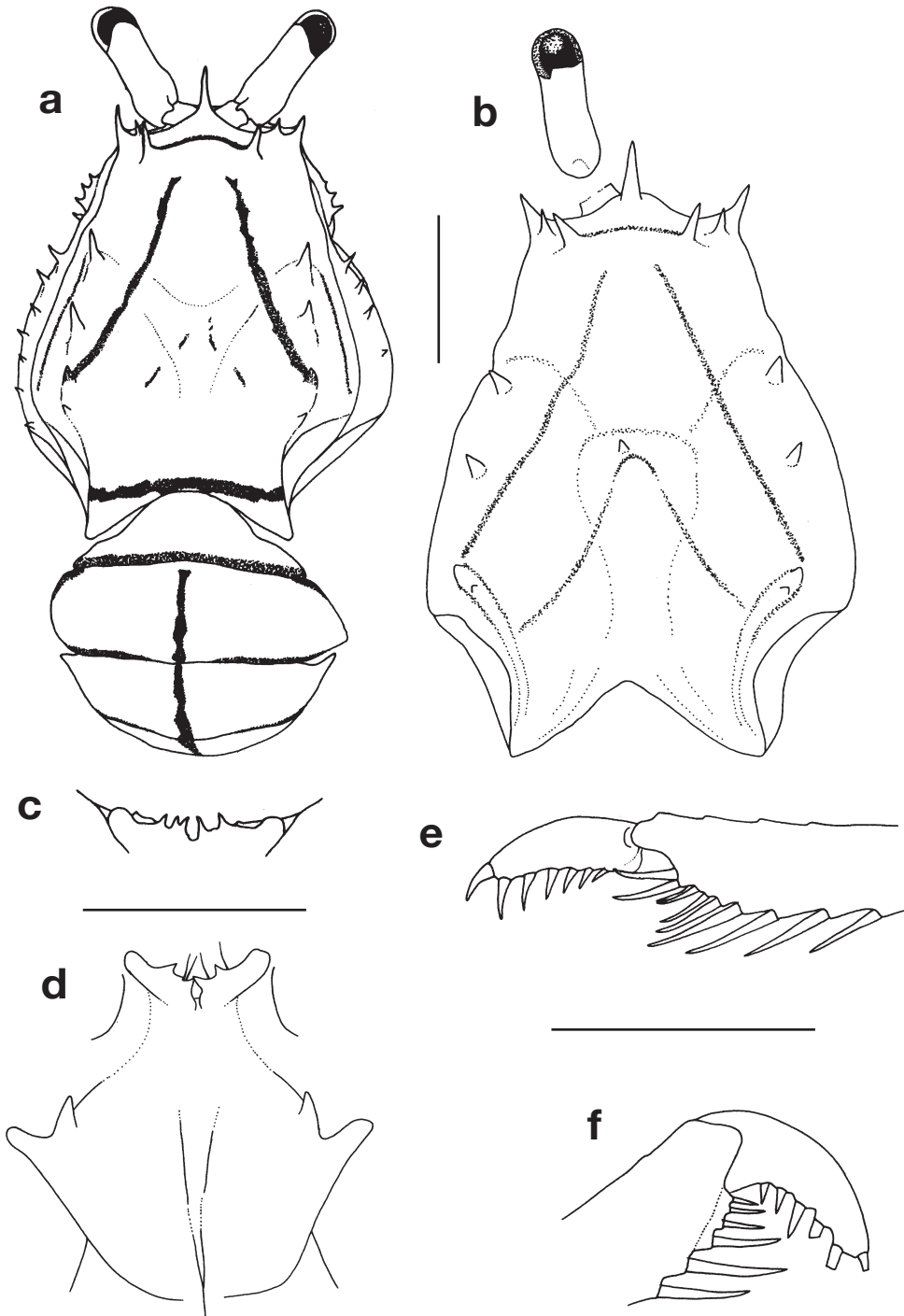


Fig. 6. Holotype male (7.3 mm), Ogasawara Islands, a, c, e (after Osawa & Nishikiori, 1998); male (9.4 mm), Dasi fishing port, Yilan County, no specific date, b, d, f (after Osawa *et al.*, 2008): **a**, carapace, dorsal; **b**, carapace and abdomen, dorsal; **c**, anterior part of sternal plastron; **d**, same; **e**, distal part of P2, lateral; **f**, distal part of detached pereopod. Scales = 3 mm.

Chirostylus rostratus Osawa & Nishikiori, 1998: 382, figs 1, 2 [type locality: Ogasawara (Bonin) Islands, 180 m].—Baba, 2005: 208.—Baba *et al.*, 2008: 14.—Osawa *et al.*, 2008b: 92, fig. 1.

Material examined.—Dasi fishing port, Yilan County, no date: 1 male (9.4 mm) (NTOU).

Diagnosis.—Rostral spine larger than epigastric spines, distinctly overreaching base of distal articles of ocular peduncles. Branchial region with 2 strong spines along lateral margin; posterior branchial region with subacute ridge bearing blunt spines directly anterior to posterolateral excavation. Thoracic sternite 3 with 4 small spines and median notch on anterior margin. Abdominal somites smooth, without posteromedian projection. Ocular peduncles with slightly dilated corneas. P1–4 covered with numerous small spines. P2–4 dactyli each with corneous flexor spines successively diminishing toward base of article, ultimate spine equally broad (distinctly more slender in Taiwanese specimen) as and distinctly shorter than penultimate spine (Osawa & Nishikiori, 1998; Osawa *et al.*, 2008b).

Size.—Males to 9.4 mm (Osawa *et al.*, 2008b); no female is known.

Coloration.—Overall whitish pink, with reddish lines: along carapace lateral margins, between posterior parts of posterolateral concavity, lateral cardiac region, between epigastric spines, along dorsoposterior margin of each abdominal somite, and longitudinal line along midline of abdominal somites 2–6. Pterygostomian flap with reddish longitudinal lines along anterior, dorsal and ventral margins. Sternite 3 pale red along anterior margin. Ocular peduncles pale red dorsodistally, with reddish line along ventral surface. P1–4 with reddish line on mesial faces of coxa to ischium; reddish spines on ventrolateral and mesial faces of ischium and of proximal two-thirds of merus on P1, on proximal fourth of mesial face of merus on P2–4. P2–4 carpi with broad transverse band of pale red (Osawa & Nishikiori, 1998).

Habitat.—Substrates unknown; 180 m (Osawa & Nishikiori, 1998).

Distribution.—Ogasawara Islands and Taiwan.

Remarks.—The present specimen was originally displayed in the Pei Kuan Resort Crab Museum, with a note that it was obtained from catches of a commercial trawler in the Dasi fishing port nearby. The specimen is fragile and was damaged because it was in dry preservation. The present specimen differs from the holotype of *C. rostratus* in possessing, instead of lacking, a cardiac spine on the carapace and a concave instead of nearly transverse anterior margin of the sternite 3 (Osawa *et al.*, 2008b). The latter character is unique in the genus, because the margin is nearly straight and transverse in all other known species, including the type of *C. rostratus*. It seems not unlikely that this has been deformed by dry condition. The ultimate of the flexor spines on P2–4 dactyli is nearly as broad as and distinctly shorter than the penultimate in the type material, whereas much narrower in the Taiwanese specimen. Discovery of additional material from Taiwan would be desirable to see if these differences are consistent.

Genus *Eumunida* Smith, 1883

真刺蝦屬

Eumunida Smith, 1883: 44 [type species: *Eumunida picta* Smith, 1883. Gender: feminine].—Henderson, 1888: 168.—A. Milne Edwards & Bouvier, 1894: 308.—Gordon, 1930: 741.—de Saint Laurent & Macpherson, 1990: 229.—de Saint Laurent & Poupin, 1996: 347.—Poore, 2004: 220.—Baba, 2005: 17.

Eumunida (*Eumunida*).—de Saint Laurent & Poupin, 1996: 347.

Eumunida (*Eumunidopsis*) de Saint Laurent & Poupin, 1996: 365 [type species: *Eumunida capillata* de Saint Laurent & Macpherson, 1990].

Diagnosis.—Carapace with oblique, posteriorly diverging row of 3 hepatic spines along hepato-gastric border; transverse striae usually distinct, rarely obsolete. Orbital (frontal) margin barely discernible in dorsal view. Rostrum spiniform. Two supraocular spines well developed. Sternal plastron with 2 submedian processes or spines on anterior margin. Abdominal somites with distinct transverse ridges; somite 2 with pleural margin anterolaterally produced into spine. Male G1 absent, G2 reduced to small size or absent. Ocular peduncles short, cornea inflated. Antennal peduncles with distal spine on each of articles 2–5, antennal acicle spiniform, flagellum long, reaching almost tip of P1. Mxp3 with bases close to each other. P1 carpus with 2 or 3 terminal spines, palm with or without ventral pad of velvet-like setae. P2–4 meri armed with row of spine on extensor crest continued on to carpus.

Remarks.—The genus is unique in the family for having the abdominal somite 2 with a strong spine on the anterolateral margin of the pleuron, and lacking male G1 and even G2 in some species.

Since de Saint Laurent & Poupin (1996) reviewed the genus from the Pacific and provided a key to species, Macpherson (2006b) described *Eumunida spinosa* from New Caledonia, and Baba & Lin (2008) described *Eumunida chani* from Taiwan. The genus contains 29 species: 26 from the Indo-West Pacific and three from the Atlantic (Baba *et al.*, 2008). Six species are shown in this book, three of which are new to Taiwan (two from Taiwan proper and one from Dongsha).

Key to species of *Eumunida* from Taiwan

1. Thoracic sternite 4 with lateral spine. Carapace lateral margin with 3 spines anterior to posterior cervical groove 2
- Thoracic sternite 4 without lateral spine. Carapace lateral margin with 2 spines anterior to posterior cervical groove 4
2. Pair of gastric spines between anterior-most hepatic spines *E. funambulus*
- No gastric spine between anterior-most hepatic spines 3
3. Ventral pad on P1 palm *E. depressa*
- No ventral pad on P1 palm *E. macphersoni*
4. Ventral pad on P1 palm *E. capillata*
- No ventral pad on P1 palm 5
5. P1 carpus with 3 distal spines *E. parva*
- P1 carpus with 2 distal spines *E. chani*

Eumunida capillata de Saint Laurent & Macpherson, 1990
毛真刺蝦

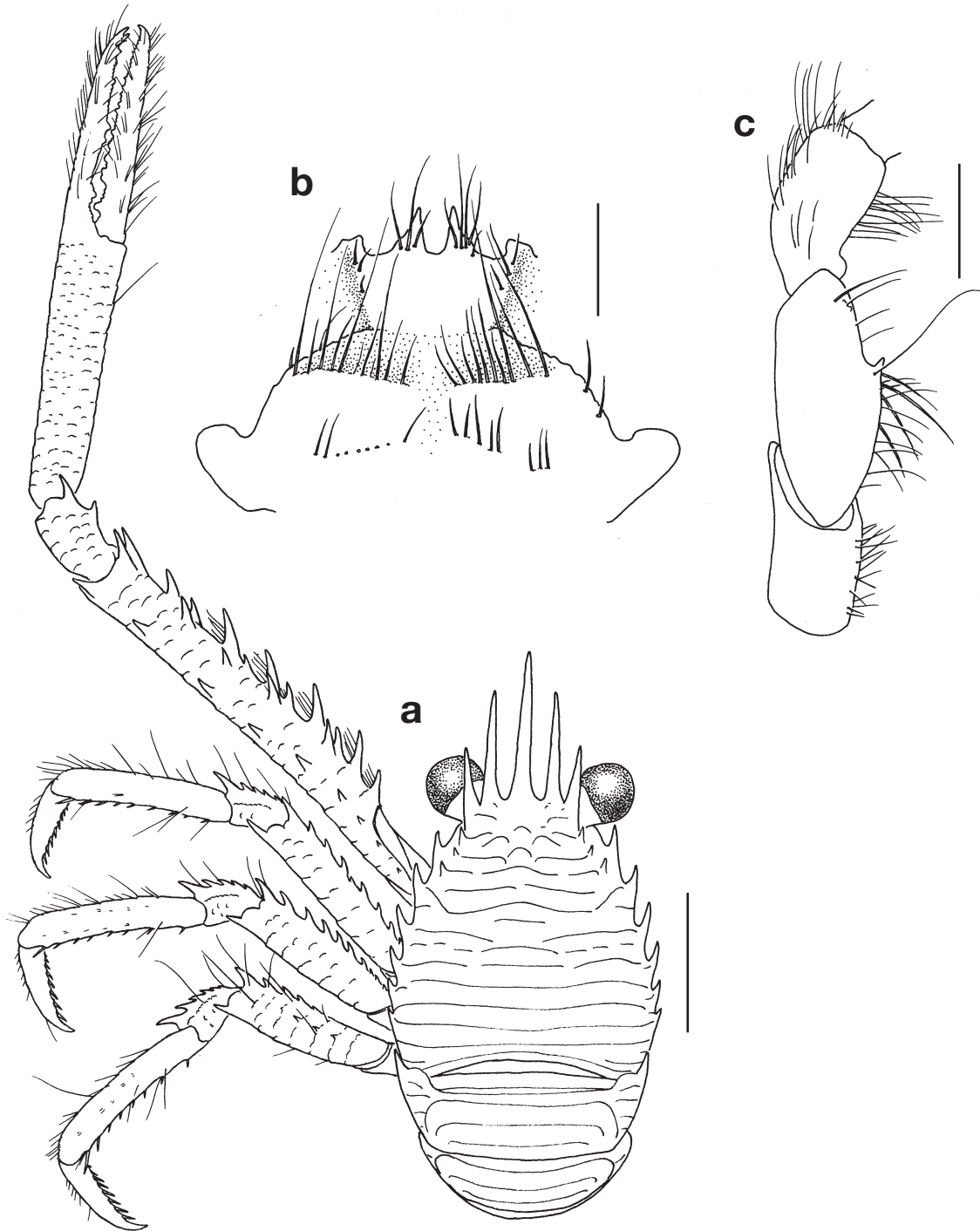


Fig. 7. Female (14.0 mm, incl. rostrum, USNM), Dongsha, Albatross stn 5317: **a**, dorsal view, right appendages omitted; **b**, anterior part of sternal plastron; **c**, right Mxp3, lateral. Scales: a = 5 mm; b, c = 1 mm (after Baba, 1988).

Eumunida smithii.—Baba, 1988: 12 (part), fig. 3a–d. (not *E. smithii* Henderson, 1885)

Eumunida capillata de Saint Laurent & Macpherson, 1990: 254, figs. 1c, 8c–d, 10a–k, 15, 17b [type locality: New Caledonia, 23°38.60'S, 167°43.12'E, 418 m].—Baba, 2005: 18, 209.—Guerao *et al.*, 2006: 14, figs. 14B–C.—Baba *et al.*, 2008: 16.

Eumunida (Eumunidopsis) capillata.—de Saint Laurent & Poupin, 1996: 374.—Ahyong & Poore, 2004: 6.

Material examined.—Dongsha, “Albatross” Stn 5317, 21°36'N, 117°27'E, 421 m: 1 female (14.0 mm, incl. rostrum) (USNM).

Diagnosis.—Carapace with distinct transverse ridges, lacking spine on gastric region; lateral margin with 6 spines: 2 anterior to posterior cervical groove and 4 behind it; first (anterolateral) spine subequal to second and half as long as lateral supraocular spine. Lateral supraocular spine terminating in midlength of mesial one. Mxp3 merus with median flexor marginal spine. Sternite 3 with pair of acute submedian processes on anterior margin; sternite 4 unarmed laterally. P1 carpus with 3 terminal spines, palm with ventral pad of densely packed short setae. P4 merus with row of spines on lateral surface. P2–4 propodi unarmed on extensor margin.

Size.—Males to 16.0 mm, females to 15.5 mm (de Saint Laurent & Macpherson, 1990).

Coloration.—Carapace and abdomen light orange. Rostral spine, lateral margin of antennal peduncles and anterior part of sternal plastron red. Distal part of P1–4 meri with red-purple spot. Distal part of P1 palm and proximal portion of fingers with red band (de Saint Laurent & Macpherson, 1990).

Habitat.—Sand and small shells (Baba, 1988); 200–650 m.

Distribution.—New Caledonia, Chesterfield Islands, New South Wales, Kai Islands, (Indonesia), Bali Sea and the South China Sea (Dongsha).

Remarks.—The first record of the species from Dongsha is that of Baba (1988) under *E. smithii*. The material was reviewed by de Saint Laurent & Poupin (1996) and is currently called *E. capillata*. This species is still known only from Dongsha and not yet found in Taiwan proper.

Eumunida chani Baba & Lin, 2008

陳氏真刺蝦



Fig. 8. Holotype male (6.0 mm), DW45.

Eumunida chani Baba & Lin, 2008: 2, figs. 1–3 [type locality: Taiwan, 22°48.3'N, 121°27.4'E, 423–439 m].

Material examined.—DW45, 22°48.3'N, 121°27.4'E, 423–439 m, 2 Aug 2000: female holotype (6.0 mm) (NTOU).

Diagnosis.—Carapace with distinct transverse ridges. Lateral margin with 2 strong spines in front of posterior cervical groove, anterior-most spine half as long as lateral supraocular spine. Sternite 3 with pair of distally lacinate submedian processes; sternite 4 with strong spine on each side. Mxp3 merus with small spine slightly distal to midlength of flexor margin. Abdomen with 3 transverse ridges on tergites 2–3, 2 on tergites 4–5. Pleura of somite 2 with 4 short ridges longitudinally arranged. P1 merus with 3 rows of spines, mesial spine larger; carpus with 2 distal spines, and row of spines on mesial margin; palm with row of 4 ventromesial spines barely discernible in dorsal view, lacking pad of densely packed setae on ventral surface. P4 merus with row of 5 small spines in midline of lateral surface; P2–4 propodi unarmed on extensor margin.

Size.—Female (holotype), 6.0 mm.

Coloration.—Body and appendages orange pink.

Habitat.—Substrates unknown; 423–439 m.

Distribution.—Taiwan.

Remarks.—*Eumunida chani* is distinguished from *E. spinosa* Macpherson, 2006 from New Caledonia by having less spinose P1, especially the carpus with two instead of three distal spines, and the palm with one row (ventromesial) instead of two rows (ventromesial and ventrolateral) of spines. The bispinose P1 carpus and the

sternite 4 with lateral spines link the species to *E. annulosa* de Saint Laurent & Macpherson, 1990 from New Caledonia and Chesterfield Islands. However, *E. chani* is easily distinguished from that species by absence of a ventral pad on the P1 palm and a small spine behind the second lateral spine of the carapace.

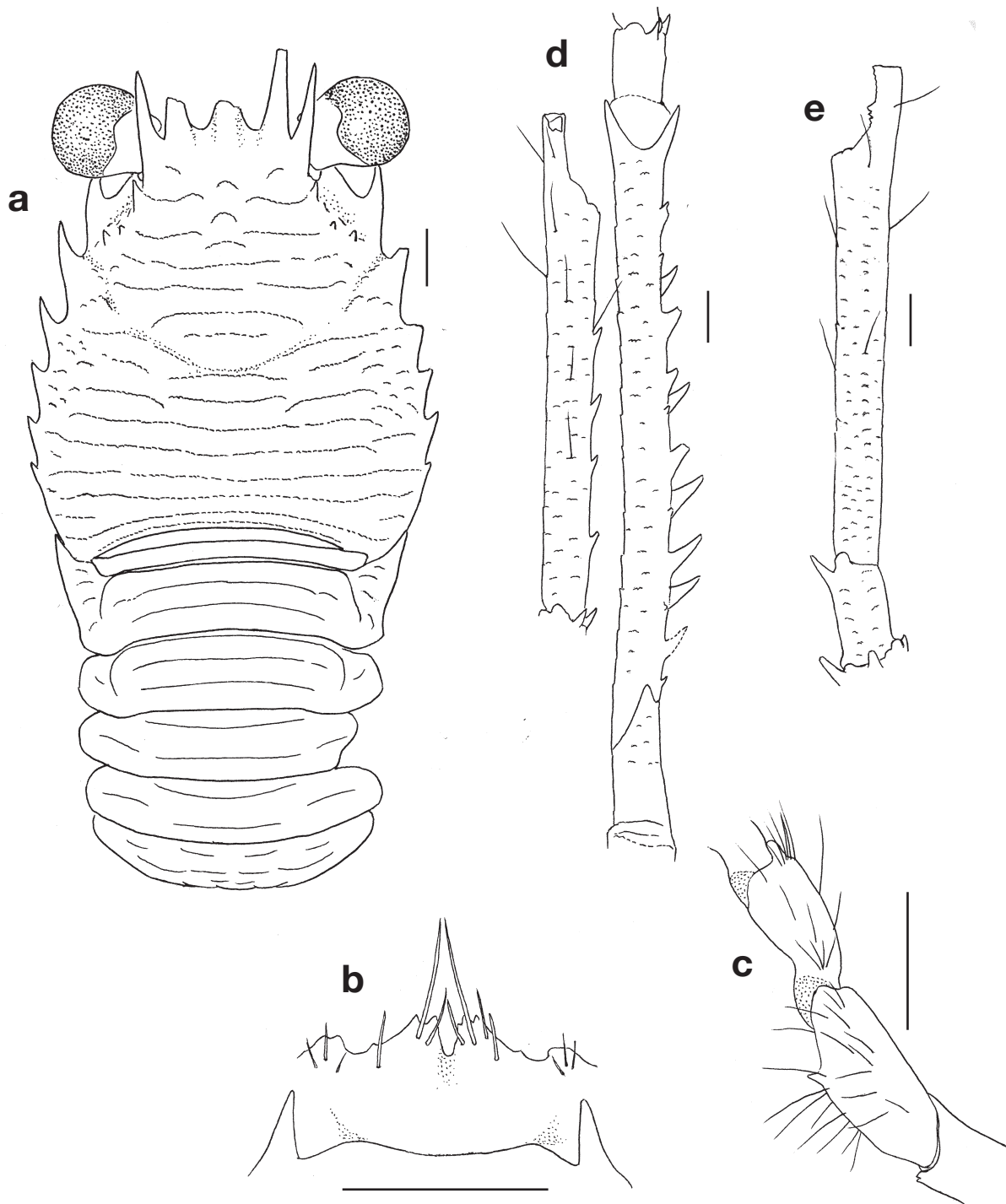


Fig. 9. Holotype female (6.0 mm), DW45: **a**, carapace and abdomen, dorsal; **b**, anterior part of sternal plastron; **c**, left Mxp3, lateral; **d**, left P1, ventral; **e**, same, dorsal. Scales = 1 mm (after Baba & Lin, 2008).

Eumunida depressa de Saint Laurent & Poupin, 1996

扁真刺蝦



Fig. 10. Male (45.6 mm), Dongsha (Pratas), South China Sea, Oct 1989.

Eumunida funambulus—Miyake, 1982: 144, pl. 48, fig. 3. (not *E. funambulus* Gordon, 1930)

Eumunida pacifica—Baba in Baba *et al.*, 1986: 165, 287 (part), fig. 116.—Miyake, 1991: 144, pl. 48, fig. 3. (not *E. pacifica* Gordon, 1930)

Eumunida (Eumunida) depressa de Saint Laurent & Poupin, 1996: 356, figs 3a–h [type locality: Kyushu-Palau Ridge, 520–1320 m].

Eumunida depressa.—Baba, 2005: 209.

Material examined.—Dongsha, 600 m, Oct 1989: 1 male (45.6 mm) (NTOU).—21°34'N, 117°32'E, 488–521m, 17 Apr 1995: 1 female (51.5 mm) (NTOU).

Diagnosis.—Carapace with distinct transverse ridges, lacking gastric spines between anterior-most hepatic spines, dorsal surface of branchial region depressed. Lateral margin with 6 or 7 spines: 3 in front of and 3 or 4 behind posterior cervical groove; first (anterior-most) spine larger than second, as long as lateral supraocular spine. Lateral supraocular spine overreaching midlength of mesial one. Sternite 3 with pair of submedian spines on anterior margin; sternite 4 with spine on each side. Mxp3 merus with small spine distal to midlength of flexor margin, with or without small distolateral spine. P1 carpus with 3 terminal spines; palm spineless, with ventral pad of densely packed short setae. P4 merus with row of spines on lateral surface; P2–4 propodi unarmed on extensor margin.

Size.—Males to 45.6 mm; females to 51.5 mm.

Coloration.—Overall orange, orange red or dark orange. Abdominal somites 4–6 and tailfan pale. P1

fingers distally whitish. Distal portions of propodi and whole dactyli of P2–4 also whitish (Miyake, 1982; Baba in Baba *et al.*, 1986; present data).

Habitat.—Substrates unknown; 488–1320 m.

Distribution.—Kyushu-Palau Ridge and vicinity of Dongsha.

Remarks.—*Eumunida depressa* was described based upon part of the material reported under *E. pacifica* by Baba in Baba *et al.* (1986) and Miyake (1991) from the Kyushu-Palau Ridge (de Saint Laurent & Poupin, 1996). The remainder of the material was named *E. macphersoni* de Saint & Poupin, 1996, which species is also included in the present catalog. *Eumunida depressa* differs from *E. macphersoni* in the posterior branchial region distinctly depressed, the P1 palm with a ventral pad of densely packed setae and unarmed, and the P4 merus with a row of spines on the lateral surface. This species is recorded for the first time from Dongsha but has not been found in Taiwan proper.

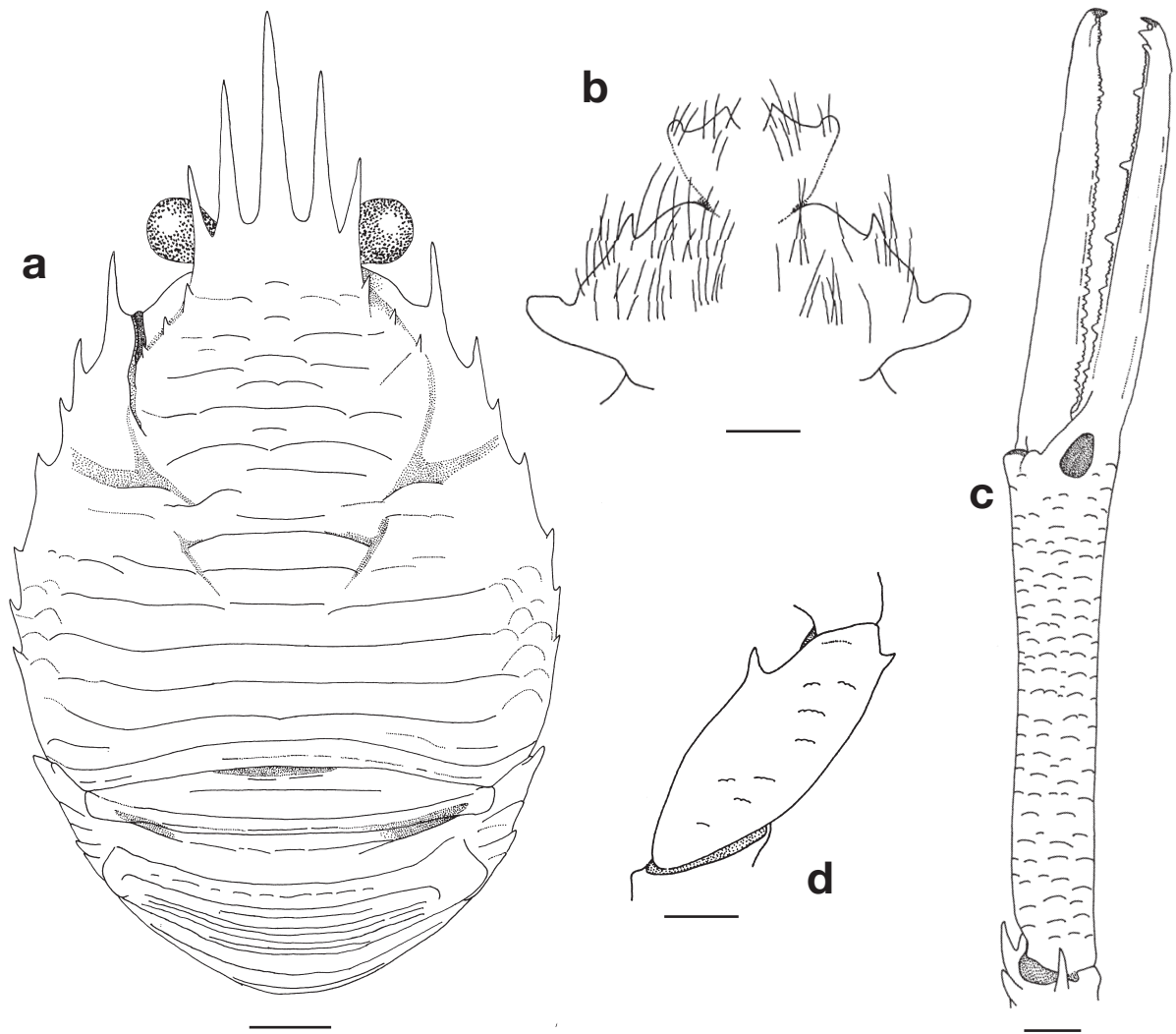


Fig. 11. Male (45.6 mm), Dongsha, Oct 1989: **a**, carapace and abdomen, dorsal; **b**, anterior part of sternal plastron; **c**, merus of left Mxp3, lateral; **d**, left P1, ventral. Scales = 5 mm.

Eumunida funambulus Gordon, 1930
繩舞真刺蝦

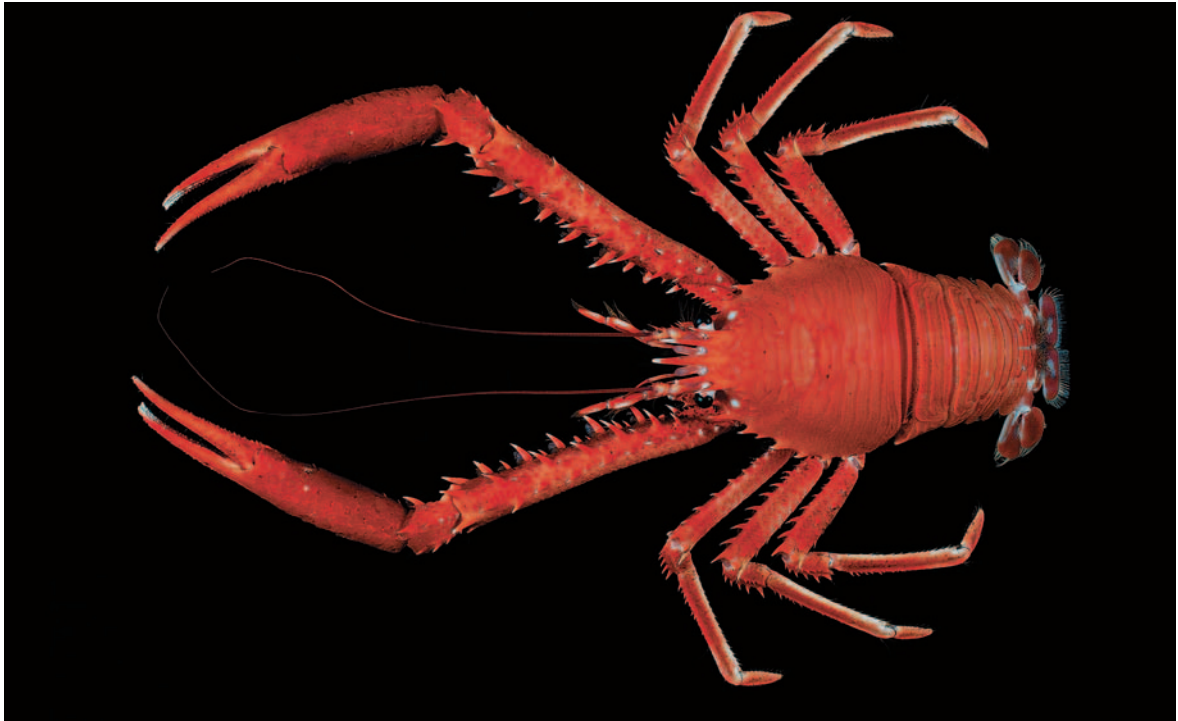


Fig. 12. Male (38.1 mm), Dasi fishing port, Yilan County, 7 Mar 2008.



Fig. 13. Male (27.0 mm), Dasi fishing port, Yilan County, 14 Jul 1985, lateral view.



Fig. 14. Hepingdao fishing port, Keelung City, Jun 2000.

Eumunida funambulus Gordon, 1930: 744, figs. 1c, 2a, 2b, 3b, 4b, 5 [type locality: Gulf of Aden, 12°45'N, 45°17'E, 476 m].—Van Dam, 1933: 10; 1937: 102.—Baba, 1973: 121, fig. 3, pl. 4: fig. 2; 1988: 6.—Wu *et al.*, 1998: 79, figs. 4, 12A.—Baba, 2005:18, 209.—Baba *et al.*, 2008: 17, fig. 1C.

Eumunida (Eumunida) funambulus.—de Saint Laurent & Poupin, 1996: 350.—Ahyong & Baba, 2004: 57.

Not *Eumunida funambulus*.—Miyake, 1982: 444, pl. 48, fig. 3. (= *E. depressa* de Saint Laurent & Poupin, 1996)

Material examined.—Longdong, Taipei County, no date: 1 female (27.9 mm) (NTOU). Dasi fishing port, Yilan County, 14 Jul 1985: 1 male (27.0 mm) (NTOU).—20 Feb 1998: 1 male (29.8 mm) (NTOU).—11 Jan 1999: 1 male (35.5 mm) (NTOU).—May 2000: 1 male (23.2 mm) (NTOU).—29 Mar 2004: 1 male (14.8 mm).—05 Aug 2004: 2 males (9.2–35.0 mm).—28 Mar 2005: 1 male (41.9 mm) (NTOU).—04 May 2005: 1 ovigerous female (35.0 mm) (NTOU).—9 Oct 2007: 1 male (16.2 mm) (NTOU).—7 Mar 2008: 1 male (38.1mm) (NTOU). CP114, 24°51.03'N, 121°58.30'E, 128–250 m, 21May 2001: 1 female (9.7 mm) (NTOU). CD380, 24°38.598'N, 122°10.436'E, 329–456 m, 24 Jul 2007: 1 male (13.8 mm) (NTOU).

Diagnosis.—Carapace with distinct transverse ridges, laterally armed with 7 spines, 3 of these located anterior to posterior cervical groove. Pair of gastric spines mesial to anterior-most hepatic spines. Mxp3 merus with 1 distodorsal and 1 or 2 ventral marginal spines; sternite 4 with strong lateral marginal spine on each side. P1 carpus with 3 terminal spines; palm with ventral pad of densely packed hairs, massive, covered with soft setae. P2 merus with row of spines on ventromesial margin; P4 merus with row of spines on lateral surface; P2–4 propodi with several extensor marginal spines in adult.

Size.—Males to 41.9 mm, females to 35.5 mm (present data).

Coloration.—Overall orange or orange red; white on eyestalks without cornea and on posterolateral portion of abdominal somite 6; white spot directly behind frontal margin, and another spots placed side by side on posterior lobe of telson. Spines on carapace and pereopods, including rostral and supraocular spines with white tip.

Habitat.—Mud, sand or globigerina (Baba 1988); 92–730 m.

Distribution.—Gulf of Aden, Socotra Channel between Aden and Bombay, Java, Sahul Bank S of Timor, Timor Sea off Darwin (Northern Territory), N Sulawesi, Philippines (between Luzon and Samar, off N Mindanao, between Cebu and Bohol, South China Sea off SW Luzon), Taiwan, and Japan.

Remarks.—The smaller (9.2 mm) of the two males from Dasi, collected 5 Aug 2004, has the P1 palm without distinct ventral pad of setae.

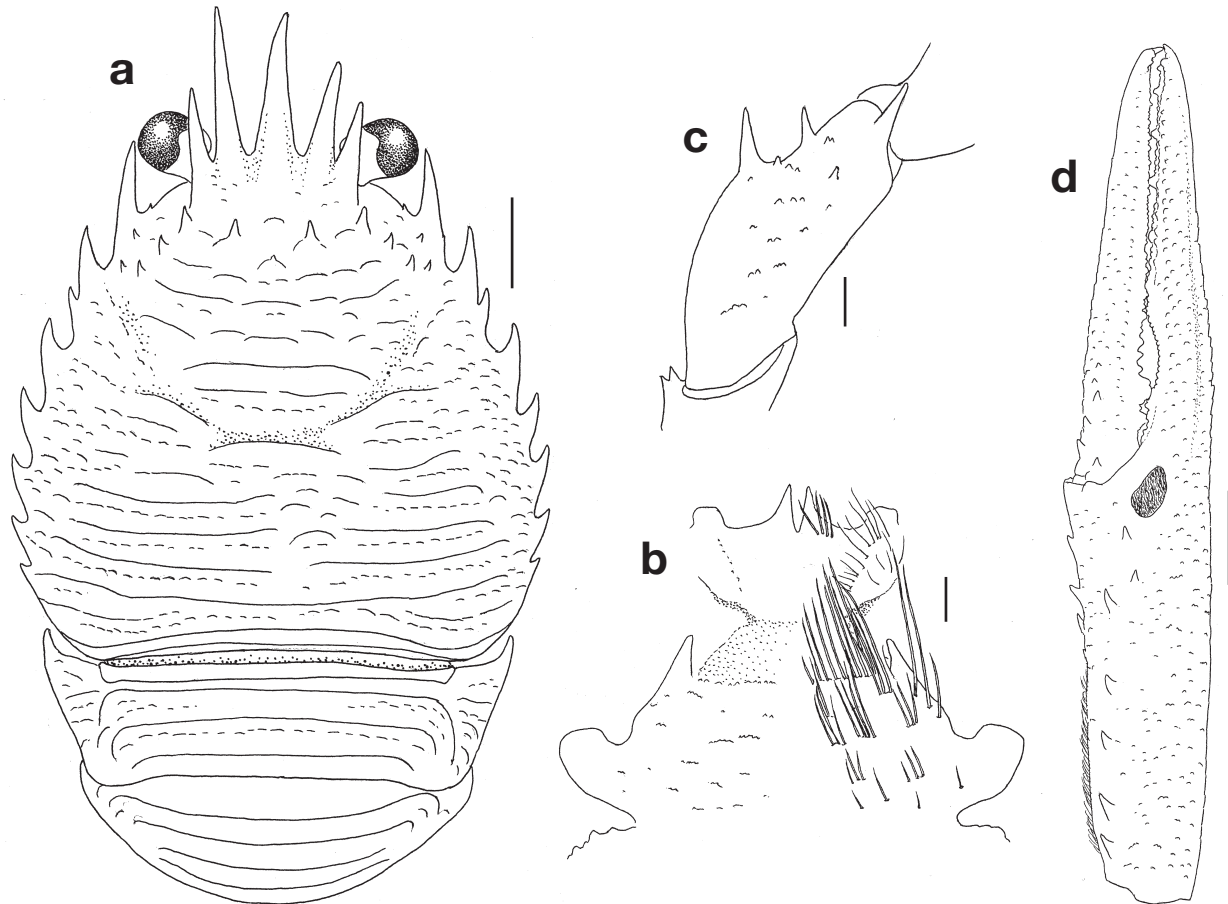


Fig. 15. Male (24.7 mm), Dasi fishing port, Yilan County, 20 Feb 1998: **a**, carapace and abdomen, dorsal; **b**, anterior part of sternal plastron; **c**, left Mxp3, lateral; **d**, left P1, ventral. Scales: a, d = 5 mm; b, c = 1 mm.

Eumunida macphersoni de Saint Laurent & Poupin, 1996
麥氏真刺蝦

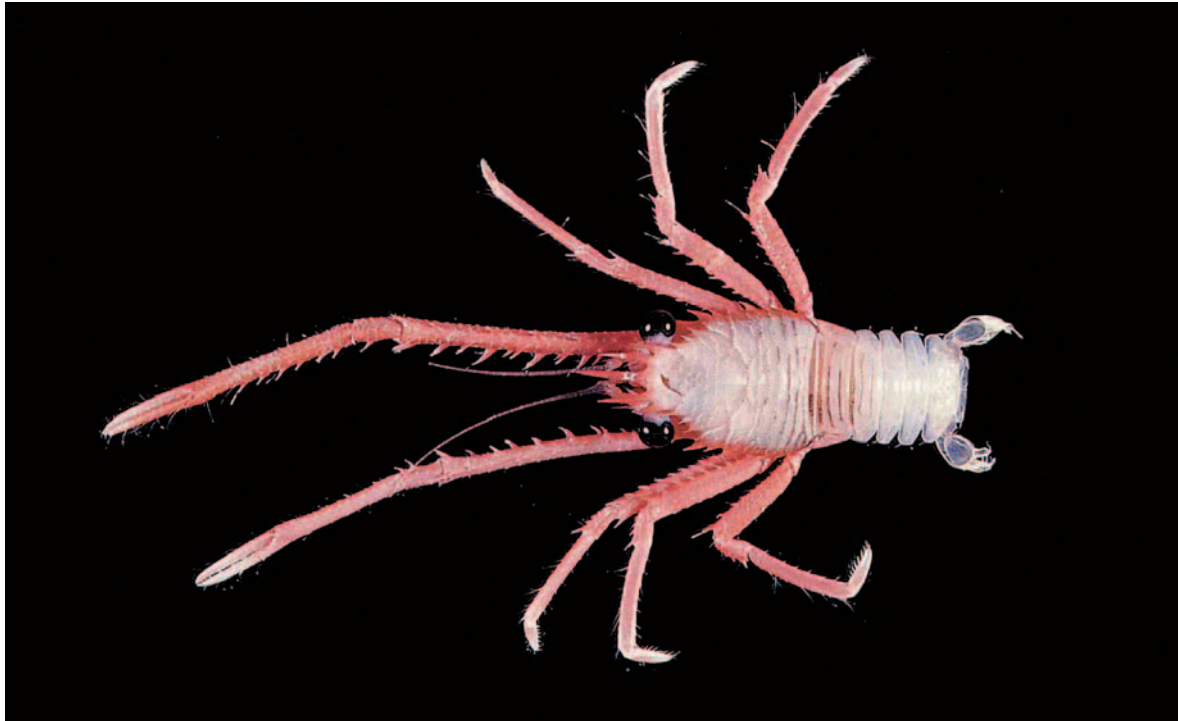


Fig. 16. Female (5.5 mm), DW 60.

Eumunida smithii.—Balss, 1913b: 21 (part), fig. 17 (Japan). (not *E. smithii* Henderson, 1885)

Eumunida sp.—Gordon, 1930: 748, fig. 8a–b (Japan; No. 1114 reported by Balss (1913b)).

Eumunida pacifica.—Baba in Baba *et al.*, 1986: 165, 287 (part). (not *E. pacifica* Gordon, 1930)

Eumunida (Eumunida) macphersoni de Saint Laurent & Poupin, 1996: 362, fig. 5a–g [type locality: Kyushu-Palau Ridge, 520–1320 m].

Eumunida macphersoni.—Baba, 2005: 210.—Baba *et al.*, 2008: 18.

Material examined.—DW60, 24°41.2'N, 122°11.8'E, 532–418 m, 4 Aug 2000: 1 female (5.5 mm) (NTOU).

Diagnosis.—Carapace with distinct transverse ridges, laterally armed with 7 spines; 3 posteriorly diminishing spines anterior to posterior cervical groove, anteriormost slightly shorter than lateral supraocular spine. No spine on gastric region. Mxp3 merus with small spine distal to midlength of flexor margin. Sternite 3 with pair of small submedian spines; sternite 4 with strong lateral marginal spine on each side. P1 merus with 3 rows of spines; carpus with 3 terminal spines; palm without pad of densely packed hairs on ventral surface, distinctly longer than fingers, with sparse setae and row of ventromesial spines. P4 merus without row of spines on lateral surface; P2–4 propodi unarmed on extensor margin.

Size.—Females to 33.6 mm (de Saint Laurent & Poupin, 1996); no male is known.

Coloration.—Carapace whitish, but pale orange red along lateral margins. Rostral and supraocular spines

and P1–4 pale orange red. Abdominal somites 2–4 much paler, remainder of abdomen whitish, tailfan translucent.

Habitat.—Substrates unknown; 418–1320 m.

Distribution.—Kyushu-Palau Ridge, Taiwan and possibly Sagami Bay, Japan.

Remarks.—This is the first record for the species since the female holotype was described from the Kyushu-Palau Ridge.

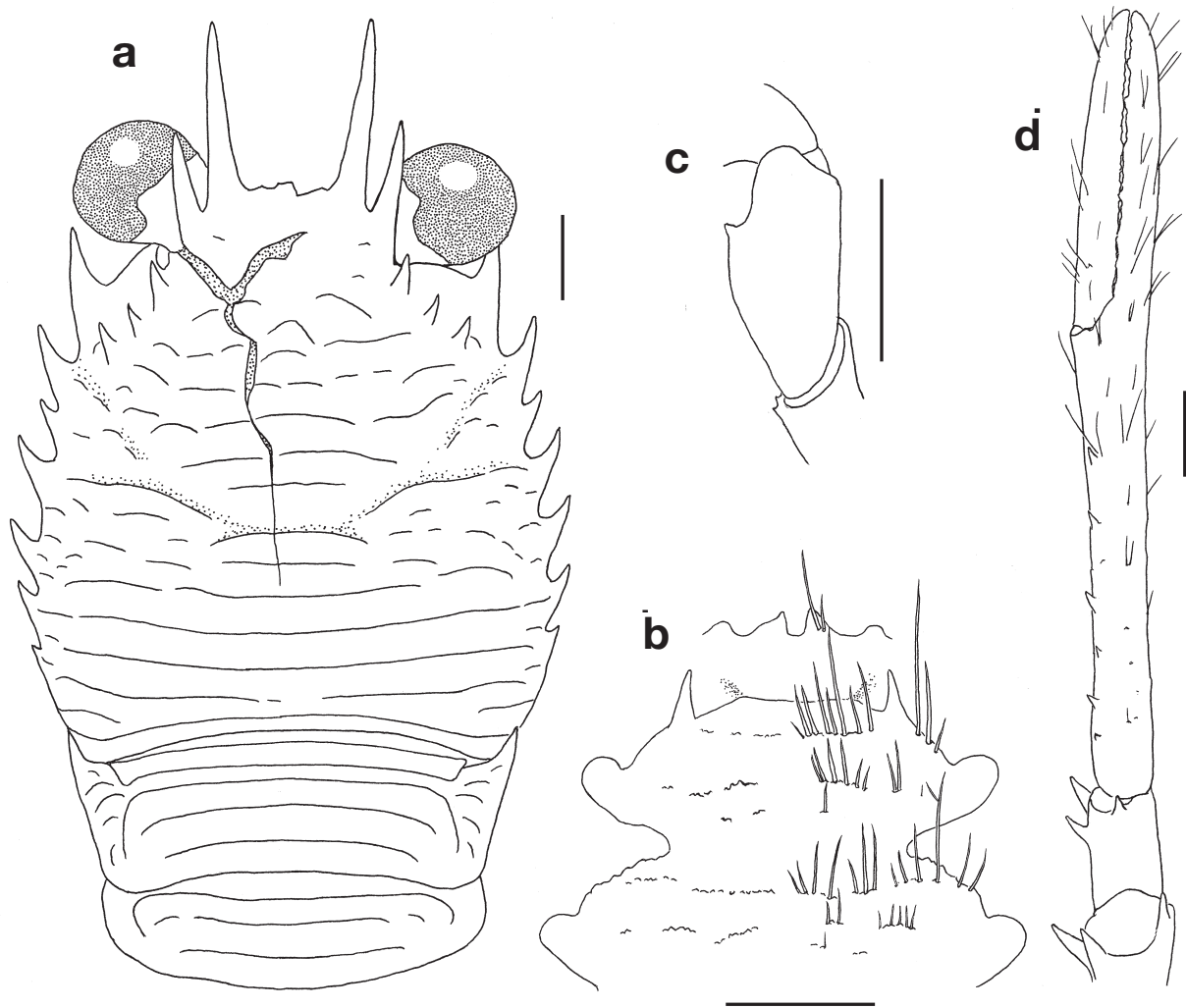


Fig. 17. Female (5.5 mm), DW60: **a**, carapace and abdomen, dorsal; **b**, anterior part of sternal plastron, **c**, left Mxp3, lateral; **d**, left P1, ventral. Scales = 1 mm.

Eumunida parva de Saint Laurent & Macpherson, 1990

小真刺蝦



Fig. 18. Male (10.0 mm), CP380.

Eumunida parva de Saint Laurent & Macpherson, 1990: 257, figs. 2a, 11a–k, 12b–c [type locality: New Caledonia, 18°52'S, 163°21.7'E, 545 m].—Baba, 2005: 210.—Baba *et al.*, 2008: 19.

Eumunida (Eumunidopsis) parva.—de Saint Laurent & Poupin, 1996: 376, fig. 9h.

Material examined.—CP59, 24°37.5'N, 122°12.8'E, 256–361 m, 4 Aug 2000: 1 female (5.4 mm) (NTOU). CD380, 24°38.598'N, 122°10.436'E, 329–456 m, 24 Jul 2007: 1 male (10.0 mm) (NTOU). DW149, 22°18.5'N, 121°29.37'E, 258–258 m, 20 May 2002: 1 ovigerous female (4.0 mm), 2 females (3.0, 3.9 mm) (NTOU).

Diagnosis.—Carapace with distinct transverse ridges, laterally armed with 6 spines; 2 spines anterior to posterior cervical groove, anterior spine subequal to posterior spine, about half as long as lateral supraocular spine. No spine on gastric region. Mxp3 merus with distinct spine distal to midlength of flexor margin. Sternite 3 with paired median spines; sternite 4 unarmed on each side. P1 merus with 2 rows of spines, carpus with 3 terminal spines; palm with ventral pad of densely packed hairs, longer than fingers, relatively massive, covered with short fine setae. P4 merus with row of spines on lateral surface. P2–4 propodi unarmed on extensor margin.

Size.—Males to 10.0 mm, females to 9.0 mm (de Saint Laurent & Macpherson, 1990; present data).

Coloration.—Overall pale orange. Abdomen translucent. P2–4 dactyli much paler. Also reported as: carapace pink or light orange; rostral and supraocular spines red, margins darker; abdomen whitish; P1 red-orange, with dorsal spines of P1 merus red, mesial spines whitish; distal portion of palm and proximal portion of fingers red; P2–4 red-light orange; distal part of propodi and dactyli whitish or translucent (de Saint Laurent & Macpherson, 1990).

Habitat.—Substrates unknown; 256–545 m.

Distribution.—New Caledonia and Taiwan.

Remarks.—One of the specimens is the largest of the species. The present material extends the northerly record and constitutes the first record for the species from Taiwan.

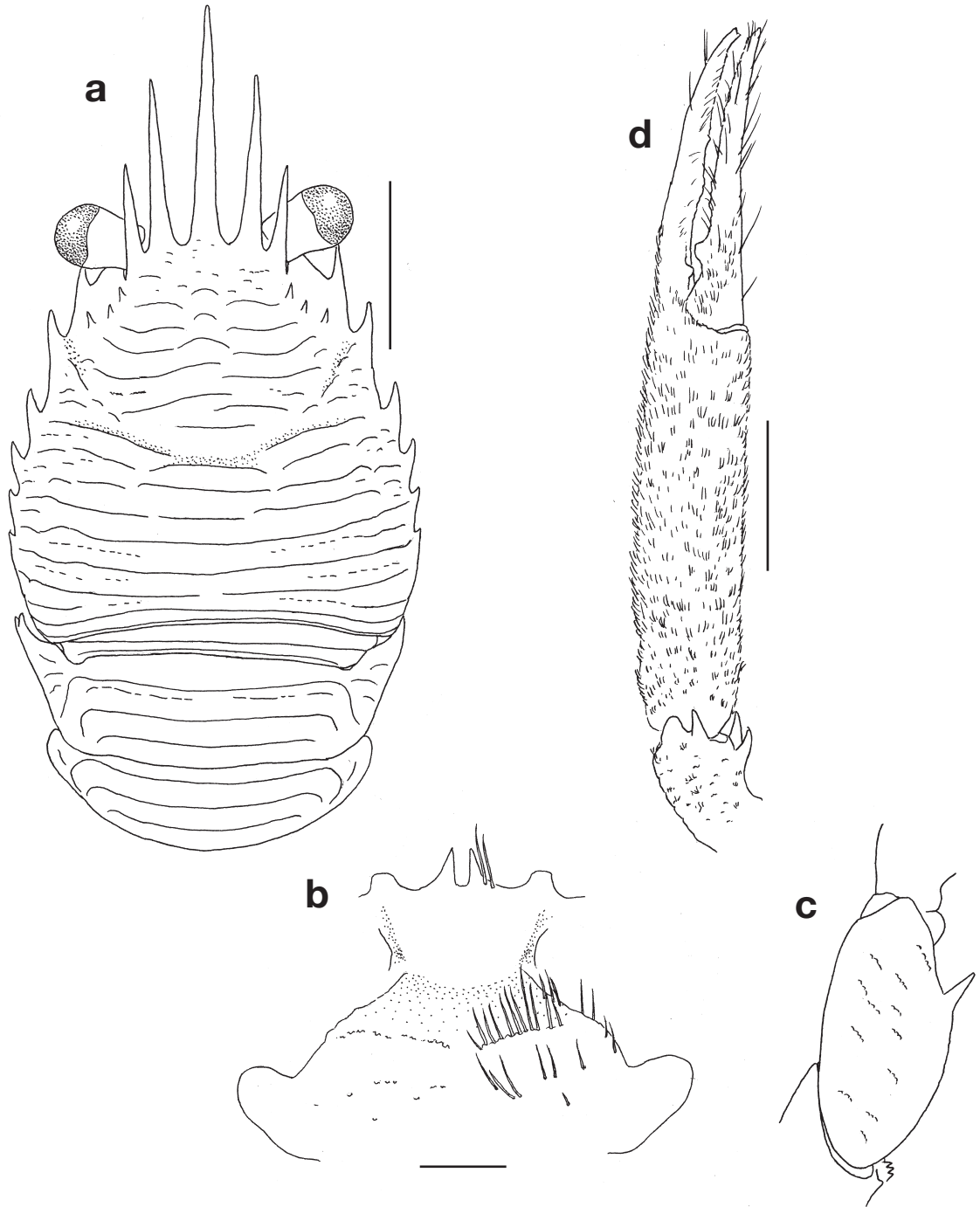


Fig. 19. Male (10.0 mm), CD380: **a**, carapace and abdomen, dorsal; **b**, anterior part of sternal plastron; **c**, right Mxp3, lateral; **d**, left P1, mesial. Scales: a, d = 5 mm; b, c = 1 mm.

Genus *Uroptychodes* Baba, 2004 似折尾蝦屬

Uroptychodes Baba, 2004: 98 [type species: *Uroptychodes epigaster* Baba, 2004. Gender: masculine].—Baba, 2005: 26.

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. Orbital margin concave, distinct in dorsal view. Excavated sternum with carinate ridge in midline. Abdominal somite 2 having pleuron anterolaterally rounded, not produced into spine. Eyes short. Antennal scale present, flagellum very short, not extending beyond end of rostrum. Mxp3 with bases broadly separated, ischium with distinct spine lateral to rounded flexor distal margin. P1 relatively slender, spinose or covered with denticular small spines. P2 distinctly more slender than P3–4, carpus longer than that of P3–4, dactylus usually unarmed on flexor margin; P3–4 dactyli with row of spines on flexor margin, penultimate broader than ultimate and penultimate. Two pairs of male gonopods.

Remarks.—The genus contains 11 species, all from the Western Pacific (Baba *et al.*, 2008). This genus is newly recorded off Taiwan and three species are here made known from Taiwan.

Key to species of *Uroptychodes* from Taiwan

1. Branchial marginal spines broad at base, nearly contiguous to one another *U. grandirostris*
– Branchial marginal spines relatively slender, distinctly separated at base from one another 2
2. Rostrum with 7 or 8 lateral spines. Penultimate spine on P2 dactylus at most twice as broad as ultimate spine *U. barunae*
– Rostrum with a few spines on lateral margin. Penultimate spine on P2 dactylus pronounced, 3 times as broad as ultimate spine *U. spinimarginatus*

Uroptychodes barunae Baba, 2004
巴烏拉似折尾蝦



Fig. 20. Male (5.1 mm), CP58.

Uroptychus barunae Baba, 2004: 100, figs. 2, 3 [type locality: Indonesia (Tanimbar Island), 7°59'S, 133°02'E, 184–186 m]; 2005: 215.—Baba *et al.*, 2008: 25.

Material examined.—CP58, 24°35.1'N, 122°05.8'E, 221–254 m, 4 Aug 2000: 27 males (2.4–5.1 mm), 20 ovigerous females (4.2–5.0 mm), 13 females (2.1–4.8 mm) (NTOU). CP212, 24°34.60'N, 122°5.84'E, 223–260 m, 26 Aug 2003: 4 males (4.0–5.1 mm), 1 ovigerous female (4.6 mm) (NTOU). CP216, 24°34.71'N, 122°4.02'E, 209–280 m, 27 Aug 2003: 5 males (4.1–4.5 mm), 6 ovigerous females (4.1–4.8 mm), 1 female (3.6–4.3 mm) (NTOU).

Diagnosis.—Carapace covered with fine setae; several small spines on hepatic region, spineless elsewhere on surface; 7–9 well-developed spines on branchial margin preceded by anterolateral spine of moderate-size and 1 or 2 small spines on hepatic margin. Rostrum with 7 or 8 small spines on lateral margin, about as long as remaining carapace. Sternite 3 with broad U-shaped median notch on anterior margin. Antennal peduncle having article 2 without distinct distolateral spine; antennal scale terminating in midlength of article 5; articles 4 and 5 with well-developed distomesial spine ventrally, article 5 slightly longer than article 4. P1 covered with small spines arranged roughly in rows. P2–4 spinose on lateral surface of merus and carpus; P2 merus longer than P3 merus, carpus three-quarters length of P2 propodus. Penultimate spine of P3–4 dactyli about twice as broad as ultimate.

Size.—Males to 5.1 mm, females to 5.0 mm (present data).

Coloration.—Carapace pale orange, with much paler narrow longitudinal stripe in midline flanked by

similar stripe. Abdomen translucent. P1–5 pale dark yellow.

Habitat.—Collected with dense crinoids; 184–280 m.

Distribution.—Indonesia (Tanimbar Island) and Taiwan.

Remarks.—The present material generally agrees well with the original description, only excepting that the P2 carpus is three-quarters instead of half length of the P2 propodus. This is the first record for the species from Taiwan.

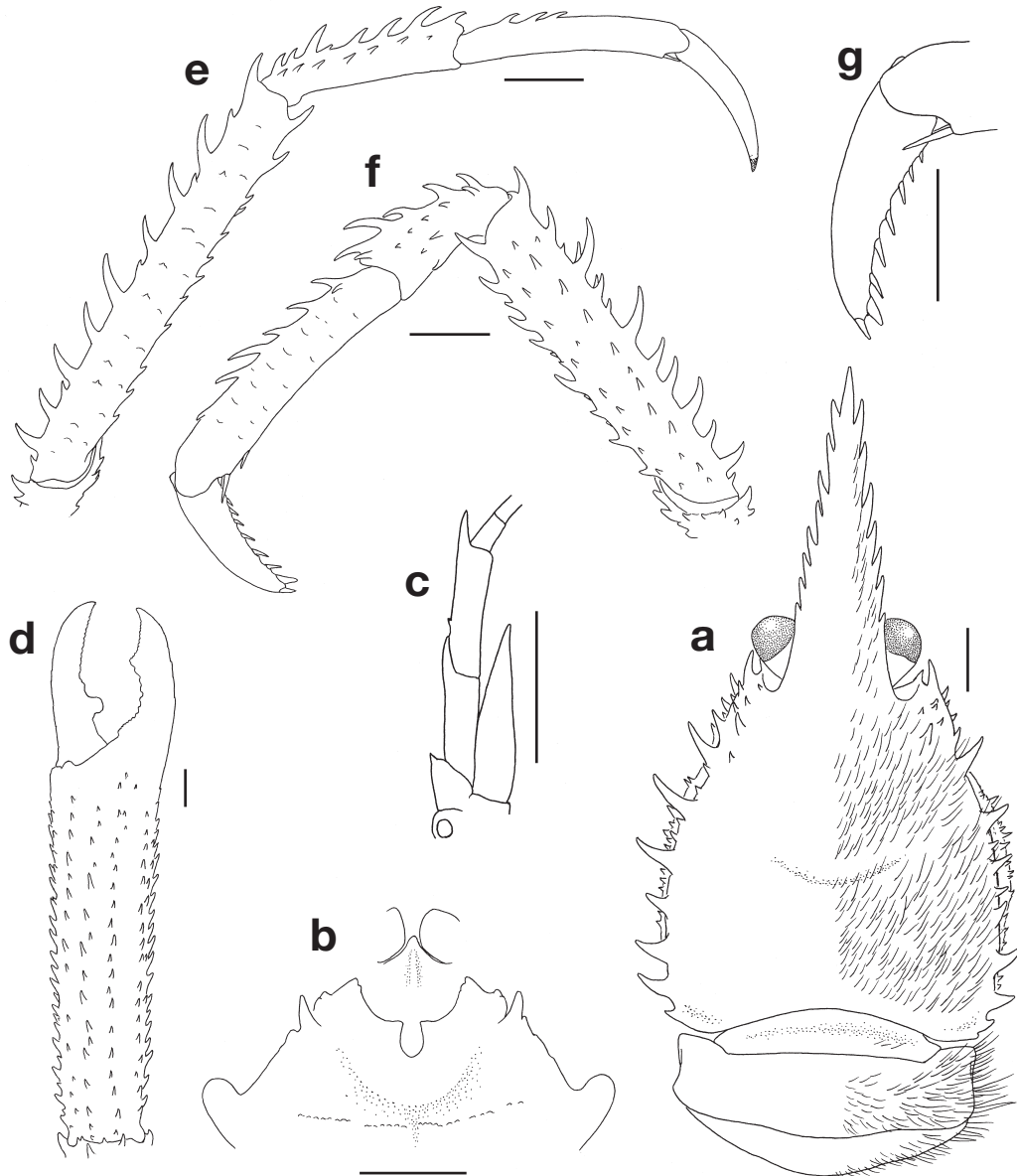


Fig. 21. Male (5.1 mm), CP58: **a**, carapace and abdomen, setae omitted from left side, dorsal; **b**, anterior part of sternal plastron; **c**, left antenna, ventral; **d**, right P1, dorsal; **e**, right P2, lateral; **f**, left P3, lateral; **g**, same, distal part, lateral. Scales = 1 mm.

Uroptychodes grandirostris (Yokoya, 1933)
巨額似折尾蝦



Fig. 22. Ovigerous female (4.9 mm), CP216.

Uroptychus grandirostris Yokoya, 1933: 68, fig. 29 (part).—Van Dam, 1939: 403, figs. 4, 4a, 5.—Miyake, in Miyake & Nakazawa, 1947: 735, fig. 2125.—Miyake, 1965: 633, fig. 1038.—Miyake & Baba, 1967c: 225, fig. 1.

Uroptychodes grandirostris.—Baba, 2004: 106, fig. 6 [designation of neotype; type locality: off Daio-zaki, Japan]; 2005: 215.—Baba *et al.*, 2008: 25, fig. 1D.

Material examined.—CP58, 24°35.1'N, 122°05.8'E, 221–254 m, 4 Aug 2000: 9 males (3.7–6.0 mm), 2 ovigerous females (6.3–8.2 mm), 5 females (2.5–4.8 mm) (NTOU). CP212, 24°34.60'N, 122°5.84'E, 223–260 m, 26 Aug 2003: 1 female (2.7 mm) (NTOU). CP216, 24°34.71'N, 122°4.02'E, 209–280 m, 27 Aug 2003: 5 males (4.0–5.0 mm), 6 ovigerous females (4.7–6.0 mm), 4 females (2.7–6.2 mm) (NTOU). CP387, 24°34.224'N, 122°01.083'E, 206 m, 25 July 2007: 1 male (5.7 mm) (NTOU).

Diagnosis.—Carapace densely or sparsely with denticles; lateral margin with 6 strong spines on branchial region, anterolateral spine moderate-sized, followed by small spine close to anteriormost of branchial marginal spines. Rostrum with ca. 10 small spines on lateral margin, dorsal surface longitudinally hollowed, length subequal to or slightly greater than that of carapace. Sternite 3 with broad U-shaped excavation on anterior median margin. Pleura of abdominal somites 2–3 covered with denticles. Antennal article 2 without distinct spine on distolateral margin; antennal scale barely reaching end of article 5; article 5 about as long as article 4, each article with well-developed distomesial spine. P1–4 covered with denticles. P2 merus distinctly longer than P3 merus, carpus 0.8 length of P2 propodus. P3–4 dactyli having ultimate flexor spine longer and slightly

narrower than penultimate.

Size.—Males to 6.0 mm, females to 8.2 mm (present data).

Coloration.—Body and P2–4 pale pink-orange, translucent on abdomen and P2–4 dactyli; 3 pairs of narrow longitudinal reddish orange stripes on carapace, median pair arising from distolateral part of rostrum, extending posteriorly to end of abdominal somite 6, lateral pair along lateral margin of carapace continued onto abdominal somite 2, intermediate pair branching out from median pair at level of rostral base, continued backward through entire carapace, then divergent toward end of abdominal somite 2. Abdominal somites 3–6 each with posteriorly divergent similar stripes. P1 reddish orange, with pale mottlings.

Habitat.—Collected together with dense crinoids (present data); 196–280 m.

Distribution.—Japan (off Daio-zaki, Kumanonada; Tosa Bay), East China Sea, and Taiwan.

Remarks.—This species is recorded for the first time from Taiwan. Some of the specimens examined have less numerous denticles on the carapace as in those reported by Baba (2004). However, the majority have much denser denticles, totally covering the carapace and lateral parts of abdominal somites 2 and 3. The ultimate spine on the P3–4 dactyli is consistently longer and slightly narrower than the penultimate in the present material. This was also confirmed by examination of the material reported by Baba (2004).

Baba (2004) designated a neotype of *U. grandirostris*, which was inadvertently mislabeled and incorrectly listed in the ‘Material Examined’ as ZLKU 4878. The actual neotype specimen, as depicted by Baba (2004: fig. 6) is the 4.9 mm female (ZLKU 4880).

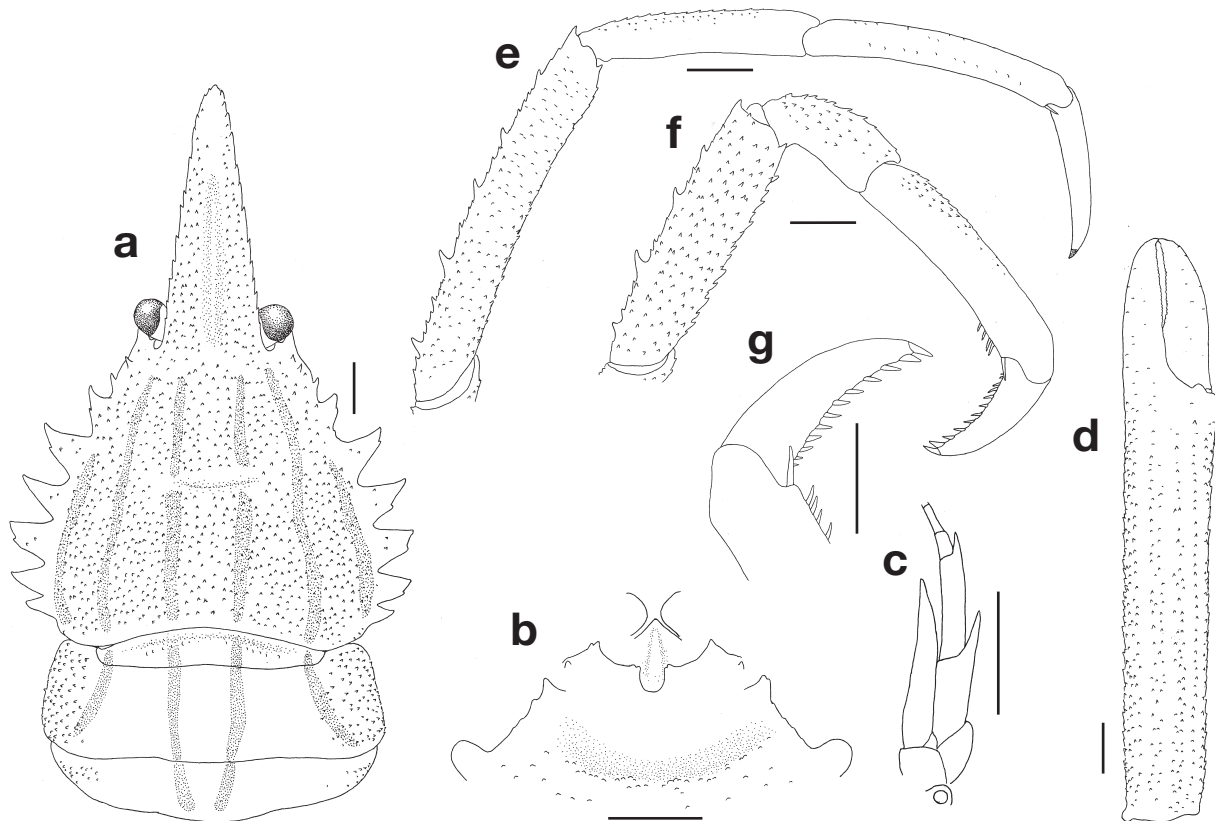


Fig. 23. Male (5.7 mm), CD387: **a**, carapace and abdomen, dorsal; **b**, anterior part of sternal plastron; **c**, right antenna, ventral; **d**, left P1, dorsal; **e**, right P2, lateral; **f**, right P3, lateral; **g**, same, distal part, lateral. Scales = 1 mm.

Uroptychodes spinimarginatus (Henderson, 1885)

緣棘似折尾蝦

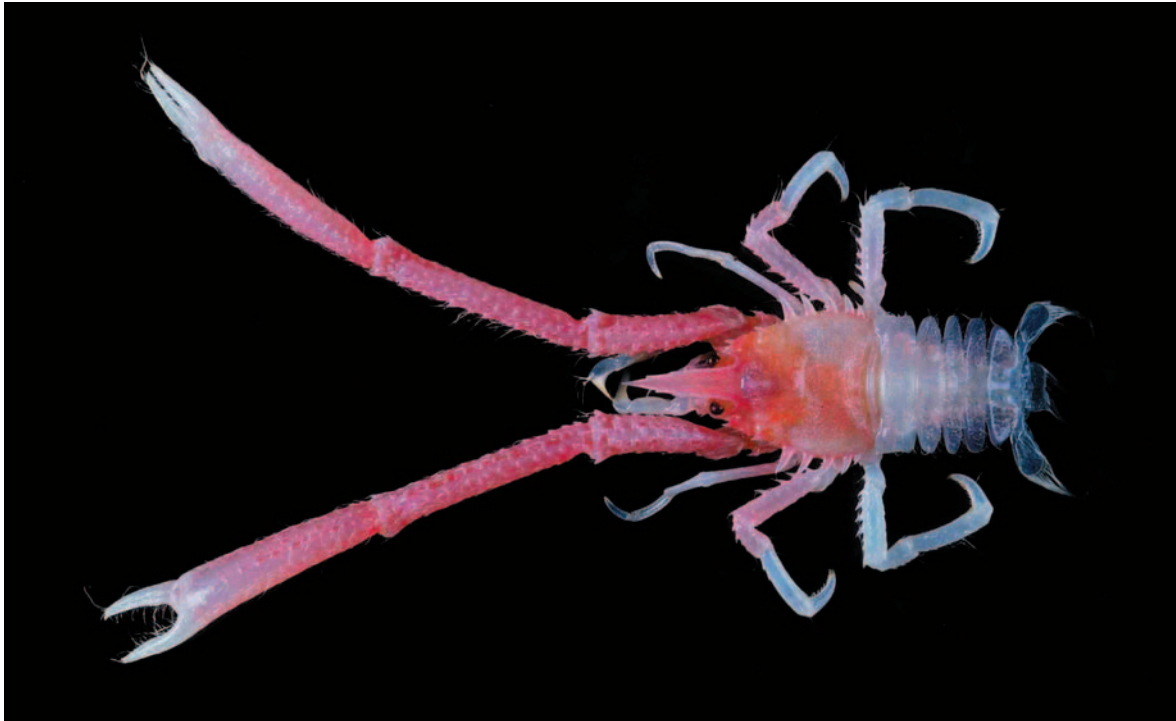


Fig. 24. Male (5.4 mm), CP300.

Diptychus spinimarginatus Henderson, 1885: 419 [type locality: off Kermadec Islands and off the Philippines, 915–952 m].

Uroptychus spinimarginatus.—Henderson, 1888: 176, pl. 21: figs. 2, 2a.—Thomson, 1899: 196.—Baba, 1988: 46, figs. 18, 19. [designation of lectotype; type locality: Kermadec Islands, 29°55'S, 178°14'W, 952 m].

Uroptychodes spinimarginatus.—Baba, 2004: 112, fig. 9b, c; 2005: 27, 215.—Baba *et al.*, 2008: 26.—Schnabel, 2009: 546.

Material examined.—CP300, 22°17.156'N, 119°59.963'E, 960–972 m, 11 Aug 2005: 2 males (5.4, 5.9 mm), 1 ovigerous female (5.3 mm) (NTOU). PCP342, 22°16.648'N, 119°59.960'E, 988–1010 m, 8 Mar 2006: 2 ovigerous females (5.0, 5.4 mm), 1 female (3.6 mm) (NTOU). PCP344, 22°15.952'N, 120°0.110'E, 995–1073 m, 8 Mar 2006: 1 ovigerous female (4.9 mm) (NTOU).

Diagnosis.—Carapace covered with fine setae, spineless on surface; lateral margin with 5–6 strong spines on branchial region, preceded by anterolateral spine of moderate-size and 1 or 2 small spines on hepatic region. Rostrum with 2–4 small spines on distolateral margin. Sternite 3 with narrow notch on anterior margin. Antennal article 2 with small distolateral spine; antennal scale overreaching midlength of but barely reaching end of article 5; article 5 twice as long as article 4, unarmed; article 4 with small distomesial spine. P1 with setiferous scale-like ridges. P2–4 unarmed on lateral surface of merus and carpus; P2 merus as long as P3 merus, carpus as long as P2 propodus. Penultimate spine of P3–4 dactyli pronouncedly broad.

Size.—Males to 5.9 mm (present data), females to 6.1 mm (Baba, 2004).

Coloration.—Carapace and P1 pinkish red; Mxp3, P2–5 and abdomen paler. Abdomen translucent. Eggs white.

Habitat.—Volcanic mud, blue mud (Henderson, 1888), coral and sand (Baba, 1988); 458–1073 m.

Distribution.—Hunter & Matthew Islands, Kermadec Islands, Palawan Passage, Kei Islands, Manado Bight (Sulawesi), Philippines, and Taiwan.

Remarks.—The present material extends the known range of the species to Taiwan.

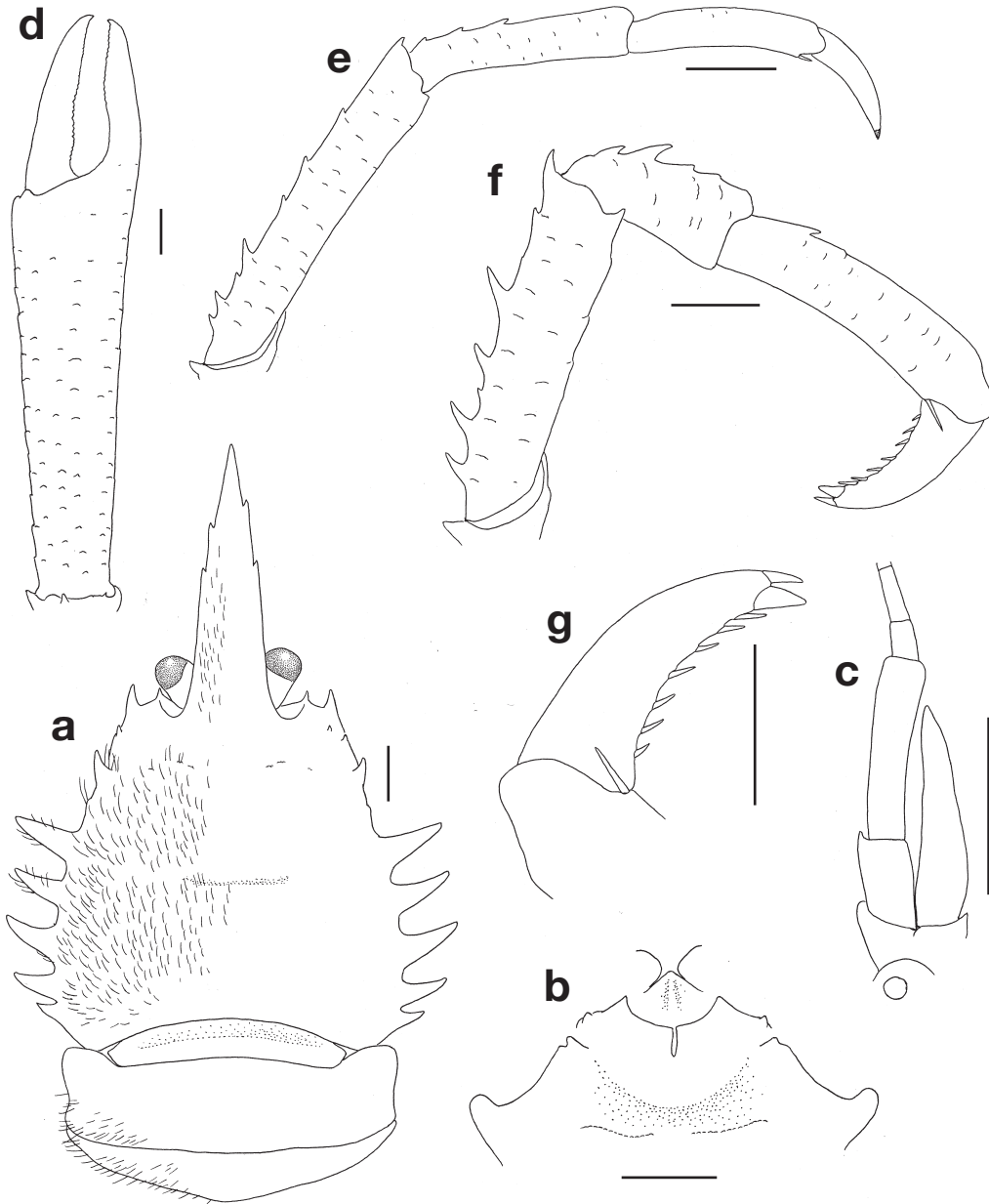


Fig. 25. Male (5.4 mm), CP300: **a**, carapace and abdomen, dorsal; **b**, anterior part of sternal plastron; **c**, left antenna, ventral; **d**, right P1, dorsal; **e**, right P2, lateral; **f**, right P3, lateral; **g**, same, distal part, lateral. Scales = 1 mm.

Genus *Uroptychus* Henderson, 1888

折尾蝦屬

Diptychus A. Milne Edwards, 1880: 61 [type species not designated. Junior homonym of *Diptychus* Steindachner, 1866 (Pisces)].—A. Milne Edwards & Bouvier, 1897: 123.

Uroptychus Henderson, 1888: 173 [replacement name for *Diptychus* A. Milne Edwards, 1880. Gender: masculine].—Alcock, 1901: 281.—Stebbing, 1910: 365.—Van Dam, 1933: 18.—Chace, 1942: 9.—Barnard, 1950: 495.—Zariquiey Álvarez, 1968: 262.—Baba, 1988: 17.—Ahyong & Poore, 2004a: 12.—Poore, 2004: 220.—Baba, 2005: 27.

Diagnosis.—Carapace dorsally smooth or with spines. Rostrum narrowly or broadly triangular, mostly flattish, rarely with ridge in ventral midline. Supraocular spines absent. Orbital margin distinct in dorsal view. Anterior margin of sternal plastron distinctly concave, with or without submedian spines and median notch. Excavated sternum anteriorly ending between bases of Mxp1, with or without spine in center or ridge in midline. Antennal peduncle with distinct antennal scale, flagellum of no great length, never overreaching P1. Mxp3 with bases broadly separated, with distal parts accommodated in excavated sternum when folded, propodus elongated. P1 spinose or unarmed. P2–4 dactyli with flexor marginal spines of various arrangement.

Remarks.—The genus is one of the most diverse groups in the family, and so far 116 species are known from the Indo-Pacific and additional ca. 100 species are being described (Baba *et al.*, 2008; Baba & Lin, 2008; Schnabel, 2009). From Taiwan and Dongsha, only five species have been reported, with one of them still known only from Dongsha (Wu *et al.*, 1998; Baba & Lin, 2008). In this book additional nine species are made known from Taiwan.

Key to species of *Uroptychus* from Taiwan

1. Anterolateral spine of carapace strong, reaching or overreaching midlength of rostrum. P4 much smaller than P3 (P4 merus and carpus half as long as P3 merus and carpus, respectively). Sternites 5–7 in females separated into left and right parts, by loss of median parts *U. scambus*
— Anterolateral spine of carapace small, at most overreaching article 2 of antenna. P4 slightly smaller than P3 (P4 merus at most 0.6 times as long as P3 merus, P4 carpus at most 0.7 P3 carpus). Sternites 5–7 in female continuous, not separated into left and right parts 2
2. Rostrum broad triangular, covering more than proximal half of ocular peduncles without cornea. Abdominal somite 1 with distinct, elevated transverse ridge *U. naso*
— Rostrum narrow triangular, covering proximal part of ocular peduncles without cornea. Abdominal somite 1 gently convex from anterior to posterior 3
3. Carapace dorsally covered with distinct spines *U. ciliatus*
— Carapace dorsally unarmed, with very tiny spines or pair of epigastric spines 4
4. Carapace subtriangular in outline. P2–4 meri with spines on extensor crests *U. triangularis*
— Carapace with lateral margins convex or convexly divergent posteriorly. P2–4 meri unarmed on extensor crests 5
5. P2–4 propodi having flexor margin medially convex, with 2 or 3 spines at midlength *U. bispinatus*
— P2–4 propodi having flexor margin nearly straight, with row of spines or pair of terminal spines 6
6. Flexor margin of P2–4 propodi with single distal spine 7
— Flexor margin of P2–4 propodi with pair of distal spines 10
7. P2–4 propodi having flexor ultimate (distal) marginal spine slightly more proximal to midpoint between

- distal end of margin and antepenultimate spine. P2–4 dactyli with proximal group of spines distantly separated from distal group of spines *U. remotispinatus*
- P2–4 propodi having flexor ultimate (distal) marginal spine situated near end of margin or at most at midpoint between distal end of margin and penultimate spine. P2–4 dactyli with row of spines along entire margin 8
8. P2–4 dactyli with row of spines strongly inclined, oriented parallel to flexor margin *U. singularis*
- P2–4 dactyli with spines somewhat inclined, not oriented parallel to flexor margin 9
9. P2–4 propodi with ultimate spine located at distal end of flexor margin *U. gracilimanus*
- P2–4 propodi with ultimate spine remote from distal end, located at midpoint between distal end of margin and penultimate spine *U. nigricapillis*
10. Carapace with distinct lateral spines, other than anterolateral spine *U. zezuensis*
- Carapace lacking lateral spines, other than anterolateral spine 11
11. P2–4 dactyli with broad penultimate spine preceded by row of much slender, inclined, nearly contiguous spines. P2–4 propodi with pair of terminal spines only on flexor margin *U. babai*
- P2–4 dactyli with penultimate spine preceded by subequal or slightly smaller spines. P2–4 propodi with pair of terminal spines preceded by row of spines 12
12. Sternite 4 with prominent distolateral process overreaching sternite 3 *U. anatonus*
- Sternite 4 angular or with small spine on distolateral margin 13
13. Carapace granulose on dorsal surface, without scale-like ridge behind each ocular peduncle. Anterolateral spine of carapace stout, overreaching article 2 of antenna *U. anacaena*
- Carapace feebly granulose on lateral portions, with distinct scale-like ridge behind each ocular peduncle. Anterolateral spine of carapace small, barely reaching end of article 2 of antenna *U. orientalis*

Uroptychus anacaena Baba & Lin, 2008

無棘折尾蝦

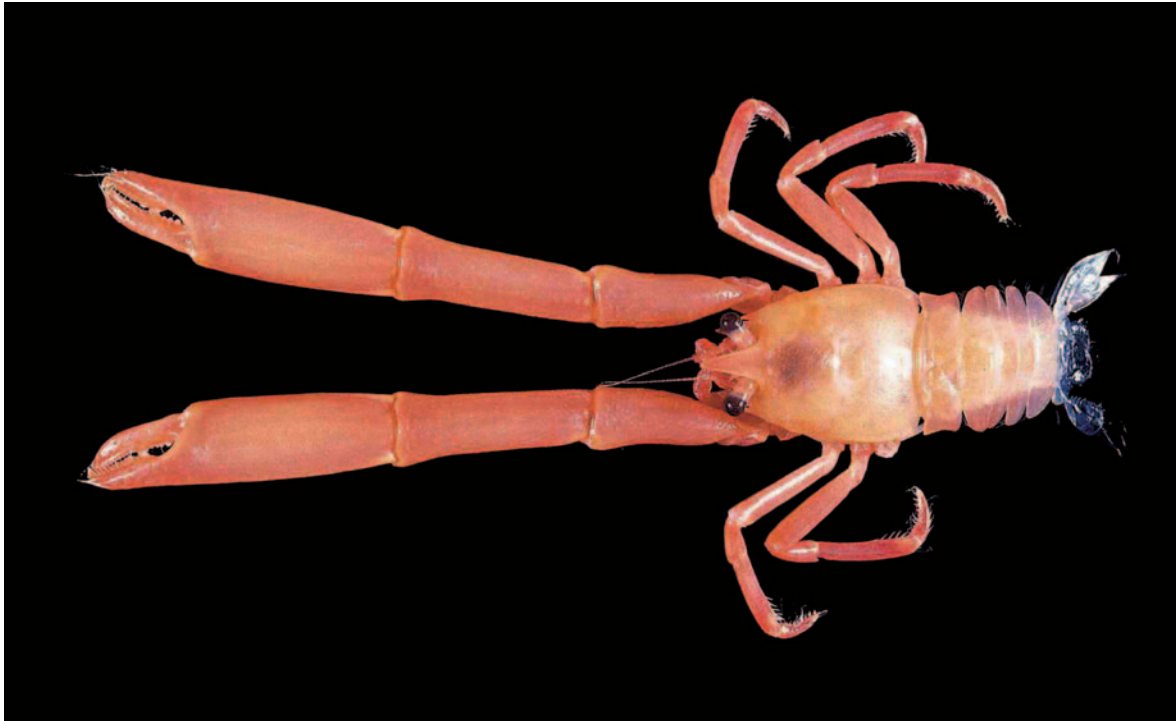


Fig. 26. Holotype male (9.7 mm), DW46.

Uroptychus anacaena Baba & Lin, 2008: 6, figs. 4, 5, 13A [type locality: Taiwan, 22°51.9'N, 121°25.2'E, 565–614 m].

Material examined.—DW46, 22°51.9'N, 121°25.2'E, 565–614 m, 2 Aug 2000: male holotype (9.7 mm) (NTOU).

Diagnosis.—Carapace as long as broad, granulose on surface, lateral margin with stout anterolateral spine followed by fine granulations, unarmed elsewhere; anterolateral spine stout, overreaching article 2 of antenna. Rostrum triangular, slightly deflexed anteriorly, dorsal surface depressed. Pterygostomian flap anteriorly ending in small spine. Excavated sternum anteriorly sharp triangular between close bases of Mxp1. Sternite 3 with submedian spines separated by V-shaped notch. Sternite 4 without spine on anterolateral angle. Abdomen glabrous, somite 1 without transverse ridge. Eyes narrow elongate. Antennal article 2 with distinct spine; antennal scale much broader than peduncle, overreaching midlength of article 5; articles 4–5 unarmed. Mxp3 unarmed on merus and carpus. P1 relatively massive, ischium dorsally with basally broad, sharp spine, ventrally without subterminal spine on mesial margin; merus as long as carapace. P2–4 meri subequal in breadth, successively shorter posteriorly; P2 merus shorter than carapace; carpi subequal, about half as long as propodi on P2–3, less than half on P4; propodi having flexor margin with pair of terminal spines preceded by 3–4 spines on distal two-fifths of length; dactyli slightly shorter than carpi, flexor margin moderately curved at proximal third, with somewhat inclined, proximally diminishing sharp spines.

Size.—Male (holotype), 9.7 mm.

Coloration.—Orange overall.

Habitat.—Substrates unknown; 565–614 m.

Distribution.—Known only from the holotype from E Taiwan.

Remarks.—The species is close to *U. brucei* (see Baba, 1986b) from NW Australia in general shape of the carapace and slender ocular peduncles. It is differentiated from that species by the antennal article 4 being unarmed instead of bearing a distomesial spine, the P1 ischium without instead of with a strong subterminal spine on the mesial ventral margin, the P2 propodus with fewer (3–4 instead of 10–19) spines on less than the distal half instead of at least on distal two-thirds (or nearly entire length) of flexor margin. The fringe of setae on the extensor margin of P2–5 dactyli is usually present in *U. brucei*, whereas in this species it is much weaker, present on the right side, obsolescent on the left side.

The present species is much closer to *U. maori* Borradaile, 1916 from New Zealand than to *U. brucei* in nearly all aspects, but it can readily be distinguished by the P1 ischium lacking, instead of bearing, a strong subterminal spine on the ventral mesial margin.

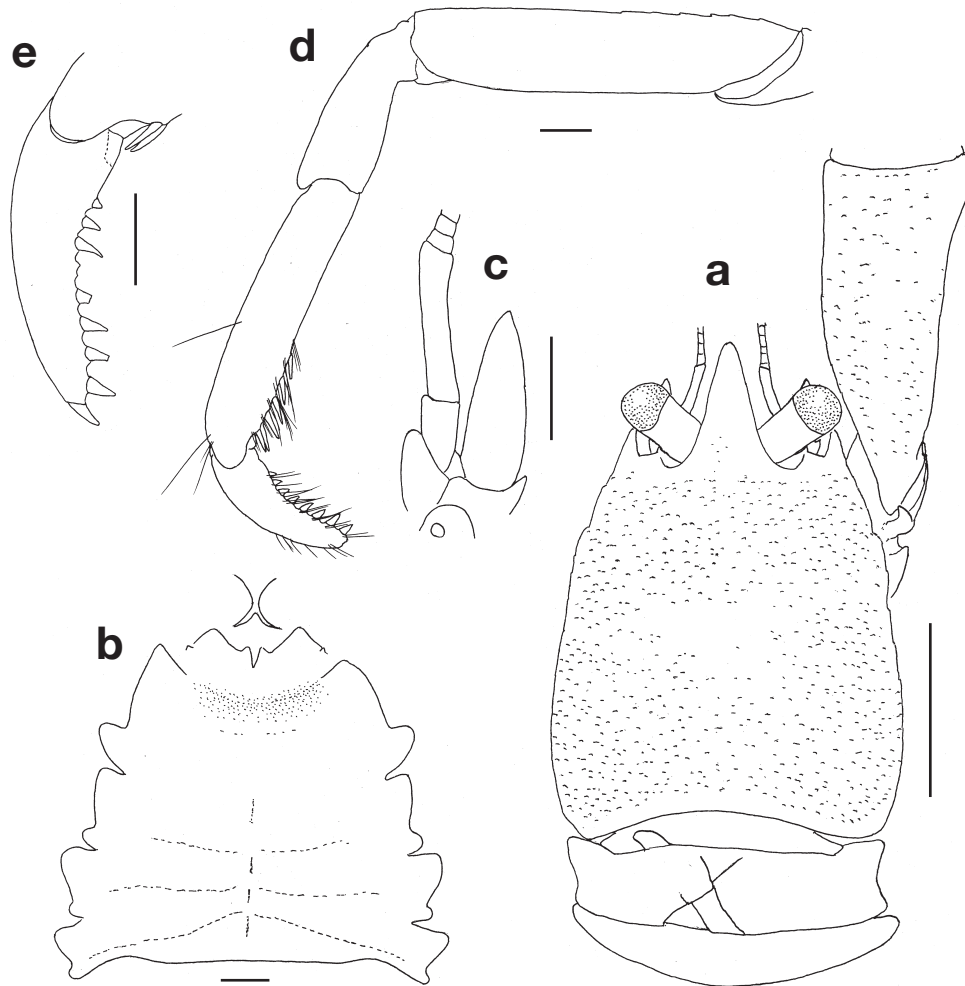


Fig. 27. Holotype male (9.7 mm), DW46: **a**, carapace and abdomen, with proximal part of right P1, dorsal; **b**, sternal plastron; **c**, left antenna, ventral; **d**, left Mxp3, ventral; **e**, left P2, lateral; **f**, same, distal part, lateral. Scales: a = 5 mm; b–f = 1 mm (after Baba & Lin, 2008).

Uroptychus anatonus Baba & Lin, 2008

前延折尾蝦



Fig. 28. Holotype male (11.1 mm), CP321.

Uroptychus anatonus Baba & Lin, 2008: 9, figs. 6, 7, 13B [type locality: 20°43.053'N, 117°33.258'E, 951–973 m].

Material examined.—CD321, 20°43.053'N, 117°33.258'E, 951–973 m, 19 Aug 2005: male holotype (11.1 mm) (NTOU).

Diagnosis.—Carapace as long as broad, granulose on dorsal surface, lateral margin with strong anterolateral spine followed by short granulate ridges representing feeble crenulations in dorsal view. Rostrum sharp triangular, somewhat deflexed anteriorly, dorsal surface flattish. Pterygostomian flap strongly angular anteriorly, ending in sharp spine. Excavated sternum anteriorly angular between close bases of Mxp1, with spine in center. Sternite 3 with submedian spines contiguous to each other on well excavated anterior margin. Sternite 4 with prominent anterolateral process overreaching sternite 3. Abdomen granulose on somites 1–2. Eyes twice as long as broad, with lateral and mesial margins subparallel. Antennal article 2 with distinct spine; antennal scale terminating in distal end of article 5; articles 4 and 5 unarmed; article 5 twice as long as article 4; flagellum barely reaching end of P1 merus. Mxp3 unarmed on merus and carpus. P1 relatively massive, ischium without subterminal spine on ventromesial margin; merus slightly longer than carapace. P2–4 meri successively shorter and narrower posteriorly; P2 merus much shorter than carapace; carpi subequal on P2–3, shortest on P4, length more than half that of propodus; propodi somewhat convex on flexor distal margin, ending in pair of spines preceded by 7, 5 or 6, 4 spines on P2, P3, P4 respectively; dactyli 0.7 length of carpi, flexor margin curved at proximal portion, with proximally diminishing subtriangular spines.

Size.—Male (holotype), 11.1 mm.

Coloration.—Dark pale orange overall.

Habitat.—Collected together with many *Nematocarcinus* spp., *Plesionika* spp. and *Uroptychus orientalis*; 951–973 m.

Distribution.—Dongsha, South China Sea.

Remarks.—*Uroptychus anatonus* resembles *U. brucei* Baba, 1986 from western Australia, *U. maori* Borradaile, 1916 from New Zealand, and *U. anacaena* from Taiwan, in the granulate carapace. It is distinguished from these three species by a strong process on the anterolateral angle of sternite 4 that overreaches the anterior end of sternite 3, the antennal scale fully reaching instead of falling short of the end of antennal article 5, the pterygostomian flap sharp angular ending in a strong spine instead of weakly angular, ending in a small spine. *Uroptychus brucei* is different from the other species in having instead of lacking a subterminal spine on the mesial margin of P1 ischium. This species is so far only known from Dongsha and not found from Taiwan proper.

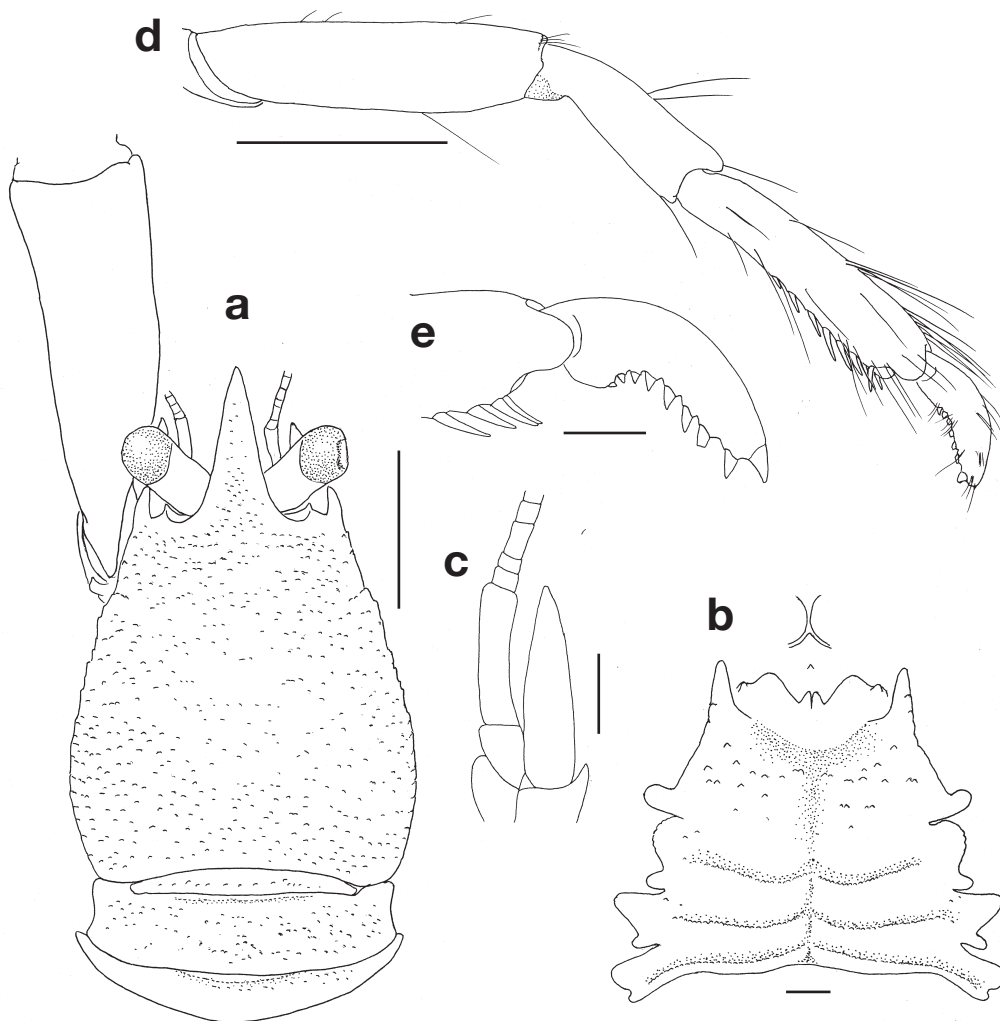


Fig. 29. Holotype male (11.1 mm), CD321: **a**, carapace and abdomen, with proximal part of left P1, dorsal; **b**, sternal plastron; **c**, left antenna, ventral; **d**, left Mxp3, ventrolateral; **e**, right P2, lateral; **f**, same, distal part, lateral. Scales: a, e = 5 mm; b–d, f = 1 mm (after Baba & Lin, 2008).

Uroptychus babai Ahyong & Poore, 2004
馬場折尾蝦

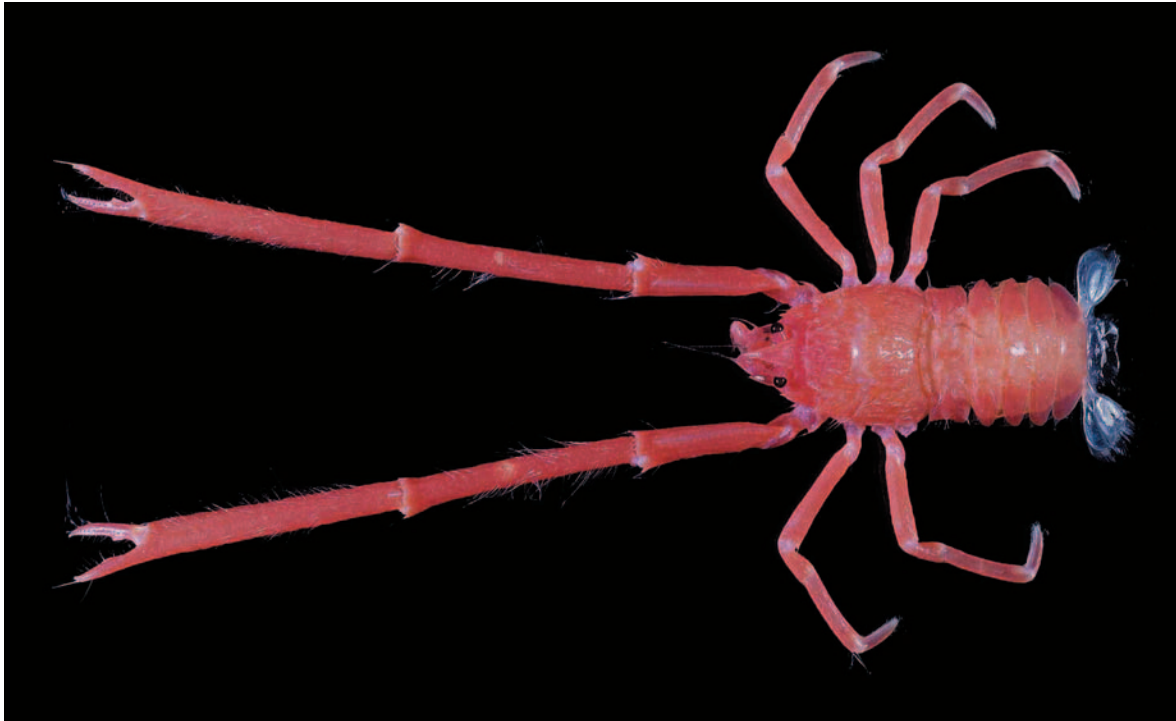


Fig. 30. Ovigerous female (11.1 mm), CP230.

Uroptychus granulatus.—Baba, 1990: 923, fig. 9. (not *U. granulatus* Benedict, 1902)

Uroptychus babai Ahyong & Poore, 2004a: 22, fig. 4 [type locality: E of Broken Bay, 33°31–34'S, 152°02–04'E, 905–914 m].—Baba, 2005: 224.—Baba *et al.*, 2008: 28.

Material examined.—CD230, 22°19.32'N, 120°3.3'E, 795–840 m, 30 Aug 2003: 1 ovigerous female (11.1 mm) (NTOU). CD231, 22°14.32'N, 119°58.78'E, 951–1062 m, 31 Aug 2003: 1 female (8.0 mm) (NTOU).

Diagnosis.—Body and appendages sparsely or thickly covered with fine setae (thick in large specimens). Carapace as long as or slightly broader than long; dorsal surface smooth in small specimens, granulose in large specimens; lateral margins with oblique granulate elevated ridges representing eminences in dorsal view, ridged along posterior half; anterolateral spine well developed, distinctly overreaching level of orbital lateral spine. Rostrum broad sharp triangular, slightly upcurved, dorsal surface slightly excavated. Pterygostomial flap with granulate short ridges or fine granules, anterior margin produced into sharp spine. Excavated sternum convex between broadly separated bases of Mxp1, with low ridge in midline. Sternite 3 strongly depressed from level of sternite 4, anterior margin deeply concave in broad V-shape, without submedian spines; sternite 4 with relatively short lateral margin anteriorly ending in rounded, angular corner or with a few small spines. Abdominal somite 1 with well-elevated, rounded transverse ridge. Eyes relatively small, 1.5–1.8 times longer than broad. Antennal peduncles relatively slender; article 2 with small lateral spine; antennal scale varying from falling short of to slightly overreaching article 5; distal 2 articles unarmed; article 5 1.6–2.1 times length of article 4; flagellum nearly reaching end of P1. Mxp3 merus unarmed on merus and carpus. P1 ischium with basally broad dorsal

spine, ventromesially unarmed; merus granulate dorsally and ventrally, with 2 distoventral spines and 1 or 2 small often obsolescent distodorsal spines; length subequal to or slightly greater than that of carapace. P2–4 subcylindrical on meri, somewhat compressed on propodi; meri unarmed, successively shorter posteriorly, subequally broad on P2–4, length subequal to or slightly shorter than carapace; carpi subequal or slightly longer on P2 than on P3–4, shorter than dactyli, 0.4 times as long as propodi; propodi with pair of distal spines only on flexor margin; dactyli relatively stout, slightly curved, about half as long as propodus on P2–4; flexor margin with slender ultimate and broad penultimate spine preceded by more than 10 close (nearly contiguous), inclined, proximally diminishing spines, all obscured by dense setae.

Size.—Males and females to 18.2 mm including rostrum (Ahyong & Poore, 2004a).

Coloration.—Orange red overall, whitish at junctures of segments and distal parts of dactyli on P1–4; tailfan translucent. Eggs whitish.

Habitat.—Sticky mud, on crinoid *Glyptometra inaequalis* (see Ahyong & Poore, 2004a); 795–1152 m.

Distribution.—Madagascar, New South Wales, and Taiwan.

Remarks.—This is a large species. The material examined constitutes the first record for the species from Taiwan. Now the species is known from three disjunct localities (see “Distribution”).

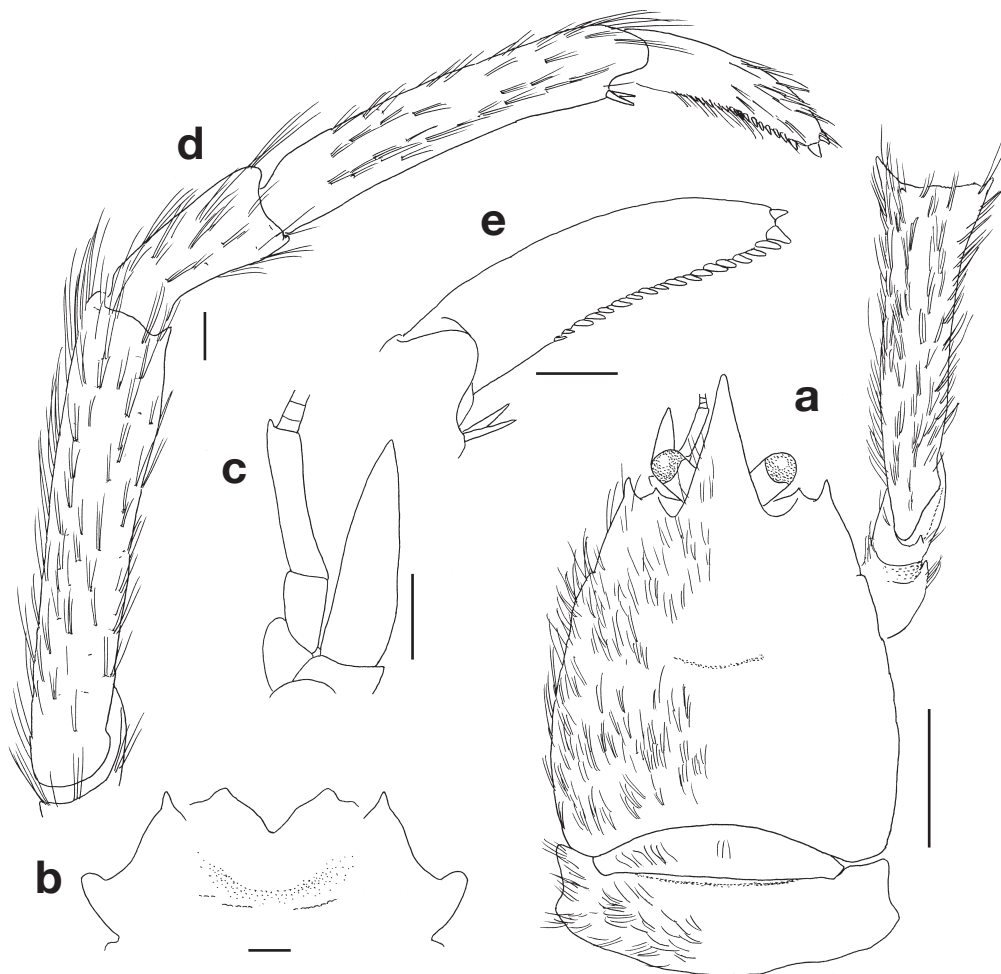


Fig. 31. Ovigerous female (11.1 mm), CD230: **a**, carapace and abdomen, setae omitted from right side, with proximal part of right P1, dorsal; **b**, anterior part of sternal plastron; **c**, left antenna, ventral; **d**, right P2, lateral; **e**, same, distal part, lateral. Scales: a = 5 mm; b–e = 1 mm.

Uroptychus bispinatus Baba, 1988
雙刺折尾蝦



Fig. 32. Male (4.8 mm), CP281.

Uroptychus bispinatus Baba, 1988: 25, fig. 9 [type locality: Moluccas between Halmahera and N Sulawesi, 2013 m].—Baba, 2005: 224.—Baba *et al.*, 2008: 29.

Material examined.—CP281, 24°24.08'N, 122°14.06'E, 1173–1248 m, 15 Jun 2005: 1 male (4.8 mm) (NTOU).

Diagnosis.—Carapace as long as broad, unarmed and smooth dorsally; lateral margin ridged on branchial region with feeble crenulations (in dorsal view); anterolateral spine very small, almost vestigial. Rostrum short triangular, dorsally flattish, length at most 1/3 that of remaining carapace. Pterygostomial flap anteriorly rather rounded, with very small spine. Excavated sternum with convex anterior margin between close bases of Mxp1, followed by longitudinal ridge on surface. Sternite 3 depressed well, relatively broad, anterior margin deeply excavated in semicircular shape, with submedian spines flanking small median notch; sternite 4 with relatively short anterolateral margin. Abdominal somites smooth and glabrous. Eyes short, distally broadened, barely or fully reaching or slightly overreaching rostral tip. Article 2 of antennal peduncle unarmed; antennal scale slightly overreaching article 4; distal 2 articles unarmed; article 5 1.4–2.0 times longer than article 4; flagellum slightly falling short of end of P1 merus. Mxp3 unarmed on merus and carpus. P1 ischium dorsally with antero-posteriorly compressed, basally broad, short spine; no spine elsewhere; merus slightly longer than carapace. P2–4 meri with flattish lateral and mesial surfaces, unarmed on extensor margin, successively shorter posteriorly, subequally broad, P2 merus slightly shorter than carapace; carpi successively slightly shorter posteriorly, length 0.7–0.8 times that of propodus on P2, 0.6–0.7 on P3 and P4; propodi having flexor margin

inflated at midlength, with 2 or 3 (usually 2) movable spines close to each other and located directly distal to midlength, no spine near juncture with dactylus; dactyli much shorter than carpi, half length of propodi, strongly curving at proximal third, distally with 2 subterminal spines of moderate size preceded by very small, inclined spines, almost contiguous to flexor margin, obscured by setae.

Size.—Male, 4.8 mm (present data); female, 8.2 mm including rostrum (Baba, 1988).

Coloration.—Pale pink overall. Anterior carapace and Mxp3 reddish pink. Corneas pale orange. Abdomen translucent.

Habitat.—Gray mud, sand and globigerina (Baba, 1988); 1173–2013 m.

Distribution.—Moluccas and Taiwan.

Remarks.—This is the first specimen since the holotype was found in the Moluccas and extends the range north to Taiwan. The species shares with *U. remotispinatus* the short antennal scale, the flexor terminal spine of P2–4 propodi considerably distant from the juncture with the dactyli, and P2–4 dactyli with the proximal and distal groups of flexor spines remotely separated from each other. *Uroptychus bispinatus* is separated from that species by the P2–4 propodi bearing an inflated instead of straight flexor margin, the presence instead of absence of a pair of epigastric spines, and the antennal article 2 without, instead of with, a distinct distolateral spine.

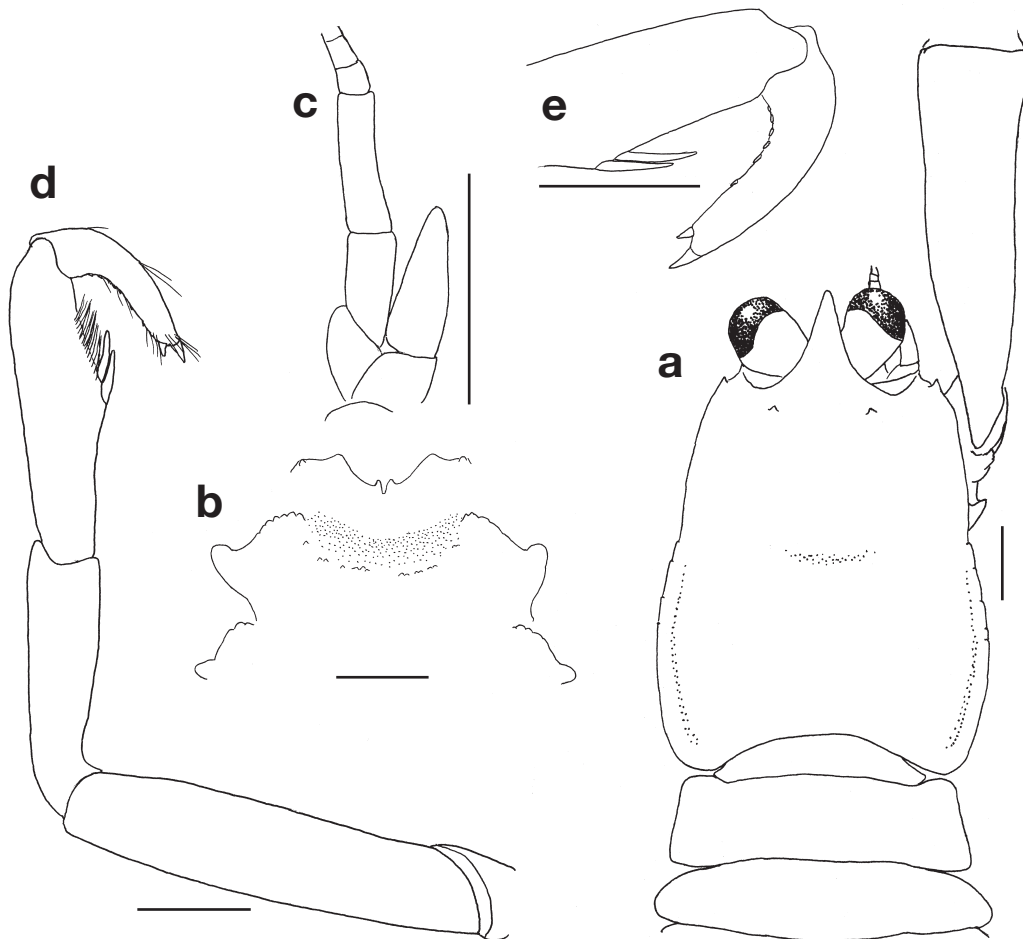


Fig. 33. Male (4.8 mm), CP281: **a**, carapace and anterior part of abdomen, with proximal part of right P1, dorsal; **b**, anterior part of sternal plastron; **c**, left antenna, ventral; **d**, right P2, lateral; **e**, same, distal part, lateral. Scales = 1 mm.

Uroptychus ciliatus (Van Dam, 1933)

纖毛折尾蝦



Fig. 34. Female (2.5 mm), DW45.

Chirostylus ciliatus Van Dam, 1933: 12, figs 17–19 [type locality: Kur Island, Kei Islands, 204 m].

Uroptychus ciliatus.—Baba, 2005: 33, fig. 9.— Baba *et al.*, 2008: 30.

Material examined.—DW45, 22°48.3'N, 121°27.4'E, 423–439 m, 2 Aug 2000: 1 female (2.5 mm) (NTOU).

Diagnosis.—Carapace broader than long, covered with pronounced and small spines and short setae moderate in density; 8 or 9 pronounced spines along lateral margin, 4 of these situated on convex branchial margin, posterior-most situated near posterior end of lateral margin; row of 4 prominent spines in midline flanked by another row of spines on each side. Anterolateral spine strong. Rostrum narrow triangular, laterally with small spine at midlength, dorsally depressed; in profile, straight, directed slightly dorsally. Pterygostomial flap with small spines on surface, anteriorly ending in sharp strong spine. Excavated sternum with convex anterior margin between broadly separated bases of Mxp1. Sternite 3 having somewhat concave anterior margin with 2 tiny submedian spines separated by small notch; sternite 4 with 2 lateral spines placed side by side, lateral larger, ventral surface with transverse row of tubercle-like spines. Abdominal somites 1–4 each with transverse row of stiff setae anteriorly; somites 1 and 2 with spines and stiff setae in transverse arrangement. Eyes elongate, terminating in midlength of rostrum. Antennal peduncles slender, article 2 with well-developed distolateral spine; antennal scale terminating in distal end of peduncle; distal 2 articles each with strong mesioventral terminal spine, article 5 1.4 times longer than article 4, with additional spine on distolateral margin and 1 small spine along mesial margin; Mxp3 having very strong lateral spine on coxa and at distal part of ischium; 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 subcylindrical, with small spines arranged in longitudinal rows on merus, carpus and palm, not on fingers; ischium dorsally with sharp spine, ventrally with strong subterminal spine on mesial margin; merus 1.2 times longer than carapace. P2–4 also spinose; meri successively shorter posteriorly, slightly broader on P3 than on P2 and P4; P2 merus slightly longer than carapace; carpi successively shorter posteriorly, 0.7 times length of propodi on P2, 0.6 on P3, 0.5 on P4; propodi having flexor margin ending in pair of spines preceded by row of spines in zigzag arrangement; dactyli 0.4 as long as propodi, flexor margin with proximally diminishing, triangular spines, terminal spine largest.

Size.—Females to 9.8 mm including rostrum (Baba, 2005); no male is known.

Coloration.—Overall pale orange yellow. Abdomen seashell pink, with 3 narrow longitudinal stripes of orange yellow. P1 pale orange.

Habitat.—Substrates unknown; 204–439 m.

Distribution.—Kei Islands (Indonesia) and Taiwan.

Remarks.—The specimen examined is less spinose and less setose than those reported earlier (van Dam, 1933; Baba, 2005), possibly due to its small size. The arrangement of large spines on the carapace is as illustrated by Baba (2005). This species is grouped together with *U. spinirostris* Ahyong & Poore, 2004 and *U. chacei* (Baba, 1986a), both of which were placed in the genus *Gastroptychus* Caullery, 1876 because of the spinose body and appendages. However, their sternite 3, with bases of Mxp3 broadly separated, represents a typical feature of *Uroptychus* (see Baba, 2005). This is the first record for the species from Taiwan. No male specimens have been taken.

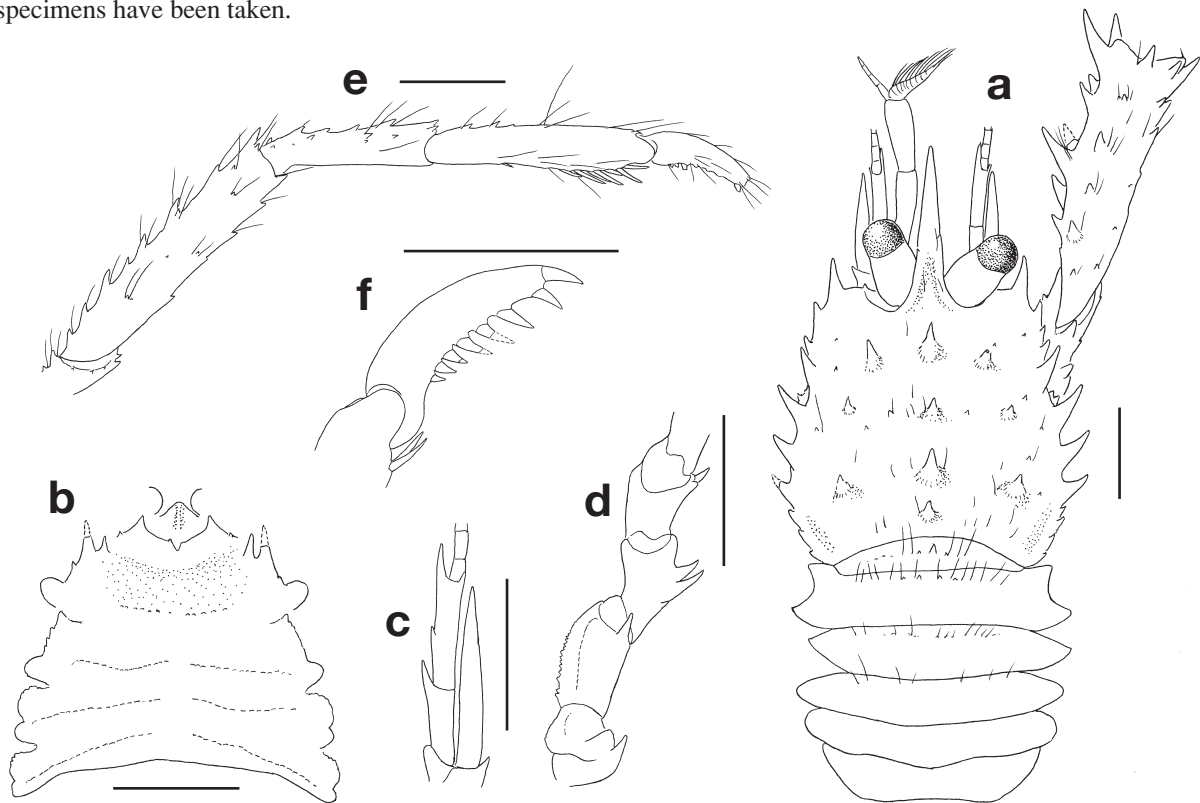


Fig. 35. Female (2.5 mm), DW 45: **a**, carapace and abdomen, with proximal part of right P1, dorsal; **b**, sternal plastron; **c**, left antenna, ventral; **d**, left Mxp3, ventral; **e**, right P2, lateral; **f**, same, distal part, lateral. Scales = 1 mm.

Uroptychus gracilimanus (Henderson, 1885)

纖手折尾蝦

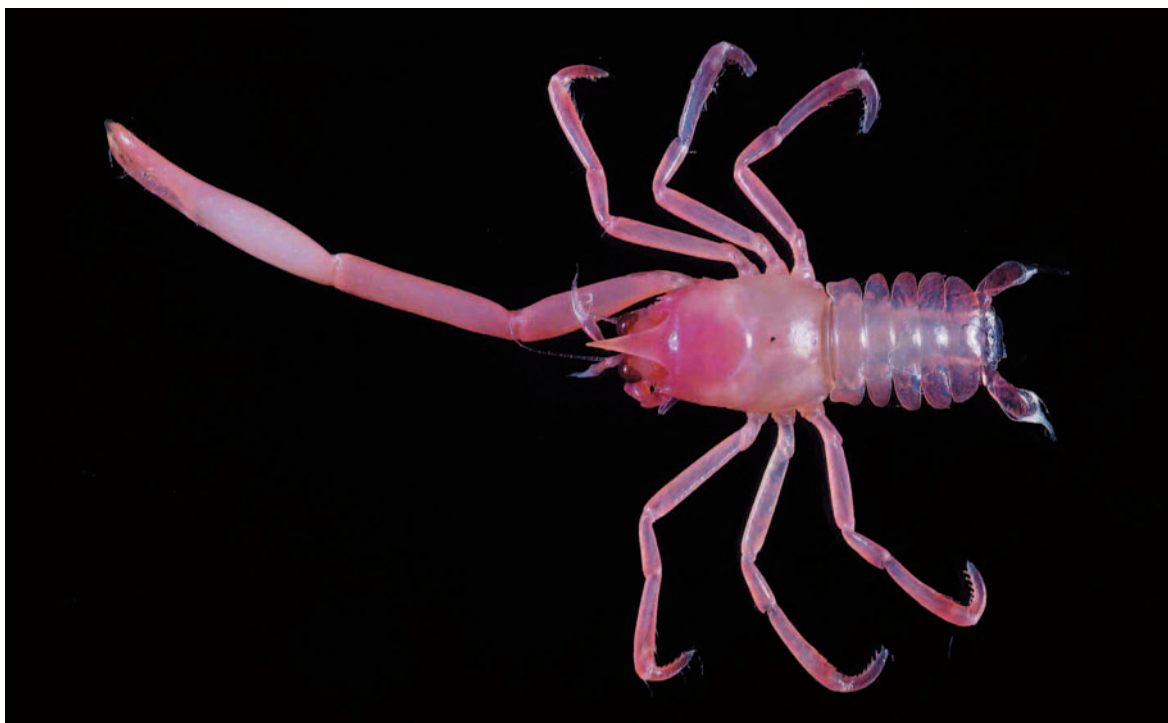


Fig. 36. Male (5.0 mm), CD229.

Diptychus gracilimanus Henderson, 1885: 420 [type locality: off Port Jackson, 750 m].

Uroptychus gracilimanus.—Henderson, 1888: 181, pl. 21: figs. 5, 5a, 5b.—Parisi, 1917: 3.—Tirmizi, 1964: 392, figs. 6–9.—Baba, 1969c: 45, figs. 3, 4; 1988: 35; 2005: 36, 226.—Davie, 2002: 31.—Ahyong & Poore, 2004a: 40, fig. 10 (part).—Poore, 2004: 225, fig. 61d.—Baba *et al.*, 2008: 33.

Not *Uroptychus gracilimanus*.—Doflein & Balss, 1913: 134 (part = *U. remotispinatus* Baba & Tirmizi, 1979 and *U. vandamanae* Baba, 1988; part remains questionable).—Baba, 1990: 941, figs. 8a, b (= new species, Baba, unpublished).

Material examined.—CD130, 22°18.77'N, 120°6.99'E, 728–709 m, 22 Aug 2001: 1 female (6.8 mm) (NTOU). CD134, 22°16.56'N, 120°6.11'E, 736–1040 m, 22 Nov 2001: 1 male (6.6 mm), 4 ovigerous females (5.9–9.4 mm) (NTOU). CD 138, 22°13.13'N, 120°20.17'E, 441–789 m, 23 Nov 2001: 2 ovigerous females (6.4, 6.6 mm) (NTOU). CD193, 22°22.84'N, 120°7.21'E, 812–900 m, 29 Aug 2002: 1 ovigerous female (6.1 mm) (NTOU). CD229, 22°13.35'N, 120°1.9'E, 1060–880 m, 30 Aug 2003: 1 male (5.0 mm) (NTOU). CD230, 22°19.32'N, 120°3.3'E, 795–840 m, 30 Aug 2003: 1 male (5.8 mm), 1 ovigerous female (5.5 mm) (NTOU). CP299, 22°19.333'N, 120°3.457'E, 806–835 m, 11 Aug 2005: 1 male (6.0 mm), 2 ovigerous females (6.3, 6.4 mm) (NTOU).

Diagnosis.—Carapace as long as broad, dorsally smooth, glabrous and unarmed; lateral margins with obsolescent tuberculate short ridges along anterior half; ridged along posterior half; anterolateral spine small. Rostrum triangular, slightly deflexed, dorsal surface slightly depressed at base. Pterygostomial flap anteriorly

ending in rounded corner with very small spine. Excavated sternum anteriorly broad triangular, ending in sharp spine between close bases of Mxp1, surface with spine in center. Sternite 3 with excavated anterior margin bearing 2 small submedian spines flanking narrow, shallow notch; sternite 4 with convex anterolateral margin bearing a few short spines anteriorly. Abdominal somites smooth and glabrous. Eyes short relative to breadth, somewhat concave on mesial margin, convex on lateral margin. Article 2 of antennal peduncle with very small lateral spine; antennal scale terminating in or overreaching midlength of article 5, never reaching its distal end; distal 2 articles unarmed; article 5 more than twice as long as article 4; flagellum nearly or barely reaching end of P1 merus. Mxp3 spineless on merus and carpus. P1 sparsely setose on fingers, glabrous elsewhere; ischium with obsolescent dorsal spine, unarmed on ventromesial margin; merus distinctly longer than carapace. P2–4 meri successively shorter posteriorly, subequally broad on P2–4 or slightly narrower on P2 than on P3; P2 merus slightly shorter than carapace; carpi subequal, 0.5–0.6 as long as propodus on P2, 0.4–0.5 on P3, 0.4 on P4; propodi having flexor margin with row of basally articulated spines, terminal spine single, located very close to distal end; dactyli curving at middle, nearly as long as propodi, flexor margin with sharp spines diminishing in size toward base of segment, ultimate spine slightly narrower than or subequal to penultimate.

Size.—Males to 6.6 mm, females to 9.4 mm (present data).

Coloration.—Pale pink overall. Anterior half of carapace pinkish red. Abdomen translucent.

Habitat.—Sticky mud, on gorgonaceans; 458–1040 m.

Distribution.—Zanzibar, off Port Jackson, Moluccas, Zamboanga, East China Sea, Taiwan and Sagami Bay.

Remarks.—This species is new to Taiwan. Ah Yong & Poore (2004a) reported *U. gracilimanus* from New South Wales, Victoria and Tasmania, between 458 and 1152 m. Their illustration (fig. 10) apparently shows a pair of epigastric spines, the P2–4 propodi with the terminal flexor spine distinctly remote from the juncture with the dactyli, and the ultimate spine of P2–4 dactyli distinctly longer than the penultimate, all characteristic of *U. nigricapillis* Alcock, 1902. Ah Yong & Baba (2004) emended the terminal spine located at the distal end of the flexor margin, illustrating the distal part of left P2 (female 9.4 mm, AM P65825) and mentioned that it was broken on the right side. However, the epigastric spines are consistently absent in the holotype of *U. gracilimanus* as well as all specimens (ca. 68 in number) from various localities around the Kei Islands, Norfolk Ridge, Vanuatu and Solomon Islands (Baba, unpublished) and Taiwan, and the ultimate spine of P2–4 dactyli is subequal to the penultimate in those specimens. Therefore, it is not unlikely that the material examined by Ah Yong & Poore (2004a) included *U. gracilimanus* and *U. nigricapillis*.



Fig. 37. Male (7.1 mm), CP134: **a**, carapace and abdomen, with proximal part of right P1, dorsal; **b**, anterior part of sternal plastron; **c**, left antenna, ventral; **d**, left P2, lateral; **e**, same, distal part. Scales = 1 mm.

Uroptychus naso Van Dam, 1933
鼻形折尾蝦



Fig. 38. Male (9.3 mm), CP115, body more orangish.



Fig. 39. Male (6.7 mm), Aodi, Taipei County, 27 Mar 2000, body more pinkish.

Uroptychus naso Van Dam, 1933: 23, figs. 35–37 [type locality: Kur Island and Taam Island, Kei Islands, 204–304 m]; 1939: 402; 1940: 97.—Baba, 1969c: 42, figs. 1, 2; 1988: 39; 2005: 49, 228.—Wu *et al.*, 1998: 81, figs. 5, 12B.—Baba *et al.*, 2008: 37, fig. 1F.

Material examined.—Aodi, Taipei County, 27 Mar 2000: 1 male (6.7 mm) (NTOU). CP58, 24°35.1'N, 122°05.8'E, 221–254 m, 4 Aug 2000: 3 males (4.3–8.0 mm), 2 ovigerous females (5.9, 6.8 mm), 4 females (3.7–5.3 mm) (NTOU). CP114, 24°51.03'N, 121°58.30'E, 128–250 m, 21 May 2001: 1 male (5.2 mm), 1 ovigerous female (8.1 mm), 1 female (2.7 mm) (NTOU). CP115, 24°53.87'N, 122°02.05'E, 381–440 m, 21 May 2001: 1 male (9.3 mm) (NTOU). CP212, 24°34.60'N, 122°5.84'E, 223–260 m, 26 Aug 2003: 1 male (5.0 mm), 1 ovigerous female (7.3 mm) (NTOU). CP216, 24°34.71'N, 122°4.02'E, 209–280 m, 27 Aug 2003: 4 males (3.0–7.1 mm), 1 female (3.1 mm) (NTOU). PCP334, 22°16.713'N, 120°0.114'E, 994–975 m, 5 Oct 2005: 3 males (3.2–4.3 mm), 2 ovigerous females (4.1, 4.4 mm) (NTOU).

Diagnosis.—Carapace finely granulate dorsally, often bearing spinules on lateral portion, with deep groove bordering gastric and cardiac regions; lateral margins divergent posteriorly; anterolateral spine small, followed by 7–9 relatively large spines on branchial region. Rostrum broad, long triangular, slightly deflexed anteriorly, dorsally excavated, ventrally carinate, laterally with small spines, length more than half that of carapace. Pterygostomian flap covered with small spines, anteriorly ending in strong spine. Excavated sternum anteriorly ending in convex margin between close bases of Mxp1, surface with longitudinal ridge in midline. Sternite 3 moderately depressed, anterior margin having deep median notch with or without small flanking spines; anterolateral margin of sternite 4 nearly straight and denticulate. Eyes relatively short, more than half portion hidden under rostrum. Article 2 of antennal peduncle with small distolateral spine; antennal scale barely reaching opposite end of article 5; distal 2 articles each with distoventral spine, that of article 5 often very small; article 5 slightly less than twice as long as article 4; flagellum very short, about as long as distal 2 articles combined. Mxp3 ischium having flexor distal margin ending in spine often accompanied by a few smaller spines directly lateral to it; merus flattish on mesial face, distolateral spine distinct, flexor margin with a few distinct spines distal to midlength; carpus with distolateral spine and small spines on extensor surface. P1 depressed distally, especially palm and fingers; covered with spinules or distinct spines; ischium with strong dorsal spine, ventromesial margin with strong subterminal spine; merus as long as or slightly longer than carapace. P2–4 relatively broad; meri successively shorter, and equally broad on P2–4; covered with small spines on lateral surface, dorsal crest with sharp spines continued on to carpus, ventrolateral margin with a few spines distally; P2 merus 0.8 length of carapace; carpi subequal on P2–3 and slightly longer than on P4, each less than half length of propodus; propodi having flexor margin with pair of distal spines preceded by smaller spines roughly arranged in 2 rows; dactyli less than half as long as propodi, flexor margin with row of relatively slender spines but penultimate spine broad.

Size.—Males to 9.0 mm (van Dam, 1933), females to 8.1 mm (present data).

Coloration.—Overall light orange. Whitish broad longitudinal stripe from rostrum to abdominal somite 3. Eyes (cornea) light grayish brown. Tailfan translucent. Eggs whitish (Wu *et al.*, 1998). Carapace with brownish red stripe flanking whitish broad median stripe (Baba *et al.*, 2008). Sometimes carapace and abdomen orange, with paler narrow stripe in midline.

Habitat.—Coarse sand (Baba, 1988), collected together with crinoids or sponges (present data); 68–994 m.

Distribution.—Kei Islands, Java Sea, Moluccas, Taiwan, East China Sea, and Japan (west coast of Kyushu and Tosa Bay).

Remarks.—This is one of the aberrant species in the genus, in having a broad, elongate rostrum covering more than half part of ocular peduncles without cornea.

The bundles of short setae on distal two segments of P2 as observed in the material of variable sizes from Japan, eastern Asia and Kei Islands (Baba, 1969c; 1988) are also present in the male from Aodi. Their function still remains unresolved.

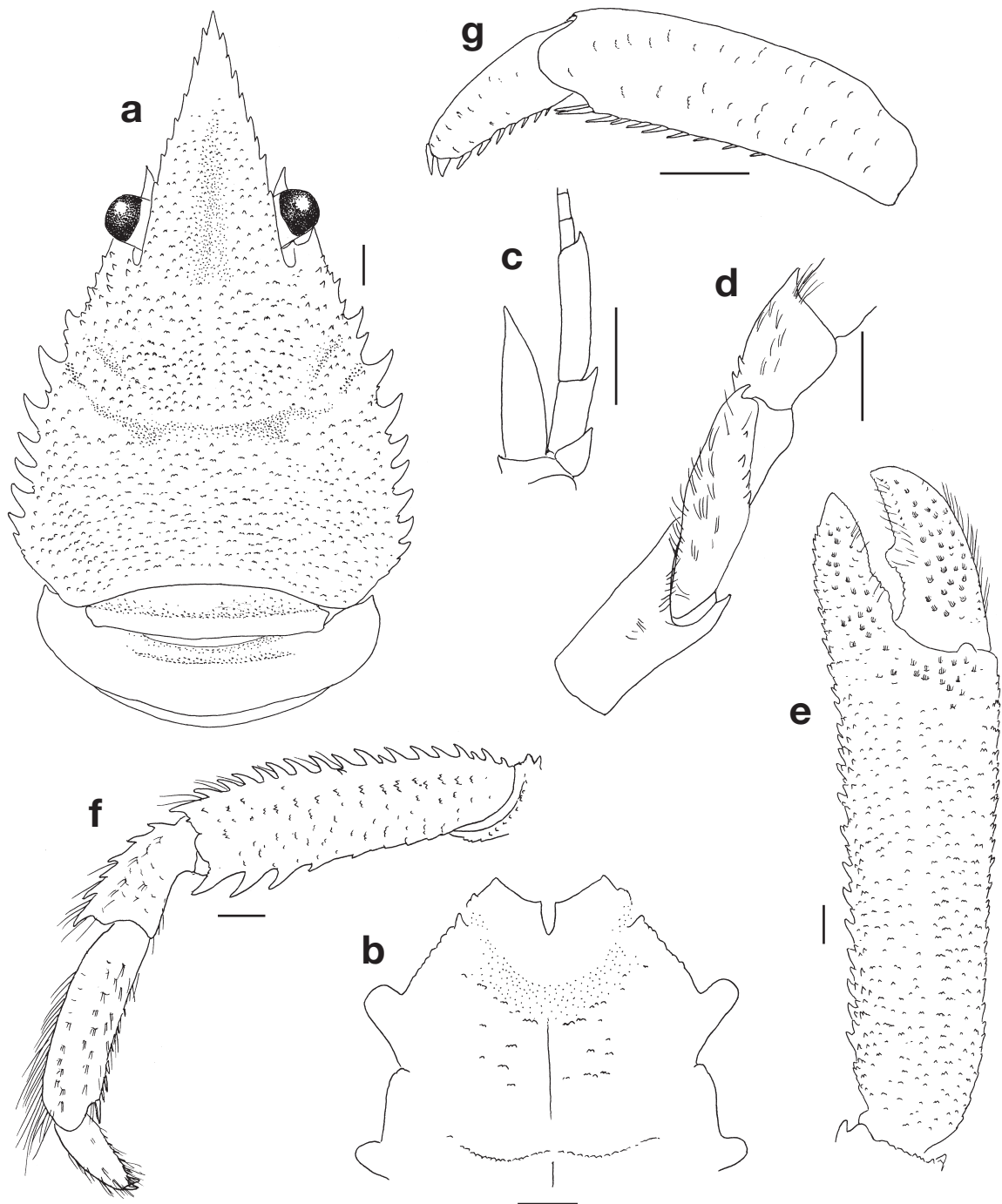


Fig. 40. Male (9.3 mm), CP115: **a**, carapace and abdomen, dorsal; **b**, anterior part of sternal plastron; **c**, right antenna, ventral; **d**, right Mxp3, ventrolateral; **e**, left P1, dorsal; **f**, right P2, lateral; **g**, same, distal part, lateral. Scales = 1 mm.

Uroptychus nigricapillis Alcock, 1901
烏毛折尾蝦

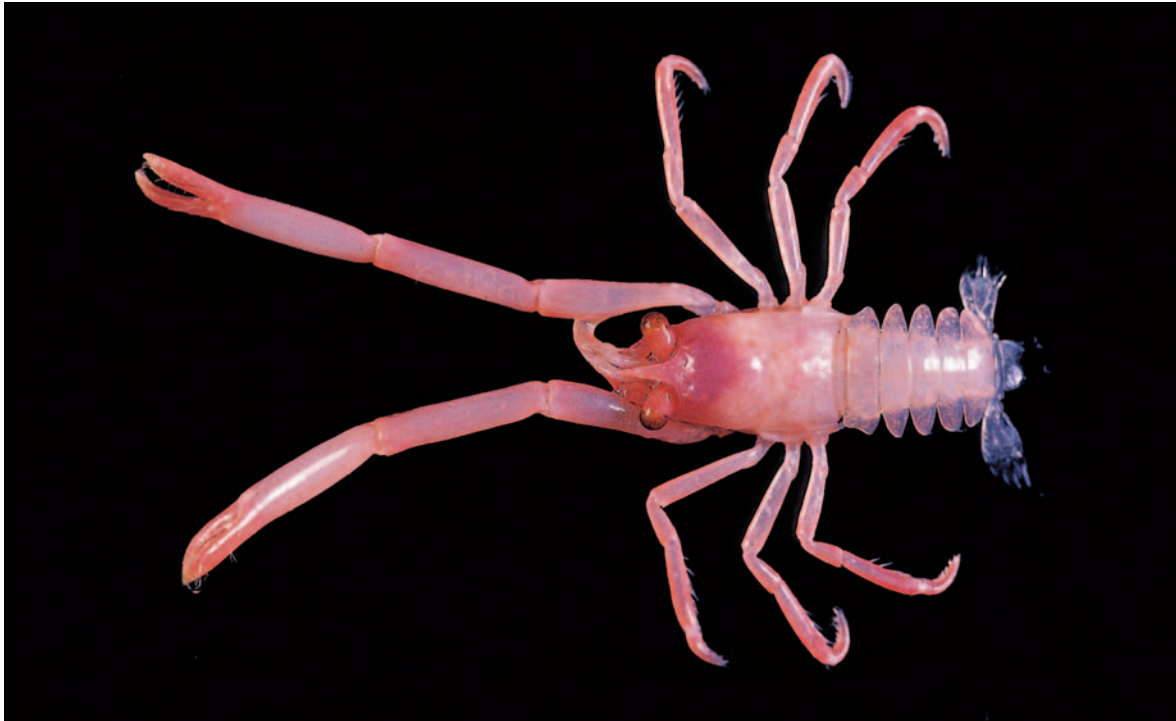


Fig. 41. Male (5.9 mm), CD136, body more reddish-pink.

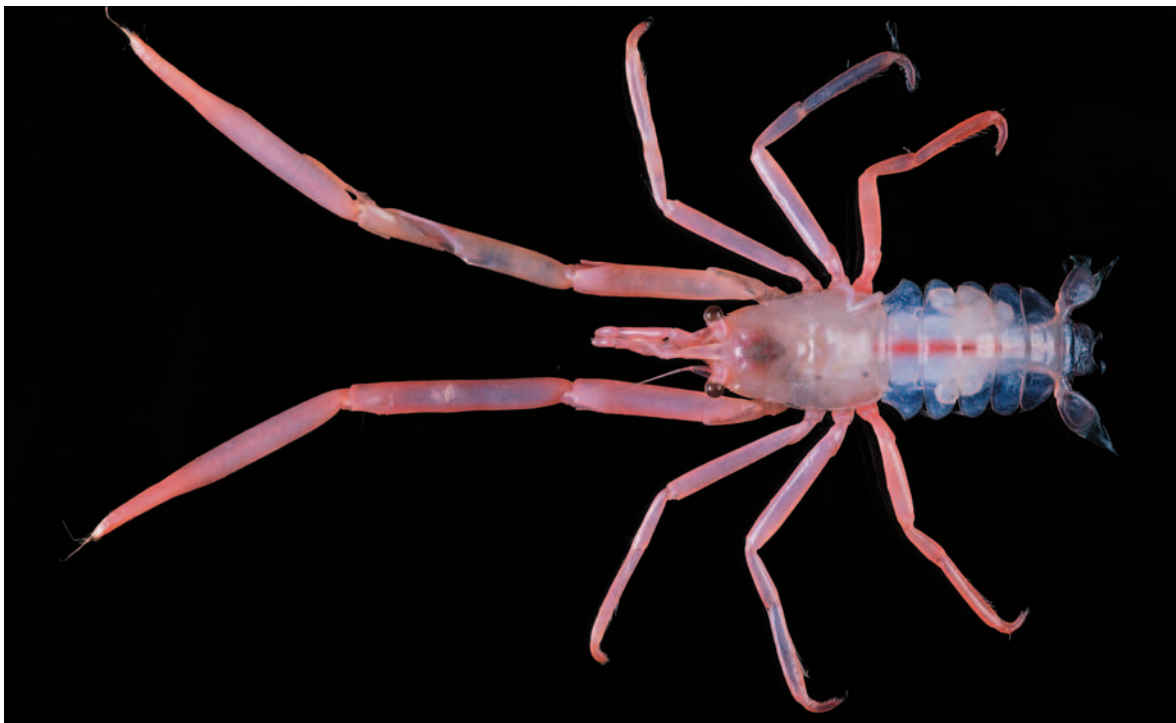


Fig. 42. Ovigerous female (8.3 mm), CP268, body paler in color.

Uroptychus nigricapillis Alcock, 1901: 283, pl. 3: fig. 3 [type locality: Andaman Sea, 1224 m].—Alcock & McArdle, 1902: pl. 56: fig. 3.—Laurie, 1926: 123.—Van Dam, 1933: 26; 1940: 98, fig. 2.—Tirmizi, 1964: 390, figs. 4, 5.—Baba, 1981: 116, fig. 4; 1988: 40; 1990: 947.—Ahyong & Baba, 2004: 60, fig. 2A–I.—Baba, 2005: 50, 228.—Baba *et al.*, 2008: 37.

?*Uroptychus gracilimanus*.—Ahyong & Poore, 2004a: 40, fig. 10 (part) [see under “Remarks” of *U. gracilimanus*]. (not *U. gracilimanus* (Henderson, 1885))

Material examined.—CP23, 22°14.8'N, 120°02.8'E, 880–1070 m, 29 Jul 2000: 2 females (8.1, 8.2 mm) (NTOU). CP28, 22°10.7'N, 120°27.9'E, 398–388 m, 30 Jul 2000: 1 female (6.7 mm) (NTOU). CP32, 22°01.7'N, 120°11.1'E, 910–1129 m, 30 Jul 2000: 2 ovigerous females (7.0, 8.6 mm), 1 female (7.2 mm) (NTOU). CD134, 22°16.56'N, 120°6.11'E, 736–1040 m, 22 Nov 2001: 3 males (8.6–9.2 mm), 4 ovigerous females (7.0–8.2 mm), 5 females (5.9–9.1 mm) (NTOU). CD135, 22°17.21'N, 120°0.28'E, 961–1112 m, 22 Nov 2001: 2 males (6.5, 8.3 mm), 2 ovigerous females (8.1, 8.9 mm), 1 female (10.4 mm) (NTOU). CD136, 22°7.75'N, 120°0.87'E, 1211–998 m, 22 Nov 2001: 3 males (5.0–9.9 mm) (NTOU). CD137, 22°12.92'N, 120°25.93'E, 316–477 m, 23 Nov 2001: 1 female (7.3 mm) (NTOU). CD141, 22°12.04'N, 119°59.96'E, 1110–985 m, 24 Nov 2001: 2 males (5.7, 7.7 mm), 1 ovigerous female (8.0 mm), 2 females (8.3, 9.0 mm) (NTOU). CD142, 22°21.64'N, 120°13.44'E, 355–277 m, 24 Nov 2001: 1 ovigerous female (8.7 mm) (NTOU). CP170, 22°12.09'N, 120°24.50'E, 330–405 m, 27 May 2002: 1 male (6.0 mm) (NTOU). CP179, 22°21.22'N, 119°54.78'E, 1212–1063 m, 25 Aug 2002: 7 males (6.0–9.7 mm), 5 ovigerous females (7.2–9.6 mm), 7 females (5.3–9.1 mm) (NTOU). CP268, 24°30.46'N, 122°06.28'E, 421–531 m, 2 Sep 2004: 1 ovigerous female (8.3 mm) (NTOU). CP300, 22°17.156'N, 119°59.963'E, 960–972 m, 11 Aug 2005: 7 males (3.8–8.2 mm), 6 ovigerous females (7.8–9.3 mm), 7 females (6.2–8.0 mm) (NTOU). PCP332, 22°17.145'N, 120°0.318'E, 961–1026 m, 5 Oct 2005: 8 males (4.0–9.5 mm), 1 ovigerous female (9.2 mm), 6 females (4.7–8.4 mm) (NTOU). PCP333, 22°16.502'N, 120°2.242'E, 889–1037 m, 5 Oct 2005: 3 males (6.8–8.8 mm), 1 ovigerous female (7.2 mm) (NTOU). PCP334, 22°16.713'N, 120°0.114'E, 994–975 m, 5 Oct 2005: 5 males (5.4–8.0 mm), 6 ovigerous females (7.3–8.8 mm), 3 females (5.0–7.0 mm) (NTOU). PCP342, 22°16.648'N, 119°59.960'E, 988–1010 m, 8 Mar 2006: 10 males (3.5–9.1 mm), 5 ovigerous females (6.8–8.0 mm), 7 females (3.5–8.0 mm) (NTOU). PCP343, 22°15.699'N, 120°2.131'E, 945–1059 m, 8 Mar 2006: 1 male (6.3 mm), 4 ovigerous females (9.7 mm), 2 females (5.2, 9.3 mm, 1 female with rhizocephalan parasite) (NTOU). PCP344, 22°15.952'N, 120°0.110'E, 995–1073 m, 8 Mar 2006: 3 males (6.2–8.4 mm), 2 ovigerous females (8.0, 8.2 mm) (NTOU). PCP345, 22°11.886'N, 120°0.526'E, 1165–1197 m, 8 Mar 2006: 1 ovigerous female (9.7 mm) (NTOU). PCP400, 22°15.989'N, 120°02.165'E, 921–971 m, 6 Nov 2008: 1 male (5.3 mm), 2 females (7.4, 7.6 mm) (NTOU). PCP445, 22°17.102'N, 120°0.167'E, 982–999 m, 14 Jul 2008: 1 ovigerous female (8.1 mm) (NTOU).

Diagnosis.—Carapace distinctly longer than broad; dorsal surface smooth, with shallow depression between gastric and cardiac regions; gastric region well swollen (elevated), with pair of epigastric spines varying from small to good size; lateral margins with anterolateral spine usually small, followed by posteriorly diminishing denticles, tubercles, or very small spines along branchial region, spine located at anterior end of branchial region somewhat or distinctly larger than remainder; ridged along posterior half. Rostrum narrowly triangular, nearly straight horizontal, dorsal surface flattish. Pterygostomial flap anteriorly rather rounded, ending in small but distinct spine. Excavated sternum having anterior margin broadly rounded, with small median spine between close bases of Mxp1, surface with small spine in center. Sternite 3 strongly depressed, anterior margin well excavated, with subovate or narrow median sinus flanked by spine often accompanying a few spines lateral to each; sternite 4 with transverse ridge bearing tubercles, anterolateral margin convex, with posteriorly diminishing blunt spines. Abdominal somites smooth and glabrous. Eyes concave on mesial margin; cornea slightly broader than remaining eyestalk. Antennal peduncles slender; article 2 with distolateral spine

usually distinct, occasionally obsolescent; antennal scale terminating or overreaching midlength of, but barely reaching end of antennal article 5; articles 4–5 unarmed; article 5 more than twice longer than article 4; flagellum barely reaching end of P1 merus. Mxp3 spineless on merus and carpus. P1 slender, subcylindrical but somewhat depressed on fingers and palm, with setae relatively short and moderate in density on fingers, almost glabrous elsewhere; ischium dorsally with basally broad, antero-posteriorly depressed, short triangular spine, ventromesially with tubercular processes on proximal part, without subterminal spine; merus slightly longer than carapace. P2–4 well compressed; meri successively shorter posteriorly, subequally broad on P2–3, slightly narrower on P4; extensor margin unarmed; P2 merus slightly shorter than carapace; carpi successively shorter posteriorly, about half as long as propodi; propodal flexor margin with single terminal spine rather remote from juncture with dactylus; dactyli more slender than propodi, strongly curving at proximal third, length slightly less than half that of propodus; flexor margin with relatively large, loosely placed spines, ultimate longer than penultimate.

Size.—Males to 9.9 mm (present data), 15.0 mm including rostrum (Tirmizi, 1964); females to 10.4 mm (present data).

Coloration.—Pale orange red overall, color sometimes deeper and sometimes paler. Tailfan translucent. Eggs whitish.

Habitat.—On gorgonian corals, collected together with coral fans or many sponges; 265–2000 m.

Distribution.—South Arabian coast, Zanzibar, off Kenya, Madagascar, Maldives, Andaman Sea, Saya de Malha Bank, W of Makassar, Java Sea, Flores Sea off S Sulawesi, between Siquijor and Bohol, South China Sea off SW Luzon, Taiwan, and SE Kyushu (Japan).

Remarks.—Although the present species is quite common from the deep waters of Taiwan, the present material constitutes the first record of the species from the island. The material from stations CP 28, CP170 and CP268 agree well with the specimens reported by Ahyong & Baba (2004). These specimens are characterized by having the P2 merus distinctly longer than the carapace and a deep excavation between gastric and cardiac regions, and more distinct lateral carapace spines, characters that do not fit the description and illustration of the “Investigator” type material. In the majority of the material examined, these features are not distinct. However, the specimens from station CD141 have a distinct depression between gastric and cardiac regions and the P2 merus is shorter than the carapace, and the carapace lateral spines are more or less distinct. Examination of the type material would be desirable to resolve the systematic status of these forms.

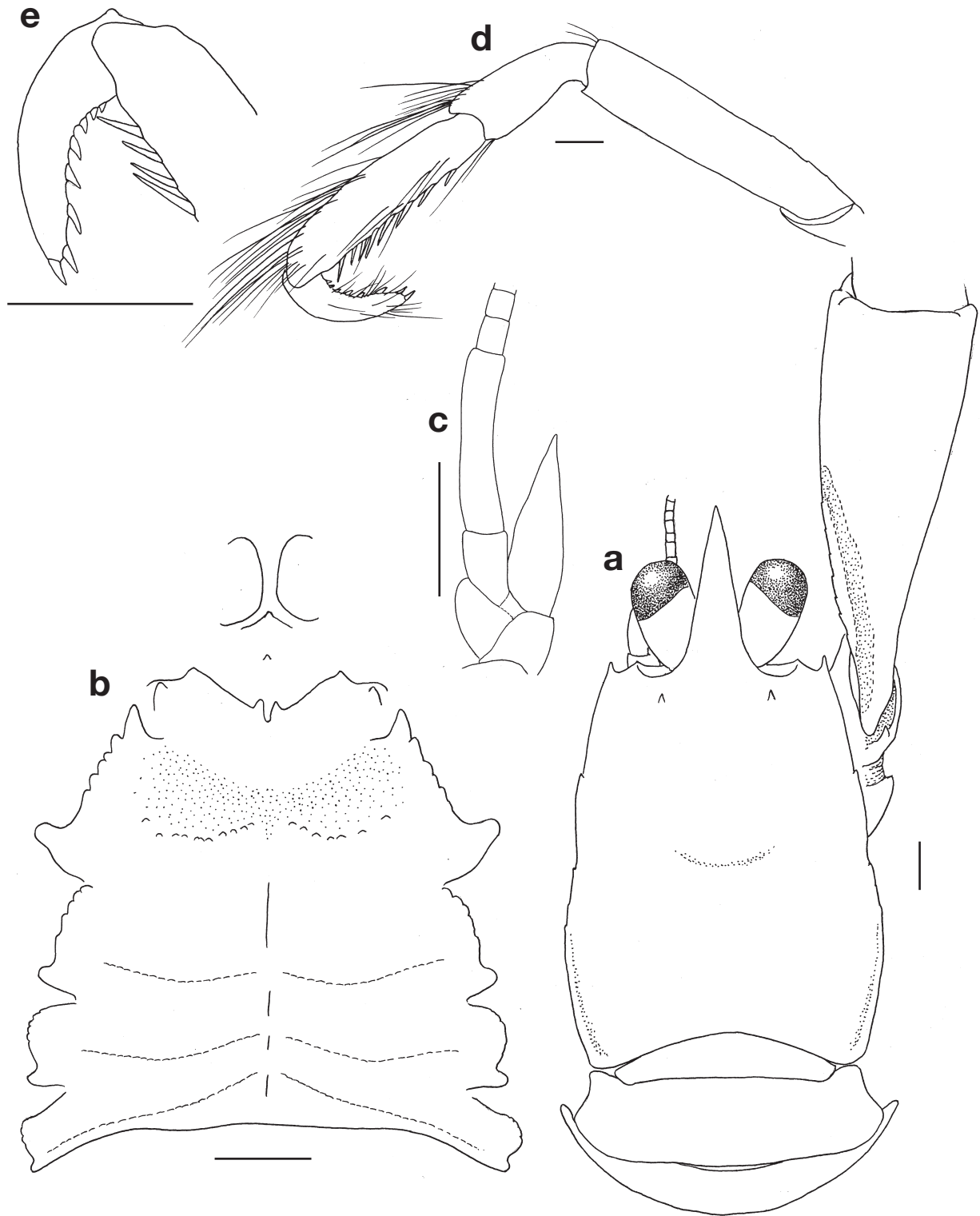


Fig. 43. Male (7.7 mm), CD141: **a**, carapace and abdomen, with proximal part of right P1, dorsal; **b**, sternal plastron, with excavated sternum; **c**, left antenna, ventral; **d**, left P2, lateral; **e**, same, distal part, lateral. Scales = 1 mm.

Uroptychus orientalis Baba & Lin, 2008
東方折尾蝦

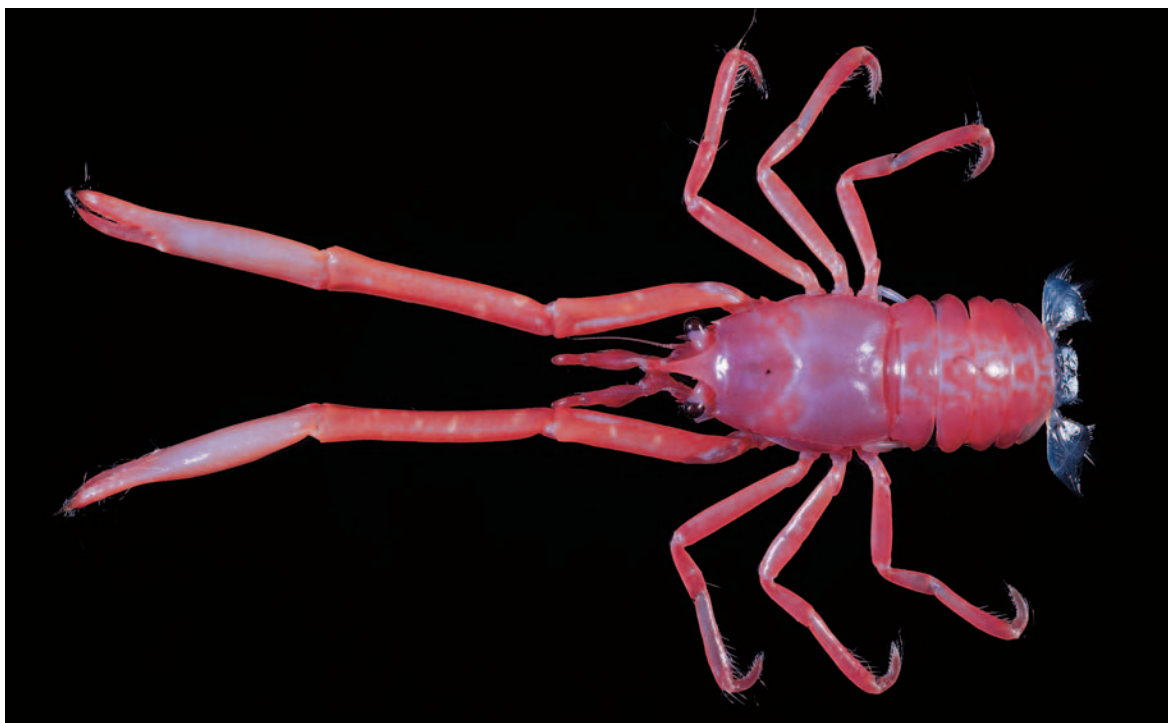


Fig. 44. Holotype ovigerous female (11.2 mm), CD230, body orangish-pink.

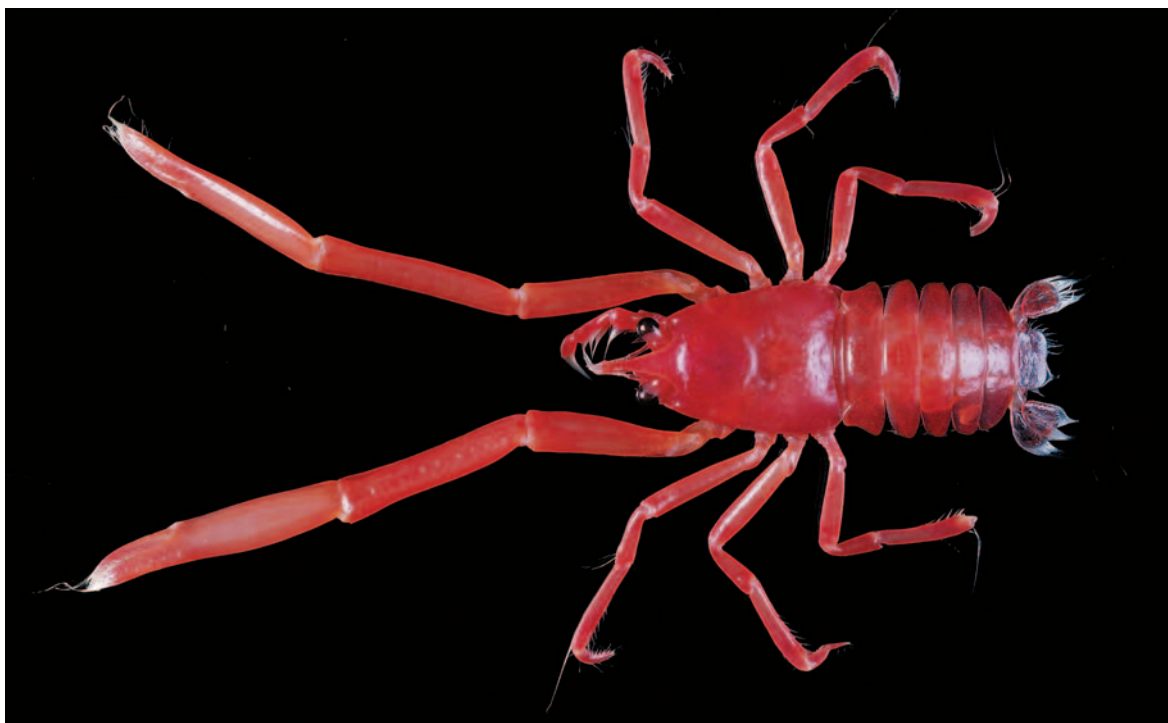


Fig. 45. Paratype ovigerous female (10.3 mm), CD321, body reddish.

Uroptychus nitidus occidentalis.—Baba, 1973: 120, fig. 2, pl. 4, fig. 1. (not *U. nitidus occidentalis* Faxon, 1893)
Uroptychus orientalis Baba & Lin, 2008: 12, figs. 8, 9, 13C [type locality, SW Taiwan, 22°19.32'N, 120°3.3'E, 795–840 m].

Material examined.—CD134, 22°16.56'N, 120°6.11'E, 736–1040 m, 22 Nov 2001: 4 ovigerous female papatypes (8.9–10.7 mm) (NTOU). CD135, 22°17.21'N, 120°0.28'E, 961–1112 m, 22 Nov 2001: 1 male papatype (9.0 mm), 1 ovigerous female papatype (10.7 mm) (NTOU). CD229, 22°13.35'N, 120°1.9'E, 1060–880m, 30 Aug 2003 : 1 male papatype (8.9 mm), 1 ovigerous female papatype (9.7 mm) (NTOU). CD230, 22°19.32'N, 120°3.3'E, 795–840 m, 30 Aug 2003: ovigerous female holotype (11.2 mm) (NTOU). CP300, 22°17.156'N, 119°59.963'E, 960–972 m, 11 Aug 2005: 1 ovigerous female papatype (10.7 mm) (NTOU). CD321, 20°43.053'N, 117°33.258'E, 951–973 m, 19 Aug 2005: 1 ovigerous female papatype (10.3 mm) (NTOU). PCP333, 22°16.502'N, 120°2.242'E, 889–1037 m, 5 Oct 2005: 1 male papatype (8.9 mm) (NTOU). PCP334, 22°16.713'N, 120°0.114'E, 994–975 m, 5 Oct 2005: 2 male papatypes (7.4, 7.4 mm) (NTOU). PCP343, 22°15.699'N, 120°2.131'E, 945–1059 m, 8 Mar 2006: 1 ovigerous female papatype (10.0 mm) (NTOU).

Diagnosis.—Carapace slightly longer than broad, dorsal surface feebly granulose and with tiny scattered tubercles on lateral portion; pair of granulate epigastric ridges posterior to ocular peduncles; anterolateral spine small, not reaching end of article 2 of antenna. Rostrum sharp triangular, distally curving slightly dorsally, flattish on dorsal surface. Pterygostomial flap anteriorly rounded, with tiny spine. Excavated sternum anteriorly sharp triangular between close and nearly contiguous bases of Mxp1, surface with small spine in center. Sternite 3 with pair of submedian spines separated by narrow notch; sternite 4 with distinct anterolateral spine followed by low denticles. Abdomen smooth and glabrous. Eyes distinctly longer than broad, cornea somewhat inflated. Antennal article 2 with sharp distolateral spine; antennal scale reaching at most distal fourth of article 5; articles 4 and 5 unarmed. Mxp3 spineless on merus and carpus. P1 relatively slender and smooth; ischium dorsally with short spine, ventrally without subterminal spine on mesial margin; merus slightly longer than carapace. P2–4 moderately compressed, with long setae on distal parts of carpi and whole propodi; meri successively shorter and narrower posteriorly; P2 merus slightly shorter than carapace; carpi successively shorter posteriorly, slightly more than half as long as propodi on P2–3, about half as long on P4; propodi slightly broadened distally, flexor margin ending in pair of spines preceded by row of spines; dactyli less than half length of propodi, flexor margin with proximally diminishing triangular spines, ultimate and penultimate subequal.

Size.—Males to 9.0 mm, females to 11.2 mm.

Coloration.—Pale orange or orange red overall. Eggs light yellowish.

Habitat.—On gorgonian host; collected together with a big squid, many *Nematocarcinus* spp., *Plesionika* spp., *Uroptychus anatonus*, and many sponges; 736–1112 m.

Distribution.—Taiwan and Dongsha in the South China Sea.

Remarks.—The presence of a pair of epigastric granulate ridges, the much smaller anterolateral spine of carapace and relatively long P2–4 carpi separate the species from *U. anacaena*. The species is also close to the eastern Pacific *U. occidentalis* Faxon, 1893, but may be distinguished by the ultimate flexor marginal spine of the P2–4 dactyli being subequal to instead of much more slender than the penultimate, and the rostrum curving dorsally instead of straight horizontal.

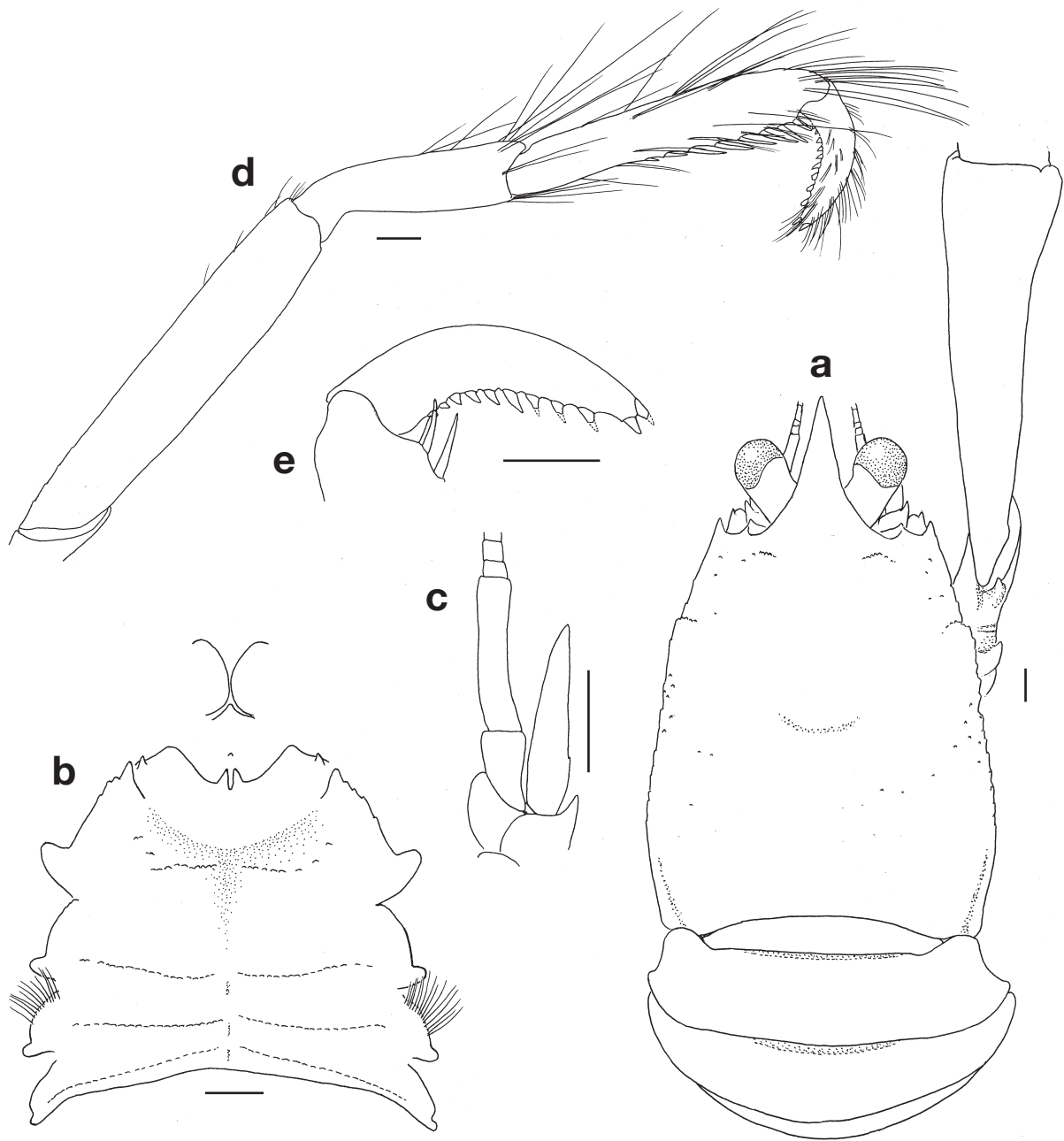


Fig. 46. Holotype ovigerous female (11.2 mm), CD230: **a**, carapace and abdomen, with proximal part of right P1, dorsal; **b**, sternal plastron; **c**, left antenna, ventral; **d**, right P2, lateral; **e**, same, distal part, lateral. Scales = 1 mm (after Baba & Lin, 2008).

Uroptychus remotispinatus Baba & Tirmizi, 1979
遠刺折尾蝦



Fig. 47. Male (6.1 mm), CP189.

Uroptychus gracilimanus.—Doflein & Balss, 1913: 134 (part). (not *U. gracilimanus* (Henderson, 1885))
Uroptychus remotispinatus Baba & Tirmizi, 1979: 52, fig. 1, 2 [type locality: Bungo Strait between Kyushu and Shikoku, Japan, 1320 m].—Baba, 1990: 947; 2005: 55, 230.—Baba *et al.*, 2008: 41.

Material examined.—CP189, 21°39.91'N, 118°20.94'E, 1649–1629 m, 27 Aug 2002: 1 male (6.1 mm) (NTOU).

Diagnosis.—Carapace slightly longer than broad, dorsal surface unarmed; lateral margin with small anterolateral spine barely reaching proximal end of antennal scale, with small tubercle-like spines often obsolescent on anterior branchial margin, ridged along posterior portion. Rostrum short, less than half length of remaining carapace, distinctly curving dorsally, dorsal surface flattish. Pterygostomial flap anteriorly roundish, bearing very small spine. Excavated sternum inflated in center, with or without spine in center, anterior margin narrowly rounded, often triangular between close bases of Mxp1. Sternite 3 short relative to width, anterior margin broadly concave with pair of median spines separated by small notch; sternite 4 having anterolateral margin relatively short, with pronounced, short anterior spine or process followed by a number of diminishing spines or tubercles. Eyes short relative to breadth, slightly narrowed proximally. Article 2 of antennal peduncle with distinct lateral spine; antennal scale usually slightly overreaching end of article 4, occasionally slightly falling short midlength of article 5; distal 2 articles unarmed; article 5 1.5 times longer than article 4; flagellum not reaching end of P1 merus. Mxp3 unarmed on merus and carpus. P1 usually smooth, often tuberculose on ventral surface of merus, unarmed except for short dorsal spine on ischium; merus slightly longer than carapace.

P2–4 relatively long and slender, unarmed on meri and carpi; meri successively shorter posteriorly, equally broad on P2–4; P2 merus slightly shorter than carapace; carpi successively slightly shorter posteriorly or subequal on P2 and P3 and slightly shorter on P4, fully half as long as propodus or slightly more than so, longer than dactyli; propodi having flexor margin with row of slender, movable spines, terminal spine single, considerably remote from juncture with dactyli; dactyli less than half length of propodi, slender, strongly curving, flexor margin with 2 groups of spines on P2, distal 2 spines remotely separated from proximal group; not consistently so on P3–4, distal third much remote from second but often equidistant between second and fourth.

Size.—Males to 11.5 mm including rostrum, females to 12.1 mm including rostrum (Baba, 1990; Baba & Tirmizi, 1979).

Coloration.—Pale seashell pink base color; reddish on anterior part of carapace including rostrum, Mxp3, P1 fingers and P2–4 propodi and dactyli. Corneas pale yellowish. Tailfan translucent.

Habitat.—On gorgonians (present data); 850–2000 m.

Distribution.—Off Durban, and off Mozambique, Madagascar, off S coast of Somali Republic, Makassar Strait, Taiwan, and Japan.

Remarks.—The name *remotispinatus* originates from the two groups of flexor spines remotely separated on P2–4 dactyli. This is also applicable to the flexor terminal spine of P2–4 propodus that is extremely remote from the juncture with the dactylus. *Uroptychus remotispinatus* is recorded for the first time from Taiwan.

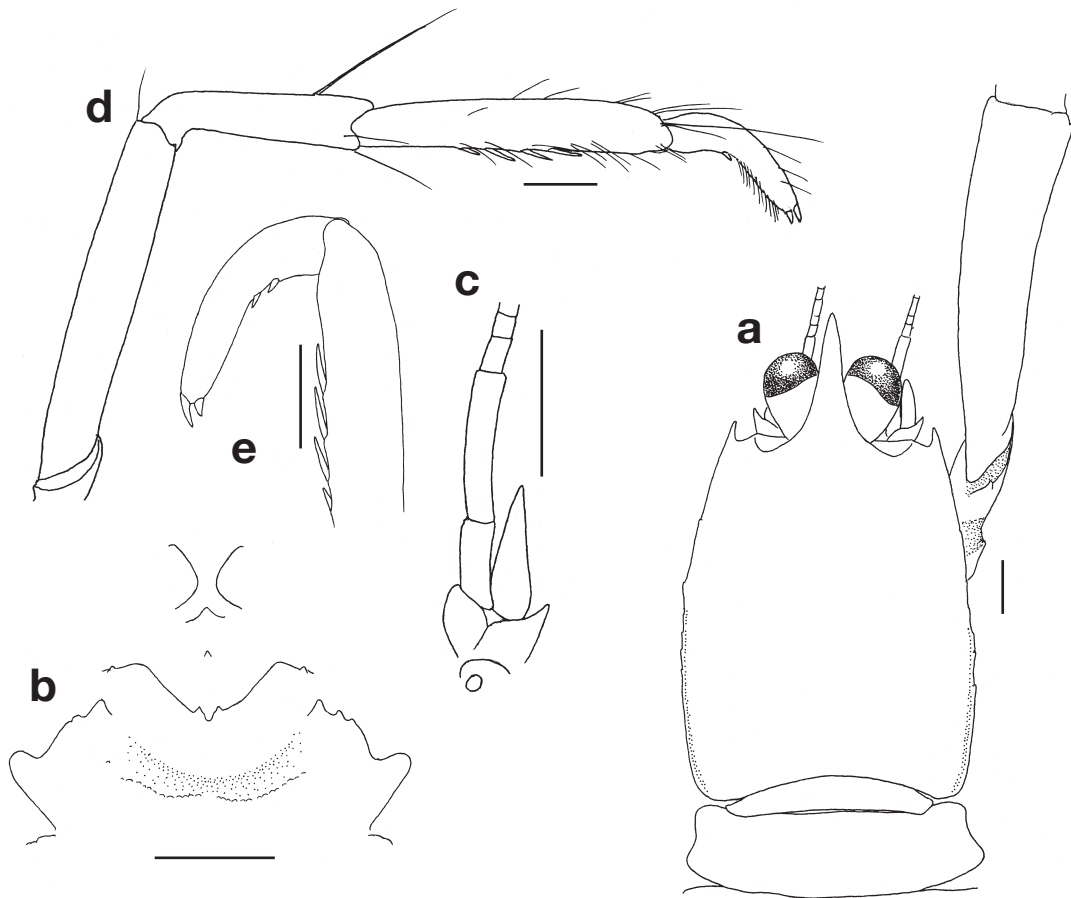


Fig. 48. Male (6.1 mm), CP189: **a**, carapace and anterior part of abdomen, with proximal part of right P1, dorsal; **b**, anterior part of sternal plastron and excavated sternum, bases of Mxp1 included; **c**, left antenna, ventral; **d**, right P2, lateral; **e**, left P2, distal part, lateral. Scales = 1 mm.

Uroptychus scambus Benedict, 1902
曲折尾蝦

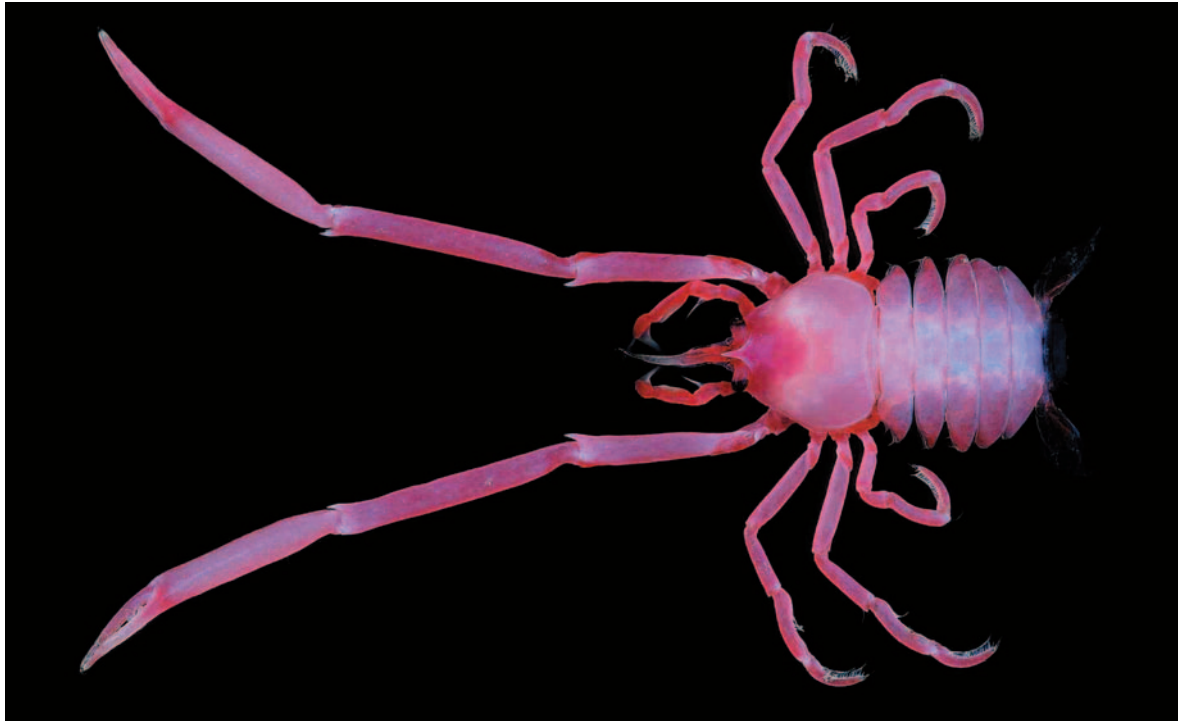


Fig. 49. Female (4.6 mm), PCP400, body pinkish-red.



Fig. 50. Male (3.3 mm), PCP334, body whitish.

Uroptychus scambus Benedict, 1902: 297, fig. 41 [type locality: off Honshu, Japan, Albatross Sta 3706 (off Heda, Suruga Bay), 617 m].—Doflein & Balss, 1913: 134.—Van Dam, 1937: 100, fig. 1.—Baba, 1981: 120; 1988: 43; 2005: 58, 230.—Baba *et al.*, 2008: 41.—Schnabel, 2009: 567.

Uroptychus glyphodactylus MacGilchrist, 1905: 249 [type locality: E of Andaman, 1041 m].—Alcock & MacGilchrist, 1905: pl. 70, fig. 4; pl. 71: figs. 1, 1a, 1b, 1c, 1d.

Uroptychus edwardi Kensley, 1981b: 69, figs. 6, 7 [type locality: off between Durban and East London, 900 m].

Material examined.—CP32, 22°01.7'N, 120°11.1'E, 910–1129 m, 30 Jul 2000: 1 ovigerous female (3.8 mm), 1 female (3.8 mm) (NTOU). CD136, 22°07.75'N, 120°0.87'E, 1211–998 m, 22 Nov 2001: 1 female (4.8 mm) (NTOU). CD141, 22°12.04'N, 119°59.96'E, 1110–985 m, 24 Nov 2001: 1 male (4.3 mm) (NTOU). CD192, 22°17.19'N, 120°1.01'E, 960–1302 m, 28 Aug 2002: 1 female (4.3 mm) (NTOU). CP300, 22°17.156'N, 119°59.963'E, 960–972 m, 11 Aug 2005: 3 males (4.1–4.3 mm), 3 ovigerous females (4.2–4.5 mm), 1 female (3.4 mm) (NTOU). PCP332, 22°17.145'N, 120°0.318'E, 961–1026 m, 5 Oct 2005: 1 male (4.1 mm), 1 ovigerous female (4.5 mm) (NTOU). PCP334, 22°16.713'N, 120°0.114'E, 994–975 m, 5 Oct 2005: 3 males (3.3–4.4 mm), 2 ovigerous females (4.2, 4.4 mm) (NTOU). PCP342, 22°16.648'N, 119°59.960'E, 988–1010 m, 8 Mar 2006: 3 males (4.4–5.1 mm), 2 ovigerous females (4.2, 4.6 mm), 1 female (4.9 mm) (NTOU). PCP343, 22°15.699'N, 120°2.131'E, 945–1059 m, 8 Mar 2006: 1 male (3.2 mm), 1 ovigerous female (4.4 mm), 1 female (3.4 mm) (NTOU). PCP344, 22°15.952'N, 120°0.110'E, 995–1073 m, 8 Mar 2006: 1 male (4.0 mm), 1 ovigerous female (4.6 mm) (NTOU). CP372, 24°23.619'N, 122°14.138'E, 1220–1280 m, 26 Aug 2006: 1 ovigerous female (4.6 mm) (NTOU). PCP400, 22°15.989'N, 120°02.165'E, 921–971 m, 6 Nov 2008: 1 female (4.6 mm) (NTOU).

Diagnosis.—Carapace much broader than long, smooth on dorsal surface; lateral margin strongly convex, anterolateral spine prominent, occasionally reaching rostral tip. Rostrum short and narrow, 0.3 length of remaining carapace, varying from slightly falling short of to slightly overreaching end of eyes, horizontal or directed slightly dorsally, dorsal surface flattish. Pterygostomian flap narrow (low in profile) on posterior half, anteriorly produced into sharp spine, smooth on surface. Excavated sternum having anterior margin bluntly subtriangular between close bases of Mxp1, surface convex along midline; sternal plastron broad relative to length, about half as long as broad; in females, left and right parts of sternites 5–7 discontinuous, interrupted by loss of median parts; sternite 3 having anterior margin broadly excavated, with pair of small, occasionally obsolescent submedian spines separated by small or obsolescent median notch. Eyes nearly oval in shape, medially inflated, distally and proximally narrowed. Antennal peduncles relatively short and slender; article 2 without spine; antennal scale short, terminating at most in midlength of article 4, occasionally fused with article 2; distal 2 articles unarmed; article 5 subequal to or slightly longer than article 4; flagellum terminating in or slightly overreaching midlength of P1 merus. Mxp3 ischium very short, denticles on crista dentata obsolete or rudimentary; merus and carpus unarmed. P1 smooth and glabrous except for fingers; ischium with basally broad, blunt distodorsal process, proximal process lobe-like, hanging over basis, unarmed elsewhere; merus and carpus each with 1–3 distodorsal spines usually prominent; merus much longer than carapace. P2 and P3 subequal, P4 reduced to less than half size of preceding legs, especially merus and carpus; meri moderately thick mesio-laterally, unarmed; P2 merus slightly longer than carapace; carpi unarmed, P2–3 carpi subequal, 4/5–3/4 length of each propodus or more than so (rarely longer than propodus); P4 carpus less than half length of P3 carpus; P2–3 propodi having flexor margin lacking spines, bearing soft setae along whole length; dactyli strongly curving, varying from nearly as long as to somewhat shorter than propodi (at least 0.7–0.8 length of propodus), subprehensile with propodus when closed, with more than 15 slender spines diminishing in size toward base of segment, nearly perpendicular to flexor margin and obscured by soft setae.

Size.—Males to 5.1 mm, females to 4.9 mm (present data); including rostrum, males to 7.3 mm (Baba,

1988, 2005).

Coloration.—Overall pale seashell pink or pale red, sometimes more reddish and sometimes more whitish. Pereopods translucent. Anterior part of carapace orange-red or reddish. Eggs whitish.

Habitat.—On gorgonians; collected together with sponges, sticky mud; most frequently collected from depths around 1000 m; 296–2084 m.

Distribution.—Between Durban and East London, E of Andamans, SW of Great Nicobar, Sombrero Channel, Makassar Strait, SW of Omae-zaki, Solor Strait, Sulawesi (Teluk Tomini), New Zealand, Tasman Sea, Taiwan, and Japan (Bungo Strait, Kumano-nada, Izu-shoto, Suruga Bay).

Remarks.—*Uroptychus scambus* is apparently a common species in deep waters off Taiwan but the present material constitutes the first record for the species from the island. The species is very close to *U. brevis* Benedict, 1902 from the western Atlantic in nearly all aspects, even in the unique female sternal plastron—left and right parts of sternites 5–7 separated by loss of median part. They differ only in the rostral shape: subcylindrical in *U. brevis*, spiniform in *U. scambus*, representing a twin species. A similar twin may be *Leiogalatea laevirostris* and *L. agassizii* (see under *Leiogalatea laevirostris*).

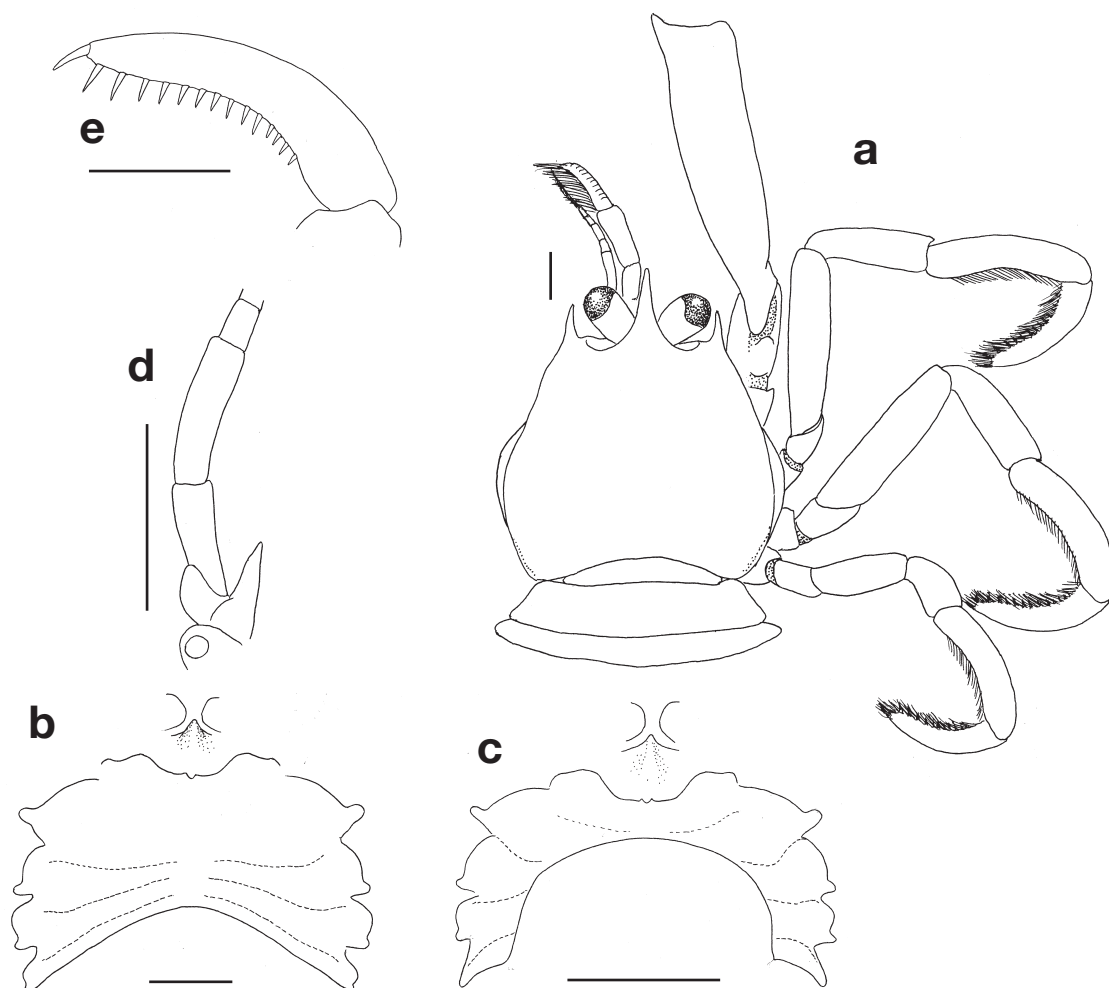


Fig. 51. Male (4.1 mm; a, b, d, e) and ovigerous female (4.5 mm; c), PCP332: **a**, carapace and right pereopods, right P5 and distal part of right P1 omitted, dorsal; **b**, sternal plastron, with excavated sternum; **c**, same; **d**, left antenna, ventral; **e**, right P3, distal part, mesial. Scales = 1 mm.

Uroptychus singularis Baba & Lin, 2008

單折尾蝦

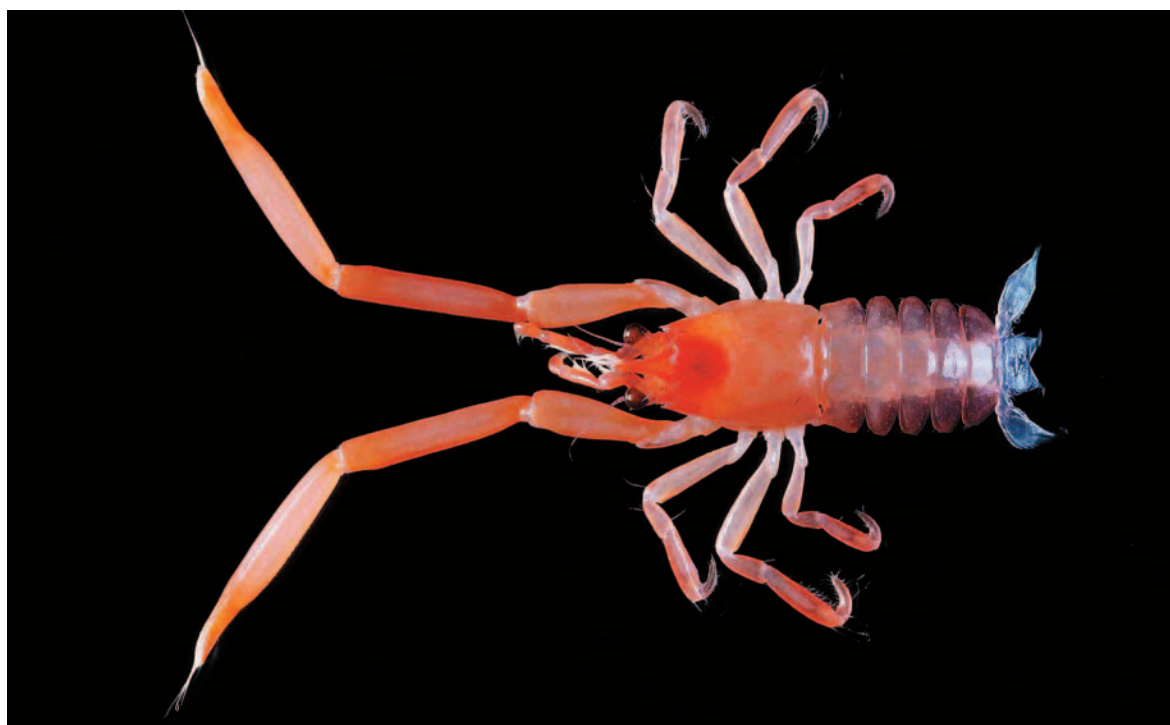


Fig. 52. Paratype female (8.0 mm), CP235.

Uroptychus singularis Baba & Lin, 2008: 18, figs. 11, 12, 13D [type locality: SW Taiwan, 22°21.22'N, 119°54.78'E, 1212–1063 m].

Material examined.—CP134, 22°16.56'N, 120°6.11'E, 736–1040 m, 22 Nov 2001: 1 ovigerous female paratype (6.6 mm), 1 female paratype (6.4 mm) (NTOU). CD135, 22°17.21'N, 120°0.28'E, 961–1112 m, 22 Nov 2001: 1 male paratype (6.8 mm) (NTOU). CD136, 22°7.75'N, 120°0.87'E, 1211–998 m, 22 Nov 2001: 3 male paratypes (5.9–7.8 mm), 2 ovigerous female paratypes (6.5, 7.1 mm), 4 female paratypes (5.9–7.1 mm) (NTOU). CD141, 22°12.04'N, 119°59.96'E, 1110–985 m, 24 Nov 2001: 5 male paratypes (4.3–7.4 mm), 2 ovigerous female paratypes (6.1, 6.3 mm) (NTOU). CP179, 22°21.22'N, 119°54.78'E, 1212–1063 m, 25 Aug 2002: male holotype (7.1 mm), 18 male paratypes (4.0–8.0 mm), 9 ovigerous female paratypes (5.7–7.0 mm), 16 female paratypes (4.2–7.3 mm) (NTOU). CP235, 25°22.95'N, 122°43.63'E, 765–806 m, 22 Jul 2004: 4 male paratypes (5.3–7.8 mm), 2 ovigerous female paratypes (7.1, 7.2 mm), 1 female paratype (8.0 mm) (NTOU). CP 300, 22°17.156'N, 119°59.963'E, 960–972 m, 11 Aug 2005: 1 male paratype (6.8 mm) (NTOU). PCP334, 22°16.713'N, 120°0.114'E, 994–975 m, 5 Oct 2005: 2 male paratypes (7.0, 7.1 mm), 5 ovigerous female paratypes (5.2–7.0 mm), 6 female paratypes (5.0–7.2 mm) (NTOU). PCP342, 22°16.648'N, 119°59.960'E, 988–1010 m, 8 Mar 2006: 12 male paratypes (3.2–7.7 mm), 4 ovigerous female paratypes (6.3–7.5 mm), 7 female paratypes (3.9–7.2 mm) (NTOU). PCP344, 22°15.952'N, 120°0.110'E, 995–1073 m, 8 Mar 2006: 4 male paratypes (6.4–7.1 mm), 6 ovigerous female paratypes (5.6–7.5 mm), 2 female paratypes (6.2, 6.8 mm) (NTOU). PCP345, 22°11.886'N, 120°0.526'E, 1165–1197 m, 8 Mar 2006: 1 ovigerous female paratype (5.8 mm) (NTOU).

Diagnosis.—Carapace distinctly longer than broad, dorsally smooth, with pair of small epigastric spines; anterolateral spine small, not reaching distal end of antennal article 2; small spine at anterior end of branchial margin. Rostrum sharply triangular, straight, directed somewhat dorsally, flattish on dorsal surface. Pterygostomial flap anteriorly ending in small spine. Excavated sternum anteriorly sharp angular between close bases of Mxp1, surface with small spine in center. Sternite 3 with pair of submedian spines separated by V-shaped notch; sternite 4 anterolaterally with small spine. Abdomen smooth and glabrous. Eyes relatively broad, cornea not inflated. Antennal article 2 with distolateral spine; antennal scale slightly overreaching midlength of article 5; articles 4 and 5 unarmed, article 5 about twice as long as article 4, antennal flagellum not reaching end of P1 merus. Mxp3 unarmed on merus and carpus. P1 ischium with short dorsal spine, unarmed on ventromesial margin; merus slightly longer than carapace. P2–4 with long setae on carpi and propodi, unarmed on meri and carpi; P4 much smaller than P2 and P3; P2 merus subequal to P3 merus, distinctly shorter than carapace; carpi longer than dactyli, half as long as propodi; propodi having flexor margin with single terminal spine preceded by row of movable spines; dactyli strongly curving proximally, with 9–11 spines oriented parallel to flexor margin, terminal spine much larger.

Size.—Males to 8.0 mm, and females to 7.5 mm (present data).

Coloration.—Pale orange overall. Deep orange viscera visible through gastric region of carapace.

Habitat.—On gorgonians; collected together with many sponges, sticky mud, sunken woods; 736–1212 m.

Distribution.—Taiwan.

Remarks.—The species is close to *U. australis* (Henderson, 1885) from eastern and southeastern Australia and New Zealand in having paired epigastric spines, very short and slender P4, and P2–4 dactyli with inclined spines almost contiguous to or oriented parallel to the flexor margin. *Uroptychus singularis* is readily distinguished from that species by the P2–4 propodi with the flexor margins ending in a single instead of a pair of spines, and the antennal scale slightly overreaching the midlength instead of reaching the end of antennal article 5.

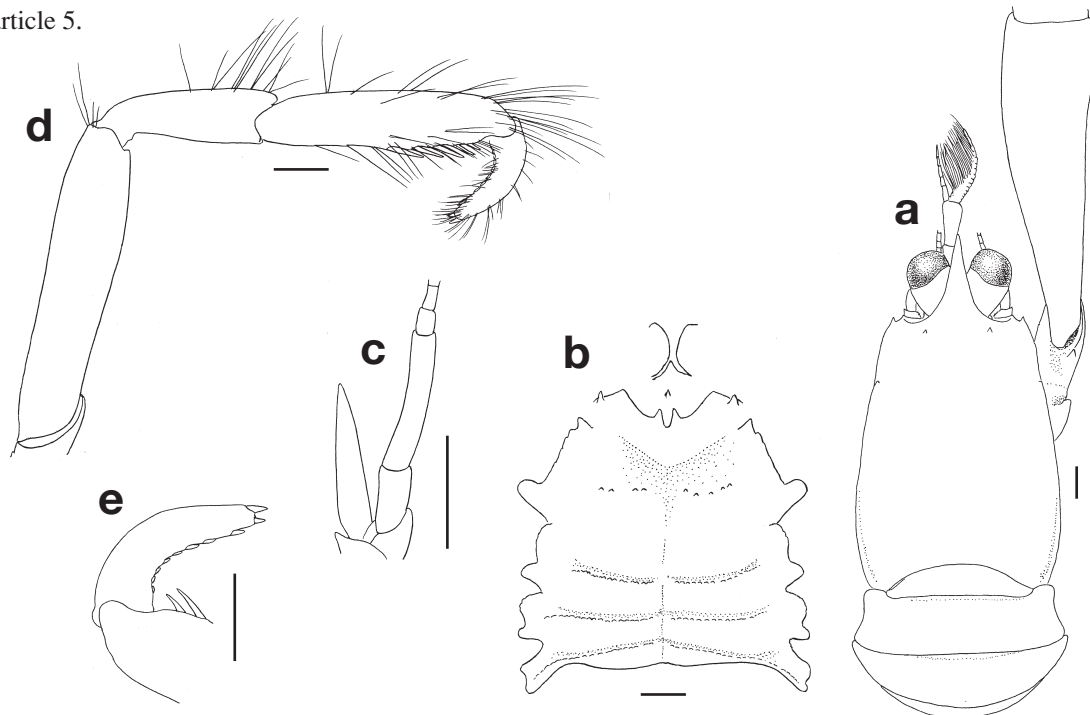


Fig. 53. Holotype male (7.1 mm), CP179: **a**, carapace and abdomen, with proximal part of right P1, dorsal; **b**, sternal plastron; **c**, right antenna, ventral; **d**, right P2, lateral; **e**, same, distal part, lateral. Scales = 1 mm (after Baba & Lin, 2008).

Uroptychus triangularis Miyake & Baba, 1967
三角折尾蝦



Fig. 54. Male (3.3 mm), DW5.

Uroptychus triangularis Miyake & Baba, 1967a: 203, fig. 1 [type locality: near Muko-jima, Bonin Islands, depth unknown].—Baba, 2005: 231.—Baba *et al.*, 2008: 44.

Material examined.—DW5, 22°40.5'N, 119°56.5'E, 213–236 m, 27 Jul 2000: 1 male (3.3 mm) (NTOU).

Diagnosis.—Carapace distinctly broader than long, subtriangular in dorsal view; dorsal surface somewhat convex on gastric region, with very small, scattered spines on anterior half; lateral margin convexly divergent, with relatively short spines, first anterolateral, relatively small, directed straight forward, second subequal to first, located about at anterior end of anterior branchial region, third strongest, basally broad and subtriangular, located at anterior end of posterior branchial region, followed by 2 smaller, subtriangular spines. Rostrum narrow triangular, slightly deflexed anteriorly, dorsal surface excavated. Pterygostomian flap anteriorly produced into sharp spine, surface with small spines. Excavated sternum with bluntly angular anterior margin between close bases of Mxp1, surface convex along midline. Sternal plastron much broader than long; sternite 3 with pair of small submedian spines on deeply concave anterior margin; sternite 4 having anterolateral margin anteriorly ending in spine accompanying small spine lateral to it. Abdominal somites glabrous. Eyes elongate, slightly more than twice as long as broad. Antennal article 2 with small distolateral spine; antennal scale slightly overreaching article 5; distal 2 articles with well-developed ventral distomesial spine; article 5 slightly longer than article 4; flagellum barely reaching end of P1 merus. Mxp3 merus with prominent distolateral spine, flexor margin with 2 or 3 small spine distal to midlength, extensor margin with very small distal spine; carpus with distolateral spine and 2 extensor marginal spines. P1 massive; ischium with strong distodorsal spine,

ventromesial margin without pronounced subterminal spine; merus subequal to carapace in length; short, stout spines on merus and carpus. P2–4 broad relative to length, well compressed mesio-laterally; meri successively shorter posteriorly, subequally broad; P2 merus shorter than carapace; carpi shorter than dactyli, about half as long as propodus on P2, 0.4 on P4; propodi having flexor margin with pair of terminal spines preceded by row of spines; dactyli slightly less than half as long as propodi, flexor margin moderately curving, with sharp triangular spines successively shorter proximally, ultimate more slender than penultimate.

Size.—Male, 3.3 mm (present data); female (ovigerous, holotype), 2.8 mm.

Coloration.—Pale orange base color. Carapace with 2 orange red stripes arising at base of eyestalk, extending diagonally backward to insertion of P4 on opposite side, crossing at median gastric region, hence representing X-shape. Abdomen with three narrow longitudinal red lines, pleura fringed with red; somite 6 and tailfan translucent. P1 laterally reddish. P2–4 reddish overall.

Habitat.—Associates and substrates unknown; 213–236 m.

Distribution.—Japan (Muko-jima, Bonin [Ogasawara] Islands) and Taiwan.

Remarks.—In the material examined, the ultimate of the flexor marginal spines of the P2–4 dactyli is more slender than the penultimate, whereas these spines are subequal in the holotype. Inasmuch as no other differences were found, this is referred to *U. triangularis*. This is the first record for the species since that of the female holotype from the Ogasawara Islands, Japan.

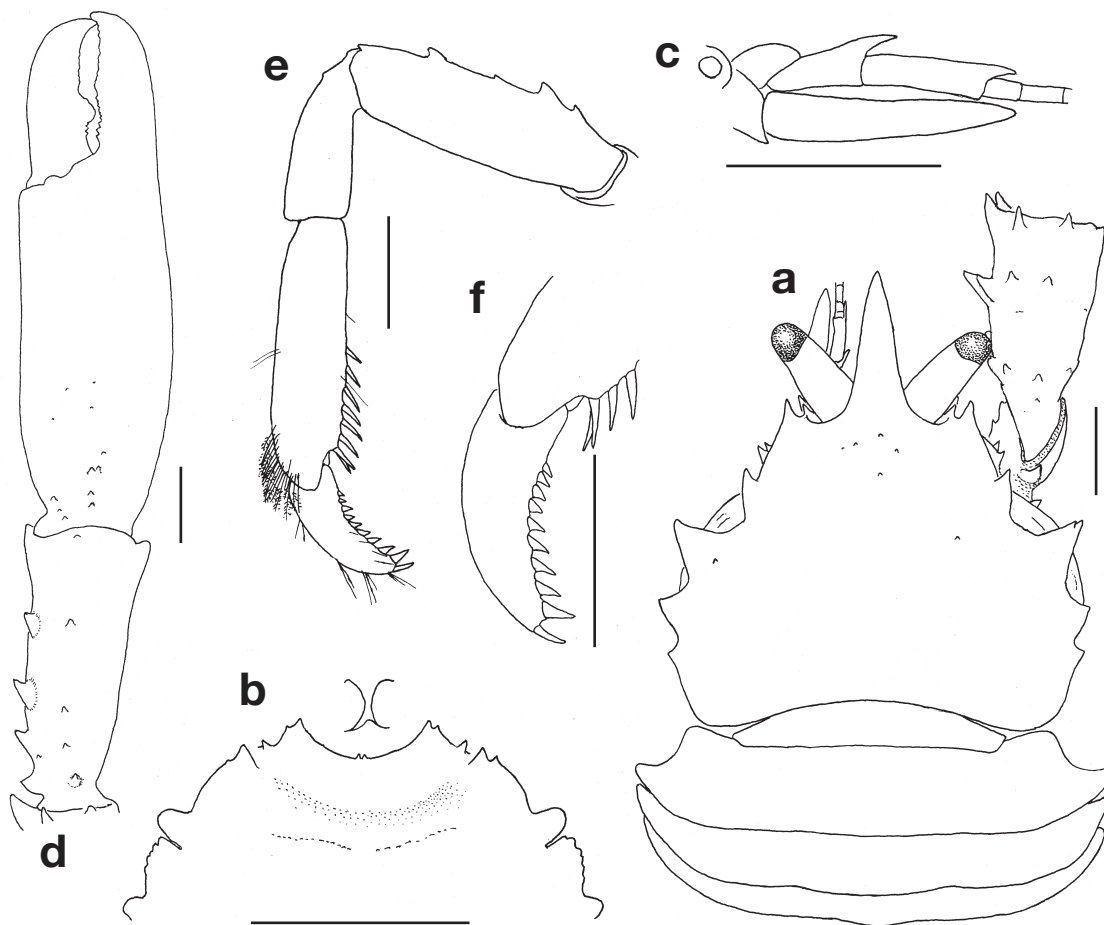


Fig. 55. Male (3.3 mm), DW5: **a**, carapace and abdomen, with proximal part of right P1, dorsal; **b**, anterior part of sternal plastron; **c**, left antenna, ventral; **d**, right P1, dorsal; **e**, left P2, lateral; **f**, same, distal part, lateral. Scales = 1 mm.

Uroptychus zezuensis Kim 1972
濟州島折尾蝦

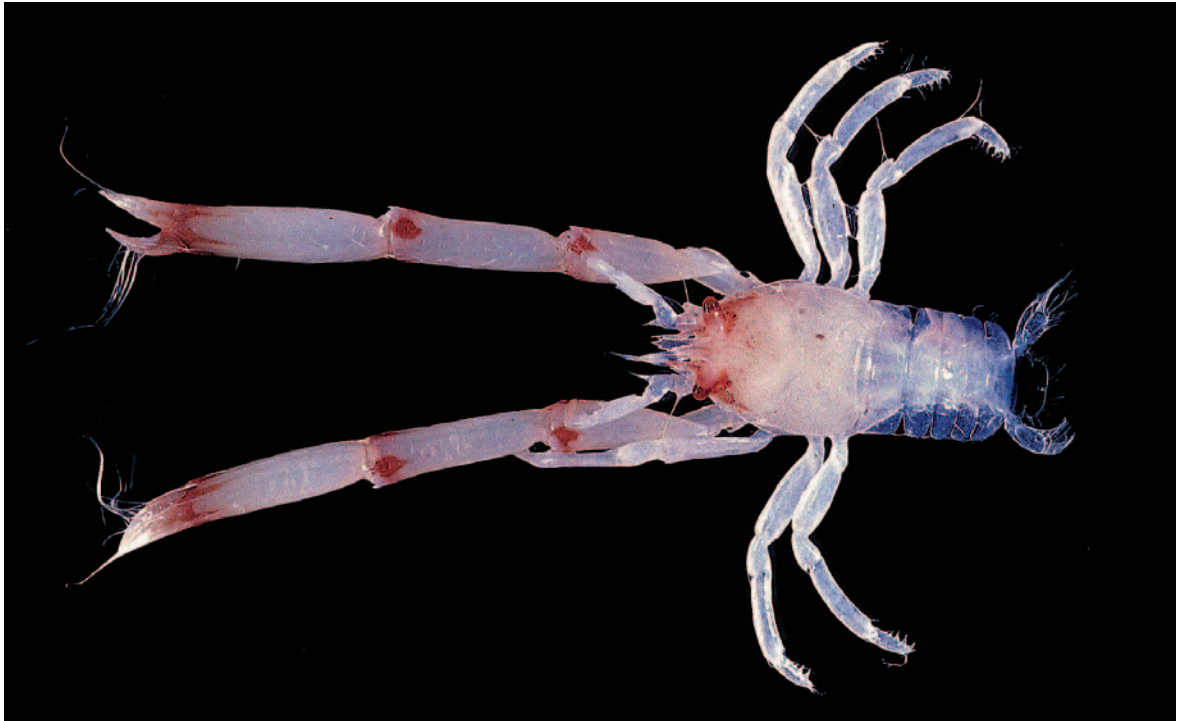


Fig. 56. Male (3.8 mm), DW3.



Fig. 57. Male (3.8 mm), DW3, on the host alcyonacean coral *Siphonogorgia* sp.

Uroptychus zezuensis Kim, 1972: 53, figs. 1, 2 [type locality: off Seogwipo, Jeju Island, 60 m].—Kim, 1973: 171, fig. 17, pl. 64: fig. 4a, 4b.—Baba, 2005: 64, fig. 23.—Baba *et al.*, 2008: 46.

Material examined.—DW3, 23°16.0'N, 119°52.8'E, 128–132 m, 27 Jul 2000: 1 male (3.8 mm), 1 female (4.2 mm) (NTOU).

Diagnosis.—Carapace slightly broader than long, dorsally slightly convex from side to side and anterior to posterior; lateral margins convex, with 5 spines on anterior half, first anterolateral, moderate in size, second and third small, fourth and fifth acute, subequal, both much larger than first. Rostrum narrowly triangular, slightly deflexed anteriorly, deeply excavated dorsally, lateral margin with or without small subapical spine. Pterygostomial flap with spinules on surface, anteriorly ending in sharp spine. Excavated sternum with distinct ridge in midline, anterior margin broad subtriangular between broadly separated bases of Mxp1. Sternite 3 shallowly depressed, anterior margin weakly concave, with narrow or relatively broad U-shaped median notch; sternite 4 with anterolateral margin anteriorly angular. Eyes elongate. Article 2 of antennal peduncle with acute lateral spine; antennal scale overreaching end of article 5 but not tip of its distal spine; distal 2 articles each with very strong ventral distomesial spine, article 5 about twice as long as article 4; flagellum barely reaching end of P1 merus. Mxp3 ischium with small spine directly lateral to rounded distal corner of flexor margin; merus short relative to length, with 1 distolateral spine and a few small spines distal to midlength of flexor margin; carpus with 1 distolateral and 1 extensor marginal spine. P1 setose; ischium dorsally with strong spine often with accompanying smaller spine proximal to it, ventromesially with strong subterminal spine; 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, length 1.2–1.3 x that of carapace. P2–4 moderately broad in lateral view, with long, distally softened setae; meri successively shorter posteriorly, equally broad on P2–4; extensor crests smooth, without spines; P2 merus slightly shorter than carapace; carpi subequal; length 0.4 that of propodi on P2–4; propodi having flexor margin with pair of terminal spines preceded by 1 spine on P2, none on P3 and P4; each dactylus slightly less than half length of propodus, ending in slender terminal spine preceded by 5 or 6 spines on flexor margin, distal 3 of these spines strong, perpendicular to flexor margin.

Size.—Males to 3.8 mm (present data), females to 7.0 mm including rostrum (Baba, 2005).

Coloration.—Overall pale seashell pink, abdomen translucent. In male, P1 reddish at distal portions of merus, carpus and propodus and proximal part of fingers; anterolateral portion of carapace (around hepatic region) also reddish. In female, these reddish marks are faint.

Habitat.—On alcyonacean coral *Siphonogorgia* sp. (present data); 60–311 m.

Distribution.—Korea (Jeju Island), Japan (Nagasaki), Taiwan and Philippines.

Remarks.—*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 in *U. tridentatus* seemed to be subject to variation. However, such variation was not found in any of the available material at hand. 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* (see Baba, 2005). The specimens examined represent the first record for the species from Taiwan. This species is very similar to *U. kudayagi* Miyake, 1961 from Japan in morphology, coloration and host preference. It is distinguished from that species by having additional spines on the carapace lateral margin and longer antennal scale.

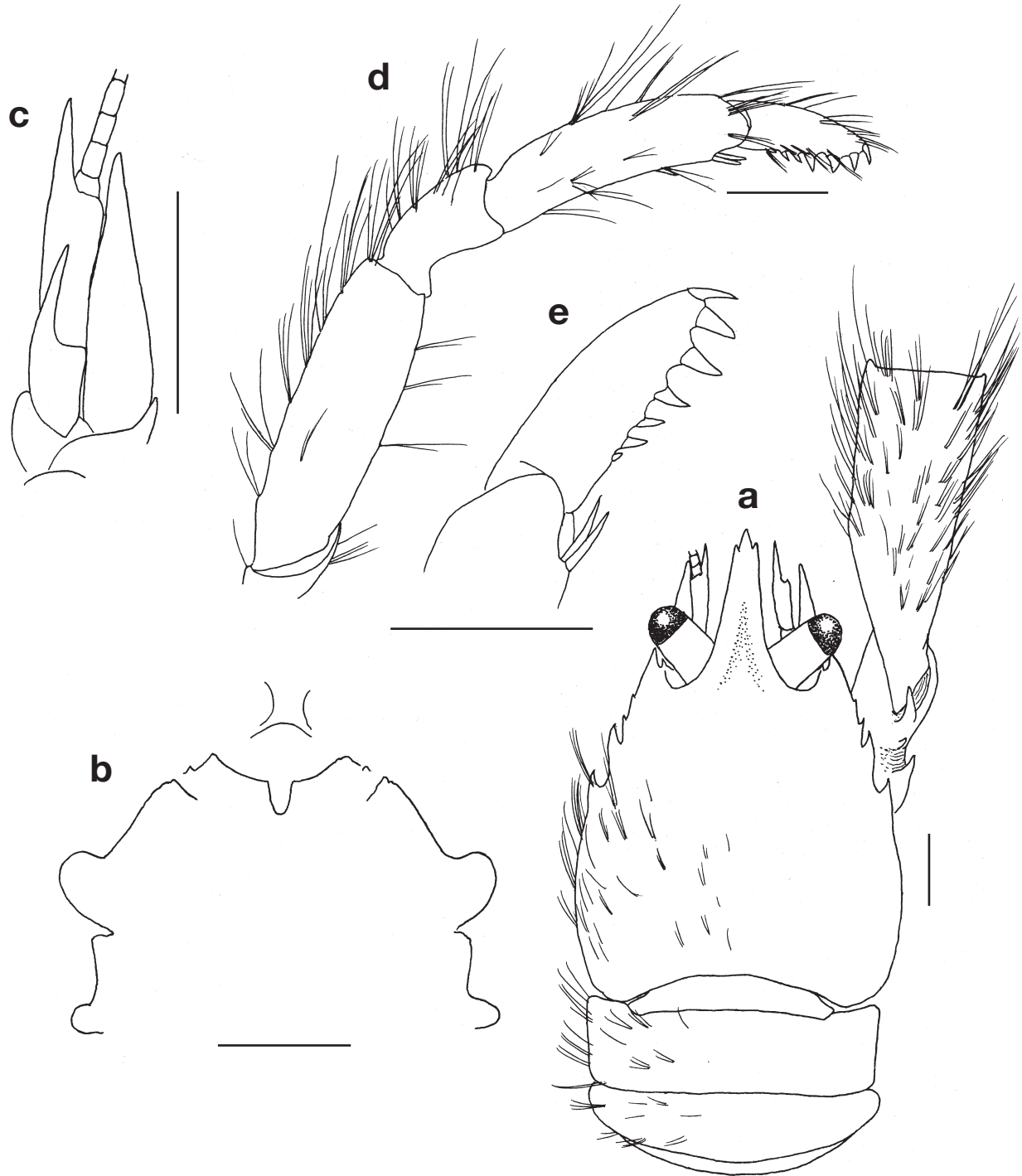


Fig. 58. Male (3.8 mm), DW3: **a**, carapace and abdomen, setae omitted from the right side, with proximal part of right P1, dorsal; **b**, anterior part of sternal plastron; **c**, left antenna, ventral; **d**, right P2, lateral; **e**, same, distal part, lateral. Scales = 1 mm.

Family Galatheidae Samouelle, 1819

鎧甲蝦科

Galatheidae Samouelle, 1819: 92.

Galatheinae.—A. Milne Edwards & Bouvier, 1894: 244.—A. Milne Edwards & Bouvier, 1897: 3.—A. Milne Edwards & Bouvier, 1899: 71.—Ortmann, 1898: 1150.—Baba, 1988: 53 (key).—Baba, 2005: 67 (key).

Galatheidae.—Bouvier, 1896: 311.—Alcock, 1901: 236.—Schmitt, 1921: 162.—Barnard, 1950: 481.—Balss, 1957: 1595.—Zariquiey Álvarez, 1968: 268.—Squires, 1970: 407.—Williams, 1965: 105.—Williams, 1984: 231.—Davie, 2002: 58.—Poore, 2004: 228.

Munidopsinae.—Ortmann, 1898: 1151.—Balss, 1957: 1596.—Baba, 1988: 53 (key).—Baba & Williams, 1998: 155 (key).—Baba, 2005: 67 (key).

Shinkainae Baba & Williams, 1998: 152, 155 (key).—Baba, 2005: 67 (key).

Type genus: *Galathea* Fabricius, 1793.

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.

Remarks.—The present family is currently known to accommodate 34 genera and 680 species (Baba *et al.*, 2008; Osawa *et al.*, 2008b; Baba & Fujita, 2008; Macpherson & Baba, 2009). In Taiwan, 15 genera and 92 species of galatheids are found, with five genera and 27 species representing new records. Amongst them, nine species in four genera are also known from Dongsha.

Key to genera of Galatheidae from Taiwan

1. Eyes reduced and non-pigmented. Mxp1 exopod without lash 2
- Eyes well developed. Mxp1 exopod with lash (subfamily Galatheinae) 4
2. Mxp3 with rudimentary epipod. Ventral surface of cephalothorax with mat of long silky setae (subfamily Shinkainae) *Shinkaia*
- Mxp3 with well-developed epipod. Ventral surface of cephalothorax without mat of long silky setae (subfamily Galatheinae) 3
3. Row of prominent spines in midline of carapace (on mesogastric and cardiac regions) and abdominal somites 2–4 *Galacantha*
- No complete row of spines in midline of carapace and abdomen *Munidopsis*
4. Gastric region with laterally compressed, anteriorly bluff strong process *Heteronida*
- Gastric region without strong median process 5
5. Rostrum spiniform 6
- Rostrum triangular, dorsally flattish 11
6. Rostrum with dorsal and ventral spines *Cervimunida*
- Rostrum without dorsal and ventral spines 7
7. Mxp3 carpus with spine at flexor distal margin. Epipods on P1–3 *Raymunida*
- Mxp3 carpus unarmed on flexor margin. Epipods at most on P1 only 8
8. Frontal margin deeply concave. Mxp3 merus subrhomboidal *Crosnierita*

- Frontal margin not concave but transverse or oblique. Mxp3 merus elongate 9
- 9. Carapace without distinct transverse ridges and striae. Rostral spine broad at base *Paramunida*
- Carapace with distinct transverse ridges or striae. Rostral spine proportionately slender 10
- 10. Abdominal somites 4 usually with more than 2 spines on anterior ridge (except *A. tenuipes*). G1 absent
..... *Agononida*
- Abdominal somite 4 usually unarmed (except *M. gillii*). G1 and G2 present *Munida*
- 11. Carapace lacking setiferous striae. Eyestalks narrow and elongate *Fennerogalatea*
- Carapace bearing setiferous striae. Eyestalks relatively broad and short 12
- 12. Rostrum dagger-shaped, with distinct supraocular tooth on each side *Phylladorhynchus*
- Rostrum subtriangular, without supraocular spines, bearing a few to several small teeth 13
- 13. Rostrum extremely elongate, ventrally carinate, with 5–9 lateral teeth *Allogalatea*
- Rostrum moderate in length, usually flattish or somewhat convex from side to side, with 2–4 lateral teeth 14
- 14. Rostrum with reduced lateral teeth. Carapace with obsolescent transverse striae bearing coarse setae
..... *Leiogalatea*
- Rostrum with distinct lateral teeth. Carapace with transverse striae bearing fine setae *Galatea*

Genus *Agononida* Baba & de Saint Laurent, 1996

宜蝦屬

Agononida Baba & de Saint Laurent, 1996: 441 [type species: *Agononida incerta* Henderson, 1888. Gender: feminine].—Poore, 2004: 229.—Baba, 2005: 68.

Diagnosis.—Carapace with distinct transverse striae. Pair of epigastric spines. Cardiac region with transverse ridge elevated, often armed with spine(s). Branchial margin with 3 or 4 spines. Rostrum spiniform, remote from supraocular spines. Lateral limit of orbit rounded. Abdominal somites 2–4 each with 2 elevated transverse ridges, each anterior ridge with 4 spines (except *A. tenuipes*: 6, 4, 2 spines on somites 2, 3, 4 respectively), posterior ridge of somite 4 with or without median spine. Telsonal subdivision incomplete. Cornea dilated. Antennal article 1 with distomesial process strong or of moderate size. Mxp3 ischium usually thin, crista dentata not well developed; 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 spines each arising from very low, small process. Male P5 without toothbrush-like setae. G1 absent. Eggs small and numerous.

Remarks.—The genus now contains 32 species, 30 of which are from the Indo-Pacific and two from the Atlantic (Baba *et al.*, 2008; Macpherson & Baba, 2009). Seven species are known from Taiwanese waters.

Key to Taiwanese species of *Agononida*

1. Carapace lateral margin with 3 spines behind anterior cervical groove. Abdominal somites 2, 3, 4 with 6, 4, 2 spines respectively on anterior ridge *A. tenuipes*
– Carapace lateral margin with 4 spines behind anterior cervical groove. Abdominal somites 2–4 each with 4 spines on anterior ridge 2
2. Cardiac spine(s) present 3
– Cardiac spine absent 5
3. Article 1 of antenna with anteriorly prolonged mesioventral spine extending far beyond end of article 5 *A. eminens*
– Article 1 of antenna with mesioventral spine barely reaching end of article 5 4
4. Antennular basal article with mesial terminal spine smaller than lateral terminal *A. analoga*
– Antennular basal article with mesial terminal spine subequal to lateral terminal *A. soelae*
5. Distomesial spine of antennal article 1 not reaching end of article 5 *A. pilosimanus*
– Distomesial spine of antennal article 1 extremely strong, extending far beyond end of article 5 6
6. Telson in male without lateral process on anterolateral margin. No red bands on P1–4 *A. incerta*
– Telson in male with lateral process on anterolateral margin. Red bands on P1–4 *A. rubrizonata*

Agononida analoga (Macpherson, 1993)

近似宦蝦



Fig. 59. Male (15.6 mm), Donggang fishing port, Pingtung County, 25 Feb 1995.

Munida squamosa.—Baba, 1988: 133.—Wu *et al.*, 1998: 131, figs. 33, 35G. (not *A. squamosa* (Henderson, 1885))

Munida analoga Macpherson, 1993a: 424, fig. 1a–g [type locality: Philippines, 12°05.6'N, 121°15.6'E, 219–220 m].

Agononida analoga.—Baba & de Saint Laurent, 1996: 442.—Baba, 2005: 69, 234.—Baba *et al.*, 2008: 47.

Material examined.—Dasi fishing port, Yilan County, 16 Mar 1995: 1 male (17.0 mm), 1 ovigerous female (14.4 mm) (NTOU).—25 Feb 1997: 1 female (11.8 mm).—11 Mar 1997: 2 females (8.7, 9.5 mm) (NTOU).—1 Jun 1998: 1 male (14.0 mm) (NTOU).—21 Mar 2002: 1 male (12.6 mm) (NTOU).—16 Dec 2004: 1 male (17.3 mm), 1 ovigerous female (14.8 mm) (NTOU). Nanfang-ao fishing port, Yilan County, 1 Sep 1995: 1 ovigerous female (17.9 mm) (NTOU). Donggang fishing port, Pingtung County, 31 Oct 1984: 2 males (8.2, 12.3 mm), 3 females (14.5–17.4 mm) (NTOU).—29 Oct 1988: 1 female (15.2 mm) (NTOU).—19 Jan 1989: 1 male (17.6 mm) (NTOU).—3 Mar 1991: 1 ovigerous female (13.8 mm) (NTOU).—25 Feb 1995: 38 males (13.2–20.9 mm), 17 ovigerous females (13.3–19.1 mm), 1 female (13.2 mm) (NTOU).—14 May 1995: 8 males (9.5–18.0 mm), 4 ovigerous females (14.5–17.4 mm) (NTOU).—3 Jun 1995: 5 males (15.4–19.2 mm), 1 female (9.9 mm) (NTOU).—5 Aug 1995: 1 male (17.3 mm), 1 female (18.3 mm) (NTOU).—12 Sep 1995: 1 female (18.1 mm) (NTOU).—21 Oct 1995: 3 males (13.7–17.8 mm), 1 female (14.6 mm) (NTOU).—2 Jun 1999: 13 males (9.5–19.7 mm), 5 ovigerous females (11.9–15.7 mm), 6 females (10.1–13.6 mm) (NTOU).—4 Dec 2003: 1 male (17.4 mm), 1 ovigerous female (18.9 mm), 1 female (13.8 mm) (NTOU). CD140, 22°11.4'N,

120°22.58'E, 452–280 m, 23 Nov 2001: 4 males (16.8–19.4 mm), 1 female (16.2 mm) (NTOU). CP290, 24°57.301'N, 122°5.030'E, 249–255 m, 8 Aug 2005: 1 male (7.3 mm) (NTOU).

Diagnosis.—Carapace with numerous transverse striae; 1 postcervical spine on each side, 1 cardiac spine and 2 spines on posterior transverse ridge. Supraocular spines slightly thicker than rostral spine, distinctly overreaching cornea. Frontal margin somewhat concavely transverse. Branchial lateral margin with 4 spines. Sternal plastron with numerous arcuate striae. Abdominal somites 2, 3, 4 with 4, 4, 4 spines respectively on anterior ridge; posterior ridge of somite 4 with median spine. Eyelashes short. Distomesial spine of antennular basal article reduced to very small size, distolateral one well developed; 2 lateral spines, distal spine barely reaching end of distolateral spine. Antennal peduncles having article 1 with moderate-sized distomesial process ending in small spine; article 2 usually unarmed, occasionally with tiny spine on distomesial margin; article 3 with sharp slender distomesial spine. Mxp3 merus with small spine on extensor distal margin. P2–4 dactyli slender and curving, flexor margin with more than 30 small seta-like spines on proximal half on P2, more proximally on P3 and P4.

Size.—Males to 22.9 mm, females to 21.8 mm (Macpherson, 1993a).

Coloration.—Base color light orange. Eyes deep brown. P1–5 with reddish mottlings. Abdomen whitish between somite 5 and end of tailfan.

Habitat.—Mostly mud, occasionally sand, sandy mud or globigerina (Baba, 1988, 2005); 170–567 m.

Distribution.—Indonesia (Kei Islands), Philippines (between Mindanao and off NW Luzon), and Taiwan.

Remarks.—This species was made known from Taiwan by Wu *et al.* (1998) under *Munida squamosa*. *Agononida analoga* is distinguished from *A. squamosa* (Henderson, 1885) by the second article of antenna that usually bears no spine or a very tiny instead of distinct spine on the distomesial margin. In coloration, *A. squamosa* has no red bands on P1–4.

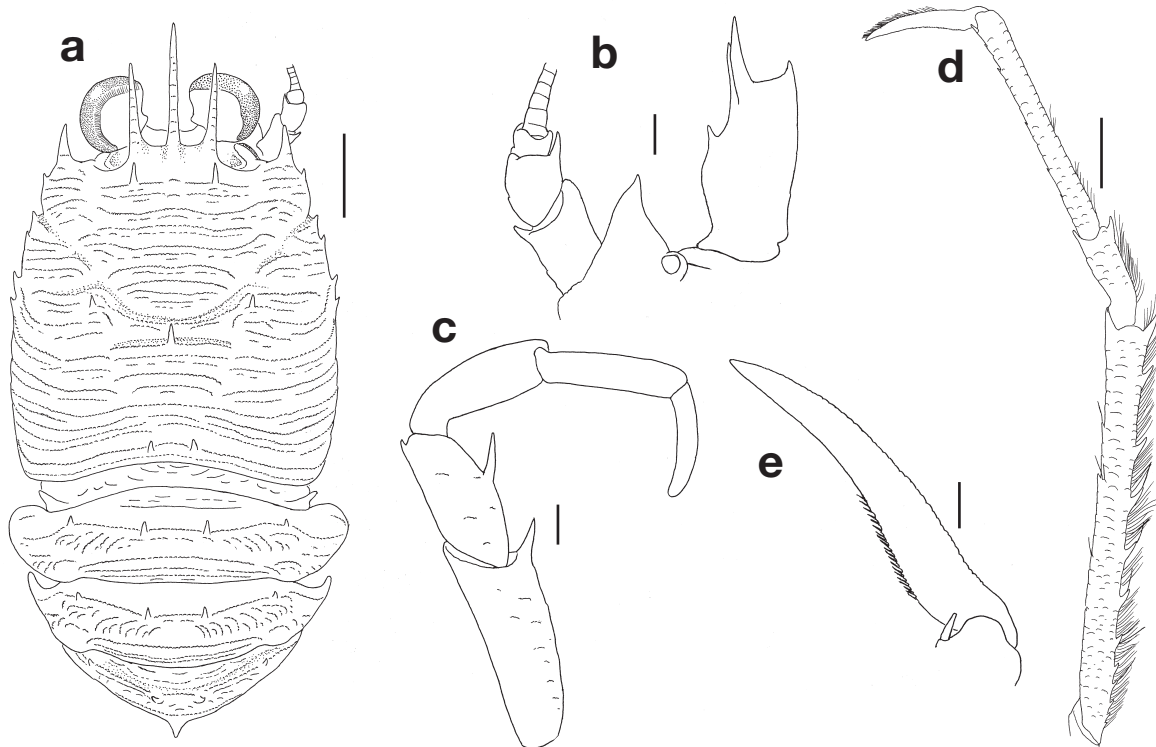


Fig. 60. Male (17.4 mm), Donggang fishing port, Pingtung County, 4 Dec 2003: **a**, carapace and abdomen, eyelash omitted on right side, dorsal; **b**, right antennule and antenna, ventral; **c**, right Mxp3, lateral; **d**, left P2, lateral; **e**, same, distal part, lateral. Scales: a, d = 5 mm; b, c, e = 1 mm.

Agononida eminens (Baba, 1988)

突顯宦蝦



Fig. 61. Female (18.6 mm), CD210.

Munida eminens Baba, 1988: 95, fig. 35 [type locality: off SE Luzon, 12°43'51"N, 124°58'50"E, 564 m]; 1994: 11.—Macpherson, 1994: 466, fig. 72; 1996a: 392.

Agononida eminens.—Baba & de Saint Laurent, 1996: 442.—Macpherson, 1997: 600; 1999: 412; 2004: 239.—Davie, 2002: 59.—Ahyong & Poore, 2004b: 7.—Poore, 2004: 229, fig. 63a.—Baba, 2005: 234.—Ahyong, 2007: 11, fig. 6A.—Poore *et al.*, 2008: 18.—Baba *et al.*, 2008: 47.

Material examined.—CD210, 24°28.99'N, 122°12.79'E, 500–1183 m, 1 Jun 2003: 1 female (18.6 mm) (NTOU).

Diagnosis.—Carapace with transverse striae moderate in number, armed with 2 or 3 spines on branchio-cardiac boundary, 1 cardiac spine and 2 spines on posterior transverse ridge. Supraocular spines slightly more slender than rostral spine, distinctly overreaching cornea. Frontal margin oblique. Branchial lateral margin with 4 spines. Sternal plastron with a few striae (only 1 short stria on each lateral portion). Abdominal somites 2, 3, 4 with 4, 4, 4 spines respectively on anterior ridge; posterior ridge on somite 4 with median spine. Eyelashes short. Antennular basal article with 2 distal spines, distomesial spine reduced to very small size, distolateral spine short; 2 lateral spines obsolete. Antennal peduncles having article 1 with pronouncedly elongate distomesial process extending forward far beyond corneal margin, article 2 with distomesial and distolateral spines, article 3 unarmed. Mxp3 merus unarmed on extensor distal margin. P2–4 dactyli proportionately broad, flexor margin with ca. 10 small serrations on proximal fourth on P2, none on P3 and P4.

Size.—Males to 22.0 mm (Macpherson, 1999), females to 18.6 mm (present data).

Coloration.—Carapace, abdominal somites 1–4, and P1–5 orange-red; posterior abdomen between somite 5 and end of telson translucent white. P1 fingers and P2–4 dactyli reddish on distal half, whitish on proximal half. Ahyong (2007) reported the color of this species as base color translucent white. Carapace pale, diffuse orange with orange-red spines. P1 with pale, diffuse orange bands across articulations and orange-red spines. P2–4 with pale, diffuse orange meri and propodi; dactyli red distally; spines orange-red.

Habitat.—Coral and sand, and green mud (Baba, 1988); 500–1183 m.

Distribution.—Queensland, Philippines, Indonesia, New Caledonia, Loyalty Islands, Norfolk Ridge, Chesterfield Islands, SW Pacific (Combe Bank, Tuscaroa Bank, Rotumah Bank), Vanuatu, Fiji, Tonga, and Taiwan.

Remarks.—This is the first record for the species from Taiwan.

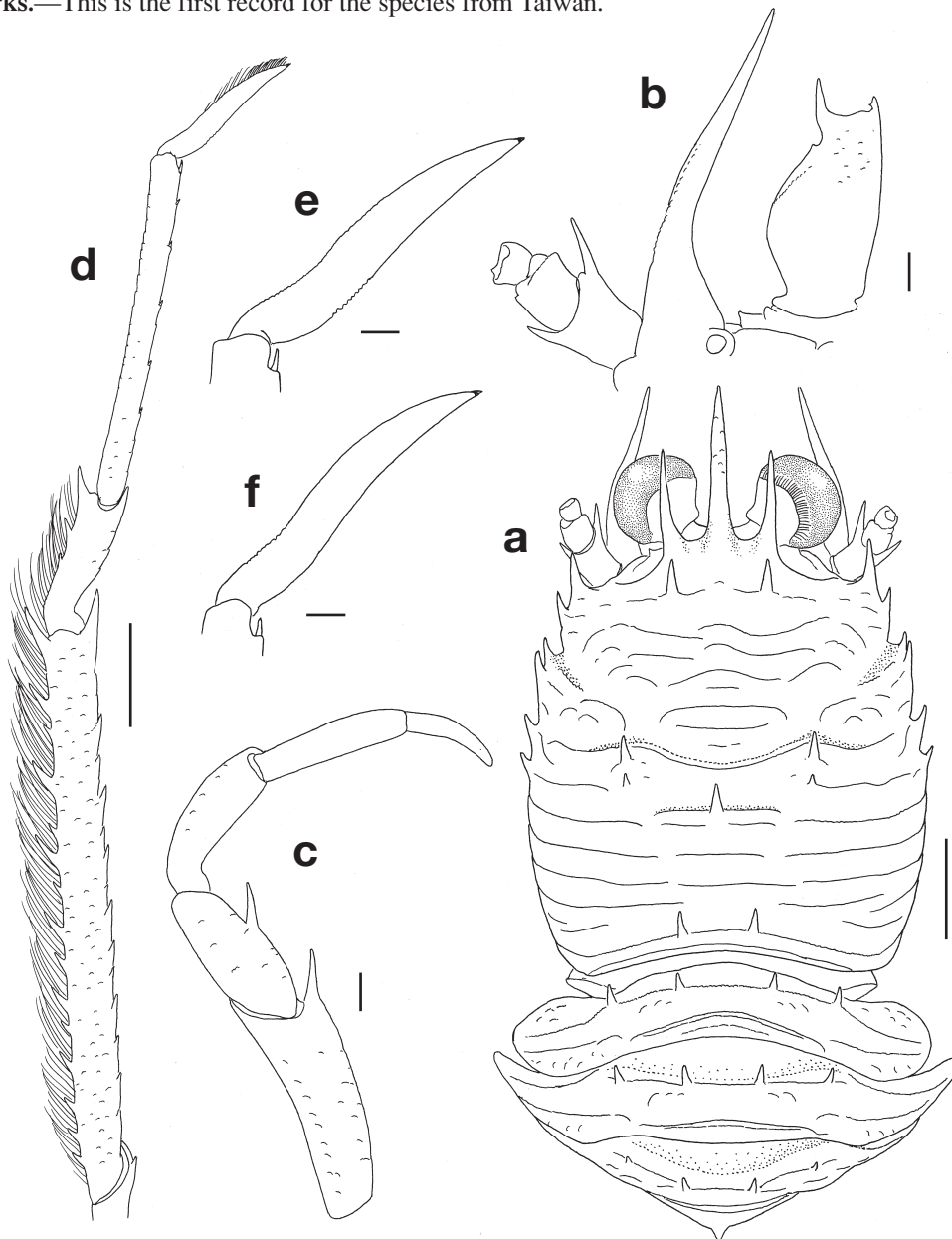


Fig. 62. Female (18.6 mm), CD210: **a**, carapace and abdomen, eyelash omitted on left side, dorsal; **b**, right antennule and antenna, ventral; **c**, right Mxp3, lateral; **d**, right P2, lateral; **e**, same, distal part, lateral; **f**, right P3, distal part, lateral. Scales: a, d = 5 mm; b, c, e, f = 1 mm.

Agononida incerta (Henderson, 1888)

模稜宦蝦

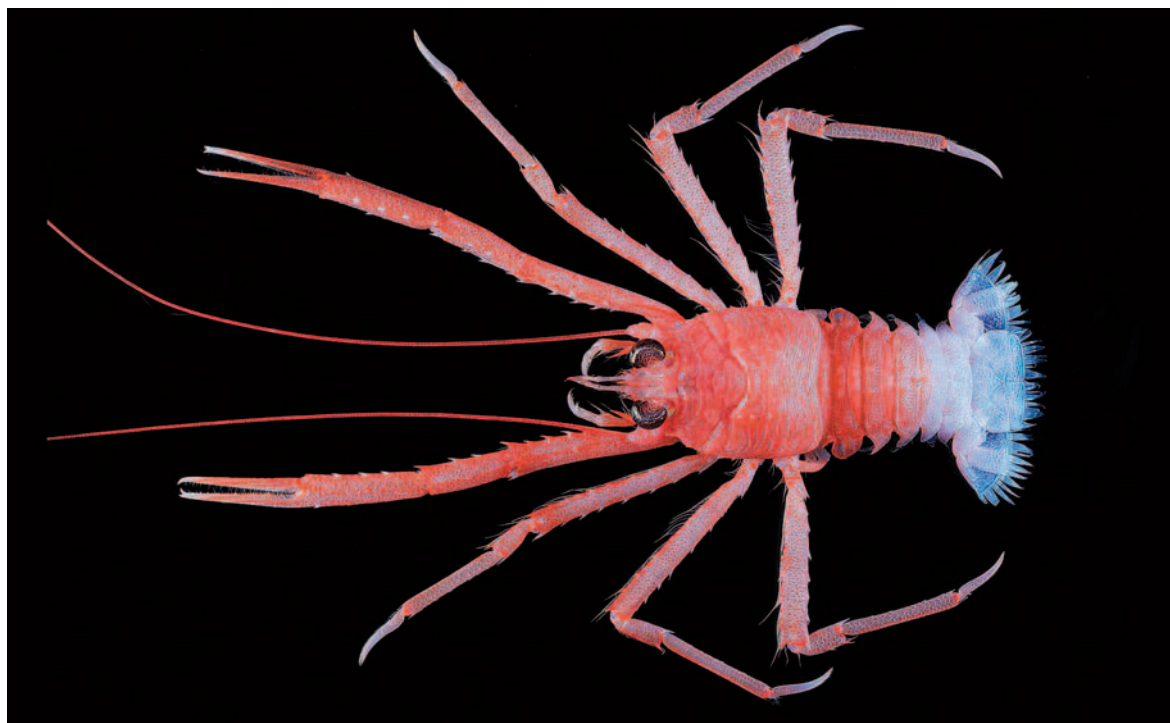


Fig. 63. Male (21.9 mm), Nanfang-ao fishing port, Yilan County, 29 Jul 2004.

Munida incerta Henderson, 1888: 130, pl. 13: figs. 4, 4a [type locality: Philippines, off Sibago Island (off Zamboanga), 06°47'N, 122°28'E, 458 m].—Yanagita, 1943: 15, figs. 1, 2.—Tirmizi, 1966: 205, fig. 22.—Miyake, 1982: 146, pl. 49, fig. 5.—Baba in Baba *et al.*, 1986: 171, 290, fig. 121.—Baba, 1988: 106.—Tirmizi & Javed, 1993: 100, figs. 43, 44.—Macpherson, 1994: 478, fig. 74; 1996a: 394.—Wu *et al.*, 1998: 113 (part), figs. 23, 26D (fig. 26E = *A. rubrizonata*).

Agononida incerta.—Baba & de Saint Laurent, 1996: 442.—Macpherson, 1997: 600; 1999a: 413; 2004: 241.—Konishi & Saito, 2000: 1022, figs. 1, 2.—Ahyong & Poore, 2004b: 8 (part).—Poore, 2004: 230.—Baba, 2005: 69, 235.—Baba *et al.*, 2008: 48.—Macpherson & Baba, 2009: 57, figs. 1, 2A–E, G–H.

Not *Munida incerta*.—Baba, 1994: 12.—Ahyong & Poore, 2004b: 8. (part = *A. rubrizonata* Macpherson & Baba, 2009)

Dubious identity:

Munida incerta.—Barnard, 1950: 492, fig. 92, a.—Baba, 1990: 963.

Material examined.—Nanfang-ao fishing port, Yilan County, 22 May 1990: 3 males (10.8–14.0 mm), 1 ovigerous female (15.5 mm), 2 females (13.1, 15.8 mm) (NTOU).—20 Aug 1991: 1 male (20.8 mm) (NTOU).—05 Dec 1991: 1 male (18.3 mm), 1 female (18.2 mm) (NTOU).—17 Jun 1993: 4 males (15.6–19.0 mm), 1 ovigerous female (17.6 mm), 1 female (18.2 mm) (NTOU).—7 Aug 1996: 2 males (20.3, 21.8 mm) (NTOU).—27 Aug 1996: 1 male (19.6 mm) (NTOU).—5 Dec 1997: 2 males (14.6, 17.2 mm) (NTOU).—29 Jul 2004: 1 male (21.9 mm), 1 female (24.6 mm) (NTOU).—10 Mar 2005: 2 males (9.1, 9.2 mm), 1 female (17.1

mm) (NTOU). Donggang fishing port, Pingtung County, 3 Jun 1995: 2 males (17.2, 17.4 mm) (NTOU). CD140, 22°11.4'N, 120°22.58'E, 452–280 m, 23 Nov 2001: 2 males (16.4, 19.1 mm), 3 ovigerous females (20.7–21.7 mm) (NTOU). CD141, 22°12.04'N, 119°59.96'E, 1110–985 m, 24 Nov 2001: 1 male (18.0 mm) (NTOU).

Diagnosis.—Carapace with numerous transverse striae; 1–3 spines on branchio-cardiac boundary (usually 3, anterior first constant, second and/or third occasionally missing); no spine on posterior ridge. Supraocular spines slightly thicker than rostral spine, barely or fully reaching corneal anterior margin. Frontal margin transverse or slightly oblique. Branchial lateral margin with 4 spines. Sternal plastron with numerous short striae. Abdominal somites 2–4 each with 4 spines on anterior ridge, posterior ridge of somite 4 with median spine. Eyelashes long, nearly reaching corneal margin. Antennular basal article with distomesial spine distinctly longer than distolateral, distal of 2 lateral spines reaching end of distolateral spine. Antennal peduncle with strong anterior prolongation on article 1, article 2 with small but distinct spine proximal to well-developed distomesial spine, article 3 unarmed. Mxp3 merus with well-developed spine on extensor distal margin. P2–4 dactyli nearly smooth on flexor margin. Male telson without lateral process.

Size.—Males to 35.5 mm, females to 29.0 mm (Macpherson, 1994).

Coloration.—Base color of carapace, abdominal somites 2–4 and pereopods pale orange. Pereopods without red bands. Eggs light blue.

Habitat.—Gray or green mud, mud and sand, fine or gray black sand, fine sand and broken shells, and brown sand and coral (Baba, 1988); 70–1110 m.

Distribution.—Off Durban, Zanzibar, eastern Indian Ocean, Philippines, Indonesia, Kiribati, New Caledonia, Loyalty Islands, Vanuatu, Chesterfield Islands, SW Pacific (Wallis Islands, Tuscaroa Bank, Waterwitch Bank, Field Bank, and Bayonnaise Bank), Fiji, Tonga, New South Wales, Queensland, Taiwan, Okinawa Trough, and Japan.

Remarks.—The species is morphologically most similar to *A. rubrizonata*; especially females cannot be discriminated easily. Males of *A. incera* are easily distinguished from male *A. rubrizonata* by the lack lateral process on the telson. Coloration is clearly different between the two species irrespective of sex: red bands on pereopods in *A. rubrizonata*, no red bands in *A. incerta*.

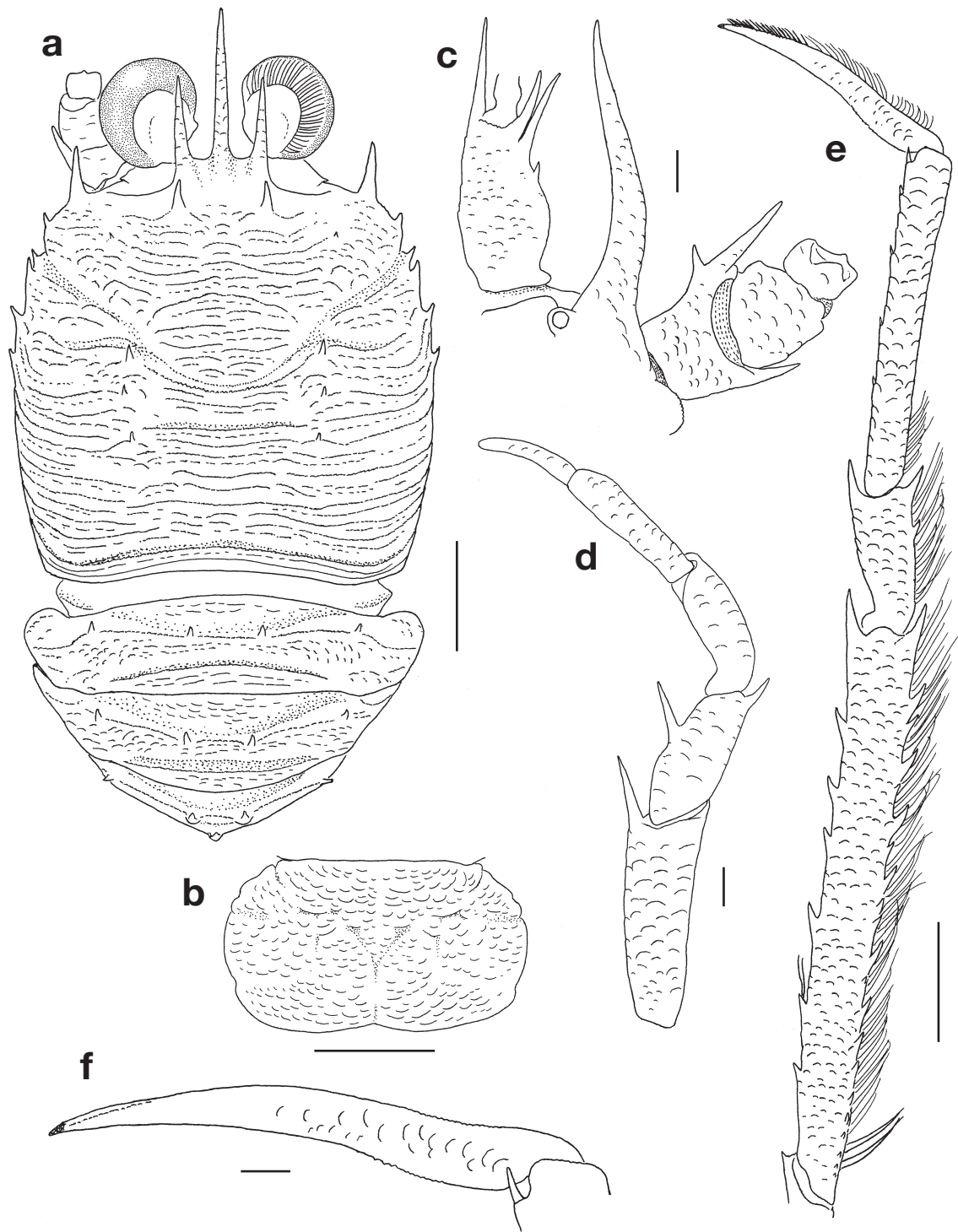


Fig. 64. Male (17.4 mm), Donggang fishing port, Pingtung County, 3 Jun 1995: **a**, carapace and abdomen, eyelash omitted on left side, dorsal; **b**, telson; **c**, left antennule and antenna, ventral; **d**, left Mxp3, lateral; **e**, left P2, lateral; **f**, same, distal part, lateral. Scales: a, b, e = 5 mm; c, d, f = 1 mm.

Agononida pilosimanus (Baba, 1969)

毛手宦蝦

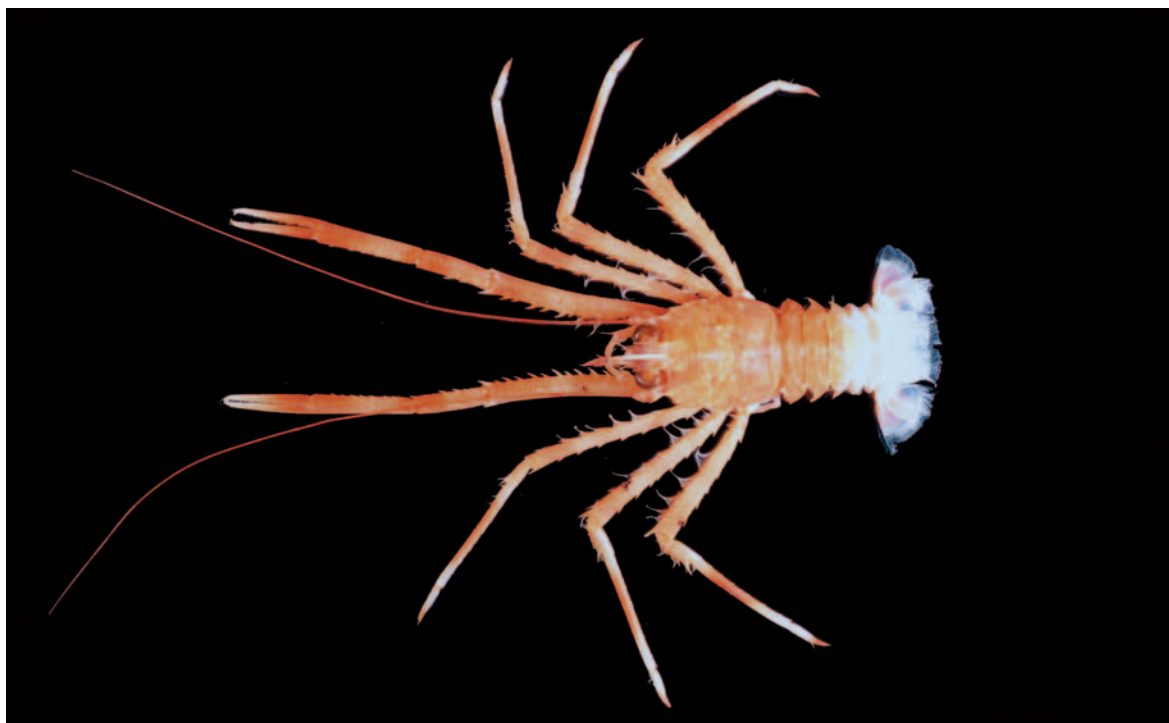


Fig. 65. Male (20.0 mm), Nanfang-ao fishing port, Yilan County, 9 May 2003.

Munida pilosimanus Baba, 1969a: 26, figs, 8, 9 [type locality: Tosa Bay, 250 m].—Baba in Baba *et al.*, 1986: 173, 291, fig. 123.—Baba, 1988: 123.—Baba, 1994: 13.—Wu *et al.*, 1998: 125, figs. 30, 35D.

Agononida pilosimanus.—Baba & de Saint Laurent, 1996: 442.—Davie, 2002: 59.—Baba, 2005: 236.—Baba *et al.*, 2008: 50.

Material examined.—Dasi fishing port, Yilan County, 27 May 1998: 1 male (22.4 mm), 1 ovigerous female (20.2 mm) (NTOU). Nanfang-ao fishing port, Yilan County, 20 Aug 1991: 1 female (19.2 mm) (NTOU).—17 Jun 1993: 4 males (20.3–27.8 mm), 2 females (21.6, 22.5 mm) (NTOU).—30 Jun 1993: 2 males (22.0, 23.7 mm), 2 females (21.2, 24.2 mm) (NTOU).—6 Aug 1996: 3 males (14.4–19.7 mm) (NTOU).—27 Aug 1996: 1 male (22.3 mm), 1 ovigerous female (23.4 mm) (NTOU).—8 Mar 2001: 4 males (21.1–25.2 mm), 2 ovigerous females (25.9, 27.7 mm), 1 female (17.2 mm) (NTOU).—9 May 2003: 1 male (20.0 mm) (NTOU). Donggang fishing port, Pingtung County, 14 May 1995: 2 males (15.6, 23.5 mm), 2 ovigerous females (21.7, 24.7 mm), 1 female (20.2 mm) (NTOU). DW45, 22°48.3'N, 121°27.4'E, 423–439 m, 2 Aug 2000: 1 male (16.2 mm) (NTOU). CP211, 24°40.591'N, 122°11.216'E, 517–518 m, 26 Aug 2003: 1 female (21.8 mm) (NTOU).

Diagnosis.—Carapace with numerous transverse striae, armed with 1 parahepatic spine, 2 spines on branchio-cardiac boundary, and 2 spines on posterior transverse ridge; no spine on cardiac region. Supraocular spines as thick as rostral spine, reaching or overreaching corneal anterior margin. Frontal margin oblique. Branchial lateral margin with 4 spines. Sternal plastron with numerous arcuate striae. Abdominal somites 2, 3, 4 with 4, 4, 4 spines respectively on anterior ridge; posterior ridge of somite 4 variably unarmed or with 1 small

median spine. Eyelashes short. Distomesial spine of antennular basal article much shorter than distolateral spine; 2 lateral spines small. Antennal peduncles having article 1 with moderate-sized distomesial process ending in small spine, article 2 with distomesial spine overreaching article 3, article 3 with sharp slender distomesial spine. Mxp3 merus unarmed on extensor distal margin. P2–4 dactyli slender, tapering, flexor margin with small seta-like spines on median third.

Size.—Males to 48.7 mm including rostrum (Baba, 1969a), females to 27.7 mm (present data).

Coloration.—Pale orange overall. Cornea deep brown, rostrum orange on distal third, whitish on proximal two-thirds, P1 fingers whitish in distal half, orange red in proximal half. P2–4 dactyli and distal third of propodi and whole P5 whitish, proximal half of P2–4 propodi orange red. Abdominal somite 6 and tailfan whitish (Wu *et al.*, 1998).

Habitat.—Fine sand and shells (Baba, 1988); 250–582 m.

Distribution.—Tosa Bay, Kyushu-Palau Ridge, Okinawa Trough, Taiwan, Sulu Archipelago, and off Central Queensland.

Remarks.—In the material examined, the posterior ridge of the abdominal somite 4 is variably unarmed or armed with a very small spine, whereas it is unarmed in previous descriptions including the type.

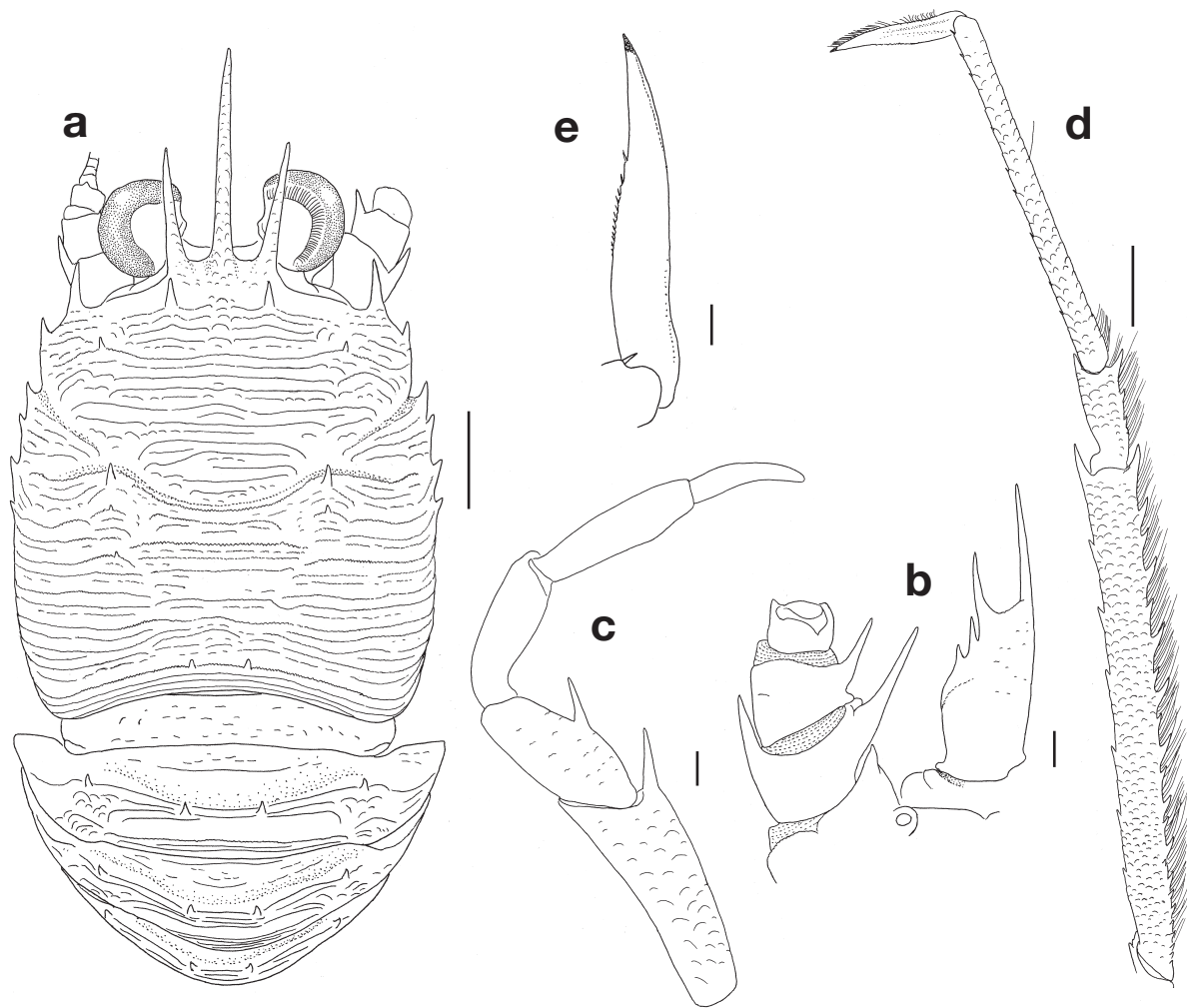


Fig. 66. Ovigerous female (20.2 mm), Dasi fishing port, Yilan County, 27 May 1998: **a**, carapace and abdomen, eyelash omitted on left side, dorsal; **b**, right antennule and antenna, ventral; **c**, right Mxp3, lateral; **d**, left P2, lateral; **e**, same, distal part, lateral; Scales: a, d = 5 mm; b, c, e = 1 mm.

Agononida rubrizonata Macpherson & Baba, 2009

紅斑官蝦



Fig. 67. Paratype male (12.6 mm), Nanfang-ao fishing port, Yilan County, 29 Jul 2004.

Munida incerta.—Baba, 1994: 12.—Macpherson, 1994: 478 (part), fig. 74.—Wu *et al.*, 1998: 113 (part), fig. 26E. (not *A. incerta* (Henderson, 1888))

Agononida incerta.—Ahyong & Poore, 2004: 8 (part) (New South Wales, 270–641 m). (not *A. incerta* (Henderson, 1888))

Agononida rubrizonata Macpherson & Baba, 2009: 60, figs. 2F, 3, 4 [type locality: Nanfang-ao fishing port, Yilan County].

Material examined.—Nanfang-ao fishing port, Yilan County, 6 Nov 1984: 2 males (17.0, 17.5 mm), 1 ovigerous female (22.0 mm) (NTOU).—16 Mar 1985: 1 male (16.2 mm), 1 ovigerous female (20.2 mm) (NTOU).—7 Aug 1996: 1 male paratype (25.6 mm), 1 female paratype (18.5 mm) (NTOU).—5 Dec 1997: 2 male paratypes (12.5, 21.6 mm), 3 ovigerous female paratypes (14.2–16.8 mm) (NTOU).—8 Apr 1999: 3 male paratypes (13.9–15.1 mm) (NTOU).—29 Jul 2004: 1 male paratype (12.6 mm) (NTOU), 1 ovigerous female paratype (20.5 mm), 2 female paratypes (10.6, 15.5 mm) (NTOU).—9 Mar 2005: 1 male paratype (15.0 mm) (NTOU).—10 Mar 2005: male holotype (16.3 mm), 7 male paratypes (15.0–16.5 mm), 2 ovigerous female paratypes (16.6, 16.9 mm), 6 female paratypes (15.0–15.5 mm) (NTOU).

Diagnosis.—Carapace with numerous transverse striae, armed with 3 spines on branchio-cardiac boundary, unarmed on cardiac region and posterior transverse ridge. Supraocular spines slightly thicker than rostral spine, slightly overreaching cornea. Frontal margin moderately oblique. Branchial lateral margin with 4 spines. Sternal plastron with numerous short striae. Abdominal somites 2, 3, 4 with 4, 4, 4 spines respectively on anterior ridge;

posterior ridge on somite 4 with median spine. Telson in male with prominent lateral process. Eyelashes long, reaching corneal margin. Distomesial spine of antennular basal article longer than distolateral spine; 2 lateral spines, distal one reaching end of distolateral spine. Antennal peduncles having article 1 with anteriorly prolonged process, article 2 with small spine proximal to well-developed distomesial spine, article 3 unarmed. Mxp3 merus with well-developed spine on extensor distal margin. P2–4 dactyli slender and curving, flexor margin with small seta-like spines on proximal third.

Size.—Males to 25.6 mm (Macpherson & Baba, 2008); females to 36.2 m including rostrum (Ahyong & Poore, 2004b).

Coloration.—Base color of carapace, second to fourth abdominal somites and pereopods pale orange. P1 with red band on distal portion of merus, proximal part of palm and base of fingers. P2–4 with red band on distal part of merus and propodus. Eggs light blue.

Habitat.—Substrates unknown; 270–641 m.

Distribution.—New South Wales, off central Queensland, New Caledonia, Loyalty Islands, Vanuatu, and Taiwan.

Remarks.—Relationships with *A. incerta* are discussed under *A. incerta*.

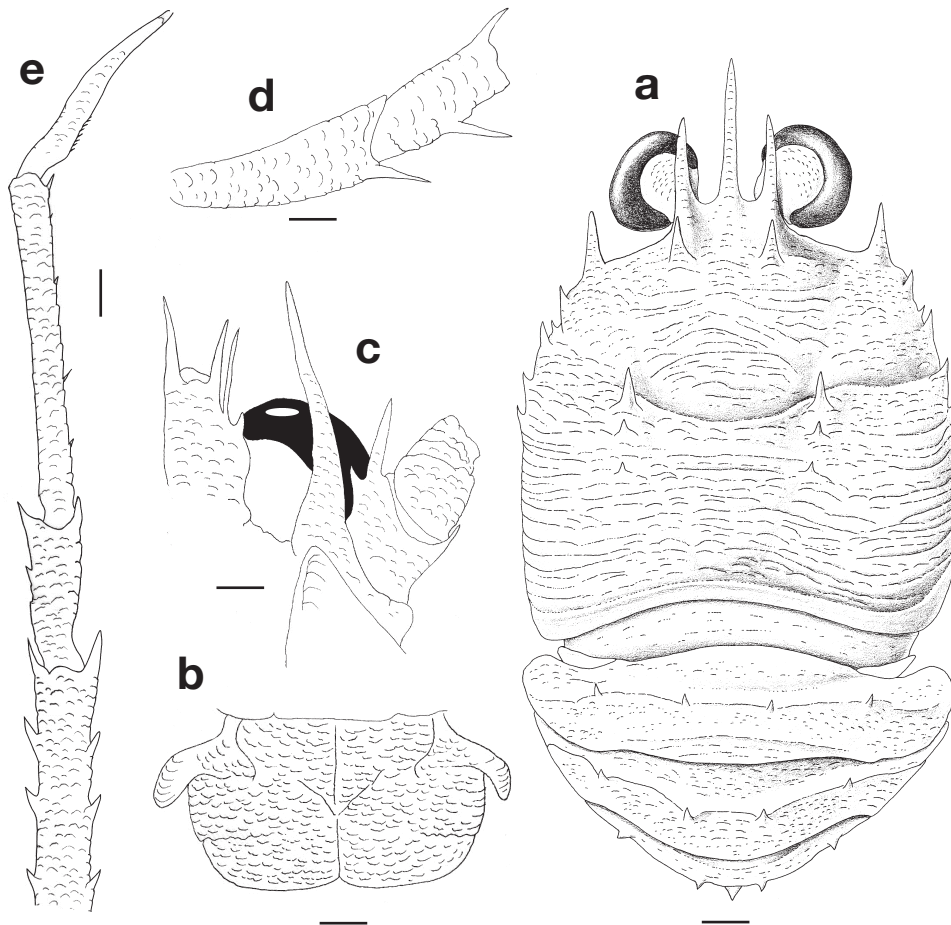


Fig. 68. Holotype male (16.3 mm), Nanfang-ao fishing port, Yilan County, 10 Mar 2005: **a**, carapace and abdomen, dorsal; **b**, telson; **c**, left antennule and antenna, ventral; **d**, right Mxp3, lateral; **e**, right P2, proximal part omitted, lateral. Scales = 2 mm (after Macpherson & Baba, 2009).

Agononida soelae (Baba, 1986)

蘇利亞宦蝦



Fig. 69. Female (18.6 mm), Nanfang-ao fishing port, Yilan County, 30 Jul 1992.

Munida sp.—Baba in Baba *et al.*, 1986: 175, 292, fig. 126.

Munida soelae Baba, 1986b: 2, fig. 3 [type locality: NW Australia, 18°52.2'S, 116°09.4'E, 501–550 m].—
Wu *et al.*, 1998: 129, figs. 32, 35F.

Agononida soelae.—Baba & de Saint Laurent, 1996: 442.—Davie, 2002: 59.—Baba, 2005: 236.—Baba *et al.*,
2008: 51.

Not *Munida soelae*.—Macpherson, 1994: 530. (= *A. procera* Ahyong & Poore, 2004)

Not *Agonoida soelae*.—Macpherson, 1997: 602; 2004: 245. (= *A. procera* Ahyong & Poore, 2004)

Material examined.—Nanfang-ao fishing port, Yilan County, 30 Jul 1992: 1 female (18.6 mm) (NTOU).

Diagnosis.—Carapace without secondary transverse striae, armed with 2 pairs of spines behind epigastric spines, 3 or 4 spines on branchio-cardiac boundary, 2 spines placed side by side on cardiac region, and 6 spines on posterior transverse ridge. Supraocular spines slightly more slender than rostral spine, distinctly overreaching cornea. Frontal margin somewhat oblique. Branchial lateral margin with 4 spines. Sternites 3–4 with a few striae, sternites 5–7 smooth. Abdominal somites 2, 3, 4 with 4, 4, 2 spines respectively on anterior ridge; posterior ridge on somite 4 with median spine. Eyelashes short. Antennular basal article with well-developed, subequal distal spines; 2 lateral spines, distal one short, reaching at most end of article without spines, proximal one much smaller. Antennal peduncles having article 1 with moderate-sized distomesial process overreaching article 2, article 2 with distomesial and distolateral spines, article 3 unarmed. Mxp3 merus unarmed on extensor distal margin. P2–4 dactyli relatively stout, tapering, flexor margin with small seta-like spines, distal of these

distinctly remote from end of dactylus.

Size.—Males to 28.2 mm including rostrum, females to 28.0 mm (Baba, 1986b).

Coloration.—Light orange red base color; setae white. Anterior carapace, branchial margin and posterior margin of carapace reddish. Cornea deep brown, eyestalk whitish. P1–4 with reddish bandings. Abdomen whitish between somite 5 and end of tailfan.

Habitat.—Substrates unknown; 450–650 m.

Distribution.—NW Australia, Indonesia, Taiwan, and Kyushu-Palau Ridge.

Remarks.—Wu *et al.* (1998) was the first to report this species from Taiwan.

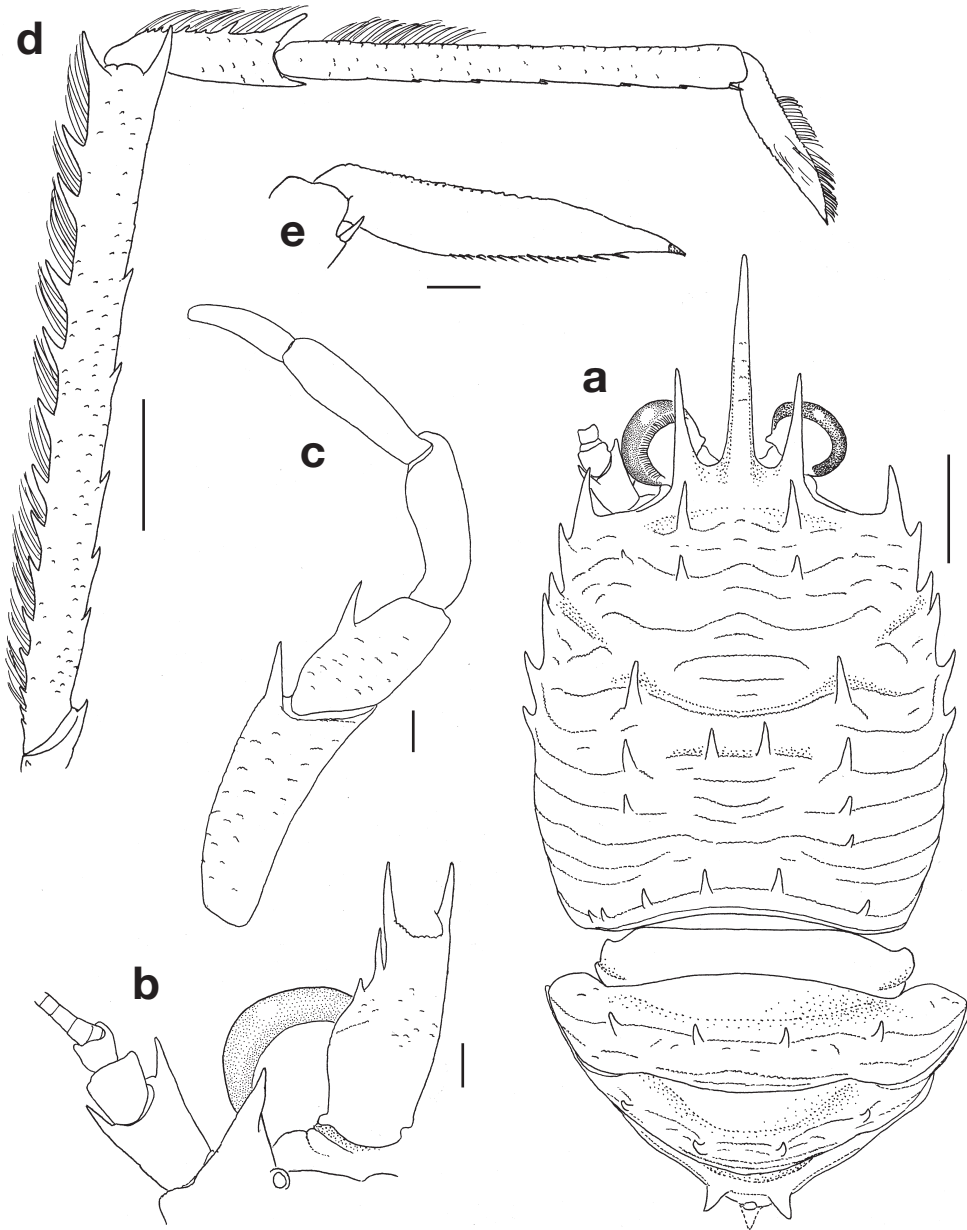


Fig. 70. Female (18.6 mm), Nanfang-ao fishing port, Yilan County, 30 Jul 1992: **a**, carapace and abdomen, eyelash omitted on right side, dorsal; **b**, right antennule and antenna, ventral; **c**, left Mxp3, lateral; **d**, right P2, lateral; **e**, same, distal part, lateral. Scales: a, d = 5 mm, b, c, e = 1 mm.

Agononida tenuipes (Miyake & Baba, 1967)
纖足官蝦

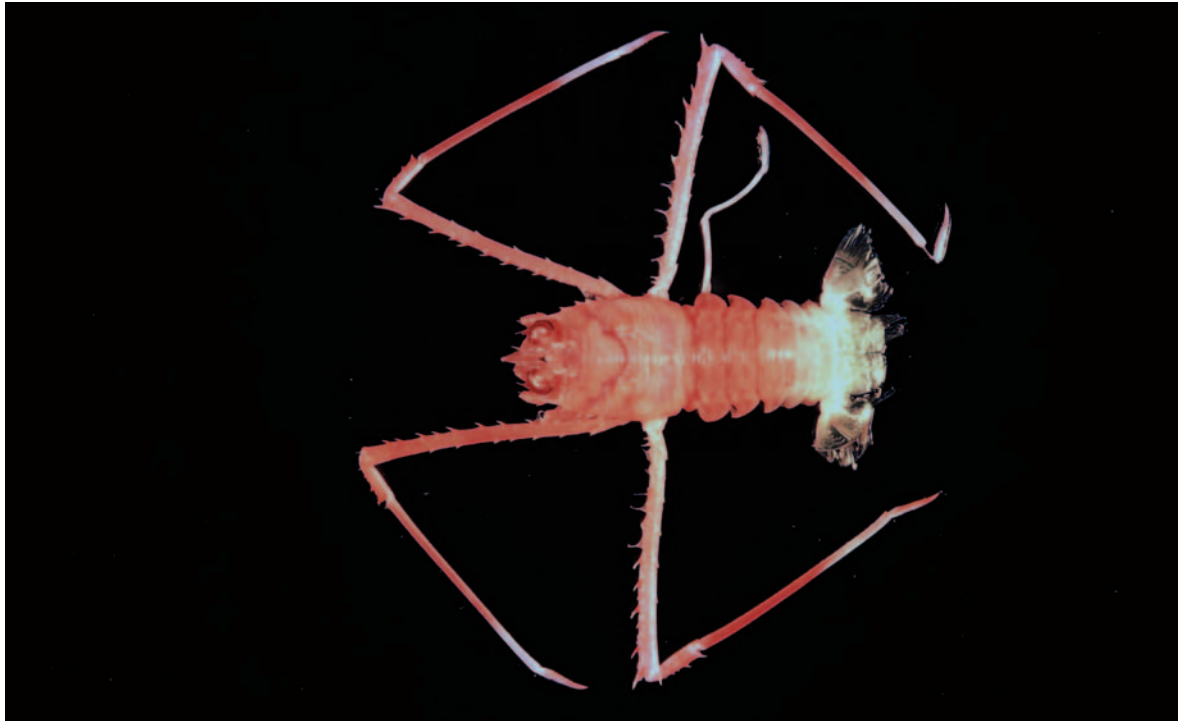


Fig. 71. Female (13.1 mm), Nanfang-ao fishing port, Yilan County, 22 May 1990.

Munida tenuipes Miyake & Baba, 1967a: 209, fig. 4 [type locality: off Heta, Suruga Bay, Japan, depth unknown, possibly from a depth below 200 m].—Wu *et al.*, 1998: 133, figs. 34, 35H.—Baba, 2005: 237.

Agononida tenuipes.—Baba & de Saint Laurent, 1996: 442.—Baba, 2005: 237.—Baba *et al.*, 2008: 52.

Material examined.—Nanfang-ao fishing port, Yilan County, 22 May 1990: 1 female (13.1 mm) (NTOU).

Diagnosis.—Carapace with numerous transverse striae, armed with postcervical spine on each side, unarmed on cardiac region and posterior transverse ridge. Supraocular spines slightly more slender than rostral spine, barely reaching corneal anterior margin. Frontal margin somewhat concavely transverse. Branchial lateral margin with 3 spines. Sternal plastron with numerous striae. Abdominal somites 2, 3, 4 with 6, 4, 2 spines respectively on anterior ridge; posterior ridge on somite 4 unarmed. Eyelashes long, reaching corneal margin. Distomesial spine of antennular basal article well developed, more than twice length of distolateral spine; 2 lateral spines, distal one overreaching end of distolateral spine, proximal one much smaller. Antennal peduncles having article 1 with well-developed distomesial spine reaching end of article 4; article 2 with distomesial spine overreaching article 4 and accompanying small spine proximally on mesial margin; article 3 unarmed. Mxp3 merus with small but distinct spine on extensor distal margin. P2–4 very slender, especially propodi; dactyli with row of small seta-like spines, smooth on distal third.

Size.—Male, 19.5 mm (Miyake & Baba, 1967a); female, 13.1 mm (present data).

Coloration.—Overall orange. Cervical groove light purple. Eyes brown. Abdomen whitish between somite 5 and end of tailfan. P2–4 propodi orange red on proximal half.

Habitat.—Possibly below 200 m; substrates unknown.

Distribution.—Japan (Suruga Bay) and Taiwan.

Remarks.—So far only two specimens are known for the species. The species is unique in the genus in having 6 spines on the abdominal somite 2, whereas all the other known species bear 4 spines. The pereopods are very slender, especially P2–4.

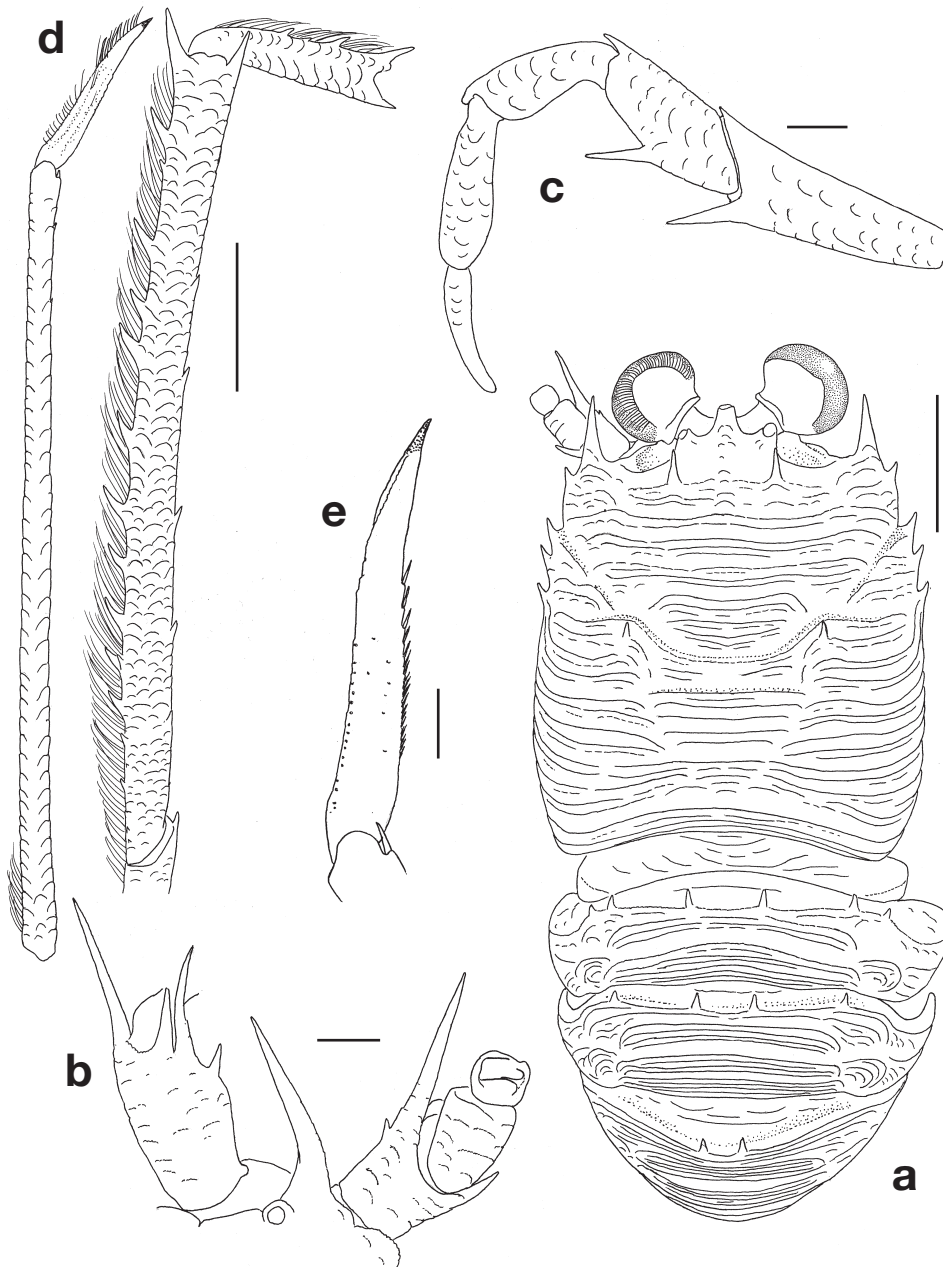


Fig. 72. Female (13.1 mm), Nanfang-ao fishing port, Yilan County, 22 May 1990: **a**, carapace and abdomen, eyelash omitted on right side, dorsal; **b**, left antennule and antenna, ventral; **c**, left Mxp3, lateral; **d**, right P2, lateral; **e**, same, distal part, lateral. Scales: a, d = 5 mm; b, c, e = 1 mm.

Genus *Allogalathea* Baba, 1969

異鎧蝦屬

Allogalathea Baba, 1969a: 5 [type species: *Galathea elegans* Adams & White, 1848. Gender: feminine].—Poore, 2004: 231.

Diagnosis.—Carapace with distinct transverse striae bearing fine but coarse setae, lateral margin with row of spines. Rostrum long, carinated ventrally, with 5–9 lateral teeth of small size. Abdomen unarmed on tergites. Telson relatively short, subdivision incomplete. Ocular peduncles short, cornea well pigmented. Orbit well delimited, lateral limit rounded. Basal article of antennule with 3 terminal spines. Mxp3 ischium subtriangular in cross section, merus with flexor spines. P1 spinose, with setiferous squamae. P2–4 with row of spines on dorsal crests of meri and carpi; flexor margin of dactyli with row of teeth each bearing corneous seta. Two pairs of male gonopods. Usually associated with crinoids.

Remarks.—The genus contains only one species.

Allogalathea elegans (Adams & White, 1848)

美麗異鎧蝦



Fig. 73. Female (5.2 mm), CP2.

- Galathea elegans* Adams & White, 1848: pl. 12, fig. 7 [type locality: Corregidor, Philippines].—Haswell, 1882b: 163.—Miers, 1884: 278.—De Man, 1888: 455.—Henderson, 1893: 431.—Ortmann, 1894: 23.—Borradaile, 1900: 421.—De Man, 1902: 709.—Henderson, 1888: 117.—Grant & McCulloch, 1906: 50, pl. 4, figs 6, 6a.—Southwell, 1906: 220.—Balss, 1913b: 4, figs 2–3.—Potts, 1915: 83, fig. 4, pl. 1, fig. 5.—Balss, 1921: 22.—Laurie, 1926: 133.—Gordon, 1935: 7.—Miyake, 1938: 37, fig. 1, pl. 2, figs A–E.—Miyake in Miyake & Nakazawa, 1947: 733, fig. 2118.—Melin, 1939: 77, figs 48–53.—Barnard, 1950: 487, figs 91, i–k.—Holthuis, 1953: 49.—Utinomi, 1956: 63, pl. 32, fig. 4.—Tirmizi, 1966: 189, fig. 11.—Miyake, 1965: 635, fig. 1045.—Miyake & Baba, 1967c: 228, fig. 3.—McNeill, 1968: 33.—Lewinsohn, 1969: 123, fig. 24.—Healy & Yaldwyn, 1970: 67, pl. 31.—Johnson, 1970: 3.—Kensley, 1981a: 34.
- Galathea longirostris* Dana, 1852: 482 [type locality: Fiji Islands, 18 m].—Dana, 1855: pl. 30, fig. 11.—Southwell, 1906: 220.
- Galathea longirostris* Yokoya, 1936: 138, fig. 6 [type locality: Misaki, Sagami Bay, Japan]. (not *G. longirostris* Dana, 1852)
- Galathea deflexifrons* Haswell, 1882a: 761 [type locality: Albany Passage, Queensland].—Haswell, 1882b: 163.
- Galathea grandirostris* Stimpson, 1858: 90 [type locality: Kagoshima Bay, Japan, 9 m].—Stimpson, 1907: 234.—Henderson, 1888: 119, pl. 12, fig. 3.—Borradaile, 1900: 421.
- Galathea* (?) *grandirostris*.—Southwell, 1906: 221.
- Allogalathea elegans*.—Baba, 1969a: 6, fig. 1.—Haig, 1973: 275.—Haig, 1974: 447.—Baba, 1977a: 252.—

Baba, 1979: 654, fig. 3.—Miyake, 1982: 149, pl. 50, fig. 5.—Takeda, 1982: 50, fig. 150.—Baba, 1982b: 61.—Baba, 1988: 54.—Baba, 1990: 950.—Tirmizi & Javed, 1993: 27, figs 12, 13.—Gosliner *et al.*, 1996: 226, fig. 820.—Wu *et al.*, 1998: 84, figs 6, 12C.—Komai, 2000: 351.—Minemizu, 2000: 168, with 3 figs.—Davie, 2002: 60.—Jones & Morgan, 2002: 133, color fig.—Kawamoto & Okuno, 2003: 93, unnumbered figs.—Poore, 2004: 231, fig. 63e, pl. 13f.—Kawamoto & Okuno, 2006: 93, unnumbered fig.—Ahyong, 2007: 13.—Macpherson, 2008: 289.—Poore *et al.*, 2008: 18.—Baba *et al.*, 2008: 53, fig. 2B, 2C.

Material examined.—Longdong, Taipei County, 21 Jul 1999: 1 female (2.6 mm) (NTOU). Gushan fishing port, Kaohsiung City, 14 Jan 1985: 1 male (5.2 mm) (NTOU). CP2, 23°38.3'N, 119°53.2'E, 83–95 m, 27 Jul 2000: 1 female (5.2 mm) (NTOU).

Diagnosis.—Rostrum more than half as long as carapace, with 5–9 lateral teeth. Carapace with distinct transverse striae, cervical groove distinct. Basal article of antennule with 3 terminal spines. Mxp3 merus with 2 or 3 flexor spines and 1 extensor distal spine. P1 stout, setose and spinose, fingers not gaping. P2–4 squamous, weak in armature; dactyli with 4 or 5 flexor spines, distal much larger. Epipods present on P1, not on P2 and P3.

Size.—Males to 13.1 mm including rostrum, females to 14.0 mm including rostrum (Baba, 1969a; 1988).

Coloration.—Various color patterns of carapace: uniformly dark red; blackish purple with narrow yellowish stripes; alternate longitudinal stripes of blackish purple and yellow; purplish with broad yellow stripe in midline; orange with whitish broad stripe in midline, etc. Pereopods also variable: P1–4 uniformly yellow orange; or P1 dark purple or dark red, fingers light yellow, P2–4 similar to P1 but light yellow on distal portion of carpus, distal portion of propodus and entire dactylus, occasionally on lateral margin of merus (Baba, 1969a; Minemizu, 2000; Kawamoto & Okuno, 2003, 2006; Poore *et al.*, 2008; Baba *et al.*, 2008). The Taiwanese material has the carapace orange or reddish, with 2 longitudinal pale yellow stripes narrow or relatively broad, extending backwards and convergent to join on abdominal somite 5.

Habitat.—Subtidal to 103 m; usually on crinoids: *Capillaster multiradiatus*; *Comanthina schelegeli*, *Comanthus bennetti*; *C. parvicirrus*; *C. sp.*; *Heterometra savignii*; *Himerometra robustispinna*; *Lamprometra klunzingeri*, *Stephanometra spicata*; and *Tropiometra carinata* (Holthuis, 1953; Miyake, 1960; Baba, 1969a; Lewinshon, 1969; Steene, 1990; Baba, 1979).

Distribution.—Widely distributed in the Indo-West Pacific: South Africa (Durban), Mozambique, Red Sea, Madagascar, Seychelles, Cargados Carajos, Suri Lanka including Gulf of Mannar, Bay of Bengal, Gulf of Martaban (Burma), Andaman Islands, Christmas Island (Indian Ocean), Singapore, western and southwestern Australia, Queensland, Great Barrier Reef, Lord Howe Rise, Torres Strait, Banda Island, north coast of Seram (Ceram), between Sulawesi and Butung, Moluccas, Celebes Sea, North Balabac Strait off northern Borneo, Sulu Archipelago, Philippines (off southeastern Mindanao, between Samar and Leyte, off Cebu, Sibuyan Sea, Luzon Strait off Batan), New Britain, Fiji Islands, Eniwetak, Palau Islands, Taiwan, East China Sea, and Japan (between Kii Peninsula and Kagoshima, Ryukyu Islands and Bonin [Ogasawara] Islands).

Remarks.—Since Baba (1969a) reported a variant that bears epipods on P1–3 from the Palau Islands, no such specimen has been reported. Further study including molecular analysis would be desirable.

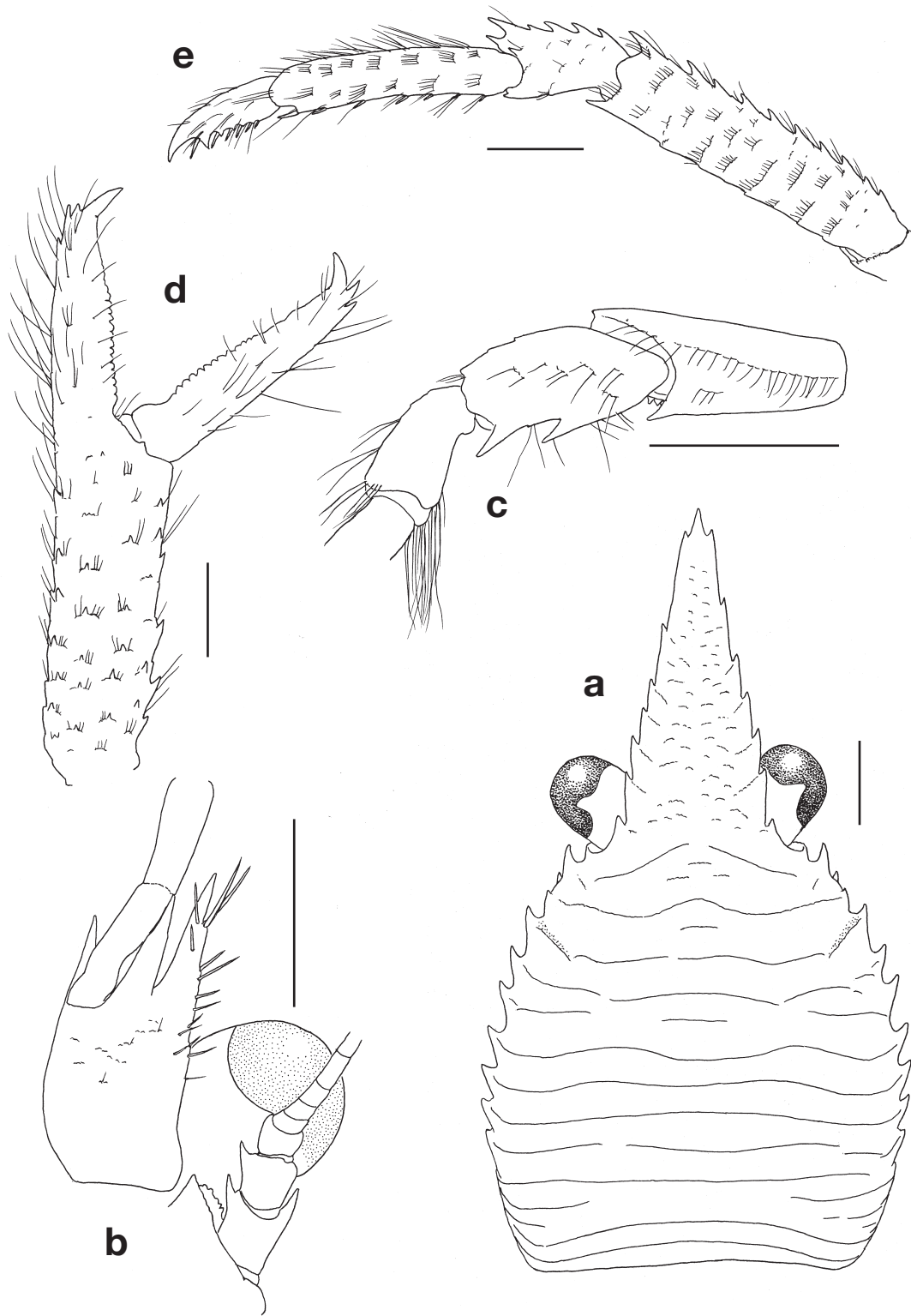


Fig. 74. Female (5.2 mm), CP2: **a**, carapace, dorsal; **b**, left antennule and antenna, ventral; **c**, left Mxp3, lateral; **d**, left P1, proximal part omitted, dorsal; **e**, left P2, lateral. Scales = 1 mm.

Genus *Cervimunida* Benedict, 1902

刺鎧蝦屬

Cervimunida Benedict, 1902: 249 [type species: *Cervimunida princeps* Benedict, 1902. Gender: feminine].—
Baba, 2005: 68 (key).

Diagnosis.—Carapace with distinct transverse striae; epigastric spines present. Lateral margin with distinct spines. Rostrum spiniform, flanked by supraocular spine, arched in lateral view, with dorsal and ventral teeth. Abdominal somites 2–4 with spines on anterior ridge. Ocular peduncles short, cornea dilated. Basal article of antennule with 2 terminal and 2 lateral spines. Mxp3 with well-developed epipods. G1 and G2 present.

Remarks.—Two species are known in the genus. The other species, *C. johni* Porter, 1903 occurs in the eastern Pacific off Chile.

Cervimunida princeps Benedict, 1902
首頸刺鎧蝦



Fig. 75. Nanfang-ao fishing port, Yilan County, 27 Jul 1995.



Fig. 76. No specific locality, middle specimen *Metanephrops formosanus* Chan & Yu, 1987.

Cervimunida princeps Benedict, 1902: 249, fig. 3 [type locality: off Honshu, Japan, “Albatross” St. 3698 (Sagami Bay, Manazuru Zaki), 280 m].—Balss, 1913b: 18, fig. 15, pl. 1: fig. 1.—Parisi, 1917: 2.—Yokoya, 1933: 65.—Makarov, 1938: 100, fig. 37.—Miyake in Miyake & Nakazawa, 1947: 733, fig. 2120.—Miyake, 1960: 97, pl. 48: fig. 6; 1965: 635, fig. 1047; 1982: 149, pl. 50, fig. 4.—Baba, 1969c: 50.—Takeda, 1982: 51, fig. 153.—Baba in Baba, *et al.*, 1986: 167, 288, fig. 118.—Wang & Li, 1986: 29, fig. 2.—Baba, 1988: 59.—Wu *et al.*, 1998: 85, figs. 7, 12D.—Baba, 2005: 240.—Baba *et al.*, 2008: 59, fig. 3I.

Munida sp.—Nakazawa, 1927: 1036, fig. 1994.

Material examined.—Dasi fishing port, Yilan County, 21 Oct 1984: 1 female (24.7 mm) (NTOU).—9 Dec 1984: 2 males (19.0, 27.3 mm) (NTOU).—6 Nov 1984: 1 ovigerous female (29.3 mm) (NTOU).—9 Dec 1984: 2 males (19.0, 27.3 mm).—2 May 1985: 3 males (22.0–32.3 mm), 1 female (23.0 mm) (NTOU).—21 May 1988: 1 female (24.8 mm) (NTOU).—27 Feb 1993: 1 male (24.4 mm) (NTOU).—28 Aug 1995: 1 female (24.3 mm) (NTOU).—15 Oct 2003: 1 male (21.6 mm) (NTOU).—11 Mar 2004: 1 male (18.0 mm) (NTOU).—7 Oct 2004: 1 male (14.7 mm), 1 female (19.3 mm) (NTOU).—16 Dec 2004: 1 male (27.3 mm) (NTOU). Nanfang-ao fishing port, Yilan County, 16 Mar 1985: 4 males (10.8–15.1 mm) (NTOU).—2 May 1985: 2 males (19.2, 27.0 mm), 2 females (12.6, 18.4 mm) (NTOU).—27 Jul 1995: 2 males (22.4, 26.9 mm) (NTOU).

Diagnosis.—Carapace strigose, dorsal surface with 6 epigastric, 2 parahepatic, 2 postcervical and 2 anterior branchial spines. Cervical groove distinct. Lateral margin with 7 spines, anterolateral spine well developed. Rostrum laterally compressed, strongly arched, with 2 distinct dorsal (occasionally a few additional small spines distal to these) and 1 ventral tooth. Supraocular spines curving dorsally, barely half as long as rostral spine. Abdominal somite 2, 3, 4 with 8 spines on anterior ridge. Eyes with inflated cornea. Basal article of antennule with distomesial spine larger than distolateral spine. Mxp3 merus with 2 equal-sized spines on flexor margin, 1–3 small spines on extensor margin. P1 setose (plumose) in large males. P2–4 dactyli tapering, flexor margin with row of seta-like spines, unarmed on distal third. Epipods absent from pereopods.

Size.—Males to 62.7 mm including rostrum (Baba in Baba *et al.*, 1986); female, 29.3 mm (present data).

Coloration.—Orange or orange red overall. Rostrum deep red at distal and proximal portions, white between. Posterior half of abdomen whitish.

Habitat.—Green mud (Baba, 1988); 76–452 m.

Distribution.—Japan (Sea of Japan off Yamagata Prefecture, Pacific coast of Japan off Inubo-zaki and southward to Kagoshima), East China Sea, Taiwan, and off northern Luzon.

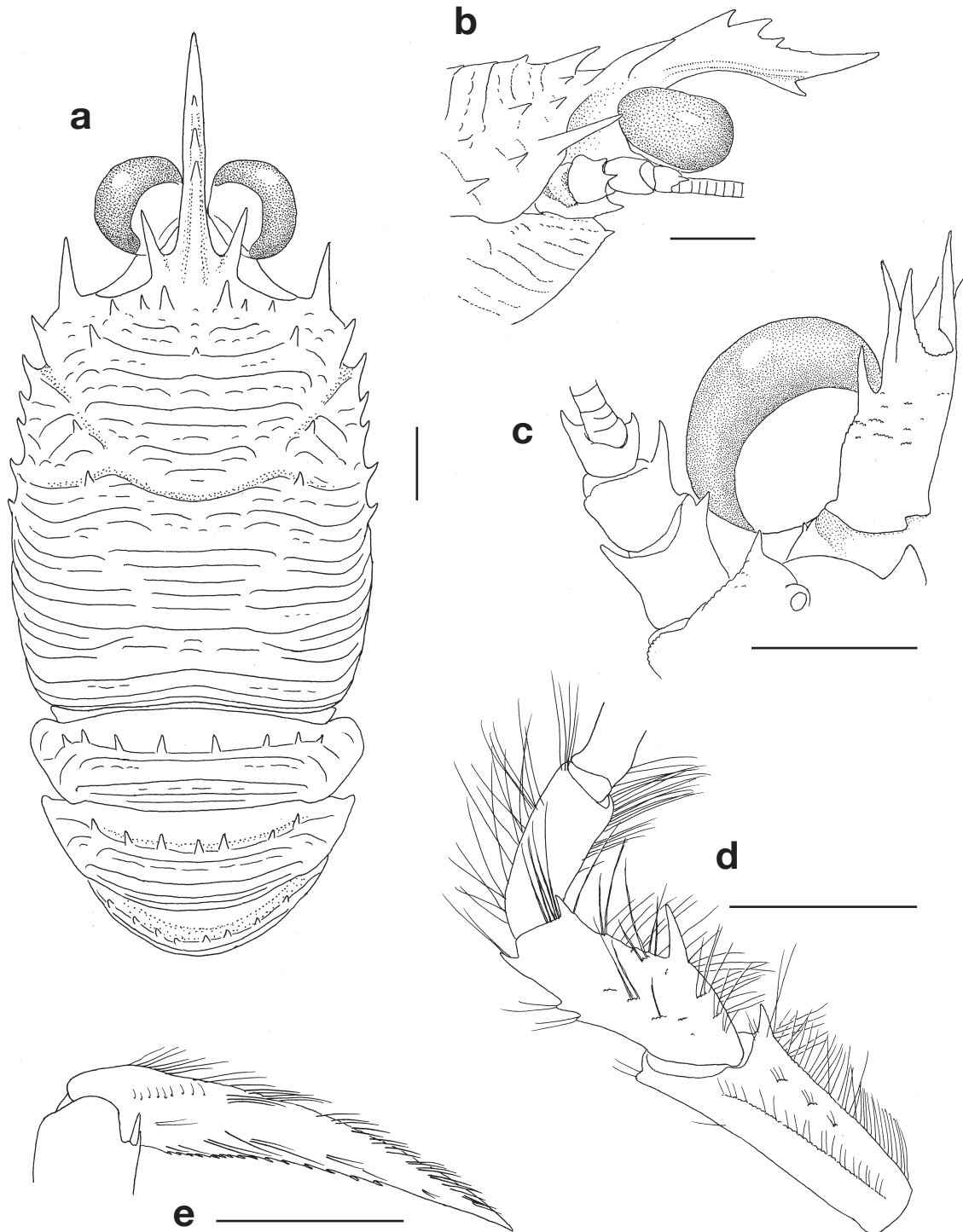


Fig. 77. Male (27.3 mm), Dasi fishing port, Yilan County, 16 Dec 2004: **a**, carapace and abdomen, dorsal; **b**, same, anterior part, lateral; **c**, right antennule and antenna, ventral; **d**, right Mxp3, lateral; **e**, right P2, distal part, lateral. Scales = 5 mm.

Genus *Crosnierita* Macpherson, 1998

柯鎧蝦屬

Crosnierita Macpherson, 1998: 352 [type species: *Crosnierita dicata* Macpherson, 1998. Gender: feminine].—
Baba, 2005: 67.

Diagnosis.—Carapace with transverse striae usually granulated. Rostral spine overreaching supraocular spines. Pair of epigastric spines. Median gastric and cardiac spines sometimes present. Pair of postcervical spines. Frontal margins deeply concave. Lateral limit of orbit rounded. Anterolateral spine of carapace strong. Branchial margin with 4 spines. Abdominal somites 2–4 with 2 transverse ridges, each anterior ridge bearing 4–6 spines; median spine on posterior ridge of somite 4. Telson incompletely subdivided. Sternite 4 with broad anterior margin, sternites 6 and 7 without granules or keels. Eyes large, cornea strongly dilated. Basal article of antennule with 2 distal and 2 lateral spines. Article 1 of antenna with distomesial spines short, not reaching end of article 2; article 2 with well-developed distal spines, distomesial spine overreaching antennal peduncle; articles 3 and 4 much narrower than proximal articles; antennal flagellum longer than P1. Mxp3 merus much shorter than ischium, subrhomboidal in lateral view, with distal spine on extensor margin and strong spine near midlength of flexor margin. P1 slender, elongate. P2–4 long and slender; dactyli slender, curving, without lateral keel, flexor margin with spine-like setae. P5 chelae more setose in male than in female; flexor face with long and sparse simple setae, fingers shorter than palm; in male, movable finger with dense set of setae on proximal part. G1 absent.

Remarks.—The carapace and abdomen are very much like those of *Agononida* but *Crosnierita* differs from that genus in the strongly excavated frontal margin and the extremely short Mxp3 merus with a strong flexor median spine and another strong extensor distal marginal spine. The genus contains four species, all from the western Pacific. A key to species is provided by Baba (2005). *Crosnierita* is recorded for the first time by one species from Taiwan.

Crosnierita yante (Macpherson, 1994)

仁娣柯鎧蝦



Fig. 78. Female (7.0 mm), DW149.

Munida yante Macpherson, 1994: 555, figs. 62, 97 [type locality: New Caledonia, 400 m].

Agononida yante.—Baba & de Saint Laurent, 1996: 442.

Crosnierita yante.—Macpherson, 1998: 353 (new combination).—Macpherson, 2000: 417; 2004: 249.—Baba, 2005: 241.—Baba *et al.*, 2008: 60.

Material examined.—DW149, 22°18.5'N, 121°29.37'E, 258–258 m, 20 May 2002: 1 female (7.0 mm) (NTOU).

Diagnosis.—No spine on cardiac and median metagastric region. Posterior margin of carapace unarmed. Sternal plastron with several striae. Articles 3 and 4 of antennal peduncle much slender, breadth of article 3 about half that of article 2. P2 dactylus distinctly more than half length of propodus, flexor margin with spinules along entire length.

Size.—Males to 10.3 mm, females to 9.3 mm (Macpherson, 2000).

Coloration.—Overall orange red, deeper on P1 fingers, distal half of palm, and proximal and distal parts of merus, pale on proximal half of P1 palm and entire carpi and distal portions of P2–4 meri.

Habitat.—Substrates unknown; 95–487 m.

Distribution.—New Caledonia, Tonga, Marquesas Islands, and Taiwan.

Remarks.—This is the first record for the species from Taiwan.

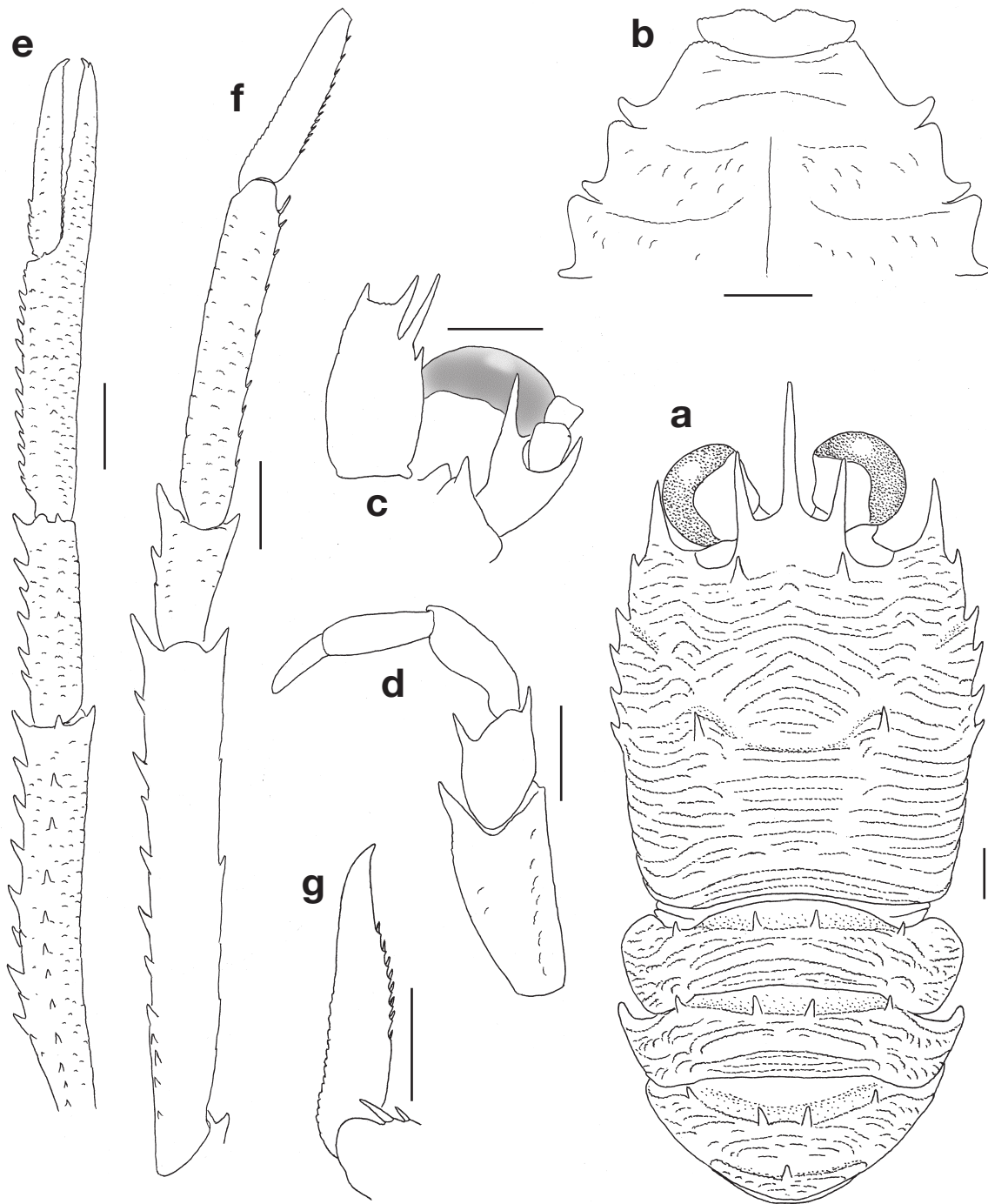


Fig. 79. Female (7.0 mm), DW149: **a**, carapace and abdomen, dorsal; **b**, anterior part of sternal plastron; **c**, left antennule and antenna, ventral; **d**, left Mxp3, lateral; **e**, right P1, dorsal; **f**, right P2, lateral; **g**, right P3, distal part, lateral. Scales = 1 mm.

Genus *Fennerogalathea* Baba, 1988

費鎧蝦屬

Fennerogalathea Baba, 1988: 60 [type species: *Fennerogalathea chacei* Baba, 1988. Gender: feminine].—
Baba, 2005: 68 (key).

Diagnosis.—Carapace with weak rugosity and small scattered spines on dorsal surface. Rostrum triangular, flattish, broad at base, lateral margin with 2 spines near base. Orbit well delimited, lateral limit angular. Sternite 3 rectangular. Abdominal somites 2–4 with anterior transverse ridge. Telson incompletely subdivided. Eyes slender, elongate, as long as rostrum, fully visible in dorsal view. Article 1 of antenna without distomesial process. Mxp3 ischium thick, with well-developed crista dentata. P1 slender, carpus relatively long, more than twice as long as broad. P2–4 slender, dactyli with row of distinct flexor teeth. G1 and G2 present.

Remarks.—Two species are known in the genus. The other species is *F. chirostyloides* Tirmizi & Javed, 1993, from the Bay of Bengal, 2417 m. This genus is reported from Taiwan for the first time.

Fennerogalathea chacei Baba, 1988

蔡氏費鎧蝦



Fig. 80. Male (4.6 mm), Donggang fishing port, Pingtung County, 22 Sep 2004.

Fennerogalathea chacei Baba, 1988: 60, figs. 24, 25 [type locality: off SW Luzon, 152–165 m]; 2005: 241.—
Baba *et al.*, 2008, 60, fig. 2F.

Material examined.—Donggang fishing port, Pingtung County, 22 Sep 2004: 1 male (4.6 mm) (NTOU).

Diagnosis.—Carapace longer than broad; dorsal surface with scattered small spines; devoid of distinct striae on anterior half, weak striae on posterior half; lateral margin with row of small spines. Rostrum elongate, narrow triangular, with 2 small lateral teeth proximally. Front margin oblique. Pterygostomial flap with rounded anterior margin. Sternite 3 rectangular; sternite 4 contiguous to entire posterior margin of preceding sternite. Abdominal somites 2–4 each with tuft of long setae on median part of anterior transverse ridge. Antennular basal article with 2 terminal spines, distomesial spine absent. Article 1 of antenna without distomesial process. Mxp3 merus with 3 small flexor and 2 small extensor spines; propodus relatively broad. P1 tuberculose and with small spines, less spinose on palm; carpus about as long as movable finger; fingers ending in incurved spine.

Size.—Males to 4.6 mm (present data), females to 8.4 mm including rostrum (Baba, 1988).

Coloration.—Translucent pale overall, orange tinged. P1 merus, carpus and palm with orange mottling distally.

Habitat.—Green mud, and gray mud and sand (Baba, 1988); 100–165 m.

Distribution.—Bali Sea, off SW Luzon, and Taiwan.

Remarks.—The present specimen constitutes the first record for the species from Taiwan. Based upon the description, this species is separated from *F. chirostyloides* Tirmizi & Javed, 1993 by the presence instead of

absence of tuft of setae on median part of anterior transverse ridge of abdominal somites 2–4 (Baba, 2005: 241). However, it is not unlikely that these two species are identical. The discovery of more material from the Indian Ocean is needed to establish the systematic status of *F. chirostyloides*.

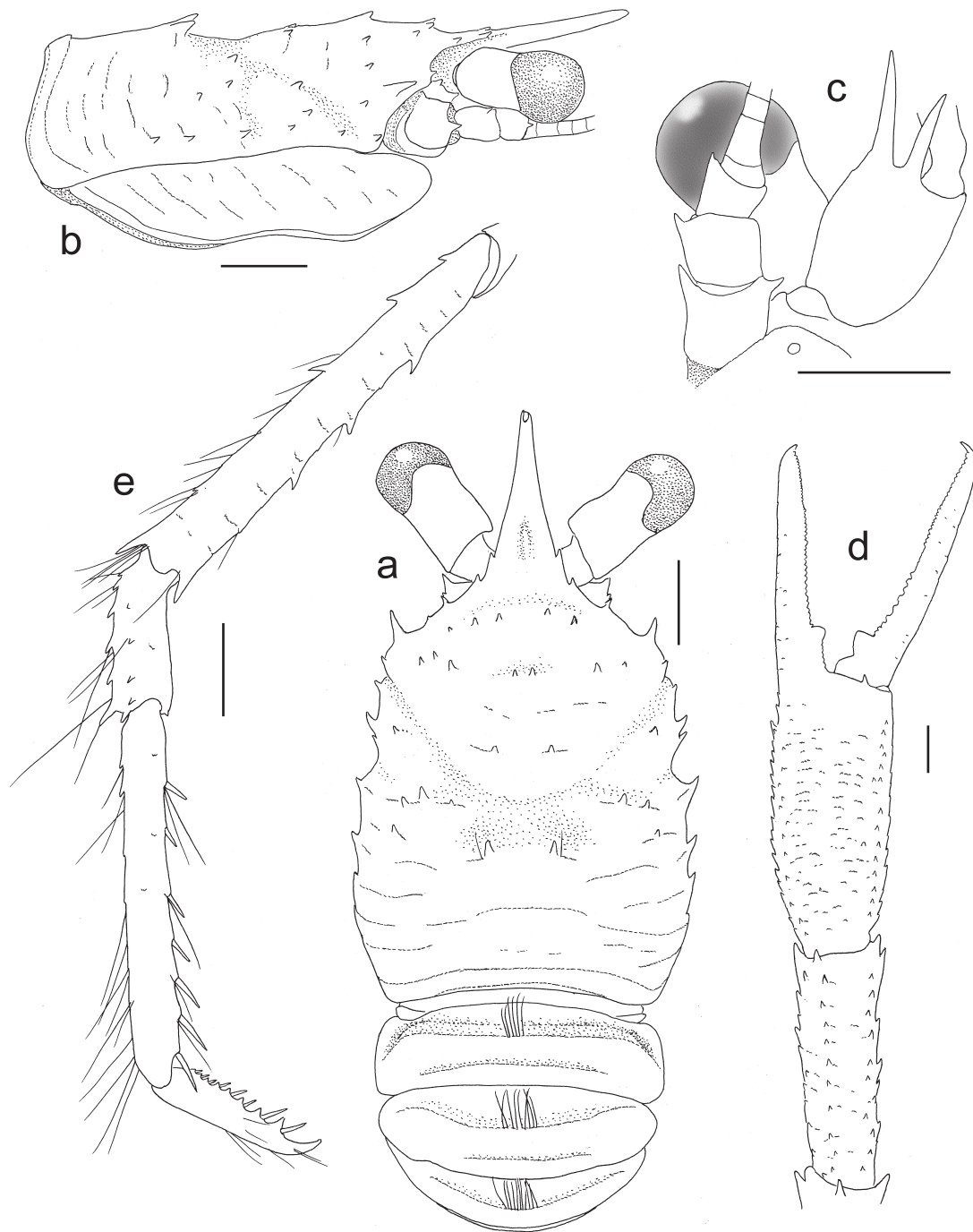


Fig. 81. Male (4.6 mm), Donggang fishing port, Pingtung County, 22 Sep 2004: **a**, carapace and abdomen, dorsal; **b**, carapace, lateral view; **c**, right antennule and antenna, ventral; **d**, left P1, dorsal; **e**, left P2, lateral. Scales = 1 mm.

Genus *Galacantha* A. Milne Edwards, 1880

棘鎧蝦屬

Galacantha A. Milne Edwards, 1880: 52 [type species: *Galacantha rostrata* A. Milne-Edwards, 1880. Gender: feminine].—Henderson, 1888: 1666.—A. Milne Edwards & Bouvier, 1894: 268.—A. Milne Edwards & Bouvier, 1897: 55.—Alcock, 1901: 274.—Stebbing, 1908: 19.—Stebbing, 1910: 364.—Doflein & Balss, 1913: 147.—Barnard, 1950: 494.—Tirmizi, 1966: 206.—Macpherson, 2007: 7.

Diagnosis.—Carapace subquadrangular, covered with small granules, simple spines, scale-like or spine-like tubercles, dorsally armed with 1 extremely strong laterally compressed mesogastric, and 1 moderately large cardiac spine. Lateral margin slightly convex, with 1 or 2 prominent anterior spines. Frontal margin oblique, without antennal spine. Posterior margin of carapace smooth. Rostrum with rostral spine upturned distally, and sometimes with 2 small subparallel spines or divergent well-developed spines at end of horizontal portion. Small spine ventral to frontal margin between ocular peduncle and antennal peduncle. Sternites smooth. Abdominal somites 2–4 with 2 moderately elevated transverse ridges, each anterior ridge with prominent median spine. Eyes movable and spineless, corneae subglobular. P2–4 long, slender. P2 overreaching P1. P2–4 dactyli compressed laterally, flexor border moderately curving, bearing proximally diminishing low teeth. Epipods present on P1–3.

Remarks.—The genus contains nine species. Seven of these species occur in the Pacific Ocean, one of which is known from Taiwan and Dongsha. Most species occur on soft bottoms, e.g. mud, clay, brownish ooze (Baba, 2005), and have a wide geographic distribution (Baba *et al.*, 2008).

Galacantha valdiviae Balss, 1913
瓦爾迪維亞棘鎧蝦



Fig. 82. Ovigerous female (21.3 mm), CP277, body reddish-orange.



Fig. 83. Male (12.9 mm), CD134, body light orange.



Fig. 84. Male (7.1 mm), CD134, body whitish.

Galacantha valdiviae Balss, 1913a: 224 [type locality: E African coast, 1°48'N, 45°42'E, 1644 m].—Macpherson, 2007: 29, figs 15, 16.—Osawa & Takeda, 2007: 137, fig. 2C, D.—Osawa *et al.*, 2008a: 38, fig. 1A.

Munidopsis valdiviae.—Doflein & Balss, 1913: 147, fig. 15, pl. 16, fig. 2.—Baba, 1982a: 112, pl. 1, fig. 1.—Baba, 1988: 173, fig. 71.—Tirmizi & Javed, 1993: 16, fig. 7.—Baba, 1994: 19.—Komai, 2000: 360.—Davie, 2002: 66.—Baba, 2005: 298.

Material examined.—CP41, 22°17.2'N, 121°02.0'E, 1192–1198 m, 1 Aug 2000: 1 male (10.1 mm) (NTOU). CD134, 22°16.56'N, 12°06.11'E, 736–1040 m, 22 Nov 2001: 2 males (7.1, 12.9 mm) (NTOU). CD136, 22°7.75'N, 120°0.87'E, 1211–998 m, 22 Nov 2001: 1 male (11.9 mm), 1 ovigerous female (16.1 mm), 1 female (10.3 mm) (NTOU). CD142, 22°21.64'N, 120°13.44'E, 355–277 m, 24 Nov 2001: 1 male (15.1 mm) (NTOU). CP179, 22°21.22'N, 119°54.78'E, 1212–1063 m, 25 Aug 2002: 2 males (9.3, 16.8 mm) (NTOU). CD192, 22°17.19'N, 120°1.01'E, 960–1302 m, 28 Aug 2002: 1 female (5.2 mm) (NTOU). CP277, 24°23.57'N, 122°14.12'E, 1222–1261 m, 14 Jun 2005: 1 ovigerous female (21.3 mm) (NTOU). CP278, 24°23.63'N, 122°14.13'E, 1222–1239 m, 14 Jun 2005: 2 females (9.6, 10.4 mm) (NTOU). CP281, 24°24.08'N, 122°14.06'E, 1173–1248 m, 15 Jun 2005: 1 male (12.5 mm) (NTOU). OCP282, 24°23.90'N, 122°14.10'E, 1200–1250 m, 15 Jun 2005: 1 male (8.9 mm) (NTOU). CP300, 22°17.156'N, 119°59.963'E, 960–972 m, 11 Aug 2005: 1 ovigerous female (17.3 mm) (NTOU). CD323, 20°41.665'N, 117°43.856'E, 1237–1388 m, 19 Aug 2005: 1 ovigerous female (11.3 mm) (NTOU). PCP342, 22°16.684'N, 119°59.960'E, 988–1010 m, 8 Mar 2006: 3 males

(6.7–14.7 mm), 3 females (9.4–20.9 mm) (NTOU). PCP350, 22°20.885'N, 121°07.659'E, 1149–1152 m, 2 Jun 2006: 1 male (15.6 mm) (NTOU). PCP351, 22°18.245'N, 121°07.527'E, 1151–1168 m, 2 Jun 2006: 1 female (13.0 mm) (NTOU). CP363, 22°09.305'N, 121°07.353'E, 1262–1269 m, 24 Aug 2006: 1 male (10.3 mm) (NTOU). CP364, 22°06.335'N, 121°08.224'E, 1275–1260 m, 24 Aug 2006: 1 male (18.2 mm) (NTOU). CP366, 22°02.872'N, 121°10.079'E, 1302–1301 m, 24 Aug 2006: 1 ovigerous female (17.6 mm) (NTOU). CP372, 24°23.619'N, 122°14.138'E, 1220–1280 m, 26 Aug 2006: 2 males (9.0, 11.1 mm), 3 females (9.3–11.7 mm) (NTOU).

Diagnosis.—Carapace armed with 2 epigastric spines, 1 strong laterally compressed mesogastric, and 1 moderately large cardiac spine. Lateral margins slightly convex, smooth, with 1 strong first (anterolateral) spine; 1 well-developed spine at midlength. Rostrum with 2 small spines at end of horizontal portion, discernible in dorsal view; rostral spine smaller than mesogastric spine, upturned distally, forming angle of nearly 60° with horizontal portion. Abdomen smooth with numerous short and uniramous setae; somites 2–4 with 2 low transverse ridges, posterior ridge on somite 4 nearly absent; each transverse groove between ridges interrupted medially.

Size.—Males to 19.0 mm, females to 21.3 mm, ovigerous females from 15.0 mm (Macpherson, 2007; Osawa *et al.*, 2008a).

Coloration.—Entire body and pereopods reddish orange to pale orange or somewhat whitish. Corneas pale yellowish. Eggs reddish.

Habitat.—Sand mixed with coral or with globigerina and pteropods (Baba, 1988); 277–1644 m.

Distribution.—Off east coast of Somali Republic, Madagascar, Mozambique Channel, Australia (off Central Queensland), Solomon Islands, Indonesia, South China Sea (Dongsha), Taiwan, and Japan.

Remarks.—*Galacantha valdiviae* is the unique species of the genus with a single prominent spine on the anterior lateral margin of the carapace and 2 epigastric spines.

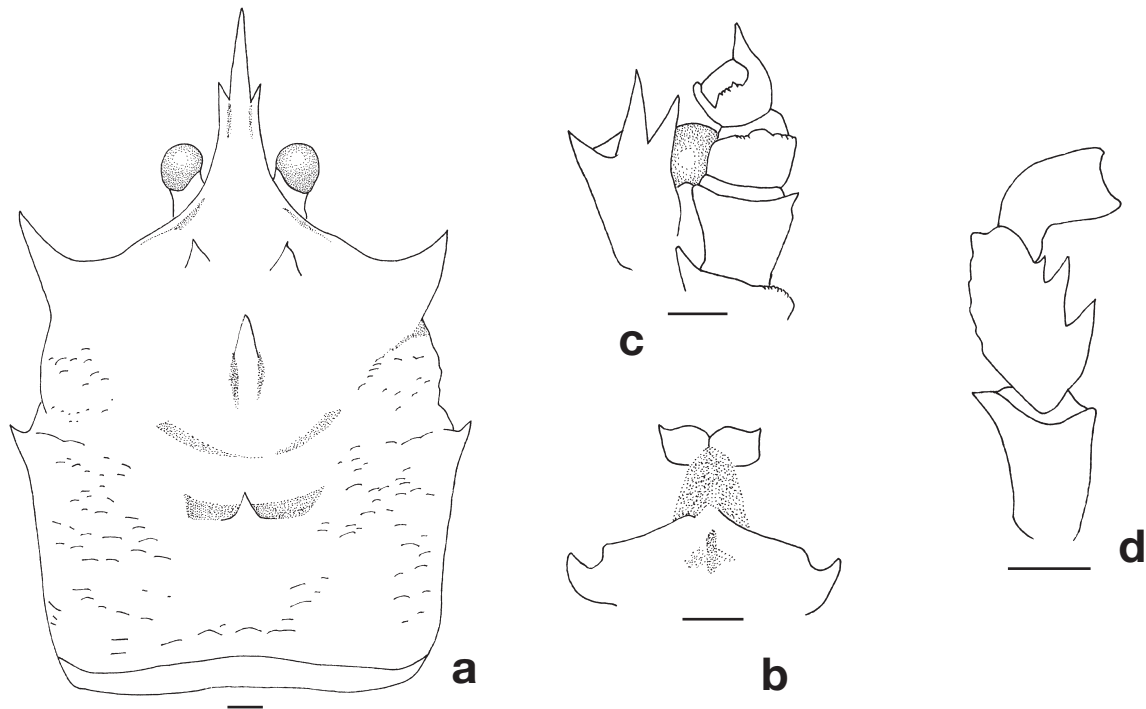


Fig. 85. Male (12.9 mm), CP134: **a**, carapace, dorsal; **b**, anterior part of sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, ischium, merus and carpus of right Mxp3, lateral. Scales: a, b = 5 mm; c, d = 1 mm.

Genus *Galathea* Fabricius, 1793

鎧甲蝦屬

Galathea Fabricius, 1793: 47 [type species: *Cancer strigosus* Linnaeus, 1761. Gender: feminine].—Stimpson, 1858: 76.—Haswell, 1882b: 161.—Henderson, 1888: 117.—A. Milne Edwards & Bouvier, 1894: 249.—A. Milne Edwards & Bouvier, 1897: 13.—Stebbing, 1910: 362.—Doflein & Balss, 1913: 139.—Schmitt, 1921: 163.—Laurie, 1926: 123.—Makarov, 1938: 79 (1962: 81).—Barnard, 1950: 482.—Zariquiey Álvarez, 1968: 271.—Baba, 1969a: 9.—Tirmizi & Javed, 1993: 41.—Poore, 2004: 231.—Baba, 2005: 74.

Diagnosis.—Carapace dorsally with setiferous transverse striae, laterally with row of spines. Cardiac region poorly defined. Rostrum dorsoventrally flattened, triangular, with 4 (rarely 2 or 5) lateral teeth. Abdomen unarmed on tergites. Telsonal 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. Mxp3 ischium subtriangular in cross section, merus armed with spines on flexor margin. P1 relatively short and spinose. P2–4 with row of spines on extensor crests of meri and carpi; flexor margin of dactylus with row of distinct teeth each bearing stiff corneous seta, ultimate tooth usually prominent. G1 rarely absent.

Remarks.—The genus is one of the most speciose and most unwieldy groups in the Galatheidae. Fifty-five species are known in the Indo-West Pacific (Baba *et al.*, 2008; Baba & Fujita, 2008) and identity of some still remains questionable. Further taxonomic study is desirable. Ten species are found in Taiwan and three of them represent new records.

Key to Taiwanese species of *Galathea*

1. Gastric spines present 2
— Gastric spines absent 7
2. Basal article of antennule with well-developed distomesial spine 3
— Basal article of antennule with small or obsolescent distomesial spine 6
3. Distinct spine on each lateral extremity of second stria behind pair of epigastric spines *G. aegyptiaca*
— No spine on second stria behind pair of epigastric spines 4
4. Third transverse stria on carapace uninterrupted. Pterygostomial flap with 1 or 2 distinct spines on dorsal margin near linea anomurica. Mxp3 merus with 1 prominent spine at midlength of flexor margin.
..... *G. mauritiana*
— Third transverse stria on carapace interrupted by cervical groove. Pterygostomial flap lacking spine on dorsal margin near linea anomurica. Mxp3 merus with 2 spines on flexor margin. 5
5. Scale-like striae on gastric region. Mxp3 carpus unarmed on extensor margin. Pterygostomial flap lacking spine on surface *G. tanegashimae*
— No scale-like striae on gastric region. Mxp3 carpus with 2 spines on extensor margin. Pterygostomial flap with spine on surface *G. orientalis*
6. Rostral lateral teeth shallowly incised. Mxp3 merus with at most very tiny spine on flexor distal margin. P1 fingers ending in incurved sharp spine to cross each other when closed *G. albatrossae*
— Rostral lateral teeth deeply incised. Mxp3 merus with distinct spine on flexor distal margin. P1 fingers distally spooned, with intermeshing teeth *G. pubescens*
7. Rostrum with 5 lateral teeth on each side. Antennular basal article with 2 distal spines (distomesial margin

- unarmed) *G. multilineata*
- Rostrum with 4 lateral teeth on each side. Antennular basal article with 3 distal spines8
- 8. Epipods on P1 *G. platycheles*
- Epipods on P1–3 9
- 9. Rostrum sharp triangular. P1 fingers narrow, distally spooned *G. inflata*
- Rostrum broadly elongate. P1 fingers strongly depressed, distally ending in incurved spine, not spooned ...
..... *G. genkai*

Galathea aegyptiaca Paulson, 1875
埃及鎧甲蝦



Fig. 86. Ovigerous female (3.8 mm), Longdong, Taipei County, 28 Aug 1989.

Galathea australiensis.—Ortmann, 1892: 251, pl. 11: figs. 8, 8a, 8i.—Borradaile, 1900: 421.—De Man, 1902: 710.—Balss, 1913b: 2.—Laurie, 1926: 123.—Melin, 1939: 56, figs. 32–35.—Miyake & Baba, 1966a: 60, figs. 3–5. (not *G. australiensis* Stimpson, 1858)

Galathea aegyptiaca Paulson, 1875: 94, pl. 12, figs. 1, 1a–b [type locality: Red Sea].—Nobili, 1906: 126, fig. 8, pl. 7, fig. 3.—Lewinsohn, 1969: 98, fig. 18.—Haig, 1974: 447.—Baba, 1977: 244; 1979: 645; 1982b: 59.—Garth *et al.*, 1987: 252.—Kamezaki *et al.*, 1988: 95, with color fig.—Baba, 1990: 952.—Tirmizi & Javed, 1993: 61, fig. 27.—Wu *et al.*, 1998: 88, figs. 8, 12E.—Davie, 2002: 60.—Baba *et al.*, 2008: 64.

Material examined.—Longdong, Taipei County, 28 Aug 1989: 1 male (3.5 mm), 1 ovigerous female (3.8 mm) (NTOU).

Diagnosis.—A pair of epigastric spines. Second stria on carapace produced forward at middle, with spine slightly mesial to its outer extremity. Pronounced plumose setae on rostrum, around epigastric spines and on fourth and fifth main striae. Third stria uninterruptedly reaching anteriormost of branchial marginal spines. Small spine between anterolateral spine and anterior cervical groove, located slightly dorsal in position. Anterior branchial margin with 2 spines. Rostrum broad, with 4 acute lateral teeth. Lateral orbital angle strongly produced. Pterygostomian flap without spines on surface. Abdominal somites 1 and 2 with 2 transverse ridges. Basal article of antennule with 3 distal spines. Mxp3 merus with 2 flexor spines and 1 or rarely 2 extensor spines. P1–4 stout, spinose, with plumose setae. P1 carpus twice longer than broad, fingers distally spooned. Epipods on P1, absent on P2–3. G1 and G2 present.

Size.—Males to 9.1 mm including rostrum, females to 8.2 mm (Miyake & Baba, 1966a).

Coloration.—Base color light brown; variable color patters: 1) anterior part of carapace reddish; 2) additional red patch on each lateral portion of carapace; 3) totally reddish, excepting whitish median third of carapace and white spot on median part of abdominal somite 2 (Miyake & Baba, 1966a; Kamezaki *et al.*, 1988). The specimen from Taiwan bears the first pattern. Dusky diffuse bands on P1 palm and merus, and P2–4 propodi.

Habitat.—Among corals, usually subtidal to 10 m, deepest record is from 146 m.

Distribution.—Widely distributed in the Indo-West Pacific: Red Sea, Madagascar, Mozambique Channel, Amirante, Saya de Malha Bank, Cargados Carazos, Western Australia, Loyalty Islands, New Guinea, Ternate, Moluccas, Palau and Yap Islands, Taiwan, Ryukyu Islands, and Bonin [Ogasawara] Islands.

Remarks.—This species is common among branching corals on the coast of the Ryukyu Islands.

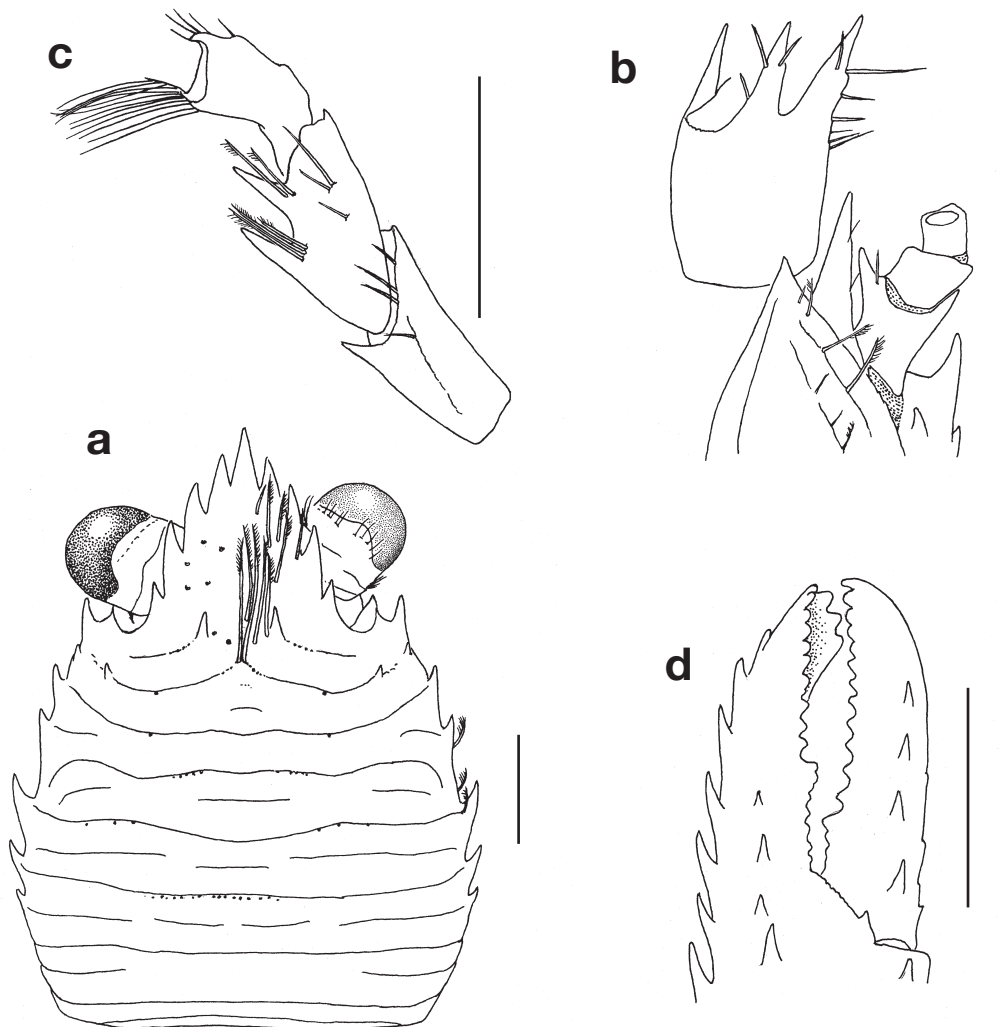


Fig. 87. Male (3.5 mm; a–c) and ovigerous female (3.8 mm; d), Longdong, Taipei County, 28 Aug 1989: **a**, carapace, eyelash omitted on left side, dorsal; **b**, left antennule and antenna, ventral; **c**, left Mxp3, lateral; **d**, left P1, distal part, dorsal. Scales = 1 mm.

Galathea albatrossae Baba, 1988

信天翁鎧甲蝦



Fig. 88. Male (4.8 mm), CP169.

Galathea albatrossae Baba, 1988: 65, fig. 26 [type locality: off northwestern Palawan, 26–46 m]; 1989: 128.—
Baba *et al.*, 2008: 64.

Material examined.—Donggang fishing port, Pingtung County, 30 Sep 2003: 1 ovigerous female (3.3 mm) (NTOU).—22 Sep 2004: 1 ovigerous female (4.5 mm) (NTOU). CP 169, 22°27.29'N, 120°17.90'E, 36 m, 26 May 2002: 2 males (4.8, 5.4 mm) (NTOU).

Diagnosis.—Row of small submedian spines on first stria of carapace. No complete, uninterrupted stria between anteriormost spines of branchial margin. Tiny spines on hepatic region. Three spines on anterior branchial margin. Rostrum relatively narrow, with 4 shallowly incised lateral teeth. Lateral orbital angle produced. Pterygostomian flap without spines on surface. Abdominal somites 2 and 3 each with 3 transverse ridges. Basal article of antennule with 2 strong distal spines, distomesial spine very small. Mxp3 merus with 3 flexor spines, proximal largest, median occasionally obsolete, unarmed on extensor margin. P1–4 relatively slender, with small spines. P1 carpus 3 times longer than broad, fingers distally ending in incurved spine and crossing. Epipods on P1, absent on P2–3. G1 and G2 present.

Size.—Males to 5.4 mm (present data); females to 7.8 mm including rostrum (Baba, 1989).

Coloration.—Yellow-orange base color. Carapace with reddish brown longitudinal stripe arising behind each eye, extending posteriorly on to abdominal somite 4, with another flanking stripe in midline of abdominal somites 2–4. Spines on P1 reddish brown.

Habitat.—Mud, mostly mixed with sand (Baba, 1988); fine sand, coral and rock, and sand and shell (Baba,

1989); 20–60 m.

Distribution.—Off northwestern Palawan, Sulu Sea off western Mindanao, South China Sea off southwestern Luzon, Taiwan and Amami-oshima (Ryukyu Islands).

Remarks.—This is the first record for the species from Taiwan.

Baba *et al.* (2008) suggested that the material reported under *Galathea whiteleggei* by Tirmizi (1966) from the South Arabian Sea at a depth of 38 m might be referable to this species. However, the illustration provided by Tirmizi & Javed (1993) of *G. whiteleggei* shows that the carapace and Mxp3 are the same as those in the illustrations of Tirmizi (1966) but the antennular basal segment bears a distinct distomesial spine, not a feature of *G. albatrossae*. Tirmizi and Javed (1993) did not refer to the record of Tirmizi (1966), but it is highly probable that these two are identical.

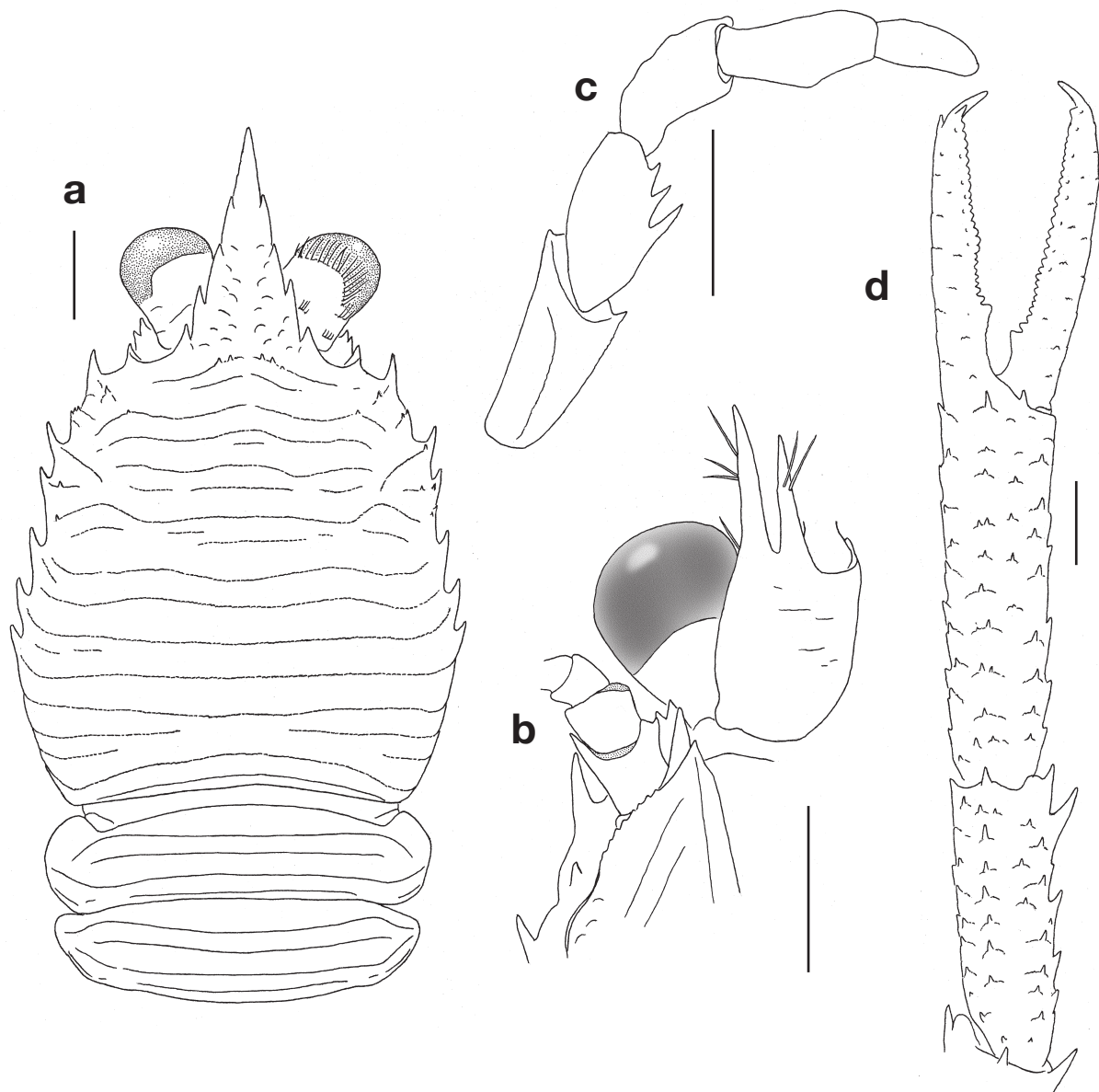


Fig. 89. Male (4.8 mm), CP169: **a**, carapace and abdomen, eyelash omitted on left side, dorsal; **b**, anterior part of cephalothorax, showing right antennule and antenna, ventral; **c**, right Mxp3, lateral; **d**, left P1, dorsal. Scales = 1 mm.

Galathea genkai Miyake & Baba, 1964
玄海鎧甲蝦



Fig. 90. Male (7.4 mm), Sihjiao Island, Penghu County, 24 Mar 2001.

Galathea genkai Miyake & Baba, 1964: 208, figs. 3, 4 [type locality: coast of northern Kyushu, 10 m].—Lewinsohn, 1969: 120, fig. 23.—Haig, 1974: 447.—Baba, 1988: 74.—Davie, 2002: 61.—Baba *et al.*, 2008: 69.

Material examined.—Sihjiao Island, Penghu County, 24 Mar 2001: 1 male (7.4 mm), from fish stomach (NTOU).

Diagnosis.—Epigastric spines absent. No complete, uninterrupted striae on anterior half of carapace. Cervical groove distinct. Small spines on hepatic and anterior branchial regions. Four or 5 spines on anterior branchial margin. Rostrum relatively narrow and elongate, twice as long as broad, with 4 shallowly incised lateral teeth. Lateral orbital angle moderately produced. Pterygostomian flap with spine on anterior surface. Abdominal somites 2 and 3 each with 4 transverse ridges. Basal article of antennule with 3 strong distal spines. Mxp3 carpus with acute spine on flexor and extensor distal margins, merus with 2 strong flexor spines and 2 strong extensor spines. P1 with broad, depressed spine at distomesial margin of merus and carpus, carpus slightly longer than broad, fingers depressed, distally ending in incurved spine and crossing. Epipods present on P1–3. G1 and G2 present.

Size.—Males to 12.3 mm including rostrum (Baba, 1988); female, 9.95 mm including rostrum (Miyake & Baba, 1964).

Coloration.—Base color translucent white. Rostrum pale orange. Carapace with 3 longitudinal rows of dark brown flecks (1 in midline, 2 along lateral margins) continued on to somite 6 of abdomen; additional fleck

of same color placed between at midlength of carapace. Pale brownish mottlings on P1. P2–4 pale pink.

Habitat.—On crinoids *Decametra chadwicki* (Clark) and *Heterometra savignii* (Müller) (Lewinsohn, 1969); hard sand; 10–68 m.

Distribution.—Red Sea, Western Australia, Sibuyan Sea, Taiwan, and Northern Kyushu (Japan).

Remarks.—This is the first record for the species from Taiwan. The sole Taiwanese specimen was obtained from the stomach of a fish but still very fresh and in an excellent condition.

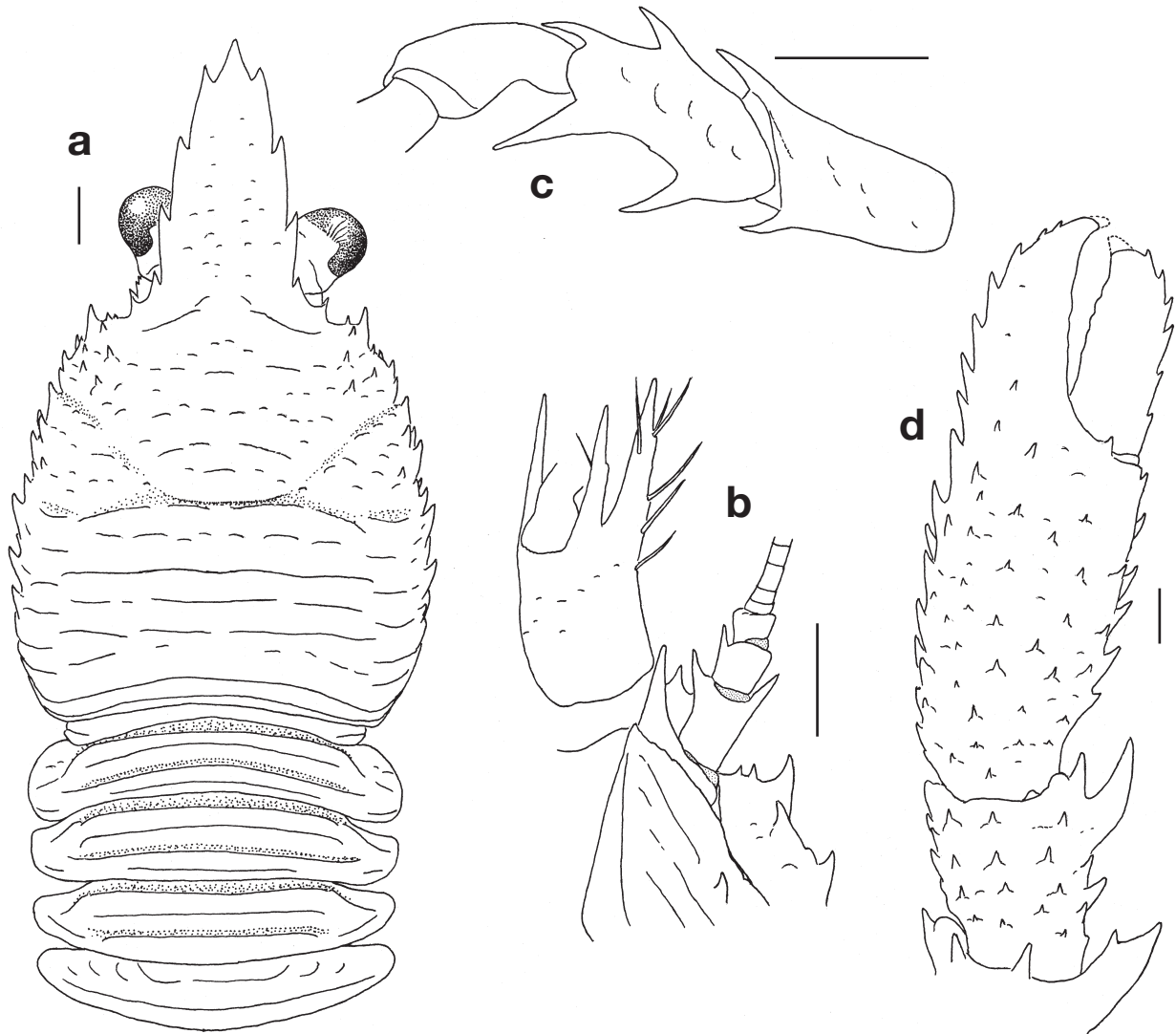


Fig. 91. Male (7.4 mm), Sihjiao Island, Penghu County, 24 Mar 2001: **a**, carapace and abdomen, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, left Mxp3, lateral; **d**, left P1, dorsal. Scales = 1 mm

Galathea inflata Potts, 1915

鼓漲鎧甲蝦



Fig. 92. Female (3.8 mm), Lanyu, Taitung County, 3 Jul 1993.

Galathea inflata Potts, 1915: 85, pl. 1, fig. 7 [type locality: Torres Strait].—Baba, 1979: 649, fig. 2.—Wu *et al.*, 1998: 92, figs 10, 12G.—Fujita & Baba, 1999: 115, fig. 2.—Fujita *et al.*, 2001: 112, figs 1–12.—Kato & Okuno, 2001: 87, with fig.—Davie, 2002: 61.—Kawamoto & Okuno, 2003: 95, unnumbered fig.—Kawamoto & Okuno, 2006: 95, unnumbered fig.—Baba *et al.*, 2008: 70.—Baba & Fujita, 2008: 52, fig. 5. Not *Galathea inflata*.—Baba, 1969b: 33, figs 1–2. (= *G. continua* Baba & Fujita, 2008)

Material examined.—Lanyu, Taitung County, 3 Jul 1993: 1 female (3.8 mm) (NTOU).

Diagnosis.—Carapace without epigastric spines. Hepatic region with 3 small but distinct spines: 1 lateral to first transverse stria, 1 between lateral orbital spine and anterolateral spine of carapace, and 1 between anterolateral spine and anterior cervical groove, located slightly dorsal in position. Anterior branchial region with interrupted, scaly ridges, lateral margin with 3 spines. Posterior half of carapace with 7 major transverse striae: 4 uninterrupted and 3 interrupted ridges in alternate arrangement. Rostrum broad triangular. Lateral orbital angle with small spine. Abdominal somites 2–3 each with 2 transverse ridges. Basal article of antennular peduncle with 3 well-developed distal spines. Mxp3 merus with 3 flexor spines (proximal and distal strong, median small) and 2 extensor spines. P1 slender; carpus 3 times longer than broad; fingers distally spooned, with intermeshing teeth. P2–4 with stiff long setae on carpi and propodi; propodi slightly more thickly setose on P4 than on P2 and P3. Epipods on P1–3. G1 absent.

Size.—Males to 5.9 mm, females to 6.0 mm (Fujita & Baba, 1999).

Coloration.—Body and pereopods dark brown or dark green base color, with 2 whitish or yellowish stripes

on carapace extending posteriorly on to abdomen, convergent to join each other on telson; additional yellowish stripe on each lateral side of abdominal somites 2–4. P1 fingers whitish at tip. P2–4 propodi yellow white on distal portion; dactyli whitish in distal half, yellow orange in proximal half. Dark green specimens are seen only on *Comaster schlegeli*, the ventral surface of which is green (Fujita & Baba, 1999). The specimen from Taiwan is dark green; P1 fingers distally yellowish.

Habitat.—Associated with comatulid crinoids: *Comanthus timorensis* (currently either *Comanthus parvicirrus* or *Clarkcomanthus littoralis* (see Potts, 1915); *Comanthus parvicirrus*, *Comaster schlegelii* (see Fujita & Baba, 2001), *Phanogenia gracilis*, *Comaster nobilis* (see Baba & Fujita, 2008); subtidal to 28 m.

Distribution.—Torres Strait, Moluccas, Taiwan, and Japan (Ryukyu Islands and Hachijo Island).

Remarks.—To the best of our knowledge, this may be the only species in the genus that lacks gonopods on the abdominal somite 1 in males.

Large specimens (>3.3 mm in carapace length) reported under *G. inflata* by Fujita & Baba (1999: Table 2) on *Capillaster multiradiatus*, *Clarkcomanthus littoralis*, *Comatella maculata*, *Comatella nigra*, *Comatella stelligera*, *Comanthus* sp., proved to belong to *G. continua* Baba & Fujita, 2008. Also the small specimens, now in poor condition, found on *Comanthus alternans*, *Stephanometra spicata*, *Tropiometra afra macrodiscus* possibly belong to *G. continua* although this identification needs confirmation (Baba & Fujita, 2008).

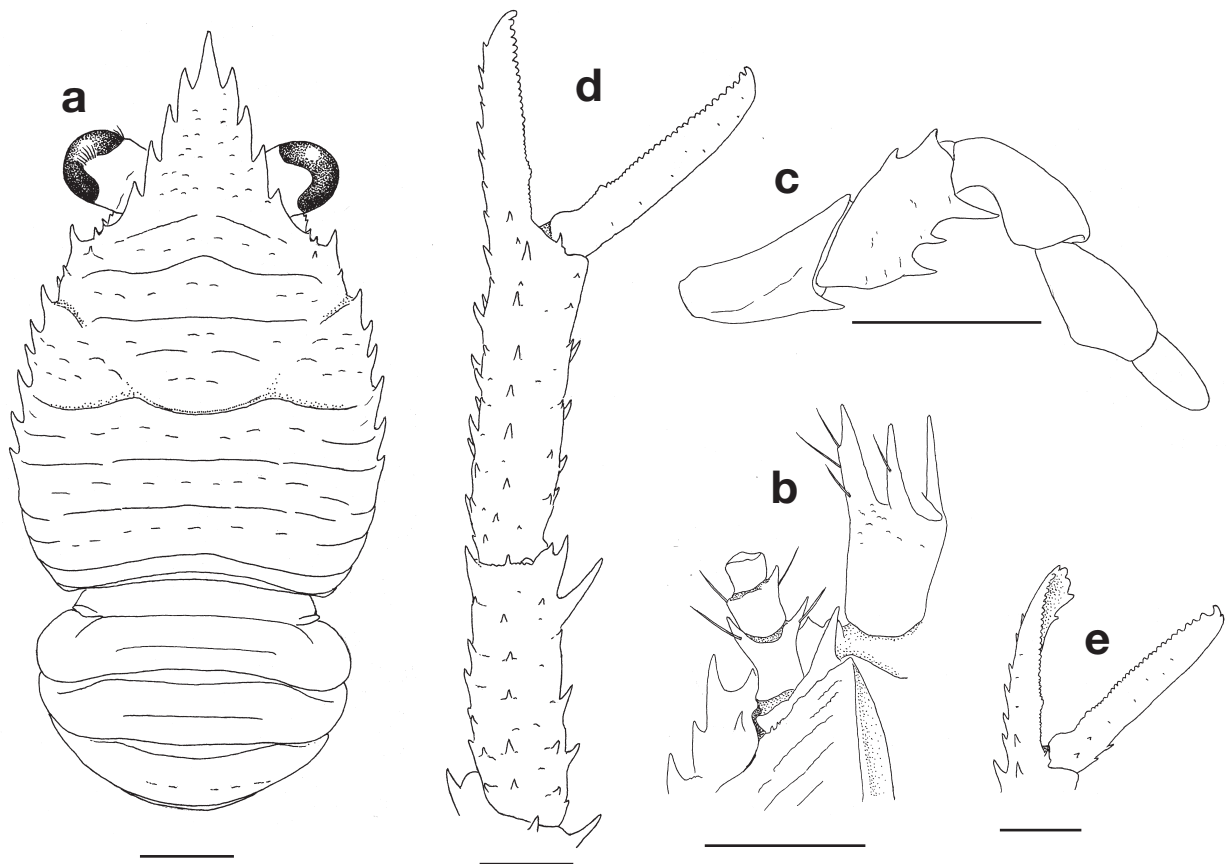


Fig. 93. Female (3.8 mm), Lanyu, Taitung County, 17 Jul 1993: **a**, carapace and abdomen, eyelash omitted on right side, dorsal; **b**, anterior part of cephalothorax, showing right antennule and antenna, ventral; **c**, right Mxp3, lateral; **d**, left P1, dorsal; **e**, same, distal part, mesiodorsal. Scales = 1 mm

Galathea mauritiana Bouvier, 1914
模里西斯鎧甲蝦

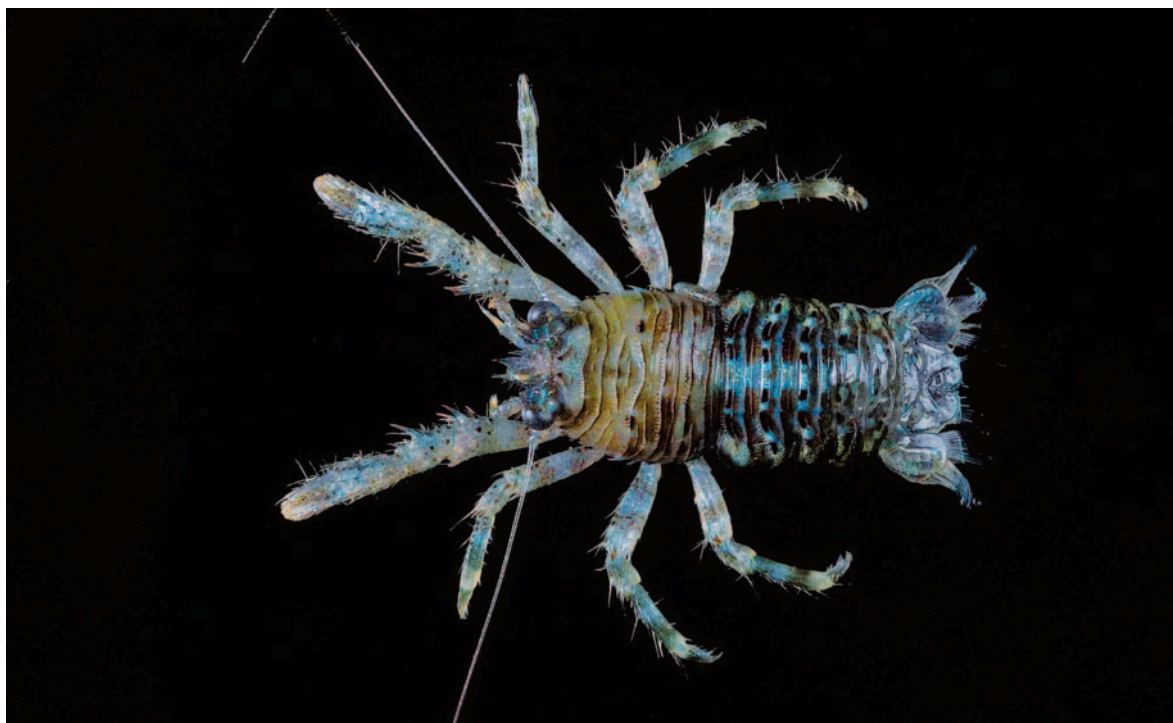


Fig. 94. Ovigerous female (4.4 mm), Hongchaikeng, Pingtung County, 21 Mar 2005.



Fig. 95. Ovigerous female (4.7 mm), Hongchaikeng, Pingtung County, 21 Mar 2005, body more orangish.

Galathea affinis Ortmann, 1892: 252, pl. 11, figs 9a, i [type locality: Fiji Islands].—Borradaile, 1898: 46.—Borradaile, 1900: 421.—de Man, 1902: 711.—Nobili, 1907: 375, pl. 1, fig. 11.—Miyake & Baba, 1966a: 57, figs 1, 2.—Lewinsohn, 1969: 112, fig. 21.—Baba, 1977: 247.—Baba, 1979: 646.—Baba, 1982b: 59.—Peyrot-Clausade, 1989: 112.—Baba, 1990: 953.—Tirmizi & Javed, 1993: 45, fig. 20.—Poupin, 1996a: 19.—Kawamoto & Okuno, 2003: 94, unnumbered fig.

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

Galathea mauritiana Bouvier, 1914: 5 [type locality: Mauritius Islands].—Bouvier, 1915: 200, figs 10, 11.—Laurie, 1926: 125.—Collins, 1995: 61.—Kawamoto & Okuno, 2006: 94, unnumbered fig.—Baba *et al.*, 2008: 73.

Material examined.—Hongchaikeng, Pingtung County, 21 Mar 2005: 2 ovigerous females (4.4, 4.7 mm) (NTOU).

Diagnosis.—Pair of epigastric spines. Cervical groove indistinct. Third stria on carapace uninterrupted between anteriormost spines on branchial lateral margin. Anterior branchial margin with 3 spines. Rostrum about as long as broad, with 4 deeply incised lateral teeth. Lateral orbital angle rounded. Pterygostomian flap with 1 or 2 spines on anterior upper margin near linea anomurica. Basal article of antennule with 3 distal spines. Mxp3 merus with prominent spine at midlength of flexor margin and distinct distal spine on extensor margin. P1 strongly spinose, carpus slightly more than 1.5 times longer than broad, fingers distally spooned. Epipods present on P1, absent on P2–3. G1 and G2 present.

Size.—Males to 6.15 mm including rostrum (Miyake & Baba, 1966a), females to 4.7 mm (present data).

Coloration.—Base color pale bluish brown. Carapace dusky or greenish brown, with darker or deeper transverse lines. Abdomen with bluish or orangish patches. P1 with bluish black spot on distal part of palm. Eggs green.

Habitat.—Common on coral reefs, under stones and rocks, between coral rocks (Miyake & Baba, 1966a; Kawamoto & Okuno, 2003, 2006); subtidal to 48 m deep.

Distribution.—Widely distributed in the Indo-West Pacific: Red Sea, Mozambique Channel, Comoro Islands, Madagascar, Farquhar Islands, Cœtivy Islands, Saya de Malha Bank, Mauritius, Chagos Archipelago, Timor, Moluccas, New Guinea, Loyalty Islands, Fiji Islands, Ellice Islands, Tuamotu Archipelago, Palau Islands, Yap, Taiwan, and Ryukyu Islands (Ishigaki-jima, Okinawa-jima and Amami-ohshima).

Remarks.—The species has long been called *Galathea affinis* Ortmann, 1892. According to Collins (1995), it was preoccupied by the Pliocene fossil *Galathea affinis* Ristori, 1886 from Sicily. Hence, the valid name for this species is *G. mauritiana* Bouvier, 1914. This is the first record for the species from Taiwan.

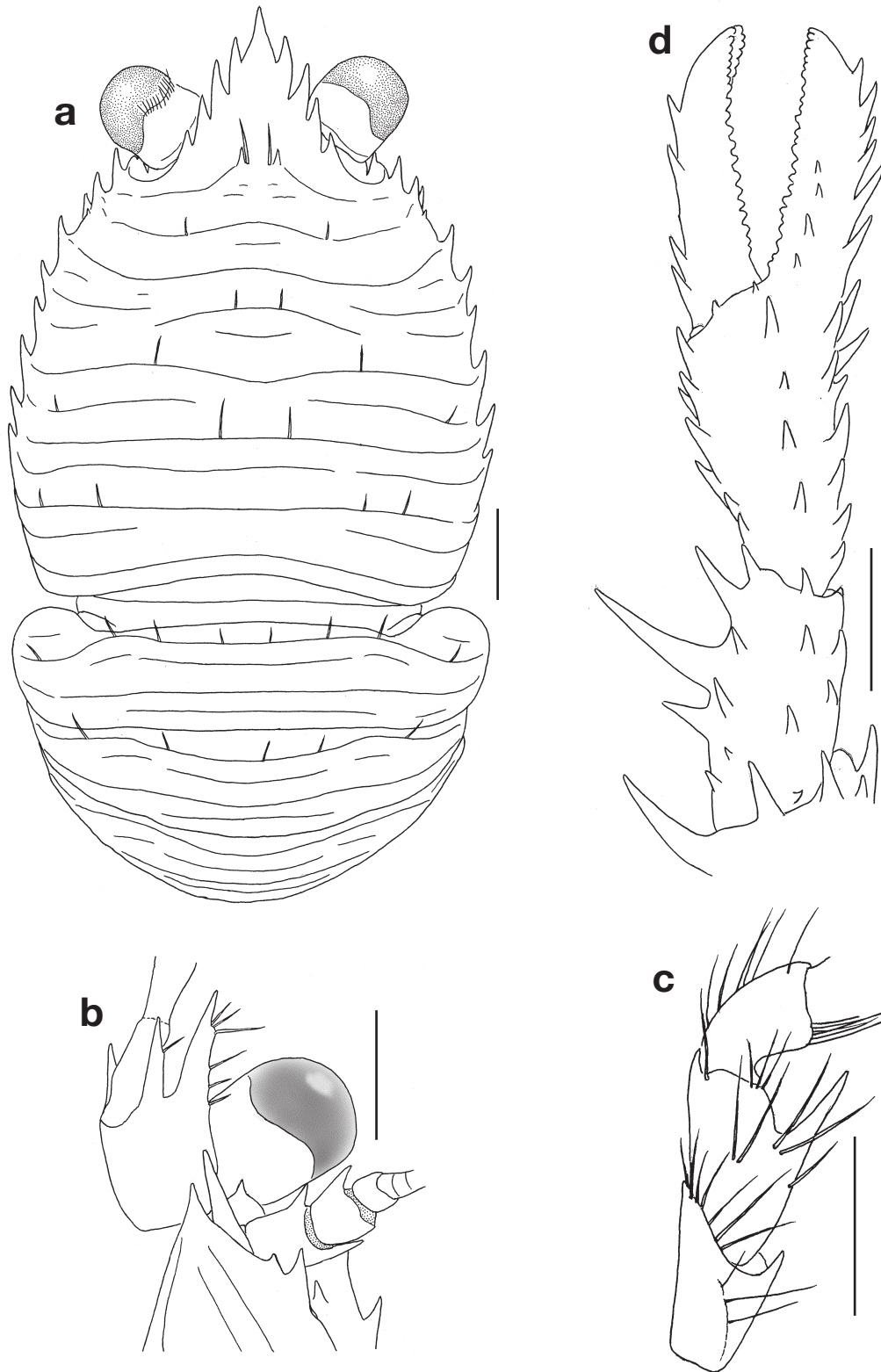


Fig. 96. Ovigerous female (4.4 mm), Hongchaikeng, Pingtung County, 21 Mar 2005: **a**, carapace and abdomen, eyelash omitted on right side, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, right Mxp3, lateral; **d**, right P1, dorsal. Scales = 1 mm.

Galathea multilineata Balss, 1913
複線鎧甲蝦



Fig. 97. Female (5.5 mm), CP160.



Fig. 98. Female (4.8 mm), Donggang fishing port, Pingtung County, 4 Dec 2003, body without white longitudinal line.

Galathea multilineata Balss, 1913b: 9, figs. 6–8 [type locality: Yagoshima (= Jogashima), Sagami Bay, Japan, 120 m].—Yokoya, 1933: 56.—Miyake & Baba, 1967c: 231, fig. 4.—Baba, 1988: 76.—Wu *et al.*, 1998: 93, figs. 11, 12H.—Komai, 2000: 353.—Baba, 2005: 244.—Baba *et al.*, 2008: 73.

Material examined.—Donggang fishing port, Pingtung County, 20 Dec 1984: 1 male (5.1 mm) (NTOU).—23 Mar 1985: 1 female (5.4 mm) (NTOU).—15 Nov 1991: 1 male (4.4 mm) (NTOU).—26 Jan 1994: 1 male (6.0 mm) (NTOU).—4 Dec 2003: 1 female (4.8 mm) (NTOU). CP 160, 22°12.98'N, 120°28.78'E, 300 m, 23 May 2002: 1 female (5.5 mm) (NTOU).

Diagnosis.—No epigastric spines. Cervical groove distinct. Numerous striae on carapace. No complete, uninterrupted stria between anteriormost spines on branchial lateral margin. No spine between anterolateral spine and anterior cervical groove. Anterior branchial margin with 3 spines. Rostrum 1.5 times as long as broad, with 5 small lateral teeth. Lateral orbital angle with small spine. Pterygostomian flap spineless on surface. Basal article of antennule with distolateral and distodorsal spines, distomesial spine absent. Mxp3 merus with 2 flexor spines of moderate and subequal size and 2 extensor spines of small size. P1 carpus slightly more than 1.5 times longer than broad, fingers distally spooned. Epipods present on P1, absent on P2–3. G1 and G2 present.

Size.—Males to 9.8 mm including rostrum, females to 9.9 mm including rostrum (Baba, 1988).

Coloration.—Overall orange red; light orange stripe in midline from whole rostrum posteriorly to abdominal somite 4 usually present, rarely absent; posterior part of abdomen between somite 5 and tailfan translucent pale yellow.

Habitat.—Gray mud, green mud, and fine coral sand (Baba, 1988); 120–393 m.

Distribution.—Japan (Sagami Bay and off Muroto-zaki), East China Sea, Taiwan, South China Sea, east coast of Mindoro, eastern Mindanao, and Sulu Archipelago.

Remarks.—The species is easily distinguished from the other known species by having five instead of four lateral teeth on the rostrum.

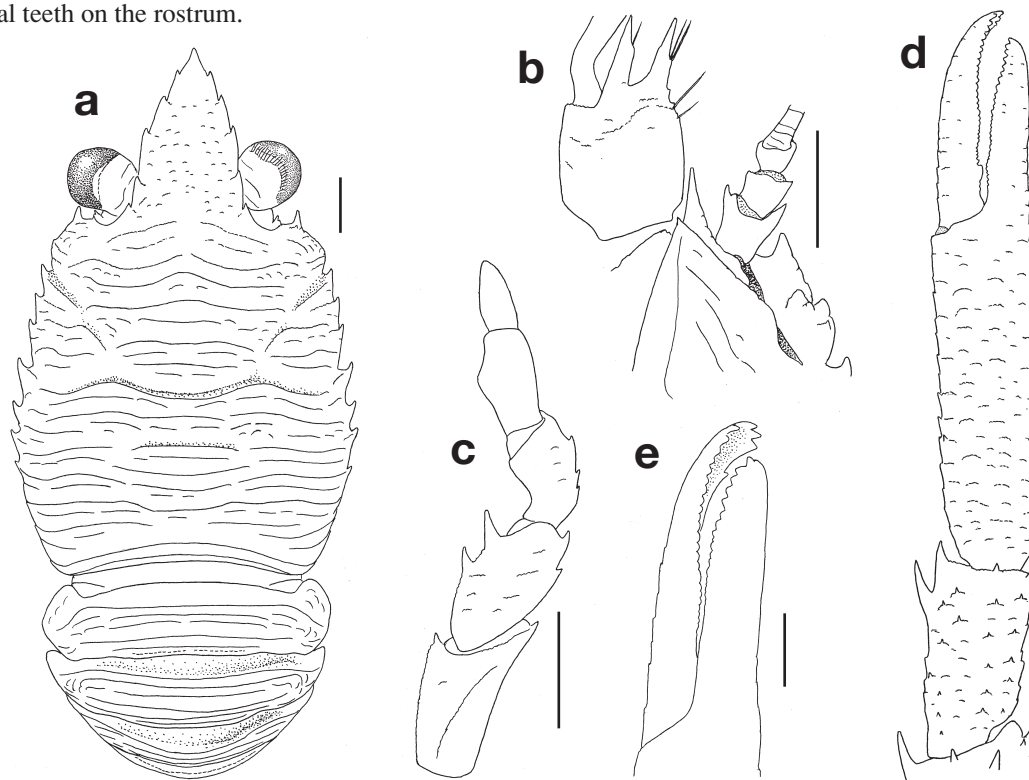


Fig. 99. Male (6.0 mm), Donggang fishing port, Pingtung County, 26 Jan 1994: **a**, carapace and abdomen, eyelash omitted on left side, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, left Mxp3, lateral; **d**, right P1, dorsal; **e**, same, distal part, dorsal. Scales = 1 mm.

Galathea orientalis Stimpson, 1858
東方鎧甲蝦



Fig. 100. Female (2.7 mm), CP2.



Fig. 101. Ovigerous female (3.3 mm), Badouzih, Keelung City, 16 Aug 2003.



Fig. 102. Male (3.1 mm), Badouzih, Keelung City, 16 Aug 2003. body with white longitudinal line.

Galathea orientalis Stimpson, 1858: 252 [type locality: Ly-i-moon Passage near Hong Kong, 46 m]; 1907: 231.—Miers, 1879: 51.—Ortmann, 1892: 252, pl. 11: figs. 10, 10a, 10i.—Doflein, 1902: 644.—Stimpson, 1907: 231.—Nakazawa, 1927: 1035, fig. 199.—Melin, 1939: 63, figs. 36–38.—Nakazawa in Miyake & Nakazawa, 1947: 732, fig. 2115.—Utinomi, 1956: 63, pl. 32: fig. 5.—Miyake, 1960: 97, pl. 48: fig. 5; 1965: 634, fig. 1042; 1982: 145, with 1 fig., pl. 49, fig. 1.—Miyake & Baba, 1967c: 232, fig. 5.—Lewinsohn, 1969: 110.—Kim, 1973: 175, fig. 19, pl. 64: figs. 5a, 5b.—Haig, 1974: 447.—Takeda, 1982: 50, fig. 149.—Baba, 1989: 130.—Minemizu, 2000: 166, with fig.—Davie, 2002: 62.—Baba, 2005: 81, 244.—Macpherson, 2007: 3.—Baba *et al.*, 2008: 74.

Galathea longimana.—Stimpson, 1907: 232. (not *G. longimana* Paul'son, 1875)

Galathea acanthomera Stimpson, 1858: 90 [type locality: Bonin Islands, 1.8 m]; 1907: 232.—Balss, 1913b: 2, fig. 1.—Yokoya, 1933: 55.—Miyake, 1938: 39, fig.—Makarov, 1938: 85.

Galathea coralliophilus.—Wu *et al.*, 1998: 90, figs. 9, 42F. (not *G. coralliophilus* Baba & Oh, 1990)

Identity questioned:

Galathea orientalis: Tirmizi, 1966: 182, figs. 6–8. (possibly = *G. anepipoda* Baba, 1990)

Material examined.—Badouzih, Keelung City, 16 Aug 2003: 1 male (3.1 mm), 1 ovigerous female (3.3 mm) (NTOU). Bitoujiao, Taipei County, no date: 1 male (2.3 mm), 1 female (2.7 mm) (NTOU). Magang, Taipei County, 22 Apr 1992: 1 male (3.1 mm) (NTOU). Mituo, Kaohsiung County, 25 Nov 1992: 1 male (2.6 mm) (NTOU). Penghu County, 24 Sep 1990: 2 males (1.8, 2.2 mm), 1 female (2.5 mm) (NTOU). CP2, 23°38.3'N,

119°53.2'E, 83–95 m, 27 Jul 2000: 1 female (2.7 mm) (NTOU).

Diagnosis.—Pair of epigastric spines. Third stria between anteriormost spines on branchial lateral margin interrupted by cervical groove. Small spine between anterolateral spine and anterior cervical groove, located slightly dorsal in position. Anterior branchial margin with 2 spines. Rostrum 1.5 times longer than broad, with 4 acute lateral teeth. Lateral orbital angle strongly produced. Pterygostomial flap with spine on anterior surface. Abdominal somites 2–3 with 2 transverse ridges. Basal article of antennule with 3 distal spines. Mxp3 merus with 2 flexor and 2 extensor spines, carpus with 2 or 3 extensor spines. P1 carpus 3 times longer than broad, fingers spooned distally. Epipods present on P1, absent on P2–3. G1 and G2 present.

Size.—Males to 11.9 mm including rostrum, females to 10.8 mm including rostrum (Baba, 2005).

Coloration.—Variable, from greenish brown to dark brown, occasionally with whitish stripe in midline of carapace and abdomen (Minemizu, 2000). The Taiwanese material has the carapace light greenish brown tinged with orange red, occasionally with pale stripe in midline; P1 light reddish brown, with whitish spot at distal end of palm; P2–4 with pale brownish bands.

Habitat.—Sand, sandy mud, coral head, rocky shore, between boulders, and on basal part of seaweed on rocks (Minemizu, 2000; present data). According to Utinomi & Kogo (1965), it was found in association with the comathulid *Comanthus japonicus*; shore to 549 m.

Distribution.—Japan (Pacific coast between Sagami Bay and off Shikoku, Kagoshima, Nagasaki, Sea of Japan off Iki Island and coast of Tottori, Ogasawara [Bonin] Islands, Amami-ohshima), Korea, Taiwan, East China Sea, Hong Kong, and western Australia (Dampier Archipelago).

Remarks.—This species was reported as *G. coralliophilus* from Taiwan by Wu *et al.* (1998). *Galathea orientalis* differs from *G. coralliophilus* in the presence of spines on the Mxp3 carpus, the absence of scale-like ridge behind the second stria of the carapace, and absence of feather-like setae on the rostrum. Baba (2005) reported *G. orientalis* from the Taiwan Strait and north of Taiwan but his material was from localities closer to mainland China or with the exact locality unknown.

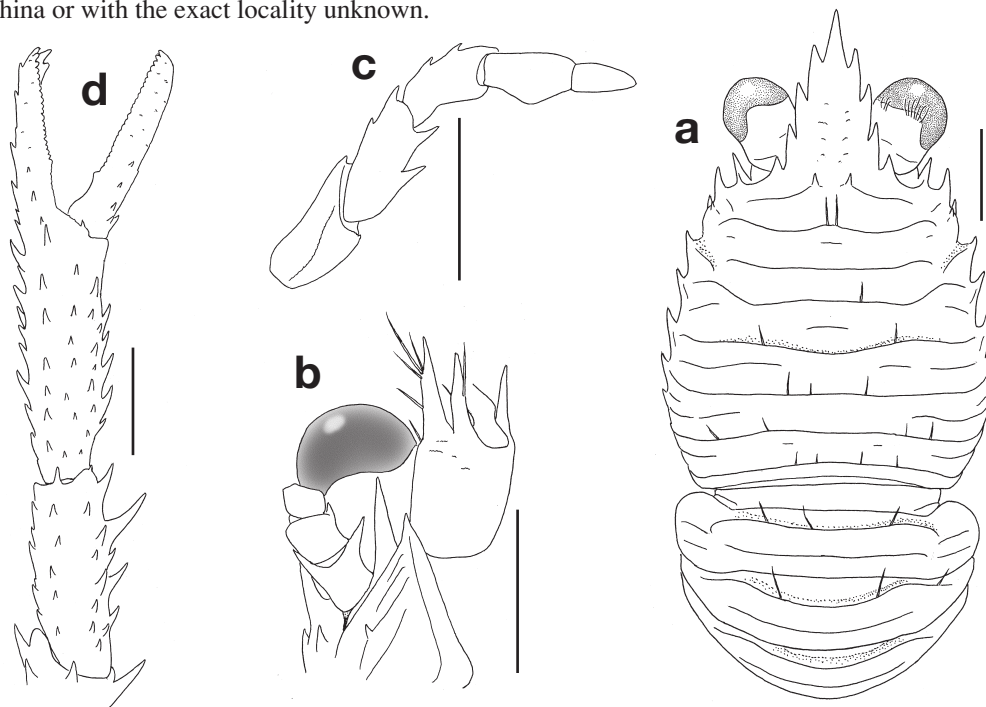


Fig. 103. Ovigerous female (3.3 mm), Badouzi, Keelung City, 16 Aug 2003: **a**, carapace and abdomen, eyelash omitted on left side, dorsal; **b**, anterior part of cephalothorax, showing right antennule and antenna, ventral; **c**, right Mxp3, lateral; **d**, left P1, dorsal. Scales = 1 mm

Galathea platycheles Miyake, 1953
寬鉗鎧甲蝦

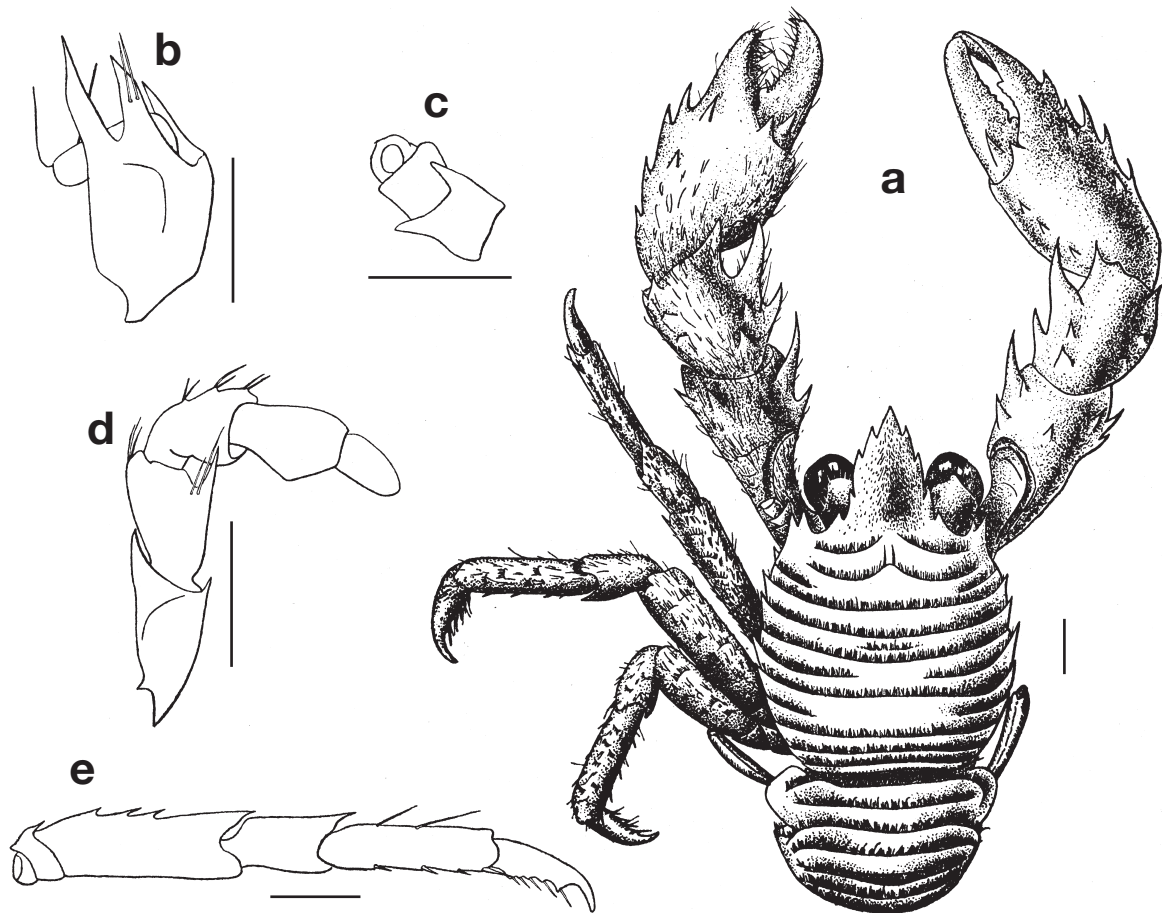


Fig. 104. Holotype male (3.0 mm, incl. rostrum), Su-ao, Yilan County, 4 Nov 1932: **a**, dorsal view; **b**, right antennule, ventral; **c**, right antenna, ventral; **d**, right Mxp3, lateral; **e**, right P3, lateral. Scales = 0.5 mm (After Miyake, 1953).

Galathea platycheles Miyake, 1953: 205, figs. 5, 6 [type locality: Swo (= Su-ao, Yilan County), Taiwan, shore].—Miyake & Baba, 1966a: 65, figs. 6.—Baba, 1977: 246; 1982b: 60; 1989: 130.—Wu *et al.*, 1998: 96, fig. 13.—Tirmizi & Javed, 1993: 81, fig. 36.—Baba *et al.*, 2008: 75.

Material examined.—None.

Diagnosis.—No epigastric spines. Cervical groove indistinct. Second stria with 2 plumose setae at middle. Third stria complete, uninterrupted between anteriormost spines on branchial margin. Small spine between anterolateral spine and anteriormost spine of branchial region. Anterior branchial margin with 3 spines. Rostrum slightly longer than broad, with 4 acute lateral teeth. Lateral orbital angle strongly produced. Pterygostomial flap without spine on surface. Abdominal somite 2 and 3 with 2 transverse ridges. Basal article of antennule with 3 distal spines. Mxp3 merus with 2 flexor spines (proximal one at midlength larger) and extensor distal spine. P1 with strong spines; carpus twice as long as broad, with prominent spine at midlength; fingers distally spooned.

Epipods on P1, absent on P2–3 (from Miyake & Baba, 1966a).

Size.—Males to 3.2 mm including rostrum (Baba, 1977); females to 4.0 mm including rostrum (Miyake & Baba, 1966a).

Coloration.—Overall yellowish white, carapace yellowish gray (Miyake & Baba, 1966a).

Habitat.—Subtidal to 40 m; coral reefs, and coarse sand and shells (Miyake & Baba, 1966a; Baba, 1977, 1982b, 1989).

Distribution.—Western Indian Ocean, Amboina, Lembah Strait, Obi Major, Taiwan, and Ryukyu Islands (Kume-jima, Okinawa-jima and Amami-ohshima).

Remarks.—This species was originally described from two Taiwanese specimens collected in 1932. The type material may have been lost and is not available for the present study. The description and illustrations in the original account are not detailed enough to show many of the distinguishing characters, and no further specimen has been collected from Taiwan. Thus, the morphological characters described here are based upon the material of Miyake & Baba (1966a) from the Ryukyu Islands.

Galathea pubescens Stimpson, 1858

柔毛鎧甲蝦



Fig. 105. Ovigerous female (5.9 mm), CP49.

Galathea pubescens Stimpson, 1858: 90 [type locality: Hakodate and Amami-oshima, Japan, 46–60 m]; 1907: 233.—Balss, 1913b: 11, figs. 11, 12.—Yokoya, 1933: 57.—Makarov, 1938: 88, fig. 32, 33.—Miyake in Miyake & Nakazawa, 1947: 732, fig. 2116.—Miyake, 1965: 634, fig. 1043; 1982: 145, pl. 49, fig. 3.—Tirmizi, 1966: 187.—Baba, 1969c: 48, fig. 5.—Kim, 1973: 176, fig. 20, pl. 65: figs. 6a, 6b.—Haig, 1974: 447.—Miyake, 1982: 145, pl. 49, fig. 3.—Baba, 1988: 76; 1990: 956.—Tirmizi & Javed, 1993: 72, fig. 31.—Baba, 1994: 4.—Wu *et al.*, 1998: 97, figs. 14, 21A.—Davie, 2002: 62.—Baba, 2005: 83, fig. 30, 245.—Baba *et al.*, 2008: 76.

Galathea subsquamata.—Wu *et al.*, 1998: 100, figs. 16, 21C. (not *G. subsquamata* Stimpson, 1858)

Material examined.—Dasi fishing port, Yilan County, 16 Apr 1988: 1 ovigerous female (6.3 mm) (NTOU). Nanfang-ao fishing port, Yilan County, 20 Jun 1991: 1 male (6.8 mm) (NTOU). CP49, 22°55.7'N, 121°21.6'E, 266–262 m, 2 Aug 2000: 1 ovigerous female (5.9 mm) (NTOU). CP 95, 24°55.80'N, 122°05.73'E, 269–360 m, 18 May 2001: 1 male (3.5 mm) (NTOU). CP102, 24°48.38'N, 122°07.97'E, 326–331 m, 19 May 2001: 1 ovigerous female (5.7 mm) (NTOU). CP108, 24°48.23'N, 122°07.74'E, 295–337 m, 20 May 2001: 1 female (4.6 mm) (NTOU). CP160, 22°12.98'N, 120°28.78'E, 300 m, 23 May 2002: 1 male (4.5 mm) (NTOU). CP212, 24°34.60'N, 122°5.84'E, 223–260 m, 26 Aug 2003: 1 female (5.7 mm) (NTOU). CP216, 24°34.71'N, 122°4.02'E, 209–280 m, 27 Aug 2003: 1 male (4.3 mm), 1 female (6.3 mm) (NTOU). OCP287, 24°57.522'N, 122°5.303'E, 259–349 m, 8 Aug 2005: 1 male (3.3 mm), 1 female (8.6 mm) (NTOU).

Diagnosis.—Carapace dorsally pubescent, with spinules on anterior half. Epigastric region with row of

small spines arranged in concentric arc. Anterior branchial margin with 3 spines. Rostrum sharp triangular, slightly more than 1.5 times longer than broad, lateral margin with 4 deeply incised, acute teeth. Lateral orbital angle with small spine. Pterygostomial flap unarmed. Abdominal somites 2 and 3 with 4 transverse ridges. Basal article of antennule with well-developed distodorsal and distolateral spines, distomesial spine obsolescent. Mxp3 merus with 3 spines on flexor margin, proximal one strong, distal and median spines smaller, occasionally obsolete; extensor margin with 2 spines, distal one consistent, proximal one often obsolete. P1 relatively slender; carpus 3 times longer than broad; fingers distally spooned, prehensile edges with intermeshing teeth. Epipods on P1, absent on P2–4. G1 and G2 present.

Size.—Males to 6.8 m, females to 8.6 mm (present data).

Coloration.—Base color translucent light pink or white. Carapace and anterior half of abdomen orange, whitish along lateral margin, with pale longitudinal stripe flanking midline. P1 orange, with tips of spines whitish. Eggs yellowish.

Habitat.—Green mud bottom (Baba, 1988), sand, and sandy mud (Miyake, 1982); 45–494 m.

Distribution.—Widely distributed in the Indo-West Pacific: Durban, Zanzibar, Madagascar, Western Australia, Central Queensland, New Caledonia, Arafura Sea, Bali Sea, Kei Islands, Philippines (off N Mindanao, between Cebu and Bohol, between Cebu and Leyte, E coast of Mindoro, and South China Sea off SW Luzon), Taiwan, East China Sea, Korea, and Japan (Amami-oshima, Murotozaki, S Kii Peninsula, Sagami Bay, Hakodate.).

Remarks.—The specimen reported under *G. subsquamata* by Wu *et al.* (1998) was examined. The distomesial spine on the basal segment of antennule is obsolescent, instead of well developed as in the true *G. subsquamata* Stimpson, 1858. The rostrum is broken but apparently it is referable to *G. pubescens*.

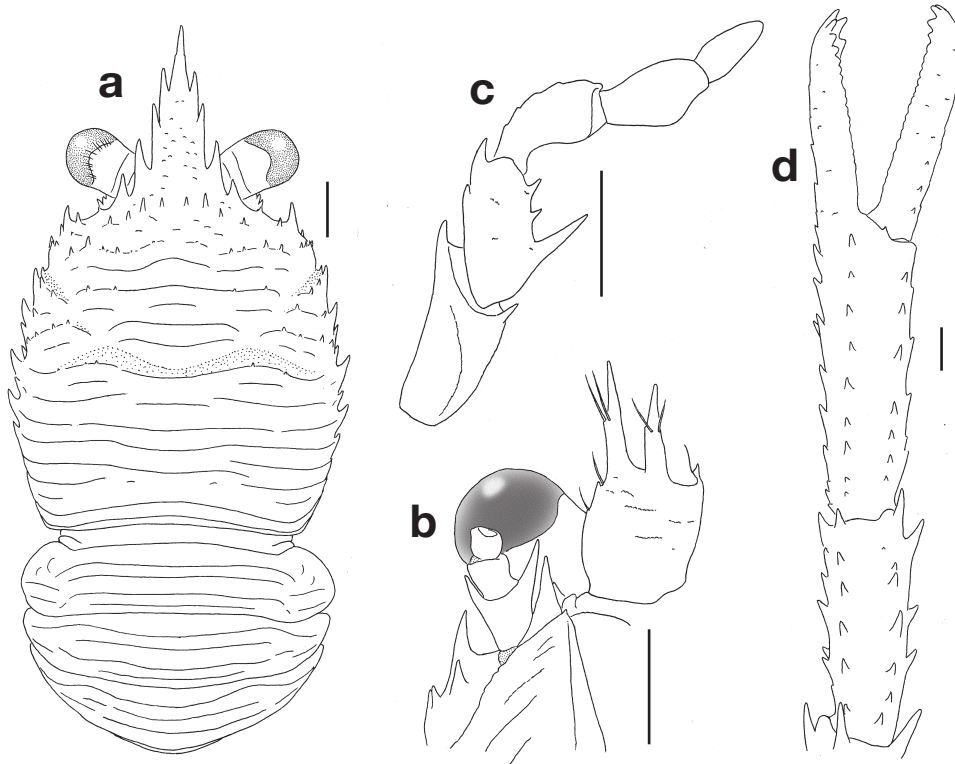


Fig. 106. Ovigerous female (5.7 mm), CP102: **a**, carapace and abdomen, eyelash omitted on right side, dorsal; **b**, anterior part of cephalothorax, showing right antennule and antenna, ventral; **c**, right Mxp3, lateral; **d**, left P1, dorsal. Scales = 1 mm.

Galathea tanegashimae Baba, 1969
種子島鎧甲蝦



Fig. 107. Ovigerous female (3.5 mm), Badouzi, Keelung City, 16 Aug 2003.



Fig. 108. Badouzi, Keelung City, 16 Aug 2003. Note the distinct white "X" mark at junction between fingers and palm.

Galathea tanegashimae Baba, 1969a: 16, fig. 4 [type locality: Off Nishino-omote, Tanega-shima Island, southern Kyushu, Japan, 15–30 m].—Lewinsohn, 1981: 182.—Tirmizi & Javed, 1993: 42, 65–66, figs 17, 28.—Ahyong, 2007: 14, fig. 7.—Baba *et al.*, 2008: 80.

Galathea spinosorostris.—Tirmizi, 1966: 181, figs 4B, 5.—Wu *et al.*, 1998: 9, figs 15, 21B.—Kawamoto & Okuno, 2003 & 2006: 95, unnumbered fig. (not *G. spinosorostris* Dana, 1852)

Material examined.—Badouzih, Keelung City, 16 Aug 2003: 2 males (2.3, 2.8 mm), 1 ovigerous female (3.5 mm), 2 females (3.0, 3.3 mm) (NTOU). Hongchaikeng, Pingtung County, 21 Mar 2005: 1 male (3.5 mm) (NTOU). South Bay, Pingtung County, 5 Dec 1985: 2 males (3.3, 3.4 mm), 1 ovigerous female (4.0 mm) (NTOU).

Diagnosis.—Epigastric region with pair of spines; no spines on hepatic dorsal surface. Gastric and branchial regions with scale-like striae in concentric arc. No complete, uninterrupted stria between anteriormost spines on branchial lateral margin. Small spine between anterolateral spine and anteriormost of branchial spines, located slightly dorsal in position. Three spines on anterior branchial margin. Rostrum broad triangular, nearly as long as broad, with 4 acute lateral teeth. Lateral orbital angle rounded. Abdominal somites 2 and 3 with 2 transverse ridges. Basal article of antennule with 3 distal spines. Mxp3 merus with 2 flexor spines (distal smaller) and 2 small extensor spines (proximal occasionally obsolete). P1 carpus twice as long as broad; fingers distally spooned, distal edge with intermeshing teeth, 3 on movable finger, 4 on fixed finger. Epipods present on P1, absent on P2–3. G1 and G2 present.

Size.—Males to 3.5 mm, females to 4.0 mm (present data).

Coloration.—Translucent reddish brown overall. Abdomen sometimes light blue with white dots. Juncture area between palm and fingers white forming a "X"- marking, fingers distally light purplish (Kawamoto & Okuno, 2003, 2006; present data).

Habitat.—Between sponges or on surface, under stones, rocks, and coral rocks (Kawamoto & Okuno, 2003, 2006); 10–165 m; 3–5 m in Taiwan.

Distribution.—Zanzibar, Somalia, E Indian Ocean, Lord Howe Rise, Taiwan, and southern Kyushu, Japan.

Remarks.—The type of *Galathea spinosorostris* Dana, 1852 is no longer extant. Examination of topotypic material (1 male, Waikiki Reef, the Hawaiian Islands, USNM 56023; 9 males, 5 ovigerous females, 2 females, 1 specimen, Honolulu, ZMUC CRU-1161-1163) shows that the Mxp3 merus bears two well-developed flexor spines, the distal of which is subequal to or rather slightly larger than the proximal spine. Also the carapace dorsal surface bears a few distinct spinules on the hepatic region. Thus, the material reported under *Galathea spinosorostris* by Wu *et al.* (1998) is undoubtedly referred to *G. tanegashimae*. At our request, Junji Okuno examined the specimens reported under *G. spinosorostris* by Kawamoto & Okuno (2003, 2006) and confirmed that they are also referable to *G. tanegashimae*.

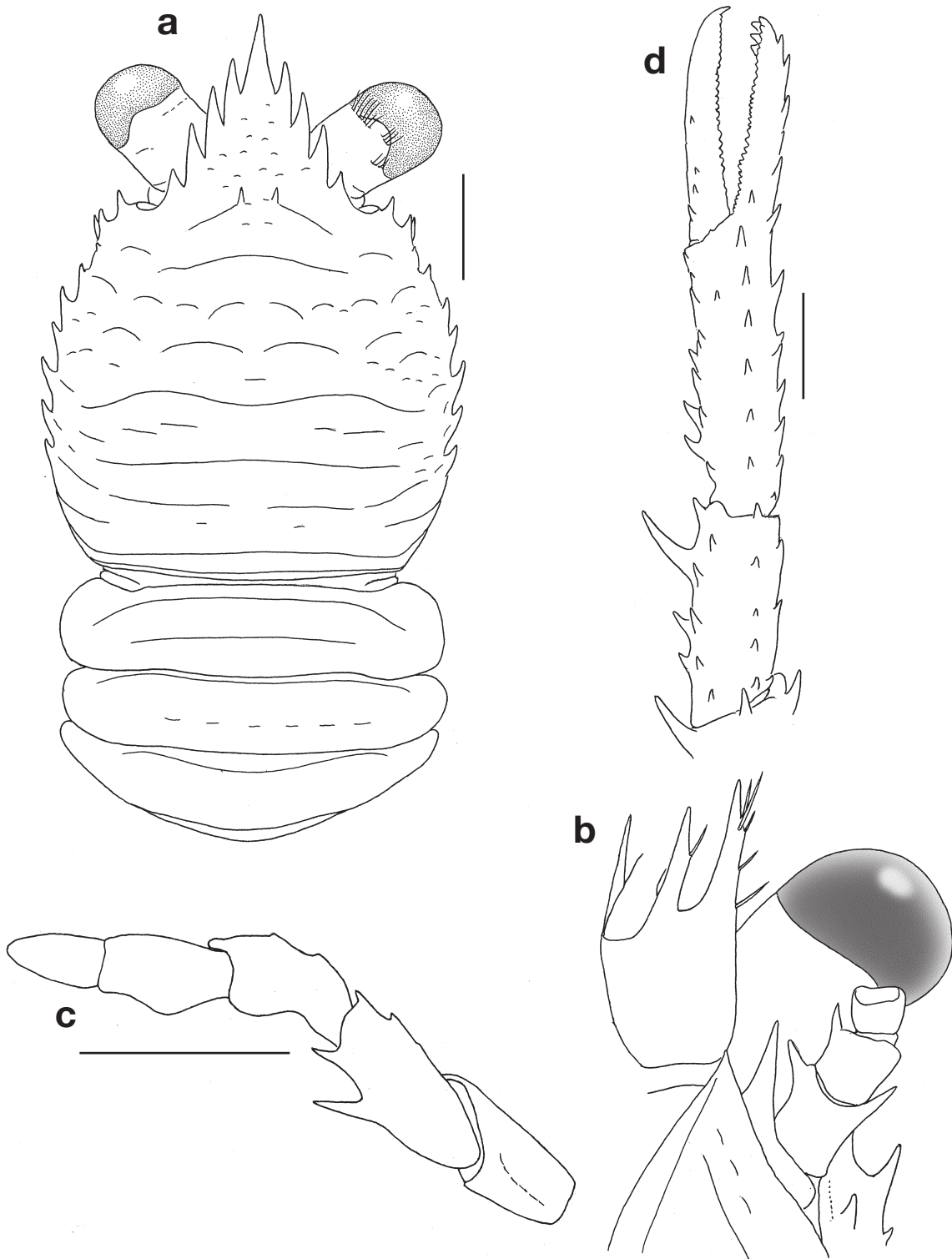


Fig. 109. Ovigerous female (3.5 mm), Badouzi, Keelung City, 16 Aug 2003: **a**, carapace and abdomen, eyelash omitted on left side, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, left Mxp3, lateral; **d**, right P1, dorsal. Scales = 1 mm.

Genus *Heteronida* Baba & de Saint Laurent, 1996

異刺鎧蝦屬

Heteronida Baba & de Saint Laurent, 1996: 474 [type species: *Bathymunida aspistrostris* Khodkina, 1981.

Gender: feminine].—Baba, 2005: 87.

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 somites 2 and 3 each with strong median process flanked by low process at lateral end of tergite. Telsonal 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. Mxp3 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 now contains three species, one of which, *H. barunae*, is here made known from Taiwan. *Heteronida aspistrostris* (Khodkina, 1981) is known from the Norfolk Ridge, New Caledonia, Loyalty Islands, Vanuatu and Tonga, and *H. clivicola* Macpherson & Baba, 2006a from French Polynesia.

Heteronida barunae Baba & de Saint Laurent, 1996

巴烏拉異刺鎧蝦

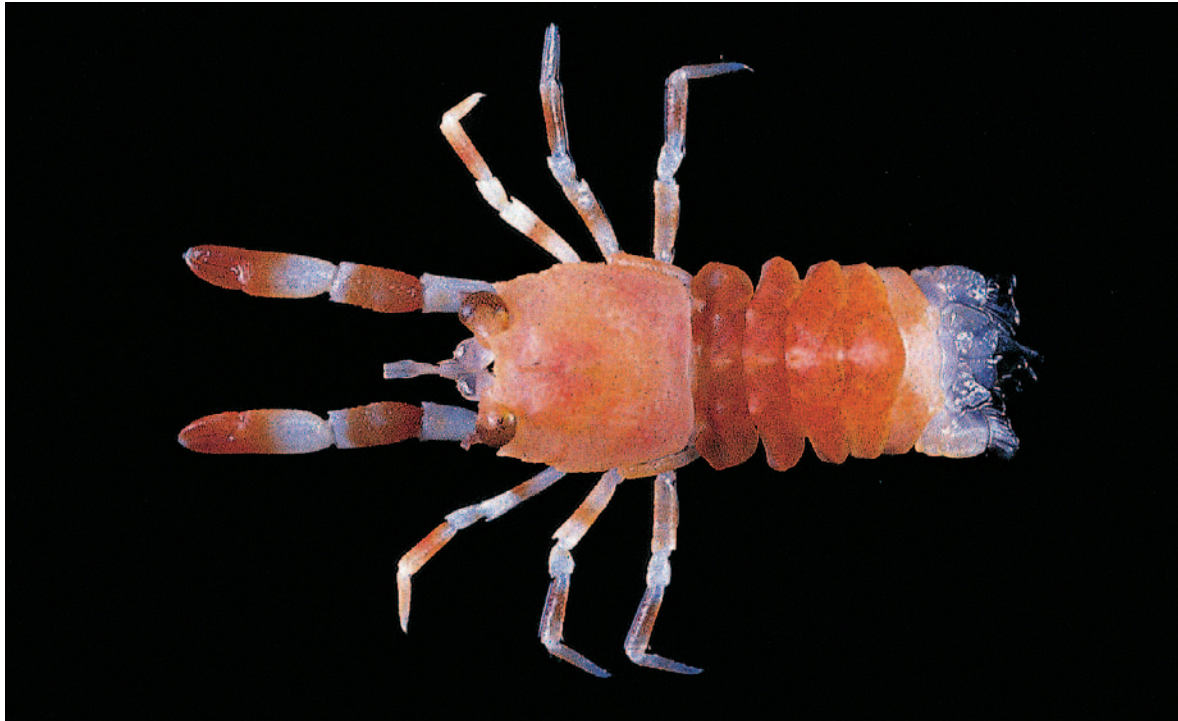


Fig. 110. Ovigerous female (3.0 mm), DW151.

Heteronida barunae Baba & de Saint Laurent, 1996: 478, figs. 3f, 24 [type locality: Kei Islands, 5°18'S, 133°01'E, 205–212 m].—Baba, 2005: 88, 246.—Baba *et al.*, 2008: 81.

Material examined.—DW149, 22°18.5'N, 121°29.37'E, 258–258 m, 20 May 2002: 1 male (2.9 mm) (NTOU). DW151, 22°18.34'N, 121°30.04'E, 301–356 m, 20 May 2002: 1 ovigerous female (3.0 mm) (NTOU).

Diagnosis.—Carapace with slightly granulose dorsal surface, without elevation on branchial region. Rostral base narrowed anteriorly, somewhat elevated laterally, middorsally without dorsal ridge. Epigastric spines rudimentary, papilla-like, flanking anterior median ridge never extending anteriorly onto rostral base. Sternites 3 and 4 not strongly depressed. Abdomen with weak sculptures, somite 4 without median process. Pereopods moderately granulose. P1 carpus longer than fingers; fingers ending in sharp incurved spine to cross each other when closed. P2 merus 0.6 carapace length; P2–4 dactyli relatively slender, flexor margin with 6 spines, ultimate spine located about at 1/5 point from distal end.

Size.—Males to 2.9 mm, females to 3.0 mm (present data).

Coloration.—Male: Carapace and abdomen with diffuse orange red markings; pereopods much paler orange; P1 fingers, median third of propodus and proximal portions of P2–4 meri deep orange. Female: Base color pale yellow. Abdominal somites 1–5 orange red. P1 fingers and distal half of palm, nearly entire carpus, proximal half of P2–4 propodi and meri orange red. The color note for a female specimen in preservative (alcohol) provided by Baba & de Saint Laurent (1996) seems to fit the coloration of the male from Taiwan and suggests that the above-noted differences are merely individual variations.

Habitat.—Substrates unknown; 205–356 m.

Distribution.—Kei Islands (Indonesia) and Taiwan.

Remarks.—The present material constitutes the first record for the species from Taiwan. The species is easily distinguished from the other two species by the rostrum having no distinct carina along the dorsal midline.

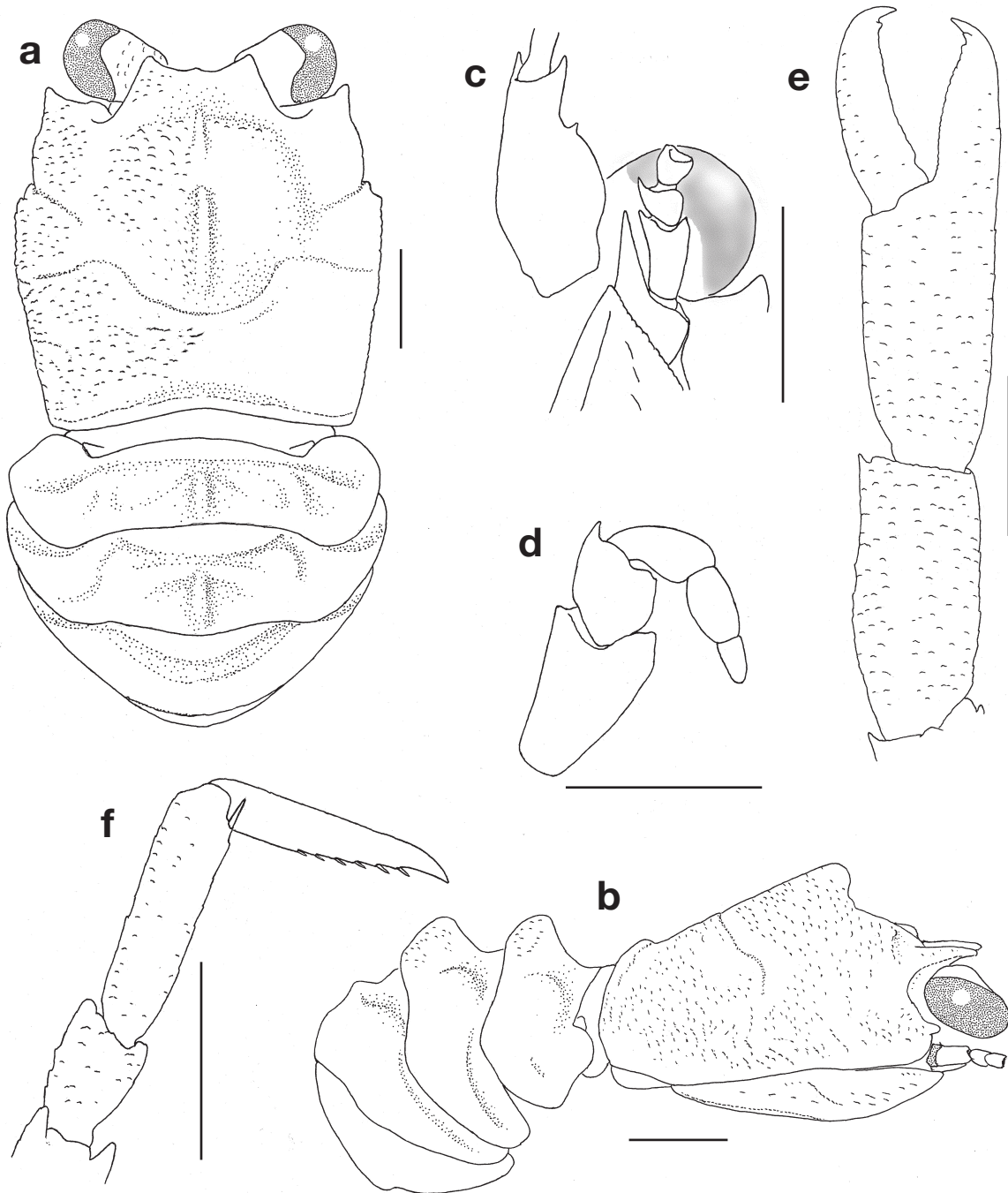


Fig. 111. Ovigerous female (3.0 mm), DW151: **a**, carapace and abdomen, dorsal; **b**, same, lateral; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, right Mxp3, lateral; **e**, right P1, dorsal; **f**, right P2, proximal part omitted, lateral. Scales = 1 mm.

Genus *Leiogalathea* Baba, 1969

滑鎧蝦屬

Leiogalathea Baba, 1969a: 2 [type species: *Galathea laevirostris* Balss, 1913. Gender: feminine].—Baba, 2005: 88.

Diagnosis.—Carapace dorsally with a few uninterrupted transverse striae and coarse setae, laterally with a few spines. Rostrum flattish, triangular, lateral teeth 1 or 2 in number, usually obsolescent. Lateral limit of orbit rounded. Sternite 3 relatively short, anterolaterally produced; anterior margin of sternite 4 broad, contiguous to entire posterior margin of preceding sternite. Abdomen unarmed; telsonal subdivision nearly complete; two pairs of male gonopods. Ocular peduncles short relative to breadth, cornea not dilated. Basal article of antennule with distolateral and distodorsal spines only. Mxp3 merus with strong spine on flexor median margin and distinct spine on extensor distal margin. Pereopods with stiff long setae. P1 spinose. P2–4 dactyli with row of distinct flexor teeth, ultimate tooth prominent.

Remarks.—The genus contains two species, one of which occurs in the Indo-West Pacific and is now found from Taiwan. The other species, *Leiogalathea agassizii* (A. Milne Edwards, 1880), is from the western and eastern Atlantic.

Leiogalathea laevirostris (Balss, 1913)
光額滑鎧蝦



Fig. 112. Male (3.9 mm), DW45, body reddish brown.



Fig. 113. Male (4.6 mm), DW45, body orangish.

Galathea laevirostris Balss, 1913a: 221 [type locality: Sombrero Channel, Nicobar Islands, 805 m].—Doflein & Balss, 1913: 140, fig. 7, pl. 12: fig. 1.—Laurie, 1926: 135.

Galathea imperialis Miyake & Baba, 1967b: 213, figs. 1, 2 [type locality: WSW of Jogashima, Sagami Bay, 160–230 m].

Leiogalathea imperialis.—Baba, 1969a: 3.

Liogalathea [lapsus] *laevirostris*.—Baba, 1990: 961.

Leiogalathea laevirostris.—Baba, 1991: 487.—Poupin, 1996b: 20, 21 (fig. h).—Baba, 2005: 88, 246.—Ahyong, 2007: 14, fig. 8.—Baba *et al.*, 2008: 83, fig. 4C.

Material examined.—DW5, 22°40.5'N, 119°56.5'E, 213–236 m, 27 Jul 2000: 1 male (3.9 mm), 1 female (2.0 mm) (NTOU). DW45, 22°48.3'N, 121°27.4'E, 423–439 m, 2 Aug 2000: 2 males (4.6, 5.6 mm), 3 females (2.6–4.1 mm) (NTOU). CP107, 24°48.18'N, 122°11.31'E, 335–420 m, 20 May 2001: 1 female (3.4 mm) (NTOU). DW149, 22°18.5'N, 121°29.37'E, 258–258 m, 20 May 2002: 2 males (3.0, 3.3 mm), 1 ovigerous female (3.8 mm) (NTOU). DW151, 22°18.34'N, 121°30.04'E, 301–356 m, 20 May 2002: 6 males (3.3–4.7 mm), 1 ovigerous female (2.9 mm), 1 juvenile (2.5 mm) (NTOU). DW 156, 21°27.06'N, 120°42.13'E, 342–367 m, 21 May 2002: 1 ovigerous female (3.2 mm) (NTOU).

Diagnosis.—Carapace dorsally with long coarse setae, transverse striae poorly developed, usually interrupted but median stria uninterrupted. Lateral margins with 3 spines: anterolateral spine, spine directly behind end of anterior cervical groove (occasionally obsolete), and mid-branchial marginal spine (occasionally obsolete). Lateral limit of orbit not angular but rounded. Rostrum triangular, flattish, lateral teeth obsolescent. Sternite 3 relatively short, 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. Mxp3 merus having flexor margin with strong median spine, extensor margin with distinct distal spine but much smaller than flexor spine. P1 relatively massive and very spinose, with long stiff setae, fingers slightly longer than palm. Epipods absent from all pereopods.

Size.—Males to 5.6 mm, females to 4.1 mm (present data).

Coloration.—Base color reddish orange to pale yellow orange. Carapace and anterior half of abdomen pale orange; pereopods with orange or orange red bands; P1 occasionally totally orange with orange red bands, fingers white at tip.

Habitat.—Corals and sponges, sand, and mud (Baba, 2005); 160–812 m.

Distribution.—Madagascar, Amirante, Nicobar Islands, New Caledonia, Hunter and Matthew Islands, Norfolk Ridge, New South Wales, Tuamotu Archipelago, Kei Islands, Taiwan, and Japan (Sagami Bay).

Remarks.—This species is reported for the first time from Taiwan. The two species included in the genus share most morphological features but *L. laevirostris* seems to be less spinose on the carapace lateral margin. As in the case of *Uroptychus scambus* and *U. brevipes*, the two species of *Leiogalathea* morphologically represent a species pair and molecular data may help to clarify their relationships.

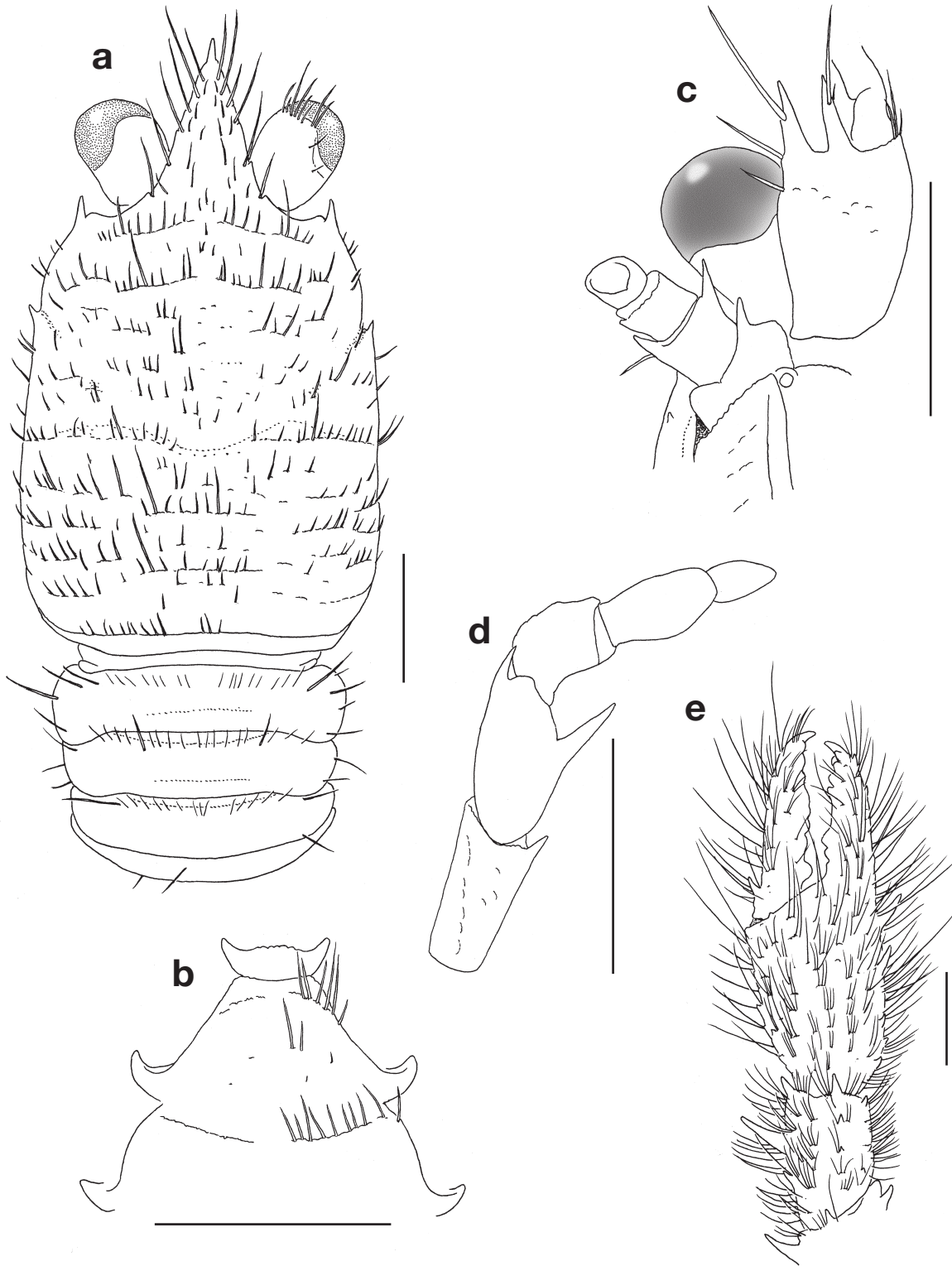


Fig. 114. Female (3.4 mm), CP107: **a**, carapace and abdomen, eyelash omitted on left side, dorsal; **b**, anterior part of sternal plastron; **c**, anterior part of cephalothorax, showing right antennule and antenna, ventral; **d**, right Mxp3, lateral; **e**, right P1, dorsal. Scales = 1 mm.

Genus *Munida* Leach, 1820

刺鎧蝦屬

Munida Leach, 1820: 52 [type species: *Pagurus rugosus* Fabricius, 1775. Gender: feminine].—Henderson, 1888: 123 (part).—Ortmann, 1894: 24.—Alcock, 1901: 237 (part).—Stebbing, 1910: 364.—Doflein & Balss, 1913: 141.—Schmitt, 1921: 164 (part).—Chace, 1942: 32.—Barnard, 1950: 488 (part).—Zariquiey Álvarez, 1968: 281.—Squires, 1970: 408.—Tirmizi & Javed, 1993: 89 (part).—Poore, 2004: 232.—Baba, 2005: 88.

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; 3–5 spines on branchial region. Rostral base with spiniform rostral spine flanked by supraocular spines. Abdominal somites with setiferous transverse striae; G1 and G2 present. Telsonal subdivision incomplete. Eyes 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. Mxp3 slender, ischium elongate, merus with spine(s) on flexor margin. P2–4 spinose, relatively slender; flexor margin of dactyli with row of seta-like spines each arising from very low, small process. Eggs small and numerous.

Remarks.—The genus *Munida* contains 242 species, 176 of which are found in the Pacific Ocean, 43 in the Atlantic Ocean and 26 in the Indian Ocean (Baba *et al.*, 2008). Twenty-seven of these species occur in Taiwan (with four of them also found in Dongsha), mostly along the continental shelf and slope. Fourteen species are newly recorded from Taiwan.

Key to species of *Munida* from Taiwan

1. Three or 4 spines on branchial margin of carapace 2
— Five spines on branchial margin of carapace 4
2. No granules and carinae on posterolateral part of sternal plastron *M. psamathe*
— Granules or carinae on posterolateral part of sternal plastron 3
3. Carinae on posterolateral part of sternal plastron *M. rufiantennulata*
— Granules on posterolateral part of sternal plastron *M. albiapicula*
4. Corneal width slightly more than, equal to or less than distance between sinus formed by supraocular and rostral spines 5
— Corneal width distinctly more than distance between sinus formed by supraocular and rostral spines 7
5. Abdominal somite 2 unarmed *M. tiresias*
— Abdominal somite 2 armed with spines on anterior ridge 6
6. Distomesial spine of P1 merus long, reaching midlength of carpus. P1 setose *M. crassa*
— Distomesial spine of P1 merus short, clearly not reaching midlength of carpus. P1 not setose *M. typhle*
7. Granules on posterolateral part of sternal plastron 8
— No granules on posterolateral part of sternal plastron 9
8. Abdominal somite 3 with pair of spines on anterior ridge *M. armata*
— Abdominal somite 3 unarmed *M. distiza*
9. Abdominal somite 3 with 1 or 2 pairs of spines on anterior ridge 10
— Abdominal somite 3 unarmed 13
10. Abdominal somite 4 with pair of spines on anterior ridge *M. gillii*
— Abdominal somite 4 unarmed 11

11. 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*
 — Distomesial spine of antennal article 1 reaching end of article 2; distomesial spine of article 2 without accompanying spine 12
12. Supraocular spines overreaching end of cornea. P1 movable finger with mesioproximal spine only *M. asprosoma*
 — Supraocular spines barely reaching proximal end (in midline) of cornea. P1 movable finger with spines between mesioproximal spine and distal end *M. kuboii*
13. Abdominal somite 2 unarmed or with spines restricted to lateral parts of anterior ridge 14
 — Abdominal somite 2 with pair of submedian spines or additional spines distributed along anterior ridge .. 18
14. Distal spines of antennular basal article unequal in size *M. leptitis*
 — Distal spines of antennular basal article subequal 15
15. P2-4 dactyli with spines along entire length of flexor margin *M. spilota*
 — P2-4 dactyli unarmed at least on distal part of flexor margin 16
16. Abdominal somite 2 with 2 spines on each side of anterior ridge *M. japonica*
 — Abdominal somite 2 unarmed on anterior ridge 17
17. Sternite 3 with anterior margin weakly bilobed, posterior margin broader than anterior margin of sternite 4 *M. caesura*
 — Sternite 3 with anterior margin produced into 2 distinct lobes, posterior margin narrower than anterior margin of sternite 4 *M. pherusa*
18. Rostrum laterally compressed *M. compressa*
 — Rostrum spiniform 19
19. Distomesial and distolateral spines of antennular basal article subequal in size 20
 — Distomesial and distolateral spines of antennular basal article distinctly unequal in size.. 24
20. Distomesial spine of antennal article 1 overreaching article 3 21
 — Distomesial spine of antennal article 1 not overreaching article 3 22
21. P2 dactylus unarmed on nearly distal half of flexor margin *M. striola*
 — P2 dactylus unarmed on distal 1/4 of flexor margin *M. oritea*
22. P2 dactylus unarmed on distal part of flexor margin *M. punctata*
 — P2 dactylus with movable spines nearly along entire flexor margin 23
23. P1 fixed finger with subterminal spine(s) only on lateral margin *M. andamanica*
 — P1 fixed finger with spine(s) in addition to subterminal spine(s) on lateral margin *M. thoe*
24. Distomesial spine of antennular basal article much shorter than distolateral spine 25
 — Distomesial spine of antennular basal article much longer than distolateral spine 26
25. Length of P2 dactylus more than half propodus length *M. militaris*
 — Length of P2 dactylus less than half propodus length *M. rupicola*
26. Rostral spine with pronounced setae on dorsal surface *M. pilorhyncha*
 — Rostral spine smooth, without pronounced setae on dorsal surface *M. agave*

Munida agave Macpherson & Baba, 1993

阿蓋芙刺鎧蝦

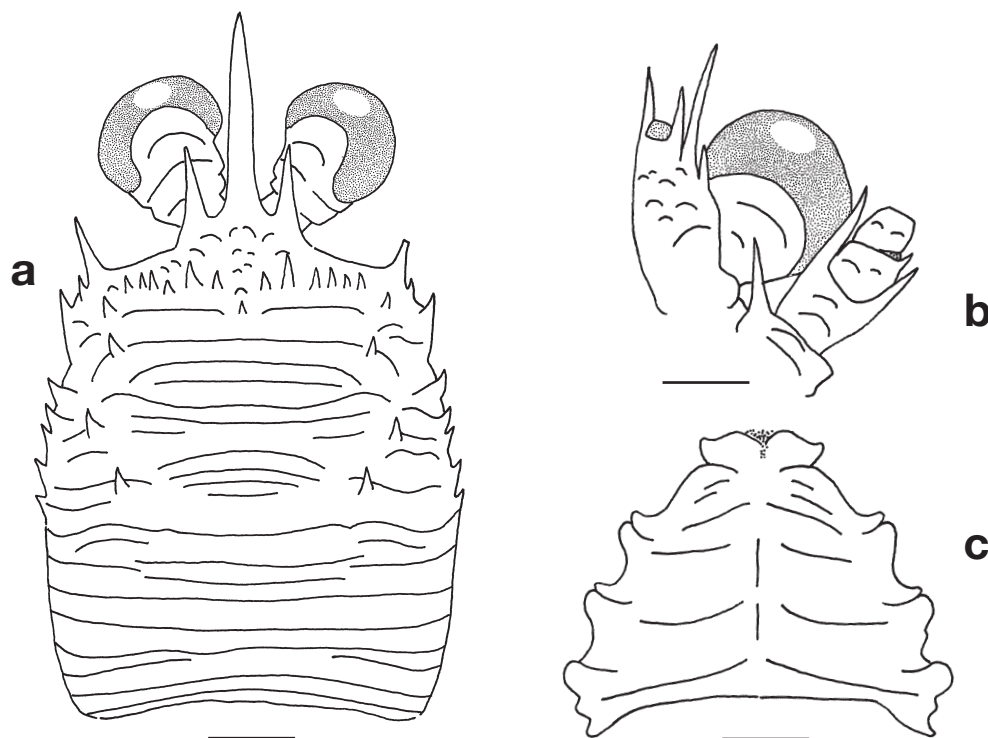


Fig. 115. Male (6.4 mm), Donggang fishing port, Pingtung County, 22 Sep 2004: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, sternal plastron. Scales = 1 mm.

Munida agave Macpherson & Baba, 1993: 387, figs 1, 2 [type locality: Philippines, 13°32.3'N, 121°07.5'E, 130–137 m].—Macpherson, 1997: 603.—Komai, 2000: 354.—Baba, 2005: 89, 258.

Material examined.—Dasi, Yilan County, 9 Sep 1984: 1 male (10.3 mm) (NTOU).—2 May 1985: 1 male (8.3 mm) (NTOU).—7 July 1985: 3 males (7.2–10.0 mm) (NTOU). Donggang fishing port, Pingtung County, 22 Sep 2004: 3 males (5.7–6.4 mm), 1 female (6.5 mm) (NTOU).

Diagnosis.—Rostrum spiniform; supraocular spines subparallel, barely reaching midlength of rostrum. Sternites 4–5 with arcuate striae. Abdominal somite 2 with 3 pairs of spines on anterior ridge. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. 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. Mxp3 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. P2–4 dactyli having flexor margin with 6 spines on proximal 2/3.

Size.—Males to 12.7 mm; females to 9.7 mm, ovigerous from 5.3 mm (Macpherson & Baba, 1993).

Coloration.—Not recorded.

Habitat.—Substrates unknown; 89–549 m.

Distribution.—Indonesia, Philippines, Taiwan, and Japan.

Remarks.—*Munida agave* is new to Taiwan but very rare, being more common in Philippine waters.

Munida albiapicula Baba & Yu, 1987

白頂刺鎧蝦

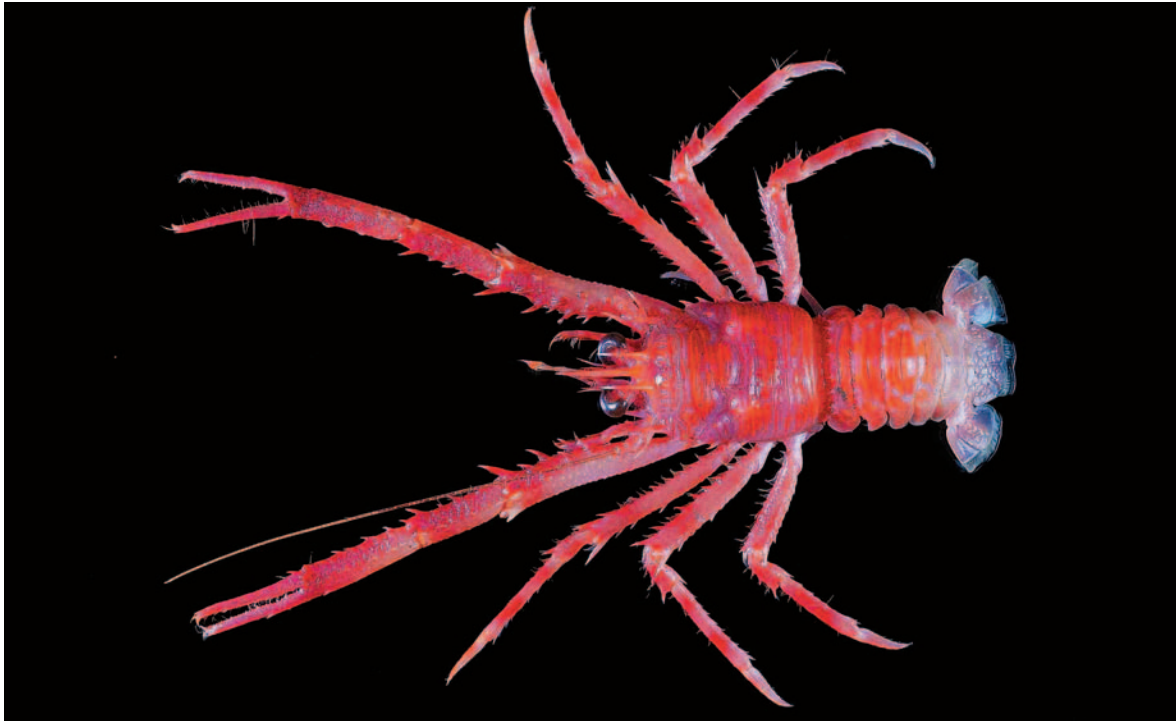


Fig. 116. Female (14.3 mm), Dasi fishing port, Yilan County, 14 Oct 2004.

Munida albiapicula Baba & Yu, 1987: 331, figs 1, 2 [type locality: NE coast of Taiwan, 50–450 m].—Wu *et al.*, 1998: 103, figs 17, 21D, E.—Komai, 2000: 354.—Baba, 2005: 258.

Material examined.—Dasi fishing port, Yilan County, 16 Jun 1985: male holotype (20.7 mm) (NTOU).—Nov 1988: 1 female (16.9 mm).—25 Feb 1997: 1 ovigerous female (11.4 mm) (NTOU).—14 Oct 2004: 1 female (14.3 mm) (NTOU).—21 Oct 2004: 2 males (14.4, 15.0 mm) (NTOU).—9 Mar 2005: 1 male (11.2 mm), 1 ovigerous female (9.0 mm) (NTOU). Nanfang-ao fishing port, Yilan County, 22 May 1990: 1 female (11.7 mm) (NTOU).—8 Mar 2001: 1 male (18.2 mm) (NTOU). Donggang fishing port, Pingtung County, 2 Apr 1992: 2 males (9.9, 11.5 mm) (NTOU).—1 Mar 2001: 1 male (8.8 mm) (NTOU).—11 Aug 2003: 1 male (10.3 mm) (NTOU).—3 Dec 2003: 1 male (14.3 mm) (NTOU). CP171, 22°13.89'N, 120°30.37'E, 195 m, 27 May 2002: 1 female (12.3 mm) (NTOU).

Diagnosis.—Carapace with 4 spines on lateral branchial margin. Abdominal somite 2 with spines on anterior ridge. Thoracic sternites with few striae; lateral parts of sternites 6–7 with granules. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Distomesial spine of antennular basal article slightly longer than distolateral. Distomesial spine of antennal article 1 exceeding article 3, distomesial spine of article 2 overreaching antennal peduncle. Mxp3 merus unarmed on extensor distal margin. P1 fixed finger with 1 proximal and 1 subterminal spine only. P1 fingers with proximal and distal spines. P2–4 dactyli clearly shorter than propodi; flexor margin of dactyli with row of spinules, unarmed on distal third.

Size.—Males to 20.7 mm, females to 16.9 mm, ovigerous from 9.0 mm (present data).

Coloration.—Orange red. Tips of supraocular spines whitish. Tailfan and distal portion of P2–4 pale.

Habitat.—Substrates not recorded; 50–450 m.

Distribution.—Taiwan.

Remarks.—*Munida albiapicula* is restricted to Taiwanese waters, though additional sampling from adjacent waters is needed to confirm its geographical range.

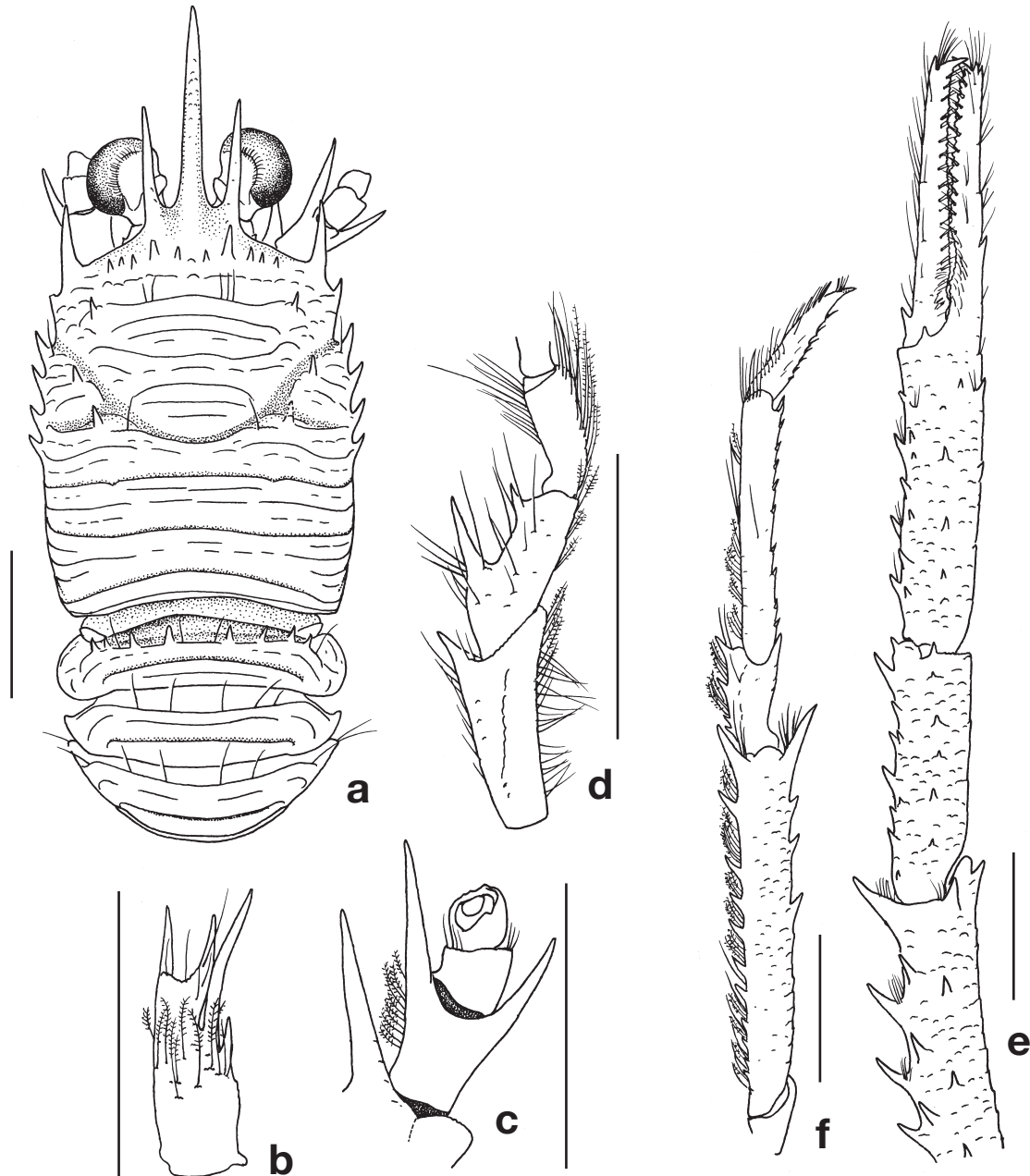


Fig. 117. Male holotype (20.7 mm), Dasi fishing port, Yilan County, 16 Jun 1985: **a**, carapace and abdomen, dorsal; **b**, basal article of left antennule, ventral; **c**, left antennal peduncle, ventral; **d**, proximal three segments of left Mxp3, lateral; **e**, right P1, proximal part omitted, dorsal; **f**, right P2, lateral. Scales = 5 mm (after Baba & Yu, 1987).

Munida andamanica Alcock, 1894

安達曼刺鎧蝦



Fig. 118. Female (11.7 mm), CP268.

Munida militaris var. *andamanica* Alcock, 1894: 321 [type locality: Andaman Sea, 11°31'40"N, 92°46'6"E, 344–403 m].—Alcock & Anderson, 1895: pl. 13, fig. 2.

Munida militaris var. *curvirostris*.—Henderson, 1888: 139 (part). (not *M. curvirostris* Henderson, 1885)

Munida andamanica.—Alcock, 1901: 242.—Lloyd, 1907: 2.—Kemp & Sewell, 1912: 25.—Balss, 1913b: 17.—Doflein & Balss, 1913: 143.—Parisi, 1917: 1.—Yokoya, 1933: 63.—Takeda, 1982: 51, fig. 152.—Miyake, 1982: 149, pl. 50, fig. 1.—Baba, 1982a: 103.—Baba in Baba *et al.*, 1986: 169, 289, fig. 119.—Baba, 1988: 85.—Tirmizi & Javed, 1993: 115, figs 50–53.—Komai, 2000: 354.—Baba, 2005: 90, figs 33–35, 258.—Poore *et al.*, 2008: 19.

Munida curvatura Benedict, 1902: 253, fig. 5 [type locality: off Honshu, Japan (4.5 miles SE of Manazuru Zaki, Sagami Bay), 280 m].

Munida curvirostris.—Baba & Macpherson, 1991: 538 (part).—Baba, 1994a: 9. (not *Munida curvirostris* Henderson, 1885)

Not *Munida andamanica*.—Tirmizi, 1966: 198. (= *M. africana* Balss, 1913, *M. sp.*)

Material examined.—Nanfang-ao fishing port, Yilan County, 8 Apr 1999: 1 ovigerous female (13.7 mm) (NTOU). CP268, 24°30.46'N, 122°06.28'E, 421–531 m, 27 May 2002: 1 female (11.7 mm) (NTOU). No specific locality, 21 Apr 1995: 1 ovigerous female (15.2 mm) (NTOU).

Diagnosis.—Rostrum spiniform. Five spines on branchial margin of carapace. Abdominal somite 2 with 6 or more spines on anterior transverse ridge and with at most 4 transverse ridges. Thoracic sternites smooth,

sternite 4 with narrow anterior margin. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Distomesial and distolateral spines of antennular basal article subequal in size. Distomesial spine of antennular article 1 not overreaching article 3. Mxp3 merus unarmed on extensor distal margin. P1 fixed finger with subterminal spine(s) only on lateral margin. P2–4 carpi each with 4 spines on dorsal ridge; dactyli much more than half length of propodi, with movable spines nearly along entire flexor margin and having ultimate flexor marginal spine (movable) much closer to penultimate spine than to tip of terminal claw.

Size.—Males to 32.0 mm, females to 32.7 mm, ovigerous females from 15.2 mm, all including rostrum (Baba in Baba *et al.*, 1986; Baba, 2005).

Coloration.—Carapace, anterior part of the abdomen (somites 1–3), and appendages orange, posterior half of the abdomen including the tailfan white. Base of the rostrum deep orange, subdistal part of supraocular spines whitish. P1 fingers white. P2–4 dactyli and distal half of propodi white, with reddish tips (see also Miyake, 1982; Baba in Baba *et al.*, 1986).

Habitat.—Mud, sand and clay (Baba, 2005); 141–1360 m.

Distribution.—Off S Mozambique, off E coast of Somali Republic, Arabian Sea in the neighborhood of the Laccadives and Maldives, SW India, Andaman Sea, off Central Queensland and SW Australia, Indonesia, Philippines, Taiwan, and Japan.

Remarks.—*Munida andamanica* is very closely related to *M. curvirostris* Henderson, 1885, from the Philippines. The two species can be distinguished by the following differences: the sternite 4 has a narrow anterior margin in *M. andamanica*, whereas this margin is broader in *M. curvirostris*. Furthermore, the P2–4 dactyli have the ultimate flexor marginal spine much closer to the penultimate spine than to the tip of the terminal claw in *M. andamanica*, whereas this spine is equidistant between the penultimate spine and the tip of the terminal claw in *M. curvirostris*. The present species is reported for the first time from Taiwan.

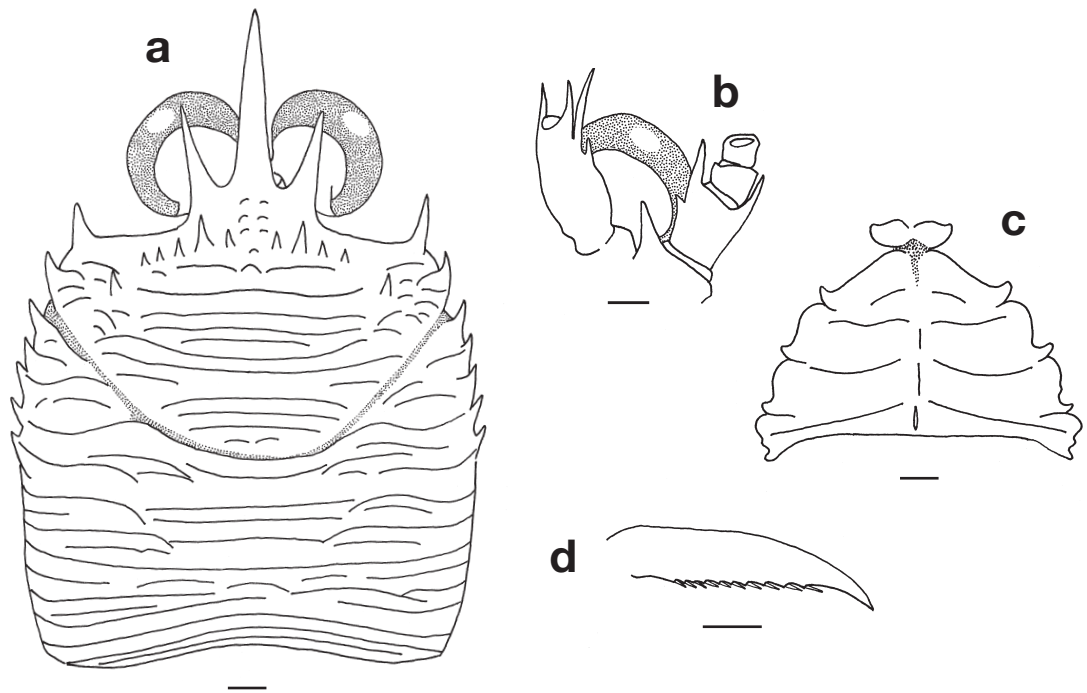


Fig. 119. Female (11.7 mm), CP268: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, sternal plastron; **d**, right P2 dactylus, lateral. Scales = 1 mm.

Munida armata Baba, 1988
武装刺鎧蝦



Fig. 120. Ovigerous female (10.8 mm), Dasi fishing port, Yilan County, 21 May 1988.



Fig. 121. Ovigerous female (10.8 mm), Dasi fishing port, Yilan County, 21 May 1988, ventral view showing egg color.

Munida armata Baba, 1988: 86, fig. 31 [type locality: South China Sea off SW Luzon, 14°N, 120°22'30"E, 216 m].—Macpherson, 1993a: 427.—Macpherson, 1997: 603.—Wu *et al.*, 1998: 105, figs 18, 21F.—Komai, 2000: 354.—Baba, 2005: 259.

Material examined.—Dasi fishing port, Yilan County, 14 July 1985: 1 male (12.0 mm) (NTOU).—21 May 1988: 1 ovigerous female (10.8 mm) (NTOU).—27 May 1997: 1 female (17.2 mm) (NTOU).

Diagnosis.—Rostrum spiniform. Five spines on branchial margin of carapace. Abdominal somite 2 with spines on anterior transverse ridge; somite 3 with pair of submedian spines on anterior transverse ridge. Granules on posterolateral part of sternal plastron. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Mxp3 merus unarmed on extensor distal margin. Distomesial and distolateral spines of antennular basal article subequal in size. Distomesial spine of antennal article 1 not overreaching article 3. P1 fingers with several proximal spines. P2–4 dactyli with spines along flexor margin.

Size.—Males to 17.9 mm, females to 17.2 mm, ovigerous females from 10.8 mm (Macpherson, 1993a; present data).

Coloration.—Ground color of carapace and abdominal segments orange. P1–4 orange, with transverse red bands. Eggs dark purple.

Habitat.—Mud and mud mixed with shells and coral sand (Baba, 1988); 174 to 216 m.

Distribution.—Indonesia, South China Sea off SW Luzon, Philippines, and Taiwan.

Remarks.—*Munida armata* is a rare species in Taiwan and it is only collected on the upper slope.

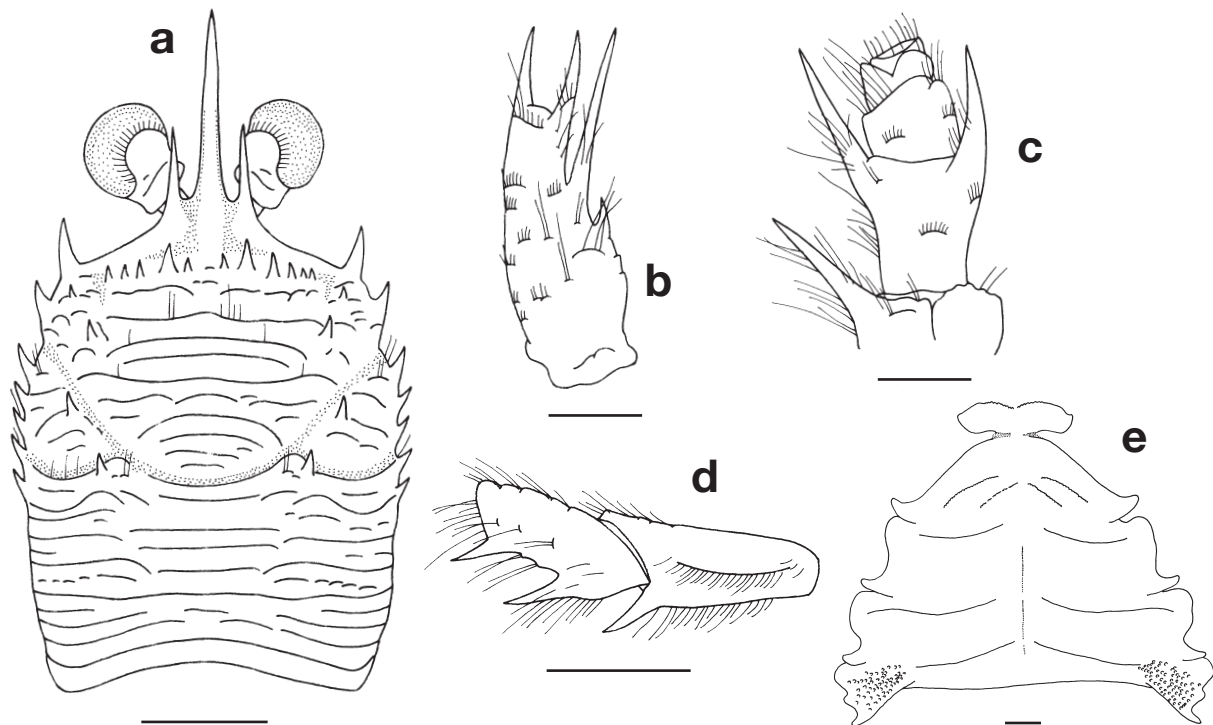


Fig. 122. Ovigerous female (10.8 mm), Dasi fishing port, Yilan County, 21 May 1988, a–d (after Wu *et al.*, 1998); female (17.2 mm), Dasi fishing port, Yilan County, 27 May 1997: **a**, carapace, dorsal; **b**, basal article of left antennule, ventral; **c**, left antennal peduncle, ventral; **d**, ischium and merus of left Mxp3, lateral; **e**, sternal plastron. Scales: a = 3 mm; b, c, e = 1 mm; d = 2 mm.

Munida asprosoma Ahyong & Poore, 2004
白身刺鎧蝦



Fig. 123. Male (10.5 mm), CP300, body pinkish.



Fig. 124. Female (14.4 mm), CD210, body orangish.



Fig. 125. Female (14.4 mm), PCP445, body reddish.

Munida militaris.—Jones & Morgan, 2002: 135. (not *M. militaris* Henderson, 1885)

Munida asprosoma Ah Yong & Poore, 2004b: 20, fig. 3 [type locality: E of Broken Bay, New South Wales, 33°35–33'S, 152°00–02'E, 823 m].—Poore, 2004: 233, fig. 64a.—Baba, 2005: 259.—Poore *et al.*, 2008: 19.

?*Munida microps*.—Baba, 1994: 13.—Macpherson, 1999: 421.—Davie, 2002: 65 (part). (not *M. microps* Alcock, 1894)

Material examined.—CP23, 22°14.8'N, 120°02.8'E, 880–1070 m, 29 Jun 2000: 1 male (8.7 mm) (NTOU). CP55, 24°26.9'N, 122°18.1'E, 638–824 m, 4 Aug 2000: 1 male (15.1 mm), 1 female (14.2 mm) (NTOU). CP134, 22°16.56'N, 120°6.11'E, 736–1040 m, 22 Nov 2001: 4 males (6.9–11.7 mm), 1 ovigerous female (8.8 mm) (NTOU). CD136, 22°17.75'N, 120°0.87'E, 1211–998 m, 11 Nov 2001: 4 males (10.3–10.5 mm) (NTOU). CD141, 22°12.04'N, 119°59.96'E, 1110–985 m, 24 Nov 2001: 1 male (11.6 mm), 1 female (11.9 mm) (NTOU). CD142, 22°21.64'N, 120°13.44'E, 355–277 m, 24 Nov 2001: 2 ovigerous females (11.4, 11.6 mm) (NTOU). CD145, 24°19.05'N, 122°13.09'E, 1642–1802 m, 19 May 2002: 1 male (8.7 mm) (NTOU). CD192, 22°17.19'N, 120°01.01'E, 960–1302 m, 28 Aug 2002: 1 female (10.7 mm) (NTOU). CD210, 24°28.99'N, 122°12.79'E, 500–1183 m, 1 Jun 2003: 11 males (6.1–14.5 mm), 4 ovigerous females (10.3–13.4 mm), 11 females (9.3–14.4 mm) (NTOU). CD214, 24°28.59'N, 122°12.66'E, 490–1027 m, 27 Aug 2003: 11 males (9.4–15.8 mm), 17 females (11.4–16.2 mm) (NTOU). CP235, 25°22.95'N, 122°43.63'E, 765–806 m, 22 Jul 2004: 1 female (18.3 mm) (NTOU). CP300, 22°17.156'N, 119°59.963'E, 960–972 m, 11 Aug 2005: 11 males (7.9–12.9 mm), 1 ovigerous female (11.5 mm), 3 females (11.3–11.8 mm) (NTOU). CP332, 22°17.145'N, 120°0.318'E, 961–1026 m, 5 Oct 2005: 11 males (7.4–13.3 mm), 4

ovigerous females (10.5–12.3 mm), 2 females (8.7, 9.7 mm) (NTOU). PCP333, 22°16.502'N, 120°2.242'E, 889–1037 m, 5 Oct 2005: 1 male (10.7 mm) (NTOU). PCP334, 22°16.713'N, 120°0.114'E, 994–975 m, 5 Oct 2005: 4 males (9.3–13.8 mm), 2 ovigerous females (10.4, 12.5 mm), 2 females (6.7, 11.3 mm) (NTOU). PCP341, 22°11.707'N, 120°10.483'E, 824–779 m, 7 Mar 2006: 6 males (7.7–14.3 mm), 3 ovigerous females (11.3–11.9 mm) (NTOU). PCP343, 22°15.699'N, 120°2.131'E, 945–1059 m, 8 Mar 2006: 1 male (12.6 mm) (NTOU). CP 371, 24°28.521'N, 122°12.821'E, 582–613 m, 26 Aug 2006: 1 male (14.1 mm), 7 females (11.6–17.6 mm) (NTOU). CP362, 22°15.594'N, 120°02.156'E, 945–1052 m, 23 Aug 2006: 2 females (11.4, 12.1 mm) (NTOU). PCP400, 22°15.989'N, 120°02.165'E, 921–972 m, Nov 2006: 2 males (9.3, 13.1 mm), 1 ovigerous female (10.2 mm) (NTOU). PCP445, 22°17.102'N, 120°0.167'E, 982–999 m, 14 Jul 2008: 13 males (7.6–14.1 mm), 8 females (6.6–14.4 mm) (NTOU).

Diagnosis.—Five spines on branchial margin of carapace. Rostrum spiniform, supraocular spines overreaching end of cornea. Abdominal somite 2 with spines distributed along anterior ridge, somite 3 with 1 or 2 pairs of spines on anterior ridge. Sternite 4 subtriangular, with anterior margin narrowly contiguous to sternite 3; no granules on posterolateral part of sternal plastron. Eyes moderately large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Distomesial spine of antennular basal article much shorter than distolateral spine. Distomesial spine of antennal article 1 reaching end of article 2; distomesial spine of article 2 without accompanying spine. Mxp3 merus unarmed on extensor margin. P1 movable finger with mesioproximal spine only. P2–4 dactyli with spines along entire flexor margin.

Size.—Males to 19.8 mm, females to 18.3 mm, ovigerous females from 8.8 mm (present data; Macpherson, 1999, as *M. microps*).

Coloration.—Carapace and abdominal segments 2–3 reddish or pinkish. Abdominal somites 4–6 and tailfan usually whitish. Rostrum and supraocular spines whitish. P1–4 reddish or pinkish. Proximal part of P1 finger whitish, distal part reddish or pinkish. Distal part of P2–4 propodi and dactyli whitish, distal part of dactyli reddish. Some specimens with P1–4 reddish or pinkish. Eggs reddish.

Habitat.—Mud; 277–1802 m.

Distribution.—New South Wales, Queensland, SW Australia, Vanuatu, and Taiwan.

Remarks.—This species is reported for the first time from Taiwan, though it seems to be quite common in deep waters.

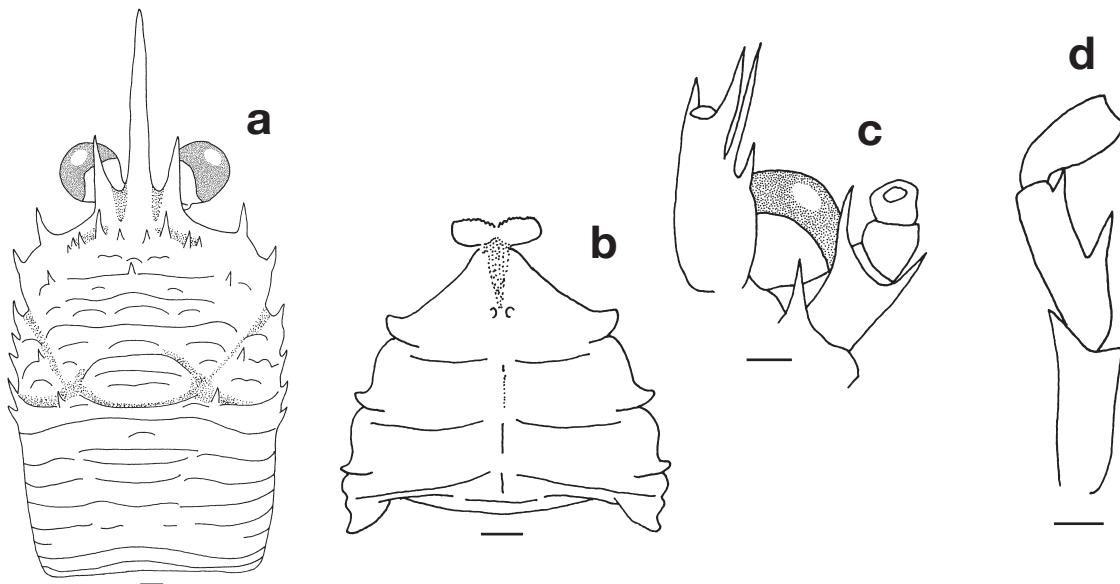


Fig. 126. Male (15.1 mm), CP55: **a**, carapace, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, ischium, merus and carpus of right Mxp3, lateral. Scales: a, b = 5 mm; c, d = 1 mm.

Munida caesura Macpherson & Baba, 1993
截斷刺鎧蝦



Fig. 127. Dasi fishing port, Yilan County, 19 Oct 1995, body orangish-red.



Fig. 128. Female (11.5 mm), Dasi fishing port, Yilan County, 3 Jul 1995, body pale orange.

Munida caesura Macpherson & Baba, 1993: 388, fig. 3 [type locality: Tosa Bay, Japan, between 250–300 m].—Macpherson, 1997: 603.—Wu *et al.*, 1998: 108, figs 20, 21H.—Baba, 2005: 96, 260.
Munida caesula (sic).—Komai, 2000: 354.

Material examined.—Dasi fishing port, Yilan Country, 3 Jul 1995: 1 female (11.5 mm) (NTOU).—19 Oct 1995: 15 males (9.1–15.1mm), 3 females (10.5–12.5 mm) (NTOU). Nanfangao fishing part, Yilan County, 2 May 1985: 1 female (13.0 mm) (NTOU). CP134, 22°16.56'N, 120°06.11'E, 730–1040 m, 22 Nov 2001: 2 males (7.6, 14.5 mm) (NTOU). CD135, 22°17.21'N, 120°0.28'E, 961–1112 m, 22 Nov 2001: 1 male (9.2 mm) (NTOU). CD136, 22°07.75'N, 120°0.87'E, 1211–998 m, 22 Nov 2001: 1 male (7.9 mm) (NTOU). CP137, 22°12.92'N, 120°25.93'E, 316–477 m, 23 Nov 2001: 1 ovigerous female (10.4 mm) (NTOU). CD141, 22°12.04'N, 119°59.96'E, 1110–985 m, 24 Nov 2001: 4 males (7.8–13.5 mm), 1 ovigerous female (11.1 mm), 1 female (6.7 mm) (NTOU). CD210, 24°28.99'N, 122°12.79'E, 500–1183 m, 1 Jun 2003: 1 female (6.6 mm) (NTOU). CD235, 25°22.95'N, 122°43.63'E, 765–806 m, 22 Jul 2004: 3 males (7.1–12.4 mm), 2 females (4.3, 8.1 mm) (NTOU). CP300, 22°17.156'N, 119°59.963'E, 960–972 m, 11 Aug 2005: 26 males (4.0–11.6 mm), 16 females (5.0–11.1 mm) (NTOU). PCP339, 22°10.813'N, 120°14.763'E, 843–831 m, 7 Mar 2006: 9 males (7.1–10.8 mm), 7 ovigerous females (7.6–11.5 mm), 2 females (6.7, 9.3 mm) (NTOU). PCP342, 22°16.648'N, 119°59.960'E, 988–1010 m, 8 Mar 2006: 2 males (7.8, 8.2 mm) (NTOU). PCP343, 22°15.699'N, 120°02.131'E, 945–1059 m, 8 Mar 2006: 1 male (8.9 mm) (NTOU). PCP400, 22°15.989'N, 120°02.165'E, 921–972 m, 6 Nov 2007: 1 male (10.0 mm) (NTOU).

Diagnosis.—Carapace with numerous transverse striae, intestinal region with scale-like stria. Frontal margin oblique in small specimens, less so in large specimens. Anterolateral spines nearly reaching sinus between rostral and supraocular spines. Abdominal somites unarmed. Sternal plastron with numerous striae; sternite 3 with anterior margin weakly bilobed, posterior margin broader than anterior margin of sternite 4. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Terminal spines of antennular basal article subequal. Article 1 of antennal peduncle having distomesial spine overreaching article 3; article 2 with distomesial spine overreaching article 4. Mxp3 merus with 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 seta-like spines, unarmed on distal fourth of length but a subterminal spine arising from base of distal corneous portion of article.

Size.—Males to 14.5 mm; females to 13.0 mm; ovigerous females from 7.6 mm (present data).

Coloration.—Ground color of carapace and abdominal somites orange to orange red. P1 distributed with many red dots, red dots sometimes also distinct on P2–4. Tips of P1 fingers whitish.

Habitat.—Sand, mud, and hard bottom (Baba, 2005); 156–1211 m.

Distribution.—Indonesia, Philippines, South China Sea (Dongsha), Taiwan, and Japan.

Remarks.—This species is rather common in Taiwanese waters. *Munida caesura* is closely related to *M. japonica* and *M. pherusa*. The adults of these species are easily distinguished from each other, e.g. by the shape of the sternites 3 and 4, and the armature of the abdominal somite 2. However, small specimens are often very similar and easily misidentified.

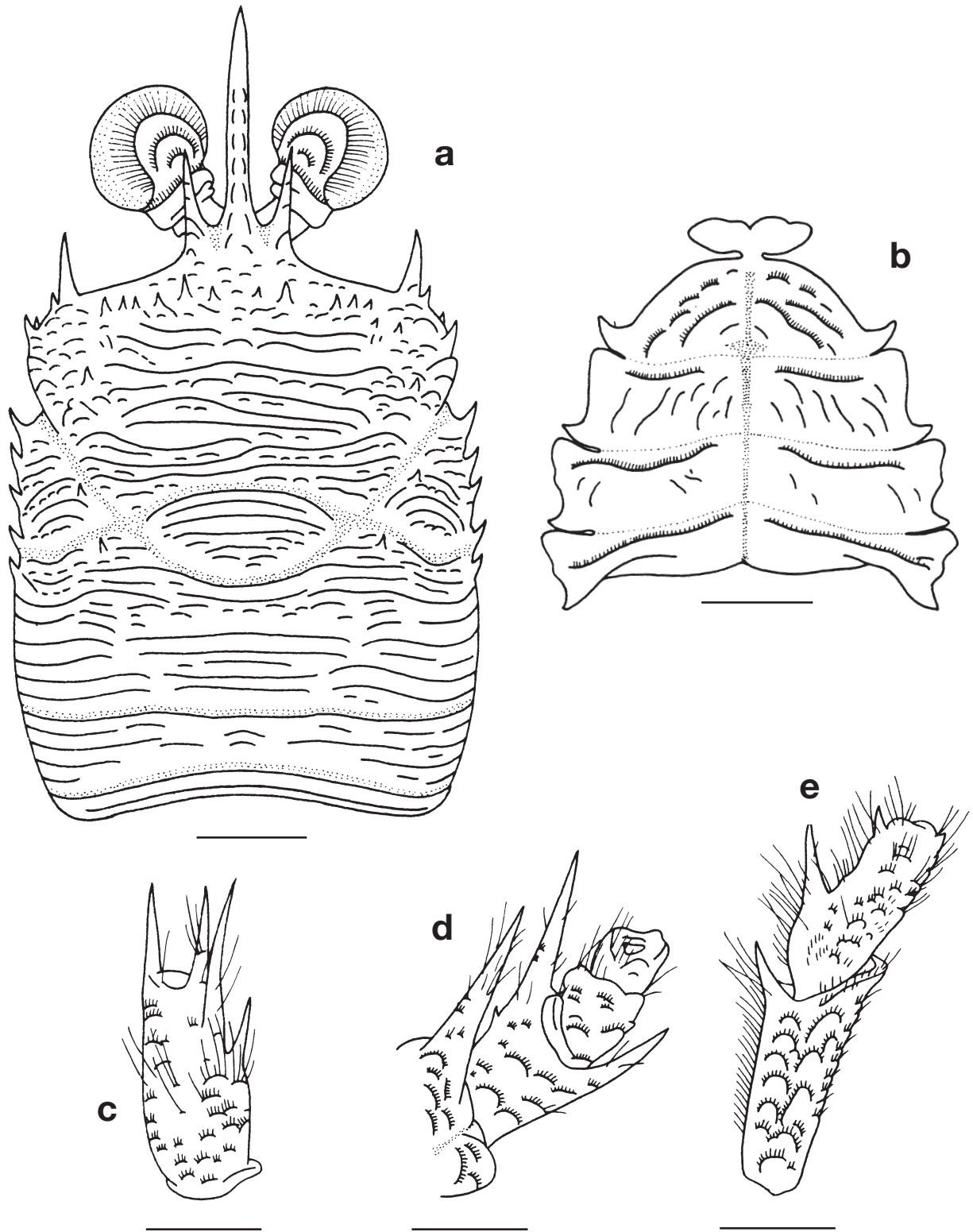


Fig. 129. Male (14.7 mm), Dasi fishing port, Yilan County, 19 Oct 1995: **a**, carapace, dorsal; **b**, sternal plastron; **c**, basal article of left antennule, ventral; **d**, left antennal peduncle, ventral; **e**, ischium and merus of left Mxp3, lateral. Scales: a, b = 3 mm; c–e = 2 mm (after Wu *et al.*, 1998).

Munida compressa Baba, 1988
緊湊刺鎧蝦



Fig. 130. Male (13.1 mm), Nanfang-ao fishing port, Yilan County, 28 Dec 1995.



Fig. 131. Male (10.2 mm), Nanfang-ao fishing port, Yilan County, 10 Apr 1991, fingers of chelipeds red.



Fig. 132. Male (11.4 mm), Dasi fishing port, Yilan County, 5 Jun 1991, carapace with pair of posterolateral red spots.



Fig. 133. Male (14.1 mm), CP269, mid posterodorsal carapace whitish.

Munida compressa Baba, 1988: 91, figs 33, 34 [type locality: Moluccas off W coast of Halmahera, 545 m].—Macpherson, 1993a: 427.—Macpherson, 1997: 606.—Wu *et al.*, 1998: 111, figs 22, 26A–C.—Komai, 2000: 354.—Baba, 2005: 99, 261.

Material examined.—Dasi fishing port, Yilan County, 5 Jun 1991: 1 male (11.4 mm) (NTOU).—9 Dec 2002: 2 ovigerous females (13.7, 13.8 mm) (NTOU).—17 Dec 2004: 1 male (12.4 mm) (NTOU).—4 Apr 2005: 1 ovigerous female (14.6 mm) (NTOU). Nanfang-ao fishing port, Yilan County, 16 Mar 1985: 2 females (12.0, 12.1 mm) (NTOU).—2 May 1985: 1 male (10.2 mm) (NTOU).—10 Apr 1991: 1 male (10.2 mm) (NTOU).—8 Feb 1993: 1 male (12.7 mm) (NTOU).—28 Dec 1995: 2 males (12.1, 12.9 mm) (NTOU).—10 Mar 2005: 1 male (13.2 mm), 1 female (12.9 mm) (NTOU). CP137, 22°12.92'N, 120°25.93'E, 316–477 m, 23 Nov 2001: 2 females (8.9, 10.2 mm) (NTOU). CP170, 22°12.09'N, 120°24.50'E, 330–405 m, 27 May 2002: 1 male (11.4 mm), 1 female (13.6 mm) (NTOU). CP269, 24°30.55'N, 122°05.78'E, 399–397 m, 2 Sep 2004: 2 males (13.5, 14.1 mm), 3 females (11.1–12.6 mm) (NTOU).

Diagnosis.—Carapace lateral margin with 5 spines on branchial region. Rostrum strongly compressed laterally, curving dorsally. Abdominal somite 2 with 8 spines. Sternites with few striae. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Basal article of antennule with subequal terminal spines. Mxp3 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. P2–4 dactyli with movable spinules along entire flexor margin.

Size.—Males to 14.8 mm; females 14.6 mm; ovigerous females from 9.5 mm (present data; Macpherson, 1993a).

Coloration.—Ground color of carapace and abdominal somites orange, sometimes with red spots on posterolateral angles of carapace or P1 fingers. Rostrum with distal red spot. P2–4 dactyli whitish. Sometimes carapace with large white patch.

Habitat.—Usually on sandy bottoms, occasionally mixed with shells or pebbles or mud (Baba, 1988); 180–668 m.

Distribution.—Arafura Sea, Kei Islands, Moluccas off W coast of Halmahera, South China Sea off SW Luzon, Philippines, off Zamboanga, off Hong Kong, Dongsha, Taiwan, and Japan.

Remarks.—In Taiwanese waters *M. compressa* is the only representative of the genus with the rostrum strongly compressed laterally and curving dorsally.



Fig. 134. Male (12.7 mm), Nanfang-ao fishing port, Yilan County, 8 Feb 1990: **a**, carapace, dorsal; **b**, basal article of left antennule, ventral; **c**, left antennal peduncle, ventral; **d**, ischium and merus of left Mxp3, lateral. Scales: a = 3 mm; b–d = 2 mm (after Wu *et al.*, 1998).

Munida crassa Baba, 1982
厚重刺鎧蝦



Fig. 135. CP300.



Fig. 136. Female (6.6 mm), CD210, body pinkish.

Munida crassa Baba, 1982a: 107, fig. 3 [type locality: East China Sea W of Osumi-gunto, 770–800 m].—Baba in Baba *et al.*, 1986: 169, 289, fig. 120.—Baba, 2005: 261.

Material examined.—CP134, 22°16.56'N, 120°06.11'E, 730–1040 m, 22 Nov 2001: 2 males (7.6, 14.5 mm) (NTOU). CD135, 22°17.21'N, 120°0.28'E, 961–1112 m, 22 Nov 2001: 1 male (9.2 mm) (NTOU). CD136, 22°07.75'N, 120°0.87'E, 1211–998 m, 22 Nov 2001: 1 male (7.9 mm) (NTOU). CP137, 22°12.92'N, 120°25.93'E, 316–477 m, 23 Nov 2001: 1 ovigerous female (10.4 mm) (NTOU). CD141, 22°12.04'N, 119°59.96'E, 1110–985 m, 24 Nov 2001: 4 males (7.8–13.5 mm), 1 ovigerous female (11.1 mm), 1 female (6.7 mm) (NTOU). CD210, 24°28.99'N, 122°12.79'E, 500–1183 m, 1 Jun 2003: 1 female (6.6 mm) (NTOU). CD235, 25°22.95'N, 122°43.63'E, 765–806 m, 22 Jul 2004: 3 males (7.1–12.4 mm), 2 females (4.3, 8.1 mm) (NTOU). CP300, 22°17.156'N, 119°59.963'E, 960–972 m, 11 Aug 2005: 26 males (4.0–11.6 mm), 16 females (5.0–11.1 mm) (NTOU). PCP339, 22°10.813'N, 120°14.763'E, 843–831 m, 7 Mar 2006: 9 males (7.1–10.8 mm), 7 ovigerous females (7.6–11.5 mm), 2 females (6.7, 9.3 mm) (NTOU). PCP342, 22°16.648'N, 119°59.960'E, 988–1010 m, 8 Mar 2006: 2 males (7.8, 8.2 mm) (NTOU). PCP343, 22°15.699'N, 120°02.131'E, 945–1059 m, 8 Mar 2006: 1 male (8.9 mm) (NTOU). PCP400, 22°15.989'N, 120°02.165'E, 921–972 m, 6 Nov 2007: 1 male (10.0 mm) (NTOU).

Diagnosis.—Five spines on branchial margin of carapace. Rostrum spiniform. Abdominal somite 2 with spines distributed along anterior ridge. Anterior margin of sternite 4 clearly narrower than sternite 3. No granules on posterolateral part of sternal plastron. Cornea small, width slightly more than or equal to distance between sinus formed by supraocular and rostral spines, and about 1/4 distance between anterolateral spines. Distomesial spine of antennular basal article much shorter than distolateral spine. Distomesial spine of antennal article 2 never reaching end of article 4. Mxp3 merus unarmed on extensor margin. P1 carpus at most 1.7 times as long as broad; fixed finger with 1 or 2 distinct spines other than proximal and subterminal spines. P2 dactylus much more than half length of propodus, with movable spines along entire length of flexor margin.

Size.—Males to 14.5 mm; females to 11.5 mm; ovigerous females from 7.6 mm (present data).

Coloration.—Ground color of body and appendages pink or light orange. Anterolateral spines of carapace sometimes orange. Distal half of P1 fingers deeper in color.

Habitat.—Substrates not recorded, probably mud; 316–1211 m.

Distribution.—Taiwan and East China Sea (Okinawa Trough and west of Osumi-gunto, Japan).

Remarks.—This is the first record of *M. crassa* from Taiwan.

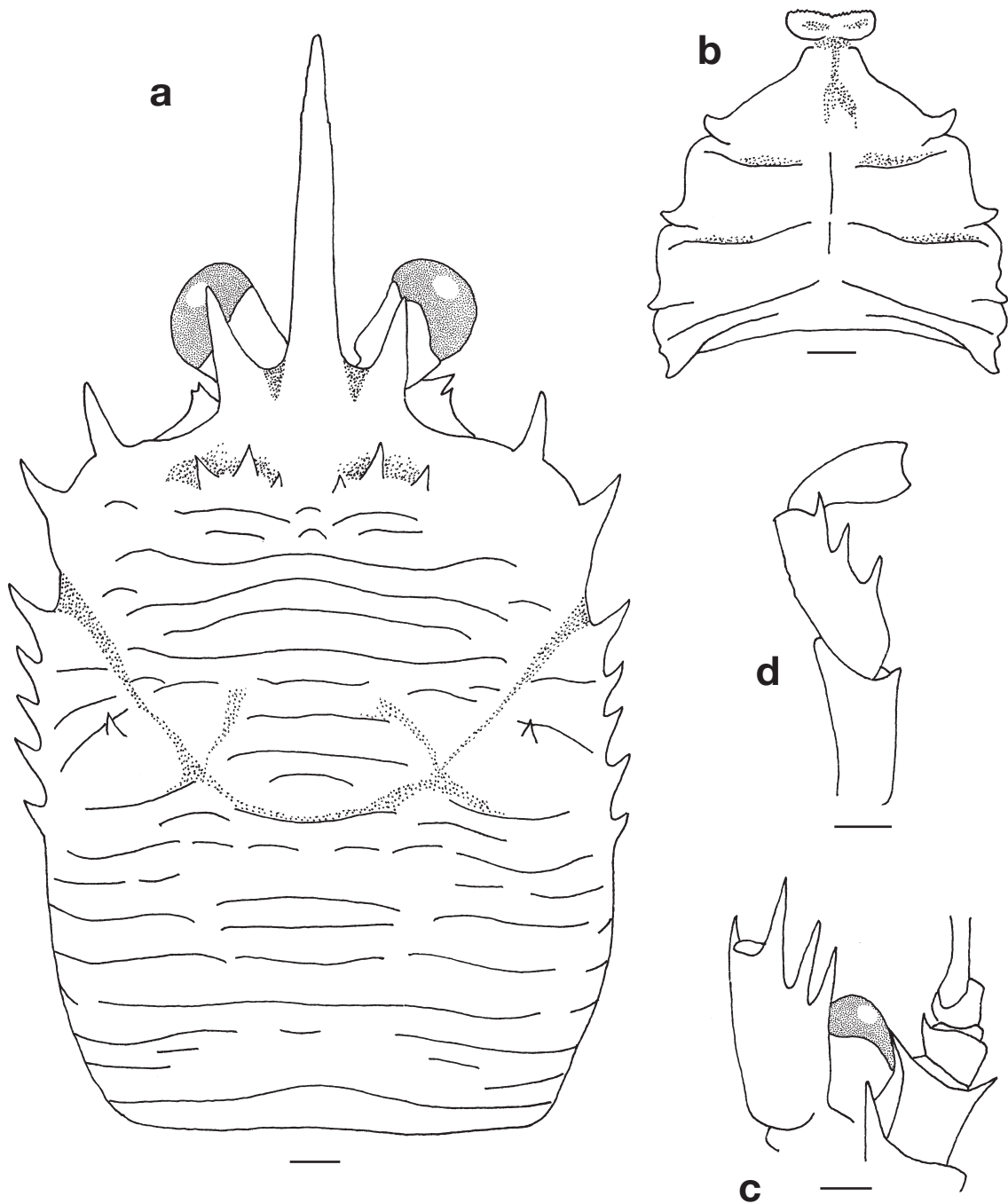


Fig. 137. Male (7.6 mm), CP134: **a**, carapace, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, ischium, merus and carpus of right Mxp3, lateral. Scales: a, b = 5 mm; c, d = 1 mm.

Munida distiza Macpherson, 1994

雙斑刺鎧蝦



Fig. 138. Male (7.1 mm), CP58.

Munida distiza Macpherson, 1994: 459, figs 14, 68, 69 [type locality: New Caledonia, 24°42.85'S, 168°09.73'E, 271 m].—Poupin, 1996b: 22, 23 (figs b, c).—Baba, 2005: 261.—Macpherson, 2006a: 308.

Material examined.—Donggang fishing port, Pingtung County 22 Sep 2004: 1 ovigerous female (11.3 mm) (NTOU). CP58, 24°26.9'N, 122°81.1'E, 638–824 m, 4 Aug 2000: 1 male (7.1 mm) (NTOU).

Diagnosis.—Five spines on branchial margin of carapace. Rostrum spiniform. Abdominal somite 2 with spines distributed along anterior ridge. Anterior margin of sternite 4 slightly narrower than sternite 3. Granules on posterolateral part of sternal plastron. Cornea moderately large, width more than distance between sinus formed by supraocular and rostral spines, and about 1/3 distance between anterolateral spines. Distomesial spine of antennular basal article longer than distolateral spine. Distomesial spine of antennal basal article exceeding article 2; distomesial spine of article 2 exceeding article 4. Mxp3 merus unarmed on extensor margin. P1 carpus twice longer than broad; movable and fixed fingers with row of spines along mesial and lateral borders, respectively (not in Taiwan specimens). P2 dactylus about half length of propodus, with movable spines along entire length of flexor margin (not in Taiwan specimens).

Size.—Males to 20.5 mm; females to 18.4 mm; ovigerous females from 10.5 mm (Macpherson, 1994, 2006).

Coloration.—Ground color of body and appendages orange, striae reddish. Rostrum and anterolateral spines orange. P1–4 with transverse whitish and orange bands; P1 merus with red spot on distolateral portion; distal part of P1 and P2–4 dactyli whitish. Thoracic sternites red (Macpherson, 1994).

Habitat.—Substrates not recorded, probably mud; 150–824 m.

Distribution.—Taiwan, New Caledonia, Philippines, Loyalty Islands, Matthew & Hunter Islands, and French Polynesia (Tuamotu and Austral Archipelagos).

Remarks.—*Munida distiza* is reported from Taiwan for the first time. The Taiwanese specimens show some differences compared with the type material, e.g. spinulation and shape of P2–4 dactyli. Additional analyses will confirm the taxonomic status of these specimens.

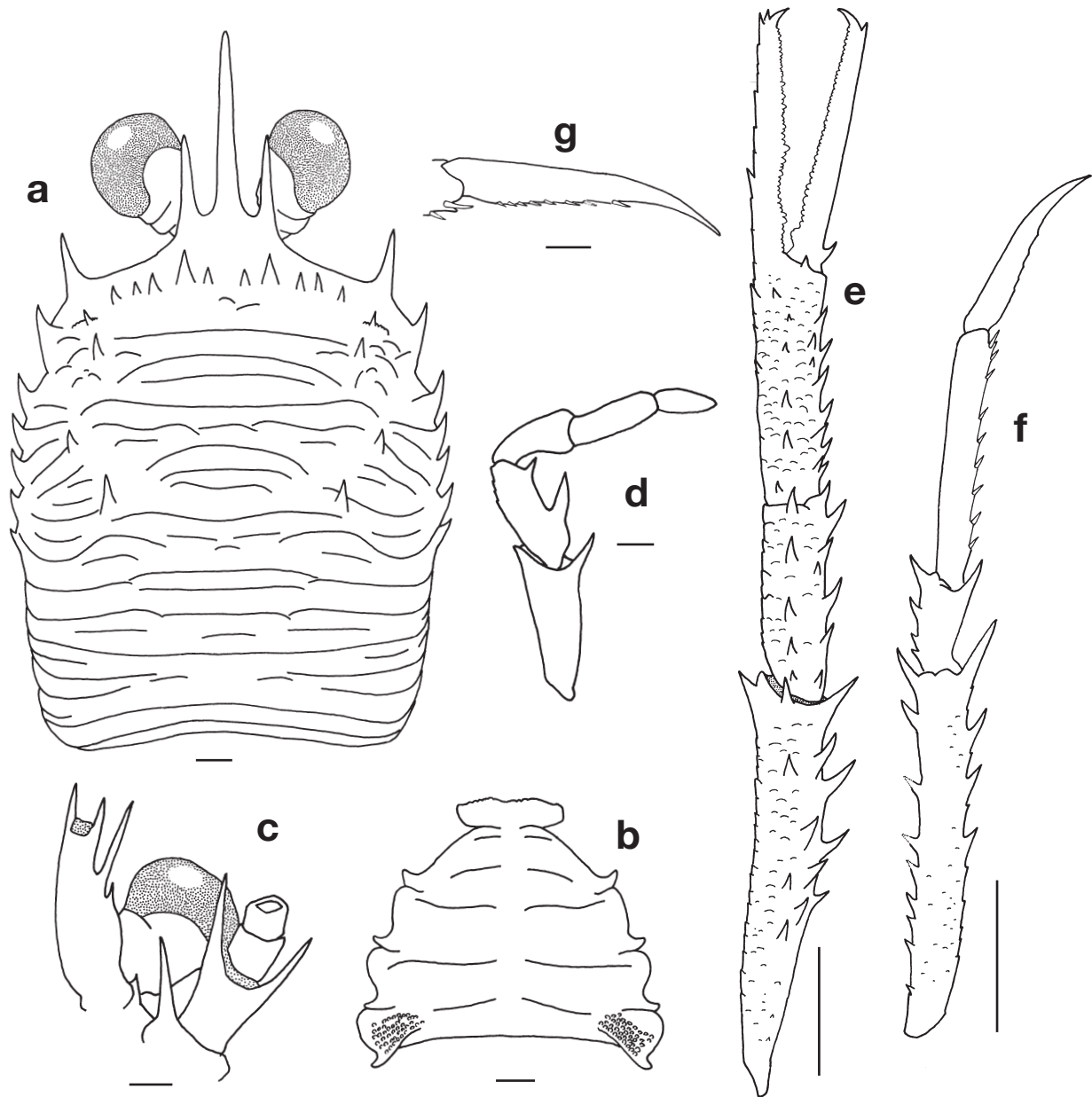


Fig. 139. Ovigerous female (11.3 mm), Donggang fishing port, Pingtung County, 22 Sep 2004: **a**, carapace, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, right Mxp3, lateral; **e**, left P1, dorsal; **f**, right P2, lateral; **g**, right P2 dactylus, lateral. Scales: a–d, g = 1mm; e, f = 5mm.

Munida gili Macpherson, 1993

嘉氏刺鎧蝦



Fig. 140. Male (5.9 mm), Donggang fishing port, Pingtung County, 5 Aug 1995.

Munida babai.—Baba, 1988: 89, fig. 32.—Wu *et al.*, 1998: 107, figs 19, 21G. (not *M. babai* Tirmizi & Javed, 1976)

Munida gili Macpherson, 1993a: 429, fig. 2 [type locality: Philippines, 13°53.1'N, 120°08.9'E, 129–134 m].—Macpherson, 1996b: 424.—Komai, 2000: 355.—Macpherson, 2004: 260.—Baba, 2005: 263.

Material examined.—Donggang fishing port, Pingtung County, 5 Aug 1995: 1 male (5.9 mm) (NTOU).

Diagnosis.—Frontal margin slightly oblique. First lateral spine short, situated at anterolateral angle, not reaching level of sinus between rostrum and supraocular spines. Branchial margins with 5 small spines. Rostrum spiniform, dorsally carinated, half as long as remaining carapace. Supraocular spines short, clearly not reaching end of corneae. Anterior ridge of second, third and fourth abdominal somites with 4, 2 and 1 pairs of spines, respectively. Fourth to sixth thoracic sternites each with some arcuate striae. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Basal article of antennule with distomesial spine longer than distolateral. Distomesial spine of antennal article 1 reaching end of article 2; distomesial spine article 2 exceeding antennal peduncle. Extensor margin of Mxp3 merus unarmed. P1 movable finger with basal and distal spines only; fixed finger with proximal and distal spines only. P2–4 dactyli slightly shorter than propodi, with movable spinules along proximal half of flexor margin.

Size.—Males to 6.1 mm, females to 7.0 mm, ovigerous females from 3.8 mm (Macpherson, 1993a, 1996b).

Coloration.—Ground color of carapace and abdominal somites orange, ridges and striae reddish. Appendages translucent whitish and covered with red dots.

Habitat.—Green mud or sand mixed with shells and gravel (Baba, 1988); 100–290 m.

Distribution.—New Caledonia, Fiji, South China Sea (off Hong Kong), Philippines, and Taiwan.

Remarks.—This single Taiwanese specimen was reported as *M. babai* Tirmizi & Javed, 1976 by Wu *et al.* (1998). The specimen lacks the P1 that helps discriminate between *M. babai* and *M. gili*, but has the distomesial spine of the antennular basal segment distinctly overreaching instead of barely reaching the distolateral spine, the other distinctive character of *M. gili*.

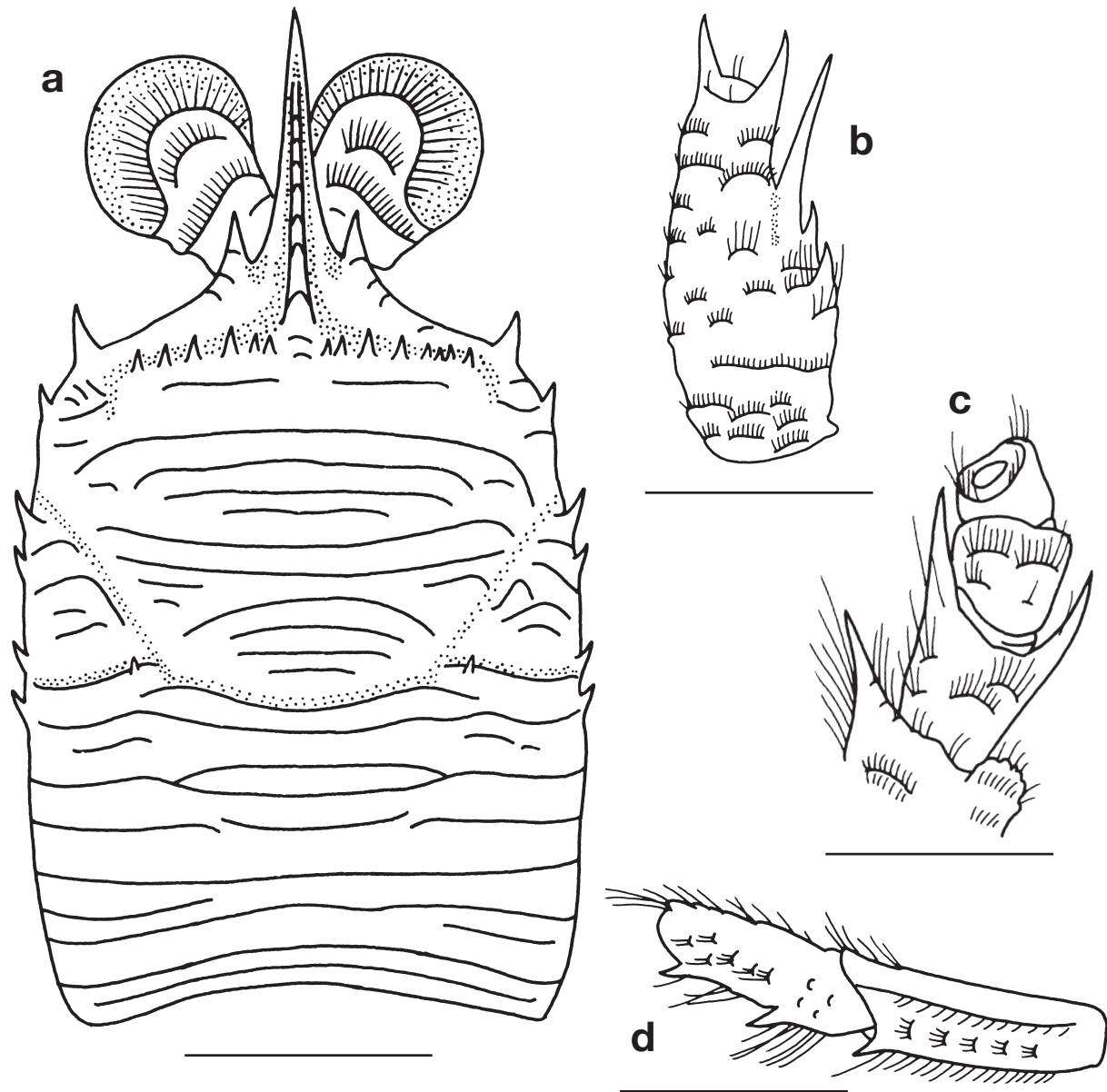


Fig. 141. Male (5.9 mm), Donggang fishing port, Pingtung County, 5 Aug 1995: **a**, carapace, dorsal; **b**, basal article of left antennule, ventral; **c**, left antennal peduncle, ventral; **d**, ischium and merus of left Mxp3, lateral. Scales: a = 2 mm; b–d = 1 mm (after Wu *et al.*, 1998).

Munida japonica Stimpson, 1858
日本刺鎧蝦

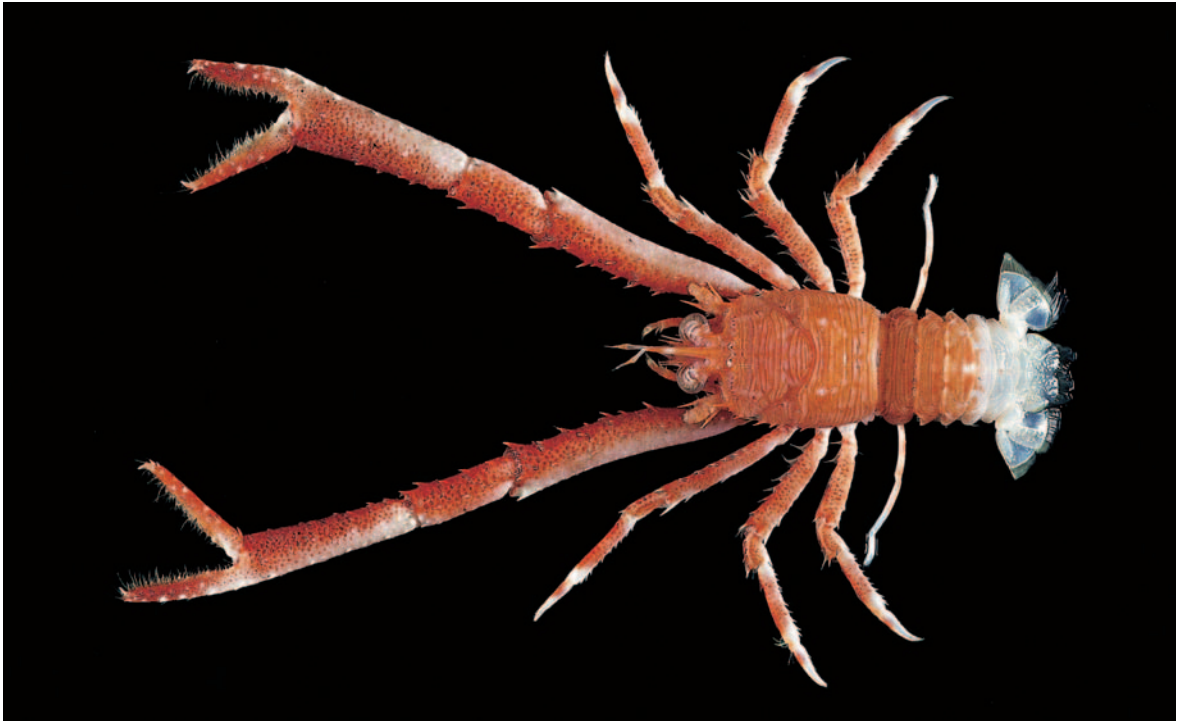


Fig. 142. Dasi fishing port, Yilan County, 19 Oct 1995, body orangish.



Fig. 143. Male (7.1 mm), CP216, body reddish.

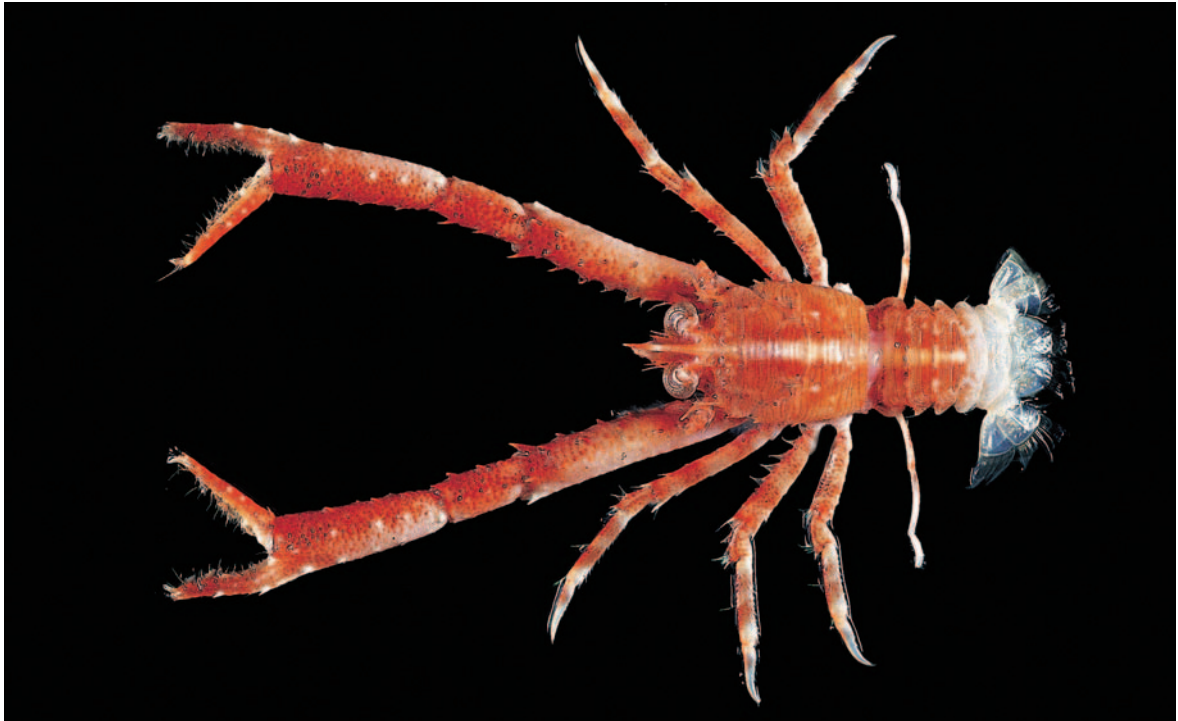


Fig. 144. Dasi fishing port, Yilan County, 19 Oct 1995, body with white dorsal longitudinal line.



Fig. 145. Dasi fishing port, Yilan County, 19 Oct 1995, with yellowish lateral patches on carapace.

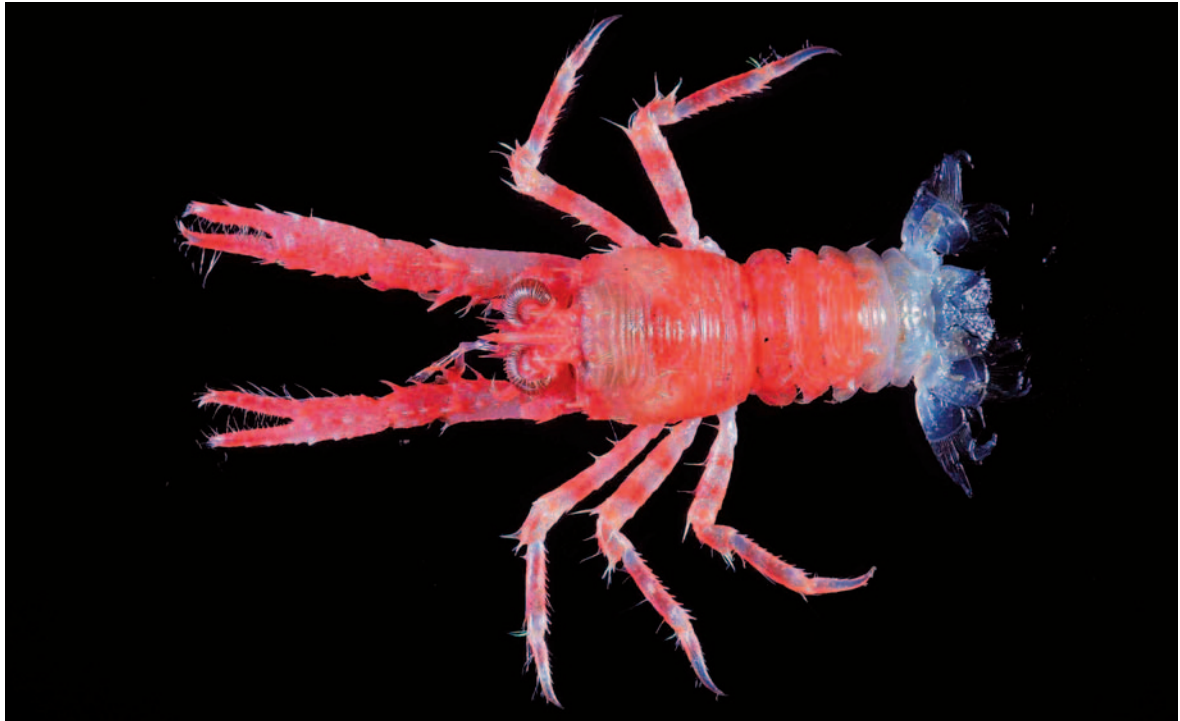


Fig. 146. Ovigerous female (5.8 mm), CP216, with large yellowish patch on anterodorsal carapace.



Fig. 147. Ovigerous female (6.4 mm), CP212, pereopods with alternating red and white bands.

Munida japonica Stimpson, 1858: 252 [type material no longer extant].—Stimpson, 1907: 235.—Miyake & Baba, 1967c: 240, figs 11, 12.—Baba & Macpherson, 1991: figs 3b, d, f, h, j, l, m; not fig. 2 (“Challenger” Stn 173 off Matuku, Fiji Islands, = *M. agave* Macpherson, & Baba, 1993).—Macpherson & Baba, 1993: 399, fig. 9 (selection of neotype [type locality: Makura-zaki, Kagoshima Pref., Japan, 145 m]).—Macpherson, 1997: 607.—Wu *et al.*, 1998: 115, figs 24, 26F, G.—Komai, 2000: 356.—Davie, 2002: 64.—Komai *et al.*, 2002: 57.—Baba, 2005: 109, 265.

Munida militaris.—Henderson, 1885: 410 (part).—Henderson, 1888: 137 (part). (not *M. militaris* Henderson, 1885)

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).—Haig, 1973: 271 (= *M. rogeri* Macpherson, 1994).—Tirmizi & Javed, 1993: 109, fig. 47 (possibly = *M. eudora* Baba & Macpherson, 1993).—Minemizu, 2000: 168 (= *Raymunida* sp.).

Dubious identity:

Munida japonica.—Miers, 1879: 51.—Borradaile, 1900: 422.—De Man, 1902: 724.—Doflein, 1902: 644.—Southwell, 1906: 220.—Parisi, 1917: 1.—Yokoya, 1933: 58.—Makarov, 1938: 97, fig. 35.—Melin, 1939: 85, figs 54–57.—Miyake, 1965: 635, fig. 1046.—Miyake, 1982: 146, pl. 49, fig. 4.—Tirmizi, 1966: 195, figs 15, 16.—Kim, 1973: 178, pl. 65, fig. 7.—Baba, 1977: 253.—Takeda, 1982: 51, fig. 151.—Baba in Baba *et al.*, 1986: 171, 290, fig. 122.—Baba, 1988: 108.—Baba, 1989: 131.—Tirmizi & Javed, 1993: 109, fig. 47.

Munida japonica typica Balss, 1913b: 15, fig. 14.

Munida militaris variety *andamanica*.—Boone, 1935: 42, pl. 10.

Munida japonica japonica.—Yanagita, 1943: 24, fig. 7.

Material examined.—Dasi fishing port, Yilan County, 3 Dec 1984: 2 males (9.0, 9.3 mm) (NTOU).—10 Mar 1985: 7 males (7.9–9.9 mm), 1 female (8.0 mm) (NTOU).—2 May 1985: 3 males (7.7–8.2 mm) (NTOU).—7 May 1985: 1 female (9.1 mm) (NTOU).—11 Jul 1989: 3 males (8.5–16.3 mm) (NTOU).—16 May 1995: 4 males (7.9–10.5 mm), 1 ovigerous female (8.1 mm), 2 females (7.3, 7.4 mm) (NTOU).—19 Oct 1995: 13 males (5.2–11.8 mm), 5 ovigerous females (7.0–9.2 mm), 1 female (10.1 mm) (NTOU).—Nov 1996: 1 female (8.4 mm) (NTOU).—25 Feb 1997: 2 males (10.4, 10.9 mm) (NTOU).—20 Mar 1999: 3 males (6.0–9.5 mm), 1 female (6.7 mm) (NTOU).—8 Mar 2000: 5 males (9.1–10.4 mm), 2 ovigerous females (7.8, 9.5 mm) (NTOU).—3 Apr 2002: 2 males (9.4, 10.8 mm) (NTOU).—15 Aug 2004: 4 males (9.3–12.1 mm), 2 females (8.7, 9.4 mm) (NTOU).—28 Oct 2004: 2 males (8.5, 10.4 mm), 2 females (9.2, 10.3 mm) (NTOU).—4 Apr 2005: 2 males (10.8, 11.2 mm) (NTOU).—2005: 2 males (11.1, 11.8 mm) (NTOU).—27 Aug 2006: 3 males (8.2–10.5 mm) (NTOU).—15 Oct 2006: 2 males (9.5, 10.8 mm) (NTOU). Gueishandao, Yilan County, 24°52.228'N, 121°59.286'E, 268–275 m, 23 Aug 2007: 38 males (6.4–9.9 mm), 8 ovigerous females (6.7–8.9 mm), 9 females (6.6–8.3 mm) (NTOU). Nanfang-ao fishing port, Yilan County, 27 Aug 1996: 1 male (9.7 mm) (NTOU).—28 Aug 1996: 1 ovigerous female (7.1 mm) (NTOU).—8 Mar 2001: 3 males (9.2–9.8 mm) (NTOU). Donggang fishing port, Pingtung County, 20 Dec 1984: 2 male (9.2, 9.9 mm) (NTOU). CP35, 22°01.8'N, 120°36.5'E, 228–222 m, 31 Jul 2000: 1 female (5.2 mm) (NTOU). CP58, 24°35.1'N, 122°05.8'E, 221–254 m, 4 Aug 2000: 18 males (4.5–8.4 mm), 2 ovigerous females (5.6, 7.0 mm), 9 females (5.1–7.6 mm) (NTOU). CP74, 24°50.84'N, 121°59.28'E, 228–222 m, 5 Jul 2001: 3 males (8.2–10.2 mm) (NTOU). CP76, 24°56.54'N, 122°01.51'E, 115–170 m, 5 Jul 2001: 1 male (8.6 mm) (NTOU). CP114, 24°51.03'N, 121°58.30'E, 128–250 m, 21 May 2001: 1 male (5.3 mm), 1 ovigerous female (6.2 mm) (NTOU). DW117, 24°59.04'N, 122°02.85'E, 153–126 m, 31 Jul 2001: 1 male (4.7 mm) (NTOU). DW118, 24°56.33'N, 122°01.47'E, 128–136 m, 31 Jul

2001: 11 males (3.5–8.9 mm), 3 ovigerous females (6.2–7.0 mm), 2 females (6.0, 6.8 mm) (NTOU). CP119, 24°56.60'N, 122°01.71'E, 123–140 m, 31 Jul 2001: 21 males (5.8–9.1 mm), 2 ovigerous females (6.5, 8.0 mm), 1 female (4.9 mm) (NTOU). CP120, 24°51.79'N, 122°02.54'E, 520–640 m, 31 Jul 2001: 3 males (9.0–9.7 mm), 1 ovigerous female (6.1 mm) (NTOU). CD123, 24°50.58'N, 122°17.31'E, 1175–1255 m, 1 Aug 2001: 3 males (4.7–8.1 mm), 1 female (4.5 mm) (NTOU). CP166, 22°23.85'N, 120°15.29'E, 200 m, 26 May 2002: 1 ovigerous female (7.7 mm) (NTOU). CP172, 22°15.16'N, 120°26.69'E, 159 m, 27 May 2002: 1 male (5.2 mm) (NTOU). CP212, 24°34.60'N, 122°05.84'E, 223–260 m, 26 Aug 2003: 3 males (4.5–7.2 mm), 4 ovigerous females (5.0–6.7 mm), 1 female (6.9 mm) (NTOU). CP216, 24°34.71'N, 122°04.02'E, 209–280 m, 27 Aug 2003: 2 males (7.1, 7.3 mm), 2 ovigerous females (5.8, 6.9 mm), 2 females (3.0, 6.7 mm) (NTOU). OCP287, 24°57.522'N, 122°05.303'E, 259–349 m, 8 Aug 2005: 1 male (10.3 mm), 2 juveniles (2.6, 3.5 mm) (NTOU). OCP288, 24°57.701'N, 122°05.346'E, 263–352 m, 8 Aug 2005: 1 male (6.2 mm), 20 juveniles (2.9–3.8 mm) (NTOU).

Diagnosis.—Branchial region of carapace with 5 lateral spines. No scale-like or short stria on intestinal region. Rostrum spiniform. Supraocular spines terminating in midlength of rostrum. Frontal margin somewhat oblique. Abdominal somite 2 with 2 spines on each side of anterior transverse stria. Sternal plastron with a few striae on sternite 4, without granules on sternite 7; sternite 4 having anterior margin contiguous to median part of posterior margin of sternite 3. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. 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. Mxp3 merus with distinct spine on extensor distal margin. P1 fingers as long as palm, each bearing proximal spines somewhat dorsal between subterminal and basal spines. P2–4 dactyli having flexor margin with movable spines, unarmed usually on distal third.

Size.—Males to 16.3 mm, females to 10.3 mm, ovigerous females from 5.0 mm (present data).

Coloration.—Ground color of carapace, abdominal somites and appendages orange, sometimes more reddish. Some specimens with median longitudinal white stripe along carapace and abdomen, some with large yellowish patches on carapace. Appendages with reddish and whitish transverse bands, sometimes with bands very distinct. Lateral margins of P1 often whitish. Eggs whitish.

Habitat.—Mud, sand, hard bottoms, clay (Baba, 2005); 22–732 m.

Distribution.—Indonesia (Kei Islands), Philippines, Taiwan, East China Sea, and Japan.

Remarks.—*Munida japonica* is a common species on the continental shelf and slope of Taiwan. The identification of the juvenile specimens from station OCP287 as belonging to this species should be considered with caution. Although the first squat lobster recorded in Taiwan was *Munida japonica typica* by Balss (1913b), the exact identity of Balss's (1913b) material needs to be confirmed as many species closely related to *M. japonica* have been described (see Macpherson & Baba, 1993).

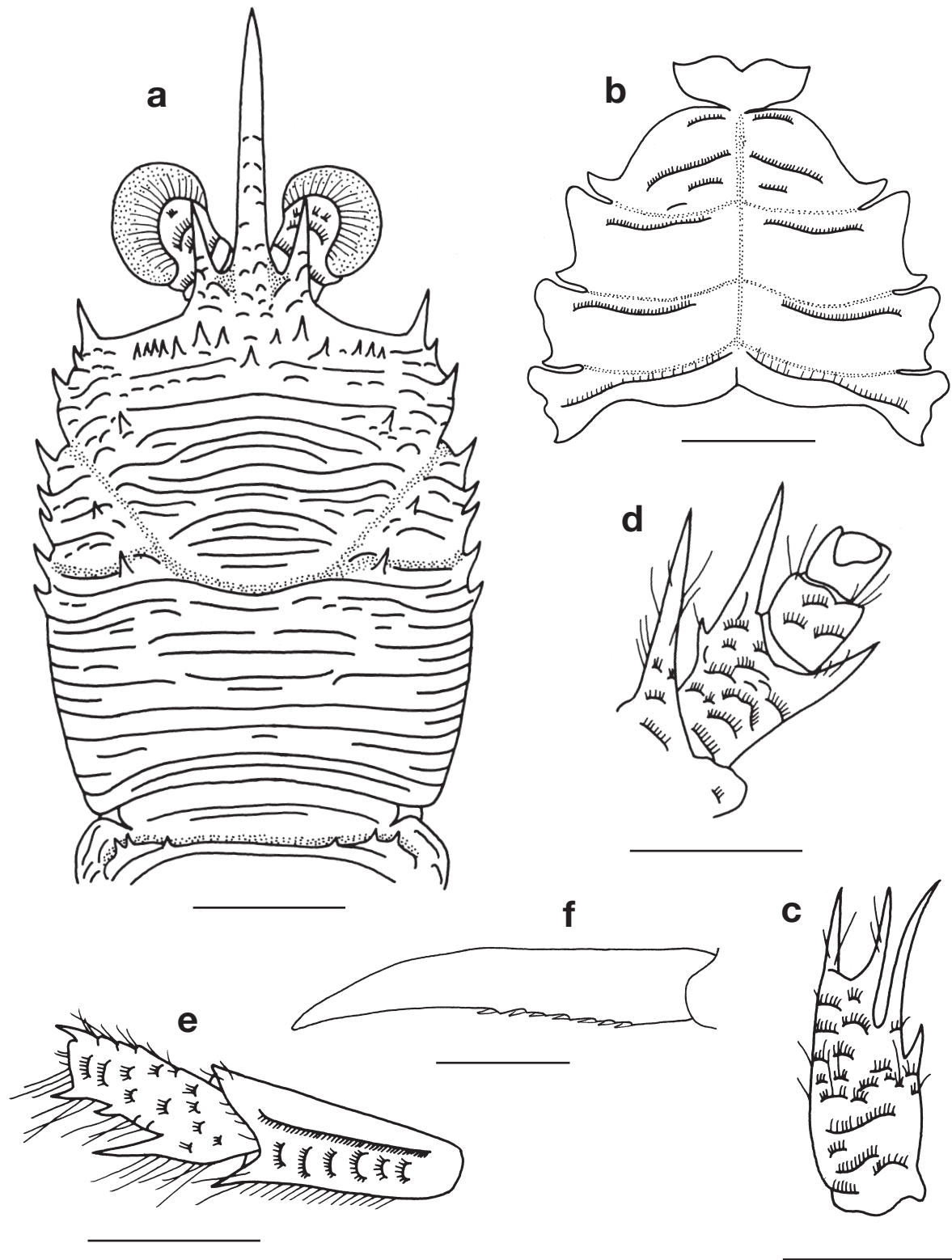


Fig. 148. Male (9.7 mm), Dasi fishing port, Yilan County, 19 Oct 1995, a–e (after Wu *et al.*, 1998); male (11.2 mm), Dasi fishing port, Yilan County, 4 Apr 2005, f: **a**, carapace, dorsal; **b**, sternal plastron; **c**, basal article of left antennule, ventral; **d**, left antennal peduncle, ventral; **e**, ischium and merus of left Mxp3, lateral; **f**, left P2 dactylus, lateral. Scales: a = 3 mm; b–e = 2 mm; f = 1 mm.

Munida kuboi Yanagita, 1943

久保刺鎧蝦

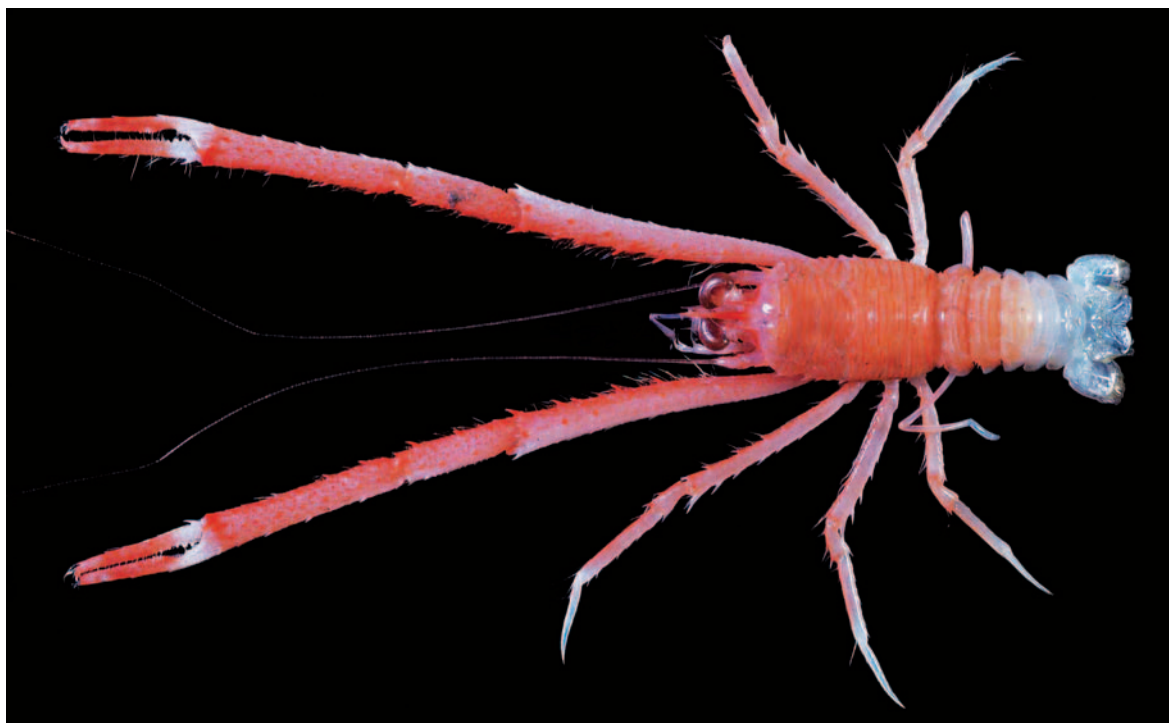


Fig. 149. Male (9.9 mm), Donggang fishing port, Pingtung County, 4 Dec 2003.

Munida kuboi Yanagita, 1943: 20, figs 5, 6 [type locality: Toyama Bay, S of Oga, and NW of Niigata, 78–148 m].—Baba, 1988: 109, fig. 4.—Macpherson, 1993a: 431.—Macpherson, 1997: 607.—Wu *et al.*, 1998: 117, figs 25, 26H.—Komai, 2000: 356.—Macpherson & de Saint Laurent, 2002: 475, fig. 3D.—Baba, 2005: 112, 266.

Not *Munida kuboi*.—Baba, 1990: 964. (= *M. shaula* Macpherson & de Saint Laurent, 2002)

Material examined.—Nanfang-ao fishing port, Yilan County, 9 Nov 1995: 3 males (13.0–14.6 mm).—21 Oct 1999: 1 female (13.7 mm) (NTOU). Donggang fishing port, Pingtung County, 20 Dec 1984: 4 males (9.5–11.6 mm) (NTOU).—23 Mar 1985: 2 males (10.0, 11.5 mm) (NTOU).— 4 Dec 2003: 7 males (7.2–10.9 mm), 1 ovigerous female (8.6 mm), 5 females (7.3–11.0 mm) (NTOU). CP11, 22°18.6'N, 119°14.8'E, 263–276 m, 28 Jul 2000: 1 female (7.5 mm) (NTOU). CP49, 22°55.7'N, 121°21.6'E, 266–262 m, 2 Aug 2000: 1 male (8.5 mm) (NTOU). CP171, 22°13.89'N, 120°30.37'E, 195 m, 27 May 2002: 1 female (6.8 mm) (NTOU). CP212, 24°34.60'N, 122°05.84'E, 223–260 m, 26 Aug 2003: 2 females (8.7, 9.8 mm) (NTOU). CP265, 24°28.65'N, 121°55.96'E, 350–345 m, 1 Sep 2004: 1 male (9.4 mm) (NTOU). OCP287, 24°57.522'N, 122°05.303'E, 259–349 m, 8 Aug 2005: 1 male (5.7 mm) (NTOU).

Diagnosis.—Lateral margins of carapace with 5 spines behind anterior cervical groove. Rostrum spiniform. Frontal margin oblique. Abdominal somites 2 and 3 with 8 and 2 spines, respectively. Sternal plastron nearly without striae; sternite 3 much wider than anterior border of sternite 4. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Distomesial spine of

antennular article 1 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. Mxp3 merus unarmed on extensor margin. P1 slender and subcylindrical; movable finger with spines between mesioproximal spine and distal end. P2–3 dactyli slightly shorter than propodi, somewhat curved, with a few to several seta-like spines along proximal half of flexor margin; P4 dactylus equally long as propodus, strongly curved.

Size.—Males to 14.6 mm, females to 13.7 mm, ovigerous females from 8.6 mm (present data).

Coloration.—Ground color of carapace, abdominal somites and appendages orange. Rostrum and supraocular spines reddish. Proximal part of P1 fingers whitish.

Habitat.—Mud, sand, mud with corals, sandy mud, mud with concretions (Baba, 1988, 2005); 78–412 m.

Distribution.—Indonesia (Bali Sea, Kei islands), Philippines, Taiwan, and Japan.

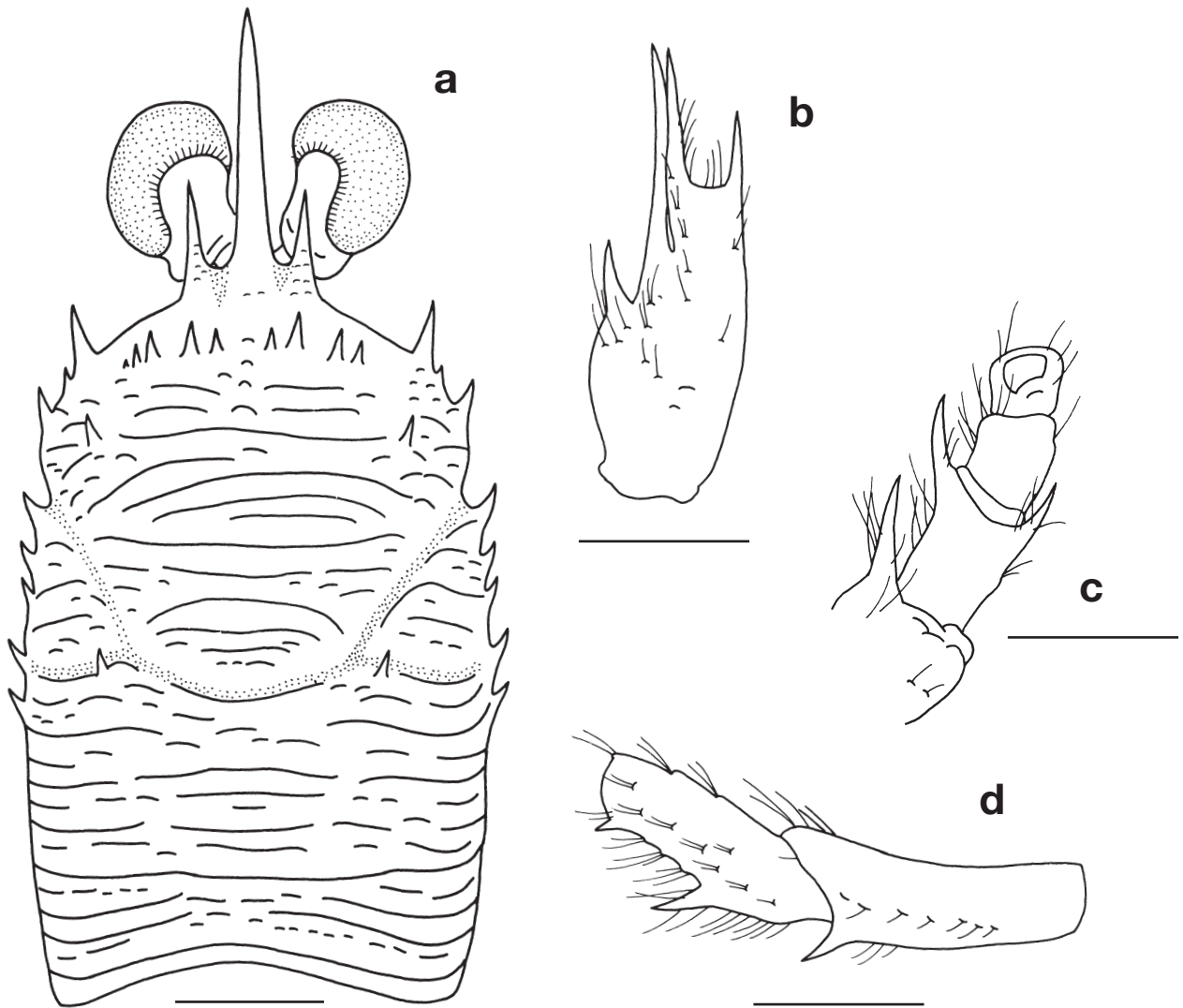


Fig. 150. Male (13.6 mm), Nanfang-ao fishing port, Yilan County, 9 Nov 1995: **a**, carapace, dorsal; **b**, basal article of right antennule, ventral; **c**, left antennal peduncle, ventral; **d**, ischium and merus of left Mxp3, lateral. Scales: a = 3 mm; b–d = 2 mm (after Wu *et al.*, 1998).

Munida leptitis Macpherson, 1994

小刺鎧蝦



Fig. 151. Male (4.5 mm), CP35.

Munida leptitis Macpherson, 1994: 487, fig. 27 [type locality: Loyalty Islands, 20°22.25'S, 166°10.00'E, 21 m].—Macpherson, 1996a: 394, fig. 14.—Macpherson, 1997: 607.—Macpherson, 1999: 419.—Macpherson, 2004: 263.—Baba, 2005: 267.—Macpherson, 2006a: 318.

Material examined.—DW34, 22°01.9'N, 120°36.4'E, 246–240 m, 31 Jul 2000: 1 male (5.8 mm) (NTOU). CP35, 22°01.8'N, 120°36.5'E, 228–222 m, 31 Jul 2000: 1 male (4.5 mm) (NTOU). DW150, 22°16.03'N, 121°28.81'E, 553–690 m, 31 Jul 2002: 1 female (3.5 mm) (NTOU).

Diagnosis.—Branchial margins of carapace with 5 small spines. Rostrum spiniform; supraocular spines short. Frontal margin transverse. Anterolateral spines short, not reaching sinus between rostral and supraocular spines. Abdominal somites unarmed. Sternal plastron with few striae. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Distomesial spine of antennular basal article shorter than distolateral. Article 1 of antennal peduncle having distomesial spine nearly reaching end of article 2; article 2 with small distomesial spine reaching end of article 3. Mxp3 merus with distal spine on extensor margin. Fixed finger of P1 with lateral marginal spines other than subterminal spines; movable finger with proximal and subterminal spines. P2–4 dactyli with seta-like spines along entire flexor margin.

Size.—Males to 7.3 mm, females to 7.1 mm, ovigerous females from 2.4 mm (Macpherson, 1996a, 2004, 2006a).

Coloration.—Ground color of body and appendages orange. P1 with numerous red spots, mesial borders of articles darker than lateral margins; proximal half of fingers whitish, distal half reddish, tips white. P2–4

scattered with red dots; dactyli whitish.

Habitat.—Substrates not recorded; 21–1200 m.

Distribution.—Vanuatu, Loyalty Islands, New Caledonia, Fiji, Tonga, Wallis, Futuna, and French Polynesia (Austral Archipelago), Indonesia, and Taiwan.

Remarks.—This is the first report of the species from Taiwan. *Munida leptitis* was described from shallow water specimens from New Caledonia. However, the taxonomic status of the specimens from different localities and depths should be reconsidered. The specimens from Taiwan agree quite well with the material from New Caledonia. However, additional morphological and molecular comparisons would be desirable in order to confirm their taxonomic status.

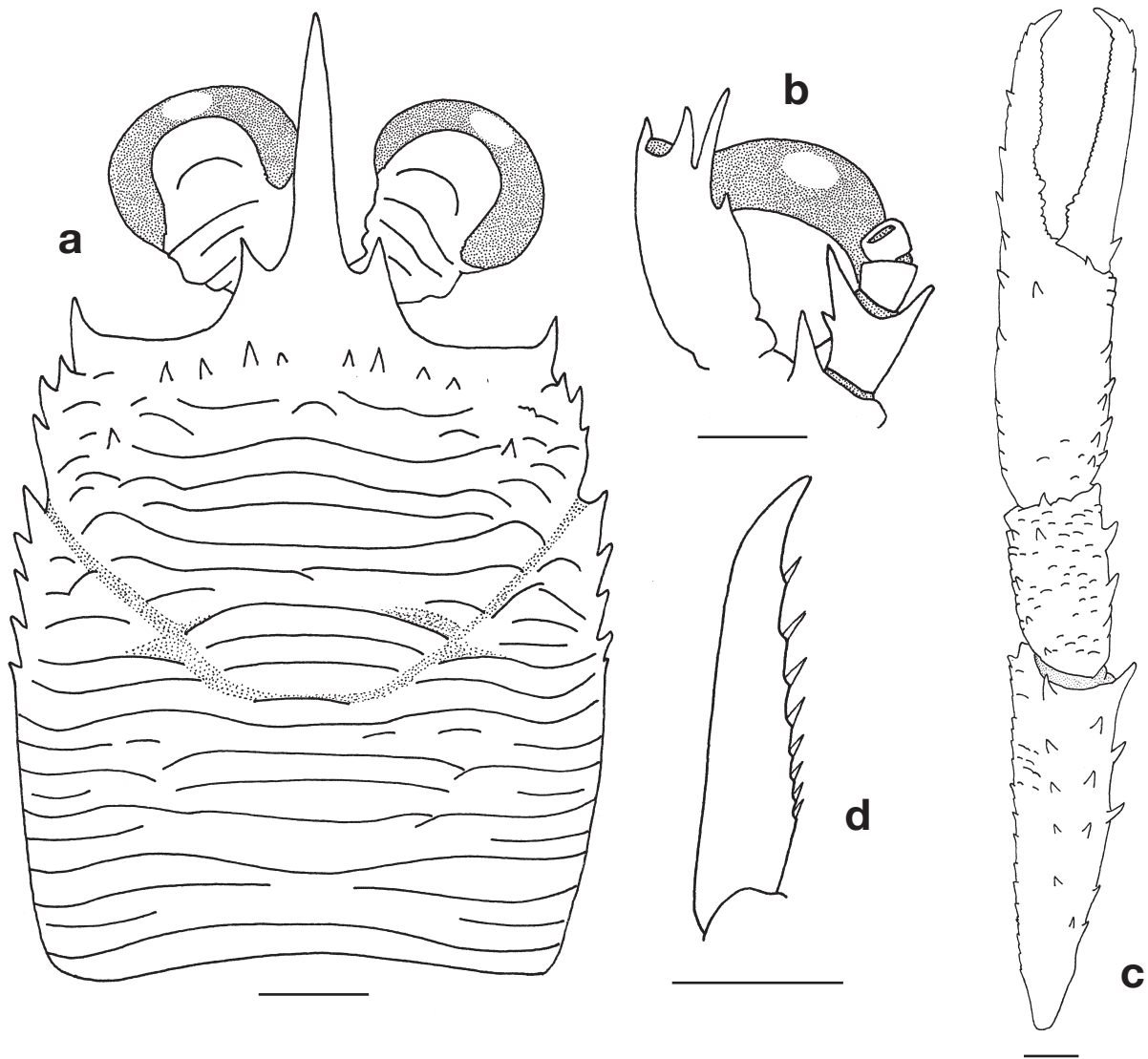


Fig. 152. Male (5.8 mm), DW34: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, left P1, dorsal; **d**, right P2 dactylus, lateral. Scales = 1 mm.

Munida militaris Henderson, 1885
軍武刺鎧蝦



Fig. 153. Female (16.5 mm), CP214, body more pinkish.



Fig. 154. Male (18.6 mm), PCP329, body more reddish.

Munida militaris Henderson, 1885: 410 (part) [off Matuku, Fiji Islands, 19°09'35"S, 179°41'50"E, 576 m] (not non-ovigerous female from *Challenger* stn 173, S of Fiji Islands, 549 m, ? = *M. sphinx* Macpherson & Baba, 1993); (not *Challenger* stn 192 off Little Ki Island, 236 m, = *M. japonica* Stimpson, 1858 and possibly *M. inornata* Henderson, 1885).—Henderson, 1888: 137 (part), pl. 14, figs 2, 2a, 2b, 5, 5a, 5b (not non-ovigerous female from *Challenger* stn 173 off Matuku, Fiji, 576 m, ? = *M. sphinx* Macpherson & Baba, 1993); (not *Challenger* stn 192 off Little Ki Island, 256 m, = *M. japonica* Stimpson, 1858 and possibly *M. inornata* Henderson, 1885).—Lloyd, 1907: 2.—Baba & Macpherson, 1991: 539, fig. 1.—Macpherson, 1994: 496.—Macpherson, 1996a: 399, fig. 16.—Macpherson, 1999: 421.—Macpherson, 2004: 266.—Ahyong & Poore, 2004b: 41.—Baba, 2005: 117, 268.

Munida vitiensis Henderson, 1885: 410 [type locality: S of the Fiji Islands, 549 m] (type not found, very possibly combined with the type of *M. militaris* from “Challenger” stn 173 by Henderson).

Material examined.—CP55, 24°35.1'N, 122°05.8'E, 221–254 m, 4 Aug 2000: 2 males (11.1, 11.5 mm), 1 female (16.7 mm) (NTOU). DW155, 24°29.27'N, 120°45.54'E, 436–469 m, 21 May 2002: 1 female (5.7 mm) (NTOU). CD210, 24°28.99'N, 122°12.79'E, 500–1183 m, 1 Jun 2003: 1 male (10.0 mm), 2 ovigerous females (10.2, 13.0 mm), 2 females (10.3, 13.9 mm) (NTOU). CP211, 24°40.591'N, 122°11.216'E, 217–518 m, 26 Aug 2003: 1 female (7.1 mm) (NTOU). CP214, 24°28.59'N, 122°12.66'E, 190–1027 m, 26 Aug 2003: 3 males (7.5–8.6 mm), 6 females (7.4–16.5 mm) (NTOU). CD320, 20°50.090'N, 117°27.170'E, 730–720 m, 19 Aug 2005: 2 males (15.5, 18.4 mm) (NTOU). PCP329, 22°20.881'N, 120°6.715'E, 691–710 m, 4 Oct 2005: 1 male (18.6 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 5 spines. Rostrum spiniform; supraocular spines usually reaching end of corneae. Abdominal somite 2 with row of spines. Sternal plastron with smooth surface; anterior part of sternite 4 narrower than sternite 3. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Basal article of antennular peduncle with distomesial spine shorter than distolateral spine. Antennal article 1 with distomesial spine not reaching or slightly reaching end of article 2; distomesial spine of article 2 reaching or slightly exceeding article 3. Mxp3 merus with extensor margin unarmed. P1 fingers usually with small proximal and subterminal spines. P2–4 dactyli more than half propodus length, with movable spinules along entire flexor margin.

Size.—Males to 20.8 mm; females to 17.8 mm; ovigerous females from 9.5 mm (Macpherson, 1999, 2004).

Coloration.—Ground color of carapace, abdominal somites 2 and 3 and P1–4 orange or reddish; striae reddish. P1 fingers mostly reddish with white tips. Proximal parts of P2–4 dactyli whitish, distal parts reddish.

Habitat.—Mud; 183–1280 m (Baba, 2005).

Distribution.—Arabian Sea, Taiwan, South China Sea (Dongsha), Kei Islands, Ambon, off Queensland, Vanuatu, New Caledonia, Combe Bank, Wallis Islands, Field Bank, Bayonnaise Bank, Fiji and Tonga.

Remarks.—This species is reported for the first time from Taiwan and Dongsha. *Munida militaris* has a wide geographic and bathymetric distribution. The specimens from Taiwan and Dongsha, as well as from other localities, show some small differences with the type material. A revision of the specimens from different areas is strongly recommended in order to determine the existence of a large intraspecific variability or the presence of different taxa.

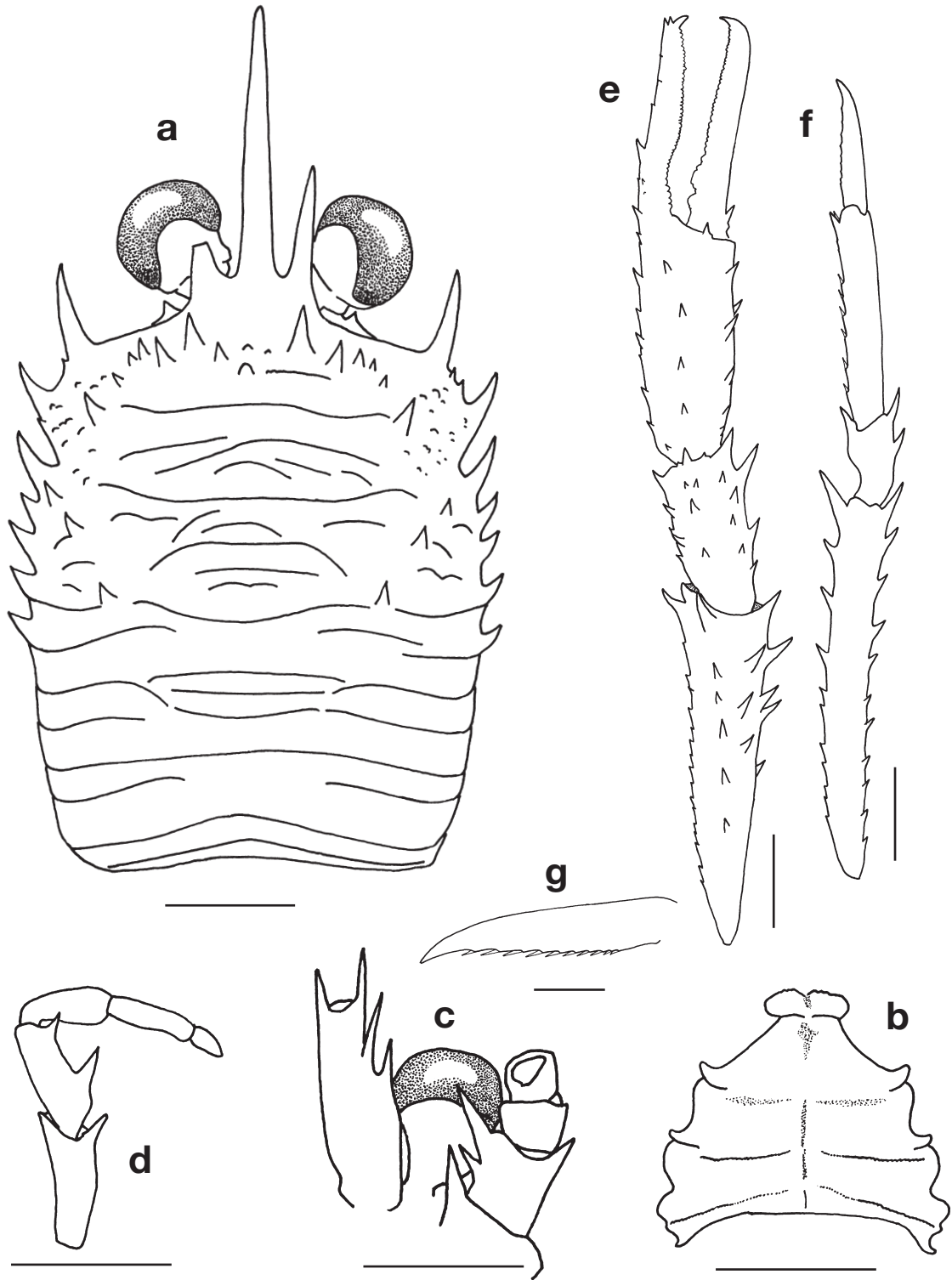


Fig. 155. Male (18.4 mm), CD320: **a**, carapace, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, right Mxp3, lateral; **e**, left P1, dorsal; **f**, left P2, lateral; **g**, left P2 dactylus, lateral. Scales = 5 mm.

Munida oritea Macpherson & Baba, 1993

奧衛娣刺鎧蝦

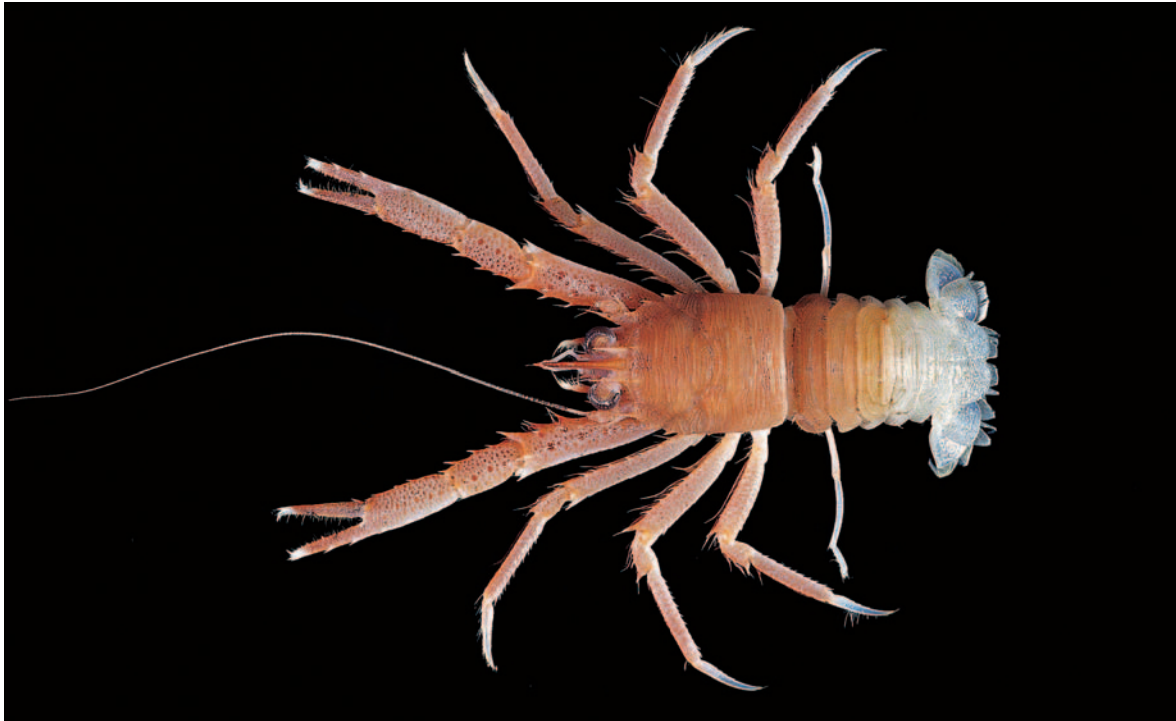


Fig. 156. Ovigerous female (13.7 mm), Nanfang-ao fishing port, Yilan County, 9 Nov 1995.

Munida heteracantha.—Baba, 1988: 104, fig. 38. (not *M. heteracantha* Ortmann, 1892)

Munida oritea Macpherson & Baba, 1993: 407, fig. 14 [type locality: Philippines, 13°59.2'N, 120°20.3'E, 208–222 m].—Wu *et al.*, 1998: 120, figs 27, 35A.—Komai, 2000: 357.—Baba, 2005: 270.

Munida thoe.—Wu *et al.*, 1998: 135 (part), fig. 42B. (not *M. thoe* Macpherson, 1994)

Material examined.—Dasi fishing port, Yilan County, 9 March 2005: 1 male (14.2 mm) (NTOU). Nanfang-ao fishing port, Yilan County, 16 Mar 1985: 1 male (19.0 mm) (NTOU).—9 Nov 1995: 1 ovigerous female (13.7 mm) (NTOU).

Diagnosis.—Branchial carapace margin with 5 spines. Rostrum spiniform; supraocular spines nearly reaching half rostral spine. Abdominal somite 2 with 8–10 spines. Sternal plastron with numerous striae. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Two terminal spines of antennular basal article subequal. Distomesial spine of antennal article 1 overreaching end of article 3; article 2 with distomesial spine reaching end of peduncle. Mxp3 merus with 2 flexor marginal spines, distal small; extensor margin unarmed. Movable finger of P1 without spine between proximal and subterminal spines; fixed finger with several lateral spines including 2 subterminal. P2–4 dactyli with small spines along flexor margin, unarmed on distal fourth.

Size.—Males to 19.0 mm, females to 15.9 mm, ovigerous females from 11.0 mm (Macpherson & Baba, 1993; present data).

Coloration.—Ground color of carapace, abdominal somites and appendages orange. Rostrum with distal

red spot. P1 with numerous small red spots. P2–4 dactyli whitish. Egg light blue.

Habitat.—Green mud bottoms, rarely mixed with sand and shells or on globigerina (Baba, 1988); 174–511 m.

Distribution.—Philippines and Taiwan.

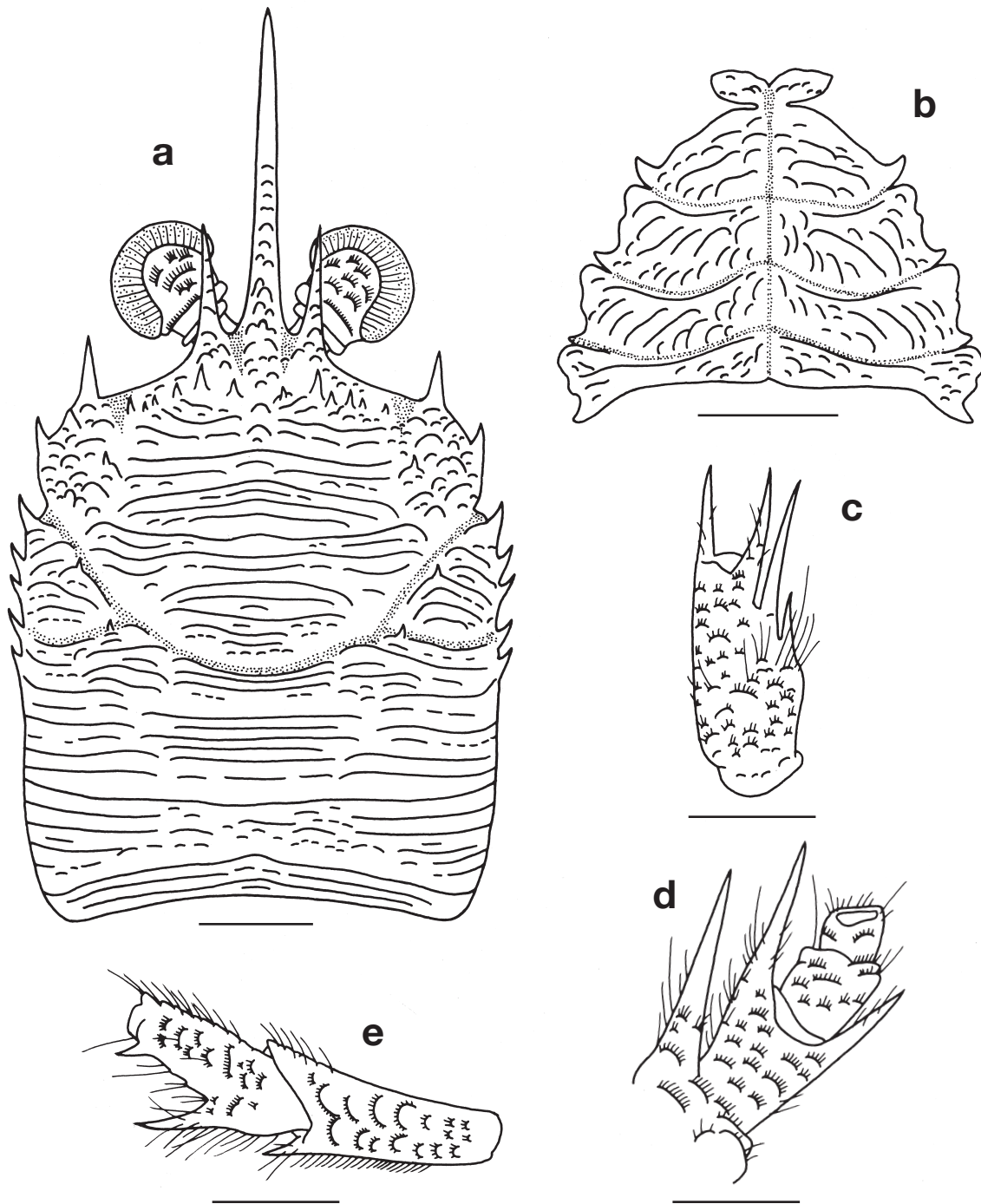


Fig. 157. Ovigerous female (13.7 mm), Nanfang-ao fishing port, Yilan County, 9 Nov 1995: **a**, carapace, dorsal; **b**, sternal plastron; **c**, basal article of left antennule, ventral; **d**, left antennal peduncle, ventral; **e**, ischium and merus of left Mxp3, lateral. Scales: a, b = 3 mm; c–e = 2 mm (after Wu *et al.*, 1998).

Munida pherusa Macpherson & Baba, 1993

斐烏沙刺鎧蝦



Fig. 158. Female (8.1 mm), Dasi fishing port, Yilan County, 3 Oct 1988.

Munida pherusa Macpherson & Baba, 1993: 408, fig. 15 [type locality: Philippines, 13°56.5'N, 120°20.7'E, 136–152 m].—Wu *et al.*, 1998: 122, figs 28, 35B.—Komai, 2000: 357.—Komai *et al.*, 2002: 57.—Baba, 2005: 270.

Material examined.—Dasi fishing port, Yilan County, 9 Sep 1984: 1 ovigerous female (8.0 mm) (NTOU).—7 July 1985: 2 females (7.2, 8.7 mm) (NTOU).—3 Oct 1988: 1 female (8.1 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 5 spines. Abdominal somites unarmed. Sternal plastron with numerous striae; sternite 3 with anterior margin produced into 2 distinct lobes, posterior margin narrower than anterior margin of sternite 4. Rostrum spiniform, supraocular spines reaching midlength of rostral spine. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Two terminal spines of antennular basal article subequal. Distomesial spine of antennal article 1 nearly reaching end of article 3; distomesial spine of article 2 overreaching end of peduncle. Mxp3 merus with distal spine on extensor margin. Movable fingers of P1 each with spines between proximal and subterminal spines. Dactyli of P2–4 with seta-like spines along flexor margin, distal third unarmed.

Size.—Males to 8.7 mm, females to 9.0 mm, ovigerous females from 5.7 mm (Macpherson & Baba, 1993).

Coloration.—Ground color of carapace, abdominal segments and appendages orange; striae reddish. Base of rostrum whitish. P1–4 with transverse red bands; distal portion of P2–4 dactyli reddish, tips whitish.

Habitat.—Substrates not recorded; 73–167 m.

Distribution.—Indonesia, Philippines, Taiwan, and Japan.

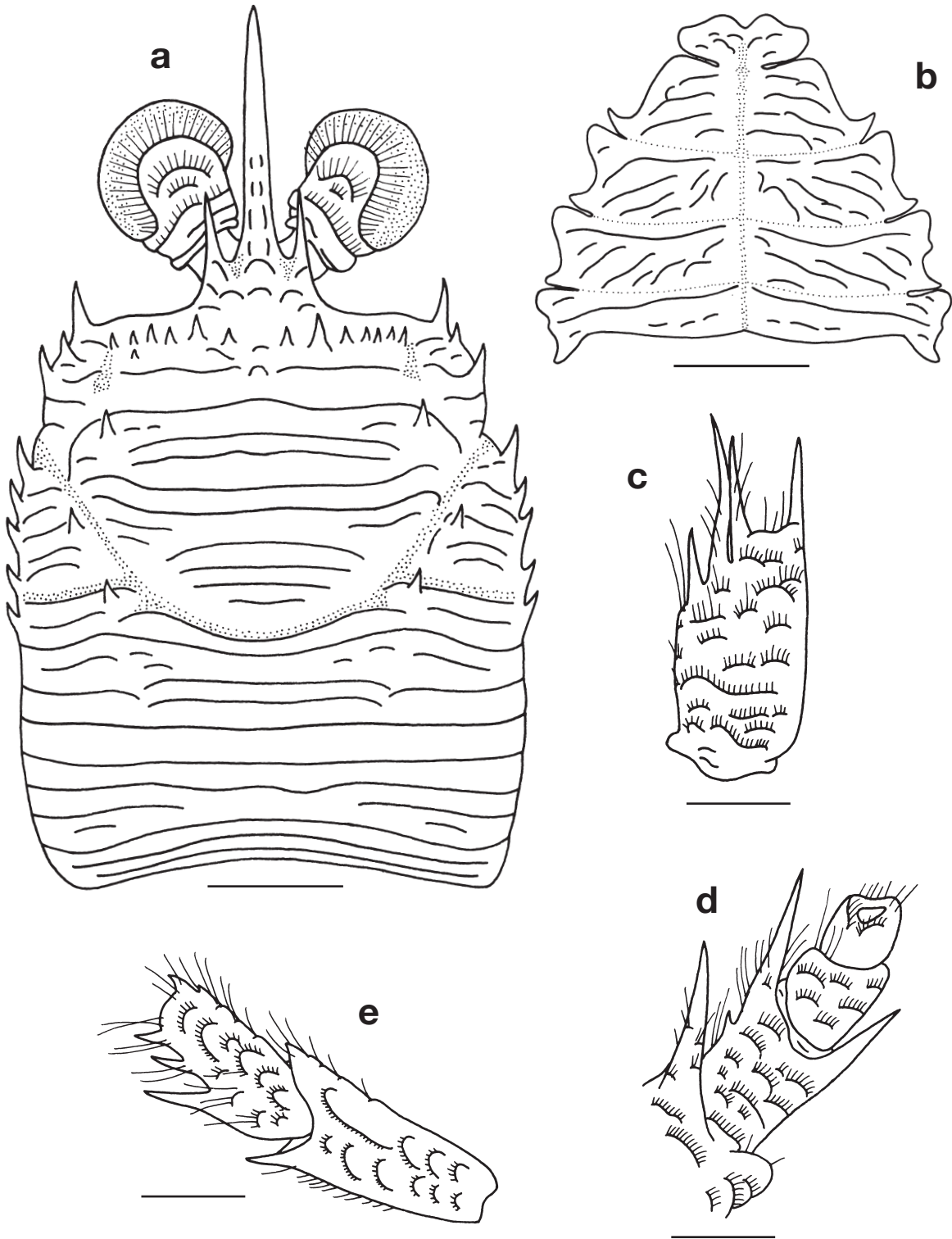


Fig. 159. Female (8.1 mm), Dasi fishing port, Yilan County, 3 Oct 1988: **a**, carapace, dorsal; **b**, sternal plastron; **c**, basal article of right antennule, ventral; **d**, left antennal peduncle, ventral; **e**, ischium and merus of left Mxp3, lateral. Scales: a, b = 2 mm; c–e = 1 mm (after Wu *et al.*, 1998).

Munida pilorhyncha Miyake & Baba, 1966
毛額刺鎧蝦



Fig. 160. Ovigerous female (17.7 mm), Dasi fishing port, Yilan County, 19 Oct 1995.



Fig. 161. Ovigerous female (18.5 mm), Dasi fishing port, Yilan County, 11 Jul 1989, ventral view showing egg color.

Munida pilorhyncha Miyake & Baba, 1966b: 81, figs 1, 2 [type locality: Tosa Bay, Japan, 200–250 m].—Miyake, 1982: 149, pl. 50, fig. 3.—Baba, 1988: 122.—Macpherson, 1993a: 436.—Wu *et al.*, 1998: 124, figs 29, 35C.—Komai, 2000: 357.—Baba, 2005: 120, 271.

Material examined.—Dasi fishing port, Yilan County, 21 Mar 1989: 1 male (17.9 mm) (NTOU).—11 Jul 1989: 1 ovigerous female (18.5 mm) (NTOU).—24 May 1995: 1 male (15.9 mm) (NTOU).—19 Oct 1995: 2 males (17.5, 19.0 mm), 2 ovigerous females (16.2, 17.7 mm) (NTOU).—11 Mar 1997: 1 male (13.7 mm), 1 female (15.7 mm) (NTOU).—27 Sep 2002: 1 female (16.5 mm) (NTOU).—17 Dec 2004: 1 male (18.4 mm) (NTOU).—28 Aug 2006: 2 ovigerous females (17.8, 19.6 mm) (NTOU).—9 Oct 2007: 1 male (17.8 mm) (NTOU). Donggang fishing port, Pingtung County, 11 Aug 2003: 1 male (20.6 mm) (NTOU). Nanfang-ao fishing port, Yilan County, 28 Dec 1995: 1 male (19.7 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 5 spines. Rostrum arched in profile, dorsally bearing long, coarse, iridescent setae. Frontal margin oblique, supraocular spines reaching end of cornea. Abdominal somite 2 with 8 spines. Sternites 3–5 with striae. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. 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. Mxp3 merus with extensor margin unarmed. P1 fingers with spines between proximal and subterminal spines. P2–4 dactyli slender, slightly curving distally with movable spines along flexor margin, unarmed on distal third.

Size.—Males to 20.6 mm, females to 19.6 mm, ovigerous females from 16.2 mm (present data).

Coloration.—Carapace, abdomen and pereopods orange, striae and ridges reddish. Rostral spine red; supraocular spines whitish. P1 with red spots, usually on spines, fingers reddish with whitish tips. P2–4 dactyli whitish (also see Miyake, 1982). Egg reddish.

Habitat.—Mud (Baba, 2005); 200–366 m.

Distribution.—Indonesia (Kei Islands), Philippines, South China Sea, Taiwan, and Japan.

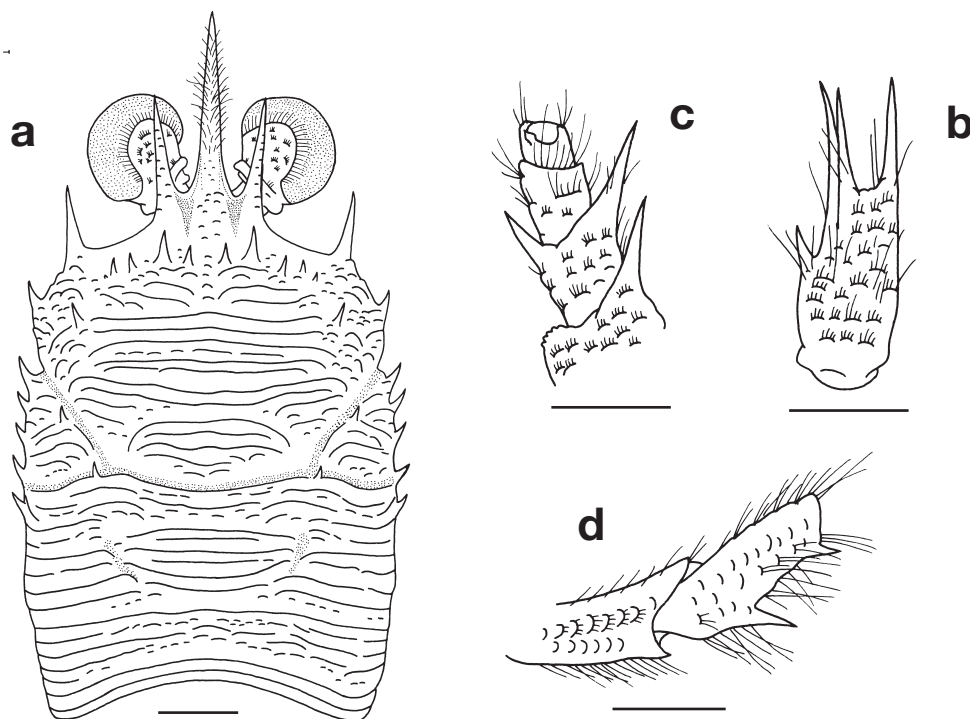


Fig. 162. Ovigerous female (17.7 mm), Dasi fishing port, Yilan County, 19 Oct 1995: **a**, carapace, dorsal; **b**, basal article of right antennule, ventral; **c**, right antennal peduncle, ventral; **d**, ischium and merus of right Mxp3, lateral. Scales = 3 mm (after Wu *et al.*, 1998).

Munida prominula Baba, 1988
顯著刺鎧蝦



Fig. 163. Male (22.2 mm), Nanfang-ao fishing port, Yilan County, 5 Mar 1991.



Fig. 164. Female (15.5 mm), CP268, bases of rostrum and supraocular spines distinctly reddish.

Munida prominula Baba, 1988: 124, fig. 47 [type locality: South China Sea off SW Formosa (= Dongsha), 421 m].—Macpherson, 1993a: 436.—Wu *et al.*, 1998: 127, figs 31, 35E.—Komai, 2000: 357.—Baba, 2005: 121, 271.

Material examined.—Dasi fishing port, Yilan County, May 1997: 1 male (14.0 mm) (NTOU).—6 May 2003: 1 male (15.9 mm) (NTOU).—11 Mar 2004: 1 male (16.3 mm) (NTOU).—8 Dec 2004: 1 female (11.8 mm) (NTOU).—4 Apr 2005: 1 male (16.6 mm) (NTOU). Nanfang-ao fishing port, Yilan County, 5 Mar 1991: 1 male (22.2 mm) (NTOU).—8 Apr 1999: 1 male (17.6 mm) (NTOU).—15 May 2003: 1 male (20.8 mm) (NTOU). CP268, 24°30.46'N, 122°6.28'E, 421–531 m, 2 Sep 2004: 1 female (15.5 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 5 spines. Rostrum spiniform, supraocular spines reaching end of corneae. Frontal margin slightly oblique. Abdominal somites 2 and 3 with 8 and 2 spines, respectively. Sternal plastron without striae; sternite 3 broader than anterior border of sternite 4. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. 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. Mxp3 merus with extensor margin unarmed. P1 fingers with spines between basal and subterminal spines. P2–4 dactyli with row of movable spines, unarmed on more than distal third.

Size.—Males to 22.2 mm, females to 15.5 mm (present data).

Coloration.—Ground color of carapace, abdominal somites and P1–4 orange. Rostrum orange or reddish, supraocular spines orange or whitish. P2–4 sometimes with indistinct orange and whitish transverse bands; distal part of dactyli whitish.

Habitat.—Mud (Baba, 2005); 337–531 m.

Distribution.—Indonesia, South China Sea (Dongsha), Philippines, and Taiwan.

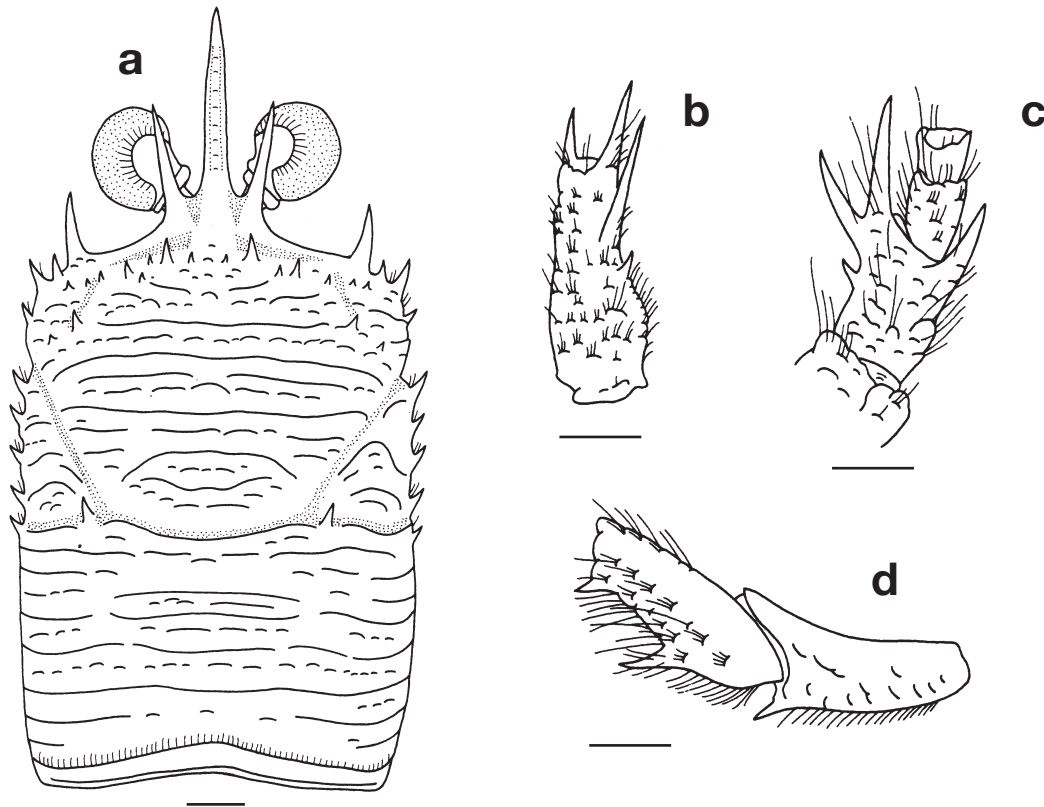


Fig. 165. Male (22.2 mm), Nanfang-ao fishing port, Yilan County, 5 Mar 1991: **a**, carapace, dorsal; **b**, basal article of left antennule, ventral; **c**, left antennal peduncle, ventral; **d**, ischium and merus of left Mxp3, lateral. Scales = 3 mm (after Wu *et al.*, 1998).

Munida psamathe Macpherson, 1994

沙美刺鎧蝦



Fig. 166. Ovigerous female (4.0 mm), DW45.

Munida psamathe Macpherson, 1994: 513, figs 40, 93 [type locality: New Caledonia, 24°39.90'S, 168°18.10'E, 573 m].—Macpherson, 1996a: 404.—Baba, 2005: 271.

Material examined.—DW45, 22°48.3'N, 121°27.4'E, 423–439 m, 2 Aug 2000: 2 males (3.3, 5.5 mm), 1 ovigerous female (4.0 mm), 1 female (4.7 mm) (NTOU). DW151, 22°18.34'N, 121°30.04'E, 301–356 m, 20 May 2002: 1 male (4.4 mm) (NTOU). DW155, 21°29.27'N, 120°45.54'E, 436–469 m, 21 May 2002: 1 ovigerous female (3.1 mm) (NTOU). No specific locality, 27 May 2001: 1 male (4.2 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 4 spines. Rostrum spiniform, supraocular spines not reaching end of corneae. Frontal margin transverse. Abdominal somite 2 with 2 small median spines. Sternal plastron smooth, without striae. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Distomesial spine of antennular basal article clearly shorter than distolateral. Antennal peduncle reduced; distomesial spine of article 1 reaching end of article 2; article 2 with small mesial and lateral marginal spine, clearly not reaching end of article 3. Mxp3 merus with distal spine, sometimes very reduced, on extensor margin. P1 finger only with small basal and subterminal spines or unarmed. P2–4 dactyli with 8–12 seta-like spines along entire flexor margin.

Size.—Males to 6.5 mm, females to 4.9 mm, ovigerous females from 3.1 mm (Macpherson, 1994; present data).

Coloration.—Ground color of body and pereopods orange. Gastric region reddish. Rostrum red. P1–4 with reddish and whitish transverse bands. P2–4 dactyli whitish.

Habitat.—Substrates unknown; 301–700 m.

Distribution.—New Caledonia, Matthew & Hunter Islands, Waterwitch Bank, Combe Bank, Bayonnaise Bank, and Taiwan.

Remarks.—This is the first record of the species from Taiwan and the NW Pacific.

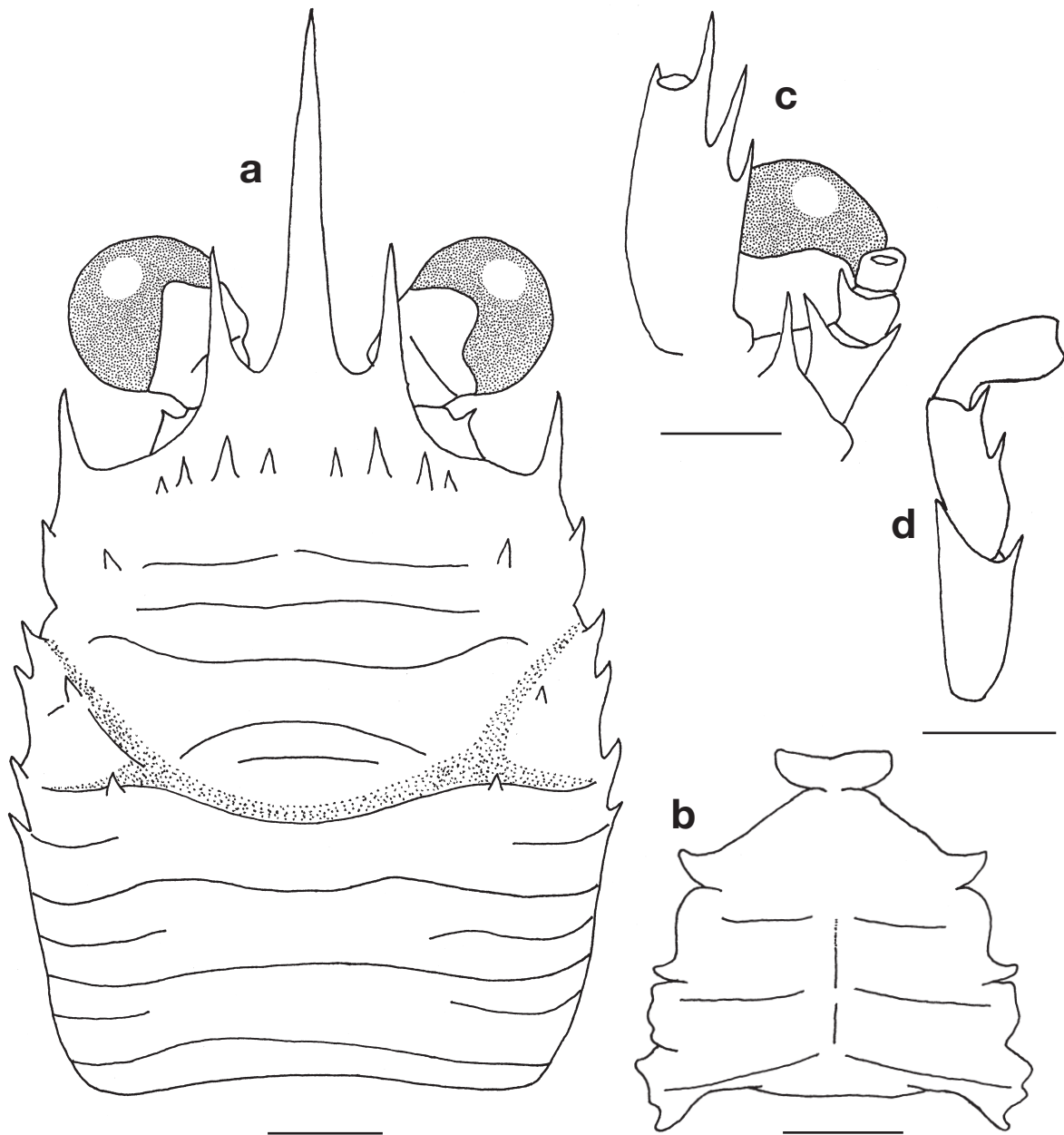


Fig. 167. Male (4.4 mm), DW151: **a**, carapace, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, ischium, merus and carpus of right Mxp3, lateral. Scales: a, b = 5 mm; c, d = 1 mm.

Munida punctata Macpherson, 1997
針孔刺鎧蝦

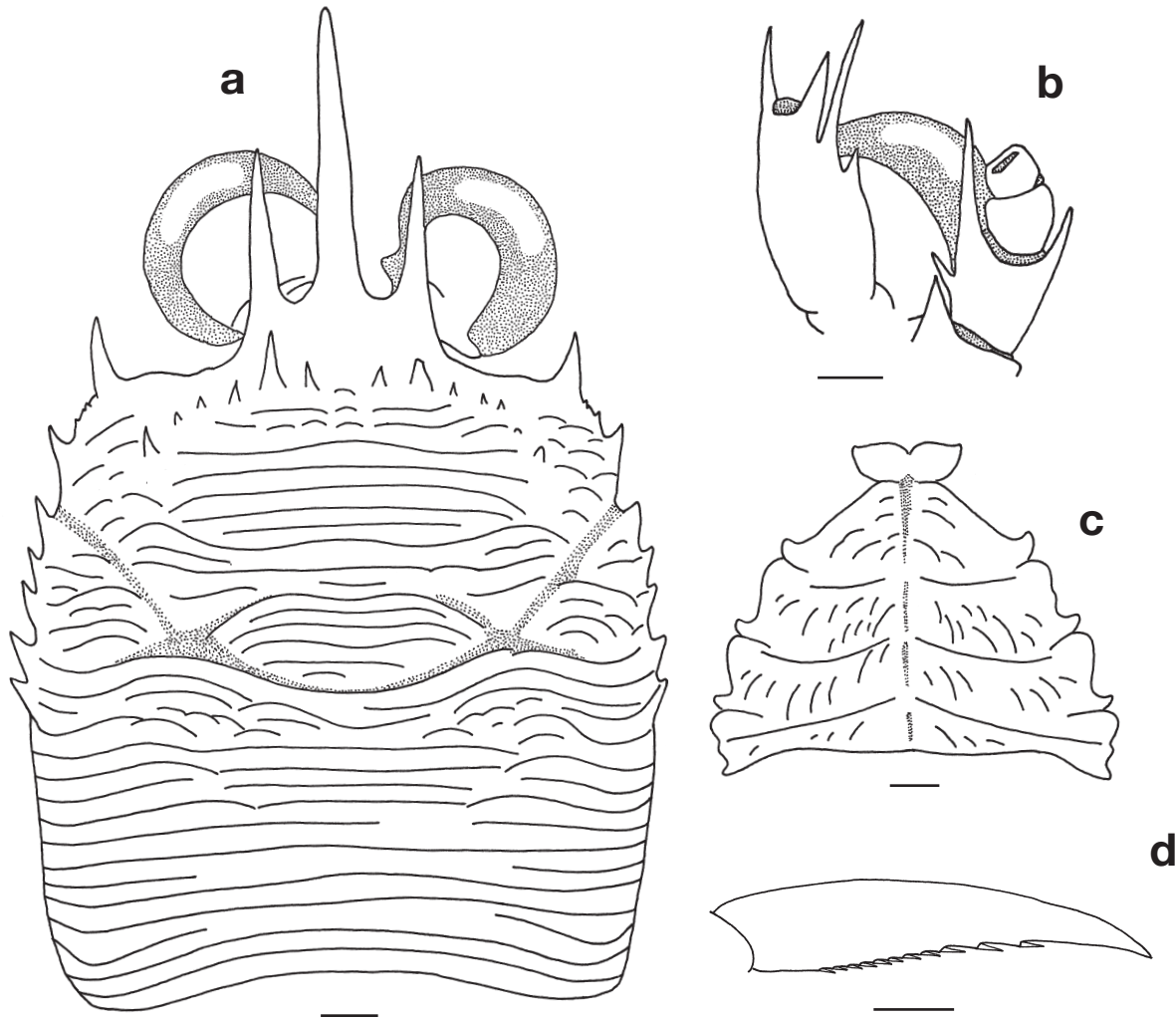


Fig. 168. Male (9.6 mm), CP264, a–b; male (12.0 mm), CP135, c–d: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, sternal plastron; **d**, right P2 dactylus, lateral. Scales = 1 mm.

Munida punctata Macpherson, 1997: 608, fig. 3 [type locality: Kei Islands, 6°08'S, 132°45'E, 390–502 m].—
Baba, 2005: 122, 272.

Material examined.—Nanfang-ao fishing port, Yilan County, 7 Apr 2004: 1 ovigerous female (14.4 mm) (NTOU). CD135, 22°17.21'N, 120°0.28'E, 961–1112 m, 22 Nov 2001: 1 male (12.0 mm) (NTOU). CP264, 24°28.07'N, 121°53.55'E, 330–297 m, 1 Sep 2004: 1 male (9.6 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 5 spines. Rostrum distally compressed; supraocular spines nearly reaching end of corneae. Abdominal somite 2 with 8–10 spines. Sternal plastron with scale-like striae.

Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral 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 distomesial spine reaching end of peduncle. Mxp3 merus unarmed on extensor margin. P1 massive, short; fixed finger with small subterminal spine; movable finger unarmed. P2–4 dactyli curving, flexor margin with 7 or 8 seta-like spines, unarmed on distal fourth.

Size.—Males to 12.7 mm, females to 14.4 mm, ovigerous females from 14.4 mm (Macpherson, 1997; present data).

Coloration.—Not recorded.

Habitat.—Mud (Baba, 2005); 297–1112 m.

Distribution.—Indonesia (Kei Islands), and Taiwan.

Remarks.—*Munida punctata* is recorded for the first time from Taiwan.

Munida rufiantennulata Baba, 1969

紅鬚刺鎧蝦



Fig. 169. Female (6.5 mm), DW5.

Munida rufiantennulata Baba, 1969a: 23, fig. 7 [type locality: near Danjo Islands, W of Kyushu, Japan, 167 m].—Baba, 1988: 128.—Baba, 1989: 131.—Macpherson, 1994: 523 (part), figs 46, 83 (1 specimen from New Caledonia = *M. ommata* Macpherson, 2004).—Macpherson, 1999: 423.—Komai, 2000: 357.—Macpherson, 2004: 277, figs 11, 18.—Baba, 2005: 124, fig. 48b, 273.

Not *M. rufiantennulata*.—Macpherson, 1997: 610. (= *M. ommata* Macpherson, 2004)

Material examined.—DW5, 22°40.5'N, 119°56.5'E, 213–236 m, 27 Jul 2000: 2 females (3.0, 6.5 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 3 or 4 spines. Rostrum spiniform; supraocular spines not exceeding cornea. Frontal margin oblique. Abdominal somite 2 with 8 spines on anterior stria. 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. Eyes moderately large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Antennular basal article with distomesial spine very small, clearly smaller than distolateral. Article 1 of antennal peduncle with sharp distomesial spine slightly exceeding end of article 2; distomesial spine of article 2 nearly reaching or slightly falling short of end of peduncle. Mxp3 merus with extensor margin unarmed. P1 fixed finger with 2 subterminal spines on lateral margin, movable finger with 1 proximal and 1 subterminal spine on mesial margin. P2–4 dactyli with movable spines along entire length of flexor margin.

Size.—Males to 15.3 mm including rostrum, females to 8.3 mm, ovigerous female from 5.2 mm (Macpherson,

1994, 2004; Baba, 2005).

Coloration.—Light orange and pale pink in ground color. Anterior branchial region marked with red rounded spot. Antennule reddish with longitudinal white stripe. Distal portion of P1 fingers, palm and carpus reddish or orange (also see Baba, 1969a).

Habitat.—Mud, occasionally mixed with globigerina, green mud, corals, sand (Baba, 1988, 2005); 44–595 m.

Distribution.—Vanuatu, New Caledonia, Loyalty Islands, Matthew & Hunter Islands, Chesterfield Islands, Fiji, Tonga, Indonesia, Philippines, Taiwan, and Japan.

Remarks.—This is the first record of the species from Taiwan.

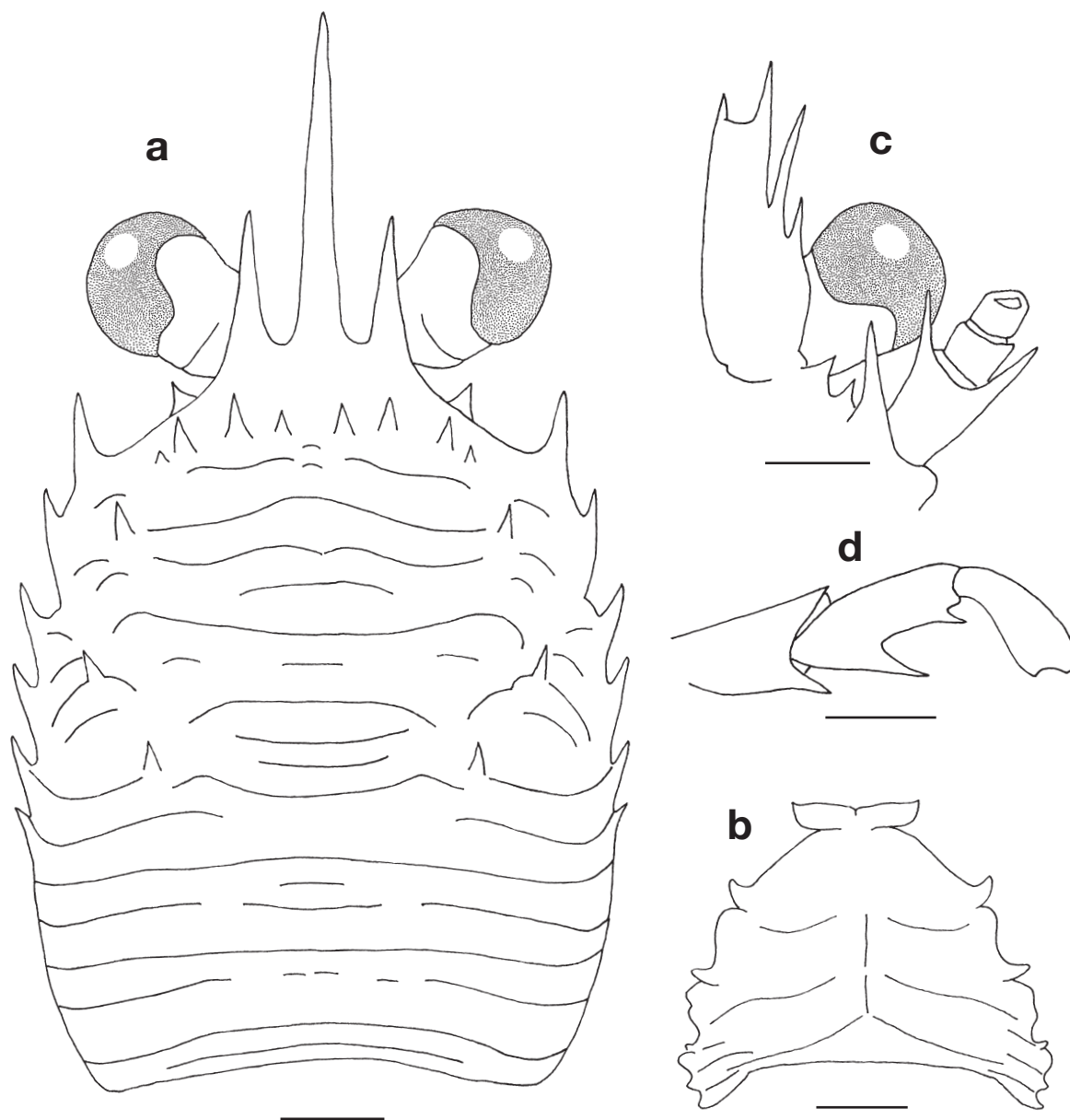


Fig. 170. Female (6.5 mm), DW5: **a**, carapace, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, ischium, merus and carpus of right Mxp3, lateral. Scales: a, b = 5 mm; c, d = 1 mm.

Munida rupicola Lin & Chan, 2005

嗜石刺鎧蝦



Fig. 171. Holotype male (13.2 mm), CP31.

Munida rupicola Lin & Chan, 2005: 237, figs 1–3 [type locality: Taiwan, 22°06'N, 120°11.8'E, 673–768 m].

Material examined.—CP31, 22°06.0'N, 120°11.8'E, 673–768 m, 30 Jul 2000: male holotype (13.2 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 5 spines. Rostrum spiniform; supraocular spines reaching end of corneae. Abdominal somite 2 with row of 8 spines. Sternal plastron with smooth surface; anterior part of sternite 4 narrower than sternite 3. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Basal article of antennular peduncle with distomesial spine small and much shorter than distolateral spine. Antennal article 1 with distomesial spine not reaching end of article 2; distomesial spine of article 2 overreaching article 3. Mxp3 merus with extensor margin unarmed. P1 fingers with small proximal and subterminal spines. P2–4 dactyli with movable spinules along entire flexor margin.

Size.—Only known from the holotype male of 13.2 mm.

Coloration.—Body including P1–4 reddish orange. Carapace with 3 transverse white bands: one directly behind rostrum, laterally reaching anterior 3 lateral marginal spines, one on mid-carapace and another one on posterior quarter of carapace. P2–4 with distal parts of propodi and entire dactyli whitish. Posterior abdomen and tailfan paler.

Habitat.—Substrates not recorded; 673–768 m.

Distribution.—So far known only from Taiwan.

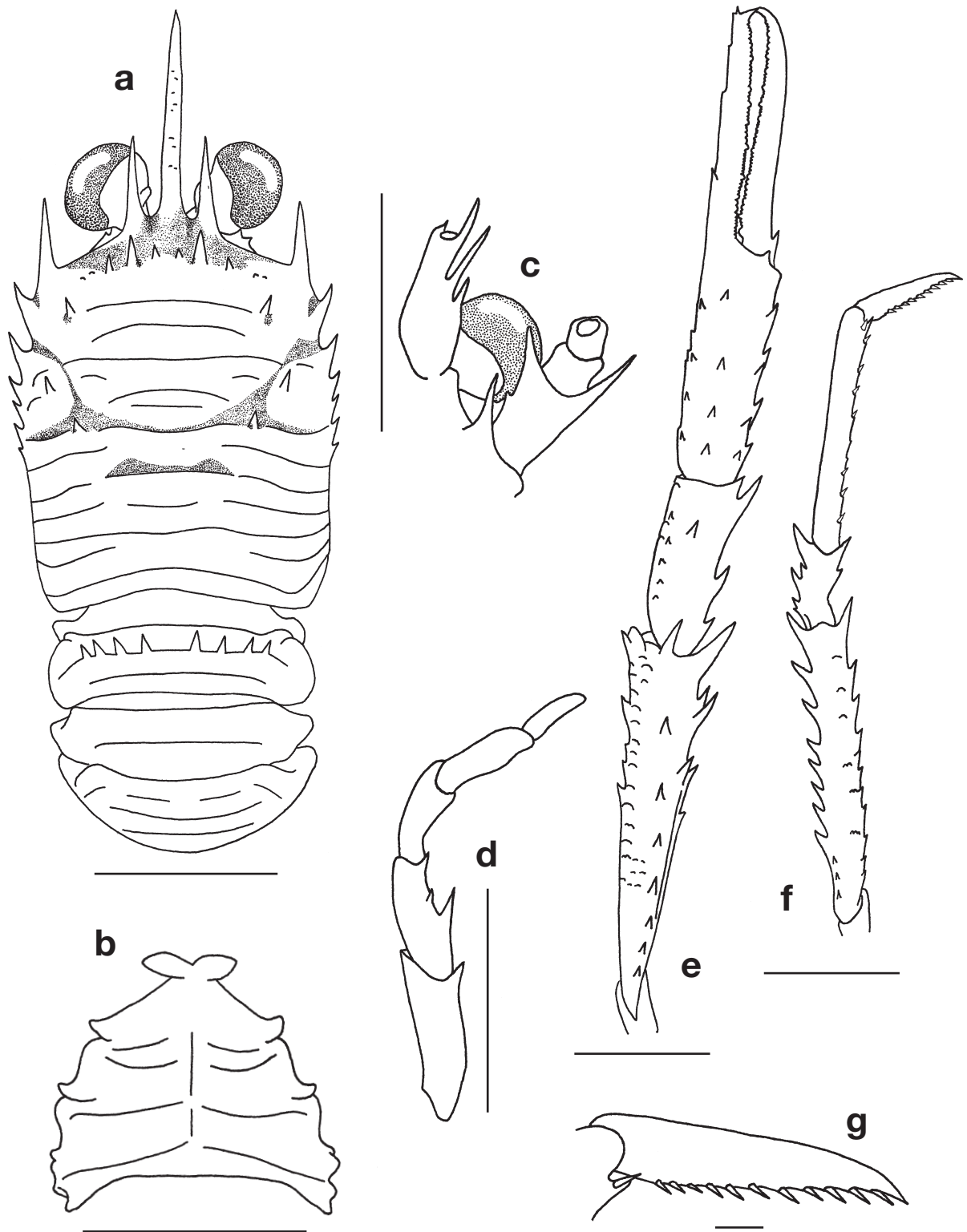


Fig. 172. Holotype male (13.2 mm), CP31: **a**, carapace and abdomen, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, right Mxp3, lateral; **e**, left P1, dorsal; **f**, right P2, lateral; **g**, right P2 dactylus, lateral. Scales: a–f = 5 mm; g = 1 mm (after Lin & Chan, 2005).

Munida spilota Macpherson, 1994
斑點刺鎧蝦



Fig. 173. Male (6.8 mm), DW151.

Munida spilota Macpherson, 1994: 533, figs 51, 84 [type locality: Matthew & Hunter Islands, 22°26'S, 171°4.1'E, 400 m].—Baba, 2005: 275.

Material examined.—DW151, 22°18.34'N, 121°30.04'E, 301–356 m, 20 May 2002: 1 male (6.8 mm), 1 female (6.6 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 5 spines. Rostrum spiniform; supraocular spines not exceeding corneae. Frontal margin transverse. Abdominal somite 2 with 2 spines on each side of anterior ridge. Sternal plastron smooth, few striae on sternite 4. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Terminal spines of antennular basal article subequal. Article 1 of antennal peduncle having distomesial spine overreaching article 2; article 2 with distomesial spine overreaching article 4. Mxp3 merus with distal spine on extensor margin. Fixed finger of P1 with lateral marginal spines other than 2 subterminal spines; movable finger with proximal and subterminal spines. P2–4 dactyli with movable spines along entire flexor margin.

Size.—Males to 8.6 mm, females to 6.6 mm; no ovigerous females have been taken (Macpherson, 1994; present data).

Coloration.—Ground color of carapace, abdomen and appendages orange or pinkish. P1 with numerous small red spots on dorsal spines; large red spot on distomesial part of palm; distal half of fingers whitish. P2–4 with indistinct orange and whitish bands.

Habitat.—Substrates not recorded; 220–600 m.

Distribution.—New Caledonia, Matthew & Hunter Islands, and Taiwan.

Remarks.—The species is rather rare in Taiwan. This is the first record of the species from Taiwan and the NW Pacific.

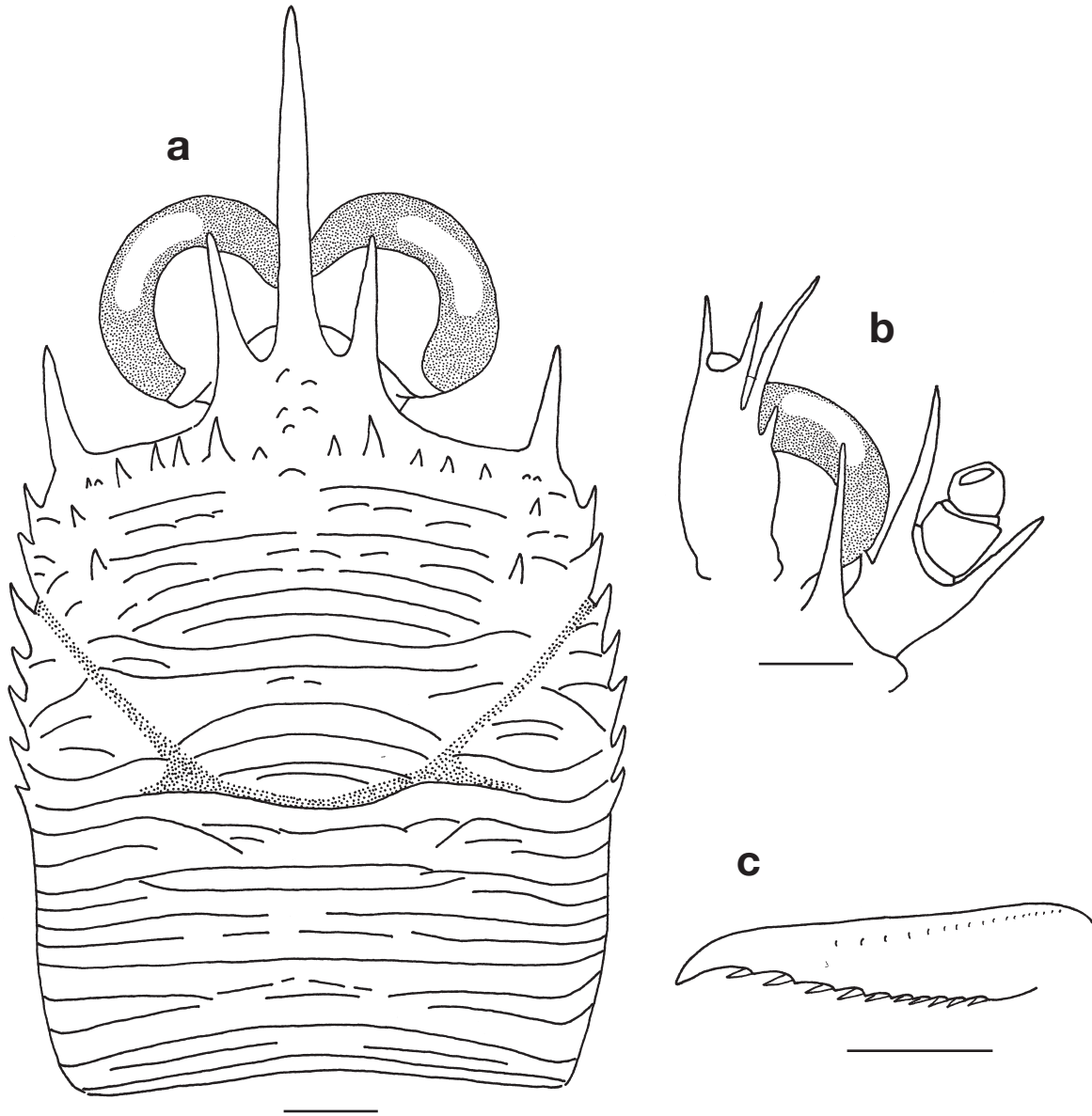


Fig. 174. Male (6.8 mm), DW151: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, left P2 dactylus, lateral. Scales = 1 mm.

Munida striola Macpherson & Baba, 1993
條紋刺鎧蝦



Fig. 175. Female (12.2 mm), CP49.

Munida striola Macpherson & Baba, 1993: 416, fig. 20 [type locality: Tosa Bay, Japan].—Macpherson, 1997: 610.—Konishi & Saito, 2000: 1026, figs 3–4.—Baba, 2005: 127, fig. 48c, 275.

Material examined.—Dasi fishing port, Yilan County, Jan 1997: 1 male (13.3 mm) (NTOU). CP49, 22° 55.7'N, 121°21.6'E, 266–262 m, 2 Aug 2000: 1 female (12.2 mm) (NTOU). CD142, 22°21.64'N, 120°13.44'E, 355–277 m, 24 Nov 2004: 1 male (15.2 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 5 spines. Rostrum spiniform; supraocular spines reaching end of corneae. Abdominal somite 2 with 8–10 spines. Sternal plastron with numerous striae. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. 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 with distomesial spine exceeding end of peduncle. Mxp3 merus with extensor margin unarmed. Movable finger of P1 without spine between proximal and 2 subterminal spines; fixed finger with some lateral spines including subterminal. P2–4 dactyli with movable spines on proximal half of flexor margin.

Size.—Males to 17.9 mm, females to 13.0 mm, ovigerous females from 7.2 mm (Macpherson & Baba, 1993).

Coloration.—Body generally orange-brown, posterior abdomen and tailfan whitish. P1 distributed with minute red dots, with tips of fingers whitish. P2–4 dactyli whitish.

Habitat.—Sand, mud (Baba, 2005); 146–355 m.

Distribution.—Indonesia, Taiwan, and Japan.

Remarks.—This is the first record of the species from Taiwan.

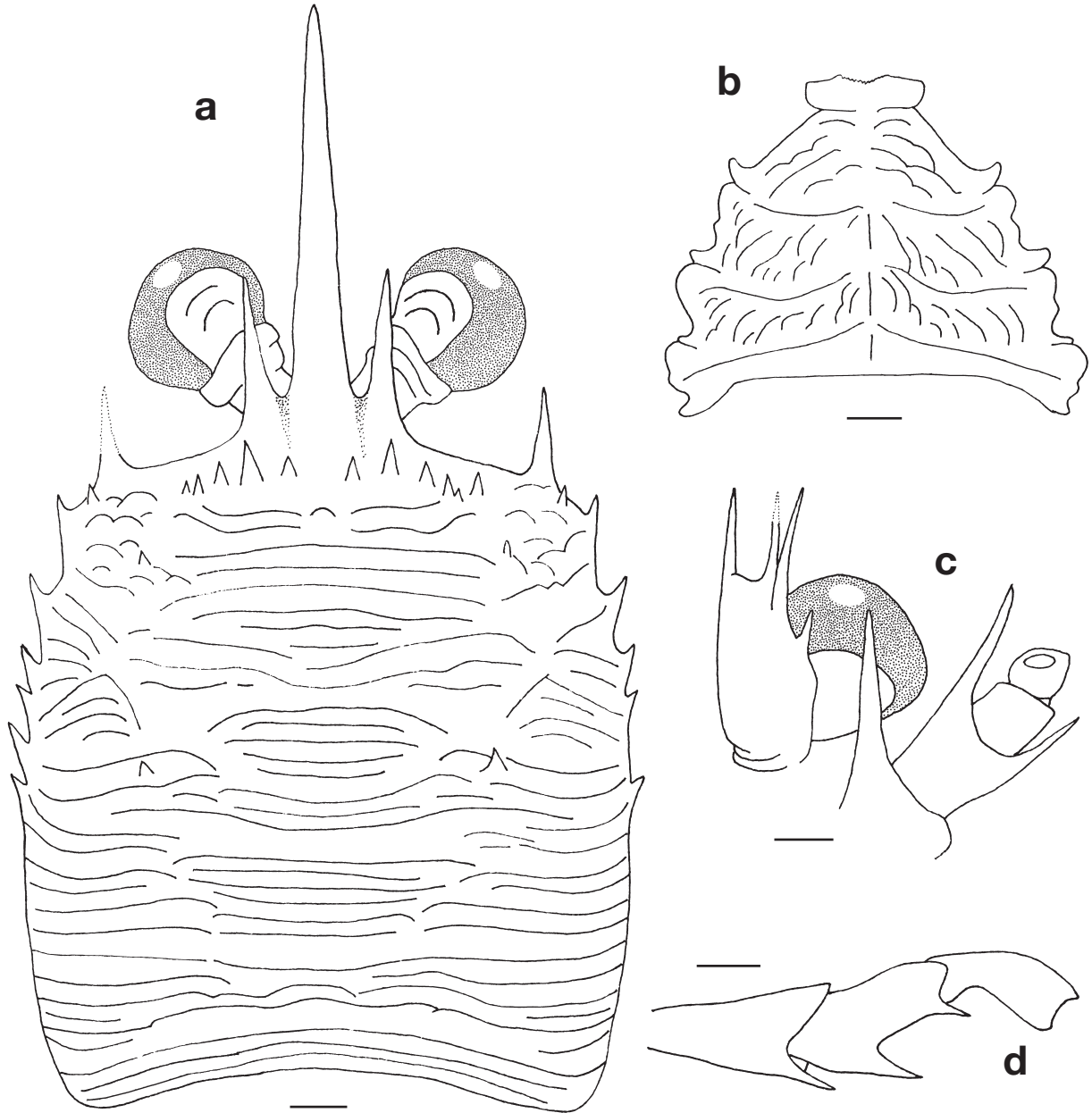


Fig. 176. Female (12.2 mm), CP49: **a**, carapace, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, ischium, merus and carpus of right Mxp3, lateral. Scales: a, b = 5 mm; c, d = 1 mm.

Munida thoe Macpherson, 1994

套依刺鎧蝦



Fig. 177. Ovigerous female (13.7 mm), Nanfang-ao fishing port, Yilan County, 7 Apr 2004.

Munida thoe Macpherson, 1994: 542, figs 56, 87 [type locality: New Caledonia, 24°54.96'S, 168°21.91'E, 500–580 m].—Macpherson, 1996a: 408.—Wu *et al.*, 1998: 135 (part), figs 36, 42A.—Komai, 2000: 358.—Baba, 2005: 276.

Not *Munida thoe*.—Wu *et al.*, 1998: 135 (part), fig. 42B. (= *M. oritea* Macpherson & Baba, 1993)

Material examined.—Nanfang-ao fishing port, Yilan County, 7 Jun 1993: 2 females (9.9, 13.7 mm) (NTOU).—9 Jan 1994: 1 male (17.1 mm) (NTOU).—8 Mar 2001: 1 male (12.0 mm) (NTOU).—7 Apr 2004: 4 males (11.7–18.9 mm), 5 ovigerous females (9.9–13.7 mm) (NTOU). Donggang fishing port, Pingtung County, no date: 1 male (13.9 mm) (NTOU). No specific locality, Dec 1997: 1 male (12.1 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 5 spines. Rostrum spiniform; supraocular spines not exceeding corneae. Abdominal somite 2 with spines along anterior ridge. Sternal plastron smooth; sternite 4 with a few short striae. Eyes large, corneal width distinctly more than distance between sinus formed by supraocular and rostral spines. Terminal spines of antennular basal article subequal. Article 1 of antennal peduncle having distomesial spine reaching end of article 2; distomesial spine of article 2 not overreaching article 4. Mxp3 merus with 2 spines on flexor margin (distal smaller, proximal prominent) and distal spine on extensor margin. Fixed finger of P1 with some lateral marginal spines other than subterminal spines; movable finger with proximal and subterminal spines. P2–4 dactyli short, with spines along entire flexor margin.

Size.—Males to 19.7 mm, females to 18.0 mm, ovigerous females from 8.3 mm (Macpherson, 1994).

Coloration.—Ground color of carapace and abdominal somites orange; epigastric, mesogastric, and

anterior branchial regions, and anterior part of cardiac and intestinal regions purple. Rostrum, supraocular spines and spines on dorsal surface of carapace orange. P1–4 with indistinct whitish and reddish transverse bands. Distal half of P1 fingers and P2–4 dactyli whitish (also see Macpherson, 1994).

Habitat.—Substrates not recorded; 260–610 m.

Distribution.—New Caledonia, Matthew & Hunter, and Bayonnaise Bank, and Taiwan.

Remarks.—The carapace of this species always has purple bands. The fig. 42B of Wu *et al.* (1998) without any purple color on the carapace actually represents *M. oritea*.

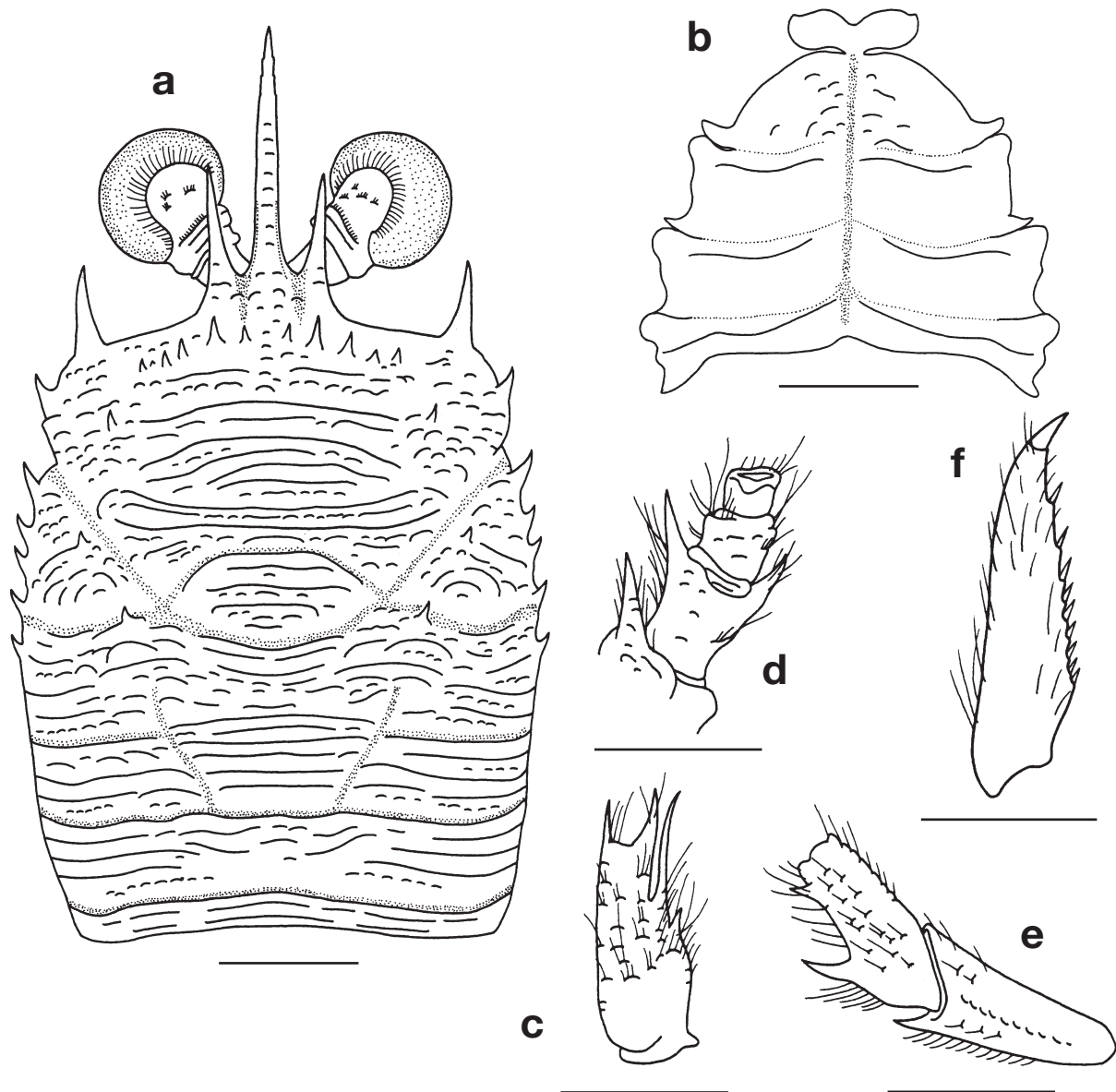


Fig. 178. Male (17.1 mm), Nanfang-ao fishing port, Yilan County, 9 Jan 1994: **a**, carapace, dorsal; **b**, sternal plastron; **c**, basal article of left antennule, ventral; **d**, left antennal peduncle, ventral; **e**, ischium and merus of left Mxp3, lateral; **f**, left P4 dactylus, lateral. Scales: a–e = 2 mm; f = 2 mm (after Wu *et al.*, 1998).

Munida tiresias Macpherson, 1994

泰衛賽刺鎧蝦

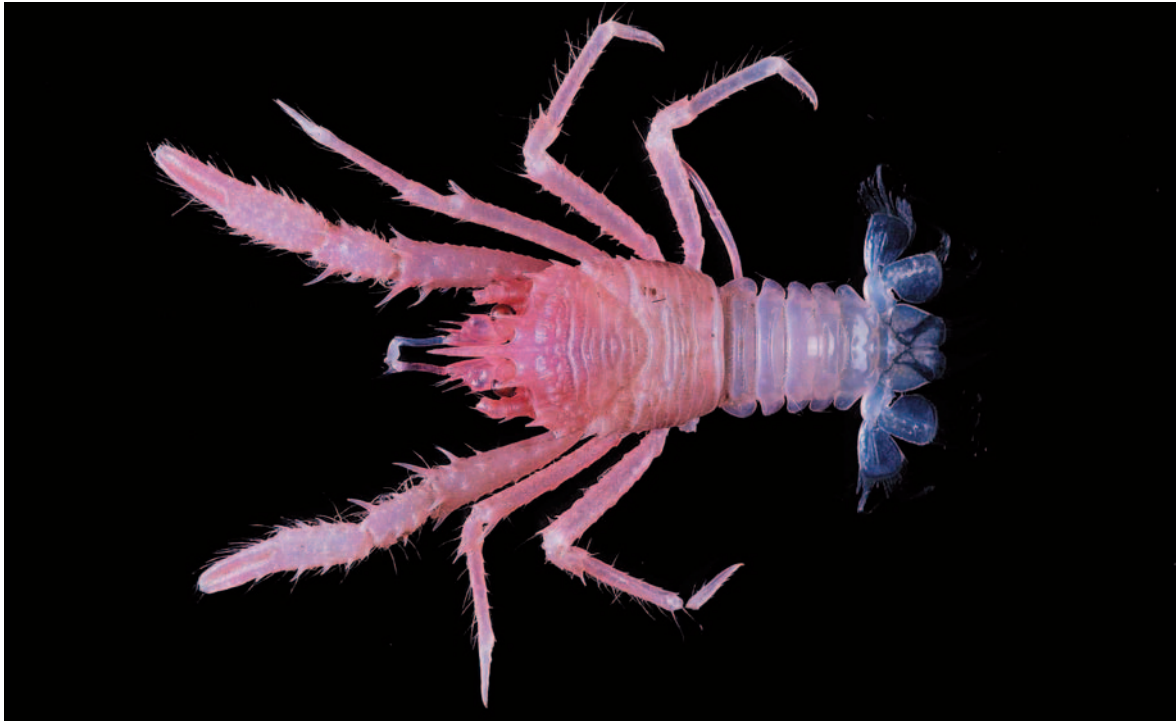


Fig. 179. Male (5.5 mm), CP281.

Munida tiresias Macpherson, 1994: 545, fig. 57 [type locality: New Caledonia, 24°00.30'S, 168°07.03'E, 1430–1470 m].—Baba, 2005: 276.—Osawa & Takeda, 2007: 134, fig. 1C, D.

Material examined.—CP281, 24°24.08'N, 122°14.06'E, 1173–1248 m, 15 Jun 2005: 2 males (5.1, 5.5 mm) (NTOU). OCP282, 24°23.90'N, 122°14.10'E, 1200–1250 m, 15 Jun 2005: 1 male (3.2 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 5 small spines. Rostrum spiniform, supraocular spines short, not reaching midlength of rostrum. Frontal margin transverse; first lateral spine mesial to anterolateral angle. Abdominal somites unarmed. Sternal plastron smooth, without striae. Eyes small, corneal width equal to or less than distance between sinus formed by supraocular and rostral spines. Distomesial spine of antennular basal article clearly smaller than distolateral. Article 1 of antennal peduncle with small distomesial spine, clearly not reaching midlength of article 2; distomesial spine of article 2 not reaching end of article 3. Mxp3 merus unarmed on extensor margin. Fingers of P1 only with small subterminal spines. P2–4 dactyli with movable spines along entire flexor margin.

Size.—Males to 5.5 mm, females to 6.9 mm, no ovigerous females have been collected (Osawa & Takeda, 2007; present data).

Coloration.—Carapace and appendages pinkish. Abdomen and P2–4 dactyli whitish.

Habitat.—Probably mud; 1140–2063 m.

Distribution.—New Caledonia, Taiwan, and Okinawa Trough.

Remarks.—*Munida tiresias* is one of the deepest living species in the genus and is newly recorded from Taiwan.

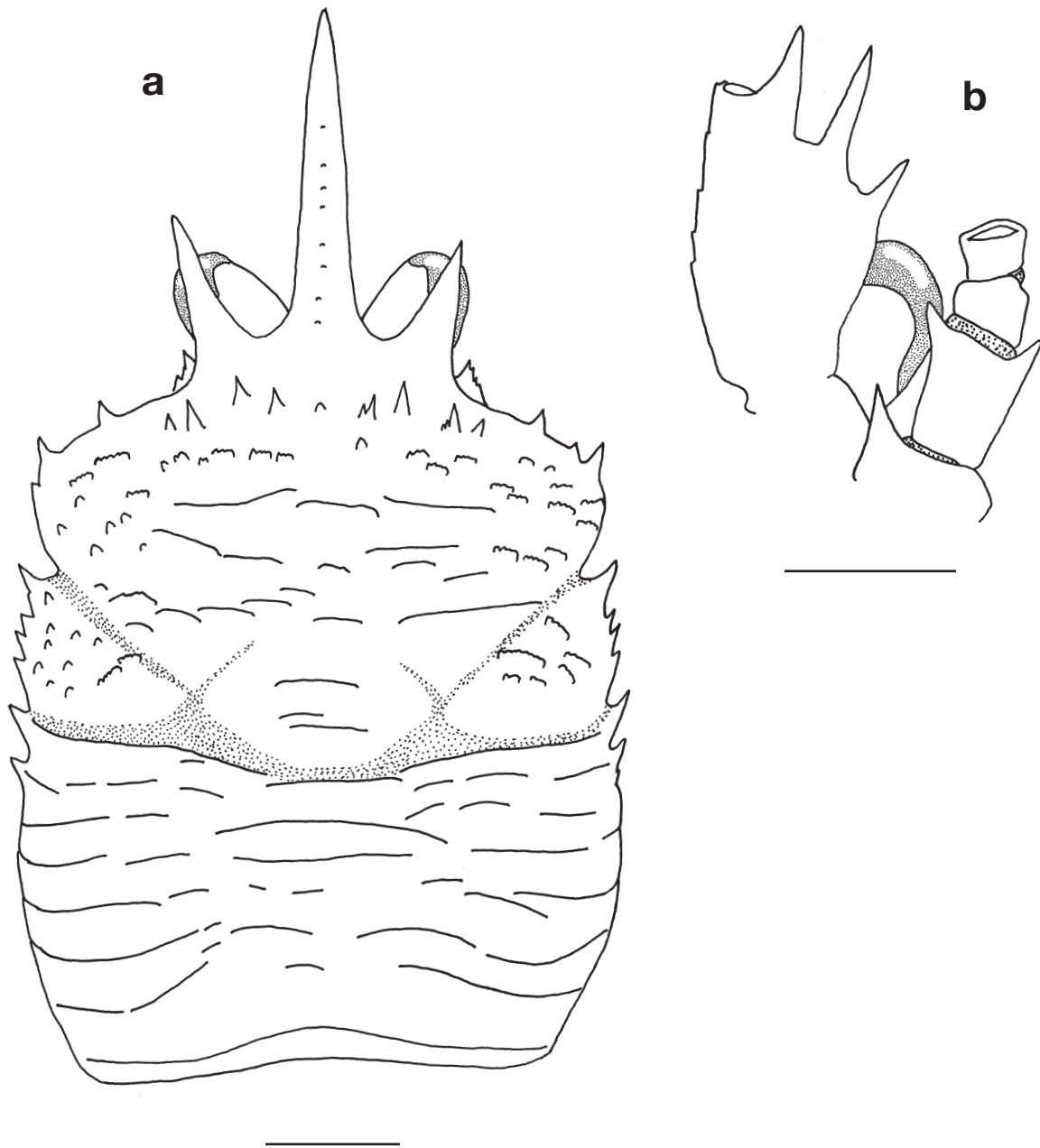


Fig. 180. Male (5.5 mm), CP281: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral. Scales = 1 mm.

Munida typhle Macpherson, 1994
盲眼刺鎧蝦



Fig. 181. Female (8.9 mm), CD210.

Munida typhle Macpherson, 1994: 549, fig. 60 [type locality: New Caledonia, 24°00.30'S, 168°07.03'E, 1430–1470 m].—Macpherson, 1999: 425.—Macpherson, 2000: 420.—Baba, 2005: 276.—Macpherson, 2006a: 325.

Material examined.—CP55, 24°26.9'N, 122°18.1'E, 638–824 m, 4 Aug 2000: 6 males (5.8–9.2 mm), 4 females (6.9–7.4 mm) (NTOU). CD210, 24°28.99'N, 122°12.79'E, 500–1183 m, 1 Jun 2003: 1 female (8.9 mm) (NTOU). CP278, 24°23.63'N, 122°14.13'E, 1222–1239 m, 14 Jun 2005: 1 male (10.4 mm) (NTOU). CP281, 24°24.08'N, 122°14.06'E, 1173–1248 m, 15 Jun 2005: 1 male (6.6 mm) (NTOU).

Diagnosis.—Branchial margin of carapace with 5 small spines. Rostrum spiniform, supraocular spines short, not reaching midlength of rostrum. Frontal margin slightly oblique; first lateral spine on anterolateral angle. Abdominal somite 2 with spines along anterior ridge. Sternal plastron smooth, without striae. Eyes small, corneal width equal to or less than distance between sinus formed by supraocular and rostral spines. Distomesial spine of antennular basal article clearly smaller than distolateral. Article 1 of antennal peduncle with distomesial spine reaching or overreaching midlength of article 2; distomesial spine of article 2 exceeding end of article 3. Mxp3 merus with extensor margin unarmed. Fixed fingers of P1 with proximal and subterminal spines; movable finger with 1 proximal spine. P2–4 dactyli with movable spines along entire flexor margin.

Size.—Males to 10.4 mm, females to 11.2 mm, ovigerous females from 5.2 mm (Macpherson, 1999, 2006b; present data).

Coloration.—Body and appendages pinkish. Rostrum and distal part of P1 fingers dark pink.

Habitat.—Substrates not recorded; 500–1470 m.

Distribution.—Vanuatu, New Caledonia, French Polynesia (Marquesas Islands, Austral Archipelago), and Taiwan.

Remarks.—This is the first record of the species from Taiwan and in the NW Pacific.

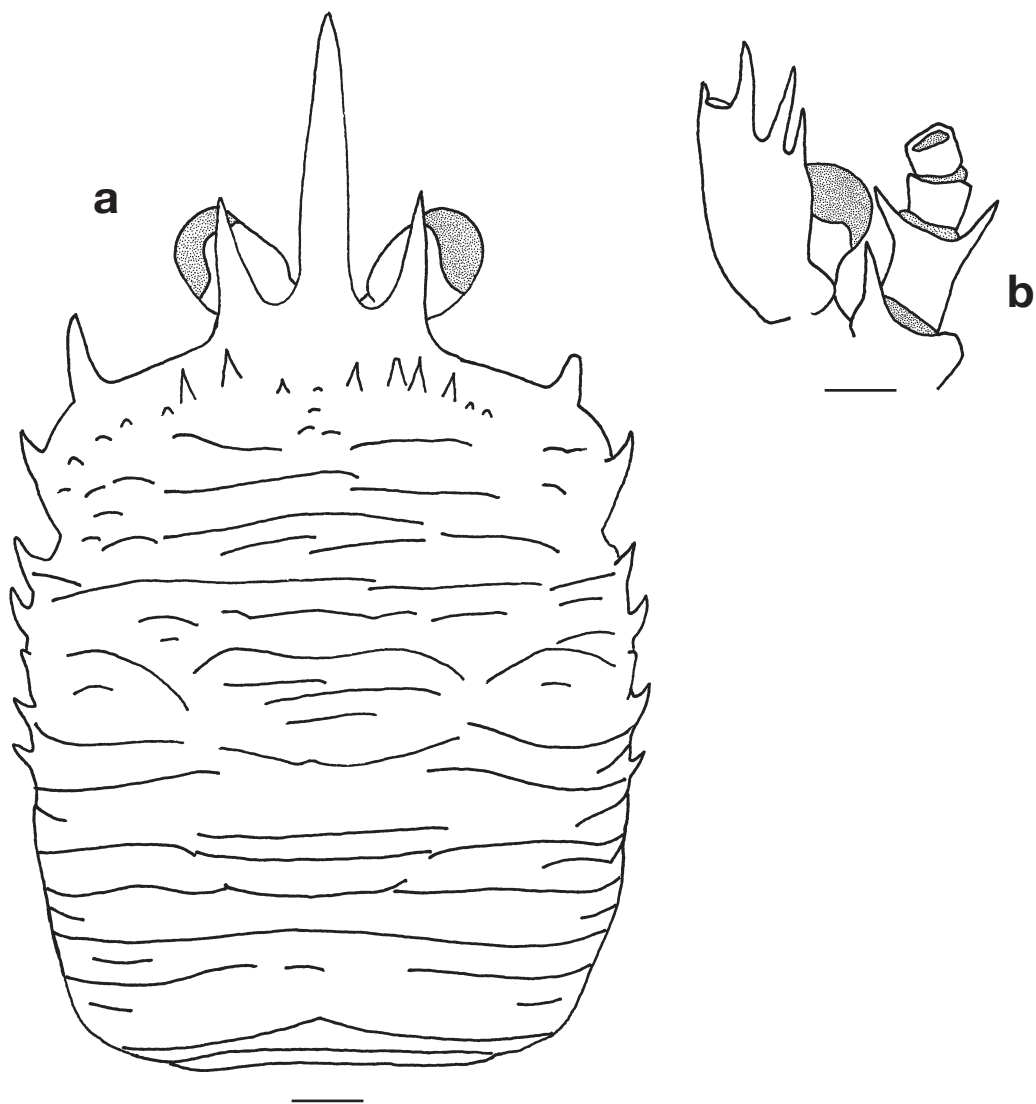


Fig. 182. Female (8.9 mm), CD210: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral. Scales = 1 mm.

Genus *Munidopsis* Whiteaves, 1874

仿刺鎧蝦屬

Munidopsis Whiteaves, 1874: 212 [type species: *Munidopsis curvirostra* Whiteaves, 1874. Gender: feminine].—Henderson, 1888: 148.—Faxon, 1895: 81.—A. Milne Edwards & Bouvier, 1897: 63.—Alcock, 1901: 247.—Doflein & Balss, 1913: 148.—Stebbing, 1914: 7.—Schmitt, 1921: 167.—Chace, 1942: 72 (key to W Atlantic species).—Barnard, 1950: 493.—Zariquiey Álvarez, 1968: 268.—Poore, 2004: 235.—Baba, 2005: 128 (key to Indo-Pacific species).

Anoplonotus Smith, 1883: 50 [type species: *Anoplonotus politus* Smith, 1883, by original designation].

Bathyankyristes Alcock & Anderson, 1894: 173 [included species: *Bathyankyristes spinosus* Alcock & Anderson, 1894; *B. laevis* Alcock & Anderson, 1894].

Elasmonotus A. Milne Edwards, 1880: 60.—Henderson, 1888: 158 [included species: *Elasmonotus longimanus* A. Milne Edwards, 1880; *E. brevipanum* A. Milne Edwards, 1880; *E. armatus* A. Milne Edwards, 1880; *E. abdominalis* A. Milne Edwards, 1880]

Galathodes A. Milne Edwards, 1880: 53 [included species: *Galathodes erinaceus* A. Milne Edwards, 1880; *G. spinifer* A. Milne Edwards, 1880; *G. robustus* A. Milne Edwards, 1880; *G. serratifrons* A. Milne Edwards, 1880; *G. abbreviatus* A. Milne Edwards, 1880; *G. reynoldsi* A. Milne Edwards, 1880; *G. simplex* A. Milne Edwards, 1880; *G. sigbei* A. Milne Edwards, 1880; *G. latifrons* A. Milne Edwards, 1880; *G. tridens* A. Milne Edwards, 1880]

Orophorhynchus A. Milne Edwards, 1880: 58 [included species: *Orophorhynchus aries* A. Milne Edwards, 1880; *O. spinosus* A. Milne Edwards, 1880; *O. squamosus* A. Milne Edwards, 1880; *O. sharreri* A. Milne Edwards, 1880; *O. nitidus* A. Milne Edwards, 1880; *O. spinoculatus* A. Milne Edwards, 1880].

Galathopsis Henderson, 1885: 417 [included species: *Galathopsis laevigata* Henderson, 1885; *G. debilis* Henderson, 1885].

Munidopsis (*Munidopsis*).—Alcock, 1901: 248.

Munidopsis (*Bathyankyristes*).—Alcock, 1901: 249.—Tirmizi, 1966: 211.

Munidopsis (*Elasmonotus*).—Alcock, 1901: 249.—Tirmizi, 1966: 211.

Munidopsis (*Galathodes*).—Alcock, 1901: 249.—Tirmizi, 1966: 211.

Munidopsis (*Orophorhynchus*).—Alcock, 1901: 249.—Tirmizi, 1966: 211

Diagnosis.—Carapace usually 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 somites transversely grooved and ridged, with or without spines; somite 6 with lateral lobes often well produced, median margin transverse or convex, occasionally produced posteriorly, overreaching lateral lobes. G1 and G2 present. Telson subdivided. Eyes movable or fixed, occasionally with eyespines. Antennal flagellum usually overreaching P1. Epipods present on Mxp2–3, 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 Mxp1. Eggs large, not numerous.

Remarks.—The genus *Munidopsis* is one of the most diverse genera of the family Galatheidae. They are commonly found living on the continental slope, usually deeper than 500 m, and on the abyssal plain, > 2000 m. Approximately 20% of the species are from abyssal depths below 3000 m, the deepest record being ca. 5330 m (e.g. *M. abyssicola*, *M. parfaiti*). The collection of these species has been usually sporadic until recently, limiting our knowledge of the distributional ranges of the species. The number of species collected per haul is very low (mostly one species), probably due to their low densities. They are frequently observed by submersibles during

mid-oceanic ridge expeditions and some species have been observed in recently discovered vent and cold-seep communities. The representatives of the genus are distributed worldwide. In total, there are about 225 species, 133 of which are found in the Pacific (Baba *et al.*, 2008; Osawa *et al.*, 2008b). At present, 34 species are made known in Taiwan, two of which are new to Taiwan proper, and three of which are found in Dongsha.

Key to species of *Munidopsis* from Taiwan

1. P1 coxae clearly visible in dorsal view. Dorsal carapace surface covered with curved spines *M. sarissa*
— P1 coxae not visible in dorsal view. Dorsal carapace smooth or with some spines only 2
2. Rostrum with pair of lateral spines at anterior end of horizontal portion 3
— Rostrum without pair of lateral spines 5
3. Spines present at least on abdominal somites 2–3 *M. formosa*
— No spines on abdominal somites 4
4. Mesial margin of P1 carpus with 2 distal spines, proximal larger *M. serricornis*
— Mesial margin of P1 carpus with 1 distal spine only *M. trifida*
5. P2 reaching or overreaching end of P1 6
— P2 not reaching end of P1 21
6. Main eyespine on median part of cornea 7
— Main eyespine (rarely small or obsolescent) on mesial end of eyestalk 9
7. Main eyespine continuous with eyestalk *M. pilosa*
— Main eyespine not continuous with eyestalk, arising from end of cornea 8
8. Cornea distinctly narrowed distally *M. bispinoculata*
— Cornea rather rounded *M. similior*
9. Fixed finger with denticulate carina on distolateral margin 10
— Fixed finger without denticulate carina on distolateral margin 17
10. Pair of anterior gastric spines or processes 11
— No distinct spine on gastric region 14
11. Carapace with additional spines behind pair of gastric spines (distinct spine mesial to anterolateral spine of carapace) *M. centrina*
— Carapace without spines other than pair of gastric spines or processes (no spine mesial to anterolateral spine of carapace) 12
12. Cornea relatively broad, maximum breadth clearly more than breadth of rostrum at midlength *M. nitida*
— Cornea relatively narrow, maximum breadth distinctly less than breadth of rostrum at midlength 13
13. Blunt process mesial to midlength of posterior half of carapace lateral margin *M. teretis*
— No process mesial to midlength of posterior half of carapace lateral margin *M. edwardsii*
14. Epipods absent from P1–3. Carapace lateral margin with 2 anterior spines, including anterolateral spine . . 15
— Epipod on P1. Carapace lateral margin with additional spines behind 2 anterior spines 16
15. Rostrum broad, triangular, lateral margins convex *M. tafrii*
— Rostrum spiniform, lateral margins straight *M. ceratophthalma*
16. Antennal peduncle not reaching tip of mesial eyespine *M. taiwanica*
— Antennal peduncle clearly overreaching tip of mesial eyespine *M. profunda*
17. No distinct spines on gastric region *M. granosa*
— Distinct spines on gastric region 18
18. Carapace with longitudinal row of submedian spines *M. arietina*

— Carapace without longitudinal row of submedian spines	19
19. Epipod absent on P1	<i>M. echinata</i>
— Epipod present on P1	20
20. Abdominal somite 6 with strongly produced posteromedian flap	<i>M. panamae</i>
— Abdominal somite 6 with posteromedian margin weakly convex, not produced	<i>M. pallida</i>
21. Eyespine(s) present, including papilla-like and tubercle-like process	22
— Eyespine absent	25
22. Cornea ventral in position, hardly visible in dorsal view	23
— Cornea well exposed, visible in dorsal view	24
23. Carapace with antennal spine. Cornea not visible in dorsal view	<i>M. subchelata</i>
— Carapace lacking antennal spine. Cornea partly visible in dorsal view	<i>M. hirsutissima</i>
24. Lateral eyespine present	<i>M. verrilli</i>
— Lateral eyespine absent	<i>M. latiangulata</i>
25. Anterolateral spine of carapace followed by 4–8 small but sharp spines on branchial region	<i>M. latimana</i>
— 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	26
26. Carapace strongly granulose or tuberculose	27
— Carapace comparatively smooth or rugose	29
27. Epipods absent from P1–3. Ocular peduncles movable	<i>M. bruta</i>
— Epipods on P1–3. Ocular peduncles immovable	28
28. 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)	<i>M. tuberosa</i>
— Carapace moderately convex from side to side, no distinct border between gastric region and rostrum. Sternite 3 narrow relative to length (2.5 times as broad as long)	<i>M. cidaris</i>
29. Ocular peduncles more than twice as long as cornea	30
— Ocular peduncles nearly as long as or shorter than cornea	31
30. Carapace lateral margin with anterolateral spine only	<i>M. kensleyi</i>
— Carapace lateral margin with anterolateral spine followed by 1 or 2 spines	<i>M. dasypus</i>
31. Cornea nearly oval or semioval	<i>M. sinclairi</i>
— Cornea cylindrical	32
32. Anterolateral angle of carapace produced into spine	<i>M. andamanica</i>
— Anterolateral angle of carapace rounded	33
33. P1 long and slender, more than 3 times carapace length	<i>M. cylindrophthalma</i>
— P1 moderately long, less than 3 times carapace length	<i>M. analoga</i>

Munidopsis analoga Macpherson, 2007
近似仿刺鎧蝦



Fig. 183. Male (8.8 mm), CP214.

Munidopsis analoga Macpherson, 2007: 34, fig. 19 [type locality: New Caledonia, 21°41.80'S, 166°40.10'E, 1080–1180 m].—Osawa *et al.*, 2008a: 41, fig. 1B.

Material examined.—CP214, 24°28.59'N, 122°12.66'E, 490–1027 m, 27 Aug 2003: 1 male (8.8 mm) (NTOU).

Diagnosis.—Carapace smooth. Anterolateral angle of carapace rounded, lateral margins unarmed. Rostrum triangular, nearly horizontal, lateral margins carinated and straight, unarmed. No spines on abdominal somites. Cornea cylindrical, longer than remaining peduncle; eyespine absent. P1 less than 3 times carapace length. P2 not reaching end of P1. P2–4 propodi of uniform width, more than 3 times longer than high; dactyli with distinct serration. Epipods absent from pereopods.

Size.—Males to 16.0 mm, females to 11.1 mm, ovigerous females from 9.3 mm (Macpherson, 2007).

Habitat.—Substrates not recorded; 490–1180 m.

Coloration.—Carapace generally reddish orange, anterior part of rostrum and cervical grooves whitish. Abdomen reddish orange on somites 2–3, whitish on somites 4–6, telson, and uropods. Corneas orange pink. Pereopods white to pale orange.

Distribution.—New Caledonia, Fiji, and Taiwan.

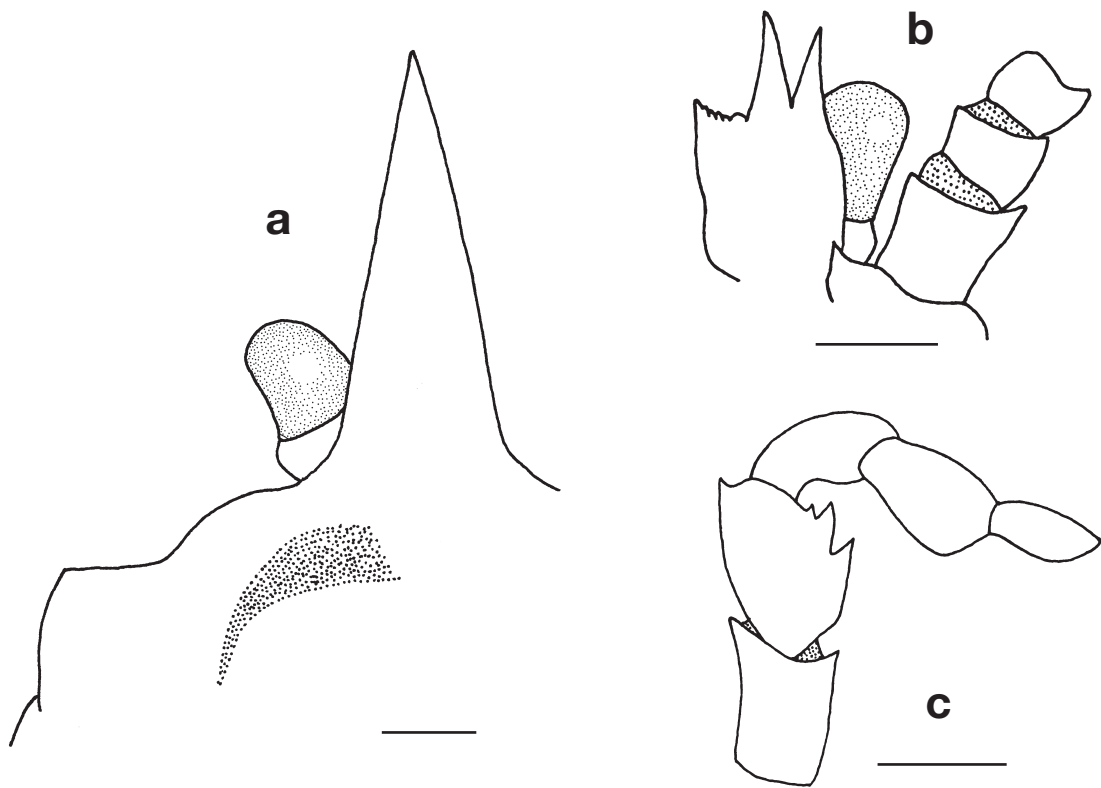


Fig. 184. Male (8.8 mm), CP214: **a**, left anterior part of carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, right Mxp3, lateral. Scales = 1 mm.

Munidopsis andamanica MacGilchrist, 1905
安達曼仿刺鎧蝦



Fig. 185. Male (11.9 mm), Dasi fishing port, Yilan County, 13 Mar 1992, body orangish-brown.



Fig. 186. Nanfang-ao fishing port, Yilan County, 27 Aug 1996, body yellowish-brown.

Munidopsis Wardeni var. *andamanica* MacGilchrist, 1905: 245 [type locality: E of Andamans, 1041 m].

Munidopsis (Munidopsis) Wardeni.—Doflein & Balss, 1913: 153, pl. 14, fig. 2.

Munidopsis andamanica.—Baba, 1988: 140, fig. 53.—Wu *et al.*, 1998: 137, figs 37, 42C.—Komai, 2000: 358.—Baba, 2005: 284.—Macpherson, 2007: 37.—Osawa & Takeda, 2007: 137, fig. 3A, B.—Osawa *et al.*, 2008a: 38.—Poore *et al.*, 2008: 21.

Material examined.—Dasi fishing Port, Yilan County, 13 Mar 1992: 1 male (11.9 mm) (NTOU).—3 Jul 1995: 1 male (13.7 mm) (NTOU).—10 Apr 2000: 1 male (14.0 mm), 1 female (21.3 mm) (NTOU).—10 Apr 2001: 1 male (12.0 mm) (NTOU).—24 Apr 2003: 1 male (10.5 mm) (NTOU).—15 Aug 2004: 2 ovigerous females (14.3, 15.4 mm) (NTOU).—16 Dec 2004: 3 males (11.5–15.1 mm) (NTOU).—28 Aug 2006: 1 male (13.2 mm) (NTOU).—15 Oct 2006: 1 male (13.2 mm) (NTOU). CD194, 22°11.6'N, 120°23.82'E, 402–505 m, 29 Aug 2002: 1 ovigerous female (9.8 mm) (NTOU). PCP348, 22°21.645'N, 120°11.619'E, 430–334 m, 9 Mar 2006: 1 male (16.2 mm) (NTOU).

Diagnosis.—Dorsal surface of carapace smooth; anterolateral angle with spine, lateral margins unarmed. Rostrum triangular, usually directed upwards, lateral margins carinated and straight. Anterior end of branchial lateral margin unarmed. No spines on abdominal somites. Cornea cylindrical, longer than remaining eyestalk; eyespine absent. P1 less than 3 times carapace length. P2 not reaching end of P1. P2–4 propodi of uniform width; dactyli with distinct serration. Epipods absent from pereopods.

Size.—Males to 25.0 mm, females to 21.3 mm, ovigerous females from 8.1 mm (Macpherson, 2007; present data).

Habitat.—Mud, mud with sand or coral, sand (Baba, 1988); many narrow tube worms (present data); sunken wood habitats (unpublished data from Vanuatu); 334–1598 m.

Coloration.—Ground color of carapace, abdominal somites and P1–4 orange brown to yellowish brown; base of rostrum, anterior half of branchial and cardiac regions, and median portion of abdominal somites whitish.

Distribution.—E of Andamans, Indonesia, Solomon Islands, New Caledonia, Vanuatu, Fiji, Taiwan, South China Sea, Philippines, Japan, and SW Australia.

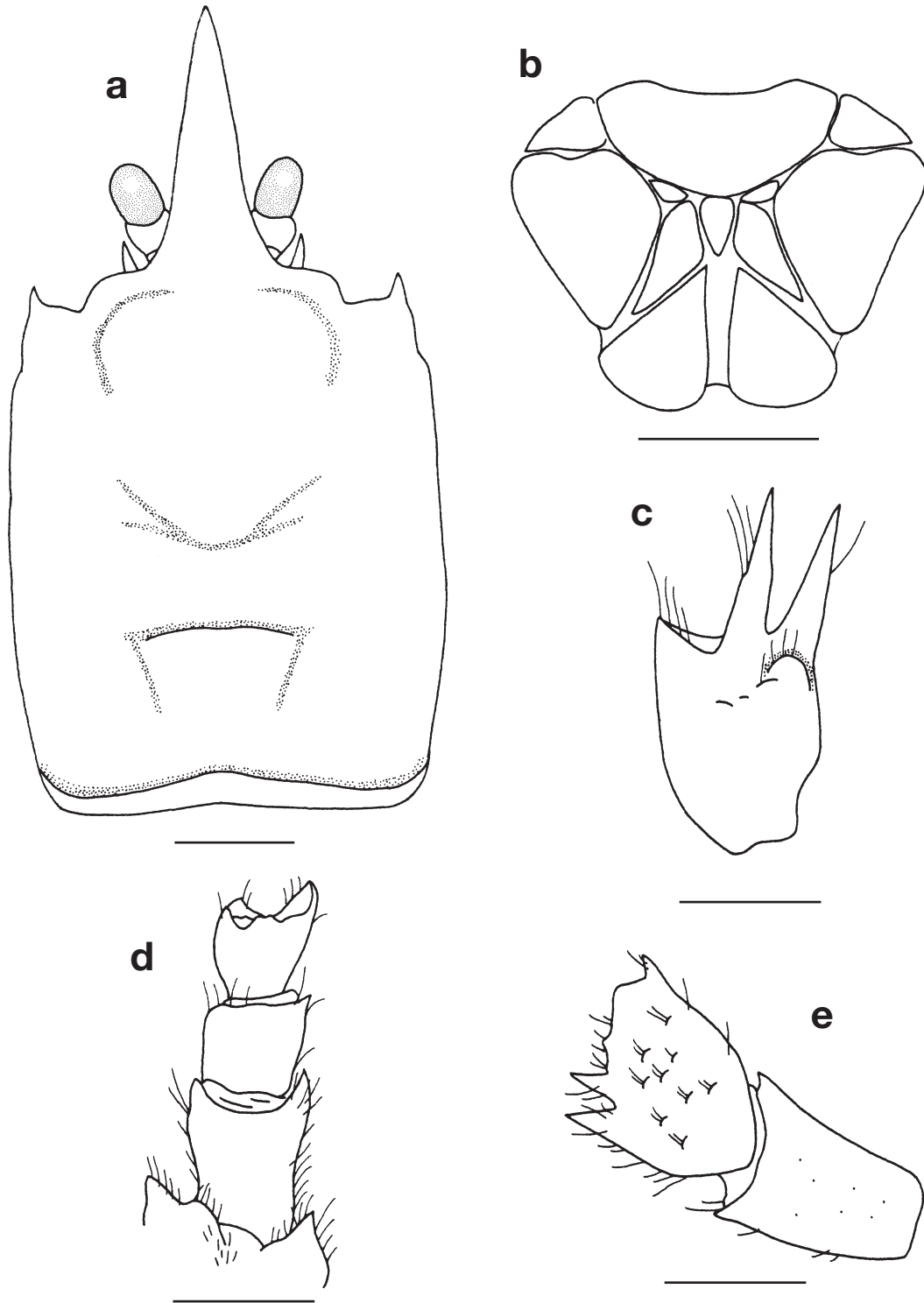


Fig. 187. Male (13.7 mm), Dasi fishing port, Yilan County, 3 Jul 1995: **a**, carapace, dorsal; **b**, telson; **c**, basal article of left antennule, ventral; **d**, left antennal peduncle, ventral; **e**, ischium and merus of left Mxp3, lateral. Scales: a = 3 mm; b = 2 mm; c–e = 1 mm (after Wu *et al.*, 1998).

Munidopsis arietina Alcock & Anderson, 1894

白羊仿刺鎧蝦



Fig. 188. Male (10.3 mm), CP373.

Munidopsis arietina Alcock & Anderson, 1894: 171 [type locality: Bay of Bengal, 2782 m].—Alcock & Anderson, 1895, pl. 12, fig. 3.—Alcock, 1901: 269.—Baba, 2005: 137, fig. 55, 285.—Osawa *et al.*, 2008a: 41, fig. 1C.

Material examined.—CP373, 24°16.287'N, 122°11.647'E, 2233–2551 m, 26 Aug 2006: 1 male (10.3 mm), 1 female (10.4 mm) (NTOU).

Diagnosis.—Carapace with longitudinal row of submedian spines; lateral margins subparallel, each with 3 spines. Posterior margin preceded by 4 spines and elevated ridge. Rostrum curving dorsad, dorsally moderately carinate, bearing 0–2 lateral teeth. Ocular peduncle relatively slender, slightly movable, eyespine on mesial end of eyestalk, directed anterolaterad. P1 fixed finger without denticulate carina on distolateral margin. P2 overreaching end of P1. P2–4 subcylindrical; meri spinose along extensor and flexor margins. Epipod absent from pereopods.

Size.—Males to 19.0 mm including rostrum, females to 10.4 mm (Baba, 2005; present data).

Coloration.—Carapace, abdomen, and pereopods entirely whitish or pale pink. Corneas orange pink.

Habitat.—Mud (Baba, 2005); 2233–2935 m.

Distribution.—Bay of Bengal and Taiwan.

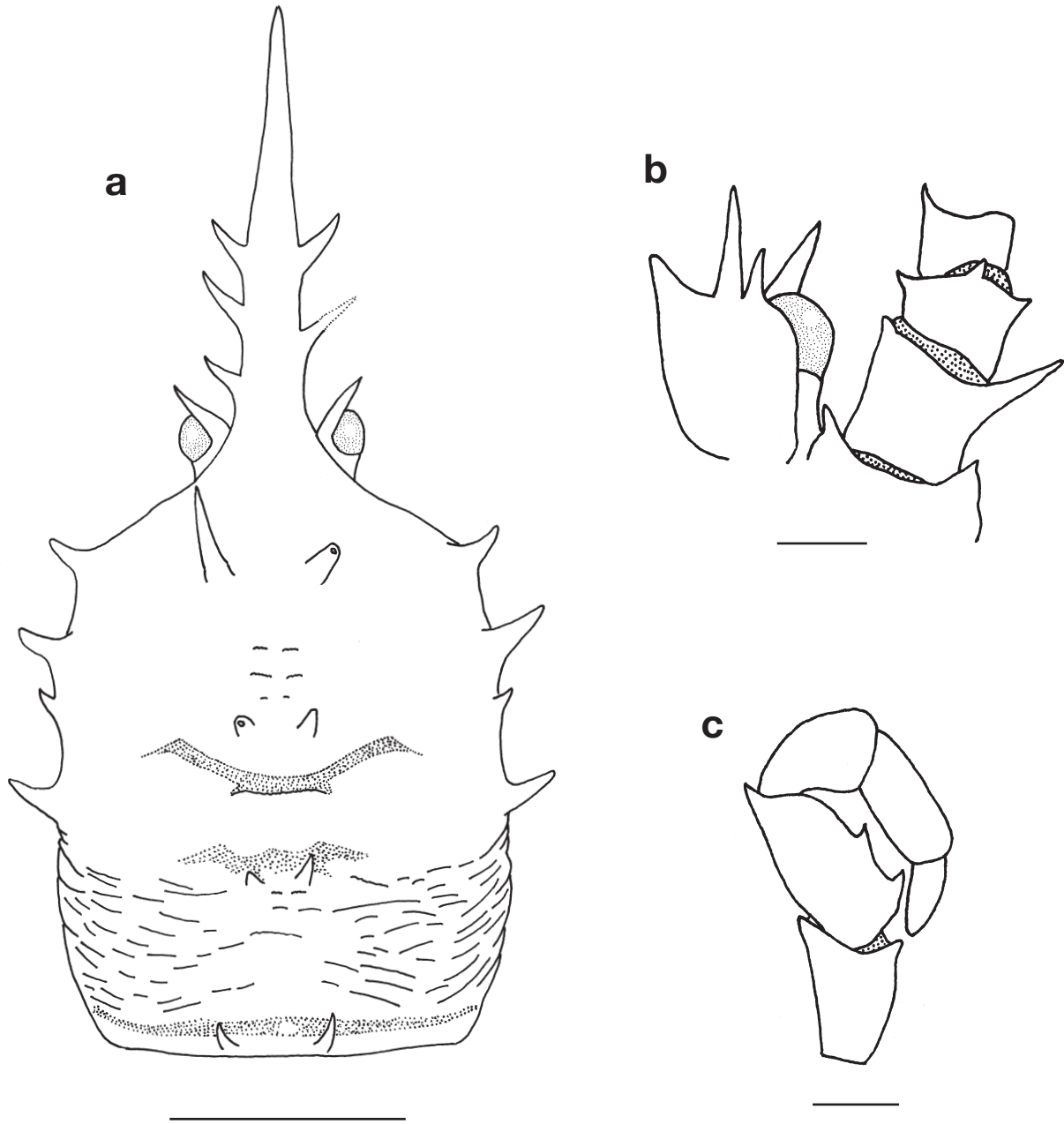


Fig. 189. Female (10.4 mm), CP373: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, right Mxp3, lateral. Scales: a = 5 mm; b, c = 1mm.

Munidopsis bispinoculata Baba, 1988
雙眼刺仿刺鎧蝦



Fig. 190. Male (11.8 mm), CP300.

Munidopsis bispinoculata Baba, 1988: 142, fig. 54 [type locality: SE of Doworra Island, off S Halmahera, 1040 m].—Baba & Poore, 2002: 232, fig. 1.—Poore, 2004: 237, fig. 65a.—Baba, 2005: 137, 285.—Macpherson, 2007: 44, fig. 55D.—Osawa & Takeda, 2007: 140.—Osawa *et al.*, 2008a: 41, fig. 1D.

Material examined.—CD199, 24°25.38'N, 122°12.41'E, 1138–1187 m, 12 Sep 2002: 1 male (7.0 mm), 1 female (8.6 mm) (NTOU). CD203, 22°0.2'N, 120°28.94'E, 635–868 m, 29 May 2003: 1 male (8.4 mm) (NTOU). CP214, 24°28.59'N, 122°12.66'E, 490–1027 m, 27 Aug 2003: 1 ovigerous female (7.8 mm) (NTOU). CP226, 22°19.15'N, 121°4.63'E, 1171–1212 m, 29 Aug 2003: 1 ovigerous female (12.3 mm) (NTOU). CP235, 25°22.95'N, 122°43.63'E, 765–806 m, 22 Jul 2004: 2 females (5.0, 5.8 mm), 4 ovigerous females (10.3–12.7 mm) (NTOU). CP281, 24°24.08'N, 122°14.06'E, 1173–1248 m, 15 Jun 2005: 1 male (10.2 mm) (NTOU). CP300, 22°17.156'N, 119°59.963'E, 960–972 m, 11 Aug 2005: 2 males (10.0, 11.8 mm) (NTOU). CP332, 22°17.145'N, 120°0.318'E, 961–1026 m, 5 Oct 2005: 1 male (8.8 mm) (NTOU). PCP333, 22°16.502'N, 120°2.242'E, 889–1037 m, 5 Oct 2005: 1 ovigerous female (10.3 mm) (NTOU). PCP334, 22°16.713'N, 120°0.114'E, 994–975 m, 5 Oct 2005: 1 male (11.4 mm) (NTOU). PCP342, 22°16.648'N, 119°59.960'E, 988–1010 m, 8 Mar 2006: 1 male (9.6 mm), 1 ovigerous female (7.4 mm) (NTOU). PCP344, 22°15.952'N, 120°0.110'E, 995–1073 m, 8 Aug 2006: 1 female (8.4 mm) (NTOU). PCP358, 22°9.556'N, 121°7.174'E, 1257–1262 m, 3 Jun 2006: 1 male (11.4 mm) (NTOU). PCP408, 22°17.67'N, 120°8.517'E, 759–764 m, 8 Nov 2007: 1 male (10.1 mm) (NTOU).

Diagnosis.—Carapace with very weak transverse striae, lateral margins subparallel, each with 2 small

anterior spines. Frontal margin oblique, bearing small but distinct antennal spine. Rostrum dorsally carinated. Abdomen spineless. Ocular peduncles immovable, cornea well developed, broad relative to length, distally narrowed, bearing eyespine directed straight forward, arising from end of cornea and another smaller eye-spine arising from mesioventral end of ocular peduncles. P1 short, fixed finger with denticulate carina on distolateral margin. P2–4 meri and carpi with spines on dorsal crest, dactyli bearing flexor marginal spines. P2 distinctly overreaching P1. Epipod absent from pereopods.

Size.—Males to 11.8 mm, females to 14.1 mm, ovigerous females from 6.5 mm (Macpherson, 2007; Osawa *et al.*, 2008a).

Coloration.—Entire body and pereopods whitish, light brown or grey. Corneas orange. Eggs yellowish.

Habitat.—Mud (Baba, 2005); 443–2363 m.

Distribution.—Madagascar, Indonesia, New South Wales, Solomon Islands, Vanuatu, Fiji, Philippines, and Taiwan.

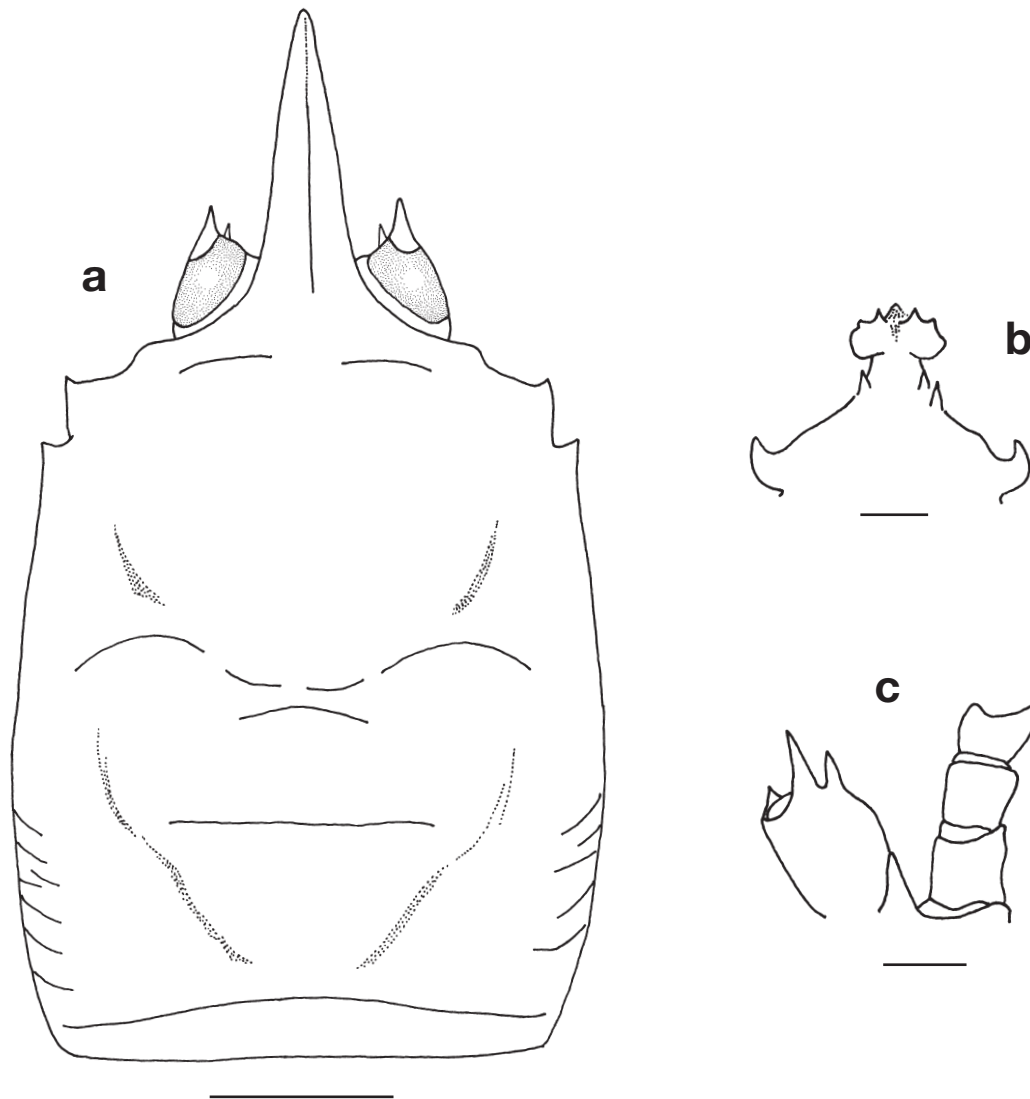


Fig. 191. Male (7.0 mm), CD199: **a**, carapace, dorsal; **b**, anterior part of sternal plastron; **c**, left antennule and antenna, ventral. Scales: a, b = 5 mm; c = 1 mm.

Munidopsis bruta Macpherson, 2007

粗糙仿刺鎧蝦

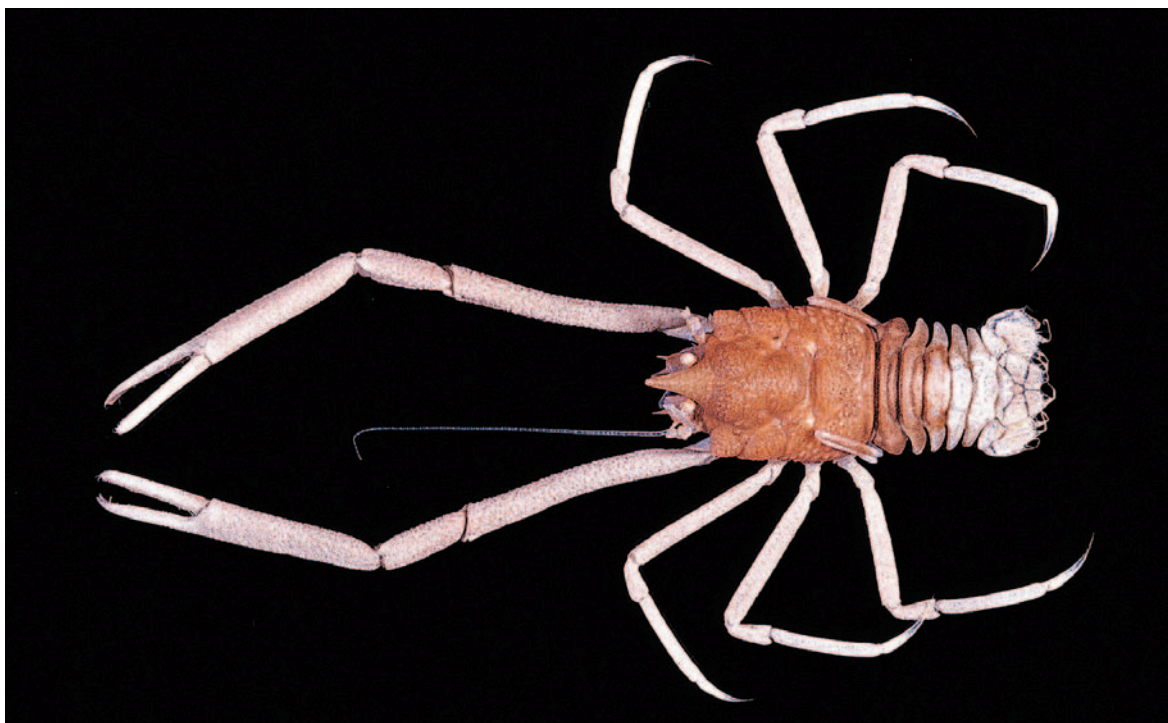


Fig. 192. Male (5.4 mm), CP27.

Munidopsis bruta Macpherson, 2007: 46, fig. 22 [type locality: SE of Doworra Island, off S Halmahera, 1040 m].

Material examined.—CP27, 22°13.3'N, 120°23.4'E, 329-377 m, 30 Jul 2000: 1 male (5.4 mm) (NTOU).

Diagnosis.—Carapace quadrangular, devoid of setae, dorsal surface granulose, areas distinct. Rostrum distally bluntly spiniform, lateral margins unarmed. Frontal and lateral margins unarmed. Abdomen spineless. Eye unarmed, small, movable; cornea distal, globose. P1 long and slender, subcylindrical, clearly longer than P2. P2-4 subcylindrical, slender, spineless, with numerous granules on meri to propodi; dactyli curving, with smooth margins. Epipods absent from all pereopods.

Size.—Males to 6.9 mm, females to 8.1 mm (Macpherson, 2007).

Coloration.—Carapace and abdomen orange; P1-4 pale whitish brown. Corneas pale yellow (also see Macpherson, 2007).

Habitat.—Substrates not recorded; 329-1203 m.

Distribution.—Solomon Islands, Indonesia, and Taiwan.

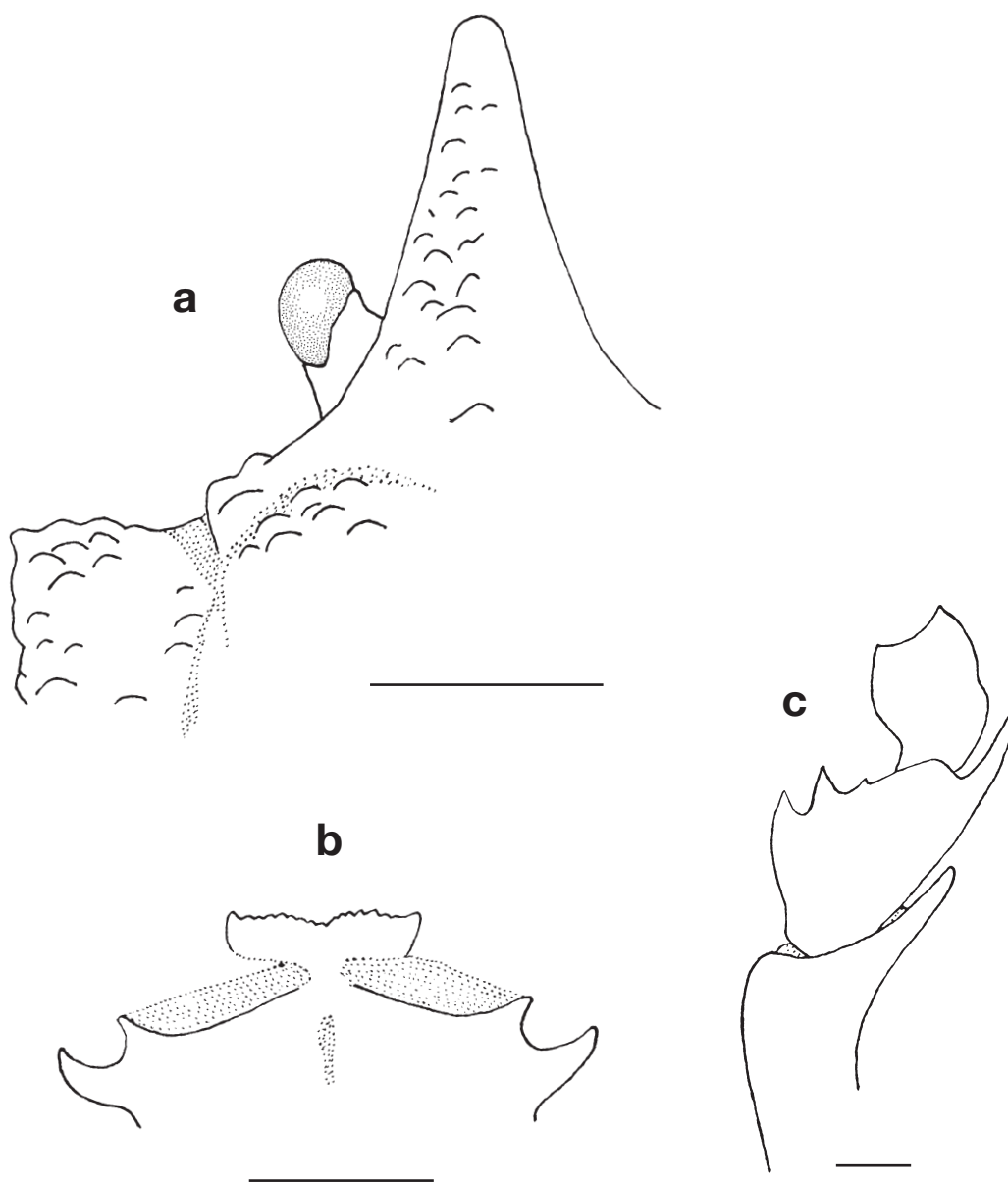


Fig. 193. Male (5.4 mm), CP27: **a**, left anterior part of carapace, dorsal; **b**, anterior part of sternal plastron; **c**, ischium, merus and carpus of left Mxp3, lateral. Scales = 1 mm.

Munidopsis centrina Alcock & Anderson, 1894
刺針仿刺鎧蝦



Fig. 194. Male (20.4 mm), CP369.

Munidopsis centrina Alcock & Anderson, 1894: 170 [type locality: Bay of Bengal, 2782 m].—Alcock & Anderson, 1895: pl. 11, figs 6, 6a.—Ahyong & Poore, 2004b: 47, fig. 9.—Baba, 2005: 139, fig. 57, 286.—Macpherson, 2007: 49.—Osawa & Takeda, 2007: 140, figs. 5A, B.—Osawa *et al.*, 2008a: 41, fig. 1E.

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

Material examined.—CP53, 24°15.7'N, 122°11.6'E, 2947–2903 m, 3 Aug 2000: 1 female (15.3 mm) (NTOU). CP185, 22°0.54'N, 119°27.94'E, 2334–2543 m, 26 Aug 2002: 1 ovigerous female (17.1 mm) (NTOU). CP284, 24°16.34'N, 122°11.67'E, 2220–2424 m, 16 Jun 2005: 1 male (9.6 mm) (NTOU). CP366, 22°02.872'N, 121°10.079'E, 1302–1301 m, 24 Aug 2006: 3 males (14.5–19.5 mm), 2 females (14.2, 16.6 mm) (NTOU). CP369, 24°18.965'N, 122°04.204'E, 3030–3070 m, 25 Aug 2006: 1 male (20.4 mm) (NTOU). CP373, 24°16.287'N, 122°11.647'E, 2233–2551 m, 26 Aug 2006: 1 ovigerous female (23.7 mm) (NTOU). CP375, 24°16.240'N, 122°11.720'E, 2216–2497 m, 27 Aug 2006: 1 female (10.8 mm) (NTOU).

Diagnosis.—Carapace with 3 groups of spines: 2 strong epigastric spines, 1 lateral protogastric (on each side) and several small median protogastric spines; distinct spine mesial to anterolateral spine of carapace. Frontal margin oblique, with antennal spine. Lateral margins convex, anterolateral spine moderate in size; 3–5 spines on anterior branchial region, 1–4 on posterior branchial region. Rostrum spiniform, without lateral spines. Abdomen unarmed. Ocular peduncles slightly movable, with 3 eyespines, 2 mesial, 1 lateral, median one strong, far exceeding cornea. P1 short; distolateral margin of fixed finger with denticulate carina. P2–4 long and spinose. P2 overreaching P1. Epipods absent from pereopods.

Size.—Males to 20.4 mm, females to 23.7 mm, ovigerous females from 17.1 mm (Osawa *et al.*, 2008a)

Coloration.—Entire body and pereopods whitish. Corneas orange pink.

Habitat.—Mud, brownish ooze (Baba, 2005); 1301–3485 m.

Distribution.—Madagascar, Mozambique Channel, Reunion Island, Bay of Bengal, Tasman Sea, New Caledonia, and Taiwan.

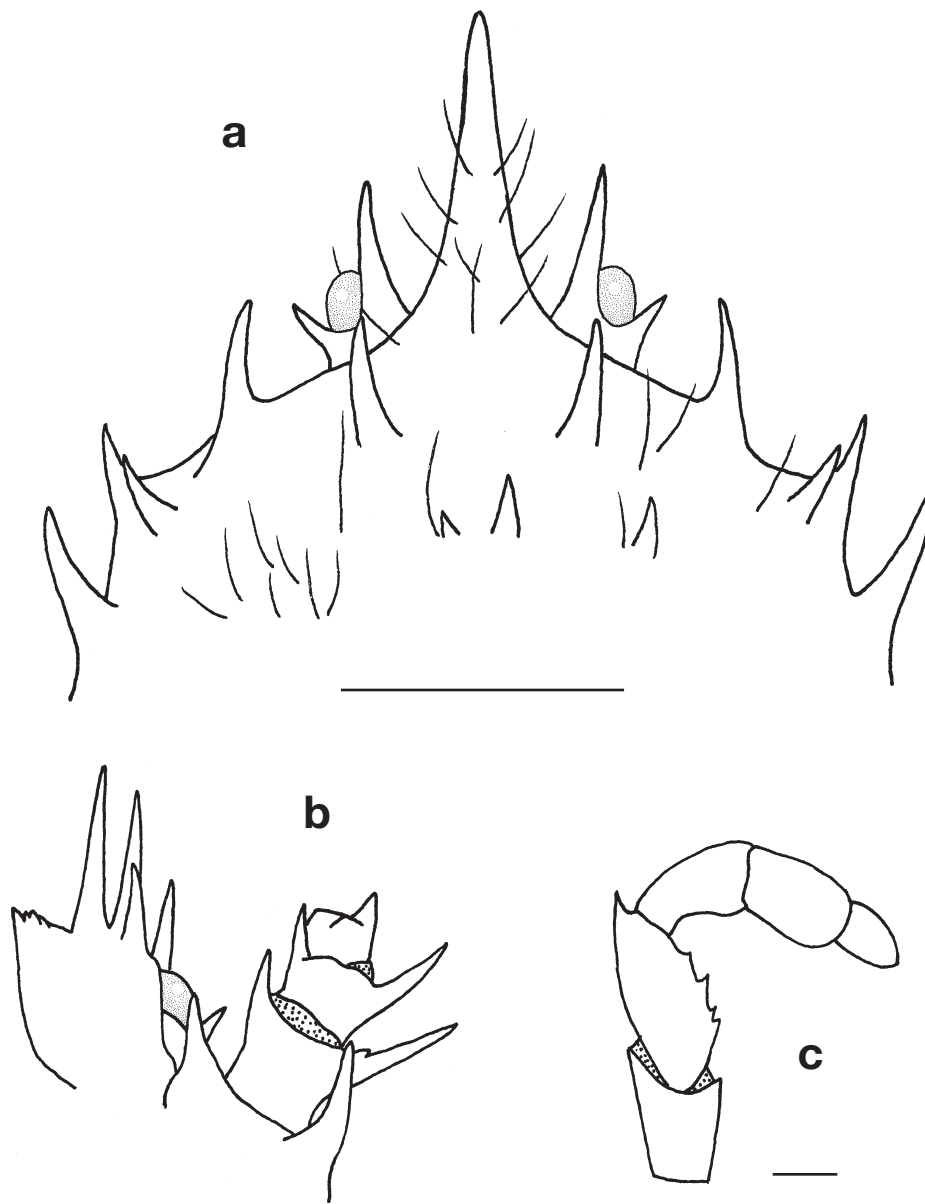


Fig. 195. Ovigerous female (17.1 mm), CP185: **a**, anterior part of carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, right Mxp3, lateral. Scales: a = 5 mm; b, c = 1 mm.

Munidopsis ceratophthalma Alcock, 1901

棘眼仿刺鎧蝦



Fig. 196. Female (7.9 mm), OCP282.

Munidopsis (Orophorhynchus) ceratophthalmus Alcock, 1901: 271, pl. 3, fig. 2 [type locality: Andaman Sea, 878 m].—Alcock & McArdle, 1902: pl. 57, fig. 2.—Doflein & Balss, 1913: 156.—Baba, 2005: 286.

Material examined.—OCP282, 24°23.90N, 122°14.10'E, 1200–1250 m, 15 Jun 2005: 1 female (7.9 mm) (NTOU).

Diagnosis.—Carapace dorsal surface moderately rugose, unarmed; lateral margins with 2 anterior spines, including anterolateral spine. Abdomen unarmed. Rostrum spiniform, without lateral spines. Main eyespine on mesial end of eyestalk, clearly exceeding cornea. P1 fixed finger with denticulate carina on distolateral margin. P2 reaching or overreaching end of P1. Epipods absent from pereopods.

Size.—Males to ca. 16.5 mm (from figure of Alcock, 1901), females to 7.9 mm.

Coloration.—Entire body ivory white. Corneas light orange.

Habitat.—Substrates not recorded; 677–1250 m.

Distribution.—Andaman Sea, Indonesia, and Taiwan.

Remarks.—The species is recorded for the first time from Taiwan.

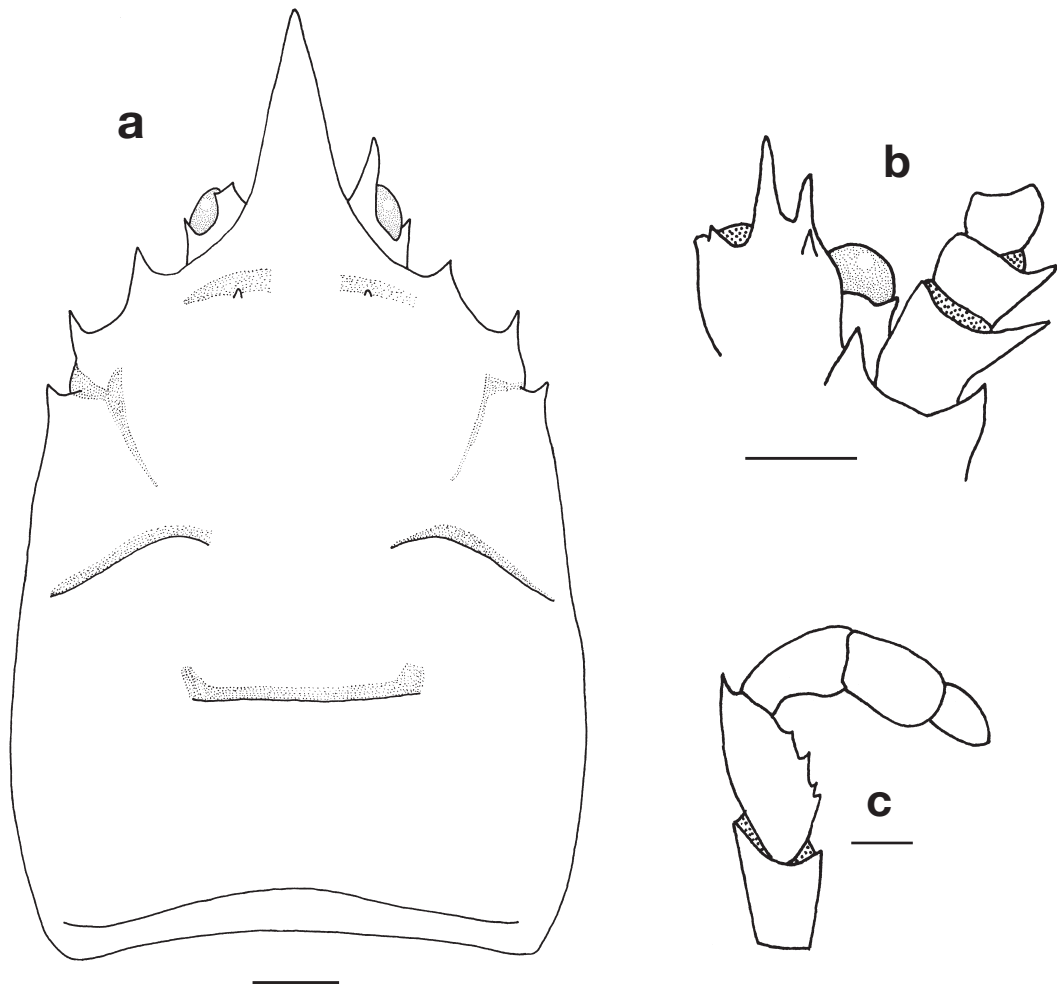


Fig. 197. Female (7.9 mm), OCP282; **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, right Mxp3, lateral. Scales = 1 mm.

Munidopsis cidaris Baba, 1994
司德維士仿刺鎧蝦



Fig. 198. Female (12.3 mm), CP134.

Munidopsis cidaris Baba, 1994: 16, fig. 7 [type locality: off central Queensland, 17°18.73'S, 147°37.20'E, 1128–1178 m].—Davie, 2002: 65.—Baba, 2005: 286.—Macpherson, 2007: 53.—Osawa *et al.*, 2008a: 42, fig. 1F.

Material examined.—CP134, 22°16.56'N, 120°6.11'E, 736–1040 m, 22 Nov 2001: 1 female (12.3 mm) (NTOU).

Diagnosis.—Dorsal surface of carapace granulate, moderately convex from side to side, no distinct border between gastric region and rostrum. Rostrum triangular, with straight lateral margin, without lateral spines. Anterolateral angle of carapace bluntly produced into spine; 1 blunt spine on anterior end of branchial region. No spines on abdominal somites. Sternite 3 less than 3 times as long as broad. Ocular peduncles immovable; eyespine absent. P2 not reaching end of P1. P2–4 propodi of uniform width; dactyli unarmed. Epipods on P1–3.

Size.—Male to 11.6 mm, females to 12.3 mm (Baba, 1994; Osawa *et al.*, 2008a).

Coloration.—Carapace, abdomen, and pereopods generally brownish orange. Propodi and dactyli of P2–4 paler. Abdominal somites 5–6 pale, and telson and uropods mostly whitish. Corneas pale orange.

Habitat.—Substrates not recorded; 736–1200 m.

Distribution.—Australia (off central Queensland), Solomon Islands, Philippines, and Taiwan.

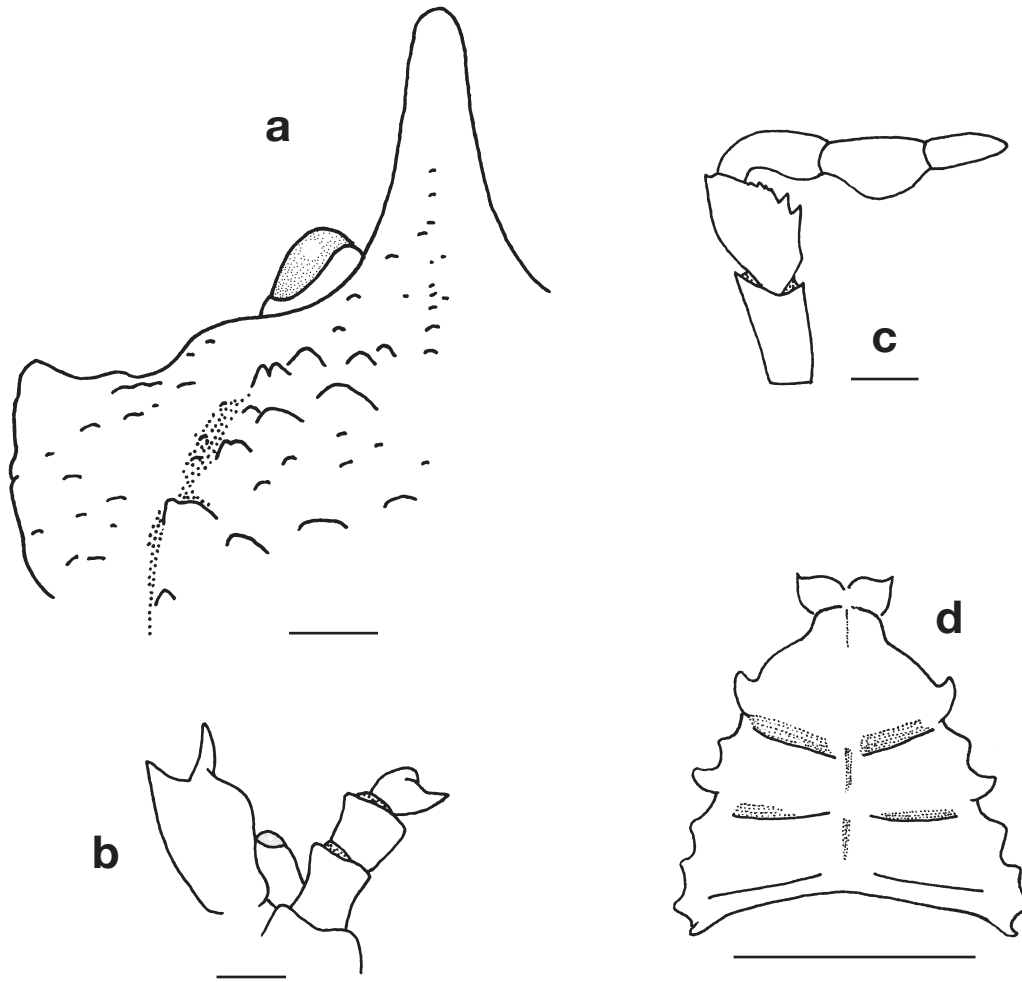


Fig. 199. Female (12.3 mm), CP134: **a**, left anterior part of carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, right Mxp3, lateral; **d**, sternal plastron. Scales = 5 mm.

Munidopsis cylindrophthalma (Alcock, 1894)
柱眼仿刺鎧蝦

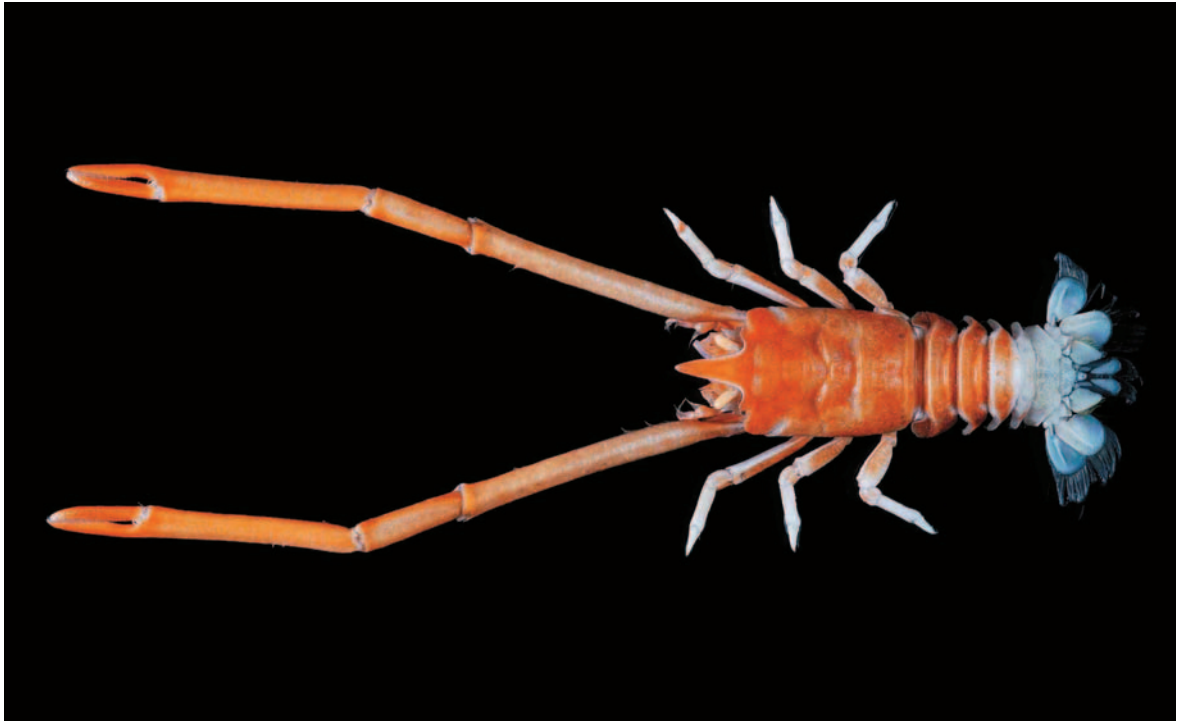


Fig. 200. Male (10.2 mm), CP268, body orangish-red.

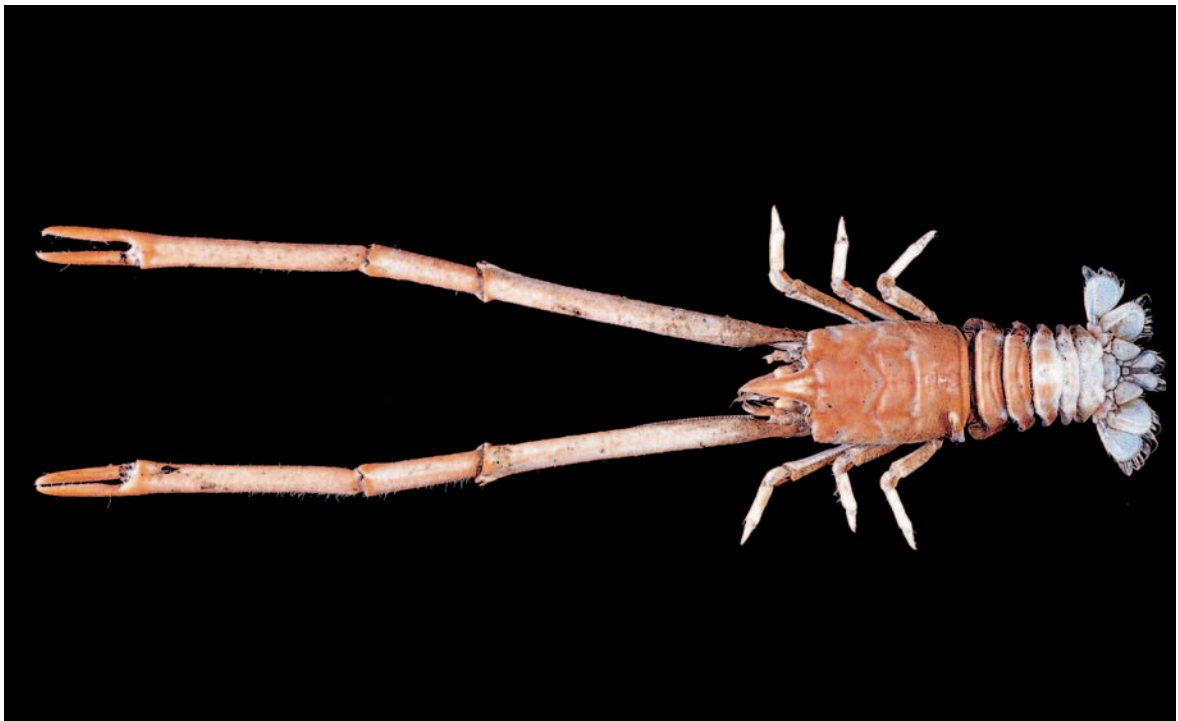


Fig. 201. Male (11.6 mm), Dasi fishing port, Yilan County, 28 May 1999, body yellowish-brown.

Elasmonotus cylindrophthalmus Alcock, 1894: 333 [type locality: Andaman Sea, 344–403 m].—Alcock & Anderson, 1895: pl. 13, fig. 4.—Anderson, 1896: 100.

Munidopsis (Orophorhynchus) cylindrophthalmus.—Alcock, 1901: 272.

Munidopsis (Elasmonotus) cylindrophthalma.—Doflein & Balss, 1913: 159.—Tirmizi, 1966: 213, figs 28, 29A, 29B.

Munidopsis okadai Yanagita, 1942: 93, 2 figs [type locality: off Akabane, Aichi Pref., Japan, 200 m].

Munidopsis cylindrophthalma.—Baba in Baba *et al.*, 1986: 177, 293, fig. 127.—Baba, 1988: 151, figs 58, 59.—Wu *et al.*, 1998: 139, figs 38, 42D.—Komai, 2000: 357.—Baba, 2005: 145, 287.—Macpherson, 2007: 58, fig. 55G.—Osawa *et al.*, 2008a: 38.—Poore *et al.*, 2008: 21.

Material examined.—Dasi fishing port, Yilan County, 28 May 1999: 1 male (11.6 mm) (NTOU). Nanfang-ao fishing Port, Yilan County, 16 Mar 1985: 1 female (9.0 mm) (NTOU).—20 Apr 1985: 1 male (11.1 mm) (NTOU).—5 Mar 1991: 1 female (12.1 mm) (NTOU).—27 Aug 1996: 2 ovigerous females (12.1, 12.8 mm) (NTOU). Donggang fishing port, 31 Oct 1984: 1 male (8.0 mm) (NTOU).—23 Mar 1985: 1 male (8.4 mm), 1 female (9.4 mm) (NTOU).—1 Mar 2001: 1 ovigerous female (8.0 mm) (NTOU). CP103, 24°48.83'N, 122°06.03'E, 367–424 m, 19 May 2001: 1 male (13.9 mm) (NTOU). CP137, 22°12.92'N, 120°25.93'E, 316–477 m, 23 Nov 2001: 3 males (8.7–11.9 mm) (NTOU). CD141, 22°12.04'N, 119°59.96'E, 1110–985 m, 24 Nov 2001: 1 male (10.9 mm) (NTOU). CP165, 22°24.06'N, 120°13.03'E, 300 m, 26 May 2002: 2 ovigerous females (12.0, 12.5 mm) (NTOU). CP268, 24°48.83'N, 122°06.03'E, 367–424 m, 19 May 2001: 1 male (10.2 mm) (NTOU). CP269, 24°30.55'N, 122°5.78'E, 399–307 m, 2 Sep 2004: 1 female (10.9 mm) (NTOU). PCP348, 22°21.645'N, 120°11.619'E, 430–334 m, 9 Mar 2006: 4 males (8.6–11.8 mm), 3 ovigerous females (10.2–10.8 mm), 2 females (6.6, 6.9 mm) (NTOU). PCP360, 22°22.799'N, 120°14.116'E, 287–292 m, 23 Aug 2006: 1 male (10.1 mm), 3 ovigerous females (9.0–9.8 mm), 1 female (9.4 mm) (NTOU). PCP412, 22°24.657'N, 120°12.844'E, 300–293 m, 9 Nov 2007: 3 males (8.3–11.8 mm), 1 ovigerous female (11.2 mm) (NTOU).

Diagnosis.—Carapace smooth, spineless. Rostrum narrowly triangular, dorsally flattish or concave, slightly upcurved distally, without lateral spines. Abdomen spineless. Ocular peduncles movable, cornea cylindrical, elongate, much longer than remaining eyestalk, without eyespine. P1 long and slender, cylindrical, spineless, more than 3 times carapace length. P2–4 very short; P2 clearly not reaching end of P1; each merus carinate along dorsal margin; each dactylus ending in sharp point preceded by prominent spines on flexor margin. Epipods absent from pereopods.

Size.—Males to 16.2 mm, females to 13.5 mm, ovigerous females from 7.2 mm (Macpherson, 2007).

Coloration.—Body yellowish-brown to orange-red; abdominal somites 5–6 and telson whitish; rostrum bordered by white or light brown band; pereopods light brown, dactyli whitish (also see Macpherson, 2007). Eggs yellowish.

Habitat.—Mud (Baba, 2005); 200–1110 m.

Distribution.—SW Australia, Vanuatu, New Caledonia, Fiji, Solomon Islands, Indonesia, Philippines, Taiwan, and Japan.

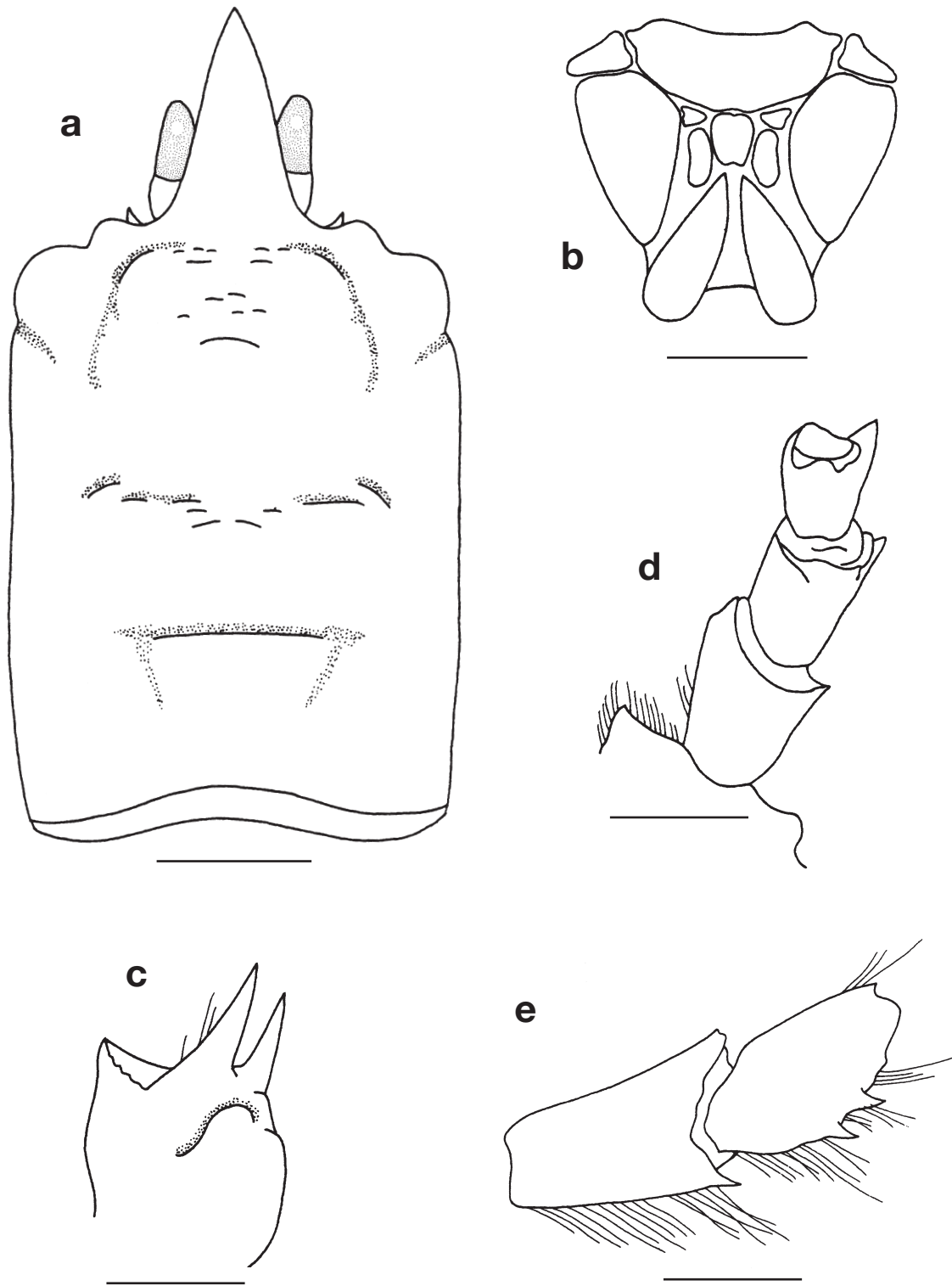


Fig. 202. Female (12.1 mm), Nanfang-ao fishing port, Yilan County, 5 Mar 1991: **a**, carapace, dorsal; **b**, telson; **c**, basal article of left antennule, ventral; **d**, left antennal peduncle, ventral; **e**, ischium and merus of right Mxp3, lateral. Scales: a = 3 mm; b = 2 mm; c–e = 1 mm (after Wu *et al.*, 1998).

Munidopsis dasypus Alcock, 1894
毛足仿刺鎧蝦

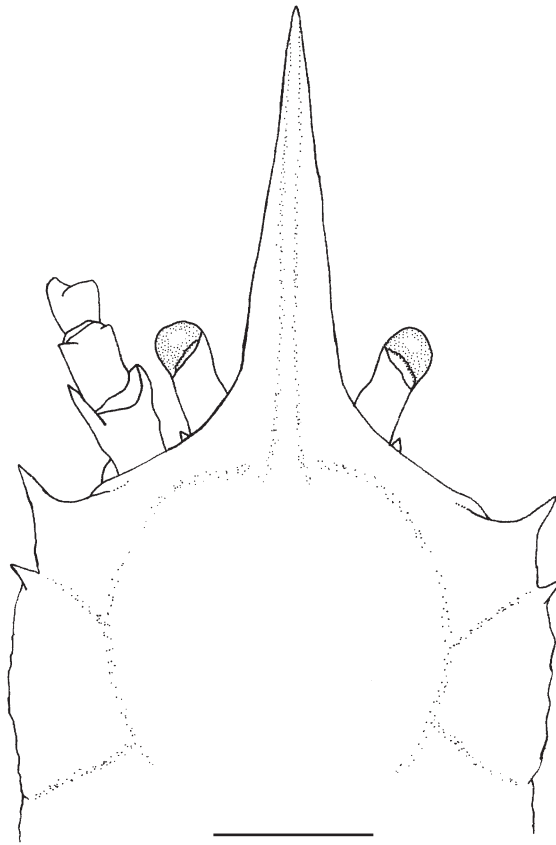


Fig. 203. Ovigerous female (14.4 mm), PCP334, anterior carapace, ocular and left antennal peduncles, dorsal. Scale = 3 mm (after Osawa *et al.*, 2008).

Munidopsis dasypus Alcock, 1894: 329 [type locality: Andaman Sea, 1027 m].—Alcock, 1901: 252.—Alcock & Anderson, 1894: 167.—Alcock & Anderson, 1895: pl. 13, fig. 9.—Alcock & MacGilchrist, 1905: pl. 70, fig. 3.—MacGilchrist, 1905: 245.—Baba, 1988: 154, fig. 60.—Komai, 2000: 359.—Ahyong & Poore, 2004b: 50.—Baba, 2005: 148, 287.—Macpherson, 2007: 59.—Osawa *et al.*, 2008a: 42, fig. 2A.—Poore *et al.*, 2008: 21.

Munidopsis (Munidopsis) dasypus.—Tirmizi, 1966: 218, fig. 32.

Not *Munidopsis dasypus*.—Kensley, 1977: 176, fig. 10.—Kensley, 1981a: 34.—Baba & Poore, 2002: 233, fig. 2. (= *M. kensleyi* Ahyong & Poore, 2004)

Material examined.—PCP344, 22°15.952'N, 120°0.110'E, 995–1073 m, 8 Mar 2006: 1 ovigerous female (14.4 mm) (NTOU).

Diagnosis.—Carapace moderately smooth, posterior transverse ridge elevated, with 3–9 spines; lateral margins subparallel, each with anterolateral spine followed by 1 or 2 spines. Frontal margin oblique. Rostrum spiniform, dorsally carinate, lateral margins unarmed. Abdominal somites spineless. Ocular peduncles slender, more than twice as long as cornea; cornea curving laterad, without eyespine. P1 merus and carpus with sharp

spines, palm spineless. Meri and carpi of P2–4 each with a few spines on dorsal margin. P2 terminating in distal end of P1 merus. Epipods present on P1.

Size.—Males to 21.0 mm, females to 24.5 mm, ovigerous females from 14.4 mm (Macpherson, 2007; Osawa *et al.*, 2008a).

Coloration.—Not recorded.

Habitat.—Clay (Baba, 2005); 214–1480 m.

Distribution.—Madagascar, Gulf of Aden, Arabian Sea, Bay of Bengal, Laccadive Sea, Andaman Sea, Western Australia (Exmouth Plateau), Indonesia, South China Sea, Philippines, and Taiwan.

Munidopsis echinata Osawa, Lin & Chan, 2008

多刺仿刺鎧蝦



Fig. 204. Holotype female (19.7 mm), CP374.

Munidopsis echinata Osawa *et al.*, 2008a: 43, figs 1G, 3, 4 [type locality: Taiwan, 24°19.195'N, 122°04.220'E, 3032–3065 m].

Material examined.—CP374, 24°19.195'N, 122°04.220'E, 3032–3065 m, female holotype (19.7 mm) (NTOU).

Diagnosis.—Carapace covered with small and moderate-sized spines and tubercles; posterior margin preceded by elevated ridge with 4 median spines. Lateral margins with anterior half with strong spines; first spine anterolateral, smaller than second. Frontal margin strongly oblique; antennal spine absent. Rostrum narrow, laterally unarmed. Abdominal somites having anterior ridges with 3 spines on somites 2 and 3, 1 spine on somite 4. Ocular peduncle immovable, with strong distomesial eyespine directed anterolaterally; lateral margin unarmed. P1 fixed finger without denticulate carina on distolateral surface. Right P3 overreaching tip of P1 by entire length of dactylus. Epipods absent from pereopods.

Size.—Only known from the holotype, female of 19.7 mm.

Coloration.—Entire body and pereopods whitish. Corneas light orange.

Habitat.—Substrates not recorded; 3032–3065 m.

Distribution.—At present known only from Taiwan.

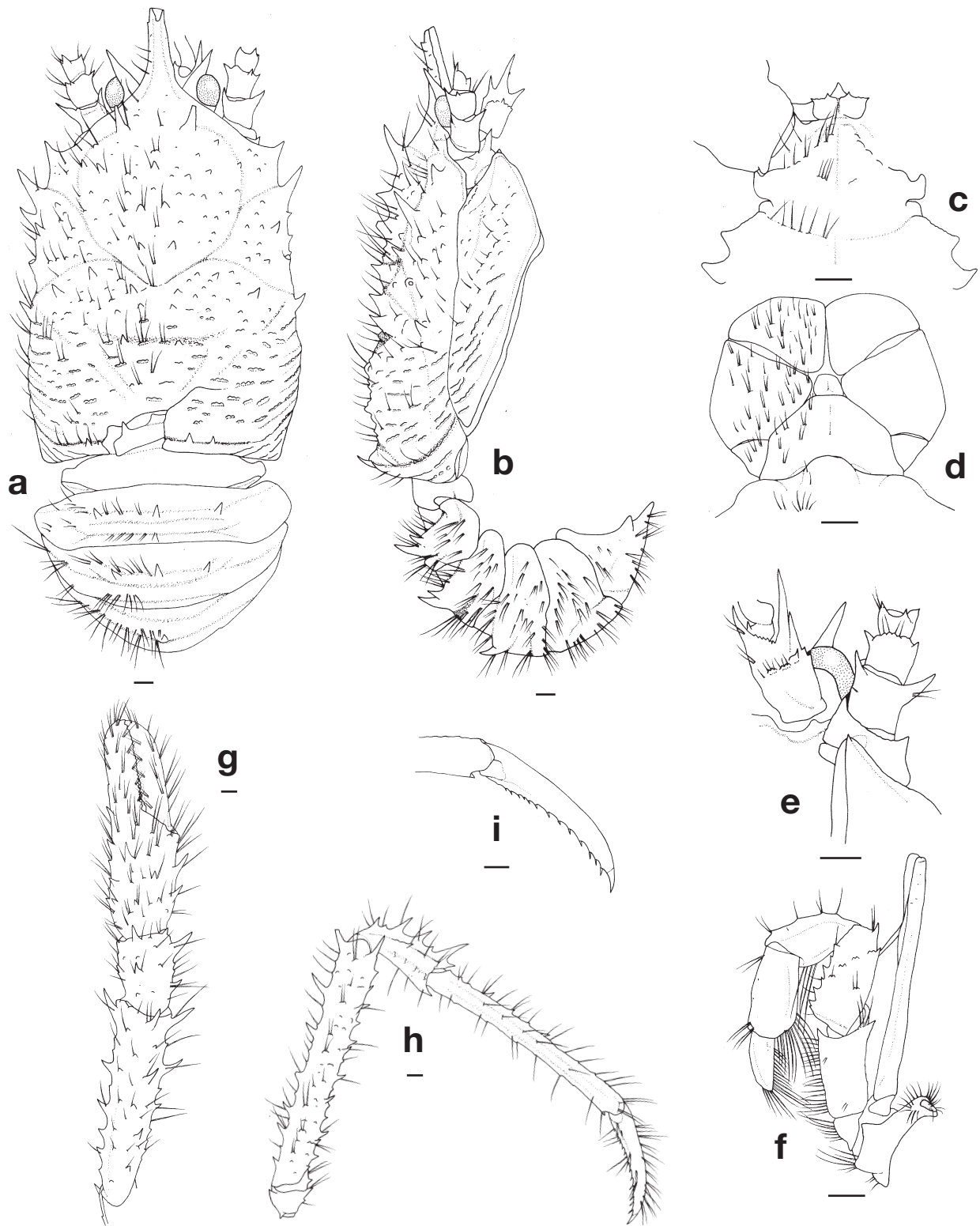


Fig. 205. Holotype male (19.7 mm), CP374: **a**, carapace and abdomen, setae omitted from right side, dorsal; **b**, same, lateral; **c**, anterior part of sternal plastron, setae omitted from left side; **d**, telson, setae omitted from left side; **e**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **f**, left Mxp3, lateral; **g**, left P1, dorsal; **h**, right P3, lateral; **i**, right P3 dactylus, setae omitted, lateral. Scales = 1 mm (after Osawa *et al.*, 2008).

Munidopsis edwardsii (Wood-Mason, 1891)
愛德華仿刺鎧蝦



Fig. 206. Male (29.1 mm), CP284.

Elasmonotus Edwardsii Wood-Mason in Wood-Mason & Alcock, 1891: 201 [type locality: Bay of Bengal (“Investigator” Stn 97), 2397 m].

Munidopsis (Orophorhynchus) Edwardsii.—Alcock, 1901: 265.

Munidopsis (Orophorhynchus) edwardsii.—Alcock & McArdle, 1902: pl. 56, fig. 2.

Munidopsis edwardsii.—Baba & Poore, 2002: 235, fig. 3.—Poore, 2004: 237, fig. 65b.—Baba, 2005: 149, 288.—Macpherson, 2007: 67.—Osawa *et al.*, 2008a: 47, fig. 1H.

Material examined.—CP284, 24°16.34'N, 122°11.67'E, 2220–2424 m, 16 Jun 2005: 1 male (29.1 mm) (NTOU). OCP296, 22°15.081'N, 121°55.095'E, 4430–4455 m, 10 Aug 2005: 1 ovigerous female (26.7 mm) (NTOU). CP373, 24°16.287'N, 122°11.647'E, 2233–2551 m, 26 Aug 2006: 1 female (29.0 mm) (NTOU). CP375, 24°16.240'N, 122°11.720'E, 2216–2497 m, 27 Aug 2006: 1 male (15.6 mm) (NTOU).

Diagnosis.—Body and appendages covered with very fine plumose setae. Carapace dorsal surface smooth, with 2 epigastric eminences pronounced and spiniform; no process mesial to midlength of posterior half of carapace lateral margin. Frontal margin oblique, antennal spine distinct. Anterolateral angle subacute; lateral borders with salient cristiform margin, overhanging pterygostomial flap. Rostrum broadly triangular, horizontal, dorsally carinate, without lateral spines. Abdomen spineless. Ocular peduncles slightly movable, vertically compressed, produced beyond cornea, ending in mesial coarse spine; cornea small and lateral, maximum breadth distinctly less than breadth of rostrum at midlength. P1 fixed finger with denticulate carina on distolateral margin. P2–4 relatively long. P2 overreaching P1. Epipods present on P1.

Size.—Males to 29.1 mm, females to 29.0 mm, ovigerous female from 26.7 mm.

Coloration.—Entire body and pereopods whitish. Corneas orange pink.

Habitat.—Brownish ooze (Baba, 2005); 1379–4455 m.

Distribution.—Southwest of Sri Lanka, Bay of Bengal, Australia (New South Wales), and Taiwan.

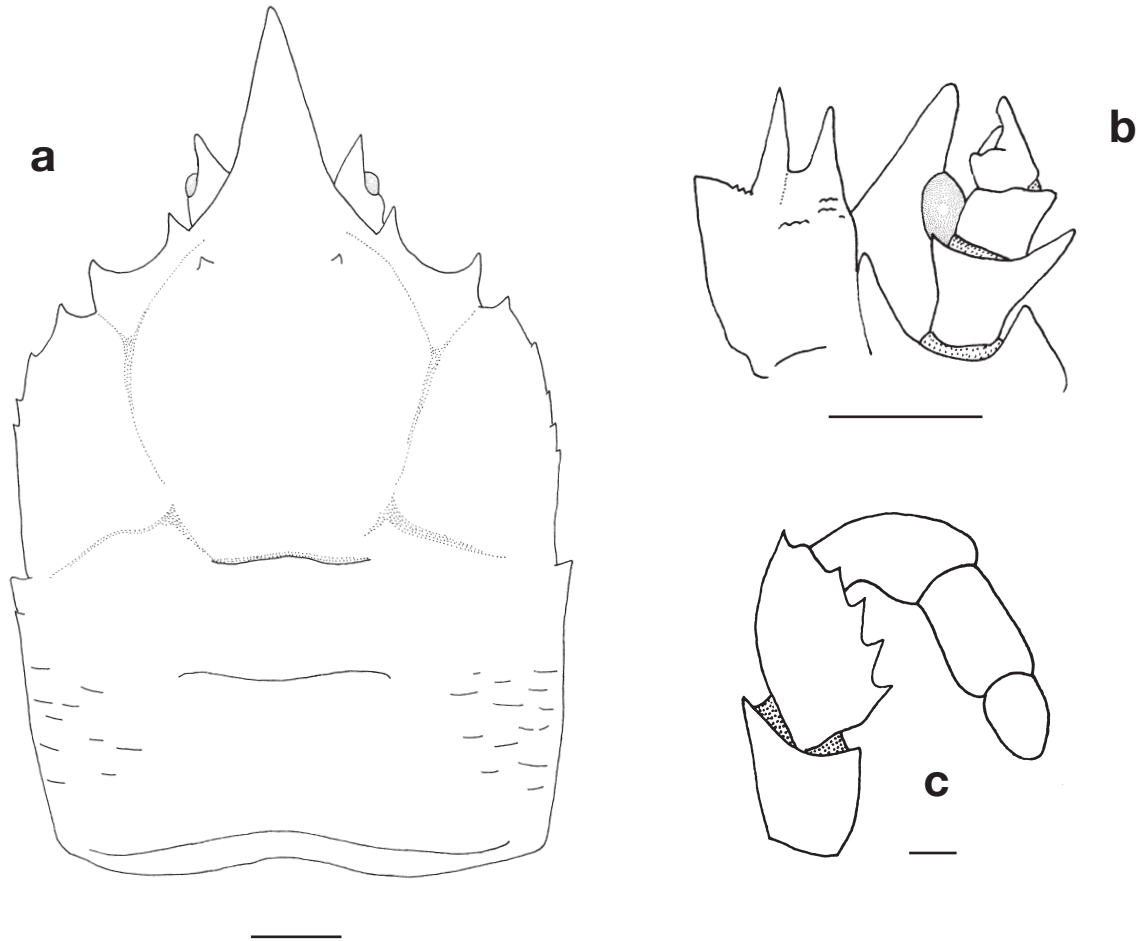


Fig. 207. Male (29.1 mm), CP284: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, right Mxp3, lateral. Scales: a, b = 5 mm; c = 1 mm.

Munidopsis formosa Wu & Chan, 2000
寶島仿刺鎧蝦



Fig. 208. Paratype ovigerous female (22.5 mm), Dasi fishing port, Yilan County, 15 May 1998.



Fig. 209. Dasi fishing port, Yilan County, 11 Mar 2004, body molted with orangish-red and white.

Munidopsis formosa Wu & Chan, 2000: 25, figs 1A, C–E, 2A, C D, 3 [type locality: Dasi fishing port, Yilan County, Taiwan].—Baba, 2005: 288.—Macpherson, 2007: 67.—Osawa *et al.*, 2008a: 38.

Material examined.—Dasi fishing port, Yilan County, Apr 1997: 1 male paratype (27.8 mm) (NTOU).—15 May 1998: 1 male paratype (25.3 mm), 1 ovigerous female paratype (22.5 mm) (NTOU).—Aug 1998: male holotype (20.4 mm) (NTOU).—28 Apr 1999: 1 ovigerous female paratype (17.4 mm) (NTOU).—7 Oct 1999: 1 male (17.5 mm) (NTOU).—May 2000: 1 ovigerous female (18.8 mm) (NTOU).—10 Apr 2001: 1 male (22.4 mm) (NTOU).—Nov 2001: 1 female (15.1 mm) (NTOU).—3 Apr 2002: 1 male (14.4 mm) (NTOU).—17 Apr 2003: 1 ovigerous female (17.6 mm) (NTOU).—24 Apr 2003: 1 female (20.2 mm) (NTOU).—16 Dec 2004: 1 male (22.7 mm), 1 female (20.5 mm) (NTOU).—28 Aug 2006: 1 male (15.9 mm) (NTOU).—4 Sep 2006: 2 females (17.5, 22.5 mm) (NTOU). CP90, 24°53.60'N, 122°01.39'E, 300–330 m, 10 May 2001: 1 female (14.1 mm) (NTOU).

Diagnosis.—Dorsal surface of carapace with some gastric spines and one median cardiac spine. Rostrum relatively broad, with pair of lateral spines, median spine nearly horizontal. Antennal spine present. Lateral margin with 4 spines; posterior border with 2 median spines. Abdominal somites 2–3 each with pair of submedian spines. P1 long and slender, fixed finger without denticulate carina on distolateral margin. P2 clearly not reaching end of P1. Epipods on P1.

Size.—Males to 27.8 mm, females to 22.5 mm, ovigerous females from 17.4 mm (Wu & Chan, 2000).

Coloration.—Body pale orange to reddish orange. Rostrum except tip, pale orange or whitish. Cervical groove and cardiac depressions sometimes whitish. Some specimens with whitish large patches on carapace and pereopods. Abdominal somites 5–6 and telson whitish. Corneas pinkish orange to pale orange or nearly whitish.

Habitat.—Substrates not recorded; 217–500 m.

Distribution.—Indonesia and Taiwan.

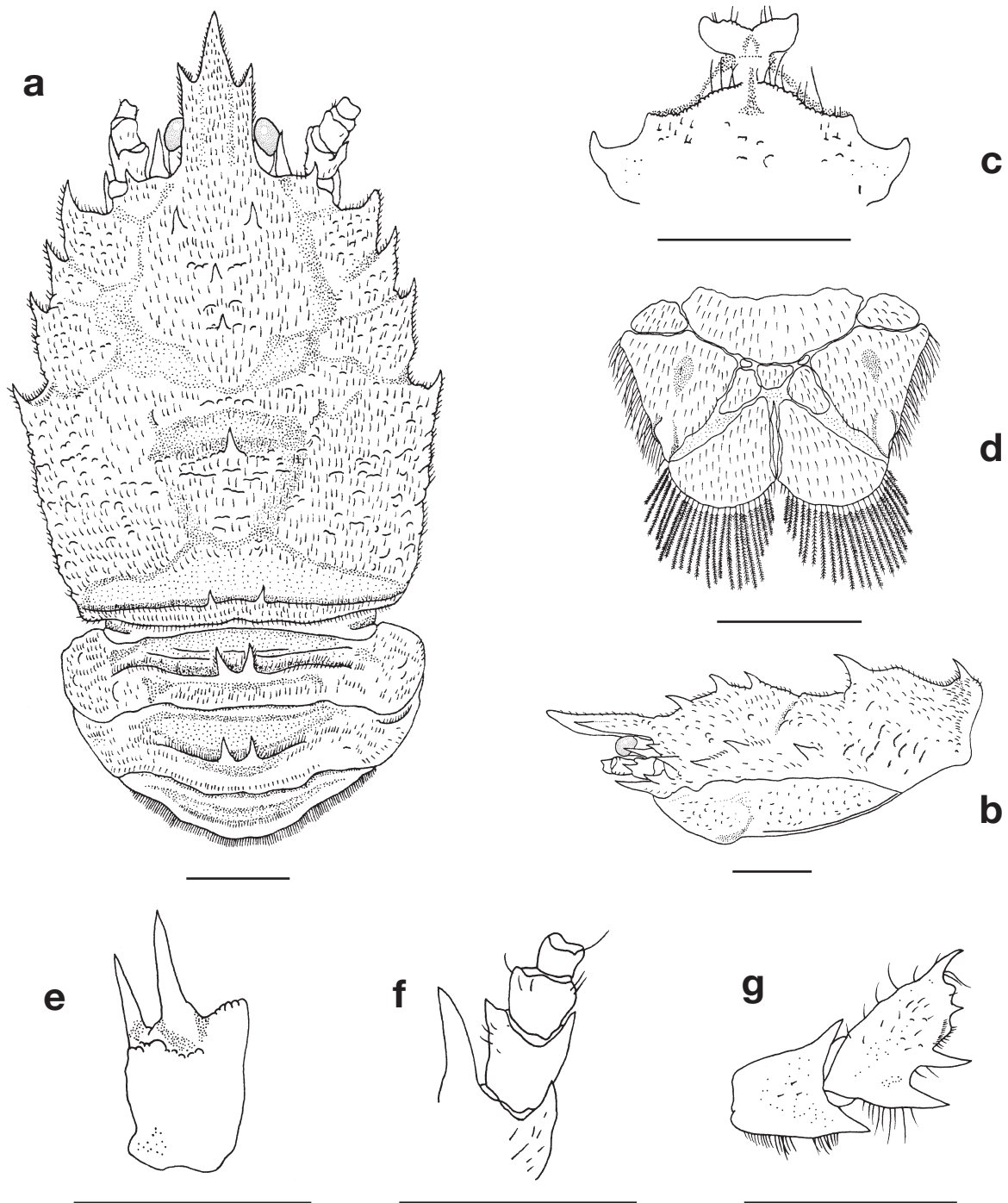


Fig. 210. Holotype male (20.4 mm), Dasi fishing port, Yilan County, Aug 1998: **a**, carapace and abdomen, dorsal; **b**, carapace, lateral; **c**, anterior part of sternal plastron; **d**, telson; **e**, basal article of right antennule, ventral; **f**, left antennal peduncle, ventral; **g**, ischium and merus of right Mxp3, lateral. Scales = 5 mm (after Wu & Chan, 2000).

Munidopsis granosa Alcock, 1901

顆粒仿刺鎧蝦



Fig. 211. Male (11.3 mm), CP374.

Munidopsis (Orophorhynchus) granosa Alcock, 1901: 266, pl. 3, fig. 1 [type locality: Bay of Bengal, 2782 m].—Alcock & McArdle, 1902: pl. 56, fig. 1.—Baba, 2005: 149, fig. 65, 289.—Osawa *et al.*, 2008a: 47, figs 2B, C, 5A.

Material examined.—CP374, 24°19.195'N, 122°04.220'E, 3032–3065 m, 26 Aug 2006: 1 male (11.3 mm) (NTOU).

Diagnosis.—Carapace and abdomen covered with tubercles, nearly devoid of setae. Dorsal surface of carapace unarmed. Rostrum very broadly triangular, with dorsal carina continued onto anterior half of gastric region, lateral margins unarmed. Abdominal somites 2–4 each with blunt, low median process. 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 teeth, movable finger shorter than fixed finger; fixed finger without denticulate carina on distolateral margin. P2 reaching distal end of P1. Epipods absent from pereopods.

Size.—Males to 20.0 mm, females to 23.6 mm, ovigerous females from 20.4 mm (all measurements including rostrum; Baba, 2005).

Coloration.—Carapace, abdomen, and pereopods entirely whitish. Corneas orange pink.

Habitat.—Brownish ooze (Baba, 2005); 2610–3485 m.

Distribution.—Mozambique Channel, Bay of Bengal and Taiwan.

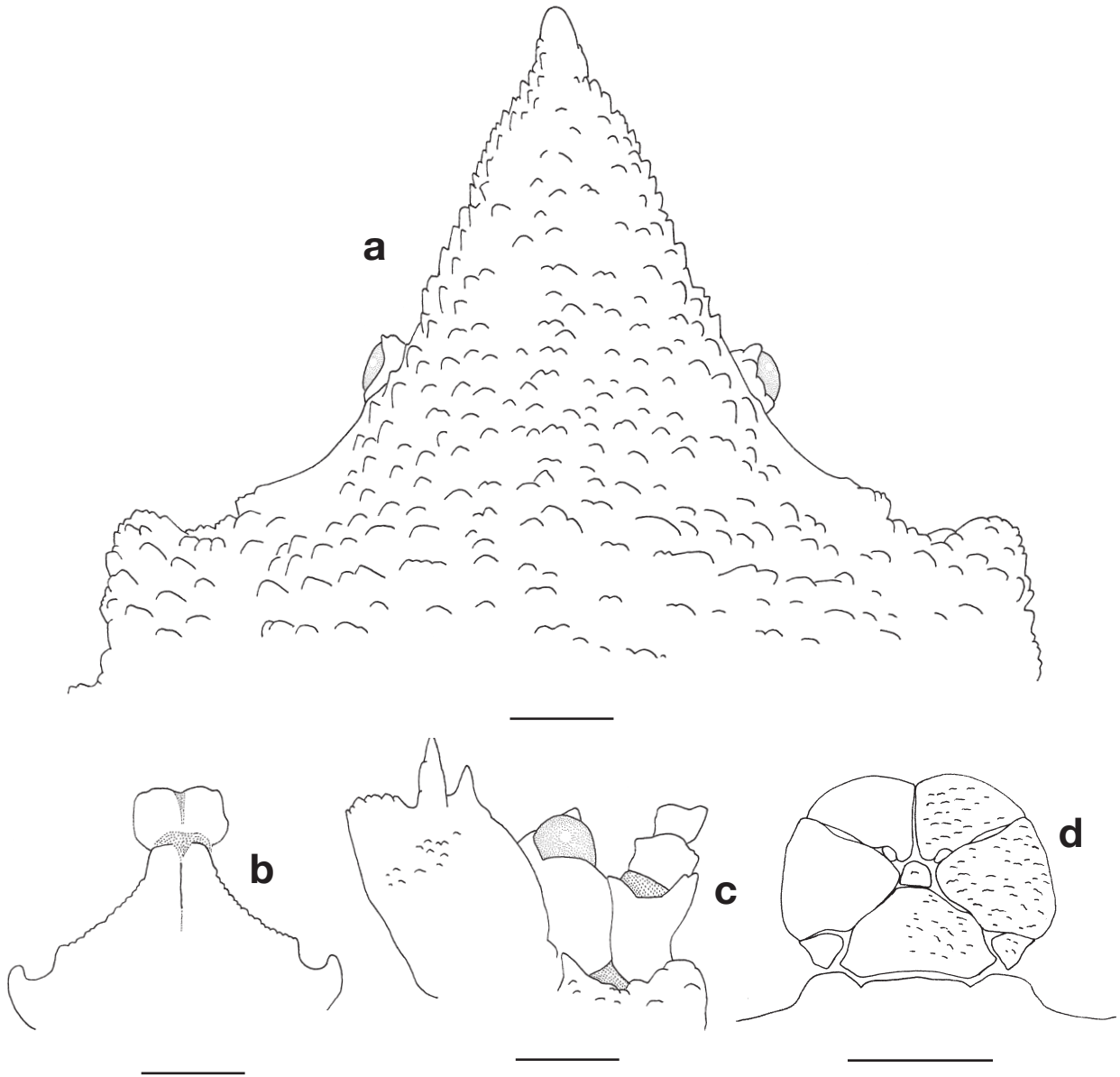


Fig. 212. Male (11.3 mm), CP374: **a**, anterior part of carapace, dorsal; **b**, anterior part of sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, telson, short ridges omitted from right side (after Osawa *et al.*, 2008). Scales: a–c = 1 mm; d = 3 mm.

Munidopsis hirsutissima Balss, 1913

濃毛仿刺鎧蝦



Fig. 213. Female (21.4 mm), OCP301.

Munidopsis hirsutissima Balss, 1913a: 223 [type locality: W of Sumatra, 1280 m].—Baba, 2005: 289.—Macpherson, 2007: 70.—Osawa *et al.*, 2008a: 47, fig. 5B.

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

Material examined.—OCP301, 22°20.906'N, 120°6.504'E, 687–712 m, 11 Aug 2005: 1 female (21.4 mm) (NTOU).

Diagnosis.—Carapace quadrangular, dorsal surface without spines, moderately rugose; lateral margins straight. Frontal margin lacking antennal spine. Rostrum triangular, short, lateral margins unarmed. Eyespine present; cornea ventral in position, hardly visible in dorsal view. P1 elongate, setose, fixed finger without denticulated carina on distolateral margin. P2 not reaching end of P1. P2–4 propodi of uniform width, not subchelate with dactyli. No epipods on pereopods.

Size.—Males to 20.3 mm, females to 25.2 mm, ovigerous females from 18.5 mm (Macpherson, 2007).

Coloration.—Carapace, corneas, abdomen, and pereopods entirely whitish; setae light brown.

Habitat.—Substrates not recorded; 495–1280 m.

Distribution.—West of Sumatra, Solomon Islands, Fiji, and Taiwan.

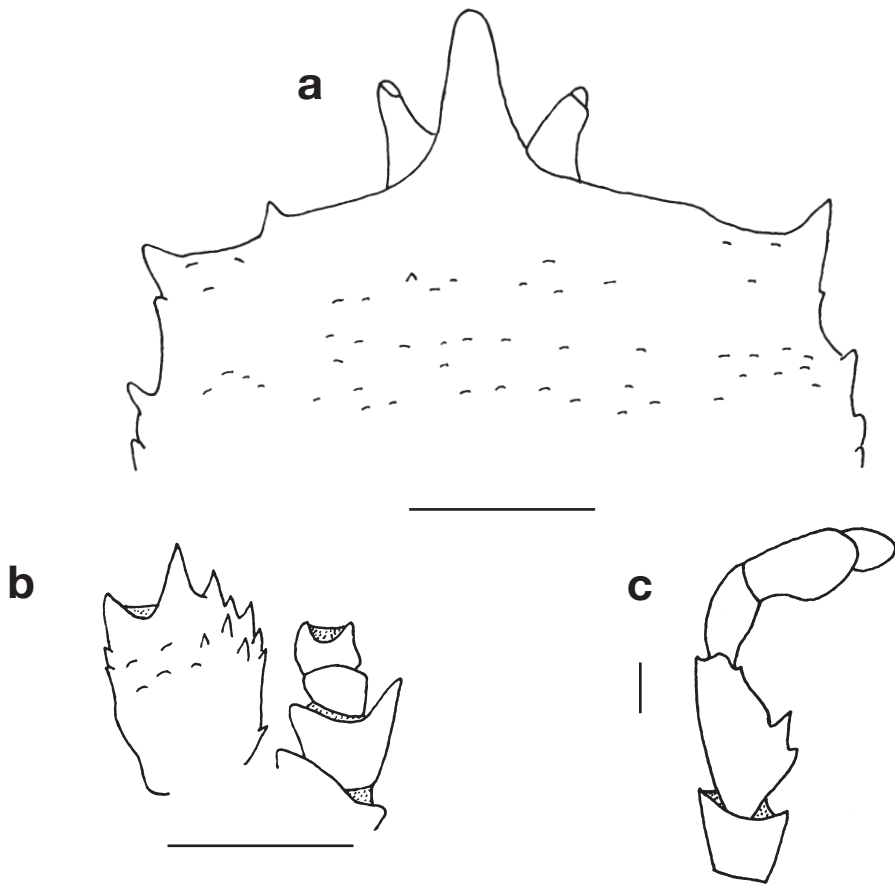


Fig. 214. Female (21.4 mm), OCP301: **a**, anterior part of carapace, dorsal; **b**, left antennule and antenna, ventral; **c**, right Mxp3, lateral. Scales: a, b = 5 mm, c = 1 mm.

Munidopsis kensleyi Ahyong & Poore, 2004
肯氏仿刺鎧蝦



Fig. 215. Male (14.7 mm), CD229.

Munidopsis kensleyi Ahyong & Poore, 2004b: 50, fig. 50 [type locality: E of Broken Bay, 33°34–31'S, 152°02–04'E, 905–914 m].—Poore, 2004: 237, fig. 65c.—Baba, 2005: 290.—Macpherson, 2007: 73, fig. 55I.—Osawa *et al.*, 2008a: 47, fig. 5C.—Poore *et al.*, 2008: 21.

Munidopsis dasypus.—Kensley, 1977: 176, fig. 10.—Kensley, 1981a: 34.—Baba & Poore, 2002: 233, fig. 2. (not *M. dasypus* Alcock, 1894)

Material examined.—Dongsha, 25 Apr 1996: 1 male (19.2 mm) (NTOU). CP32, 22°01.7'N, 120°11.1'E, 910–1129 m, 30 Jul 2000: 1 male (9.0 mm), 1 female (5.3 mm) (NTOU). CP55, 24°26.9'N, 122°18.1'E, 638–824 m, 4 Aug 2000: 1 female (11.9 mm) (NTOU). CD134, 22°16.56'N, 120°6.11'E, 736–1040 m, 22 Nov 2001: 2 males (14.2, 14.6 mm), 1 ovigerous female (10.8 mm), 1 female (11.5 mm) (NTOU). CD229, 22°13.35'N, 120°1.9'E, 1060–880 m, 30 Aug 2003: 2 males (14.3, 14.7 mm), 2 females (11.1, 11.3 mm) (NTOU). OCP298, 22°19.328'N, 120°3.394'E, 797–847 m, 11 Aug 2005: 2 males (9.5, 11.8 mm) (NTOU). PCP333, 22°16.502'N, 120°2.244'E, 889–1037 m, 5 Oct 2005: 1 male (11.9 mm) (NTOU). PCP343, 22°15.699'N, 120°2.131'E, 945–1059 m, 8 Mar 2005: 1 male (12.4 mm), 2 ovigerous females (12.6, 13.6 mm) (NTOU). PCP400, 22°15.989'N, 120°2.165'E, 921–972 m, 6 Nov 2007: 2 ovigerous females (13.3, 16.1 mm) (NTOU).

Diagnosis.—Carapace moderately smooth, posterior transverse ridge elevated, with 3–9 spines; lateral margins subparallel, each bearing anterolateral spine only. Frontal margin oblique. Rostrum spiniform, dorsally carinate, without lateral spines. Abdominal somites spineless. Ocular peduncles slender, more than twice as long

as cornea, setose, cornea curving laterad, without eyespine. P1 merus and carpus with sharp spines, palm spineless, fixed finger without denticulate carina on distolateral margin. Meri and carpi of P2–4 each with a few spines on dorsal margin. P2 terminating in distal end of P1 merus. Epipods present on P1.

Size.—Males to 19.2 mm, females to 17.3 mm, ovigerous females from 10.8 mm (Macpherson, 2007; Osawa *et al.*, 2008a)

Coloration.—Entire body generally reddish orange; grooves on carapace, telson, and uropods paler colored while P1 deeper colored. Corneas orange pink.

Habitat.—Substrates not recorded; 476–1313 m.

Distribution.—South Africa, Australia (New South Wales), New Caledonia, Chesterfield Islands, Vanuatu, Wallis and Futuna Islands, Solomon Islands, South China Sea (Dongsha) and Taiwan.

Remarks.—This species is recorded from Dongsha for the first time.

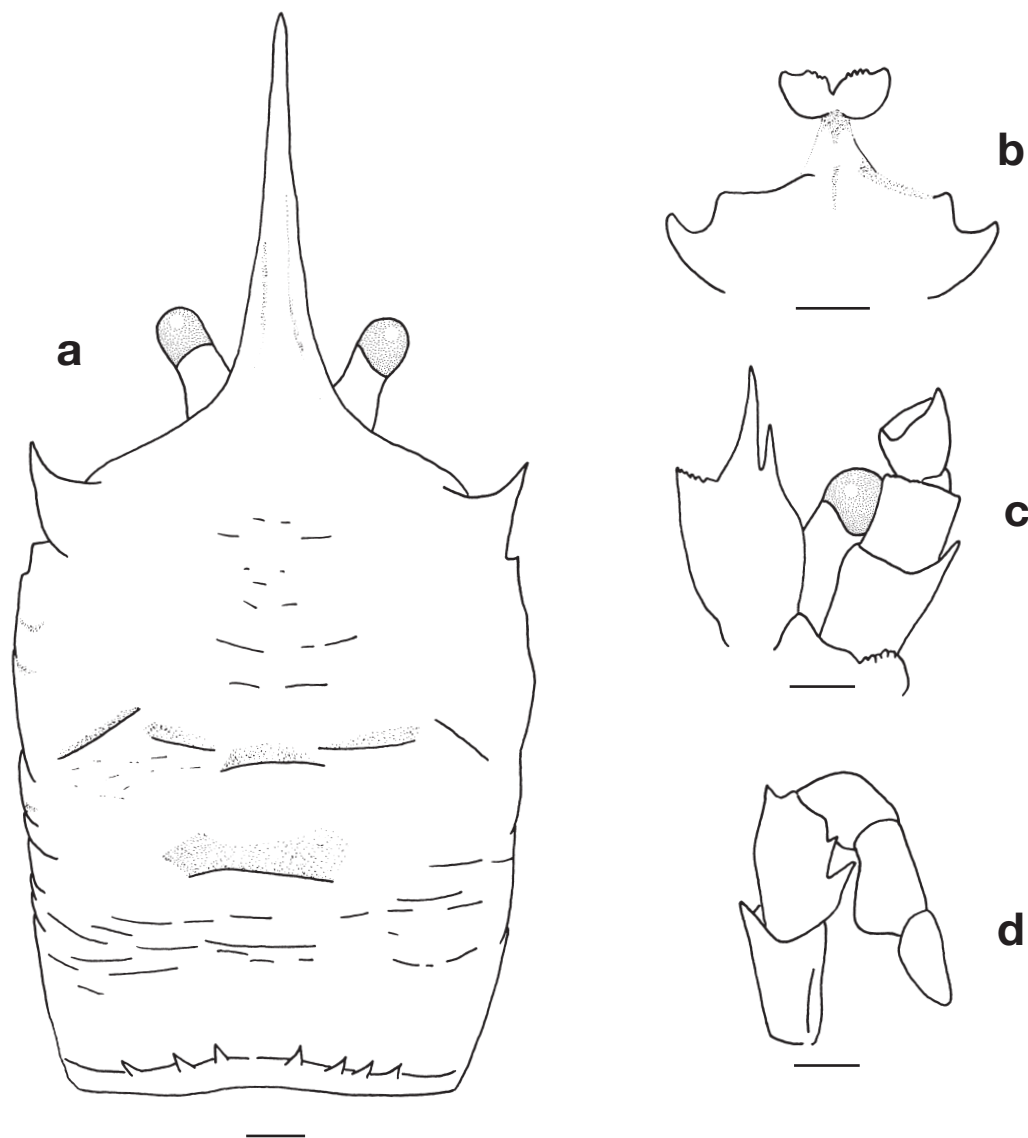


Fig. 216. Male (9.0 mm), CP32: **a**, carapace, dorsal; **b**, anterior part of sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, right Mxp3, lateral. Scales: a, b = 5 mm; c, d = 1 mm.

Munidopsis latiangularata Osawa, Lin & Chan, 2006
寬角仿刺鎧蝦



Fig. 217. Holotype ovigerous female (13.2 mm), CP284.

Munidopsis latiangularata Osawa *et al.*, 2006b: 251, figs 1–4 [type locality: Taiwan, 24°16.34'N, 122°11.67'E, 2220–2424 m].

Material examined.—CP284, 24°14.34'N, 122°11.67'E, 2220–2424 m, 16 Jun 2005: ovigerous female holotype (13.2 mm) (NTOU).

Diagnosis.—Carapace dorsal surface covered with small protuberances and tubercles. Lateral margins subparallel, anterior corner truncate. Rostrum broad, subtriangular, lateral margins convex, crenulate, unarmed. Abdomen with numerous small protuberances and tubercles. Ocular peduncle immovable, with short, dorsomesially placed eyespine directed forward, lateral spine absent. P1 moderately long; fixed finger with somewhat ventrally directed carina of blunt spines on distolateral surface. P2 not reaching end of P1. P2–4 moderately stout, somewhat compressed laterally; dactyli with flexor margin nearly straight, with proximally diminishing teeth. Epipods absent from pereopods.

Size.—Only known from the holotype, ovigerous female of 13.2 mm.

Coloration.—Carapace, abdomen, and pereopods entirely white. Corneas orange–pink. Setae on pereopods grayish brown. Eggs pale orange and translucent.

Habitat.—Substrates not recorded; 2220–2424 m.

Distribution.—Taiwan.

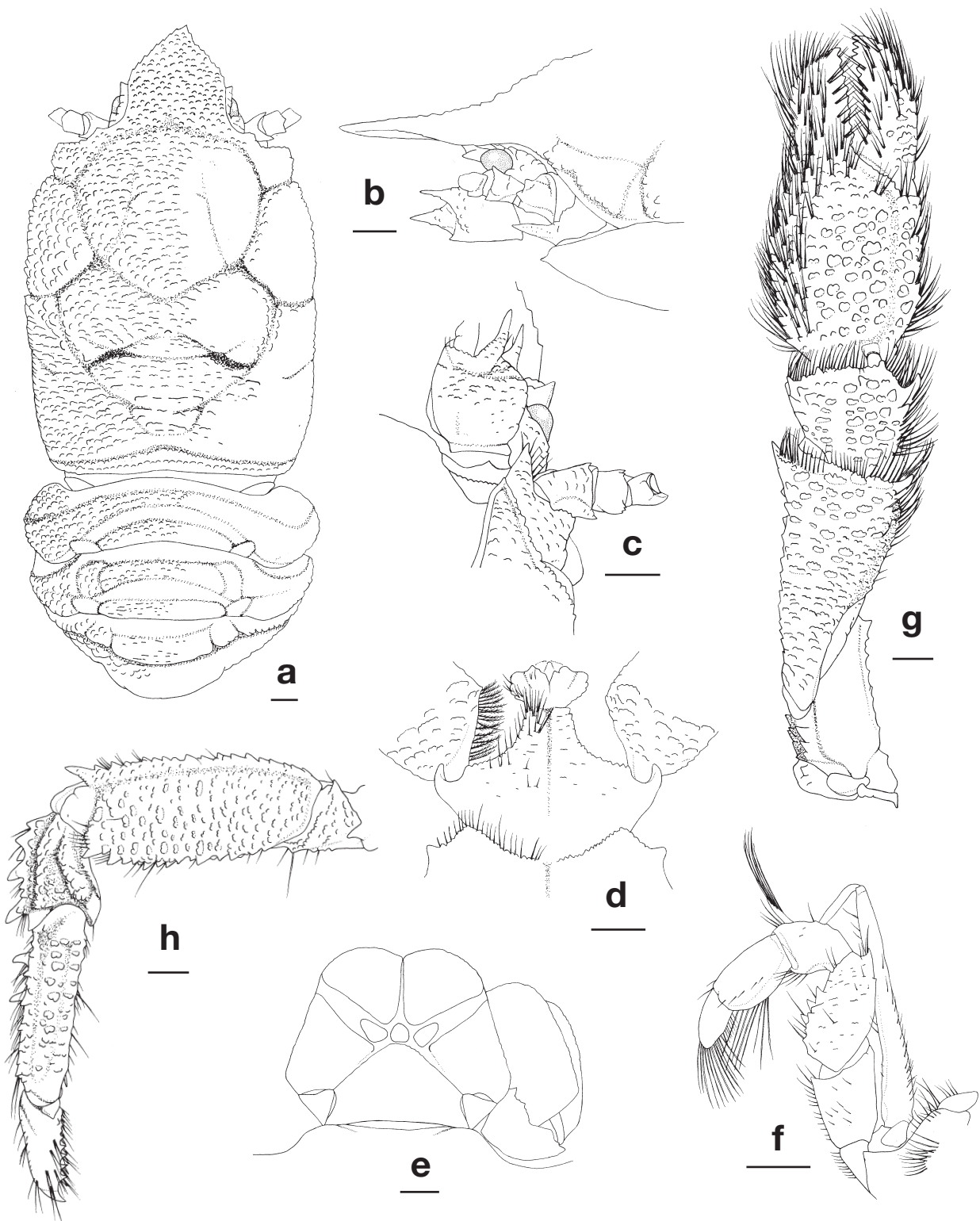


Fig. 218. Holotype ovigerous female (13.2 mm), CP284: **a**, carapace and abdomen, tubercles omitted from right side, dorsal; **b**, anterior carapace and cephalic appendages, lateral; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, anterior part of sternal plastron; **e**, telson and left uropod; **f**, left Mxp3, lateral; **g**, left P1, dorsal; **h**, left P2, lateral. Scales = 1 mm (after Osawa *et al.*, 2006).

Munidopsis latimana Miyake & Baba, 1966

寬手仿刺鎧蝦



Fig. 219. Female (10.5 mm), Donggang fishing port, Pingtung County, 22 Sep 2004.

Munidopsis latimana Miyake & Baba, 1966b: 85, figs 3, 4 [type locality: Tosa Bay, Japan, 250–350 m].—Baba in Baba *et al.*, 1986: 179, 294, fig. 129.—Baba, 1988: 154.—Wu *et al.*, 1998: 141, figs 39, 42E.—Komai, 2000: 359.—Baba, 2005: 290.—Macpherson, 2007: 74.—Osawa *et al.*, 2008a: 38.

Material examined.—Donggang fishing port, Pingtung County, 2 Dec 1995: 1 male (16.5 mm) (NTOU).—4 Dec 2003: 1 male (11.9 mm) (NTOU).—22 Sep 2004: 1 female (10.5 mm) (NTOU).—16 Dec 2004: 1 ovigerous female (15.1 mm) (NTOU). CD166, 22°23.85'N, 120°15.29'E, 200 m, 26 May 2002: 2 males (12.8, 13.1 mm) (NTOU).

Diagnosis.—Carapace dorsal surface smooth, furnished with setae, without spines; anterolateral spine of carapace followed by 4–8 small but sharp spines on branchial region. No spines on abdominal somites. Rostrum flat, broadly triangular, lateral borders unarmed. Frontal margin with antennal spine. Eyespine absent. P1 depressed, palm large. P2 not reaching end of P1. P2–4 propodi of uniform width, not subchelate with dactyli. Epipods absent from pereopods.

Size.—Males to 17.1 mm, females to 15.1 mm, ovigerous females from 7.0 mm (Macpherson, 2007; Osawa *et al.*, 2008a).

Coloration.—Yellow, yellow orange to reddish. Dorsal surface of carapace and abdomen with two pale or whitish longitudinal stripes. Corneas red. P1–4 yellow to reddish, with some white spots and bands (also see Baba in Baba *et al.*, 1986).

Habitat.—Substrates not recorded; 135–620 m.

Distribution.—Vanuatu and New Caledonia, Solomon Islands, Indonesia, Philippines, Taiwan, and Japan.

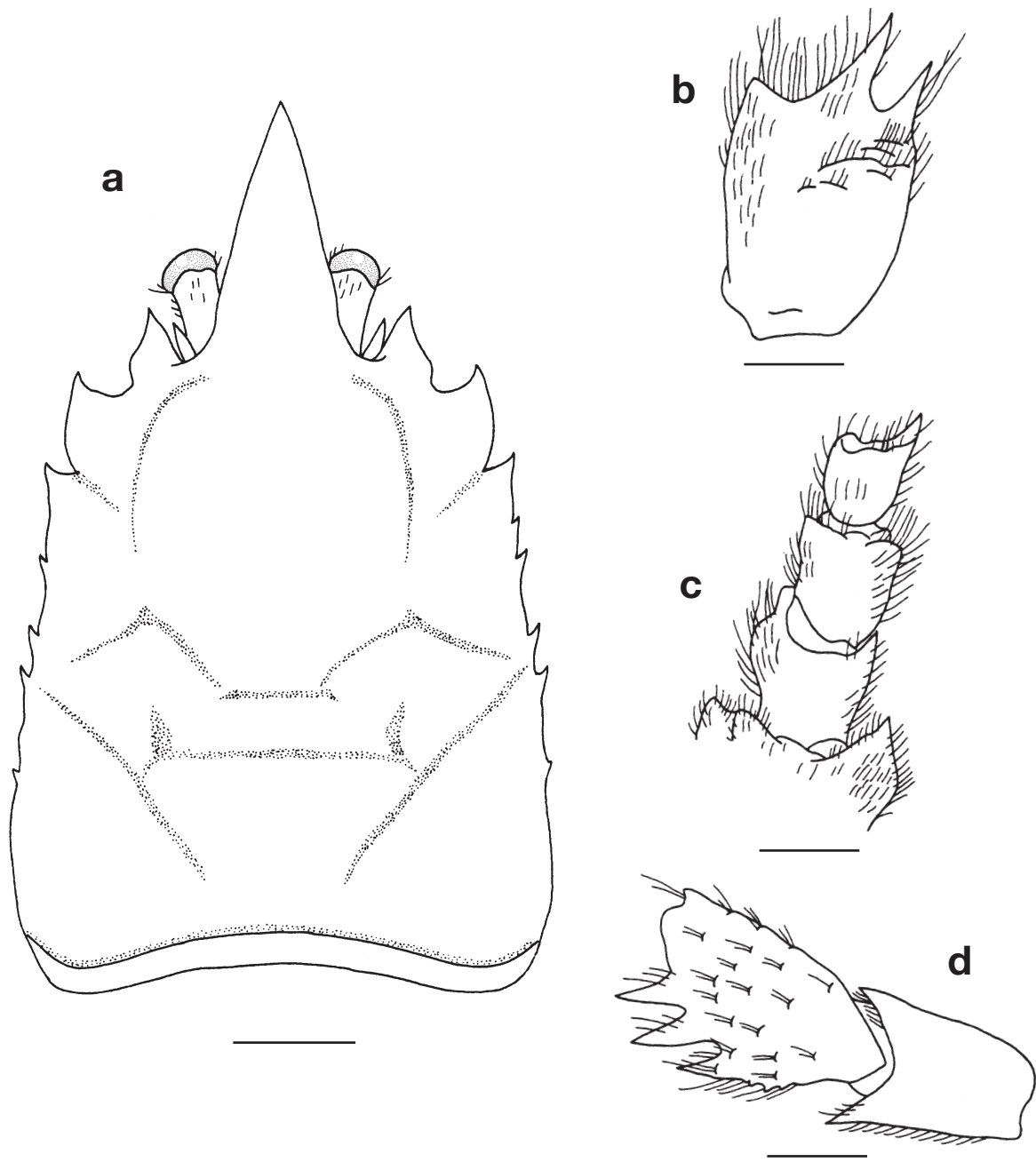


Fig. 220. Male (16.5 mm), Donggang fishing port, Pingtung County, 2 Dec 1995: **a**, carapace, dorsal; **b**, basal article of left antennule, ventral; **c**, left antennal peduncle, ventral; **d**, ischium and merus of left Mxp3, lateral. Scales: a = 3 mm; b–d = 1 mm (after Wu *et al.*, 1998).

Munidopsis nitida (A. Milne Edwards, 1880)

優雅仿刺鎧蝦



Fig. 221. Male (17.8 mm), PCP358.

Orophorhynchus nitidus A. Milne Edwards, 1880: 59 [type locality: Guadeloupe, 1407–1607 m].

Orophorhynchus spinosus A. Milne Edwards, 1880: 58 [type locality: Dominica, 1797 m].

Munidopsis brevimana Henderson, 1885: 414 [type locality: off the Admiralty Islands, 1958 m].—Henderson, 1888: 154, pl. 17, figs 1, 1a, 2, 2a. (not *M. brevimana* (A. Milne Edwards, 1880))

Munidopsis ciliata Wood-Mason, in Wood-Mason & Alcock, 1891: 200 [type locality: Bay of Bengal (“Investigator” Stn 97), 2397 m].—Alcock & Anderson, 1895: pl. 11, fig. 3.—Faxon, 1895: 84, pl. 18, fig. 3.—Ambler, 1980: 19 (not material off Oregon, 2030–2875 m, = *Munidopsis lignaria* Williams & Baba, 1989).—Wicksten, 1989: 315.—Hendrickx & Harvey, 1999: 376.—Baba, 1982a: 114, pl. 2, fig. 1.—Baba, 1988: 147, fig. 56.—Tirmizi & Javed, 1993: 13, fig. 6.—Hendrickx, 2001: 100.—Hendrickx, 2003: 23.—Hendrickx, 2007: 598, fig. 2A.

Munidopsis (Orophorhynchus) ciliata.—Alcock, 1901: 267.—MacGilchrist, 1905: 248.—Tirmizi, 1966: 216, fig. 31.

Munidopsis nitida.—A. Milne Edwards & Bouvier, 1894: 275.—A. Milne Edwards & Bouvier, 1897: 74, pl. 6, figs 6, 7.—Young, 1900: 407, 409.—Benedict, 1902: 276, 323.—Doflein & Balss, 1913: 176, 177.—Chace, 1942: 73.—Pequegnat & Pequegnat, 1970: 153, fig. 5–12.—Williams & Turner, 1986: 619.—Tavares & Campinho, 1998: 91, figs 3, 4.—Baba, 2005: 158, figs 72, 73.—Macpherson, 2007: 85.—Osawa *et al.*, 2008a: 48, fig. 5D.

Material examined.—CP190, 21°35.01'N, 118°15.02'E, 1650–1665 m, 28 Aug 2002: 1 male (18.7 mm)

(NTOU). CD191, 21°41.04'N, 118°21.95'E, 1630–1623 m, 28 Aug 2002: 2 males (6.4, 9.7 mm), 1 female (8.1 mm) (NTOU). CD199, 24°25.38'N, 122°12.41'E, 1138–1187 m, 12 Sep 2002: 1 male (21.2 mm), 1 female (23.6 mm) (NTOU). CP278, 24°23.63'N, 122°14.13'E, 1222–1239 m, 14 Jun 2005: 1 female (18.4 mm) (NTOU). OCP282, 24°23.90'N, 122°14.10'E, 1200–1250 m, 15 Jun 2005: 1 female (5.0 mm) (NTOU). CD325, 20°40.281'N, 118°3.598'E, 1982–1794 m, 20 Aug 2005: 1 male (11.5 mm), 2 females (14.6, 17.7 mm) (NTOU). PCP358, 21°41.04'N, 118°21.95'E, 1630–1623 m, 3 Jun 2005: 1 male (17.8 mm) (NTOU). CP364, 22°06.335'N, 121°08.224'E, 1275–1260 m, 24 Aug 2006: 1 female (20.0 mm) (NTOU).

Diagnosis.—Carapace with interrupted, setiferous striae; pair of epigastric spines prominent; lateral margin with 4 or 5 spines including small anterolateral one, anterior second strongest. Frontal margin with distinct antennal spine. Rostrum narrowly acute, laterally unarmed. Abdomen spineless. Ocular peduncles movable, with mesial and lateral eyespines, mesial one larger; cornea broad relative to remaining eyestalk, maximum breadth clearly more than breadth of rostrum at midlength. P1 shorter than P2, distolateral margin of P1 fixed finger with denticulate carina. P2–4 meri and carpi with acute spines on dorsal crest; propodi unarmed. Epipods present on P1, not on P2–4.

Size.—Males to 25.0 mm, females to 23.6 mm, ovigerous females from 17.5 mm (Macpherson, 2007).

Coloration.—Entire body and pereopods whitish. Corneas orange pink. Eggs pale yellowish.

Habitat.—Mud, clay (Baba, 2005); 222–3680 m. The shallow record from the Solomon Islands (222–228 m) should be considered with caution, because most of the records were well below 800 m (Macpherson, 2007).

Distribution.—Western Atlantic (West Indies, Gulf of Mexico, southwestern Brazil), Eastern Atlantic (Gulf of Guinea), Indian and Pacific Oceans (Mozambique Channel, Madagascar, southwestern Indian Ocean, Gulf of Aden, Bay of Bengal, Papua and Admiralty Islands, Solomon Islands, New Caledonia, Vanuatu, Philippines, Indonesia, South China Sea (Dongsha), Taiwan, Japan, SE Gulf of California and Gulf of Panama.

Remarks.—This is the first record of *M. nitida* from Dongsha.

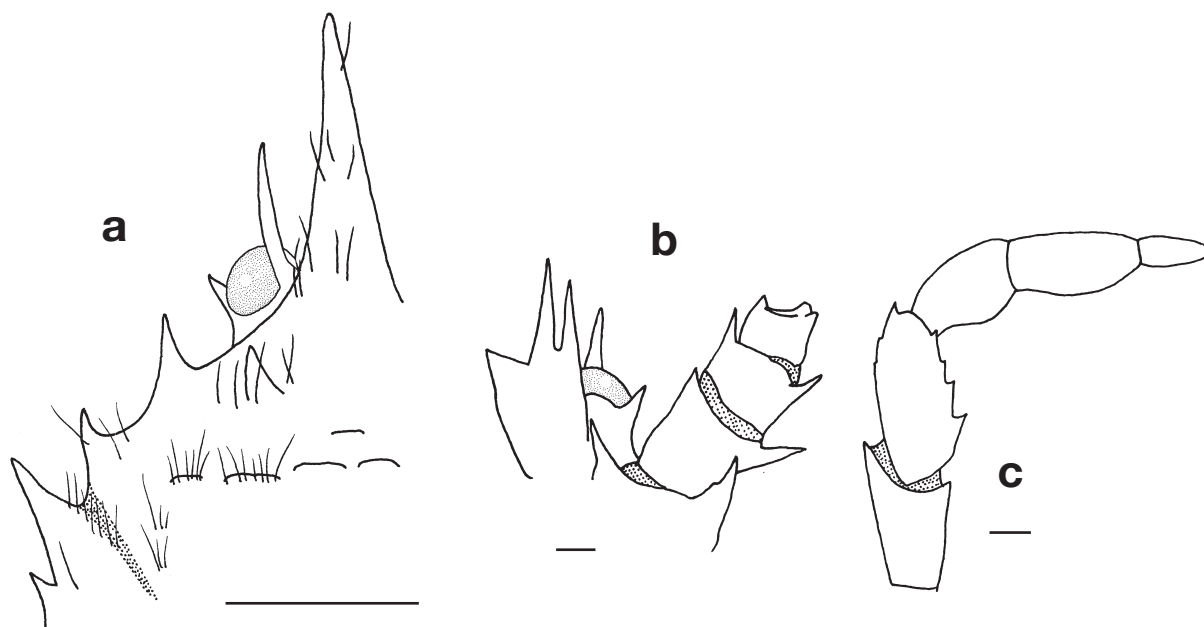


Fig. 222. Male (18.7 mm), CP190: **a**, left anterior part of carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, right Mxp3, lateral. Scales : a = 5 mm; b, c = 1 mm.

Munidopsis pallida Alcock, 1894
蒼白仿刺鎧蝦



Fig. 223. Female (40.1 mm), CP369.

Munidopsis subsquamosa var. *pallida* Alcock, 1894: 331 [type locality: Andaman Sea, 3299 m].—Alcock & Anderson, 1895: pl. 13, fig. 7.

Munidopsis (Orophorhynchus) subsquamosa var. *pallida*.—Alcock, 1901: 268.

Munidopsis pallida.—Gore, 1983: 209.—Baba, 2005: 161, figs 74, 75, 292.—Osawa *et al.*, 2008a: 49, figs 2D, E, 5E, F.

Not *Munidopsis (Orophorhynchus) subsquamosa* var. *pallida*.—Doflein & Balss, 1913: 155, figs 21, 22. (= *Munidopsis* sp.)

Material examined.—CD325, 20°40.281'N, 118°3.598'E, 1982–1794 m, 20 Aug 2005: 1 male (30.4 mm) (NTOU). CP369, 24°18.965'N, 122°04.204'E, 3030–3070 m, 26 Aug 2006: 1 female (40.1 mm) (NTOU). CP373, 24°16.287'N, 122°11.647'E, 2233–2551 m, 26 Aug 2006: 1 female (14.0 mm) (NTOU). CP374, 24°19.195'N, 122°04.220'E, 3032–3065 m, 26 Aug 2006: 1 male (29.5 mm) (NTOU).

Diagnosis.—Dorsal surface of carapace with scales; pair of epigastric spines distinct. Frontal margin oblique, with antennal spine. Anterolateral spine of carapace subequal or larger than antennal spine. Rostrum broad at base, dorsally carinate, slightly to greatly upturned distally, laterally unarmed. Abdominal somites with distinct rugosities, unarmed, somite 6 with posteromedian margin weakly convex, not produced. Eyestalk short relative to length, ocular peduncles slightly movable with strong mesiodorsal eyespine. P1–4 with reduced spination. P1 fixed finger without denticulate carina on distolateral margin. P2 overreaching end of P1. P2–4 dactyli weakly curved distally, having ultimate flexor marginal tooth equidistant between penultimate tooth and

tip of article. Epipod on P1, absent from P2–4.

Size.—Males to 30.4 mm, females to 40.1 mm (Osawa *et al.*, 2008a).

Coloration.—Entire body and pereopods whitish. Corneas orange pink.

Habitat.—Brownish ooze (Baba, 2005); 1794–3299 m.

Distribution.—Bay of Bengal, Andaman Sea, South China Sea (Dongsha) and Taiwan.

Remarks.—This species is recorded from Dongsha for the first time.

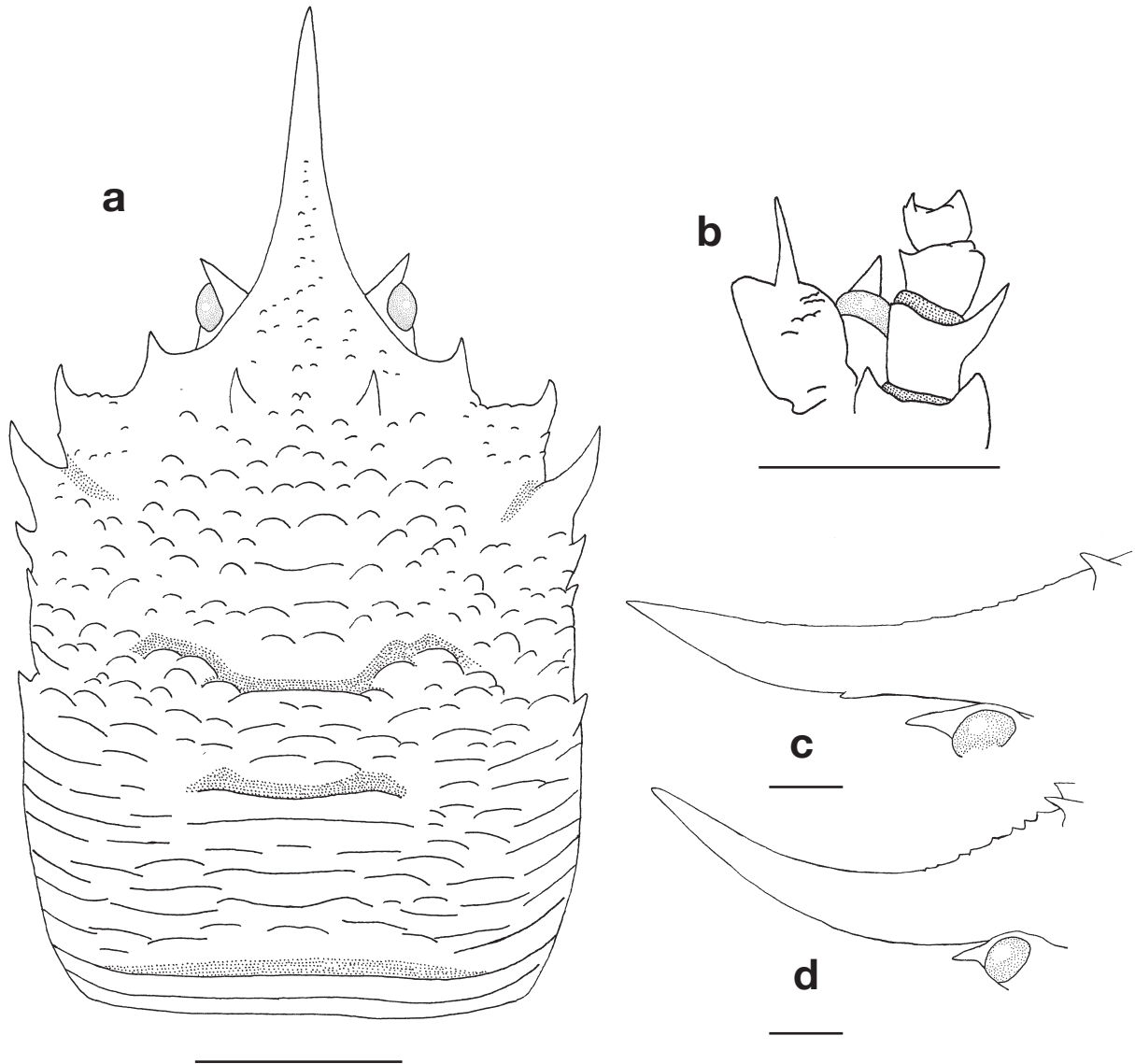


Fig. 224. Female (14.0 mm), CP373, a-b; female (40.1 mm), CP369, c (after Osawa *et al.*, 2006); male (29.5 mm), CP374, d (after Osawa *et al.*, 2006): **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, rostrum and eye, lateral; **d**, same. Scales: a, b = 5 mm; c, d = 3 mm.

Munidopsis panamae Baba, 2005
巴拿馬仿刺鎧蝦



Fig. 225. Female (16.3 mm), CP294.

Munidopsis panamae Baba, 2005: 165, fig. 78, 292 [type locality: Gulf of Panama, 05°49'N, 78°52'W, 3800 m].—Osawa *et al.*, 2006a: 427, figs 4A, B, 5B.

Material examined.—CP294, 23°59.364'N, 122°20.762'E, 3564–3579 m, 9 Aug 2005: 1 female (16.3 mm) (NTOU).

Diagnosis.—Carapace with spines on gastric region. Rostrum broadly triangular, laterally unarmed. Frontal margin oblique, with distinct antennal spine larger than anterolateral spine of carapace. Abdominal somites unarmed; somite 6 having posteromedian margin produced, exceeding lateral lobes. Ocular peduncles slightly movable, distomesial eyespine well developed, lateral spine absent; cornea small, moderately exposed. P1 fixed finger without denticulate carina on distolateral margins. P2 slightly overreaching end of P1; flexor margin of P2–4 dactyli concavely curving, ultimate tooth closer to penultimate tooth than to tip of terminal claw. Epipods present on P1, not on P2–4.

Size.—Only two females have been collected; the largest is 28.0 mm, with rostrum.

Coloration.—Carapace, abdomen, and pereopods entirely white. Corneas orange.

Habitat.—Clay (Baba, 2005); 3564–3800 m.

Distribution.—Taiwan and Gulf of Panama.

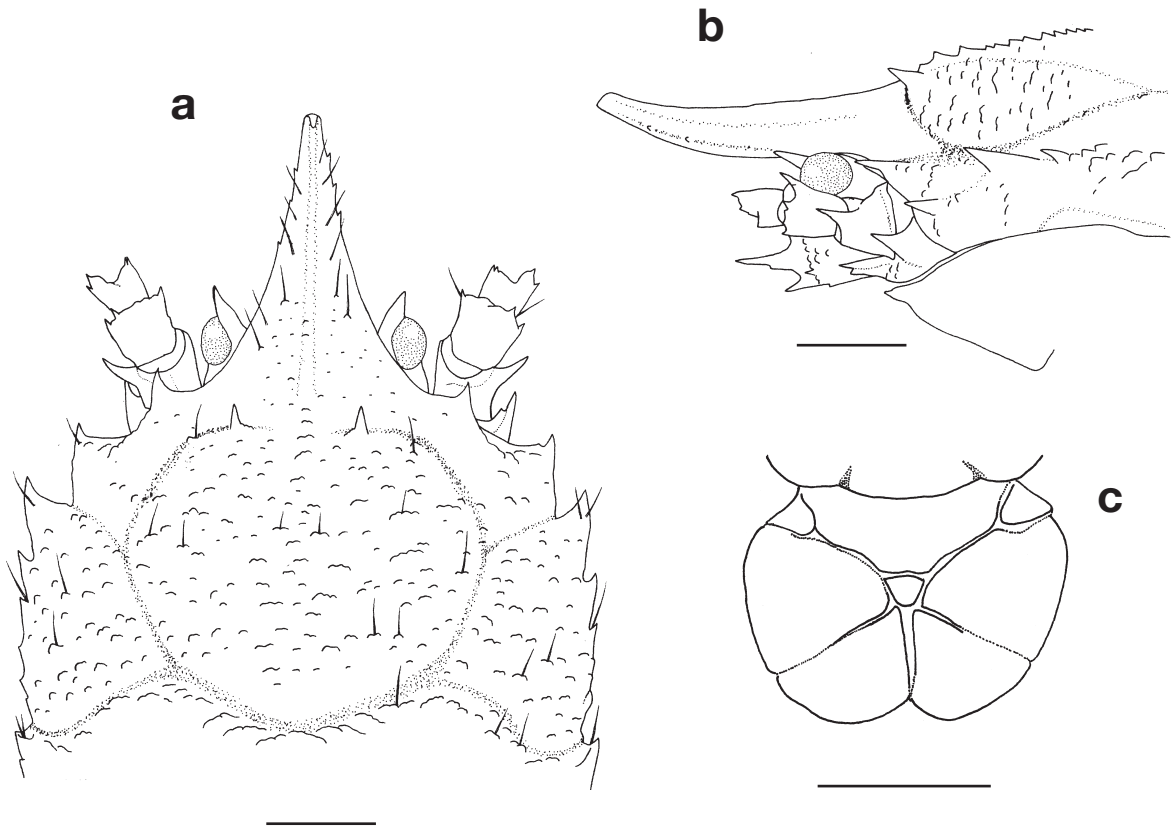


Fig. 226. Female (16.3 mm), CP294: **a**, anterior part of carapace and cephalic appendages, distal part of rostrum broken, dorsal (after Osawa *et al.*, 2006); **b**, same, setae omitted, lateral (after Osawa *et al.*, 2006); **c**, telson. Scales: a, b = 3 mm; c = 5 mm.

Munidopsis pilosa Henderson, 1885
毛茸仿刺鎧蝦



Fig. 227. Male (12.2 mm), CP235.



Fig. 228. Male (12.2 mm), CP235, in association with sunken wood.

Munidopsis pilosa Henderson 1885: 415 [type locality: off Gilolo Island (Moluccas S of Batjan), 0°48'30"S, 126°58'30"E, 1510 m].—Henderson, 1888: 157, pl. 17, figs 5, 5a, 5b.—Alcock & Anderson, 1894: 171.—Baba, 1988: 155, fig. 61.—Baba, 2005: 293.—Macpherson, 2007: 93.—Osawa & Takeda, 2007: 140.—Osawa *et al.*, 2008a: 49, fig. 6A.

Material examined.—CP39, 21°57.5'N, 121°03.2'E, 1316–1317 m, 1 Aug 2000: 5 males (4.3–10.8 mm), 7 females (3.3–9.3 mm) (NTOU). CP55, 24°26.9'N, 122°18.1'E, 638–824 m, 4 Aug 2000: 1 male (5.3 mm), 1 female (9.0 mm) (NTOU). CD136, 22°7.75'N, 120°0.87'E, 1211–988 m, 22 Nov 2000: 1 female (8.6 mm) (NTOU). CD199, 22°25.38'N, 122°12.41'E, 1138–1187 m, 12 Sep 2002: 2 males (9.3, 9.6 mm) (NTOU). CD226, 22°19.15'N, 121°4.63'E, 1171–1212 m, 29 Aug 2003: 1 male (5.4 mm) (NTOU). CD227, 22°12.04'N, 121°5.29'E, 1232–1260 m, 29 Aug 2003: 12 males (5.1–10.6 mm), 1 ovigerous female (10.5 mm), 4 females (5.8–11.1 mm) (NTOU). CP235, 25°22.95'N, 122°43.63'E, 765–806 m, 22 Jul 2004: 3 males (4.4–12.2 mm), 1 ovigerous female (9.9 mm), 1 female (5.9 mm) (NTOU). CP241, 25°9.51'N, 122°31.87'E, 638–824 m, 24 Jul 2004: 1 male (9.1 mm) (NTOU). CP277, 24°23.57'N, 122°14.12'E, 1222–1261 m, 14 Jun 2005: 1 ovigerous female (8.6 mm) (NTOU). OCP282, 24°23.90'N, 122°14.10'E, 638–824 m, 15 Jun 2005: 1 male (11.5 mm), 1 ovigerous female (10.1 mm) (NTOU). PCP358, 22°9.556'N, 121°7.174'E, 1257–1262 m, 3 Jun 2005: 1 ovigerous female (9.3 mm) (NTOU). CP363, 22°09.305'N, 121°07.353'E, 1262–1269 m, 24 Aug 2006: 5 males (7.6–11.4 mm), 4 ovigerous females (8.0–10.2 mm), 2 females (5.9, 8.4 mm) (NTOU). CP364, 22°06.335'N, 121°08.224'E, 1275–1260 m, 24 Aug 2006: 6 males (6.2–12.1 mm), 12 ovigerous females (7.3–11.3 mm), 2 females (9.6, 11.3 mm) (NTOU). CP365, 22°04.322'N, 121°09.199'E, 1291–1295 m, 24 Aug 2006: 1 ovigerous female (11.5 mm) (NTOU). CP372, 24°23.619'N, 122°14.138'E, 1220–1280 m, 24 Aug 2006: 2 ovigerous females (8.6, 11.6 mm) (NTOU). PCP410, 22°16.967'N, 120°0.3'E, 969–1036 m, 8 Nov 2007: 1 male (10.2 mm) (NTOU). PCP438, 22°15.395'N, 121°3.311'E, 1206–1222 m, 12 Jul 2008: 1 male (7.2 mm), 1 ovigerous female (11.5 mm), 1 juvenile (1.6 mm) (NTOU).

Diagnosis.—Carapace and pereopods covered with short setae. Dorsal surface of carapace smooth; lateral margin not crested, armed with 1 or 2 anterior spines. Rostrum narrowly triangular, laterally unarmed. Antennal spine present. Abdominal somites spineless. Sternite 4 with at least 2 pairs of anterior spines. Main eyespine strong, on median part of cornea, continuous with eyestalk. P1 fixed finger without denticulate carina on distolateral margin. P2 overreaching end of P1. Merus and carpus of P2–4 with marginal spines. Epipods absent from pereopods.

Size.—Males to 12.2 mm, females to 11.7 mm, ovigerous females from 7.3 mm (Macpherson, 2007; Osawa *et al.*, 2008a).

Coloration.—Entire body and pereopods whitish; setae pale brown. Corneas orange pink. Eggs light yellowish.

Habitat.—Hard bottoms (Baba, 1988); associated with sunken wood; 638–1640 m.

Distribution.—Madagascar, Andaman Sea, Solomon Islands, Vanuatu, Tonga Islands. Indonesia, Philippines, and Taiwan.

Remarks.—*Munidopsis pilosa* is commonly found in association with sunken wood in the deep waters of Taiwan.

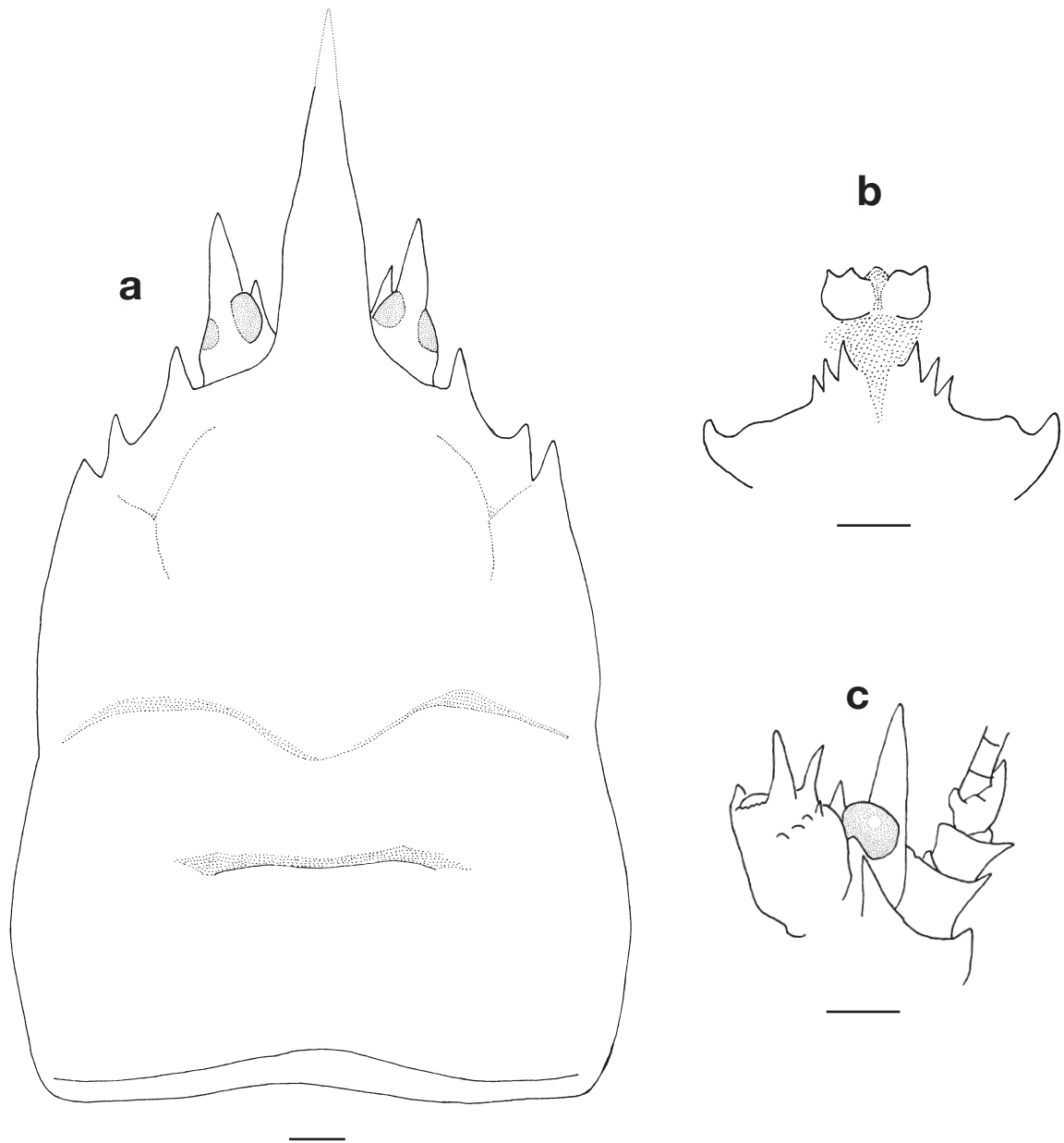


Fig. 229. Ovigerous female (11.5 mm), PCP438: **a**, carapace, dorsal; **b**, anterior part of sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral. Scales = 1 mm.

Munidopsis profunda Baba, 2005
深海仿刺鎧蝦



Fig. 230. Male (27.3 mm), CP416.

Munidopsis profunda Baba, 2005: 173, figs 82, 83, 293 [type locality: Celebes Sea, 01°50'N, 119°20'E, 5243–5163 m].—Osawa *et al.*, 2006a: 427, figs 4C, D, 5C, D.

Material examined.—CP 294, 23°59.364'N, 122°20.762'E, 3564–3579 m, 9 Aug 2005: 2 males (16.9, 23.4 mm), 1 female (16.7 mm) (NTOU). OCP296, 22°15.081'N, 121°55.095'E, 4430–4455 m, 10 Aug 2005: 1 male (20.6 mm), 1 female (27.9 mm) (NTOU). CP413, 22°15.0668'N, 121°54.9872'E, 4412–4446 m, 12 Jun 2008: 5 males (22.1–29.0 mm) (NTOU). CP415, 22°26.166'N, 122°21.1054'E, 4813–4807 m, 14 Jun 2008: 2 males (16.6, 17.6 mm), 1 ovigerous female (23.5 mm) (NTOU). CP414, 22°37.9098'N, 122°32.7264'E, 5011–4990 m, 13 Jun 2008: 2 males (28.0, 15.3 mm), 2 ovigerous females (18.5, 19.5 mm), 2 females (14.4, 21.3 mm) (NTOU). CP416, 22°26.4405'N, 122°21.1782'E, 4824–4807 m, 15 Jun 2008: 4 males (15.3–28.0 mm), 4 ovigerous females (18.5–25.5 mm), 2 females (14.1, 21.3 mm) (NTOU).

Diagnosis.—Body covered with short fine setae. Carapace dorsally spineless; lateral margin with some spines, first spine at anterolateral angle, second largest. Rostrum broadly triangular, dorsally carinate, laterally unarmed. Frontal margin oblique, with antennal spine larger than anterolateral spine. Abdomen spineless, somite 6 having posteromedian margin not produced, not exceeding lateral lobes. Ocular peduncles hardly movable, with mesial and lateral eyespines, mesial one strongly produced forward but slightly incurved distally, cornea small and lateral. P1 short and stout; fixed finger with denticulate carina on distolateral margin. P2 overreaching P1. Epipods present on P1.

Size.—Males to 34.1 (with rostrum), females to 27.9 mm, ovigerous females from 18.5 mm (Baba, 2005;

Osawa *et al.*, 2006a).

Coloration.—Carapace, abdomen, and pereopods entirely white. Corneas orange-pink. Setae on pereopods grayish brown.

Habitat.—Bluish clay (Baba, 2005); 3564–5243 m.

Distribution.—Taiwan and Celebes Sea.

Remarks.—This species and *M. taiwanica* are the deepest (5011 m) living marine animals so far known from Taiwan.

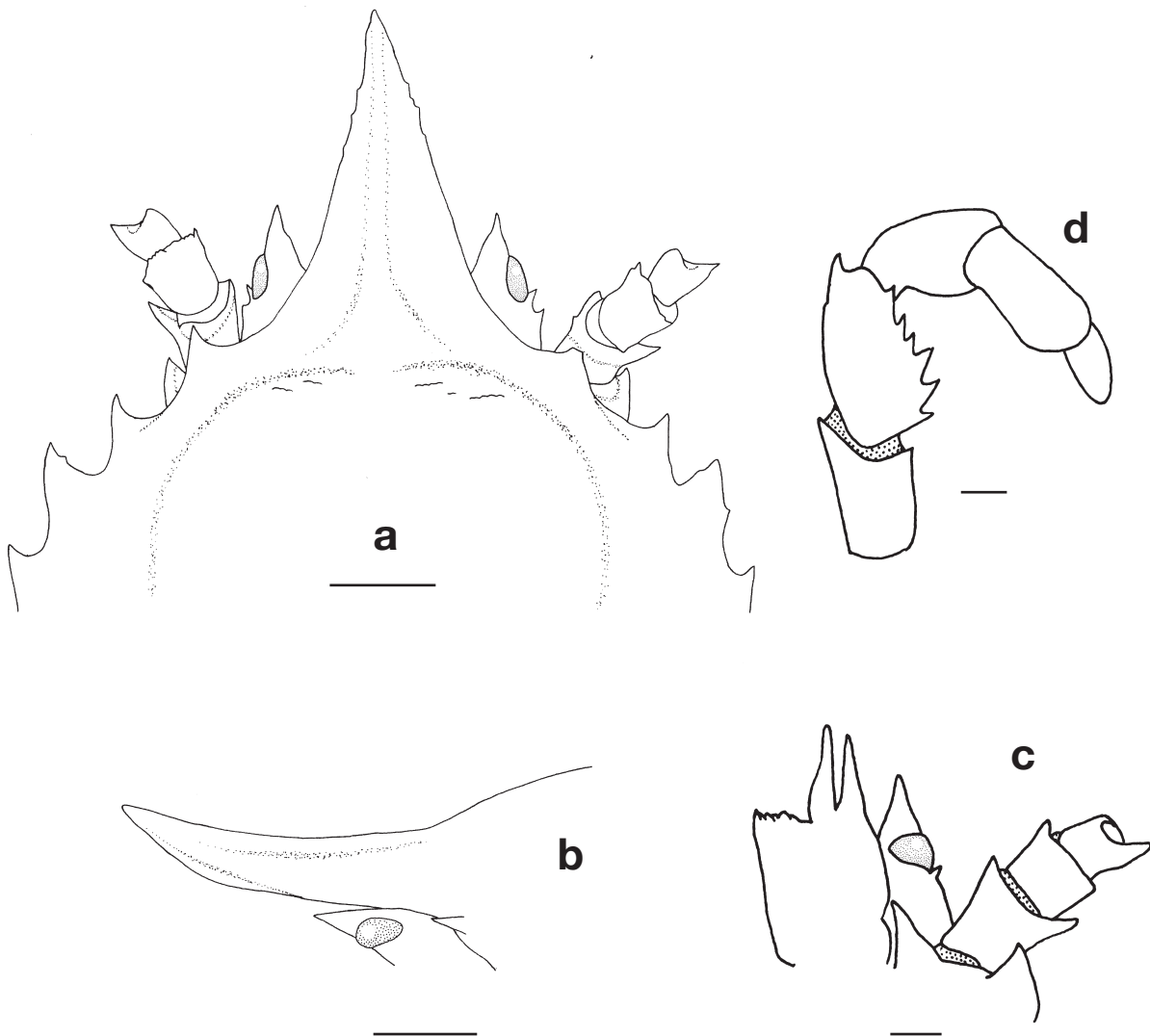


Fig. 231. Male (23.4 mm), CP294: **a**, anterior part of carapace and cephalic appendages, plumose setae omitted, dorsal (after Osawa *et al.*, 2006); **b**, rostrum and eye, lateral (after Osawa *et al.*, 2006); **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, right Mxp3, lateral. Scales: a, b = 3 mm; c, d = 1 mm.

Munidopsis sarissa Lin, Osawa & Chan, 2007
長槍仿刺鎧蝦

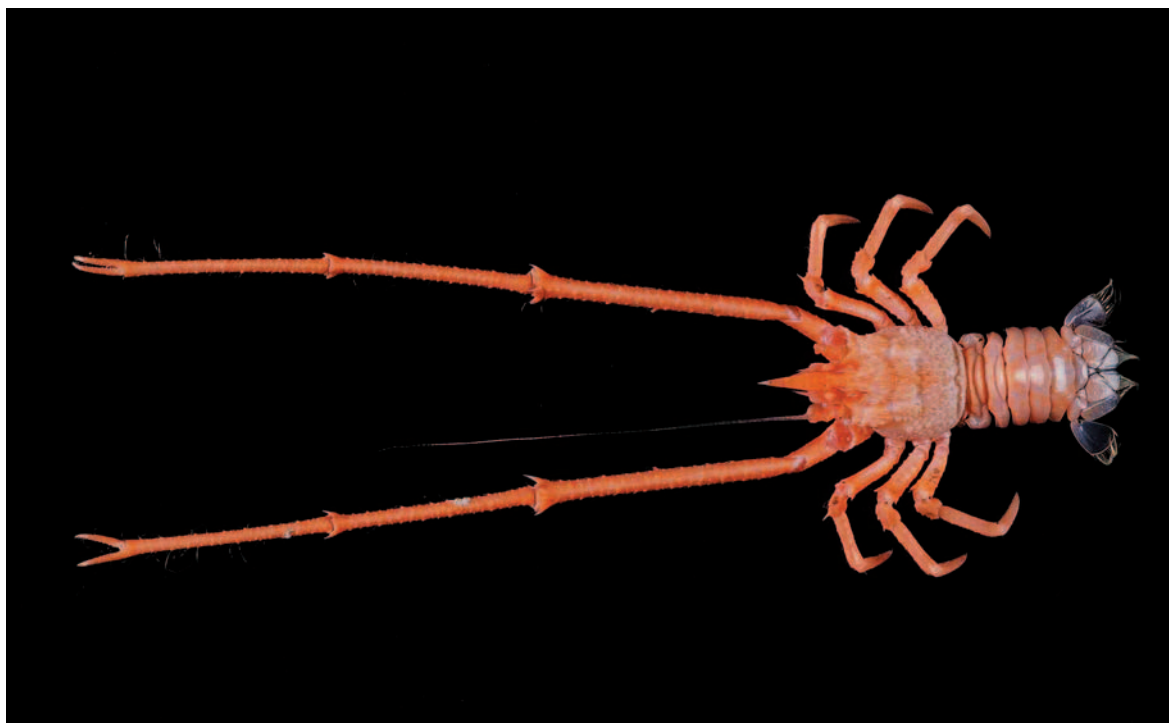


Fig. 232. Paratype ovigerous female (7.3 mm), PCP334.

Munidopsis sarissa Lin *et al.*, 2007: 167, figs 1–3 [type locality: Taiwan, 22°17.16'N, 119°59.91'E, 960–972 m].

Material examined.—CP300, 22°17.156'N, 119°59.963'E, 960–972 m, 11 Aug 2005: male holotype (8.8 mm), 1 male paratype (5.9 mm), 1 ovigerous female paratype (7.9 mm), 3 female paratypes (5.8–8.5 mm) (NTOU). PCP334, 22°16.713'N, 120°0.114'E, 994–975 m, 5 Oct 2005: 4 male paratypes (5.6–6.7 mm), 3 ovigerous female paratypes (7.3–8.3 mm) (NTOU). PCP342, 22°16.648'N, 119°59.960'E, 988–1010 m, 8 Mar 2006: 1 male paratype (5.3 mm), 1 female paratype (5.3 mm) (NTOU).

Diagnosis.—Dorsal surface of carapace with numerous recurved spines; lateral margins spinose; posterior margin with small spines and tubercles. Rostrum elongate and lance-like, lateral margins crenulate. Abdomen spineless. Ocular peduncle slightly movable, with very small, subacute projection at anteromesial end; cornea globular. P1 subcylindrical, very long and slender, coxae clearly visible in dorsal view. P2–4 moderately stout, somewhat compressed laterally. P2 not reaching end of P1. Epipods absent from pereopods.

Size.—Males to 8.8 mm, females to 8.5 mm, ovigerous females from 7.3 mm (Lin *et al.*, 2007).

Coloration.—Rostrum and anteromedian part of carapace, and sometimes P1, orange-pink. Most parts of carapace, abdomen, and pereopods pink to white. Corneas light orange. Eggs orange.

Habitat.—Most specimens were collected amongst the branches of gorgonian corals (also see Lin *et al.*, 2007); 960–1010 m.

Distribution.—At present known only from Taiwan.

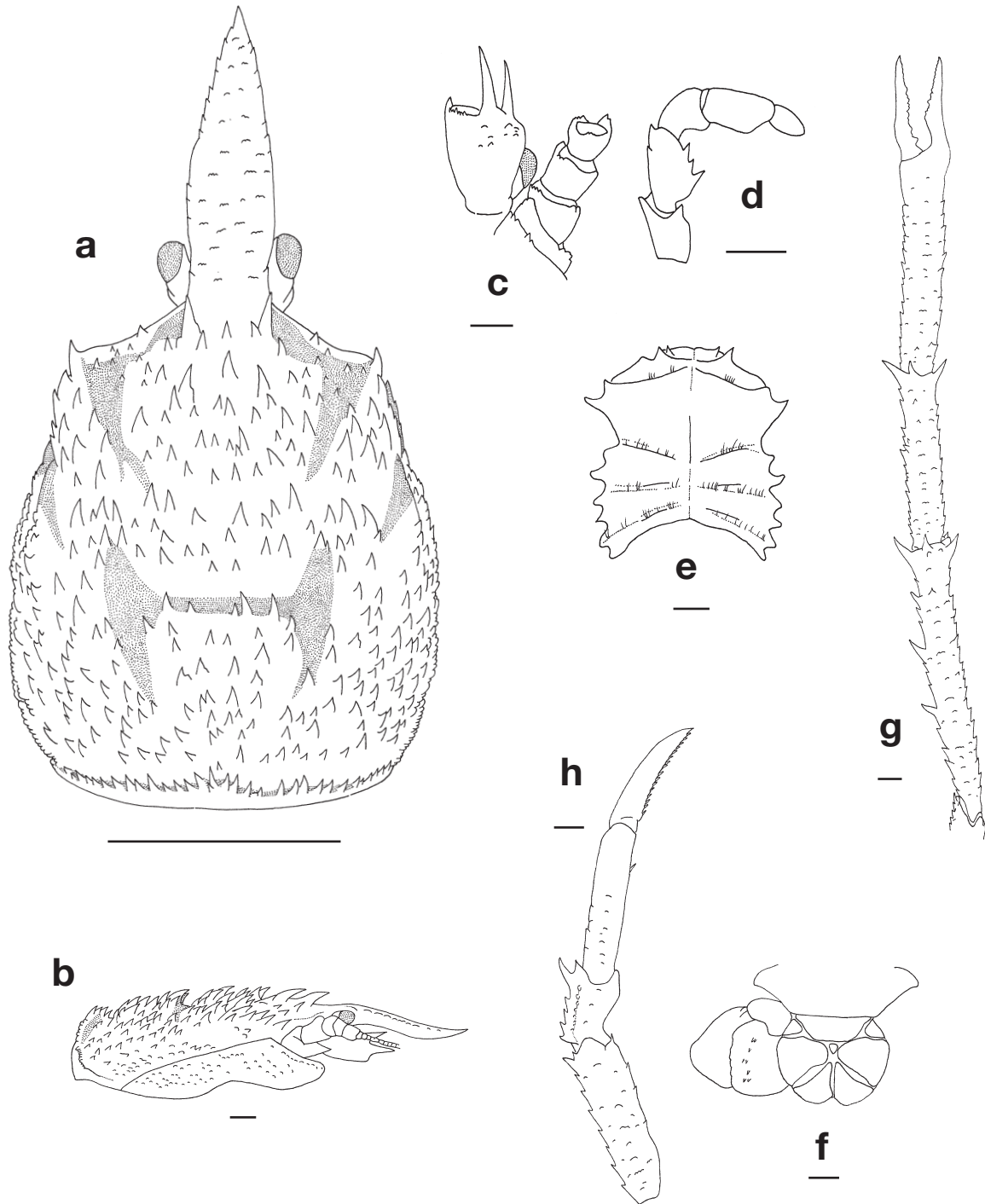


Fig. 233. Holotype male (8.8 mm), CP300: **a**, carapace, dorsal; **b**, carapace and cephalic appendages, lateral; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, right Mxp3, lateral; **e**, sternal plastron; **f**, telson and left uropods; **g**, right P1, dorsal; **h**, right P2, lateral; . Scales = 1 mm (after Lin *et al.*, 2007).

Munidopsis serricornis (Lovén, 1852)

鋸角仿刺鎧蝦



Fig. 234. Male (7.7 mm), CD203.

- Galathea serricornis* Lovén, 1852: 22 [type locality: Sweden, Vader Island, along Bohuslan coast, c. 92 m].
Galathea tridentata Esmark, 1857: 239 [type locality: Lofoten, W coast of Norway].—Sars, 1872: 256.
Galathodes serricornis.—A. Milne Edwards, 1880: 55.—Dons, 1915: 71, fig. 20.
Galathodes rosaceus A. Milne Edwards, 1881: 932 [type locality: N coast of Spain, 900 m].—A. Milne Edwards, 1882: 43.
Galathodes tridentata.—Sars, 1883: 43, pl. 1, fig. 3.—A. Milne Edwards & Bouvier, 1894: 231, 279, fig. 32.—A. Milne Edwards & Bouvier, 1899: 83.—A. Milne Edwards & Bouvier, 1900: 331, pl. 31, figs 5–7.—Norman, 1894: 155.—Caullery, 1896: 390.—Bouvier, 1922: 48.
Galathodes tridentatus.—Sars, 1890: 162, pl. 4.—Kemp, 1910: 414.
Munidopsis tridentatus.—Ortmann, 1892: 256.
Munidopsis tridentata.—Ortmann, 1892: 256.—Benedict, 1902: 276, 328.—Doflein & Balss, 1913: 175, 176.—Laurie, 1926: 139.—Chace, 1942: 88.—Zariquiey Álvarez, 1968: 269, fig. 95a.—Miyake & Baba, 1970: 95.—Pequegnat & Pequegnat, 1970: 158, fig. 5–14.—Samuelsen, 1972: 91.—Baba, 1988: 172, fig. 70.—Abello & Valladares, 1988: 99, fig. 3.—Komai, 2000: 359.
Munidopsis ? *rosacea*.—Alcock & Anderson, 1899a: 19.
Munidopsis rosacea.—Alcock & Anderson, 1899b: pl. 40, fig. 4.
Munidopsis (*Galathodes*) ? *tridentata*.—Alcock, 1901: 264.
Munidopsis bahamensis Benedict, 1902: 276, 278, 317, fig. 22 [type locality: off the coast of Florida, off

Fernandina, 31°09'00"N, 79°33'30"W, 644 m].—Doflein & Balss, 1913: 175, 177.—Chace, 1942: 89.—Pequegnat & Pequegnat, 1970: 139.—Pequegnat & Pequegnat, 1971: 5.

Munidopsis tenuirostris Benedict, 1902: 276, 289, 328, fig. 32 [type locality: off Georgia, 30°44'00"N, 79°26'00"W, 805 m].—Doflein & Balss, 1913: 176, 178.—Chace, 1942: 4.—Pequegnat & Pequegnat, 1970: 139.—Pequegnat & Pequegnat, 1971: 5.

Munidopsis (Galathodes) tridentata.—Doflein & Balss, 1913: 158.—Selbie, 1914: 81, pl. 12, figs 1–5.—Bouvier, 1922: 48.—Pérez, 1927: 287.

Munidopsis (Galathodes) serricornis.—Balss, 1926: 29.

Munidopsis serricornis.—Christiansen, 1972: 46, fig. 57.—d'Udekem d'Acoz, 1999: 168.—Baba & Poore, 2002: 241, figs 6a, b, d, e, 7a, c, d, 8, a, c, d, 9a, b, e–g.—Ahyong & Poore, 2004b: 57.—Ingle & Christiansen, 2004: 143, figs 116, 119.—Baba, 2005: 185, 295.—Macpherson & Segonzac, 2005: 42.—Macpherson, 2007: 97.—Osawa *et al.*, 2008a: 49, fig. 6B.—Poore *et al.*, 2008: 22.

Material examined.—CD203, 22°0.2'N, 120°28.94'E, 635–868 m, 29 May 2003: 1 male (7.7 mm) (NTOU).

Diagnosis.—Carapace scarcely setose, bearing pair of epigastric spines. Lateral margins convex, armed in anterior half with 4 or 5 small spines, first anterolateral, usually small. Frontal margin with small antennal spine. Rostrum broad, dorsally carinate, distally trifid. Abdomen unarmed. Ocular peduncles small and movable, lacking eyespines. P1 moderately setose. P2–4 meri with row of small dorsal spines; dactyli nearly straight along flexor margin, bearing row of teeth each with seta-like spine. P2 barely overreaching end of P1 carpus. Epipods absent from all pereopods.

Size.—Males to 10.9 mm, females to 13.0 mm, ovigerous females from 5.6 mm (Macpherson & Segonzac, 2005).

Coloration.—Body and pereopods generally pinkish orange, P1 deeper colored. Corneas pink.

Habitat.—Mud (Baba, 2005). Some specimens have been collected with gorgonian *Acanthogorgia* sp. (Macpherson & Segonzac, 2005); 96–2091 m.

Distribution.—Eastern Atlantic from Norway and Iceland to Cape Verde Islands. Western Atlantic off southeast of the United States to northwest of Gulf of Mexico. Indo-Pacific from Madagascar to Indonesia, Taiwan, Philippines, and Australia (SW Australia, Tasmania and Victoria).

Remarks.—Macpherson (2007) suggested that, considering the wide geographical distribution of this species, the specimens from different localities should be reviewed. Some in the previous records may belong to recently described species such as *M. treis* Ahyong and Poore, 2004, *M. ternaria* Macpherson, 2007, or to a new species. The Taiwan specimen was collected at depths of 635–868 m.

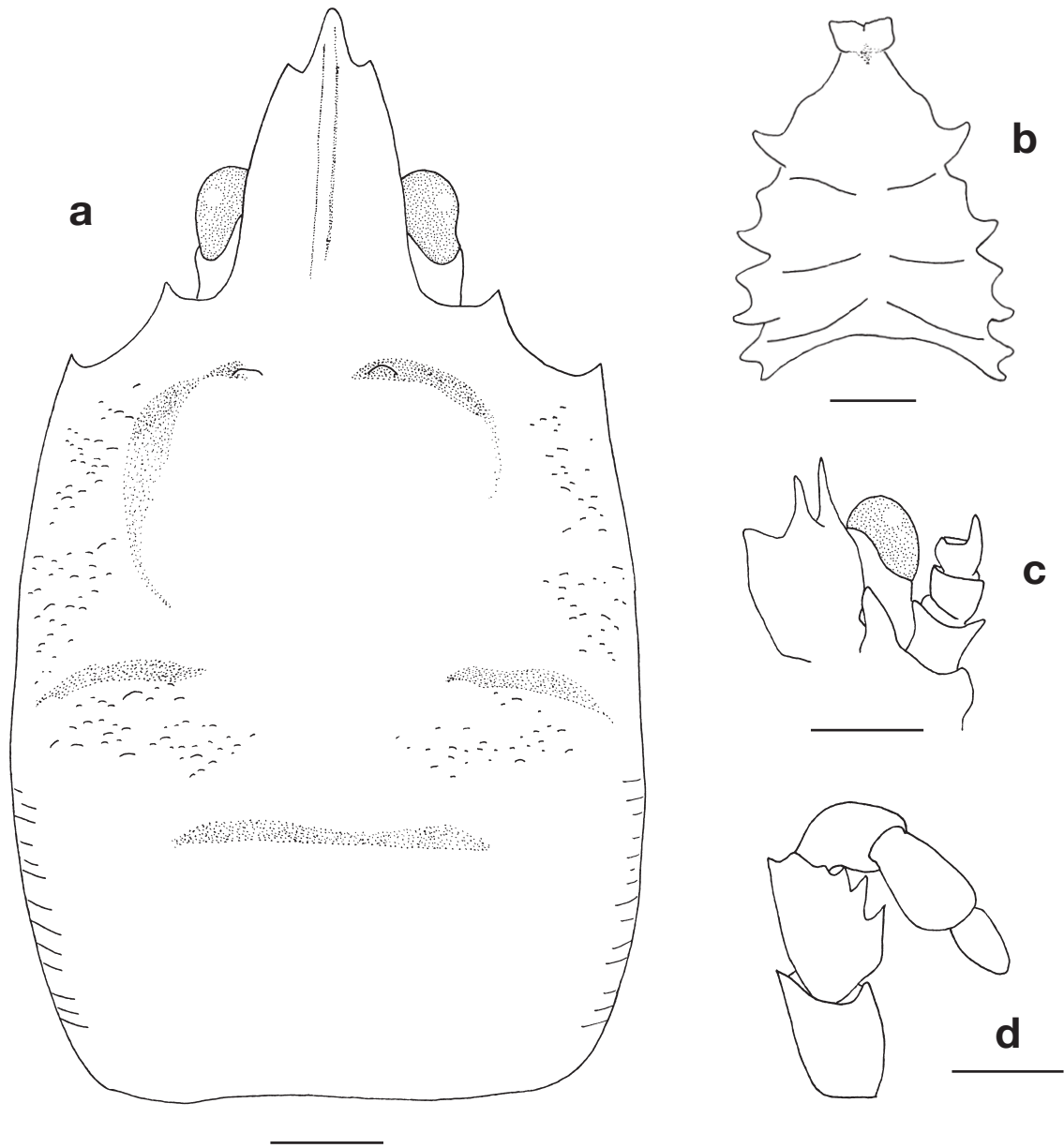


Fig. 235. Male (7.7 mm), CD203: **a**, carapace, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, right Mxp3, lateral. Scales: a, b = 5 mm; c, d = 1 mm.

Munidopsis similior Baba, 1988
更似仿刺鎧蝦



Fig. 236. Male (8.9 mm), CD140, carapace without longitudinal white median line.



Fig. 237. Female (9.1 mm), CP165, carapace with longitudinal white median line.

Munidopsis similior Baba, 1988: 164, fig. 65 [type locality: NE of Legazpi Lt., off SE Luzon, 131°2'N, 123°49'18"E, 267 m].—Komai, 2000: 359.—Baba, 2005: 295.—Macpherson, 2007: 98, fig. 55L.—Osawa *et al.*, 2008a: 51, figs 6C, D.

Material examined.—CD140, 22°11.4'N, 120°22.58'E, 452–280 m, 23 Nov 2001: 1 male (8.9 mm) (NTOU). CP165, 22°24.06'N, 120°13.03'E, 300 m, 26 May 2002: 1 female (9.1 mm), 1 ovigerous female (6.8 mm) (NTOU).

Diagnosis.—Dorsal surface of carapace smooth, lateral margins subparallel, each with 2 small anterior spines. Frontal margin with small antennal spine. Rostrum moderately triangular, dorsally carinated, laterally unarmed. Abdomen spineless. Ocular peduncles immovable, cornea rather rounded, eye-spines present, arising from end of cornea, mesioventral eyespine relatively large, rather distantly separated from lateral eyespine. P1 short, fixed finger with denticulate carina on distolateral margin. P2–4 meri and carpi with spines on dorsal crest, dactyli bearing flexor marginal spines. P2 distinctly overreaching P1. Epipods absent from pereopods.

Size.—Males to 9.3 mm, females to 9.1 mm, ovigerous females from 5.3 mm (Macpherson, 2007; present data).

Coloration.—Body generally orange or brown; distal articles of pereopods, abdominal somite 6, telson, and uropods lighter colored or whitish. Abdomen usually with white, median longitudinal line. Carapace with or without white median longitudinal line continuous with line on abdomen (also see Macpherson, 2007). Corneas orange/yellow. Eggs yellowish.

Habitat.—Mud (Baba, 1988); 267–798 m.

Distribution.—Madagascar, Solomon Islands, Vanuatu, Fiji, Indonesia, Philippines, Taiwan, and the South China Sea.

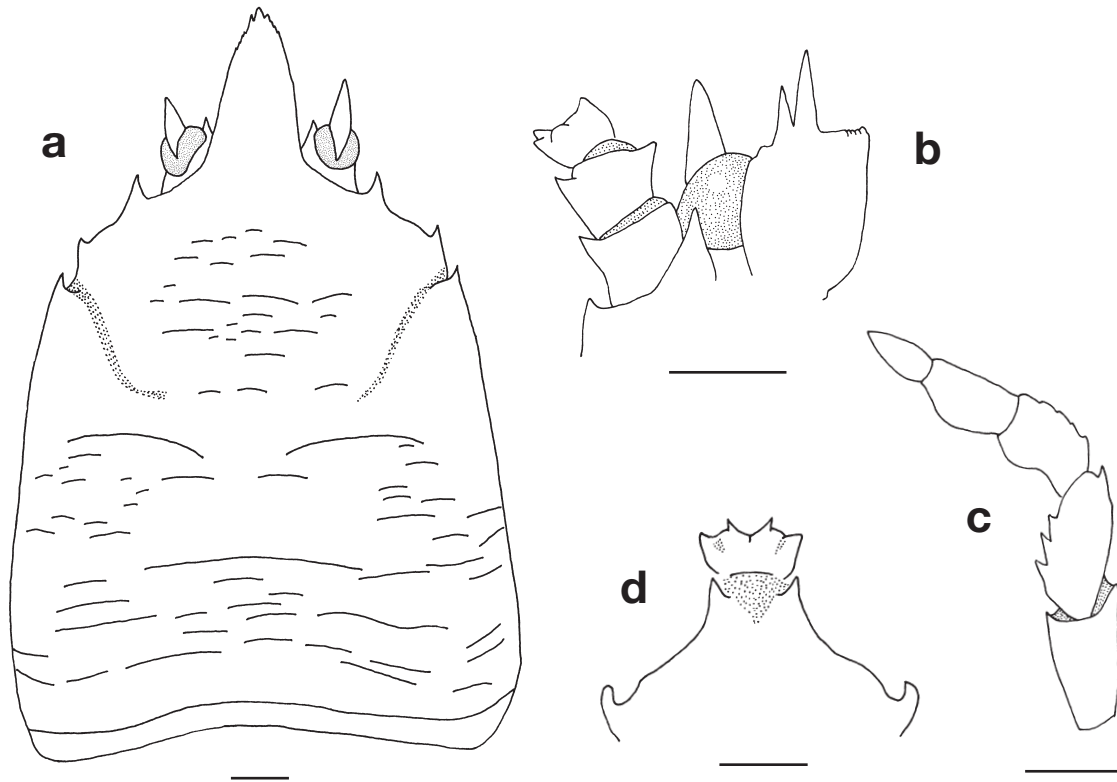


Fig. 238. Female (9.1 mm), CP165, a; male (8.9 mm), CD140, b–d: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing right antennule and antenna, ventral; **c**, left Mxp3, lateral; **d**, anterior part of sternal plastron. Scales: a = 5 mm; b–d = 1 mm.

Munidopsis sinclairi McArdle, 1901

先氏仿刺鎧蝦



Fig. 239. Female (15.8 mm), CP366.

Munidopsis (Elasmonotus) Sinclairi McArdle, 1901: 524 [type locality: off S coast of Sri Lanka, 1610 m].

Munidopsis (Elasmonotus) sinclairi.—Alcock & McArdle, 1902: pl. 56, fig. 4.

Munidopsis sinclairi.—Baba, 1988: 166, fig. 66.—Baba, 2005: 295.—Macpherson, 2007: 98, fig. 45.—Osawa *et al.*, 2008a: 51, fig. 6E.

Material examined.—CD199, 24°25.38'N, 122°12.41'E, 1138–1187 m, 12 Sep 2002: 1 female (9.8 mm) (NTOU). CP366, 22°02.872'N, 121°10.079'E, 1302–1301 m, 24 Aug 2006: 3 females (10.3–15.8 mm) (NTOU).

Diagnosis.—Dorsal surface of carapace unarmed, with rugosities, mostly on gastric region. Rostrum narrowly triangular, laterally unarmed. Frontal margin without any process or spine behind antennal peduncle. Anterolateral angle of carapace rounded; anterior end of branchial lateral margin unarmed. No spines on abdominal somites. Ocular peduncles as long as cornea; cornea nearly oval or semioval, without eyespine. P1 distinctly longer than carapace, nearly spineless; fixed finger without denticulate carina on distolateral margin. P2–4 dactyli with distinct serration or small spines. P2 not reaching end of P1. Epipods absent from pereopods.

Size.—Males to 13.3 mm, females 15.8 mm, ovigerous females from 6.9 mm (Macpherson, 2007; Osawa *et al.*, 2008a).

Coloration.—Body and pereopods generally orange-brown; grooves on carapace, median part of rostrum, and telson and uropods pale colored or whitish. Corneas orange-brown. Eggs yellowish.

Habitat.—Mud, mud mixed with sand (Baba, 1988); 527–1750 m.

Distribution.—South coast of Sri Lanka, New Caledonia, Vanuatu, Solomon Islands, Indonesia, Philippines, and Taiwan.

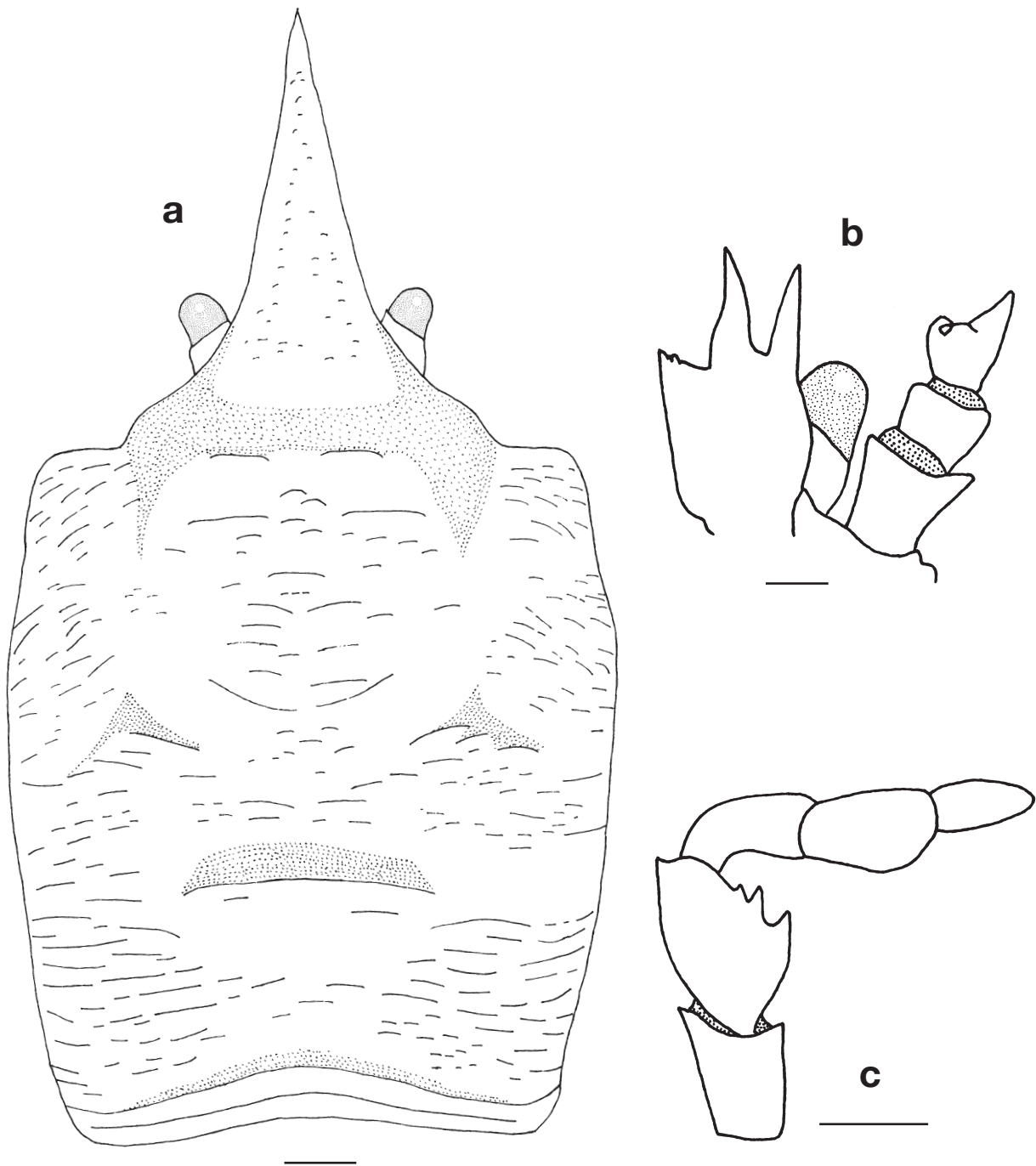


Fig. 240. Female (9.8 mm), CD199: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, right Mxp3, lateral. Scales = 1 mm.

Munidopsis subchelata Balss, 1913
亞鉗仿刺鎧蝦

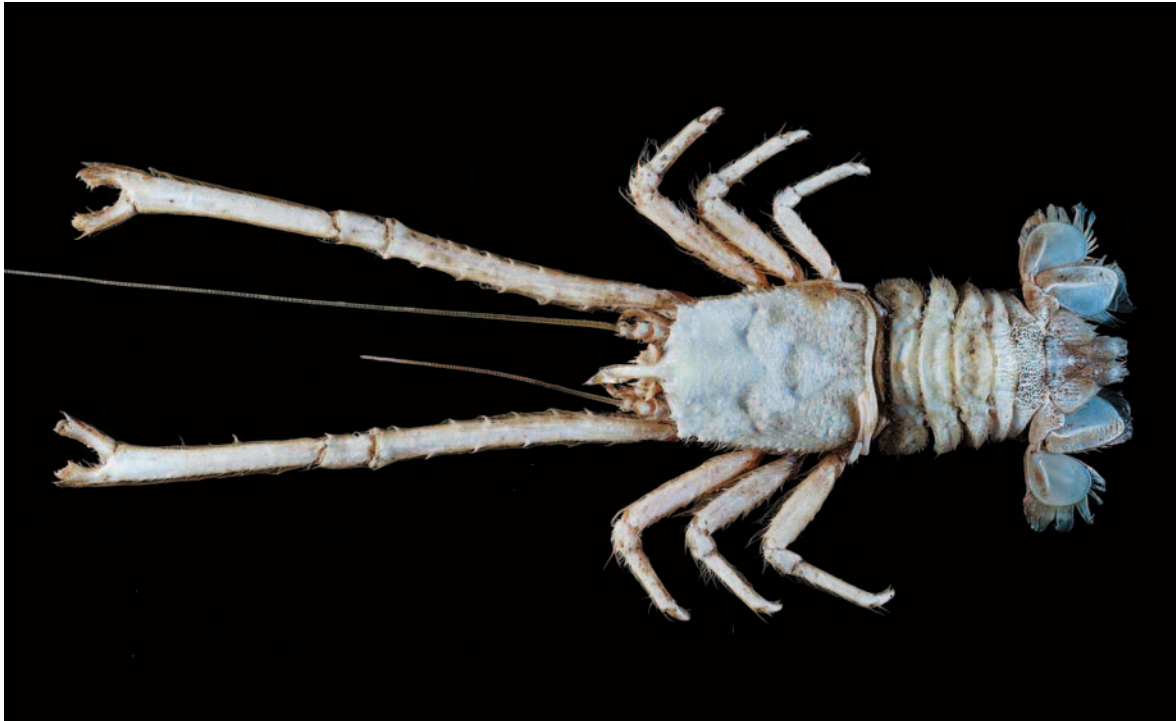


Fig. 241. Male (36.7 mm), CP235.



Fig. 242. Male (36.7 mm), CP235, in association with sunken wood (the smaller specimen on left side is *Munidopsis pilosa*).

Munidopsis subchelata Balss, 1913a: 222 [type locality: W of Sumatra, 0°39'S, 98°52'E, 750 m].—Baba, 2005: 296.—Macpherson, 2007: 110.—Osawa & Takeda, 2007: 140, fig. 5C, D.—Osawa *et al.*, 2008a: 51, fig. 6F.

Munidopsis (Munidopsis) subchelata.—Doflein & Balss, 1913: 149, pl. 16, fig. 1.

Munidopsis plana Baba in Baba *et al.*, 1986: 181, fig. 21, fig. 131 [type locality: Okinawa Trough, 560–692 m].

Material examined.—CP235, 25°22.95'N, 122°43.63'E, 765–806 m, 22 Jul 2004: 2 males (32.3, 36.7 mm), 1 female (28.4 mm) (NTOU).

Diagnosis.—Carapace quadrangular, dorsal surface without spines, moderately rugose; lateral margins straight and subparallel, unarmed. Carapace with antennal spine. Rostrum triangular, short, laterally unarmed. Eyespine present; cornea ventral in position, not visible in dorsal view. P1 elongate, setose, fixed finger without denticulate carina on distolateral margin. P2 not reaching end of P1. P2–4 propodi of uniform width, not subchelate with dactyli. No epipods on pereopods.

Size.—Males to 36.7 mm, females to 28.4 mm (Osawa *et al.*, 2008a).

Coloration.—Body, pereopods, and corneas entirely whitish; setae grayish brown.

Habitat.—Substrates not recorded; associated with sunken wood; 560–1302 m.

Distribution.—Solomon Islands, Indonesia, Okinawa Trough, and Taiwan.

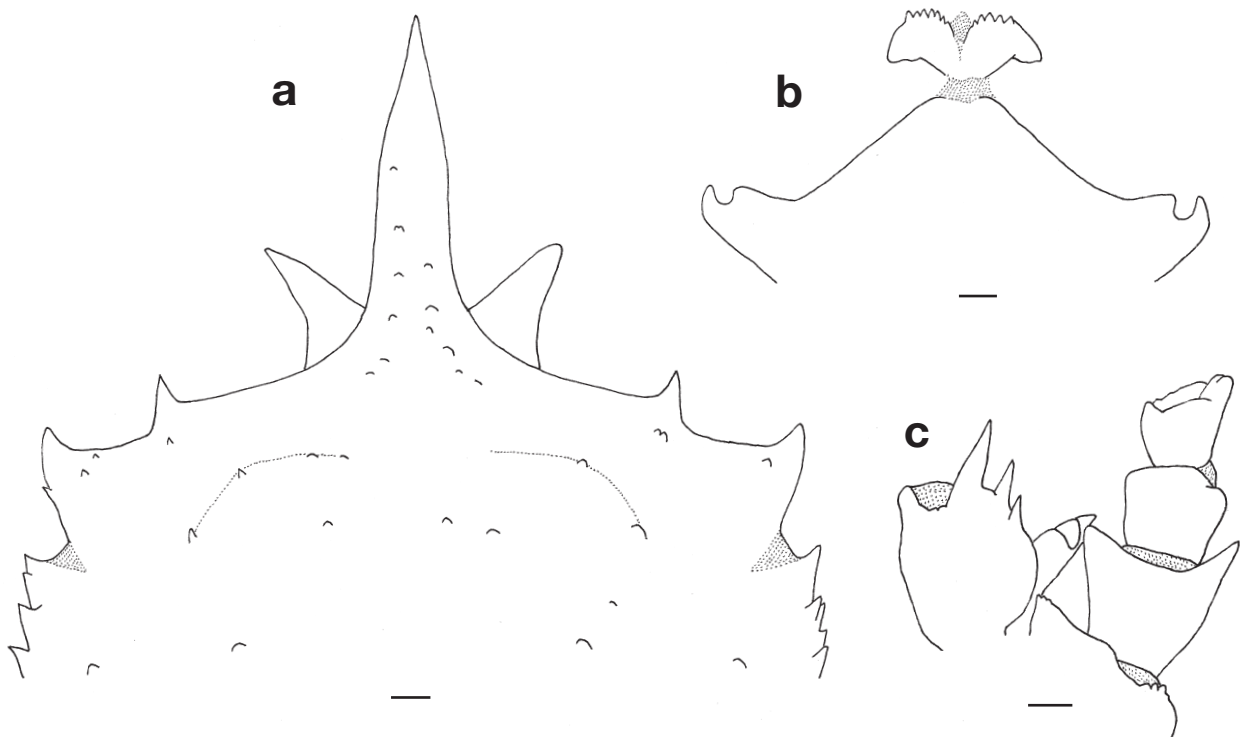


Fig. 243. Male (32.3 mm), CD235: **a**, anterior part of carapace, dorsal; **b**, anterior part of sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral. Scales = 1 mm.

Munidopsis tafrii Osawa, Lin & Chan, 2006
水試仿刺鎧蝦



Fig. 244. Holotype male (17.1 mm), CP294.

Munidopsis tafrii Osawa *et al.*, 2006a: 420, figs 1–3, 5A [type locality: Taiwan, 23°59.36'N, 122°20.76'E, 3564–3579 m].—Macpherson, 2007: 110.

Material examined.—CP294, 23°59.364'N, 122°20.762'E, 3564–3579 m, 9 Aug 2005: male holotype (17.1 mm) (NTOU).

Diagnosis.—Dorsal surface of carapace covered with transverse ridges, without spines, lateral margins convex and unarmed. Frontal margin with antennal spine. Rostrum broad, subtriangular, with median longitudinal carina. Abdomen covered with short transverse ridges. Ocular peduncle immovable, with short dorsomesially eyespine. P1 palm massive; fixed finger with distolateral denticulate carina. P2 reaching or slightly overreaching tip of P1; P2–4 dactyli with flexor margin nearly straight. Epipods absent from pereopods.

Size.—Only two males known, 17.1 and 19.8 mm.

Coloration.—Carapace, abdomen, and pereopods entirely white. Corneas orange-pink. Setae on pereopods grayish brown.

Habitat.—Substrates not recorded; 3564–3680 m.

Distribution.—New Caledonia and Taiwan.

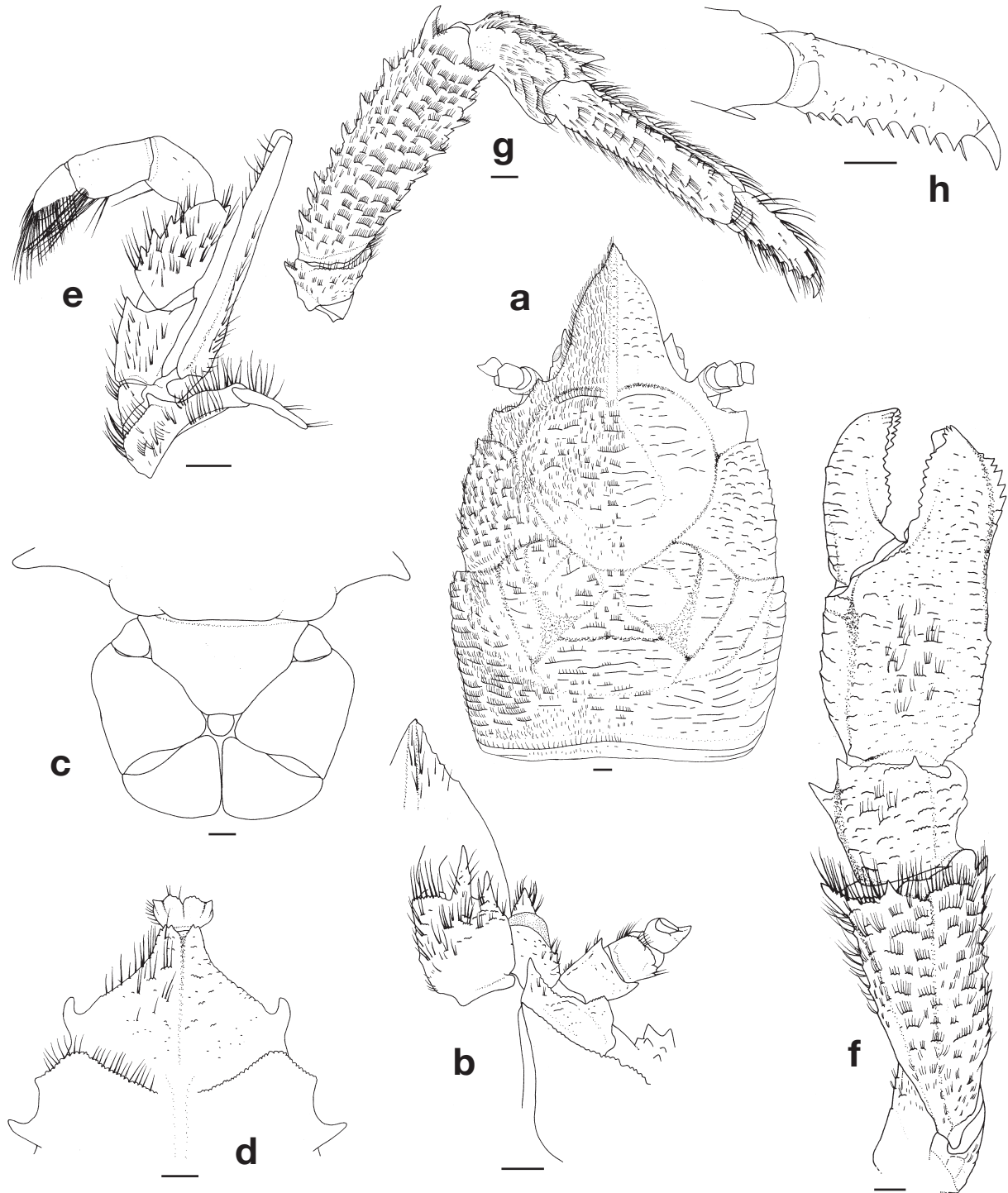


Fig. 245. Holotype male (17.1 mm), CP294: **a**, carapace, setae omitted from right side, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, telson; **d**, anterior part of sternal plastron, setae omitted from left side; **e**, left Mxp3, lateral; **f**, right P1, dorsal; **g**, right P2, lateral; **h**, right P2 dactylus, setae omitted, lateral. Scales = 1 mm (after Osawa *et al.*, 2006).

Munidopsis taiwanica Osawa, Lin & Chan, 2008
臺灣仿刺鎧蝦

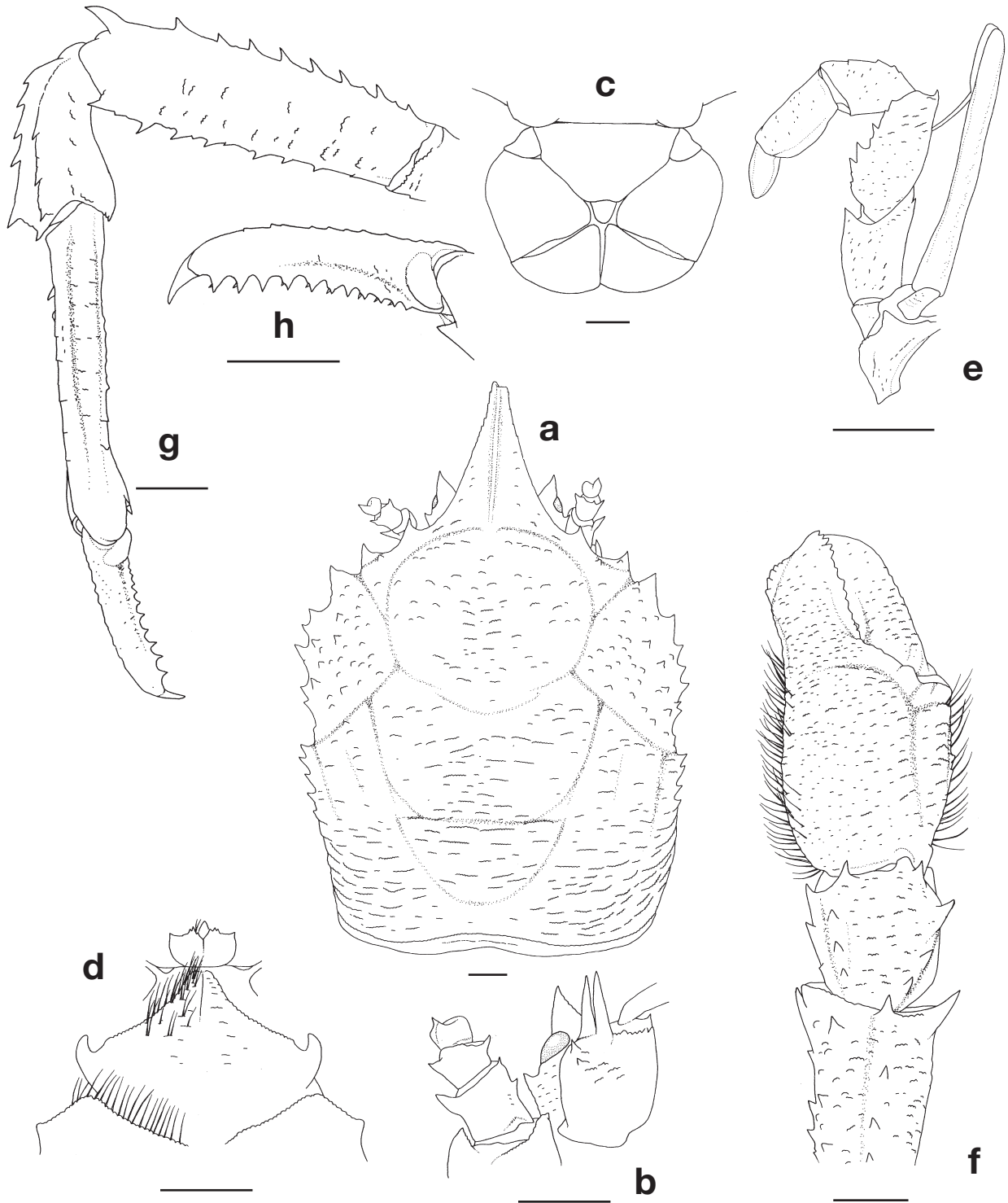


Fig. 246. Holotype ovigerous female (25.9 mm), CP414: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing right antennule and antenna, ventral; **c**, telson; **d**, anterior part of sternal plastron, setae omitted from left side; **e**, left Mxp3, lateral; **f**, left P1, only setae on lateral and ventral margins of palm illustrated, dorsal, **g**, left P3, lateral; **h**, left P3 dactylus, lateral. Scales = 3 mm (after Osawa *et al.*, 2008).

Munidopsis taiwanica Osawa *et al.*, 2008b: 93, figs. 2, 3 [type locality: Taiwan, 22°37.91'N, 122°32.73'E, 5011–4990 m].

Material examined.—CP414, 22°37.91'N, 122°32.73'E, 5011–4990 m, 13 Jun 2008: ovigerous female holotype (25.9 mm) (NTOU).

Diagnosis.—Dorsal surface of carapace covered with curved short plumose setae, without spines; gastric region with short interrupted ridges; anterior branchial region with small spines laterally. Rostrum broadly triangular, carinate dorsally. Frontal margin with small antennal spine. Anterolateral spine slightly larger than antennal spine; branchial margin with some spines. Ocular peduncle hardly movable, with 2 eyespines; mesial spine strong and lateral spine small. Antennal peduncle not reaching tip of mesial eyespine. P1 fixed finger with denticulate carina on distolateral margin. P2–4 setose; P2 overreaching tip of P1. Epipod present only on P1.

Size.—Only known from the holotype, ovigerous female of 25.9 mm.

Habitat.—Substrates not recorded; 4990–5011 m.

Coloration.—Body and pereopods whitish.

Distribution.—Taiwan.

Remarks.—This species and *M. profunda* are the deepest (5011 m) living marine animals so far known from Taiwan. The two species were collected together in the same haul and not initially recognized as different species because of their similar coloration. Because *M. profunda* is rather common in the very deep waters of Taiwan, and has often been photographed, the specimen subsequently identified as *M. taiwanica* was not photographed.

Munidopsis teretis Baba, 2005

圓滑仿刺鎧蝦

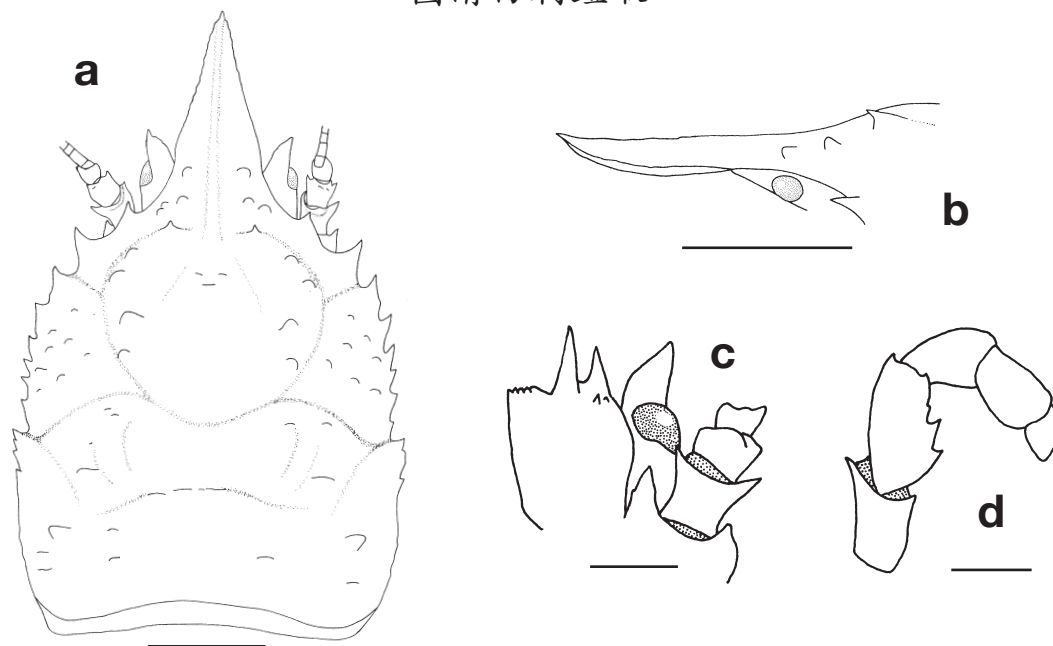


Fig. 247. Male (10.3 mm), CP294: **a**, carapace, plumose setae and rugae omitted, dorsal (after Osawa *et al.*, 2006); **b**, rostrum and eye, lateral (after Osawa *et al.*, 2006); **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **d**, right Mxp3, lateral. Scales: a, b = 3 mm; c, d = 1 mm.

Munidopsis teretis Baba, 2005: 190, 297, fig. 91 [type locality: off Durban, 32°00'S, 32°41'E, 3520 m].—
Osawa *et al.*, 2006a: 427, figs 4E, F.

Material examined.—CP294, 23°59.364'N, 122°20.762'E, 3564–3579 m, 9 Aug 2005: 1 male (10.3 mm) (NTOU).

Diagnosis.—Body and appendages covered with short fine setae. Dorsal surface of carapace with pair of epigastric tubercles or spines; blunt process mesial to midlength of posterior half of carapace lateral margin. Lateral margin with some spines. Rostrum broadly triangular, less than half length of remaining carapace. Frontal margin oblique, antennal spine small. Abdomen spineless. Ocular peduncles hardly movable, basally broad, with stout eyespine produced distomesially; cornea small and lateral, maximum breadth distinctly less than breadth of rostrum at midlength. P1 fixed finger with denticulate carina on distolateral margin. P2–4 relatively short; each dactylus with flexor margin nearly straight. P2 slightly overreaching end of P1. Epipod present on P1, absent from P2–4.

Size.—Only known from 3 specimens, males to 16.3 mm, female 27.1 mm (including rostrum).

Coloration.—Color pattern similar to that of *M. profunda* (see Osawa *et al.*, 2006a and Remarks below).

Habitat.—Globigerina ooze (Baba, 2005); 3520–3930 m.

Distribution.—South Africa (off Durban), Taiwan and Australia (Tasman Sea).

Remarks.—No fresh specimen photograph is available. The present specimen was collected together with three specimens of *M. profunda*. As with *M. taiwanica*, the coloration of *M. teretis* is similar to *M. profunda* and was not initially recognized as a distinct species. Thus, the specimen of *M. teretis* was unfortunately not photographed.

Munidopsis trifida Henderson, 1885

三叉仿刺鎧蝦



Fig. 248. Male (14.1 mm), CD230.

Munidopsis trifida Henderson, 1885: 415 [type locality: Straits of Magellan, 51°27'30"S, 74°03'W, 732 m].—Henderson, 1888: 156, pl. 17, figs 2, 2a.—Alcock & Anderson, 1894: 168.—Anderson, 1896: 99.—Alcock & Anderson, 1899a: 18.—Benedict, 1902: 329.—Yokoya, 1933: 66.—Lloyd, 1907: 2.—Miyake in Miyake & Nakazawa, 1947: 734, fig. 2121.—Haig, 1955: 40.—Baba, 1969c: 52, figs 6a, 7.—Wicksten, 1989: 316.—Baba in Baba *et al.*, 1986: 179, 294, fig. 130.—Baba, 2005: 193, 298.—Macpherson, 2007: 115.—Osawa & Takeda, 2007: 142, fig. 6A, B.—Osawa *et al.*, 2008a: 51, fig. 6G.

Munidopsis (Galathodes) trifida.—Alcock, 1901: 260.—Alcock & MacGilchrist, 1905: pl. 70, fig. 1.—Balss, 1913b: 20.—Tirmizi, 1966: 229, fig. 40.

Munidopsis tomentosa Benedict, 1902: 329 [name proposed for Indian Ocean population].

Munidopsis trifida tomentosa.—Baba, 1969c: 50, figs 6b, 8.

Material examined.—CD230, 22°19.32'N, 120°3.3'E, 795–840 m, 30 Aug 2003: 1 male (14.1 mm), 1 ovigerous female (14.7 mm), 1 female (14.7 mm) (NTOU).

Diagnosis.—Body and pereopods covered with fine setae. Carapace with 2 epigastric spines; lateral margin with 4 spines, last one at midlength. Rostrum with paired lateral spines at distal end of horizontal portion. Frontal margin oblique, antennal spine absent. Anteriorly directed small spine ventral to frontal margin between ocular and antennal peduncles. Abdominal somites spineless. Ocular peduncles lacking eyespine, movable. P1 relatively long; mesial margin of carpus with 1 distal spine only. P2–4 meri with row of spines on dorsal crest; dactyli with flexor margin straight. P2 not reaching end of P1. Epipods absent from pereopods.

Size.—Males to 24.7 mm, females to 24.3 mm, ovigerous females from 10.6 mm (Macpherson, 2007).

Coloration.—Carapace and abdomen orange pink, with irregular pale colored patches, and telson and uropods mostly whitish. Corneas pink. P1 entirely reddish orange, P2–4 orange pink with lighter colored patches. Eggs orange.

Habitat.—Substrates not recorded; 280–1270 m.

Distribution.—Madagascar, Laccadive Sea, southern Arabian coast, Gulf of Aden, Bay of Bengal, New Caledonia, Solomon Islands, South and East China Seas, Indonesia, Taiwan, Japan, Straits of Magellan and south of Chile.

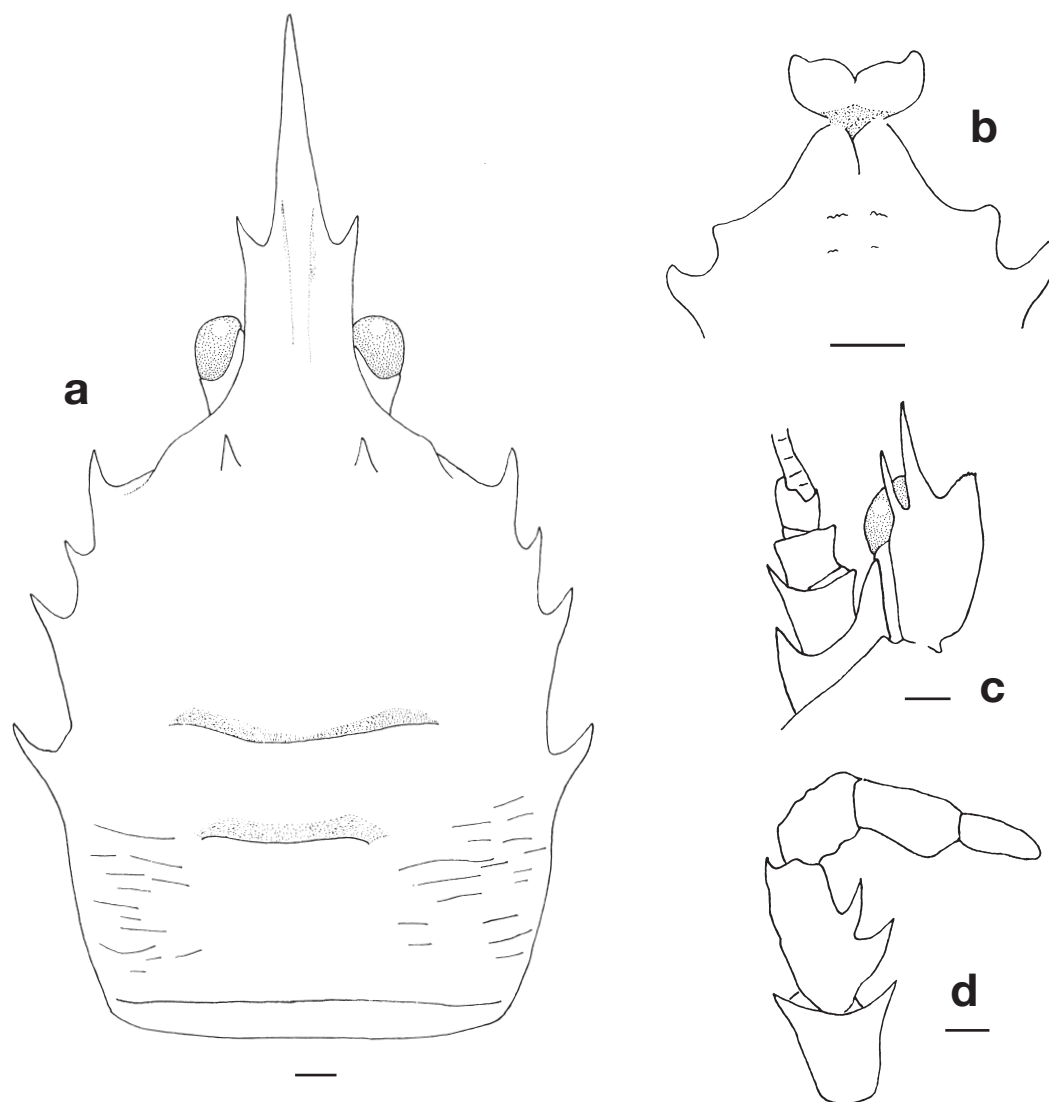


Fig. 249. Male (14.1 mm), CD230: **a**, carapace, dorsal; **b**, anterior part of sternal plastron; **c**, anterior part of cephalothorax, showing right antennule and antenna, ventral; **d**, right Mxp3, lateral. Scales: a, b = 5 mm; c, d = 1 mm.

Munidopsis tuberosa Osawa, Lin & Chan, 2008
疣突仿刺鎧蝦



Fig. 250. Holotype female (7.7 mm), PCP343.

Munidopsis tuberosa Osawa *et al.*, 2008a: 52, figs 6H, 7, 8 [type locality: Taiwan, 22°15.699'N, 120°02.131'E, 945–1059 m].

Material examined.—PCP343, 22°15.699'N, 120°2.131'E, 945–1059 m, 8 Mar 2005: female holotype (7.7 mm) (NTOU).

Diagnosis.—Dorsal surface of carapace and abdomen covered with numerous protuberances, epigastric lobes distinct. Lateral margins subparallel, unarmed, not crested; anterior corner rounded. Rostrum subtriangular in dorsal view, dorsally carinate, laterally unarmed. Abdomen unarmed; somite 6 with weakly produced posterolateral lobes. Sternite 3 more than 3 times as broad as long. Ocular peduncle immovable, without eyespines; cornea lateral, relatively large. P1 fixed finger without denticulate carina on distolateral surface. P2 not exceeding P1. P2–4 dactyli with flexor margin nearly straight. Epipods on P1–3.

Size.—Only known form the holotype, female of 7.7 mm.

Coloration.—Carapace, abdomen, and pereopods orange brown; protuberances of carapace and abdomen, distal articles of P2–4, posterior abdomen, telson, and uropods lighter colored or whitish. Corneas orange pink.

Habitat.—Substrates not recorded; 945–1059 m.

Distribution.—Taiwan.

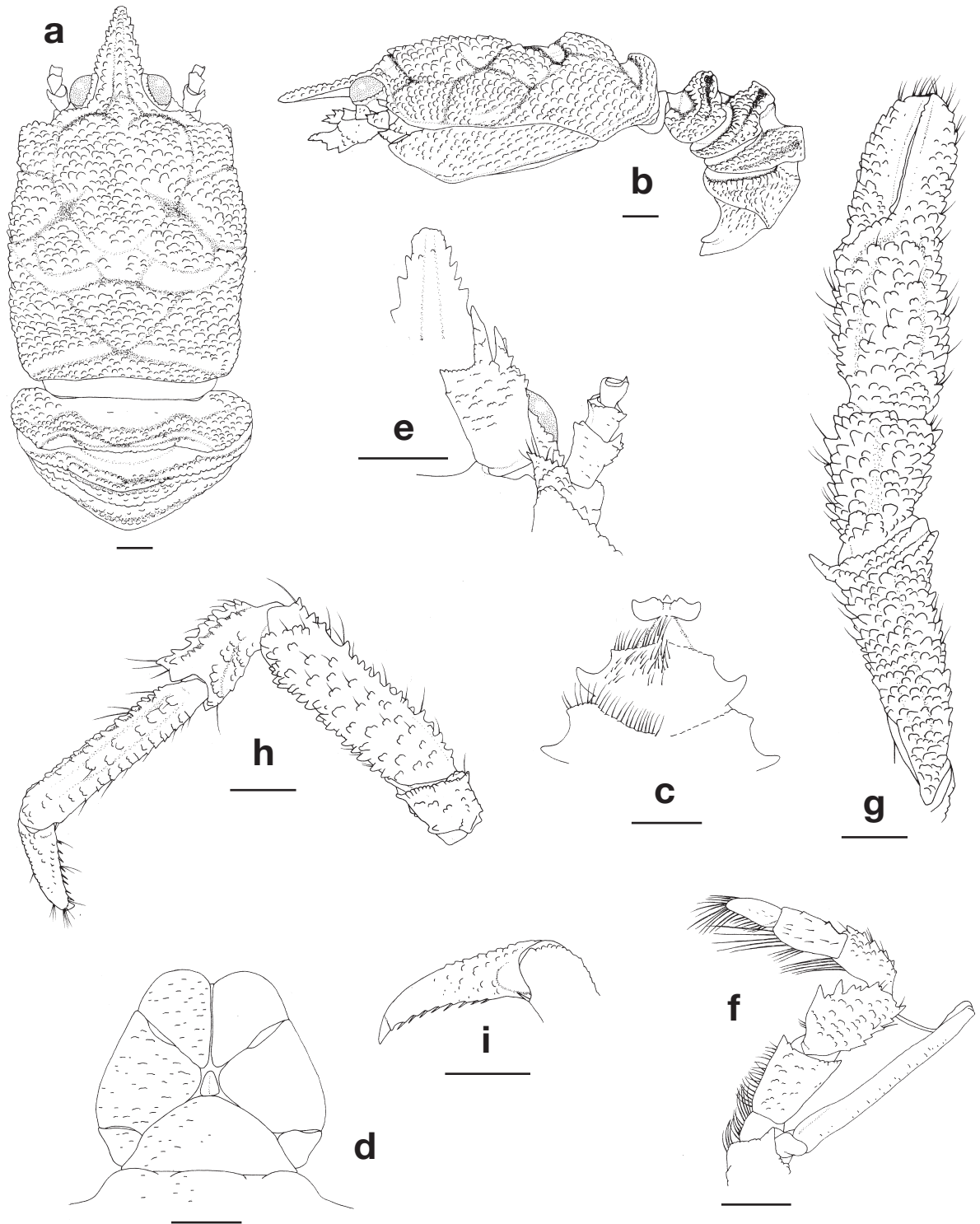


Fig. 251. Holotype female (7.7 mm), PCP343: **a**, carapace and abdomen, dorsal; **b**, same, lateral; **c**, anterior part of sternal plastron, setae omitted from left side; **d**, telson, striae omitted from left side; **e**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **f**, left Mxp3, lateral; **g**, right P1, dorsal; **h**, left P2, lateral; **i**, left P3 dactylus, lateral. Scales = 1 mm (after Osawa *et al.*, 2008).

Munidopsis verrilli Benedict, 1902

威氏仿刺鎧蝦



Fig. 252. Ovigerous female (18.1 mm), near Diaoyutai (Senkaku), Apr 1999.

Munidopsis verrilli Benedict, 1902: 291, fig. 3 [type locality: off San Diego, 32°40.30'N, 117°31.30'W, 1500 m].—Rathbun, 1904: 167.—Schmitt, 1921: 169, fig. 108.—McCauley, 1972: 414.—Luke, 1977: 26.—Wicksten, 1982: 245.—Wicksten, 1989: 316.—Baba & Poore, 2002: 245, fig. 10.—Poore, 2004: 238, fig. 65k.—Baba, 2005: 194, 298.—Osawa & Takeda, 2007: 142, fig. 6C, D.

Material examined.—Near Diaoyutai (Senkaku), about 1200 m, Apr 1999: 1 ovigerous female (18.1 mm) (NTOU).

Diagnosis.—Carapace, abdomen and pereopods with long coarse setae. Carapace with 2 epigastric spines. Frontal margin with antennal spine. Lateral margins each bearing 5 spines. Rostrum narrowly triangular, carinate on dorsal surface, lateral margins unarmed. Abdomen spineless. Ocular peduncles movable, with mesial and lateral eyespines, cornea well exposed, visible in dorsal view. P1 with denticulate carina on distolateral margin of fixed finger. P2–4 slender; meri and carpi with row of spines on dorsal margin; dactyli with straight flexor margin. P2 not reaching end of P1. Epipods absent from P1–4.

Size.—Males not measured, females to 22.5 mm, ovigerous females from 18.1 mm.

Coloration.—Body overall ivory white. Corneas whitish.

Habitat.—Clay (Baba, 2005); 732–4169 m.

Distribution.—Western Pacific from Indonesia to Taiwan and Japan, Australia (Tasmania), Eastern Pacific from off Oregon to Gulf of California.

Remarks.—*Munidopsis verrilli* is recorded for the first time from Taiwan.

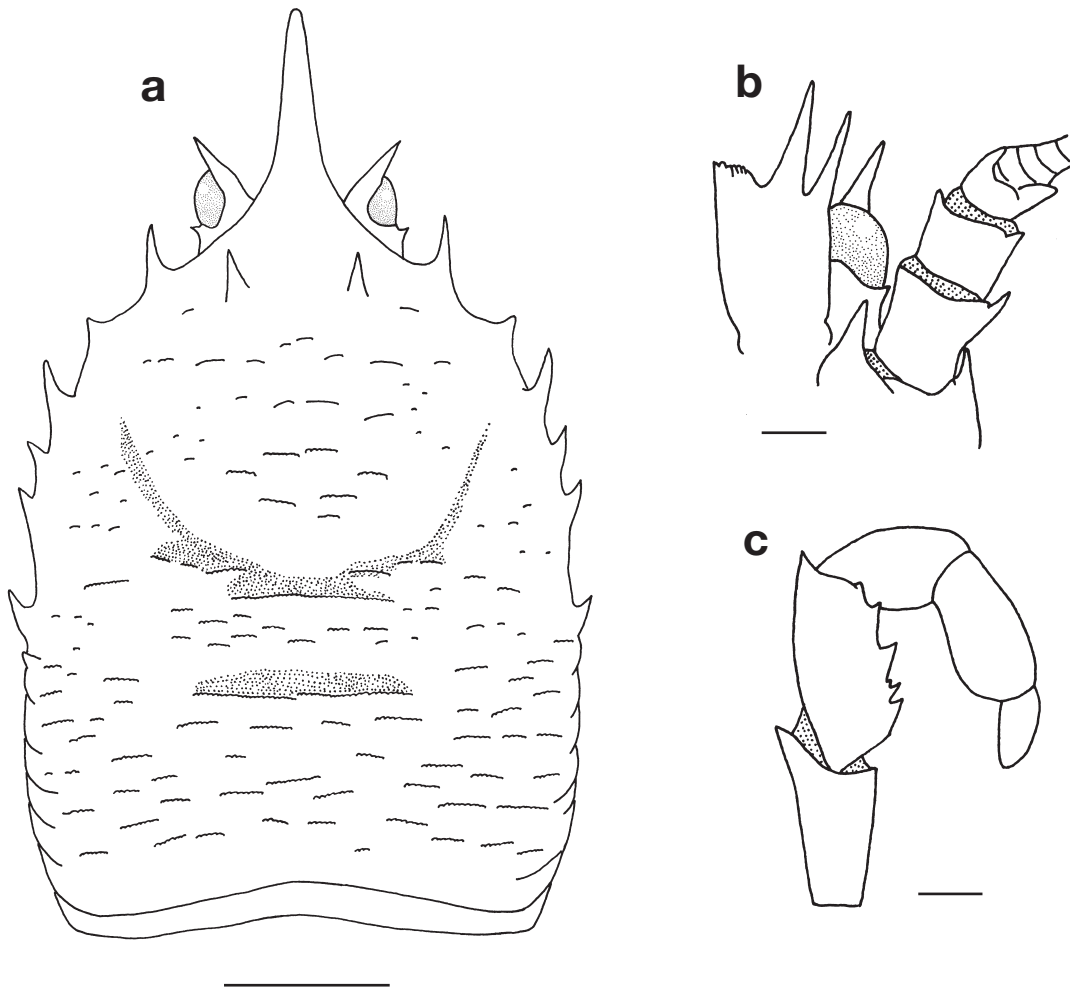


Fig. 253. Ovigerous female (18.1 mm), near Diaoyutai (Senkaku), Apr 1999: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing left antennule and antenna, ventral; **c**, right Mxp3, lateral. Scales: a = 5 mm; b, c = 1 mm.

Genus *Paramunida* Baba, 1988

似刺鎧蝦屬

Paramunida Baba, 1988: 175 [type species: *Paramunida setigera* Baba, 1988. Gender: feminine].—Poore, 2004: 239.—Baba, 2005: 197.

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 somites 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.—The genus contains 24 species, all from the Indian and Pacific Oceans (Baba *et al.*, 2008; Macpherson & Baba, 2009). Only four species of the genus are presently known from Taiwan, two species representing new records. The species are usually collected in a variety of habitats, including soft and hard bottoms and inhabiting mostly the continental shelf and slope. The genus seems to be a good monophyletic group (Machordom & Macpherson, 2004).

Key to species of *Paramunida* from Taiwan

1. Median gastric region with row of 3–4 distinct spines *P. tricarinata*
— Median gastric region with 1 (rarely 2) spine 2
2. Article 2 of antennal peduncle relatively slender, length distinctly more than that of articles 3–4 combined; distomesial spine clearly overreaching antennal peduncle *P. leptotes*
— Article 2 of antennal peduncle as long as articles 3–4 combined; distomesial spine not reaching or slightly overreaching end of antennal peduncle 3
3. Rostrum with thick dorsal carina. Distomesial spine of antennal article 2 spiniform, slightly overreaching end of antennal peduncle *P. cristata*
— Rostrum with thin dorsal carina. Distomesial spine of antennal article 2 blunt or mucronated, nearly reaching end of antennal peduncle *P. scabra*

Paramunida cristata Macpherson, 2004
冠額似刺鎧蝦

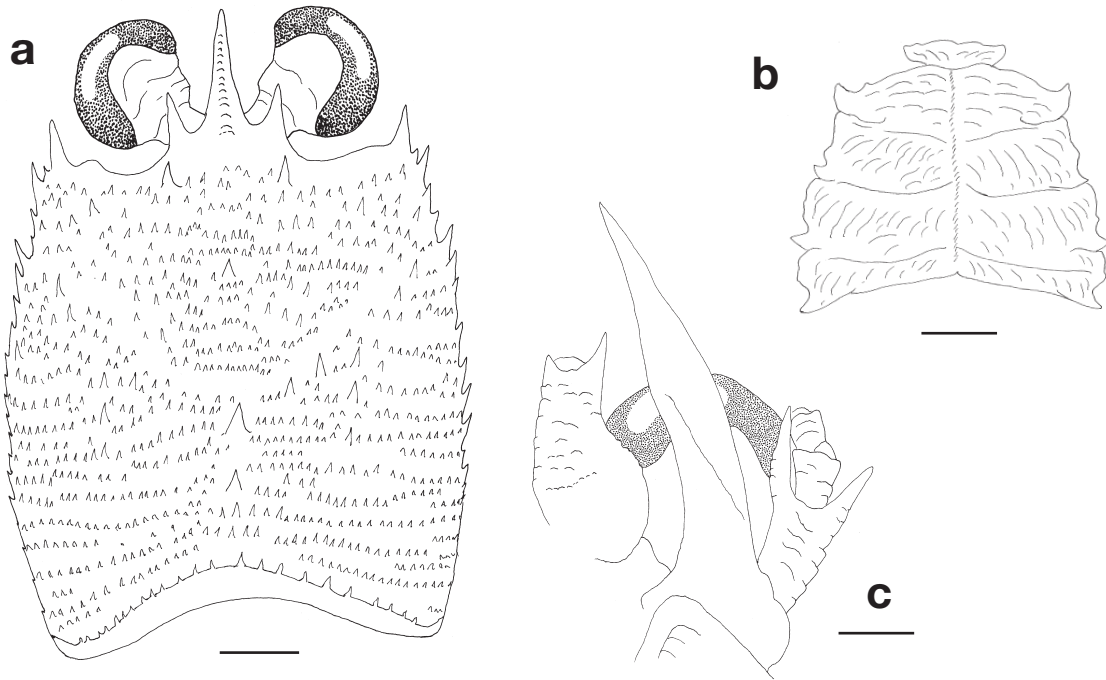


Fig. 254. Female (10.1 mm), PCP269: **a**, carapace, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing right antennule and antenna, ventral. Scales: a, b = 2 mm; c = 1 mm.

Paramunida cristata Macpherson, 2004: 283, fig. 13 [type locality: Fiji, 16°05.47'S, 179°27.83'W, 390–403 m].—Baba, 2005: 302.

Material examined.—CP269, 24°30.55'N, 122°5.78'E, 399–397 m, 2 Sep 2004: 1 female (10.1 mm) (NTOU).

Diagnosis.—Gastric region with 1 well-developed median spine and 2 epigastric spines. Cardiac region with row of 3 well-developed spines along midline, anteriormost thicker. Anterolateral spine well developed, overreaching sinus between rostral and supraocular spines. Rostral spine triangular, with thick dorsal longitudinal carina; supraocular spines half as long as and more slender than rostrum. Posterior ridge of abdominal somite 4 with distinct single median spine. Thoracic sternites with numerous arcuate striae. Anterior prolongation of article 1 of antennal peduncle clearly overreaching article 4 by about 1/4 of its length; article 2 (spines excluded) about 1.5 times length of article 3 and about 1.5 times longer than wide, distomesial spine slightly exceeding antennal peduncle, distolateral spine not reaching end of article 3; article 3 slightly longer than wide and unarmed. P2–4 long and slender; P2 propodus about 9 times as long as high.

Size.—Males to 11.8 mm, females to 11.2 mm, ovigerous females from 8.9 mm (Macpherson, 2004).

Coloration.—Not recorded.

Habitat.—Substrates not recorded; 390–513 m.

Distribution.—Fiji, Vanuatu, and Taiwan.

Remarks.—This is the first record for the species from Taiwan.

Paramunida leptotes Macpherson & Baba, 2009

纖細似刺鎧蝦



Fig. 255. Paratype ovigerous female (12.8 mm), Nanfang-ao fishing port, Yilan County, 22 May 1990.

Munida proxima Baba, 1982a: 110, fig. 4.—Baba in Baba *et al.*, 1986: 173, 291, fig. 124.—Wu *et al.*, 1998: 143, figs 40, 42F. (not *Paramunida proxima* (Henderson, 1885))

Paramunida leptotes Macpherson & Baba, 2009: 63, figs 5, 6 [type locality: NE Taiwan, 24°38.598'N, 122°10.436'E, 329–456 m].

Material examined.—Nanfang-ao fishing port, Yilan County, 22 May 1990: 1 ovigerous female paratype (12.8 mm) (NTOU). CD380, 24°38.598'N, 122°10.436'E, 456 m, 24 Jul 2007: male holotype (10.3 mm) (NTOU).

Diagnosis.—Rostral spine larger than supraocular spines. Carapace with median gastric region with 1 (rarely 2) spine; median cardiac region with 1 well-developed anterior spine followed behind by 1 or 2 small spines in midline. Posterior ridge of abdominal somite 4 unarmed. Sternal plastron with numerous striae. Article 2 of antennal peduncle distinctly longer than articles 3–4 combined, with well-developed distomesial spine, overreaching end of antennal peduncle, and far falling short of end of anterior prolongation of article 1. P2–4 long and slender; P2 propodus 9.5–10 times longer than high and 1.3–1.4 times dactylus length.

Size.—Males to 17.7 mm including rostrum, females to 12.8 mm, ovigerous females from 9.6 mm including rostrum (Baba, 1982a; Baba in Baba *et al.*, 1986; Macpherson & Baba, 2009).

Coloration.—Carapace and abdomen totally but unevenly reddish; gastric region deep red, anterior branchial region pale, median gastric and median cardiac spines distally whitish. Pereopods pale, with brilliant red bands (also see Baba in Baba *et al.*, 1986).

Habitat.—Substrates not recorded; 320–456 m.

Distribution.—Taiwan and Japan.

Remarks.—*Paramunida leptotes* closely resembles *P. proxima* (Henderson, 1885) from the Philippines, Indonesia and Admiralty Islands, at 275–430 m (Baba *et al.*, 2008). The two species can be differentiated by the spination of the posterior ridge of the fourth abdominal somite, the shape of the distomesial spine of the second article of the antennal peduncle and by the size of the third article of the antenna.

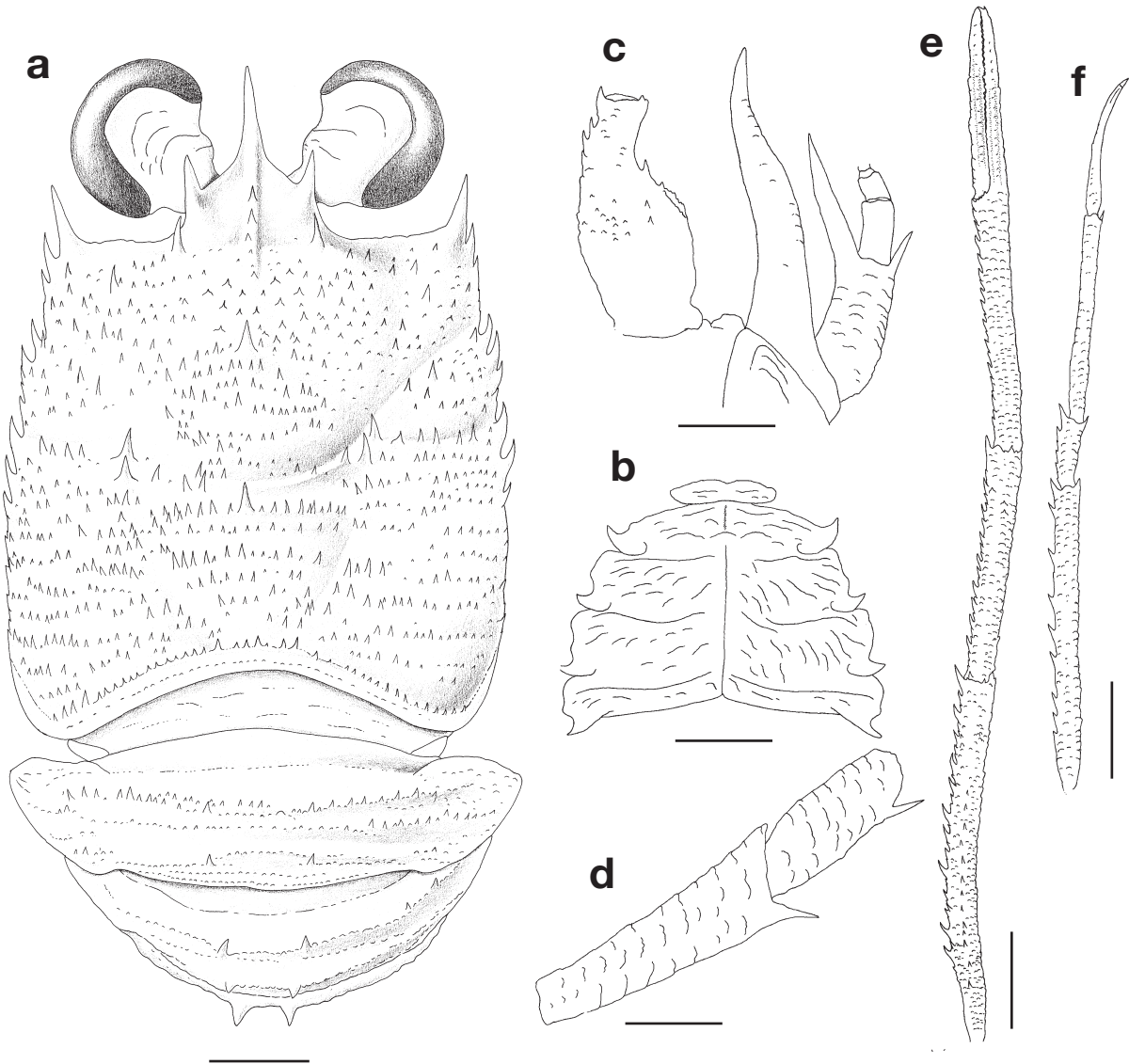


Fig. 256. Male holotype (10.3 mm), CD380. **a**, carapace and abdomen, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing right antennule and antenna, ventral; **d**, ischium and merus of right Mxp3, lateral; **e**, right P1, dorsal; **f**, right P2, lateral. Scales: a, c, d = 2 mm; b = 1 mm; e, f = 0.5 mm (after Macpherson & Baba, 2009).

Paramunida scabra (Henderson, 1885)

粗糙似刺鎧蝦



Fig. 257. Male (5.2 mm), CP120.

Munida scabra Henderson, 1885: 409 [type locality: off the Ki (Kei) Island, 05°49'15"S, 132°14'15"E, 236 m].—Henderson, 1888: 134, pl. 15, figs 4, 4a, 4b.—Yokoya, 1933: 63.—Yanagita, 1943: 30, figs 9, 10.—Miyake & Baba, 1967c: 242, fig. 13.—Baba, 1969c: 49.—Kim, 1973: 178.—Miyake, 1982: 149, pl. 50, fig. 2.—Baba in Baba *et al.*, 1986: 175, 292, fig. 125.

Paramunida scabra.—Baba, 1988: 180.—Baba, 1990: fig. 15a.—Macpherson, 1993b: 462, fig. 8.—Tirmizi & Javed, 1993: 131, figs 58, 59.—Baba, 1994: 19.—Komai, 2000: 360.—Davie, 2002: 66.—Baba, 2005: 199, 303.

Not *Paramunida scabra*.—Wu *et al.*, 1998: 145, figs 41, 42G (= *P. tricarinata* (Alcock, 1894)).

Dubious identity:

Munida scabra var. *longipes* Borradaile, 1900: 422 (type locality: Talili Bay, New Britain Talili Bay, New Britain; 3 syntypes not located).

Material examined.—Dasi fishing port, Yilan County, 3 Dec 1984: 1 ovigerous female (10.8 mm) (NTOU).—9 Dec 1984: 1 male (8.0 mm) (NTOU). CP120, 24°51.79'N, 122°02.54'E, 520–640 m, 31 Jul 2001: 1 male (5.2 mm) (NTOU). No specific locality, 9 Nov 1995: 1 female (8.1 mm) (NTOU).

Diagnosis.—Rostrum with thin dorsal carina; rostral spine larger than supraocular spines. Carapace with median gastric region with 1 (rarely 2) spine; cardiac region with row of 3–4 spines in midline. Posterior ridge of abdominal somite 4 with distinct single median spine. Sternal plastron with numerous striae. Article 2 of antennal peduncle as long as articles 3–4 combined, with well-developed distomesial spine not reaching end of

antennal peduncle and far falling short of end of anterior prolongation of article 1. P2 propodus about 8 times as long as high, and less than 1.5 times dactylus length.

Size.—Males to 13.7 mm, females to 13.8 mm, ovigerous females from 7.2 mm (Macpherson, 1993b).

Coloration.—Ground color of carapace and abdomen pale pink. Epigastric and cardiac regions reddish. Ground color of P1–4 whitish, with red bands and some small red spots; P1 fingers white, distal portion reddish (see also Miyake, 1982).

Habitat.—Sand, hard bottom, shells, corals, clay and mud (Baba, 2005); 70–1630 m.

Distribution.—Eastern Africa (off Tanzania and off Mozambique), Hong Kong, East and South China Sea (Dongsha), Indonesia, Philippines, Taiwan, Japan, and Australia (off Central Queensland).

Remarks.—The wide geographic and bathymetric ranges of the species recommend a revision of the specimens from the different localities in order to confirm their identities. The material reported as *P. scabra* from Taiwan by Wu *et al.*, (1998) is actually a misidentification of *P. tricarinata*. Thus, *P. scabra* is correctly recorded from Taiwan for the first time by this work.

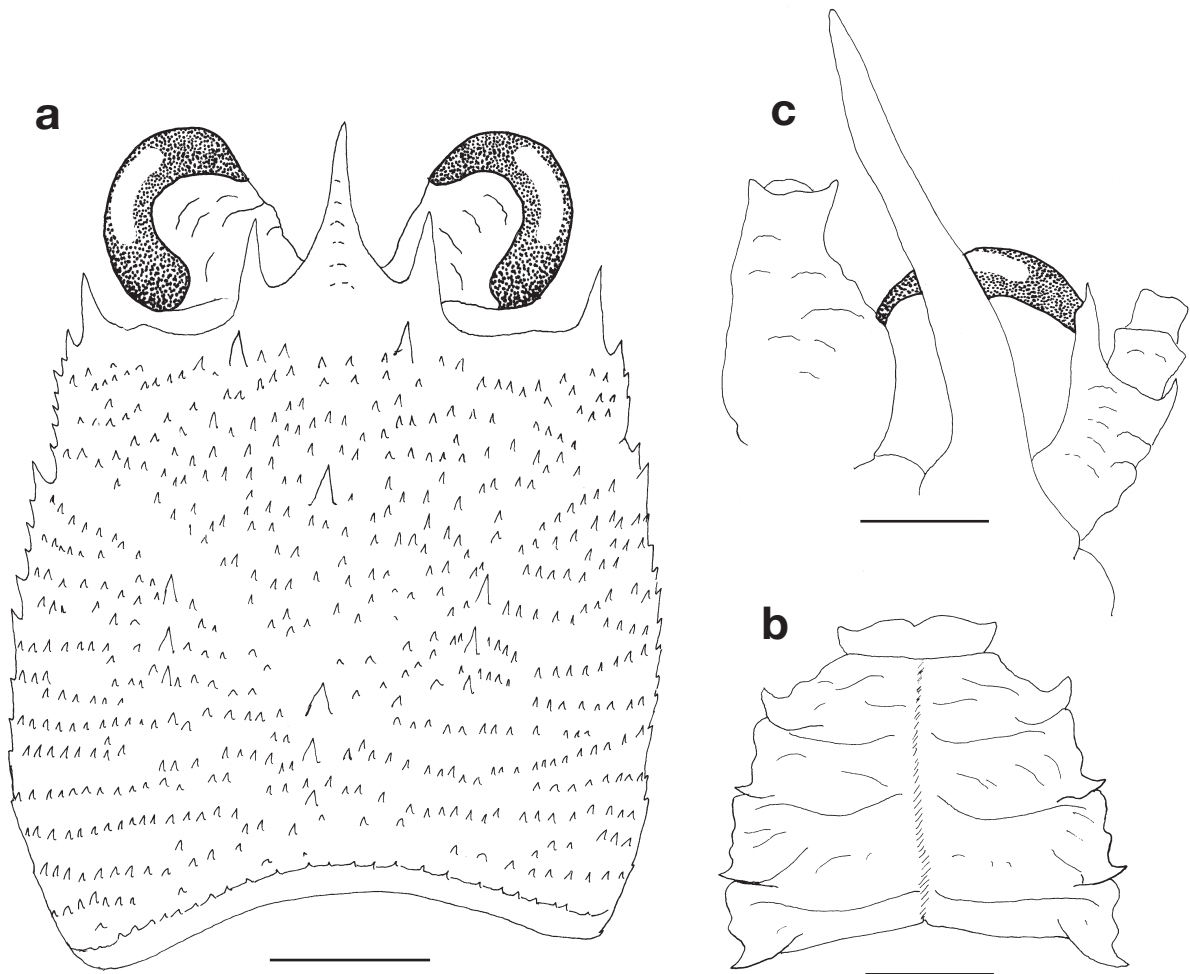


Fig. 258. Male (5.2 mm), CP120: **a**, carapace, dorsal; **b**, sternal plastron; **c**, anterior part of cephalothorax, showing left antennule and antenna, ventral. Scales: a, b = 1 mm; c = 0.5 mm.

Paramunida tricarinata (Alcock, 1894)
三脊似刺鎧蝦



Fig. 259. Nanfang-ao fishing port, Yilan County, 9 Nov 1995.



Fig. 260. Nanfang-ao fishing port, Yilan County, 7 Apr 2004, body more reddish and with large yellowish-white patch on anterodorsal carapace.

Munida tricarinata Alcock, 1894: 324 [type locality: Andaman Sea, 205 m].—Alcock, 1901: 246.—Alcock & Anderson, 1895: pl. 12, fig. 1.—Laurie, 1926: 138.—Tirmizi, 1966: 202, fig. 21.
Paramunida tricarinata.—Baba, 1990: 968, fig. 15b.—Macpherson, 1993b: 469, fig. 11.—Baba, 2005: 304.
Paramunida scabra.—Wu *et al.*, 1998: 145, figs 41, 42G. (not *P. scabra* (Henderson, 1885))

Material examined.—Dasi fishing port, Yilan County, 1 Sep 1997: 1 ovigerous female (9.8 mm) (NTOU).—9 Dec 2003: 1 male (11.5 mm) (NTOU).—16 Dec 2004: 6 males (10.8–11.6 mm), 1 ovigerous female (11.4 mm) (NTOU). Nanfang-ao fishing Port, Yilan County, 5 Aug 1982: 1 male (8.0 mm) (NTOU).—9 Sep 1989: 1 ovigerous female (7.0 mm), 2 females (8.3, 8.5 mm) (NTOU).—3 Mar 1991: 1 male (8.4 mm), 2 ovigerous females (7.9, 8.1 mm), 1 female (5.2 mm) (NTOU).—20 Jun 1991: 1 ovigerous female (10.9 mm) (NTOU).—20 Aug 1991: 1 male (10.5 mm) (NTOU).—19 Apr 1995: 1 male (9.1 mm), 1 ovigerous female (9.1 mm) (NTOU).—13 Jun 1995: 1 male (8.9 mm) (NTOU).—9 Nov 1995: 4 males (10.2–12.7 mm), 2 females (10.4, 12.7 mm) (NTOU).—28 Jan 1997: 1 male (9.6 mm) (NTOU).—23 Sep 1997: 1 male (9.8 mm), 1 ovigerous female (9.5 mm) (NTOU).—30 Oct 1997: 1 ovigerous female (10.1 mm) (NTOU).—18 Nov 1997: 1 male (8.6 mm) (NTOU).—5 Dec 1997: 1 male (10.1 mm), 1 ovigerous female (8.9 mm) (NTOU).—23 Mar 1999: 1 male (9.8 mm) (NTOU).—26 Jan 1999: 1 male (9.0 mm) (NTOU).—7 Apr 2004: 9 males (7.7–12.1 mm), 4 ovigerous females (7.9–10.6 mm) (NTOU).—Donggang fishing Port, Pingtung County, 20 Dec 1984: 4 males (7.6–10.1 mm), 2 ovigerous females (7.9, 9.8 mm) (NTOU).—Mar 1985: 1 female (9.8 mm) (NTOU).

Diagnosis.—Rostral spine larger than supraocular spines. Carapace with gastric region with row of 3–4 distinct spines in midline. Posterior ridge of abdominal somite 4 with distinct single median spine. Sternal plastron with numerous striae. Basal antennular article exceeding cornea by distal 1/5 of length at most. Article 2 of antennal peduncle with well-developed distomesial spine far falling short of end of anterior prolongation of article 1; article 3 slightly longer than broad. P2 propodus about 7 times as long as broad, and more than 1.5 times dactylus length.

Size.—Males to 13.0 mm, females to 12.7 mm, ovigerous females from 7.9 mm (present data).

Coloration.—Carapace and abdomen orange or reddish; gastric region deep red, sometimes with white patch on mesogastric region. Pereopods orange or pale, with red bands. Eggs light blue.

Habitat.—Substrates not recorded; 183–457 m.

Distribution.—Madagascar, Providence and Saya de Malha Bank, Zanzibar, Arabian Sea, Maldiv Islands, Andaman Sea, and Taiwan,

Remarks.—Wu *et al.* (1998) was the first to report this species from Taiwan but as *P. scabra*. The records from Eastern African coast should be revised.

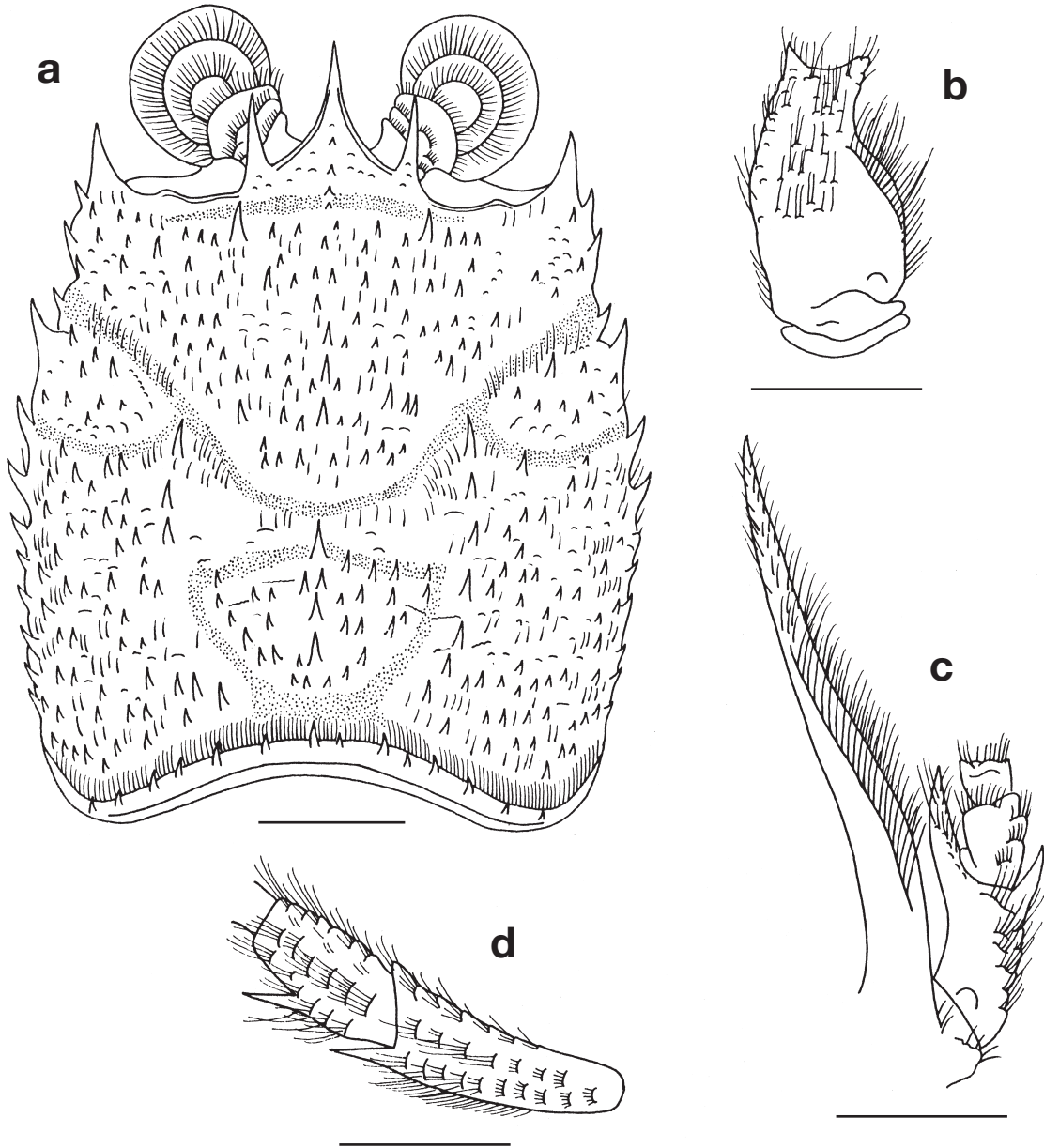


Fig. 261. Male (12.1 mm), Nanfang-ao fishing port, Yilan County, 9 Nov 1995: **a**, carapace, dorsal; **b**, basal article of left antennule, ventral; **c**, left antennal peduncle, ventral; **d**, ischium and merus of left Mxp3, lateral. Scales: a = 3 mm; b–d = 2 mm (after Wu *et al.*, 1998).

Genus *Phylladorhynchus* Baba, 1969

葉額鎧蝦屬

Phylladorhynchus Baba, 1969a: 3 [type species: *Galathea pusilla* Henderson, 1885. Gender: masculine].—
Baba, 2005: 200.

Diagnosis.—Carapace dorsally with distinct transverse striae and usually with 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. Sternite 3 having posterior margin entirely contiguous to sternite 4. Telsonal subdivision incomplete. Ocular peduncles movable; cornea not dilated, as broad as remaining eyestalk. Basal article of antennule with 5 distal spines including double spines on distolateral margin. Antennal peduncle with strong ventral distomesial process on article 1. G1 absent.

Remarks.—Five species are known, all from the Indo-Pacific. One of these, *P. pusillus*, is for the first time made known from Taiwan.

Phylladorhynchus pusillus (Henderson, 1885)
小葉額鎧蝦



Fig. 262. Male (3.1 mm), OCP288.



Fig. 263. Male (3.1 mm), CP85, body pale colored and carapace with thick light brown margins.

Galathea pusilla Henderson, 1885: 407 [type locality: Twofold Bay, Australia, 36°59'S, 150°20'E, 275 m].—Henderson, 1888: 121, pl. 12, figs 1, 1a, 1b.—Thomson, 1899: 193, pl. 21, fig. 7.—Chilton, 1906: 267.—Grant & McCulloch, 1906: 49, pl. 4, figs 5, 5a.—Chilton, 1911: 303.—Borradaile, 1916: 92.—McNeill, 1926: 305.—Miyake, 1965: 635, fig. 1044.—Miyake & Baba, 1967c: 234, fig. 6.—Zarenkov, 1968: 177, fig. 22.—Lewinsohn, 1969: 116.

Galathea integra Benedict, 1902: 248 [type locality: off Honshu, Japan (Ose Zaki, S. 55d, W. 2.25 M), 110–128 m].—Yokoya, 1933: 55.—Makarov, 1938: 88, fig. 31.—Miyake, in Miyake & Nakazawa, 1947: 732, fig. 2117.

Galathea lenzi Rathbun, 1907: 49, pl. 3, fig. 1 [type locality: Corral, Chile].—Balss, 1922: 334.—Haig, 1955: 31, fig. 6.—Andrade, 1985: 111.

Phylladorhynchus pusillus.—Baba, 1969a: 4.—Haig, 1973: 282.—Baba, 1991: 486, fig. 4e–f.—Davie, 2002: 66.—Poore, 2004: 238, fig. 66b.—Baba, 2005: 201, 305.—Poore *et al.*, 2008: 22.—Baba *et al.*, 2008: 176, fig. 4C.

Phylladorhynchus cf. pusillus.—Ahyong, 2007: 42, fig. 20B, 22.

Not Galathea integra.—Laurie, 1926: 135. (= *P. integrirostris* (Dana, 1852))

Not Galathea pusilla.—Tirmizi, 1966: 175, fig. 1. (= *P. ikedai* (Miyake & Baba, 1965))

Material examined.—Aodi, Taipei County, 27 Mar 2000: 1 male (2.8 mm), 1 ovigerous female (2.8 mm) (NTOU). CP58, 24°35.1'N, 122°05.8'E, 221–254 m, 4 Aug 2000: 3 males (2.7–3.2 mm), 1 ovigerous female (3.5 mm) (NTOU). CP76, 24°56.54'N, 122°01.51'E, 115–170 m, 7 May 2001: 1 female (1.8 mm) (NTOU). CP85, 24°00.55'N, 122°00.54'E, 255–390 m, 9 May 2001: 6 males (2.2–4.0 mm) (NTOU). DW149, 22°18.5'N, 121°29.37'E, 258–258 m, 20 May 2002: 1 male (2.0 mm) (NTOU). CP277, 24°23.57'N, 122°14.12'E, 1222–1261 m, 14 Jun 2005: 1 male (3.8 mm) (NTOU). OCP287, 24°57.522'N, 122°5.303'E, 259–349 m, 8 Aug 2005: 11 males (2.1–2.6 mm), 1 ovigerous female (2.6 mm), 8 females (1.5–2.7 mm) (NTOU). OCP288, 24°57.701'N, 122°5.346'E, 263–352 m, 8 Aug 2005: 27 males (1.1–4.2 mm), 2 ovigerous females (2.4, 2.6 mm), 13 females (2.1–3.0 mm) (NTOU). OCP293, 24°58.367'N, 122°5.289'E, 262–232 m, 8 Aug 2005: 28 males (1.5–3.4 mm), 3 ovigerous females (2.4–2.7 mm), 25 females (1.4–3.4 mm) (NTOU).

Diagnosis.—Carapace with 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. Mxp3 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.

Size.—Males to 4.2 mm; females to 3.5 mm (present data).

Coloration.—Carapace and abdomen translucent white or diffuse orange red; Carapace lateral spines and rostral basal spines orange red. P1 diffuse orange-red. P2–4 with diffuse, clear orange-red bandings.

Habitat.—Pools on reef to a depth of 1261 m.

Distribution.—Widely distributed in the western and eastern Pacific, without records from central Pacific: SW Australia, SE Australia, Tasmania, E Australia (Twofold Bay, Queensland), Three Kings Islands, off North Cape, Cook Strait, Auckland, SW Pacific, Chesterfield Islands, Kei Islands, East China Sea, Taiwan, Japan (both Pacific coast and Sea of Japan; northern limit, Tsugaru Strait), Chile, Juan Fernandez Islands, and San Felix Island.

Remarks.—The previous deepest record is 549 m at Sagami Bay, Japan (Baba, 2005). One of the specimens here examined, a male from station CP277, is from a depth of 1222–1261 m, the deepest record for the species. Specimens from New Zealand attain much larger size with robust P2–4, whereas those occurring

around Japan and Taiwan are relatively small (Baba, unpublished). Moreover, the material reported under *P. cf. pusillus* by Ahyong (2007) has a white band on the P1 fingers, which is missing in the Taiwanese specimens as well as southern Australian specimens (Poore *et al.*, 2008). Molecular study would be desirable to investigate this inconsistency.

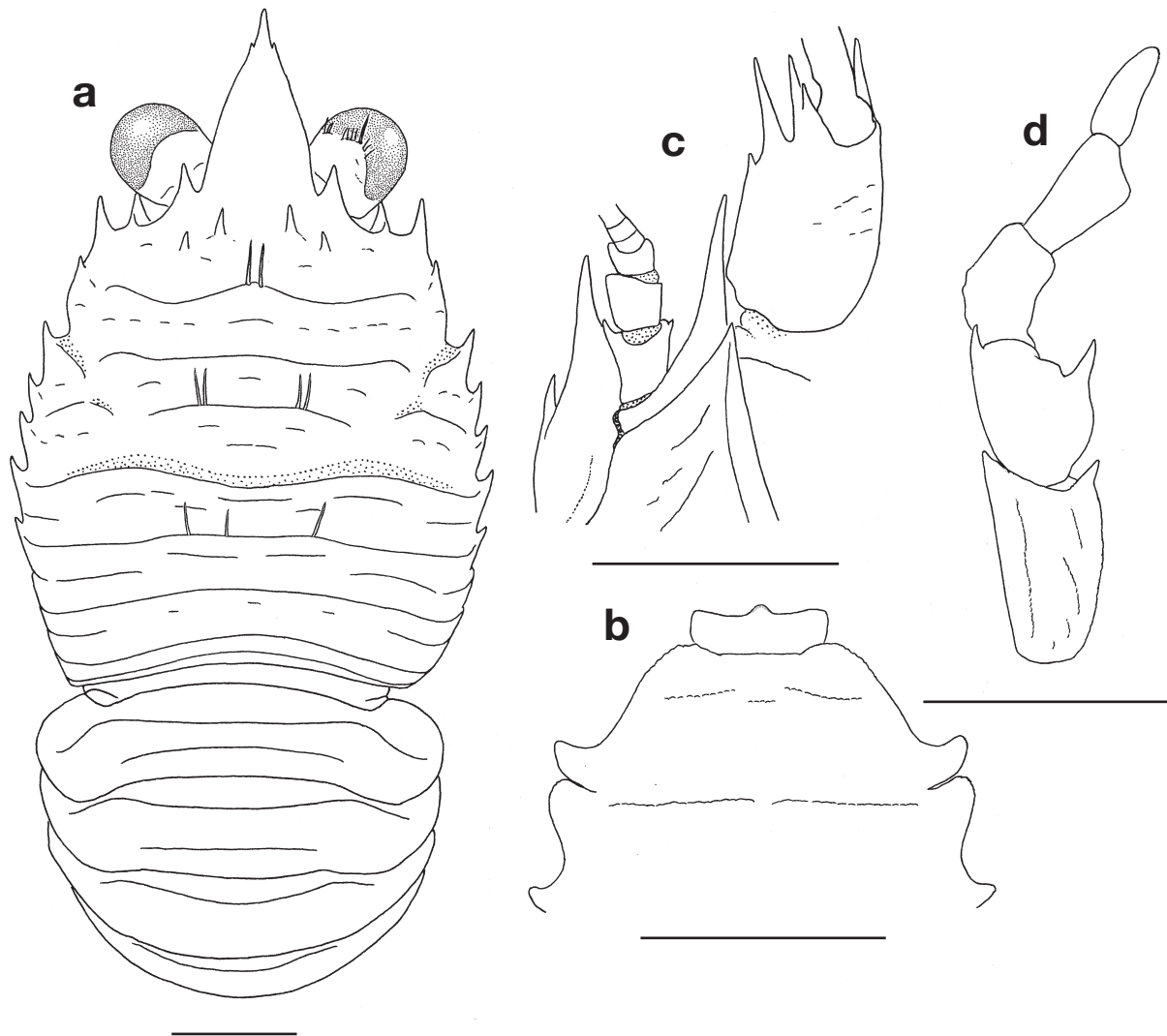


Fig. 264. Ovigerous female (3.5 mm), CP58: **a**, carapace and abdomen, eyelash omitted on left side, dorsal; **b**, anterior part of sternal plastron; **c**, anterior part of cephalothorax, showing right antennule and antenna, ventral; **d**, right Mxp3, lateral. Scales = 1 mm.

Genus *Raymunida* Macpherson & Machordom, 2000

衛鎧蝦屬

Raymunida Macpherson & Machordom, 2000: 253 [type species: *Raymunida cagnetei* Macpherson & Machordom, 2000. Gender: feminine].—Baba, 2005: 201.

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 somites unarmed; endopod of uropod with small, basally articulate spines on posterior margin. Telsonal subdivision incomplete. Mxp3 carpus with spine on flexor distal margin. P2 merus more slender than those of P3–4. Epipods on P1–3.

Remarks.—The genus accommodates 10 species. One is known from Taiwan.

Raymunida formosanus Lin, Chan & Chu, 2004

寶島衛鎧蝦



Fig. 265. Holotype male (15.4 mm), Dasi fishing port, Yilan County, Feb 1999.

Raymunida formosanus Lin *et al.*, 2004: 149, figs. 1–3 [type locality: Dasi fishing port, Yilan County, Taiwan].—Ahyong & Poore, 2004b: 70, fig. 17.—Poore, 2004: 239, fig. 66c, d.—Baba, 2005: 307.—Baba *et al.*, 2008: 179.

Material examined.—Dasi fishing Port, Yilan County, Feb 1999: male holotype (15.4 mm) (NTOU).—05 Jan 1999: 1 female paratype (19.3 mm) (NTOU).—12 Mar 2003: 1 female paratype (12.5 mm) (NTOU). CP76, 24°56.54'N, 122°01.51'E, 115–170 m, 07 May 2001: 1 ovigerous female paratype (15.0 mm) (NTOU).

Diagnosis.—Five pairs of epigastric spines; 1 or 2 parahepatic, 3–5 anterior branchial (directly behind anterior cervical groove), 1 postcervical spine on each side. Sternites 5–7 smooth. Abdominal somites 2–3 without secondary stria between anterior and median transverse ridges. Article 1 of antenna with distomesial spine overreaching end of article 4, reaching end of basal antennular article. Mxp3 merus unarmed on extensor margin. P1 robust, fixed finger with row of lateral marginal spines continued from palm, terminating in midlength or distal third point of article. Mero-carpal articulation of P4 overreaching frontal margin of carapace.

Size.—Male (holotype), 15.4 mm, females to 19.3 mm, ovigerous female from 15.0 mm (Lin *et al.*, 2004).

Coloration.—Body orange red. Eyes pale black. Carapace transversely pale at base of rostrum and behind eyes, with spines whitish with red tips; cephalic appendages with 3 transverse lines of red, white and red in anterior view. P1 reddish, fingers with 2 pale bands on distal and middle parts. P2–5 with pale and red alternating bands.

Habitat.—Substrates unknown; 104–300 m.

Distribution.—Taiwan and New South Wales.

Remarks.—The species is close to *R. confundens* Macpherson & Machordom, 2001 from New Caledonia and Chesterfield Islands but distinguished by robust instead of slender P1, squamate instead of non-squamate P2–4, and different coloration: uniform in color on carapace and abdomen, instead of white bands on carapace and white spots on abdomen.

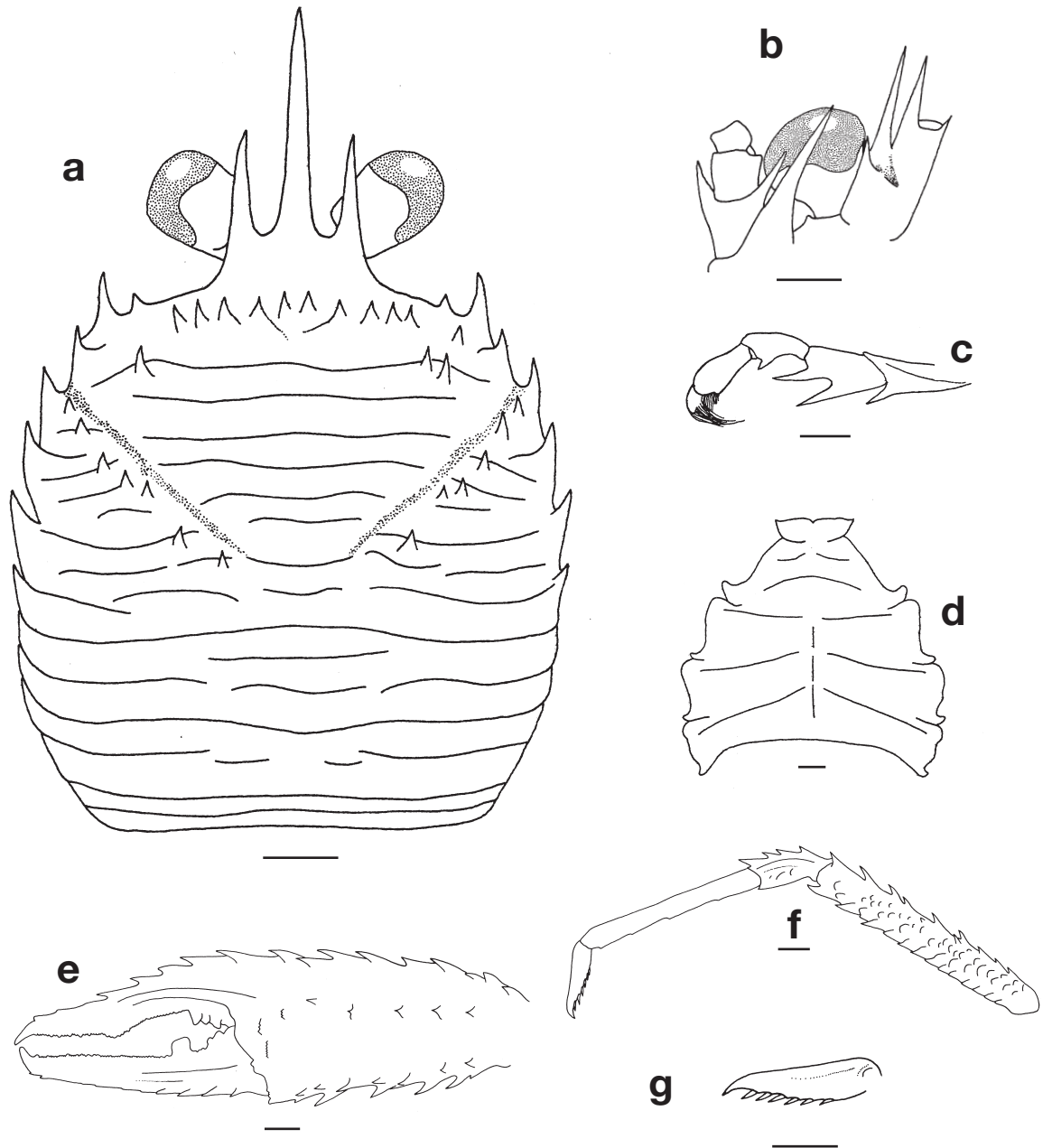


Fig. 266. Holotype male (15.4 mm), Dasi fishing port, Yilan County, Feb 1999: **a**, carapace, dorsal; **b**, anterior part of cephalothorax, showing right antennule and antenna, ventral; **c**, left Mxp3, lateral; **d**, sternal plastron; **e**, right P1, distal part, dorsal; **f**, left P2, lateral; **g**, left P2 dactylus, lateral. Scales = 1 mm (after Lin *et al.*, 2004).

Genus *Shinkaia* Baba & Williams, 1998

潛鎧蝦屬

Shinkaia Baba & Williams, 1998: 148 [type species: *Shinkaia crosnieri* Baba & Williams. Gender: feminine].—
Baba, 2005: 67 (key).

Diagnosis.—Carapace slightly convex from side to side and anterior to posterior, without grooves on dorsal surface; lateral margins smoothly convex, cristate, slightly upturned and bearing many small, obsolescent or moderate-sized forward trending spines, spine at anterior end of branchial region somewhat more pronounced than others. Strong angle lateral to flattened, immobile basally fused eyestalks with cornea on ventral surface, orbit obtuse in dorsal view. Pterygostomial flap anteriorly produced, covering greater part of antennal peduncle. Dense long plumose setae on sternum, pterygostomial flap, and ventral surface of Mxp3 and pereopods. P1 strong, broad, depressed and nearly equal, fixed finger bearing ventral longitudinal pit. P2–4 stout and moderately flattened, dactyli bearing prehensile comb of dense corneous setae. Short epipods present on Mxp3 and P1–3. Mxp1 without lash.

Remarks.—The genus, originally placed in the subfamily Shinkaiinae Baba and Williams, 1998, contains only one species previously only known from active hydrothermal vent sites. Very short epipods on Mxp3 and P1–3 are unique in the family; all the other genera have a well-developed epipod at most on Mxp3; if present on P1–3, epipods are usually well developed.

Shinkaia crosnieri Baba & Williams, 1998
柯氏潛鎧蝦



Fig. 267. Male (45.0 mm), near Diaoyutai (Senkaku), Apr 1999.

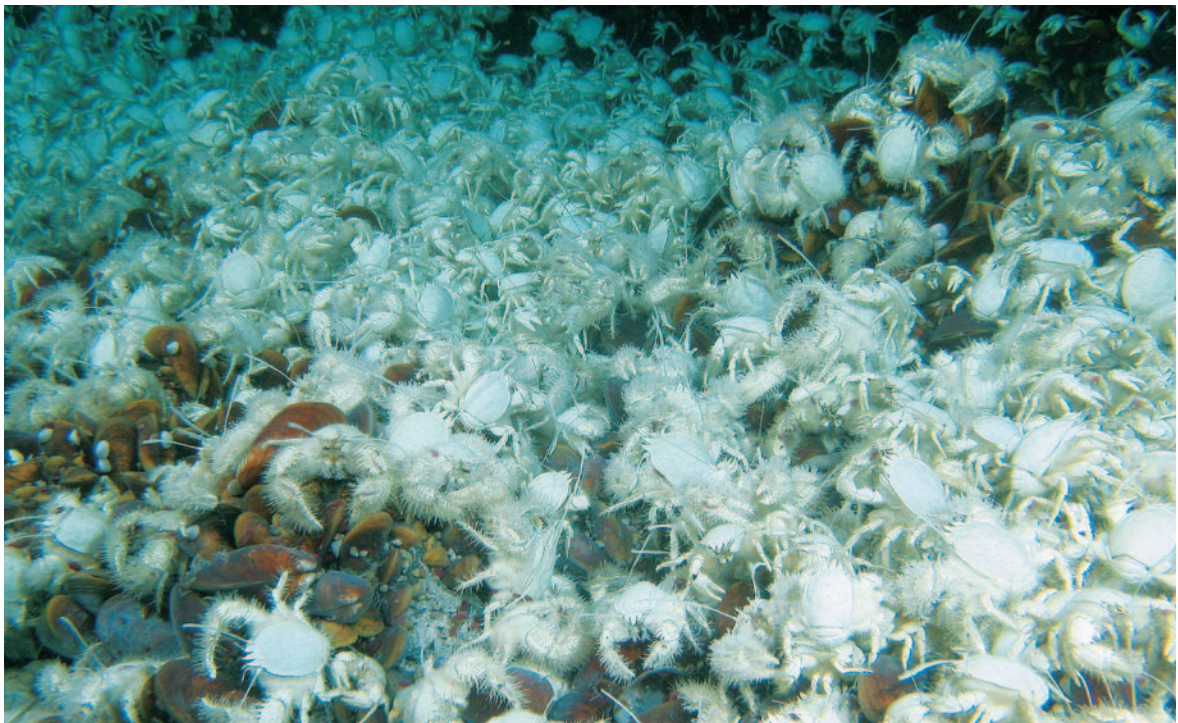


Fig. 268. Formosa Ridge cold seep site, 2007.



Fig. 269. Formosa Ridge cold seep site, 2007. Note the dense long plumose setae on ventral body.

Munidopsis sp.—Fujikura *et al.*, 1995: 233.

Shinkaia crosnieri Baba & Williams, 1998: 148, figs 1, 3–6 [type locality: Bismarck Archipelago, 3°18.85'S, 152°34.92'E, 1483 m].—Chan *et al.*, 2000: 800, figs 1, 2.—Watabe, 2000: 31.—Fujikura *et al.*, 2002: 24.—Martin & Haney, 2005: 481.—Baba, 2005: 307.—Macpherson & Baba, 2006b: 449, fig.—Baba *et al.*, 2008: 181, fig. 4I.

Material examined.—Near Diaoyutai (Senkaku), about 1200 m, Apr 1999: 2 males (21.1, 45.0 mm) (specimen not located).

Diagnosis.—Characters as for the genus.

Size.—Males to 45.0 mm (Chan *et al.*, 2000); females to 32.8 mm (Baba & Williams, 1998).

Coloration.—Body ivory white overall. Long stiff setae light brown. Dense plumose setae on ventral surface muddy white.

Habitat.—Deep-sea hydrothermal vent and cold seep sites; 600–1500 m.

Distribution.—Bismarck Archipelago, off NE and SW Taiwan, and Okinawa Trough.

Remarks.—Recently *S. crosnieri* was found to be a dominant species at a cold seep site on the Formosa Ridge at about 1100 m depth off SW Taiwan. Although no specimen from this cold seep site was available for examination, its identity is unmistakable from the many photographs and video taken at the Formosa Ridge cold seep. The material reported from the hydrothermal vent off NE Taiwan by Chan *et al.* (2000) was also not available for the present study. Thus, the line-drawings provided here are based on a specimen collected from

Okinawa Trough by JAMSTEC.

This squat lobster has been seen in extremely high densities at both hydrothermal vent chimneys and cold seeps. This may be explained by that they may feed on bacteria proliferated among the dense long plumose setae on the sternum, pterygostomial flap and ventral surface of pereopods (Tsuchida *et al.*, 2007).

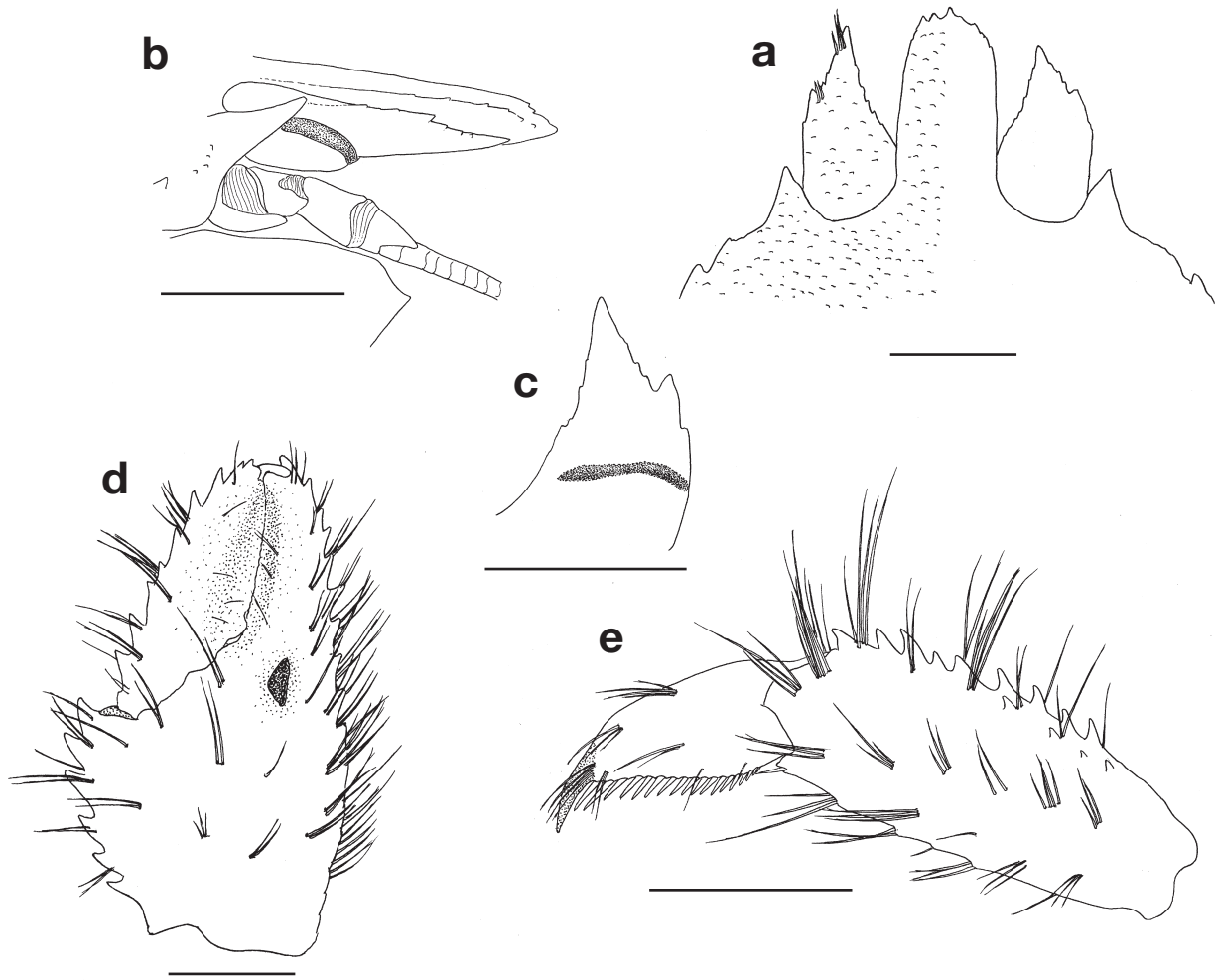


Fig. 270. Female (29.5 mm, JAMSTEC), “Shinkai 2000” Dive 979, Iheya Seamount, 976 m, 27 Sep 1997 : **a**, anterior part of carapace, fine granules and setae omitted on right side, dorsal; **b**, same, lateral; **c**, left eye, ventral; **d**, left P1, distal part, ventral; **e**, left P2, distal part, lateral. Scales = 5 mm.

Literature Cited

- Abello, P. & Valladares, F.J. 1988. Bathyal decapod crustaceans of the Catalan Sea (Northwestern Mediterranean). *Mésogée*, 48: 97–102.
- Adams, A. & White, A. 1848. Crustacea. In: Adams, A. (ed.), *The Zoology of the voyage of the HMS "Samarang" under the command of Captain Sir Edward Belcher, C.B., F.R.A.S., F.G.S., during the years 1843–1846*. Benham and Leeve, London, pp. 1–66, 13 pls.
- Ahyong, S.T. 2007. Decapod Crustacea collected by the NORFANZ Expedition: Galatheidae and Polychelidae. *Zootaxa*, 1593: 1–54.
- Ahyong, S.T. & Baba, K. 2004. Chirostylidae from north-western Australia (Crustacea: Decapoda: Anomura). *Memoirs of Museum Victoria*, 61: 57–64.
- Ahyong, S.T. & Poore, G.C.B. 2004a. The Chirostylidae of southern Australia (Crustacea, Decapoda, Anomura). *Zootaxa*, 436: 1–88.
- Ahyong, S.T. & Poore, G.C.B. 2004b. Deep-water Galatheidae (Crustacea: Decapoda: Anomura) from southern and eastern Australia. *Zootaxa*, 472: 3–76.
- Ahyong, S.T., Schnabel, K.E. & Maas, E. 2009. Anomuran phylogeny: new insights from molecular data. In: Martin, J.W., Crandall, K. & Felder, D.F. (eds), *Decapod Crustacean Phylogenetics. Crustacean Issues*, 18: 399–414.
- Alcock, A. (1894) Natural history notes from H.M. Royal Indian Marine Survey Steamer "Investigator," commander R.F. Hoskin, R.N., commanding. – Series II, No. 1. On the results of deep-sea dredging during the season of 1890–91 (continued). *Annals and Magazine of Natural History*, (6), 13: 321–334.
- Alcock, A. 1901. *A descriptive catalogue of the Indian deep-sea Crustacea Decapoda Macrura and Anomala, in the Indian Museum. Being a revised account of the deep-sea species collected by the Royal Indian Marine Survey Ship Investigator*. Trustees of the Indian Museum, Calcutta, 286 pp., 3 pls.
- Alcock, A. & Anderson, A.R.S. 1894. Natural history notes from H.M. Royal 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. *Journal of the Asiatic Society of Bengal*, (2) (Natural History), 63: 141–185, pl. 9.
- Alcock, A. & Anderson, A.R.S. 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*. Trustees of the Indian Museum, Calcutta, pls 9–15.
- Alcock, A. & Anderson, A.R.S. 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. *Annals and Magazine of Natural History*, (7) 3: 1–27.
- Alcock, A. & Anderson, A.R.S. 1899b. *Crustacea, Part VII. Illustrations of the zoology of the Royal Indian Marine Surveying Steamer "Investigator."* Trustees of the Indian Museum, Calcutta, pls 36–45.
- Alcock, A. & MacGilchrist, A.C. 1905. *Crustacea, Part XI. Illustrations of the zoology of the Royal Indian Marine Surveying Steamer "Investigator."* Trustees of the Indian Museum, Calcutta, pls. 68–76.
- Alcock, A. & McArdle, S.B. 1902. *Crustacea, Part X. Illustrations of the zoology of the Royal Indian Marine Surveying Steamer "Investigator."* Trustees of the Indian Museum, Calcutta, pls 56–67.
- Ambler, J.W. 1980. Species of Munidopsis (Crustacea, Galatheidae) occurring off Oregon and in adjacent waters. *Fishery Bulletin*, 78, 13–34.
- Anderson, A.R.S. 1896. An account of the deep-sea Crustacea from the Bay of Bengal and Laccadive Sea. *Journal of the Asiatic Society of Bengal*, (2) (Natural History), 65: 88–106.
- Andrade, H. 1985. Crustáceos decápodos marinos del Archipiélago de Juan Fernandez. In: Arana, P. (ed.), *Investigaciones marinas en el Archipiélago de Juan Fernandez, Chile*. Universidad Católica de Valparaíso, Valparaíso, pp. 109–116.
- Baba, K. 1969a. Four new genera with their representatives and six new species of the Galatheidae in the collection of the Zoological Laboratory, Kyushu University, with redefinition of the genus *Galathea*. *Ohmu*, 2: 1–32.
- Baba, K. 1969b. New addition to the galatheid fauna of Japan (Crustacea, Anomura). *Ohmu*, 2: 33–40.
- Baba, K. 1969c. Chirostylids and galatheids from dredgings and trawlings operated in the East China Sea by the Japanese

- Fisheries Research Vessel Kaiyo Maru in 1967. *Ohmu*, 2: 41–57.
- Baba, K. 1973. Remarkable species of the Chirostylidae (Crustacea, Anomura) of Japanese waters. *Memoirs of the Faculty of Education, Kumamoto University, Section 1 (Natural Science)*, 22: 117–125, pl. 4.
- Baba, K. 1977. Biological results of the Snellius Expedition XXVIII. The galatheid Crustacea of the Snellius Expedition. *Zoologische Mededelingen, Leiden*, 50: 243–259.
- Baba, K. 1979. Expédition Rumphius II (1975) Crustacés parasites, commensaux, etc. (Th. Monod et R. Sèrene, éd.), VII. Galatheid crustaceans (Decapoda, Anomura). *Bulletin du Muséum National d'Histoire Naturelle, Paris*, (4) Section A, 1: 643–657.
- Baba, K. 1981. Deep-sea galatheidean Crustacea (Decapoda, Anomura) taken by the *R/V Soyo-Maru* in Japanese Waters. I Family Chirostylidae. *Bulletin of the National Science Museum, Tokyo*, (A) 1: 111–134.
- Baba, K. 1982a. Deep-sea galatheidean Crustacea (Decapoda, Anomura) taken by the *R/V Soyo-Maru* in Japanese waters. II Family Galatheidae. *Bulletin of the National Science Museum, Tokyo*, (A) 8: 103–120.
- Baba, K. 1982b. Galatheids and pagurids of the Palau Islands (Crustacea: Anomura). *Proceedings of the Japanese Society of Systematic Zoology*, 23: 56–70.
- Baba, K. 1986a. Two new species of anomuran crustaceans (Decapoda: Chirostylidae and Galatheidae) from the Andaman Sea. *Journal of Crustacean Biology*, 6: 625–632.
- Baba, K. 1986b. Two new anomuran Crustacea (Decapoda: Anomura) from north-west Australia. *The Beagle, Occasional Papers of the Northern Territory Museum of Arts and Sciences*, 3: 1–5.
- Baba, K. 1988. Chirostylid and galatheid crustaceans (Decapoda: Anomura) of the “Albatross” Philippine Expedition, 1907–1910. *Researches on Crustacea*, Special Number, 2: 1–203.
- Baba, K. 1989. Anomuran crustaceans obtained by dredging from Oshima Strait, Amami-Oshima of the Ryukyu Islands. *Memoirs of the National Science Museum, Tokyo*, 22: 127–134.
- Baba, K. 1990. Chirostylid and galatheid crustaceans of Madagascar (Decapoda, Anomura). *Bulletin du Muséum National d'Histoire Naturelle, Paris*, (4e série) Section A, 11: 921–975.
- Baba, K. 1991. Crustacea Decapoda: *Alainius* gen. nov., *Leiogalatea* Baba, 1969, and *Phylladorhynchus* Baba, 1969 (Galatheidae) from New Caledonia. In: Crosnier, A. (ed.), Résultats des Campagnes MUSORSTOM, volume 9. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, (A), 152: 479–491.
- Baba, K. 1994. Deep-sea galatheid crustaceans (Anomura: Galatheidae) collected by the ‘Cidaris I’ Expedition off central Queensland, Australia. *Memoirs of the Queensland Museum*, 35: 1–21.
- Baba, K. 2004. *Uroptychodes*, new genus of Chirostylidae (Crustacea: Decapoda: Anomura), with description of three new species. *Scientia Marina*, 68: 97–116.
- Baba, K. 2005. Deep-sea chirostylid and galatheid crustaceans (Decapoda: Anomura) from the Indo-West Pacific, with a list of species. *Galathea Report*, 20: 1–317.
- Baba, K. 2009. A new species of squat lobster (Decapoda, Anomura, Chirostylidae) from the Philippines and Indonesia. *Crustaceana*, 82: 795–802.
- Baba, K. & Fujita, Y. 2008. Squat lobsters of the genus *Galathea* (Decapoda: Anomura: Galatheidae) associated with comatulid crinoids from the Ryukyu Islands, Japan. *Crustacean Research*, 37: 45–64.
- Baba, K., Hayashi, K.I. & Toriyama, M. 1986. *Decapod crustaceans from continental shelf and slope around Japan: The intensive research of unexploited fishery resources on continental slopes*. Japan Fisheries Resource Conservation Association, Tokyo, 336 pp.
- Baba, K. & Lin, C.W. 2008. Five new species of chirostylid crustaceans (Crustacea: Decapoda: Anomura: Chirostylidae) from Taiwan. *Zootaxa*, 1919: 1–24.
- Baba, K. & Macpherson, E., 1991. Reexamination of the type material of *Munida militaris* Henderson, 1885 (Crustacea: Decapoda: Galatheidae), with the selection of a lectotype. *Proceedings of the Biological Society of Washington*, 104: 538–544.
- Baba, K., Macpherson, M., Poore, G.C.B., Ah Yong, S.T., Bermudez, A., Cabezas, A., Lin, C.W., Nizinski, M., Rodrigues, C. & Schnabel, K.E. 2008. Catalogue of squat lobsters of the world (Crustacea: Decapoda: Anomura—families Chirostylidae, Galatheidae and Kiwaidae). *Zootaxa*, 1905: 1–220.
- Baba, K. & Oh, S.C. 1990. *Galathea coralliophilus*, a new decapod crustacean (Anomura: Galatheidae) from Singapore,

- Gulf of Thailand, and West Irian. *Proceedings of the Biological Society of Washington*, 103: 358–363.
- Baba, K. & Poore, G.C.B. 2002. *Munidopsis* (Decapoda, Anomura) from south-eastern Australia. *Crustaceana*, 75: 231–252.
- Baba, K. & de Saint Laurent, M. 1992. Chirostyliid and galatheid crustaceans (Decapoda: Anomura) from active thermal vent areas in the southwest Pacific. *Scientia Marina*, 56: 321–332.
- Baba, K. & de Saint Laurent, M. 1996. Crustacea Decapoda: Revision of the genus *Bathymunida* Balss, 1914, and description of six new related genera (Galatheidae). In: Crosnier, A. (ed.), Résultats des Campagnes MUSORSTOM, volume 15. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 168: 433–502.
- Baba, K. & Tirmizi, N.M. 1979. A new chirostyliid (Crustacea, Decapoda, Anomura) from deeper parts of the Japanese waters and off the east coast of Africa. *Proceedings of the Japanese Society of Systematic Zoology*, 17: 52–57.
- Baba, K. & Williams, A.B. 1998. New Galatheoidea (Crustacea, Decapoda, Anomura) from hydrothermal systems in the West Pacific Ocean: Bismarck Archipelago and Okinawa Trough. *Zoosystema*, 20: 143–156.
- Baba, K. & Yu, H.P. 1987. Short note *Munida albiapicula*, a new species of anomuran crustacean (Decapoda: Galatheidae) from Taiwan. *Bulletin of the Institute of Zoology, Academia Sinica*, 26: 331–335.
- Balss, H. 1913a. Neue Galatheiden aus der Ausbeute der deutschen Tiefsee-Expedition. “Valdivia.” *Zoologischer Anzeiger*, 41: 221–226.
- Balss, H. 1913b. Ostasiatische Decapoden I. Die Galatheiden und Paguriden. In: Doflein, F. (ed.), Beiträge zur Naturgeschichte Ostasiens. *Abhandlungen der Mathematisch-Physikalischen Klasse der Königlich Bayerischen Akademie der Wissenschaften*, 2: 1–85, pls 1, 2.
- Balss, H. 1915. Die Decapoden des Roten Meeres. II. Anomuren, Dromiaceen und Oxystomen. Expeditionen S.M. Schiff Pola in das Rote Meer. Nordliche und südliche Haefte 1895/96–1897/98. *Zoologische Ergebnisse XXXI. Berichte der Kommission für ozeanographische Forschungen. Denkschriften der mathematisch-naturwissenschaftlichen Klasse der Kaiserlichen Akademie der Wissenschaften Wien*, 92: 1–20.
- Balss, H. 1921. Results of Dr. E. Mjöberg's Swedish Scientific Expeditions to Australia 1910–13. XXIX. Stomatopoda, Macrura, Paguridea und Galatheidea. *Kungliga Svenska Vetenskapsakademiens Handlingar*, 61: 2–24.
- Balss, H. 1922. Decapoden von Juan Fernandez. In: Skottsberg, C. (ed.), *The Natural History of Juan Fernandez and Easter Island. Zoology*, Uppsala, pp. 329–340.
- Balss, H. 1926. Decapoda. In: Grimpe, G. & Wagler, E. (eds), *Die Tierwelt der Nord- und Ostsee*, Akademische Verlagsgesellschaft Becker, Leipzig, Lief 6, Teil 10, Heft 2: 1–112.
- Balss, H. 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 (crabs and shrimps). *Annals of the South African Museum*, 38: 1–837.
- Benedict, J.E. 1902. Description of a new genus and forty six new species of crustaceans of the family Galatheidae with a list of the known marine species. *Proceedings of the Biological Society of Washington*, 26: 243–334.
- 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. *Bulletin of the Vanderbilt Marine Museum (Huntington Museum)*, 6: 1–264, 96 pls.
- Borradaile, L.A. 1898. On some crustaceans from the South Pacific. – Part II. Macrura Anomala. *Proceedings of the Zoological Society of London*, 31: 457–68, pl. 36.
- Borradaile, L.A. 1900. On the Stomatopoda and Macrura brought by Dr. Willey from the South Seas. *Zoological Results Based on Material From New Britain, New Guinea, Loyalty Islands and Elsewhere, Collected During the Years 1895, 1896 and 1897, by Arthur Willey*, 4: 395–428, pls 36–39.
- Borradaile, L.A. 1916. Crustacea. Part 1. – Decapoda. *British Antarctic “Terra Nova” Expedition, Natural History Reports, Zoology*, 3: 75–110.
- Bouchet, P., Heros, V., Lozouet, P. & Maestrati, P. 2008. A quarter-century of deep-sea malacological exploration in the South and West Pacific: Where do we stand? How far to go? In: Heros, V., Cowie, R.H. & Bouchet, O. (eds). *Tropical Deep-Sea Benthos*, volume 25. *Mémoires du Muséum national d'Histoire naturelle, Paris*, 196: 9–40.
- Bouvier, E.L. 1896. Sur la famille des Chirostyliidae, Ortmann, et sur la classification des Galatheidea [Crust.]. *Bulletin de la Société Entomologique de France*, 65: 307–312.

- Bouvier, E.L. 1914. Sur la faune carcinologique de l'île Maurice. *Comptes Rendus Hebdomadaires de Séances de l'Académie des Sciences, Paris*, 159: 1–8.
- Bouvier, E.L. 1915. Décapodes marcheurs (Reptantia) et stomatopodes recueillis à l'île Maurice par M. Paul Carie. *Bulletin Scientifique de la France et de la Belgique*, 48: 178–318, pls 12–17.
- Bouvier, E.L. 1922. Observations complémentaires sur les crustacés décapodes (Abstraction faite des Carides) provenant des Campagnes de S.A.S. le Prince de Monaco. *Résultats des Campagnes Scientifiques accomplies sur son Yacht par Albert Ier Prince Souverain de Monaco*, 62: 1–106, pls 1–6.
- Caulley, M. 1896. Crustacés schizopodes et décapodes. In: Koehler, R. (ed.), Résultats scientifiques de la Campagne du Caudan dans le Golfe de Gascogne, août-septembre, 1895. *Annales de l'Université de Lyon*, 26: 365–419, pls 13–17.
- Chace, F.A. 1942. The Anomura Crustacea. I. Galatheidea. Reports of the scientific results of the Atlantis Expeditions to the West Indies, under the joint auspices of the University of Havana and Harvard University. *Torreia*, 11: 1–106.
- Chan, T.Y., Lee, D.A. & Lee, C.S. 2000. The first deep-sea hydrothermal animal reported from Taiwan: *Shinkaia crosnieri* Baba and Williams, 1998 (Crustacea: Decapoda: Galatheidae). *Bulletin of Marine Science*, 67: 799–804.
- Chilton, C. 1906. Report of some Crustacea dredged off the coast of Auckland. *Transactions and Proceedings of the New Zealand Institute*, 38: 265–269.
- Chilton, C. 1911. Crustacea. Scientific Results New Zealand Government Trawling Expedition 1907. *Records of the Canterbury Museum*, 1: 285–312.
- Christiansen, M.E. 1972. *Bestemmelsestabell over Crustacea Decapoda. Tifotkreps*. Universitetsforlaget, Oslo, 71 pp.
- Chu, K.H., Tsang, L.M., Ma, K.Y. & Ng, P.K.L. 2009. Decapod phylogeny: what can protein coding genes tell us? In: Martin, J.W., Crandall, K. & Felder, D.F. (eds.), Decapod Crustacean Phylogenetics. *Crustacean Issues*, 18: 89–99.
- Collins, J.S.H. 1995. *Galathea mauritiana* Bouvier, 1915— a replacement name for *Galathea affinis* Ortmann, 1892 non *Galathea affinis* Ristori, 1886. *Science Report of the Toyohashi Museum of Natural History*, 5: 61–62.
- Dana, J.D. 1852. Crustacea. Part I. *United States Exploring Expedition, during the years 1838, 1839, 1840, 1841, 1842, under the command of Charles Wilkes, U.S.N.*, 13: 1–685, with a folio atlas of 96 pls (published 1885).
- Dana, J.D. 1855. Crustacea. Part I. *United States Exploring Expedition, during the years 1838, 1839, 1840, 1841, 1842, under the command of Charles Wilkes, U.S.N.*, 13: pls 1–95.
- Davie, P.J.F. 2002. *Crustacea: Malacostraca: Eucarida (Part 2): Decapoda – Anomura, Brachyura*. CSIRO Publishing, Melbourne, xiv + 641 pp.
- De Man, J.G. 1888. Bericht ueber die von Herrn Dr. J. Brock im indischen Archipel gesammelten Decapoden und Stomatopoden. *Archiv für Naturgeschichte*, 53: 215–600, pls 7–22a.
- De Man, J.G. 1902. Die von Herrn Professor Kükenthal im Indischen Archipel gesammelten Dekapoden und Stomatopoden. *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft*, 25: 467–929, pls 19–27.
- Doflein, F. 1902. Ostasiatische Dekapoden. *Abhandlungen der Mathematisch-Physikalischen Klasse der Königlich Bayerischen Akademie der Wissenschaften*, 21: 613–670, pls 1–6.
- Doflein, F. & Balss, H. 1913. Die Galatheiden der Deutschen Tiefsee-Expedition. *Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem Dampfer "Valdivia" 1898–1899*, 20: 125–184, pls 12–17.
- Dons, C. 1915. Nord-Norges Decapoder. *Tromsø Museums Aarshefter*, 37: 15–153, pls 1–2.
- Esmark. 1857. Om *Galathea tridentata*. *Forhandlingar skand. naturf.*, 7: 239–240.
- Fabricius, J.C. 1775. *Systema Entomologiae, sistens Insectorum Classes, Ordines, Genera, Species, adjectis Synonymis, Locis, Descriptionibus, Observationibus*. Kortii, Flensburgi et Lipsiae, 832 pp.
- Fabricius, J.C. 1793. *Entomologia systematica emendata et aucta. Secundum classes, ordines, genera, species adjectis synonymis, locis; observatiōnibus, descriptionibus*. Hafniae, 519 pp.
- Faxon, W. 1895. XV. The stalk-eyed Crustacea. In: Reports on an exploration off the west coasts of Mexico, Central and South America, and off the Galapagos Islands, in charge of Alexander Agassiz, by the U.S. Fish Commission Steamer "Albatross" during 1891, Lieut.-Commander Z.L. Tanner, U.S.N., commanding. *Memoirs of the Museum of Comparative Zoology at Harvard College*, 18: 1–230.
- Fujikura, K., Hashimoto, J., Fujiwara, Y. & Okutani, T. 1995. Community ecology of the chemosynthetic community at off Hatsushima site, Sagami bay, Japan. *JAMSTEC Journal of Deep Sea Research*, 11: 227–241. (in Japanese)
- Fujikura, K., Hashimoto, J., Fujiwara, Y. & Okutani, T. 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 Research*, 57: 21–30. (in Japanese, with English summary)
- Fujita, Y. & Baba, K. 1999. Two galatheid associates of crinoids from the Ryukyu Islands (Decapoda: Anomura: Galatheidae) with their ecological notes. *Crustacean Research*, 28: 112–124.
- Fujita, Y., Baba, K. & Shokita, S. 2001. Larval development of *Galathea inflata* Potts, 1915 (Decapoda: Anomura: Galatheidae) described from laboratory-reared material. *Crustacean Research*, 30: 111–132.
- Garth, J.S., Haig, J. & Knudsen, J.W. 1987. Crustacea Decapoda (Brachyura and Anomura) of Enewetak Atoll. In: Devaney, D.M., Reese, E.S., Burch, B.L. & Helfrich, P. (eds), *The natural history of Enewetak Atoll*. U.S. Department of Energy, Office of Scientific and Technical Information, Oak Ridge, pp. 235–261.
- Gordon, I. 1930. On the species of the galatheid genus, *Eumunida* (Crustacea, Decapoda). *Proceedings of the General Meetings for Scientific Business of the Zoological Society of London*, 1929: 741–753.
- Gordon, I. 1935. Anomura (excluding Paguridea). Résultats scientifiques du voyage aux Indes orientales Néerlandaises de LL.AA.RR. le Prince et la Princesse Leopold de Belgique. *Mémoires du Musée Royal d'Histoire Naturelle de Belgique*, 3: 1–12.
- Gore, R.H. 1983. Notes on rare species of *Munidopsis* (Anomura: Galatheidae) and *Ethusina* (Brachyura: Dorippidae) collected by the USNS Barlett in the Venezuela Basin, Caribbean Sea. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 135: 200–217.
- Gosliner, T.M., Behrens, D.W. & Williams, G.C. 1996. *Coral reef animals of the Indo-Pacific: animal life from Africa to Hawai'i exclusive of the vertebrates*. Sea Challengers, Monterey, 314 pp.
- Grant, F.E. & McCulloch, A.R. 1906. On a collection of Crustacea from the Port Curtis district, Queensland. *Proceedings of the Linnean Society of New South Wales*, 1906: 2–53, pls 1–4.
- Guerao, G., Macpherson, E., Samadi, S., Richer de Forges, B. & Boisselier, M.-C. 2006. First stage zoeal descriptions of five Galatheaidea species from Western Pacific (Crustacea: Decapoda: Anomura). *Zootaxa*, 1227: 1–29.
- Haig, J. 1955. Reports of the Lund University Chile Expedition 1948–49. 20. The Crustacea Anomura of Chile. *Lunds Universitetets Arsskrift N.F. Avd. 2*, 51: 1–68.
- Haig, J. 1973. Galatheaidea (Crustacea, Decapoda, Anomura) collected by the F.I.S. Endeavour. *Records of the Australian Museum*, 28: 269–289.
- Haig, J. 1974. The anomuran crabs of Western Australia: their distribution in the Indian Ocean and adjacent seas. *Journal of the Marine Biological Association of India*, 14: 443–451.
- Haswell, W.A. 1882a. Description of some new species of Australian Decapoda. *Proceedings of the Linnean Society of New South Wales*, 6: 750–763.
- Haswell, W.A. 1882b. *Catalogue of the Australian stalk-and sessile-eyed Crustacea*. Australian Museum, Sydney, 324 pp.
- Healy, A. & Yaldwyn, J.C. 1970. *Australian crustaceans in colour*. Reed, Sydney, 112 pp.
- Henderson, J.R. 1885. Diagnoses of new species of Galatheidae collected during the “Challenger” expedition. *Annals and Magazine of Natural History*, (5) 16: 407–421.
- Henderson, J.R. 1888. Report on the Anomura collected by H.M.S. *Challenger* during the years 1873–76. *Report on the Scientific Results of the Voyage of H.M.S. Challenger during the years 1873–76. Zoology*, 27: 1–221, 21 pls.
- Henderson, J.R. 1893. A contribution to Indian carcinology. *Transactions of the Zoological Society of London*, (2, Zoology) 5: 325–458, pls 36–40.
- Hendrickx, M.E. 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. *Belgian Journal of Zoology*, 131: 95–109.
- Hendrickx, M.E. 2003. Geographic and bathymetric distribution of species of *Munidopsis* (Crustacea: Decapoda: Galatheidae) in the SE Gulf of California, Mexico. In: Hendrickx, M.E. (ed.), *Contributions to the Study of East Pacific Crustaceans [Contribuciones al Estudio de los Crustáceos del Pacífico Este]*, Instituto de Ciencias del Mar y Limnología, UNAM, Mazatlan, pp. 21–30.
- Hendrickx, M.E. 2007. Specimens of *Munidopsis* (Decapoda, Anomura, Galatheidae) collected by the R/V “Revelle” (May 2004) in the Gulf of California, Mexico. *Crustaceana*, 80: 597–601.
- Hendrickx, M.E. & Harvey, A.W. 1999. Checklist of anomuran crabs (Crustacea: Decapoda) from the eastern tropical Pacific. *Belgian Journal of Zoology*, 129: 363–389.

- Holthuis, L.B. 1953. Enumeration of the decapod and stomatopod Crustacea from Pacific Coral Islands. *Atoll Research Bulletin*, 24: 1–66, 2 maps.
- Huang, Z.G. 1994. *Marine species and their distribution in China's Seas*. China Ocean Press, Beijing, 764 pp. + 134 pp. (in Chinese)
- Huang, Z.G. 2008. *Marine species and their distribution in China's Seas*. China Ocean Press, Beijing, 1191 pp. (second edition) (in Chinese)
- Ingle, R.W. & Christiansen, M.E. 2004. *Lobsters, mud shrimps and anomuran crabs. Keys and notes for the identification of species*. Field Studies Council for Linnaean Society of London Estuarine and Coastal Sciences Association, Shrewbury, 271 pp.
- Johnson, D.S. 1970. The Galatheidea (Crustacea Decapoda) of Singapore and adjacent waters. *Bulletin of the National Museum Singapore*, 35: 1–44.
- Jones, D.S. & Morgan, G.J. 2002. *A field guide to crustaceans of Australian waters*. Reed New Holland, Sydney, 224 pp.
- Kamezaki, N., Nomura, K., Hamano, T. & Omae, H. 1988. *Encyclopedia of marine life in Okinawa, Crustacea*. Shinseito Publishing, Okinawa, 232 pp. (in Japanese)
- Kato, S. & Okuno, J. 2001. *Shrimps and crabs of Hachijo Island*. TBS-Britannica, Tokyo, 157 pp. (in Japanese)
- Kawamoto, T. & Okuno, J. 2003. *Shrimps and crabs of Kume Island, Okinawa*. Hankyu Communications, Tokyo, 174 pp. (in Japanese)
- Kawamoto, T. & Okuno, J. 2006. *Shrimps and crabs of Kume Island, Okinawa*. Hankyu Communications, Tokyo, 175 pp.
- Kemp, S.W. 1910. The Decapoda collected by the “Huxley” from the north side of the Bay of Biscay in August, 1906. *Journal of the Marine Biological Association of the United Kingdom*, 8: 407–420.
- Kemp, S.W. & Sewell, R.B.S. 1912. Notes on Decapoda in the Indian Museum. III. The species obtained by R.I.M.S.S. ‘Investigator’ during the survey season 1910–11. *Records of the Indian Museum*, 7: 15–32, pl. 1.
- Kensley, B. 1977. The South African Museum's Neiring Naude cruises. Part 2. Crustacea, Decapoda, Anomura and Brachyura. *Annals of the South African Museum*, 72: 161–188.
- Kensley, B. 1981a. On the zoogeography of southern African decapod Crustacea, with distributional checklist of the species. *Smithsonian Contributions to Zoology*, 338: 1–64.
- Kensley, B. 1981b. The South African Museum's Meiring Naude cruises. Part 12. Crustacea Decapoda of the 1977, 1978, 1979 cruises. *Annals of the South African Museum*, 83: 49–77.
- Khodkina, I.V. 1981. A contribution to the fauna of the family Galatheidae (Decapoda) of the South-west Pacific. *Zoologicheskii Zhurnal, Moscow*, 8: 1261–1264 [in Russian with English summary and translation].
- Kim, H.S. 1972. A new species of family Chirostylidae (Crustacea: Anomura) from Jeju Island, Korea. *Korean Journal of Zoology*, 15: 53–56.
- Kim, H.S. 1973. Anomura Brachyura. In: *Illustrated Encyclopedia of Fauna and Flora of Korea*, Seoul, 694 pp.
- Komai, T. 2000. A check list of Thalassinidea and Anomura (Crustacea: Decapoda) from the South China Sea. *Raffles Bulletin of Zoology, Supplement*, 8: 343–376.
- Komai, T., Ohtsuka, S., Nakaguchi, K. & Go, A. 2002. Decapod crustaceans collected from the southern part of the Sea of Japan in 2000–2001 using TRV Toyoshio-maru. *Natural History Research*, 7: 19–73.
- Konishi, K. & Saito, T. 2000. Larvae of the deep-sea squat lobsters, *Agononida incerta* (Henderson, 1888) and *Munida striola* Macpherson and Baba, 1993 with notes on larval morphology of the family (Crustacea: Anomura: Galatheidae). *Zoological Science*, 17: 1021–1029.
- Latreille, P.A. 1802. *Histoire naturelle, générale et particulière des Crustacés et des Insectes. Ouvrage faisant suite à l'histoire naturelle générale et particulière, composée par Leclerc de Buffon, et rédigée par C.S. Sonnini, membre de plusieurs sociétés savantes*. Dufart, Paris.
- Laurie, R.D. 1926. 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. – Anomura collected by Mr. J. Stanley Gardiner in the western Indian Ocean in H.M.S. Sealark. *Transactions of the Zoological Society of London*, (2, Zoology) 19: 121–167, pls 8, 9.
- Lewinsohn, C. 1969. Die Anomuren des Roten Meeres (Crustacea Decapoda: Paguridea, Galatheidea, Hippidea). *Zoologische Verhandelingen, Leiden*, 104: 1–213, pls 1–2.
- Lewinsohn, C. 1981. Researches on the coast of Somalia. *Galathea tanegashimae* Baba (Crustacea Decapoda) from Somalia

- and notes on *Galathea spinosorostris* Dana. *Monitore Zoologico Italiano*, (nuova seria), Supplementa, 14: 181–188.
- Lin, C.W. & Chan, T.Y. 2005. A new squat lobster, *Munida rupicola* (Crustacea: Decapoda: Galatheidae), from Taiwan. *Proceedings of the Biological Society of Washington*, 118: 237–243.
- Lin, C.W., Chan, T.Y. & Chu, K.H. 2004. A new squat lobster of the genus *Raymunida* (Decapoda : Galatheidae) from Taiwan. *Journal of Crustacean Biology*, 24: 149–156.
- Lin, C.W., Osawa, M. & Chan, T.Y. 2007. A new *Munidopsis* (Crustacea: Decapoda: Galatheidae) associated with gorgonian corals from the deep waters off Taiwan. *Proceedings of the Biological Society of Washington*, 120: 167–174.
- Linnaeus, C. 1761. *Fauna Suecica sistens Animalia Sueciae Regni: Mammalia, Aves, Amphibia, Pisces, Insecta, Vermes. Distributa per Classes, Ordines, Genera, Species, cum Differentiis Specierum, Synonymis Auctorum, Nominibus Incolarum, Locis Natalium, Descriptionibus Insectorum*, 578 pp.
- Lloyd, R.E. 1907. Contributions to the fauna of the Arabian Sea, with descriptions of new fishes and Crustacea. *Records of the Indian Museum*, 1: 1–12.
- Lovén, S. 1852. De svenska arterna af släktet *Galathea*. *Ofversigt af Konglige Vetenskaps-Akademiens Förhandlingar*, 9: 20–23.
- Luke, S.R. 1977. Catalog of the benthic invertebrate collections of the Scripps Institution of Oceanography. I – Decapod Crustacea and Stomatopoda. *Scripps Institution of Oceanography Reference Series*, 77–9: 1–72.
- 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. *Annals and Magazine of Natural History*, (7) 15: 233–268.
- Macpherson, E. 1993a. Crustacea Decapoda: species of the genus *Munida* Leach, 1820 (Galatheidae) collected during the MUSORSTOM and CORINDON cruises in the Philippines and Indonesia. In: Crosnier, A. (ed.), Résultats des Campagnes MUSORSTOM, volume 10. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 156: 421–442.
- Macpherson, E. 1993b. Crustacea Decapoda: species of the genus *Paramunida* Baba, 1988 (Galatheidae) from the Philippines, Indonesia and New Caledonia. In: Crosnier, A. (ed.), Résultats des Campagnes MUSORSTOM, volume 10. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 156: 443–473.
- Macpherson, E. 1994. Crustacea Decapoda: Studies on the genus *Munida* Leach, 1820 (Galatheidae) in New Caledonia and adjacent waters with descriptions of 56 new species. In: Crosnier, A. (ed.), Résultats des Campagnes MUSORSTOM, volume 12. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 161: 421–569.
- Macpherson, E. 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: Crosnier, A. (ed.), Résultats des Campagnes MUSORSTOM, volume 15. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 168: 387–421.
- Macpherson, E. 1996b. Crustacea Decapoda: new records of species of the genera *Munida* Leach, 1820 and *Paramunida* Baba, 1988 (Galatheidae) from New Caledonia, with the descriptions of three new species. In: Crosnier, A. (ed.), Résultats des Campagnes MUSORSTOM, volume 15. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 168, 423–431.
- Macpherson, E. 1997. Crustacea Decapoda: species of the genera *Agononida* Baba & de Saint Laurent, 1996 and *Munida* Leach, 1820 (Galatheidae) from the KARUBAR cruise. In: Crosnier, A. and Bouchet, P. (eds), Résultats des Campagnes MUSORSTOM, volume 16. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 172: 597–612.
- Macpherson, E. 1998. A new genus of Galatheidae (Crustacea, Anomura) from the western Pacific Ocean. *Zoosystema*, 20: 351–355.
- Macpherson, E. 1999. 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: Crosnier, A. (ed.), Résultats des Campagnes MUSORSTOM, volume 20. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 180: 407–426.
- Macpherson, E. 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: Crosnier, A. (ed.), Résultats des Campagnes MUSORSTOM, volume 21. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 184: 415–423.
- Macpherson, E. 2004. Species of the genus *Munida* Leach, 1820 and related genera from Fiji and Tonga (Crustacea: Decapoda: Galatheidae). In: Marshall, B.A. & Richer de Forges, B. (eds), Tropical Deep-Sea Benthos, volume 23.

- Mémoires du Muséum National d'Histoire Naturelle, Paris*, 191: 231–292.
- Macpherson, E. 2006a. Galatheidæ (Crustacea, Decapoda) from the Austral Islands, Central Pacific. In: Richer de Forges, B. and Justine, J.L. (eds), Tropical Deep-Sea Benthos. volume 24. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 193: 285–333.
- Macpherson, E. 2006b. New species and new occurrence of Galatheoidea (Crustacea, Decapoda) from New Caledonia. *Zoosystema*, 28: 669–681.
- Macpherson, E. 2007. Species of the genus *Munidopsis* Whiteaves, 1784 from the Indian and Pacific Oceans and reestablishment of the genus *Galacantha* A. Milne-Edwards, 1880 (Crustacea, Decapoda, Galatheidæ). *Zootaxa*, 1417: 1–135.
- Macpherson, E. 2008. Some new records of shallow-water galatheid crustaceans (Anomura: Galatheidæ) from the Dampier Archipelago, Western Australia. *Records of the Western Australian Museum Supplement*, 72: 289–297.
- Macpherson, E. & Baba, K. 1993. Crustacea Decapoda: *Munida japonica* Stimpson, 1858, and related species (Galatheidæ). In: Crosnier, A. (ed.), Résultats des Campagnes MUSORSTOM, volume 10. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 156: 381–420.
- Macpherson, E. & Baba, K. 2006a. New species and records of small galatheids (Crustacea, Decapoda, Galatheidæ) from the southwest and central Pacific Ocean. *Zoosystema*, 28: 443–456.
- Macpherson, E. & Baba, K. 2006b. Arthropoda: Decapoda, Anomura. In: Desbruyères, D., Segonzac, M. & Bright, M. (eds), Handbook of deep-sea hydrothermal vent fauna. *Denisia*, 18: 434, 438, 440, 444–446, 448, 449, 452–454.
- Macpherson, E. & Baba, K. 2009. New species of squat lobsters of the genera *Agononida* and *Paramunida* (Crustacea: Decapoda: Anomura: Galatheidæ) from the western Pacific. *Zootaxa*, 2024: 56–68.
- Macpherson, E., Jones, W. & Segonzac, M. 2005. A new squat lobster family of Galatheoidea (Crustacea, Decapoda, Anomura) from the hydrothermal vents of the Pacific-Antarctic Ridge. *Zoosystema*, 27: 709–723.
- Macpherson, E. & Machordom, A. 2000. *Raymunida*, new genus (Decapoda: Anomura: Galatheidæ) from the Indian and Pacific Oceans. *Journal of Crustacean Biology*, 20: 253–258.
- Macpherson, E. & Machordom, A. 2001. Phylogenetic relationships of species of *Raymunida* (Decapoda: Galatheidæ) based on morphology and mitochondrial cytochrome oxidase sequences, with the recognition of four new species. *Journal of Crustacean Biology*, 21: 696–714.
- Macpherson, E. & de Saint Laurent, M. 2002. On the genus *Munida* Leach, 1820 (Decapoda, Galatheidæ) from the western and southern Indian Ocean, with the description of four new species. *Crustaceana*, 75: 465–484.
- Macpherson, E. & Segonzac, M. 2005. Species of the genus *Munidopsis* (Crustacea, Decapoda, Galatheidæ) from the deep Atlantic Ocean, including cold-seep and hydrothermal vent areas. *Zootaxa*, 1095: 1–60.
- Makarov, V.V. 1938. Anomura. Rakoobraznyey, Vol. 10, No. 3. In: Shtakel'berg, A.A. (ed.), *Fauna SSSR*, (new series) 16: x + 324 pp., 5 pls. Akademii Nauk SSSR, Moscow (English translation, 1962. Crustacea, Anomura. Israel Program for Scientific Translation, Jerusalem, 278 pp.)
- Martin, J.W. & Davis, G.E. 2001. An updated classification of the Recent Crustacea. *Natural History Museum of Los Angeles County, Science Series*, 39: 1–124.
- Martin, J.W. & Haney, T.A. 2005. Decapod crustaceans from hydrothermal vents and cold seeps: a review through 2005. *Zoological Journal of the Linnean Society*, 145: 445–522.
- 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. *Annals and Magazine of Natural History*, (7) 8: 517–526.
- McCaughey, J.E. 1972. A preliminary checklist of selected groups of invertebrates from otter-trawl and dredge collections off Oregon. In: Pruter, A.T. & Alverson, D.L. (eds), *The Columbia River Estuary and Adjacent Ocean Waters. Bioenvironmental Studies*. University of Washington Press, Seattle, pp. 409–443.
- McLaughlin, P.A., Lemaitre, R. & Sorhannus, U. (2007) Hermit crab phylogeny: a reappraisal and its “fall-out”. *Journal of Crustacean Biology*, 27: 97–115.
- McNeill, F.A. 1926. The biology of North-West Islet, Capricorn Group. *Australian Zoologist*, 4: 299–318, pl. 41.
- McNeill, F.A. 1968. Crustacea, Decapoda and Stomatopoda. *Scientific Reports of the Great Barrier Reef Expedition 1928–29*, 7: 1–98, pls 1, 2.
- Melin, G. 1939. Paguriden und Galatheiden von Prof. Dr. Sixten Bocks Expedition nach den Bonin-Inseln 1914. *Kungliga*

- Svenska Vetenskapsakademiens Handlingar*, 18: 1–119.
- 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. *Proceedings of the Zoological Society of London*, 1879: 18–59, pls 1–3.
- Miers, E.J. 1884. Crustacea. *Report of the Zoological Collections made in the Indo-Pacific Ocean during the voyage of HMS 'Alert', 1881–1882*: 178–331.
- 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. Études préliminaires sur les Crustacés. *Bulletin of the Museum of Comparative Zoology at Harvard College*, 8: 1–168, pls 1, 2.
- Milne Edwards, A. 1881. Compte rendu sommaire d'une exploration zoologique faite dans l'Atlantique, a bord du navire le Travailleur. *Comptes Rendus Hebdomadaires de Séances de l'Académie des Sciences, Paris*, 93: 931–936.
- Milne Edwards, A. 1882. Summary report upon a zoological exploration made in the Mediterranean and the Atlantic on board the "Travailleur." *Annals and Magazine of Natural History*, (5) 9: 37–46.
- Milne Edwards, A. & Bouvier, E.L. 1894. Considerations générales sur la famille des Galatheides. *Annales des Sciences Naturelles, Zoologie*, (7) 16: 191–327.
- Milne Edwards, A. & Bouvier, E.L. 1897. 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), by the U. S. Coast Survey steamer "Blake," Lieut.-Com. C.D. Sigsbee, U.S.N., and Commander J.R. Bartlett, U.S.N., commanding. XXXV: Description des Crustacés de la Famille des Galathéidés recueillis pendant l'expédition. *Memoirs of the Museum of Comparative Zoology at Harvard College*, 19: 5–141.
- Milne Edwards, A. & Bouvier, E.L. 1899. Crustacés décapodes provenant des campagnes de l'Hirondelle (supplément) et de la Princesse-Alice (1891–1897). *Résultats des Campagnes Scientifiques accomplies sur son Yacht par Albert Ier Prince Souverain de Monaco*, 13: 1–106.
- Milne Edwards, A. & Bouvier, E.L. 1900. Crustacés décapodes. Première partie. Brachyures et Anomoures. In: Milne-Edwards, A. (ed.), *Expéditions scientifiques du Travailleur et du Talisman pendant les années 1880, 1881, 1882, 1883*. Masson, Paris, pp. 1–396, 32 pls.
- Minemizu, R. 2000. *Marine decapod and stomatopod crustaceans mainly from Japan*. Bun-ichi-sogo-shuppan, Tokyo, 344 pp.
- Miyake, S. 1938. Galatheids obtained from Oshima, Prov. Kii. *Annotationes Zoologicae Japonenses*, 17: 37–42, pl. 2.
- Miyake, S. 1953. On three new species of *Galathea* from the Western Pacific. *Journal of the Faculty of Agriculture, Kyushu University*, 10: 199–208.
- Miyake, S. 1960. Decapod Crustacea, Anomura. In: Okada, Y.K. & Uchida, T. (eds), *Encyclopedia zoologica illustrated in colours*. Hokuryukan, Tokyo, pp. 89–97, pls 44–48. (in Japanese)
- Miyake, S. 1961. Three new species of Anomura from Japan (Decapoda, Crustacea). *Journal of the Faculty of Agriculture, Kyushu University*, 11: 237–247.
- Miyake, S. 1965. Crustacea, Anomura. In: Okada, Y.K. & Uchida, T. (eds), *New illustrated encyclopedia of the fauna of Japan*, Tokyo, pp. 630–652. (in Japanese)
- Miyake, S. 1982. *Japanese crustacean decapods and stomatopods in color*. Hoikusha, Osaka, 261 pp (first edition; second printing in 1991 including some name changes of some species). (in Japanese)
- Miyake, S. & Baba, K. 1964. Two new species of *Galathea* from Japan and the East China Sea. *Journal of the Faculty of Agriculture, Kyushu University*, 13: 205–211.
- Miyake, S. & Baba, K. 1966a. Descriptions of galatheids collected from coral reefs of the Ryukyu Islands (Crustacea, Anomura). *Journal of the Faculty of Agriculture, Kyushu University*, 14: 57–79.
- Miyake, S. & Baba, K. 1966b. Two new species of the family Galatheidae from the Tosa Bay, Japan. *Journal of the Faculty of Agriculture, Kyushu University*, 14: 81–88.
- Miyake, S. & Baba, K. 1967a. Descriptions of new species of galatheids from the Western Pacific. *Journal of the Faculty of Agriculture, Kyushu University*, 14: 203–212.
- Miyake, S. & Baba, K. 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. *Journal of the Faculty of Agriculture, Kyushu University*, 14: 213–224.

- Miyake, S. & Baba, K. 1967c. Galatheids of the East China Sea (Chirostylidae and Galatheidae, Decapoda, Crustacea). *Journal of the Faculty of Agriculture, Kyushu University*, 14: 225–246.
- Miyake, S. & Baba, K. 1968. On the generic characters of *Chirostylus*, with description of two Japanese species (Crustacea, Anomura). *Journal of the Faculty of Agriculture, Kyushu University*, 14: 279–387.
- Miyake, S. & Baba, K. 1970. The Crustacea Galatheidae from the tropical-subtropical region of West Africa, with a list of the known species. *Atlantide Report*, 11: 61–97.
- Miyake, S. & Nakazawa, K. 1947. Crustacea, Anomura. In: Uchida, S. (ed.), *Illustrated encyclopedia of the fauna of Japan (exclusive of insects)*. Revised edition. Hokuryukan, Tokyo, pp. 731–750, figs 2115–2171.
- Nakazawa, K. 1927. Crustacea Decapoda. Pp. 992–1124, figs 1910–2166. In: Hirase, S., Hozawa, S., Isuka, A., Kawamura, T., Kishida, K., Komai, T., Kuroda, N., Marukawa, H., Marumo, S., Nakazawa, K., Oka, A., Okada, Y., Ohshima, H., Sasaki, M., Shinohara, T., Tanaka, S., Uchida, K., Yokohama, K. & Yoshida, S. (eds), *Figuraro de Japanaj Bestoj*. Hokuryukan: Tokyo. (in Japanese)
- Nobili, G. 1906. Faune carcinologique de la Mer Rouge. Décapodes et stomatopodes. *Annales des Sciences Naturelles*, 4: 1–347, pls 341–311.
- Nobili, G. 1907. Ricerche sui Crostacei della Polinesia. Decapodi, Stomatopodi, Anisopodi e Isopodi. *Memorie della Reale Accademia della Scienze di Torino*, (2) 57: 351–430.
- Norman, C. 1894. A month on the Trondhjem Fiord. *Annals and Magazine of Natural History*, (6) 13: 150–164, 267–283, pl. 12.
- Ortmann, A.E. 1892. Die Decapoden-Krebse des Strassburger Museums, mit besonderer Berücksichtigung der von Herrn Dr. Döderlein bei Japan und bei den Liu-Kiu-Inseln gesammelten und zur Zeit im Strassburger Museum aufbewahrten Formen. IV. Die Abtheilungen Galatheidea und Paguridea. *Zoologische Jahrbücher, Abtheilung für Systematik, Geographie und Biologie der Thiere*, 6: 241–326.
- Ortmann, A.E. 1894. Crustaceen. In: Semon, R. (ed.), *Zoologische Forschungsreisen in Australien und dem malayischen Archipel. Denkschriften der Medicinisch-Naturwissenschaftlichen Gesellschaft zu Jena*, 8: 3–80, pls 81–83.
- Ortmann, A.E. 1881–1901. Crustacea (Zweite Hälfte: Malacostraca). In: Gerstaecker, A. (ed.), *Die Klassen und Ordnungen der Arthropoden ... Vol 5 (2) of H.G. Bronn's Die Klassen und Ordnungen der Thier-Reichs wissenschaftlich dargestellt in Wort und Bild*. C.F. Winter'sche Verlagshandlung, Leipzig, viii + 1319 pp., 128 pls.
- Osawa, M., Lin, C.W. & Chan, T.Y. 2006a. *Munidopsis* (Decapoda: Anomura: Galatheidae) from the abyssal depths of Taiwan, with description of one new species. *Journal of Crustacean Biology*, 26: 420–428.
- Osawa, M., Lin, C.W. & Chan, T.Y., 2006b. A new species of *Munidopsis* (Crustacea: Decapoda: Galatheidae) from deep waters off Taiwan. *Proceedings of the Biological Society of Washington*, 119: 251–258.
- Osawa, M., Lin, C.W. & Chan, T.Y. 2008a. Species of *Galacantha* and *Munidopsis* (Crustacea: Decapoda: Anomura: Galatheidae) from the deep-waters off Taiwan, with the description of two new species. *Scientia Marina*, 72: 37–57.
- Osawa, M., Lin, C.W. & Chan, T.Y. 2008b. Additional records of *Chirostylus* and *Munidopsis* (Crustacea: Decapoda: Galatheoidea) from Taiwan. *The Raffles Bulletin of Zoology*, Supplement 19: 91–98.
- Osawa, M. & Nishikiori, K. 1998. A new species of the genus *Chirostylus* Ortmann, 1892 (Crustacea: Decapoda: Anomura: Chirostylidae) from the Ogasawara Islands, southern Japan. *Proceedings of the Biological Society of Washington*, 111: 382–388.
- Osawa, M. & Takeda, M. 2007. Deep-sea Galatheidae (Crustacea, Decapoda, Anomura) from Tosa Bay and Okinawa Trough, Southern Japan. *Bulletin of the National Museum, of Natural Science, Tokyo*, (A) 33: 133–146.
- Parisi, B. 1917. I Decapoda giapponesi des Museo di Milano. V. Galatheidea e Reptantia. *Atti della Societa' Italiana di Scienze Naturali e del Museo Civico di Storia Naturale, Milano*, 56: 1–24.
- Paul'son, O. 1875. *Studies on Crustacea of the Red Sea with notes regarding other seas. Part I. Podophthalmata and Edriophthalmata (Cumacea)* (Original in Russian. English translation by the Israel Program for Scientific Translations, Jerusalem, 1961, 164 pp.). S.V. Kul'zhenko, Kiev, 144 pp.
- Pequegnat, L.H. & Pequegnat, W.E. 1970. Deep-sea anomurans of superfamily Galatheoidea with description of three new species. Pp. 125–170. In: Pequegnat, W.E. & Chace, F.A. (eds), *Contributions on the Biology of the Gulf of Mexico*. Texas A & M University.
- Pequegnat, W.E. & Pequegnat, L.H. 1971. *New species and new records of Munidopsis (Decapoda: Galatheidae) from the*

- Gulf of Mexico and Caribbean Sea (Supplement to Texas A & M University Oceanographic Studies. Volume 1)*. Gulf Publishing Co, Houston, 25 pp.
- Pérez, C. 1927. Études sur la morphologie des crustacés décapodes. I. Caractères sexuels de l'abdomen chez les galatheides. *Bulletin Biologique de la France et de la Belgique*, 61: 246–292.
- Peyrot-Clausade, M. 1989. Crab cryptofauna (Brachyura and Anomura) of Tikehau, Tuamotu Archipelago, French Polynesia. *Coral Reefs*, 8: 109–117.
- Poore, G.C.B. 2004. *Marine decapod Crustacea of southern Australia. A guide to identification (with chapter on Stomatopoda by Shane Ahyong)*. CSIRO Publishing, Melbourne, 574 pp.
- Poore, G.C.B., McCallum, A.W. & Taylor, J. 2008. Decapod Crustacea of the continental margin of southwestern and central Western Australia: preliminary identifications of 524 species from FRV Southern Surveyor voyage SS10-2005. *Museum Victoria Science Report*, 11: 1–106.
- Potts, F.A. 1915. The fauna associated with crinoids of a tropical coral reef: with especial reference to its color variation. *Papers from the Department of Marine Biology, Carnegie Institution of Washington*, 8: 73–96, pl. 1.
- Poupin, J. 1996a. Crustacea Decapoda of French Polynesia (Astacidea, Palinuridea, Anomura, Brachyura). *Atoll Research Bulletin*, 442: 1–114.
- Poupin, J. 1996b. *Atlas des crustacés marins profonds de Polynésie Française Récoltes du navire Marara (1986/1996)*. Service Mixte de Surveillance Radiologique et Biologique, Montlhéry, 59 pp.
- Rathbun, M.J. 1904. Decapod crustaceans of the northwest coast of North America. Vol. 10. Crustaceans. In: Rathbun, M.J., Richardson, H., Holmes, S.J. & Cole, L.J. (eds), *Harriman Alaska Expedition with cooperation of Washington Academy of Sciences. Alaska*. Doubleday, Page & Co, New York, pp. 1–200.
- Rathbun, M.J. 1907. South American Crustacea. *Revista Chilena de Historia Natural*, 11: 45–50, pls 2, 3.
- Richer de Forges, B. & Justine, J.L. 2006. Introduction. In: Richer de Forges, B. & Justine, J.L. (eds). *Tropical Deep-Sea Benthos*, volume 24. *Mémoires du Muséum national d'Histoire naturelle, Paris*, 193: 9-13.
- de Saint Laurent, M. & Macpherson, E. 1990. Crustacea Decapoda: Le genre *Eumunida* Smith, 1883 (Chirostylidae) dans les eaux néo-calédoniennes. In: Crosnier, A. (ed.), *Résultats des Campagnes MUSORSTOM*, volume 6. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, (A) 145: 227–288.
- de Saint Laurent, M. & Poupin, J. 1996. Crustacea, Anomura: Les espèces indo-ouest pacifiques du genre *Eumunida* Smith, 1880 (Chirostylidae) Description de six espèces nouvelles. In: Crosnier, A. (ed.), *Résultats des Campagnes MUSORSTOM*, volume 15. *Mémoires du Muséum National d'Histoire Naturelle, Paris*, 168: 337–385.
- Samouelle, G. 1819. *The entomologists' useful compendium; or an introduction to the knowledge of British Insects, comprising the best means of obtaining and preserving them, and a description of the apparatus generally used; together with the genera of Linné, and modern methods of arranging the Classes Crustacea, Myriapoda, spiders, mites and insects, from their affinities and structure, according to the views of Dr. Leach. Also an explanation of the terms used in entomology; a calendar of the times of appearance and usual situations of near 3,000 species of British Insects; with instructions for collecting and fitting up objects for the microscope*. Thomas Boys, London, 496 pp., 412 pls.
- Samuelson, T.J. 1972. Larvae of *Munidopsis tridentata* (Esmark) (Decapoda, Anomura) reared in the laboratory. *Sarsia*, 48: 91–98.
- Sars, G.O. 1872. Underigøelser over Hardengerfjordens Fauna. I. Crustacea. *Forhandlinger i Videnskaps-Selskapet in Kristiania*, 1871: 245–286.
- Sars, G.O. 1883. Oversigt af Norges Crustaceer med forløbige Bemaerkninger over de nye eller mindre bekjendte Arter. *Forhandlinger i Videnskaps-Selskapet in Kristiania*, 1882, 1–124.
- Sars, G.O. 1890. Bidrag til Kundskaben om Decapodernes Forvandlinger. II. *Lithodes-Eupagurus-Spiropagurus-Galathodes-Galatea-Munida-Porcellana-(Nephrops)*. *Archiv för Matematik og Naturvidenskab*, 13: 133–201, pls 1–7.
- 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. *University of California Publications in Zoology*, 23: 1–359, pls 1–50.
- Schnabel, K.E. 2009. A review of the New Zealand Chirostylidae (Anomura: Galatheaidea) with description of six new species from the Kermadec Islands. *Zoological Journal of the Linnean Society*, 155: 542–582.
- Selbie, C.M. 1914. The Decapoda Reptantia of the coasts of Ireland. Part 1. Palinura, Astacura and Anomura (except

- Paguridea). *Fisheries Ireland Scientific Investigations*, 1: 1–116, pls 111–115.
- 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. *Proceedings of the United States National Museum*, 6: 1–57, pls 51–56.
- Southwell, T. 1906. Report on the Anomura collected by Professor Herdman, at Ceylon, in 1902. *Report to the Government of Ceylon on the Pearl Oyster Fisheries of the Gulf of Manaar, Supplementary Report*, 5: 211–224.
- Squires, H.J. 1970. Decapod Crustacea of the Atlantic coast of Canada. *Canadian Bulletin of Fisheries and Aquatic Sciences*, 221: 1–532.
- Stebbing, T.R.R. 1908. South African Crustacea, Part 4. Marine Investigations in South Africa. *Annals of the South African Museum*, 6: 1–96, pls 27–40.
- Stebbing, T.R.R. 1910. General catalogue of South African Crustacea (Part V. of S.A. Crustacea, for the Marine Investigations in South Africa). *Annals of the South African Museum*, 6: 281–593, pls 15–22.
- Stebbing, T.R.R. 1914. General catalogue of South African Crustacea (Part VII. of S.A. Crustacea, for the Marine Investigations in South Africa). *Annals of the South African Museum*, 6: 1–53, pls 1–12.
- 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. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 10: 225–252.
- Stimpson, W. 1907. Report on the Crustacea (Brachyura and Anomura) collected by the North Pacific Exploring Expedition, 1853–1856. *Smithsonian Miscellaneous Collections*, 49: 1–240, 26 pls.
- Takeda, M. 1982. *Keys to the Japanese and foreign crustaceans fully illustrated in colors*. Hokuryukan, Tokyo, 284 pp.
- Tavares, M. & Campinho, P. 1998. Three new records of deep-sea squat lobsters of the genus *Munidopsis* Witheaves from the southwestern Atlantic Ocean (Decapoda: Galatheidae). *Crustacean Research*, 27: 88–100.
- Thomson, G.M. 1899. A revision of the Crustacea Anomura of New Zealand. *Transactions of the Royal Society of New Zealand (Zoology)*, 31: 169–197.
- Tirmizi, N.M. 1964. Crustacea: Chirostylidae (Galatheidea). *The John Murray Expedition 1933–34, Scientific Reports*, 10: 385–415.
- Tirmizi, N.M. 1966. Crustacea: Galatheidae. *The John Murray Expedition 1933–34. Scientific Reports*, 11: 167–234.
- Tirmizi, N.M. & Javed, W. 1976. A new species of *Munida* from the Indian Ocean with a redescription of a syntype of *Munida spinulifera* Miers, 1884 (Decapoda, Galatheidea) *Crustaceana*, 31: 81–89.
- Tirmizi, N.M. & Javed, W. 1993. *Indian Ocean galatheids (Crustacea: Anomura)*. Marine Reference Collection and Resource Centre, University of Karachi, Karachi, 147 pp.
- Tsuchida, S., Fujiwara, Y., Yamamoto, H., Kawato, M., Uematsu, K. & Suzuki, Y. 2007. Epibiotic bacteria associated with the ventral setae of galatheid crab *Shinkaia crosnieri*. The 45th Annual Meeting of the Carcinological Society of Japan, Abstract: O-11 (in Japanese).
- 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. *Patrimoines naturels (M.N.H.N./S.P.N.)*, 40: 1–383.
- Utinomi, H. 1956. *Coloured illustrations of seashore animals of Japan*. Hoikusha, Osaka, 168 pp. (in Japanese)
- Utinomi, H. & Kogo, I. 1965. On some comatulids from the coastal sea of Kii Peninsula. *Publications from the Seto Marine Biological Laboratory*, 13: 263–286.
- Van Dam, A.J. 1933. Die Chirostylidae der Siboga-expedition. Decapoda VIII: Galatheidea: Chirostylidae. *Siboga Expéditie*, 39a7: 1–46.
- Van Dam, A.J. 1937. Einige neue Fundorte von Chirostylidae. *Zoologischer Anzeiger* 120: 99–103.
- Van Dam, A.J. 1939. Ueber einige *Uroptychus*-Arten des Museums zu Kopenhagen. *Bijdragen tot de Dierkunde*, 27: 392–407.
- Van Dam, A.J. 1940. Anomura, gesammelt vom Dampfer Gier in der Java-See. *Zoologischer Anzeiger*, 129: 95–104.
- Wang, F. & Li, Z. 1986. New records of Galatheidae (Crustacea, Anomura) from East China Sea. *Marine Science, Qungdao*, 10: 28–31.
- Wang, F. 1989. The squat lobsters (Crustacea, Anomura) of China. *Transactions of Oceanology and Liminology*, 2: 62–65. (in Chinese)

- Watabe, H. 2000. Decapod fauna of the hydrothermally active and adjacent fields on the Hatoma Knoll, southern Japan. *JAMSTEC Journal of Deep Sea Research*, 17: 29–34 (in Japanese, with English summary)
- Whiteaves, J.F. 1874. On recent deep-sea dredging operations in the Gulf of St. Lawrence. *American Journal of Science*, (3) 7: 210–219.
- Wicksten, M.K. 1982. Crustaceans from baited traps and gill nets off southern California. *California Fish and Game*, 67: 244–248.
- Wicksten, M.K. 1989. Ranges of offshore decapod crustaceans in the eastern Pacific Ocean. *Transactions of the San Diego Society of Natural History*, 21: 291–316.
- Williams, A.B. 1965. Marine decapod crustaceans of the Carolinas. *Fishery Bulletin*, 65: 1–298.
- Williams, A.B. 1984. *Shrimps, lobsters, and crabs of the Atlantic coast of the eastern United States, Maine to Florida*. Smithsonian Institution Press, Washington, 550 pp.
- Williams, A.B. & Baba, K. 1989. New squat lobsters (Galatheidae) from the Pacific Ocean: Mariana Back Arc Basin, East Pacific Rise, and Cascadia Basin. *Fishery Bulletin*, 87: 899–910.
- Williams, A.B. & Turner, R.D. 1986. Squat lobsters (Galatheidae: *Munidopsis*) associated with mesh-enclosed wood panels submerged in the deep sea. *Journal of Crustacean Biology*, 6: 617–624.
- Wood-Mason, J. & Alcock, A. 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. *Annals and Magazine of Natural History*, (5) 7: 270–271.
- Wu, M.F. & Chan, T.Y. 2000. A new squat lobster of the genus *Munidopsis* Whiteaves, 1874 (Crustacea : Decapoda : Galatheidae) from Taiwan. *Proceedings of the Biological Society of Washington*, 113: 24–29.
- Wu, M.F., Chan, T.Y. & Yu, H.P. 1998. On the Chirostylidae and Galatheidae (Crustacea: Decapoda: Galatheidea) of Taiwan. *Annual of Taiwan Museum*, 40: 75–153. (in Chinese, with English abstract)
- Yanagita, I. 1942. Description of a new species of *Munidopsis* (Anomuran Crustacea) from Enshyunada, Japan. *Bulletin of the Biogeographical Society of Japan*, 12: 93–95.
- Yanagita, I. 1943. Revision of *Munida*, a genus of decapod crustaceans found in Japanese waters. *Bulletin of the Biogeographical Society of 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. *Journal of the College of Agriculture, Tokyo Imperial University*, 12: 1–226.
- Yokoya, Y. 1936. Some rare and new species of decapod crustaceans found in the vicinity of the Misaki Marine Biological Station. *Japanese Journal of Zoology*, 7: 129–146.
- Young, C.G. 1900. *The stalk-eyed Crustacea of British Guiana, West Indies, and Bermuda*. London, 514 pp.
- Zarenkov, N.A. 1968. Crustacea Decapoda collected in the Antarctic and Antitropical regions by the Soviet Antarctic Expedition. *Issledovaniya Fauny Morei, SSSR*, 6: 153–199. (in Russian)
- Zariquiey Álvarez, R. 1968. Crustaceos decapodos Ibericos. *Investigacion Pesquera*, 32: i–xv, 1–510.

Map of Taiwan



List of Localities in English and Chinese

Aodi, Taipei County	澳底 台北縣
Badouzi, Keelung City	八斗子 基隆市
Bitoujiao, Taipei County	鼻頭角 台北縣
Dasi, Yilan County	大溪 宜蘭縣
Diaoyutai (Senkaku)	釣魚台
Donggang, Pingtung County	東港 屏東縣
Dongsha (Pratas), South China Sea	東沙群島
Gueishandao, Yilan County	宜蘭縣 龜山島
Gushan, Kaohsiung City	鼓山, 高雄市
Hepingdao, Keelung City	和平島 基隆市
Hongchaikeng, Pingtung County	紅柴坑 屏東縣
Lanyu, Taitung County	蘭嶼 台東縣
Longdong, Taipei County	龍洞 台北縣
Magang, Taipei County	馬崗 台北縣
Mituo, Kaohsiung County	彌陀 高雄縣
Nanfang-ao, Yilan County	南方澳 宜蘭縣
Penghu County	澎湖縣
Sihjiao Island, Penghu County	四角嶼 澎湖縣
South Bay, Pingtung County	南灣 屏東縣
Su-ao, Yilan County	蘇澳 宜蘭縣

CRUSTACEAN FAUNA OF TAIWAN: SQUAT LOBSTERS (CHIROSTYLIDAE AND GALATHEIDAE)

Authors: K. BABA, E. MACPHERSON, C.W. LIN, T.Y. CHAN

Published by:

National Taiwan Ocean University

2 Pei Ning Road, Keelung 20224, Taiwan, R.O.C.

Tel No.: +886-2-24622192

<http://www.ntou.edu.tw>

ISBN 978-986-01-8860-8

GPN 1009801580

© 2009 National Taiwan Ocean University, Keelung.

No part of this book may be reproduced in any form, by print, photoprint, microfilm, or any other means without permission from the publishers.

Art Design Wen-Chi Sun

Printing Suhai Design and Production

35-B, Guang Fu S. Road, Taipei 105, Taiwan, R.O.C.

Tel: +886-2-2761-8117

Sales and Order

Wu-Nan Bookstore Co. Ltd., No.6, Jhongshan Rd., Central District, Taichung City 400,
Taiwan, R.O.C.

Tel. No.: +886-4-22260330

<http://www.wunanbooks.com.tw/>

1st Edition, July 2009
Printed in Taiwan, R.O.C.