



## ***Eurycope crassiramis* sp. nov., a new species of Munnopsidae (Crustacea, Isopoda, Asellota) from the Weddell Sea, Southern Ocean\***

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### **Abstract**

A new species of Eurycopinae (Munnopsidae) *Eurycope crassiramis* sp. nov. is described from the bathyal of the Weddell Sea, Southern Ocean. The new species is most similar to *E. gausi* Wolff, 1956. Both species can be distinguished from all other species of this genus by the short cephalon and ambulosome (each length in the new species is 0.1 body length), a rostrum equal or subequal to medial cephalic length, a uropod with very broad rami and a protopod not broadened medially, and the peculiar form of the male pleopod 1. The new species differs from *E. gausi* by the following characters: a lacinia mobilis with 6 denticles, a mandibular spine row with 6–7 setae, and a distolateral margin of male pleopod 1 broadly rounded, without projecting corners.

**Key words:** Crustacea, Isopoda, Asellota, Munnopsidae, Eurycopinae, *Eurycope*, Weddell Sea, Southern Ocean

### **Introduction**

Munnopsidae is one of the largest isopod families. They are widespread in cold waters, and are often the most abundant isopod group in deep-sea benthic samples (Brandt *et al.* 2004, 2005; Brenke *et al.* 2005). Currently the family is divided into eight subfamilies (in addition to five genera *incertae sedis*). Among them, Eurycopinae Hansen, 1916 is one of the most important groups in regard to both the taxonomical diversity and number of individuals (Wilson & Hessler 1980, 1981; Svavarsson 1987). The central genus of Eurycopinae, *Eurycope* Sars, 1864, is a large and heterogeneous complex. The great number of morphologically diverse species was placed in this genus previously because of their specific natatory eurycopid morphology, while many other taxonomically important characters were ignored. Wilson & Hessler (1980) redescribed the type species of the genus, *E. cornuta* Sars, 1864, and surveyed the morphology of *Eurycope*, thus proposing a unified scheme for descriptions. Later, they revised the genus and restricted its definition, excluding thirty four species (Wilson & Hessler 1981). Eighteen of these excluded species were transferred into three newly described genera (*Disconectes*, *Tythocope* and *Belonectes*). For six species, five new genera were erected during subsequent studies: *Baeonectes* Wilson, 1982, *Coperonus* Wilson, 1989, *Lionectes* Wilson, 1989, *Hapsidohedra* Wilson, 1989 and *Dubinectes* Malyutina & Brandt, 2006. The remaining ten species to be removed from *Eurycope* have not yet been placed into other genera and formally stay within *Eurycope*. Kussakin (2003) excluded one more species, *E. ovata* Birstein, 1970, from *Eurycope*. The genus now consists of forty species, without those species listed above. Some of these forty species forms complexes of closely related species. Morphological differences between species within the complexes are sometimes very small.

In the current study, the new species, *Eurycope crassiramis* sp. nov., is described based on material from the ANDEEP III expedition (ANtarctic benthic DEEP-sea biodiversity: colonisation history and recent community patterns) on board RV *Polarstern* (2005).

## Methods

Individuals of the new species were collected by means of an epibenthic sledge (Brenke 2005) in the Weddell Sea, Southern Ocean at 1582 m depth. Specimens were fixed in pre-cooled 96% ethanol. The material was provided by the Zoological Museum, Hamburg (ZMH) within the context of the CeDAMar program (Census of the Diversity of Abyssal Marine Life).

The best-preserved specimen (premature male) was designated as holotype. All preparations were made from adult male and female paratypes.

The drawings were made using an Olympus SZX7 microscope equipped with a camera lucida and LABOVAL 4 microscope with a Lomo RA-7U4.2 drawing tube.

The terminology and measurements mostly follow Wilson (1980, 1982). The length of the cephalon was measured medially from the tip of the rostrum to the posterior margin of the cephalon. The total body length was measured medially from the tip of the rostrum to the posterior tip of the pleotelson. The dorsal view was used for measuring width, while the length of the body segments was measured in lateral view (Malyutina & Brandt 2006).

The type material is deposited in the Zoological Museum, Hamburg (ZMH).

## TAXONOMY

**Munnopsidae Lilljeborg, 1864**

**Eurycopinae Hansen, 1916**

***Eurycope* Sars, 1864**

*Synonymy:* *Eurycope* Sars, 1864: 4 (208); Richardson, 1905: 490; Hansen, 1916: 137; Wolff, 1956: 123, 1962: 143; Wilson & Hessler, 1980: 241, 1981: 403; Wilson, 1983: 452; Svavarsson, 1987: 183; Kussakin, 2003: 21; Malyutina & Brandt, 2006: 12.

*Type species:* *Eurycope cornuta* Sars, 1864, by original designation.

***Eurycope crassiramis* sp. nov.**

(Figs 1–8)

Material examined

**Holotype:** premature male (3.6 mm), ANDEEP III, Stn. 133-2, 16 March 2005, 62°46.73'–62°46.33'S, 53°02.57'–53°04.14'W, 1582 m (ZMH K-41787).

**Paratypes:** 2 males (4.5 mm; 4.0 mm, preparatory); 3 females (3.3–3.6 mm); preparatory female with oostegites in early stages (3.6 mm); 35 juveniles (1.6–2.3 mm), same location as holotype (ZMH K-41788).

Diagnosis

Cephalon and ambulosome length each about 0.1 body length, natasome 0.7–0.8 body length. Rostrum length 0.8–1.0 medial cephalic length, narrowing distally, anteriorly indented, overhang 0.1 length. Article 1 of antenna 1 with distomedial projection extending from 0.1–0.2 (female, immature male) to 0.5 (mature male) length beyond anterior tip of rostrum. Incisor of left mandible with 3 cusps, lacinia mobilis with 6 den-

ticles, spine row with 6–7 setae. Male pleopod 1 distally angled downward at 45°, with broad medial notch, distomedial lobes 0.8 length and 0.5 width of distolateral lobes, fringed with simple setae. Male pleopod 2 protopod with 11 lateral hemiplumose setae, distomedial edge slightly truncated; stylet length 0.7 protopod length. Operculum suboval, length 0.6 width, apex pointed, with seta, posterior margin flattened. Uropodal protopod not broadened medially, rami very broad: exopod length/width ratio 3.2–3.4, endopod length/width ratio 1.8–2.1.

#### Description (premature male, holotype)

*Body* wide, deep and vaulted, broadened at pereonites 5–6 (Fig. 1A, B); length 2.2 width at pereonite 5; greatest height at pereonites 5–6 0.3 length. *Cephalon* (Fig. 1C) width 2.6 length, length 0.1 body length, with concave posterior margin. Rostrum broad, narrowing distally, slightly overhanging frons, anteriorly indented, length 1.0 medial cephalic length, width at the most posterior extent of the rostral notch 0.1 cephalic width, width at the base of antennae 1 0.3 cephalic width, overhang 0.1 length. Cephalic keels small, each with 5 short stout setae. Frons subvertical. Postrostral lateral length 0.1 width; lateral spine blunt, triangular, 0.9 frons height, with 4 short setae. *Pereon*. Ambulosome short, less than 0.1 body length, natasome 0.8 body length. Pereonite 1 length 0.1 width, equal to postrostral cephalic length; pereonites 2–7 to pereonite 1 length ratios: 1.2, 1.0, 0.8, 6.0, 5.0, 8.4, length/width ratios: 0.1, 0.1, 0.1, 0.4, 0.3, 0.6. Lateral margins of pereonites 1–6 convex, of pereonite 7 slightly concave; anterior margins convex; pereonites 5–7 medioventral area convex, in pereonites 5 and 7 enlarged into angular projections, bearing plumose setae in pereonite 7, in pereonite 6 posteriorly depressed; ventrolateral area with cuticular ridges, pereonite 7 anteriorly of coxa with bulla, bearing single large seta. Coxae 1–4 subequal in length, length (including anterolateral processes) 3.0, 2.7, 3.2, 4.0 pereonites 1–4 length respectively, anterolateral process of coxa 1 extending beyond lateral antennal groove. *Pleotelson* length 0.3 body length, width 1.4 length, 1.0 pereonite 7 width; distal tip rounded, angled downward; posterior rim 0.2 pleotelson length.

*Antenna 1* (Fig. 1A, C) article 1 length equal to width, distomedial projection extending 0.2 of length beyond anterior tip of rostrum.

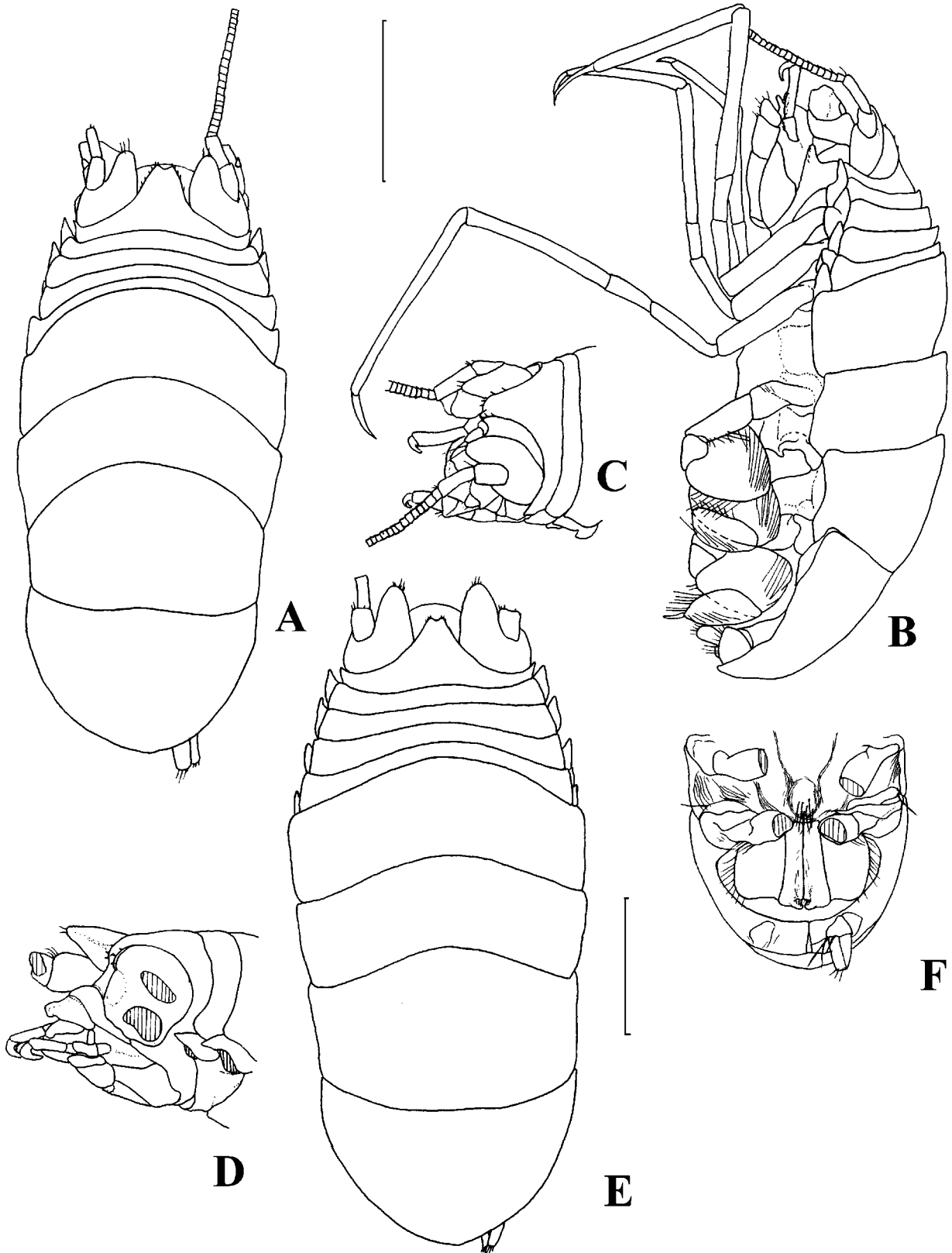
#### Mature male, paratype

*Body* (Fig. 1E, F) length 2.1 width. *Cephalon* (Fig. 1D) width 2.9 length, length 0.1 body length. Rostrum strongly narrowing distally, anterior notch deeper than in holotype, length 0.8 medial cephalic length, width at the most posterior extent of the rostral notch 0.08 cephalic width, width at the base of antennae 1 0.2 cephalic width, overhang 0.1 length. Frons subvertical, height 0.3 mouthfield depth. Labrum/clypeus length ratio 1.3. Postrostral lateral length 0.06 width.

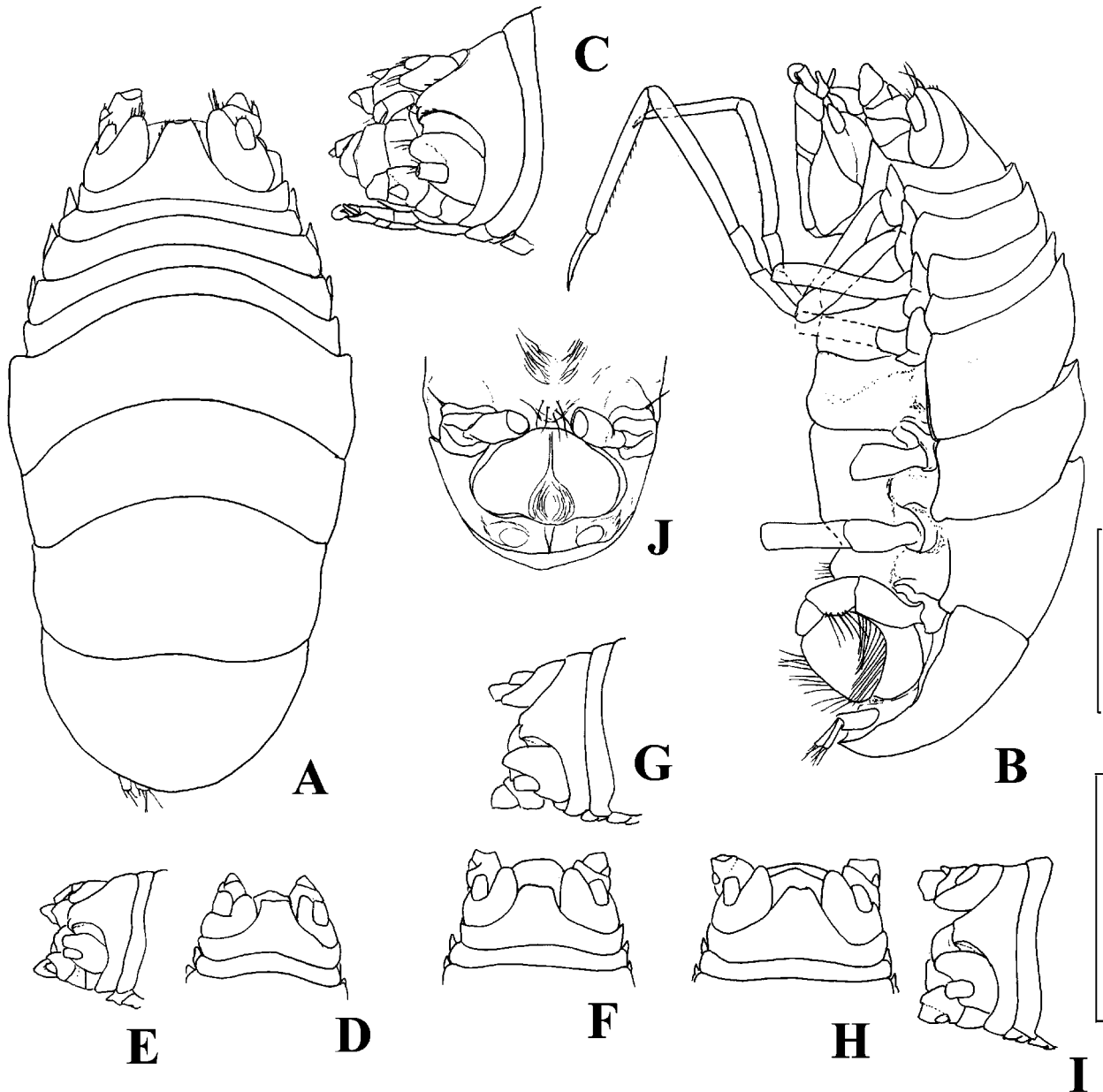
*Antenna 1* (Fig. 3A) article 1 length 1.2 width, distomedial projection extending 0.5 of length beyond anterior tip of rostrum, with 4 distal unequally bifid setae; article 2 length 1.5 width and 0.4 article 1 length, with 7 unequally bifid setae and some fine simple setae distally; article 3 length 2.3 width, subequal to article 2 length; flagellum 0.7 total length, with 41 articles, some articles with simple setae.

*Antenna 2* (Fig. 3B, C) articles 1–4 length/width ratios: 0.5, 1.4, 1.1, 0.8, articles 2–4 to article 1 length ratios: 1.4, 2.1, 1.6; article 2 with 2 lateral unequally bifid setae, article 3 with row of 13 unequally bifid setae; squama length 0.4 article 3 length, with 4 distal unequally bifid setae.

*Mandibles* (Fig. 3D–F) incisor with 3 cusps, ventral cusp separated from 2 dorsal cusps by straight part of distal margin (bearing 1 small additional cusp on right mandible); lacinia mobilis of left mandible stout, 0.9 length of incisor, with 6 denticles, ventral denticle largest; spine row with 7 and 9 spines on left and right mandibles respectively; posterior margin of molar triturative surface with 6 and 5 setae on left and right mandibles respectively, dorsal margin extended. Palp article 2 0.5 mandibular body length, with sparse fine hairs and 3–5 distolateral setae; article 1 0.4 article 2 length; article 3 curved, about 0.6 article 2 length, with about 9–12 cleaning setae.



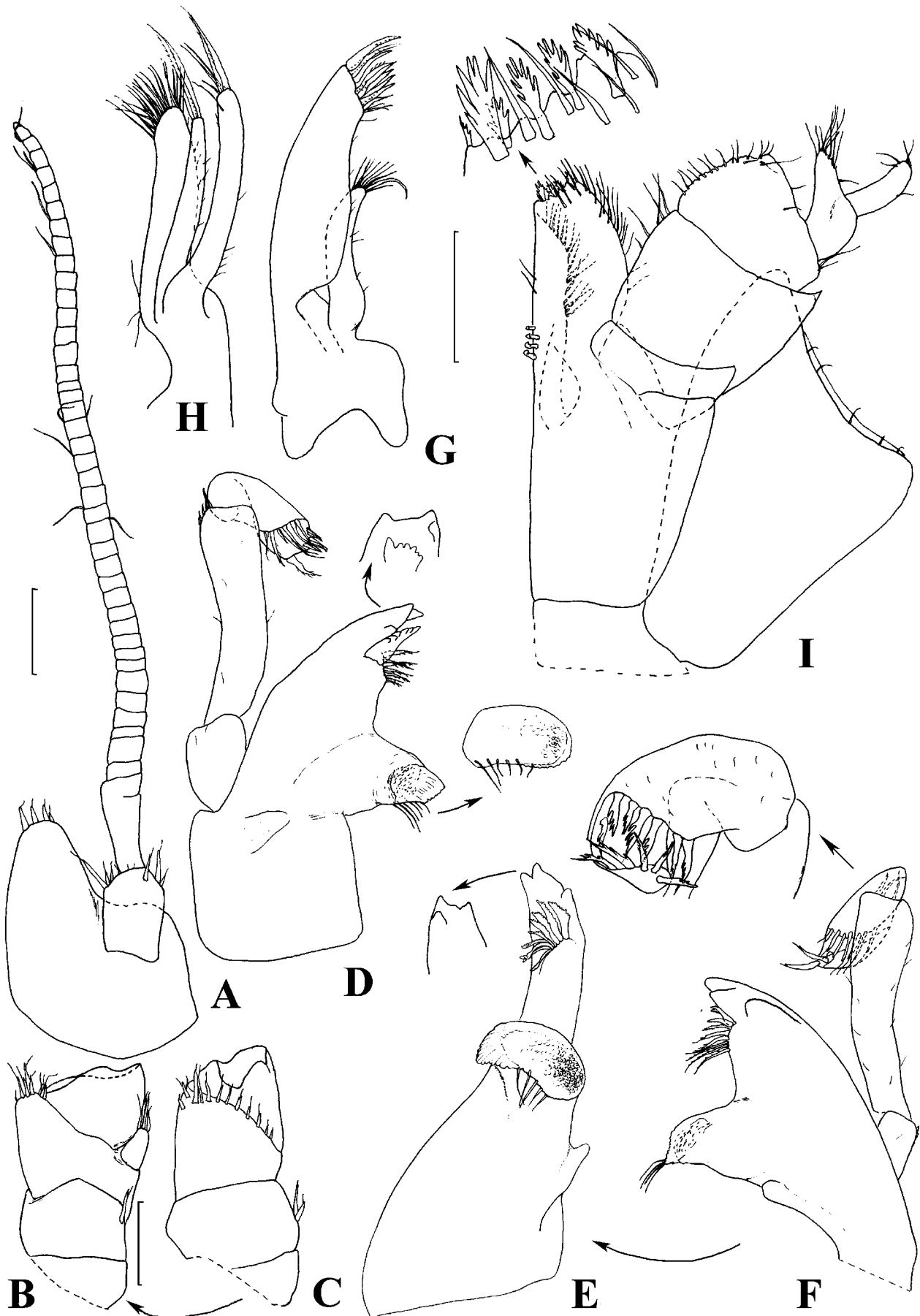
**FIGURE 1.** *Eurycope crassiramis* sp. nov. A–C, premature male, holotype; D–F mature male, paratype. A, E, habitus, dorsal view; B, habitus, lateral view; C, cephalon, dorsolateral view; D, lateral view of face, antennae removed; F, pleon, ventral view. Scale bar = 1.0 mm.



**FIGURE 2.** *Eurycope crassiramis* sp. nov., paratypes. A–C, J female; D–I, juveniles. A, habitus, dorsal view; B, habitus, lateral view; C, E, G, I, cephalon, dorsolateral view; D, F, H, cephalon, dorsal view; J, pleon, ventral view. Scale bar = 1.0 mm.

*Maxilla 1* (Fig. 3G) lateral lobe length 3.1 width, width 2.1 mesial lobe width, medial margin with fine simple setae, distal margin with 9 robust serrated setae and 4 fine simple setae on distomedial angle. Mesial lobe length 3.8 width, medial margin with fine simple setae, distal margin with 8 fine simple setae and 1 long setulated seta on distomedial angle.

*Maxilla 2* (Fig. 3H) lateral lobe longest, length 5.0 width, with 2 long setulated setae and 4 fine simple setae. Middle lobe shortest, length 9.3 width, width 1.0 lateral lobe width, with 2 long setulated setae and some fine simple setae. Mesial lobe length about 5.0 width, width 2.0 lateral lobe width, distal margin with numerous fine simple setae.



**FIGURE 3.** *Eurycope crassiramis* sp. nov., mature male, paratype. A, antenna 1; B, C antenna 2 articles 1–4; D, left mandible; E, F, right mandible; G, maxilla 1; H, maxilla 2; I, maxilliped. Scale bar = 0.2 mm.

*Maxilliped* (Fig. 3I) basis length 2.3 width, endite length 1.8 width, extending beyond palp article 2 distal margin, with 4 retinaculae, distal margin with 6 fan setae and some simple slender setae, lateral and medial margins with dense fine simple setae. Palp articles 1 and 2 with distolateral angles produced into triangular lobes, article 1 lateral margin 2.6 medial margin length, width 0.7 basis width; article 2 lateral margin length 1.2 medial margin length and 1.7 article 1 lateral margin length, medial margin with 5 simple setae; article 3 medial margin convex, rounded, serrated, 3.2 lateral margin length and 0.7 article 2 lateral margin length, with 15 short simple setae, distal margin with few fine simple setae; article 4 lateral margin length 0.6 article 3 medial margin length, medial lobe length 0.8 lateral margin length, with 10 simple distal setae, article 5 length 1.2 article 4 length, with 5 simple setae; articles 1–5 length/width ratios: 0.7, 0.9, 0.7, 0.7, 2.9. Epipod trapezoid, length 1.6 width and 0.9 basis length, distomedial angle rounded, lateral projection broad, distal margin with 5 short setae, inserted in cuticular membrane.

*Pereopod 1* (Fig. 5A) basis to dactylus length/width ratios: 4.9, 3.7, 2.0, 7.5, 5.4, 4.0, ischium to dactylus versus basis length ratios: 0.4, 0.2, 0.9, 0.5, 0.1; basis with sparse small dorsal setae, 1 distoventral unequally bifid seta and some fine distal setae; ischium, merus and carpus with numerous long simple setae on ventral margin and 2 simple setae on dorsal angle, carpus with sparse, small dorsal setae; propodus with 1 long simple seta on ventral margin and numerous long simple setae distally; claws rounded apically, ventral claw slightly longer than dorsal, 1 seta inserting between claws.

*Pereopod 2* (Fig. 5B) basis to dactylus length/width ratios: 4.3, 4.0, 1.8, 8.0, 9.8, 10.0, ischium to dactylus versus basis length ratios: 0.7, 0.3, 1.3, 1.2, 0.7; ischium, merus, carpus and propodus ventral margin with sparse short simple setae, merus with 5 longer distoventral setae and 1 distodorsal unequally bifid seta; carpus with few short dorsal simple setae, 1 longer distodorsal simple seta and 1 distodorsal unequally bifid seta; propodus with 1 distodorsal and 1 distoventral unequally bifid seta; claws subequal in length, dorsal claw width about 2.0 ventral claw width, 1 seta inserting between claws.

*Pereopod 3* (Fig. 5C) dactylus missing; basis to propodus length/width ratios: 4.0, 4.6, 2.6, 10.4, 13.6, ischium to propodus versus basis length ratios: 0.7, 0.4, 1.4, 1.3; basis with sparse small simple setae; ischium with 9 ventral simple setae, 1 dorsal simple seta and 1 short distodorsal unequally bifid seta; merus with 1 ventral simple seta, 4 distoventral simple setae and 2 distodorsal unequally bifid setae; carpus with short simple setae on dorsal margin, 3 longer distodorsal setae and 2 distoventral unequally bifid setae; propodus ventral margin with short simple setae.

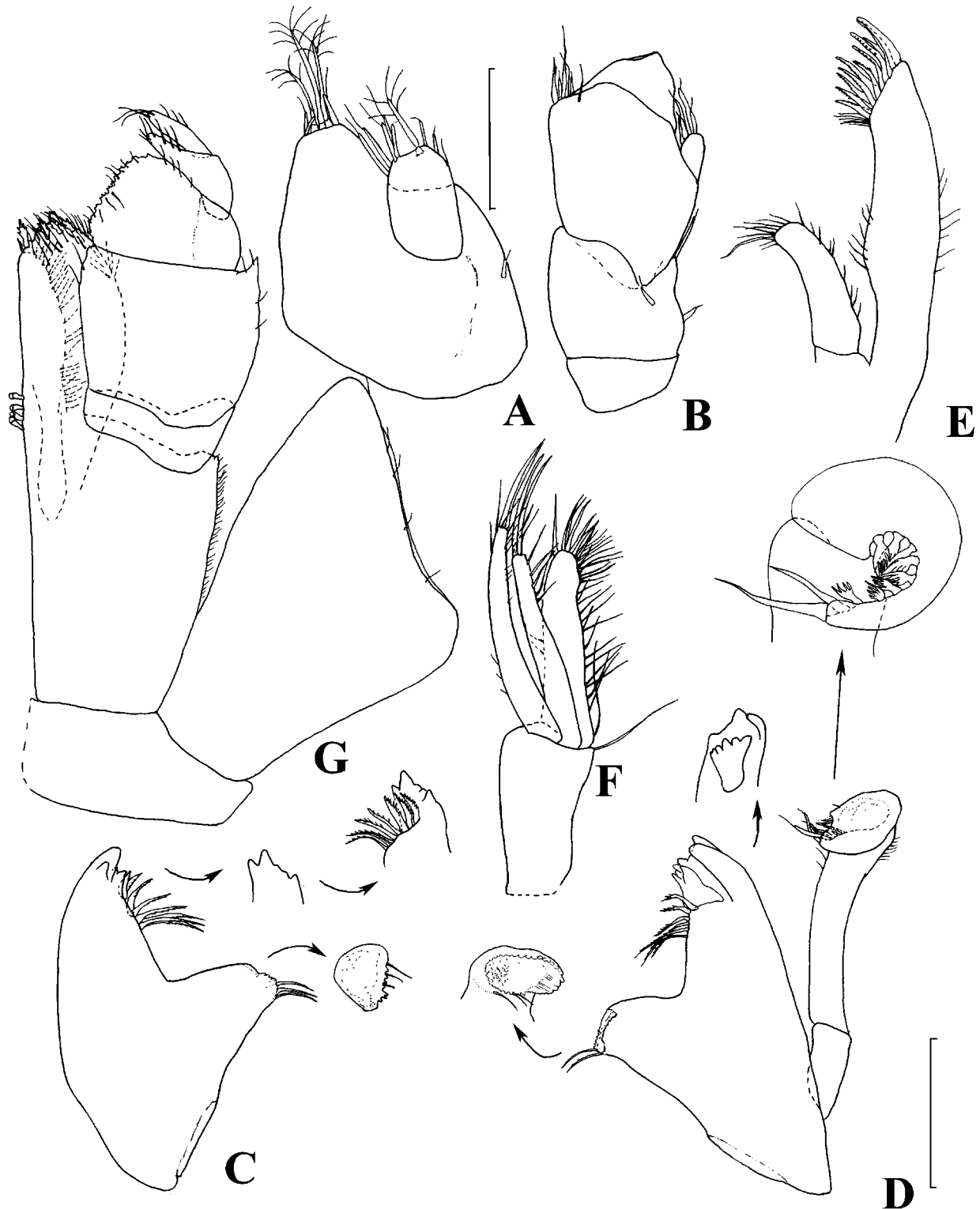
*Pereopod 4* (Fig. 5D) basis to dactylus length/width ratios: 4.8, 5.8, 2.6, 9.3, 15.3, 15.0, ischium to dactylus versus basis length ratios: 0.8, 0.4, 1.4, 1.4, 0.6; basis with 3 short distoventral unequally bifid setae; ischium ventral margin with sparse small simple setae; merus with 2 distodorsal unequally bifid setae; carpus with sparse small simple setae, 3 longer distodorsal simple setae, 2 distal unequally bifid setae and 1 distal broom seta; propodus with 1 simple distodorsal seta and 3 unequally bifid setae in distal third of ventral margin; claws subequal in length, slightly wider dorsally than ventrally, 1 seta inserting between claws.

*Pereopod 5* (Fig. 6A) propodus and dactylus missing; basis to carpus length/width ratios: 1.4, 2.4, 1.8, 1.3, ischium to carpus versus basis length ratios: 1.4, 0.8, 1.9; basis, ischium and merus with scales; basis ventrally with 2 simple setae and 1 unequally bifid seta; ischium dorsal margin with row of 11 plumose setae; merus with 1 dorsal plumose seta; carpus with 31 dorsal and 20 ventral submarginal plumose setae.

*Pereopod 6* (Fig. 6B) propodus and dactylus missing; basis to carpus length/width ratios: 1.5, 2.0, 1.8, 1.4, ischium to carpus versus basis length ratios: 1.2, 0.7, 1.8; basis, ischium and merus with scales; basis with 2 proximodorsal plumose setae, 3 long unequally bifid distoventral setae and 1 simple distoventral seta; ischium dorsal margin with row of 11 plumose setae, ventral margin with fine hairs and 3 distal unequally bifid setae; merus with fine hairs; carpus with 26 dorsal and 18 ventral submarginal plumose setae.

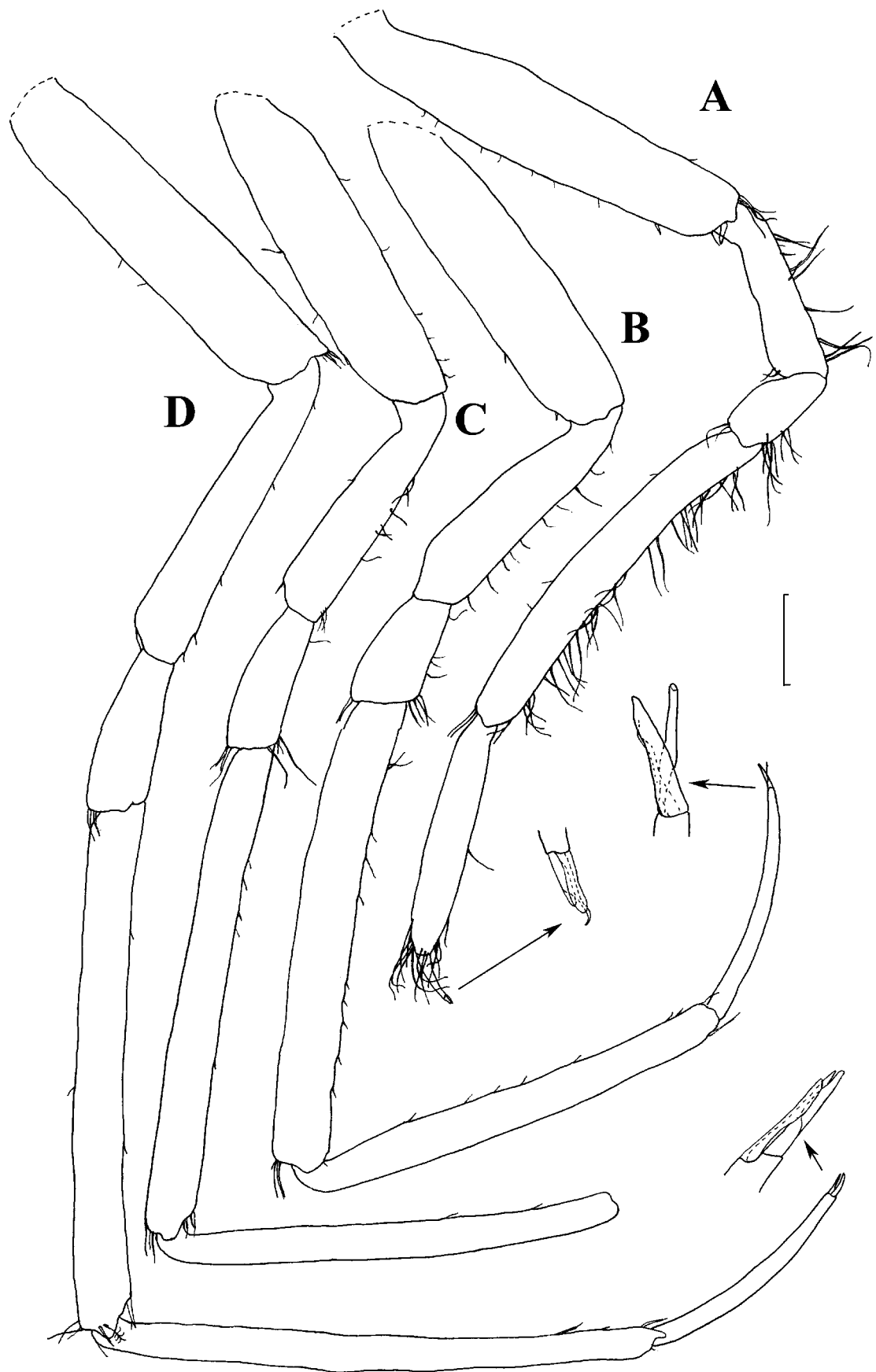
*Pereopod 7* (Fig. 6C) basis to dactylus length/width ratios: 1.4, 1.4, 1.6, 1.1, 2.3, 5.0, ischium to dactylus versus basis length ratios: 1.0; 0.7, 1.7, 1.6, 0.6; basis with 2 proximodorsal plumose setae and 3 unequally bifid distoventral setae; ischium dorsal margin with row of 5 plumose setae, ventral margin with 4 distal

unequally bifid setae; merus with 1 dorsal unequally bifid seta; carpus with 32 dorsal and 18 ventral submarginal plumose setae and 2 short stout dorsal unequally bifid setae; propodus dorsal margin serrated, with 33 submarginal plumose setae, ventral margin with 14 submarginal plumose setae and 1 distal broom seta; claw 0.2 dactylus length, acute, 1 seta inserting at base of claw.

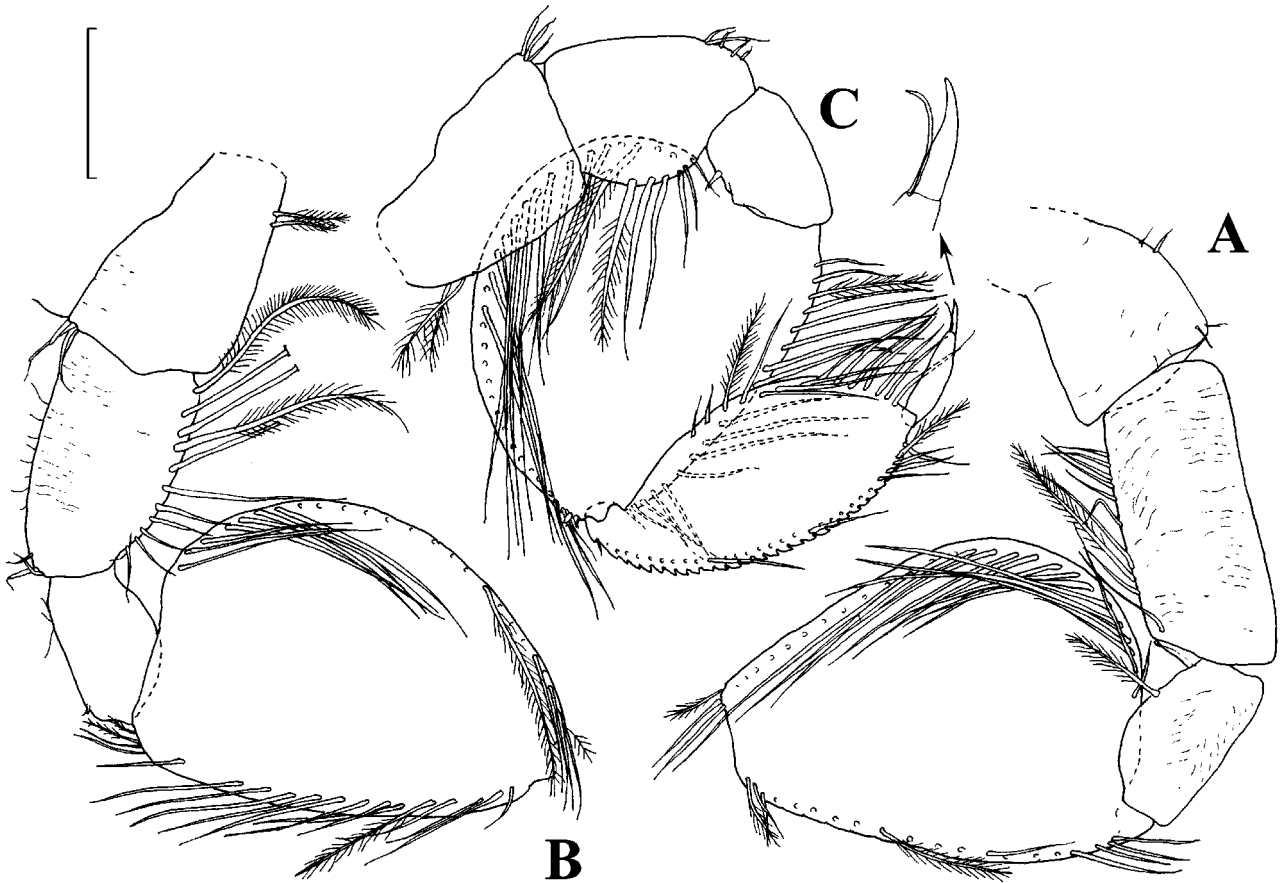


**FIGURE 4.** *Eurycope crassiramis* sp. nov., female, paratype. A, antenna 1 articles 1–2; B, antenna 2 articles 1–4; C, right mandible; D, left mandible; E, maxilla 1; F, maxilla 2; G, maxilliped. Scale bar = 0.2 mm.





**FIGURE 5.** *Eurycope crassiramis* sp. nov., mature male, paratype. A–D, pereopods 1–4. Scale bar = 0.2 mm.



**FIGURE 6.** *Eurycope crassiramis* sp. nov., mature male, paratype. A–C, pereopods 5–7. Scale bar = 0.2 mm.

*Pleopod 1* (Fig. 8A, B) sympod widest distally, length 2.5 greatest width, 0.2 length from distal tip angled downward at 45°, with broad medial notch; ventral surface with 2 rows of 9 plumose setae each in middle third and 2 rows of 14 short simple setae each in distal third; distal lobes forming posteroventrally directed tube: distolateral lobes directed posteriorly, parallel to sympod axis, length 1.2 width; distomedial lobes directed posteroventrally, almost perpendicular to sympod axis, length 0.8 length of distolateral lobes, width 0.9 width of distolateral lobes, with about 10 simple setae on distal margin.

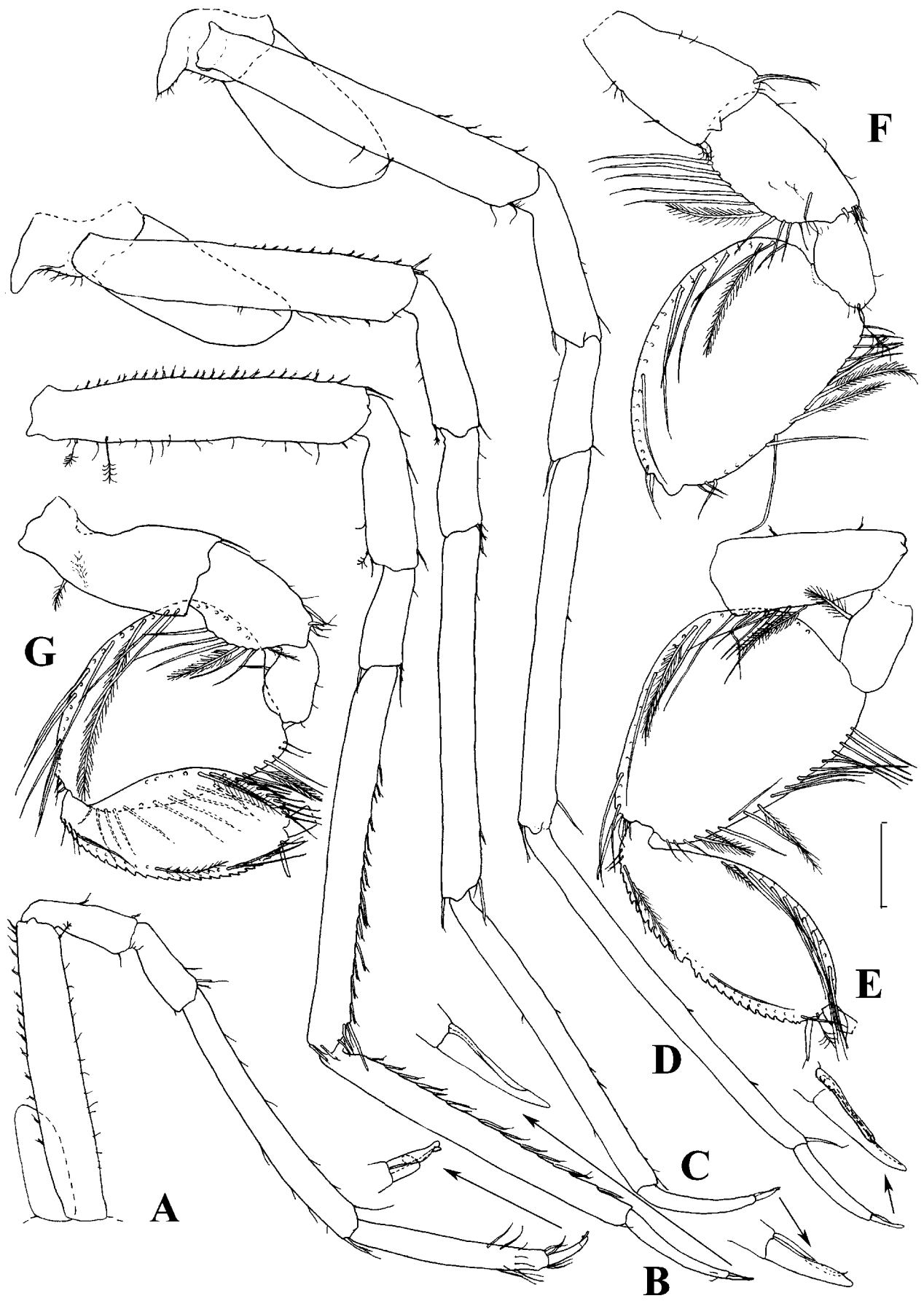
*Pleopod 2* (Fig. 8C) protopod length 1.2 width, with 11 lateral submarginal hemiplumose setae, distomedial edge slightly truncated; endopod basal article length 2.7 width and 0.3 protopod length, stylet length 5.2 width and 0.7 protopod length; exopod posterolateral angle with tuft of long fine setae.

*Pleopod 3* (Fig. 8D) endopod cupped, lateral margin convex, length subequal width, with 3 distomedial plumose setae; exopod basal article length 1.7 width and 0.8 endopod length, distal article length 4.8 width and 0.7 basal article length.

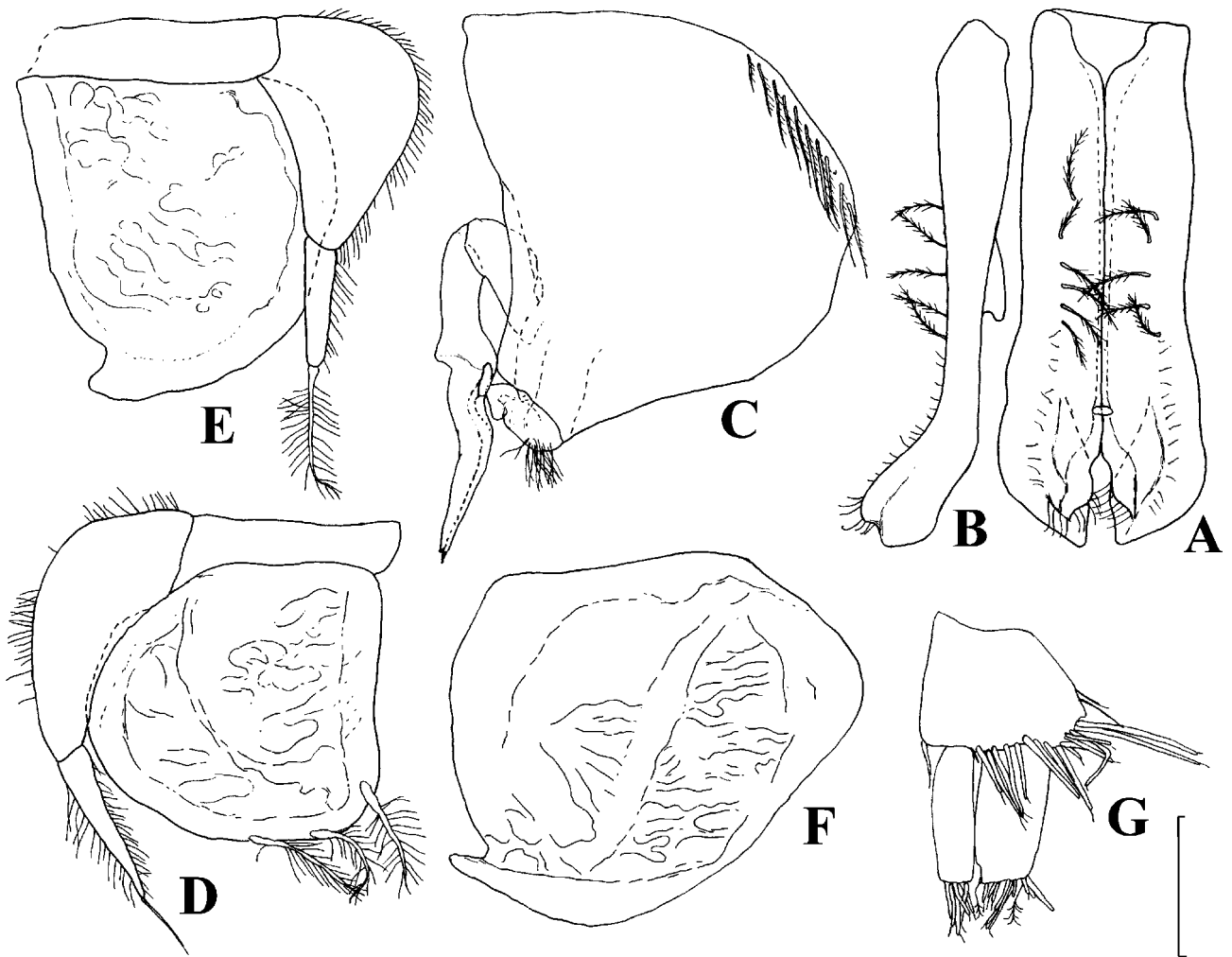
*Pleopod 4* (Fig. 8E) endopod highly cupped, lateral margin convex, medial margin indented near distal tip, length 1.1 width; exopod basal article length 1.4 width and 0.7 endopod length, distal article length 3.6 width and 0.5 basal article length.

*Pleopod 5* (Fig. 8F) endopod highly cupped, margins convex, medial margin strongly indented near distal tip, length 0.8 width.

*Uropod* (Fig. 8G) protopod length 0.8 width, distomedial angle slightly produced, truncated, distal margin with 18 unequally bifid setae, increasing in length and density toward distomedial angle; exopod length 3.4 width and 1.1 length of protopod, with 7 distal unequally bifid setae; endopod length equal exopod length, width 1.6 exopod width, with 2 broom setae and 13 unequally bifid distal setae.



**FIGURE 7.** *Eurycope crassiramis* sp. nov., female, paratype. A–G, pereopods 1–7. Scale bar = 0.2 mm.



**FIGURE 8.** *Eurycope crassiramis* sp. nov., mature male, paratype. A, B, ventral and lateral view of pleopod 1; C, pleopod 2; D–F, pleopods 3–5; G, uropod; Scale bar = 0.2 mm.

#### Female, paratype

*Body* (Fig. 2A, B) wider and higher than that of male, length 1.9 greatest width; greatest height 0.4 length. *Cephalon* (Fig. 2C) length/width ratios the same as those of premature male (holotype). *Pereon*. Ambulosome slightly longer than that of male, length 0.14 body length, natasome 0.7 body length. Pereonites 2–7 to pereonite 1 length ratios: 1.6, 1.0, 1.2, 4.5, 4.3, 8.2. Coxae 1–4 length (including anterolateral processes) 2.7, 1.9, 3.0, 2.3 pereonites 1–4 length respectively, anterolateral process of coxa 1 almost reaching lateral antennal groove.

*Antenna 1* (Fig. 4A) articles 1–2 similar to those of premature male, article 1 distomedial projection extending 0.1 of length beyond anterior tip of rostrum; remaining articles missing.

*Antenna 2* (Fig. 4B) articles 1–4 length/width ratios: 0.6, 1.1, 1.4, 0.8, articles 2–4 to article 1 length ratios: 2.2, 3.3, 1.3.

*Mandibles* (Fig. 4C, D) incisor similar to that of male, but between ventral and 2 dorsal cusps on right mandible 2 small additional cusps; spine row with 6 and 8 spines on left and right mandibles respectively; posterior margin of molar triturative surface with 3 setae. Palp article 2 length 0.7 mandibular body length, distally with fine setae; article 3 length about 0.4 article 2 length, with about 14 cleaning setae.

Remaining *mouthparts* (Fig. 4E–G) similar to those of male.

*Pereopods 1–4* (Fig. 7A–D) generally more slender than those of male, with relatively longer basis and shorter ischium and dactylus (except pereopod 1, possessing relatively longer dactylus than that of male).

Basis to dactylus length/width ratios as follows: pereopod 1: 5.6, 2.9, 2.5, 9.0, 6.9, 5.3; pereopod 2: 5.4, 3.4, 2.0, 10.3, 10.0, 9.0; pereopod 3: 5.5, 3.7, 2.5, 9.0, 11.1, 7.5; pereopod 4: 6.3, 3.7, 2.6, 10.1, 16.3, 10.5. Ischium to dactylus versus basis length ratios as follows: pereopod 1: 0.4, 0.3, 0.9, 0.6, 0.2; pereopods 2 and 3: 0.5, 0.3, 1.1, 1.0, 0.4; pereopod 4: 0.4, 0.3, 1.0, 1.1, 0.4. Basis ventral margin with small unequally bifid setae that are numerous on pereopods 1–3 and sparse on pereopod 4; pereopod 1 ischium, merus and carpus with sparse simple setae.

*Pereopods 5–7* (Fig. 2B, 7E–G) basis slender and longer relative to that of male. Pereopod 5 basis and dactylus missing; ischium to propodus length/width ratios: 2.5, 1.6, 1.4, 2.2. Pereopod 6 propodus and dactylus missing; basis to carpus length/width ratios: 1.7, 1.7, 1.7, 1.5, ischium to carpus versus basis length ratios: 1.0, 0.6, 1.6. Pereopod 7 dactylus missing; basis to propodus length/width ratios: 2.0, 1.5, 1.6, 1.3, 2.1, ischium to propodus versus basis length ratios: 0.7; 0.4, 1.3, 1.3. Pereopod 7 basis without plumose setae; pereopods 5–7 ischium and carpus with less submarginal plumose setae than those of male (except pereopod 7 ischium): ischium dorsal margin bearing from 6–7 (on pereopods 5 and 7) to 9 (on pereopod 6) plumose setae; carpus bearing from 23–24 (on pereopods 5 and 6) to 31 (on pereopod 7) submarginal plumose setae near dorsal margin and 17–18 submarginal plumose setae near ventral margin. Propodus with 1 distodorsal long stout unequally bifid seta, dorsal margin with 28 submarginal plumose setae, ventral margin with 14 submarginal plumose setae.

*Operculum* (Fig. 9A–C) in ventral view suboval, length 0.6 width, height 0.5 length; ventral surface with rounded keel, length 0.9 total length, apex pointed, at 0.1 of total length from distal tip, with seta (broken off in illustrated specimen); posterior margin flattened in lateral view, subvertical; lateral fields slightly curving ventrally, without marginal setae.

*Pleopods 3–5* (Fig. 9D–F) similar to those of male.

*Uropod* (Fig. 9G) similar to that of male, but distomedial angle of protopod almost not produced, rounded, distal margin with about 14 unequally bifid setae; exopod with 5 distal unequally bifid setae; endopod with about 9 distal unequally bifid setae.

*Etymology*: Derived from the Latin *crassus* meaning thick and *rami* meaning branches, referring to the unusually broad uropodal rami.

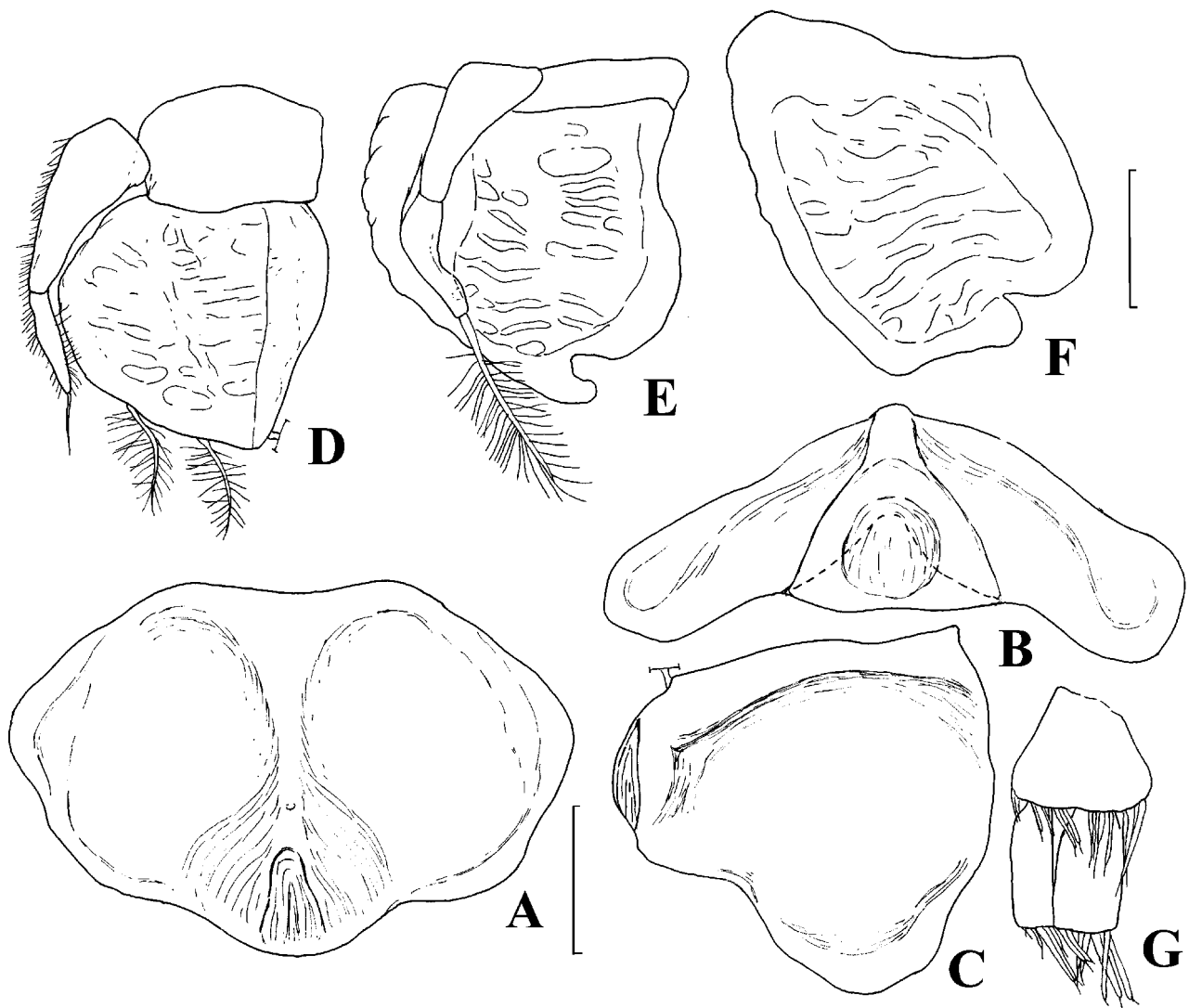
*Distribution*: Known from the type locality only.

## Remarks

The new species displays significant intraspecific variability of the rostral morphology and length of the first article of antenna 1 distomedial projection depending on sex and developmental stage. Juveniles possess a relatively broad and short rostrum and distomedial projection of the first article of antenna 1 (Fig. 2D–I). They become elongated and narrower in the subsequent stages with the extreme state in mature males. Cephalic morphology of premature males resembles that of females.

*E. crassiramis* sp. nov. mostly resembles *E. gausi* Wolff, 1956. The latter species is known by holotype only from the Indian sector of the Southern Ocean (66°02'S, 89°38'E) where it was taken at shallower depth (385 m) (Wolff 1956). Both species are rather similar in size, shape and length/width ratios of body and cephalon, including rostral characters. Uropods, the shape of male pleopod 2 and many antennal and mouthpart characters are nearly identical in these two species. *E. crassiramis* can be distinguished from *E. gausi* in the following characters: the lacinia mobilis of the left mandible has 6 denticles, the spine row is composed of 6–7 setae; the distolateral margin of the male pleopod 1 is broadly rounded and has no projecting corners.

*E. crassiramis* can be easily distinguished from the remaining species of *Eurycope* by the following: the short cephalon and ambulosome, each about 0.1 of the body length, the rostrum equal or subequal to medial cephalic length, the uropod with very broad rami and protopod not broadened medially, and the peculiar form of the male pleopod 1.



**FIGURE 9.** *Eurycope crassiramis* sp. nov., female, paratype. A–C, ventral, posterior and lateral view of operculum; D–F, pleopods 3–5; G, uropod; Scale bar = 0.2 mm.

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### References

- Birstein, J.A. (1970) Additions to the fauna of Isopods (Crustacea, Isopoda) of the Kurile-Kamchatka Trench. Part I. *Trudy Instituta Okeanologii Akademiyi Nauk SSSR*, 5, 249–340. In Russian.
- Brandt, A., Brkeland, W., Brix, S. & Malyutina, M. (2004) Diversity of Southern Ocean deep-sea Isopoda (Crustacea, Malacostraca) – a comparison with shelf data. *Deep-Sea Research Part II*, 1753–1768.
- Brandt A., Ellingsen, K.E., Brix, S., Brkeland, W. & Malyutina, M. (2005) Southern Ocean deep-sea isopod species richness (Crustacea, Malacostraca): influences of depth, latitude and longitude. *Polar Biology*, 28, 284–289.

- Brenke, N (2005) An epibenthic sledge for operations on marine soft bottom and bedrock. *Journal of the Marine Technology Society*, 39 (2), 13–24.
- Brenke, N., Brix, S. & Knuschke, T. (2005) Results of the DIVA-1 expedition of RV Meteor (Cruise M48/1). A new deep-sea species from the Angola Basin: *Prochelator angolensis* sp. nov. (Asellota: Desmosomatidae). *Organisms, Diversity & Evolution*, 5, 179–188.
- Hansen, H.J. (1916) *Crustacea Malacostraca* 3. Danish Ingolf Expedition 3 (5), 1–262.
- Kussakin, O.G. (2003) *Marine and brackish-water Isopoda of the cold and temperate waters of the Northern Hemisphere. III. Suborder Asellota. Part 3. Family Munnopsidae*. Opredeliteli po faune, izdavaemie Zoologicheskim Institutom Rossiyskoy Akademii Nauk. Nauka, pp. 1–381. In Russian.
- Lilljeborg, W. (1864) *Bidrag till Kannedomen om de inom Sverige och Norrige frekommende Crustaceen af Isopodernas underordning och Tanaidernas familj*. Upsala Univ., 1, 1–32.
- Malyutina, M. & Brandt A. (2006) A reevaluation of the Eurycopinae (Crustacea, Isopoda, Munnopsidae) with a description of *Dubinetes* gen. nov. from the southern Atlantic deep sea. *Zootaxa*, 1272, 1–44.
- Sars, G. O. (1864) Om en anomal Gruppe af Isopoder. *Forhandlinger i Videnskaps-selskabet i Christiania 1863*, 205–221.
- Svavarsson, J. (1987) Eurycopidae (Isopoda, Asellota) from bathyal and abyssal depths in the Norwegian, Greenland, and North Polar Seas. *Sarsia*, 72(3–4), 183–196.
- Richardson, H. (1905) *A Monograph on the isopods of North America*. Bulletin of the United States National Museum, 54, P. I–LIII, 1–727.
- Wilson, G.D.F. (1982) Systematics of a species complex in the deep-sea genus *Eurycope*, with a revision of six previously described species (Crustacea: Isopoda: Eurycopidae). *Bulletin of the Scripps Institution of Oceanography*, 25, 1–64.
- Wilson, G.D.F. (1983) An unusual species complex in the genus *Eurycope* (Crustacea, Isopoda, Asellota) from the deep North Atlantic ocean. *Proceedings of the Biological Society of Washington*, 96(3), 452–467.
- Wilson, G.D.F. (1989) A systematic revision of the deep-sea subfamily Lipomerinae of the Isopod Crustacean family Munnopsidae. *Bulletin of the Scripps Institution of Oceanography*, 27, 1–138.
- Wilson, G.D.F. & Hessler, R.R. (1980) Taxonomic characters in the morphology of the genus *Eurycope* (Crustacea, Isopoda) with a redescription of *E. cornuta* Sars, 1864. *Cahiers de Biologie Marine*, 21, 241–263.
- Wilson, G.D.F. & Hessler, R.R. (1981) A revision of the genus *Eurycope* (Isopoda, Asellota) with descriptions of three new genera. *Journal of Crustacean Biology*, 1(3), 401–423.
- Wolff, T. (1956) Isopoda from depths exceeding 6000 meters. *Galathea Report*, 2, 85–157.
- Wolff, T. (1962) The systematics and biology of bathyal and abyssal Isopoda Asellota. *Galathea Report*, 6, 1–320.