



## Sebidae\*

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### Abstract

Three new species of sebid amphipods are reported from the Great Barrier Reef.

**Key words:** Crustacea, Amphipoda, Sebidae, Great Barrier Reef, Australia, taxonomy, new species, *Seba gruneri*, *Seba mariolgae*, *Seba zeumindi*

### Introduction

The global distribution of the Sebidae is disjointed. Currently it occurs in the Mediterranean Sea, Eastern and Southern Atlantic Ocean, southern United States, Hawaiian Islands, Indian Ocean, Antarctica and Australia, however, it may have a much wider distribution. Here, three new species belonging to the genus *Seba* Bate, 1862 are recorded and described from the Great Barrier Reef. All three are new to Science.

### Materials and methods

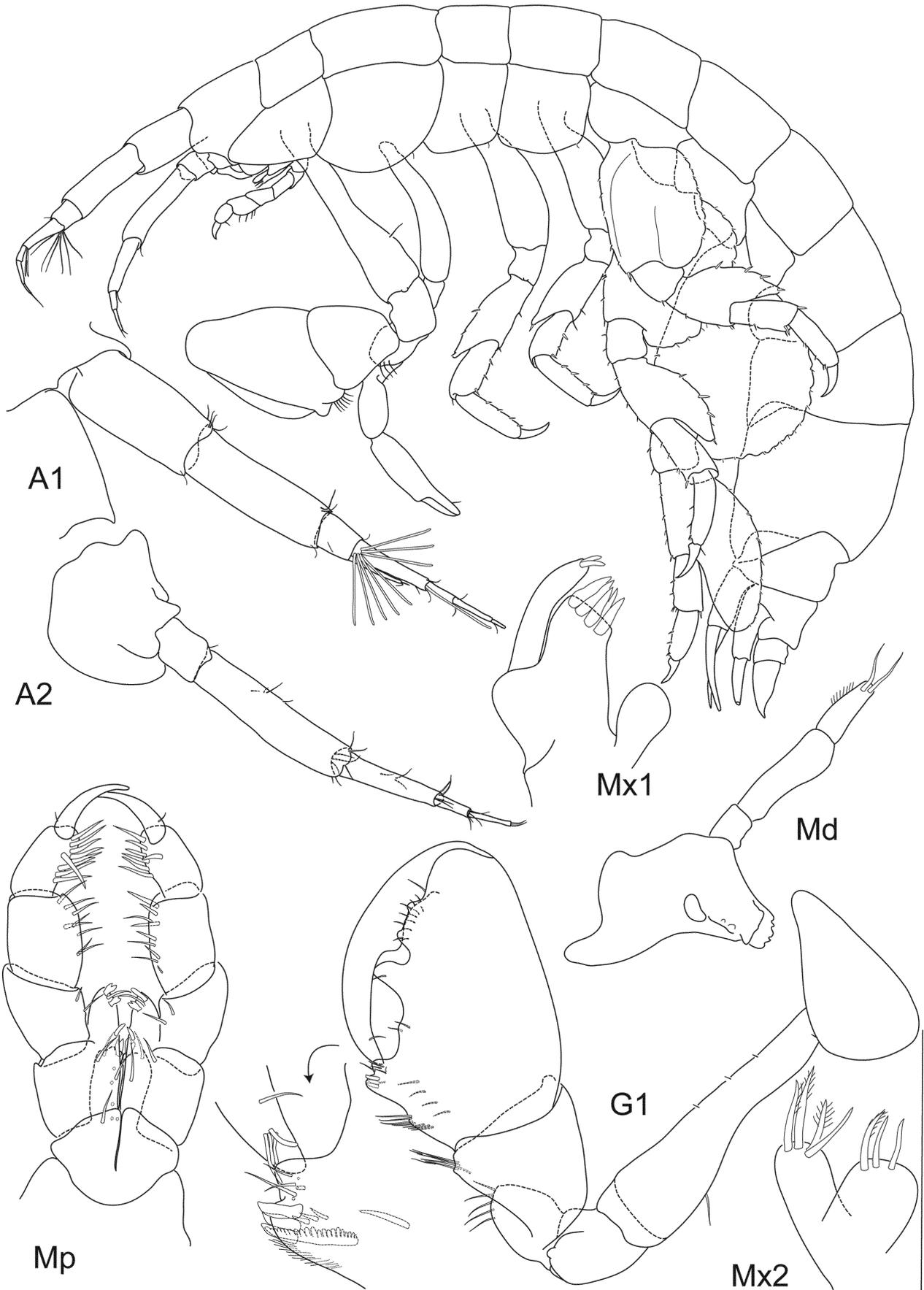
The descriptions were generated from a DELTA database (Dallwitz 2005) to the sebid genera and species of the world. Material was hand-collected on scuba and is lodged in the Australian Museum, Sydney (AM). A set of colour plates, a list of standard abbreviations and detailed station data is available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

### *Seba* Bate, 1862

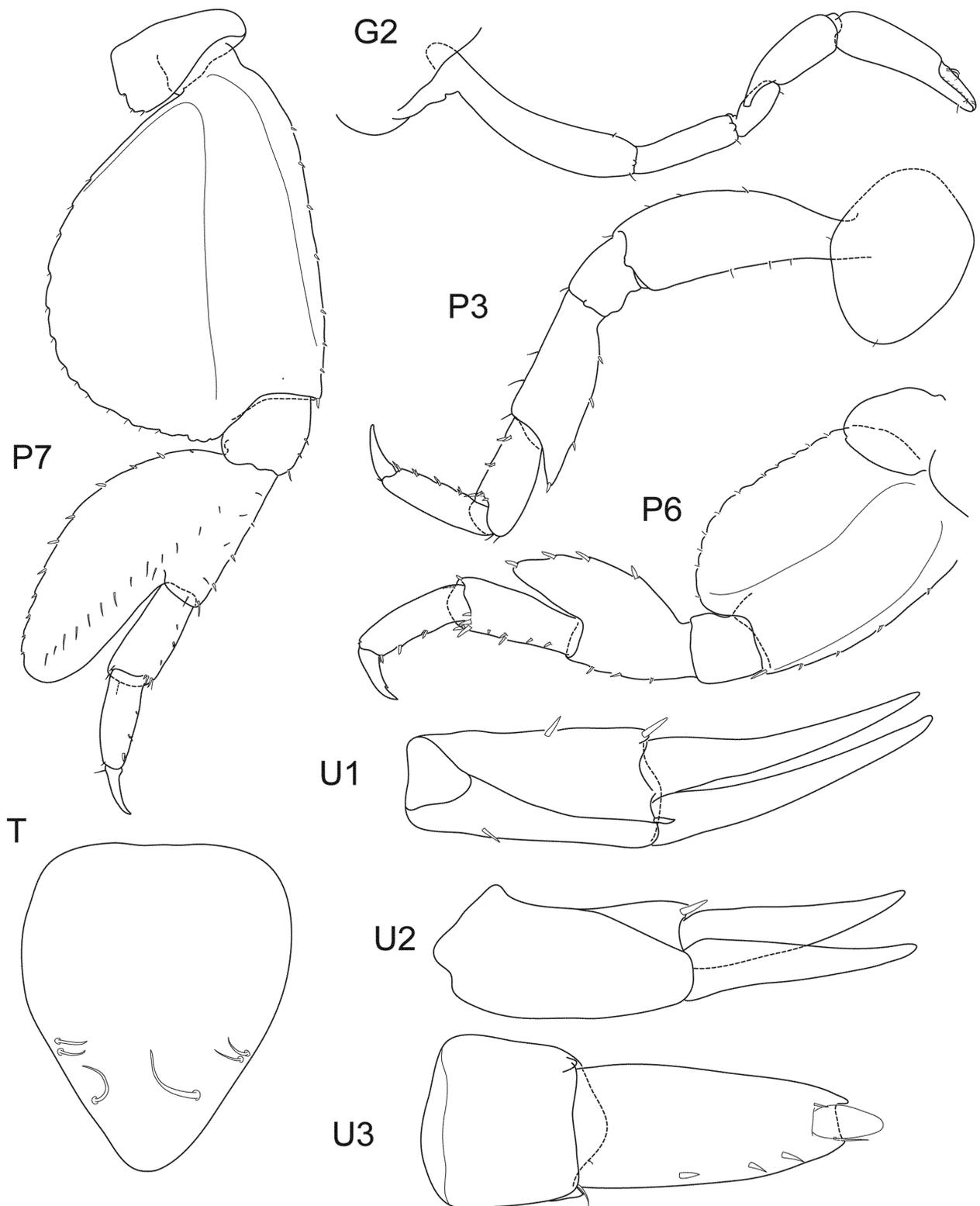
#### *Seba gruneri* sp. nov.

(Figs 1–3)

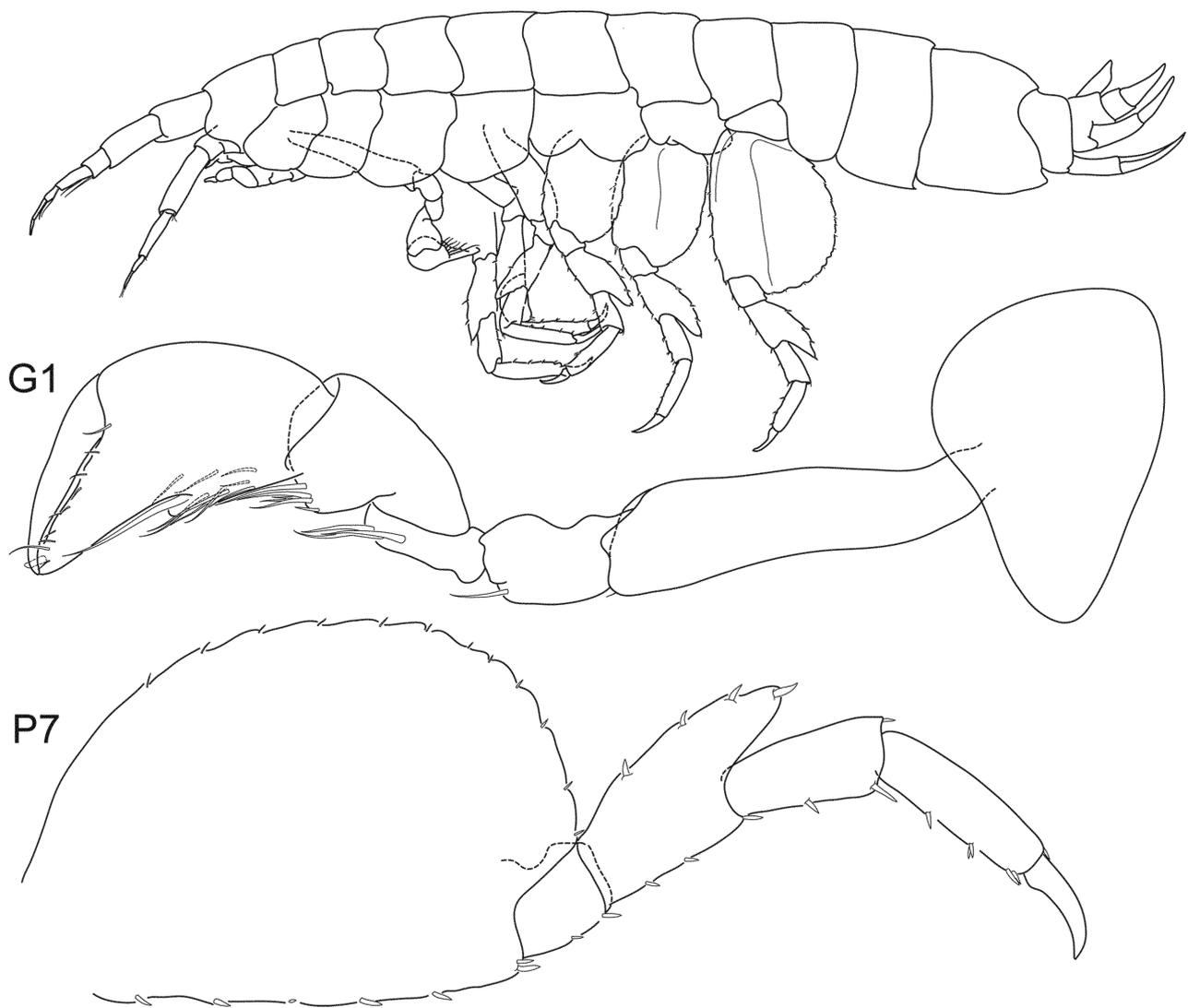
**Type material.** Holotype, male, 3.9 mm, AM P71239, Horseshoe Reef, Lizard Island (14°41.21'S 145°26.49'E), sponge, large coral bommies surrounded by sand and rubble, by hand on scuba, 9 m, C. Serejo,



**FIGURE 1.** *Seba gruneri* sp. nov., holotype, male, 3.9 mm, AM P71239, Horseshoe Reef, Lizard Island, Great Barrier Reef.



**FIGURE 2.** *Seba gruneri* sp. nov., holotype, male, 3.9 mm, AM P71239, Horseshoe Reef, Lizard Island, Great Barrier Reef.



**FIGURE 3.** *Seba gruneri* sp. nov., paratype, female, 2.5 mm, AM P71237, Horseshoe Reef, Lizard Island, Great Barrier Reef.

2 March 2005 (QLD 1760). Paratypes: 7 males from type locality; and 1 female, 2.5 mm, AM P71237, from type locality.

**Other material examined.** 32 females, 5 juvenile males AM P71237 (QLD 1760); 1 male JDT/LIZ-19; 3 juveniles, 1 male JDT/LIZ-7.

**Type locality.** Horseshoe Reef, Lizard Island, Queensland, Australia (14°41.21'S 145°26.49'E).

**Etymology.** Named for the late Professor Dr. Hans Eckhard Gruner, the predecessor of COC at the Natural History Museum in Berlin, to acknowledge his valuable contributions to crustacean research.

**Description.** Based on male holotype, 3.9 mm, AM P71239.

**Head.** Head eyes apparently absent. *Antenna 1* peduncular article 1 subequal in length to article 2; article 2 length 2.9 x breadth. *Maxilla 1* palp 1-articulate. *Maxilla 2* with two plates.

**Pereon.** *Gnathopod 1* subchelate; larger than gnathopod 2; coxa with posteroventral corner rounded; propodus thumb absent, palm obtuse, sculptured; dactylus curved. *Gnathopod 2* chelate; ischium long, 3.3 x breadth; carpus not lobate, carpus more than 0.6 x length of propodus. *Pereopod 3* coxa with posteroventral corner subquadrate to rounded. *Pereopod 4* coxa with posteroventral lobe absent. *Pereopod 5* basis evenly expanded, margins subparallel; merus expanded, extending 75% along carpus. *Pereopod 6* basis evenly expanded, margins subparallel. *Pereopod 7* basis broadly expanded, posterior margin evenly convex; merus broadly expanded, extending past distal margin of carpus.

**Pleon.** *Epimeron* 2 posteroventral corner acutely produced. *Epimeron* 3 posteroventral corner subquadrate. *Urosomites* 2–3 coalesced. *Uropod* 1 peduncle subequal in length to uropod 2 peduncle; outer ramus subequal in length to inner ramus. *Uropod* 2 outer ramus subequal in length to inner ramus. *Uropod* 3 peduncle about half length of ramus. *Telson* longer than broad, lateral margins slightly convex.

**Female** (sexually dimorphic characters). Based on paratype, female, 2.5 mm, AM P71237. *Antenna* 1 peduncular article 2 length 2.5 x breadth. *Gnathopod* 1 chelate; smooth, straight. *Pereopod* 5 extending halfway along carpus. *Pereopod* 7 merus expanded, extending about halfway along carpus.

**Habitat.** Sponges on large coral bommies surrounded by sand and rubble.

**Remarks.** Similar to *Seba gruneri* sp. nov., there are a few sebid species that have a characteristically widened merus lobe that surpasses the distal margin of the carpus on pereopod 7 in the male sex. However, details of the morphology or combination of characters are different. *Seba aloe* Karaman, 1971, *Seba antarctica* Walker, 1907 and *Seba gloriosae* Ledoyer, 1986 have the same merus shape, but on pereopods 5–7 (vs on pereopod 7 only) and a finger like palm process creating a chelate gnathopod 1 (vs a subchelate, sculptured palm). Also similar is the material that Griffiths (1974, 1976) described from Southern Africa as *Seba saundersi*. This species has a ventrally strongly elongate merus lobe on pereopod 7 (weaker on pereopod 6) and a subchelate, though differently sculptured subchelate palm region. A similar merus lobe arrangement appears in *Seba subantarctica* Schellenberg, 1931, but this species has a clearly chelate gnathopod 1. *Seba chiltoni* Moore, 1987 and *Seba typica* (Chilton, 1884) in the descriptions by Ledoyer, 1978 and 1986 are very similar to the new species in the shape of the gnathopod 1 palm and the protrusion on the inner curvature of the dactylus, but compared to *Seba gruneri* sp. nov. the merus lobe on pereopod 7 is not longer than the distal carpus margin. *Seba robusta* Ortiz & Lemaitre, 1997 has also a very similar palm morphology of gnathopod 1, however, the meral lobes are short and rather slender.

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

### *Seba mariolgae* sp. nov.

(Figs 4, 5)

**Type material.** Holotype, female, 1.5 mm, AM P70603, 300 m off south-east corner of Palfrey Island, Lizard Island (14°41.71'S 145°27.06'E), coral rubble, rubble patches between coral bommies, airlift, 3.7 m, R.T. Springthorpe, J.K. Lowry, O. Coleman, 23 February 2005 (QLD 1621).

**Type locality.** 300 m off south-east corner of Palfrey Island, Lizard Island (14°41.71'S 145°27.06'E).

**Etymology.** Named after my parents (MNY), Mario and Olga Yerman in recognition of their constant support.

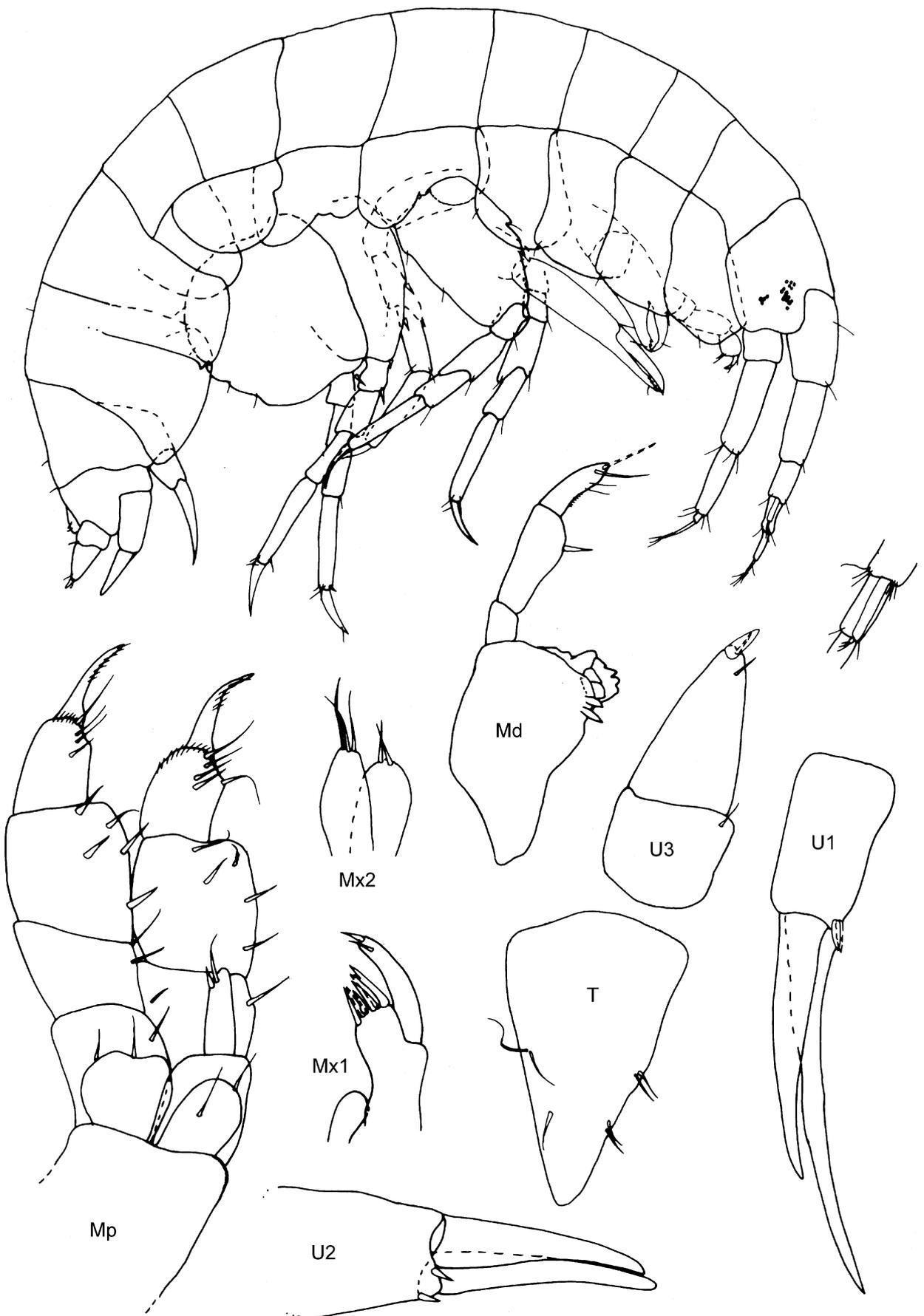
**Description.** Based on the female holotype, 1.5 mm, AM P70603.

**Head.** *Head* eyes present. *Antenna* 1 peduncular article 1 subequal in length to article 2; article 2 length 3.0 x breadth. *Maxilla* 1 palp 1-articulate. *Maxilla* 2 with two plates.

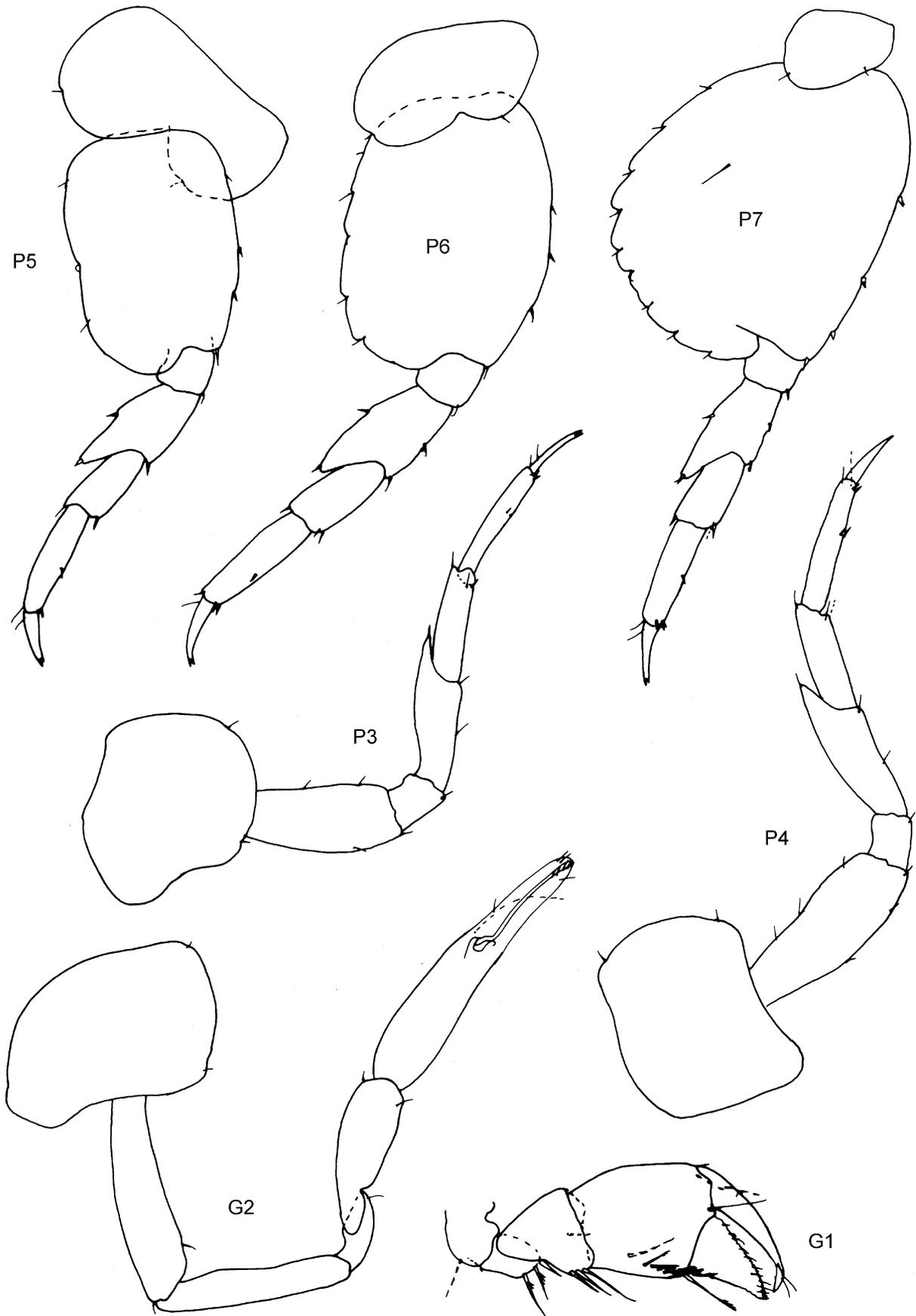
**Pereon.** *Gnathopod* 1 subchelate; larger than gnathopod 2; coxa with posteroventral corner rounded; propodus thumb absent, palm obtuse, smooth, straight; dactylus curved. *Gnathopod* 2 chelate; ischium long, 5 x breadth; carpus not lobate, carpus about 0.5 x length of propodus. *Pereopod* 3 coxa with posteroventral corner subquadrate to rounded. *Pereopod* 4 coxa with posteroventral lobe small or absent. *Pereopod* 5 basis evenly expanded, margins subparallel; merus expanded, extending half way along carpus. *Pereopod* 6 basis evenly expanded, margins subparallel. *Pereopod* 7 basis broadly expanded, posterior margin evenly convex; merus expanded, extending about half way along carpus.

**Pleon.** *Epimeron* 2 posteroventral corner strongly produced. *Epimeron* 3 posteroventral corner subquadrate. *Urosomites* 2–3 coalesced. *Uropod* 1 peduncle shorter than uropod 2 peduncle; outer ramus shorter than inner ramus. *Uropod* 2 outer ramus subequal in length to inner ramus. *Uropod* 3 peduncle about a third of the length of ramus. *Telson* longer than broad, lateral margins slightly convex.

**Habitat.** Patches of coral rubble between coral bommies.



**FIGURE 4.** *Seba mariolgae* sp. nov., holotype, female, 1.5 mm, AM P70603, Palfrey Island, Lizard Island, Great Barrier Reef.



**FIGURE 5.** *Seba mariolgae* sp. nov., holotype, female, 1.5 mm, AM P70603, Palfrey Island, Lizard Island, Great Barrier Reef.

**Remarks.** *Seba mariolgae* is readily distinguished from other similar species, such as *S. gruneri* sp. nov., *S. tropica* McKinney, 1980, *S. saundersii* Stebbing, 1875, *S. dubia* Schellenberg, 1926, *S. chiltoni* Moore, 1987 and *S. antarctica* Walker, 1907 by the presence of eyes and its extremely long gnathopod 2.

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

***Seba zeumindi* sp. nov.**

(Figs 6, 7)

**Type material.** Holotype, female, 0.9 mm, AM P77558, Cobia Hole, Lizard Island (14°39.154'S 145°26.851'E), coarse sediment with shell and coral, among patches of reef, core, 17 m, M. Yerman, 25 February 2005 (QLD 1663).

**Type locality.** Cobia Hole, Lizard Island, Queensland, Australia.

**Etymology.** Named after my (MNY) two loyal canine companions, Zeus and Mindy.

**Description.** Based on the female holotype 0.9 mm, AM P77558.

**Head.** Head eyes present. *Antenna 1* peduncular article 1 subequal in length to article 2; article 2 length, 2 x breadth.

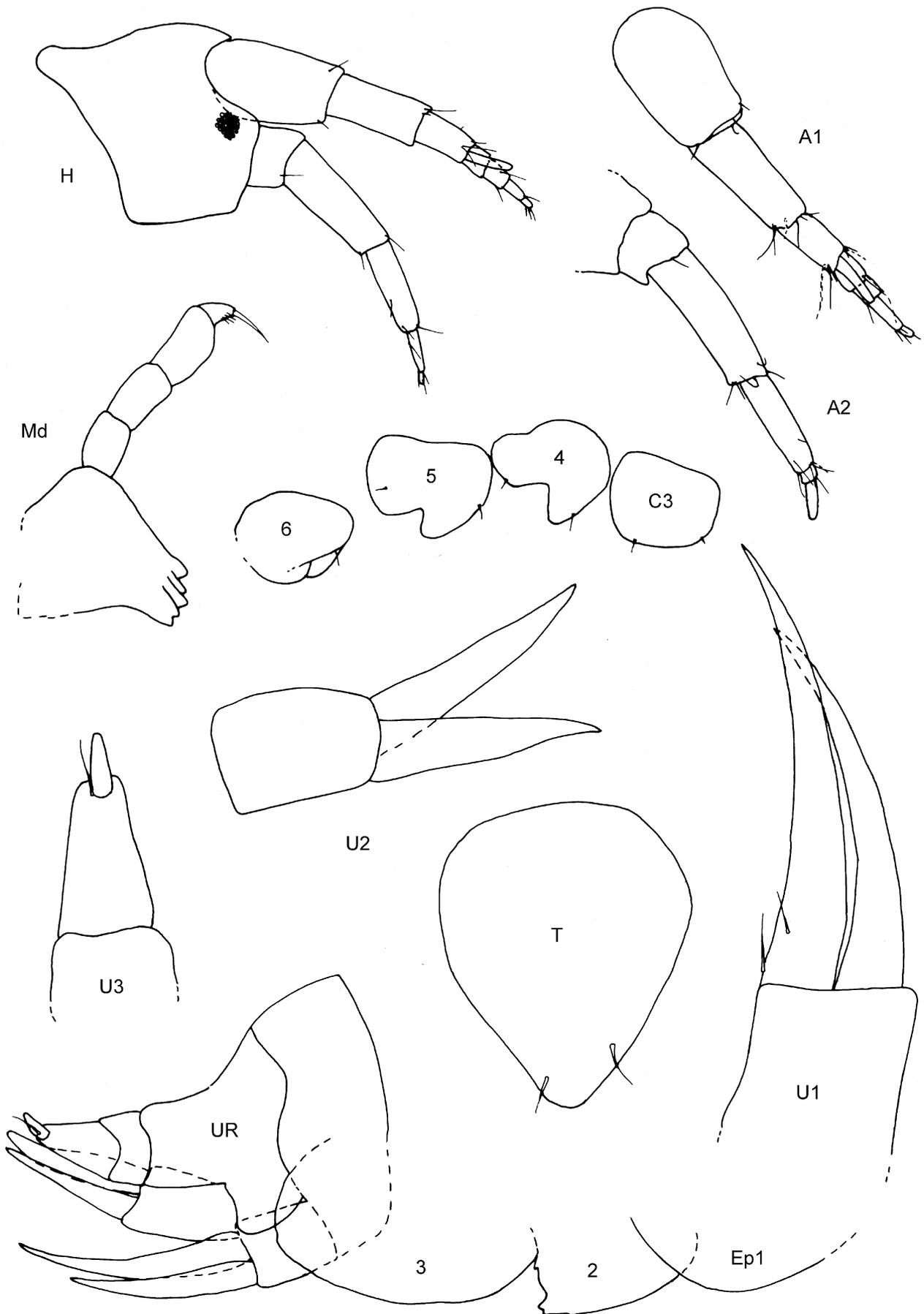
**Pereon.** *Gnathopod 1* subchelate; smaller than gnathopod 2; coxa with posteroventral corner rounded; propodus palm obtuse, smooth and straight; dactylus is curved. *Gnathopod 2* chelate; ischium short, 3.25 x breadth; carpus about 0.5 x length of propodus. *Pereopod 3* coxa with posteroventral corner subquadrate, or with posteroventral corner rounded. *Pereopod 4* coxa with posteroventral lobe small or absent. *Pereopod 5* basis evenly expanded, margins subparallel; merus expanded, slightly extending along carpus. *Pereopod 6* basis evenly expanded, margins subparallel. *Pereopod 7* basis broadly expanded, posterior evenly convex; merus expanded, slightly extending along carpus.

**Pleon.** *Epimeron 2* posteroventral corner weakly produced. *Epimeron 3* posteroventral corner rounded. *Urosomites.* *Uropod 1* peduncle shorter than uropod 2 peduncle; outer ramus shorter than inner ramus. *Uropod 2* outer ramus slightly shorter than inner ramus. *Uropod 3* peduncle about half length of ramus. *Telson* longer than broad, lateral margins slightly convex.

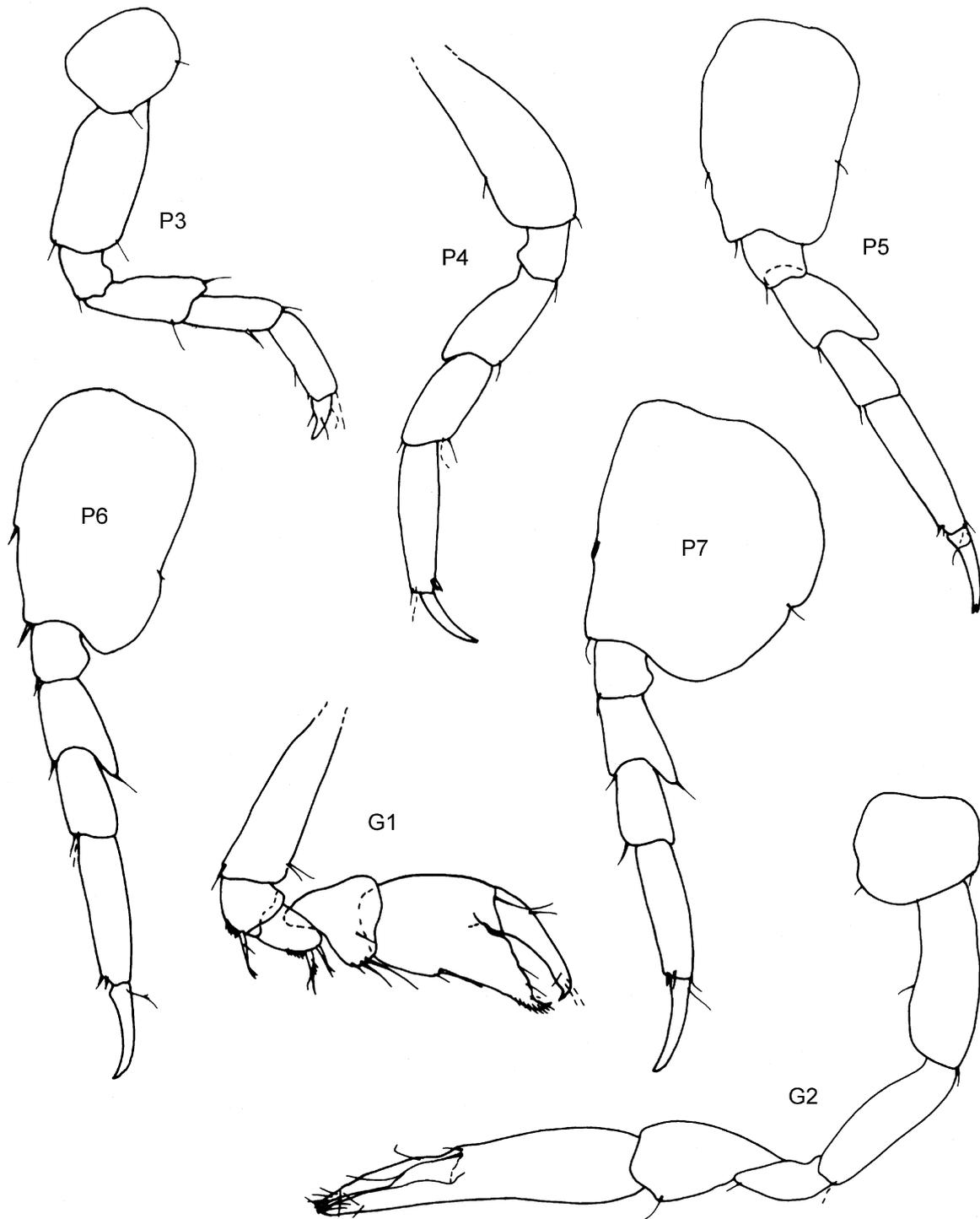
**Habitat.** Coarse sediment with shell and coral, among patches of reef.

**Remarks.** *Seba zeumindi* is similar to *S. mariolgae* in that it also possesses eyes. It can however, can be distinguished from other similar species, such as *S. tropica* McKinney, 1980, *S. saundersii* Stebbing, 1875, *S. dubia* Schellenberg, 1926 and *S. antarctica* Walker, 1907, by the slight extension of the merus along the carpus on pereopods 5 and 7. The posteroventral corner on epimeron 3 is rounded, similar to *S. stoningtonensis* Thurston, 1974 and *S. subantarctica* Schellenberg, 1931 and the rami on uropod 2 are subequal in length.

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



**FIGURE 6.** *Seba zeumindi* sp. nov., holotype, female, 0.9 mm, AM P77558, Cobia Hole, Lizard Island, Great Barrier Reef.



**FIGURE 7.** *Seba zeumindi* sp. nov., holotype, female, 0.9 mm, AM P77558, Cobia Hole, Lizard Island, Great Barrier Reef.

**Acknowledgements**

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## References

- Bate, C.S. (1862) *Catalogue of specimens of amphipodous Crustacea in the collection of the British Museum*. Taylor and Francis, London, 399 pp.
- Coleman, C.O. (2003) "Digital inking": How to make perfect line drawings on computers. *Organism, Diversity and Evolution, Electronic Supplement*, 14, 1–14, <http://senckenberg.de/odes/03-14.htm>
- Coleman, C.O. (2006) Substituting time-consuming pencil drawings in arthropod taxonomy using stacks of digital photographs. *Zootaxa*, 1360, 61–68.
- Chilton, C. (1884) Additions to the sessile-eyed Crustacea of New Zealand. *Transactions and Proceedings of the New Zealand Institute*, 16, 249–265.
- Dallwitz, M.J. (2005) Overview of the DELTA System. <http://delta-intkey.com/www/overview.htm>
- Griffiths, C.L. (1974) The Amphipoda of Southern Africa. Part 4. The Gammaridea and Caprellidea of the Cape Province east of Cape Agulhas. *Annals of the South African Museum*, 65, 251–336.
- Griffiths, C.L. (1976) Guide to the benthic marine amphipods of Southern Africa. *Trustees of the South African Museum. Cape Town*, 1–106.
- Karaman, G.S. (1971) Zum Problem der *Seba*-Arten: *Seba aloe* n. sp. und *Seba armata* (Chevreux) (Fam. Sebidae). - 35. Beitrag zur Kenntnis der Amphipoden. *Memoria del Museo Civico di Storia Naturale Verona*, 19, 73–90.
- Ledoyer, M. (1978) Amphipodes gammariens (Crustacea) des biotopes cavitaires organogenes recifaux de l'île Maurice (Ocean Indien). *The Mauritius Institute Bulletin*, 8, 197–332.
- Ledoyer, M. (1986) Crustacés amphipodes gammariens. Familles des Haustoriidae à Vitjazianidae. *Faune de Madagascar*, 59, 599–1112.
- Lowry, J.K. & Myers, A.A. (2009) Foreword. In: Lowry, J.K. & Myers, A.A. (eds), Benthic Amphipoda of the Great Barrier Reef, Australia. *Zootaxa*, 2260, 17–108.
- McKinney, L.D. (1980). "Four new and unusual amphipods from the Gulf of Mexico and Caribbean Sea." *Proceedings of the Biological Society of Washington*, 93, 83–103.
- Moore, P.G. (1987) Taxonomic studies on Tasmanian phytal amphipods (Crustacea): the families Anamixidae, Leucothoidae and Sebidae. *Journal of Natural History*, 21, 239–262.
- Ortiz, M. & Lemaitre, R. (1997) Seven new amphipods (Crustacea: Peracarida: Gammaridea) from the Caribbean Coast of South America. *Boletín de Investigaciones Marinas y Costeras*, 26, 71–104.
- Schellenberg, A. (1926) Die Gammariden der Deutschen Südpolar-Expedition 1901-1903. *Deutsche Südpolar-Expedition*, 18(Zoology 10), 235–414.
- Schellenberg, A. (1931) Gammariden und Caprelliden des Magellangebietes, Südgeorgien und der Westantarktis. *Further zoological Results of the Swedish Antarctic Expedition 1901-1903*, 2, 1–290.
- Stebbing, T.R.R. (1875) On some new exotic sessile-eyed crustaceans. *Annals and Magazine of Natural History*, Series 4, 15, 184–188, pl. 15A.
- Thurston, M.H. (1974). Crustacea amphipoda from Graham Land and the Scotia Arc, collected by operation Tabarin and the Falkland Islands Dependencies Survey, 1944-59. *British Antarctic Scientific Reports*, No. 85.
- Walker, A.O. (1907) Crustacea. III. Amphipoda. *National Antarctic Expedition 1901-1904 "Discovery"*, 1–39. Walker, A.O. (1908) Amphipoda from the Auckland Islands. *Annals and Magazine of Natural History*, Series 8, 2(7), 33–39.