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## *EPIMERIA HELDI*, A NEW SPECIES OF AMPHIPODA (CRUSTACEA, EPIMERIIDAE) FROM THE ANTARCTIC OCEAN

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### ABSTRACT

The new amphipod species *Epimeria heldi* is described. It differs from all known eperimiids in the following combination of characters: apically rounded coxae 1-3, the characteristic sculptured coxal plate 4, the narrow basis 7 and uropod 3 rami apically rounded. The body colour of the living animal is grey, with dark red mouthparts and appendages, and yellow eyes.

### INTRODUCTION

During cruise 42 (ANT XIV/2) of RV "Polarstern" to the Antarctic Peninsula 1996/97, large quantities of crustaceans were collected. In one of these samples there was a striking, large amphipod that had never appeared in previous benthic collections from this region. It proved to be new to science and is described in detail herein. The material is deposited in the Museum für Naturkunde Berlin.

### SYSTEMATICS

***Epimeria heldi*** n. sp. (Figs. 1-5)

Material: Holotype: ov. female, 52 mm (measured from rostrum to the tip of uropod 3) ZMB No. 27224.

#### TYPE LOCALITY

"Polarstern" cruise 42 (ANT XIV/2) St. 31; Antarktis: 60°54.60'S 55°45.90'W, depth 235 m. Gear: Agassiz-trawl

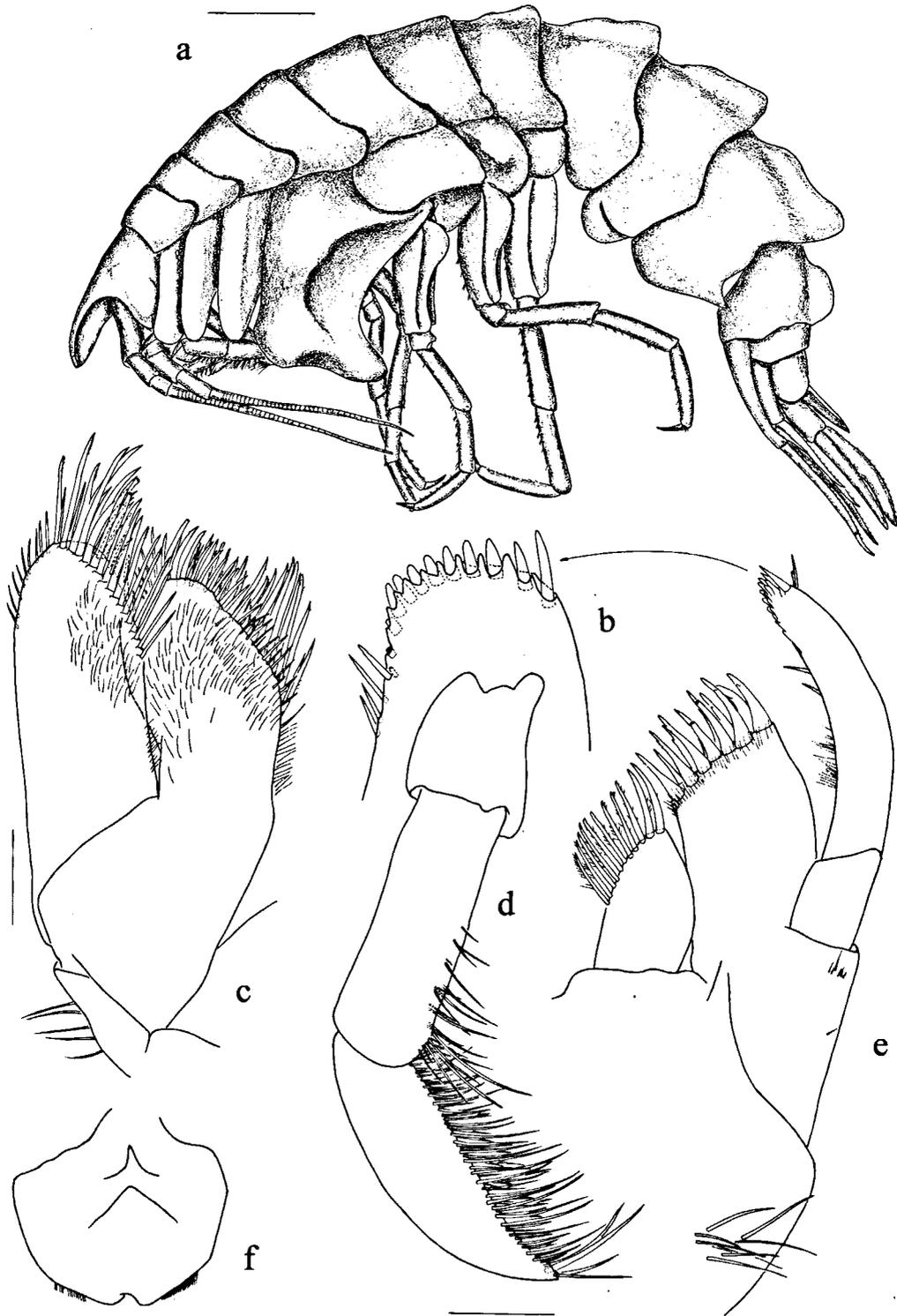


Fig. 1a-f, *Epimeria held n. sp.*, holotype female 52 mm, a. left lateral habitus; b. apex of maxilla 1 palp; c. maxilla 2; d. mandibular palp; e. maxilla 1. Scale bars a: 5 mm, c-e: 500 $\mu$ , f: 1 mm.

## DESCRIPTION

Head (Fig. 1a) with relatively long stout rostrum; eyes large, kidney-shaped, bright yellow in the living animal with dark parts posteriorly, colour lost in alcohol, not even having the border of the eyes visible on the cuticle; length of head (including rostrum) about that of pereonite 1-3 combined.

Pereonite 2 (Fig. 2b) shortest; pereonite 4-7 increasing in length successively. A dorsal carina starts on pereonite 6 with a small hump, becomes clearly apparent on metasomal segments 1-3 with blunt, middorsal processes, which increase in length to the posterior margin of the segments, and having a shallow depression seen laterally. Epimeron 1 (Fig. 1a) with postero-marginal rounded lobe; epimeron 2 with angular postero-marginal lobe; posteroventral region of epimera 1-2 not angular, but rounded, with ridges on lateral faces; epimeron 3 with weak lobe-like postero-marginal protrusion and pointed posteroventral angle. Urosomite 1 (Fig. 1a) with a rounded keel-like middorsal process, longer than urosomite 2-3 combined. Urosomite 3 with lateral posteriorly projecting lobes.

Antenna 1 (Fig. 2c, h, e), stout peduncular article 1 with oblique distal margin, longer than article 2-3 combined; accessory flagellum unia-articulate, scale-like; flagellar articles with distal setae and aesthetascs (Fig. 2e).

Antenna 2 (Fig. 4a): article 1 small, pointed; article 4 and 5 subequal; flagellar articles with short setae (Fig. 4i).

Labrum (upper lip) (Fig. 1f): pointed process on frontal face, with a apical narrow notch and lateral fields of hair-like setae.

Mandible (Fig. 4j, 1d): incisor with stout dentation; lacinia mobilis on left mandible narrow with oblique apical edge, on right mandible wider with clear dentation; rakers consisting of smooth setae; molar ridged with hair-like setae on the margin, mandibular palp with short first article; article 2 subequal to 3, subrectangular, with a row of setae on the dorsal margin; article 3 pointed with dense setation marginally.

Lower lip (hypopharynx) (Fig. 2a): wide lobe with slender mandibular lobes; mediobasal region with a group of stout setae on both sides.

Maxilla 1 (Fig. 1e, b): basal part with group of

lateral setae; inner lobe with 11 slender setae; outer plate oblique apically, with 13 slender, medially serrate stout apical setae. Palp wide, 2-articulate, proximal article short, about 1/3 of distal article; the latter with short, stout nodular setae apically, hiding within serrate margin, some longer setae medially (Fig. 1b).

Maxilla 2 (Fig. 1c): basal part with lateral long setae; inner plate oblique, with long setae medioapically and shorter laterodistally; outer plate apically rounded with long setae on the apex and shorter ones medially and laterally.

Maxillipeds (Fig. 2 f, d, g): basal part (coxa) with setae on posterior face; second article (basis) with a row of setae on both apical margins; outer plate (Fig. 2d) with mediobasal angle; long, smooth setae on apical margin, short setae on medial margin; inner plate (Fig. 2g) with long setulated setae on medial margin and short setae on distal margin, medioapical setae nodular. Palp 4-articulate, article 3 about half as wide as article 2; 4th article claw-like with apical nail.

Pereopod (gnathopod) 1 (Fig. 3a, b): coxa weakly tapering, with rounded apex; basis weakly curved anteriorly with very long, slender setae on both margins; ischium shorter than merus; merus with groups of long setae on posterodistal margin; carpus expands distally with groups of long setae on posterior margin; propodus narrower than carpus, subequal in length; groups of setae on posterior margin and on medial face; dactylus with row of stout setae on posterior margin; palm narrow, with fine serrate margin and some stout setae (Fig. 3b).

Pereopod (gnathopod) 2 (Fig. 3d, e): coxa longer than that of pereopod 1, slightly tapering distally, apically rounded; basis subrectangular with long, slender setae on posterior margin; ischium shorter than merus; merus with groups of long setae on posterodistal margin; carpus longer than propodus and carpus of pereopod 1, only weakly expanded distally, with groups of long setae postero-marginally; propodus narrower than that of pereopod 1; dactylus with row of stout setae on posterior margin; palm narrow, with fine serrate margin and some stout setae (Fig. 3e).

Pereopod 3 (Fig. 4h, e): coxal plate tapering and rounded distally; basis longer than ischium and merus combined, with slender marginal

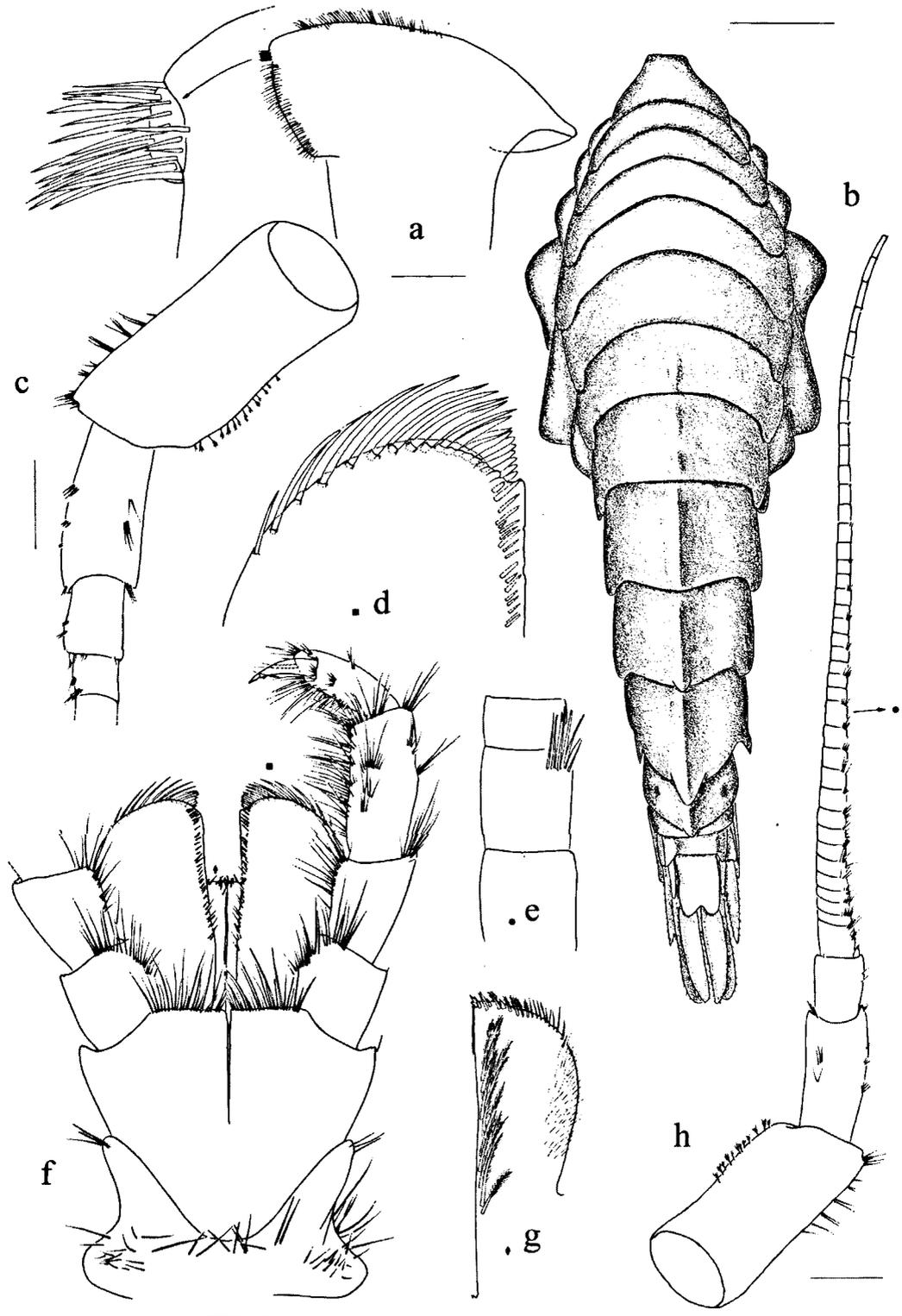


Fig. 2a-h, *Epimeria heldi* n. sp., holotype female 52 mm, a. low lip, damaged during dissection, with detail of mediobasal region; b. dorsal aspect of habitus; c. peduncle of antenna 1; d. left outer plate of maxilliped, frontal aspect; e. example of flagellar article of antenna 1, region indicated in Fig. 2h; f. maxillipeds, right palp omitted; g. inner plate of maxilliped, frontal aspect; h. antenna 1. Scale bars a: 500  $\mu$ m, b: 5 mm, c, d, h: 1 mm.

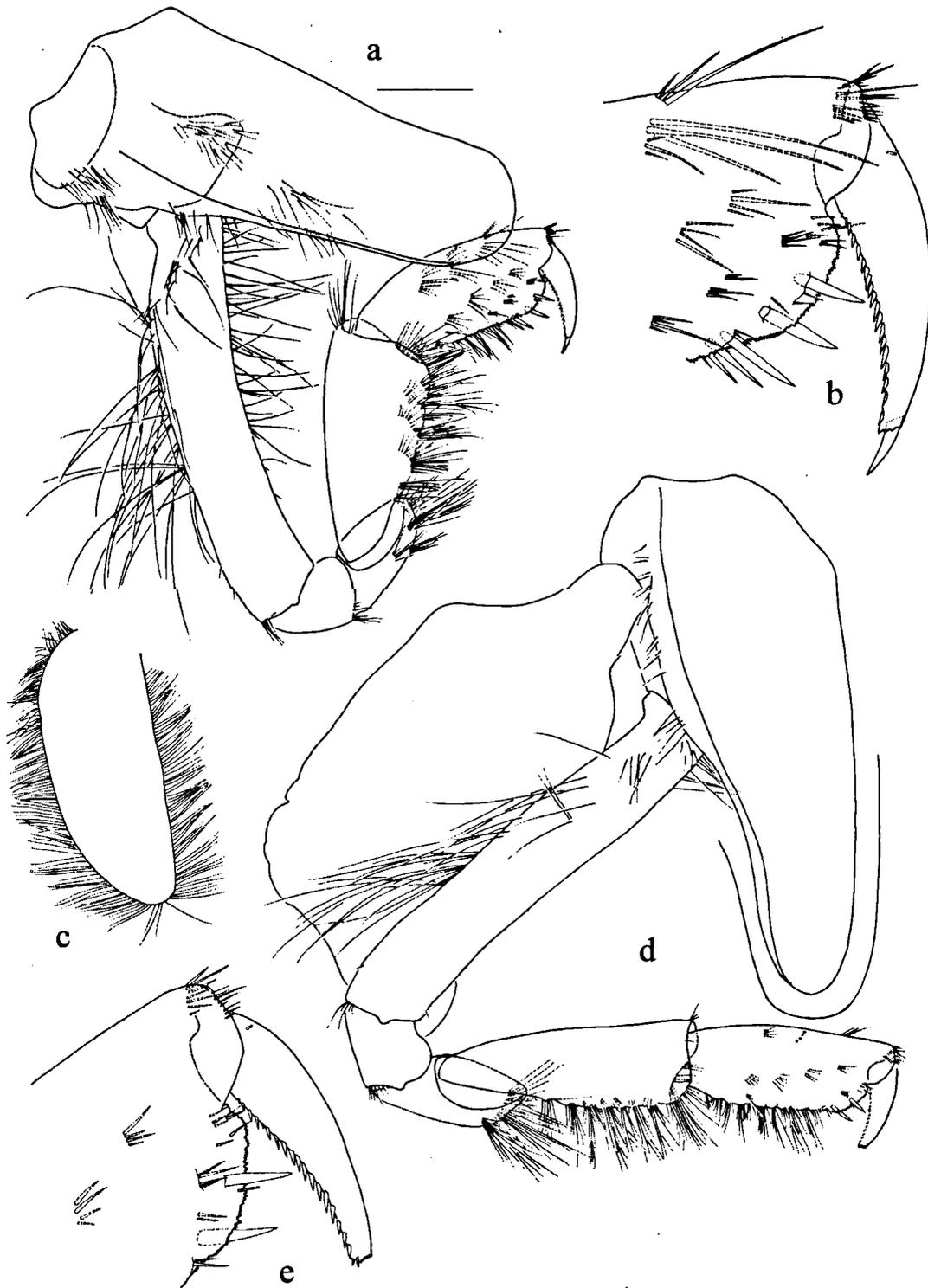


Fig. 3a-d, *Epimeria heldi* n. sp., holotype female 52 mm, a, pereopod (gnathopod) 1; b, detail of chela of pereopod 1; c, oostegite of pereopod (gnathopod) 2; d, pereopod (gnathopod) 2, additional line shows that apex is wider, seen more from frontally; e, detail of chela of pereopod 2. Scale bars a: 1mm. b, e: 500  $\mu$ m. d: 1 mm.

setae proximally; ischium with a depression on anterior margin; merus slightly expanded distally, anterodistally slightly produced; carpus subequal to propodus.

Pereopod 4 (Fig. 4d, c, b): coxal plate largest, surpassing all other coxae, with complex sculpture (Fig. 1a): 1 rounded bulge on lateral face and 2 protrusions close to distal margin; an oblique distal margin with a shallow depression; posterior margin with deep excavation between rounded posterodistal angle and long posteromarginal, proximal, subacute process, that is partially covered by coxa 5; semicircular ridge on lateral face, rather indistinct in distal half. Basis slightly longer than ischium and merus combined; ischium with anteromarginal depression; merus slender, anterodistally slightly produced; carpus shorter and wider than propodus.

Pereopod 5 (Fig. 5a, h): coxal plate, wider than long, embedding posteromarginal process of coxa 4 in groove on lateral face; anterior margin rounded, posteriorly produced, lateral face with strong ridge; ventral margin subacute; basis with rounded proximal lobe and additional edge posteromarginally, with slender setae anteromarginally, lateral face with ridge; ischium with posterior depression; merus, carpus and propodus subequal.

Pereopod 6 (Fig. 5b): coxa about as wide as long, anterior margin straight, posterior margin rounded, lateral face produced into diagonal ridge which is situated close the proximal posterior region of coxa 5, short ventral angular lobe posteriorly; basis with rounded proximal lobe and additional edge posteromarginally, with slender setae anteromarginally, anterior margin convex, lateral face with ridge; ischium to propodus similar to that of pereopod 5, but each article longer.

Pereopod 7 (Fig. 5c, d): coxa wider than long, anterior margin straight, posterior margin rounded; basis with convex anterior and straight posterior margin, tapering distally; ischium to propodus somewhat wider and longer compared to pereopod 6.

Pleopod 1 (Fig. 5e): peduncle slightly tapering, inner margin with long slender setae, outer margin with shorter setulated setae; outer ramus somewhat longer than inner.

Uropod 1 (Fig. 4k): peduncle somewhat short-

er than rami, with slender setae proximomediomarginally; spine-like setae only on lateral side (apart from 1 medioapical seta); outer ramus slightly longer than inner one.

Uropod 2 (Fig. 5f): peduncle shorter than outer ramus, which is shorter than inner one.

Uropod 3 (Fig. 5g): peduncle shortest; rami subequal, long, and apically rounded.

Telson (Fig. 4g): 1.6 x as long as wide, with rounded apical lobes and v-shaped excavation; lateral margins weakly convex.

Colour: grey, with reddish shimmer, especially on coxal plates and basis of pereopods, and ventral side of rostrum; antennae, pereopods, distally from ischium, and rami of uropods dark red; eyes bright yellow with dark spots on posterior edge.

*Etymology*: The species is dedicated to Christoph Held to thank him for his great comradeship on board of RV "Polarstern".

#### REMARKS

The new species can be distinguished very easily from other epimeriids by the following combination of characters:

smooth pereon segments 1-5; posterior carinae from segment 6 on (though inconspicuous on pereonite 6-7) reaching to urosomite 1; carinae on pleonites subacute with a shallow depression, blunt on urosomite 1, coxae 1-3 with rounded apex, coxa 4 sculptured, with 3 rounded bulges on the lateral face, and a ridge that runs in a semicircle on the surface and an oblique distal margin, basis of pereopod 7 narrow and posterior margin straight, epimera 1-2 rounded without posteroventral angle, and apex of uropod 3 rami rounded.

The new species does not belong to the genus *Metepimeria* due to its 4-articulate maxillipedal palp (vs 3-articulate), nor *Pseudepimeria* (if one supports this taxonomic concept at all), due to its developed gnathopodal palms (vs lacking palms), nor to *Epimeriella* having a well developed mandibular molar (vs setose lobe) and a normal lower lip (vs wide hypopharyngeal gap).

There are several species of *Epimeria* that have

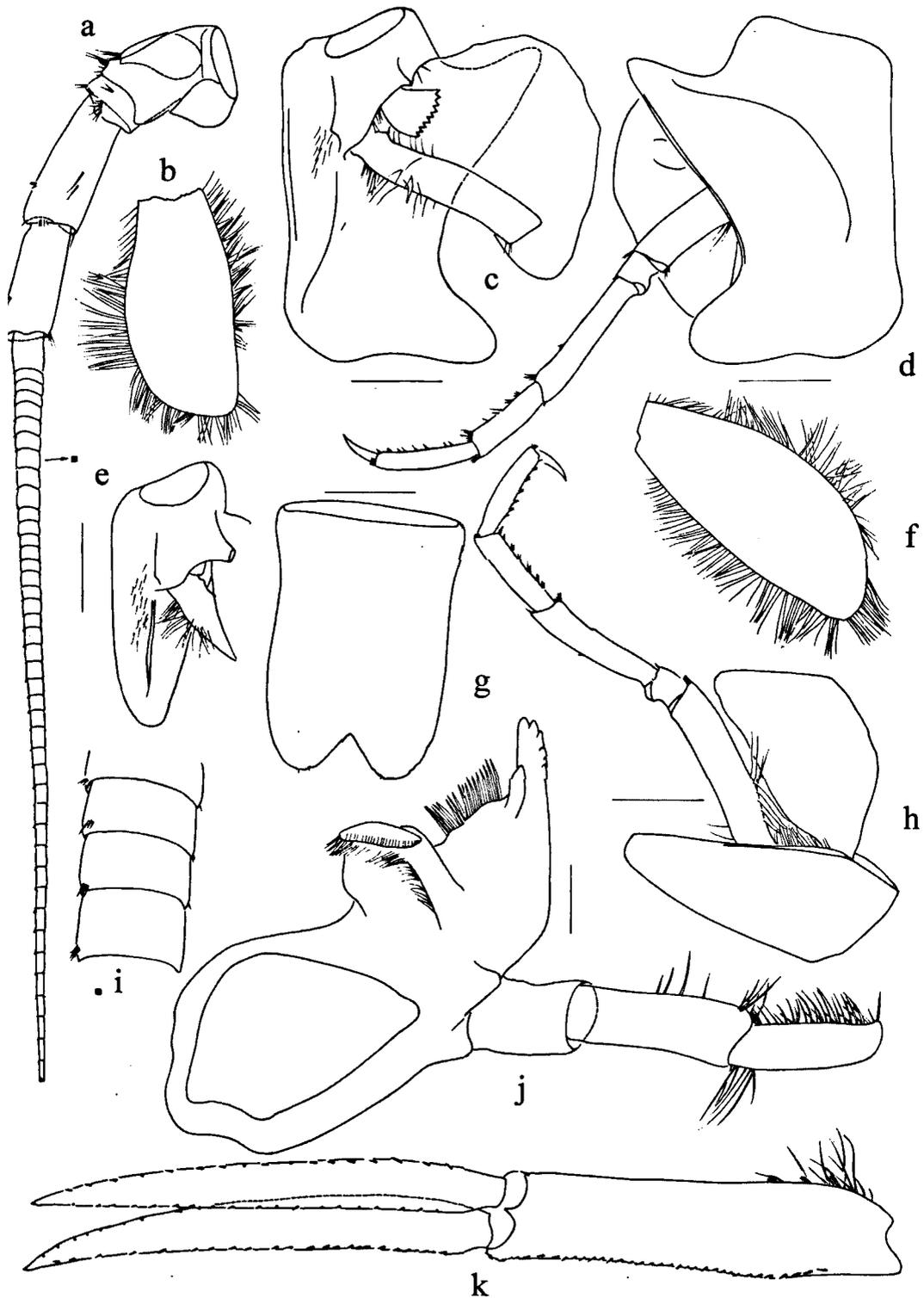


Fig. 4a-k, *Epimeria heldi* n. sp., holotype female 52 mm, a. antenna 2; b. oostegite of pereopod 4; c. coxa and basis of pereopod 4, medial aspect; d. pereopod 4; e. pereopod 3 coxa, medial aspect; f. oostegite of pereopod 3; g. telson; h. pereopod 3; j. right mandible; k. uropod 3. Scale bars a, c, d, e, h: 250  $\mu$ m, j: 500  $\mu$ m, k: 1 mm.

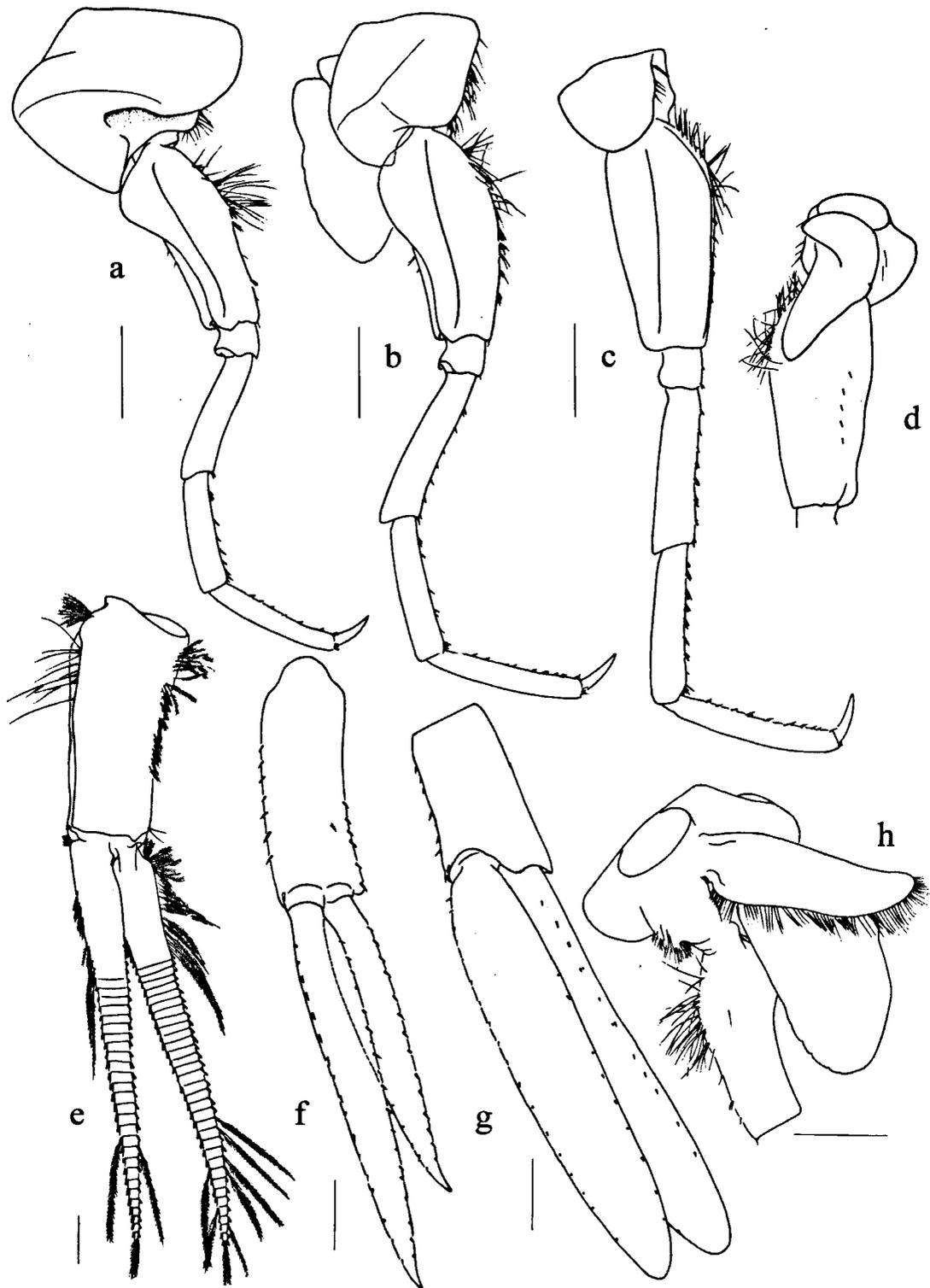


Fig. 5a-h, *Epimeria heldi* n. sp., holotype female 52 mm, a. pereopod 5; b. pereopod 6; c. pereopod 7; d. medial aspect of pereopod 7; e. pleopod 1; f. uropod 2; g. uropod 3; h. medial aspect of uropod 5. Scale bars a-d: 250  $\mu$ m, e-g: 1 mm, h: 250  $\mu$ m.

unarmed anterior pereonites and carinae on the pleonites without additional lateral teeth. *Epimeria bispinosa* Ledoyer, 1986 from Madagascar; *E. bruuni* Barnard, 1961 (a juvenile?); *E. concordia* Griffiths, 1977; *E. cora* Barnard, 1971; *E. glauca* Barnard, 1961; *E. longispinosa* K.H. Barnard, 1916; *E. pacifica* Gurjanova, 1955; *E. puncticulata* K.H. Barnard, 1930; *E. robusta* K.H. Barnard, 1930; *E. subcarinata* Nagata, 1963 and *E. yaquinae* McCain, 1991. These species have smooth faced or pointed coxae 4. Only *E. georgiana* Schellenberg, 1931 from the Antarctic bears a similar shaped coxa 4 (but not its characteristic sculpture) as *E. heldi* n. sp., but, amongst many differences, this species can be discriminated from the new species by the wide and deeply notched posterior margins of basis 5-7. *Epimeria grandirostris* (Chevreux, 1913) also has a sculpture on the lateral face of coxa 4, but this article is much narrower and without the 3 bulges of *E. heldi* n. sp. In addition to that the dorsal carinae start on pereonite 1 and there are additional teeth on both sides of the carinae. In several other species of *Epimeria* the epimeral plate of metasomal segment 1 is also ventrally rounded, however, a wanting posteroventral angle on epimeron 2 as in the new species is unique. The wide rounded rami of uropod 3 can similarly be found in *E. yaquinae*, but here these are very long and the apex surpasses those of uropod 1-2.

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