

Shallow-water Species of the Genus *Munida* (Crustacea, Decapoda, Anomura, Galatheidae) from the Ryukyu and Ogasawara Islands, southern Japan

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Abstract Three species of *Munida* Leach, 1820 are reported from the shallow-water of the Ryukyu and Ogasawara Islands, southern Japan. The present record of *Munida leptosyne* Macpherson, 1994 greatly extends its geographical distribution northwards into the northern hemisphere, and the fresh color pattern of the species is described for the first time. Intraspecific morphological variations of *Munida olivariae* Macpherson, 1994, are discussed. The species usually inhabits in a small hole as probable empty tube of unidentified serpulid polychaete on the coral reef slopes. *Munida kawamotoi* sp. nov. is described on the basis of three specimens from Kume-jima Island of the central Ryukyus. This species appears closest to *M. hyalina* Macpherson, 1994, but is distinguished from the latter species primary by the structure of the seventh thoracic sternite, basal segment of the antennular peduncle, and fingers of the cheliped. The color photographs of three *Munida* species are also provided for their effective identification.

Key words: Crustacea, Decapoda, Galatheidae, *Munida*, new species, fresh coloration, southern Japan.

The genus *Munida* Leach, 1820 is actually represented by more than 140 species (Macpherson & Machordom, 2000: 253). The number of the Indo-West Pacific species have been rapidly increased by the recent studies (e.g., Baba, 1988; Macpherson & de Saint Laurent, 1991, 2002; Macpherson & Baba, 1993; Macpherson, 1994, 1999, 2000), although some species were transferred to several new genera (Baba, 1988; Baba & de Saint Laurent, 1996; Macpherson, 1998; Macpherson & Machordom, 2000). *Munida* mainly includes deep-water inhabitants, and there are few species recorded from shallow-water up to the depth of 50 m (see Macpherson, 1994). In the Indo-West Pacific region, the galatheids from the shallow-water around coral reefs have been usually known to comprise species of the genera such as *Galathea* Fabricius, 1793, *Phylladiorhynchus* Baba, 1969, and *Sadayoshia* Baba,

1969 (Miyake & Baba, 1966; Baba, 1979, 1982).

Examination of the galatheid specimens recently collected by SCUBA diving at the depth of 10–35 m in the Ryukyu and Ogasawara Islands discloses that they include three species of *Munida* and the one species should be regarded as new to science. The present paper provides supplemental remarks of *M. leptosyne* Macpherson, 1994 and *M. olivariae* Macpherson, 1994, and description of *M. kawamotoi* sp. nov., with the illustrations and color photographs of the fresh specimens.

The carapace length (CL), as the indication of specimen size, was measured from the level of the sinus formed by rostrum and supraocular spines to the posterior margin in the midline. The lengths of segments of cheliped are measured along the dorsomesial margin and those of walking legs are along the extensor margin, respec-

tively. The terminology used generally follows previous studies (e.g., Macpherson & de Saint Laurent, 1991; Macpherson, 1994; Baba & de Saint Laurent, 1996). The specimens examined are deposited in the Coastal Branch of Natural History Museum and Institute, Chiba (CMNH) and the National Science Museum, Tokyo (NSMT).

Taxonomy

Family Galatheidae

Genus *Munida* Leach, 1820

Munida leptosyne Macpherson, 1994

(Figs. 1, 5A)

Munida leptosyne Macpherson, 1994: 489, fig. 28.

Material examined. 1 ovigerous female (CL 6.1 mm); Tonbarazashi, Kume-jima Island, Ryukyu Islands; 35 m; 23 Oct. 2001; SCUBA diving; coll. T. Kawamoto; CMNH-ZC 784.

Color (Fig. 5A). The fresh color pattern of this species is described for the first time. Ground color of the carapace, abdominal segments, and chelipeds is light orange. The anterior branchial regions are whitish. The second to fourth abdominal segments each has 3 white patches each along the anterior margin of the dorsal surface. The movable and fixed fingers of the chelipeds possess few dark orange patches on the distal part of the dorsal surface. The walking legs are semitransparent, with transverse red and light orange bands on the lateral surface.

Distribution. Previously known only from the Loyalty and Chesterfield Islands, 6–100 m. (Macpherson, 1994). The present record of the species from the Ryukyu Islands greatly extends its geographical distribution northwards into the northern hemisphere.

Remarks. The present specimen agrees well with the original description of *M. leptosyne* by Macpherson (1994: 489), except for the armature on the dorsal anterior ridge of the second abdominal segment. The original description mentions that the species has 8 spines, but the present

specimen possesses only 7 spines (Fig. 1A).

Munida leptosyne closely resembles *M. gordoae* Macpherson, 1994 from New Caledonia, Loyalty Islands, and Matthew and Hunter Islands, Chesterfield Islands, and Vanuatu, and *M. barbeti* Galil, 1999 from Mauritius, Madagascar, and Reunion and Aldabra Islands, in having the lateral margins of the carapace each with four spines behind cervical groove (Fig. 1A), small coarse granules restricted only on the lateral parts of the seventh thoracic sternite (Fig. 1B), second abdominal segment with a row of 7 or 8 spines along the dorsal anterior ridge (Fig. 1A), and basal segment of the antennular peduncle (distal spines excluded) overreaching the distal margin of the cornea (Fig. 1C). However, both *M. leptosyne* and *M. barbeti* differ from *M. gordoae* by having the anterior branchial region of the carapace each with a spine, fourth thoracic sternite with the anterior margin being narrower than the third sternite (in *M. gordoae*, the anterior margin is subequal to the preceding sternite), basal segment of the antennular peduncle with distomesial spine being longer than the distolateral (in *M. gordoae*, the distomesial spine is shorter than the ditolateral), and second segment of the antennal peduncle with the distomesial spine not or nearly reaching the distal margin of the third segment (in *M. gordoae*, the distomesial spine exceeds the distal margin of the third segment). *M. leptosyne* is further distinguished from *M. barbeti* primarily by the anterior margin of the fourth thoracic sternite being more distinctly narrower than that of *M. barbeti* and dactylus of the chelipeds being distinctly longer than the palm (Fig. 1D; in *M. barbeti*, the dactylus is subequal to the palm). The color pattern also distinguishes *M. leptosyne* from *M. barbeti*. *Munida leptosyne* possesses entirely light orange chelipeds and red and light orange banded walking legs, whereas *M. barbeti* is described as having red and yellow stripes on the chelipeds and walking legs (see Galil, 1999: 61).

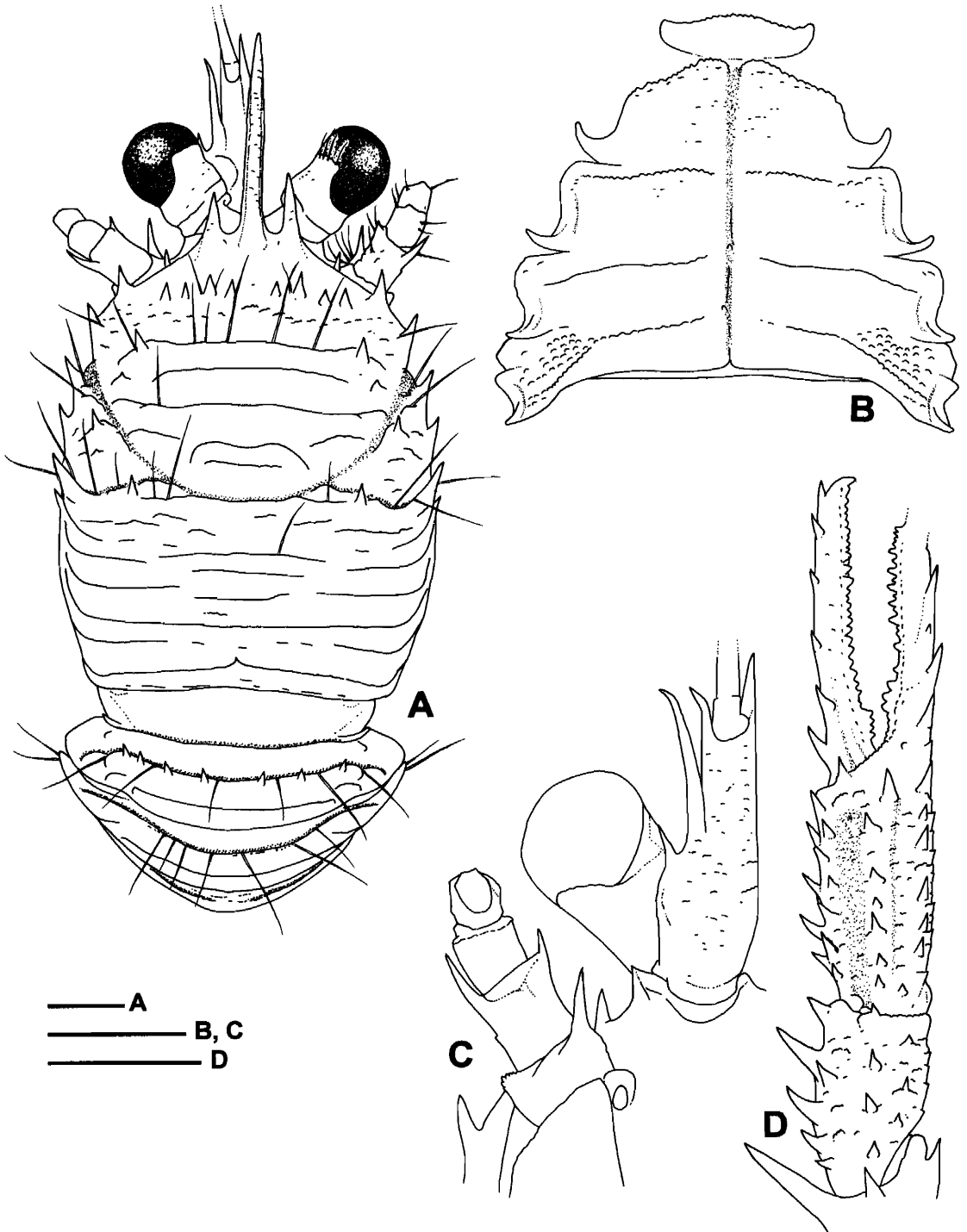


Fig. 1. *Munida leptosyne* Macpherson, 1994, ovigerous female (CL 6.1 mm) from Kume-jima Island, Ryukyu Islands (CMNH-ZC 784). A, carapace, abdomen, and cephalic appendages, dorsal, setae partially omitted; B, sternal plastron, ventral, setae omitted; C, right cephalic region, showing antennular and antennal peduncles, ventral, setae omitted; D, carpus and chela of right cheliped, distal part of fixed finger broken, dorsal, setae omitted. Scales equal 1.0 mm.

Munida olivarae Macpherson, 1994

(Figs. 2, 5B)

Munida olivarae Macpherson, 1994: 505, figs. 36, 80; Osawa *et al.*, 2002: 2, figs. 1–3.

Galathea sp. 2: Gosliner *et al.*, 1996: 226, unnumbered fig.

Galatheidae sp.: Debelius, 1999: 241, unnumbered fig.; Minemizu, 2000: 167, unnumbered fig.

Material examined. Ryukyu Island: 1 female (CL 5.6 mm); Hamazaki, Kakeroma Island (near Amami-oshima Island); about 10 m; 30 Aug. 1993; collector not recorded; NSMT-Cr 14395. 1 male (CL 6.8 mm); Maeda-misaki, Onna, Okinawa Island; 20.1 m; 5 May 2000; SCUBA diving; coll. Y. Fujita; NSMT-Cr 14269. 1 ovigerous female (CL 4.3 mm); Minna-jima Island; depth not recorded; 14 Oct. 1999; coll. M. Ueda; CMNH-ZC 808. 1 juvenile (CL 2.4 mm); south off Hatonohama; Kume-jima Island; 13 m; 19 Jul. 1997; coll. S. Ogawa; NSMT-Cr 14396. 1 male (CL 5.3 mm); Imazuni, Kumejima-Island; 15 m; 21 Oct. 2001; SCUBA diving; coll. T. Kawamoto; CMNH-ZC 647. 1 ovigerous female (CL 6.2 mm); Amitori, Iriomote Island; 30 m; 15 May 1998; SCUBA diving; coll. R. Minemizu; NSMT-Cr 14397.

Ogasawara Islands: 1 ovigerous female (CL 6.7 mm); Otouto-jima Island; 25 m; date not recorded; SCUBA diving; coll. O. Morishita; CMNH-ZC 782.

Color (Fig. 5B). Ground color of the carapace, abdominal segments, and chelipeds is reddish orange. The epigastric, hepatic, and anterior branchial regions have white patches. The second to fourth abdominal segments each possesses 3 small white patches on the dorsal surface. The chelipeds have irregular-sized white or pale yellow patches on the dorsal surface. The walking legs are semitransparent, with transverse red and light orange or yellow bands on the lateral surface.

Distribution. New Caledonia, Loyalty Islands, and Matthew and Hunter Islands (Macpherson, 1994), Philippines (Gosliner *et al.*, 1996), Kii Peninsula of central Japan, and Ryukyu and Ogasawara Islands (Osawa *et al.*,

2002; present study); 6–190 m.

Remarks. Macpherson (1994: 505) characterized *M. olivarae* by having a set of characters as follows: the anterior margins of the carapace are strongly oblique, the lateral margins of the carapace each has five spines behind cervical groove (Fig. 2A); the thoracic sternites is mostly smooth; the second abdominal segment is unarmed on the dorsal anterior ridge (Fig. 2A); the basal segment of the antennular peduncle has the distomesial spine longer than the distolateral (Fig. 2C); the movable and fixed fingers of the cheliped are armed with a row of spines along the mesial and lateral margin, respectively (Fig. 2D); and the propodus of the walking legs is slightly longer than dactylus (Fig. 2E). *Munida clinata* Macpherson, 1994 from the Philippines, Indonesia, New Caledonia, Chesterfield Islands, Futuna Island, and Vanuatu, and *M. foresti* Macpherson & de Saint Laurent, 2002 from Reunion Island appear closest to *M. olivarae*. However, *M. clinata* is distinguished from *M. olivarae* by having the antennular peduncle with subequal distal spines and propodus of the walking legs being about 1.5 times longer than the dactylus, in addition to the palm of the cheliped with less number of spines on the dorsal surface than that of *M. olivarae*. (see Macpherson, 1994: 507). The color pattern is also clearly different in the two species as shown by Macpherson (1994: 505, fig. 80; 1995: 391, fig. 13). *Munida foresti* differs from *M. olivarae* by having the second segment of the antennular peduncle with a distomesial spine overreaching the end of the third segment (in *M. olivarae*, only reaching the end of the third segment), in addition to less strongly oblique frontal margins of the carapace and more slenderer dactyli of the walking legs (see Macpherson & de Saint Laurent, 2002: 469: fig. 1).

Specimens examined have some morphological characters disagreeing with the original description of *M. olivarae* by Macpherson (1994). The seventh thoracic sternite varies to possess no or few to several, coarse granules on the lateral parts (Fig. 2B); but the original description mentions it as smooth. The branchial margins of the

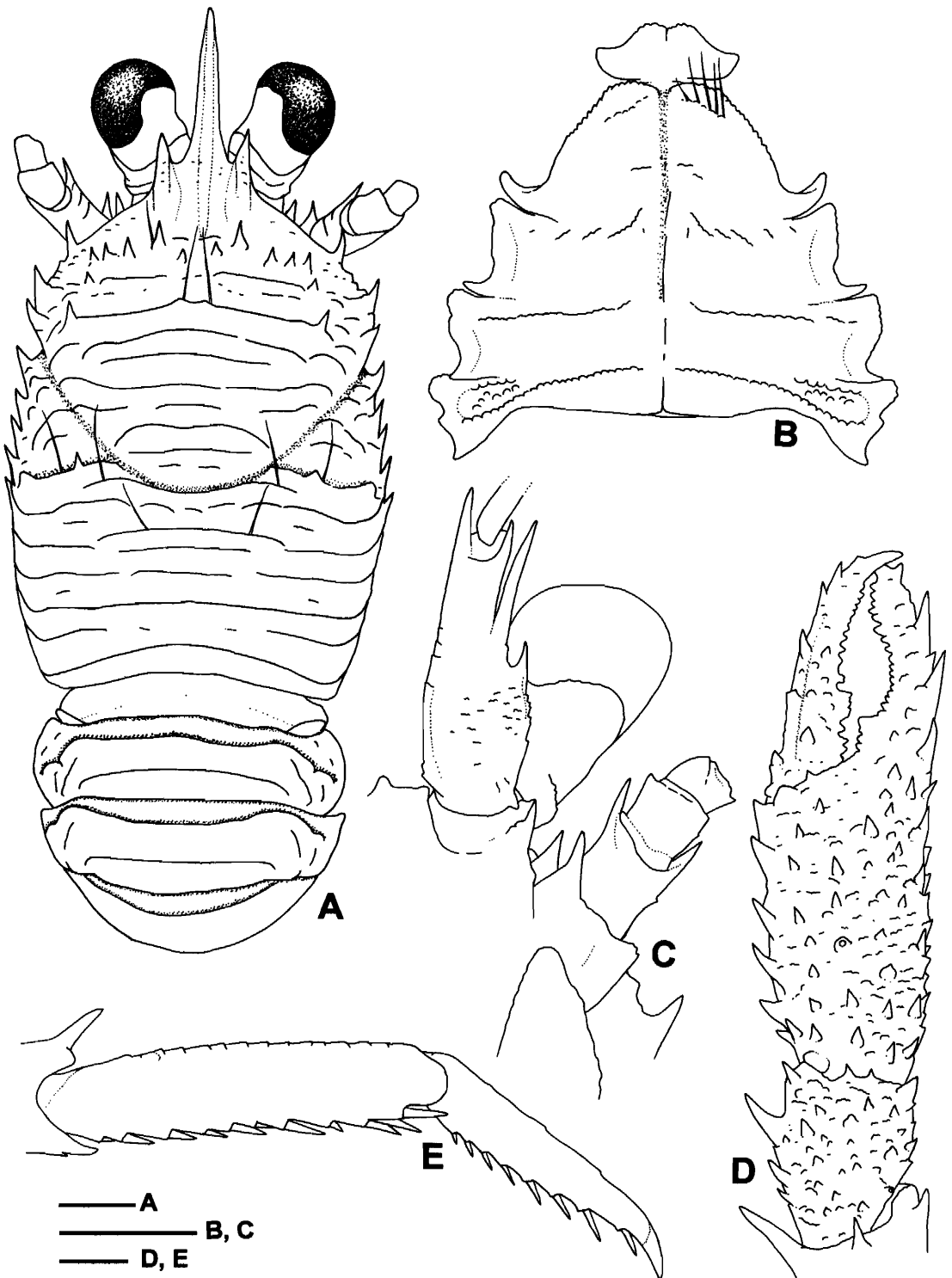


Fig. 2. *Munida olivariae* Macpherson, 1994, male (CL 6.8 mm) from Okinawa Island, Ryukyu Islands (NSMT-Cr 14269). A, carapace, abdomen, and cephalic appendages, dorsal, setae partially omitted; B, sternal plastron, ventral, setae partially omitted; C, left cephalic region, showing antennular and antennal peduncles, ventral, setae omitted; D, carpus and chela of right cheliped, dorsal, setae omitted; E, propodus and dactylus of right second pereopod (first walking leg), lateral, setae omitted. Scales equal 1.0 mm.

carapace each has four spines in two female specimens (CL 4.3 mm, CMNH-ZC 808; CL 5.6 mm, NSMT-Cr 14395), whereas it possesses five spines in the type material and the posteriormost spine is sometimes very small in other specimens examined. The distal spines on the basal segment of the antennular peduncle are subequal in the juvenile specimen (CL 2.4 mm, NSMT-Cr 14396), but the distomesial spine is longer than the distolateral in the original description. However, the other characters observed and color pattern of the specimens examined generally agree well with those of *M. olivarae*. The difference in the armature of the antennular basal segment of the juvenile is probably due to the development of the specimen. The structures of the branchial margins of the carapace and thoracic sternites have been regarded as useful characters for distinguishing species of *Munida* (e.g., Baba, 1988; Macpherson & de Saint Laurent, 1991; Macpherson, 1994). Although it is no doubt that these characters are important in the species identification with caution, they seem to be regarded as rather intraspecific variations in *M. olivarae* than the characters of other species. Taking the morphological variations into consideration, *M. olivarae* resembles *M. evarne* Macpherson & de Saint Laurent, 1991 from the Tubuai Islands of the French Polynesia in having the strongly oblique anterior margins of the carapace, short supraocular and anterolateral spines, stout chelipeds armed with numerous strong spines, and rather short propodus of the walking legs, in addition to the structures of the antennular basal segment, antennal peduncle, and third maxilliped. However, *M. olivarae* can be distinguished from *M. evarne* by the armature on the second abdominal segment and seventh thoracic sternite. The dorsal anterior ridge on the second abdominal segment is unarmed in *M. olivarae*, but it has a median pair of small spines in *M. evarne*. The seventh thoracic sternite possesses more number of coarse granules on the lateral parts in *M. evarne*, but the granules are completely lacking or reduced to few or several number in *M. olivarae*, as mentioned above

The juvenile specimen examined (CL 2.4 mm, NSMT-Cr 14396) has a pair of flattish subovate pleopods similar to those of the adult male, each on the third to fifth abdominal segments; but lacks gonopods on the first and second abdominal segments and gonopores on the coxae of the fifth pereopods unlike the male as well as gonopores on the coxae of the third pereopods unlike adult female.

Osawa *et al.* (2002: 2, 5) pointed out the unusual habitat of *M. olivarae*. This species usually inhabits a small hole as probable empty tube of unidentified serpulid polychaete on the coral or rocky reef slopes. The underwater photographs of the galatheid were also provided by Gosliner *et al.* (1996: 226, as *Galathea* sp. 2), Debelius (1999: 241, as *Galatheidae* sp.), and Minemizu (2000: 167, as *Galatheidae* sp.).

***Munida kawamotoi* sp. nov.**

(Figs. 3, 4, 5C, D)

Type series. Holotype. male (CL 4.6 mm); Umagai, Kumejima-Island, Ryukyu Islands; 25m; 20 Jun. 2001; SCUBA diving; coll. T. Kawamoto; CMNH-ZC 617.

Paratypes. 1 male (CL 5.0 mm); Tonbarazashi, Kumejima-Island; 35 m; 23 Oct. 2001; SCUBA diving; coll. T. Kawamoto; CMNH-ZC 785. 1 female (CL 4.3 mm); same data as CMNH-ZC 785; CMNH-ZC 786.

Description of holotype. Carapace (Fig. 3A) excluding rostrum longer than wide. Dorsal surface moderately convex from side to side; transverse main striae mostly uninterrupted on gastric region but interrupted or uninterrupted on cardiac region, with dense very short, not iridescent setae, sparsely bearing long iridescent setae on anterior half; few secondary striae present. Gastric region with row of 5 pairs of epigastric spines, median pair small, mesial second pair directly behind supraocular spines largest. Cervical grooves distinct. One parahepatic, 1 anterior branchial, and 1 postcervical spines present on each side. Frontal margins strongly oblique. Lateral margins feebly convex. Anterolateral spines

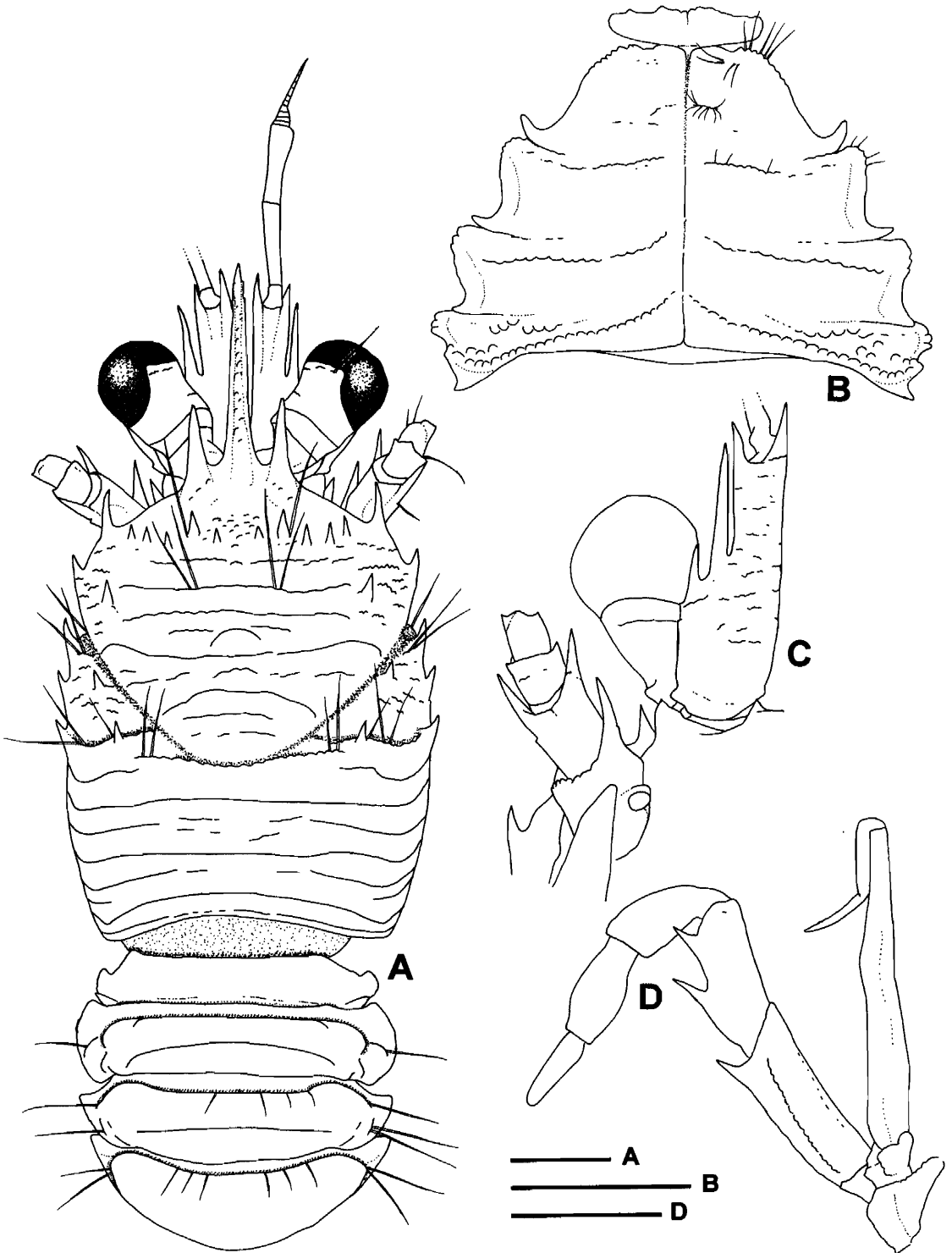


Fig. 3. *Munida kawamotoi* sp. nov., holotype male (CL 4.6 mm) from Kume-jima Island, Ryukyu Islands (CMNH-ZC 617). A, carapace, abdomen, and cephalic appendages, dorsal, setae partially omitted; B, sternal plastron, ventral, setae partially omitted; C, right cephalic region, showing antennular and antennal peduncles, ventral, setae omitted; D, left third maxilliped, lateral, setae omitted. Scales equal 1.0 mm.

each situated at anterolateral angle, moderately well-developed but not reaching level of sinus between rostrum and supraocular spines. Second marginal spine in front of cervical groove 1/3 length of preceding spine. Branchial margins each with 3 spines; anterior spine larger than followings.

Rostrum (Fig. 3A) spiniform, 0.46 times as long as remaining carapace, nearly horizontal but slightly sinuous distally; lateral margins minutely serrated distally. Supraocular spines short, reaching 0.31 length of rostrum and 0.48 length of ocular peduncles, subparallel, slightly directed upward.

Third thoracic sternite (Fig. 3B) 3.78 times as wide as long, with small shallow notch on median anterior margin. Fourth sternite approximately 3.0 times as long as preceding sternite, mostly smooth, with pair of short transverse striae along concave median line; anterior margin roundly truncate, subequal to third sternite, with small median notch. Fifth and sixth sternite smooth. Seventh sternite with few or several coarse granules on lateral parts. Transverse ridges of fifth to seventh obtuse, granulated, size of granules becoming large posteriorly. Pterygostomial flaps unarmed.

Second abdominal segment (Fig. 3A) unarmed on anterior transverse ridge. Second and third segments with anterior ridge and 1 uninterrupted stria. Fourth segment with only anterior ridge, no additional striae.

Eyes (Fig. 3A) large, dilated; maximum corneal diameter approximately 1/3 of distance between bases of anterolateral spines; eyelash apparently absent; single long iridescent seta present near distal margin of dorsal surface.

Basal segment of antennular peduncles (Fig. 3C), when distal spines excluded, approximately 1/3 length of carapace excluding rostrum, elongated, overreaching distal margin of corneas, with 2 distal spines, mesial spine slightly or moderately longer than lateral; two spines present on lateral margin, proximal spine short, located at midlength of segment, distal spine long but not exceeding distolateral spine.

Antennal peduncles (Fig. 3C) moderately short. First segment with long distal spine on mesial margin, slightly overreaching distal margin of second segment; distolateral angle unarmed. Second segment with strong spine each at distomesial and distolateral angles, spines subequal, mesial spine slightly overreaching distal margin of third segment. Third segment with very small spine each at distomesial and distolateral angles. Fourth segment unarmed.

Third maxilliped (Fig. 3D) with ischium 1.68 times longer than merus measured along extensor margin, with strong spine at distomesial angle but no spine at disto-extensor angle. Merus slightly narrowed distally, flexor margin with two strong, subequal spines, distal spine slightly shorter than distal; extensor margin unarmed.

Chelipeds (Fig. 4A) similar, subequal, relatively stout, 1.68 times as long as carapace excluding rostrum, with short squamiform ridges anteriorly bearing very short, not iridescent setae, ridges most numerous on carpus and palm; scattered, iridescent short and long setae present on mesial and lateral surfaces including dorsal margins, particularly on cutting edges of fingers. Merus with row of spines each along mesial and lateral margins of dorsal surface, distal spines much stronger, mesial distal spine reaching proximal 1/4 of carpus; mesial face and ventromesial margin with short row of 2 or 3 spines in distal half; distal ventrolateral angle with spine. Carpus 0.74 times longer than palm; dorsal surface with mesial and lateral rows of small spines; dorsomesial margin with strong spines, spine near distal angle largest; ventromesial margin with small spine near distal angle; ventrolateral margin with distinct rounded projection bearing spine at ventral base. Palm 2.0 times as long as broad measured at bases of fingers and approximately as long as movable finger (dactylus); dorsal surface with strong spine at base of movable finger, 2 irregularly arranged, short longitudinal rows of small spines on mesial half, and single row of larger spines along midline; dorsomesial and dorsolateral margins with row of spines, spines of dorsolateral margin continuing onto fixed finger

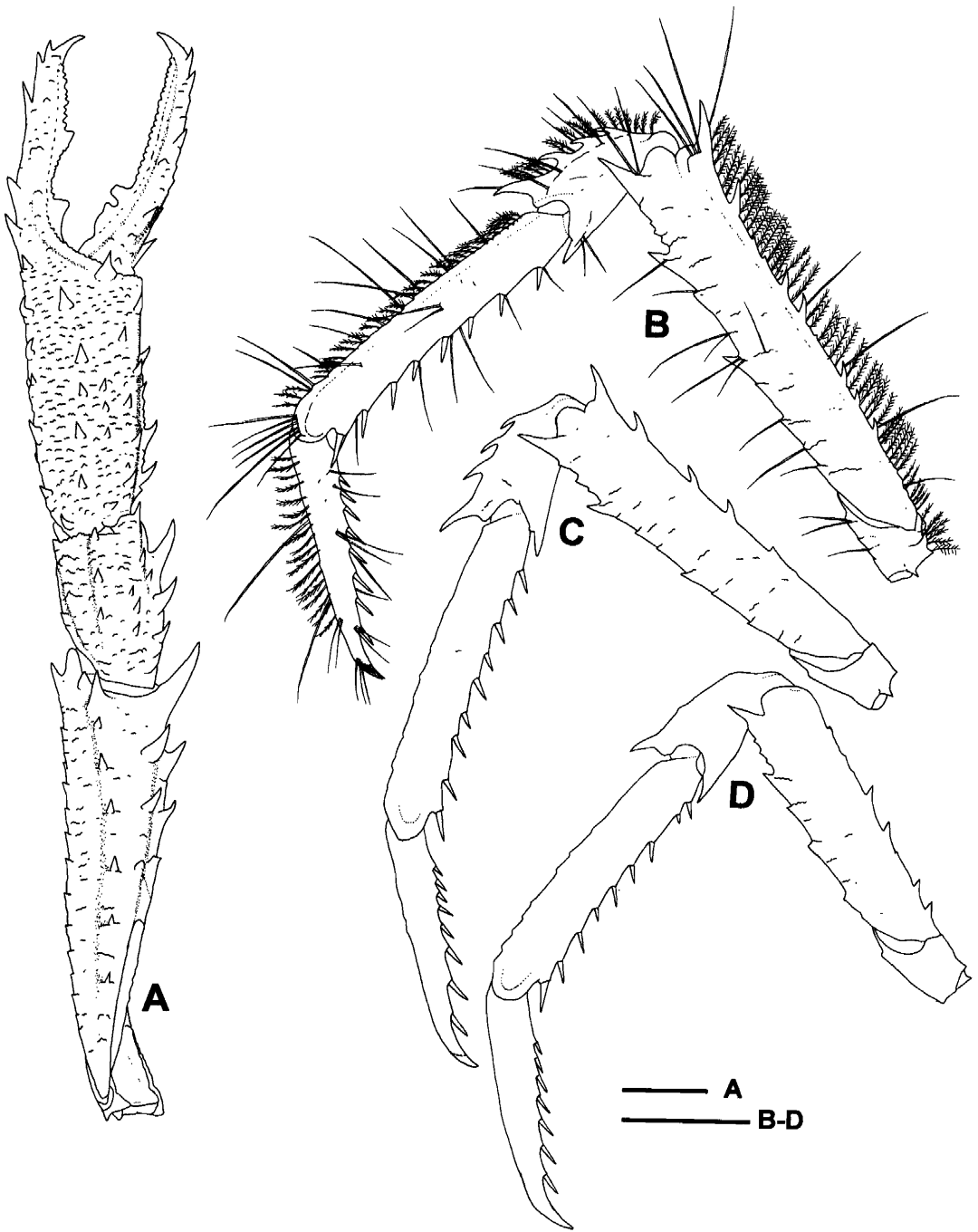


Fig. 4. *Munida kawamotoi* sp. nov., holotype male (CL 4.6 mm) from Kume-jima Island, Ryukyu Islands (CMNH-ZC 617). A, left cheliped, dorsal, setae omitted; B, left first walking leg (second pereopod), lateral; C, left second walking leg, lateral, setae omitted; E, left third walking leg, lateral, setae omitted. Scales equal 1.0 mm.

and becoming stronger distally; mesial surface with row of few spines along proximal 2/3 of midline; ventromesial margin with small median spine and moderately strong distal spine; lateral face unarmed. Fingers distally curving and crossing when closed, ending in sharp point; movable finger (dactylus) as long as palm, with row of spines on dorsomesial margin, mesial face with proximal spine; interval between 2 spines on dorsolateral margin of fixed finger becoming broad in median part; cutting edges gaping, each with 2 strong teeth and numerous small teeth, strong teeth situated on proximal and median parts in fixed finger and on proximal part in movable finger.

Walking legs (Fig. 4B–D) relatively short, slender, diminishing in length posteriorly; extensor and flexor margins with scattered, long iridescent setae, extensor margin bearing row of dense short plumose setae. Second pereopod (first walking leg) 2.09 times as long as carapace excluding rostrum; merus 0.74 of carapace length, 6.0 times as long as high measured at median points, 2.83 and 1.34 times longer than carpus and propodus, respectively; propodus 6.33 times as long as high measured at median points, 1.19 length of dactylus. Merus with 6 or 7 strong spines interspersed by few small spinules on extensor margin, increasing in size distally; lateral flexor margin with 3 strong spines on distal half, distalmost spine largest; lateral surface with short transverse rugae on flexor half; mesial flexor margin with spine at distal angle. Carpus with 4 extensor and 1 distoflexor strong spines. Propodus with extensor margin unarmed; flexor margin with 9 slender movable spines including distal pair, distolateral spine larger than distomesial. Dactylus long, slender, with curved distal claw; extensor margin weakly convex; flexor margin with 8 slender movable spines, each arising from low process. Third pereopod (second walking leg) similar to second; merus with 5–7 distinct spines on extensor margin and 2 distinct spines on distal half of lateral flexor margin; carpus with 3 or 4 extensor and 1 distoflexor strong spines; propodus with 9 or 10 flexor spines in-

cluding distal pair; dactylus with 7 or 8 flexor spines. Fourth pereopod (third walking leg); merus 0.65 times longer than that of second, with 4 small spines on proximal half of extensor margin and 2 distinct spines on distal part of lateral flexor margin; carpus with 1 strong spine each at distoextensor and distoflexor angles; propodus with 8 or 9 flexor spines including distal pair; dactylus with 7 flexor spines.

Fifth pereopods with chela bearing dense, simple coarse setae, most numerous in flexor face (dorsal when the appendage is fold) of palm; palm with several, distally curved scythe-like setae; carpus with simple coarse setae on distoflexor margin. Epipods absent from all pereopods.

Male with 2 pairs of pleopods modified as gonopods on first and second abdominal segments; second pair more developed than first.

Variation of paratypes. In two paratype specimens, strong teeth on the cutting edges of the movable and fixed fingers of chelipeds are reduced in size or apparently lacking. The palm is narrower than holotype, 2.09–2.49 times as long as broad measured at bases of fingers and 0.8–0.9 times as long as movable finger. In second pereopod, merus has 10 strong extensor spines and 3 or 4 strong, lateral flexor spines, carpus has 4 or 5 extensor spines, propodus possesses 9 or 10 flexor spines including distal pair, dactylus bears 7 flexor spines. In third pereopod, merus has 6–8 strong extensor spines and 2 or 3 strong, lateral flexor spines, carpus possesses 4 or 5 extensor spines. In fourth pereopod, merus has 5–7 small extensor spines and 3 or 4 distinct, lateral flexor spines, dactylus bears 6 or 7 flexor spines.

In female specimen (CMNH-ZC 786); the carapace is armed with 6 pairs of epibranchial spines and 4 brachial spines, the posteriormost spine is very small. The setation of the fifth pereopod chela is similar to that of male.

Color (Fig. 5C, D). Ground color of the carapace, abdominal segments, and chelipeds are light red (chelipeds of paratypes are pale reddish orange). The third abdominal segment is whitish on the dorsala median region except for anterior

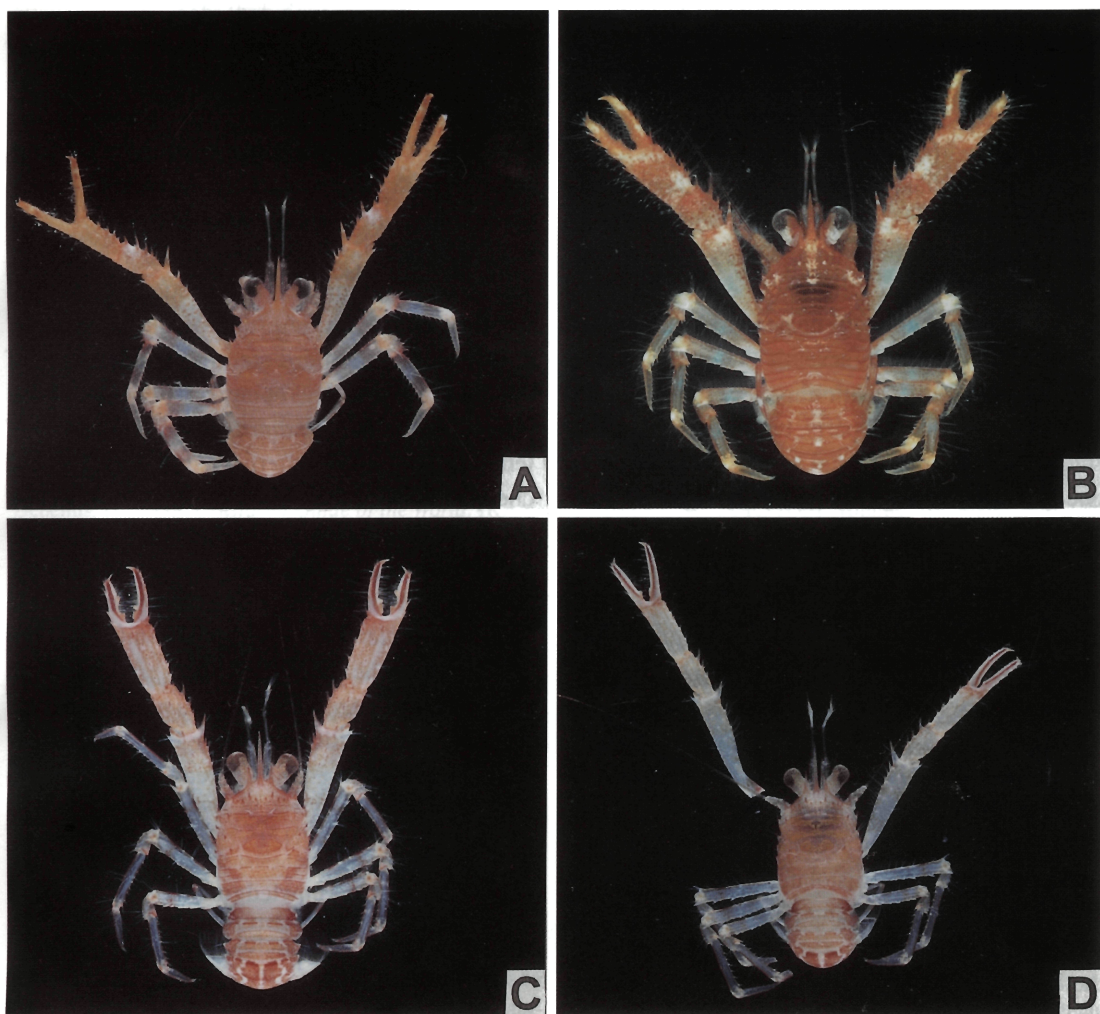


Fig. 5. Entire animal, dorsal. A, *Munida leptosyne* Macpherson, 1994, ovigerous female (CL 6.1 mm) from Kume-jima Island, Ryukyu Islands (CMNH-ZC 784); B, *Munida olivarae* Macpherson, 1994, ovigerous female (CL 6.7 mm) from Otouto-jima Island, Ogasawara Islands (CMNH-ZC 782); C, *Munida kawamotoi* sp. nov., holotype male (CL 4.6 mm) from Kume-jima Island, Ryukyu Islands (CMNH-ZC 617); D, *Munida kawamotoi* sp. nov., paratype male (CL 5.0 mm) from Kume-jima Island, Ryukyu Islands (CMNH-ZC 785).

ridge and following transverse stria; the fourth abdominal segment has 1 median and 1 pair of lateral longitudinal, white patches on the dorsal surface, the lateral patches reach near the posterior margin of the fifth segment. The palm of the chelipeds possesses 2 longitudinal white lines on the dorsal surface; the movable and fixed fingers are whitish, with dark reddish lines along cutting edges. The walking legs are semitransparent, with small yellow patch at the distal end of each

the merus to propodus and proximal end of the dactylus on the lateral surface; the merus and carpus bear some small reddish patches on the dorsal margin and the distal part of the lateral surface; the propodus and dactylus are dark reddish on the extensor face.

Distribution. At the present, only Kume-jima Island of the Ryukyu Islands; 25–35 m.

Etymology. The species is dedicated to Mr. T. Kawamoto, who collected many interesting de-

capod crustaceans including galatheids in shallow water around Kume-jima Island and kindly provided us with the specimens for study.

Remarks. *Munida kawamotoi* appears closest to *M. hyalina* Macpherson, 1994 from New Caledonia, Chesterfield Islands, and Indonesia, in having the branchial margins of the carapace usually each with only three spines (four spines in female specimen of the new species), abdominal segments completely unarmed on the dorsal anterior ridge, fifth to seventh thoracic sternites without carinae, seventh thoracic sternite with granules on the lateral parts, basal segment of the antennular peduncle (distal spines excluded) distinctly overreaching the distal margin of the cornea, and first segment of the antennal peduncle with distomesial spine reaching or slightly overreaching the distal margin of the second segment. However, the new species is distinguished from *M. hyalina* by the anterior branchial region of the carapace with a spine (in *M. hyalina*, no spine), seventh thoracic sternite with few or several coarse granules on the lateral parts (in *M. hyalina*, numerous small granules), basal segment of the antennular peduncle with distomesial spine longer than the distolateral and distal spine on the lateral margin being slightly overreaching the distal margin of the segment (in *M. hyalina*, the distomesial spine is shorter than the distolateral and distal spine on the lateral margin does not overreach the distal margin of the segment), and movable and fixed fingers of the cheliped each with a row of spines on the mesial and lateral margins, respectively (in *M. hyalina*, movable finger has only basal and distal spines and fixed finger possesses only several distal spines), in addition to the smaller eyes.

Munida plexaura Macpherson & de Saint Laurent, 1991 from the Tuamotu and Tubuai Islands of French Polynesia and Marquesas Islands, also has the characters shared between *M. kawamotoi* and *M. hyalina*, except for the structure of the seventh thoracic sternite and basal segment of the antennular peduncle. In *Munida plexaura*, the seventh thoracic sternite is smooth on the lateral parts and basal segment of the antennular pedun-

cle (distal spines excluded) does not reach the distal margin of the cornea. *Munida kawamotoi* further differs from *M. plexaura* by having the anterior branchial regions of the carapace each with a spine (in *M. plexaura*, no spine); third thoracic sternite with a small, shallow notch on the median anterior margin (in *M. plexaura*, with a strong, broad concavity); fourth thoracic sternite with broad anterior margin, subequal to the third sternite (in *M. plexaura*, the margin is distinctly narrower than the third sternite; and dactylus of the first walking leg being 0.84 length of the propodus (in *M. plexaura*, approximately half length). The color pattern on the carapace and chelipeds also clearly distinguishes *M. kawamotoi* from *M. plexaura*. The carapace is entirely light red or pale reddish orange in *M. kawamotoi*, whereas it has wide transverse yellow and purple bands in *M. plexaura*. The movable and fixed fingers of the chelipeds have dark reddish lines along cutting edges in *M. kawamotoi*, but such the lines are not discernible in *M. plexaura* (see Macpherson & de Saint Laurent, 1991: 399, pl. IE).

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