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Acutiserolis poorei sp. nov. from the Amundsen and Bellingshausen Seas, Southern Ocean (Crustacea, Isopoda, Serolidae)

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Abstract

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Acutiserolis poorei sp. nov., is described from the Amundsen and Bellingshausen Seas, Southern Ocean. Comparison with the type material of the most similar species, *Acutiserolis spinosa* (Kussakin, 1967) revealed that *A. poorei* may be distinguished from *A. spinosa* by broader eyes, less acute and slightly shorter coxal plates and the small tubercles that are irregularly scattered on the dorsal surface. Additionally, no suture divides the fifth coxal plate and the head has a prominent mediocaudal spine reaching to the middle of the third pereonite; the *appendix masculina* is considerably shorter than that of *A. spinosa*, while the pleotelson of *A. poorei* is covered with some small tubercles and the mediocaudal tip is slightly more prominent than that of *A. spinosa*.

Keywords taxonomy, Isopoda, Serolidae, new species, Acutiserolis poorei, Southern Ocean

Introduction

The first significant change from the simplistic serolid taxonomy was the establishment of several new genera by Brandt (1988) including *Acutiserolis*. This was recently revised by Poore & Storey (2009) and *Cuspidoserolis* Brandt, 1988 synonymised with *Acutiserolis*. Poore & Storey (2009) presented an updated and extensive generic diagnosis.

A new species has been sampled in the Amundsen and Bellingshausen Seas, faunistically a yet unknown area of the Southern Ocean, from onboard of the British RV *James Clarke Ross*. It is described in the present paper.

Material and methods

During the BIOPEARL II (BIOdiversity, Phylogeny, Evolution and Adaptive Radiation of Life in Antarctica) expedition in 2008 with RV *James Clarke Ross* (JR 179, for location data see Kaiser et al., 2009), megabenthic fauna from the shelf of the Amundsen and Bellingshausen Seas was sampled using an Agassiz trawl fitted with a net of mesh size 1 cm. All specimens of the species described here came from approximately 1500 m depth.

The sampled fauna was fixed in 96% ethanol. In the laboratory, megabenthic isopods of the BIOPEARL 2 expedition were kept in ethanol permanently and dissected, identified and illustrated using a Leica MZ12 stereomicroscope equipped with a camera lucida.

Abbreviations used in text and figures:

A1, 2—antennula, antenna; Hy,—hypopharynx; lMd, rMd,—left and right mandible; Mp,—mandibular palp; Mx1, 2,—maxillula, maxilla; Mxp,—maxilliped; P1–7,—pereopods 1–7; Plp1–5,—pleopods 1–5; urp,—uropods

Taxonomy

Sphaeromatidea Wägele, 1989

Serolidae Dana, 1853

Genus *Acutiserolis* Brandt, 1988

Acutiserolis Brandt, 1988: 21; 1991: 131, 139.— Poore & Storey, 2009: 2–9.

Cuspidoserolis Brandt, 1988: 23-24.— Brandt, 1991: 131, 138–139—. Wägele, 1994: 52, 59–60.

Serolis (*Acutiserolis*). –Wägele, 1994: 53, 60. Not *Acutiserolis*. –Poore & Brandt, 1997: 152–160 (= *Brucerolis* Poore & Storey, 2009).

Type species. *Acutiserolis spinosa* (Kussakin, 1967) (Brandt, 1988 by original designation).

Generic remarks. The genus diagnosis of *Acutiserolis* Brandt, 1988 had been referred to by Poore and Brandt in 1997 and recently been revised by Poore and Storey (2009) who have designated *Cuspidoserolis* to be a junior synonym of *Acutiserolis*. As Poore and Storey provided a very extensive

generic diagnosis of *Acutiserolis*, their concept is followed here except for the fact that pereonite 6 is dorsally not fused with 7 and pleonite 1 because in *A. poorei* at least a suture line of the segment is clearly visible.

Acutiserolis poorei **sp. nov. (figs. 1–4)**

Holotype. Female of 24 mm length, 13.03.2008, RV *James Clarke Ross*, Amundsen Sea, Pine Island Bay slope, 71°15'S 109°98'E, 1515–1530 m depth, ZMH-K 42212.

Paratypes. male of 28 mm length, female of 22 mm length (laterally partly damaged), and female (damaged after pereonite 3, anterior part only), 27.02.2006, RV *James Clarke Ross*, Bellingshausen Sea, northwest of Alexander Island, 68°38'S 75° 87'E, 1469–1497 m depth ZMH-K-42213; female of 24 mm length, two Manca II of 19 mm each, 13.03.2008, RV *James Clarke Ross*, Amundsen Sea, Pine Island Bay slope, 71°15'S 109°97'E, 1515–1530 m depth, ZMH-K-42214.

Diagnosis. Head with long mediocaudal acuminating spine reaching mid of third pereonite in dorsal view. Eyes 0.3 as broad as long, dorsal side of body with scattered tubercles on all pereonites, pleonites and pleotelson. Tips of coxal plates not quite as acute, but shorter and less curved coxal plates laterally to their pereomers. The coxal plates were directed caudally to a larger extent than in the type species. Pereonites 6 and 7 not fused mediodorsally or medioventrally. Uropods inserted within proximolateral caudally directed notch (smaller and less distinct than in the type species). Male *appendix masculina* twice as long as endopodite (possibly the male is subadult). Pleotelson covered with some small spine-like tubercles and caudally rounded, mediocaudal tip is slightly acute (slightly more than that of *A. spinosa*).

Distribution. Amundsen Sea and Bellingshausen Sea.

Etymology. Named after Gary Poore, who loves to work with Serolidae and related species. Besides being a very good isopodologist he is a very good friend.

Description of female holotype (fig. 1) and paratype (fig. 2): Anterolateral angles of head slightly elongate laterally (fig. 1); head frontally slightly narrower than mediocaudally. Two shallow rounded elevations on head, sculptured by small concave and small convex structures, a mediocaudal spine reaching mid of third pereonite. Body surface irregularly covered with tubercles (only illustrated on pleotelson). Sixth coxal plate longest, slightly less than half as long as the length of the animal, measured from head to pleotelson. The epimera of the second and third pleonites do not reach as far back as the apex of the sixth coxal plate, and also do not surpass the pleotelson (they reach about two thirds of pleotelsonic length), first pleonite with slightly longer epimera than second. Pereonite 7 small, without coxal plates. Pereonites 2–4, and 7 with caudolateral small spines, strongest and most pronounced in pereonite 7, pleonites 2 and 3 also with caudolateral small spines. Pleotelson with one long elevated medial keel and proximolateral triangular elevations on each side of this keel, tips caudally directed. Pleotelson with two small shallow frontolateral spines and small spines and tubercles scattered on dorsal surface. Tip of pleotelson slightly acuminating (fig. 1).

A1 of paratype female (fig. 2): second peduncular article about twice as long as first one, third one longest, first and second article with small feather-like seta. 47 flagellar articles; first flagellar article longest. From flagellar articles 15 to last but one article one aestetasc each and 1–3 long simple setae. Last flagellar article without aesthetasc, but with 6 simple setae and one feather-like seta.

A2 of paratype female (fig. 2) with 19 flagellar articles. First peduncular article very short; second peduncular article slightly longer than third without setae; third article with few mediodistal and lateral short setules; fourth peduncular article little shorter than fifth, but slightly broader, with several longitudinal rows of groups of 5–7 simple setae; fifth peduncular article also with groups of setae. All 20 flagellar articles with groups of 1–4 distolateral simple setae and one on opposite side.

P2 of paratype female (fig. 2) basis bearing three feather-like setae, and long ischium with only distal simple setae. Merus 0.5 of ischium and 0.9 of carpus, carpus with some ventral simple setae and some distodorsal ones. Propodus proximally as broad as distally. Ventrally the propodus bears rows of long simple setae. Dactylus 0.4 as long as propodus, with short dorsal setules, a short and small claw.

Additional description of paratype male (figs 1–4).

Mandibles of paratype male (fig. 2): Pars incisiva of rMd narrower than of left. Lacinia mobilis of rMd much smaller and narrower than pars incisiva, one tooth accompanied by a small, similarly long blunt, spine-like structure, pars molaris lacking. First palp article as broad as second, second one longest (slightly longer than first), with a distolateral row of more than 27 spines. Last article shortest and laterally bent, with a ventral row of smooth spines (detail in fig. 2). Pars incisiva of lMd (fig. 2) 1.2 as broad as of rMd, with broad cutting surface and one shallow incision, lacinia mobilis with one broad surface and accompanied by a single spine (rudiment of the spine row), pars molaris absent.

Lateral endite of Mx1 of paratype male (fig. 2) distally curved medially, apically with 10 strong cuticularized teeth. Medial endite small rudiment, with one short apical seta.

Mx2 of paratype male (fig. 2): Inner endite with many slender setae, median endite with two long setae, outer endite also with two long setae: setae of median and outer endite setulated at tips (detail in fig. 2).

Mxp of paratype male (fig. 2) with large quadrangular epipodite, strong endite, 1.3 as long as epipodite. Endite apically with two strong spines, no coupling hooks present, but mediolateral surface of endite covered with simple setules and setae. Palp usual.

P1 of paratype male (fig. 3): Basis to merus without any spines or setae, carpus with two strong sensory spines. Mediolateral surface of propodus with one long row of sensory spines, the sensory seta divides the spine distally. Alternating to these sensory spines shorter and broader ones occur, which are densely covered with small setules and which also bear a sensory seta with a distal pore. Dactylus with small and short dactylar claw.

P2 of paratype male (fig. 3) with long basis and ischium, ischium with few simple setae. Merus and carpus about subequal in length with some ventral simple setae and some distodorsal

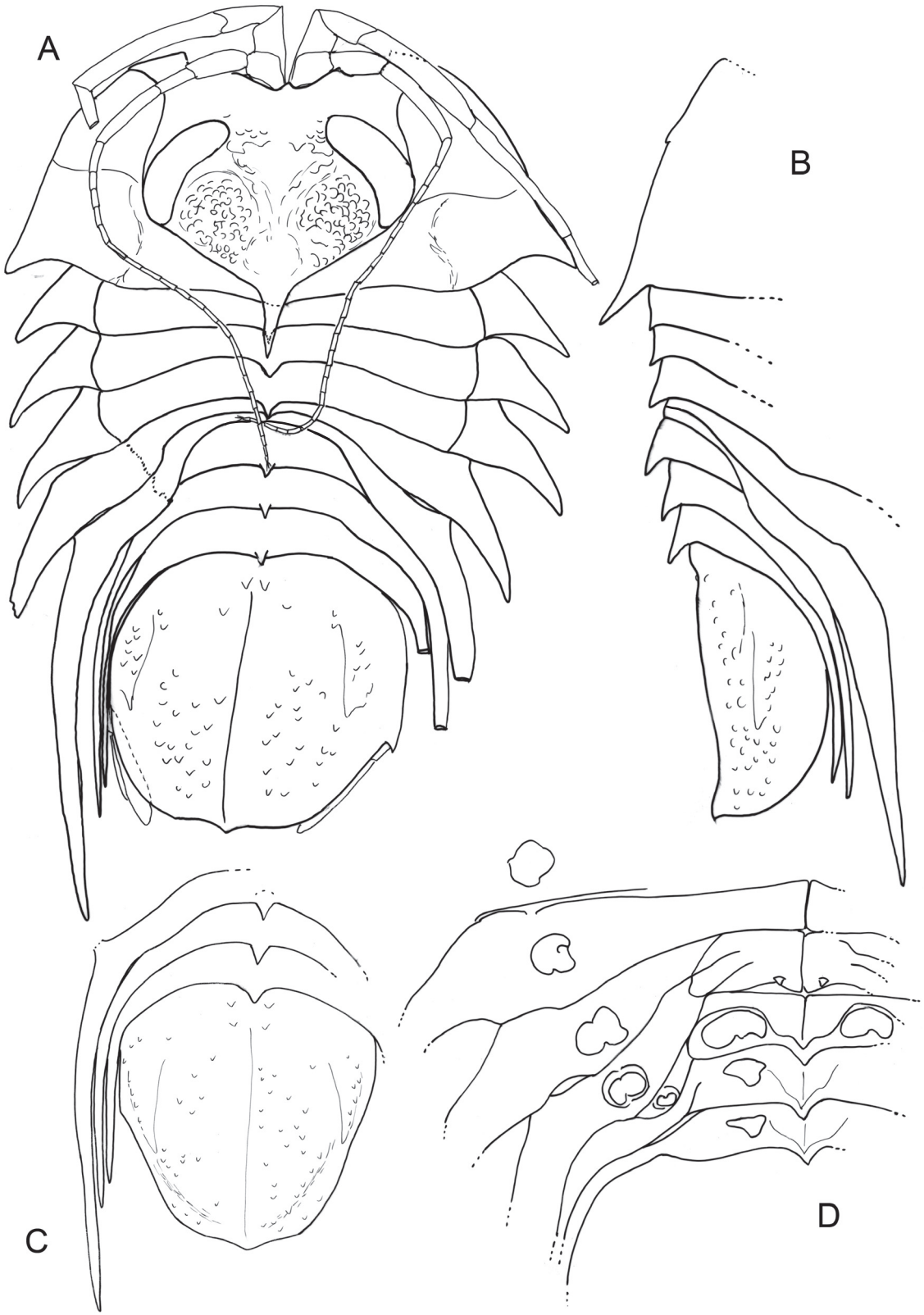

Figure 1. *Acutiserolis poorei* sp. nov., holotype female in dorsal (A) and lateral (B) view, pleotelson of paratype male (C) and ventral part of paratype male (D).

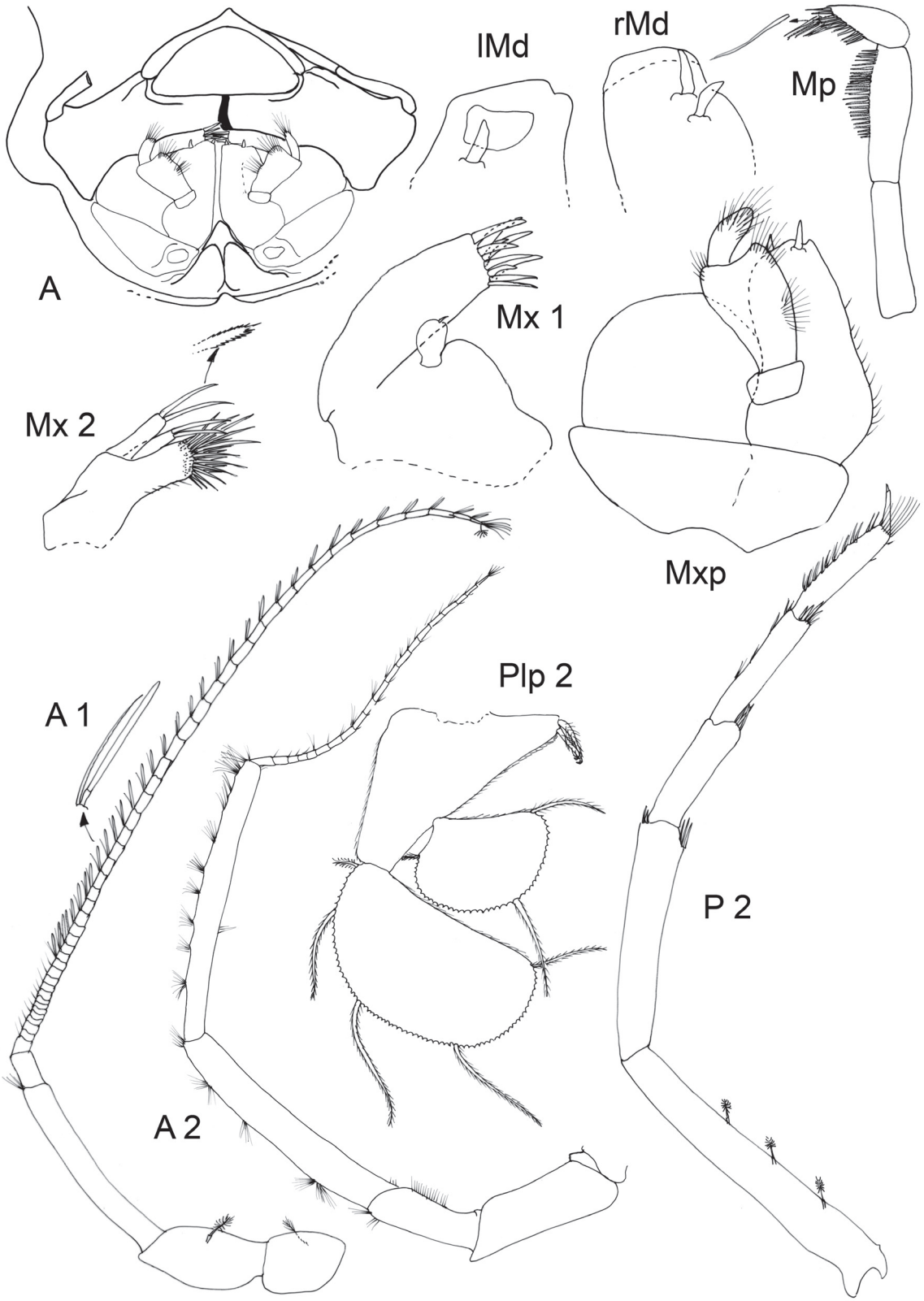

Figure 2 *Acutiserolis poorei* sp. nov., paratype female, head ventrally (A); paratype male, incisor of left and right mandible and mandibular palp, maxillula and maxilla; paratype female, antennula, antenna, pereopod 2 and pleopod 2.

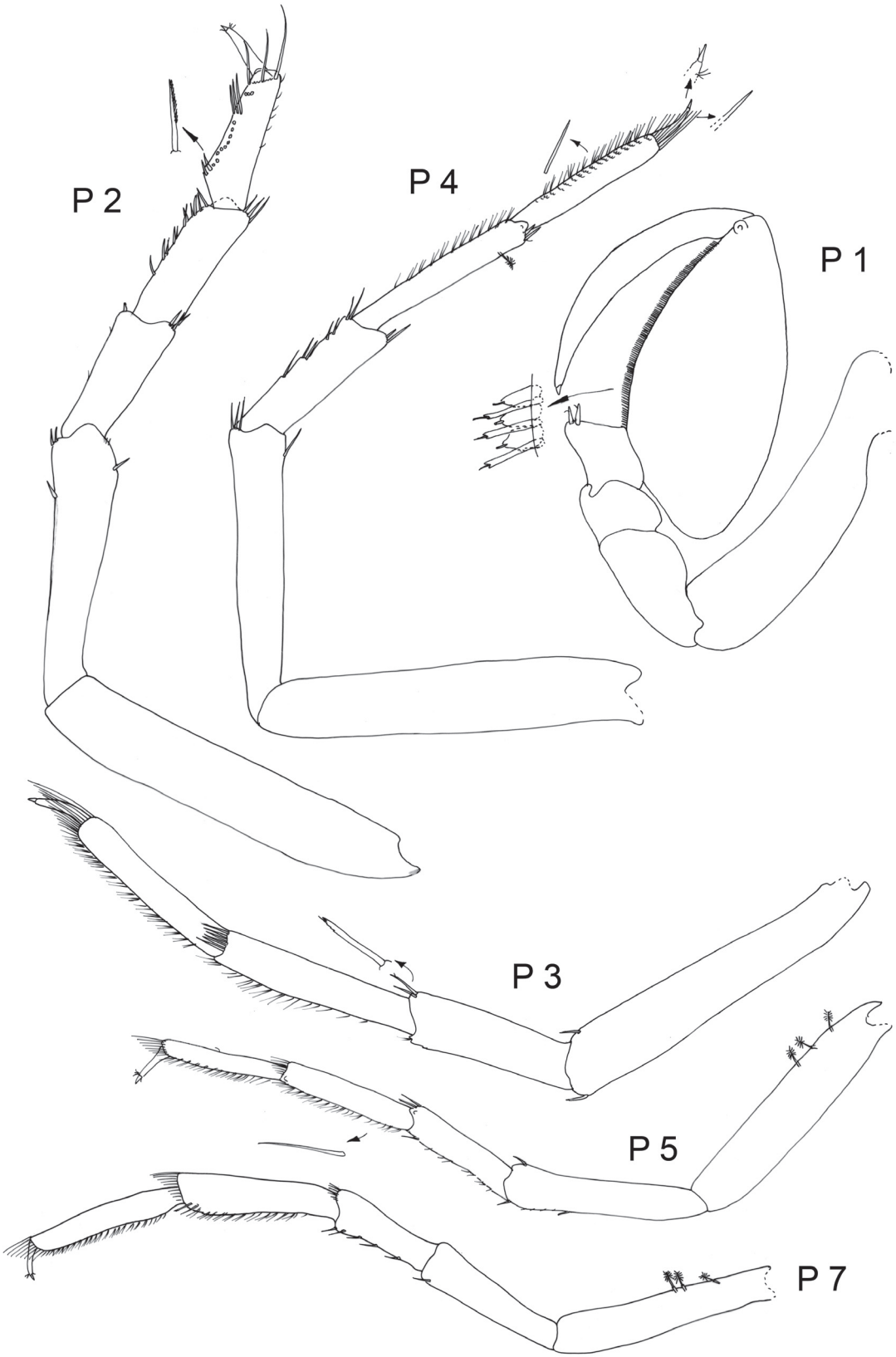

Figure 3 *Acutiserolis poorei* sp. nov., paratype male, pereopods 1–5, pereopod 7.

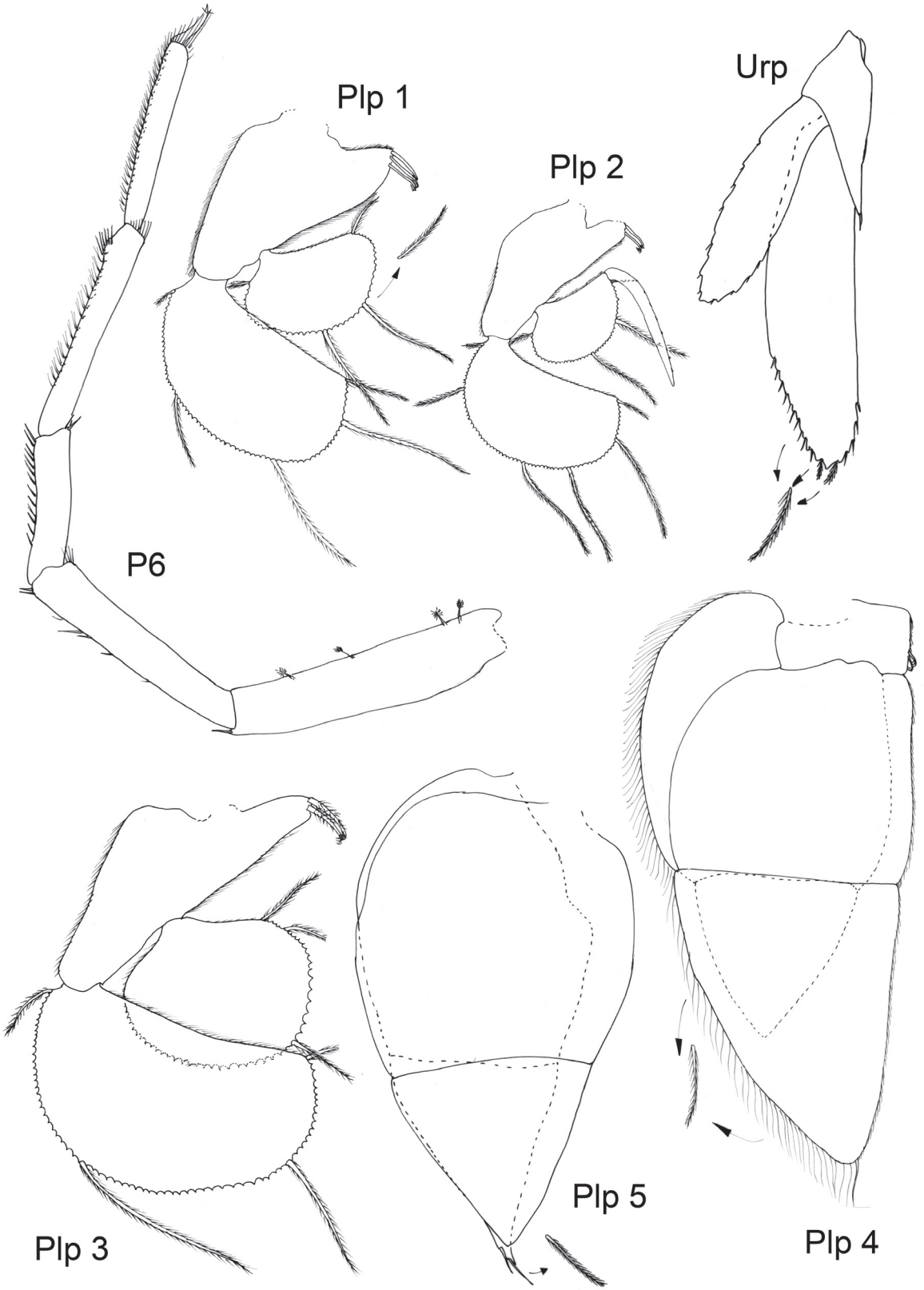

Figure 4 *Acutiserolis poorei* sp. nov., paratype male, pereopod 6, pleopods 1–5, uropod.

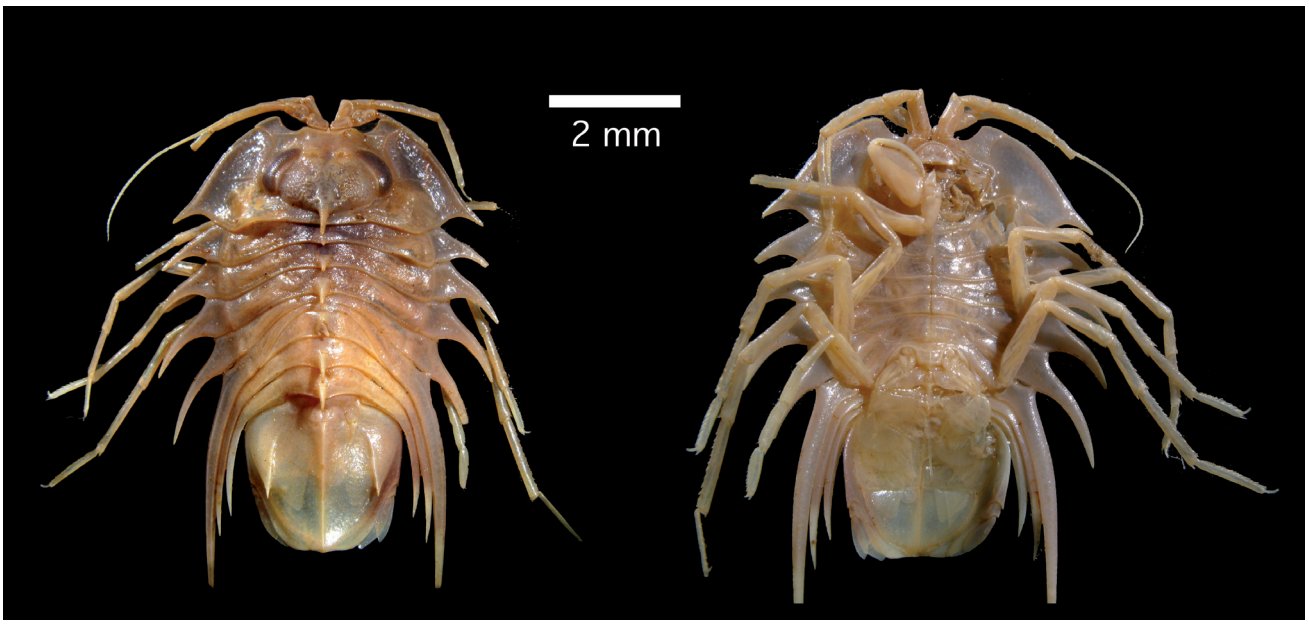

Figure 5. Photograph of *Acutiserolis spinosa* (Kussakin, 1967) (Zoological Museum of St. Petersburg) # 46416, holotype male of 32 mm length.

ones. Propodus only 1.1 broadened in the lower part, about as broad as a third of the length of the propodus, distally narrower. Propodus with three rows of long simple setae in distal third of the article besides distally setulated proximal ones. Dactylus less than half as long as propodus, with three dorsal setules, a short and small claw as well as a short ventral setule.

P3–7 of paratype male (figs. 3, 4) similar, P7 shortest. Long basis with 0–3 feather-like setae. Ischium 0.6–0.8 as long as basis with only very few short simple setae, especially distally, distodorsally a simple seta. Ventrally few setae present on ischium and some more on merus, most on carpus and propodus. Distodorsally of merus, carpus, and propodus a transverse row of long simple setae, most on carpus and propodus. Distodorsal region of propodus similar to that of carpus, but with longer and more simple setae. Dactylus very small and slender, only slightly longer than the distal setae of the propodus, with a very short apical claw and 1–3 short setules.

Plp1 of paratype male (fig. 4) sympodite bearing three proximomedially setulated setae, distally of these setae a setulated tuft (similar to a brush). Endopodite smaller than exopodite.

Plp2 of paratype male (fig. 4) with sympodite similar to that of Plp1, slightly smaller and only with two proximomedial setae. *Appendix masculina* about twice as long as endopodite, with short and blunt medial spine-like structures.

Plp3 of paratype male (fig. 4) similar to Plp1, bearing two proximomedially setulated setae. Endopodite smaller and more rounded than exopodite.

Exopodite of Plp4 of paratype male (fig. 4) medially with transverse fusion line, with a lateral row of short marginal plumose setae. Endopodite smaller without setae; sympodite very short, quadrangular, few medial setae.

Plp5 of paratype male (fig. 4) with short sympodite (damaged during dissection, not illustrated). Exopodite with 2 short distal plumose setae, endopodite smooth, as long as exopodite, both rami with transverse fusion line.

Urp of paratype male (fig. 4) with elongate trapezoidal sympodite, bearing a mediodistal simple seta. Exopodite 0.6 length of endopodite, both rami with short distal and mediolateral marginal, plumose setae, more on endopodite.

Remarks. Acutiserolis poorei sp. nov. can easily be distinguished from other species of the genus by the long mediocaudal acuminating spine on head reaching mid of third pereonite in dorsal view. The dorsal side of body bears scattered tubercles on all pereonites, pleonites and pleotelson, but much less than in *A. luethjei* (Wägele, 1986). Pereonites 6 and 7 not fused mediodorsally in *A. poorei* which is most similar to the type species *Acutiserolis spinosa* (Kussakin 1967) sampled at Ob-station, Scott Island, Pacific Ocean (67°21'S; 179° 53'E) between 500–900 m depth. Three specimens were collected in the Bellingshausen Sea and another four from the slope of Pine Island Bay, Amundsen Sea. The new species can be distinguished from *A. spinosa* in having less acute, shorter and less curved coxal plates, scattered tubercles on the dorsal surface (only illustrated on pleotelson) which are lacking in *A. spinosa* being characterised by a smooth dorsal surface. Moreover, *A. poorei* has a mediocaudal spine of the head which reaches to mid of third pereonites and not of second pereonite as in *A. spinosa*. Like in *A. spinosa*, no suture divided the coxal plates of the fifths coxa from the body in *A. poorei* which is visible at pereomers 2 to 4, however, the male *appendix*

masculina of *A. poorei* is shorter than that of *A. spinosa* (however, this could be due to the fact that we might have sampled only a sub-adult male). The comparison of the type of *A. spinosa* revealed some slight differences to the photographs presented by Poore and Storey (2009) (figure 5) with regard to the length of the pereonites and the strength of the dorsal spines. In fact the types have been sampled at 67°S, whereas the material Poore & Storey (2009) use for their description is from 65°S. *Acutiserolis gerlachei* (Monod, 1925) has an acuminating pleotelson with a frontomedial elevation which is lacking in *A. poorei*. *A. johnstoni* (Hale, 1952), has broader and stronger coxal plates with a much narrower gap between lateral epimers and the head is caudally diagonally acuminating and extending into a very long and acute spine, in *A. poorei* the lateral margin of the head is more rounded.

Held (2003) documented that *Ceratoserolis trilobitoides* (Eights, 1833) consists of several cryptic species and Bruce (2009) showed that *Caecoserolis novaecaledoniae* (Poore & Brandt, 1997) was a species complex of five species several of which were sympatrically occurring. Future genetic analyses might reveal further surprises with regard to cryptic species also within the genus *Acutiserolis*.

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