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Holodentata gen. nov. (Isopoda: Asellota: Paramunnidae) with a description of two new species: *H. caeca* and *H. triangulata* from the Southern Ocean*

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Abstract

A new genus of Paramunnidae, *Holodentata* (type species: *Paramunna gaussi* Vanhöffen, 1914) is erected. The new genus comprises two new species: *H. caeca,* from the deep Weddell Sea and *H. triangulata*, from the Ross Sea. The new genus is distinguished by the following characters: article 3 of the antenna short and with strong denticles, mandible palp absent, article 2 of maxilliped palp longest, coxal plates visible in dorsal view in all pereonites, pleotelson broad and laterally denticulated.

Key words: Isopoda, *Holodentata*, Ross Sea, Powell Basin, Southern Ocean, taxonomy, new genus, new species

Introduction

The family Paramunnidae Vanhöffen, 1914 (Isopoda: Asellota) includes more than 100 species which are characterized by their small size (approximately 0.6–3 mm). The species belonging to this family are distributed all over the world from the poles to the tropics, but their major diversity lies in the temperate/cold water of the southern hemisphere (Wilson 1980). This family is species rich and abundant in shallow waters. However, the Paramunnidae also have a wide bathymetric range and includes some abyssal species. Several paramunnids have been described from Antarctic waters, mainly from the Antarctic Peninsula, McMurdo Sound, Davis Sea, Adélie and Queen Mary Coasts (Richardson 1906, 1908 and 1913; Hodgson 1910, Vanhöffen 1914, Hale 1937, among others). Recently, a worldwide revision of this family was published by Just and Wilson (2004, 2006, 2007), who erected several new genera and re-diagnosed many others. As a result of these studies the Paramunnidae has proved to be a more highly diverse family than previously thought.

A high percentage of Southern Ocean isopod species appear to be endemic, probably due to an intense speciation processes in geographic isolation (Brandt 1992). However, this fauna is far from being well known. With regard to this, it is worth noting that the ANDEEP (ANtarctic benthic DEEP-sea biodiversity, colonisation history and recent community patterns) surveys, recently carried out in the deep Weddell Sea on board the RV *Polarstern*, revealed high levels of previously unrecorded biodiversity. In particular, of the 674 isopod species collected 585 were new to science (Brandt *et al.* 2007a).

The species descriptions are based on material from two recent Antarctic expeditions; the ANDEEP III expedition, with RV *Polarstern*, which took place in 2005 in the deep Weddell Sea, and the 19th *Italica*

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expedition on board of RV *Italica*, carried out in February 2004 in the Ross Sea. The latter one was the first large-scale attempt to collect samples along the northern Victoria-Land Coast systematically from Cape Adare (71°S) down to Terra Nova Bay (74°S). Choudhury and Brandt (2007) reported the Paramunnidae to be the most abundant and most frequently collected isopod family in the *Italica* material. In the ANDEEP III material the paramunnids were less abundant and the family was sampled to 4069 m depth (Brandt *et al.* 2007b). An overview of all known 21 paramunnid species from the Southern Ocean and their bathymetric ranges are given in Table 1.

TABLE 1: Species of Paramunnidae recorded from the Southern Ocean.

Species	Depth (m)
Austrimunna antarctica Richardson, 1906	12–60
Austronanus glacialis Hodgson, 1910	36.5–45
Austronanus dubius (Hale, 1937)	46–55
Austrosignum glaciale Hodgson, 1910	18–36
Austrosignum escandellae Castelló, 2004	45
Coulmannia australis Hodgson, 1910	183–400
Coulmannia frigida Hodgson, 1910	91–385
Coulmannia ramosae Castelló, 2004	124
Cryosignum incisum (Richardson,1908)	?
Cryosignum lunatum (Hale, 1937)	3.5–7
Harrietonana subtriangulata (Richardson, 1908)	0–12
Kiklonana arnaudi (Amar & Roman, 1974)	13–20
Kussakinella spinosa (Kussakin, 1982)	17
Notoxenus spinifer Hodgson, 1910	50
Pagonana hodgsoni Just & Wilson, 2004	< 45
Pagonana rostrata (Hodgson, 1910)	< 45
Palanana serrata (Richardson, 1908)	0.5–20
Palanana gaini (Richardson, 1913)	6
Holodentata gaussi (Vanhöffen, 1914) **comb. nov.**	385
Pleurosignum elongatum Vanhöffen, 1914	25–30
Pleurosignum magnum Vanhöffen, 1914	22–150

Material and Methods

Specimens of *Holodentata caeca* sp. nov. were collected in the Powell Basin (Antarctic) during the ANDEEP III (ANT XXII/3) 2005 expedition of the RV *Polarstern* in the Southern Ocean. The material was collected using an epibenthic sledge (Brenke 2005). Specimens of *Holodentata triangulata* sp. nov. were collected during the 19th *Italica* expedition, in February 2004 in the Ross Sea. Samples were taken along a latitudinal transect between Cape Adare and Terra Nova Bay with a modified Rauschert dredge (Lörz *et al.* 1999).

The material from both expeditions was sieved using a 500 µm mesh and fixed in pre-cooled 96% ethanol for later DNA analysis.

Some specimens of both species were stained with Chlorazole Black E®, and the appendages were dissected and temporarily mounted in glycerin. Illustrations of the whole animal and dissected appendages

were prepared using a Carl Zeiss (Axioskop 2) compound microscope equipped with a camera lucida. For SEM photographs, the specimens were cleaned with nonionic detergent Triton® X100 and ultrasound. After that, they were dehydrated through a graded series of ethanol baths ending in 100%, critical point dried, gold-palladium sputter coated, and examined under a Leo 1525 microscope.

The length of the head, the pereonites, free pleonite and pleotelson, and the total length of the body, were all estimated along the mid-dorsal line. The width of the head was measured between the tips of the eyestalks. The lengths of the articles of the appendages were measured following Hessler (1970). The habitus was drawn in lateral view (Figs. 1B, 6B) to show the proportions of the segments; the denticles on the margins of head, pereonites, pleotelson and coxal plates were not drawn.

Taxonomy

Paramunnidae Vanhöffen, 1914
Holodentata gen. nov.

Type species: *Paramunna gaussi* Vanhöffen, 1914

Species included: *Holodentata gaussi* (Vanhöffen, 1914), comb. nov.; *H. caeca* sp. nov.; and *H. triangulata* sp. nov.

Diagnosis. Head with eyestalks, with or without ommatida. Lateral margins of eyestalks, pereonites, pleotelson and coxal plates surrounded with denticles. Article 3 of the antenna short and with strong denticles. Mandibular palp absent. Article 2 of maxilliped palp longest. Coxal plates visible in dorsal view in all the pereonites. Pereopod 1 carpus oval with 2 robust setae on ventral margin. Pereopods 2–7 without supplementary claw. Uropod biramous without protopod.

Etymology. The genus name is combined from Greek *holos* meaning entirely and Latin *dentatus* meaning toothed, alluding to the denticles of the lateral margins of the pereonites, pleotelson and coxal plates.

Remarks. The most striking character of the genus *Holodentata* is the fact that the second article of the maxillipedal palp is the longest article. This feature has never been reported before in any other genus of the family Paramunnidae. Four other genera of Paramunnidae show coxal plates process-like, viz., *Antennulosignum* Nordenstam, 1933; *Austrogonium* Menzies & George, 1972; *Bathygonium* Kussakin & Vasina, 1984 and *Pleurosignum* Vanhöffen, 1914. However, *Holodentata* can easily be distinguished from those genera, as all the coxal plates possess denticles. Some members of the genus *Pleurogonium* Sars G.O., 1883 also have coxal plates process-like with denticles, but they differ from *Holodentata* in the absence of eyestalks and pleotelson laterally smooth.

Geographic distribution. Species of the genus *Holodentata* have only been found in the Southern Ocean; *H. gaussi* was originally described from Wilkes Land (385 m), *H. caeca* sp. nov. was collected in the Powell Basin (1584 m), Weddell Sea and *H. triangulata* sp. nov. was found at different stations around Cape Hallett (84–353 m), Ross Sea.

Holodentata caeca sp. nov.
(Figs. 1–5, 10D)

Holotype: 1 ovigerous ♀ (1.6 mm), ZMH–41970, Weddell Sea; Station 133–2, (62°46.73'S, 53°02.57'W), depth 1584 m, 16 March 2005, RV *Polarstern*.

Paratypes: same locality as holotype: 25 brooding ♀♀ (1.2–1.5 mm), 87 preparatory ♀♀ (1.2–1.4 mm), 81 adult ♂♂ (0.9–1.4 mm) and 5 juveniles (0.8–0.9 mm) (ZMH–41971).

Diagnosis. Head anterior lobe rounded and curving upward in lateral view. Eyestalk long axis points laterally, without ommatidia. Lateral margin of pereonites 1–3 expanded into a subquadrate projection, 4

rounded and 5–7 produced into a single processes. Coxal plates produced into processes.

Description of ovigerous female (habitus description based on the holotype ZMH–41970, description of appendages on the paratype ZMH–41971). Length: 1.6 mm (Fig. 1A, B). Body width 0.6 length, widest at pereonite 3. Head width 2.2 length; anterior lobe rounded and curving upward in lateral view, margin with small denticles (broken off in the specimen illustrated, Fig. 1C). Apex of eyestalks denticulated, long axis pointing laterally, without ommatidia. Lateral margin of pereonites 1–3 expanded into a subquadrate projection, 4 rounded and 5–7 produced into single processes. Pereonite 1 about as long as pereonite 2, pereonite 2 < 3 > 4 > 5< 6 = 7 = free pleonite. Pereonite 5 shortest and pereonite 3 longest. Coxal plates produced into processes and denticulated, visible in dorsal view in all pereonites. Pleotelson width 1.2 length, marginally with 21–23 denticles on each side, apex pointed.

Antennula (Fig. 2B), article 1 largest, with 1 simple seta and 5 robust denticles on one side; article 2 0.7 length of article 1, with 4 broom and 3 simple setae; article 3 shorter than article 2, with 1 simple seta, article 4 shortest with 1 broom seta, article 5 slightly longer than article 6 without setation; article 6 with 4 simple setae and 1 aesthetasc.

Antenna (Fig. 2A), article 1 without setation, article 2 with 1 simple seta, article 3 with 5 robust denticles on each side and 3 denticles on distal margin, and 4 simple setae; article 4 shortest with 2 simple setae; article 5 subequal in length to article 6 with 1 broom and 2 simple setae; article 6 with 3 broom and 2 simple setae; flagellum with 8 articles, each article with numerous setae.

Right mandible (Fig. 2C), incisor process with 5 blunt cusps (proximal one quadrate); spine row with 5 serrate setae; molar process with 1 row of teeth and 1 seta on distal edge. Left mandible (Fig. 2D) as right except for: incisor process with a 3-cusped lacinia mobilis and spine row with 4 serrate setae; molar process without setation.

Maxillula (Fig. 2E), lateral lobe with 1 simple seta close to distal margin, 11 cuspidate setae distally (2 of these setulated) and 5 simple setae on lateral margin; mesial lobe with 4 large setulated setae distally and 4 slender simple setae on lateral margin.

Maxilla (Fig. 2F), lateral and middle lobe protruding distomedially, with 1 pectinated and 3 simple setae distally; mesial lobe with 2 pectinated, 1 setulated and 5 simple (with pore-bearing tip) setae on distal margin, 1 setulated seta and numerous simple slender setae on mesial margin.

Maxilliped (Fig. 3A), endite with 2 coupling hooks, distal margin with 3 simple and 2 setulated setae, ventral surface with 2 fan setae, dorsal with 3 setulated setae (see detail drawing). Epipod ovate, width 0.5 of length.

Pereopod 1 (Fig. 3B), basis longest article with 3 simple setae. Ischium 0.6 basis length, with 3 simple setae. Merus cup-shaped, with 6 simple setae and 2 cuticular combs. Carpus oval, 0.7 ischium length; dorsal margin with 2 simple setae distally; ventral margin with 2 robust and 5 simple setae and anterior surface with 1 cuticular comb. Propodus 0.9 ischium length, dorsal margin with 3 simple setae, ventral margin with 7 simple setae, anterior surface with 5 cuticular combs and 1 simple seta. Dactylus with 2 simple setae near distal end and 2 simple setae between unguis and supplementary claw, unguis slightly shorter than dactylus, supplementary claw 0.7 unguis length.

Pereopods 2–7 (Figs. 3C, D; 4). Bases with 2–4 simple setae. Ischia with 3–4 simple setae. Meri with 3–5 simple setae. Carpi with 2 simple setae at half length of article, and 3–5 simple setae and 1 broom seta on distal end, carpus of pereopod 7 with 6 cuticular combs. Propodi with 2–3 simple setae at half length of article, and 3–4 simple setae and 1 broom seta on distal end. Dactyli with 4–6 simple setae, unguis slightly longer than dactylus, supplementary claw absent.

Operculum (Fig. 5A) ovoid and pointed distomedially, width 0.9 length; lateral margins with several simple setae (many of these broken).

Pleopod 3 (Fig. 5B), endopod width 0.6 length, with 3 plumose setae distally. Exopod with 2 articles, distal one with 1 distal simple seta, which extends beyond the tips of the endopod setae.

Pleopod 4 (Fig. 5C), exopod reaching half length of endopod (endopod folded in the specimen illustrated).

Pleopod 5 (Fig. 5D) width 0.5 length.

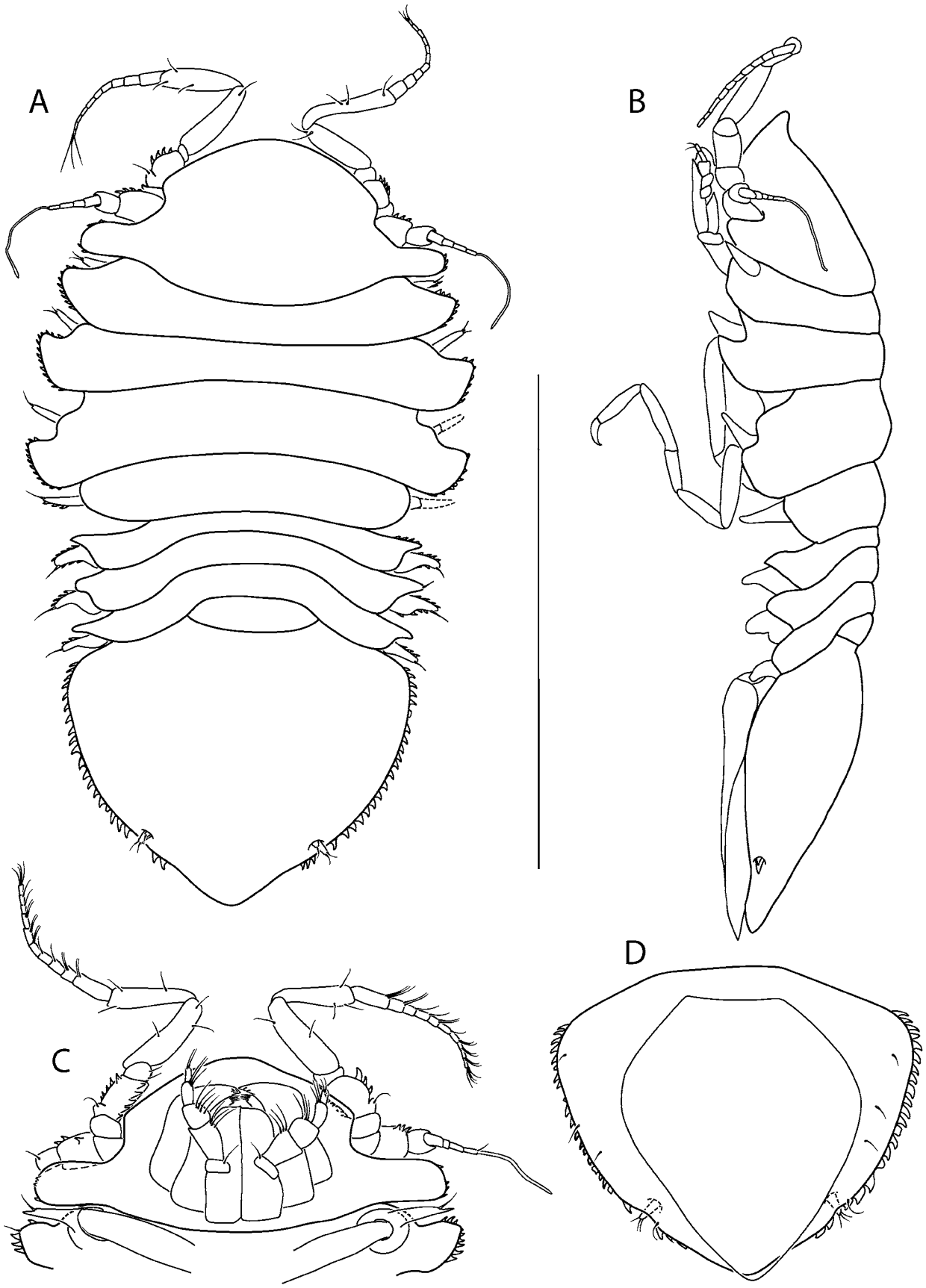

FIGURE 1. *Holodentata caeca* sp. nov., holotype ♀, ZMH–41970, A, dorsal view; B, lateral view. Scale bar = 1 mm. C, head in ventral view; D, pleotelson in ventral view. Scale bar = 0.5 mm.

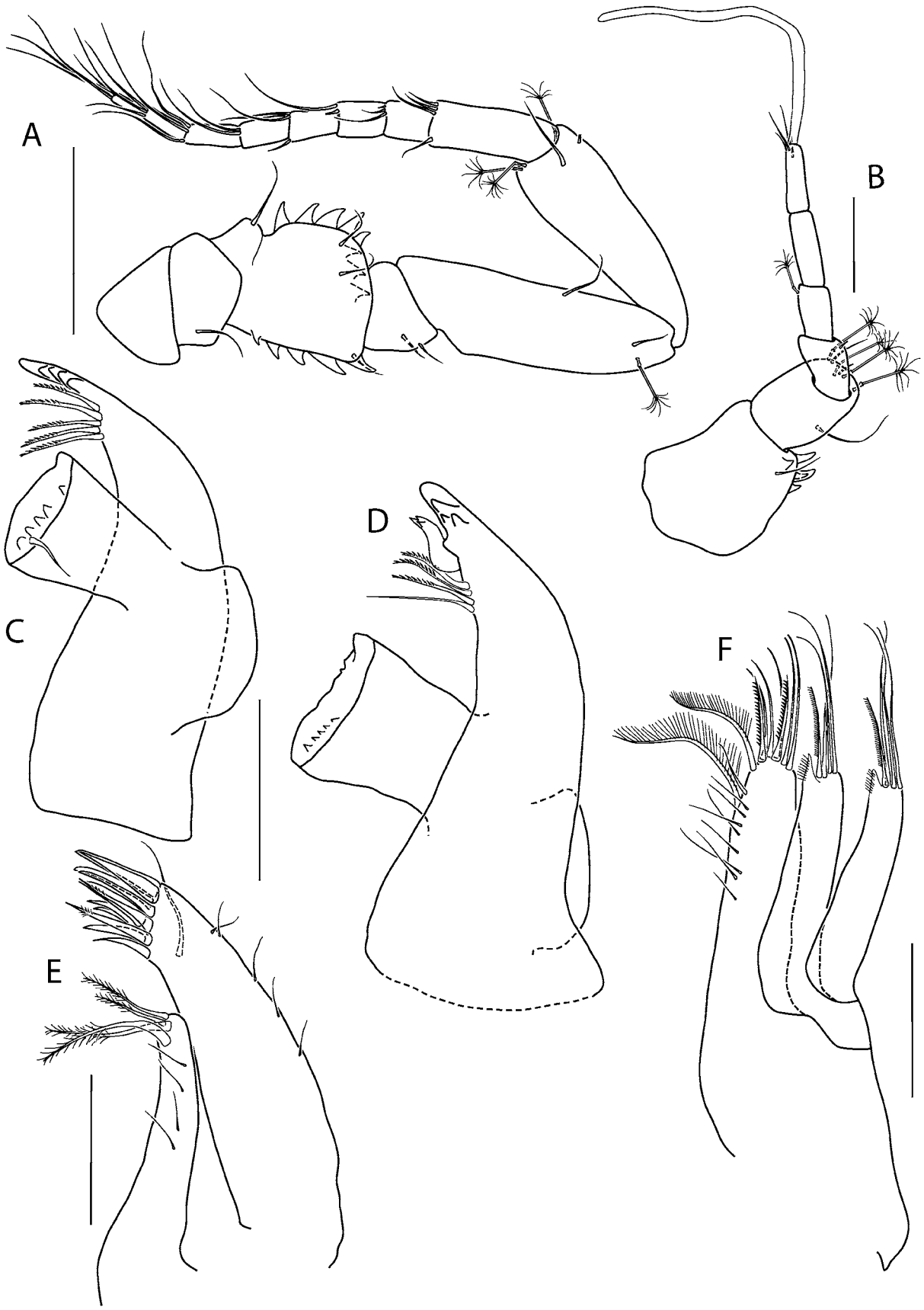

FIGURE 2. *Holodentata caeca* sp. nov., paratype ♀, ZMH–41971, A, antenna. Scale bar = 0.1 mm. B, antennula; C, right mandible; D, left mandible; E, maxillula; F, maxilla. Scale bars = 0.05 mm.

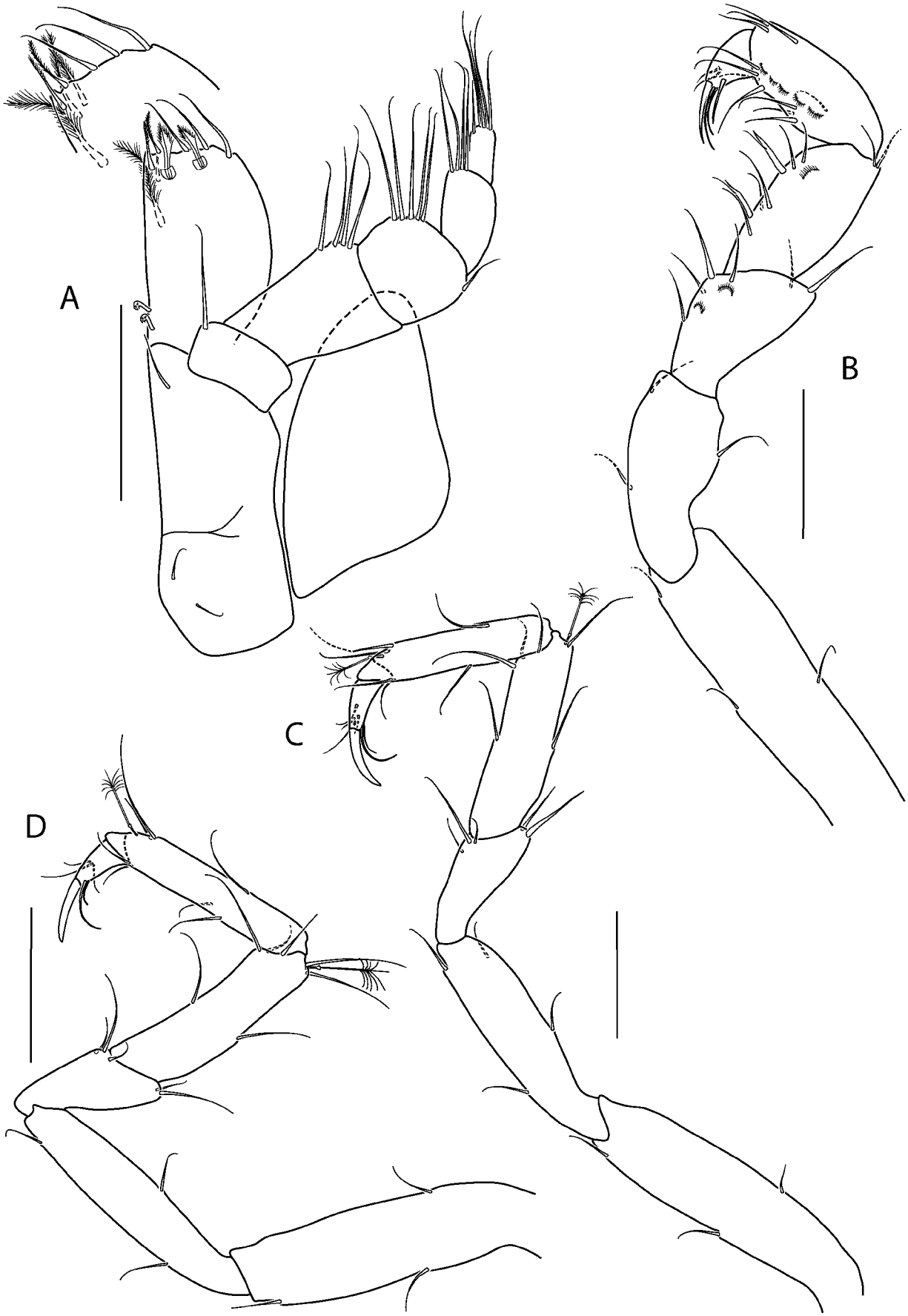

FIGURE 3. *Holodentata caeca* sp. nov., paratype ♀, ZMH–41971, A, maxilliped; B, pereopod 1; C, pereopod 2; D, pereopod 3. Scale bars = 0.1 mm.

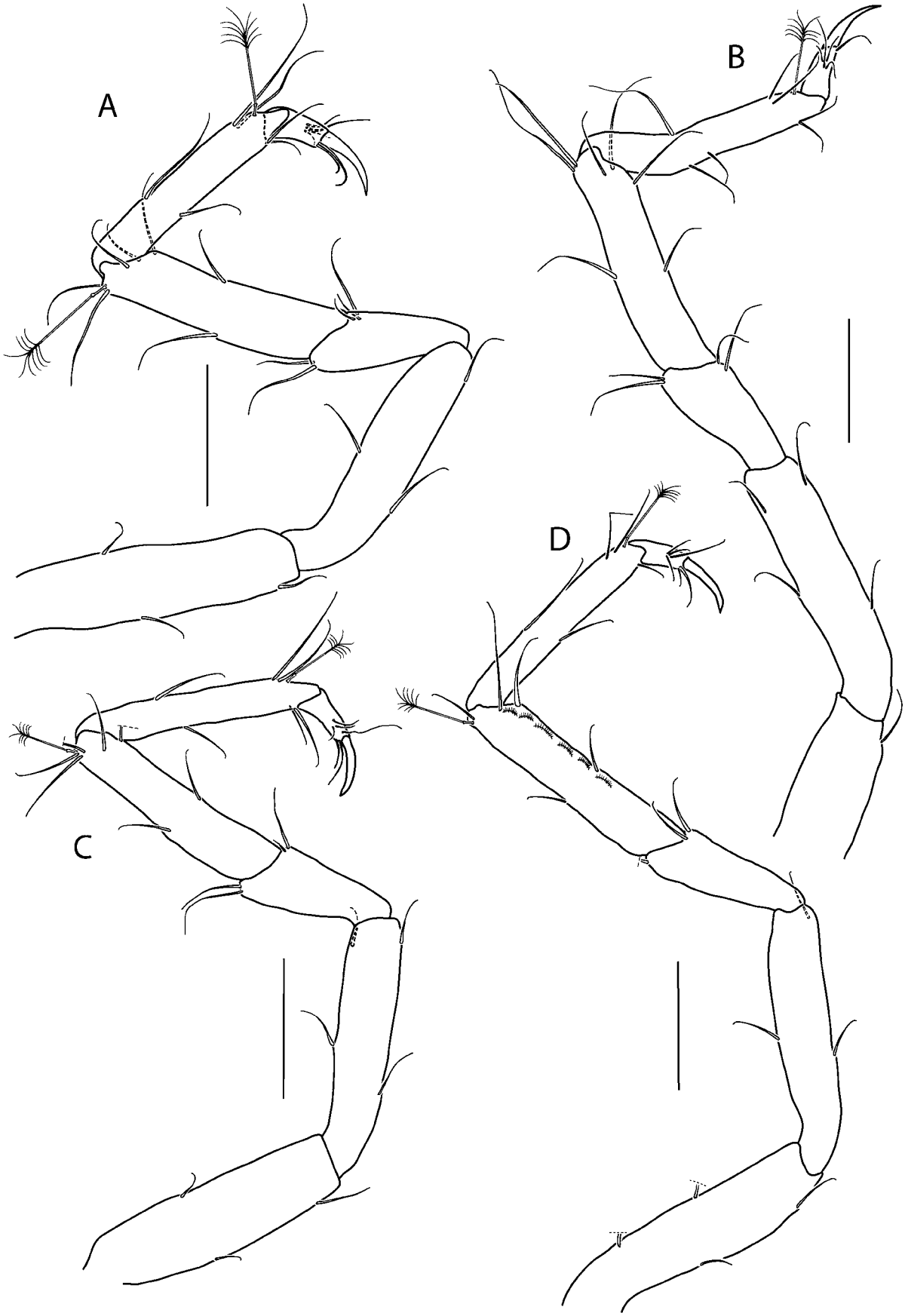

FIGURE 4. *Holodentata caeca* sp. nov., paratype ♀, ZMH–41971, A, pereopod 4; B, pereopod 5; C, pereopod 6; D, pereopod 7. Scale bars = 0.1 mm.

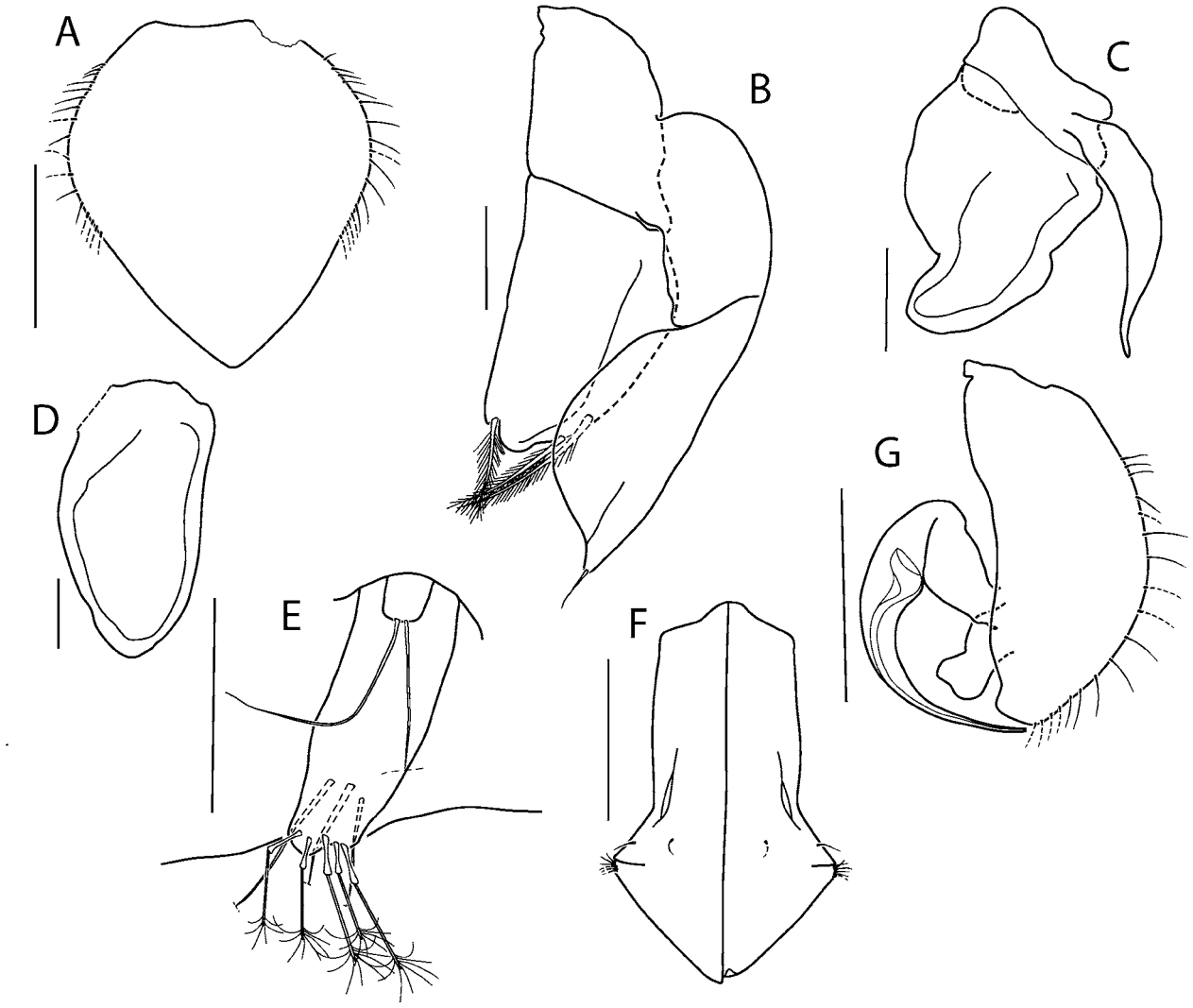

FIGURE 5. *Holodentata caeca* sp. nov., paratype ♀, ZMH–41971, A, operculum; B, pleopod 3; C, pleopod 4; D, pleopod 5. Scale bars = 0.2 mm. E, uropod. Scale bar = 0.05 mm. Paratype ♂, ZMH–41971. F, pleopod 1; G, pleopod 2. Scale bars = 0.2 mm.

Uropod (Fig. 5E) exopod 0.2 endopod length, with 2 simple setae distally; endopod with 3 simple setae subapically and 5 broom setae distally.

Description of adult male (paratype ZMH–41971). Pleopod 1 (Fig. 5F) maximum width 0.6 length; lateral lobes at 0.7 of its length from proximal end, each one with 6 simple setae; ventral surface with 4 simple setae (2 of these close to lateral margin).

Pleopod 2 (Fig. 5G), protopod width 0.4 length, with 18 simple setae on lateral margin. Endopod slightly surpassing protopod. Exopod bilobed.

Remarks. *H. caeca* sp. nov. is most similar to *H. triangulata* sp. nov.; the main differences between these two species are discussed in the remarks section of the latter one.

Distribution. Only known from type locality.

Etymology. The species name is Latin *caeca* meaning blind and refers to the absence of ommatidia.

***Holodentata triangulata* sp. nov.**
(Figs. 6–9, 10A–C)

Holotype: 1 adult ♀ (ZMH–41972); Ross Sea, RV *Italica*, station H out 4, 72°18.5'S, 170°26.8'E, 235 m depth, 12 Feb 2004.

Paratypes: same locality as holotype: 25 brooding ♀♀ (1.4–1.8 mm), 26 preparatory ♀♀ (1–1.7 mm), 12 adult ♂♂ (1.1–1.5 mm) and 7 juveniles (0.9–1 mm); (ZMH–41973). Station H out 2, 72°17.5'S, 170°29.4'E, 353 m depth, 11 Feb 2004: 7 brooding ♀♀ (1.5–1.7 mm), 5 preparatory ♀♀ (1.1–1.5 mm), 3 juvenile ♀♀ (0.9–1 mm) and 3 adult ♂♂ (1.1–1.2 mm). Station H in 3, 72°17.0'S, 170°13.1'E, 316 m depth, 16 Feb 2004: 3 preparatory ♀♀ (1–1.4 mm) and 2 adult ♂♂ (1.4–1.5 mm). Station H in 4, 72°17.1'S, 170°14.0'E, 196 m depth, 16 Feb 2004: 5 brooding ♀♀ (1.3–1.7 mm), 9 preparatory ♀♀ (1–1.6 mm), 2 adult ♂♂ (1.2–1.3mm) and 7 juveniles (0.8–1 mm). Station H in 5, 72°17.2'S, 170°17.9'E, 84 m depth, 16 Feb 2004: 4 preparatory ♀♀ (1.3–1.4 mm), 1 juvenile ♀ (0.9 mm) and 2 adult ♂♂ (0.9–1.1 mm). Station H out 1, 72°14.8' S, 170°15.2'E, 542 m depth, 9 Feb 2009: 4 preparatory ♀♀ (1.2–1.6 mm) and 1 juvenile ♀ (1 mm).

Diagnosis. Head anterior lobe triangular with blunt apex, and curving upward in lateral view. Eyestalk long axis pointing laterally, with 4 ommatidia. Lateral margin of pereonites 1–3 expanded into a subquadrate projection, 4 rounded and 5–7 produced into single processes. Coxal plates produced into processes. Pereopod 7, carpus with 1 robust seta distoventrally.

Description of brooding female (habitus description based on the holotype ZMH–41972, description of appendages on the paratype ZMH–41973). Length: 1.9 mm (Fig. 6A, B). Body width 0.6 length, widest at pereonite 3. Head width 2.4 length; anterior lobe triangular with blunt apex, curving upward in lateral view, marginally denticulated (Figs. 6C, 10B). Eyestalks long axis pointing laterally, with 4 ommatidia. Lateral margin of pereonites 1–3 expanded into a subquadrate projection, 4 rounded and 5–7 produced into single processes. Total length of all pereonites and free pleonite combined subequal to pleotelson length. Coxal plates produced into processes and denticulated, visible in dorsal view in all pereonites. Pleotelson width 1.2 length, marginally with 20–25 denticles on each side, apex truncate.

Antennula (Fig. 7A), article 1 largest, with 1 broom seta, and 3 and 1 robust denticles on each side; article 2 0.6 length of article 1, with 2 broom and 3 simple setae; article 3 0.7 length of article 2 and subequal in length to article 5 (and 6); article 4 shortest, with 1 simple seta; article 6 with 3 simple setae and 1 aesthetasc.

Antenna (Figs. 7B, 10C), articles 1 and 2 glabrous; article 3 short distally broadened, with 2 simple setae and several robust denticles; article 4 with 1 simple seta; article 5 subequal in length to article 6, with 1 simple seta; article 6 with 3 broom and 3 simple setae; flagellum with 9 articles, each article with numerous setae.

Right mandible (Fig. 7C), incisor process with 4 blunt cusps (proximal one quadrate); spine row with 5 serrate setae; molar process with 1 row of teeth and 1 serrate seta on distal edge. Left mandible (Fig. 7C detail) as right except for: incisor process with a 4-cusped lacinia mobilis (1 of these cusps minute) and spine row with 4 serrate setae; molar process without setation.

Maxillula (Fig. 7D), lateral lobe with 1 simple seta close to distal margin and 12 cuspidate setae distally (2 of these setulated), mesial lobe with 5 setulated setae distally and 4 slender simple setae.

Maxilla (Fig. 7E), lateral and middle lobe protruding distomedially, with 1 pectinated and 3 simple setae distally; mesial lobe with 2 pectinated, 1 setulated and 6 simple (with pore-bearing tip) setae on distal margin, 1 setulated seta and numerous slender simple setae on mesial margin.

Maxilliped (Fig. 7F), endite with 2 coupling hooks, distal margin with 4 setulated setae, ventral surface with 2 fan setae and 1 setulated seta, dorsal surface with 3 setulated setae (see detail). Epipod ovate, width 0.6 of length.

Pereopod 1 (Fig. 8A, B), basis longest article with 3 simple setae. Ischium 0.5 basis length, with 2 simple setae and 1 cuticular comb. Merus cup-shaped, with 5 simple setae and 2 cuticular combs. Carpus oval, 0.8 ischium length; dorsal margin with 1 simple seta distally; ventral margin with 2 robust and 6 simple setae, anterior surface with 1 cuticular comb. Propodus 0.8 ischium length, dorsal margin with 4 simple setae (1 at

half length article and 3 distal), ventral margin with 7 simple setae, anterior surface with 1 simple seta and 4 cuticular combs. Dactylus with 3 simple setae near distal end and 2 simple setae between unguis and supplementary claw, unguis slightly shorter than dactylus, supplementary claw 0.8 unguis length.

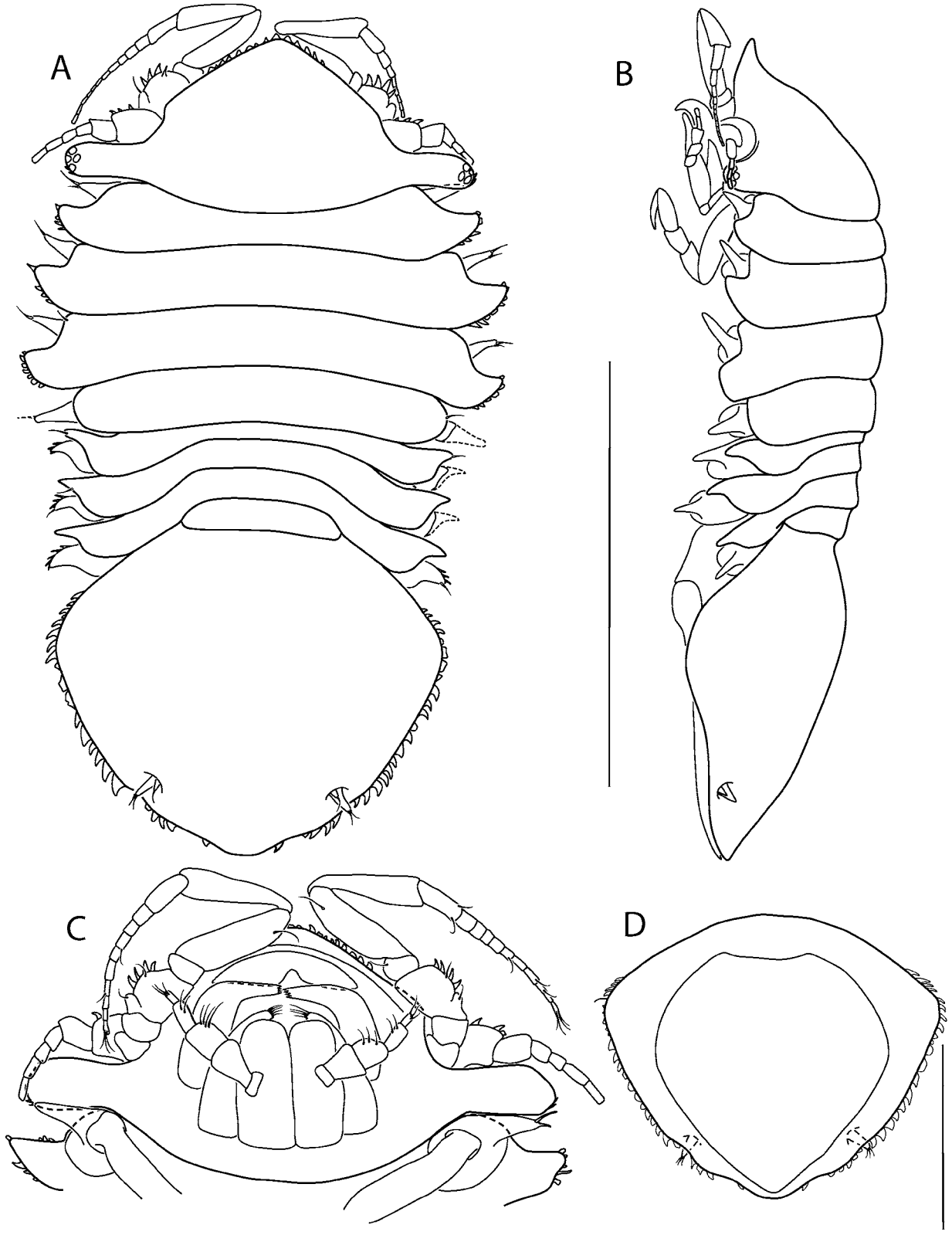

FIGURE 6. *Holodentata triangulata* sp. nov., holotype ♀, ZMH–41972, A, dorsal view; B, lateral view. Scale bar = 1 mm. C, head in ventral view. Scale bar = 0.5 mm. D, Pleotelson in ventral view. Scale bar = 0.5 mm.

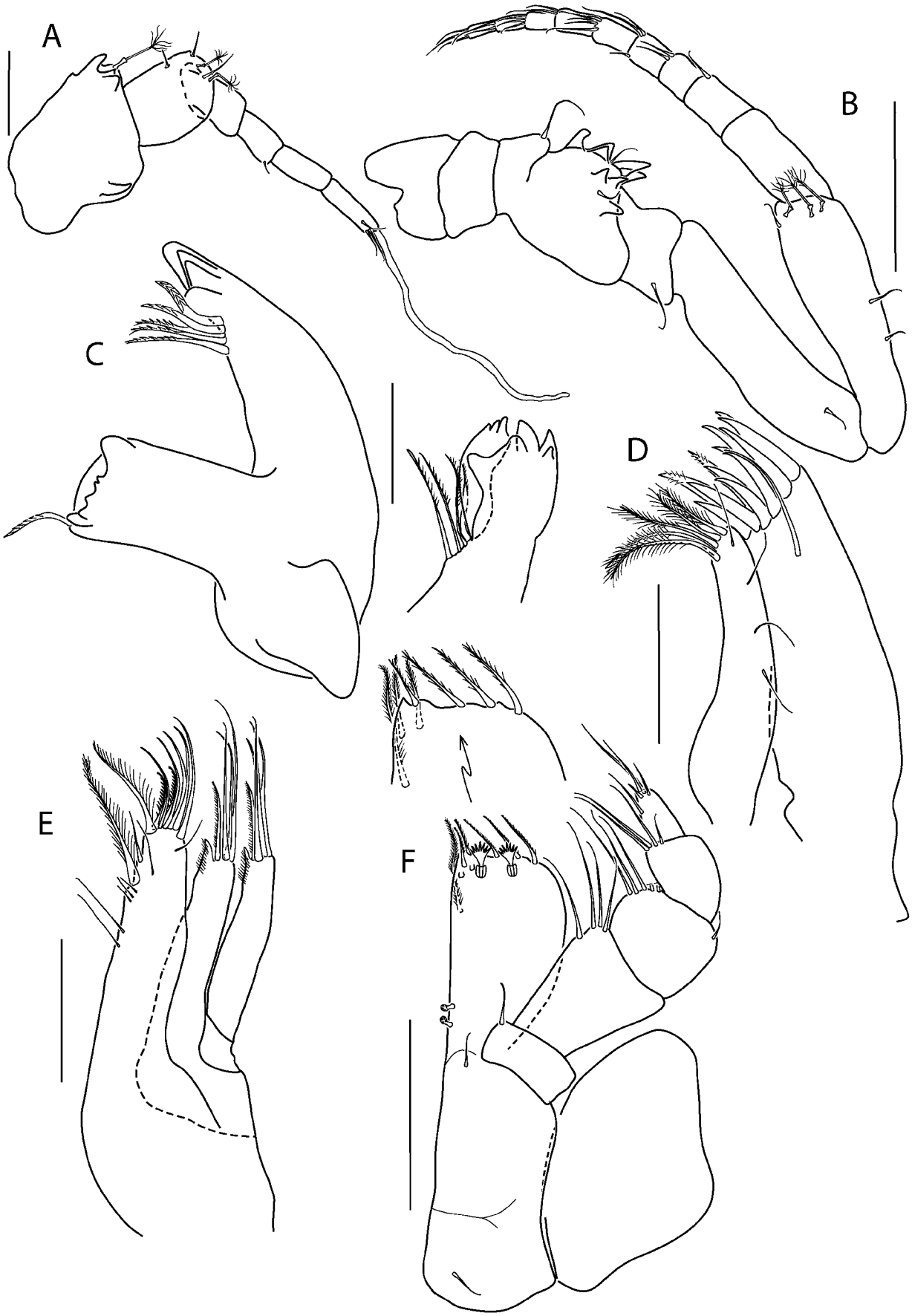

FIGURE 7. *Holodentata triangulata* sp. nov., paratype ♀, ZMH–41973, A, antennula. Scale bar = 0.05 mm. B, antenna. Scale bar = 0.1 mm. C, right mandible and detail of the incisor process of left mandible; D, maxillula; E, maxilla. Scale bars = 0.05 mm. F, maxilliped. Scale bar = 0.1 mm.

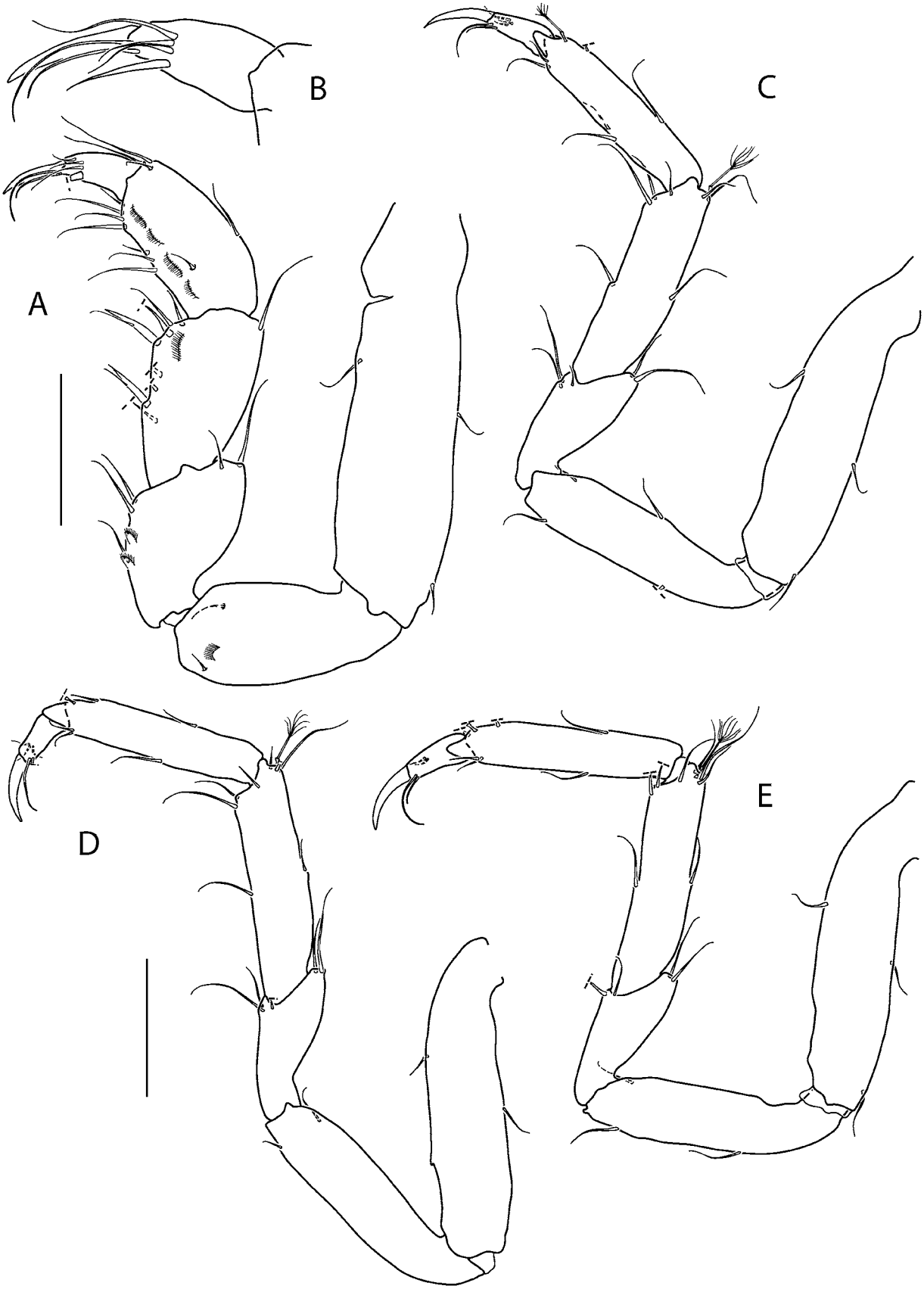

FIGURE 8. *Holodentata triangulata* sp. nov., paratype ♀, ZMH–41973, A, pereopod 1; B, dactylus of pereopod 1; C, pereopod 2; D, pereopod 3; E, pereopod 4. Scale bars = 0.1 mm.

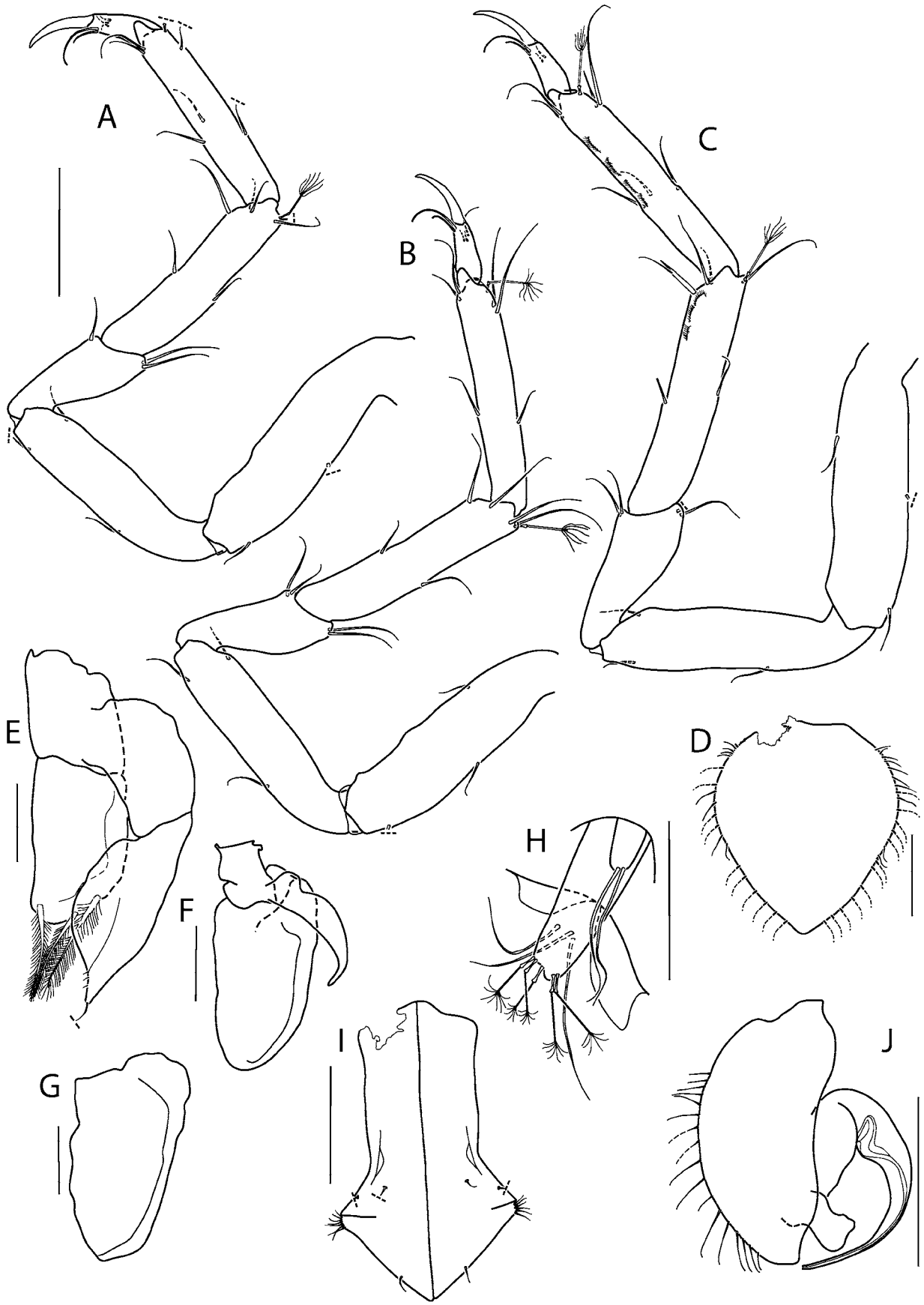

FIGURE 9. *Holodentata triangulata* sp. nov., paratype ♀, ZMH–41973, A, pereopod 5; B, pereopod 6; C, pereopod 7. Scale bar = 0.1 mm. D, operculum; E, pleopod 3; F, pleopod 4; G, pleopod 5. Scale bars = 0.2 mm. H, uropod. Scale bar = 0.05 mm. Paratype ♂, ZMH–41973. I, pleopod 1; J, pleopod 2. Scale bars = 0.2 mm.

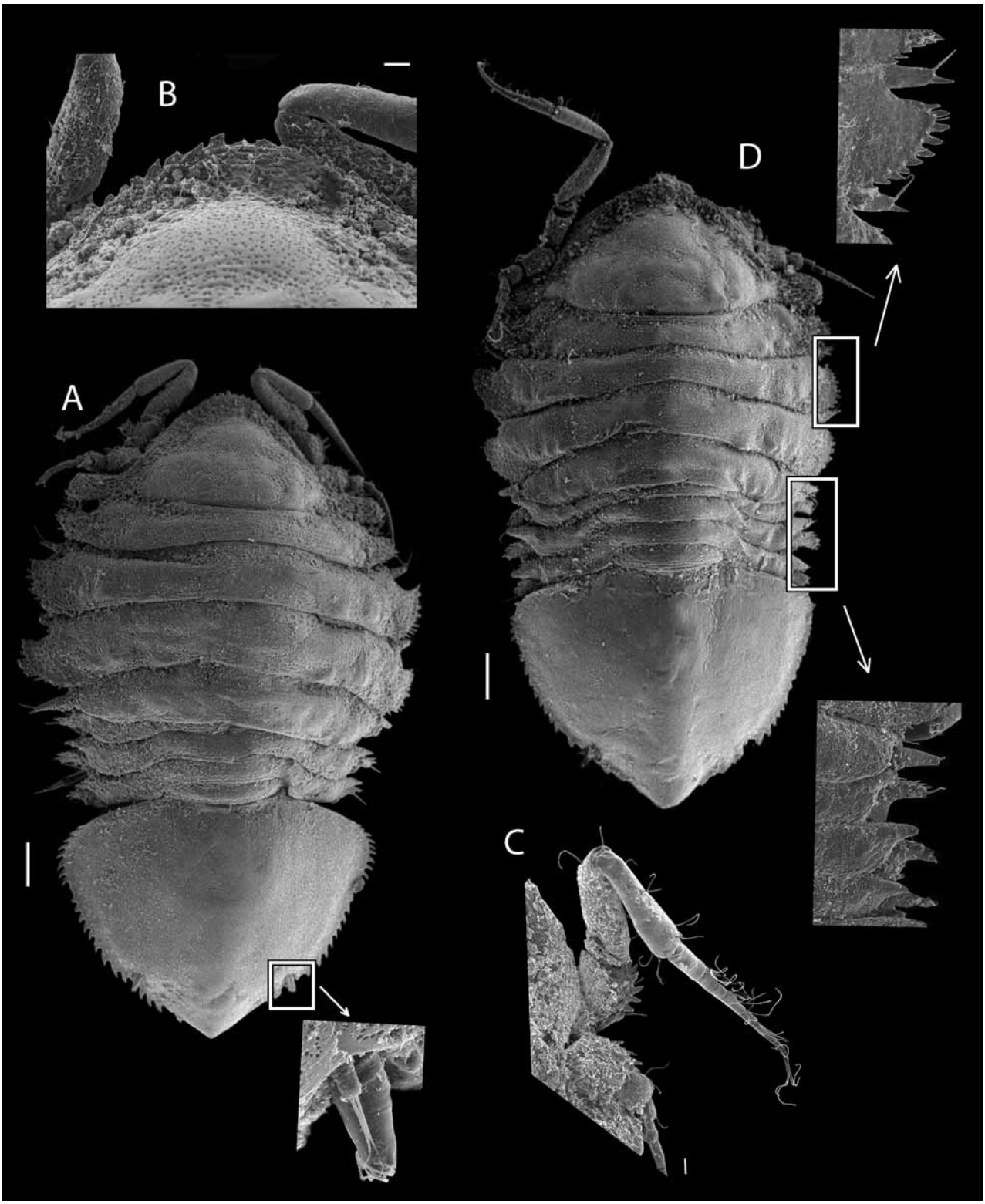

FIGURE 10. SEM photographs. *Holodentata triangulata* sp. nov., paratype ♀, ZMH–41973. A, dorsal view and detail of the uropod. Scale bar = 100 µm. B, frontal margin of head in dorsal view; C, antenna. Scale bars = 20 µm. *H. caeca* sp. nov., paratype ♀, ZMH–41971. D, dorsal view and details of the lateral margins of the pereonites. Scale bar = 100 µm.

Pereopods 2–7 (Figs. 8C–E, 9A–C). Bases with 2–3 simple setae. Ischia with 2–4 simple setae. Meri with 3–5 simple setae. Carpi with 2 simple setae at half length article, and 3–6 simple setae and 1 broom seta on

distal end; carpus of pereopod 7 with 1 robust seta distoventrally and some cuticular combs. Propodi with 2–3 simple setae half way along the length of article, 2–4 simple setae and 1 broom seta on distal end; propodus of pereopod 7 with some cuticular combs. Dactyli with 4–5 simple setae, unguis slightly longer than dactylus, supplementary claw absent.

Operculum (Fig. 9D) ovoid and acuminating distomedially, width 0.9 length; lateral margins with several simple setae (many of these broken).

Pleopod 3 (Fig. 9E), endopod width 0.6 length, with 3 plumose setae distally. Exopod with 2 articles; distal one with 3 minute setae and 1 distal simple seta, which extends towards the tips of the endopod setae.

Pleopod 4 (Fig. 9F), endopod width 0.5 length, exopod reaching half length of endopod.

Pleopod 5 (Fig. 9G) width 0.5 length.

Uropod (Fig. 9H) exopod 0.3 endopod length, with 2 simple setae distally; endopod with 3 simple setae subapically and 5 broom setae distally.

Description of adult male (paratype ZMH–41973). Pleopod 1 (Fig. 9I) maximum width 0.6 length; lateral lobes at 0.7 of its length from proximal end, each one with 6–7 simple setae; distal projection with 2 simple setae; ventral surface with 4 simple setae (2 of these close to lateral margins).

Pleopod 2 (Fig. 9J), protopod width 0.4 length, with 17 simple setae on lateral margin. Endopod slightly surpassing protopod. Exopod bilobed.

Remarks. *H. triangulata* is most similar to *H. caeca*, but it can be easily distinguished from the latter by having (features dealing with *H. caeca* are in parentheses): Head anterior lobe triangular (anterior lobe rounded), eyestalks with ommatidia (blind), antenna article 3 with denticles on one side (article 3 with denticles on both margins), carpus pereopod 7 with one distal robust seta on ventral margin (robust seta absent).

Distribution. Only known from type locality.

Etymology. The epithet is derived from Latin *triangulus* meaning triangular alluding to the triangular shape of the head.

Discussion

At present, *Holodentata* gen. nov. includes three species, all of them from the Southern Ocean: *H. gaussi* (Vanhöffen, 1914) from the Gauss Station, Wilkes Land; *H. triangulata* sp. nov. from the Ross Sea; and *H. caeca* sp. nov. from the Powell Basin, Weddell Sea. The main differences among these three species are summarized in Table 2.

TABLE 2: Character comparison of the three species included in the new genus *Holodentata*.

	Anterior lobe of head	Ommatidia	Lateral margins of pereonites	Coxal plates
H. gaussi (Vanhöffen, 1914)	rounded	present	all rounded	rounded
H. caeca sp. nov.	rounded	absent	1–3 subquadrate, 4 rounded, 5–7 produced into single processes	produced into processes
H. triangulata sp. nov.	triangular	present	1–3 subquadrate, 4 rounded, 5–7 produced into single processes	produced into processes

Holodentata gaussi (Vanhöffen, 1914), the type species of the new genus described herein, was originally placed in the genus *Paramunna*. Just and Wilson (2004) revised the genus *Paramunna* and redefined its

diagnostic characters. These authors also transferred several species which were formally placed in the genus *Paramunna*; *P. gaussi* was removed from this genus but was not assigned to any other genera until now. It is worth noting that two other species also excluded from the genus *Paramunna* (*P. quadratifrons* Iverson and Wilson, 1981 and *P. pellucida* Kensley, 2003) still remain *incertis sedis*. Most probably these two species require the erection of new genera, however to confirm this assumption an examination of their type specimens is needed.

Just and Wilson (2004) reported that several genera of the *Paramunna* complex have a wide geographical distribution, while the species usually show a very narrow range of distribution. Our data support this geographical pattern, *Holodentata* being a circumpolar Antarctic genus, whilst the distributions of each of the three species are only known from one sea. *Holodentata* also shows a wide bathymetric range, as *H. triangulata* was collected in relatively shallow waters (84–542 m), whereas *H. caeca* was collected at bathyal depth (1584 m).

Just and Wilson (2004) described sexual dimorphism in several species of the *Paramunna* complex, however it was not observed in either of the two new described species.

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