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Maeridae, the *Ceradocus* group*

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* *In*: Lowry, J.K. & Myers, A.A. (Eds) (2009) Amphipoda (Crustacea: Peracarida) of the Great Barrier Reef, Australia. *Zootaxa*, 2260, 1–930.

Abstract

Eight genera, of which one is new to science and 18 species, of which one is new to science, are reported, primarily living in the crevices of the reef or among algae, but one genus is probably interstitial.

Key words: Crustacea, Amphipoda, Maeridae, Great Barrier Reef, Australia, taxonomy, new genus, new species, *Austromaera brevicaudata, Ceradocus crenatipalma, Ceradocus hawaiensis*, *Ceradocus oxyodus*, *Ceradocus* cf. *rubromaculatus, Ceradocus woorree, Ceradocus yandala*, *Glossomaera octodens, Jerbarnia stocki, Linguimaera pirloti, Maeropsis cobia, Maeropsis griffini, Quadrimaera pacifica, Quadrimaera quadrimana, Quadrimaera* cf. *reishi, Quadrimaera serrata, Saurodocus hobbit, Saurodocus minimarenus*

Introduction

Within the large family Maeridae the *Ceradocus-Maera-Elasmopus* group is defined by rami of third uropods subequal in length and conspicuously long, in contrast to melitids (*sensu stricto*) with rami clearly unequal in length. While the latter have developed a quite typical shape of the first gnathopod, this is much less the case in this group.

Ceradocus is exclusively marine and widely distributed from the tropics to the Mediterranean. Both pairs of maxillae have the inner plates medially fully setose, the inner plate of maxilla 2 is widened and often of triangular shape; the third article of the mandible palp shows different steps of reduction, the first article is usually distally lengthened and pointed, creating a "knee" on this articulation.

The genus *Maera* (*sensu lato*) was for a long time mainly negatively defined: it lacks the medial setation on both maxillae, typical for *Ceradocus*, it lacks the falcate third article on the mandible palp, typical for *Elasmopus*. Recently *Maera* (*sensu stricto*) was redefined (Krapp-Schickel, 2000), which excluded a number of species. *Maera* (*sensu stricto*) is similar to *Ceradocus* in the shape of the mandible palp, but has lost the medial setation on the maxillae; and it shows a series of special synapomorphies (eyes reniform, dactylus of gnathopod 2 on outer margin with many dense setae, basis of pereopod 7 with posterodistal corner, uropod 3 rami truncate etc.). Other genera had to be created or re-established for grouping the remaining species of *Maera* (*sensu lato*).

Elasmopus, *Mallacoota* and *Parelasmopus* also belong to this group, but are treated in a separate paper.

Materials and methods

Material was hand collected on SCUBA. The descriptions were generated from a DELTA database (Dallwitz

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2005) to melitid genera and species. All material is lodged in the Australian Museum, Sydney (AM). A set of colour plates, list of standard abbreviations and details of station data are 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.

Austromaera Lowry & Springthorpe, 2005

Austromaera brevicaudata (Ledoyer, 1984)
(Fig. 1)

Maera brevicaudata Ledoyer, 1984: 67, fig. 32.
Austromaera brevicaudata. –Krapp-Schickel, 2008: 8, table 4.

Material examined. 36 males, juveniles, AM P75308 (QLD 1988); 14 males, females, juveniles, AM P75309 (QLD 1988).

Type locality. l'îlot Maître, New Caledonia (~22°15'S 166°26'E).

Description. Based on male, 4.0 mm, AM P75309.

Head. *Head* lateral cephalic lobe rounded, anteroventral slit present, anteroventral corner subquadrate. *Antenna 1* longer than antenna 2, first two peduncular articles subequal; accessory flagellum with 2 articles. *Antenna 2* gland cone not reaching end of article 3; article 4 longer than article 5. *Mandible* palp slender, article 1 about 3 x as long as wide, distally not produced, article 3 longer than article 1, but shorter than article 2. *Maxillae 1–2* inner plates distally with long setae, proximally with very fine hairs.

Pereon. *Gnathopod 1* coxa anteroventral corner produced into rounded lobe; carpus subequal in length to propodus; propodus distally tapering, posterior margin straight, without palmar corner, with 5 robust setae. *Gnathopod 2* merus lacking distoventral spine; carpus triangular, clearly longer than wide; propodus slender, length more than twice width, palm defined by small hump. *Pereopods* 5–7 basis ovate, posteroventrally lengthened and widened into lobe.

Pleon. *Epimeron 1* posteroventral corner rounded. *Epimera* 2–3 with minute posterodistal spine, smooth on all margins. *Uropod 3* rami subequal, about 1.7 x length of subquadrate peduncle, distally tapering, with few robust setae. *Telson* trapezoidal, proximally as wide as long, distally with rounded tip and seta, on inner margin a U-shaped excavation with one strong robust seta inserted there.

Female (sexually dimorphic characters). No sexual differences found.

Habitat. Coral rubble, coarse sand, 2–4m depth.

Remarks. This material (with ovigerous females of 4.5 mm length) resembles the Australian species *Austromaera mastersii* (Haswell, 1879a), described from Port Jackson, NSW, to such a degree that if there were only a few specimens without eggs, it would be tempting to surmise these were juveniles. But Haswell's species is described with "5 lines" (5/12 of an inch) and also in Lowry & Springthorpe (2005) it is redescribed in the recently created genus *Austromaera* with a male of 11.8 mm and a female of 12.5 mm, while among the material of the Great Barrier Reef the ovigerous females have about one third of this length. Main differences besides the body length are the shape of gnathopod propodi, which are wider and more rounded in the species from NSW, and which fit perfectly to the description of *Maera brevicaudata* Ledoyer, 1984. *Austromaera brevicaudata* forms a complex together with *A. mastersii* (Haswell, 1879a) and *A. bruzelii* (Stebbing, 1888); the latter may be synonymous to *A. mastersii*.

Distribution. *Australia*. Queensland: One Tree Island, Great Barrier Reef (current study). *New Caledonia*. l'îlot Maître (Ledoyer 1984).

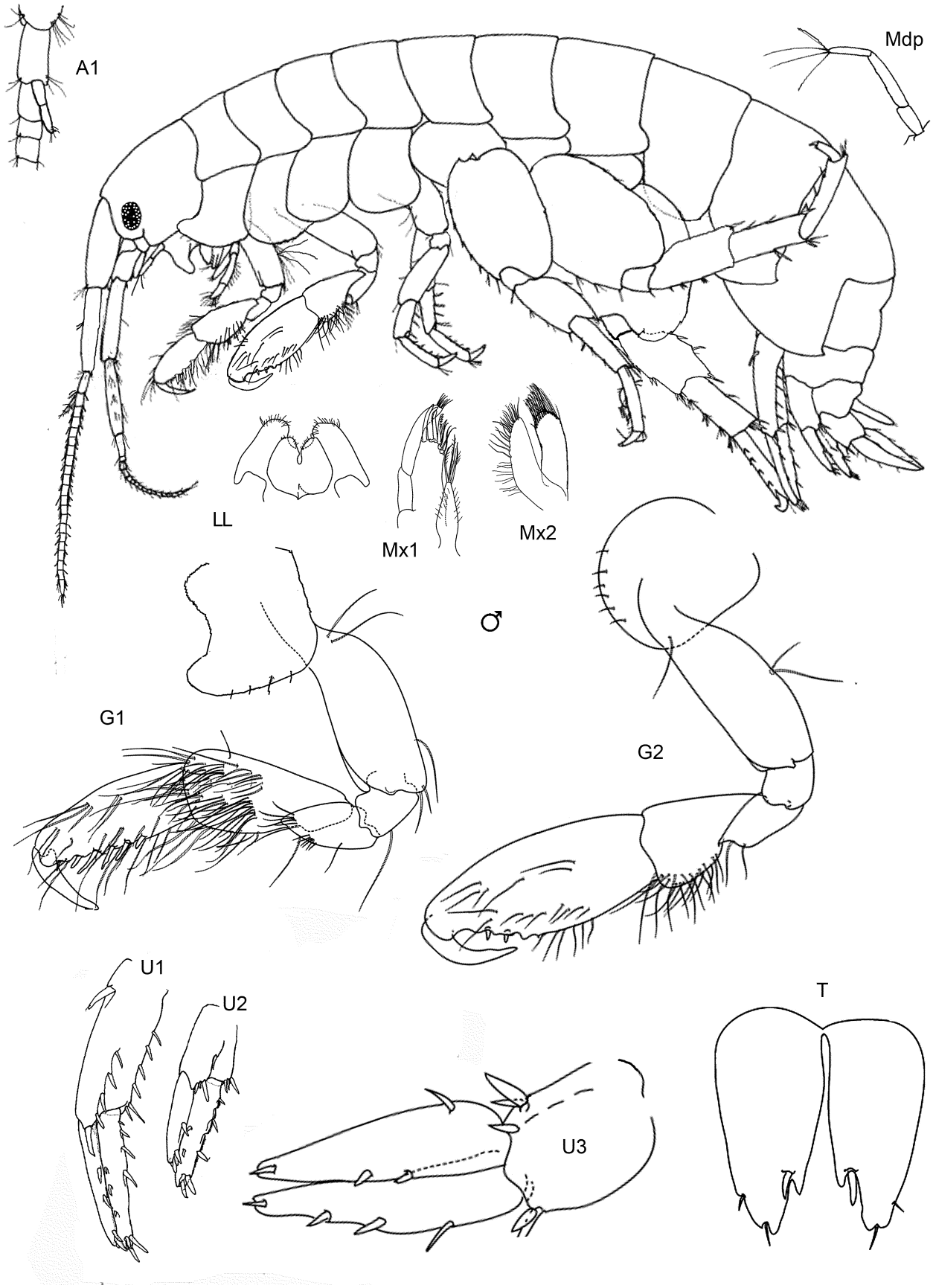

FIGURE 1. *Austromaera brevicaudata* (Ledoyer, 1984), male, 4.0 mm, AM P75308. One Tree Island, Lizard Island, Great barrier Reef.

***Ceradocus* Costa, 1853**

***Ceradocus crenatipalma* Ledoyer, 1979**
(Figs 2, 3)

Ceradocus crenatipalma Ledoyer, 1979: 62, fig. 34. —Ledoyer, 1983: 162, figs 434–435.

Material examined. 1 male, 2 juvenile**,** AM P77697 **(**JDT/OPH 2); 1 male, 1 male sub-adult (2 slides), AM P70734 (QLD 1643).

Type locality. Toliara (Tuléar), Madagascar (~23°25'S 43°42'E).

Description. Based on male, 7.0 mm, AM P77697.

Head. *Head* with anteroventral notch. *Antenna 1* peduncular article 2 subequal to article 1, accessory flagellum with more than 4 articles. *Antenna 2* article 4 longer than article 5. *Mandible* palp article 1 distally pointed and lengthened; article 3 shorter than third article 2. *Maxilla 1* inner plate triangular, with about 20 setae. *Maxilla 2* inner plate with row of mediofacial setae.

Pereon. *Gnathopod 1* coxa anterodistally pointed; propodus and carpus subequal. *Gnathopod 2* asymmetrical, larger gnathopod with palm nearly to fully transverse, propodus length 1.5–1.8 x width, half of palm with up to 4 wave-shaped shallow humps; smaller gnathopod with palm strongly oblique to nearly transverse, palm smooth, propodus length more than 2 x width. *Pereopod 7* basis posterior margin smooth, length 1.8 x width.

Pleon. *Epimeron 1* posterior margin dorsally serrated, posteroventral margin smooth, ventral margin with one shallow incision. *Epimeron 2* posterior margin dorsally serrated, posteroventral margin smooth, ventral margin with one shallow incision. *Epimeron 3* dorsally serrated, posterior margin ventrally serrated, ventral margin with 2 incisions. *Urosomite 1* with small blunt mediodorsal spine and 1 spine on each side; *urosomite 2* with 1 small medial spine and several small lateral ones. *Uropod 3* with many robust setae, rami about 2x length of peduncle, length:width = 4. *Telson* with lateral plumose setae, subdistally 2-3 long robust setae, the longer ones longer than telson.

Female (sexually dimorphic characters). Not known from GBR collections.

Habitat. Coral rubble and sponge, 2–5 m depth.

Remarks. One third of the known species has a transverse palm on the second gnathopod. *Ceradocus chevreuxi* differs from all of them in having a U-shaped and well defined incision near the palmar corner of gnathopod 2 and shorter telson spination. It differs from *C. hawaiensis* in lacking a medial spine on the metasome segments. It differs from *C. natalensis* Griffiths, 1974, by having a gnathopod 2 palmar corner of more than 90° and an accessory flagellum of 9 articles, from *C. oliveri* Appadoo & Myers, 2006 and *C. ramsayi* (Haswell, 1879b), by 2–3 V-shaped incisions near the palmar corner, and from *C. oliveri* by the very narrow and smaller gnathopod 2 as well as narrow pereopod bases. The gnathopod 2 palm of *C. selickensis* Sheard, 1939, is smooth, and in *C. spinifera* Ledoyer, 1973, there is a molar-shaped hump near the dactylus insertion. *Ceradocus yandala* Berents, 1983, has a much slimmer shaped gnathopod 2 propodus. This species is new for Australia.

Distribution. *Australia*. Queensland: Lizard Island, Orpheus Island (current study). *Madagascar* (Ledoyer 1979, 1983).

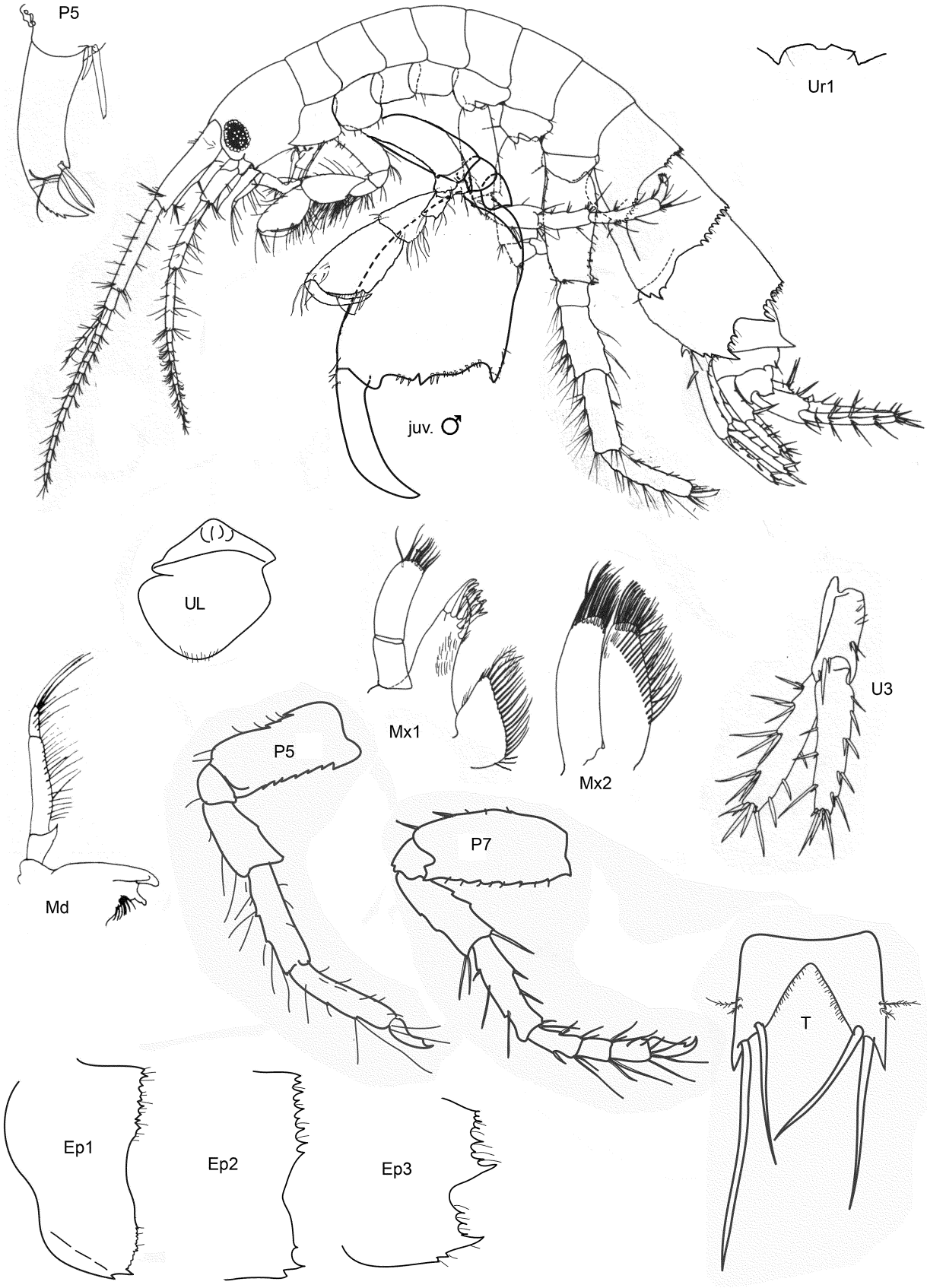

FIGURE 2. *Ceradocus crenatipalma* Ledoyer, 1979, juvenile male, 5.0 mm, AM P70734, Watsons Bay, Lizard Island, Great Barrier Reef.

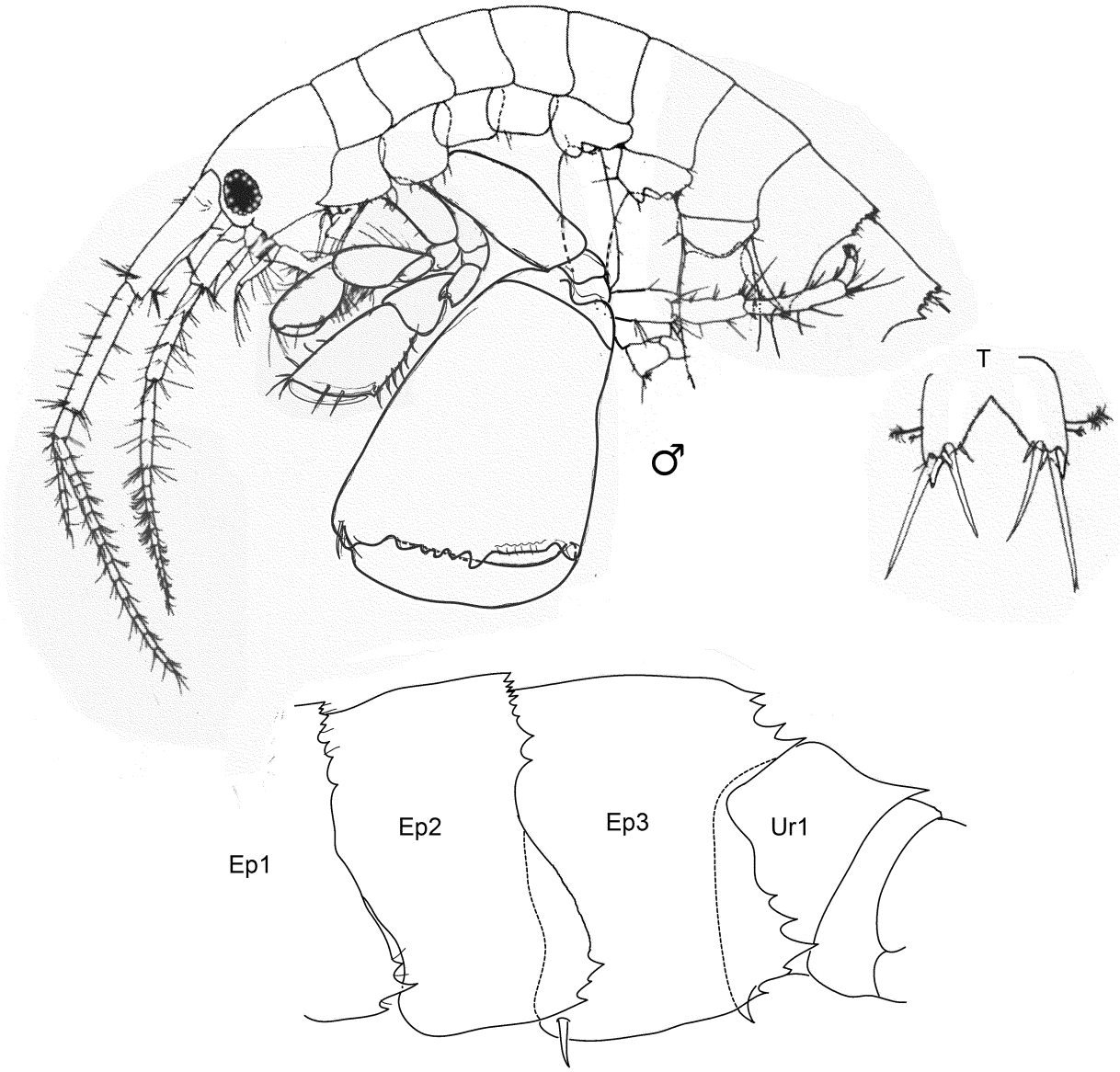

FIGURE 3 *Ceradocus crenatipalma* Ledoyer, 1979, adult male, 6.0 mm, AM P70734, Watsons Bay, Lizard Island, Great Barrier Reef.

***Ceradocus hawaiensis* J.L. Barnard, 1955**
(Fig. 4)

Ceradocus hawaiensis J.L. Barnard, 1955: 5, figs 2–3. —J.L. Barnard, 1970: 115, fig. 65. —J.L. Barnard, 1971: 70, fig. 41. —Ledoyer, 1972: 207, figs 30, 31. —Ledoyer, 1978: 266. —Berents, 1983: 103, fig. 2. —Lowry & Stoddart, 2003: 175.

Material examined. 14 specimens, AM P30646, Heron Island (23°27'S 151°55'E), living on the hermit crab *Dardanus megistos*, A.J. Bruce, 11 July 1980.

Type locality. Hanauma Bay, Oahu, Hawaii (~21º16'N 157º42'W).

Description. Based on female, 4.8 mm, AM P30646.

Head. *Head* with anteroventral notch. *Antenna 1* peduncular article 1 subequal to article 2; accessory flagellum with 6 articles. *Mandible* palp article 1 with distal acute prolongation, article 3 shorter than article 2. *Maxilla 1* inner plate triangular. *Maxilla 2* inner plate with row of mediofacial setae.

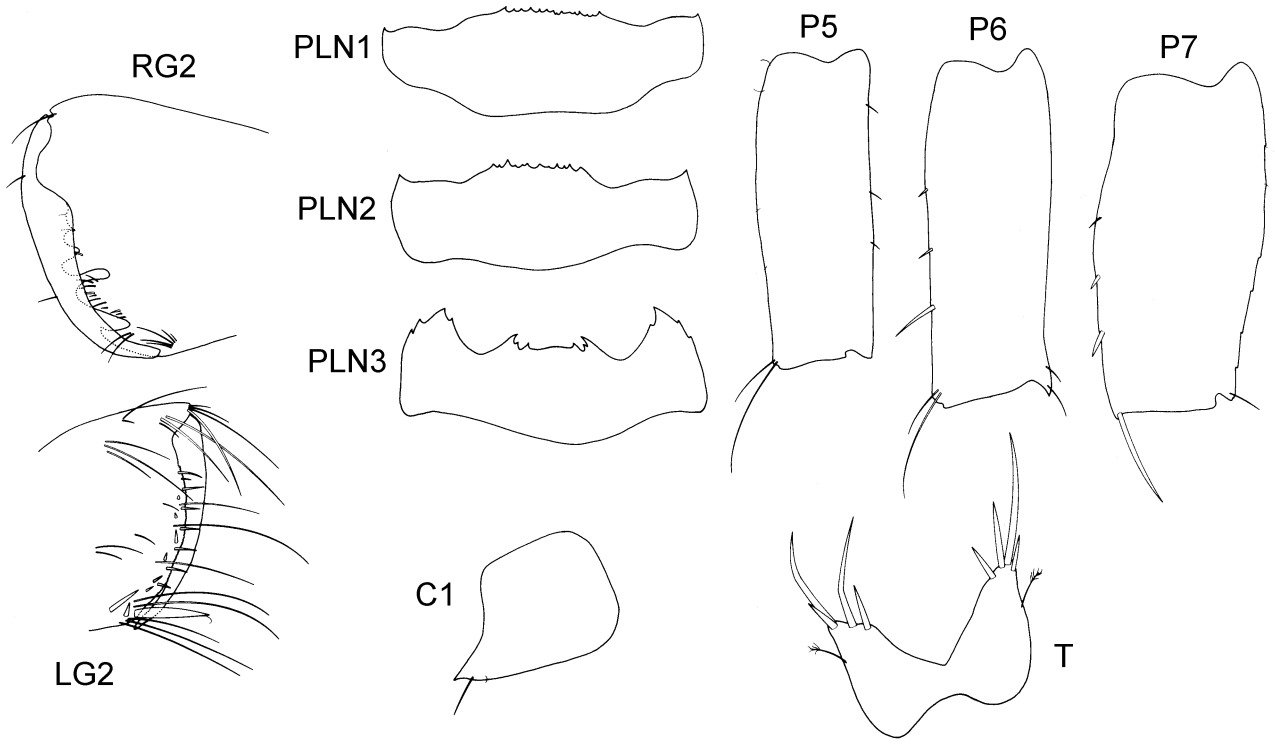

FIGURE 4. *Ceradocus hawaiensis* J.L. Barnard, 1955, female, 4.8 mm (pleonites 1–3), female, 6.4 mm, AM P30646, Heron Island, Great Barrier Reef (redrawn from Berents 1983).

Pereon. *Gnathopod 1* coxa with acute anterodistal corner; carpus and propodus subequal. *Gnathopod 2* asymmetrical; propodus with nearly transverse palm, that of larger gnathopod with several incisions. *Pereopods 3–7* with narrow rectangular basis.

Pleon. *Pleonites 1–2* with many small dorsal serrations. *Pleonite 3* mediodorsally smooth, laterally with three curved spines. *Epimera 1–2* posterior margin smooth, posterodistal corner with small upturned spine. *Epimeron 3* with notches on ventral margin and one spine on posterior margin. *Urosomites 1–2* with 2–3 with dorsal spines. *Urosomite 3* smooth. *Telson* wider than long, deeply cleft, apices acutely tapering and each bearing 1–2 long robust setae (about the length of the telsonic lobes) and up to 4 short robust setae.

Male (sexually dimorphic characters). Based on male, AM P30646. Gnathopod 2 stronger, with more incisions.

Habitat. Commensal with the hermit crab *Dardanus megistos*.

Remarks. *Ceradocus hawaiensis* differs from other maerids species on the GBR by a wider posteroventral corner of the pereopod 7 basis and strongly produced posteroventral spine on epimeron 3.

Distribution. *Australia.* Queensland: Heron Island, Great Barrier Reef (Berents 1983). *USA*. Hawaii (J.L. Barnard 1955, 1970). *Madagascar* (Ledoyer 1972, 1978).

Ceradocus oxyodus Berents, 1983

(Figs 5, 6)

Ceradocus oxyodus Berents, 1983: 104, figs 3, 4. —Lowry & Stoddart, 2003: 175.

Material examined. 1 male, 7.5 mm (2 slides), AM P70991 (QLD 1693); 3 adults, AM P70742 (QLD 1645); 3 adults, AM P70757 (QLD 1645); 1 adult, AM P71048 (QLD 1706); 1 male, 2 juveniles, AM P71154 (QLD 1732).

Type locality. Casuarina Beach, Lizard Island, Queensland, Australia (14°40.5’S 145°26.6’E).

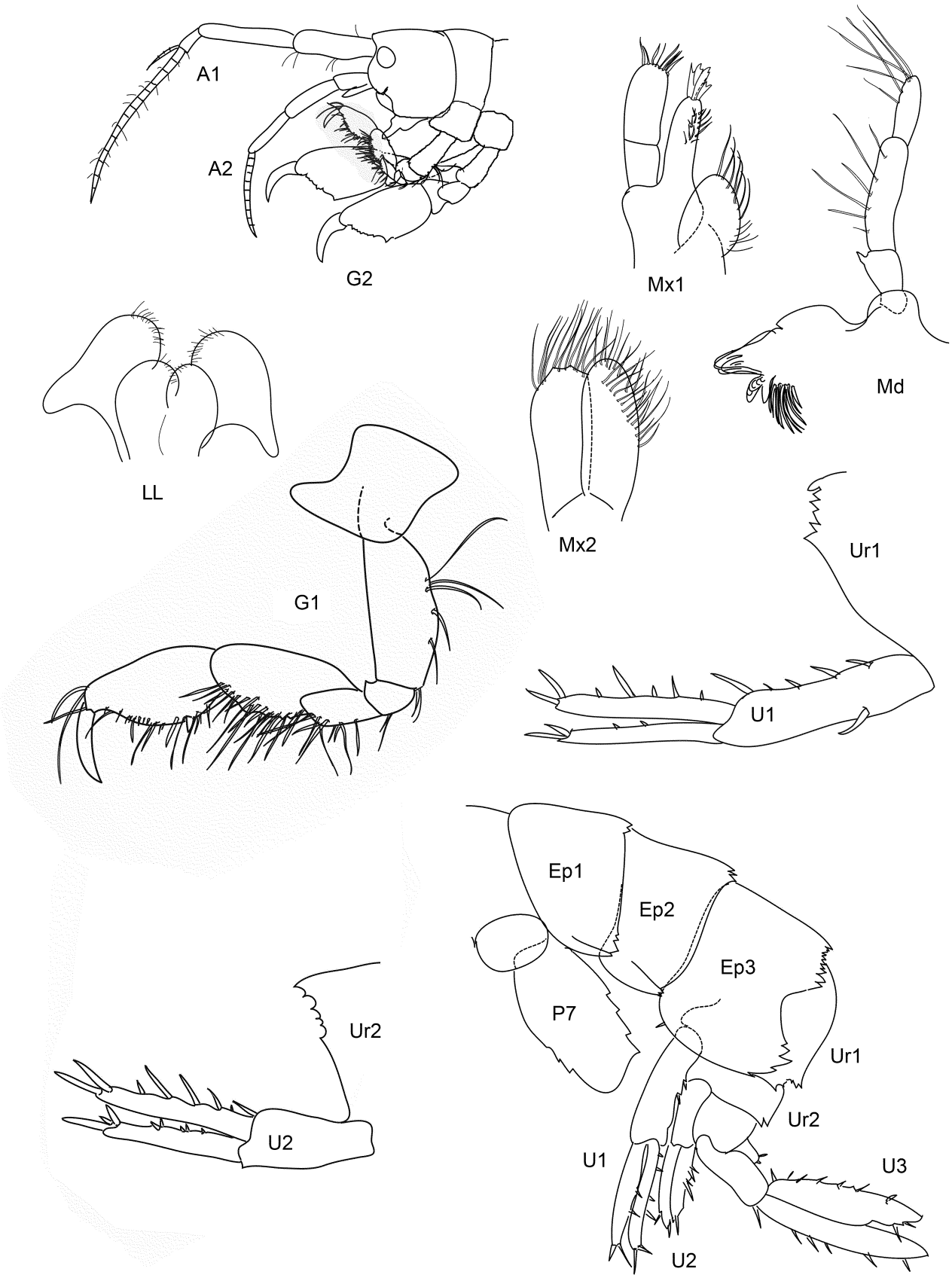

FIGURE 5. *Ceradocus oxyodus* Berents, 1983, adult male, 7.5 mm, AM P70991, north of Bird Islet, Lizard Island, Great Barrier Reef.

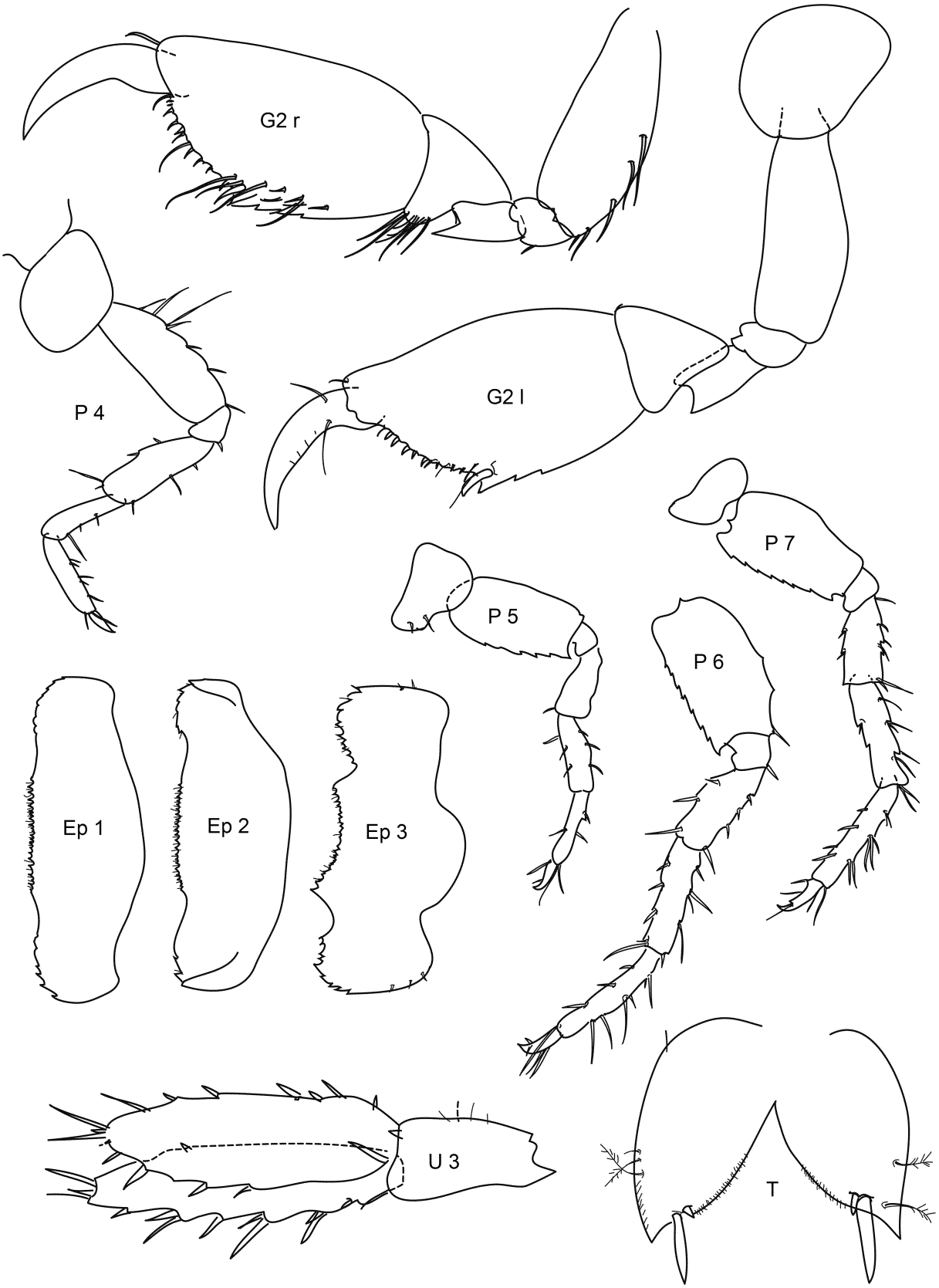

FIGURE 6. *Ceradocus oxyodus* Berents, 1983, adult male, 7.5 mm, AM P70991, north of Bird Islet, Lizard Island, Great Barrier Reef.

Description. Based on male, 7.5 mm, AM P70991.

Head. *Head* subocular notch present. *Antenna 1* peduncular article 2 longer article 1, accessory flagellum with up to 3 articles. *Antenna 2* article 4 longer than article 5. *Mandible* palp article 1 distal acute prolongation, article 3 half length of article 2.

Pereon. *Gnathopod 1* carpus subequal in length to propodus. *Gnathopod 2* symmetrical; propodus length more than 1.8 x width, palm oblique, no excavation or incision except a shallow one near corner. *Pereopod 7* basis posterior margin smooth, length equal to or greater than 1.8 x width.

Pleon. *Pleonite 1* dorsally with medial gap and some lateral spines. *Pleonite 2* with very small medial spine, and additional small lateral ones. *Epimeron 1* posterior margin dorsally serrated, posteroventral margin unevenly incised, ventral margin smooth. *Epimeron 2* posterior margin dorsally serrated, posteroventral margin uneven, with tiny incisions. *Epimeron 3* dorsally serrated, posteroventral and ventral margins serrated. *Uropod 3* with many robust setae, external ramus short, less than 4x width. *Telson* with lateral setae and with 2–3 subdistal long robust setae on each lobe.

Female (sexually dimorphic characters). Unknown.

Habitat. Coarse sand, sand with mixed brown algae, patchy seagrass or blue-green algae, coral rubble, silty coarse sediment or soft bottom, crinoids, *Halimeda macroloba*, *Halimeda cylindracea*, *Caulerpa taxifolia*, *Gracilaria* sp., *Lobophora* sp., 3.5–23 m.

Remarks. Symmetrical second gnathopods occur in the following seven species: *Ceradocus breweri* (Kunkel 1910), *C. cotonensis* Appadoo & Myers 2006, *C. dooliba* J.L. Barnard, 1972, *C. orchestiipes* Costa 1853, *C. rubromaculatus* (Stimpson, 1856), *C. sellickensis* Sheard, 1939 and *C. sheardi* Shoemaker 1948, as well as in *C. oxyodus*. In *C. rubromaculatus* the telsonic setation is stronger than that of *C. oxyodus*. This nominal species, *C. rubromaculatus*, varies a lot in different descriptions while the characters in the original description are rather sparse. Several species may hide under this name. *Ceradocus dooliba* is a much larger species (up to 23 mm) with a different dorsal serration-pattern to that of *C. oxyodus*. *Ceradocus cotonensis* Appadoo & Myers, 2006, described from Rodriguez in the Indian Ocean, matches *C. oxyodus* in many respects, but the dorsal armament of the urosome of *C. cotonensis* has not been described.

Distribution. *Australia*. Queensland: Lizard Island (Berents 1983, current study).

Ceradocus cf. *rubromaculatus* (Stimpson, 1856)

(Figs 7, 8)

? *Ceradocus rubromaculatus*. –K.H. Barnard, 1931: 124.

Material examined. 1 female ?, 6.0 mm, AM P77698 (JDT/OPH 2).

Type locality: Sydney, Australia (~33°51'S 151°15'E).

Description. Based on female ?, 6.0 mm, AM P77698.

Head. *Head*, subocular notch present. *Antenna 1* peduncular article 2 subequal with article 1; accessory flagellum with 4 articles. *Mandible* palp article 1 distally asymmetrically lengthened; article 3 about half length of article 2.

Pereon. *Gnathopod 1* propodus and carpus subequal. *Gnathopod 2* asymmetrical, large gnathopod palm regularly rounded without corner, propodus length twice the width; small gnathopod palm also regularly rounded without corner, propodus length 2.4 x width. In large palm excavation present near dactylus insertion, broad hump molar-like. *Pereopod 7* basis posterior margin smooth, length 2 x width.

Pleon. *Pleonite 1* with small mediodorsal spine, *pleonite 2* with 1 small medial spine and several tiny lateral ones. *Epimeron 1* posterior margin dorsally serrated, posteroventral and ventral margins smooth. *Epimeron 2* posterior margin dorsally serrated, posteroventral margin smooth, ventral margin with tiny incisions. *Epimeron 3* dorsally serrated, posteroventral and ventral margins serrated. *Uropod 3* missing. *Telson* lateral plumose setae present, one subdistal robust seta, scarcely exceeding tip of telsonic lobe.

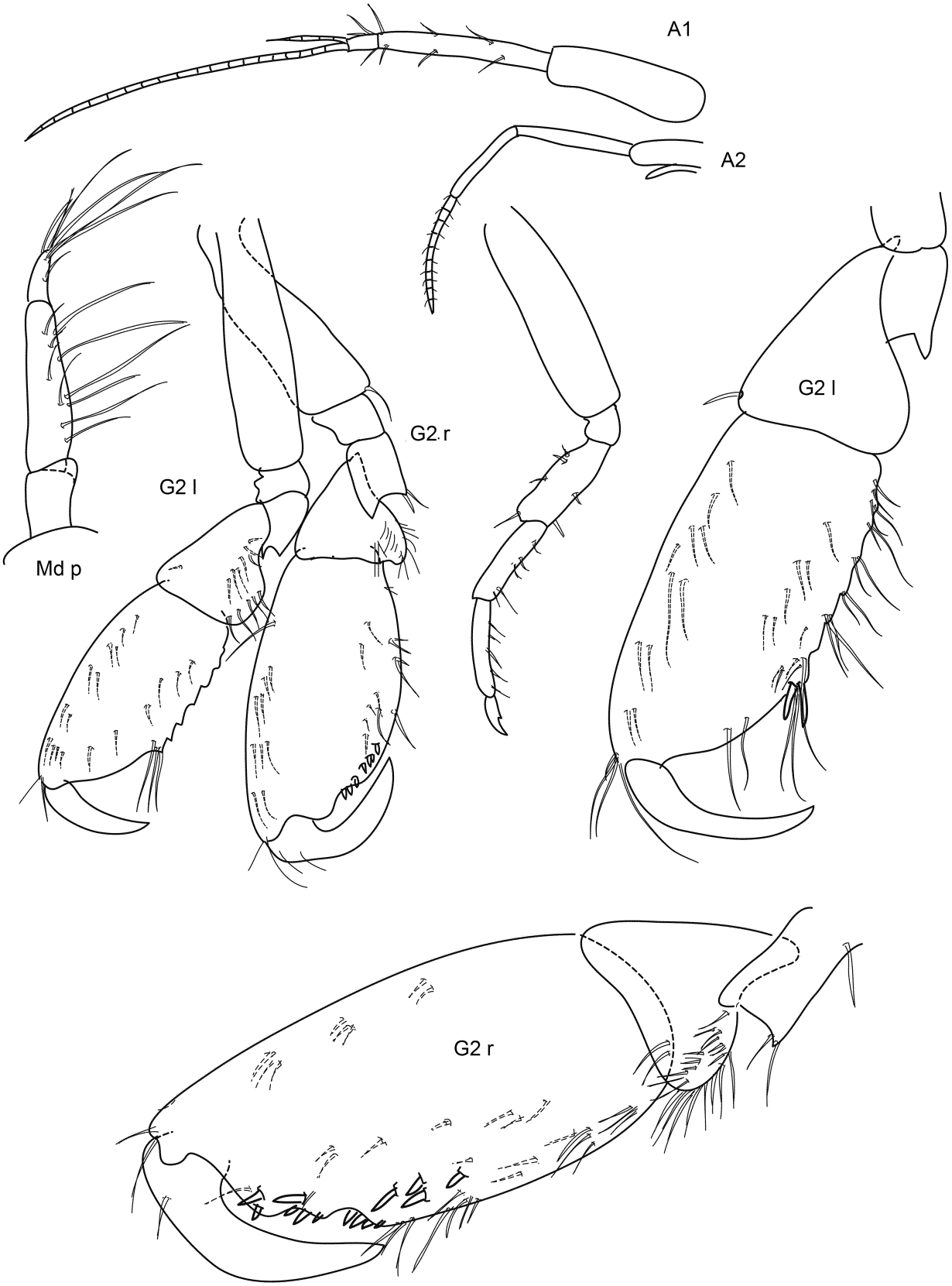

FIGURE 7. *Ceradocus* cf. *rubromaculatus* (Stimpson, 1856), adult, sex unknown, 6.0 mm, AM P77698, Cobble Beach, Orpheus Island, Great Barrier Reef.

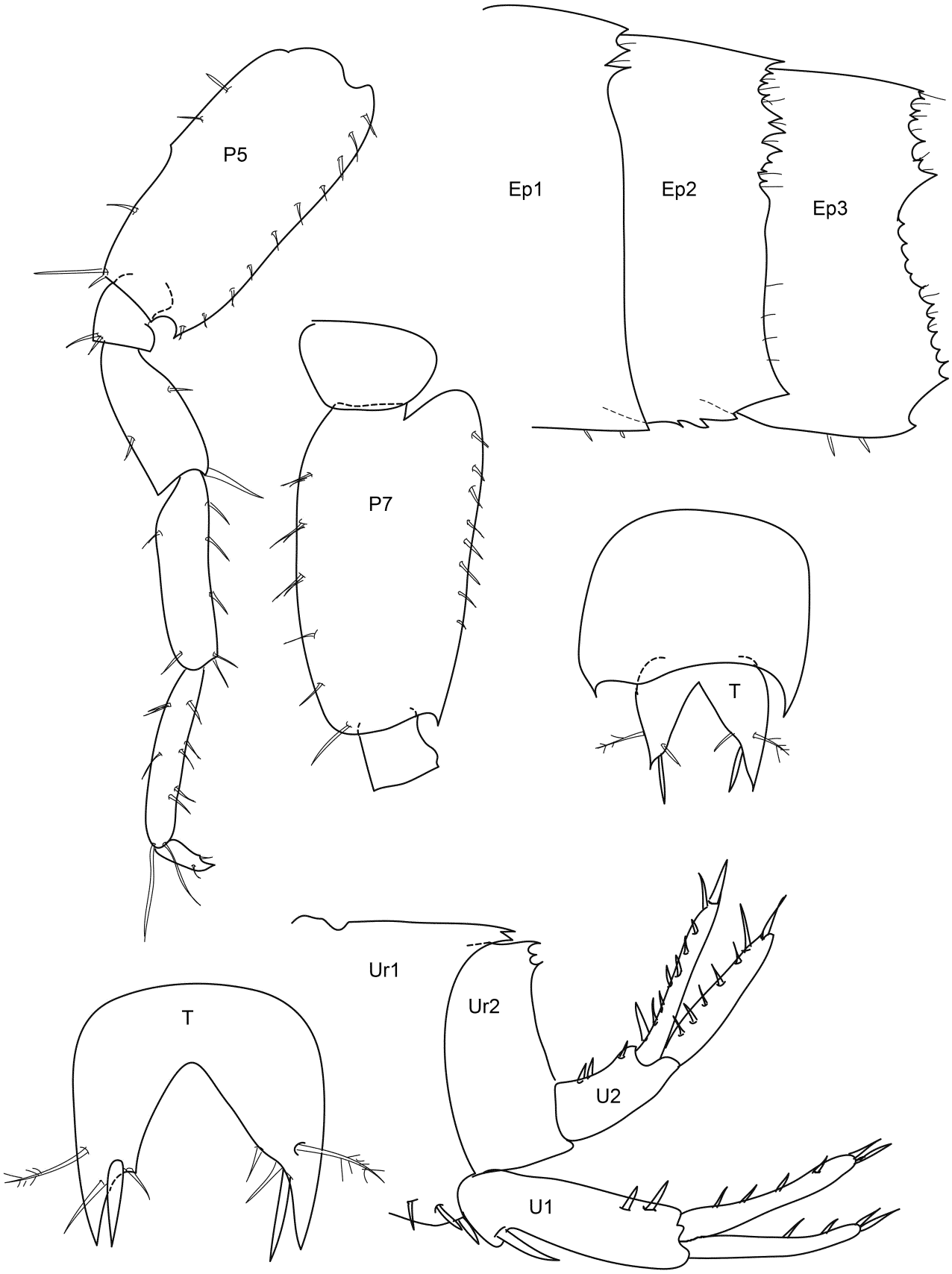

FIGURE 8. *Ceradocus* cf. *rubromaculatus* (Stimpson, 1856), adult, sex unknown, 6.0 mm, AM P77698, Cobble Beach, Orpheus Island, Great Barrier Reef.

Male (sexually dimorphic characters). Unknown.

Habitat. Coral rubble, 2 m.

Remarks. Most of the known *Ceradocus* species show a well pronounced palmar corner on gnathopod 2, not only in males but also in females. There are only 7 species with oval gnathopod 2 propodus in females: four of them have other clear morphological differences: *C. serratus* (Bate, 1862) from England, but also reported from Australia (doubtfully the same species), has a smooth ventral and serrated posteroventral margin in epimeron 2; *C. spinifera* Ledoyer, 1973 from Madagascar has a serrated posteroventral margin on epimeron 1 and serrations on posterior and ventral margin of epimeron 2; in *C. woorree* Berents, 1983, the dentation on the body is lacking; in *C. yandala* Berents, 1983, from Australia the second gnathopods have a nearly right-angled palmar corner with a U-shaped incision in the middle of the palm.

In *C. greeni* Appadoo & Myers, 2005 from Mauritius, *C. inermis* Hirayama, 1986 from Ariake Sea and *C. rubromaculatus* (Stimpson, 1856) from Australia, there are dentations also on the urosomites which do not occur in the present specimen. The shape of the gnathopods is closest to that of *C. rubromaculatus*, hence the tentative placement of the single female here.

Distribution. *Australia*. Orpheus Island (current study) ; ? Low Isles (K.H. Barnard, 1931).

***Ceradocus woorree* Berents, 1983**
(Fig. 9, 10, Pl. 4E)

Ceradocus woorree Berents, 1983:106, figs 5, 6. —Lowry & Stoddart, 2003: 176.

Material examined. Holotype: male, 6.9 mm, AM P31714, eastern end of Mangrove Beach, Lizard Island (14°41'S 145°27.5'E), from sediment, 1.5 m depth (QLD 37). Paratype, male, 5.9 mm, AM P31715, Casuarina Beach, Lizard Island (14°40.5'S, 145°26.6'E), under stones at low tide mark (QLD 39).

Type locality. Lizard Island. Great Barrier Reef, Australia (14º41’S 145º27.5’E).

Description. Based on holotype, male, 6.9 mm, AM P31714.

Head. *Head* subocular notch present, narrow. *Antenna 1* longer than antenna 2; peduncle and flagellum subequal; peduncular articles 1 and 2 subequal, accessory flagellum with 5 articles. *Antenna 2* peduncle 3 times as long as flagellum, gland cone extending beyond article 3; flagellum with 11 articles. *Mandible* palp article 1 distally acutely lengthened. *Maxilla 1* inner plate quadrate. *Maxilla 2* inner plate ovate, with medio-facial row of setae.

Pereon. *Gnathopod 1* coxa subquadrate with anterodistally pointed and lengthened corner; propodus 0.9 x length of carpus. *Gnathopod 2* asymmetrical, large palm transverse or nearly transverse, but palm much shorter than remaining posterior margin of propodus; in small gnathopod 2 propodus palm not defined, posterior margin smooth and rounded. *Pereopod 5* basis posterior margin smooth, posterodistal corner lengthened into rounded lobe. *Pereopods 6-7* basis posterior margin weakly serrated, posterodistal corner rectangular.

Pleon. Epimeron 1–3 all margins smooth, posterodistal corner a little lengthened and upturned. *Uropod 3* peduncle half as long as rami; rami subequal, leaf-like, broadend, outer ramus with small distal robust setae; distally rounded, not truncated. *Telson* longer than wide, deeply cleft, apices distally pointed, each lobe with one larger and 2 smaller robust setae and one plumose seta.

Female (sexually dimorphic characters). No sexual difference**.**

Habitat. In sediment and under stones, 1.5 m depth.

Remarks. *Ceradocus woorree* is the only *Ceradocus* on the GBR without dorsal serrations on pleonites 1–3. According to Berents (1983) *C. woorree* is most similar to *C. aviceps* K.H. Barnard (1940) from South Africa.

Distribution. *Australia*. Queensland: Lizard Island (Berents 1983).

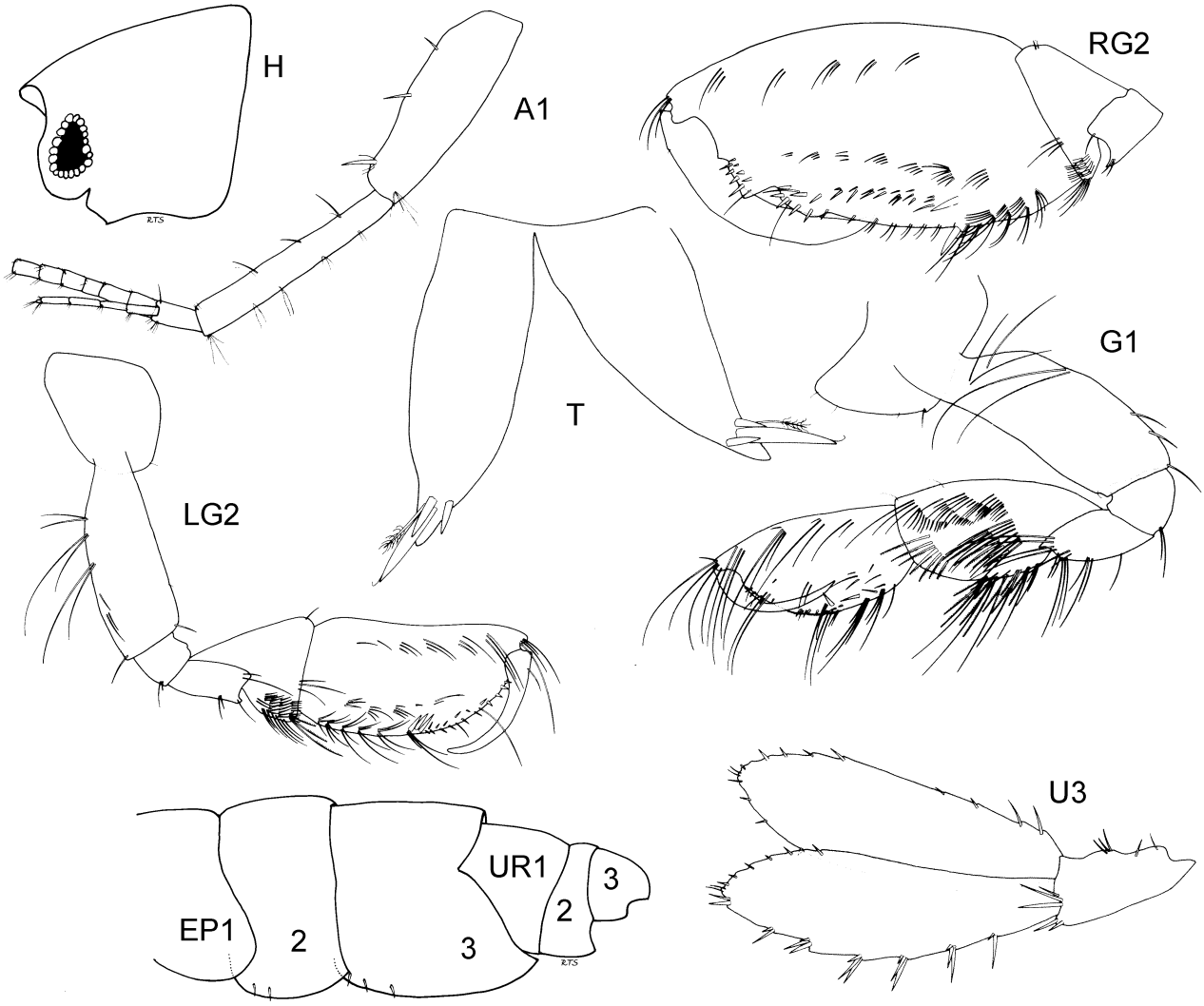

FIGURE 9. *Ceradocus woorree* Berents, 1983, holotype, male, 6.9 mm, AM P31714, Mangrove Beach, Lizard Island, Great Barrier Reef (redrawn from Berents 1983 except urosome).

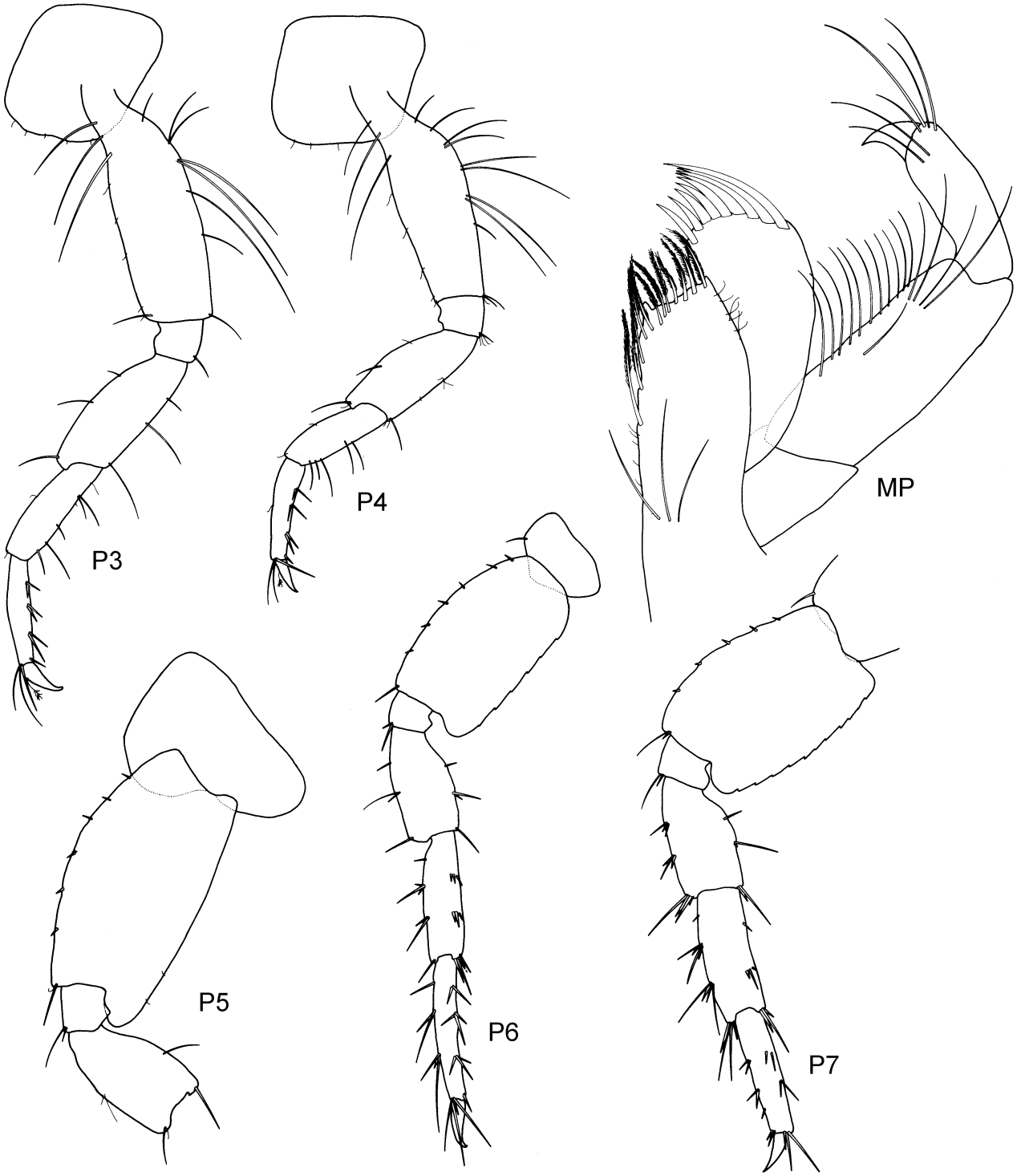

FIGURE 10. *Ceradocus woorree* Berents, 1983, holotype, male, 6.9 mm, AM P31714, Mangrove Beach, Lizard Island, Great Barrier Reef (redrawn from Berents 1983).

***Ceradocus yandala* Berents, 1983**
(Fig. 11)

Ceradocus yandala Berents, 1983: 109, figs 7, 8. —Lowry & Stoddart, 2003: 176.

Material examined. 2 females, AM P70598 (QLD 1622); 3 males, AM P71020 (2 slides) (QLD 1709); 1 adult, AM P71296 (QLD 1765).

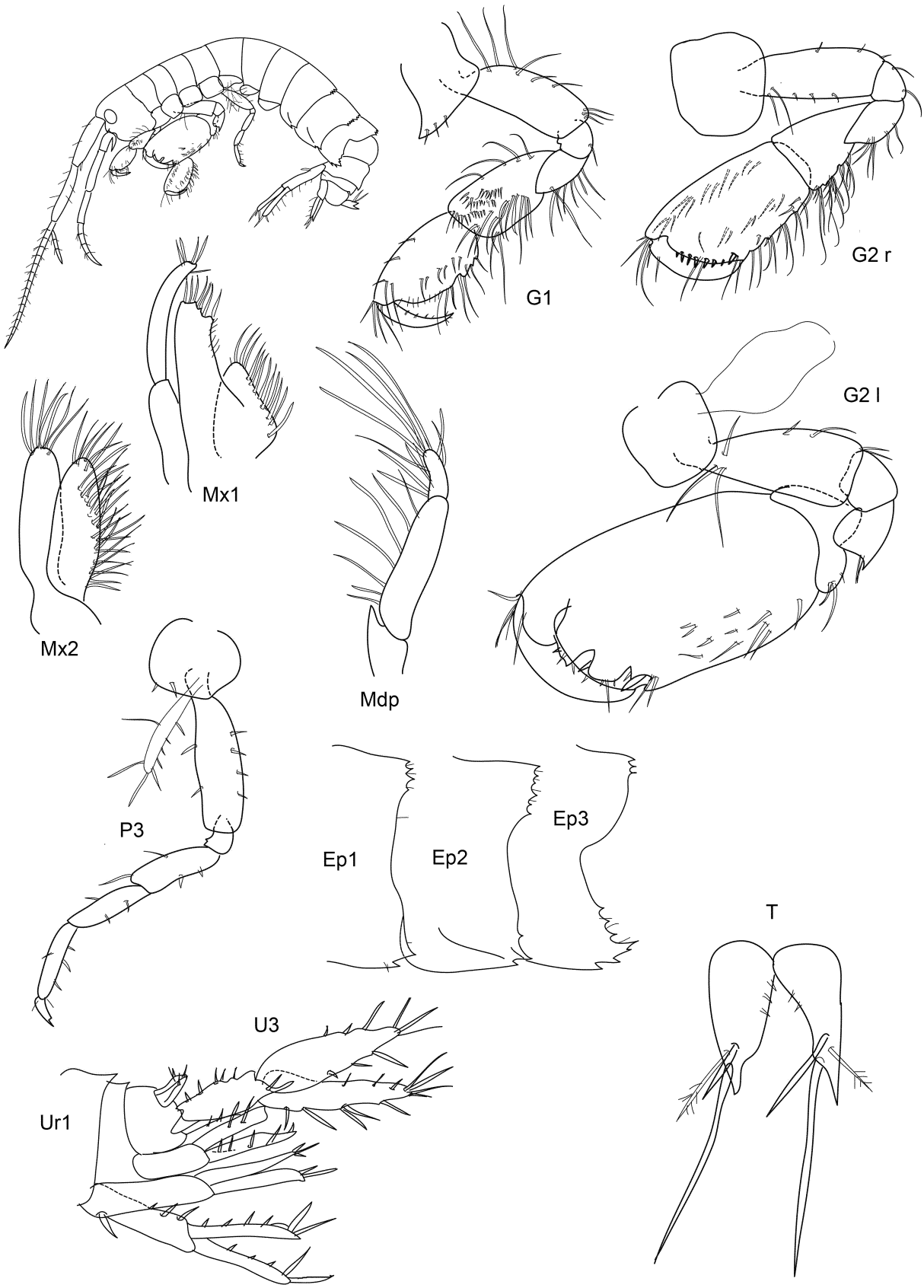

FIGURE 11. *Ceradocus yandala* Berents, 1983, male, 4.5 mm, AM P71020, north-east of North Point, Lizard Island, Great Barrier Reef.

Type locality. Mermaid Cove, Lizard Island, Great Barrier Reef, Australia (14°38.84'S 145°27.24'E).

Description. Based on male, 4.5 mm, AM P71020.

Head. *Head* subocular notch present. *Antenna 1* peduncular article 2 longer than article 1; accessory flagellum with 3 articles. *Antenna 2* article 4 longer than article 5. *Mandible* palp article 1 with distal acute prolongation; article 3 less than half article 2.

Pereon. *Gnathopod 1* carpus and propodus subequal. *Gnathopod 2* asymmetrical, large gnathopod palm transverse or nearly transverse, with rectangular excavation medially, propodus length 1.7 x width; small gnathopod palm oblique, smooth, ratio of small propodus length to width similar to that of the larger one.

Pleon. *Pleosomite 1* with large mediodorsal spine. *Pleosomite 2* lacking spine. *Epimeron 1* posterodorsal margin serrated, posteroventral margin smooth, ventral margin with few incisions. *Epimeron 2* posterodorsal margin serrated, posteroventral margin smooth, ventral margin with few incisions. *Epimeron 3* dorsal, posteroventral and ventral margins serrated. *Telson* lateral setae present, those on inner margins very short, 2 subdistal, long robust setae.

Female (sexually dimorphic characters). Based on female, AM P70598. *Gnathopod 2* with shallower incision in the middle of palm, and palmar corner wider, otherwise shape of propodus similar.

Habitat. Coral rubble, patches between coral or sand bommies, sponges, 3–10 m.

Remarks. This species is easy to distinguish from others by the subovate propodus of male gnathopod 2 and small body size.

Distribution. *Australia*. Queensland: Lizard Island (Berents 1983, current study).

Glossomaera gen. nov.

Type species. *Maera octodens* Sivaprakasam, 1968.

Etymology. From the Greek "glossa" meaning "tongue" referring to the thickened upper lip.

Diagnosis. Eyes oval. Lateral cephalic lobe broad, with anteroventral notch, anteroventral corner subquadrate. Upper lip thickened. Mandible palp article 3 subequal to article 2; maxilla 1 inner plate slender, maxilla 2 inner plate without mediofacial row of setae. Gnathopod 2 asymmetrical. Pereopod bases distally narrowing. Epimera 1–2 without shallow excavation posterodistally, epimeron 3 serrate on posterior margin. Telson lobes with shallow excavation distally.

Included species. *G. octodens* (Sivaprakasam, 1968); *G. lindsae* (Myers, 1989).

Remarks. The type species was added to *Linguimaera* by Lowry & Springthorpe (2005: 3), but some characters do not match to this otherwise quite homogeneous genus (see also below): the eyes are rounded-oval (vs. reniform in all *Linguimaera*), mandible palp article 3 is subequal in length to article 2 (always clearly shorter in *Linguimaera*), epimera 1 and 2 have a sharply pointed posterodistal corner (blunt corners followed by a characteristic shallow excavation in *Linguimaera*).

Glossomaera octodens (Sivaprakasam, 1968) nov. comb.

(Figs 12, 13)

Maera octodens Sivaprakasam, 1968: 36, fig. 2. —Ledoyer, 1978: 278, fig. 31. —Ledoyer, 1979: 80, fig. 45. —Berents, 1983: 128, fig. 22 (part). —Myers, 1985: 112, fig. 88. —Appadoo, Myers & Fagoonee, 2002: 668, fig. 17. —Lowry & Stoddart, 2003: 181.

Linguimaera octodens. —Lowry & Springthorpe, 2005: 238.

Material examined. 1 male (slide), AM P70640 (QLD 1621).

Type locality. Appa Island, East coast of India (~9°9.36'N 78°49.48'E).

Description. Based on male, 4.5 mm, AM P70640.

Head. *Head* lateral cephalic lobe broad, notch present; eye small, rounded. *Antenna 1* peduncular articles 1 and 2 subequal, accessory flagellum with 3 articles. *Mandible* palp articles 2 and 3 subequal, article 3 with 3 long lateral and 3 long distal setae.

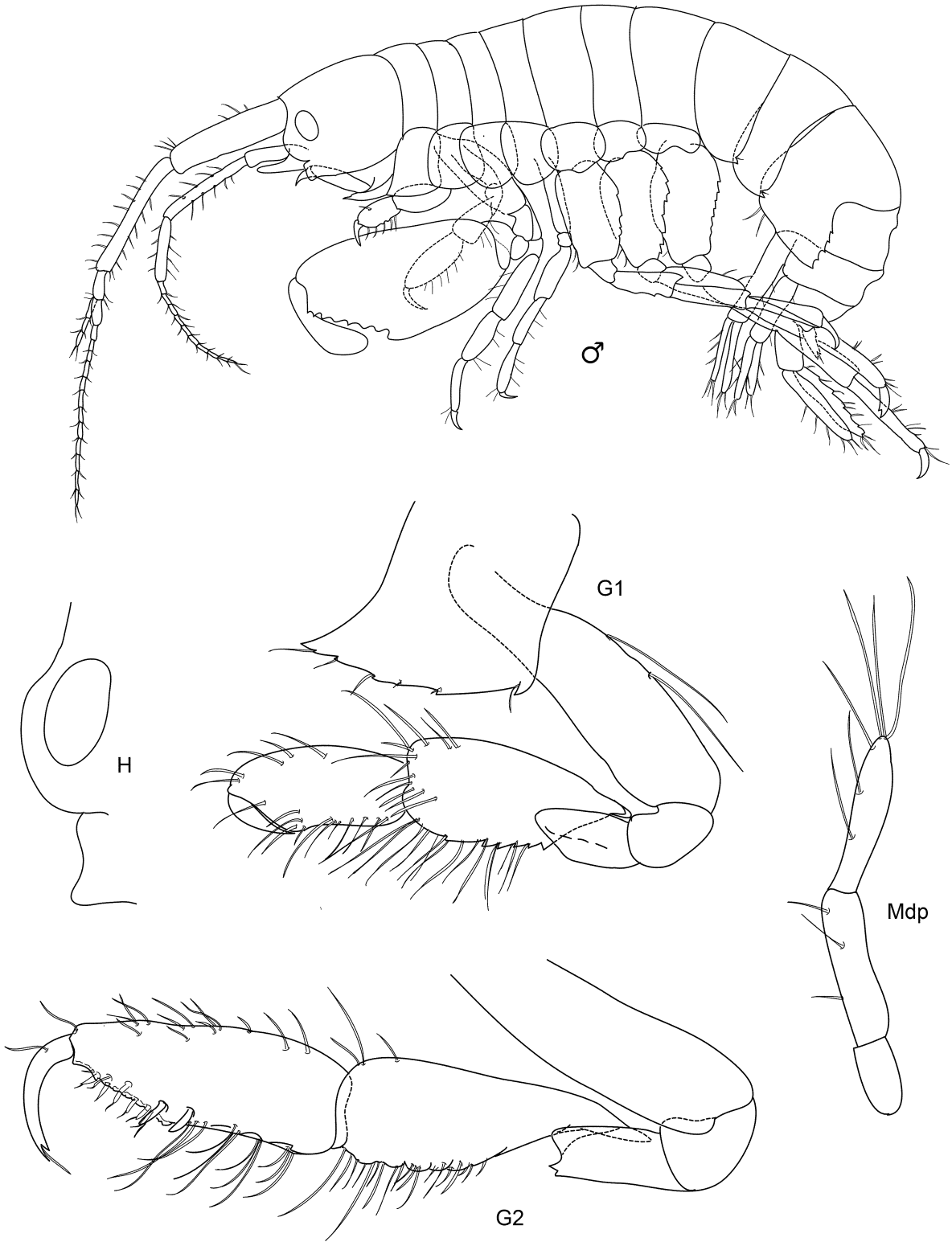

FIGURE 12. *Glossomaera octodens* (Sivaprakasam, 1968), male, 4.0 mm, AM P70640, Palfrey Island, Lizard Island, Great Barrier Reef.

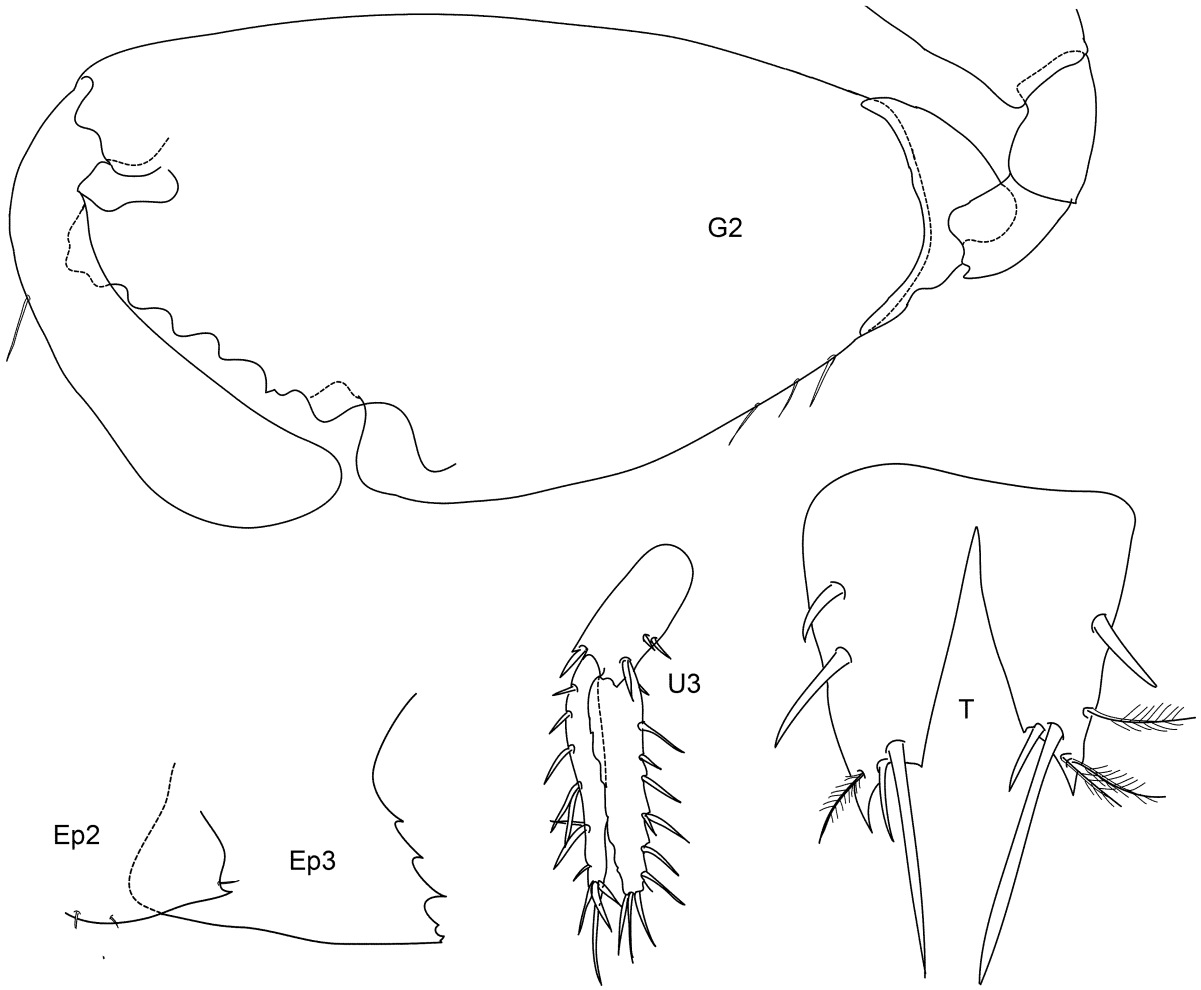

FIGURE 13. *Glossomaera octodens* (Sivaprakasam, 1968), male, 4.0 mm, AM P70640, Palfrey Island, Lizard Island, Great Barrier Reef.

Pereon. *Gnathopod 1* coxa quadrangular, anterodistal acute corner, ventral margin serrated; carpus wider and longer than rectangular propodus. *Gnathopod 2* asymmetrical; in smaller gnathopod, carpus triangular, somewhat longer than rectangular propodus with oblique palmar margin; larger gnathopod with cup-shaped carpus, propodus about 2.5 x length of that of smaller gnathopod, palm oblique and with 6–8 regular toothwaves; dactylus distally broadened. *Pereopods* 5–7 basis posterior margin serrated, narrowing distally.

Pleon. *Epimera 1–2* posterodistally with small upturned spine, followed by a shallow incision on posterior margin, with 1 seta inserted. *Epimeron 3* posterior margin serrated, ventral margin smooth. *Uropod 3* rami subequal, about 1.5 x length of peduncle, with short distal truncation and with many robust setae. *Telson* deeply cleft, lobes with shallow distal excavation, outer margin terminating in long spine, inner margin not lengthened, corner of about 90°; excavation with one strong robust seta inserted, length less than that of telson, lateral margins with 1–2 plumose setae and 1–2 shorter robust setae.

Female (sexually dimorphic characters). Unknown.

Habitat. Coral rubble, rubble patches between coral bommies, 3.7m.

Distribution. *Australia*. Queensland: Lizard Island (Berents 1983, current study). *Fiji* (Myers 1985). *India* (Sivaprakasam 1968). *Madagascar* (Ledoyer 1978, 1979). *Mauritius* (Appadoo *et al*. 2002).

***Jerbarnia* Croker, 1971**

***Jerbarnia stocki* Thomas & Barnard, 1990**
(Figs 14, 15)

Jerbarnia stocki Thomas & Barnard 1990: 169, figs 1–3. —Lowry & Stoddart, 2003: 190.

Material examined. 1 unknown sex, AM P77830 (JDT/ LIZ 15); 3 unknown sex, AM P77733 (JDT/LIZ 16); 1 unknown sex, AM P77829 (JDT/LIZ 17).

Type locality. Off Lizard Head, Lizard Island, Queensland, Australia (14°40'S 145°28'E).

Description. Based on that of Thomas & Barnard (1990), paratype, female, 4.3 mm.

Head. *Head* anterior margin with wide rounded excavation. *Eye* consisting of a patchy assemblage of ommatidia. *Antenna 2* shorter than antenna 1. *Mandible* stout with strong molar. *Maxilla 1* inner plate slender, with few apical setae only, palp with two articles. *Maxilla 2* inner plate half width of outer plate. *Maxilliped* palp with 3 articles, outer plate extending beyond palp article 2.

Pereon. *Gnathopod* 1 and 2 similar; *Gnathopod 1* carpus longer than propodus. *Coxa 3* widened anterodistally. *Pereopods 4–7*, coxa wider than long. *Pereopods 5–7* basis slender, not lobate.

Pleon. *Pleonites 1–3* dorsally smooth. *Epimera* posteroventral angles rounded. *Urosomites 1–2* with bidentate posterodorsal margins. *Uropod 1* rami longer than peduncle, slender, equal in length, with long robust distal setae. *Uropod 2* much shorter than uropod 1. *Uropod 3* elongate, peduncle almost reaching apex of rami of uropod 1, with robust setae; rami subequal, very long, ovatolanceolate. *Telson* quadrate, deeply incised.

Male (sexually dimorphic characters). Based on description of Thomas & J.L. Barnard (1990), holotype, male, 3.7 mm. *Gnathopod 2* gigantic, with coxa, basis and ischium strongly elongate; propodus of different shape from that of females, elongate and widened with oblique palm and defining spine.

Variation. Small specimens have second article on outer ramus of uropod 3.

Habitat. Rubble, 2 m.

Remarks. Differing from all species of the *Ceradocus*-group by the strikingly long coxa 2.

Distribution. *Australia*. Queensland: Lizard Island (Thomas & Barnard 1990, current study).

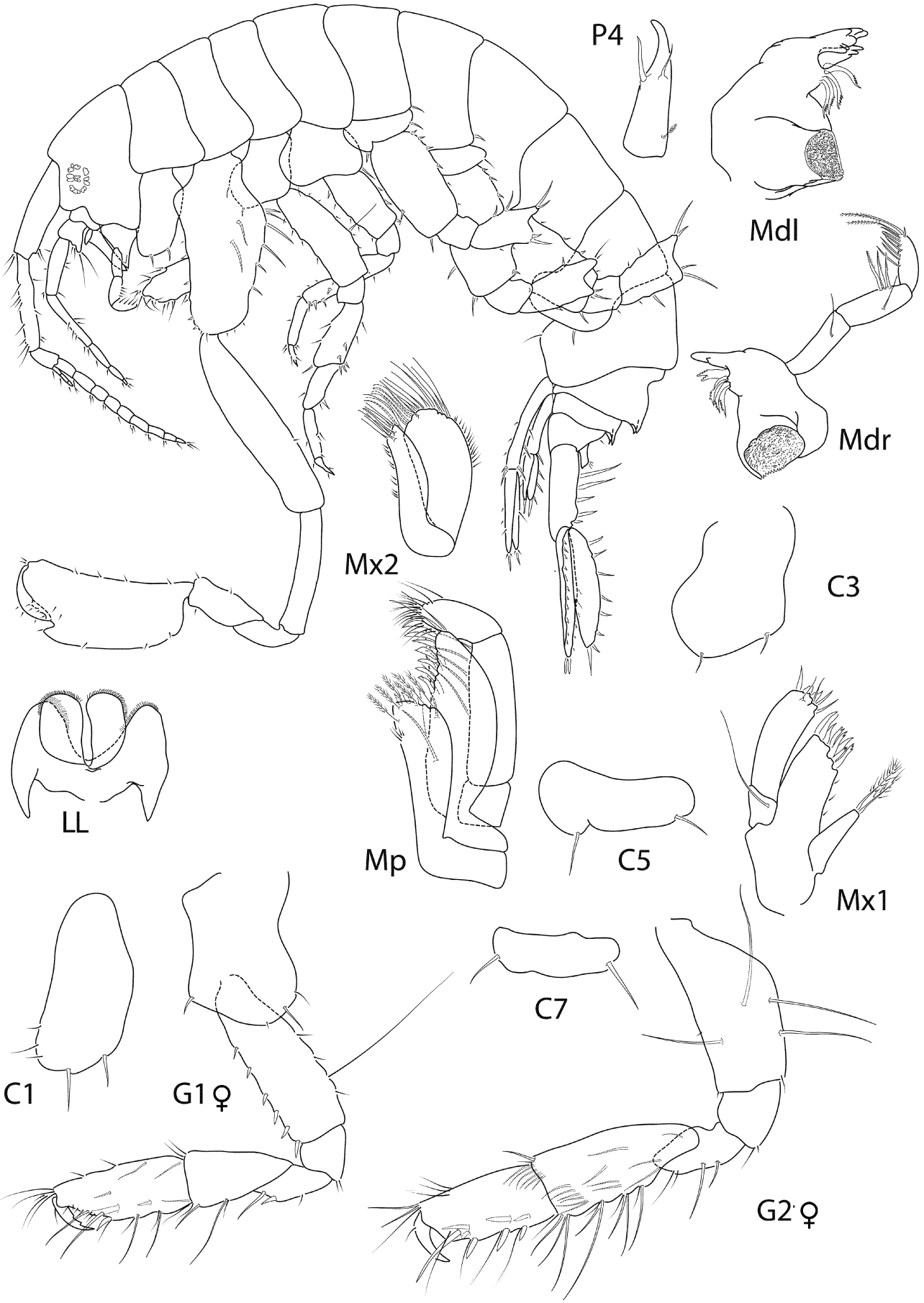

FIGURE 14. *Jerbarnia stocki* Thomas & J.L. Barnard, 1990, male holotype, 3.7 mm, details of gnathopods 1–2 (G1f, G2f) of female paratype, Lizard Island, Great Barrier Reef (redrawn from Thomas & J.L. Barnard 1990).

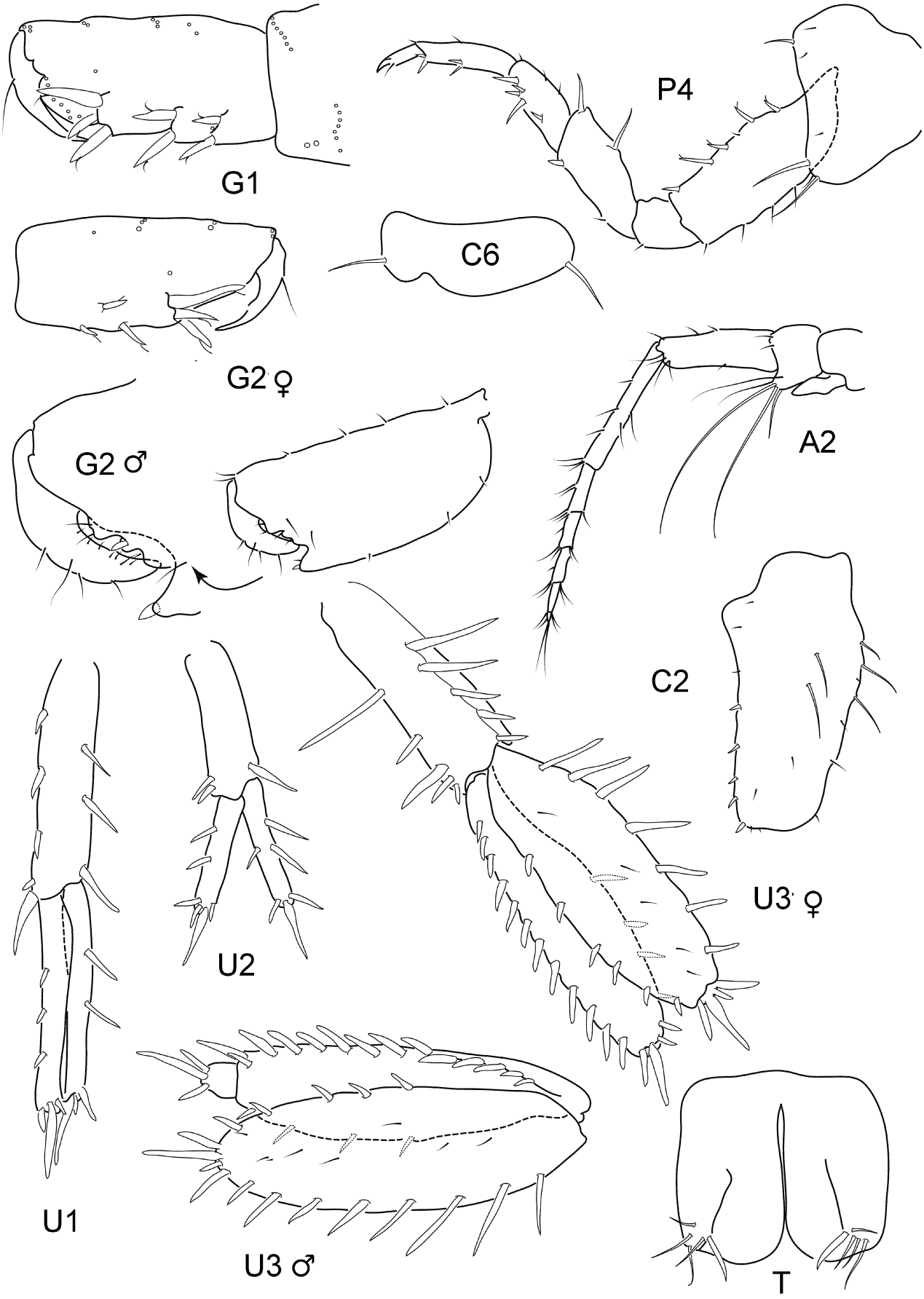

FIGURE 15. *Jerbarnia stocki* Thomas & J.L. Barnard, 1990, male holotype, 3.7 mm, details of gnathopods 1–2 propodi and dactyli (G1f, G2f) of female paratype, Lizard Island, Great Barrier Reef. (redrawn from Thomas & J.L. Barnard 1990).

Linguimaera Pirlot, 1936

***Linguimaera pirloti* Krapp-Schickel, 2003**
(Fig. 16)

Maera hamigera. —Appadoo *et al*., 2002: 664, figs 14–16.
Linguimaera othonides. —Pirlot, 1936: 309, fig. 132. —Krapp-Schickel, 2003: 258.
Linguimaera pirloti Krapp-Schickel, 2003: 261, fig. 2.

Material examined. 1 adult, sex unknown, AM P70959 (QLD 1697); 2 adults, sex unknown, AM P71190 (QLD 1728).

Type locality. Sulawesi, Indonesia (2°40'S 120°48'E).

Description. Based on adult, sex unknown, 9.0 mm, AM P70959.

Head. *Head* lateral cephalic lobe broad, notch present. *Eye* large, three x as long as broad, reniform. *Antenna 1* peduncular article 1 shorter than article 2; accessory flagellum with 3 articles. *Upper lip* thickened. *Mandible* palp article 3 length 0.6 x length of article 2.

Pereon. *Gnathopod 1* coxa rectangular with anterodistal acute corner, distal margin smooth; carpus wider and longer than oval propodus. *Gnathopod 2* asymmetrical: similar in shape but different in size; carpus shorter than propodus; propodus palm oblique, with 2 very shallow excavations. *Pereopods* 5–7 basis posterior margin serrated, parallel sided or a little narrowing.

Pleon. *Epimera 1–2* with blunt posterodistal corner, posterior margin with a shallow excavation. *Epimeron 3* posterior margin serrated, ventral margin smooth. *Uropod 3* rami about twice length of peduncle, with many robust setae, distally with very narrow truncation and group of distal robust setae. *Telson* deeply cleft, lobes with shallow distal excavation, outer margin longer than inner, with 2–3 short robust setae inserted, inner margin of lobes with 3–4 short robust setae, outer with smooth setae.

Habitat. Seagrass and sand, shallow reef flat, coral rubble, granite rock face with some corals and turf algae, 2–16 m.

Distribution. *Australia.* Queensland: Lizard Island (current study). *Indonesia*. Sulawesi (Pirlot 1936). *Mauritius* (Appadoo *et al.* 2002).

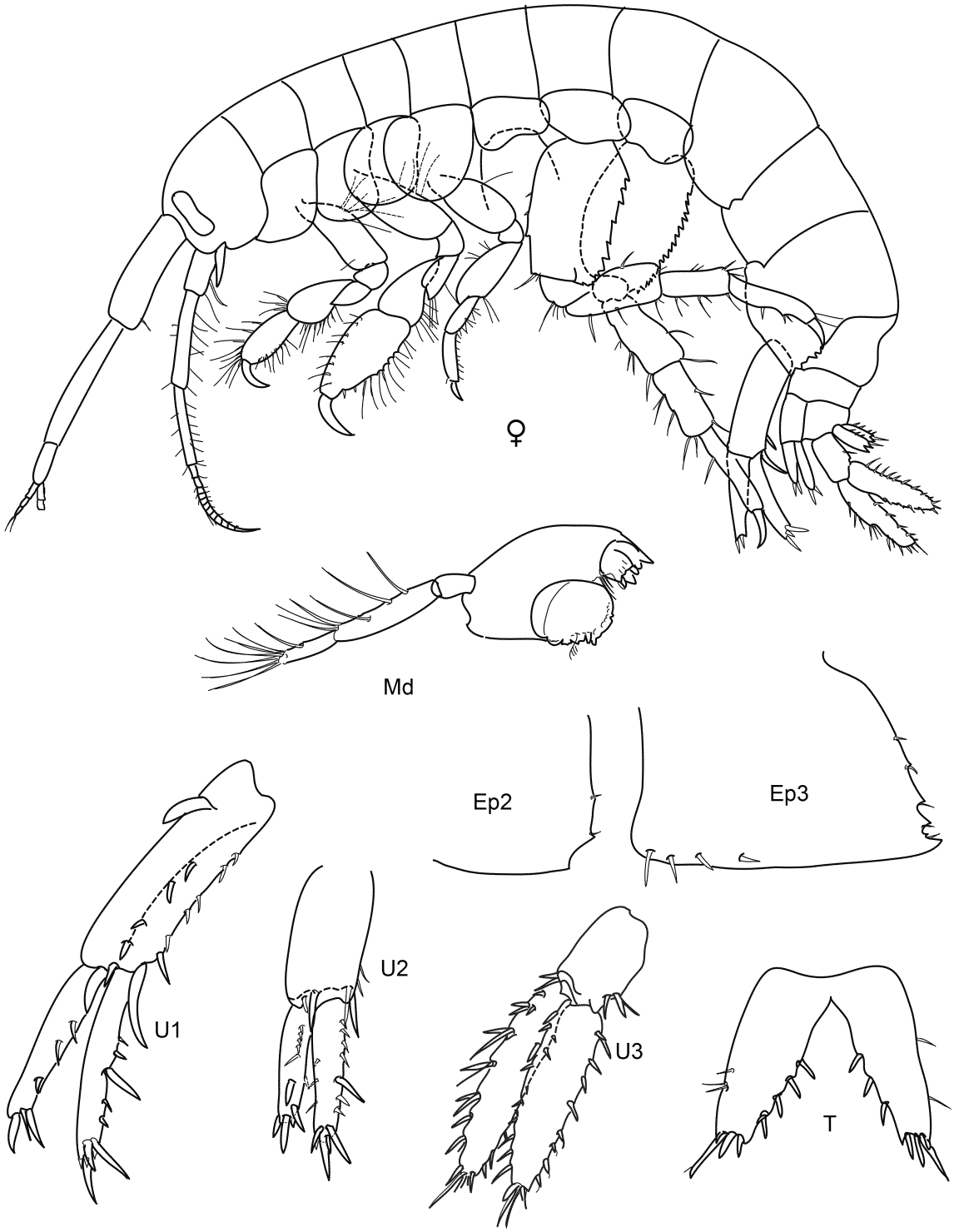

FIGURE 16. *Linguimaera pirloti* Krapp-Schickel, 2003, ovigerous female, 9.0 mm, AM P71012, North Point, Lizard Island, Great Barrier Reef.

***Maeropsis* Chevreux, 1919**

***Maeropsis cobia* sp. nov.**
(Figs 17**,** 18)

Maera serratipalma. —Ledoyer, 1983: 546: fig. 208. —Appadoo *et al.* 2002: 657, figs 9–11.

Type material. Holotype: male, 3.6 mm, AM P71183, Mermaid Cove, Lizard Island (14°38.91'S 145°27.26'E), encrusting algae & rubble, sand with rubble bottom, 2 m, T. Krapp-Schickel, 28 February 2005 (QLD 1730). Paratypes, 1, sex unknown, AM P77699, same locality.

Additional material examined. 2 juveniles, AM P70658 (QLD 1621); 1 juvenile, AM P77719 (QLD 1621); 1 juvenile, AM P70951 (QLD 1697); 1 juvenile, AM P71287 (QLD 1763); 2 juveniles, AM P71294 (QLD 1765); 1 juvenile, AM P71599 (QLD 1777); 1 juvenile, AM P71381 (QLD 1791); 1 juvenile, AM P71431 (QLD 1808); 4 adults, AM P77700 (SEL/LZI 1-3); 1 female, 8 juveniles, AM P77718 (SEL/LZI-2-2).

Type locality. Mermaid Cove, Lizard Island, Queensland, Australia (14°38.84'S 145°27.24'E).

Etymology. After Cobia Hole on Lizard Island.

Description. Based on holotype, male, 3.6 mm, AM P71183.

Head. *Head* lateral cephalic lobe rounded, lacking anteroventral notch. *Eye* oval. *Antenna 1* first two peduncular articles subequal; accessory flagellum with 4 articles. *Antenna 2* peduncular article 5 shorter than 4. *Mandible* palp article 1 with acute distal prolongation, article 3 longer than article 1, shorter than article 2. *Maxilla 1* inner plate very slender with 2 terminal setae. *Maxilla 2* inner plate slender, slightly slimmer than outer plate, with many distal and a few lateral setae; no mediofacial row of setae.

Pereon. *Gnathopod 1* coxa subquadrate with anterodistal margin produced, acute; carpus longer than propodus; propodus with rounded posterior margin. *Gnathopod 2* propodus trapezium-shaped, regularly widening distally; palm serrate, with regular toothwaves; incision directly before defining spine on palmar corner very shallow. *Pereopods 5–7* basis posterior margin serrated, narrowing distally.

Pleon. Epimera 1–3 all margins smooth, posterodistal corner a little lengthened and upturned. *Uropod 3* rami unequal, distally truncate, with a distal and marginal group of robust setae about half length of rami. *Telson* trapezium-shaped, distally narrowing, truncate, with very shallow excavate lobes, with 1 long and 2 short robust setae inserted.

Female (sexually dimorphic characters). No sexual difference**.**

Variation. Gnathopod 2 propodus palm lacking incision before defining spine.

Habitat. Encrusting algae and coral rubble, sand with rubble bottom, 1–16 m depth.

Remarks. Both Ledoyer (1983) and Appadoo *et al*. (2002), named their material *Maera serratipalma* after the species described by Nagata, (1965). But Nagata's material is more than double size (7–8 mm), gnathopod 1 has a well defined palmar corner and is much less robust, gnathopod 2 has nearly parallel margins on the propodus (here clearly widening distally) and the bases of pereopods 6 and 7 have rounded and lengthened posterodistal lobes, which are not present in the present material; also the telsonic spination is different.

Distribution. *Australia*. Queensland: Lizard Island (current study). *Madagascar* (Ledoyer 1983). *Mauritius* (Appadoo *et al.* 2002).

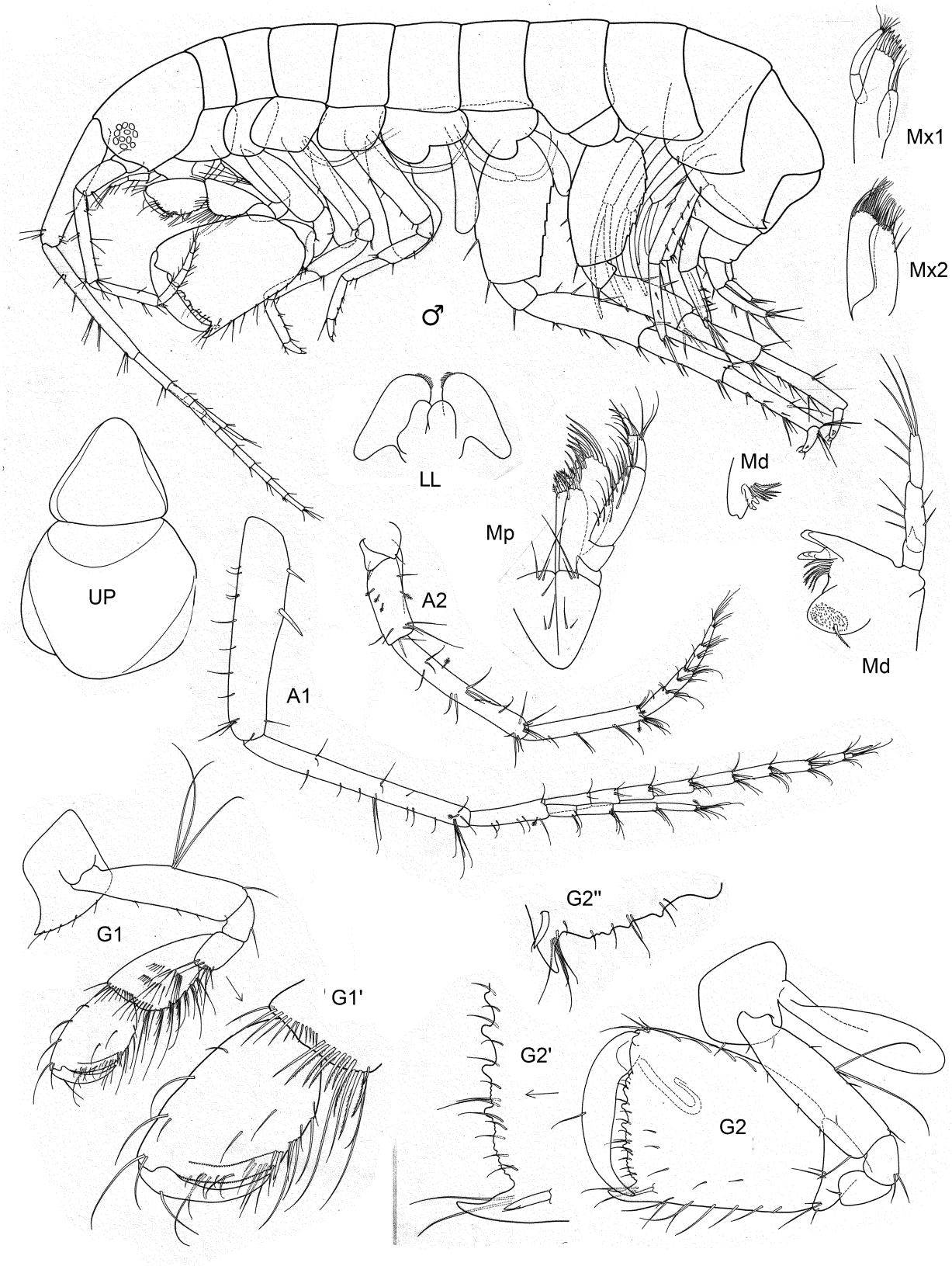

FIGURE 17. *Maeropsis cobia* **sp. nov.**, holotype, male, 3.6 mm, AM P71183, Mermaid Cove, Lizard Island, Great Barrier Reef.

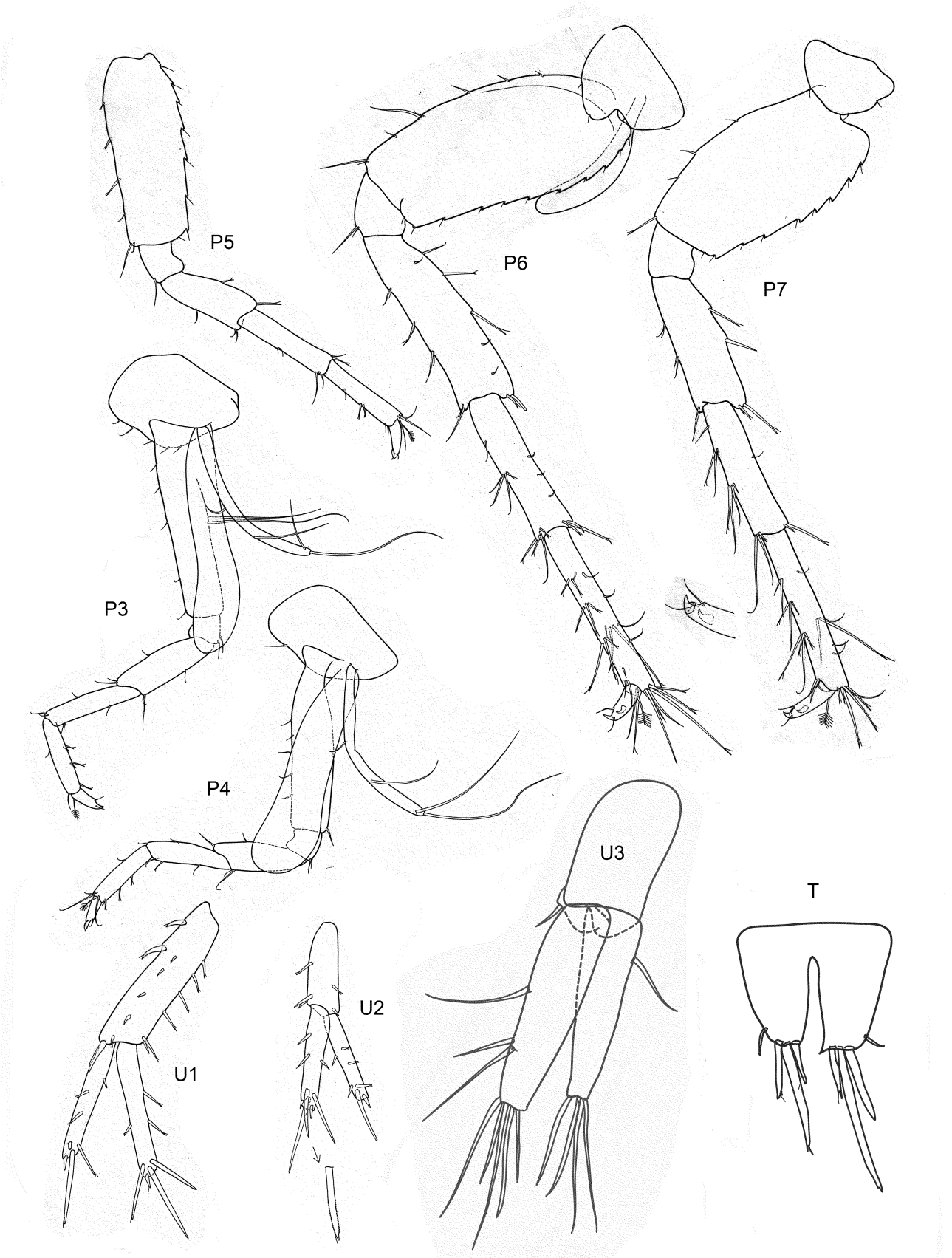

FIGURE 18. *Maeropsis cobia* **sp. nov.**, holotype, male, 3.6 mm, AM P71183, Mermaid Cove, Lizard Island, Great Barrier Reef.

***Maeropsis griffini* (Berents, 1983)**
(Fig. 19)

Maera griffini Berents, 1983: 125, Fig. 20–21
Maeropsis griffini. —Lowry & Springthorpe, 2005: 238.

Material examined. 29 adults and juveniles, AM P70602 (QLD 1621); 1 juvenile, AM P70610 (QLD 1621); 1 adult, 1 juvenile, AM P70615 (QLD 1621); 1 adult, 3 juveniles, AM P70626 (QLD 1621); 1 juvenile, AM P70659 (QLD 1621); 1 female, AM P70660 (QLD 1621); 3 females, AM P70999 (QLD 1621); 2 females, AM P71201 (QLD 1621); 2 adults, AM P77720 (QLD 1622); 1 female, AM P70741 (QLD 1645); 1 adult, 1 juvenile, AM P70769 (QLD 1653); 1 adult, AM P70892 (QLD 1653); 2 juveniles, AM P70996 (QLD 1663); 1 adult, AM P71046 (QLD 1718); 1 juvenile, AM P71336 (QLD 1724); 7 adults, AM P71254 (1725); 5 females, AM P71266 (1725); 2 adults, AM P71074 (QLD 1727); 2 adults, AM P71120 (QLD 1735); 2 adults, AM P71068 (QLD 1737); 3 adults, AM P71118 (QLD 1748); 23 adults and juveniles, AM P71236 (QLD 1768); 1 adult, 2 juveniles, AM P71513 (QLD 1777); 1 adult, 2 juveniles, AM P71602 (QLD 1803); 1 female, AM P71485 (QLD 1809); 1 juvenile, AM P71596 (1838).

Type locality. Between Bird Islet and South Island, Lizard Island, Queensland, Australia (14° 42'S 145° 28'E).

Description. Based on male, 5.5 mm, AM P71068.

Head. *Head*, anteroventral corner rounded, anteroventral slit absent. *Eye* ovate. *Antenna 1* peduncular article 2 shorter than article 1, article 3 minute; accessory flagellum with 3 articles. *Antenna 2* gland cone surpassing end of peduncle article 3, article 4 longer than article 5. *Upper lip* thickened. *Mandible* palp article 1 nearly 3 x as long as wide, distally triangularly lengthened but not pointed; article three subequal with or somewhat longer than article 2.

Pereon. *Gnathopod 1* coxa anteroventral corner produced, acute; merus without sharp posterodistal prolongation; carpus anterior margin rounded. *Gnathopod 2* significantly enlarged in both sexes, symmetrical; merus without sharp posteroventral prolongation; propodus palm with well defined palmar corner (about 90°), with two shallow excavations and strong robust setae. *Pereopods 5–7* basis with short robust setae on anterior margin; dactylus simple. Per*eopod 7* basis posterodistal corner rounded, lengthened and widened into lobe; merus swollen and lengthened posterodistally; all articles except ischium with bundles of long, fine setae.

Pleon. *Epimera 1–3* posterodistally not acutely lengthened, no upturned spine; posterior and ventral margins smooth. *Uropod 3* rami unequal, dorsoventrally flattened, longer ramus about 1.5 to 2 x length of peduncle, distally subacute, tapering; with apical robust and long fine setae, about 3/4 length of ramus; outer ramus with 1 article. *Telson* deeply cleft, trapezium-shaped, lobes distally excavated twice, the outer corner of excavations being the longer; inner and outer margins of lobes lacking setae, but long ones (approximately telson length) inserted in excavations.

Female (sexually dimorphic characters). Based on female, 5.0 mm, AM P70602 *Gnathopod 2* palm poorly defined, rounded. *Telson* apically less excavated.

Habitat. Coral rubble or bommies, 2–22 m depth.

Remarks. The dorsoventrally flattened rami of uropod 3 in the species are characteristic.

Distribution. *Australia*. Queensland: Lizard Island (Berents 1983 and current study).

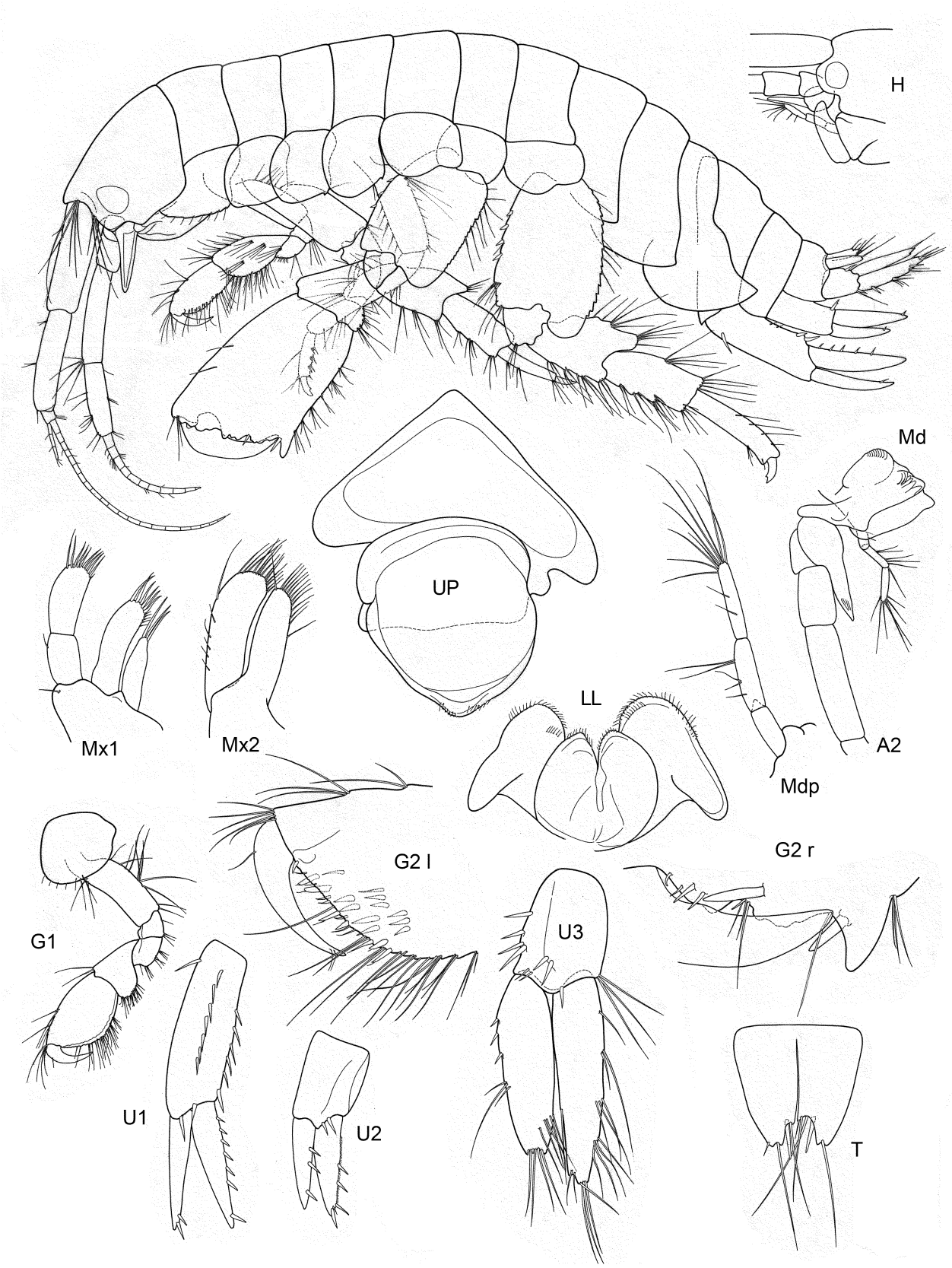

FIGURE 19. *Maeropsis griffini* (Berents, 1983), male, 5.5 mm, AM P71068, Granite Bluff, Lizard Island, Great Barrier Reef.

***Quadrimaera* Krapp-Schickel & Ruffo, 2000**

***Quadrimaera pacifica* (Schellenberg, 1938)**
(Fig. 20)

Maera pacifica Schellenberg, 1938: 42, figs 19–20. —Nayar, 1959: 23, pl. 8, figs 16–17. —J.L. Barnard, 1965: 511. —J.L. Barnard, 1970: 150, figs 92–93. —J.L. Barnard, 1971: 84, figs 38–41. —Ledoyer, 1972: 227, fig. 43 (forme A). —Ledoyer, 1983: 534, figs 201–202 (forme A). —Kim & Kim, 1987: 11, fig. 10. —Ruffo, Krapp & Gable, 2000: 13.
Maera kaiulani J.L. Barnard, 1970: 141, figs 90–91. —J.L. Barnard, 1971: 84, figs 38–41.
Quadrimaera kaiulani. —Krapp-Schickel & Ruffo, 2000: 194.
Quadrimaera cf. *pacifica*. —Appadoo *et al*., 2002: 650, fig. 5.

Material examined. 12 adults and juveniles (1 male 5 mm, 2 slides, 1 female, 1 slide), AM P77721(SEL/LZI-2-3); 20 adults and juveniles, (1 male, 5 mm, 2 slides) AM P77722 (SEL/LZI-2-4); 1 young female, AM P77723 (SEL/LZI-2-6).

Type locality. Makin, Kiribati (~1°40'S 179°22'W).

Description. Based on male, 5.0 mm, AM P77721.

Head. *Head*, lateral cephalic lobe rounded, anteroventral slit absent, anteroventral corner acutely lengthened. *Antenna 1* peduncular article 2 longer than article 1, accessory flagellum with 3–4 articles. *Antenna 2* lacking gland cone, article 4 longer than article 5. *Upper lip* lobate and thickened. *Mandible* palp article 1 distally somewhat oblique, resulting in knee-like articulation, lacking distal prolongation, article 3 clearly longer than article 2.

Pereon. *Gnathopod 1* coxa subquadrate, without acute anterodistal prolongation; carpus with shallow notch on anterodistal margin; propodus with rounded posterior margin. *Gnathopod 2* male propodus subrectangular, widening distally, palmar margin with small medial U-shaped shallow excavation and with deeper and narrower excavation next to prominent, acute defining spine; dactylus with 1 seta on outer margin, inner margin slightly bulging. *Pereopods 3–7* anterior margins of all articles and posterior margin of the merus with many groups of short robust setae, posterodistal corners of carpus, merus and propodus with a bundle of many robust setae, those on the merus of pereopod 7 surpassing the middle of the carpus, propodus hind margin smooth or with 1–2 setae, dactylus bifid.

Pleon. *Epimera 1–3* smooth, posterodistal corner blunt. *Uropod 3* rami peduncle and outer ramus of about the same length, the inner ramus a little shorter; both rami distally truncate, with about 5 robust setae which are shorter than the rami. *Telson* deeply cleft, lobes obliquely truncate, distally with 3–5 long robust setae.

Female (sexually dimorphic characters). *Gnathopod 2* palm rounded and smooth, with a V-shaped incision, or medially a small excavation, next to the defining spine.

Variation. Uropod 3 rami morphologically extremely different according to the age: Juveniles have the rami much narrower, and the outer one 1.5 x longer than the peduncle (J.L. Barnard, 1970: 151 fig. 92) and the inner ramus is much shorter than the outer one. Telson in juveniles not truncate, but distally with shallow excavation, distal corners lengthened to acute tips.

Habitat. Protected beach, coral rubble, sand, algae, wood pieces, 0–0.3 m.

Remarks. As already mentioned in Ruffo, Krapp & Gable (2000), the triangular spine on the inner margin of the dactylus of gnathopod 2 (drawn by Schellenberg 1938: fig. 19) was never found until now, although a hyperadult male of 7 mm of the syntypical series could be checked.

Ruffo, Krapp & Gable (2000) required more material of different ages to understand better the often cited "variability" of this species. In the current collection this was the case, and there were specimens of different sizes and morphs together in one sample. It was found that, similar to what is already known for *Quadrimaera serrata* (see J.L. Barnard 1970: fig. 97), the uropods and telson change their shape during morphological development. The uropod 3 rami of juveniles are very different in length to those of adults, such as shown for *Maera kaiulani* (see J.L. Barnard 1970: 147, figs 90, 91—never again reported). Thus there is strong evidence

to suggest that *Q. kaiulani* (J.L. Barnard, 1970) is a juvenile stage of *Quadrimaera pacifica.* The fact that juveniles start with such a short ramus in uropod 3 indicates that *Quadrimaera pacifica*, which is placed in the same group as *Q. quadrimana* (Dana, 1853), *Q. reishi* (J.L. Barnard, 1979), *Q. schellenbergi* (Ruffo, 1938), *Q. cristianae* Krapp-Schickel & Ruffo, 2000, and *Q. ceres* (Ruffo, Krapp & Gable, 2000), where such development is not reported, may not share the same origin as other members of this genus.

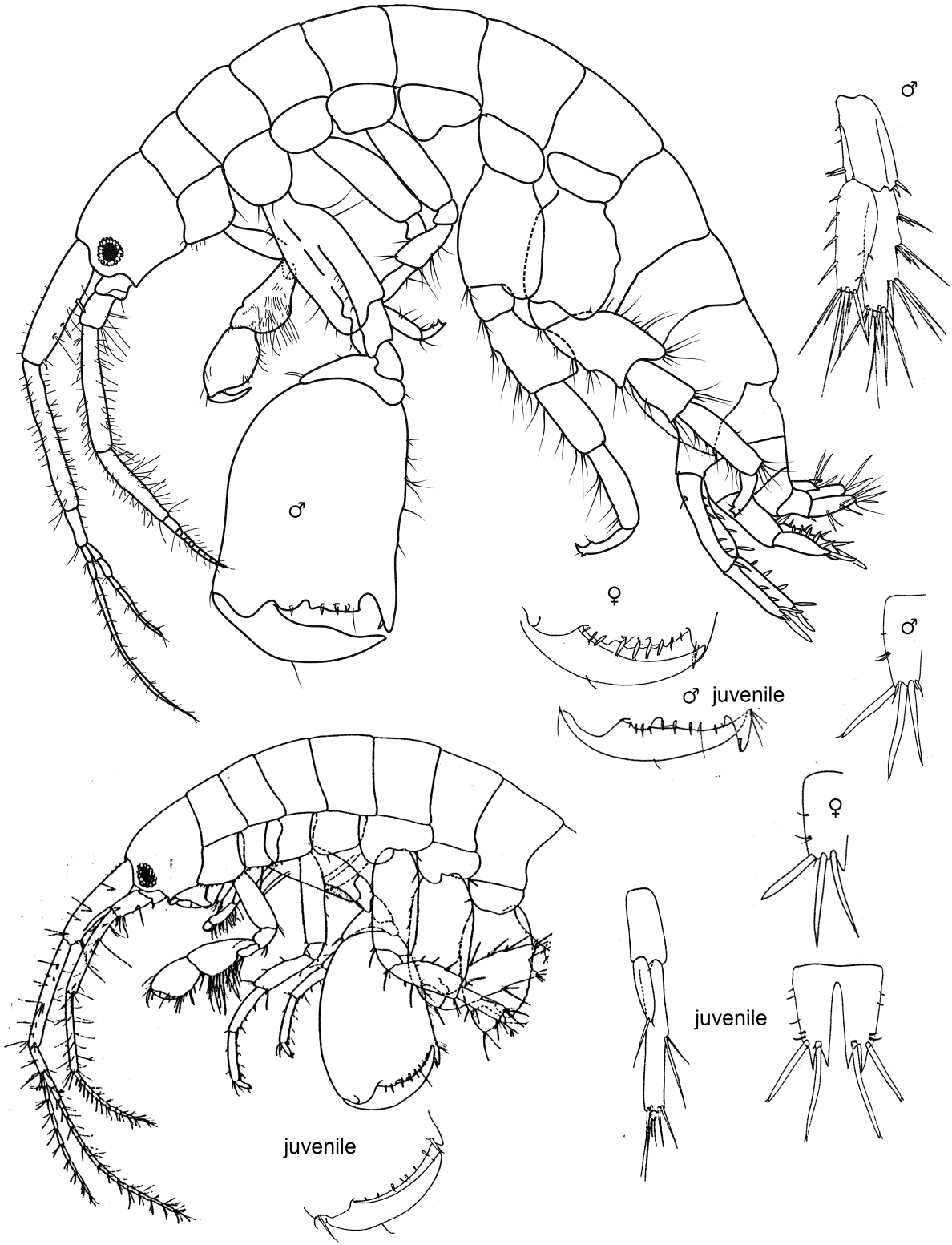

FIGURE 20. *Quadrimaera pacifica* (Schellenberg, 1938), male, 5.0 mm, ovigerous female, juvenile, AM P77721, Palfrey Island, Lizard Island, Great Barrier Reef.

Myers (1985: 112, figs 89, 90) illustrated material under the name of *Maera pacifica* which could well be a hybrid of *Q. quadrimana* and *Q. pacifica*, as it has a much deeper medial incision on gnathopod 2 palm than usual for *Q. pacifica*, but lacks the second V-shaped incision typical for *Q. quadrimana*. The identical shape is given in Ledoyer (1972: 230, pl. 44) as *Maera pacifica* forme B and in Griffiths (1976: 25, fig. 8) again under *Maera pacifica.* It is tempting to define it as a separate species, but morphologically there is no other reliable character for distinguishing.

Distribution. *Australia*. Queensland: Lizard Island (current study). *Fiji* (Schellenberg 1938, Myers 1985). *Hawaii* (Schellenberg 1938, J.L. Barnard 1970). *Kiribati* (Schellenberg 1938). *Madagascar* (Ledoyer 1972). *Mauritius* (Appadoo *et al*. 2002).

***Quadrimaera quadrimana* (Dana, 1853)**
(Fig. 21)

Gammarus quadrimanus Dana, 1853: 955, pl. 65, fig. 9.
Maera quadrimana. —Schellenberg, 1938: 45, figs 21–22. —J.L. Barnard, 1965: 511, fig. 17. —J.L. Barnard, 1970: 152, figs 94–95. —Ledoyer, 1972: 229, pl. 45. —Berents, 1983: 128, fig. 22. —Myers, 1985: 116, fig. 91.
Quadrimaera quadrimana. —Lowry & Stoddart, 2003: 186.

Material examined. 1 female "intersex", 3.5 mm (slide), AM P77724 (JDT/LIZ 2); 1 male, AM P77726 (JDT/LIZ 3); 1 male, AM P77725 (JDT/OPH 2); 1 female, 5 juveniles, AM P70601 (QLD 1622); 1 female incomplete, AM P70963 (QLD 1687); 1 female incomplete, AM P71030 (QLD 1711); 1 male, 5.0 mm (2 slides), AM P71041 (QLD 1715); 2 males, 9 females, AM P71270 (QLD 1767); 1 female, AM P71280 (QLD 1770); 1 male, 1 female, AM P71474 (QLD 1792); 1 male, 8 females, AM P77727 (SEL/LZI-2-7).

Type locality. Fiji (~17°40'S 178°31'E).

Description. Based on male, 5.0 mm, AM P71041.

Head. *Head* anteroventral corner produced into a sharp cusp, lacking anteroventral slit. *Antenna 1* peduncular article 2 longer than article 1; accessory flagellum with 5–6 articles. *Antenna 2* gland cone reaching end of short article 3. *Mandible* palp article 3 longer than article 2.

Pereon. *Gnathopod 1* coxa quadrangular, anteroventral corner rounded; carpus triangular, with notch on anterodistal margin; propodus ovoid. *Gnathopod 2* propodus rectangular with parallel margins, palm defined by V-shaped incision next to prominent acute spine; medially two smaller narrow incisions defining two molar-shaped elevations; dactylus outer margin with 1 seta, inner margin smooth. *Pereopods 3–7* with bifid dactylus. *Pereopods 5–7* basis narrow with sub-parallel margins and a posteroventral corner. *Pereopod 7* propodus posterior margin with one group of long setae.

Pleon. *Epimera* smooth. *Uropod 3* rami subequal, longer than peduncle, outer ramus somewhat longer, truncate and with many robust setae that are shorter than ramus. *Telson* deeply cleft, lobes distally evenly truncate and with 4 robust setae, some longer, some shorter than telson length.

Female (sexually dimorphic characters). Based on female, 3.5 mm, AM P77724**.** *Gnathopod 2* propodus palm with regularly serrate palm.

Variation. Ovigerous females may have regularly serrate palmar margin or in larger individuals, a palm similar to that of males with two deeper incisions (see also Schellenberg 1938 and Myers 1985).

Habitat. Tunicates, coral rubble, mixed coralline algae with epiphytes, brown algal tufts, bommies and sand patches, seagrass, 1–17 m depth.

Remarks. This species is found in the same group with *Q. pacifica* (see description above). Many authors described problems with highly variable material: juveniles have very narrow rectangular pereopod bases with ratio of length to width of about 2 (see Schellenberg, 1938: 47 fig. 22), while a male of 6.4 mm is described by J.L. Barnard (1970:153 fig. 94) with a pereopod 7 basis ratio of length to width of 1.4. J.L. Barnard (1965: 511 fig. 17) shows that the middle spine on the palmar margin can be worn.

Distribution. *Australia.* Queensland, Lizard Island (Berents 1983, current study). *Madagascar* (Ledoyer 1972, 1983). *India* (Sivaprakasam 1968). *Marshall Islands* and *Kiribati* (Schellenberg 1938; J.L. Barnard 1965). *Fiji* (Dana 1853, Schellenberg 1938, Myers 1985). *Hawaii* (Schellenberg 1938, J.L. Barnard 1970).

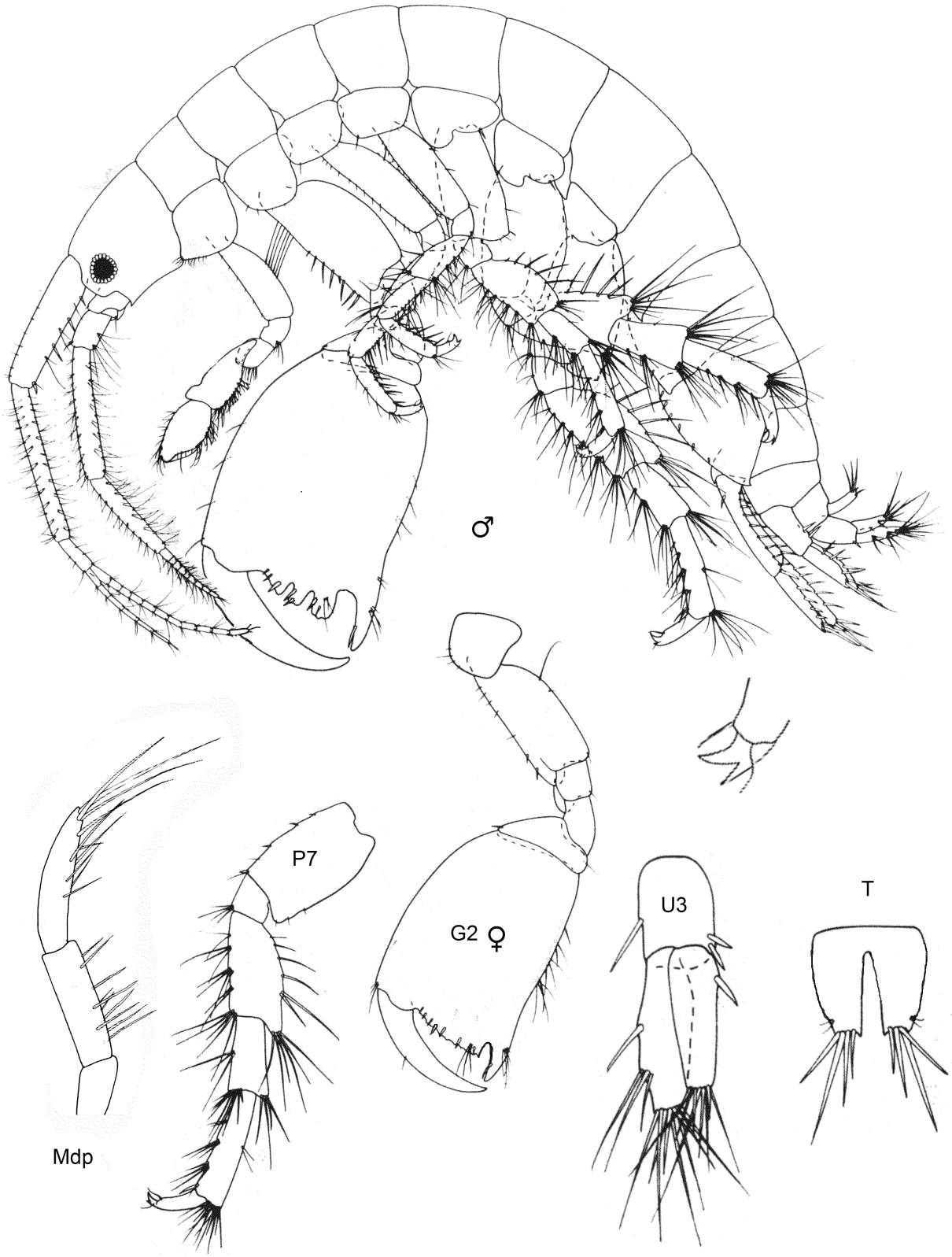

FIGURE 21. *Quadrimaera quadrimana* (Dana, 1853), male, 5.0 mm, AM P71041, Mermaid Cove, Lizard Island, Great Barrier Reef.

***Quadrimaera* cf. *reishi* (J.L. Barnard, 1979)**
(Fig. 22)

Maera reishi. —Berents, 1983: 129, fig. 23.
Quadrimaera reishi. —Lowry & Stoddart, 2003: 186 (catalogue).

Material examined. 1 male (slide), AM P30094 (75 LIZ 4-3); 2 males, AM P30159 (76 LIZ A); 1 male, 1 juvenile, AM P30160 (76 LIZ B12-24-2).

Description. Based on male, 4.0 mm, AM P30160.

Head. *Head* lateral cephalic lobe rounded, anteroventral slit absent, anteroventral corner acute. *Eye* rounded. Antenna *1* peduncular article 2 longer than article 1; accessory flagellum with 5 articles. *Antenna 2* peduncular gland cone surpassing article 3, article 4 longer than article 5. *Upper lip* thickened. *Mandible* palp article 1 distally oblique, article 3 shorter than article 2.

Pereon. *Gnathopod 1* coxa subquadrate, anterodistal corner rounded; carpus longer than propodus; propodus posterior margin rounded. *Gnathopod 2* propodus rectangular, widening distally, palm with deep U-shaped excavation medially, distally defined by deep narrow incision and sharp prominent spine. *Pereopods 3–7* basis with short setae; ischium, merus, carpus and propodus with many long robust setae, dactylus bifid.

Pleon. *Uropod 3* rami unequal, distally truncate with many long robust setae. *Telson* deeply cleft, lobes truncate with 3 long, robust setae of about length of telson.

Female (sexually dimorphic characters). Unknown.

Variation. Telson may have very shallow excavations.

Habitat. Rock covered with algae (*Chlorodesmis*), 18 m.

Remarks. The unusually long gland cone fits to the description of *Q. reishi* J.L. Barnard, 1979, and so do the first gnathopods and the pereopods. However, in the original description of *Q. reishi* the third article of the mandible palp is clearly longer than the second one (as in *Q. quadrimana* (Dana, 1853) and *Q. pacifica* (Schellenberg, 1938)) and the male of 5.5 mm has a deep V-shaped medial incision in the propodus palm, neither of which is visible in the here studied material, while in the original description of *Q. reishi* the gnathopod 2 of a 6.5 mm long male matches well the Lizard Island males of 4.8 mm. The present material is also similar to *Quadrimaera pieteri* Krapp-Schickel & Ruffo, 2000, *Q. massavensis* (Kossmann, 1880), *Q. santiniae* Krapp-Schickel & Ruffo, 2006, *Q. trisinuata* (Mateus & Mateus, 1986) *and Q. incerta* (Chilton, 1883), all of which have the mandible palp article 3 shorter than article 2, a relatively short and wide basis on gnathopod 2, a short merus on pereopod 7 which does not reach half length of carpus, a propodus of pereopod 7 with only one tuft of setae on posterior margin, a slender uropod 3 with the ratio of outer ramus to peduncle longer than 1, and shallow excavated telsonic lobes with few, but longer, robust setae.

Distribution. *Australia.* Queensland: Lizard Island (Berents 1983).

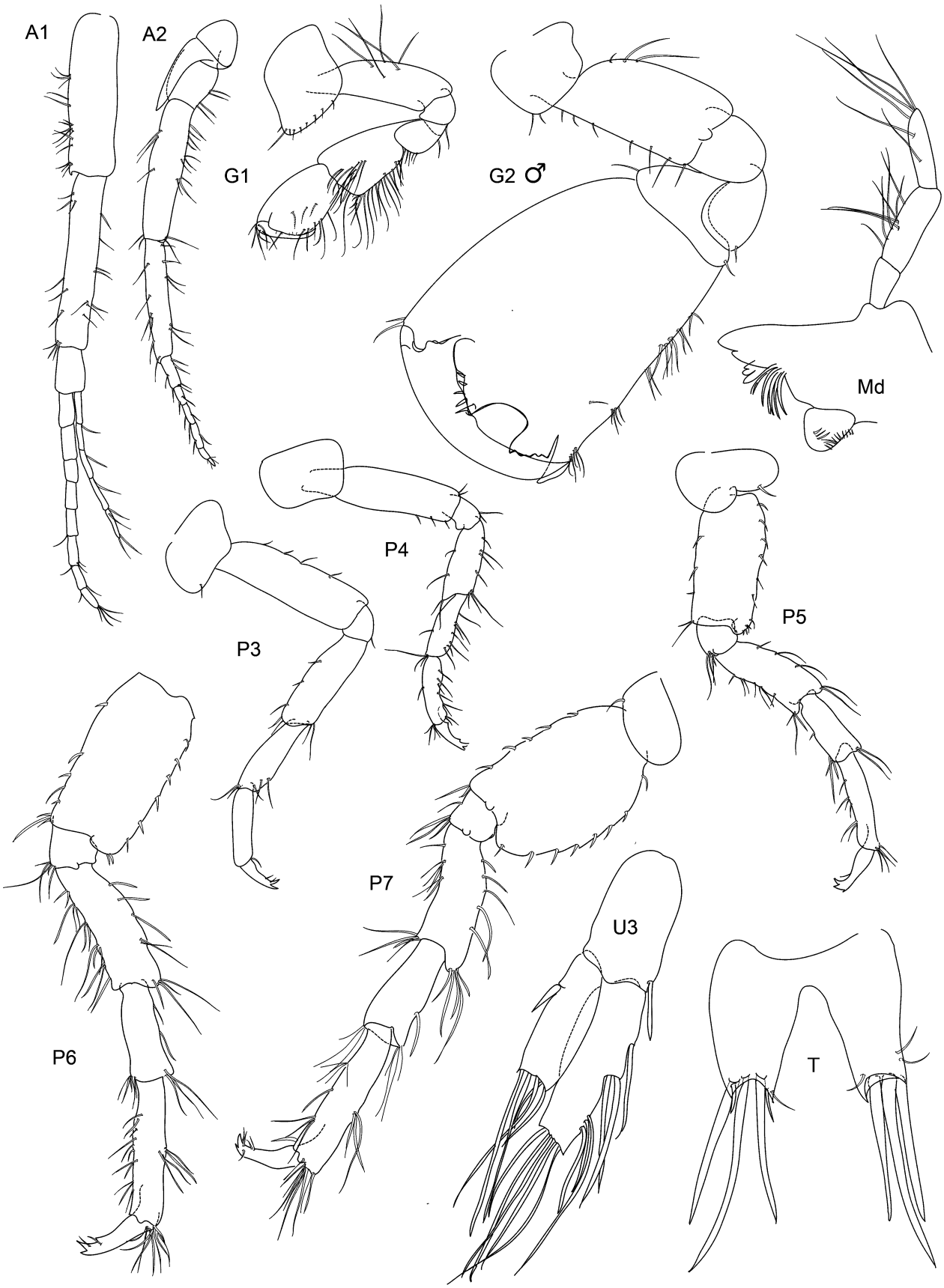

FIGURE 22. *Quadrimaera* cf. *reishi* (J.L. Barnard, 1979), 1 male, 4.0 mm, AM P30160, Palfrey Island, Lizard Island, Great Barrier Reef.

***Quadrimaera serrata* (Schellenberg, 1938)**
(Figs 23**,** 24)

Maera inaequipes serrata Schellenberg, 1938: 41, fig. 18. —J.L. Barnard, 1965: 510. —Ledoyer, 1967: 127, fig. 9. —Sivaprakasam, 1966: 100.
Maera serrata. —J.L. Barnard, 1970: 155, figs 96–97. —Ledoyer, 1972: 231, fig. 46.— Ledoyer, 1983: 544, fig. 207. —Berents, 1983: 131, fig. 24. —Myers, 1985: 117, fig. 92. —Appadoo, Myers & Fagoonee, 2002: 652, figs 6–8.
Quadrimaera serrata. —Lowry & Stoddart, 2003: 187.

Material examined. 1 male (2 slides), AM P77730 (JDT/LIZ 3); 2 adults, AM P77728 (JDT/OPH 2); 1 adult (slide), AM P77729 (JDT/OPH 2); 3 males, 1 female, AM P77732 (QLD 1622); 1 female, AM P70859 (QLD 1689); 1 male, AM P71204 (QLD 1736); 1 juvenile, 1 female (slide), AM P77731 (SEL/LZI-4-1).

Type locality. Kiribati (1°40'S 179°22'W).

Description. Based on male, 5.0 mm, AM P77731.

Head. *Head* lateral cephalic lobe rounded, anteroventral slit absent, anteroventral corner acute. *Eye* rounded. *Antenna 1* peduncular article 2 longer than article 1; accessory flagellum with 6 articles. *Antenna 2* peduncular article 2 gland cone reaching or surpassing end of article 3, article 4 longer article 5. *Upper lip* thickened. *Mandible* palp article 1 distally oblique, distal prolongation absent, article 3 shorter than article 2.

Pereon. *Gnathopod 1* coxa rhomboidal, anterodistal corner acute, but not lengthened; carpus with notch on anterodistal margin; propodus rounded. *Gnathopod 2*, propodus rectangular with somewhat rounded anterior margin, palm defined by short acute spine, with 1 shallow semicircular medial excavation opposite to a triangular hump on the dactylus; dactylus with no or one seta on anterior margin, posterior margin with 1–2 triangular humps near palmar excavation. *Pereopods 3–7* dactylus bifid. *Pereopods 5–7* basis with serrated posterior margin.

Pleon. *Epimera* 1–2 posterodistal corner with a small spine, *Epimeron 3* posterior margin regularly serrated. *Uropod 3* rami subequal, distally truncate, with about 4 robust setae that are about half as long as rami. *Telson* deeply cleft, distally and submarginally incised, with one long and one short robust seta in deeper distal incision and one long seta in marginal incision.

Female (sexually dimorphic characters). Based on female, 3.5 mm, AM P77731. *Gnathopod 2* dactylus with triangular hump(s) on inner side of dactylus and with smaller medial palmar excavation than that of male.

Habitat. Coral rubble, sand, coralline algae, creek lined with mangroves. 1–9 m depth.

Remarks. The triangular hump on the inner side of the gnathopod 2 dactylus, which is drawn by Schellenberg (1938) for the male of *Quadrimaera pacifica*, is only well developed in this species.

Distribution. *Australia*. Queensland. Lizard Island (Berents 1983, current study). *Red Sea* (Ruffo 1969). *Madagascar* (Ledoyer 1967, 1983). *South Africa* (Griffiths 1973). *India* (Sivaprakasam 1966). *Mauritius* (Appadoo *et al*. 2002). *Marshall Islands* and *Kiribati* (Schellenberg 1938, J.L. Barnard 1965). *Fiji* (Schellenberg 1938, Myers 1985). *Hawaii* (Schellenberg 1938, J.L. Barnard 1970).

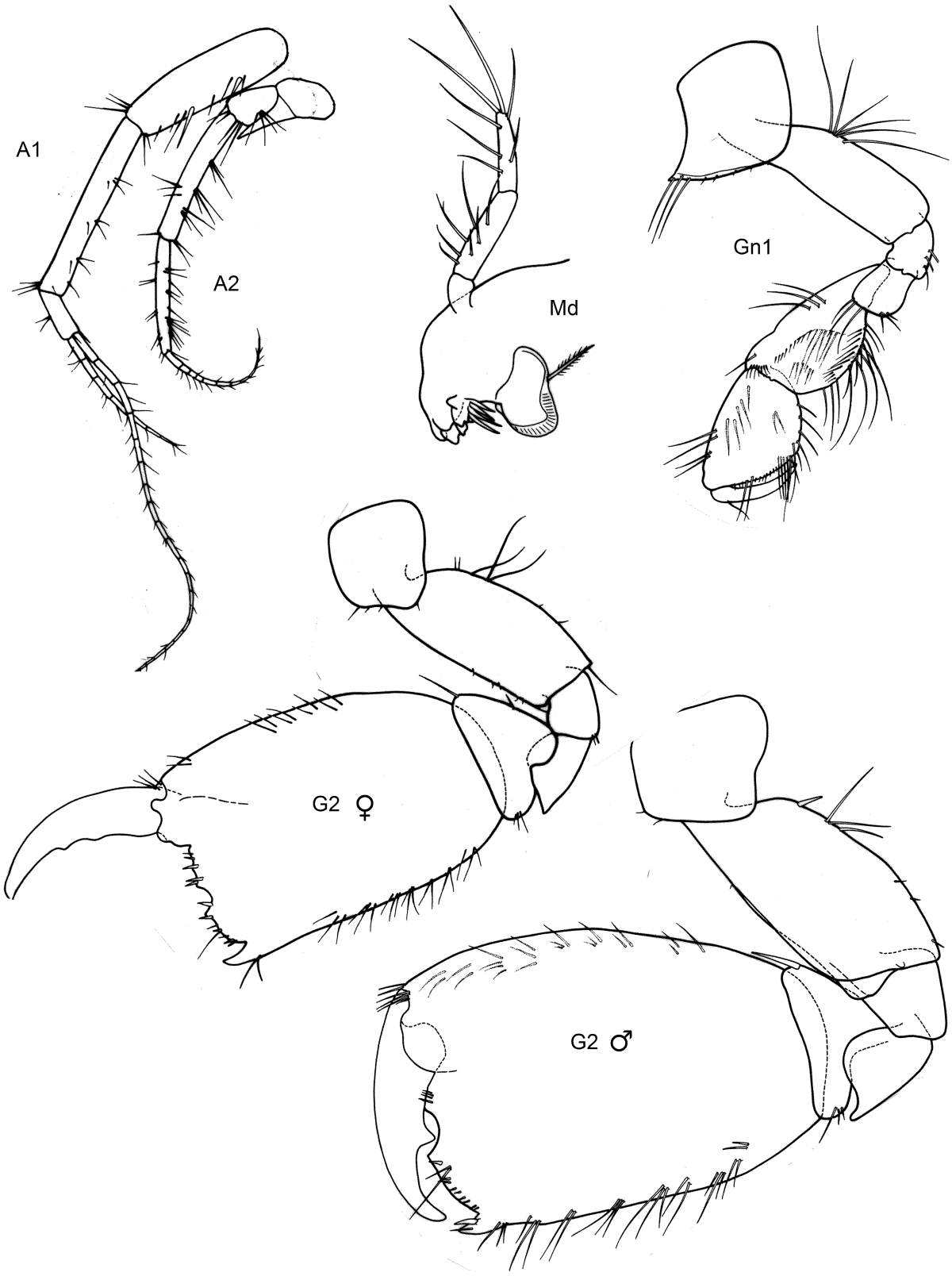

FIGURE 23. *Quadrimaera serrata* (Schellenberg, 1938), male, 5.0 mm, AM P77730, southern tip, Lizard Island, female 3.5 mm, AM P77731, Blue Lagoon, Lizard Island, Great Barrier Reef.

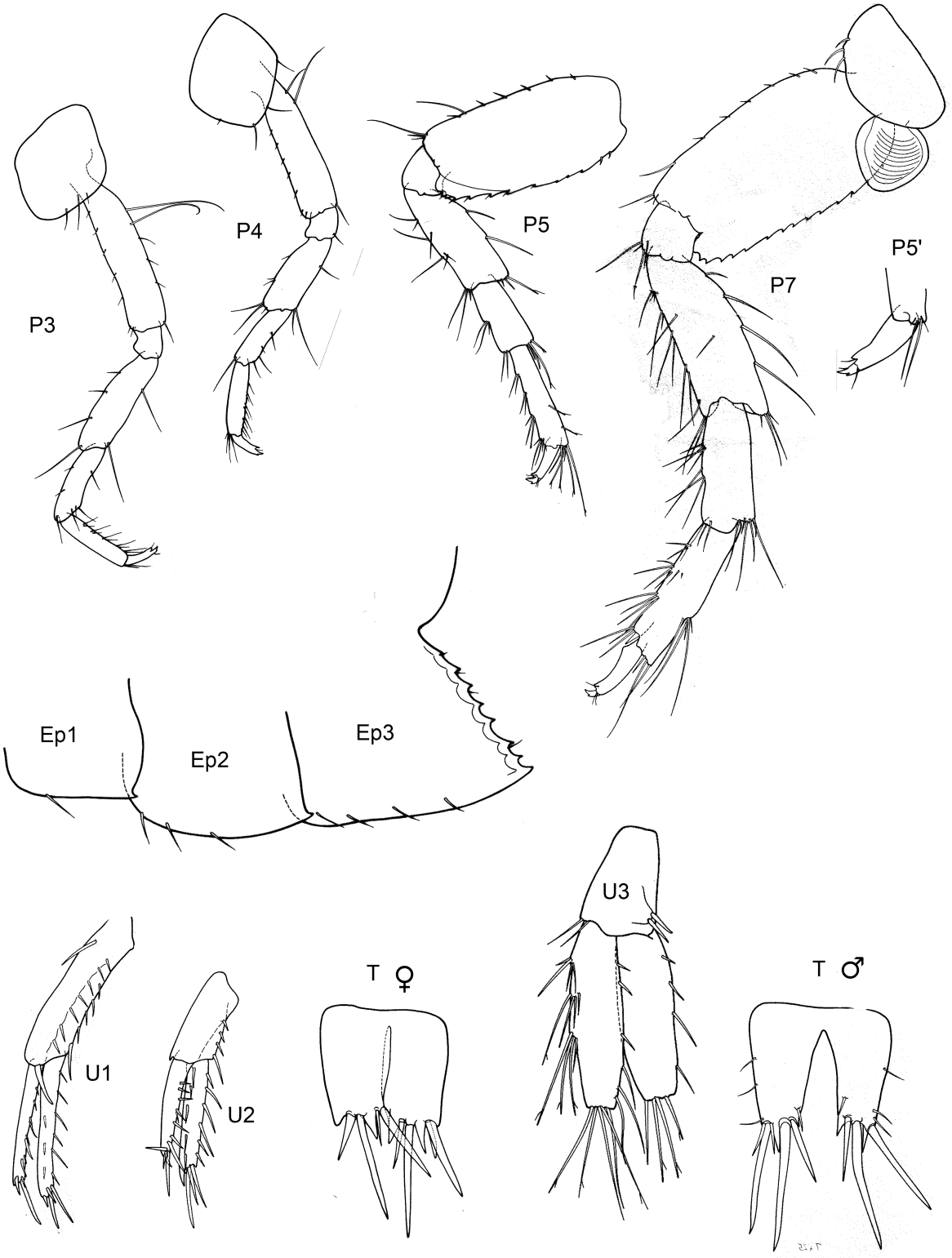

FIGURE 24. *Quadrimaera serrata* (Schellenberg, 1938), male, 5.0 mm, AM P77730, Southern tip, Lizard Island, female 3.5 mm, AM P77731, Blue Lagoon, Lizard Island, Great Barrier Reef.

***Saurodocus* Yerman & Krapp-Schickel, 2008**

***Saurodocus hobbit* Yerman & Krapp-Schickel, 2008**
(Fig. 25)

Saurodocus hobbit Yerman & Krapp-Schickel, 2008: 64, fig. 3.

Material examined. Holotype, female, 2.2 mm, with one large egg (slide), AM P 77695 (SEL/LZI-1-1); 1 unknown sex, AM P77696 (SEL/LZI-1-1).

Type locality. Mermaid Cove, Lizard Island, Queensland, Australia, Island (14°38.90' S 145°27.26'E).

Description. Based on holotype, female, 2.2 mm, AM P77695.

Head. *Head* with anteroventral corner rounded, without notch or slit; eyes round. *Antenna 1* peduncle strong, without robust setae along posterior margin; flagellum lost, therefore accessory flagellum unknown. *Antenna 2* peduncular article 2 gland cone not reaching to end of peduncular article 3; article 3 globular; article 4 longer than 5; flagellum with 12 articles. *Mandible* palp slender, article 1 without distal prolongation, articulation somewhat oblique; article 2 longer than article 3; article 3 longer than article 1, slim, subovoid with straight posterior margin, with 3 pectinate setae laterally. *Maxilla 1* inner plate triangular, as broad as long, with 6 setae. *Maxilla 2* inner plate with marginal and oblique setal row.

Pereon. *Gnathopod 1* coxa rectangular, narrow, anteroventral corner not produced; carpus triangular, shorter than propodus; propodus shorter than coxa, posterior margin rounded, palm defined by blunt corner. *Gnathopod 2* coxa rectangular, narrow, anteroventral corner not produced; carpus triangular, shorter than propodus; propodus similar to that of gnathopod 1, but narrower, anterior and posterior margin with setae; dactylus inner margin with 2 incisions. *Pereopods* slender, with short setae, basis smooth; dactylus simple.

Pleon. *Pleonites* quadrangular, without dentation. *Epimera 2–3* posterodistal corner acute. *Urosomites* smooth. *Uropod 1* peduncle a little longer than rami. *Uropod 2* peduncle subequal to rami. *Uropod 3* rami 7 x longer than broad, lanceolate, distally acute; outer ramus with fine serration on both margins. *Telson* quadrangular, deeply cleft, longer than broad, lobes distally with two incisions each having one short robust seta and 2–3 short fine setae; no lateral setae.

Male (sexually dimorphic characters). Unknown.

Habitat. Protected beach with patch reefs offshore, coarse coral sand with pieces of coral, 0.5–1.0 m. Probably interstitial.

Remarks. This tiny specimen was carrying one large egg, thus was undoubtedly adult.

Distribution. *Australia*. Queensland: Lizard Island (Yerman & Krapp-Schickel 2008, current study).

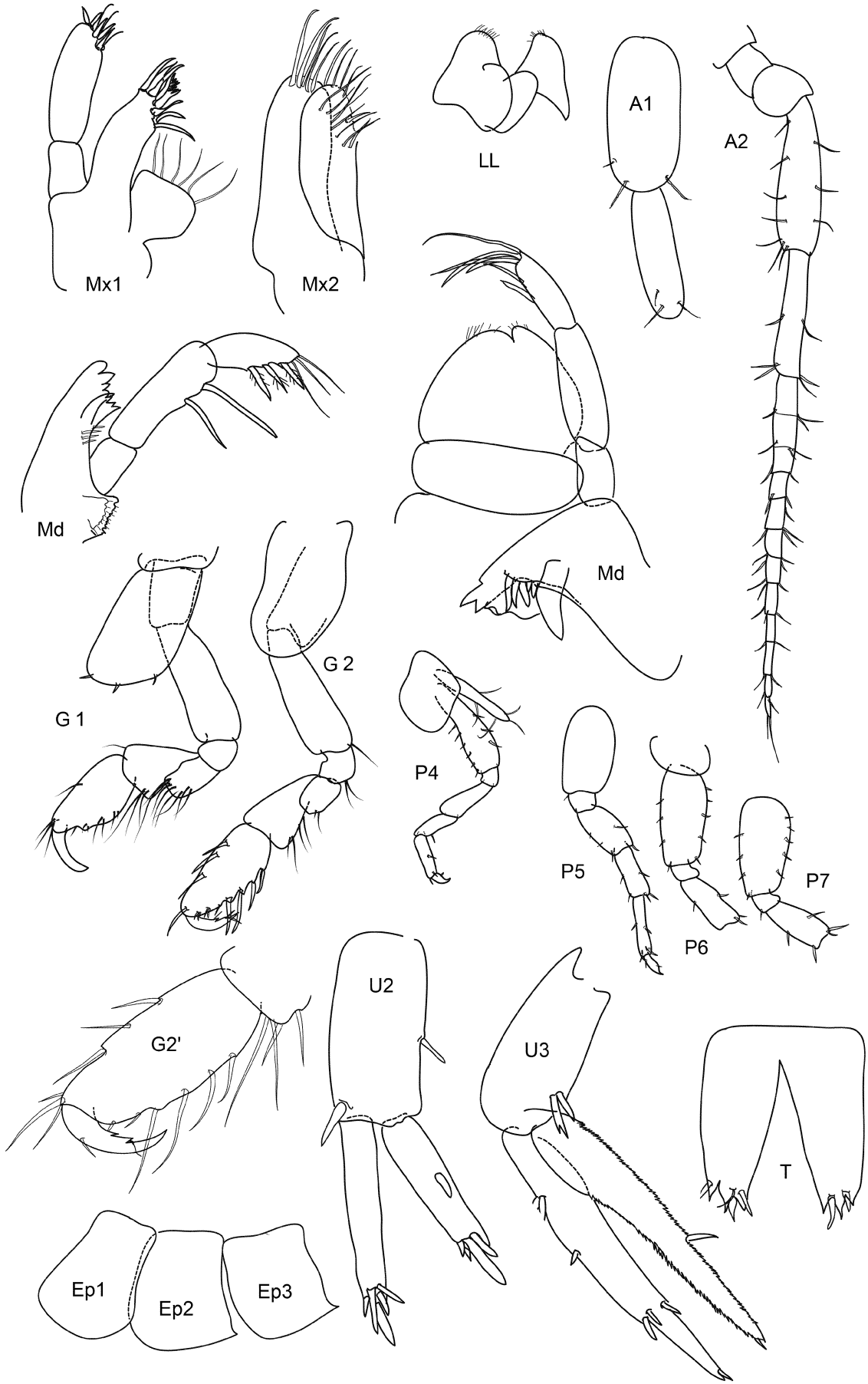

FIGURE 25. *Saurodocus hobbit* Yerman & Krapp-Schickel, 2008, holotype, female, 2.2mm, AM P77695, Mermaid Cove, Lizard Island, Great Barrier Reef.

***Saurodocus minimarenus* Yerman & Krapp-Schickel, 2008**
(Figs 26, 27)

Saurodocus minimarenus Yerman & Krapp-Schickel, 2008: 61, figs 1, 2.

Type material. Holotype, female, 1.2 mm, (slide), AM P77560, reef crest off Coconut Beach, Lizard Island (14°41.037'S 145°28.282'E), patches of coarse coral sand between reef, 2.6 m, M. Yerman, 23 February 2005 (QLD 1620).

Type locality. Coconut Beach, Lizard Island, Queensland, Australia (14°41.037'S 145°28.282'E).

Description. Based on holotype, female, 1.2 mm, AM P77560.

Head. *Head* with anteroventral corner rounded; without notch or slit; eyes round. *Antenna 1* longer than antenna 2; peduncle rather strong; peduncular article 1 longer than article 2, without robust setae along posterior margin; flagellum with 8 articles; accessory flagellum minute, with 2 articles. *Antenna 2* peduncular article 2 gland cone not reaching to end of peduncular article 3; article 3 globular; article 4 subequal to longer than article 5; flagellum with 5 articles. *Mandible palp* inner margin of article 1 weakly produced distally, article 2 longer than article 3, article 3 longer than article 1, with 2 lateral setae, 3 smooth distal setae and many shorter setae along the surface. *Maxilla 1* inner plate with 3 distal setae. *Maxilla 2* inner plate with marginal setae, without oblique setal row. *Maxilliped* inner plate not reaching basis of outer plate, which is about the same length.

Pereon. *Gnathopod 1* coxa anteroventral corner not produced, anterior margin convex; carpus 0.6 x length of propodus, triangular, shorter than propodus; palm nearly transverse and defined by posterodistal corner. *Gnathopod 2* carpus triangular, shorter than propodus; propodus similar to that of gnathopod 1, but narrower and lacking palmar corner, anterior and posterior margins with setae. *Pereopods 3–7* dactyli without anterodistal spine. *Pereopods 5–7* slender, with few short setae, basis posterior margin smooth.

Pleon. *Pleonite 1* dorsally smooth. *Pleonite 2* with dorsal spine. *Pleonite 3* dorsally smooth. *Epimeron 1* posteroventral corner with small acute or subacute spine. *Epimeron 2* posteroventral corner acute. *Epimeron 3* posteroventral margin distally with some small teeth. *Urosomite 1* with long dorsal spine. *Urosomite 2* posterior margin smooth. *Urosomite 3* without dorsal setae. *Uropods 1–2* peduncle longer than rami. *Uropod 3* rami 6.5 x longer than broad, distally acute or subacute, lanceolate. *Telson* quadrangular, deeply cleft; longer than broad with 2 short, subapical robust setae on each lobe, no lateral setation.

Male (sexually dimorphic characters). Unknown.

Habitat. Living in coarse coral sand among coral reef at 2.6 m. Probably interstitial.

Remarks. *Saurodocus minimarenus* differs from *S. hobbit* in the following main characters: gnathopod 2 propodus is half as long as wide as that of *S. hobbit*; pleon with dorsal spines (smooth in *S. hobbit*).

Distribution. *Australia.* Queensland: Lizard Island (Yerman & Krapp 2008).

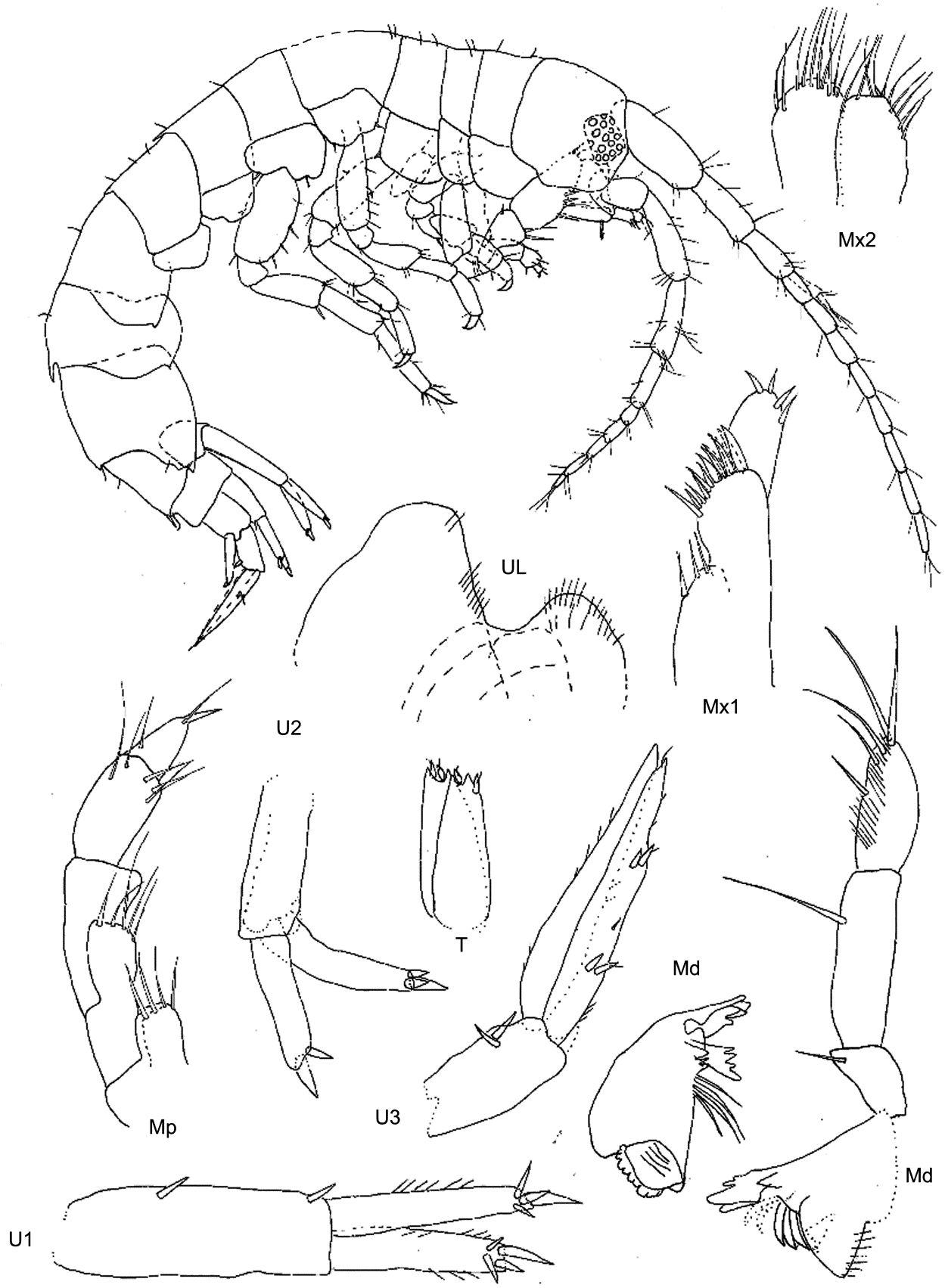

FIGURE 26. *Saurodocus minimarenus* Yerman & Krapp-Schickel, 2008, holotype, female, 1.2 mm, AM P77560, reef crest off Coconut Beach, Lizard Island, Great Barrier Reef.

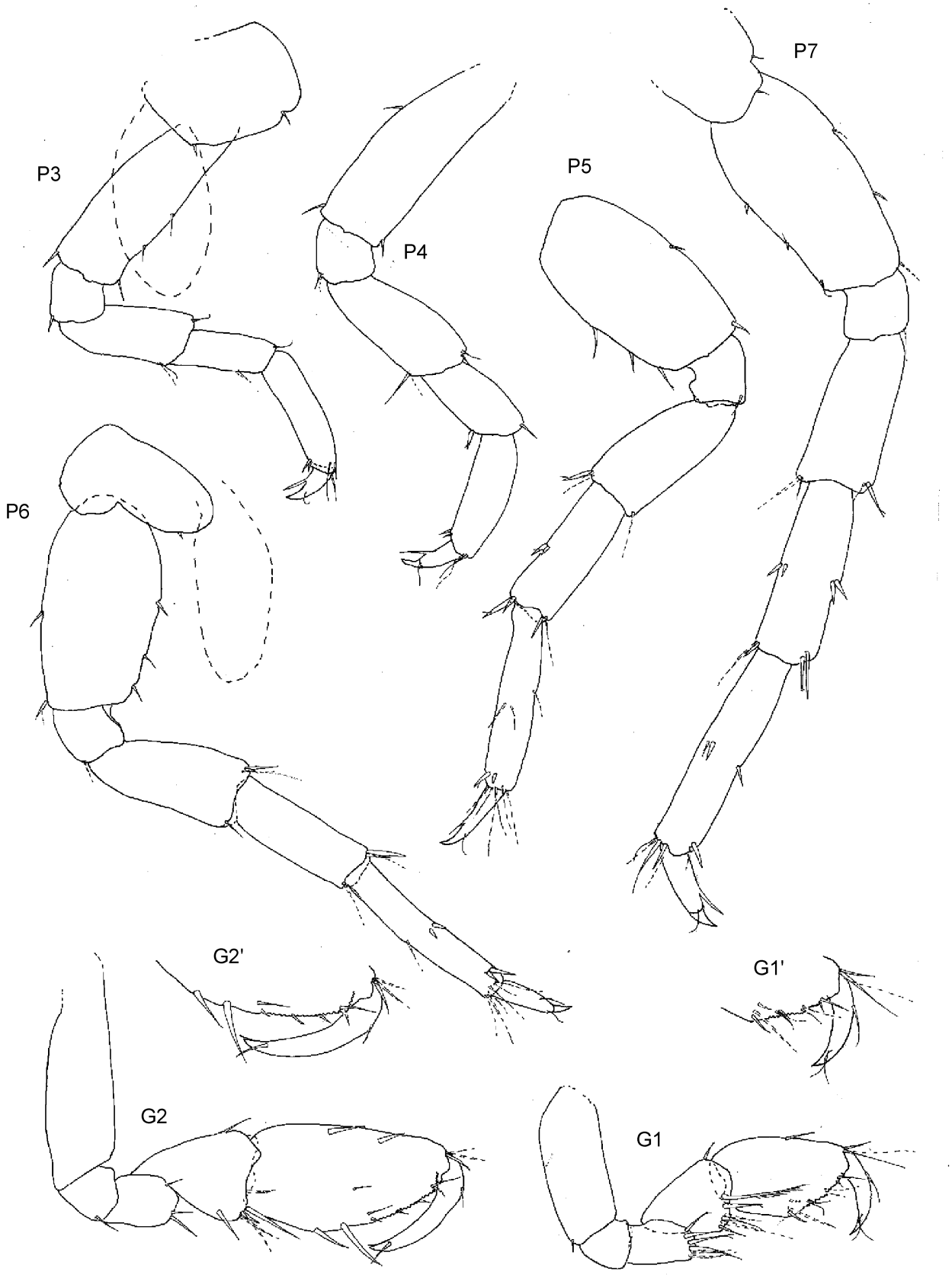

FIGURE 27. *Saurodocus minimarenus* Yerman & Krapp-Schickel, 2008, holotype, female, 1.2 mm, AM P77560, reef crest off Coconut Beach, Lizard Island, Great Barrier Reef.

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