

Antarcturus bovinus n. sp., a New Weddell-Sea Isopod of the Family Arcturidae (Isopoda: Valvifera)

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Summary. *Antarcturus bovinus* n. sp. (Isopoda, Valvifera) is described from the Antarctic Peninsula and the western and southern Weddell-Sea. This species can easily be recognized by the absence of large spines, the spine armature of the dorsal surface characteristic of other species is lacking. Only *A. antarcticus* Bouvier, 1910, *A. coppingeri* Miers, 1881, *A. granulatus* Nordenstam, 1933 and *A. lillei* Tattersall, 1921 are similar, but *A. bovinus* n. sp. can be discerned from these by the presence of blunt supraocular spines.

Introduction

In the course of the preparation of a review on the Arcturid fauna of the Weddell Sea a very frequent species hitherto unknown to science was discovered in the material from the *Polarstern* expeditions of the seasons 1982/1983, 1983/1984 and 1984/1985. The taxonomy of the Arcturidae is in a bad state and many Antarctic species are poorly known (Wägele, in press a). New species should be described in detail to avoid future confusion. The genera, of which many are probably polyphyletic, require careful revisions before a better concept of their definition can be presented.

Methods

During the Antarctic expeditions in 1982/1983, 1983/1984 and 1984/1985 with the RV *Polarstern*, samples were collected by means of an Agassiz-Trawl. For data on the stations, see Table 1.

Abbreviations used in text and figures: A 1,2 = antenna 1,2; Hy = hypopharynx; Md = mandible; Md = left mandible; Mx 1,2 = maxilla 1,2; Mxp = maxilliped; P 1–7 = pereopods 1–7; Plp 1–5 = pleopods 1–5; rMd = right mandible; Urp = uropod

Table 1. Station list

Sample no.	Position	Depth (m)	Date	Gear (AGT = Agassiz-Trawl)
A9	73°41.78'S 20°55.5'W	191 m	8. 2. 83	AGT
A20	76°34.20'S 30°53.5'W	335 m	22. 2. 83	AGT
A21	75°38.9'S 27°20.86'W	289 m	23. 2. 83	AGT
A27	70°26.94'S 8°39.86'W	346 m	1. 3. 83	AGT
A29	62°53.82'S 54°51.97'W	183–176 m	12. 3. 83	AGT
ANT I/135	73°41.6'S 20°55.3'W	215 m	8. 2. 83	AGT
AII/341	76°39.2'S 52°09.0'W	295–300 m	26. 1. 84	AGT
AII/460	76°37.2'S 52°18.1'W	313 m	12. 2. 84	AGT
AII/470	77°07.5'S 48°35.8'W	233–234 m	14. 2. 84	AGT
AIII/19	60°42.40'S 45°33.07'W	86 m	13. 1. 85	AGT
AIII/25	72°35.67'S 18°8.17'W	604–656 m	27. 1. 85	AGT
AIII/26	72°31.64'S 17°34.97'W	242–264 m	19. 1. 85	AGT
01/129	70°29.9'S 8°07.3'W	270–303 m	4. 2. 83	AGT
01/153	75°55.9'S 28°28.7'W	380–398 m	12. 2. 83	AGT
04/303	76°54.8'S 50°30.4'W	238 m	18.–19. 1. 84	baited trap
04/474	76°56.7'S 49°44.0'W	224–216 m	14. 2. 84	AGT
PS06/203	62°05'S 57°40'W	281–140 m	3. 12. 84	AGT
	62°05'S 57°41'W			

Immediately after dredging the material was sorted on deck. Living animals were transferred into cooled aquaria for studies on functional morphology (Wägele 1987), whereas dead or injured animals were fixed in glutaraldehyde or formaldehyde. The drawings were prepared with the help of a camera lucida and a WILD M5A dissecting microscope as well as a LEITZ DIALUX 20EB microscope. Type material was deposited in the British Museum (Natural History).

Systematics

Antarcturus bovinus n. sp. (Valvifera: Arcturidae)

Holotype: 1 ovigerous female, 27 mm length, sample AIII/25 (locus typicus), 72°35.67'S 18°8.17'W, depth 604–656 m (Agassiz-Trawl), 27. 1. 85 (B. M. N. H.: 1987:498:1). **Allotype:** 1 male, 17 mm, from type locality (1988:7:1).

Paratypes: 1 male, 26 mm length; sample 04/474, 76°d56.7'S 49°44.0'W, depth 216–224 m (Agassiz-Trawl), 14. 2. 84, 4 females and 3 males (21–24 mm length) (B. M. N. H.: 1987:499:1); sample A9, 73°41.78'S 20°55.5'W, depth 191 m (Agassiz-Trawl), 8. 2. 83 (B. M. N. H.: 1987:500:7).

Additional Material (see Table 1): Additional specimens were present in the following samples: A9 (1 specimen), A20 (1 specimen) A21 (3 specimens), A27 (1 specimen), A29 (1 specimen), Ant/135 (1 specimen), AII/341 (3 specimens), AII/460 (1 specimen), AII/470 (1 specimen), AIII/19 (1 specimen), AIII/26 (1 specimen), 01/129 (1 specimen) 01/153 (1 specimen), 04/301 (1 specimen), 04/471 (1 specimen), PS 06/203 (1 specimen). This material is kept in the collection of the second author.

Distribution: *Antarcturus bovinus* is only known from the Antarctic Peninsula and the Weddell-Sea in a depth ranging from 86 to 656 m.

Description. Body long and slender; pereonite 1 fused with cephalothorax; pereonite 2 subequal in length to pereonite 3; pereonite 4 longest; pereonite 5 smaller than 2; pereonites 6 and 7 smallest. Tergites of pereonites 5–7 with concave posterior border into which the following segment fits when the animal bends dorsally.

All three anterior pleonites fused with pleotelson. Cephalothorax with large, laterally protruding eyes, blunt supraocular spines directed dorsally, curved frontally, not surpassing the eyes in dorsal view. On this somite (cephalothorax and pereonite 1) several groups of transverse elevations can be discerned: First the two lobes, which are prolonged into the supraocular spines, which do not cover the eyes (see lateral view, Fig. 2). This elevation is followed caudally by another pair of spineless lobes; 3 further spineless transverse elevations follow, the last of these forms the caudal margin of the first segment and is a little larger (see lateral view, Fig. 2).

Only pereonite 1 bears a lateral supracoxal spine. The whole body surface is covered by very small spines or tubercles, especially on the lateral and on caudal margins of the somites.

All pleonites are fused, but the first three pleonites still have lateral incisions (Fig. 2). With the exception of very small spines there are no other lateral spines on the pleonites. Caudal margin of pleotelson round and characterized by two long caudal spines, which surpass the uropods (Fig. 1). Besides many small spines there are two pairs of somewhat larger spines on the dorsal telsonic surface.

A 1 with 3 peduncular and 2 flagellar articles (Fig. 3). First peduncular article broadest, with one disterolateral feather-like bristle. Peduncular article 2 shorter than either 1 or 3, with 6 feather-like bristles on one side and another single feather-like bristle on opposite side. Third peduncular article just a little shorter than first, with several small simple setae. First flagellar article very small, forming a ring and bearing 3 small feather-like bristles. Last flagellar article long and slender, somewhat shorter than second and third peduncular articles together, with 11 groups of two aesthetascs and two shorter simple setae each, last two groups of aesthetascs at the tip of the antennula without smaller setae; distally 3 simple setae and a single feather-like bristle situated on a small knob (rudiment of a third flagellar article).

A 2 very long and slender, with 5 peduncular and 10 flagellar articles (Fig. 3). First peduncular article small, second one just a little larger, with a row of lateral simple setae and 3 small notches on opposite side. Third peduncular article longer than 1 and 2 together, with a lateral row of simple setae, opposite side without any setae or cuticular structures. Fourth peduncular article longer than the first three but smaller than the fifth one, with few setae and a single feather-like bristle in the mid-

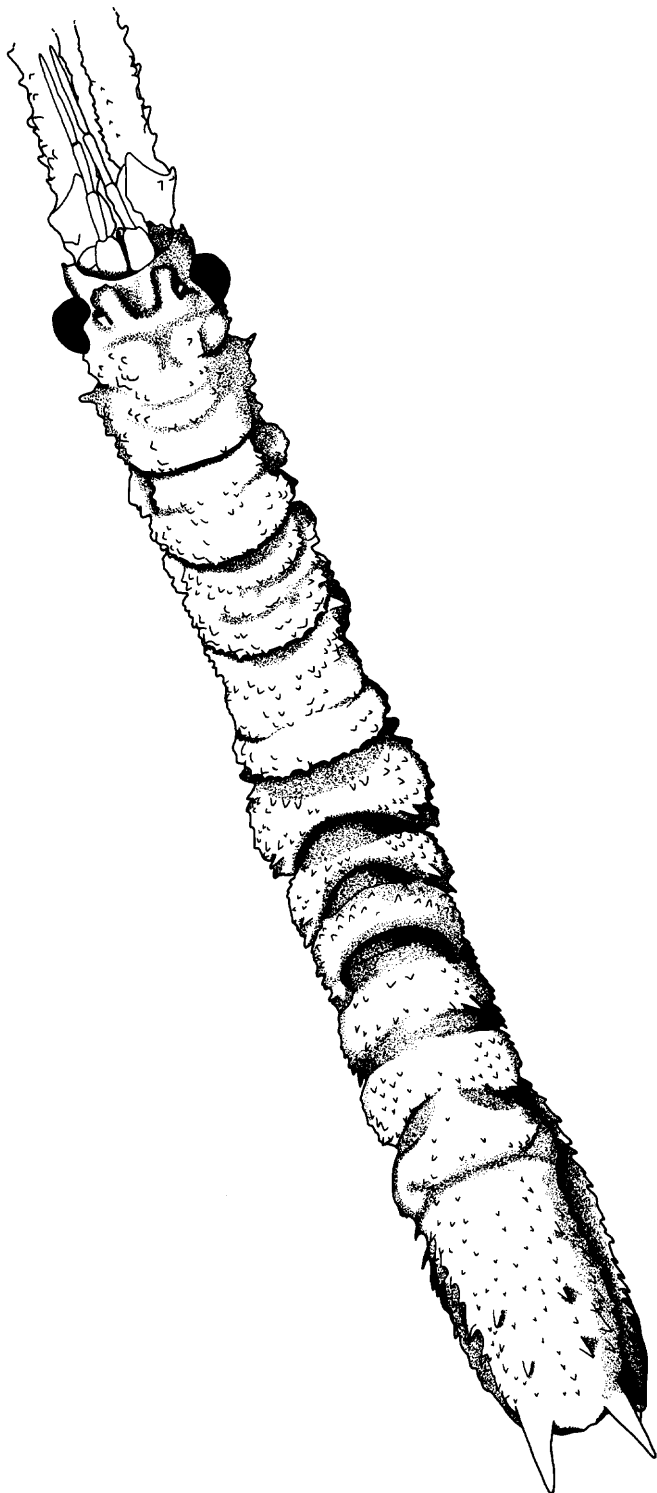


Fig. 1. *Antarcturus bovinus* n. sp., male paratype in dorsal view; antennae not shown in full length

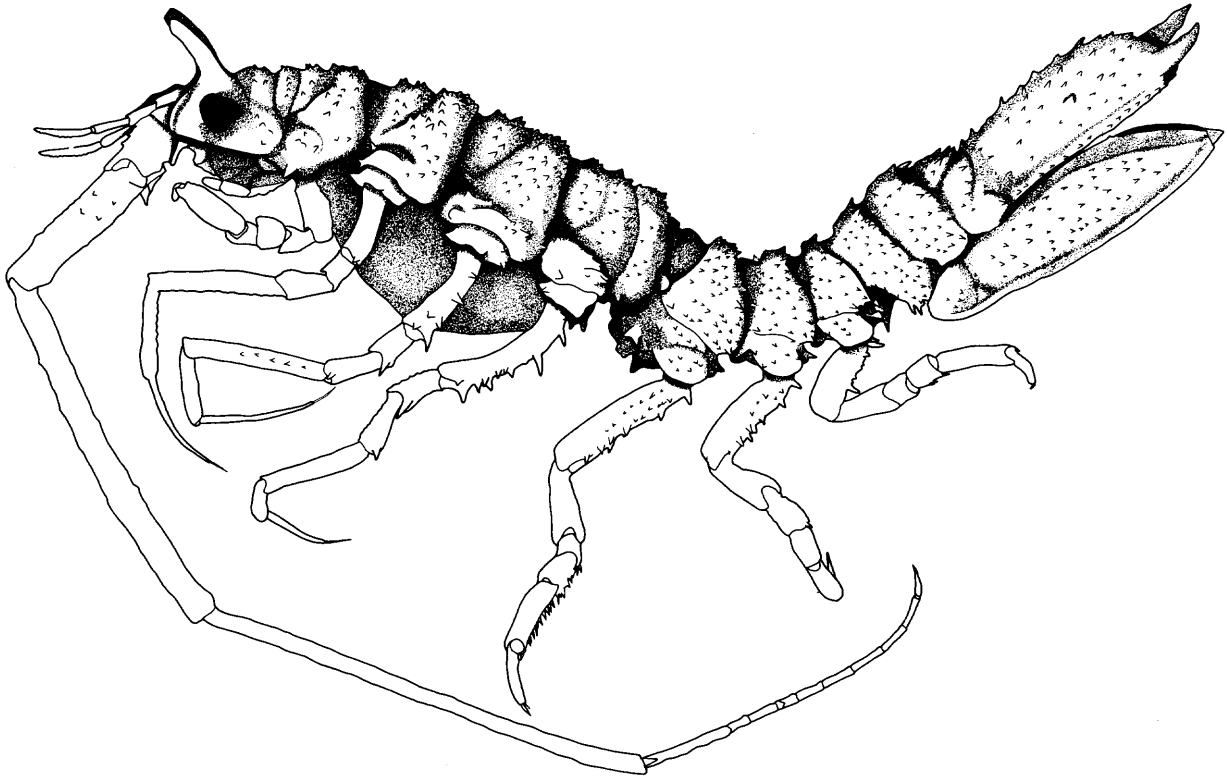


Fig. 2. *Antarcturus bovinus* n. sp., female holotype in lateral view

dle of the article. Fifth peduncular as well as following articles densely setose, with several groups each of 3 simple small setae and single short "sensory spines" (see detail in Fig. 3). First flagellar article about as long as peduncular articles 1 and 2 together. The remaining flagellar articles measure about the same length, except the fifth one, which is twice as long. The last flagellar article bears a distal claw-like structure (Fig. 3b).

Md without palp (Fig. 4). Pars incisiva of right Md narrower than left, with 4 strong chitinized teeth, lacinia mobilis of one tooth and a row of setae-like structures; pars molaris stout, broad grinding surface with indented lower margin. Pars incisiva of left Md with 5 chitinized teeth; lacinia mobilis with 3 teeth and a row of about 5 setae-like structures; pars molaris as in right mandible.

Hy (Fig. 3) consisting of two voluminous lateral lobes and a pair of small medioventral lobes (not shown in Fig. 3); medial margin of larger lobes covered with fine setules.

Lateral endite of Mx 1 (Fig. 3) distally curved medially, apex with 11 strong curved teeth, partly equipped with denticles; medial endite shorter and smaller, bearing 3 setulated strong bristles.

Mx 2 (Fig. 4) consisting of 3 endites. Outer (lateral) endite (Fig. 4) with 4 long setulated spines, a short and slender setulated bristle as well as 5 shorter simple setae; medial endite with 3 long spines and some shorter setae on medial margin; inner endite (Fig. 4, see details) with 20 setae, some of which are strong, other being slender, most of them with 2 rows of spinules (see Fig. 4).

Mxp (Figs. 4 and 5) with long-oval epipodite, strong endite and 5-segmented palp. Endite dorsally concave, apical margin with 2 rows of short, spine-like setae, spinulated on two sides, and another row of similar, but longer setae on medial margin. Coupling hooks not present. Third palpal article longest, last smallest, all with a dense brush of mostly setule-bearing bristles on medioventral surface and on medial margin. The maxillipeds are sexually dimorphic. In females (Fig. 4) they are a little broader and stouter, the palp is more slender in males (Fig. 5) than in females. The female bears a maxillipedal oostegite.

P 1 (Fig. 5) shorter than P 2–7, basis long, carpus trapezoidal, subchelate propodus broad-oval, dactylus shorter than propodus, with one long and one short distal claw. All articles densely setose. Ventral surface of propodus with few setae, most on medial part and on palm. Mediodorsal side of propodus forming a slightly concave "spoon", central surface of this spoon with several very small and thin setae. Curved dorso-lateral surface with long feather-like setae, arranged in parallel transverse rows of combs; dorsal part of palm bearing many medially directed setae.

P 2–4 all quite similar (Figs. 5 and 6). P 2 shortest, long setae on posteromedial margins, some spines on anterolateral margin, especially on carpus and anterodistally on ischium and merus; on propodus and dactylus spines lacking, but with more simple setae on anterolateral margins than on the other articles; long filter setae are present on ischium, merus, carpus, propodus and dactylus; these setae have about the same length in P 2–4. Basis with posterodistal semicircular group of setae. Dactylus with 1 longer and 1 shorter distal claw and two setae inbetween.

P 5–7 (Fig. 6) shorter and stouter than P 2–4, basis always the longest article, cuticle with several spines and tubercles on posterolateral surface, especially on basis of P 5 and P 7. On P 6 and P 7 a varying number of feather-like posterolateral bristles; anterior surface of merus and carpus with two rows; propodus with one longitudinal row of short, strong spines, partly covered with hairs (detail in Fig. 6).

Pleopods of immature specimens and females all similar (Fig. 7), with long branches and many marginal swimming setae. Males with modified Plp 1 and Plp 2. Sympodite of male Plp 1 (Fig. 7) very long, with a row of 10 coupling setae, on opposite side 7 pointed teeth. Exopod of Plp 1 with a medially protruding lateral lobe and a ridge from this edge diagonally to distolateral margin, where a large number of simple setae inserts; the diagonal ridge ends distally at the base of setulated setae. Sympodite of Plp 2 (Fig. 7) rather short, endopodite with long, stiletto-like appendix masculina, exo- and endopodite as in female.

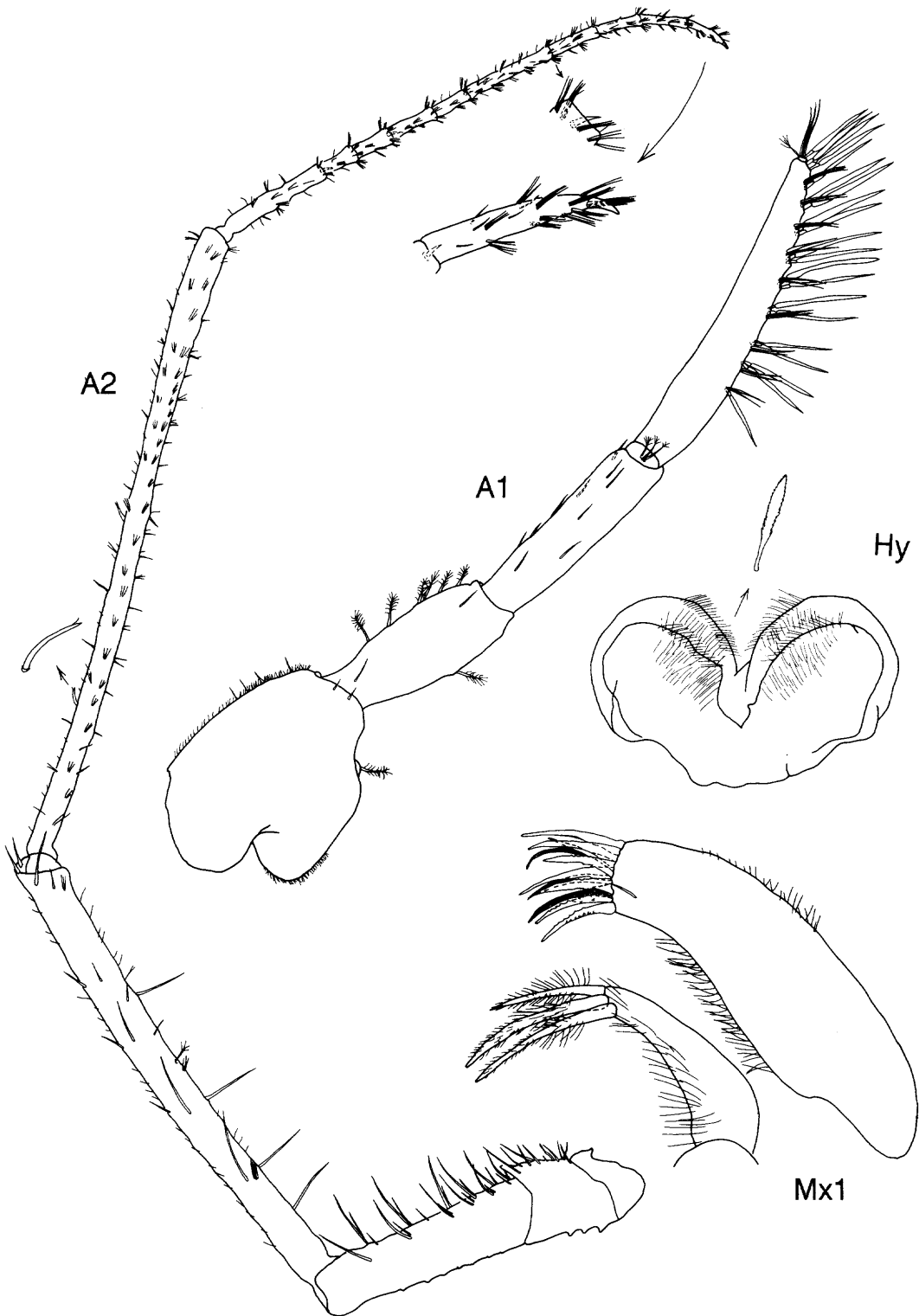


Fig. 3. *Antarcturus bovinus* n. sp., female holotype. *Antenna 2* with detail of apical claw; hypopharynx with enlarged seta (detail). For symbols see list of abbreviations

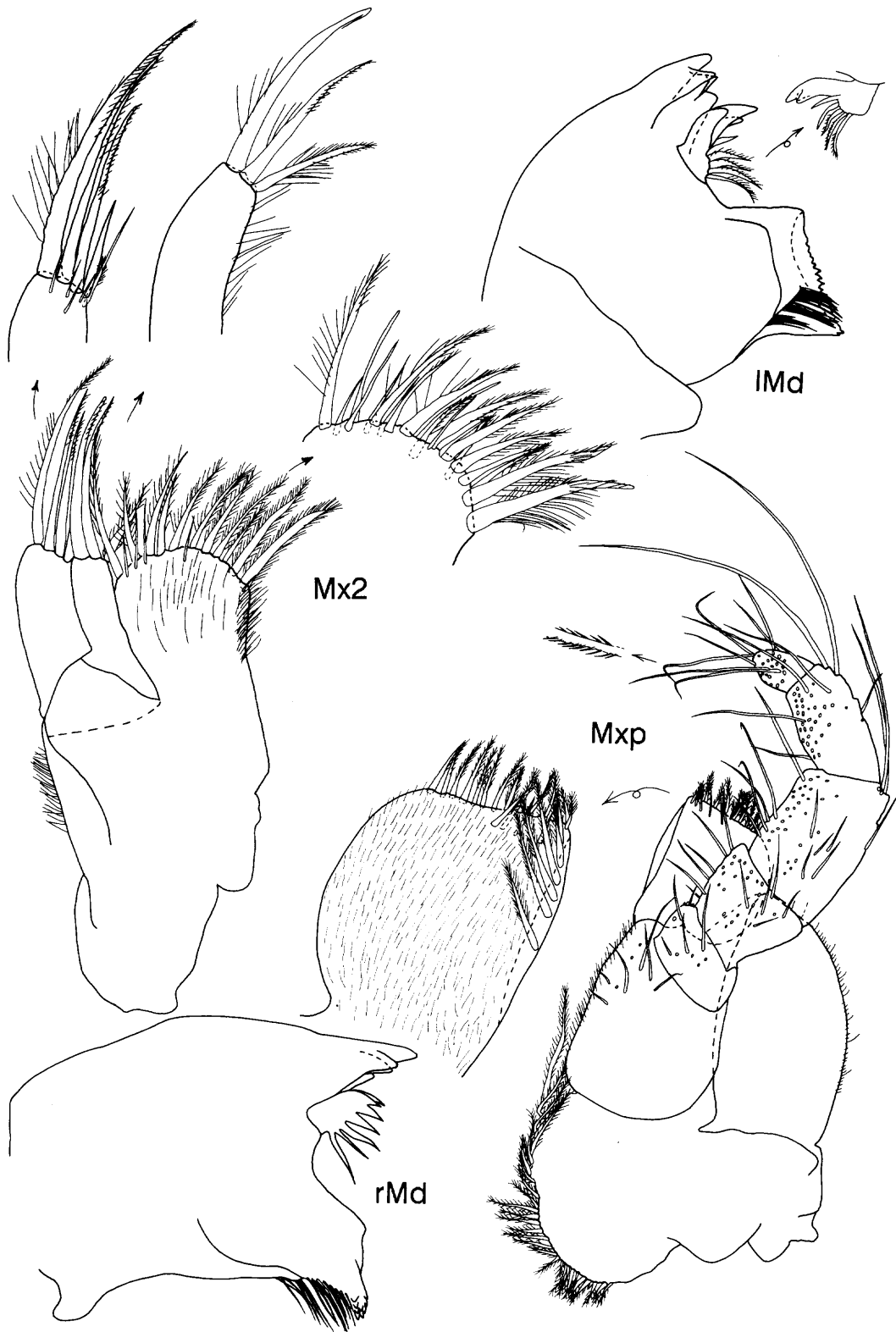


Fig. 4. *Antarcturus bovinus* n. sp., female holotype. Details of setation of endites of maxilla 2 and of endite of maxilliped. Lacinia of left mandible shown in two views

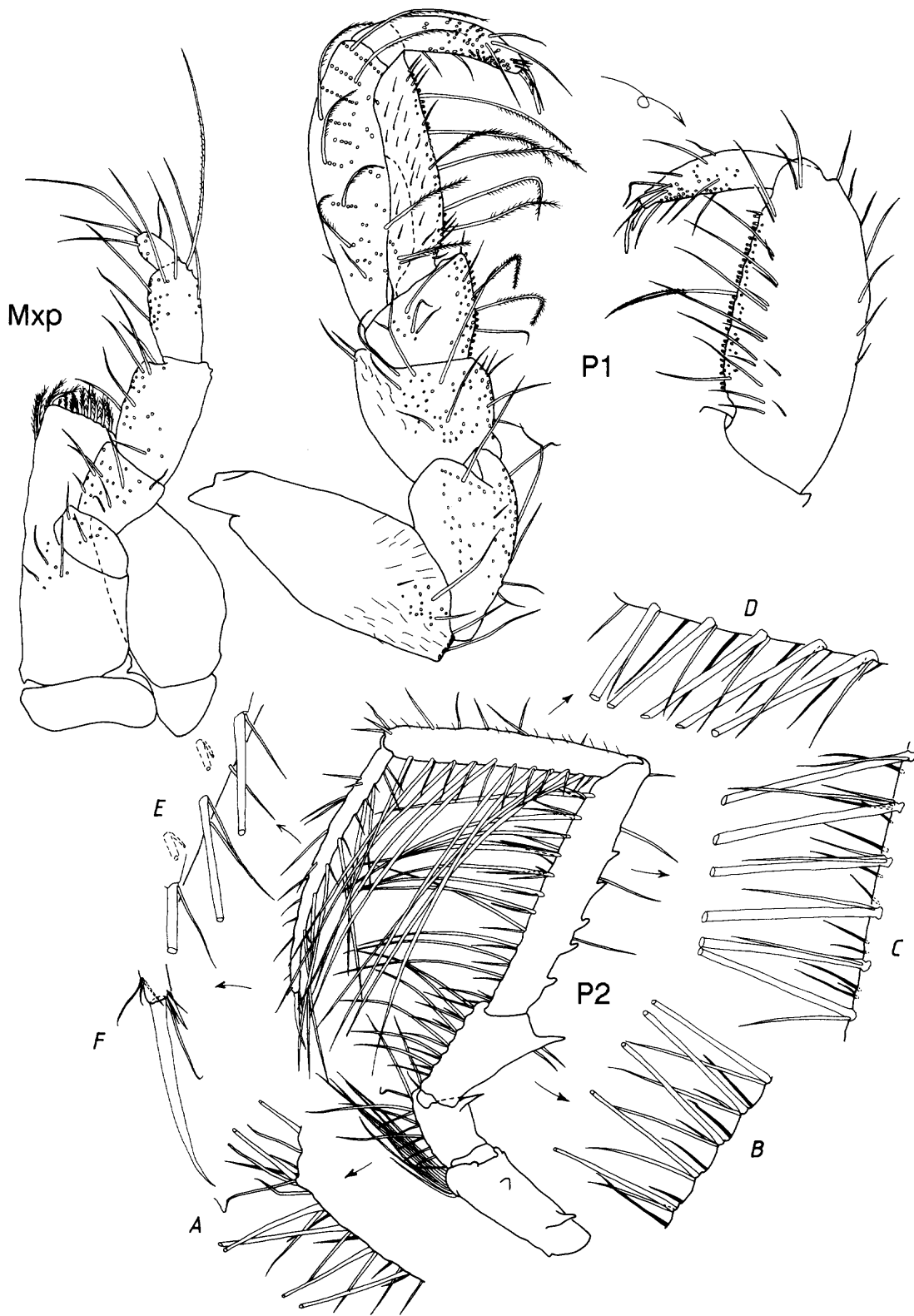


Fig. 5. *Antarcturus bovinus* n. sp., female holotype. Of most setae only place of insertion is shown. *Pereopod 1* drawn in dorsal view with detail of ventral side of propodus and dactylus. *A–F*: Details of the setation of *pereopod 2*, namely of ischium, merus, carpus, propodus, dactylus and the terminal claws, respectively

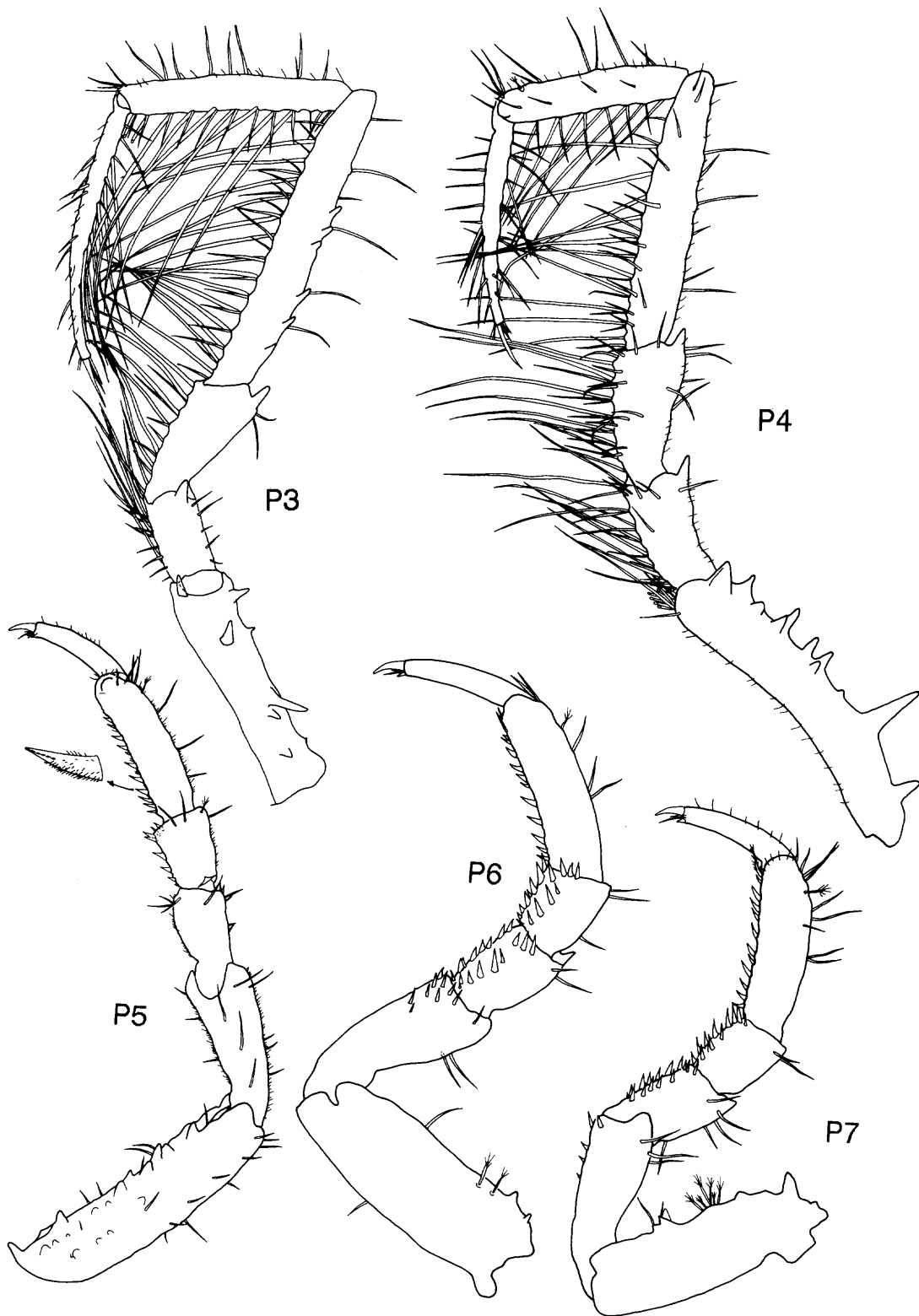


Fig. 6. *Antarcturus bovinus* n. sp., female holotype

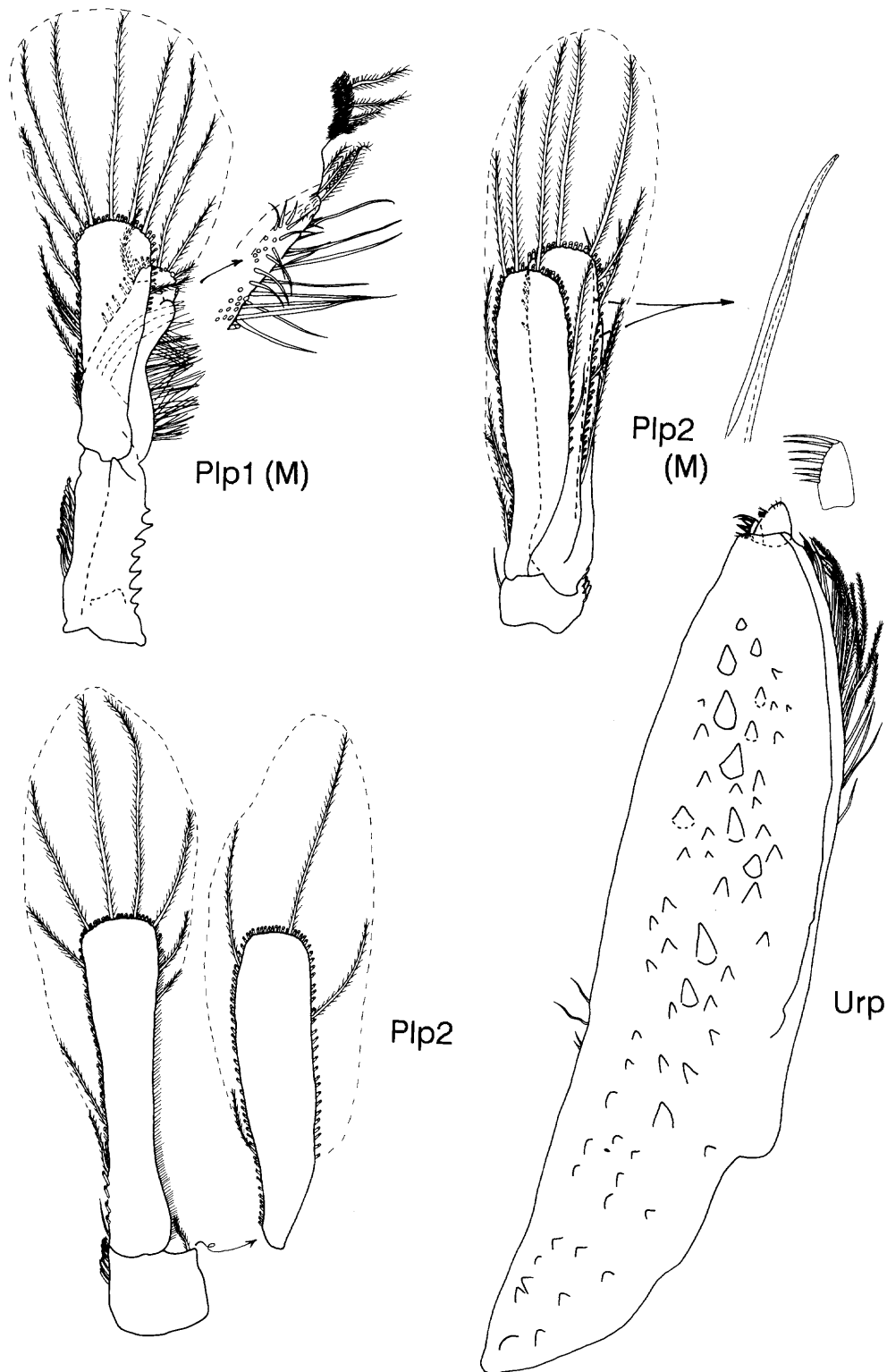


Fig. 7. *Antarcturus bovinus* n. sp. Pleopod 2 of female holotype, remaining appendages of male paratype (M). Detail: apex of exopod of Plp 1, appendix masculina of Plp 2, small branch of uropod

Urp (Fig. 7), medial surface with strong teeth of varying length and small tubercles. The smaller of the two rami bears 7 strong lateral spines (see detail in Fig. 7).

Discussion

Some species of *Antarcturus* Zur Strassen, 1902 are similar to *A. bovinus*, because of the lack of larger spines. Of these, *A. antarcticus* Bouvier, 1910 and *Antarcturus coppingeri* Miers, 1881 have in common with *Antarcturus bovinus* the tubercular body surface, but the supraocular spines are lacking in *A. antarcticus* and *A. coppingeri*, the pleotelson is shorter and stouter, especially in *A. coppingeri*, and bears no spines with the exception of the caudal ones (Wägele, in press a). In *Antarcturus granulatus* Nordenstam, 1933 the supraocular spines are very short and bent dorsolaterally above the eyes, whereas in *A. bovinus* these are larger and bent frontally. The caudal spines of *A. granulatus* are very small and do not reach over the caudal margin of the telson, which is pointed. In *A. bovinus* the caudal spines surpass the tip of the telson and the pereonites 2–4 are more slender than in *A. granulatus*, which has broad supracoxal spines on these somites. *Antarcturus lillei* Tattersall, 1921 can be distinguished by the small hooks representing supraocular spines, a shorter pleotelson as well as short caudal spines, which do not reach the end

of the uropods. The tip of the telson is neither pointed nor round, but a little concave.

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