BULLETIN DE L'INSTITUT ROYAL DES SCIENCES NATURELLES DE BELGIQUE BIOLOGIE, 79: 243-304, 2009
BULLETIN VAN HET KONINKLIJK BELGISCH INSTITUUT VOOR NATUURWETENSCHAPPEN BIOLOGIE, 79: 243-304, 2009

New records of *Liljeborgia* from Antarctic and sub-Antarctic seas, with the description of two new species (Crustacea: Amphipoda: Liljeborgiidae)

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Abstract

Two new *Liljeborgia* species are described: *L. anepsia* n. sp. from the Falkland Islands and *L. bathysciarum* n. sp. from the continental slope near Elephant Island. *L. chevreuxi* SCHELLENBERG, 1931, *L. nesiotica* D'UDEKEM D'ACOZ, 2008 and *L. polydeuces* D'UDEKEM D'ACOZ, 2008, previously only recorded from the West Antarctic area, are shown to be circum-Antarctic species. *L. cryptothrix* D'UDEKEM D'ACOZ, 2008 and *L. kerguelensis* BELLAN-SANTINI & LEDOYER, 1974, which were only known from Ile Kerguelen, are now recorded from Macquarie Island. The New Zealand species *L. barhami* HURLEY, 1954 is recorded for the first time from Stewart Island (most southernly record) and the species is fully re-described. The variations of *L. longicornis* (SCHELLENBERG, 1931) are discussed.

Key-words: *Liljeborgia*, Crustacea, Amphipoda, Antarctica, sub-Antarctic, Magellanic region, deep sea, continental shelf, Systematics.

Résumé

Deux nouvelles espèces de *Liljeborgia* sont décrites: *L. anepsia* n. sp. des Falkland Islands et *L. bathysciarum* n. sp. de la pente continentale au large d'Elephant Island. *L. chevreuxi* SCHELLENBERG, 1931, *L. nesiotica* D'UDEKEM D'ACOZ, 2008 et *L. polydeuces* D'UDEKEM D'ACOZ, 2008, qui n'étaient connues que de la région ouest-antarctique s'avèrent être des espèces circum-antarctiques. *L. cryptothrix* D'UDEKEM D'ACOZ, 2008 et *L. kerguelensis* BELLAN-SANTINI & LEDOYER, 1974, qui n'étaient connues que des Iles Kerguelen, sont maintenant signalées de Macquarie Island. L'espèce néozélandaise *L. barhami* HURLEY, 1954 est signalée pour la première fois de Stewart Island (signalement le plus méridional) et l'espèce est redécrite en détails. Les variations de *L. longicornis* (SCHELLENBERG, 1931) sont discutées.

Mots-Clés: *Liljeborgia*, Crustacea, Amphipoda, Antarctique, sub-Antarctique, région magellanique, abysses, plateau continental, Systématique.

Introduction

In a recent monograph, D'UDEKEM D'ACOZ (2008) revised the genus *Liljeborgia* (Crustacea: Amphipoda: Liljeborgiidae) in the Southern Ocean south of 44°S, describing 11 new species and re-describing 12 previously named species. Due to various constraints, it was not possible to study all available samples in that monograph. Part of the additional material was studied when that work was in press or already published, and some already studied specimens were examined a second time, resulting in new data on the geographical distribution of several species and the discovery of two additional new species. These data are published in the present contribution.

Material and methods

The methodology adopted in the present paper follows D'UDEKEM D'ACOZ (2008) and will not be here repeated. In many cases, the label of the specimens had a station number without full coordinates. These coordinates have been extracted from various published and unpublished sources. They were listed by D'UDEKEM D'ACOZ (2008), except for the coordinates of the stations of the cruise **ANT-IX/3** of the R/V Polarstern, which are given by BATHMANN et al. (1992), and those of the cruise **ANT-XXIV/2**, which are given by BRANDT et al. (2008). Geographical names are given in English for places situated south of 60°S, in the language of the country for places situated north of 60°S. The material collected by Martin RAUSCHERT has been provisionally registered at the Royal Belgian Institute of Natural Sciences, I.G. 31.273, but the majority of the specimens will be transferred to the Zoologisches Museum, Hamburg Universität, Hamburg in the future, when the study of the rest of the Antarctic *Liljeborgia* material

will be completed.

Abbreviations and acronyms

APPENDAGES OF ANIMALS: **A1-A2**: antennae 1 and 2; **Md**: mandible; **Mx1-Mx2**: maxillae 1 and 2; **Mxp**: maxilliped; **Gn1-Gn2**: gnathopods 1 and 2; **P3-P7**: pereiopods 3 to 7; **Ep1-Ep3**: epimeral plates 1 to 3; **U1-U3**: uropods 1 to 3.

GEARS: **AGT**: Agassiz trawl; **EBS**: epibenthic sledge; **GSN**: ground trawl; **RD**: Rauschert dredge.

SCIENTIFIC INSTITUTIONS: **MCSN**: Museo Civico di Storia Naturale, Verona, Italy; **NIWA**: National Institute of Water and Atmospheric Research, New Zealand; **RBINS**: Royal Belgian Institute of Natural Sciences, Brussels, Belgium; **USNM**: US National Museum of Natural History, Smithsonian Institution, Washington DC, USA.

SHIP: **TAN**: R/V Tangaroa.

Systematics

Family Liljeborgiidae STEBBING, 1899

Genus *Liljeborgia* BATE, 1862

Liljeborgia BATE, 1862: 118 (type species: *Gammarus pallidus* BATE, 1857; gender: feminine); D'UDEKEM D'ACOZ, 2008: 48
Lilljeborgia GOËS, 1866: 529 (erroneous spelling for *Liljeborgia* Bate, 1862)
Not *Liljeborgia* CLAUS, 1866: 22 (Copepoda, type species: *Liljeborgia linearis* CLAUS, 1866: 22)

***Liljeborgia anepsia* n. sp.**
(Figs 1-6)

MATERIAL: **R/V William Scoresby, sta. 97**, East Falkland Island, Port Stanley [51°42'S 057°51'W according to http://www.geonames.org/], 15-18 m, 20.iii.1927: 1 ♂ holotype (found together with 1 *L. longicornis* and 3 *L. octodentata*), mounted on 7 slides in Euparal, coll. W. SCHMITT, Acc. 097902, USNM 1100661

ETYMOLOGY: *L. anepsia* n. sp. belongs to the *consanguinea* species group, comprising those species with 2 spines of different sizes close to each other on the dorsolateral border of the peduncle of uropod 1. As for other species of this group, I have coined a name related to the familal relationship. Since the present species is rather distinctive, an allusion to a distant relationship has been chosen for its name. *Anepsia, -ae* is a latinization of the Greek noun ἀνεψιά, -ή, which means cousin (feminine) or niece. The name is a noun in apposition.

DESCRIPTION (MALE):
Rostrum blunt-tipped, narrow and short.

Eye present, small, vaguely elliptic, ommatidia vestigial and small; pigmentation reduced in alcohol.

A1: major flagellum with 13 articles; accessory flagellum with 7 articles.

A2: article 4 of peduncle unusually stout and short, with groups of large dorsomedial and ventrolateral spines of normal stoutness; article 5 with well-developed stout isolated dorsomedial spines and strong ventrolateral spines (most of them forming groups); flagellum with 11 articles.

Epistome almost straight in lateral view.

Md: right lacinia mobilis with anterior margin minutely denticulate and with one especially large lateral triangular tooth; spines of incisor process with tiny spinules, not expanded and apically acute; article one of palp nearly as long as article two (ratio length article one / article two = 0.89); article one 6.33 x as long as wide; article two with 2 subdistal setae, 7.78 x as long as wide; article three 7.00 x as long as wide, 0.68 x as long as article two.

Mx1: second article of palp with 1 seta on upper margin, 6 fairly stout spines on ventral and apical margins, and 5 well-developed facial setae; outer plate with 9 smooth spines; inner plate with 4 marginal setae.

Mx2: outer plate with 3 well-developed setae on upper margin; setae of Mx2 not very numerous (most facial and subfacial setae very stout).

Mxp: article one of palp with 1 medium-sized slender distal outer seta, article two without non-distal setae on outer margin; article three with 3 isolated setae (of normal stoutness) on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins distinctly curved and 0.98 x as long as article three; outer plate with 6 well-developed slender and well-spaced spines on medial border, and 5 or 6 slender medio-ventral setae at the same level as spines or more proximally; inner plate with 2 stout and well-developed anterior spines and 7 to 8 stout setae.

Gn1: coxa broadly triangular, with concave posterior border, with barely distinct anterior and posterior notch; merus with sparse setae and well-developed acute distal tooth; carpus process unusually short, with setae forming 5 indistinct groups, tip of carpus reaching 0.20 of propodus, far from reaching propodal group of

strong spines; propodus 2.10 x as long as wide; group of spines on the proximal 0.41 of propodus (most distal spine used as point of reference); these spines are rather small; palm border forming a regular curve and without teeth; palm with hooked spines of outer row well spaced (9 hooked outer spines + 1 long proximal outer seta); dactylus with 2 teeth; dactylar teeth restricted to proximal area.

Gn2: coxa bluntly triangular, broad, with lateral borders strongly diverging downwards, with small posterior and anterior notch (the two notches are close to each other); merus with 3 groups of setae, and with acute distal tooth; carpus process with 8 groups of setae; tip of carpus reaching 0.17 of propodus, reaching proximal propodal group of strong spines; propodus 1.98 x as long as wide; group of spines on the proximal 0.33 of propodus (most distal spine used as point of reference); these spines are small and form actually 2 groups; palm border weakly convex, distinctly denticulate, with large distal triangular tooth; palm with many long outer setae; dactylus long, 0.80 x as long as propodus, with 9 teeth and toothed to 0.7 of its length; propodus of Gn2 considerably longer than propodus of Gn1, ratio length Gn2 / length Gn1: 1.81; surface of propodus of Gn2 / surface of propodus of Gn1: 3.42.

P3: coxa triangulo-elliptic, broad, with well-developed anterior and posterior notches (notches very close to each other); leg very stout; merus 1.40 x as long as carpus and 0.94 x as long as propodus; dactylus of normal length, stout, with anterior and posterior borders distinctly curved, 0.87 x as long as carpus and 0.58 x as long as propodus; posterior border of merus with 4 groups of 1 or 2 well-developed long thin setae; anterior border of merus with 3 groups of 1 or 2 well-developed thin setae; carpus with 2 pairs of slender setae (each group with 1 long seta) on posterior border, with 1 isolated anterodistal setule; propodus with 2 groups of 2 slender setae (of which one is well developed and the other short), with small distal spine (length of longest propodal setae about 1.00 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 2 well-developed slender setae and 2 isolated setules in more proximal position.

P4: coxa broad (1.18 x as long as wide), with anterior and posterior border apparently converging downwards (the coxa is somewhat distorted in the specimen examined), with ventral border convex, with 2 medium-sized teeth on posterior border and small anterior notch (in anteroventral position); leg very stout; merus 1.37 x as long as carpus and 1.03 x as long as propodus; dactylus of normal length, stout, with anterior and posterior borders distinctly curved, 0.77 x as long as carpus and 0.58 x as long as propodus; posterior border of merus with 4 groups of 1 or 2 thin setae (of which one is long); anterior border of merus with 2 groups of 1 or 2 well-developed thin setae; carpus with 2 pairs of slender setae (each group with 1 long seta) on posterior border, without anterior setae; propodus with 3 groups of 1 or 2 slender setae (of which one is well developed), with small distal spine (length of longest propodal setae about 0.97 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 2 slender setae (of which one is long) and 2 isolated setules in more proximal position.

P5: leg stout; basis broad (1.51 x as long as wide), anteriorly and posteriorly strongly and regularly convex; anterior border with only 4 small conical spines + distal angle with a long spine, posterior border with 9 extremely faint obtuse crenulations, distal border rounded, produced into a regularly curved lobe; ischium with long spine on anterodistal corner; merus with 4 anterior groups of 2 well-developed spines (proximal spines somewhat smaller than distal spines), with 2 isolated small posterior spines + distal group of 3 medium-sized posterodistal spines; carpus with 2 anterior groups of medium-sized spines (distal intermixed with long and strong seta) and no posterior spines (except apical group); carpus 0.62 x as long as merus; carpus + propodus 1.19 x as long as merus; propodus with 4 isolated stout spines on anterior border and no spines or setae on posterior border except propodal apical tuft (the latter consisting of 5 long stout setae not associated to a spine); dactylus barely curved and very stout, 0.22 x as long as propodus.

P6: leg stout; basis broad (1.65 x as long as wide), anteriorly strongly and regularly convex, posteriorly slightly convex; anterior border with only 5 small conical spines + distal angle with a long spine and a slender spinule, posterior border with 11 faint obtuse crenulations, distal border rounded, produced into an obtuse vaguely triangular lobe; ischium with large spine on anterodistal corner; merus with 4 anterior groups of 1 or 3 slender and well-developed spines (proximal spine shorter), with 2 isolated small posterior spines + distal group of 3 medium-sized posterodistal spines; carpus with 1 anteromedial and 1 distal group of well-developed spines; carpus 0.72 x as long as merus; propodus with 3 anterior groups of 1 or 2 well-developed stout spines (not associated with setae), and some long and strong posterior setae; apical tuft of setae not seen on examined specimen (but possibly rubbed off); propodus with apical spinule; dactylus slightly curved, stout, with tip entire, 0.28 x as long as propodus.

P7: leg stout; basis broad (1.50 x as long as wide), anteriorly and posteriorly strongly and regularly convex (basis symmetrically elliptic), anterior border with only 4 small conical spines + distal angle with a long spine, posterior border with 10 weak obtuse crenulations, distal border rounded, produced into a regularly curved lobe; ischium with large spine on anterodistal corner; merus and carpus with medium-sized anterior and posterior spines; merus 3.20 x as long as wide and 0.83 x as long as basis; carpus 0.97 x as long as merus; propodus of P7 1.55 x as long as propodus of P6; propodus with 4 anterior groups of fairly slender well-developed spines, and 4 well-developed posterior spines, of which the distal one is associated with 2 long setae; dactylus straight, long and very slender, entire, > 0.53 x as long as propodus (dactylus broken at tip, but missing part presumably small).

Pleonite 1: posterodorsal area toothless; Ep1 with small posteroventral tooth, with posterior border strongly convex; anteriorly with 5 very thin setae.

Pleonite 2: posterodorsal area toothless; Ep2 with small blunt posteroventral tooth, with posterior border weakly convex, with 2 anterior very thin setae.

Pleonite 3: posterodorsal area without tooth; Ep3 with short and extremely blunt posteroventral tooth followed upwards by a notch, with posterior border weakly convex.

Urosomite 1 posterodorsally toothless; ventrolateral border without spines; peduncle with 3 dorsolateral spines: 1 long immediately followed by 1 medium-sized on the middle, and a long and strong distal one, with 5 to 6 medium-sized rather stout dorsomedial spines (4 to 5 regularly spaced on the proximal 0.8 followed by a long empty space and then a distal spine); outer ramus with slender medium-sized outer spine and no medial spines; inner ramus without spines on outer border and with 0 to 1 long slender spine on medial border.

Urosomite 2 with dorsal border posteriorly terminated in a rather small sharp tooth pointing backwards; peduncle of U2 with 2 slender dorsolateral spines on distal 0.3, with 1 dorsomedial spine (in apical position); outer ramus with 2 to 3 long slender outer spines and no medial spines; inner ramus without spines on outer border and with 1 long slender spine on medial border.

Urosomite 3 without posterolateral tooth on each side, with a pair of short posterodorsal spines; U3 distinctly shorter than U1 and a bit shorter than U2; outer ramus and inner ramus of U3 subequal, outer ramus with 0-1 medium-sized slender spine on outer border; inner ramus 1.20 x as long as peduncle, with 2 medium-sized spines on outer border and 1 or 2 long slender spines on medial border.

Telson: cleft to 0.61 of its length; medial tooth of each lobe distinctly overreaching of outer tooth (1.41 x as long as outer tooth); inter-teeth spine overreaching outer tooth by 0.79 of its length, 0.18 x as long as telson; medial apical teeth of telson with 2 very short setae; outer apical teeth of telson with 0 or 1 very short seta.

LENGTH: 8 mm.

DISTRIBUTION: Magellanic species: East Falkland Island, Port Stanley, 51°42'S 057°51'W, 15-18 m.

REMARKS: *Liljeborgia anepsia* n. sp. exhibits similarities with the sympatric species *L. quinquedentata* SCHELLENBERG, 1931 (see D'UDEKEM D'ACOZ, 2008 for illustrations), but the new species has considerably stouter appendages, especially the antennae and pereiopods 3 to 4. The stocky and very spinose peduncle of its second antennae is somewhat similar to the New Zealand species *L. barhami* HURLEY, 1954, which is redescribed in the present paper. However in many respects, *L. anepsia* n. sp. is a highly characteristic species. Its absence of posterodorsal spines on all pleonites and on urosomite 1 is remarkable. The shape of coxa 2, the very weak crenulations of the basis of the last three pairs of pereiopods, the extreme bluntness of the posteroventral tooth of the third pleonite, the absence of ventrolateral spines on the first urosomite, the relative length of the teeth of the tip of the telson are also unusual.

Liljeborgia barhami HURLEY, 1954
(Figs 7-12)

Liljeborgia barhami HURLEY, 1954: 798, figs. 184-201

MATERIAL: **RCS Viti, cruise Fox, sta. B232**, off extreme south New Zealand, Stewart Island, 46°54.80'S 168°09.50'E, 9 m, 23.v.1960: 2 mature specimens (1 ♂ about 9 mm and 1 ♀ about 8 mm), NIWA 7881.

DESCRIPTION: Rostrum blunt-tipped, narrow, of normal length.

Eye present, medium-sized, slightly reniform, ommatidia present, large, well distinct; pigmentation reduced in alcohol.

A1: major flagellum with 15 articles; accessory flagellum with 7 articles.

A2: article 4 of peduncle unusually stout and short, with groups of large stout dorsomedial and ventrolateral

spines; article 5 with well-developed stout dorsomedial spines (often forming pairs or even triplets) and strong ventrolateral spines (often forming pairs or even triplets); flagellum with 12 articles.

Epistome rounded, rather protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 well-developed rounded teeth; right lacinia mobilis distinctly smaller than left one, with anterior margin almost smooth (very minutely denticulate) and with one large lateral triangular tooth; spines of incisor process not especially spinulose, circular in cross section; article one of palp shorter than article two (ratio length article one / article two = 0.76); article one 4.0 x as long as wide; article two with 4 setae spread on distal third, 6.17 x as long as wide; article three 5.80 x as long as wide, 0.77 x as long as article two.

Mx1: second article of palp with 2 setae on upper margin, 7 spines of normal stoutness on ventral and apical margin, and 5 well-developed facial setae; outer plate with 9 spines of which some have 1 or 2 denticles; inner plate with 1 distal seta.

Mx2: setae of normal stoutness and number; outer plate with 3 well-developed setae on upper margin; inner plate with facial setae forming an almost regular row.

Mxp: article one of palp with 2 medium-sized slender distal outer setae, article two without non-distal setae on outer margin; article three with 2 groups of rather stout setae (first group with 1-2 setae; second group with 3 setae), article four (dactylus) stout, with anterior margin strongly curved and posterior margin moderately curved, and 0.75 x as long as article three; outer plate with 6 normally developed and well-spaced spines on medial border, and about 6 medio-ventral setae at the same level as spines; inner plate with 2 rather stout and well-developed anterior spines and 4 to 6 normally developed setae.

Gn1: coxa triangular, with concave posterior border, with small posterior notch, with or without a minute anterior notch, ventromedial surface with numerous short and very slender setae; merus with 2-3 groups of setae, with or without small distal tooth; carpus process not very long, with 8 (♂) or 5 (♀) groups of setae, tip of carpus reaching 0.27 (♂) or 0.34 (♀) of propodus, not reaching propodal group of strong spines; propodus 2.07 (♂) or 2.00 (♀) x as long as wide; group of spines on the proximal 0.37 (♂) or 0.38 (♀) of propodus (most distal spine used as point of reference); these spines are small; palm border forming a regular curve and without teeth; palm with hooked spines of outer row well spaced (31 (♀) or 37 (♂) hooked outer spines + 1 long proximal outer seta (both sexes)); dactylus with 2 teeth, in very proximal position.

Gn2: coxa broadly quadrate, very broad in ♂, broad in ♀, with small posterior and anterior notch (the two notches are widely separate); merus with loosely distributed setae, and with distal tooth in ♂ only; carpus process with 7 to 8 groups of setae; tip of carpus reaching 0.21 (♂) or 0.22 (♀) of propodus, not reaching propodal group of strong spines (separation especially large in ♂); chela with significant sexual dimorphism; propodus 2.19 (adult ♂) or 2.06 (♀) x as long as wide; group of spines on the proximal 0.46 (♂) or 0.43 (♀) of propodus (most distal spine used as point of reference); these spines are small; in ♂ palm border slightly convex, crenulated, with distal broad triangular blunt tooth; palm with 10 hooked spines and 22 long outer setae in adult ♂; in ♀ palm border distinctly convex and smooth, with hooked spines of outer row rather well spaced (15 hooked outer spines + 10 outer setae); dactylus of normal length, 0.69 (♂) or 0.74 (♀) x as long as propodus, with 5 (♂ and ♀) teeth and toothed to 0.4 to 0.5 of its length. In both sexes propodus of Gn2 longer than propodus of Gn1, ratio length Gn2 / length Gn1: 1.66 (♂) or 1.28 (♀); surface of propodus of Gn2 / surface of propodus of Gn1: 2.65 (♂) or 1.61 (♀).

P3: coxa elliptic, broad in ♂, narrower in ♀, with normally developed anterior and posterior tooth or notch (tooth and notch very close to each other); merus 1.35 x as long as carpus and 0.92 x as long as propodus; dactylus rather long, rather slender, with its anterior and posterior borders distinctly curved, 0.89 x as long as carpus and 0.61 x as long as propodus; anterior border of merus with 9 to 10 very long setae, which are isolated or sometimes associated with a setule; posterior border of merus with 6 isolated very long thin setae; carpus with 3 groups of 1-2 slender setae (each group with 1 long seta) on posterior border, with 2 isolated setules + 1 fairly long distal seta on anterior border; propodus with 3 groups of 2 slender setae (1 well-developed and 1 short), with pair of small distal spines (length of longest propodal setae about 1.08 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 2 setae (1 long seta and 1 setule) and 3 isolated setules in more proximal position.

P4: coxa broad (1.16 x as long as wide), with anterior and posterior border diverging downwards, with ventral border weakly convex, with 4 small teeth on posterior border and small anteroventral tooth; merus 1.42 x as long as carpus and 0.94 x as long as propodus; dactylus rather long, rather slender, with anterior and posterior borders distinctly curved, 0.93 x as long as carpus and 0.61 x as long as propodus; anterior border of merus

with 9 very long setae, which are isolated or sometimes associated with a setule; posterior border of merus with 8 well-developed isolated long thin setae; carpus with 4 groups of 2 slender setae (each group with 1 long and 1 short seta) on posterior border, with 1 isolated distal short seta on anterior border; propodus with 3 groups of 1-2 slender setae (one well-developed, often associated with a short one), small distal spine (length of longest propodal setae about 1.00 x as long as width of propodus) on posterior border; anterior border of propodus with 5 isolated setules.

P5: basis broad (1.57 x as long as wide), anteriorly strongly and regularly convex, posteriorly straight; anterior border with small conical spines (distal angle with a long spine), posterior border with 17 deeply incised and non-erect teeth, distal border rounded, produced into a regularly curved lobe; ischium with large spine on anterodistal corner; merus with 8 anterior groups of 1 to 3 mid-sized spines, with 4 posterior isolated and fairly small spines (incl. apical spine); carpus with 3 anterior groups of well-developed spines (not intermixed with setae) and no posterior spines (except apical group); carpus 0.66 x as long as merus; carpus + propodus 1.28 x as long as merus; propodus with 3 small isolated spines on anterior border and 2 isolated long setae on posteromedial border, with propodal apical tuft of 5 long setae; dactylus slightly curved and slender, 0.36 x as long as propodus.

P6: basis fairly broad (1.63 x as long as wide), anteriorly strongly and regularly convex, posteriorly nearly straight; anterior border with small conical spines (distal angle with a long spine), posterior border with 17 deeply incised and non-erect teeth, distal border rounded, produced into a regularly curved lobe; merus with 6 anterior groups of 1 or 2 well-developed spines, with 5 posterior groups of 1 or 2 fairly small spines (incl. apical group); carpus with 3 groups of well-developed spines on posterior border, which are not associated with setae; carpus 0.52 x as long as merus; propodus with 4 anterior groups of 1 or 2 long medium-sized spines (not associated with setae), and some long and strong posterior setae; apical tuft of setae well developed and associated with 1 spinule; dactylus weakly curved, slender, with tip entire, 0.38 x as long as propodus.

P7: basis broad (1.37 to 1.44 x as long as wide), anteriorly and posteriorly strongly and regularly convex, anterior border with small conical spines (distal angle with 1 short and 1 long spine), posterior border with 21 to 23 deeply incised teeth, distal border rounded, produced into a regularly curved lobe; ischium with 1 long spine on anterodistal corner; merus and carpus with well-developed anterior and posterior spines; merus 3.40 to 3.64 x as long as wide and 0.74 x as long as basis; carpus 1.05 x as long as merus; propodus of P7 1.52 x as long as propodus of P6; propodus with 6 anterior groups of 1 or 2 slender medium-sized spines, and 5 groups of 1-3 medium-sized to long posterior spines; dactylus straight, long and very slender, entire, > 0.73 x as long as propodus (small part of dactylus missing in illustrated specimen).

Pleonite 1: posterodorsal area toothless; Ep1 with normally developed posteroventral tooth, with posterior border distinctly convex; anteriorly with 5 long slender setae.

Pleonite 2: posterodorsal area with 1 small tooth; Ep2 with rather well-developed posteroventral tooth, with posterior border distinctly convex, with 2 long slender setae.

Pleonite 3: posterodorsal area without tooth; Ep3 with strong posteroventral tooth followed upwards by a deep notch of which the upper corner is sharply angular, with posterior border barely convex.

Urosomite 1 posteriorly terminated in a small and sharp tooth pointing backwards; ventrolateral border with 2 spines; peduncle of U1 with 4 dorsolateral spines: 1 long immediately followed by 1 medium-sized on the middle, 1 small one on distal 0.8 and 1 long and strong distal one, with 4 dorsomedial spines; outer ramus with 5 well-developed outer spines and no medial spines; inner ramus with 2 rather small spines on outer border and with 4 long slender spines on medial border.

Urosomite 2 with dorsal border posteriorly terminated in a well-developed and sharp tooth pointing backwards; peduncle of U2 with 2 well-developed dorsolateral spines on distal 0.2, with 1 dorsomedial distal spine; outer ramus with 4 large and rather slender outer spines and no medial spines; inner ramus without spines on outer border and with 3 long slender spines on medial border.

Urosomite 3 without posterolateral tooth on each side (the two specimens available for study have been checked), with a pair of well-developed posterodorsal spines; U3 shorter than U1 and equal to U2; outer ramus and inner ramus of U3 subequal, outer ramus without spines; inner ramus 1.36 x as long as peduncle, with 2 to 3 well-developed spines on outer border and 4 well-developed slender spines on medial border.

Telson: cleft to 0.62 of its length; medial and outer tooth of each lobe subequal; inter-teeth spine normally overreaching outer tooth by 0.53 of its length, 0.22 x as long as telson; outer apical teeth of telson with 3 short setae.

LENGTH: 9 mm.

TYPES: "Torrent Bay, No. 5, C. BARHAM MORRIS, XII.20, CHILTON's collection. This is in the Nelson region between Golden and Tasman Bays" (HURLEY, 1954). The coordinates of Torrent Bay are 40°57'S 173°03'E. HURLEY (1954) states that he borrowed CHILTON's material from the Canterbury University College, New Zealand.

DISTRIBUTION: New Zealand: Whangarei Harbour, 35°45'S 174°21'E (INGLIS *et al.*, 2006), Hawke Bay, 39°35'S 177°00'E, less than 16 m depth (KNOX & FENWICK, 1981), Torrent Bay, 40°57'S 173°03'E, with no depth indication (HURLEY, 1954) and Stewart Island, 46°54.80'S 168°09.50'E, 9 m depth (present material).

REMARKS: While the original description of *L. barhami* was sufficient to recognize the species, many details were omitted. Therefore the species is here re-described and illustrated in detail. *L. barhami* seems close to the Magellanic species *L. quinquedentata* SCHELLENBERG, 1931 (see D'UDEKEM D'ACOZ, 2008) and *L. anepsia* n. sp. (see present paper). The most distinctive feature of *L. barhami* is the ornamentation of the anterior border of the merus of pereiopods 3 and 4, which consists of about 10 very long setae. Other known *Liljeborgia* species from cold waters of the Southern hemisphere have at most a few short or fairly short setae in the same position.

L. barhami is a typical representative of the New Zealand or Antipodean fauna, which has no *Liljeborgia* species in common with the rest of the Southern Ocean.

Liljeborgia bathysciarum n. sp.
(Figs 13-18)

Liljeborgia georgiana; D'UDEKEM D'ACOZ, 2008: 69-75 (in part), not figs. 45-34 (= *L. georgiana*)

MATERIAL: **ANT-XXII/3, ANDEEP III, sta. 133-2**, Elephant Island, 62°46.49'S 053°03.50'W to 62°46.38'S 053°03.98'W, 1579-1584 m, EBS-Epinet, 16.iii.2005: 6 specimens (5 paratypes in alcohol + holotype ♀, which has been dissected and partly mounted on 17 slides; one P5 of a paratype has also been mounted), leg. A. BRANDT, ZMH-41954; **ANT-XXII/3, ANDEEP III, sta. 133-2**, Elephant Island, 62°46.49'S 053°03.50'W to 62°46.38'S 053°03.98'W, 1579-1584 m, EBS-Supranet, 16.iii.2005: 1 paratype, leg. A. BRANDT, ZMH-41954.

ETYMOLOGY: The name *bathyscia, -ae* has been created in combining *bathy-* (Latin prefix derived from the Greek adjective βαθυς meaning deep) with the Greek noun σκιά, -ή latinized in *scia, -ae* and which means shadow. It is used as specific epithet in the form of the plural genitive, *bathysciarum*, which literally means 'from the shadows of the depths', as an allusion to the twilight or bathyal zone, which is the habitat of the species.

DESCRIPTION (FEMALE): Rostrum triangular with acute tip, of normal length.

Eye present, fairly small, elliptic, ommatidia present but not very distinct; colourless in alcohol.

A1: major flagellum with 24 articles in ♀; accessory flagellum with 15 articles in ♀.

A2: article 4 of peduncle with medium-sized and rather stout ventrolateral and dorsomedial spines; article 5 without dorsomedial spines, with only 1 tiny ventrolateral spine (in apical position); flagellum with 20 articles in ♀.

Epistome rounded, slightly protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 rounded teeth and trace of a sixth tooth; right lacinia mobilis a bit smaller than left one, with anterior margin minutely crenulated and with one medium-sized lateral triangular tooth; ultimate spine of incisor process of normal stoutness; article one of palp slightly shorter than article two (ratio length article one / article two = 0.86); article one 3.95 x as long as wide; article two with 4 long setae on tip and one more near tip, 4.83 x as long as wide; article three 4.23 x as long as wide, 0.63 x as long as article two.

Mx1: second article of palp with 6 setae on upper margin, 11 spines on ventral and apical margin (proximal ones fairly slender, distal ones fairly stout) and 12 facial setae; outer plate with 10 strongly denticulate spines; inner plate with a single seta.

Mx2: outer plate with about 7 medium-sized setae on upper margin.

Mxp: article one of palp with 8 well-developed distal outer dorsal setae, article two with a pair of non-distal setae on outer margin; article three with 4 transverse rows of 1 to 6 thin setae on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins strongly curved and 0.65 x as long as article three; outer plate with 15 narrowly spaced spines on medial border (these spines are normally developed and stout except the distal ones, which are longer; the most distal spine is normal in shape), and 11 strong medio-ventral setae at the same level as spines; inner

plate with 4 stout and well-developed anterior spines and 9 normally developed setae.

Gn1: coxa broadly triangular, with rather strong pilosity on medial surface, with distinctly concave posterior border, with small posterior and anterior tooth; merus with about 4 groups of setae and small acute distal tooth; carpus process with 7 groups of setae, tip of carpus reaching 0.18 of propodus, far from reaching propodal group of strong spines; propodus 1.85 (♀) x as long as wide; group of spines on the proximal 0.33 of propodus (most distal spine used as reference point); one of these spines is very long; palm border forming a regular curve, without teeth, with hooked spines of outer row narrowly spaced (63 hooked outer spines, and 16 outer setae or straight slender spines in ♀); dactylus with 4 teeth (♀); dactylus toothed to 0.2 of its length.

Gn2: coxa triangulo-elliptic with small posterior and anterior tooth (the 2 teeth are moderately distant); merus with 4 groups of setae and with small acute distal tooth; carpus process with 12 groups of setae; tip of carpus reaching 0.18 (♀) of propodus, reaching propodal group of strong spines in ♀; propodus 1.93 (♀) x as long as wide; group of spines on the proximal 0.33 of propodus of ♀ (most distal spine used as reference point); one of these spines is very long; palm border curved and convex in ♀, without teeth; setae of palm short, with hooked spines of outer row narrowly spaced (63 hooked spines and 24 setae in ♀; dactylus of normal width, with 10 (♀) teeth; dactylus toothed to 0.5 of its length. Gn2 larger than Gn1; ratio length Gn2 / length Gn1: 1.31 (♀), surface of propodus of Gn2 / surface of propodus of Gn1: 1.67 (♀).

P3: coxa elliptic, of normal width, with small anterior and posterior tooth; merus 1.37 x as long as carpus and 0.98 x as long as propodus; dactylus not very long, stout with its two borders slightly curved, 0.56 x as long as carpus and 0.41 x as long as propodus; posterior border of merus with 3 isolated long setae; carpus with 3 well-developed setae (distal one paired with 1 setule) on posterior border; propodus with 8 pairs of spines (each consisting of 1 slender spine associated with 1 short spine) (length of longest propodal spines about 0.8 x width of propodus); anterior border of propodus with distal group of some short setae (some may have been rubbed off) but without setae in more proximal position.

P4: coxa very broad (1.22 x as long as wide), with anterior and posterior border parallel, with ventral border distinctly convex, with 4 small teeth on posterior border and 1 small anteroventral tooth; merus 1.34 x as long as carpus and 0.99 x as long as propodus; dactylus not very long, stout with its two borders slightly curved, 0.52 x as long as carpus and 0.39 x as long as propodus; posterior border of merus with 3 isolated long setae; carpus with 4 well-developed setae (of which the distal one is paired with 1 setule) on posterior border; propodus with 7 groups of spines (each consisting of 1 long slender spine associated with 1 short spine (or 2 short spines on the distal group)) (length of longest propodal spines about 0.88 x width of propodus); anterior border of propodus with distal group of 4 well-developed setae but without setae in more proximal position.

P5: coxa with small posterior tooth; basis narrow (1.78 x as long as wide), anteriorly distinctly and regularly convex (maximal inflexion on the middle), posteriorly straight; anterior border with small conical spines, posterior border with 15 distinct but not especially strong, non-erect teeth, distal border nearly straight (junction posterior/distal border forming an abrupt curve) and (almost) not produced into a lobe; distal tooth not reaching tip of basis and not fused with distal border; ischium with small conical spine on anterodistal corner; merus with anterior groups of well-developed spines and posterior groups of very short spines (except distal one, which includes well-developed spines).

P6: coxa with small posterior tooth; basis very narrow (1.86 x as long as wide), anteriorly convex and posteriorly straight; anterior border with small conical spines, posterior border with 14 distinct teeth, distal border straight (junction posterior/distal border forming a regular curve) and not produced into a lobe; distal tooth not reaching tip of basis and not fused with distal border; ischium with small conical spine on anterodistal corner; merus with anterior and posterior groups of well-developed spines; tip of P6 missing

P7: coxa without posterior tooth; basis very narrow (1.68 x as long as wide), anteriorly weakly convex and posteriorly straight; anterior border with small conical spines (distal angle with 2 conical spines), posterior border with 12 distinct teeth, distal border straight and not produced into a lobe; distal tooth not reaching tip of basis and not fused with distal border; ischium with small conical spine on anterodistal corner; merus with well-developed anterior and posterior spines; merus 4.51 x as long as wide and 1.10 x as long as basis; tip of P7 missing.

Pleonite 1: posterodorsal area produced into 1 large tooth + a pair of minute lateral teeth; Ep1 with small acute posteroventral tooth, with posterior border distinctly convex; without setae.

Pleonite 2: posterodorsal area produced into 1 large tooth + a pair of minute lateral teeth; Ep2 with small sharp posteroventral tooth, with posterior border

distinctly convex.

Pleonite 3: posterodorsal area toothless and deeply notched; Ep3 with well-developed acute posteroventral tooth, with posterior border straight on all length and joining the posteroventral tooth after forming a shallow notch; no denticle above the notch.

Urosomite 1 with low sigmoid crest-like carina, posteriorly terminated in a strong posterodorsal tooth pointing obliquely upwards (its ventral border slightly convex); ventrolateral border with 3 spines; peduncle of U1 with 10 dorsolateral spines: 9 regularly spaced and short slender ones spread on all length of peduncle and 1 long and strong distal one, with 4 well-developed dorsomedial spines regularly spaced all along distal 0.8; outer ramus with numerous short outer and inner spines; inner ramus with 7 short spines and 10 medium-sized spines on medial border.

Urosomite 2 with dorsal border forming a large triangular tooth pointing obliquely upwards; peduncle of U2 with 6 regularly spaced and long dorsolateral spines, with 2 dorsomedial spines; outer ramus with 9 long outer spines and 6 short medial spines; inner ramus with 6 short spines on outer border and 9 long spines on medial border.

Urosomite 3 with small posterolateral tooth on each side, with a pair of very long posterodorsal styliform spines; outer ramus of U3 with 3 groups of 1 to 2 short outer spines; inner ramus with 4 short and rather stout spines on outer border, with 5 well-developed spines on medial border.

Telson: cleft to 0.73 of its length; medial tooth of each lobe reaching 0.15 of outer tooth; inter-teeth spine overreaching outer tooth by 0.35 of its length, 0.35 x as long as telson; apical teeth of telson without setae.

LENGTH: About 14 mm.

DISTRIBUTION: Elephant Island, 62°46.49'S 053°03.50'W to 62°46.38'S 053°03.98'W, 1579-1584 m.

REMARKS: The type material of *L. bathysciarum* n. sp. was previously identified as *L. georgiana* SCHELLENBERG, 1931 by D'UDEKEM D'ACOZ (2008). However, during a study of the sequences of the COI gene fragment, a considerable rate of genetic divergence between these specimens and others was observed. A re-examination of the material revealed differences in the ornamentation of the posterodistal corner of the basis of pereiopod 7: rounded in *L. bathysciarum* n. sp. and produced into a tooth in *L. georgiana*. The ornamentation of the posterior border of the propodus of pereiopods 3 and 4 is also different, with shorter spines/setae in *L. bathysciarum* n. sp. than in *L. georgiana*; especially the accessory spines/setae are much shorter in *L. bathysciarum* n. sp. Finally *L. bathysciarum* n. sp. is considerably smaller (14 mm) than *L. georgiana* (27 mm), and lives at a greater depth (1579-1584 m vs. 15 to 1136 m).

L. bathysciarum n. sp. is also very close to *L. nesiotica* D'UDEKEM D'ACOZ, 2008, which also has a rounded posterodistal corner on the basis of pereiopod 7. The merus of pereiopod 7 is about 0.85 times as long as the basis in *L. nesiotica*, but 1.10 in *L. bathysciarum* n. sp. The posterior teeth of the basis of pereiopod 7 are also more deeply cut in *L. nesiotica* than in *L. bathysciarum* n. sp., and they are also more numerous in *L. nesiotica* (16-22) than in *L. bathysciarum* n. sp. (12). In *L. nesiotica*, the posteroventral corner of the third epimeral plate has a strong tooth and almost always a denticle above it, whilst there is a single normally developed tooth in *L. bathysciarum* n. sp. The number of spines on uropods 1 and 2 is also higher in *L. bathysciarum* n. sp. than in *L. nesiotica*. The difference in size between the outer and inner tooth of the lobes of the telson is much less pronounced in *L. nesiotica* than in *L. bathysciarum* n. sp. Finally the shape of the dorsal carinate tooth of urosomites 1 and 2 is somewhat different. However this last character should be considered with extreme caution, since it is rather variable in other *Liljeborgia* species of the group *georgiana*. *L. nesiotica* is also found in shallower water (31 to 570 m) than *L. bathysciarum* n. sp. (1579-1584 m).

Even with the recognition of *L. bathysciarum* n. sp., *L. georgiana* remains a potentially heterogeneous taxon. Indeed it exhibits pronounced variations in several characters. For example there are significant differences between populations of *L. georgiana* in the proportion of specimens with or without a small posterolateral tooth on each side of the large posteromedian tooth of pleonites 1 and 2, and with or without a non-distal tuft of setae on the outer margin of article 2 of the palp of the maxilliped. Also the ratio between the length of the propodus of pereiopods 7 and 6 appears to be surprisingly variable (1.38 to 2.23) in *L. georgiana*. So far this character has not been systematically investigated in specimens from different populations, and it is not yet known whether those differences are individual or population level variations.

Liljeborgia chevreuxi SCHELLENBERG, 1931
(Figs 19-21)

Lilljeborgia consanguinea; CHEVREUX, 1913: 125, figs.

25-27
Lilljeborgia chevreuxi SCHELLENBERG, 1931: 128
Liljeborgia chevreuxi; D'UDEKEM D'ACOZ, 2008: 54, figs. 13-18

MATERIAL: **ANT-VII/4, EPOS leg 3, sta. 245**, E Weddell Sea, AGT (haul 9) (74°39.7'S 029°41.6'W to 75°40.4'S 029°37.2'W, 283-284 m) + sta. 245 GSN (haul 9) (74°39.9'S 029°36.7'S 029°36.7'W to 74°39.3'S 029°40.0'W, 511-516 m), 02.ii.1989: 1 specimen (length = 5 mm), leg. C. DE BROYER, RBINS, I.G. 27.497; **ANT-IX/3, sta. 179**, Lazarev Sea, 69°59.1'S 008°00.4'E to 69°59.1'S 007°59.9'E, presumably AGT, 161-181 m, 22.ii.1991: 1 specimen about 8 mm, leg. M. RAUSCHERT, RBINS, I.G. 31.273; **ANT-XXI/2, BENDEX, sta. 019-1**, Bouvetøya, 54°30.09'S 003°14.13'E to 54°30.01'S 03°13.97'E, 247-260 m, AGT, 24.xi.2003: 2 specimens (largest = about 7 mm), leg. M. RAUSCHERT, RBINS, I.G. 31.273; **ANT-XXIV/2, ANDEEP-SYSTCO, sta. 048-1**, East Weddell Sea, 070°02'S 008°02'W, 595-602 m, RD, 12.i.2008: 2 specimens (mounted in toto, in Euparal), leg. H. ROBERT, RBINS, I.G. 31.272; **TAN0402/77**, Ross Sea, 72.1167°S 172.7132°E, 499 m, van Veen grab, 14.ii.2004: 1 ♂ (about 10 mm), NIWA 21028.

DISTRIBUTION: East of Antarctic Peninsula: Marguerite Bay (CHEVREUX, 1913 as *L. consanguinea*), Western Weddell Sea, Dundee Island (D'UDEKEM D'ACOZ, 2008), Eastern Weddell Sea, Lazarev Sea, Bouvetøya and Ross Sea (present material). From 200 m (CHEVREUX, 1913 as *L. consanguinea*) to 595-602 m (present material).

REMARKS: D'UDEKEM D'ACOZ (2008) identified a single *Liljeborgia* specimen from Dundee Island as *L. chevreuxi*, despite some differences with the account of CHEVREUX (1913, as *L. consanguinea* STEBBING, 1888). No posterodorsal tooth on pleonite 3 and urosomite 2 were present in the specimen from Dundee Island, whilst according to CHEVREUX (1913) the type specimen has a reduced tooth in these positions. Unfortunately, the type specimen is lost (DEFAYE, in litt.) and the alleged differences were considered as possible errors of observation (D'UDEKEM D'ACOZ, 2008). On these points, the new material listed in the present paper (figs. 19F and 21A) conforms to the re-description by D'UDEKEM D'ACOZ (2008). The new material includes specimens in which the posterodorsal pair of spines of urosomite 3, and the three distal articles of pereiopod 7 are still present, while they were missing in the specimen studied by D'UDEKEM D'ACOZ (2008). The spines of urosomite 3 prove to be well-developed and the dactylus of pereiopod 7 is 0.70 times as long as the propodus. *L. chevreuxi* is apparently rather uncommon. However the scarcity of records could also be partly due to its modest size, its body length barely reaching 10 mm.

It must be noticed that the circum-Antarctic species *L. chevreuxi* is extremely similar to the sub-Antarctic form *L. pseudomacronyx* BELLAN-SANTINI & LEDOYER, 1987. According to BELLAN-SANTINI & LEDOYER (1987: 403), *L. pseudomacronyx* would have a short and curved dactylus on pereiopod 7, since they illustrates a pereiopod 5 with a short dactylus and state that pereiopods 5 to 7 have the same structure. On the other hand, *L. chevreuxi* has a very long straight dactylus on pereiopod 7 (CHEVREUX, 1913 as *L. consanguinea*; present data). Unfortunately, the statements of BELLAN-SANTINI & LEDOYER (1987) are not substantiated by illustrations of pereiopod 7, and all the specimens examined by D'UDEKEM D'ACOZ (2008) were missing the last three articles of their pereiopods 7. Other minor differences, like the armature of the anterior coxae, are listed by D'UDEKEM D'ACOZ (2008) but their value is uncertain. Therefore, the examination of a larger quantity of topotypical *L. pseudomacronyx*, including specimens with intact pereiopods 7, would be highly desirable. However, for the time being the validity of the species is accepted. The existence of endemic species in waters surrounding Marion Island has been suggested (e.g. BRANCH *et al.*, 1993); notwithstanding its young geological age (about 0.45 myr, according to CHOWN *et al.*, 1998).

Liljeborgia cryptothrix D'UDEKEM D'ACOZ, 2008
(Figs 22-23)

Liljeborgia cryptothrix D'UDEKEM D'ACOZ, 2008: 63, fig. 33-38

MATERIAL: **R/V Eltanin, cruise 27, sta. 1974**, Macquarie Island, 15.ii.1967, 54°30'S-54°34'S 158°59'E, 112-124 m: 3 specimens, USNM.

DISTRIBUTION: Ile Kerguelen, 23 to 48 m (D'UDEKEM D'ACOZ, 2008) and Macquarie Island, at 112-124 m (present data).

REMARKS: The posterior pereiopods of the specimens reported above are incomplete. However, the other parts agree well with topotypical *L. cryptothrix* from Ile Kerguelen as described by D'UDEKEM D'ACOZ (2008), except for some details. In the dissected specimen from

Macquarie Island, the inner plates of the maxillipeds have only 2 spines (instead of 3), coxa 4 is broader, the dactylus of pereiopods 3 and 4 is somewhat longer, the rami of uropods 3 have more spines, and the apical spine of the telson is longer than in the specimens of Ile Kerguelen. These differences are actually minor and could well fall within the normal range of variation of *L. cryptothrix*.

Ile Kerguelen and Macquarie Island have also another *Liljeborgia* species in common: *L. kerguelensis* (see elsewhere in this paper). The occurrence of the same species (or extremely similar forms) around these two distant (4000 km) and fairly ancient (minimum age 30 and 11.5 myr according to CHOWN *et al.*, 1998) sub-Antarctic islands is a bit surprising. However faunistic elements common for these two islands have been found in other groups of organisms (e.g. O'HARA, 1998). As suggested by EDGAR (1987) and O'HARA (1988), the circum-Antarctic current could allow for the eastwards transportation of shallow-water organisms (like *L. cryptothrix* and *L. kerguelensis*) over vast distances on detached and drifting holdfasts of the widely distributed kelps *Macrocystis pyrifera* (LINNAEUS) C. AGARDH and *Durvillaea antarctica* (CHAMISSO) HARIOT.

Liljeborgia georgiensis K.H. BARNARD, 1932

Liljeborgia kinahani var. *georgiensis* K.H. BARNARD, 1932: 142, fig. 81b
Liljeborgia georgiensis; D'UDEKEM D'ACOZ, 2008: 75-77, figs. 54-59

MATERIAL: **ARC87, sta. DP2**, King George Island, in front of Copacabana (just after the station DP1, direction: offshore), 62°08'S 058°27'W, 20-30 m, duration of dredging: 10', Polish trawl, 09.i.1987: 1 specimen, leg. C. DE BROYER, RBINS, I.G. 27.395; **ARC93, sta. CA92**, King George Island, Admiralty Bay, 62°08'S 058°27'W, 30 m, AGT, 28.iv.1993: 4 specimens, leg. J. SICINSKI, RBINS, I.G. 31.066; **ARC93, sta. 109**, King George Island, Admiralty Bay, 62°08'S 058°27'W, 25-35 m, AGT, 15.xi.1993: 1 specimen, leg. D.R. MUNN, RBINS, I.G. 31.066; **FER93, sta. CA82 + CA83**, King George Island, Admiralty Bay, 62°08'S 58°27'W, 04.ii.1993: 1 specimen, leg. C. DE BROYER, RBINS, I.G. 31.067; **ARC94, sta. F11**, King George Island, Admiralty Bay, 62°08'S 058°27'W, on gillnet near Napier Rock in front of Llano Point 13.xii.1993: 8 specimens including ovigerous ♀♀, leg. C. DE BROYER, RBINS, I.G. 31.065.

DISTRIBUTION: South Georgia (type locality) and King George Island; 5-8 m to 26-35 m (D'UDEKEM D'ACOZ, 2008).

REMARKS: *L. georgiensis* was previously only known from a very small number of specimens (D'UDEKEM D'ACOZ, 2008). The new material does not increase the geographical and bathymetric range of the species, but it indicates that it is not uncommon in shallow water at Admiralty Bay (King George Island). All the specimens available for study are females or immatures and no adult male has been found so far.

Liljeborgia kerguelensis BELLAN-SANTINI & LEDOYER, 1974

(Figs 24-25)

Liljeborgia kerguelensis BELLAN-SANTINI & LEDOYER, 1974: 678 (material in part), pl. 21; D'UDEKEM D'ACOZ, 2008: 81, fig. 67-73

MATERIAL: **R/V Eltanin, cruise 27, sta. 1974**, Macquarie Island, 15.ii.1967, 54°30'S-54°34'S 158°59'E, 112-124 m: 3 specimens, USNM.

DISTRIBUTION: Ile Kerguelen, 15 to 48 m (D'UDEKEM D'ACOZ, 2008) and Macquarie Island, at 112-124 m (present data).

REMARKS: No significant differences could be detected between the material from Macquarie Island and topotypical *L. kerguelensis* from Ile Kerguelen (see figs 24-25 versus D'UDEKEM D'ACOZ, 2008, figs 67-73). The specimens examined were found together with *L. cryptothrix*, which was also originally described from Kerguelen.

Liljeborgia longicornis (SCHELLENBERG, 1931)

(Figs 26-34)

Lilljeborgiella longicornis SCHELLENBERG, 1931: 137, fig. 73
Liljeborgia longicornis; K.H. BARNARD, 1932: 143, in part, not fig. 82 (= *L. georgiana* Schellenberg, 1931); D'UDEKEM D'ACOZ, 2008: 83, figs. 74-80 (typical form)
Not *Lilljeborgia longicornis*; BELLAN-SANTINI & LEDOYER, 1987: 402-403, fig. 19c (= *L. nesiotica* D'UDEKEM D'ACOZ, 2008)

MATERIAL USED FOR ILLUSTRATIONS OR NOT LISTED BY

D'UDEKEM D'ACOZ (2008):
MAG94, sta. 966, Estrecho de Magallanes, Laredo, 52°57.9'S 70°46.9'W, 13 m, RD, 31.x.1994: 12 specimens [typical form] (2 vials), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 972**, Estrecho de Magallanes, Paso Ancho St. 16, 53°28.8'S 070°21.9'W, 01.xi.1994, 92 m, dredge: 21 specimens [small, short-toothed form] of all size including ovigerous ♀♀ (1 ♀ mounted on 12 slides, 1 adult ♂ partly mounted on 2 slides and 19 other specimens, leg. M. RAUSCHERT, I.G. 31.273; **MAG94, sta. 1192**, Isla Picton, 55°06.7'S 067°01.6'W, 13.xi.1994, 40-55 m, dredge: 9 specimens [small, short-toothed form] (including 1 ovigerous ♀), leg. M. Rauschert, I.G. 31.273; **MAG94, sta. 1204**, Isla Wollaston, 55°38.4'S 067°12.4'W, 14.xi.1994, 40 m, dredge: 1 ovigerous ♀ about 9 mm [small, short-toothed form] (together with about 7 *L. octodentata*), leg. M. RAUSCHERT, I.G. 31.273; **CIMAR Fiordo 3, sta. 2**, Bahía Posesión, 52°19.4'S 069°12.2'W, 40 m, mud, 06.x.1997: 13 specimens [typical form] (including ovigerous ♀♀; mottled colour pattern still distinct after 10 years in formalin) (2 vials), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **CIMAR Fiordo 3, station nahe 12**, Boca Occidental, Estrecho de Magallanes, 16.x.1997, 4 m depth, from macro-algae: 1 large mature female with short dorsolateral teeth on pleonites 1-2, but otherwise closer to the typical form, leg. M. RAUSCHERT, I.G. 31.273.

DISTRIBUTION: Patagonia and Falkland Islands (D'UDEKEM D'ACOZ, 2008); 4 (present data) to 128 m (D'UDEKEM D'ACOZ, 2008).

REMARKS: Considerable variation was observed in the samples of *Liljeborgia longicornis*. Especially, in some (but not all) small (9-14 mm) specimens the posterolateral teeth of pleonites 1 and 2 were especially short and the basis of their periopods had fewer (10-16) serrations than in large specimens and also some small ones (17-21). Pereiopods 3 and 4 were also more slender, with a longer dactylus. In these small specimens the posteromedian tooth of pleonites 1 and 2, and of urosomite 2 also looked surprisingly short. Some of these suspect small specimens (as small as 9 mm) were already ovigerous, while typical *L. longicornis* are often considerably larger (up to 22 mm). For some time, the author was wondering if it was not possible to split *L. longirostris* into two species. Therefore, careful examination was carried out of several specimens, in order to confirm the constant nature of the putative specific differences. This investigation showed that the variability (allometric and also individual) of *L. longicornis* was high, and that important intergradation existed between the extreme forms. It was not possible to assign all specimens to one or another category, and with the limited material at hand, it was not possible to conclude whether two species hide behind the name *L. longirostris* or not. For the time being, *L. longirostris* is therefore considered as a variable species with a 'typical form' and a 'short-toothed form'. Complete illustrations are given for the short-toothed form, and some figures complementing those of D'UDEKEM D'ACOZ (2008) for the typical form. Typical *L. longicornis* have a highly characteristic colour pattern with red mottling (D'UDEKEM D'ACOZ, 2008) and the colour pattern of short-toothed *L. longicornis* should be carefully examined, when living specimens will be available for study.

It is also necessary to mention that large specimens of *L. longicornis* of the typical form have spines on the anterior border of article 5 of the peduncle of the second antennae, which is not indicated by D'UDEKEM D'ACOZ (2008). The distribution of this character state amongst *Liljeborgia* species is not random, and it is probably of some evolutionary significance.

L. longicornis is superficially similar to the Antarctic species *L. bathysciarum* n. sp. and the Antarctic / insular sub-Antarctic species *L. nesiotica* D'UDEKEM D'ACOZ, 2008. *L. longicornis* has longer and more slender spines/setae on the posterior border of the propodus of the pereiopods 3-4 than its relatives.

While a few non-liljeborgiid amphipods occuring in the Magellanic region are said to be widely distributed in the cold and temperate parts of the Southern hemisphere (CHIESA et al., 2005; DE BROYER et al., 2007), all reliable records of Magellanic *Liljeborgia* species: *L. longicornis* and *L. anepsia* n. sp., *L. macrodon* SCHELLENBERG, 1931, *L. octodentata* SCHELLENBERG, 1931, *L. prionota* D'UDEKEM D'ACOZ, 2008, *L. quinquedentata* SCHELLENBERG, 1931 (D'UDEKEM D'ACOZ, 2008; present data) indiquate they are endemic species, which are absent from Antarctica and sub-Antarctic islands other than the Falklands.

Liljeborgia nesiotica D'UDEKEM D'ACOZ, 2008
(Figs 35-42)

Liljeborgia longicornis; BELLAN-SANTINI & LEDOYER, 1987: 402-403, fig. 19C
Liljeborgia nesiotica D'UDEKEM D'ACOZ, 2008: 90-92, figs. 89-93

MATERIAL: **R/V Eltanin, sta. 2120**, University of

Southern California, Expedition USAP, gear: Grab - Camera, Cr. No.: 32, Field No.: USARP/EL/32/2120/USC, Acc: 4046006, Ross Sea, 73°04'S 179°03'E, 570 m, 11.ii.1963: 1 ovigerous ♀, USNM 1027879; **Ross Sea, Victoria Land**, Cr. No.: 32, Exped. USAP, Field No: USARP/EL/32/2007/USC, Acc: 404606, 73°05'S 173°59'E to 73°06'S 174°S 05'E, 339-343 m, 12.i.1968, gear: trawl-Blake: 1 specimen, USNM 1027880; **TAN0402/21**, 71.7995°S 170.9487°E, 168 m, van Veen grab, 09.ii.2004: 1 ♀, NIWA 2102; **TAN0402/24**, 71.7978°S 170.9409°E, 119 m, van Veen grab, 09.ii.2004: 2 small specimens, NIWA 21024; **TAN0402/30**, 71.7463°S 171.2913°E, 277 m, van Veen grab, 09.ii.2004: 1 specimen, NIWA 21025; **TAN0402/34**, Ross Sea, 71.7685°S 171.1012°E, 235 m, van Veen grab, 10.ii.2004: 1 damaged specimen, NIWA 21026; **TAN0402/111**, Ross Sea, 71.3045°S 170.6180°E, 357 m, van Veen grab, 18.ii.2004: 1 large specimen, NIWA 17887; **TAN0402/125**, Ross Sea, 71.3165°S 170.4657°E, 163 m, van Veen grab, 19.ii.2004: 3 specimens, NIWA 20880; **TAN0402/192**, Ross Sea, 71.6013°S 170.8760°E, 220 m, van Veen grab, 28.ii.2004: 1 specimen, NIWA 21029; **ARC93, sta. CA 105**, King George Isl., Admiralty Bay, 62°08'S 058°27'W, 80 m, Belgian AGT, 03.x.1993: 1 mature ♀, leg. J. Sicinski, RBINS, I.G. 31.066; **ARC94, sta. F11**, King George Isl., Admiralty Bay, 62°08'S 058°27'W, on gillnet near Napier Rock in front of Llano Point, 13.xii.1993: 2 specimens, leg. C. De Broyer, RBINS, I.G. 31.065; **ANT-XXI/2, BENDEX, sta. 019-1**, Bouvetøya, 54°30.09'S 003°14.13'E to 54°30.01'S 003°13.97'E, 247-260 m, AGT, 24.xi.2003: 3 specimens, leg. M. Rauschert, RBINS I.G. 31.273; **ANT-XXI/2, BENDEX, sta. 028-1**, Bouvetøya, 54°22.49'S 003°17.58'E to 54°22.54'S 003°17.21'E, 122-134 m, AGT, 25.xi.2003: 19 specimens including an ovigerous ♀, which has been dissected and mounted on 10 slides (largest specimen, ♂ = 13 mm), leg. M. Rauschert, RBINS I.G. 31.273; **R/V Marion Dufresne, cruise MD 08, sta. 22 BB 125**, Marion Isl., 46°52.4'S 037°51.9'E, grab (benne Okean), sand, 30 m, 26.iii.1976: 3 immature (presumably ♀) specimens (largest one = holotype; other specimens = paratypes), in alcohol, except telson of largest paratype, which has been mounted on a slide in Euparal, MCSN; **R/V Marion Dufresne, cruise MD 08, sta. 33 DC 164**, Marion Isl., 46°52.2'S 037°51.5'E, dredge (drague Charcot), 45 m, year 1976: parts of a mature ♀ (paratype) previously identified as *L. longicornis*, MCSN slides 3301, 3302 and 3303, and Gn1-2 of a ♂ (paratype) previously identified as *L. longicornis*, MCSN slide 3304.

Addendum to the description by d'Udekem d'Acoz (2008):

Md: left lacinia mobilis minutely denticulate

Mx1: second article of palp with 3 setae on upper margin, 9 rather slender spines on ventral and apical margin and 8 strongly curved facial setae; outer plate with 10 strongly denticulate spines; inner plate with a single seta.

Mx2: outer plate with about 4 well-developed setae on upper margin.

Gn1: ventral border of coxa anteriorly straight or very weakly concave and posteriorly convex; palm border with 53 (♀) or 61 (♂) hooked outer spines, and 9 (♀) or 24 (♂) outer setae; dactylus with 3 (♀) or 5 (♂) teeth.

Gn2: palm border of ♀ with 44 hooked outer spines, and 17 outer setae; palm border of ♂ distally vaguely sinuate, with numerous long outer setae; dactylus with 10 (♀) or 15 teeth (♂); palm of adult ♂♂ with proximal large spines (unlike most adult *L. georgiana*).

P3-P4: propodus with spines isolated or associated with setules.

P5: basis border nearly straight with 14 (♀ and ♂) strong posterior teeth in specimens from Bouvetøya, 12 in ♀ from King George Island, 13 in ♀ from the Ross Sea.

P6: basis border straight with 21 (♀) or 18 (♂) strong posterior teeth, 18 in ♀ from King George Island, 15 in ♀ from the Ross Sea.

P7: basis very narrow (1.72 to 1.79 x as long as wide in specimens from Bouvetøya; 1.58 in ♀ from King George Island; 1.62 in ♀ from the Ross Sea), anteriorly weakly convex and posteriorly straight (or actually inconspicuously concave in specimens from Bouvetøya); posterior border with 22 (♀ and ♂ from Bouvetøya), 16 (♀ from King George Island) or 19 (♀ from the Ross Sea) strong teeth; junction posterior/distal border rounded; merus and carpus with long anterior and posterior spines; merus 4.06 (♀ from Bouvetøya), 4.32 (♂ from Bouvetøya), 3.72 (♀ from King George Island) or 3.90 (♀ from the Ross Sea) x as long as wide, and 0.96 (♀ and ♂ from Bouvetøya), 0.94 (♀ from King George Island and from the Ross Sea) x as long as basis; carpus 0.88 (♂ from Bouvetøya) or 0.83 (♀ from King George Island) x as long as merus; propodus of P7 1.43 (♂ from Bouvetøya) or 1.38 (♀ from King George Island) x as long as propodus of P6; propodus of P7 6.69 to 7.09 x as long as wide, with 8 anterior groups of 1 or 2 normally developed spines, and 7 posteromedial groups of articulate structures including 1 spine and 0-5 well-developed setae (apical tuft included); dactylus posteriorly weakly curved and

anteriorly straight, distally notched, fairly stout, short, 0.28 (♂ from Bouvetøya) or 0.29 (♀ from King George Island) x as long as propodus.

Ep3: posteroventral tooth strong to very strong in specimens from Bouvetøya, distinctly shorter and conform to topotypical specimens in specimens from King George Island and the Ross Sea; small tooth almost always present above posteroventral notch.

Telson: cleft to 0.72 (♂ from Bouvetøya) or 0.66 (♀ from King George Island) of its length; medial tooth of each lobe reaching 0.47 (♂ from Bouvetøya) or 0.48 (♀ from King George Island) of outer tooth; inter-teeth spine overreaching outer tooth by half of its length or a bit more, 0.34 x as long as telson; each lobes of telson with 2 small setae in apical notch (one of these setae presumably rubbed off in ♀ from King George Island).

DISTRIBUTION: Marion Island, 31 to 110 m (BELLAN-SANTINI & LEDOYER, 1987, as *L. longicornis*; D'UDEKEM D'ACOZ, 2008) King George Island (Admiralty Bay), 80 m; Bouvetøya, 122-134 to 247-260 m; Ross Sea, 119 to 570 m (present material).

REMARKS: The original description of *L. nesiotica* by D'UDEKEM D'ACOZ (2008) was incomplete, as a result of the rather poor condition of the type material. The gaps in this description are filled in the descriptive addendum given above. The specimens from Marion Island (type specimens), King George Island, Bouvetøya and the Ross Sea (new material) are extremely similar to each other but not absolutely identical. The tooth of the third epimeral plate is stronger in the specimens of Bouvetøya than in other specimens. The posterior border of the basis of the last three pereiopods is very slightly different, with a posterior border vaguely more convex in the specimens from Marion Island. The number of posterior teeth of the basis of pereiopods 5 and 7 is especially high in specimens from Bouvetøya. Finally the medial tooth of the telson lobes is somewhat longer in the specimens from Bouvetøya and King George Island than in the material from Marion Island, at least in the dissected specimens. Such differences are actually quite weak and fall within the range of variation observed between populations of the more common species *L. georgiana*. So, with the information at hand (restricted to morphological data), the material of the different populations examined should be considered as conspecific.

The distribution of *L. nesiotica* almost completely coincides with that of the very similar species *L. georgiana* and the two species have been found in the same sample at Bouvetøya. *L. nesiotica* is much smaller than *L. georgiana* (14 vs. 27 mm). The most significant differences between the two species concern pereiopod 7. The posterodistal corner of the basis of pereiopod 7 is rounded in *L. nesiotica*, whilst it is produced into a tooth in *L. georgiana*. The propodus of pereiopod 7 is considerably shorter and broader in *L. nesiotica* than in *L. georgiana*: 6.69 to 7.09 times as long as wide in *L. nesiotica*, but 10.6 times in *L. georgiana*. The posterior teeth of the basis of pereiopod 7 are also more deeply cut in *L. nesiotica* than in *L. georgiana*, and they are also more numerous in *L. nesiotica* (16-22) than in *L. georgiana* (10-17). *L. nesiotica* is also very similar to *L. bathysciarum* n. sp., which occurs in deeper waters. See section on *L. bathysciarum* n. sp. for a comparison between the two species.

D'UDEKEM D'ACOZ (2008) also noticed that *L. nesiotica* exhibits some similarities with the New Zealand species *L. hansoni* HURLEY, 1954, but that the latter had a broader and more rounded basis on its last 3 pereiopods. It must be added that, according to HURLEY's (1954) figures, *L. hansoni* has a large number of long marginal setae on the anterior and ventral border of pleonite 1, which are absent in *L. nesiotica*. *L. hansoni* would also have spines on the anterior border of article 5 of the peduncle of antenna 2 and the flagellum of the same appendage (HURLEY, 1954). Such spines are absent in *L. nesiotica*.

L. nesiotica occurs north (Marion Island) and south of the Antarctic convergence and proves to be circum-Antarctic, just like the similar but larger species *L. georgiana* SCHELLENBERG, 1931. So far, only one other *Liljeborgia* species is known to occur on both sides of the Antarctic convergence: *L. consanguinea* STEBBING, 1888, but available data suggests it is not circum-Antarctic and is restricted to the ancient plateau (120 myr according to DUNCAN, 2002) supporting Ile Kerguelen (situated just above the Antarctic convergence) and Heard Island (situated below the convergence) (D'UDEKEM D'ACOZ, 2008). Marion Island, which is a very young island (about 0.45 myr, according to CHOWN et al., 1998) could have been colonized by *L. nesiotica* of Antarctic or Bouvet origin during the Cenozoic glaciations, when the waters were colder, and afterwards these amphipods would have adapted to the gradual postglacial warming. The role of Bouvetøya (also a young island, but > 1 myr, according to PRESTVIK & WINSNES, 1981 cited by GUTT, 2006), as possible stepping stone between the Antarctic and sub-Antarctic islands, has been stressed by ARNTZ (2006).

Off the sub-Antarctic Marion Island, *L. nesiotica* was found together with *L. pseudomacronyx* BELLAN-SANTINI & LEDOYER, 1987, which so far has not been

found elsewhere, but which is extremely similar to the Antarctic species *L. chevreuxi* SCHELLENBERG, 1931. In the waters surrounding the Antarctic Bouvetøya, *L. nesiotica* was found together with the true Antarctic species *L. georgiana*, and *L. chevreuxi*.

Liljeborgia polydeuces D'UDEKEM D'ACOZ, 2008
(Figs 43-44)

Liljeborgia cf. *quinquedentata*; HOLMAN & WATLING, 1983: 239, figs. 19-21
Liljeborgia quadridentata; D'UDEKEM D'ACOZ & ROBERT, 2008: 54 (list)
Liljeborgia polydeuces D'UDEKEM D'ACOZ, 2008: 99, figs. 110-116

MATERIAL: **FER93, sta. CA 84**, King George Isl., Admiralty Bay, Arctowski Cove, 62°08'S 058°27'W, 150 m, Belgian AGT, 04.ii.1993: 1 specimen in very poor condition, leg. C. DE BROYER & V. GOMES, RBINS, I.G. 31.067; **ANT-XIX/3, ANDEEP I, station unavailable**, near King George Isl., bottom trawl, stomach content of the fish *Gobionotothen gibberifrons* (LÖNNBERG, 1905) (450 mm long), February 2002: 1 large typical ♀, leg. C. DE BROYER, P. DAUBY & F. NYSSEN, RBINS, I.G. 31.073; **ANT-XXIV/2, ANDEEP-SYSTCO, sta. 048-1**, East Weddell Sea, Neumayer, off northern pear, 070°02'S 008°02'W, 595-602 m, RD, 12.i.2008: about 20 specimens (2 vials, one ♂ mounted on 11 slides, 1 Gn2 of a further ♂ mounted on 1 slide; largest specimens about 12 mm), leg. H. ROBERT, RBINS, I.G. 31.272; **HMNZS Endeavour, cruise Ross Sea, sta. A0520**, Ross Sea, 74°20.00'S 179°30.00'E, 198 m, 03.ii.1960; 1 ♀, NIWA 18608.

DISTRIBUTION: Elephant Island (type locality), King George Island, Northwestern Weddell Sea, Eastern Weddell Sea (D'UDEKEM D'ACOZ, 2008); Ross Sea (present material). 137-154 m to 594-602 m (D'UDEKEM D'ACOZ, 2008).

REMARKS: Only a very few small specimens of *L. polydeuces* were previously known from the East Weddell Sea (D'UDEKEM D'ACOZ, 2008) and this material was of mediocre quality. On the other hand the new material collected during the cruise ANDEEP SYSTCO includes a fairly high number of fine specimens from this area. These specimens exhibit slight differences with the type specimens from the Elephant Island. They are smaller (12 mm vs. 16 and sometimes 21 mm). Their pleonite 1 is always armed, which is the case only in juveniles in topotypical specimens. Their pereiopods 5, 6 and 7 (especially their basis) are slightly more slender than in topotypical specimens. These differences suggest some differentiation between populations. On the other hand the morphology of gnathopod 2 of male is nearly identical (with small blunt teeth). The merus of pereiopod 5 lacks non-distal posterior spines just as in the types.

The finding of a specimen identifiable as *L. polydeuces* in the Ross Sea immensely increases the distribution of the species and indicates it is circum-Antarctic.

Liljeborgia sp. 3
(Fig 45)

MATERIAL: **ANTXV/3, EASIZ II, sta. 198**, Sea of Weddell, Kapp Norvegia, 71°16.9'S 12°36.1'W to 71°16.9'S 12°35.10'W, 412 m, RD, 16.ii.1998: 1 juvenile (5 mm), leg. M. RAUSCHERT, IRScNB I.G. 31.273.

DISTRIBUTION: East Weddell Sea, 412 m (present material).

REMARKS: D'UDEKEM D'ACOZ (2008) described two distinctive but incomplete *Liljeborgia* species under the names of *Liljeborgia* sp. 1 and sp. 2. A third interesting incomplete distinctive taxon is here named *Liljeborgia* sp. 3. It is represented by a single juvenile (5 mm long) specimen, missing its pereiopods 7 and collected on the continental shelf of the Eastern Weddell Sea. In several respects this specimen, which is devoid of eyes, is similar to *L. consanguinea* STEBBING, 1888 (a species from the Kerguelen Plateau) and with *L. bythiana* D'UDEKEM D'ACOZ, 2008 (an abyssal species), but it also exhibits significant differences. In *Liljeborgia* sp. 3, pereiopods 5 and 6 have reduced propodal ornamentation and present an especially long dactylus, if compared with *L. consanguinea*. In *Liljeborgia* sp. 3, the posterodorsal teeth of pleonites 1-3 are of similar size, whilst those of the first two pleonites are much stronger than the tooth of the third one in *L. consanguinea*. In *Liljeborgia* sp. 3, the first two posterolateral spines of the peduncle of uropod 1 are small and of similar size, whilst the first one is large and the second is small in *L. consanguinea*. *Liljeborgia* sp. 3 has considerably longer spines on the tip of the lobe of the telson than in *L. bythiana*, and in *Liljeborgia* sp. 3 the posterior serration of the basis of periopods 5 and 6 is considerably stronger. *Liljeborgia* sp. 3 could be either a juvenile *L. consanguinea* or an undescribed species.

Acknowledgements

This work has started as a part of the BIANZO II project, supported by the Scientific Research Programme on the Antarctic of the Belgian Federal Science Policy [Service Public fédéral de Programmation Politique scientifique] (contract SD/BA/02A) and was continued in the framework of the 'Action 1' research project 'Evolution of biodiversity patterns in shelf and abyssal liljeborgiid amphipods from the Polar Oceans and surrounding seas' of the author. This second research project was also funded by the Federal Belgian Science Policy. This is contribution n° 23 of the Census of Antarctic Marine Life (CAML) and ANDEEP publication n° 124. I would like to thank Claude De Broyer who gave me the possibility to work in the framework of this BIANZO II project. The following persons provided me with specimens of high scientific value: Angelika Brandt and Hans Georg Andres (ZMH), Henri Robert (IRScNB), Anne-Nina Lörz and Kareen Schnabel (NIWA), Martin Rauschert (AWI), Sandro Ruffo and Leonardo Latella (MCSN), Chad Walter (USNM). The text has been revised by Sammy De Grave (OUMNH) and Wim Vader (TMU). They are all sincerely acknowledged.

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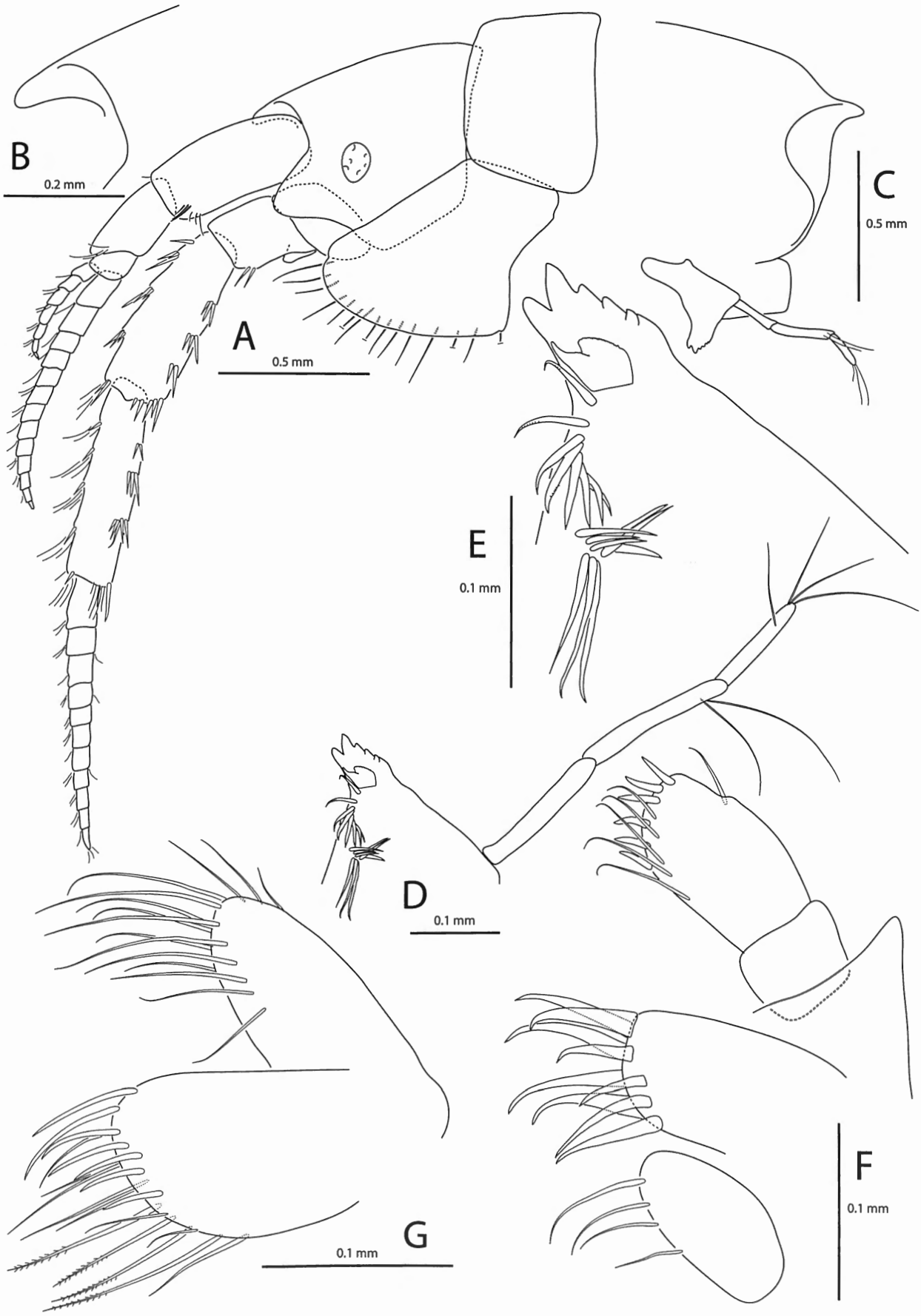

Fig. 1. – *Liljeborgia anepsia* n. sp., ♂, Falkland Isl., R/V William Scoresby, sta. 97. A, head with antennae and first free body segment; B, rostrum; C, head with epistome and Md; D, right Md; E, tip of right Md; F, Mx1; G, left Mx2.

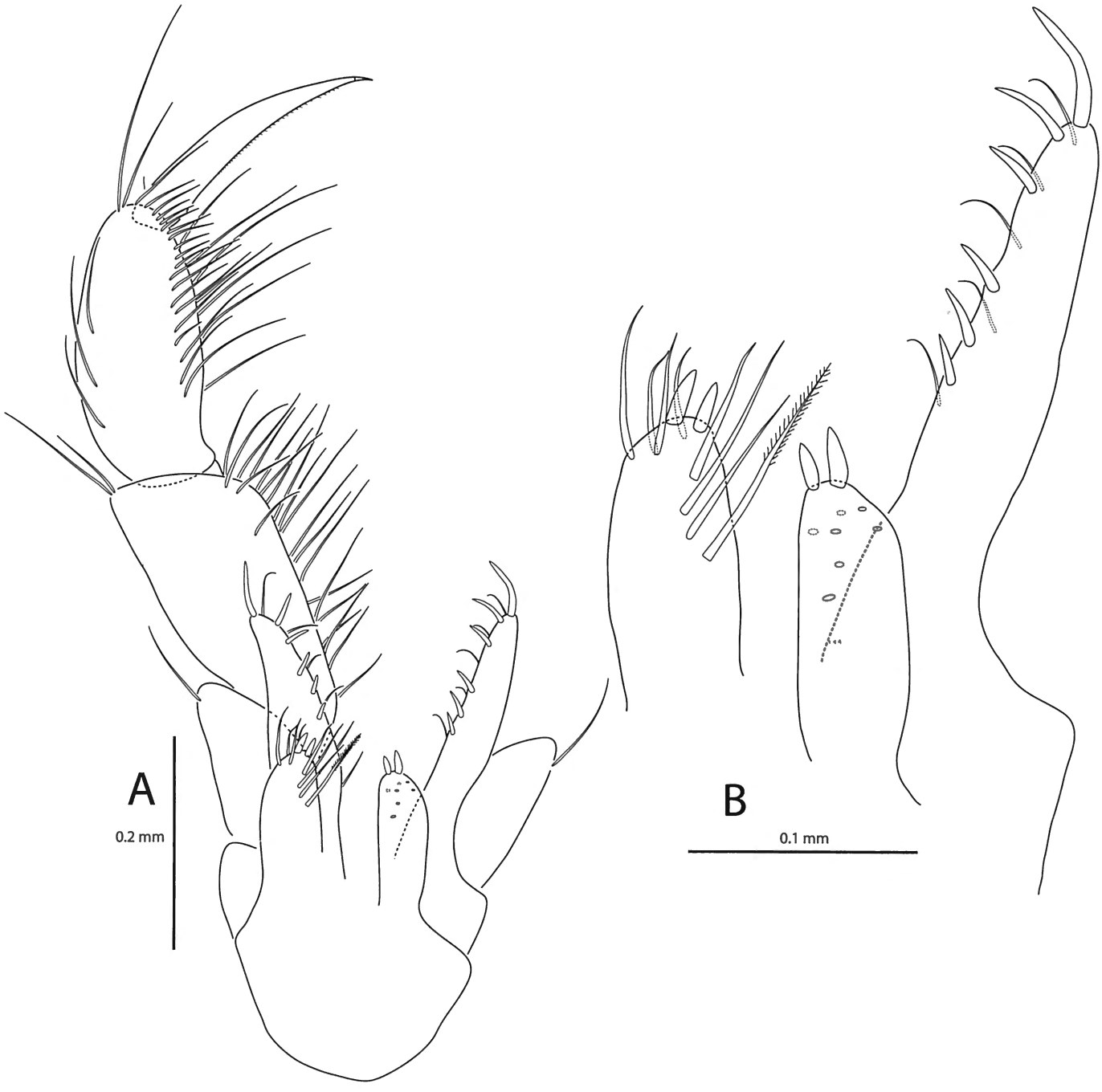

Fig. 2. – *Liljeborgia anepsia* n. sp., ♂, Falkland Isl., R/V William Scoresby, sta. 97. A, Mxp; B, Mxp plates.

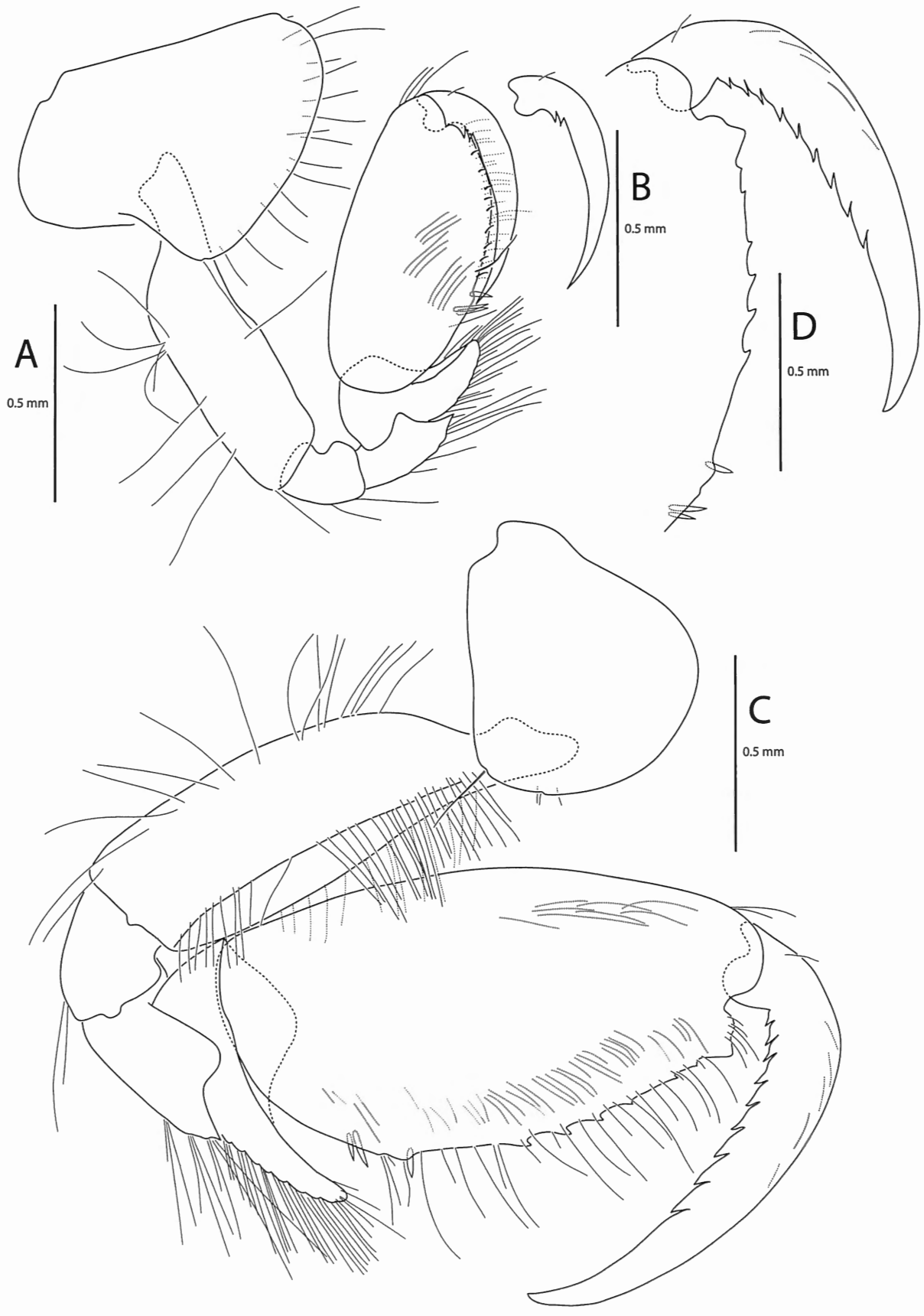

Fig. 3. – *Liljeborgia anepsia* n. sp., ♂, Falkland Isl., R/V William Scoresby, sta. 97. A, right Gn1; B, dactylus of right Gn1; C, right Gn2; D, palm and dactylus of right Gn2.

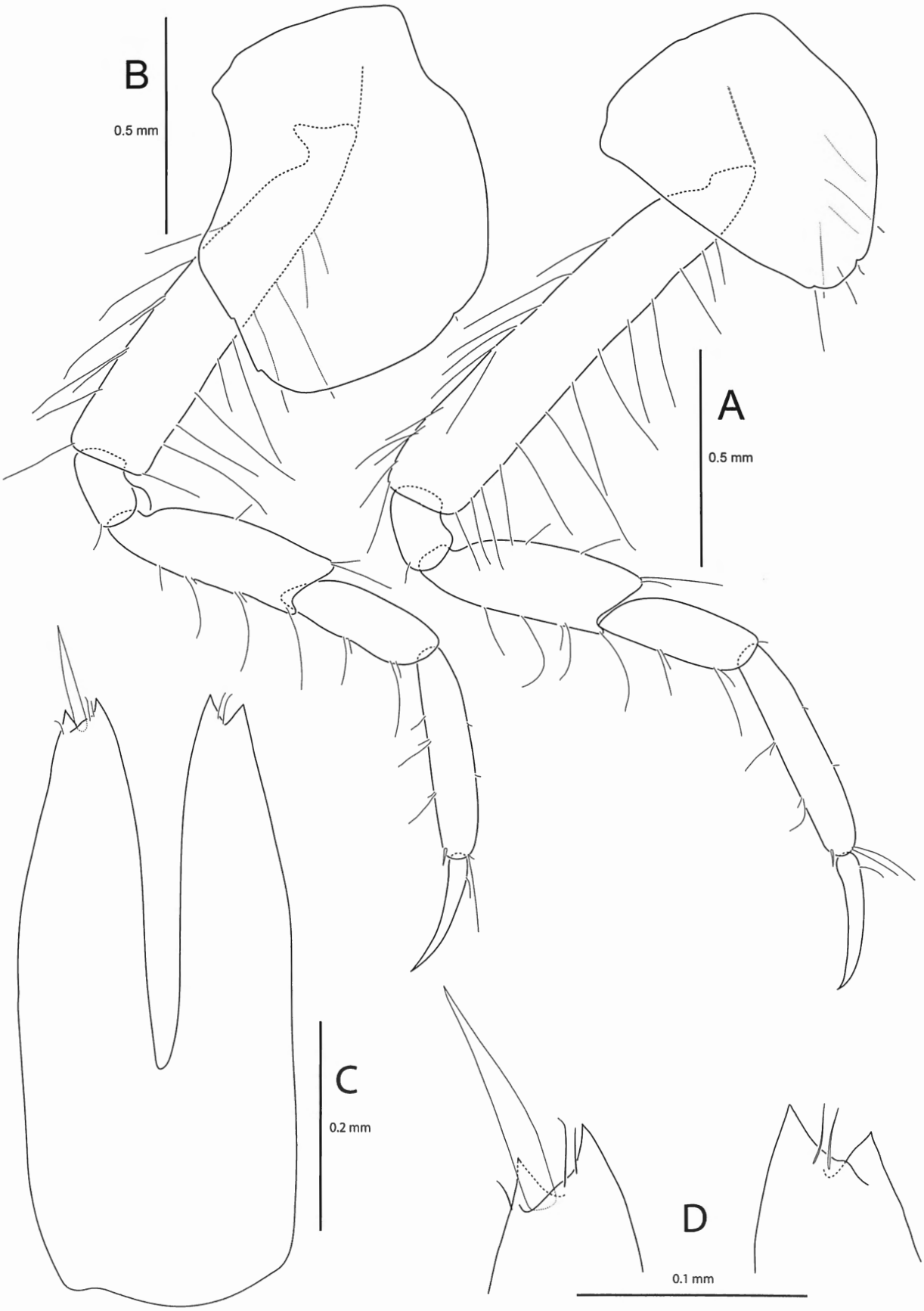

Fig. 4. – *Liljeborgia anepsia* n. sp., ♂, Falkland Isl., R/V William Scoresby, sta. 97. A, right P3; B, right P4; C, telson; D, tip of telson.

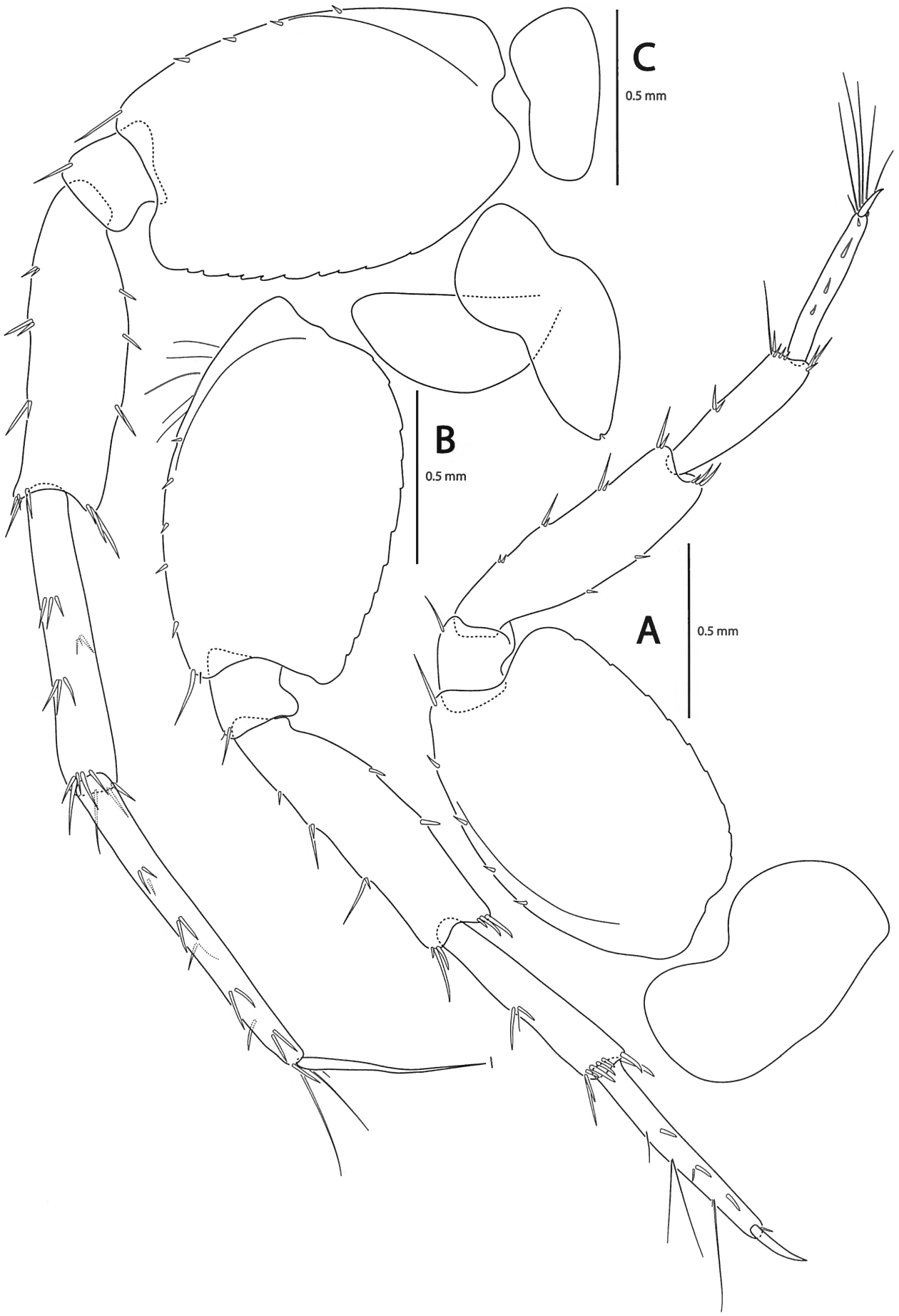

Fig. 5. – *Liljeborgia anepsia* n. sp., ♂, Falkland Isl., R/V William Scoresby, sta. 97. A, right P5; B, left P6; C, left P7.

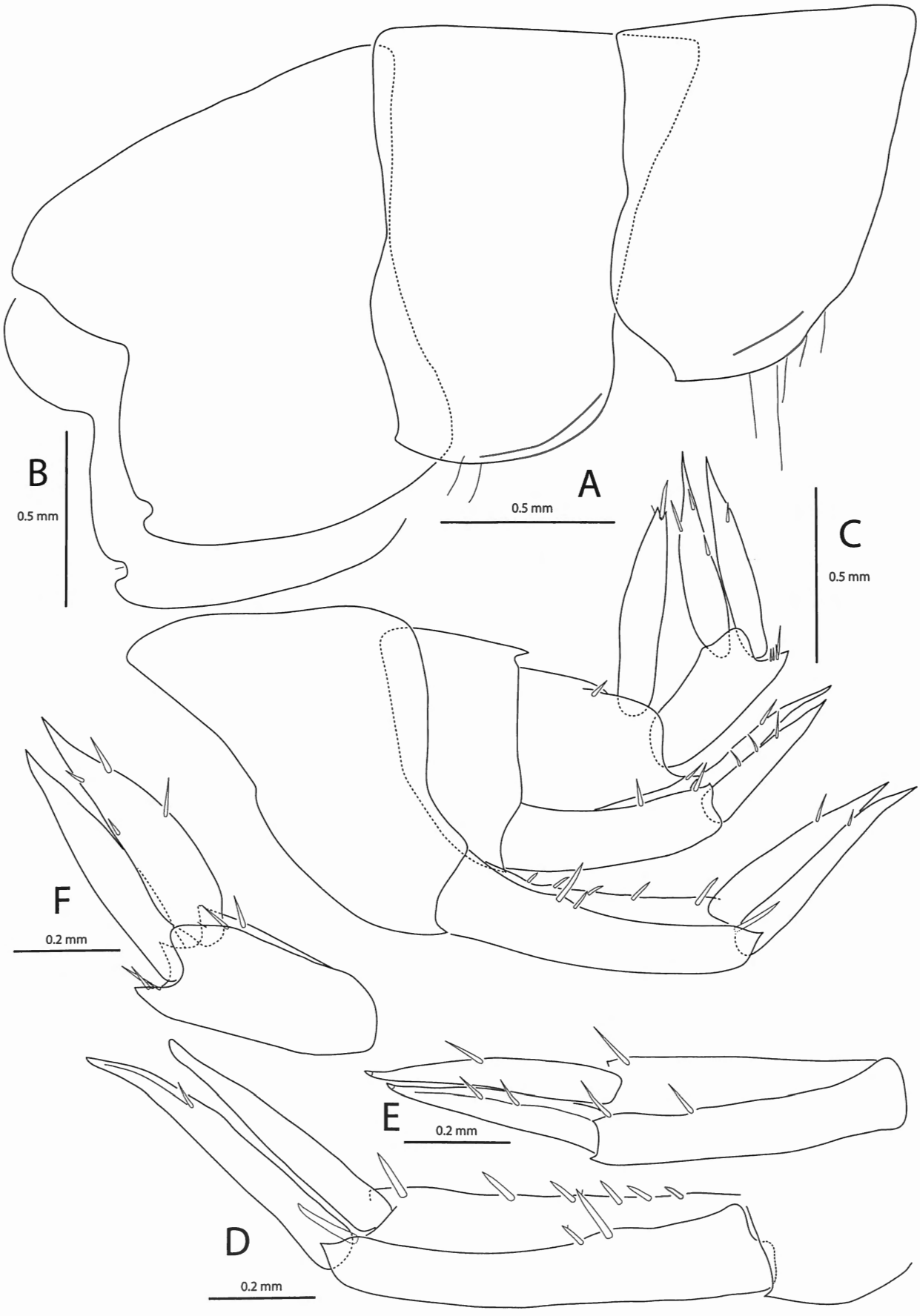

Fig. 6. – *Liljeborgia anepsia* n. sp., ♂, Falkland Isl., R/V William Scoresby, sta. 97. A, pleosome (right side); B, posterior border of left pleonite 3; C, urosome; D, right U1; E, right U2; F, right U3.

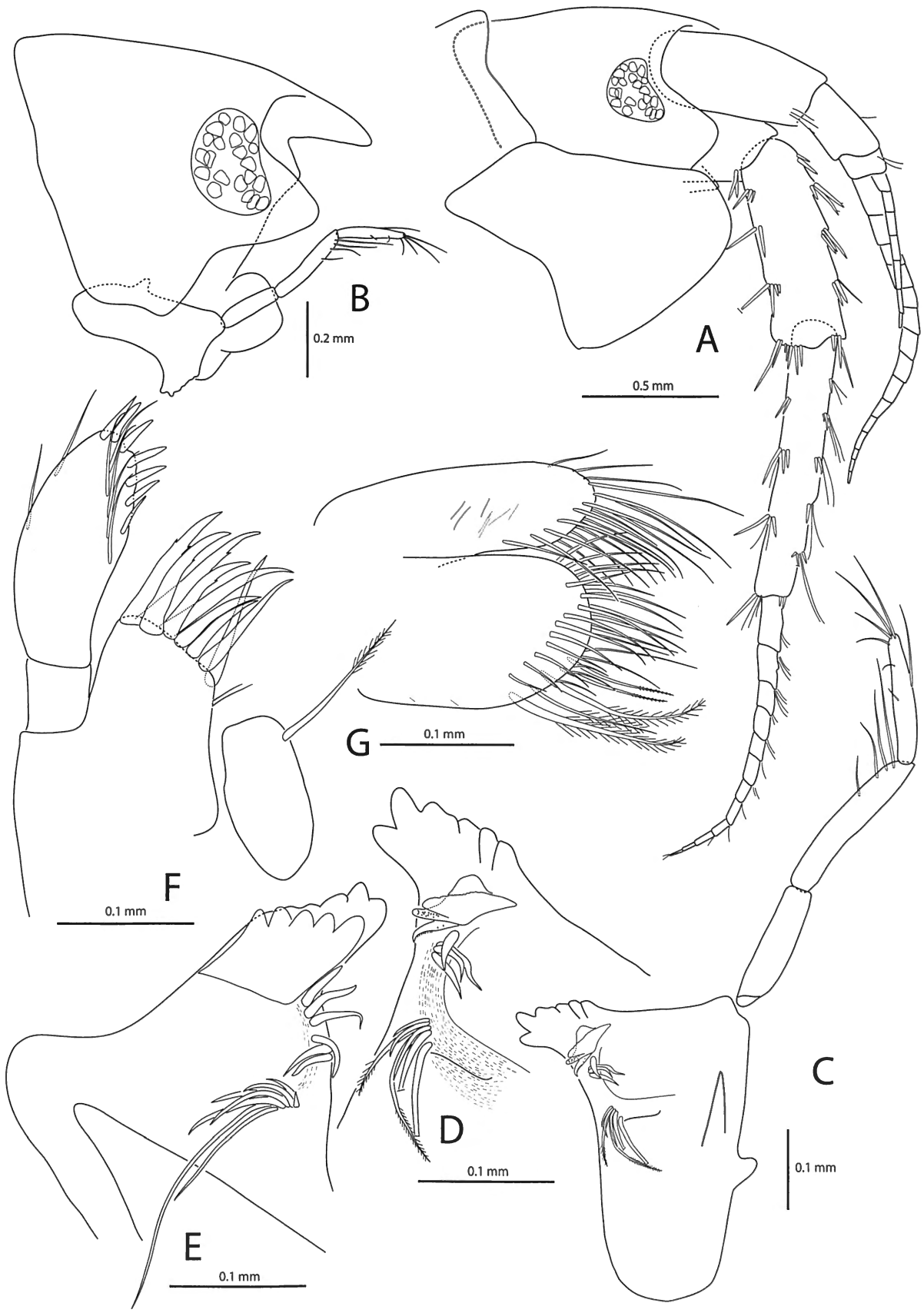

Fig. 7. – *Liljeborgia barhami* HURLEY, 1954, adult ♂, Stewart Isl.; A, head with antennae and coxa1; B, head, with epistome and mandible; C, right Md; D, tip of right Md; E, tip of left Md; F, left Mx1; G, left Mx2.

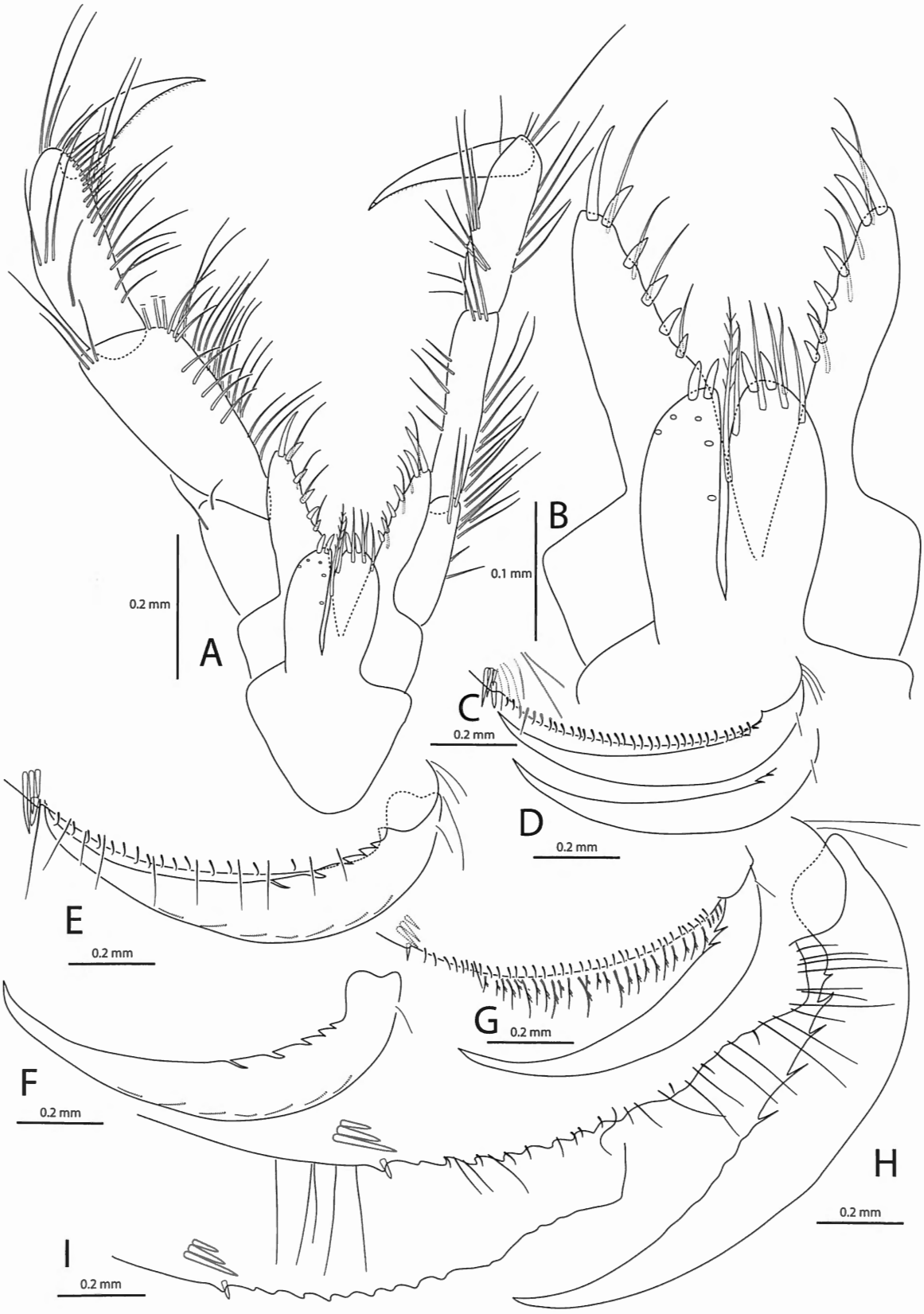

Fig. 8. – *Liljeborgia barhami* HURLEY, 1954, Stewart Isl.; A-B, G-I, adult ♂; C-D, mature ♀, Stewart Isl.; A, Mxp; B, plates of Mxp; C, chela of right Gn1; D, dactylus of right Gn1; E, chela of right Gn2; F, dactylus of right Gn2; G, chela of right Gn1; H, chela of right Gn2; I, palm of right Gn2. The medial row of setae (i.e. the setae with 2 lateral prongs) has been illustrated only for the Gn1 of the ♂ (fig. G).

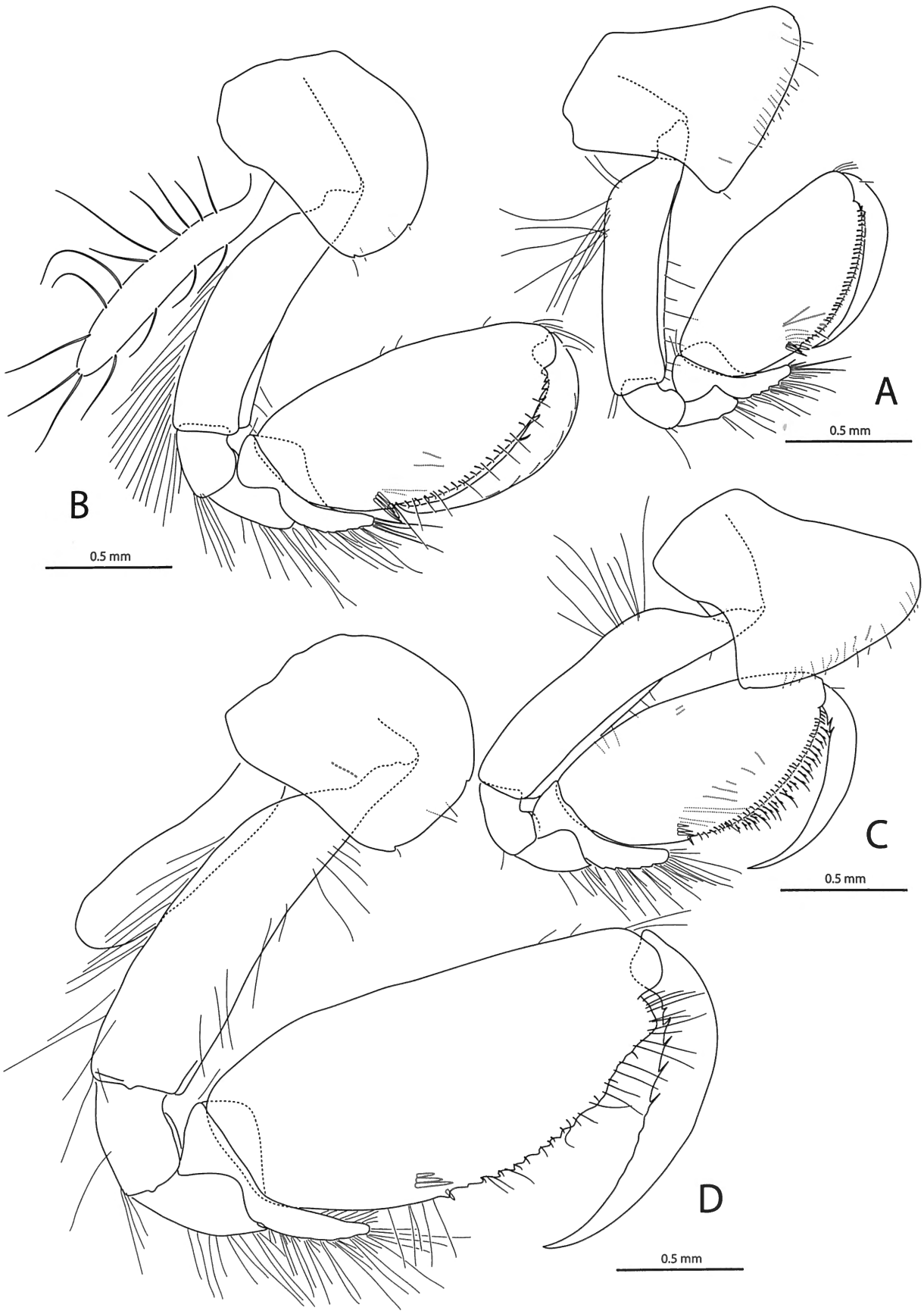

Fig. 9. – *Liljeborgia barhami* Hurley, 1954, Stewart Isl.; A-B, mature ♀; C-D, adult ♂. A, right Gn1; B, right Gn2; C, right Gn1; D, right Gn2. The medial row of setae (i.e. the setae with 2 lateral prongs) have been illustrated only for the Gn1 of the ♂ (fig. C).

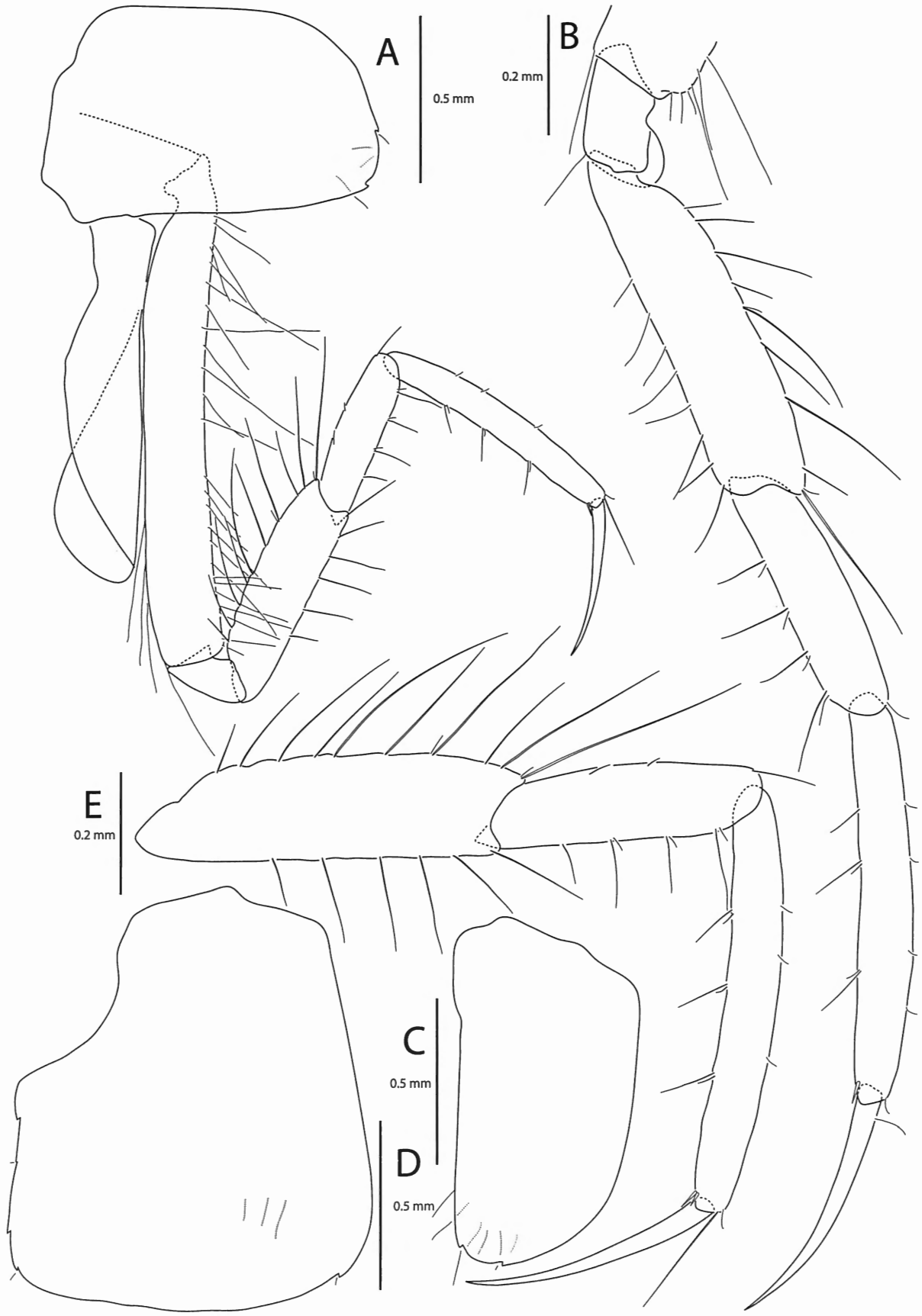

Fig. 10. – *Liljeborgia barhami* HURLEY, 1954, Stewart Isl.; A-B, D-E, adult ♂; C, mature ♀. A, right P3; B, tip of right P4; C, coxa 3; D, coxa 4; E, tip of right P3. Note the difference in width between the coxa 3 of the ♂ and that of the ♀.

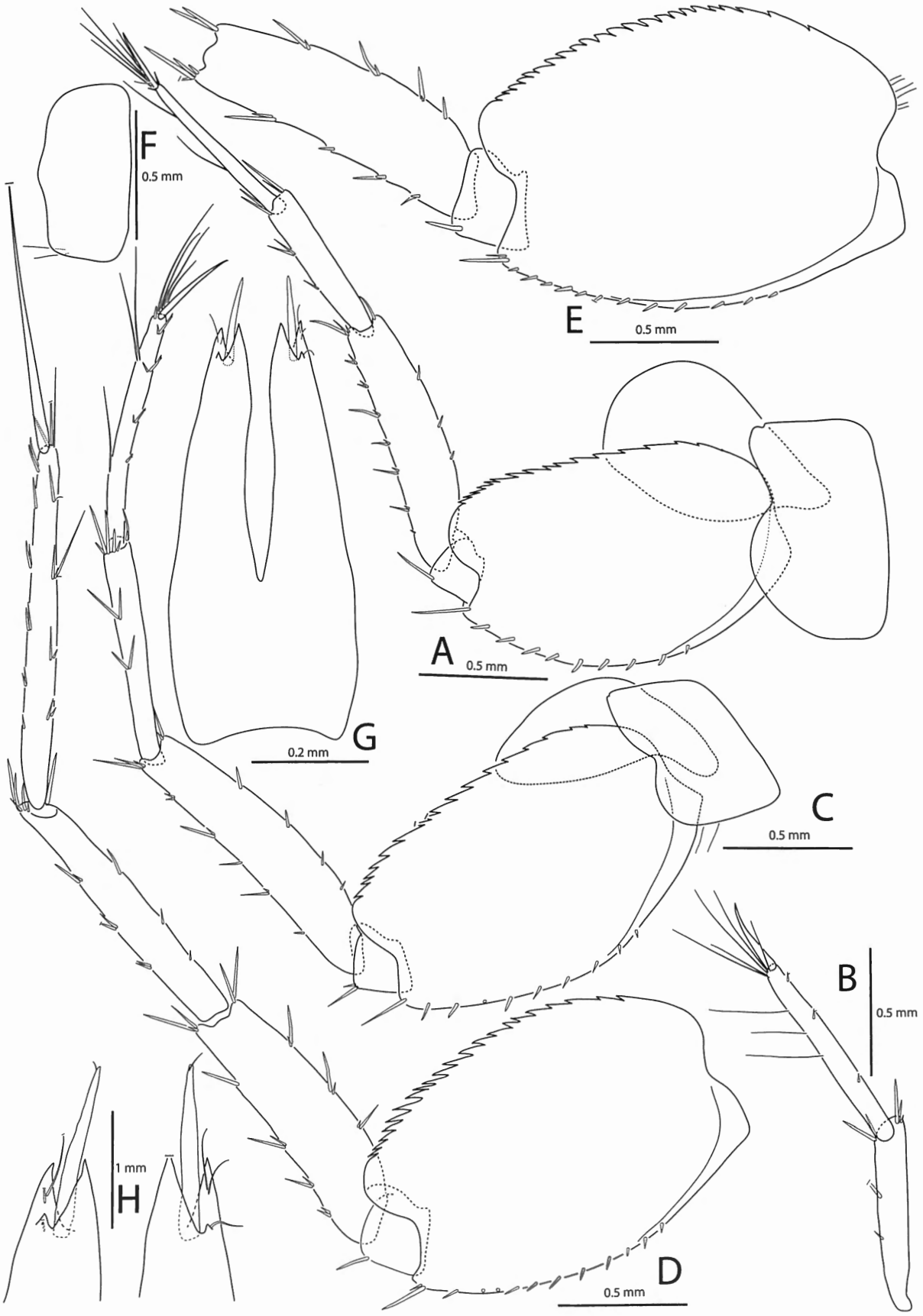

Fig. 11. – *Liljeborgia barhami* HURLEY, 1954, Stewart Isl.; A, C, D, mature ♀; B, E-H, adult ♂. A, right P5; B, tip of right P5; C, right P6; D-E, right P7; F, coxa of right P7; G, telson; H, tip of telson.

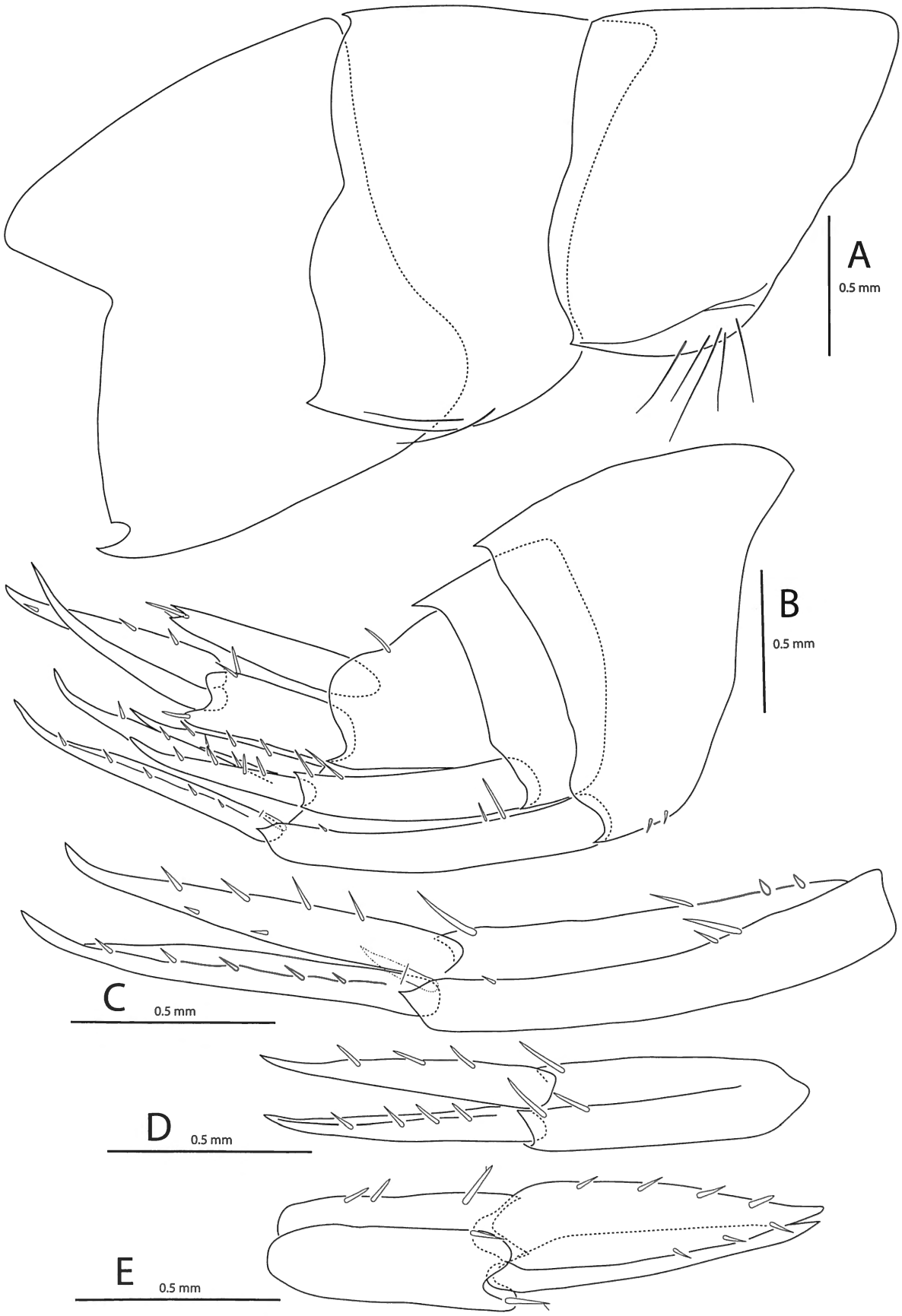

Fig. 12. – *Liljeborgia barhami* HURLEY, 1954, Stewart Isl.; A-E, adult ♂. A, pleosome; B, urosome; C, right U1; D, right U2; E, left U3.

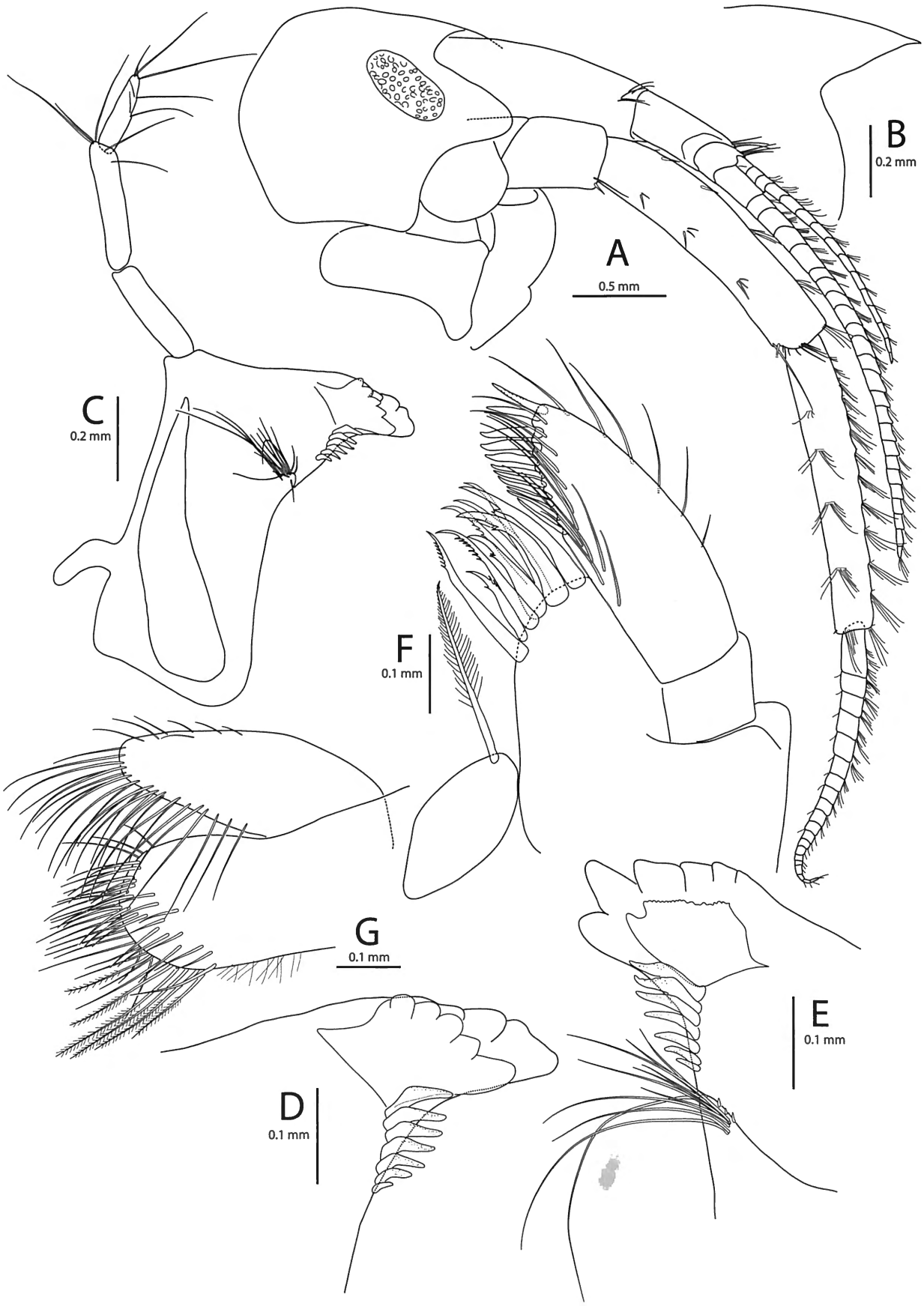

Fig. 13. – *Liljeborgia bathysciarum* n. sp., ♀ holotype, Elephant Isl., ANT-XXII/3, sta. 133-2. A, head and surrounding appendages; B, rostrum; C, left Md;, D, tip of left Md; E, right Md; F, left Mx1; G, left Mx2.

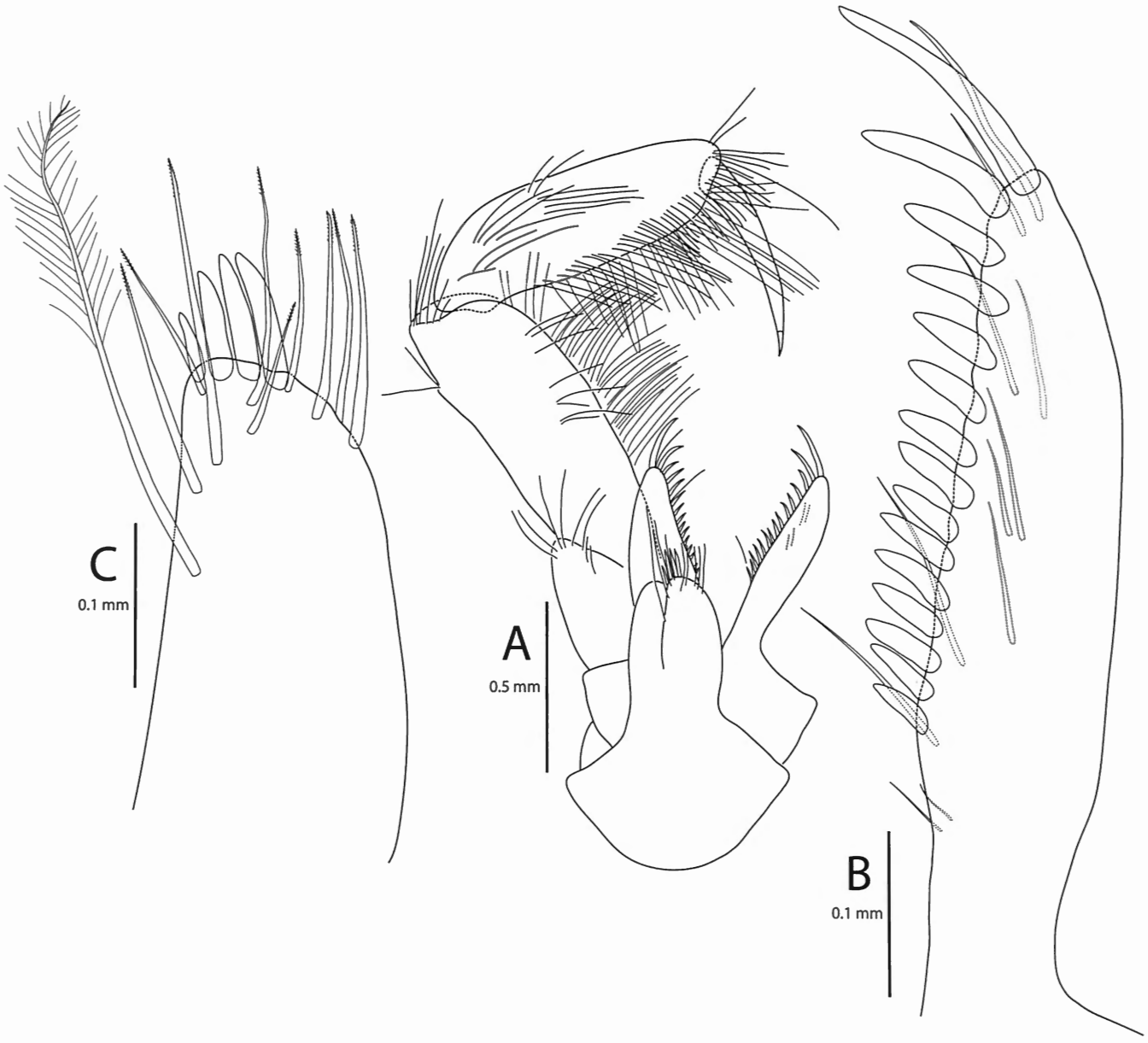

Fig. 14. – *Liljeborgia bathysciarum* n. sp., ♀ holotype, Elephant Isl., ANT-XXII/3, sta. 133-2. A, Mxp; B, right outer plate of Mxp; C, right inner plate of Mxp.

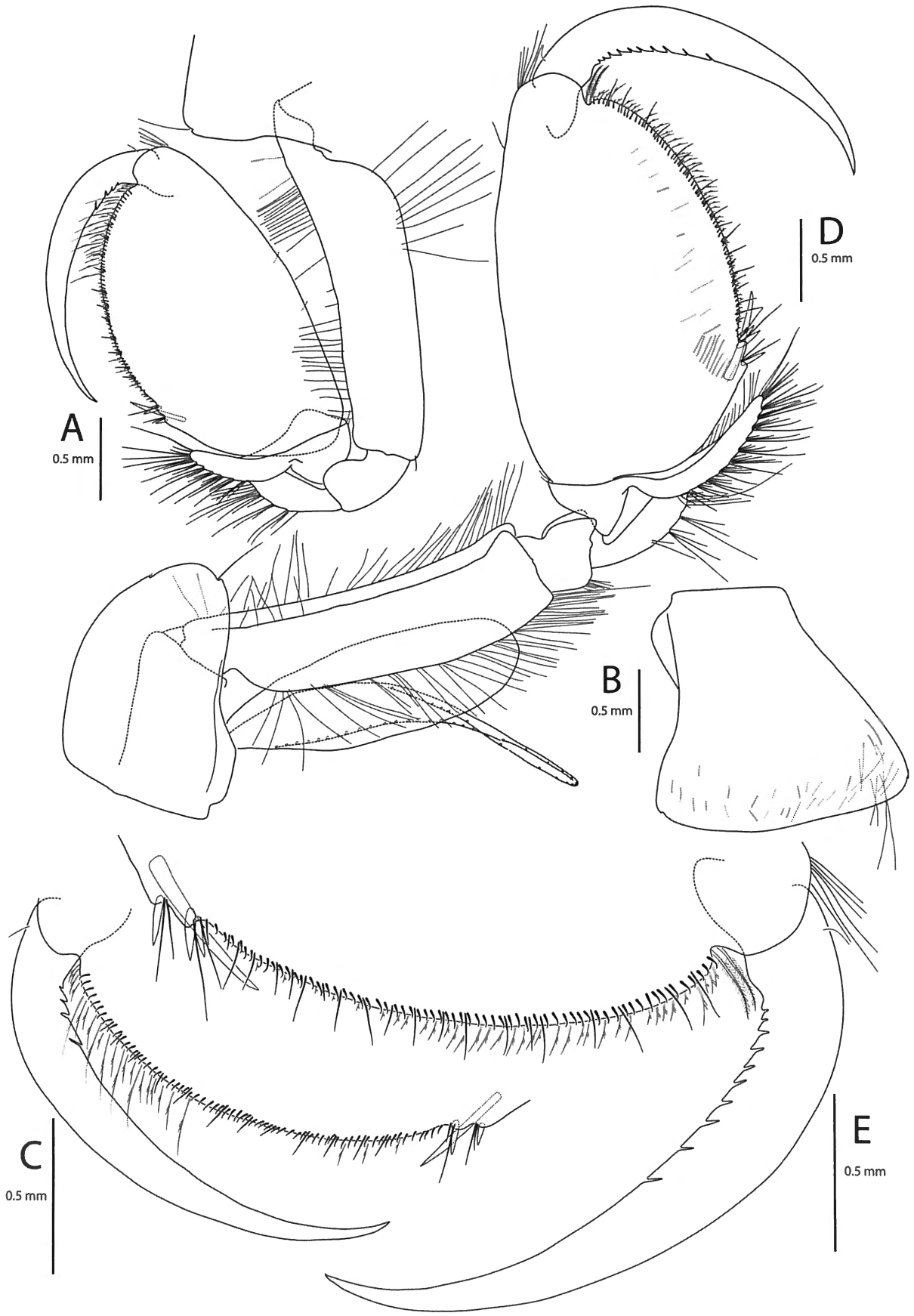

Fig. 15. – *Liljeborgia bathysciarum* n. sp., ♀ holotype, Elephant Isl., ANT-XXII/3, sta. 133-2. A, left Gn1; B, right coxa 1; C, palm and dactylus of left Gn1; D, right Gn2; E, palm and dactylus of right Gn2.

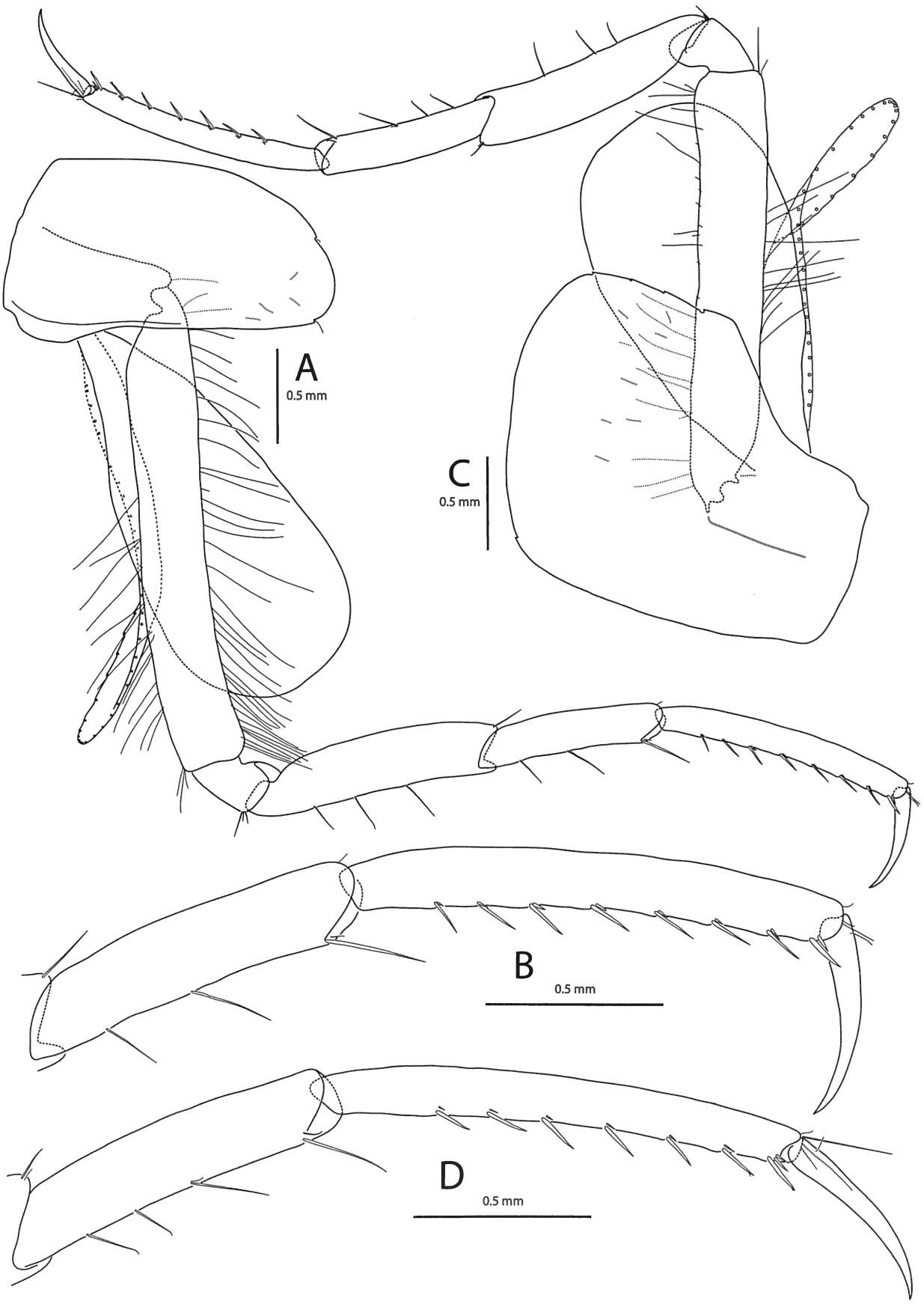

Fig. 16. – *Liljeborgia bathysciarum* n. sp., ♀ holotype, Elephant Isl., ANT-XXII/3, sta. 133-2. A, right P3; B, tip of right P3; C, right P4; D, tip of right P4.

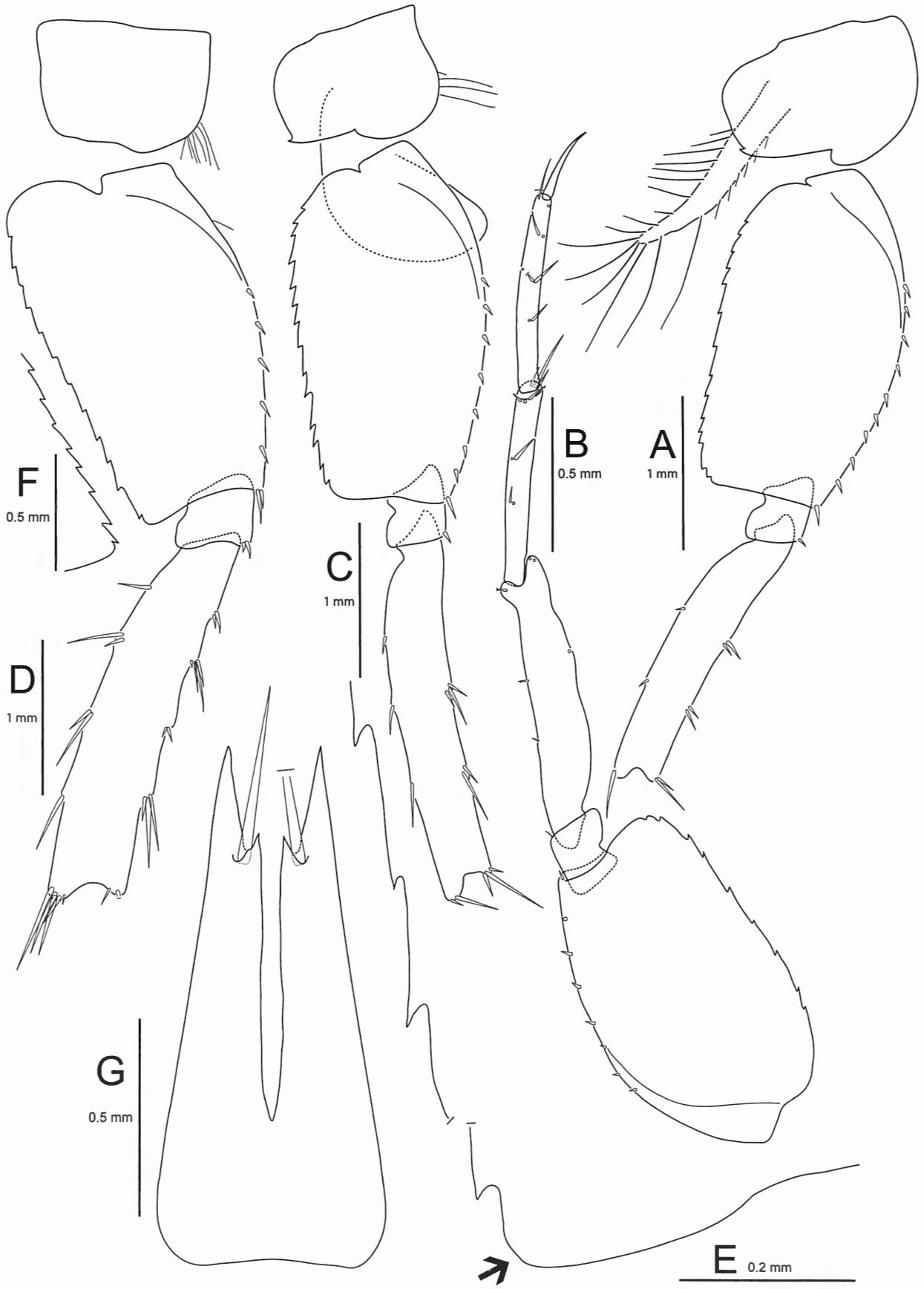

Fig. 17. – *Liljeborgia bathysciarum* n. sp., Elephant Isl., ANT-XXII/3, sta. 133-2. A, C, D, E, G, ♀ holotype; B, paratype, sex unknown (leg found detached in the vial); F, ♀ paratype. A, B, right P5; C, right P6; D, right P7; E, posterodistal area of basis of right P7; F, posterodistal area of basis of left P7; G, telson.

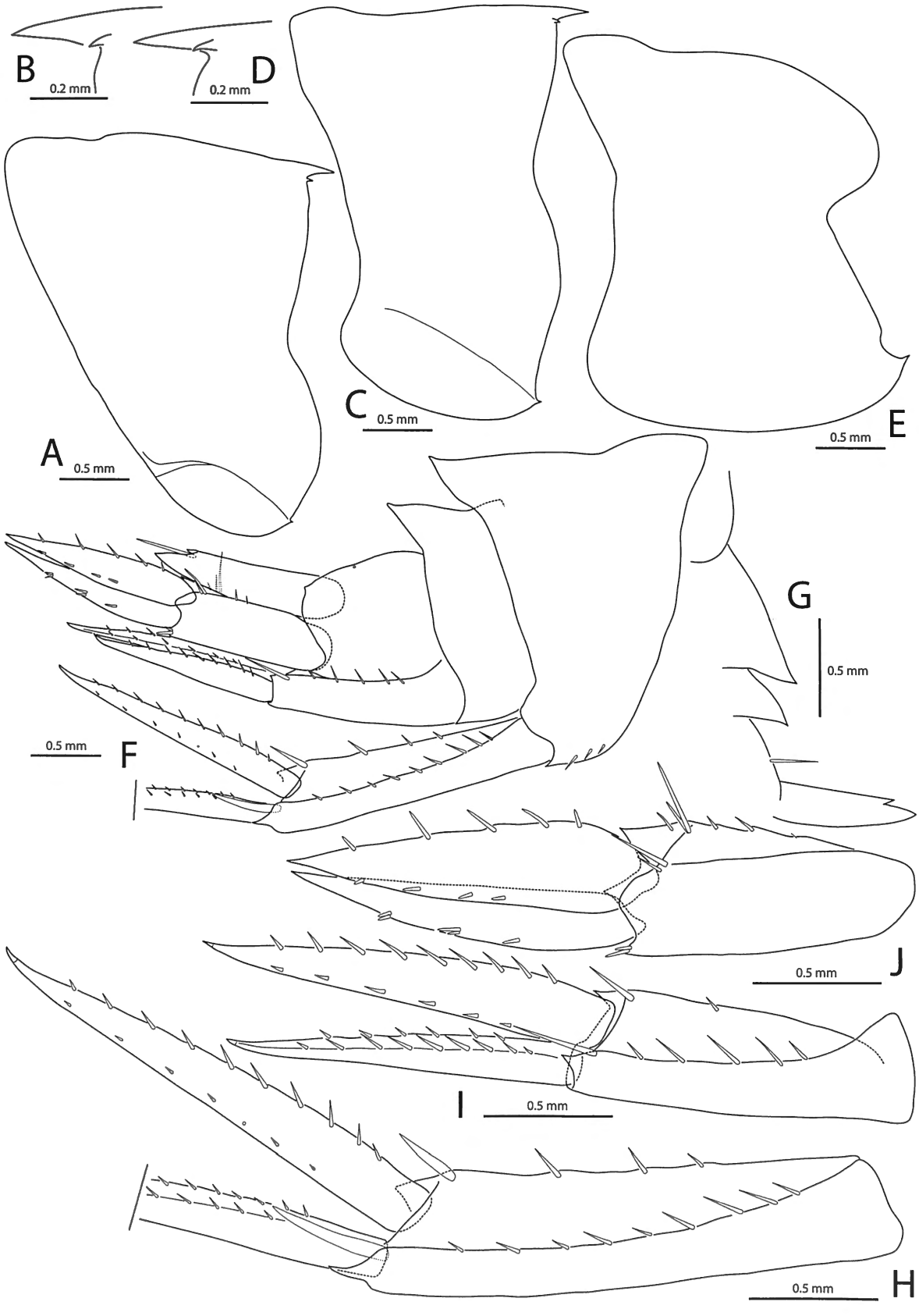

Fig. 18. – *Liljeborgia bathysciarum* n. sp., Elephant Isl., ANT-XXII/3, sta. 133-2. A-F, H-J, ♀ holotype; G, ♀ paratype. A, pleonite 1 (left side); B, posterodorsal corner of pleonite 1 (right side); C, pleonite 2 (left side); D, posterordorsal corner of pleonite 2. (right side); E, pleonite 3 (left side); F, urosome (left side); G, dorsal part of 4 last posterior segments + telson; H, right U1; I, right U2; J, right U3.

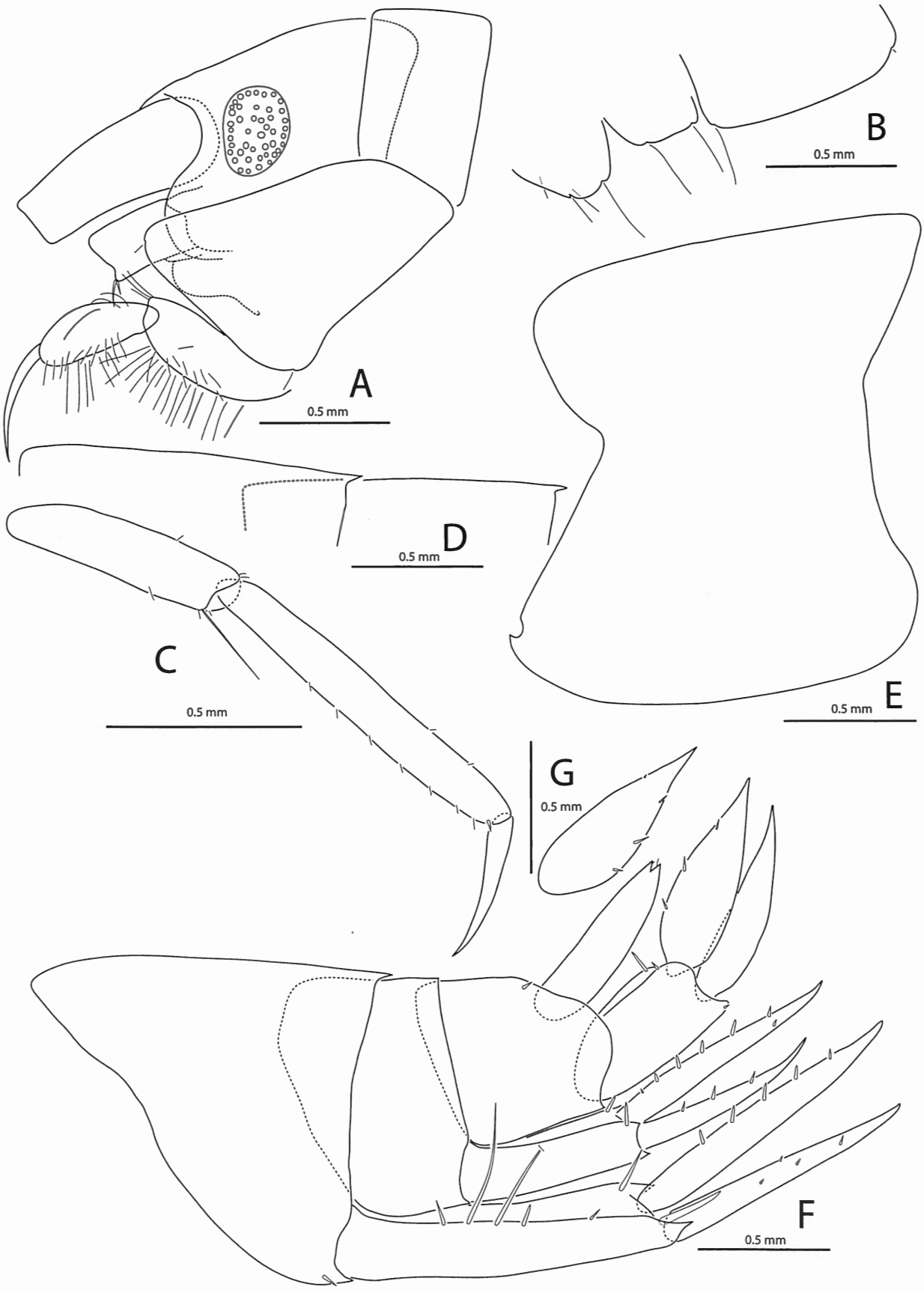

Fig. 19. – *Liljeborgia chevreuxi* SCHELLENBERG, 1931, ♂, Ross Sea, TAN 0402/77. A, head; B, tip of right coxae 1-3; C, tip of right P4; D, dorsal border of pleonites 1-2; E, pleonite 3; F, urosome; G, inner ramus of right U3.

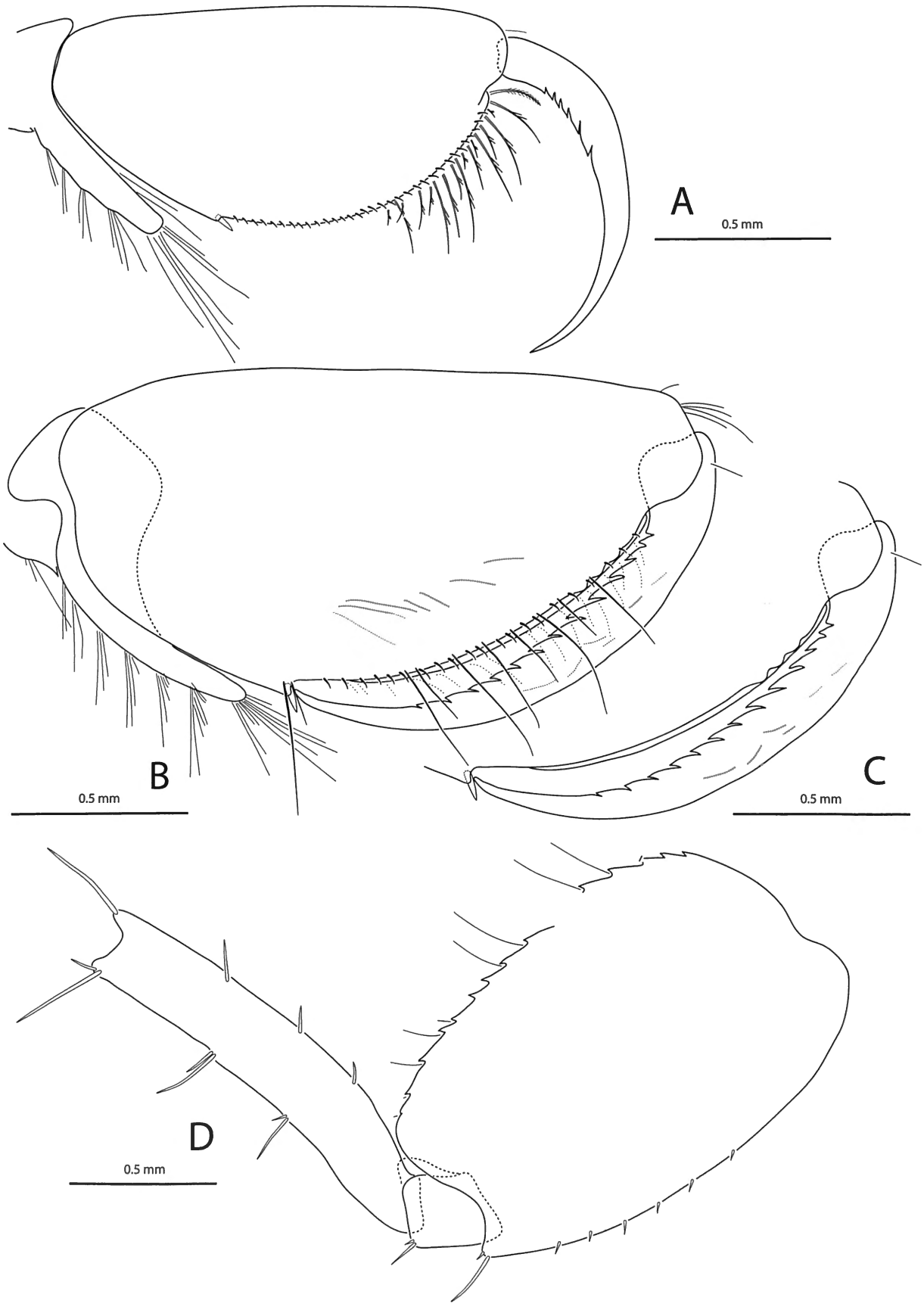

Fig. 20. – *Liljeborgia chevreuxi* SCHELLENBERG, 1931, ♂, Ross Sea, TAN 0402/77. A, right Gn1; B, right Gn2; C, dactylus and palm of right Gn2; D, right P6

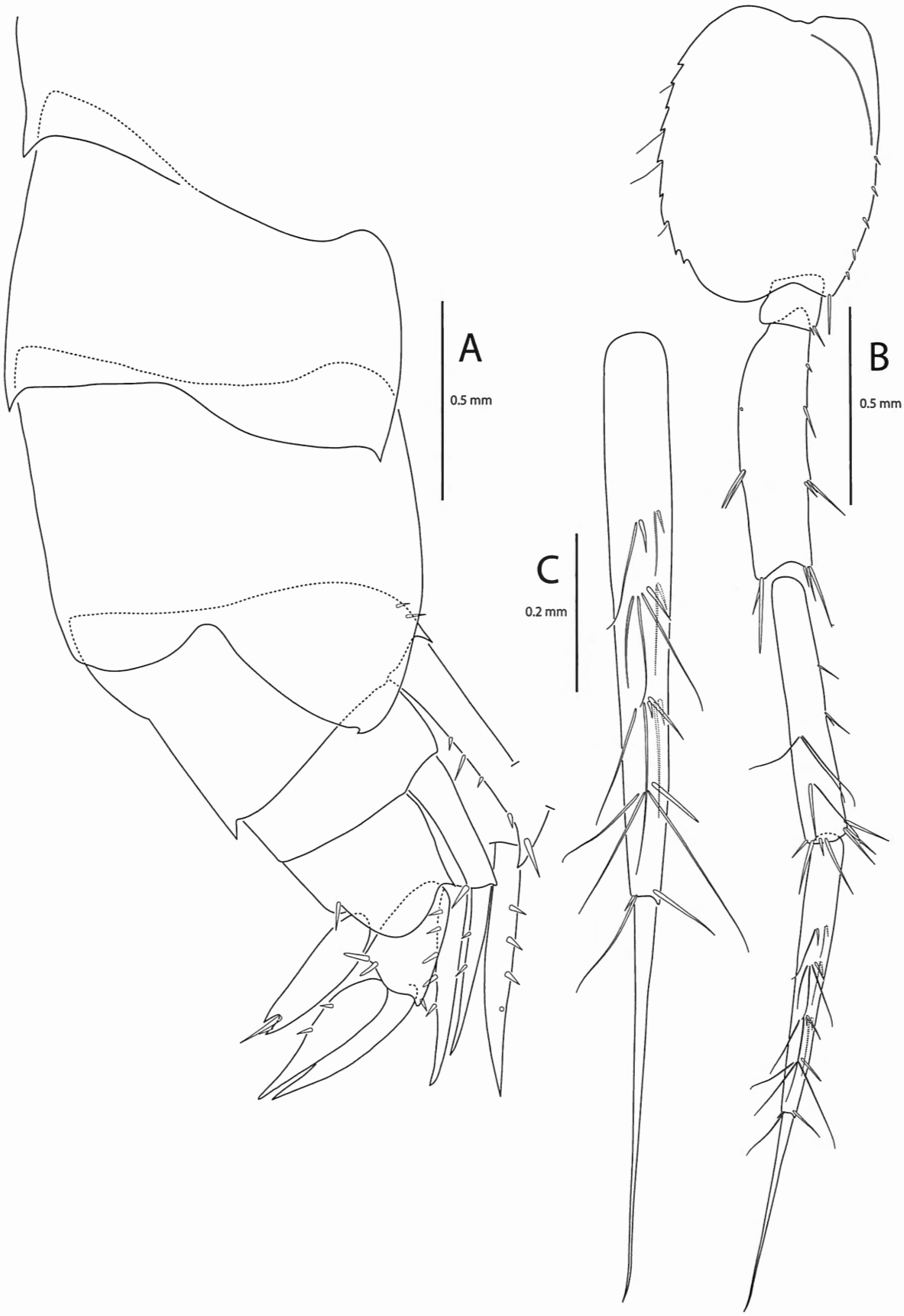

Fig. 21. – *Liljeborgia chevreuxi* SCHELLENBERG, 1931, presumably ♀♀. A, ANT XXI-2, sta. 019-1, Bouvetøya; B-C, ANT VII-4, sta. 245, E Weddell Sea. A, pleon. B, left P7 (medial view); C, tip of left P7 (medial view).

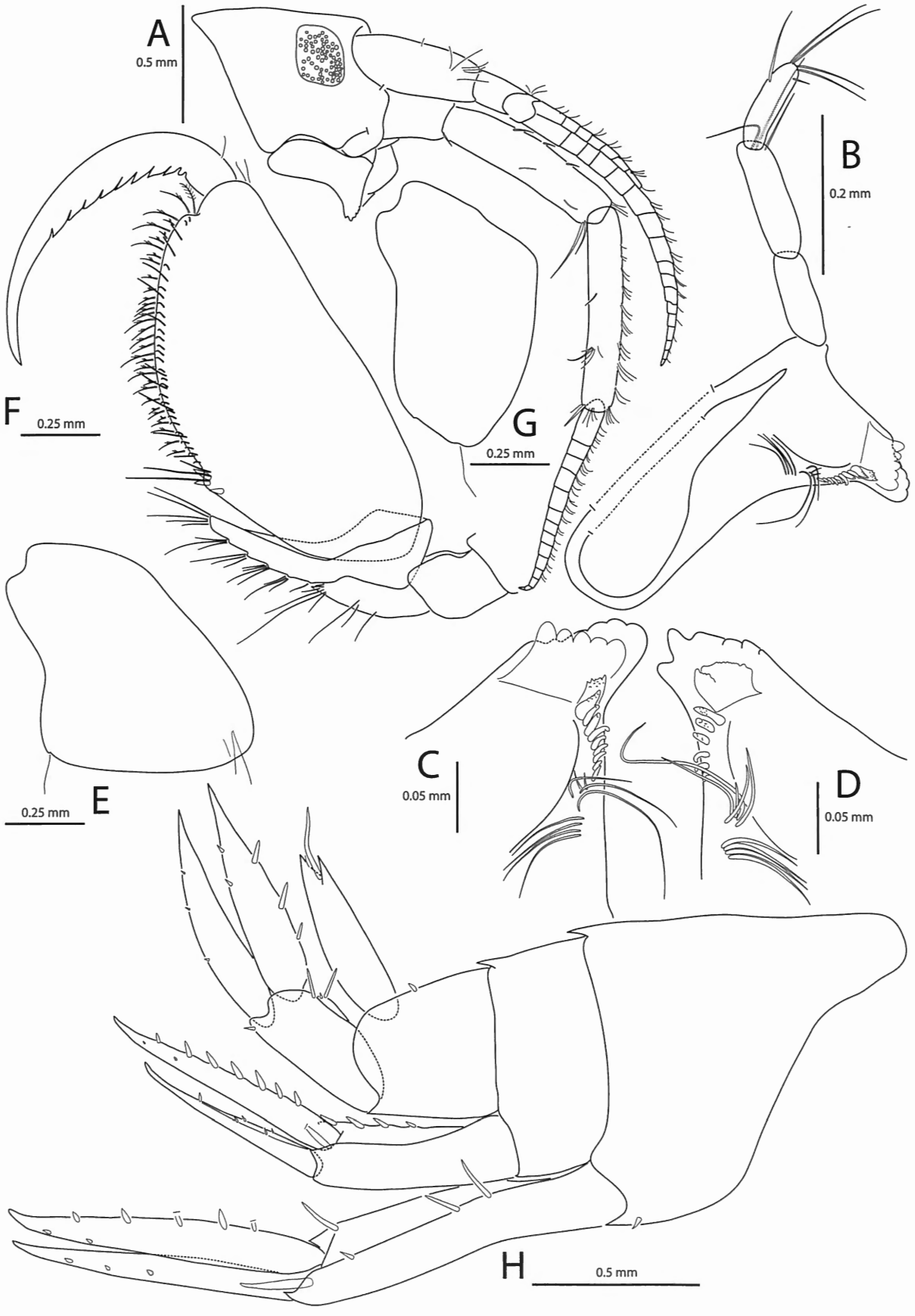

Fig. 22. – *Liljeborgia cryptothrix* D'UDEKEM D'ACOZ, 2008, nearly mature ♀, Macquarie Isl., R/V Eltanin, cruise 27, sta. 1974. A, head with antennae; B, left Md; C, tip of left Md, D, tip of right Md; E, right coxa 1; F, left Gn2; G, right coxa 2; H, urosome.

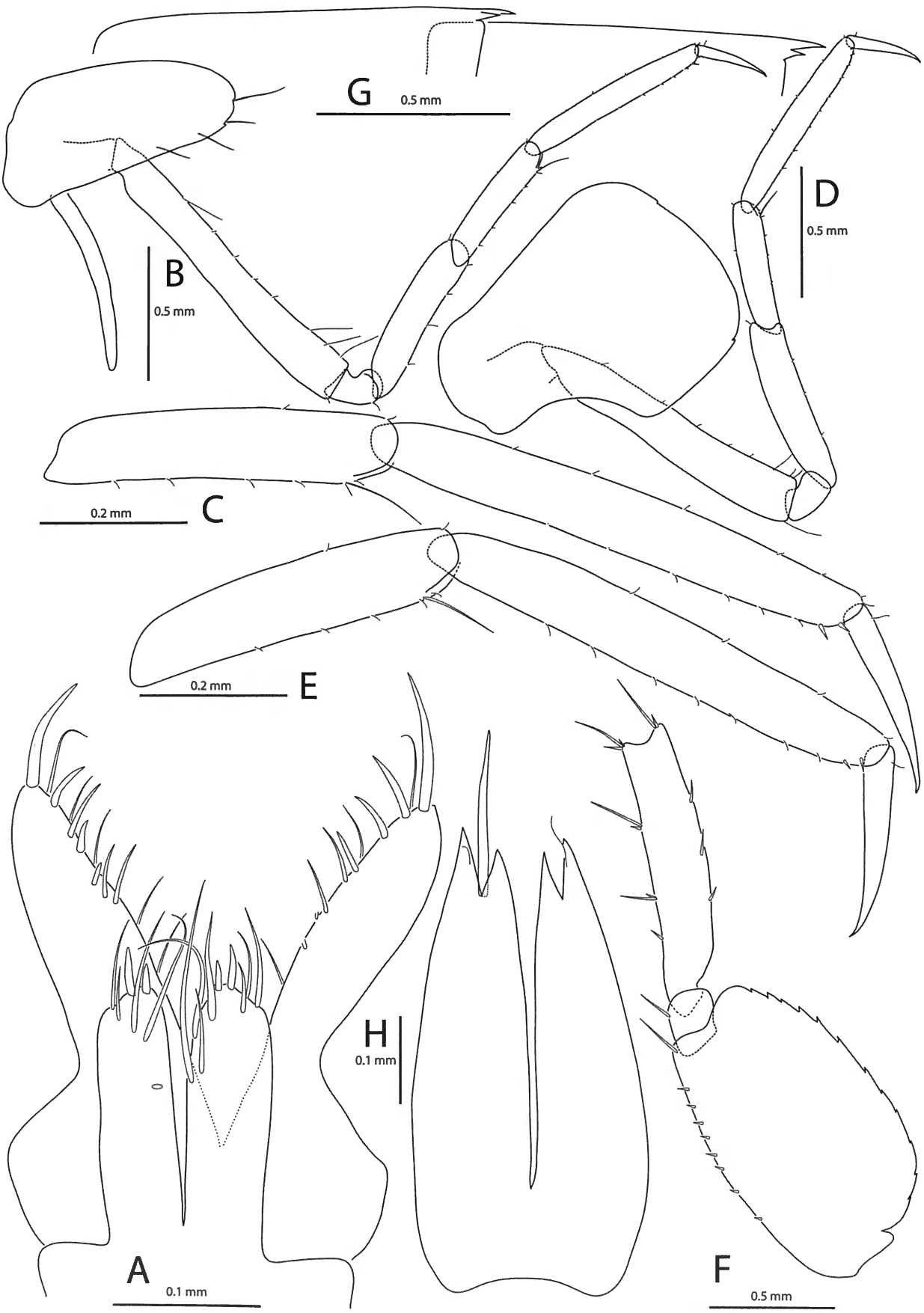

Fig. 23. – *Liljeborgia cryptothrix* D'UDEKEM D'ACOZ, 2008, nearly mature ♀, Macquarie Isl., R/V Eltanin, cruise 27, sta. 1974. A, plates of Mxp; B, right P3; C, tip of right P3; D, right P4; E, tip of right P4; F, right P6; G, dorsal border of pleonites 1 & 2; H, telson.

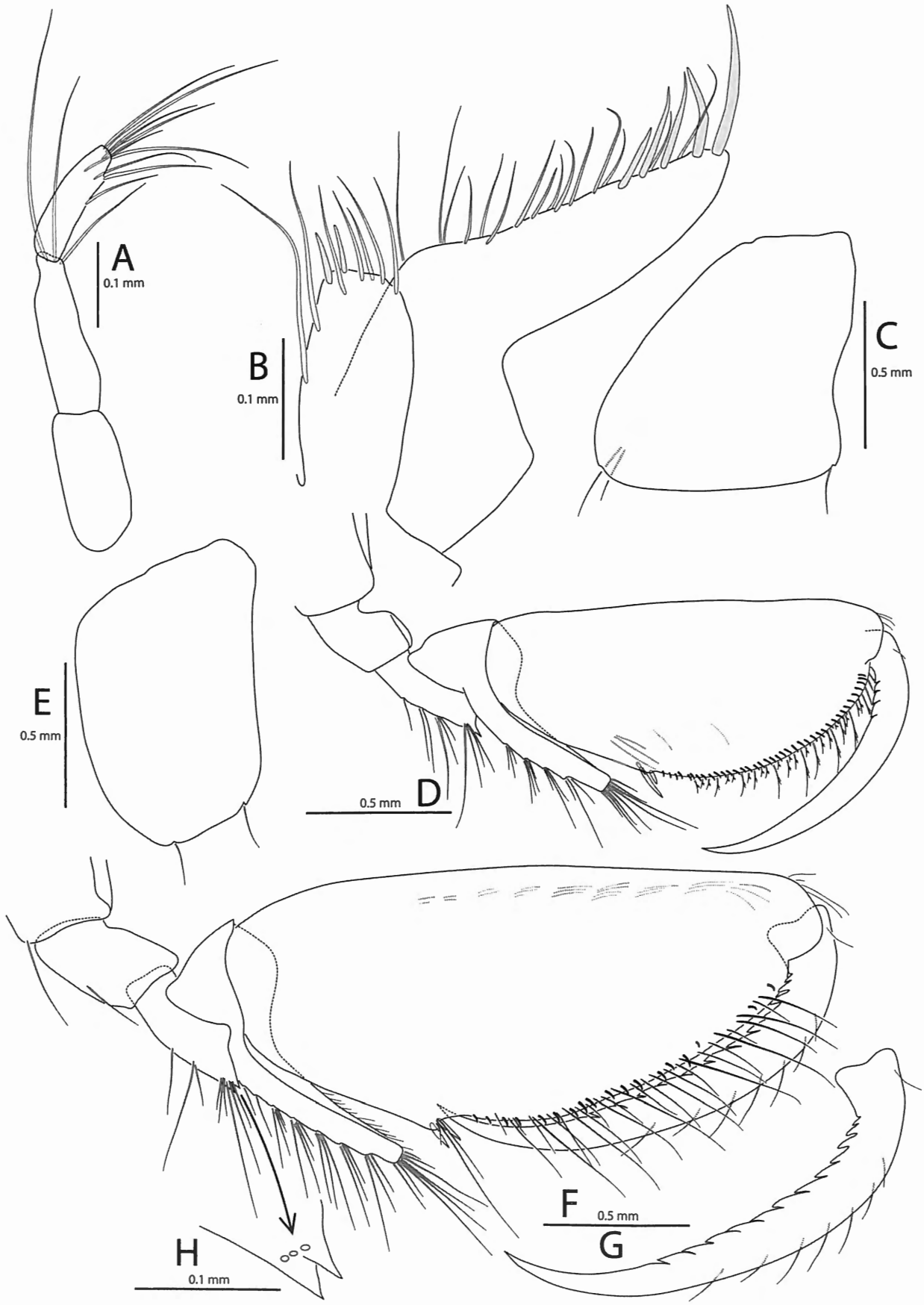

Fig. 24. – *Liljeborgia kerguelensis* Bellan-Santini & Ledoyer, 1974, adult ♂, Macquarie Isl., R/V Eltanin, cruise 27, sta. 1974. A, palp of right Md; B, right plates of Mxp; C, left coxa 1; D, right Gn1; E, left coxa 2; F, right Gn2; G, dactylus of right Gn2; H, tip of merus of right Gn2.

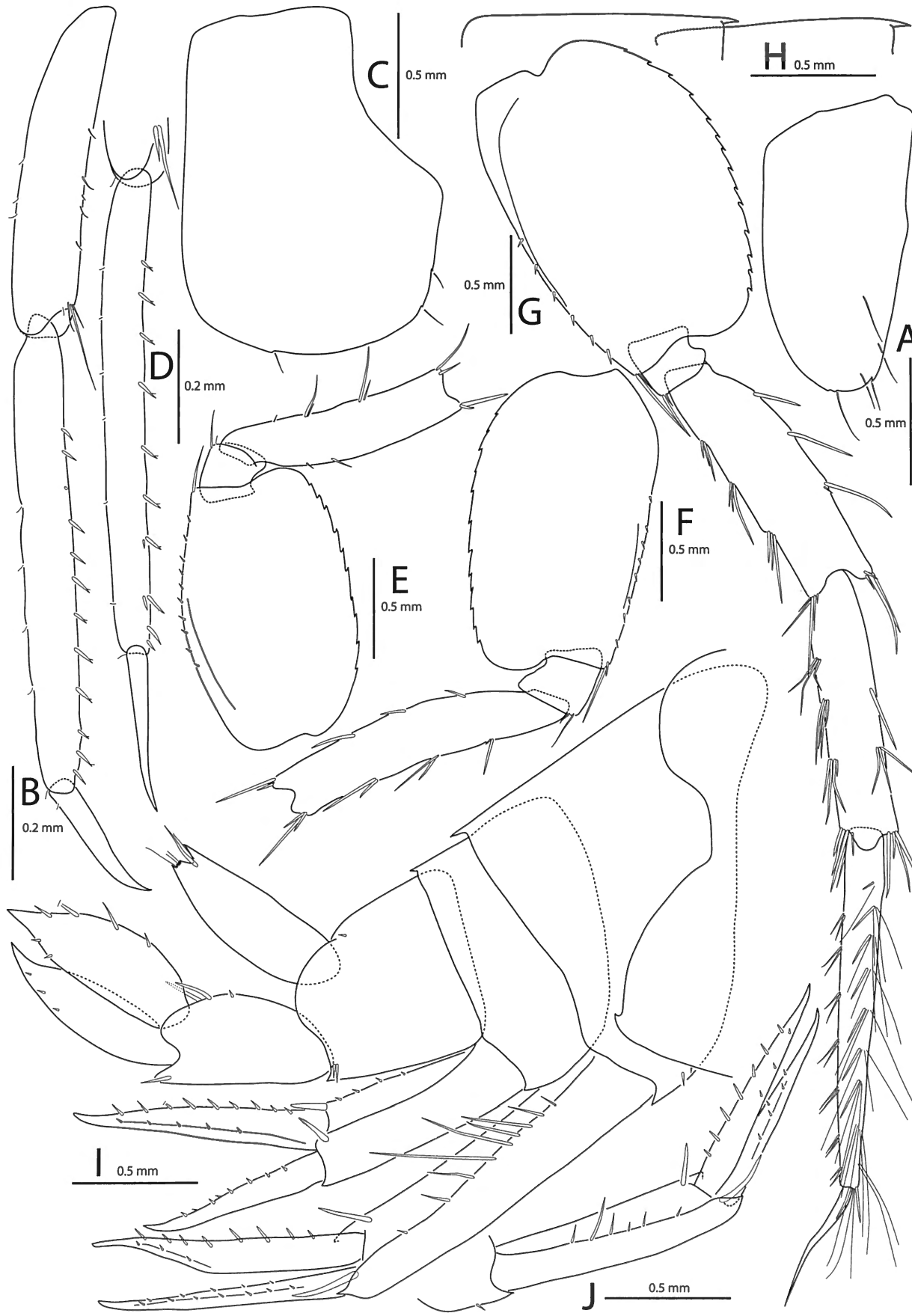

Fig. 25. – *Liljeborgia kerguelensis* Bellan-Santini & Ledoyer, 1974. A-G, I, adult ♂; H, J, ♀. Macquarie Isl., R/V Eltanin, cruise 27, sta. 1974. A, left coxa 3; B, tip of left P3; C, left coxa 4; D, tip of left P4; E, right P5; F, right P6; G, right P7; H, dorsal border of pleonites 1 & 2; I, urosome; J, left U1.

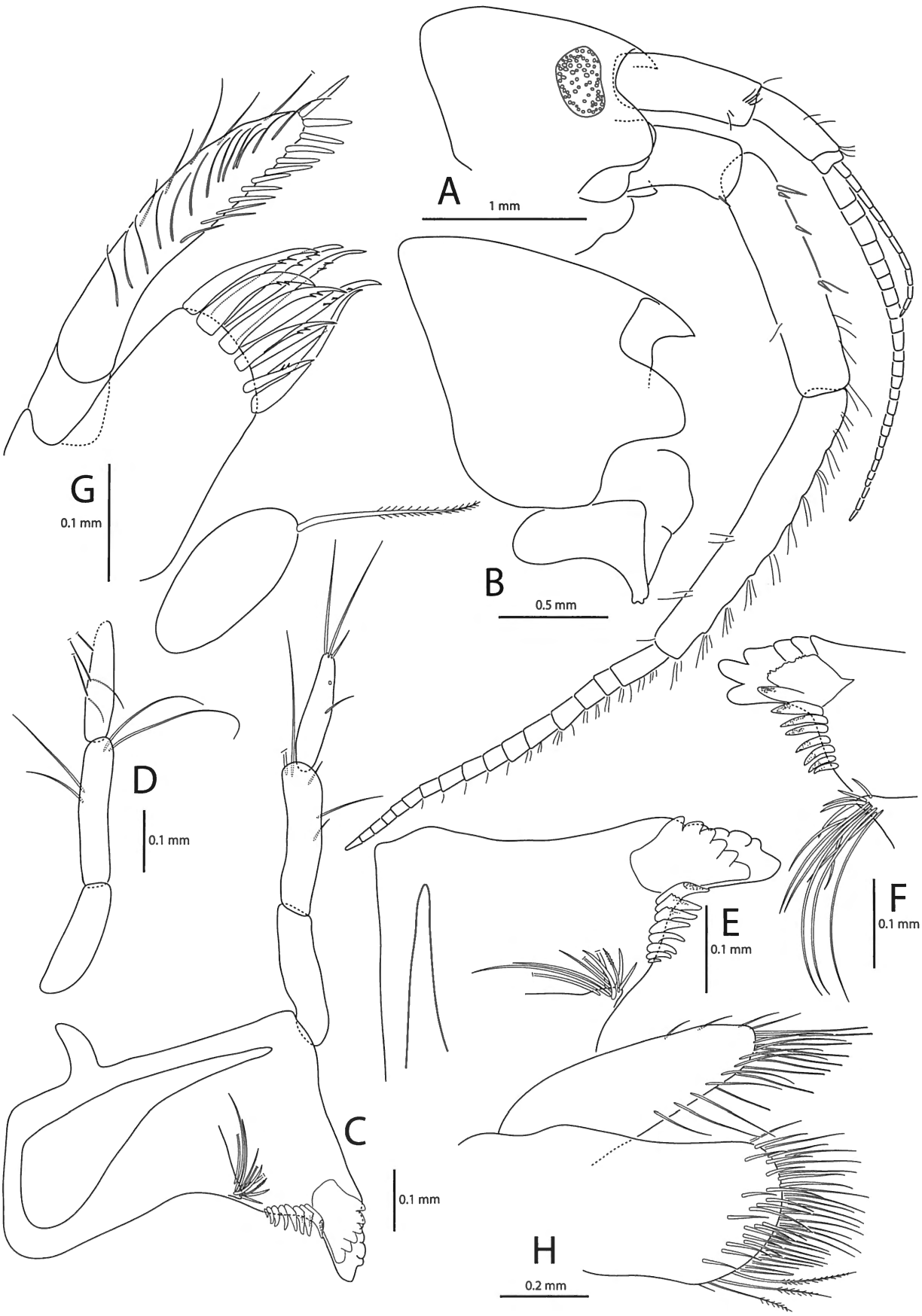

Fig. 26. – *Liljeborgia longicornis* (SCHELLENBERG, 1931), short-toothed form, Patagonia, Victor Hensen Cruise, sta. 972. A, ♂; B-H, ♀. A, head with antennae; B, head with epistome and Md; C, left Md; D, palp of right Md; E, tip of left Md; F, tip of right Md; G, right Mx1; H, right Mx2.

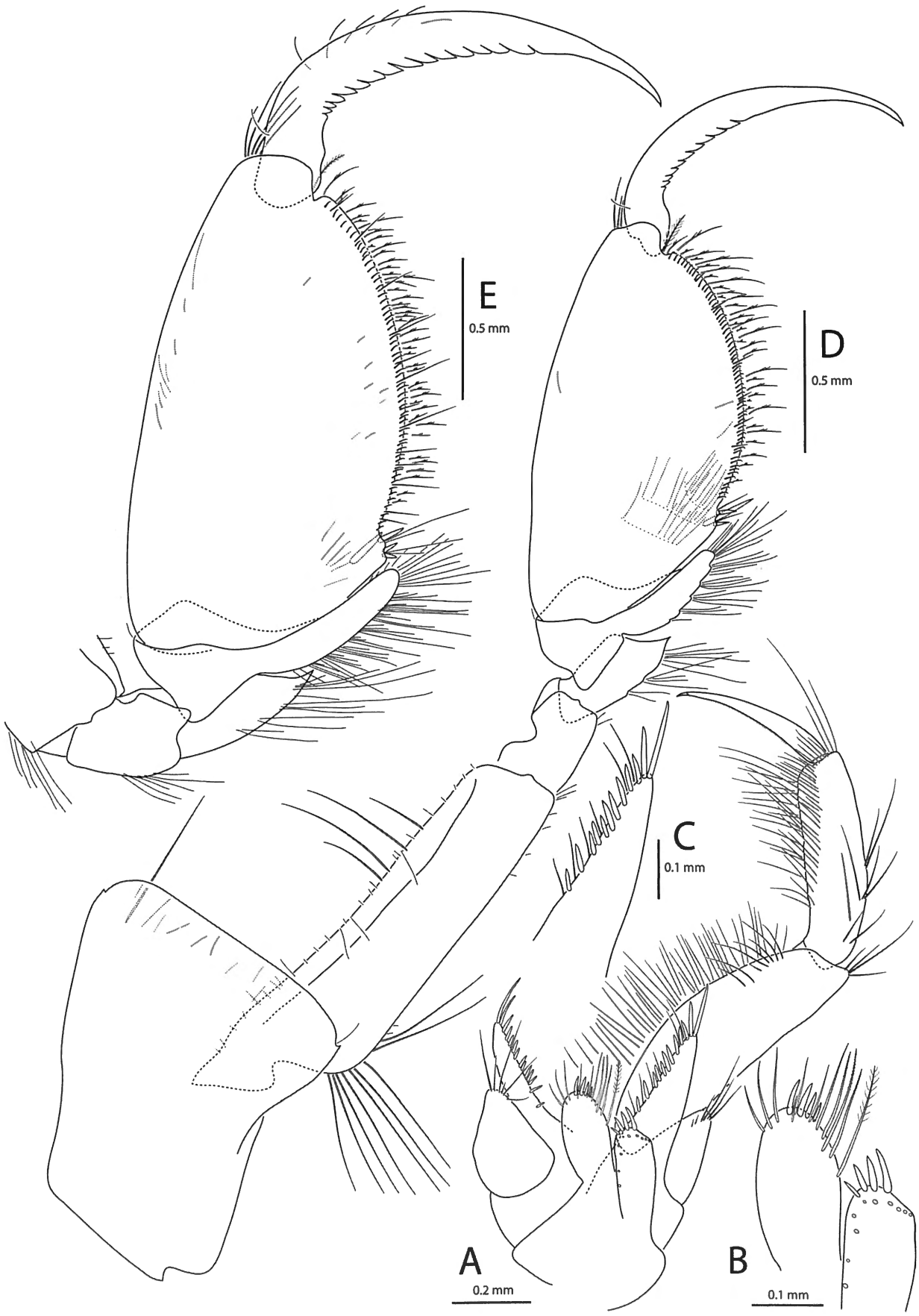

Fig. 27. – *Liljeborgia longicornis* (SCHELLENBERG, 1931), short-toothed form, Patagonia, Victor Hensen Cruise, sta. 972, ♀. A, Mxp; B, inner plates of Mxp; C, right outer plate of Mxp; D, right Gn1; E, right Gn2.

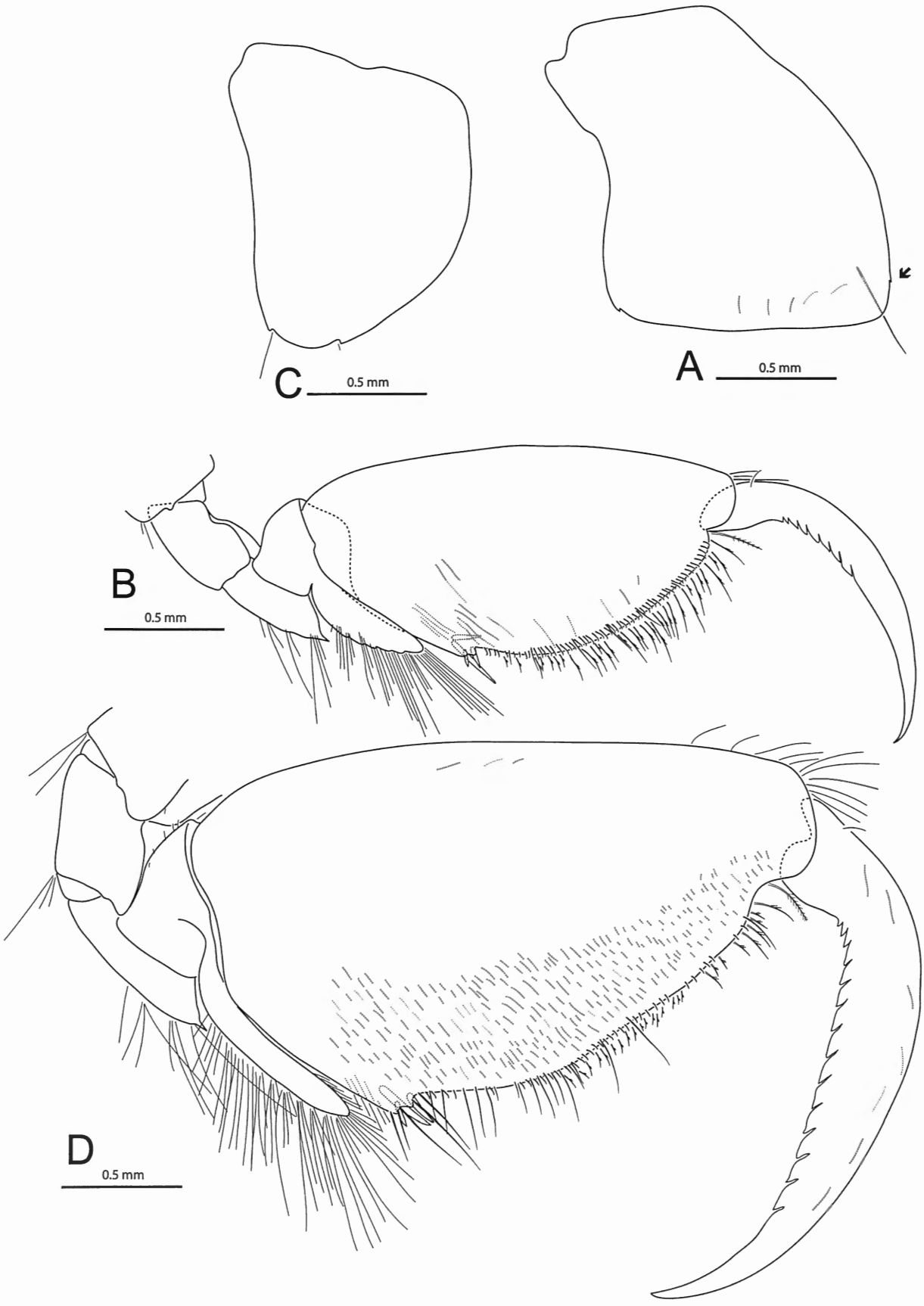

Fig. 28. – *Liljeborgia longicornis* (SCHELLENBERG, 1931), short-toothed form, Patagonia, Victor Hensen Cruise, sta. 972, ♂. A, right coxa 1; B, right Gn1; C, right coxa 2; D, right Gn2.

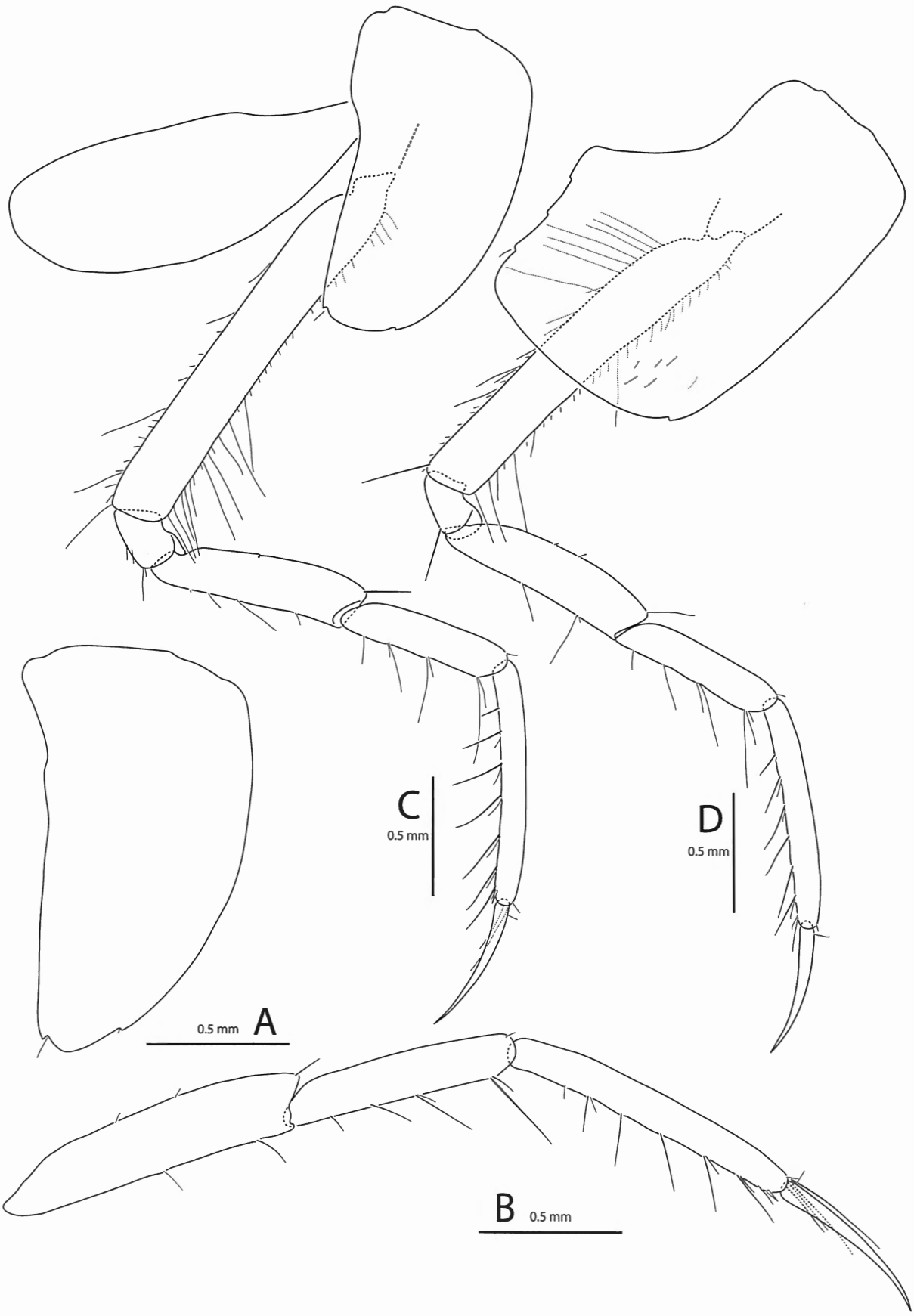

Fig. 29. – *Liljeborgia longicornis* (SCHELLENBERG, 1931), short-toothed form, Patagonia, Victor Hensen Cruise, sta. 972. A-B, ♂; C-D, ♀. A, right coxa 3; B, tip of P3; C, P3; D, P3.

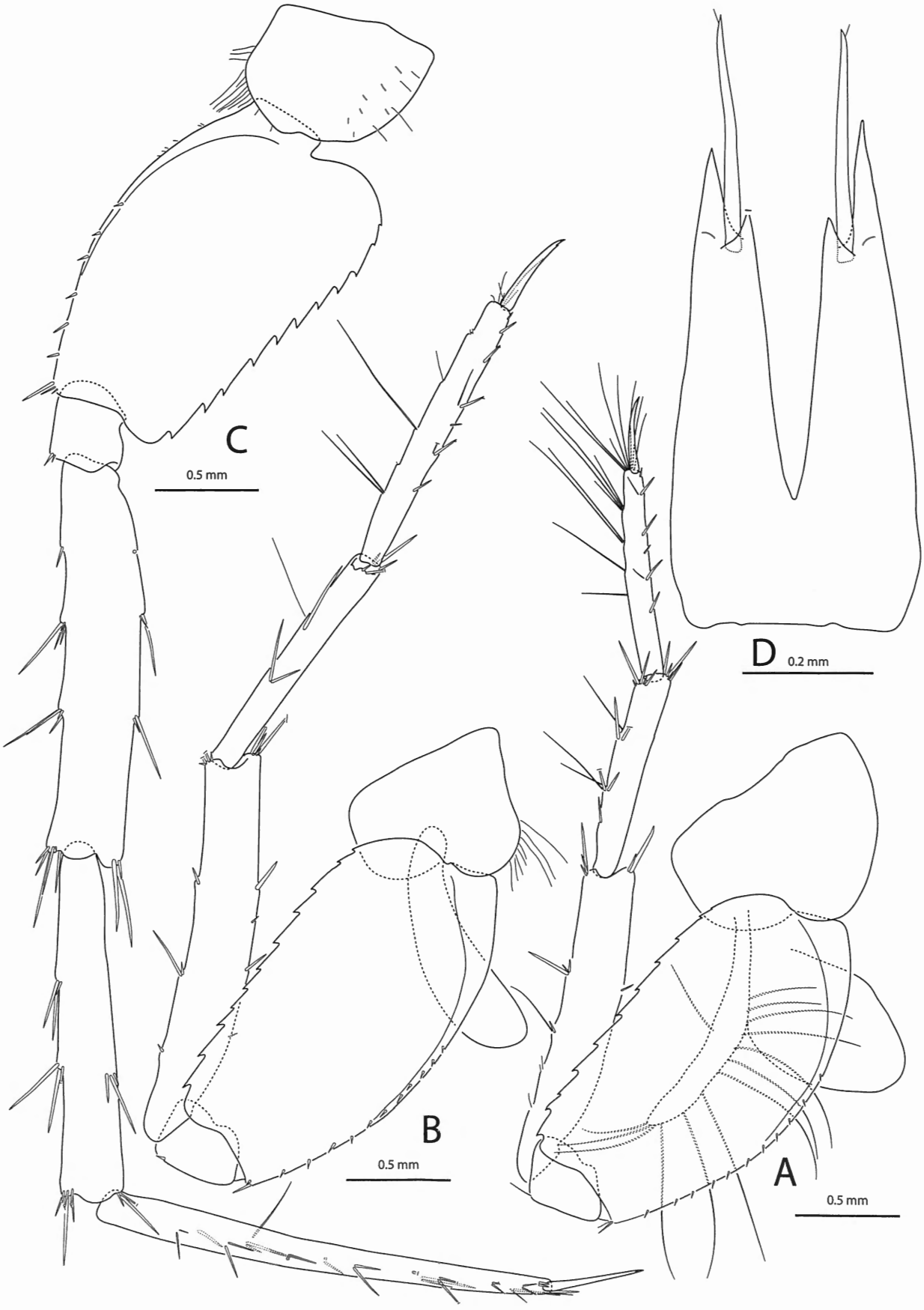

Fig. 30. – *Liljeborgia longicornis* (SCHELLENBERG, 1931), short-toothed form, Patagonia, Victor Hensen Cruise, sta. 972, ♀. A, right P5; B, right P6; C, left P7; D, telson.

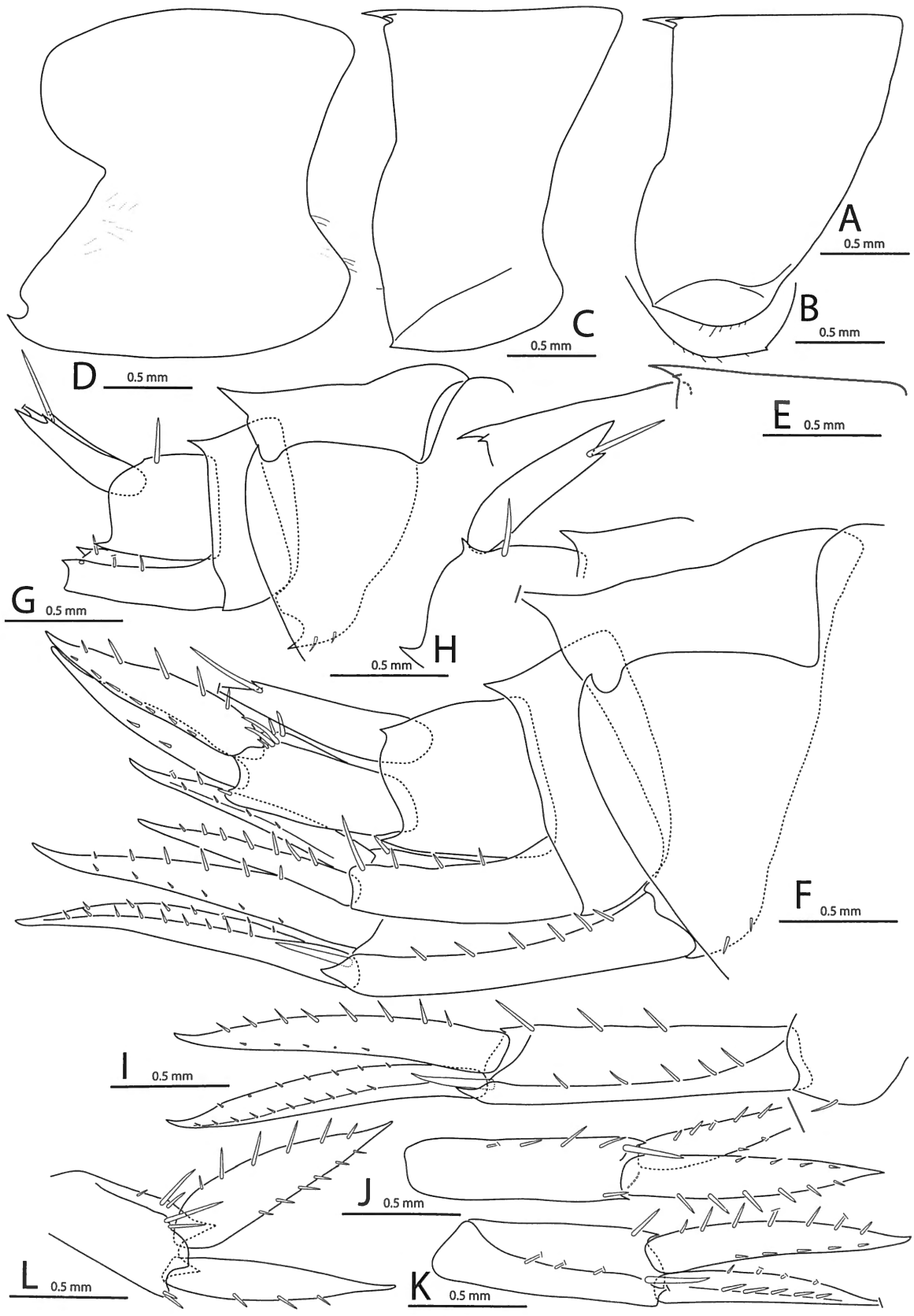

Fig. 31. – *Liljeborgia longicornis* (SCHELLENBERG, 1931), short-toothed form, Patagonia. A-D, F, H-L, Victor Hensen Cruise, sta. 972 (A-D, H-L: ♀; F, ♂); E, G, Victor Hensen Cruise, sta. 1204, oviverous ♀. A, pleonite 1 (right side); B, idem (tip of left side); C, pleonite 2 (right side); D, pleonite 3 (right side); E, dorsal border of pleonites 1 and 2; F-G, urosome and posterior part of pleonite 3; H, posterior part of urosome; I, right U1; J, right U2; K, left U2; L, left U3.

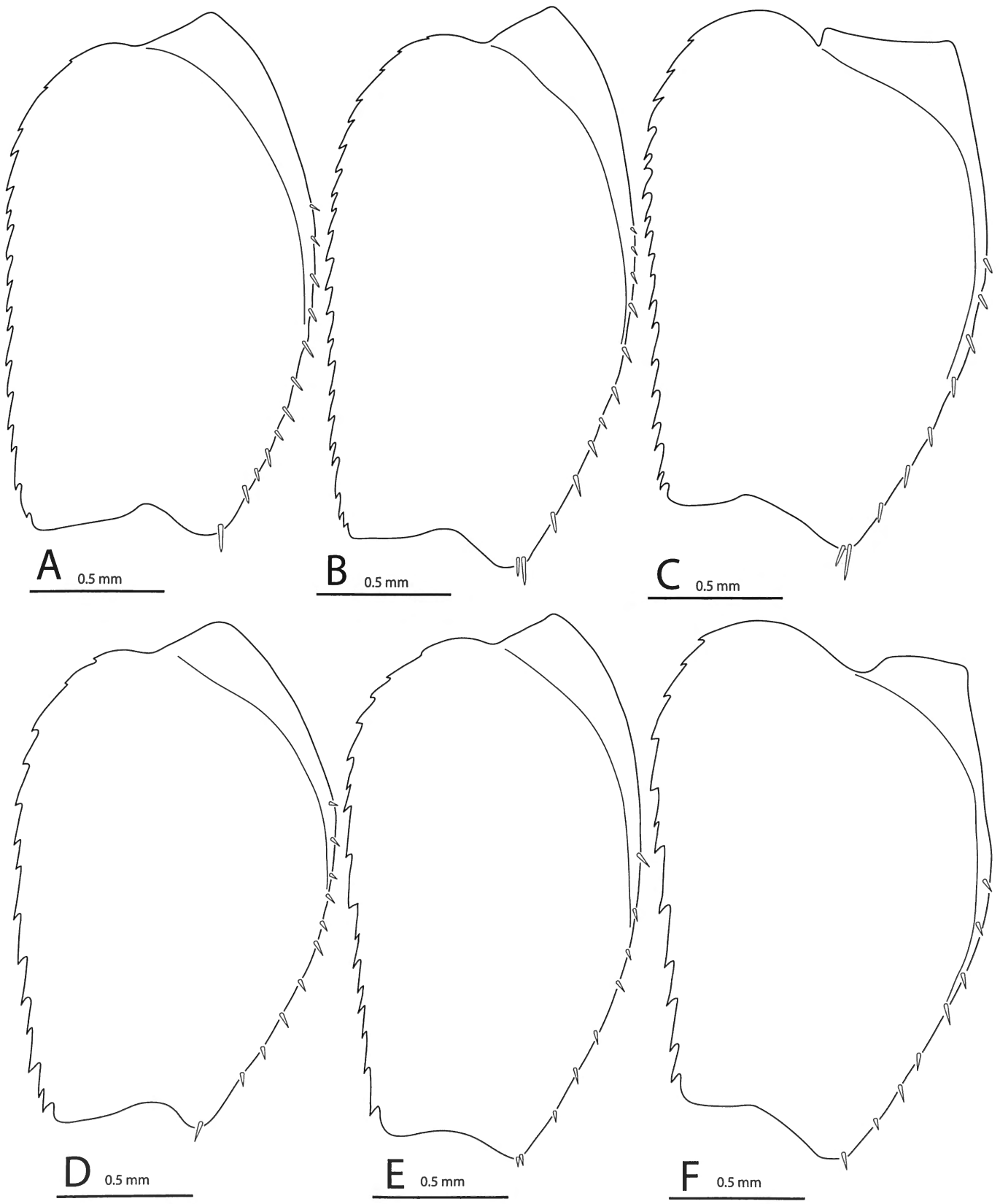

Fig. 32. – A-C, *Liljeborgia longicornis* (SCHELLENBERG, 1931), typical form, ♀, Patagonia, MAG94, sta. 966; D-F, short-toothed form, ♂, MAG94, sta. 972. A, D, basis of P5; B, E, basis of P6; C, F, basis of P7.

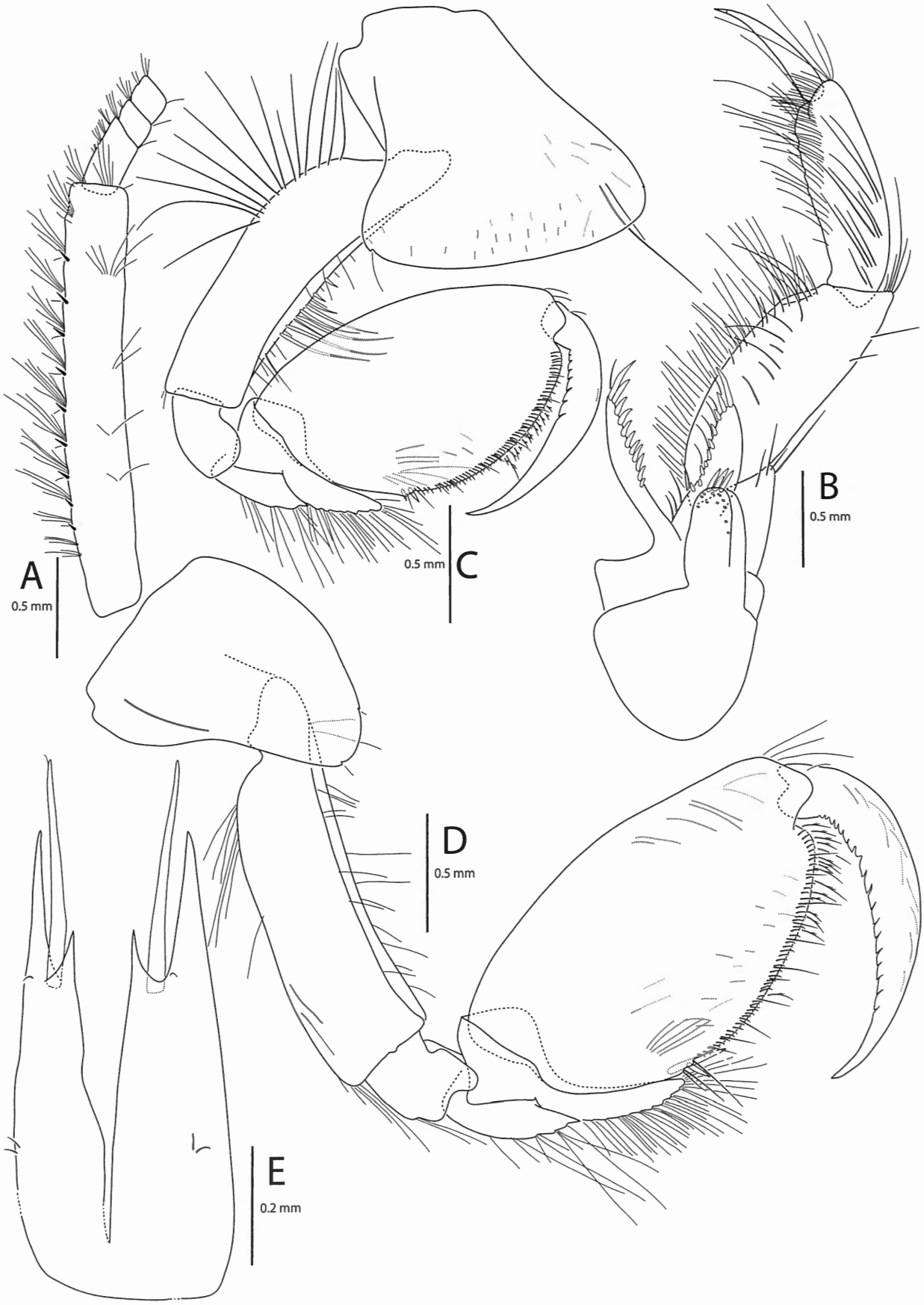

Fig. 33. – *Liljeborgia longicornis* (SCHELLENBERG, 1931), typical form, Patagonia. A, large ♀, CIMAR Fiordo 3, sta. 2; B-E, small ♀, MAG94, sta. 966. A, article 5 of peduncle and proximal flagellar articles of right A2; B, Mxp; C, right Gn1; D, right Gn2; E, telson.

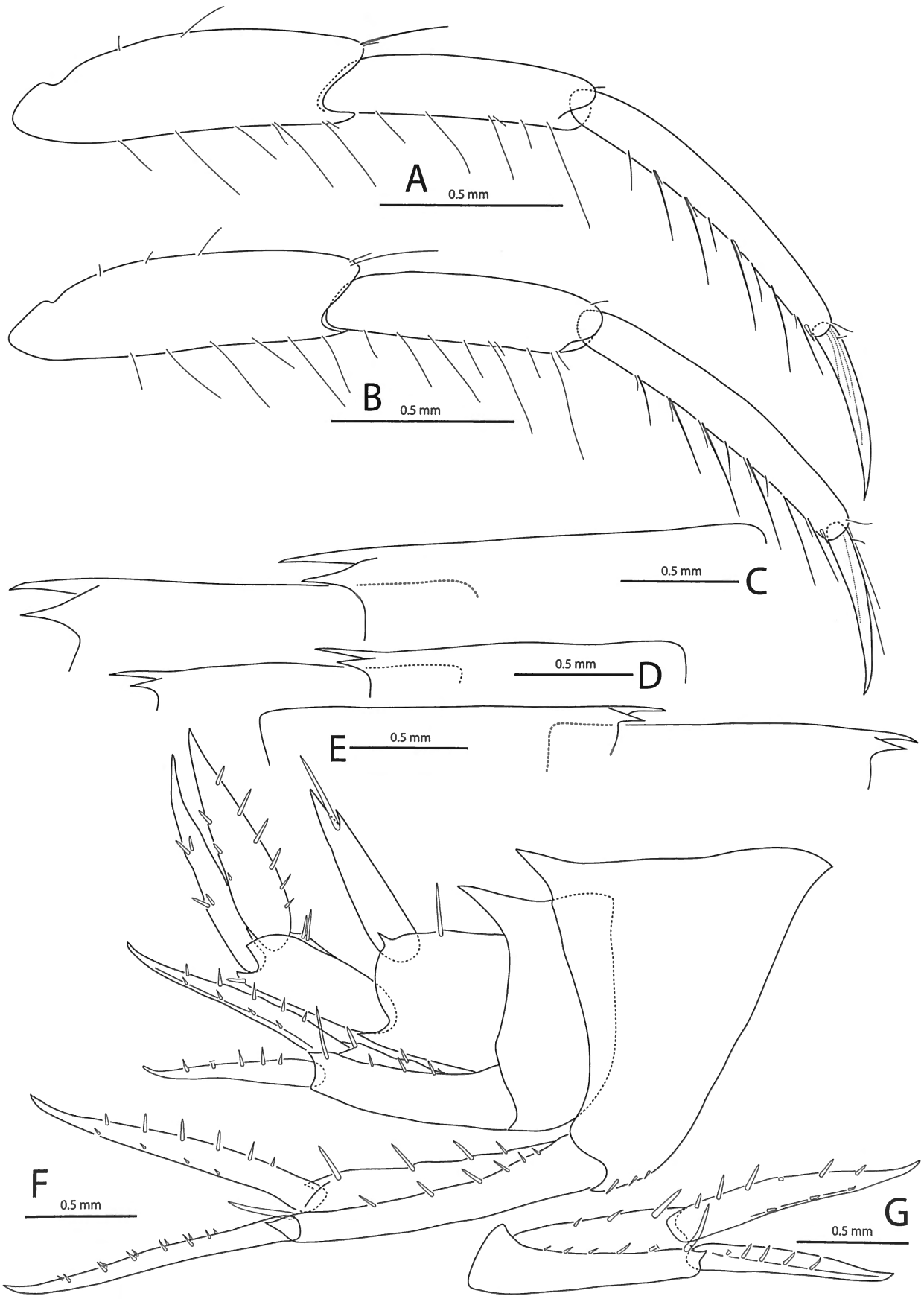

Fig. 34. – *Liljeborgia longicornis* (SCHELLENBERG, 1931), typical form, ♀♀ (A-B, D-E, about 11 mm; C larger specimen about 15 mm), Patagonia, MAG94, sta. 966. A, tip of right P3; B, tip of right P4; C-E, dorsal border of pleonite 1-2 in lateral view; F, urosome; G, left U2.

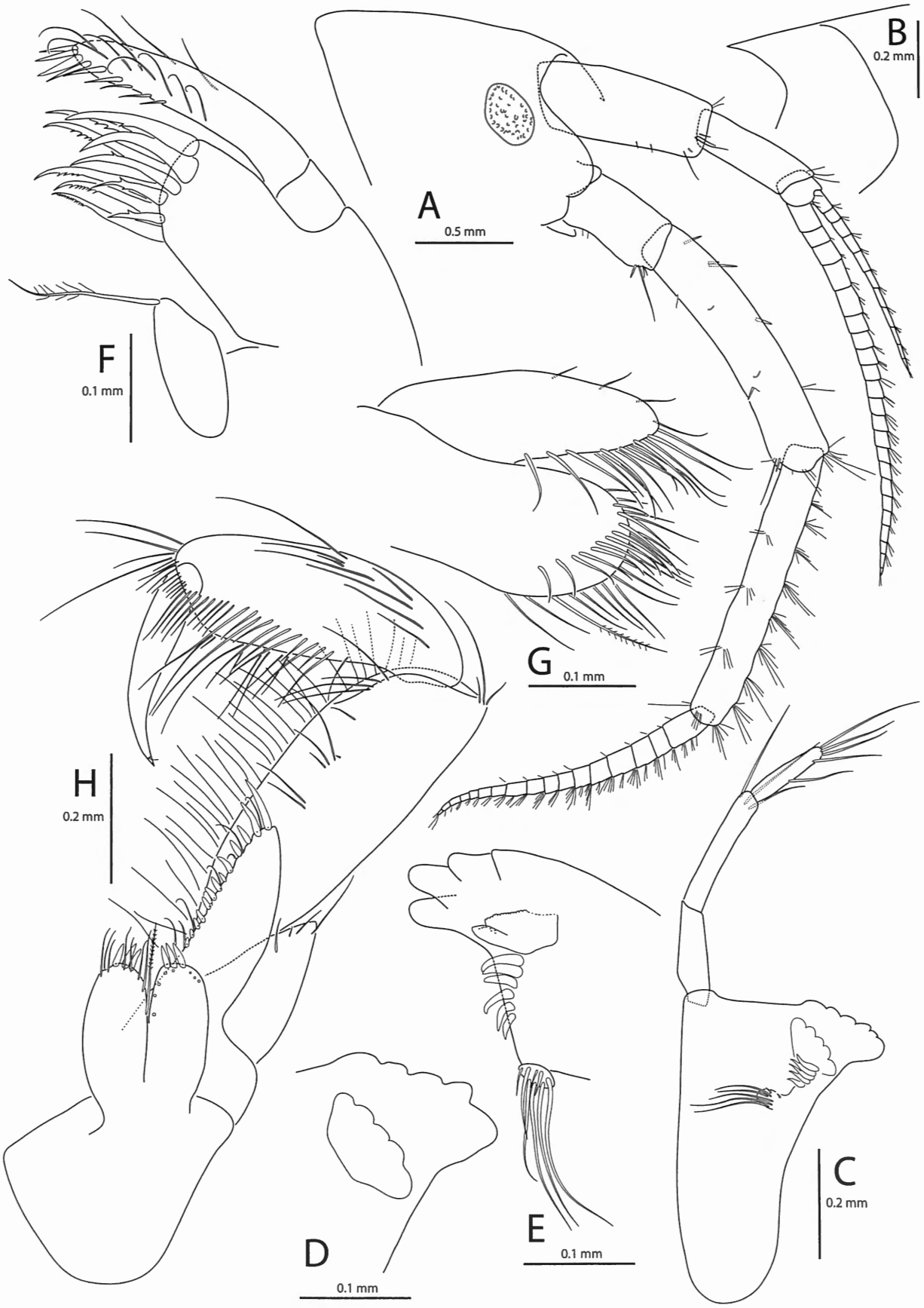

Fig. 35. – *Liljeborgia nesiotica* D'UDEKEM D'ACOZ, 2008, Bouvetøya, BENDEX, sta. 028-1. A, adult ♂; B-F, ovigerous ♀. A, head and antennae; B, rostrum; C, left Md; D, tip of left Md; E, tip of right Md; F, left Mx1; G, right Mx2; H, Mxp.

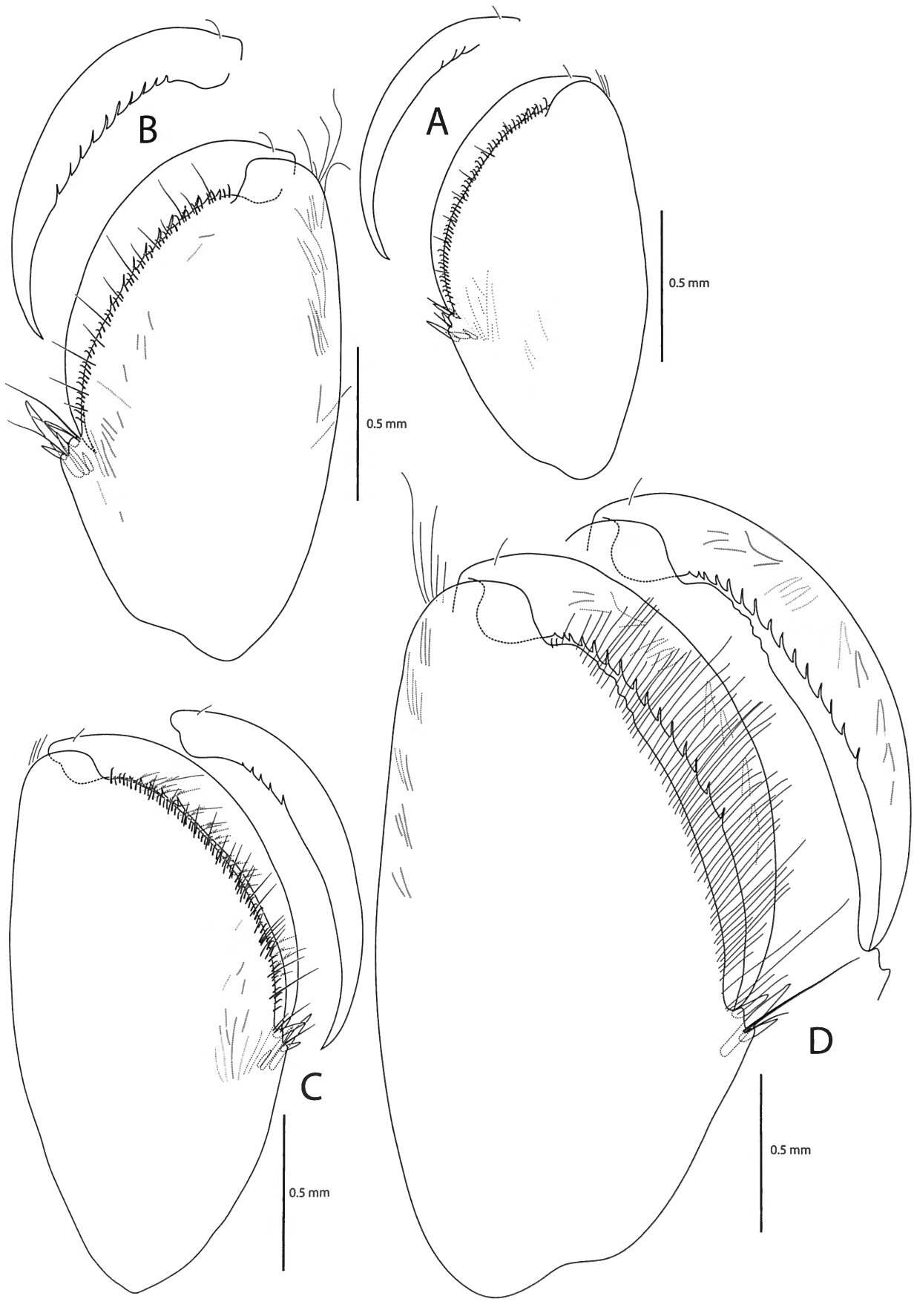

Fig. 36. – *Liljeborgia nesiotica* D'UDEKEM D'ACOZ, 2008, Bouvetøya, BENDEX, sta. 028-1. A-B, ovigerous ♀; C-D, adult ♂. A, left Gn1; B, left Gn2; C, right Gn1; D, right Gn2.

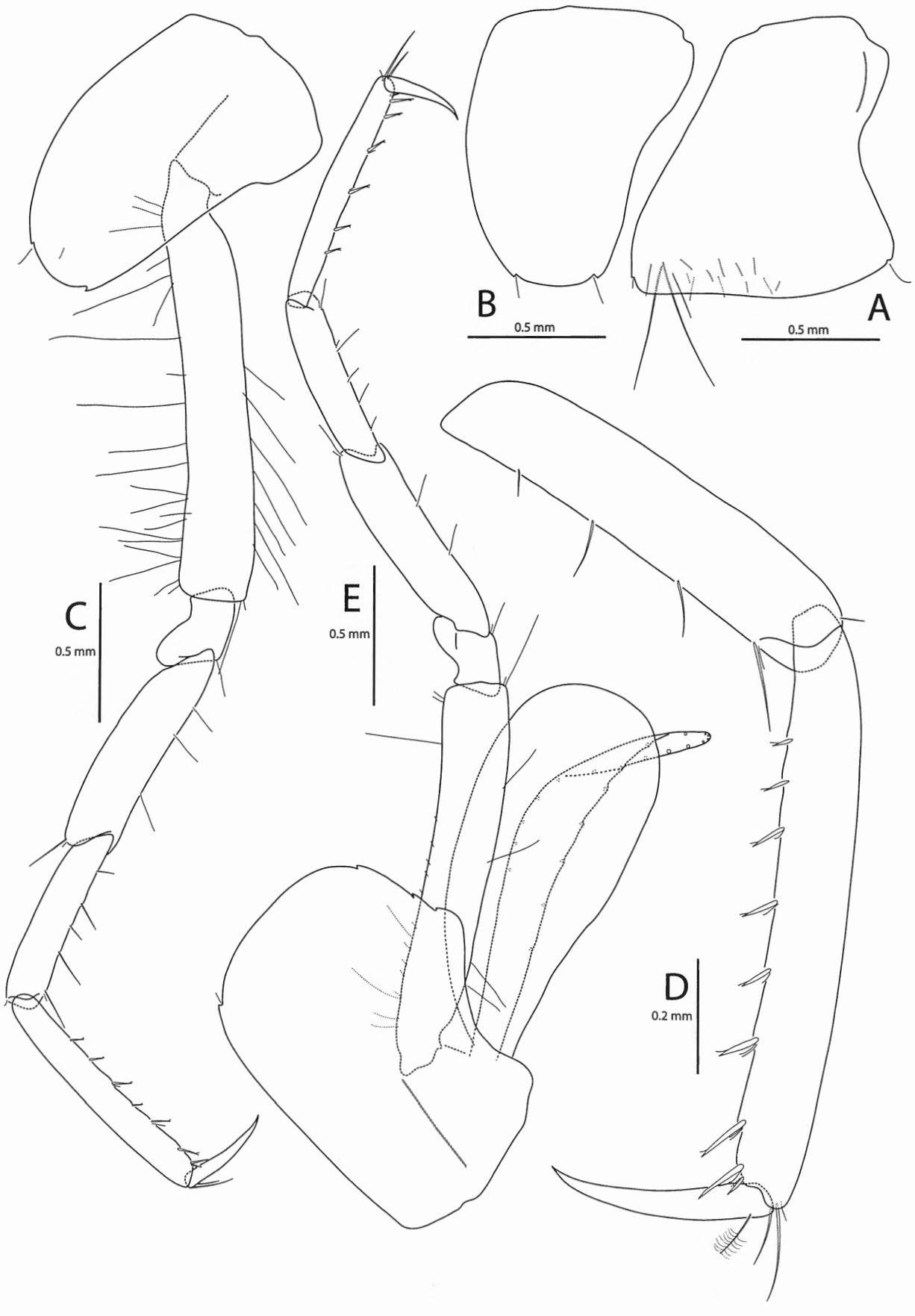

Fig. 37. – *Liljeborgia nesiotica* D'UDEKEM D'ACOZ, 2008, Bouvetøya, BENDEX, sta. 028-1. A-C, E, ovigerous ♀; D, adult ♂. A, left coxa 1; B, left coxa 2; C, left P3; D, tip of right P3; E, right P4.

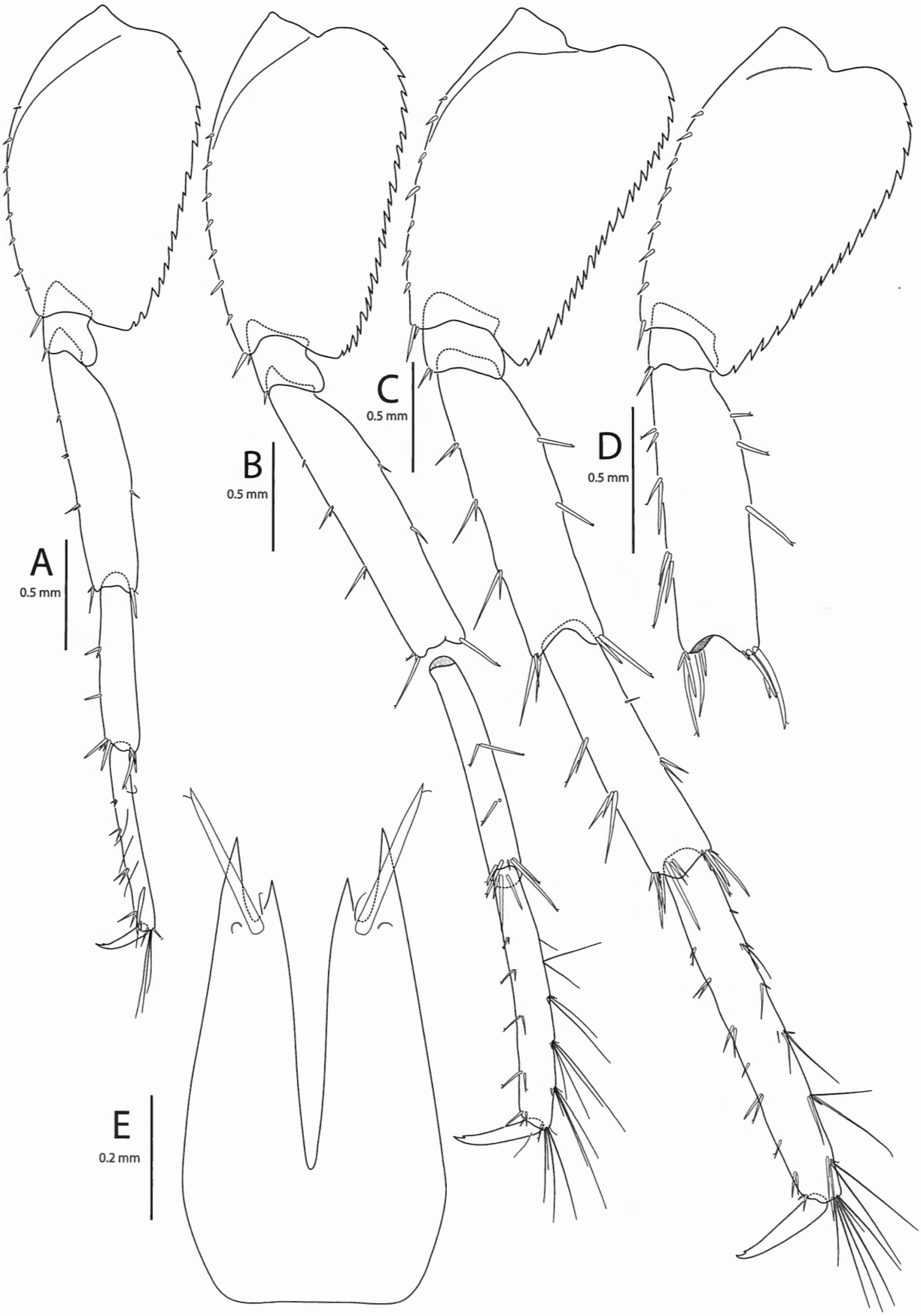

Fig. 38. – *Liljeborgia nesiotica* D'UDEKEM D'ACOZ, 2008. A-C, E, ovigerous ♀, Bouvetøya, ANT-XXI/2, sta. 028-1; D, ♀ holotype, Marion Isl., R/V Marion Dufresne, cruise MD 08, sta. 22 BB 125. A, left P5; B, left P6; C, D, left P7; E, telson.

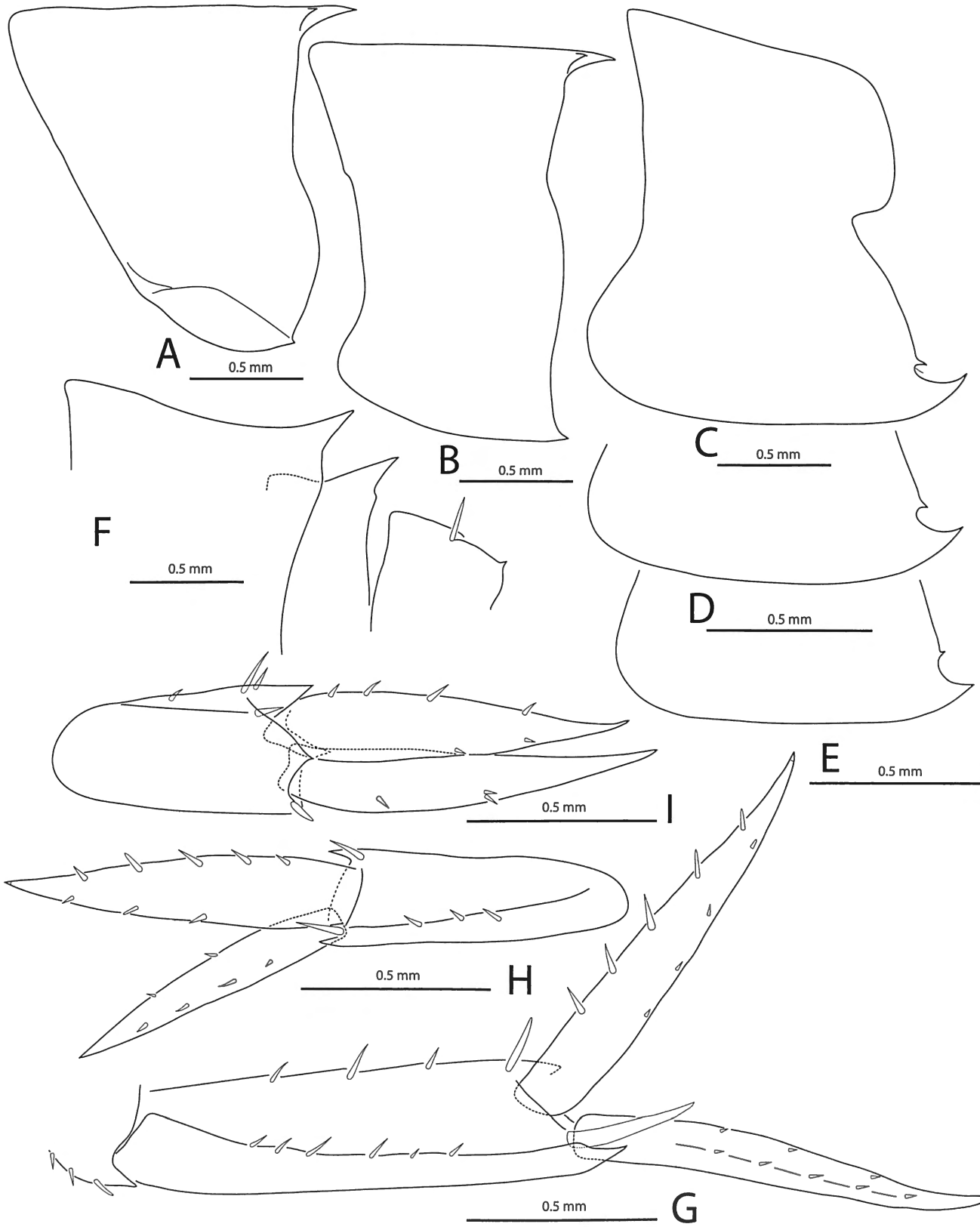

Fig. 39. – *Liljeborgia nesiotica* D'UDEKEM D'ACOZ, 2008. A-C, F-I, ovigerous ♀; D, other ♀, Bouvetøya, ANT-XXI/2, sta. 028-1; E, ♀ holotype, Marion Isl., R/V Marion Dufresne, cruise MD 08, sta. 22 BB 125. A, Ep1; B, Ep2; C-E, Ep3; F, urosome; G, left U1; H, right U1; I, left U3. C, Ep3 with usual development of tooth in Bouvetøya; D, Ep3 of specimen from the same area with unusually weak tooth.

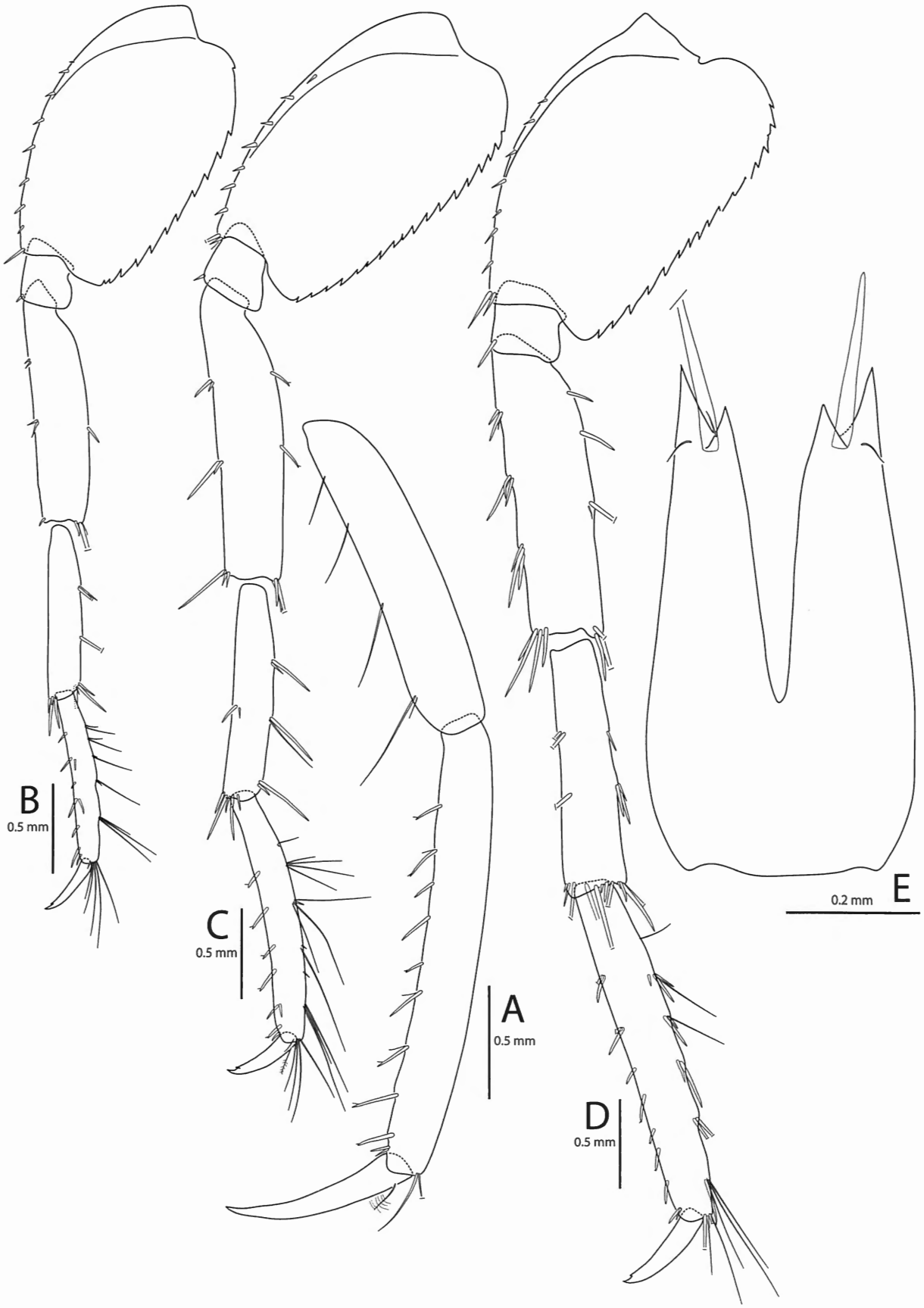

Fig. 40. – *Liljeborgia nesiotica* D'UDEKEM D'ACOZ, 2008, ovigerous ♀, King George Isl., ARC93, sta. CA 105. A, tip of right P3; B, left P5; C, left P6; D, left P7; E, telson.

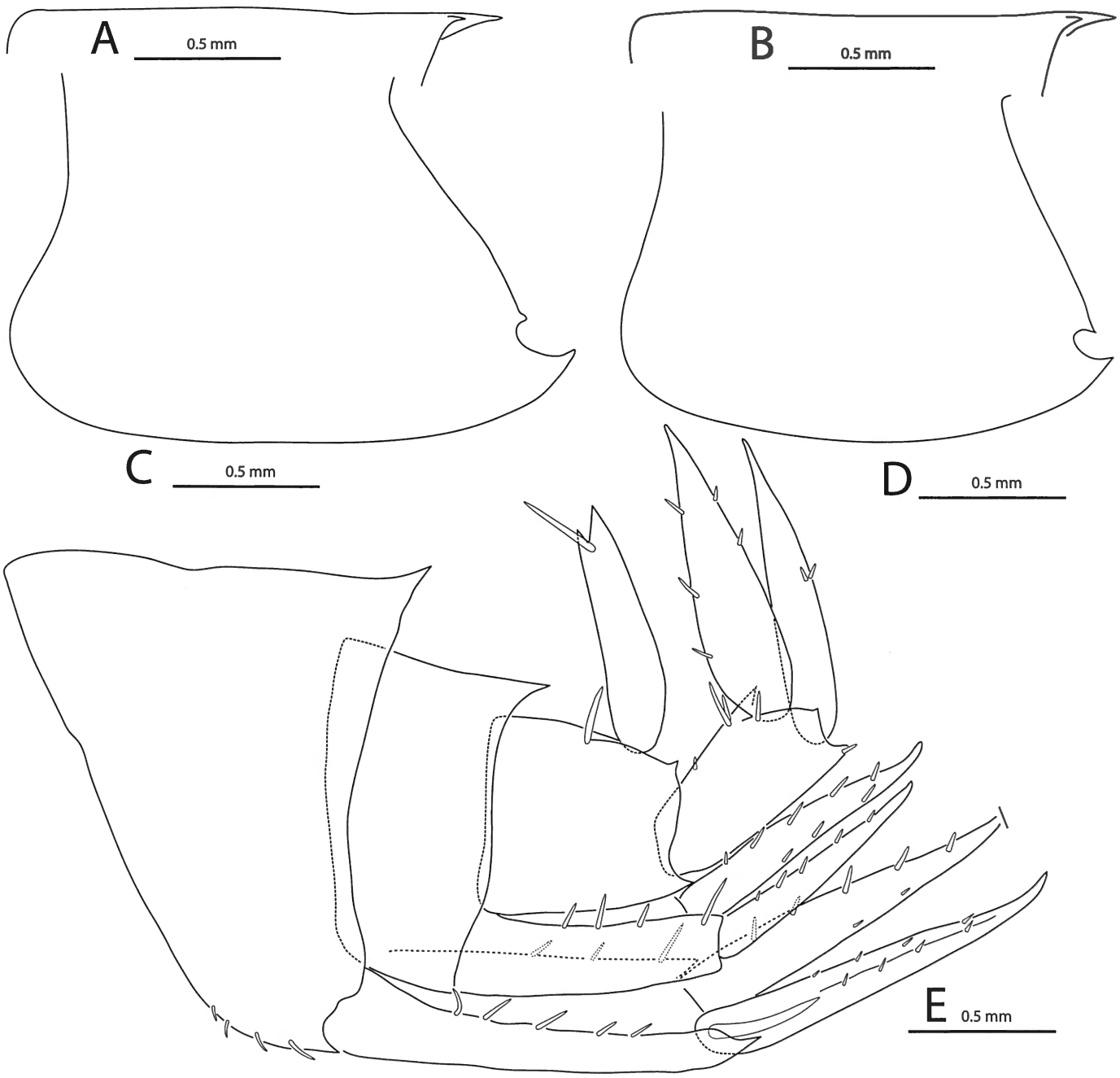

Fig. 41. – *Liljeborgia nesiotica* D'UDEKEM D'ACOZ, 2008, King George Isl. A, B, C, E, ovigerous ♀, ARC93, sta. CA 105; D, presumably ♀, Arc93, sta. F11. A, dorsal border of pleonite 1; B, dorsal border of pleonite 2; C, D, Ep3; E, urosome.

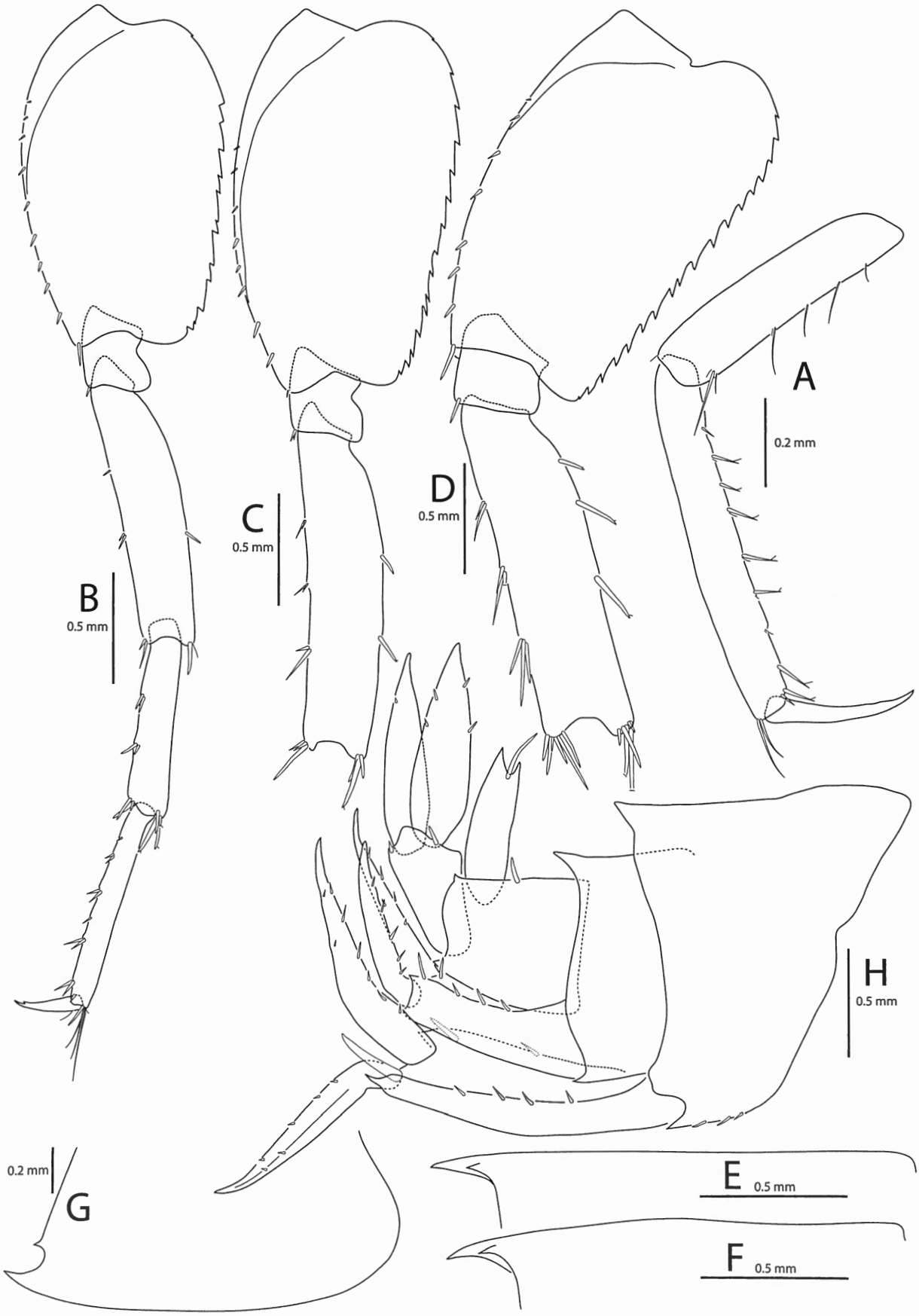

Fig. 42. – *Liljeborgia nesiotica* D'UDEKEM D'ACOZ, 2008, ovigerous ♀, Ross Sea, R/V Eltanin, sta. 2120. A, tip of left P4; B, left P5; C, left P6 (tip missing); D, left P7 (tip missing); E, dorsal part of pleonite 1; F, dorsal part of pleonite 2; G, Ep3; H, urosome.

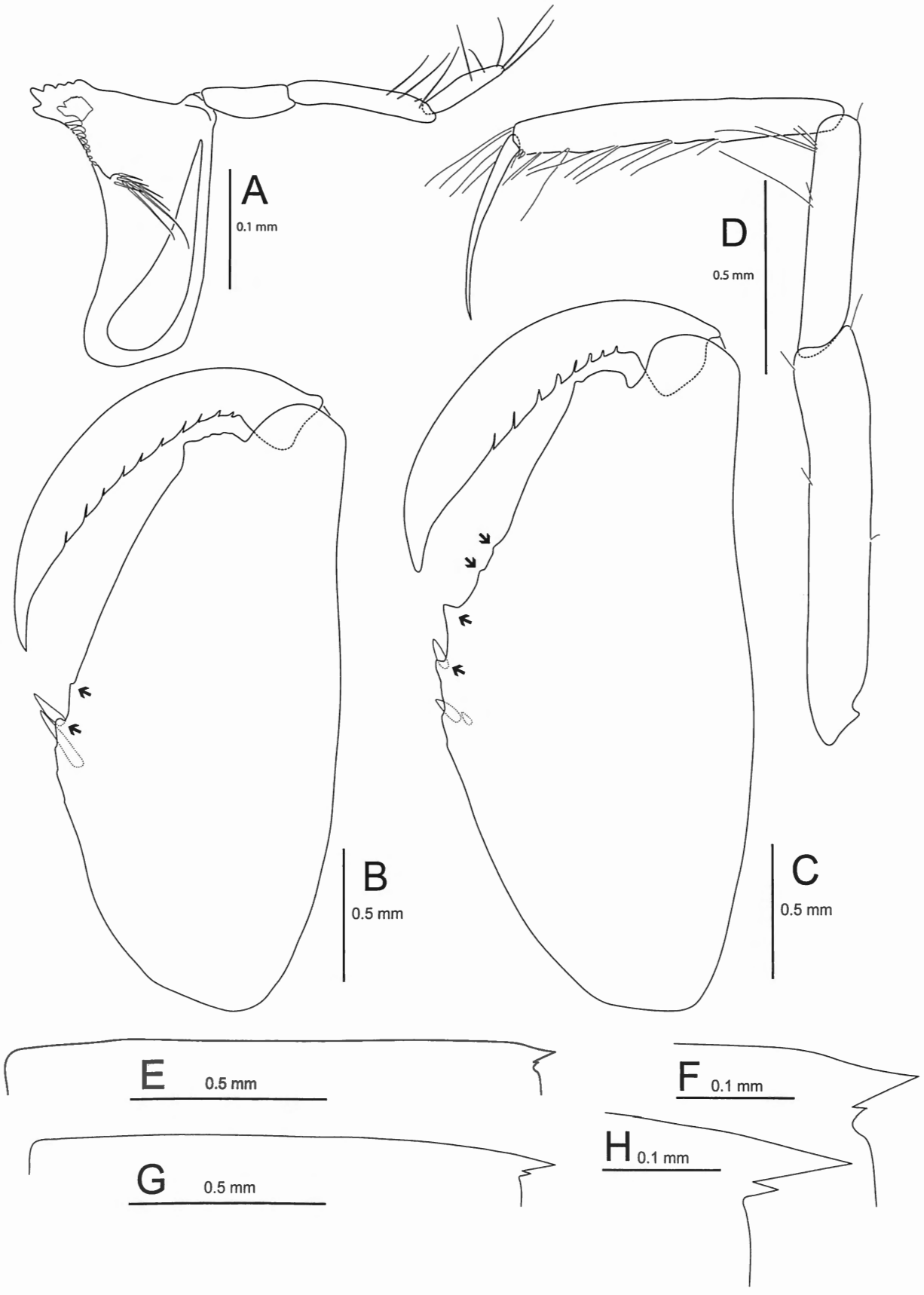

Fig. 43. – *Liljeborgia polydeuces* D'UDEKEM D'ACOZ, 2008, East Weddell Sea, ANT-XXIV/2, sta. 048-1. A-B, D-H, ♂; C, ♂ (other specimen). A., right Md; B-C, chela of left Gn2; D, tip of left P3; E, dorsal part of pleonite 1; F, posterodorsal angle of pleonite 1; G, dorsal part of pleonite 2; H, posterodorsal angle of pleonite 2.

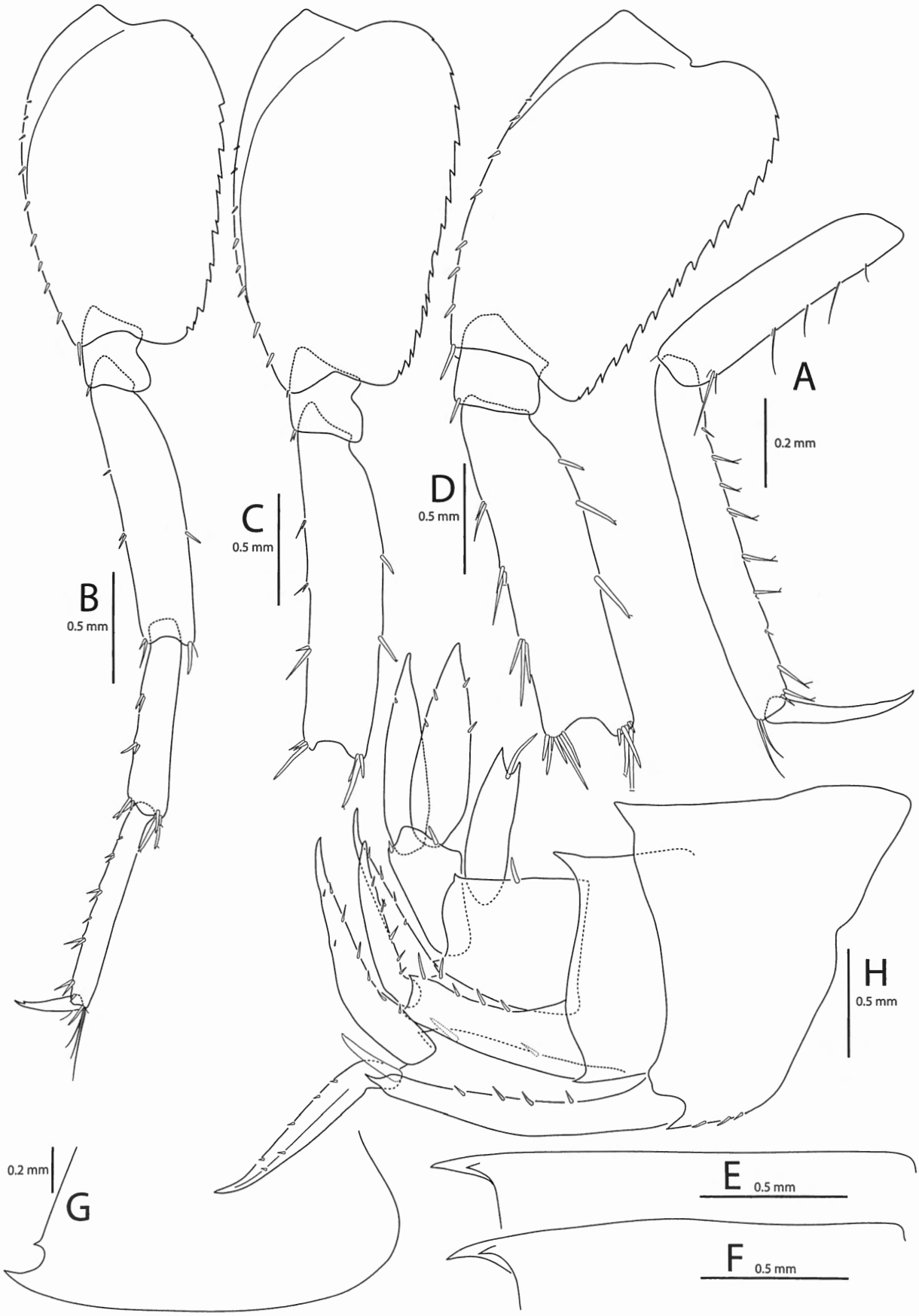

Fig. 42. – *Liljeborgia nesiotica* D'UDEKEM D'ACOZ, 2008, ovigerous ♀, Ross Sea, R/V Eltanin, sta. 2120. A, tip of left P4; B, left P5; C, left P6 (tip missing); D, left P7 (tip missing); E, dorsal part of pleonite 1; F, dorsal part of pleonite 2; G, Ep3; H, urosome.

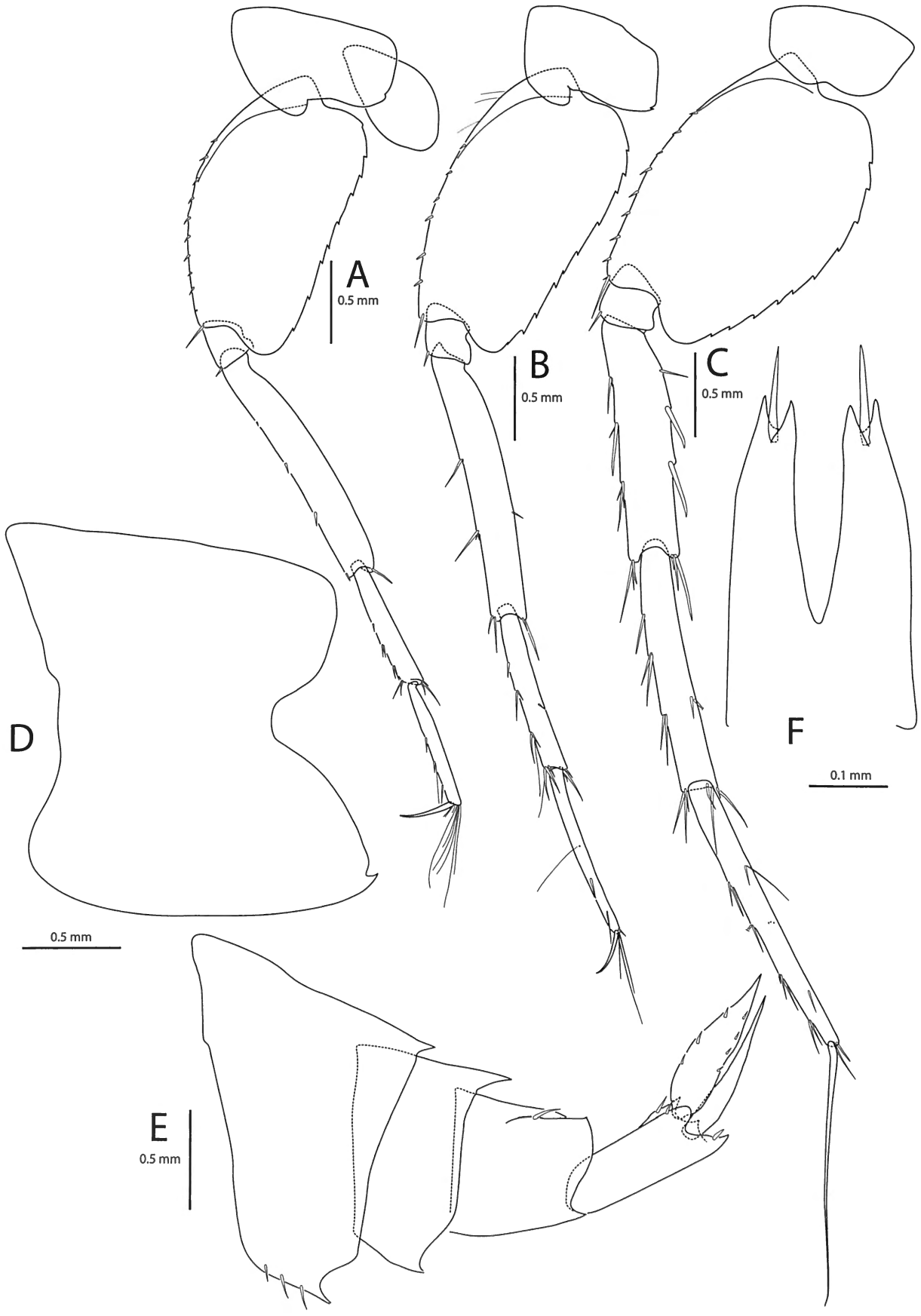

Fig. 44. – *Liljeborgia polydeuces* D'UDEKEM D'ACOZ, 2008, East Weddell Sea, ANT-XXIV/2, sta. 048-1, ♂. A, left P5; B, left P6; C, left P7; D, pleonite 3; E, urosome; F, telson.

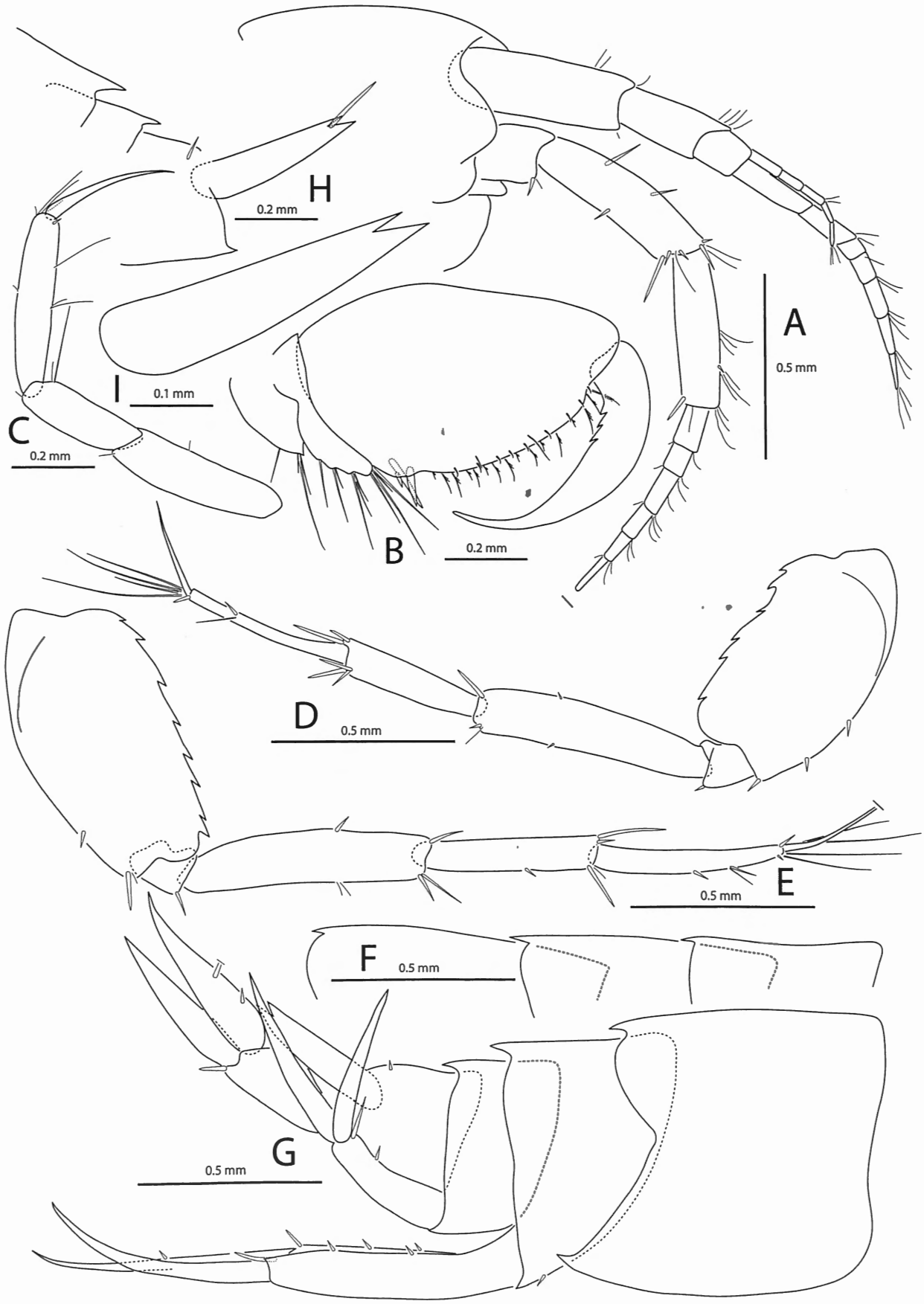

Fig. 45. – *Liljeborgia* sp. 3. Kapp Norvegia, ANT-XV/3, sta. 78, juvenile, sex unknown. A, head with antennae; B, right Gn2; C, tip of left P3; D, right P5; E, left P6; F, dorsal part of pleonites 1-3; G, urosome and pleonite 3; H, tip of urosome; I telson in lateral view (apical spine not shown). The drawings have been made without dissecting the specimen.