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Amphilochidae*

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

Abstract

One genus and two new species of amphilochid amphipods are reported from the Great Barrier Reef, mainly from Lizard Island. Two new species, *Amphilochus justi* **sp. nov.** and *A. lacertus* **sp. nov.**, are described.

Key words: Crustacea, Amphipoda, Amphilochidae, Great Barrier Reef, Australia, taxonomy, new species, *Amphilochus justi*, *Amphilochus lacertus*

Introduction

The Amphilochidae is defined by a laterally compressed body, subchelate gnathopods, with at least coxa 1 vestigial, coxa 4 with well developed posteroventral lobe, urosomites not coalesced, no apical robust setae on the rami of uropods 1 and 2, inner ramus of uropod 2 longer than outer, biramous third uropods and an entire, laminar, telson. According to McKinney (1978) members of the Amphilochidae are very common in the marine bottom fauna, especially from the coral reefs, but are often overlooked due to their small size (2–4 mm). They are usually considered to be nestlers with wide ecological niches. They are also known to be associates of ascidians, sponges and bivalves.

Of the 14 known amphilochid genera: *Afrogitanopsis*, *Amphilochella*, *Amphilochoides*, *Amphilochopsis*, *Amphilochus*, *Apolochus*; *Cyclotelson*, *Gitana*, *Gitanogeiton*, *Gitanopsilis*, *Gitanopsis*, *Paramphilochoides*, *Paramphilochus* and *Rostrogitanopsis* (Barnard & Karaman 1991; Hoover & Bousfield 2001; Rauschert 1994), only two (*Amphilochus* and *Cyclotelson*) are known from the Great Barrier Reef. *Amphilochus* occurs worldwide, generally in shallow water and currently contains 23 species including the latest addition by Ren (2006). *Cyclotelson* is a monotypic genus, apparently endemic to the Torres Strait, which is an apparent commensal of feather stars.

Until now, five species in four genera (*Amphilochus marionis* Stebbing, 1888, *A. ruperti* Moore, 1988, *Cyclotelson purpureum* Potts, 1915, *Gitanogeiton sarsi* Stebbing, 1910, *Gitanopsis difficilis* J.L. Barnard, 1961) have been reported from waters around Australia (Lowry & Stoddart 2003). None was previously known from the Great Barrier Reef, although *C. purpureum* has been reported from Torres Strait.

Recently the author had an opportunity to examine specimens of several undescribed species from the family Amphilochidae collected on the Great Barrier Reef (GBR). Identification and dissection of individuals were however quite intricate, due to the nature of the specimens supplied. Most of the specimens were incomplete, extremely fragile and brittle. In spite of this, two undescribed species of *Amphilochus* were discovered. One species, *Amphilochus lacertus* **sp. nov.**, was relatively common. The other species,

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Amphilochus justi **sp. nov.** was represented by only one female specimen, but because of its distinctive morphology the species is described here.

Materials and methods

Material was hand-collected on scuba and is lodged in the Australian Museum, Sydney (AM). A set of colour plates, 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.

Amphilochidae Boeck, 1871

Amphilochus Bate, 1862

Amphilochus justi sp. nov.

(Figs 1, 2)

Type material. Holotype, female, 2.6 mm, AM P70575 (in slides), 200 m off Research Beach, Lizard Island (14°40.83'S 145°26.75'E), fine biogenic sand, patches of reef and sand, 2.5 m, J. Just, 23 February 2005 (QLD 1625).

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

Etymology. The species is dedicated to Dr Jean Just from the Museum of Tropical Queensland, who collected these animals.

Description. Based on holotype, female, 2.6 mm, AM P70575.

Head. *Head* lateral cephalic lobes apically round; eyes irregularly round with black centre bordered with numerous opaque ommatidia. *Antenna 1* flagellum with about 5 articles, distoventral corner of last three articles with several elongate and flattened setae; accessory flagellum lacking. *Antenna 2* longer than Antenna 1; flagellum with 5 articles. *Upper lip* bilobed, asymmetric, densely pubescent apically. *Lower Lip* each lobe of outer plate subtriangular, shoulders densely pubescent, produced inward with bifid tooth. *Mandible* molar conical; palp with 3 articles of length ratios 6:13:16, article 3 apically attenuated. *Maxilla 1* outer plate with several large teeth; palp biarticulate, extending far beyond outer plate, apical margin with several large teeth. *Maxilla 2* inner plate with medial row of submarginal setae; outer plate longer than inner, with several terminal setae. *Maxilliped* inner plate missing; palp article 3 longer than wide, dactylus without unguis.

Pereon. *Gnathopod 1* coxa anterodistally rounded; basis slender, anterior and posterior margin without setae, posterodistal margin with seta; merus with 2 distal robust setae; carpus with robust setae on posterior lobe; propodus anterior margin with few long setae, anterodistally with 2 short setae, palm transverse lined with slender setae and defined by three robust setae; dactylus inner margin serrate. *Gnathopod 2* basis anterior without seta, with flange, posterodistal margin with robust seta; carpus with elongate posterior lobe extending edge of palm, inner margin of lobe with two robust setae, distal part with three robust setae; propodus distally expanded, palm transverse, serrate, lined with slender setae, posterodistally with 2 short robust setae; dactylus inner margin serrate. *Pereopod 3* coxa longer than wide; basis without setae; dactylus attenuate. *Pereopod 4* coxa large, quadrate; dactylus attenuate. *Pereopod 5* basis expanded, anterior margin with 4 short robust setae, posterior margin with short fine setae; dactylus attenuate. *Pereopod 6* basis anterior margin with 4 robust setae, posterior margin expanded with fine setae; dactylus attenuate. *Pereopod 7* basis anterior margin with 5 robust setae, posterior margin subquadrate with fine setae along margin; dactylus attenuate.

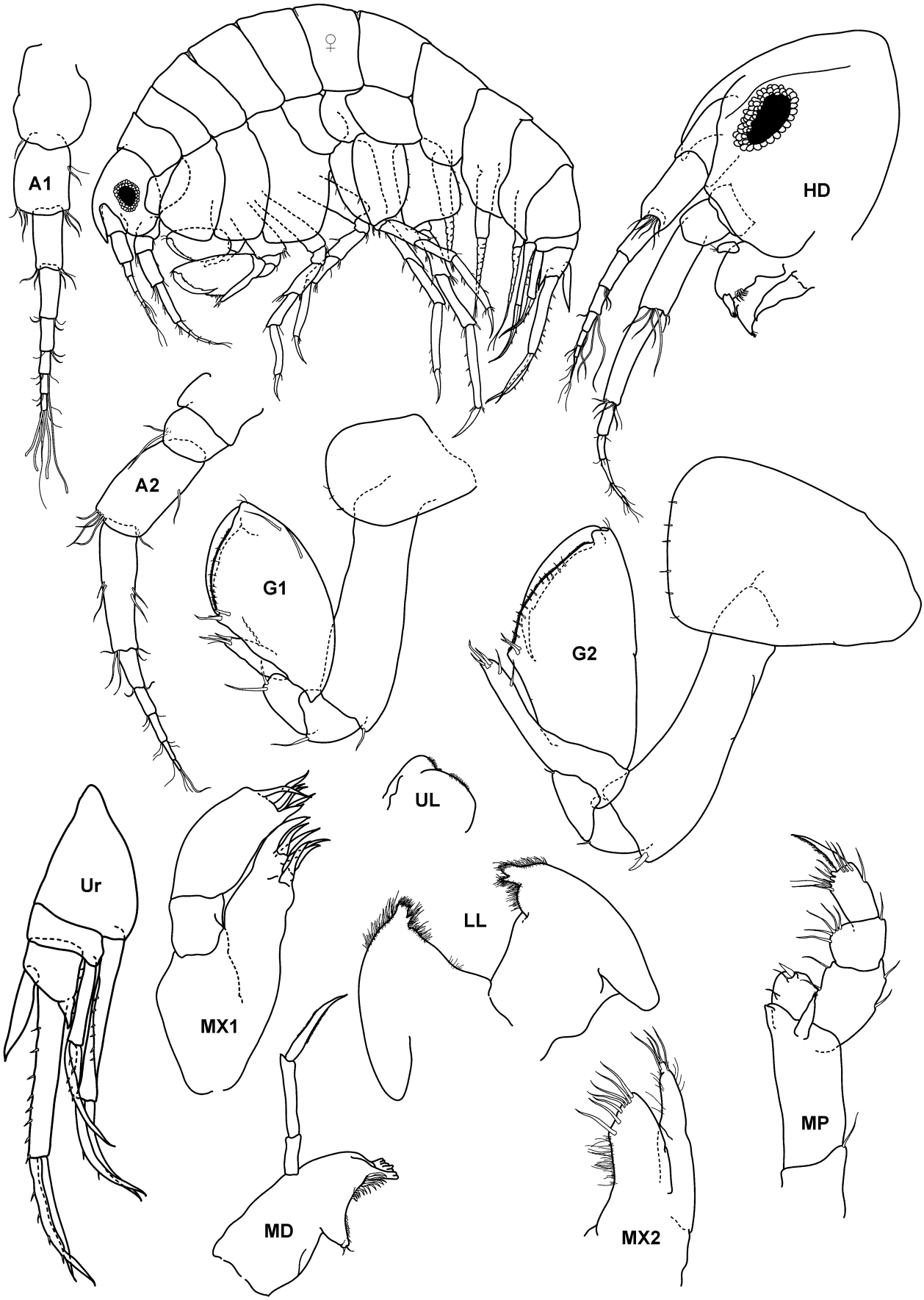

FIGURE 1. *Amphilochus justi* **sp. nov.**, holotype female, 2.6 mm, AM P70575, off Research Beach, Lizard Island, Great Barrier Reef.

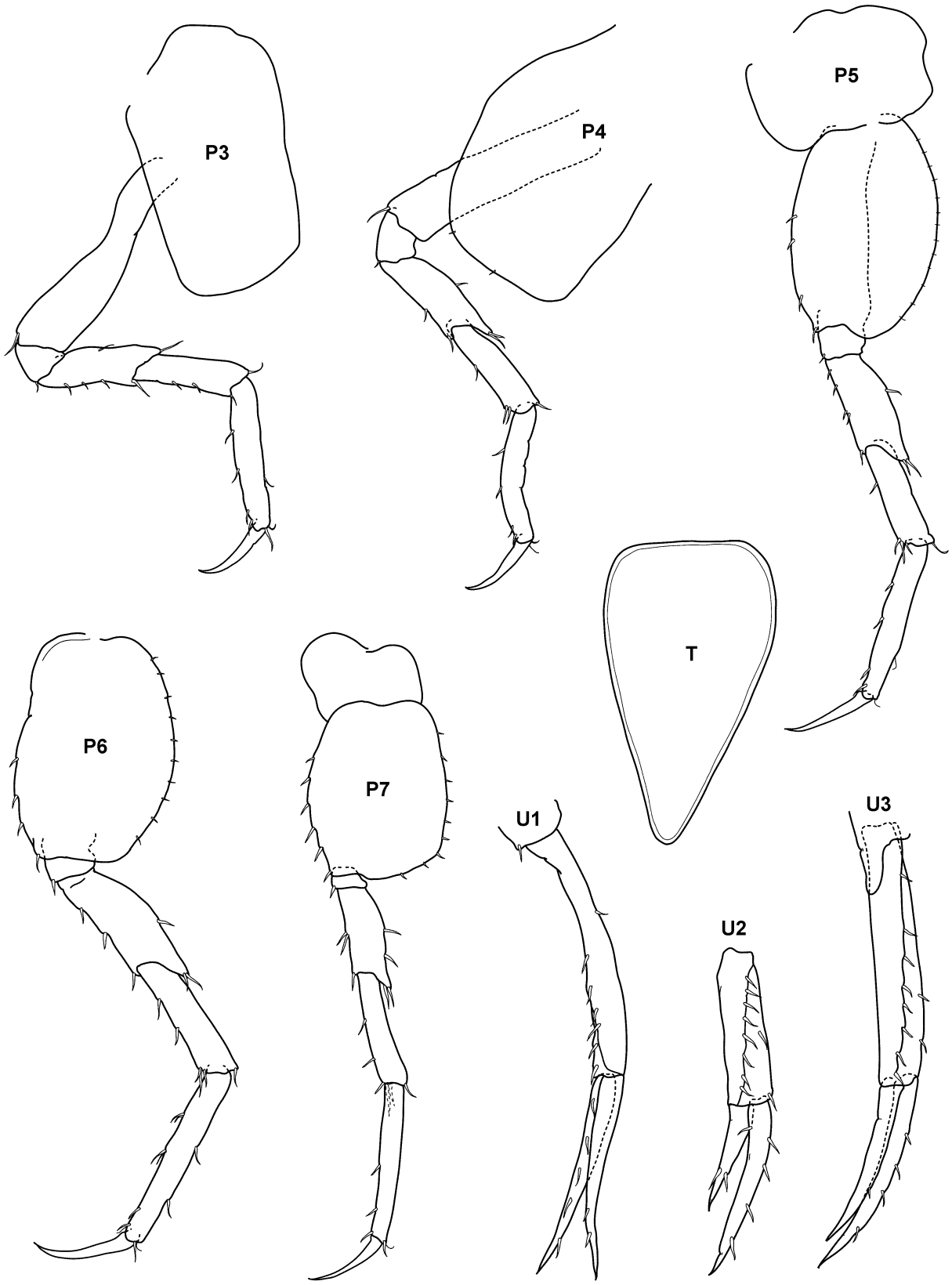

FIGURE 2. *Amphilochus justi* **sp. nov.**, holotype female, 2.6 mm, AM P70575, off Research Beach, Lizard Island, Great Barrier Reef.

Pleon. *Uropod 1* rami subequal in length with several short robust setae along margin; peduncle elongate much longer than rami, inner margin with 5 short robust setae. *Uropod 2* biramous, inner ramus longer than outer ramus with several short robust setae along margin; peduncle subequal in length to inner ramus, inner margin lined with short robust setae. *Uropod 3* biramous, rami subequal, inner ramus slightly longer than outer; peduncle longer than rami, lined with short robust setae. *Telson* entire, longer than wide, rounded distally.

Male (sexually dimorphic characters). Unknown.

Habitat. Sandy biogenic substrate.

Remarks. In general appearance this species shows close resemblance to species of *Amphilochus* as is particularly evident in the shape of the gnathopods, coxae, uropods and telson. However, the heavily setose peduncular article of uropod 2, subquadrate structure of pereopod 7 basis, and comparatively longer carpal lobe of gnathopod 2 (exceeding the end of propodus) are quite unlike those of any other known species of Australian *Amphilochus*. *Amphilochus justi* **sp. nov.** is quite similar to *A. ruperti* Moore, 1988, in not having a dactylar unguis on the maxillipedal palp. On the other hand it differs in the absence of accessory flagellum of antenna 1, longer carpal lobe of gnathopod 2 (extending beyond edge of palm) and the absence of sub-marginal minute robust setae along the anterior margins of the bases of pereopods 5–7. The other known Australian *Amphilochus*, *A. marionis* Stebbing, 1888, could be readily distinguished from *A. justi* **sp. nov.** by having propodus of gnathopod 2 as long as wide and a relatively shorter telson. Table 1 summarizes the characters and states reviewed from literature and the present study.

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

***Amphilochus lacertus* sp. nov.**
(Figs 3, 4)

Type material. Holotype, female, 2.7 mm, AM P76251 (in slides). Paratypes: 37 specimens, AM P73185, 100 m off Freshwater Beach, Lizard Island (~14°41'S 145°27'E), sediment sample from sand bottom, 1.5 m, C. J. Short, 10 October 1978 (QLD 35).

Type locality. Freshwater Beach, Lizard Island, Queensland, Australia (~14°41'S 145°27'E).

Etymology. Named 'lacertus' in Latin for lizard, after the type locality, Lizard Island.

Description. Based on holotype female, 2.7 mm, AM P76251.

Head. *Head* lateral cephalic lobes apically round, rostrum decurved, slightly beyond peduncular article 1 of antenna 1; eyes large, irregularly round with black core. *Antenna 1* slightly shorter than antenna 2, peduncular articles 1–3 with few short setae distally; flagellum with about 7 articles; accessory flagellum vestigial. *Antenna 2* flagellum with 6 articles. *Labium* bilobed, densely pubescent apically. *Lower lip* shoulders densely, produced inward, with 2 small teeth on each lobe, mandibular process small. *Maxilla 1* inner plate missing; outer plate with 7 large teeth; palp biarticulate, extending beyond outer plate, distal segment apical margin with several fine and robust setae. *Maxilla 2* inner plate broader than outer plate with several stiff setae apically. *Mandible*, incisor serrate; palp 3-articulate, article 2 shorter than 1, article 3 attenuate. *Maxilliped* inner plate margin rounded apically, distally serrate with several fine setae; outer plate apical margin with fine and robust pectinate setae; palp stout, dactylus with unguis.

Pereon. *Gnathopod 1* coxa subquadrate; basis lined with several long setae along anterior margin, posterodistal margin with one seta; carpus subtriangular, slightly produced posterodistally with several pectinate setae; propodus distally expanded, anterior margin without setae; palm transverse, serrate, lined with slender setae, corner defined by 2 robust setae; dactylus inner margin serrate, distally attenuate. *Gnathopod 2* coxa longer than wide; basis anterior margin without seta, anterodistal with flange, posterior margin expanded distally without setae along margin, posterodistal with one short robust seta; carpus with elongate posterior lobe extending beyond edge of palm, outer margin of lobe with 3 basal robust setae, distal part with 3 robust setae; propodus broad, gradually expanding, anterior margin without setae on medial margin, palm transverse

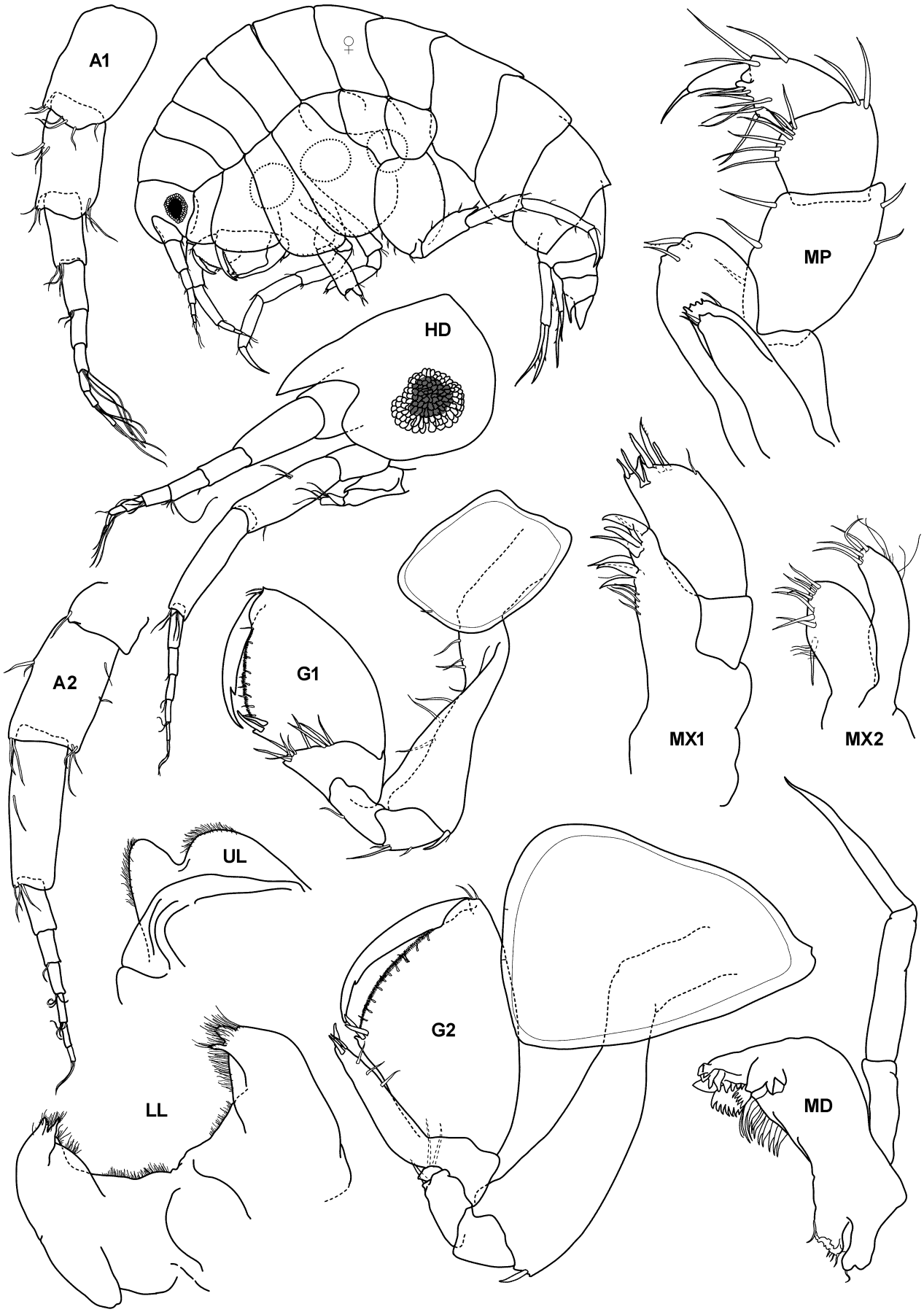

FIGURE 3. *Amphilochus lacertus* **sp. nov.**, holotype female, 2.7 mm, AM P76251, Freshwater beach, Lizard Island, Great Barrier Reef.

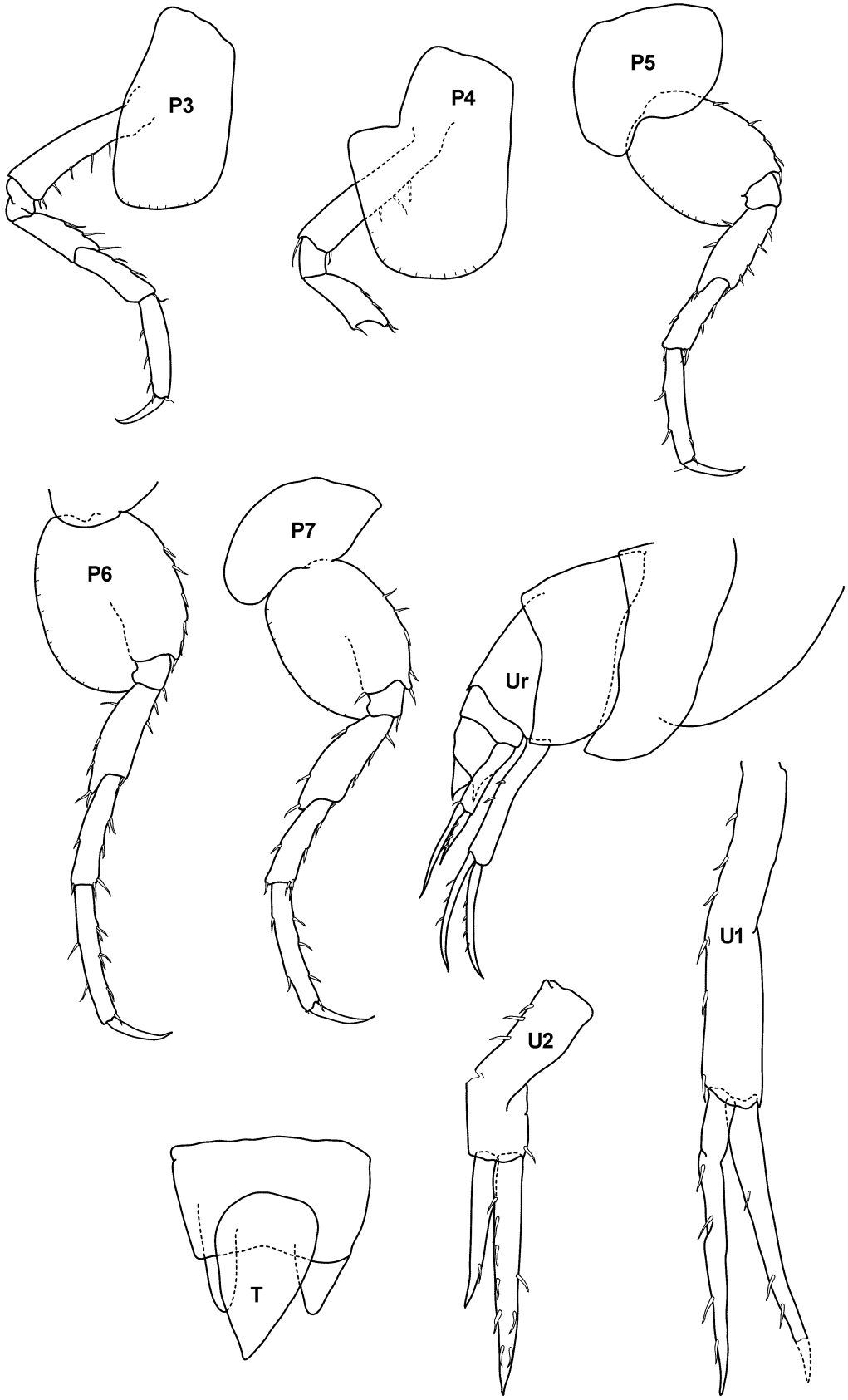

FIGURE 4. *Amphilochus lacertus* **sp. nov.**, holotype female, 2.7 mm, AM P76251, Freshwater beach, Lizard Island, Great Barrier Reef.

TABLE 1. Comparison between the main characteristics of Australian *Amphilochus*.

Characters / Species	Peduncular article of U2	Anterior margin of G1 basis	Eyes size	Basis of P7	Proximal article of the maxillipedal palp	Carpal lobe of G2	Dactylar unguis on the maxillipedal palp	Accessory flagellum of A1	Anterior margins of the bases of P5–P7	Width to length ratio of propodus G2	Telson
Amphilochus justi sp. nov.	Heavily setose – along lateral margin	Lacking setae	Relatively big	subquadrate	With setation	Distinctly exceeding the end of propodus	absent	absent	without sub-marginal minute robust setae	Longer than wide	>1.5x as long as wide
Amphilochus lacertus sp. nov.	Moderately setose	lined with medium length setae	Relatively big	subovate	With setation	indistinctly exceeding the end of propodus	present	vestigial	without sub-marginal minute robust setae	Longer than wide	>1.5x as long as wide
A. ruperti Moore, 1988	Lightly setose – distally	lined with short length setae	Relatively big	subovate	With setation	Not exceeding the end of propodus	absent	uniarticulate	with sub-marginal minute robust setae	Longer than wide	>1.5x as long as wide
Amphilochus marionis Stebbing, 1888	Lightly setose – distally	Lacking setae	small	subovate	Without setation	Not exceeding the end of propodus	absent	unknown	without sub-marginal minute robust setae	as long as wide	<1.5x as long as wide

with fine setae along margin and defined by 2 robust setae; dactylus inner margin serrate, distally attenuate. *Pereopod 3* coxa subrectangular; basis elongate, anterior margin with 4 medium length setae along margin; dactylus falcate. *Pereopod 4* coxa expanded medially; basis slender; carpus, propodus and dactylus lost. *Pereopod 5* coxa bilobed; basis subquadrate, anterior margin with 4 robust setae, posterior with fine setae along margin; merus expanded posterodistally; dactylus falcate. *Pereopod 6* basis anterior margin with 5 robust setae, posterior margin medially expanded with fine setae along margin; dactylus falcate. *Pereopod 7* basis expanded, anterior margin with 4 short robust setae, posterior margin with fine setae; dactylus falcate.

Pleon. *Uropod 1* rami subequal in length, with short setae along margin; peduncle slightly shorter than rami with several short setae on inner margin. *Uropod 2* inner ramus longer than outer ramus, lined with short setae along medial margin; peduncle shorter rami. *Uropod 3* lost. *Telson* entire, longer than wide, apically acute.

Male (sexually dimorphic characters). Unable to determine adult male among broken specimens.

Habitat. Sandy bottom.

Remarks. *Amphilochus lacertus* **sp. nov.** appears to be closely related to *A. justi*. They more or less agree in the structure of the pleonal epimera 1–3, antennae and uropods. The gnathopods are also nearly identical, except that basis of gnathopod 1 lined with medium length setae along its anterior margin. Further, the rostrum is extending beyond article 1 of antenna 1. Among the more important features characteristic of the present species is the overall structure of maxilliped. In *A. lacertus* the maxilliped is somewhat stouter especially in palp articles 1–3, the presence of the dactylar unguis also add to these differences.

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

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