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Lowry, J.K., & Poore, G.C.B., 1985. The Ampeliscid Amphipods of south-eastern Australia (Crustacea). *Records of the Australian Museum* 36(6): 259–298. [11 June 1985].

doi:10.3853/j.0067-1975.36.1985.348

ISSN 0067-1975

Published by the Australian Museum, Sydney

nature culture **discover**

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The Ampeliscid Amphipods of South-eastern Australia (Crustacea)

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ABSTRACT. The Ampeliscid amphipods of south-eastern Australia are studied in detail for the first time. The two known species, *Ampelisca australis* Haswell and *A. acinaces* Stebbing, are rediscovered, and 15 new species in the genera *Ampelisca*, *Byblis* and *Haploops* are described. These include *Ampelisca ballina*, *A. bidura*, *A. calooma*, *A. dimboola*, *A. euroa*, *A. jingera*, *A. narooma*, *A. tilpa*, *A. toora*, *A. yuleba*, *Byblis bega*, *B. gerara*, *B. mildura*, *B. tinamba* and *Haploops oonah*. A key is provided to the ampeliscid species of south-eastern Australia.

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KEYWORDS: taxonomy, Amphipoda, Ampeliscidae, *Ampelisca*, *Byblis*, *Haploops*.

The Australian ampeliscid amphipods have never been studied in detail. Only two species, *Ampelisca australis* Haswell, 1879, and *A. acinaces* Stebbing, 1888, have been recorded. Stebbing (1910) reported *Ampelisca pusillus* Sars from south-eastern Australia but the record is dubious. In collections from the Australian Museum, the Museum of Victoria and from other sources we have rediscovered *A. australis* and *A. acinaces*. In addition, we have discovered 14 new species in the genera *Ampelisca*, *Byblis* and *Haploops*. This is only part of our collection, and indicates that when the Australian ampeliscids are better known the number of species will be similar to, or exceed that of, other well-known areas such as New England (Bousfield, 1973), southern California (J.L. Barnard, 1960), the north-eastern Pacific (Dickinson, 1982, 1983), the Mediterranean Sea (Bellan-Santini, 1982), the British Isles (Lincoln, 1979) and southern Africa (Griffiths, 1976).

Groups of ampeliscid species are usually very similar in general morphology and differ most clearly through distinctions in antennae, gnathopod 1, pereopod 7, urosome, uropods and telson. In this paper we have diagnosed species using these characters plus a few others, thereby avoiding long, repetitious descriptions. Later, when more material is available for study, certain species such as *A. australis*, may be recognized as complex species groups. This paper illustrates the diagnostic characters of each species and gives a lateral view of the whole animal for most species. In addition,

a key is provided to aid in identification.

Most of the material used in this study comes from macrobenthic surveys of the bays and continental shelf and slope of south-eastern Australia, between southern Queensland and Tasmania. The New South Wales material comes from dredge samples made by the FRV *Kapala* (Division of Fisheries, New South Wales Department of Agriculture), grab samples taken during the Australian Museum's Hunter District Water Board Survey (HDWBS) and grab and SCUBA samples taken during the Australian Museum Shelf Benthic Survey (AMSBS). Collections from the Hawkesbury River and Broken Bay were made by the Department of Marine Ecology, Australian Museum (AMHRS) and collections from Botany Bay were made by the State Pollution Control Commission (SPCC). Most of this material is held in the Australian Museum (AM).

Collections from Bass Strait were obtained from the Museum of Victoria's Bass Strait Survey (BSS). The Victorian Ministry for Conservation, Marine Studies Group, sampled in Western Port as part of the Crib Point Benthic Survey (CPBS) and the Westernport Bay Environmental Study (WBES). The Marine Studies Group also sampled in Port Phillip Bay as part of the Port Phillip Bay Environmental Study (PPBES). Details of this work were reported by Poore, *et al.* (1975). These collections are held in the Museum of Victoria, Melbourne (NMV) (formerly known as the National Museum of Victoria).

Benthic samples from Moreton Bay made by the Department of Zoology, University of Queensland (QUBS) are also used in this study. The material is held in the Queensland Museum, Brisbane (QM).

New specific epithets are Australian aboriginal place names chosen only for their euphony, and are treated

as arbitrary combinations of letters. The following abbreviations are used in the figures: A1,2: antenna 1,2; Cl: coxa 1; EPI-3: epimeron 1-3; Gl: gnathopod 1; MD: mandible; MX1: maxilla 1; MP: maxilliped; MPp: maxillipedal palp; P3-7: peraeopod 3-7; T: telson; U1-3: uropod 1-3; UR: urosome.

Key to Species of Ampeliscidae from South-eastern Australia

1. Head as long as deep; lobe on article 2 of peraeopod 7 not expanded distally, with posterior margin nearly vertical.....*Haploops* (one species, *H. oonah*)
—Head longer than deep; lobe on article 2 of peraeopod 7 expanded distally, with posterior margin oblique.....2
2. Peraeopod 7, free anterior margin of article 2 lacking setae near junction with article 3, article 7 broad at base, not spine-like.....*Ampelisca*... 3
—Peraeopod 7, free anterior margin of article 2 setose near junction with article 3, article 7 spine-like.....*Byblis*... 14
3. Uropod 3, outer ramus ovate; telson longer than broad, with spines along the cleft and terminally.....*A. bidura*
—Uropod 3, rami lanceolate; telson as long as broad, with spines mid-dorsally on each lobe.....4
4. Antenna 1 much longer than peduncle of antenna 2; peraeopod 7 with article 2 overlapping article 4.....5
—Antenna 1 shorter than or subequal to peduncle of antenna 2; peraeopod 7 with article 2 not overlapping article 4.....8
5. Peraeopod 7, article 3 longer than article 4; uropod 2, outer ramus without a subterminal spine; coxae 1-3 without posteroventral hooks; mandibular palp, article 2 inflated.....*A. euroa*
—Peraeopod 7, article 3 shorter than or equal to article 4; uropod 2, outer ramus with a subterminal spine; coxae 1-3 with posteroventral hooks; mandibular palp, article 2 linear.....6
6. Without eyes or cuticular lenses; uropod 2, rami each with one dorsal spine row; peraeopod 7, article 2 without setae along distal margin.....*A. narooma*
—With 2 pairs of eyes and cuticular lenses; uropod 2, rami each with 2 dorsal spine rows; peraeopod 7, article 2 with dense setal row along distal margin.....7
7. Antennae 1 and 2 subequal; epimeron 3 with square posteroventral corner.....*A. calooma*
—Antenna 1 shorter than antenna 2; epimeron 3 with strongly projecting tooth.....*A. jingera*
8. Peraeopod 7, article 6 linear, more than twice as long as broad.....9
—Peraeopod 7, article 6 inflated, rarely more than 1.5 times as long as broad.....10
9. Urosomites 2-3 with a prominent dorsal keel; antenna 1, article 2 more than twice length of article 1; epimeron 3 without a posteroventral tooth.....*A. acinaces*
—Urosomites 2-3 without a dorsal keel; antenna 1, articles 1 and 2 subequal; epimeron 3 with a posteroventral tooth.....*A. ballina*
10. Urosomite 1 with a saddle-shaped dorsal keel; peraeopod 7, anterodistal corner of lobe of article 2 obscuring distal margin of article 3.....*A. toora*

- Urosomite 1 with a simple or upturned dorsal keel; peraeopod 7, anterodistal corner of lobe of article 2 not obscuring distal margin of article 3.....11
- 11. Uropod 2, inner ramus with two dorsal rows of short spines.....*A. australis*
- Uropod 2, inner ramus with a single dorsal row of long and short spines.12
- 12. Urosomite 1 with prominent dorsal keel, obliquely truncate posteriorly; peraeopod 7, ventral margin of article 2 transverse, reaching only as far as angle on posterior margin of article 3; antenna 1 reaching only to end of article 4 of antenna 2.....*A. dimboola*
- Urosomite 1 with a more or less acutely projecting dorsal keel; peraeopod 7, ventral margin of article 2 oblique, reaching beyond angle on posterior margin of article 3; antenna 1 reaching well along or beyond article 5 of antenna 2.....13
- 13. Peraeopod 7, article 2 about as broad as length of anterior margin; uropod 2, outer ramus with 2 long subterminal spines; antenna 1, article 1 much longer than broad.....*A. tilpa*
- Peraeopod 7, article 2 narrower than length of anterior margin; uropod 2, outer ramus with 1 longer subterminal spine; antenna 1, article 1 slightly longer than broad.....*A. yuleba*
- 14. Without cuticular lenses; gnathopod 1 subchelate, palm slightly oblique; telson, lobes with an apical spine.....*B. gerara*
- With 2 pairs of eyes and cuticular lenses; gnathopod 1 simple; telson, lobes without apical spines.....15
- 15. Antennae subequal; lobe on peraeopod 7 broadly rounded, truncate, reaching slightly beyond distal margin of article 4.....*B. tinamba*
- Antenna 1 shorter than antenna 2; lobe on peraeopod 7 elongate, reaching well along article 5.....16
- 16. Telson distally truncate; coxa 1 broadly convex ventrally, not reaching anterior margin of head.....*B. mildura*
- Telson distally rounded; coxa 1 tapering distally, straight ventrally, reaching anterior margin of head.....*B. bega*

Family Ampeliscidae

Ampelisca Krøyer

Type-species. *Ampelisca eschrichtii* Krøyer, 1842 (original designation).

Remarks. Species of the genus *Ampelisca* are distinguished by the absence of setae on the anterior margin of article 2 of peraeopod 7, and the broadly-based article 7 on the same limb. Dickinson (1982) diagnosed the genus in detail and provided a key to species in the north-eastern Pacific region. J.L. Barnard (1960) provided a key to the species then known.

Ampelisca acinaces Stebbing

Figs 1, 2

Ampelisca acinaces Stebbing, 1888: 1036, pls 101, 102. — Della Valle, 1893: 476, pl. 57 fig. 43; Stebbing, 1906: 108, figs 25, 26; 1910: 635; Sheard, 1937: 19; J.L. Barnard, 1958: 17; 1960: 7, 18; Imbach, 1967: 63. not *Ampelisca acinaces*. — Thomson, 1902: 464; Chilton,

1906: 268; 1917: 87 (as a junior synonym of *A. eschrichtii*); K.H. Barnard, 1931: 119.

Material examined. 2 specimens AM P34152, east of Long Reef, New South Wales, 33°46'S 151°43'E, dredged, 176 m, 5 December 1977, *Kapala* station K77-23-01.

Diagnosis. Head about 1.4 times as long as deep without a rostrum; anteroventral corner angular, anteroventral margin oblique; 2 pairs of eyes, each with a cuticular lens. Antenna 1 nearly as long as peduncle of antenna 2; peduncular article 2 at least 2.3 times as long as article 1. Antenna 2 as long as body. Coxae 1-3 with hooks on posteroventral corners. Peraeopod 4 with article 4, 3.5 times as long as wide. Peraeopod 7, distal corner of article 2 not reaching distal margin of article 3, posterior margin oblique, posteroventral corner rounded, ventral margin slightly oblique, setose; article 3 about 1.6 times as long as article 4; articles 4 and 5 bearing well-developed anterior lobes; article 6 not inflated, about 2.5 times as long as broad and longer than articles 4 and 5 combined. Epimera 1-3 with broadly rounded posteroventral corners. Urosomite 1

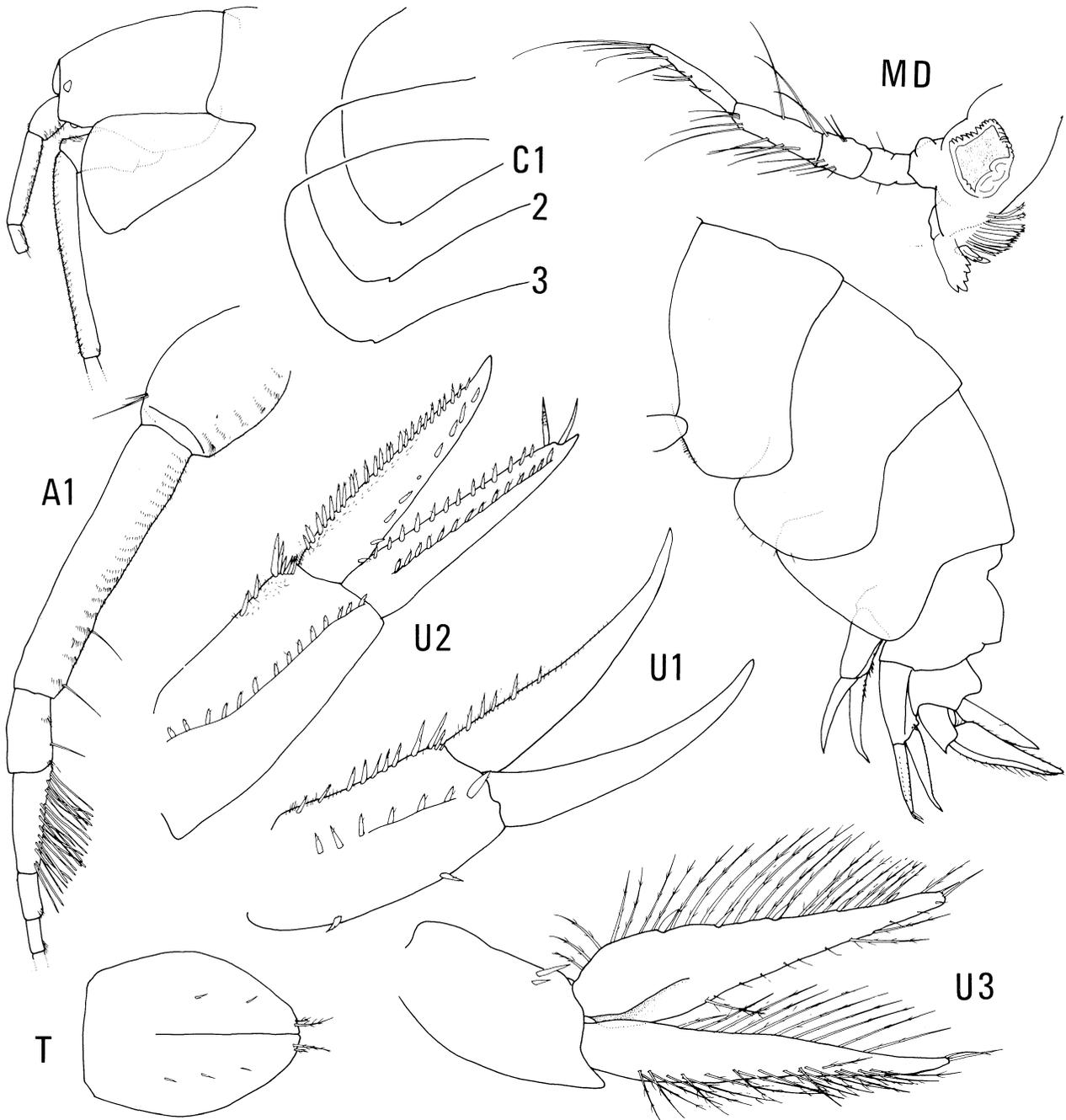


Fig. 1. *Ampelisca acinaces* Stebbing, 1888, male, east of Long Reef, New South Wales.

with a long, even dorsal keel; urosomites 2-3 with a triangular dorsal crest. Uropod 2, inner ramus with 2 dorsal rows of short spines, outer ramus with 2 dorsal rows of short spines, plus 2 long subterminal spines. Uropod 3, rami narrowly lanceolate, both with plumose setae. Telson 1.5 times as long as broad, cleft 0.7 times length, with a row of mid-dorsal setae and 2 apical setae on each lobe.

Remarks. *Ampelisca acinaces* has remained unreported since its original description by Stebbing (1888). The material we have examined from collections made recently off the coast of New South Wales by the

FRV *Kapala* agrees in all details with Stebbing's *Challenger* specimens.

Along the east coast of Australia, *A. acinaces* is most closely related to *A. ballina* and differs from it in the length of article 2 of the peduncle of antenna 1, the head shape, the rounded posteroventral corner of epimeron 3, and the raised dorsal keel of urosomites 2-3.

Distribution. New South Wales; shelf, 64-176 m.

Ampelisca australis Haswell

Figs 3, 4

Ampelisca australis Haswell, 1879: 257, 258, p1. 9 fig. 1. -

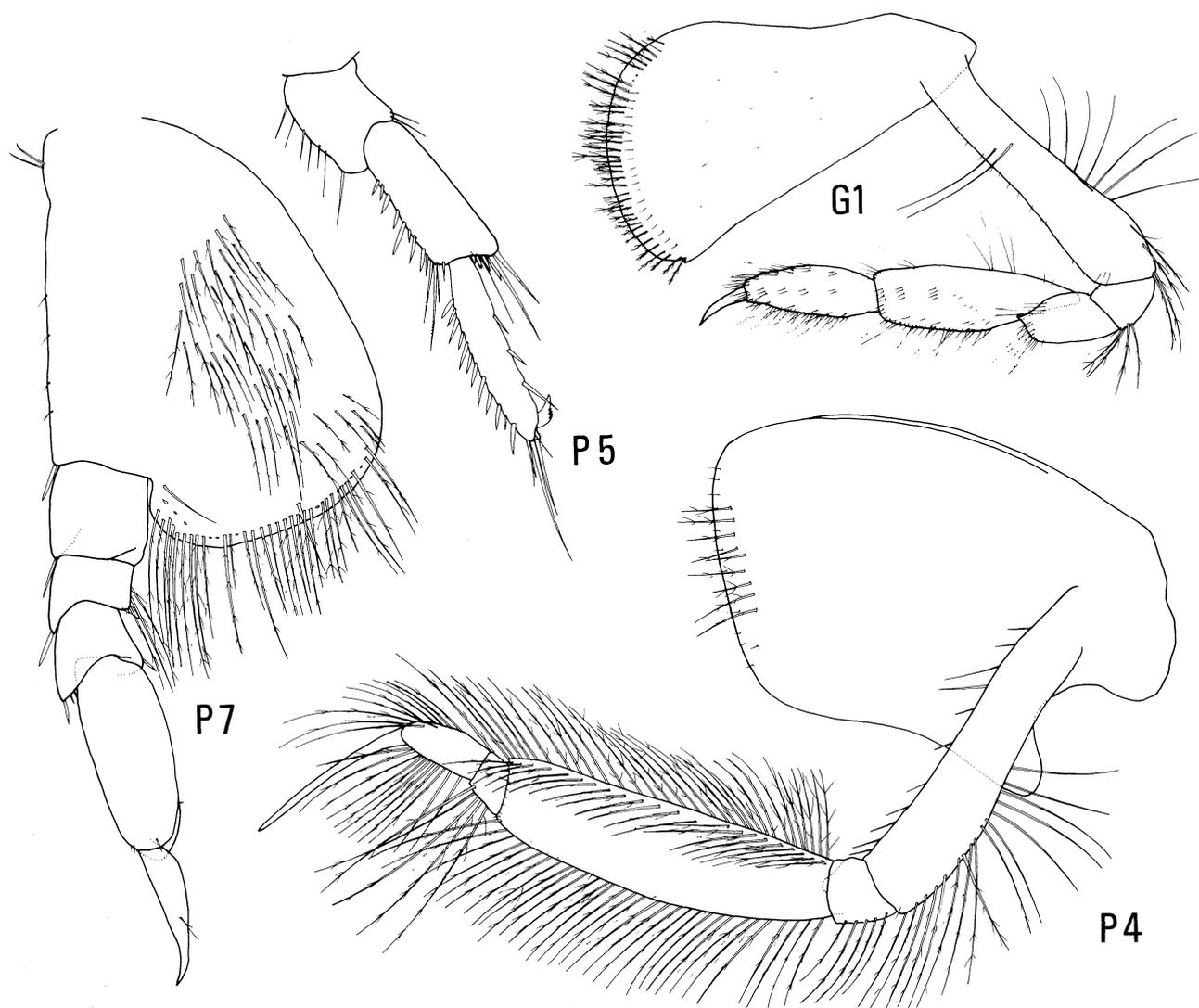


Fig. 2. *Ampelisca acinaces* Stebbing, 1888, male, east of Long Reef, New South Wales.

1882: 235, 236; 1885: 97, 98, pl. 12 figs 11–16, pl. 13 fig. 4 (specimens from Port Jackson only); Della Vale, 1893: 471; Stebbing, 1906: 104; 1910: 634; Sheard, 1937: 19; J.L. Barnard, 1958: 19; 1960: 9; 1974: 140; Imbach, 1967: 63.

Ampelisca sp. 3. — Poore *et al.*, 1975: 33, 65.

not *Ampelisca australis*. — Schellenberg, 1938: 6–8, fig. 2; J.L. Barnard, 1965: 463 (table).

Material examined. One specimen, AM P3431, Port Jackson, New South Wales, 9–11 m; 10 specimens, AM P34155 and NMV J2170, east of Long Reef, New South Wales, dredged, 175 m, 5 December 1977, *Kapala* station K77-23-01; 30 specimens, AM P34126, east of Bondi, New South Wales, 80 m, dredged, R. Springthorpe, 11 December 1980, *Kapala* station K80-20-11; 164 specimens, AM P22672, P22673, P22675 and P22679 to P22682, east of Malabar, New South Wales, 31–82 m, fine sand to gravel, AMSBS stations; 2 specimens, AM P34138 and P34139, east of Wollongong, New South Wales, dredged, 277 m, 13 December 1978, *Kapala* station K78-27-08; 26 specimens, AM P34165, off Moona Moona Creek, Jervis Bay, New South Wales, 8 m, P.B. and

P.M. Berents, 21 February 1982; 18 specimens, NMV J2215 to J2124, Western Port, Victoria, 2–16 m, muddy to shelly sand, CPBS and WBES stations; 23 specimens, NMV J2125, J2126, Port Phillip Bay, Victoria, 4–9 m, sand, PPBES stations; 300+ specimens, NMV J2127 to J2132, J7101, J7105, J7711 to J7726, throughout Bass Strait, 16–60 m, from 19 BSS stations.

Diagnosis. Head about 1.4 times as long as deep with a very short rostrum; anteroventral margin oblique; 2 pairs of eyes, each with a cuticular lens. Antenna 1 shorter than peduncle of antenna 2, just exceeding article 4; peduncular article 2 about 1.3 times as long as article 1. Antenna 2 half of two-thirds as long as body. Coxae 1–3 with well-developed posteroventral hooks. Peraeopod 4 with article 4 about 2.8 times as long as broad. Peraeopod 7, article 2 with posteroventral corner rounded, ventral margin oblique, slightly convex and setose, distal corner sharp, not reaching distal margin of article 3; articles 3, 4 and 5 subequal in length; articles 4 and 5 bearing anterior

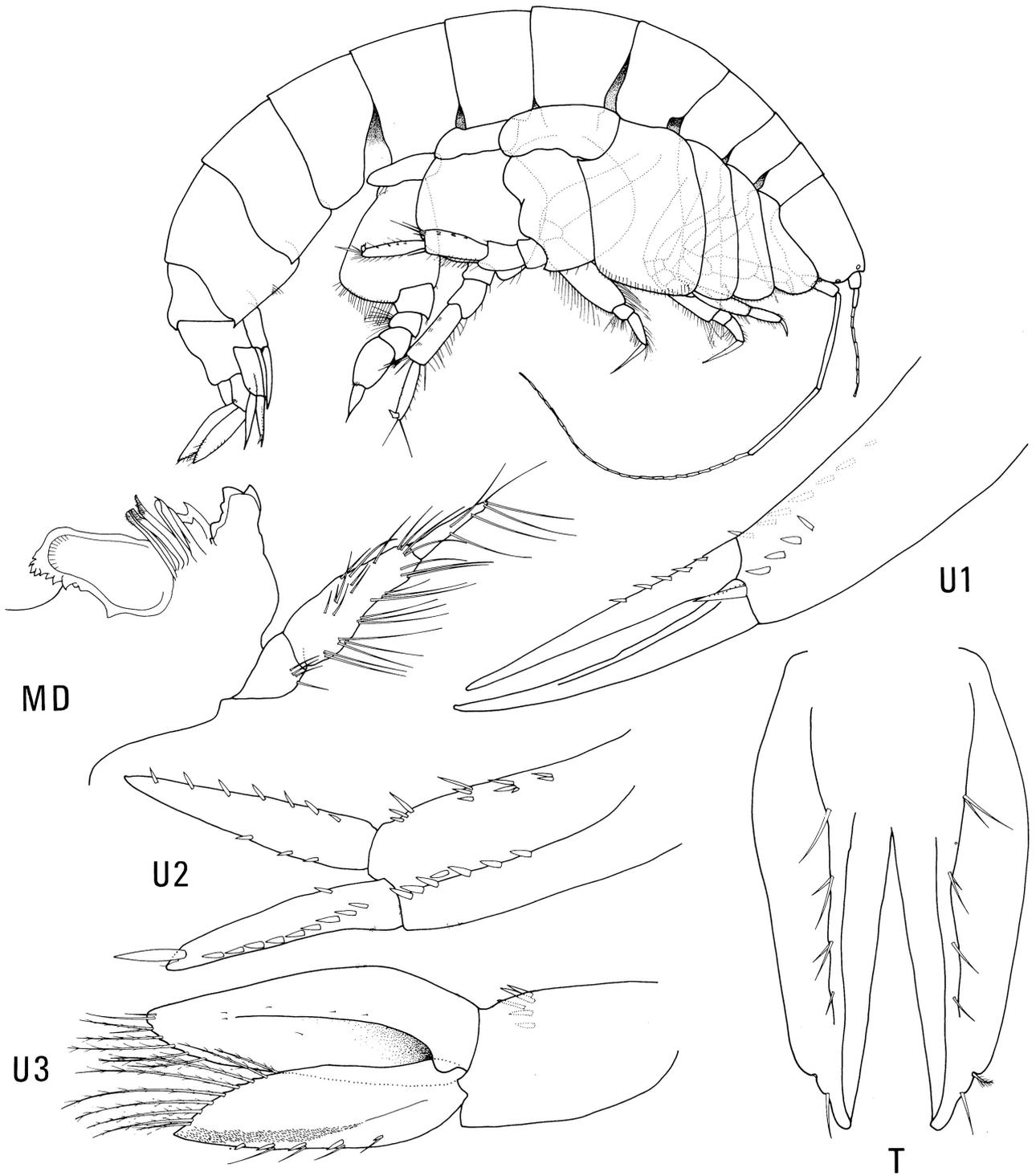


Fig. 3. *Ampelisca australis* Haswell, 1880, female, 15.1 mm, Port Phillip Bay, Victoria.

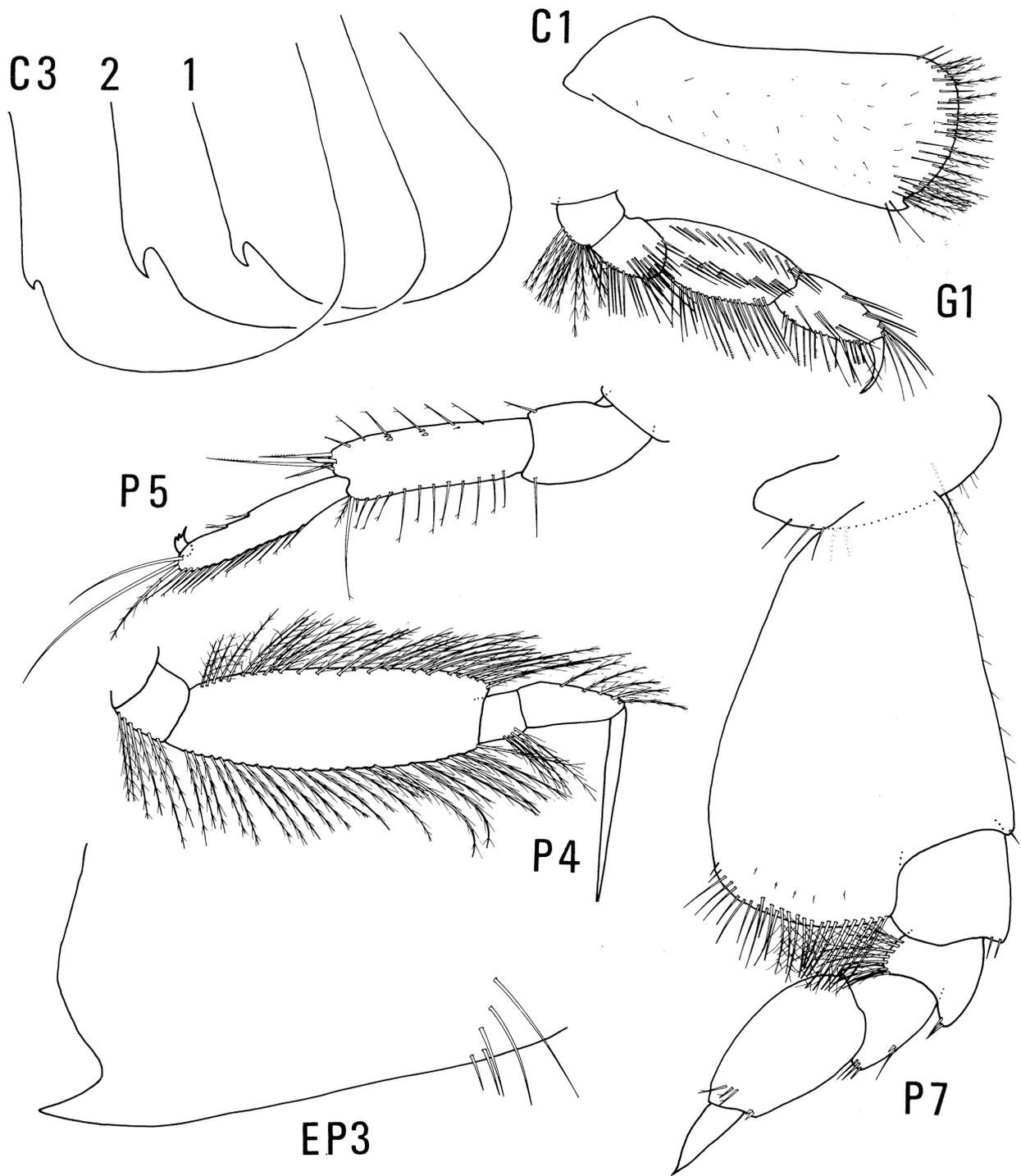


Fig. 4. *Ampelisca australis* Haswell, 1880, female, 15.1 mm, Port Phillip Bay, Victoria.

lobes; article 6 inflated, about 1.7 times as long as broad and nearly 1.5 times as long as articles 4 and 5 combined. Epimeron 1 with rounded posteroventral corner; epimeron 2, posteroventral corner with an acutely projecting tooth; epimeron 3, posteroventral corner with shallow sinus and acutely projecting tooth. Urosomite 1 with a dorsal keel, rounded posteriorly. Coalesced urosomites 2 and 3 with sinuoid dorsal margin. Uropod 2, both rami with 2 rows of minute dorsal spines, shorter outer ramus with a strong subterminal spine. Uropod 3, rami subequal in length, broadly lanceolate; inner ramus with long setae along inner distal margin; outer ramus with plumose setae along inner distal margin; outer margin with a row of short spines and a narrow strip of minute denticles distolaterally. Telson 1.8 times as long as broad, cleft 0.7 times length, with a row of mid-dorsal setae and a pair of subapical sensory setae on each lobe.

Remarks. The original description of *Ampelisca australis* Haswell, 1880, is not very detailed and the only material labeled as 'type' (AM P3431) is probably not Haswell's type material but a later collection. Fortunately Haswell illustrated the nearly rudimentary first antenna of *A. australis* which distinguishes this species from all others in south-eastern Australia. This allowed us to identify new material in our collections with Haswell's description of *A. australis*. The so-called 'type' specimen also has a rudimentary antenna 1 and is conspecific.

Ampelisca australis is easily distinguished by antenna 1, but it is closely related to at least four other species in south-eastern Australia: *A. dimboola*, *A. tilpa*, *A. toora* and *A. yuleba*. All of these species are characterized by having uropod 3 with broadly lanceolate rami bearing swimming setae on the inner distal margins and a band of minute denticles on the outer margin of the inner ramus. They have a short posteroventral lobe on article 2 of pereopod 7 and a broad article 6, and their telsons are longer than broad with a row of mid-dorsal setae on each lobe.

Distribution. New South Wales, Bass Strait, Victoria and Tasmania; shelf and bays, 9–293 m.

Ampelisca ballina n.sp.

Figs 5, 6

Type-material. HOLOTYPE: male, 14.4 mm, AM P22666 (with 4 slides), east of Malabar, New South Wales, 33°58'S 151°33'E, 187 m, dredged, 9 August 1973, AMSBS station 44. PARATYPE: 1 specimen, AM P34151, south-east of Broken Bay, New South Wales, 33°43'S 151°40'E, dredged, 143 m, 5 December 1978, *Kapala* station K78-26-02.

Diagnosis. Head about 1.4 times as long as deep, anteroventral margin slightly concave; 2 pairs of eyes, each with a cuticular lens. Antenna 1 nearly as long as peduncle of antenna 2; peduncular article 2 subequal in length to article 1. Antenna 2, length unknown, greater than half body length. Coxae 1 and 2 with small posteroventral hooks. Coxa 3 with rounded

posteroventral corner. Pereopod 4 with article 4, 3.3 times as long as wide. Pereopod 7, posterior margin of article 2 broadly rounded, widest at midpoint and bearing plumose setae along distal half, distal corner rounded, extending beyond distal margin of article 3; article 3 about 1.5 times as long as article 4; article 4 with well-developed anterior lobe; article 6 not inflated, 2.3 times as long as broad and subequal in length to articles 4 and 5 combined. Epimera 1 and 2 with broadly rounded posteroventral corners; epimeron 3, posteroventral corner with acute tooth and deep sinus. Urosomites 1 and 2–3 each with a shallow dorsal sinus. Uropod 2, both rami with 2 dorsal rows of spines, outer ramus with long subterminal spine. Uropod 3, rami elongate, subequal in length, lanceolate; inner ramus with a row of spines along inner margin; outer ramus with a short row of distal plumose setae along inner margin. Telson 1.3 times as long as broad, cleft 0.6 times length; with a short row of mid-dorsal spines, a pair of proximolateral setae and a pair of distolateral setae on each lobe.

Remarks. *Ampelisca ballina* is most closely related to *A. acinaces*. Both species are characterized by long, slender, lanceolate rami on uropod 3 and a linear article 6 on pereopod 7. *Ampelisca ballina* differs from *A. acinaces* in having a short second article on the peduncle of antenna 1 and a hook on the posteroventral corner of epimeron 3.

Ampelisca ballina appears to be closely related to *A. hancocki* J.L. Barnard from the eastern Pacific Ocean. The most obvious differences between them include the length to width ratio of article 6 of pereopod 7, the dorsal setation of the telson and the lack of a subapical spine on the outer ramus of uropod 2 in *A. hancocki*.

Distribution. New South Wales; shelf 143–187 m.

Ampelisca bidura n.sp.

Figs 7, 8

Type-material. HOLOTYPE: 4.4 mm, AM P34131 (with 3 slides), east of Bondi, New South Wales, 33°52'S 151°23'E, 80 m, dredged, R. Springthorpe, 11 December 1980, *Kapala* station K80-20-11. PARATYPES: 2 specimens, AM, P34132, type-locality; 3 specimens, NMV J1572, east of Broken Bay, New South Wales, 33°32'S 152°08'E, 914 m, dredged, R. Springthorpe, 10 December 1980, *Kapala* station K80-20-08; 1 specimen, AM P34133, east of Long Reef, New South Wales, 33°46'S 151°43'E, 176 m, dredged, 5 December 1977, *Kapala* station K77-23-01; 4 specimens, AM P25472, east of Port Kembla, New South Wales, 34°26-27'S 151°27'E, 1200 m, *Globigerina* ooze, dredged, J.K. Lowry, 13 December 1976, *Kapala* station K76-23-02.

Additional material. 26 specimens, AM P34157, north-east of Long Reef, New South Wales, dredged, 176 m, 5 December 1977, *Kapala* station K77-23-01; 7 specimens, AM P34159, north-east of Long Reef, New South Wales, dredged, 366 m, 5 December 1977, *Kapala* station K77-23-03; 14 specimens, NMV J7103, north-east of Port Kembla, dredged, 161 m, 13 December 1978, *Kapala* station K78-27-11; 1

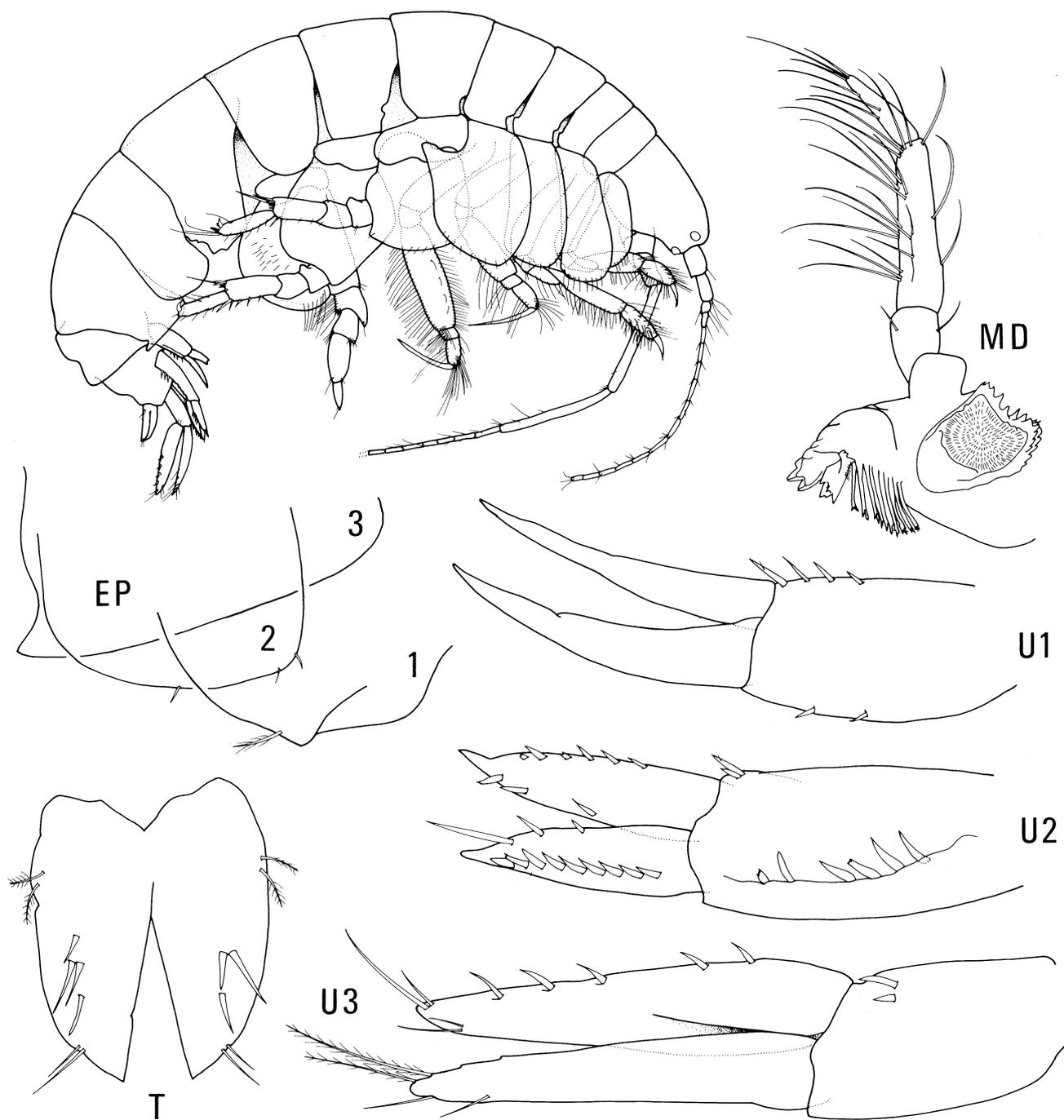


Fig. 5. *Ampelisca ballina* n.sp., holotype, male, 14.4 mm, east of Malabar, New South Wales.

specimen, NMV J7743, eastern Bass Strait, dredged, 293 m, 28 March 1979, BSS station 36.

Diagnosis. Head slightly deeper than long, with small rostrum; anteroventral corner broadly rounded; eyes absent. Antenna 1 nearly as long as peduncle of antenna 2; peduncular article 2 slightly shorter than article 1. Antenna 2 less than half length of body. Coxae 1-3 with rounded posteroventral corners. Peraeopod 4 with article 4, 2.3 times as long as wide. Peraeopod 7,

posteroventral margin of article 2 broadly rounded, lined with plumose setae along distal half, distal corner rounded, not extending to distal margin of article 3; article 3 nearly 1.4 times as long as article 4; article 4 with a small anterior lobe; articles 5 and 6 subequal in length and article 6 not inflated. Epimeron 1 with broadly rounded posteroventral corner. Epimera 2 and 3 with posteroventral corners nearly forming right angles. Urosomite 1 with dorsal margin produced

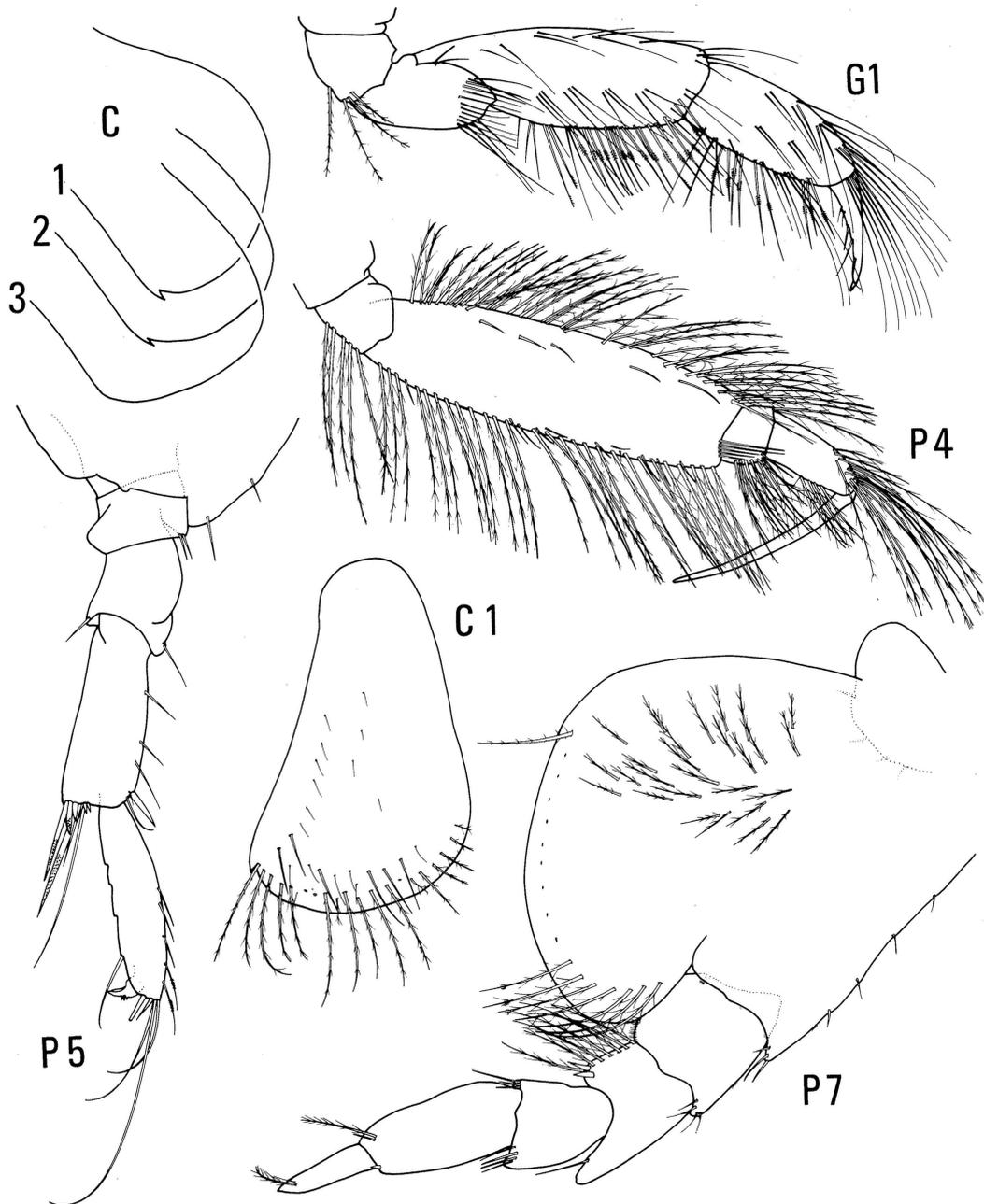


Fig. 6. *Ampelisca ballina* n.sp., holotype, male, 14.4 mm, east of Malabar, New South Wales.

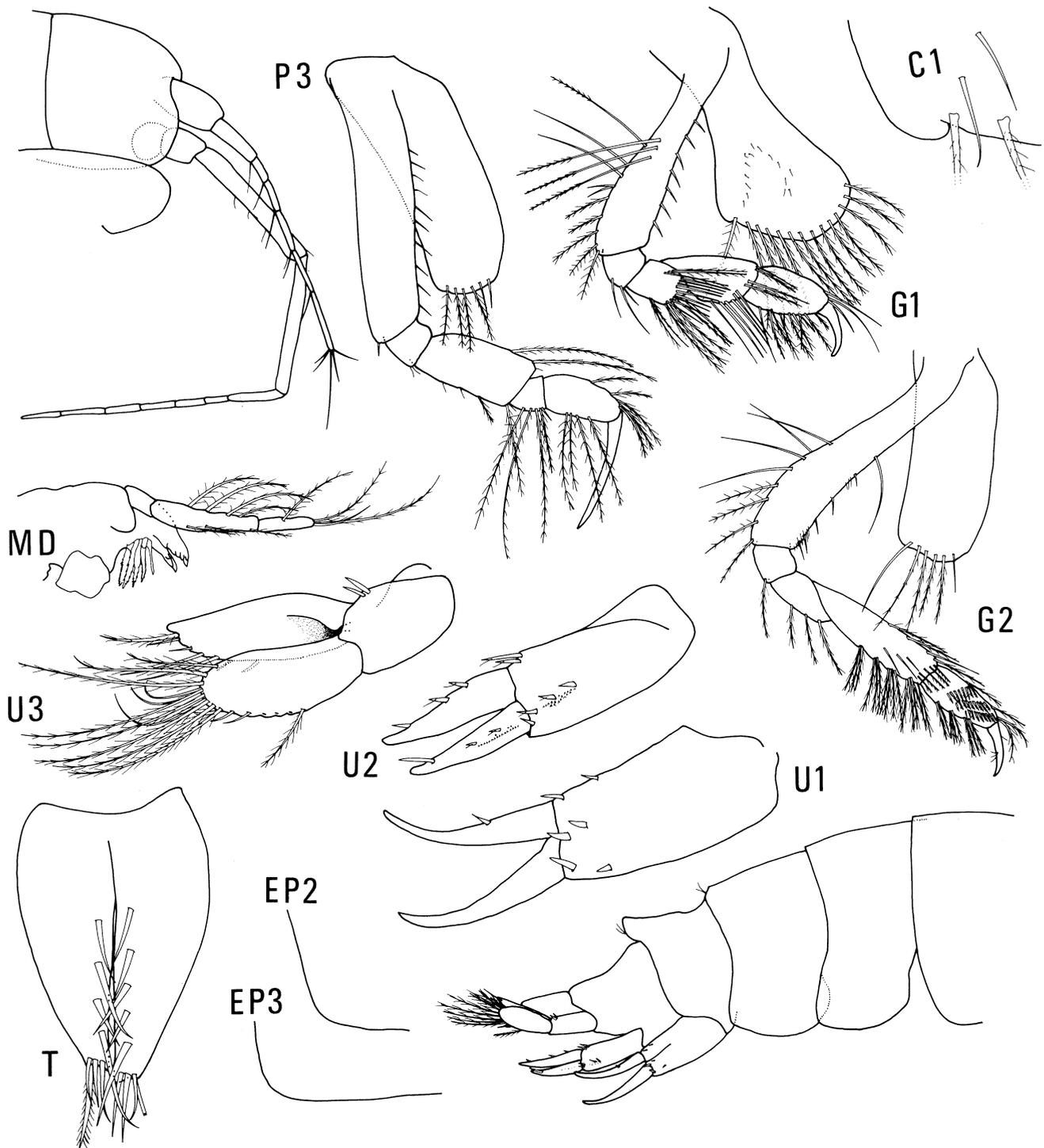


Fig. 7. *Ampelisca bidura* n.sp., holotype, 4.4 mm, east of Bondi, New South Wales.

posteriorly into a large triangular carina. Uropod 2, rami with few dorsal spines, the outer ramus with a long subterminal spine. Uropod 3, inner ramus slightly longer than outer ramus, with distal plumose setae along inner margin; outer ramus apically rounded, with plumose setae extending distally from midpoint of outer margin. Telson about 1.4 times as long as broad, cleft 0.9 times length, with a strong row of spines along margin of cleft

and 4 apical spines on each lobe.

Remarks. *Ampelisca bidura* is not similar to any of the known Australian species. It is more closely related to a group of North Pacific species which are characterized by: short head; peraeopod 7 with short posteroventral lobe on article 2 and simple articles 3 to 5 without well-developed lobes; uropod 3 with broad rami, inner ramus rounded apically; urosomite 1 with

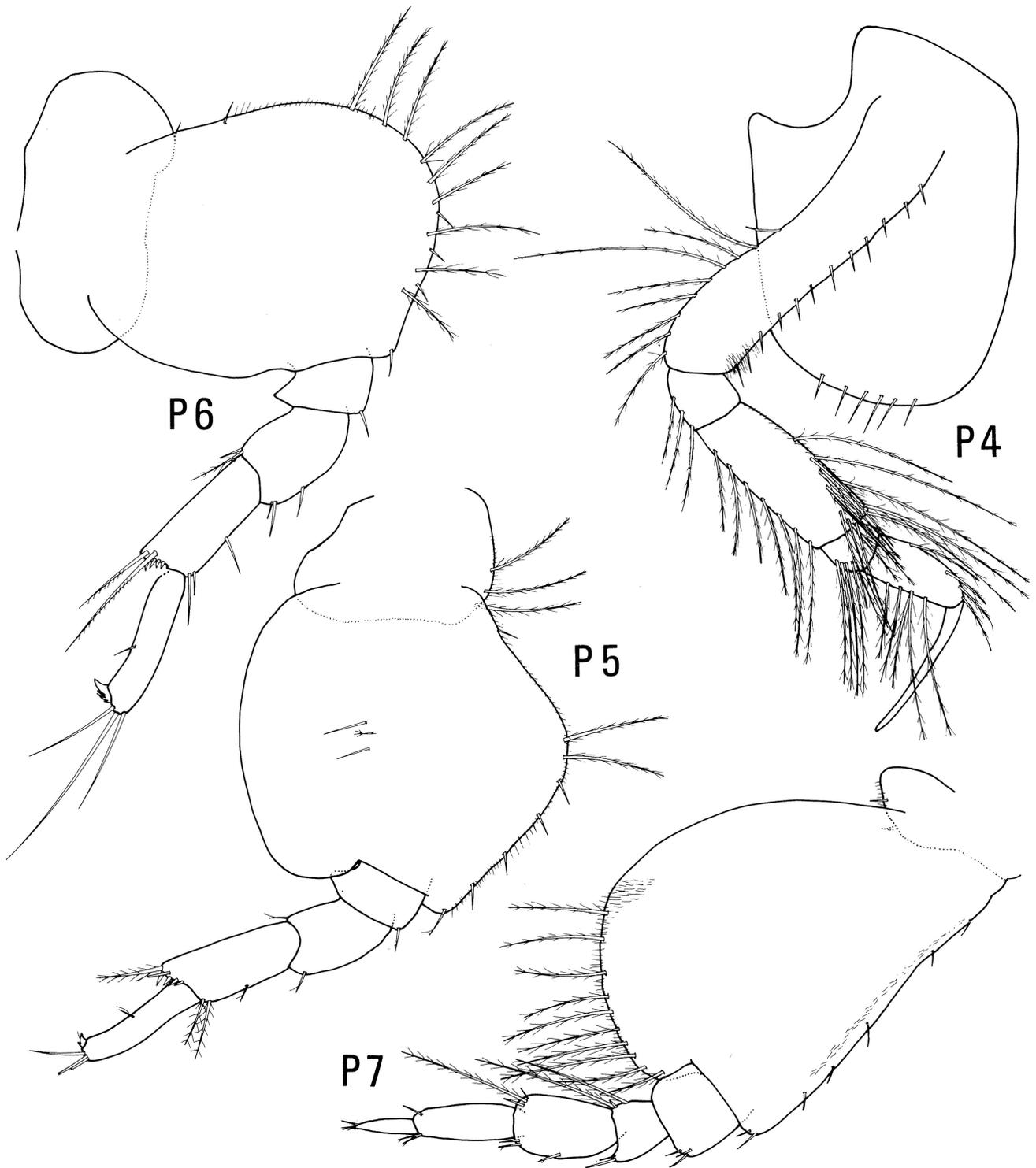


Fig. 8. *Ampelisca bidura* n.sp., holotype, 4.4 mm, east of Bondi, New South Wales.

the distal margin produced into a triangular carina; and a telson with a row of setae or spines along margins of cleft.

Dickinson (1982) recognized this species group and included *A. plumosa* Holmes, *A. birulai* Brügger and *A. hessleri* Dickinson. We also recognize *A. misakiensis* Dahl, from the Sagami Sea as a member of this group. Imbach (1967) reported *A. misakiensis* from the Bay of Nha-Trang in the South China Sea, but from her illustrations and remarks we think she was describing at least one unknown species. Her illustrations of a large female differ from Dahl's (1945) illustrations in having a shorter antenna 1, a large rostrum on the head, a simple first gnathopod, more strongly produced posterodistal corners on article 4 of pereopods 5 and 6, a shorter stouter fourth article on pereopod 7 and a rounded posteroventral corner on epimeron 3.

Within this group, *A. bidura* appears to be most closely related to *A. hessleri*. Both species have similar head shapes, similar first gnathopods and similar telsons. *Ampelisca bidura* differs from *A. hessleri* in lacking eyes, in having shorter first antennae and in having a subapical spine on the outer ramus of uropod 2. It differs from *A. plumosa* in the shape of the head, in having a more oblique palm on gnathopod 1, in having stouter setae on the telson and shorter, broader rami on uropod 3. *Ampelisca birulai* differs from *A. bidura* in having a subchelate gnathopod 1, longer and thinner rami on uropod 3 and very few setae on the telson. *Ampelisca misakiensis*, which appears to be closely related to *A. birulai*, is distinguished from *A. bidura* by its subchelate first gnathopods and the elongate fourth article of pereopod 7. The *A. misakiensis* of Imbach (1967) is easily distinguished from *A. bidura* by its long cephalic rostrum.

Distribution. New South Wales, Bass Strait; shelf and slope, 80-1200 m.

Ampelisca calooma n.sp.

Figs 9, 10

Type-material. HOLOTYPE: 13.2 mm, AM P34169 (with 4 slides), north-east of Long Reef, New South Wales, 33°43'S 151°40'E, dredged, 143 m, 5 December 1978, *Kapala* station K78-26-02. PARATYPES: 2 specimens, AM P34170, 1 specimen NMV J7104, type-locality; 1 specimen, AM P34171, north-east of Port Kembla, New South Wales, 34°20'S 151°18'E, dredged, 161 m, 13 December 1978, *Kapala* station K78-27-11; 1 specimen, AM P34172, north-east of Long Reef, New South Wales, 33°41'S 151°53'E, dredged, 366 m, 5 December 1977, *Kapala* station K77-23-03; 1 specimen, AM P34130, east of Long Reef, New South Wales, dredged, 176 m, 5 December 1977, *Kapala* station K77-23-01.

Additional material. 1 specimen, NMV J7740, eastern Bass Strait, 140 m, 15 November 1981, BSS station 170.

Diagnosis. Head about 1.2 times as long as deep, without a rostrum; anteroventral corner square, anteroventral margin oblique; 2 pairs of eyes, each with a cuticular lens. Antenna 1 much longer than peduncle of antenna 2, almost as long as antenna 2; peduncular

article 2 about 1.7 times as long as article 1. Antenna 2 about two-thirds as long as body. Coxae 1-3 with posteroventral hooks. Pereopod 4 with article 4, 3.3 times as long as broad. Pereopod 7, distal lobe of article 2 reaching about midway along article 4, posteroventral margin of article 2 continuously convex, setose ventrally; article 3 about 1.5 times as long as article 4; article 4 with an acute anterodistal lobe; article 5 with an anterior lobe; article 6 only slightly inflated, about 1.8 times as long as broad, as long as articles 4 and 5 combined. Epimera 1 and 2 with rounded posteroventral corner; epimeron 3 with a square posteroventral corner. Urosomite 1 with a broad dorsal rounded keel; urosomites 2-3 without dorsal keel. Uropod 2, rami each with 2 dorsal spine rows; outer ramus with a long subterminal spine. Uropod 3, rami subequal in length, narrow-lanceolate; outer ramus with row of spines on outer margin and setae on inner margin; inner ramus with plumose setae distally. Telson 1.2 times as long as wide, cleft three-quarters of length; lateral margins convex and tapering from base to a subacute apex; setae marginally and 2 pairs dorsally, no spines.

Remarks. Among the species in south-eastern Australia, *Ampelisca calooma* appears to be most closely related to *A. jingera*. It can be easily distinguished from *A. jingera* by its subequal antennae, well-developed anterodistal lobe on article 4 of pereopod 7 and the lack of a posteroventral hook on epimeron 3.

Distribution. New South Wales and Bass Strait; shelf, 140-366 m.

Ampelisca dimboola n.sp.

Figs 11, 12

Type-material. HOLOTYPE: female, 10.0 mm, AM P23172, 1.5 km east of Burwood Beach, New South Wales, 32°57.5'S 151°44.7'E, fine sand, 22 m, 20 September 1975, HDWBS station 02. PARATYPES: 4 specimens, AM P23166, P23170, P23173, P23174, type-locality, 20-28 m, 18 December 1975, HDWBS stations 01, 02.

Additional material. 8 specimens, AM P22674, P22676, P22678, east of Malabar, New South Wales, 31-53 m, sand, 17-19 May 1972, AMSBS stations; 2 specimens, AM P34127, P34128, Pittwater, New South Wales, 4 m, sand, 30 March 1977; 1 specimen, AM P34205, off Moona Moona Creek, Jervis Bay, New South Wales, 8 m, P.B. and P.M. Berents, 21 February 1982; 1 specimen, NMV J7707, Ninety-mile Beach, Victoria, 16 m, sand, 31 July 1983, BSS station 212; 4 specimens, NMV J7115 and J7116, off Seaspray, Victoria, 10 m, J.E. Watson, 1979.

Diagnosis. Head about 1.4 times as long as deep, without a rostrum; anteroventral margin oblique; 2 pairs of eyes, each with a cuticular lens. Antenna 1 shorter than peduncle of antenna 2; peduncular article 2 about 1.3 times as long as article 1. Antenna 2 up to two-thirds as long as body. Coxae 1-3 with well-developed

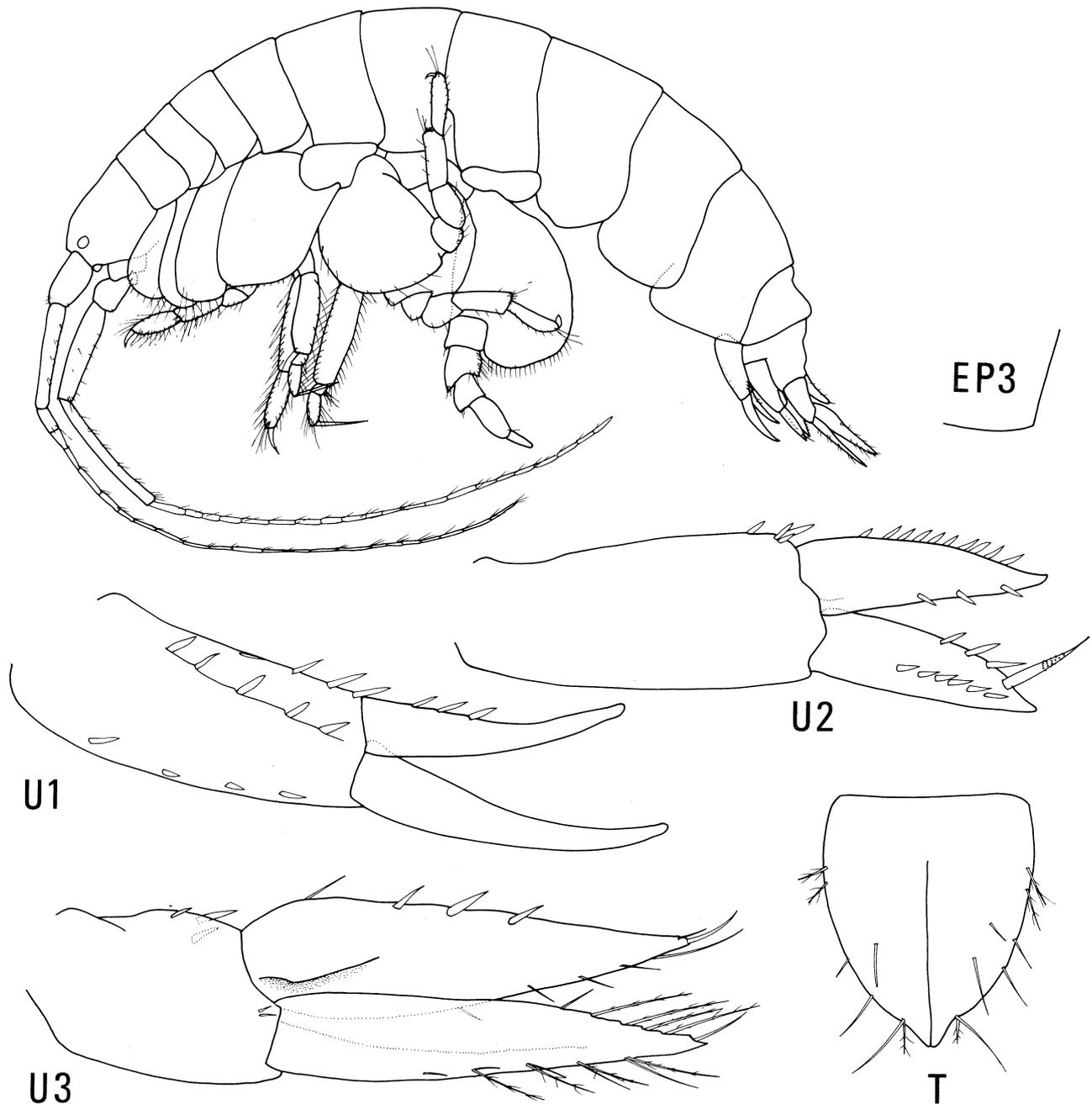


Fig. 9. *Ampelisca calooma* n.sp., holotype, 13.2 mm, north-east of Long Reef, New South Wales.

posteroventral hooks. Peraeopod 4 with article 4 about 3 times as long as broad. Peraeopod 7, article 2 with posteroventral corner rounded, ventral margin transverse, setose, distal corner sharply rounded, reaching midway along posterior margin of article 3; article 4 half length of articles 3 and 5; anterior lobe of article 5 well developed; article 6 inflated, about 1.7 times as long as broad and nearly 1.7 times as long as articles 4 and 5 combined. Epimeron 3, posteroventral corner with shallow sinus and acutely projecting tooth. Urosomite 1 with a dorsal keel, obliquely truncated

posteriorly. Uropod 2, inner ramus with long and short spines, outer ramus with short spines and a strong subterminal spine. Uropod 3, rami subequal in length, broadly lanceolate; inner ramus with long plumose setae along inner distal margin; outer ramus with long plumose setae along inner distal margin, outer margin with a row of short spines and plumose setae and a narrow strip of minute denticles distolaterally. Telson 1.5 times as long as broad, cleft 0.6 times length, with a row of mid-dorsal setae and a pair of subapical setae on each lobe.

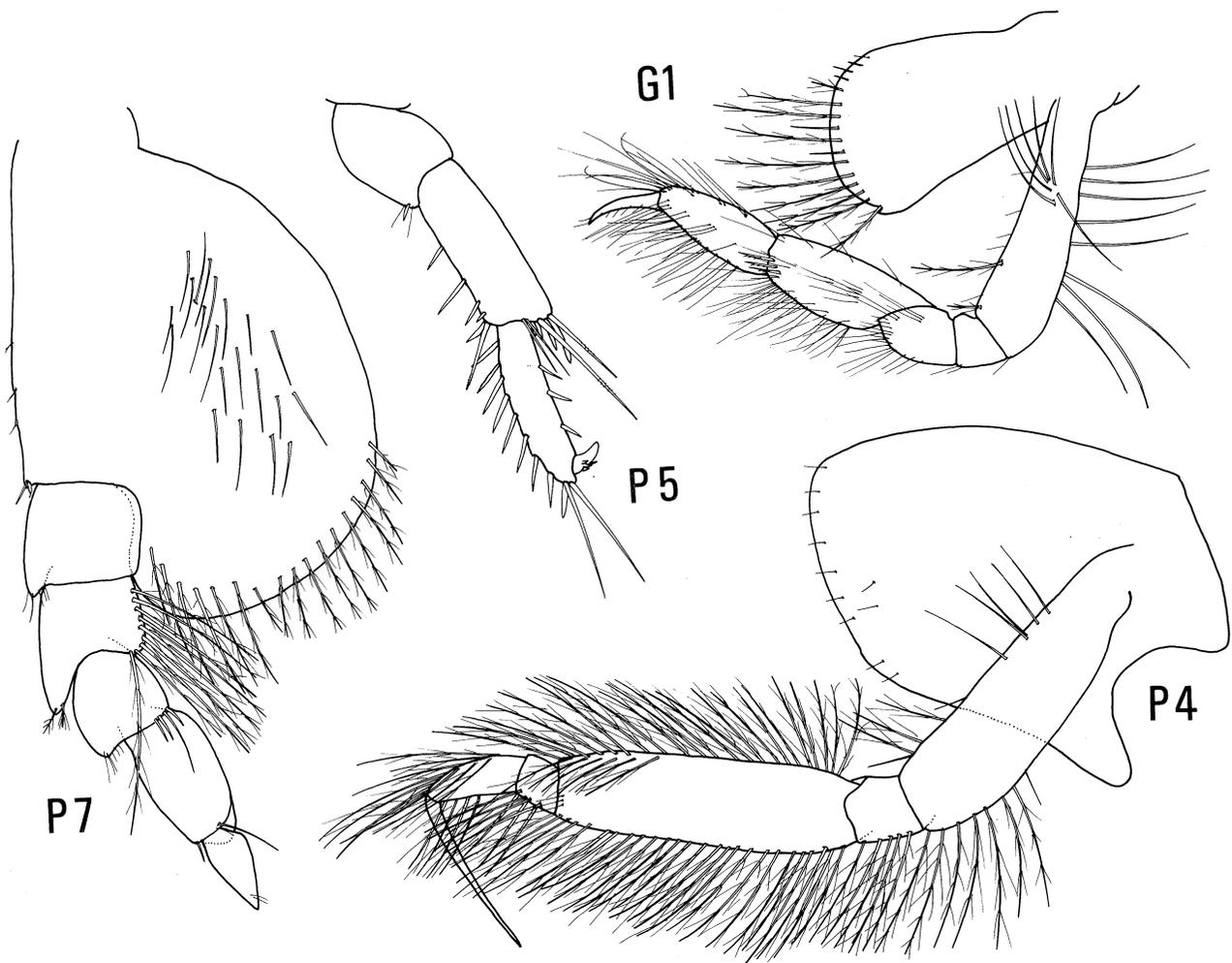


Fig. 10. *Ampeliscia calooma* n.sp., holotype, 13.2 mm, north-east of Long Reef, New South Wales.

Remarks. *Ampeliscia dimboola* is part of the species group discussed under *A. australis*. It is easily distinguished from *A. australis* by the long and short spine row on the inner ramus of uropod 2. It is distinguished from *A. tilpa* and *A. yuleba* by the very short first antennae.

Distribution. New South Wales, eastern Victoria; bays and inner shelf, 4–53 m.

Ampeliscia euroa n.sp.

Figs 13, 14

Ampeliscia aequicornis. — Poore et al., 1975: 33, 65.

Type-material. HOLOTYPE: female, 9.0 mm, NMV J2133 (with 3 slides), Port Phillip Bay, Victoria, 38°02.3'S 144°34.5'E, silty sand, 6 m, 18 November 1971, PPBES Station 919. PARATYPES: 11 specimens, AM P34173, Port Phillip Bay, Victoria, 37°53.0'S 144°51.5'E, sand, 8 m, 7 June 1971, PPBES station 901; 1 specimen, AM P34174, Port Phillip Bay, Victoria, 37°55.3'S 144°49.8'E, sand, 9 m, 7 June 1971, PPBES station 904; 3 specimens, AM P34175, Port Phillip Bay, Victoria, 38°04.7'S 144°32.7'E, sand, 7 m, 11 June 1971, PPBES station 929; 4 specimens, NMV J2134, Port

Phillip Bay, Victoria, 37°57'S 144°45'E, sand, 5 m, 3 February 1972, PPBES station 907; 8 specimens, NMV J2135, Port Phillip Bay, Victoria, 37°57'S 144°48'E, sand, 9 m, 8 June 1971, PPBES station 908; 2 specimens, NMV J2136, 38°03'S 144°35'E, sand, silt, clay, 6 m, 18 November 1971, PPBES station 919; 2 specimens, NMV J2137, 38°07'S 144°31'E, silt, clay, 7 m, 12 February 1970, PPBES station 942.

Additional material. 3 specimens, AMP34177, P34178, P34184, Port Stephens, New South Wales, 3–22 m, W. Ponder and J. Hall, 25–28 October 1980; 58 specimens, AM P34180, P34181, Box Head, Broken Bay, New South Wales, sponges, 15 m, J.K. Lowry and R.T. Springthorpe, 22 November 1982; 326 specimens, AM P34187 to P34200, Brooklyn, Hawkesbury River, New South Wales, sand and mud, 2–9 m, August 1979 — August 1980; 12 specimens, AM P34201 to P34204, Hawkesbury River, New South Wales, AMHRS stations; 5 specimens, AM P34153, east of Long Reef, New South Wales, dredged, 176 m, 5 December 1977, *Kapala* station K77-23-01; 3 specimens, AM P34183, east of Bondi, New South Wales, dredged, 80 m, R. Springthorpe, 11 December 1980, *Kapala* station K80-20-11; 22 specimens, AM P22661 to P22665, east of Turrismetta Heads, Dee Why and Long Reef, New South Wales, 15–38 m, AMSBS stations; 39 specimens, AM P22667 to P22670, P22677 and P34176, east

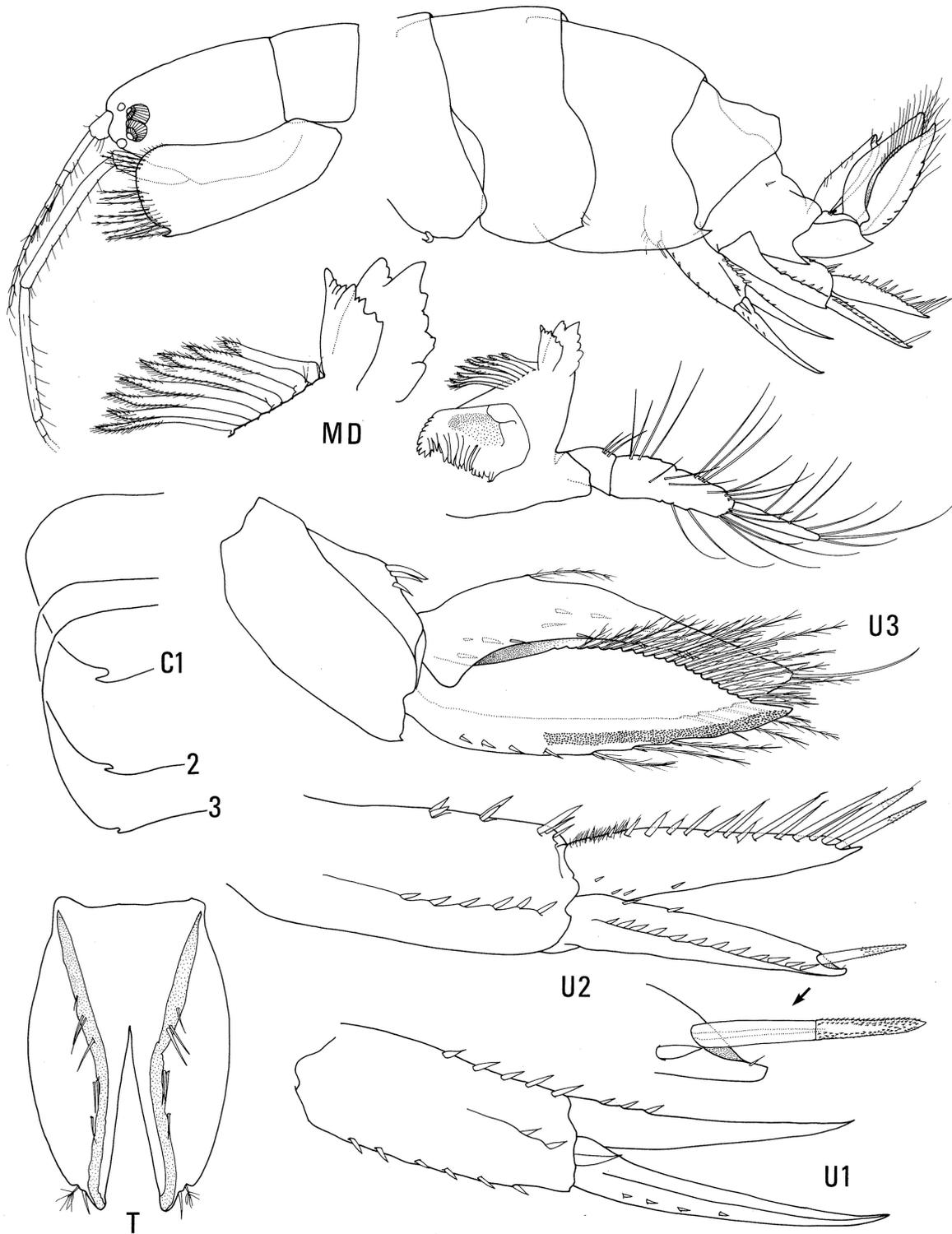


Fig. 11. *Ampelisca dimboola* n.sp., holotype, female, 10.0 mm, 1.5 km east of Burwood Beach, New South Wales.

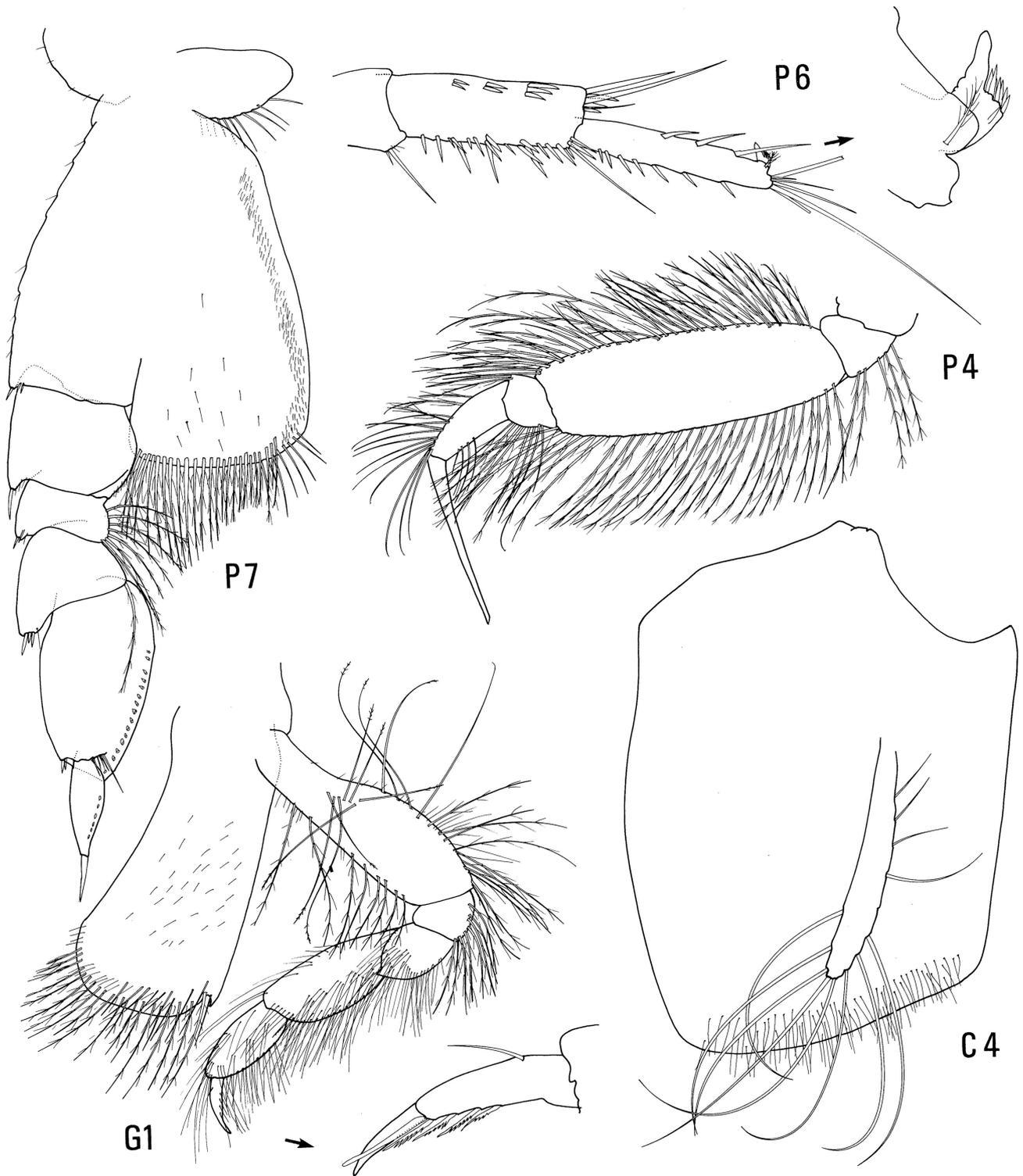


Fig. 12. *Ampelisca dimboola* n.sp., holotype, female, 10.0 mm, 1.5 km east of Burwood Beach, New South Wales.

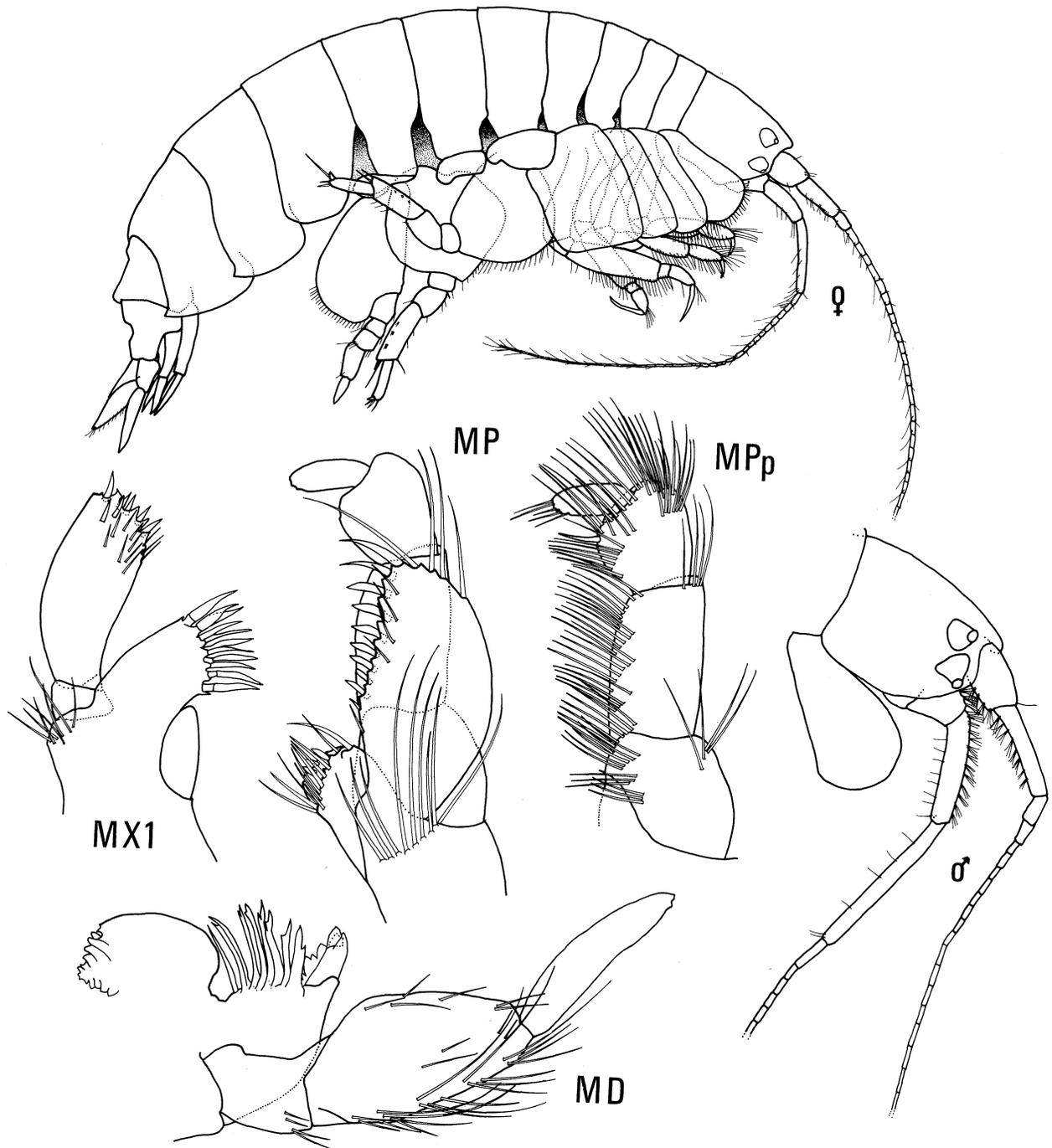


Fig. 13. *Ampelisca euroa* n.sp., holotype, female, 9.0 mm, paratype, male, Port Phillip Bay, Victoria.

of Malabar, New South Wales, 66–81 m, AMSBS stations; 3 specimens, AM P26869 to P26871, Botany Bay, New South Wales, sand, 7–19 m, SPCC stations; 2 specimens, AM P34166, P34167, off Moona Moona Creek, Jervis Bay, New South Wales, on solitary ascidians in *Ecklonia* bed, 3–4.5 m, P. Berents, October 1981; 6 specimens, AM P34179, off Moona Moona Creek, Jervis Bay, New South Wales, mussels, algae and sand, 8 m, J.K. Lowry, 19 June 1982; 60 specimens, AM P34185 and NMV J2138 to J2144, Port Phillip Bay, Victoria, PPBES stations; 950+ specimens, NMV J2786 to

J2896, Crib Point, Western Port, Victoria, CPBS stations; 35 specimens, NMV J2145 to J2155, Western Port, Victoria, WBES stations; 40+ specimens, AM P34186, NMV J2156 to J2158, and J7728 to J7736, throughout Bass Strait, BSS stations; 3 specimens, NMV J7737 to J7739, Cape Paterson, Victoria, epifauna; 8 specimens, AM P34164, near Lowly Point, Spencer Gulf, South Australia, 18 m, K. Sheard, 7 March 1938; 1 specimen, AM P34182, Maston old wharf, American River Inlet, Kangaroo Island, South Australia, on *Zostera*, P. Hutchings, 2 March 1979.

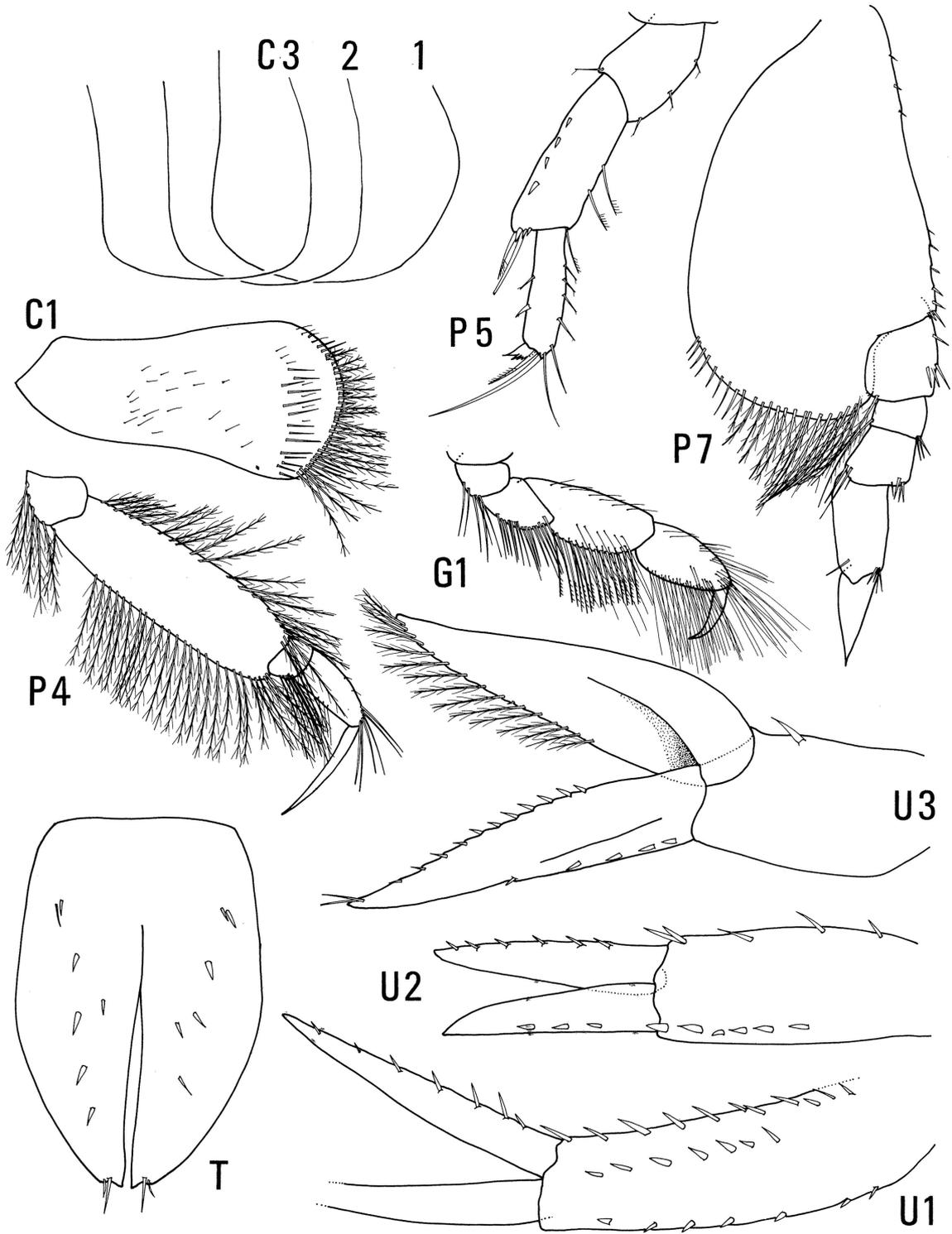


Fig. 14. *Ampelisca euroa* n.sp., holotype, female, 9.0 mm, Port Phillip Bay, Victoria.

Diagnosis. Head about 1.3 times as long as deep, with short rostrum and oblique anteroventral margin; 2 pairs of eyes, each with a cuticular lens. Antenna 1 almost as long as antenna 2; peduncular article 2, 1.3 times as long as article 1. Antenna 2 at least half as long as body. Coxae 1–3 without posteroventral hooks. Peraeopod 4, article 4 about 2.8 times as long as broad. Peraeopod 7, posterior margin of article 2 gently rounded, ventral margin transverse, straight, lined with plumose setae, extending two-thirds along article 3; article 3 twice length of article 4; articles 4 and 5 without anterior or posterior lobes and subequal in length; article 6 not inflated, about twice as long as broad and subequal in length to articles 4 and 5 combined. Epimeron 1 with posteroventral corner rounded. Epimera 2 and 3, posteroventral corners each with acutely projecting tooth. Urosomite 1 with a low crest, abruptly cut off posteriorly; urosomites 2–3 with a shallow sinus. Uropod 2, rami subequal, each with a dorsal row of minute spines. Uropod 3, rami lanceolate, subequal in length; inner ramus with short plumose setae along inner margin; outer ramus with short spines along inner and outer margins. Telson 1.5 times as long as broad, cleft 0.7 times length, with a row of short dorsal spines and a pair of short apical setae on each lobe.

Remarks. *Ampelisca euroa* differs from all other *Ampelisca* species in this study in its peculiar mandibular palp with its swollen second article and long, slender third article. However, *A. euroa* does appear to be closely related to *A. milleri* J.L. Barnard from California. Both species have similar mandibular palps, first gnathopods, seventh peraeopods, second and third uropods and telson. *Ampelisca euroa* is distinguished from *A. milleri* by its longer first antennae, different head shape and acute posteroventral corners on epimera 1 and 2. *Ampelisca nossibeensis* Ledoyer also has a similar mandibular palp, first gnathopod, seventh peraeopod and third uropod. But although the second uropod lacks a subapical spine on the inner ramus as in *A. euroa* and *A. milleri*, the rami are long and slender. The telson also differs in having apical spines.

Ampelisca euroa is the most abundant ampeliscid species in south-eastern Australia. It occurs in estuarine conditions and on the continental shelf from as far north as Port Stephens, New South Wales, to the Spencer Gulf in South Australia. In Port Phillip Bay this species prefers sandy rather than muddy substrates where it averages about 50 individuals per square metre (Poore *et al.*, 1975).

Distribution. New South Wales, Victoria, Bass Strait, South Australia; shelf and bays, 3–176 m.

Ampelisca jingera n.sp.

Figs 15, 16

Type-material. HOLOTYPE: 7.5 mm, AM P34135 (with 3 slides), off St Helens Point, Tasmania, 41°20.6'S 148°30'E, fine clayey sand, 110 m, P. Colman, 25 March 1973, BMR station 573-2038. PARATYPES: 3 specimens, AM P34136, 3 specimens, NMV J1563, type-locality.

Additional material. 21 specimens, AM P34134, east of Long Reef, New South Wales, dredged, 175 m, 5 December 1977, *Kapala* station K77-23-01; 2 specimens, AM P34161, north-east of Long Reef, New South Wales, dredged, 143 m, 5 December 1978, *Kapala* station K78-26-02; 1 specimen, AM P34137, east of Bondi, New South Wales, dredged, 80 m, R. Springthorpe, 11 December 1980, *Kapala* station K80-20-11; 1 specimen, AM P34129, Botany Bay, New South Wales, September 1921; 8 specimens, AM P34160, north-east of Wollongong, New South Wales, dredged, 161 m, 13 December 1978, *Kapala* station K78-27-11; 50+ specimens, NMV J7114, J7708 to J7710, J7727, Bass Strait, dredged, 82–293 m, BSS stations 32, 36, 158 and 170.

Diagnosis. Head 1.2 times as long as deep; anteroventral margin oblique and straight; 2 pairs of eyes, each with a cuticular lens. Antenna 1 about 1.5 times length of peduncle of antenna 2; peduncular article 2 a little longer than article 1. Antenna 2 about as long as body. Coxae 1–3 all with posteroventral hooks. Peraeopod 4 with article 4, 3.2 times as long as wide. Peraeopod 7, posterior margin of article 2 convex, widest distally, posteroventral margin gently convex, bearing plumose setae, distal corner rounded and extending about halfway along article 4; article 3 about as long as article 4; articles 4 and 5 each with a triangular anterodistal lobe; article 6 tapering, 2.2 times as long as wide, subequal to articles 4 and 5 together. Epimera 1 and 2 with rounded posteroventral corners; epimeron 3, posteroventral corner with a prominent acute tooth. Urosomite 1 with a small dorsal carina posteriorly. Uropod 2, rami subequal, each with 2 rows of dorsal spines; outer ramus with a long subterminal spine. Uropod 3, rami subequal, narrowly lanceolate; inner ramus with plumose setae along distal halves of both margins; outer ramus acute, with spines on outer margin. Telson 1.3 times as long as broad, cleft 0.7 times length, with 2 dorsal spines and a distal spine and seta on each lobe.

Remarks. *Ampelisca jingera* is most closely related to *A. calooma* as discussed under that species. The species occur together in some samples.

Distribution. New South Wales, Bass Strait and Tasmania; shelf and slope, 80–293 m.

Ampelisca narooma n.sp.

Fig. 17

Type-material. HOLOTYPE: 11.0 mm, AM P34140 (with 3 slides), east of Port Kembla, New South Wales, 34°27-26'S 151°27'E, dredged, *Globigerina* ooze, 1200 m, J.K. Lowry, 13 December 1976, *Kapala* station K76-23-02. PARATYPES: 3 specimens, AM P34141, type-locality.

Additional material. One specimen, AM P27291, east of Lady Elliott Island, Queensland, 24°00'S 153°06'E, worm tubes and pteropod shells in fine grey sandy ooze, 476–531 m, P. Colman and F. Rowe on HMAS *Kimbla*, 17 November 1977.

Diagnosis. Head about 1.4 times as long as deep, without rostrum; anteroventral margin oblique and sinuoid; without eyes. Antenna 1 slightly longer than peduncle of antenna 2; peduncular article 2 about 1.5 times as long as article 1. Antenna 2 about half length

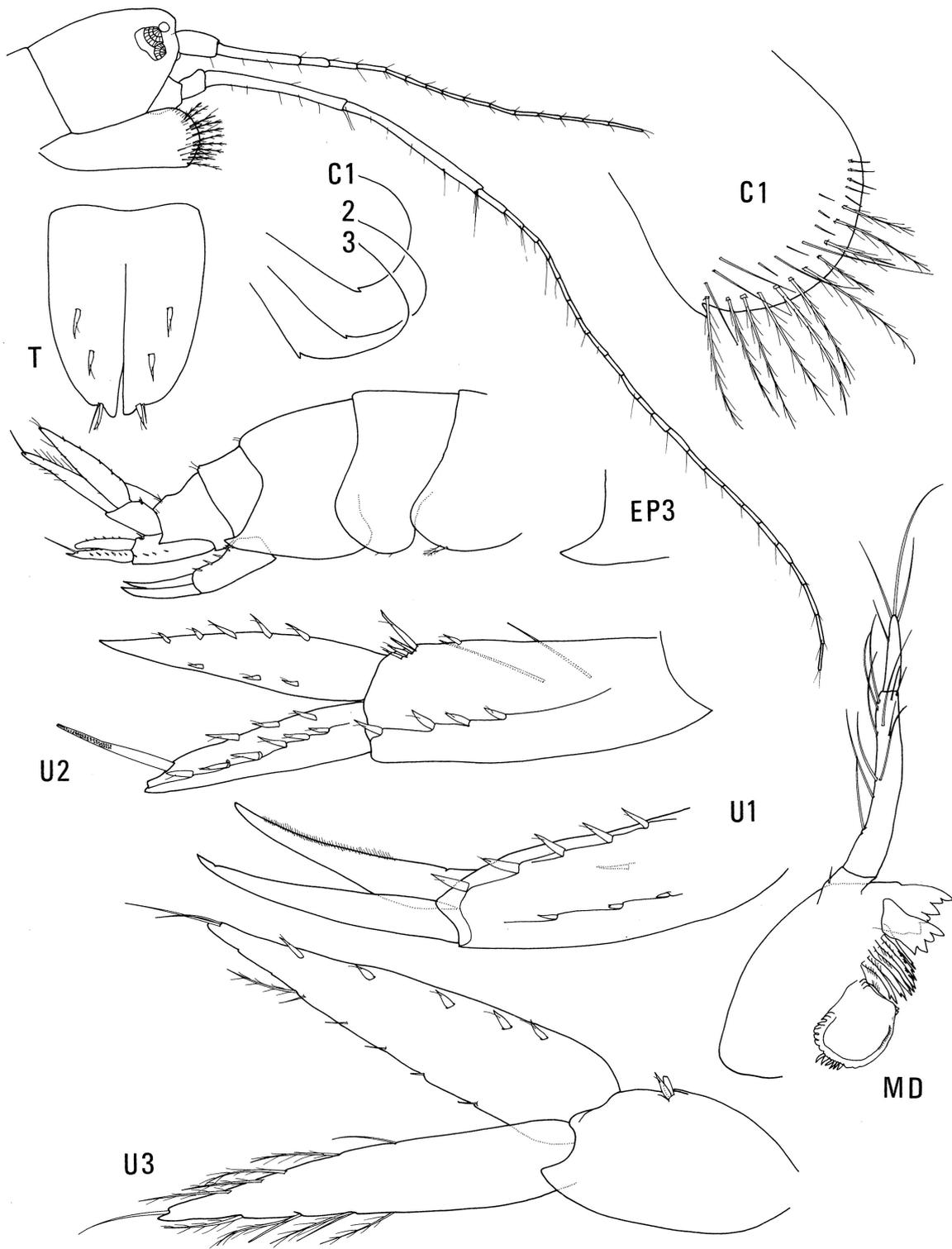


Fig. 15. *Ampelisca jingera* n.sp., holotype, 7.5 mm, off St Helens Point, Tasmania.

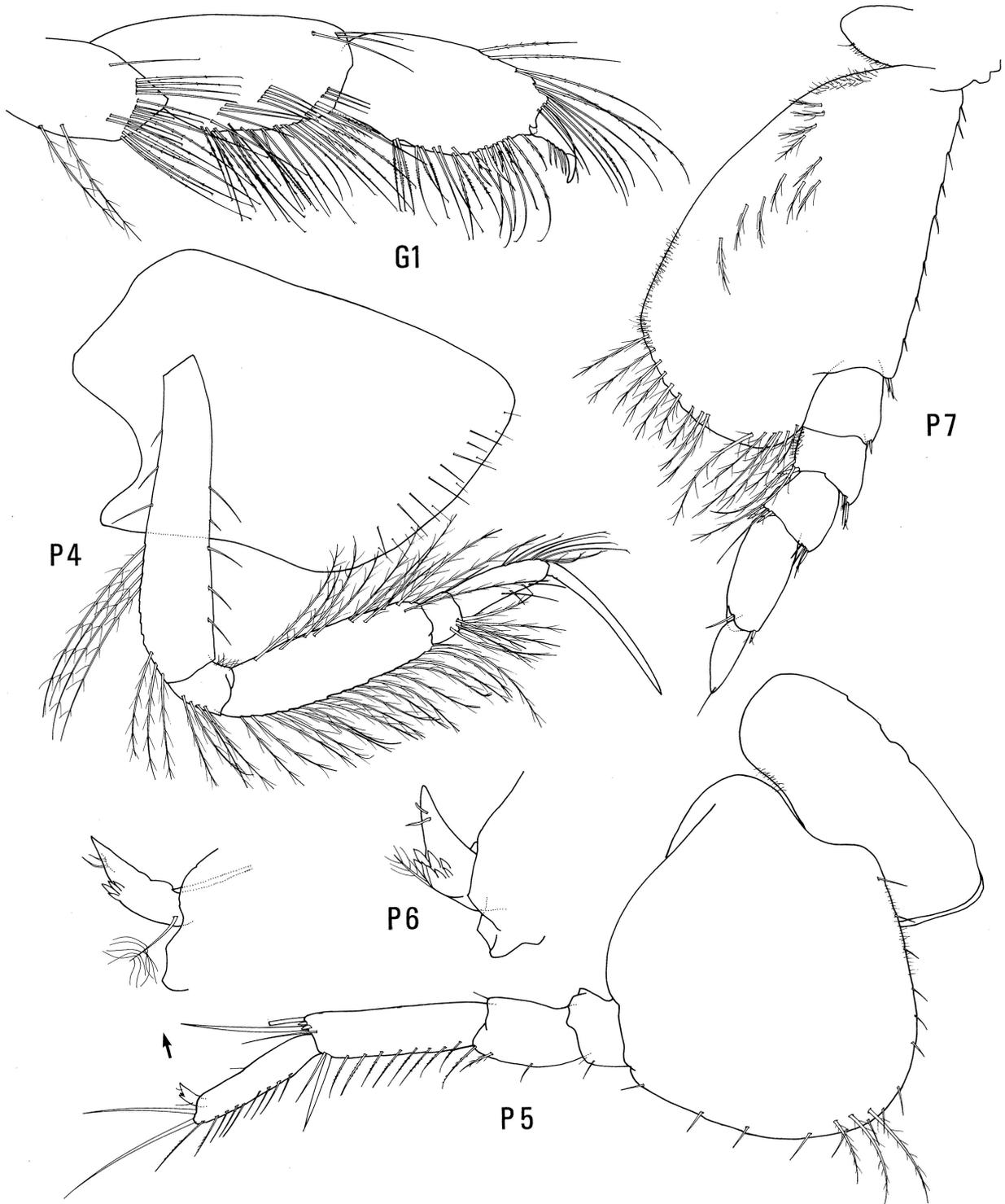


Fig. 16. *Ampelisca jingera* n.sp., holotype, 7.5 mm, off St Helens Point, Tasmania.

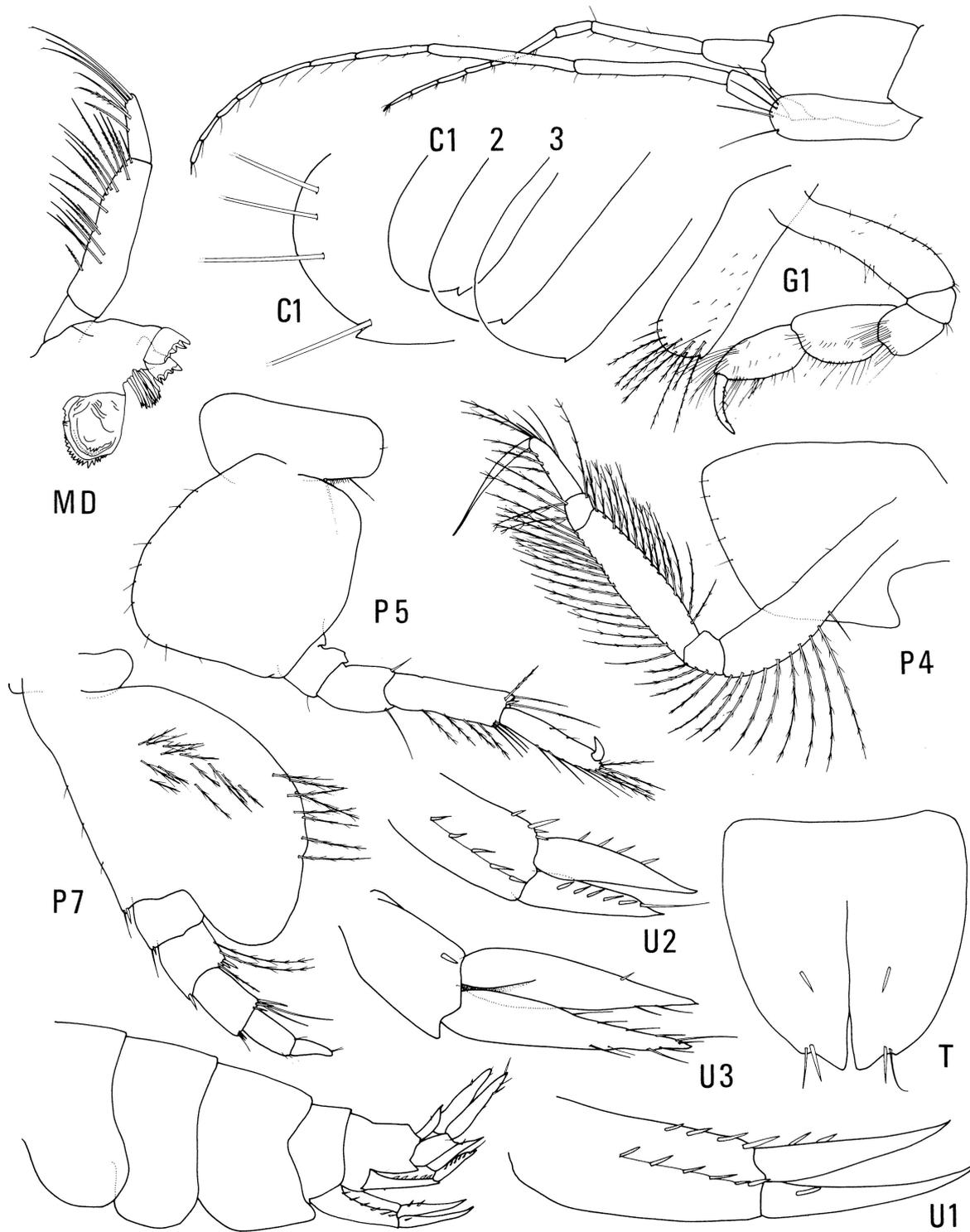


Fig. 17. *Ampelisca narooma* n.sp., holotype, 11.0 mm, east of Port Kembla, New South Wales.

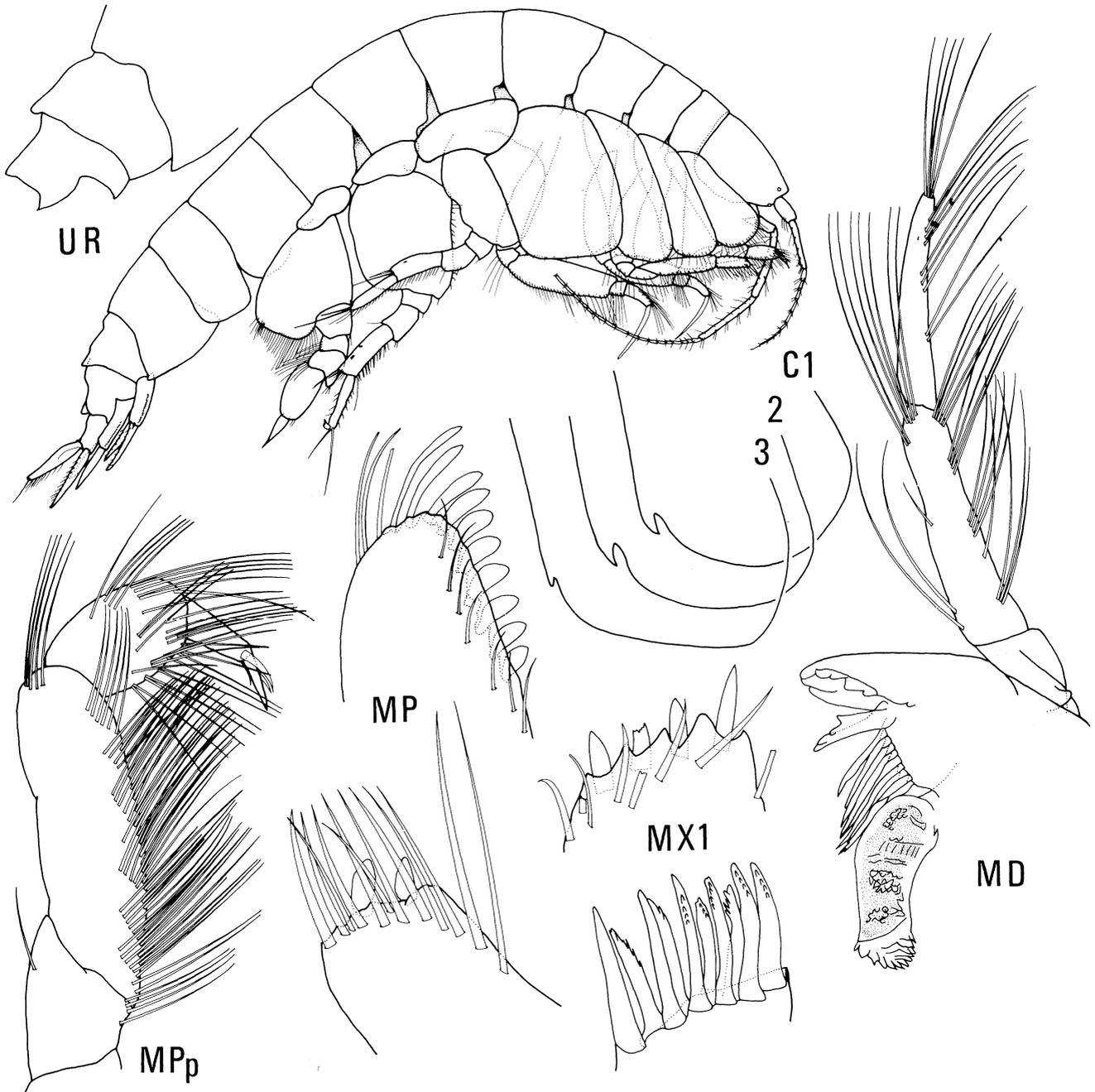


Fig. 18. *Ampelisca tilpa* n.sp., holotype, 13.3 mm, east of Burwood Beach, New South Wales.

of body. Coxae 1-3 with minute posteroventral hooks. Peraeopod 4 with article 4 about 3.5 times as long as broad. Peraeopod 7, posterior margin of article 2 ovate, reaching to distal margin of article 4, with a patch of plumose setae just distal to mid-posterior margin, ventral margin naked; articles 3 and 4 subequal in length; article 6 small, not inflated, about twice as long as broad, 0.8 times length of article 5. Epimera 1 and 2 with posteroventral corners broadly rounded; epimeron 3 with posteroventral corner produced into a subacute tooth. Urosomites without dorsal crests.

Uropod 2, rami each with a dorsal spine row; shorter outer ramus with long fine subterminal spine. Uropod 3, rami narrow, subequal in length, lanceolate, with sparse setation. Telson about as long as broad, cleft 0.8 times length, with a mid-dorsal seta and 2 subapical setae on each lobe.

Remarks. *Ampelisca narooma* does not appear to be closely related to any south-eastern Australian species. The slender, lanceolate rami of uropod 3 are similar to those of *A. calooma* and *A. jingera*, but the rami are less setose than in either of those species.

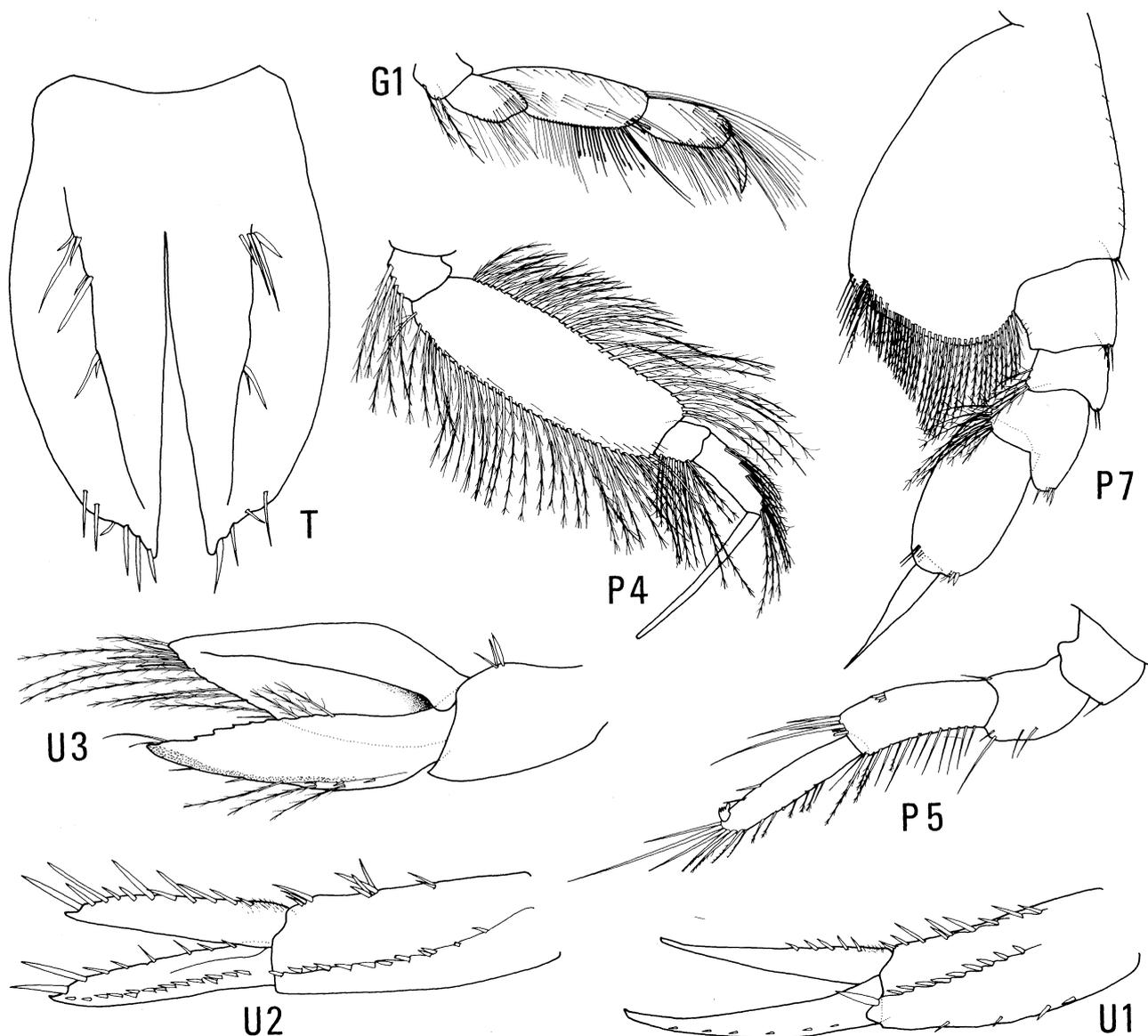


Fig. 19. *Ampelisca tilpa* n.sp., holotype, 13.3 mm, east of Burwood Beach, New South Wales.

Although article 2 of pereopod 7 is produced along article 4 as in *A. calooma* and *A. jingera*, both of these species have an inflated article 5, and in *A. calooma* article 4 has anterodistal lobes.

Distribution. Queensland, New South Wales; slope, 476-1200 m.

Ampelisca tilpa n.sp.

Figs 18, 19

Ampelisca sp. — Dorsey & Synott, 1980: 159.

Type-material. HOLOTYPE: 13.3 mm, AM P34142 (with 4 slides), 500 m east of Burwood Beach, New South Wales, 32°57.5'S 151°44.7'E, coarse sand, 14 m, Shipek grab, 22 August 1975, HDWBS transect 03. PARATYPES: 6 specimens, AM P23175 to P23179 and NMV J7102, type-locality, 14-26 m, 17 March-18 December 1975, HDWBS transects 01 to 03;

1 specimen, AM P23180, 1 km east of Dudley Beach, New South Wales, 32°58.7'S 151°43.8'E, coarse sand, 15 m, Shipek grab, 30 November 1975, HDWBS transect 02.

Additional material. 74 specimens, NMV J2159 to J2163, Black Rock, Breamlea, Victoria, fine sand, 9-22 m, J. Dorsey, 10 November 1978 to 24 January 1979; 50 specimens, NMV J7106 to J7113, off Seaspray, Victoria, 10 m, J.E. Watson, 1979 and 1980; 15 specimens, AM P27073, P27080, P27095, P27104, Lagoon Bay, Tasmania, sand, 16 m, A.J. Darnall, 7 June 1977.

Diagnosis. Head 1.5 times as long as deep, without rostrum; anteroventral margin oblique; 2 pairs of eyes, each with a cuticular lens. Antenna 1 about as long as peduncle of antenna 2, peduncular article 2 twice as long as article 1. Antenna 2 about two-thirds length of body. Coxae 1-3 with posteroventral hooks. Pereopod 4 with article 4, 3 times as long as broad. Pereopod 7, article 2 with posterior margin oblique, posteroventral margin

sharply rounded, ventral margin oblique, more or less straight and bearing plumose setae, not extending to distal margin of article 3; article 3 twice as long as article 4; articles 4 and 5 with anterior lobes; article 6 inflated, nearly 1.8 times as long as broad and 1.5 times as long as articles 4 and 5 combined. Epimera 1 and 2 with broadly rounded posteroventral corners; epimeron 3, posteroventral corner with subacutely projecting tooth. Urosomite 1 with a low crest projecting posteriorly as a small tubercle. Urosomites 2–3 mid-dorsally simple, but with posterolateral projections. Uropod 2, rami subequal; inner ramus with row of dorsal spines of varying lengths; outer ramus with dorsal spine row plus 2 long subterminal spines. Uropod 3, rami subequal in length, broadly lanceolate; inner ramus with a distal row of plumose setae along outer margin; outer ramus with plumose setae distally along inner margin, outer margin with a row of plumose setae, a row of small spines and a long, narrow patch of minute denticles. Telson 1.5 times as long as broad, cleft 0.7 times length, with a row of strong mid-dorsal setae and a row of about 6 strong apical setae on each lobe.

Remarks. *Ampelisca tilpa* is a member of the species group discussed under *A. australis*. It is very closely related to *A. yuleba*. *Ampelisca tilpa* has shorter second antennae and a longer, more slender, mandibular palp than *A. yuleba*. The posteroventral margin of article 2 of peraeopod 7 does not project beyond article 3 in *A. tilpa*, and uropods 1 and 2 are more spinose. The telson in *A. tilpa* is broader and the mid-dorsal setae are more slender.

Ampelisca tilpa is currently known from south of Newcastle, New South Wales, and *A. yuleba* is known only from Moreton Bay, Queensland. The possibility exists that the populations are clinal variations of one species.

Distribution. New South Wales, Victoria, Tasmania; shelf and bays, 9–26 m.

Ampelisca toora n.sp.

Fig. 20

?*Ampelisca australis*. — Haswell, 1885: 97, pl. 13 figs 1–3 (part from Port Stephens).

Ampelisca sp. 2. — Poore *et al.*, 1975: 33, 65.

Type-material. HOLOTYPE: 11.0 mm, NMV J2165 (with 3 slides), Port Phillip Bay, Victoria, 38°07.0'S 144°44.7'E, sand, 4 m, 16 November 1971, PPBES station 945. PARATYPES: 33 specimens, NMV J2166 and AM P34702, southern Port Phillip Bay, Victoria, 38°21.1'S 144°51.5'E, sand, 9 m, 9 December 1971, PPBES station 985; 1 specimen, NMV J2167, between Hogan Group and East Moncoeur Island, Bass Strait, 39°10.9'S 146°37.2'E, bryozoan sediment, 55 m, B.J. Smith *et al.* on HMAS *Kimbla*, 25 November 1973, station K7/73-53; 1 specimen, NMV J2168, between Wilsons Promontory and Glennie Island, Bass Strait, 39°03.5'S 146°14.4'E, bryozoan sediment, 49 m, B.J. Smith *et al.* on HMAS *Kimbla*, 26 November 1973, station K7/73-60.

Additional material. One specimen, QM W6361, off Fraser Island, Queensland, 25°08'S 153°33'E; 1 specimen, AM

P34143, south of Fraser Island, Queensland, 25°48'S 153°46'E, dredged, 73 m, 10 November 1976, *Kimbla* station Q11; 1 specimen, AM P34162, south-east of Port Stephens, New South Wales, dredged, 145 m, 6 December 1978, *Kapala* station K78-26-07; 1 specimen, AM P34156, east of Long Reef, New South Wales, dredged, 176 m, 5 December 1977, *Kapala* station K77-23-01; 50+ specimens, NMV J7698 to J7706, Bass Strait, dredged, 26–82 m, BSS stations; 1 specimen, AM P34163, south of Mount Young, Spencer Gulf, South Australia, 18 m, K. Sheard on FL *Whyalla*, 8 March 1938.

Diagnosis. Head 1.3 times as long as deep, without rostrum; anteroventral corner rounded; 2 pairs of eyes, each with a cuticular lens. Antenna 1 subequal in length to peduncle of antenna 2; peduncular article 2 subequal in length to article 1. Antenna 2 as long as body. Coxae 1 and 2 with shallow posteroventral hooks. Coxa 3 with rounded posteroventral corner. Peraeopod 4, article 4 about twice as long as broad. Peraeopod 7, posterior margin of article 2 slightly rounded, posteroventral margin oblique, slightly concave and lined with plumose setae, distal corner sharp and just overlapping article 4; article 3 subequal in length to article 4; articles 4 and 5 with anterior lobes; article 4 subequal in length to article 5; article 6 inflated, about as broad as long. Epimera 1 and 2 with broadly rounded posteroventral margins; epimeron 3, posteroventral corner with acutely projecting tooth. Urosomite 1, dorsal process strongly saddle-shaped. Uropod 2, rami subequal, each ramus with a dorsal row of short spines, outer ramus with a long, subterminal spine. Uropod 3, rami broadly lanceolate, subequal in length; inner ramus with plumose setae along outer distal margin; outer ramus with short spines and setae, and a long narrow patch of minute denticles along outer margin. Telson 1.3 times as long as wide, cleft 0.8 times length, with a sparse row of mid-dorsal setae and 3 subapical setae on each lobe.

Remarks. *Ampelisca toora* is a member of the species group discussed under *A. australis*. It is distinguished by the saddle-shaped dorsal carina on urosomite 1 and the subtle excavation on the posteroventral margin of article 2 of peraeopod 7.

Haswell (1885) illustrated a specimen from Port Stephens which he called *A. australis*, but which appears to be *A. toora*. This species currently has the widest distribution of any Australian ampeliscid species, from Spencer Gulf, South Australia, to off Fraser Island, Queensland, and its occurrence in Port Stephens is reasonable.

Distribution. Queensland, New South Wales, Victoria, Bass Strait; shelf and bays, 4–176 m.

Ampelisca yuleba n.sp.

Fig. 21

Type-material. HOLOTYPE: female, 10.2 mm, QM W11198, Middle Banks, Queensland, 27°14'S 153°20'E, sand/mud, 21m, S. Cook, September 1972, QUBS stations 28, 29 and 35. PARATYPES: 4 specimens, QM W6348, 3 specimens, QM W6349, 8 specimens, NMV J2173, 5 specimens, AM P34168, 2 specimens, QM W6351, type-locality.

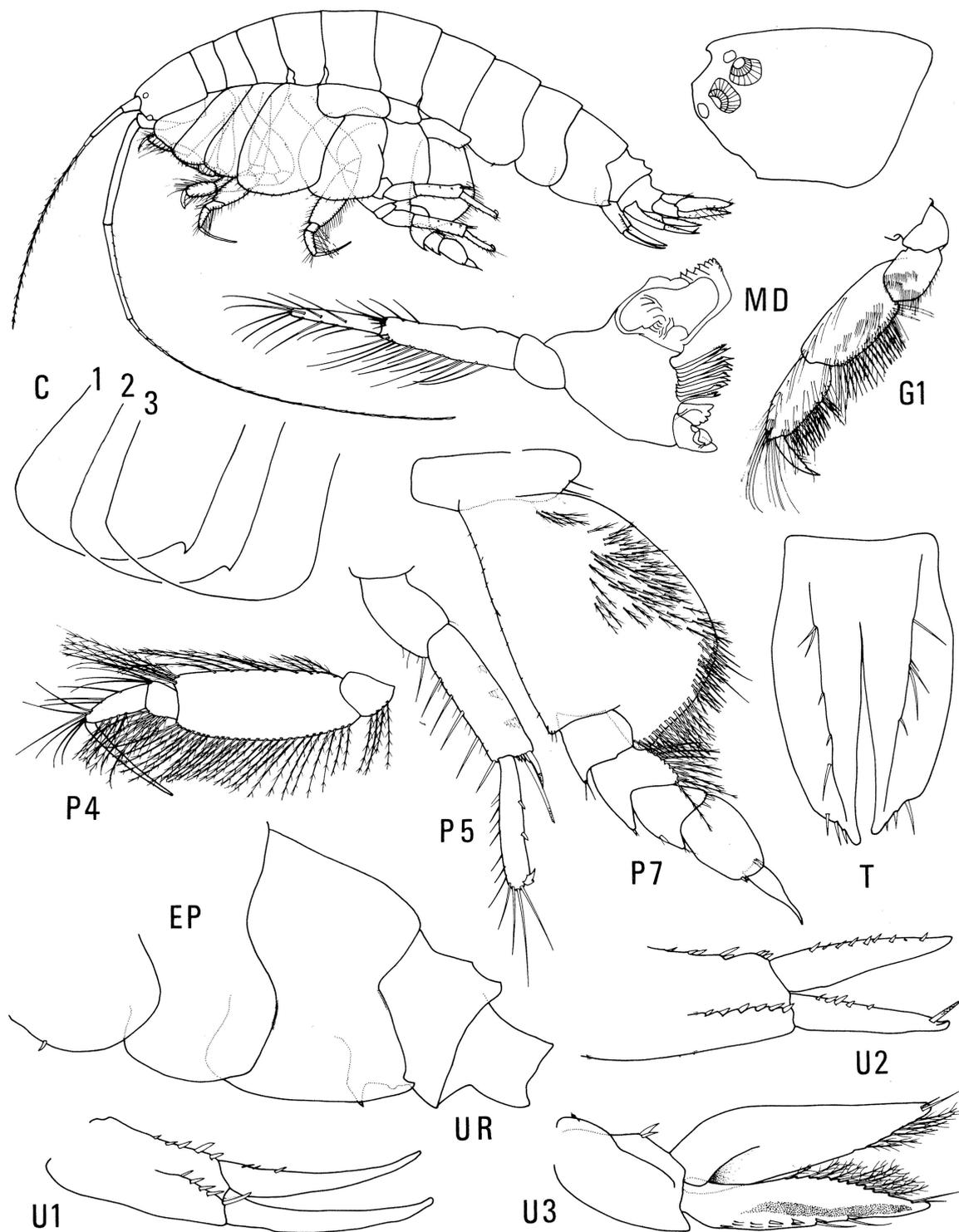


Fig. 20. *Ampelisca toora* n.sp., holotype, 11.0 mm, Port Phillip Bay, Victoria.

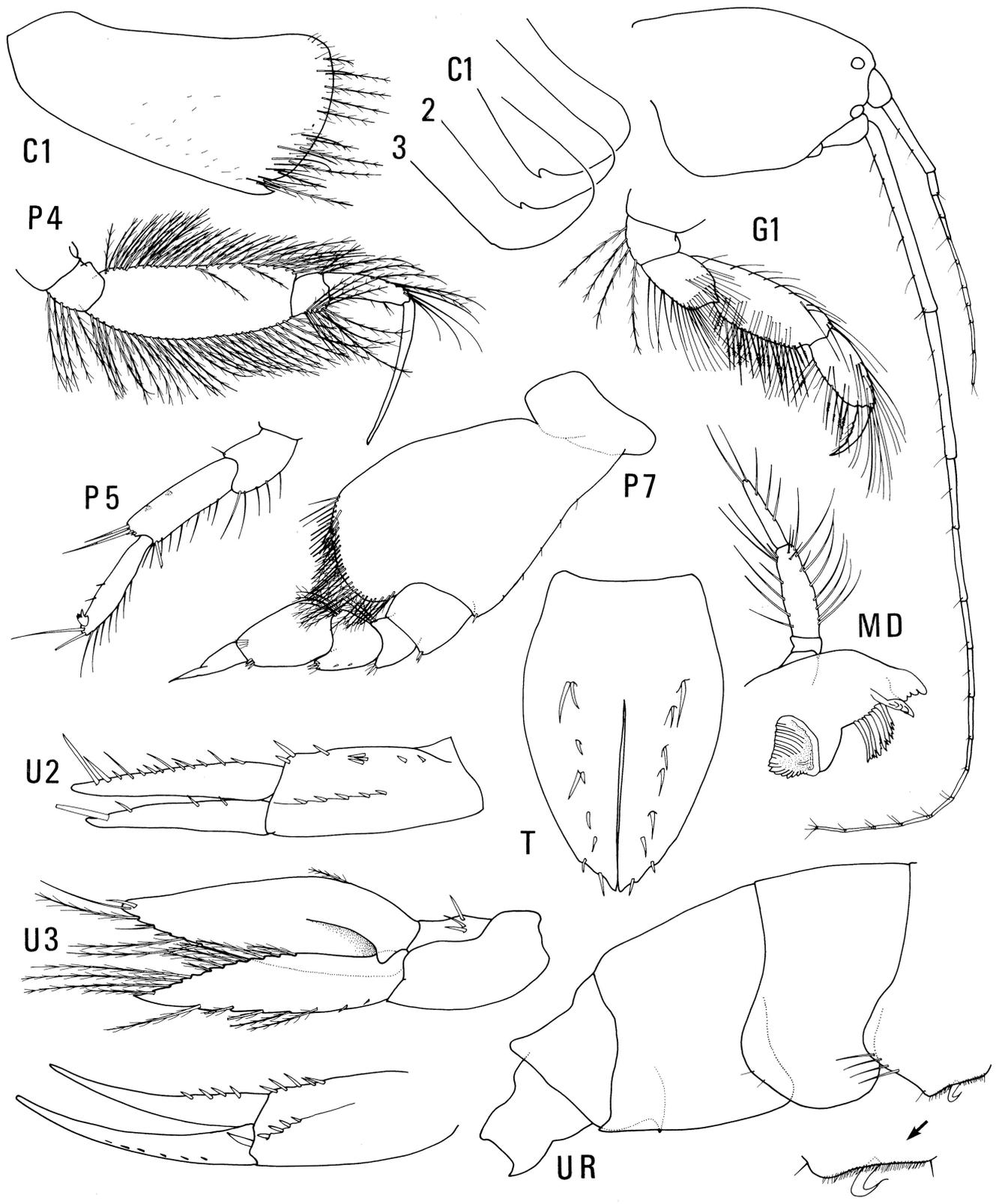


Fig. 21. *Ampelisca yuleba* n.sp., holotype, female, 10.2 mm, Middle Banks, Moreton Bay, Queensland.

Additional material. 28 specimens, QM W6352, W6353 and W11199, type-locality, 26 m, S. Cook and S. Newlands, December 1972 – June 1974.

Diagnosis. Head about 1.4 times as long as deep, without rostrum; anteroventral margin oblique; 2 pairs of eyes, each with a cuticular lens. Antenna 1 nearly as long as peduncle of antenna 2; peduncular article 2 about 2.4 times as long as article 1. Antenna 2 about half as long as body. Coxae 1 and 2 with posteroventral hooks; coxa 3 with slight posteroventral indentation. Peraeopod 4 with article 4 about 2.6 times as long as wide. Peraeopod 7, posterior margin of article 2 oblique, posteroventral corner sharply rounded, ventral margin convex, just reaching distal margin of article 3, with plumose setae; article 3 about twice as long as article 4; articles 4 and 5 with anterior lobes; article 6 inflated, about 1.5 times as long as broad, 1.2 times as long as articles 4 and 5 combined. Epimeron 1 with 4 setae along posteroventral margin and a rounded posteroventral corner; epimeron 2 with broadly rounded posteroventral corner; epimeron 3 with posteroventral corner produced into an acute tooth. Urosomite 1 with a dorsal keel becoming elevated distally; coalesced urosomites 2 and 3 with shallow dorsal saddle. Uropod 2, inner ramus with dorsal spine row of which the last subterminal spine is longer, outer ramus with 3 dorsal spines and a strong subterminal spine. Uropod 3, rami subequal, lanceolate; inner ramus with plumose setae along outer distal margin; outer ramus with plumose setae along outer and inner margins. Telson about 1.5 times as long as wide, with a row of short setae and 2 subapical setae on each lobe.

Remarks. *Ampelisca yuleba* is most closely related to *A. tilpa* as discussed under that species. *Ampelisca yuleba* is currently known only from southern Queensland. It was referred to as Amphipod 28 by Stephenson *et al.* (1978). The ventral hook on pleonite 1, seen in some species of *Ampelisca*, is particularly obvious in this species.

Distribution. Moreton Bay, Queensland; 21–26 m.

Byblis Boeck

Type-species. *Ampelisca gaimardii* Krøyer, 1846 (original designation).

Remarks. The genus *Byblis* is distinguished by the presence of setae all along the anterior margin of article 2 of peraeopod 7, and a spine-like dactyl on the same limb. Dickinson (1983) has given a more detailed diagnosis along with references to recent studies of the genus.

Byblis bega n.sp.

Figs 22, 23

Type-material. HOLOTYPE: 15.7 mm, AM P23168 (with 4 slides), 1 km east of Burwood Beach, New South Wales, 32°57.5'S 151°44.7'E, fine sand, 26 m, Shipek grab, 20 March 1975, HDWBS transect 01. PARATYPE: 1 specimen, AM

P23169, type-locality, 28 m, 20 May 1975; 1 specimen, AM P22671, east of Malabar, New South Wales, 33°57'S 151°19'E, medium to fine sand, 45 m, Shipek grab, 15 May 1972, AMSBS station 2A.

Additional material. 4 specimens, AM P34158, east of Long Reef, New South Wales, dredged, 176 m, 5 December 1977, *Kapala* station K77-23-01.

Diagnosis. Head about 1.4 times as long as deep; 2 pairs of eyes, each with a cuticular lens. Antenna 1 reaching just beyond end of article 4 of peduncle of antenna 2; flagellum shorter than peduncle. Antenna 2 about one-third length of body. Gnathopod 1 simple. Peraeopod 4, article 5 two-thirds as wide as long. Peraeopod 7, article 2 strongly setose posteroventrally, obliquely lobed and narrowly rounded distally; article 5 about 1.4 times as long as articles 3 and 4 combined. Uropod 3, rami broadly lanceolate, with serrate overlapping margins. Telson as long as basal width, distally rounded, cleft 0.6 times length, each lobe bearing 2 pairs of small dorsal setae.

Remarks. *Byblis bega*, like *B. mildura*, lacks apical telsonic spines and thereby differs from most non-Australian species (see Dickinson, 1983). The species is most easily recognised by its very short antenna 1, oblique and elongate lobe on article 2 of peraeopod 7 and rounded telson.

Distribution. New South Wales shelf; 26–176 m.

Byblis gerara n.sp.

Figs 24, 25

Type-material. HOLOTYPE: female, 14.0 mm, AM P34144 (with 3 slides), east of Broken Bay, New South Wales, 33°31–33'S 152°08–01'E, dredged, 910 m, R. Springthorpe, 10 December 1980, *Kapala* station K80-20-08. PARATYPES: 3 specimens, AM P34145, and 3 specimens, NMV J2174, type-locality; 4 specimens, AM P34146, east of Broken Bay, New South Wales, 33°37–39'S 152°04–02'E, dredged, 910–892 m, R. Springthorpe, 10 December 1980, *Kapala* station K80-20-09; 1 specimen, AM P34147, east of Broken Bay, New South Wales, 33°35–37'S 152°05'E, dredged, 118 m, R. Springthorpe, 1 December 1980, *Kapala* station K80-20-1.

Diagnosis. Head about 16 times as long as deep; without eyes. Antenna 1 reaching half way along article 5 of peduncle of antenna 2; flagellum longer than peduncle. Antenna 2 slightly longer than body. Gnathopod 1 subchelate, palm slightly oblique, serrate with strong spines. Peraeopod 4, article 5 as long as wide. Peraeopod 7, article 2 posterodistally lobed, posterior margin convex, distal margin broadly rounded and setose; article 4, 3 times as long as article 3, article 5 half as long as article 4. Uropod 3, rami narrowly lanceolate, with simple and plumose setae but without serrate inner margins. Telson 1.2 times as long as basal width, strongly tapering, cleft 0.7 times length, each lobe with a pair of proximal setae, 2 mid-dorsal spines and an apical spine and seta.

Remarks. *Byblis gerara* is immediately distinguished from other Australian species by the absence of eyes, the strongly subchelate gnathopod 1 with slightly

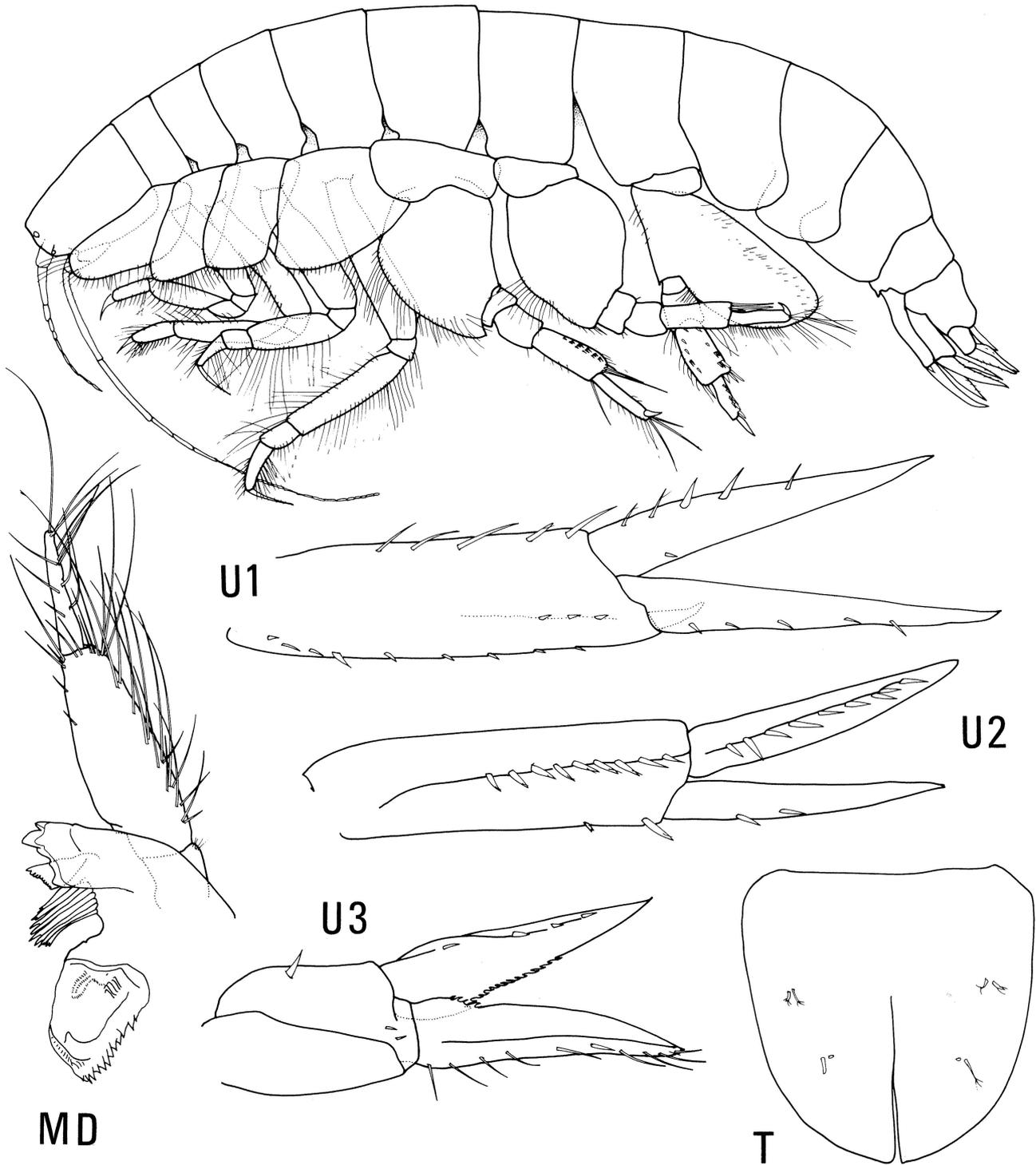


Fig. 22. *Byblis bega* n.sp., holotype, 15.7 mm, east of Burwood Beach, New South Wales.

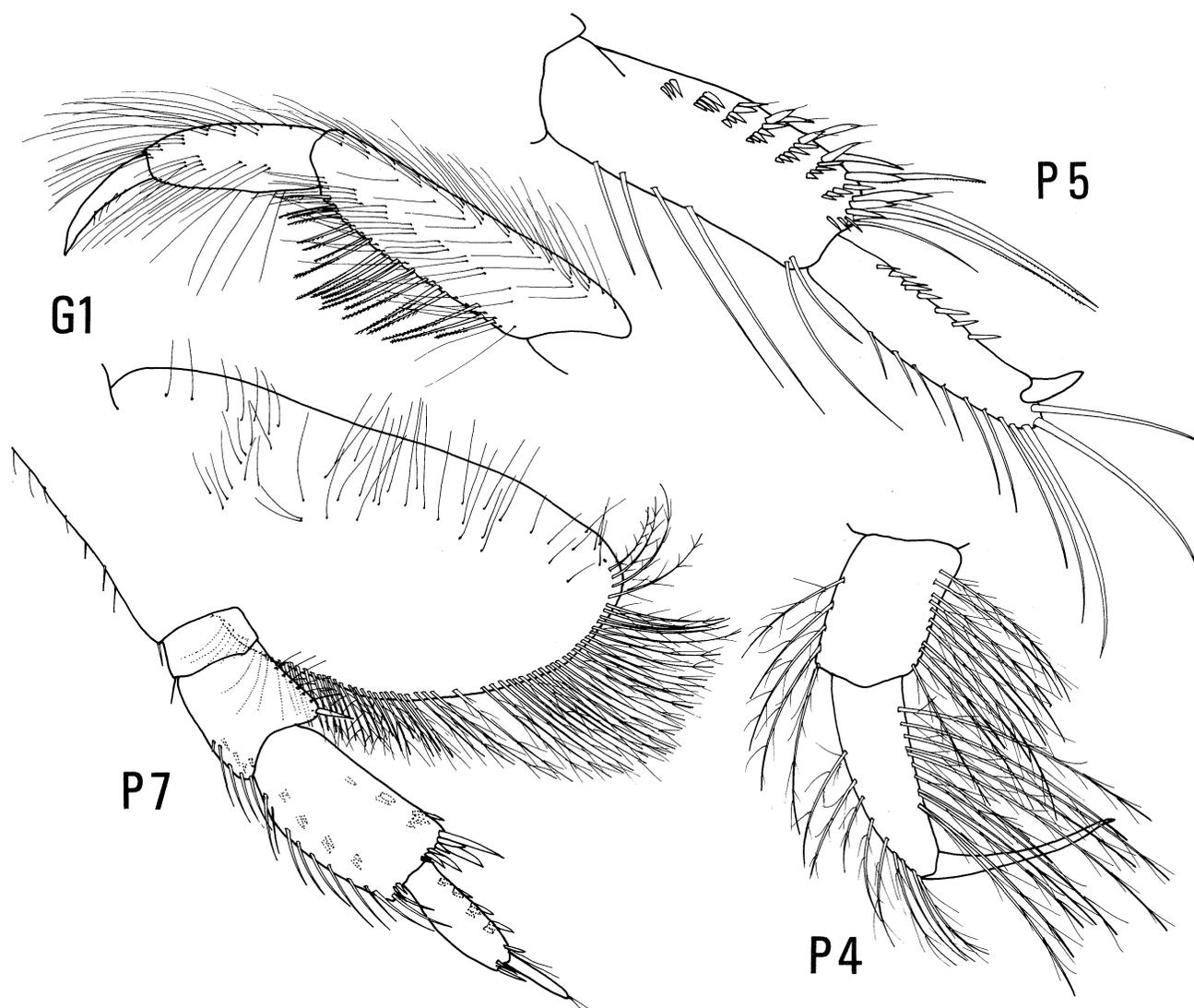


Fig. 23. *Byblis bega* n.sp., holotype, 15.7 mm, east of Burwood Beach, New South Wales.

oblique palm, and the presence of apical telsonic spines. Blind species of *Byblis* are not uncommon in deeper water (Margulis, 1967; Mills, 1971) but none possesses a first gnathopod of the form described here.

Distribution. New South Wales; slope, 892–1138 m.

Byblis mildura n.sp.

Figs 26, 27

Byblis sp. 1. — Poore *et al.*, 1975: 33, 65; Poore & Kudenov, 1978: 148, 150; Poore & Rainer, 1979: 485–490.

Type-material. HOLOTYPE: 12.2 mm, NMV J2175 (with 4 slides), Port Phillip Bay, Victoria, 38°18.7'S 144°53.3'E, sand, 18 m, 22 September 1970, PPBES station 982. PARATYPES: 9 specimens, NMV J2176, type-locality; 42 specimens, NMV J2177, Port Phillip Bay, Victoria, 38°18.7'S 144°56.7'E, sand, 19 m, 11 October 1971, PPBES station 983; 36 specimens, AM P34354, Port Phillip Bay, Victoria, 38°16.3'S 144°51.5'E, sand, silt, clay, 24 m, 8 December 1971, PPBES station 976.

Additional material. 12 specimens, QM W6354 to W6356, Middle Banks, Moreton Bay, Queensland, sand/mud, 21–23 m, S. Cook, September 1972, QUBS stations 28, 29, 34; 85 specimens, QM W6358, W6359, Middle Banks, Moreton Bay, Queensland; 4 specimens, QM W6360, Bramble Bay, Moreton Bay, Queensland; 5 specimens, QM W3718, Peel Island, Moreton Bay, Queensland; 5 specimens, AM P34148, east of Bondi, New South Wales, dredged, 80 m, R. Springthorpe, 11 December 1980, *Kapala* station K80-20-11; 6000+ specimens, AM P3419 and NMV J2178 to J2229, J5690 to J5700, Port Phillip Bay, Victoria, PPBES stations, and Crib Point, Western Port, Victoria, CPBS stations; 2 specimens, NMV J7742, central Bass Strait, 82 m, shell, bryozoans and mud, 13 November 1981, BSS station 158.

Diagnosis. Head 1.6 times as long as deep; 2 pairs of eyes, each with a cuticular lens. Antenna 1 reaching two-thirds way along article 5 of peduncle of antenna 2; flagellum longer than peduncle. Antenna 2 slightly less than half length of body. Gnathopod 1 subchelate, palm extremely oblique. Peraeopod 4, article 5 half as

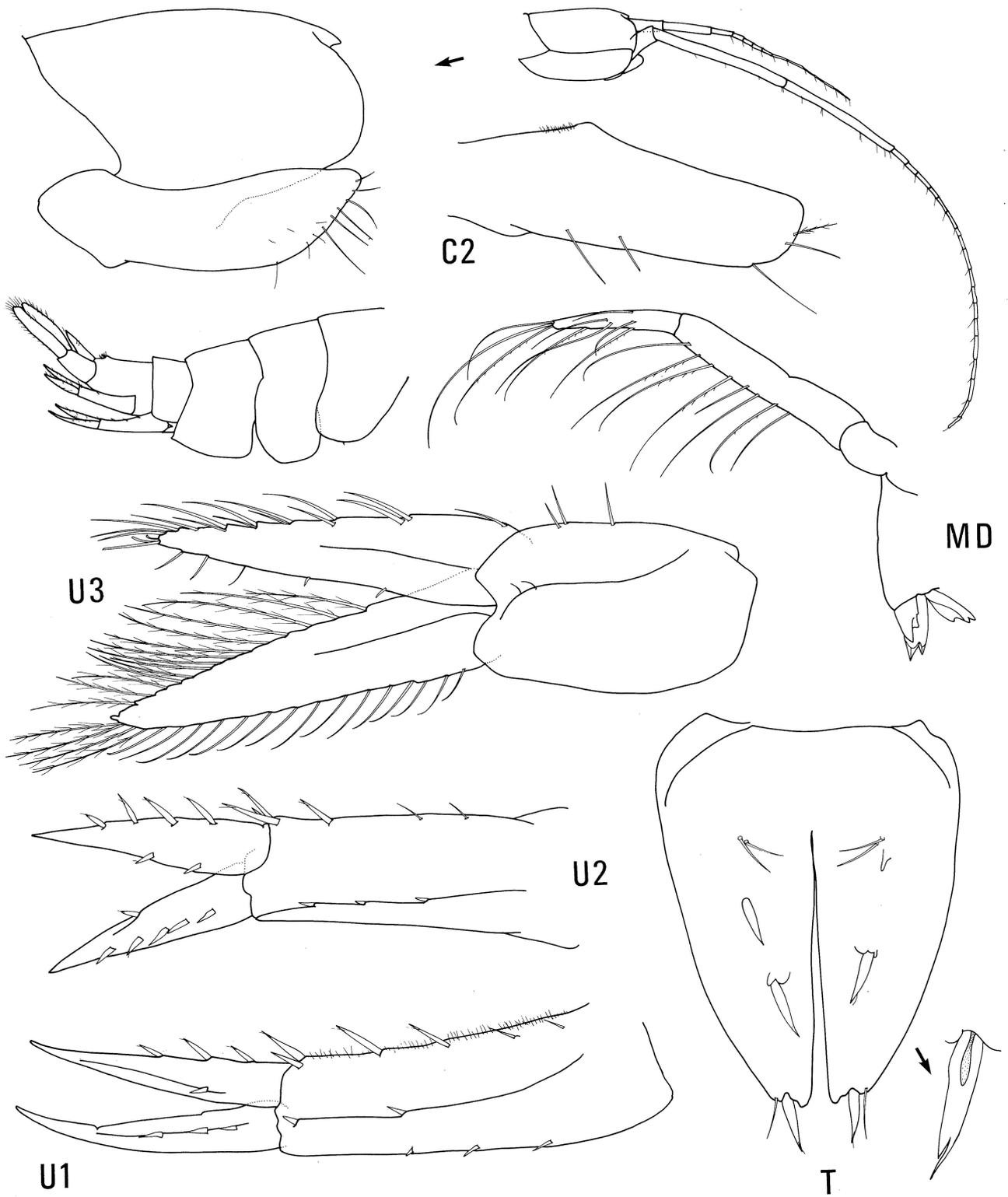


Fig. 24. *Byblis gerara* n.sp., holotype, female, 14.0 mm, east of Broken Bay, New South Wales.



Fig. 25. *Byblis gerara* n.sp., holotype, female, 14.0 mm, east of Broken Bay, New South Wales.

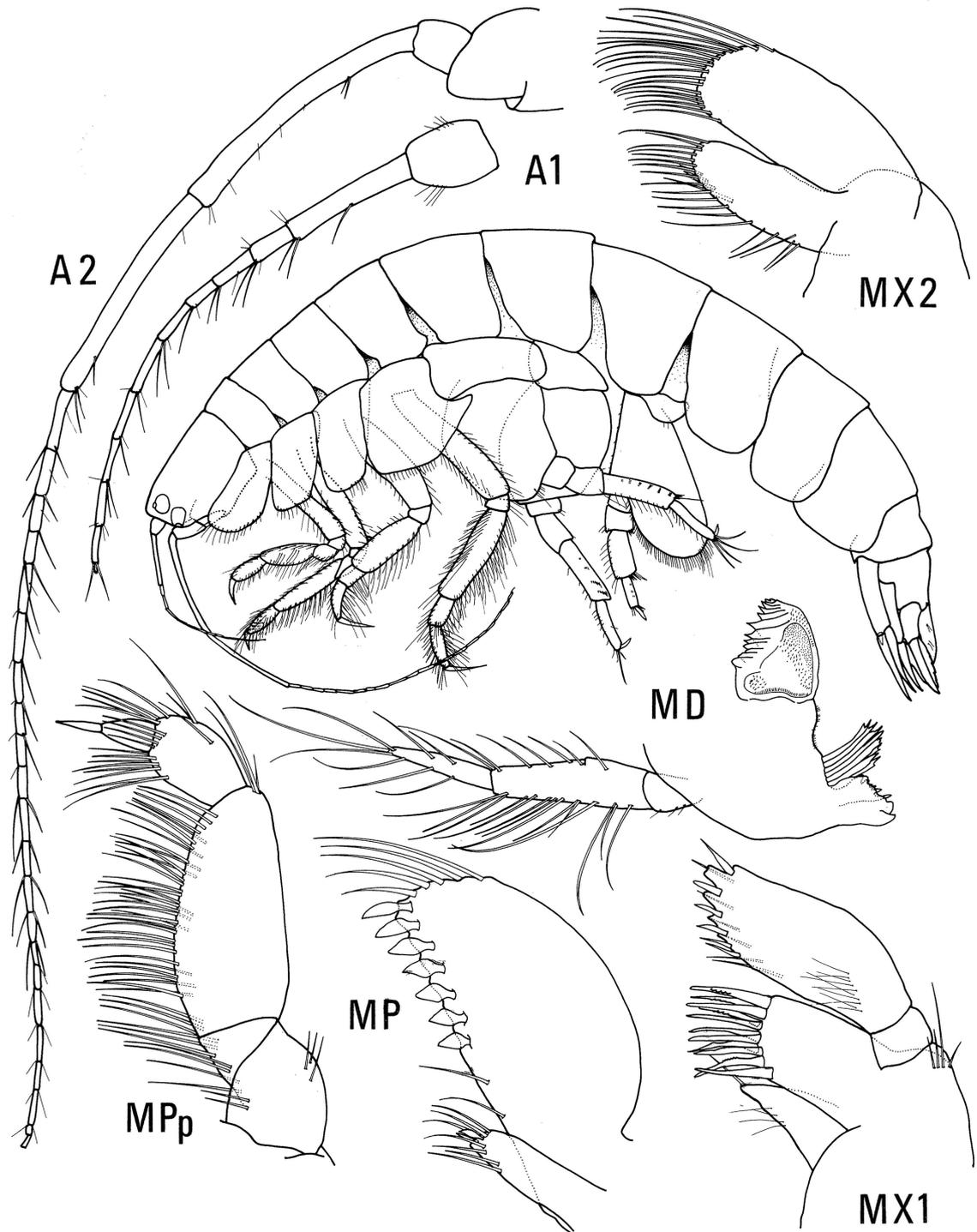


Fig. 26. *Byblis mildura* n.sp., holotype, 12.2 mm, Port Phillip Bay, Victoria.

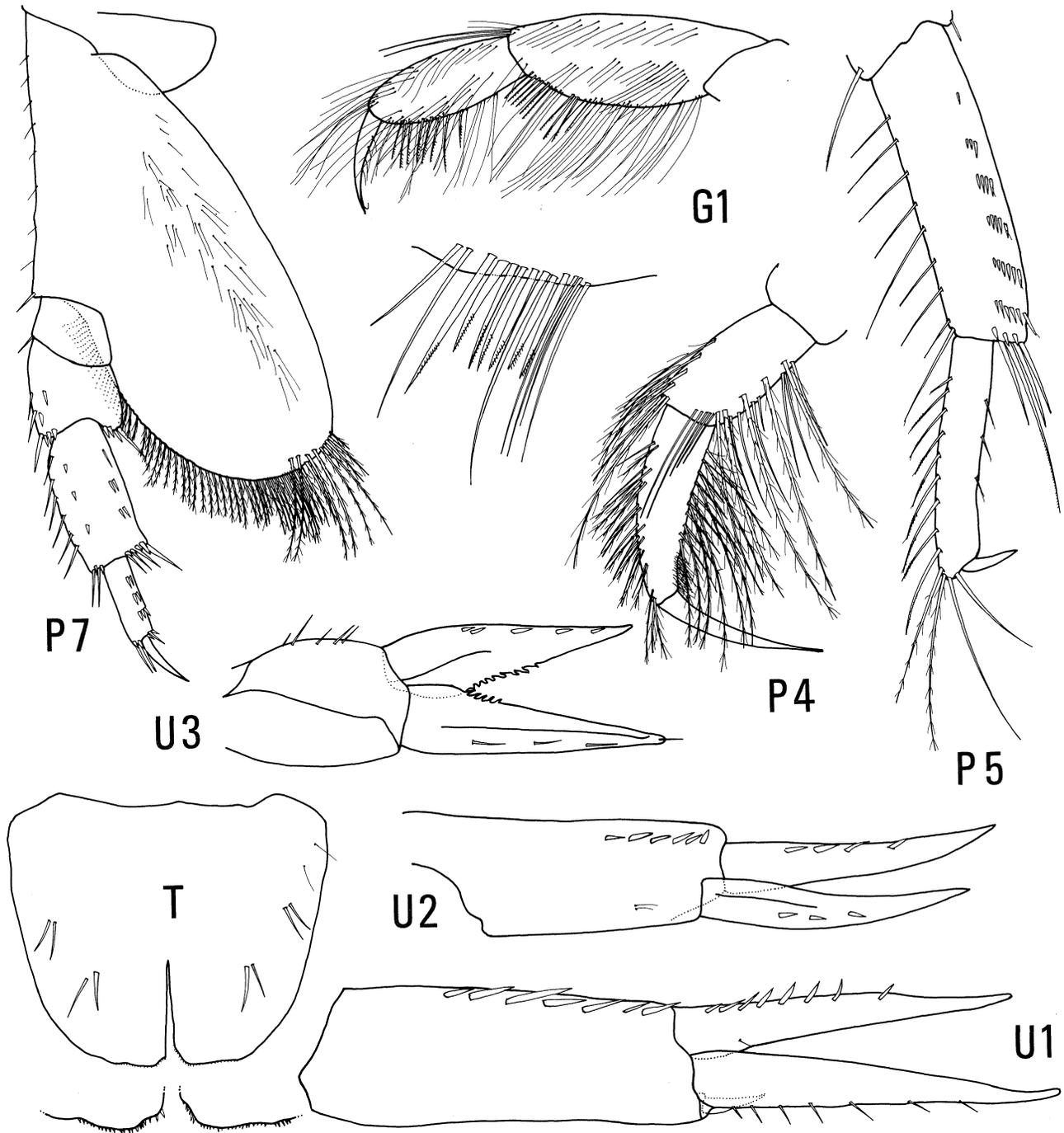


Fig. 27. *Byblis mildura* n.sp., holotype, 12.2 mm, Port Phillip Bay, Victoria.

wide as long. Peraeopod 7, article 2 posterodistally lobed, posterior margin convex, anterodistal margin broadly rounded; article 5 as long as articles 3 and 4 combined. Uropod 3, rami with serrate overlapping margins. Telson about 0.8 times as long as basal width, distally truncate with minute spinules, cleft 0.4 times length, each lobe with 2 pairs of dorsal setae.

Remarks. *Byblis mildura* is a common species most easily recognised by its persistent brown colour.

Antenna 1 is almost as long as the peduncle of antenna 2, and the distal lobe of article 2 on peraeopod 7 is produced more vertically than in *B. bega*. The relationship of this species to non-Australian species is not clear. It seems that no other described species possesses the truncate telson with minute spinules of *B. mildura*.

Quantitative studies in Port Phillip Bay have shown *B. mildura* to be the most abundant ampeliscid on

muddy sediments, with a mean density from many samples in this environment of about 35/m² (Poore *et al.*, 1975). Long-term monitoring of population density has shown it to vary substantially from year to year, up to a maximum of 1200/m² (Poore & Rainer, 1979). This species was referred to as Amphipod 8 by Stephenson *et al.* (1978).

Distribution. Queensland, New South Wales, Victoria; bays and shelf, 10–82 m.

Byblis tinamba n.sp.

Fig. 28

Type-material. HOLOTYPE: 7.4 mm, NMV J7752 (with 3 slides), south of Lakes Entrance, Bass Strait, 38°18'S 147°15'E, muddy fine shell, 55 m, 31 July 1983, epibenthic sled, BSS station 209. PARATYPES: 5 specimens, NMV J7753, type-locality; 18 specimens, AM P34703, eastern Bass Strait, 38°52.6'S 148°25.2'E, sand, 140 m, BSS station 170; 3 specimens, NMV J7754, east of Wilsons Promontory, Bass Strait, 39°03.2'S 146°39.5'E, muddy sand, 55 m, BSS station 179; 4 specimens, NMV J7755, south of Wilsons Promontory, Bass Strait, 39°12.9'S 146°27.3'E, muddy sand, 65 m, BSS station 180; 4 specimens, AM P34704, south-east of Lakes Entrance, Bass Strait, 37°59'S 148°27'E, muddy sand and shell, 51 m, BSS station 207.

Additional material. 9 specimens, NMV J7756 to J7760, western Bass Strait, 52–207 m, BSS stations 65, 68, 84, 130 and 187.

Diagnosis. Head slightly longer than deep; 2 pairs of eyes, each with a cuticular lens. Antennae 1 and 2 of similar length, about half as long as body; antenna 1, flagellum twice as long as peduncle. Gnathopod 1 subchelate, palm extremely oblique. Peraeopod 4, article 5 about as wide as long. Peraeopod 5, dactyl with a small anterior accessory tooth. Peraeopod 7, article 2 posterodistally lobed, posterior margin slightly convex, posterodistal corner sharply rounded; article 4 with long posterior setae; article 5 as long as article 4. Uropod 3, inner ramus with inner margin serrate. Telson 0.6 times as long as basal width, broadly rounded, cleft half length, each lobe with 3 lateral setae proximally, a pair at about the mid-point and a seta and a spine on the distal half.

Remarks. *Byblis tinamba* is distinguished from other Australian species by its subequal antennae and the shape of article 2 on peraeopod 7.

Distribution. Bass Strait; 51–207 m.

Haploops Liljeborg

Type-species. *Haploops tubicola* Liljeborg, 1852 (original designation).

Remarks. Species of the genus *Haploops* are easily distinguished by the more or less rectangular, rather than triangular, second article of peraeopod 7. Most known species are from the deep-sea, as is the case of the only known Australian species.

Haploops oonah n.sp.

Figs 29, 30

Type-material. HOLOTYPE: 7.9 mm, AM P34150 (with 4 slides), east of Port Kembla, New South Wales, 34°27–26'S 151°27'E, dredged, *Globigerina* ooze, 1200 m, J.K. Lowry, 13 December 1976, Kapala station K76-23-02. PARATYPES: 15 specimens, AM P25473, 4 specimens, NMV J2230, type-locality.

Additional material. One specimen, NMV J7741, eastern Bass Strait, sandy mud, 1120 m, pipe-dredge, BSS station Q631.

Diagnosis. Head about 1.2 times as long as deep, without a rostrum, anterior margin more or less vertical; one pair of eyes with cuticular lens. Antenna 1 longer than peduncle of antenna 2, about 0.8 times length of antenna 2; peduncular article 2 slightly longer than article 1. Antenna 2 as long as body. Peraeopod 7, article 2 broadest proximally, posterior margin concave and setose, posterodistal lobe obliquely angled and reaching beyond distal margin of article 3; article 3 rectangular, shorter than broad, with a distal spine row; article 4 almost 3 times as long as article 3, broader distally and with posterior and distal spine rows; article 6 as long as article 5, anterior and posterior margins convex; article 7 short, cylindrical with a distinct unguis. Epimera 2 and 3 with square posteroventral corners. Urosomite 1 with a rounded, triangular dorsal crest. Urosomites 2–3 with a pair of small dorsolateral bosses near anterior margin. Uropod 1, rami unarmed. Uropod 2, rami each with a single dorsal spine row. Uropod 3, rami tapering distally, truncate; outer ramus with 2 spines and distal setae; inner ramus with distal setae on both margins. Telson slightly longer than wide, cleft 0.7 times length, lateral margins convex and tapering, each lobe distally rounded, with a subterminal spine and seta.

Remarks. *Haploops oonah* is most closely related to *H. descansa* J.L. Barnard, 1961, which is known from the eastern Tasman Sea. *Haploops oonah* is distinguished from *H. descansa* by its longer first antennae, well-developed distal spines on article 3 of peraeopod 7, less spinose article 5 on peraeopod 7 and square posteroventral corner on epimeron 3. *Haploops lodo* J.L. Barnard, 1961, is also related to this species group but is distinguished from *H. oonah* by its lack of cuticular lenses and its rounded posteroventral corner on epimeron 3.

Distribution. New South Wales, Bass Strait; slope, 1120–1200 m.

ACKNOWLEDGEMENTS. We thank the Directors of the Australian Museum and the Museum of Victoria for providing travel funds; Roger Springthorpe for composing and inking the plates; Helen Stoddart, Helen Lew Ton and Graeme Milledge for other technical assistance; and Peter Davie for lending us the ampeliscid collection of the Queensland Museum.

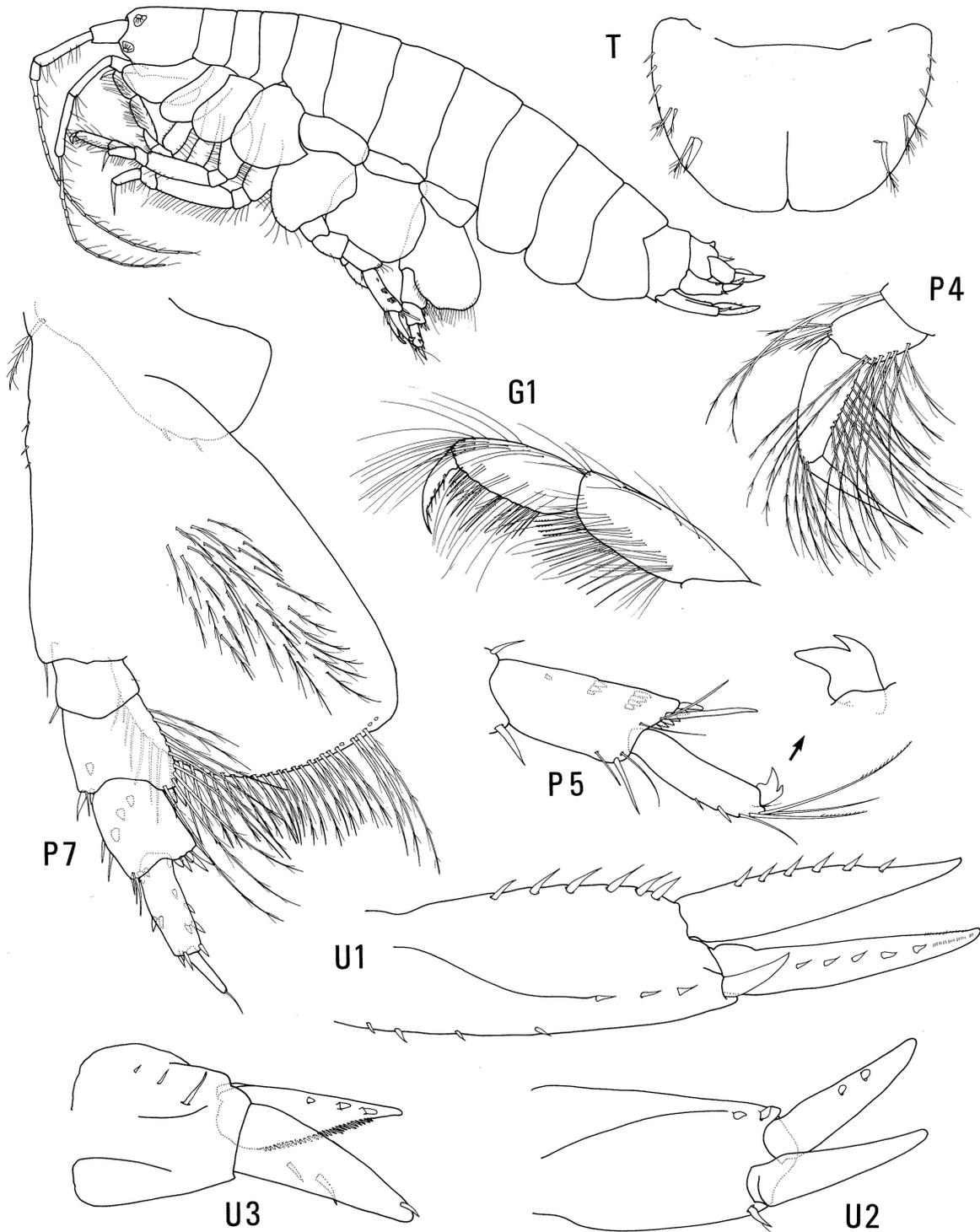


Fig. 28. *Byblis tinamba* n.sp., holotype, 7.4 mm, Bass Strait.

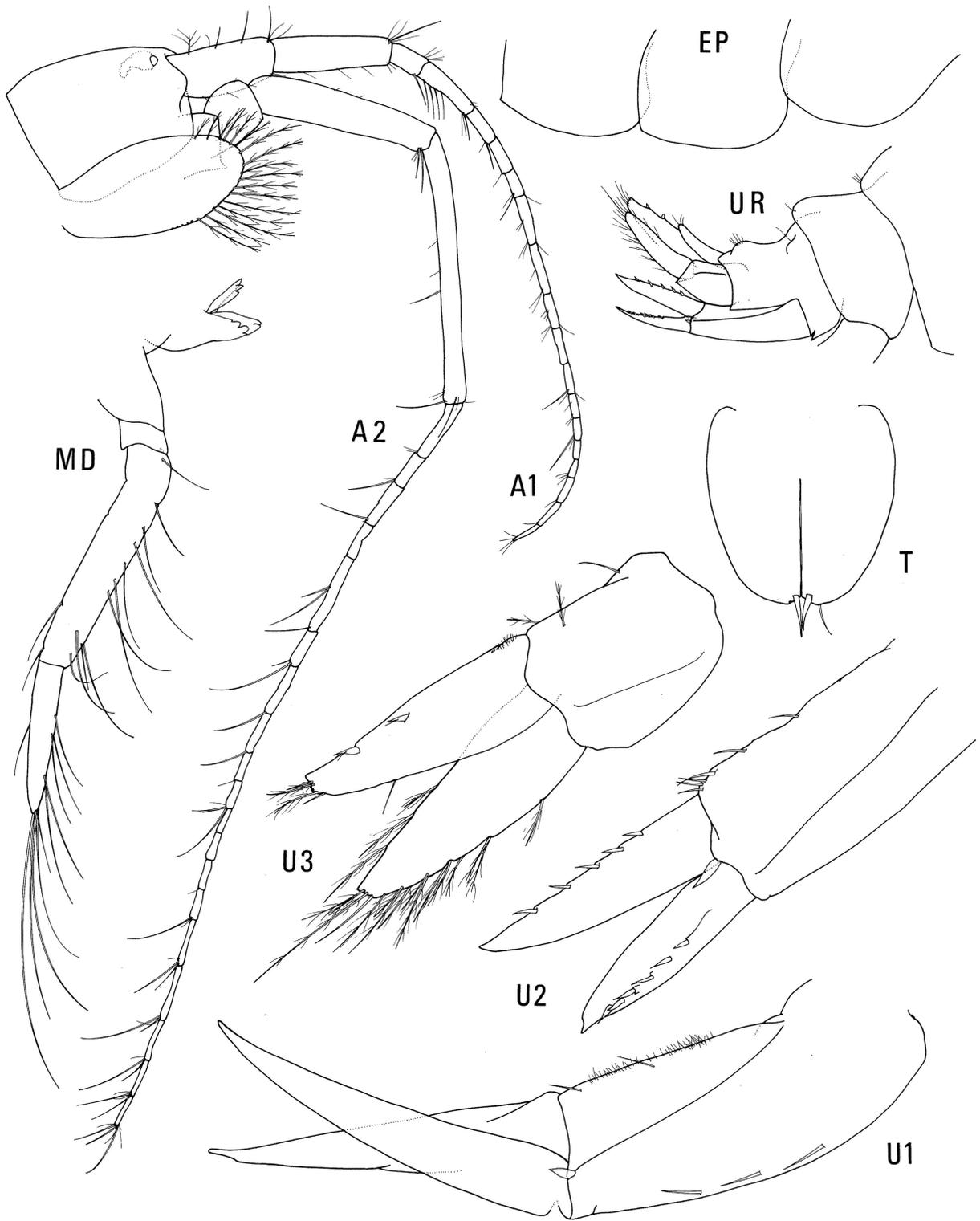


Fig. 29. *Haploops oonah* n.sp., holotype, 7.9 mm, east of Port Kembla, New South Wales.

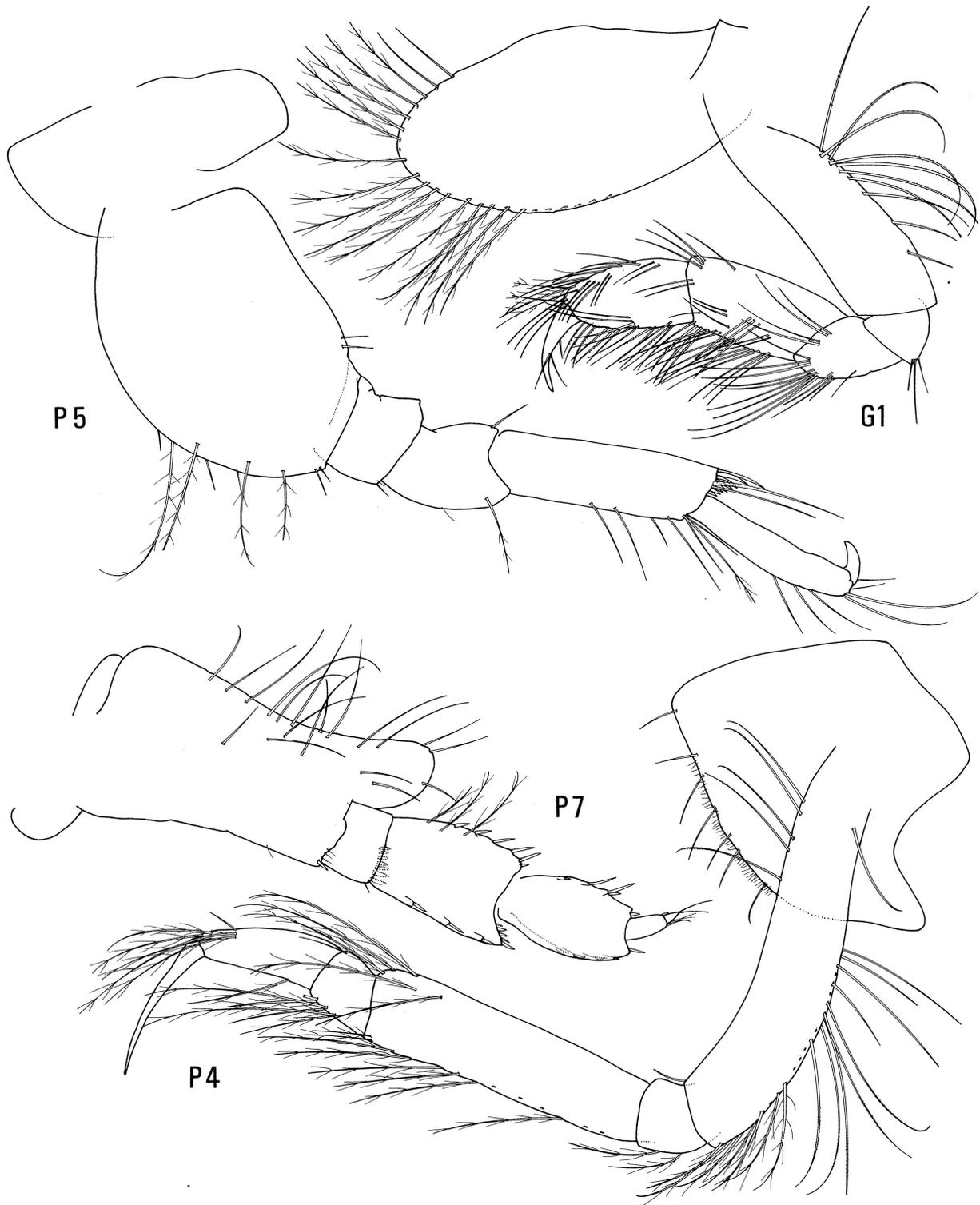


Fig. 30. *Haploops oonah* n.sp., holotype, 7.9 mm, east of Port Kembla, New South Wales.

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Accepted 6 August 1984