Zootaxa 3844 (1): 001–064
www.mapress.com/zootaxa/

Monograph

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3844.1.1
http://zoobank.org/urn:lsid:zoobank.org:pub:10B3C1CE-6279-4B4C-8139-C5D3EDB24255

ZOOTAXA

3844

New tryphosine amphipods from Australian waters (Crustacea, Amphipoda, Lysianassoidea, Lysianassidae, Tryphosinae)

J.K. LOWRY & N.M. KILGALLEN

Australian Museum Research Institue, 6 College St, Sydney, New South Wales 2010, Australia.
E-mail: jim.lowry@austmus.gov.au, niamh.kigallen@austmus.gov.au

Magnolia Press
Auckland, New Zealand

Accepted by S. Gerken: 17 Apr.2014; published: 30 Jul. 2014

J.K. LOWRY & N.M. KILGALLEN
New tryphosine amphipods from Australian waters (Crustacea, Amphipoda, Lysianassoidea, Lysianassidae, Tryphosinae)
(*Zootaxa* 3844)

64 pp.; 30 cm.

30 Jul. 2014

ISBN 978-1-77557-461-3 (paperback)

ISBN 978-1-77557-462-0 (Online edition)

FIRST PUBLISHED IN 2014 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: zootaxa@mapress.com

http://www.mapress.com/zootaxa/

ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

Table of contents

Abstract

We report seven tryphosine genera (two new) from Australian waters for the first time and describe 13 new species: *Cedrosella cito* **sp. nov.**; *Lysianella lui* **sp. nov.**; *Lysianella moonamoona* **sp. nov.**; *Microlysias soela* **sp. nov.**; *Paralysianopsis capricornia* **sp. nov.**; *Paralysianopsis dandenong* **sp. nov.**; *Paralysianopsis pomona* **sp. nov.**; *Paralysianopsis ruffoi* **sp. nov.**; *Patonga nona* **gen. nov.**, **sp. nov.**; *Tasmanosa tasman* **gen. nov.**, **sp. nov.**; *Tasmanosa toogooloo* **sp. nov.**; *Tryphosites colmani* **sp. nov.**; *Tryphosites psittacus* **sp. nov.** *Rhinolabia* is considered to be a junior synonymy of *Paralysianopsis*. *Paralysianopsis elliotti* (Lowry & Stoddart, 1995b) and *P.* cf. *jebbi* (Lowry & Stoddart, 1995b), previously known from Papua New Guinea are also reported from eastern Australia. The type species of each genus is also catalogued and illustrated.

Key words: Crustacea, Amphipoda, Lysianassoidea, Tryhosinae, Australia, taxonomy, new genus, new species

Introduction

Australia has a rich lysianassoid fauna diverse in families, genera and species. There are currently about 183 lysianassoid species known from Australia in 21 families and 71 genera. We estimate that once reporting on the

current collections is complete, this figure will increase to about 85 genera and 230 species. This compares closely with the well-known north-eastern Atlantic and Mediterranean fauna of about 235 species in 23 families and 73 genera. However, collections and studies have concentrated on the east coast of Australia and the Great Barrier Reef, leaving much the fauna of western and northern tropical Australia undiscovered.

In this paper we report on a set of genera known from seemingly disparate parts of the world and now described from Australian waters. It is apparent that more extensive collections and continued taxonomic studies will fill in many similar geographical gaps. To date, the genus *Cedrosella* Barnard & Karaman, 1987, has been reported only from the Cedros Trench, off Baja California. *Lysianella* G.O. Sars, 1883 is currently known from the north-eastern Atlantic (north of the Skagerrak), the Barents Sea, the south Atlantic in the Cape Basin and Kerguelen Islands, and the Mediterranean Sea, from shallow water down to 4000 m depth. *Microlysias* Stebbing, 1918 is currently known from the western Indian Ocean and the South China Sea. *Tryphosites* G.O. Sars, 1891, is currently known from the North Polar Sea, the north-eastern Atlantic, the Mediterranean Sea and the Falkland Islands in the south-western Atlantic Ocean. Records from Australian waters represent very large extensions in the known distributions of these genera and highlight the lack of collecting and knowledge about lysianassoid amphipods from deep-sea faunas in the Indo-West Pacific. *Paralysianopsis* Schellenberg, 1931 has previously been reported from Papua New Guinea (Lowry & Stoddart 1995b). Thirteen new species and two new genera, *Patonga* and *Tasmanosa* are described from eastern Australia. Synonymies, type and distribution information and illustrations are provided for the type species of each genus. Two species, *Paralysianopsis elliotti* (Lowry & Stoddart, 1995b) and *P.* cf. *jebbi* (Lowry & Stoddart, 1995b), previously known from northern Papua New Guinea, are reported from Australia for the first time.

Material and methods

The descriptions were generated from a DELTA database (Dallwitz 2010) to the tryphosine genera and species of the world. Diagnostic characters, which distinguish each taxon in at least two respects from every other taxon, are denoted in the descriptions by *bold italic* type. In describing the accessory flagellum we use the term operculum in the sense of a flattened cover or partial cover of the callynophore. *Maxilla 1* setal-tooth arrangements follow the formulae outlined in Lowry & Stoddart (1992, 1995a). In describing the telson we define the cleftness as: deeply cleft (more than 66%); moderately cleft (33% to 66%); weakly cleft (less than 33%). Material is lodged in the Australian Museum, Sydney (AM); Los Angeles County Museum of Natural History, Los Angeles (LACM); the Museo Civico di Storia Naturale, Verona (MCSN); Natural History Museum, London (formerly British Museum (Natural History) (BMNH)); Trømso University Museum (TM); Museum Victoria, Melbourne (NMV); the Zoologisk Museum, Universitetet i Bergen (ZMUB); and the Zoologisches Museum Universitet Oslo, Norway (ZMUO). Standard abbreviations on the plates are: A, antenna; E, epistome; EP, epimeron; G, gnathopod; H, head; LB, labium; MD, mandible; MX, maxilla; MP, maxilliped; P, pereopod; ST, setal-tooth; T, telson; U, uropod; L, left; R, right.

Systematics

Lysianassoidea Dana, 1849
Lysianassidae Dana, 1849

Tryphosinae Lowry & Stoddart, 1997

Cedrosella Barnard & Karaman, 1987

Cedrosella Barnard & Karaman, 1987: 865.—Barnard & Karaman, 1991: 474.

Type species. *Ambasiopsis fomes* J.L. Barnard, 1967, original designation by Barnard & Karaman, 1987: 865.

Included species. *Cedrosella* contains two species: *C. fomes* (J.L. Barnard, 1967); *C. cito* **sp. nov**.

Diagnostic description. Antenna 1 accessory flagellum not forming operculum. Mandibular molar a reduced column, proximally setose, distally triturating; palp attached slightly distally. Maxilliped outer plate apical robust setae present. *Gnathopod 1* subchelate; coxa large, slightly shorter than gnathopod 2 coxa, tapering distally; carpus distinctly shorter than propodus. Uropod 2 inner ramus not constricted. Telson deeply cleft.

Remarks. *Cedrosella* is similar to *Ambasiopsis*, differing from it in the lack of a carina on antenna 1 peduncle article 1, the arrangement of the setal-teeth (modified 6/5 in *Cedrosella* and reduced to seven setal-teeth in *Ambasiopsis*) and the length of the *gnathopod 1* carpus (shorter than propodus in *Cedrosella*, longer than the propodus in *Ambasiopsis*). This is the first record of this genus outside of the Cedros Trench, off Baja California, a considerable increase to its Pacific Ocean distribution. *Cedrosella* appears to have a lower bathyal to abyssal depth range (1840–3745 m).

Cedrosella fomes (J.L. Barnard, 1967)

(Fig. 1)

Ambasiopsis (?) *fomes* J.L. Barnard, 1967: 47, figs 19, 20.—Barnard & Karaman, 1987: 865.
Cedrosella fomes.—Barnard & Karaman, 1991: 474.

Types. Holotype, male, 2.6 mm, LACM CR 1961-097.1 (originally AHF 6131).

Type locality. Cedros Trench, eastern Pacific Ocean Station 7249, (27°36.42'N 115°56.42'W), 3705–3745 m.

Habitat. Marine, ooze.

Depth range. 3705–3745 m (J.L. Barnard 1967).

Distribution. *Eastern Pacific Ocean*. Cedros Trench (J.L. Barnard 1967).

Cedrosella cito sp. nov.

(Figs 2–4)

Types. Holotype male, 4.6 mm, NMV J67525, 76 km south of Point Hicks, Victoria, Australia (38°29.33'S 149°19.98'E), 1840 m, sandy mud, fine shell, WHOI epibenthic sled, 26 October 1988, coll. G.C.B. Poore and party, RV *Franklin*. Paratypes, 2 specimens, 3.0–4.0 mm, NMV J67526, same collection details as holotype.

Type locality. South of Point Hicks, Victoria, Australia (38°29.33'S 149°19.98'E), 1840 m depth.

Etymology. Named for the barque *Cito*, which was swept onto rocks at Cape St. John, Bass Strait in April 1879; used as a noun in apposition.

Description. Based on holotype male, 4.6 mm, NMV J67525. *Head* lateral cephalic lobe subtriangular, strongly produced, apically subacute; eyes apparently absent. *Antenna 1* accessory flagellum not forming operculum, 3-articulate; primary flagellum with strong 2-field callynophore, robust setae present on proximal articles; calceoli present, small. *Antenna 2* peduncular article 3 short; articles 3 to 5 not enlarged; flagellum short, calceoli present. *Labrum*, epistome and upper lip separate; epistome produced equally with upper lip, concave; upper lip not produced. *Mandible* molar with asymmetrically reduced column, distally triturating; palp attached about midway or very slightly distally. *Maxilla 1* outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; palp distal margin with apical robust setae. *Maxilliped* outer plate with 1 long, slender apical robust seta.

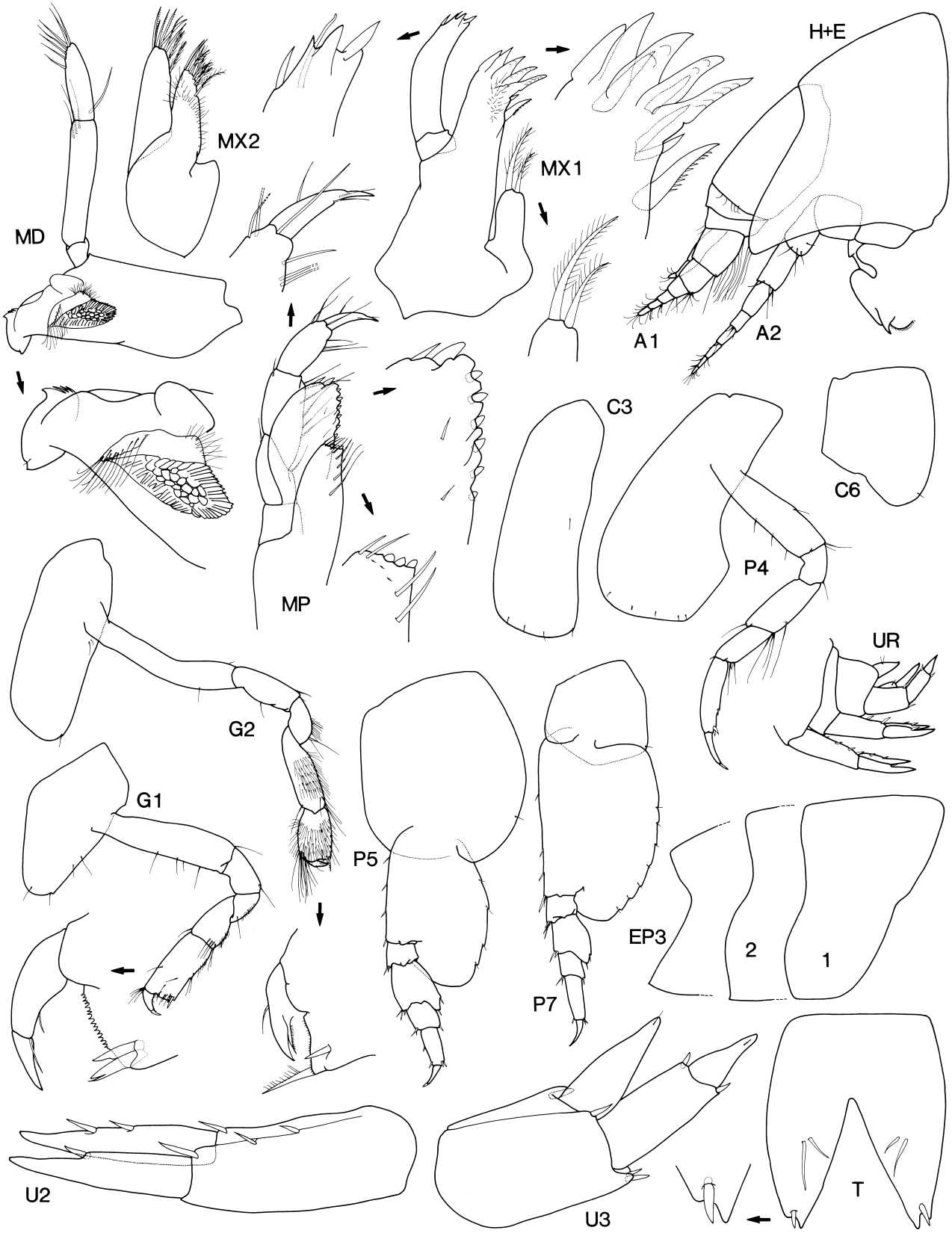

FIGURE 1. *Cedrosella fomes* (J.L. Barnard, 1967), holotype, ?male, 2.66 mm, from the Cedros Trench, off Baja California, Mexico. After J.L. Barnard (1967).

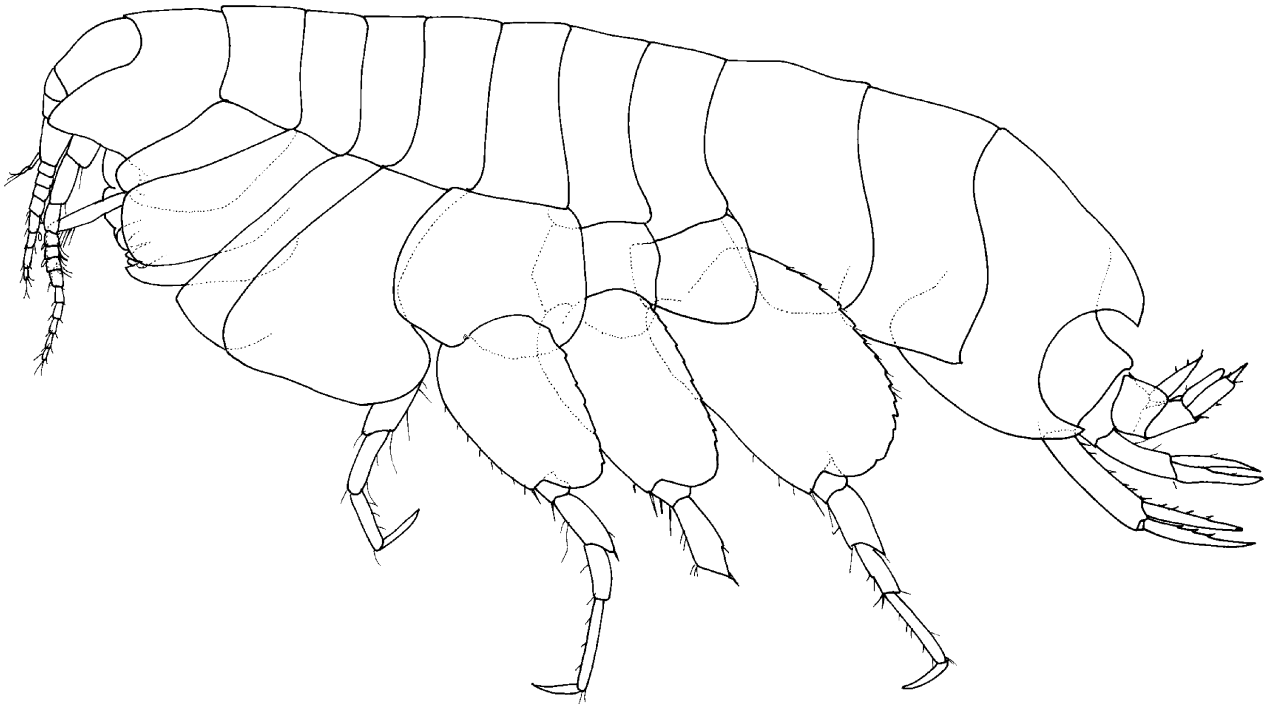

FIGURE 2. *Cedrosella cito* **sp. nov.**, *habitus*, paratype, male, 4.0 mm, NMV J67526, from 76 km south of Point Hicks, Victoria, Australia.

Pereonites 1–7 dorsally smooth. *Gnathopod 1* subchelate; coxa subtriangular, tapering distally with straight anterior margin, slightly shorter than coxa 2; basis sparsely setose along anterior margin; ischium short; carpus short, shorter than propodus, without posterior lobe; propodus margins subparallel, sparsely setose along posterior margin, palm transverse, entire, straight. *Gnathopod 2* minutely subchelate, propodus palm transverse. ***Pereopod 4 coxa with a well-developed posteroventral lobe***. *Pereopod 5* basis longer than broad, not posteroproximally excavate, posterior margin weakly serrate. *Pereopod 7* basis posterodistally produced less than halfway along merus.

Pleonite 3 dorsodistally produced, acutely downturned. Epimeron 3 posterior margin smooth, ***posteroventral corner forming broad, upwardly-curved spine***. *Urosomite 1* dorsally straight. *Uropod 2* inner ramus without constriction. *Uropod 3* inner and outer rami well developed, without plumose setae on rami, outer ramus article 2 long. *Telson* deeply cleft, longer than wide, with 1 dorsal robust seta per lobe and 1 apical robust setae on each lobe.

Sexually dimorphic characters. Not known.

Remarks. *Cedrosella cito* **sp. nov.** is the second species described in the genus. It is easily distinguished from the type of the genus, *C. fomes* (Barnard, 1967), by the distinctive pleonite 3, which is dorsodistally acutely produced over urosomite 1 in addition to forming a strong curving spine on the posteroventral corner.

Depth range. 1840 m.

Distribution. *Australia*. Bass Strait.

Lysianella G.O. Sars, 1883

Lysianella G.O. Sars, 1883: 78.—G.O. Sars, 1890: 50.—Della Valle, 1893: 797.—Stebbing, 1906: 31.—Gurjanova, 1951: 182.—J.L. Barnard, 1969: 349.—Diviacco & Ruffo, 1989: 509.—Barnard & Karaman, 1991: 499.

Type species. *Lysianella petalocera* G.O. Sars, 1883, by monotypy.

Included species. *Lysianella* contains six species: *L. dellavallei* Stebbing, 1906; *L. lui* **sp. nov.**; *L. mimica* J.L. Barnard, 1962; *L. moonamoona* **sp. nov.**; *L. morbihanensis* (Bellan-Santini & Ledoyer, 1974); *L. petalocera* G.O. Sars, 1883.

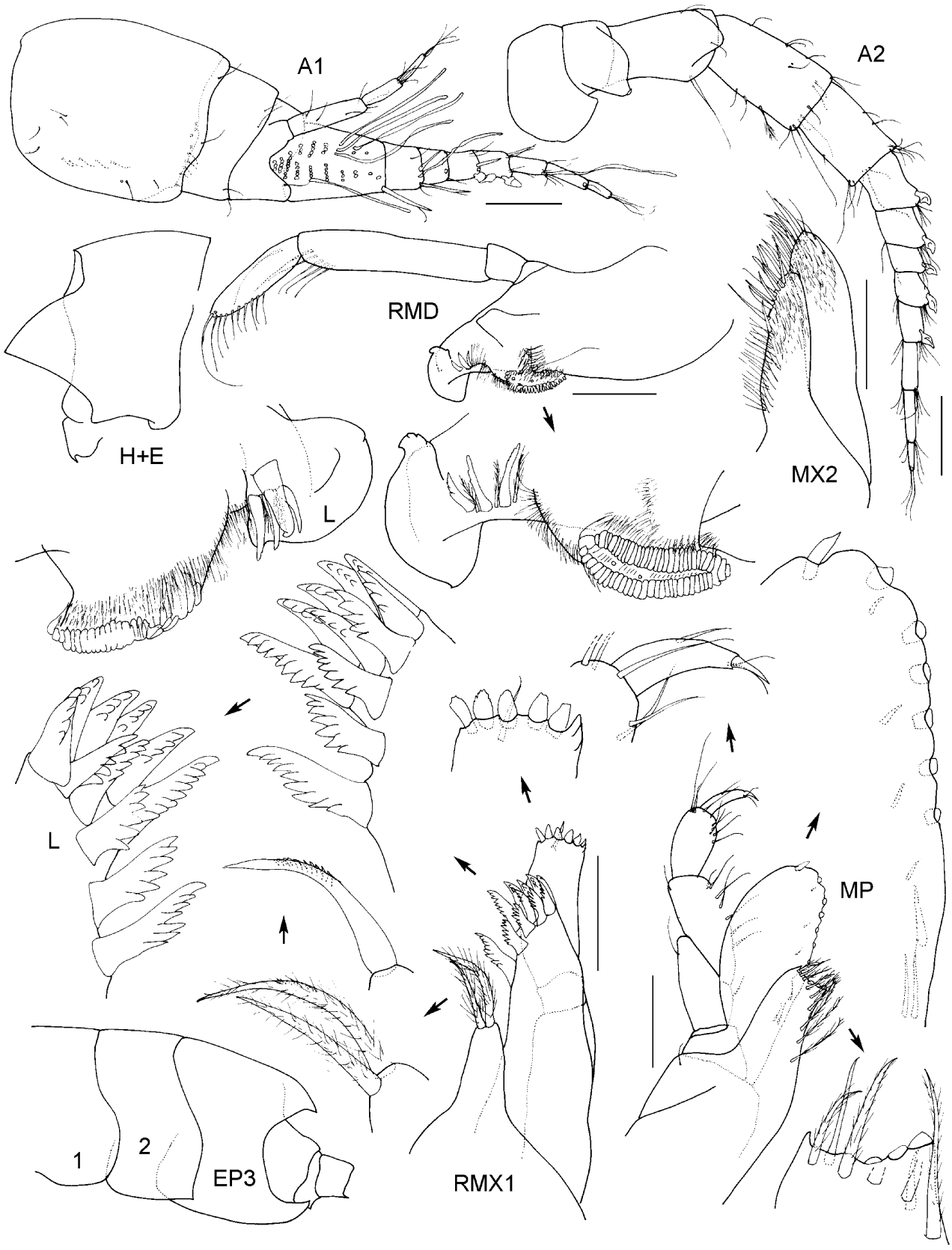

FIGURE 3. *Cedrosella cito* **sp. nov.**, holotype, male, 4.6 mm, NMV J67525, from 76 km south of Point Hicks, Victoria, Australia. Scale: 0.1 mm.

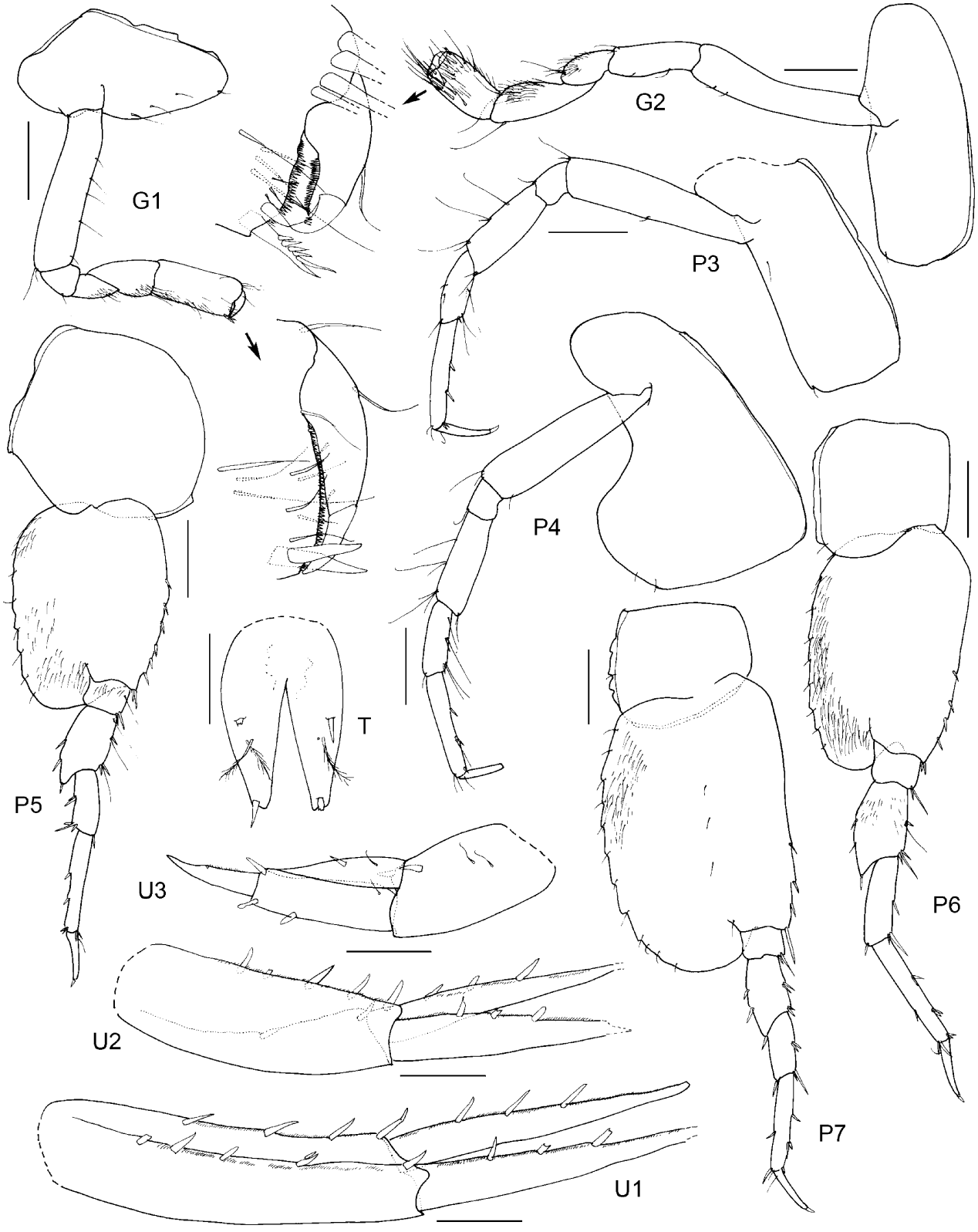

FIGURE 4. *Cedrosella cito* **sp. nov.**, holotype, male, 4.6 mm, NMV J67525, from 76 km south of Point Hicks, Victoria, Australia. Scale: gnathopods, pereopods, 0.2 mm; uropods, telson, 0.1 mm.

Diagnostic description. Antenna 1 with strong 2-field callynophore in male and female; accessory flagellum not forming operculum. Antenna 2 flagellum article 4 swollen in male and female with brush setae on the anterior margin. Mandible incisor slightly curved; palp attached midway to slightly distally. Maxilliped outer plate apical

robust setae present (1 small and thick). *Gnathopod 1* subchelate; coxa large, nearly as long as coxa 2, subrectangular; carpus short, subequal in length to or shorter than propodus. Uropod 2 inner ramus with or without weak constriction. Uropod 3 outer ramus 2-articulate. Telson entire.

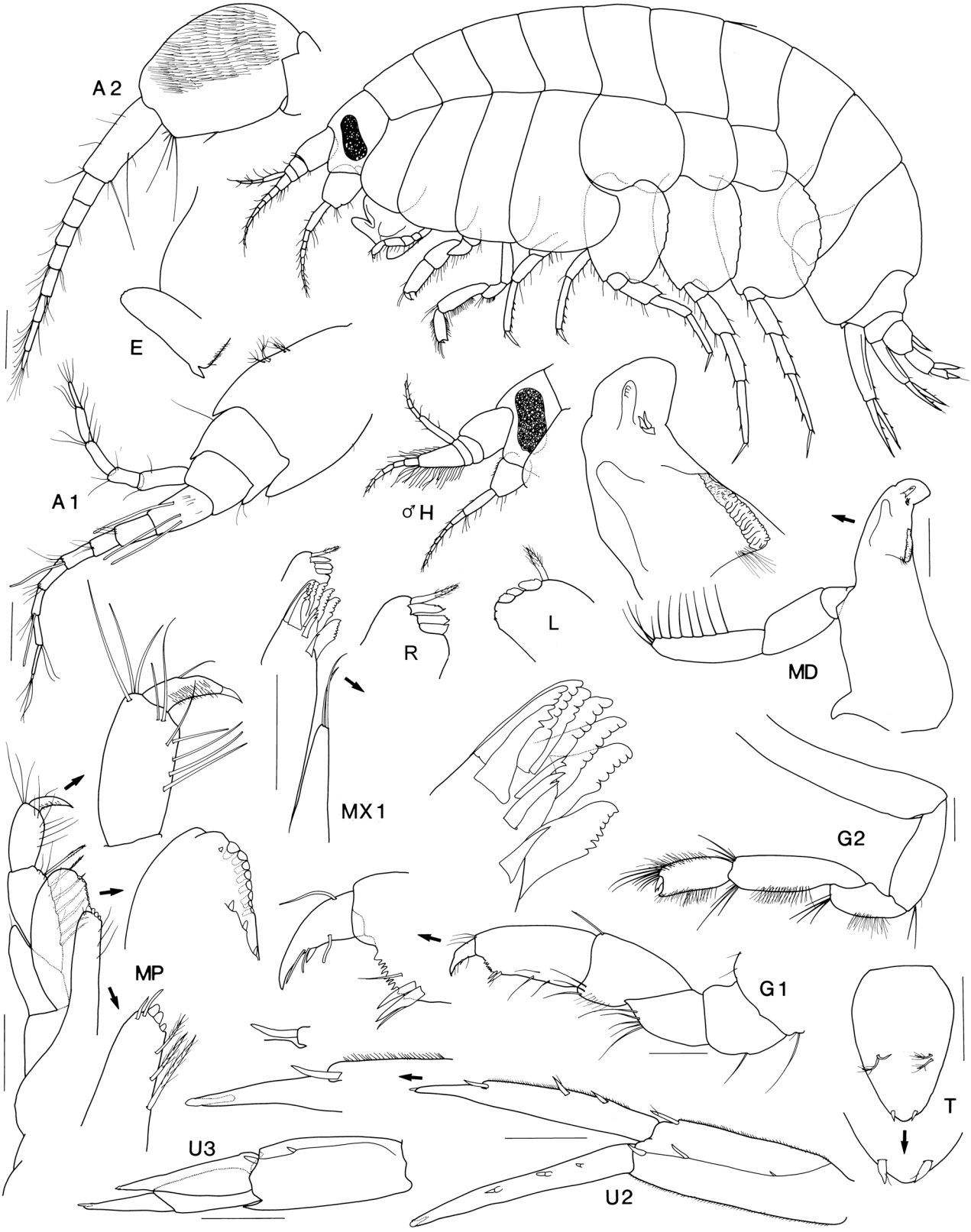

FIGURE 5. *Lysianella petalocera* Sars, 1883, TM 8732, Hjeltefjord, Bergen, Norway, 260 m depth; whole animal head of male, epistome and upper lip after Sars (1890). Scale: 0.1 mm.

Lysianella petalocera G.O. Sars, 1883
(Fig. 5)

Lysianella petalocera G.O. Sars, 1883: 78, pl. 3 fig. 3.—G.O. Sars, 1890: 51, pl. 18 fig. 2.—Della Valle, 1893: 797, pl. 61 fig. 9.—Stebbing, 1906: 31.—Stephensen, 1923: 11.—Schneider, 1926: 7.—Stephensen, 1929: 54.—Stephensen, 1935: 43.—Stephensen, 1942: 470 (table).—Enequist, 1949: 387 (table), 399.—Gurjanova, 1951: 183, fig. 54.—J.L. Barnard, 1958: 94 (list).—Oldevig, 1959: 10.—Vader, 1984: 18.—Barnard & Karaman, 1991: 499.—Palerud & Vader, 1991: 37.—Tzvetkova & Golikov, 2001: 89.

Types. Probably lost, see remarks below.

Material examined. 1 specimen, TM 8732, Hjeltefjord, Bergen, Norway [approx. 60º24'N 05º05'E], 260 m, Rothlisberg-Pearcy epibenthic sled, 4 August 1978, W. Vader.

Type locality. Lyngdalsfjorden, southern Norway, 60–100 fathoms [~110–180 m], and Bekkervig [Bekkjarvik], western Norway.

Habitat. Living in ascidians (Stephensen 1935).

Depth range. 35–260 m (Stephensen 1935; this study).

Remarks. According to Åse Wilhelmsen, ZMUO (2013 *in litt*.), only one sample of *Lysianella petalocera* from the G.O. Sars collection exists in the ZMUO in Oslo, with the locality "*N.m Finm*." This sample is not registered in the type collection. "*N.m*" may mean *Norvegia meridialis* (Southern Norway) and "*Finm*." may refer to Finmark, northern Norway. It is most likely Finmark, as *L. petalocera* has previously been collected from there at Mehavn, near Nordkap (G.O. Sars 1890) and therefore is not part of the type series.

Distribution. *Norway.* Lyngdalsfjorden, Farsund to Mehamn, Finmark (Sars 1890; Stephensen 1935). *Russia.* South-western Barents Sea (Gurjanova 1951).

Lysianella lui sp. nov.
(Figs 6–8)

Types. Holotype, female, 4.8 mm, NMV J67536, 54 km east-south-east of Nowra, New South Wales, Australia (34°52.72'S 151°15.04'E), 996 m, mud, fine sand, fine shell, WHOI epibenthic sled, 22 October 1988, G.C.B. Poore *et al.,* RV *Franklin*, SLOPE stn 53. Paratypes: 6 specimens, 3.7–4.3 mm, NMV J67537, same collection details as holotype.

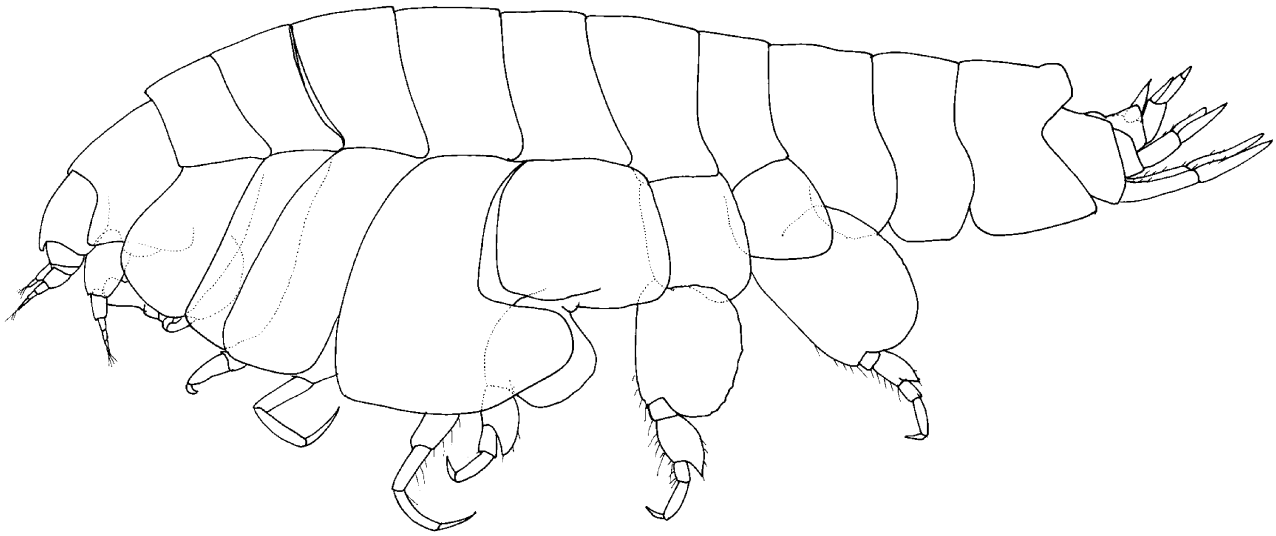

FIGURE 6. *Lysianella lui* **sp. nov.**, *habitus*, holotype, female, NMV J67536, from 54 km east-south-east of Nowra, New South Wales, Australia.

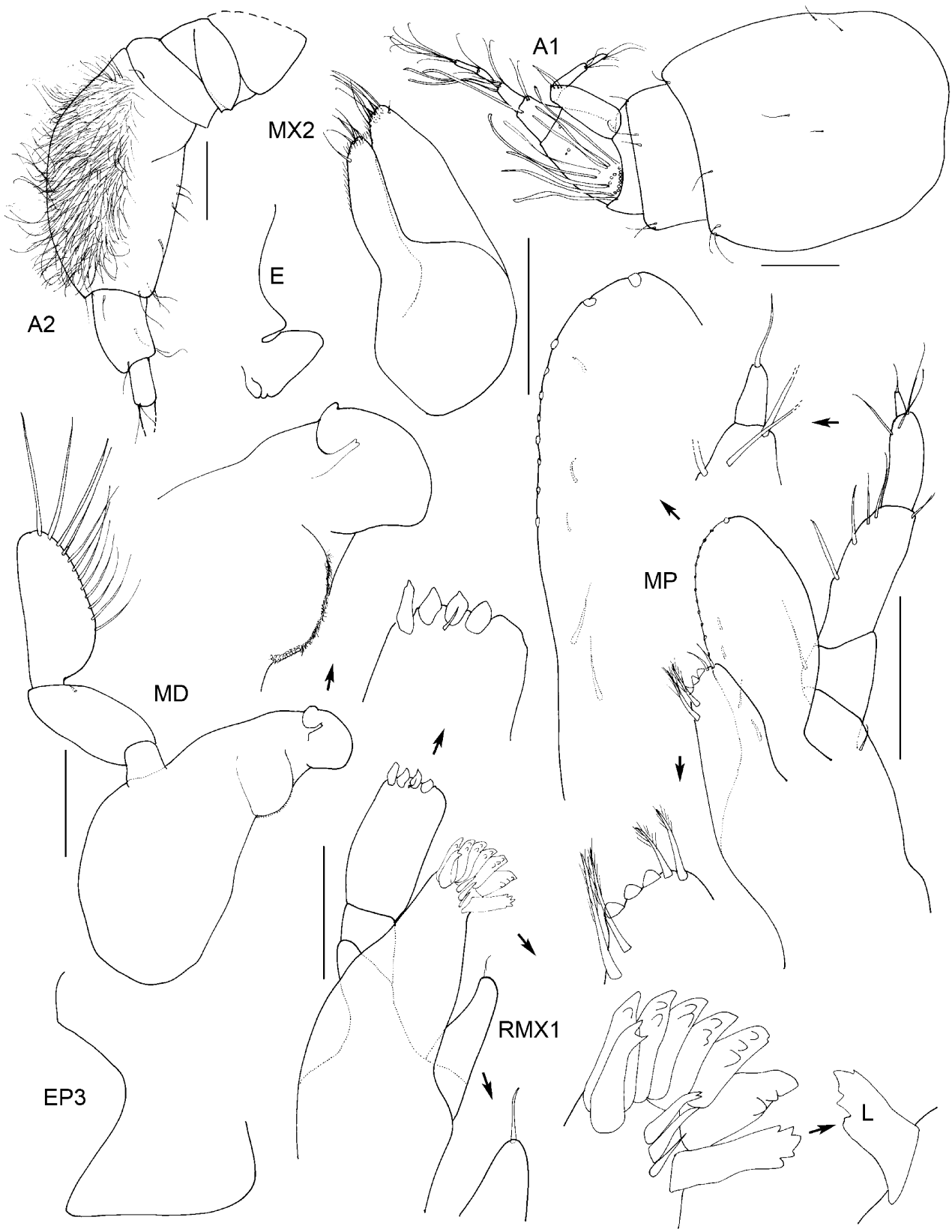

FIGURE 7. *Lysianella lui* **sp. nov.**, holotype, female, NMV J67536, from 54 km east-south-east of Nowra, New South Wales, Australia. Scale: 0.1 mm.

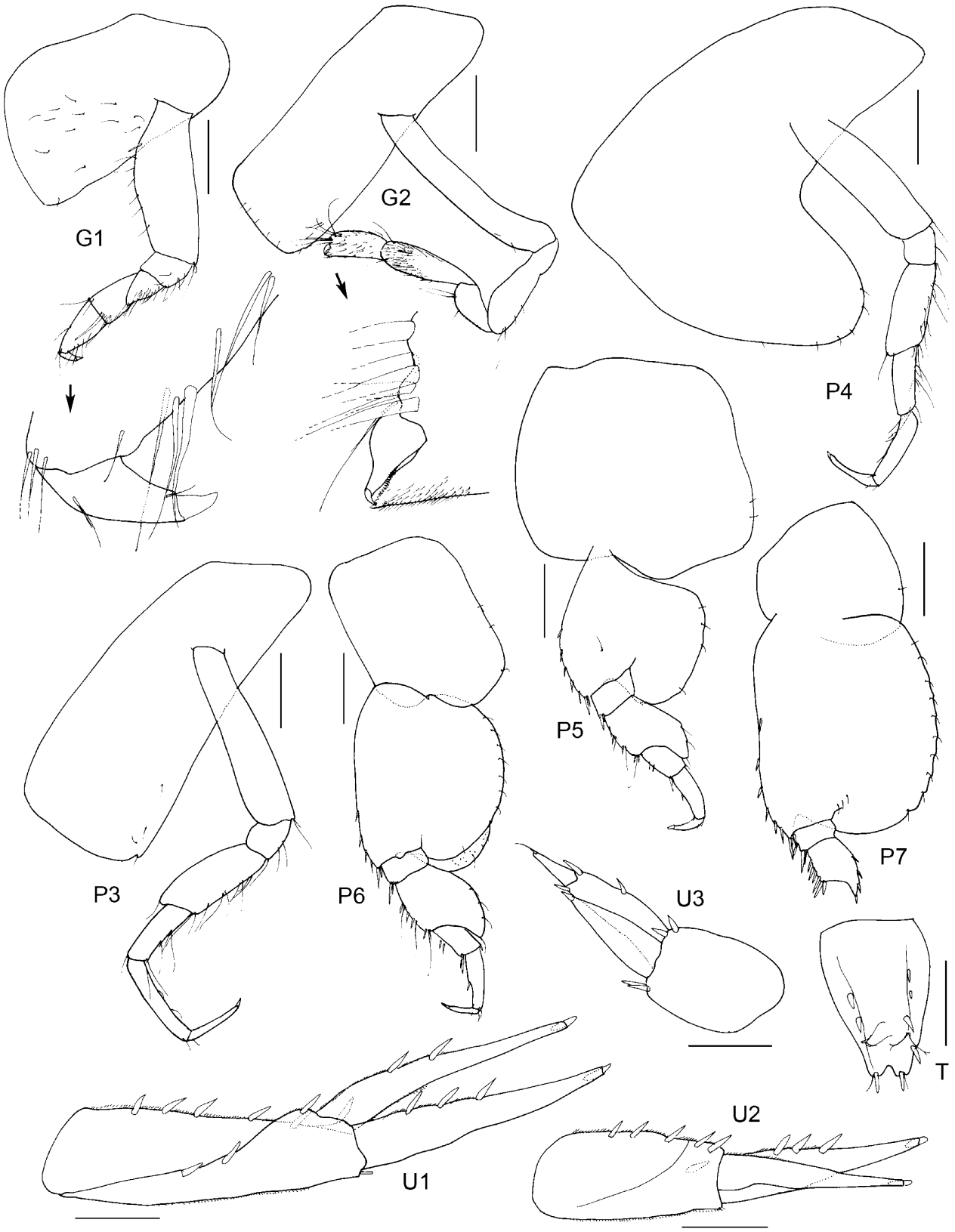

FIGURE 8. *Lysianella lui* **sp. nov.**, holotype, female, NMV J67536, from 54 km east-south-east of Nowra, New South Wales, Australia. Scale: gnathopods, pereopods, 0.2 mm; uropods, telson, 0.1 mm.

Additional material examined. 1 specimen, NMV J67538, off Nowra, New South Wales, Australia (34°52.29'S 151°15.02'E), 1096 m, shell, WHOI epibenthic sled, 15 July 1986, coll. G.C.B. Poore and C.C. Lu, RV

Franklin SLOPE stn 7; 1 specimen, NMV J14608, south of Point Hicks, Victoria, Australia (38°25.90'S 148°58.60'E), 1850 m, muddy, sandstone, WHOI epibenthic sled, 22 July 1986, G.C.B. Poore *et al.,* RV *Franklin* SLOPE stn 25; 2 specimens, NMV J67539, off Freycinet Peninsula, Tasmania, Australia (42°2.20 'S 148°38.70'E), 800 m, coarse shelly sand, WHOI epibenthic sled, 27 July 1986, M.F. Gomon *et al.,* RV *Franklin*, SLOPE stn 45; 1 specimen, NMV J7659, Eastern Bass Strait, 112 km south-south-east of Cape Conran, Victoria, Australia (38º49.0'S 149º00.9'E), 2450 m, mud, pipe dredge, 16 November 1981, coll. R. Wilson, RV *Tangaroa* stn BSS Q-636.

Type Locality. 54 km east-south-east of Nowra, New South Wales, Australia (34°52.72'S 151°15.04'E), 996 m depth.

Etymology. Named for Chung-Cheng Lu, one of the collectors of this species.

Description. Based on holotype female, 4.8 mm, NMV J67536. *Head* lateral cephalic lobe subtriangular, apically subacute; eyes apparently absent. *Antenna 1* accessory flagellum forming operculum partially covering callynophore, 3-articulate; primary flagellum with weak 2-field callynophore, robust setae absent from proximal articles; calceoli absent. *Antenna 2* peduncular article 3 short; article 4 enlarged; flagellum short, calceoli absent. *Labrum*, epistome and upper lip separate; epistome less produced than upper lip, concave; upper lip produced, subacute apically. *Mandible* molar with reduced column and reduced triturating surface; palp attached about midway. *Maxilla 1* outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; palp distal margin with apical robust setae. ***Maxilliped*** outer plate with 2 short apical robust setae; ***palp article 4 poorly developed***.

Pereonites 1–7 dorsally smooth. *Gnathopod 1* weakly subchelate; coxa large, about as long as coxa 2, subrectangular with straight anterior margin; basis sparsely setose along anterior margin; ischium short; carpus short, subequal in length to or slightly shorter than propodus, without posterior lobe; propodus small, margins slightly tapering distally, sparsely setose along posterior margin, palm strongly acute, entire, straight. *Gnathopod 2* minutely chelate; propodus palm moderately obtuse. *Pereopod 4* coxa with a well-developed posteroventral lobe. *Pereopod 5* basis about as long as broad, posteroproximally excavate, posterior margin not serrate. *Pereopod 7* basis posterodistally less than halfway along merus.

Pleonite 3 without mid-dorsal carina, ***posterodorsal margin produced, truncated***. *Epimeron 3* posterior margin smooth, posteroventral corner subacute. *Urosomite 1* dorsally straight. ***Uropod 2 inner ramus without constriction***. *Uropod 3* inner and outer rami well developed, outer ramus article 2 long, without plumose setae on rami. ***Telson apically notched***, longer than wide, with 6–8 dorsal robust setae and 2 apical robust setae.

Sexually dimorphic characters. Not known.

Remarks. *Lysianella lui* is very similar to *Lysianella mimica* (J.L. Barnard, 1962). The most outstanding difference between these species is the maxilliped palp article 4 which is reduced and blunt in *L. lui* **sp. nov.**, but well-developed in *L. mimica*. *Lysianasella lui* is also similar to *L. morbihanensis* (Bellan-Santini & Ledoyer, 1974) from the Kerguelen Islands, but the latter species apparently lacks a fourth article on the maxilliped palp, and the posteroventral lobe on pereopod 4 is not as strongly developed as in *L. lui*. *Lysianella lui* is the only species in the genus with no constriction on uropod 2, otherwise diagnostic for the genus.

Depth range. 800–2450 m.

Distribution. *Australia*. Eastern and south-eastern coasts, from Nowra, New South Wales to the Freycinet Peninsula, Tasmania.

***Lysianella moonamoona* sp. nov.**
(Figs 9–11)

Types. Holotype, immature (?) male, 3.2 mm, AM P.68976, off mouth of Moona Moona Creek, Jervis Bay, New South Wales, Australia (35°2.9'S 150°41.0'E), 4 m, macroalga *Ecklonia sp.* holdfast, hand collected on scuba, September 1981, coll. P.B. Berents.

Type locality. Off mouth of Moona Moona Creek, Jervis Bay, New South Wales, Australia; 4 m depth.

Etymology. Named for Moona Moona Creek, the type locality; used as a noun in apposition.

Description. Based on holotype, (?) male, 3.2 mm. *Head* lateral cephalic lobe narrowly rounded; eyes oval. *Antenna 1* accessory flagellum not forming operculum, 4-articulate; primary flagellum with weak 1-field

callynophore, robust setae absent from proximal articles; calceoli absent. *Antenna 2* peduncular article 3 short; article 4 slightly swollen; flagellum short, calceoli absent. *Labrum*, epistome and upper lip separate; epistome less produced than upper lip, straight; ***upper lip produced, apically subacute***. ***Mandible*** molar with reduced column and reduced triturating surface; ***palp attached slightly distally***, article 3 without A3-setae. *Maxilla 1* outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; palp distal margin with apical robust setae. ***Maxilliped*** outer plate with 1 short apical robust seta; ***palp article 4 well-developed***.

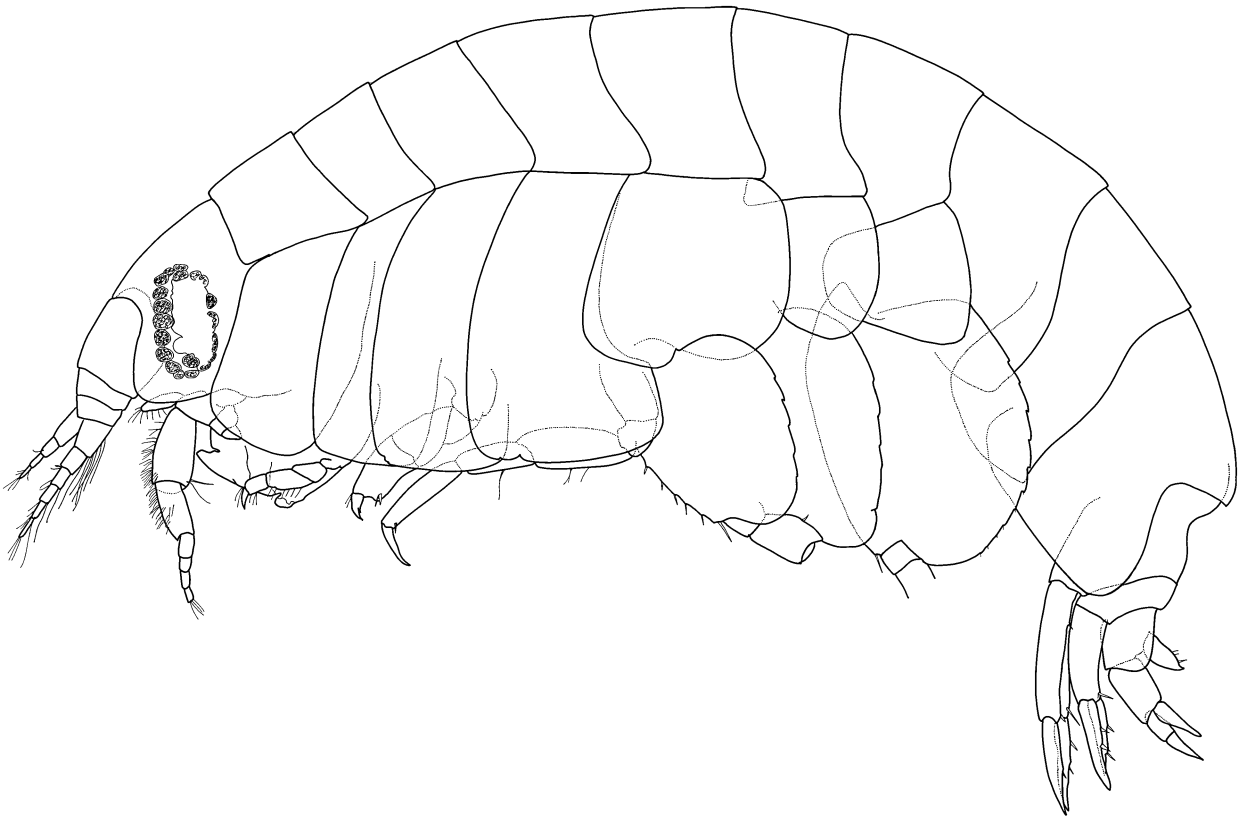

FIGURE 9. *Lysianella moonamoona* **sp. nov.**, *habitus*, holotype, male, 3.2 mm, AM P.68976, from off mouth of Moona Moona Creek, Jervis Bay, New South Wales, Australia.

Pereonites 1–7 dorsally smooth. *Gnathopod 1* subchelate; coxa large, about as long as coxa 2, subrectangular, with straight anterior margin; basis without setae along anterior margin; ischium short; carpus short, subequal in length to propodus, without posterior lobe; propodus small, margins subparallel, sparsely setose along posterior margin, palm transverse to slightly acute, entire, straight. *Gnathopod 2* minutely chelate; propodus palm slightly obtuse. *Pereopod 4* coxa with a well-developed posteroventral lobe. *Pereopod 5* basis about as long as broad, not posteroproximally excavate, posterior margin weakly serrate. *Pereopod 7* basis posterodistally produced less than halfway along merus.

Pleonite 3 without mid-dorsal carina, not produced dorsodistally, posterodorsal margin not produced. *Epimeron 3* posterior margin smooth, posteroventral corner rounded. *Urosomite 1* with slight notch. ***Uropod 2 inner ramus with weak constriction.*** *Uropod 3* inner and outer rami well developed, outer ramus article 2 long, without plumose setae on rami. ***Telson entire,*** as long as wide, apically convex without dorsal robust setae, with 2 apical robust setae on each lobe.

Sexually dimorphic characters. Not known.

Remarks. We have tentatively placed this species in the genus *Lysianella*. The antenna 2 peduncle article 4 is not as enlarged as in other species of the genus. The description is based on a small, probably immature, specimen. We consider that this character has not yet fully developed in the material at hand.

Depth range. 4 m.

Distribution. *Australia*. Recorded only from Jervis Bay, New South Wales.

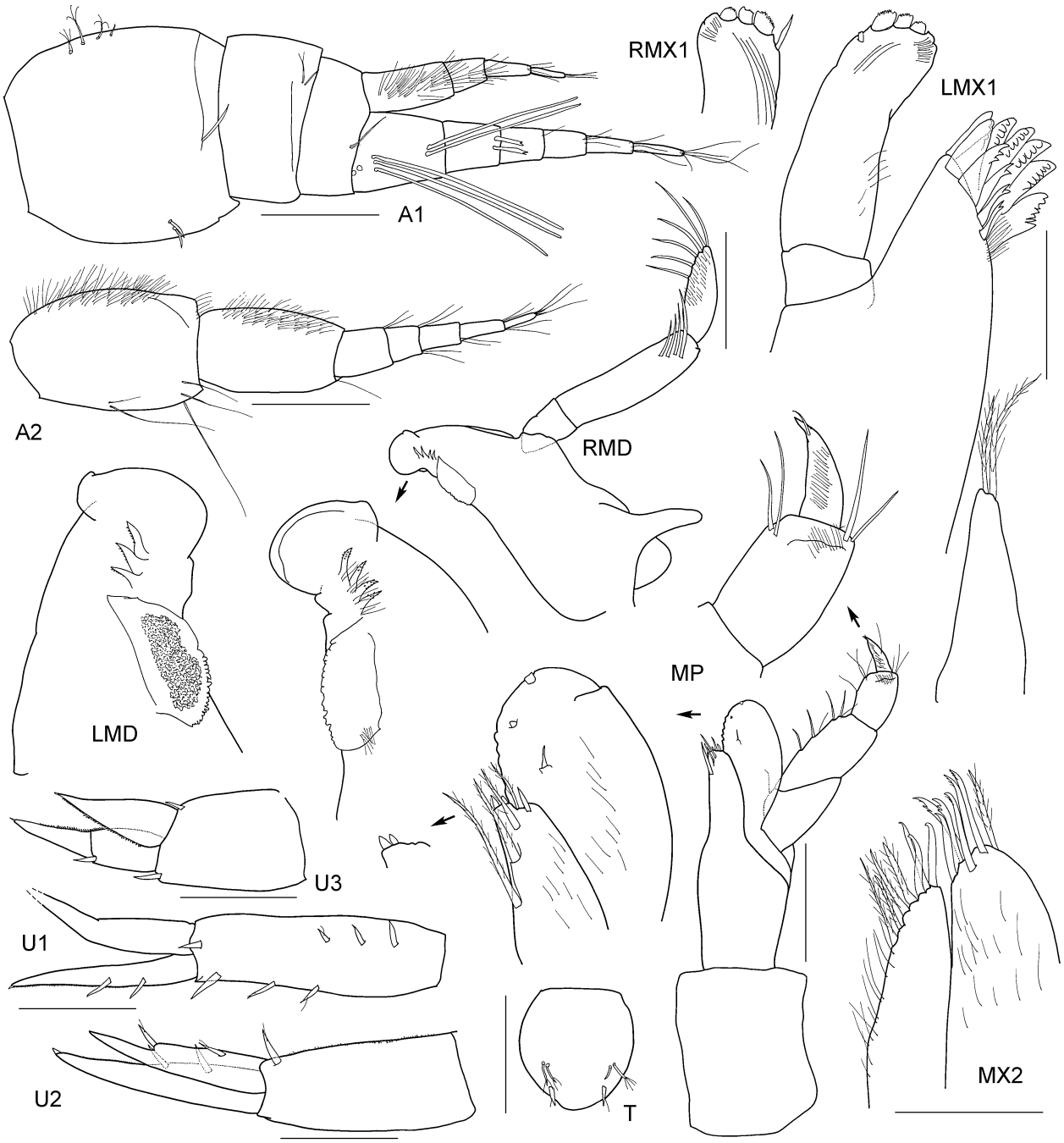

FIGURE 10. *Lysianella moonamoona* **sp. nov.**, holotype, male, 3.2 mm, AM P.68976, from off mouth of Moona Moona Creek, Jervis Bay, New South Wales, Australia. Scale: 0.1 mm.

Microlysias Stebbing, 1918

Microlysias Stebbing, 1918: 63. K.H. Barnard, 1937: 144.—J.L. Barnard, 1969: 351.—Griffiths, 1975: 148.—Barnard & Karaman, 1991: 503.

Type species. *Microlysias xenokeras* Stebbing, 1918, monotypy.

Included species. *Microlysias* includes two species: *M. soela* **sp. nov**; *M. xenokeras* Stebbing, 1918.

Diagnostic description. Antenna 1 with strong 2-field callynophore in male and female; accessory flagellum well developed; not forming operculum. Antenna 2 flagellum article 5 swollen (with brush setae on the anterior

margin). Mandible incisor slightly curved; palp attached midway to slightly distally. Maxilliped outer plate apical robust setae present (1 small and stubby). *Gnathopod 1* subchelate; coxa large, nearly as long as coxa 2; ischium short; carpus shorter than propodus. Pereopod 4 coxa with well developed posteroventral lobe. Pereopods 5–7 basis without serrate posterior margins. Uropod 2 inner ramus not constricted. Uropod 3 rami with plumose setae in male and female. Telson deeply cleft.

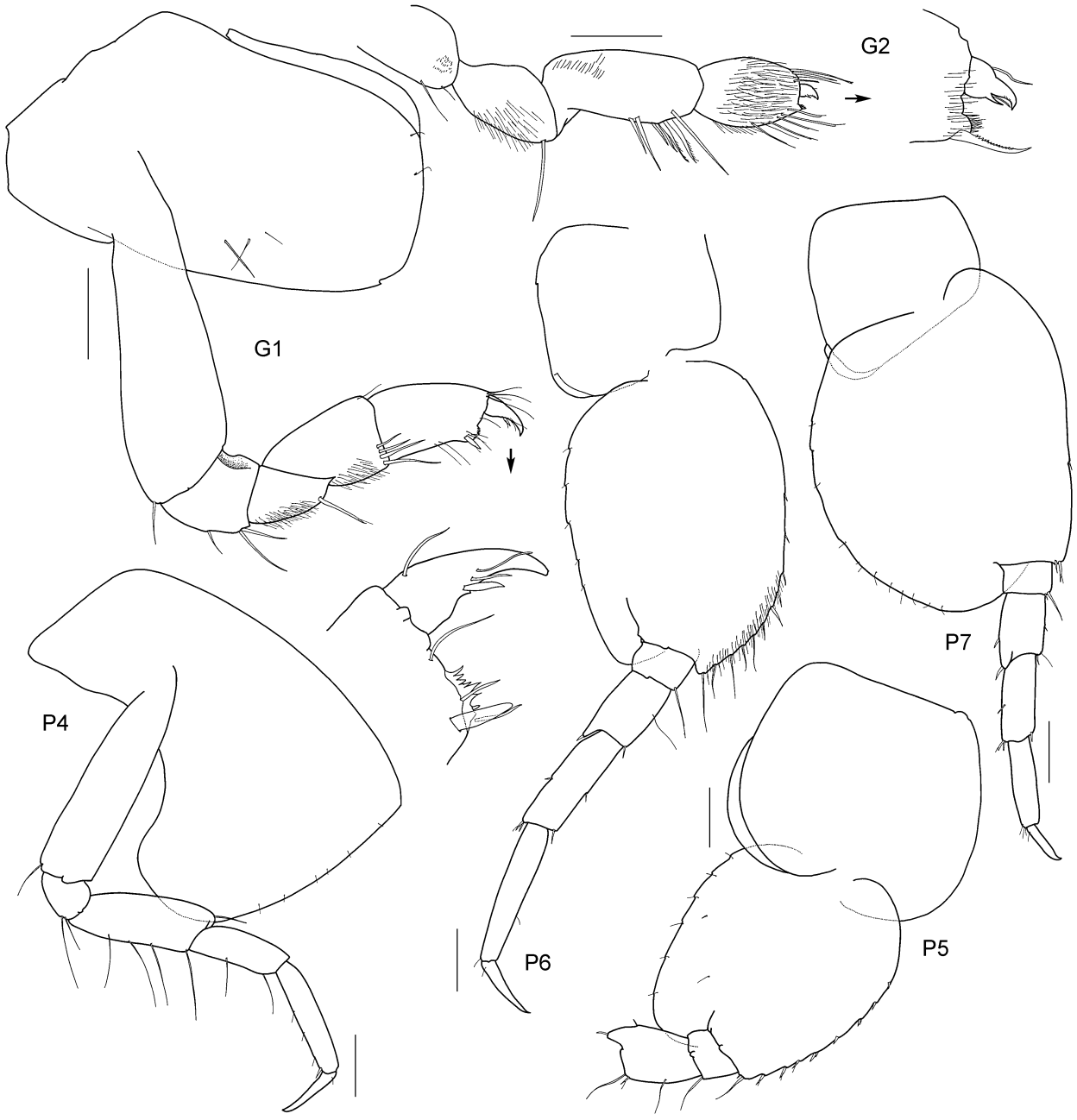

FIGURE 11. *Lysianella moonamoona* **sp. nov.**, holotype, male, 3.2 mm, AM P.68976, from off mouth of Moona Moona Creek, Jervis Bay, New South Wales, Australia. Scale: 0.1 mm.

Microlysias xenokeras **Stebbing, 1918**
(Fig. 12)

Microlysias xenokeras Stebbing, 1918: 64, fig. 9.—K.H. Barnard, 1940: 441.—J.L. Barnard, 1958: 95 (list).—Thurston & Allen, 1969: 362.—Barnard & Karaman, 1991: 503.—Day *et al*., 1970: 50 (table).

? *Microlysias indica* K.H. Barnard, 1937: 144, fig. 2a–c (according to Griffiths 1975: 148).—Griffiths, 1973: 293, fig. 9.—Griffiths,

1976: 55 (key).—J.L. Barnard, 1958: 95 (list).—Thurston & Allen, 1969: 362.

Not *Microlysias xenokeras*.—K.H. Barnard, 1940: 441 (from Plettenberg Bay, South Africa = *Orchomenopsis plicata* Schellenberg, 1926 according to Griffiths 1975: 148).

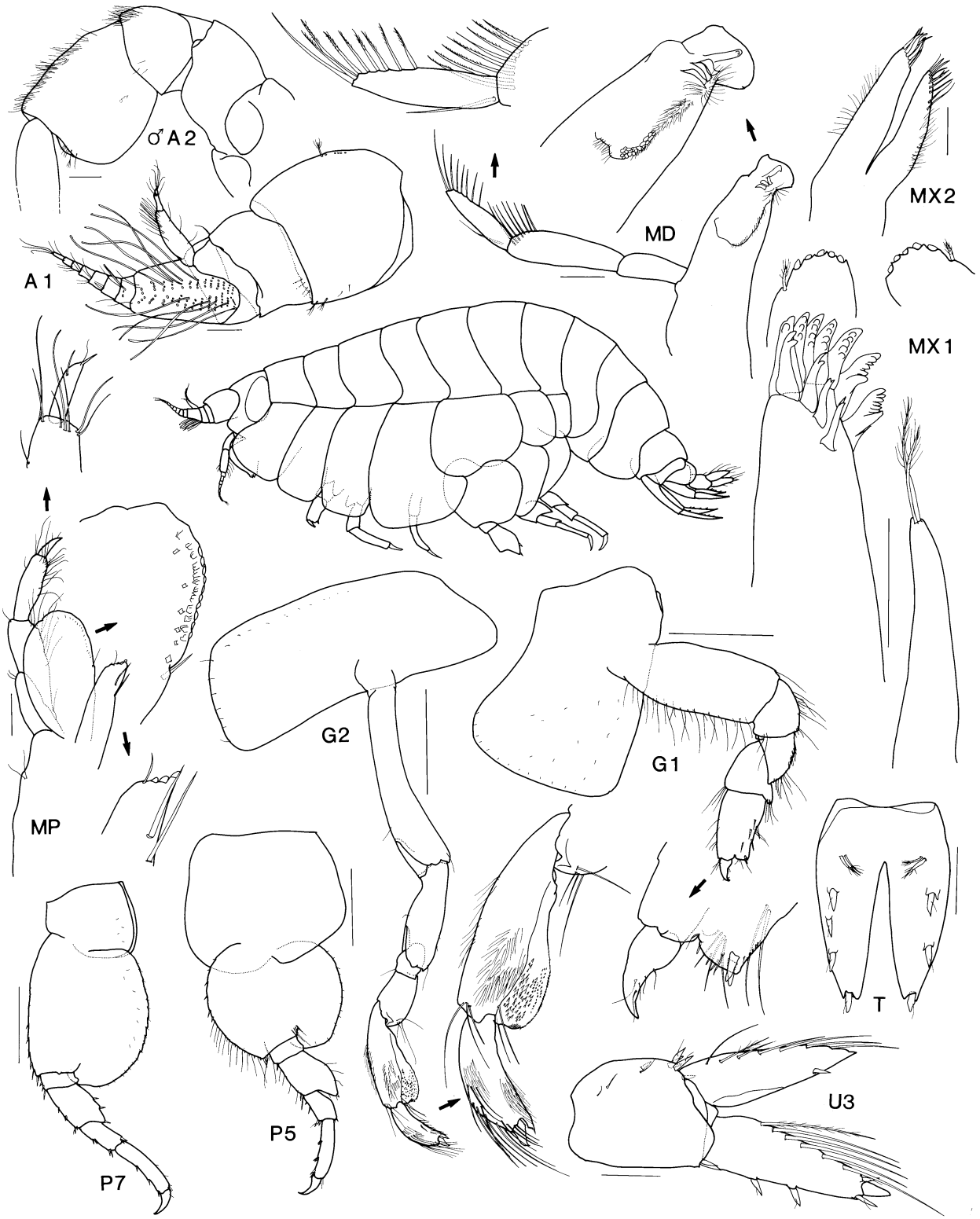

FIGURE 12. *Microlysias xenokeras* **sp. nov.**, syntypes, female, 5.8 mm, male, 6.2 mm, Durban, South Africa. Scale: gnathopods, pereopods, 0.5 mm; remainder, 0.1 mm.

Types. Syntypes, 2 females, 1 male, BMNH 1928.12.1:2055–2061.

Type locality. Vetch's Pier, Durban Bay, South Africa, 4 m depth.

Associations. Commensal in ascidians.

Depth range. 4–13.5 m (Stebbing 1918; K.H. Barnard 1937).

Distribution. *Western Indian Ocean:* South Africa (Stebbing 1918) to the South Arabian coast (K.H. Barnard 1937 (as *M. indica*)).

***Microlysias soela* sp. nov.**
(Figs 13–15)

Microlysias xenokeras.—Azman & Othman, 2013: 14, fig. 9.

Types. Holotype female 5.5 mm, AM P.68958, North West Shelf, Western Australia, (19°58.4'S 117°49.2'E), 43 m, sled, 26 June 1983, CSIRO Division of Fisheries, FRV *Soela* stn 03-D4-S. Paratypes: 33 specimens, 3.2–5.6 mm, AM P.68959, with same collection details as holotype; 2 specimens, AM P.68960, North West Shelf, Western Australia, Australia (19°59.2'S 117°48.6'E), 41 m, sled, 26 June 1983, CSIRO Division of Fisheries, FRV *Soela* stn 03-D8-S; 1 male, 6.0 mm, NMV J67527, North-West Shelf between Port Hedland and Dampier, Western Australia, Australia (20°01.00'S 117°11.00'E – 20°01.00'S 117°12.00'E), 48 m, WHOI epibenthic sled, 11 June 1983, G.C.B. Poore & H.M. Lew Ton, FRV *Soela* [stn NWA-48].

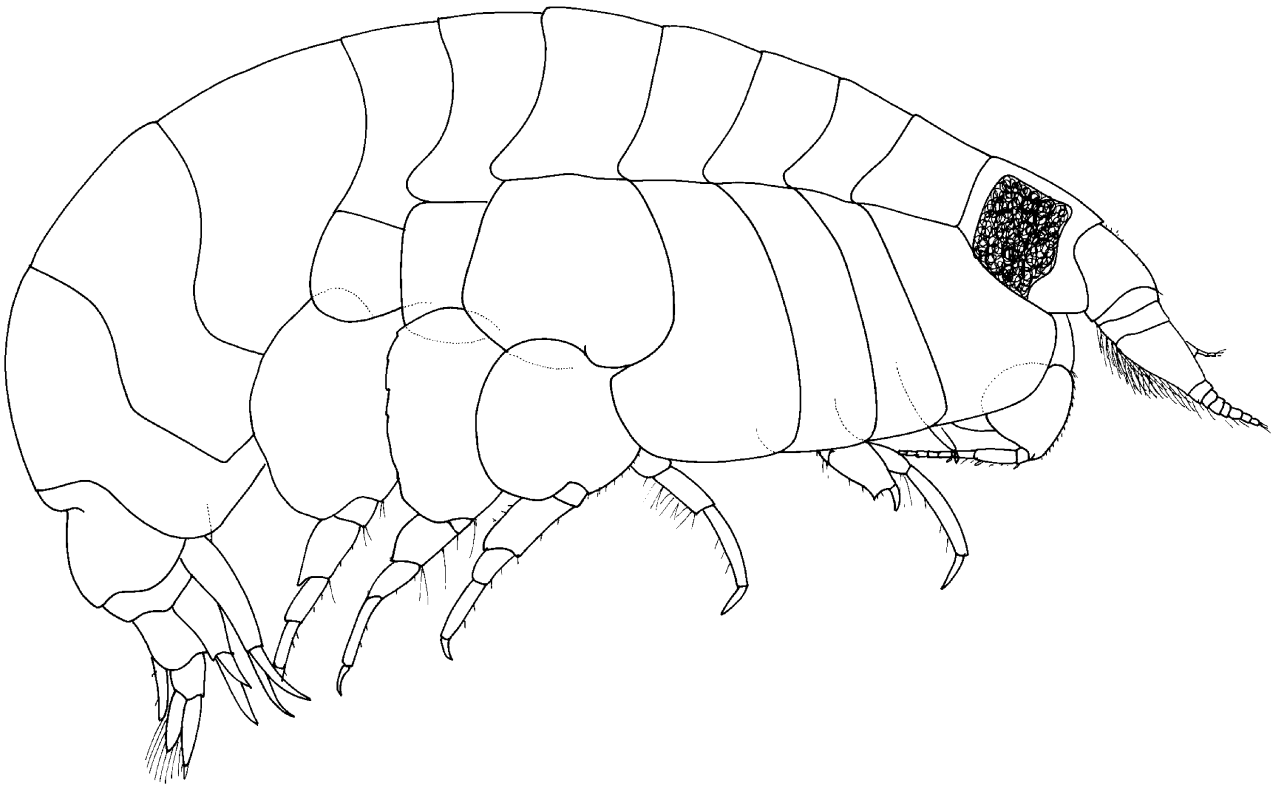

FIGURE 13. *Microlysias soela* **sp. nov.**, *habitus,* paratype, male, 6.0 mm, NMV J67527, North-West Shelf, Western Australia.

Additional material examined. 1 male, NMV J67528 North-West Shelf between Port Hedland and Dampier, Western Australia, Australia (20°01.00'S 117°11.00'E–20°01.00'S 117°12.00'E), 48 m, WHOI epibenthic sled, 11 June 1983, G.C.B. Poore & H.M. Lew Ton, FRV *Soela* [stn NWA-48]; 23 specimens, NMV J67529, North-West Shelf between Port Hedland and Dampier, Western Australia, Australia (20°01.00'S 117°11.00'E–20°01.00'S 117°12.00'E), 48 m, WHOI epibenthic sled, 11 June 1983, G.C.B. Poore & H.M. Lew Ton, FRV *Soela* [stn NWA-48]; 1 female, NMV J67530, North-West Shelf between Port Hedland and Dampier, Western Australia, Australia (20°01.00'S 117°11.00'E–20°01.00'S 117°12.00'E), 48 m, WHOI epibenthic sled, 11 June 1983, G.C.B. Poore & H.M. Lew Ton, FRV *Soela* [stn NWA-48]; 1 specimen, NMV J67531, North-West Shelf between Port Hedland and

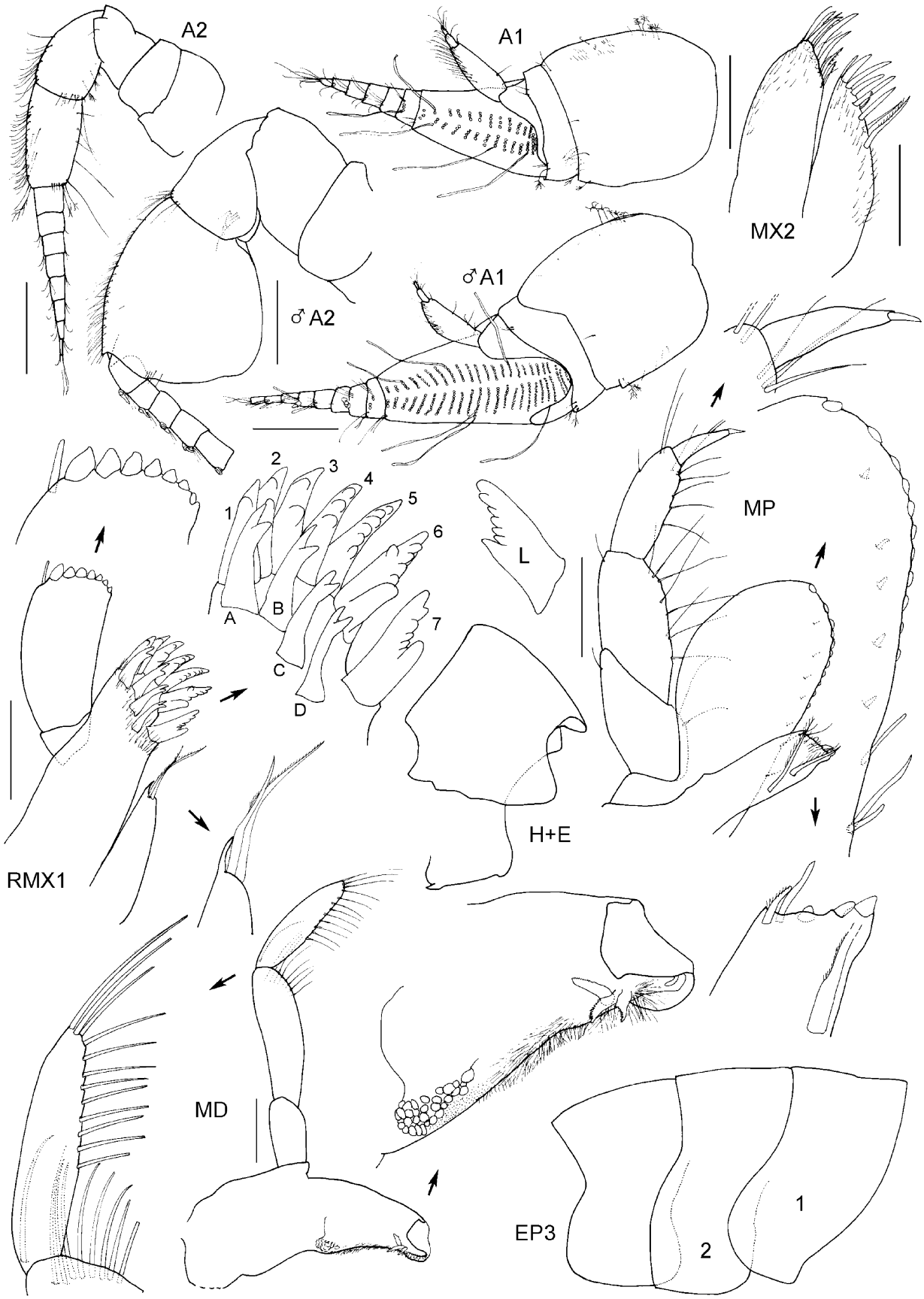

FIGURE 14. *Microlysias soela* **sp. nov.**, holotype, female AM P.68958; paratype, male A1, 2, NMV J67527, from North-West Shelf, Western Australia. Scale: antennae, 0.2 mm; mouthparts, 0.1 mm.

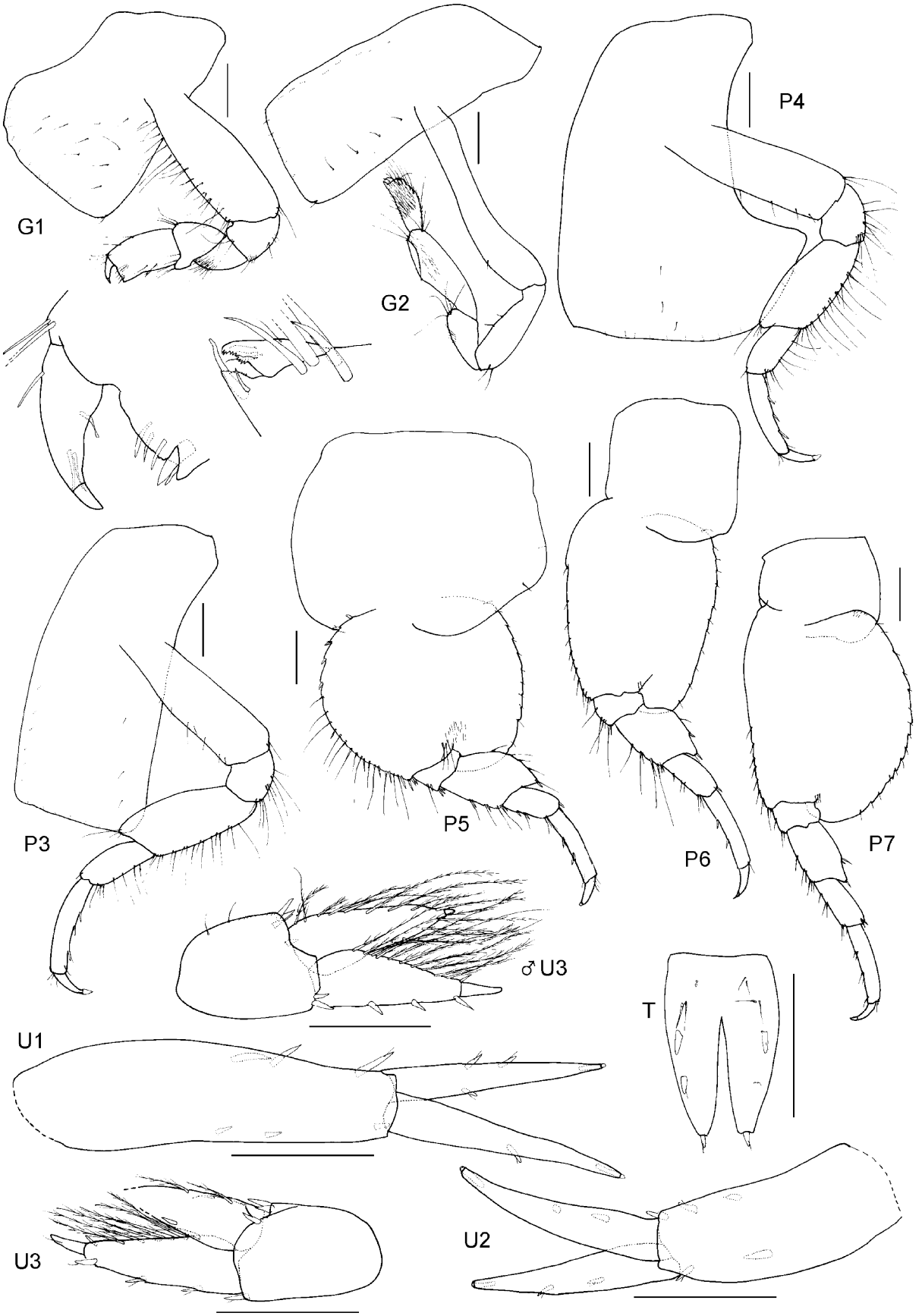

FIGURE 15. *Microlysias soela* **sp. nov.**, holotype, female AM P.68958; paratype, male U3, NMV J67527, from North-West Shelf, Western Australia. Scale: 0.2 mm.

Dampier, Western Australia, Australia (19°38'S 118°06'E–19°37'S 118°05'E), 49 m, crinoids, WHOI epibenthic sled, 13 June 1983, G.C.B. Poore & H.M. Lew Ton, FRV *Soela* [stn NWA-56]; 1 specimen, NMV J67532, North-West Shelf between Port Hedland and Dampier, Western Australia, Australia (19°00.5'S 117°26.0'E–19°00.5'S 117°46.23'E), 120 m, WHOI epibenthic sled, 12 June 1983, G.C.B. Poore & H.M. Lew Ton, FRV *Soela* [NWA-52]; 1 specimen, NMV J67533, North-West Shelf between Port Hedland and Dampier, Western Australia, Australia (20°01.00'S 117°17.00'E–20°00.00'S 117°18.00'E), 46 m, WHOI epibenthic sled, 2 June 1983, G.C.B. Poore & H.M. Lew Ton, FRV *Soela* [NWA-5].

Type locality. North West Shelf, Western Australia, Australia (19°58.4'S 117°49.2'E); 43 m depth.

Etymology. Named for the FRV *Soela*; used as a noun in apposition.

Description. Based on holotype female, 5.5 mm, AM P.68958. *Head* lateral cephalic lobe subtriangular, apically subacute; eyes irregularly subrectangular, covering most of head. *Antenna 1* accessory flagellum forming a partial operculum, 3-articulate; primary flagellum with strong 2-field callynophore, robust setae absent from proximal articles; calceoli absent. *Antenna 2* peduncular article 3 short; articles 3 to 5 not enlarged; flagellum short, calceoli absent. Labrum, epistome and upper lip fused, broadly rounded, concave. *Mandible* molar ridge-like, narrow, setose with narrow distal triturating surface; palp attached about midway, article 3 with 1 proximal A3-setae. ***Maxilla 1 inner plate apically produced into a slender spine***; outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; palp distal margin with apical robust setae. *Maxilliped* outer plate with 1 short apical robust seta.

Pereonites 1–7 dorsally smooth. *Gnathopod 1* subchelate; coxa large, about as long as coxa 2, subrectangular, with concave anterior margin, distally straight; basis moderately setose along anterior margin; ischium short; carpus compressed, shorter than propodus, with narrow posterior lobe; propodus small, margins subparallel, sparsely setose along posterior margin, palm transverse, entire, straight. ***Gnathopod 2*** minutely chelate; ***propodus palm moderately obtuse***. *Pereopod 4* coxa with a well-developed posteroventral lobe. *Pereopod 5* basis slightly broader than long, not posteroproximally excavate, posterior margin weakly serrate. *Pereopod 7* basis posterodistally produced less than halfway along merus.

Pleonite 3 without mid-dorsal carina, not produced dorsodistally, posterodorsal margin not produced. *Epimeron 3* posterior margin smooth, posteroventral corner broadly rounded. *Urosomite 1* with anterodorsal notch and slightly rounded boss. *Uropod 2* inner ramus without constriction. *Uropod 3* inner and outer rami well developed, outer ramus article 2 short, with plumose setae on both rami. *Telson* deeply cleft, longer than wide, with 2–3 dorsal robust setae per lobe and 1 apical robust setae on each lobe.

Sexually dimorphic characters. Based on male, 6.0 mm, NMV J67527. *Antenna 1* primary flagellum with strong 2-field callynophore (stronger than female); calceoli present, small. *Antenna 2* peduncular article 3 short; article 5 greatly enlarged; flagellum long, calceoli present.

Remarks. The only other recognised species of *Microlysias*, *M. xenokeras* Stebbing, 1918, is known from south-western South Africa. A second species, *M. indica* K.H. Barnard, 1937, from the south Arabian coast is considered by Griffiths (1975) to be a synonym of *M. xenokeras*.

Microlysias soela **sp. nov.** is very similar to *M. xenokeras*. The gnathopod 2 palm in *M. xenokeras* is extremely obtuse (almost at a right angle), but only moderately obtuse in *M. soela* and the antenna 2 peduncle article 3 is longer in the female of *M. xenokeras*. *Microlysias soela* also has a distinct spine-like projection from the apical margin of the *maxilla 1* inner plate that is absent in *M. xenokeras*.

Based on the less obtuse palm of gnathopod 2 the record of *M. xenokeras* from Pulau Tioman (Azman & Othman 2013) appears to be *M. soela*.

Depth range. 41–120 m (this study).

Distribution. *Australia*. North West Shelf, Western Australia (this study). *Malaysia*. Pulau Tioman (Azman & Othman 2013).

Paralysianopsis Schellenberg, 1931

Paralysianopsis Schellenberg, 1931: 7.—J.L. Barnard, 1969: 356.—Lowry & Stoddart, 1984: 103.—Barnard & Karaman, 1991: 513.—Lowry & Stoddart, 1995b: 102.

Austronisimus K.H. Barnard, 1931: 425 (type species = *Austronisimus rhinoceros* K. H. Barnard, 1931).

Rhinolabia Ruffo, 1971: 103 (type species = *Rhinolabia parthenopeia* Ruffo, 1971).—Diviacco & Ruffo, 1989: 541.—Barnard & Karaman, 1991: 525.—Lowry & Stoddart, 1995: 116.

Type species. *Paralysianopsis odhneri* Schellenberg, 1931, monotypy.

Included species. *Paralysianopsis* includes 12 species: *P. capricornia* **sp. nov.**; *P. dandenong* **sp. nov.**; *P. elliotti* (Lowry & Stoddart, 1995b) **comb. nov.**; *P. jebbi* (Lowry & Stoddart, 1995b); *P. mauritiensis* Ledoyer, 1978; *P. mazamoz* Lowry & Stoddart, 1995; *P. odhneri* Schellenberg, 1931; *P. padoz* Lowry & Stoddart, 1995b; *P. paeowai* (Lowry & Stoddart, 1995b) **comb. nov.**; *P. parthenopeia* (Ruffo, 1971) **comb. nov.**; *P. pomona* **sp. nov.**; *P. ruffoi* **sp. nov.**

Diagnostic description. Antenna 1 accessory flagellum not forming operculum. Antenna 2 flagellum article 3–5 slender, brush setae present or absent. Labrum with epistome and upper lip fused or weakly separate. Mandibular incisor curved; molar a reduced column with reduced triturating surface or a flap with or without setae, with vestigial distal triturating patch; palp attached midway to slightly distally. *Maxilla 1* ST-7 apically cuspidate; ST-D slender, apically cuspidate; palp distal margin with robust setae along entire or part of margin, or robust setae vestigial or absent. Maxilliped outer plate apical robust setae vestigial. *Gnathopod 1* weakly to strongly subchelate; coxa large, nearly as long as coxa 2, not tapering; carpus slightly longer than propodus; propodus palm acute, straight. Pereopod 4 coxa with posteroventral lobe. Uropod 2 inner ramus constricted. Uropod 3 rami without plumose setae; inner ramus slender, lanceolate, 2-articulate, article 2 as long as or longer than article 1. Telson entire.

Remarks. The only character separating *Paralysianopsis* and *Rhinolabia* has been the well-developed apical robust setae on the palp of *maxilla 1*, present in *Paralysianopsis* (setae absent in *Rhinolabia*, but with a strong medially serrate margin). In *P. pomona* **sp. nov.** the medially serrate apical margin persists along with a set of lateral robust setae. In *P. mazamoz* the medial serrate margin is well developed and the robust setae are vestigial and in species such as *P. paeowai* there is only a remnant of the serrate medial margin and no robust setae. This is a gradational character which does not separate the genera.

Paralysianopsis incerta (Ledoyer, 1986) was transferred to *Glorieusella* Kilgallen & Lowry, 2014.

Paralysianopsis odhneri Schellenberg, 1931

(Fig. 16)

Paralysianopsis odhneri Schellenberg, 1931: 7, fig. 2.—K.H. Barnard, 1932: 38, fig. 6.—Nicholls, 1938: 11.—J.L. Barnard, 1958: 97.—Arnaud, 1974: 648.—Lowry & Bullock, 1976: 102.—De Broyer, 1983: 197, figs 57–59.—Lowry & Stoddart, 1984: 104, figs 4–6.—Barnard & Karaman, 1991: 514.—Gonzalez, 1991: 59.—Jażdżewski *et al*., 1992: 464 (table 1), 468 (table 2).—De Broyer & Jażdżewski, 1993: 73.—Lowry & Stoddart, 1995b: 102 (key).— Jażdżewski *et al*., 1996: 371.—De Broyer *et al*., 2007: 149.

Austronisimus rhinoceros K.H. Barnard, 1931: 425.—Thurston & Allen, 1969: 356.

Types. Lectotype, immature, 3 mm, SMNH type collection no. 703. Paralectotype, female, 4 mm, SMNH 3432 (designated by Lowry & Stoddart 1984).

Type locality. Outside Grytviken, South Georgia, South Atlantic Ocean [approx. 54°22'S 36°27'W], stones and algae from algae-covered rocky bottom outside *Macrocystis*-formation, 30 m depth.

Depth range. 2–147 m (De Broyer *et al*. 2007).

Distribution. *South Atlantic and Southern Oceans*. Falkland Islands (Schellenberg 1931); South Georgia (Schellenberg 1931; K.H. Barnard 1932); South Shetland Islands (Jażdżewski *et al*. 1992); Adélie Coast, Antarctica (Nicholls 1938); Davis Sea (De Broyer 1983).

Paralysianopsis capricornia sp. nov.

(Figs 17–19)

Types. Holotype, female, 3.6 mm, AM P.70543, east of Fitzroy Reef, Queensland, Australia (23°32.53'S 152°16.45'E), 105 m, baited trap, 16 June 1993–17 June 1993, J.K. Lowry, P. Freewater & R.T. Springthorpe, MV *Reefknot* stn QLD-954/SEAS. Paratypes: 1 male, 2.4 mm, AM P.71608; 6 specimens, 2.9–4.2 mm, AM P.49695; 1 specimen, AM P.57642, 2.4 mm, east of Fitzroy Reef, Queensland, Australia (23°32.53'S 152°16.45'E), 105 m, baited trap, 16 June 1993–17 June 1993, J.K. Lowry, P. Freewater & R.T. Springthorpe, MV *Reefknot* stn QLD-

954/SEAS; 1 male, 3.6 mm, AM P.71609; 28 specimens, 2.4–3.6 mm, AM P.57643, east of Fitzroy Reef, Queensland, Australia (23°32.53'S 152°16.45'E), 105 m, baited trap, 16 June 1993–17 June 1993, J.K. Lowry, P. Freewater & R.T. Springthorpe, MV *Reefknot* stn QLD-955/SEAS.

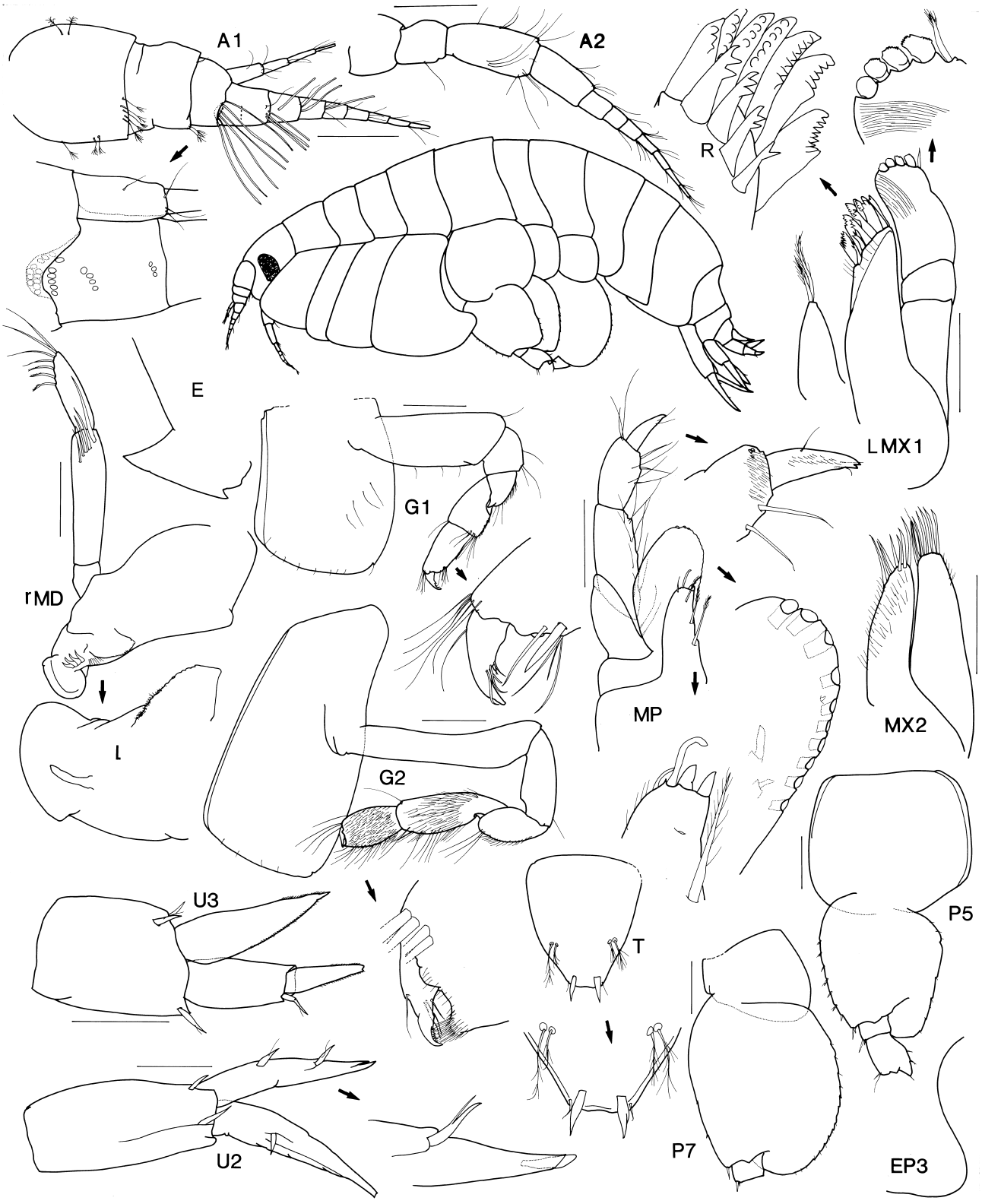

FIGURE 16. *Paralysianopsis odhneri* Schellenberg, 1931, paralectotype, female, 4 mm, SMNH 3432, Port William, Falkland Islands. Scale: antennae, gnathopods, pereopods, 0.2 mm; remainder, 0.1 mm.

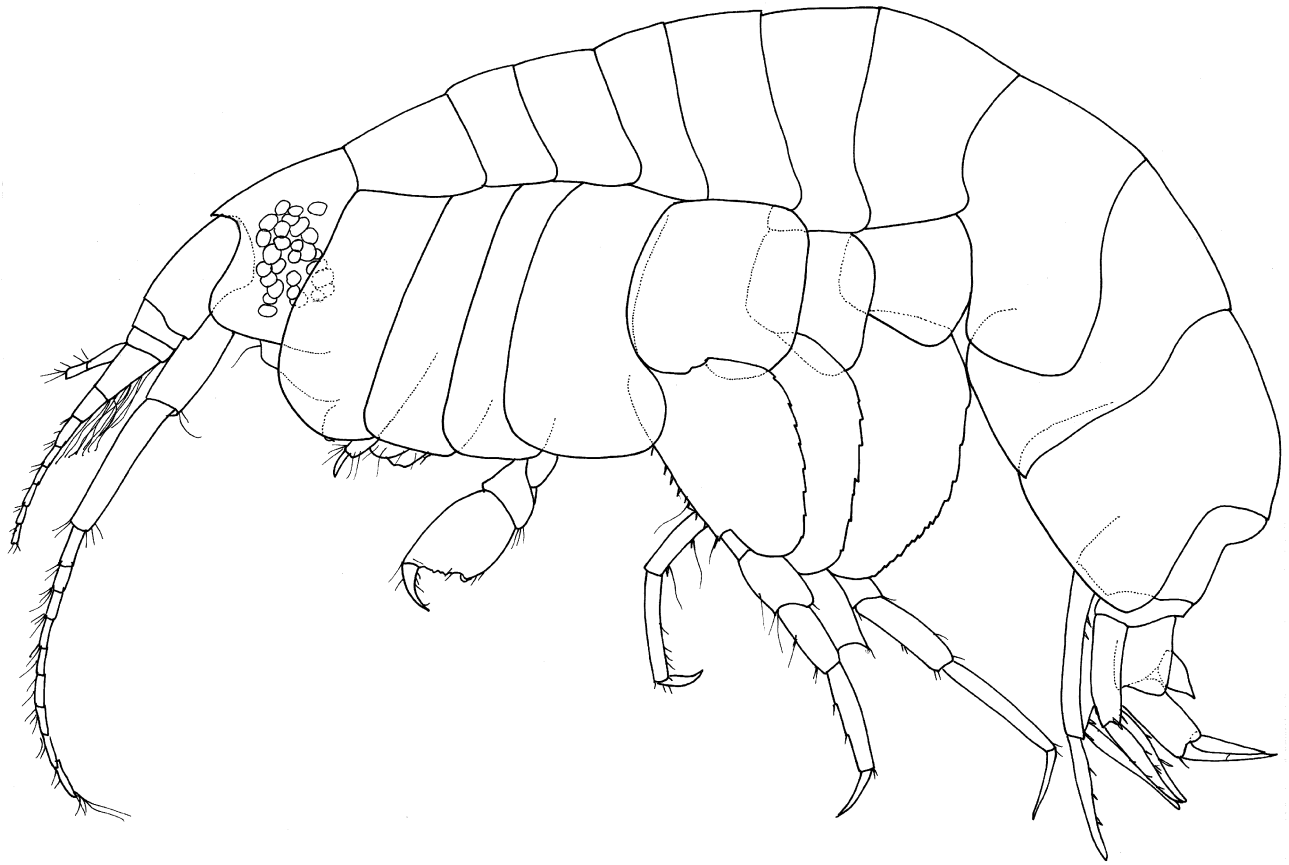

FIGURE 17. *Paralysianopsis capricornia* **sp. nov.**, paratype, male, 3.6 mm, AM P.71609, from east of Fitzroy Reef, Queensland, Australia.

Additional material examined. *Queensland*. 1 specimen, AM P.57749, east of Flynn Reef (16° 41.32'S 146°18.27'E), 100 m, baited trap, 06 June 1993–07 June 1993, J.K. Lowry, P. Freewater, W. Vader, RV *Sunbird* stn QLD-919/SEAS; 3 specimens, AM P.51125, east of Fitzroy Reef (23° 34.82'S 152°11.77'E), 58 m, baited trap, 3 June 1994–4 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* stn QLD-1091; 1 specimen, AM P.57748, east of Flynn Reef (16° 41.32'S 146°18.27'E), 100 m, baited trap, 6 June 1993–7 June 1993, J.K. Lowry, P. Freewater, W. Vader, RV *Sunbird* stn QLD-918/SEAS; 3 specimens, AM P.50756, east of Fitzroy Reef (23°32.47'S 152°16.45'E), 58 m, baited trap, 2 June 1994–3 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* stn QLD-1073; 1 specimen, AM P.51118, east of Fitzroy Reef (23°34.92'S 152°11.77'E), 58 m, baited trap, 16 June 1993–17 June 1993, J.K. Lowry, P. Freewater, R.T. Springthorpe, MV *Reefknot* stn QLD-953/SEAS; 5 specimens, AM P.71610, east of Fitzroy Reef (23°32.47'S 152°16.45'E), 100 m, baited trap, 2 June 1994–3 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* stn QLD-1076; 39 specimens, AM P.50764, east of Fitzroy Reef (23°32.47'S 152°16.45'E), 100 m, baited trap, 3 June 1994–4 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* stn QLD-1096; 8 specimens, AM P.58238, east of Fitzroy Reef (23°32.47'S 152°16.45'E), 100 m, baited trap, 2 June 1994–3 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* stn QLD-1078; 15 specimens, AM P.49629, east of Fitzroy Reef (23°32.47'S 152°16.45'E), 100 m, baited trap, 2 June 1994–3 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* stn QLD-1078.

Type locality. East of Fitzroy Reef, Queensland, Australia (23°32.53'S 152°16.45'E), 105 m.

Etymology. The specific epithet "*capricornia*" refers to Capricornia Cays National Park, which includes Fitzroy Reef, the type locality; used as a noun in apposition.

Description. Based on holotype, female, ~3.6 mm, AM P.70543. *Head* lateral cephalic lobe broadly rounded; eyes oval to irregular. *Antenna 1* accessory flagellum not forming operculum; primary flagellum with weak 2-field callynophore, robust setae absent from proximal articles; calceoli absent. *Antenna 2* peduncle weakly geniculate between articles 3–4; article 3 short; articles 3 to 5 not enlarged, brush setae absent; flagellum short, calceoli absent. *Labrum*, epistome and upper lip separate; epistome not produced, concave; upper lip slightly produced in

front of epistome, rounded. *Mandible* molar weakly setose with a vestigial triturating surface. *Maxilla 1* outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; palp distal margin serrate/rugose, without apical robust setae. *Maxilliped* outer plate apical robust setae absent.

Pereonites 1–7 dorsally smooth. ***Gnathopod 1 subchelate***; coxa large, about as long as coxa 2, subrectangular with straight anterior margin; basis not setose along anterior margin; ischium short; ***carpus compressed***, shorter than propodus, without posterior lobe; propodus large, not setose along posterior margin, palm transverse to slightly acute, irregular, ***with disk-like process on posterodistal corner***. *Gnathopod 2* minutely chelate; propodus palm transverse, convex. *Pereopod 5* basis about as long as broad, not posteroproximally excavate, posterior margin weakly serrate. *Pereopod 7* basis posterodistally produced to less than halfway along merus.

Pleonite 3 without mid-dorsal carina, not produced dorsodistally, posterodorsal margin not produced. *Epimeron 3* posterior margin smooth, posteroventral corner narrowly rounded. *Urosomite 1* with slight notch dorsally. *Uropod 2* inner ramus with slight constriction. *Uropod 3* inner and outer rami well developed, outer ramus article 2 long, without plumose setae on rami. *Telson* entire, longer than wide, apically truncate, without robust setae.

Sexually dimorphic characters. *Antenna 1* with strong 2-field callynophore. *Antenna 2* peduncle articles 4 and 5 elongate. *Gnathopod 1* propodus longer than *gnathopod 1* of female, palm with strong, posteromedial robust seta.

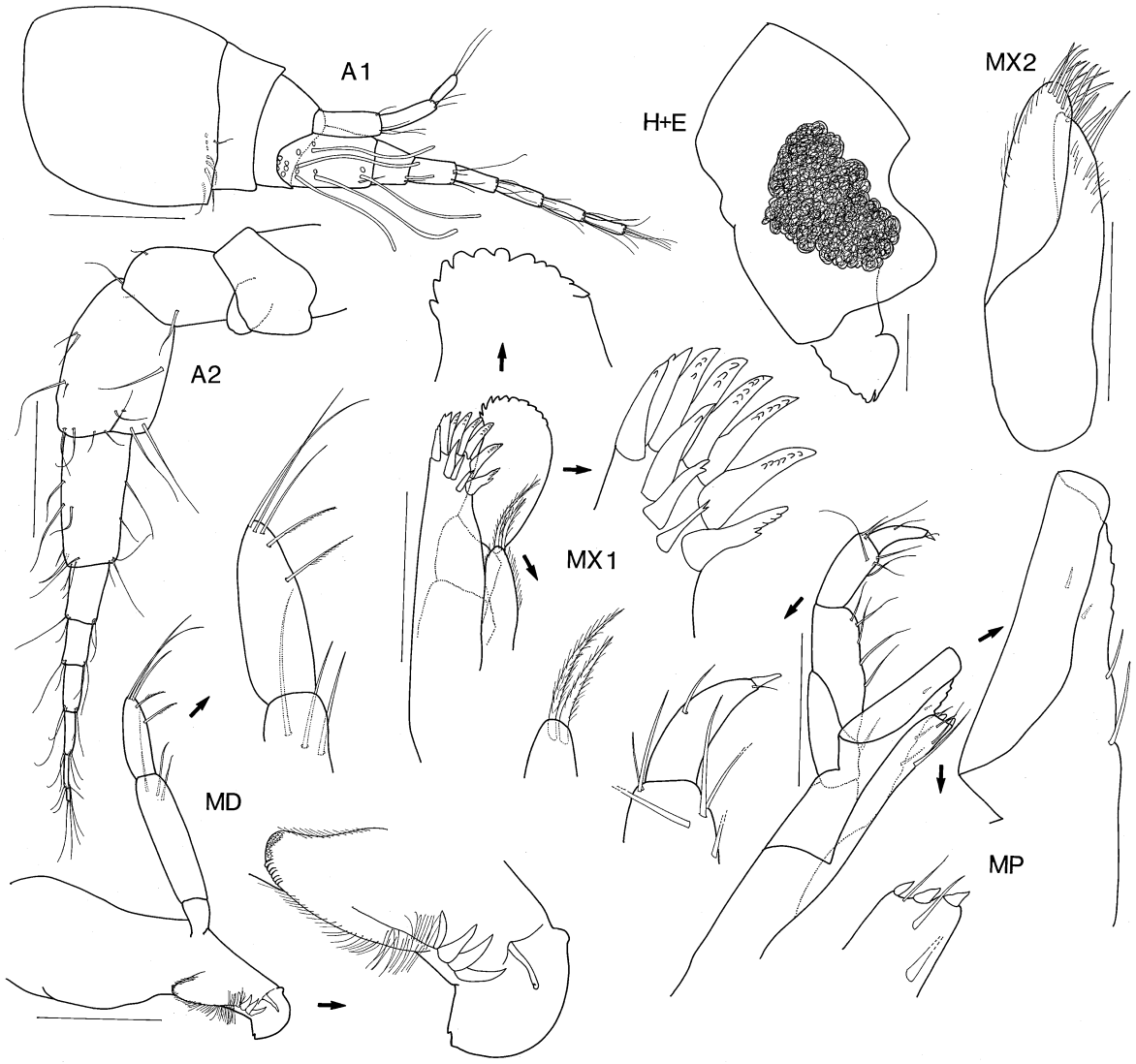

FIGURE 18. *Paralysianopsis capricornia* **sp. nov**., holotype, female, ~3.6 mm, AM P.70543, from east of Fitzroy Reef, Queensland, Australia. Scale: 0.1 mm.

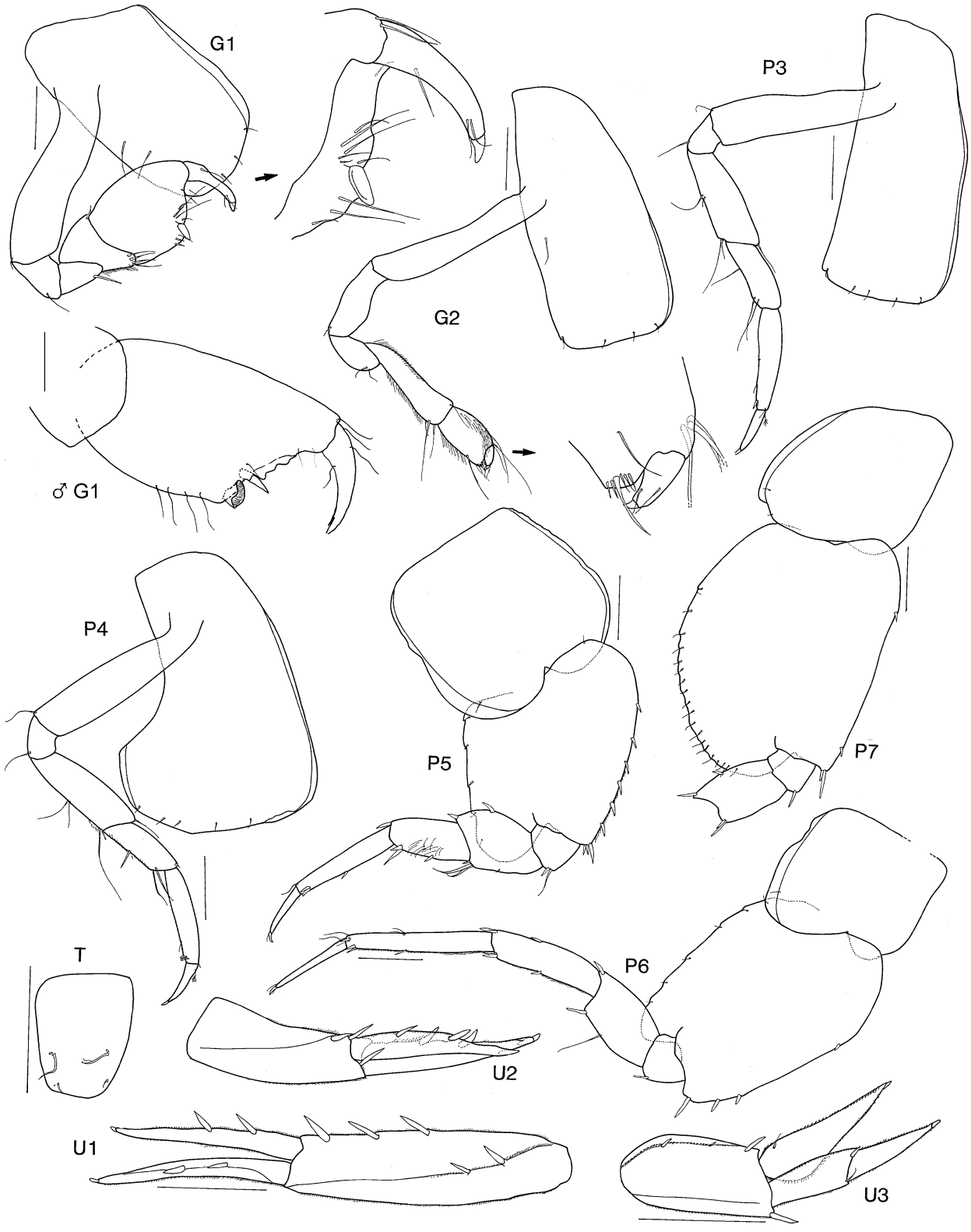

FIGURE 19. *Paralysianopsis capricornia* **sp. nov.**, holotype, female, ~3.6 mm, AM P.70543; paratype male, 3.6 mm, AM P.71609, from east of Fitzroy Reef, Queensland, Australia. Scale: 0.1 mm.

Remarks. *Gnathopod 1* of *P. capricornia* differs from all other *Paralysianopsis* in having a carpus that is nearly compressed and a very broad, strongly subchelate propodus that bears an unusual disk-like process into which the tip of the dactylus appears to close. All other characters fit the diagnosis for *Paralysianopsis*.

Depth range. 58–105 m.
Distribution. *Australia*. Great Barrier Reef, Queensland.

***Paralysianopsis dandenong* sp. nov.**
(Figs 20–22)

Types. Holotype, female, 2.2 mm, AM P.70314, off Moona Moona Creek, Jervis Bay, New South Wales, Australia (35º3.5'S 150º40.8'E), 4.6 m, kelp holdfasts, hand collected on SCUBA, 15 August 1981, coll. P.B. Berents. Paratypes: 2 males, 2.4–3.2 mm, AM P.70315, same collection details as holotype; 1 male, 2.3 mm, AM P.70316, off mouth of Moona Moona Creek, Jervis Bay, New South Wales, Australia (35º2.9'S 150º40.8'E), 4 m, *Ecklonia* holdfast, hand collected on scuba, September 1981 coll. P.B. Berents.

Type locality. Off Moona Moona Creek, Jervis Bay, New South Wales, Australia; 4.6 m depth.

Etymology. Named for the steamer *Dandenong*, sunk off Jervis Bay in September 1876; used as a noun in apposition.

Description. Based on female, 2.2 mm, AM P.70314. *Head* lateral cephalic lobe rounded; eyes oval. *Antenna 1* accessory flagellum not forming operculum; primary flagellum with weak 2-field callynophore, robust setae absent from proximal articles; calceoli absent. ***Antenna 2*** peduncular article 3 short; articles 3 to 5 not enlarged, ***brush setae absent***; flagellum short, calceoli absent. ***Labrum, epistome and upper lip separate***; epistome less produced than upper lip, straight; ***upper lip weakly produced, slightly subacute apically***. ***Mandible molar a reduced column with reduced triturating surface***. *Maxilla 1* outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; palp distal margin with apical robust setae. *Maxilliped* outer plate with apical robust setae absent.

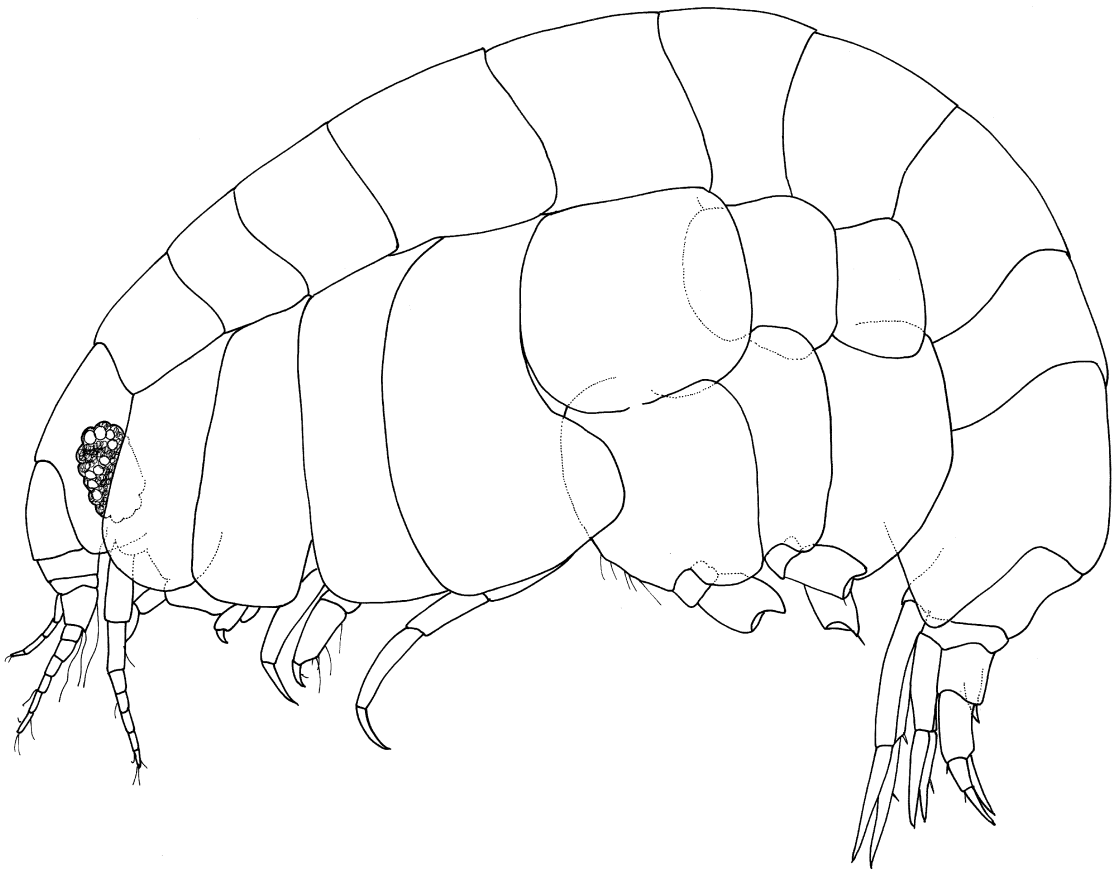

FIGURE 20. *Paralysianopsis* dandenong **sp. nov.**, habitus, holotype, female, 2.2 mm, AM P.70314, from off mouth of Moona Moona Creek, Jervis Bay, New South Wales.

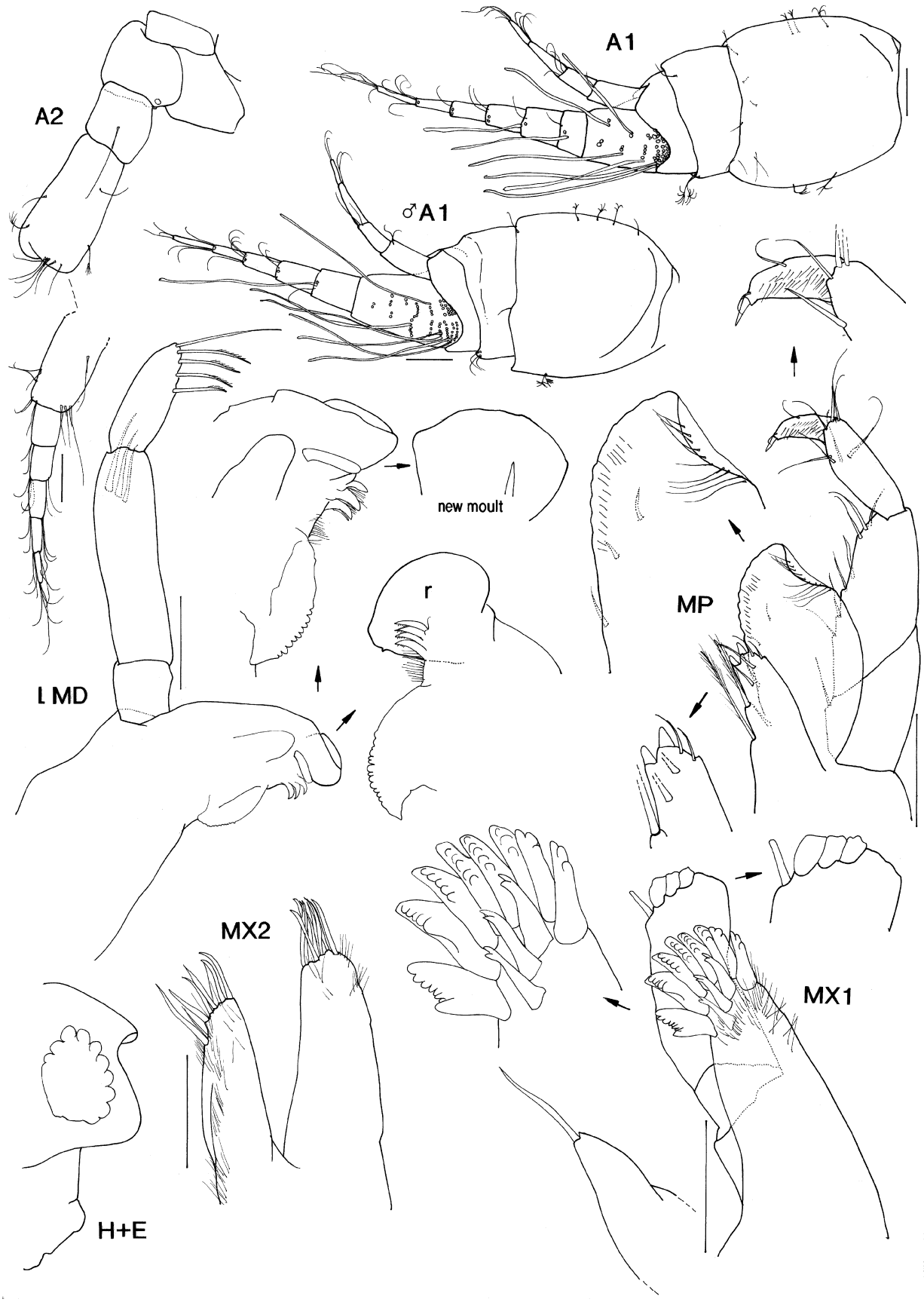

FIGURE 21. *Paralysianopsis dandenong* **sp. nov.**, holotype, female, 2.2 mm, AM P.70314; paratype male, 2.3 mm, AM P.70316, both from off Moona Moona Creek, Jervis Bay, New South Wales, Australia. Scale: 0.05 mm.

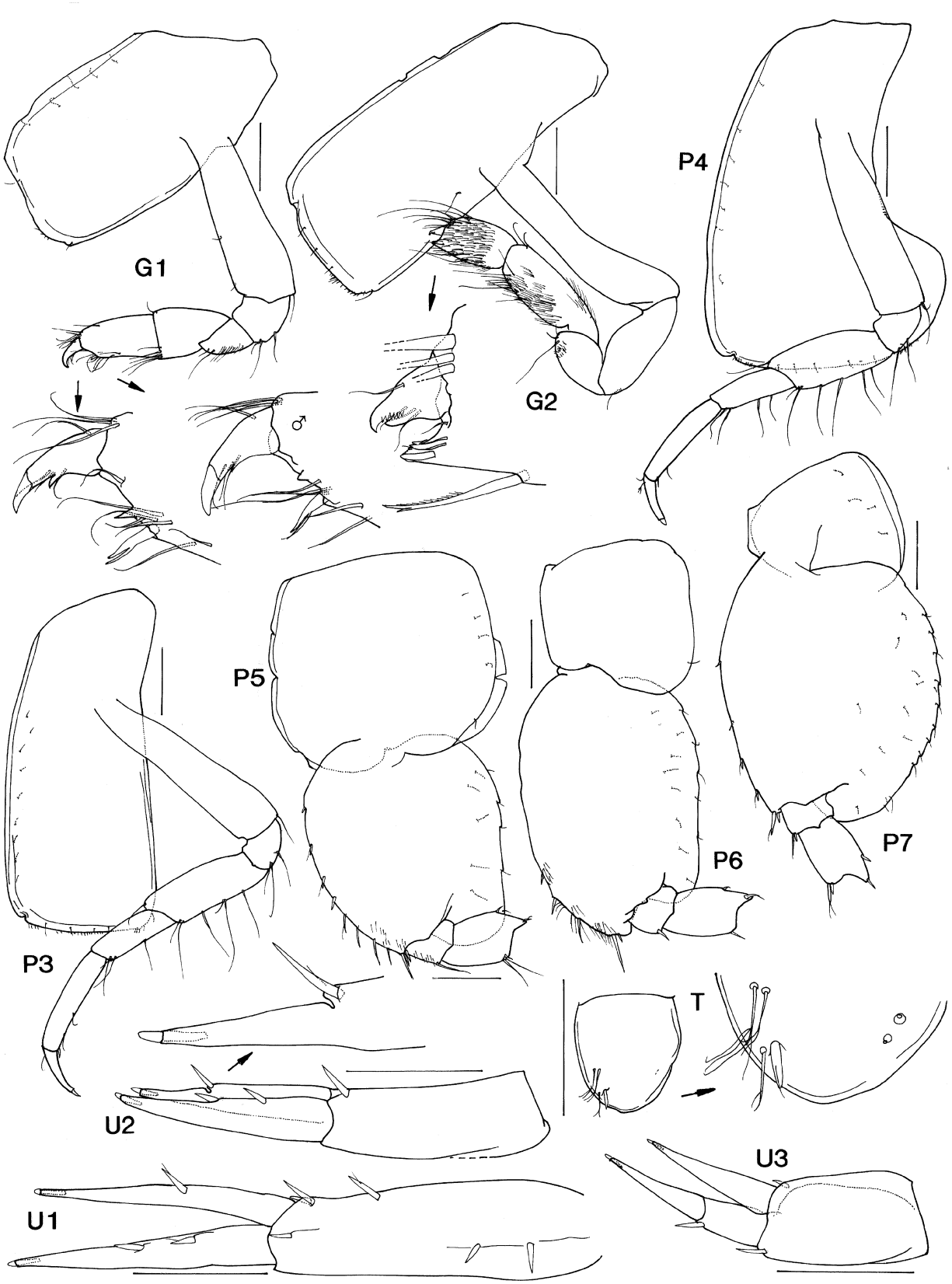

FIGURE 22. *Paralysianopsis dandenong* **sp. nov.**, holotype, female, 2.2 mm, AM P.70314; paratype, male, 2.3 mm, AM P.70316, both from off Moona Moona Creek, Jervis Bay, New South Wales, Australia. Scale: 0.1 mm.

Pereonites 1–7 dorsally smooth. *Gnathopod 1* subchelate; coxa large, about as long as coxa 2, subrectangular with straight anterior margin; basis sparsely setose along anterior margin; ischium short; carpus short, subequal in length to propodus, without posterior lobe; propodus small, sparsely setose along posterior margin, palm moderately acute, entire, straight. *Gnathopod 2* propodus palm moderately obtuse, with minutely serrate pad on posterior corner. ***Pereopod 5 basis about as long as broad*****,** not posteroproximally excavate, posterior margin weakly or not serrate. *Pereopod 7* basis posterodistally produced less than halfway along merus.

Pleonite 3 without mid-dorsal carina, not produced dorsodistally, posterodorsal margin not produced. *Epimeron* 3 posterior margin smooth, posteroventral corner narrowly rounded. *Urosomite 1* with slight notch. *Uropod 2* inner ramus with constriction. *Uropod 3* inner and outer rami well developed, outer ramus article 2 long, without plumose setae on rami. ***Telson entire***, longer than wide, apically rounded, without dorsal robust setae, with 1 subapical robust seta on each apical corner.

Sexually dimorphic characters. Based on male, 2.3 mm, AM P.70316. *Antenna 1* primary flagellum with strong 2-field callynophore.

Remarks. *Paralysianopsis dandenong* **sp. nov.** is very similar to *P. padoz* Lowry & Stoddart, 1995b. The distinguishing characters of these taxa are antenna 1 flagellum article 1, which is shorter than the remaining articles combined in *P. dandenong* (longer than the remaining articles combined in *P. padoz*); antenna 2 without brush setae (brush setae present in *P. padoz*); and the telson, which is apically rounded in *P. dandenong* (apically truncated in *P. padoz*).

Depth range. 4–4.6 m.

Distribution. *Australia*. Recorded only from Jervis Bay, New South Wales.

Paralysianopsis elliotti (Lowry & Stoddart, 1995) comb. nov.

Rhinolabia elliotti Lowry & Stoddart, 1995b: 117, figs 10–12.

Types. Holotype, female with non-setose oostegites, 3.1 mm, AM P.41573. Paratypes: 24 specimens, AM P.41574; 7 specimens, AM P.41575; 15 specimens, AM P.41700.

Type locality. Wongad Natun Reef, Madang Lagoon, Papua New Guinea (5°08.32’S 145°49.37’E), 27 m depth.

Material examined. 3 specimens, AM P.50743, east of Fitzroy Reef, Queensland, Australia (23°34.92'S 152°11.77’E), 58 m, baited trap, 16–17 June 1993, J.K. Lowry, P. Freewater & R.T. Springthorpe, MV *Reefknot* [QLD-952/SEAS]; 404 specimens, AM P.50745, east of Fitzroy Reef, Queensland, Australia (23°32.53’S 152°16.45’E), 105 m, baited trap, 16–17 June 1993, J.K. Lowry, P. Freewater & R.T. Springthorpe, MV *Reefknot* [QLD-955/SEAS]; 3 specimens, AM P.50747, east of Fitzroy Reef, Queensland, Australia (23°32.17’S 152°17.98’E), 203 m, baited trap, 16–17 June 1993, J.K. Lowry, P. Freewater & R.T. Springthorpe, MV *Reefknot* [QLD-957/SEAS]; 6 specimens, AM P.50755, east of Fitzroy Reef, Queensland, Australia (23°32.47’S 152°16.45’E), 58 m, baited trap, 2–3 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* [QLD-1073]; 46 specimens, AM P.50758, east of Fitzroy Reef, Queensland, Australia (23°32.47’S 152°16.45’E), 100 m, baited trap, 2–3 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* [QLD-1076]; 3 specimens, AM P.50759, east of Fitzroy Reef, Queensland, Australia (23°32.47’S 152°16.45’E), 200 m, baited trap, 2–3 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* [QLD-1081]; 6 specimens, AM P.50761, east of Fitzroy Reef, Queensland, Australia (23°34.92’S 152°11.77’E), 58 m, baited trap, 3–4 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* [QLD-1093]; 88 specimens, AM P.50763, east of Fitzroy Reef, Queensland, Australia (23°32.47’S 152°16.45’E), 100 m, baited trap, 3–4 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* [QLD-1096]; 2 specimens, AM P.50765, east of Fitzroy Reef, Queensland, Australia (23°32.47’S 152°16.45’E), 200 m, baited trap, 3–4 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* [QLD-1097]; 57 specimens, AM P.51117, east of Fitzroy Reef, Queensland, Australia (23°34.92’S 152°11.77’E), 58 m, baited trap, 16–17 June 1993, J.K. Lowry, P. Freewater & R.T. Springthorpe, MV *Reefknot* [QLD-953/SEAS]; 35 specimens, AM P.51119, east of Fitzroy Reef, Queensland, Australia (23°32.53’S 152°16.45’E), 105 m, baited trap, 16–17 June 1993, J.K. Lowry, P. Freewater & R.T. Springthorpe, MV *Reefknot* [QLD-954/SEAS]; 40 specimens, AM P.51122, east of Fitzroy Reef, Queensland, Australia (23°32.47’S 152°16.45’E), 100 m, baited trap, 2–3 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot*

[QLD-1078]; 2 specimens, AM P.51124, east of Fitzroy Reef, Queensland, Australia (23°32.47'S 152°16.45'E), 200 m, baited trap, 2–3 June 1994, J.K. Lowry & K. Dempsey, MV *Reefknot* [QLD-1079]; 53 specimens, AM P.57724, due east of Mooloolaba, Queensland, Australia (26°39.13'S 153°18.88'E), 50 m, baited trap, 3–4 July 1995, J.K. Lowry & K. Dempsey, MV *Capricorn I* [QLD-1213].

Description. *Head* lateral cephalic lobe rounded; eyes oval. *Antenna 1* accessory flagellum not forming operculum; primary flagellum with weak 2-field callynophore, robust setae absent from proximal articles; calceoli absent. *Antenna 2* peduncular article 3 short; articles 3 to 5 not enlarged, brush setae absent; flagellum short, calceoli absent. *Labrum*, epistome and upper lip separate; epistome less produced than upper lip, slightly concave; upper lip weakly produced, rounded. *Mandible* molar setose with a reduced triturating surface. ***Maxilla 1*** outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; ***palp serrate along entire distal margin***, without apical robust setae. *Maxilliped* outer plate with apical robust setae absent; palp article 4 well-developed. *Pereonites 1–7* dorsally smooth. ***Gnathopod 1*** subchelate; coxa large, about as long as coxa 2, subrectangular with straight anterior margin; basis not setose along anterior margin; ischium short; ***carpus short, shorter than propodus***, without posterior lobe; propodus small, sparsely setose along posterior margin, ***palm transverse***, entire, straight. *Gnathopod 2* propodus palm obtuse, without minutely serrate pad on posterior corner. ***Pereopod 5 basis longer than broad***, not posteroproximally excavate, posterior margin weakly serrate. *Pereopod 7* basis posterodistally produced less than halfway along merus.

Pleonite 3 without mid-dorsal carina, not produced dorsodistally, posterodorsal margin not produced. *Epimeron* 3 posterior margin smooth, posteroventral corner narrowly rounded. *Urosomite 1* with slight notch. *Uropod 2* inner ramus with slight constriction. *Uropod 3* inner and outer rami well developed, outer ramus article 2 long, without plumose setae on rami. *Telson* entire, apically truncate, without dorsal- or subapical robust setae.

Depth range. 27–200 m.

Distribution. *Papua New Guinea*. Madang Lagoon (Lowry & Stoddart 1995b). *Australia*. Queensland (this study).

***Paralysianopsis* cf. *jebbi* (Lowry & Stoddart, 1995b)**

(Fig. 23)

? *Rhinolabia jebbi* Lowry & Stoddart, 1995b: 121, figs 13, 14.

Types. Holotype, female with non-setose oostegites, 5.2 mm, AM P.41577. Paratypes, 10 specimens, AM P.41578.

Type locality. 0.75 km east of Planet Rock, Astrolabe Bay, Papua New Guinea (5°15.48'S 149°49.14'E), about 500 m depth.

Material examined. 4 specimens, AM P.51111, east of Fortescue Bay, Tasmania, Australia (43°06.7'S 148°13.6'E), 200 m, baited trap, 16–17 April 1993, J.K. Lowry & P. Freewater, MV *Tasmanian Enterprise* [TAS-356]; 2 specimens, AM P.51112, east of Fortescue Bay, Tasmania, Australia (43°06.7'S 148°13.6'E), 200 m, baited trap, 17–18 April 1993, J.K. Lowry & P. Freewater, MV *Tasmanian Enterprise* [TAS-376].

Description. *Head* lateral cephalic lobe narrowly rounded; eyes oval. *Antenna 1* accessory flagellum not forming operculum; primary flagellum with weak 2-field callynophore, robust setae absent from proximal articles; calceoli absent. *Antenna 2* peduncular article 3 short; articles 3 to 5 not enlarged, brush setae absent; flagellum short, calceoli absent. ***Labrum***, epistome and upper lip separate; epistome less produced than upper lip, straight; ***upper lip strongly produced, rounded***. *Mandible* molar strongly setose with a vestigial distal triturating surface. ***Maxilla 1*** outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; ***palp serrate along outer half of distal margin, without apical robust setae***. *Maxilliped* outer plate with apical robust setae absent; palp article 4 well-developed.

Pereonites 1–7 dorsally smooth. *Gnathopod 1* very weakly subchelate, appearing simple; coxa large, about as long as coxa 2, subrectangular with straight anterior margin; basis sparsely setose along anterior margin; ischium short; carpus short, subequal in length to propodus, without posterior lobe; propodus small, sparsely setose along posterior margin, palm extremely acute, entire, straight. *Gnathopod 2* propodus palm obtuse, with minutely serrate pad on posterior corner. ***Pereopod 5 basis longer than broad***, not posteroproximally excavate, posterior margin weakly serrate. *Pereopod 7* basis posterodistally produced less than halfway along merus.

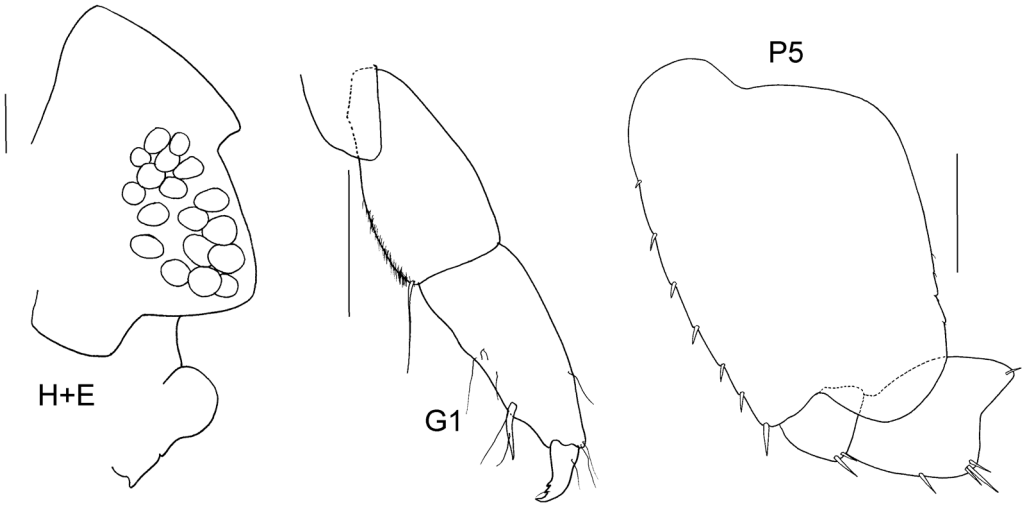

FIGURE 23. *Paralysianopsis* cf. *jebbi* (Lowry & Stoddart, 1995), head, G1 from specimen 'a', AM P.51112; *pereopod 5* from specimen 'b', AM P.51112, from east of Fortescue Bay, Tasmania. Scale bars: head, 0.2 mm; G1, P5, 0.1 mm.

Pleonite 3 without mid-dorsal carina, not produced dorsodistally, posterodorsal margin not produced. *Epimeron* 3 posterior margin smooth, posteroventral corner produced, narrowly rounded. *Uropod 2* inner ramus with slight constriction. *Uropod 3* inner and outer rami well developed, outer ramus article 2 long, without plumose setae on rami. ***Telson entire, apically truncate, slightly concave***, without dorsal robust setae, with single subapical robust seta on each corner.

Remarks. The only difference we can see between *P. jebbi* and the current material is the broader merus on *pereopod 5* in the Tasmanian specimens. This is a very large range extension with no records in between, but *P. jebbi* occurs at 500 m in Papua New Guinea and *P.* cf. *jebbi* occurs at 200 m in Tasmania, indicating similar environments.

Depth range. 200–500 m.

Distribution. *Australia*. Tasmania (this study). *Papua New Guinea*. Astrolabe Bay, Madang (Lowry & Stoddart 1995b).

***Paralysianopsis pomona* sp. nov.**
(Figs 24–26)

Types. Holotype, female, 5.2mm, NMV J67540, South of Point Hicks, Victoria, Australia (38°17.70'S 149°11.30'E), 400 m, coarse sand, gravel, mud, many sponges, WHOI epibenthic sled, 24 July 1986, M.F. Gomon *et al.,* RV *Franklin* SLOPE stn 40. Paratypes: 1 female 5.1 mm, NMV J67543; 1 male, 3.1 mm, NMV J67541; 12 specimens, 1.6–5.6 mm, NMV J67542, all with same collection details as holotype.

Additional material examined. *New South Wales*. 3 specimens, NMV J14770, Off Eden (37°0.60'S 150°20.70'E), 363 m, coarse shell, WHOI epibenthic sled, 21 July 1986, G.C.B. Poore *et al.,* RV *Franklin*, SLOPE stn 22; 2 specimens, NMV J67544, 44 km east of Nowra (34°55.79'S 151°08.06'E), 429 m, muddy coarse shell, WHOI epibenthic sled, 22 October 1988, G.C.B. Poore *et al.,* RV *Franklin*, SLOPE stn 56; 1 male, AM P.50753, north-east of Coffs Harbour (30°14.83'S 153°27.56'E), 200 m, baited trap, 8 September 1994–09 September 1994, J.K. Lowry & K. Dempsey, MV *Carrie Ann* stn NSW-987*;* 775 specimens, AM P.44281, east of Wollongong (34°28'S 151°02'E), 100 m, baited trap, 28 March 1994–29 March 1994, J.K. Lowry & K. Dempsey, MV *Robin E* stn NSW-961*;* 4 specimens, AM P.47028, off Wollongong (34°32.08'S 151°12.56'E), 200 m, baited trap, 7 May 1993–08 May 1993, P. Freewater & party, MV *Robin E* stn NSW-797*;* 1 specimen, AM P.50739, off Wollongong (34°32.02'S 151°13.0'E), 200 m, baited trap, 06 May 1993–07 May 1993, P. Freewater & party, MV *Robin E* stn NSW-781*;* 2 specimens, AM P.50738, off Wollongong (34°32.02'S 151°13.0'E), 200 m, baited trap, 06 May 1993–07 May 1993, P. Freewater & party, MV *Robin E* stn NSW-780*;* 1 specimen, AM P.43494, off Wollongong (34°31.48'S 151°13.22'E), 200 m, baited trap, 27 March 1994–28 March 1994, J.K. Lowry & K. Dempsey, MV

Robin E stn NSW-945*;* 3 specimens, AM P.51127, due east of Coffs Harbour (30°17.48'S 153°13.9'E), 45.4 m, baited trap, 11 August 1993–12 August 1993, P.B. Berents, R.T. Springthorpe & W. Vader, MV *Cheryl Lee* stn NSW-875*;* 3 specimens, AM P.44301, off Wollongong (34°26.53'S 150°57.98'E), 50 m, baited trap, 27 March 1994–28 March 1994, J.K. Lowry & K. Dempsey, MV *Robin E* stn NSW-939*;* 1003 specimens, AM P.50740, off Wollongong (34°28.22'S 151°02.28'E), 100 m, baited trap, 7 May 1993–08 May 1993, P. Freewater & party, MV *Robin E* stn NSW-795*;* 318 specimens, AM P.50736, off Wollongong (34°28.15'S 151°02.37'E), 100 m, baited trap, 06 May 1993–07 May 1993, P. Freewater & party, MV *Robin E* stn NSW-778*;* 94 specimens, AM P.50735, off Wollongong (34°28.15'S 151°02.37'E), 100 m, baited trap, 06 May 1993–07 May 1993, P. Freewater & party, MV *Robin E* stn NSW-776*;* 816 specimens, AM P.50741, off Wollongong (34°28.22'S 151°02.28'E), 100 m, baited trap, 7 May 1993–08 May 1993, P. Freewater & party, MV *Robin E* stn NSW-796.

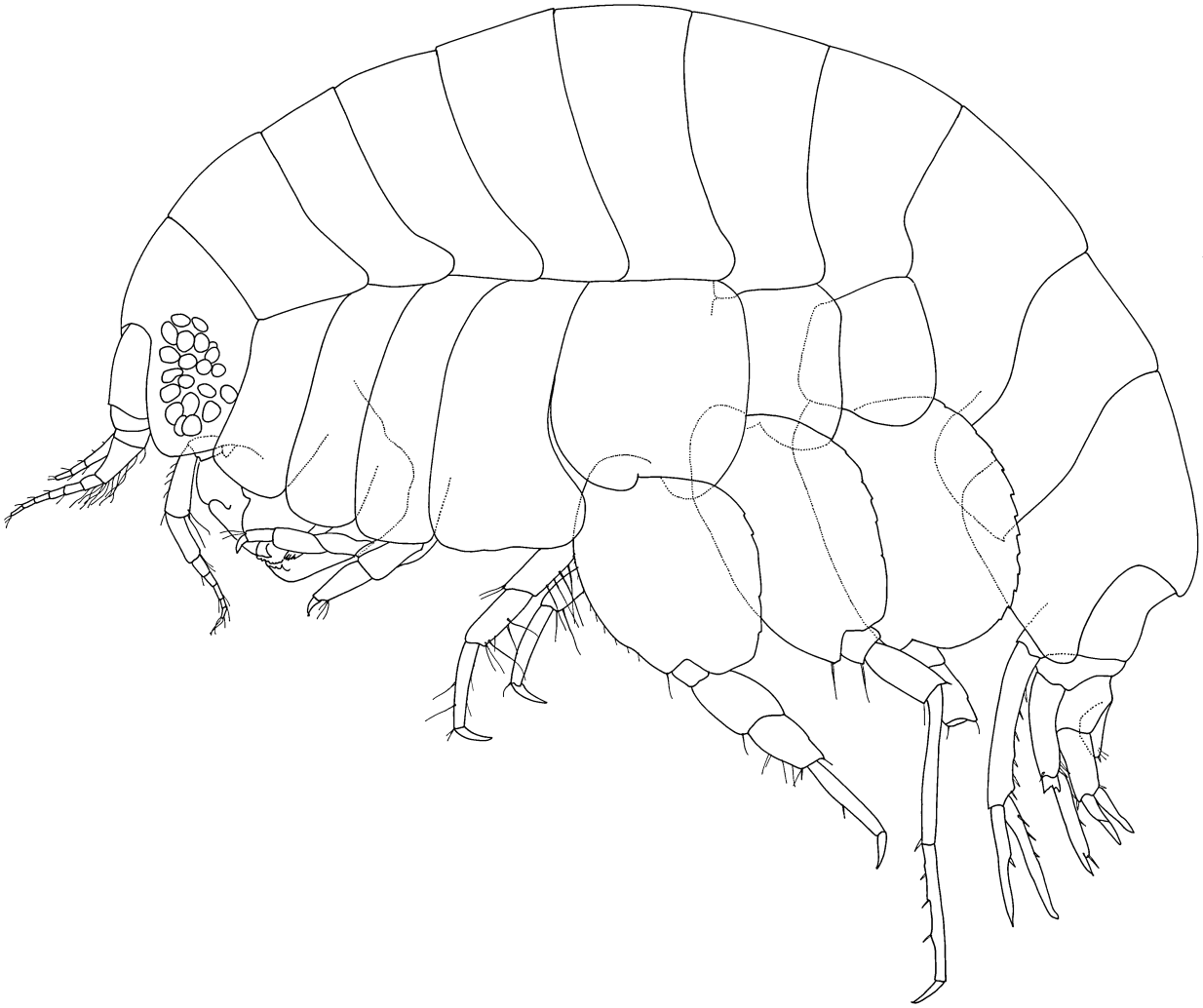

FIGURE 24. *Paralysianopsis pomona* **sp. nov.**, *habitus*, paratype female, 5.1 mm, NMV J67543, from south of Point Hicks, Victoria, Australia.

Queensland. 1 specimen, AM P.47912, due east of Mooloolaba (26º39.12'S 153º18.87'E), 50 m, baited trap, 3 April 1994–4 April 1994, J.K. Lowry & K. Dempsey, MV *Capricorn I*, SEAS stn QLD-1142.

Tasmania. 4 specimens, NMV J67545, off Freycinet Peninsula (42°2.20'S 148°38.70'E), 800 m, coarse shelly sand, WHOI epibenthic sled, 27 July 1986, M.F. Gomon *et al.,* RV *Franklin*, SLOPE stn 45; 13 specimens, NMV J67546, off Freycinet Peninsula (42°0.20'S 148°37.70'E), 720 m, coarse shelly sand, WHOI epibenthic sled, 27 July 1986, M.F. Gomon *et al.,* RV *Franklin*, SLOPE stn 46; 1 specimen, NMV J67547, off Freycinet Peninsula (41°57.50'S 148°37.90'E), 400 m, coarse shell, WHOI epibenthic sled, 27 July 1986, M.F. Gomon *et al.,* RV *Franklin* SLOPE stn 48; 1 ? female, AM P.69634, mouth of Fortescue Bay (43°07.77'S 147°59.47'E), 50 m, baited trap, 8–9 April 1994, J.K. Lowry & K. Dempsey, MV *Martrudan* stn TAS-386*;* 15 specimens, AM P.51106, mouth

of Fortescue Bay (43°07.77'S 147°59.47'E), 50 m, baited trap, 8–9 April 1994, J.K. Lowry & K. Dempsey, MV *Martrudan* stn TAS-386*;* 16 specimens, AM P.51089, mouth of Fortescue Bay (43°07.77'S 147°59.47'E), 50 m, baited trap, 8–9 April 1994, J.K. Lowry & K. Dempsey, MV *Martrudan* stn TAS-387*;* 25 specimens, AM P.58332, mouth of Fortescue Bay (43°07.77'S 147°59.47'E), 50 m, baited trap, 9 April 1994–10 April 1994, J.K. Lowry & K. Dempsey, MV *Martrudan* stn TAS-406.

FIGURE 25. *Paralysianopsis pomona* **sp. nov.**, holotype female, 5.2 mm, NMV J67540; paratype male, 3.1 mm, NMV J67541, from south of Point Hicks, Victoria, Australia. Scale: 0.1 mm.

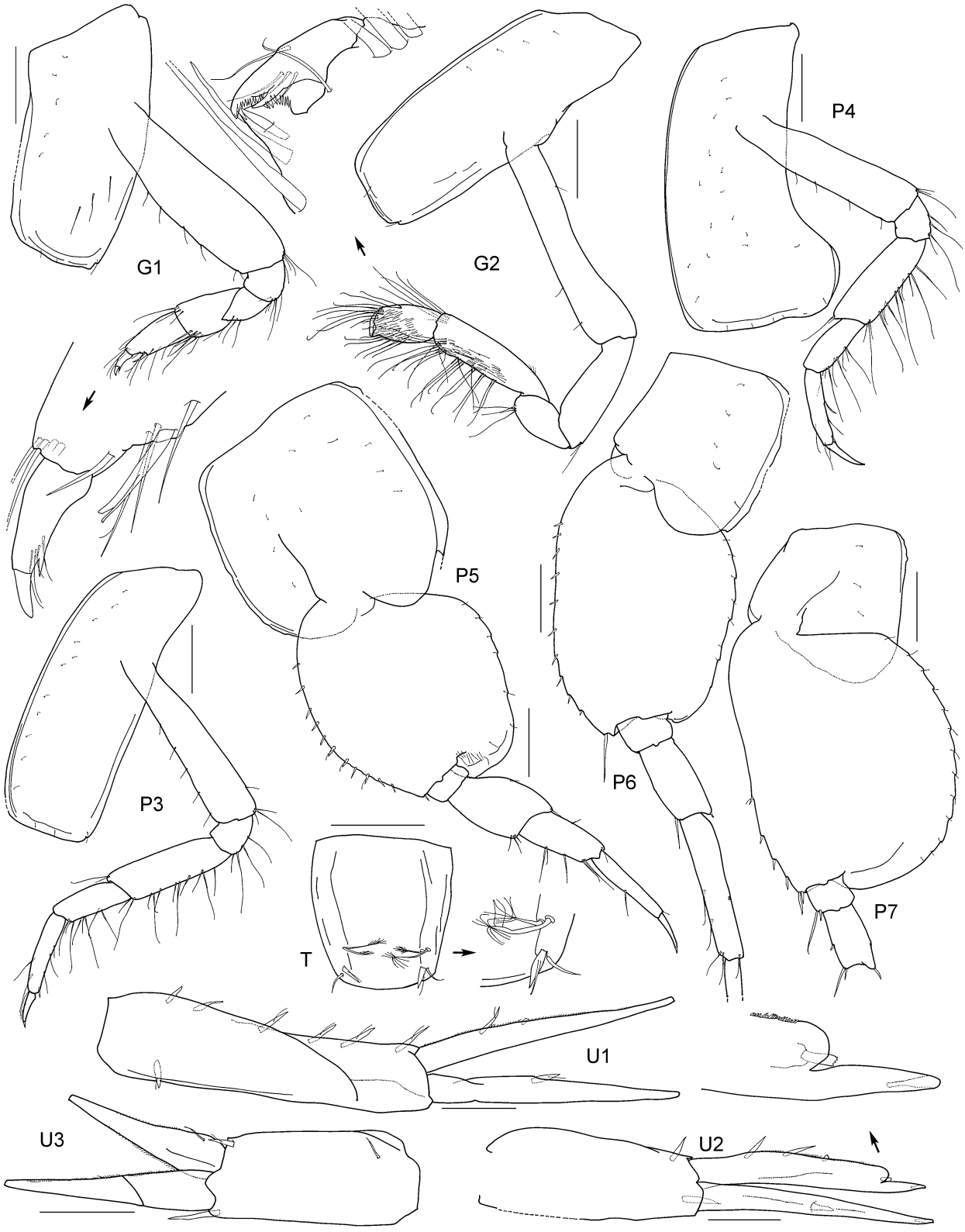

FIGURE 26. *Paralysianopsis pomona* **sp. nov.**, holotype female, 5.2 mm, NMV J67540, from south of Point Hicks, Victoria, Australia. Scale: gnathopods, pereopods, 0.2 mm; uropods, telson, 0.1 mm.

Victoria. Many specimens, NMV J67548, south of Point Hicks (38°21.90'S 149°20.00'E), 1000 m, WHOI epibenthic sled, 23 July 1986, G.C.B. Poore *et al.,* RV *Franklin* SLOPE stn 32; 2 specimens, NMV J67549, south of Point Hicks (38°14.80'S 149°9.30'E), 200 m, coarse sand, gravel, WHOI epibenthic sled, 24 July 1986, M.F. Gomon *et al.,* RV *Franklin*, SLOPE stn 41.

Bass Strait. 7 specimens, NMV J67550, eastern Bass Strait, 63 km east of North Point, Flinders Island (39º44.8'S 148º40.6'E), 124 m, muddy sand, WHOI epibenthic sled, 14 November 1981, R. Wilson, RV *Tangaroa* stn BSS-167S; 1 specimen, NMV J67551, eastern Bass Strait, 85 km north-east of North Point, Flinders Island (39º02.4'S 148º30.6'E), 120 m, muddy sand, 15 November 1981, R. Wilson, RV *Tangaroa* stn BSS-169; 2 specimens, NMV J67552, eastern Bass Strait, 100 km north-east of North Point, Flinders Island (38º51.8'S 148º26.5'E), 130 m, fine sand, WHOI epibenthic sled, 15 November 1981, R. Wilson, RV *Tangaroa* stn BSS-170S; 1 specimen, NMV J67554, western Bass Strait, 54 km west of Stokes Point, King Island (40º06.0'S 143º17.0'E), 158 m, medium sand, Smith-McIntyre Grab, 11 October 1980, G.C.B. Poore, HMAS *Kimbla* stn BSS-100G; 10 specimens, NMV J67553, Western Bass Strait, 36 km SSW of Stokes Point, King Island (40º26.7'S 143º41.4'E), 85 m, medium sand, 22 November 1981, R. Wilson, RV *Tangaroa* stn BSS-198;

Type locality. South of Point Hicks, Victoria, Australia (38°17.70'S 149°11.30'E), 400 m depth.

Etymology. Named for the sailing vessel *Pomona*, blown ashore between Lake Tyers and the mouth of the Snowy River in 1866; used as a noun in apposition.

Description. Based on holotype, female, 5.2 mm, NMV J67540. *Head* lateral cephalic lobe apically rounded; eyes oval. *Antenna 1* accessory flagellum not forming operculum; primary flagellum with weak 2-field callynophore, robust setae absent from proximal articles; calceoli absent. *Antenna 2* peduncular article 3 short; articles 3 to 5 not enlarged, brush setae absent; flagellum short, calceoli absent. ***Labrum, epistome and upper lip separate***; epistome not produced, concave; upper lip not produced. ***Mandible molar setose with a vestigial triturating surface***. *Maxilla 1* outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; palp with robust setae along half of the distal margin, serrate along other half. *Maxilliped* outer plate apical robust setae absent.

Pereonites 1–7 dorsally smooth. ***Gnathopod 1 weakly subchelate, appearing simple***; coxa large, about as long as coxa 2, subrectangular with straight anterior margin; basis sparsely setose along anterior margin; ischium short; carpus short, subequal in length to propodus, without posterior lobe; propodus small, sparsely setose along posterior margin, palm extremely acute, entire, straight. *Gnathopod 2* propodus palm transverse, with minutely serrate pad on posterior corner. ***Pereopod 5 basis about as long as broad,*** not posteroproximally excavate, posterior margin not serrate. *Pereopod 7* basis posterodistally produced, not reaching merus.

Pleonite 3 without mid-dorsal carina, not produced dorsodistally, posterodorsal margin not produced. *Epimeron 3* posterior margin smooth, posteroventral corner produced, narrowly rounded. *Urosomite 1* with slight notch dorsally. *Uropod 2* inner ramus with moderate constriction. *Uropod 3* inner and outer rami well developed, outer ramus article 2 long, without plumose setae on rami. *Telson* entire, slightly longer than wide, truncated with 2 subapical robust setae.

Sexually dimorphic characters. Based on paratype, male, 3.1 mm, NMV J67541. *Head* lateral cephalic lobe subacute, slightly downward-pointing. *Upper lip* produced slightly in front of epistome. *Antenna 1* primary flagellum with strong 2-field callynophore.

Remarks. *Paralysianopsis pomona* **sp. nov.** is most similar to *P.* cf. *jebbi*. However, the upper lip of *P.* cf. *jebbi* is more produced and rounded than that of *P. pomona*; the maxilla 1 palp of *P.* cf. *jebbi* lacks any robust setae (robust setae are present in *P. pomona*); and the *pereopod 5* basis is longer than broad in *P.* cf. *jebbi* compared with *P. pomona* where it is as long as broad.

Depth range. 50–800 m.

Distribution. *Australia*. Eastern coasts from Mooloolaba, Queensland, to the Freycinet Peninsula, Tasmania, and the Bass Strait.

***Paralysianopsis ruffoi* sp. nov.**
(Figs 27, 28)

Types. Holotype, female with non-setose oostegites, 2.7 mm, AM P.69297, north end of Fannie Bay, west end of East Point, Darwin, Northern Territory, Australia (11°24.5'S 130°48.5'E), 8–10 m, encrusting ascidian *Didemnum psammatodes*, hand collected on scuba, 26 October 1982, J.K. Lowry, stn NT-97. Paratypes: 1 male, 1.8 mm, AM P.69298; 6 specimens, 1.2–2.4 mm, AM P.69299, north end of Fannie Bay, west end of East Point, Darwin, Northern Territory, Australia (11°24.5'S 130°48.5'E), 8–10 m, encrusting ascidian *Didemnum psammatodes*, hand collected on scuba, 26 October 1982, J.K. Lowry, stn NT-97.

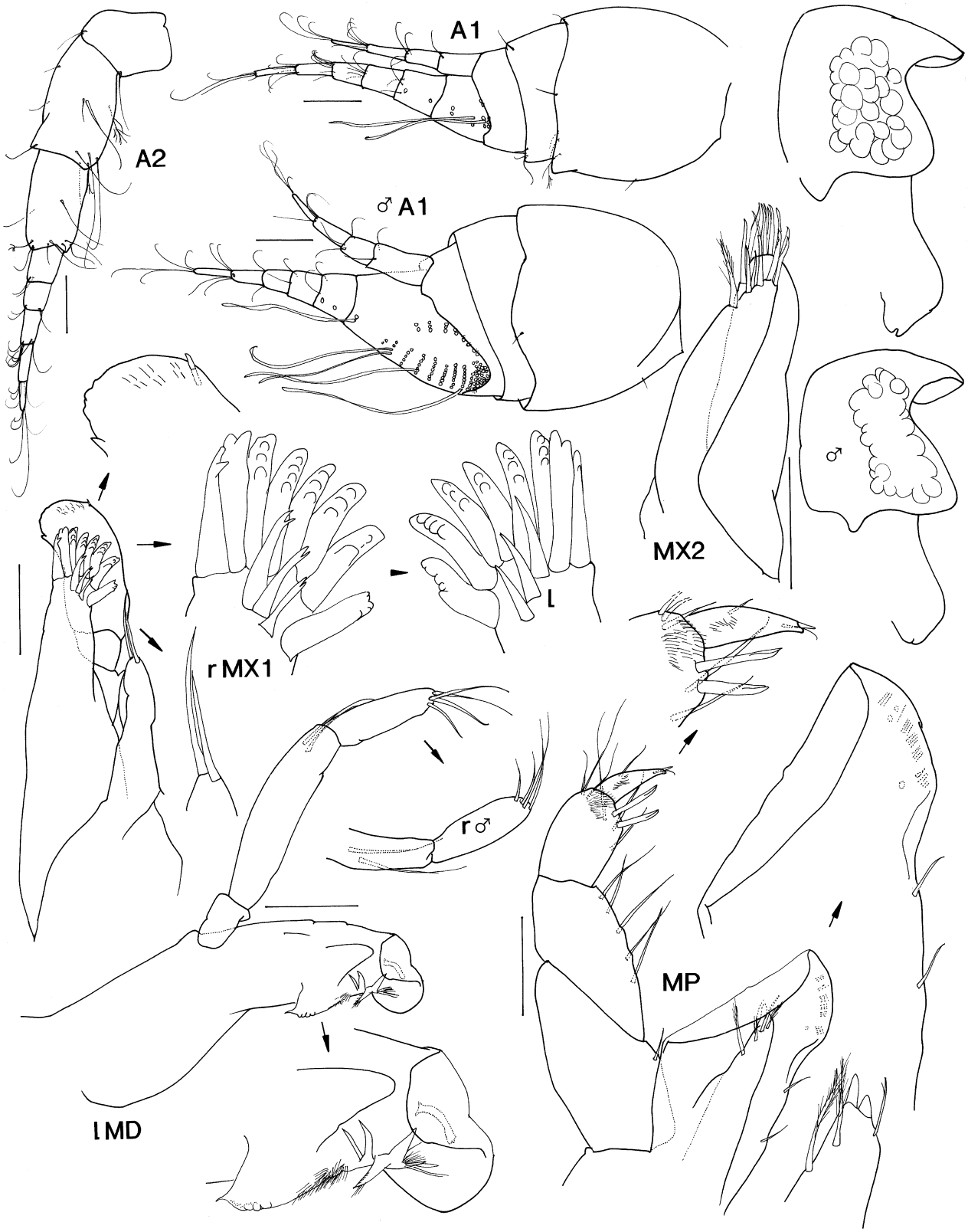

FIGURE 27. *Paralysianopsis ruffoi* **sp. nov.**, holotype, female, 2.7 mm, AM P.69297; paratype, male, 1.8 mm, AM P.69298 Fannie Bay, Darwin, NT. Scale: 0.05 mm.

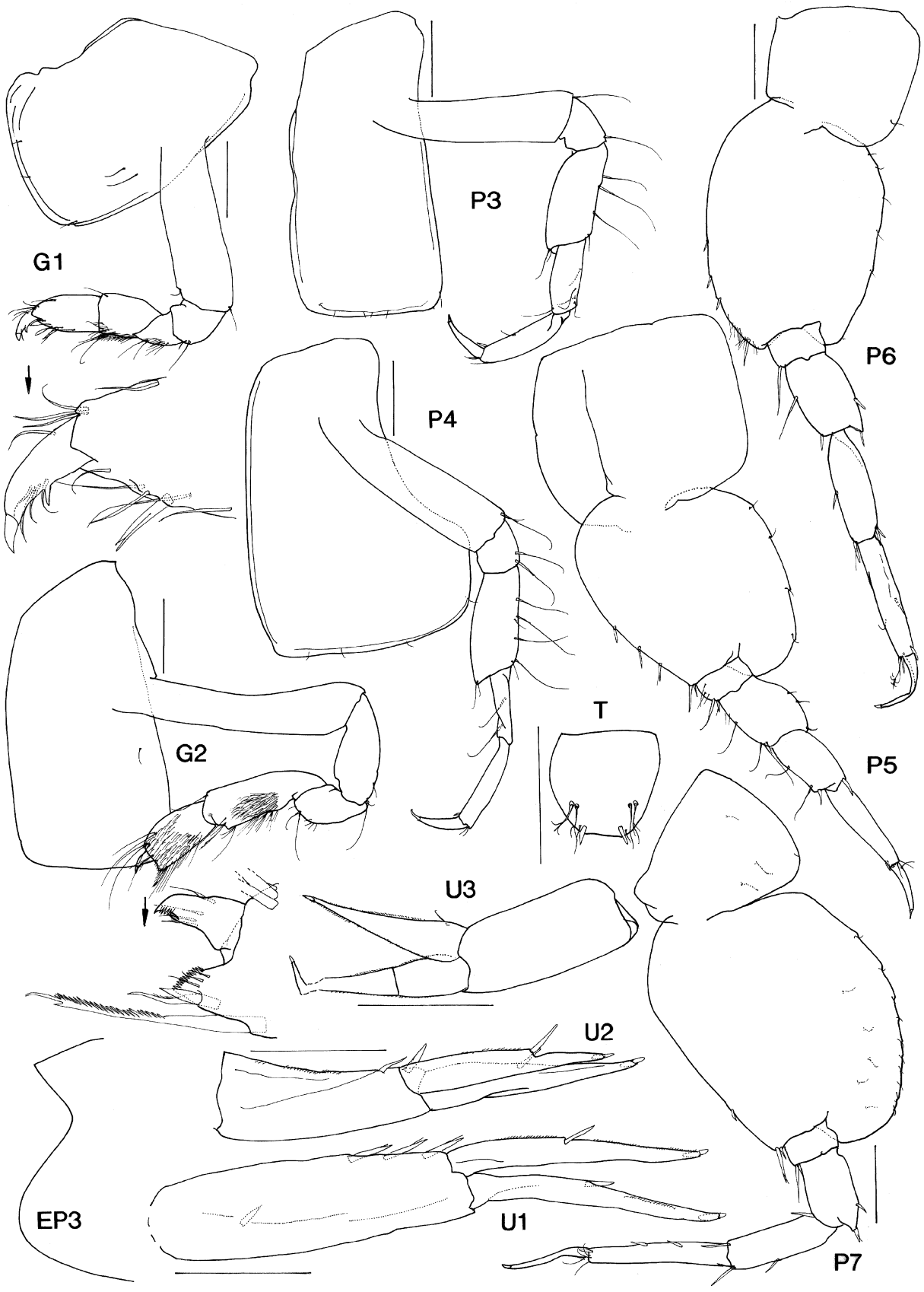

FIGURE 28. *Paralysianopsis ruffoi* **sp. nov.**, holotype, female, 2.7 mm, AM P.69297, Fannie Bay, Darwin, NT. Scale: 0.1 mm.

Additional material examined. *Northern Territory.* 1 male, AM P.69374, reef at west end of Oxley Island (11°00'S 132°49'E), 5 m, *Halimeda* sp., 20 October 1982, J.K. Lowry, stn NT-78; 1 male, AM P.69375, patch reef on north side of New Year Island (10°54'S 133°02'E), 10 m, hydroids on coral, 14 October 1982, G.C.B. Poore, stn NT-17.

Type locality. North end of Fannie Bay, west end of East Point, Darwin, Northern Territory, Australia (11°24.5'S 130°48.5'E), 8–10 m depth.

Etymology. Named for Sandro Ruffo, in appreciation of his contribution to lysianassoid taxonomy.

Description. Based on holotype, female, 2.7 mm, AM P.69297. *Head* lateral cephalic lobe broadly rounded; eyes oval. *Antenna 1* accessory flagellum not forming operculum; primary flagellum with weak 1-field callynophore, robust setae absent from proximal articles; calceoli absent. Antenna 2 peduncle weakly geniculate between articles 3–4; article 3 short; articles 3 to 5 not enlarged, brush setae absent; flagellum short, calceoli absent. ***Labrum, epistome and upper lip fused***, proximally concave distally produced and rounded. *Mandible* molar weakly setose with a reduced triturating surface. ***Maxilla 1*** outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; ***palp distal margin smooth, without apical robust setae.*** *Maxilliped* outer plate apical robust setae absent.

Pereonites 1–7 dorsally smooth. ***Gnathopod 1 weakly subchelate***; coxa large, about as long as coxa 2, subrectangular with slightly concave anterior margin; basis not setose along anterior margin; ischium short; carpus short, subequal in length to propodus, without posterior lobe; propodus small, weakly setose along posterior margin, palm acute, straight, entire. *Gnathopod 2* propodus palm transverse to slightly obtuse. *Pereopod 5* basis slightly longer than broad, not posteroproximally excavate, posterior margin not serrate. *Pereopod 7* basis posterodistally produced, not reaching merus.

Pleonite 3 without mid-dorsal carina, not produced dorsodistally, posterodorsal margin not produced. ***Epimeron 3 posterior margin smooth, posteroventral corner broadly rounded***. *Uropod 2* inner ramus with slight constriction. *Uropod 3* inner and outer rami well developed, outer ramus article 2 long, without plumose setae on rami. *Telson* entire, as long as wide, apically truncate, with 2 subapical robust setae.

Sexually dimorphic characters. Based on paratype, male, 1.8 mm, AM P.69298. *Head* lateral cephalic lobes narrowly rounded to subacute. *Antenna 1* flagellum article 1 broader than female, with strong 2-field callynophore.

Remarks. *Paralysianopsis ruffoi* is very similar to *P. mazamoz*, but *P. ruffoi* has no apical robust setae or serrate margin on the palp of maxilla 1 (vestigial robust setae and well-develop serrate margin in *P. mazamoz*) and *P. ruffoi* has a broadly rounded posteroventral corner on epimeron 3 (produced and narrowly rounded in *P. mazamoz*).

Depth range. 5–10 m.

Distribution. *Australia*. Northern Territory.

***Patonga* gen. nov.**

Type species. *Patonga nona* **sp. nov.**

Included species. *Patonga* includes one species: *P. nona* **sp. nov.**

Etymology. Named for the small village near the mouth of the Hawkesbury River in New South Wales.

Diagnostic description. Antenna 1 accessory flagellum forming partial operculum. Antenna 2 flagellum article 5 slender (without brush setae). Mandibular incisor curved; palp attached midway. Maxilla 1 ST-7 serrate along most of medial margin; ST-D slender, serrate along most of medial margin. Maxilliped outer plate apical robust setae present. *Gnathopod 1* subchelate; coxa large, nearly as long as coxa 2, not tapering; carpus subequal to slightly longer than propodus. Pereopod 4 coxa without posteroventral lobe. Uropod 2 inner ramus not constricted. Uropod 3 rami with plumose setae. Telson deeply cleft.

Remarks. The genus appears to be most similar to *Lepiduristes* Barnard & Karaman, 1987, a monotypic genus known only from abyssal depths in the Caribbean Sea. These taxa are separated by the antenna 1 peduncle article 1 which is much more dorsally produced in *Lepiduristes*; the *gnathopod 1* coxa, tapering in *Lepiduristes* but subrectangular in *Patonga*; the *gnathopod 1* propodus which is much more elongate in *Lepiduristes*; and the uropod 3 which has an elongate second article on the outer ramus in *Lepiduristes* versus a short article in *Patonga*.

Patonga is also very similar to *Tryphosoides* Schellenberg, 1931, but has a much longer antenna 1 accessory flagellum and lacks the characteristic offset accessory flagellum terminal article seen in *Tryphosoides*.

Patonga differs from *Cedrosella* in having a non-tapering *gnathopod 1* coxa and a much more poorly developed pereopod 4 basis posterior lobe.

Distribution. Eastern Australia.

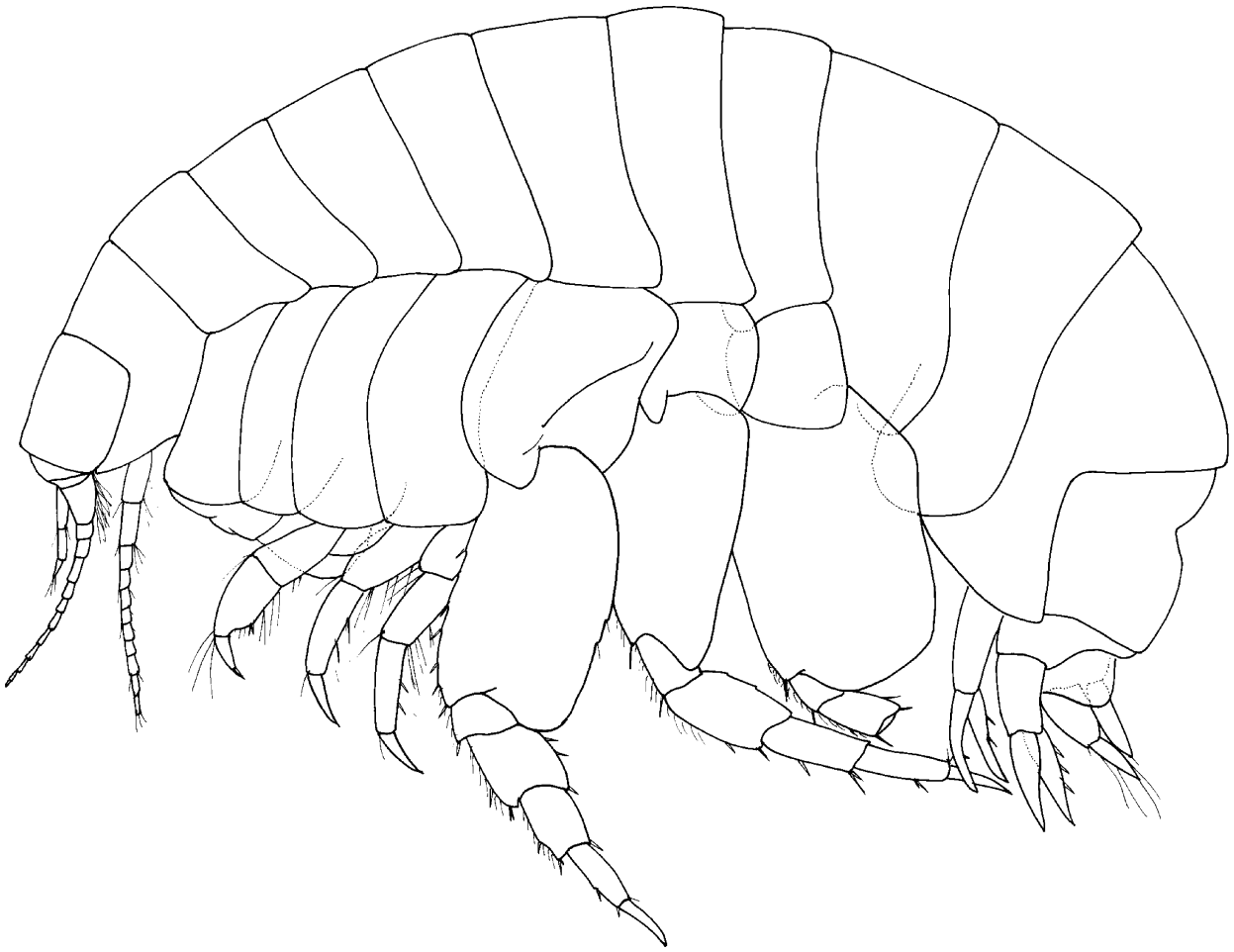

FIGURE 29. *Patonga nona* **sp. nov.**, *habitus*, holotype, female, 3.3 mm, AM P.69443, east of Long Reef Point, New South Wales, Australia.

***Patonga nona* sp. nov.**
(Figs 29–31)

Types. Holotype female, 3.3 mm, AM P.69443, east of Long Reef Point, New South Wales, Australia (33°46'S 151°43'E), 176 m, dredge, 5 December 1977, FRV *Kapala* stn K77-23-01. Paratypes: 1 female, 3.2 mm, AM P.69444, same collection data as holotype; 1 female, 3.4 mm, AM P.69445, Cape Banks, New South Wales, Australia (34°00'S 151°16'E) 65–70 m, Smith-McIntyre Grab, 29 October 1990–14 November 1990, The Ecology Lab for RMI/Pioneer Project stn 3-185.

Type locality. East of Long Reef Point, New South Wales, Australia (33°46'S 151°43'E), 176 m depth.

Etymology. Named for the sailing vessel *Nona*, wrecked in 1857 in Broken Bay during a gale; used as a noun in apposition.

Description. Based on holotype female, 3.3 mm, AM P.69443. *Head* lateral cephalic lobe margins straight dorsally, ventrally sinusoidal, apically acute. *Antenna 1* accessory flagellum not forming operculum, terminal article not offset; primary flagellum with strong 2-field callynophore, robust setae absent from proximal articles; calceoli absent. *Antenna 2* peduncular article 3 short; articles 3 to 5 not enlarged; flagellum short, calceoli absent. *Labrum* epistome/upper lip separate; epistome produced equally with upper lip, slightly concave; upper lip not produced. *Mandible* molar with reduced column and reduced triturating surface; palp attached midway. *Maxilla 1*

outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally along inner margin; palp distal margin with apical robust setae. *Maxilliped* basis without recurved hook.

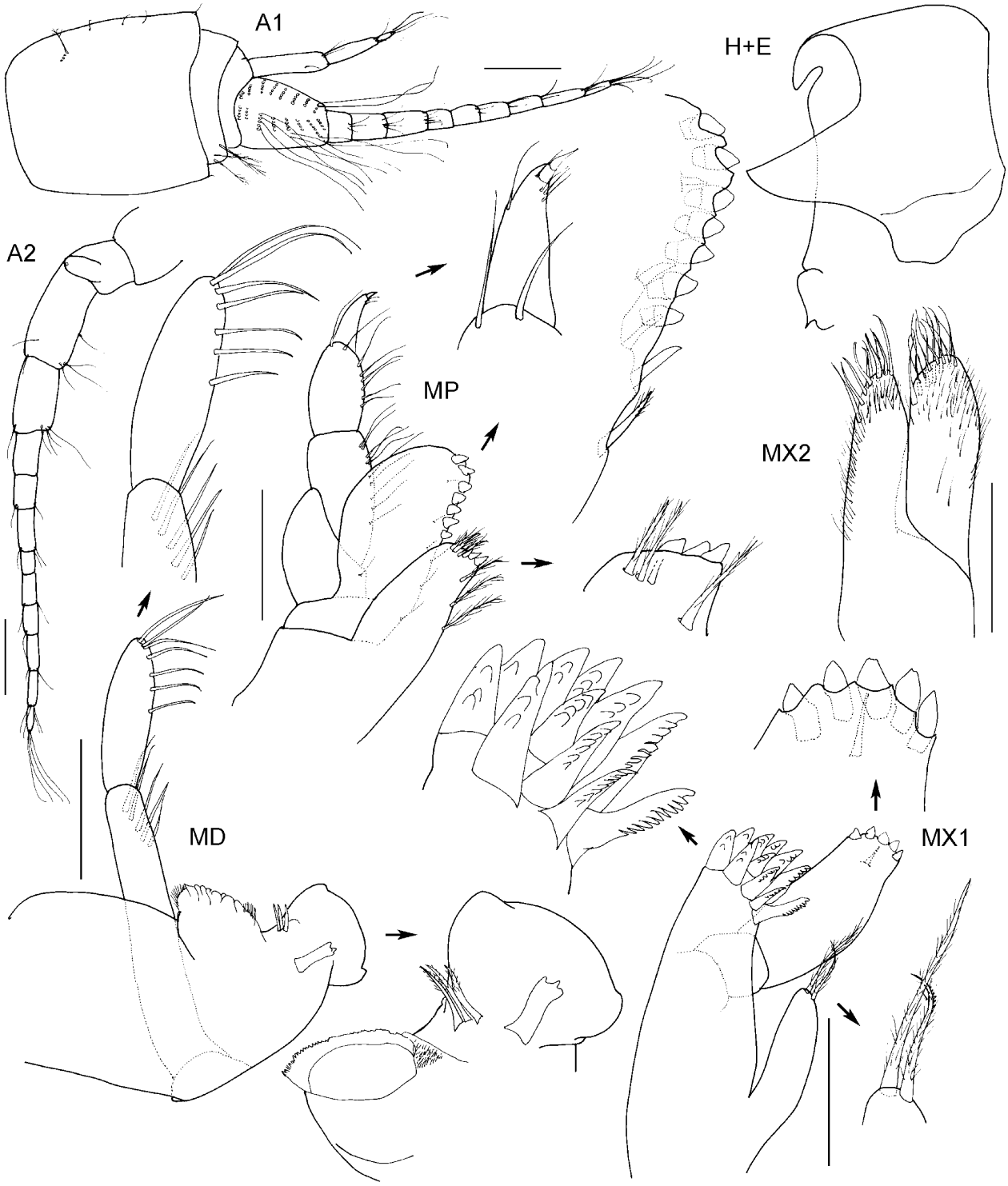

FIGURE 30. *Patonga nona* **sp. nov.**, holotype, female, 3.3 mm, AM P.69443, east of Long Reef Point, New South Wales, Australia. Scale: 0.1 mm.

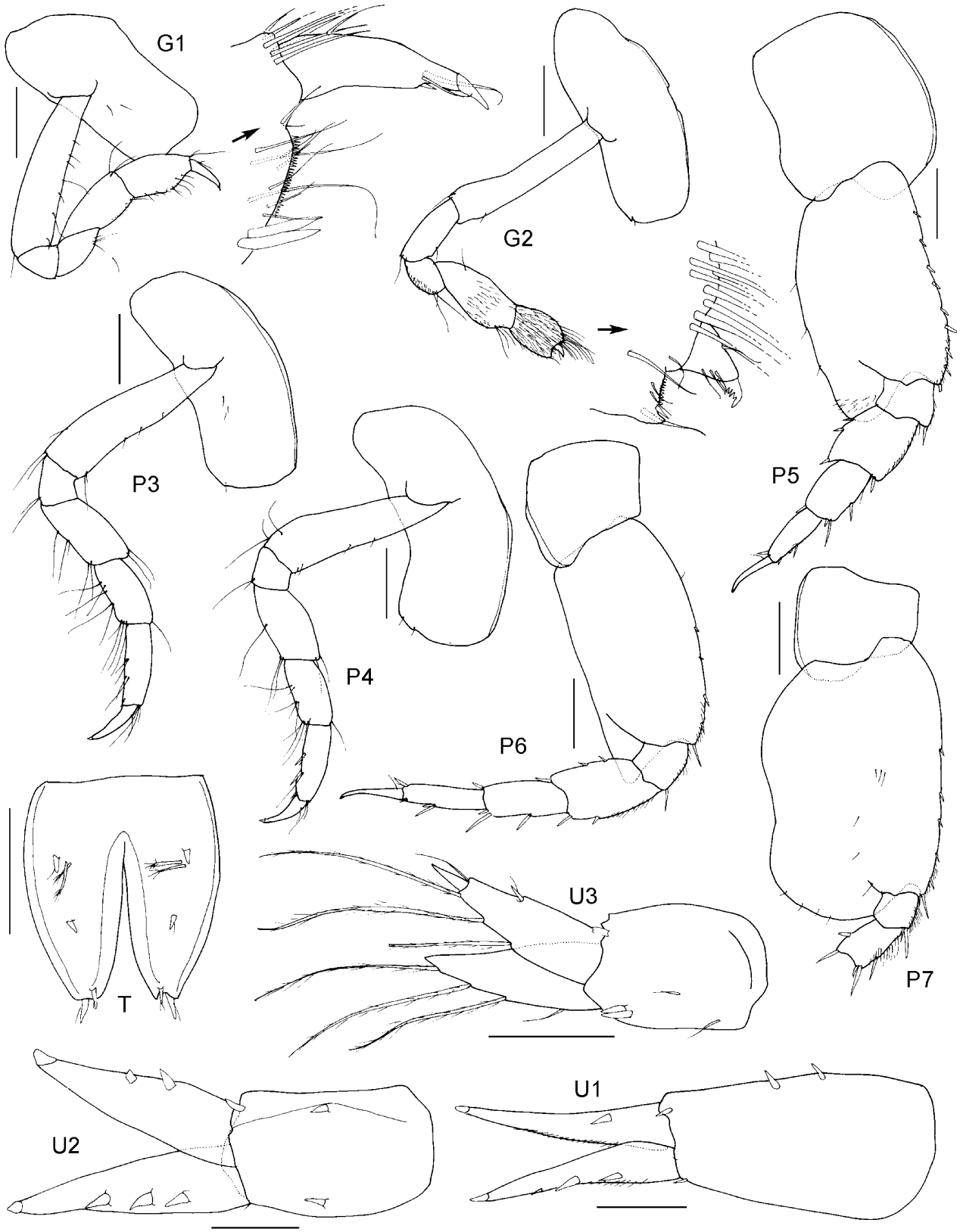

FIGURE 31. *Patonga nona* **sp. nov.**, holotype, female, 3.3 mm, AM P.69443, east of Long Reef Point, New South Wales, Australia. Scale: gnathopods, pereopods, 0.2 mm; uropods, telson, 0.1 mm.

Pereonites 1–7 dorsally smooth. *Gnathopod 1* subchelate; coxa large, about as long as coxa 2, subrectangular with straight anterior margin; basis moderately setose along anterior margin; ischium short; carpus long, longer

than propodus, without posterior lobe; propodus small, margins subparallel, sparsely setose along posterior margin, palm moderately acute, entire, straight. *Gnathopod 2* propodus palm transverse. *Pereopod 5* basis longer than broad, not posteroproximally excavate, posterior margin not serrate. *Pereopod 7* basis posterodistally produced, not reaching merus; not posterodistally excavate.

Pleonites 1–3 without mid-dorsal carina, not produced dorsodistally. *Epimeron 3* posterior margin smooth, posteroventral corner subquadrate. *Urosomite 1* with slight notch. *Uropod 3* peduncle without dorsolateral flange; inner and outer rami well developed, outer ramus article 2 short, with plumose setae on both rami. *Telson* deeply cleft, longer than wide, with 2 dorsal robust setae per lobe and 1 apical robust seta on each lobe.

Sexually dimorphic characters. Unknown.

Depth range. 65–176 m.

Distribution. *Australia*. Coast of New South Wales.

Tasmanosa gen. nov.

Type species. *Tasmanosa tasman* **sp. nov.,** by present designation.

Included species. *Tasmanosa* includes two species: *T. tasman* **sp. nov.**; *T. toogooloo* **sp. nov.**

Etymology. A reference to the Tasman Sea.

Diagnostic description. Antenna 1 peduncular article 1 without anterodistal projections; accessory flagellum not forming operculum. Antenna 2 peduncle article 5 not enlarged, with weak brush setae on the anterior margin in male. Mandibular incisor curved; molar an asymmetric column, proximally setose, distally triturating; palp attached midway. *Maxilla 1* ST-7 slender, serrate along most of medial margin; ST-D slender, serrate along most of medial margin. Maxilliped outer plate apical setae present. *Gnathopod 1* subchelate; coxa large about as long as coxa 2, slightly tapering distally; ischium short; carpus shorter than propodus; propodus posterior margin densely setose. Pereopod 4 coxa with well developed posteroventral lobe. Uropod 2 inner ramus not constricted. Uropod 3 rami with or without plumose setae. Telson deeply cleft.

Remarks. *Tasmanosa* **gen. nov.** is similar to *Coximedon* Barnard & Karaman, 1991, but does not display the broadened *gnathopod 1* propodus characteristic of that genus. The setal-teeth are much more finely serrate and the robust setae on the medial margin of the maxilliped outer plate more strongly developed in *Tasmanosa*. Additionally, the *gnathopod 1* propodus of *Tasmanosa* has a dense brush of long setae, while that of *Coximedon* only has sparse, short setae.

Tasmanosa differs from *Tryphosella* Bonnier, 1893, in having a longer and more weakly tapering *gnathopod 1* coxa with the carpus much shorter than the propodus, and the propodus densely setose on the posterior margin. *Tasmanosa* also has a longer and more weakly tapering *gnathopod 1* coxa than *Cedrosella* Barnard & Karaman, 1987, in addition to having more finely serrate setal-teeth.

Tasmanosa tasman sp. nov.

(Figs 32–34)

Types. Holotype, ovigerous female, 10.2 mm, AM P.71642, east of Fortescue Bay, Tasmania, Australia (43°8.96'S 148°15.36'E), 1000 m, baited trap, 8 April 1994–09 April 1994, J.K. Lowry & K. Dempsey, MV *Martrudan* stn TAS-423. Paratypes: 5 specimens, 7.5–8.0 mm, AM P.51093, and 2 specimens, 4.8–8.5 mm, AM P.52149, both with same collection details as holotype; 1 male, 10.0 mm, AM P.71643, and 40 specimens, 7.0–15.5 mm, AM P.71644, 76.8 km south-southeast of South East Cape, Main Pedra Hill, Tasmania, Australia (44°15.6'S 147°07.8'E), 1312 m, baited trap, 21 January 1997–24 January 1997, CSIRO party, FRV *Southern Surveyor* stn SS01/97/08.

Additional material examined.1 specimen, AM P.73699, Tasman Sea, south-southeast of South East Cape, Tasmania, Australia (44°23.4'S 147°16.2'E), 1942 m, baited trap, 31 January 1997–31 January 1997, CSIRO party, FRV *Southern Surveyor* stn SS01/97/65; 307 specimens, AM P.78689, Tasman Sea, 76.8 km south-south-east of South East Cape, Main Pedra Hill, Tasmania, Australia (44°15.6'S 147°07.8'E), 1312 m, baited trap, 21 January 1997–24 January 1997, CSIRO party, FRV *Southern Surveyor* stn SS01/97/08; many specimens, AM P.73700,

Tasman Sea, 76.8 km south-southeast of South East Cape, Main Pedra Hill, Tasmania, Australia (44º15.6'S 147º07.8'E), 1312 m, baited trap, 21 January 1997–24 January 1997, CSIRO party, FRV *Southern Surveyor* stn SS01/97/08.

Type Locality. East of Fortescue Bay, Tasmania, Australia (43°8.96'S 148º15.36'E), 1000 m depth.

Etymology. Named for the steamship *Tasman* lost near Hippolyte Rocks, Tasmania in November 1883; used as a noun in apposition.

Description. Based on holotype, female, 10.2 mm AM P.71642. *Head* lateral cephalic lobe subtriangular, apically acute. ***Antenna 1*** accessory flagellum not forming operculum; primary flagellum with strong 2-field callynophore, ***robust setae present on proximal articles***; calceoli absent. *Antenna 2* peduncular article 3 short; articles 3 to 5 not enlarged; flagellum short, calceoli absent. *Labrum*, epistome and upper lip separate; epistome produced equally with upper lip, broadly rounded; upper lip not produced. *Mandible* molar with asymmetrically reduced column, proximally setose, distally triturating. *Maxilla 1* outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; palp distal margin with apical robust setae. *Maxilliped* outer plate with 4 long, slender apical robust setae.

Pereonites 1–7 dorsally smooth. ***Gnathopod 1*** subchelate; coxa large, about as long as coxa 2, slightly tapering distally; ***basis densely setose along anterior margin***; ischium short; carpus short, shorter than propodus, without posterior lobe; propodus densely setose along posterior margin, ***palm transverse, straight, striated***. *Gnathopod 2* minutely subchelate; propodus palm transverse to slightly obtuse. ***Pereopod 5 coxa producing anterior lobe***; basis longer than broad, not posteroproximally excavate, posterior margin weakly serrate. *Pereopod 7* basis posterodistally produced, reaching merus.

Pleonite 3 without mid-dorsal carina, not produced dorsodistally, posterodorsal margin not produced. *Epimeron 3* posterior margin smooth, rounded, posteroventral corner narrowly rounded. ***Urosomite 1 dorsally straight, obliquely truncated apically***. *Uropod 2* inner ramus without constriction. *Uropod 3* inner and outer rami well developed, outer ramus article 2 short, without plumose setae on rami. *Telson* deeply cleft, longer than wide, with 1 dorsal robust seta and 1 apical robust setae on each lobe.

Sexually dimorphic characters. Based on paratype, male, 10.0 mm, AM P.71643. *Antenna 1* and *2* with calceoli.

Remarks. See remarks under *Tasmanosa toogooloo* **sp. nov.**

Depth range. 1000–1942 m.

Distribution. *Australia.* Tasmania.

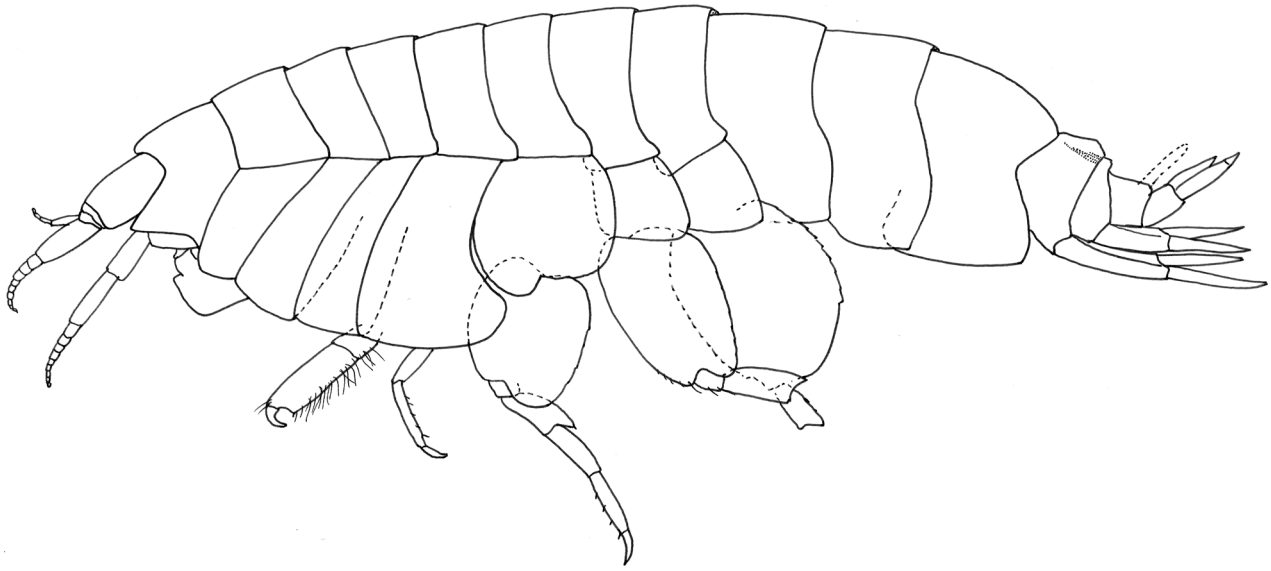

FIGURE 32. *Tasmanosa tasman* **sp. nov.,** *habitus*, holotype, female, 10.2 mm, AM P. 71642, from east of Fortescue Bay, Tasmania, Australia.

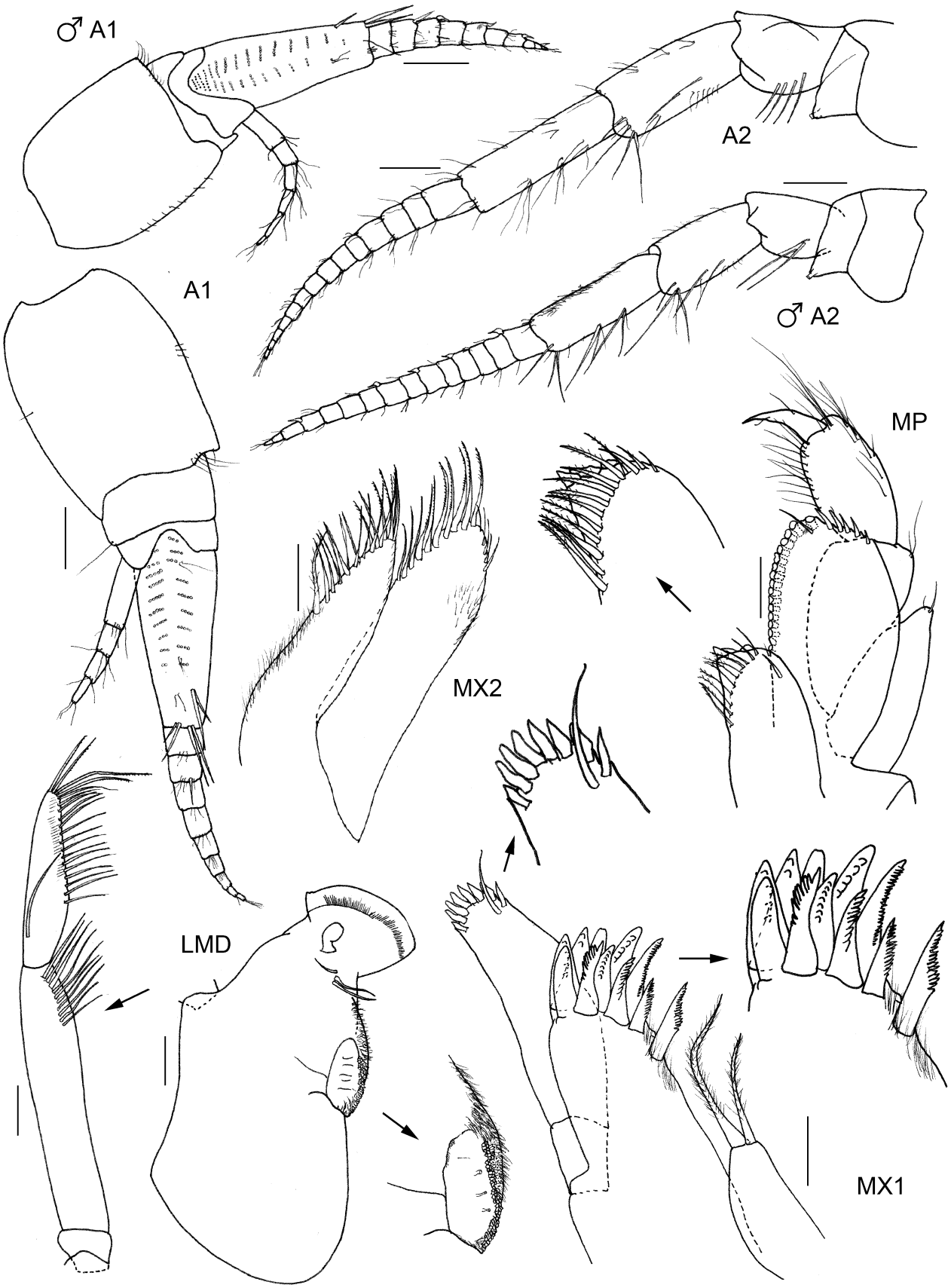

FIGURE 33. *Tasmanosa tasman* **sp. nov.**, holotype, female, 10.2 mm, AM P.71642, from east of Fortescue Bay, Tasmania, Australia; paratype, male, 10.0 mm, AM P.71643, south-southeast of South East Cape, Main Pedra Hill, Tasmania, Australia. Scale: antennae, 0.2 mm; mouthparts, 0.1 mm.

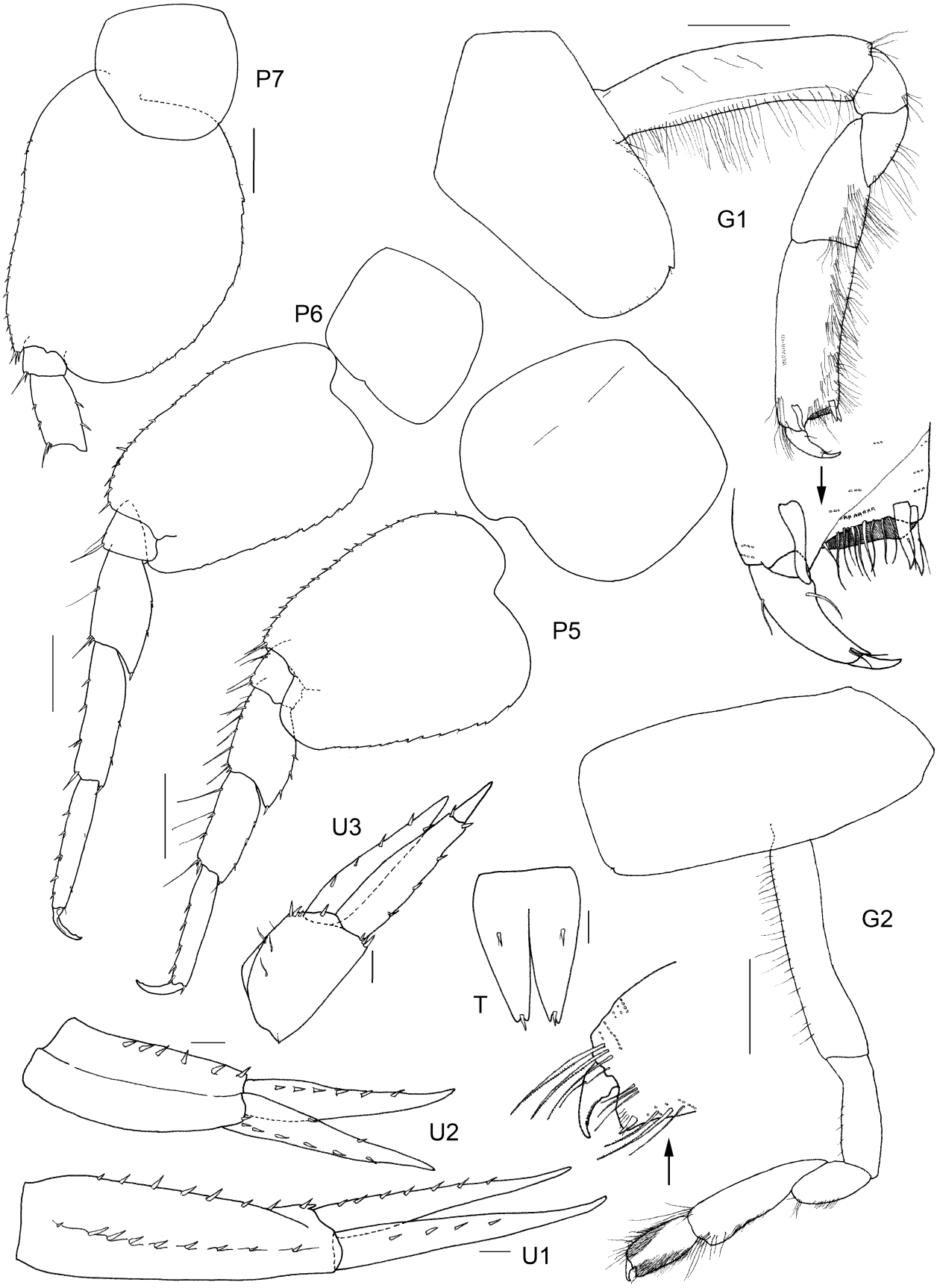

FIGURE 34. *Tasmanosa tasman* **sp. nov.**, holotype, female, 10.2 mm, AM P.71642, from east of Fortescue Bay, Tasmania, Australia. Scale: gnathopods, pereopods, 0.5 mm; uropods, telson, 0.1 mm.

***Tasmanosa toogooloo* sp. nov.**
(Figs 35–37)

Types. Holotype female, 5.0 mm, AM P.70550, east of Long Reef Point, New South Wales, Australia (33°46'S 151°43'E), 176 m, dredge, 5 December 1977, FRV *Kapala* stn K77-23-01. Paratypes: 1 male, 4.2 mm, AM P.70551; 1 female, 5.2 mm, AM P.70552; 2 specimens, 3.0–4.8 mm, AM P.70553, same collection details as holotype; 1 specimen, 5.0 mm AM P.71607, east of Long Reef, New South Wales, Australia (33°43'S 151°46'E to 33°44'S 151°46'E), 174 m, epibenthic sled, 20 December 1985, J.K. Lowry & R.T. Springthorpe, FRV *Kapala* stn K85-21-08.

Additional material examined. 1 male, AM P.70554, north-east of Wollongong, New South Wales, Australia (34°20'S 151°18'E), 161 m, dredge, 13 December 1978, FRV *Kapala* stn K78-27-11.

Type Locality. East of Long Reef Point, New South Wales, Australia (33°46'S 151°43'E), 176 m depth.

Etymology. Named for the schooner *Toogooloo*, foundered in 1901 off the central coast of New South Wales; used as a noun in apposition.

Description. Based on holotype female, 5.0 mm, AM P.70550. *Head* lateral cephalic lobe subtriangular, apically subacute. ***Antenna 1*** accessory flagellum not forming operculum; primary flagellum with strong 2-field callynophore, ***robust setae absent from proximal articles***; calceoli absent. *Antenna 2* peduncular article 3 short; articles 3 to 5 not enlarged; flagellum short, calceoli absent. *Labrum*, epistome and upper lip separate; upper lip not produced. *Mandible* molar with asymmetrically reduced column, proximally setose, distally triturating. *Maxilla 1* outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; palp distal margin with apical robust setae. *Maxilliped* outer plate with 2 long slender apical robust setae.

Pereonites 1–7 dorsally smooth. ***Gnathopod 1*** **s**ubchelate; coxa large, about as long as coxa 2, slightly tapering distally*;* ***basis moderately setose along anterior margin***; ischium short; carpus short to compressed, shorter than propodus, without posterior lobe; propodus densely setose along posterior margin, ***palm transverse, straight, rugose***. *Gnathopod 2* propodus palm slightly obtuse. ***Pereopod 5 coxa equilobate***; basis longer than broad, not posteroproximally excavate, posterior margin weakly serrate. *Pereopod 7* basis posterodistally produced less than halfway along merus.

Pleonite 3 without mid-dorsal carina, not produced dorsodistally, posterodorsal margin not produced. *Epimeron 3* posterior margin smooth, posteroventral corner narrowly rounded. ***Urosomite 1 with deep notch and subtriangular, subacute boss***. *Uropod 2* inner ramus without constriction. *Uropod 3* inner and outer rami well developed, outer ramus article 2 short, without plumose setae on rami. *Telson* deeply cleft, longer than wide, with 2 dorsal robust setae and 1 apical robust seta on each lobe.

Sexually dimorphic characters. Based on paratype, male, 4.2 mm, AM P.70551. *Antenna 1* and *2* calceoli present, small.

Remarks. The *gnathopod 1* of *Tasmanosa toogooloo* **sp. nov.** is quite different from that of its congener *T. tasman* **sp. nov.** The carpus is much shorter in *T. toogooloo* and it lacks the distinctly striated palm of *T. tasman*. Additionally, *T. toogooloo* has a propodus that is densely setose along both the anterior and posterior margins, as opposed to *T. tasman,* in which just the posterior margin of the propodus is setose. The *pereopod 5* coxa is equilobate (producing an anterior lobe in *T. tasman*), and urosomite 1 has a distinct subacute boss (dorsally straight and obliquely truncated apically in *T. tasman*).

Depth range. 161–176 m.

Distribution. *Australia*. New South Wales.

Tryphosites G.O. Sars, 1891

Tryphosites G.O. Sars, 1891: 91.—Stebbing, 1906: 77.—Chevreux & Fage, 1925: 61.—Schellenberg, 1942: 107.—J.L. Barnard, 1969: 366.—Lincoln, 1979: 80.—Diviacco & Ruffo, 1989: 571.—Barnard & Karaman, 1991: 538.

Type species. *Anonyx longipes* Bate & Westwood, 1863, original designation.

Included species. *Tryphosites* includes five species: *T. alleni* Sexton, 1911; *T. chevreuxi* Stebbing, 1914; *T. colmani* **sp. nov.**; *T. longipes* (Bate, 1862); *T. psittacus* **sp. nov.**

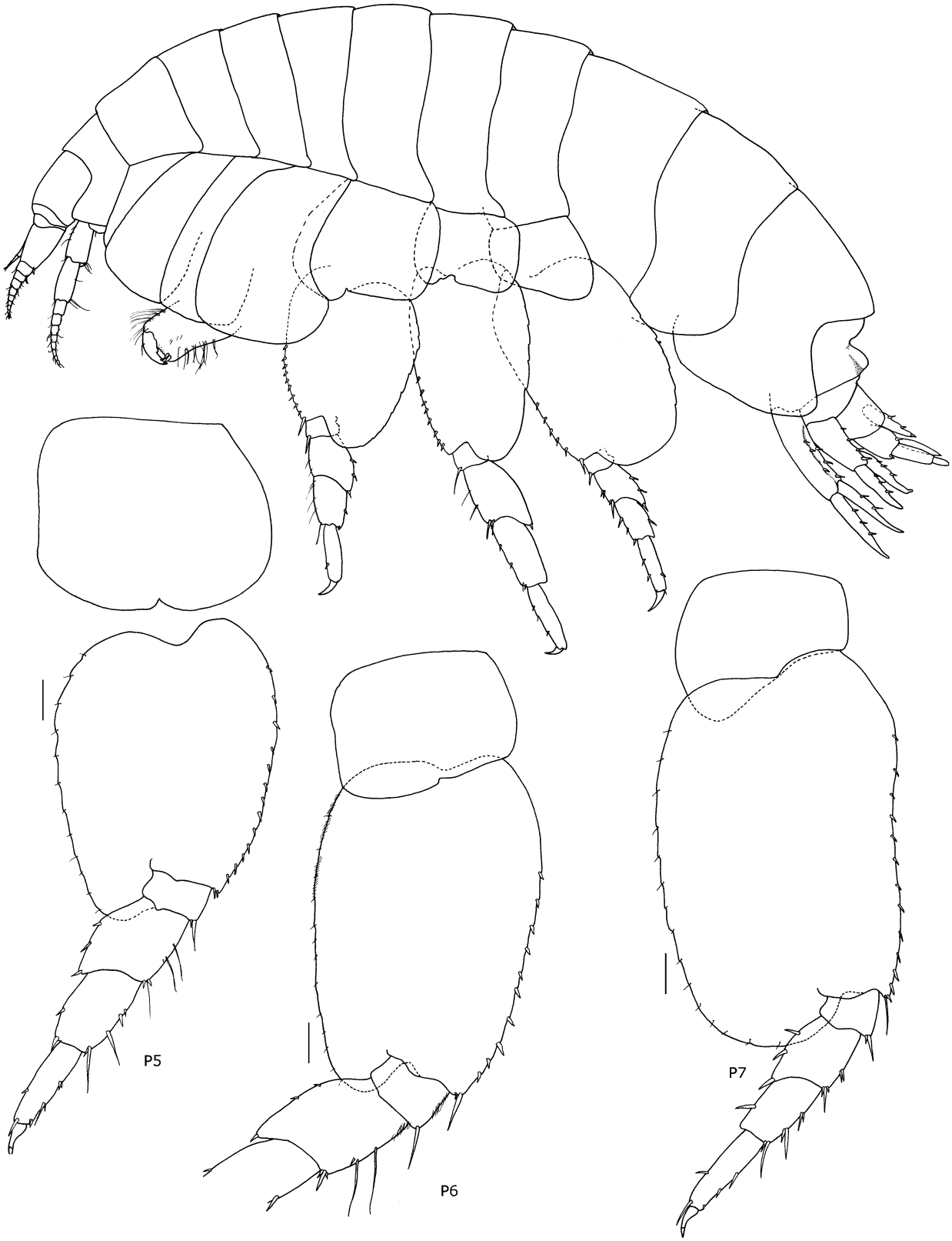

FIGURE 35. *Tasmanosa toogooloo* **sp. nov.**, holotype, female, 5.0 mm, AM P.70550, from east of Long Reef Point, New South Wales, Australia. Scale: 0.1 mm.

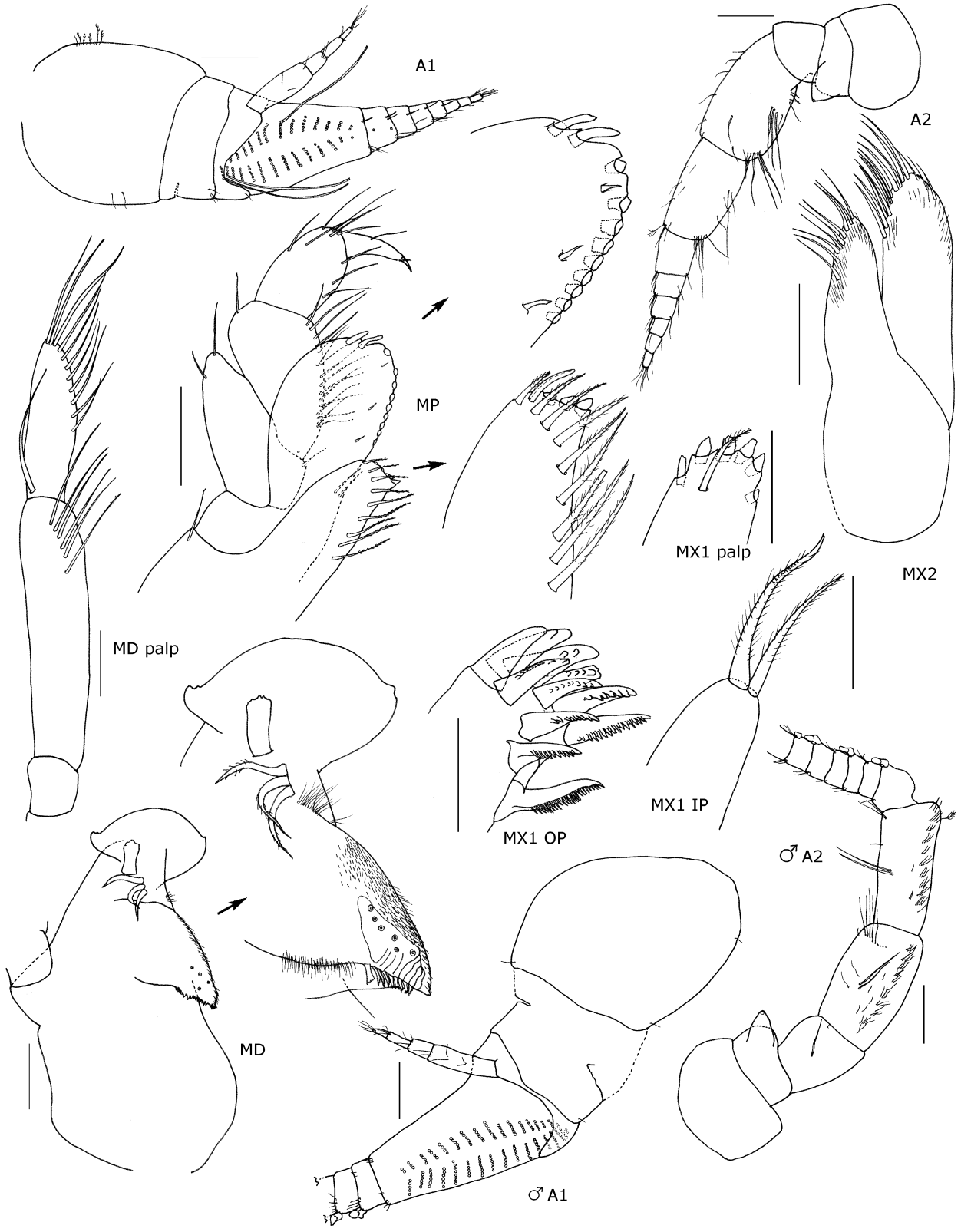

FIGURE 36. *Tasmanosa toogooloo* **sp. nov.**, holotype, female, 5.0 mm, AM P.70550; paratype, male, 4.2 mm, AM P.70551, from east of Long Reef Point, New South Wales, Australia. Scale: MD, MX1, 0.05 mm, remainder, 0.1 mm.

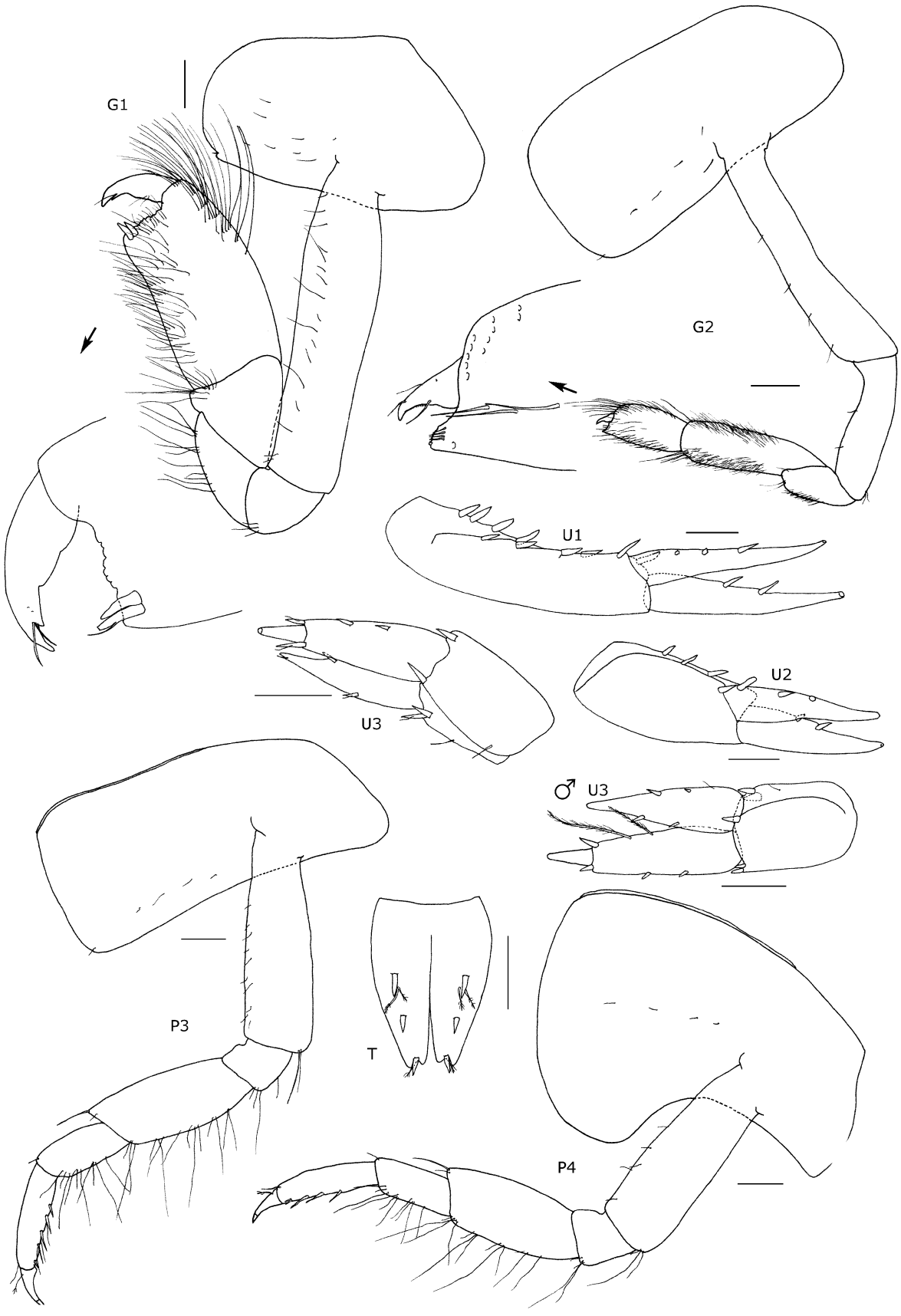

FIGURE 37. *Tasmanosa toogooloo* **sp. nov.**, holotype, female, 5.0 mm, AM P.70550; paratype, male, 4.2 mm, AM P.70551, from east of Long Reef Point, New South Wales, Australia. Scale: 0.1 mm.

Diagnostic description. Antenna 1 accessory flagellum not forming operculum. Antenna 2 flagellum article 5 slender (with brush setae). Mandibular incisor curved; palp attached midway. *Maxilla 1* ST-7 serrate distally with smooth medial margin; ST-D slender, cuspidate along distal half of medial margin. Maxilliped outer plate apical robust setae present. *Gnathopod 1* subchelate; coxa large, nearly as long as coxa 2, not tapering; carpus longer than propodus. Pereopod 4 coxa with well-developed posteroventral lobe. Uropod 2 inner ramus constricted. Uropod 3 rami with plumose setae. Telson moderate to deeply cleft.

Distribution. North Atlantic; Pacific Ocean.

Tryphosites longipes (Bate, 1862)

(Fig. 38)

Anonyx longipes Bate, 1862: 79, pl. 13, fig. 4.—Bate & Westwood, 1863: 113, text figure.—Della Valle, 1893: 830.
Tryphosa longipes.—Boeck, 1871: 118.
Tryphosites longipes.—G.O. Sars, 1891: 81, pl. 28, fig. 3, pl. 29, fig. 1.—Stebbing, 1906: 77.—Chevreux & Fage, 1925: 61, figs 48, 49.—Chevreux, 1935: 55.—Bellan-Santini & Ledoyer, 1973: 921.—Karaman, 1973: 141.—Relini Orsi & Würtz, 1977: [page unknown].—Drago, Albertelli & Cattaneo, 1978: [page unknown].—Lincoln, 1979: 80, fig. 31a–h.—Diviacco & Ruffo, 1989: 572, fig. 394.—Barnard & Karaman, 1991: 538.
Anonyx ampulla.—Bate, 1862: 79.—Bate & Westwood, 1863: 116.

Types. Apparently lost. Bate (1862) based his description on specimen(s) from the collection of the British Museum (Natural History Museum, London). However, no specimens are subsequently mentioned in the catalogue of types from that institution (Thurston & Allen 1969).

Type locality. Off the Shetland Islands, North-eastern Atlantic Ocean.

Material examined. 1 female with setose oostegites, ZMUB 16488, North Sea (56º50'N 1º36'E), 68 m, 2 July 1904, M. Sars; 1 ovigerous female, ZMUB 16440, North Sea (57º09'N 1º30'E), 96 m, 6 July 1904, M. Sars; 1 female, ZMUB 16461, North Sea (57º41'N 5º39'E), 100 m, 19 June 1904, M. Sars; 1 male, ZMUB 16773, North Sea (56º50'N 01º36'E), 68 m, 2 July 1904, M. Sars; 2 ovigerous females, ZMUB 32356, Feios Bay, Sogn, Norway [approx.61º09'N 6º45'E], 40–80 m, 26 August 1908, J. Greig; 1 female, ZMUB 31836; Skagerrak (57º44'N 9º53'E), 31 July 1906, M. Sars; 1 male, ZMUB 59107, Liholmene, Bergen, Norway [approx. 60º22'N 5º10'E], 90–100 m, 2 August 1966, Biol. Stasjon; 1 specimen, ZMUB 16786, Norwegian Sea (61º15'N 01º06'E), 170 m, 25 June 1906, M. Sars; 1 ovigerous female, ZMUB 17119, Jondal, Hardangerfjord, Norway [approx. 60º16'N 06º13'E], 100–200 m, 25 July 1908, J. Greig; 1 female, ZMUB 16394, Norwegian Sea (61º15'N 01º06'E), 170 m, 25 June 1904, M. Sars; 5 specimens, ZMUB 7122, Trondheim fjord [approx. 63º31'N 10º17'E], 365 m, 17 January 1899, Wollebæk; 1 specimen, ZMUB 3037, Hardanger [approx. 60º16'N 06º13'E], ?Danielssen; 1 ovigerous female, ZMUB 19872, Norwegian Sea (61º43'N 01º60'E), 190 m, 1906, M. Sars; 1 specimen, ZMUB 2689, Hardanger [approx. 60º16'N 06º13'E], ?Danielssen; 1 juvenile, ZMUB 59110, Drivsund, 17 m, 9 August 1965, Biol. St; 1 specimen, AM P.71648, off Kilchattan, Bute Island, Firth of Clyde, Scotland (55°45'N 05°02'W), 60 m, muddy sand, D net, 1 October 1981, P.G. Moore; 2 males, AM P.32405, 40 km off Isle of May, Scotland (56°11'N 2°34'W), 1887.

Depth range. 1–365 m (this study).

Distribution. *Northeast Atlantic Ocean*. Shetland (Bate 1862); coast of Scotland (Bate & Westwood 1863; this study); Norwegian coasts (Boeck 1871; this study); Channel Islands (Chevreux & Fage 1925); Atlantic coasts of France (Chevreux & Fage 1925); North Sea; North Polar Sea; *Mediterranean Sea*. Naples; Sicily (Chevreux & Fage 1925; Chevreux 1935); Kotor, Montenegro (Karaman 1973).

Tryphosites colmani sp. nov.

(Figs 39–41)

Types. Holotype, ovigerous female, 7.1 mm, AM P.68955, east of Long Reef Point, New South Wales, Australia (33°43'S 151°46'E to 33°44'S 151°46'E), 174 m, 20 December 1985, J.K. Lowry & R.T. Springthorpe, FRV *Kapala* stn K85-21-08. Paratypes: 1 male, AM P.68956, 7.4 mm, same collection details as holotype; 2 males, AM

P.68957, 6.4–7.1 mm, east of Long Reef Point, New South Wales, Australia (33°46'S 151°43'E), 176 m, 5 December 1977, FRV *Kapala*, FRV *Kapala* stn K77-23-01.

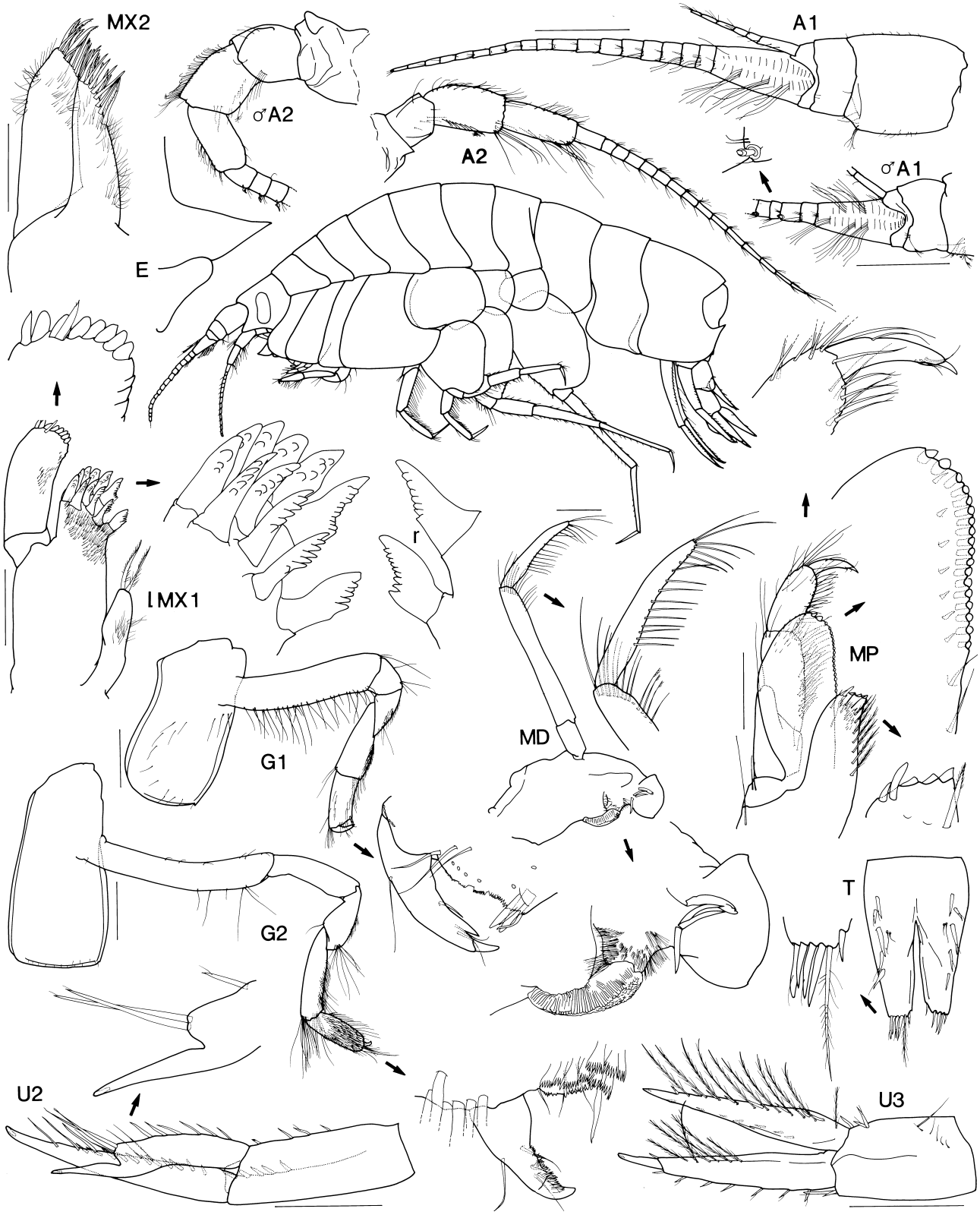

FIGURE 38. *Tryphosites longipes* (Bate, 1862), female, 18.0 mm, ZMUB 16488, from the North Sea; male 14.0 mm, ZMUB 7122, from Trondheimsfjord, Norway. Scale: mouthparts, 0.2 mm; remainder, 0.5 mm.

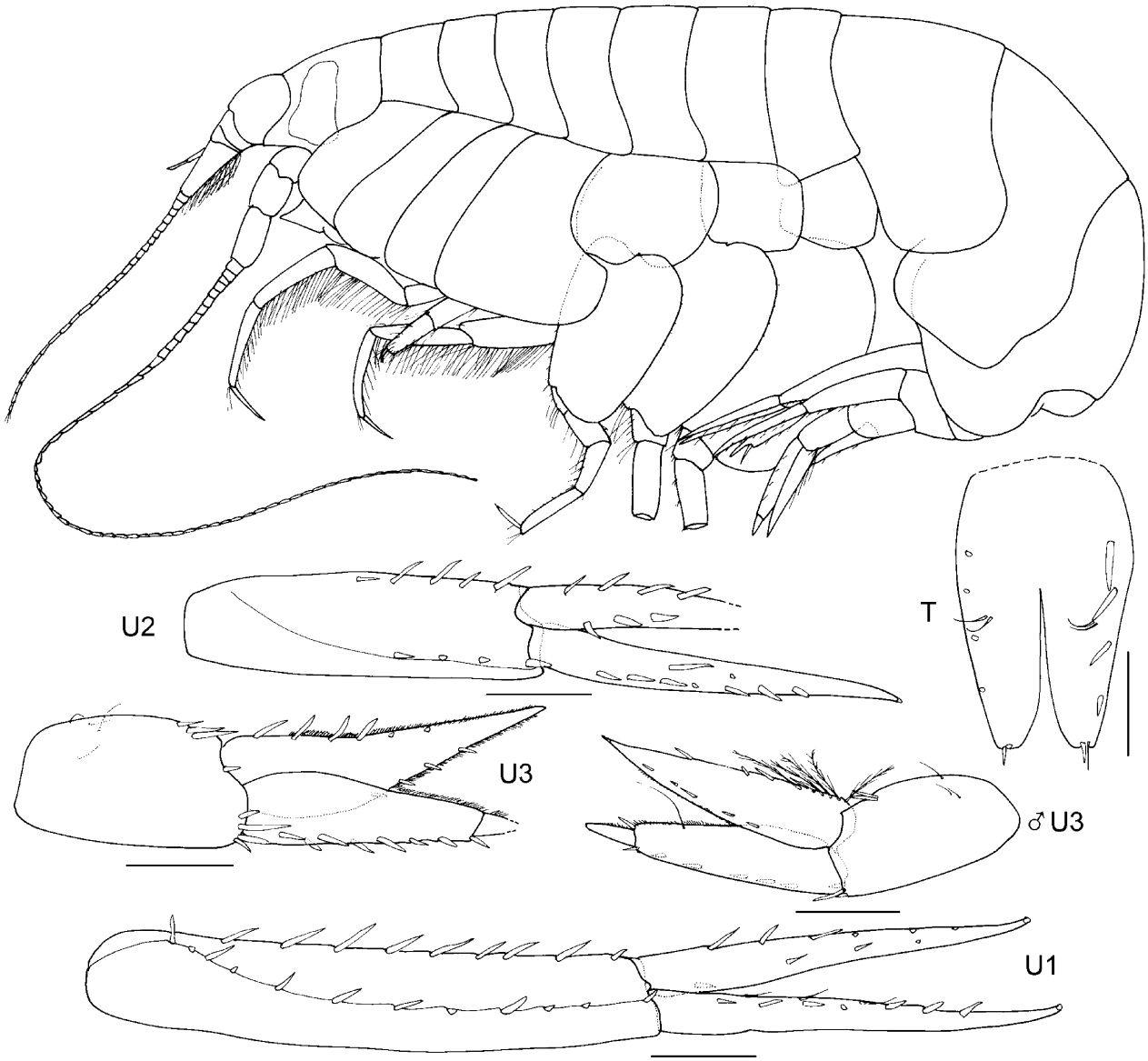

FIGURE 39. *Tryphosites colmani* **sp. nov.**, *habitus* and male U3 from AM P.68948, from northeast of Lady Elliott Island, Queensland; uropods, telson from holotype, female, AM P.68955, from east of Long Reef Point, New South Wales. Scale: 0.2 mm.

Additional material examined. 1 male, AM P.68948; 2 males, AM P.68949, both from north-east of Lady Elliott Island, Queensland, Australia (24°03.7'S 152°49.4'E), 150 m, 4 July 1984, P.H. Colman & G. Hangay & S.J. Keable, HMAS *Kimbla* stn K84-3; 1 specimen, NMV J67534, Bass Strait, Australia (39º48.6'S 146º18.8'E), 82 m, shell-bryozoans-mud, epibenthic sled, 13 November 1981, G.C.B. Poore *et al*., RV *Tangaroa* stn BSS-158S (=NZOI stn Q616); 1 specimen, NMV J67535, off Eden, New South Wales, Australia (37º00.60'S 50º20.70'E), 363 m, coarse shell, WHOI epibenthic sled, 21 July 1986, G.C.B. Poore *et al*., RV *Franklin*, SLOPE stn 22.

Type Locality. East of Long Reef Point, New South Wales, Australia (33°43'S 151°46'E to 33°44'S 151°46'E), 174 m depth.

Etymology. Named after Phil Colman, a naturalist who has made a life-long study of Long Reef, the type locality.

Description. Holotype, female, 7.1 mm, AM P.68955. *Head* lateral cephalic lobe subtriangular, apically acute. *Antenna 1* accessory flagellum not forming operculum, 5-articulate; primary flagellum with strong 2-field callynophore, robust setae absent from proximal articles; calceoli absent. *Antenna 2* peduncular article 3 short; articles 3 to 5 not enlarged; flagellum long, calceoli absent. ***Labrum, epistome and upper lip separate; epistome produced beyond upper lip, concave, apically acute***; upper lip not produced. *Mandible* molar columnar, with oval fully triturating surface; palp attached about midway or very slightly proximally. *Maxilla 1* outer plate setal-tooth 7

present, left and right asymmetrical, cuspidate distally; palp distal margin with apical robust setae. *Maxilliped* outer plate with 2, short apical robust setae.

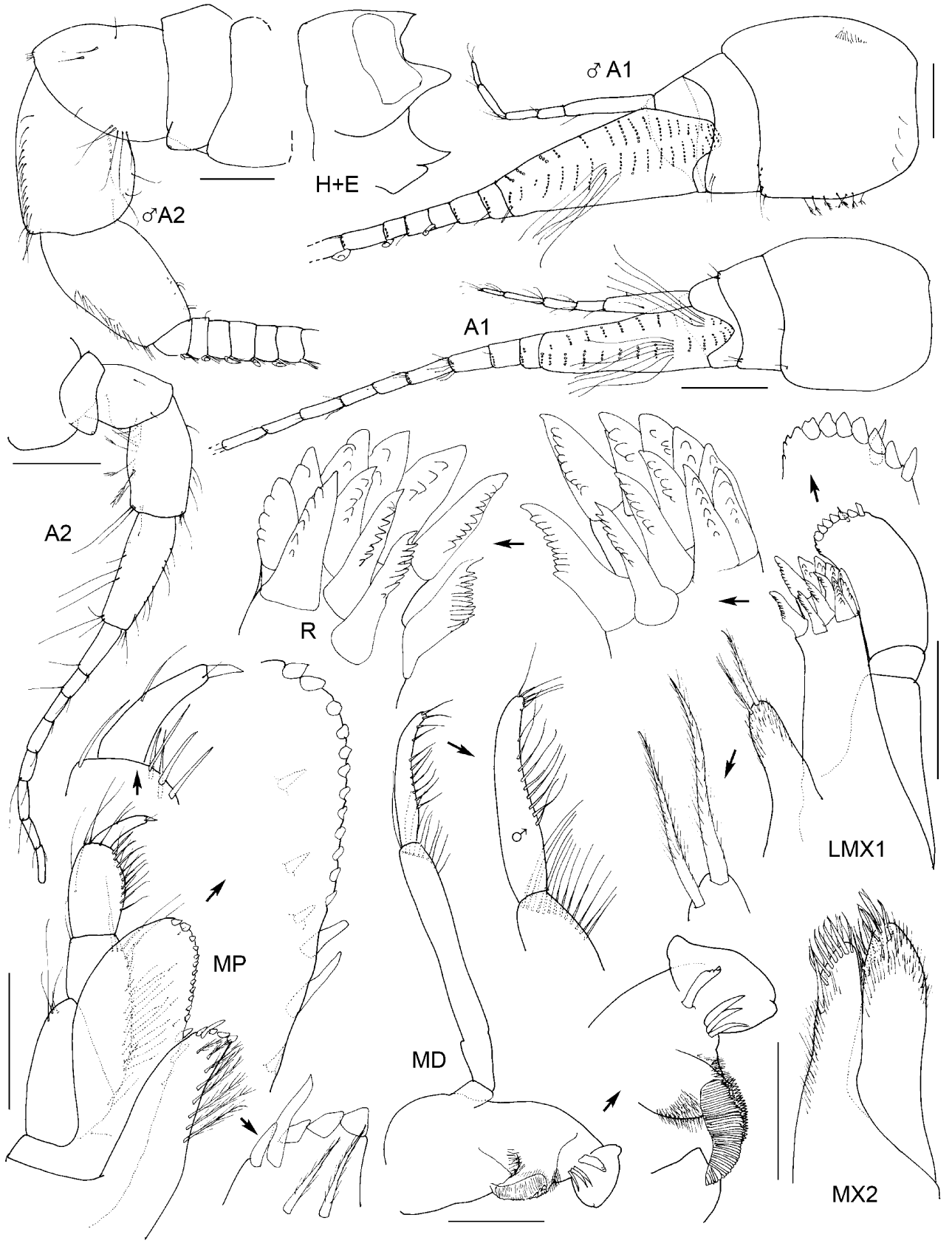

FIGURE 40. *Tryphosites colmani* **sp. nov.**, holotype, female, 7.1 mm, AM P.68955 from east of Long Reef Point, New South Wales; male, AM P.68948, from north-east of Lady Elliott Island, Queensland. Scale: 0.2 mm.

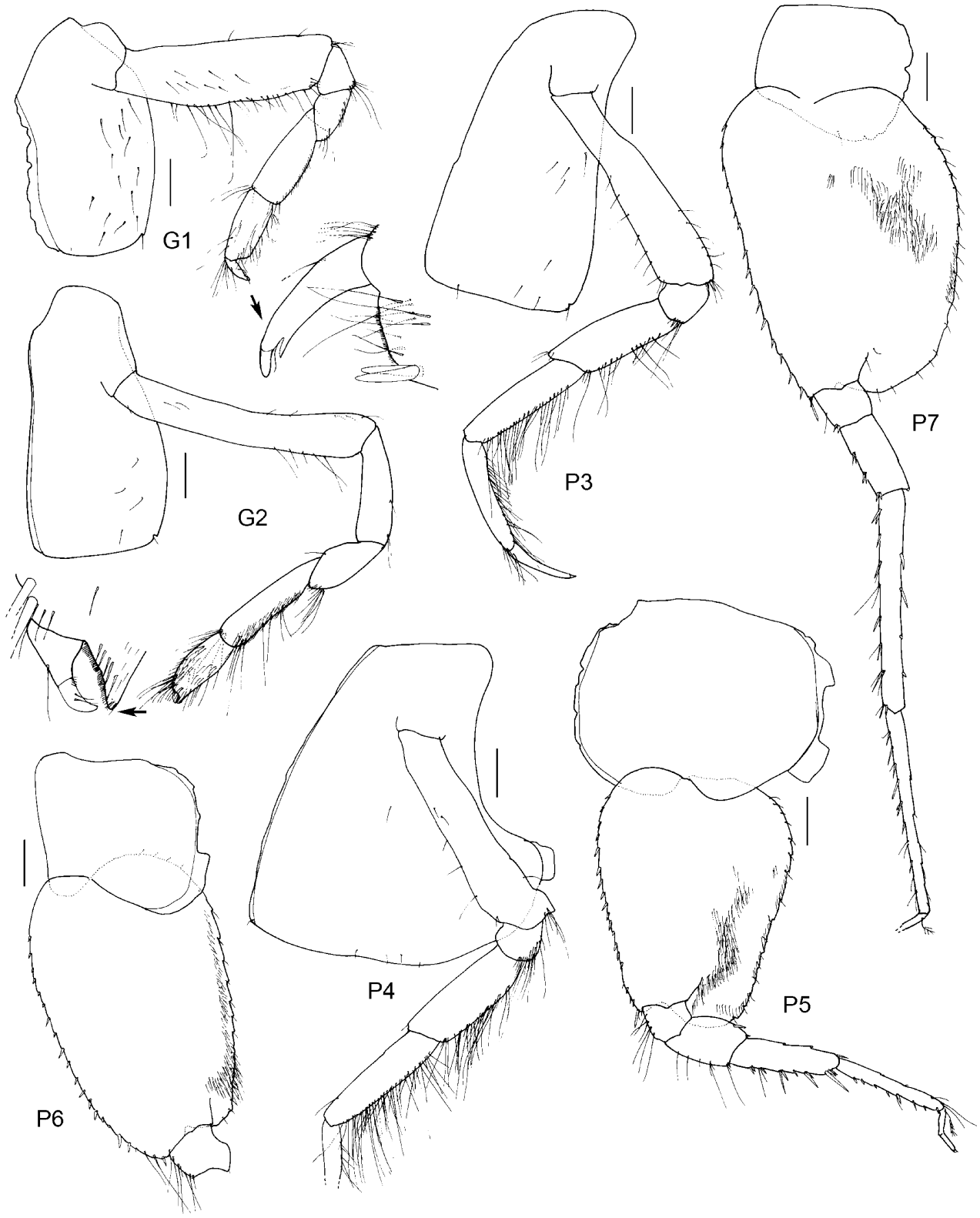

FIGURE 41. *Tryphosites colmani* **sp. nov.**, holotype, female, 7.1 mm, AM P.68955, from east of Long Reef Point, New South Wales. Scale: 0.2 mm.

Pereonites 1–7 dorsally smooth. *Gnathopod 1* subchelate; coxa medium to long, about as long as coxa 2, subrectangular with slightly concave anterior margin; basis moderately setose along anterior margin; ischium short; carpus long, longer than propodus, without posterior lobe; propodus small, margins subparallel, sparsely setose along posterior margin, palm slightly acute, entire, straight. *Gnathopod 2 minutely subchelate; propodus palm*

moderately obtuse. *Pereopod 4* coxa with a well-developed posteroventral lobe. *Pereopod 5* basis longer than broad, not posteroproximally excavate, posterior margin not serrate. *Pereopod 7* basis posterodistally produced, not reaching merus.

Pleonite 3 without mid-dorsal carina, not produced dorsodistally, posterodorsal margin not produced. ***Epimeron 3 posterior margin smooth, posteroventral corner broadly rounded. Urosomite 1 with anterodorsal notch and slightly rounded boss.*** *Uropod 3* inner and outer rami well developed, outer ramus article 2 short, without plumose setae on rami. ***Telson moderately cleft***, longer than wide, with 4 dorsal robust setae per lobe and 1–2 apical robust setae on each lobe.

Sexually dimorphic characters. Based on paratype, male, 7.4 mm, AM P.68956. *Antenna 1* with calceoli. *Antenna 2* peduncular article 3 short; articles 4 and 5 enlarged; flagellum long, calceoli present.

Remarks. *Tryphosites colmani* **sp. nov.** is most similar to the type of the genus*, T. longipes* (Bate, 1862). However, it lacks the broad, upturned spine on the posterodistal corner of the epimeron 3 which distinguishes it from *T. longipes*.

Depth range. 82–363 m.

Distribution. *Australia.* Bass Strait, Victoria to north-east of Lady Elliott Island, Queensland.

***Tryphosites psittacus* sp. nov.**
(Figs 42–45)

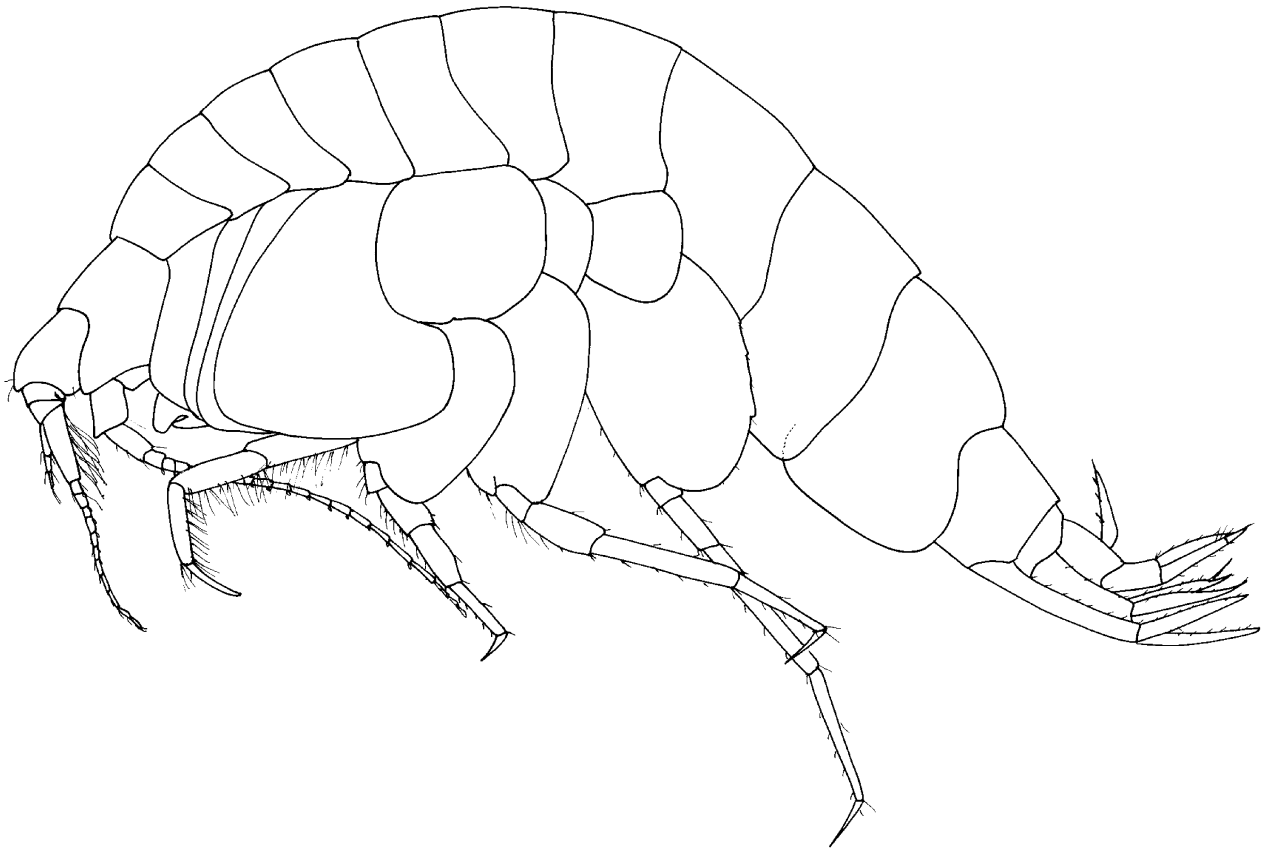

FIGURE 42. *Tryphosites psittacus* **sp. nov.**, *habitus,* paratype, male, 6.7 mm, AM P.69288, from east of Broken Bay, New South Wales.

Types. Holotype female, 7.5 mm, AM P.69287, east of Broken Bay, New South Wales, Australia (33°31' S, 152°08'E), 914 m, 2.5 m sled dredge, 10 December 1980, R.T. Springthorpe, FRV *Kapala* stn K80-20-08. Paratypes: male, 6.7 mm, AM P.69288; 2 specimens, 6.4–7.6 mm, AM P.69289; 1 specimen, 6.8 mm, AM P.69291, all same collection data as holotype; 1 specimen, 7.0 mm, AM P.69290, east of Broken Bay, New South Wales, Australia (33°37' S, 152°04'E), 896–923 m, dredged, 10 December 1980, R.T. Springthorpe, FRV *Kapala* stn K80-20-09.

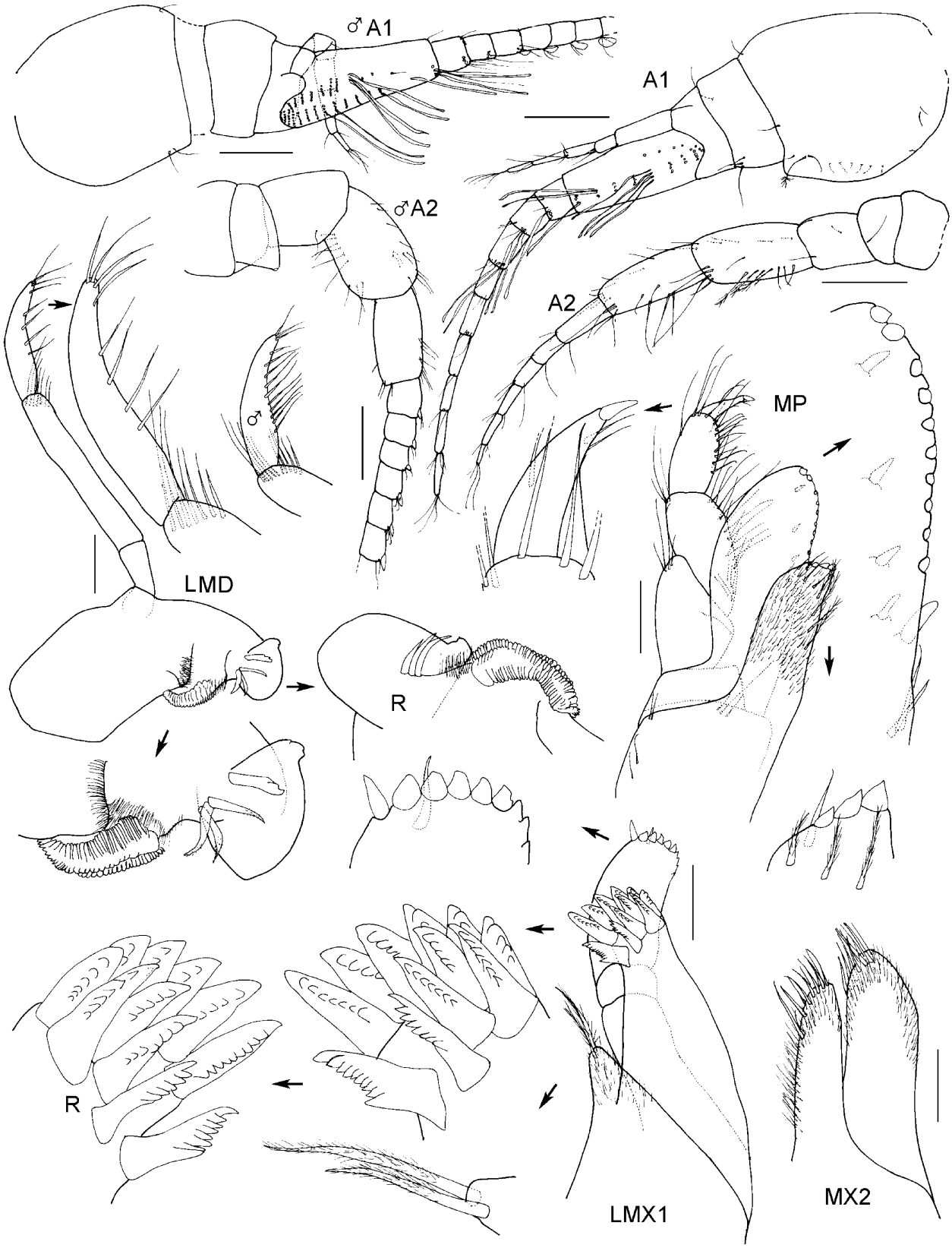

FIGURE 43. *Tryphosites psittacus* **sp. nov.,** holotype, female, 7.5 mm, AM P.69287; paratype, male, 6.7 mm, AM P.69288, from east of Broken Bay, New South Wales, Australia. Scale: mouthparts, 0.1 mm; antennae, 0.2 mm.

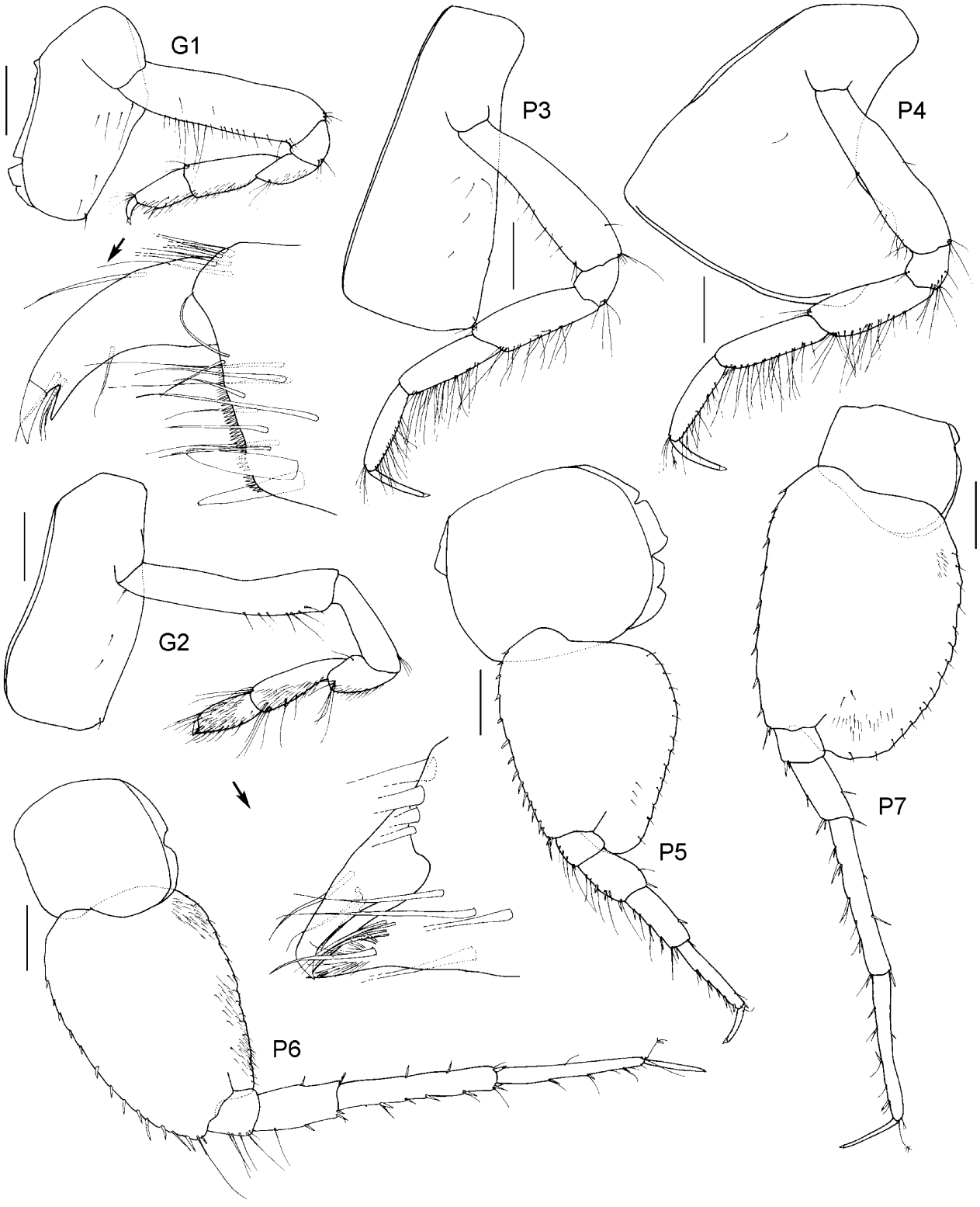

FIGURE 44. *Tryphosites psittacus* **sp. nov.**, holotype, female, 7.5 mm, AM P.69287, from east of Broken Bay, New South Wales, Australia. Scale: 0.2 mm.

Additional material examined. *New South Wales*: 2 specimens, NMV J67518, 54 km ESE of Nowra, New South Wales, Australia (34°52.72'S 151°15.04'E), 996 m, mud, fine sand, fine shell, WHOI epibenthic sled, 22 October 1988, G.C.B. Poore *et al.,* RV *Franklin*, SLOPE stn 53.

Tasmania: 79 specimens, NMV J67519, off Freycinet Peninsula, Tasmania, Australia (42°0.20'S 148°37.70'E),

720 m, coarse shelly sand, WHOI epibenthic sled, 27 July 1986, M.F. Gomon *et al.,* RV *Franklin* SLOPE stn 46. 2 specimens, NMV J67520, off Freycinet Peninsula, Tasmania, Australia (41°58.60'S 148°38.80'E), 500 m, coarse shell, WHOI epibenthic sled, 27 July 1986, M.F. Gomon *et al.,* RV *Franklin*, SLOPE stn 47. 3 specimens, NMV J67521, off Freycinet Peninsula, Tasmania, Australia (42°2.20 'S 148°38.70'E), 800 m, coarse shelly sand, WHOI epibenthic sled, 27 July 1986, M.F. Gomon *et al.,* RV *Franklin*, SLOPE stn 45. 3 specimens, NMV J67524, 48 km ENE of Cape Tourville, Tasmania, Australia (42°00.25'S 148°43.55'E), 1264 m, gravel with lumps of sandy mud aggregate, WHOI epibenthic sled, 30 October 1988, G.C.B. Poore *et al.,* RV *Franklin*, SLOPE stn 81. 1 specimen, NMV J14618, off Freycinet Peninsula, Tasmania, Australia (41°57.50'S 148°37.90'E), 400 m, coarse shell, WHOI epibenthic sled, 27 July 1986, M.F. Gomon *et al.,* RV *Franklin*, SLOPE stn 48.

Victoria: 157 specimens, NMV J67522, south of Point Hicks, Victoria, Australia (38°17.70'S 149°11.30'E), 400 m, coarse sand, gravel, mud, many sponges, WHOI epibenthic sled, 24 July 1986, M.F. Gomon *et al.,* RV *Franklin*, SLOPE stn 40. 12 specimens, NMV J67523, south of Point Hicks, Victoria, Australia (38°19.60'S 149°24.30'E), 930 m, rock, rubble, clay, sand, biogenic sed., WHOI epibenthic sled, 23 July 1986, M.F. Gomon *et al.,* RV *Franklin*, SLOPE stn 33.

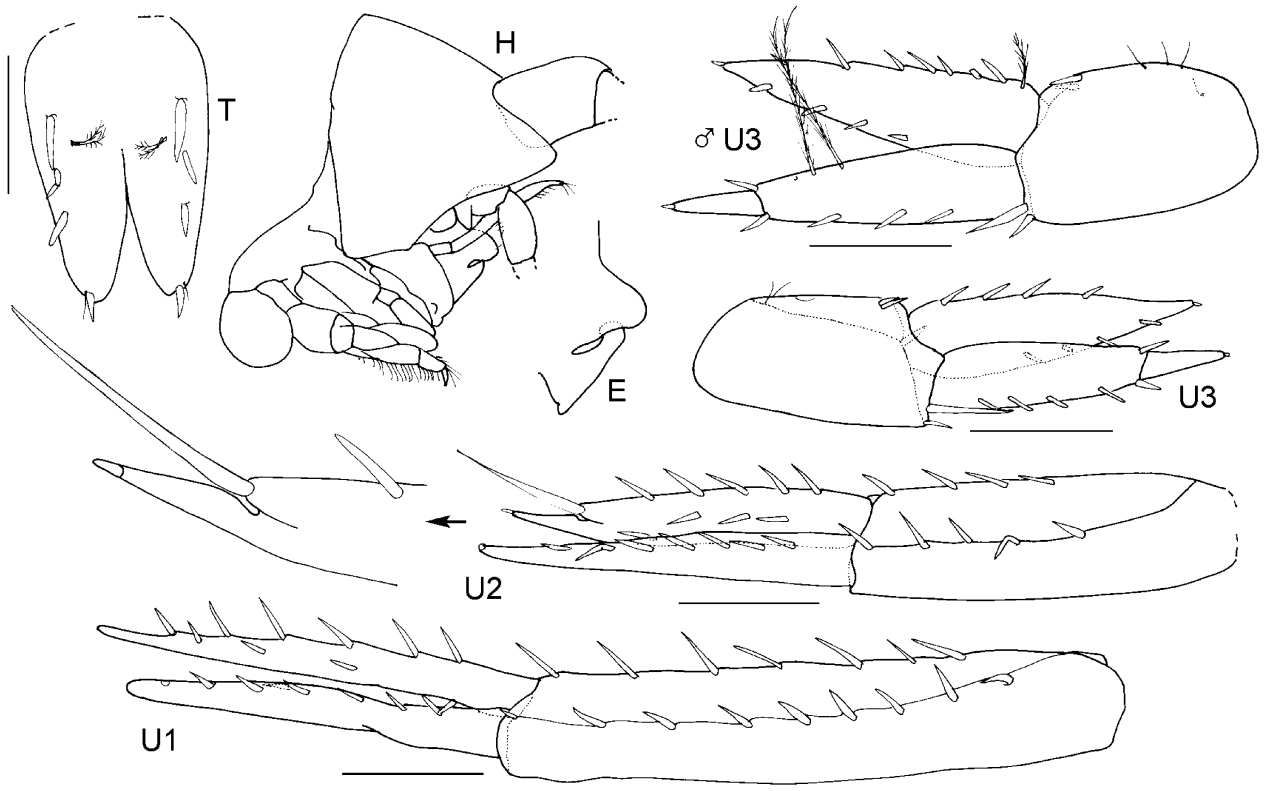

FIGURE 45. *Tryphosites psittacus* **sp. nov.**, holotype, female, 7.5 mm, AM P.69287; paratype, male, 6.7 mm, AM P.69288, from east of Broken Bay, New South Wales, Australia. Scale: 0.2 mm.

Type locality. East of Broken Bay, New South Wales, Australia (33°31' S, 152°08'E), 914 m depth.

Etymology. Named *psittacus* (Latin), meaning parrot, referring to the epistome and upper lip complex which resembles a parrot's beak.

Description. Based on holotype, female, 7.5 mm, AM P.69287. *Head* lateral cephalic lobe semidome, apically subacute. *Antenna 1* peduncular article 1 without anterodistal lobe; article 2 without anterodistal lobe; accessory flagellum present, not forming operculum, terminal article not offset; flagellum with weak 2-field callynophore, robust setae absent from proximal articles; calceoli absent. *Antenna 2* peduncular article 3 short; articles 3 to 5 not enlarged; flagellum short, calceoli absent. ***Labrum epistome/upper lip separate; epistome slightly produced beyond upper lip, narrowly rounded***; upper lip not produced. *Mandible* molar columnar, with oval fully triturating surface; palp attached midway. *Maxilla 1* outer plate setal-tooth 7 present, left and right symmetrical, cuspidate distally; palp distal margin with apical robust setae. *Maxilliped* outer plate with 2 short, broad apical robust setae.

Pereonites 1–7 dorsally smooth. *Gnathopod 1* subchelate; coxa large, about as long as coxa 2, distally

subovate; basis moderately setose along anterior margin; ischium short; carpus long, longer than propodus, without posterior lobe; propodus small, margins subparallel, sparsely setose along posterior margin, palm moderately acute, entire, straight. *Gnathopod 2* minutely chelate propodus palm moderately obtuse. *Pereopod 5* basis longer than broad, not posteroproximally excavate, posterior margin not serrate. *Pereopod 7* basis posterodistally produced less than halfway along merus.

Pleonites 1–3 without mid-dorsal carina, not produced dorsodistally. ***Epimeron 3 posterior margin smooth, posteroventral corner broadly rounded***. ***Urosomite 1 dorsally straight***. *Uropod 2* inner ramus with constriction. *Uropod 3* peduncle without dorsolateral flange; inner and outer rami well developed, outer ramus article 2 short, without plumose setae on rami. *Telson* moderately cleft, longer than wide, with 3 dorsal robust setae per lobe and 1 apical robust seta on each lobe.

Sexually dimorphic characters. Based on paratype male AM P.69288. *Antenna 1* flagellum article 1 with strong 2-field callynophore; calceoli present, small. *Antenna 2* peduncular article 3 short; articles 4 and 5 slightly broader than female; flagellum long, calceoli present. *Uropod 3* with plumose setae on both rami.

Remarks. *Tryphosites psittacus* **sp. nov.** differs from all other *Tryphosites* species by lacking the acutely produced epistome. Instead this species has an unusual epistome and upper lip complex in which the epistome is slightly produced in front of the upper lip and both are apically rounded.

Depth range. 400–1264 m.

Distribution. *Australia*. Continental slope from Broken Bay, New South Wales, to the Freycinet Peninsula, Tasmania.

Acknowledgements

Thanks to Helen Stoddart for preliminary work on the taxa in this paper; Rachael Peart, Roger Springthorpe and Arundathi Bopiah for their preparation of the figures. Thanks to the AM Research librarians (Fiona Simpson and Frances Smith) for help with the literature. Thanks to Steve Keable (AM), Jo Taylor (MV), Regina Wetzer and Adam Wall (LACM) and Åse Wilhelmsen (ZMUO) for registrations of new species and updating the type status of species in this paper. This study was funded by an ABRS grant.

References

Arnaud, P.M. (1974) Contribution a la bionomie marine benthique des régions antarctiques et subantarctiques. *Téthys*, 6, 465–656.

Azman, B.A.R. & Othman, B.H.R. (2013) Shallow water marine gammaridean amphipods of Pulau Tioman, Malaysia, with the description of a new species. *ZooKeys*, 335, 1–31. http://dx.doi.org/10.3897/zookeys.335.5567

Barnard, J.L. (1958) Index to the families, genera, and species of the gammaridean Amphipoda (Crustacea). *Allan Hancock Foundation Publications,* Occasional Paper, 19, 1–145.

Barnard, J.L. (1962) South Atlantic abyssal amphipods collected by R.V. Vema. Abyssal Crustacea. *Vema Research Series*, 1, 1–78.

Barnard, J.L. (1967) Bathyal and abyssal gammaridean Amphipoda of Cedros Trench, Baja California. *Bulletin of the United States National Museum*, 260, 1–205. http://dx.doi.org/10.5479/si.03629236.260.1

Barnard, J.L. (1969) The families and genera of marine gammaridean Amphipoda. *Bulletin of the United States National Museum*, 271, 1–535, 173 figs.

Barnard, J.L. & Karaman, G.S. (1987) Revisions in classification of gammaridean Amphipoda (Crustacea), Part 3. *Proceedings of the Biological Society of Washington*, 100, 856–875.

Barnard, J.L. & Karaman, G.S. (1991) The families and genera of marine gammaridean Amphipoda (except marine gammaroids). *Records of the Australian Museum,* Supplement 13, 1–866. http://dx.doi.org/10.3853/j.0812-7387.13.1991.367

Barnard, K.H. (1931) Diagnosis of new genera and species of amphipod Crustacea collected during the 'Discovery' investigations, 1925–1927. *Annals and Magazine of Natural History,* Series 10, 7, 425–430.

Barnard, K.H. (1932) Amphipoda. *Discovery Reports*, 5, 1–326, pl. 1.

Barnard, K.H. (1937) Amphipoda. *Scientific Reports of the John Murray Expedition*, 4, 131–201.

Barnard, K.H. (1940) Contributions to the crustacean fauna of South Africa. 12. Further additions to the Tanaidacea, Isopoda,

and Amphipoda, together with keys for the identification of the hitherto recorded marine and fresh-water species. *Annals of the South African Museum*, 32, 381–543.
Bate, C.S. (1862) *Catalogue of the Specimens of Amphipodous Crustacea in the Collection of the British Museum*. London, Trustees, British Museum, 399 pp.
Bate, C.S. & Westwood, J.O. (1863) *A History of the British Sessile-eyed Crustacea*. London, John van Voorst, 507 pp.
Bellan-Santini, D. (1998) Ecology, *In:* Ruffo, S. (Ed.), The Amphipoda of the Mediterranean. Part 4. *Mémoires de l'Institute Océanographique, Monaco*, 13, 869–893.
Bellan-Santini, D. & Ledoyer, M. (1973) Inventaire des Amphipodes Gammariens récoltés dans la région de Marseille. *Téthys,* 4 (4), 899–933.
Bellan-Santini, D. & Ledoyer, M. (1974) Gammariens (Crustacea – Amphipoda) des Iles Kerguelen et Crozet. *Tethys*, 5 (4), 635–708.
Bellan-Santini, D. & Ruffo, S. (1998) Faunistics and zoogeography, *In:* Ruffo, S. (Ed.), The Amphipoda of the Mediterranean. Part 4. *Mémoires de l'Institute Océanographique, Monaco*, 13, 895–911.
Boeck, A. (1871) Crustacea Amphipoda Borealia et Arctica. *Forhandlinger i Videnskabs-Selskabet i Christiania*, 1870, 83–280.
Bonnier, J. (1893) Les amphipodes du Boulonnais (1). *Bulletin Scientifique de la France et de la Belgique,* 24, 161–207, pls. 165–168.
Chevreux, E. (1935) Amphipodes provenant des campagnes du Prince Albert Ier de Monaco. *Résultats des Campagnes Scientifiques Accomplies sur son Yacht par Albert Ier Prince Souverain de Monaco*, 90, 1–214, pls. 1–16.
Chevreux, E. & Fage, L. (1925) Amphipodes. *Faune de France,* 9, 1–488.
Dallwitz, M.J. (2010) *Overview of the DELTA system*. Available from: http://www.delta-intkey.com/www/overview.htm (accessed 25 June 2013)
Dana, J.D. (1849) Synopsis of the genera of Gammaracea. *American Journal of Science and Arts,* Series 2, 8, 135–140.
Dauvin, J.C. & Bellan-Santini, D. (2002) Les crustacés amphipodes Gammaridea benthiques des côtes françaises metropolitaines: Bilan des connaissances. *Crustaceana*, 75, 299–340.
Day, J.H., Field, J.G. & Penrith, M.J. (1970) The benthic fauna and fishes of False Bay, South Africa. *Transactions of the Royal Society of South Africa, 39*, 1–108.
http://dx.doi.org/10.1080/00359197009519103
De Broyer, C. (1983) *Recherches sur la systématique et l'évolution des crustacés amphipodes gammarides antarctiques et subantarctiques*. Université de Louvain, 468 pp.
De Broyer, C. & Jażdżewski, K. (1993) Contribution to the marine biodiversity inventory. A checklist of the Amphipoda (Crustacea) of the Southern Ocean. *Documents de Travail de l'Institut Royal des Sciences Naturelles de Belgique*, 73, 1–154.
De Broyer, C., Lowry, J.K., Jażdżewski, K., & Robert, H. (2007) Catalogue of the Gammaridean and Corophiidean Amphipoda (Crusteacea) of the Southern Ocean with distribution and ecological data. *In:* De Broyer, C. (Ed.), Census of Antatrctic Marine Life: Synopsis of the Amphipoda of the Southern Ocean. Vol. 1. *Bulletin de l'Institut Royal des Sciences Naturelles de Belqigue,* Biologie 77*,* Supplement 1 (1), 1–325.
Della Valle, A. (1893) Gammarini del Golfo di Napoli. *Fauna und Flora des Golfes von Neapel,* 20, 1–948, pls. 941–961.
Diviacco, G. & Ruffo, S. (1989) Family Lysianassidae. *In:* Ruffo, S. (Ed.), *The Amphipoda of the Mediterranean. Part 2. Gammaridea (Haustoriidae to Lysianassidae) Mémoires de l'Institute Océanographique, Monaco*, 13, pp. 469–576.
Drago, N., Albertelli, G. & Cattaneo, M. (1978) Osservazioni faunistiche sul benthos dell'isola di Capraia. *Annali del Museo civico di storia naturale 'Giacomo Doriau',* 82, 72–77. [not seen]
Enequist, P. (1949) Studies on the soft-bottom amphipods of the Skagerak. *Zoologiska Bidrag från Uppsala*, 28, 297–492.
Gonzalez, E. (1991) Actual state of gammaridean amphipoda taxonomy and catalogue of species from Chile. *Hydrobiologia*, 223, 47–68.
http://dx.doi.org/10.1007/bf00047628
Griffiths, C.L. (1973) The Amphipoda of southern Africa. Part 1. The Gammaridea and Caprellidea of southern Moçambique. *Annals of the South African Museum*, 60, 265–306.
Griffiths, C.L. (1975) The Amphipoda of southern Africa. Part 5. The Gammaridea and Caprellidea of the Cape Province west of Cape Agulhas. *Annals of the South African Museum*, 67, 91–181.
Griffiths, C.L. (1976) *Guide to the Benthic Marine Amphipods of Southern Africa*. Trustees, South African Museum, Cape Town, 106 pp.
Gurjanova, E.F. (1951) [Amphipods of the seas of the USSR and surrounding waters (Amphipoda-Gammaridea)]. *Akademiya Nauk SSSR, Opredeliteli po Faune SSSR,* 41, 1–1029. [in Russian]
Jażdżewski, K., De Broyer, C., Teodorczyk, W. & Konopacka, A. (1992) Survey and distributional patterns of the amphipod fauna of Admiralty Bay, King George Island, South Shetland Islands. *Polish Polar Research*, 12, 461–472.
Jażdżewski, K., Weslawski, J.C. & De Broyer, C. (1996) A comparison of the amphipod faunal diversity in two polar fjords: Admiralty Bay, King George island (Antarctic) and Hornsund, Spitsbergen (Arctic). *Polskie Archiwum Hydrobiologii*, 42, 367–384.
Karaman, G.S. (1973) On some new or very interesting Amphipoda of the Adriatic Sea. (XL11 contribution to the knowledge of the Amphipoda). *Memorie del Museo civico di storia naturale di Verona,* 20, 99–147, 19 figs.

Kilgallen, N.M. & Lowry, J.K. (2014) The *Tryphosa* group (Crustacea: Amphipoda: Lysianassoidea: Lysianassidae: Tryphosinae). *Zootaxa*, 3768 (5), 501–545.
http://dx.doi.org/10.11646/zootaxa.3768.5.1

Ledoyer, M. (1986) Crustacés Amphipodes Gammariens. Familles des Haustoriidae à Vitjazianidae. *Faune de Madagascar*, 59, 599–1112.

Ledoyer, M. (1977) Contribution à l'étude de l'ecologie de la faune vagile profonde de la Méditerranée nord occidentale I. Les gammariens (Crustacea, Amphipoda). *Bollettino del Museo Civico di Storia Naturale di Verona*, 4, 321–421.

Ledoyer, M. (1978) Amphipodes gammariens (Crustacea) des biotopes cavitaires organogènes récifaux de l'île Maurice (Océan Indien). *The Mauritius Institute Bulletin*, 8, 197–332.

Lincoln, R.J. (1979) British Marine Amphipoda: Gammaridea. *In*. British Museum (Natural History), London, pp. i–v, 1–658.

Lowry, J.K. & Bullock, S. (1976) Catalogue of the marine gammaridean Amphipoda of the Southern Ocean. *Royal Society of New Zealand Bulletin*, 16, 1–187.

Lowry, J.K. & Stoddart, H.E. (1984) Redescriptions of Schellenberg's types of *Lysianopsis subantarctica* and *Paralysianopsis odhneri* (Amphipoda, Lysianassidae). *Crustaceana*, 47, 98–108.
http://dx.doi.org/10.1163/156854084x00342

Lowry, J.K. & Stoddart, H.E. (1992) A revision of the genus *Ichnopus* (Crustacea: Amphipoda: Lysianassoidea: Uristidae). *Records of the Australian Museum,* 44, 185–245.
http://dx.doi.org/10.3853/j.0067-1975.44.1992.32

Lowry, J.K. & Stoddart, H.E. (1995a) New lysianassoid genera and species from south-eastern Australia (Crustacea: Amphipoda). *Records of the Australian Museum,* 47, 7–25.
http://dx.doi.org/10.3853/j.0067-1975.47.1995.5

Lowry, J.K. & Stoddart, H.E. (1995b) The Amphipoda (Crustacea) of Madang Lagoon: Lysianassidae, Opisidae, Uristidae, Wandinidae and Stegocephalidae. *Records of the Australian Museum Supplement*, 22, 97–174.
http://dx.doi.org/10.3853/j.0812-7387.22.1995.122

Lowry, J.K. & Stoddart, H.E. (1997) Amphipoda Crustacea IV. Families Aristiidae, Cyphocarididae, Endevouridae, Lysianassidae, Scopelocheiridae, Uristidae. *Memoirs of the Hourglass Cruises*, 10, 1–148.

Nicholls, G.E. (1938) Amphipoda, Gammaridea. *Australasian Antarctic Expedition 1911–14, Scientific Reports,* Series C, 2, 1–145.

Oldevig, H. (1959) Arctic, subarctic and Scandinavian amphipods in the collections of the Swedish Natural History Museum in Stockholm. *Göteborgs Kungliga Vetenskaps- och Vitterhets-Samhälles Handlingar,* Series B, 8, 1–132, 134 plates.

Palerud, R. & Vader, W. (1991) Marine Amphipoda Gammaridea in north-east Atlantic and Norwegian Arctic. *Tromura, Naturvitenskap*, 68, 1–97.

Relini Orsi, L. & Wurtz, M. (1977) Aspetti della rete trofica batiale riguardanti *Aristeus antennatus* (Risso, 1816) (Crustacea, Penaeidae). *In*: Cinelli, F., Fresi, E. & Mazzella, L. (Eds.), *Atti del IX* Congresso della Societa italiana di biologia marina, Lacco Ameno d'lschia 19–22 maggio 1977. la Seppia, Firenze, pp. 389–398, 2 figs. [not seen]

Ruffo, S. (1971) Studi sui crostacei anfipodi LXIX. Un nuovo genere di Lysianassidae del Golfo di Napoli e osservazioni su *Lysianella dellavallei* Stebbing (Crustacea Amphipoda). *Memorie del Museo Civico di Storia Naturale, Verona*, 19, 103–112.

Sars, G.O. (1883) Oversigt af Norges Crustaceer med forelobige Bemaerkninger over de nye eller mindre bekjendte Arter, I: (Podophthalmata-Cumacea-Isopoda-Amphipoda). *Forhandlinger i Videnskabs-Selskabet i Christiania*, 18, 1–124, pls. 1–6.

Sars, G.O. (1890) *An Account of the Crustacea of Norway, with Short Descriptions and Figures of all the Species. Vol. I. Amphipoda. Parts 1–3.* Christiana, Alb. Cammermeyer, 68 pp., 24 pls. [pp. 1–68, pls. 1–24]

Sars, G.O. (1891) *An Account of the Crustacea of Norway, with Short Descriptions and Figures of all the Species*. *Vol. I. Amphipoda. Parts 4–9.* Christiana, Alb. Cammermeyer, 144 pp., 48 pls. [pp. 69–212, pls. 25–72]

Schellenberg, A. (1926) Amphipoda 3: Die Gammariden der Deutschen Tiefsee-Expedition. *Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem Dampfer „Valdivia“ 1898–1899*, 23 (5), 195–243.

Schellenberg, A. (1931) Gammariden und Caprelliden des Magellangebietes, Sudgeorgiens und der Westantarktis. *Further Zoological Results of the Swedish Antarctic Expedition 1901–1903*, 2, 1–290, pl. 1.

Schellenberg, A. (1942) Krebstiere oder Crustacea IV: Flohkrebse oder Amphipoda. *Die Tierwelt Deutschlands, Jena*, 40, 1–252.

Schneider, J.S. (1926) Tromsösundets amphipoder, isopoder og cumaceer. *Tromsö Museums Årshefter*, 47, 1–73.

Sexton, E.W. (1911) A new amphipod species, *Tryphosites alleni*. *Annals and Magazine of Natural History,* Series 8, 7, 510–513, pl. 14.

Stebbing, T.R.R. (1906) Amphipoda. I. Gammaridea. *Das Tierreich*, 21, 1–806.

Stebbing, T.R.R. (1914) Crustacea from the Falkland Islands collected by Mr. Rupert Vallentin, F.L.S. Part II. *Proceedings of the Zoological Society of London*, 1, 341–78, pls. 1–9.

Stebbing, T.R.R. (1918) Some Crustacea of Natal. *Annals of the Durban Museum*, 2, 47–75, pls. 8–12.

Stephensen, K. (1923) Crustacea Malacostraca, V: (Amphipoda, I). *Danish Ingolf-Expedition*, 3, 1–100.

Stephensen, K. (1929) Amphipoda. *Die Tierwelt der Nord- und Ostsee,* 14, 1–188.

Stephensen, K. (1935) The Amphipoda of N. Norway and Spitsbergen with adjacent waters. *Tromsö Museums Skrifter*, 3,

1–140.
Stephensen, K. (1942) The Amphipoda of N. Norway and Spitsbergen with adjacent waters. *Tromsö Museums Skrifter*, 3, 363–526.
Thurston, M.H. & Allen, E. (1969) Type material of the families Lysianassidae, Stegocephalidae, Ampeliscidae and Haustoriidae (Crustacea: Amphipoda) in the collections of the British Museum (Natural History). *Bulletin of the British Museum (Natural History),* Series Zoology, 17, 347–388.
Tzvetkova, N.L. & Golikov, A.A. (2001) Suborder Gammaridea Dana, 1852. *Explorations of the Fauna of the Seas,* 51, 79–94.
Vader, W. (1984) Notes on Norwegian marine Amphipoda. 8. Amphipods found in association with sponges and tunicates. *Fauna Norvegica,* Series A, 5, 16–21.