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The new deep-sea families Cebocaridae fam. nov., Cyclocaridae fam. nov. and Thoriellidae fam. nov. (Crustacea: Amphipoda: Lysianassoidea)

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Abstract

Within the Lysianassoidea three new families are established: Cebocaridae **fam. nov.** is established for the deep-sea bathypelagic genera *Cebocaris* J.L. Barnard, 1964; *Crybelocephalus* Tattersall, 1906; *Crybelocyphocaris* Shoemaker, 1945; *Cyphocarioides* Birstein & Vinogradov, 1970; *Mesocyclocaris* Birstein & Vinogradov, 1964; *Mesocyphocaris* Birstein & Vinogradov, 1960; *Metacyclocaris* Birstein & Vinogradov, 1955; *Metacyphocaris* Tattersall, 1906 and *Paracyphocaris* Chevreux, 1905; Cyclocaridae **fam. nov.** is established for the deep-sea demersal scavenging genus *Cyclocaris* Stebbing, 1888; and Thoriellidae **fam. nov.** is established for the abyssopelagic genera *Chevreuxiella* Stephensen, 1915, *Danaella* Stephensen, 1925, *Parachevreuxiella* Andres, 1987 and *Thoriella* Stephensen, 1915. The families Cebocaridae and Thoriellidae are reported from Australian waters for the first time, in the form of *Metacyphocaris helgae* Tattersall, 1906 and *Parachevreuxiella justi* **sp. nov.**

Key words: Crustacea, Amphipoda, Lysianassoidea, Cebocaridae, Cyclocaridae, Thoriellidae, Australia, deep-sea, taxonomy, new families, new species

Introduction

Based on the very reduced coxa 1 and small coxa 2 Barnard & Karaman (1991: 428) included 21 genera in their 'Cyphocarin Lysianassidae' group. Since then, one of these genera (*Pseudocyphocaris* Ledoyer, 1986) has been placed in the Wandinidae Lowry & Stoddart, 1990; two genera (*Cyphocaris* Boeck, 1871 and *Procyphocaris* J.L. Barnard, 1961) have been placed in the family Cyphocarididae Lowry & Stoddart, 1997; four genera (*Amaryllis* Haswell, 1879, *Bathyamaryllis* Pirlot, 1933, *Pseudamaryllis* Andres, 1981 and *Vijaya* Walker, 1904) have been placed in the family Amaryllididae Lowry & Stoddart, 2002 and *Lepidepecreella* Schellenberg, 1926a has been placed in the family Lepidepecreellidae Stoddart & Lowry, 2010. In this paper nine genera (*Cebocaris* J.L. Barnard, 1964; *Crybelocephalus* Tattersall, 1906; *Crybelocyphocaris* Shoemaker, 1945; *Cyphocarioides* Birstein & Vinogradov, 1970; *Mesocyclocaris* Birstein & Vinogradov, 1964; *Mesocyphocaris* Birstein & Vinogradov, 1960; *Metacyclocaris* Birstein & Vinogradov, 1955; *Metacyphocaris* Tattersall, 1906 and *Paracyphocaris* Chevreux, 1905) are placed in the new family Cebocaridae; the genus *Cyclocaris* Stebbing, 1888 is placed in the new monotypic family Cyclocaridae; and four genera (*Chevreuxiella* Stephensen, 1915, *Danaella* Stephensen, 1925, *Thoriella* Stephensen, 1915 and the subsequently included *Parachevreuxiella* Andres, 1987) are placed in the new family Thoriellidae, all within the Lysianassoidea.

The families Cebocaridae and Thoriellidae are reported from Australian waters for the first time, in the form of *Metacyphocaris helgae* Tattersall, 1906 and *Parachevreuxiella justi* **sp. nov.**

Materials and methods

The family-level diagnoses and descriptions were generated from a DELTA database (Dallwitz 2005) to the families and subfamilies of the lysianassoid amphipods. The family-level names are formed in accordance with

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ICZN Article 29.3.1.1, which allows the "-id" letters of the stem to be deleted in the family name. The **bold** parts of the descriptions are diagnostic characters which distinguish each taxon in at least two respects from every other taxon. Material is lodged in the Australian Museum, Sydney (AM) and Museum Victoria, Melbourne (MV). Standard abbreviations on the plates are: A, antenna; C, coxa; E, epistome; EP, epimeron; G, gnathopod; H, head; MD, mandible; MX, maxilla; MP, maxilliped; P, pereopod; T, telson; U, uropod; L, left; R, right. Maxilla 1 setal-tooth classification follows Lowry & Stoddart (1990, 1992, 1995).

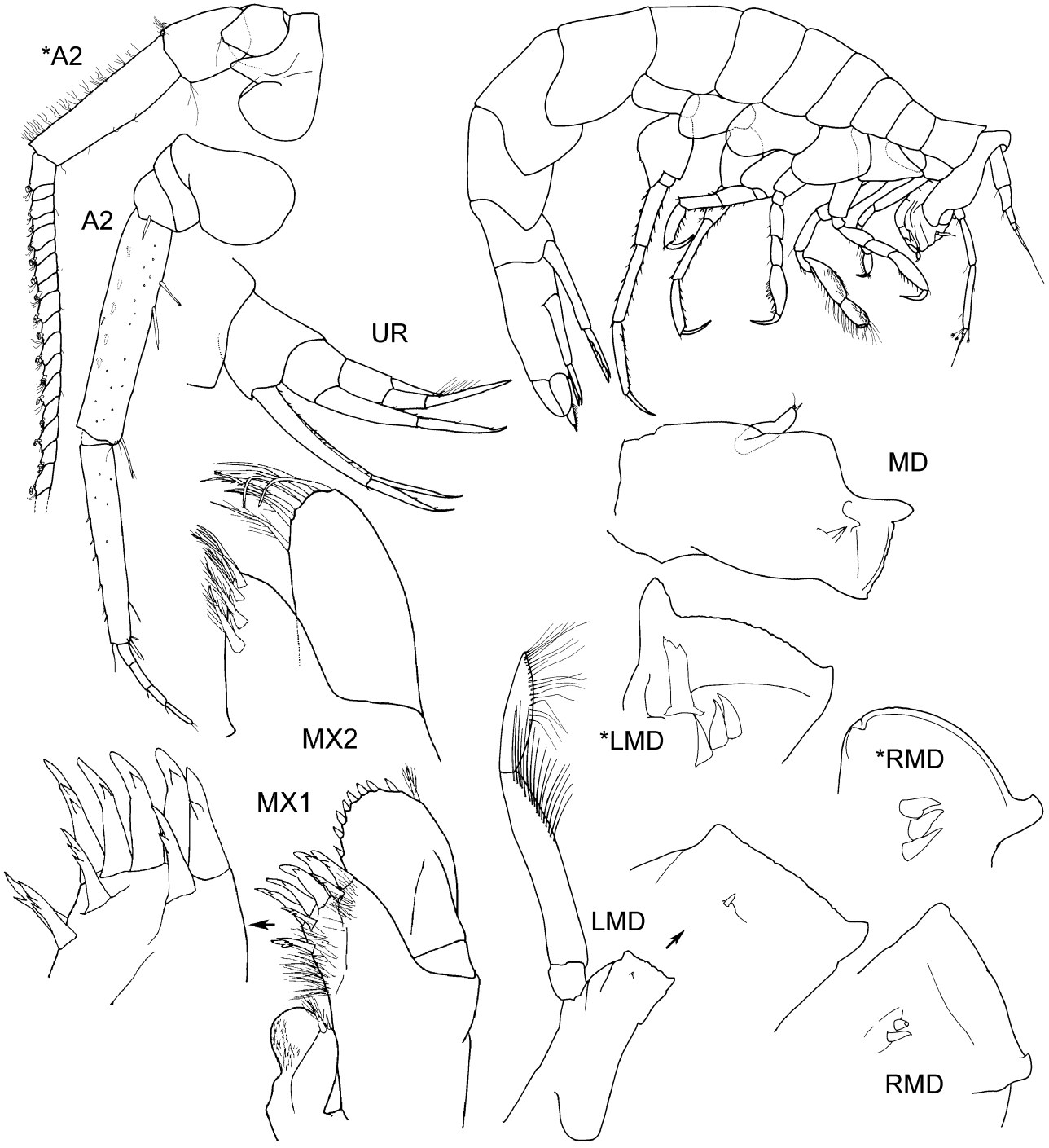

FIGURE 1. Morphological features of the Cebocaridae **fam. nov.** Habitus—*Crybelocyphocaris tattersalli* Shoemaker, 1945. A2, UR—*Metacyphocaris helgae* Tattersall, 1906.*A2, LMD, RMD—*Metacyclocaris polycheles* Birstein & Vinogradov, 1955. *LMD, *RMD—*Mesocyphocaris longicaudatus* Birstein & Vinogradov, 1960. MD, MX2—*Cyphocarioides elongatus* Birstein & Vinogradov, 1970. MX1—*Crybelocephalus megalurus* Tattersall, 1906.

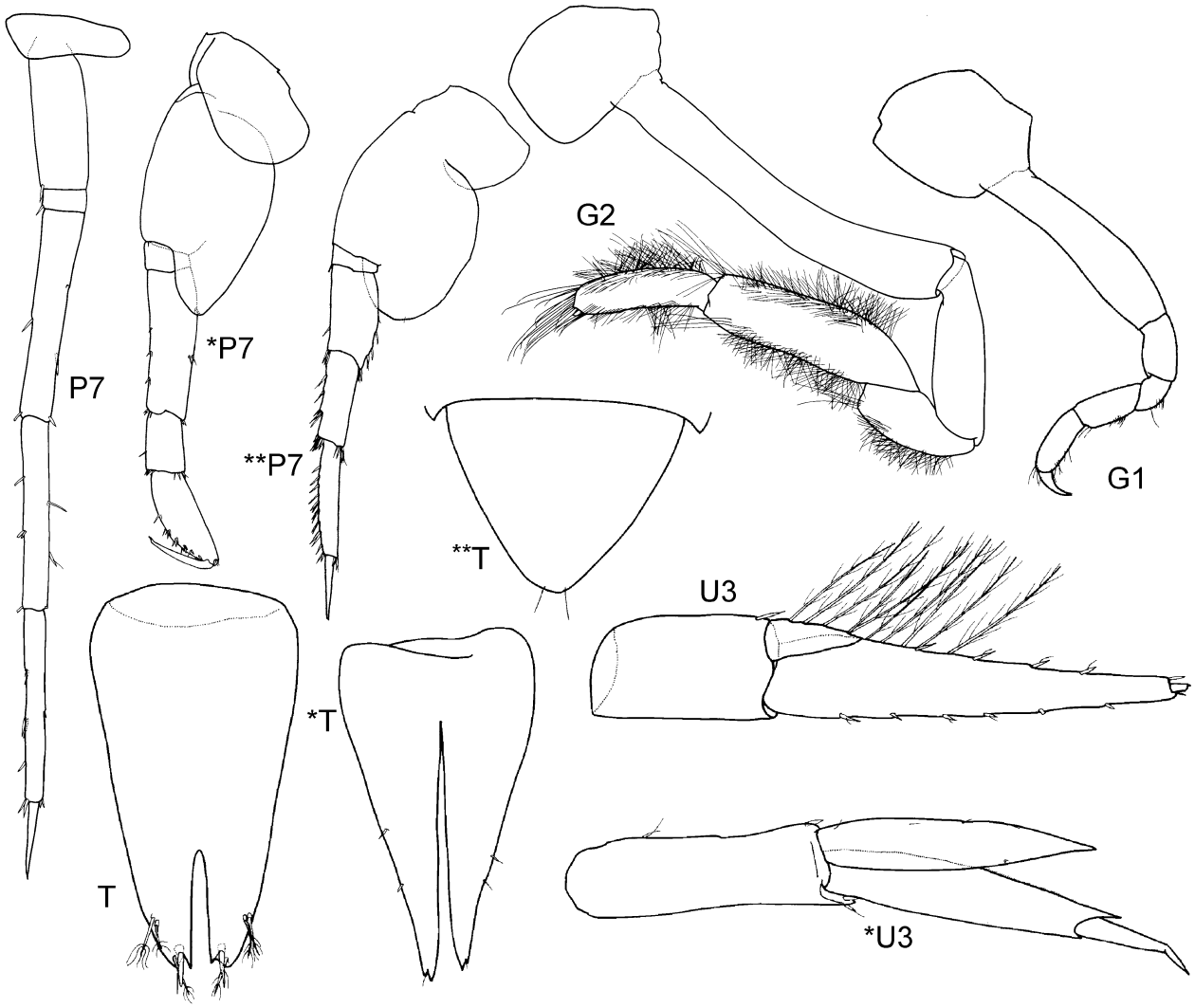

FIGURE 2. Morphological features of the Cebocaridae **fam. nov.** G1, G2, **P7, **T—*Crybelocephalus megalurus*. P7—*Cyphocarioides elongatus*. *P7—*Mesocyclocaris gracilis* Birstein & Vinogradov, 1964. U3, T—*Metacyphocaris helgae*. *U3, *T—*Metacyclocaris polycheles*.

Cebocaridae fam. nov.
(Figs 1, 2)

Diagnostic description. ***Head*** exposed or partially covered by pereonite 1 and coxa 1; **much deeper than long, extending well below insertion of antenna 2**, without cheek notch. *Antennae* calceoli present or absent in male. *Antenna 2* peduncular article 3 without distal hook. *Epistome* with proximal portion not produced. *Mouthpart bundle* subquadrate. ***Mandible*** incisors well developed, **asymmetrical**, left straight, minutely serrate, right convex, smooth; left lacinia mobilis present or absent, if present then blade-like, broader than long, with serrate margin or rod-like; accessory setal row with 5 or less robust setae, without distal setal tuft; **molar vestigial or absent**; palp present or absent, if present then inserted approximately midanteriorly. ***Maxilla 1*** inner plate with pappose setae along medial margin or with apical pappose setae; **outer plate with setal-teeth in modified 8/3 crown arrangement**, setal-teeth large; **palp** large, **with apical robust setae**. ***Maxilla 2*** **inner plate significantly shorter than outer plate**, inner plate with or without oblique row of facial setae (weak when present). *Maxilliped* outer plate present, medial setae vestigial or absent, with apical slender setae; palp 4-articulate, article 4 well developed.

Gnathopod 1 simple; **coxa vestigial**; ischium short or long; carpus short; propodus small; dactylus slightly curved. ***Gnathopod 2*** **coxa vestigial**. ***Pereopods*** **some prehensile**; distal spurs absent. *Pereopod 4* coxa with posteroventral lobe well developed, weak or absent. *Pereopod 5* coxa anterior and posterior lobes subequal, or posterior lobe deeper than anterior lobe.

Uropod 3 rami biramous. *Telson* cleft or entire.

Type genus. *Cebocaris* J.L. Barnard, 1964.

Included genera. The Cebocaridae includes 9 genera: *Cebocaris* J.L. Barnard, 1964; *Crybelocephalus* Tattersall, 1906; *Crybelocyphocaris* Shoemaker, 1945; *Cyphocarioides* Birstein & Vinogradov, 1970; *Mesocyclocaris* Birstein & Vinogradov, 1964; *Mesocyphocaris* Birstein & Vinogradov, 1960; *Metacyclocaris* Birstein & Vinogradov, 1955; *Metacyphocaris* Tattersall, 1906; *Paracyphocaris* Chevreux, 1905.

Remarks. Among lysianassoid amphipods only six family-level taxa have the first and second coxae vestigial: Cebocaridae, Cyclocaridae, Cyphocarididae, Lepidepecreellidae, Thoriellidae and Wandinidae. Among these taxa only the cebocarids and the cyclocarids have the inner plate of maxilla 2 significantly shorter than the outer plate. All cebocarids have some pereopods prehensile while no cyclocarids have prehensile pereopods. Cebocarids are distinguished by their much deeper heads which in cyclocarids are only slightly deeper than long. In addition cebocarids have the mandibular molar vestigial or absent and the maxilla 1 setal-teeth in an 8/3 crown arrangement whereas in cyclocarids the molar is a well developed setose tongue and the maxilla 1 setal-teeth are in a 7/4 crown arrangement, adaptations for scavenging.

There is very little known about the biology of cebocarid amphipods aside from the study of Bowman & Wasmer (1984) which suggested that *Paracyphocaris praedator* Chevreux, 1905 is an egg-mimic that feeds upon the eggs of the pelagic caridean shrimp *Oplophorus novaezeelandiae* de Man, 1931. Based on slim evidence presented by K.H. Barnard (1932) and Shoemaker (1945) Bowman & Wasmer (1984: 847) suggested that all cebocarid genera might be 'associated with the marsupia of deep-sea pelagic shrimps'.

Generic distinctions between some of the cebocarid genera are very slight. A complete revision of the family is needed, at both generic and species level (see remarks under *Metacyphocaris helgae* Tattersall, 1906).

Key to Genera of Cebocaridae

1. Urosomites 1–3 free 2
– Urosomites 2 and 3 fused . . . . . *Crybelocyphocaris*
2. Pereopod 7 basis expanded posteriorly 3
– Pereopod 7 basis linear . . . . . *Cyphocarioides*
3. Uropod 3 rami subequal in length 4
– Uropod 3 inner ramus shorter than outer ramus 5
4. Mandibular palp present; pereopod 7 simple . . . . . *Crybelocephalus*
– Mandibular palp absent; pereopod 7 prehensile . . . . . *Mesocyclocaris*
5. Telson entire . . . . . *Cebocaris*
– Telson cleft 6
6. Mandibular palp present, 3-articulate 7
– Mandibular palp vestigial 1- or 2-articulate or absent . . . . . *Metacyphocaris*
7. Antenna 2 flagellum well-developed; mandibular palp large, with setae on posterior margin of articles 2 and 3. . . . . *Metacyclocaris*
– Antenna 2 flagellum very small or vestigial; mandibular palp small, with apical setae only. 8
8. Antenna 2 flagellum short; uropod 3 inner ramus slightly shorter than outer ramus . . . . . *Paracyphocaris*
– Antenna 2 flagellum vestigial (less than 3 articles); uropod 3 inner ramus much shorter than (less than 0.2 ×) outer ramus . . . . . *Mesocyphocaris*

Metacyphocaris Tattersall, 1906

Metacyphocaris Tattersall, 1906: 29. — Schellenberg, 1927: 665. — Gurjanova, 1962: 78. — Hurley, 1963: 21. — J.L. Barnard, 1969: 350. — Barnard & Karaman, 1991: 502.

Metacyphocaris helgae Tattersall, 1906

(Figs 3, 4)

Metacyphocaris Helgae Tattersall, 1906: 29, pl. 3 fig. 1, pl. 4. — Stephensen, 1912a: 88. — Stephensen, 1912b: 613. — Stephensen, 1913: 113. — Stephensen, 1915: 38. — Stephensen, 1923: 54. — Schellenberg, 1926b: 216, figs 26c, 27. — Schellenberg, 1927: 666, fig. 60. — Pirlot, 1929: 8. — Schellenberg, 1929: 196. — K.H. Barnard, 1932: 37, fig. 5. —

Stephensen, 1932: 354. — Stephensen, 1933: 9. — Chevreux, 1935: 28. — Thorsteinson, 1941: 60, pl. 3 figs 31-38. — Shoemaker, 1945: 189. — J.L. Barnard, 1958: 95. — Birstein & Vinogradov, 1958: 222. — Birstein & Vinogradov, 1960: 171. — Gurjanova, 1962: 79, fig. 14. — Hurley, 1963: 22, fig. 3. — Birstein & Vinogradov, 1964: 156. — O'Riordan, 1969: 32. — Thurston & Allen, 1969: 361. — Vader, 1983: 140 (table 1). — Umezu, 1984: 128. — Austin, 1985: 601. — Costello *et al.*, 1989: 32. — Barnard & Karaman, 1991: 502. — Palerud & Vader, 1991: 38. — Lopes *et al.*, 1993: 209. — Thurston, 2001: 684 (table 2).

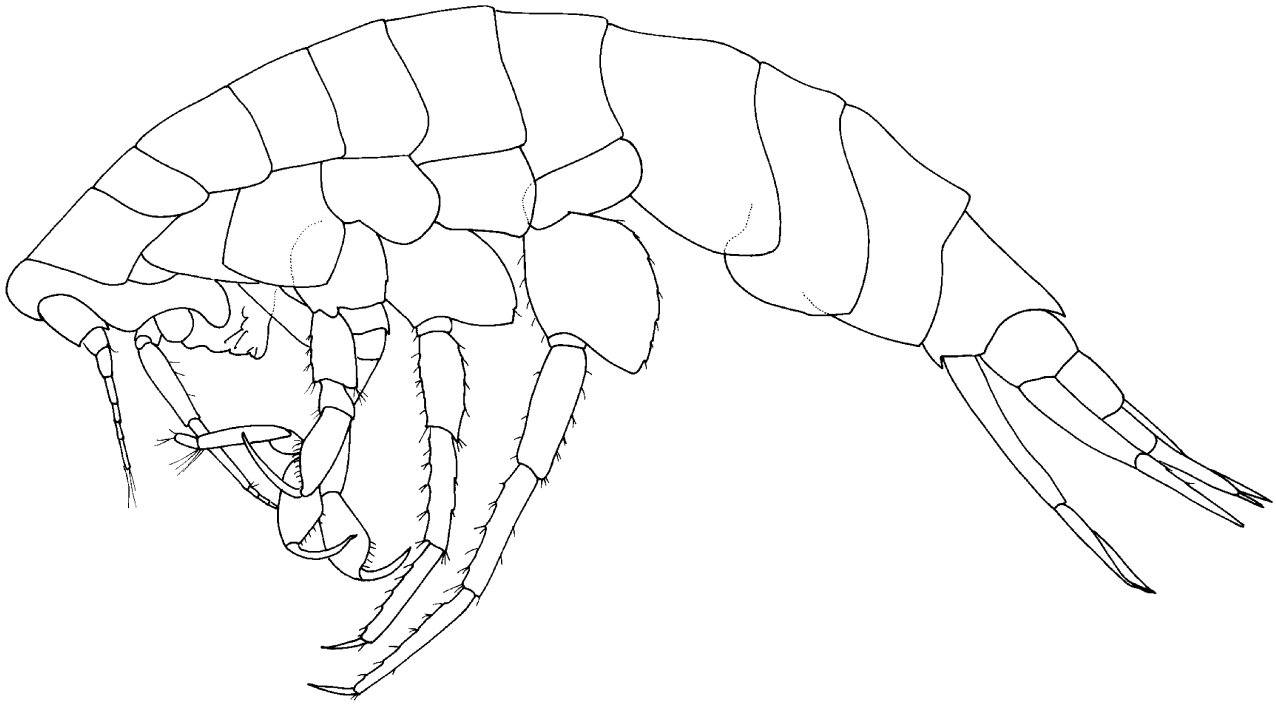

FIGURE 3. *Metacyphocaris helgae* Tattersall, 1906; immature specimen, 11.5 mm, MV J15797, south of Point Hicks, Victoria, Australia.

Type localities (for syntypes). 40 miles north by west of Eagle Island, County Mayo, Ireland, eastern North Atlantic Ocean, [approx. 54°30'N 11°30'W], 1152 m over 1189+ m; same locality, 1371 m over 1829+ m; west of Porcupine Bank, eastern North Atlantic Ocean, 53°07'N 15°06'W, 1371 m over 1573 m; 50 miles north by west of Eagle Island, County Mayo, Ireland, eastern North Atlantic Ocean, [approx. 54°30'N 11°30'W], 1097 m over 2195 m; same locality, 2113 m over 2195 m.

Material examined. 1 specimen, immature, 11.5 mm, MV J15797, south of Point Hicks, Victoria, Australia, 38°27.20'S 149°09.70'E, 8 m rectangular midwater trawl, 22 July 1986, M.F. Gomon *et al.*, RV *Franklin*, stn SLOPE 24.

Distribution. Atlantic, Indian and Pacific Oceans, between 65°N and 40°S; to 4740 m depth (see remarks).

Remarks. Tattersall (1906: 30), in his original description of *Metacyphocaris helgae*, said it had no mandibular palp, only a "very small rounded tubercular appendage". We have examined a specimen from the syntype series and confirm this description. Tattersall used this character to separate *Metacyphocaris* from *Paracyphocaris*. K.H. Barnard (1932) reported material of *M. helgae* from the South Atlantic Ocean with a rudimentary 2-articulate mandibular palp. Shoemaker (1945) also reported material with a rudimentary 2-articulate mandibular palp from Bermuda in the western North Atlantic Ocean and Hurley (1963) reported material with a 1-articulate palp from the San Nicholas Basin, eastern Pacific Ocean. There are now 18 literature reports of *M. helgae* material, recording more than 100 specimens. Most are not illustrated or described so it is not possible to assess the variation in the mandibular palp or any other characters which might indicate separate species. The single specimen we record here has no mandibular palp and matches very well with Tattersall's type material.

The depth range cited above is very unlikely. According to Thurston (2010 *in litt*.) this is ‘the bottom depth under the 0–4990 m haul listed in Birstein & Vinogradov (1960). Virtually all Birstein & Vinogradov hauls were made with open nets and the depths quoted are metres of wire out. The same is true for most mid-water hauls, even those made in horizontal mode. I have unpublished data for *M. helgae* collected in the North Atlantic at 60N20W,

53N20W, 40N20W and 30N23W to depths of 2000 m or more. Based on an analysis of more than 200 specimens obtained using the opening/closing IOS RMT1+8 nets, the species occurs in all layers from 600–700 m down to 1250–1500 m. Single specimens were caught at 500–600 m and 1500–2000 m.'

FIGURE 4. *Metacyphocaris helgae* Tattersall, 1906; immature specimen, 11.5 mm, MV J15797, south of Point Hicks, Victoria, Australia. Scales represent 0.2 mm.

Cyclocaridae fam. nov.
(Fig. 5)

Diagnostic description. ***Head*** exposed, **slightly deeper than long**, without cheek notch. *Antennae* calceoli present or absent in male. *Antenna 2* peduncular article 3 without distal hook. *Epistome and upper lip* separate. *Epistome* with proximal portion not produced. *Mouthpart bundle* subquadrate. ***Mandible*** incisors well developed, incisors asymmetrical, left straight, **minutely serrate**, right convex, smooth; left lacinia mobilis rod-like; accessory setal

row with more than 5 robust setae, without distal setal tuft; **molar a setose tongue**; **palp inserted distally**. *Maxilla 1* inner plate with pappose setae along medial margin; outer plate with setal-teeth in 7/4 crown arrangement, setal-teeth large; palp large, with apical robust setae. *Maxilla 2* inner plate significantly shorter than outer plate, inner plate without oblique row of facial setae. *Maxilliped* outer plate present, medial setae small, blunt or bead-shaped, with apical slender setae; palp 4-articulate, article 4 well-developed.

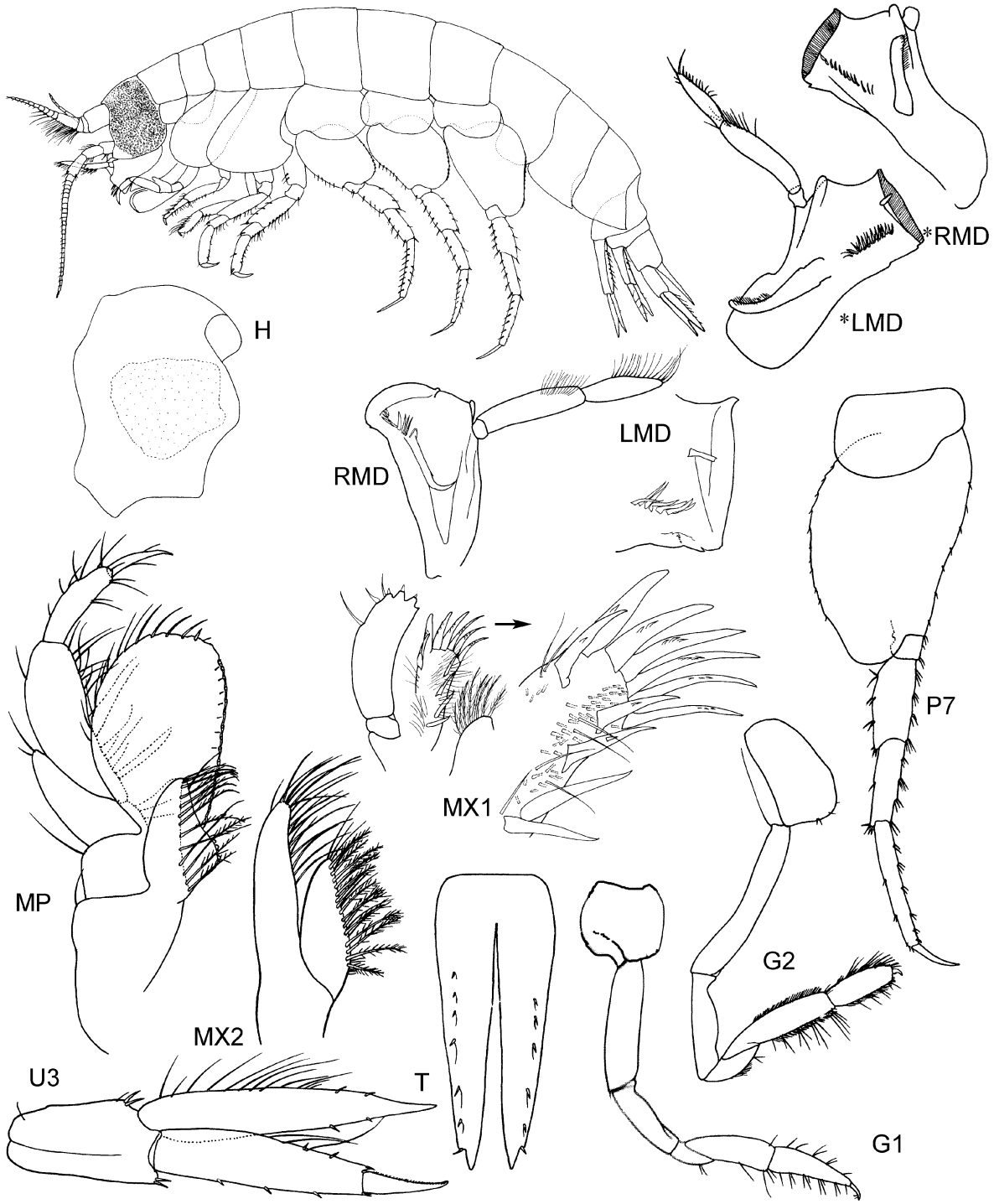

FIGURE 5. Morphological features of the Cyclocaridae **fam. nov.** Habitus, G1, G2, *LMD, *RMD, MP, MX2, P7, T, U3—*Cyclocaris guilelmi* Chevreux, 1899. H, RMD, LMD, MX1—*Cyclocaris tahitensis* Stebbing, 1888. (Habitus after Sars 1900; G1, G2, *LMD, *RMD, MP, MX2, P7, T, U3 after J.L. Barnard 1959.)

Gnathopod 1 simple; coxa vestigial; ischium long; carpus long; propodus small; dactylus slightly curved. *Gnathopod 2* coxa vestigial. *Pereopods* all simple; distal spurs absent. *Pereopod 4* coxa with posteroventral lobe weak or absent. *Pereopod 5* coxa anterior and posterior lobes subequal.
Uropod 3 biramous. *Telson* cleft.

Type genus. *Cyclocaris* Stebbing, 1888.

Included genera. Cyclocaridae includes only one genus: *Cyclocaris* Stebbing, 1888.

Remarks. As discussed above, cyclocarids appear to be most similar to cebocarid amphipods. Cyclocarids differ significantly from cebocarids in the head which is only slightly deeper than long, in the eyes which cover most of the head, in the mandible which has more strongly asymmetrical incisors and a setose molar and in the simple, non-prehensile pereopods. We have examined material of *Cyclocaris tahitensis* collected at the Austral Isles (reported by Lowry & Stoddart 1994) and found that the head shape, when fully exposed, is similar to that of *C. guilelmi*. There is also evidence of a very large eye which had faded with preservation (see fig. 5H female, AM P.42130).

In contrast to the possibly-egg-eating cebocarids, members of the Cyclocaridae are abundant deep-sea scavengers known from the northern and southern hemispheres in the Atlantic and Pacific Oceans. They are unusual among lysianassoid taxa in having eyes covering the whole head, a situation similar to some hyperiidean taxa. This might indicate that cyclocarids are predators as well as scavengers. Cyclocarids have been taken in the water column (490–2857 m), but they also live near the bottom: Lowry & Stoddart (1994) reported *C. tahitensis* Stebbing, 1888 from baited traps set on the bottom in 65 to 870 m depth.

Thoriellidae fam. nov.
(Figs 6, 7)

Diagnostic description. ***Head*** exposed or partially covered by coxa 3; **much deeper than long, extending well below insertion of antenna 2**, without cheek notch. *Antennae* calceoli present or absent in male. *Antenna 2* peduncular article 3 without distal hook. *Epistome* with proximal portion not produced. *Mouthpart bundle* subquadrate. ***Mandible*** incisors well developed, symmetrical or asymmetrical, left convex or straight, minutely serrate, right convex or straight, smooth; left lacinia mobilis absent; accessory setal row with 5 or less robust setae, without distal setal tuft; molar absent; **palp absent**. ***Maxilla 1*** inner plate with pappose setae along medial margin or with 2 apical pappose setae; **outer plate with setal-teeth in modified 8/3 crown arrangement**, setal-teeth large; palp large, without apical robust setae. *Maxilla 2* inner plate subequal to or slightly shorter than outer plate, inner plate without oblique row of facial setae. ***Maxilliped*** outer plate present, medial setae vestigial or absent, without apical setae; **palp 2-articulate, 1-articulate or absent**.

Gnathopod 1 simple; coxa vestigial; ischium short (length up to 2 × breadth); carpus short; propodus small or large; dactylus slightly curved or vestigial. *Gnathopod 2* coxa short, subequal in size to coxa 3 or vestigial. *Pereopods* all simple; propodus with or without spurs. *Pereopod 4* coxa with posteroventral lobe weak or absent. *Pereopod 5* coxa posterior lobe deeper than anterior lobe.

Uropod 3 present or absent; if present then ***rami vestigial or absent***. ***Telson absent***.

Type genus. *Thoriella* Stephensen, 1915.

Included genera. The Thoriellidae includes 4 genera: *Chevreuxiella* Stephensen, 1915, *Danaella* Stephensen, 1925, *Parachevreuxiella* Andres, 1987 and *Thoriella* Stephensen, 1915.

Remarks. Only cebocarids and thoriellids have the first and second coxae vestigial and maxilla 1 with the setal-teeth in an 8/3 crown arrangement. Thoriellids differ from cebocarids and all other lysianassoid families in having uropod 3 vestigial or absent and the telson absent.

There is little information on the biology of this abyssopelagic group. Herring (1981) reported bioluminescence in live specimens of *Thoriella islandica*, *Chevreuxiella metopoides*, *Danaella mimonectes* and other entities in the *Chevreuxiella/Danaella* group. Parker (1999) reported an unusual antennal reflector associated with bioluminesence in an undescribed species of thoriellid.

Thoriellids have been very rarely reported in the literature. From the North Atlantic Ocean there have been one record of *Chevreuxiella* (Stephensen 1915), two records of *Danaella* (Stephensen 1925), one record of *Parachevreuxiella* (Andres 1987) and two records of *Thoriella* (Stephensen 1915 and Shoemaker 1945). There are three records of *Danaella* from the Southern Ocean (Andres 1983, Birstein & Vinogradov 1962 and Piatkowski *et*

al. 1994), one record of *Thoriella* from the Red Sea (K.H. Barnard 1937) and one record of *Thoriella* from the eastern South Pacific Ocean (Vinogradov 1990). According to Thurston (2010, *in litt*.) there are possibly as many as 15 thoriellid 'entities' among more than 100 or so specimens collected in the mid-water north-east Atlantic. Uncertainty as to the number of species arises from radical ontogenetic change and the difficulty of recognising whether differences are intra- or inter-specific. The description of these taxa may lead to changes in the family diagnosis.

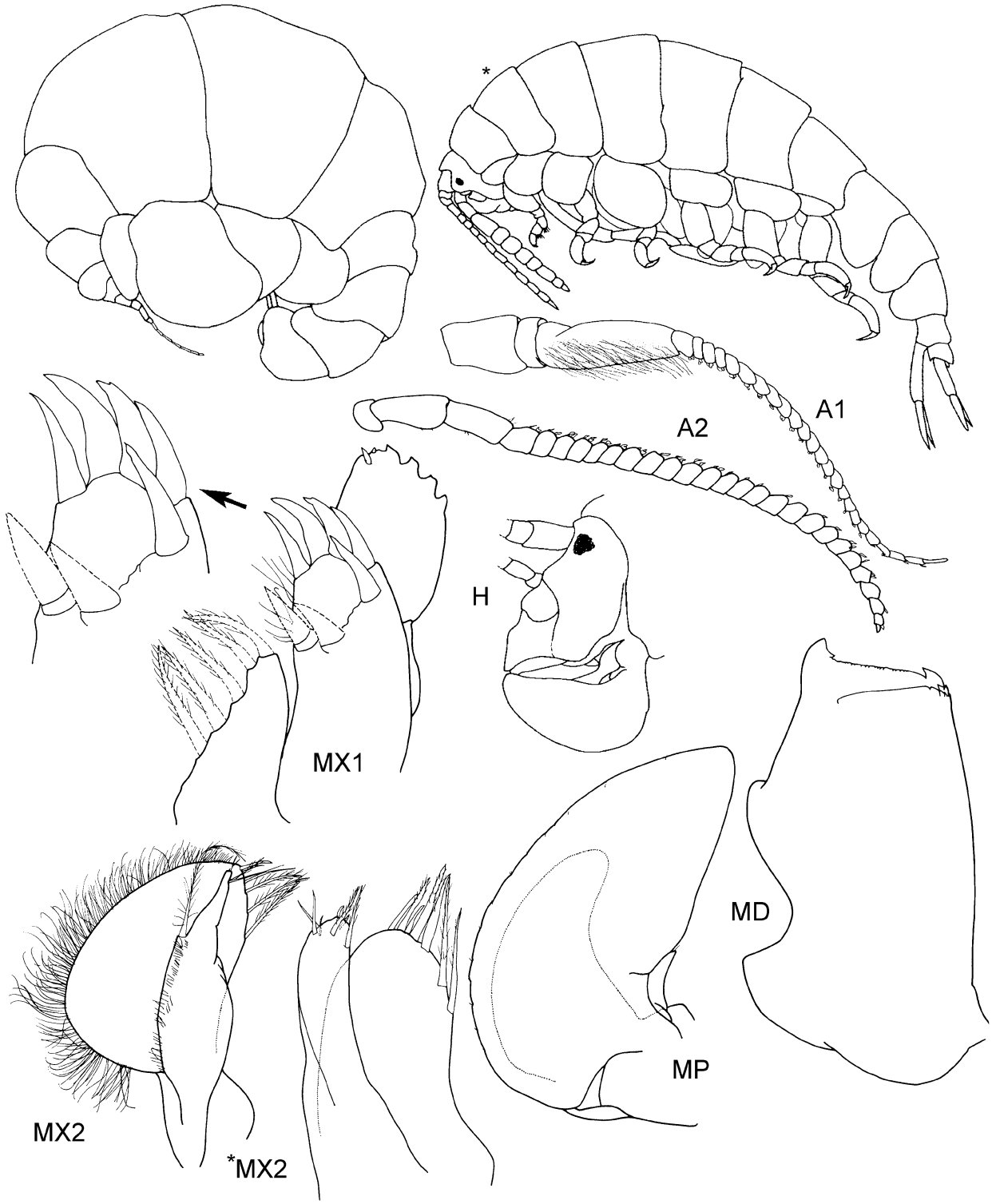

FIGURE 6. Morphological features of the Thoriellidae **fam. nov.** Habitus—*Danaella mimonectes* Stephensen, 1925. *Habitus, MD, MX1—*Thoriella islandica* Stephensen, 1915. H, MX2, MP—*Parachevreuxiella lobata* Andres, 1987. A1, A2,*MX2—*Chevreuxiella metopoides* Stephensen, 1915: (H, MX2, MP after Andres 1987.)

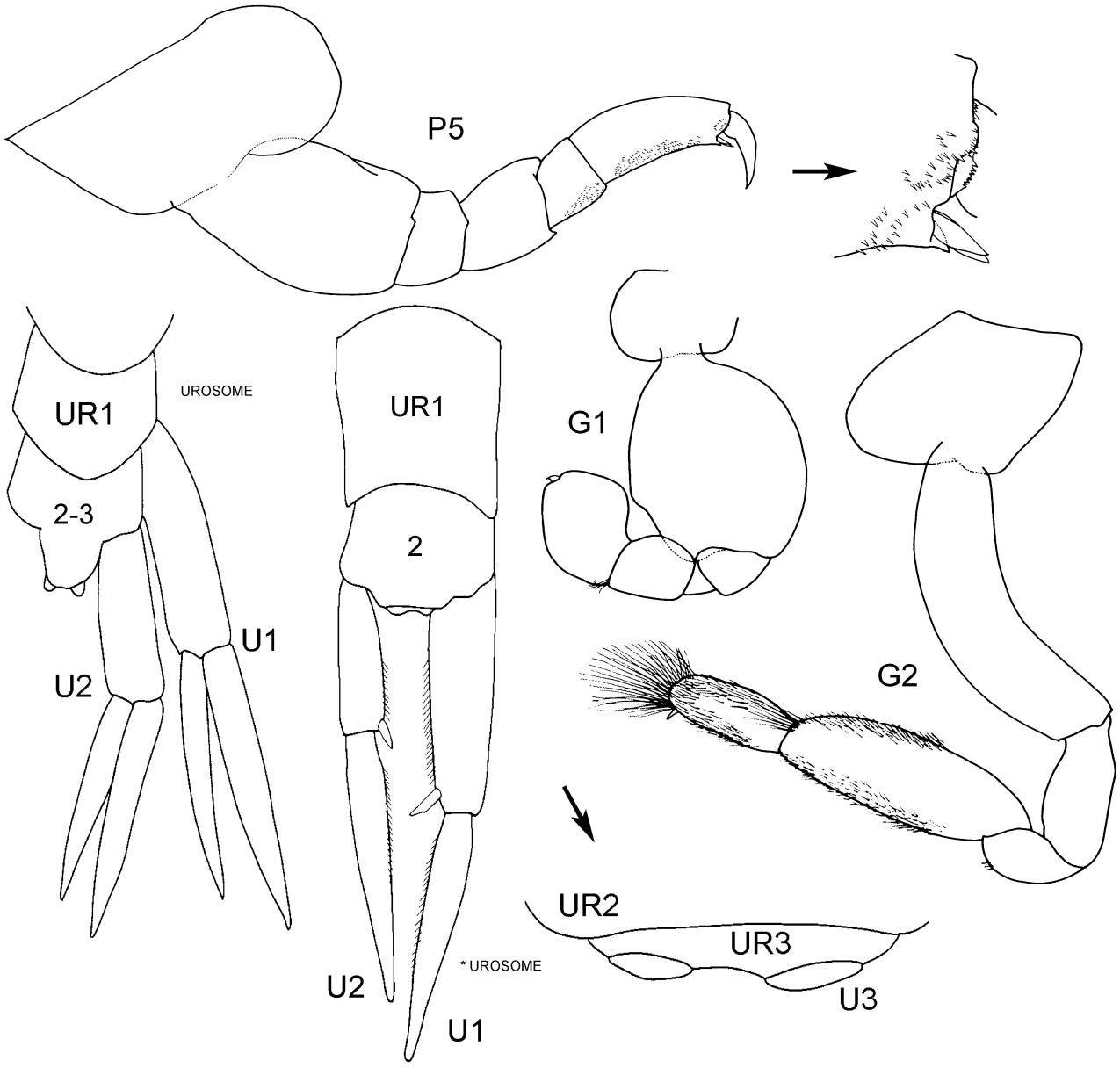

FIGURE 7. Morphological features of the Thoriellidae **fam. nov.** G1—*Parachevreuxiella lobata*. G2—*Chevreuxiella metopoides*. P5, urosome—*Thoriella islandica*. *urosome—*Danaella mimonectes*. (G1 after Andres 1987; urosome after Stephensen 1915; *urosome after Stephensen 1925.)

Key to Genera of Thoriellidae

1. Pereopods 3–7 coxae small and discontiguous; uropods 1 and 2, inner ramus as long as outer ramus . . . . . *Thoriella*
- Pereopods 3–7 coxae large and overlapping; uropods 1 and 2, inner ramus short, vestigial or absent 2
2. Pereonites 3–6 ordinary; maxilliped with vestigial palp; uropods 1 and 2, inner ramus short or absent 3
- Pereonites 3–6 grossly swollen; maxilliped without palp; uropods 1 and 2, inner ramus vestigial . . . . . *Danaella*
3. Pereopod 7 basis pyriform; uropods 1 and 2 elongate, inner ramus short . . . . . *Chevreuxiella*
- Pereopod 7 basis linear; uropods 1 and 2 extremely elongate, inner ramus short . . . . . *Parachevreuxiella*

Parachevreuxiella Andres, 1987

Parachevreuxiella Andres, 1987: 97.

Remarks. *Parachevreuxiella* was originally discovered west of Ireland in the North Atlantic and this new record from the Tasman Sea in the south-western South Pacific is a huge range extension.

Parachevreuxiella justi sp. nov.
(Figs 8–10)

Type material. Holotype, male, 21.5 mm, MV J15798, south of Point Hicks, Victoria, Australia, 38°27.20'S 149°09.70'E to 38°24.93'S 149°03.75'E, 1720 m over bottom depth of 1720–1800 m, rectangular midwater trawl, 22 July 1986, M.F. Gomon *et al*. on RV *Franklin*, stn SLOPE 24.

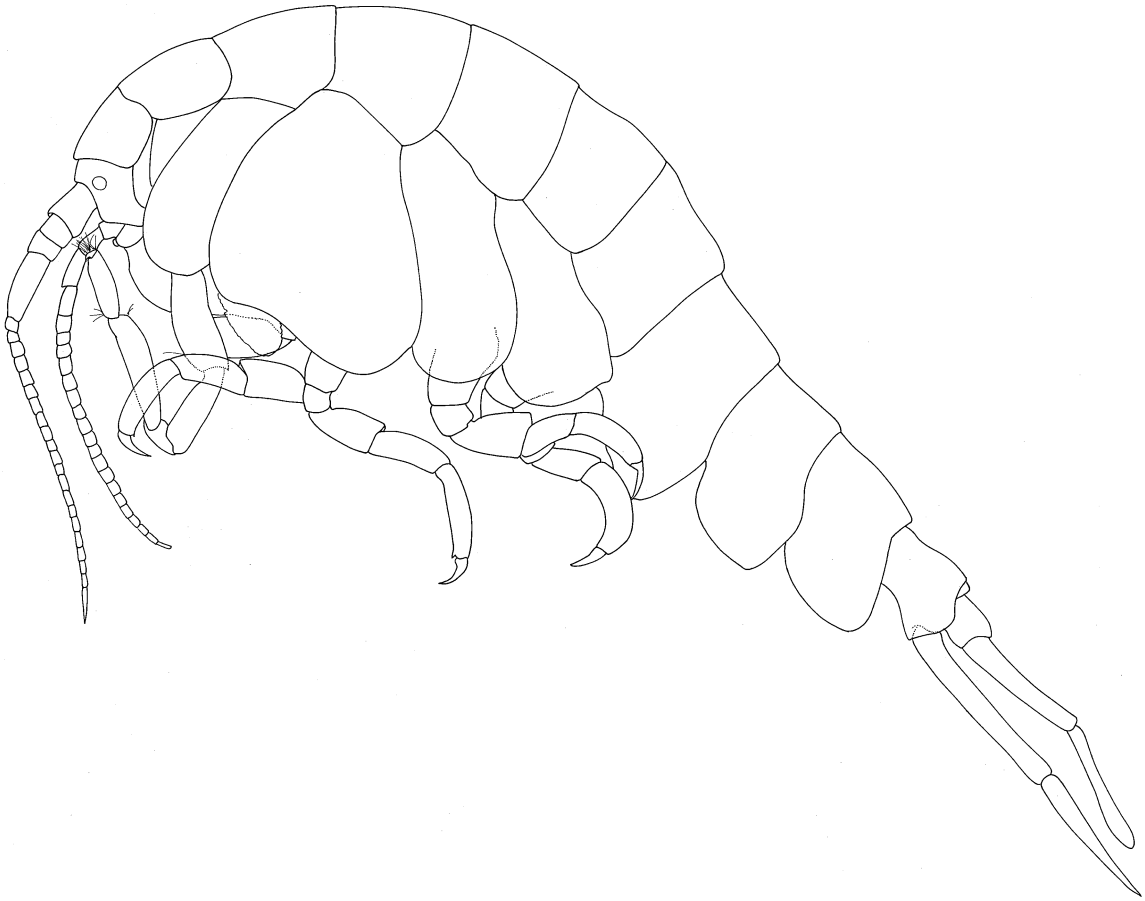

FIGURE 8. *Parachevreuxiella justi* **sp. nov.** Holotype male, 21.5 mm, MV J15798, south of Point Hicks, Victoria, Australia.

Type locality. South of Point Hicks, Victoria, Australia, 38°27.20'S 149°09.70'E to 38°24.93'S 149°03.75'E, 1720 m over bottom depth of 1720–1800 m.

Etymology. The species is named for Jean Just who recognised this specimen in the unsorted SLOPE material.

Diagnostic description. *Head* much deeper than long, narrow, extending well below insertion of antenna 2, lateral cephalic lobe small, narrowly rounded; rostrum absent; eyes round. *Antenna 1* accessory flagellum absent; flagellum 22-articulate, with callynophore, but without aesthetascs; without calceoli. *Antenna 2* flagellum 22-articulate, without calceoli. *Epistome and upper lip* fused; produced into broad step. *Mandible* asymmetrical, incisors large, left with straight margin, minutely serrate, right with straight smooth margin; lacinia mobilis absent; accessory setal row absent; molar absent; mandibular palp absent. *Maxilla 1* inner plate tapering distally, with reduced row of pappose setae along medial margin; outer plate with 7 setal-teeth in modified 8/3 crown

arrangement; palp large, 2-articulate, without apical setae. *Maxilla 2* inner plate very broad, with round lateral margin covered in long fine setae; outer plate narrow, tapering distally. *Maxilliped* inner plate large; outer plate large, subovate; palp vestigial, 1-articulate.

Gnathopod 1 weakly subchelate; coxa vestigial; basis short, broad; ischium short, length 1.1 × breadth; carpus short, length 1.3 × breadth, shorter than, (0.6 ×) propodus; dactylus simple, extremely reduced. *Gnathopod 2* minutely subchelate; coxa vestigial; dactylus vestigial.

Pereopod 3 coxa large; propodus without posterodistal spur; dactylus long, slender, curved. ***Pereopod 4* coxa deeper than wide**; propodus without posterodistal spur; dactylus long, slender, curved. *Pereopod 5* coxa bilobate, posterior lobe strongly produced ventrally; basis linear; propodus without posterodistal spur. *Pereopod 6* coxa large, strongly lobate posteriorly; basis linear, slightly broader than basis of pereopod 5; propodus without posterodistal spur; dactylus long, slender, curved. *Pereopod 7* basis linear with slight posteroproximal bulge; propodus curved, without posterodistal spur; dactylus long, slender.

Epimeron 3 posteroventral corner narrowly rounded. *Urosomites* 1 and 2 free, 3 absent; urosomites 1 and 2 dorsally smooth. ***Uropod 1*** uniramous; **ramus** narrow, **length 5 × breadth and 0.7 × length of peduncle**. ***Uropod 2*** uniramous; **ramus** narrow, **length 7 × breadth, as long as peduncle**. *Uropod 3* absent. *Telson* absent.

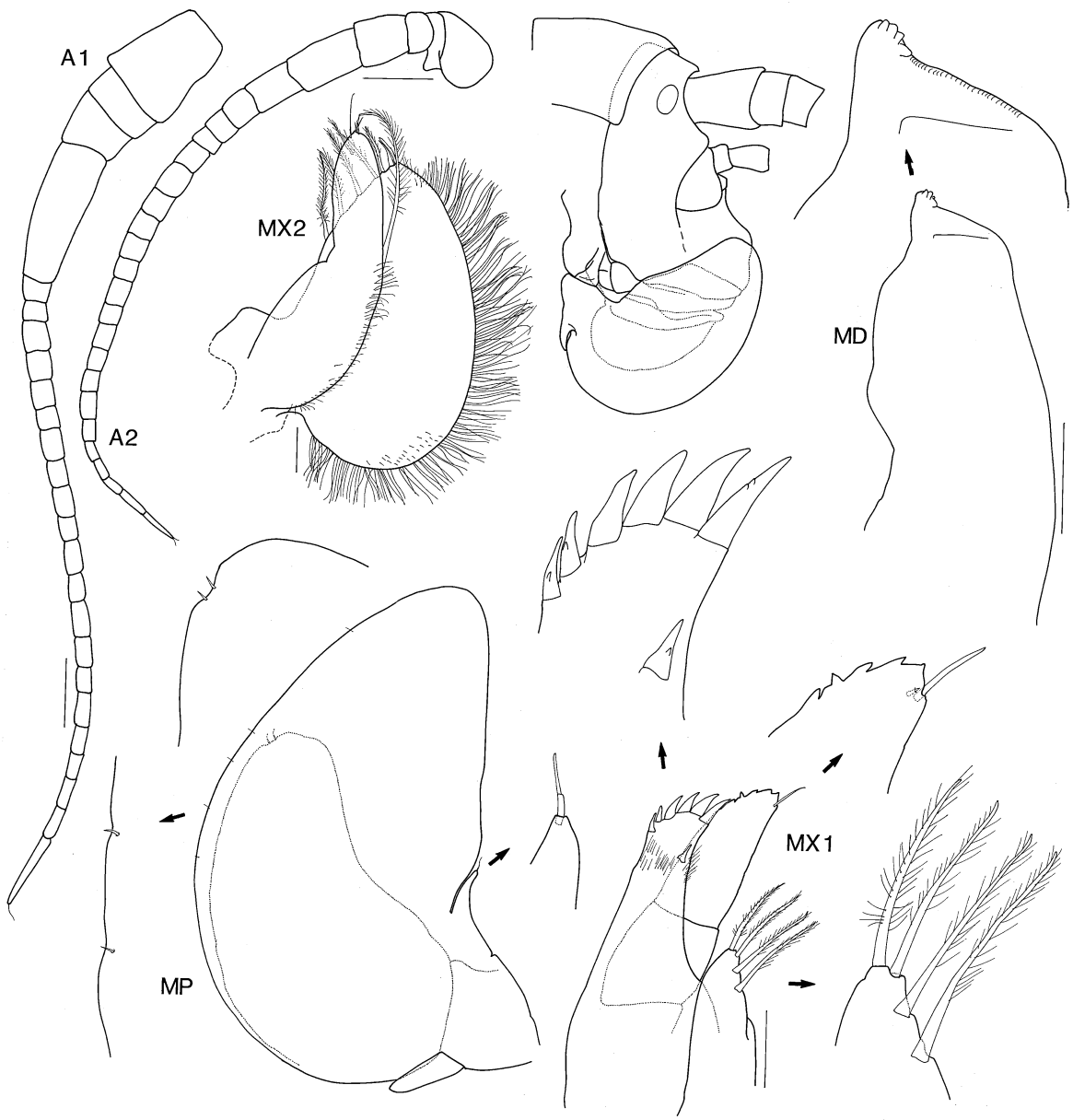

FIGURE 9. *Parachevreuxiella justi* **sp. nov.** Holotype male, 21.5 mm, MV J15798, south of Point Hicks, Victoria, Australia.

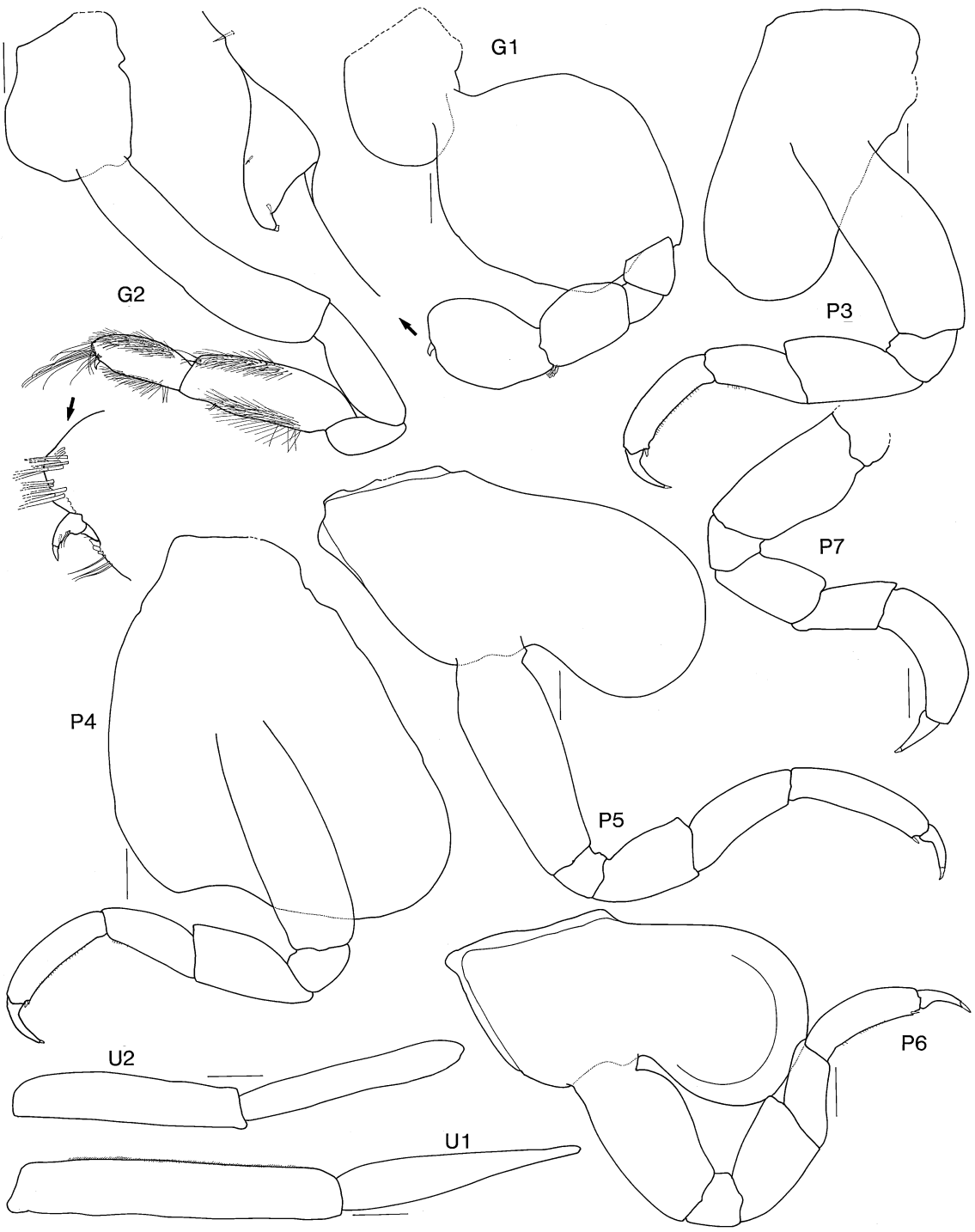

FIGURE 10. *Parachevreuxiella justi* **sp. nov.** Holotype male, 21.5 mm, MV J15798, south of Point Hicks, Victoria, Australia.

Remarks. *Parachevreuxiella justi* is very similar to *P. lobata* despite their great geographical separation. They can be distinguished by the deeper than wide coxa 4 in *P. justi* (wider than deep in *P. lobata* Andres, 1987) and in the ratios and shapes of uropods 1 and 2.

Distribution. South-west South Pacific Ocean in 1720–1800 m depth.

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