PARANTHURID ISOPODS (CRUSTACEA, ISOPODA, ANTHURIDEA) FROM SOUTH EASTERN AUSTRALIA

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Abstract

Isopods of the family Paranthuridae from south-eastern Australia are described: *Accalathura gigas* (Whitelegge), *Accalathura bassi* n. sp., *Aenigmathura lactanea* Thomson, *Colanthura furneauxi* n. sp., *C. peroni* n. sp., *Leptanthura boweni* n. sp., *L. flindersi* n. sp., *L. murrayi* n. sp., and *Ulakanthura marlee* n. sp. Distinguishing features of *Accalathura gigantissima* Kussakin from Antarctica are noted.

Introduction

Large collections of isopods from marine benthos of the Victorian and New South Wales bays and shelf show that seven of the twelve genera of the family Paranthuridae diagnosed by Poore (1980) are represented. These are *Leptanthura, Bullowanthura* and *Ulakanthura,* which were dealt with in part by Poore (1978), and *Accalathura, Aenigmathura, Colanthura* and *Paranthura.* In this contribution additional species of *Leptanthura* and *Ulakanthura* and species belonging to *Accalathura, Aenigmathura* and *Colanthura* are described. The genus *Paranthura* will be the subject of a later study. A key and diagnoses for parathurid genera were given by Poore (1980).

In all the figures the following abbreviations are used: A1, A2, antennae 1 and 2; MD, mandible; MDp, mandibular palp; MP, maxilliped; P1-P7, pereopods 1 to 7; PL1-PL5, pleopods 1 to 5; T, telson; U, uropod; AM, appendix masculina.

Material for this study has come from the following surveys and institutions:

Crib Point Benthic Survey, 1965-1972 (CPBS) and Westernport Bay Environmental Study, 1973-1974 (WBES), both carried out in Western Port, Victoria, by the Marine Studies Group, Ministry for Conservation, Melbourne, Victoria;

Shelf Benthic Survey, 1973 (AMSBS) carried out on the New South Wales shelf by the Australian Museum, Sydney, N.S.W.;

Eurobodalla Shire Estuary Survey, 1974 (AMESES) carried out in southern N.S.W. by the Australian Museum, Sydney;

Hawkesbury River Study, 1977-1978 (AMHRS) carried out in the Hawkesbury River estuary by the Australian Museum, Sydney;

Surveys carried out in eastern Victorian estuaries by the LaTrobe Valley Water and Sewerage Board (LVWSB) in 1978-1980;

Australasian Antarctic Expedition, 1911-14 (AAE), and British, Australian and New Zealand Antarctic Research Expeditions (BANZARE);

The National Museum of Victoria (NMV), Melbourne, the Australian Museum (AM), Sydney, the South Australian Museum (SAM), Adelaide, and the Western Australian Museum (WAM), Perth.

Accalathura Barnard

Accalathura Barnard, 1925: 147.—Menzies & Glynn, 1968: 33.—Poore, 1980: 58-59.

Katanthura Nierstrasz, 1941: 243.

Metanthura Nierstrasz, 1941: 247.

Description: Paranthuridae with eyes (but sometimes lacking pigment). Pereon with feeble dorsolateral grooves, otherwise smooth; pereonites 4-6 with a small dorsal pit and sometimes with a transverse groove. Pleonites distinct from each other and from telson. Telson thin, narrow, not indurate and with long terminal setae; statocyst absent, or present and opening by a dorsal slit or pore. Uropodal endopod usually barely exceeding telson, richly setose; exopod usually narrow and lanceolate but rarely ovate, setose. Antenna 1 flagellum longer than peduncle, of 10-20 articles. Antenna 2 flagellum as long or longer than peduncle, of 10-30 articles. Mandible with an acute incisor, its palp with 3 articles, the last bearing a comb of about 20 setae. Maxilla a sharp, barely-serrate spine. Maxilliped elongate, the suture between head and basis clear; a prominent narrow endite reaching to the middle of

the second palp article; palp of 2 articles, the first with 3-5 setae and the second with many long terminal setae. Pereopod 1 stout, subchelate, palm with a setose cutting edge and usually a pronounced proximal thumb. Pereopods 2 and 3 subchelate, less well developed than first, article 6 flattened, ovate or linear, with 4-6 spines on cutting edge. Pereopods 4-7 with article 5 linear, anterior and posterior margins equal. Pleopod 1 exopod operculiform, only slightly indurate. Adult male only slightly more elongate than juvenile or female, bearing a multi-articulate flagellum on antenna 1 which bears fine aesthetascs most commonly only on the proximal half or two-thirds. Females with oostegites on pereonites 2-5. Colourless or with brown pigment dorsally and on some limbs.

Remarks: The genus *Accalathura* at present includes twelve species, most from the Indo-Pacific region (Poore, 1980). This description concurs with Barnard's (1925) and Poore's (1980) diagnoses in all except some minor points. Barnard noted only three pairs of oostegites; four are found on all Australian species as is the usual case for paranthurids. Eyes are present in all species as stated by Poore (1980) but are without pigment in *Accalathura gigas* and *A. gigantissima* where they may be seen only by dissection.

A redescription of the type species follows with notes on the related species *A. gigantissima* from Antarctica. A new species from south-eastern Australia is described and the possibility of a third in the region is raised.

Elsewhere in Australia the genus is represented by at least seven other species, probably undescribed. These are represented in museum collections by one or two individuals each and come from Thursday Island, Lizard Island (two species), Heron Island, the Coral Sea and Western Australia [two species including Thomson's (1951) record of *A. gigas*].

Accalathura gigas (Whitelegge)
Figures 1, 2

Calathura gigas Whitelegge, 1901: 225-229, figs 19a-e (Port Jackson, N.S.W., 66-71 m).

Accalathura gigas.—Barnard, 1925: 148 (part).— Nierstrasz, 1941: 242 (part).— Poore: 59 (part) [N.S.W.].

not *Accalathura gigas.*—Barnard, 1925: 148 (part).— Nierstrasz, 1941: 242 (part) [Seychelles]. = *A. sladeni* (Stebbing, 1910).

not *Accalathura gigas.*—Barnard, 1925: 148 (part).—Hale, 1929: 246.—Nierstrasz, 1941: 242 (part).—Poore, 1980: 59 (part) [St Vincent Gulf, South Australia]. = *A. bassi* n. sp.

not *Accalathura gigas.*—Barnard, 1936: 148.—Nierstrasz, 1941: 242 (part) [Arakan, Lower Burma]. Specific identity not determined.

not *Accalathura gigas.*—Hale, 1937: 14-15 (part).—Poore, 1980: 59 (part) [Antarctica]. = *A. gigantissima* Kussakin, 1967.

not *Accalathura gigas.*—Thomson, 1951: 2, fig. 1 [Rottnest Island, Western Australia] = *Accalathura* sp.

? *Accalathura gigas.*—Hale, 1937: 14-15 (part) [off Maria Island, Tasmania, 2380 m.].

Description: Female: Head as wide as long, about half as long as pereonite 1; rostrum about half length of lateral lobes; lateral lobes truncated but with rounded corners; eyes without pigment.

Pereon with shallow sharply-defined dorsolateral grooves, most obvious on pereonites 3 to 7; very shallow dorsal pits on anterior margins of pereonites 4 to 6. Pleon 1.5 times as long as pereonite 7.

Antenna 1 peduncle reaching to end of third article of antenna 2; flagellum of about 25 articles, reaching almost to end of flagellum of antenna 2 (less so in juveniles). Antenna 2 flagellum of 30-40 articles. Antennal flagella with fewer articles in juveniles.

Mandibular palp article 2 with 3-4 setae; article 3 more than twice as long as greatest width, with a comb of 30 spines and 1 long seta. Maxillipedal endite reaching to middle of second palp article, with 2 ventral setae; palp article 1 with 6 ventral setae, article 2 with many terminal setae.

Pereopod 1 stout; palm with a strong perpendicular thumb, an acute angle between its distal margin and the palm; palm and thumb with about 50 marginal setae. Pereopods 2 and 3 similar, article 6 ovate with 7-8 spines on cut-

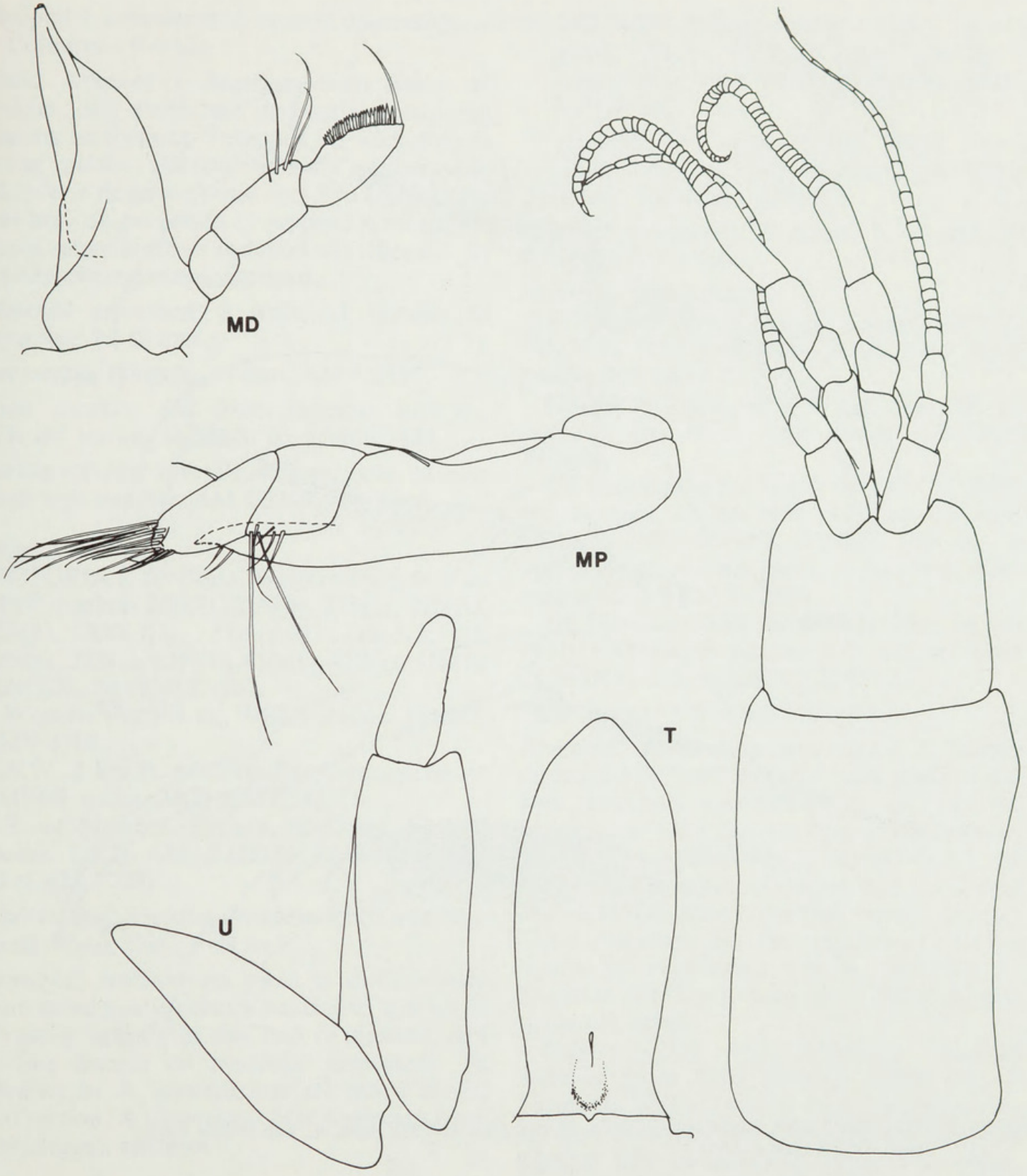

Figure 1—*Accalathura gigas*. Lectotype, juvenile, 39 mm (AM G2197).

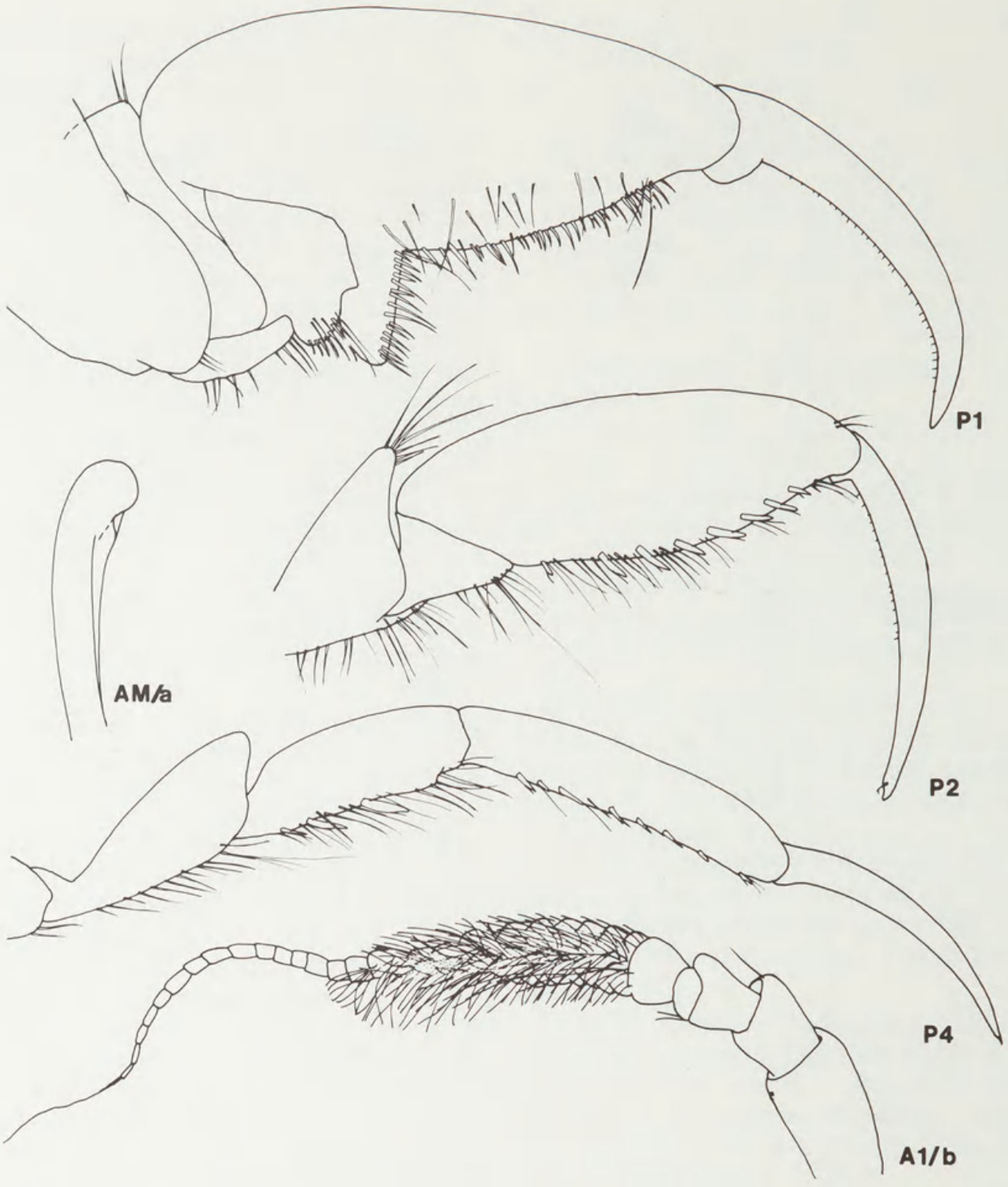

Figure 2—*Accalathura gigas*. Lectotype, juvenile, 39 mm (AM G2197); male, 42 mm (NMV J703); male, 42 mm (AM G2197).

ting edge. Pereopod 4 elongate, articles 5 and 6 with marginal spines; article 6 is 5 times as long as wide; article 7 about 11 times as long as width at midpoint and about 80% length of article 6. Pereopods 5-7 similar to 4 but more elongate.

Uropodal peduncle shorter than telson, distomedial angle acute; endopod length 2.5 times greatest width; exopod broadly lanceolate, length 3 times greatest width. Telson widest near its midpoint, broadly tapering to a subacute tip, length 2.5 times greatest width.

Pleopod 1 indurate and exopod operculiform. Coloured off-white.

Male: Antenna 1 flagellum with about 40 articles, only about half its length swollen and bearing aesthetascs. Perepods 1-3 with densely setose palms. Pereon ventrally rugose with transverse ridges on pereonites 2 to 6 and a ventral keel on pereonite 1. Appendix masculina about same length as endopod of pleopod 2, its tip slightly expanded, scooped.

Material examined: 3 males, 1 female, 50 juveniles; 10-42 mm.

Lectotype: Juvenile, 39 mm, AM G2197.

Type locality: Off Port Jackson, N.S.W., "Thetis" station 34, 66-71 m, March 1898.

Paralectotypes: Juvenile, 42 mm; male, 42 mm: from type locality, AM G2197.

Other material:
VICTORIA. Crib Point, Western Port, 8-19 m: CPBS stations 200(7), 21N(4), 21S(1), 22N(1), 22S(3), 300(3,3), 31N(1,2), 31S(3,1,1,1), 32N(1), 32S(1), 33N(1), 41N(1), 41S(2), 51S(1), 52N(3,3), NMV J687-707.

Western Port, 8 m: WBES station 1736(2), NMV J708.

N.S.W. 2 km E. of Long Bay, Sydney, 66 m: AMSBS station 24(2) AM P24355.

E. of Malabar, Sydney, 66-83 m: AMSBS station III(2) AM P22815; AMSBS station 40(1) AM P22817.

Distribution: Victoria (Western Port) and New South Wales shelf; 8-83 m.

Remarks: Accalathura gigas is distinguished from other south-eastern Australian species of the genus by its large size, lack of pigment, and its fine dactyls on posterior pereopods. Its affinities to *A. gigantissima* are noted in the next section. A lectotype is herein selected from Whitelegge's syntypes.

Accalathura gigantissima Kussakin
Figure 3

Accalathura gigantissima Kussakin, 1967: 253-256, figs 18, 19.—Poore, 1980: 59. [Lars Christensen Coast and North Coast, Antarctica].

Accalathura gigas.—Hale, 1937: 14-15 (part).—Poore, 1980: 59 (part) [George V land, Adelie Land and Shackleton Ice Shelf, Antarctica].

? *Accalathura gigas.*—Hale, 1937: 14-15 (part).—Poore, 1980: 59 (part) [off Maria Island, Tasmania, 2380 m].

Material examined: 3 males, 1 female, 17 juveniles, 13-51 mm.

Non-type material only:
ANTARCTICA. Off George V Land, 66°55′S, 145°21′E, 527-549 m, ooze, 28 Dec 1913, AAE station 2(5) SAM TC2486.

Off Adelie Land, 66°32′S, 141°39′E, 287 m, ooze, 31 Dec 1913, AAE station 3(3) SAM TC2484.

Off Shackleton Ice Shelf: 64°44′S, 97°28′E, 655 m, ooze, 31 Jan 1914, AAE station 11(1) SAM TC2487; 64°32′S, 97°20′E, 201 m, no ooze, animals and few rocks, 31 Jan 1914, AAE station 12(3) SAM TC2485.

Off Mawson Coast, 66°45′S, 62°03′E, 16 Feb 1931, BANZARE station 107: 123 m, SAM TC2489(4), 219 m, SAM TC2491(5).

Distribution: Antarctica; 123-655 m.

Remarks: Accalathura gigantissima is readily distinguished from *A. gigas,* with which it has been previously confused (Hale, 1937) by the broad rami of the uropod. Other differences are the much broader dactyls of pereopods 4-7, the very long appendix masculina with its dished end, and the male's smooth ventral pereon. These characters and the mandibular palp are figured for comparison with *A. gigas* (Fig. 3). Kussakin (1967) has adequately described this species in detail.

Hale's (1937) AAE collection included material from 1300 fathoms (1380 m) off Tasmania. Unfortunately, these specimens cannot now be found and it is therefore uncertain whether they belong to *A. gigas* or *A. gigantissima.* Although Hale noted differences in his material from the original description of *A. gigas* he did not differentiate the Tasmanian from the Antarctic specimens.

The BANZARE examples are new records for the species. A photograph of a specimen from the AAE collections was reproduced by Mawson (1915).

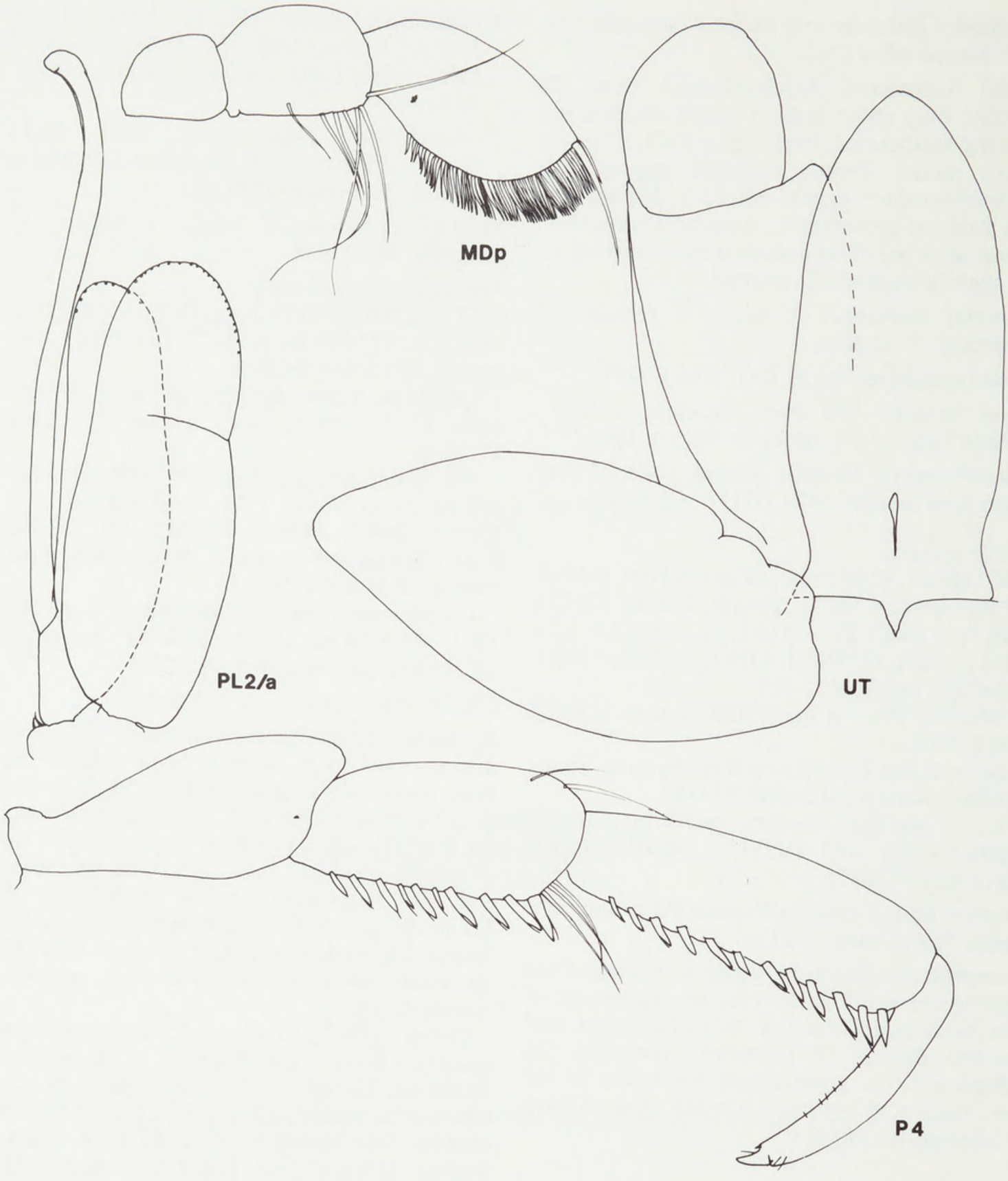

Figure 3—*Accalathura gigantissima.* Juvenile, 50 mm (SAM TC2484); male, 36 mm (SAM TC2485).

Accalathura bassi new species
Figures 4, 5

Accalathura gigas.—Barnard, 1925: 148.—Hale 1929: 246.—Nierstrasz, 1941: 242.—Poore, 1980: 59 [records, St Vincent Gulf, South Australia].

A. sladeni (Stebbing).—Hale, 1937: 14-15.—Kensley, 1980: 3-5 [records, South Australia].

not *Accalathura gigas* (Whitelegge, 1901).

Description: Female: Head as wide as long, little more than half as long as pereonite 1; lateral lobes rounded; eyes pigmented orange-red, 30-40 ommatidia, sometimes not contiguous in juveniles.

Pereon with poorly-defined dorsolateral grooves, most obvious on pereonites 3-7; transverse grooves on anterior margins of pereonites 4 to 6. Pleon 1.5 times as long as pereonite 7.

Antenna 1 peduncle reaching to end of second article of antenna 2; flagellum of 15-25 articles, reaching to midpoint of flagellum of antenna 2. Antenna 2 flagellum of 20-25 articles.

Mandibular palp article 2 with 2-4 setae; article 3 more than twice as long as greatest width, with a comb of about 20 spines and 1 long seta. Maxillipedal endite reaching to middle of second palp article, with 1 ventral seta; palp article 1 with 4-5 ventral setae, article 2 with many terminal setae.

Pereopod 1 stout; palm with a broadly-based thumb, a wide obtuse angle between its distal margin and the palm; palm and thumb together with numerous marginal setae. Pereopods 2 and 3 similar, article 6 ovate with 5-7 setae on cutting edge. Pereopod 4 moderately elongate, articles 5 and 6 with marginal spines; article 6 is 4 times as long as wide; article 7 about 7 times as long as width at midpoint and about 70% length of article 6. Pereopods 5-7 more elongate.

Uropodal peduncle much shorter than telson, distomedial angle projecting, acute; endopod length less than twice greatest width; exopod lanceolate, length 4 times greatest width. Telson widest near its base, broadly tapering to an acute or rounded tip, length 2.5 times greatest width. Pleopod 1 operculiform but not indurate.

Colour more or less well developed, brown patches dorsally on antennae, pereon, pleon, telson and uropods.

Male: Antenna 1 with about 25 flagellar articles, almost all swollen and bearing aesthetascs. Eyes of numerous contiguous ommatidia. Pereopods 1-3 with densely setose palms. Pereon ventrally smooth. Appendix masculina little longer than endopod of pleopod 2, its tip slightly curved, with a mesial blade.

Material examined: 2 males, 3 females, 35 juveniles: 9-23 mm.

Holotype: Ovigerous female, 21 mm, NMV J725.

Type locality:
VICTORIA. East Arm, Western Port, 38°22.28′S, 145°30.34′E, 5 m, sand, coll: Marine Studies Group, Ministry for Conservation, 29 Nov 1973 (WBES stn 1734).

Paratypes:
VICTORIA. Crib Point, Western Port, 8-19 m: CPBS stations 21N(1), 21S(3), 23N(2), 26S(1), 300(1), 31E(1), 32N(1,1), 32S(1), 33N(1), 41N(1), 41S(1), 42N(1), 51S(2), 52N(1) NMV J709-722, AM P30722.

Western Port, 9 m: WBES stations 1735 (2) NMV J724.

Western Port, off Rhyll, O.A. Sayce collection purchased 25.7.1911 (14) NMV J727.

Other material:
SOUTH AUSTRALIA. Cable Bay, coll: Dr Campbell, 13 Apr 1936. SAM TC 2494(1).

St Vincent Gulf (det. *A. gigas* by K. H. Barnard), SAM TC2503(1).

Port River, Adelaide, 4-9 m, coll: A. Zietz (det. *A. gigas* by K. H. Barnard), SAM TC2508(1).

Distribution: Victoria and South Australia; coastal waters, 8-19 m, sandy sediments.

Remarks: Accalathura bassi shows some points of variability which are important in evaluating specific characters in the genus. First, the eyes of most of the material from the Crib Point Benthic Survey showed non-contiguous ommatidia. This was not the case in adult specimens

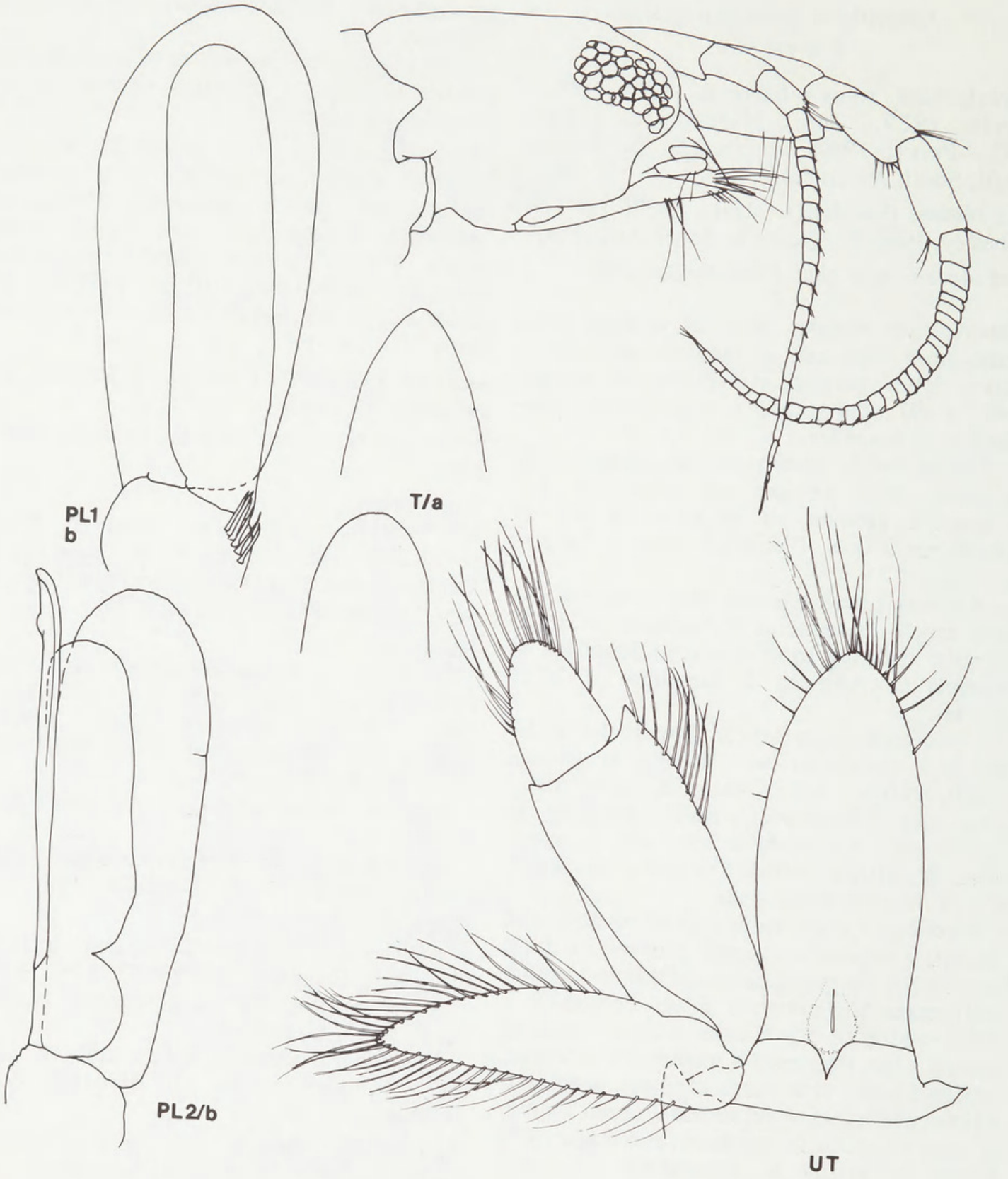

Figure 4—*Accalathura bassi.* Holotype, female, 21 mm (NMV J725); juveniles (NMV J727); male, 17 mm (AM P30722).

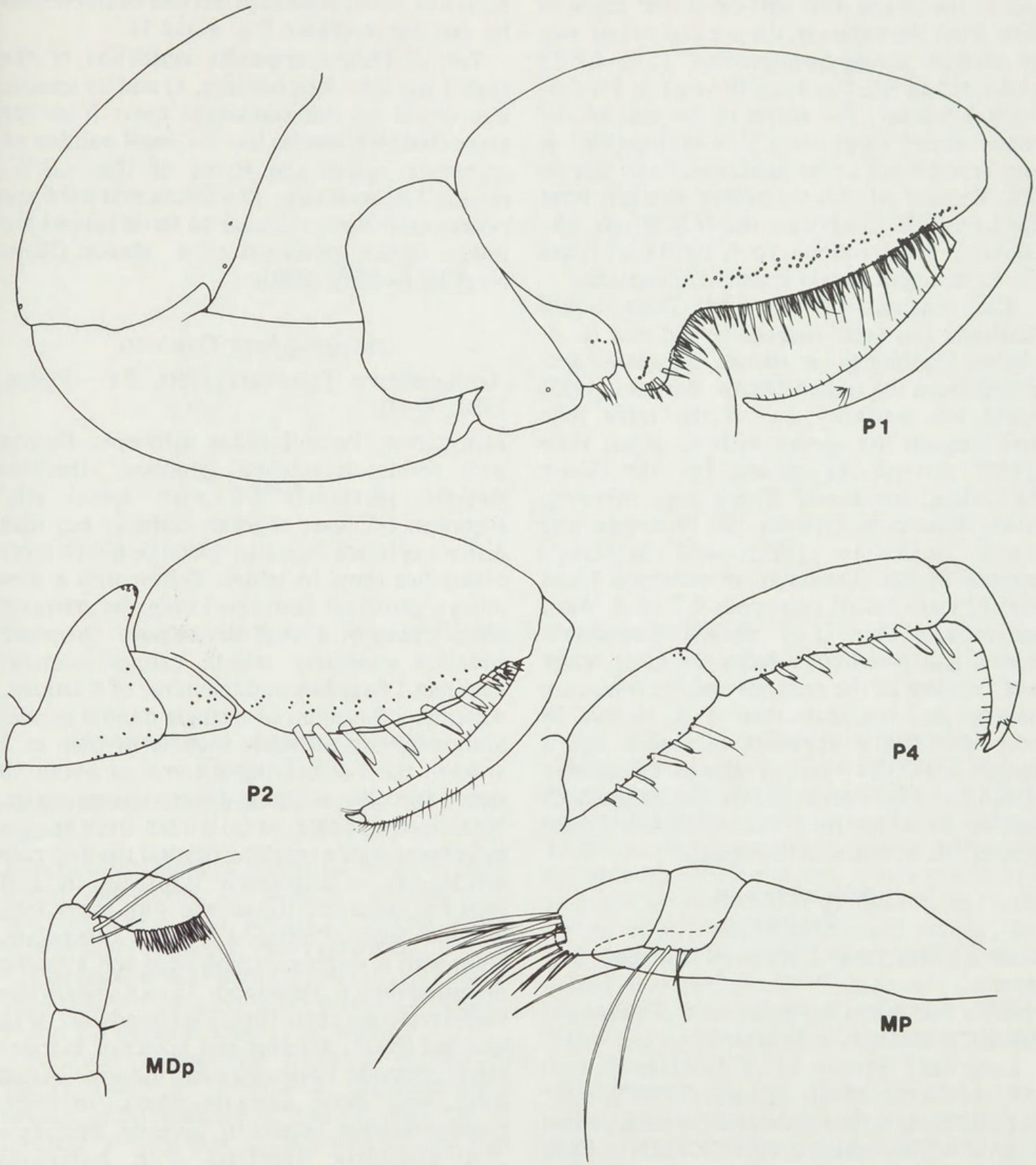

Figure 5 – *Accalathura bassi*. Holotype, female, 21 mm (NMV J725).

nor in specimens with well-developed colouration. Both the nature of the eye and colour may be altered during preservation. (The CPBS material had spent at least 10 years in 5% formalin.) Second, the shape of the end of the telson varied from acute to rounded (Fig. 4) and seemed not to be associated with size or sex. Because of this variability it might have been possible to allocate the N.S.W. *Accalathura* sp. which follows, to *A. bassi* were it not for its distinctive male appendix masculina.

The material of *A. bassi* from South Australia has been assigned in the past to *A. sladeni* (Stebbing), a species originally described from the Indian Ocean. Barnard (1925) noted the similarity but at the same time synonomised the species with *A. gigas*; Hale (1937) revived *A. sladeni* for the South Australian specimens. There are, however, small differences between this Victorian and South Australian species and Stebbing's original figures. The dactyl of pereopod 1 and the sixth articles of pereopods 4-7 of *A. bassi* are broader than in *A. sladeni*. The maxillipedal and mandibular palps are more setose and the rami of the uropods and the telson are broader and less acute than in *A. sladeni*. In both species the appendix masculina has a simple apex, not bifid as figured by Kensley (1980) for other Indian Ocean specimens. Both species are close to a second Indian Ocean species, *A. borradailei* (Stebbing).

Accalathura sp.
Figure 6

Material examined: 1 male, 3 juveniles; 6-12 mm.
N.S.W. Port Kembla, epifauna, J. E. Watson, Feb 1977, NMV J726 (1 male).

Long Reef, Sydney, NMV J846(1).

E. of North Head, Sydney, 33°49′S, 151° 18′E, 21.3 m, with the sponge *Polymastea craficia*, AMSBS station, AM P22811(1), AM P24361(1).

Distribution: New South Wales coast and shelf.

Remarks: The three juvenile specimens from N.S.W. could easily be assigned to the previous species *A. bassi* on the basis of similar colour pattern, mouthparts and pereopods. The telson is narrower than is usual for *A. bassi* from Victoria and South Australia but this character can be variable (compare Figs 4 and 6).

The distinctive appendix masculina of the male from Port Kembla (Fig. 6) and its smaller size would set this individual apart from the more southern species but the small number of specimens makes the status of the N.S.W. population uncertain. The telson and bifid appendix masculina is similar to those figured for Indian Ocean specimens of *A. sladeni* (Stebbing) by Kensley (1980).

Aenigmathura Thomson

Aenigmathura Thomson, 1950: 5-8.—Poore, 1980: 59-60.

Description: Paranthuridae with eyes. Pereon with feeble dorsolateral grooves, otherwise smooth; pereonites 4-6 with dorsal pits. Pleonites 1-5 fused together dorsally but with distinct epimera laterally, pleonite 6 free from others but fused to telson. Telson with a prominent proximal dome enclosing the statocyst which opens by a small dorsal pore. Uropodal endopod exceeding telson, exopod narrow. Antenna 1 flagellum rudimentary, of 3 articles. Antenna 2 flagellum of a single minute article. Mandible with an acute incisor, its palp of 3 articles, the last bearing a comb of about 10 setae. Maxilla a sharp barely-serrate spine. Maxilliped elongate, basis dintinct from head; a prominent endite reaching beyond the first palp article; palp of 2 (possibly 3) articles, the first with few setae and the second with many long terminal setae. Pereopod 1 stout, subchelate, palm with a spinose cutting edge and a strong proximal thumb. Pereopods 2 and 3 slightly less well-developed than first. Pereopods 4-7 with article 5 linear, anterior and posterior margins equal. Pleopod 1 operculiform, indurate. Adult male with more elongate pleon, uropods, pereopods than female or juvenile, bearing a multi-articulate flagellum with numerous aesthetascs on antenna 1. Females with oostegites on pereonites 3-5.

Remarks: The genus is monotypic. The description given above expands on that of Poore (1980) on the basis of the new material described below and the recently discovered type material.

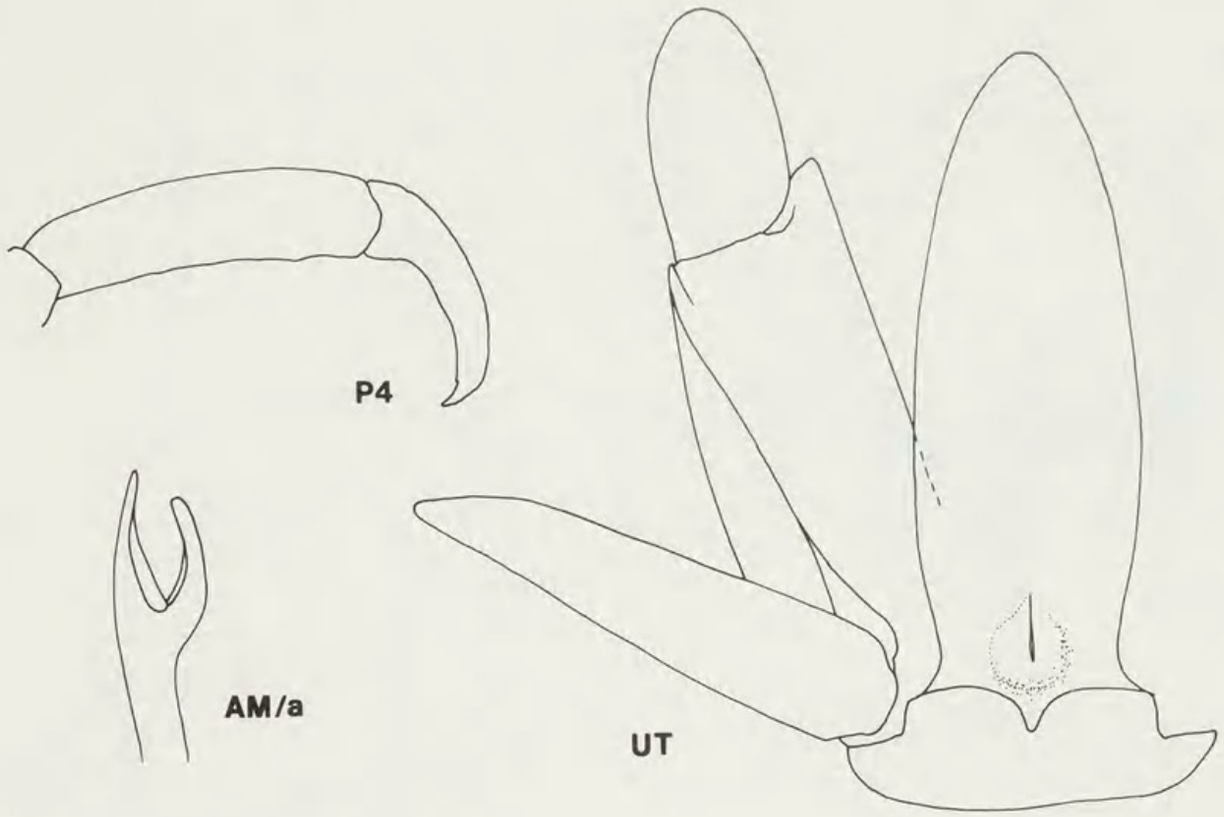

Figure 6—*Accalathura* sp. Juvenile, 12 mm (NMV J846); male, 12 mm (NMV J726).

Aenigmathura lactanea Thomson
Figures 7, 8

Aenigmathura lactanea Thomson, 1951: 5-8, figs 4a-k.

Description: Female: Head as wide as long, about two-thirds as long as pereonite 1; rostrum about half length of lateral lobes; lateral lobes rounded; eyes pigmented.

Pereon with dorsolateral rows of long setae; very shallow dorsal pits on pereonites 4 to 6. Pleon 1.5 times as long as pereonite 7.

Antenna 1 peduncle reaching to end of fourth article of antenna 2; flagellum of 2 articles, not reaching to end of peduncle of antenna 2. Antenna 2 flagellum of a single minute setose article.

Mandible with 2-4 setae near base of palp; palp article 2 longer than other two together, with 1-2 setae; article 3 twice as long as greatest width, with a comb of 9-10 spines. Maxillipedal endite pointed, reaching beyond first palp article, with 1 ventral seta; palp article 1 with 4 ventral setae, article 2 and poorly defined third article with 13-14 terminal and ventral setae.

Pereopod 1 stout; palm oblique, with a strong perpendicular thumb, the curved cutting edge of the palm is rolled laterally, its exposed medial surface complexly ridged; palm and thumb with 20-25 complex spines in the submarginal groove formed by the rolling of the cutting edge. Pereopods 2 and 3 similar, but little less well-developed. Pereopods 4-7 moderately elongate, article 5 about 1.5 times as long as wide, with 4-5 posterior spines; article 6 with 4-6 posterior spines; article 7 stout, shorter than article 6.

Uropodal peduncle shorter than telson, distomedial angle blunt; endopod length 1.5 times greatest width, setose; exopod lanceolate, length 3 times greatest width. Telson widest proximally, with a rounded to subacute end, length twice greatest width. Pleopod 1 indurate and exopod operculiform.

Colour off-white.

Male: Antenna 1 flagellum with about 13-15 articles all bearing aesthetascs. Pereopod 1 palm

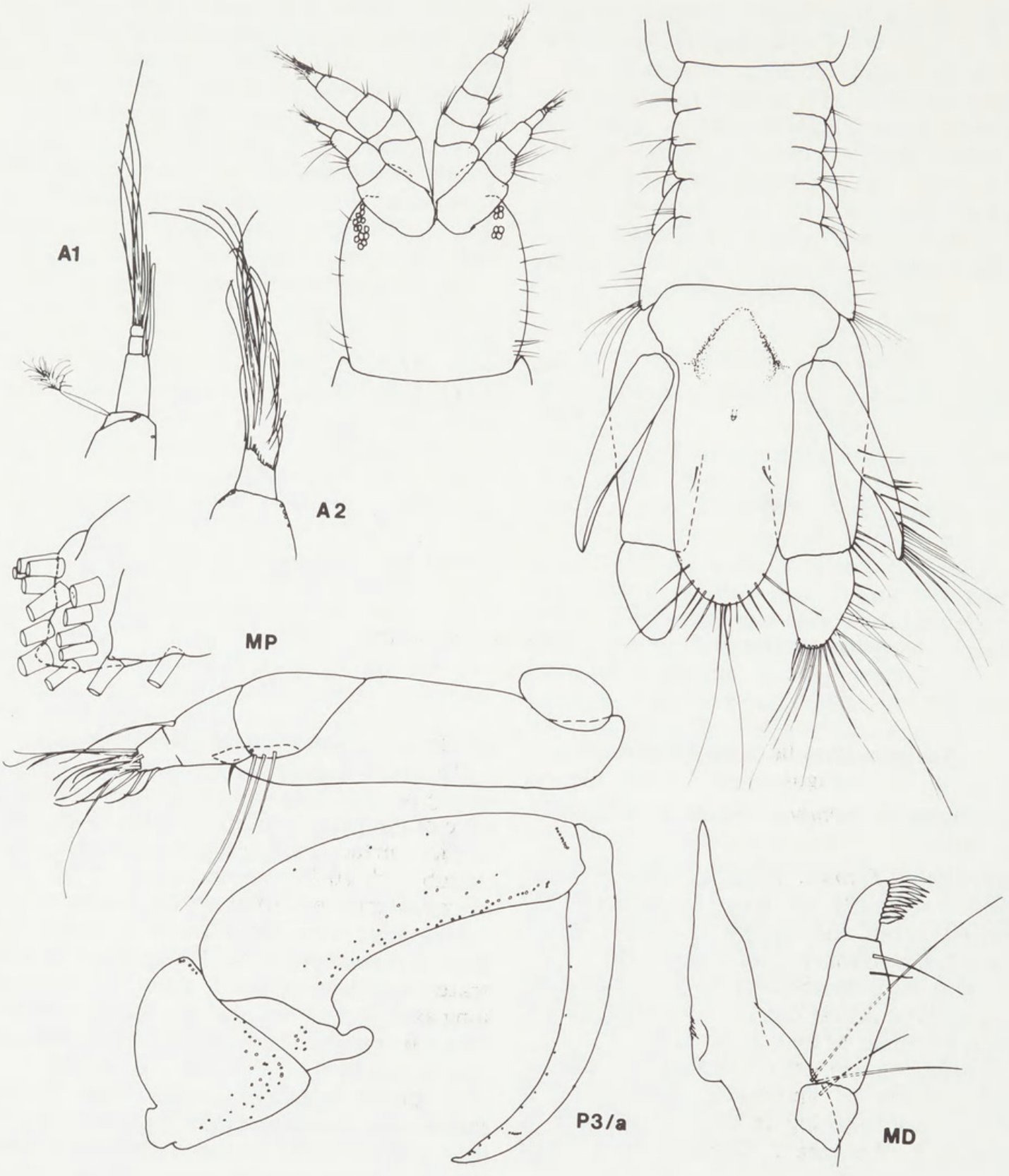

Figure 7—*Aenignathura lactanea.* Juvenile, 18 mm; male, 17 mm (NMV J851).

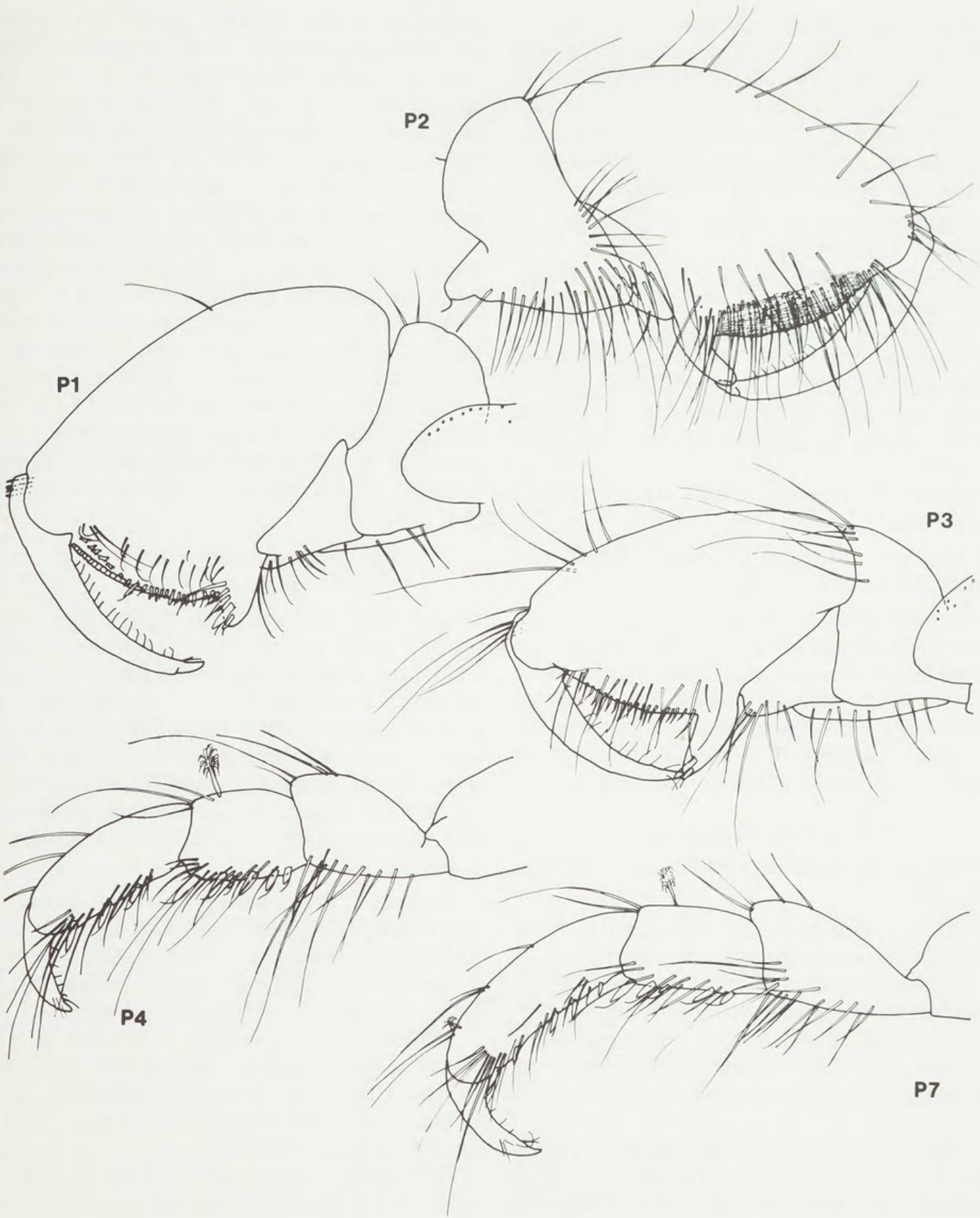

Figure 8—*Aenigmathura lactanea*. Juvenile, 18 mm (NMV J851).

axial-oblique, more elongate than in juveniles. Pereopods 2-3 with elongate concave densely setose palm, its proximal thumb dominated by a distal projection of article 5. Pereopods 4-7 more elongate than in juveniles. Pereon ventrally setose. Appendix masculina shorter than endopod of pleopod 2, its tip simple.

*Material examined:*6 males, 3 females, 56 juveniles; 5.2-20.2 mm.
WESTERN AUSTRALIA. Bathurst Point, Rottnest Island, WAM 11/17-31(2); WAM 147-62 (syntype male and female).
VICTORIA. Crib Point, Western Port, 8-23 m: CPBS stations: C4(3), 21N(1), 23N(1), 300(7), 32N(2,1,6), 32S(5), 41N(13), 41S(1), 42S(1), 51N(4), 51S(8), 52N(3), 61N(4) NMV J847-860, AM P30721.

Western Port, 24 m: WBES station 1748(1) NMV J861.

Distribution: Victoria (Western Port) and Western Australia; intertidal—24 m.

Remarks: Thomson's (1951) figures and description adequately characterize the species but he failed to notice the fusion of pleonite 6 and telson, an unusual feature among paranthurids. The Victorian material differs from the type specimens from Western Australia only in that the apex of the telson is more acute.

Colanthura Richardson

Colanthura Richardson, 1902: 287.—Poore, 1980: 60-61.

Remarks: Colanthura is distinguished from other Australian paranthurids by the absence of the seventh pereopod in adults. Poore (1980) synonomised *Cruranthura* Thomson, represented by a single species from Western Australia with *Colanthura* on the basis of similar mouthparts, pereopods, pereon and tail fan.

In the type species of *Colanthura, C. tenuis* Richardson, all pleonites are free and pereonite 7 is much narrower and shorter than pereonite 6. This is the case also in *C. nigra* Nunomura, *C. pigmentata* Kensley, *C. uncinata* Kensley, *C. pingouin* Kensley, *C. squamosissima* Menzies and *C. uncinata* Kensley. In an undescribed species from the New Zealand subantarctic (Poore, in press) pereonite 7 and the pleon are similar in form to the type species but pleonites 1-5 are fused dorsally. In *C. simplicia* (Thomson), *C. caeca* Mezhov and in the two new species described here, pereonite 7 is as wide as and about one-quarter as long as pereonite 6. Only pleonites 1 and 6 are free from other pleonites; pleonites 2-5 are fused dorsally. *C. simplicia* and *C. peroni* n. sp. are also unusual in that pleopods 2-5 have a non-setose, 2-articled endopod, a condition rare elsewhere in the Anthuridea. But this is not so in *C. caeca* and *C. furneauxi* n. sp., the other two members of this group. The agreement in mandible, maxilliped and pereopods of all species of *Colanthura,* the scattered distribution of the two groups of species, and the variable form of the pleopods in the second group, argues against separate generic status for the last-mentioned four species.

Colanthura furneauxi new species
Figures 9-11

Description: Female: Head longer than wide, shorter than pereonite 1; rostrum broadly triangular, shorter than lateral lobes. Eyes dorsolateral. Pereonite 7 one-third the length of pereonite 6. Pereonites 4-6 with shallow, broad dorsal pits; all pereonites and pleon with sculpture of small pits laterally and dorsally. Pleon little longer than pereonite 6, pleonites 1 and 6 free from others, pleonites 2-5 fused only dorsally.

Antenna 1 flagellum of 4 articles, as long as last 2 articles of peduncle, with terminal setae and about 8 aesthetascs. Antenna 2 flagellum of 1 short article, only one-third as long as last article of peduncle, with numerous setae.

Mandible with a curved blade-like process mesially; palp absent. Maxilliped basis not distinct from head, bearing 1 ventral seta; maxillipedal palp not distinct from basis, with 12 ventral and terminal setae.

Pereopod 1 stout; article 5 with posterior setae; article 6 swollen, palm axial, convex and with a distinct truncate proximal thumb, palm with 2 rows of about 10 short setae laterally and one row of about 35 setae mesially. Pereopods 2, 3 less stout than 1; article 5 with setae; article 6 palm convex and with 6 marginal spines. Pereopods 4-6 similar; article 5 twice as long as

Figure 9—*Colanthura furneauxi*. Holotype, juvenile, 9.1 mm (NMV J1037, 1038).

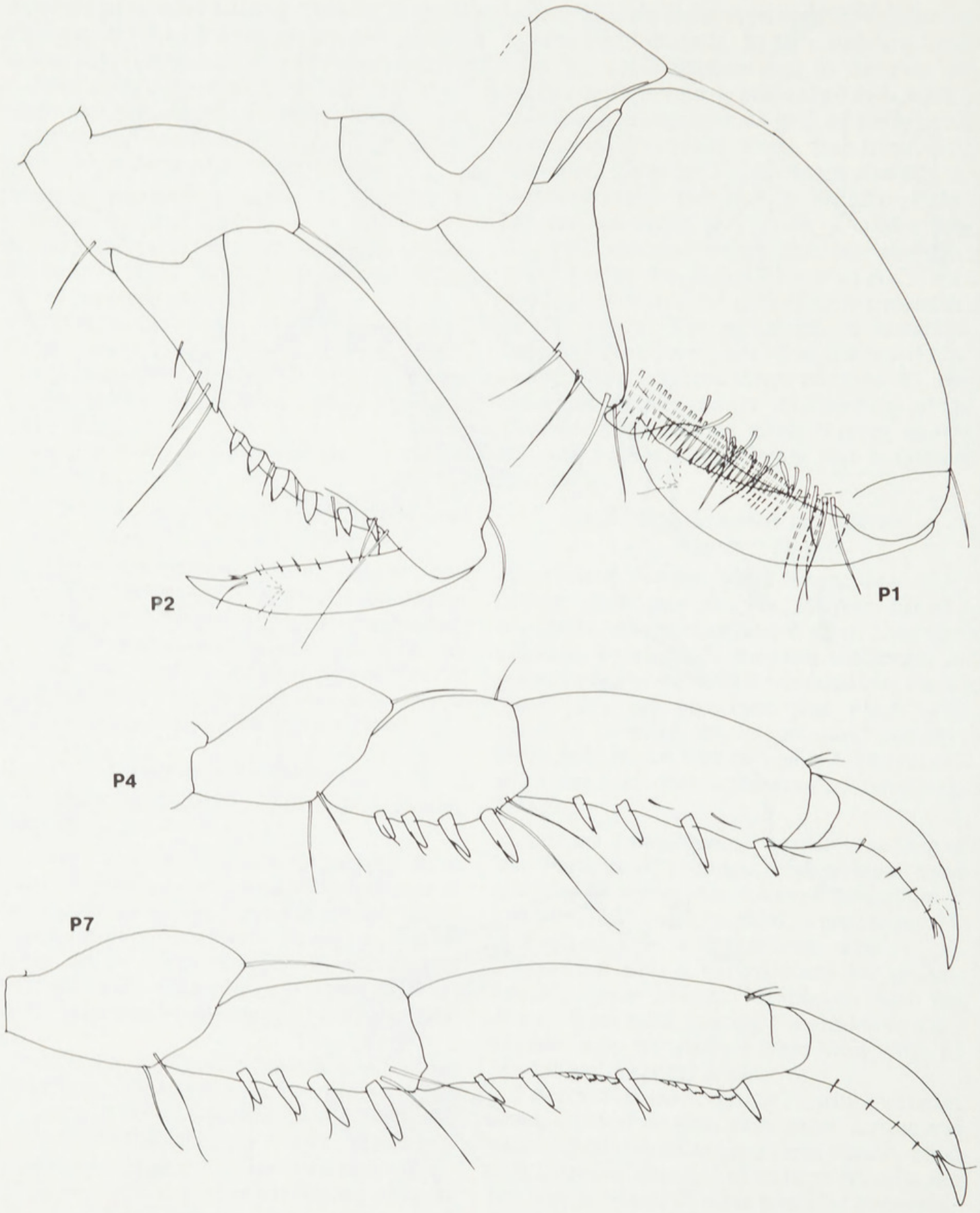

Figure 10—*Colanthura furneauxi*. Holotype, juvenile, 9.1 mm (NMV J1037, 1038).

Figure 11 – *Colanthura furneauxi*. Paratype, male, 5.5 mm (NMV J1040).

wide, with 4 posterior spines; article 6 is three times as long as wide, with 4 posterior spines; article 7 shorter than 6.

Uropodal peduncle with a subacute distomesial angle; endopod broadly ovate, wider than long, with convex margins, setose, half length of peduncle; exopod 1.4 times as long as wide, broadly excavate at apex, setose. Telson as long as uropod, dorsally concave, widest at midpoint, apex rounded, numerous terminal setae; no statocyst.

Pleopod 1 exopod operculiform. Pleopods 2-5 with terminal setae on both rami.

Colour densely red-brown on head, pereon and pleon, less obvious in some specimens.

Male: Differs from above description in flagellum of antenna 1 being of 5 articles bearing numerous aesthetascs, reaching to midpoint of head; appendix masculina straight, tip with minute terminal hook, longer than exopod.

Material examined: 4 males, 8 juveniles; 5.2-9.1 mm.

Holotype: juvenile, 9.1 mm, NMV J1037 and J1038 (slide).

Type locality:
Tasmania. Fisher Island, 2 m, on the alga *Caulocystis,* coll: G. Edgar, 1 Aug 1980.

Paratypes:
TASMANIA. Fancy Point, Bruny Island, 3-6 m, from algae, coll: G. Edgar, 9 June 1978-3 Jan 1979, NMV J1039 (1), J1040 (4), J1041 (2), J1042 (3).

Tinderbox, from the alga *Caulerpa,* coll: G. Edgar, 10 May 1978, NMV J1043 (1).

Distribution: Tasmania; subtidal.

Remarks: Colanthura furneauxi falls in the group of species in which pereonite 7 is as wide as and about one-quarter as long as pereonite 6 and in which pleonites 2-5 are fused dorsally. It differs from *C. peroni* n. sp. in possessing setae on both rami of the pleopods. The species may also be distinguished from *C. peroni* by the broader uropodal exopod.

C. furneauxi is most closely related to *C. caeca* Mezhov in the number of articles in the antennae and form of the pleopods, uropod and telson. The species differ in nature of the pereopods and uropodal exopod.

Colanthura peroni new species
Figures 12, 13

Description: Female: Head longer than wide, shorter than pereonite 1; rostrum broadly truncate, shorter than lateral lobes. Eyes dorsolateral. Pereonite 7 one-quarter the length of pereonite 6. Pereonites 3-6 with shallow dorsal pits. Pleon as long as pereonite 6, pleonites 1 and 6 free from others, pleonites 2-5 fused only dorsally.

Antenna 1 flagellum of 4 articles, as long as last 2 articles of peduncle, with setae and 2 or 3

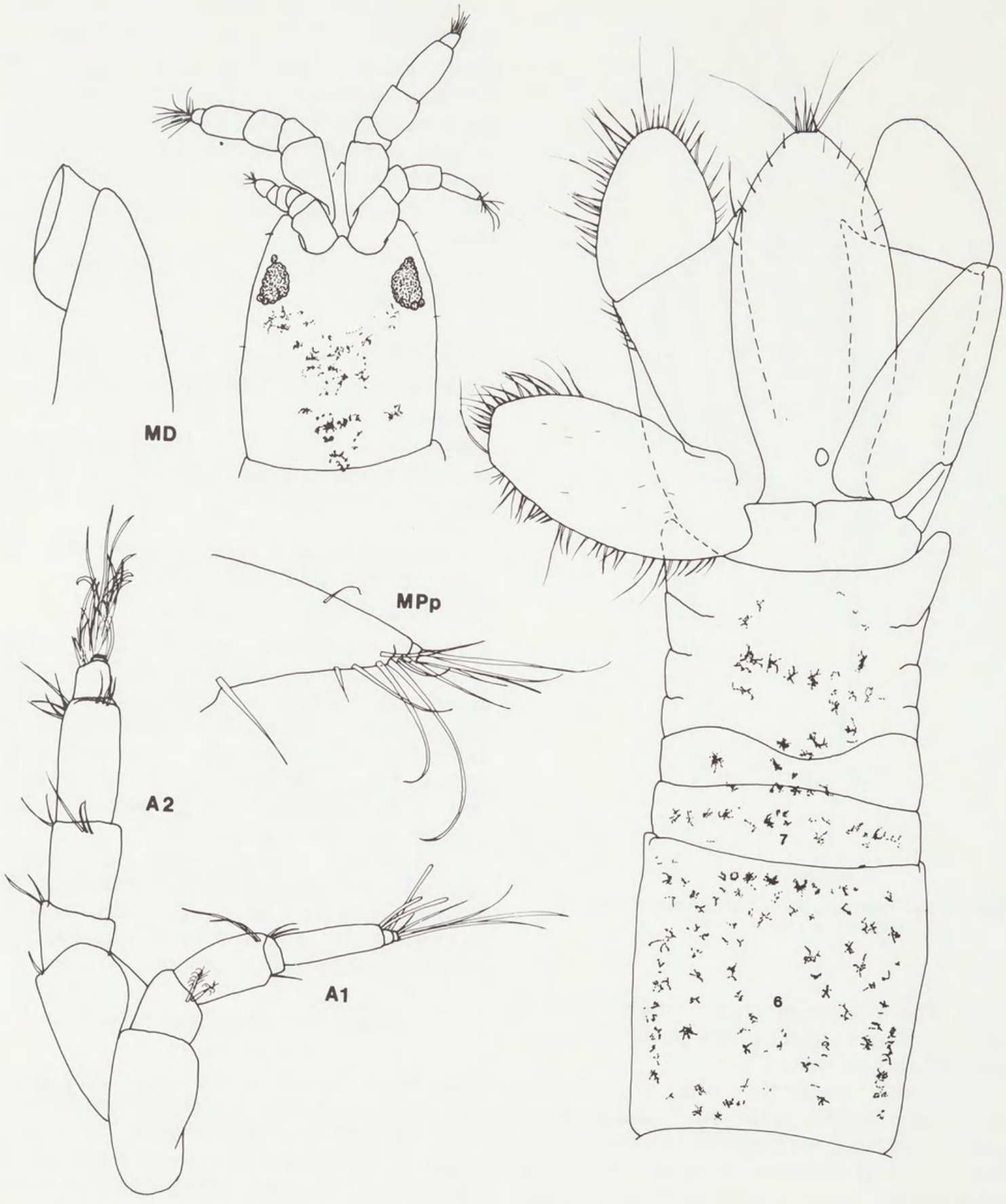

Figure 12—*Colanthura peroni*. Holotype, female, 9.5 mm (AM P24949).

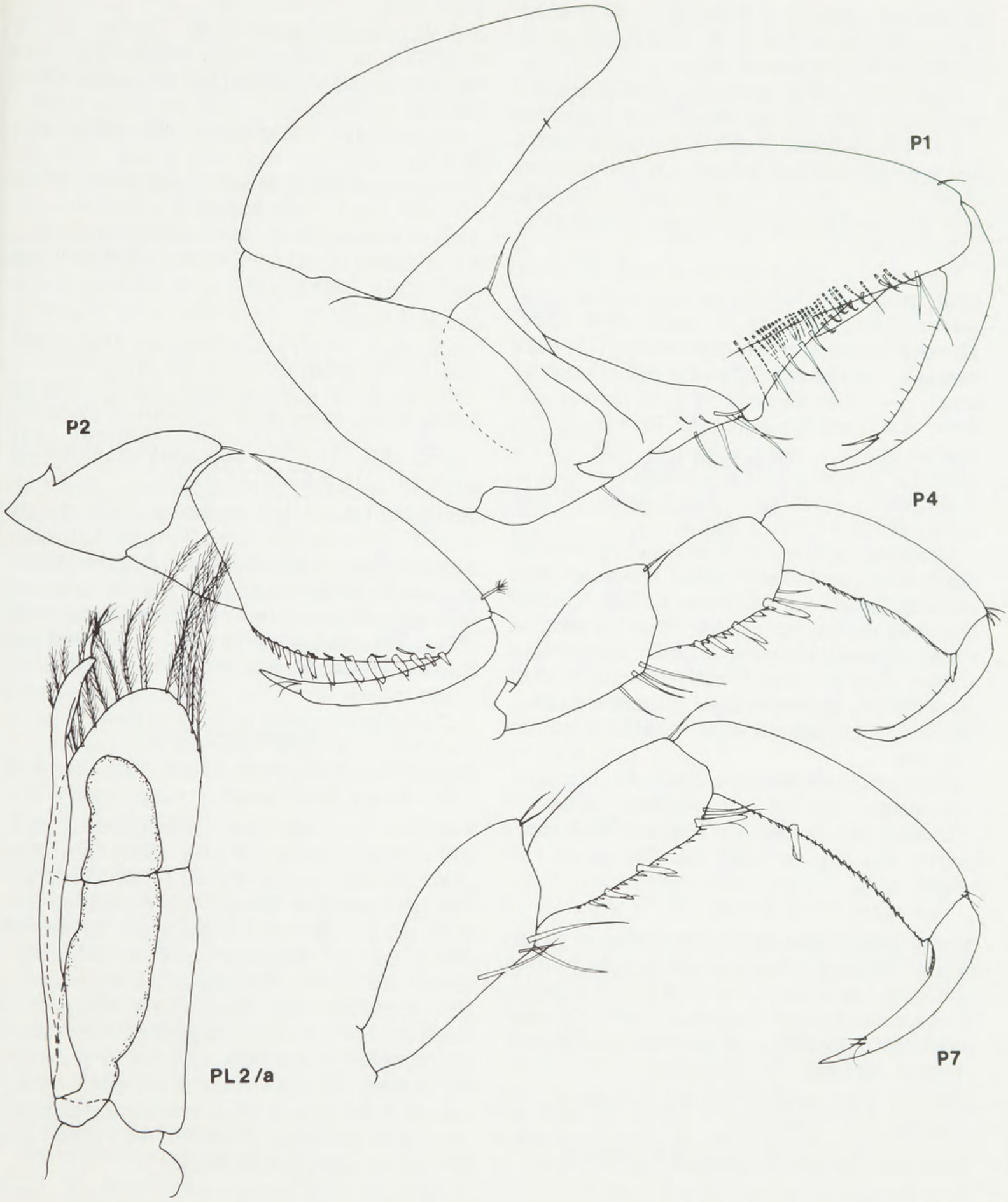

Figure 13—*Colanthura peroni*. Holotype, female, 9.5 mm (AM P24949); male, 7.3 mm (AM P24950).

aesthetascs. Antenna 2 flagellum of 3 short articles, only one-third as long as last article of peduncle, with numerous setae.

Mandible with a curved blade-like process mesially; palp absent. Maxilliped basis not distinct from head, bearing 1 ventral and 1 distal setae; maxillipedal palp not dintinct from basis, only a minute terminal article partially free, palp articles together with 11 ventral and 1 dorsal setae.

Pereopod 1 stout; article 5 with posterior setae; article 6 swollen, palm axial, concave and with an obsolete proximal thumb, with about 12 short setae laterally and about 25 setae mesially. Pereopods 2, 3 less stout than 1; article 5 with setae; article 6 palm convex and with 10-12 marginal spines. Pereopods 4-6 similar; article 5 twice as long as wide, with 4 posterior spines; article 6 is 4 times as long as wide, with 1 distal spine and 1 one-third way along; article 7 shorter than 6.

Uropodal peduncle with an acute distomesial angle; endopod broadly ovate, almost as wide as long, with convex margins, setose, half length of peduncle; exopod twice as long as wide, truncate at apex, setose. Telson little shorter than uropod, dorsally concave, widest at midpoint, apex rounded, 10 terminal setae, about 12 submarginal setae in distal third; no statocyst.

Pleopod 1 exopod operculiform. Pleopods 2-5 without terminal setae on the endopod.

Colour red-brown in distinct chromatophores dorsally on head, pereon, pleon and telson.

Oostegites on pereonites 2-5.

Male: Differs from above description in flagellum of antenna 1 being of 4-5 articles bearing numerous aesthetascs, reaching to end of head; distomesial angle of uropod peduncle strongly produced; appendix masculina curved, slightly swollen tip, longer then exopod.

Material examined: 7 males, 5 females, 13 juveniles; 4.5-12.9 mm.

Holotype: Female, 9.5 mm, AM P24949.

Type locality:
N.S.W. Tuross River, 36°04.73′S., 150°07.43′E., low tide transect, AMESES stn 038, coll: N. Carrick, 7 Aug 1974.

Paratypes:
N.S.W. Brobothalle Bay, Tuross River, AMESES stn 064, AM P20899(1), AM P24951(2), AM P24953(3); stn 038, NMV J966(1).

Coila Lake, AMESES stn 029, AM P24950(1).

Near Juno Head, Hawkesbury River, 10 m, AMHRS stn 1.4, NMV J968(1).

Hawkesbury River, 20 m, AMHRS stn 9.1, AM P28606(1), AM P28607(1); AMHRS stn 10.2, NMV J967(1).

Other material:
VICTORIA. Wallagaraugh River, Mallacoota Inlet, LVWSB stn 53, NMV J971(2).

Snowy River estuary, near Marlo, LVWSB stn 44, NMV J970(10).

Distribution: N.S.W. and eastern Victorian estuaries; intertidal to 20 m.

Remarks: Colanthura peroni is most closely related to *C. simplicia* from Western Australia. Although type material of this species cannot be found, Thomson's (1946) figures indicate sufficient differences to warrant separate species status. The rami of the uropods of *C. simplicia* are proportionally much narrower than in *C. peroni*.

Leptanthura Sars

Leptanthura Sars, 1899: 47-48.—Poore, 1978: 136.—Poore, 1980: 61-62.

Remarks: A recent description (Poore, 1978) and a brief diagnosis (Poore, 1980) have been given for this genus. Poore (1978) described three species then known from south-eastern Australia [*L. diemenensis* (Haswell), *L. nunana* Poore and *L. kapala* Poore]; three further species are added here. *Leptanthura diemenensis* is the most common species in this part of Australia and typically is separated from others by the dished telson with a pair of long subterminal setae dorsally. There is still some confusion over the identity of several small specimens from shelf and slope of eastern Australia; these are not included in this paper.

Leptanthura boweni new species
Figures 14-16

Description: Female: Head wider than long,

little shorter than pereonite 1; rostrum truncate, as long as subquadrate lateral lobes; eyes absent. Pereonite 1 with strong lateral ridges produced anteriorly alongside head and laterally over articulation of pereopods, ridges less well defined on pereonites 2 and 3. Pereonites 4-6 with dorsal pits, and laterally a regular sculpture of minute pitting. Pleon more than twice as long as pereonite 7.

Antenna 1 flagellum of 2 articles, shorter than last article of peduncle, with 2 setae and 3 aesthetascs. Antenna 2 flagellum of 2-3 articles, as long as last article of peduncle, with about 20 setae.

Mandible with an acute incisor; palp articles 1 and 2 without setae, article 3 with a small terminal spine. Maxilliped basis not distinct from head, bearing 1 ventral seta distally; maxillipedal palp of 3 partially separated articles; article 1 with 3 ventral and 1 dorsal setae, article 2 with 1 or 2 setae and article 3 with 4 terminal setae.

Pereopod 1 with a stout basis; article 4 with a strong anterior lobe; article 5 with a produced distal margin bearing 1 terminal spine and seta; article 6 not swollen, palm well separated from distal corner of article 5, palm transverse and almost chelate, with 1 spine and medial setae; article 7 twice as long as palm. Pereopods 2, 3 like 1 but basis less stout, palm with 2 spines. Pereopods 4-7 similar; articles 5 and 6 each with 1 distal spine; article 7 as long as 6.

Uropodal peduncle produced distomesially, a high crest along its dorsolateral margin; endopod triangular but concave on mesial edge, setose, three-quarters length of peduncle; exopod deeply incised, setose, wider than long, ventral part acute, dorsal part more rounded although anterior margin straight. Telson shorter than uropod, dorsally concave, widest three-quarters way along and tapering to a subacute end; 4 short setae in a shallow terminal notch, few minute submarginal setae elsewhere.

Pleopod 1 exopod operculiform.

Oostegites on pereonites 2-6.

Male: As above description but: antenna 1 flagellum of 8-11 setose articles reaching to middle of pereonite 1; antenna 2 flagellum with 4 articles; pereopod 1 with long mesial setae on articles 4-6, no spine on article 6; pereopods 2, 3, palm poorly defined, posterior margins of article 6 with 4 spines; pereopods 4-7 more elongate; uropod rami more elongate; appendix masculina acute, tapering, reaching a quarter its length beyond endopod of pleopod 2.

Material examined: 4 males, 21 females, 89 juveniles; 4.0-6.1 mm.

Holotype: Juvenile, 6.0 mm, NMV J932 and J933 (slide).

Type locality:
VICTORIA. Port Phillip Bay, 38°02.3′S., 144°44.7′E., 13 m, sand, coll: Marine Pollution Studies Group, 10 June 1971 (PPBES station 922).

Paratypes:
VICTORIA. Port Phillip Bay, 3-15 m: PPBES stations: 907(4), 908(4), 913(36), 922(10,13), 930(4), 932(7), 953(1), 984(2), 985(16) NMV J934-946, AM P 30723.

Other material: VICTORIA. Port Phillip Bay: PPBES stations: 1252(1), 1262(1) NMV J947-948.

Crib Point, Western Port, 7-19 m: CPBS stations: B1(1), 52N(1) NMV J949-950.

Western Port, intertidal to 18 m: WBES stations: 1704(1), 1707(2), 1724(2), NMV J951-953.

Flinders Canyon, eastern Bass Strait, 39°40.3′S., 148°46.5′E., 293-329 m, VIMS Cruise 79-K-1, HMAS "Kimbla", station 33, 27 Mar 1979, NMV J962(1).

N.S.W. Gunnamatta Bay, Port Hacking: NMV J954(3), NMV J955(1).

Distribution: Victoria and New South Wales bays; sandy to silty-sand sediments; intertidal-329 metres.

Remarks: Leptanthura boweni is an unusual species, perhaps worthy of separate generic status. It differs from all other species of *Leptanthura* in the poor development of the first three pereopods. The sixth article of these limbs is little stronger than those of the posterior walking legs and bears a peculiar transverse, almost chelate, palm. The broad dorsum on pereonite 1 is also not found elsewhere in the genus.

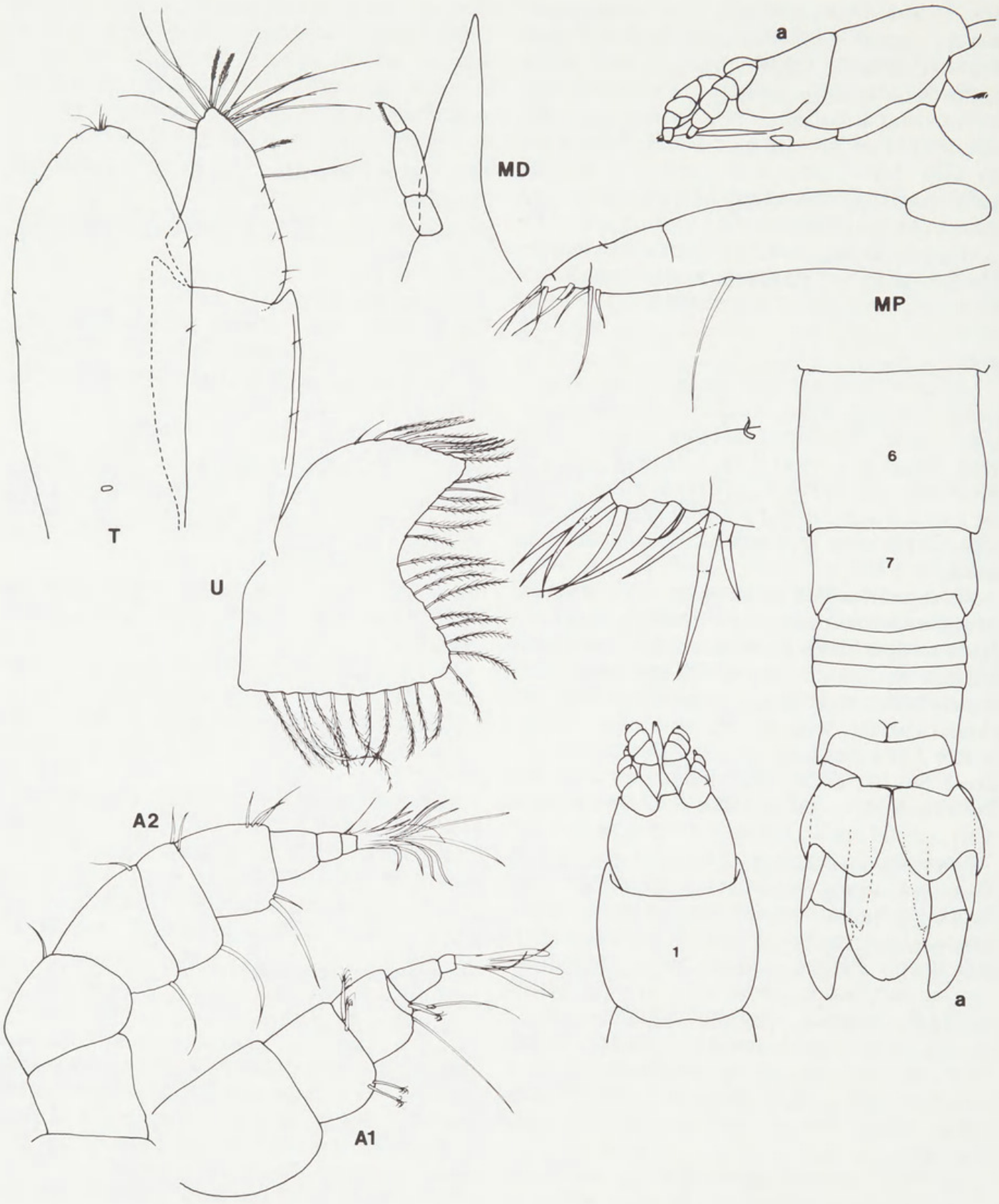

Figure 14—*Leptanthura boweni.* Holotype, juvenile, 6.0 mm (NMV J932, 3); a, juvenile (NMV J934).

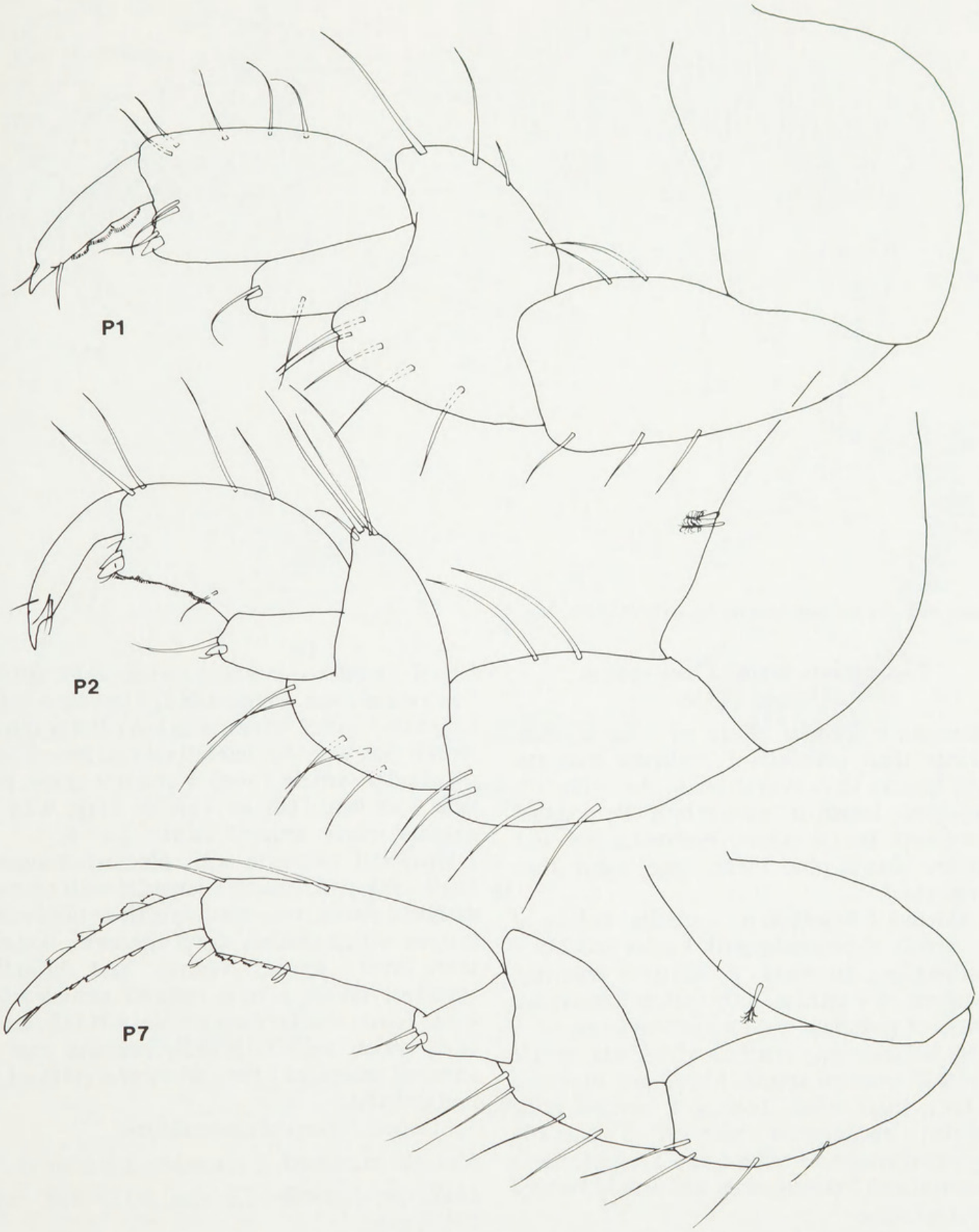

Figure 15—*Leptanthura boweni*. Holotype, juvenile, 6.0 mm (NMV J932, 3).

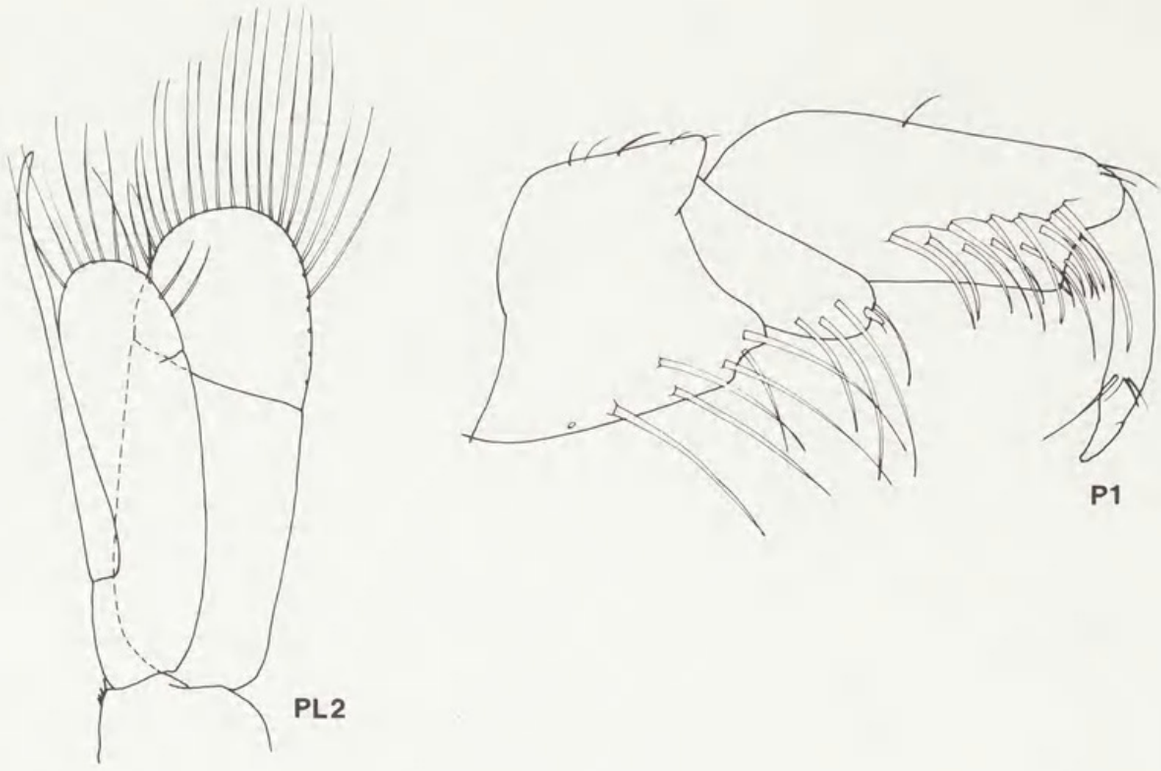

Figure 16—*Leptanthura boweni.* Male (NMV J936, 7).

Leptanthura flindersi new species
Figures 17, 18

Description: Female: Head as wide as long, shorter than pereonite 1; rostrum truncate, little shorter than lateral lobes. Pereonite 7 is two-thirds length of pereonite 6. Pereonite 1 with weak lateral ridges. Pereonites 3-6 with shallow dorsal pits. Pleon little longer than pereonite 7.

Antenna 1 flagellum of 3 articles, as long as last article of peduncle, with 3 setae and 2 or 3 aesthetascs. Antenna 2 sharply tapering, flagellum of 4 articles, only half as long as last article of peduncle, with numerous setae.

Mandibular palp article 2 with 1 seta, article 3 with 2 terminal spines. Maxilliped basis not distinct from head, bearing 2 ventral setae distally; maxillipedal palp of 3 partially separated articles, articles 1 and 2 together with 4 ventral and 1 dorsal setae, and article 3 with 4 terminal setae.

Pereopod 1 stout; article 5 with 2 anterior spines and 1 seta; article 6 swollen, palm well separated from distal corner of article 5, palm oblique and with a proximal thumb, with 7 lateral complex spines and mesial setae; article 7 as long as palm. Pereopods 2, 3 less stout than 1; article 5 with 2 spines; article 6 palm without thumb but with 4-5 lateral spines. Pereopods 4-7 similar; article 5 with 1 anterior spine; article 6 at least half as wide as long, with 2 anterior spines; article 7 shorter than 6.

Uropodal peduncle with blunt distomesial angle; endopod broadly triangular with convex margins, setose, two-thirds length of peduncle; exopod with a shallow distal concavity, longer than wide, setose, ventral part broadly rounded, dorsal part a reduced semicircular lobe. Telson shorter than uropod, dorsally concave, widest near its broadly rounded end; 4 terminal setae and 3 pairs of submarginal setae in distal third.

Pleopod 1 exopod operculiform.

Material examined: 2 juveniles; 3.5-5.3 mm.

Holotype: Juvenile, 5.3 mm, NMV J960 and J961 (slide).

Type locality:
TASMANIA. Schouten Passage, N. of Schouten Island., 12 m, sand and corallines,

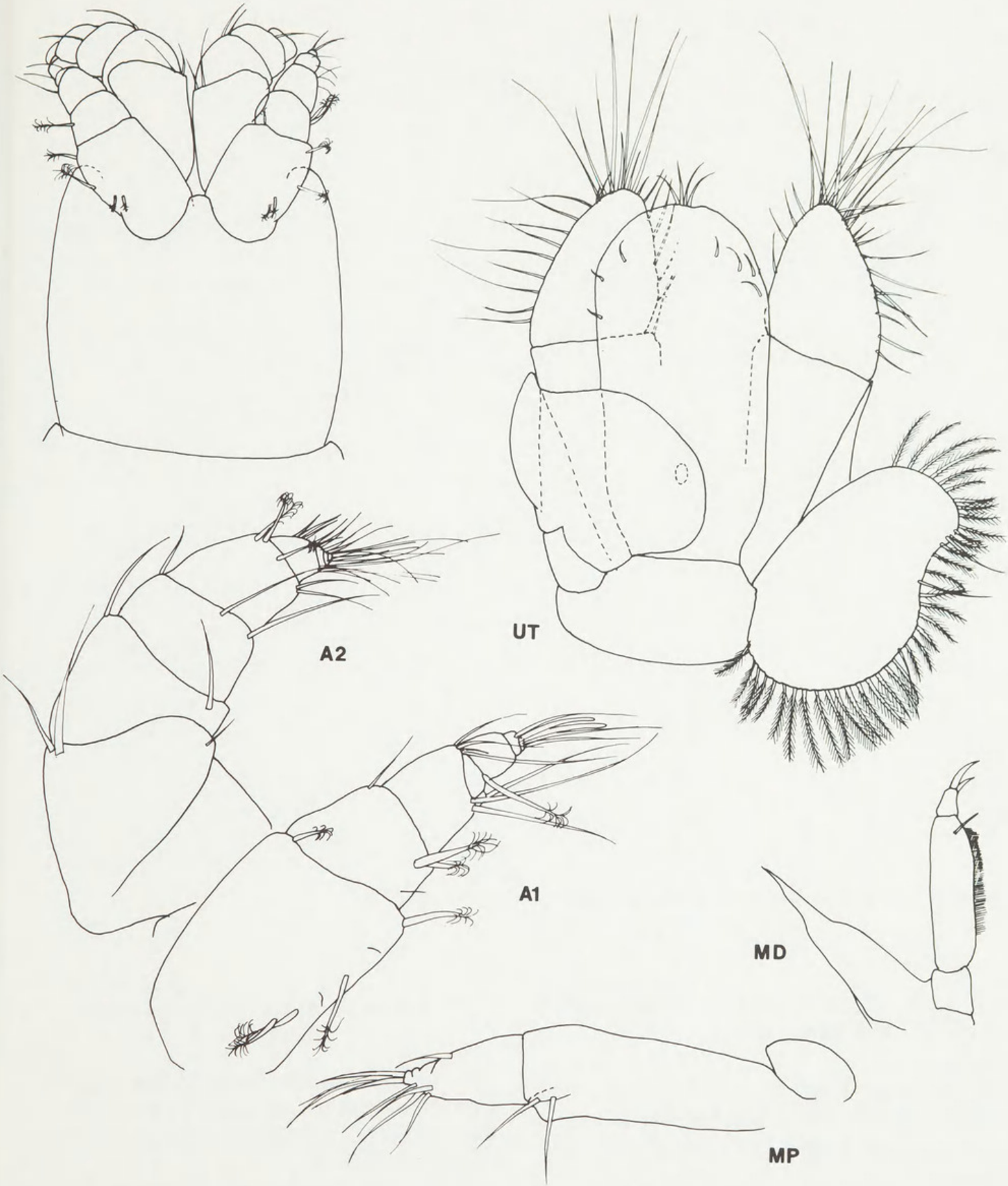

Figure 17—*Leptanthura flindersi*. Holotype, juvenile, 5.3 mm (NMV J960, 1).

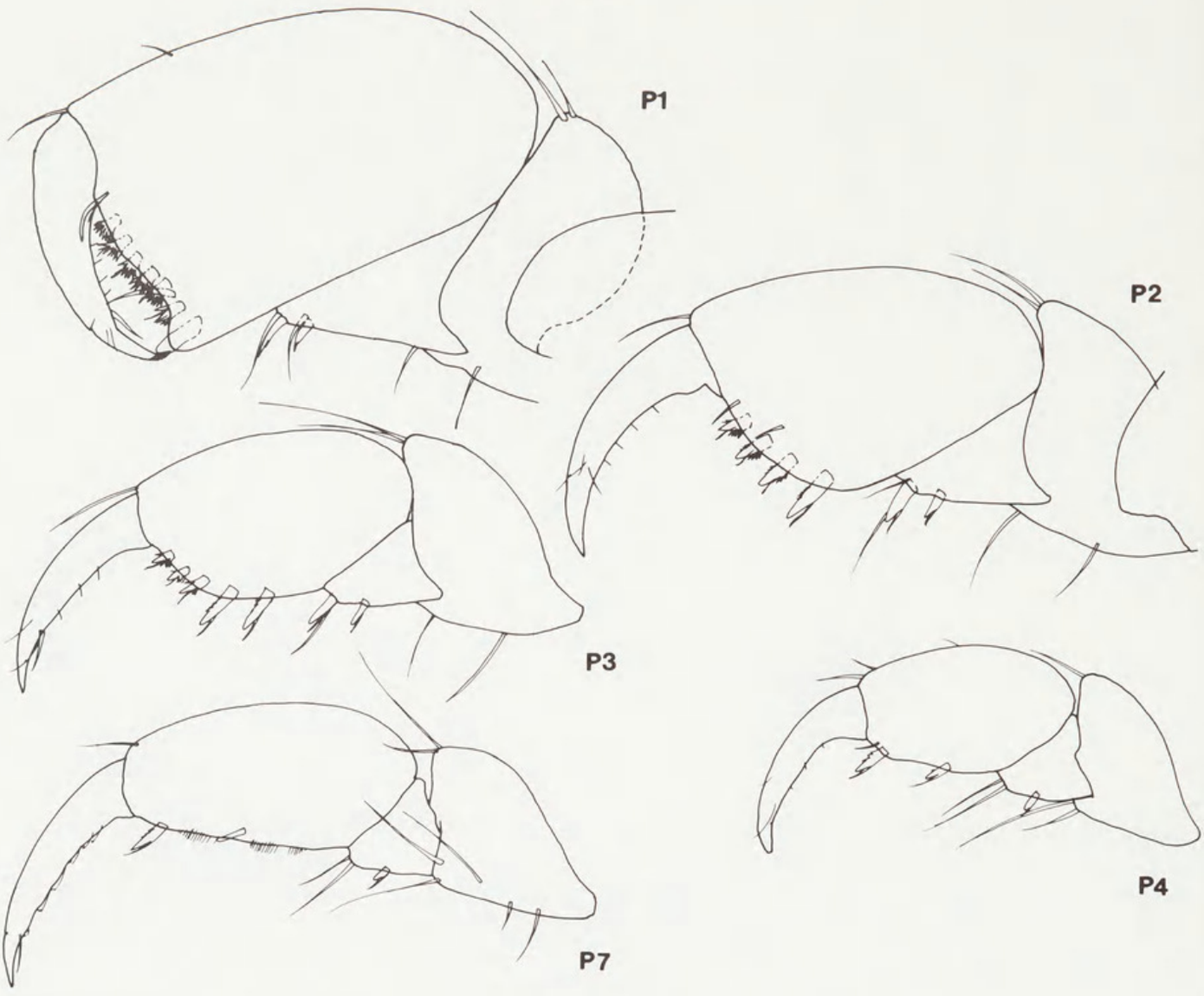

Figure 18—*Leptanthura flindersi.* Holotype, juvenile, 5.3 mm (NMV J960, 1).

coll: A. J. Dartnall on FRV "Penghana", 8 June 1977, Van Veen Grab.

Paratype:
N.S.W. Long Reef, Sydney, 23.8 m, coll: AMSBS, 27 Apr 1972, AM P24358(1).

Distribution: N.S.W. and Tasmania east coast; 12-24 m.

Remarks: L. flindersi is a small species distinguished from other species in south-eastern Australia by the broad uropodal endopod, the three pairs of submarginal setae on the telson and the oblique palm on pereopod 1.

Leptanthura murrayi new species
Figures 19, 20

Description: Female: Head longer than wide, almost as long as pereonite 1. Pereonites 4-6 with pits and transverse grooves at anterior margin of dorsum.

Antenna 1 flagellum of 3 articles, first the longest and equal to last peduncle article. Antenna 2 flagellum of 2 short articles.

Mandible with an acute incisor, palp article 2 is 3 times length of first, with 1 seta; palp article 3 with 2 barbed spines distally. Maxilliped basis

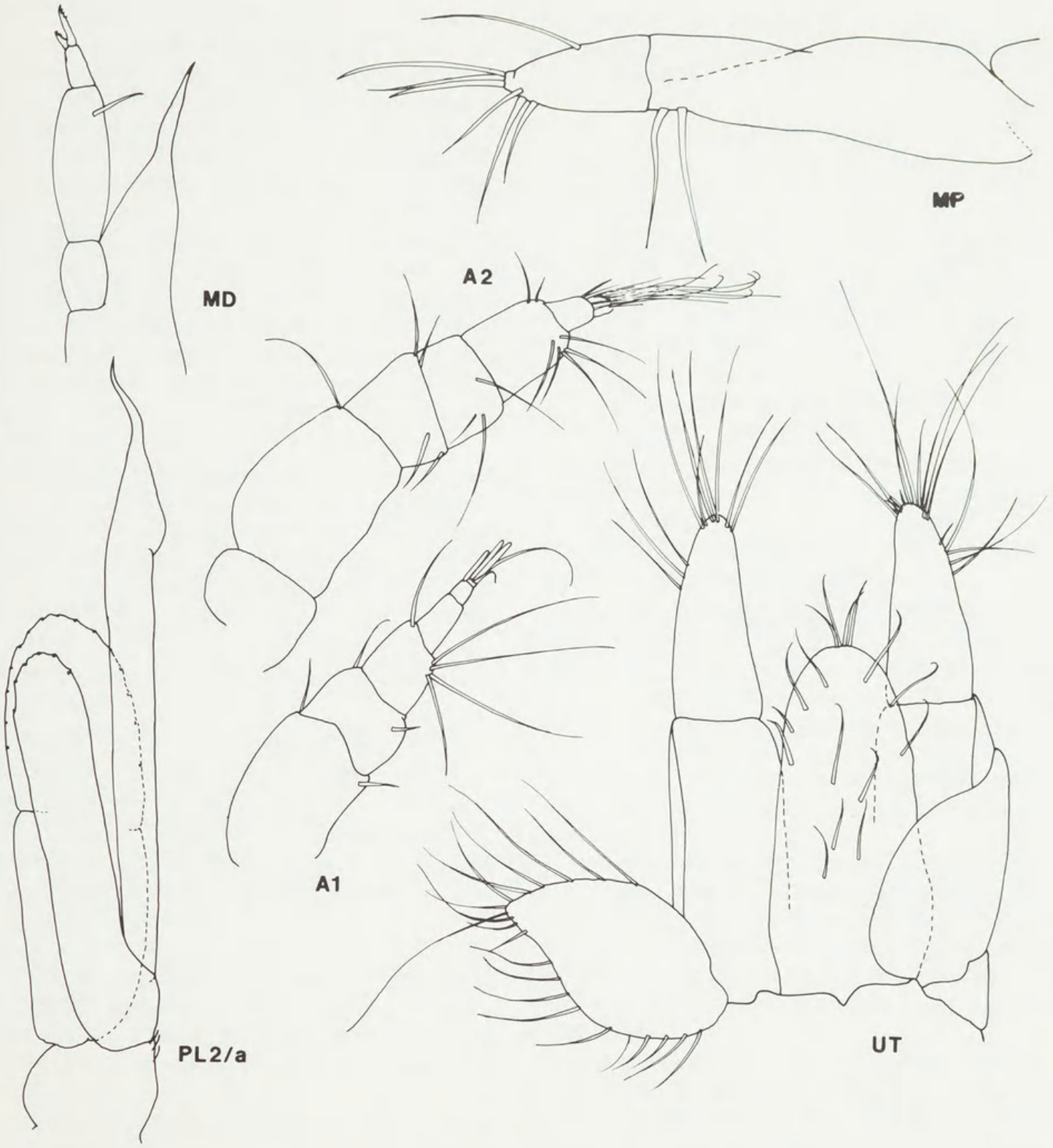

Figure 19—*Leptanthura murrayi.* Holotype, juvenile, 6.6 mm (NMV J862, 3); male (NMV J868).

not distinct from head, bearing 2 ventral setae distally; maxillipedal palp of 2 poorly distinguished articles, the second minute; article 1 with 3-4 ventral and 1 dorsal setae, article 2 with 3-4 setae.

Pereopod 1 stout, palm almost transverse, its short proximal thumb well separated from the distal corner of article 5. Article 5 of pereopod 1 with 2 spines; article 6 elongate, more than twice as long as wide, its palm with 7 lateral

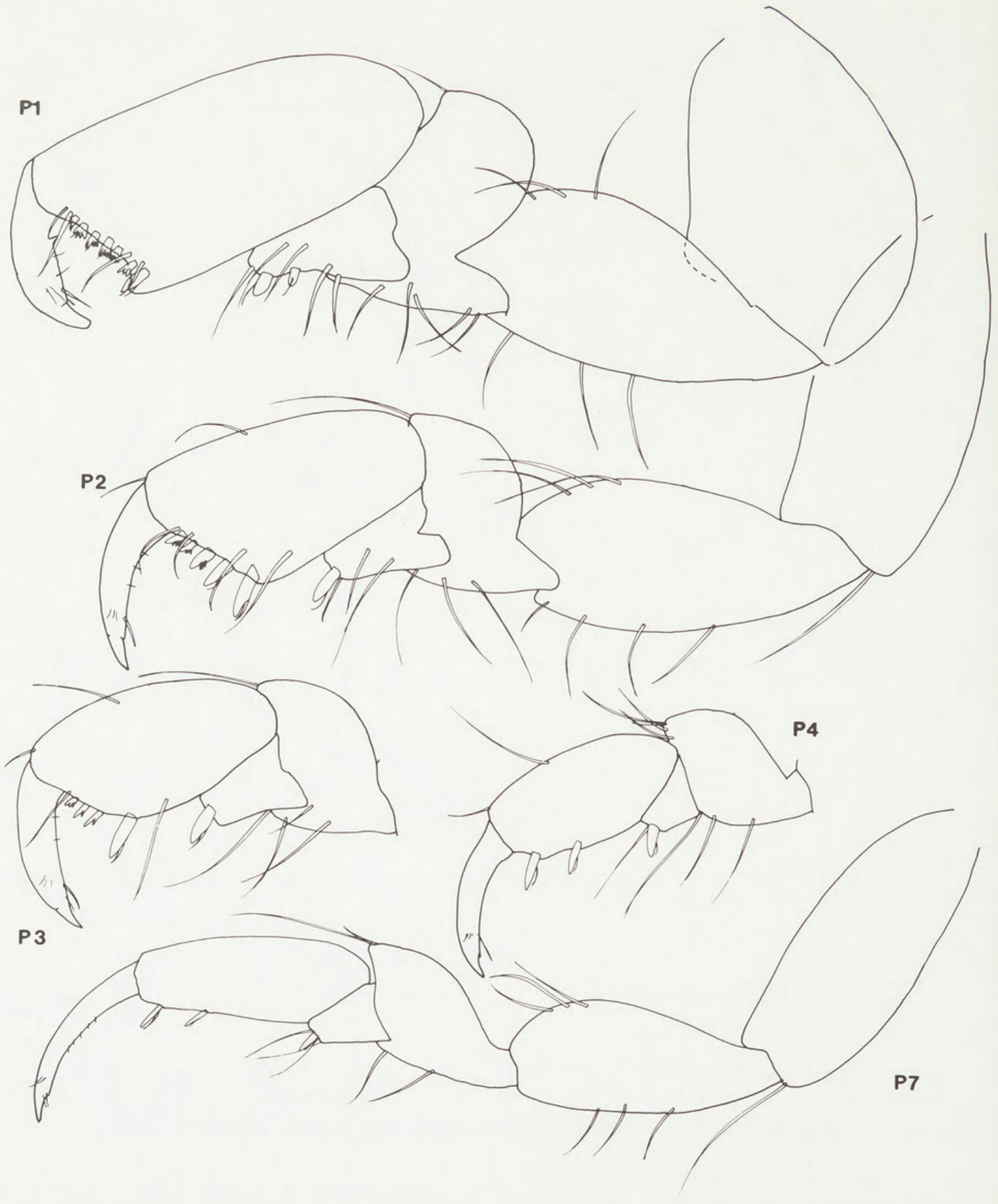

Figure 20—*Leptanthura murrayi*. Holotype, juvenile, 6.6 mm (NMV J862, 3).

complex spines with interspersed setae; article 7 as long as palm. Pereopods 2, 3 less well developed than first, fewer spines on articles 5 and 6, article 6 less inflated than on pereopod 1. Pereopods 4-7 progressively more elongate, article 5 small, triangular and with 1 spine; article 6 with 2 spines; dactyl as long as palm of article 6.

Uropodal endopod triangular, setose, about two-thirds length of peduncle, little more than twice as long as broad; exopod acute distally, setose, more than half as wide as long. Telson shorter than uropod, dorsally convex, gradually tapering to a rounded apex; statocyst opening by a proximal slit; 4 terminal setae and scattered dorsal setae.

Male: Differs from above description in possession of setose 7-articled flagellum on antenna 1 reaching to middle of pereonite 1; elongate pereopods; setose palm on pereopod 1; appendix masculina broad, almost twice as long as endopod of pleopod 2, distally slender, tapering.

Material examined: 2 males, 19 juveniles; 4.6-6.6 mm.

Holotype: Juvenile, 6.6 mm, NMV J862 and J863 (slide).

Type locality:
VICTORIA. Crib Point, Western Port, 38°20.94′S, 145°14.08′E, 16 m, muddy sand, coll: Marine Pollution Studies Group 30 Mar 1965 (CPBS stn 51N).

Paratypes:
VICTORIA. Crib Point, Western Port, 12-19 m: CPBS stations: C4(1), 32N(1), 51N(9), 600(2), 61N(1) NMV J864-867, AM P30724.

Western Port, 24 m: WPES station 1746(7) NMV J868.

Distribution: Victoria (Western Port); sandy sediments; 12-24 m.

Remarks: Leptanthura murrayi, at 6.6 mm, is the smallest species of the genus so far known from Australia. It is distinguished from the slightly longer *L. nunana* Poore by shorter and broader uropodal rami, by the arrangement of setae on the maxilliped and the form of the pereopods, particularly the first.

The unusually broad and long appendix masculina of this species sets it apart from all other species in the genus; it is a form unusual in the family.

Ulakanthura Poore

Ulakanthura Poore, 1978: 147-150.—Poore, 1980: 64.

Remarks: Diagnoses for this genus have been provided recently by Poore. It is characterised by being blind, having a mandibular palp of a single article and having posterior lobes on article 4 of pereopods 4-7.

Ulakanthura marlee new species
Figures 21, 22

Ulakanthura colac Poore, 1978: 152-154 (part from Victoria and N.S.W.).—Dorsey & Synnot, 1980: 159.
not *Ulakanthura colac* Poore, 1978: 152-154, figs 12, 13 (part from Queensland).

Description: Female: Head longer than wide, as long as pereonite 1; rostrum acutely triangular; eyes absent. Pereon with obsolete dorsolateral grooves, dorsal pits and paired rows of setae on dorsum of pereonites 4-6. Pleon little longer than pereonite 6, pleonites distinct.

Antenna 1 flagellum of 3-4 articles, little longer than last article of peduncle. Antenna 2 flagellum of 4 setose articles.

Mandible with an acute incisor, palp a single small article. Maxilliped basis not distinct from head, with 1 distal ventral seta, 2 distal dorsal setae and 8-12 setae laterally; maxillipedal palp of 3 poorly defined articles, first with 1 dorsal seta, second with 4 ventral and third with 4 distal setae.

Pereopod 1 stout, palm oblique and with a small thumb proximally. Article 5 of pereopod 1 with 3-4 spines; article 6 with 10 spines along the cutting edge. Pereopod 2 articles 6 broader than that of pereopod 1, palm oblique. Article 5 of pereopods 2, 3 with 2-3 spines; palm of article 6 with a proximal thumb and row of 11 spines laterally. Pereopods 4-7 dissimilar to pereopods 1-3, subequal. Article 4 of pereopods 4-7 setose, lobed posteriorly, the lobe reaching to the distal end of article 5 on pereopod 4 and just short of this point on pereopod 7; article 5 with 4 spines; article 6

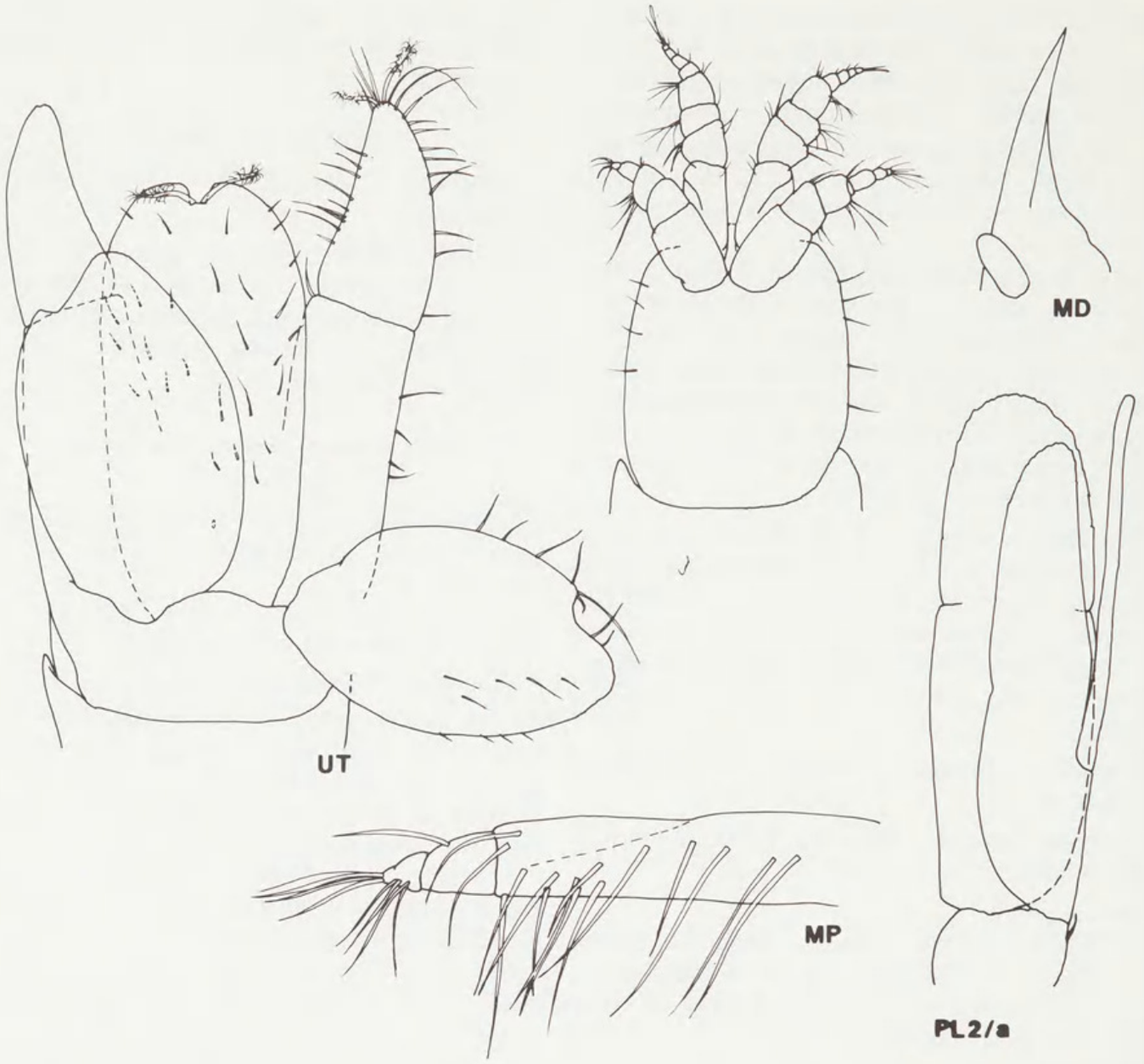

Figure 21 – *Ulakanthura marlee.* Holotype, juvenile, 11 mm (NMV J490, 1); male (NMV J494).

with 4-5 spines; article 7 barely tapering, with 1 long seta and 1 short terminal spine.

Uropodal endopod setose, triangular, not quite twice as long as wide; two-thirds as long as peduncle; exopod broad and with a shallow subterminal cleft situated such that dorsal apex is longer than ventral apex of exopod. Telson reaching halfway along endopod, dorsally concave, slightly splayed, tapering to a broadly rounded end divided by a square notch; statocyst opening by a small dorsal pore; brush-setae in the terminal notch and scattered short setae dorsally.

Colour in alcohol cream.

Male: differs from above description in setose palm of pereopod 1; flagellum of antenna 1 with 14-15 articles bearing numerous aesthetascs reaching as far back as middle of pereonite 2. Appendix masculina a simple rod reaching to the end of the exopod of pleopod 2.

Material examined: 4 males, 1 female, 45 juveniles; 4.0-11.0 mm.

Holotype: Juvenile, 11.0 mm, NMV J490 and J491 (slide).

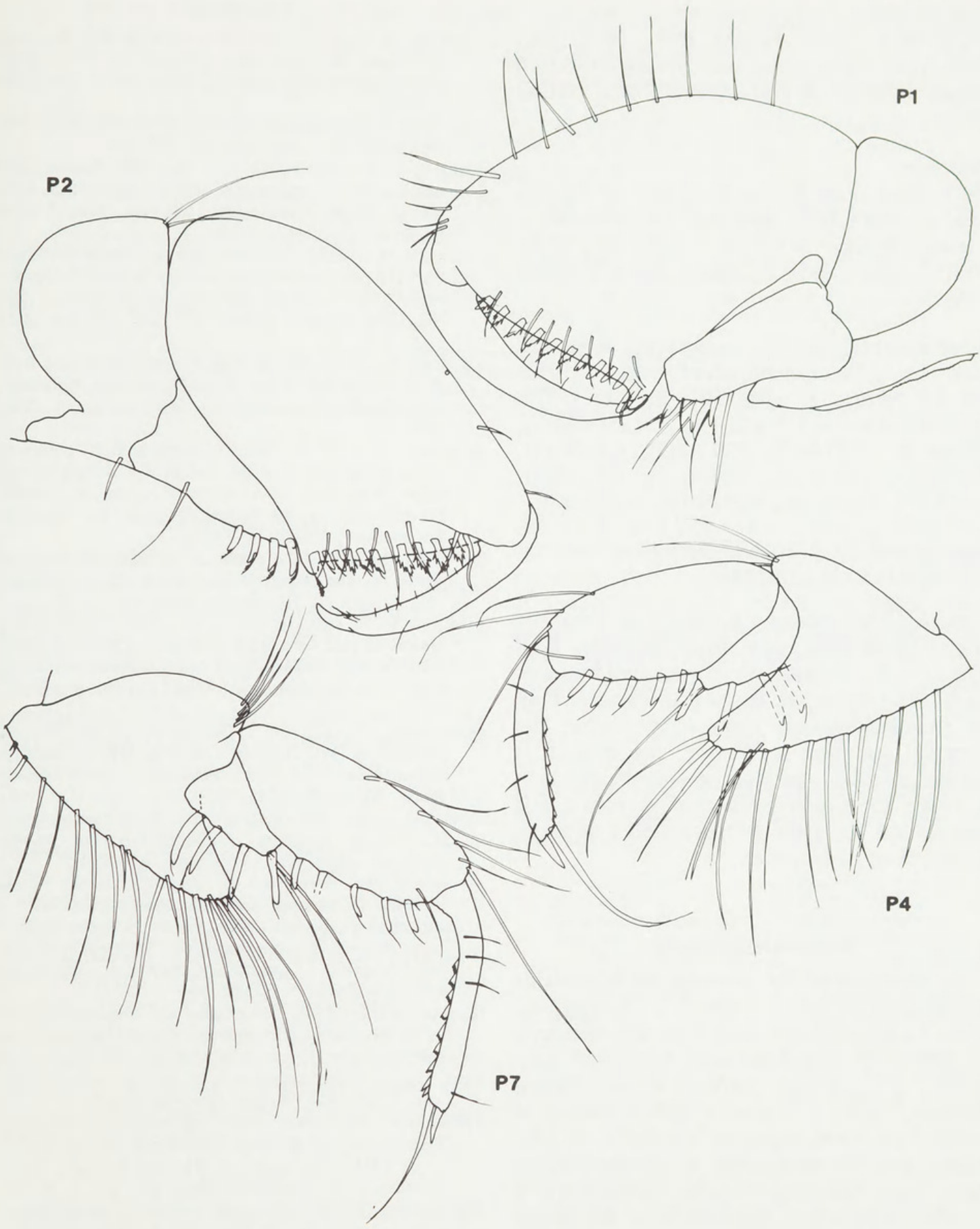

Figure 22 – *Ulakanthura marlee.* Holotype, juvenile, 11 mm (NMV J490, 1).

Type locality:
VICTORIA. Port Phillip Bay, 38°11.7′S., 144°44.7′E., 10 m, sand, coll: Marine Pollution Studies Group, 16 Feb 1971 (PPBES station 960).

Paratypes:
VICTORIA. Port Phillip Bay, 5-10 m: PPBES stations: 960(1,2,16), 967(1) NMV J492-495.
Black Rock, Breamlea, 9-20 m: NMV J956(1), NMV J957(2), NMV J958(2), NMV J959(1).

Other material: N.S.W. Hawkesbury River, off Juno Head, 10 m, sandy mud, coll: A. Jones and C. Short, 5 May 1977-21 Feb 1978, (AMHRS stations 1.3 and 1.4) AM P28603(1), P28604(4), P29743(3), P29744(2), P29745(1), P29746(2), P29747(1), P29748(1), P29749(1), P29751(1), P29752(1), P29753(1), P29755(4).

Distribution: N.S.W. and Victoria; 5-20 m; well sorted sandy sediments.

Remarks: This species was previously confused with *Ulakanthura colac* from Moreton Bay, Queensland. The differences are small but consistent. The end of the telson is more acute than the rounded-truncate form of *U. colac;* the uropodal endopod is shorter, the exopod is broader, its two lobes not the same length as in *U. colac*; the posterior lobe of pereopod 7 is longer; and the palm of pereopod 1 is more oblique than in *U. colac.*

Acknowledgements

For the loan of the material on which this contribution is based I thank J. Lowry, A. Jones, C. Short (Australian Museum, Sydney), W. Zeidler (South Australian Museum, Adelaide), R. George (Western Australian Museum, Perth), S. Rainer (CSIRO Division of Fisheries and Oceanography, Cronulla), S. McCauley and S. McCullum (LaTrobe Valley Water and Sewerage Board, Traralgon). I especially appreciate the efforts of N. Bruce (University of Queensland, Brisbane) in locating type material.

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