



Dexaminidae*

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Abstract

Four genera and 11 species of dexaminids are reported from the Great Barrier Reef. Of these, three species (*Dexaminoculus grobbeni* (Spandl, 1923), *Guernea ipilya* Thomas & Barnard, 1991, *G. yamminye* Thomas & Barnard, 1991) have been previously encountered on the Reef, seven species (six *Paradexamine*, one *Polycheria*) are new to science and one species (*Paradexamine micronesicus* Ledoyer, 1979) is reported for the first time from Australian waters. All species are described and illustrated.

Key words: Crustacea, Amphipoda, Dexaminidae, Great Barrier Reef, Australia, taxonomy, new species, *Dexaminoculus grobbeni*, *Guernea ipilya*, *Guernea yamminye*, *Paradexamine aequiserrata*, *Paradexamine exilis*, *Paradexamine levitelson*, *Paradexamine massa*, *Paradexamine micronesicus*, *Paradexamine quadratus*, *Paradexamine saxeta*, *Polycheria goanna*

Introduction

The Dexaminidae is a large, very diverse cosmopolitan family, comprising 18 genera and at least 188 known species worldwide (Ishimaru 1987, Barnard & Karaman 1991, Thomas & Barnard 1991, Lowry & Stoddart 2003). Several of the genera are quite large (e.g. *Guernea*, *Paradexamine*, *Polycheria*) and contain many closely similar, often poorly known, species. For this reason, the taxonomy of a number of these species is somewhat confused and their geographic distributions remain unclear. In addition, in spite of several relatively recent regional publications describing new species of dexaminids (Hirayama 1984, 1985, 1986; Ledoyer 1984; Ishimaru 1987; Myers 1985, 1995; Ortiz & Lalana 1997, 1999; Ren 2006), many areas have not been extensively studied and additional new species undoubtedly remain to be discovered.

The family Dexaminidae was subdivided into two subfamilies, the Dexamininae and the Prophliantinae, by Barnard (1970) and Barnard & Karaman (1991). Later, Bousfield & Kendall (1994) resurrected the family Atylidae G.O. Sars, including four subfamilies (Anatylinae, Atylinae, Lepechinellinae, Nototropiinae), and restricted the Dexaminidae to *Delkarlye*, *Dexamine*, *Dexaminella*, *Dexaminoculus*, *Guernea*, *Haustoriopsis*, *Paradexamine*, *Polycheria*, *Sebadexius*, *Syndexamine* and *Tritaeta*, which they placed in four subfamilies, the Dexamininae, Dexaminoculinae, Polycheriinae and Prophliantinae. The generic composition of the subfamilies of Dexaminidae differs between these two competing classifications. Because we are not carrying out any phylogenetic analyses of world dexaminoid taxa, we make no attempt here to classify below the level of family.

Dexaminid species occur in a variety of habitats, but are most common among algae or in sand, gravel or rubble habitats in relatively shallow water. Members of some genera (*Tritaeta*, *Paradexamine*, *Polycheria*) are often loosely or exclusively associated with marine sponges or ascidians (Bellan-Santini 1982, Barnard & Karaman 1991, Lowry & Stoddart 2003). Little is known of dexaminid life history, although males of many species, including *Dexaminoculus grobbeni*, *Guerneia ipilya*, and *G. yamminye*, as well as two previously undescribed species of *Paradexamine* from the Great Barrier Reef, rise up into the water column at night in search of mates (Macquart-Moulin 1984, Lowry & Stoddart 2003, current study). Males and females of many species exhibit a moderate amount of sexual dimorphism, with males generally having larger eyes, a more setose peduncle article 1 of antenna 1 and article 4 of antenna 2, a longer flagellum of antenna 2, and more setose third uropods. Sexual differences also occur in the gnathopods of some species, although these are frequently similar between males and females.

Eight genera of dexaminids are currently known from Australia, mostly from the south-eastern, southern and south-western regions. These include *Atylus* (one species), *Delkarlye* (one species), *Dexaminoculus* (one species), *Guerneia* (six species), *Paradexamine* (17 species), *Polycheria* (one species), *Prophlias* (one species) and *Syndexamine* (five species) (Lowry & Stoddart 2003). Of these, two genera (three species) have previously been reported from the Great Barrier Reef, including *Dexaminoculus grobbeni* (Spandl, 1923) (Lowry 1981), *Guerneia ipilya* Thomas & Barnard, 1991 and *G. yamminye* Thomas & Barnard, 1991 (Thomas & Barnard 1991). As a result of the present study, eight additional species are now known to occur on the Reef. Seven of these species, six *Paradexamine* and one *Polycheria*, are new and are currently known only from the Great Barrier Reef. In addition, the range of one additional species of *Paradexamine*, *P. micronesicus* Ledoyer, 1979, is extended to include the Reef, representing its first known occurrence in Australian waters.

Materials and methods

Material examined during this study was hand collected on scuba or snorkel, by night lighting, and by washes of rubble, rock and algae samples. The great majority of the material is from Australian Museum collections from Lizard Island; however, several samples from Lizard Island and Orpheus Island are from the collections of James D. Thomas or the junior author. Almost all of the material is currently lodged in the Australian Museum, Sydney (AM) except for a small number of lots which are deposited in the Gulf Coast Research Laboratory Museum (GCRL), Ocean Springs, Mississippi U.S.A. Descriptions were generated from a DELTA database (Dallwitz 2005) of the dexaminid genera and species of the Great Barrier Reef. A set of colour plates, list of standard abbreviations and detailed station data is available in Lowry & Myers (2009) and a CD (*Benthic Amphipoda (Crustacea: Peracarida) of the Great Barrier Reef: Interactive Keys*) is available with the book. In addition, the keys can be accessed at the crustacea.net website.

Dexaminidae Leach, 1814

Dexaminoculus Lowry, 1981

Dexaminoculus grobbeni (Spandl, 1923)

(Figs 1, 2)

Sphaerophthalmus grobbeni Spandl, 1923: 14. —Spandl, 1924: 61–63, fig. 23. —J.L. Barnard, 1969: 480, fig. 173a.
Dexaminoculus grobbeni. —Lowry, 1981: 191–197, figs 1–5. —Ledoyer, 1984: 44–45, fig. 21.

Material examined. 2 males, 5 females, 1 juvenile, AM P78017 (JDT/LIZ 9); 4 males, 2 females, 1 juvenile, GCRL 2881 (JDT/LIZ 10); 1 male, 1 female, AM P78018 (JDT/OPH 4); 4 males, 4 females, 1 juvenile, AM P78019 (JDT/OPH 8); 1 female, AM P78020 (JDT/OPH 11); 1 female, AM P70867 (QLD 1654); 1 female, AM P70845 (QLD 1666); 1 female, AM P70914 (QLD 1672); 1 juvenile, AM P71133 (QLD 1742); 1 male,

AM P71341 (QLD 1805); 5 males, 1 female, AM P71424 (QLD 1805); 34 males, AM P71515 (QLD 1805); 15 males, AM P71520 (QLD 1805).

Type Locality. Gulf of Suez, Red Sea (~28°40'N, 32°57'E).

Description. Based on 1 female, 2.6 mm, AM P71424; 2 females, 2.3–2.4 mm, GCRL 2881.

Head. Head ocular spine absent or weak. *Antenna 1* peduncle article 1 with posteroproximal acute or subacute process. *Antenna 2* poorly developed, very short, 4-articulate; peduncle article 4, anterior margin sparsely setose. *Maxilla 1* palp very stout, about twice as long as broad. *Maxilla 2* inner plate subequal to outer plate in length, with dense apical slender setae, inner margin without setae. *Maxilliped* palp 3-articulate.

Pereon. *Gnathopod 1* propodus subtriangular, broadest distally, anterior margin convex, palm convex; dactylus posterior margin entire. *Gnathopod 2* coxa subtriangular, anterodistal margin entire; merus shorter than carpus. *Pereopods 3–7* simple or scarcely prehensile. *Pereopod 4* coxa truncate distally, posterodistal corner slightly produced, subacute. *Pereopods 5–7* of diverse morphology. *Pereopod 6* basis, posterior lobe moderately expanded, rounded posterodistally. *Pereopod 7* coxal gill present.

Pleon. *Epimeron 3* posterodistal excavation deep, posteroventral spine large. *Urosomite 1* posterodorsal spine small, acute. *Telson* lobes with apices minutely serrate.

Colour in life. Eyes red. Antennal peduncles translucent grey flecked with white; flagellum of antenna 2 pale rust. Head, pereon, pleon and urosome translucent pale olive green, heavily flecked with white, sparsely flecked with rust. Pereopods translucent grey banded with white.

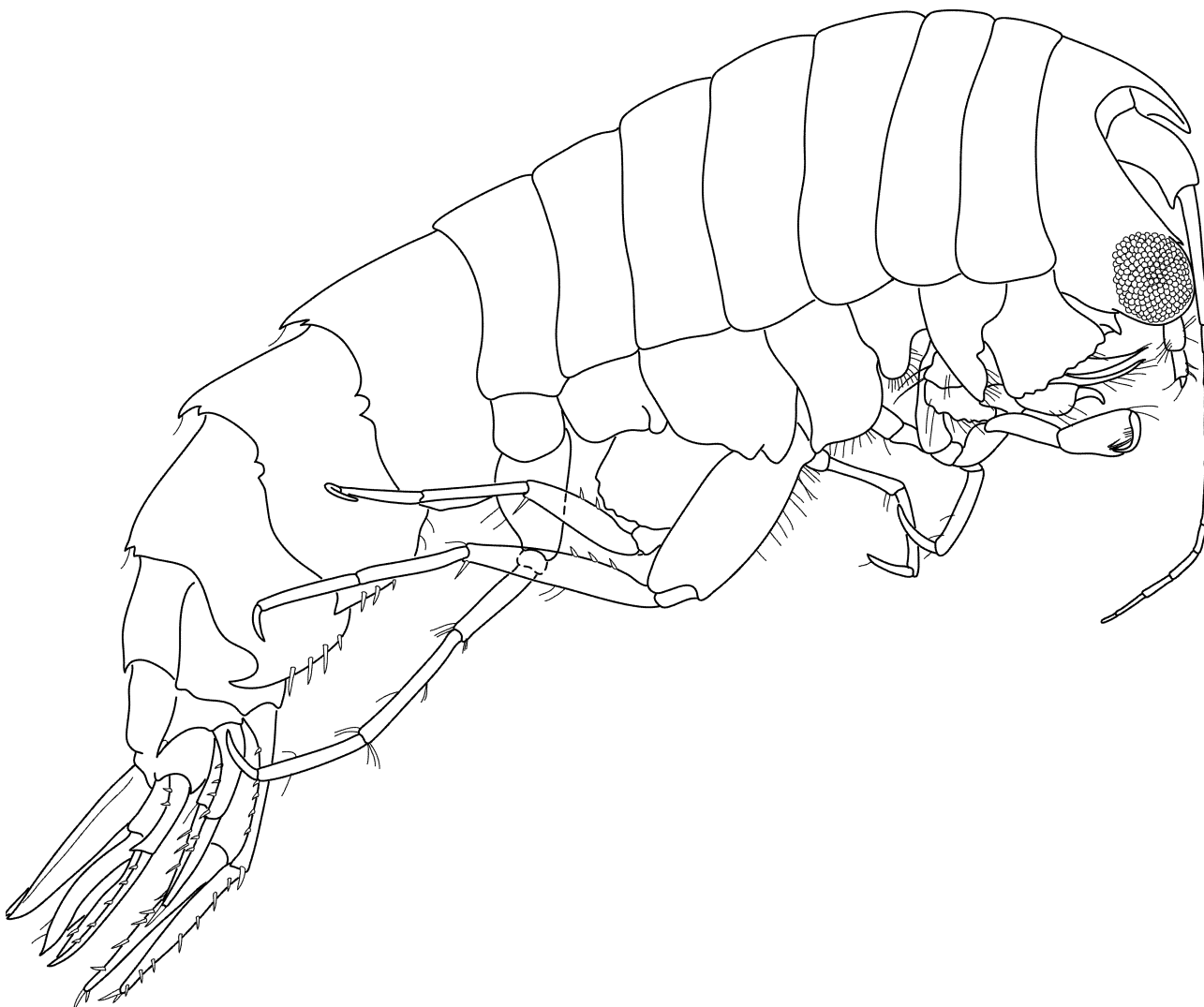


FIGURE 1. *Dexaminoculus grobbeni* (Spandl, 1923), female, 3.6 mm, Lizard Island, Great Barrier Reef (after Lowry 1981).

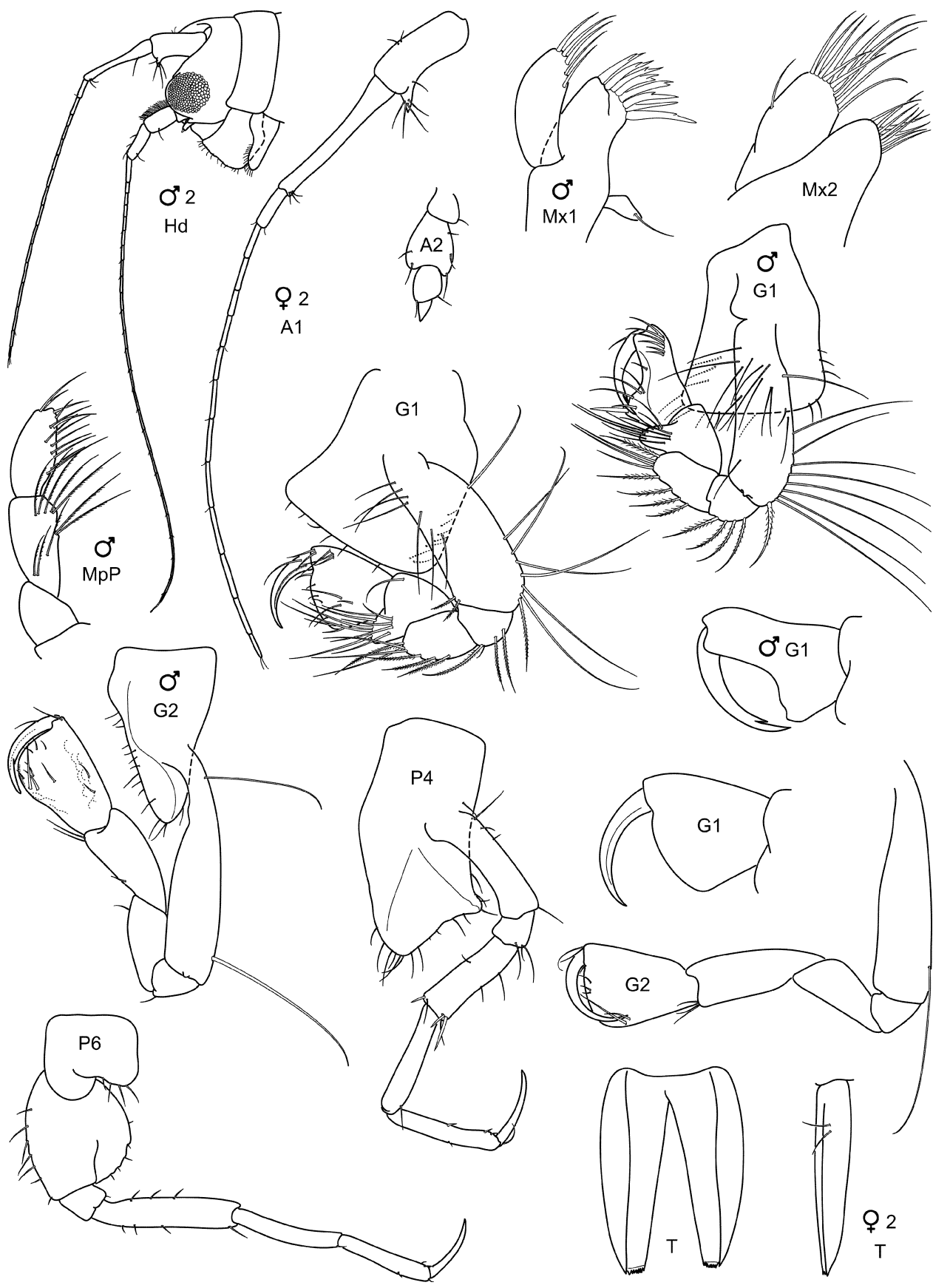


FIGURE 2. *Dexaminoculus grobbeni* (Spandl, 1923), lectotype, female, 2.9 mm, Gulf of Suez, Red Sea (after Lowry 1981); female 2, 2.3 mm, GCRL 2881, North Point, Lizard Island; male, 3.9 mm, Lizard Island (after Lowry 1981); male 2, 3.0 mm, AM P71515, Third Beach, Lizard Island, Great Barrier Reef.

Male (sexually dimorphic characters). Based on 5 males, 2.8–3.3 mm, AM P71424; 1 male, 3.0 mm, AM P7515; 4 males, 2.4–2.8 mm, GCRL 2881. *Antenna 2* well-developed, elongate; peduncle article 4, anterior margin densely setose. *Gnathopod 1* propodus L-shaped, broadest proximally, anterior margin weakly emarginate, palm deeply excavate, broadly angled, without pectinate slender seta.

Habitat. Sand or algal turf bottoms along reef front or on patch reefs at depths of 1–25 m. Males often found in night plankton.

Remarks. *Dexaminoculus grobbeni* can be distinguished from two of the other three known species in the genus (*D. acutipes* Ledoyer, 1979 and *D. cavimana* Ledoyer, 1983 from Madagascar) by the weakly emarginate anterior margin of the propodus of gnathopod 2 in the male (margin convex in the other species) and by the deeply excavate posterodistal margin and large posterodistal spine on epimeron 3 (weakly excavate with a small spine in the other species). It is very similar to *D. lacinimanus* Ortiz and Lalana, 1999 from Indonesia, from which it can be distinguished by the 4-articulate antenna 2 of the female (5+-articulate in *D. lacinimanus*), the distally subtruncate coxa 4 (rounded in *D. lacinimanus*) and the minutely serrate apices on the telson lobes (apices entire in *D. lacinimanus*). Although Lowry (1981) does not illustrate the posteroproximal process on antenna 1, peduncle article 1, a re-examination of the Lizard Island material used in his description has confirmed its presence (J.K. Lowry, pers. com.).

Distribution. *Australia.* Queensland: Lizard Island, Orpheus Island, One Tree Island (Lowry 1981, current study). *New Caledonia.* Noumea (Ledoyer 1984). *Red Sea.* Gulf of Suez (Spandl 1923, 1924).

***Guernea* Chevreux, 1887**

***Guernea ipilya* Thomas & Barnard, 1991**

(Figs 3, 4)

Guernea ipilya Thomas & Barnard, 1991: 301–306, figs. 1–4 (part).

Material examined. 2 males, 15 females, 1 juvenile, AM P78021 (JDT/LIZ 17); 2 females, AM P78022 (JDT/OPH 4); 1 female, AM P70638 (QLD 1621); 1 female, AM P70978 (QLD 1684); 1 female, AM P71050 (QLD 1706); 1 female, AM P71027 (QLD 1714); 1 female, AM P71093 (QLD 1716); 1 female, AM P71172 (QLD 1723); 1 female, AM P71150 (QLD 1732); 1 male, AM P71135 (QLD 1742); 1 female, AM P71167 (QLD 1751); 1 juvenile, AM P71178 (QLD 1751); 1 female, AM P71301 (QLD 1761); 1 female, AM P71385 (QLD 1791); 1 female, AM P71398 (QLD 1801); 30 males, AM P71415 (QLD 1805); 5 males, AM P71521 (QLD 1805); 1 male, AM P71469 (QLD 1821); 1 male, 1 female, GCRL 2895 (SEL/LZI-1-3); 1 male, 1 female, GCRL 2896 (SEL/LZI-2-3); 1 female, GCRL 2897 (SEL/LZI-5-1).

Type Locality. Near Lizard Head, Lizard Island, Queensland, Australia (~14°41'S 145°28'E).

Description. Based on 7 females, 1.9–2.4 mm AM P78021.

Head. *Head* lateral lobes rounded. *Eye* medium, smaller than lateral lobe. *Antenna 1* peduncle article 1 without short, dense brush setae lining posterior margin. *Antenna 2* short, not longer than head; peduncle article 4 without short, dense brush setae lining anterior margin; flagellum short, 3-articulate. *Mandible* palp absent. *Maxilla 1* palp stout, about three times as long as broad, with slender apical process, with 2 apical slender setae. *Maxilla 2* inner plate shorter than outer plate, with sparse apical slender setae, inner margin without setae. *Maxilliped* palp 4-articulate.

Pereon. *Gnathopod 2* carpus subequal in length to propodus. *Pereopods 3–7* simple or scarcely prehensile. *Pereopod 3* carpus with large robust setae on posterior margin. *Pereopod 5* coxa posterior lobe enlarged, much deeper than anterior lobe. *Pereopods 5–7* of diverse morphology. *Pereopod 6* basis, posterior margin straight. *Pereopod 7* coxal gill absent; merus and carpus expanded; carpus broadly ovate, not enveloping propodus; propodus subequal to carpus in length.

Pleon. *Urosomite 1* without dorsal hump, without dorsal keel, with 2 dorsolateral carinae. *Urosomite 2–3* fused, without dorsal humps, with 2 dorsolateral carinae, without dorsal robust setae. *Uropods 1–2* inner

ramus subequal to outer in length; apical robust setae of rami short, distinctly less than one-half length of corresponding ramus. *Uropod 1* peduncle without basofacial slender setae. *Uropod 3* peduncle without distolateral robust seta; inner ramus, inner margin without plumose slender setae; outer ramus, inner margin without long plumose slender setae, outer margin without robust seta. *Telson* lobes with slender apical setae.

Male (sexually dimorphic characters). Based on 6 males, 1.9–2.0 mm, AM P71415; 2 males, 1.8–2.1 mm, AM P78021. *Head* lateral lobes acute or subacute. *Eye* very large, covering most of lateral lobe. *Antenna 1* peduncle article 1 with short, dense brush setae lining posterior margin. *Antenna 2* moderately long, approximately half length of body; peduncle article 4 with short, dense brush setae lining posterior margin; flagellum long, multiarticulate. *Uropod 3* peduncle with distolateral robust seta; inner ramus, inner margin with long plumose slender setae; outer ramus, inner margin with long plumose slender setae.

Habitat. On rubble or sand bottoms in back reef, reef flat or patch reef habitats at depths of 0.3–23 m. Often found among mixed red, brown and green algae growing on rubble or sand. Males often occur in night plankton.

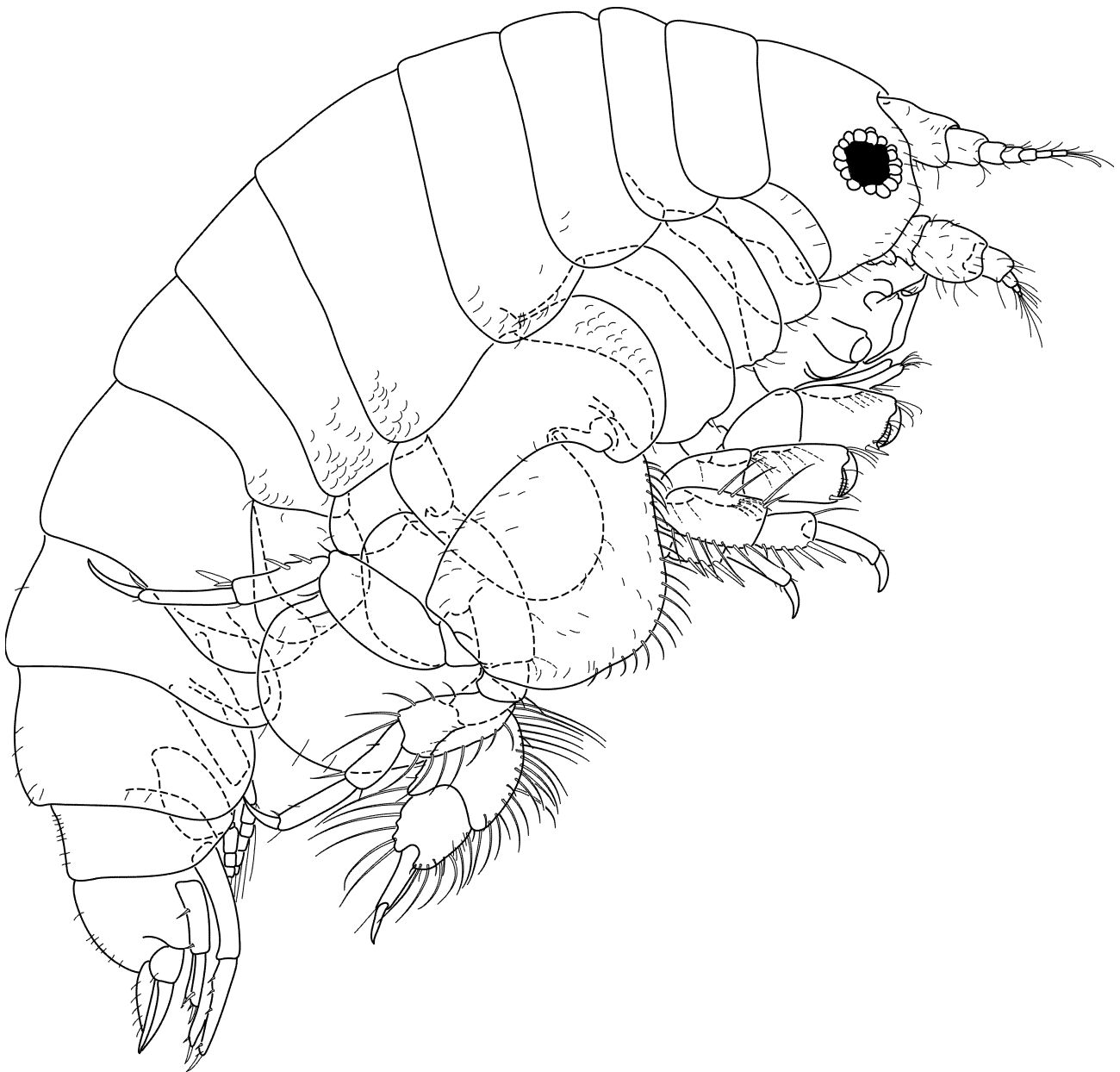


FIGURE 3. *Guerneia ipilya* Thomas & Barnard, 1991, holotype, female, 2.0 mm, NMV J20494, near Lizard Head, Lizard Island, Great Barrier Reef (after Thomas & Barnard 1991).

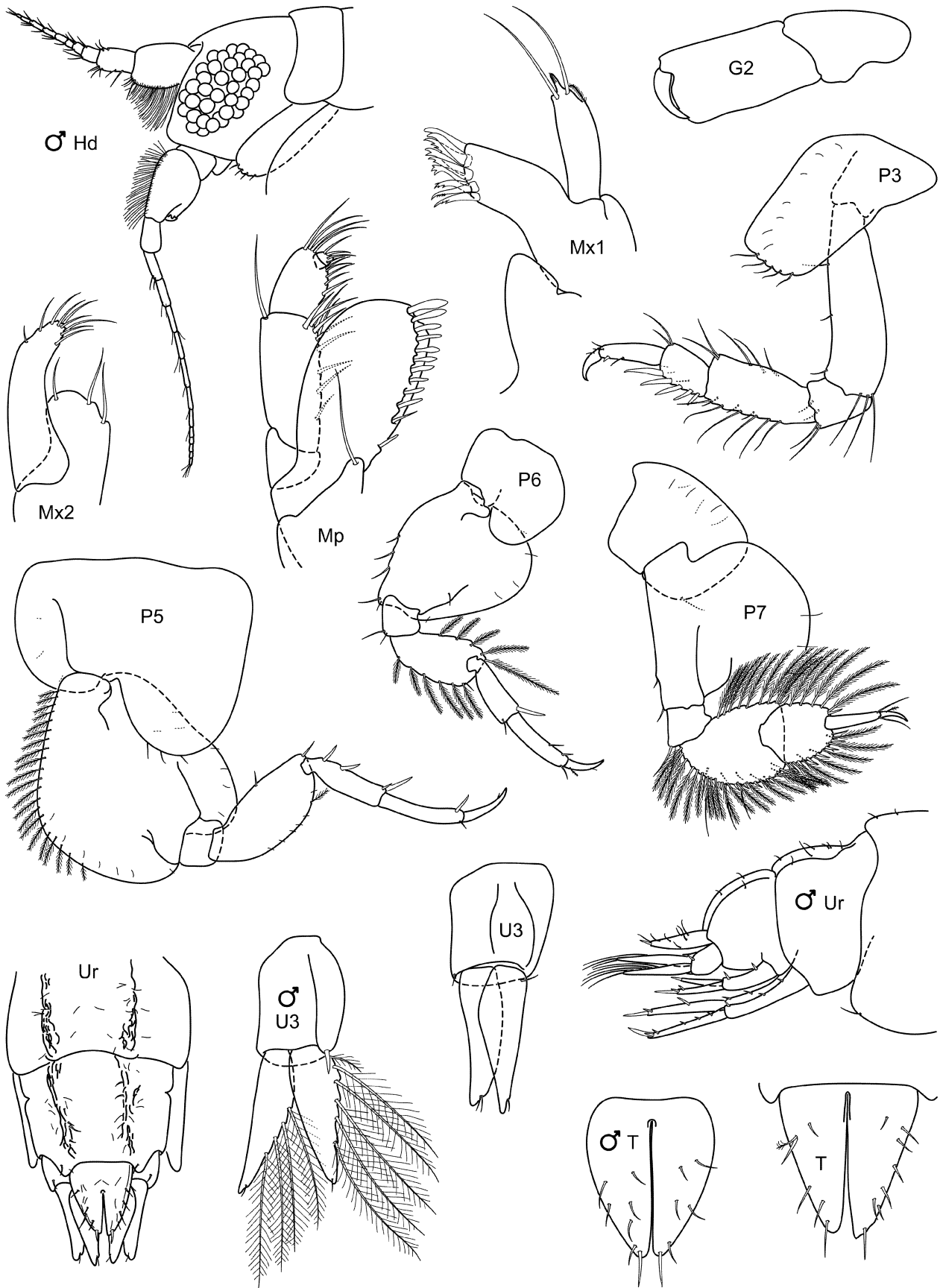


FIGURE 4. *Guerneia ipilya* Thomas & Barnard, 1991, holotype, female, 2.0 mm, NMV J20494, near Lizard Head, Lizard Island (after Thomas & Barnard 1991); male, 1.9 mm, AM P71415, Third Beach, Lizard Island, Great Barrier Reef.

Remarks. *Guernea ipilya* is very close to the Indonesian species *G. sulawesiensis* Ortiz & Lalana, 1997 and to the Madagascar species *G. latipes* Ledoyer, 1979. It differs from the former in the double carinae of the urosomites (*G. sulawesiensis* lacks these) and from the latter in the consolidated eye of the female (ommatidia more dispersed in *G. latipes*), the more densely setose peduncle articles of the antennae in the male, the more setose pereopods 5–6 and the shorter apical robust setae on the rami of uropods 1–2. It can be separated from the five other species in the genus currently known from Australia (*G. endota* J.L. Barnard, 1972a; *G. gelane* J.L. Barnard, 1972a; *G. melape* J.L. Barnard, 1972a; *Guernea unchalka* J.L. Barnard, 1972a; *G. yamminye* Thomas & Barnard, 1991) by the 1-articulate palp of maxilla 1 (*G. gelane* and *G. melape* have a 2-articulate palp), the broadly expanded merus and carpus of pereopod 7 (more weakly expanded in *G. endota*, *G. gelane*, *G. melape* and *G. unchalka*), the lack of dorsal robust setae on urosomites 2+3 (*G. endota* and *G. melape* have dorsal robust setae) and the lack of short robust setae on the rami of uropod 3 (all five of the other Australian species have at least one robust seta on the rami of uropod 3). It further differs from *G. yamminye*, with which it co-occurs on Lizard Island, in the shorter carpus of gnathopod 2, the less posterodistally produced carpus and longer propodus of pereopod 7, the lack of dorsal humps on urosomites 1 and 2+3 (*G. yamminye* has three very pronounced dorsal humps on the urosomites), the pair of dorsolateral carinae on urosomite 1 (*G. yamminye* has one median carina), the short apical robust setae on the rami of uropods 1–2 (long in *G. yamminye*) and the lack of a plumose slender seta on the inner ramus of uropod 3 in the female (present in *G. yamminye*).

Distribution. *Australia.* Queensland: Lizard Island, Yonge Reef, Orpheus Island (Thomas & Barnard 1991, current study).

***Guernea yamminye* Thomas & Barnard, 1991**

(Figs 5, 6, Pl. 3B)

Guernea yamminye Thomas & Barnard, 1991: 306–309, figs 4(part)–6.

Material examined. 1 male, AM P70893 (QLD 1653); 1 female, AM P71216 (QLD 1758); 1 female, AM P71257 (QLD 1771); 1 male, AM P71302 (QLD 1761); 1 female, 1 juvenile, AM P71305 (QLD 1772); 1 male, AM P71309 (QLD 1756); 1 juvenile, AM P71313 (QLD 1779); 1 male, AM P71342 (QLD 1805); 97 males, AM P71408 (QLD 1805); 2 females, AM P71446 (QLD 1814); 6 males, AM P71514 (QLD 1805).

Type Locality. Near Mermaid Beach, Lizard Island, Queensland, Australia (~14°39'S 145°27'E).

Description. Based on 1 female, 2.6 mm, AM P71216; 1 female, 2.1 mm, AM P71257; 1 female, 3.5 mm, AM P71305.

Head. *Head* lateral lobes acute or subacute. *Eye* medium, smaller than lateral lobe. *Antenna 1* peduncle article 1 without short, dense brush setae lining posterior margin. *Antenna 2* short, not longer than head; peduncle article 4 without short, dense brush setae lining anterior margin; flagellum short, 3-articulate. *Mandible* palp absent. *Maxilla 1* palp stout, about three times as long as broad, without apical spout, with 1 apical slender seta. *Maxilla 2* inner plate shorter than outer plate, with sparse apical slender setae, inner margin without setae. *Maxilliped* palp 4-articulate.

Pereon. *Gnathopod 2* carpus approximately one and one-half times length of propodus. *Pereopods 3–7* simple or scarcely prehensile. *Pereopod 3* carpus with large robust setae on posterior margin. *Pereopod 5* coxa posterior lobe well-developed, subequal to anterior lobe in depth. *Pereopods 5–7* of diverse morphology. *Pereopod 6* basis, posterior margin concave. *Pereopod 7* coxal gill absent; merus and carpus expanded; carpus broadly ovate, partially enveloping propodus; propodus approximately one-half length of carpus.

Pleon. *Urosomite 1* with dorsal hump, without dorsal keel, with 1 median dorsal carina. *Urosomite 2–3* fused, with 2 dorsal humps, with 2 dorsolateral carinae, without dorsal robust setae. *Uropods 1–2* inner ramus subequal in length to outer; apical robust setae of rami elongate, at least one-half length of corresponding ramus. *Uropod 1* peduncle with basofacial slender setae. *Uropod 3* peduncle with distolateral robust seta;

inner ramus, inner margin with single short plumose slender seta; outer ramus, inner margin without long plumose slender setae, outer margin with robust seta. *Telson* lobes with slender apical setae.

Colour in life. Ivory overall, with a few small scattered rusty spots and faint banding on the antennae. The eye is mostly white, with a few red or rust-coloured ommatidia. Juveniles are similarly coloured

Male (sexually dimorphic characters). Based on 1 male, 2.2 mm, AM P71302; 1 male, 2.3 mm, AM P71309; 6 males, 2.1–2.6 mm, AM P71514. *Eye* bright red. *Antenna 1*–2 peduncle, all body segments and proximal parts of the coxae, pale rusty orange with darker markings in some areas. *Eye* very large, covering most of lateral lobe. *Antenna 2* moderately long, approximately half length of body; peduncle article 4 with short, dense brush setae lining anterior margin; flagellum long, multiarticulate. *Maxilla 1* palp without apical slender setae. *Uropod 3* inner ramus, inner margin with long plumose slender setae; outer ramus, inner margin with long plumose slender setae.

Habitat. On rubble, sand or mud bottoms, occasionally with algae or seagrasses, on patch reefs or in back reef areas. Occurs at depths of 1–25 m. Males often found in night plankton.

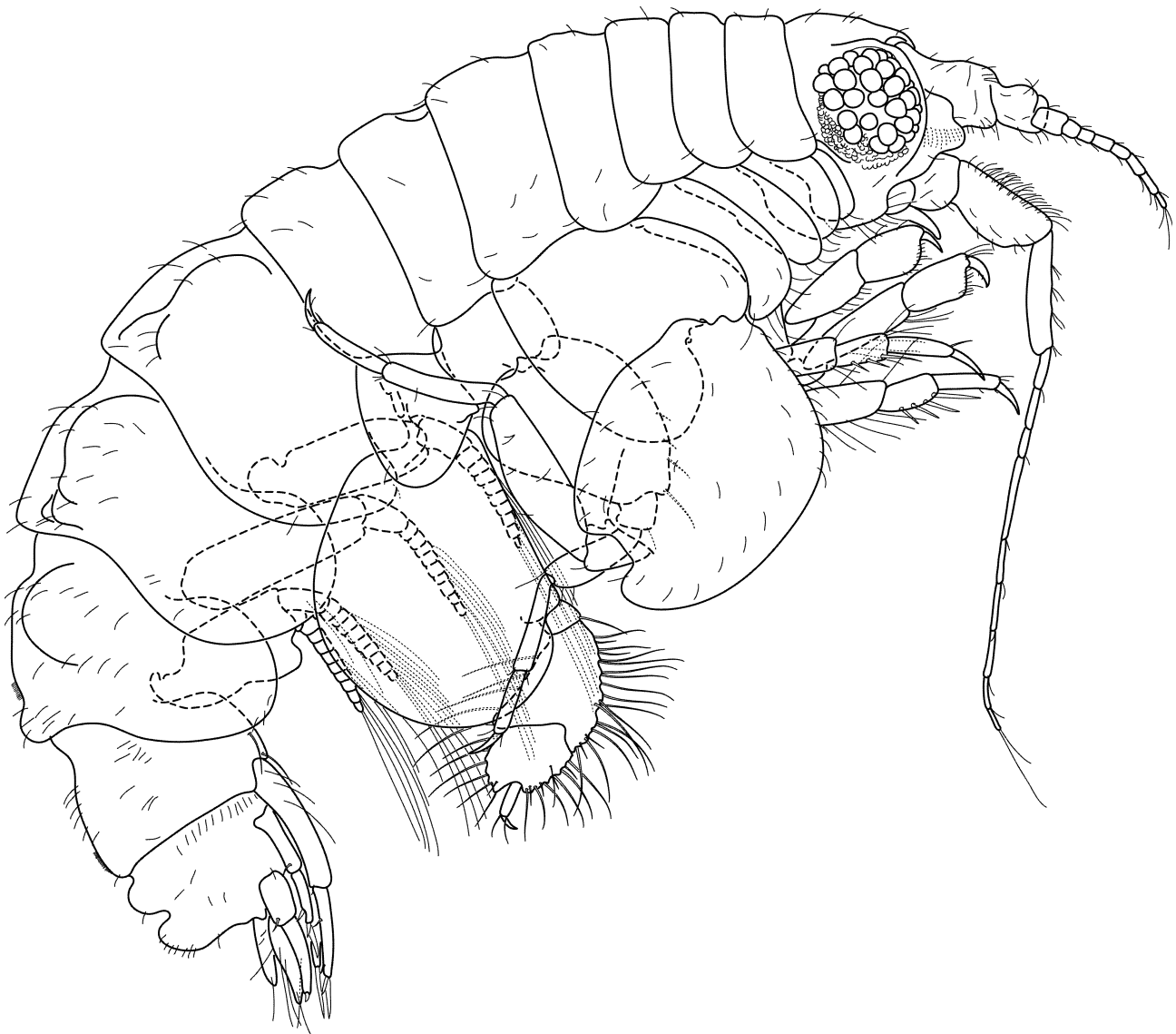


FIGURE 5. *Guernea yamminye* Thomas & Barnard, 1991, holotype, male, 1.8 mm, NMV J20496, near Mermaid Beach, Lizard Island, Great Barrier Reef (after Thomas & Barnard, 1991).

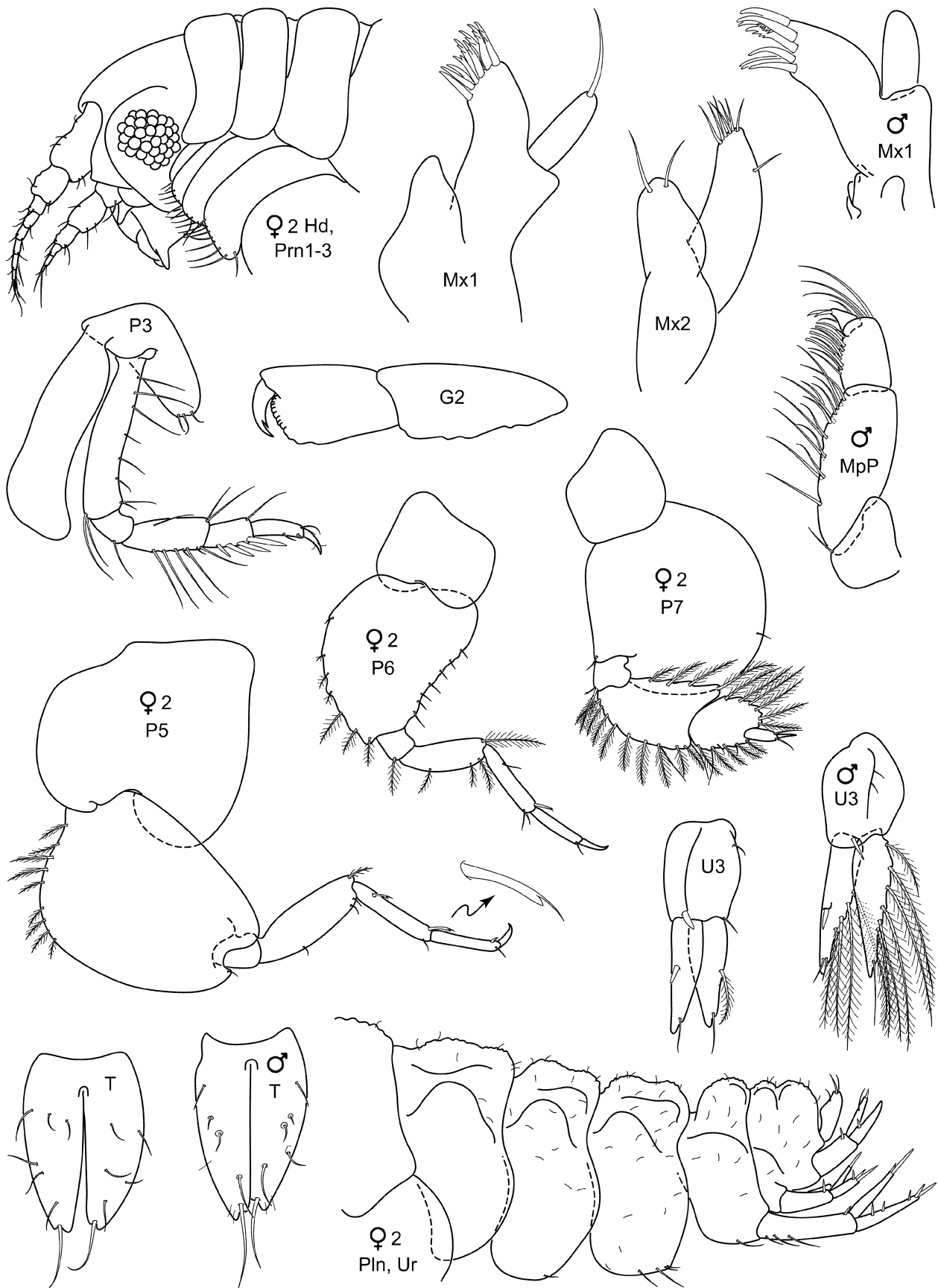


FIGURE 6. *Guernea yamminye* Thomas & Barnard, 1991, female, 2.1 mm, AM P71257, Casuarina Beach, Lizard Island; female 2, 3.5 mm, AM P71305, Horseshoe Reef, Lizard Island; holotype, male, 1.8 mm, NMV J20496, near Mermaid Beach, Lizard Island, Great Barrier Reef (after Thomas & Barnard, 1991).

Remarks. *Guernea yamminye* can be distinguished from all other Australian members of the genus by the distinctive "triple-humped" morphology of the urosome. Only four other known species of *Guernea* exhibit this urosomal morphology: *G. coalita* (Norman, 1868) from the north-eastern Atlantic and Mediterranean; *G. longicornis* Ledoyer, 1983 from Madagascar; *G. reticulata* (Schellenberg, 1938) from the Bismarck Archipelago; and *G. tumulosa* Griffiths, 1976 from South Africa. *Guernea yamminye* differs from *G. coalita* in the 1-articulate palp of maxilla 1 (palp 2-articulate in *G. coalita*), the excavate posterior margin of pereopod 6 (not excavate in *G. coalita*) and the short propodus of pereopod 7 partially enveloped by the carpus ((propodus long, not enveloped by the carpus in *G. coalita*). It differs from *G. longicornis* in the excavate posterior margin of the basis of pereopod 6 (not excavate in *G. longicornis*) and the presence of a short robust seta on the outer margin of the outer ramus of uropod 3 in both sexes and a short plumose slender seta on the inner margin of the inner ramus in the female (these are lacking in *G. longicornis*). *Guernea yamminye* differs from *G. reticulata* in the lack of crenulations on the posterior margin of the basis of pereopod 7 (margin crenulate in *G. reticulata*) and by having a less well-developed posterodistal lobe on the carpus of that appendage. It can be distinguished from *G. tumulosa* by the 1-articulate palp of maxilla 1 (2-articulate in *G. tumulosa*) and by the subequal rami and elongate apical robust setae of uropods 1–2 (inner ramus shorter than outer and apical robust setae short in *G. tumulosa*).

Distribution. *Australia*. Queensland: Lizard Island, Yonge Reef (Thomas & Barnard 1991, current study).

***Paradexamine* Stebbing, 1899**

***Paradexamine aequiserrata* sp. nov.**

(Figs 7, 8)

Type Material. Holotype, male, 2.5 mm, AM P77993, Third Beach, small bay in lee of wind (14°40.2' S 145°26.55' E), hand netting in water column, night lights, 2 m, J.K. Lowry, A.A. Myers & L. Hughes (QLD 1805). Paratypes, 8 males, 1 female, AM P77994, same data as holotype.

Additional material examined. 1 female, P77995 (QLD 1732); 1 male, AM P71344 (QLD 1805); 29 males, AM P71407 (QLD 1805); 3 males, AM P71527 (QLD 1805).

Type Locality. Third Beach, Lizard Island, Queensland, Australia (14°40.2'S 145°26.55'E).

Etymology. From the Greek 'aequalis' = similar and 'serrata' = saw-toothed, referring to the even-sized spines on the distal end of each telson lobe.

Description. Based on holotype, male, 2.5 mm, AM P77993.

Head. *Head* lateral lobes acute or subacute. *Eye* huge, more than half length of head, with black central core. *Antenna 1* peduncle article 1 without process on posterior margin. *Antenna 2* equal to body length; peduncle article 4 broader proximally, finely setulose; flagellum with 30+ articles. *Mandible* palp absent; incisor process lacking robust setal row. *Maxilla 1* palp stout, about three times as long as broad. *Labium* mandibular lobes acute. *Maxilliped* palp 4-articulate.

Pereon. *Gnathopod 1* carpus longer than propodus; propodus not greatly expanded distally. *Gnathopod 2* carpus elongate, slender, longer than propodus. *Pereopods 3–7* simple or scarcely prehensile. *Pereopod 3* coxa, posterodistal corner rounded; dactylus more than half length of propodus. *Pereopods 5–7* of uniform morphology. *Pereopod 5* basis subrectangular, with posterodistal lobe, anterior margin with short robust setae. *Pereopod 6* basis pyriform, broadest proximally, posteroproximal margin convex, weakly serrate, posterodistal margin concave, smooth. *Pereopod 7* coxal gill present; basis slender or moderately expanded, much longer than broad, posterodistal margin concave or straight, smooth or weakly serrated.

Pleon. *Segments* with the following dorsal spine arrangement (from urosomite 1 forwards): 3.3.3.0.0. *Epimeron 2* posteroventral corner produced into a strong spine. *Epimeron 3* posterior and ventral margins smooth, with a single strong posteroventral spine. *Urosome* with urosomites 2–3 fused. *Urosomite 1* with

dorsal spine and two dorsolateral spines. *Uropod 3* rami with many long fine setae. *Telson* lobes distally serrated, each lobe with multiple serrations of even size and shape, without distal spine, with subdistal robust seta, without subdistal slender seta.

Female (sexually dimorphic characters). Based on paratype, female, 2.5 mm, AM P77994. *Eye* large, about half or less length of head. *Antenna 2* shorter than body length; peduncle article 4 slender, parallel sided, weakly setulose; flagellum with 10–12 articles. *Uropod 3* rami lacking long fine setae.

Habitat. Sand bottom in shallow water.

Remarks. This species is very similar to *P. rewa* Myers, 1985, from Fiji, from which it differs in the more slender and less serrated basis of pereopod 7, in the more elongated carpus of gnathopod 2 and in the acute eye lobes of the male (rounded in *P. rewa*).

Distribution. *Australia*. Queensland: Third Beach, Lizard Island (current study).

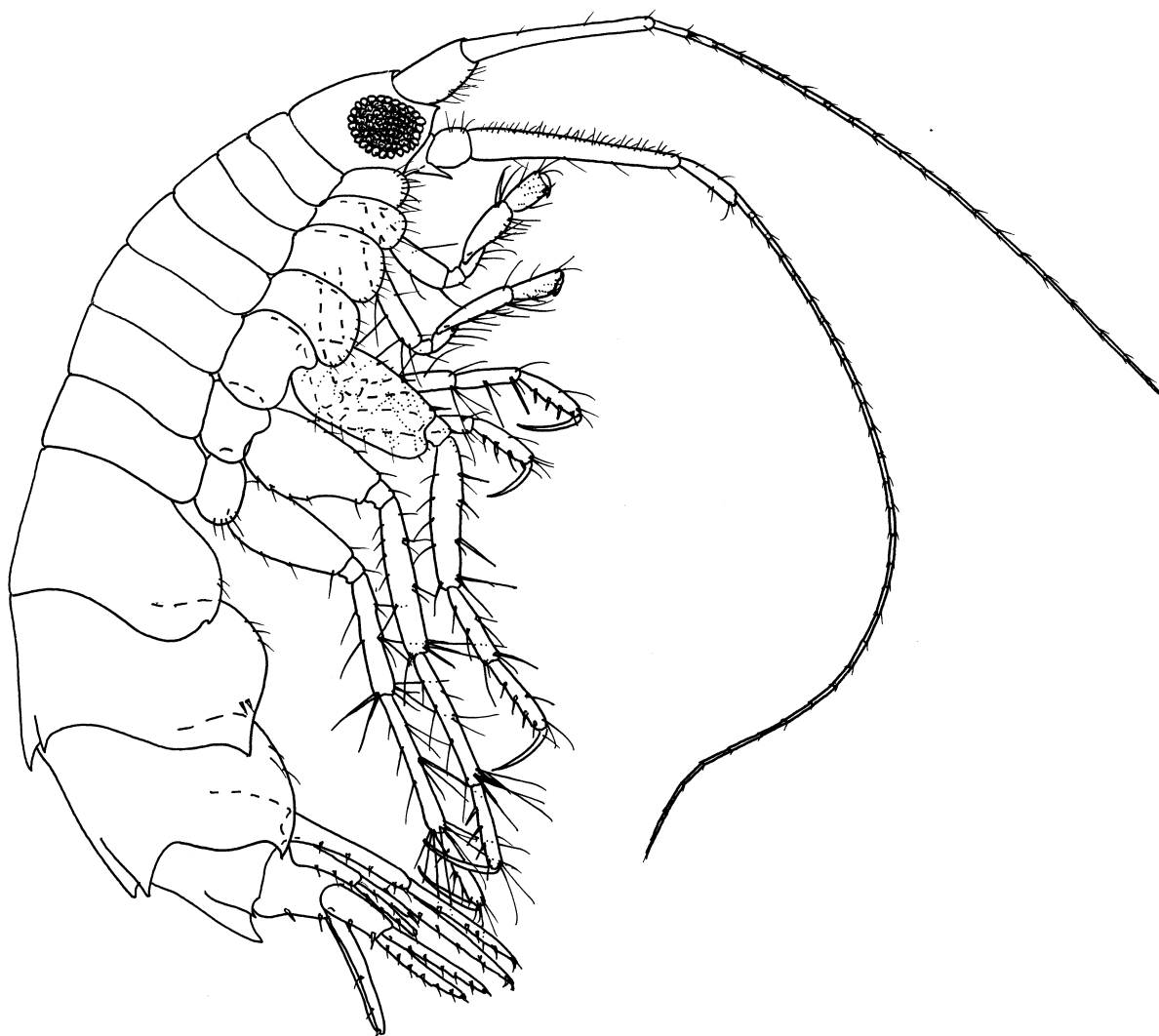


FIGURE 7. *Paradexamine aequiserrata* sp. nov., holotype, male, 2.5 mm, AM P77993, Third Beach, Lizard Island, Great Barrier Reef.

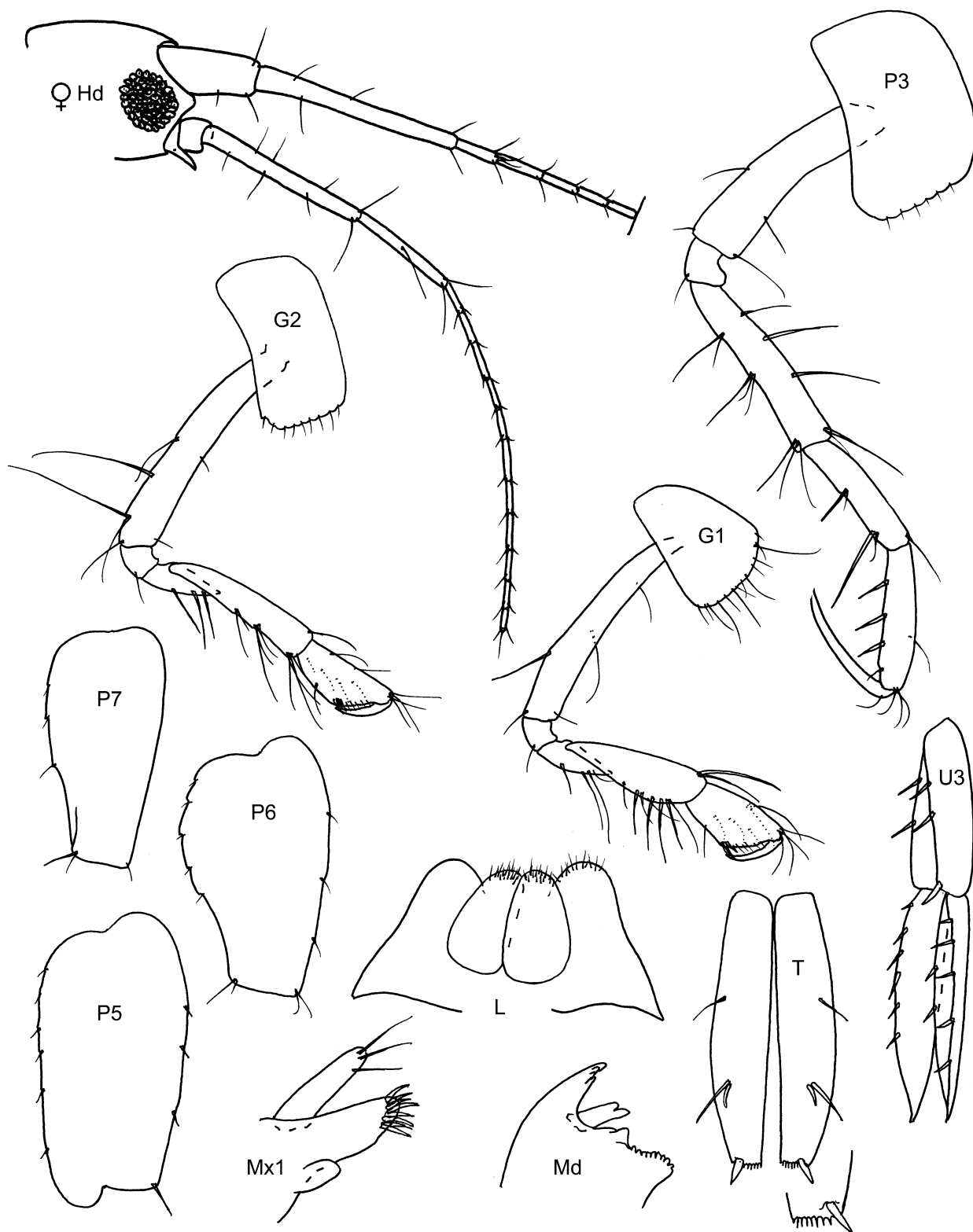


FIGURE 8. *Paradexamine aequiserrata* **sp. nov.**, holotype, male, 2.5 mm, paratype, female, 2.5 mm, AM P77993, Third Beach, Lizard Island, Great Barrier Reef.

***Paradexamine exilis* sp. nov.**

(Figs 9, 10)

Type Material. Holotype, male, 1.9 mm, AM P77996, Third Beach (14°40.20'S 145°26.548'E), water column sample at night, small bay in lee of wind, with lights and hand nets over 2 m depth, J. Lowry, A. Myers & L. Hughes (QLD 1805). Paratype, male, AM P77997, same data as holotype.

Additional material examined. 9 males, AM P77998 (QLD 1805).

Type Locality. Third Beach, Lizard Island, Queensland, Australia (14°40.20'S 145°26.548'E).

Etymology. From the Latin 'exilis' = slender, referring to the very slender gnathopod 2.

Description. Based on holotype, male, 1.9 mm, P77996.

Head. Head lateral lobes rounded. Eye huge, more than half length of head, with black central core. *Antenna 1* peduncle article 1 with posterodistal blunt process tipped with long setae. *Antenna 2* length unknown; peduncle article 4 broader proximally, finely setulose; flagellum unknown. *Mandible* palp absent; incisor process with robust setal row. *Maxilla 1* palp elongate, more than four times as long as broad. *Maxilliped* palp 4-articulate.

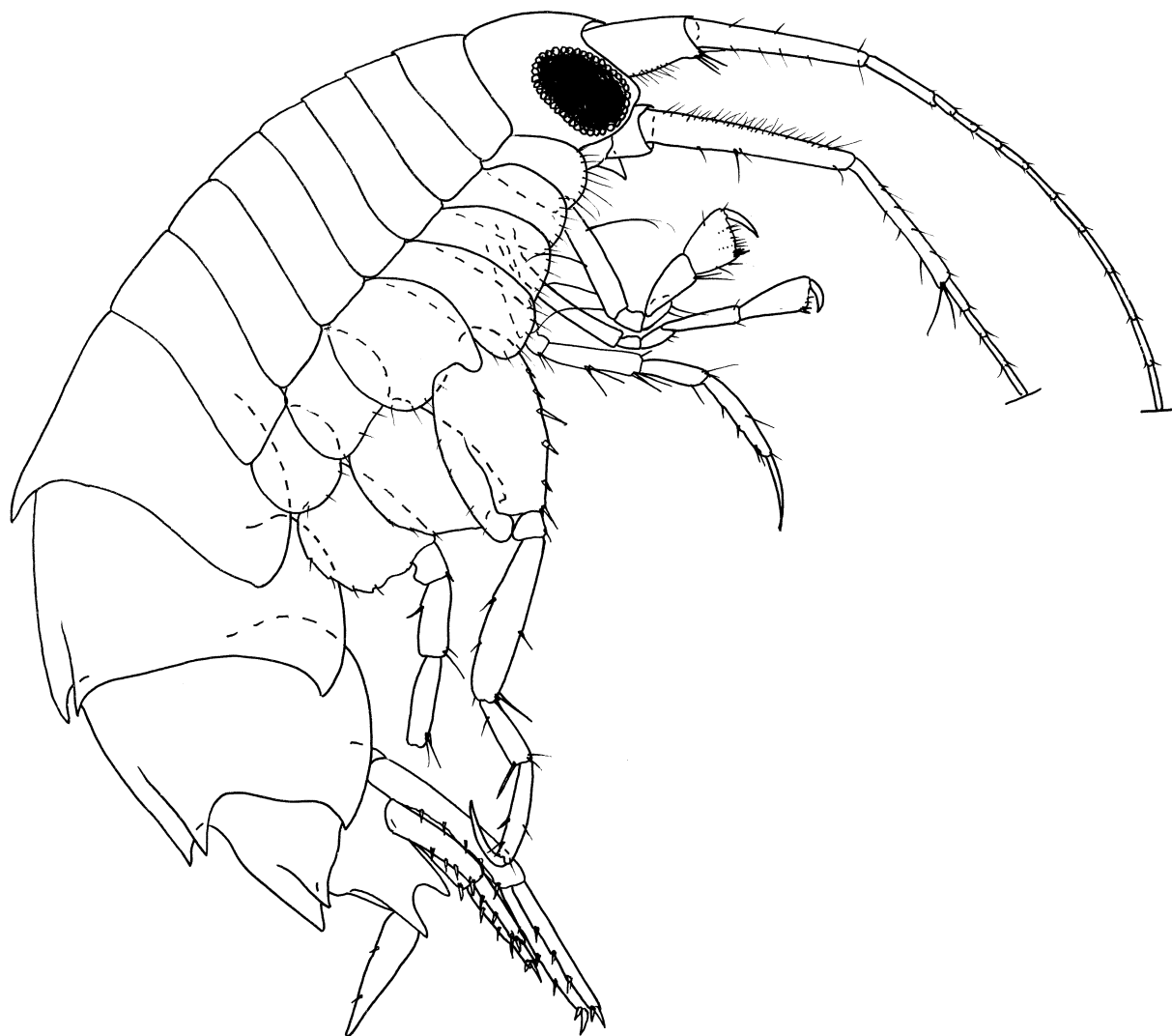


FIGURE 9. *Paradexamine exilis* sp. nov., holotype, male, 1.9 mm, AM P77996, Third Beach, Lizard Island, Great Barrier Reef.

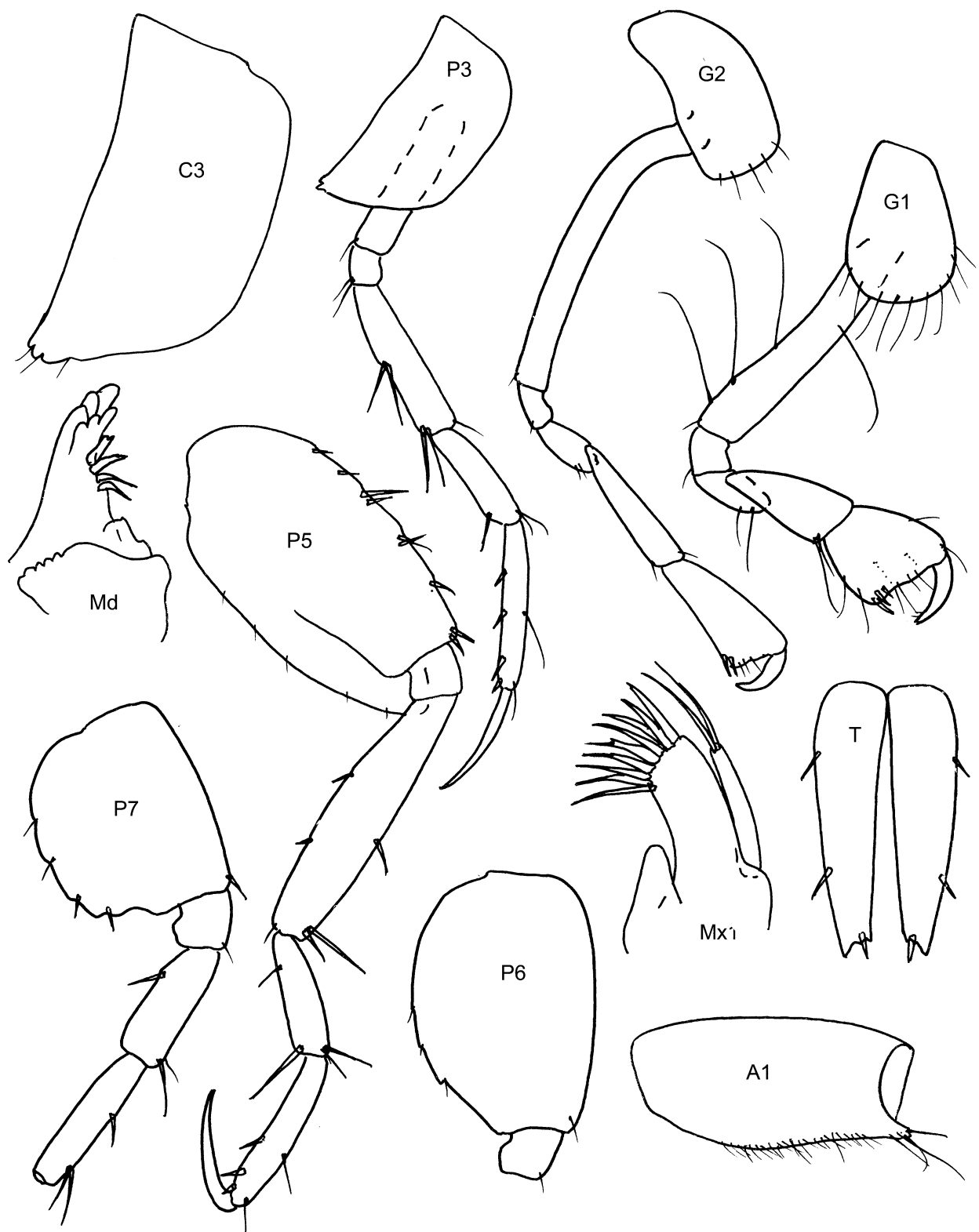


FIGURE 10. *Paradexamine exilis* sp. nov., holotype, male, 1.9 mm, AM P77996, Third Beach, Lizard Island, Great Barrier Reef.

Pereon. *Gnathopod 1* carpus subequal in length with propodus; propodus distinctly expanded distally. *Gnathopod 2* carpus elongate, slender, subequal in length with propodus. *Pereopods 3–7* simple or scarcely prehensile. *Pereopod 3* coxa, posterodistal corner with multiple spines; dactylus more than half length of

propodus. *Pereopods* 5–7 of uniform morphology. *Pereopod* 5 basis weakly ovate, anterior margin with short robust setae. *Pereopod* 6 basis moderately broad, subovate, posterior margin convex, weakly serrate. *Pereopod* 7 coxal gill present; basis strongly expanded, almost as broad as long, posterodistal margin scalloped.

Pleon. *Segments* with the following dorsal spine arrangement (from urosomite 1 forwards): 3.3.3.1.0. *Epimeron* 2 posteroventral corner produced into a strong spine. *Epimeron* 3 posterior and ventral margins smooth, with a single strong posteroventral spine. *Urosome* with urosomites 2–3 fused. *Urosomite* 1 with dorsal spine and two dorsolateral spines. *Uropod* 3 rami with many long fine setae. *Telson* lobes distally smooth, with distal spine, with subdistal robust seta.

Female (sexually dimorphic characters). Unknown.

Habitat. Unknown. Males collected in water column at night.

Remarks. With its elongate and slender gnathopod 2 and posterodistal extension on antenna 1, peduncle article 1, this species resembles *P. micronesicus* Ledoyer, 1979. It differs from that species in its rounded lateral cephalic lobes (strongly acute in *P. micronesicus*), the pleonal spine formula (1.3.3.3.0 in *P. micronesicus*, 3.3.3.1.0 in *P. exilis*), the projection on antenna 1, peduncle article 1 being a blunt process (acute in *P. micronesicus*), the multilobed posterodistal corner on coxa 3 (single spine in *P. micronesicus*) and the broad basis of pereopod 7 with its scalloped posterior margin (moderately expanded and serrate in *P. micronesicus*).

Distribution. *Australia.* Queensland: Third Beach, Lizard Island (current study).

***Paradexamine levitelson* sp. nov.**

(Figs 11, 12, Pl. 3C)

Type Material. Holotype, female, 3.0 mm, AM P70595, 300 m off south-east corner of Palfrey Island (14°41.71'S 145°27.06'E), coral rubble, 3.7 m, R.T. Springthorpe, J.K. Lowry (QLD 1622). Paratypes, 1 male, 3 females, AM P78004, same data as holotype.

Additional material examined. 1 male, 2 females, AM P70617 (QLD 1621); 1 female, AM P70625 (QLD 1621); 1 female, AM P70637 (QLD 1621); 1 female, AM P70671 (QLD 1646); 1 male, AM P70829 (QLD 1666); 1 female, AM P70855 (QLD 1689); 1 male, 1 juvenile, AM P70990 (QLD 1693); 1 female, AM P71148 (QLD 1707); 1 female, 1 juvenile, AM P71161 (QLD 1732); 1 female, AM P71194 (QLD 1736); 1 female, AM P71238 (QLD 1768); 1 juvenile, AM P71249 (QLD 1766); 1 male, AM P71300 (QLD 1761); 1 male, AM P71311 (QLD 1779); 1 female, AM P71312 (QLD 1779); 1 female, AM P71314 (QLD 1779); 1 female, SEL/LZI-2-3; 33 unsexed, SEL/LZI-2-7; 1 male, 1 female, 2 juvenile, SEL/LZI-3-2.

Type Locality. Palfrey Island, Lizard Island, Queensland, Australia (14°41.71'S 145°27.06'E).

Etymology. From the Latin 'levis' = smooth, together with telson, indicating the smooth distal margin of each telson lobe in this species.

Description. Based on holotype, female, 3.0 mm, AM P70595.

Head. *Head* lateral lobes rounded. *Eye* large, about half or less length of head, with black central core. *Antenna* 1 peduncle article 1 without process on posterior margin. *Antenna* 2 much shorter than body length; peduncle article 4 slender, parallel sided, weakly setulose; flagellum with 8–10 articles. *Mandible* palp absent; incisor process with robust setal row. *Maxilla* 1 palp elongate, more than four times as long as broad. *Labium* mandibular lobes obtuse. *Maxilliped* palp 4-articulate.

Pereon. *Gnathopod* 1 carpus shorter than propodus; propodus not greatly expanded distally. *Gnathopod* 2 carpus subtriangular, shorter than propodus. *Pereopods* 3–7 simple or scarcely prehensile. *Pereopod* 3 coxa, posterodistal corner with single spine, distal margin culate; dactylus more than half length of propodus. *Pereopods* 5–7 of uniform morphology. *Pereopod* 5 basis, posterior margin weakly concave, anterior margin with long robust setae. *Pereopod* 6 basis ovate. *Pereopod* 7 coxal gill present; basis strongly expanded, almost as broad as long, posterodistal margin strongly serrated.

Pleon. *Segments* with the following dorsal spine arrangement (from urosomite 1 forwards): 3.3.3.3.0. *Epimeron 2* posteroventral corner produced into a strong spine. *Epimeron 3* posterior and ventral margins smooth, with a single strong posteroventral spine. *Urosome* with urosomites 2–3 fused. *Urosomite 1* with dorsal spine and two dorsolateral spines. *Uropod 3* rami lacking long fine setae. *Telson* lobes distally smooth, without distal spine, with subdistal robust seta.

Male (sexually dimorphic characters). Based on paratype, male, 3.1 mm, AM P70595. *Eye* huge, more than half length of head. *Antenna 2* length unknown; peduncle article 4 broader proximally, finely setulose; flagellum unknown. *Uropod 3* rami with many long fine setae.

Habitat. Sands, coral rubble and other coarse sediments, sometimes with *Udotea* (green alga), *Halimeda* or mixed brown algae.

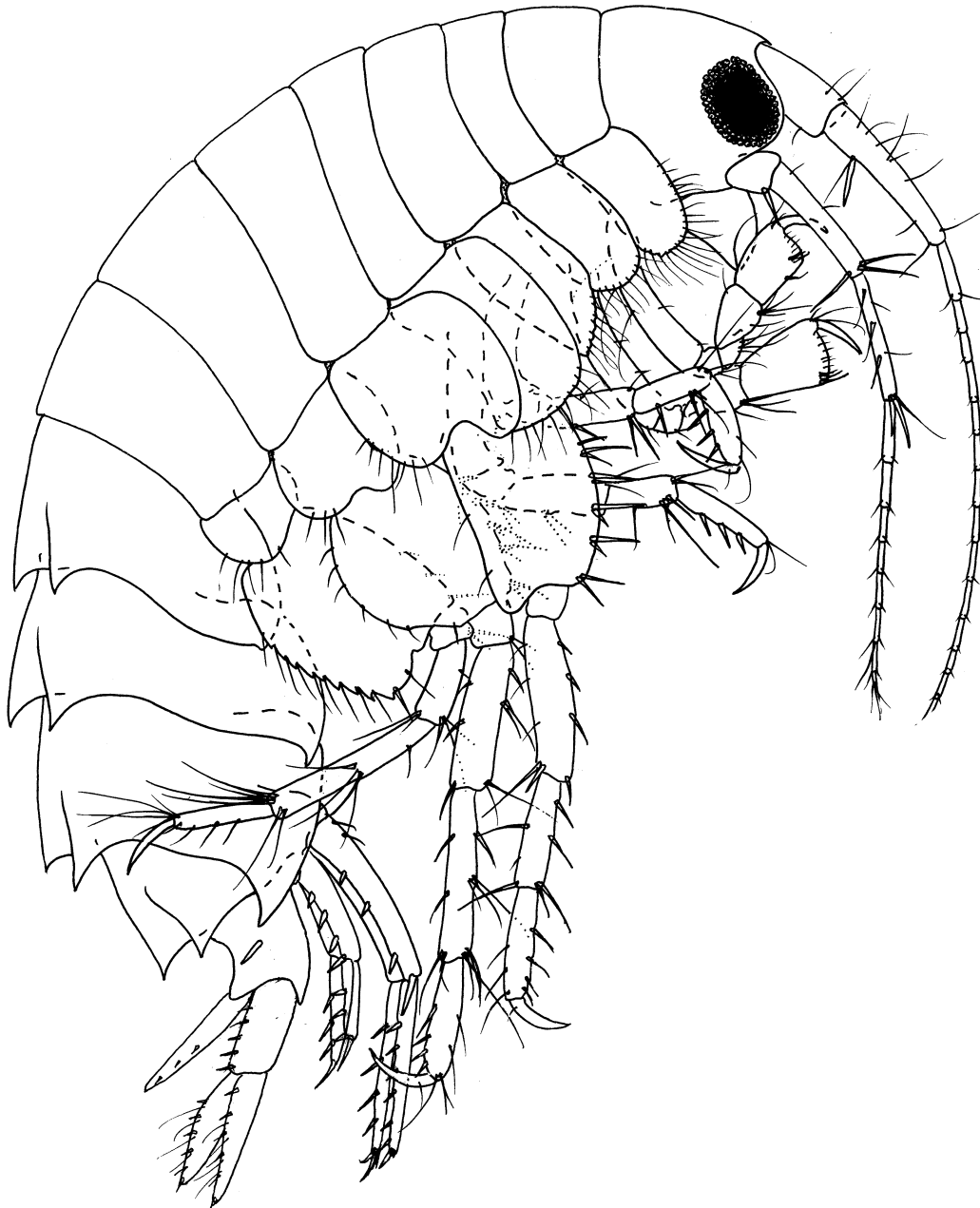


FIGURE 11. *Paradexamine levitelson* sp. nov., holotype, female, 3.0 mm, AM P70595, Palfrey Island, Lizard Island, Great Barrier Reef.

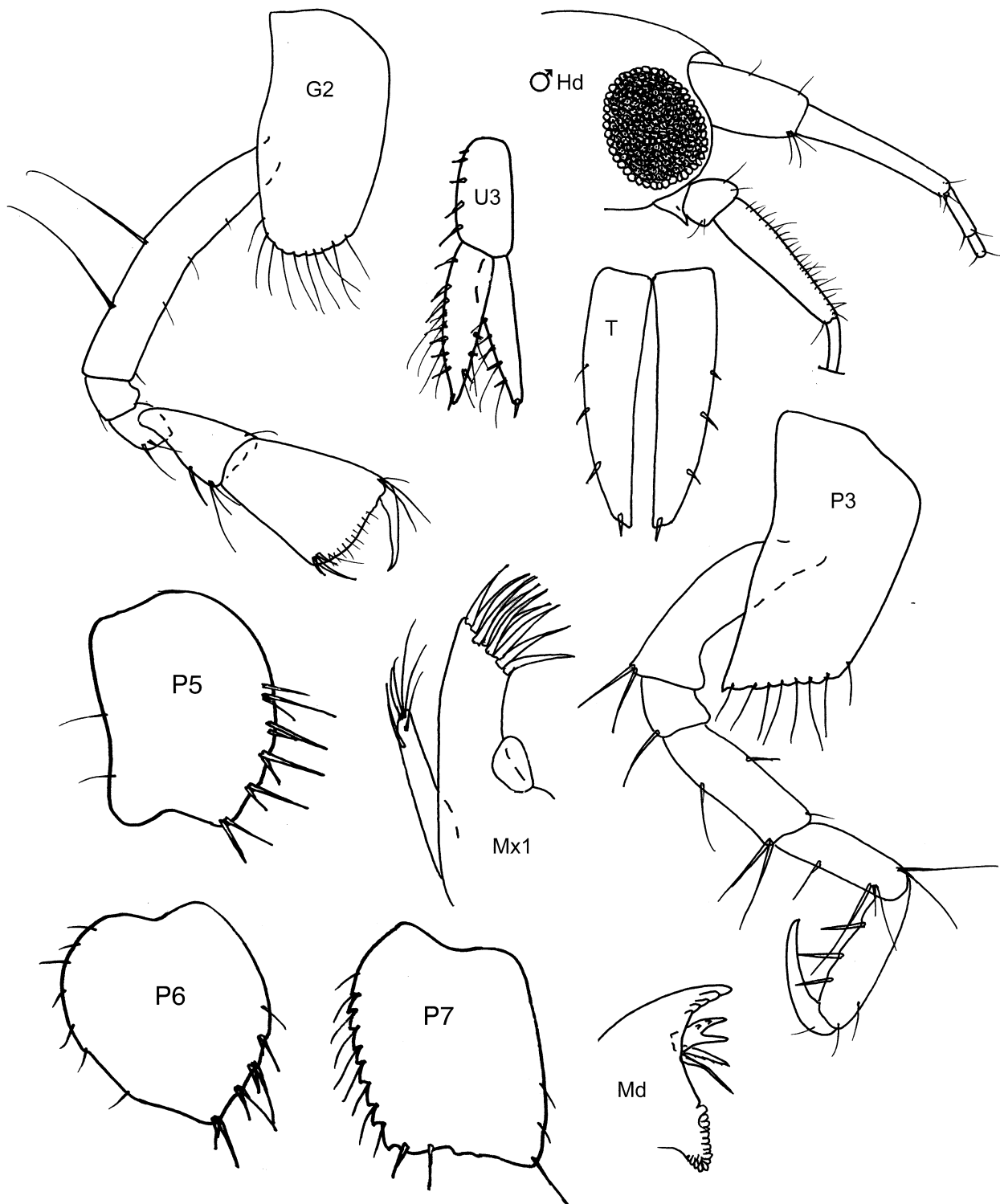


FIGURE 12. *Paradexamine levitelson* **sp. nov.**, holotype, female, 3.0 mm, AM P70595, paratype, male, 3.1 mm, AM P78004, Palfrey Island, Lizard Island, Great Barrier Reef.

Remarks. This species is most similar to *P. goomai* J.L. Barnard, 1972a from south-western Australia in the rounded lateral cephalic lobes, crenulate distal margin of coxa 3, and smooth telson. It differs from that species, however, in having one dorsal and two subdorsal spines on pleon segment 1 (spines lacking in *P. goomai*), a non-serrate coxa 2 (serrate in *P. goomai*) and in having fewer and more slender robust setae on

pereopods 3–7. *Paradexamine levitelson* also has a strongly serrate posterior margin to the basis of pereopod 7, whereas it is very weakly notched in *P. goomai*.

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

***Paradexamine massa* sp. nov.**

(Figs 13, 14)

Type Material. Holotype, male, 2.5 mm, AM P78001, Picnic Beach, Palfrey Island (14°41.70'S 145°26.92'E), subtidal, protected beach, coral rock, rubble, sand patches, 0.3 m, S.E. LeCroy (SEL/LZI-2-6). Paratypes, 6 unsexed, AM P78002, same data as holotype.

Additional material examined. 5 females, AM P71106 (QLD 1710); 1 male, AM P71047 (QLD 1718).

Type Locality. Palfrey Island, Lizard Island, Queensland, Australia (14°41.70'S 145°26.92'E).

Etymology. From the Latin 'massa' = lump, referring to the swelling on the posterior margin of peduncle article 1 of antenna 1.

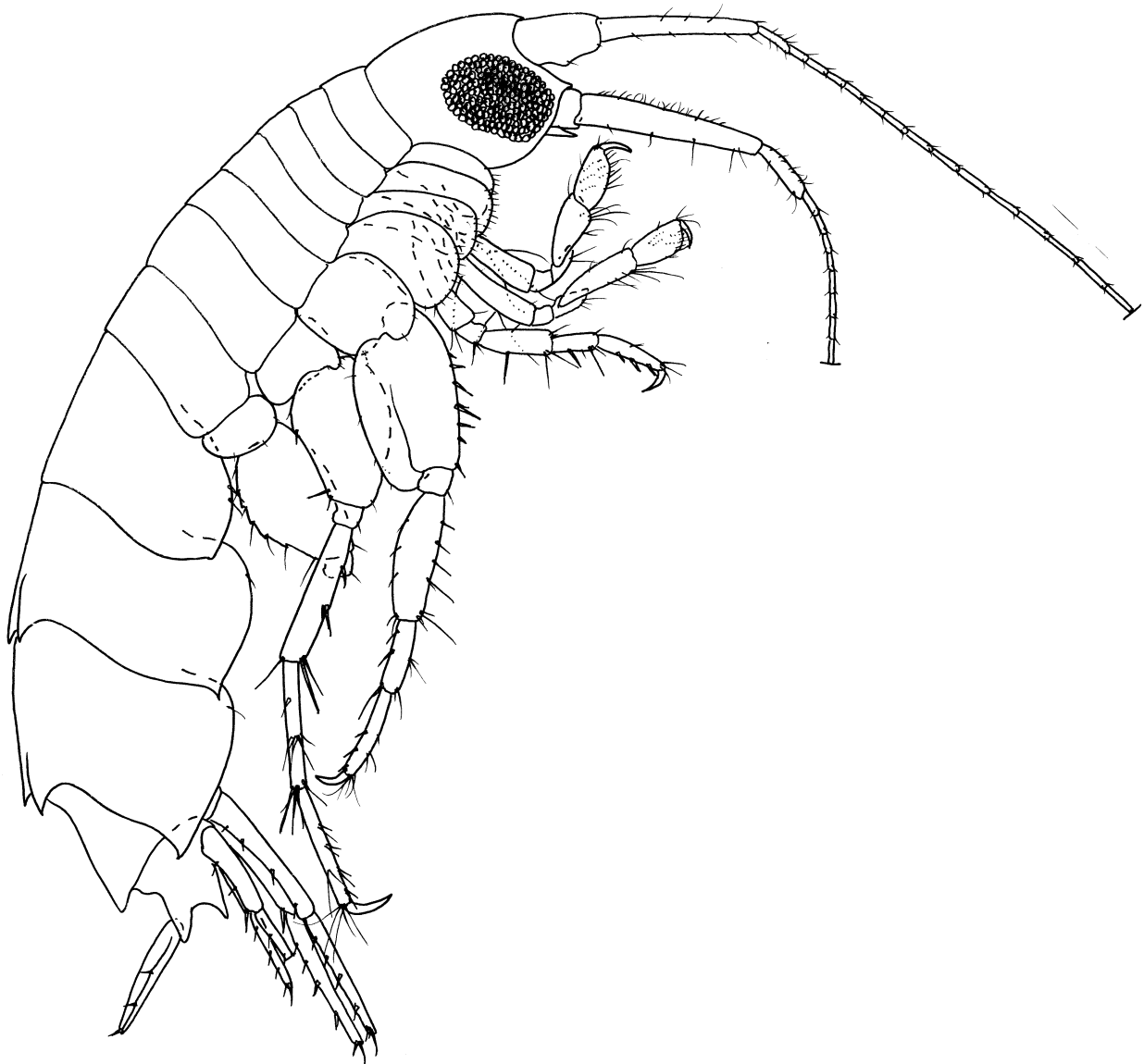


FIGURE 13. *Paradexamine massa* sp. nov., holotype, male, 2.5 mm, AM P78001, Palfrey Island, Lizard Island, Great Barrier Reef.

Description. Based on holotype, male, 2.5 mm, AM P78001.

Head. *Head* lateral lobes acute. *Eye* huge, more than half length of head, with black central core. *Antenna 1* peduncle article 1 with medial rounded process on posterior margin. *Antenna 2* length unknown; peduncle article 4 broader proximally, finely setulose; flagellum unknown. *Mandible* palp absent; incisor process lacking robust setal row. *Maxilla 1* palp stout, about three times as long as broad. *Labium* mandibular lobes acute. *Maxilliped* palp 4-articulate.

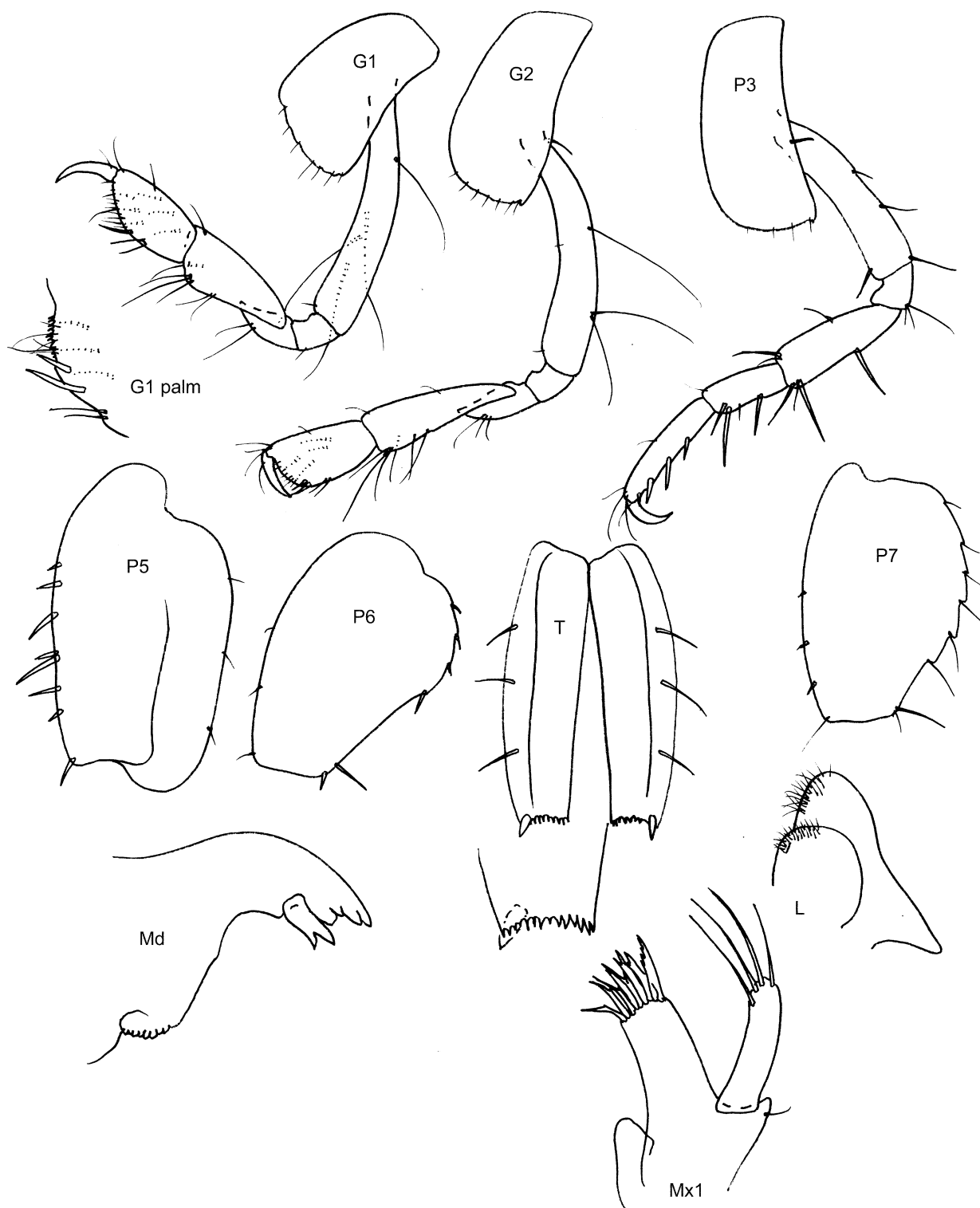


FIGURE 14. *Paradexamine massa* sp. nov., holotype, male, 2.5 mm, AM P78001, Palfrey Island, Lizard Island; female, 2.4 mm, AM P71106, North Point, Lizard Island, Great Barrier Reef.

Pereon. *Gnathopod 1* carpus longer than propodus; propodus not greatly expanded distally. *Gnathopod 2* carpus elongate, slender, longer than propodus. *Pereopods 3–7* simple or scarcely prehensile. *Pereopod 3* coxa, posterodistal corner with single spine; dactylus much less than half length of propodus. *Pereopods 5–7* of uniform morphology. *Pereopod 5* basis subrectangular, with posterodistal lobe, anterior margin with short robust setae. *Pereopod 6* basis pyriform, broadest proximally, posteroproximal margin convex, with robust setae, posterodistal margin substraight, smooth. *Pereopod 7* coxal gill present; basis moderately expanded, longer than broad, posterodistal margin serrated.

Pleon. *Segments* with the following dorsal spine arrangement (from urosomite 1 forwards): 1.3.3.0.0. *Epimeron 2* posteroventral corner produced into a small spine. *Epimeron 3* posterior and ventral margins smooth, with a single strong posteroventral spine. *Urosome* with urosomites 2–3 fused. *Urosomite 1* with dorsal spine only. *Uropod 3* rami with many long fine setae. *Telson* lobes distally serrated, each lobe with multiple serrations of uneven size and shape, without distal spine, with subdistal robust seta, without subdistal slender seta.

Female (sexually dimorphic characters). Based on female, 2.4 mm, AM P71106. *Eye* large, about half or less length of head. *Antenna 2* peduncle article 4 slender, parallel sided, weakly setulose. *Uropod 3* rami lacking long fine setae.

Habitat. Soft bottom with sponges, corals, crinoids, hydroids, *Halimeda*.

Remarks. This species is close to *P. pacifica* (Thomson, 1879), but differs in the shape of the basis of pereopods 6 and 7. The posterodistal margin of the basis of pereopod 6 is almost straight and asetiferous in *P. massa* (weakly convex and evenly setose in *P. pacifica*) and that of pereopod 7 is strongly serrate in *P. massa* (weakly serrate in *P. pacifica*). In addition, the inner plate of maxilla 1 is asetiferous in *P. massa* (with two distal setae in *P. pacifica*) and the mandibular processes of the labium are blunt in *P. massa* (finely pointed and recurved in *P. pacifica*).

Distribution. *Australia*. Queensland: Palfrey Island and North Point, Lizard Island (current study).

***Paradexamine micronesicus* Ledoyer, 1979**

(Figs 15, 16)

Paradexamine micronesicus Ledoyer, 1979: 56, fig. 30 (II). —Ledoyer, 1983: 374, fig. 140.

Dexaminoides orientalis. —J.L. Barnard, 1965: 523, fig. 25.

Material examined. 1 female, AM P78003 (QLD 1621); 1 male, AM P70749 (QLD 1647); 1 juvenile, AM P70793 (QLD 1649); 2 females, AM P78005 (SEL/LZI-1-1).

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

Description. Based on female, 2.8 mm, AM P70637.

Head. *Head* lateral lobes acute. *Eye* large, about half or less length of head, with black central core. *Antenna 1* peduncle article 1 with posterodistal acute spine. *Antenna 2* length unknown; peduncle article 4 slender, parallel sided, weakly setulose; flagellum unknown. *Maxilliped* palp 4-articulate.

Pereon. *Gnathopod 1* carpus longer than propodus; propodus not greatly expanded distally. *Gnathopod 2* carpus elongate, slender, much longer than propodus. *Pereopods 3–7* simple or scarcely prehensile. *Pereopod 3* coxa, posterodistal corner with single spine; dactylus much less than half length of propodus. *Pereopods 5–7* of uniform morphology. *Pereopod 5* basis subrectangular, with posterodistal lobe, anterior margin without robust setae. *Pereopod 6* basis pyriform, broadest proximally, posteroproximal margin convex, serrated, posterodistal margin straight, smooth. *Pereopod 7* coxal gill present; basis moderately expanded, longer than broad, posterodistal margin serrated.

Pleon. *Segments* with the following dorsal spine arrangement (from urosomite 1 forwards): 1.3.3.1.0. *Epimeron 2* posteroventral corner produced into a small spine. *Epimeron 3* posterior and ventral margins smooth, with a single strong posteroventral spine. *Urosome* with urosomites 2–3 fused. *Urosomite 1* with

dorsal spine only. *Uropod 3* rami lacking long fine setae. *Telson* lobes distally serrated, each lobe with multiple serrations of uneven size and shape, without distal spine, without subdistal robust seta, without subdistal slender seta.

Male (sexually dimorphic characters). Based on male, 2.8 mm, AM P70749. *Eye* huge, more than half length of head. *Antenna 2* peduncle article 4 broader proximally, finely setulose. *Uropod 3* rami with many long fine setae.

Habitat. Sandy bottoms with mounds of *Udotea* and coral rubble.

Remarks. Present material agrees well with the original description (Ledoyer 1979).

Distribution. *Australia.* Queensland: Lizard Island (current study). *Madagascar.* Toliara (Tulear) (Ledoyer 1979). *Micronesia.* Ifaluk Atoll (Barnard 1965).

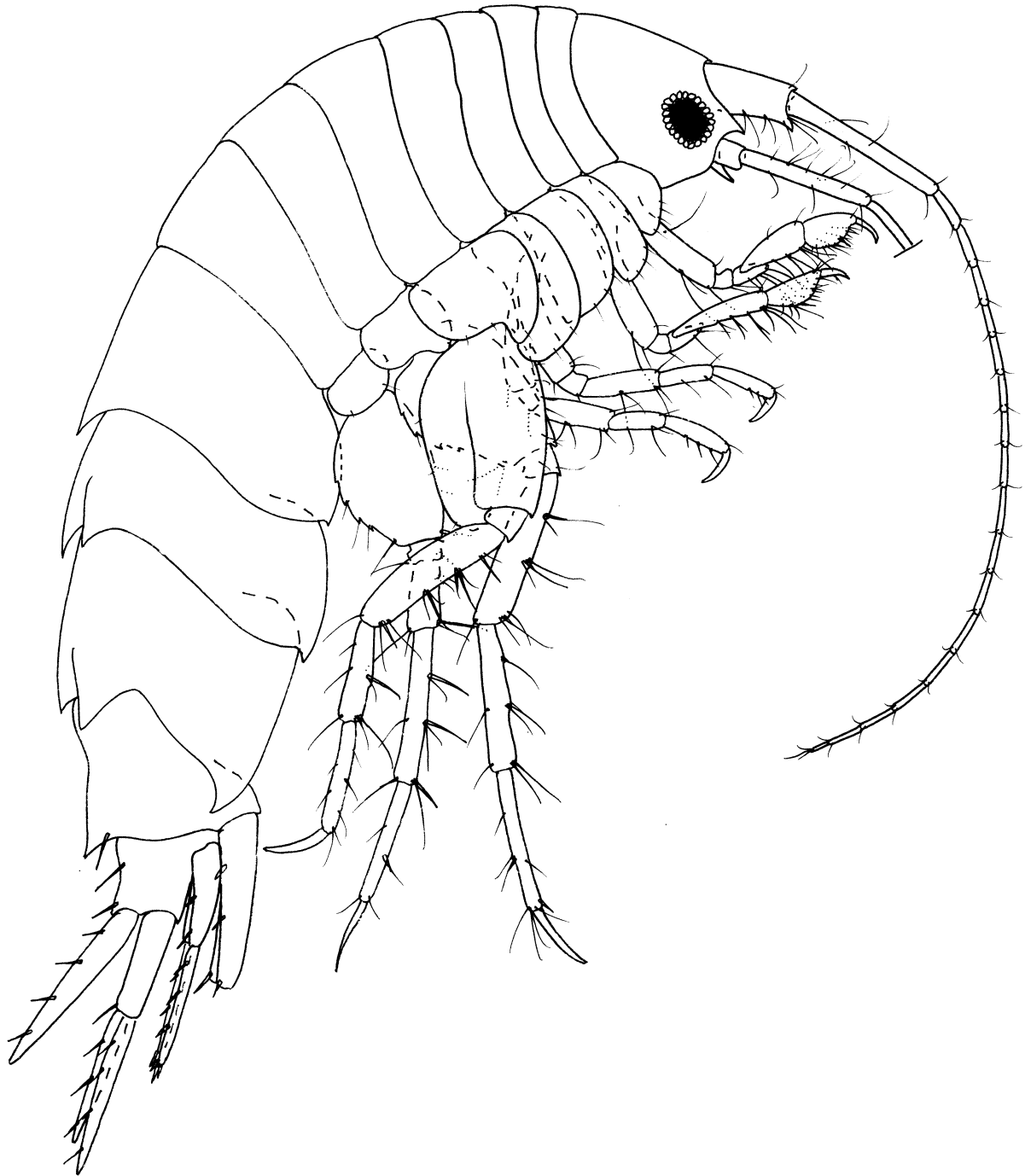


FIGURE 15. *Paradexamine micronesicus* Ledoyer, 1979, female, 2.8 mm, AM P70637, Palfrey Island, Lizard Island, Great Barrier Reef.

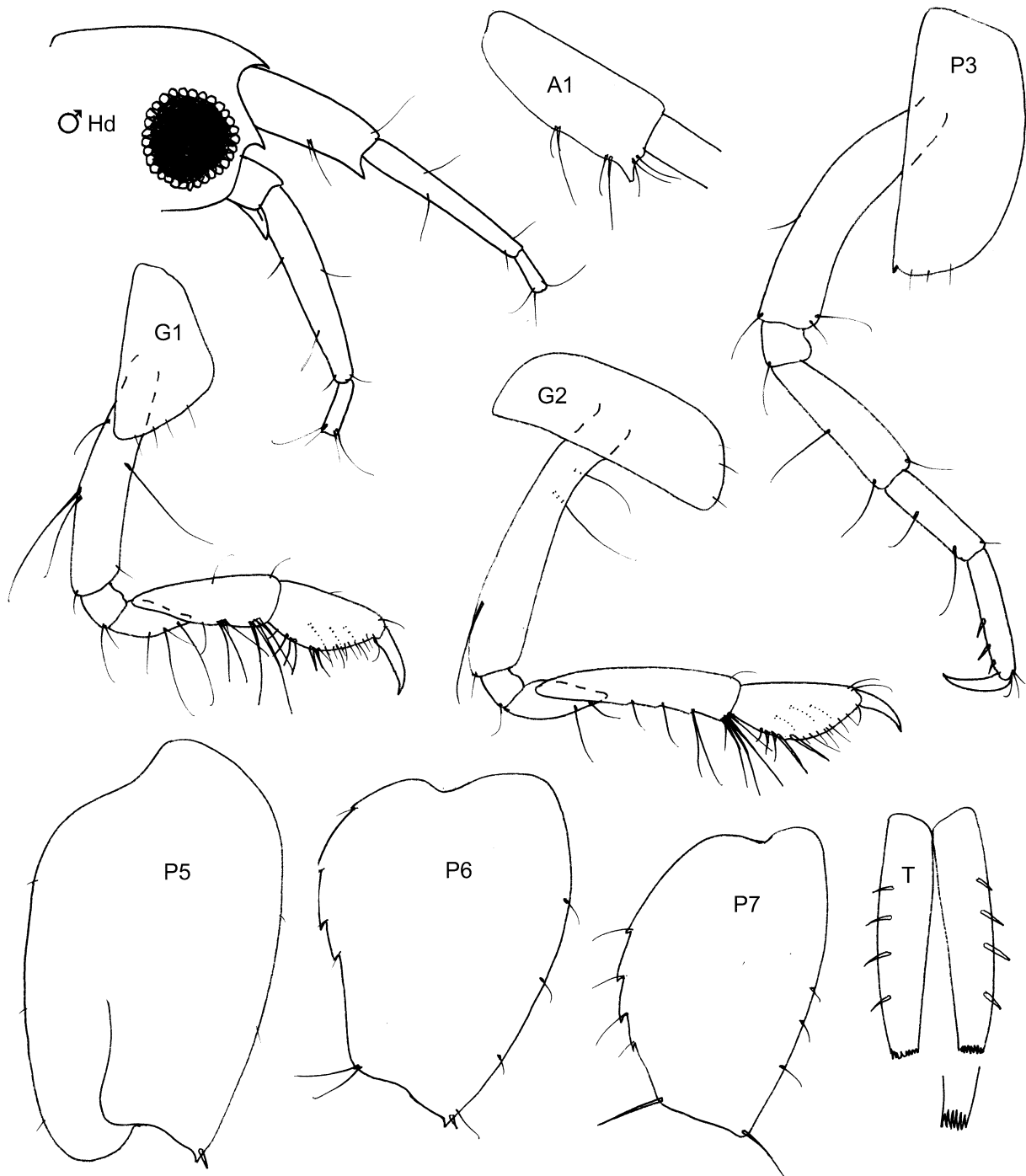


FIGURE 16. *Paradexamine micronesicus* Ledoyer, 1979, female, 2.8 mm, AM P70637, Palfrey Island, Lizard Island; male, 2.8 mm, AM P70749, Watson's Bay, Lizard Island, Great Barrier Reef.

***Paradexamine quadratus* sp. nov.**

(Figs 17, 18)

Type Material. Holotype, female, 2.4 mm, AM P77999, Picnic Beach, Palfrey Island, Lizard Island (14°41.70' S, 145°26.92'E), subtidal, patch reef, rubble patch with sand bottom, 2 m, S.E. LeCroy, 3 July 2001 (SEL/LZI-2-1). Paratype, 1 female, AM P78000, same data as holotype.

Type Locality. Palfrey Island, Lizard Island, Queensland, Australia (14°41.70'S 145°26.92'E).

Etymology. From the Latin 'quadratus' = square, referring to the almost square basis of pereopod 7.

Description. Based on holotype, female, 2.4 mm, AM P77999.

Head. *Head* lateral lobes rounded. *Eye* large, about half or less length of head, composed of clear ommatidia (in alcohol). *Antenna 1* peduncle article 1 without process on posterior margin. *Antenna 2* very short, one third or less length of body; peduncle article 4 slender, parallel sided, weakly setulose; flagellum with 5 articles. *Maxilliped* palp 4-articulate.

Pereon. *Gnathopod 1* carpus shorter than propodus; propodus not greatly expanded distally. *Gnathopod 2* carpus subtriangular, shorter than propodus. *Pereopods 3–7* simple or scarcely prehensile. *Pereopod 3* coxa, posterodistal corner rounded; dactylus more than half length of propodus. *Pereopods 5–7* of uniform morphology. *Pereopod 5* basis subrectangular, with posterodistal lobe, anterior margin with long robust setae. *Pereopod 6* basis very broad, subovate, posterior margin strongly convex, strongly serrated. *Pereopod 7* coxal gill present, basis strongly expanded, almost as broad as long, posterodistal margin strongly serrated.

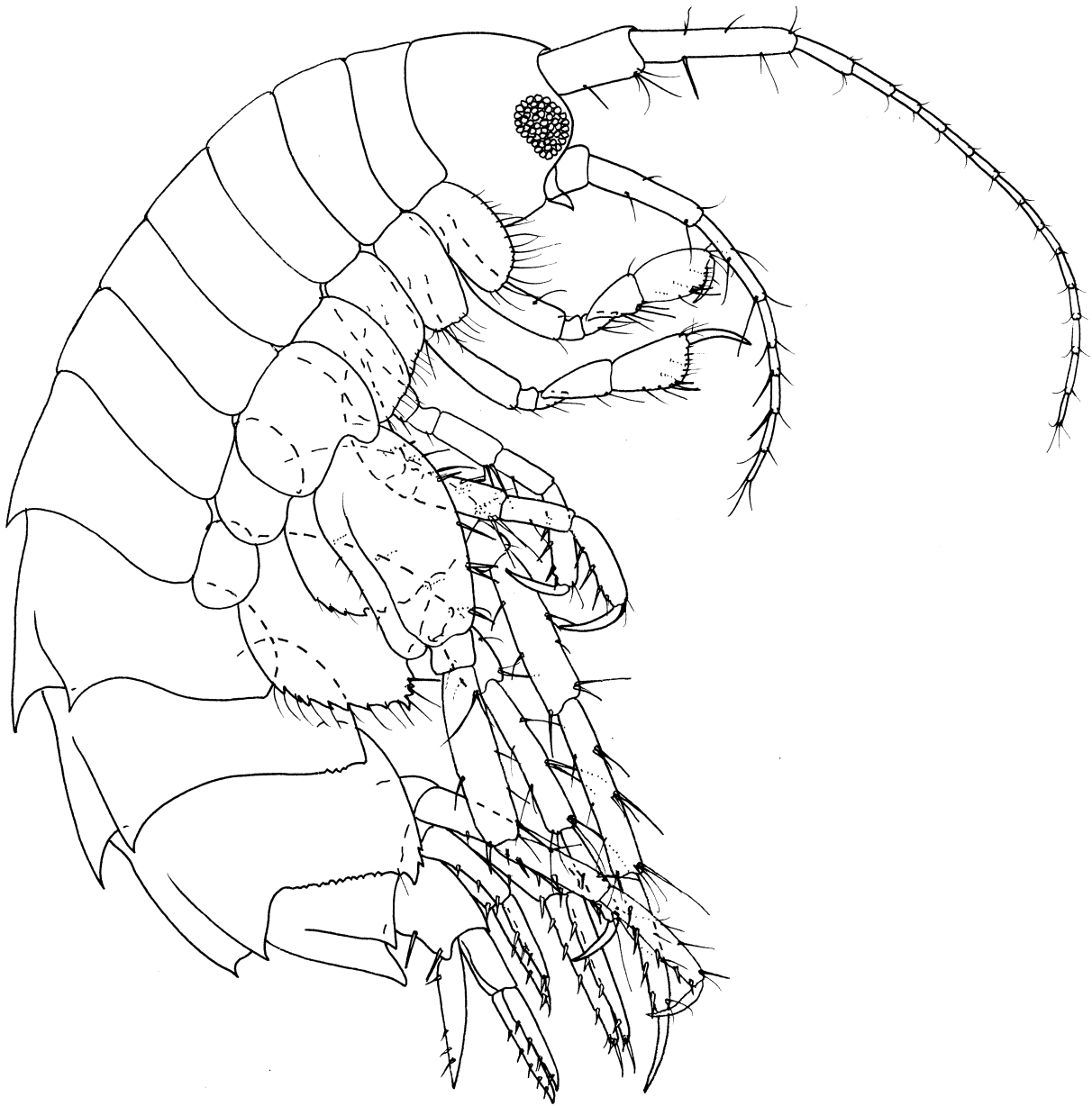


FIGURE 17. *Paradexamine quadratus* sp. nov., holotype, female, 2.4 mm, AM P77999, Palfrey Island, Lizard Island, Great Barrier Reef.

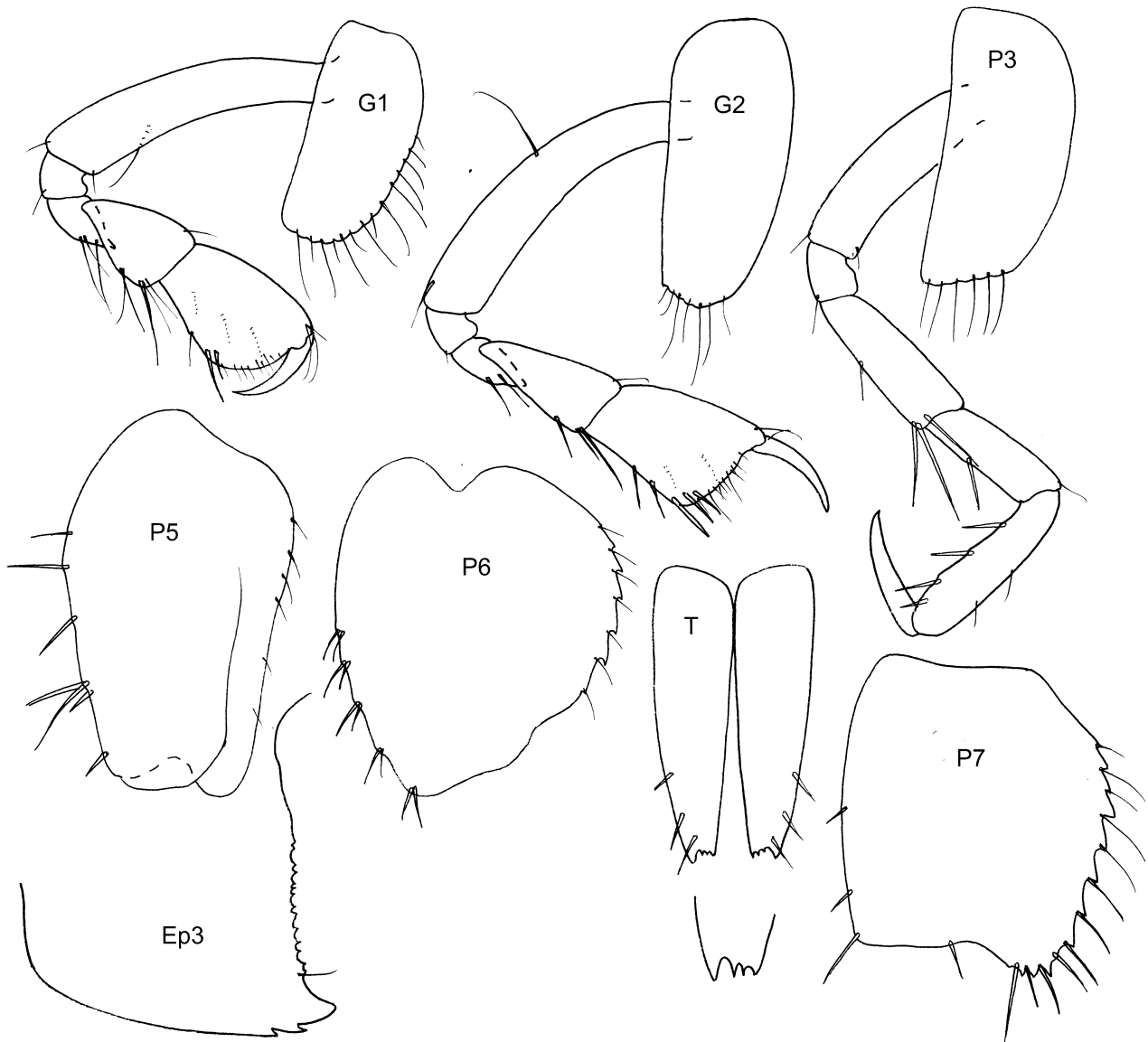


FIGURE 18. *Paradexamine quadratus* sp. nov., holotype, female, 2.4 mm, AM P77999, Palfrey Island, Lizard Island, Great Barrier Reef.

Pleon. Segments with the following dorsal spine arrangement (from urosomite 1 forwards): 3.3.3.3.1. *Epimeron 2* posterior margin minutely serrate, posteroventral corner subquadrate. *Epimeron 3* posterior margin minutely serrate, with strong posteroventral spine and accessory spines. *Urosomite 1* with dorsal spine and two dorsolateral spines. *Uropod 3* rami lacking long fine setae. *Telson* lobes distally serrated, each lobe with only 2–3 serrations of uneven size and shape, with distal spine, without subdistal robust seta, with subdistal slender seta.

Male (sexually dimorphic characters). Unknown.

Habitat. Rubble patch with sand bottom.

Remarks. This species is close to *P. mozambica* Ledoyer, 1979, but that species has a very elongate pereopod 3 coxa that is drawn out at the posterodistal corner into a long, slender triangular process. In addition, epimeron 3 is 'denticulate' on its ventral margin in *P. mozambicus* whereas in *P. quadratus* the ventral margin has strong spines. Also, the basis of pereopod 6 is less broad and 'finemente dentele' in *P. mozambicus*, but broad and strongly serrated in *P. quadratus*.

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

***Paradexamine saxeta* sp. nov.**

(Figs 19, 20)

Type Material. Holotype, female, 2.0 mm, AM P70577, 200 m off Research Beach (14°40.83'S 145°26.75E), coarse biogenic sand with seagrass, 2.5 m, J. Just (QLD 1626). Paratype, 1 male, AM P78006, same data as holotype.

Additional material examined. 1 female, AM P70648 (QLD 1634); 3 males, 1 female, 2 juveniles, AM P70704 (QLD 1637); 1 female, AM P70935 (QLD 1688); 1 male, 2 juveniles, AM P78007 (QLD 1732); 1 male, AM P71099 (QLD 1733); 1 female, AM P71259 (QLD 1771); 1 male, AM P71330 (QLD 1778); 3 females, AM P78009 (SEL/LZI-2-3); 1 female, AM P78008 (SEL/LZI-2-4); 2 females, AM P78010 (SEL/LZI-5-2).

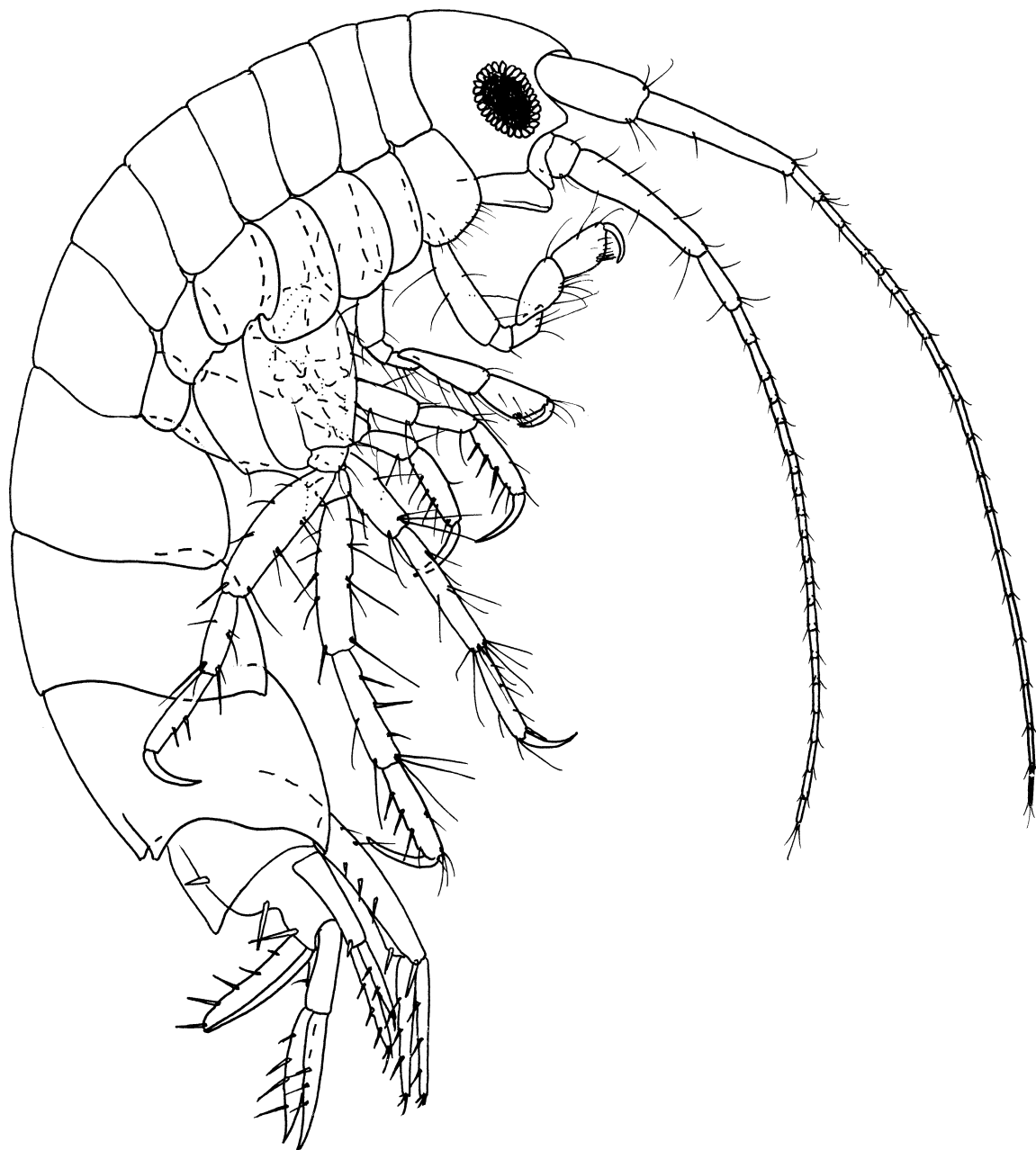


FIGURE 19. *Paradexamine saxeta* sp. nov., holotype, female, 2.0 mm, AM P70577, Research Beach, Lizard Island, Great Barrier Reef.

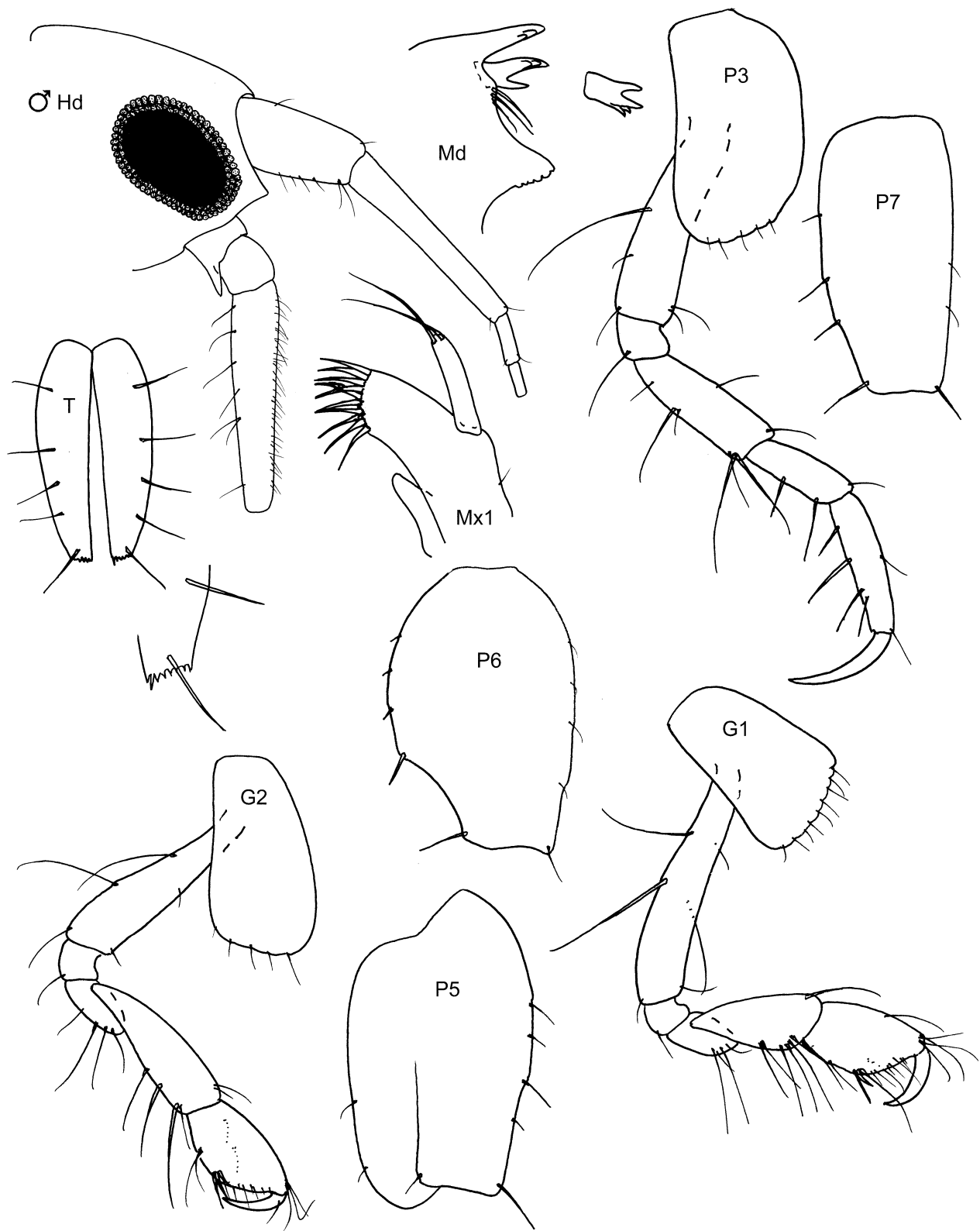


FIGURE 20. *Paradexamine saxeta* **sp. nov.**, holotype, female, 2.0 mm, AM P70577, paratype, male, 2.2 mm, AM P78006, Research Beach, Lizard Island, Great Barrier Reef.

Type Locality. Off Research Beach, Lizard Island, Queensland, Australia (14°40.83'S 145°26.75'E').

Etymology. From the Latin 'saxetus' = a rocky place, referring to the Great Barrier Reef.

Description. Based on holotype, female, 2.0 mm, AM P70577.

Head. *Head* lateral lobes acute or subacute. *Eye* large, about half or less length of head, with black central core. *Antenna 1* peduncle article 1 without process on posterior margin. *Antenna 2* shorter than body length; peduncle article 4 slender, parallel sided, weakly setulose; flagellum with about 20 articles. *Mandible* palp absent; incisor process with robust setal row. *Maxilla 1* palp elongate, more than four times as long as broad. *Maxilliped* palp 4-articulate.

Pereon. *Gnathopod 1* carpus subequal in length with propodus; propodus not greatly expanded distally. *Gnathopod 2* carpus elongate, slender, longer than propodus. *Pereopods 3–7* simple or scarcely prehensile. *Pereopod 3* coxa, posterodistal corner rounded; dactylus more than half length of propodus. *Pereopods 5–7* of uniform morphology. *Pereopod 5* basis subrectangular, with posterodistal lobe, anterior margin with short robust setae. *Pereopod 6* basis pyriform, broadest proximally, posteroproximal margin convex, with few small robust setae, posterodistal margin concave, smooth. *Pereopod 7* coxal gill present; basis slender or moderately expanded, much longer than broad, posterodistal margin, smooth or weakly serrated.

Pleon. *Segments* with the following dorsal spine arrangement (from urosomite 1 forwards): 1.3.0.0.0. *Epimeron 2* posteroventral corner produced into a weak spine. *Epimeron 3* posterior and ventral margins smooth, with a single strong posteroventral spine. *Urosome* with urosomites 2–3 fused. *Urosomite 1* with dorsal spine only. *Uropod 3* rami lacking long fine setae. *Telson* lobes distally serrated, each lobe with multiple serrations of uneven size and shape, without distal spine, without subdistal robust seta, with subdistal slender seta.

Male (sexually dimorphic characters). Based on paratype, male, 2.2 mm, AM P78006. *Eye* huge, more than half length of head. *Antenna 2* length unknown; peduncle article 4 broader proximally, finely setulose; flagellum unknown. *Uropod 3* rami with many long fine setae.

Habitat. Sand and rubble with coral patches.

Remarks. The poorly developed spines on the pleon of this material, together with its relatively small size, suggests it may be juvenile. However, it does not appear to be a juvenile of any of the other currently known GBR species and the male paratype has the enlarged eye, setose peduncle article 4 of antenna 2 and setose rami of uropod 3 that are characteristic of adult males. The strongly excavate posterodistal margin of the basis of pereopod 6 is not described for any other Australian species, although it occurs in a somewhat less exaggerated state in *P. linga* J.L. Barnard, 1972a. *Paradexamine saxeta* differs from *P. linga* in the more slender basis of pereopod 7 and in the much less acute lateral cephalic lobe. It also lacks robust setae on the ventral margin of epimeron 3. These are well-developed in *P. linga*.

Distribution. *Australia.* Queensland: Research Beach, Lizard Island (current study).

Polycheria Haswell, 1879

Polycheria goanna sp. nov.

(Figs 21, 22)

Type Material. Holotype, male, 4.0 mm, AM P78023, south of Lizard Head, Lizard Island (~14°41'S 145°28'E), coral rubble, 2 m, J.D. Thomas, 29 January 1989 (JDT/LIZ 14). Paratypes, 2 males, 2 females, AM P78024, off southern tip of island, Lizard Island, coral rubble and algal turf on patch reef, 1 m, J.D. Thomas, 23 January 1989 (JDT/LIZ 3).

Type Locality. South of Lizard Head, Lizard Island, Queensland, Australia (~14°41'S 145°28'E).

Etymology. The specific epithet refers to the large monitor lizards or goannas for which the type locality at Lizard Head and Lizard Island itself are named.

Description. Based on holotype, male, 4.0 mm, AM P78023 (JDT/LIZ 14); 2 paratype, males, 3.0–3.4 mm, AM P78024 (JDT/LIZ 3).

Head. Head eye large, approximately one-half length of head, or huge, nearly as long as head. *Antennae* 1–2 flagellar articles with very long distal setae, setae 2–3 articles in length. *Antenna* 2 peduncle article 4 with sparse short bristle setae on anterior margin. *Mandible* palp absent. *Maxilla* 1 palp stout, about three times as long as broad, expanded distally, with apical serrations, without marginal slender setae; inner plate with apical seta. *Maxilla* 2 inner plate subequal to outer plate in length, with dense apical slender setae, inner margin with dense row of slender setae. *Maxilliped* palp 4-articulate, article 4 reduced, subtriangular, with apical nail.

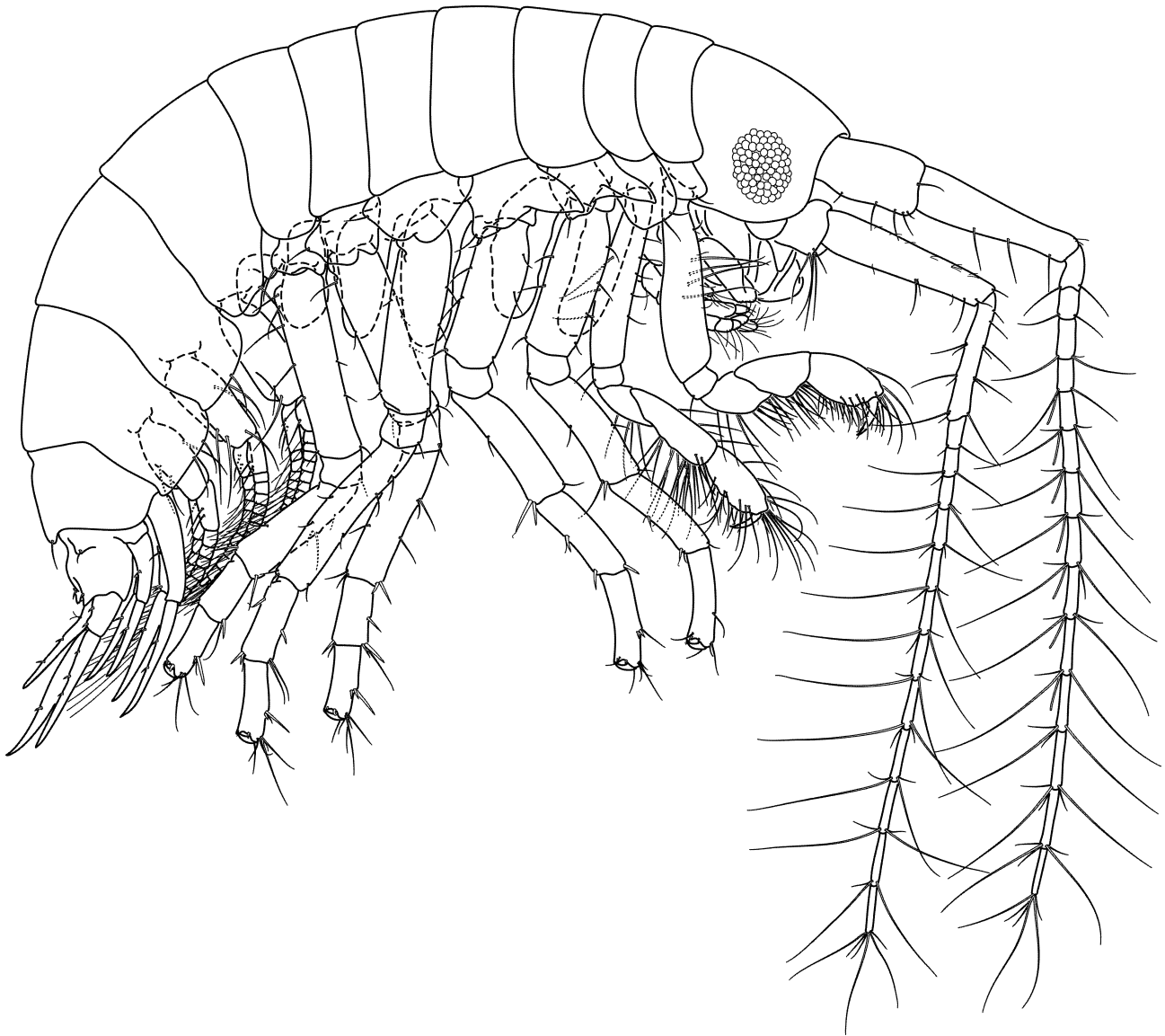


FIGURE 21. *Polycheria goanna* sp. nov., paratype, male, 2.9 mm, AM P78024, off southern tip of Lizard Island, Great Barrier Reef.

Pereon. *Gnathopods* 1–2 coxa anterodistal corner unproduced or weakly produced, rounded. *Gnathopod* 1 coxa as wide as deep or wider than deep. *Pereopods* 3–7 fully prehensile. *Pereopod* 3 coxa anterodistal corner strongly produced, forming subacute process, process moderately slender. *Pereopod* 4 coxa anterodistal corner strongly produced, forming subacute process, process stout. *Pereopod* 5 coxa subtriangular, broadest proximally. *Pereopods* 5–7 of uniform morphology. *Pereopod* 7 coxa posterodistal corner unproduced or weakly produced, rounded; coxal gill present; carpus subequal in length to propodus.

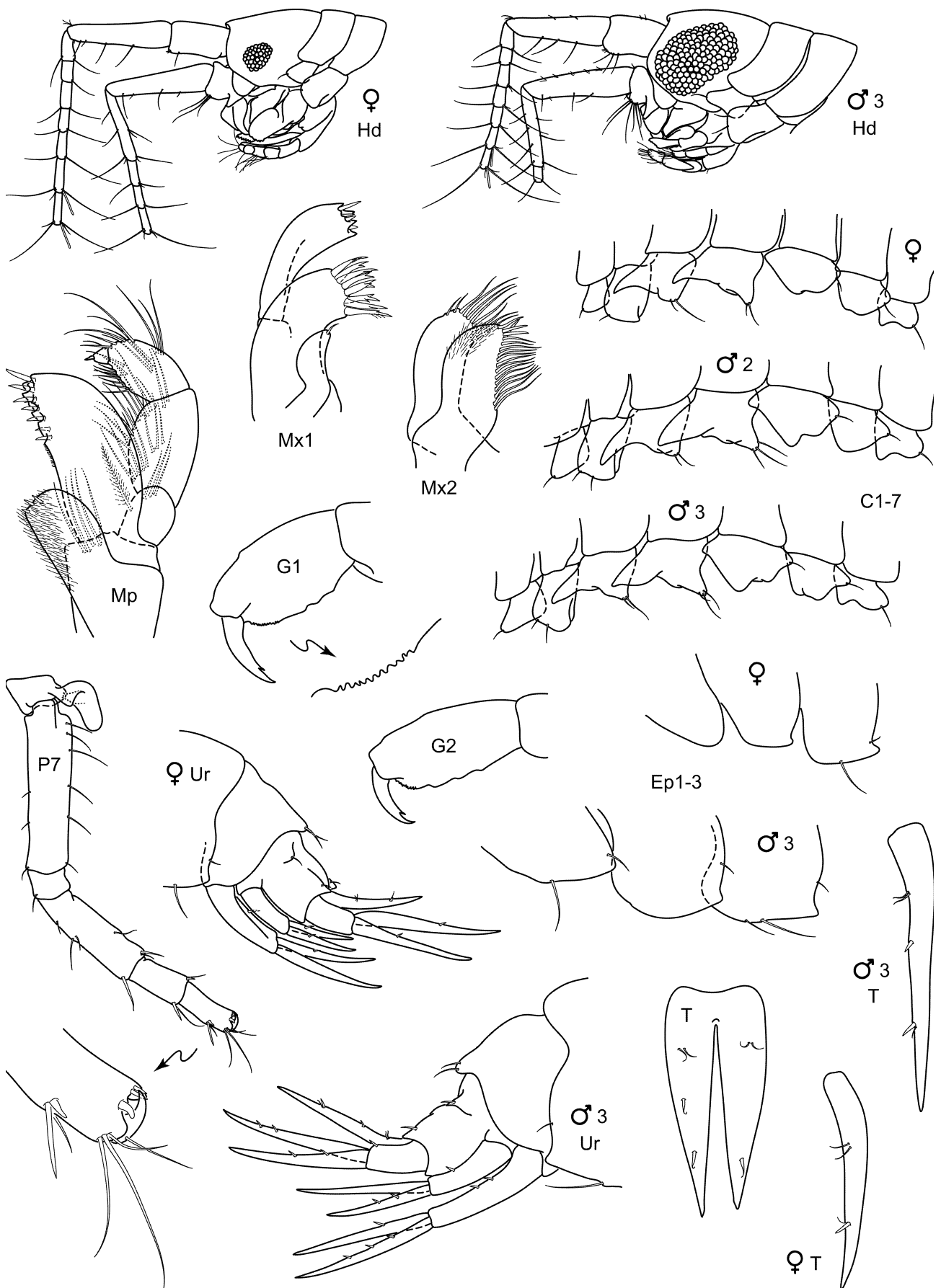


FIGURE 22. *Polycheria goanna* sp. nov., paratype, male, 2.9 mm, paratype, male 2, 3.4 mm, paratype, female, 2.6 mm, AM P78024, off southern tip of Lizard Island, Great Barrier Reef ; holotype, male 3, 4.0 mm, AM P78023, south of Lizard Head, Lizard Island, Great Barrier Reef.

Pleon. *Epimeron* 3 with posteroventral spine, ventral margin with elongate slender setae. *Urosomite* 1 with poorly developed, apically rounded dorsal keel. *Urosomites* 2–3 fused. *Uropod* 1 peduncle without slender setae on ventral margin; inner ramus subequal in length to outer. *Uropod* 2 inner ramus longer than outer. *Uropod* 3 rami slender, lanceolate, margins with short robust setae; inner ramus longer than outer. *Telson* subtriangular, broadest proximally, with 1–3 submarginal short robust setae laterally, without apical or subapical robust setae.

Female (sexually dimorphic characters). Based on 2 paratype, females, 2.1–2.6 mm, AM P78024. *Eye* small, approximately one-third length of head. *Antenna* 2 peduncle article 4 without short bristle setae on anterior margin. *Gnathopod* 1 coxa deeper than wide. *Pereopod* 4 coxa anterodistal process moderately slender. *Uropod* 2 inner ramus subequal to outer in length.

Habitat. Coral rubble and algal turf on patch reefs at depths of 1–2 m.

Remarks. *Polycheria goanna* **sp. nov.** can be distinguished from all other known species of *Polycheria* except *P. obtusa* J.L. Barnard, 1972b from New Zealand by the extremely elongate setae on the flagella of antennae 1–2. It is otherwise very different from that species, however, differing in the distally expanded, poorly setose palp of maxilla 1 (palp distally narrowing, with long marginal and apical slender setae in *P. obtusa*), the more strongly produced anterodistal corners of the coxae, the more slender pereopods, the lack of slender setae on the ventral margin of the peduncle of uropod 1 and the inner ramus of uropod 3 (*P. obtusa* has long slender setae on these appendages), and the more weakly spinose uropods and telson. It is very similar to *P. atolli* Walker, 1905, differing mainly in the longer antennal setae (short in *P. atolli*), the presence of an apical seta on the inner plate of maxilla 1 (seta lacking in *P. atolli*) and the much less well developed dorsal keel on urosomite 1. The shape of the apical article of the maxillipedal palp may also differ between the two species. Walker's (1905) figure shows a claw-like apical article; however, Ledoyer's (1972, 1983) figures of *P. atolli* material from Madagascar show a shorter, subtriangular article much closer to that of *P. goanna* **sp. nov.** in morphology.

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

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