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Squat Lobsters of the Genus *Munida* (Crustacea: Decapoda: Anomura: Munididae) from the Ogasawara Islands, with Descriptions of Four New Species

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Abstract. The present study reports on the squat lobster genus *Munida* Leach, 1820 (Anomura: Munididae) collected in the Ogasawara Islands during the Project "Studies on the Origin of Biodiversity in the Sagami Sea Fossa Magna Element and the Izu-Ogasawara (Bonin) Arc" in 2006–2010, carried out by the National Museum and Nature and Science. Six species were identified, including four new species: *M. disiunctus* sp. nov., *M. honshuensis* Benedict, 1902, *M. koyo* sp. nov., *M. longinquus* sp. nov., *M. munin* sp. nov., and *M pectinata* Macpherson and Machordom, 2005. The two previously described species are newly recorded from the area, of them *M. pectinata* is first recorded from waters outside New Caledonia. Affinities of the four new species are discussed.

Key words: Crustacea, Munididae, *Munida*, new species, Ogasawara Islands

Introduction

The galatheoid fauna of the oceanic Ogasawara Islands, located at about 1000 km south of Tokyo, central Japan, is little known, although some publications have been published (Stimpson, 1858; Balss, 1913; Melin, 1939; Miyake and Baba, 1965; Osawa and Okuno, 2002). With regard to the genus *Munida* Leach, 1820, only a few species have been reported from the area. Melin (1939) recorded *Munida japonica* Stimpson, 1858, and *M. heteracantha* Ortmann, 1892 (as *Munida japonica* var. *heteracantha*) from Chichijima Island, but the identification of his record of *M. japonica* still needs to be verified (Baba *et al*., 2008). Takeda and Kurata (1976) mentioned an unidentified specimen obtained from gut contents of fish as *Munida* sp. Osawa and Okuno (2002) reported the occurrence of *M. olivarae* Macpherson, 1994 in Otouto-jima Island. The genus is currently represented by 246 species worldwide (De Grave *et al*., 2009), and recent studies have shown the great species diversity of the genus in the tropical and subtropical waters in the West Pacific (e.g., Baba, 1988; 1994; 2005; Baba *et al*., 2009; Macpherson, 1993; 1994; 1996a; 1996b; 1997; 1999a; 1999b; 2000; 2004; 2006a; 2006b; 2009; Macpherson and de Saint Laurent, 1991; Macpherson and Baba, 1993; Macpherson and Machordom, 2005; Machordom and Macpherson, 2004; Ahyong and Poore, 2004; Ahyong, 2007). There is no doubt that many species await discovery in the Ogasawara Islands.

During a five-year project carried out by the National Museum of Nature and Science, Tokyo, "Studies on the Origin of Biodiversity in the Sagami Sea, Fossa Magna Element and the Izu-Ogasawara Arc" (2006–2010), dredgings and/or trap samplings using research vessels were made in the shallow to upper bathyal zone in waters around the Ogasawara Islands. Numerous decapod crustaceans were collected. The present study reports on species of *Munida* represented by six species, including four new to science and one new to the Japanese fauna. Supplemental collections housed in the Natural History Museum and Institute, Chiba, were also examined.

The material examined is deposited in the Na-

tional Museum of Nature and Science (NSMT) and Natural History Museum and Institute, Chiba (CBM). The carapace length (cl), as the indication of specimen size, was measured from the level of the sinus between rostrum and supraocular spines to the midpoint of the posterodorsal margin in the midline. The lengths of segments of cheliped are measured along the dorsomesial margin and those of ambulatory legs are along the dorsal or extensor margin. The higher classification follows Ahyong *et al*. (2010).

Taxonomic Account

Superfamily **Galatheoidea**
Family **Munididae**
Genus ***Munida*** Leach, 1820

Munida disiunctus sp. nov. [New Japanese: Hanare-chū-koshiori-ebi] (Figs. 1–2)

Materials examined. Holotype: R/V *Koyo*, 2010 cruise, stn 17, W of Mago-jima Island, 27°12.78′N, 142°05.14′E, 160 m, 7 July 2010, male (cl 6.9 mm), NSMT-Cr S 853.

Paratype: R/V *Koyo*, 2008 cruise, stn 23, W of Chichi-jima Island, 27°12.04′N, 142°04.28′E, 202–199 m, 30 October 2008, 1 male (cl 5.2 mm), NSMT-Cr S 854.

Description. Carapace (excluding rostrum) (Fig. 1A) about 1.1 times longer than wide. Dorsal surface gently convex transversely; main transverse ridges mostly interrupted; only few secondary transverse striae present between main ridges; most ridges and striae with dense short, non-iridescent setae. Gastric region slightly elevated, with 6 pairs of epigastric spines and median spine or tubercle. Cervical groove distinct. Parahepatic, hepatic, anterobranchial spines present, these spines small; postcervical spines absent. Anterior part of branchial region between cervical groove and transverse groove without granules; lateral part of posterior branchial region with 8 or 9 transverse ridges. Intestinal region with 1 rather broad scale. Frontal margins nearly transverse. Lateral margins feebly convex in dorsal view. Anterolateral spines each located at anterolateral angle, relatively long, reaching sinus between rostrum and supraocular spines. Second marginal spine anterior to cervical groove less than 0.2 length of anterolateral spine. Branchial margins each with 5 small spines, anteriormost spine larger than other spines.

Rostrum (Fig. 1A) spiniform, about 0.5 times as long as carapace, nearly horizontal in lateral view. Supraocular spines moderately long and slender, parallel in dorsal view and very slightly ascending in lateral view, about 0.4 length of rostrum.

Pterygostomial flap with sharp spine anteriorly, lateral face rugose with irregular transverse or obliquely transverse ridges.

Third thoracic sternite (Fig. 1B) about 2.9 times wider than long, almost as wide as anterior margin of fourth sternite; anterior margin faintly granulate, with distinct median notch. Fourth sternite with few transverse striae. Fifth to seventh sternites nearly smooth. Transverse ridges nearly smooth, with row of short setae.

Second abdominal somite (Fig. 1A) with unarmed anterior ridge and 2 or 3 transverse striae on tergum. Third somite (Fig. 1A) with unarmed anterior ridge and 1–3 transverse striae. Fourth somite with unarmed anterior ridge and few striae interrupted medially. Sixth somite (Fig. 1C) with 2 transverse striae interrupted laterally. Telson (Fig. 1C) distinctly wider than long, with numerous squamiform ridges on proximal half.

Eyes (Fig. 1A) large. Cornea strongly dilated and somewhat flattened dorsoventrally, corneal width much greater than sinus between rostrum and supraocular spine and 0.25–0.30 of carapace length. Eyestalk slightly narrowed proximally, with 1 stria on dorsal surface; eyelash short, not covering corneal surface.

Basal segment of antennular peduncle (Fig. 1D) moderately stout, reaching distal corneal margin, length excluding distal spines about 2.0 of width; distal spines moderately long and slender, unequal with distomesial spine somewhat shorter than distolateral spine; 2 lateral spines present, first spine far overreaching distal spines, located somewhat proximal to base of distolateral

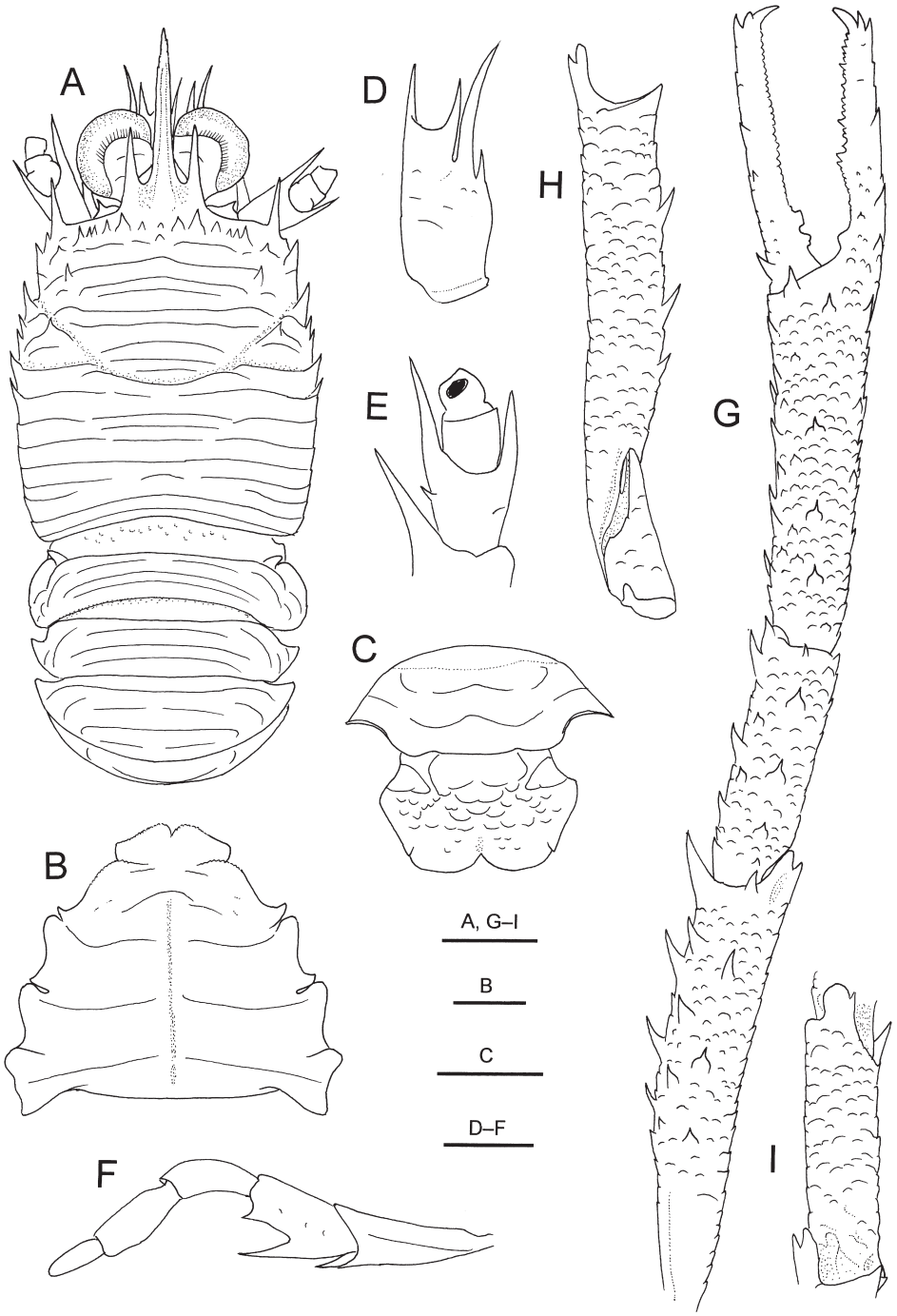

Fig. 1. *Munida disiunctus* sp. nov., holotype, male (cl 6.9 mm), NSMT-Cr S 853. A, carapace, first to third abdominal somites, and cephalic appendages, dorsal view (distal two segments of antennular peduncles omitted); B, thoracic sternum, ventral view; C, sixth abdominal somite and telson, external view; D, basal segment of left antennular peduncle, ventral view; E, left antennal peduncle, ventral view; F, endopod of left third maxilliped, lateral view; G, right cheliped, dorsal view; H, same, merus, ventral view; I, same, carpus ventral view. Setae omitted. Scale bars: 2 mm for A, C, G–I; 1 mm for B, D–F.

spine, second spine short, located slightly proximal to base of first spine; statocyst lobe not particularly inflated.

Antennal peduncle (Fig. 1E) moderately stout, not reaching distal corneal margins. First segment with moderately long distomesial spine not reaching distal margin of third segment; distolateral angle unarmed. Second segment with distomesial spine overreaching distal margin of fourth segment, distolateral spine reaching slightly beyond third segment, mesial spine tiny. Third and fourth segments unarmed.

Third maxilliped (Fig. 1F) moderately slender. Ischium distinctly longer than merus, with strong ventrodistal spine, produced dorsodistal angle terminating in sharp spine. Merus with 2 greatly unequal spines on ventral margin, distal spine small, proximal spine arising at about midlength very strong; dorsodistal margin unarmed. Carpus smooth on extensor surface. Propodus subequal in length to carpus, not expanded. Dactylus shorter than propodus.

Chelipeds (Fig. 1G–H) strongly squamous, similar, subequal in length, 3.4 times as long as carapace at most, equally broad on merus, carpus and palm; mesial face of merus to palm with mixture of short plumose setae and stiff iridescent setae. Merus with row of 4–6 spines on dorsal surface laterally (spines increasing in size distally) and 3–5 spines mesially (spine at distomesial angle strong and diverging); lateral face with small spine at ventrodistal angle, no other spines; mesial face with row of 3 spines adjacent to dorsal margin and row of 3 spines adjacent to ventral margin, ventromesial distal angle with spine. Carpus shorter than palm; dorsolateral margin with 5 small spines (distalmost spine strongest), dorsomesial margin also with 6 spines; ventrodistal angle with small spine. Palm slightly widened distally, 2.6–3.2 times longer than wide; dorsal surface with row of median row of 4 or 5 small spines and 1 spine at articulation to dactylus, dorsolateral margin with 2 or 3 small spines, dorsomesial margin with 7 small spines; mesial face with row of 3 small spines adjacent to dorsal margin. Fixed finger nearly straight, terminating in sharp claw, with 1 or 2 small subdistal spines; cutting edge weakly denticulate; surfaces with scattered short setae dorsally, sparse long stiff setae laterally and mesially. Dactylus 0.8–1.0 times as long as palm, unarmed or armed with some small granules proximally on dorsal surface, terminating in sharp, curved claw crossing tip of fixed finger; lateral margin with proximal and subterminal spines (two additional spines present on lateral margin in holotype, otherwise unarmed in paratype), with several long stiff setae; cutting edge with denticulate over entire length; narrow proximal hiatus between dactylus and fixed finger in holotype, no hiatus in paratype.

Ambulatory legs (second to fourth pereopods) moderately long and slender, decreasing in length posteriorly; setal row on dorsal or extensor margin of merus to propodus consisting of thin plumose and thick iridescent setae. Second pereopod (Fig. 2A, B) about 2.5 times as long as carapace; merus 0.7–0.8 times as long as carapace, about 6.4 times longer than high, dorsal margin with row of 6–8 spines, distal spine strongest, ventral margin with 1 strong distal spine followed by 2–4 smaller spines and short transverse ridges, lateral face with few short striae or squamiform ridges; carpus about 0.3 length of propodus, with prominent extensor distal spine and 2 or 3 small spines or spinules on extensor margin, flexor distal margin produced in spine; propodus unarmed on extensor margin, lateral face almost smooth, flexor margin with row of 10 movable spines; dactylus (Fig. 2B) about 0.7 times as long as propodus and about 6.0 times as long as high, slightly curved sinuously, bearing sparse short to long stiff setae, flexor margin slightly sinuous, with 8 corneous spines in proximal 0.7–0.8, notably decreasing in length proximally, distal 0.2–0.3 only with subterminal spinule closely appressed to unguis. Third pereopod (Fig. 2C) with merus bearing row of 6 spines increasing in size distally on dorsal margin and row of 2–4 spines and short transverse ridges on ventral margin; carpus with 1 prominent extensor distal spine and 2 or 3 additional smaller spines on extensor margin; propodus with 10 or 11 movable spines on flexor mar-

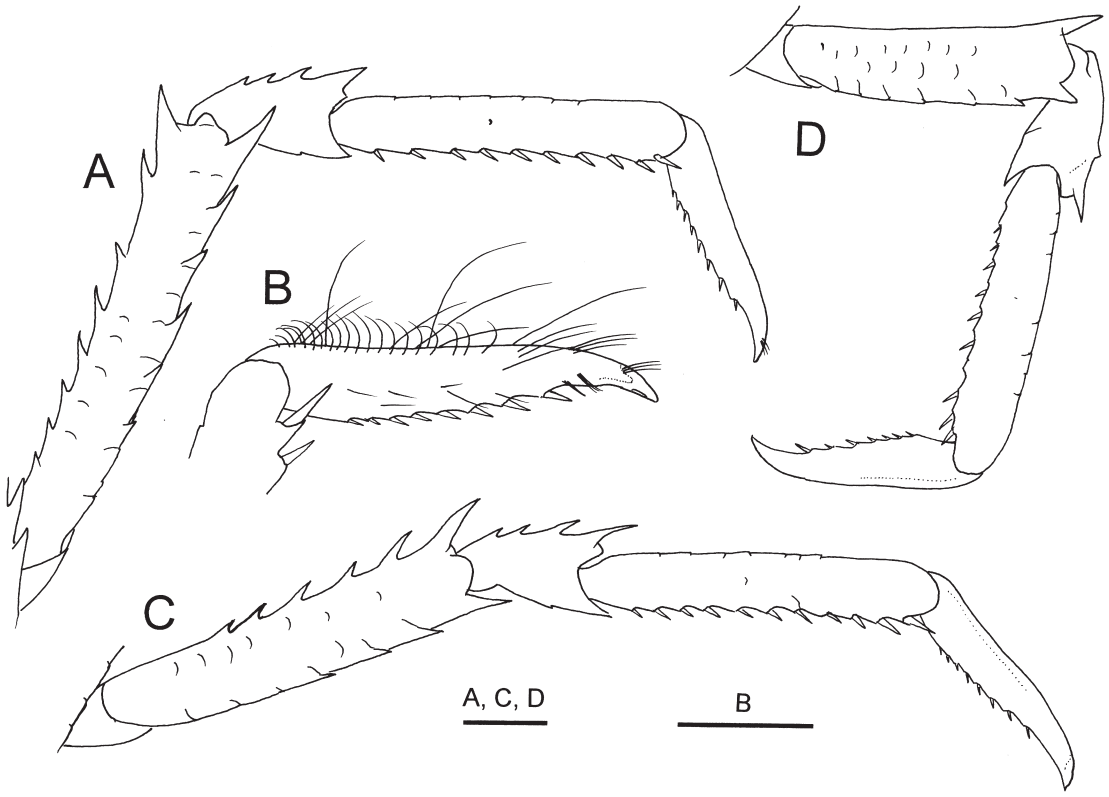

Fig. 2. *Munida disiunctus* sp. nov., holotype, male (cl 6.9 mm), NSMT-Cr S 853. Right ambulatory legs, lateral view, setae omitted except for B. A, second pereopod; B, same, distal part of propodus and dactylus, setation shown; C, third pereopod; D, fourth pereopod. Scale bars: 1 mm.

gin; dactylus with 8 corneous spines on flexor margin in proximal 0.7–0.8 and subterminal spinule. Fourth pereopod (Fig. 2D) reaching to lateral end of cervical groove of carapace by mero-carpal articulation; merus about 0.6 length of that of second pereopod, bearing dorsodistal spine, dorsal margin otherwise unarmed, ventral margin with prominent distal spine followed by 1 or 2 small spines and short transverse ridges; carpus with prominent dorsodistal and ventrodistal spines; propodus with 9–11 movable spines on flexor margin; dactylus with 8 corneous spines on flexor margin in proximal 0.7–0.8 and subterminal spinule.

Fifth pereopod without distinctive features.

Uropodal protopod with 1 small spine posteriorly on outer side.

Color in life. Not known.

Distribution. At present known only from Ogasawara Islands, 160–202 m.

Remarks. The two male specimens of the present new species seem to attain maturity because the gonopods are fully developed. *Munida disiunctus* sp. nov. closely resembles *M. notata* Macpherson, 1994 from the Southwest Pacific in sharing five spines on the branchial carapace margins, nearly transverse frontal margin, absence of a postcervical spine on the carapace, smooth thoracic sternites, unarmed anterior ridge of the second abdominal somite, distomesial spine of the basal segment of the antennular peduncle slightly longer than distolateral spine, distomesial spine of the first segment of the antennal peduncle reaching the distal margin of the third segment, distomesial spine of the second segment of the antennal peduncle overreaching the fourth seg-

ment, and dilated corneas. However, the new species is distinguishable from *M. notata* by several morphological characters (Macpherson, 1994). The carapace has fewer transverse ridges in the new species than in *M. notata*. For example, there are eight transverse ridges on the lateral part of the posterior branchial region in *M. disiunctus*, whereas *M. notata* has 13 ridges there. Similarly, the abdominal tergites have fewer transverse striae in *M. disiunctus* than in *M. notata*. The number of the striae on the carapace and abdomen may increase with increase of the body size, but this character still works when specimens in similar developmental stages are compared. The cornea is larger in *M. disiunctus* than in *M. notata* (the corneal width 0.25–0.30 in the new species versus less than 0.20 in *M. notata*). The distomesial spine of the first segment of the antennal peduncle is less elongate in the new species than in *M. notata* (reaching the distal margin of the third segment in the former versus nearly reaching the fourth segment in the latter). The merus of the third maxilliped is unarmed on the dorsodistal margin in the new species, rather than armed with a small dorsodistal spine in *M. notata*. The dactylus of the second pereopod is unarmed in the distal 0.25 in *M. disiunctus*, rather than 0.30 or more in *M. notata*.

Except for the character of the distal spines of the basal segment of the antennular peduncle, the new species also resembles *M. leagora* Macpherson, 1994 from the Southwest Pacific and *M. pseliphora* Macpherson, 1994 from New Caledonia, in sharing the characters mentioned above (Macpherson, 1994). The latter two species differ from *M. disiunctus* in the subequal distal spines of the first segment of the antennular peduncle, although this character is rather delicate. *Munida leagora* further differs from the new species in having more numerous transverse ridges or striae on the carapace and abdomen, the elongate distolateral spine of the second segment of the antennal peduncle that overreaches the fourth segment, and the proportionally shorter dactylus of the second pereopod (less than 0.5 times as long as the propodus versus about 0.7 times as long). *Munida pseliophora* is distinguished from *M. disiunctus* by having more elongate and slender anterolateral spines of the carapace (clearly overreaching the sinus between the supraocular spine and the rostrum versus just reaching it), the smaller cornea (the corneal width 0.20 or less in *M. pseliophora* versus 0.25–0.30 in *M. disiunctus*) and three, instead of two, ventral spines on the third maxilliped merus.

Etymology. From the Latin "*disiunctus*" (= remote), alluding to the locality of the new species remote from the Japanese mainland.

Munida honshuensis Benedict, 1902 [New Jn.: Suji-chū-koshiori-ebi] (Fig. 11A)

Munida honshuensis Benedict, 1902: 261, fig. 11 (type locality: off Honshu, Japan, 110–128 m); Macpherson and Baba, 1993: 396, fig. 7; Baba, 2005: 264.

Munida japonica: Ortmann, 1892: 254, pl. 11, fig. 11, 11i, 11k. Not *Munida japonica* Stimpson, 1858.

Materials examined. FR/V *Koyo*, 2009 cruise, stn 10, N of Haha-jima Island, 26°50.25′N, 142°07.09′E, 145–150 m, 13 July 2009, dredge, 1 juv. (cl 4.7 mm), CBM-ZC 10102; stn 26, NE of Mago-jima Island, 27°14.36′N, 142°16.04′E, 230–250 m, 15 July 2009, dredge, 1 male (cl 7.5 mm), CBM-ZC 10103.

R/V *Tansei-maru*, KT09-2 cruise, stn TW1-1, W of Chichi-jima Island, 27°01.40′N, 142°07.41′E, 145–138 m, 19 March 2009, dredge, 1 male (cl 6.9 mm), CBM-ZC 10104; stn TW2-3, W of Chichi-jima Island, 27°03.03′N, 142°05.29′E, 166 m, 19 March 2009, 1 male (cl 6.0 mm), CBM-ZC 10105.

Coloration. Fig. 11A. Ground color of carapace, abdomen, and appendages orange, transverse ridges or squamiform ridges or tubercles darker. Cornea brown. Chelipeds with reddish tinge on distal parts of merus and carpus and distal part of palm at articulation to dactylus; distal part of fingers whitish; dorsal spines on palm also whitish. Ambulatory legs each with white band at articulation between dactylus and propodus.

Distribution. Previously known from the Pacif-

ic coast of the Japanese mainland, 110–300 m. The present specimens extend the geographical range of the species to the Ogasawara Islands.

Remarks. The present specimens agree well with the redescription of *Munida honshuensis* given by Macpherson and Baba (1993), particularly in the following diagnostic characters: carapace with five branchial spines; fourth to seventh thoracic sternites with arcuate striae; lateral parts of seventh thoracic sternite with fine granules; second abdominal somite with 9–10 spines distributed over entire length of anterior ridge; cornea large, strongly dilated; basal segment of antennular peduncle with distomesial spine longer than distolateral spine; distomesial spine of second segment of antennal peduncle overreaching fourth segment; merus of third maxilliped with small spine on dorsodistal margin. Therefore, the specimens are identified with *M. honshuensis* with little hesitation.

Melin (1939) reported *Munida japonica* from the Ogasawara Islands, but Baba *et al*. (2008) questioned the identity. It is likely that Melin's specimens are actually referable to *M. honshuensis*, because the two species are superficially very similar (Macpherson and Baba, 1993).

Munida koyo sp. nov. [New Jn: Koyo-chū-koshi-ori-ebi] (Figs. 3–5)

Materials examined. Holotype: FR/V *Koyo*, 2008 fishery ground survey, S of Chichi-jima Island, Ogasawara Islands, about 1000 m deep, 14 October 2008, male (cl 17.4 mm), CBM-ZC 10121.

Paratypes: same data as holotype, 4 males (cl 16.0–19.2 mm), 1 ovig. female (cl 17.2 mm), CBM-ZC 10120; same data, 2 males (cl 17.0. 18.9 mm), NSMT-Cr S 855.

Description. Carapace (excluding rostrum) (Fig. 3A) about 1.1–1.2 times longer than wide. Dorsal surface gently convex transversely; main transverse ridges mostly interrupted; numerous secondary transverse striae or transverse rows of small scale-like ridges between main ridges; most ridges and striae with dense short, non-iridescent setae. Gastric region with 10–12 epigastric spines and median tubercle. Cervical groove distinct. Parahepatic, anterobranchial and postcervical spines usually present, these spines small. Anterior part of branchial region between cervical groove and transverse groove with small scale-like ridges, but non-granulate; lateral part of posterior branchial region with 12 or 13 transverse ridges. Intestinal region with one or few short transverse striae. Frontal margins very slightly oblique. Lateral margins very slightly convex in dorsal view. Anterolateral spines each located at anterolateral angle of carapace, moderately long, falling short of sinus between rostrum and supraocular spines, slightly diverging. Anterolateral margin with 1 or 2 marginal spines posterior to anterolateral spine, these spines distinctly shorter than anterolateral spine. Branchial margins each with 5 small spines, anteriormost spine strongest.

Rostrum (Figs. 3A, 4A) spiniform, about 0.5 times as long as carapace, directed forward, slightly sinuously curved in lateral view; distal part of lateral margins faintly denticulate. Supraocular spines moderately long and slender, parallel or slightly diverging in dorsal view and slightly ascending in lateral view, about 0.4 length of rostrum.

Pterygostomial flap (Fig. 4A) unarmed anteriorly, lateral face rugose with irregular transverse or obliquely transverse ridges.

Third thoracic sternite (Fig. 3B) about 2.9 times wider than long, much wider than anterior margin of fourth sternite; anterior margin faintly granulate, with shallow median notch. Fourth sternite with faint stria medially. Fifth to seventh sternites smooth. Transverse ridges nearly smooth, with row of short setae.

Second abdominal somite (Fig. 3A) with 10 spines in 5 pairs on anterior ridge and 2 transverse striae on tergum and several small scales on each pleuron. Third somite (Fig. 3A) with unarmed anterior ridge and 2 transverse striae (anterior stria interrupted medially and laterally, posterior stria complete); pleura each with short striae or scales. Fourth somite (Fig. 3A) with unarmed anterior ridge and 2 interrupted striae. Sixth somite (Fig. 4B) with 2 main transverse striae in-

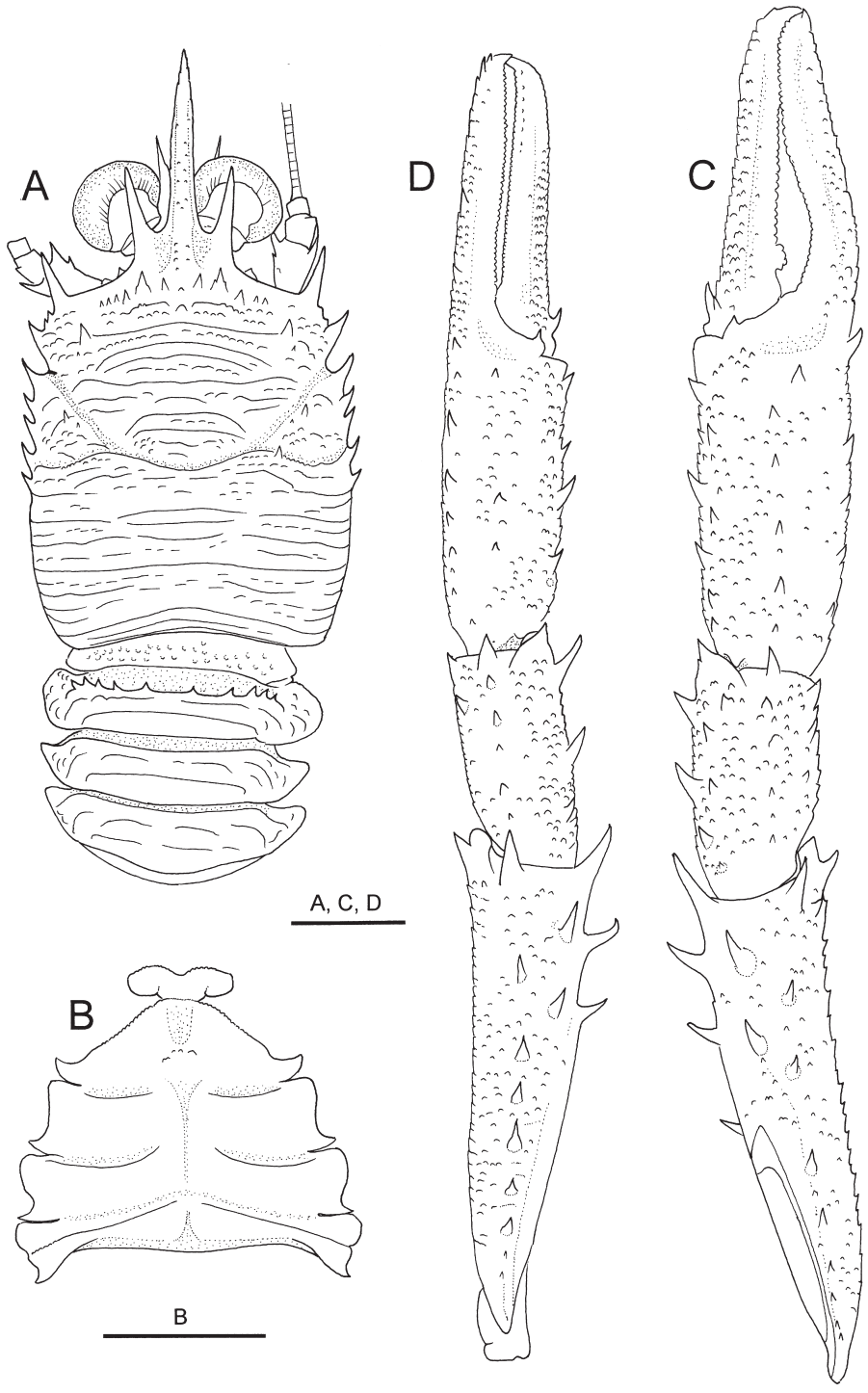

Fig. 3. *Munida koyo* sp. nov., holotype, male (cl 17.4 mm), CBM-ZC 10121. A, carapace, first to third abdominal somites, and cephalic appendages, dorsal view (distal two segments of antennular peduncles omitted); B, thoracic sternum, ventral view; C, right cheliped, dorsal view; D, left cheliped, dorsal view. Setae omitted (A, B) or denuded (C, D). Scale bars: 5 mm.

terrupted medially and few short striae laterally. Telson (Fig. 4B) distinctly wider than long, with numerous squamiform ridges except for smooth broad oblique sulci.

Eyes (Figs. 3A, 4A, C) large. Cornea strongly dilated, somewhat flattened dorsoventrally, corneal width much greater than sinus between rostrum and supraocular spine and about 0.25 of carapace length. Eyestalk slightly narrowed proximally, with 1 stria on dorsal surface; eyelashes short, not covering corneal surface.

Basal segment of antennular peduncle (Fig. 4C) moderately stout, reaching distal corneal margin, length excluding distal spines about 2.0 of width; distal spines relatively long and slender, distolateral spine subequal in length to slightly longer than distomesial spine; 2 lateral spines present, first spine very slender, not reaching distal spines, faintly sinuously curved in ventral view, slightly ascending in lateral view, arising somewhat proximal to base of distolateral spine, second spine small, arising at midlength of segment; statocyst lobe not particularly inflated; ventral surface with scattered squamiform ridges.

Antennal peduncle (Fig. 4C) moderately stout, not reaching distal corneal margins. First segment with short, subacute distomesial spine reaching only midlength of second segment; distolateral angle unarmed. Second segment with distomesial spine reaching distal margin of third segment, distolateral spine not reaching distal margin of third segment; mesial margin with small spine at midlength. Third and fourth segments unarmed.

Third maxilliped (Fig. 4D) moderately slender. Ischium longer than merus, with small ventrodistal spine, distolateral angle terminating in small spine; lateral face with minute scale-like ridges. Merus with 2 unequal spines on ventral margin, proximal spine arising at about midlength stronger than distal spine; dorsodistal margin unarmed; lateral face also with minute scale-like ridges. Carpus smooth on extensor surface. Propodus subequal in length to carpus, not expanded. Dactylus slender, shorter than propodus.

Chelipeds (Figs. 3C, D, 4E–H) relatively stout, 3.5 times longer than carapace at most, equally broad on merus, carpus and palm, usually similar and subequal, but in males occasionally slightly dissimilar and unequal; entire surfaces with dense covering of soft plumose setae, scattered stiff iridescent setae also present on ventral surface of merus, and mesial faces of carpus and chela. Merus having row of 9–10 spines on dorsal surface laterally (spines noticeably increasing in size distally) and 3 prominent spines mesially (strongest spine at distomesial angle reaching proximal 0.2 of carpus); lateral face with scattered scale-like tubercles becoming larger ventrally, ventrolateral distal angle with small spine; mesial face with sparse granules, 1 or 2 strong spines on midline, and 2 strong spines adjacent to ventral margin, ventromesial distal angle with strong spine; ventral surface with numerous scale-like ridges and tubercles. Carpus about 0.7 length of palm; dorsal surface with small scale-like tubercles, dorsolateral and dorsomesial margins each with 5 small spines including distal marginal spine; lateral face covered with squamiform ridges and 2 small spines adjacent to dorsal margin; mesial face with scattered spinules or spinulose tubercles and 3 strong spines along midline; ventral surface with scattered scale-like tubercles and with 1 middle spine. Palm 2.1–2.4 times longer than wide; dorsal surface with scattered small tubercles, median row of 3–6 small spines and 1 spine at articulation to dactylus, dorsolateral margin with 5–6 small spines, dorsomesial margin 2–4 small spines; mesial face with row of 3 small spines adjacent to dorsal margin; ventral surface with few short transverse ridges and small spine at articulation to dactylus. Fixed finger nearly straight to arched, terminating in sharp claw, bearing small tubercles on surfaces and 1–4 spines on mesial margin (including 1 or 2 subterminal spines), cutting edge minutely denticulate; surfaces with scattered short setae dorsally, sparse long stiff setae laterally and mesially. Dactylus subequal in length to palm, terminating in sharp, curved claw crossing tip of fixed finger; surfaces covered with numerous small tubercles or granules, dorsomesial margin with only 1 proximal spine; cutting edge denticulate over entire length,

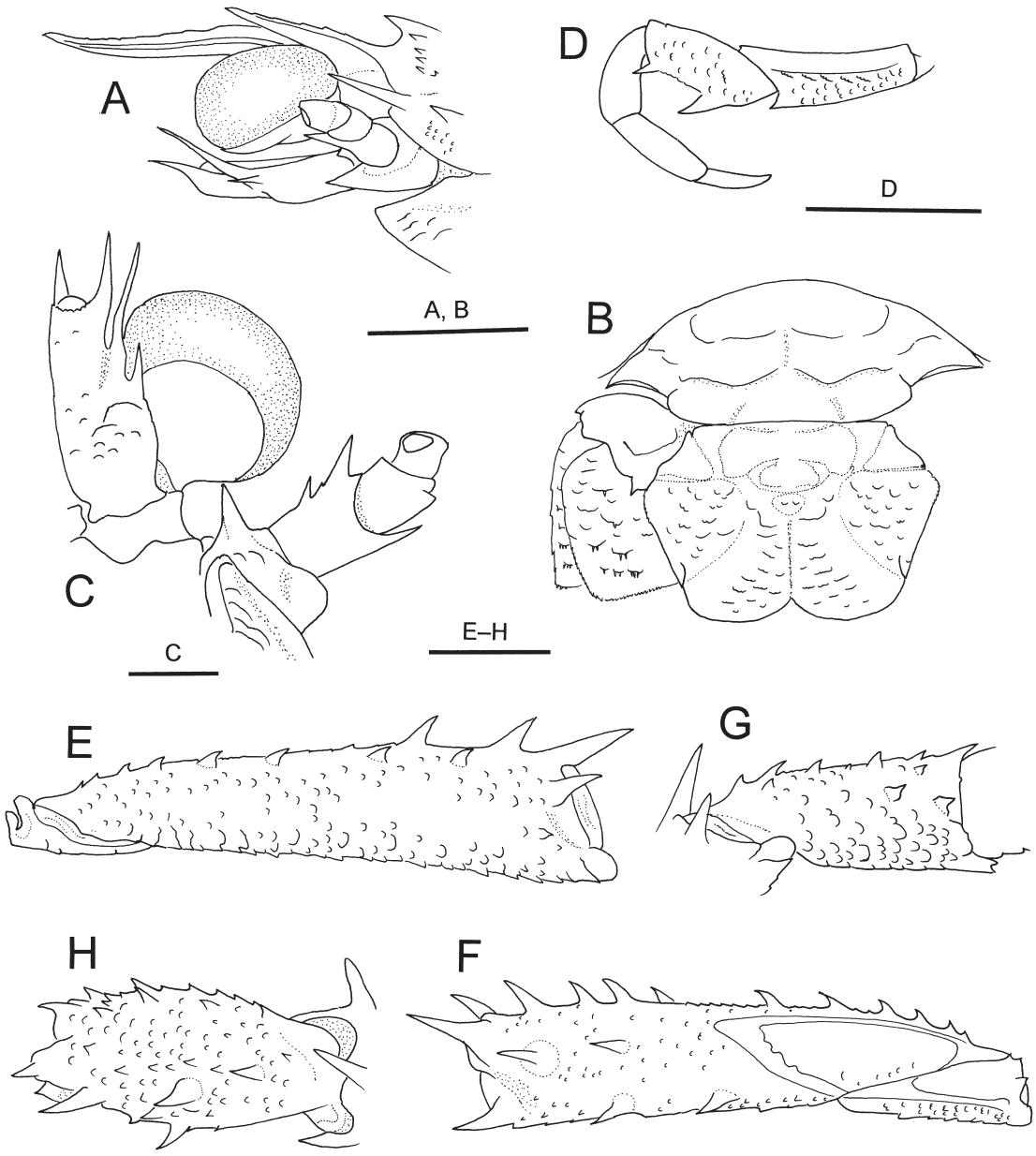

Fig. 4. *Munida koyo* sp. nov., holotype, male (cl 17.4 mm), CBM-ZC 10121. A, anterior part of carapace and left cephalic appendages, lateral view; B, sixth abdominal somite, telson and left uropod, external view; C, left eye, basal segment of antennular peduncle and antennal peduncle, ventral view; D, endopod of left third maxilliped, lateral view; E, merus of right cheliped, lateral view; F, same, mesial view; G, carpus of right cheliped, lateral view; H, same, dorsomesial view. Setae omitted (A–D) or denuded (E–H).

occasionally with small rectangular tooth proximally; narrow proximal hiatus between dactylus and fixed finger in males, no hiatus in females.

Ambulatory legs (second to fourth pereopods) squamous, moderately long and relatively slender, decreasing in length posteriorly. Second pereopod (Fig. 5A) about 2.1 times longer carapace; merus about 0.9 times as long as carapace, about

7.9 times longer than high, dorsal margin with numerous plumose setae and row of 12–13 spines, distal spine strongest, ventrolateral margin with 1 strong distal spine followed by 1 or 2 spines and squamiform ridges, ventromesial margin with 1 distal spine, lateral face with numerous scale-like tubercles or squamiform ridges strongest adjacent to ventral margin; carpus about 0.3 length of propodus, with prominent extensor distal spine and 1 or 2 spines and few spinules on extensor margin, flexor distal margin produced in spine; propodus unarmed on extensor margin, lateral face almost with scattered small scale-like tubercles, flexor margin with row of 9–10 movable spines; dactylus (Fig. 5B) about 0.6 times as long as propodus and 4.6–5.0 times as long as high, nearly straight, bearing numerous short to long stiff setae, flexor margin slightly sinuous, with 9–11 corneous spinules over entire length, including subterminal spinule closely appressed to unguis. Third pereopod (Fig. 5C) generally similar to second pereopod; merus bearing row of 12 spines increasing in size distally on dorsal margin, ventral margin with 1 prominent ventrodistal spine followed by 1 small spine and squamiform ridges; carpus with 1 prominent extensor distal spine and 1 or 2 additional spines on extensor margin; propodus with 9 movable spines on flexor margin; dactylus with 8 corneous spinules on flexor margin. Fourth pereopod (Fig. 5D, E) not reaching to lateral end of cervical groove of carapace by mero-carpal articulation; merus about half length of that of second pereopod, bearing small dorsodistal spine, dorsal margin otherwise unarmed, ventral margin with prominent distolateral spine and squamiform ridges, no distomesial

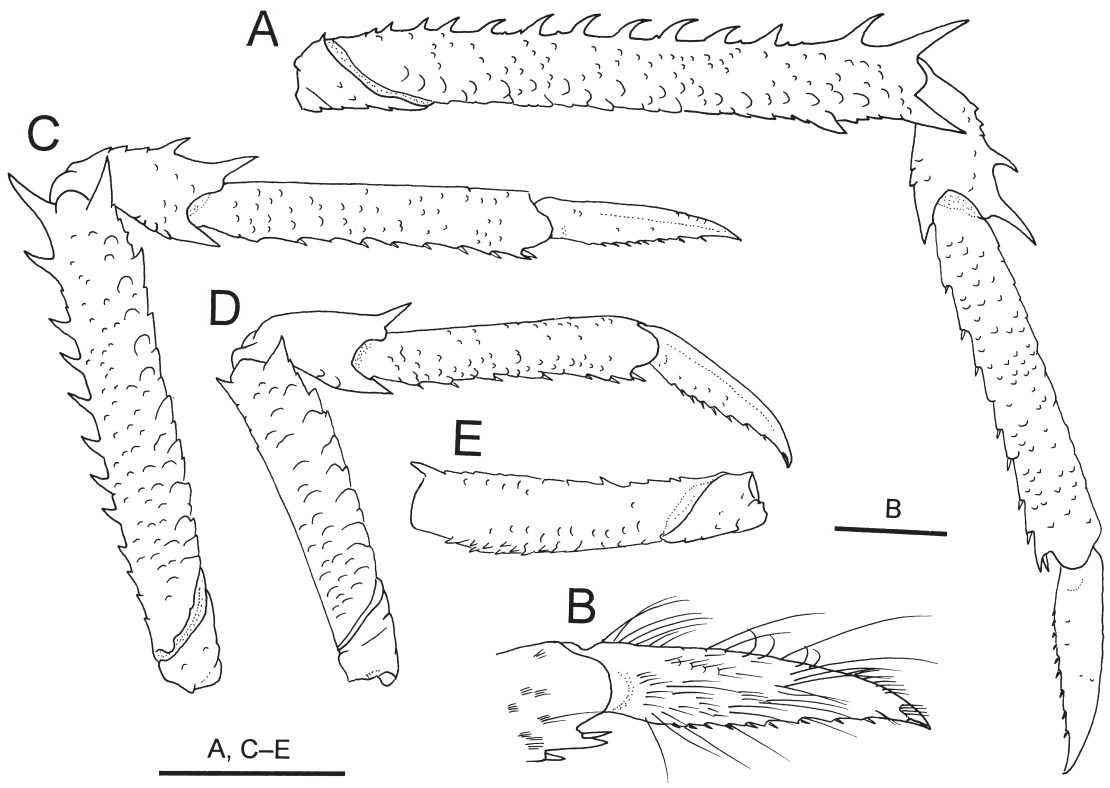

Fig. 5. *Munida koyo* sp. nov., holotype, male (cl 17.4 mm), CBM-ZC 10121. Right ambulatory legs, setae omitted except for B. A, second pereopod, lateral view; B, same, distal part of propodus and dactylus, lateral view, setation shown; C, third pereopod, lateral view; D, fourth pereopod, lateral view; E, merus of fourth pereopod, mesial view. Scale bars: 5 mm for A, C–E; 2 mm for B.

spine; some tiny spines on mesial face adjacent to ventral margin; carpus with prominent extensor distal and flexor distal spines, otherwise unarmed; propodus with 9 movable spines on flexor margin; dactylus with 8 corneous spinules on flexor margin. Fifth pereopod without distinctive features.

Uropodal protopod (Fig. 4B) with 1 small spine posteriorly.

Color in life. Unknown. In preservative in formalin, carapace, anterior three somites of abdomen and pereopods pinkish, basal parts of supraocular spines white.

Distribution. Known only from off Chichi-jima Island, Ogasawara Islands, about 1000 m.

Remarks. *Munida koyo* sp. nov. appears closest to *M. militaris* Henderson, 1885 in sharing five branchial spines on the carapace, the third thoracic sternite being much wider than the anterior margin of the fourth sternite, one or two transverse striae on the second and third abdominal tergites, absence of granular patches on the lateral parts of the seventh thoracic sternite, a row of spines along the anterior ridge of the second abdominal somite, eye large, subequal or slightly unequal distal spines on the basal segment of the antennular peduncle (the distolateral spine is slightly longer than the distomesial spine, when unequal) and moderately elongate chelipeds. However, the new species is readily distinguished from *M. militaris* in the presence of many secondary striae or transverse rows of small scale-like ridges on the carapace, which are very few in *M. militaris* (cf. Baba and Macpherson, 1991; Baba *et al*., 2009). Furthermore, in the new species, the anterolateral spine on the carapace does not reach the level of the sinus between the rostrum and supraocular spine, instead of reaching or slightly overreaching it in *M. militaris*; the distomesial spine on the second segment of the antennal peduncle only reaches the distal margin of the third segment in *M. koyo*, rather than overreaching it in *M. militaris*; the merus of the second pereopod has only one distinct spine on the ventrolateral margin proximal to the distal spine in *M. koyo*, but there are three distinct spines in *M. militaris*.

Munida howensis Ahyong, 2007 is also similar to *M. koyo* sp. nov. in the ornamentation of the carapace and the characters above mentioned, but the former is readily distinguished from the new species by the more strongly unequal distal spines on the basal segment of the antennular peduncle, the more elongate distomesial spine on the second segment of the antennal peduncle, which reaches the distal margin of the fourth segment, and the possession of three, rather than two, ventral spines on the merus of the third maxilliped.

Baba and Macpherson (1991) clarified that the type series of *M. militaris* contained three species, *M. militaris*, *M. japonica* Stimpson, 1858, and *M. inornata* Henderson, 1885. One of the four specimens from "Challenger" station 173, off Matuku Fiji Islands, was selected as a lectotype by the authors. Later, it has been shown that the specimens referred to *M. japonica* actually contained two species, *M. japonica* and *M. agave* Macpherson and Baba, 1993 (Macpherson and Baba, 1993; Baba et al., 2008). The type specimens referred to *M. militaris* now include the four specimens from "Challenger" station 173 and one specimen from Ambon, Indonesia. There is little doubt that the latter specimen is specifically distinct from the former lot containing the lectotype, because it has numerous secondary striae on the carapace and the more elongate distomesial spine on the second segment of the antennal peduncle. The latter character provides evidence that this specimen from Ambon is also specifically distinct from *M. koyo* sp. nov.

Etymology. Named for the FR/V *Koyo* of the Ogasawara Fisheries Center, from which many specimens of *Munida* studied here were collected. Noun in apposition.

Munida longinquus sp. nov. [New Jn.: Adeyaka-chū-koshiori-ebi:] (Figs. 6–7, 11B)

Materials examined. Holotype: R/V *Koyo*, 2008 cruise, stn 19, E of Chichi-jima Island, 27°06.07′N, 142°18.56′E, 175–176 m, ovig. female (cl 4.4 mm), NSMT-Cr S 856.

Paratypes: R/V *Koyo*, 2008 cruise, stn 4, W of Chichi-jima Island, 27°03.60′N, 142°04.22′E,

211–214 m, 1 male (cl 3.4 mm), 1 ovig. female (cl 3.9 mm), NSMT-Cr S 857.

Description. Carapace (excluding rostrum) (Fig. 6A) about 1.2 times longer than wide. Dorsal surface gently convex transversely; main transverse ridges mostly interrupted; no secondary transverse striae between main ridges; most ridges with dense short, non-iridescent setae. Gastric region slightly elevated, with 9 (5 on left, 4 on right) epigastric spines and median scale. Cervical groove distinct. Parahepatic and postcervical spines on each side, these spines small; anterobranchial spine absent. Anterior part of branchial region between cervical groove and transverse groove without granules; lateral part of posterior branchial region with 6 or 7 transverse ridges. Intestinal region without scale. Frontal margins somewhat oblique. Lateral margins feebly convex in dorsal view. Anterolateral spines each located at anterolateral angle, relatively short, not reaching sinus between rostrum and supraocular spines. Second marginal spine anterior to cervical groove less than half-length of anterolateral spine. Branchial margins each with 4 small spines, decreasing in size posteriorly.

Rostrum (Fig. 6A) spiniform, about 0.4 times as long as carapace, nearly horizontal in lateral view. Supraocular spines moderately long and slender, parallel in dorsal view and very slightly ascending in lateral view, about 0.4 length of rostrum.

Pterygostomial flap with sharp spine anteriorly, lateral face rugose with irregular transverse or obliquely transverse ridges.

Third thoracic sternite (Fig. 6B) about 4.8 times wider than long, almost as wide as anterior margin of fourth sternite; anterior margin faintly granulate, with very shallow median notch. Fourth sternite with 2 submedian short transverse striae on either side of midline. Fifth and sixth sternites nearly smooth. Seventh sternite with scattered granules on lateral parts. Transverse ridges nearly smooth, with row of short setae.

Second abdominal somite (Fig. 6A) with 2 pairs of minute lateral spines on anterior ridge and 1 transverse stria on tergum. Third somite (Fig. 6A) with unarmed anterior ridge and 1 transverse stria. Fourth somite (Fig. 6A) with unarmed anterior ridge, no stria on tergum. Sixth somite (Fig. 6C) with 1 medially interrupted stria. Telson (Fig. 6C) distinctly wider than long, with several squamiform or short transverse ridges.

Eyes (Fig. 6A, D) moderately large. Cornea dilated, corneal width much greater than sinus between rostrum and supraocular spine and 0.22–0.23 of carapace length. Eyestalk not narrowed proximally, without striae on dorsal surface; eyelash sparse, very short.

Basal segment of antennular peduncle (Fig. 6D) moderately stout, overreaching distal corneal margin, length excluding distal spines about 2.5 of width; distal spines relatively short and stout, distinctly unequal with distolateral spine longer than distomesial spine; 2 lateral spines present, first spine reaching only midlength of distolateral spine, arising slightly distal to midlength of segment,, second spine short, arising at midlength of segment; statocyst lobe not particularly inflated.

Antennal peduncle (Fig. 6D) relatively short and stout, far falling short of distal corneal margins. First segment with short distomesial spine reaching distal margin of second segment; distolateral angle unarmed. Second segment with distomesial spine reaching distal margin of third segment, distolateral spine subequal to distomesial spine, reaching slightly beyond third segment, mesial spine absent. Third and fourth segments unarmed.

Third maxilliped moderately slender. Ischium distinctly longer than merus, with strong ventrodistal spine, distolateral angle terminating in sharp spine (Fig. 6E). Merus with 2 greatly unequal spines on ventral margin, distal spine small, proximal spine arising at about midlength very strong; dorsodistal margin unarmed (Fig. 6E). Carpus smooth on extensor surface. Propodus subequal in length to carpus, not expanded. Propodus not expanded. Dactylus shorter than propodus.

Chelipeds (Fig. 6F–H) not squamous, similar, subequal in length, about 2.5 times longer than carapace, equally broad on merus, carpus and

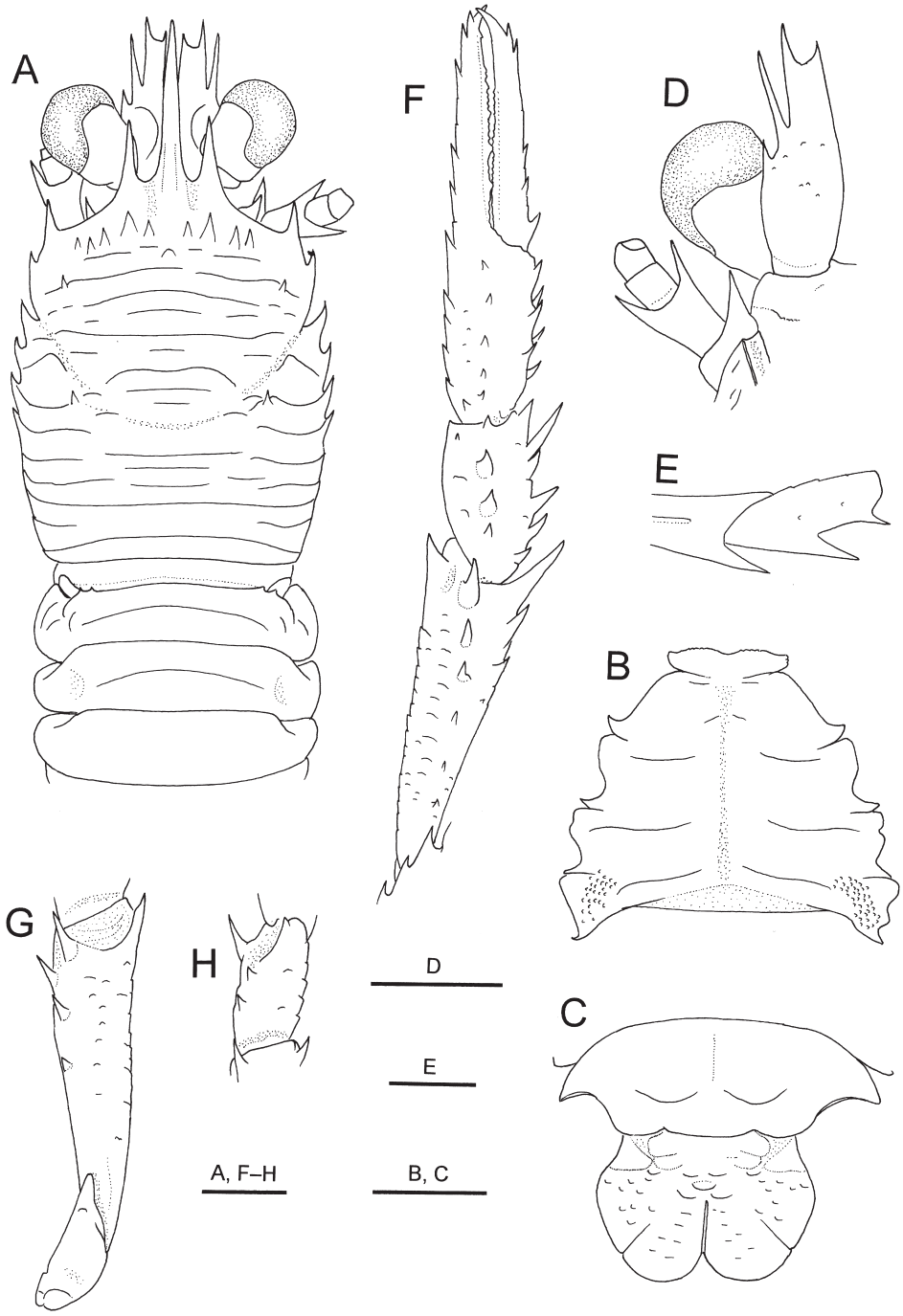

Fig. 6. *Munida longinquus* sp. nov., holotype, ovig. female (cl 4.4 mm), NSMT-Cr S 856. A, carapace, first to third abdominal somites, and cephalic appendages, dorsal view (distal two segments of antennular peduncles omitted); B, thoracic sternum, ventral view; C, sixth abdominal somite and telson, external view; D, right eye, basal segment of antennular peduncle and antennal peduncle, ventral view; E, distal part of ischium and merus of right third maxilliped, lateral view; F, left cheliped, dorsal view; G, same, merus, ventral view; H, same, carpus ventral view. Setae omitted. Scale bars: 1 mm for A–D, F–I; 0.5 mm for E.

palm; mesial face of merus and palm with numerous long iridescent setae, mesial face of carpus with mixture of numerous plumose setae and few iridescent setae. Merus with row of 6 spines on dorsal margin (spines increasing in size distally) and 3 spines mesially (spine at distomesial angle strong and diverging); lateral face with short transverse ridges and strong ventrodistal spine; ventromesial margin with 3 spines including strong ventrodistal spine; ventral surface with scattered short transverse ridges. Carpus subequal in length to palm; dorsolateral margin with 4 small spines (distalmost spine small, marginal), dorsomesial margin also with 5 strong spines; lateral face with short transverse, occasionally denticulate ridges; ventral face with 2 small strong spines, ventrodistal angle with spine. Palm not widened distally, about 2.0 times longer than wide; dorsal surface with longitudinal row of 6 small spines along midline, dorsolateral margin with 4 small spines, dorsomesial margin 3 small spines; mesial face with longitudinal row of 3 spines; ventral surface with scattered low tubercles and 1 spine located as base of dactylus; fixed finger nearly straight, terminating in sharp claw, with 6 spines on lateral margin, cutting edge weakly denticulate; surfaces with scattered short setae dorsally, sparse long stiff setae laterally and mesially. Dactylus about 1.5 times as long as palm, unarmed proximally on dorsal surface, terminating in sharp, curved claw crossing tip of fixed finger; mesial margin with 5 spines including 1 proximal and 2 subterminal spines, and with several long stiff setae; cutting edge with minutely denticulate over entire length; no proximal hiatus between dactylus and fixed finger.

Ambulatory legs (second to fourth pereopods) moderately long and slender, decreasing in length posteriorly. Second pereopod (Fig. 7A) about 2.0 times as long as carapace; merus about 0.8 times as long as carapace, about 6.0 times longer than high, dorsal margin with row of 9–10 spines decreasing in size proximally and row of plumose and iridescent setae (tuft of long iridescent setae at base of strong dorsodistal spine), ventral margin with 1 strong distal spine followed by 1–2 small spines and short transverse ridges, lateral face with few short striae; carpus about 0.3 length of propodus, with prominent extensor distal spine and 1 small spines on extensor margin, flexor distal margin produced in strong spine; propodus unarmed on extensor margin, lateral face almost smooth, flexor margin with row of 9–11 movable spines; dactylus (Fig. 7B) about 0.8 times as long as propodus and about 5.8 times as long as high, nearly straight, bearing sparse short to long stiff setae, flexor margin faintly sinuous, bearing 9–10 slender corneous spines over entire length, including subterminal spinule closely appressed to unguis. Third pereopod (Fig. 7C) similar to second: merus bearing row of 4–7 small spines on dorsal margin, ventral margin with prominent ventrodistal spine followed by 1–2 small spines and short transverse ridges; carpus with 1 prominent extensor distal spine and 2 additional small spines on extensor margin; propodus with 6–8 movable spines on flexor margin; dactylus with 7–8 corneous spines on flexor margin. Fourth pereopod (Fig. 7D) reaching to lateral end of cervical groove of carapace by mero-carpal articulation; merus about 0.6 length of that of second pereopod, unarmed on dorsal margin, ventral margin with prominent distal spine followed by short transverse ridges; carpus with small dorsodistal and strong ventrodistal spines; propodus with 6–9 movable spines on flexor margin; dactylus with 7–8 corneous spines on flexor margin.

Fifth pereopod without distinctive features.

Uropodal protopod with 1 small spine posteriorly on outer side.

Color in life. Fig. 11B. Carapace yellow, with pale purple bands posterior to epigastric spines, along cervical groove and across cardiac region; rostrum and frontal margin red; dorsal surface with pair of distinct red spots on branchial region just posterior to cervical groove. Second abdominal somite pale purple, with red line along anterior ridge and yellow transverse band on middle potion of tergum; remaining abdominal somites brownish, with distinct white marking on third to fourth somites. Eye with reddish brown cornea; eyestalk red. Antennular and antennal peduncles

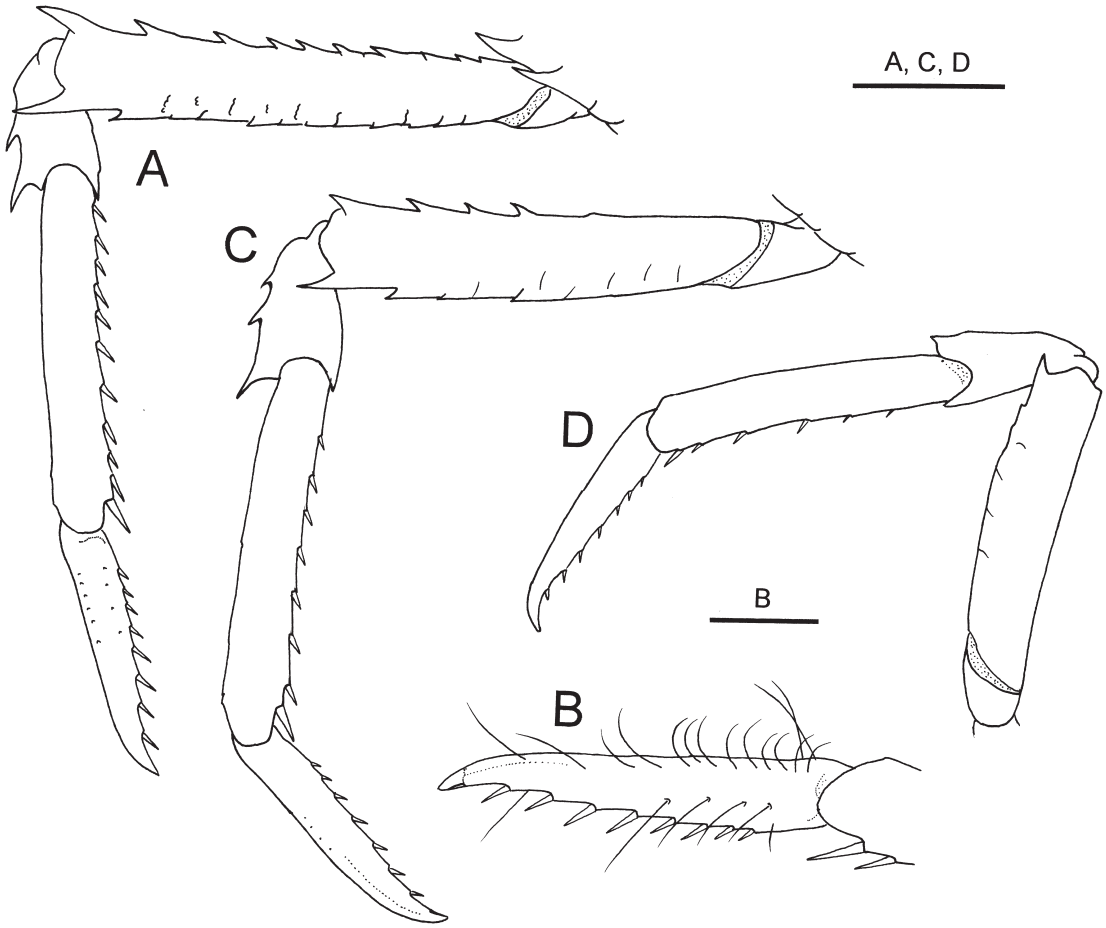

Fig. 7. *Munida longinquus* sp. nov., holotype, ovig. female (cl 4.4 mm), NSMT-Cr S 856. Left ambulatory legs, lateral view, setae omitted except for B. A, second pereopod; B, same, distal part of propodus and dactylus, setation shown; C, third pereopod; D, fourth pereopod. Scale bars: 1 mm for A, C, D; 0.5 mm for B.

translucent, with tint of red. Cheliped generally pale red, fingers and spines dark red. Ambulatory legs with white and reddish bands.

Distribution. Known only from the Ogasawara Islands, at depths of 175–214 m.

Remarks. *Munida longinquus* sp. nov. resembles *M. gordoae* Macpherson, 1994 from the Southwest Pacific and *M. rogeri* Macpherson, 1994 from the Southwest Pacific and Western Australia in sharing four branchial marginal spines on the carapace, second abdominal somite bearing spines on the anterior ridge, granular patches on the lateral parts of the seventh thoracic sternite, somewhat elongate basal segment of the antennular peduncle, and distolateral spine of the basal segment of the antennular peduncle being longer than the distomesial spine (Macpherson, 1994). The new species differs from these latter two species in the lack of submedian spines on the anterior ridge of the second abdominal somites, which are present in the latter two species, arranged in two pairs. In *M. longinquus*, there are only two minute spines at each lateral angle of the anterior ridge. Furthermore, the cornea is relatively larger in the new species than in *M. gordoae* and *M. rogeri* (the corneal width is more than 0.20 of the carapace length in *M. longinquus*, rather than less than 0.20 in *M. gordonae* and *M. rogeri*. The basal segment of the antennular peduncle is less elongate in the new species

than in the latter two species (about 2.5 times longer than wide except for distal spines in *M. longinquus* versus more than 3.0 times in the latter two species). *Munida rogeri* further differs from the new species in the granular patches extending onto the lateral parts of the sixth thoracic sternite and the stronger distomesial spine of the first segment of the antennal peduncle that reaches the distal margin of the third segment, rather than only reaching to the distal margin of the second segment in *M. longinquus*.

Munida pasithea Macpherson and de Saint Laurent, 1991 from French Polynesia is also very similar to *M. longinquus*, but it is distinguished from the new species by the subequal distal spines of the basal segment of the antennular peduncle and the presence of two pairs of submedian spines on the anterior ridge of the second abdominal somite (Macpherson and de Saint Laurent, 1991).

Etymology. From the Latin *longinquus*, meaning distant, in reference to the type locality of the new species, which is far distant from the Japanese mainland.

Munida munin sp. nov. [New Jn: Munin-chū-koshiori-ebi] (Figs. 8–9, Fig. 11C)

Materials examined. Holotype: R/V *Koyo*, 2009 cruise, stn 30, E of Nishi-jima Island, 27°07.22′N, 142°10.60′E, 50–52 m, 16 July 2009, dredge, male (cl 8.0 mm), CBM-ZC 10106.

Paratypes: R/V *Koyo*, 2008 cruise, stn 20, 29 October 2008, 1 ovig. female (cl 5.7 mm), NSMT-Cr S 858; stn 26, 30 October 2008, 1 male (cl 7.2 mm), 1 female (cl 8.0 mm), 1 ovig. female (cl 7.2 mm), 1 juv. (cl 3.7 mm), NSMT-Cr. 2009 cruise, stn 4, W of Minami-jima Island, 26°58.64′N, 142°04.64′E, 470 m, 13 July 2009, 1 female (cl 4.9 mm), NSMT-Cr S 860; stn 14, S of Haha-jima Island, 26°34.03′N, 142°10.80′E, 92–93 m, 14 July 2009, dredge, 1 male (cl 6.4 mm), CBM-ZC 10108; stn 29, S of Nishi-jima Island, 27°06.59′N, 142°10.25′E, 60–61 m, 16 July 2009, dredge, 1 female (cl 5.1 mm), 2 ovig. females (cl 6.4, 6.6 mm), CBM-ZC 10109. 2010 cruise, stn 3, N of Haha-jima Island, 26°45.32′N, 142°05.99′E, 97–100 m, 5 July 2010, dredge, 1 ovig. female (cl 6.2 mm), NSMT-Cr S 861; stn 27, S of Nishi-jima Island, 27°06.65′N, 142°10.42′E, 59–60 m, 9 July 2010, dredge, 2 ovig. females (cl 7.2, 7.6 mm), NSMT-Cr S 862.

Non-type. R/V *Koyo*, 2008 cruise, stn 6, W of Chichi-jima Island, 27°04.64′N, 142°08.52′E, 88 m, 24 October 2008, dredge, 1 male (cl 9.9 mm, damaged), NSMT-Cr S 863. 2009 cruise, stn 8, N of Haha-jima Island, 26°45.20′N, 142°06.44′E, 98–102 m, 13 July 2009, dredge, 1 juv. (cl 3.6 mm), CBM-ZC 10110; stn 30, same data as holotype, 1 juv. (cl 4.7 mm), CBM-ZC 10107. 2010 cruise, stn 21, E of Higashi-jima Island, 27°06.20′N, 142°18.82′E, 176–178 m, 21 October 2010, dredge, 1 juv. (cl 4.4 mm), NSMT-Cr S 864; stn 31, Chichi-jima Island, W of Futami Port, 27°05.18′N, 142°08.48′E, 96–97 m, 9 July 2010, dredge, 1 male (cl 5.0 mm), 2 juv. (cl 3.8, 4.2 mm), NSMT-Cr S 865.

Description. Carapace (excluding rostrum) (Fig. 8A) about 1.2 times longer than wide. Dorsal surface gently convex transversely; main transverse ridges mostly interrupted; only few secondary transverse striae between main ridges; most ridges and striae with dense short, non-iridescent setae. Gastric region with 5 or 6 pairs of epigastric spines and median spine or tubercle. Cervical groove distinct. Parahepatic, anterobranchial and postcervical spines on each side, these spines small. Anterior part of branchial region between cervical groove and transverse groove without granules; lateral part of posterior branchial region with 9 or 10 transverse ridges. Intestinal region without transverse ridge. Frontal margins strongly oblique. Lateral margins feebly convex in dorsal view. Anterolateral spines each located at anterolateral angle of carapace, relatively short, far falling short of sinus between rostrum and supraocular spines. Anterolateral margin with 1 or 2 marginal spines posterior to anterolateral spine, these spines distinctly smaller than anterolateral spine. Branchial margins each with 5 small spines, posteriormost spine smaller than other subequal spines.

Rostrum (Fig. 8A) spiniform, about 0.5 times

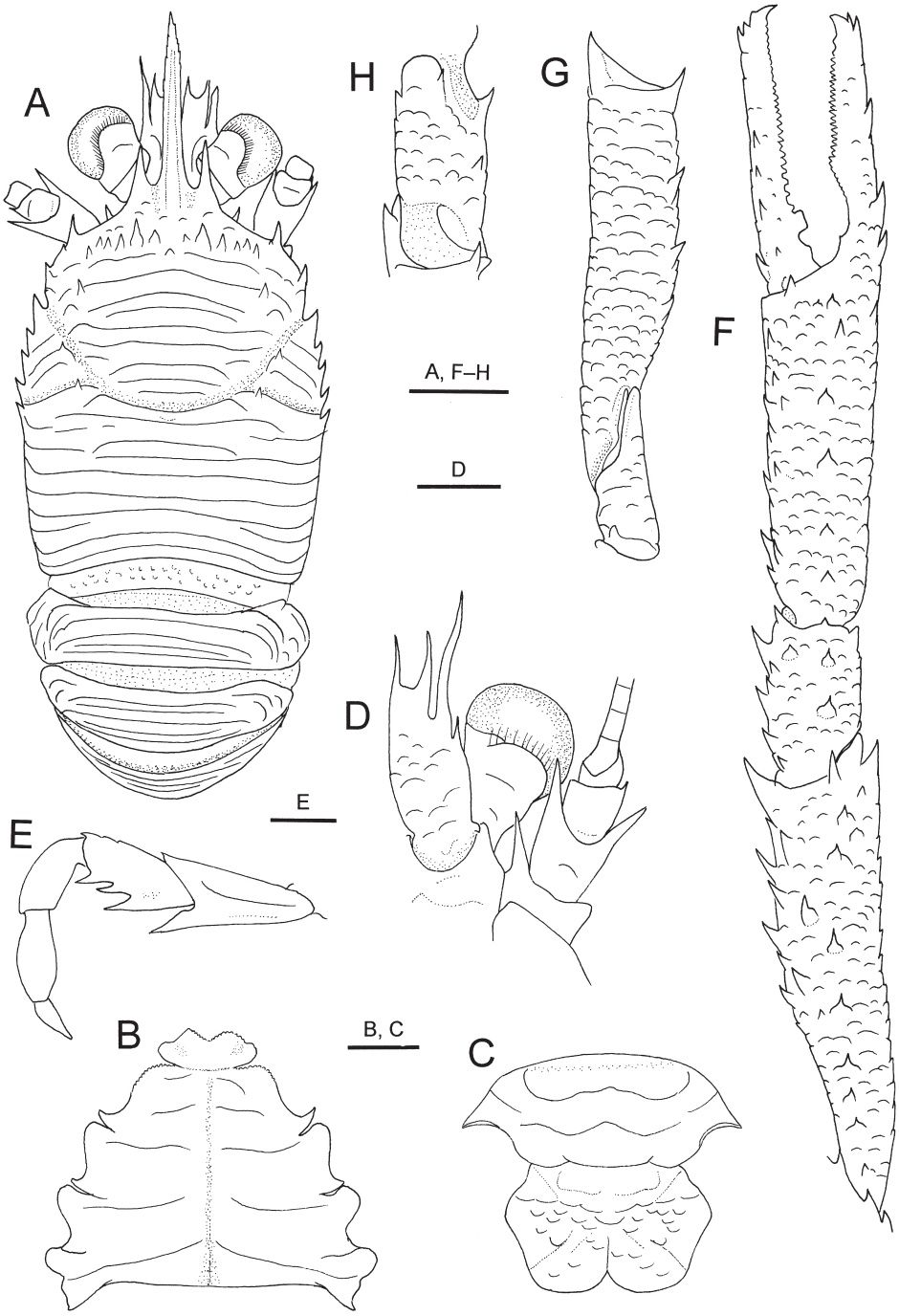

Fig. 8. *Munida munin* sp. nov., holotype, male (cl 8.0 mm), CBM-ZC 10106. A, carapace, first to third abdominal somites, and cephalic appendages, dorsal view (distal two segments of antennular peduncles omitted); B, thoracic sternum, ventral view; C, sixth abdominal somite and telson, external view; D, left eye, basal segment of left antennular peduncle and antennal peduncle, ventral view; E, endopod of left third maxilliped, lateral view; F, right cheliped, dorsal view; G, same, merus, ventral view; H, same, carpus ventral view. Setae omitted. Scale bars: 2 mm for A, F–H; 1 mm for B–E.

as long as carapace, nearly horizontal in lateral view; distal part of lateral margins minutely denticulate. Supraocular spines relatively short and slender, parallel in dorsal view and very slightly ascending in lateral view, 0.25 length of rostrum.

Pterygostomial flap unarmed anteriorly, lateral face rugose with irregular transverse or obliquely transverse ridges.

Third thoracic sternite (Fig. 8B) about 2.9 times wider than long, almost as wide as anterior margin of fourth sternite; anterior margin faintly granulate, with wide V-shaped median notch. Fourth sternite with 2 transverse striae. Fifth to seventh sternites nearly smooth. Transverse ridges nearly smooth, with row of short setae.

Second abdominal somite (Fig. 8A) with unarmed anterior ridge and 3 or 4 transverse striae on tergum. Third somite (Fig. 8A) with unarmed anterior ridge and 3 or 4 transverse striae. Fourth somite (Fig. 6A) with unarmed anterior ridge and 3 or 4 striae. Sixth somite (Fig. 8C) with 2 striae (posterior one interrupted laterally). Telson (Fig. 8C) distinctly wider than long, with several squamiform ridges.

Eyes (Fig. 8A) moderately large. Cornea dilated, not flattened dorsoventrally, corneal width much greater than sinus between rostrum and supraocular spine and about 0.20 of carapace length. Eyestalk slightly narrowed proximally, with 1 stria on dorsal surface; eyelash short, not covering corneal surface.

Basal segment of antennular peduncle (Fig. 8D) moderately stout, reaching distal corneal margin, length excluding distal spines about 2.0 of width; distal spines relatively long and slender, subequal in length; 2 lateral spines present, first spine elongate, far overreaching distal spines, sinuously curved, arising somewhat proximal to base of distolateral spine, second spine short, arising anterior to midlength of segment; statocyst lobe not particularly inflated; ventral surface with scattered squamiform ridges.

Antennal peduncle (Fig. 8D) moderately stout, not reaching distal corneal margins. First segment with moderately long distomesial spine reaching or slightly overreaching distal margin of second segment; distolateral angle unarmed. Second segment with distomesial spine reaching or slightly falling short of distal margin of fourth segment, distolateral spine reaching third segment; mesial margin unarmed. Third segment unarmed or armed with small distolateral spine; fourth segments unarmed.

Third maxilliped (Fig. 8E) moderately slender. Ischium longer than merus, with strong ventrodistal spine, distolateral angle terminating in small spine. Merus with 3 unequal spines on dorsal margin, proximalmost spine arising at about midlength stronger than 2 distal spines; dorsodistal margin with small spine. Carpus smooth on extensor surface. Propodus subequal in length to carpus, not expanded. Dactylus shorter than propodus.

Chelipeds (Fig. 8F–H) squamous, similar, subequal in length, 3.4 times longer carapace at most, equally broad on merus, carpus and palm; mesial face of merus to chela with short to very short plumose setae and rather few longish iridescent setae. Merus with row of 9–10 spines on dorsal surface laterally (spines increasing in size distally) and 3–4 spines mesially (strongest spine at distomesial distal angle relatively short); ventrolateral distal angle with small spine; mesial face with row of 2–3 spines adjacent to dorsal margin and row of 3–5 spines (including ventrodistal spine) adjacent to ventral margin. Carpus about half length of palm; dorsolateral margin with 3 small spines (distalmost marginal spine smallest), dorsomesial margin also with 4 spines; ventrolateral distal angle produced in prominent, rounded lobe bearing small spine; lateral face with few spinules or granules and 1 spine located at about midlength; mesial face with row of 4 spines adjacent to ventral margin (distalmost spine strongest), ventromesial distal angle with small spine; ventral surface with 1 small spine at middle. Palm slightly widened distally, 2.8 times longer than wide; dorsal surface with median row of 5 small spines and 1 spine at articulation to dactylus, dorsolateral margin with 2–4 small spines, dorsomesial margin with 6 small spines; mesial face with row of 3–4 small spines. Fixed finger nearly

straight, terminating in sharp claw, with 4–5 spines including 1 proximal and 1–2 subdistal spines; cutting edge denticulate; surfaces with scattered short setae dorsally, sparse long stiff setae laterally and mesially. Dactylus 0.8 times as long as palm, bearing few tiny spines proximally on dorsal surface, terminating in sharp, curved claw crossing tip of fixed finger; dorsomesial margin with 5–6 small spines (including 1 proximal and 2 subdistal spines) and with several long stiff setae; cutting edge with denticulate over entire length, occasionally with small rectangular tooth proximally; in large males (including holotype), narrow proximal hiatus between dactylus and fixed finger present.

Ambulatory legs (second to fourth pereopods) moderately long and slender, decreasing in length posteriorly; setal row on dorsal or extensor margin of merus to propodus consisting of thin plumose and thick iridescent setae. Second pereopod (Fig. 9A) about 2.3 times as long as carapace; merus about 0.8 times as long as carapace, about 5.6 times longer than high, dorsal margin armed with 8–10 spines, distal spine strongest, ventral margin with 1 strong distal spine followed by 2 small spines and short transverse ridges, lateral face with few short striae or squamiform ridges; carpus about 0.3 length of propodus, with extensor distal spine and 3 spines or spinules on extensor margin, flexor distal margin produced in spine; propodus unarmed on extensor margin, lateral face almost smooth, flexor margin with row of 10–11 movable spines; dactylus (Fig. 9B) 0.6–0.7 times as long as propodus and 5.0–6.0 times as long as high, nearly straight, bearing sparse short to long stiff setae, flexor margin slightly sinuous, with 7–9 corneous spines over entire length, including subterminal one closely appressed to unguis. Third pereopod (Fig. 9C) with merus bearing row of 6–8 spines increasing in size distally on dorsal margin and row of 2–4 spines, ventral margin with 1 prominent ventro-

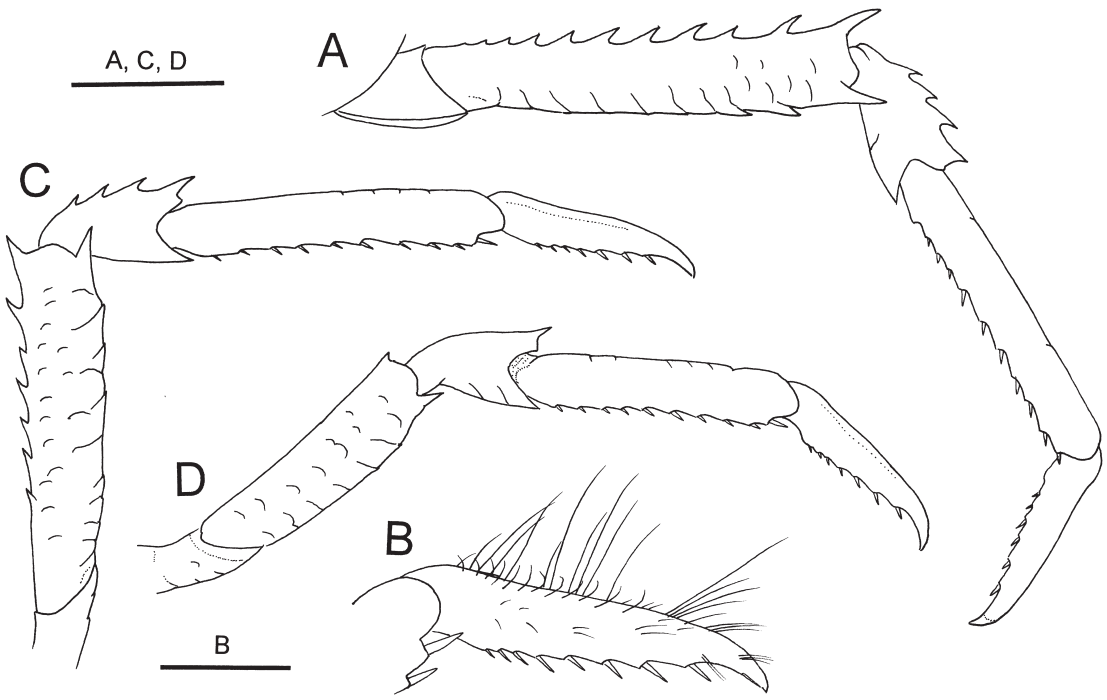

Fig. 9. *Munida munin* sp. nov., holotype, male (cl 8.0 mm), CBM-ZC 10106. Right ambulatory legs, lateral view, setae omitted except for B. A, second pereopod; B, same, distal part of propodus and dactylus, setation shown; C, third pereopod; D, fourth pereopod. Scale bars: 2 mm for A, C, D; 1 mm for B.

distal spine followed by short transverse ridges; carpus with 1 extensor distal spine and 2 or 3 additional spines on extensor margin; propodus with 10–11 movable spines on flexor margin; dactylus with 7–8 corneous spines on flexor margin, distal fourth unarmed. Fourth pereopod (Fig. 9D) reaching to lateral end of cervical groove of carapace by mero-carpal articulation; merus about 0.6 length of that of second pereopod, bearing small dorsodistal spine, dorsal margin otherwise unarmed, ventral margin with prominent distal spine and short transverse ridges; carpus with prominent extensor distal and flexor distal spines, otherwise unarmed; propodus with 10 movable spines on flexor margin; dactylus with 7 corneous spines on flexor margin.

Fifth pereopod without distinctive features.

Uropodal protopod with 1 small spine posteriorly.

Color in life. Fig. 11C. Ground color of carapace and abdomen orange, abdominal somites with white spots or markings. Third maxilliped orangish, with distinct dark red spots at dorsodistal part of merus. Chelipeds with obscurely delimited transverse whitish and reddish bands. Ambulatory legs also having whitish and reddish or brownish bands.

Distribution. Known only from Ogasawara Islands, at depths of 50–178 m.

Remarks. *Munida munin* sp. nov. is morphologically very similar to *M. clinata* Macpherson, 1994 from New Caledonia and *M. llenasi* Macpherson, 2006 from the Austral Archipelago in having the following features: strongly oblique frontal margins of the carapace, five spines on the branchial margin of the carapace posterior to the cervical groove, smooth thoracic sternites, unarmed abdominal somites, merus of the third maxilliped having a dorsodistal spine, and fingers of the cheliped bearing rows of spines on lateral and mesial margins, respectively (Macpherson, 1994; 2006). From *M. clinata*, the new species can be distinguished by the following minor, but constant characters: the distomesial spine of the second segment of the antennal peduncle is relatively short, slightly falling short of or just reaching the distal margin of the fourth segment in *M. munin*, rather than clearly overreaching it in *M. clinata*; and the supraocular spines are less elongate in the new species, only reaching the level of the midlength of the eye, rather than reaching the distal corneal margins in *M. clinata*. From *M. llenasi*, the new species can be distinguished by subequal distal spines on the basal segment of the antennular peduncle, the relatively short distomesial spines on the first segment of the antennal peduncle and the more elongate palm of the cheliped (2.8 times longer than wide versus about 2.0 times). In *M. llenasi*, the distal spines on the basal segment of the antennular peduncle are unequal with the distomesial spine being longer than distolateral spine.

Following the key of Baba (2005), this new species keys out in couplets with *M. roshanei* Tirmizi, 1966 from the western Indian Ocean. Macpherson (1994), who examined the types and additional material of *M. roshanei*, clarified that this species is characterized by the possession of numerous striae on the thoracic sternites and the fingers of the chelipeds lacking rows of spines on the lateral and mesial margins, respectively. These characters immediately separate *M. roshanei* from the new species and the above-mentioned allies.

Etymology. "Munin" is an old name of the Ogasawara Islands, meaning "no residents". Used as a noun in apposition.

Munida pectinata Macpherson and Machordom, 2005 [New Jn: Kushinoha-chū-koshiori-ebi] (Fig. 10, 11D)

Munida pectinata Macpherson and Machordom, 2005: 828, fig. 3 [type locality: New Caledonia, 190–212 m]; Baba et al., 2008: 112.

Materials examined. R/V *Koyo*, 2008 cruise, stn 25, 27°07.31′N, 142°07.70′E, 129 m, 30 October 2008, dredge, 1 male (cl 5.5 mm), NSMT-Cr S 866; 1 male (cl 5.5 mm), NSMT-Cr. 2009 cruise, stn 7, W of Minami-jima Island, 27°01.72′N, 142°07.39′E, 136–138 m, 10 July 2009, dredge, 2 males (cl 4.8, 5.0 mm), CBM-ZC 10111; stn 9, N of Haha-jima Island, 26°45.64′N, 142°05.75′E, 102–118 m, 13 July 2009, dredge, 1

male (cl 8.2 mm), 2 ovig. females (cl 5.6, 8.4 mm), CBM-ZC 10112; stn 12, W of Haha-jima Island, 26°42.24′N, 142°05.80′E, 96 m, 1 ovig. female (cl 5.2 mm), NSMT-Cr S 867; stn 14, S of Haha-jima Island, 26°34.03′N, 142°10.80′E, 92–93 m, 14 July 2009, dredge, 1 male (cl 4.9 mm), CBM-ZC 10113; stn 15, S of Haha-jima Island, 26°24.80′N, 142°10.92′E, 106–109 m, 14 July 2009, dredge, 1 male (cl 5.4 mm), CBM-ZC 10114. 2010 cruise, stn 21, E of Higashi-jima Island, 27°06.20′N, 142°18.82′E, 175–178 m, 8 July 2010, dredge, 2 males (cl 4.3, 4.8 mm), 1 juv. (cl 3.2 mm), NSMT-Cr S 868; stn 23, E of Higashi-jima Island, 27°06.23′N, 142°18.82′E, 178–179 m, 8 July 2010, dredge, 1 female (cl 5.2 mm), NSMT-Cr S 869; stn 31, W of Futami Port, Chichi-jima Island, 27°05.18′N, 142°08.48′E, 96–97 m, 9 July 2010, dredge, 2 males (cl 6.7, 7.3 mm), 3 females (cl 4.4–5.3 mm), NSMT-Cr S 870.

TR/V *Shin'yo-maru*, 1997 cruise, stn 13, W of Otouto-jima Island, 27°11.21′N, 142°05.32′E, 154–151 m, 16 October 1997, dredge, 1 male (cl 4.5 mm), 2 females (cl 6.0, 6.1 mm), CBM-ZC 9669; stn 14, similar locality, 27°10.91′N, 142°07.99′E, 151 m, coral rock and sand, 16 October 1997, dredge, 3 juv. (cl 3.4–3.6 mm), CBM-ZC 9683. 2009 cruise, stn 4, E of Muko-jima Islands, 27°44.99′N, 142°10.52′E, 159–152 m, 16 November 2009, 1 ovig. female (cl 6.6 mm), 1 juv. (cl 3.6 mm), NSMT-Cr S 871; stn 5, E of Muko-jima Islands, 27°45.10′N, 142°11.05′E, 193–172 m, 16 November 2009, 2 males (cl 6.8, 7.6 mm), 1 female (cl 4.2 mm), 5 ovig. females (cl 5.2–6.5 mm), 2 juv. (cl 2.7, 3.0 mm), NSMT-Cr S 872.

R/V *Tansei-maru*, KT09-02 cruise, stn KK-1-2(1), Kaikata Seamount, 26°40.00′N, 140°55.54′E, 165–172 m, 16 March 2009, chain bag dredge, 3 males (cl 5.0–9.8 mm), CBM-ZC 10119; stn TW-1-1, W of Chichi-jima Island, 27°01.40′N, 142°07.41′E, 138–145 m, 19 March 2009, dredge, 3 males (cl 5.1–6.8 mm), 1 ovig. female (cl 6.0 mm), 2 juv. (cl 4.1, 4.3 mm), CBM-ZC 10115; stn TW-2-1, W of Chichi-jima Island, 27°03.01′N, 142°04.84′E, 190–191 m, 19 March 2009, dredge, 1 male (cl 10.1 mm), CBM-ZC 10116; stn TW-2-3, W of Chichi-jima Island, 27°03.03′N, 142°05.29′E, 165–166 m, 19 March 2009, dredge, 3 males (cl 4.6–5.3 mm), 3 juv. (cl 4.3–5.3 mm), CBM-ZC 10117; stn TW-02-04, W of Chichi-jima Island, 27°02.94′N, 142°07.17′E, 194–221 m, 19 March 2009, dredge, 2 males (cl 4.6, 5.2 mm), 2 juv. (cl 4.2, 5.3 mm), CBM-ZC 10118.

Abbreviated description based on newly collected specimens. Carapace (Fig. 10A) about 1.2 times longer than wide; transverse ridges on dorsal surface mostly interrupted; few scales or secondary striae between main ridges, no scale on intestinal region; gastric region with 5 or 6 pairs of epigastric spines; parahepatic, anterobranchial and postcervical spines usually present on each side; frontal margins somewhat oblique; lateral margins slightly convex; anterolateral spine moderately strong, located at anterolateral angle of carapace, not reaching level of sinus between rostrum and supraocular spines; 2 or 3 marginal spines anterior to cervical groove; branchial margin with 5 moderately small spines. Rostrum (Fig. 10A) spiniform, 0.6–0.7 times as long as carapace, horizontal with distal part slightly upturned. Supraocular spines slender, nearly parallel, slightly falling short of midlength of rostrum or distal corneal margins.

Second abdominal somite (Fig. 10A) unarmed on anterior ridge, with 3 or 4 striae on tergum. Third and fourth abdominal somites (Fig. 10A) unarmed on anterior ridges, each with 2 or 3 striae on tergum.

Eyes (Fig. 10A, C) moderately large, corneal width about 0.2 of carapace length, eye lashes very short.

Basal segment of antennular peduncle (Fig. 10C) with distomesial spine slightly longer than distolateral spine; lateral margin with 2 spines, laterodistal spine elongate, overreaching distal spines, lateroproximal spine small.

Antennal peduncle (Fig. 10C) with first segment bearing long distomesial spine, reaching distal margin of third segment. Second segment with moderately long distomesial spine slightly

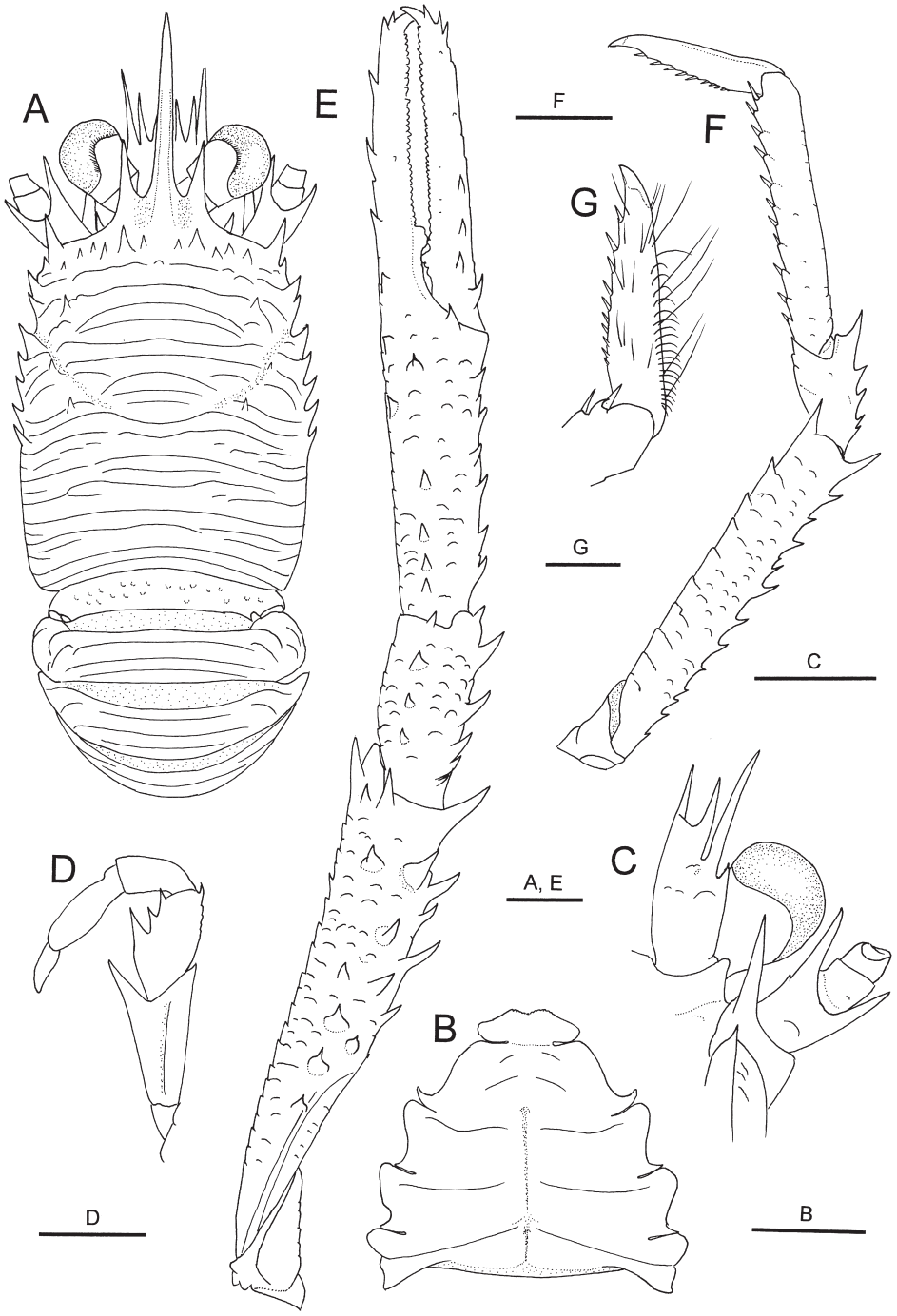

Fig. 10. *Munida pectinata* Macpherson and Machordom, 2005, male (cl 9.8 mm), CBM-ZC 10119. A, carapace, first to third abdominal somites, and cephalic appendages, dorsal view (distal two segments of antennular peduncles omitted); B, thoracic sternum, ventral view; C, right eye, basal segment of antennular peduncle and antennal peduncle, ventral view; D, endopod of left third maxilliped, lateral view; E, left cheliped, dorsal view; F, left second pereopod, lateral view; G, same, distal part of propodus and dactylus, lateral view, setation shown. Setae omitted except for G. Scale bars: 2 mm for A–F; 1 mm for G.

overreaching distal margin of fourth segment; distolateral spine somewhat shorter than distomesial spine, reaching or slightly overreaching distal margin of third segment; mesial margin with 1 spinule. Third segment unarmed.

Third maxilliped (Fig. 10D) with ischium bearing strong ventrodistal spine. Merus deep, with 3 spines on ventral margin in distal half, proximalmost spine strongest, dorsodistal margin with small spine.

Chelipeds (Fig. 10E) moderately squamous, 3.5 times longer than carapace at most. Merus armed with some spines, strongest spine on distal margin moderately short to moderately long, reaching proximal 0.1–0.2 of carpus. Carpus with row of spines on each dorsolateral and dorsomesial margin. Palm 2.7 times longer than wide at most, with small spines arranged in longitudinal rows.

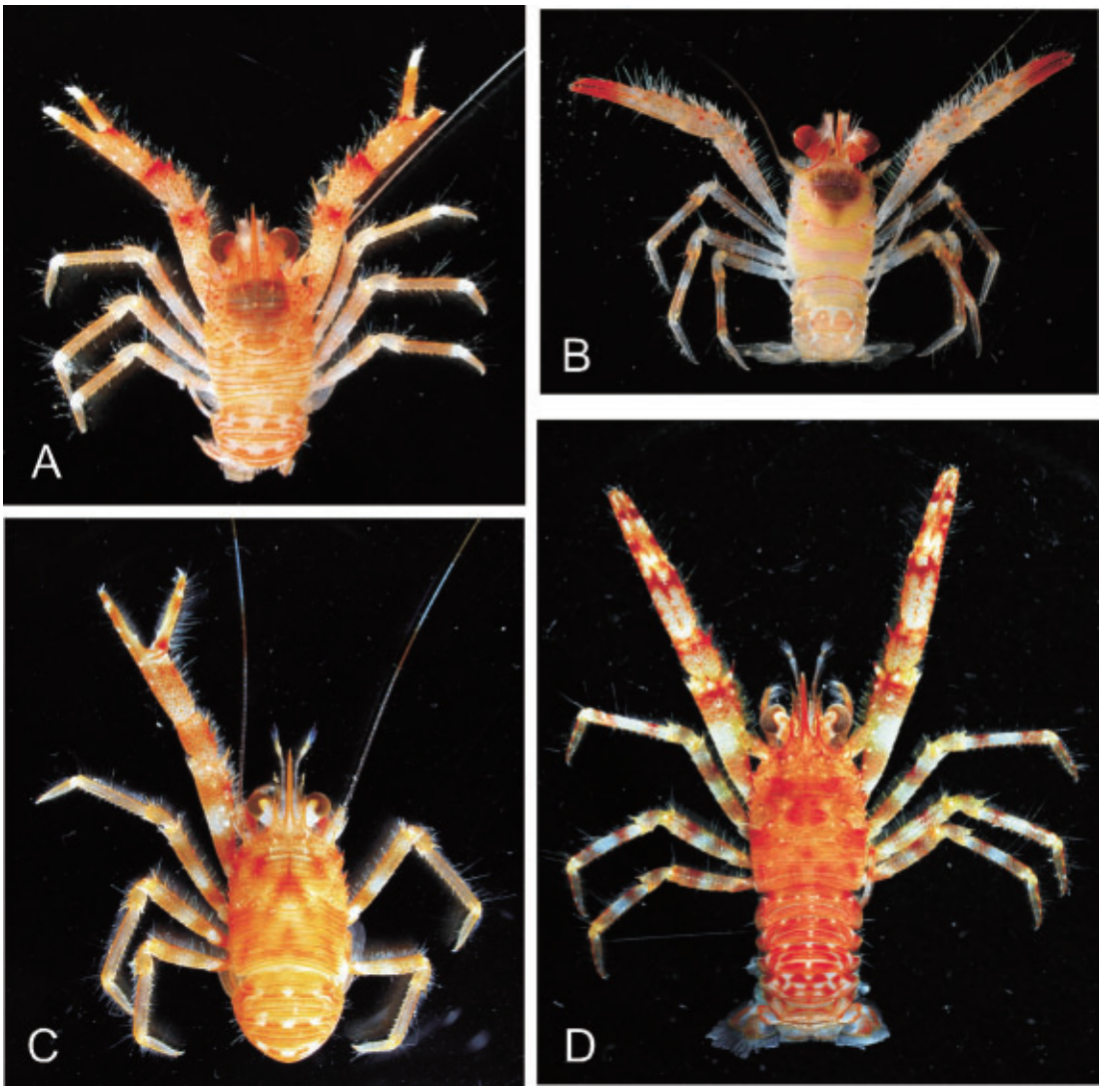

Fig. 11. Coloration in life. A, *Munida honshuensis* Benedict, 1902, juvenile (cl 4.7 mm), CBM-ZC 10102; B, *Munida longinquus* sp. nov., paratype, (cl 3.4 mm), NSMT-Cr S 857, photo H. Komatsu; C, *Munida munin* sp. nov., paratype, ovig. female (cl 6.2 mm), NSMT-Cr S 861, photo H. Komatsu; D, *Munida pectinata* Macpherson and Machordom, 2005, ovig. female (cl 8.4 mm), CBM-ZC 10112.

Fixed finger with row of spines on dorsolateral margin. Dactylus 1.0–1.2 times longer than palm, with 1–3 spines on dorsal surface proximally; mesial margin with 1 proximal and 2 or 3 subdistal spines, and occasionally with few additional spines between proximal and subdistal spines.

Second pereopod (Fig. 10F) about 2.5 times longer than carapace; merus with row of spines on dorsal margin over entire length, dorsodistal spine strongest, ventral margin with 1 strong distal spine followed by short transverse ridges; carpus with strong extensor distal spine followed by 2–4 small spines on extensor margin and ventrodistal spine; propodus 6.0–7.0 times longer than high, 10 or 11 movable spines on flexor margin. Dactylus (Fig. 10G) 0.6–0.7 times as long as propodus, 5.0–6.0 times longer than high; flexor margin sinuous, bearing 9–11 small corneous spines almost over entire length, including subterminal one closely appressed to unguis. Third pereopod similar to second pereopod. Fourth pereopod shorter than second and third pereopods.

Coloration. Fig. 11D. Carapace, abdomen and appendages generally orange; carapace with darker tint on dorsal surface; first to third abdominal somite each with 3 white spots arranged in transverse row. Cornea brown; eyestalk white, dorsal part adjacent to corneal margin orangish. Third maxilliped with prominently red merus. Meri of cheliped and ambulatory legs each with obscure white band at middle.

Distribution. Previously known only from New Caledonia, at depths of 190–240 m. The present material greatly extends the geographical range of this species to the northwestern Pacific.

Remarks. The present specimens closely agree with the original description of *Munida pectinata* by Macpherson and Machordom (2005) in every diagnostic aspect, and are identified with the species with little hesitation.

Munida pectinata is superficially similar to *M. munin* sp. nov., and these two species are sometimes found sympatrically in the surveyed area. However, some minor, but constant characters distinguish them: the frontal margins of the carapace are more oblique in *M. munin* sp. nov. than in *M. pectinata*; the distomesial spine of the basal segment of antennular peduncle is slightly longer than the distolateral spine in *M. pectinata*, whereas these spines are subequal in *M. munin* sp. nov.; the distomesial spine on the basal segment of the antennal peduncle distinctly overreaches the third segment in *M. pectinata*, rather than reaching only the distal margin of the second segment in *M. munin* sp. nov. Furthermore, in life, *M. pectinata* is easily recognizable by the prominently red merus of the third maxilliped.

Munida pectinata is the most frequently represented species in the present collections.

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References

Ahyong, S., T. 2007. Decapod Crustacea collected by NORFANZ Expedition: Galatheidae and Polychelidae. *Zootaxa*, 436: 1–88.

Ahyong, S.T., K. Baba, E. Macpherson and G.C.B. Poore, 2010. A new classification of the Galatheoidea (Crustacea: Decapoda: Anomura). *Zootaxa*, 2676: 57–68.

Ahyong, S.T. and G.C.B. Poore, 2004. Deep-water Galatheidae (Crustacea: Decapoda: Anomura) from southern and eastern Australia. *Zootaxa*, 472: 3–76.

Baba, K., 1988. Chirostylid and galatheid crustaceans (Decapoda: Anomura) of the "Albatross" Philippine Expedition, 1907–1910. *Researches on Crustacea*, Special Number 2: 1–203.

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

Baba, K., 2005. Deep-sea chirostylid and galatheid crustaceans (Decapoda: Anomura) from the Indo-West Pacific, with a list of species. *Galathea Reports*, 20: 1–317.

Baba, K. and E. Macpherson, 1991. Reexamination of the type material of *Munida militaris* Henderson, 1885 (Crustacea: Decapoda: Galatheidae), with selection of a lectotype. *Proceedings of the Biological Society of Washington*, 104: 538–544.

Baba, K., E. Macpherson, C.-W. Lin and T.-Y. Chan, 2008. Crustacean Fauna of Taiwan: Squat lobsters (Chirostylidae and Galatheidae). ix + 311 pp. National Taiwan Ocean University, Keelung.

Baba, K., E. Macpherson, G.C.B. Poore, S.T. Ahyong, A.B.P. Cavezas, C.-W. Lin, M. Nizinski, C. Rodrigues and K.E. Schnabel, 2008. Catalogue of squat lobsters of the world (Crustacea: Decapoda: Anomura – families Chirostylidae, Galatheidae and Kiwaidae). *Zootaxa*, (1905): 1–220.

Benedict, J., 1902. Description of a new genus and forty six new species of crustaceans of the family Galatheidae with a list of the known marine species. *Proceedings of the Biological Society of Washington*, 26: 129–148.

Balss, H., 1913. Ostasiatische Decapoden I. Die Galatheiden und Paguriden. *In*: Doflein, F. (ed.), *Beitrage zur Naturgeschichte Ostasiens. Abhandlungen der Mathematisch-Physikalischen Klasse der Königlich Beyerischen Akedemie der Wissenschaften*, (2): 1–85, pls. 1, 2.

De Grave, S., N.D. Pentcheff, S.T. Ahyong, T.-Y. Chan, K.A. Crandall, P.C. Dworschak, D.L. Felder, R.M. Feldmann, C.H.J.M. Fransen, L.Y.D. Goulding, R. Lemaitre, M.E.Y. Low, J.W. Martin, P.K.L. Ng, C.E. Schweitzer, S.H. Tan, D. Tshudy and R. Wetzer, 2009. A classification of living and fossil genera of decapod crustaceans. *Raffles Bulletin of Zoology*, Supplement, (21): 1–109.

Leach, W.E., 1820. Galathéadées. *In*: *Dinctionaire des Sciences Naturelles*, pp. 49–56, F.G. Levreault, Paris.

Machordom, A. and E. Macpherson, 2004. Rapid radiation and cryptic speciation in galatheid crabs of the genus *Munida* and related genera in the South West Pacific: molecular and morphological evidence. *Molecular Phylogenetics and Evolution*, 33: 259–279.

Macpherson, E., 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. Mémoirs du Muséum national d'Histoire naturelle*, (156): 443–472.

Macpherson, E., 1994. Crustacea Decapoda: studies on the genus *Munida* Leach, 1820 (Galatheidae) in New Caledonia and adjacent waters with descriptions of 56 new species. *In*: Crosnier, A. (ed.), *Résultats des campagnes MUSORSTOM, volume 12. Mémoirs du Muséum national d'Histoire naturelle*, (161): 421–569.

Macpherson, E., 1996a. Crustacea Decapoda: species of the genera *Munida* Leach, 1820 and *Paramunida* Baba, 1988 (Galatheidae) from the seas around the Wallis and Futuna Islands. *In*: Crosnier, A. (ed.), *Résultats des campagnes MUSORSTOM, volume 15. Mémoirs du Muséum national d'Histoire naturelle*, (168): 387–421.

Macpherson, E., 1996b. Crustacea Decapoda: new records of species of the genera *Munida* Leach, 1820 and *Paramunida* Baba, 1988 (Galatheidae) from New Caledonia, with the descriptions of three new species. *In*: Crosnier, A. (ed.), *Résultats des campagnes MUSORSTOM, volume 15. Mémoirs du Muséum national d'Histoire naturelle*, (168): 423–431.

Macpherson, E., 1997. Crustacea Decapoda: species of the genera *Agononida* Baba & de Saint Laurent, 1996 and *Munida* Leach, 1820 (Galatheidae) from the KARUBAR cruise. *In*: Crosnier, A. and P. Bouchet (eds.), *Résultats des campagnes MUSORSTOM, volume 16. Mémoirs du Muséum national d'Histoire naturelle*, (168): 387–421.

Macpherson, E., 1999a. Crustacea Decapoda: species of the genera *Agononida* Baba & de Saint Laurent, 1996 and *Munida* Leach, 1820 (Galatheidae) collected during MUSORSTOM 8 cruise in Vanuatu. *In*: Crosnier, A. (ed.), *Résultats des campagnes MUSORSTOM, volume 20. Mémoirs du Muséum national d'Histoire naturelle*, (180): 407–426.

Macpherson, E., 1999b. Three new species of the genus *Munida* Leach, 1820 (Decapoda, Galatheidae) from the Seychelles (Indian Ocean). *Zoosystema*, 21: 473–482.

Macpherson, E., 2000. Crustacea Decapoda: species of the genera *Crosnierita* Macpherson, 1988, *Munida* Leach, 1820 and *Paramunida* Baba, 1988 (Galatheidae) collected during the MUSORSTOM 9 cruise to the Marquesas Islands. *In*: Crosnier, A. (ed.), *Résultats des campagnes MUSORSTOM, volume 21. Mémoirs du Muséum national d'Histoire naturelle*, (184): 415–423.

Macpherson, E., 2004. Species of the genus *Munida* Leach, 1820 and related genera from Fiji and Tonga (Crustacea: Decapoda: Galatheidae). *In*: Marshall, B.A. and B. Richer de Forges (eds.), *Tropical Deep-Sea Benthos, volume 23. Mémoirs du Muséum national d'Histoire naturelle*, (191): 231–292.

Macpherson, E., 2006a. Galatheidae (Crustacea, Decapoda) from the Austral Islands, Central Pacific. *In*: B. Richer de Forges and J.L. Justine (eds.), *Tropical Deep-Sea Benthos, volume 24. Mémoirs du Muséum national d'Histoire naturelle*, (193): 285–333.

Macpherson, E., 2006b. New species and new occurrence of Galatheoidea (Crustacea: Decapoda) from New Caledonia. *Zoosystema*, 28: 669–681.

Macpherson, E. 2009. New species of squat lobsters of the genera *Munida* and *Raymunida* (Crustacea, Decapoda, Galatheidae) from Vanuatu and New Caledonia. *Zoosystema*, 31: 431–451.

Macpherson, E. and K. Baba, 1993. Crustacea Decapoda: *Munida japonica* Stimpson, 1858, and related species (Galatheidae). *In*: Crosnier, A. (ed.), *Résultats des campagnes MUSORSTOM, volume 10. Mémoirs du Muséum national d'Histoire naturelle*, (156): 381–420.

Macpherson, E. and A. Machordom, 2005. Use of morphological and molecular data to identify three new sibling species of the genus *Munida* Leach, 1820 (Crustacea, Decapoda, Galatheidae) from New Caledonia. *Journal of Natural History*, 39: 819–834.

Macpherson, E. and M. de Saint Laurent, 1991. Galatheid crustaceans of the genus *Munida* Leach, 1818, from French Polynesia. *Bulletin du Muséum national d'Histoire naturelle*, *Paris*, 4e série, Section A, 13: 373–422.

Melin, G., 1939. Paguriden und Galatheiden von Prof. Dr. Sixten Bocks Expedition nach den Bonin-Inseln 1914. *Kungliga Svenska Vetenskapsakademiens Handlinger*, 18: 1–119.

Miyake, S. and K. Baba, 1965. Some galatheids obtained from the Bonin Islands (Crustacea, Anomura). *Journal of the Faculty of Agriculture, Kyushu University*, 13: 585–593.

Ortmann, A.E. 1892. Die Decapoden-Krebse des Strassburger Museums, mit besonderer Berücksichtigung der von Herrn Dr. Döderlein bei Japan und bei den Liu-Kiu-Inseln gesammelten und zur Zeit im Strassburger Museum aufbewahrten Formen. IV. Die Abtheilungen Galatheidea und Paguridea. *Zoologische Jahrbücher, Abtheilung für Systematik, Geographie und Biologie der Thiere*, 6: 241–326.

Osawa, M. and J. Okuno. 2002. Shallow-water species of the genus *Munida* (Crustacea, Decapoda, Anomura, Galatheidae) from the Ogasawara Islands, southern Japan. *Bulletin of the National Science Museum*, Series A (Zoology), 28: 129–141.

Takeda, M. and Y. Kurata. 1976. Crabs of the Ogasawara Islands, II. First report on the species obtained from stomachs of fishes. *Researches on Crustacea*, 7: 116–137.

Stimpson, W. 1858. Prodromus descriptionis animalium evertebratorum, quae in Expeditione ad Oceanum Pacificum Septentrionalem, a Republica Federata missam 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.

小笠原諸島海域から採集されたチュウコシオリエビ属（甲殻亜門：十脚目：異尾下目：チュウコシオリエビ科）

駒井智幸

国立科学博物館により実施された調査プロジェクト「相模灘における生物多様性の起源探求に関する研究　フォッサマグナ要素および伊豆－小笠原弧」により小笠原諸島海域から採集されたチュウコシオリエビ属 *Munida* Leach, 1820 を報告する．以下の 6 種が記録された：*M. disiunctus* sp. nov.（新称：ハナレチュウコシオリエビ）；*M. honshuensis* Benedict, 1902（新称：スジチュウコシオリエビ）；*M. koyo* sp. nov.（コウヨウチュウコシオリエビ）；*M. longinquus* sp. nov.（新称：アデヤカチュウコシオリエビ）；*M. munin* sp. nov.（新称：ムニンチュウコシオリエビ）；*M. pectinata* Macpherson and Machordom, 2005（新称：クシノハチュウコシオリエビ）．4 新種については詳細な記載を与え，近縁種との比較を行った．クシノハチュウコシオリエビはニューカレドニア海域から知られるのみであったが，本研究により西太平洋海域に広く分布することが明らかとなった．西太平洋海域における本属の種多様性は非常に高いこと知られているが，小笠原諸島海域は調査例が少なく，今後調査が進めばより多くの種が発見されることが期待される．