

DEEP-SEA GALATHEID CRUSTACEANS (ANOMURA: GALATHEIDAE)
COLLECTED BY THE 'CIDARIS I' EXPEDITION OFF CENTRAL QUEENSLAND,
AUSTRALIA

KEIJI BABA

Baba, K. 1994 06 01: Deep-sea galatheid crustaceans (Anomura: Galatheidae) collected by the 'Cidaris I' Expedition off central Queensland, Australia. *Memoirs of the Queensland Museum* 35(1): 1-21. Brisbane. ISSN 0079-8835.

A collection of deepsea galatheid crustaceans obtained by the 'Cidaris I' Expedition off the Central Queensland Shelf contains 20 species, five of which are described as new: *Bathymunida inermis*, *Munida alia*, *M. declivis*, *M. rubridigitalis*, and *Munidopsis cidaris*. *Galathea inconspicua* Henderson, 1885 is recorded for the first time since the unique male holotype taken by the 'Challenger' off Banda Island. The ranges of 13 species are extended. □ *Crustacea, Anomura, Galatheidae, deepsea, Australia, Indo-West Pacific.*

K. Baba, Faculty of Education, Kumamoto University, 2-40-1 Kurokami, Kumamoto 860, Japan; 21 October 1993.

In 1986, under the research project "The deep-sea benthos off the Great Barrier Reef Shelf and adjacent Coral Sea", 113 deepsea stations were worked by the 'Cidaris I' (Dr M. Pichon, Cruise Leader). Crustaceans from the samples obtained have been studied by Bruce (1989, 1990), Crosnier (1988), Macpherson (1990), Richer de Forges & Guinot (1990) and Poore & Bardsley (1992). The present material comprises 112 specimens in 24 lots taken from 15 stations in depths ranging between 296 and 1609m. They are divided among 20 species of the Galatheidae.

Twenty-two species of the Galatheidae have hitherto been known from Australia (Stimpson, 1858; Haswell, 1882a, 1882b; Miers, 1884; Henderson, 1885, 1888; Whitelegge, 1900; Grant & McCulloch, 1906; Balss, 1921; McNeill, 1926, 1968; Hale, 1927; Boone, 1935; Lewinsohn, 1967; Haig, 1973, 1974; Baba, 1986). Many of these are shallow-water inhabitants, and the deep-sea forms (occurring in transitional depths) are represented by only five species: four of *Munida* and one of *Galathea*. There is no previous record for the deepsea *Munidopsis* from Australia. Among the 20 species reported herein, 18 are recorded for the first time from Australia, including five new species (one of *Bathymunida*, three of *Munida*, one of *Munidopsis*). No chirostylids are included in the collection, although six (one *Chirostylus*, one *Eumunida* and four *Uroptychus*) are known to occur in Australian waters (Henderson, 1888; Haig, 1974; Baba, 1986; de Saint Laurent & Macpherson, 1990).

Measurements are shown in parentheses under the heading of 'Material Examined', indicating the postorbital carapace length. The material is

deposited in the Queensland Museum, Brisbane (QM).

SYSTEMATICS

Bathymunida Balss, 1914 *Bathymunida inermis* sp. nov. (Fig. 1)

MATERIAL EXAMINED

HOLOTYPE: ovig. ♀ (3.0mm), QMW19702, Sta. 42-2 (17°21.77'S, 146°48.52'E), 303-296m, sledge, 15 May 1986.

PARATYPES: Same data as holotype, 8 ♂ (2.6-3.9mm), 10 ovig. ♀ (3.3-3.7mm), 3 ♀ (2.7-3.8mm), QMW19701.

ETYMOLOGY

From the Latin *inermis* (unarmed) alluding to the lack of spines on the dorsal surface of the carapace.

DESCRIPTION OF HOLOTYPE

Carapace, excluding rostrum, about 1.5 times as wide as long; dorsal surface convex from side to side, unarmed, transverse ridges as figured; cervical groove distinct, its dorsal midpoint slightly posterior to midlength of postorbital carapace length; in profile, gastric region moderately inflated, preceded by distinct depression, cardiac region medially elevated, border between branchial and cardiac regions also elevated. Lateral margins posteriorly divergent to point somewhat posterior to anterior cervical groove, convergent posteriorly from this point. Anterolateral spine well developed, directed

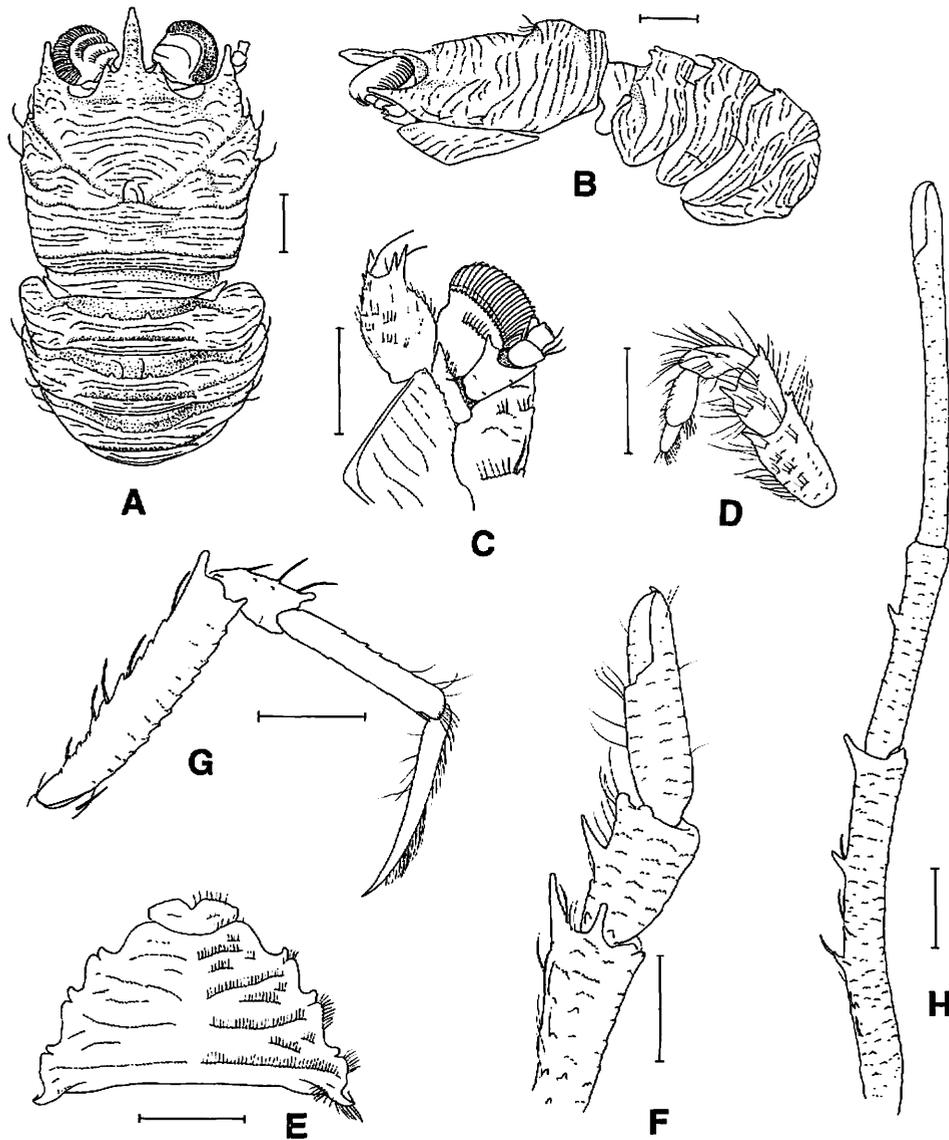


FIG. 1. *Bathymunida inermis* sp. nov. A-G, ovigeous female holotype; H, male paratype (carapace length, 3.5mm). A, carapace and abdomen, dorsal view; B, same, lateral view, tailfan omitted; C, anterolateral part of cephalothorax, showing antennular and antennal peduncles, ventral view; D, endopod of left third maxilliped, lateral view; E, sternal plastron; F, right cheliped, dorsal view; G, right first walking leg, lateral view; H, right cheliped, dorsal view. Scales = 1mm.

straight forward, overreaching supraocular spine, followed by small process directly behind it; branchial lateral margin behind cervical groove with a few reduced spines and crenulations; long fine setae sparse on anterior median part of car-

diac region and anterior part of branchial lateral margin.

Rostrum overreaching end of cornea, much wider than supraocular spines; directed slightly upward, moderately compressed laterally, ending

in blunt tip, dorsally with fine tubercles, mid-laterally ridged. Supraocular spines very short, 0.15 times as long as, and, not distantly remote from rostrum.

Transverse ridges on abdominal segments as illustrated; second through fourth segments each with 4 short blunt spines on anterior ridge.

Eyes dilated, depressed, with fringe of long setae near base of cornea.

Basal segment of antennule relatively short, with denticular spines on distal half of mesial and lateral margins, distolateral margin with dorsoventrally bifid spines somewhat longer than distomesial one. Antennal peduncles partly visible in dorsal view, placed beneath anterolateral spine of carapace; first segment with ventral distomesial margin produced into spine not longer than second segment, second segment with distomesial and distolateral spines, former acute and shorter, latter directed straight forward, ending in blunt tip.

Third maxillipeds typical of genus, ischium elongate, flexor margin with stout distal spine, extensor margin with 1 or 2 small distal spines; merus short, flexor margin with sharp median spine, extensor margin with well-developed distal spine accompanied proximally by a few denticular crenulations.

Sternal plastron as illustrated.

Chelipeds similar, 2.3 times as long as postorbital carapace length; mesially provided with fine plumose setae, dorsally and ventrally with scale-like granulate ridges. Merus equally wide as carpus, but much wider than chela (distal 2 segments), terminally armed with well-developed mesial, somewhat smaller dorsal, and very small blunt lateral spines, dorsally with small spines roughly in row. Carpus with 2 mesial marginal spines; distal one terminal in position, as wide as proximal, but short, ending in blunt tip; proximal one at midlength, acute. Propodus 0.76 times as wide as carpus, 2.2 times as long as wide, unarmed. Fingers 0.8 times as long as palm, not gaping, distally sharp, curved and crossed.

Walking legs relatively slender, with iridescent, fine plumose setae along extensor margins except for distal segment; first walking leg reaching midlength of dactylus of cheliped. Meri similar on first and second walking legs but longer on first, extensor margin with line of short inclined spines on first and second walking legs (terminal one prominent on first leg, small on second leg), unarmed on third leg; flexor margin with short terminal spine followed proximally by denticles on first 2 legs, no terminal spine on third

leg. Carpus having extensor margin with blunt distal spine, paralleling row of a few denticles or denticular processes on dorsolateral surface. Propodus 0.84 times as long as dactylus on first leg, equally long on second and third legs, extensor margin with a few denticles on first and second legs, flexor margin with slender distal spine distinct on first and second legs, absent on third. Dactylus slender, curved as figured, extensor margin with relatively long coarse setae, flexor margin smooth, with sparse setae proximally.

VARIATION AND DIFFERENCES BETWEEN SEXES

All paratypes agree with the holotype, except for one ovigerous female having cheliped carpus with additional spine proximal to midmesial marginal spine. Males differ from females in having cheliped carpus and propodus both relatively long and slender, especially in large males (length-width ratios of carpus 1.7-2.4 in females, 2.6-2.9 in small males (2.6-2.7mm), 7.2 or 8.0 in large males (3.6-3.7mm); those of propodus 2.0-3.1 in females, 4.3-7.6 in small males, 13.4 in large males); propodus and fingers much narrower than carpus. Chelipeds 2.3-2.4 times as long as postorbital carapace length in small males and all females, 3.5 times longer in large intact male. First walking leg fully reaching end of cheliped in ovigerous females, terminating at distal end of carpus in large males, but in small males ranging from reaching end of propodus to almost midlength of finger.

REMARKS

Six species of *Bathymunida* are known to date: *B. aspistrostris* Khodkina, 1981, from Norfolk Island Ridge in 51m; *B. balssi* Van Dam, 1938, from Seram Sea in 118m; *B. brevisrostris* (Yokoya, 1933), from Japan in 105-106m (Baba, 1970: 59); *B. longipes* Van Dam, 1938, from Bali Sea near Kangean Group and Sulu Archipelago in 100-140m; *B. polae* Balss, 1914, from the Red Sea and Madagascar in 150-255m (Baba, 1990: 952); and *B. quadratiostrata* Melin, 1939, from the Bonin Islands in 128-183m. Baba (1990: 952) suggested that *B. polae* and *B. balssi* may be identical.

Several important characters separate *B. inermis* from all other species of *Bathymunida*: 1, strong dorsal spines on the carapace (on the gastric and cardiac regions in particular) are absent; 2, the supraocular spines are much closer to the very stout rostral spine; 3, the transverse ridges on the carapace are more distinct; 4, the

chela is much narrower than the carpus and merus. These characters (only except for the last) do not fit the definition of the genus given by Balss (1914). However, due to the large number of shared characters unique to *Bathymunida*, the present species is provisionally placed in this genus. These are: the orbital margin is so strongly concave that the orbit is largely visible in a dorsal view; the second, third and fourth abdominal tergites bear 4, 2, 2 spines on the anterior ridge; the third thoracic sternite is anteriorly strongly produced, with the entire posterior margin usually contiguous with the anterior margin of the following sternite; distal two segments of the endopod of the third maxilliped, and even the merus, are reduced in size; the dactyli of the walking legs are slender and nearly smooth without spines on the flexor margin. *Bathymunida* will be revised in a series of studies on New Caledonian material now in progress.

The longer chelipeds displayed by large males may not be aberrant, because examples of this are also known in *B. polae* (see Baba, 1990: 952).

***Galathea* Fabricius, 1793**
***Galathea pubescens* Stimpson, 1858**

Galathea pubescens Stimpson, 1858: 252; Baba, 1988: 76 (synonymy and references).

MATERIAL EXAMINED

Sta. 42-2 (17°21.77'S, 146°48.52'E), 303-296m, sledge, 15 May 1986: 1 ♂ (3.4mm), QMW19703.

REMARKS

This specimen has a less spinose and less setose carapace, as noted earlier for some specimens from the Philippines (Baba, 1988: 76) as well as from the East China Sea (Baba, 1988: 77). This is one of the few species of *Galathea* that are found in the deepsea.

RANGE

Previously known from Japan, East China Sea, Philippines, Western Australia and Zanzibar, in 40-494m. Recorded for the first time from eastern Australia.

***Galathea inconspicua* Henderson, 1885**
 (Fig. 2)

Galathea inconspicua Henderson, 1885: 408; 1888: 122, pl. 12, fig. 2.

MATERIAL EXAMINED

Sta. 42-2 (17°21.77' S, 146°48.52'E), 303-296m, sledge, 15 May 1986, 1 ovig. ♀ (5.0mm), QMW19704.

DESCRIPTION

Carapace, excluding rostrum, 1.2 times as long as wide, dorsal surface with distinct setiferous ridges as illustrated; 8 small spines on epigastric region and 2 spines on each lateral protogastric region. Lateral margins slightly convex, with 9 spines on each side; 2 in front of cervical groove; first anterolateral (preceded by 2 small spines mesial to it); second small, with accompanying spinules (1 dorsal and 3 or 4 ventral to it, ventral-most somewhat larger); third to ninth behind cervical groove; fifth, sixth and ninth very small.

Rostrum very narrowed distally, length fully more than half that of remaining carapace; lateral teeth anteriorly diminishing in size, anteriormost situated somewhat anterior to midlength of rostrum.

Pterygostomial flap lacking spine on surface and anterior margin.

Orbit sharply delimited laterally by small anterolaterally directed spine, ventrolateral margin with line of 3 or 4 small teeth.

Eyes somewhat depressed and elongate, mesial and lateral margins slightly convex, eyestalks with fringe of short setae near cornea.

Second and third abdominal segments each with 4 transverse ridges.

Antennular basal segment with very reduced mesial terminal spine, well-developed lateral terminal spine, stronger dorsal spine and a few very small lateral marginal spines proximal to dorsal one; terminal segment with tuft of pronounced setae on distodorsal margin. Antennal peduncle having first segment with well-developed distoventral process ending in sharp point reaching nearly to end of second segment, second segment with distolateral spine much longer than distomesial spine; third segment with distomesial and distolateral spines, both very small, latter rather dorsal in position.

Ischium of third maxilliped with well-developed spine on flexor distal margin and small one on extensor distal margin, mesial ridge with 20 or 21 denticles. Merus with 3 spines on flexor margin; proximal one well developed, situated about at midlength; distal one distinctly smaller than proximal one, terminal in position; median one very small, somewhat proximal to midpoint between these; extensor margin with small spine at distal end.

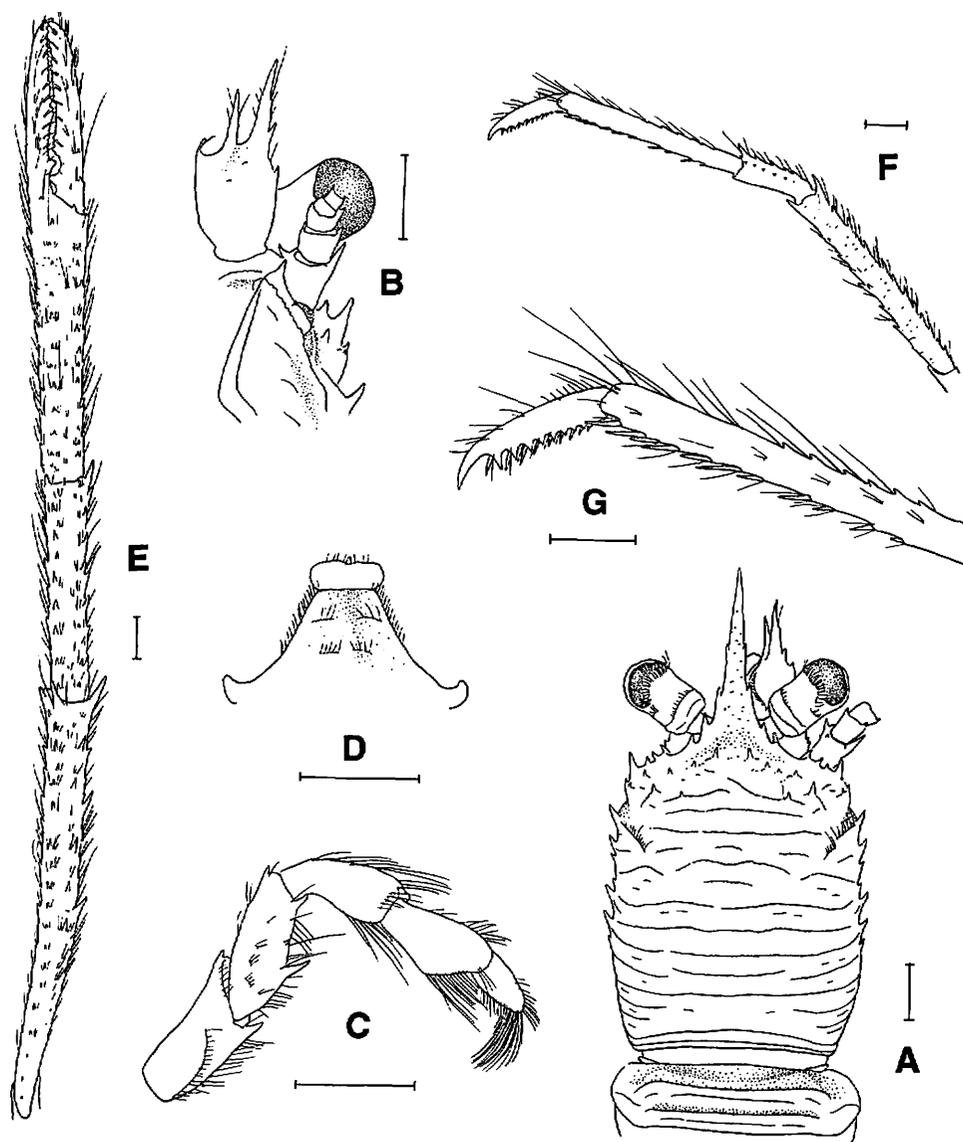


FIG. 2. *Galathea inconspicua* Henderson, ovigerous female from Station 42-2. A, carapace and anterior abdominal segments, dorsal view; B, anterolateral part of cephalothorax, showing antennular and antennal peduncles, ventral view; C, endopod of right third maxilliped, lateral view; D, anterior part of sternum; E, left cheliped, dorsal view; F, left first walking leg, lateral view; G, distal two segments of same, lateral view. Scales = 1 mm.

Anterior part of sternum as figured; third thoracic sternite roughly quadrangular; fourth thoracic sternite 3.1 times as wide as preceding, relatively long, width 1.9 times length of anterolateral margin.

Chelipeds slender, fully more than 5 times as long as carapace excluding rostrum; sparsely provided with fine setae. Spination in dorsal view as illustrated; 4 rows of spines (2 dorsal, 1 lateral, 1 mesial) on merus, carpus and propodus, mesial

terminal spine on merus much pronounced. Carpus 6 times as long as wide, more than half length of merus, bearing no prominent spines but somewhat larger distal one on mesial margin. Propodus distally somewhat wider, slightly longer than carpus, 6 times as long as wide. Fingers three-fourths as long as palm, somewhat gaping proximally, distally fitting to each other (when closed) with a few intermeshing teeth; opposable margins with line of tubercles on distal two-thirds, proximally with pronounced basal process. Ventral surface of cheliped with 2 rows of spines on merus, scattered spinules on carpus and palm, and larger distoventral spine on carpus.

Walking legs also slender and sparsely setose. First walking leg overreaching end of merus but barely reaching midlength of carpus of cheliped. Meri posteriorly diminishing in size; extensor margin with 14, 13, 9 spines on first, second, third walking legs, respectively; flexor margin with 7 or 8 spines, terminal of these much larger. Carpus with row of 7 small extensor marginal spines paralleling another row of small spines on lateral face. Propodus about 11 times as long as wide, slightly more than twice as long as dactylus, extensor margin with 5 or 6 small spines on proximal half on first and second legs, nearly none on third, flexor margin with 10 or 11 slender spines (excluding distomesial) on first, 9 or 11 on second, 10 on third. Dactylus ending in sharply curved claw preceded by 9 or 10 rather erect teeth decreasing in size proximally, each tooth with corneous setae arising from its base.

Epipods present on chelipeds, absent from walking legs.

REMARKS

This specimen is referred without doubt to *G. inconspicua*, the identification verified by examination of the male holotype in the collection of the Natural History Museum, London (BM1888:33). The holotype is now in poor condition, lacking all pereopods.

The spination of the carapace illustrated by Henderson (1888: pl. 12, fig. 2) is not correct; the epigastric row of 6 spines in the holotype is somewhat more posterior in position, accompanying a lateral protogastric spine posterior and lateral to lateral extremity of this row, and the lateral marginal spines are rather distinct, only lacking the hindmost (eighth) as in the present specimen; there are some minor discrepancies between the type and the present specimen: in the type the carapace is wider, the length-width ratio (excluding the rostrum) being 1.08; the merus of

the third maxilliped on the right side (detached and missing on the left) bearing three spines as described by Henderson (the median one being prominent). The presence of epipods on the chelipeds, the spinose anterior gastric region, the basal antennular segment having a reduced distomesial spine, and the carpus of the cheliped lacking prominent mesial marginal spines, link the species strongly to *G. albatrossae* Baba, 1988 from the Philippines and the Ryukyus (Baba, 1988:65; 1989:128). The latter, however, has the carapace with fewer lateral marginal spines, the triangular rostrum distally not strongly narrowed, the chelipeds shorter relative to the carapace, the walking legs having fewer flexor marginal spines on the propodus (at most four) and dactylus (six), and the anterior part of the sternum longer relative to width (the fourth thoracic sternite being 2.7 times as wide as the preceding sternite, its width 2.8 times the length of its lateral margin).

The full description provided above will complement the brevity of the previous descriptions of the type material by Henderson (1885, 1888).

RANGE

Off Banda Island and eastern Australia, in 296-659m. This is the first record for the species since that of the unique holotype from 'Challenger' Station 194.

Munida Leach, 1820

Munida alia sp. nov.

(Fig. 3)

MATERIAL EXAMINED

HOLOTYPE: ovig. ♀ (9.2mm), QMW19705, Sta. 52-2 (18°04.16'S, 147°17.17'E), 490-512m, beam trawl, 18 May 1986.

ETYMOLOGY

From the Latin *alius* (another), alluding to the other species of a group centered around *Munida heteracantha*.

DESCRIPTION OF HOLOTYPE

Carapace 1.09 times as long as wide, when measured from level between mesial bases of right and left anterolateral spines to midpoint of posterior margin of carapace. Dorsal surface moderately convex from side to side, with relatively numerous striae as illustrated, sparsely provided with coarse setae, on anterior half in particular; cervical groove distinct, anterior bifurcation with iridescent setae at end (on lateral margin of carapace). Epigastric region with 10

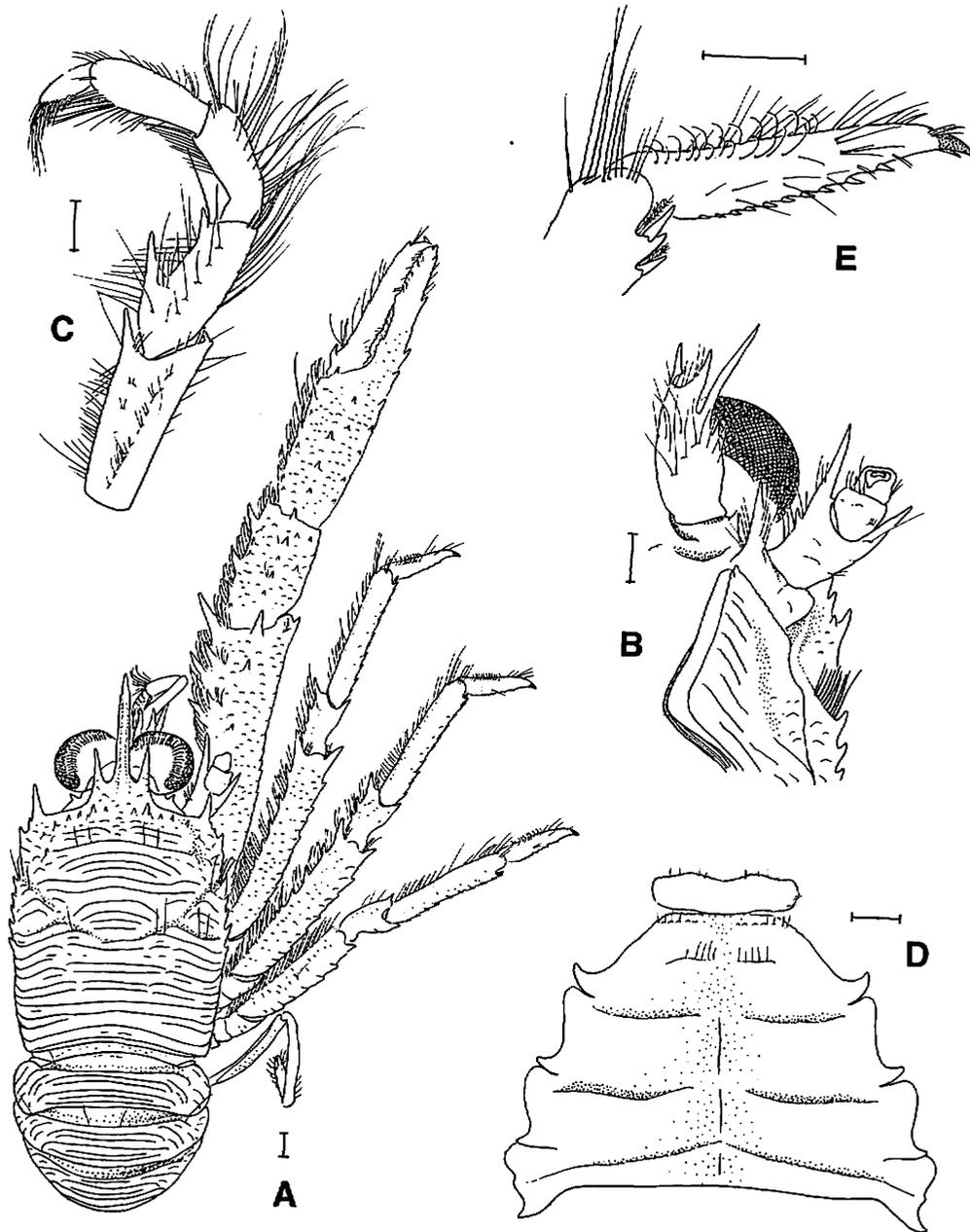


FIG. 3. *Munida alia* sp. nov., ovigerous female holotype. A, dorsal view, left appendages omitted; B, anterolateral part of cephalothorax, showing antennular and antennal peduncles, ventral view; C, endopod of left third maxilliped, lateral view; D, sternal plastron; E, distal segments of right first walking leg, lateral view. Scales = 1mm.

spines in 5 pairs, second from mesial pair situated directly behind supraocular spines, accompanying small spine at its lateral base. Lateral protogastric spine distinct, preceded by small spine slightly anterior and lateral to it. No other spinulation elsewhere on dorsal surface. Lateral margins slightly convex, anterolateral spine sharp and prominent, directed forward and somewhat laterad, barely reaching sinus between rostrum and supraocular spine, followed by a few denticular spines and 1 small spine slightly anterior to midpoint between first spine and anterior cervical groove; 5 subequal spines on anterior brachial margin behind anterior cervical groove. Front margin slightly oblique.

Rostrum spiniform, nearly horizontal but slightly upcurved distally, length 0.4 that of remaining carapace, about 3 times that of supraocular spine. Supraocular spines moderately remote from rostral spine, somewhat divergent anteriorly.

Abdominal segments strigose, second and third segments each with 6 transverse ridges, first and fourth ridges elevated, latter preceded by distinct groove or trough.

Eyes dilated, cornea 0.3 times as wide as carapace; eyestalk with fringe of short setae near cornea.

Basal segment of antennule elongate, length (exclusive of spines) 2.2 times its greatest width; 2 terminal spines subequal in size. Antennal peduncle having first segment with strong ventral distomesial spine reaching end of next segment; second segment with well-developed distomesial and distolateral spines, former distinctly overreaching end of peduncle, accompanied by small extra spine proximal to it, latter ending at mid-length of ultimate peduncular segment.

Endopod of third maxilliped relatively slender. Ischium with prominent spine on flexor distal margin, unarmed on extensor margin; mesial ridge with 25 or 26 denticles. Merus with 2 flexor marginal spines, proximal one very strong, situated about 1/3 from proximal end, distal one small and terminal; no spine on extensor margin. Distal 2 segments relatively slender.

Sternal plastron as illustrated, with a few striae on fourth thoracic sternite. Third thoracic sternite laterally expanded, 4.5 times as wide as long, anterior margin sinuous, provided with fine blunt denticles. Following sternite twice as long as preceding, with relatively wide anterior margin, not triangular.

Chelipeds similar, relatively stout, length 3 times that of carapace (excluding rostrum), sur-

face with fine squamiform ridges, and both iridescent, and fine plumose setae, particularly on mesial face. Spinulation as figured. Merus with another row of 4 ventromesial spines; 3 prominent mesial marginal spines, particularly distalmost. Carpus with 3 small ventromesial and 1 distoventral spines, all invisible in dorsal view. Propodus moderately depressed, somewhat narrower than merus, more than twice as long as wide, nearly equal in length to movable finger, lateral marginal spines somewhat dorsal in position, dorsal surface with median row of spines, mesial margin with row of 3 spines paralleling another row of 4 distinct and a few small spines somewhat dorsal in position. Fingers distally curving, crossing when closed, somewhat gaping in proximal half; movable finger having mesial margin with 1 well-developed proximal and 1 small subterminal spine interspersed by a few small spines; fixed finger with line of 5 lateral marginal spines continued onto propodus, distal 2 nearer to each other, distalmost subterminal.

Walking legs relatively short, with squamiform ridges on surface and both iridescent and fine plumose setae on mesial face except for dactylus with coarse setae; first walking leg reaching to midlength of cheliped propodus. Merus with row of 11 or 12 extensor marginal spines and another line of 6 or 7 flexor marginal spines on first and second walking legs, these spines diminishing in size proximally; terminal spines pronounced, flexor marginal terminal larger, proximal 4 or 5 extensor marginal spines very small and somewhat lateral in position; on third walking leg, extensor margin with 4 small spines on proximal half, flexor margin with a few spines and denticles. Carpus with 4 (on first), 3 (on second), and 1 (on third) spines on extensor margin, in addition to one at distal end of flexor margin. Propodus less than twice, but more than 1.5 times, length of dactylus, fully 6 times as long as high, flexor margin produced into spine on distal corner, with 11 movable slender spines. Dactylus ending in curved corneous spine, flexor margin convex, with 10 (on first), 9 (on second), 8 (on third) slender spines, each arising from low process, but distalmost of these present at base of corneous toe.

REMARKS

Lack of granules on the seventh thoracic sternite, subequal terminal spines on the antennular basal segment, and lack of the extensor distal marginal spine on the merus of the third maxilliped link the species to *Munida semoni*

Ortmann, 1894, *M. oritea* Macpherson & Baba, 1993 and *M. striola* Macpherson & Baba, 1993. The new species differs from the last two species in the less strigose sternal plastron and the distomesial spine of the basal antennal segment not distinctly overreaching the second antennal segment. Another close relative, *M. semoni*, is characterized by a row of spines on the second abdominal segment, and absence of the extra spine on the mesial margin of the second segment of the antennal peduncle, both the obvious differences from the new species.

***Munida curvirostris* Henderson, 1885**

Munida curvirostris Henderson, 1885: 412.

Munida militaris var. *curvirostris* Henderson, 1888: 139, pl. 3: figs. 7, 7A, 7B.

Munida andamanica Alcock, 1894: 321.

MATERIAL EXAMINED

Sta. 51-2 (18°03.85'S, 147°19.50'E), 689-704m, sledge, 18 May 1986, 2 ♂ (10.2, 12.5mm), 2 ovig. ♀ (10.2, 13.4mm), 1 ♀ (6.2mm), QMW19706.

REMARKS

As noted by Baba & Macpherson (1991:538), *Munida andamanica* Alcock, 1894, a well-known species in the Indo-West Pacific, should be merged with *M. curvirostris* Henderson, 1885.

RANGE

Indo-West Pacific from east African coast eastward and northward to Japan, in 141-1,360m; see Baba (1988:86) for distribution.

***Munida declivis* sp. nov.**
(Fig. 4)

MATERIAL EXAMINED

HOLOTYPE: ♀ (7.6mm), QMW19708, Sta. 42-2 (17°21.77'S, 146°48.52'E), 303-296m, sledge, 15 May 1986.

PARATYPES: Same data as holotype, 9 ♂ (6.4-4.2mm), 1 ♀ (7.4mm), 5 spec. (sex indet., 5.7-4.1mm), QMW19707; Sta. 46-3 (17°55.38'S, 147°00.96'E), 295-309m, beam trawl, 16 May 1986, 1 ♂ (4.3mm), 1 spec. (sex indet., 2.7mm), QMW19709.

ETYMOLOGY

From the Latin *declivis* (sloping, inclined) referring to the very oblique front margin.

DESCRIPTION OF HOLOTYPE

Carapace elongate, 1.3 times as long as wide when measured in midline from level between mesial bases of anterolateral spines to posterior margin of carapace. Transverse ridges as figured, cervical groove distinct. Epigastric region with row of 10 spines in 5 pairs, median pair small, mesial second pair directly behind supraocular spines prominent, other pairs gradually diminishing in size laterally, lateral protogastric and postcervical spines small but distinct. Lateral margins subparallel, bearing 8 spines, anterior 3 in front of, and remaining 5 behind, cervical groove; first anterolateral, largest, somewhat mesial to level of third to eighth, second spine small, third smaller than first, placed at midpoint between anterolateral spine and anterior cervical groove, following 5 spines on anterior branchial region, subequal. No spine on posterior transverse ridge. Front margin strongly oblique.

Rostral spine 0.4 times as long as remaining carapace, slightly arched in lateral view, with small tubercles dorsally. Supraocular spines directed somewhat dorsad, subparallel to rostral spine, moderately remote from rostrum, and barely reaching its midlength.

Second abdominal segment with 3 transverse ridges, first (anterior) ridge with 8 spines, second ridge interrupted, third ridge uninterrupted, preceded by distinct groove. Third abdominal segment unarmed.

Basal segment of antennule elongate, distomesial spine distinctly shorter than distolateral, proximal lateral spine small, median lateral spine elongate, directed anterodorsad. Antennal peduncle having first segment with ventral distomesial spine sharp, moderate-sized, not reaching end of second segment; second segment with distomesial and distolateral spines both well developed, subequal in size; third segment unarmed.

Ischium of third maxilliped with well-developed spine on flexor distal margin and very small one on extensor distal margin, mesial ridge with 22 or 23 denticles. Merus relatively less setose, flexor margin with 2 spines, distal one terminal and small, proximal one prominent, slightly proximal to midlength, extensor margin unarmed.

Sternal plastron barely strigose. Third thoracic sternite short, about 5 times as wide as long; fourth thoracic sternite triangular in shape, width 2.3 times that of preceding sternite.

Chelipeds unequal; right one shorter, presumably regenerated, with somewhat

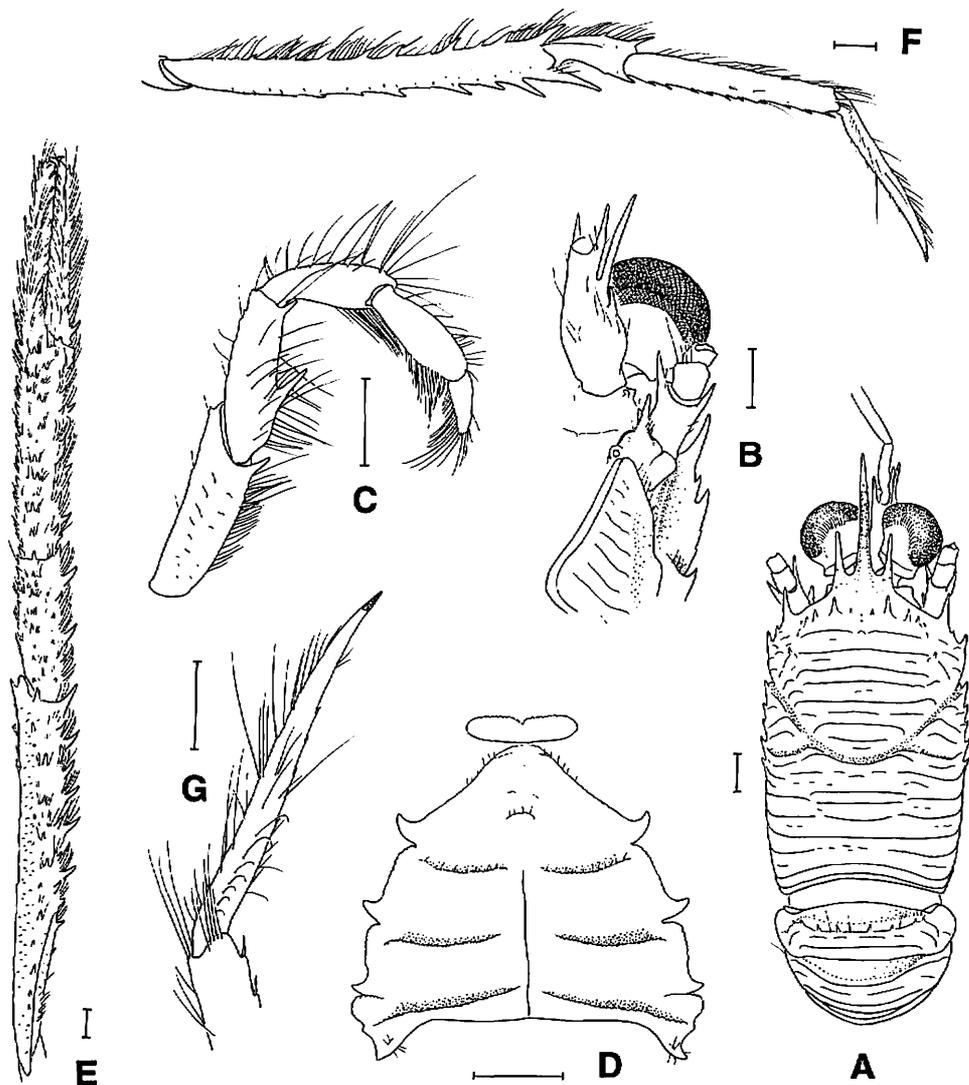


FIG. 4. *Munida declivis* sp. nov., female holotype. A, carapace and abdomen, dorsal view; B, anterolateral part of cephalothorax, showing antennular and antennal peduncles, ventral view; C, endopod of right third maxilliped, lateral view; D, sternal plastron; E, left cheliped, dorsal view; F, right first walking leg, lateral view; G, distal part of same, lateral view. Scales = 1mm.

pronounced spination. Left cheliped 4.6 times as long as postorbital carapace length, with chela somewhat depressed; laterally with fine plumose setae, mesially with both iridescent and plumose setae; ventral surface granulate; dorsally armed with 4 rows of spines on merus, carpus and

propodus (2 dorsal and 1 mesial, 1 lateral); another ventral row of smaller spines near mesial margin on merus and propodus. Merus relatively long, slightly shorter than chela (propodus and fingers combined). Carpus 2.8 times as long as wide, 0.66 times as long as propodus. Propodus

4.4 times as long as wide. Fingers 0.89 times as long as propodus, slightly gaping proximally, distally ending in strongly curved, crossing claws; movable finger having mesial margin with 3 spines (proximal pronounced, distal terminal, median at 2/3 from proximal end), accompanying 1 dorsal and 1 ventral row of smaller spines, each row situated near mesial margin; fixed finger with row of lateral spines continued onto propodus.

Walking legs slender, dorsally with both fine plumose and iridescent setae. First walking leg reaching end of cheliped carpus. Merus with spines on flexor and extensor margins on first and second walking legs, distalmost of latter prominent but falling short of end of carpus, spination on third leg rather reduced. Carpi of first and second walking legs each with well-developed spine on extensor and flexor distal margins and additional smaller one about at mid-length of extensor margin, that of third walking leg with small spine on extensor distal margin. Propodus 1.2 times as long as dactyli on first walking leg, equally long on second and third, flexor margin with 10, 9, 2 or 3 slender spines on first, second and third leg respectively. Dactylus slender, slightly curving, ending in corneous tip on first 2 legs; somewhat stouter, more strongly curved, ending in strong claw on third leg; flexor margin with 4 or 5 very fine denticles each with short corneous setae, distalmost seta present at point 0.36 from distal end.

VARIATION

Supraocular spines usually subparallel, rarely somewhat convergent anteriorly, length 0.24-0.36 (average, 0.29) times that of rostral spine. Epigastric spines numbering mostly 8 (4 pairs); in younger specimens median and lateralmost pairs obsolete. Number of spines on second abdominal segment usually 8, rarely 7, 6, 5 or 4, fewest number only in younger specimens. Flexor margins of propodi of walking legs with usually 7 or 8 spines, occasionally 6, rarely 6 or 9 on first and second walking legs, 3 or 4 on third. Dactyli of first and second walking legs with 4 or 5, rarely 6 small spines, ultimate one rather distant from toe end (at least 1/4 of length), that of third walking leg with usually 4, rarely 3 very small spines, present in proximal half.

Males with 2 pairs of gonopods.

REMARKS

The strongly oblique front margin, elongate carapace, and slender walking legs, characteristic

of *Munida declivis*, are also possessed by *M. kuboi* Yanagita, 1943. The new species is readily distinguished from that species by the lack of dorsal spines on the third abdominal segment and the much shorter and very spinose chelipeds.

Munida eminens Baba, 1988

Munida eminens Baba, 1988: 95, fig. 35.

MATERIAL EXAMINED

Sta. 15-4 (17°45.99'S, 148°39.09'E), 964-958m, beam trawl, 9 May 1986, 1 ♀ (12.8mm), QMW19710.

REMARKS

Munida eminens may be characterized by the following combination of characters: the carapace bearing four lateral marginal spines behind the anterior bifurcation of the cervical groove; the antennal peduncle having the first segment with an extremely long distomesial spine directed straight forward, only slightly falling short of the end of the rostral spine; the third thoracic sternite short and strongly expanded laterally; and the dactyli of the walking legs depressed, falciform and proportionately wide.

The present specimen is not intact, having no abdomen and chelipeds. Lack of the posterior cardiac spine as well as the hindmost of the three postcervical spines displayed by this specimen may be considered as variation.

RANGE

Previously known from the Philippines in Palawan Passage and off southeastern Luzon, in 564-686m. The range is now extended to eastern Australia.

Munida heteracantha Ortmann, 1892

Munida heteracantha Ortmann, 1892: 255, pl. 11: figs. 12, 12i, 12k; Macpherson & Baba, 1993: 393, fig. 6.

Munida exigua Baba, 1988: 98, fig. 36.

MATERIAL EXAMINED

Sta. 42-2 (17°21.77'S, 146°48.52'E), 303-296m, sledge, 15 May 1986, 1 ♂ (4.8mm), QMW19717.

REMARKS

The type material of *M. heteracantha* now in the collection of the Musée Zoologique, Strasbourg, has been redescribed by Macpherson & Baba (1993:393) and *M. exigua* Baba, 1988, was synonymized with this species.

The present specimen has been found in a lot from Station 42-2 in which *M. declivis* new species is included (see above).

RANGE

Previously known from the Philippines, Indonesia, off Hong Kong, and Sagami Bay, Japan, in 68-222m. Recorded from eastern Australia for the first time.

?*Munida incerta* Henderson, 1888

Munida incerta Henderson, 1888: 130, pl. 13: figs. 4, 4a; Baba, 1988: 106 (synonymy and references).

MATERIAL EXAMINED

Sta. 47-2 (17°51.76'S, 147°07.95'E), 503-497m, sledge, 16 May 1986, 2 ovig. ♀ (19.6, 21.2mm), QMW19718.

REMARKS

This identification is provisional, for the specimens have a red spot on the distal portion of the propodus of the walking legs, which is at variance with the color illustration of *Munida incerta* provided by Miyake (1982: pl. 49, fig. 5) and Baba in Baba et al. (1986: fig. 121). There are no distinct morphological differences between these specimens and previous descriptions. However, available male specimens taken outside the Great Barrier Reef off Bowen, Queensland, and off Taiwan which likewise bear such red color spots, have a pronounced outward process on the anterior lateral expansion of the telson. This process is absent in specimens from the vicinity of the Kei Islands, the type locality of *M. incerta*, in the collection of the Copenhagen Museum, as well as in those reported by Miyake (1982) and Baba in Baba et al. (1986) (Baba, unpubl.). This fact suggests the existence of another species closely related to *M. incerta*. Further investigation of these differences will be reported elsewhere, but the present females are not sufficient for clarification of the problem.

Munida leviantennata Baba, 1988 (Fig. 5)

Munida leviantennata Baba, 1988:111, figs. 41, 42.

MATERIAL EXAMINED

Sta. 43-2 (17°34.58'S, 146°53.21'E), 458-500m, sledge, 15 May 1986, 1 ♂ (14.5mm), QMW19719; Sta.

52-2 (18°04.16'S, 147°17.17'E), 490-512m, beam trawl, 18 May 1986, 1 ♂ (12.1mm), QMW19720.

REMARKS

The supraocular spines which were broken in the unique female holotype and which were speculated to be very close to the rostrum (Baba, 1988: 111), are rather remote from it; they are more or less divergent anterolaterally and more than two-thirds the length of the rostral spine. Two pairs of gonopods are present in the male.

RANGE

Previously known only from the Molucca Sea off west coast of Halmahera, in 485m.

Munida magniantennulata Baba & Türkay, 1992

Munida magniantennulata Baba & Türkay, 1992: 205, figs. 2, 3; Baba & de Saint Laurent, 1992: 326.

MATERIAL EXAMINED

Sta. 20-4 (17°45.04'S, 147°48.14'E), 1,228-1,223m, beam trawl, 10 May 1986, 1 ♀ (7.5mm), QMW19721; Sta. 35-3 (16°50.83'S, 147°10.61'E), 1,607-1,609m, sledge, 14 May 1986, 1 ♀ (5.0mm): QMW19722.

REMARKS

This species has recently been described from active thermal vent areas in the Lau Basin in 1750-2003m (Baba & Türkay, 1992:205; Baba & de Saint Laurent, 1992:326). As its name suggests, this species has an unusually large antennular basal segment that, spines excluded, overreaches the midlength of the rostral spine, and exceeds the cornea by more than the full length of the eyestalk and cornea. The following characters seen in this material from non-active thermal vent areas differ from the type but may be within the limit of variation; four distinct epigastric spines, the lateral two smaller; chelipeds more spinose with relatively strong spines, the palm bearing a distinct dorsal row and the fixed fingers bearing one or two additional lateral marginal spines on the larger specimen; the second abdominal segment bears two or four dorsal spines, and the following segment bears a distinct transverse groove preceded by an elevated anterior ridge.

The larger specimen from Station 20-4 bears an externa and a few scars of rhizocephalan parasites.

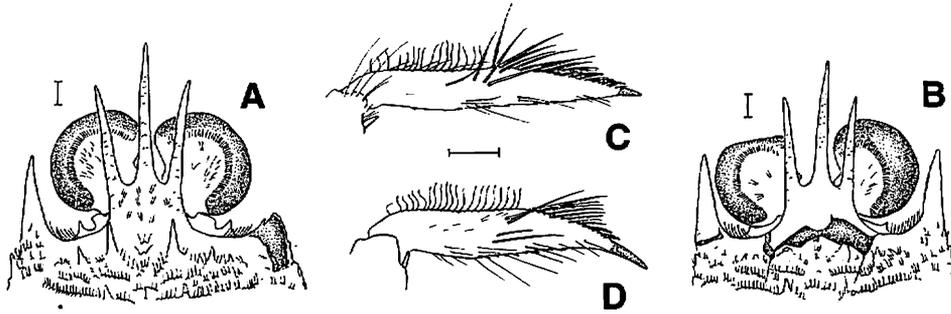


FIG. 5. *Munida leviantennata* Baba, 1988. A, C, D, male from Sta. 43-2; B, male from Sta. 52-2. A, anterior part of carapace; B, same; C, dactylus of second walking leg, lateral view; D, dactylus of third walking leg, lateral view. Scales = 1mm.

RANGE

Previously known from the Lau Basin, in 1750-2003m.

Munida microps Alcock, 1894

Munida microps Alcock, 1894: 326; Baba, 1988: 122 (references and synonymy).

MATERIAL EXAMINED

Sta. 1-3 (18°07.87'S, 147°35.7'E), 956-969m, sledge, 6 May 1986, 1 spec. (sex indet., 5.8mm), QMW19723; Sta. 14-1 (17°49.45'S, 148°39.51'E), 990-1,006m, beam trawl, 8 May 1986, 1 ♂ (14.9mm), QMW19724.

REMARKS

In the larger specimen, eyes are somewhat larger than noted in earlier descriptions, but other specific characters are as diagnosed by Baba (1988:122). Two spines on the third abdominal segment are present as reported for the 'Albatross' specimen (Baba, 1988:122). The branchial spines directly behind the middle of the anterior bifurcation of the cervical groove is barely discernible in the smaller specimen.

RANGE

Previously known from the Arabian Sea, Maldives, off Colombo, Andaman Sea, Sulawesi and southeastern Australia off Green Cape, New South Wales; in 686- 1,234m.

Munida pilosimanus Baba, 1969

Munida pilosimanus Baba, 1969: 26, figs. 8, 9; Baba, in Baba et al., 1986: 173, 291, fig. 123; Baba, 1988: 123.

MATERIAL EXAMINED

Sta. 52-2 (18°04.16'S, 147°17.17'E), 490-512m, beam trawl, 18 May 1986, 1 ♂ (30.2mm), QMW19725.

REMARKS

Lateral protogastric spines are absent, but this specimen is undoubtedly referred to *M. pilosimanus*. No additional characters of significance were noted.

RANGE

Previously known from the Sulu Archipelago, Kyushu-Palau Ridge, Okinawa Trough and Tosa Bay, in 250-582m.

Munida rubridigitalis sp. nov.

(Fig. 6)

MATERIAL EXAMINED

HOLOTYPE: ♂ (10.6mm), QMW19726, Sta. 47-2 (17°51.76'S, 147°07.95'E), 503-497m, sledge, 16 May 1986.

PARATYPES: Same data as holotype, 2 ♂ (10.0-12.7mm), 3 ovig. ♀ (10.9-12.1mm), 1 ♀ (9.5mm), 1 spec. (sex indet., 10.0mm), QMW19727.

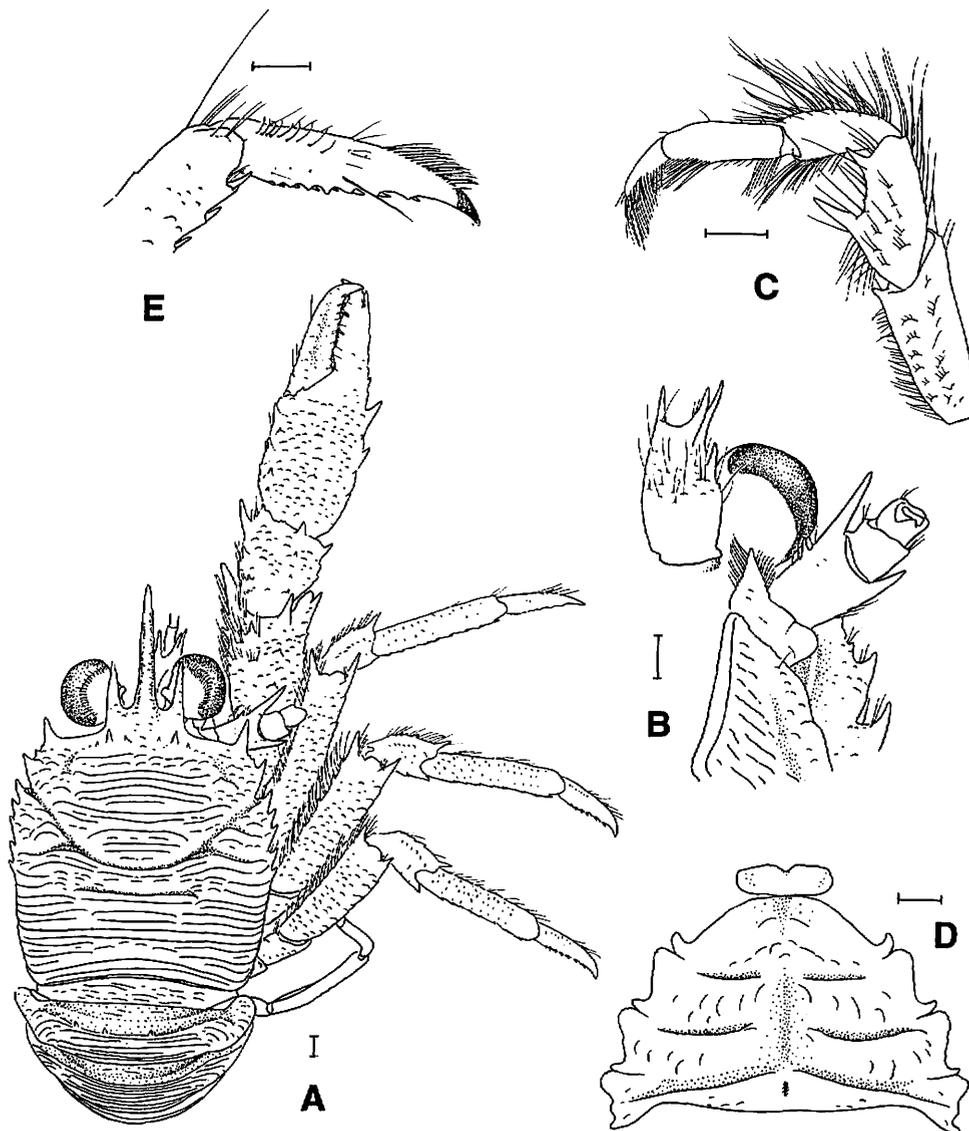


FIG. 6. *Munida rubridigitalis* sp. nov., male holotype. A, dorsal view, left appendages omitted; B, anterolateral part of cephalothorax, showing antennular and antennal peduncles, ventral view; C, endopod of left third maxilliped, lateral view; D, sternal plastron; E, distal segments of right first walking leg, lateral view. Scales = 1mm.

ETYMOLOGY

From the Latin *ruber* (red) and *digitalis* (pertaining to a finger), alluding to the reddish tips of the cheliped fingers, a character that separates the species from its close relative *M. compressa* Baba, 1988.

DESCRIPTION OF HOLOTYPE

Carapace, when measured from point level with mesial bases of left and right anterolateral spines to midpoint of posterior margin, slightly wider than long, dorsally arched from side to side, with numerous transverse ridges as figured,

median transverse ridge behind midcervical groove somewhat elevated. Cervical groove distinct. Epigastric region preceded by distinct depression, bearing row of 6 spines in 3 pairs, mesial pair small, subequal to lateral pair in size, median pair directly behind supraocular spines pronounced. No other spinulation elsewhere on carapace. Lateral margin somewhat convex medially, bearing 7 spines: 2 in front of, and 5 behind, anterior bifurcation of cervical groove; first anterolateral, largest, 2 very small denticles behind; second spine smaller than first; third to seventh subequal, placed on anterior branchial region. Front margin somewhat oblique.

Rostral spine considerably compressed laterally, relatively high dorsoventrally, upcurved to about 30°, length about half that of remaining carapace and about four-fifths distance between its base and midcervical groove. Supraocular spines relatively stout, subparallel, 0.4 times as long as rostral spine; elevated as high as rostral spine but tip somewhat depressed.

Abdominal segments with numerous striae; second segment dorsally with 7 ridges, anterior first ridge well elevated, with 8 spines of small size, fourth ridge preceded by distinct groove; third segment with 9 striae, fifth stria preceded by groove.

Eyes dilated, 0.25 times as wide as carapace excluding spines, eyestalks with fringe of short setae near cornea.

Basal segment of antennule, exclusive of spines, nearly reaching end of cornea; 2 terminal spines subequal in size. First (proximal) segment of antennal peduncle produced into short stout spine at ventral distomesial margin; second segment also produced on distomesial and distolateral margins into sharp spines (distomesial one reaching end of peduncle), with extra small spine at midpoint of mesial margin; third and fourth segments unarmed.

Third maxilliped having ischium with small spine on flexor distal margin, mesial ridge with 28 denticles. Merus distally narrowed, flexor margin with 2 spines, distal one terminal and smaller, proximal one situated at midlength of margin, prominent, accompanying very small spine distal to its base, extensor margin unarmed. Distal 2 segments slender.

Sternal plastron as figured, bearing scale-like ridges. Third thoracic sternite with bilobed anterior margin, 3.6 times as wide as long. Fourth thoracic sternite 2.3 times as long as preceding sternite, anterior margin rounded, its median portion contiguous to that of posterior margin of third

thoracic sternite. Seventh thoracic sternite lacking granules.

Chelipeds similar, relatively massive, granulate on surface, marginally provided with both iridescent and short fine plumose setae somewhat thicker on mesial margins of merus. Merus with anterior end not reaching tip of rostrum, with 4 terminal spines: dorsomesial spine strong, accompanied by small spine proximal to it; dorsal spine pronounced but smaller than dorsomesial, followed proximally by 7 other dorsal spines in row near lateral margin; lateral spine smaller, subequal to ventromesial, accompanied proximally by smaller spine; another distal spine middorsally, somewhat proximal to level of terminal spines. Carpus relatively short, somewhat longer than wide, spination as figured, distal second of mesial marginal spines prominent. Propodus moderately depressed, barely 1.5 times as long as carpus, 1.4 times as long as wide, lateral margin convex with 5 spines, distal one pronounced, remaining 4 very small; mesial margin with row of 4 or 5 small spines, those on right cheliped somewhat dorsal; dorsal surface proximally with small spine somewhat lateral to midline only on left cheliped. Fingers about as long as propodus, distally strongly curving, crossing when closed, opposable margins not gaping, lined with denticles, fixed finger having lateral margin with small subterminal and another small proximal one, movable finger unarmed on mesial margin.

Walking legs relatively stout, posteriorly diminishing in size, covered with squamiform ridges particularly distinct on meri, mesially with both fine plumose and iridescent setae thick on meri, carpi and proximal half of propodi. First walking leg fully reaching juncture between propodus and movable finger of cheliped. Merus with 11 or 12 extensor marginal spines on first and second walking legs, terminal one strong; 1 strong terminal and 1 or 2 small accompanying spinules on third walking leg; flexor margin with terminal spine about as large as extensor terminal on anterior 2 legs, somewhat smaller on third. Carpus having extensor margin with strong distal spine followed proximally by smaller spine and 3-6 denticles. Propodus 6 (first walking leg), 8 (second), 7 (third) times as long as high, 1.4 (first), 1.6 (second), 1.5 (third) times as long as dactylus, flexor margin with 8 relatively short corneous spines. Dactylus distally sharpened and curved, more distinctly so on third walking leg, extensor margin with rather stiff long setae on one-third length proximal to corneous toe, flexor

margin with 8 (on first and second) or 7 (on third) low processes each with seta-like inclined short spines, unarmed on distal fourth.

Epipods absent from all pereopods.

COLOUR IN PRESERVATIVE

Reddish on distal part of rostrum and distal half of fingers of cheliped.

VARIATION

Three pairs of epigastric spines usually present, occasionally accompanied by a few small spines or tubercular processes laterally. Lateral protogastric spines present or absent. Number of spines on second abdominal tergum varying between 8 and 11 (mostly 8). Merus of cheliped with or without spine proximal to prominent terminal dorsomesial one; another spine proximal to terminal ventromesial one often absent. Number of propodal flexor marginal spines varying from 7 to 11 (mostly 9) on first walking leg, 8 or 9 on second, mostly 8, often 9, rarely 7 on third.

REMARKS

Munida rubridigitalis is most closely related to *M. compressa* Baba, 1988, a species distributed from the Molucca Sea, South China Sea from off southwestern Luzon, north to off southwestern Formosa and Tosa Bay, 180-545m (Baba, 1988:91), in particular, the compressed rostrum with a red distal mark and the short chelipeds with pronounced terminal spines on the merus. The differences between the two species are very slight, but I believe that the combination of the following characters is sufficient to differentiate them: the transverse ridges on the carapace and abdominal segments in *M. rubridigitalis* are distinctly more numerous (seven and nine ridges on the second and third abdominal segment, respectively) and rather weakly elevated, while in *M. compressa* they are fewer (in particular, the second and third abdominal segments have only 3 ridges each) and major striae on the carapace are rather elevated; the propodi of the walking legs have 5 or 6 slender spines in *M. compressa*, 8 or 9 in *M. rubridigitalis*; the cheliped fingers are reddish on the distal half in *M. rubridigitalis*, whitish over their whole length in *M. compressa*; the pterygostomian flap has a reddish patch directly below the linea anomurica in *M. compressa* (Baba, unpubl.), none in *M. rubridigitalis*.

Munida squamosa Henderson, 1885

Munida squamosa Henderson, 1885: 409; Yanagita, 1943: 18; Macpherson, 1993: 425.

MATERIAL EXAMINED

Sta. 47-2 (17°51.76'S, 147°07.95'E), 503-497m, sledge, 16 May 1986, 13 ♂ (11.2-14.8mm), 11 ovig. ♀ (11.3-14.7mm), 3 ♀ (9.5-9.7mm), QMW19711.

REMARKS

According to Macpherson (1993: 425), *M. squamosa* is characterized by the prominent cardiac spine, presence of a spine on the distomesial margin of the second segment of the antennal peduncle, and short and stout dactyli of the walking legs, all to mention the obvious differences from *M. analoga* Macpherson, 1993, from the Philippines and Indonesia. The 'Albatross' material of *M. squamosa* identified by Baba (1988:133) was merged with *M. analoga* (Macpherson, 1993: 424).

RANGE

Previously known from the Admiralty Islands and Japan in 275-360m. The known range is now extended to eastern Australia.

Munidopsis Whiteaves, 1874

Munidopsis cidaris sp. nov.

(Fig. 7)

MATERIAL EXAMINED

HOLOTYPE: ♂ (11.6mm), QMW19712, Sta. 25-1 (17°18.73'S, 147°37.20'E), 1,128-1,178m, beam trawl, 11 May 1986.

ETYMOLOGY

The specific name is a noun in apposition from the Greek *kidaris*, referring to the name of this expedition.

DESCRIPTION OF HOLOTYPE

Carapace, excluding rostrum, slightly longer than wide, narrowed posteriorly, moderately arched transversely, greatest width between anterior branchial regions, cervical groove distinct. Gastric region lacking dorsal spines, with scale-like rugae moderately elevated; moderately inflated metagastric area of reverse triangle-shape defined by shallow groove arising from near junction of anterior and posterior bifurcations of cervical groove. Hepatic and anterior branchial regions separated by anterior cervical groove, provided dorsally with tubercles; each

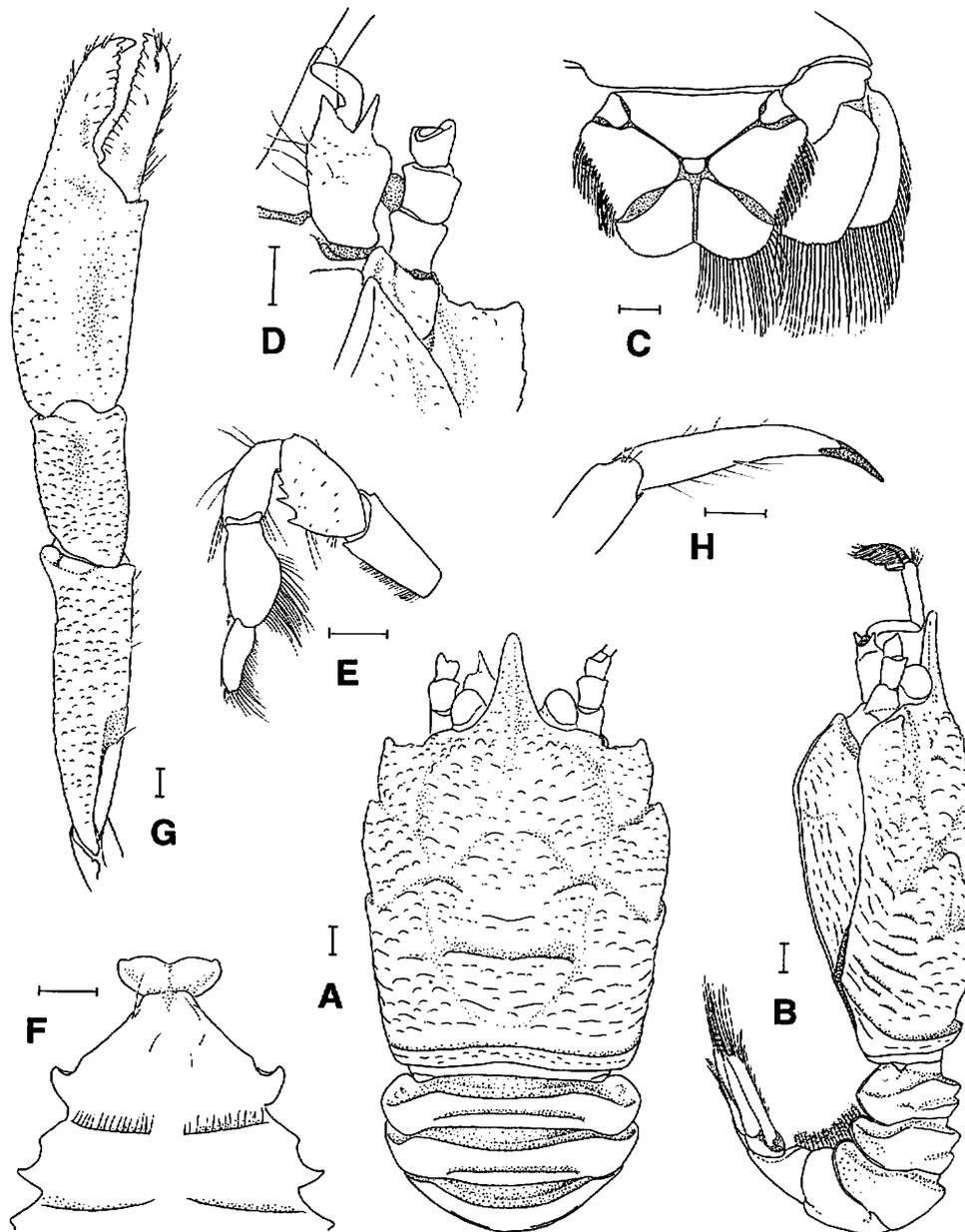


FIG. 7. *Munidopsis cidaris* sp. nov., male holotype. A, carapace and abdomen, dorsal view; B, same, lateral view; C, telson and right uropod; D, anterolateral part of cephalothorax, showing antennular and antennal peduncles, ventral view; E, endopod of left third maxilliped, lateral view; F, sternal plastron, posterior portion omitted; G, left cheliped, dorsal view; H, distal segments of right first walking leg, lateral view. Scales = 1mm.

margin lobe-like, separated by notch corresponding to cervical groove, anterior lobe (hepatic) with blunt short anterolateral spine. End of posterior bifurcation of cervical groove bordering anterior and posterior branchial regions, as figured. Posterior half of carapace with larger scale-like ridges more distinctly elevated than those on gastric region; cardiac region well elevated anteriorly but sloping down posteriorly, with transverse ridge considerably raised in profile from level directly anterior to it. Front margin slightly oblique, convex directly behind insertion of antennal peduncle.

Rostrum short, roughly triangular, basally wide, 0.27 times as long as remaining carapace; nearly horizontal, dorsally weakly carinate, ending in rounded tip.

Eyes small, immovable, reaching to about mid-length of rostrum, corneas rounded; eyestalks short without any processes.

Abdominal segments rather smooth, second and third segments each with anterior and posterior transverse ridges, both well elevated; fourth segment with anterior ridge only, fifth segment without ridges, sixth segment without distinct lobes on posterior margin. Telson divided into 8 plates, midlateral plate fringed with stiff setae.

Basal segment of antennule elongate, more narrowed proximally than distally, with distodorsal spine of moderate size; lateral margin markedly inflated; distomesial portion produced but not spiniform; ventral terminal margin denticulate and strongly sloping. Antennal peduncle unarmed, first (proximal) segment with very short blunt process on ventral distomesial margin; second segment narrowed proximally.

Ischium of third maxilliped with small spine on flexor distal margin; mesial ridge with 24 denticles. Merus distinctly longer than ischium when measured in midlateral line, lateral face widest at midlength, flexor margin with 4 or 5 distally diminishing spines on distal half.

Third thoracic sternite strongly narrowed posteriorly, width slightly less than half that of following sternite, anterior margin sinuous, greatest width 3 times greatest length. Fourth thoracic sternite subtriangular, with anteriorly truncate margin contiguous to posterior margin of preceding sternite.

Chelipeds unequal in length, left one longer and wider; length 2.5 (left) or 2.1 (right) times that of carapace excluding rostrum; finely granulate, sparsely provided with short setae; somewhat depressed distally. Merus with distomesial mar-

gin bluntly produced. Carpus as long as movable finger. Propodus 1.8 times as long as wide, 1.26 (left) or 1.08 (right) times as long as movable finger; mesial margin nearly straight, lateral margin convex. Fingers slightly gaping on left, not gaping on right, ventrally spooned, opposable margins lined with denticles, medially strongly convex on fixed finger, somewhat concave on movable finger; distally incurved to cross each other when closed.

Walking legs relatively slender, finely granulate, nonspinose on surface, gradually diminishing in length; first walking leg ending at about middle of movable finger of cheliped. Merus with lateral face flattish, extensor margin crested with rounded ridge continued into carpus, flexor distal margin with minute process. Propodus about 8 times as long as wide, 1.5 times length of dactylus, flexor margin with small distal spine. Dactylus slender, strongly curving, distally spiniform, flexor margin nearly smooth, with a few very small eminences discernible under high magnification.

Epipods present on chelipeds and following two pairs of walking legs.

REMARKS

The carapace bearing scale-like, elevated tubercles, well-defined regions, weak lateral marginal spines, the second and third abdominal segments unarmed but with two elevated transverse ridges, and the chelipeds lacking distinct spines, link the species to *M. hemingi* Alcock & Anderson, 1899, obtained by the 'Investigator' from the Travancore [Kelara] coast in 787m (Alcock & Anderson, 1899:19; Alcock, 1901:251). The 'Investigator' species, however, has the carapace broader behind than in front, and bears distinct epigastric spines; the eyes are slightly movable, and have a very small papilliform spine at the mesial angle of the eyestalk; the cheliped has a distomesial spine on the carpus; and the four pairs of pereopods bear epipods. These characters all serve to separate it from *M. cidaris*.

Munidopsis rostrata (A. Milne Edwards, 1880)

Galacantha rostrata A. Milne Edwards, 1880: 52.

Galacantha rostrata: Chace, 1942: 75 (synonymy and references); Baba, 1988: 161.

MATERIAL EXAMINED

Sta. 32-2 (17°05.89'S, 147°11.85'E), 1,539-1,517m, beam trawl, 13 May 1986, 4 ovig. ♀ (15.7-18.0mm), 1 ♀ (13.7mm), QMW19713.

RANGE

This widespread species occurs in the Indo-Pacific, Atlantic and Southern Oceans, in 1,650-3,294m. See Chace (1942:76) and Baba (1988:162) for distribution.

Munidopsis trachynotus (Anderson, 1896)

Galacantha trachynotus Anderson, 1896: 100.

Munidopsis trachynotus: Baba, 1988: 171 (synonymy and references).

MATERIAL EXAMINED

Sta. 30-4 (17°19.12'S, 147°11.20'E), 1,403-1,385m, beam trawl, 12 May 1986, 1 ♂ (25.7mm), QMW19714.

RANGE

Previously known from the Arabian Sea and Sulawesi, in 1,380-1,893m.

Munidopsis valdiviae (Doflein & Balss, 1913)

Galacantha valdiviae Doflein & Balss, 1913: 147, fig. 15, pl. 16: fig. 2.

Munidopsis valdiviae: Baba, 1982: 112, pl. 1: fig. 1; 1988: 173, fig. 71.

MATERIAL EXAMINED

Sta. 13-1 (17°58.49'S, 148°38.40'E), 1,040-1,059m, beam trawl, 8 May 1986, 1 ♂ (19.6mm), QMW19715.

REMARKS

In this specimen, the two epigastric spines which are usually very small, are absent.

RANGE

Previously known from east Africa off southern Somali Republic, Molucca Sea off northwestern Sulawesi, Palawan Passage, and Japan, in 1,120-1,644m. The range is now extended to north-eastern Australia.

Paramunida Baba, 1988***Paramunida scabra*** (Henderson, 1885)

Munida scabra Henderson, 1885: 409.

Paramunida scabra: Baba, 1988: 180 (synonymy and references); 1990:968, fig. 15A.

MATERIAL EXAMINED

Sta. 47-2 (17°51.76'S, 147°07.95'E), 503-497m, sledge, 16 May 1986, 4 ♂ (8.1-9.9mm), 6 ovig. ♀ (7.2-8.2mm), QMW19716.

REMARKS

The antennal peduncles are as described and illustrated for *Paramunida tricarinata* from Madagascar, not as in the female syntype of *P. scabra* (see Baba, 1990:986, fig. 15), but the gastric spination is typical of the species, having a median spine only.

RANGE

Previously known from the Malay Archipelago including the Kei Islands, northern Borneo and Philippines, off Hong Kong, off southwestern Taiwan, East China Sea, and Japan, in 70-1,630m. The range is now extended south to off northeastern Australia.

ACKNOWLEDGEMENTS

I thank Dr. Michel Pichon, cruise leader of the 'Cidaris I' Expedition and deputy director of the Australian Institute of Marine Science, Dr. Peter Arnold, a curator at the Museum of Tropical Queensland, Townsville, and Frank Hoedt, then research officer with the project, for making the specimens available for study. The holotype of *Galathea inconspicua* Henderson in the collection of the Natural History Museum, London, was made available on loan through Paul F. Clark to whom I express my appreciation. The manuscript benefited from reviews by Peter J.F. Davie of the Queensland Museum, Gary C.B. Poore of the Museum of Victoria, Melbourne, and an anonymous reviewer, and from discussion with Enrique Macpherson of the Instituto de Ciencias del Mar, Barcelona and Michèle de Saint Laurent of the Muséum national d'Histoire naturelle, Paris. Pertinent background data were made available by Peter Davie.

LITERATURE CITED

- ALCOCK, A. 1894. Natural history notes from H.M. Indian marine survey steamer 'Investigator', commander R.F. Hoskyn, R.N., late commanding. - Series II, No. 1. On the results of the deep-sea dredging during the season 1890-91 (continued). *Annals and Magazine of Natural History* (6)13: 321-334.
- ALCOCK, A. & ANDERSON, A.R.S. 1899. 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.
- ANDERSON, A.R.S. 1896. Natural history notes from the R.I.M.S. steamer 'Investigator'. Ser. II, No. 21. An account of the deep-sea Crustacea collected during the season 1894-95. *Journal of the Asiatic Society of Bengal* 65(II:2): 88-106.
- BABA, K. 1969. 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, Occasional Papers of the Zoological Laboratory, Faculty of Agriculture, Kyushu University 2(1): 1-32.
1970. Redescription of *Bathymunida brevirostris* (Yokoya, 1933) (Crustacea, Decapoda, Galatheidae). *Memoirs of the Faculty of Education, Kumamoto University, Section 1 (Natural Science)* 18: 59-62.
1982. 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, series A (Zoology)* 8(3): 103-118.
1986. Two new anomuran Crustacea (Decapoda: Anomura) from north-west Australia. *The Beagle* 3(1): 1-5.
1988. Chirostylid and galatheid crustaceans (Decapoda: Anomura) taken by the 'Albatross' Philippine Expedition, 1907-1910. *Researches on Crustacea, Special Number 2: v*, 1-203.
1989. Anomuran crustaceans obtained by dredging from Oshima Strait, Amami-Oshima of the Ryukyu Islands. *Memoirs of the National Science Museum* 22: 127-134.
1990. Chirostylid and galatheid crustaceans of Madagascar (Decapoda: Anomura). *Bulletin du Muséum national d'Histoire naturelle, Paris* (4) section A, (1989) 11(4): 921-975.
- BABA, K., HAYASHI, K. & TORIYAMA, M. 1986. Decapod crustaceans from continental shelf and slope around Japan. (Japan Fisheries Resource Conservation Association: Tokyo).
- 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(3): 538-544.
- BABA, K. & SAINT LAURENT, M. DE. 1992. Chirostylid and galatheid crustaceans (Decapoda: Anomura) from active thermal vent areas in the southwest Pacific. *Scientia marina* 56(4): 321-332.
- BABA, K. & TÜRKAY, M. 1992. *Munida magniantennulata*, a new deepsea decapod crustacean from active thermal vent areas of Valu-Fa-Ridge in the Lau Basin, SW-Pacific (Anomura: Galatheidae). *Senckenbergiana maritima* 22(3/6): 203-210.
- BALSS, H. 1914. Über einige interessante decapoden der 'Pola'-Expeditionen in das Rote Meer. *Anzeiger der Kaiserlichen Akademie der Wissenschaften, Mathematisch-Naturwissenschaftliche Klasse* 51(9): 133-139.
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(10): 2-24.
- BOONE, L. 1935. Scientific results of the world cruise of the yacht 'Alva' 1931, William K. Vanderbilt, commanding. Crustacea and Echinodermata. *Bulletin of the Vanderbilt Marine Museum, Huntington, New York* 6: 1-264.
- BRUCE, A.J., 1989. Two mantis shrimps new to the Australian fauna (Crustacea: Stomatopoda: Bathysquillidae). *The Beagle* 5 (1988): 87-95.
1990. *Periclimenes franklini* sp. nov., a new deep sea shrimp from the Coral Sea (Crustacea: Decapoda: Palaemonidae). *The Beagle* 7(1): 55-64.
- CHACE, F.A., Jr. 1942. The anomuran Crustacea. I. Galatheidea. Reports on the scientific results of the Atlantis expeditions to the West Indies, under the joint auspices of the University of Havana and Harvard University. *Torreia* 11: 1-106.
- CROSNIER, A. 1988. Contribution à l'étude des genres *Haliporus* Bate 1881 et *Gordonella* Tirmizi 1960 (Crustacea Decapoda Penaeoidea). Description de deux espèces nouvelles. *Bulletin du Muséum national d'Histoire naturelle, Paris* (4) 10(A): 563-601.
- DOFLEIN, F. & BALSS, H. 1913. Die galatheiden der Deutschen Tiefsee-Expedition. *Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem dampfer 'Valdivia' 1898-1899, Jena* 20: 125-184.
- FABRICIUS, J.C. 1793. 'Entomologia systematica emendata et aucta secundum classes, ordines, genera, species ajectis synonymis, locis, observationibus, descriptionibus'. Volume 2. Hafniae.
- GRANT, F.E. & McCULLOCH, A.R. 1906. On a collection of Crustacea from the Port Curtis district, Queensland. *The Proceedings of the Linnean Society of New South Wales* 31: 2-53.
- HAIG, J. 1973. Galatheidea (Crustacea, Decapoda, Anomura) collected by the F.I.S. Endeavour. *Records of the Australian Museum* 28(14): 269-289.
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(2): 443-451.
- HALE, H.M. 1927. 'The crustaceans of South Australia'. Part 1. (Government Printer: Adelaide).
- HASWELL, W.A. 1882a. Description of some new species of Australian Decapoda. *The Proceedings*

- of the Linnean Society of New South Wales 6: 750-763.
- 1882b. 'Catalogue of the Australian stalk and sessile-eyed Crustacea'. (Australian Museum: Sydney).
- HENDERSON, J.R. 1885. Diagnoses of the new species of Galatheidea collected during the 'Challenger- Expedition. Annals and Magazine of Natural History (5) 16: 407-421.
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.
- KHODKINA, I.V. 1981. A contribution to the fauna of the family Galatheidae (Decapoda) of the south-west Pacific. Zoologicheskii Zhurnal 60(8): 1261-1264.
- LEACH, W.E. 1820. Galatéadées. Dictionnaire des Sciences Naturelles, Paris 18: 48-56.
- LEWINSOHN, C. 1967. Beitrag zur kenntnis und verbreitung von *Galathea australiensis* Stimpson, 1858, (Crustacea Decapoda, Anomura, Galatheidae) nebst beschreibung eines neotypus. Zoologische Mededelingen, Leiden 42(18).
- MACPHERSON, E. 1990. Crustacea Decapoda: on a collection of Nephropidae from the Indian Ocean and Western Pacific. In, Crosnier, A. (ed.), Résultats des campagnes MUSORSTOM, Volume 6. Mémoires du Muséum national d'Histoire naturelle, Paris (A) 145: 289-328.
1993. 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. Memoires du Muséum national d'Histoire naturelle, Paris, Zoologie 157: 381-420.
- MACPHERSON, E. & BABA, K. 1993. Crustacea Decapoda: *Munida japonica* Stimpson, 1858, and related species (Galatheidae). In Crosnier, A., (ed.), 'Résultats des Campagnes MUSORSTOM', Volume 10. Memoires du Muséum national d'Histoire naturelle, Paris, Zoologie 157: 381-420.
- McNEILL, F.A. 1926. The biology of North-West Islet, Capricorn Group. Australian Zoologist 4(5): 299-318.
1968. Crustacea, Decapoda & Stomatopoda. -Scientific Reports of the Great Barrier Reef Expedition 1928-29, British Museum 7(1): 1-98.
- MELIN, G. 1939. Paguriden und galatheaiden von Prof. Dr. Sixten Bocks Expedition nach den Bonin-Inseln 1914. Kungliga Svenska Vetenskapsakademiens Handlingar (3) 18(2):1-119
- MIERS, J.E. 1884. Crustacea. Pp. 178-322, 513-575. In 'Report on the zoological collections made in the Indo-Pacific Ocean during the voyage of H.M.S. 'Alert' 1881-2'. (British Museum: London).
- MILNE EDWARDS, A. 1880. Reports on the results of dredging under the supervision of Alexander Agassiz, in the Gulf of Mexico and in the Caribbean Sea, etc. VIII. Etudes préliminaires sur les Crustacés. Bulletin of the Museum of Comparative Zoology at Harvard College, in Cambridge 8(1): 1-68.
- MIYAKE, S. 1982. 'Japanese crustacean decapods and stomatopods in color'. Vol. 1. Macrura, Anomura and Stomatopoda. Hoikusha: Osaka.
- ORTMANN, A. 1894. Crustaceen. Pp. 3-80. In Semon, R. (ed.), 'Zoologische forschungsreisen in Australien und dem Malayischen Archipel'. Denkschriften der medizinisch-naturwissenschaftlichen Gesellschaft zu Jena 8.
- POORE, G.C.B. & BARDSLEY, T.M. 1992. Austrarcturellidae (Crustacea: Isopoda: Valvifera), a new family from Australasia. Invertebrate Taxonomy 6: 843-908.
- RICHER DE FORGES, B. & GUINOT, D. 1990. A new *Cyrtomaia*: *C. griffini* from Australia (Crustacea: Decapoda: Brachyura). Memoirs of the Queensland Museum 28(2): 523-530.
- SAINT LAURENT, M. DE & MACPHERSON, E. 1990. Les especes atlantiques du genre *Eumunida* Smith, 1883 (Crustacea: Decapoda: Chirostylidae). Journal of Natural History, 24(3): 647-666.
- 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.
- VAN DAM, A.J. 1938. Die gattung *Bathymunida* Balss. Zoologischer Anzeiger 121: 194-202
- WHITEAVES, J.F. 1874. On recent deep-sea dredging operations in the Gulf of St. Lawrence. American Journal of Science (3) 7: 210-219.
- WHITELEGGE, T. 1900. Crustacea Part I. Scientific results of the trawling expedition of H.M.C.S. Thetis, off the coast of New South Wales, in February and March, 1898. Australian Museum, Sydney, Memoir 4:133-199.
- 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 1923-1930. Journal of the College of Agriculture, Tokyo Imperial University 12(1): 1-226.