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Siphonoecetinae (Crustacea: Amphipoda: Ischyroceridae) 7: Australian Concholestids, *Ambicholestes* n.gen., with a Description of Six New Species, and a New, Restricted Diagnosis for *Caribboecetes* Just, 1983

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ABSTRACT. A new genus, *Ambicholestes*, of concholestid Siphonoecetinae is described. *Caribboecetes* Just, 1983 is re-diagnosed to encompass *C. barbadensis* Just, 1983 (type species), *C. jenikarpae* Just, 1984a, *C. intermedius* Just, 1984a and, tentatively, *C. pterycornis* Just, 1984a only. *Caribboecetes crassicornis* Just, 1984a, *C. magellani* Just, 1984a and *C. squamiferus* Just, 1984a are transferred to *Ambicholestes*, together with six new species from Australia: *A. cygnatratus, A. poorei, A. trilobatus, A. berentsae, A. thetis*, and *A. minutus*. The three last mentioned species are placed in a new subgenus, *Austrolestes*. The main character distinguishing *Ambicholestes* s.l. from *Caribboecetes* is the presence in the former of unique, complexly lobate inner lobes of the lower lip.

A possible stridulation organ involving coxal plate 2 and pereopod 2 is described for three species of *Ambicholestes*. A key to Australian *Ambicholestes* is provided. *Ambicholestes squamiferus* is recorded from Guam.

JUST, J., 1998. Siphonoecetinae (Crustacea: Amphipoda: Ischyroceridae) 7: Australian concholestids, *Ambicholestes* n.gen., with a description of six new species, and a new, restricted diagnosis for *Caribboecetes* Just, 1983. *Records of the Australian Museum* 50(1): 27–54.

Siphonoecetine amphipods are small (2–15 mm) marine crustaceans found in a variety of sheltered sandy or muddy places from the low water mark to several hundred metres depth, occasionally in very dense aggregations. Individual amphipods occupy tiny empty snail shells or worm tubes, which they carry around in a crawling or jumping manner. Siphonoecetines have been found around most continents except Antarctica and the North Polar Ocean, but many species remain to be described, not the least around Australia and south-east Asia. A brief overview of siphonoecetine classification, distribution and biology is presented by Just (1988).

This study is the second in a planned series describing the rich Australian fauna of Siphonoecetinae. *Australoecetes* Just, 1983 was dealt with in detail by Just (1985). Preliminary results from field work and museum studies in Australia in 1984 were used in phylogenetic, biogeographic, and biological contexts by Just (1988). In

the latter study the Siphonoecetinae was informally divided into concholestids and siphonoecetids. The former group is characterised by: coxal plates 3–4 having the distal margin dentate with thick, squamose setae; article 4 in pereopods 3–4 being anterolobate only; the dactylus on pereopods 5–7 having no accessory tooth; uropod 2 being absent.

In the present study, seven concholestid species, six of them new to science, are described from Australian waters (Fig. 1, distribution).

Just (1983) placed his new subfamily Siphonoecetinae in the Corophiidae, but later (Just, 1988) noted the similarity to cerapodid taxa (Ischyroceridae). Barnard & Karaman (1991) treated the subfamily as part of the Ischyroceridae complex of the Corophioidea close to *Cerapus* and allies. Lowry & Berents (1996) show that their "*Siphonoecetes* clade" (= Siphonoecetinae) and "*Cerapus* clade" (comprising five genera) are sister groups within a proposed "*Ericthonius* group" (= corophioid taxa with dorsal spines on the telson). Their study does not resolve whether or not the *Ericthonius* group belong in the Ischyroceridae. Bousfield & Hoover (1997) restrict the family Corophiidae to the newly created Corophiinae and the Siphonoecetinae. Since Bousfield and Hoover provide no supporting evidence for this sister group relationship, and they make no mention of the potential relationship between Siphonoecetinae and the ericthonid/cerapodid genera, I prefer to retain, for practical reasons, the Siphonoecetinae in the Ischyroceridae as suggested by Barnard & Karaman (1991), pending a broader based cladistic analysis of the Corophioidea.

Colour descriptions are copied from my field notes and colour transparencies of live animals. The length of animals was measured from the tip of the rostrum/front margin of the cephalon along the dorsal curvature to the apex of the telson. Names of institutions are abbreviated as follows: AM—Australian Museum, Sydney; NMV—Museum of Victoria, Melbourne; NMNH—National Museum of Natural History, Smithsonian Institution, Washington; QM—Queensland Museum, Brisbane; ZMUC—Zoological Museum, University of Copenhagen.

Review of *Caribboecetes*

Caribboecetes Just, 1983, differs from other concholestids by having a short, flattened inner ramus on uropod 1 and no ramus on uropod 3. *Concholestes* Giles, 1888 has a long and cylindrical inner ramus on uropod 1 and no ramus on uropod 3, while *Africoecetes* Just, 1983 has one ramus on uropod 3. Following the discovery of several new

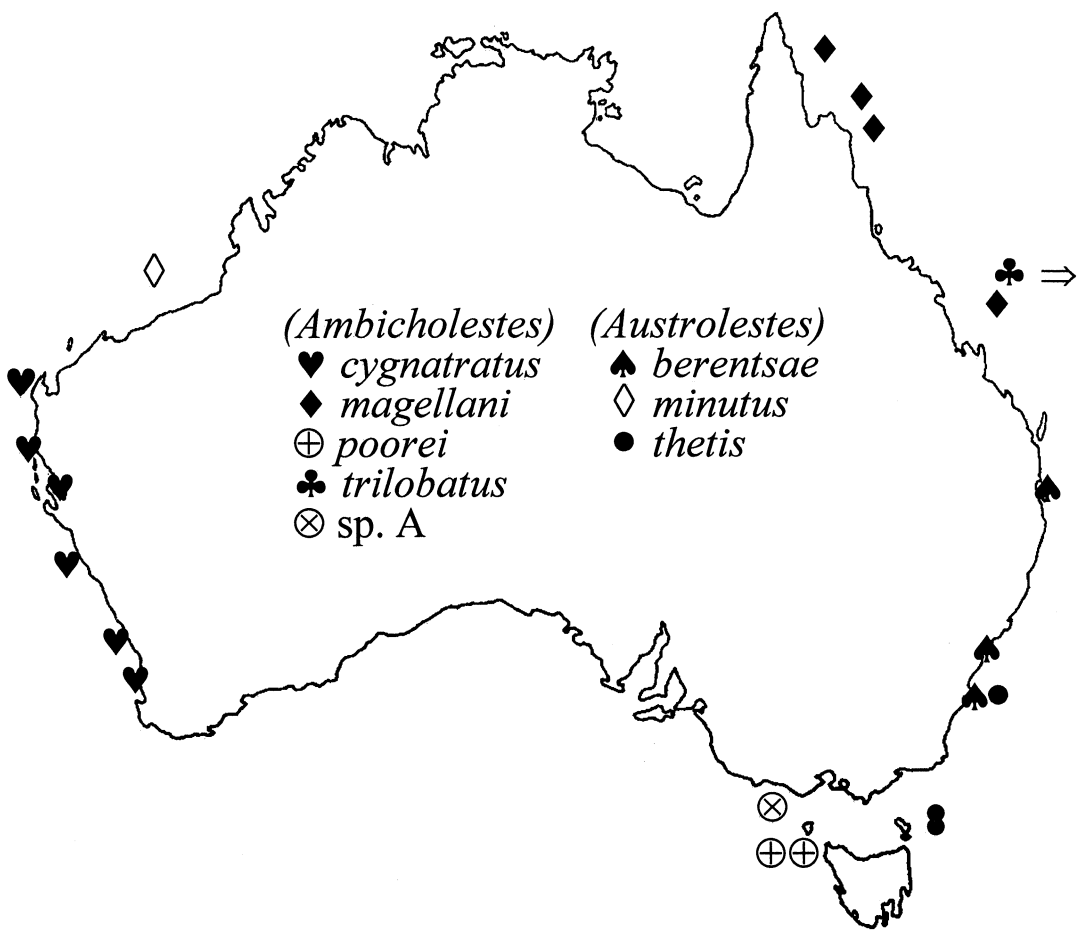

Fig. 1. Distribution of species of *Ambicholestes* in Australia. Arrow points towards Chesterfield Islands in the Coral Sea.

concholestids from Australia and a re-evaluation of the *Caribboecetes* species described by Just (1983, 1984a) it has become clear that *Caribboecetes* must be divided into two groups based primarily on the structure of the lower lip and the setation on pereopod 7. *Caribboecetes barbadensis* (type-species of the genus), *C. jenikarpae*, and *C. intermedius* have the inner lobes of the lower lip simple, more or less ovoid, while *C. crassicornis, C. magellani*, and *C. squamiferus* have uniquely and complexly lobate inner lobes (Fig. 2) with a proximolateral backward curving projection on each lobe and the proximal lobe margin produced and set at an angle of up to 45 degrees with the inner lobe plane. The three last mentioned species have a midlateral, longitudinal row of setae on article 2 of pereopod 7 in addition to the normal marginal setae. The densely setose anterior lateral surfaces of coxal plate 7 and article 2 of pereopod 7 in *C. jenikarpae* are considered independently derived autapomorphisms.

On this basis a new genus, *Ambicholestes*, is established for *C. crassicornis, C. magellani, C. squamiferus* and the Australian concholestids described below. Diagnostic differences between *Caribboecetes* and *Ambicholestes* are summarised in Table 1 (p. 53).

The structure of the lower lip in *Caribboecetes pterycornis* is not known (lost during original dissection). In spite of several autapomorphic attributes, which set this species apart from other *Caribboecetes*, I tentatively retain it in that genus on account of the lack of a midlateral row of setae on article 2 of pereopod 7.

Caribboecetes Just, 1983

New restricted diagnosis. Concholestid Siphonoecetinae (*sensu* Just, 1988) with inner ramus of uropod 1 at most $^1/_2$ length of outer ramus, flattened, with robust setae on margin. Uropod 3 without ramus. Mandibular palp 2-articulate, blunt, reaching to about apex of incisor. Inner lobes of lower lip simple. Ocular field of eye lobes not inflated. Article 2 of pereopod 7 without single midlateral row of setae. Oostegites on pereopods 2–5. Gills on pereopods 4–6.

Type species. *Caribboecetes barbadensis* Just, 1983 (original designation).

Additional species. *Caribboecetes intermedius* Just, 1984a, *C. jenikarpae* Just, 1984a, *C. pterycornis* Just, 1984a (tentatively).

Further description. Rostrum present or absent. Coxal plates 5–6 antero- as well as posterolobate (except *C. pterycornis*, posterolobate only). Upper lip with apical notch. Antenna 1 article 3 50–60% (*C. pterycornis* 70%) length of article 1, article 2 80–95% length of article 1. Antenna 2 article 4 75–90% length of article 5. Antenna 1 reaching from just beyond peduncle of antenna 2 to about tip of flagellum of antenna 2. Pereopod 1 article 6 80–90% length of article 5, without posteroapical tooth, with posteroapical robust seta and 1–2 robust setae on posterior margin; article 5 with 1 posteroapical robust seat. Pereopod 2 article 6 10–45% longer than article 5 (except *C. pterycornis*, 70%), with posteroapical triangular tooth and varying number of posterior robust setae. Pereopods 3–4 with posterior robust setae on article 5. Pereopods 5–6 with crescent of equal-sized short, robust setae on article 5. Pleopods with peduncle broader than long; rami as long as or longer than width of peduncle; inner ramus slightly longer than outer ramus.

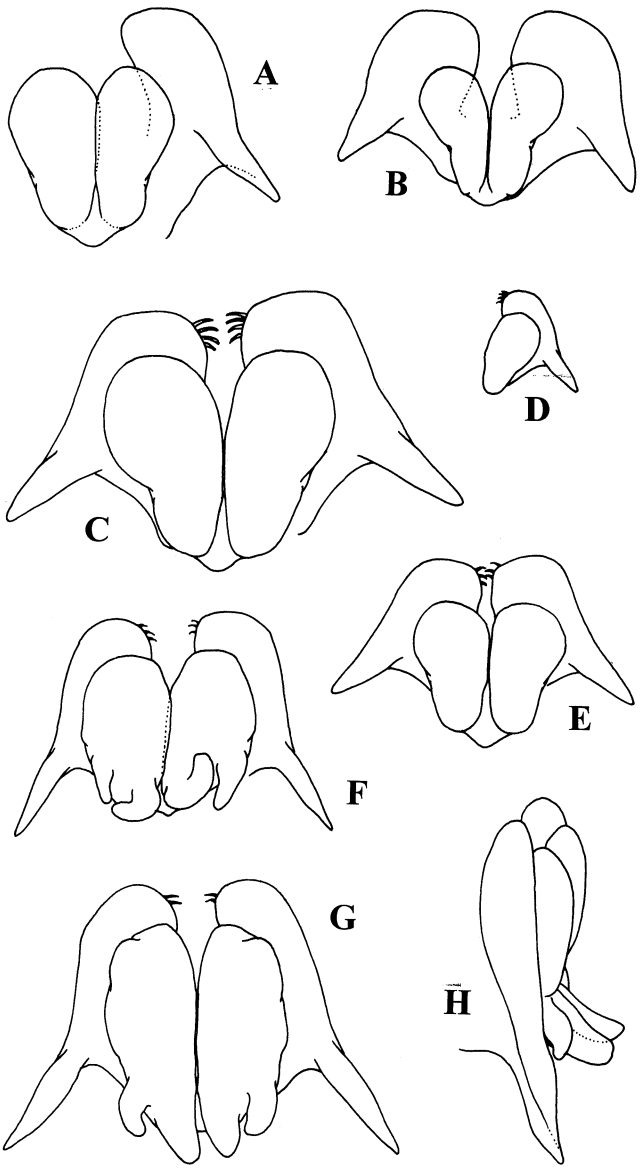

Fig. 2. Lower lip of selected concholestid Siphonoecetinae. **A**, *Concholestes omani* Just, 1987; **B**, *Africoecetes armatus* (Griffiths, 1974); **C**, *Caribboecetes barbadensis* Just, 1983; **D**, *Caribboecetes intermedius* Just, 1984; **E**, *Caribboecetes jenikarpae* Just, 1984; **F**, *Ambicholestes crassicornis* (Just, 1984, n. comb.); **G**, *Ambicholestes squamiferus* (Just, 1984, n. comb.); **H**, *Ambicholestes berentsae* n.sp., lateral view. Not to scale.

Distribution. Caribbean, Pacific Mexico; from low water mark to 54 m.

Australian Concholestids

A full cladistic analysis of the Siphonoecetinae, and the concholestid component in particular, is not feasible at the present time. Many siphonoecetines remain to be described, including groups of species exhibiting characters which will influence the outcome of such an analysis. The problem is compounded by the present uncertainties, at the outgroup level, of where the Siphonoecetinae belong in the Corophioidea, and by difficulties in delimiting families with which Siphonoecetinae are believed to be related. The proposed classification of the Australian concholestids is based on immediately obvious synapomorphies, such as a complex lower lip versus a simple one, and an elongated, 1-articulate, pointed mandibular palp versus the otherwise ubiquitous short, club shaped palp with a tiny second article (in a single known species the first article is broadly expanded). The use of subgeneric classification is a subjective convenience to keep together species sharing a major synapomorphy, e.g., the complex lower lip in *Ambicholestes*, but differing at a perceived subordinate sister group level, here *Ambicholestes* sensu stricto versus *Ambicholestes* (*Austrolestes*). This use of the subgenus category is consistent with Just (1983—*Siphonoecetes*, and 1985—*Australoecetes*).

Urosomites and the telson

In my first contribution to the taxonomy of the Siphonoecetinae (Just, 1983) an important character in the diagnosis of the new genus *Caribboecetes* was "... urosomite 3 and telson fused dorsally". This still holds good for the four species retained in that genus. For the three species of *Caribboecetes* described by Just (1984a, *C. crassicornis, C. magellani*, and *C. squamiferus*), but here transferred to *Ambicholestes* n.gen., it was noted (Just, 1984a: 38) that the urosomite-telson configuration is not intraspecifically stable (occurrence of incomplete fusion between urosomite 3 and the telson, more or less complete fusion between urosomites 1 and 2 and/or 2 and 3). The same lability is found in the Australian concholestids and will be commented upon where relevant. For that reason the urosomite-telson configuration has not been included in the diagnoses of *Caribboecetes* and the new genus group taxa below.

Stridulation organs

Three species in *Ambicholestes* s.s., viz., *A. crassicornis, A. magellani*, and *A. trilobatus* n.sp. possess what appears to be a sound producing organ. Coxal plate 2 carries on the posteroventral margin a row of backward and slightly outward pointing teeth; pereopod 2 article 2 carries medially along the anterior margin a number of short, pointed, proximally inflated, hollow setae, (Just, 1984a, figs 13–14, 16; this paper Fig. 8). When pereopod 2 is moved forward the setae come into contact with the coxal plate teeth. This may result in the production of sound. The different arrangement of setae in the three species (*A. crassicornis*: nearly straight row, *A. magellani*: on two projecting lobes, *A. trilobatus*: on three projecting lobes) further suggests differences in the sound patterns produced. Stridulation in live animals has not been observed.

In this paper the three species are placed in *Ambicholestes* s.s. together with *A. squamiferus, A. cygnatratus* n.sp. and *A. poorei* n.sp. for other reasons, but their joint possession of a unique potential stridulation mechanism suggests they form a clade which may eventually warrant separate genus group recognition.

Sexual dimorphism

Some groups of siphonoecetines exhibit distinctive sexual dimorphism (*Siphonoecetes (Centraloecetes)*: uropod 1, Just, 1983; *Australoecetes (Stebbingoecetes)*: coxal plate 1, Just, 1985; *Africoecetes*: pereopod 2, Just, 1984b). No such differences between the sexes have been observed in species of *Caribboecetes* or *Ambicholestes*. In species of *Ambicholestes*, as in all other siphonoecetines, male antennae are longer, antenna 1 often with more flagellar articles, stouter, and more densely setose than in females; the body length of adult males is greater than in adult females; and females often have fewer robust setae on pereopods and uropods. The number of robust setae mentioned in descriptions below is the maximum number found in adult males, or otherwise in the material available.

Ambicholestes n.gen.

Diagnosis. Concholestid Siphonoecetinae (*sensu* Just, 1988) with inner ramus of uropod 1 at most 1/2 length of outer ramus, flattened, with robust setae on margin. Uropod 3 without ramus. Mandibular palp blunt or pointed, with or without small second article. Inner lobes of lower lip complexly lobate. Ocular field of eye lobes inflated. Article 2 of pereopod 7 with marginal setae and midlateral, single, longitudinal row of setae. Oostegites on pereopods 2–5. Gills on pereopods 4–6.

Type species. *Caribboecetes magellani* Just, 1984a.

Additional species. *Ambicholestes berentsae* n.sp., *A. crassicornis* (Just, 1984a) **n.comb.**, *A. cygnatratus* n.sp., *A. minutus* n.sp., *A. poorei* n.sp., *A. squamiferus* (Just, 1984a) **n.comb.**, *A. thetis* n.sp., *A. trilobatus* n.sp.

Further description. Rostrum present or absent. Coxal plates 5 and 6 posterolobate only. Upper lip with apical notch. Antenna 1 article 3 55–85% length of article 1, article 1 85–95% length of article 2. Antenna 2 peduncular article 4 75–90% length of article 5. Antenna 1 reaching from middle of to just beyond peduncular article 5 of antenna 2. Pereopod 1 article 6 subequal in length to article 5 (± 10%), with or normally without posteroapical triangular tooth, with posteroapical robust seta and varying number of posterior robust setae; article 5 normally with posteroapical robust seta. Pereopod 2 article 6 subequal in length to article 5 (± 10%), with posteroapical triangular tooth and varying number of posterior robust setae; article 5 with 1 posteroapical robust seta. Pereopods 3 and 4 with

posterior short, robust setae on article 5. Pereopods 5 and 6 with crescent of short, equal-sized robust setae on article 5. Pleopods with peduncle broader than long, rami at most as long as width of peduncle, inner ramus slightly longer than outer ramus.

Distribution. The Philippines (*A. magellani, A. squamiferus*), Guam (*A. squamiferus*, new record), Caribbean (*A. crassicornis*), Australia (see Fig. 1); 0.1–229 m.

Etymology. The genus name is derived from the Latin *ambifarius* = with two sides, referring to the bimodal distribution of the genus (South East Asia-Australia and the Caribbean), combined with an allusion to its concholestid affinity. Masculinum.

Ambicholestes (Ambicholestes) squamiferus (Just, 1984a), **n.comb.**

Caribboecetes squamiferus Just, 1984a: 59, figs 1D, 18, 19.

Material examined. Agana Bay, Guam, on rubble, 12.8 m, 25 April 1984, Stn GUM 112D, J.H. Dominguez and R.K. Kropp, NMNH (11 specimens in small prosobranch shells). Pago Bay, Guam, under/in algal mat at outer reef flat, intertidal, 1 November 1984, Stn GUM 189, R.K. Kropp, NMNH (62 specimens in similar abodes), AM P44613 (10 specimens in similar abodes), Guam Marine Laboratory, University of Guam (10 specimens in similar abodes).

This is the first record of Siphonoecetinae from Guam.

Key to Australian *Ambicholestes* n.gen.

1 Mandibular palp 2-articulate, blunt, somewhat club shaped, reaching to about apex of incisor ..... (*Ambicholestes* sensu stricto) 2

—— Mandibular palp 1-articulate, apically pointed, overreaching incisor with at least 1/3 palp length ..... (*Austrolestes*) n.subgen. 5

2 Article 2 of pereopod 2 anterior margin with 2 or 3 anterior lobes, lobe margins with medial short, hollow setae. Coxal plate 2 posteroventral margin with row of sharp teeth 3

—— Article 2 of pereopod 2 anterior margin straight, without specialised setae. Coxal plate 2 posteroventral margin smooth 4

3 Rostrum absent. Article 2 of pereopod 2 with 2 lobes. Pleon dorsally smooth ..... *(Ambicholestes) magellani* (Just, 1984a)

—— Rostrum present, pointed, arising from depressed position between antennae 1. Article 2 of pereopod 1 with 3 lobes. Pleon densely setulose ..... *(Ambicholestes) trilobatus* n.sp.

4 Rostrum present in normal position. Cephalic surface in rostral area smooth ..... *(Ambicholestes) cygnatratus* n.sp.

—— Rostrum absent. Midanterior cephalic margin forming a broadly rounded setulose lobe ..... *(Ambicholestes) poorei* n.sp.

5 Triangular rostrum present in normal position 6

—— Rostrum absent. Midanterior cephalic margin forming a wide, rounded triangle ..... *(Austrolestes) thetis* n.sp.

6 Cephalon twice as long as pereonite 1. Peduncular article 3 of antenna 2 with medioproximal hook shaped robust seta ..... *(Austrolestes) minutus* n.sp.

—— Cephalon and pereonite 1 of subequal length. Antenna 2 without hook shaped robust setae ..... *(Austrolestes) berentsae* n.sp.

Subgenus *Ambicholestes* s.s.

Diagnosis. *Ambicholestes* with short, club-shaped mandibular palp carrying tiny second article; palp reaching to about apex of incisor. Antenna 1 article 3 55–70% length of article 1. Male antenna 2 at most as long as cephalon and pereon combined.

Type species. *Caribboecetes magellani* Just, 1984a.

Additional species. *Ambicholestes crassicornis* (Just, 1984a) **n.comb.**, *A. cygnatratus* n.sp., *A. poorei* n.sp., *A. squamiferus* (Just, 1984a) **n.comb.**, *A. trilobatus* n.sp.

Ambicholestes (Ambicholestes) cygnatratus n.sp.

Figs 3–5

Material examined. HOLOTYPE: male, 2.5 mm, Bush Bay, 5 km off shore, 30 km S of Carnarvon, 29°10'S 114°39'E, 2 m, extensive shallow sea-grass beds and detritus, airlift, 6 January 1984, R.T. Springthorpe & J.K. Lowry, Stn WA-431, AM P44599. PARATYPES: (77 specimens, all from Western Australia). Same data as holotype, AM P34966 (28 specimens). One kilometre W of Red Bluff, Kalbarri, 27°42'S 114°09'E, 18 m, *Ecklonia* bed, rocky bottom, "curly" bryozoans, 9 January 1984, J.K. Lowry, Stn WA-452, AM P34967 (4). Green Island, Rottnest Island, 32°01'S 115°S 30'E, off jetty, 0.5 m, coralline algae at base of jetty pilings, 21 December 1983, R.T. Springthorpe, AM P34968 (1). Kalbarri, 500 m off Chinaman's Rock, 27°42'S 114°09'E, 6 m, rocky bottom, "curly pink" bryozoans, 10 January 1984, R.T. Springthorpe, Stn WA-460, AM P34979 (18). Kalbarri, 500 m off Chinaman's Rock, 27°42'S 114°09'E, 6 m, brown algae on rock shelf, 10 January 1984, J.K. Lowry, Stn WA-465, AM P34980. Kalbarri, Red Bluff, 27°42'S 114°09'E, 3–4 m, rocky shore, mixed coralline algae, 10 January 1984, R.T. Springthorpe, Stn WA-480, AM P34981. Cathedral Rock, Rottnest Island, 32°01'S 115°27'E, 1 m, edge of reef flat, mixed algae and sponges, 21 December 1983, R.T. Springthorpe and J.K. Lowry, Stn WA-250, AM P34982 (1). Green Island, Rottnest Island, 32°01'S 115°30'E, off jetty, 1 m, mixed algal turf on rock, 21 December 1983, R.T. Springthorpe, Stn WA-268, AM P35070 (2). Cape Range National Park, off Ned's Camp, channel in Ningaloo Reef, 21°59'S 113°54.5'E, 6 m, tubular brown algae, 31 December 1983, R.T. Springthorpe, Stn WA-320, AM P35074 (2). Cape Range National Park, off South Ned's Beach, 22°00'S 113°55'E, inshore limestone reef, 2 m, mixed algae, 31 December 1983, J.K. Lowry, AM P35076 (2). North side of Point John, Rockingham, 30 km S of Perth, 0.75 m (LW), sand with some detritus, inside sea-grass and algal belt, hand dredge, 8 March 1984, J. Just, Stn AU-7, ZMUC (1). Denham, Shark Bay, near head of jetty (east side), along edge of dense *Posidonia* bed, 2 m (MW), sand, foraminiferans, detritus, hand dredge, 21 March 1984, J. Just, Stn AU-19, ZMUC (3).

Diagnosis. Rostrum present in normal position. Antennal peduncles with smooth cuticle (not counting ordinary setae).

Further description. Rostrum short, triangular. Subrostral part of frons with microsetules. Antennal peduncles without robust setae. Antenna 2 ventroapical projection of article 2 as long as broad, rounded, with 3–5 apical setae.

Coxal plates 5 and 6 posterior lobe rounded with upward turned part rounded. Posterior lobe of coxal plate 7 microsetulose. Pleonal sideplates 1 and 2 evenly rounded.

Mouthparts normal. Mandibular palp laterally and distally with very dense cover of microsetules hiding tiny second article.

Pereopod 1 article 6 without posterodistal tooth, with up to 4 posterior robust setae. Pereopod 2 article 6 with up to 4 posterior robust setae, article 2 with straight anterior margin carrying a few long and a few short setae.

Uropod 1 outer ramus 3 times longer than broad, with up to 5 lateral robust setae; inner ramus half the length of outer ramus, with apical and lateral robust setae.

Urosomites 1 and 2 separate or partly fused dorsally (fusion appears to be more common in larger specimens). Telson free.

Size. Largest male: 3.1 mm; largest female: 2.8 mm.

Colour (specimens from Denham, Stn AU-19). Cephalon semitransparent with light brown shining through, with light beige bar between eyes and onto rostrum. Dorsum light brown in mottled, reticulate pattern. Eyes white with black ommatidia. Antennae colourless transparent with white blotches and dots. Coxal plates, pereopods and urosome colourless transparent.

Biology. Specimens were found on detritus-enriched sand in and around sea-grass and algal beds, in low algal mats, and under large algae on hard substrate. The only type of abode observed (most specimens listed above) is small prosobranch shells with a short coarse-grained entrance tube.

Distribution. Western Australia; 0.5–18 m depth.

Etymology. The specific epithet refers to the black swan, *Cygnus atratus*, the state symbol of Western Australia.

Ambicholestes (Ambicholestes) magellani (Just, 1984a), n.comb.

Caribboecetes magellani Just, 1984a: 57, figs 1C, 16, 17.

Material examined (237 specimens). Heron Island, south Queensland, reef crest, boulder zone, 30 September 1979, N.L. Bruce, QM W11667 (1 specimen). Heron Island, south Queensland, centre of Wistari-Heron channel, 33 m, 2 October 1980, Boer & Hensby, AM P30981 (1). Lizard Island, north Queensland, BK-119, AM P34958 (4). Lizard Island, north Queensland, BK-122, AM P34959 (4). Lizard Island, north Queensland, BK-130, AM P34960 (5). Lizard Island, north Queensland, BK-131, AM P34961 (1). Lizard Island, north Queensland, reef edge 200 m NW of Palfrey Island, 14°40'S 145°28'E, 3 m, coral sand and rubble between bommies, 16 October 1978, J.K. Lowry, AM P34962 (1). Lizard Island, north Queensland, reef edge 200 m NW of Palfrey Island, 14°40'S 145°28'E, 3 m, sand beneath coral boulders, 16 October 1978, P.C. Ferrill, AM P34963 (19). No.5 Sandbank Reef, north Queensland, 13°45'S 144°16'E, 8–10 m, rubble washing from SW end of Reef, December 1982, I. Loch, AM P34964 (88).

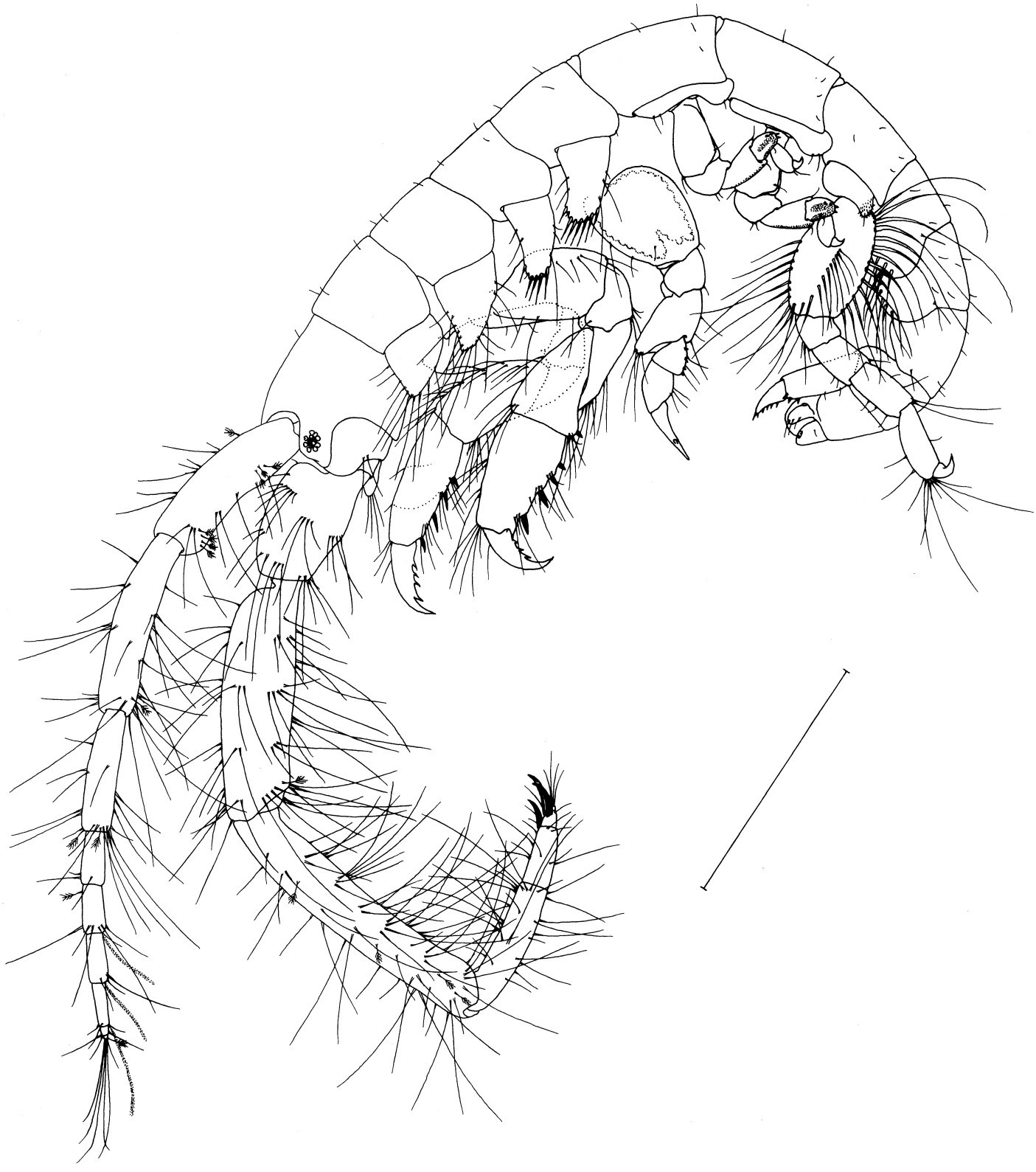

Fig. 3. *Ambicholestes (Ambicholestes) cygnatratus* n.sp., holotype. Scale bar: 0.5 mm.

Escape Reef, south end, north Queensland, 15°53'S 145°49'E, 18 m, rubble washing, outer slope of shelf, 20 December 1981, I. Loch, AM P34965 (85). Elizabeth Reef, SW end, Tasman Sea, 29°57.2'S 159°01.2'E, outer reef slope near "Yoshi Maru Ikawa" wreck, 12 m, algal turf on rocky substrate, airlift, 10 December 1987, R.T. Springthorpe & J.K. Lowry, Site 30, AM P37917 (2). Lizard Island, north Queensland, 14°40'S 145°28'E, outermost reef outside Research Point, seaward face, patches of coarse sand and rubble between bommies, 8 m, hand dredge, 16 July 1984, J. Just Stn AU-37, ZMUC (7). Lizard Island, north

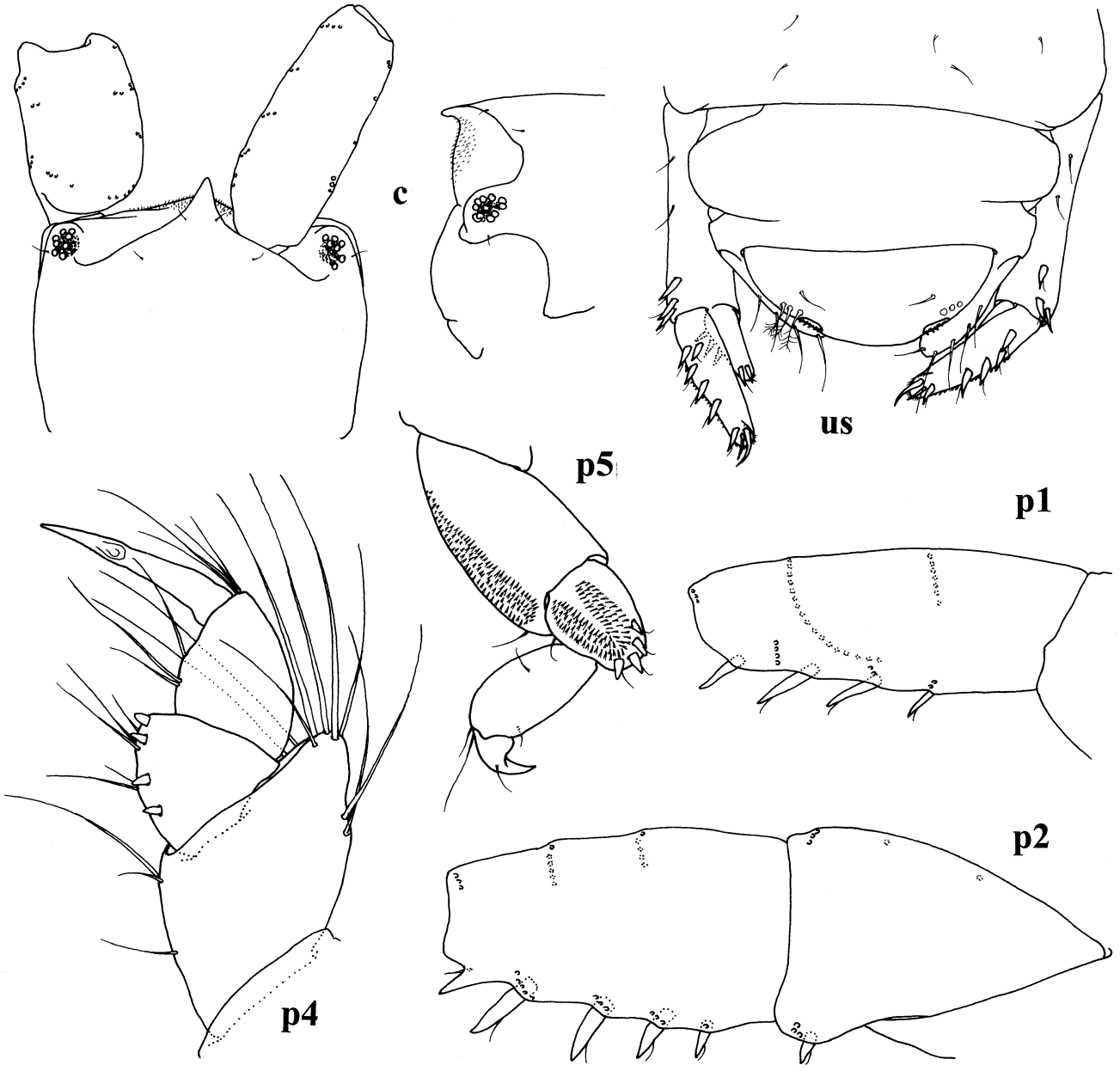

Fig. 4. *Ambicholestes (Ambicholestes) cygnatratus* n.sp., holotype. **c**, cephalon, dorsal and lateral view; **p**, pereopod (1, 2, 4 and 5); **us**, urosome, dorsal view.

Queensland, 14°40'S 145°28'E, outermost reef outside Research Point, seaward face, patches of coarse sand and rubble between bommies, 7–8 m, 17 July 1984, J. Just Stn AU-38, ZMUC (13), AM P44600 (8, in houses).

Diagnosis. Rostrum absent. Anterior margin of cephalon evenly rounded. Antenna 2 peduncle article 3 with dorsal and medial microsetules. Article 2 of pereopod 2 with anterior margin bilobed; presumed stridulation organ present.

Further description. See Just (1984a).

Remarks. The original material of *A. magellani* from The Philippines consisted of two females. Mouthparts were not dissected out for study. The present material shows that the species has complexly lobate inner lobes of the lower lip. Male cephalon and antennae are moderately longer and more setose than in females.

Australian specimens generally carry more robust setae on pereopods 3–6 article 5 than the material from the Philippines, and uropod 3 carries up to 9 lateral robust setae (2 and 3 in the holotype). These differences may represent geographical variations. In all other respects, including colour, the present material agrees with the description and illustrations in Just (1984a).

Size. Largest male: 3.3 mm (north Queensland); largest female: 2.8 (north Queensland), 3.9 mm (Heron Island).

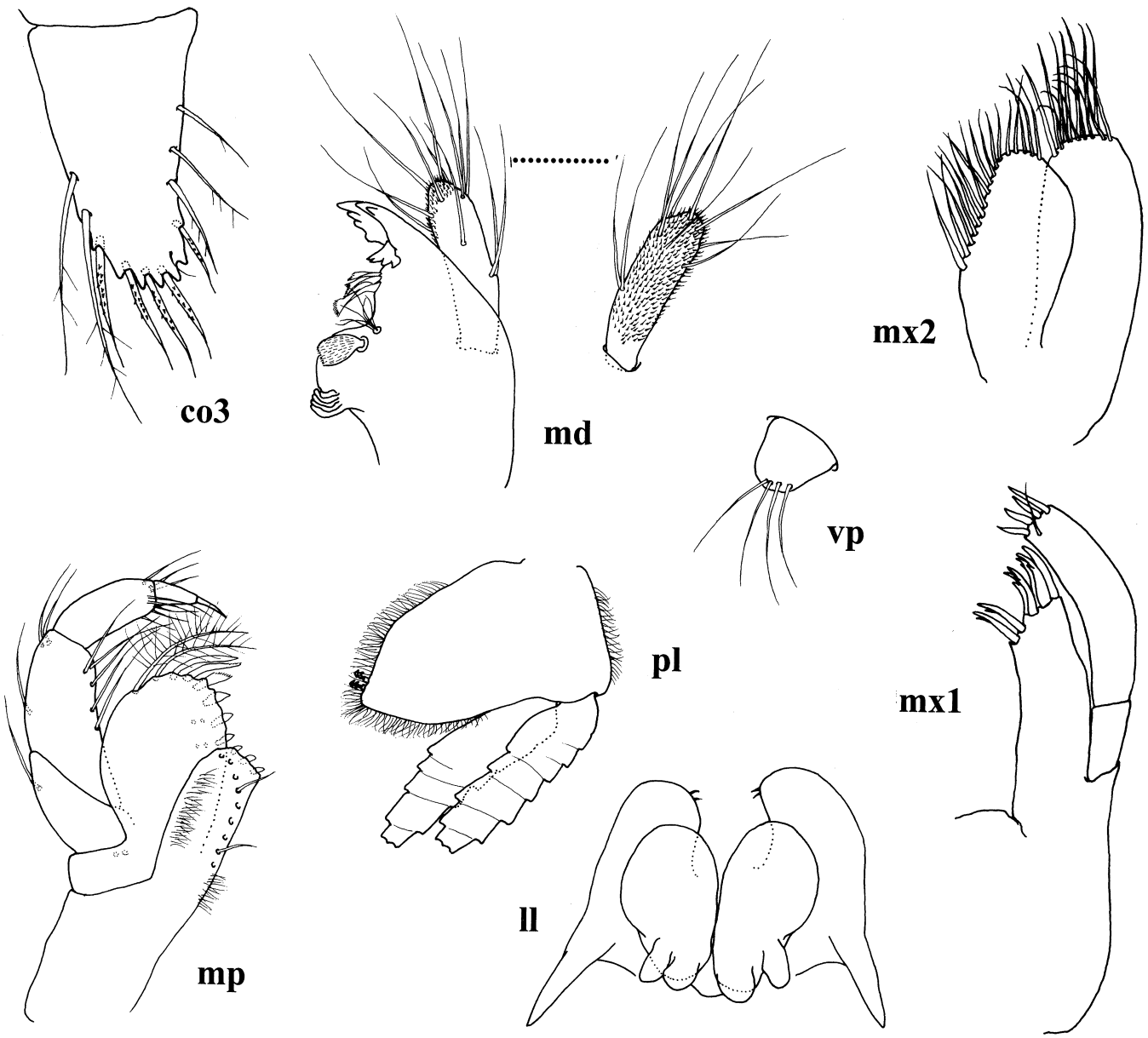

Fig. 5. *Ambicholestes (Ambicholestes) cygnatratus* n.sp., holotype. **co3**, coxal plate 3; **ll**, lower lip; **md**, mandible; **mp**, maxilliped; **mx1-2**, maxilla 1 and 2; **pl**, pleopod (ramal setae omitted); **vp**, ventral process of article 2, antenna 2.

Biology. Of the 31 specimens from Stn AU-37, AU-38 (both Lizard Island), W11667 (Heron Island) and P37917 (Elizabeth Reef) 30 were found in small prosobranch shells, each with a short, coarse-grained entrance tube. One specimen occupied a piece of calcareous polychaete tube. All other specimens listed are without their abode.

Specimens were found in sheltered places in and around coral reefs and bommies on sediments with a high content of medium to coarse coral rubble.

Distribution. Central Philippines; north-eastern Australia; 3–33 m depth.

Ambicholestes (Ambicholestes) trilobatus n.sp.

Figs 6–8

Material examined. HOLOTYPE: fully developed female, 3.5 mm, with empty marsupium, Long Island, Chesterfield Reef, Coral Sea, seaward face, 20 m, "Lady Basten", N.L. Bruce, 4 May 1979, QM W11668. Unique.

Diagnosis. Rostrum present in depressed position between antennae 1. Antenna 1 peduncle article 1 and antenna 2 peduncle article 3 (rest of antenna missing) partly covered

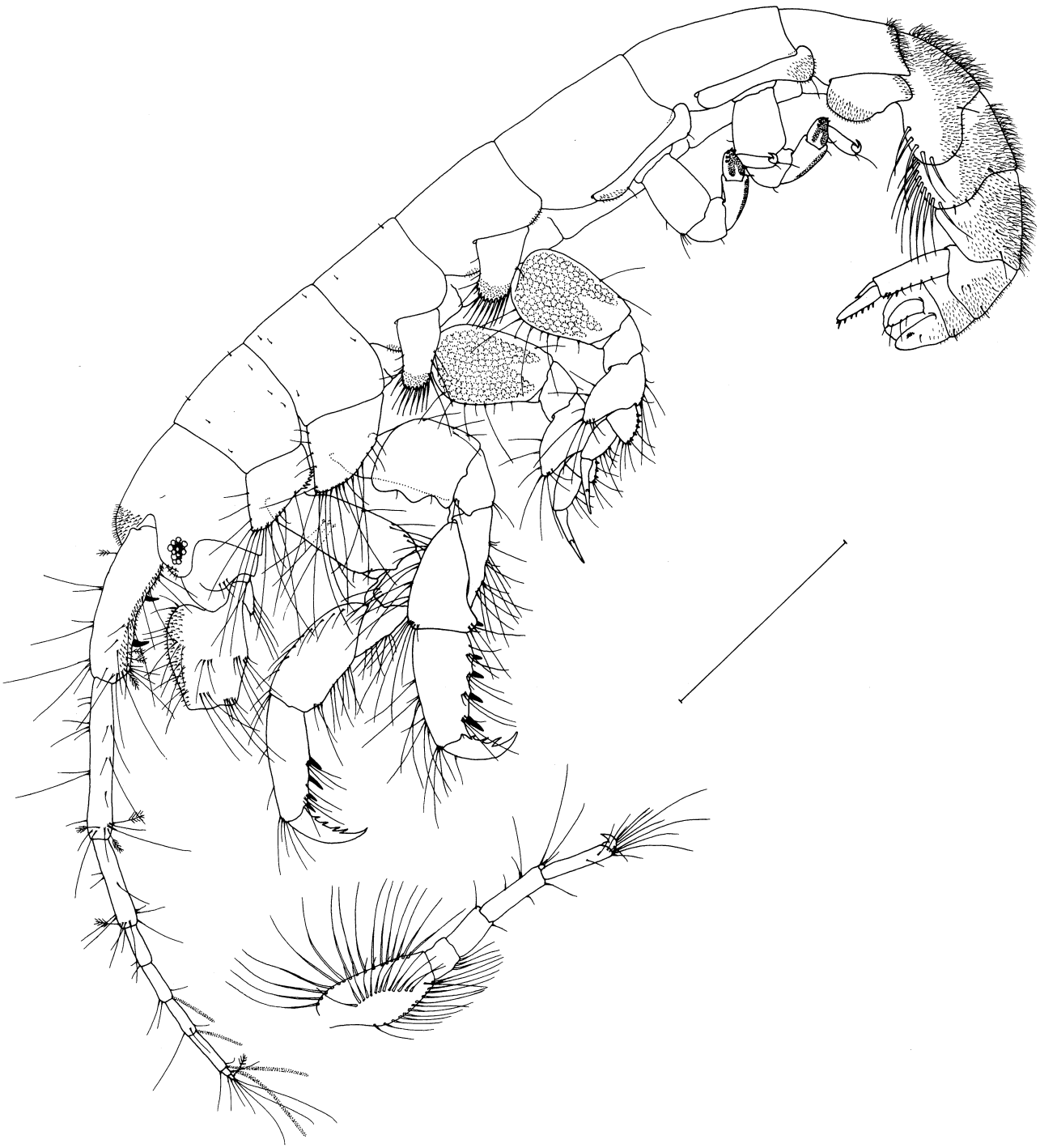

Fig. 6. *Ambicholestes (Ambicholestes) trilobatus* n.sp., holotype. Pereopod 7 shown separately. Scale bar: 0.5 mm.

with microsetules. Anterior margin of cephalon and rostrum covered by microscales. Pleon and urosomites dorsally with dense cover of long, very fine setules. Article 2 of pereopod 2 with anterior margin trilobate; presumed stridulation organ present.

Further description. Rostrum narrow, pointed. Antenna 1 peduncle article 1 with 2 recurved robust setae ventrally, with ventral to medial cover of microsetules. Antenna 2 peduncle article 3 with mid-medial robust seta, with dorsal to medial cover of microsetules; ventroapical projection of article 2 as long as wide, triangular, with 4 long lateral and 2 short medial setae.

Coxal plates 5 and 6 posterior lobe rounded with upturned part rounded. Distalmost part of plates 3 and 4, anterior lobe of plate 5, posterior lobe of plate 6, and anterior lobe of plate 7 with microscales. Pleonal sideplates 1 and 2 evenly rounded.

Mouthparts normal. Mandibular palp laterally to ventrally with lose cover of acute cuticular scales.

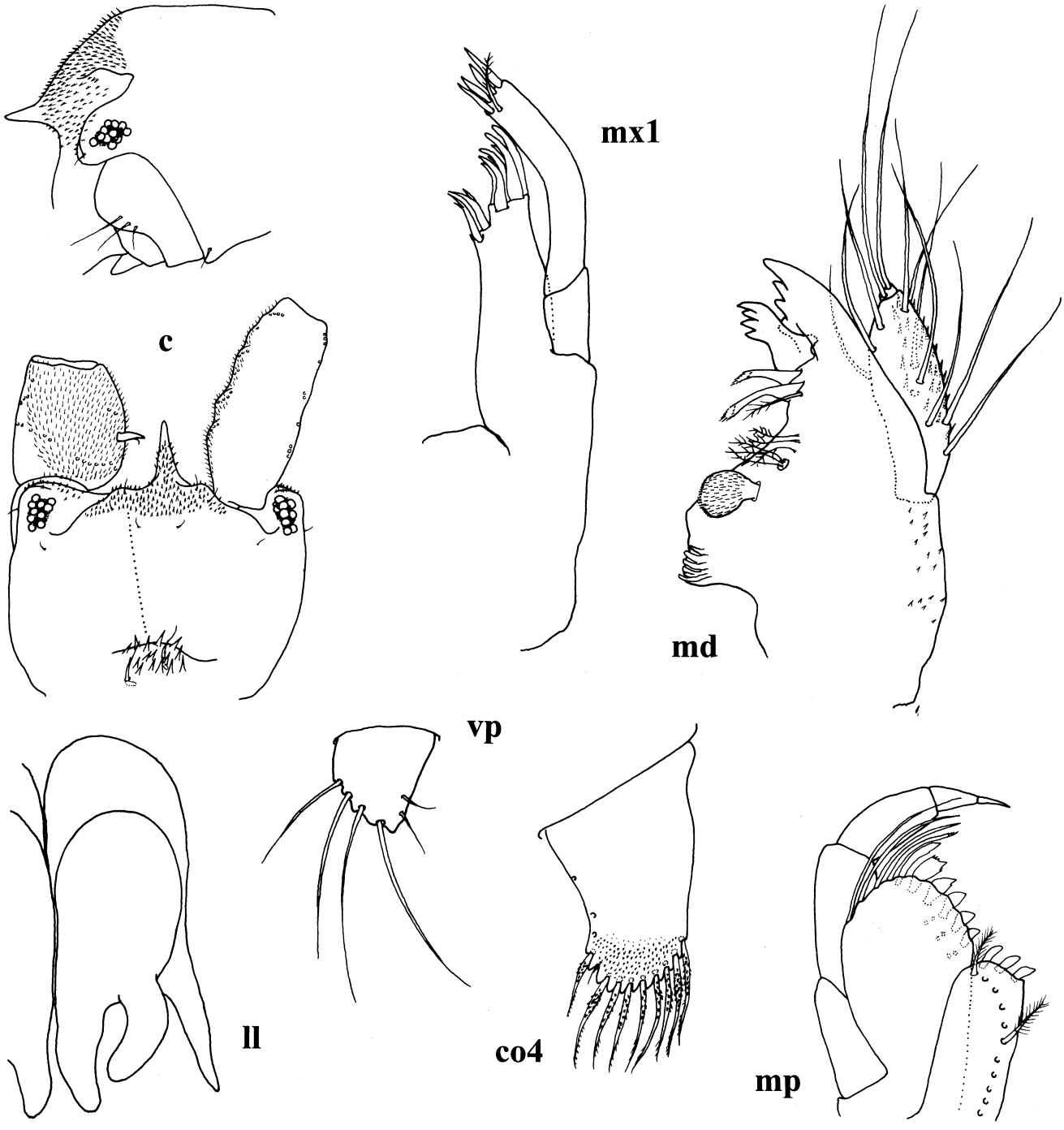

Fig. 7. *Ambicholestes (Ambicholestes) trilobatus* n.sp., holotype. **c**, cephalon, dorsal and lateral view; **co4**, coxal plate 4; **ll**, lower lip (drawn in situ); **md**, mandible; **mp**, maxilliped; **mx1**, maxilla 1; **vp**, ventral process of article 2, antenna 2.

Pereopod 1 article 6 without posterodistal tooth, with 4 posterior robust setae. Pereopod 2 article 6 with 4 posterior robust setae; article 2 anterior margin proximal to lobate part with a few small marginal teeth.

Uropod 1 outer ramus about 5 times longer than broad, with 7 lateral robust setae; inner ramus ca. 40% length of outer ramus, with lateral and apical robust setae.

Urosomites 1 and 2 free. Urosomite 3 and telson fused dorsally, but with distinct subcuticular line of articulation.

Colour and biology. Not known.

Etymology. The specific epithet alludes to the shape of the anterior margin of pereopod 2 article 2.

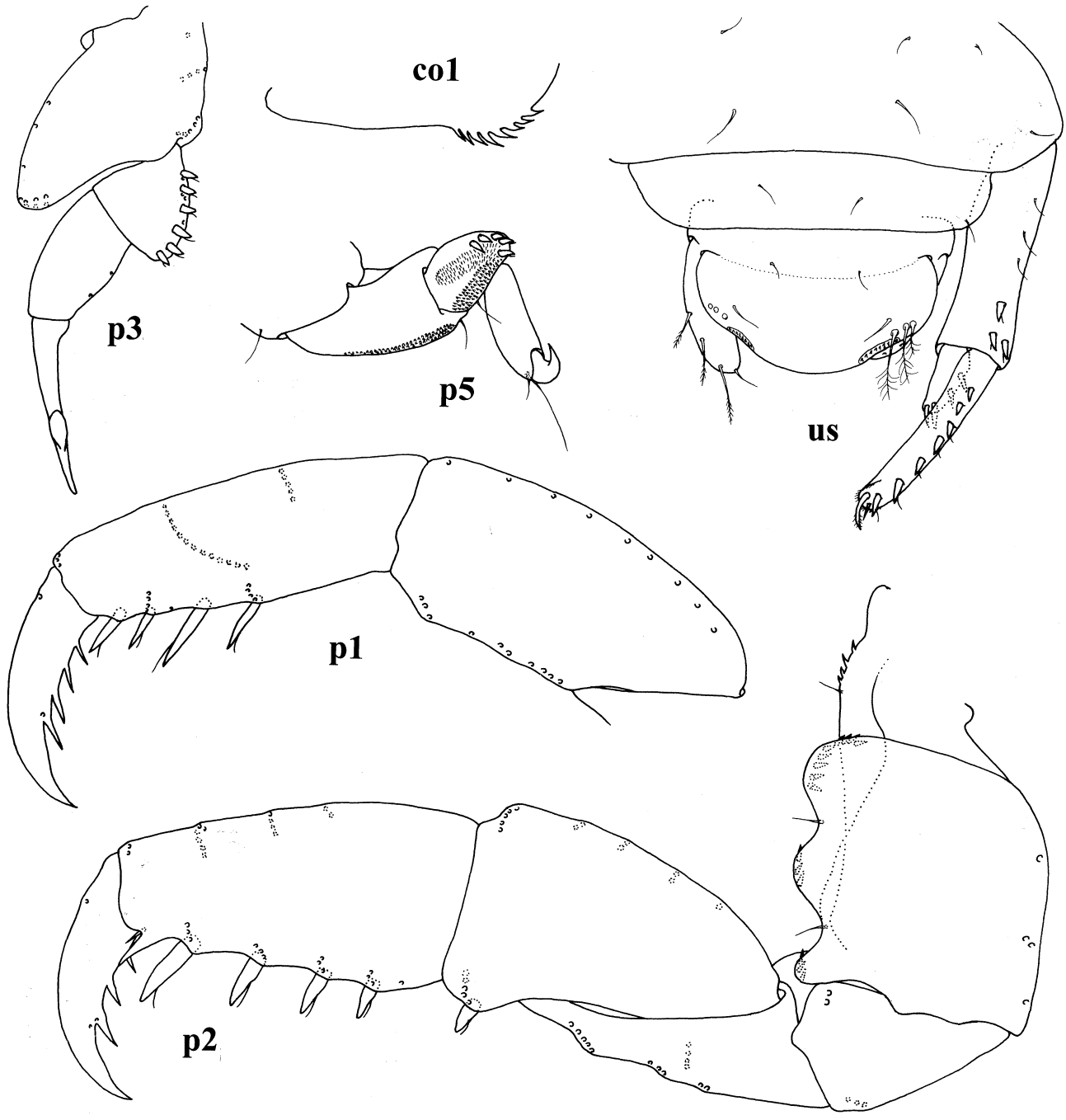

Fig. 8. *Ambicholestes (Ambicholestes) trilobatus* n.sp., holotype. **co1**, ventral margin of coxal plate 1 with posterior, presumed stridulation teeth; **p**, pereopod (1, 2, 3 and 5); **us**, urosome, dorsal view.

Ambicholestes (Ambicholestes) poorei n.sp.

Figs 9–11

Material examined. HOLOTYPE: male, 2.4 mm, Bass Strait, 40°06'S 143°16'E, 187 m, fine sand with some mud and silt, grab, G.C.B. Poore, 11 October 1980, Stn BSS 101, NMV J9544. PARATYPE: Bass Strait, 40°07'S 143°12'E, 229 m, muddy sand, grab, G.C.B. Poore, 11 October 1980, Stn BSS 105, NMV J9545 (1 male).

Diagnosis. Rostrum absent. Midanterior margin of cephalon forming a broadly rounded lobe. Antenna 1 peduncle article 1 and antenna 2 distal to peduncle article 2 with cover of microsetules. Midcephalic lobe and pleon with cover of microsetules.

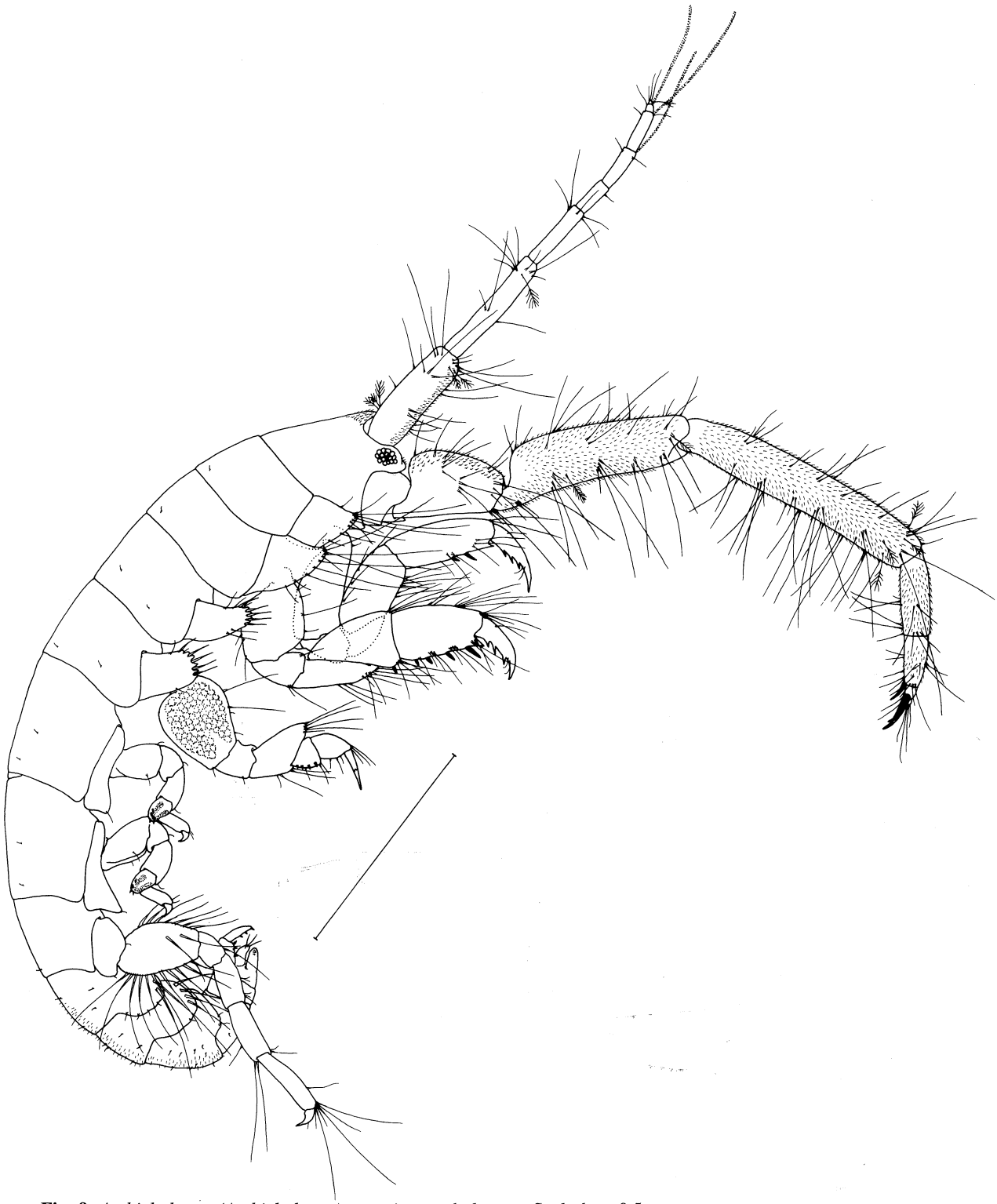

Fig. 9. *Ambicholestes (Ambicholestes) poorei* n.sp., holotype. Scale bar: 0.5 mm.

Further description. Antenna 1 peduncular article 1 without robust setae, with ventral cover of microsetules. Antenna 2 peduncular article 3 with 1 midmedial robust seta, with dorsal to medial cover of microsetules; ventroapical projection of article 2 about as long as wide, rounded triangular, with a few long apical setae.

Coxal plate 4 barely longer than wide at base, plate 3 ca. 50% longer than wide. Coxal plates 5 and 6 posterior lobe with ventral part triangular, apex blunt, dorsal part rounded, not upward turned; this configuration being more pronounced in plate 6. Pleonal side plates 1 and 2 with weak posterior angle and 2 small insinuations each with a

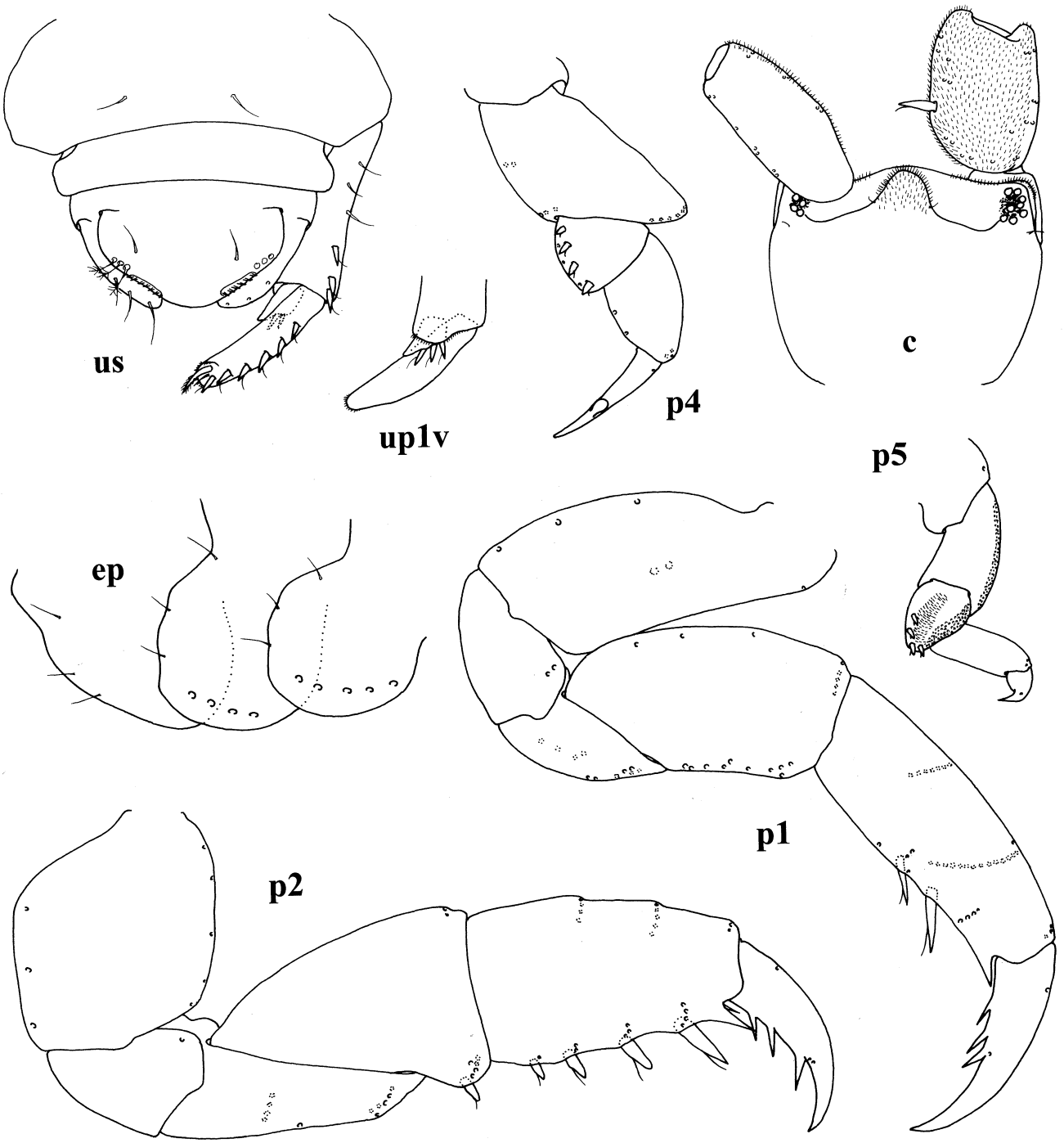

Fig. 10. *Ambicholestes (Ambicholestes) poorei* n.sp., holotype. **c**, cephalon, dorsal view; **ep**, epimeral plates, right lateral view; **p**, pereopod (1, 2, 4 and 5); **up1v**, left uropod 1 in ventral view showing inner ramus; **us**, urosome, dorsal view.

short seta below ordinary, wide sinus.

Mouthparts normal. Mandibular palp reaching to tip of incisor, with lose lateral and dorsal cover of microsetules.

Pereopod 1 article 6 with posterodistal tooth and 2 posterior robust setae; article 5 without ventrodistal robust seta. Pereopod 2 article 6 with 4 posterior robust setae; article 2 anterior margin convex, with a few long and short setae. Pereopod 7 article 2 with lateral setal row unusually short, composed of 2 setae only.

Uropod 1 outer ramus about 3 1/2 times longer than broad with up to 6 lateral robust setae; inner ramus ca. 1/3 length of outer ramus, with rounded medioapical projection and

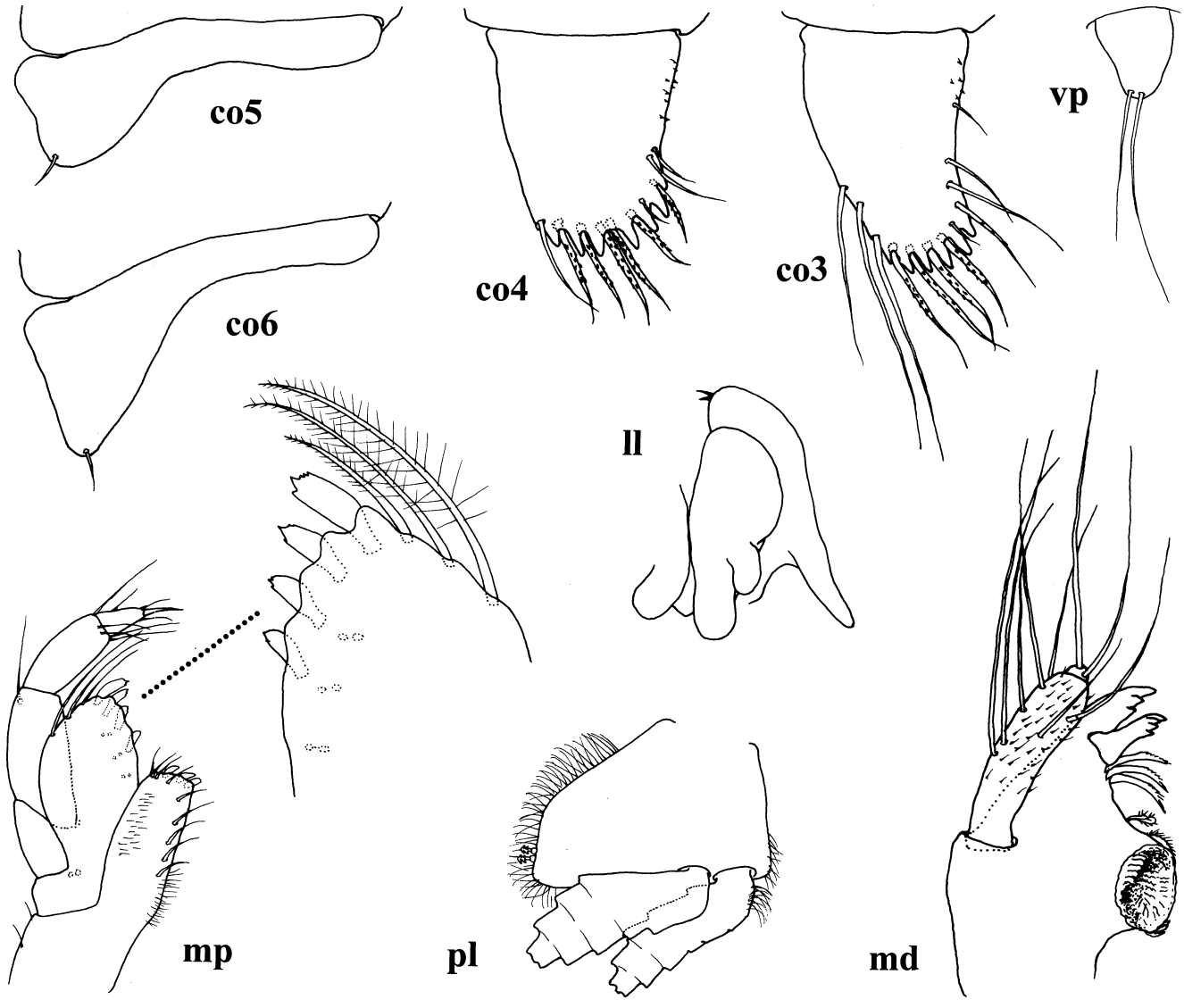

Fig. 11. *Ambicholestes (Ambicholestes) poorei* n.sp., holotype. **co**, coxal plate (3–6); **ll**, lower lip; **md**, mandible; **mx**, maxilliped; **pl**, pleopod (ramal setae omitted); **vp**, ventral process of article 2, antenna 2.

lateral robust setae only. Urosomites 1 and 2 free. Urosomite 3 and telson fused dorsally.

Size. Largest male: 2.4 mm; female not known.

Colour. Not known.

Biology. On muddy-silty sand.

Distribution. Western Bass Strait; 187–229 m depth.

Etymology. The species is named for Dr Gary Poore (Museum of Victoria) for his role in the exploration of the Bass Strait benthic fauna.

Ambicholestes (Ambicholestes) sp. A

Fig. 12

Material examined. Male, 2.3 mm, Bass Strait, 38°32'S 142°28'E, 52 m, medium sand, G.C.B. Poore, 20 November 1981, Stn BSS 187, NMV J9546.

The single specimen, which has lost both pairs of antennae, is very similar to *A. (A.) poorei* described above. It shares with that species all characteristics except the following: coxal plate 3 twice as long as wide at base; plate 4 50% longer than wide; coxal plates 5 and 6 with posterior lobe rounded ventrally, with dorsal part upward turned, rounded; pereopod 7 article 2 with row of 6 mediolateral setae.

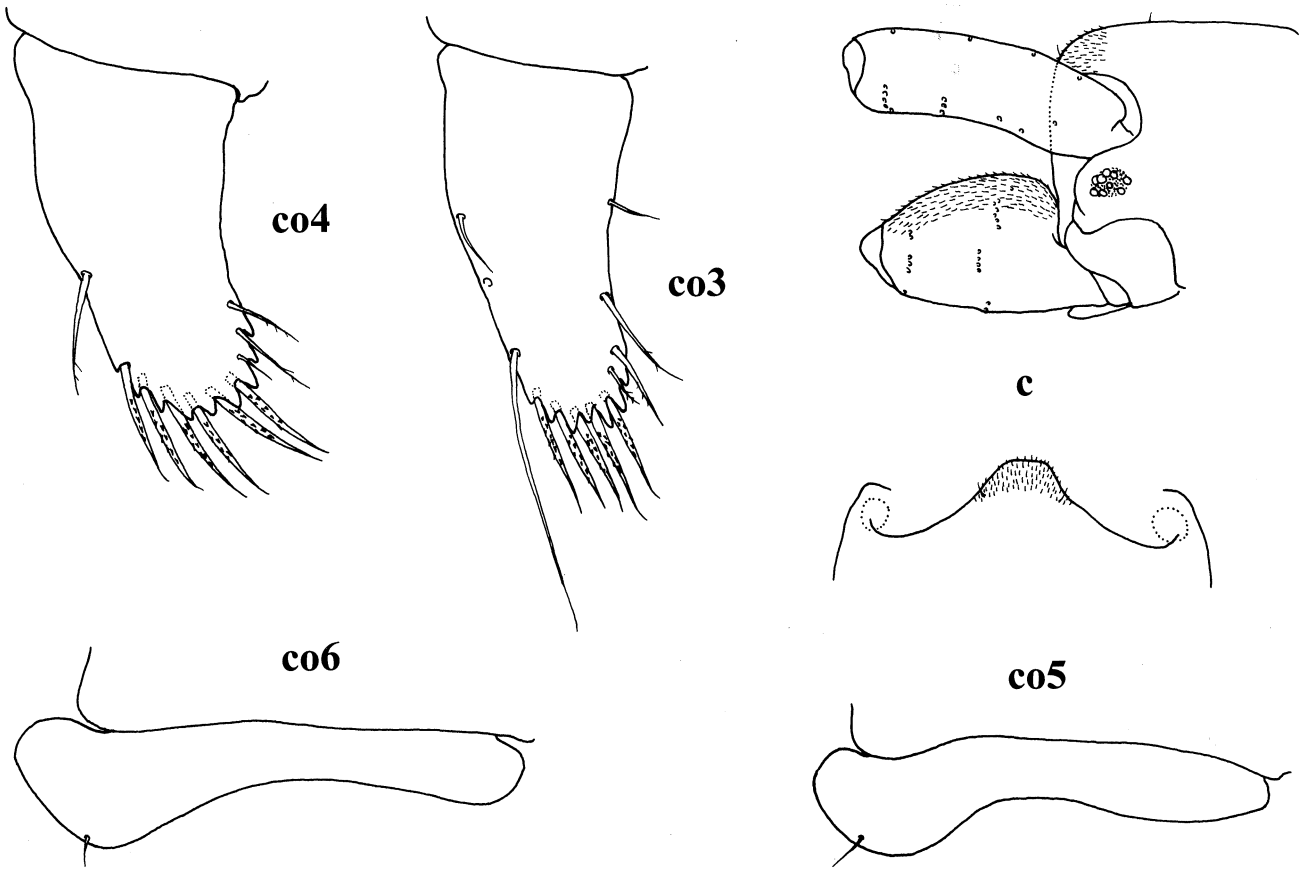

Fig. 12. *Ambicholestes (Ambicholestes)* sp. A, NMV J9546. **c**, cephalon, dorsal and lateral view; **co**, coxal plate (3–6).

Ambicholestes (A.) sp. A is probably distinct from but closely related to *A. poorei*. However, more material of both is needed before this question can be adequately addressed.

Subgenus *Austrolestes* n.subgen.

Diagnosis. *Ambicholestes* with elongate, 1-articulate, apically pointed mandibular palp; palp overreaching mandibular incisor by 1/3–1/2 palp length. Antenna 1 peduncle article 3 70–85% length of article 1. Male antenna 2 at least as long as combined length of cephalon, pereon and pleon.

Type species. *Ambicholestes berentsae* n.sp.

Additional species. *Ambicholestes minutus* n.sp., *A. thetis* n.sp.

Etymology. The name of this subgenus is composed of an allusion to Australia and its concholestid affinity.

Ambicholestes (Austrolestes) berentsae n.sp.

Figs 13–16

Concholestes spp., Stephenson & Cook (1977, partim, see Just 1988), Stephenson, Cook & Newlands (1978, partim, see Just 1988).

Material examined. HOLOTYPE: male, 5.6 mm, Jervis Bay, New South Wales, off Moona Moona Creek, 35°03'S 150°42'E, 8 m, air-lift of bottom sediment, P.B. Berents, 29 January 1983, AM P44601. PARATYPES: 265 specimens. **Jervis Bay** (136): SE of Huskisson, off Moona Moona Creek, 8 m, fine sand with detritus to coarse shelly, broadly rippled sand , just inside low rock reef covered with large brown algae, hand dredge (SCUBA), J. Just, 15 November 1984, Stn AU-65, AM P44602 (3) and ZMUC (5). North side of Plantation Point, 35°04'S 150°32'E, 5 m, wide patches of silty sand with *Halodule* between rock reefs, hand dredge (SCUBA), J. Just, 17 November 1984, Stn AU-70, AM P44603 (3). North side of Plantation Point, 35°04'S 150°32'E, 5 m, wide patches of silty sand with *Halodule* between rock reefs, hand dredge (SCUBA), J. Just, 17 November 1984, Stn AU-71, AM P44604 (3). Off Moona Moona Creek, 53°03'S 150°42'E, 8 m, sand, airlift, P.B. Berents, 17 November 1981, AM P44605

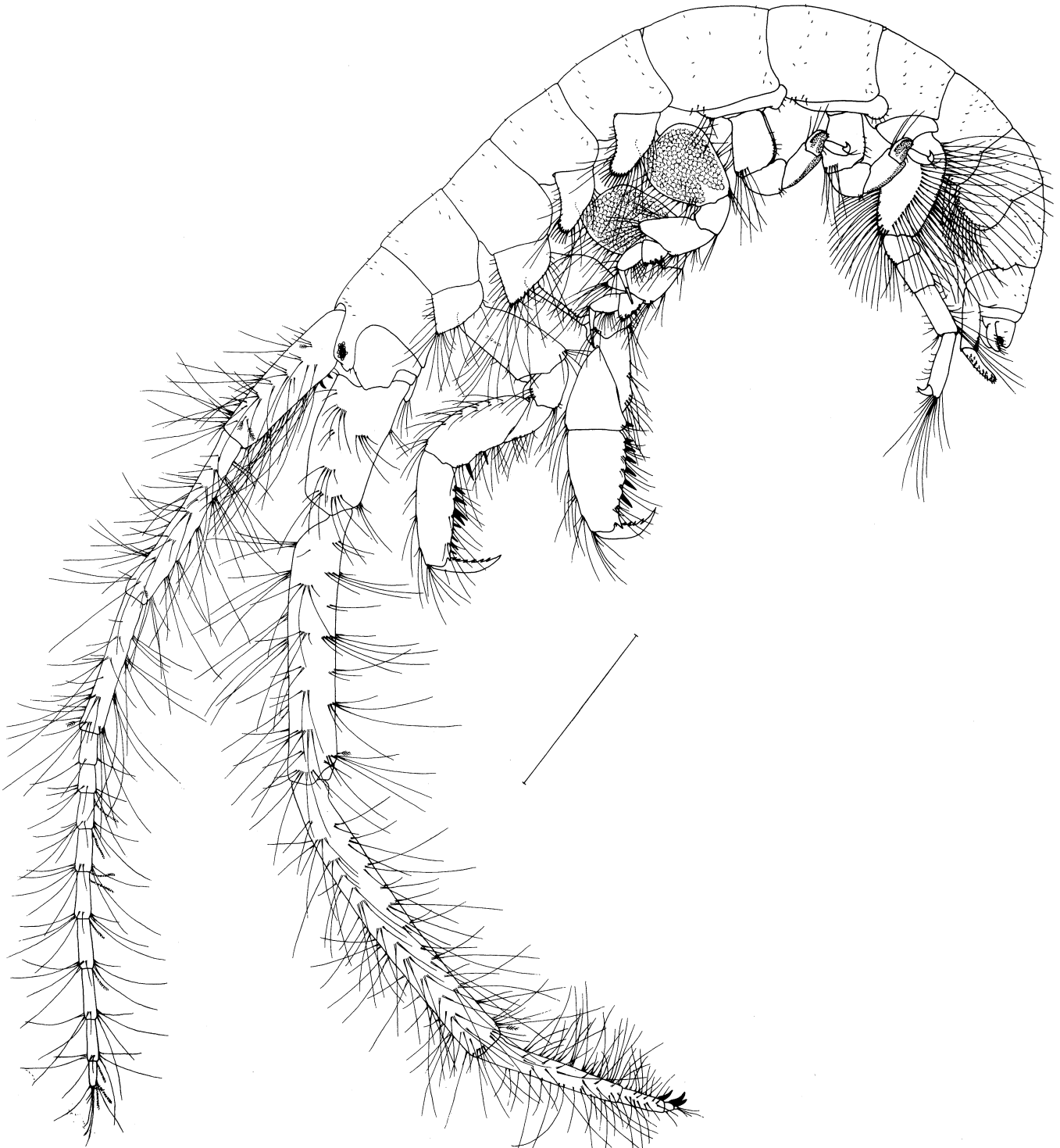

Fig. 13. *Ambicholestes (Austrolestes) berentsae* n.sp., holotype. Scale bar: 1 mm.

(3). Off Moona Moona Creek, 53°03'S 150°42'E, 8 m, sand, airlift, P.B. Berents, 17 December 1982, AM P44606 (74). Off Moona Moona Creek, 53°03'S 150°42'E, 8 m, sand, airlift, P.B. Berents and A.R. Jones, 18 March 1983, AM P44607 (16). Off Moona Moona Creek, 53°03'S 150°42'E, 8 m, sand, airlift, P.B. Berents, 29 January 1983, AM P44608 (29). Off Moona Moona Creek, 53°03'S 150°41'E, 8 m, sand, hand operated corer, P.B. Berents, 16 December 1983, AM P44609 (3). **Port Jackson** (98): North Harbour, at base of jetty at Store Beach, 33°51'S 151°16'E, 3 m, sand, large amount of fine shell fragments, some detritus, *Halodule* and various low algae, hand dredge (SCUBA), J. Just, 26 September 1984, Stn AU-59, AM P44610 (57) and P44611 (9). North Harbour, at base of jetty at Store Beach, 33°51'S 151°16'E, 3 m, sand, large amount of fine shell fragments, some detritus, *Halodule* and various low algae, hand dredge (SCUBA), J. Just, August 1986, AM P44612 (32). **Bass Strait** (27): western

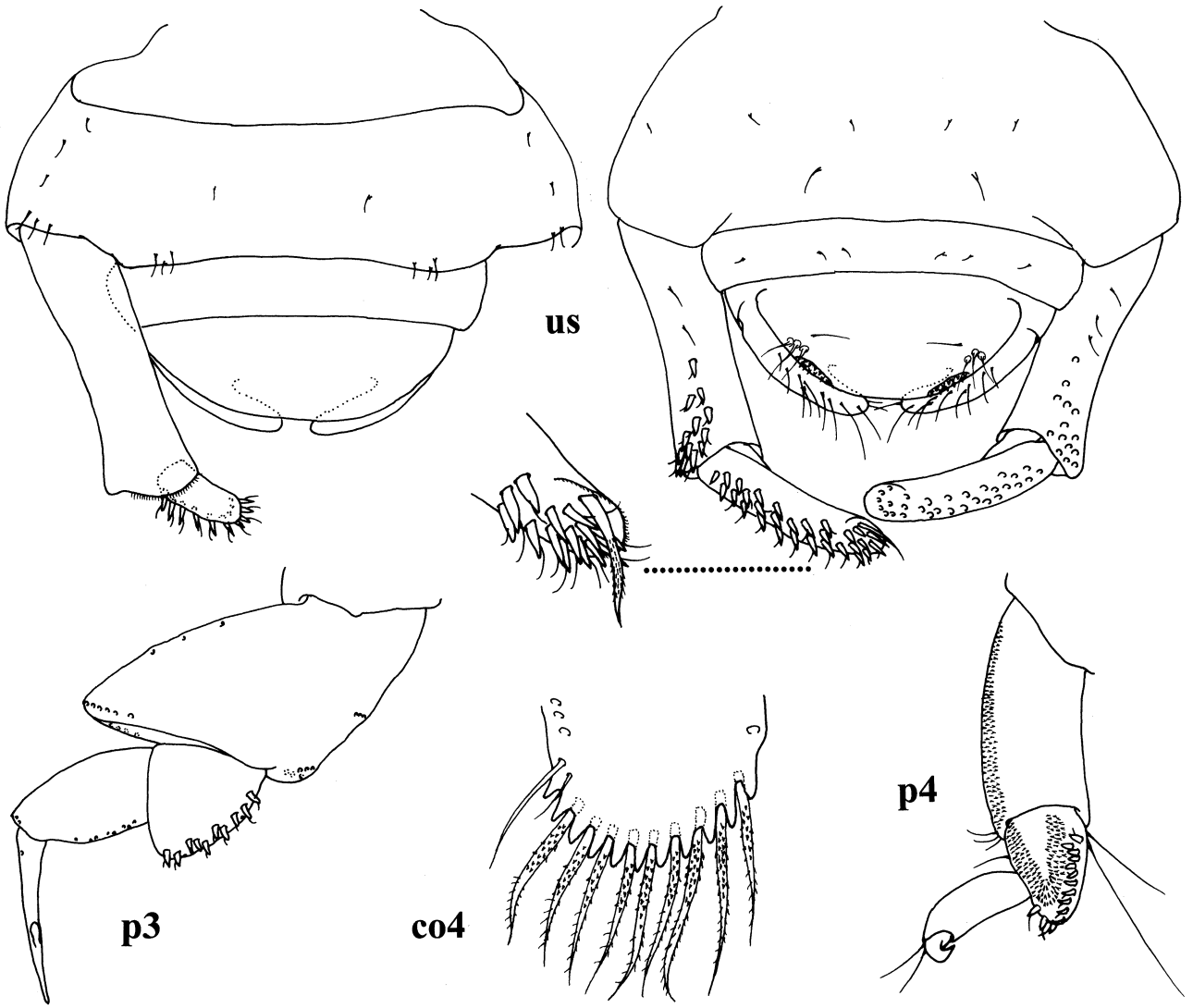

Fig. 14. *Ambicholestes (Austrolestes) berentsae* n.sp., holotype. **co4**, apex of coxal plate 4; **p**, pereopod (3 and 4); **us**, urosome, dorsal and ventral view.

Bass Strait, 64 km WNW of Cape Farewell, King Island, 39°31'S, 143°12'E, 122 m, medium sand, Smith-McIntyre grab/pipe dredge, G.C.B. Poore, HMAS "Kimbla", 11 October 1980, Stn BSS 83, NMV J9535 (1). Eastern Bass Strait, 94 km NE of North Point, Flinders Island, 38°53.7'S 147°55.2'E, 71 m, medium sand, WHOI epibenthic sled, R. Wilson, RV "Tangaroa", 15 November 1981, Stn BSS 171 S, NMV J9538 (1). Eastern Bass Strait, 70 km N of North Point, Flinders Island, 39°05.2'S 147°56.6'E, 62 m, shelly sand, WHOI epibenthic sled, R. Wilson, RV "Tangaroa", 17 November 1981, Stn BSS 172 S, NMV J9531 (1). Eastern Bass Strait, 70 km N of North Point, Flinders Island, 39°05.2'S 147°56.6'E, 62 m, shelly sand, grab, sled or trawl (see label), R. Wilson, RV "Tangaroa", 17 November 1981, Stn BSS 172, NMV J9539 (1). Western Bass Strait, 15 km S of Port Fairy, 38°32.0'S 142°28.6'E, 52 m, medium sand, grab, sled or trawl (see label), R. Wilson, RV "Tangaroa", 20 November 1981, Stn BSS 187, NMV J9543 (1). Western Bass Strait, 80 km SSE of Cape Otway, 39°26'S 142°57'E, 113 m, medium sand, Smith-McIntyre grab/pipe dredge, G.C.B. Poore, HMAS "Kimbla", 9 October 1980, Stn BSS 67, NMV J9534 (1). Western Bass Strait, 31 km SSW of Cape Otway, 39°08'S 143°24'E), 77 m, medium sand, Smith-McIntyre grab/naturalist's dredge, G.C.B. Poore, HMAS "Kimbla", 8 October 1980, Stn BSS 56, NMV J9533 (1). Central Bass Strait, 36 km S of Cape Otway, 39°03'S 143°51'E, 85 m, medium sand, carbonate, Smith-McIntyre grab/ naturalist's dredge, G.C.B. Poore, HMAS "Kimbla", 7 October 1980, Stn BSS 47, NMV J9532 (1). Central Bass Strait, 38 km SW of Cape Paterson, 38°56.4'S 145°16.6'E, 70 m, fine sand, WHOI epibenthic sled, R. Wilson, RV "Tangaroa", 12 November 1981, Stn BSS 155 S, NMV J9537 (6). Central Bass Strait, 38 km SW of Cape Paterson, 38°55.5'S 145°17.0'E, 70 m, fine sand, Smith-McIntyre grab, R. Wilson, RV "Tangaroa", 12 November 1981, Stn BSS 155 G, NMV J9536 (3). Eastern Bass Strait, 20 km SE of Port Albert, 38°43.4'S 146°56.9'E, 26 m, WHOI epibenthic sled, R. Wilson, RV "Tangaroa", 18 November 1981, Stn BSS 178 S, NMV J9541 (3). Eastern Bass Strait, 20 km SE of Port Albert, 38°43.4'S 146°56.9'E, 26 m, WHOI epibenthic sled, R. Wilson, RV "Tangaroa", 18 November

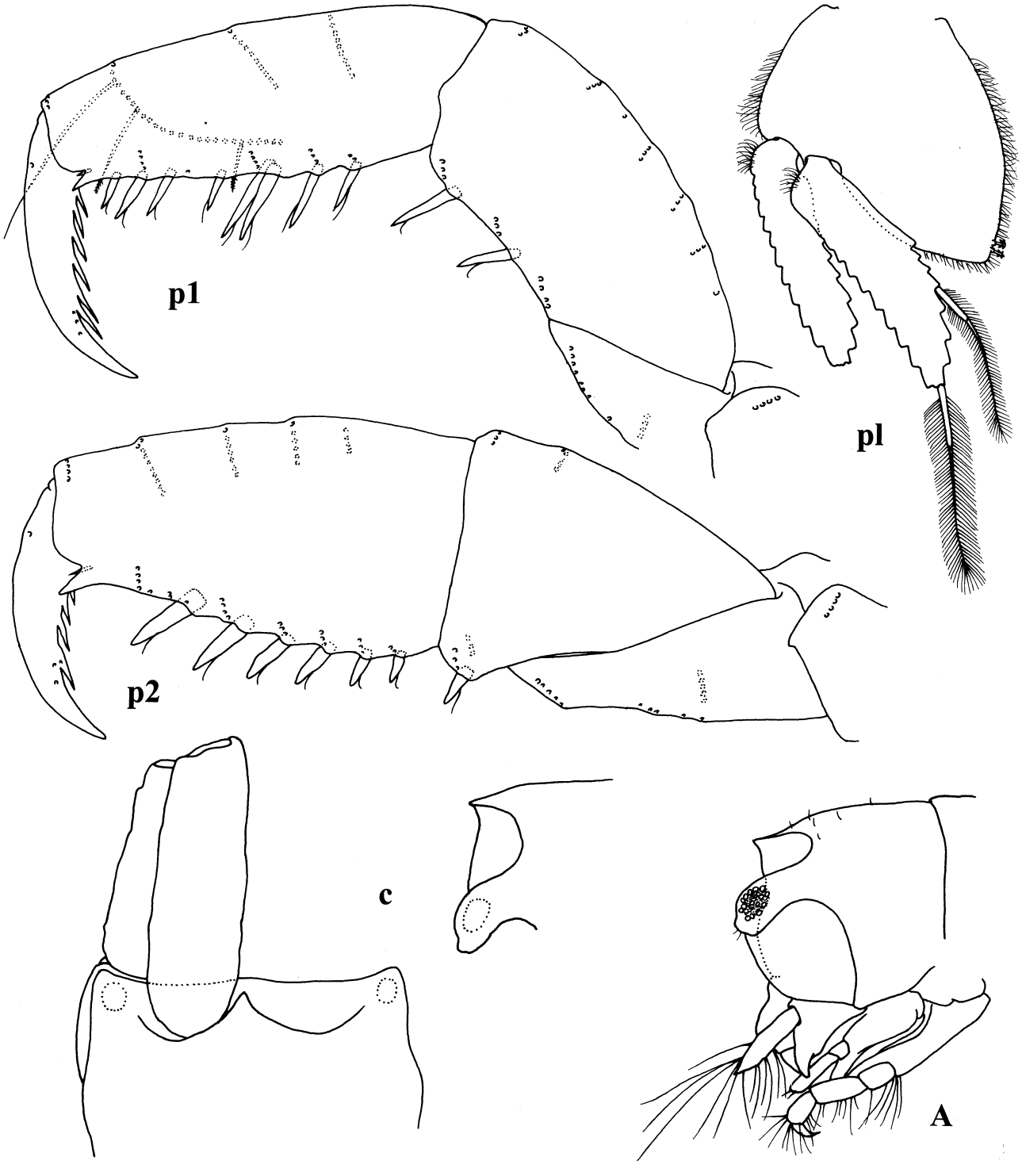

Fig. 15. *Ambicholestes (Austrolestes) berentsae* n.sp., holotype, except **A**: lateral view of cephalon of male from AU-59 (Port Jackson). **c**, cephalon, dorsal and lateral view; **p**, pereopod (1 and 2); **pl**, pleopod 1 (most ramal setae omitted).

1981, Stn BSS 178 S, NMV J9542 (1). Eastern Bass Strait, 50 km SE of Port Albert, 38°54.3'S 147°13.4'E, 58 m, coarse shell, grab, sled or trawl (see label), R. Wilson, RV "Tangaroa", 18 November 1981, Stn BSS 176, NMV J9540 (6). **Other material:** Jibbon, New South Wales, 34°05'S 151°10'E, 50 m, sand, dredge, K. Sheard, CSIRO 12 September 1943, AM P44219 (1). East of Cape Banks, New South Wales, 33°52'S 151°23'E, 88 m, 2.5 m sledge dredge, R. Springthorpe and P.H. Colman, FRV "Kapala", Stn K80-20-11, 11 December 1980, AM P44614 (3).

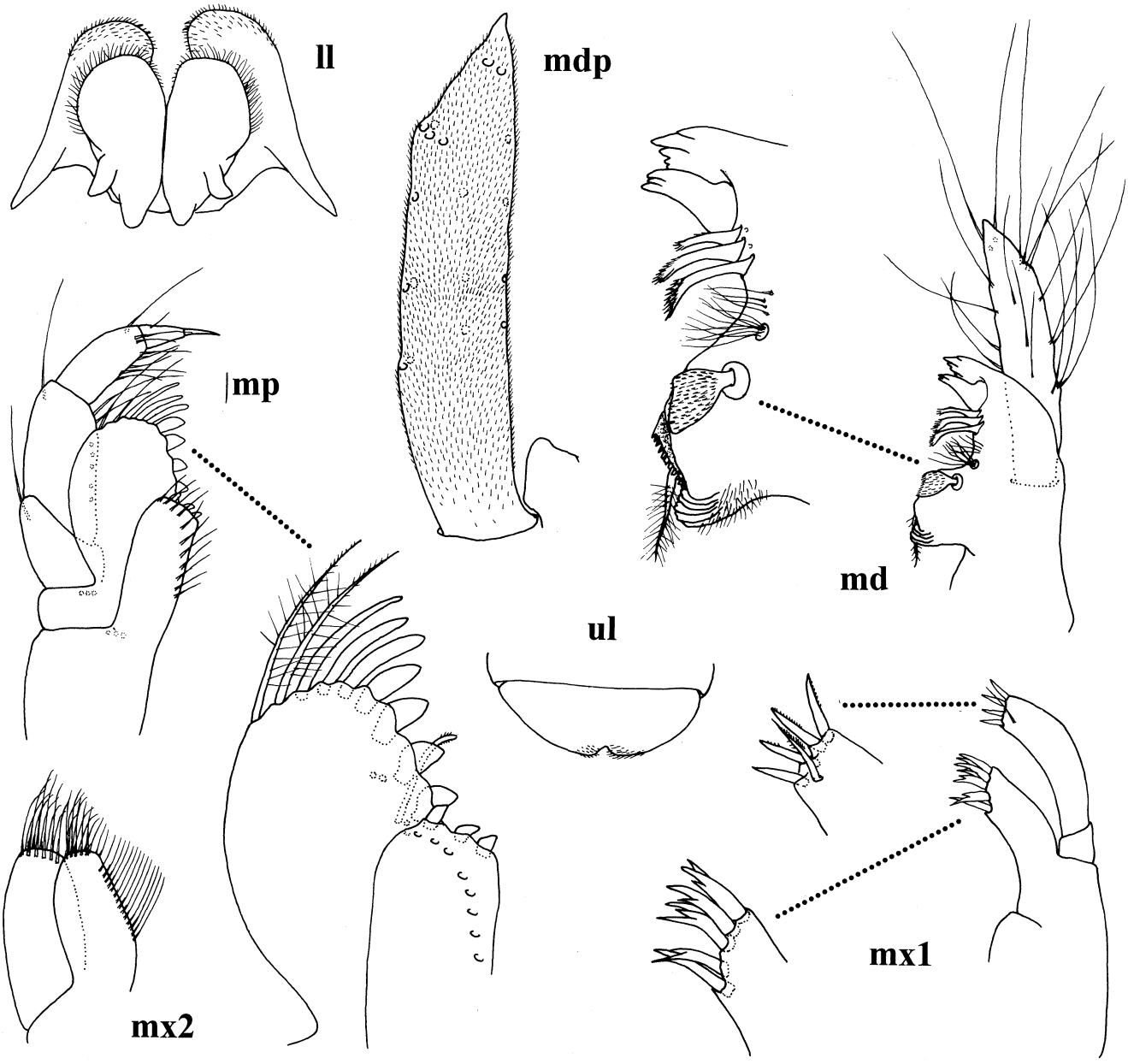

Fig. 16. *Ambicholestes (Austrolestes) berentsae* n.sp., holotype. **ll**, lower lip; **md**, mandible; **mdp**, mandibular palp, dorsolateral view; **mp**, maxilliped; **mx**, maxilla (1 and 2); **ul**, upper lip.

ADDITIONAL MATERIAL. **Moreton Bay, Queensland** (several hundred): Middle Banks, 19 m, sand, September 1972, S. Cook, Stn 9, QM W6345 (5–10 specimens, 27 abodes). Middle Banks, 22 m, sand, September 1972, S. Cook, Stn 19, QM W6346 (several hundred). Middle Banks 1982, Zool. Dep., Univ. of Queensland, Stn 1C, QM W11660 (1). Middle Banks, July/August 1982, I. Poiner, QM W11662 (10). Middle Banks, September 1976, Zool. Dep., Univ. of Queensland, QM W11663 (30). Middle Banks, October 1976, Zool. Dep., Univ. of Queensland, QM W11664 (7). Middle Banks, December 1976, Zool. Dep., Univ. of Queensland, QM W11665 (7). Middle Banks, June 1974, S. Cook and S. Newlands, QM W20646 (1).

Diagnosis. *Austrolestes* with rostrum present in normal position. Cephalon along dorsal midline as long as or up to 10% longer than pereonite 1. Cephalon and body with setules in distinct transverse rows.

Further description (type material). Rostrum pointed, triangular. Antenna 1 peduncle article 1 with 1 (occasionally 2) recurved robust setae ventrally in proximal half. Antenna 2 article 3 without robust setae; ventroapical projection of article 2 wider than long, evenly rounded, with apical row of long setae. Male antenna 1 longer than combined cephalon and pereon by approximately 1/2 pleon length, with up to 11 flagellar articles. Male antenna 2 about as long as cephalon, pereon and pleon combined.

Coxal plates 5 and 6 with posterior lobe rounded to bluntly triangular (plate 5 in particular); plate 5 anterior

margin with short row of long setae. Pleonal side plates 1 and 2 evenly rounded.

Mandibular palp overreaching mandibular cutting edge by about 1/2 palp length, entire lateral surface densely covered by microsetules.

Pereopod 1 article 5 with 1 (occasionally 2) posterior robust setae; article 6 with posterodistal tooth and up to 8 posterior robust setae. Pereopod 2 article 2 anterior margin straight, fringed with moderately long, simple setae; article 6 with up to 6 posterior robust setae. Pereopods 5 and 6, article 2 anterodistally with row of up to 10 long setae, article 5 with up to 15 short robust setae in crescent.

Uropod 1, peduncle with up to 15 distal robust setae; outer ramus about 4 1/2 times longer than broad, with up to 13 double and triple rows of dorsolateral robust setae; inner ramus barely less than 1/2 length of outer ramus, with up to 11 lateral and apical robust setae.

Urosomites 1 and 2 free; urosomites 2 and 3 normally free, but in some specimens part fusion is apparent; urosomite 3 and telson fused dorsally, but often with distinct subcuticular line of demarcation.

Size. Largest male: 7.7 mm; largest female: 4.8 mm.

Colour (live animals). Overall yellowish-orange. Cephalon and first two pereonites with red-brown mottling, rest of pereon and most of pleon with whitish mottling. Pereopods colourless transparent, anterior ones in large specimens with brownish tinge. Frons and mouthparts faintly brownish. Antenna 1 semitransparent whitish, with faint orange-yellow core in peduncle; peduncle and flagellum with whitish longitudinal line middorsally. Antenna 2 generally as 1, with same core colour in peduncle; peduncle articles 3–5 with 3 longitudinal lines of white and 3 of orange-brown.

Moreton Bay population. Specimens from Moreton Bay have not been included in the type material, although they identify to *A. berentsae* in the key presented. Adult specimens are significantly smaller than the type material (largest male: 4.8 mm; largest female: 3.2 mm; largest ovigerous female: 2.9 mm). Pereopods 1 and 2 are more robust, with articles 5 and 6 slightly broader relative to the length than in the type material. Generally specimens from Moreton Bay have fewer robust setae on pereopods and uropods. In some specimens the telson is separate from urosomite 3, in others partly or fully fused as in the type material.

The difference in size between specimens of the Moreton Bay population and the more southerly type material may reflect environmental differences, hydrographic regimes in particular. Morphological differences outlined may be partly size dependent and partly of a clinal nature. However, material is required from in between central New South Wales and Moreton Bay as well as around and outside Moreton Bay and north perhaps to the southern reaches of the Great Barrier Reef in order to fully assess the status of the Moreton Bay population here referred to *A. berentsae*.

Biology. On fine to coarse, often shelly, detritus-covered sand. In shallow water also in *Halodule* sea-grass beds. The predominant abode used is small prosobranch shells furnished with a short tube with coarse shell fragments (86 out of 110 abodes from Jervis Bay and Port Jackson, the several hundred abodes from Moreton Bay and the only 3 abodes found in the material from the Bass Strait). Some specimens from Jervis Bay and Port Jackson occupied small scaphopod shells (5) or polychaete tubes (19).

Distribution (all populations). Eastern Australia: Moreton Bay, Queensland, to Bass Strait; 3–122 m depth.

Etymology. This species is named for Dr P. (Penny) B. Berents, Australian Museum, in recognition of her work on the Jervis Bay fauna and her help during my field work in New South Wales, Jervis Bay in particular.

Ambicholestes (Austrolestes) thetis n.sp.

Figs 17–19

Siphonoecetes australis Stebbing, 1910 (*partim*, Stebbing 1910, Plate 54C).

Material examined. HOLOTYPE: male, 4.7 mm, Bass Strait, 63 km E of North Point, Flinders Island, 39°44.8'S 148°40.6'E, 124 m, muddy sand, epibenthic sled, R. Wilson, RV "Tangaroa", 14 November 1981, Stn BSS 167, NMV J9528. PARATYPES: 25 specimens. Eastern Bass Strait, 60 km E of North Point, Flinders Island, 39°41.7'S 148°39.5'E, 115 m, muddy sand, naturalist's dredge, G.C.B. Poore, HMAS "Kimbla", 27 March 1979, Stn BSS 32, NMV J9526 (4 specimens) and J9527 (3). Eastern Bass Strait, 63 km E of North Point, Flinders Island, Tasmania, 39°44.8'S 148°40.6'E, 124 m, muddy sand, Smith-McIntyre grab, R. Wilson, RV "Tangaroa", 14 November 1981, Stn BSS 167 G, NMV J9529 (4). Eastern Bass Strait, 63 km E of North Point, Flinders Island, Tasmania, 39°44.8'S 148°40.6'E, 124 m, fine sand, WHOI epibenthic sled, R. Wilson, RV "Tangaroa", 14 November 1981, Stn BSS 167 S, NMV J9530 (20). New South Wales, off Cape Three Point, 40–50 fms (74–92 m), "Thetis" Expedition, Stn 13, AM P2529, (1 male, one of two former syntypes of *Siphonoecetes australis* Stebbing, 1910, see Just 1985: 333). New South Wales, off Cape Three Point, 40–50 fms (74–92 m), "Thetis" Expedition, January 1911, AM P31867 (re-registered from P2528) (1 male, probably a missing syntype of *Siphonoecetes australis* Stebbing, 1910, see Just 1985: 333).

Diagnosis. *Austrolestes* without rostrum. Cephalic front margin a rounded wide triangle. Cephalon along midline as long as first 1 1/2 pereonites

Further description. Antenna 1 peduncle article 1 with 1 recurving robust seta ventrally in proximal half. Antenna 2 peduncular article 3 without robust setae; ventroapical projection of peduncular article 2 wider than long, evenly rounded, with apical row of long setae. Male antenna 1

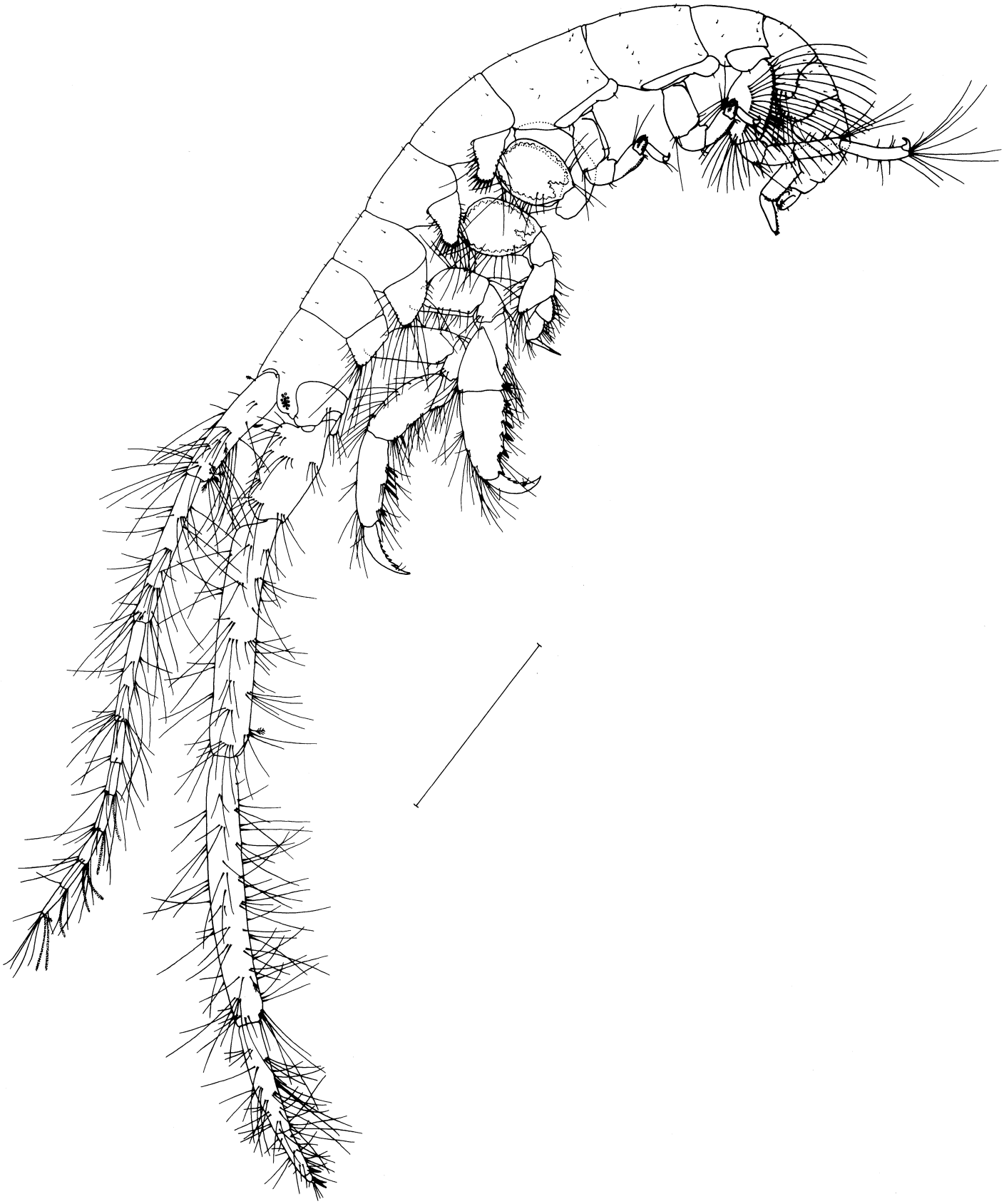

Fig. 17. *Ambicholestes (Austrolestes) thetis* n.sp., holotype. Scale bar: 1 mm.

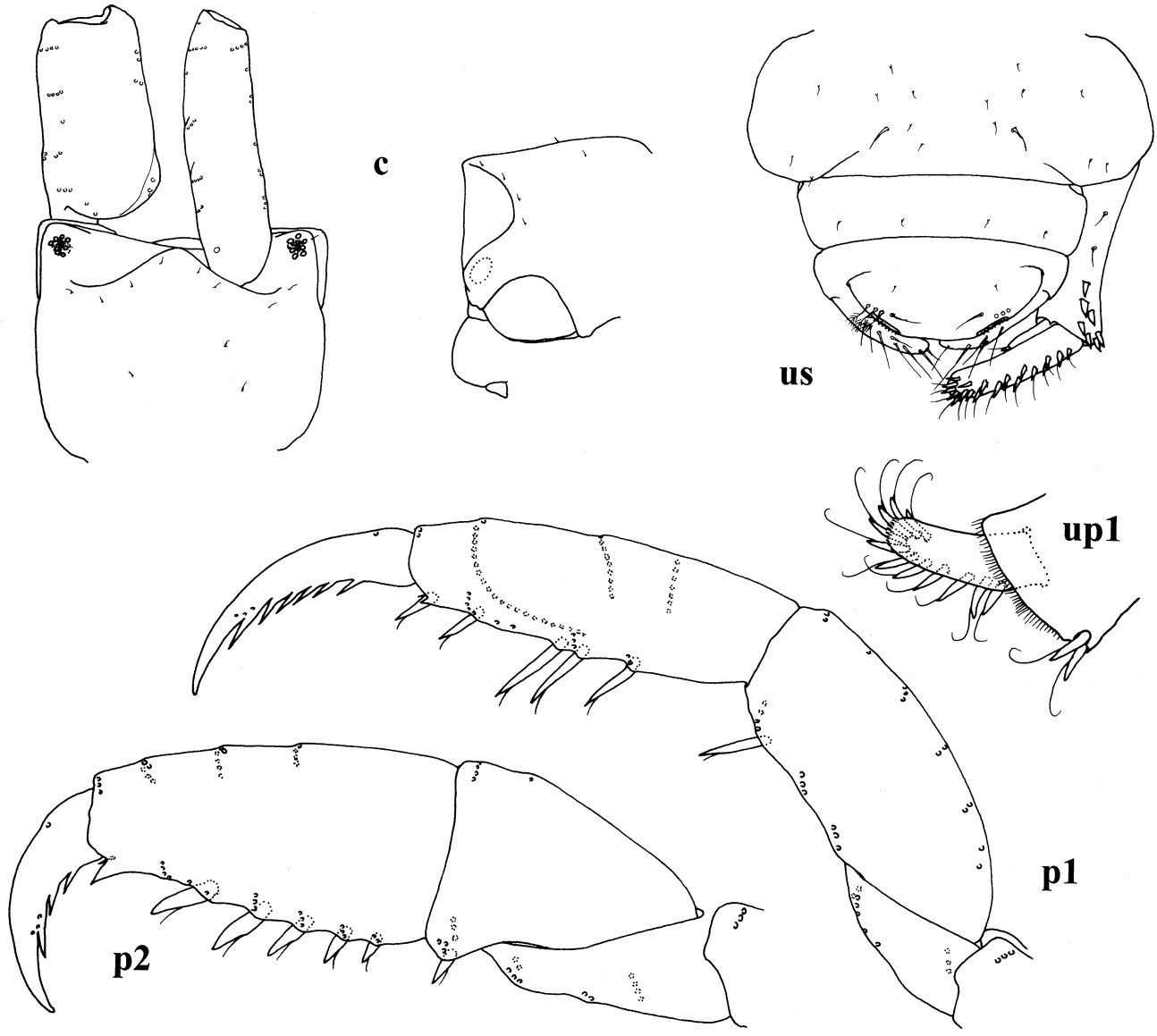

Fig. 18. *Ambicholestes (Austrolestes) thetis* n.sp., holotype. **c**, cephalon, dorsal and lateral view; **p**, pereopod (1 and 2); **up1**, left uropod 1, ventral view, inner ramus, enlarged; **us**, urosome, dorsal view.

about as long as first 6½ pereonites with up to 7 flagellar articles. Male antenna 2 as long as cephalon, pereon and pleon combined.

Coxal plates 5 and 6 with posterior lobe rounded; plate 5 without long anterior setae. Pleonal sideplates 1 and 2 evenly rounded.

Mandibular palp overreaching mandibular incisor by about 1/10 palp length, with distolateral and medioventral cover of microsetules, tip naked.

Pereopod 1 article 5 with 1 posterodistal robust seta; article 6 with small posterodistal tooth. Pereopod 2 article 2 anterior margin straight, fringed with moderately long simple setae; article 6 with up to 5 posterior robust setae. Pereopods 5 and 6 article 2 anterodistally with 1 long and a few short setae.

Uropod 1 peduncle about 2½ times longer than wide, with up to 8 distal robust setae dorsolaterally; outer ramus barely 4 times longer than broad, with 15–17 lateral robust setae, single as well as double; inner ramus c. 2/5 length of outer ramus with up to 12 lateral and apical robust setae.

Urosomites 1 and 2 free. Urosomite 3 and telson fused dorsally.

Size. Largest male: 4.7 mm; largest female: 3.8 mm.

Colour. Not known.

Biology. On muddy sand.

Distribution. Eastern Australia: central New South Wales to eastern Bass Strait; 74–124 m depth.

Etymology. The specific epithet refers to HMCS "Thetis" from which the first specimens of this species were collected off Botany Bay.

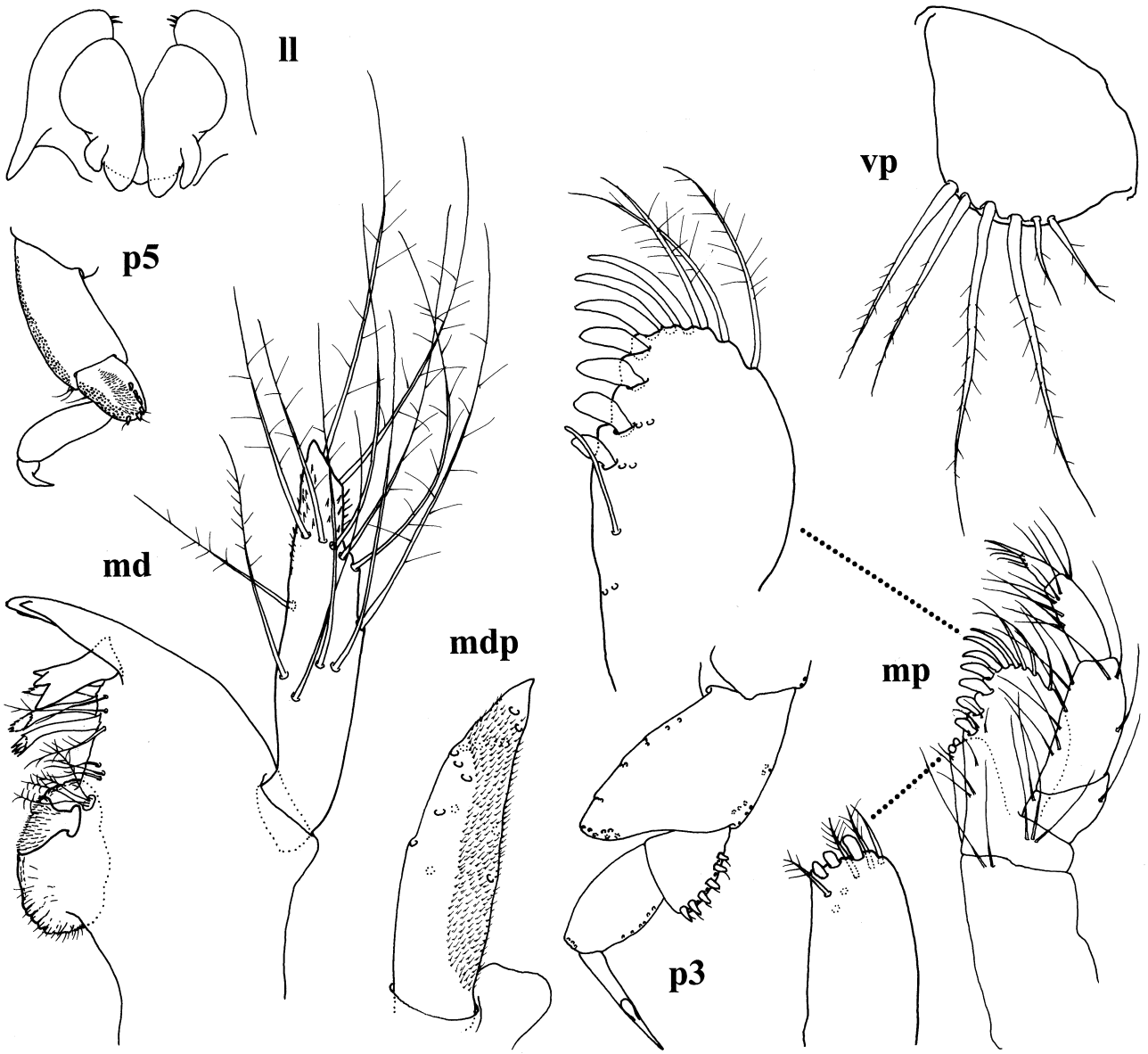

Fig. 19. *Ambicholestes (Austrolestes) thetis* n.sp., holotype. **ll**, lower lip; **md**, mandible: **mdp**, mandibular palp, dorsolateral view; **mp**, maxilliped; **p**, pereopod (3 and 5); **vp**, ventral process of article 2, antenna 2.

Ambicholestes (Austrolestes) minutus n.sp.

Figs 20–22

Material examined. HOLOTYPE: male of 2.2 mm, Northwest Shelf, Western Australia, 19°04.8'S 118°50.7'E, 84 m, sand with ca. 10% gravel and some detritus, grab, 29 June 1983, CSIRO Fisheries, Stn 03/83/B5G, AM P44615. PARATYPE: Northwest Shelf, Western Australia, 19°05.3'S 118°54.0'E, 83 m, sand with ca. 10% gravel and some detritus, grab, 15 February 1983, CSIRO Fisheries, Stn 01/83/B4G, AM P44616 (1 male).

Diagnosis. *Austrolestes* with rostrum present in normal position. Cephalon along dorsal midline as long as pereonites 1 and 2 combined. Antenna 2 peduncle article 3 with proximal dorsomedial recurved robust seta.

Further description. Rostrum short, pointed, triangular. Antenna 1 longer than combined length of cephalon and pereon by about 1/2 pleon length, with up to 8 flagellar articles (left flagellum in holotype appears to be regenerating); peduncle article 1 with recurved robust seta ventrally in proximal half. Antenna 2 distinctly longer than cephalon and entire body combined; ventroapical projection of peduncle article 2 about 1 1/2 times longer than wide, distally tapering with rounded apex carrying a few long setae.

Coxal plates 5 and 6 with posterior lobe poorly produced ventrally, posterior margin with rounded triangular projection. Pleonal side plates 1 and 2 evenly rounded.

Mandibular palp overreaching mandibular incisor with about 1/3 palp length, dorsolaterally with scattered acute microscales.

Fig. 20. *Ambicholestes (Austrolestes) minutus* n.sp., holotype. Scale bar: 0.5 mm.

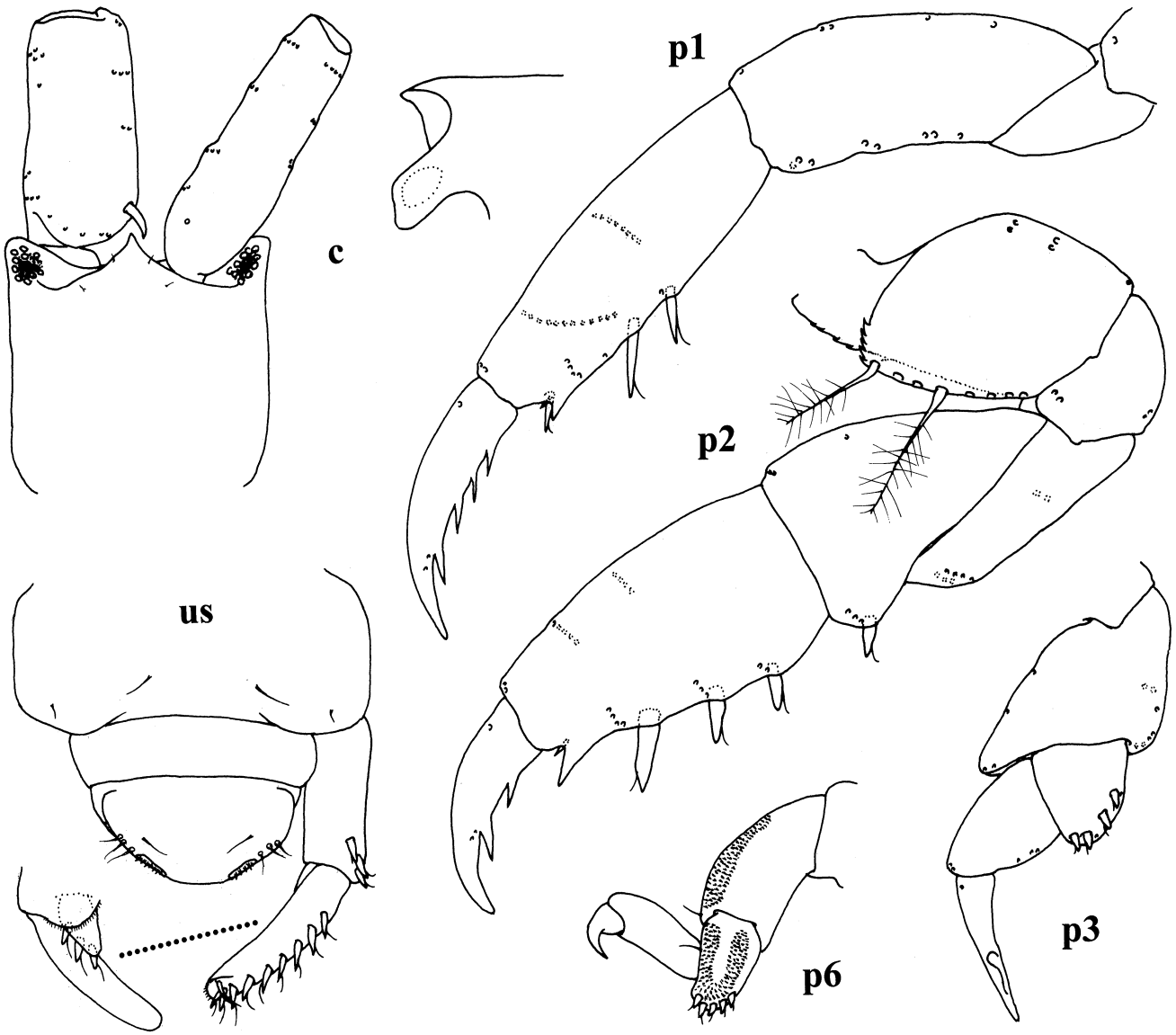

Fig. 21. *Ambicholestes (Austrolestes) minutus* n.sp., holotype. **c**, cephalon, dorsal and lateral view; **p**, pereopod (1, 2, 3 and 6); **us**, urosome, dorsal view, right uropod 1 in ventral view.

Pereopod 1 article 5 without posterior robust setae; article 6 with posterodistal tooth, 2 midposterior robust setae and 1 robust seta more distally. Pereopod 2 article 2 lateral anterior margin faintly convex, fringed with moderately long plumose setae with inflated bases, proximally with transverse row of small acute teeth, similar teeth present proximally on medial anterior margin; article 6 with 3 posterior robust setae. Pereopods 5 and 6 article 2 anteriorly with 1 long and 1 or 2 short setae, article 5 with up to 6 short robust setae in crescent.

Uropod 1 peduncle about $2^1/_3$ times longer than wide, with 2 or 3 distal robust setae; outer ramus about $3^1/_2$ times longer than wide, with single lateral row of up to 8 robust setae; inner ramus about $^2/_5$ length of outer ramus, distally tapering with 3 lateral to apical robust setae.

Urosomites 1 and 2 free. Urosomite 3 and telson dorsally fused.

Size. Largest male: 2.2 mm; (female not known).

Colour. Not known.

Biology. Not known.

Distribution. Western Australia, Northwest Shelf; 83–84 m depth.

Etymology. The specific epithet refers to the small size of the species compared with the other species in the subgenus.

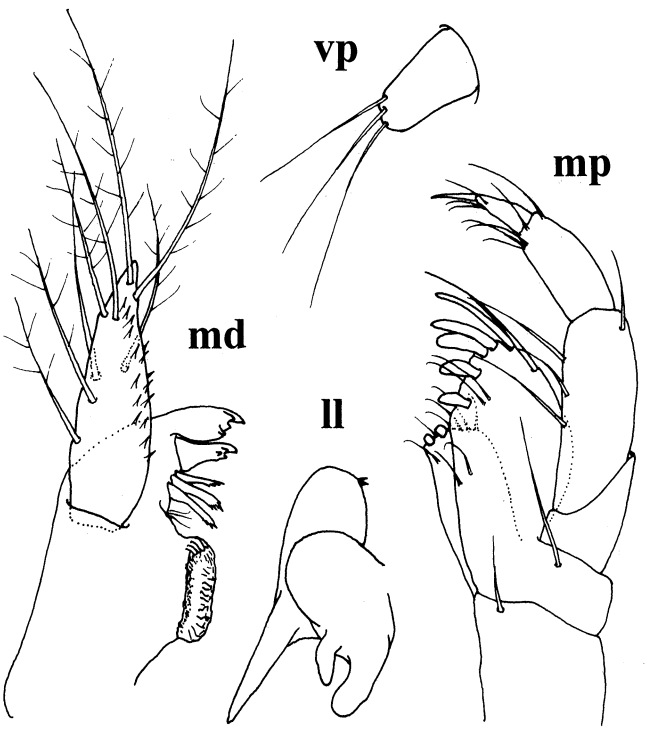

Fig. 22. *Ambicholestes (Austrolestes) minutus* n.sp., holotype. **ll**, lower lip; **md**, mandible; **mp**, maxilliped; **vp**, ventral process of article 2, antenna 2.

Table 1. Summary of diagnostic differences between *Caribboecetes* Just, 1983 and *Ambicholestes* n.gen.

	Caribboecetes	*Ambicholestes*	
		(Ambicholestes)	*(Austrolestes)*
Lower lip complex (C), simple (S)	S	C	C
Pereopod 7, article 7 with row of lateral setae (L), smooth (S)	S	L	L
Eyelobes inflated (I), not inflated (N)	N	I	I
Antenna 1 peduncle: article 1 shorter (S) or longer (L) that 2	L	S	S
Mandibular palp rounded with small 2nd article (R) or 1-articulate, pointed (P)	R	R	P
Male antenna 2 shorter (S) or longer (L) than cephalon plus pereon	S	S	L

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