



Decapod Crustacea collected by the NORFANZ Expedition: Galatheidae and Polychelidae

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Table of contents

Abstract	2
Introduction	2
Materials and methods	2
SYSTEMATICS	3
Galatheidae Samouelle, 1819	3
Munidopsinae Ortmann, 1898	3
<i>Galacantha quiquei</i> Macpherson, 2007	3
<i>Galacantha rostrata</i> A. Milne-Edwards, 1880	4
<i>Munidopsis bractea</i> sp. nov.	5
<i>Munidopsis norfanz</i> sp. nov.	7
<i>Munidopsis treis</i> Ahyong & Poore, 2004	10
Galatheinae Samouelle, 1819	11
<i>Agononida eminens</i> (Baba, 1988)	11
<i>Agononida marini</i> (Macpherson, 1994)	11
<i>Agononida nielbrucei</i> Vereshchaka, 2005	11
<i>Agononida procera</i> Ahyong & Poore, 2004	13
<i>Allogalatea elegans</i> (Adams & White, 1848)	13
<i>Galathea tanegashimae</i> Baba, 1969	14
<i>Leiogalatea laevirostris</i> (Balss, 1913)	14
<i>Munida acacia</i> sp. nov.	15
<i>Munida cerisa</i> sp. nov.	19
<i>Munida collier</i> sp. nov.	22
<i>Munida endeavourae</i> Ahyong & Poore, 2004	25
<i>Munida exilis</i> sp. nov.	25
<i>Munida howensis</i> sp. nov.	28
<i>Munida isos</i> Ahyong & Poore, 2004	31
<i>Munida icela</i> sp. nov.	31
<i>Munida redacta</i> sp. nov.	34
<i>Munida rubrimana</i> sp. nov.	36
<i>Munida tangaroa</i> sp. nov.	38
<i>Paramunida labis</i> Macpherson, 1996	41
<i>Phylladorhynchus</i> cf. <i>pusillus</i> (Henderson, 1885)	42
<i>Phylladorhynchus integrirostis</i>	42
<i>Tasmanida</i> gen. nov.	43
<i>Tasmanida norfolkae</i> sp. nov.	45
Polychelidae Wood-Mason, 1874	47
<i>Pentacheles laevis</i> Bate, 1878	47

<i>Pentacheles validus</i> A. Milne Edwards, 1880	49
<i>Polycheles enthrix</i> (Bate, 1878).....	49
<i>Polycheles sculptus</i> Smith, 1880.....	50
<i>Polycheles suhmi</i> (Bate, 1878)	51
Discussion	51
Acknowledgments	52
References	52

Abstract

The present study reports on the squat lobsters (Galatheidae) and blind lobsters (Polychelidae) collected by the 2003 NORFANZ Expedition to the Lord Howe Rise, Norfolk, and West Norfolk Ridges in the northern Tasman Sea. Galatheids and polychelids, both typical components of the outer shelf and slope, were collected from 26 and 36 mostly deep-water stations, respectively. Polychelids were represented by five species in two genera; galatheids by 26 species in ten genera of which one genus and twelve species are new to science. *Munida grievae* Vereshchaka, 2005, and *M. gordonii* Vereshchaka, 2005, both described from northeastern New Zealand, are synonymised with *M. endeavourae* Ah Yong & Poore, 2004, and *M. isos* Ah Yong & Poore, 2004, respectively, both described from eastern Australia.

Key words: Crustacea, Decapoda, Galatheidae, Polychelidae, *Tasmanida*, new genus, new species, taxonomy, NORFANZ, Tasman Sea, New Zealand, Australia

Introduction

The 2003 NORFANZ Expedition to the northern Tasman Sea explored deepwater habitats on the Lord Howe Rise, Norfolk and West Norfolk ridges. Numerous decapod Crustacea were collected, of which the pontonine shrimps and penaeoid prawns have been already reported (Bruce 2004, 2005; Dall 2005). Squat lobsters (Galatheidae) and blind lobsters (Polychelidae), both typical components of the outer shelf and slope, were collected from 26 and 36 NORFANZ stations, respectively. The present study reports on the NORFANZ galatheids and polychelids, represented by 26 species in 10 genera and 5 species in 2 genera, respectively. Two of three species of Galatheidae recently described from New Zealand (Vereshchaka 2005) were collected by the NORFANZ Expedition (see *Agononida nielbrucei* Vereshchaka, 2005, and *Munida endeavourae* Ah Yong & Poore, 2004). Vereshchaka's third species, though not collected by NORFANZ, is also treated below under the account of *Munida isos* Ah Yong & Poore, 2004, to clarify its status.

Materials and methods

Measurements of specimens are given in millimetres (mm) and, unless otherwise indicated, refer to carapace length, measured along the dorsal midline from the rostral apex to the posterior margin of the carapace. Postorbital carapace length (pcl.) is measured along the dorsal midline from the posterior margin of the orbit to the posterior margin of the carapace. Synonymies are restricted to primary synonyms, major works and relevant regional literature. Specimens are deposited in the Australian Museum, Sydney (AM), National Institute of Water and Atmospheric Research, Wellington (NIWA), National Museum of New Zealand Te Papa Tongarewa, Wellington (NMNZ).

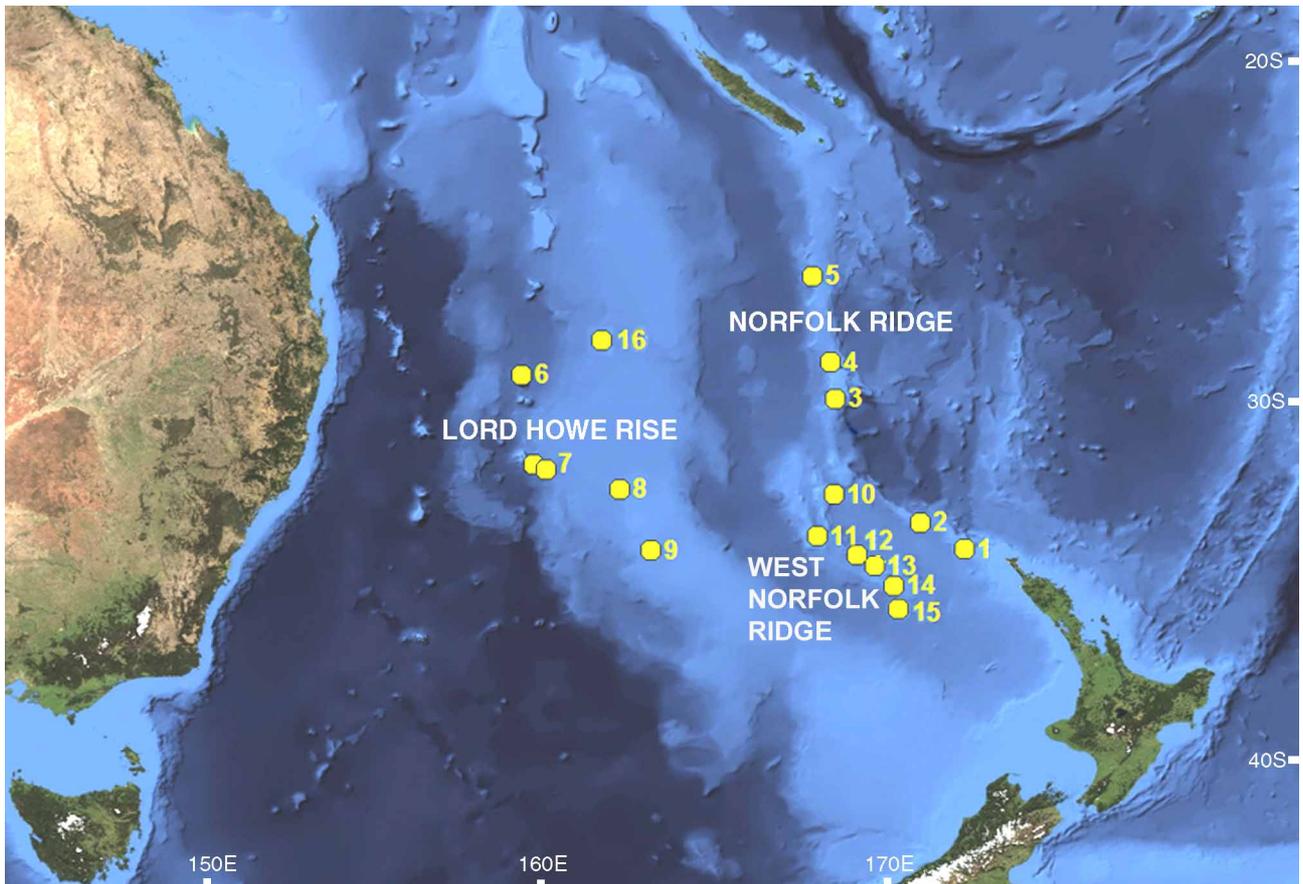


FIGURE 1. NORFANZ survey area. Survey sites numbered 1–15. TAN0308 stations within survey sites are as follows — site 1: stns 1–9; site 2: stns 124–136; site 3: stns 11–23; site 4: stns 24–36; site 5: stns 37–45; site 6: stns 48–59; site 7: stns 60–71; site 8: stns 73–80; site 9: stns 81–92; site 10: stns 105–123; site 11: stns 93–104; site 12: stns 137–147; site 13: stns 148–156; site 14: stns 157–166; site 15: stns 167; site 16: stns 47.

SYSTEMATICS

Galatheidae Samouelle, 1819

Munidopsinae Ortmann, 1898

Galacantha quiquei Macpherson, 2007

(Fig. 2A, B)

Galacantha quiquei Macpherson, 2007: 15–18, fig. 6 [type locality: Wallis and Futuna Islands].

Material examined. *Norfolk Ridge*: NMNZ, 1 female (19.4 mm), 33°32.62'S, 170°04.13'E, 1270–1350 m, TAN0308/130 #006, 1 Jun 2003.

West Norfolk Ridge: NIWA 28088, 1 ovigerous female (27.7 mm), 34°58.85'S, 169°29.60'E, 1288–1294 m, TAN0308/160 #021, 4 Jun 2003; AM P73027, 1 male (20.9+ mm, rostrum broken), 33°42.45'S, 167°27.03'E, 1451–1478 m, TAN0308/102 #012, 28 May 2003.

Colour in life. Base colour white. Ventral surface, fingers and mesial surfaces of chelipeds, anterior and posterior third of carapace (except midline), and lateral margins of abdomen orange.

Remarks. The ovigerous female differs from the type description (Macpherson 2007) only in the number of subdistal spines on the rostrum: two on the left side and one on the right, rather than one on each side.

Distribution. Solomon Islands, Vanuatu, New Caledonia, Fiji, Wallis and Futuna Islands, and for the first time, New Zealand; 835–1478 m (Macpherson 2007; present study).



FIGURE 2. A, B, *Galacantha quiquei* Macpherson, 2007, male, 20.9+ mm, TAN0308/102, (AM P73027). C, D, *Galacantha rostrata* A. Milne-Edwards, 1880, atypical specimen, male, 26.0 mm, TAN0308/167 (NIWA 28060).

***Galacantha rostrata* A. Milne-Edwards, 1880**

(Fig. 2C, D)

Galacantha rostrata A. Milne-Edwards, 1880: 52 [type locality: Bequia, Windward Islands, West Indies]. — Macpherson, 2007: 18–19, fig. 10I, J.

Galacantha Talismani Filhol, 1885: pl. 3 [type locality: Cap Ghir, N of Canary Islands].

Galacantha investigatoris Alcock & Anderson, 1894: 173 [type locality: Laccadive Sea].

Munidopsis rostrata. — Baba 1988: 161; 1994: 18. — Baba & Poore 2002: 236–241, fig. 5. — Ahyong & Poore 2004: 56–57. — Baba 2005: 180–181, 294.

Material examined. *West Norfolk Ridge*: NMNZ, 1 male (31.2 mm), 1 ovigerous female (31.3+ mm; ovum diameter 2.8 mm), 35°35.83'S, 169°33.43'E, 1760–1786 m, TAN0308/167 #016, 5 Jun 2003; NIWA 28060, 2 males (26.0[pcl.]–31.5 mm), 35°35.83'S, 169°33.43'E, 1760–1786 m, TAN0308/167 #016, 5 Jun 2003.

Colour in life. Orange overall.

Remarks. As reported by Baba & Poore (2002) for southeastern Australian material, the two spines at the anterolateral angle of the carapace in the present specimens are subequal. One male (26.0 mm pcl, Fig. 2C, D) is atypical in lacking the rostrum entirely and the ovigerous female bears 1 or 2 minute spines behind the anterolateral spines. The specimens otherwise agree with the recent accounts from the area (Baba & Poore 2002; Macpherson 2007). Notably, the posterior margin of the mesogastric spine in the present series is straight as in New Caledonian specimens rather than slightly convex as in West African material (Macpherson 2007).

Distribution. Atlantic and Southern oceans, Indian Ocean, western and eastern Pacific. The Indo-West Pacific range includes Zanzibar, the Arabian Sea, Indonesia, Japan, Australia, New Caledonia, and now New Zealand; 1584–3294 m (Ahyong & Poore 2004; Macpherson 2007).

***Munidopsis bractea* sp. nov.**

(Fig. 3A, 4)

Type material. Holotype: AM P73028, male (6.8 mm), Lord Howe Rise, 34°11.06'S, 162°39.19'E, 430–740 m, TAN0308/086 #15, 26 May 2003. Paratypes: NMNZ, 1 male (4.2 mm), 1 female (4.9 mm), southern Norfolk Ridge, 33°23.41'S, 170°11.58'E, 469–526 m, TAN0308/126 #77, 31 May 2003; NIWA 28071, 1 male (5.0 mm), southern Norfolk Ridge, 33°23.41'S, 170°11.58'E, 469–526 m, TAN0308/126 #77, 31 May 2003.

Diagnosis. Carapace dorsal outline subquadrate, surface sparsely setose, densely squamate; gastric region prominently raised; anterior gastric region inclined at about 60°, with pair of prominent epigastric scales; cardiac region prominent, squamae upraised. Rostrum spatulate, horizontal, one-third remaining carapace length. Abdominal tergites 2–4 with 2 elevated ridges separated by median transverse groove. Tergites 2 and 3 with short, blunt antrorse median projection on anterior transverse ridge. Eyes immovable, with prominent distomesial and distal squamae and shorter proximal squamae. Antennular basal segment with upright cluster of 3 or 4 evenly splayed spines on dorsal margin. Chelipeds elongate, equal, at least 1.4 times carapace length; densely squamate. Pereopods 1–3 with epipod.

Description. *Carapace:* 1.5 times as long as wide, moderately convex from side to side; widest at level of cardiac region; dorsal outline subquadrate, widest at level of cardiac region; surface sparsely setose, densely squamate, anterior margins of squamae crenulate or serrate; gastric region prominently raised; anterior gastric region inclined at about 60°, with field of small spines; with pair of prominent epigastric scales; cardiac region prominent, squamae upraised. Cervical groove distinct. Anterolateral margins slightly oblique; anterolateral angle squamate, with short, blunt tooth; outer orbital angle blunt, margins serrated. Lateral margins subparallel, broadly convex; without spines. Posterior margin with upraised, serrated squamae. Rostrum spatulate, horizontal; width about one-fifth distance between anterolateral angles; length one-third remaining carapace length; dorsal surface with low median carina; distal half with margins straight or slightly concave, serrated, convergent, apex blunt; proximal half with concave margins. Pterygostomian region squamate, anterior margin pointed.

Sternum: Slightly longer than wide; widest at sternite 7. Sternite 3 about 0.4 width of sternite 4; anterior margin irregularly sinuous, deeply emarginate medially; posterolateral margins rounded. Sternite 4 anterior margin sinuous, crenulate broadly convex; surface with scattered setose striae. Sternites 5–7 smooth.

Abdomen: Integument irregularly dimpled; pleura with scattered low granules. Tergites 2–4 with 2 elevated ridges separated by median transverse groove. Tergites 2 and 3 with short, blunt antrorse median projection on anterior transverse ridge. Tergites 4–6 unarmed. Telson slightly broader than long; composed of 8 plates; margins setose; surface with scattered striae. Uropodal endopod unarmed; margins setose.

Eyes: Immovable, sparsely setose, with prominent distomesial and distal squamae and shorter proximal squamae. Cornea subglobular, as wide as stalk.

Antennule: Basal segment with short distomesial spine and larger multispinose distolateral process; ventromesial surface serrate; lateral surface with oblique tuberculate row near midlength; middorsal margin with upright cluster of 3 or 4 smooth, slender, evenly splayed subequal spines.

Antenna: Basal segment with triangular, dorsally dentate distomesial tooth, overreaching segment 2; distolateral tooth blunt, reaching midlength of segment 2. Segment 3 with blunt distomesial and distalolateral tooth. Segment 4 unarmed. Flagellum not extending beyond midlength of cheliped.

Maxilliped 3: Surface squamate. Ischium extensor margin with low teeth and triangular distal tooth; with triangular flexor tooth; crista dentata with 13–15 corneous teeth. Merus extensor margin with 4 or 5 teeth;

flexor margin with 4 broad, irregular teeth. Carpus extensor margin with 4 or 5 teeth, proximal smallest. Propodus squamate, as long as carpus. Dactylus unarmed, shorter than propodus.

Pereopod 1 (cheliped): Elongate, equal, 1.7–2.2 (males) and 1.4 (female) times carapace length; surfaces rugose, densely covered with raised squamae. Ischium with 1 or 2 short dorsal distal spines. Merus twice as long as carpus. Propodal palm longer than dactylus, length about 1.8 (males) and 2.0 (females) times height. Dactylus occlusal margins dentate, without gape; apices slightly hollowed, bidentate.

Pereopods 2–4: Similar, surfaces squamose; pereopods 2–4 decreasing in length posteriorly; pereopod 2 not overreaching cheliped carpus. Merus extensor and flexor margins with 1 and 2 rows of rugose, raised squamae, respectively. Carpus with short striae; extensor margin with upright tubercles and squamae, largest distally; flexor margin unarmed. Propodus about 4 times as long as high; with denticulate surfaces and margins; with extensor margin irregularly tuberculate or spinose, with blunt distal tooth; with minute, movable, distal flexor spine. Dactylus about half (largest specimen) to two-thirds propodus length (smallest specimen); extensor margin minutely spinose on proximal half; flexor margin with 10–12 movable spines and corneous unguis.

Epipods: Pereopods 1–3 with epipod.

Colour in life. Overall deep to pale orange, palest in largest specimens.



FIGURE 3. A, *Munidopsis bractea* sp. nov. paratype female, 4.9 mm, TAN0308/126 (NMNZ). B, *Munidopsis norfanz* sp. nov., holotype, TAN0308/066 (AM). C, *Munidopsis treis* Ahyong & Poore, 2004, female, 10.7 mm, TAN0308/154 (NMNZ).

Etymology. Derived from *bractea*, Latin for scale or plate, alluding to the squamose ornamentation of the carapace.

Remarks. *Munidopsis bractea* sp. nov. is morphologically similar to *M. proales* Ahyong & Poore, 2004, *M. tasmaniae* Ahyong & Poore, 2004, *M. sonne* Baba, 1995, *M. taurulus* Ortmann, 1892, and *M. papanui* Schnabel & Bruce, 2006, in the strongly rugose dorsum that is densely covered with tubercles or squamae. The new species, however, is readily distinguished from each of the aforementioned species by its much higher gastric region in which the anterior gastric surface is inclined at about 60° to the horizontal, rather than

45° or less. Of these rugose species, *M. bractea* is most similar to *M. papanui* from New Zealand: both have a basal antennular segment with a multispinose dorsal margin, ill-defined or absent lateral carapace teeth, and a median antrorse projection on abdominal tergites 2 and 3 (albeit much less pronounced in *M. bractea* than in *M. papanui*). Other than the height of the gastric region, *M. bractea* differs from *M. papanui* in numerous features including the squamate rather than tuberculate carapace surface, irregular rather than straight rostral margins, and relatively transverse rather than distinctly oblique anterior margin of sternite 4. Sexual dimorphism in *M. bractea* is expressed in cheliped size, being longer and more robust in the largest male (holotype) than in the female and other paratypes.

Distribution. Lord Howe Rise and southern Norfolk Ridge; 430–740 m.

***Munidopsis norfanz* sp. nov.**

(Fig. 3B, 5)

Type material. Holotype: AM, male (13.1 mm), E of Ball's Pyramid, Tasman Sea, 31°45.73'S, 159°20.93'E, 565–960 m, TAN0308/066 #020, 23 May 2003.

Diagnosis. Carapace with short striae, without dorsal spines; frontal margins oblique, outer orbital angle rounded; anterolateral spine stout; lateral margins unarmed. Rostrum width about one-third distance between anterolateral spines; exceeding one-third remaining carapace length; apex bluntly pointed; with pair of small subdistal teeth. Sternite 4 with few scattered striae. Sternites 5–7 smooth. Abdominal tergites sparsely setose, unarmed; tergites 2–4 with elevated anterior ridge and shallow transverse groove behind anterior ridge. Ocular peduncle movable, unarmed. Antennular basal segment with 2 distolateral spines, dorsal shorter; with short distomesial spine. Cheliped slightly longer than carapace; pollex and dactylus with simple apices. Pereopod 2 reaching to about proximal third of cheliped dactylus. Pereopods 2–4 with dentate extensor and flexor margins on merus, most prominent on anterior two pereopods. Pereopods without epipods.

Description. *Carapace:* 1.4 times as long as wide; moderately convex from side to side, sparsely covered with hooked, plumose setae; without dorsal spines; with short striae; cervical groove distinct; frontal margins oblique, outer orbital angle rounded; anterolateral spine short, stout. Lateral margins broadly convex, irregularly serrate but without teeth; widest at level of cardiac region. Rostrum broad, width about one-third distance between anterolateral spines; length exceeding one-third remaining carapace length; apex bluntly pointed, slightly inclined dorsally; with pair of small subdistal teeth; carinate dorsally; lateral proximal faintly convex, distally crenulate. Pterygostomian region with scattered striae; anterior apex acute.

Sternum: Sternum slightly wider than long; widest at sternite 7. Sternite 3 about one-third width of sternite 4; anterior margin medially emarginate, crenulate either side of midline. Sternite 4 with a few scattered setose striae. Sternites 5–7 smooth.

Abdomen: Tergites sparsely setose, unarmed. Tergites 2–4 with elevated anterior ridge and shallow transverse groove behind anterior ridge, shallowest of tergite 4; tergite 2 with few granules laterally. Tergite 5 without transverse groove. Tergite 6 with sinuous posterior margin. Telson composed of 9 plates.

Eye: Movable, non-setose, unarmed; partially concealed by rostrum. Cornea subglobular, slightly wider than peduncle.

Antennule: Basal segment with 2 distolateral spines, dorsal shorter; with short distomesial spine; ventrals surface crenulate; ventral and lateral surfaces with few striae.

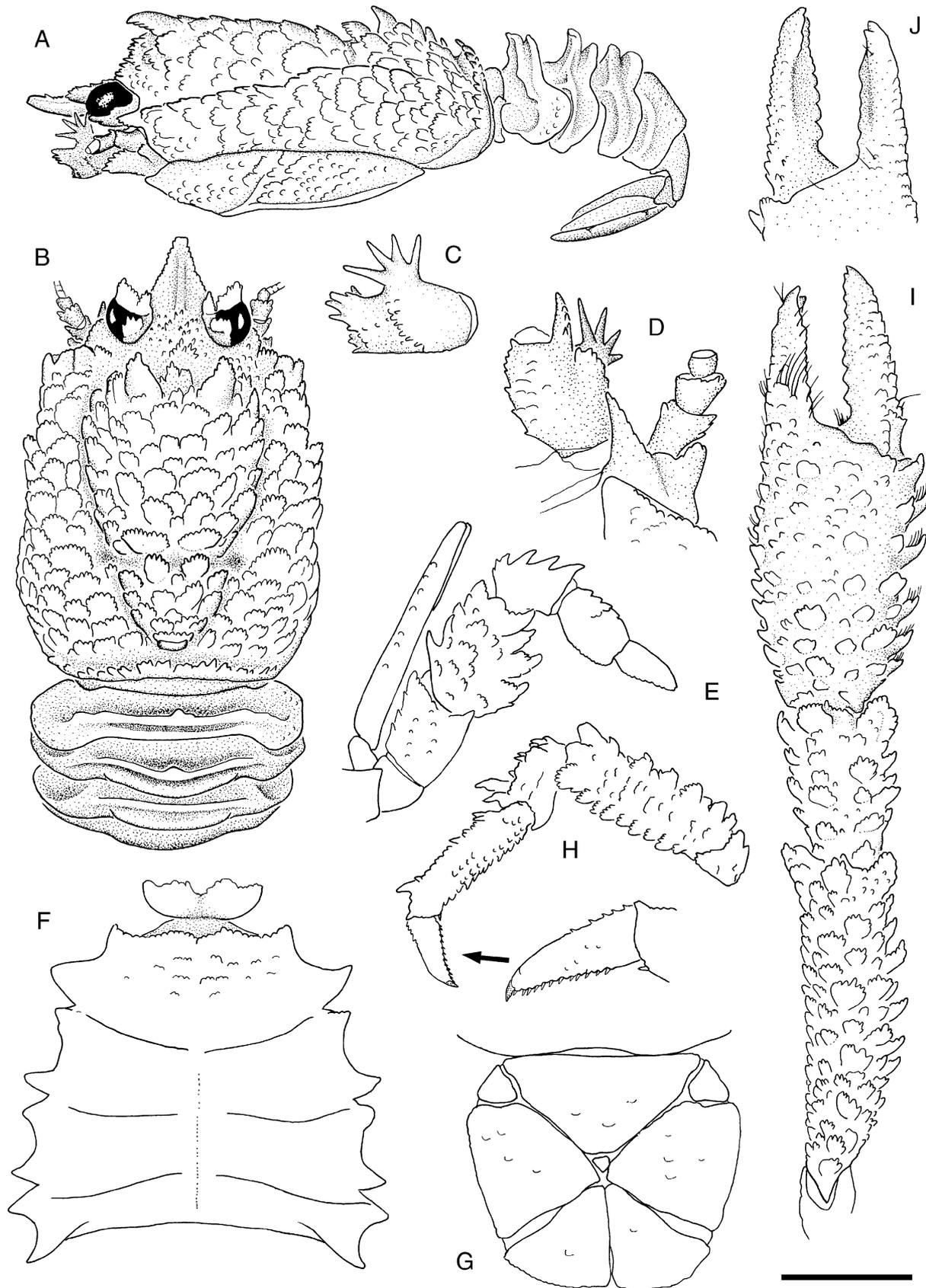


FIGURE 4. *Munidopsis bractea* sp. nov., holotype male, 6.8 mm (AM P73028). A, left lateral view. B, dorsal view. C, left basal antennular segment, lateral view. D, left antennule and antenna, ventral view. E, right third maxilliped, lateral view. F, sternum. G, telson. H, left pereopod 2. I, left cheliped, lateral view. J, left cheliped fingers, mesial view. Scale: A, B, H–J = 2.0 mm; C–G = 1.0 mm.

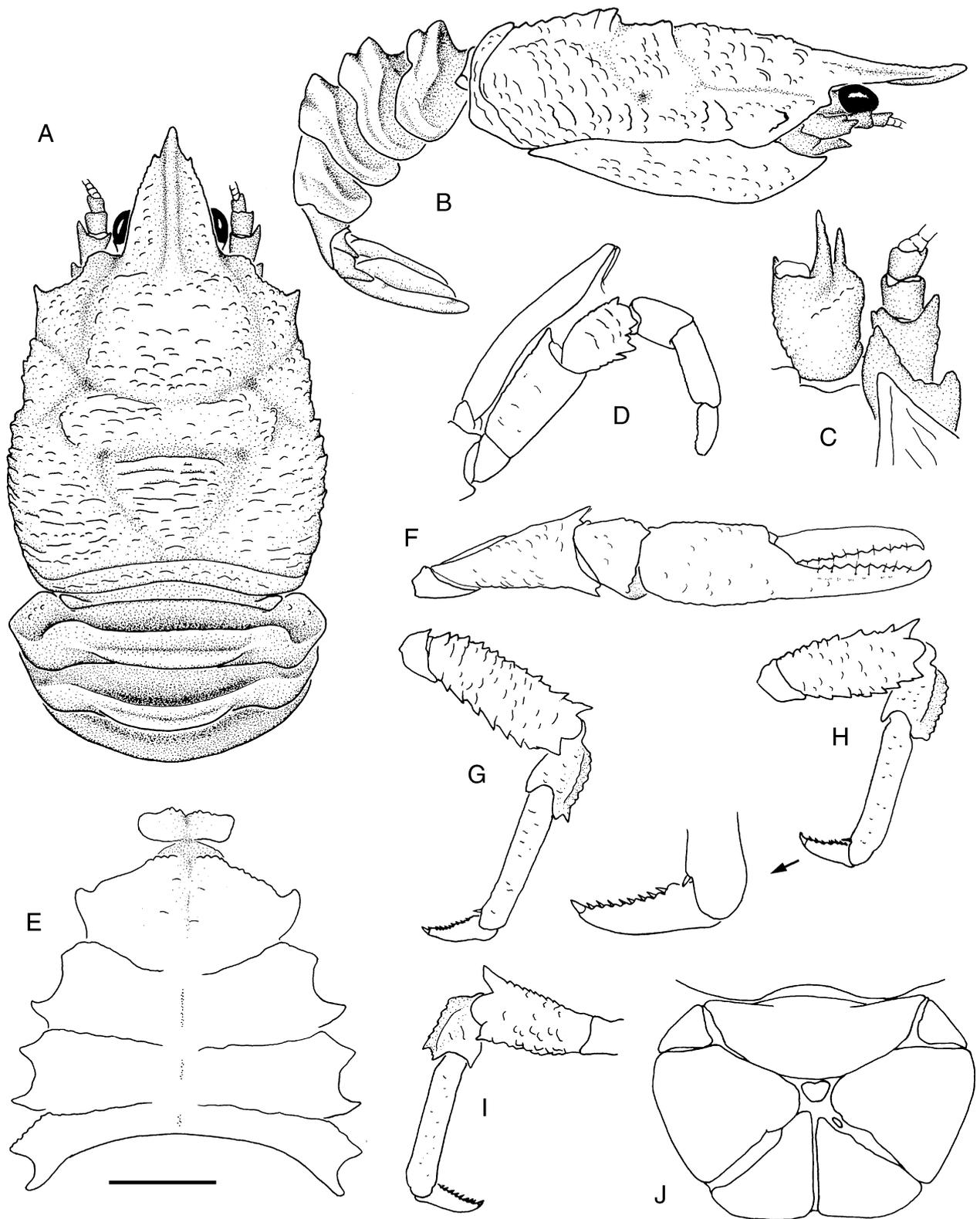


FIGURE 5. *Munidopsis norfanz* sp. nov., holotype male, 13.1 mm (AM). A, dorsal view. B, right lateral view. C, left antennule and antenna, ventral view. D, right third maxilliped, lateral view. E, sternum. F, right cheliped, lateral view. G, right pereopod 2. H, right pereopod 3. I, left pereopod 4. J, telson. Scales: A, B, F–I = 3.0 mm; C–E, J = 1.5 mm.

Antenna: Basal segment with blunt mesial and lateral tooth. Segment 2 with stout distolateral spine; distomesial margin angular. Segments 3 and 4 unarmed. Flagellum extending beyond cheliped.

Maxilliped 3: Dactylus, propodus and carpus unarmed. Merus with distal extensor spine; flexor margin with 2 proximal teeth and several smaller denticles; crista dentata with 19 or 20 corneous denticles.

Pereopod 1 (cheliped): Slightly longer than carapace; sparsely setose and rugose. Propodus with sparse striae; unarmed; palm about 1.6 times as long as high; dorsal margin of palm shorter than dactylus. Pollex and dactylus with dentate occlusal margins; apices simple. Carpus unarmed, trigonal, about half palm length. Merus distally with stout dorsal (bifid on right side), ventral distal and mesial spine. Ischium with blunt dorso-distal tooth.

Pereopods 2–4: Slightly compressed, sparsely setose, with scattered striae. Pereopod 2 reaching to about proximal third of cheliped dactylus. Merus extensor and flexor margins dentate, most prominent on anterior 2 pereopods, with distal spines. Carpus extensor margin with irregular dorsal carina and distal spine; with low, irregular, lateral carina. Propodus unarmed, sparsely striated, length about 6 times height; flexor margin with pair of small, distal movable spines. Dactylus about half propodus length; terminating in corneous unguis; flexor margin with 8 or 9 movable spines.

Epipods: Pereopods without epipods.

Colour in life. Pale orange dorsally; off white ventrally.

Etymology. Named for the expedition that resulted in the present collection; used as a noun in apposition.

Remarks. *Munidopsis norfanz* **sp. nov.** closely resembles *M. moresbyi* Alcock & Anderson, 1899, reported from the Arabian Sea and Indonesia (Macpherson 2007), in the broad rostrum, absence of the outer orbital spine, absence of dorsal or lateral carapace spines (apart from anterolateral), and absence of pereopodal epipods. The new species is distinguished from *M. moresbyi* by the comparatively broader rostrum with a pair of small, subdistal marginal spines; shorter, less pronounced carapace striae (particularly on the gastric region); posteriorly sloping rather than transverse anterolateral carapace margins; and prominently dentate rather than relatively smooth flexor and extensor margins of the meri of the walking legs. Further, based on Macpherson's (2007) account of Indonesian material tentatively identified as *M. moresbyi*, *M. norfanz* also differs in bearing a distal mesial tooth on the basal antennular segment, movable rather than fixed eyes, smooth rather granular sternites, and simple rather than spooned cheliped finger-tips (features neither mentioned nor figured by Alcock & Anderson (1899)). The Indonesian specimens, however, do not entirely agree with the type account: the rostrum is broader rostrum and the carapace striation resembles that of *M. norfanz*. As indicated by Macpherson (2007), the Indonesian material might represent a distinct species.

Distribution. Presently known only from east of Ball's Pyramid, Tasman Sea; 565–960 m.

***Munidopsis treis* Ah Yong & Poore, 2004**

(Fig. 3C)

Munidopsis treis Ah Yong & Poore, 2004: 62–65, fig. 15 [type locality: 278 km W of Cape Catastrophe, Great Australian Bight, South Australia, Australia, 800 m]. — Baba 2005: 297. — Macpherson 2007: 113.

Material examined. *West Norfolk Ridge*: NMNZ, 1 male (6.1 mm), 4 females (3.9–10.7 mm), 34°37.20'S, 168°57.03'E, 521–539 m, TAN0308/154 #099, 3 Jun 2003.

Colour in life. Carapace pale orange with white mid-band extending from rostral apex to intestinal region; margins white. Abdomen white with pair of longitudinal pale orange stripes. Pereopods pale orange.

Remarks. *Munidopsis treis* has been recorded from southeastern Australia, New Caledonia and the Chesterfield Islands. The present specimens are the first records in New Zealand waters and compare well with published accounts (Ah Yong & Poore 2004; Macpherson 2007).

Distribution. South Australia, Tasmanian seamounts, the Chesterfield Islands, New Caledonia, and now the West Norfolk Ridge, New Zealand; 366–820 m (Ah Yong & Poore 2004; Macpherson 2005).

Galatheinae Samouelle, 1819

Agononida eminens (Baba, 1988)

(Fig. 6A)

Munida eminens Baba, 1988: 95–98, fig. 35 [type locality: off SE Luzon, Philippines]; 1994: 11. —Macpherson 1994: 466, fig. 72.

Agononida eminens. — Ahyong & Poore 2004: 7–8. — Baba 2005: 233, 234.

Material examined. *Norfolk Ridge*: NMNZ, 6 males (13.3–20.5 mm), 7 females (15.4–24.4 mm), 26°25.94'S, 167°10.87'E, 750–774 m, TAN0308/043 #59, 18 May 2003; NIWA 28055, 1 male (20.7 mm), 1 ovigerous female (18.9 mm), 26°25.94'S, 167°10.87'E, 750–774 m, TAN0308/043 #59, 18 May 2003.

Colour in life. Base colour translucent white. Carapace pale, diffuse orange with orange-red spines. Chelipeds with pale, diffuse orange bands across articulations and orange-red spines. Walking legs with pale, diffuse orange meri and propodi; dactyli red distally; spines orange-red.

Remarks. Variation in carapace spination in the present series resembles that reported by Ahyong & Poore (2004): one cardiac spine and two branchiocardiac spines are usually present, except in two specimens, in which the posterior branchiocardiac spine was incipient.

Distribution. The Philippines, Indonesia, eastern Australia, New Caledonia, Loyalty Islands, Wallis and Futuna Islands; 564–1051 m (Baba 2005).

Agononida marini (Macpherson, 1994)

(Fig. 6D)

Munida marini Macpherson, 1994: 492, 495, figs. 30, 77 [type locality: New Caledonia].

Agononida marini. — Ahyong & Poore 2004: 9–10. — Baba 2005: 233, 235.

Material examined. *Norfolk Ridge*: NIWA 28072, 1 male (16.3 mm), 1 female (19.0 mm), 33°23.41'S, 170°11.58'E, 469–526 m, TAN0308/126 #38 sp. 19, 31 May 2003.

Remarks. The specimens agree well with published accounts, exhibiting similar variation in abdominal spination to that reported by Ahyong & Poore (2004). Abdominal tergite 4 bears two anterior spines in the male, four in the female.

Distribution. New Caledonia, eastern Australia, and now from northern New Zealand; 457–548 m (Ahyong & Poore 2004).

Agononida nielbrucei Vereshchaka, 2005

(Fig. 6B, C)

Agononida nielbrucei Vereshchaka, 2005: 137–139, fig. 1, tab. 1 [type locality: NE of Bay of Plenty, New Zealand, 35°44'S, 178°30'E, 260–470 m].

Type material. NIWA 4066, H-879, ovigerous female holotype (15.6 mm), 35°44.51–44.35'S, 178°30.20–29.75'E, 260–470 m, TAN 0107/01, 19 May 2001.

Other material examined. *Norfolk Ridge*: NMNZ, 1 female (16.3+ mm), W of Three Kings Islands, 34°09.14'E, 171°27.95'E, 542–554 m, TAN0308/006 #004, 12 May 2003; NMNZ, 1 male (15.2 mm), 5 females (15.5–16.8 mm), 33°23.60'S, 170°09.53'E, 605–622 m, TAN0308/125 #004, 31 May 2003; NIWA 28062, 2 males (20.8–21.6 mm), 5 females (8.2–27.3 mm), 33°23.41'S, 170°11.58'E, 469–526 m, TAN0308/



FIGURE 6. A, *Agononida eminens* (Baba, 1988), male, 20.7 mm, TAN0308/043 (NIWA 28055). B, C, *Agononida nielbrucei* Vereshchaka, 2005, female 16.1 mm, male, 8.5 mm, TAN0308/154 (NIWA 28063). D, *Agononida marini* (Macpherson, 1994), female, 19.0 mm, TAN0308/126 (NIWA 28072). E, *Agononida procera* Ah Yong & Poore, 2004, female, 21.4 mm, TAN0308/89 (NIWA 28073).

126 #34, 31 May 2003; NIWA 28064, 11 males (15.4–25.0 mm), 16 females (11.7–26.5 mm), 33°22.61'S, 170°12.70'E, 514–540 m, TAN0308/132 #020, 1 Jun 2003; NMNZ, 2 males (13.7–17.6 mm), 2 females (10.4–15.9 mm), 33°23.60'S, 170°12.38'E, 469–490 m, TAN0308/136, 1 Jun 2003.

West Norfolk Ridge: NIWA 28061, 1 male (18.5 mm), 2 females (14.4–15.9+ mm), 32°36.49'S, 167°43.98'E, 699–707 m, TAN0308/107 #25, 29 May 2003; NMNZ, 7 males (10.1–13.2 mm), 8 females (7.7–16.6 mm), 34°17.09'S, 168°21.50'E, 785–800 m, TAN0308/141 #009, 2 Jun 2003; AM P73013, 3 females (15.1–18.8 mm), 34°37.81'S, 168°58.59'E, 508–560 m, TAN0308/149 #018, 3 Jun 2003; AM P73014, 50 males (8.0–24.8 mm), 52 females (8.4–22.8 mm), TAN0308/154 #25; AM P73015, 8 males (8.4–22.8 mm), 5 females (14.1–19.4 mm), TAN0308/154 #25; AM P73016, 5 males (8.2–11.2 mm), TAN0308/154 #080; NIWA 28063, 80 males (7.7–23.8 mm), 60 females (8.3–26.1 mm), TAN0308/154; NMNZ, 1 male (10.7 mm), 35°10.27'S, 169°29.24'E, 867–869 m, TAN0308/158 #019, 4 Jun 2003.

Remarks. *Agononida nielbrucei* was described on the basis of a single female specimen from northeastern New Zealand, so the present large series permits documentation of variation. The dorsal carapace spination usually consists of two median cardiac, two lateral cardiac and two (occasionally three) posterior marginal spines. In some specimens, a single median cardiac spine is present, and in females and subadult males, the posterior lateral cardiac spine may be minute or absent. Females are ovigerous by at least 15.5 mm carapace length. Sexual dimorphism of the chelipeds is evident by 22.4 mm carapace length whereby one or both chelipeds of males bears a distinct gape between the fingers and is more robust than in size-matched females. Chelipeds are generally longer in males than in females: 2.7–3.1 times carapace length (males); 2.4–2.8 times carapace length (females). Colour pattern appears to vary allometrically in *A. nielbrucei*, with the carapace of specimens less than 10 mm carapace length being solid orange-red, becoming mottled or diffuse with increasing size (Fig. 5B, C).

Colour in life. Base colour translucent white. Pereopods with orange-red banding. Carapace solid orange-red, becoming mottled or diffuse with increasing size (Fig. 5B, C).

Distribution. Northeastern New Zealand to the West Norfolk Ridge; 260–800 m.

Agononida procera Ahyong & Poore, 2004

(Fig. 6E)

Agononida procera Ahyong & Poore, 2004: 10–13, fig. 1 [type locality: E of Broken Bay, New South Wales, Australia; 823 m]. — Machordom & Macpherson 2004: table 2. — Baba 2005: 234, 236.

Material examined. *Lord Howe Rise*: AM P73017, 1 female (15.7 mm), 29°13.61'S, 159°02.49'E, 740–800 m, TAN0308/56 #026, 21 May 2003; NMNZ, 1 female (14.3 mm), E of Ball's Pyramid, 31°45.73'S, 159°20.93'E, 565–960 m, TAN0308/66 #33, 23 May 2003; NIWA 28073, 1 female (21.4 mm), 34°12.18'S, 162°41.18'E, 748–772 m, TAN0308/89 #39, 26 May 2003.

Remarks. The present specimens of *A. procera* agree well with the type description and extend the known range to the southern Lord Howe Rise.

Colour in life. Base colour white. Pereopods with transverse red and white bands. Carapace with diffuse orange-red markings, darkest on peaks of transverse ridges.

Distribution. Eastern Australia, the Lord Howe Rise, and New Caledonia; 450–960 m (Ahyong & Poore 2004; Machordom & Macpherson 2004; this study).

Allogalatea elegans (Adams & White, 1848)

Galathea elegans Adams & White, 1848: pl. 12, fig. 7 [type locality: Philippine Islands].

Galathea deflexifrons Haswell, 1882: 761 [type locality: Albany Passage, Queensland, Australia].
Allogalathea elegans. — Baba 1988: 54.

Material examined. *Lord Howe Rise*: NMNZ, 1 male (TL 3.8 mm), 2 females (TL 2.8–6.5 mm), S of Ball's Pyramid, 31°52.44'S, 159°14.43'E, 72–82 m, on crinoids, TAN0308/67 #37, 23 May 2003; NIWA 28074, 2 ovigerous females (TL 11.3–11.9 mm), S of Ball's Pyramid, 31°52.44'S, 159°14.43'E, 72–82 m, TAN0308/67 #42, 23 May 2003.

Remarks. *Allogalathea elegans* is a known crinoid associate and is common throughout the tropical and subtropical Indo-West Pacific.

Distribution. Widespread in the Indo-West Pacific; intertidal to 146 m (Baba 1988).

***Galathea tanegashimae* Baba, 1969**

(Fig. 7)

Galathea tanegashimae Baba, 1969: 16–18, fig. 4 [type locality: off Nishino-omote, Tanegashima Island, Southern Kyushu, Japan]. — Tirmizi & Javed 1993: 42, 65–66, figs. 17, 28.

Material examined. *Lord Howe Rise*: NIWA 28076, 1 female (3.6 mm), S of Ball's Pyramid, 31°52.44'S, 159°14.43'E, 72–82 m, TAN0308/67 #58, 23 May 2003.

Remarks. The single specimen from off Ball's Pyramid agrees extremely well with Baba's (1969) account of the holotype of *G. tanegashimae*. *Galathea tanegashimae* has been recorded from off Somalia, the Andaman Sea and Japan (Baba 1969; Tirmizi & Javed 1993) so the present specimen represents the first record from the southwestern Pacific. *Galathea tanegashimae* closely resembles *G. spinosorostris* Dana, 1852, but differs by the absence of dorsal hepatic spines on the carapace. Although Baba (1990) proposed the synonymy of *G. spinosorostris* and *G. tanegashimae*, Baba (2005) excluded the latter from the synonymy of the former.

Distribution. Somalia, Andaman Sea, Japan, and for the first time from the southwestern Pacific; between 15–30 and 72–82 m depth (Baba 1969; present study).

***Leiogalathea laevirostris* (Balss, 1913)**

(Fig. 8)

Galathea laevirostris Balss, 1913: 221 [type locality: W entrance of Sombrero Channel, Nicobar Islands, 805 m].
Galathea imperialis Miyake & Baba, 1967: 213, figs. 1, 2 [type locality: WSW of Jagoshima, Sagami Bay].
Leiogalathea laevirostris. — Baba 1969: 3; 1991: 487–488; 2005: 88, 246 [synonymy].

Material examined. *Norfolk Ridge*: NMNZ, 1 female (8.8 mm), W of Norfolk Island, 28°51.21'S, 167°42.53'E, 690–812 m, TAN0308/29 #25, 15 May 2003. *Australia*: AM P26580, 1 female (5.8 mm), NE of Batemans Bay, 35°38–41'S, 150°42–40'E, 540 m, K77-12-04, 10 Aug 1977.

Remarks. The present specimen from TAN0308/29 represents the first record of *L. laevirostris* from the vicinity of Norfolk Island, though Baba (1991) reported the species from the northern Norfolk Ridge and New Caledonia. The specimen from Batemans Bay, New South Wales, included here to document its presence in Australia, is the southernmost record of the species.

Distribution. Madagascar and the western Indian Ocean to Indonesia, and New Caledonia to Japan and French Polynesia; now from New South Wales and Norfolk Island, Australia; 160–812 m (Baba 2005; present study).

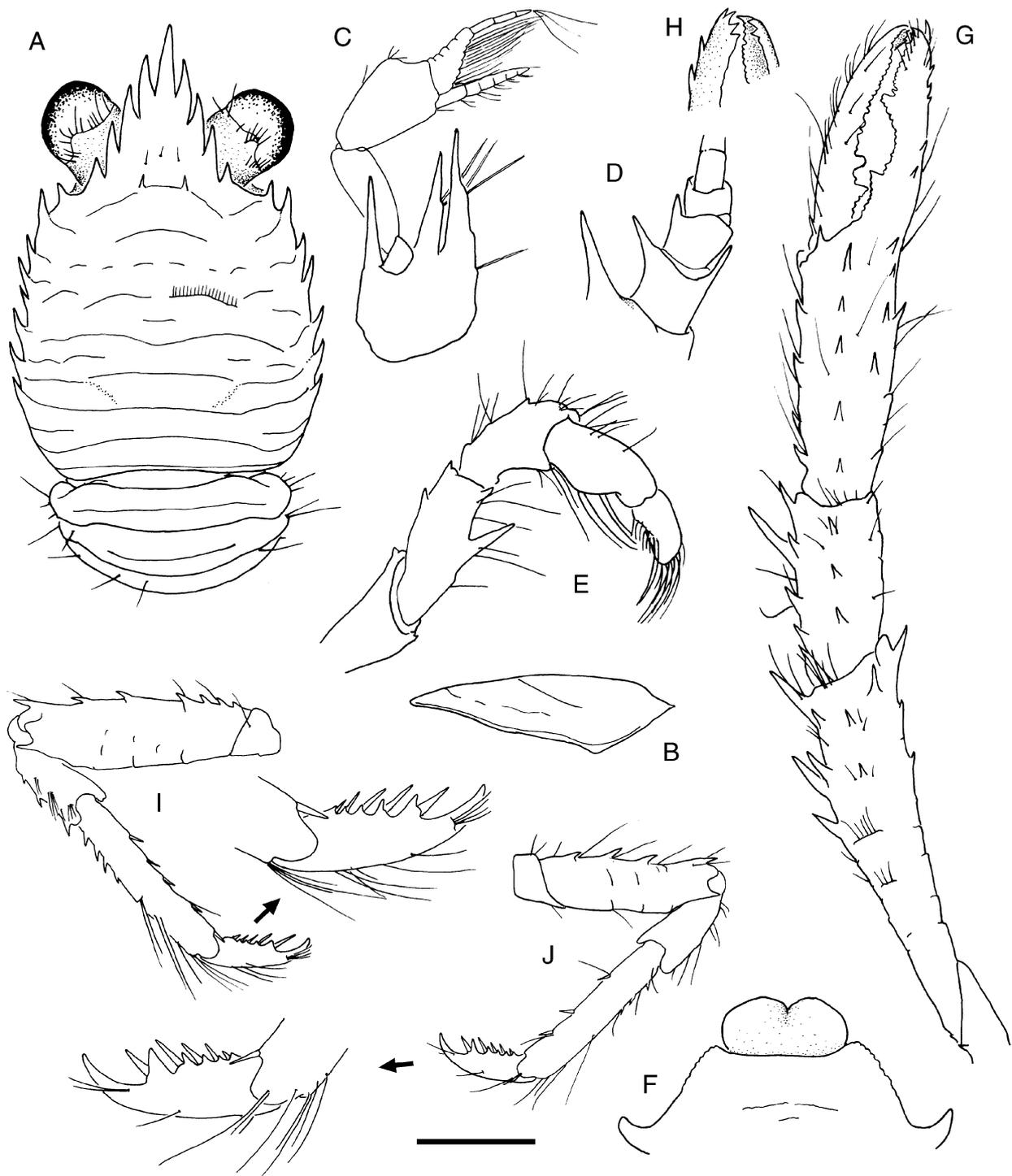


FIGURE 7. *Galathea tanegashimae* Baba, 1969, female, 3.6 mm, TAN0308/67 (NIWA 28076). A, dorsal. B, right pterygostomial flap. C, left antennule, ventral view. D, left antenna, ventral view. E, right third maxilliped, lateral view. F, third and fourth sternite. G, right cheliped, lateral view. H, right cheliped fingers, mesial view. I, left pereopod 2. J, right pereopod 3. Scale: A, B, G–J = 1.0 mm; C–F = 0.5 mm.

***Munida acacia* sp. nov.**

(Fig. 9, 10A)

Type material. Holotype: NMNZ, ovigerous female (10.6 mm), West Norfolk Ridge, 34°37.81'S, 168°58.59'E, 508–560 m, TAN0308/149 #014, 3 Jun 2003.

Diagnosis. Carapace margins with 5 spines posterior to cervical groove; with parahepatic and postcervical spine; frontal margins faintly sloping posteriorly. Rostrum spiniform. Sternites 5–7 smooth. Abdominal tergite 2 with row of spines along anterior ridge; tergite 3 unarmed. Maximum corneal diameter about half basal distance between anterolateral spines. Antennular basal segment terminal spines subequal. Antennal basal segment with strong mesial spine, apex reaching base of segment 3. Maxilliped 3 merus extensor margin with small distal tooth. Cheliped almost twice carapace length; pollex ventral margin unarmed; carpus about 2.5 times as long as high. Pereopods 2 and 3 propodus extensor margins spinose proximally; dactyli with distalmost movable flexor spine at base of corneous unguis.

Description. *Carapace:* Transverse ridges well-spaced, generally entire, with very few secondary striae an anterior half and anterior portion of posterior half; gastric and branchial regions with several short striae; hepatic region smooth; cervical groove distinct; with pair of distinct epigastric spines behind supraocular spines, flanked mesially by 1 and laterally by 2 or 3 smaller spines; with 1 parahepatic and 1 postcervical spine. Frontal margins faintly sloping posteriorly; rostrum spiniform, horizontal, three times as long as supraocular spines and more than half-remaining carapace length. Supraocular spines parallel. Anterolateral spines situated at anterolateral angle, slightly divergent, not extending to base of sinus between rostrum and supraocular spine. Margins of carapace anterior to cervical groove with 2 spines (including anterolateral); with 5 spines posterior to cervical groove.

Sternum: Sternite 3 broad, anterior margin sinuous, rounded laterally. Sternite 4 with 2 pairs of minute striae, otherwise smooth; anterior margin broadly and evenly convex. Sternites 5–7 smooth. Ridges demarcating sternites smooth or slightly crenulate.

Abdomen: Tergite 2 with 7 spines along anterior ridge; with 1 uninterrupted transverse stria and 2 short arcuate striae laterally. Tergites 3 and 4 unarmed, each with 1 medially interrupted and 1 entire transverse stria and short lateral striae. Tergite 5 with 2 uninterrupted transverse striae and short lateral striae.

Eye: Large, with maximum corneal diameter about half basal distance between anterolateral spines; peduncle with long distal setae.

Antennule: Basal segment elongate, slightly overreaching cornea, with scattered ventral striae; terminal spines subequal; with 2 lateral spines, distal markedly longer than proximal.

Antenna: Basal segment with strong mesial spine, apex reaching base of segment 3. Segment 2 with 1 or 2 small spines and acute granule on mesial margin; distomesial spine overreaching segment 4; distolateral spine reaching end of segment 3. Segments 3 and 4 unarmed.

Maxilliped 3: Ischium with strong distal flexor spine and minute distal extensor spine. Merus shorter than ischium; flexor margin with strong distal and proximal spine; extensor margin with small distal tooth.

Pereopod 1 (cheliped): About 1.9 times carapace length; sparsely setose; with scattered striae and granules and multiple rows of small spines. Dactylus slightly longer than palm; with 5 small proximal spines and distal spine; occlusal margin denticulate, without gape. Propodus palm almost three times as long as high, with dorsal, medial and ventral rows of spines, longest dorsally. Pollex with 2 subdistal spines, and row of lateral spines; ventral margin unarmed. Carpus about 2.5 times as long as high, slightly shorter than palm; with dorsal, medial and ventral rows of spines, longest dorsally. Merus with strong distal and dorsal spines, longest not reaching proximal quarter of carpus; lateral surface granulate or minutely denticulate, with row of 6–8 small spines.

Pereopod 2: Merus with 11–13 extensor and 7 or 8 graded flexor spines. Carpus with 4 extensor spines and distal flexor spine. Propodus 4.0 times as long as high; extensor margin with 4 or 5 spines proximally; flexor margin with 11 or 12 small movable spines. Dactylus 0.6 propodus length; flexor margin with 8 movable spines, distalmost spine at base of corneous unguis.

Pereopod 3: Merus with 8 or 9 extensor and 6 or 7 graded flexor spines. Carpus with 5 extensor spines and distal flexor spine. Propodus 4.7 times as long as high; extensor margin with 4–6 spines proximally; flexor margin with 10 small movable spines. Dactylus 0.6 propodus length; flexor margin with 8 movable spines, distalmost spine at base of corneous unguis.

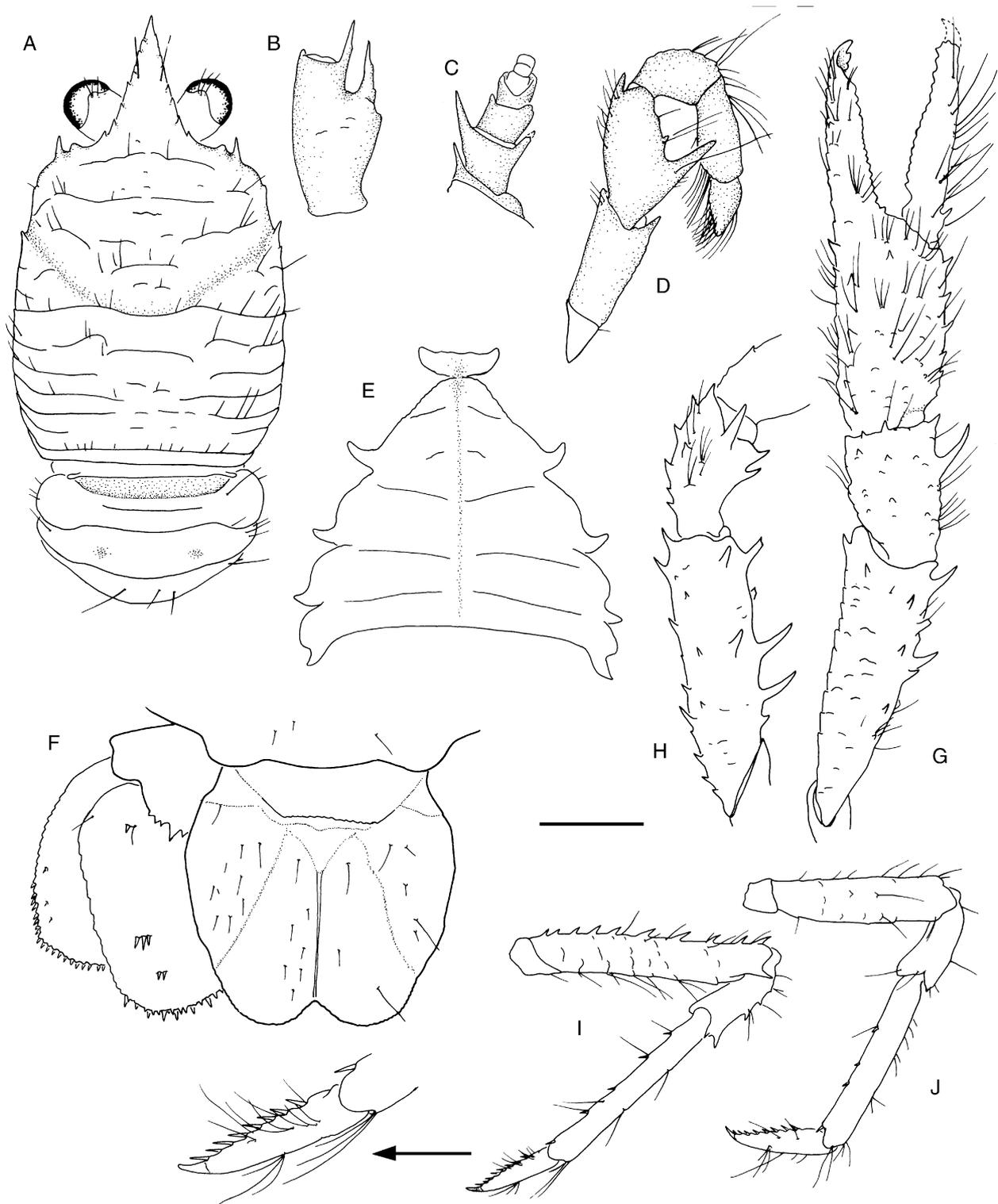


FIGURE 8. *Leiogalatea laevirostris* (Balss, 1913), female, 8.8 mm, TAN0308/29 (NMNZ). A, dorsal. B, left antennule, ventral view. C, left antenna, ventral view. D, right third maxilliped, lateral view. E, sternum. F, telson. G, left cheliped, lateral view. H, left cheliped carpus and merus, dorsal view. I, right pereopod 2. J, right pereopod 4. Scale: A, G–J = 2.0 mm; B–F = 1.0 mm.

Pereopod 4: Merus with 4–7 extensor and 3 or 4 graded flexor spines. Carpus extensor margin unarmed; with distal flexor spine. Propodus 4.5 times as long as high; extensor margin unarmed; flexor margin with 6 or 7 small movable spines. Dactylus 0.6 propodus length; flexor margin with 7 or 8 movable spines, distalmost spine at base of corneous unguis.

Colour in life. Base colour translucent white. Carapace and abdomen pale orange; spines red. Chelipeds pale, diffuse orange; spines red; carpus with red distal patch; fingers whitish with two distal red bands.

Etymology. Named *acacia*, Latin, after a genus of thorny Gondwanan plants, alluding to the spinose extensor margin of the propodi of pereopods 2 and 3.

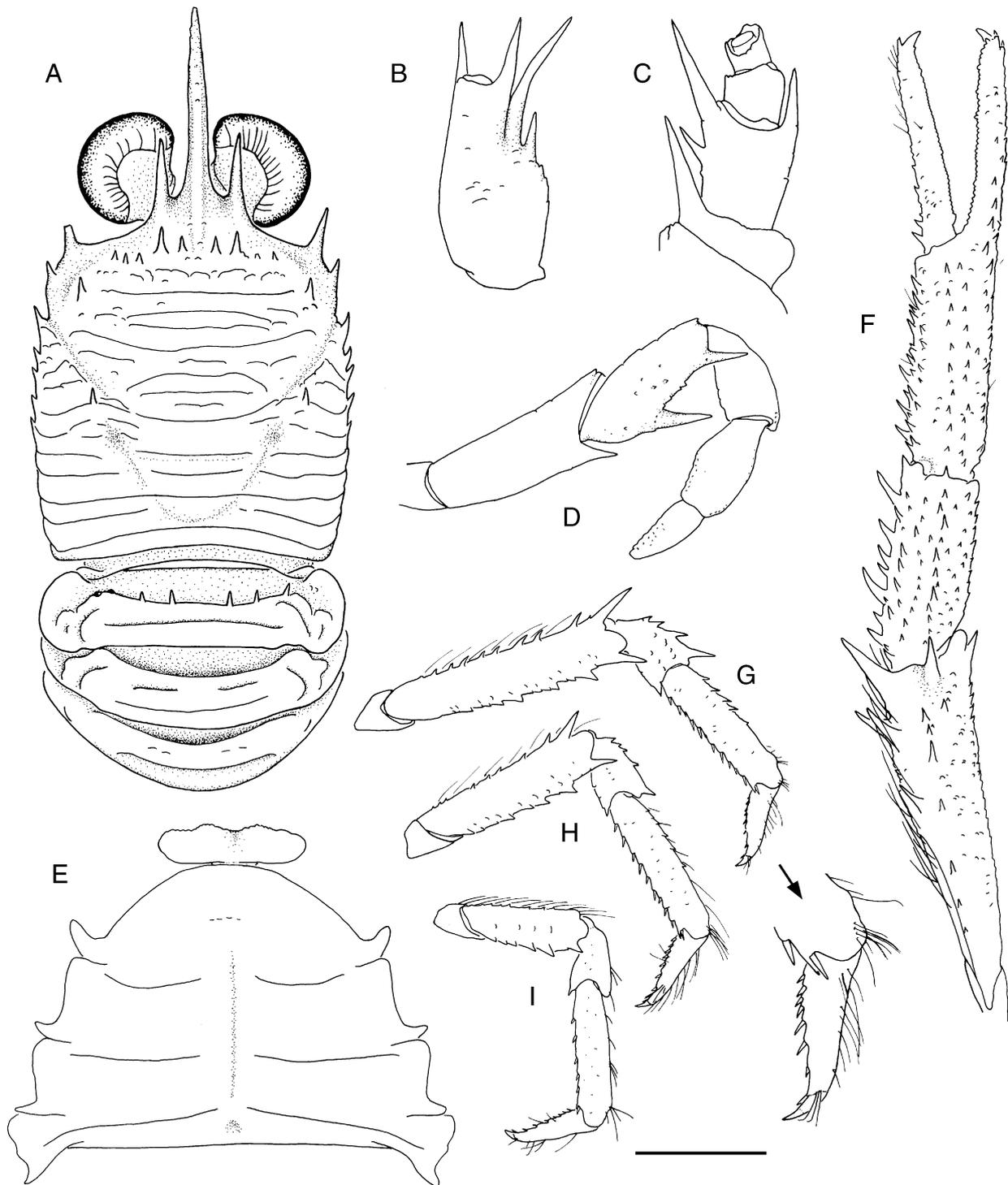


FIGURE 9. *Munida acacia* sp. nov., ovigerous female holotype, 20.6 mm (NMNZ). A, dorsal view. B, left antennule, ventral view. C, left antenna, ventral view. D, right third maxilliped, lateral view. E, sternum. F, right cheliped, lateral view. G–I, pereopod 2–4. Scale: A, F–I = 2.5 mm; B–E = 1.2 mm.

Remarks. *Munida acacia* sp. nov. closely resembles *M. icela* sp. nov. and *M. spinicuris* Ah Yong & Poore, 2004 from Australia in bearing five spines on the branchial carapace margins, a row of spines along the

anterior ridge of abdominal tergite 2, and armed dorsal margins of the propodi of the first two walking legs. *Munida acacia* is readily distinguished from *M. icela* and *M. spinicruris* by the smooth rather than granular posterolateral surface of sternite 7. *Munida acacia* further differs from *M. icela* by posteriorly sloping rather than transverse anterolateral margins of the carapace.

Distribution. Presently known only from the West Norfolk Ridge; 508–560 m

***Munida cerisa* sp. nov.**

(Fig. 10B, 11)

Type material. Holotype: AM, male (16.2 mm), W of Norfolk Island, 28°51.21'S, 167°42.53'E, 690–812 m, TAN0308/29 #14, 15 May 2003.

Diagnosis. Carapace margins with 5 spines posterior to cervical groove; transverse ridges well-spaced, with few, scattered, secondary striae; anterior branchial and postcervical spine absent.

Rostrum spiniform. Sternite 4 anterior margin broadly and evenly convex. Abdominal tergite 2 with row of spines along anterior ridge; tergites 3 and 4 unarmed. Antennular basal segment terminal spines subequal. Antennal basal segment with strong mesial spine, apex not reaching beyond segment 2; segment 2 with distomesial spine reaching to about midlength of segment 4. Maxilliped 3 merus extensor margin unarmed. Cheliped about 1.5 times carapace length; pollex ventral margin unarmed; merus distal spines with longest not reaching midlength of carpus. Pereopods 2 and 3 carpus extensor margin with 2 spines; dactylus with distal-most movable flexor spine at base of unguis.

Description. *Carapace:* Transverse ridges well-spaced, generally entire, with few, scattered, secondary striae; gastric and cardiac regions with several short striae; hepatic region with few granules or short striae; cervical groove distinct; with pair of distinct epigastric spines behind supraocular spines, flanked mesially and laterally small spine; with 1 parahepatic spine; anterior branchial and postcervical spine absent. Frontal margins almost transverse; rostrum spiniform, horizontal, three times as long as supraocular spines and almost half remaining carapace length. Supraocular spines divergent. Anterolateral spines situated at anterolateral angle, slightly divergent, not extending to base of sinus between rostrum and supraocular spine. Margins of carapace anterior to cervical groove with 2 spines (including anterolateral); with 5 spines posterior to cervical groove.

Sternum: Sternite 3 broadly subquadrate; anterior margin sinuous. Sternite 4 with pair of short striae, otherwise smooth; anterior margin broadly and evenly convex. Sternites 5–7 smooth. Ridges demarcating sternites smooth or slightly crenulate.

Abdomen: Tergite 2 with 8 spines along anterior ridge; with 1 transverse stria and 2 short arcuate striae laterally. Tergite 3 unarmed, with pair of short, shallow transverse striae and 1 uninterrupted transverse stria. Tergites 4 and 5 with 2 medially interrupted transverse striae.

Eye: Large, with maximum corneal diameter almost half basal distance between anterolateral spines; peduncle with few distal setae.

Antennule: Basal segment elongate, slightly overreaching cornea; terminal spines subequal; with 2 lateral spines, distal markedly longer than proximal.

Antenna: Basal segment with strong mesial spine, apex not reaching beyond segment 2. Segment 2 with small spine on mesial margin; distomesial spine reaching to about midlength of segment 4, lateral reaching to or almost to midlength of segment 3. Segments 3 and 4 unarmed.

Maxilliped 3: Ischium with 2 small distal flexor spines. Merus shorter than ischium; flexor margin with strong distal and proximal spine; extensor margin unarmed.

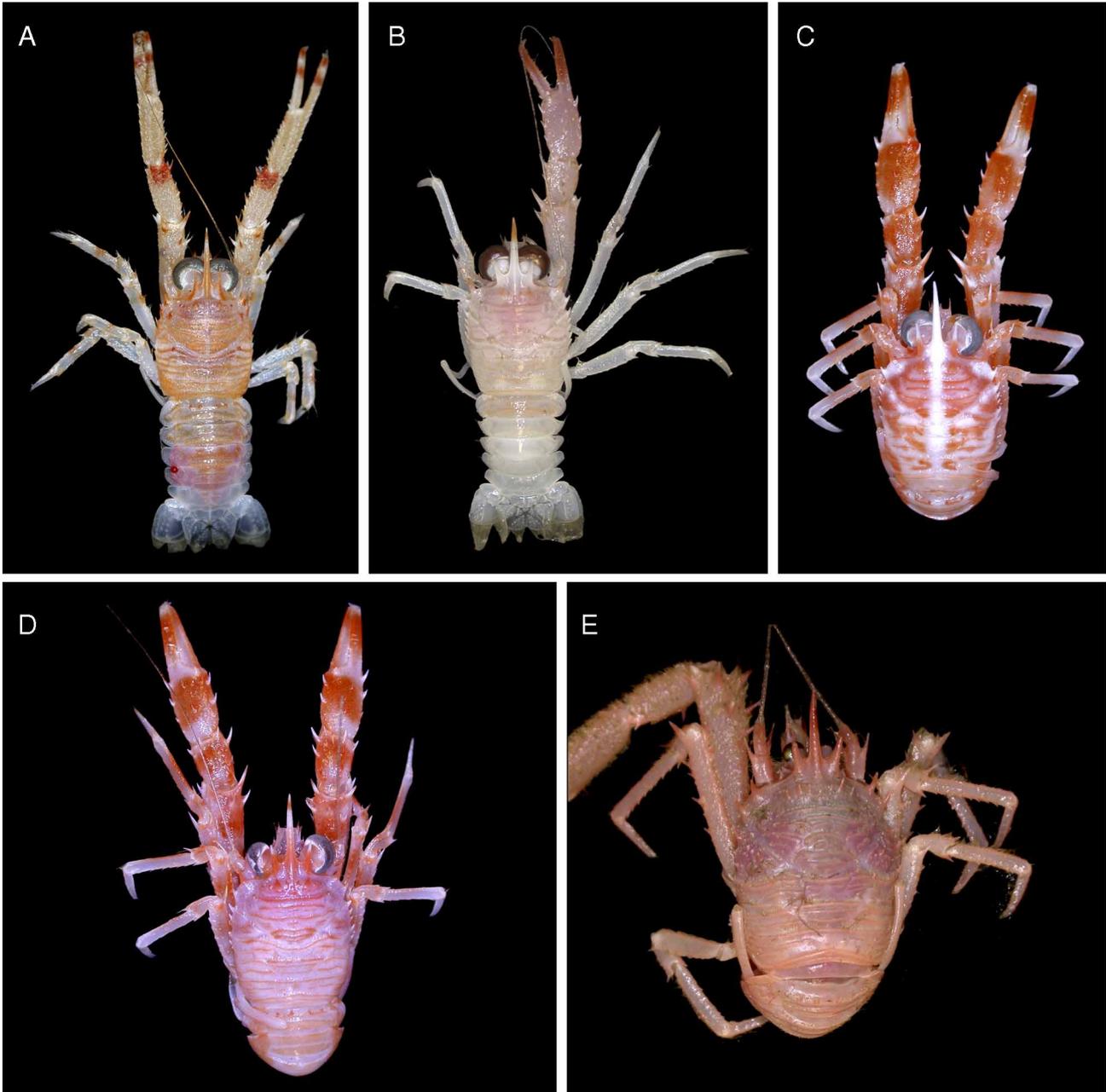


FIGURE 10. A, *Munida acacia* **sp. nov.**, female holotype, 20.6 mm (NMNZ) B, *Munida cerisa* **sp. nov.**, male holotype, 16.2 mm, TAN0308/29 (AM). C, *Munida collier* **sp. nov.**, ovigerous female paratype, 19.7 mm, TAN0308/043 (AM P73025). D, *Munida collier* **sp. nov.**, male paratype, 19.6 mm, TAN0308/043 (AM P73024). E, *Munida endeavourae* Ah Yong & Poore, 2004, ovigerous female, 21.7 mm, TAN0308/009 (NIWA 28077).

Pereopod 1 (cheliped): About 1.5 times carapace length; with few rows of spines and few short squamae; margins with sparse plumose setae and scattered iridescent setae. Dactylus slightly longer than palm; unarmed dorsally except for small proximal spine; occlusal margin denticulate, without gape. Propodus palm about 1.6 times as long as high; with dorsal, medial and ventral row of spines; pollex with 2 subdistal spines, ventral margin unarmed. Carpus 1.5 times long as high, shorter than palm with dorsal and ventral row of spines. Merus with strong distal and dorsal spines, longest not reaching midlength of carpus; surface otherwise unarmed except for row of 6 small lateral spines.

Pereopod 2: Merus with 13 extensor and 8 flexor spines. Carpus extensor margin with 2 spines, proximal margin irregular; with distal flexor spine. Propodus 5.9 times as long as high; extensor margin unarmed;

flexor margin with 9 small movable spines. Dactylus 0.7 propodus length; flexor margin with 10 movable spines, distalmost spine at base of unguis.

Pereopod 3: Merus with 12 or 13 extensor and 6 or 7 flexor spines. Carpus extensor margin with 2 spines, proximal margin irregular; with distal flexor spine. Propodus 6.3 times as long as high; extensor margin unarmed; flexor margin with 9 small movable spines. Dactylus 0.7 propodus length; flexor margin with 9 or 10 movable spines, distalmost spine at base of unguis.

Pereopod 4: Merus with 8 extensor and 3 flexor spines. Carpus with distal extensor and flexor spine. Propodus 5.4 times as long as high; extensor margin unarmed; flexor margin with 7 small movable spines. Dactylus 0.7 propodus length; flexor margin with 10 movable spines, distalmost spine at base of unguis.

Colour in life. Base colour translucent white. Carapace and abdomen dusky; anterolateral and rostral spines dull red distally. Chelipeds dusky; fingers red.

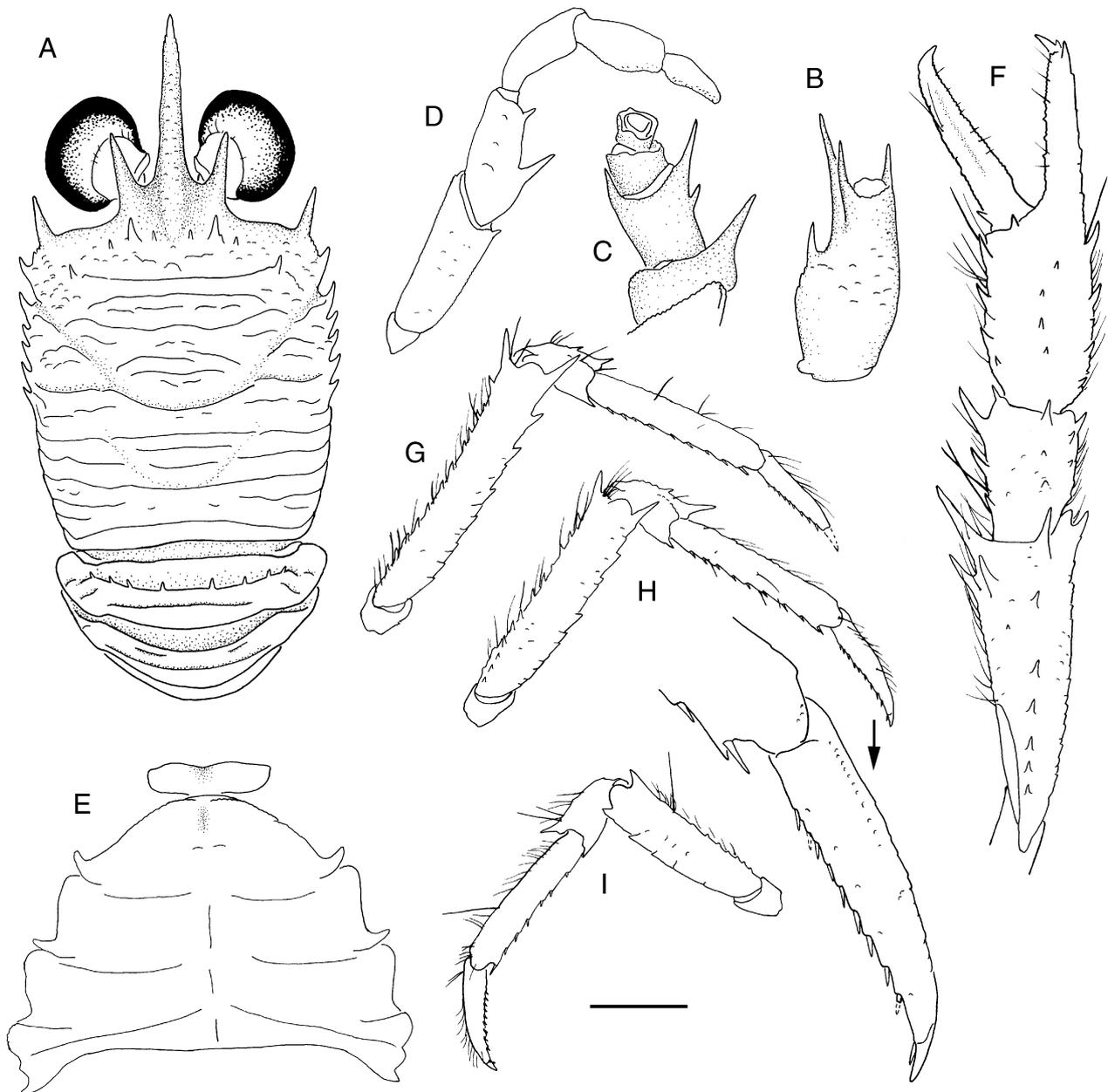


FIGURE 11. *Munida cerisa* sp. nov., male holotype, 16.2 mm, TAN0308/29 (AM). A, dorsal view. B, right antennule, ventral view. C, right antenna, ventral view. D, right third maxilliped, lateral view (setae omitted). E, sternum. F, right cheliped, lateral view. G, H, right pereopod 2–3. I, left pereopod 3. Scale: A, F–I = 3.0 mm; B–E = 1.5 mm.

Etymology. Derived from *cherise*, from the Old French (from the Latin *cerasus*) for cherry, alluding to the red fingers of the chelipeds.

Remarks. *Munida cerisa* sp. nov. most closely resembles *M. collier* sp. nov and *M. curvirostris* Henderson, 1885, from the Philippines sharing subequal terminal spines on the basal antennular segment, five spines on the branchial carapace margins, absence of anterior branchial and postcervical spines on the dorsal surface, and relatively short chelipeds, not exceeding twice carapace length. It differs from *M. collier* in having six instead of eight epigastric spines, divergent rather than subparallel supraocular spines, in having the distal flexor spine on the walking leg dactyli placed at the base of, rather than well proximal to the base of the unguis, and in colour pattern. *Munida collier* bears red markings and patches over most of the dorsal surface in contrast to *M. cerisa* in which only the cheliped fingers are red (Fig. 10B–D). *Munida cerisa* differs from *M. curvirostris* in having a narrower and rounded rather than broad, subtruncate median anterior margin of sternite 4, more divergent supraocular spines, and shorter distal spines on the cheliped merus in which the longest spine reaches to less than the midlength of the carpus, rather than to the distal three-quarters.

Distribution. Presently known only from the type locality, west of Norfolk Island; 690–812 m.

***Munida collier* sp. nov.**
(Fig. 10C, D, 12)

Type material. Holotype: NIWA 28068, male (17.8 mm), northern Norfolk Ridge, 26°25.94'S, 167°10.87'E, 750–774 m, TAN0308/043 #57, 18 May 2003. Paratypes: NMNZ, 1 female (16.4 mm), northern Norfolk Ridge, 26°25.94'S, 167°10.87'E, 750–774 m, TAN0308/043 #57, 18 May 2003; AM P73024, 1 male (19.6 mm), northern Norfolk Ridge, 26°25.94'S, 167°10.87'E, 750–774 m, TAN0308/043 #58, 18 May 2003; AM P73025, 1 male (20.1 mm), 1 ovigerous female (19.7 mm), northern Norfolk Ridge, 26°25.94'S, 167°10.87'E, 750–774 m, TAN0308/043 #56, 18 May 2003.

Diagnosis. Carapace margins with 5 spines posterior to cervical groove; transverse ridges well-spaced, with few, scattered, secondary striae; anterior branchial and postcervical spine absent. Rostrum spiniform. Sternite 4 anterior margin broadly and evenly convex. Abdominal tergite 2 with row of spines along anterior ridge; tergites 3 and 4 unarmed. Antennular basal segment terminal spines subequal. Antennal basal segment with strong mesial spine, apex not reaching beyond segment 2; segment 2 with distomesial spine reaching to midlength of segment 4. Maxilliped 3 merus extensor margin unarmed. Cheliped about 1.5 times carapace length; pollex ventral margin unarmed; merus distal spines with longest not reaching midlength of carpus. Pereopods 2 and 3 carpus extensor margin with 2 spines; dactylus with distalmost movable flexor spine proximal to dactylar apex by one-quarter length of flexor margin.

Description. *Carapace:* Transverse ridges well-spaced, generally entire, with very few secondary striae an anterior half, none on posterior half; gastric and cardiac regions with several short striae; hepatic region with scattered granules or short striae; cervical groove distinct; with pair of distinct epigastric spines behind supraocular spines, flanked mesially by 1 and laterally by 2 small spines; with 1 parahepatic spine; anterior branchial and postcervical spine absent. Frontal margins almost transverse; rostrum spiniform, horizontal, three times as long as supraocular spines and almost half remaining carapace length. Supraocular spines subparallel. Anterolateral spines situated at anterolateral angle, slightly divergent, not extending to base of sinus between rostrum and supraocular spine. Margins of carapace anterior to cervical groove with 2 spines (including anterolateral); with 5 spines posterior to cervical groove.

Sternum: Sternite 3 broadly subquadrate; anterior margin sinuous. Sternite 4 with 2 pairs of short striae, otherwise smooth; anterior margin broadly and evenly convex. Sternites 5–7 smooth. Ridges demarcating sternites smooth or slightly crenulate.

Abdomen: Tergite 2 with 8–11 spines along anterior ridge; with 1 transverse stria and 2 short arcuate striae laterally. Tergite 3 unarmed, with 1 medially interrupted transverse stria. Tergite 4 with 2 medially interrupted

transverse striae. Tergite 5 with 1 medially interrupted transverse and 1 medially uninterrupted transverse stria.

Eye: Large, with maximum corneal diameter almost half basal distance between anterolateral spines; peduncle with few distal setae.

Antennule: Basal segment elongate, slightly overreaching cornea; terminal spines subequal; with 2 lateral spines, distal markedly longer than proximal.

Antenna: Basal segment with strong mesial spine, apex not reaching beyond segment 2. Segment 2 with small spine on mesial margin; distomesial spine reaching to midlength of segment 4, lateral reaching at least to midlength but not beyond distal three-quarters of segment 3. Segments 3 and 4 unarmed.

Maxilliped 3: Ischium with 2 small distal flexor spines. Merus shorter than ischium; flexor margin with strong distal and proximal spine; extensor margin unarmed.

Pereopod 1 (cheliped): About 1.5 times carapace length; with few rows of spines and few short squamae; margins with sparse plumose setae and scattered iridescent setae. Dactylus slightly longer than palm; unarmed dorsally except for small proximal spine; occlusal margin denticulate, without gape. Propodus palm 1.6 times as long as high, with dorsal, medial and ventral row of spines; pollex with 2 subdistal spines, ventral margin unarmed. Carpus 1.7 times as long as high, shorter than palm with dorsal, medial and ventral row of spines. Merus with strong distal and dorsal spines, longest not reaching midlength of carpus; surface otherwise unarmed except for row of 5 small lateral spines.

Pereopod 2: Merus with 11 or 12 extensor and 9 or 10 graded flexor spines. Carpus extensor margin with 2 spines, proximal margin minutely dentate; with distal flexor spine. Propodus 5.4 times as long as high; extensor margin unarmed; flexor margin with 8 small movable spines. Dactylus 0.7 propodus length; flexor margin with 8–10 movable spines, distalmost spine proximal to dactylar apex by one-quarter length of flexor margin.

Pereopod 3: Merus with 11 extensor and 6–8 flexor graded spines. Carpus extensor margin with 2 spines, proximal margin minutely dentate; with distal flexor spine. Propodus 5.9 times as long as high; extensor margin unarmed; flexor margin with 8 or 9 small movable spines. Dactylus 0.6 propodus length; flexor margin with 7 or 8 movable spines, distalmost spine proximal to dactylar apex by one-quarter length of flexor margin.

Pereopod 4: Merus with 10 or 11 extensor and 4 or 5 graded flexor spines. Carpus extensor margin with distal spine, proximal margin minutely dentate; with distal flexor spine. Propodus 4.8 times as long as high; extensor margin unarmed; flexor margin with 6 small movable spines. Dactylus 0.7 propodus length; flexor margin with 9 movable spines, distalmost spine inserting proximal to dactylar apex by one-quarter length of flexor margin.

Colour in life. Base colour translucent white. Carapace and abdomen diffuse pink with red striae; with or without whitish mottling. Chelipeds with red patch distally giving impression of diffuse red and white banding. Walking legs diffuse pink with white dactyli and proximal half of propodi.

Etymology. Named for my good friends, Peter and Melissa Collier; used as a noun in apposition.

Remarks. *Munida collier* **sp. nov.** most closely resembles *M. cerisa* **sp. nov.**, *M. andamanica* Alcock, 1894, and *M. rosula* Macpherson, 1994, sharing subequal terminal spines on the basal antennular segment, five spines on the branchial carapace margins, absence of anterior branchial and postcervical spines on the dorsal surface, and relatively short chelipeds (not exceeding twice carapace length) in which the longest distal merus spines do not overreach the midlength of the carpus. *Munida collier* differs from *M. cerisa* in having the ultimate flexor spine on the dactyli of the walking legs placed well proximal to the base of the unguis. From *M. andamanica*, *M. collier* is readily distinguished by colour-in-life (mottled red-pink carapace and white walking leg dactyli versus a uniform orange red carapace and red-tipped walking leg dactyli; compare Fig. 10C–D with Baba in Baba *et al.* 1986: 168, top figure) and the secondary striation of the carapace: numerous in *M. andamanica* versus very few on the anterior half and none on the posterior half in *M. collier*. *Munida collier* is distinguished from *M. rosula* by the evenly curved rather than trianguloid anterior margin of

sternite 4, absence of secondary striae on the posterior half of the carapace and presence of one (medially interrupted) transverse stria instead of two (one interrupted, one entire) on abdominal tergite 3, shorter mesial spine of antennal segment 1 that does not reach base of segment 3, and colour-in-life (chelipeds with extensive red patches versus some red at the articulations; compare Fig. 10C–D with Macpherson 1994: fig. 82).

Distribution. Presently known only from the northern Norfolk Ridge; 750–774 m.

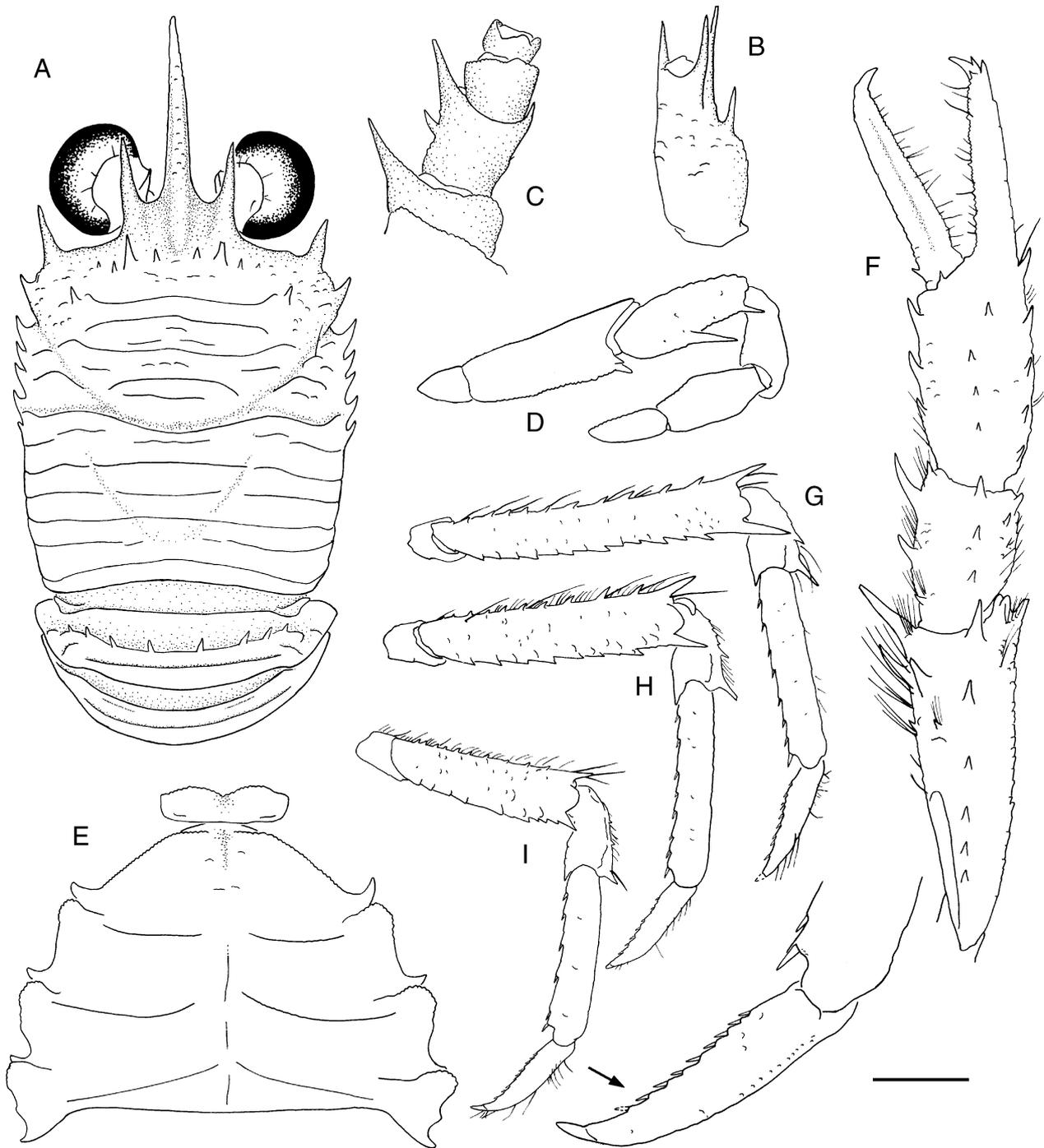


FIGURE 12. *Munida collier* sp. nov., male holotype, 17.8 mm, TAN0308/043 (NIWA 28068). A, dorsal view. B, left antennule, ventral view. C, left antenna, ventral view. D, right third maxilliped, lateral view (setae omitted). E, sternum. F, right cheliped, lateral view. G–I, right pereopods 2–4. Scale: A, F–I = 3.0 mm; B–E = 1.5 mm.

***Munida endeavourae* Ah Yong & Poore, 2004**

(Fig. 10E)

Munida microps. — Haig, 1973: 271–273 [part, larger specimen only] [not *M. microps* Alcock, 1894].

Munida endeavourae Ah Yong & Poore, 2004: 29–32, fig. 5 [type locality: 51 km SE of Green Cape, New South Wales, Australia, 37°30'S, 150°33'E]. — Baba 2005: 262.

Munida grievae Vereshchaka, 2005: 140–141, fig. 3, tab. 1–2 [type locality: NE of Bay of Plenty, New Zealand, 36°08.36–08.57'S, 178°11.77–11.50'E, 655–977 m] [new synonymy].

Material examined. *Norfolk Ridge*: NIWA 28077, 1 ovigerous female (21.7 mm), E of Three Kings Islands, 34°02.88'S, 171°08.18'E, 1145–1185 m, TAN0308/009 #18, 12 May 2003; AM P73026, 2 females (12.8–20.0 mm), West Norfolk Ridge, 34°17.84'S, 168°25.82'E, 1261–1268 m, TAN0308/145 #013, 2 Jun 2003.

Kermadec Ridge: NIWA 4064, H-881, ovigerous female (16.8 mm), 36°08.36–08.57'S, 178°11.77–11.50'E, 655–977 m, mud, TAN 0107/228, 24 May 2001 (holotype of *Munida grievae* Vereshchaka, 2005).

Colour in life. Dull, pale orange-pink.

Remarks. The present NORFANZ specimens of *M. endeavourae* agree closely with the type material (Ah Yong & Baba 2004) and confirm the presence of the species in New Zealand waters. Vereshchaka (2005) described *Munida grievae* based on a single female from northeastern New Zealand. *Munida grievae* and *M. endeavourae* are indistinguishable; the two species are herein synonymised.

Distribution. Southeastern Australia and now from northern New Zealand; 620–1700 m (Ah Yong & Poore 2004).

***Munida exilis* sp. nov.**

(Fig. 13, 14A)

Type material. Holotype: NIWA 28067, female (13.7 mm), West Norfolk Ridge, 34°17.09'S, 168°21.50'E, 785–800 m, TAN0308/141 #10, 2 Jun 2003. Paratypes: AM P73022, 2 females (5.7–6.1 mm pcl), southern Norfolk Ridge, 33°23.60'S, 170°12.38'E, 469–490 m, TAN0308/136#81, 1 Jun 2003; NMNZ, 1 ovigerous female (6.0 mm pcl), southern Norfolk Ridge, 33°23.41'S, 170°11.58'E, 469–526 m, TAN0308/126 #79, 31 May 2003; NMNZ, 1 male (11.4 mm), southern Norfolk Ridge, 33°23.60'S, 170°12.38'E, 469–490 m, TAN0308/136#80, 1 Jun 2003.

Diagnosis. Carapace margins with 5 spines posterior to cervical groove; frontal margins almost transverse; supraocular spines parallel; anterolateral spine extending beyond base of sinus between rostrum and supraocular spine; anterior branchial and postcervical spine absent. Rostrum spiniform. Sternite 4 anterior margin trianguloid, narrowly contiguous with third sternite; sternites 5–7 smooth. Abdominal tergite 2 with row of spines on anterior border; tergite 3 unarmed. Maximum corneal diameter half basal distance between anterolateral spines. Antennular basal segment with distomesial spine shorter than lateral. Antennal basal segment with blunt inner mesial angle; segment 2 with long mesial and lateral terminal spines, mesial overreaching distal segment of peduncle, lateral reaching midlength of segment 4. Maxilliped 3 merus extensor margin unarmed. Cheliped slender, about 3.0 times carapace length; pollex ventral margin unarmed; carpus about 6 times as long as wide. Pereopods 2–4 dactylus flexor margin with terminal 0.4 unarmed.

Description. *Carapace*: Transverse ridges well spaced, with few secondary striae; cervical groove distinct; with pair of distinct epigastric spines behind supraocular spines, flanked medially by 1 and laterally by 2 smaller spines, forming transverse row; parahepatic spine flanked by several small granules; anterior branchial and postcervical spine absent. Frontal margins almost transverse; rostrum spiniform, horizontal, about twice as long as supraocular spines and about half remaining carapace length. Supraocular spines parallel. Anterolateral spine slightly divergent, situated at anterolateral angle, extending beyond base of sinus between

rostrum and supraocular spine. Margins of carapace anterior to cervical groove with 3 spines (including anterolateral); with 5 spines posterior to cervical groove.

Sternum: Sternite 3 transversely subquadrate. Sternite 4 with pair of striae, otherwise smooth; anterior margin trianguloid, narrowly contiguous with sternite 3. Sternites 5–7 smooth. Ridges demarcating sternites feebly granular.

Abdomen: Tergite 2 with row of 6 spines on anterior border and 1 transverse stria. Tergite 3 unarmed, with 1 transverse stria. Tergite 4 with 1 transverse stria. Tergite 5 with 1 uninterrupted anterior stria and medially interrupted posterior stria.

Eye: Large, with maximum corneal diameter half basal distance between anterolateral spines; peduncle with row of long distal setae.

Antennule: Basal segment elongate, slightly overreaching cornea; distomesial spine shorter than lateral; with 2 lateral spines, distal markedly longer than proximal.

Antenna: Basal segment with blunt inner mesial angle. Segment 2 with long mesial and lateral terminal spines, mesial overreaching distal segment of peduncle, lateral overreaching segment 3; mesial margin with or without small spine. Segments 3 and 4 unarmed.

Maxilliped 3: Ischium with small distal flexor spine. Merus as long as ischium; flexor margin with strong distal and proximal spine; extensor margin unarmed.

Pereopod 1 (cheliped): Slender, about 3.0 times carapace length; with short squamae, and acute granules or small spines; sparsely setose. Dactylus with small dorsal proximal spine and small subterminal spine; occlusal margin denticulate, with proximal gape in adult males. Propodus palm 6–7 times as long as high, longer than pollex; pollex with 2 subdistal spines. Carpus about 6 times as long as wide; sparsely spinose dorsally. Merus with irregularly distributed spines on lateral, dorsal and mesial surfaces; spines strongest distally.

Pereopod 2: Merus with 10–12 extensor and 6–8 flexor spines. Carpus with 2 extensor and 2 flexor spines. Propodus 6.3 times as long as high; extensor margin unarmed; flexor margin with 13 small movable spines. Dactylus 0.6 propodus length; flexor margin with 8 or 9 movable spines; terminal 0.4 of flexor margin unarmed.

Pereopod 3: Merus with distal extensor and 6 or 7 flexor spines. Carpus with extensor and 1 or 2 flexor spines. Propodus 6.1 times as long as high; extensor margin unarmed; flexor margin with 13 or 14 small movable spines. Dactylus 0.7 propodus length; flexor margin with 6 movable spines; terminal 0.4 unarmed.

Pereopod 4: Merus extensor margin unarmed; with 6–8 flexor spines. Carpus with distal extensor and 2 flexor spines. Propodus 6.3 times as long as high; extensor margin unarmed; flexor margin with 11 or 12 movable spines. Dactylus 0.7 propodus length; flexor margin with 5 movable spines; terminal 0.4 unarmed.

Colour in life. Base colour translucent white. Carapace ridges, rostrum, and spines orange-red. Chelipeds and walking legs pale, diffuse orange; spines orange-red.

Etymology. Named *exilis* (Latin), thin, for the slender, elongated appearance of the species.

Remarks. *Munida exilis* sp. nov. most closely resembles *M. amblytes* Macpherson, 1994, from New Caledonia, in having near-transverse frontal carapace margins with well-developed anterolateral spines, absence of anterior branchial or postcervical carapace spines, well-spaced striae, triangular sternite 4, unarmed terminal 0.4 of the flexor margin of the dactyli of the walking legs, and short distomesial spine on the basal antennular segment. The new species is readily distinguished from *M. amblytes* by its longer chelipeds (about three instead of about two times carapace length), parallel rather than divergent supraocular spines, longer anterolateral spines (reaching beyond the base of sinus between the rostral and supraocular spines), fewer spines on the anterior margin of abdominal tergite 2 (6 versus 8–10), and the longer outer spine on segment 2 of the antennal peduncle (reaching the midlength of segment 4 rather than apex of segment 3).

Distribution. Presently known only from localities on the southern Norfolk Ridge and West Norfolk Ridge; 469–800 m.

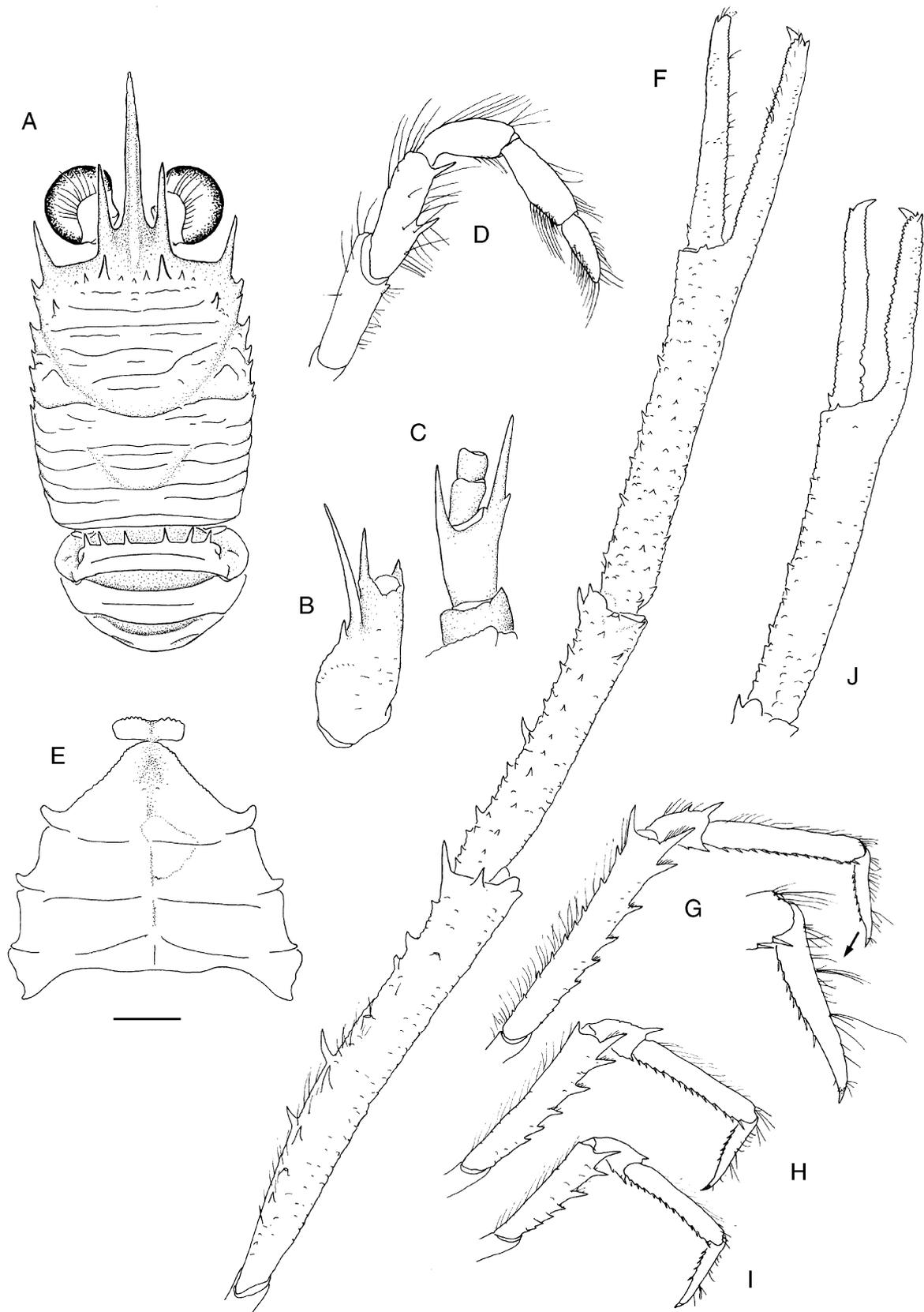


FIGURE 13. *Munida exilis* sp. nov. A–I, female holotype, 13.7 mm, TAN0308/141 (NIWA 28067). J, male paratype, 11.4 mm, TAN0308/136 (NMNZ). A, dorsal view. B, right antennule, ventral view. C, right antenna, ventral view. D, right third maxilliped, lateral view. E, sternum. F, right cheliped, lateral view. G–I, right pereopods 2–4. J, right chela, lateral view. Scale: A, F–J = 2.0 mm; B–E = 1.0 mm.

***Munida howensis* sp. nov.**

(Fig. 14B, 15)

Type material. Holotype: AM, male (19.2 mm), Lord Howe Rise, E of Ball's Pyramid, 31°45.73'S, 159°20.93'E, 565–960 m, TAN0308/066 #023, 23 May 2003.

Diagnosis. Carapace densely striated; margins with 5 spines posterior to cervical groove; posterior half of the carapace surface with rows of secondary striae; with 1 anterior branchial and 1 postcervical spine. Rostrum spiniform. Sternites without posterolateral granular patches; sternite 4 with broadly convex anterior margin. Abdominal tergite 2 with row of spines along anterior ridge; tergite 3 unarmed. Maximum corneal diameter slightly exceeding one-third basal distance between anterolateral spines. Antennular basal segment with distomesial spine shorter than distolateral spine. Antennal basal segment mesial spine reaching to distal two-thirds of segment 3; segment 2 with distomesial spine overreaching segment 4. Maxilliped 3 merus extensor margin with minute distal tooth; flexor margin with 3 spines. Cheliped pollex with 2 stout spines along proximal ventral margin; carpus less than twice as long as high. Pereopod 2–4 propodus about 5–6 times as long as high; dactylus flexor margin with terminal fifth unarmed.

Description. *Carapace:* Densely striated; striae generally entire; gastric, hepatic and branchial regions with several short striae; cervical groove distinct; with pair of distinct epigastric spines behind supraocular spines, flanked mesially by 1 smaller spine, and laterally by 4 or 5 smaller spines; with 1 parahepatic, 1 anterior branchial and 1 postcervical spine. Frontal margins slightly sinuous, almost transverse; rostrum spiniform, horizontal, about twice as long as supraocular spines and exceeding one-third remaining carapace length. Supraocular spines subparallel. Anterolateral spines well-developed, situated at anterolateral angle, parallel, extending slightly beyond base of sinus between rostrum and supraocular spine. Margins of carapace anterior to cervical groove with 2 or 3 spines (including anterolateral); with 5 spines posterior to cervical groove.

Sternum: Sternite 3 bilobed; anterior margin biconcave. Sternite 4 with 5 pairs of striae, otherwise smooth; anterior margin broadly convex. Sternites 5–7 smooth. Ridges demarcating sternites smooth.

Abdomen: Tergite 2 with 9 spines along anterior ridge; with 2 transverse striae, 2 rows of secondary striae and several short arcuate striae laterally. Tergite 3 unarmed, with 2 entire transverse striae, 1 subdivided transverse striae, and several short striae laterally. Tergite 4 with 1 medially interrupted and 1 entire transverse stria, and several short striae laterally. Tergite 5 with 2 entire transverse striae in addition to short lateral striae.

Eye: Moderate, with maximum corneal diameter slightly exceeding one-third basal distance between anterolateral spines; peduncle with numerous short distal setae.

Antennule: Basal segment elongate, slightly overreaching cornea; distomesial spine shorter than lateral terminal spine; with 2 lateral spines, distal markedly longer than proximal.

Antenna: Basal segment with strong mesial spine, apex reaching to distal two-thirds of segment 3. Segment 2 with small spine on mesial margin; distomesial spine overreaching segment 4, lateral not overreaching third segment. Segments 3 and 4 unarmed.

Maxilliped 3: Ischium with small distal flexor spines. Merus shorter than ischium; flexor margin with strong distal, proximal and median spine; extensor margin with minute distal tooth.

Pereopod 1 (cheliped): About 1.7 times carapace length; sparsely granulate and setose. Dactylus longer than palm; with small proximal spine only; occlusal margin denticulate, without gape. Propodus palm 1.7 times as long as high; with row of dorsal, lateral and ventral spines; pollex with 2 subdistal spines and 2 stout spines along proximal margin. Carpus 1.8 times as long as high, subequal to palm length; strongly spinose dorsally, surface with 2 rows of small spines. Merus with strong distal and dorsal spines, longest reaching proximal third of carpus; surface with 2 rows of small spines.

Pereopod 2: Merus with 12–14 extensor and 5 or 6 flexor spines. Carpus with 3 extensor spines and distal flexor spine. Propodus 5.6 times as long as high; extensor margin unarmed; flexor margin with 10–14 small

movable spines. Dactylus 0.7 propodus length; flexor margin with 10–14 movable spines; terminal fifth of flexor margin unarmed.

Pereopod 3: Merus with 8 or 9 extensor and 5 flexor spines. Carpus with 5 extensor spines (distal 2 longest, proximal 3 minute) and distal flexor spine. Propodus 5.3 times as long as high; extensor margin unarmed; flexor margin with 13–15 small movable spines. Dactylus 0.7 propodus length; flexor margin with 11 or 12 movable spines; terminal fifth of flexor margin unarmed.



FIGURE 14. A, *Munida exilis* **sp. nov.**, male paratype, 11.4 mm, TAN0308/136 (NMNZ). B, *Munida howensis* **sp. nov.**, male holotype, 19.2 mm, TAN0308/066 (AM). C, *Munida redacta* **sp. nov.**, male holotype, 9.4 mm, TAN0308/020 (AM). D, *Munida rubrimana* **sp. nov.**, ovigerous female holotype, 15.0 mm, TAN0308/043 (NMNZ). E, *Munida tanga-roa* **sp. nov.**, ovigerous female paratype, 14.1 mm, TAN0308/29 (NIWA 28070).

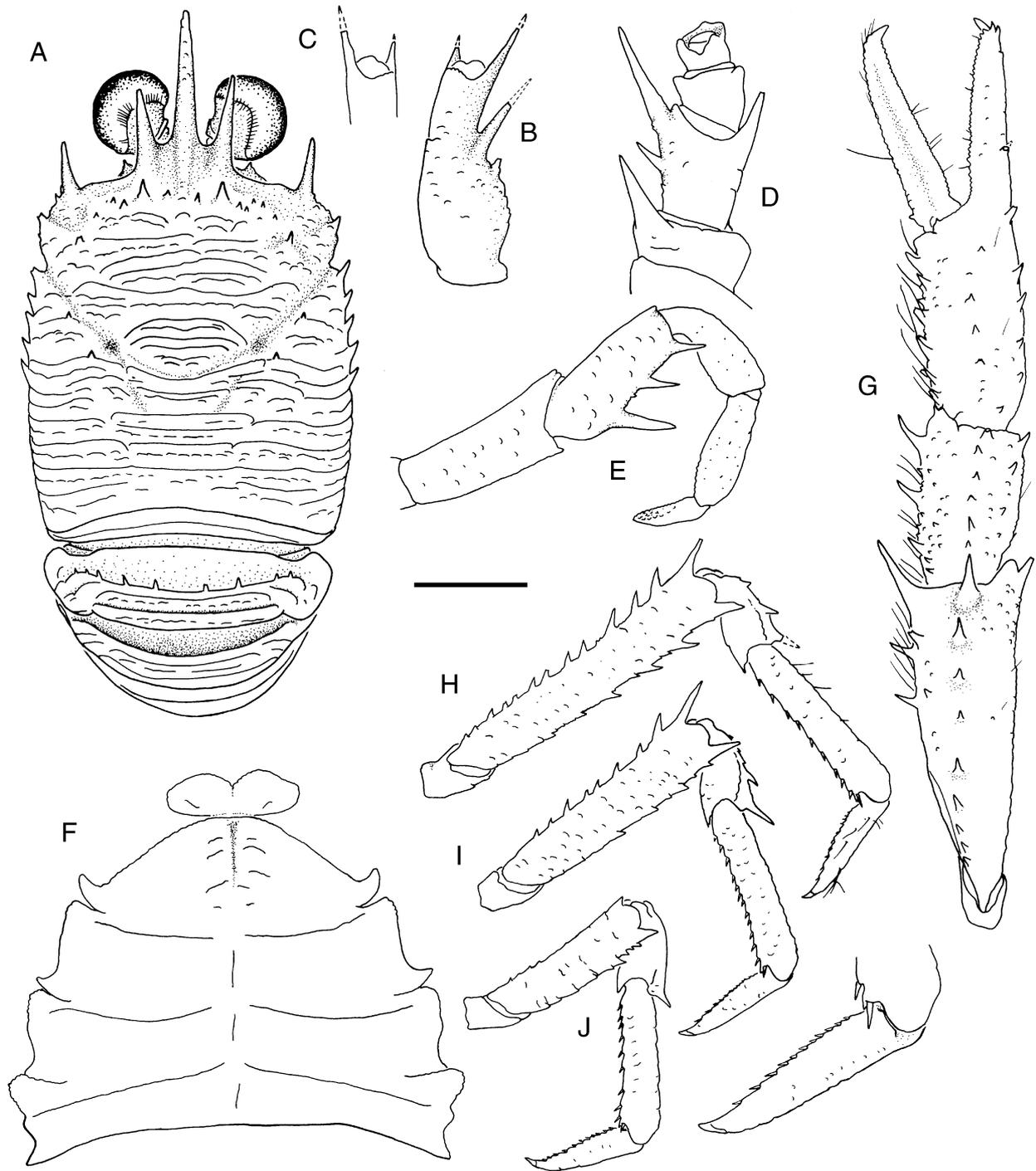


FIGURE 15. *Munida howensis* sp. nov., male holotype, 19.2 mm, TAN0308/066 (AM). A, dorsal view. B, left antennule, ventral view. C, right antennule, distal portion, ventral view. D, left antenna, ventral view. E, right third maxilliped, lateral view. F, sternum. G, right cheliped, lateral view. H–J, right pereopods 2–4. Scale: A, G–J = 4.0 mm; B–F = 2.0 mm.

Pereopod 4: Merus with distal extensor and 4 or 5 flexor spines. Carpus with distal extensor and flexor spine. Propodus 4.6 times as long as high; extensor margin unarmed; flexor margin with 10 small movable spines. Dactylus 0.7 propodus length; flexor margin with 9 or 10 movable spines; terminal fifth of flexor margin unarmed.

Colour in life. Dusky overall. Anterior spines and rostrum of carapace dull red. Cheliped fingers with dull pink distal half.

Etymology. Derived from the Lord Howe Rise, from which the holotype was collected.

Remarks. *Munida howensis* sp. nov. is morphologically closest to *M. eclepsis* Macpherson, 1994, from New Caledonia: both species have a spinose ventral margin of the cheliped pollex, five spines on the branchial carapace margins, parahepatic, anterior branchial and postcervical carapace spines, a row spines along the anterior ridge of abdominal tergites 2 and 3, and a short distomesial spine on the basal antennular segment.

Munida howensis sp. nov., however, is readily separated from *M. eclepsis* by the presence of rows of secondary striae on the posterior half of the carapace surface, in the shorter lateral spine of antennal peduncular segment 2 (which does not overreach segment 3), and in the tri- rather than bispinose flexor margin of maxilliped 3 merus.

Distribution. Presently known only from east of Ball's Pyramid, Tasman Sea; 565–960 m.

***Munida isos* Ahyong & Poore, 2004**

Munida microps. — Haig, 1973: 273 [part, smaller specimen only] [not *M. microps* Alcock, 1894].

Munida isos Ahyong & Poore, 2004: 34–38, fig. 6 [type locality: off St Patricks Head, Tasmania, 41°35'S, 148°14'E].

Munida gordonii Vereshchaka, 2005: 139, fig. 2, tab. 1–2 [type locality: off Wairarapa coast, New Zealand, 41°35.45–34.88'S, 175°46.39–47.23'E, 1000–1400 m] [new synonymy].

Material examined. NIWA 4065, H-880, ovigerous female (15.0 mm), off Wairarapa coast, New Zealand, 41°35.45–34.88'S, 175°46.39–47.23'E, 1000–1400 m, mud, TAN0107/326, 24 May 2001 (holotype of *Munida gordonii* Vereshchaka, 2005).

Remarks. *Munida gordonii* Vereshchaka, 2005, recently described from off the Wairarapa coast is indistinguishable from *M. isos* Ahyong & Poore, 2004, described from southeastern Australia; the two species are herein synonymised.

Two of three species described by Vereshchaka (2005) are represented in the NORFANZ collection: *Agononida nielbrucei* and *Munida grievae* (synonymised above with *M. endeavourae* Ahyong & Poore, 2004). Although *M. isos* was not represented in the NORFANZ collection, it is reported here to clarify the status of *M. gordonii*, the third species described from New Zealand by Vereshchaka (2005).

Distribution. Southeastern Australia, from Broken Bay to Tasmania, and now from New Zealand; 640–1700 m (Ahyong & Poore 2004).

***Munida icela* sp. nov.**

(Fig. 16)

Type material. Holotype: NMNZ, male (10.3 mm), West Norfolk Ridge, 34°37.20'S, 168°57.03'E, 521–539 m, TAN0308/154 #25, 3 Jun 2003. Paratypes: NIWA 28069, 2 males (9.5–11.1 mm), West Norfolk Ridge, 34°37.20'S, 168°57.03'E, 521–539 m, TAN0308/154 #25, 3 Jun 2003.

Diagnosis. Carapace margins with 5 spines posterior to cervical groove; transverse ridges well-spaced, generally entire, with few secondary striae an anterior half and cardiac region of carapace; anterior branchial and postcervical spines present; frontal margins transverse. Rostrum spiniform. Sternite 4 smooth; anterior margin broadly and evenly convex. Sternites 5 and 6 smooth. Sternite 7 with granular patch laterally. Abdominal tergite 2 with row of spines along anterior ridge; tergite 3 unarmed. Maximum corneal diameter half basal distance between anterolateral spines. Antennular basal segment terminal spines subequal. Maxilliped 3 merus extensor margin unarmed. Cheliped 3 times carapace length. Pereopods 2 and 3 propodus extensor margin spinose proximally; dactylus with distalmost flexor spine at base of corneous unguis.

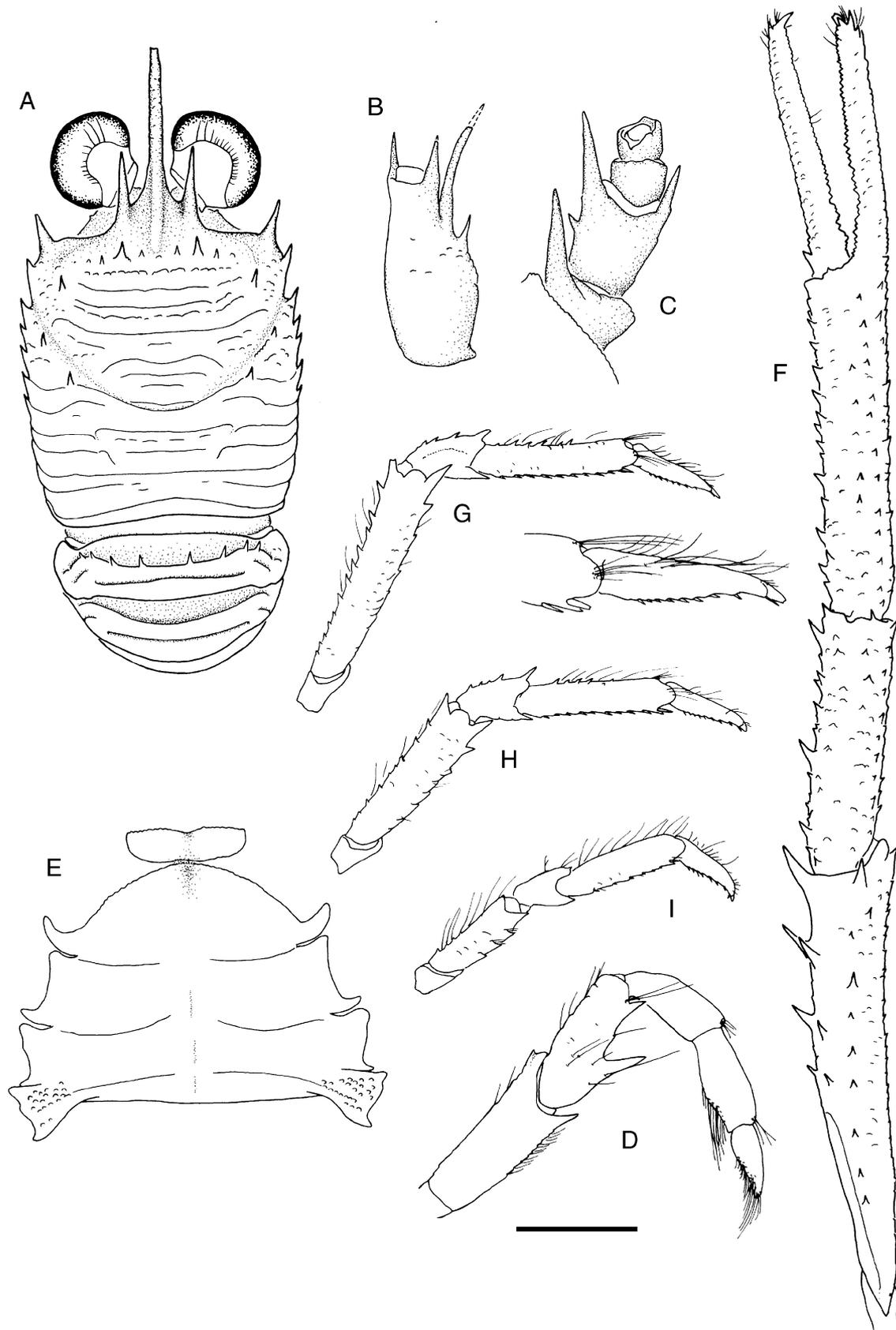


FIGURE 16. *Munida icela* sp. nov., male holotype, 10.3 mm, TAN0308/154 (NMNZ). A, dorsal view. B, left antennule, ventral view. C, left antenna, ventral view. D, right third maxilliped, lateral view. E, sternum. F, right cheliped, lateral view. G–I, right pereopods 2–4. Scale: A, F–I = 2.5 mm; B–E = 1.2 mm.

Description. *Carapace*: Transverse ridges well-spaced, generally entire, with few secondary striae an anterior half and cardiac region of carapace; gastric, hepatic and branchial regions with several short striae; cervical groove distinct; with pair of distinct epigastric spines behind supraocular spines, flanked mesially and laterally small spine and granule; with 1 parahepatic, 1 anterior branchial and 1 postcervical spine. Frontal margins transverse; rostrum spiniform, horizontal, three times as long as supraocular spines and more than half remaining carapace length. Supraocular spines parallel. Anterolateral spines situated at anterolateral angle, slightly divergent, extending to base of sinus between rostrum and supraocular spine. Margins of carapace anterior to cervical groove with 2 spines (including anterolateral); with 5 spines posterior to cervical groove.

Sternum: Sternite 3 broad, anterior margin sinuous, truncate laterally. Sternite 4 smooth; anterior margin broadly and evenly convex. Sternites 5 and 6 smooth. Sternite 7 with granular patch laterally. Ridges demarcating sternites smooth or slightly crenulate.

Abdomen: Tergite 2 with 8 spines along anterior ridge; with 1 uninterrupted transverse stria and 2 short arcuate striae laterally. Tergite 3 unarmed, with 1 uninterrupted transverse stria. Tergite 4 with 1 medially interrupted transverse stria. Tergite 5 with 1 medially interrupted and 1 medially uninterrupted transverse stria.

Eye: Large, with maximum corneal diameter half basal distance between anterolateral spines; peduncle with distal setae.

Antennule: Basal segment elongate, slightly overreaching cornea, with scattered ventral striae; terminal spines subequal; with 2 lateral spines, distal markedly longer than proximal.

Antenna: Basal segment with strong mesial spine, apex reaching base of segment 3. Segment 2 with small spine on mesial margin; distomesial spine overreaching segment 4; distolateral spine reaching end of segment 3. Segments 3 and 4 unarmed.

Maxilliped 3: Ischium with strong distal flexor spine; extensor margin unarmed. Merus shorter than ischium; flexor margin with strong distal and proximal spines; extensor margin unarmed.

Pereopod 1 (cheliped): About 3.0 times carapace length; sparsely setose; with scattered striae and granules and multiple rows of small spines. Dactylus slightly longer than palm; with small proximal and distal spine; occlusal margin denticulate, without gape. Propodus palm about 5 times as long as high, with dorsal, medial and ventral rows of short spines. Pollex with 2 subdistal spines; ventral margin unarmed. Carpus about 4 times as long as high, shorter than palm; with dorsal, medial and ventral rows of spines, longest dorsally. Merus with strong distal and dorsal spines, longest not reaching proximal quarter of carpus; lateral surface with short striae and row of 8 or 9 small spines.

Pereopod 2: Merus with 13–15 extensor and 6–9 graded flexor spines. Carpus with 4 or 5 extensor spines and distal flexor spine. Propodus 5.3 times as long as high; extensor margin with 6 or 7 spines proximally; flexor margin with 9 or 10 small movable spines. Dactylus 0.6 propodus length; flexor margin with 9 or 10 movable spines, distalmost spine at base of corneous unguis.

Pereopod 3: Merus with 8 or 9 extensor and 4 or 5 graded flexor spines. Carpus with 4 or 5 extensor spines and distal flexor spine. Propodus 5.0 times as long as high; extensor margin with 5 or 6 spines proximally; flexor margin with 10 small movable spines. Dactylus 0.6 propodus length; flexor margin with 8 or 9 movable spines, distalmost spine at base of corneous unguis.

Pereopod 4: Merus with 4 small proximal extensor spines, distally unarmed; with 4 graded flexor spines. Carpus extensor margin with distal flexor and extensor spine. Propodus 4.3 times as long as high; extensor margin unarmed; flexor margin with 6 or 7 small movable spines. Dactylus 0.6 propodus length; flexor margin with 8 movable spines, distalmost spine at base of corneous unguis.

Etymology. Derived from *ikelos*, Greek for like, alluding to the similarity of the new species to *M. acacia* sp. nov. and *M. spinicruris* Ahyong & Poore, 2004.

Remarks. *Munida icela* sp. nov. closely resembles *M. spinicruris* Ahyong & Poore, 2004, and *M. acacia* sp. nov. in bearing five spines on the branchial carapace margins, a row of spines along the anterior ridge of

the abdominal tergite 2, and armed dorsal margins of the propodi of the first two walking legs. *Munida icela* is readily distinguished from *M. spinicruris* as follows: the eyes are larger, being greater, rather than less than one-third of the distance between the anterolateral spines; the distomesial spine of the basal antennular segment is as long as rather than longer than the lateral spine; the cheliped is triple rather than less than twice carapace length. Characters distinguishing *M. icela* from *M. acacia* are discussed under the account of the latter.

Distribution. Presently known only from the West Norfolk Ridge; 521–539 m.

***Munida redacta* sp. nov.**

(Fig. 14C, 17)

Type material. Holotype: AM, male (9.4 mm), S of Norfolk Island, 29°41.84'S, 168°02.62'E, 322–337 m, TAN0308/020 #071, 14 May 2003.

Diagnosis. Carapace branchial margin with 5 spines. Abdominal tergite 2 with 2 spines at each lateral extremity of anterior ridge; with 3 transverse striae. Sternite 7 with granulate posterolateral surface. Maximum corneal diameter half basal distance between anterolateral spines. Distal spines of basal antennular segment subequal. Maxilliped 3 merus flexor margin with 2 spines; extensor margin with small distal spine. Cheliped dactylus longer than palm. Dactylus of first walking leg about three-quarters propodus length.

Description. *Carapace:* Transverse ridges well spaced, generally entire; gastric and hepatic regions with several short striae; cervical groove distinct; with pair of distinct epigastric spines behind supraocular spines, flanked mesially by 1 smaller spine, and laterally by 5 smaller spines; with 1 parahepatic, 1 anterior branchial and 1 postcervical spine. Frontal margins almost transverse; rostrum spiniform, horizontal, about four times as long as supraocular spines and about half remaining carapace length. Supraocular spines subparallel. Anterolateral spines well-developed, parallel, situated at anterolateral angle, extending almost to base of sinus between rostrum and supraocular spine. Margins of carapace anterior to cervical groove with 4 spines (including anterolateral); with 5 spines posterior to cervical groove.

Sternum: Sternite 3 broadly subquadrate; anterior margin sinuous. Sternite 4 with pair of striae, otherwise smooth; anterior margin broadly convex. Sternites 5 and 6 smooth. Posterolateral surface of sternite 7 granular. Ridges demarcating sternites smooth.

Abdomen: Tergite 2 with 2 spines at each extremity of anterior ridge; with 3 uninterrupted transverse striae and several short arcuate striae laterally. Tergite 3 unarmed, with 4 uninterrupted transverse striae. Tergite 4 with 4 transverse striae, posteriormost medially interrupted. Tergite 5 with 3 striae.

Eye: Large, with maximum corneal diameter half basal distance between anterolateral spines; peduncle without distal setae.

Antennule: Basal segment elongate, slightly overreaching cornea; mesial and lateral terminal spines subequal; with 2 lateral spines, distal markedly longer than proximal.

Antenna: Basal segment with strong mesial spine, apex reaching to midlength of segment 3. Segment 2 with small spine on mesial margin and with mesial and lateral terminal spines, mesial overreaching distal segment of peduncle, lateral overreaching segment 3. Segments 3 and 4 unarmed.

Maxilliped 3: Ischium with strong distal flexor spine. Merus shorter than ischium; flexor margin with strong distal and proximal spines; extensor margin with small distal spine.

Pereopod 1 (cheliped): About 1.7 times carapace length; with rows of small spines and few short squamae; sparsely setose. Dactylus longer than palm; with 4 small dorsal spine in proximal half and small subterminal spine; occlusal margin denticulate, without gape. Propodus palm 1.8 times as long as high, surface spinose; pollex with 2 subdistal spines and 3 stout spines along margin. Carpus 1.8 times as long as high, subequal to palm length; strongly spinose dorsally, surface with 2 rows of small spines. Merus with strong distal and dorsal spines, surface otherwise unarmed except for row of 3 small lateral spines.

Pereopod 2: Merus with 8 extensor and 7 flexor spines. Carpus with 5 extensor spines and distal flexor spine. Propodus 5.3 times as long as high; extensor margin unarmed; flexor margin with 11 small movable spines. Dactylus 0.7 propodus length; flexor margin with 8 movable spines; terminal third of margin unarmed except for spinule at base of unguis.

Pereopod 3: Merus with 5 extensor and 2 flexor spines. Carpus with 5 or 6 extensor spines and distal flexor spine. Propodus 5.5 times as long as high; extensor margin unarmed; flexor margin with 13 small movable spines. Dactylus 0.7 propodus length; flexor margin with 7 or 8 movable spines; terminal third of margin unarmed except for spinule at base of unguis.

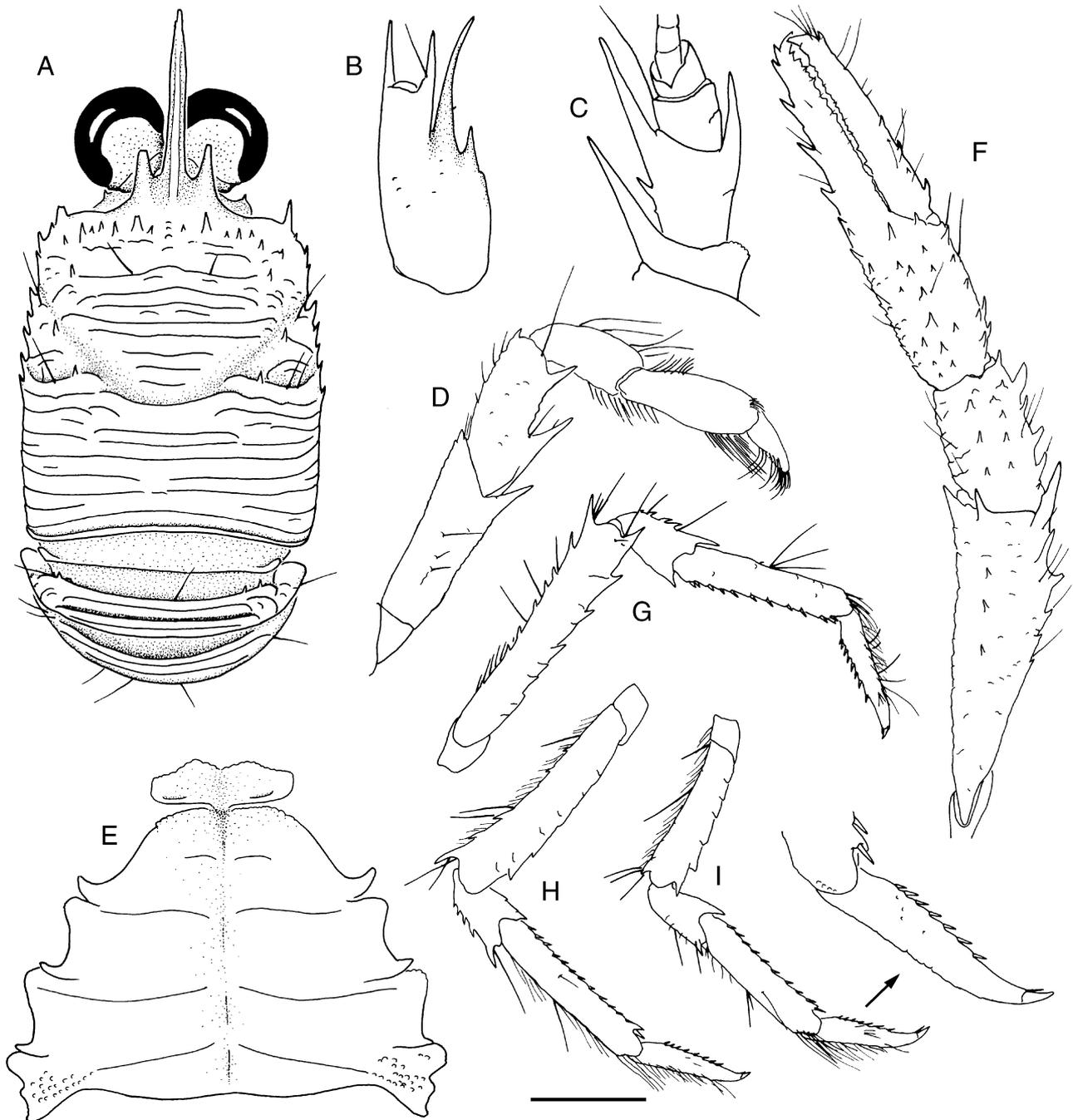


FIGURE 17. *Munida redacta* sp. nov., male holotype, 9.4 mm, TAN0308/020 (AM). A, dorsal view. B, left antennule, ventral view. C, left antenna, ventral view. D, right third maxilliped, lateral view. E, sternum. F, left cheliped, lateral view. G, right pereopod 2. H–I, left pereopods 3–4. Scale: A, F–I = 2.0 mm; B–E = 1.0 mm.

Pereopod 4: Merus extensor margin with distal spine; with 2 flexor spines. Carpus with distal extensor and flexor spine. Propodus 5 times as long as high; extensor margin unarmed; flexor margin with 10 small movable spines. Dactylus 0.8 propodus length; flexor margin with 7 movable spines; terminal third of margin unarmed except for spinule at base of unguis.

Colour in life. Base colour translucent white with diffuse orange mottling. Carapace spines red. Chelipeds and walking legs with diffuse orange-red banding.

Etymology. From *redacta*, Latin, for reduced, alluding to the fewer abdominal and cheliped striae of the new species in comparison to *M. stigmatica*.

Remarks. *Munida redacta* **sp. nov.** closely resembles *M. stigmatica* Macpherson, 1994, from the New Caledonian region, in sharing five spines on the branchial carapace margins, a pair of spines at the lateral extremities of the anterior ridge of abdominal tergite 2, and a granular posterolateral surface of sternite 7. *Munida redacta* differs from *M. stigmatica* in the following features: abdominal tergite 2 bears fewer secondary striae, fewer primary striae (three versus about six); the cheliped and walking legs are sparsely, rather than densely squamate; the dactylus of the cheliped is longer, rather than shorter than the palm; the lateral spine of the basal antennular segment is subequal to, rather than shorter than the mesial spine; the dactylus of the first walking leg is about three-quarters rather than half the propodus length; and the flexor margin of the merus of maxilliped 3 is bi- rather than trispinose.

Distribution. Presently known only from the type locality, south of Norfolk Island; 322–337 m.

***Munida rubrimana* sp. nov.**

(Fig. 14D, 18)

Type material. Holotype: NMNZ, ovigerous female (15.0 mm), northern Norfolk Ridge, 26°25.94'S, 167°10.87'E, 750–774 m, TAN0308/043 #60, 18 May 2003.

Diagnosis. Carapace margins with 5 spines posterior to cervical groove; with 1 anterior branchial and 1 postcervical spine. Rostrum spiniform. Sternite 4 with anterior margin broadly convex; sternites 5–7 smooth. Abdominal tergite 2 with row of spines along anterior ridge; tergite 3 unarmed, with 1 transverse stria. Maximum corneal diameter almost half basal distance between anterolateral spines. Antennular basal segment with terminal spines equal. Antennal basal segment mesial spine reaching base of segment 3; segment 2 with distomesial spine reaching to about midlength of segment 4. Maxilliped 3 merus extensor margin unarmed. Cheliped about 1.5 times carapace length; pollex with strong spine on ventral proximal margin; carpus about twice as long as high. Pereopod 2–4 dactylus with distalmost flexor spine at base of unguis.

Description. *Carapace*: Transverse ridges well spaced, generally entire; gastric and branchial regions with several short striae; cervical groove distinct; with pair of distinct epigastric spines behind supraocular spines, flanked mesially and laterally by small spine; with 1 parahepatic, 1 anterior branchial and 1 postcervical spine. Frontal margins sloping posteriorly; rostrum spiniform, horizontal, about three times as long as supraocular spines and almost half remaining carapace length. Supraocular spines subparallel. Anterolateral spine situated at anterolateral angle, slightly divergent, extending to base of sinus between rostrum and supraocular spine. Margins of carapace anterior to cervical groove with 2 spines (including anterolateral); with 5 spines posterior to cervical groove.

Sternum: Sternite 3 broadly subquadrate; anterior margin sinuous. Sternite 4 with pair of short striae, otherwise smooth; anterior margin broadly convex. Sternites 5–7 smooth. Ridges demarcating sternites smooth.

Abdomen: Tergite 2 with 11 spines along anterior ridge; with 1 transverse stria and several short arcuate striae laterally. Tergite 3 unarmed, with 1 transverse stria. Tergite 4 with medially interrupted transverse stria. Tergite 5 with 2 striae.

Eye: Large, with maximum corneal diameter almost half basal distance between anterolateral spines; peduncle with few short, distal setae.

Antennule: Basal segment elongate, slightly overreaching cornea; terminal spines equal; with two lateral spines, distal markedly longer than proximal.

Antenna: Basal segment with strong mesial spine, apex almost reaching base of segment 3. Segment 2 with small spine on mesial and lateral margins; distomesial spine reaching to about midlength of segment 4, lateral reaching beyond midlength of segment 3. Segments 3 and 4 unarmed.

Maxilliped 3: Ischium with distal flexor spine. Merus shorter than ischium; flexor margin with strong distal and proximal spine; extensor margin unarmed.

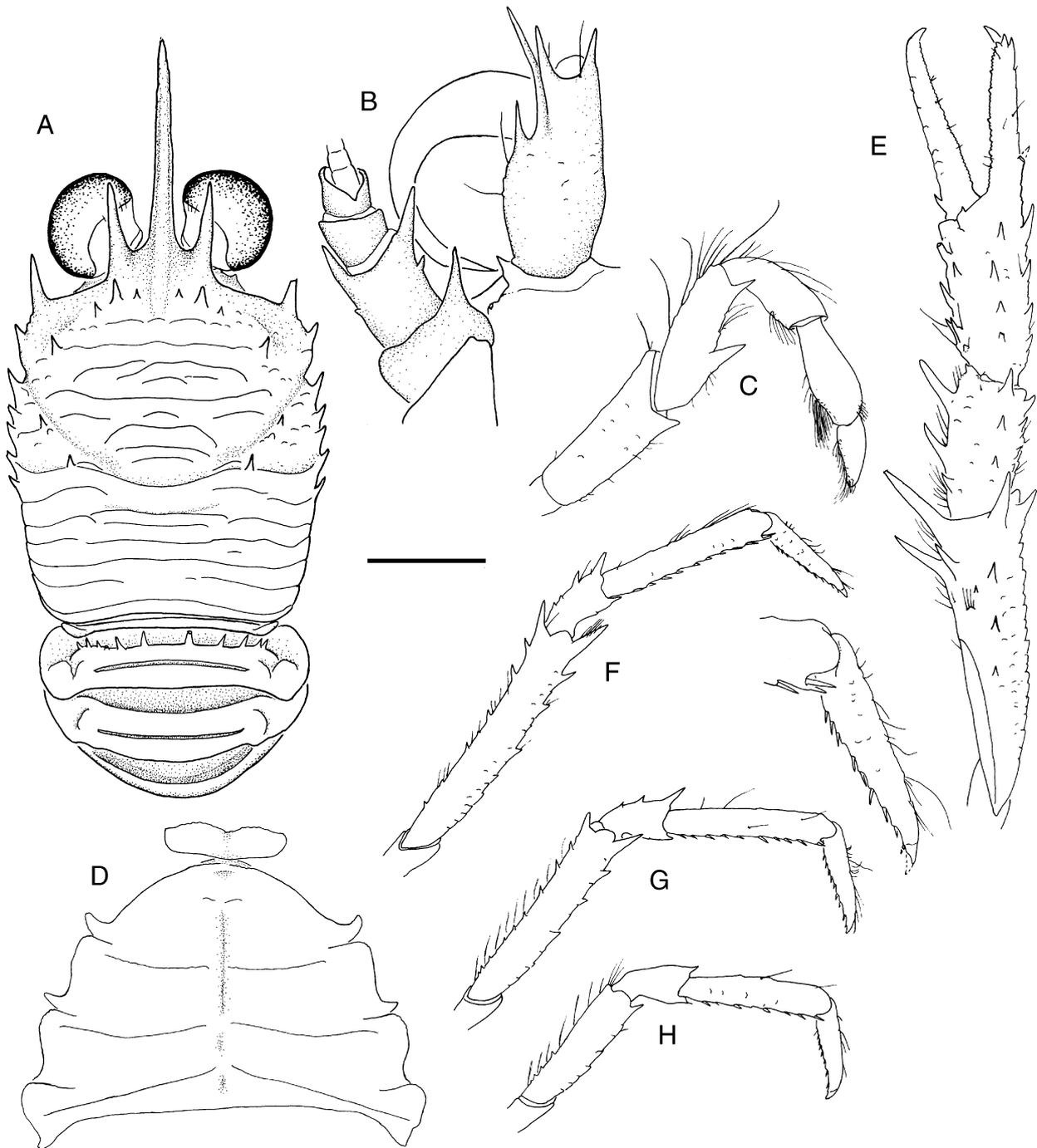


FIGURE 18. *Munida rubrimana* sp. nov., ovigerous female holotype, 15.0 mm, TAN0308/043 (NMNZ). A, dorsal view. B, right antennule and antenna, ventral view. C, right third maxilliped, lateral view. D, sternum. E, right cheliped, lateral view. F–H, right pereopods 2–4. Scale: A, E–H = 3.0 mm; B–D = 1.5 mm.

Pereopod 1 (cheliped): About 1.5 times carapace length; with few rows of spines and few short squamae; sparsely setose. Dactylus longer than palm; unarmed dorsally; occlusal margin denticulate, without gape. Propodus palm twice as long as high, surface spinose; pollex with 2 subdistal spines and 1 strong spine on ventral proximal margin. Carpus less than 2.1 times long as high, shorter than palm; strongly spinose dorsally, surface with 2 rows of small spines. Merus with strong distal and dorsal spines, surface otherwise unarmed except for row of 3 small lateral spines; longest distal spine reaching to proximal third of carpus.

Pereopod 2: Merus with 8 extensor and 5 flexor spines. Carpus with 4 extensor and 2 flexor spines. Propodus 6.3 times as long as high; distal extensor margin unarmed; flexor margin with 10 small movable spines. Dactylus 0.7 propodus length; flexor margin with 9 movable spines, distalmost spine at base of unguis.

Pereopod 3: Merus with 10 extensor and 4 flexor spines. Carpus with 3 extensor and distal flexor spine. Propodus 6 times as long as high; extensor margin unarmed; flexor margin with 10 small movable spines. Dactylus 0.7 propodus length; flexor margin with 8 movable spines, distalmost spine at base of unguis.

Pereopod 4: Merus with 4 small, proximal extensor spines and distal flexor spine. Carpus with distal extensor and flexor spine. Propodus 4.9 times as long as high; extensor margin unarmed; flexor margin with 7 small movable spines. Dactylus 0.7 propodus length; flexor margin with 8 movable spines, distalmost spine at base of unguis.

Colour in life. Base colour translucent white. Carapace and abdomen pale, diffuse red-pink, darkest anteriorly and posterolaterally; anterolateral and gastric spines red. Chelipeds largely red with white fingers. Walking legs with red and white banding.

Etymology. From *rubri* and *manus*, Latin for red hand, alluding to the mostly red chelipeds of the new species.

Remarks. *Munida rubrimana* **sp. nov.** most closely resembles *M. masoae* Macpherson, 1996, from Bayonnaise Bank, in sharing five branchial marginal spines on the carapace, a row of spines along the anterior ridge of abdominal tergite 2, subequal distal spines on the basal antennular segment, relatively short chelipeds with proximal and subterminal spines on the margin of the pollex, and absence of granular patches on sternite 7. The new species is readily distinguished from *M. masoae* by the presence of anterior branchial and postcervical spines on the carapace, one instead of two transverse striae on abdominal tergite 3, and in having the distalmost flexor spine on the walking leg dactyli inserting at the base of the unguis, rather than well proximal to the unguis. Of the species in the NORFANZ collection, *M. rubrimana* **sp. nov.** most closely resembles *M. tangaroa* **sp. nov.**, *M. collier* and *M. cerisa*. *Munida rubrimana* is distinguished from *M. tangaroa* by the relative lengths of the distal spines on the basal antennular segment: subequal in the former, distolateral longer in the latter. *Munida collier* and *M. cerisa* are readily distinguished from *M. rubrimana* by the absence of a spine on the proximal margin of the cheliped pollex, and by the absence of anterior branchial and postcervical spines on the carapace.

Distribution. Presently known only from the northern Norfolk Ridge; 750–774 m.

Munida tangaroa **sp. nov.**

(Fig. 14E, 19)

Type material. Holotype: AM P73023, ovigerous female (9.8 mm), W of Norfolk Island, 28°51.21'S, 167°42.53'E, 690–812 m, TAN0308/29, 15 May 2003. Paratypes: AM P75441, 1 male (10.3 mm), 1 female (8.5 mm), W of Norfolk Island, 28°51.21'S, 167°42.53'E, 690–812 m, TAN0308/29, 15 May 2003; NIWA 28070, 1 ovigerous female (14.1 mm), W of Norfolk Island, 28°51.21'S, 167°42.53'E, 690–812 m, TAN0308/29 #008, 15 May 2003; NMNZ, 1 female (12.2 mm), W of Norfolk Island, 28°51.21'S, 167°42.53'E, 690–812 m, TAN0308/29 #007, 15 May 2003.

Diagnosis. Carapace margins with 5 spines posterior to cervical groove; anterior branchial and postcervical spine present. Rostrum spiniform. Sternite 4 with broadly convex anterior margin. Sternites 5–7 smooth.

Abdominal tergite 2 with row of spines along anterior ridge; tergite 3 unarmed. Maximum corneal diameter half basal distance between anterolateral spines. Antennular basal segment with distolateral spine longer than mesial spine; ventral surface unarmed. Antennal basal segment mesial spine not reaching beyond segment 2; segment 2 with distomesial spine reaching to about midlength of segment 4. Maxilliped 3 merus extensor margin unarmed. Cheliped about 1.5 times carapace length; carpus 1.8 times long as high; pollex with strong spine on ventral proximal margin. Pereopod 2–4 dactylus with distalmost flexor spine at base of unguis.

Description. *Carapace*: Transverse ridges well spaced, generally entire; gastric and cardiac regions with several short striae; cervical groove distinct; with pair of distinct epigastric spines behind supraocular spines, flanked mesially and laterally by small spine; with 1 parahepatic, 1 anterior branchial and 1 postcervical spine. Frontal margins sloping posteriorly. Rostrum spiniform, horizontal, about three times as long as supraocular spines and almost half remaining carapace length. Supraocular spines subparallel. Anterolateral spine situated at anterolateral angle, slightly divergent, not extending to base of sinus between rostrum and supraocular spine. Margins of carapace anterior to cervical groove with 2 spines (including anterolateral); with 5 spines posterior to cervical groove.

Sternum: Sternite 3 broadly subquadrate; anterior margin sinuous. Sternite 4 with pair of short striae, otherwise smooth; anterior margin broadly convex. Sternites 5–7 smooth. Ridges demarcating sternites smooth.

Abdomen: Tergite 2 with 5–8 spines along anterior ridge; with 1 transverse stria and several short arcuate striae laterally. Tergite 3 unarmed, with 1 transverse stria. Tergite 4 with medially interrupted transverse stria. Tergite 5 with 2 striae.

Eye: Large, with maximum corneal diameter half basal distance between anterolateral spines; peduncle with few distal setae.

Antennule: Basal segment elongate, slightly overreaching cornea; distolateral spine longer than mesial spine; with 2 lateral spines, distal markedly longer than proximal.

Antenna: Basal segment with strong mesial spine, apex not reaching beyond segment 2. Segment 2 with small spine on mesial and lateral margins; distomesial spine reaching to about midlength of segment 4, lateral reaching to midlength of segment 3. Segments 3 and 4 unarmed.

Maxilliped 3: Ischium with small distal flexor tooth. Merus shorter than ischium; flexor margin with strong distal and proximal spine (except in 12.2 mm female, lacking distal spine); extensor margin unarmed.

Pereopod 1 (cheliped): About 1.5 times carapace length; with few rows of spines and few short squamae; sparsely setose. Dactylus longer than palm; unarmed dorsally; occlusal margin denticulate, without gape. Propodus palm 1.9 times as long as high, surface spinose; pollex with 2 subdistal spines, and strong spine on proximal ventral margin. Carpus 1.8 times long as high, shorter than palm; strongly spinose dorsally, surface with 2 rows of small spines. Merus with strong distal and dorsal spines, surface otherwise unarmed except for row of 6 small lateral spines.

Pereopod 2: Merus with 9 extensor and 6 flexor spines. Carpus with 2 extensor and distal flexor spine. Propodus 6.4 times as long as high; extensor margin unarmed; flexor margin with 7 small movable spines. Dactylus 0.8 propodus length; flexor margin with 8 movable spines, distalmost spine at base of unguis.

Pereopod 3: Merus with 8 extensor and 4 flexor spines. Carpus with 2 extensor and distal flexor spine. Propodus 6.7 times as long as high; extensor margin unarmed; flexor margin with 8 small movable spines. Dactylus 0.7 propodus length; flexor margin with 8 movable spines, distalmost spine at base of unguis.

Pereopod 4: Merus with 4 or 5 small, proximal extensor spines; with 3 flexor spines. Carpus with distal extensor and flexor spine. Propodus 6.4 times as long as high; extensor margin unarmed; flexor margin with 6 small movable spines. Dactylus 0.8 propodus length; flexor margin with 8 movable spines, distalmost spine at base of unguis.

Colour in life. Carapace and abdomen dull red-orange. Chelipeds dull red-orange with white fingers. Walking legs dull red-orange with dactyli and distal half of propodi white.

Remarks. *Munida tangaroa* **sp. nov.** resembles *M. rubrimana* **sp. nov.** in most respects, sharing five branchial marginal spines on the carapace, anterior branchial and postcervical spines, a row of spines along the anterior ridge of abdominal tergite 2, relatively short chelipeds with proximal and subterminal spines on the margin of the pollex, absence of granular patches on sternite 7, and the distalmost flexor dactyl spine of the walking legs inserting at the base of the unguis. *Munida tangaroa* differs from *M. rubrimana* in colour pattern (dull red-orange overall with white pereopodal extremities versus pale, diffuse pink body and red chelipeds) and in the distinctly unequal (lateral longer) rather than subequal terminal spines on the basal antennular segment.

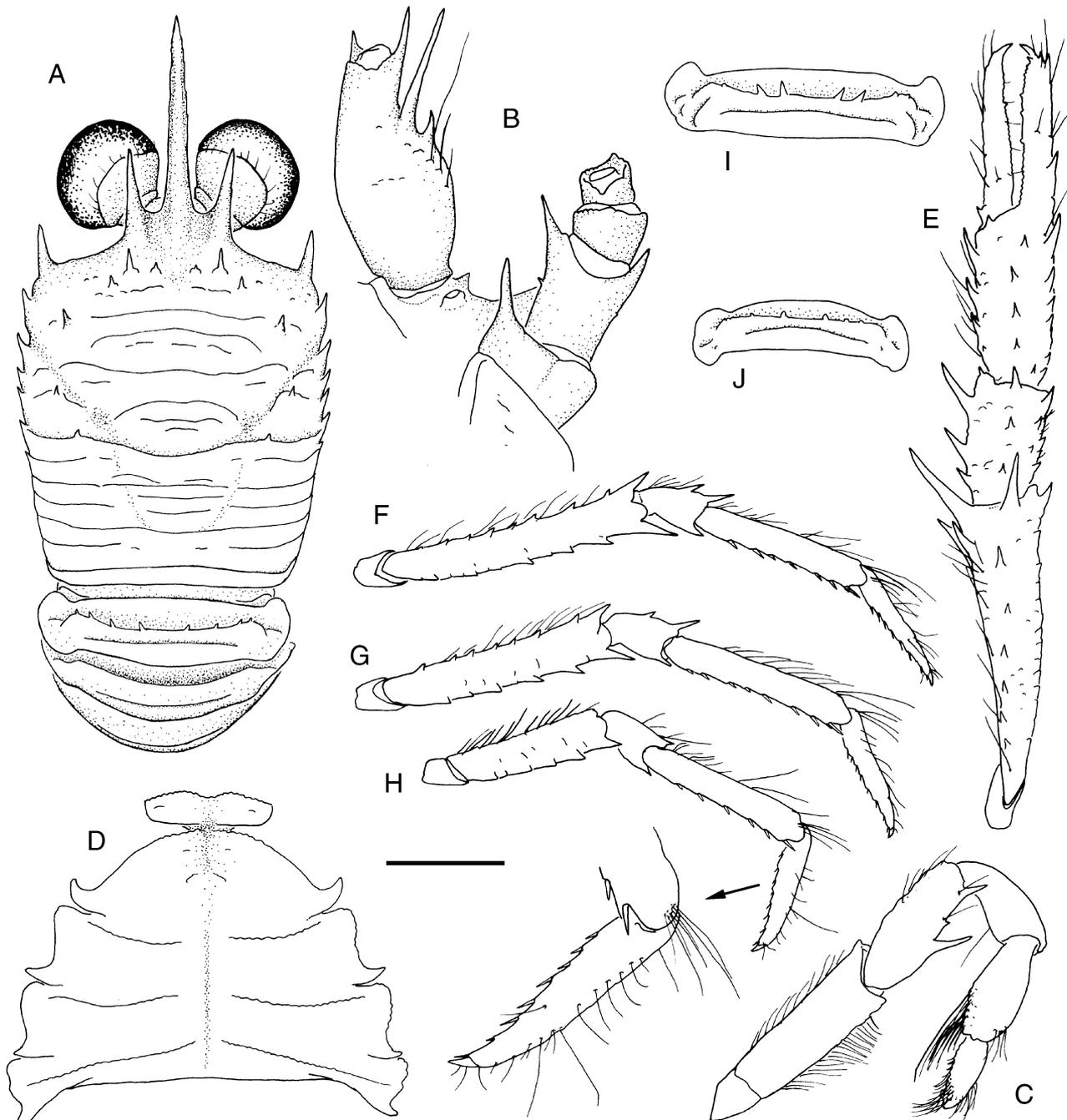


FIGURE 19. *Munida tangaroa* **sp. nov.**, TAN0403/29. A–H ovigerous female holotype, 9.8 mm, (AM P73023). I, male paratype, 10.3 mm (AM P75441). J, female paratype, 8.5 mm (AM P75441). A, dorsal view. B, left antennule and antenna, ventral view. C, right third maxilliped, lateral view. D, sternum. E, right cheliped, lateral view. F–H, right pereopods 2–4. I–J, second abdominal tergite. Scale: A, E–J = 2.0 mm; B–D = 1.0 mm.

The specimens of the type series are morphologically uniform in most respects, differing chiefly in the spination of abdominal tergite 2 increasing allometrically from five spines in the smallest specimen to eight in specimens exceeding 10 mm carapace length. The 12.2 mm female is atypical in lacking the distal flexor spine on the merus of maxilliped 3 and in having a less pronounced proximal spine on the margin of the pollex of the cheliped.

Distribution. Presently known only from west of Norfolk Island; 690–812 m.

***Paramunida labis* Macpherson, 1996**

(Fig. 20A)

Paramunida labis Macpherson, 1996: 413, figs. 9, 24 [type locality: Futuna Island, 245–400 m]. — Baba 2005: 302.

Material examined. *Norfolk Ridge*: AM P73029, 1 male (6.6 mm), 1 ovigerous female (7.5 mm), 29°41.84'S, 168°02.62'E, 322–337 m, TAN0308/020 #005, 14 May 2003; NIWA 28075, 1 ovigerous female (7.9 mm), near Norfolk Island, 29°02.24'S, 167°35.96'E, 0–1200 m, TAN0308/025 #074, 15 May 2003.

Colour in life. Translucent with clear, diffuse orange mottling, darkest anteriorly. Chelipeds with orange-red band across articulations. Walking legs with diffuse, clear orange-red banding; dactyli clear red.



FIGURE 20. A, *Paramunida labis* Macpherson, 1996, ovigerous female, 7.9 mm, TAN0308/025 (NIWA 28075). B, *Phylladiorhynchus* cf. *pusillus* (Henderson, 1885), female, 8.7 mm, TAN0308/126 (NIWA 28065).

Remarks. The two specimens agree well with the type description, and extend the known range onto the Norfolk Ridge. *Paramunida labis* closely resembles *P. antipodes* Ahyong & Poore, 2004, from southeastern

Australia, differing in bearing one instead of three prominent cardiac spines and in the shorter mesiodistal spine on antennal segment 2 which reaches or only slightly overreaches the base of, rather than reaching or overreaching the end of segment 3.

Distribution. Wallis and Futuna Islands, Fiji, Tonga, and now from the vicinity of Norfolk Island; 245–440 m (Macpherson 1996).

***Phylladorhynchus integrirostris* (Dana, 1852)**

(Fig. 21)

Galathea integrirostris Dana, 1852: 482 [type locality: Hawaiian Islands]; 1855, pl. 30: figs. 12a, b.

Phylladorhynchus integrirostris.—Baba, 1991: 485–487, fig. 4c, d; 2005: 304–305 [synonymy].

Material examined. *Lord Howe Rise*: NIWA 28066, 1 female (3.6 mm), S of Ball's Pyramid 31°52.44'S, 159°14.43'E, 72–82 m, TAN0308/67 #58, 23 May 2003.

Remarks. The single specimen agrees in most respects with published accounts, differing only in having straight rather than concave margins on either side of the midline of sternite 3.

Distribution. Western Indian Ocean to New Caledonia, Ogasawara Islands, Marshall Islands, Hawaiian Islands, Easter Island, and the Juan Fernández Islands; intertidal to 160 m (Baba 2005); now from the Lord Howe Rise, south of Ball's Pyramid.

***Phylladorhynchus cf. pusillus* (Henderson, 1885)**

(Fig. 20B, 22)

Galathea pusilla Henderson, 1885: 407 [type locality: off New South Wales, Australia]; 1888: 121, pl. 12: figs. 1, 1a, b.

Galathea integra Benedict, 1902: 248 [type locality: off Honshu, Japan].

Galathea lenzi Rathbun, 1907: 49, pl. 3: fig 1 [type locality: Corral, Chile].

Phylladorhynchus pusillus.—Haig, 1973: 282.—Baba 1974: 381; 1991: 486–487, fig. 4e, f; 2005: 305 [synonymy].

Material examined. *Norfolk Ridge*: NIWA 28065, 1 female (8.7 mm), southern Norfolk Ridge, 33°23.41'S, 170°11.58'E, 469–526 m, TAN0308/126 #87, 31 May 2003.

Southeastern Australia: AM P17563, 2 males (4.9–5.5 mm), 1 female (4.7 mm), S and SW of Mount Cann, Gippsland, Victoria, Australia, 120–183 m; AM E6158, 1 male (6.9 mm), S of Cape Everard, Victoria, Australia, with rhizocephalan.

Colour in life. Carapace and abdomen transparent, pale yellow-orange; with orange-red marginal spines and rostrum. Chelipeds clear, diffuse pink-red; spines orange-red. Fingers crossed by white band. Walking legs with diffuse, clear orange-red banding.

Remarks. The single NORFANZ specimen agrees with several 'large' Australian and New Zealand specimens reported as *P. pusillus* by Haig (1973) and Baba (1991), respectively, in their straight or almost straight rather than distinctly convex rostral margins. *Phylladorhynchus pusillus* sensu stricto bears convex rostral margins (Baba 1991) and generally does not exceed about 5 mm carapace length. The rostral condition of these 'aberrant' specimens appears not to be an allometric artefact, being stable across a wide size range (Fig. 22). As presently understood, *P. pusillus* could be a composite taxon, so present specimens are only tentatively identified pending a review of *Phylladorhynchus* by K. Schnabel (NIWA).

Distribution. Western Indian Ocean to eastern Australia, New Zealand, the Chesterfield Islands, to Japan, San Félix, and the Juan Fernández Islands; intertidal to 580 m (Baba 2005).

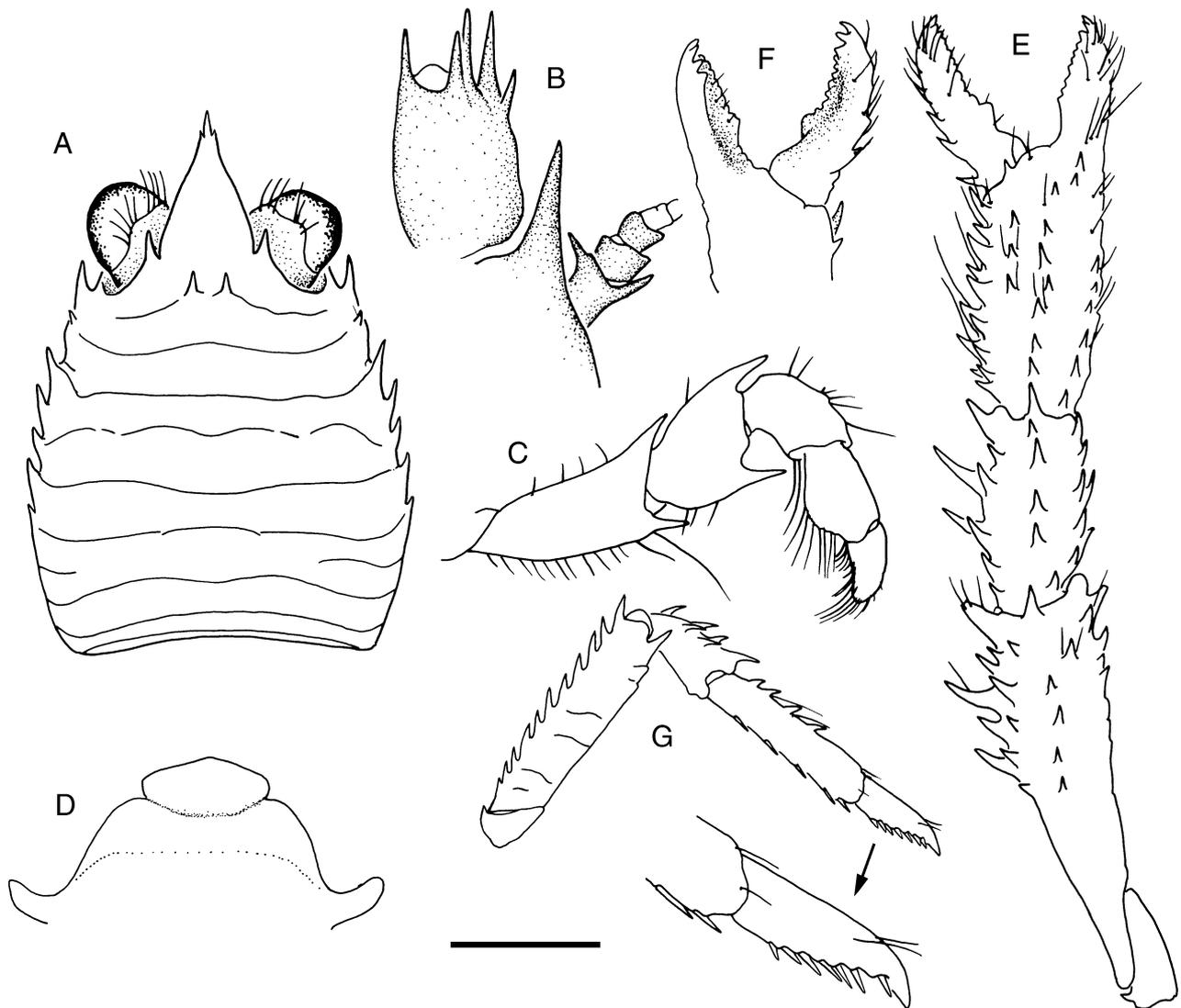


FIGURE 21. *Phylladiorhynchus integrirostris* (Dana, 1852), female, 3.6 mm, TAN0308/67 (NIWA 28066). A, carapace. B, left antennule and antenna, ventral view. C, right third maxilliped, lateral view. D, third and fourth sternites. E, right cheliped, lateral view. F, right cheliped fingers, mesial view. G, right pereopod 2. Scale: A, E–G = 1.0 mm; B–D = 0.5 mm.

***Tasmanida* gen. nov.**

Diagnosis. Carapace with distinct transverse striae; with epigastric and postcervical spines; with prominent median gastric process; cardiac region unarmed. Rostral spine stout, longer than supraocular spines; orbit deeply concave; anterolateral spines stout; branchial and anterior postcervical marginal spines present. Abdominal tergites with transverse striae; tergites 2–4 with spines. Telson subdivision complete. Sternite 4 with broad, straight, anteromedian margin, contiguous with posterior margin of sternite 3. Ocular peduncle dorsoventrally flattened; cornea dilated. Basal antennular segment with distomesial and 2 distolateral spines. Antennal basal segment with long mesial spine. Maxilliped 3 merus slightly exceeding twice as long as high. Pereopod 2–4 dactyli with row of small, movable flexor spines. Pereopod 5 propodus with brush of simple setae on flexor surface.

Etymology. An arbitrary combination of Tasman and the Latin suffix *-ida*. Gender feminine.

Type species. *Tasmanida norfolkae* gen. et sp. nov., by present designation.

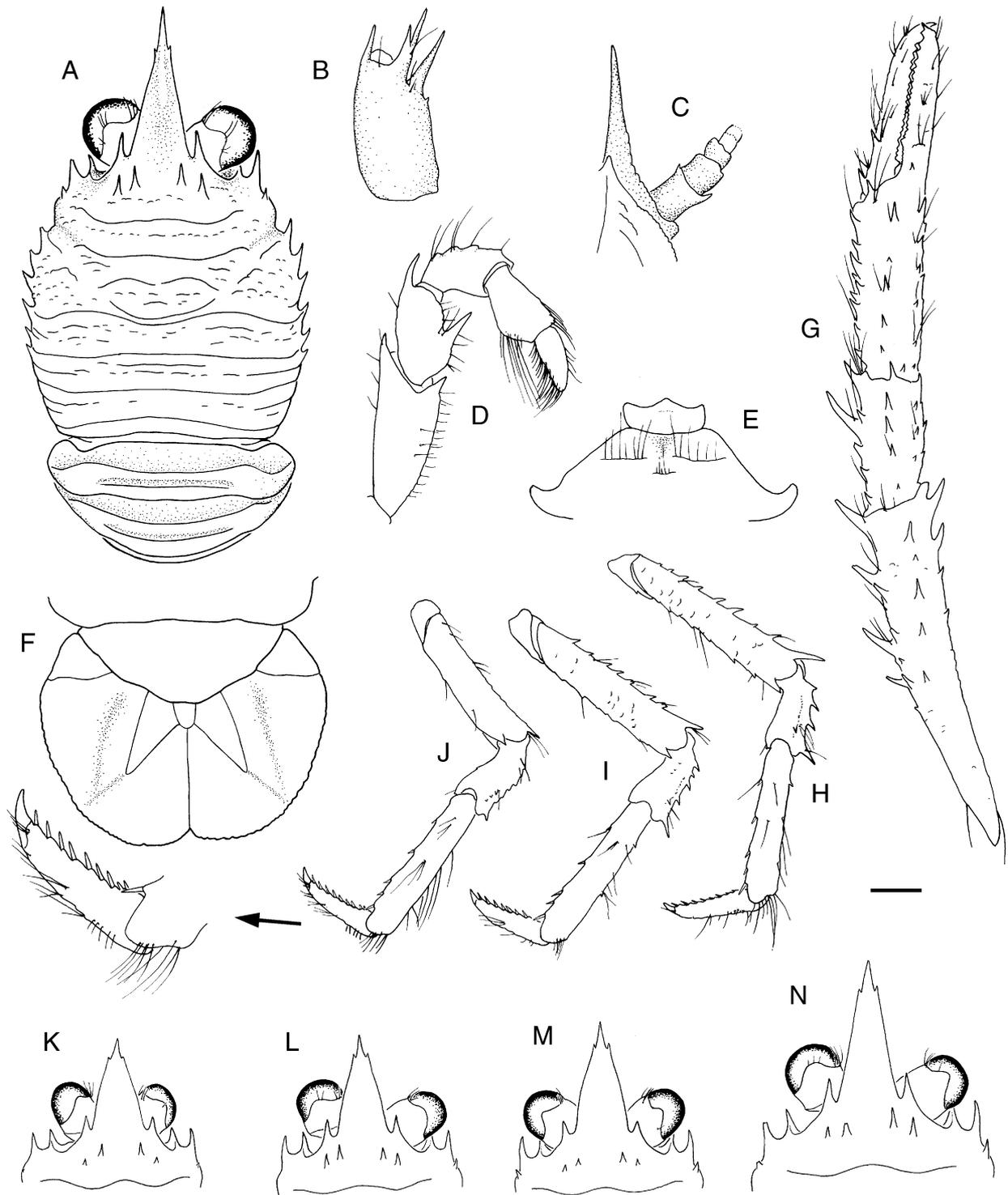


FIGURE 22. *Phylladorhynchus cf. pusillus* (Henderson, 1885). A–J, female, 8.7 mm, TAN0308/126 (NIWA 28065). K–M, female 4.7 mm, male 4.9 mm, male 5.5 mm, off Victoria, Australia (AM P17563). N, male 6.9 mm, off Victoria, Australia (AM E6158). A, dorsal. B, left antennule, ventral view. C, left antenna, ventral view. D, right third maxilliped, lateral view. E, third and fourth sternites. F, telson. G, right cheliped, lateral view. H–J, right pereopods 2–4. Scale: A, G–J = 1.0 mm; B–F = 0.5 mm; K–N = 0.7 mm.

***Tasmanida norfolkae* sp. nov.**

(Fig. 23)

Type material. Holotype: NMNZ, female (8.2 mm), West Norfolk Ridge, 34°37.20'S, 168°57.03'E, 521–539 m, TAN0308/154 #25, 3 Jun 2003.

Description. *Carapace:* Transverse ridges well spaced, with short striae on hepatic region, with sparse plumose setae and few longer iridescent setae; cervical groove distinct; with pair of distinct, blunt epigastric spines behind supraocular spines; parahepatic and branchial regions with 12 or 13 small tubercles or blunt spines; with prominent, blunt postcervical spine and large, blunt, longitudinally carinate gastric spine. Frontal margins deeply concave, laterally weakly sinuous; rostral spine blunt, dorsally carinate, dorsally inclined, apex not exceeding eyes; supraocular spines slightly divergent, short, blunt, about one-quarter rostral length. Anterolateral spine stout, extending slightly beyond apices of supraocular spines. Margins of carapace anterior to cervical groove with 3 spines (including anterolateral; posterior 2 blunt); with 5 blunt spines posterior to cervical groove; posterior margin unarmed.

Sternum: Sternite 3 anteriorly biconcave; lateral margins rounded; posterior margin straight, fully contiguous with anterior margin of sternite 4. Sternite 4 trapezoid, smooth, without striae. Sternites 5–7 smooth. Ridges demarcating sternites smooth.

Abdomen: Tergite 2 with row of 4 blunt spines on anterior border and 2 short striae lateral to submedian spines; with 1 uninterrupted transverse stria; pleuron with 3 striae. Tergite 3 with row of 4 blunt spines on anterior border, each with lateral stria; with transverse striae, interrupted near level of outer anterior spine. Tergite 4 with row of 4 blunt spines on anterior border and median spine posteriorly; with transverse row of short striae behind anterior spines. Tergite 5 unarmed; with short, scattered striae.

Eye: Maximum corneal diameter 0.4 distance between apices of anterolateral spines; peduncle with long distal setae and a short setose stria.

Antennule: Basal segment elongate, slightly overreaching cornea; distomesial spine short; with 2 distolateral spines, dorsal subequal to distomesial spine, ventral minute; midlateral margin with 2 small spines.

Antenna: Distomesial spine of basal segment slender, reaching to level of apex of basal antennular segment. Segment 2 with distolateral and longer distomesial spine; distomesial spine not overreaching segment 3. Segment 3 with distomesial spine. Segment 4 with distolateral spine. Flagellum, short, as long as cheliped dactylus, reaching anteriorly to midlength of cheliped carpus.

Maxilliped 3: Ischium with strong distal flexor spine; extensor margin unarmed. Merus ovate, unarmed; length slightly exceeding twice height.

Pereopod 1 (cheliped): Slender, about 1.8 times carapace length; with short squamae; sparsely setose. Dactylus dorsal margin unarmed; occlusal margin finely denticulate, without gape. Propodus palm 1.9 times as long as high, longer than pollex; pollex margin unarmed. Carpus about 2 times as long as wide. Merus with short distal tooth on dorsal, ventral and mesial margins.

Pereopods 2–4: Similar, decreasing in length posteriorly; segments with sparsely distributed plumose and longer iridescent setae, primarily along extensor margin of merus. Merus with distal flexor spine; distal extensor margin with spine on pereopod 2, blunt on pereopods 3 and 4. Carpus with blunt, distal extensor and flexor projection; with few striae. Propodus 5.5–7.0 times as long as high; extensor margin unarmed, sparsely setose; flexor margin with 6 or 7 small movable spines. Dactylus 0.8–0.9 propodus length; flexor margin with 9 or 10 movable spines, distalmost spine proximal to base of unguis; terminal 0.2 of flexor margin unarmed.

Pereopod 5: Setal brush on propodal flexor surface extending from proximal third to distal third of pollex. Dactylus and proximal extensor surface of palm with plumose setae.

Etymology. Named *norfolkae*, derived from the type locality, the West Norfolk Ridge.

Remarks. *Tasmanida norfolkae* gen. et sp. nov. most closely approaches species of *Neonida* Baba & de Saint Laurent, 1996, *Bathymunida* Balss, 1914, and *Onconida* Baba & de Saint Laurent, 1996, in sharing a

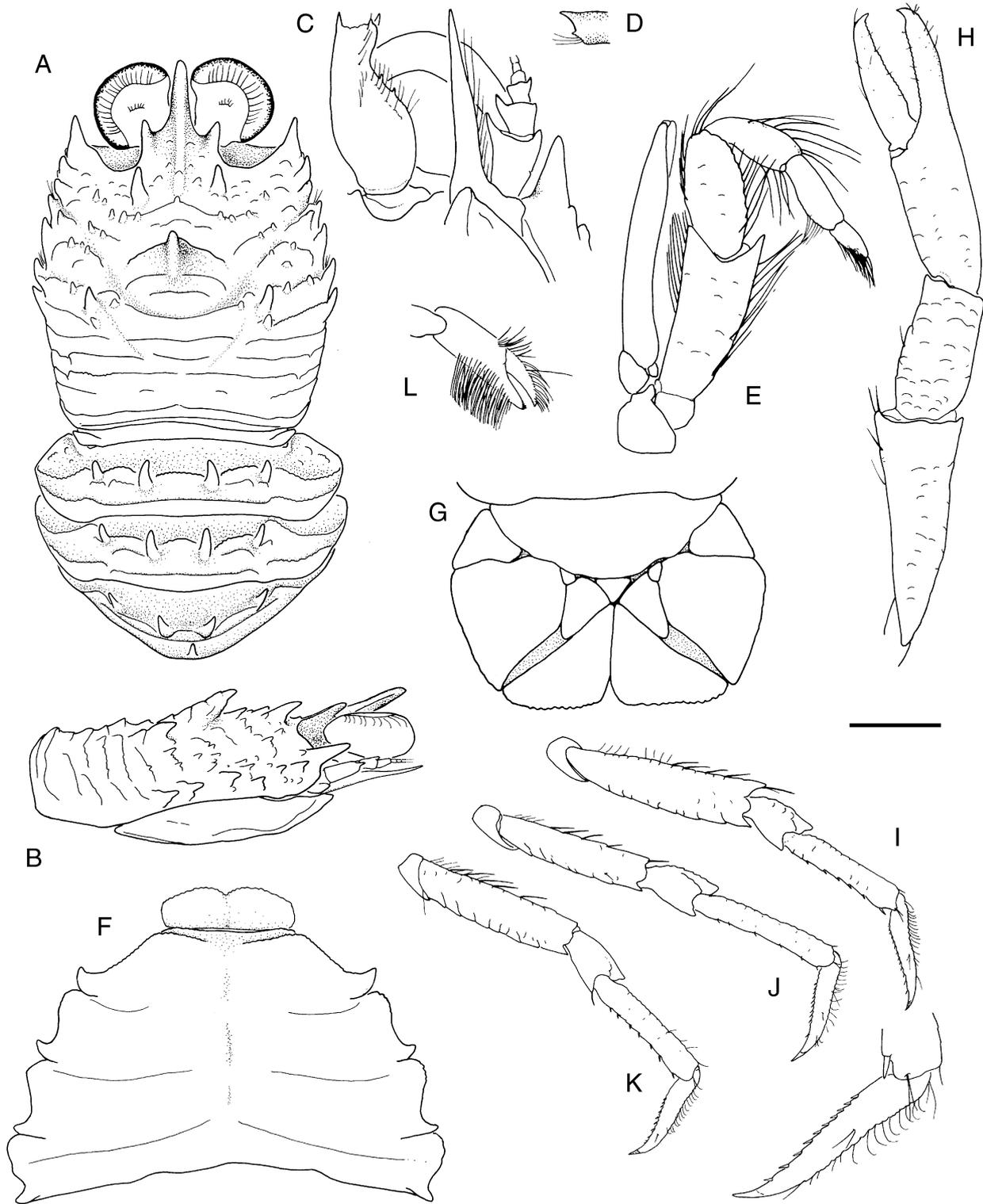


FIGURE 23. *Tasmanida norfolkae* gen. et sp. nov., female holotype, 8.2 mm, TAN0308/154 (NMNZ). A, dorsal. B, carapace, right lateral view. C, left antennule and antenna, ventral view. D, distal portion of left basal antennular segment, lateral view. E, right third maxilliped, lateral view. F, sternum. G, telson. H, right cheliped, lateral view. I–K, right pereopods 2–4. L, right pereopod 5, chela. Scale: A, B, H–K = 2.0 mm; C–G, L = 1.0 mm.

slender rostral spine, deeply concave orbital margins, and a brush of setae on the flexor surface of the pereopod 5 propodus. *Tasmanida* differs from *Bathymunida* and *Neonida* in the following features: the distal mesial margin of the basal antennal segment is produced as a long spine that overreaches antennal segment 4, rather

than a short, angular prominence or spine that does not reach the midlength of antennal segment 2; maxilliped 3 merus is unarmed and is about twice rather than one and a half times as long as high; and the cardiac region lacks a median prominence. Of the aforementioned taxa, *T. norfolkae* appears to be most similar to species of *Onconida*, particularly *O. prostrata* Baba & de Saint Laurent, 1996, sharing the unarmed cardiac region, the long mesiodistal spine on the basal antennal segment, short antennal flagellum, and ovate, unarmed maxilliped 3 merus. *Tasmanida*, however, is readily distinguished from *Onconida* by the following features: abdominal tergites 2 and 3 are spinose; the anterior margin of abdominal tergite 4 bears four instead of two spines; the distomesial spine of the basal antennal segment is much longer, reaching the apex rather than the midlength of the basal antennular segment; and the anteromedian margin of sternite 4, rather than being narrow, is broad and contiguous with the entire posterior margin of sternite 3. The presence of the dactylar spine on pereopod 5, a feature of male *Onconida*, remains to be determined for *Tasmanida*.

Baba & de Saint Laurent (1996) and Baba (2005) highlighted the taxonomic significance of the setation of the pereopod 5 chela, including the presence of a setal brush on the flexor face of the propodus in genera most similar to *Tasmanida*. Whereas *Tasmanida* also bears a setal brush on pereopod 5, that of *Tasmanida* is composed of simple rather than plumose setae (though setae on the dactyl and other parts of the propodus are plumose). Males of *Neonida*, *Bathymunida*, and *Onconida* lack pleopod 1. Male *Tasmanida* are presently unknown, but in view of the morphological features shared with *Neonida*, *Bathymunida*, and *Onconida*, males of the new genus are predicted also to lack pleopod 1.

The single known specimen of *Tasmanida norfolkae* was collected with *Munida icela* sp. nov., *Munidopsis treis*, and *Agononida nielbrucei*.

Distribution. Presently known only from the West Norfolk Ridge; 521–539 m.

Polychelidae Wood-Mason, 1874

***Pentacheles laevis* Bate, 1878**

(Fig. 24B)

Pentacheles laevis Bate, 1878: 278 [type locality: Moluccas, Indonesia, 4°33'N, 127°06'E]. — Galil 2000: 291 (key), 301–305, fig. 7. — Ahyong & Brown 2002: 54–56, 75, figs. 1A–B. — Ahyong & Chan 2004: 171–173, figs. 1A–C, 4A.

Pentacheles gracilis Bate, 1878: 279 [type locality: off Fiji, 19°07.50'S, 178°19.35'E].

Polycheles granulatus Faxon, 1893: 197 [type locality: off Panama, 4°03'N, 81°31'E]. — Griffin & Stoddart 1995: 240, figs. 4–5.

Pentacheles beaumontii Alcock, 1894: 236 [type locality: off Colombo, Sri Lanka].

Polycheles dubius Bouvier, 1905a: 480 [type locality: off the Azores, 44°04'N, 9°81'W].

Polycheles eryoniformis Bouvier, 1905b: 644 [type locality: Madeira].

Polycheles sp. — Takeda in Amaoka *et al.* 1990: 357.

Material examined. *Norfolk Ridge*: NMNZ, 1 carapace (18.1 mm), 30°08.96'S, 167°26.86'E, 1032–1131 m, TAN0308/15 #008, 14 May 2003; NIWA 28078, 1 male (23.9 mm), 1 female (19.0 mm), 33°32.62'S, 170°04.13'E, 1270–1350 m, TAN0308/0130 #003, 1 Jun 2003.

West Norfolk Ridge: NIWA 28080, 1 ovigerous female (49.1 mm), 33°49.50'S, 166°58.80'E, 950–987 m, TAN0308/94 #021, 27 May 2003; AM P66159, 2 males (38.1–38.4 mm), 1 female (40.9 mm), 33°46.26'S, 167°19.50'E, 1017–1042 m, TAN0308/96 #006, 28 May 2003; AM P66161, 2 males (19.3–19.4 mm), 2 females (18.6–18.8 mm), 33°42.45'S, 167°27.03'E, 1451–1478, TAN0308/102 #26, 28 May 2003; AM P66163, 1 male (24.6 mm), 2 females (19.1–24.1 mm), 33°46.55'S, 167°29.28'E, 1431–1460, TAN0308/103 #016, 29 May 2003; AM P66164, 1 female (18.8 mm), 32°36.30'S, 167°47.44'E, 1008–1029 m, TAN0308/111 #010, 29 May 2003; NMNZ, 1 female (25.8 mm), 32°36.30'S, 167°47.44'E, 1008–1029 m, TAN0308/

111 #010, 29 May 2003; AM P66301, 2 males (41.3–43.5 mm), 1 female (23.7 mm), 32°35.22'S, 167°47.66'E, 1021–1052 m, TAN0308/114 #005, 30 May 2003; NIWA 28054, 1 female (32.3 mm), 32°36.39'S, 167°50.59'E, 1331–1345 m, TAN0308/121 #013, 30 May 2003; AM P66303, 1 male (38.6 mm), 2 females (31.5–40.6 mm), 34°14.33'S, 168°21.18'E, 1195–1202 m, TAN0308/146 #007, 3 Jun 2003; NIWA 28057, 1 female (46.9 mm), 34°34.99'S, 168°55.54'E, 1000–1150 m, TAN0308/150 #29, 3 Jun 2003; NIWA 28053, 1 male (39.3 mm), 1 female (43.0 mm), 34°34.13'S, 168°56.48'E, 1013–1340 m, TAN0308/151 #008, 3 Jun 2003; AM P66304, 4 females (32.7–47.8 mm), 34°34.81'S, 168°57.79'E, 813–1000 m, TAN0308/155 #005, 4 Jun 2003;

NMNZ, 1 male (38.2 mm), 34°34.26'S, 168°56.23'E, 1013–1350 m, TAN0308/156 #006, 4 Jun 2003; AM P66308, 2 males (24.6–26.8 mm), 1 female (19.3 mm), 34°58.85'S, 169°29.60'E, 1288–1294 m, TAN0308/160 #020, 4 Jun 2003; AM P66309, 1 female (19.6 mm), 35°35.83'S, 169°33.43'E, 1760–1786 m, TAN0308/167 #019, 5 Jun 2003.

Lord Howe Rise: NIWA 28049, 2 males (18.6–31.2 mm), 1 female (27.7 mm), 32°26.70'S, 161°46.95'E, 1130–1147 m, TAN0308/77 #011, 25 May 2003; AM P66158, 1 female (37.2 mm), 34°12.70'S, 163°21.59'E, 1082–1120 m, TAN0308/092 #017, 27 May 2003.

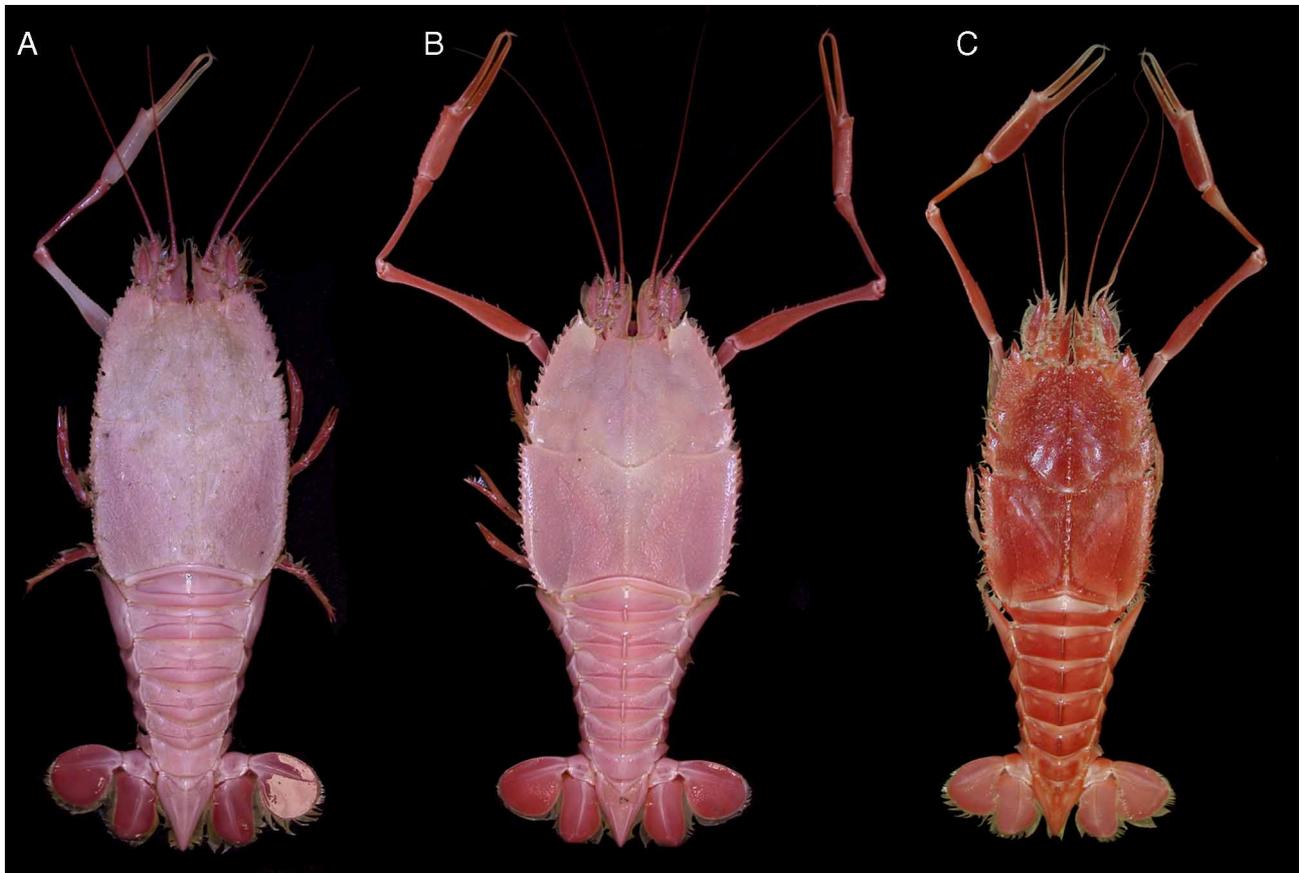


FIGURE 24. A, *Pentacheles validus* A. Milne Edwards, 1880, TAN0308/047 (specimen not seen). B, *Pentacheles laevis* Bate, 1978, TAN0308/044 (specimen not seen). C, *Polycheles enthrix* (Bate, 1878), female (44.5 mm), TAN0308/81 (AM P66155).

Colour in life. Overall pale rose-pink. Chelipeds, walking legs and uropods crimson.

Remarks. The specimens agree well with published accounts: the inner and outer orbital margins are armed and carapace spination (8–10: 3–5: 13–16) is within the reported range (Galil 2000; Ah Yong & Brown 2002; Ah Yong & Chan 2004).

Pentacheles laevis and *Polycheles enthrix* appear to be the two most common polychelids in the northern Tasman Sea, though they were sympatric only at three stations on the West Norfolk Ridge (94, 96, 155). Most

records of *Pentacheles laevis* are from depths exceeding 1000 m, whereas *Polycheles enthrix* was usually collected at depths shallower than 800 m.

Distribution. Worldwide, from the Indo-West Pacific, eastern Pacific, western and eastern Atlantic, including New Caledonia, Australia, and New Zealand; 212–2505 m (Galil 2000; Ahyong & Galil 2006).

***Pentacheles validus* A. Milne Edwards, 1880**

(Fig. 24A)

Pentacheles validus A. Milne Edwards, 1880: 65 [type locality: off Bequia, Windward Islands, West Indies]. — Galil, 2000: 291 (key), 308–311, fig. 10. — Ahyong & Brown, 2002: 56, 75, 76.

Pentacheles debilis Smith, 1884: 360 [type locality: off New England, United States of America].

Pentacheles debilis var. *armatus* Bouvier, 1905a: 480 [type locality: off Canary Islands].

Polycheles demani Stebbing, 1917: 28 [type locality: off Cape Point Lighthouse, South Africa].

Polycheles chilensis Sund, 1920: 226 [type locality: off Juan Fernández Islands].

Material examined. *West Norfolk Ridge*: AM P72219, 1 male (45.2 mm), 2 females (19.9–28.9 mm), 35°35.83'S, 169°33.43'E, 1760–1786 m, TAN0308/167 #018, 5 Jun 2003; NIWA 28050, 1 female (18.3 mm), 35°35.83'S, 169°33.43'E, 1760–1786 m, TAN0308/167 #018, 5 Jun 2003.

Lord Howe Rise: NIWA 28056, 3 males (25.3–53.5 mm), 2 females (27.8–46.5 mm), 32°03.98'S, 159°52.80'E, 1920–1934 m, TAN0308/71 #010, 24 May 2003; AM P66151, 1 male (51.8 mm), 1 female (58.7 mm), 32°11.59'S, 160°51.66'E, 1342–1361 m, TAN0308/72 #006, 24 May 2003; NMNZ, 1 male (56.8 mm), 32°25.94'S, 161°47.62'E, 1132–1197 m, TAN0308/73 #34, 24 May 2003.

Colour in life. Overall pale rose-pink. Chelipeds, walking legs and uropods crimson.

Remarks. *Pentacheles validus* has been reported from New Zealand, Australia and New Caledonia (Galil 2000; Ahyong & Brown 2002) so its presence in the study area is expected. The carapace spination (8–9, 4–5, 29–31) agrees closely with the reported range (7–9, 4, 20–32) (Galil 2000) and (7–8, 3–4, 23–30) (Ahyong & Brown 2002).

Distribution. Worldwide, from the Indo-West Pacific, Eastern Pacific, Western and Eastern Atlantic, including New Caledonia, Australia, and New Zealand; 914–3365 m (Galil, 2000).

***Polycheles enthrix* (Bate, 1878)**

(Fig. 24C, 25)

Willemoesia euthrix Willemoes Suhm, 1875: xxxiii [*nomen nudum*].

Pentacheles enthrix Bate, 1878: 280, pl. 13 figs. 1–3 [type locality: Fiji, restricted by lectotype designation (see Ahyong & Brown 2002)].

Pentacheles euthrix. — Bate 1888: 149–154, figs. 14–27, 33–36, pl. 17.

Polycheles euthrix. — Griffin & Stoddart 1995: 239 [part].

Polycheles enthrix. — Galil 2000: 322–325, fig. 16 [part]. — Ahyong & Brown 2002: 65, 75, 77, fig. 7C, D.

Material examined. *Norfolk Ridge*: NMNZ, 2 males (15.9–37.5 mm), 1 female (37.3 mm), off Norfolk Island, 28°51.21'S, 167°42.53'E, 690–812 m, TAN0308/029 #009, 15 May 2003; NIWA 28079, 1 female (18.8 mm), TAN0308/40 #49; 26°25.28'S, 167°11.26'E, 714–756 m, TAN0308/40 #49, 17 May 2003; NIWA 28051, 2 males (26.1–39.5 mm), 1 female (14.3 mm), 26°25.94'S, 167°10.87'E, 750–774 m, TAN0308/043 #32, 18 May 2003.

West Norfolk Ridge: NMNZ, 1 male (11.9 mm), 2 females (26.7–38.3 mm), 33°49.50'S, 166°58.80'E, 950–987 m, TAN0308/94 #021, 27 May 2003; NMNZ, 3 males (29.5–31.7 mm), 5 females (45.2–58.1 mm), 33°49.24'S, 167°03.35'E, 805–938 m, TAN0308/95 #007, 27 May 2003; AM P66160, 2 females (33.2–47.3

mm), 33°46.26'S, 167°19.50'E, 1017–1042 m, TAN0308/096 #007, 28 May 2003; AM P66305, 1 female (51.4 mm), 34°34.81'S, 168°57.79'E, 813–1000 m, TAN0308/155 #006, 4 Jun 2003; AM P66307, 1 male (38.3 mm), 35°08.12'S, 169°28.37'E, 868–872 m, TAN0308/159 #015, 4 Jun 2003.

Lord Howe Rise: AM P66153, 3 females (41.6–58.8 mm), 32°41.80'S, 162°33.47'E, 855–874 m, TAN0308/079 #007, 25 May 2003; AM P66154, 2 males (36.8–48.5 mm), 10 females (44.9–60.6 mm), 32°42.50'S, 162°33.86'E, 850–872 m, TAN0308/080 #005, 25 May 2003; AM P66155, 6 males (26.0–42.7 mm), 20 females (20.9–66.7 mm), 34°01.95'S, 162°35.96'E, 780–818 m, TAN0308/81 #009, 25 May 2003; AM P66156, 5 males (21.6–35.8 mm), 8 females (15.6–51.7 mm), 34°12.44'S, 162°39.50'E, 758–760 m, TAN0308/82 #003, 26 May 2003; AM P66157, 2 females (51.1–52.4 mm), 34°11.83'S, 162°37.10'E, 761–765 m, TAN0308/83 #001, 26 May 2003; NIWA 28052, 3 males (26.5–30.7 mm), 11 females (26.4–58.3 mm), 34°12.18'S, 162°41.18'E, 748–772 m, TAN0308/89 #005, 26 May 2003.

Colour in life. Overall red.

Remarks. The present specimens of *P. enthrix* agree well with recent accounts (Galil 2000; Ahyong & Brown 2002). Lateral carapace spination is 8–10: 3–4: 12–17, and the antrorse tooth on the abdominal tergite 5 is pointed in adult females, blunt in adult males. The spination of the anterior carapace margin flanking the rostral spines varies allometrically. The inner orbital spine and a second similar spine are always present, but the additional smaller marginal spines vary in length and number according to body size. Nevertheless, a row of small spines is always present in addition to the two larger spines, distinguishing *P. enthrix* from the north-western Pacific species, *P. amemiyai* Yokoya, 1933, which bears only two spines on either side of the rostral spines.

Distribution. Fiji to New Zealand, and Australia; 229–1152 m (Ahyong & Brown 2002).

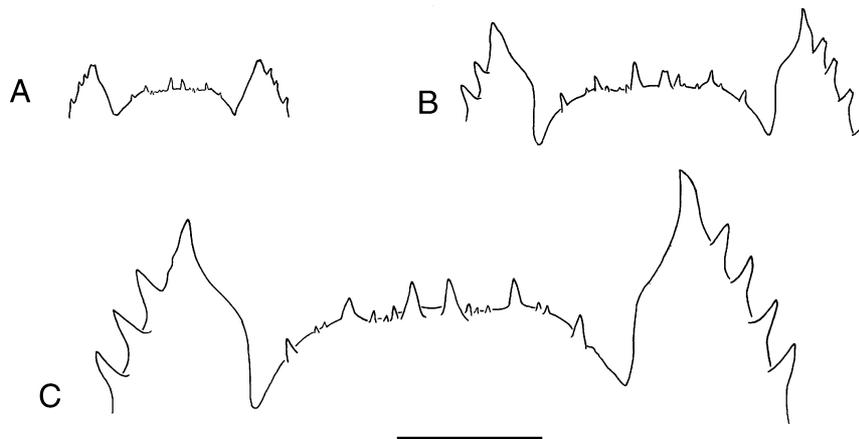


FIGURE 25. *Polycheles enthrix* (Bate, 1878), TAN0308/43 (NIWA 28051), anterior carapace margin. A, female 14.3 mm. B, male 26.1 mm. C, male 39.5 mm. Scale = 5.0 mm.

Polycheles sculptus Smith, 1880

Polycheles sculptus Smith, 1880: 346, pl. 7 figs. 1–6 [type locality: off Nova Scotia, Canada, 43°10'N, 61°20'W]. — Galil 2000: 292, 340–344, fig. 24. — Ahyong & Brown 2002: 75, 78. — Ahyong & Chan 2004: 179, fig. 3E, G. *Pentacheles spinosus* A. Milne Edwards, 1880: 66 [type locality: W of Tortugas, off Dominica]. *Stereomastis sculpta*. — Griffin & Stoddart 1995: 248.

Material examined. *West Norfolk Ridge*: AM P66162, 1 female (46.9 mm), 33°46.55'S, 167°29.28'E, 1431–1460, TAN0308/103 #016, 29 May 2003.

Lord Howe Rise: AM P66152, 1 female (21.7 mm), 32°11.59'S, 160°51.66'E, 1342–1361 m, TAN0308/72, 24 May 2003; NIWA 28059, 1 female (26.1 mm), 32°39.33'S, 162°33.11'E, 864–879 m, TAN0308/78 #025, 25 May 2003.

Remarks. Carapace spination of the present specimens is within the reported range (Galil 2000, Ahyong & Chan 2004): gastric spines 5, branchial spines 5 or 6, lateral carapace spination 6–7: 3–4: 6–7.

Distribution. Worldwide: both sides of the Atlantic Ocean, including the Mediterranean Sea, and widely distributed in the Indo-West Pacific including Vanuatu, Australia, and New Zealand; 200–4000 m (Galil 2000).

Polycheles suhmi (Bate, 1878)

Pentacheles suhmi Bate, 1878: 278 [type locality: Gulf of Penas, Chile, 47°48'S, 74°46'W].

Stereomastis suhmi. — Bate 1888: 154, figs. 13, 37–38, pl. 15: figs. 3, 4. — Griffin & Stoddart 1995: 249, figs. 12–15.

— Takeda in Amaoka *et al.* 1990: 358.

Polycheles suhmi. — Galil 2000: 344–346, fig. 25. — Ahyong & Brown 2002: 75, 77.

Material examined. *West Norfolk Ridge*: AM P66165, 1 female (14.1 mm), 32°36.30'S, 167°47.44'E, 1008–1029 m, TAN0308/111 #008, 29 May 2003; AM P66306, 1 male (15.4 mm), 35°10.27'S, 169°29.24'E, 867–869 m, TAN0308/158 #011, 4 Jun 2003. *Lord Howe Rise*: NIWA 28058, 1 male (18.8 mm), 34°12.18'S, 162°41.18'E, 748–772 m, TAN0308/89 #005, 26 May 2003.

Remarks. Carapace spination (5–6, 2, 8) is within the reported range (Galil 2000).

Distribution. Southern Pacific and Atlantic oceans, and Southern Ocean (South Africa, Chile, New Zealand, and Australia); 292–2195 m (Galil 2000).

Discussion

The Polychelidae collected by the NORFANZ Expedition comprises five widespread species already known from the northern Tasman Sea including New Zealand, Australia and New Caledonia. *Polycheles enthrix* has the narrowest distribution of the species collected, ranging from eastern Australia to New Zealand and Fiji. Each of the other polychelids, however, ranges widely in the Indo-Pacific region and Atlantic Ocean. Although NORFANZ polychelids do not present novel bathymetric or distributional data, the consistency of diagnostic characters in the large series available corroborates current taxonomic species concepts. In contrast to the polychelids, the NORFANZ Galatheidae includes new distributional records and new species. The 26 species collected are distributed among ten genera, of which 12 species and one genus are new to science. Most new records for the study area represent incremental range extensions, in which species were already known either from eastern Australia and/or New Caledonia. These include *Agononida procera*, *A. eminens*, *A. marini*, *Munidopsis treis*, *Galacantha rostrata*, *G. quiquei*, *Leiogalatea laevirostris*, *Paramunida labis*, *Phyl-ladorhynchus integrirostris* and *Munida endeavourae*. The record of *Galatea tanegashimae*, however, is significant as the first of the species from the southwestern Pacific. More surprising, however, are the species of *Munida* collected. Nine of ten species of *Munida* recorded are new to science, despite the New Caledonian and southeastern Australian faunas being among the best known in the Indo-West Pacific (e.g., Macpherson 1994; Ahyong & Poore 2004). Most of the new species of *Munida* reported here have closest morphological affinities with New Caledonian species, corroborating the contention that galatheids have undergone rapid speciation in the southwestern Pacific (Machordom & Macpherson 2004). Further exploration in the Tasman Sea will likely yield many more undescribed species of Galatheidae.

Acknowledgments

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