



Caprellidae*

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Abstract

Seventeen species of caprellids in 14 genera are reported, mainly from Lizard Island on the Great Barrier Reef, Queensland, Australia. *Metaprotella sandalensis* Mayer, 1898 and *Quadrisegmentum triangulum* Hirayama, 1988, are the most common species in the reef system. Although caprellids were present at most sites, they were abundant only on hydroid and sediment substrates.

Key words: Crustacea, Amphipoda, Caprellidae, Great Barrier Reef, Australia, taxonomy, *Aciconula australiensis*, *Caprella penantis*, *Hemiaegina minuta*, *Metaprotella sandalensis*, *Orthoprotella australis*, *Orthoprotella pearce*, *Orthoprotella sp.*, *Paracaprella sp.*, *Protella similis*, *Pseudaeginella cf. biscaynensis*, *Jigurru vailhoggett*, *Metaprotella novaehollandiae*, *Perotripus keablei*, *Pseudoprellicana johnsoni*, *Pseudoprotella fallax*, *Quadrisegmentum lowryi*, *Quadrisegmentum triangulum*

Introduction

Caprellid amphipods are known worldwide and many species have apparent wide distributions. They are “ambush predators” living on many substrates, micro-herbivores on seagrasses and algae or detritivores. The first taxonomic study which included caprellids from the Great Barrier Reef was Guerra-García (2006). In this paper 17 species in 14 genera are reported from the Reef, 10 species in the Caprellinae and seven species in the Phtisicinae. The most common caprellid species known from the Reef are *Metaprotella sandalensis* Mayer, 1898 and *Quadrisegmentum triangulum* Hirayama, 1988. The majority of the species reported here are from the northern part of the Reef at Lizard Island. It is expected that future surveys from other parts will turn up more species.

Material and Methods

The descriptions were generated from a DELTA database (Dallwitz 2005) to caprellid genera and Australian species. All material is lodged in the Australian Museum, Sydney (AM). A set of colour plates, a list of standard abbreviations and detailed station data is available in Lowry & Myers (2009). A CD (*Benthic Amphipoda (Crustacea: Peracarida) of the Great Barrier Reef: Interactive Keys*) is available with the book or the keys can be accessed at the crustacea.net website.

Caprellidae Leach, 1814

Caprellinae Leach, 1814

Aciconula Mayer, 1903

Aciconula australiensis Guerra-García, 2004a

(Fig. 1)

Aciconula australiensis Guerra-García, 2004a: 23, figs 19–23. —Guerra-García, 2006: 441, fig. 40.

Type locality. Legendre Island, Dampier Archipelago, Western Australia, Australia (20°21.401'S 116°49.779'E), coral substrate plus encrusting bivalve molluscs, 12 m depth.

Material examined. Holotype male, 2.1 mm, AM P62148 (WA 640); paratype female, AM P62149 (WA 640); male, AM P61735 (QLD 1475); 1 female, 1 juvenile, AM P61736 (QLD 1567).

Description. Based on male, AM P61735 and female, AM P62149.

Head and pereonites slender. *Head/pereonite 1* fused (suture present); dorsal margin convex; eye large, distinctive. *Antenna 1* well developed; slender, 0.33 x body length; peduncle article 2 longest, article 3 straight; accessory flagellum absent; flagellum 0.75 x peduncular length, with more than 2 articles. *Antenna 2* 0.5 x antenna 1 length or 0.6 x antenna 1 length, slender; peduncle with several feeble setae; flagellum about 1/4 (0.25 x) of peduncular length, with 2 articles. *Labrum* notched, forming shallow quadrilateral projections. *Mandible* right incisor with 6 teeth, right lacinia mobilis transformed into a plate serrated distally, accessory setal row with 2 setae; molar reduced; left incisor with 5 teeth, lacinia mobilis with 7 teeth, without trapezoid plate and setal row with 3 setae; palp 3–articulate. *Maxilla 1* outer plate with 6 stout apical setal-teeth. *Maxilliped* inner plate smaller than outer plate, oval; outer plate 2.5 x length of inner plate; palp article 2 scarcely setose on inner margin; palp article 4 enlarged, weakly falcate.

Pereon. Pereonites 2 to 7 not fused; pereonites 3 and 4 longest, subequal in length. *Pereonite 1* with single anterodorsal projection (variously developed). *Gnathopod 1* distinctly smaller than gnathopod 2; propodus subtriangular, palm begins 1/4 along posterior margin, smooth, without large, rounded knob proximally; dactylus slightly curved, inner margin smooth. *Pereonite 2* with single mid-dorsal projection, with slight mid-dorsal hump. *Gnathopod 2* situated toward anterior end of pereonite 2; basis subequal in length to pereonite 2, without anterodistal projection; ischium without anterodistal projection; propodus subovate, large, anterodistal margin widely concave, without anterodistal triangular projection, without projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, palm proximal projection with 1 robust (grasping) seta, margin slightly convex, smooth, without hook-like projection at base of dactylus, without distal shelf, with deep, wide sinus, with large midpalmar projection. *Pereonite 3* without projections. *Pereopod 3* reduced, with 2 articles. *Pereonite 4* without projections. *Pereopod 4* with 2 articles. *Pereopod 5* well developed, with 6 articles, slender. Pereopods 6 and 7 weakly prehensile. *Pereopod 6* basis and propodus subequal in length.

Gills on pereonites 3 and 4. *Pereonite 3 gill* straight, ovate. *Pereonite 4 gill* length about 1/5 of corresponding pereonite, straight, ovate.

Pleon. Some uropods present (pair of 'lateral lobes').

Female (sexually dimorphic characters). Body length 1.9 mm. *Head* without anterodorsal projections. *Gnathopod 2* propodus anterodistal margin slightly convex; palm without sinus, with tiny midpalmar projection. *Pereopod 3* with 4 articles. *Pereonite 3 gill* length about 1/4 of corresponding pereonite. *Pereonite 4 gill* length about 1/3 of corresponding pereonite.

Habitat. Clinging to small hydroids or algal turf on dead corals.

Remarks. *Aciconula australiensis* was recently described from Western Australia (Guerra-García 2004a). This species is uncommon on the Great Barrier Reef. Only three specimens were collected from Lizard Island.

Distribution. *Australia.* Queensland: Coconut Beach and ‘Washing Machine Reef’, Lizard Island, Great Barrier Reef (Guerra-García 2004a, 2006). Western Australia: Dampier Archipelago (Guerra-García 2004a).

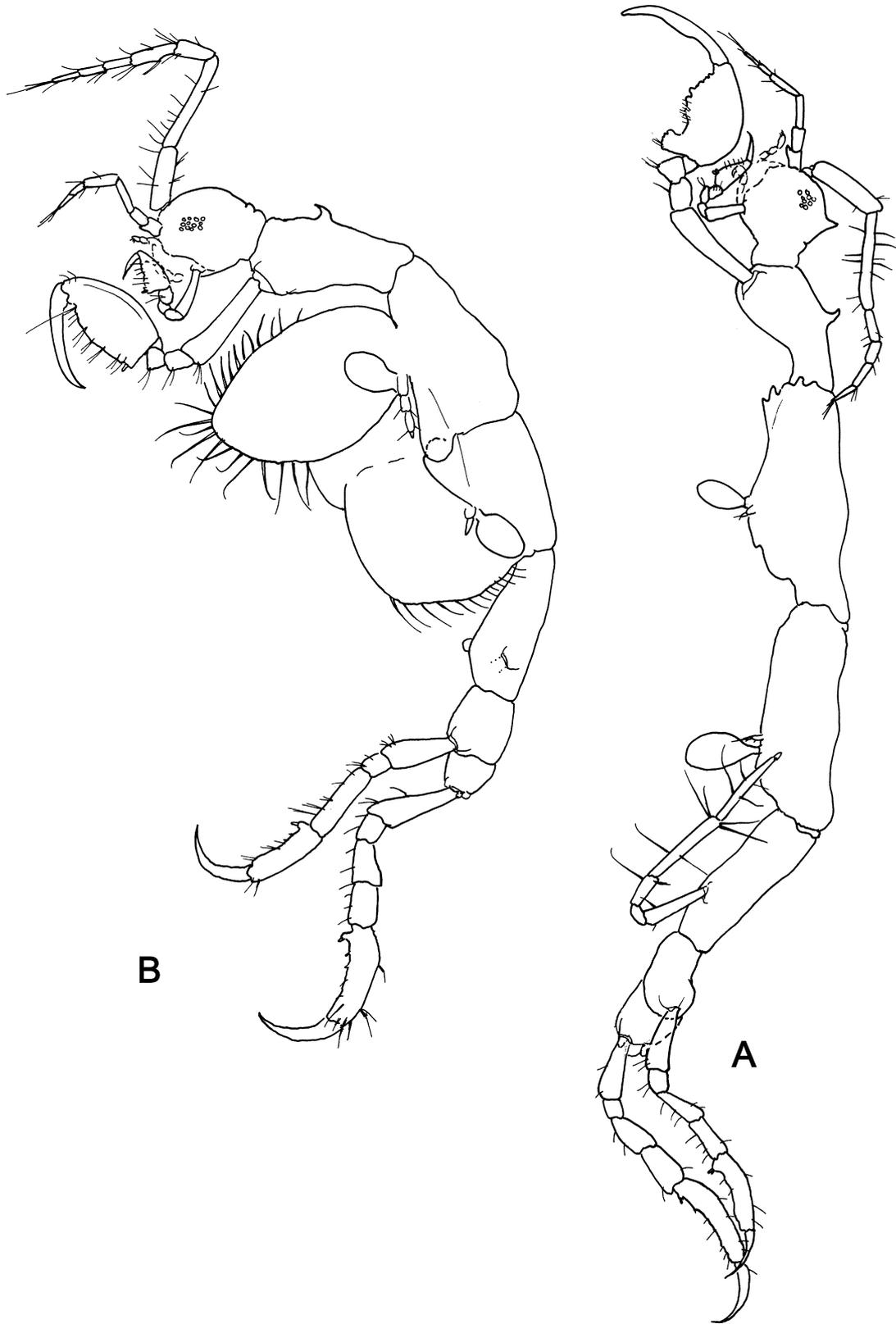


FIGURE 1. *Aciconula australiensis* Guerra-García, 2004a. A: paratype, male, AM P61735, B: female, AM P62149, Coconut Beach, Great Barrier Reef., Refigured from Guerra-García (2004a).

Caprella Lamarck, 1801

Caprella penantis Leach, 1814

(Fig. 2)

Caprella Penantis Leach, 1814: 404.

Caprella acutifrons Mayer, 1882: 48. —Mayer, 1890: 50, pl. 2: figs 36, 37, 39–41, pl. 4: figs 52, 53, 55, 57–61, 65–69. —Mayer, 1903: 79, pl. 3, figs 4–28, pl. 7, figs 62–65.

Caprella penantis McCain, 1968: 33, figs 15, 16. —McCain & Steinberg, 1970: 33. —Cavedini, 1982: 508. —Krapp-Schickel, 1993: 791. —Guerra-García & Takeuchi, 2002: 692, fig. 12. —Guerra-García & Takeuchi, 2004: 1013, fig. 35. —Guerra-García, 2004a: 30, 32, 33, fig. 32. —Krapp-Schickel & Guerra-García, 2005: 49, fig. 2. —Guerra-García, 2006: 442, fig. 42. —Guerra-García, Krapp-Schickel & Müller, 2006: 153, figs 2–4.

Material examined. 4 males, 1 premature female, 3 females, 1 juvenile, AM P61632 (QLD 658); 1 male, 1 premature female, 1 female, 1 juvenile, AM P61631 (QLD 659).

Type locality. Devonshire Coast, England.

Description. Based on male, 14 mm, AM P61632.

Head and pereonites slender. *Head/pereonite 1* fused (suture present); dorsal margin straight; eye large, distinctive. *Antenna 1* well developed; slender, 0.4 x body length; peduncle article 2 longest, article 3 straight; accessory flagellum absent; flagellum subequal in length to peduncle, with more than 2 articles. *Antenna 2* 0.75 x antenna 1 length, slender; peduncle setose; flagellum 0.4 x peduncular length, with 2 articles. *Mandible* right incisor with 5 teeth, right lacinia mobilis with 5 indistinct teeth, accessory setal row with 2 setae; molar well developed; left incisor with 5 teeth, lacinia mobilis with 5 teeth, without trapezoid plate, accessory setal row with 3 setae; palp absent. *Maxilla 1* outer plate with 7 stout apical setal-teeth. *Maxilliped* inner plate subrectangular; palp article 4 not enlarged.

Pereon. Pereonites 2 to 7 not fused; pereonites 3 and 4 longest, subequal in length (just about longer than other pereonites). *Pereonite 1* without projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus subtriangular, palm begins 1/6 along posterior margin, minutely serrate, without large, rounded knob proximally; dactylus slightly curved, inner margin smooth. *Pereonite 2* without projections. *Gnathopod 2* situated toward anterior end of pereonite 2; basis about 0.5 x length of pereonite 2, basis without anterodistal projection; ischium without anterodistal projection; propodus subovate or elliptical, massive, anterodistal margin slightly convex or straight, without anterodistal triangular projection, without projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, palm with proximal poison tooth, margin deeply concave, smooth, without hook-like projection at base of dactylus, with broad well developed distal shelf, without projection, without sinus, without midpalmar projection. *Pereonite 3* without projections. *Pereopod 3* absent. *Pereonite 4* without projections. *Pereopod 4* absent. *Pereopod 5* well developed, with 6 articles, broad. *Pereopod 6* basis shorter than propodus.

Gills on pereonites 3 and 4. *Pereonite 3 gill* length about 1/2 of corresponding pereonite, straight, ovate. *Pereonite 4 gill* length about 1/2 of corresponding pereonite, straight, ovate.

Pleon. Unknown.

Female (sexually dimorphic characters) based on female, 12 mm, AM P61632. *Gnathopod 2* propodus large; palm margin slightly convex, without distal shelf.

Habitat. The material on the Great Barrier Reef was found clinging to *Halimeda*. *Caprella penantis* has also been found living on red and brown algae, *Posidonia*, hydroids, Alcyonaria, Zoantharia, Bryozoa, sponges, *Arbacia* (Echinodermata) and *Libinia* (Decapoda) (Krapp-Schickel 1993). The species has been also found in sponges, ascidians, spirorbids, gorgonaceans, *Caulerpa* beds and hydroid *Cnidoscypus* (Guerra-García 2004a; Guerra-García *et al.* 2006), and among mussels (Díaz *et al.*, 2005).

Remarks. Although this species is believed to be cosmopolitan (Krapp-Schickel, 1993), its presence is only occasional along the Great Barrier Reef, occurring in only two samples near the northern end of the reef.

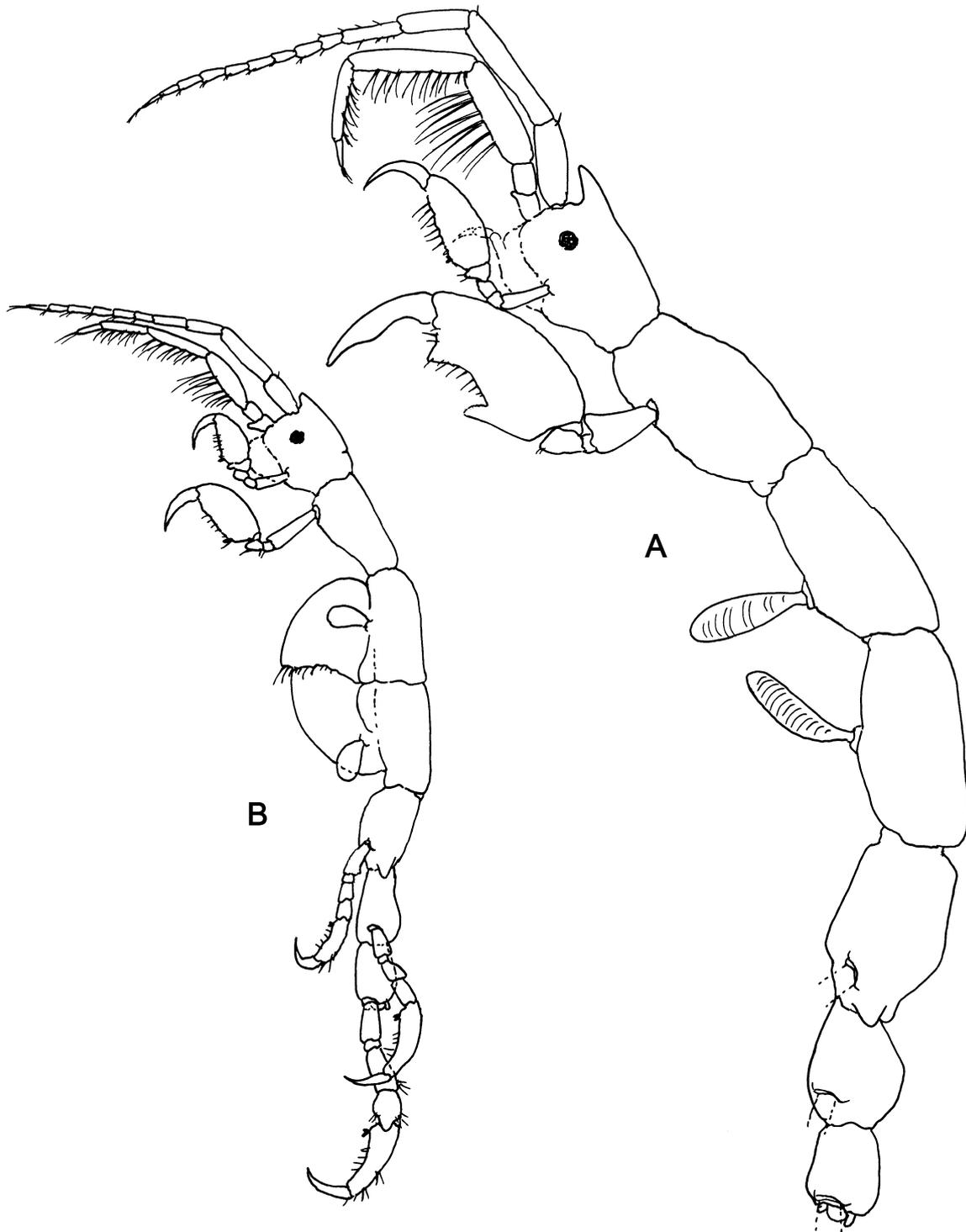


FIGURE 2. *Caprella penantis* Leach, 1814. Lateral view. A, male, ~6 mm; B, female, ~3.3 mm, AM P61632, GBRMPA Reef 11-131, Great Barrier Reef. Refigured from Guerra-García (2006).

Distribution. *Australia.* Queensland: GBRMPA Reef 11-131, northern end of the Great Barrier Reef (Guerra-García 2006). Tasmania: Mercury Passage (Guerra-García & Takeuchi 2004). *Other records.* Atlantic Ocean, Indian Ocean, Pacific Ocean and Mediterranean Sea (see Krapp-Schickel & Guerra-García 2005).

Hemiaegina Mayer, 1890

Hemiaegina minuta Mayer, 1890

(Fig. 3)

Hemiaegina minuta Mayer, 1890: 40, pl. 1: fig. 25, pl. 3: figs 32–35, pl. 5: fig. 52, pl. 6: figs 13, 33–34, pl. 7: fig. 4. —McCain, 1968: 61, figs 29–30. —McCain & Steinberg, 1970: 51. —Gable & Lazo-Wasem, 1987: 637. —Müller, 1990: 836. —Serejo, 1997: 630, fig. 1. —Guerra-García, 2003a: 105, fig. 10. —Guerra-García 2003b: 6, fig. 3; Guerra-García, 2004a: 39, fig. 32. —Díaz *et al.*, 2005: 5, 6, 18, fig. 9. —Krapp-Schickel & Guerra-García, 2005: 50, fig. 3. —Guerra-García, 2006: 443, fig. 43. —Guerra-García, Krapp-Schickel & Müller, 2006: 171, figs 14–16.

Hemiaegina quadripunctata Sundara Raj, 1927: 126, pl. 18.

Hemiaegina costai Quitete, 1972: 165, pls. 1–2.

Material examined. 5 males, 2 females, AM P61648 (QLD 979). See station list for occurrences (Lowry & Myers 2009) and Guerra-García (2006) for complete material examined.

Type locality. Off Amoy, China, 15–46 m depth.

Description. Based on male, AM P61648.

Head and pereonites slender. *Head/pereonite 1* fused (suture absent); dorsal margin straight; eye small, not distinctive. *Antenna 1* well developed; slender, 0.8 x body length; peduncle article 2 longest, article 3 straight; accessory flagellum absent; flagellum longer than peduncle, with more than 2 articles, proximal article composed of 2 articles. *Antenna 2* 0.4 x antenna 1 length, slender; peduncle with several feeble setae; flagellum about 1/5 (0.2 x) of peduncular length, with 2 articles. *Mandible* right incisor with 5 teeth, right lacinia mobilis transformed into a serrated plate, accessory setal row absent; molar well developed; left incisor with 5 teeth, lacinia mobilis with 5 teeth, without trapezoid plate; palp absent. *Maxilla 1* outer plate with 6 stout apical setal-teeth. *Maxilliped* inner plate smaller than outer plate, quadrilateral; outer plate 2 x length of inner plate; palp article 2 setose on inner margin; palp article 4 not enlarged.

Pereon. Pereonites 2 to 7 not fused. *Pereonite 1* without projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus subtriangular, palm begins 1/5 along posterior margin, smooth, with large, rounded knob proximally; dactylus curved, inner margin smooth. *Pereonite 2* without anterolateral projection, with ventral projection between insertion of gnathopods. *Gnathopod 2* situated toward anterior end of pereonite 2 or near middle of pereonite 2; basis about 1.5 x length of pereonite 2, without anterodistal projection; ischium without anterodistal projection; propodus elliptical, massive, anterodistal margin widely concave, without anterodistal triangular projection or projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, palm proximal projection with 1 robust (grasping) seta, palm margin irregular, smooth, without hook-like projection at base of dactylus, with broad well developed distal shelf, with two triangular projections distally, with deep, wide sinus, with large midpalmar projection. *Pereonite 3* without projections. *Pereopod 3* reduced or vestigial, with 1 article. *Pereonite 4* without projections. *Pereopod 4* reduced, with 1 article. *Pereopod 5* well developed, with 6 articles, slender. Pereopods 6 and 7 prehensile. *Pereopod 6* basis longest followed by merus. *Pereopod 7* similar to pereopod 6; merus shorter than basis. *Gills* on pereonites 3 and 4. *Pereonite 3 gill* length about as long as corresponding pereonite, straight, ovate or elongate, cylindrical. *Pereonite 4 gill* as long as corresponding pereonite, straight, ovate or elongate, cylindrical.

Pleon. *Uropod 1* present; peduncle free, elongate, length about 1.7 x width; ramus length about 3–4 x width, ramus 1.75 x peduncular length.

Female not described (similar to male).

Habitat. This species has been found on many different substrates on the Great Barrier Reef: green, brown and red algae, sponges, tunicates, seagrass, dead corals encrusted with algal turf, and under small boulders, but at Lizard Island the species has been only found on hydroids (Guerra-García 2006). *Hemiaegina minuta* has been previously collected from *Sargassum* sp. and taken in plankton tows (McCain & Steinberg 1970). Müller (1990) reported that *H. minuta* prefers more or less exposed reef locations. Guerra-García

(2003a; 2003b) found the species associated with algae in Papua New Guinea and Mauritius. This species has also been found on *Arca zebra* (Díaz *et al.* 2005).

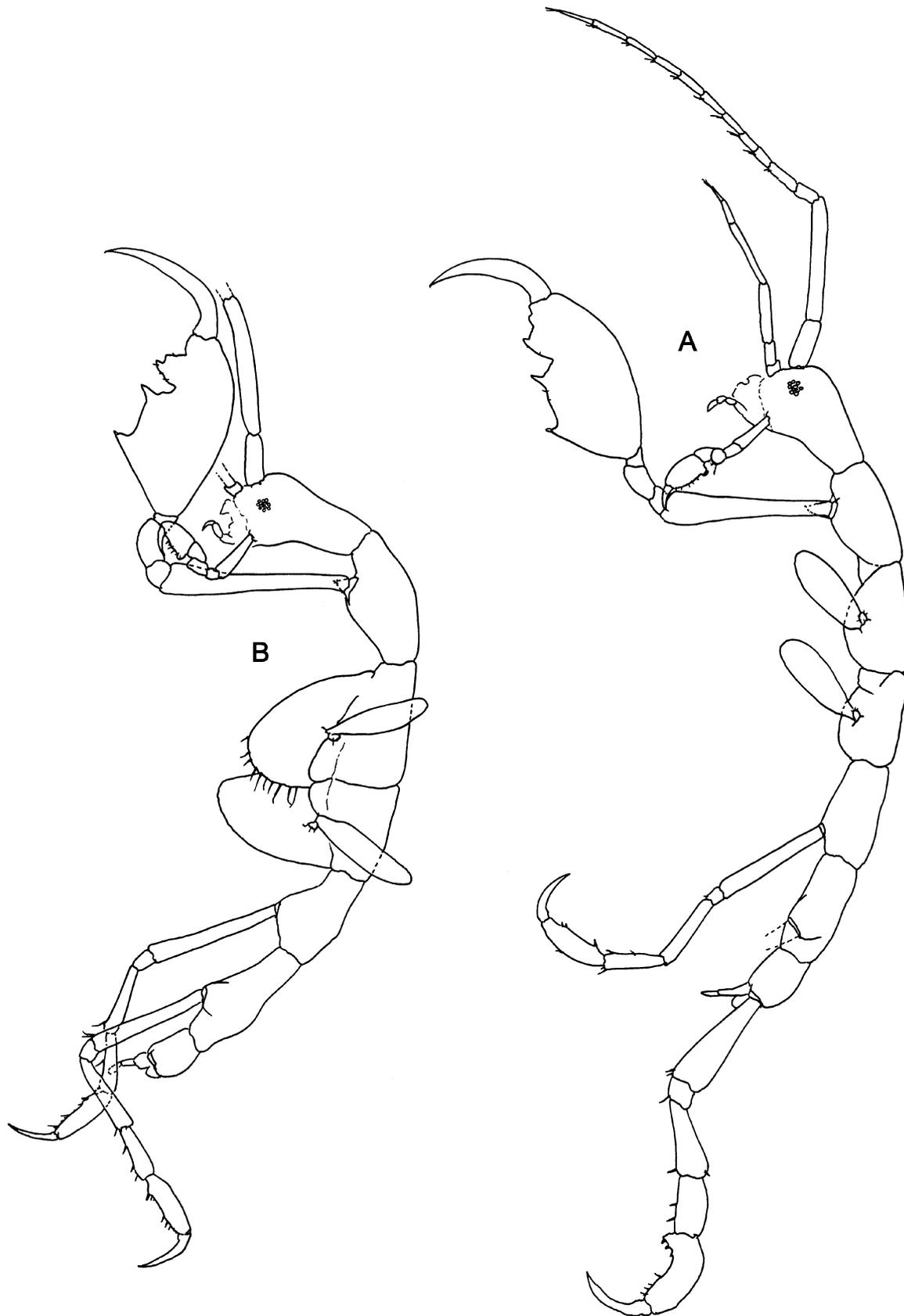


FIGURE 3. *Hemiaegina minuta* Mayer, 1890. Lateral view. A, male, ~3 mm; B, female ~3.5 mm, AM P61648, Freshwater Bay, Queensland. Refigured from Guerra-García (2006).

Remarks. *Hemiaegina minuta* is widely distributed in tropical and temperate waters worldwide (Müller 1990). The Queensland specimens agree with the description of McCain (1968) based on material from the West coast of North America.

Distribution. *Australia.* Queensland: Freshwater Bay; Stradbroke Island; GBR: North Point, Lizard Island, Dome Island, Hervey Islands; East Fitzroy Reef, Great Barrier Reef. New South Wales: Elizabeth and Middleton Reef; Lord Howe Island (Guerra-García 2006). Western Australia: Fremantle (Guerra-García 2004a). *Bermuda* (McCain & Steinberg 1970). *China.* Off Amoy, China, 15–46 m deep (Mayer 1890). *Colombia.* Bahía de Santa Marta, Punta Betín, Bahía Concha, Bahía Nenguangue (Guerra-García *et al.* 2006). *India.* Krusadai Island, South Arabian coast (McCain & Steinberg 1970). *Indonesia.* Bali (Krapp-Schickel & Guerra-García 2005). *Japan.* Sunohama and Tateyama (McCain & Steinberg 1970). *Mauritius.* Baie du Tumbeau (Guerra-García 2003b). *Papua New Guinea.* Bootless Bay (Guerra-García 2003a). *Society Islands.* Bora Bora (McCain & Steinberg 1970). *South Africa.* False Bay (McCain & Steinberg 1970). *USA.* Virginia; Cape Hatteras, North Carolina; Elliot Key, Florida; Loggerhead Key, Tortugas; 29°44'N 88°23.5'W; Port Aransas, Texas; St. John, Virgin Islands; Oahu, Hawaii (McCain & Steinberg 1970). *Venezuela.* Guayacán, Sucre (Díaz *et al.* 2005).

Metaprotella Mayer, 1890

Metaprotella sandalensis Mayer, 1898

(Fig. 4)

Metaprotella sandalensis Mayer, 1898: 53, figs 1–6. —Mayer, 1903: 40, pl. 1: figs 30, 31, 34–36, pl. 6: figs 56–63, pl. 9: figs 16, 17, 44, 60. —Müller, 1990: 836, figs 41–64. —Laubitz, 1991: 113, fig. 10. —Guerra-García, 2004b: 163, figs 4, 5. —Guerra-García & Takeuchi, 2004: 1017, fig. 37. —Krapp-Schickel & Guerra-García, 2005: 51, fig. 4. —Guerra-García, 2006: 443, fig. 44.

Material examined. More than 20 specimens, AM P61804 (QLD 1570). See station list for occurrences (Lowry & Myers 2009) and Guerra-García (2006) for complete material examined.

Type locality. Sandal Bay, Lifou, Loyalty Islands, New Caledonia.

Description. Based on male, ~7.5 mm and female, ~5.6 mm, AM P61804.

Head and pereonites slender. *Head/pereonite 1* fused (suture present, faintly visible). dorsal margin convex; eye large, distinctive. *Antenna 1* well developed; slender, as long or longer than body; peduncle articles 2 and 3 subequal in length, article 3 straight; accessory flagellum absent; flagellum 0.4 x peduncular length, with more than 2 articles, proximal article composed of 2 articles. *Antenna 2* 0.4 x antenna 1 length, slender; peduncle with several feeble setae; flagellum about 1/5 (0.2 x) of peduncular length, with 2 articles. *Mandible* right incisor with 5 teeth, right lacinia mobilis absent, accessory setal row with 4 setae; molar well developed; left incisor with 5 teeth, lacinia mobilis with 5 teeth, without trapezoid plate; palp 3–articulate, palp setal formula 1-x-1. *Maxilliped* inner plate smaller than outer plate, subrectangular; outer plate 2.5 x length of inner plate; palp article 2 scarcely setose on inner margin; palp article 4 not enlarged, falcate.

Pereon. Pereonites 6 and 7 completely fused. *Pereonite 1* with small, paired, curved anterodorsal projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus triangular, palm begins 1/4 along posterior margin, minutely serrate, without large, rounded knob proximally; dactylus slightly curved, inner margin smooth. *Pereonite 2* with paired anteriorly curved mid-dorsal projections and simple distal projection dorsally. *Gnathopod 2* situated toward anterior end of pereonite 2; basis about 0.75 x length of pereonite 2, with anterodistal projection; ischium without anterodistal projection; propodus subovate, large, anterodistal margin widely concave or straight, without anterodistal triangular projection or projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, proximal projection with 1 robust (grasping) seta, palm margin irregular, smooth, without hook-like projection at base of dactylus, with narrow well developed distal shelf, with two triangular projections distally, with deep, narrow sinus, with large



FIGURE 4. *Metaprotella sandalensis* Mayer, 1898. Lateral view. A, male, ~7.5 mm; B, female, 5.6 mm, AM P61804, north-east side of Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

midpalmar projection. *Pereonite 3* with paired mid-dorsal projections and distal single projection dorsally. *Pereopod 3* reduced, with 1 article. *Pereonite 4* without projections. *Pereopod 4* reduced, with 1 article. *Pereopod 5* well developed, with 7 articles, slender. *Pereopods 6* and *7* simple or prehensile (very weakly). *Pereopod 6* basis shorter than propodus. *Pereopod 7* similar to *pereopod 6*.

Gills on *pereonites 3* and *4*. *Pereonite 3 gill* length less than 1/4 of corresponding *pereonite*, straight, ovate. *Pereonite 4 gill* length about 1/8 of corresponding *pereonite*, straight, ovate.

Pleon. *Uropod 1* present; peduncle fused to pleon.

Female (sexually dimorphic characters). *Gnathopod 2* palm without sinus.

Habitat. Müller (1990) reported that *Metaprotella sandalensis* probably prefers sheltered locations. It occurs in mangroves, seagrass beds, coral rubble and on coarse and fine sediment bottoms. In these habitats it is found on algae such as *Halimeda* and *Turbinaria ornata*, on hydroids such as *Gymnangium* sp., *Aglaophenia cupressina* and *Macrorhynchia philippina* and it is common on sponges, gorgonians, soft corals, encrusted dead corals, bryozoans and ascidians (Guerra-García 2006).

Remarks. This species is common in shallow waters of the tropical Indo-Pacific and is clearly the most common species on the Great Barrier Reef. The GBR specimens are assigned to *Metaprotella sandalensis* on the basis of the arrangement of the dorsal projections and the absence of a marked suture between the head and *pereonite 1* (Larsen, 1997).

Distribution. *Australia.* Queensland: Great Detached Reef; Shadwell Reef; GBRMPA Reef 11-102; GBRMPA Reef 11-418; Ashmore Reef; Boot Reef, Portlock Reef; Hervey Islands, Freshwater Bay; Crystal Beach, Coconut Beach, Blue Lagoon, Watsons Bay, and off North Point, Lizard Island; Eagle Island; Osprey Island; Ellison Reef. New South Wales: Elizabeth and Middleton Reefs (Guerra-García 2006). Western Australia: Shark Bay and Cockburn Sound (Guerra-García 2004a). Tasmania: Sloop Reef, Bay of Fires, 41°13'S, 148°17.5'E, Joes Bight, Freycinet Peninsular, 42°16.7'N, 148°18.7'E (Guerra-García & Takeuchi 2004). *Fiji Islands.* Viti Levu (McCain & Steinberg 1970). *Indonesia.* Labuan Badjo, Borneo; Dongala, Celebes; Pulu Tongkil and 6°07.5'N 120°26'E, Sulu Sea; Amboina; between Gisser and Ceram-Laut, Ceram Sea (McCain & Steinberg 1970). Bali and Sanur-Bali (Krapp-Schickel & Guerra-García 2005). *New Caledonia.* Sandal Bay, Lifou, Loyalty Islands (Mayer 1898). *Kiribati.* Aranuka and Tapeteucea, 4°20'S 152°10'W (McCain & Steinberg, 1970). *Malaysia.* (McCain & Steinberg 1970). *Papua New Guinea.* Bootless Bay and Madang Lagoon (Guerra-García 2003a). *Thailand.* Koh Chang and Koh Kahdal (McCain & Steinberg 1970); Phuket (Guerra-García 2004b). *Singapore.* (McCain & Steinberg 1970). *Society Islands.* Bora Bora and Moorea, (Müller 1990). *Sri Lanka.* Dutch Bay (McCain & Steinberg 1970). *USA.* Hawaii: Oahu and Lisiansky Islands (McCain & Steinberg 1970).

***Orthoprotella* Mayer, 1903**

***Orthoprotella australis* (Haswell, 1880)**

(Fig. 5)

Protella australis Haswell, 1880: 276, pl. 12: fig. 4. —Haswell, 1885: 997, pl. 49: figs 2–4. —Mayer, 1890: 23.

Orthoprotella australis. —Mayer, 1903: 35, pl. 1: figs 23, 24, pl. 6, figs 45, 47–49, pl. 9: figs 14, 37, 57. —Guerra-García, 2004a: 42, fig. 44. —Guerra-García, 2006: 444, fig. 45.

Material examined. More than 20 specimens, AM P61693 (QLD 1560). See station list for occurrences (Lowry & Myers 2009) and Guerra-García (2006) for complete material examined.

Type locality. Port Jackson, New South Wales, Australia (~33°51'S 151°16'E).

Description. Based on male, 15.02 mm and female, ~7.2 mm, AM P61693.

Head and *pereonites* slender. *Head/pereonite 1* fused (suture present), slightly concave along dorsal margin; eye large, distinctive. *Antenna 1* well developed; robust, slightly shorter than body length; peduncle

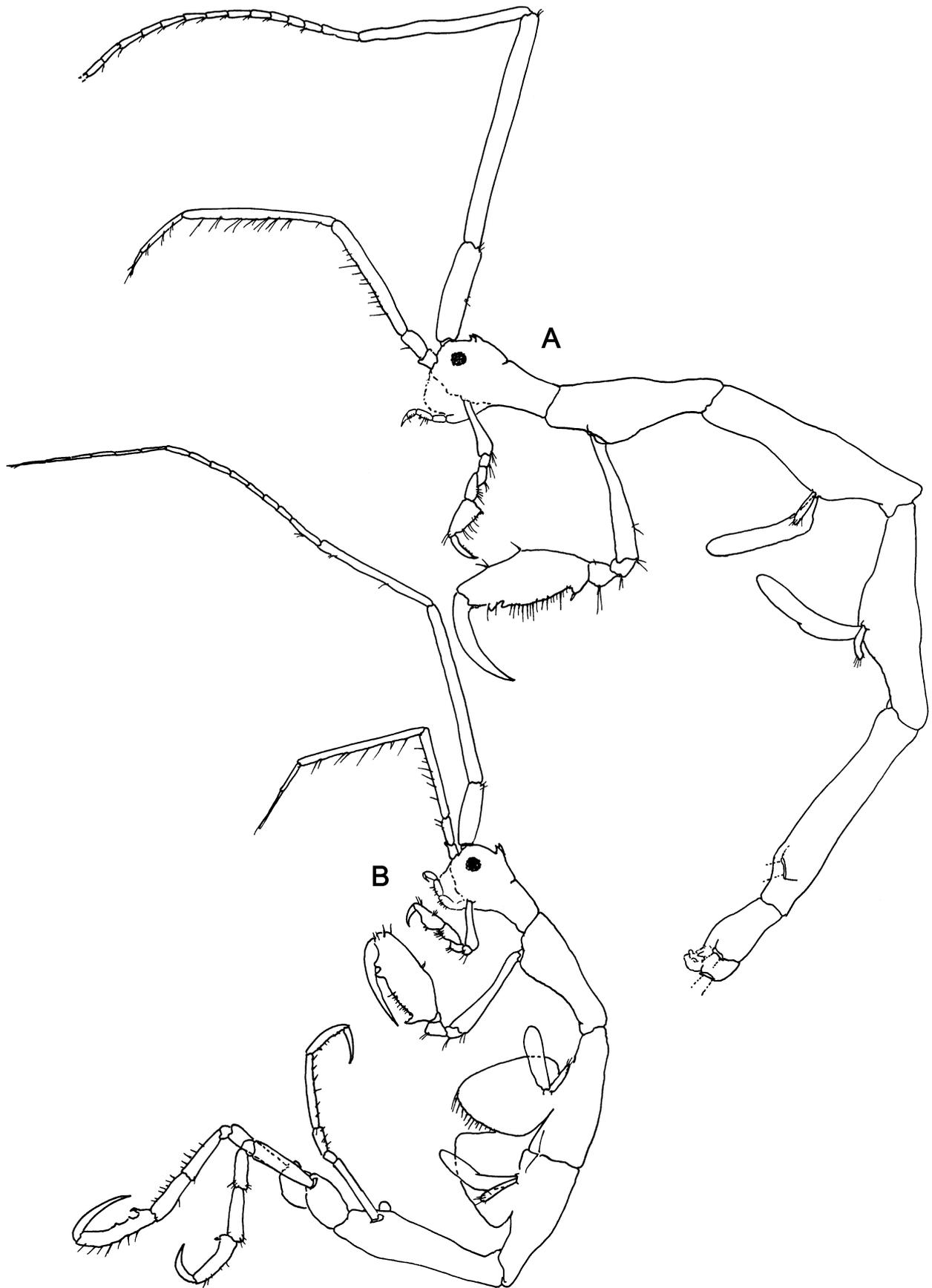


FIGURE 5. *Orthoprotella australis* (Haswell, 1880). Lateral view. A, male, ~10.5 mm, B, female, ~7.2 mm, AM P61693, between Bird Islet and South Island, Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

article 2 longest, article 3 straight; accessory flagellum absent; flagellum 0.4 x peduncular length, with more than 2 articles, proximal article composed of 3 articles. *Antenna 2* 0.4 x antenna 1 length, slender; peduncle with several feeble setae; flagellum about 1/6 (0.17 x) of peduncular length, with 2 articles. *Labrum* notched, forming rounded quadrilateral projections. *Mandible* right incisor with 5 teeth, right lacinia mobilis transformed into a serrate plate, accessory setal row with 2 setae; molar well developed; left incisor with 5 teeth, lacinia mobilis with 4 teeth, without trapezoid plate, accessory setal row with 3 setae; palp 3-articulate, palp setal formula 1-x-y-1. *Maxilla 1* outer plate with 7 stout apical setal-teeth. *Maxilliped* inner plate smaller than outer plate; oval; 3 x length of inner plate; palp article 2 setose on inner margin; palp article 4 not enlarged, weakly falcate.

Pereon. Pereonites 6 and 7 partially fused. Pereonite 1 with small paired, curved anterodorsal projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus triangular, palm begins 1/4 along posterior margin, minutely serrate to serrate, without large, rounded knob proximally; dactylus straight, inner margin serrate. *Pereonite 2* without projections. *Gnathopod 2* situated toward anterior end or near middle of pereonite 2; basis with anterodistal projection; ischium with anterodistal projection; propodus elongate (subrectangular), large, anterodistal margin narrowly concave, without anterodistal triangular projection, without projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, palm proximal projection with 1 robust (grasping) seta, palm margin straight, smooth, without hook-like projection at base of dactylus, with broad well developed distal shelf, with 1 large projection, with deep, narrow sinus, with large midpalmar projection. *Pereonite 3* with subacute anterolateral projection. *Pereopod 3* reduced, with 1 article. *Pereonite 4* without projections. *Pereopod 4* very slender. *Pereopod 4* reduced, with 1 article *Pereopod 5* well developed, with 7 articles. Pereopods 6 and 7 prehensile. *Pereopod 7* similar to pereopod 6.

Gills on pereonites 3 and 4. *Pereonite 3 gill* length about 1/2 of corresponding pereonite, curved anteriorly, ovate. *Pereonite 4 gill* length about 1/2 of corresponding pereonite, curved anteriorly, ovate or elongate, cylindrical.

Pleon. *Uropod 1* present; peduncle free, elongate, length about 2.5 x width; ramus length about 3–4 x width, ramus 1 x peduncular length (about). *Uropod 2* ramus absent.

Female (sexually dimorphic characters). *Head/pereonite 1* smooth, not rounded dorsally, with paired anteriorly straight dorsal projections. *Pereonite 2* without paired midventral projections. *Pereonite 3* without anterolateral projection. *Gnathopod 2* situated near anterior end of pereonite 2; palm margin slightly convex, minutely serrate. *Uropod 2* ramus well developed or absent.

Habitat. Most of the specimens has been found clinging on hydroids (*Macrorhynchia phylippina* and *Salacia* sp.), but the species is also associated with tunicates (*Polycarpa pigmentata*), sediments and algae (see Guerra-García, 2004a, 2006).

Remarks. *Orthoprotella australis* is easily distinguished from its congeners by the presence of two acute projections on the head. The species seems to be uncommon on the Great Barrier Reef, but large populations were found on hydroids at Lizard Island.

Distribution. *Australia.* Queensland: Between Bird Islet & Trawler Beach, Lizard Island; off Chinamans Ridge; Pidgin Point (Guerra-García 2006). Northern Territory: south side of New Year Island, west end Oxley Island, Arafura Sea (Guerra-García 2004a). Western Australia: 1 km north-east of Cape Legendre, Legendre Island, Dampier Archipelago and North-West shelf (Guerra-García 2004a). New South Wales: Port Jackson; off Manning River and Port Stephens (Haswell 1880). *Indonesia.* Between Gisser and Ceram Laut, Ceram Sea; Pulu Jedan, Arafura Sea; Banda Sea; Sawu Sea (McCain & Steinberg 1970).

***Orthoprotella pearce* Guerra-García, 2006**

(Fig. 6)

Orthoprotella pearce Guerra-García, 2006: 445, figs 47–51.

Material examined. Holotype male, 5.6 mm, AM P61740 (QLD 1580). Paratype: 1 female, 5.4 mm, AM P61741 (QLD 1580).

Type locality. Pidgin Point, Watsons Bay, Lizard Island, Queensland, Australia (14°41'S 145°27'E), on the hydroid *Halopteris buskii*, 5–10 m.

Description. Based on holotype male, 5.6 mm and paratype female, 5.4 mm.

Head and pereonites slender. *Head/pereonite 1* fused (suture present), dorsal margin convex; eye large, distinctive. *Antenna 1* well developed; slender, 0.67 x body length; peduncle article 2 longest, article 3 straight; accessory flagellum absent; flagellum slightly longer than peduncle, with more than 2 articles, proximal article composed of 2 articles. *Antenna 2* 0.5 x antenna 1 length, slender; peduncle with several feeble setae; flagellum about 1/4 (0.25 x) of peduncular length, with 2 articles. *Labrum* weakly notched, forming rounded quadrilateral projections. *Mandible* right incisor with 5 teeth, right lacinia mobilis with 10 small teeth (+), accessory setal row with 2 setae; molar well developed; left incisor with 5 teeth, lacinia mobilis with 5 teeth, without trapezoid plate, accessory setal row with 3 setae; palp 3–articulate. *Maxilla 1* outer plate with 7 stout apical setal-teeth. *Maxilliped* inner plate smaller than outer plate; subrectangular; 2.5 x length of inner plate; palp article 2 setose on inner margin; palp article 4 enlarged, weakly falcate.

Pereon. Pereonites 2 to 7 not fused; pereonites 3 and 4 longest, subequal in length. *Pereonite 1* without projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus triangular, palm begins 1/4 to 1/3 along posterior margin, smooth, without large, rounded knob proximally; dactylus slightly curved, inner margin smooth. *Pereonite 2* with small, anterolateral triangular projection. *Gnathopod 2* situated toward anterior end or near middle of pereonite 2; basis subequal in length to pereonite 2, with anterodistal projection; ischium with anterodistal projection; propodus subovate, large, anterodistal margin widely concave, with large anterodistal triangular projection, without projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, palm proximal projection with 1 robust (grasping) seta, palm margin irregular, smooth, without hook-like projection at base of dactylus, with broad well developed distal shelf, with two triangular projections distally, with deep, narrow sinus, with large midpalmar projection. *Pereonite 3* with subacute anterolateral projection. *Pereopod 3* reduced, with 1 article. *Pereonite 4* with anterolateral projection. *Pereopod 4* reduced, with 1 article. *Pereopod 5* well developed, with 6 articles, slender. Pereopods 6 and 7 prehensile. *Pereopod 6* basis longest followed by carpus. *Pereopod 7* similar to pereopod 6.

Gills on pereonites 3 and 4. *Pereonite 3 gill* length about 1/3 of corresponding pereonite, straight, ovate. *Pereonite 4 gill* length about 1/3 of corresponding pereonite or length about 1/2 of corresponding pereonite, straight, ovate.

Pleon. *Uropod 1* present; peduncle free, peduncle length about 1.7 x width; ramus length about 4–5 x width.

Female (sexually dimorphic characters). *Pereonite 3* with anterolateral triangular projection (large). *Pereonite 4* without anterolateral projection. *Gnathopod 2* situated near anterior end of pereonite 2; *Uropods* absent.

Habitat. On the hydroids *Macrorhynchia philippina* and *Halopteris buskii* in 4–10 m depth.

Remarks. *Orthoprotella pearce* looks very similar to *O. mayeri*. They can be distinguished only with observation of the lateral view and careful examination of the mouthparts. *Orthoprotella mayeri* has two articles in pereopods 3 and 4, although the distal article is tiny and difficult to detect, while in *O. pearce* these pereopods are uni-articulate. In connection with the mouthparts, the distal article of the mandibular palp in *O. mayeri* presents a setal formula 1-x-y-1 with x being more than 20 and y=2-4, while the formula in *O. pearce* is 1-x-1 with x=7. Furthermore, the distal projection of the third article of the maxilliped palp is present in *O. mayeri* and absent in *O. pearce*.

Distribution. *Australia.* Queensland: Watsons Bay and Coconut Beach, Lizard Island (Guerra-García 2006).

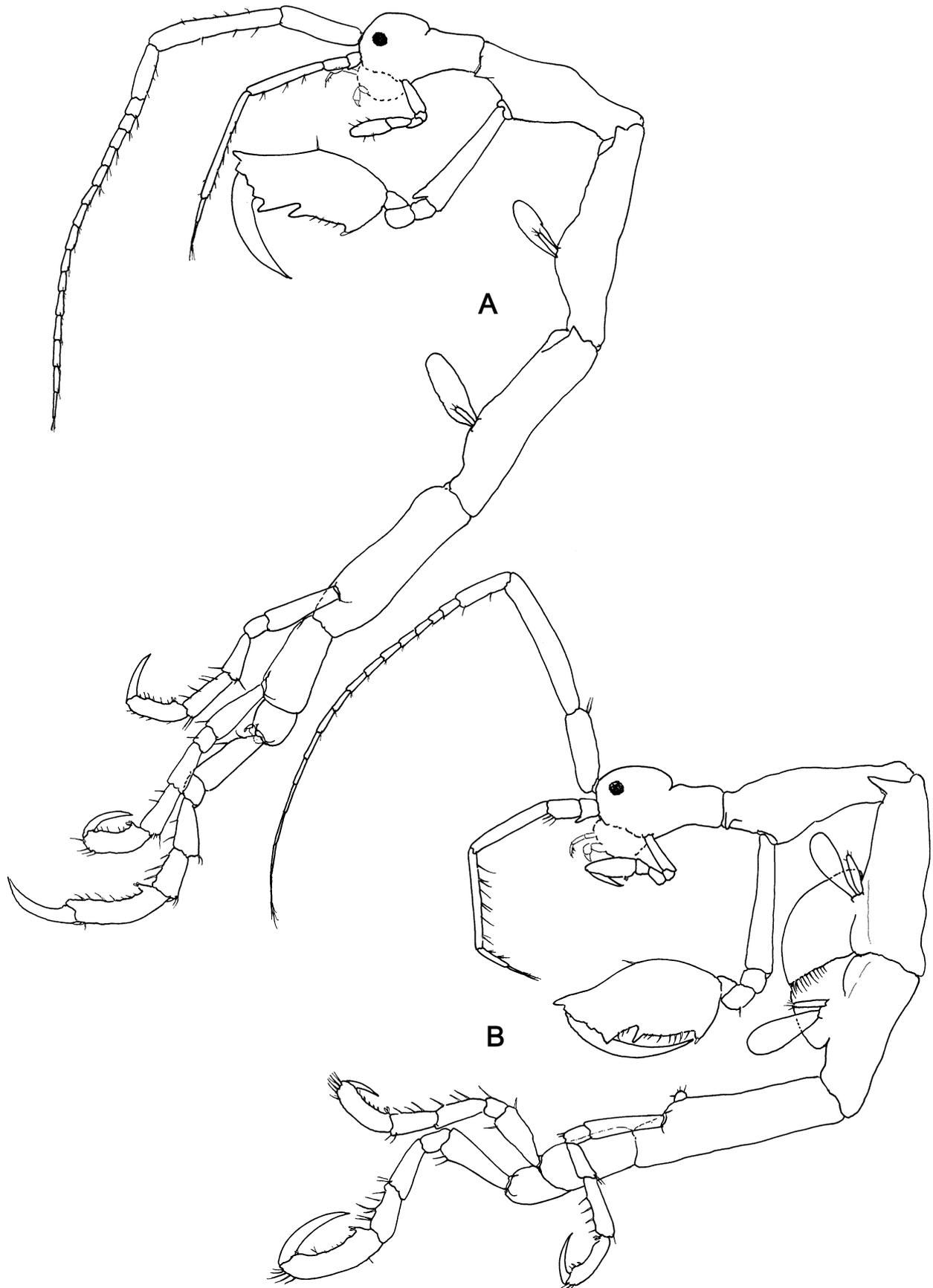


FIGURE 6. *Orthoprotella pearce* Guerra-García, 2006. Lateral view. A, holotype male, 5.6 mm, AM P61740; B, paratype female, ~5.5 mm, AM P61741, Pidgin Point, Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

***Orthoprotella* sp.**

(Fig. 7)

Orthoprotella mayeri. —Guerra-García, 2006: 445, fig. 46 (in part).

Material examined. 1 female, ~5 mm, AM P80440 (QLD 1570).

Description. Based on female, ~5 mm, AM P80440.

Head and pereonites slender. *Head/pereonite 1* fused (suture present), head without rostrum. Eyes large, distinctive. *Antenna 1* between 0.6–0.8 body length; peduncle article 2 longest; primary flagellum subequal in length to peduncle or longer than peduncle, flagellum with more than 2 articles; flagellum proximal article composed of 2 fused articles. *Antenna 2* without dense concentration of long slender setae along posterior margin; flagellum with 2 articles.

Head/pereonite 1 without anterodorsal projections, without mid-ventral projections.

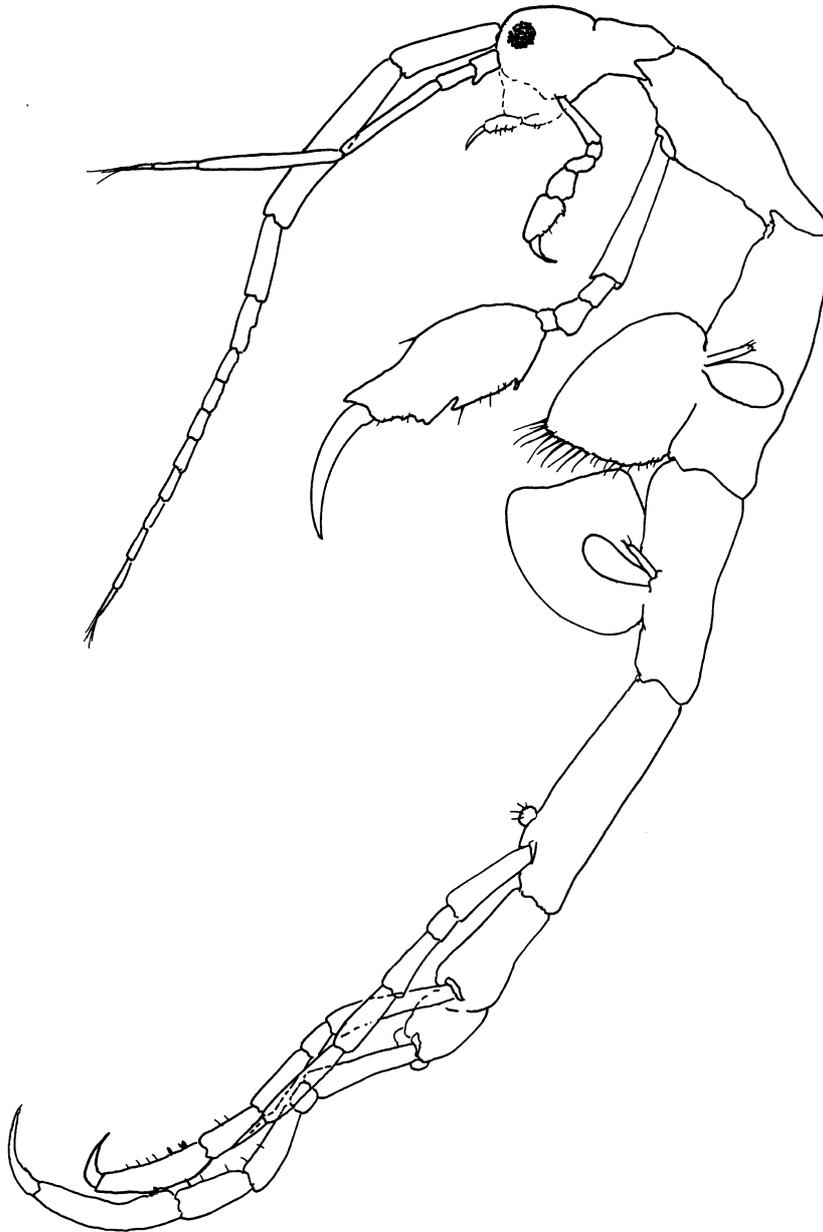


FIGURE 7. *Orthoprotella* sp. Lateral view. Female, ~5 mm, (QLD 1570), north-east side of Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

Pereon. *Gnathopod 1* propodus subtriangular, palm begins less than 0.25 along posterior margin of propodus or begins 0.25 along posterior margin of propodus. *Pereonite 2* with anterolateral triangular projection. *Gnathopod 2* situated toward anterior end of pereonite 2; basis shorter than pereonite 2, with small anterodistal projection; propodus massive, propodus elongate (subrectangular), anterodistal margin widely concave; propodus palm irregular, with small midpalmar projection, with deep, narrow sinus, propodus palm with broad, well developed distal shelf. *Pereonite 3* with anterolateral triangular projection. *Pereopod 3* reduced, with 1 article. *Pereopod 4* reduced, with 1 article. *Pereopod 5* well developed, slender, with 6 articles. *Pereopods 6* and *7* simple. *Pereopod 6* basis longest followed by propodus. *Pereopod 7* merus slightly shorter than basis.

Gills on pereonites 3 and 4; *pereonite 3 gill* ovate, *pereonite 3 gill* length between 0.25 –0.5 x corresponding pereonite; *pereonite 4 gill* ovate, *pereonite 4 gill* length between 0.25 –0.5 x corresponding pereonite. Pleopods absent or vestigial.

Habitat. The species has been found on coral rubble (Guerra-García, 2006).

Remarks. *Orthoprotella mayeri* K.H. Barnard, 1916, was recently shown by Takeuchi & Lowry (2007) to be confined to southern Africa. The taxon referred to as *O. mayeri* from Australia (Lowry & Stoddart 2003) is described as *O. berentsae* Takeuchi & Lowry (2007). The female reported from the GBR by Guerra-García (2006) differs from *O. berentsae* as follows: the propodus of gnathopod 2 is much more elongate with a width and the anterodistal margin is widely concave, the propodus has a very narrow sinus compared with that of *O. berentsae*. We consider it to be an undescribed species, but because there is only one female specimen we are leaving it un-named.

Guerra-García (2006) also recorded a number of male specimens under the same name from Elizabeth Reef off the coast of New South Wales which appear to be *O. berentsae* Takeuchi & Lowry, 2007.

Distribution. *Australia.* Queensland: north-east side of Lizard Island (Guerra-García 2006).

***Paracaprella* Mayer, 1890**

***Paracaprella* sp.**

(Fig. 8)

Paracaprella sp. Guerra-García, 2006: 448, fig. 52.

Material examined. 1 premature female, ~2.5 mm, AM P61633 (QLD 659); 2 premature females, AM P61634 (QLD 658); 1 female, AM P61646 (QLD 921).

Description. Based on female, ~2.3 mm, AM P61633.

Head. *Head/pereonite 1* fused (suture present). Eyes large, slightly distinctive. *Antenna 1* between 0.3 – 0.5 body length; peduncle article 2 longest; primary flagellum subequal in length to peduncle, flagellum with more than 2 articles; flagellum proximal article composed of 2 fused articles (?). *Antenna 2* without dense concentration of long slender setae along posterior margin; flagellum with 2 articles. Mandible palp 1–articulate or vestigial; molar well developed.

Pereon. *Gnathopod 1* propodus subtriangular, palm begins less than 0.25 along posterior margin of propodus or begins 0.25 along posterior margin of propodus. *Pereonite 2* without anterolateral projection, without midlateral projection, without anterodorsal projection, without mid-dorsal projections, without paired midventral projections, without ventral projection between insertion of gnathopods. *Gnathopod 2* situated toward anterior end of pereonite 2; basis subequal in length to pereonite 2, without anterodistal projection; propodus large, propodus elongate (subrectangular), propodus anterodistal margin slightly convex or straight, propodus without projections along mid-anterior margin; propodus palm smooth, propodus palm convex (?), without midpalmar projection, without sinus. *Pereonite 3* without anterolateral projection, without mid-dorsal projections, without paired mid-ventral projections. *Pereopod 3* reduced or vestigial, pereopod 3 with 2

articles. *Pereonite 4* without anterolateral projection, without mid-dorsal projections, without mid-ventral spines, without posterodorsal projection. *Pereopod 4* reduced or vestigial, with 2 articles. *Pereonite 5* without anterolateral projection, without dorsal projections, without posterodorsal projection. *Pereopod 5* well

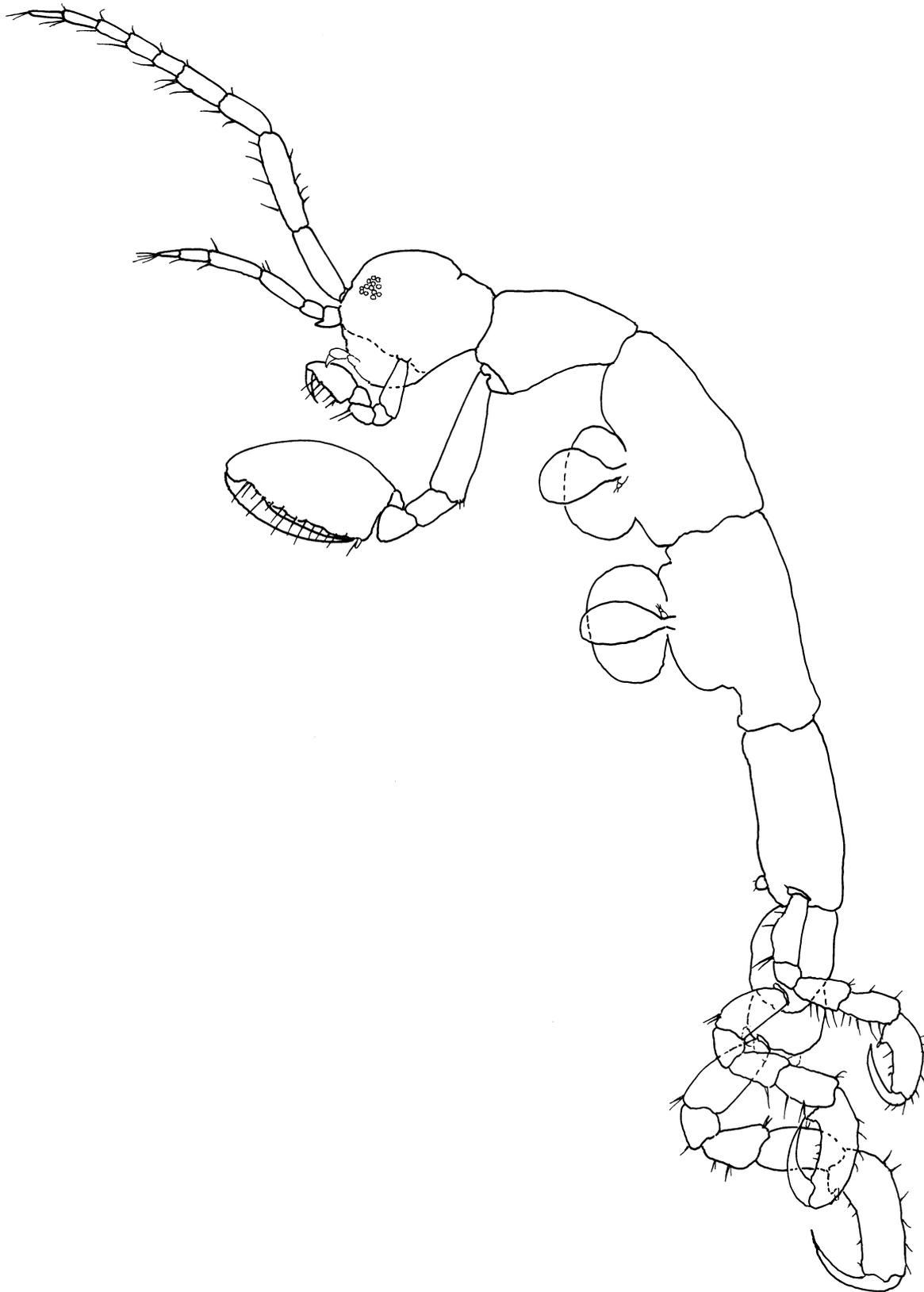


FIGURE 8. *Paracaprella* sp. Premature female, ~2.5 mm, AM P61633, GBRMPA Reef 11-131, Great Barrier Reef. Refigured from Guerra-García (2006).

developed, slender, with 6 articles. *Pereopods* 6 and 7 prehensile. *Pereopod* 6 basis shorter than propodus. *Pereopod* 7 merus shorter than basis.

Gills on pereonites 3 and 4; *pereonite 3 gill* ovate, *pereonite 3 gill* length between 0.25–0.5 x corresponding pereonite; *pereonite 4 gill* ovate, *pereonite 4 gill* length between 0.25–0.5 x corresponding pereonite.

Pleon. Pleopods absent or vestigial.

Remarks. Guerra-García (2006) did not give this taxon a name because no males were known. No new material has been discovered since. *Paracaprella* sp. can be distinguished from other species on the GBR by the combination of the following characters: antenna 2 flagellum 2–articulate, mandibular palp reduced, molar present, gills on pereonites 3 and 4, pereopods 3 and 4, 2–articulate and pereopods 5–7, 6–articulate.

Distribution. Northern Great Barrier Reef (Guerra-García 2006).

Protella Dana, 1852

Protella similis Mayer, 1903

(Fig. 9)

Protella similis Mayer, 1903: 34, pl. 1: figs 19–22, pl. 6: figs 41, 42. —Laubitz, 1991: 119, fig. 16. —Guerra-García, 2002a: 227, figs 13–16. —Guerra-García, 2004a: 52, 54, fig. 42. —Guerra-García, 2006: 448, fig. 53.

Material examined. More than 20 specimens, AM P61707 (QLD 1525). See station list for occurrences (Lowry & Myers 2009) and Guerra-García (2006) for complete material examined.

Type locality. Indonesia (7°25'S 113°16'E, 7°S 120°34.5'E, 2°25'S 117°43'E, 0°3.8'S 130°24.3'E, 1°42.5'S 130°47.5'E).

Description. Based on male, 8.4 mm, AM P61707.

Head and pereonites slender. *Head/pereonite 1* fused (suture present), dorsal margin convex; eye large, distinctive. *Antenna 1* well developed; slender, as long or longer than body; peduncle articles 2 and 3 subequal in length, article 3 straight; accessory flagellum absent; flagellum 0.66 x peduncular length or 0.75 x peduncular length, with more than 2 articles. *Antenna 2* 0.4 x antenna 1 length, slender; peduncle with several feeble setae; flagellum about 1/5 (0.2 x) of peduncular length or about 1/4 (0.25 x) of peduncular length, with 2 articles. *Labrum* notched, forming rounded quadrilateral projections. *Mandible* right incisor with 5 teeth, right lacinia mobilis with 2 large teeth; molar well developed; left incisor with 5 teeth, lacinia mobilis with 4 teeth; palp 3–articulate. *Maxilla 1* outer plate with 5 stout apical setal-teeth. *Maxilliped* inner plate smaller than outer plate; subrectangular; 2 x length of inner plate or 2.5 x length of inner plate; palp article 2 setose on inner margin; palp article 4 slightly enlarged, falcate.

Pereon. Pereonites 2 to 7 not fused; pereonite 5 longest (subequal to pereonite 3). Pereonite 1 without projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus triangular, palm begins 1/4 along posterior margin, smooth, without large, rounded knob proximally; dactylus slightly curved, inner margin serrate. *Pereonite 2* without projections. *Gnathopod 2* situated toward anterior end or situated near middle of pereonite 2; basis about 0.75 x length of pereonite 2, with anterodistal projection; ischium without anterodistal projection; propodus subovate, anterodistal margin slightly convex, without anterodistal triangular projection, without projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, palm proximal projection with 1 robust (grasping) seta, palm margin straight or irregular, smooth, without hook-like projection at base of dactylus, with narrow well developed distal shelf (poorly developed), with 1 large projection, with 2 shallow sinuses, without midpalmar projection. *Pereonite 3* without projections. *Pereopod 3* reduced, with 1 article. *Pereonite 4* without projections. *Pereopod 4* reduced, with 1 article. *Pereopod 5* well developed, with 6 articles, slender. *Pereopods* 6 and 7 prehensile.

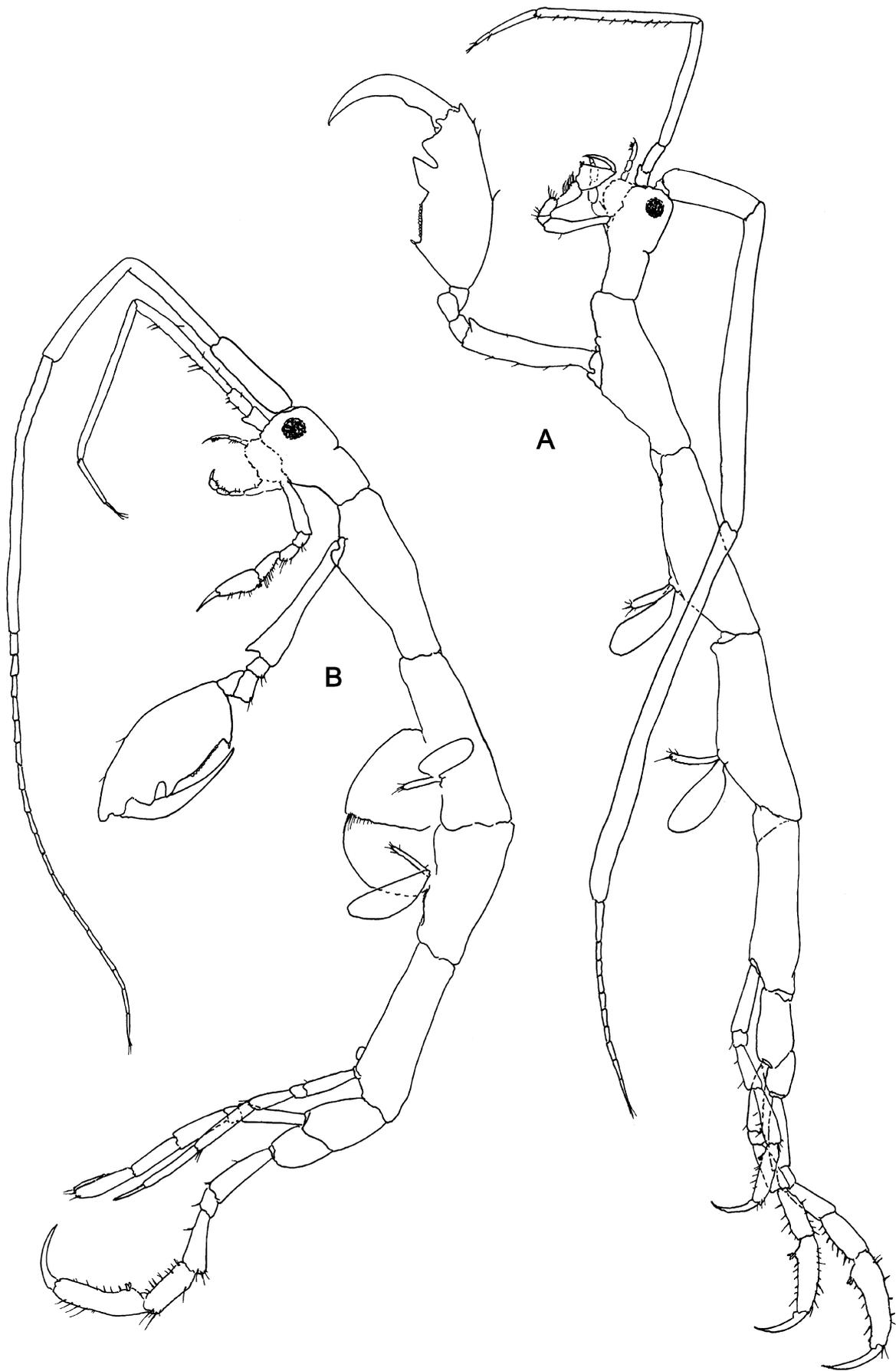


FIGURE 9. *Protella similis* Mayer, 1903. A, Male, ~4.8 mm, B, female, ~4.5 mm, AM P61707, Palfrey Island, Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

Gills on pereonites 3 and 4. *Pereonite 3 gill* length about 1/2 of corresponding pereonite, straight, ovate. *Pereonite 4 gill* length about 1/2 of corresponding pereonite or length about 2/3 of corresponding pereonite, straight, ovate. *Pereopods 6 and 7* present.

Pleon. *Uropod 1* present (in the form of a lateral lobe); peduncle fused to pleon.

Habitat. Living on the hydroids similar to *Macrorhynchia philippina*, and *Aglaophenia delicatula*, sediments and an erect brown sponge similar to *Pericharax heteroraphis* in 2 to 20 m depth. The species has been also found in corals (Guerra-García, 2002a) and gorgonaceans (Guerra-García, 2004a).

Remarks. *Protella similis* appear to be uncommon on the Great Barrier Reef, but it can be locally abundant living mainly on hydroids.

Distribution. *Australia.* Queensland: Pidgin Point, Watsons Bay; Turtle Beach; Palfrey Island; South Island, all Lizard Island (Guerra-García 2006). *Indonesia* Mollucca and Ceram Seas; Arafura Sea; Flores Sea; Dongala, Celebes; Banda Sea; Java Sea (Mayer 1903; McCain & Steinberg 1970). *Philippines* (Laubitz 1991). *Tanzania* (Guerra-García 2002a). *Thailand* (McCain & Steinberg 1970).

***Pseudaeginella* Mayer, 1890**

***Pseudaeginella* cf. *biscaynensis* (McCain, 1968)**

(Fig. 10)

Pseudaeginella biscaynensis. —Guerra-García, 2004a: 107, fig. 12. —?Guerra-García, 2004a: 54, fig. 43. —Guerra-García, 2006: 448, fig. 54.

Material examined. 1 male, AM P61620 (QLD 680); 1 male, AM P61621 (QLD 734); 1 female, AM P61623 (QLD 759); 2 males, AM P61622 (QLD 760); 1 male, AM P61689 (BK 114); 1 premature female, AM P61688 (BK 126); 1 premature female, AM P61690 (QLD 1476).

Description. Based on male, AM P61689 (BK 114).

Head. *Head/pereonite 1* fused (suture absent), head without rostrum. Eyes large, distinctive or small, not distinctive. *Antenna 1* between 0.3–0.5 body length; peduncle article 2 longest; primary flagellum subequal in length to peduncle or longer than peduncle, flagellum with more than 2 articles; flagellum proximal article composed of 2 fused articles. *Antenna 2* without dense concentration of long slender setae along posterior margin; flagellum with 2 articles. *Mandible* right incisor with 5 teeth; accessory setal row with 2–5 setae; palp 3–articulate; molar absent. *Mandible* left incisor with 5 teeth; with 3 trapezoid plates decreasing in size; accessory setal row with 2–5 setae. *Maxilla 1* outer plate with 6 stout apical setal-teeth. *Maxilliped* inner plate smaller than outer plate; inner margin smooth; palp article 2 scarcely setose on inner margin, palp article 3 without distal projection, palp article 3 with few distal setae (1–5), palp article 4 enlarged.

Pereon. *Gnathopod 1* propodus triangular or subtriangular, palm begins about 0.33 along posterior margin of propodus, with 2 robust setae near corner of palm; dactylus slightly curved. *Pereonite 2* without anterolateral projection, without anterodorsal projection, with single tiny mid-dorsal projection, without paired midventral projections, without ventral projection between insertion of gnathopods, with slight posterodorsal projection. *Gnathopod 2* situated toward anterior end of pereonite 2, or situated near middle of pereonite 2; basis subequal in length to pereonite 2, without anterodistal projection; propodus massive, propodus subovate, propodus anterodistal margin straight (more or less); palm proximal projection with 1 robust (grasping) seta, propodus palm smooth, propodus palm straight or irregular, with large midpalmar projection, with deep, narrow sinus, propodus palm with broad, well developed distal shelf. *Pereonite 3* without anterolateral projection, with single mid-dorsal projection (slight), without paired mid-ventral projections, pereonite 3 without posterodorsal projection. *Pereopod 3* reduced or vestigial, with 1 article. *Pereonite 4* without anterolateral projection, without mid-dorsal projections, without mid-ventral spines, without posterodorsal projection. *Pereopod 4* reduced, with 1 article. *Pereonite 5* without anterolateral

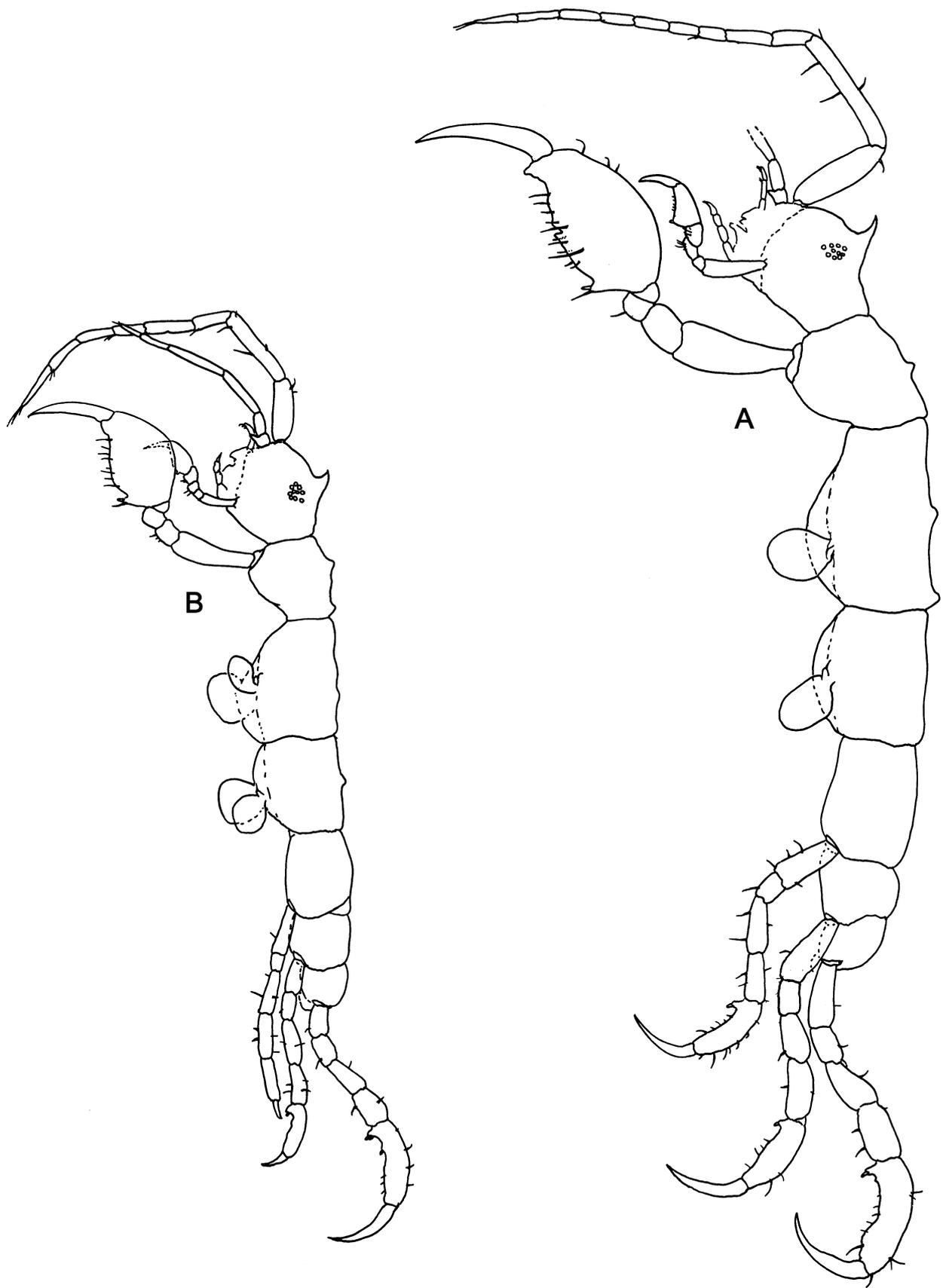


FIGURE 10. *Pseudaeginella* cf. *biscaynensis* (McCain, 1968). A, Male, ~2.3 mm, AM P61689 North Point, Lizard Island; B, female, ~1.75 mm, AM P61690, Coconut Beach, Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

projection, without dorsal projections, without posterodorsal projection. *Pereopod* 5 well developed, slender. *Pereopods* 6 and 7 weakly prehensile.

Gills on pereonites 3 and 4; *pereonite 3 gill* ovate, *pereonite 3 gill* length between 0.25–0.5 x corresponding pereonite; *pereonite 4 gill* ovate, *pereonite 4 gill* length between 0.25–0.5 x corresponding pereonite or length between 0.6–0.8 x corresponding pereonite.

Pleon. *Pleopods* absent or vestigial. *Telson* (dorsal lobe) present.

Habitat. Purple sponge, calcareous red tubular algae, *Halimeda*, 2–30 m depth. The species has been found in shallow waters living on red algae (McCain 1968; Guerra-García 2004a), the green algae *Avrainvillea* sp. and the seagrass *Thalassia* sp. (Gable & Lazo-Wasem 1987), among corals, through *Cymodocea* sp. and *Syringodium* sp. (Guerra-García 2002a).

Remarks. *Pseudaeginella* cf. *biscaynensis* differs from *P. biscaynensis* by differences in body projections and pereopod 5. Specimens of *P. cf. biscaynensis* have a more robust pereopod 5 and are considerably less spinose than those of *P. biscaynensis*. *Pseudaeginella biscaynensis*, known from the Florida coast and vicinity, has also been recently recorded in the Indian Ocean (Guerra-García, 2002a). It remains that *P. biscaynensis* may prove to be a species complex. Further study of this species is required.

Distribution. *Australia*. Queensland: Ashmore Reef and Boot Reef, Coral Sea; Coconut Beach, Bird Islet and North Point, all Lizard Island (Guerra-García 2006). Coral Sea Island Territory: Elizabeth and Middleton Reefs (Guerra-García 2006).

Phtisicinae Vassilenko, 1968

Jigurru Guerra-García, 2006

Jigurru vailhoggett Guerra-García, 2006

(Fig. 11)

Jigurru vailhoggett Guerra-García, 2006: 426, figs 13–17.

Material examined. Holotype male, 3.1 mm, AM P61744 (QLD 1475). Paratypes: 2 males, 1 female, AM P61745 (QLD 1475).

Type locality. Coconut Beach, Lizard Island, Queensland, Australia (14°40'S 145°28'E), dead thick branching hard coral encrusted with calcareous red algae and filamentous algal turf, 8 m depth (QLD 1475).

Description. Based on holotype male, 3.1 mm and paratype female, 2.2 mm.

Head and pereonites slender. *Head/pereonite 1* fused (suture absent), dorsal margin convex; eye large, distinctive. *Antenna 1* well developed; slender, 0.33 x body length; peduncle article 2 longest (slightly longer than article 3), article 3 straight; accessory flagellum absent; flagellum 0.66 x peduncular length, with more than 2 articles, proximal article composed of 3 articles. *Antenna 2* 0.4 x antenna 1 length, slender; peduncle with several feeble setae; flagellum 0.4 x peduncular length, with 2 articles. *Labrum* weakly notched, forming rounded quadrilateral projections. *Mandible* right incisor with 5 teeth, right lacinia mobilis with 2 large teeth, follow by 2 plates, accessory setal row with 4 setae; molar absent; left incisor with 5 teeth, lacinia mobilis with 5 teeth, with 5–6 trapezoid plates decreasing in size; palp 3–articulate, palp setal formula 1-x-1. *Maxilla 1* outer plate with 6 stout apical setal-teeth. *Maxilliped* inner plate subequal to outer plate; round (inner plates almost fused); subequal to inner plate; palp article 2 setose on inner margin (with about 6 setae on inner margin); palp article 4 not enlarged, falcate.

Pereon. *Pereonites 2 to 7* not fused; pereonite 5 longest. Pereonite 1 without projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus triangular, palm begins about 1/3 to 2/5 along posterior margin, smooth, without large, rounded knob proximally; dactylus curved, inner margin smooth. *Pereonite 2* without projections. *Gnathopod 2* situated toward anterior end of pereonite 2; basis about 1.5 x length of, or subequal

in length to pereonite 2, without anterodistal projection; ischium without anterodistal projection; propodus subovate, large, anterodistal margin convex, without anterodistal triangular projection, without projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, proximal projection with 3 robust (grasping) setae, margin convex, smooth, without hook-like projection at base of dactylus, without distal shelf, sinus or midpalmar projection. *Pereonite 3* without projections. *Pereopod 3* absent.

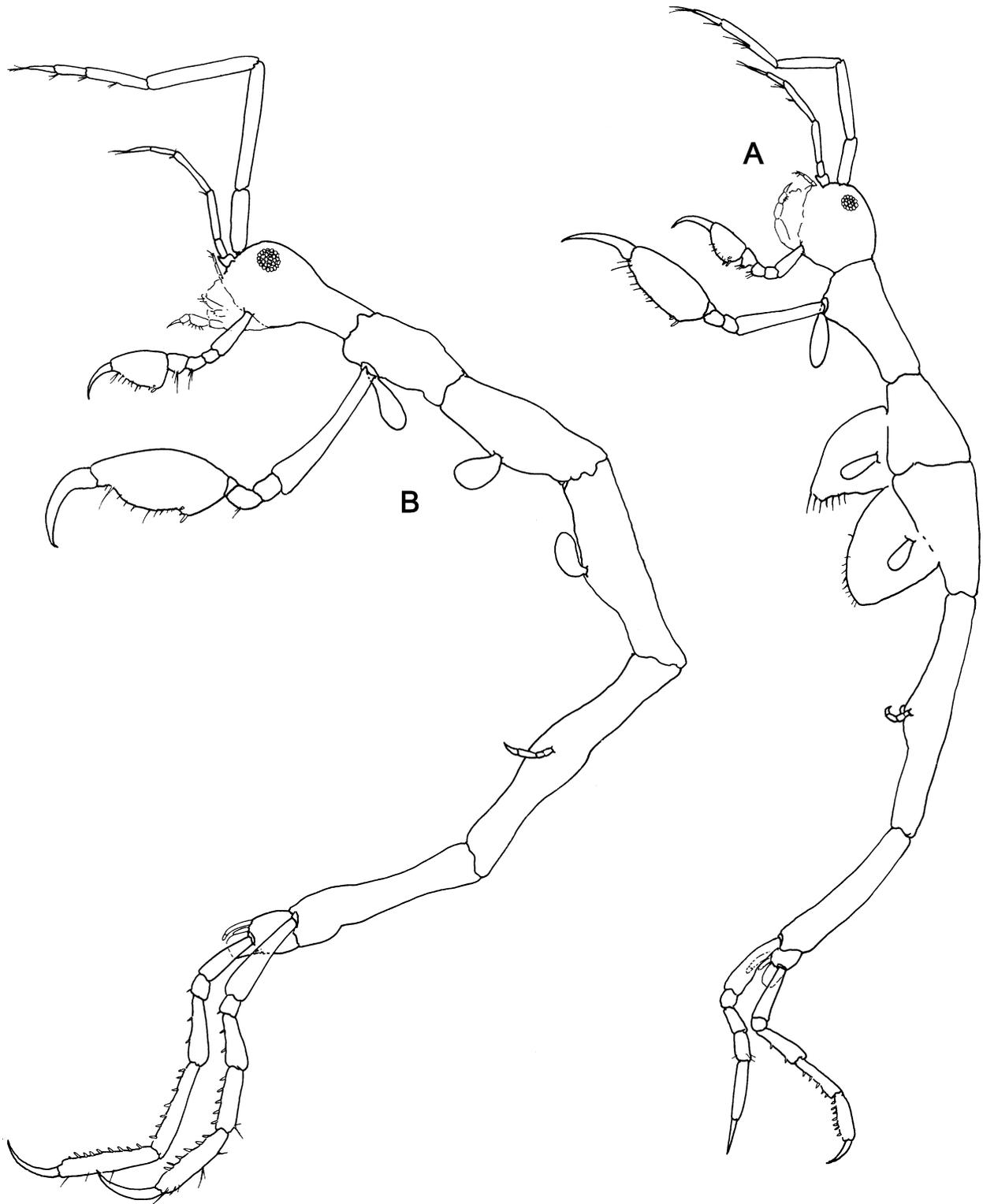


FIGURE 11. *Jigurru vailhoggett* Guerra-García, 2006. A, Female paratype, 2.2 mm, AM P61745; B, male holotype, 3.1 mm, AM P61744, Coconut Beach, Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

Pereonite 4 without projections. *Pereopod 4* absent. *Pereopod 5* reduced or vestigial, with 3 articles or with 4 articles (3 articles, but basal article almost divided into 2 articles), slender. *Pereopods 6 and 7* simple. *Pereopod 6* basis and propodus subequal in length. *Pereopod 7* similar to pereopod 6.

Gills on pereonites 2 to 4. *Pereonite 3 gill* length about 1/3 of corresponding pereonite, straight, ovate. *Pereonite 4 gill* length about 1/4 of corresponding pereonite, straight, ovate.

Pleon. *Uropod 1* present; peduncle fused to pleon; ramus length about 6–8 x width. *Uropod 2* ramus well developed.

Female (sexually dimorphic characters). *Oostegites* scarcely setose. *Gnathopod 2* similar to male, but with dactylus slightly more elongate.

Remarks. *Jigurru vailhoggett* differs from other caprellids on the GBR in having pereopod 3 and 4 absent, pereopod 5 reduced to four articles and gills on pereonites 2 to 4.

Distribution. *Australia.* Queensland: Coconut Beach, Lizard Island (Guerra-García 2006).

***Metaproto* Mayer, 1903**

***Metaproto novaehollandiae* (Haswell, 1880)**

(Fig. 12)

Proto novae-hollandiae Haswell, 1880: 275, pl. 2: fig. 3. —Mayer, 1882: 26; Stebbing, 1888: 1230. —Mayer 1890: 14. *Metaproto novaehollandiae.* —Mayer, 1903: 26, pl. 1: fig. 11, pl. 6: fig. 24, pl. 9: fig. 3, 50. —Stebbing, 1910: 651. —McCain & Steinberg, 1970: 56. —Laubitz 1991: 103, fig. 1. —Guerra-García, 2002b: 396, fig. 2. —Guerra-García, 2003a: 100, fig. 2. —Guerra-García, 2004a: 10, 12, fig. 23. —Guerra-García, 2004b: 160, fig. 1. —Guerra-García, 2006: 430, fig. 23.

Phtisica marina. —Jones, 1984: 103.

Material examined. More than 20 specimens, AM P61702 (QLD 1574). See station list for occurrences (Lowry & Myers 2009) and Guerra-García (2006) for complete material examined.

Type locality. Port Jackson, New South Wales Australia (33°51'S 151°16'E).

Description. Based on male, ~8.5 mm, female, ~6 mm.

Head and pereonites slender. *Head/pereonite 1* fused (suture absent), slightly concave along dorsal margin; eye large, distinctive. *Antenna 1* well developed; slender, 0.4 x body length; peduncle article 2 longest (slightly longer than article 3), article 3 straight; accessory flagellum absent; flagellum 0.4 x peduncular length, with more than 2 articles, proximal article composed of 2 articles. *Antenna 2* 0.5 x antenna 1 length, slender; peduncle without setae; flagellum about 1/4 (0.25 x) of peduncular length, with more than 4 articles. *Labrum* notched, forming shallow quadrilateral projections. *Mandible* right lacinia mobilis absent, accessory setal row with 7 setae; molar absent; with 3 trapezoid plates decreasing in size; palp 3–articulate, palp setal formula 1-5-1. *Maxilla 1* outer plate with 6 stout apical setal-teeth. *Maxilliped* inner plate subequal to outer plate, round; outer plate subequal to inner plate; palp article 2 scarcely setose on inner margin; palp article 4 not enlarged, weakly falcate.

Pereon. Pereonites 2 to 7 not fused; pereonite 5 longest. *Pereonite 1* without projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus triangular, palm begins about 1/3 along posterior margin, smooth, without large, rounded knob proximally; dactylus curved, inner margin smooth. *Pereonite 2* without projections. *Gnathopod 2* situated toward anterior end of pereonite 2; basis subequal in length to pereonite 2, without anterodistal projection; ischium without anterodistal projection; propodus subovate, large, anterodistal margin convex, without anterodistal triangular projection, without projections along mid-anterior margin; in larger specimens palm with proximal cavity filled with membranous sack, palm proximal projection with 3 robust (grasping) setae, palm margin convex, crumpled, without hook-like projection at base of dactylus, without sinus or midpalmar projection. *Pereonite 3* without projections. *Pereopod 3* well developed, with 6 articles. *Pereonite 4* without projections. *Pereopod 4* well developed, with 6 articles.

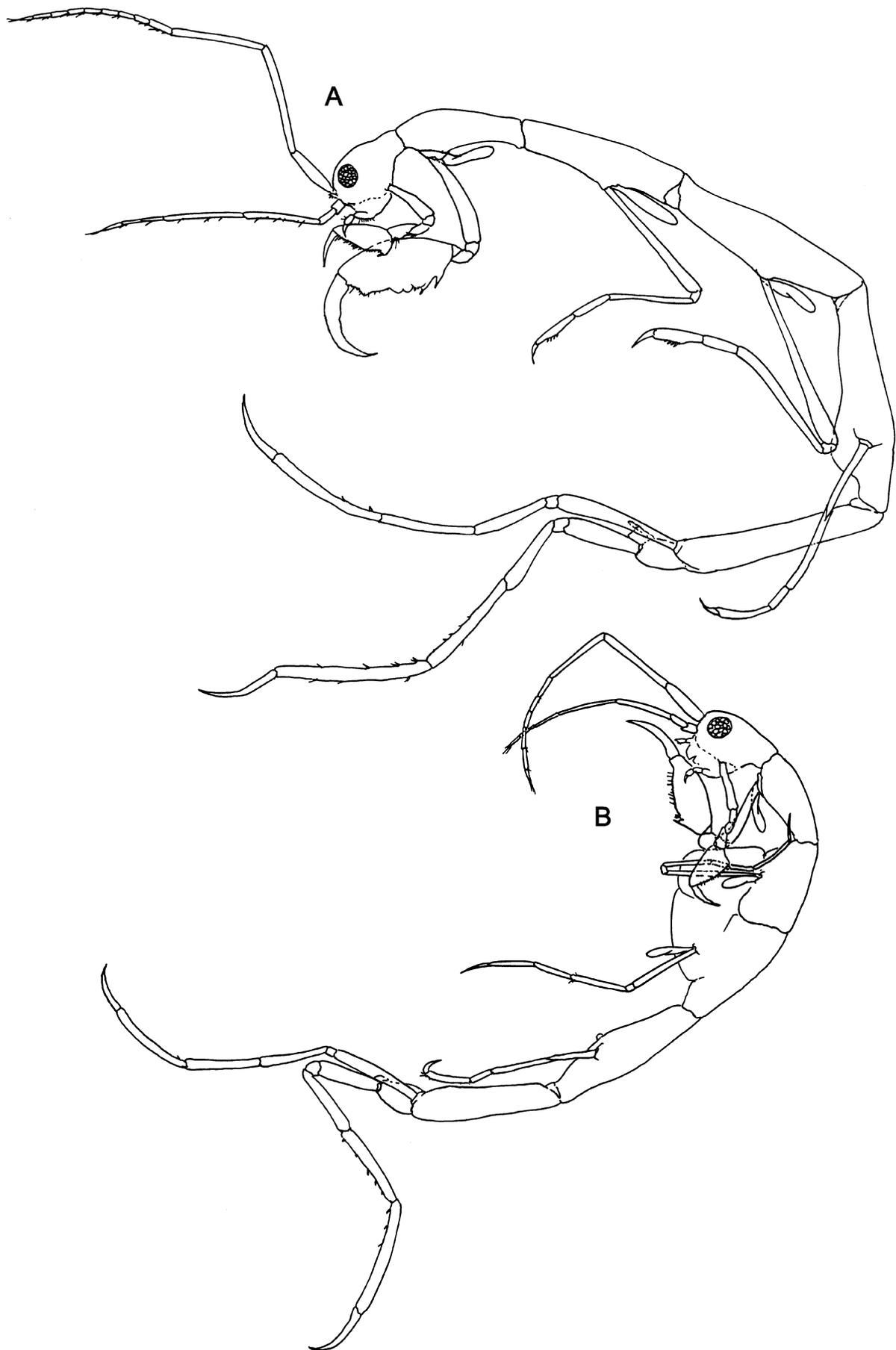


FIGURE 12. *Metaproto novaehollandiae* (Haswell, 1880). A, Male, ~8.5 mm, B, female, ~6 mm, AM P61702, Casuarina Beach, Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

Pereopod 5 well developed, with 7 articles, slender. *Pereopods 6 and 7* simple. *Pereopod 6* basis and propodus subequal in length. *Pereopod 7* similar to pereopod 6.

Gills on pereonites 2 to 4. *Pereonite 3 gill* length about 2/3 of corresponding pereonite, curved posteriorly, elongate, cylindrical. *Pereonite 4 gill* length about 1/2 of corresponding pereonite, distal part curved posteriorly, elongate, cylindrical.

Pleon. *Uropod 1* present; peduncle free, very short, length about 2/3 width; ramus length about 4–5 x width, ramus 4 x peduncular length.

Female (sexually dimorphic characters). *Gnathopod 2* propodus elongate; palm margin straight, smooth, without distal shelf, with tiny midpalmar projection.

Remarks. *Metaproto novaehollandiae* is the only species of *Metaproto* on the reef. It differs from other GBR caprellids in having pereopod 3 to 5 well developed and gills on pereonites 2 to 4.

Distribution. *Australia.* Queensland: Ashmore Reef, Coral Sea. Dynamite Passage, outer Great Barrier Reef (Guerra-García 2006). Lizard Island: Crystal Beach; Chinamans Ridge, Watsons Bay; patch reefs at north end of Casuarina Beach; Mangrove Beach, Blue Lagoon; between Bird Islet & Trawler Beach, Blue Lagoon; outer reef slope midway between Bird Islet and South Island; north-west of Palfrey Island, south-west of Eagle Island (Guerra-García 2006). Heron Island: near entrance to harbour (Guerra-García 2006). Northern Territory: South side of New Year Island, Arafura Sea (Guerra-García 2004a). Western Australia: 19°03.4'S 119°03.3'E to 19°03.6'S 119°03.6'E (Guerra-García 2004a). New South Wales: Port Jackson (Haswell 1880). *Indonesia.* Banda Sea (McCain & Steinberg 1970). *New Caledonia:* 21°34'S, 116°27'E (Laubitz, 1991). *Papua New Guinea.* Bootless Bay and Madang Lagoon (Guerra-García 2003a). *Philippines:* 12°31'N, 120°39.5'E (Laubitz 1991; Guerra-García 2002b). *South Africa.* (McCain & Steinberg, 1970). *Thailand.* Phuket (Guerra-García 2004b).

Perotripus Dougherty & Steinberg, 1953

Perotripus keablei Guerra-García, 2006

(Fig. 13)

Perotripus keablei Guerra-García, 2006: 431, figs 24–27.

Material examined. Holotype male, 5.2 mm, AM P61747 (QLD 6). Paratypes: 1 female, AM P61748 (QLD 14). See station list for occurrences (Lowry & Myers 2009) and Guerra-García (2006) for complete material examined.

Type locality. Off Mangrove Beach, Blue Lagoon, Lizard Island, Queensland (14°40'S 145°28'E), sand, 1.5 m depth.

Description. Based on holotype male, 5.2 mm and female paratype, 2.7 mm.

Head and pereonites slender. *Head/pereonite 1* fused (suture almost absent); dorsal margin convex; eye large, distinctive. *Antenna 1* reduced; slender, 0.15 x body length; peduncle article 2 longest, article 3 straight; accessory flagellum absent; flagellum 0.33 x peduncular length, with 2 articles. *Antenna 2* 0.6 x antenna 1 length, slender; peduncle with several feeble setae; flagellum about 1/5 (0.2 x) of peduncular length, with 2 articles. *Labrum* notched, forming rounded quadrilateral projections. *Mandible* right incisor with 6 teeth, right lacinia mobilis transformed into a plate, followed by 4 plates decreasing in size, accessory setal row absent; molar absent; left incisor with 6 teeth, lacinia mobilis with 6 teeth, with 3 trapezoid plates decreasing in size; palp 3–articulate, palp setal formula with 1 to 4 large distal setae. *Maxilla 1* outer plate with 5 stout apical setal-teeth. *Maxilliped* inner plate subequal to outer plate, subrectangular; outer plate 2/3 (0.66 x) length of inner plate; palp article 2 setose on inner margin; palp article 4 not enlarged, not falcate.

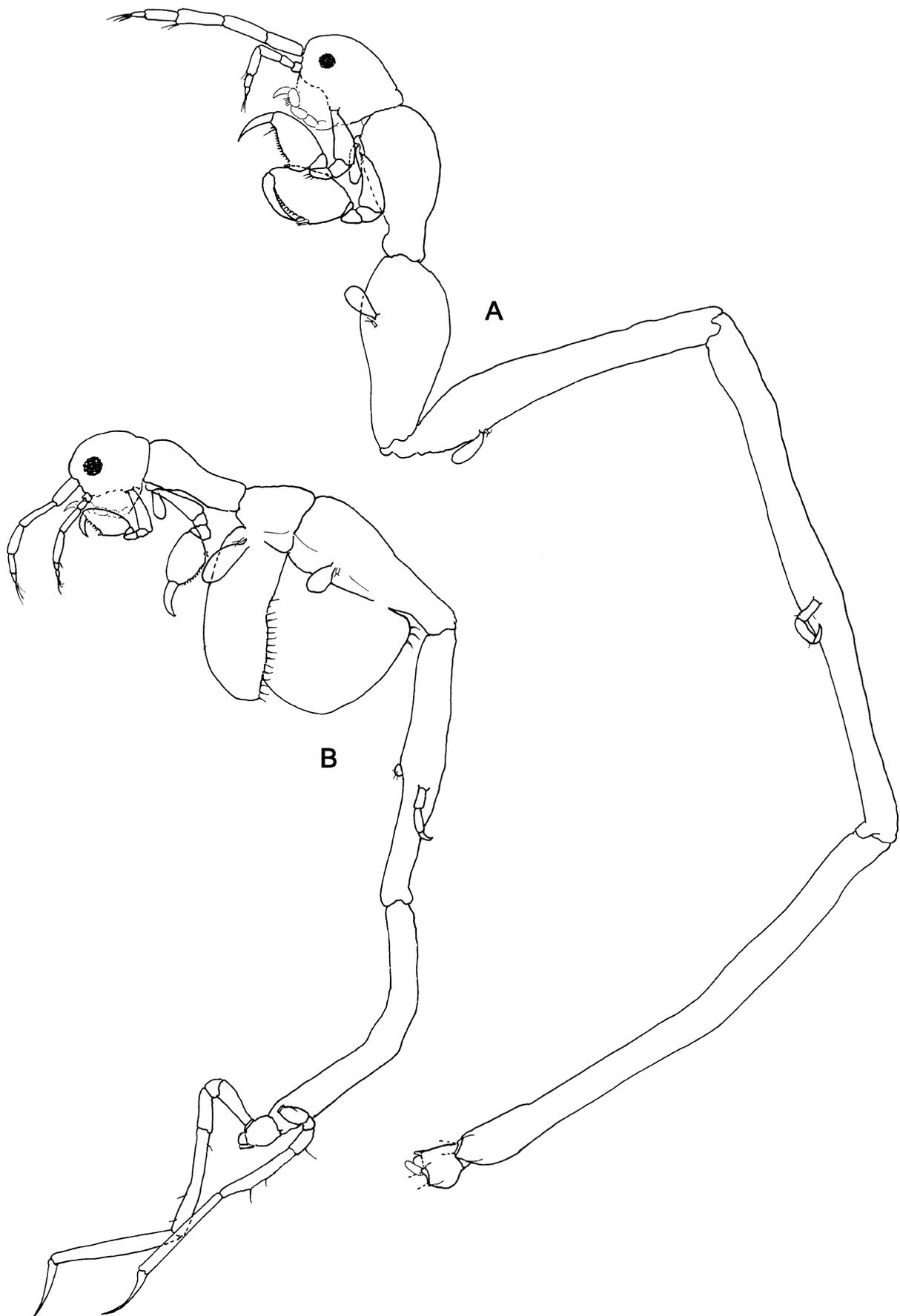


FIGURE 13. *Perotripus keablei* Guerra-García, 2006. A, holotype male, 5.2 mm, AM P61747, Mangrove Beach, Lizard Island, B, paratype female, 2.7 mm, AM P61748, Bird Islet, Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

Pereon. Pereonites 2 to 7 not fused. *Pereonite 1* without projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus subtriangular, palm begins about 1/3 along posterior margin, smooth, without large, rounded knob proximally; dactylus curved, inner margin smooth. *Pereonite 2* without ventral projection between insertion of gnathopods. *Gnathopod 2* situated toward anterior end of pereonite 2; basis about 0.5 x length of pereonite 2, without anterodistal projection; ischium without anterodistal projection; propodus elliptical, large, anterodistal margin narrowly concave, without anterodistal triangular projection, without projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, proximal projection with 3 robust (grasping) setae, margin convex, minutely serrate, without hook-like projection at base of dactylus, without distal shelf, sinus or midpalmar projection. *Pereonite 3* without projections. *Pereopod 3* reduced, with 1 article. *Pereonite 4* without projections. *Pereopod 4* reduced, with 1 article. *Pereopod 5* reduced or vestigial, with 3 slender articles. *Pereopods 6* and *7* simple. *Pereopod 6* basis shorter than propodus. *Pereopod 7* similar to pereopod 6.

Gills on pereonites 2 to 4. *Pereonite 3 gill* length about 1/4 of corresponding pereonite, straight, ovate. *Pereonite 4 gill* length about 1/8 of corresponding pereonite, curved anteriorly, ovate.

Pleon. Uropods absent.

Female (sexually dimorphic characters). *Pereonites 4–6* shorter than in male; propodus of gnathopod 2 twice as long as wide. Oostegites sparsely setose. *Pereopod 6* palm without robust setae.

Habitat. Sandy bottoms, coral rubble, 0.5 to 25 m depth.

Remarks. The only other known species of *Perotripus* is *P. brevis* (La Follette, 1915) from the west coast of North America, redescribed in detail by Laubitz (1970). *Perotripus keablei* differs from *P. brevis* as follows: pereonites 2 and 3 are smooth instead of sculptured with lateral projections; pereopod 3 uniaarticulate instead of three-articulate; the penes are large instead of small; the pleon lacks a pair of small appendages.

Distribution. *Australia*: Queensland: Blue Lagoon; Casuarina Beach; Mermaid Cove, all Lizard Island (Guerra-García, 2006).

***Pseudoprellicana* Guerra-García, 2006**

***Pseudoprellicana johnsoni* Guerra-García, 2006**

(Fig. 14)

Pseudoprellicana johnsoni Guerra-García, 2006: 434, figs 29–32.

Material examined. Holotype male, 2.8 mm, AM P61737 (QLD 27). Paratype: 1 female, AM P61738 (QLD 29).

Type locality. Between Bird Islet & South Island, Lizard Island, Queensland, Australia (14°40'S 145°E), sediment at reef base with mixed algae, 25 m depth (QLD 27).

Description. Based on holotype male, 2.8 mm and paratype female, 2.7 mm.

Head and pereonites slender. *Head/pereonite 1* fused (suture absent); slightly concave along dorsal margin or dorsal margin straight; eye large, distinctive. *Antenna 1* well developed; slender, 0.33 x body length; peduncle articles 2 and 3 subequal in length, article 3 straight; accessory flagellum absent; flagellum 0.4 x peduncular length, with more than 2 articles. *Antenna 2* 0.5 x antenna 1 length, slender; peduncle without setae; flagellum about 1/4 (0.25 x) of peduncular length, with 2 articles. *Labrum* weakly notched, forming rounded quadrilateral projections. *Mandible* right incisor with 5 teeth, right lacinia mobilis coarsely toothed followed by 2 plates; accessory setal row with 5 setae; molar absent; left incisor with 5 teeth, lacinia mobilis with 5 teeth, with 5–6 trapezoid plates decreasing in size; palp 3-articulate, palp setal formula with 1 to 4 large distal setae. *Maxilla 1* outer plate with 6 stout apical setal-teeth. *Maxilliped* inner plate larger than outer plate, subrectangular; outer plate 1/2 (0.5 x) length of inner plate; palp article 2 scarcely setose on inner margin; palp article 4 not enlarged, weakly falcate.

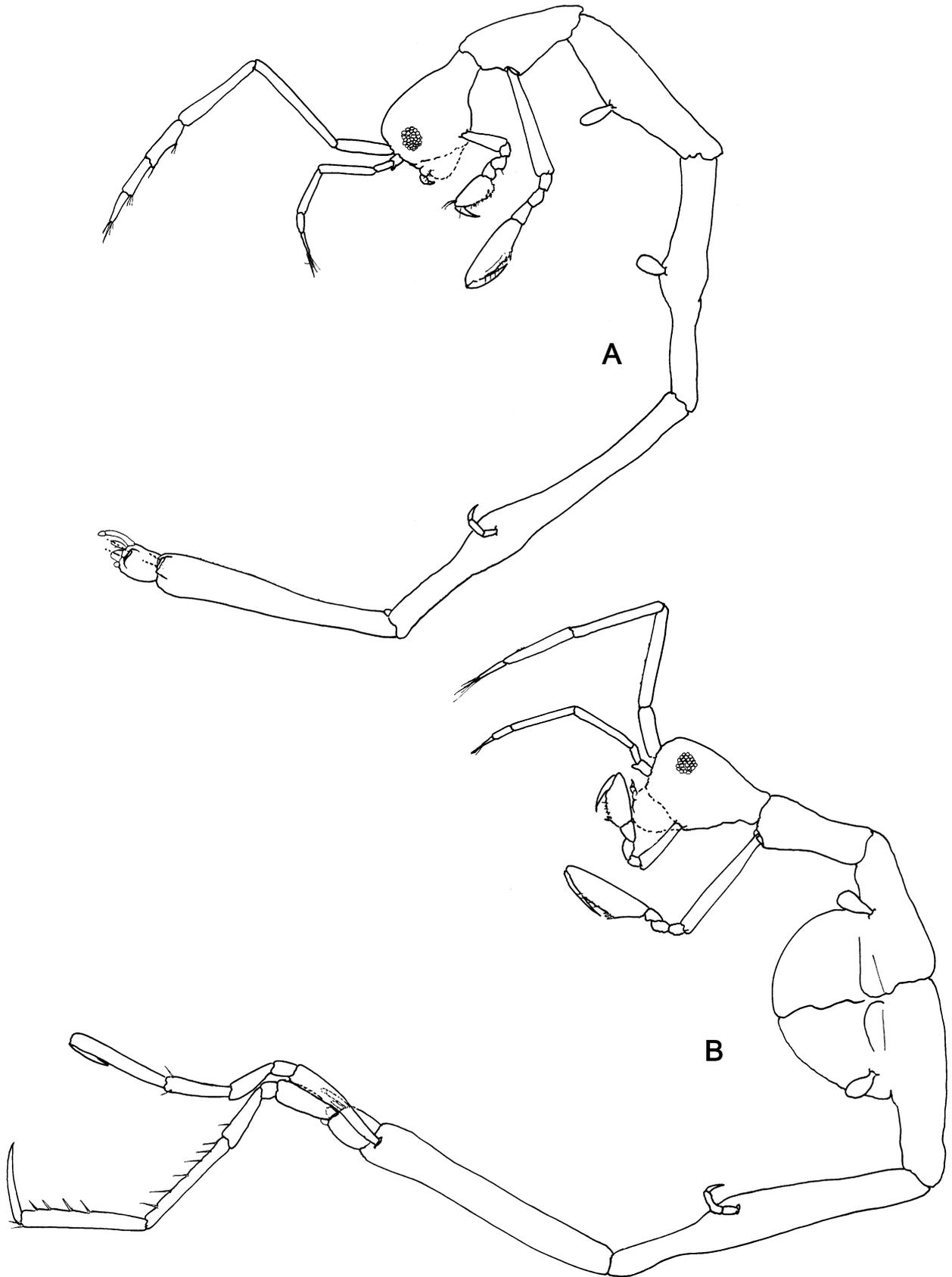


FIGURE 14. *Pseudoprellicana johnsoni* Guerra-García, 2006. A, Holotype male, 2.8 mm, AM P61737, B, paratype female, 2.7 mm, AM P61738, between Bird Islet & South Island, Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

Pereon. Pereonites 2 to 7 not fused; pereonite 5 longest. Pereonite 1 without projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus subtriangular, palm begins 2/5 along posterior margin, smooth, without large, rounded knob proximally; dactylus curved, inner margin smooth. *Pereonite 2* without projections. *Gnathopod 2* situated toward anterior end or near middle of pereonite 2; basis subequal in length to pereonite 2, without anterodistal projection; ischium without anterodistal projection; propodus subovate or elongate, large, anterodistal margin slightly convex, without anterodistal triangular projection, without projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, palm proximal projection with 3 robust (grasping) setae, palm margin convex, smooth, without hook-like projection at base of dactylus, without distal shelf, without sinus, without midpalmar projection. *Pereonite 3* without projections. *Pereopod 3* absent. *Pereonite 4* without projections. *Pereopod 4* absent. *Pereopod 5* reduced or vestigial, with 3 articles, slender. Pereopods 6 and 7 simple.

Gills on pereonites 3 and 4. *Pereonite 3 gill* length less than 1/4 of corresponding pereonite, straight, ovate. *Pereonite 4 gill* length about 1/6 of corresponding pereonite, straight, ovate.

Pleon. *Uropod 1* present. *Uropod 2* ramus well developed.

Female (sexually dimorphic characters). *Head/pereonite 1* dorsal margin straight. *Antenna 2* 0.6 x antenna 1 length. *Gnathopod 2* situated near anterior end of pereonite 2. *Pereopods 6 and 7* present. *Pereopod 6* basis and propodus subequal in length; propodus without trapezoid comb on distal part of palm; dactylus curved, dactylus not setose. *Pereopod 7* similar to pereopod 6; merus shorter than basis; dactylus with plumose seta distally.

Habitat. Sediment at reef base with mixed algae, 25 m depth.

Remarks. The genus *Pseudoprotella* was established by Guerra-García (2006). The closest genera are *Prellicana* and *Jigurru* (see details in Guerra-García 2006)

Distribution. *Australia*: Queensland: between Bird Islet and South Island, Lizard Island (Guerra-García 2006).

***Pseudoprotella* Mayer, 1903**

***Pseudoprotella fallax* Mayer, 1903**

(Fig. 15)

Pseudoprotella fallax Mayer, 1903: 27, pl. 6, fig. 22; pl. 9, figs 5, 52. —Mayer, 1912: 8, fig. 3. —Utinomi, 1947: 69. —Guerra-García, 2006: 436, fig. 33.

Material examined. 1 premature female, ~1.75 mm and 1 female, ~2 mm, AM P61734 (QLD 1475).

Type locality. Koh Kauv and Koh Chuen, Thailand.

Description. Based on premature female, ~1.75 mm and ovigerous female, AM P61734

Head and pereonites slender. *Head/pereonite 1* dorsal margin convex; eye large, distinctive. *Antenna 1* well developed; slender, 0.33 x body length to 0.4 x body length; peduncle articles 2 and 3 subequal in length, article 3 straight; accessory flagellum absent; flagellum 0.75 x peduncular length or subequal in length to peduncle, with more than 2 articles. *Antenna 2* 0.8 x antenna 1 length, slender; peduncle with several feeble setae, or without setae; flagellum about 1/4 (0.25 x) of peduncular length or 0.4 x peduncular length, with 2 articles. Mandible molar absent; palp 3-articulate, palp setal formula with 1 to 4 large distal setae. *Maxilliped* inner plate slightly smaller than or subequal to outer plate.

Pereon. Pereonites 2 to 7 not fused; pereonite 5 longest. Pereonite 1 without projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus triangular, palm begins about 1/3 along posterior margin, smooth, without large, rounded knob proximally; dactylus curved, inner margin smooth. *Pereonite 2* without projections. *Gnathopod 2* situated toward anterior end or near middle of pereonite 2; basis subequal in length to pereonite 2, without anterodistal projection; ischium without anterodistal projection; propodus elongate,

large, anterodistal margin convex or straight, without anterodistal triangular projection, without projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, palm margin slightly convex, smooth, without hook-like projection at base of dactylus, sinus or midpalmar projection. *Pereonite 3*

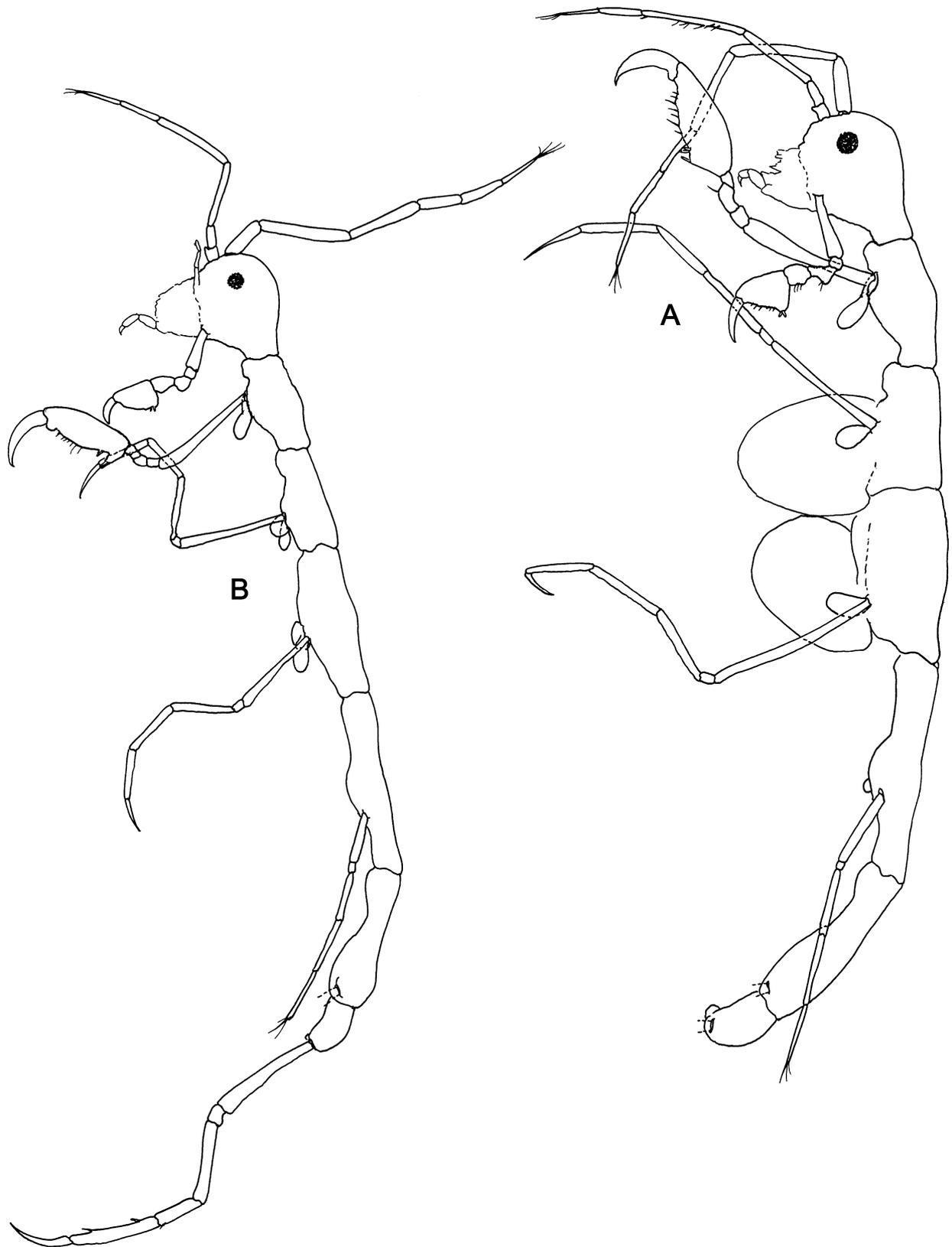


FIGURE 15. *Pseudoproteo fallax* Mayer, 1903. A, Female, ~2 mm, B, premature female, ~1.75 mm, AM P61734, Coconut Beach, Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

without projections. *Pereopod 3* well developed, with 6 articles. *Pereonite 4* without projections. *Pereopod 4* well developed, with 6 articles. *Pereopod 5* well developed, with 5 articles, very slender. *Pereopods 6 and 7* simple. *Pereopod 7* similar to *pereopod 6*.

Gills on pereonites 2 to 4. *Pereonite 3 gill* length about 1/4 of corresponding pereonite, straight, ovate. *Pereonite 4 gill* length about 1/5 of corresponding pereonite or length about 1/4 of corresponding pereonite, straight, ovate.

Habitat. Filamentous algal turf attached to dead, thick, branching hard coral, 8 m depth.

Remarks. Two specimens (1 female and 1 premature female) from Lizard Island were identified as *P. fallax* after consulting the type material of this species, on the basis of the following characters: 3 pairs of gills, flagellum of antenna 2 with 2 articles; pereopods 3 and 4 6-articulate; pereopod 5 5-articulate with the distal article elongate and provided with setae distally (Guerra-García 2006).

Distribution. *Australia.* Queensland: Coconut Beach, Lizard Island (Guerra-García 2006). Western Australia: Shark Bay (McCain & Steinberg 1970). *Thailand.* Koh Kouv and Koh Chuen (Mayer 1903).

Quadrisegmentum Hirayama, 1988

Quadrisegmentum lowryi Guerra-García, 2006

(Fig. 16)

Quadrisegmentum lowryi Guerra-García, 2006: 437, figs 34–38.

Material examined. Holotype male, 6.2 mm, AM P61635 (QLD 674). Paratypes: 1 female, AM P61636 (QLD 674). See station list for occurrences (Lowry & Myers 2009) and Guerra-García (2006) for complete material examined.

Type locality. Inside the Outer Barrier, south-east of Cape York, Queensland (10°56.90'S 144° 0.51'E), coral rubble, 20 m depth (QLD 674).

Description. Based on holotype male, 6.2 mm, AM P61635 paratype female, 3.8 mm, AM P61636.

Head and pereonites slender. *Head/pereonite 1* fused (suture absent) concave along dorsal margin or dorsal margin straight; eye large, distinctive. *Antenna 1* well developed; slender, as long or longer than body; peduncle articles 2 and 3 subequal in length, article 3 straight; accessory flagellum absent; flagellum subequal in length to peduncle, with more than 2 articles. *Antenna 2* 0.5 x antenna 1 length, slender; peduncle without setae; flagellum 0.75 x peduncular length, with more than 4 articles. *Labrum* notched, forming rounded quadrilateral projections (very rounded). *Mandible* right incisor with 5 teeth, right lacinia mobilis absent, three plates accessory setal row with 3 setae; molar absent; left incisor with 5 teeth, lacinia mobilis with 4 teeth, with 3 trapezoid plates decreasing in size, accessory setal row with three setae; palp 3-articulate, palp setal formula 1-0-1. *Maxilla 1* outer plate with 6 stout apical setal-teeth. *Maxilliped* inner plate larger than outer plate; subrectangular; outer plate 2/3 (0.66 x) length of inner plate; palp article 2 scarcely setose on inner margin; palp article 4 not enlarged, falcate.

Pereon. Pereonites 2 to 7 not fused; pereonite 5 longest. *Pereonite 1* without projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus subtriangular, palm begins 2/5 along posterior margin, smooth, without large, rounded knob proximally; dactylus slightly curved, inner margin smooth. *Pereonite 2* with small mid-dorsal hump. *Gnathopod 2* situated toward anterior end of pereonite 2; basis greater than 2 x length of pereonite 2, without anterodistal projection; ischium without anterodistal projection; propodus subovate, massive, anterodistal margin straight, without anterodistal triangular projection, without projections along mid-anterior margin; palm with proximal cavity filled with a membranous sack, palm proximal projection with 1 robust (grasping) seta, palm margin straight or irregular (slightly), smooth, without hook-like projection at base of dactylus, without distal shelf, without sinus, without midpalmar projection. *Pereonite 3* without projections. *Pereopod 3* well developed, with 6 articles. *Pereonite 4* without projections. *Pereopod 4*



FIGURE 16. *Quadrisegmentum lowryi* Guerra-García, 2006. A, Holotype male, 6.2 mm, AM P61635, B, paratype female, 3.8 mm, AM P61636, C, premature female, inside the Outer Barrier, south-east of Cape York, Great Barrier Reef. Refigured from Guerra-García (2006).

well developed, with 6 articles. *Pereopod 5* reduced or vestigial, with 4 slender articles. Pereopods 6 and 7 simple. *Pereopod 6* basis longest followed by merus. *Pereopod 7* similar to pereopod 6.

Gills on pereonites 2 to 4. *Pereonite 2 gill* triangular, *pereonite 3 gill* length about 1/3 of corresponding pereonite, straight, elongate, cylindrical. *Pereonite 4 gill* length about 1/3 of corresponding pereonite, straight, elongate, cylindrical.

Pleon. *Uropod 1* present. *Uropod 2* ramus well developed.

Female (sexually dimorphic characters). *Antenna 1* flagellum 7-articulate; *Antenna 2* flagellum 3-articulate. *Gnathopod 2* carpus about 3 x as long as wide, more elongate than in male, with 3 robust (grasping) setae and without membranous sack proximally. *Pereopods 6 and 7* 6-articulate, propodus with 4 robust (grasping) setae and 1 seta on pereopod 6 and 3 robust (grasping) setae and 1 seta on pereopod 7. *Oostegites* not setose.

Habitat. Coral rubble, 8 to 20 m depth.

Remarks. *Quadrisegmentum lowryi* is very similar to its only congener *Q. triangulum*. The main differences between the two species are: (1) the antennae, gnathopods and pereopods 6 and 7 are clearly longer in *Q. lowryi*; (2) the propodus of the gnathopod 2 male is provided with a developed distal triangular projection in *Q. triangulum* while this projection is absent in *Q. lowryi*; (3) the abdominal appendages are 2-articulate in *Q. triangulum* and 1-articulate in *Q. lowryi*.

Besides these differences, the membranous sack present on the male propodus palm of *Q. lowryi* is apparently not present in *Q. triangulum* (Hirayama, 1988).

Distribution. *Australia*. Queensland: south-east of Cape York and Palfrey and South Islands, Lizard Island (Guerra-García 2006).

***Quadrisegmentum triangulum* Hirayama, 1988**

(Fig. 17)

Quadrisegmentum triangulum Hirayama, 1988: 1089, figs 1–3. —Guerra-García, 2006: 440, fig. 39.

Material examined. 1 male, ~7.7 mm, 1 female, ~5.5 mm, AM P61725 (QLD 1565). See station list for occurrences (Lowry & Myers 2009) and Guerra-García (2006) for complete material examined.

Type locality. West Islet, Ashmore Islands, north-west Western Australia (12°41.28'S 122°59.14'E), on gorgonian host, *Isis hippurus* Linnaeus, 18 m depth.

Description. Based on 1 male, ~7.7 mm, 1 female, ~5.5 mm, AM P61725

Head and pereonites slender. *Head/pereonite 1* fused (suture absent), slightly concave along dorsal margin; eye large, distinctive, or large, protruding. *Antenna 1* well developed; slender, about 0.5 x body length; peduncle article 2 longest, article 3 straight; accessory flagellum absent; flagellum 0.4 x peduncular length or 0.5 x peduncular length, with more than 2 articles. *Antenna 2* 0.75 x antenna 1 length, slender; peduncle without setae; with more than 4 articles (5–7 articles). *Labrum* notched, forming rounded quadrilateral projections. *Mandible* right incisor with 5 teeth, right lacinia mobilis transformed into a plate, accessory setal row with 7 setae; molar absent; left incisor with 4 teeth, lacinia mobilis transformed into a serrated plate, with 3 trapezoid plates decreasing in size; palp 3-articulate, palp setal formula 1-0-1. *Maxilla 1* outer plate with 6 stout apical setal-teeth. *Maxilliped* inner plate smaller than outer plate; serrate distally; outer plate subequal to inner plate; palp article 2 scarcely setose on inner margin; palp article 4 not enlarged, not falcate.

Pereon. Pereonites 2 to 7 not fused; pereonite 5 longest. *Pereonite 1* without projections. *Gnathopod 1* distinctly smaller than gnathopod 2; propodus triangular, palm begins 2/5 along posterior margin, smooth, without large, rounded knob proximally; dactylus curved, inner margin smooth. *Pereonite 2* without projections. *Gnathopod 2* situated near middle of pereonite 2; basis about 1.5 x length of pereonite 2, without anterodistal projection; ischium without anterodistal projection; propodus elongate, massive, anterodistal

margin straight, without anterodistal triangular projection, without projections along mid-anterior margin; palm without proximal cavity filled with membranous sack, palm proximal projection with 2 robust (grasping) setae, palm margin concave, smooth, without hook-like projection at base of dactylus, with broad well developed distal shelf, without projection, without sinus, without midpalmar projection. *Pereonite 3*

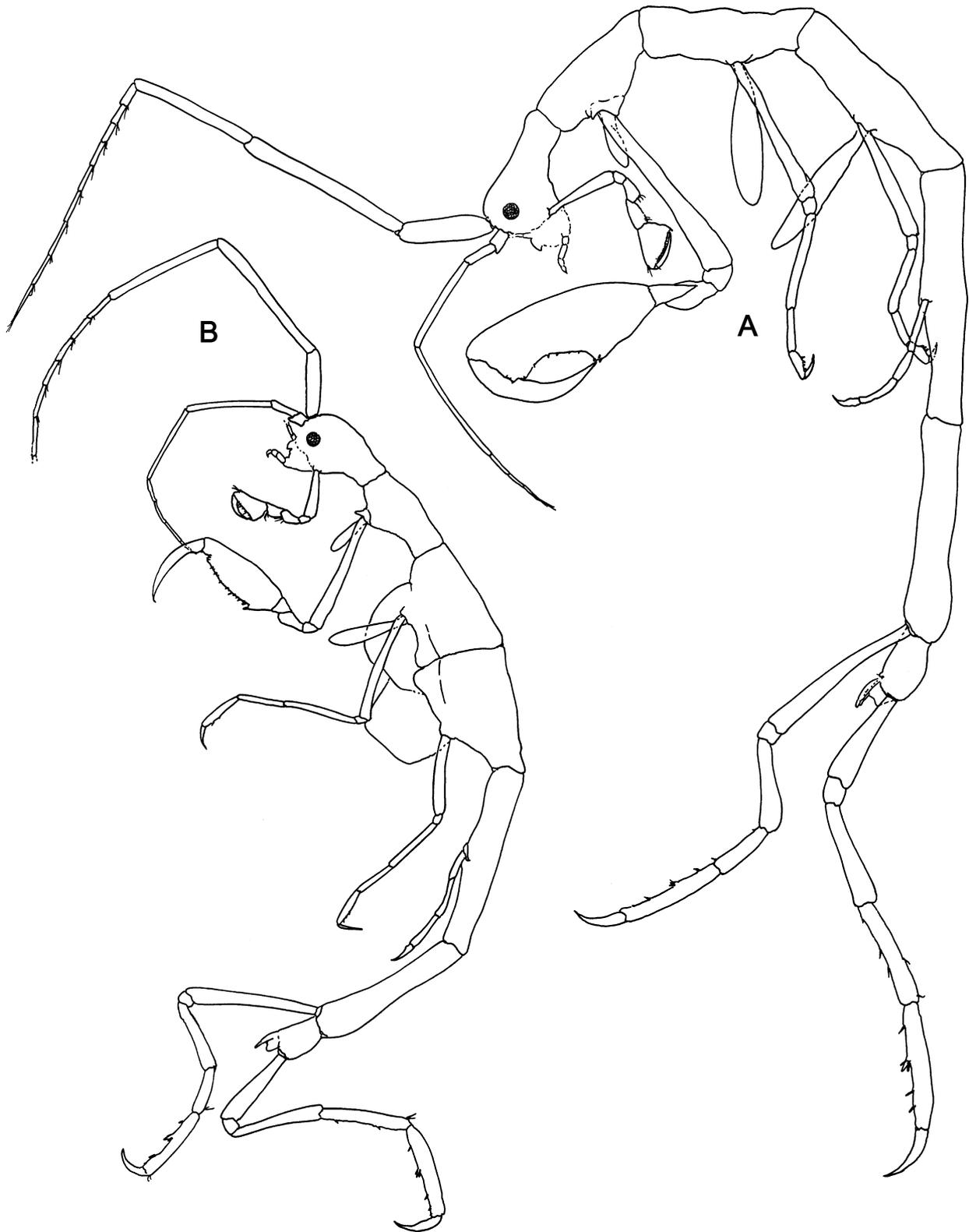


FIGURE 17. *Quadrisegmentum triangulum* Hirayama, 1988. A, Male, ~7.7 mm, B, female, ~5.5 mm, AM P61725, north-east side of Lizard Island, Great Barrier Reef. Refigured from Guerra-García (2006).

without projections. *Pereopod 3* well developed, with 6 articles. *Pereonite 4* without projections. *Pereopod 4* well developed, with 6 articles. *Pereopod 5* reduced or vestigial, with 4 slender articles. *Pereopod 6* basis longest followed by merus. *Pereopod 7* similar to pereopod 6.

Gills on pereonites 2 to 4. *Pereonite 2* gill rounded. *Pereonite 3* gill length about 2/3 of corresponding pereonite, straight, elongate, cylindrical. *Pereonite 4* gill length about 2/3 of corresponding pereonite, straight, elongate, cylindrical.

Pleon. *Uropod 1* present. *Uropod 2* ramus well developed.

Female (sexually dimorphic characters). *Gnathopod 2* situated near anterior end of pereonite 2; basis (proximal-most article) subequal in length to pereonite 2; large; palm margin convex or straight.

Habitat. Patch reefs, algae and coral rubble, associated with the hydroid *Halopteris buskii* and the sponge *Clathria reinwardti*, 2–30 m.

Remarks. *Quadrisegmentum triangulum* is one of the most abundant caprellid species on the Great Barrier Reef.

Distribution. *Australia:* Queensland: off Coconut Beach; off Crystal Beach; Mangrove Beach, Blue lagoon; between Bird Islet and South Island; Chinamans Ridge, Watsons Bay; Mermaid Cove; Pidgin Point; North Point; south of "Washing Machine", north-east side of Lizard Island (Guerra-García 2006). Lord Howe Island. Middleton Reef (Guerra-García 2006). Western Australia: Ashmore Islands (Hirayama 1988).

Papua New Guinea: Motupore Island and Madang (Guerra-García 2003a).

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References

- Barnard, K.H. (1916) Contributions to the crustacean fauna of South Africa. The Amphipoda. *Annals of the South African Museum*, 15(3), 105–302.
- Cavedini, P. (1982) Contributo alla conoscenza dei Caprellidi del Mediterraneo (Crustacea, Amphipoda). *Bollettino del Museo civico di storia naturale di Verona*, 8, 493–531.
- Dallwitz, M. J. (2005) Overview of the DELTA System, <http://delta-intkey.com>, Last accessed (16/12/2008).
- Dana, J.D. (1852) On the classification of the Crustacea Choristopoda or Tetradecapoda. *American Journal of Science and Arts, Series 2*, 14, 297–316.
- Díaz, Y.J., Guerra-García, J.M. & Martín, A. (2005) Caprellids (Crustacea: Amphipoda: Caprellidae) from shallow waters of the Caribbean coast of Venezuela. *Organisms, Diversity and Evolution* 5, 249–251 (electronic supplement at <http://www.sencenberg.de/odes/05-10.htm>).
- Gable, M.F. & Lazo-Wasem, E.A. (1987) The caprellids (Amphipoda: Caprellidea) of Bermuda: a survey of specimens collected from 1876–1987, including cave inhabitants, and the description of *Deutella aspiducha*, new species. *Proceedings of the Biological Society of Washington*, 100(3), 629–639.
- Guerra-García, J.M. (2002a) Redescription of five rare caprellids (Crustacea: Amphipoda: Caprellidea) collected from Tanzanian coasts. *Helgoland Marine Research*, 55: 221–231.
- Guerra-García, J. M. (2002b) Littoral Caprellids (Crustacea: Amphipoda: Caprellidea) from Philippines, with the description of a new species. *The Raffles Bulletin of Zoology*, 50(2), 395–406.
- Guerra-García, J. M. (2003a) Caprellids (Crustacea: Amphipoda) from Papua New Guinea, with the description of a new species. *Helgoland Marine Research*, 57, 100–109.
- Guerra-García, J.M. (2003b) The Caprellidea (Crustacea: Amphipoda) from Mauritius Island, western Indian Ocean. *Zootaxa*, 232, 1–24.
- Guerra-García, J.M. (2004a) The Caprellidea (Crustacea, Amphipoda) from Western Australia and Northern Territory, Australia. *Hydrobiologia*, 522(1–3), 1–74.
- Guerra-García, J.M. (2004b) Littoral Caprellidea (Crustacea, Amphipoda) from Phuket, Thailand. *Steenstrupia*, 28(2),

- Guerra-García, J.M. (2006) Caprellidae (Crustacea: Amphipoda) from the Great Barrier Reef and adjacent locality. *Records of the Australian Museum*, 58(3), 417–458.
- Guerra-García, J.M. Krapp-Schickel, T. & Müller, H.G. (2006) Caprellids from the Caribbean coast of Colombia, with description of three new species and a key for species identification. *Bol. Invest. Mar. Cost.*, 35, 149–194.
- Guerra-García, J.M. & Takeuchi, I. (2002) The Caprellidea (Crustacea: Amphipoda) from Ceuta, North Africa, with the description of three species of *Caprella*, a key to the species of *Caprella*, and biogeographical discussion. *Journal of Natural History*, 36(6), 675–714.
- Guerra-García, J.M. & Takeuchi, I. (2004) The Caprellidea (Crustacea: Amphipoda) from Tasmania. *Journal of Natural History*, 38: 967–1044.
- Haswell, W.A. (1880) On some Amphipods from Australia and Tasmania. *Proceedings of the Linnean Society of New South Wales*, 5(1), 97–105.
- Haswell, W.A. (1885) Revision of the Australian Laemodipoda. *Proceedings of the Linnean Society of New South Wales*, 6(4), 993–1000.
- Hirayama, A. (1988) A ghost shrimp with four-articulate fifth pereopods (Crustacea: Caprellidea: Phtisicidae) from Northwest Australia. *Zoological Science*, 5, 1089–1093.
- Jones, A.R. (1984) Sedimentary relationships and community structure of benthic crustacean assemblages of reef-associated sediments at Lizard Island, Great Barrier Reef. *Coral Reefs*, 3, 101–111.
- Krapp-Schickel, T. (1993) Suborder Caprellidea in S. Ruffo (ed.). *The Amphipoda of the Mediterranean. Mémoires de l'Institut Océanographique, Monaco*, 13(3), 773–809.
- Krapp-Schickel, T. & Guerra-García, J. (2005) Littoral Caprellidae (Crustacea: Amphipoda) from Indonesia, with the description of a new species. *Bollettino del Museo Civico di Storia Naturale di Verona*, 29, 47–62.
- La Follette, R. (1915) Caprellidae from Laguna Beach. *Journal of Entomology and Zoology*, 7, 55–63.
- Lamarck, J.B. (1801) *Système des animaux sans vertèbres ou tableaux général des classes, des orders et des genres de ces animaux*. Paris: Deterville, 295 pp.
- Larsen, K. (1997) A new species of *Metaprotella* (Crustacea: Amphipoda: Caprellidea) from east Africa, with key to the genera of Protellidae and discussion of generic characteristics. *Journal of Natural History*, 31, 1203–1212.
- Laubitz, D.R. (1970) Studies on the Caprellidae (Crustacea, Amphipoda) of the American North Pacific. *National Museum of Natural Sciences, Ottawa, Publications in Biological Oceanography*, 1, 1–89.
- Laubitz, D.R. (1991) Crustacea Amphipoda Caprellidea: Caprellids from the western Pacific (New Caledonia, Indonesia and the Philippines). In A. Crosnier (ed.). *Résultats des Campagnes MUSORTSTOM*, 152, 101–123.
- Leach, W.E. (1814) Article Crustaceology. *The Edinburgh Encyclopaedia*, 7, 429–437.
- Lowry, J.K. & Myers, A.A. (2009) Foreword. In: Lowry, J.K. & Myers, A.A. (Eds), *Amphipoda of the Great Barrier Reef, Australia*. *Zootaxa*, 2260, 17–108.
- Lowry, J.K. & Stoddart, H.E. (2003) Crustacea: Malacostraca: Peracarida: Amphipoda, Cumacea, Mysidacea. In Beesley, P.L. & Houston, W.W.K. (Eds), *Zoological Catalogue of Australia*, Vol. 19.2B, 531 pp, Melbourne: CSIRO Publishing, Australia.
- Mayer, P. (1882) Caprelliden. *Fauna und Flora des Golfes von Neapel*, 6, 1–201.
- Mayer, P. (1890) Die Caprelliden des Golfes von Neapel und der angrenzenden Meeres-Abschnitte. *Fauna und Flora des Golfes von Neapel*, 17, 1–55.
- Mayer, P. (1898) *Metaprotella sandalensis* n.sp. *Zoological Results Based on Material from New Britain, New Guinea, Loyalty Islands and Elsewhere, Collected during the Years 1895, 1896 and 1897, by Arthur Willey, D.Sc. Lond., M.A. Cantab.* Part I, 53–56.
- Mayer, P. (1903) Die Caprelliden der Siboga-Expedition. *Siboga Expeditie*, 34, 1–160.
- Mayer, P. (1912) Caprellidae. In W. Michaelsen & R. Hartmeyer (ed.). *Fauna Südwest-Australiens*, 4(1), 1–14.
- McCain, J.C. (1968). The Caprellidea (Crustacea: Amphipoda) of the western North Atlantic. *Bulletin of the United States National Museum*, 278, 1–116.
- McCain, J.C. & Steinberg, J.E. (1970) Amphipoda-I, Caprellidea-I. *Crustaceorum Catalogus*, 2, 1–78.
- Müller, H.G. (1990) New species and records of coral reef inhabiting Caprellidea from Bora Bora and Moorea, Society Islands (Crustacea: Amphipoda). *Revue suisse Zoologie*, 97(4), 827–842.
- Quitete, J.M.P.A. (1972) *Hemiaegina costai*, nova espécie de Caprellidae da costa brasileira (Crustacea: Amphipoda). *Atas da Sociedade de Biologia Rio de Janeiro*, 15(3), 165–168.
- Serejo, C.S. (1997) *Hemiaegina costai* Quitete, 1972, a synonym of *Hemiaegina minuta* Mayer, 1890 (Amphipoda, Caprellidae). *Crustaceana*, 70(5), 630–632.
- Stebbing, T.T.R. (1888) Report on the Amphipoda collected by *H.M.S. Challenger* during the years 1873–1876. *Report on the Scientific Results of the Voyage of H.M.S. Challenger during the years 1873–1876*, Zoology, 29, xxiv + 1737.
- Stebbing, T.T.R. (1910) Scientific results of the trawling expedition of HMCS *Thetis* Crustacea, Part 5: Amphipoda. *Memoirs of the Australian Museum*, 4(12), 567–658.
- Sundara Raj, B. (1927) Suborder Caprellidea (Laemodipoda). The littoral fauna of Krusada Island in the Gulf of Manaar.

The Bulletin of the Madras Government Museum, Natural History Section, 1, 125–128.

Takeuchi, I. & Lowry, J.K. (2007) Redescription of *Orthoprotella mayeri* K.H. Barnard, 1916 (Amphipoda: Caprelloidea) from Cape Province, South Africa and description of *Orthoprotella berentsae* sp. nov. from New South Wales, Australia. *Zootaxa*, 1632 37-48.

Utinomi, H. (1947) Caprellidae of Japan and adjacent waters. *Seibutu Supplement*, 1, 68–82.

Vassilenko, S.V. (1968) [On the taxonomy and basic development lines of the family Caprellidae (Amphipoda, Caprellidea)]. *Akademiya Nauk SSSR, Doklady*, 183, 1461–1464.