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Two New Species of *Exampithoe* Barnard, 1925, Subgenus *Melanesius* Ledoyer, 1984, from Southern Australia (Crustacea: Amphipoda: Ampithoidae)

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ABSTRACT. *Exampithoe (Melanesius) compressa* n.sp. and *E. (M.) halei* n.sp. are described from shallow water in southern Australia. The distinctive compressed body shape sets the former species apart from other *Exampithoe*. *Exampithoe (M.) halei* is of similar body shape as the two previously known species in *Melanesius*, viz. *E. (M.) cooki* and *E. (M.) kutti*, but can be immediately distinguished from them by the angular cutting edge of its gnathopods 1 and 2, and by its vestigial mandibular molar.

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Until recently Australian marine ampithoid amphipods had received little attention, although members of the family constitute a diverse and commonly occurring element of the fauna in algal communities and sea-grass beds of subtropical and temperate parts of Australia.

Poore & Lowry (1997) reviewed the status and validity of species reported from Australia, presented diagnoses of all known genera in the Ampithoidae, and described five new ampithoid species, including *Exampithoe kutti* Poore & Lowry, 1997, first Australian record of the genus.

Prior to Poore & Lowry (1997), three species of *Exampithoe* had been described: *E. natalensis* Barnard, 1925 (type-species) from South Africa, *E. gracilipes* Ledoyer, 1984 and *E. cooki* Ledoyer, 1984 both from New Caledonia. Ledoyer (1984) placed *E. cooki* in a new subgenus *Melanesius* based on its lacking a mandibular palp. Poore & Lowry (1997) referred their new species, *E. kutti*, to *Melanesius*.

In the present study two new species of *Exampithoe (Melanesius)* from the south coast of Australia are described. *Exampithoe (Melanesius) halei* n.sp. is similar to *E. (M.) kutti*, while *E. (M.) compressa* n.sp. exhibits an unusual body form.

Unless otherwise stated, left side appendages are illustrated. The length of animals was measured from the mid-dorsal front margin of the cephalon along the dorsal curvature to the apex of the telson.

Exampithoe (Melanesius) Ledoyer, 1984

Diagnosis. See Poore & Lowry (1997).

Description. Cephalon and body strongly to moderately compressed laterally. Cephalon as long as or longer than pereonites 1 and 2 combined, twice as deep as pereonite 1, with moderate to inconspicuous ocular lobes and recession for antenna 2, and wide angled anteroventral corners. Eyes present, round.

Coxal plate 1 as long as or slightly longer than broad, all other plates broader than long. Plates 3 and 4 covering proximal 1/10 of basis of respective pereopods. Pleonal sideplates rounded.

Antennae slender, of subequal length (*E. cooki*: not confirmed).

Mouthparts: Upper lip broader than long, apex entire. Mandibles strongly curved, left and right alike; laciniae mobiles broad, pedunculate, left and right subsimilar, with 5–7 teeth; short (2–3) setal row present. Maxilla 1, inner plate reduced, rounded, with or without a few distomedial setae; outer plate with 10 apical robust setae; palp 2-articulate, extending beyond outer plate, with distomedial to apical setae. Maxillipeds, inner plate with truncate apex, with one short, broad seta apically; outer plate reaching apex of palp article 2, with medial row of robust setae grading into apical and lateral plumose setae; palp 4-articulate with well-developed unguis, unguis with medial row of denticles.

Gnathopods 1 and 2 of subequal structure and size, (gnathopod 1 occasionally broader than 2 in male), with palm convex, defined posteriorly by strong robust seta, distally by smaller, blunt, striated seta (*E. cooki*: striation not confirmed). Pereopods 3 and 4 of equal size and shape, basis strongly inflated, dactylus short, blunt, with large glandular orifice laterally. Pereopods 5–7 of equal shape, 6 and 7 of equal length and longer than 5, article 2 hardly expanded, article 6 with row of robust setae along anterior margin, small oblique grasping palm with straight, smooth or occasionally striated robust setae and one or two curved, blunt, striated robust setae (*E. cooki*: striation not confirmed).

Pleopods slender, peduncle subequal in length to outer ramus, with 2 coupling hooks, rami of equal length (*E. kutti*) or outer ramus about 80% length of inner ramus (*E. cooki*: not confirmed).

Uropods 1 and 2 slender, rami with terminal group of 4 unequally long robust setae. Uropod 3, outer ramus with two recurved terminal robust setae, distally tapering, dorsal surface covered with acute, proximally pointing cuticular scales, inner ramus shorter than outer, flattened, oval, with a few long setae on each side of terminal robust seta.

Telson wider than long to equal width and length, entire, broadest in middle.

Gills present on gnathopod 2 and pereopods 3–6 (*E. cooki*: not confirmed). Gills plate-like, those of gnathopod 2 and pereopod 3 short, linear, of 4–6 longer and broadly oval but of decreasing size.

Oostegites present on gnathopod 2 and pereopods 3–5 (*E. cooki*: not confirmed), oblong oval, densely fringed with long, thin curly-tipped setae.

Key to species of *Exampithoe (Melanesius)*

1 Cephalon and body strongly compressed with cephalon bulging above insertion of antennae 1 ..... *compressa* n.sp.

—— Cephalon and body not compressed, typically ampithoid 2

2 Mandibular molar vestigial. Cutting edge of gnathopods 1 and 2 angular at midpoint between defining robust setae ..... *halei* n.sp.

—— Mandibular molar reduced but distinctive. Cutting edge of gnathopods 1 and 2 evenly curved to nearly straight 3

3 Mandibular molar low, broad, rounded non-triturative with apical setae. Male gnathopod 1 distinctly larger than 2 ..... *cooki* Ledoyer, 1984

—— Mandibular molar low, broad, triturative. Male gnathopods 1 and 2 of similar size ..... *kutti* Poore & Lowry, 1997

Exampithoe (Melanesius) compressa n.sp.

Figs. 1, 2

Material examined. HOLOTYPE: ovigerous female, 6.9 mm, Sellicks Beach, Gulf of St Vincent, South Australia, 35°20'S 138°27'E, *Amphibolis* bed, 7 March 1936, H.M. Hale, Australian Museum, AM P37195. PARATYPES: (38 specimens in all). Same data as holotype, AM P37196 (12). Two Peoples Bay, south-western corner, Albany, Western Australia, 34°57'17"S 118°11'15"E, wash from dense, overgrown *Posidonia* and *Amphibolis* sea-grass, 0.5 m, 28 March 1984, J. Just, Stn AU-25, AM P34815 (1) and P34817 (2). Vancouver Peninsula near Mistaken Island, Albany, Western Australia, 35°04'11"S 117°55'48"E, 6 m, sea-grass with bryozoans (?) or fine pink algae, 13 December 1983, R.T. Springthorpe, Stn WA-120, AM P34818 (23), P34816 (male A).

Description. Cephalon and body extremely compressed; in holotype, ratio of midlateral width of cephalon to midlateral depth = 2 : 5; ratio of width of pereonite 3 level with insertion of coxal plate to lateral depth of segment including coxal plate = 1 : 2. Cephalon bulging above insertion of antennae 1, with strongly convex dorsal curvature, without well defined anterior margin or rostrum. Ocular lobes inconspicuous, rounded truncate. Eyes small, round, about 0.1 mm in diameter.

Coxal plate 1 quadrate; plates 2–5 of increasing size, strongly rounded anteriorly, distinction between large anterior and small posterior lobe in plate 5 poorly defined; plates 6 and 7 small, semicircular, 6 slightly bilobed.

Antenna 1 about 10% longer than 2, flagellum approximately 3 times longer than peduncle, with up to 24 articles, distal ones with aesthetascs; peduncle reaching to apex of or slightly beyond article 4 of peduncle of antenna 2. Antenna 2 with peduncle approximately 70% length of flagellum; flagellum with up to 20 articles.

Mouthparts: Upper lip about twice as broad as long. Mandibular setal row with 3 (left) and 2 (right) short, simple to pectinate setae; molar small, conical, non-triturative, rounded apex scabrous with 1 to 2 small setae; left lacinia mobilis stronger than right. Lower lip with outer lobes rounded, inner lobes roundedly pointed apically. Maxilla 1, rounded inner plates with 1 medioapical seta; palp with apical setae only.

Gnathopods 1 and 2 of equal size and form, with articles 5 and 6 of equal length; cutting edge of 6 weakly convex. Pereopods 3 and 4, article 2 broadly oval, about one and a half times as long as broad, anterior margin with short, posterior margin with long simple setae increasing in length proximally; anterior margin of article 4 evenly convex, not produced apically; articles 5 and 6 slender of equal length, 5 approximately 2.5 times longer than broad, 6 distally tapering, approximately 4 times longer than mid width; dactylus 40% length of article 6. Pereopods 5–7 with narrowly oval article 2, twice as long as broad in 5, 2.5 times longer than broad in 6 and 7, with a few marginal setules anteriorly and posteriorly; articles 5 and 6 of equal length.

Uropods 1 and 2 both reaching to tip of uropod 3. Uropod 1 ratios, peduncle to inner ramus = 3 : 2, inner ramus to outer ramus = 7 : 6; peduncle with few dorsolateral and dorsomedial robust setae and proximal simple setae; inner ramus with one midmedial and 1 distolateral robust setae; outer ramus with 2 lateral robust setae. Uropod 2 ratios, peduncle to inner ramus = 1 : 1, inner ramus to outer ramus = 5 : 3; peduncle with 1 to 2 dorsal robust setae; inner ramus with 1 midmedial and 1 midlateral robust setae, outer ramus with one midlateral robust seta. Uropod 3, peduncle twice as long as middorsal width, with 2 midlaterodorsal setae, dorsoapical margin with a few setae, ventroapical margin with row of approximately 8 unequally long setae; medial robust seta of outer ramus nearly straight, bifid, lateral seta stronger, striate.

Telson length approximately 90% width, roundedly hexagonal, lateral lobes with 2 submarginal long setae, distolateral margins with 3 small plumose setae, dorsodistal surface with 2 long simple setae and 2 tiny cuticular knobs either side of the long setae.

Size. Largest male: 8.9 mm; largest female: 9.8 mm; size range of ovigerous females: 6.9–9.8 mm.

Colour (live animals). Bright green, semitransparent. Eyes shiny ruby-red (AU-25).

Note on behaviour. In the laboratory, specimens from Two Peoples Bay (AU-25) actively sought out *Posidonia* sea-grass blades from a mixture of sea-grasses and smaller algae. Animals would cling to the broad side of the blade in a lateral position. The perfect colour camouflage and the strongly compressed body rendered the animal nearly invisible except for its brilliantly red eye.

Distribution. In sea-grass beds; Gulf of St Vincent, South Australia, and around Albany, Western Australia; 0.5–6 m depth.

Etymology. The species name alludes to the strongly compressed body.

Remarks. The distinctive compressed body shape sets this species apart from other *Exampithoe*.

Exampithoe (Melanesius) halei n.sp.

Figs. 3, 4

Material examined. HOLOTYPE: ovigerous female, 6.3 mm, Port Willunga, South Australia, 35°16'S 138°28'E, H. M. Hale, AM P37197. PARATYPES: same data as holotype, AM P35089 (12) and P37198 (paratype A, male).

Description. Cephalon and body moderately compressed; in holotype, midlateral width of cephalon to midlateral depth = 5 : 6.5; width of pereonite 3 level with insertion of coxal plate to lateral depth including coxal plate = 5 : 7. Cephalon with normal dorsal curvature and front margin; ocular lobes rounded, smoothly integrated into margins above and below. Eyes round, approximately 0.15 mm in diameter.

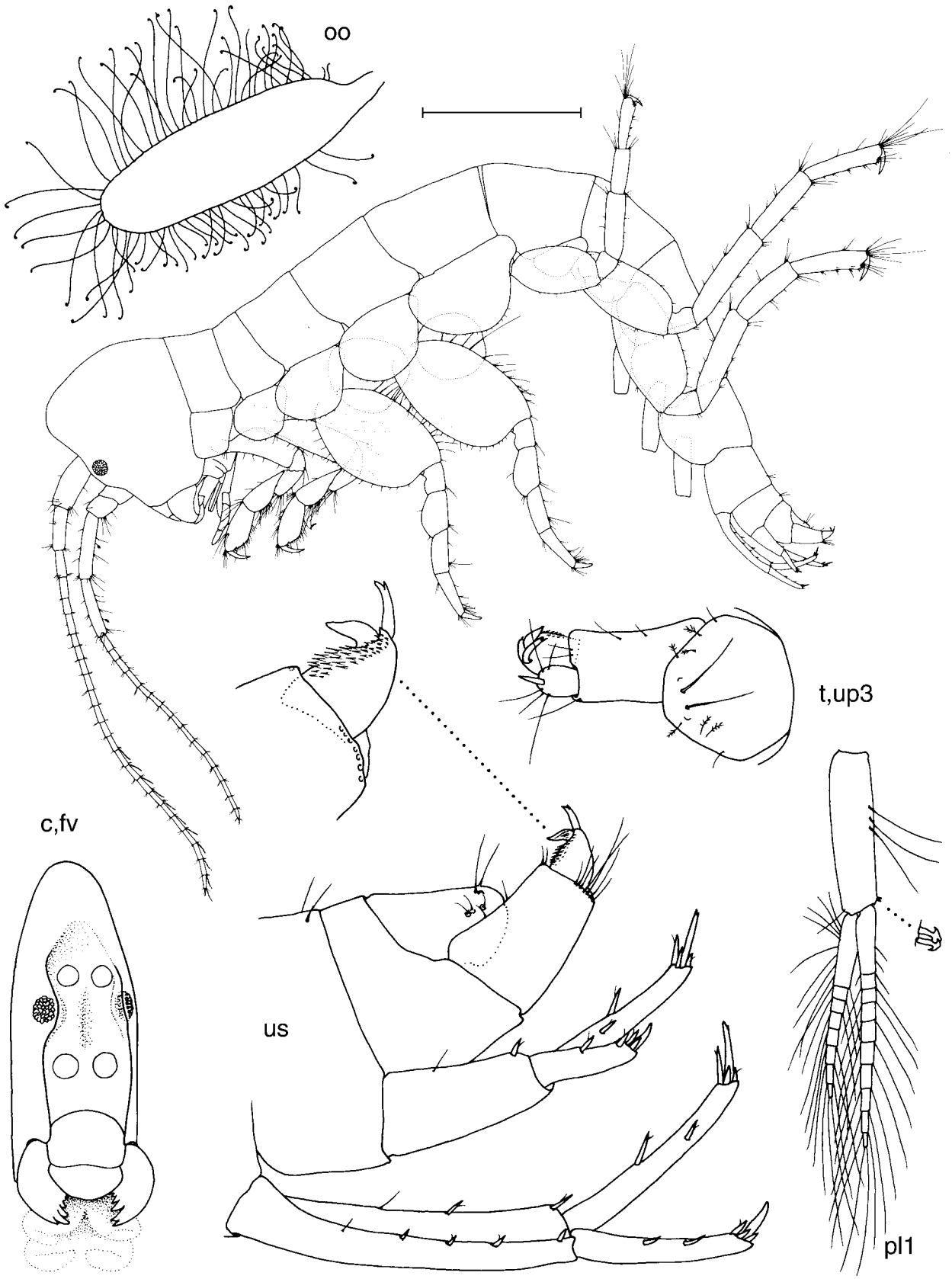

Figure 1. *Exampithoe (Melanesius) compressa* n.sp., holotype. **c, fv**, cephalon, frontal view, insert points of antennae indicated; **oo**, oostegite of pereopod 3; **pl 1**, pleopod 1; **t**, telson; **up 3**, uropod 3; **us**, urosome. Habitus scale bar: 1 mm.

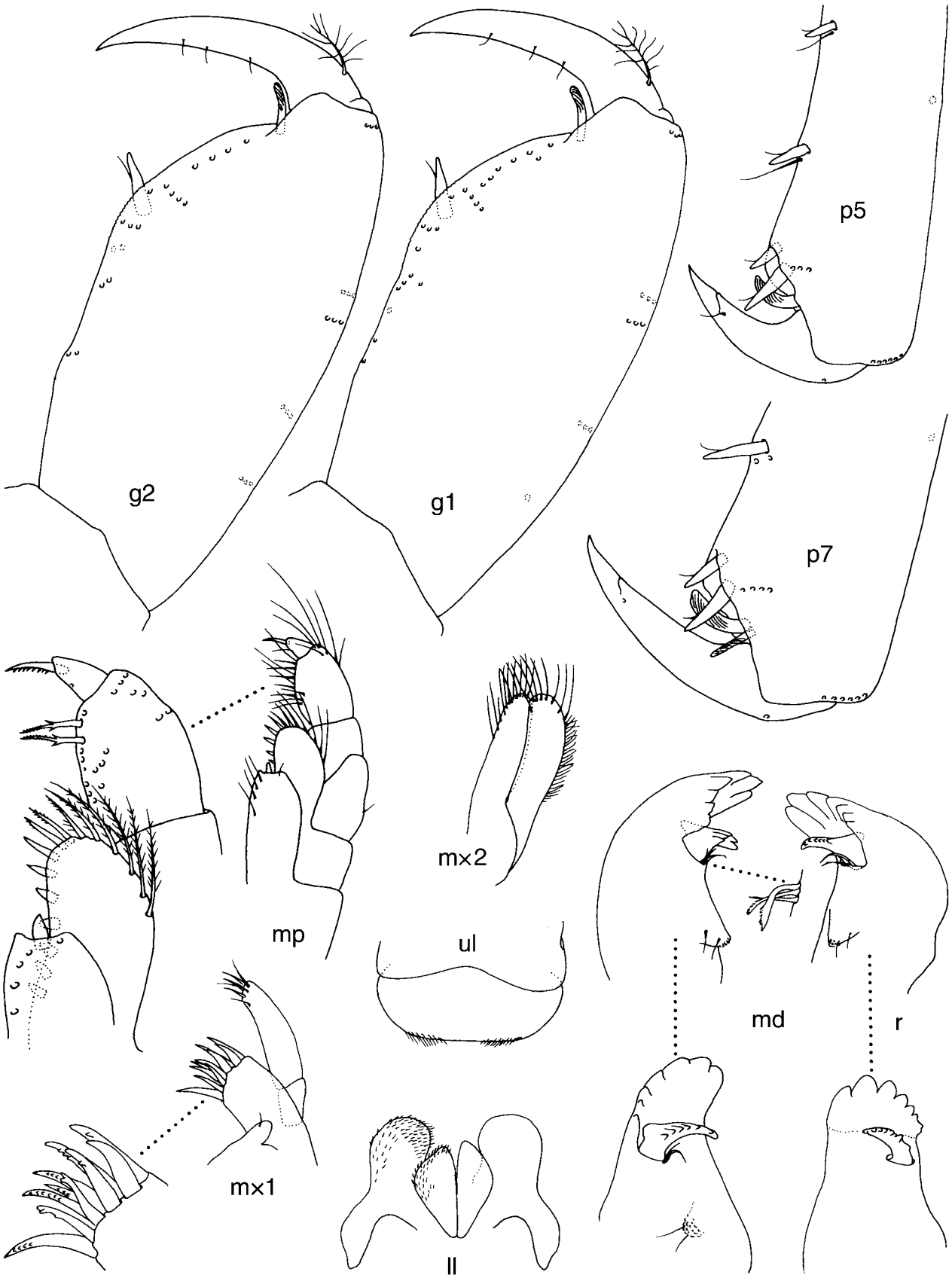

Figure 2. *Exampithoe (Melanesius) compressa* n.sp., holotype. **g**, gnathopod; **ll**, lower lip; **md**, mandible; **mp**, maxilliped; **mx 1**, maxilla 1; **mx 2**, maxilla 2; **p**, pereopod; **r**, right; **ul**, upper lip.

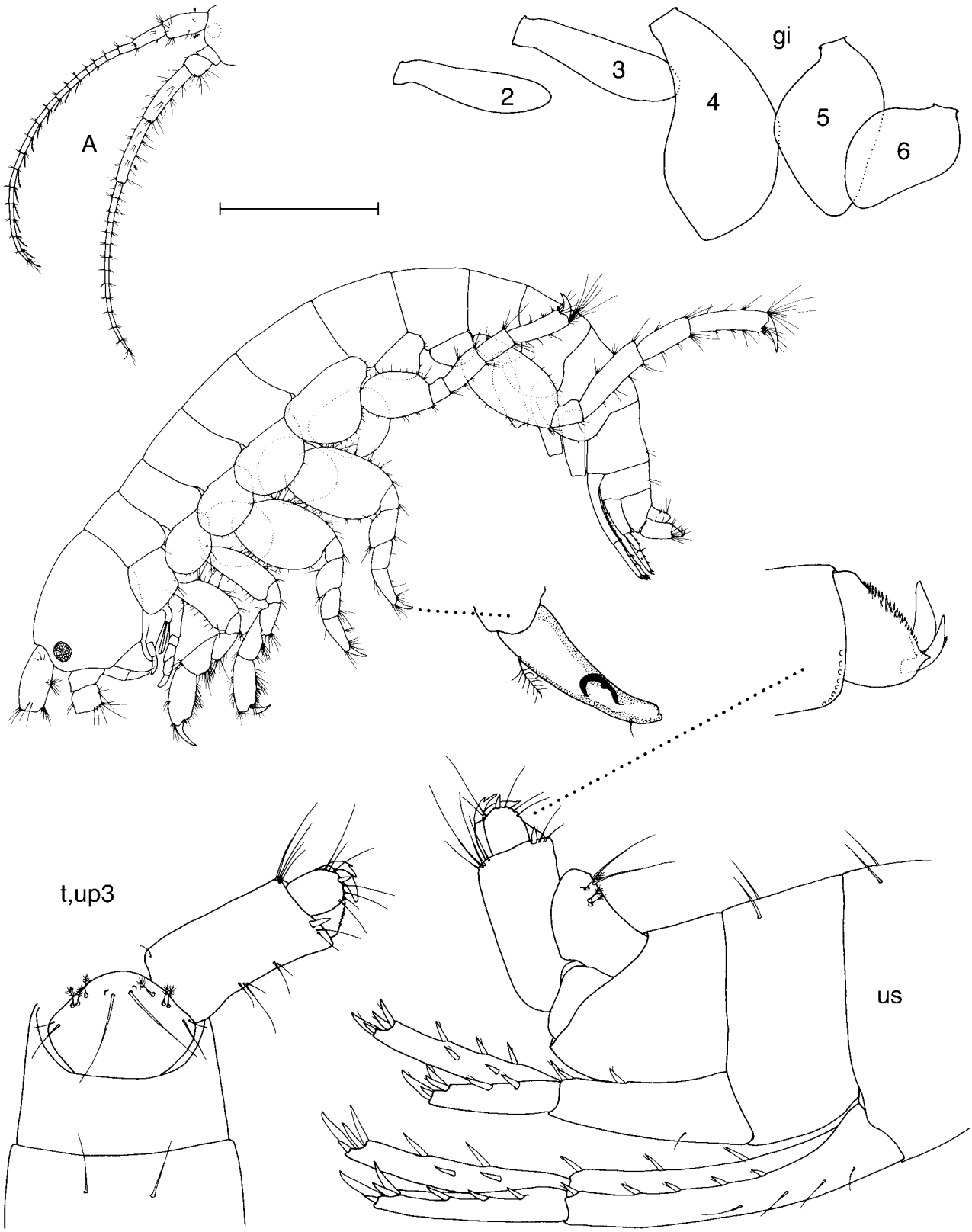

Figure 3. *Exampithoe (Melanesius) halei* n.sp., holotype, except A = paratype A. **gi**, gills of gnathopod 2 and pereopods 3–6; **t**, telson; **up 3**, uropod 3; **us**, urosome. Habitus scale bar: 1 mm.

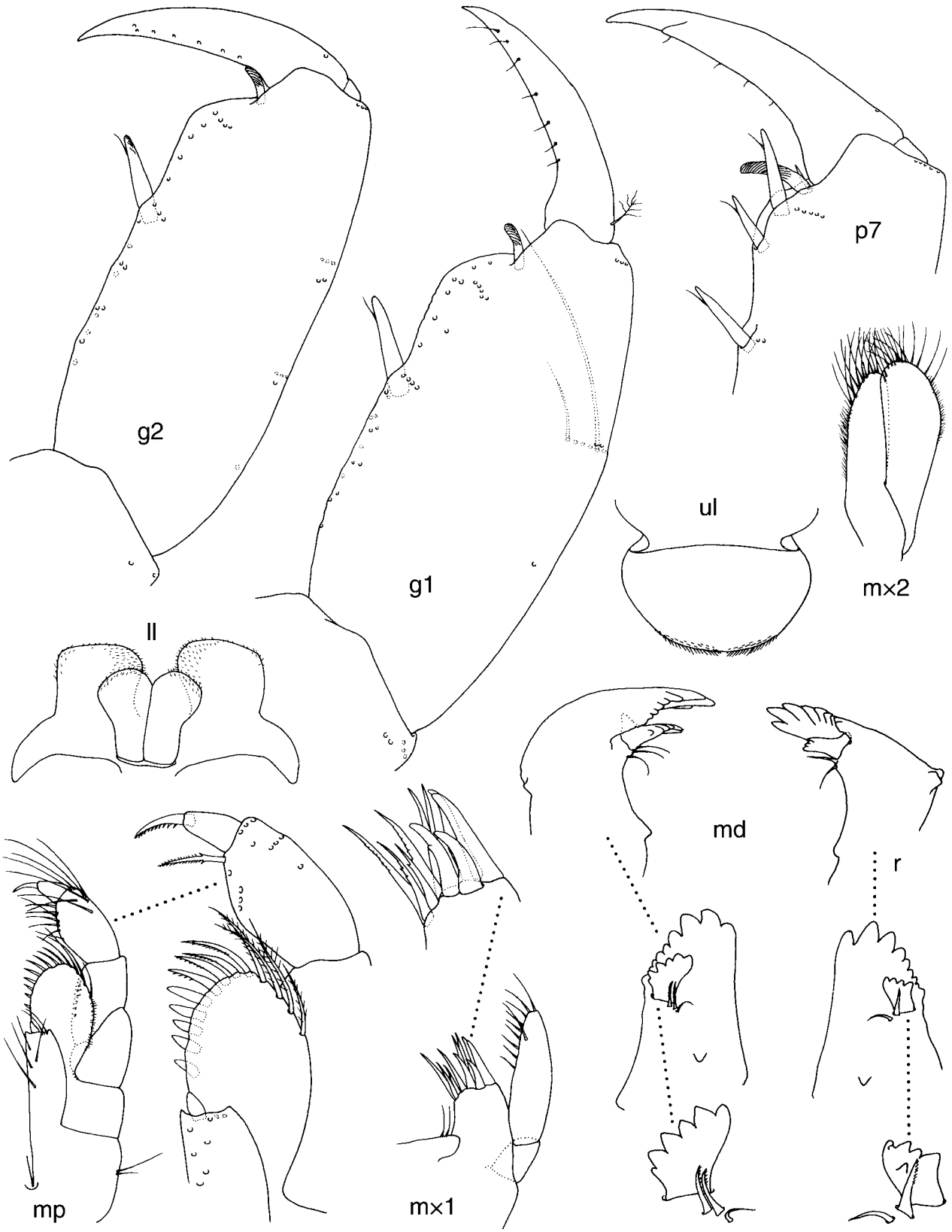

Figure 4. *Exampithoe (Melanesius) halei* n.sp., holotype. **g**, gnathopod; **ll**, lower lip; **md**, mandible; **mp**, maxilliped; **mx 1**, maxilla 1; **mx 2**, maxilla 2; **p**, pereopod; **r**, right; **ul**, upper lip.

Coxal plate 1 near rectangular, anterior margin slightly longer than posterior margin; plates 2–5 of increasing size, strongly rounded anteriorly, 5 rounded triangular with posterior lobe weakly set off from anterior lobe; plates 6 and 7 small, semicircular, 6 slightly bilobed.

Antenna 1 and 2 of equal length. Antenna 1 peduncle 1/3 third length of flagellum, reaching to about the middle of peduncle article 4 of antenna 2; flagellum with up to 24 articles, most flagellar articles with aesthetascs. Flagellum of antenna 2 approximately 10% longer than peduncle, with up to 14 articles.

Mouthparts: Upper lip approximately 50% broader than long. Mandibles with small hump at normal place of palp insertion; setal row with 3 (left) and 2 (right) short, simple to pectinate setae; molar a tiny smooth knob; left lacinia mobilis stronger than right. Lower lip with outer lobes roundedly rectangular, inner lobes rounded distally. Maxilla 1, rounded inner plate with 2 setae; palp with setae apically and along distal half of inner margin.

Gnathopods 1 and 2 of equal shape, articles 5 and 6 of gnathopod 1 slightly larger than in 2, cutting edge of both gnathopods convex, somewhat angular in middle (less so in smaller specimens). Pereopods 3 and 4, article 2 broadly oval, about one and a half times as long as broad, anterior margin with short, posterior margin with longer, irregularly spaced setae; anterior margin of article 4 broadly convex, moderately produced apically; article 5 80% length of 6, width approximately 75% length; article 6 distally tapering, 3 times longer than mid-width; dactylus half the length of article 6. Pereopods 5–7 with article 2 oval, 50% (5) to 70% (6 and 7) longer than broad, anterior and posterior margins with short setae; article 6 40–60% longer than 5.

Uropods 1 and 2 both reaching to tip of uropod 3. Uropod 1 ratios, peduncle to inner ramus = 3 : 2, inner ramus to outer ramus = 7 : 6; peduncle with robust setae along dorsolateral and dorsomedial margins and row of 3–4 simple setae in proximal half of lateral surface; inner ramus with 2 lateral and 2 medial robust setae; outer ramus with 3 lateral robust setae. Uropod 2 ratios, peduncle to inner ramus = 1 : 1, inner ramus to outer ramus = 3 : 2; peduncle with 2 lateral and 1 medioapical robust setae; inner ramus with 3 medial and 2 lateral robust setae; outer ramus with 2 lateral robust setae. Uropod 3, peduncle twice as long as middorsal width, with two middorsolateral groups of setae, dorsoapical margin with 1 robust seta and a few simple setae, ventrolateral apical margin with row of approximately 10 long setae; medial robust seta of outer ramus curved, bifid.

Telson, length approximately 70% width, widest in middle, apex broadly rounded, lateral lobes with 2 submarginal long setae, distolateral margin with 3 small plumose setae, dorsodistal surface with 2 long setae and 2 tiny cuticular knobs either side of the long setae.

Size. Largest male: 5.8 mm; largest female: 7.3 mm; size range of mature females: 6.2–7.3 mm.

Colour and behaviour. Not known.

Distribution. Gulf of St. Vincent, South Australia.

Etymology. Named for H.M. Hale, Australian carcinologist and collector of the present material.

Remarks. *Exampithoe halei* can be immediately distinguished from *E. cooki* and *E. kutti* by its more slender article 6 of gnathopods 1 and 2 and their angular cutting edge, and by its vestigial mandibular molar (*E. kutti*: low triturating ridges; *E. cooki*: rounded, non-triturative projection).

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References

Barnard, K.H., 1925. Contribution to the crustacean fauna of South Africa, V: the Amphipoda. *Annals of the South African Museum* 15(3): 105–302.

Ledoyer, M., 1984. Les gammariens (Crustacea, Amphipoda) des herbiers de phanerogames marines de Nouvelle Caledonie (Region de Noumea). *Memoires du Museum National d'Histoire Naturelle, Ser. A, Zoologie* 129: 1–113.

Poore, A.G.B., & J.K. Lowry, 1997. New ampithoid amphipods from Port Jackson, New South Wales, Australia (Crustacea: Amphipoda: Ampithoidae). *Invertebrate Taxonomy* 11: 897–941.

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