

## Shelf and abyssal *Liljeborgia* BATE, 1861 of the Southern Ocean (Crustacea, Amphipoda, Liljeborgiidae)

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### Abstract

In Antarctic and sub-Antarctic seas, the genus *Liljeborgia* has been recorded from 4 to 4385 m. The occurrence of 12 valid previously named species is confirmed south of 40°S (Tasmania and New Zealand excluded): *L. chevreuxi* SCHELLENBERG, 1931, *L. consanguinea* STEBBING, 1888, *L. eurycradus* THURSTON, 1974, *L. georgiana* SCHELLENBERG, 1931, *L. georgiensis* K.H. BARNARD, 1932, *L. kerguelensis* BELLAN-SANTINI & LEDOYER, 1974, *L. longicornis* (SCHELLENBERG, 1931), *L. macrodon* SCHELLENBERG, 1931, *L. octodentata* SCHELLENBERG, 1931, *L. pseudomacronyx* BELLAN-SANTINI & LEDOYER, 1987, *L. quadridentata* SCHELLENBERG, 1931 and *L. quinquedentata* SCHELLENBERG, 1931. All these species are re-described in detail, wherever possible after the types. In addition, 11 new Antarctic and sub-Antarctic species (6 shelf and 5 deep-sea species) are described: *L. abyssotypica* n. sp., *L. bythiana* n. sp., *L. cnephatidis* n. sp., *L. cryptothrix* n. sp., *L. homospora* n. sp., *L. nesiotica* n. sp., *L. permacra* n. sp., *L. polydeuces* n. sp., *L. prionota* n. sp., *L. rauscherti* n. sp. and *L. semperhiemalis* n. sp. Two additional species (*Liljeborgia* sp. 1 and sp. 2) are characterized but not named, due to the inadequate condition of the available material. It is demonstrated that *L. falklandica* K.H. BARNARD, 1932 is a junior synonym of *L. octodentata* SCHELLENBERG, 1931. The Antarctic and sub-Antarctic records of *L. dubia* (HASWELL, 1879), and the sub-Antarctic record of *L. proxima* CHEVREUX, 1907 are not accepted because the types of these species originate respectively from warm-temperate and tropical seas, and such species from warmer climates are unlikely to occur in the frigid waters of the Southern Ocean. Several species have a very restricted distribution (e.g. insular endemism) and such species are probably very vulnerable to major environmental alterations. All Antarctic and sub-Antarctic *Liljeborgia* can be divided into two morphologically homogeneous groups of species: a group without setae on the outer distal border of the first article of the palp of the maxilliped and with only one (distal) spine on the dorsomedial border of the peduncle of the first uropod, and a group with dorsal setae on the outer distal border of the first article of the palp of the maxilliped

and with several spines on the dorsomedial border of the peduncle of the first uropod. These two groups, which are also characterized by other less constant characters, appear widely distributed across the world oceans.

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

### Résumé

Dans les mers antarctiques et subantarctiques, le genre *Liljeborgia* est signalé entre 4 et 4385 m. La présence de 12 espèces valides précédemment nommées au sud de 40°S (Tasmanie et Nouvelle-Zélande exclues) est confirmée: *L. chevreuxi* SCHELLENBERG, 1931, *L. consanguinea* STEBBING, 1888, *L. eurycradus* THURSTON, 1974, *L. georgiana* SCHELLENBERG, 1931, *L. georgiensis* K.H. BARNARD, 1932, *L. kerguelensis* BELLAN-SANTINI & LEDOYER, 1974, *L. longicornis* (SCHELLENBERG, 1931), *L. macrodon* SCHELLENBERG, 1931, *L. octodentata* SCHELLENBERG, 1931, *L. pseudomacronyx* BELLAN-SANTINI & LEDOYER, 1987, *L. quadridentata* SCHELLENBERG, 1931 et *L. quinquedentata* SCHELLENBERG, 1931. Toutes ces espèces sont redécrites en détail, d'après les types, chaque fois que la chose est possible. De plus, 11 espèces nouvelles antarctiques et subantarctiques (6 espèces du plateau continental et 5 espèces profondes) sont décrites: *L. abyssotypica* n. sp., *L. bythiana* n. sp., *L. cnephatidis* n. sp., *L. cryptothrix* n. sp., *L. homospora* n. sp., *L. nesiotica* n. sp., *L. permacra* n. sp., *L. polydeuces* n. sp., *L. prionota* n. sp., *L. rauscherti* n. sp. et *L. semperhiemalis* n. sp. Deux espèces supplémentaires (*Liljeborgia* sp. 1 et sp. 2) sont caractérisées mais pas nommées, vu l'état inadéquat du matériel disponible. Il est démontré que *L. falklandica* K.H. BARNARD, 1932 est un synonyme plus récent de *L. octodentata* SCHELLENBERG, 1931. Les signalements antarctiques et subantarctiques de *L. dubia* (HASWELL, 1879), et le signalement subantarctique de *L. proxima* CHEVREUX, 1907 ne sont pas acceptés comme valides car les types de ces espèces proviennent

respectivement de mers tempérées chaudes et tropicales, et la présence de telles espèces de climats cléments est hautement improbable dans les eaux glaciales de l'Océan Austral. Plusieurs espèces ont une distribution restreinte (par exemple endémisme insulaire). De telles espèces sont probablement très vulnérables aux altérations majeures de l'environnement. Les *Liljeborgia* antarctiques et subantarctiques se répartissent en deux groupes morphologiquement homogènes: un groupe sans soies sur le bord externe distal de l'article 1 du palpe du maxillipède et avec une seule épine (distale) sur le bord dorsomédial du pédoncule du premier uropode, et un groupe avec des soies dorsales sur le bord externe distal de l'article 1 du palpe du maxillipède et avec plusieurs épines sur le bord dorsomédial du pédoncule du premier uropode. Ces deux catégories, qui sont aussi caractérisées par d'autres différences moins accusées, sont également largement représentées dans les océans du monde.

**Mots-clés:** *Liljeborgia*, Crustacea, Amphipoda, Antarctique, sub-Antarctique, Patagonie, abysses, plateau continental, Systématique.

*«With the advent of further and larger collections from the Antarctic the earlier descriptions get subjected more and more to the fire of criticism. It is comparatively easy to sort out the specimens into species; the assignation of names, giving due credit to earlier authors, is the difficulty. All praise is due to those who have paved the way in the study of Antarctic and sub-Antarctic Amphipods. It is inevitable that pioneers should leave a few stones, sticks and snags as stumbling-blocks to those who follow. It takes much work to make a well-defined path, and also to arrive at a clear-cut definition of a «species». It is also inevitable, with an ever more searching analysis of specific characters, that even the most elaborate description will often be found to lack just the precise information which a later student requires»* (K.H. BARNARD, 1932).

## INTRODUCTION

Amphipod crustaceans are the most diverse zoological group in the seas surrounding Antarctica. In a recent catalogue, DE BROYER *et al.* (2007) gave a list of no less than 815 marine amphipod species (Hyperiididae excluded) recorded south of the subtropical convergence, and a very conservative estimation suggests that the real number of species in Antarctic and sub-Antarctic seas must be at least twice higher. Oceanographic cruises made during the past 25 years have yielded a huge amount of amphipod specimens from the continental shelf of the Southern Ocean, while the recent ANDEEP cruises collected a high number of samples from the Antarctic deep seas, including a very considerable number of unknown species. Many previous descriptions

are inadequate or outdated, and thorough revisions at the generic or familial level describing all available named and unknown species are badly needed. Such a revision was recently accomplished for the 'spiny amphipods' (Epimeriidae, Iphimediidae, etc), which have been reviewed in a series of descriptive papers followed by a nicely illustrated identification guide (COLEMAN, 2007). The present work should be the first of a series of similar papers on the Liljeborgiidae. At the same time it will contribute to international research projects such as the Census of Antarctic Marine Life and the ANDEEP programme.

The genus *Liljeborgia* BATE, 1861 is the only genus of Liljeborgiidae present in the Southern Ocean. It is cosmopolitan in nature with a continuous distribution from the epicontinental seas of Antarctica to the abyssal depths of the Arctic Ocean, and a depth range spanning from the infralittoral to over 6000 m depth. The oldest records of *Liljeborgia* in the Southern Ocean are those of *L. consanguinea* STEBBING, 1888 from the Iles Kerguelen and Heard Island, published in the report of the H.M.S. Challenger expedition (STEBBING, 1888). The next addition is provided more than 40 years later by SCHELLENBERG (1931), who erected no less than seven new species. The remaining four valid *Liljeborgia* species from Antarctic and sub-Antarctic waters were described in four papers published between 1932 and 1987 (K.H. BARNARD, 1932; THURSTON, 1974; BELLAN-SANTINI & LEDOYER, 1974 & 1987). All Antarctic or sub-Antarctic *Liljeborgia* species were known by unstandardized and sometimes very short descriptions, accompanied by usually mediocre and often very few illustrations. As a consequence of such sibylline diagnoses, many further species records cannot be considered as based on rigorous identification but rather as the result of a haphazard guess. They are often unreliable and of little value for biogeographical analyses and for a biodiversity assessment. So, the first and main objective of the present paper is to fully redescribe these previously named species, wherever possible by re-examining their type specimens. The second objective is to complete this revision by the description of new species collected during various oceanographic cruises, in particular those of the German icebreaker Polarstern. The present paper proposes standardized descriptions of representatives of all the morphological species groups of *Liljeborgia* currently known from Antarctic and sub-Antarctic waters. The careful comparison of 25 *Liljeborgia* species also provided the opportunity to establish which characters should be included in future descriptions of species from any part of the world. Therefore this contribution is offered as a basis

for a more rigid taxonomy of the genus *Liljeborgia* of the Southern Ocean and other seas. However it is by no means the final chapter on the systematics of the Antarctic and sub-Antarctic *Liljeborgia*. Indeed, due to various practical constraints, it was not possible to study all the Antarctic and sub-Antarctic material available at this stage and it was not yet possible to address biogeographical and phylogenetic questions. The study of satellite forms close to well characterized species will be carried out at a later stage, and results concerning molecular systematics will be treated separately.

### MATERIAL AND METHODS

Specimens were first examined in toto within cavity slides filled with glycerin and illustrations made if necessary. All drawings of type specimens from the Museum of Stockholm were made without dissection. Appendages of newly dissected specimens were usually illustrated in glycerin temporary microscope preparations and afterwards permanently mounted in Euparal. However the large pieces were sometimes directly mounted in Euparal. Medial structures of the last three pairs of pereopods were seen more easily after mounting in Euparal, as a result of the clarifying properties of this mounting medium. The sequence of transfer was: glycerin (or alcohol 70%) > absolute alcohol (or denatured alcohol 96%) > mixture of 20% Euparal / 80% absolute alcohol (or denatured alcohol) > Euparal. The pieces were left at least one hour in each bath. Pencil drawings were made with two types of pencils ( $\emptyset = 0.3$  and  $0.5$  mm) with the help of a camera lucida mounted on a Leica DMLB compound microscope. Those drawings were photographed with a Canon 'Powershot S3 IS' camera (settings on nightshot; macro, no flash). The contrasts were readjusted with Adobe Photoshop 8.0.1 and afterwards the colour picture was converted in grayscale. Inking was done with the software Adobe Illustrator 11.0.0 and an A3 drawing table (Wacom Intuos3 12x19). At the beginning of this study, the drawing instructions of COLEMAN (2003) were more or less strictly followed. However some of his instructions were soon skipped and several new functions were experimented (e.g. creation of art brushes for drawing spines and thick setae). The original orientation of spines and setae was sometimes modified during the inking process in order to improve the readability of the drawing.

Surfaces of propodus of gnathopods are approximated as ellipses with propodus length as greatest diameter and propodus width as smallest diameter. In a number

of cases, character states are defined as ratios, which are more objective and precise than terms like 'fairly narrow', 'very broad', etc. The length of the basis of the pereopods 5-6-7 used in the ratios is the length of the anterior or the posterior border (depending which one is the longest). The ratio measurements should be considered as indicative only, since they are usually based on one specimen only and tilting artifacts on the microscope preparations are possible. The lenses of the microscope can also induce aberrations of sphericity, which are not negligible. However it was considered preferable to accurately record most ratios to two digits, in order to prevent any loss of information. It will leave the possibility to create any kind of fine-tuned rescaling in further derivative papers, especially in cladistic analyses. Due to time restriction, no extensive studies on variability has been carried out, and especially the meristic characters are likely to depart somewhat from the given numbers in some specimens. These numbers are usually given for adults, and it must be borne in mind that in juveniles the dactyli of the gnathopods have often less teeth and the antennal flagella less articles than in adults.

The term 'setae' is used for slender articulate structures, 'spines' for stout articulate structures, 'teeth' for inarticulate pointed structures. Geographical names are given in English for places situated south of 60°S, in the language of the country for places located north of 60°S.

The material collected by Martin RAUSCHERT has been provisionally registered at the RBINS (I.G. 31.068), but the majority will be transferred to the ZMB in the future, when the study of the rest of the Antarctic *Liljeborgia* material will be completed.

In the majority of cases, the label of the specimens had a station number without longitude/latitude coordinates. These coordinates have been extracted from various published and unpublished sources, such as:

**Eugenia Expedition 1851-53:** samples with detailed labels

**H.M.S. Challenger (1873-1876):** samples with detailed label

**R/V Albatross (1888):** samples with detailed label

**Nordenskjölds Exp. – Nordenskjölds expedition till Eldslandet och Patagonia 1895-96:** labels always incomplete and without coordinates; whenever possible the data have been completed with ANONYMOUS (1967)

**Swedish S. Polar Exp. – Swedish South Polar Expedition 1901-03:** samples with detailed labels

**Stations of A.G. BENNETT (1918):** coordinates

unavailable and presumably lost

**Discovery expedition (1925-1927):** names of locations given by K.H. BARNARD (1932); coordinates extracted from ALBERTS (1995)

**R/V William Scoresby (1927):** names of localities indicated on label; coordinates obtained via [www.geonames.org](http://www.geonames.org)

**R/V Eltanin (various cruises, 1962-1968):** samples with detailed label

**Material from Iles Kerguelen and Crozet (1966) of BELLAN-SANTINI & LEDOYER (1974):** coordinates of locations given in the paper extracted from DELÉPINE (1973)

**Cruise MD 08 of the R/V Marion Dufresne, 1976:** BELLAN-SANTINI & LEDOYER (1987)

**26th and 30th Soviet Antarctic Expeditions, 1980-1982 and 1984-1986:** RAUSCHERT (1991) only gives the locations of his stations; their coordinates have been extracted from ALBERTS (1995).

**KER82 – Mission Iles Kerguelen 1982 (RBINS):** coordinates of locations extracted from DELÉPINE (1973)

**ARC87 – ARCTOWSKI 87 - 11th Polish Antarctic Expedition 1986-1987 (PAE11):** 'MISTA' database from Department of Invertebrates, RBINS

**FER93 – Mission Antarctique 'Ferraz' 1993 (RBINS):** 'MISTA' database from Department of Invertebrates, RBINS

**ARC93 – ARCTOWSKI 93 - 17th Polish Antarctic Expedition 1993 (PAE93):** 'MISTA' database from Department of Invertebrates, RBINS

**ARC94 – ARCTOWSKI 94: 18th Polish Antarctic Expedition 1994 (PAE94):** 'MISTA' database from Department of Invertebrates, RBINS.

**MAG94 – MAGELLAN 94, 'Victor Hensen cruise' Joint Magellan Campaign 1994:** ARNTZ & GORNY (1996)

**CIMAR Fiordo 3, R/V Vidal Gormaz (1997):** coordinates extracted from RÍOS *et al.* (2005), MUTSCHKE & RÍOS (2006) and DE BROYER (2007)

**ANT-VII/4 (ANTARKTIS-VII/4), PS14, EPOS leg 3, and ANT-VII/5, 1989:** ARNTZ *et al.* (1990)

**ANT-XIII/3, PS39, Wed 96, EASIZ I, 1996:** ARNTZ & GUTT (1997)

**ANT-XV/3, PS48, Wed 98, EASIZ II, 1998:** ARNTZ & GUTT (1999)

**ANT-XIX/3-4, PS61, ANDEEP I and II, 2002:** FÜTTERER *et al.* (2003)

**ANT-XXI/2, PS65, BENDEX, 2003-2004:** ARNTZ & BREY (2005)

**ANT-XXII/3, PS67, ANDEEP III, 2005:** FAHRBACH (2006)

**ANT-XXIII/8, PS69, 2006-2007:** GUTT (2008)

**R/V Tangaora, 2004:** coordinates provided by Kareen SCHNABEL (NIWA):

#### ABBREVIATIONS AND ACRONYMS

APPENDAGE 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:** pereopods 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; **MUC:** multicorer; **RD:** Rauschert dredge

SCIENTIFIC INSTITUTIONS: **AWI:** Alfred Wegener Institute, Bremerhaven; **BMNH** or **NHM:** the Natural History Museum, London, UK (previously British Museum, Natural History); **MCSN:** Museo Civico di Storia Naturale, Verona, Italy; **MNHN:** Muséum National d'Histoire Naturelle, Paris, France; **NIWA:** National Institute of Water and Atmospheric Research, Wellington, New Zealand; **NRS:** Naturhistoriska Riksmuseet, Stockholm, Sweden; **RBINS:** Royal Belgian Institute of Natural Sciences, Brussels, Belgium; **SAM:** South African Museum, Cape Town, South Africa; **USNM:** US National Museum of Natural History, Smithsonian Institution, Washington DC, USA; **ZMB:** Museum für Naturkunde der Humboldt Universität, Berlin, Germany; **ZMH:** Zoologisches Museum, Hamburg Universität, Hamburg, Germany

#### SYSTEMATICS

##### Family Liljeborgiidae STEBBING, 1899

##### *Liljeborgia* BATE, 1862

*Iduna* BOECK, 1861: 656 (type species: *Iduna brevicornis* BOECK, 1860) [homonym: Aves]

*Liljeborgia* BATE, 1862: 118 (type species: *Gammarus pallidus* BATE, 1857; gender: feminine); BARNARD & KARAMAN, 1991: 413-416

*Microplax* LILLJEBORG, 1865a: 11; 1865b: 18 (type species: *Iduna brevicornis* BOECK, 1860) [new name for *Iduna* but again homonym: Heteroptera]

*Lilljeborgiella* SCHELLENBERG, 1931: 136 (type species: *Lilljeborgiella longicornis* SCHELLENBERG, 1931)

*Heeliljeborgia* LEDOYER, 1986: 691 (type species: *Liljeborgia heeia* BARNARD, 1970)

## DIAGNOSIS

A1 with long accessory flagellum divided in more than 4 articles. Mandible: molar non triturative and with several long stout setae; left lacinia mobilis with 4 to 6 (most commonly 5) teeth; palp with articles 1 and 2 in linear succession (articulation not strongly angular), article 1 elongate and article 3 not arched. Carpus of Gn1-Gn2 with long anterior process. Palm of Gn1-Gn2 with outer row of regular-sized hooked spinules often intermixed with smooth setae, and with medial row of strong acute-tipped setae, each with two long prongs on anterior border, except distal seta which is pappose. Gn2 larger than Gn1 (exceptionally equal to Gn1: male *L. prionota* n. sp.). Dactylus of Gn1-Gn2 usually deeply toothed (teeth missing on first or both gnathopods in a few, mostly deep-water species). Outer ramus of U3 with 1 article. Lobes of telson with 1 apical spine in most species (2 spines in *L. serrata* NAGATA, 1965; 3 spines in *L. hwanghaensis* KIM & KIM, 1990).

## DISTRIBUTION

Cosmopolitan, 0 to 6000 m.

## REMARKS.

The genus under study, which is dedicated to the Swedish naturalist LIL(L)JEBORG, is sometimes spelled *Liljeborgia* (with one 'L', in third position) and sometimes *Lilljeborgia* (with two 'L', in third and fourth position). This merits comments in order to ensure the stability of nomenclature. Vilhelm (Wilhelm) LILJEBORG, 1816-1908, changed his name to William LILLJEBORG (with double 'L') around 1860, when he visited the USA for a while (VADER, 1972). BATE (1862: 118) published the name *Liljeborgia* with one 'L', hence after the change in the surname. The International Code of Zoological Nomenclature, 4th edition (art. 32.5.1. on incorrect original spellings) states: "If there is in the original publication itself, without recourse to any external source of information, clear evidence of an inadvertent error, such as a lapsus calami or a copyist's or printer's error, it must be corrected. Incorrect transliteration or latinization, or use of an inappropriate connecting vowel, are not to be considered inadvertent errors". There is no evidence of inadvertent error, since BATE (1862) explicitly dedicated the species to LILJEBORG (with one 'L'): "It is named in compliment to Prof. LILJEBORG". So, even if one considers the latinization by BATE as incorrect, then the original spelling with one 'L' should be considered

as nomenclaturally correct and should be conserved. On the other hand, the same rules dictate that if one day the genus *Lilljeborgia* SCHELLENBERG, 1931 would be resurrected, it should retain the two 'L' in the first part of the nomen. Finally, it should be pointed out that the various papers by LIL(L)JEBORG should be cited respecting the printed spelling of the author's name, and not in 'correcting' them, as done for example by BARNARD & KARAMAN (1991). Indeed author's names should not be considered as persons but as signatures (DUBOIS, 2008).

BARNARD & KARAMAN (1991) listed 44 species of *Liljeborgia*, which they considered as presumably valid. One of them (*L. falklandica* K.H. BARNARD, 1932) is put in synonymy in the present paper. Three species are not included in the monograph of BARNARD & KARAMAN (1991): *L. hwanghaensis* KIM & KIM, 1990, *L. petrae* LYONS & MYERS, 1991 and *L. polonius* HUGHES & LOWRY, 2006 (see KIM & KIM, 1990; LYONS & MYERS, 1991; HUGHES & LOWRY, 2006). In the present paper, 11 new species are described, raising the total number of presumedly valid named species to 57. The author is aware of the existence of several undescribed species from various parts of the world, and the genus is obviously considerably more speciose than previously assumed.

All the *Liljeborgia* species of the Southern Ocean and at least a large number of species from other areas can be assigned to two clear-cut morphological groups, but at this stage it cannot be ascertained whether these groups are clades or not. The first group has no anterior outer setae on the dorsal side of the first article of the palp of the maxilliped and only one (distal) spine on the dorsomedial border of the peduncle of the first uropod; the posterior border of the propodus of the pereopods 3 and 4 has setules or small spines. The second group has anterior outer setae on the dorsal side of the first article of the palp of the maxilliped, and has several spines on the dorsomedial border of the peduncle of the first uropod; the ornamentation of the posterior border of the propodus of the pereopods 3 and 4 is variable but most commonly consists of long or rather long spines/setae. The second group is the most species rich and morphologically diverse in the Southern Ocean. One of its representatives, *L. prionota* n. sp. is the only known *Liljeborgia* species in which the sexual dimorphism is concentrated on the first gnathopod instead of the second gnathopod, and it is the only one in which the second gnathopod is not significantly larger than the first gnathopod in adult male. These characters are reminiscent of some other Liljeborgiidae, such as *Idunella aeqvicornis* (G.O. SARS, 1876) (see G.O.

SARS, 1890-1895), *I. pirata* KRAPP-SCHICKEL, 1975 (see KRAPP-SCHICKEL, 1989), *Listriella brevicornis* (LEDOYER, 1973) (see LEDOYER, 1986 as *Idunella b.*), *L. curvidactyla* (NAGATA, 1965) (see NAGATA, 1965 as *Idunella c.*), and *Sextonia longirostris* CHEVREUX, 1920 (see CHEVREUX & FAGE, 1925), in which the first gnathopod is dominant and very sexually dimorphic. It is not yet known if these similarities are symplesiomorphic or homoplastic in nature, but the question should be addressed in the future.

***Liljeborgia abyssotypica* n. sp.**

(Figs 1-6)

MATERIAL

**R/V Eltanin, sta. 38-11GR34**, Tasman Basin, SE of Tasmania, 49°45'36"S 152°36'12"E, 4304 m, Camera grab, 01.v.1964: 1 specimen (holotype), presumably ♂ (no oostegites), leg. L.D. MCKINNEY, USNM 180248 [labeled as the holotype of *Liljeborgia abyssotypicus* [sic] MCKINNEY; the specimen, which was already dissected by MCKINNEY, has not been permanently mounted]

ETYMOLOGY

*Abyssotypicus*, -a, -um, adjective created in combining the Greek adjectives ἀβυσσος, 'bottomless, unfathomable' (term often used for describing the depths of the sea), and τυπικός, 'conforming to type'. The original manuscript spelling '*abyssotypicus*' proposed by L.D. MCKINNEY is here corrected in doubling of the 'S' of *abyss-*, and its ending is put in concord with *Liljeborgia*, which is feminine.

DESCRIPTION

Rostrum very short, bluntly triangular.

Eye absent.

A1: major flagellum with 14 articles; accessory flagellum with 8 articles.

A2: article 4 of peduncle with long styliiform dorsal and ventrolateral spines; article 5 with small dorsomedial spines and with 3 very slender ventrolateral spines often associated with one or several setae; flagellum with 11 articles, slightly longer than fifth article of peduncle.

Epistome rounded in lateral view, and not protruding.

Md: left lacinia mobilis large and with anterior margin with 5 triangular teeth; right lacinia mobilis slightly smaller, with anterior margin with 6 obtuse

teeth (larger than usual) and one large lateral tooth; spines of incisor process not spinulose, ultimate spine of incisor process not much stouter than others; articles one and two of palp subequal (ratio length article one / article two = 0.99); article one 5.62 x as long as wide; article two with 2 setae on tip and no setae more proximally, 4.77 x as long as wide; article three 3.77 x as long as wide, 0.53 x as long as article two; all setae of palp unusually short.

Mx1: second article of palp with 1 seta on upper margin, 5 spines of normal stoutness on ventral and apical margin, and 4 facial setae; outer plate with 9 denticulate spines; inner plate with a single seta.

Mx2: outer plate with 3 widely spaced strong setae on upper margin; setae of Mx2 of normal stoutness and not very numerous.

Mxp: article one of palp with 2 medium-sized slender distal outer dorsal setae, article two with 2 non distal setae on outer margin; article three with one pair of setae on anterior border, article four (dactylus) stout, with anterior margin barely curved and posterior margin nearly straight, and 0.80 x as long as article three; outer plate with 7 to 8 widely spaced, very stout spines and 6 spiniform medio-ventral setae at the same level as spines or more proximally; inner plate with 3 short and extremely stout anterior spines and 5 to 6 spiniform setae.

Gn1: coxa broadly triangular, with posterior border distinctly concave, with small anterior and posterior tooth; merus with distal group of setae and median isolated seta, without distal tooth; carpus process with 4 groups of setae; tip of carpus reaching 0.10 of propodus, separated from propodal group of strong spines by distinct space; propodus 1.9 x as long as wide; group of spines on the proximal 0.29 of propodus (most distal spine used as reference point); these spines are long; palm border forming a regular curve, without teeth, with widely spaced and unusually small hooked spines on outer row (22 hooked outer spines and no outer setae); dactylus without teeth.

Gn2: coxa quadrato-elliptic and broad with small anterior and posterior tooth (the two teeth are widely distant from each other); merus with sparse setae, without distal tooth; carpus process with 5 groups of setae; tip of carpus lobe very blunt; propodus 1.8 x as long as wide; proximal spines including a group of 2 spines of which one is very long, and a more distal isolated spine on the proximal 0.14 of propodus; palm border regularly convex, with hooked spines of outer row rather well spaced (24 hooked outer spines); setae of inner row of palm of normal length; dactylus very long (0.89 x as long as propodus) with 1 tooth. Propodus

of Gn2 significantly longer than propodus of Gn1; ratio length Gn2 / length Gn1: 1.31; surface of propodus of Gn2 / surface of propodus of Gn1: 1.74.

P3: coxa elliptic, of normal width, with normally developed anterior and posterior tooth (the two teeth are normally distant from each other); merus 2.0 x as long as carpus (i.e. carpus extremely short) and 1.35 x as long as propodus (i.e. propodus very short); dactylus very long, very slender and strongly curved, 0.94 x as long as carpus and 0.64 x as long as propodus; merus with a pair of normal-sized setae on 0.6 of posterior border, followed by a short distal seta, with 1 short seta on middle of anterior border; carpus with 2 groups of thin and very long setae (incl. distal group) on posterior border, with 1 isolated short seta on anterior border; propodus with 3 groups of thin and very long setae (length of longest propodal setae about 3.18 x width of propodus) on posterior border; anterior border of propodus with 1 isolated setule and distal group of long setae.

P4: coxa fairly broad (1.08 x as long as wide), with anterior and posterior border diverging downwards, with anterior border distinctly convex, with ventral border slightly and regularly convex, with 3 strong and sharp teeth on posterior border, with 1 small anteroventral tooth; merus 1.95 x as long as carpus (i.e. carpus extremely short) and 1.48 x as long as propodus (i.e. propodus very short); dactylus very long, slender and strongly curved, 0.89 x as long as carpus and 0.68 x as long as propodus; merus with a pair of normal-sized setae on 0.6 of posterior border, followed by a short distal seta; carpus with 2 groups of thin and very long setae (incl. distal group) on posterior border, with 1 isolated short seta on anterior border; propodus with 3 groups of thin and very long setae (length of longest propodal setae about 2.33 x width of propodus) on posterior border; anterior border of propodus with 2 isolated setules and distal group of long setae.

P5: coxa short, with small posterior tooth; basis very narrow (2.04 x as long as wide), with anterior border distinctly curved and posterior border straight; anterior border with conical spines, posterior border with only 6 teeth (which are widely separated from each other), distal border produced into a protruding rounded toothless lobe; ischium without spine on anterodistal corner; merus with groups of short anterior and posterior spines; carpus with 4 groups of spines (one group also with a long seta) on anterior border, and no posterior ornamentation except distal group of spines; carpus 0.55 x as long as merus; carpus + propodus 1.07 x as long as merus; propodus with anterior long slender spines and setae, which can be associated in groups (3

groups of spine/seta); propodal apical tuft of setae very developed (consisting of many setae which are very long; there are no spines); dactylus slightly curved and slender, 0.41 x as long as propodus.

P6: coxa short, with small posterior tooth; basis very narrow (2.09 x as long as wide), with anterior border distinctly curved and posterior border straight; anterior border with conical spines (distal angle with a rather long spine), posterior border with only 6 teeth (which are widely separated from each other), distal border produced into a protruding rounded toothless lobe; ischium without spine on anterodistal corner; merus with anterior groups of well developed spines and posterior groups of short spines; carpus with 3 groups of long slender spines on anterior border and no posterior spines (except apical group); carpus 0.59 x as long as merus; propodus with long slender anterior spines, each associated with 1 or 2 long setae (3 spine/seta groups); dactylus slightly curved and slender, 0.40 x as long as propodus; propodal apical tuft very developed (many setae which are very long).

P7: coxa short, without posterior tooth; basis very narrow (1.79 x as long as wide), with anterior and posterior border straight; anterior border with conical spines (distal angle with a medium-sized spine paired with a spinule), posterior border with only 6 teeth (which are widely separated from each other), distal border produced into a protruding rounded toothless lobe; ischium without spine on anterodistal corner; merus with long anterior and posterior spines; merus 5.18 x as long as wide and 0.97 x as long as basis; carpus with long anterior spines and short posterior spines + distal group of long spines; carpus 0.81 x as long as merus; propodus of P7 1.53 x as long as propodus of P6; propodus with 4 groups of long slender spines on anterior border; trace of a broken apical spine; 3 short setules on posterior border; dactylus straight, very long and narrow (styliiform and becoming apically hair-like), 1.17 x as long as propodus.

Pleonite 1: posterodorsal area produced into 1 well developed tooth; Ep1 with small posteroventral tooth, with posterior border strongly convex, without setae.

Pleonite 2: posterodorsal area produced into 1 well developed tooth; Ep2 with tiny but acute posteroventral tooth followed by a notch, with posterior border distinctly convex, with 2 setules on posterior border.

Pleonite 3: posterodorsal area produced into 1 small tooth; Ep3 with unusually short blunt posteroventral tooth, positioned at the same level as ventral margin, with posterior border nearly straight and with 1 setule.

Urosomite 1 with dorsal border rectilinear in its posterior half, with well developed posterodorsal tooth

pointing backwards; ventrolateral border with 0 to 1 spine; peduncle of U1 with 3 dorsolateral spines: two short ones (on 0.4 and 0.7 of peduncle), and 1 long and stout distal one, with 3 dorsomedial spines: 2 stout and large spines on first half of peduncle and 1 long and stout distal spine; outer ramus with 3 well-developed outer spines and 0 to 1 medial spines; inner ramus with 1 well developed spine on outer border and 2 to 3 well developed spines on medial border.

Urosomite 2 with dorsal border rectilinear, with well developed posterodorsal tooth pointing backwards; peduncle of U2 with 3 dorsolateral spines: one short on proximal 0.4, another (broken but presumably short or fairly short) on distal 0.7 and one near the tip, with a single well developed dorsomedial spine in apical position; outer ramus with 3 well developed outer spines and no medial spines; inner ramus with 0 to 1 well developed spine on outer border and 2 well developed spines on medial border.

Urosomite 3 with small blunt posterolateral tooth on each side, with pair of long styliform spines (0.31 x as long as height of urosomite 3); U3 shorter than U1 and a bit shorter than U2; outer ramus and inner ramus of U3 subequal; outer ramus of U3 without spines; inner ramus 1.29 x as long as peduncle, with 2 spines on outer side, with 3 well developed spines on medial side.

Telson: cleft to 0.62 of its length; medial tooth of each lobe reaching about 0.58 of outer tooth; inter-teeth spine overreaching outer tooth by 0.65 of its length, 0.32 x as long as telson; tip of telson lobes without setae.

#### LENGTH

Said to be 7.36 mm prior to dissection (manuscript label found in the vial).

#### DISTRIBUTION

Off southeastern Tasmania, 49°45'36"S 152°36'12"E, 4304 m.

#### REMARKS

*Liljeborgia abyssotypica* n. sp. is morphologically similar to *L. bythiana* n. sp. and *L. permacra* n. sp. See identification key.

### *Liljeborgia bythiana* n. sp.

(Figs 7-12)

#### MATERIAL

**ANT-XIX/4, ANDEEP II, sta. 131-3**, W Weddell Sea, 65°19.83'S 051°31.62'W to 65°19.95'S 051°31.41'W, 3049-3050 m, EBS-Epinet, 05.iii.2002: 2 specimens (holotype, presumably ♂, 11 mm: dissected and mounted on 12 slides in Euparal; paratype, presumably ♂, 7 mm, in alcohol, except one P6: mounted on a slide in Euparal), leg. A. BRANDT, ZMH-41951

#### ETYMOLOGY

*Bythianus*, -a, -um: Latin adjective created after the Greek noun βυθος, the depths of the sea. The name alludes to the deep-sea habitat of the species.

#### DESCRIPTION

Rostrum short, narrowly triangular, very acute.

Eye absent.

A1: major flagellum with 15 articles in holotype (9 in paratype); accessory flagellum with 9 articles in holotype (5 in paratype).

A2: article 4 of peduncle with long slender dorsal and ventrolateral spines; article 5 with small dorsomedial spines and 1 distal ventrolateral spine; flagellum with 11 articles in holotype (7 in paratype), slightly shorter than fifth article of peduncle.

Epistome rounded and somewhat protruding in lateral view.

Md: left lacinia mobilis large and with anterior margin with 5 rounded teeth; right lacinia mobilis distinctly smaller, with anterior margin coarsely and deeply denticulate and with one large lateral tooth; ultimate spine of incisor process not much stouter than others, but the two distal spines of left Md with median spur; second article of palp long and narrow, slightly longer than first and significantly longer than third (ratio length article one / article two = 0.88); article one 5.23 x as long as wide; article two with setae near tip and one seta on 0.62 of its length, 7.00 x as long as wide; article three 5.88 x as long as wide, 0.60 x as long as article two.

Mx1: second article of palp with 2 setae on upper margin, 5 long and rather slender spines on ventral and apical margin, and 6 facial setae; outer plate with 9 denticulate spines; inner plate with 2 well developed setae on tip.

Mx2: outer plate with 3 widely spaced setae on upper

margin; setae of Mx2 not very numerous, of normal slenderness and those of inner plate rather short.

Mxp: article one of palp with 2 well developed distal outer dorsal setae, article two without non distal setae on outer margin; article three with two pairs of strong dorsal setae + 2 isolated setae on anterior border, article four (dactylus) stout, with anterior margin distinctly curved and posterior margin nearly straight and 0.76 x as long as article three; outer plate with 12 widely spaced, stout short spines and 6 to 9 spiniform medio-ventral setae at the same level as spines or more proximally; inner plates with 4 to 5 anterior spines (which are rather long) and 7 to 9 marginal and submarginal strong and not very long setae.

Gn1: coxa triangular, with posterior border barely concave, with posterior notch and only a trace of anterior notch; merus with 2 groups of setae, with distal tooth; carpus process with 7 groups of setae; tip of carpus reaching 0.18 of propodus, separated from propodal group of strong spines by distinct space; propodus 1.97 x as long as wide; group of spines (reduced to a single rather short spine) on the proximal 0.32 of propodus; palm border forming a regular curve, without teeth, with rather well spaced, small hooked spines (on outer row) (35 hooked outer spines + 1 outer seta in proximal position); dactylus without teeth.

Gn2: coxa triangulo-elliptic and strongly narrowing downwards with normally developed anterior and posterior tooth (distance between teeth not so long); merus with 3 groups of sparse setae, with distal tooth; carpus process with 7 well separated groups of setae; carpus reaching 0.26 of propodus, not reaching propodal group of strong spines; propodus 1.97 x as long as wide; group of spines on the proximal 0.38 of propodus (most distal spine used as reference point); palm border regularly convex; medial setae of palm short, outer border of palm with 31 well developed hooked spines + 4 setae); dactylus 0.74 x as long as propodus, with 4 teeth on proximal 0.25. Gn2 distinctly larger than Gn1; ratio length Gn2 / length Gn1: 1.26, surface of propodus of Gn2 / surface of propodus of Gn1: 1.58.

P3: coxa very narrow and elliptic with normally developed anterior and posterior tooth (distance between teeth not so long); merus 1.71 x as long as carpus (i.e. carpus short) and 1.21 x as long as propodus (i.e. propodus short); dactylus well developed, slender and strongly curved, 0.93 x as long as carpus and 0.67 x as long as propodus; merus with 3 regularly spaced groups of 1 or 2 setules (last one in distal position) on posterior border, without setule on middle of anterior border; carpus with a median pair of short setae followed by a distal group of 3 setae (of which one is

long) on posterior border; propodus with 3 groups of setae (of which the two last ones consist of long ones) followed by a pair of distal spinules (length of longest propodal seta about 2.28 x width of propodus) on posterior border; anterior border of propodus without setae except distomedial group of long setae.

P4: coxa of normal proportions (1.16 x as long as wide), with anterior and posterior border slightly diverging downwards, with anterior border straight, with ventral border distinctly and regularly convex, with posterior border straight, with 1 truly tiny anteroventral notch and 2 well developed posterior teeth; merus 1.73 x as long as carpus (i.e. carpus short) and 1.32 x as long as propodus (i.e. propodus short); dactylus well developed, slender and strongly curved, 0.89 x as long as carpus and 0.68 x as long as propodus; merus with 3 isolated setules (last one in distal position) on posterior border, without setule on middle of anterior border; carpus with a median pair of well developed setae followed by a distal group of 3 setae (of which one is long) on posterior border; propodus with 3 groups of long setae followed by a pair of distal spinules (length of longest propodal seta about 2.55 x width of propodus) on posterior border; anterior border of propodus without setae except distomedial group of long setae.

P5: coxa short, with small posterior tooth; basis narrow (1.95 x as long as wide), with anterior border distinctly convex and posterior border straight; anterior border with conical spines (distal angle with pair of small spines of which the longest one is slightly longer than the more proximal spines), posterior border with only 7 teeth (which are small and widely separated from each other), distal border produced into a weakly protruding, rounded toothless lobe; ischium with spinule on anterodistal corner; merus with small spines on tip of anterior and posterior border and no other ornamentation (i.e. spination very reduced); carpus 0.49 x as long as merus; carpus + propodus 1.03 x as long as merus; propodus with 2 anterior groups of one long slender spine and one long slender seta; propodal apical tuft of setae well developed (1 small spine associated with these setae); dactylus straight and slender, 0.44 x as long as propodus.

P6: coxa short, with small posterior tooth; basis narrow (1.77 x as long as wide), with anterior border distinctly convex and posterior border weakly convex; anterior border with conical spines (distal angle with a medium-sized spine, 3 x as long as more proximal ones), posterior border with only 4 teeth in paratype (P6 missing in holotype), distal border produced into a protruding, rounded toothless lobe; ischium with medium-sized spine on anterodistal corner; merus with

anterior and posterior small spines (which are isolated except for the anterodistal group which forms a pair); three distal articles missing.

P7: coxa short, without posterior tooth; basis rather narrow (1.59 x as long as wide), with anterior border distinctly convex and posterior border very convex, anterior border with conical spines (distal angle with a pair of spines of which the longest one is medium-sized, twice as long as the more proximal ones), posterior border with only 6 teeth, distal border produced into a protruding rounded toothless lobe; ischium with small spine on anterodistal corner; merus with well developed anterior and long posterior spines; three distal articles missing.

Pleonite 1: posterodorsal area produced into 1 small tooth; Ep1 with very small posteroventral tooth, with posterior border weakly convex, without setae.

Pleonite 2: posterodorsal area produced into 1 small tooth; Ep2 with slight upper convexity and distinct lower concavity, with very small posteroventral tooth.

Pleonite 3: posterodorsal area produced into 1 small tooth; Ep3 with large acute posteroventral tooth (no notch above tooth), positioned as the same level as ventral margin, with posterior border straight, oblique and without setules.

Urosomite 1 with dorsal border rectilinear, with very small posterodorsal tooth pointing backwards; ventrolateral border with 1 spine; peduncle of U1 with 3 dorsolateral spines: 2 widely spaced very short ones, and 1 long and stout distal one, with 3 or 4 (including the distal one) well developed dorsomedial spines; outer ramus with 3 small outer spines in holotype (2 in paratype) and no medial spines; inner ramus with no spines on outer border and 3 small spines on medial border in holotype (2 in paratype).

Urosomite 2 with dorsal border rectilinear, with very small posterodorsal tooth pointing backwards; peduncle of U2 with 2 outer dorsal spines: one short on distal 0.7 and a normally developed one near the tip, with 2 or 3 well developed medial dorsal spines; outer ramus with 2 small outer spines in holotype (1 in paratype) and no medial spines; inner ramus with no spines on outer border and 3 small spines on medial border.

Urosomite 3 without posterolateral tooth on each side, with well developed pair of posterodorsal spines; U3 shorter than U1 and almost as long as U2; outer ramus and inner ramus of U3 subequal, peduncle of U3 with 2 isolated medial spines (of which the proximal one is very short); outer ramus of U3 without spines; inner ramus 1.28 x as long as peduncle, without spines on outer side, with 3 small spines on medial side.

Telson: cleft to 0.70 of its length; medial tooth of

each lobe short, reaching only 0.32 of outer tooth and 0.13 x as long as telson; inter-teeth spines shorter than outer teeth (reaching 0.74 of their length); tip of telson lobes without setae.

#### SIZE

11 mm.

#### DISTRIBUTION

Western Weddell Sea, 65°20'S 051°32'W, 3049-3050 m.

#### REMARKS

*L. bythiana* n. sp. is morphologically similar to *L. abyssotypica* n. sp. and *L. permacra* n. sp. (see key), and it is also superficially similar to *L. zarica* BARNARD, 1962 from the abyssal depths of the Cape Basin (BARNARD, 1962). However there are clear-cut differences between them. In *L. zarica*, the articles of the mandibular palp are much stouter than in *L. bythiana* n. sp. The coxa of the fourth pereopod has no teeth in *L. zarica*, whilst it has 2 well developed teeth in *L. bythiana* n. sp. In *L. zarica*, the basis of the fifth and seventh pereopods is significantly broader than in *L. bythiana* n. sp. In *L. zarica*, the anterior spines of the basis of the fifth and seventh pereopods are long and slender, whilst they are short and stout (i.e. normal) in *L. bythiana* n. sp. The rami of the third uropod have no spines in *L. zarica*, whilst there are 3 spines on the medial border of the inner ramus in *L. bythiana* n. sp. In *L. zarica*, the telson is cleft to all its length, whilst it is only cleft to 0.7 of its length in *L. bythiana* n. sp. In *L. zarica*, the apical telson spines are much longer than the outer teeth, whilst they are significantly shorter than the outer teeth in *L. bythiana* n. sp.

#### *Liljeborgia chevreuxi* SCHELLENBERG, 1931

(Figs 13-18)

*Liljeborgia consanguinea*; CHEVREUX, 1913: 125, figs 25-27

*Liljeborgia chevreuxi* SCHELLENBERG, 1931: 128

*Liljeborgia* sp. 2 D'UDEKEM D'ACOZ & ROBERT, 2008: 54 (list)

#### MATERIAL

ANT-XXIII-8, sta. 728-2, NW Weddell Sea, off Dundee Isl. (Paulet Isl.), 63°42.50'S 056°01.84'W to 63°42.31'S 056°02.08'W, 327-331 m, AGT, 24.i.2006,

original fixation with formalin: 1 ovigerous ♀, 8 mm, photographed in fresh condition, dissected and mounted on 12 slides in Euparal, leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.071

#### DESCRIPTION

Rostrum pointed, triangular with acute tip, normalized.

Eye present, extremely large, subquadrate, ommatidia present, large, well distinct; pigmentation persisting in alcohol.

A1: major flagellum with 20 articles; accessory flagellum with 10 articles.

A2: article 4 of peduncle with dorsomedial spines, and with ventrolateral spines only in apical position; article 5 without dorsomedial and ventrolateral spines (only with setae); flagellum with 17 articles.

Epistome bluntly triangular, strongly protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 bluntly triangular teeth; right lacinia mobilis considerably smaller than left one, with anterior margin minutely denticulate and with one especially large lateral tooth; spines of incisor process stout and spinulose; article one of palp much shorter than article two (ratio length article one / article two = 0.70); article one 2.32 x as long as wide; article two with 3 distal/subdistal setae and no setae more proximally, 4.04 x as long as wide; article three 3.00 x as long as wide, 0.53 x as long as article two.

Mx1: second article of palp with 3 setae on upper margin, 8 slender spines on ventral and apical margin, and 6 well developed facial setae; outer plate with 7 weakly denticulate spines; inner plate with 1 apical strong seta.

Mx2: outer plate with 2 well developed setae on upper margin; setae of Mx2 rather strong.

Mxp: article one of palp without distal outer dorsal setae, article two without non distal setae on outer margin; article three with 3 isolated slender setae on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins distinctly curved and 0.78 x as long as article three; outer plate with 14 mostly long and slender moderately spaced spines on medial border (longer slender spines intermixed with shorter stouter ones), and about 8 slender medio-ventral setae at the same level as spines or more proximally; inner plate with 2 small and rather slender anterior spines and 7 not very long setae.

Gn1: coxa narrowly triangular, with weakly concave posterior border, with small posterior and anterior

notch; merus with 3 groups of setae and small acute distal tooth (not distinct on figure); carpus process with 4 groups of setae, tip of carpus reaching 0.25 of propodus, not reaching propodal group of strong spines; propodus 2.20 x as long as wide; group of spines on the proximal 0.32 of propodus (most distal spine used as point of reference); these spines are well developed; palm border forming a regular curve and without teeth; palm with hooked spines of outer row narrowly spaced (29 hooked outer spines and no outer setae); dactylus with 7 teeth; dactylar teeth reaching half of dactylus length.

Gn2: coxa quadrato-elliptic, of normal stoutness, with small posterior and anterior notch (the two notches are not close to each other); merus with 3 groups of setae, and with small distal tooth; carpus process with 5 groups of setae; tip of carpus reaching 0.28 of propodus, reaching propodal group of strong spines; propodus 2.12 x as long as wide; group of spines on the proximal 0.34 of propodus (most distal spine used as point of reference); these spines are well developed; palm border distinctly convex and smooth, with hooked spines of outer row normally spaced (19 hooked outer spines + 10 outer setae); dactylus of normal size, 0.72 x as long as propodus, with 12 teeth and toothed to 0.8 of its length. Gn2 only a bit longer than propodus of Gn1, ratio length Gn2 / length Gn1: 1.21; surface of propodus of Gn2 / surface of propodus of Gn1: 1.50.

P3: coxa elliptic, narrow, with well developed posterior tooth, and anterior notch (tooth and notch very close to each other); merus 1.32 x as long as carpus and 0.89 x as long as propodus; dactylus very short, stout, with its anterior and posterior borders weakly curved, 0.56 x as long as carpus and 0.38 x as long as propodus; posterior border of merus with 6 isolated setules; carpus with 4 groups of 1-2 setules on posterior border (distal group with a thin medium-sized seta in addition), with 1 isolated setule on tip of anterior border; propodus with 8 isolated setules + a small distal spine (length of longest propodal setules about 0.36 x as long as width of propodus) on posterior border; anterior border of propodus with 4 isolated setules.

P4: coxa of normal width (1.31 x as long as wide), with anterior and posterior border parallel, with ventral border slightly convex, with 3 medium-sized teeth on posterior border and minute anteroventral tooth (at an unusually posterior level) associated with a long thin seta; merus 1.34 x as long as carpus and 0.95 x as long as propodus; dactylus very short, stout, with its anterior and posterior borders weakly curved, 0.57 x as long as carpus and 0.39 x as long as propodus; posterior border of merus with 6 isolated setules; carpus with 4 groups of

1 or 2 setules on posterior border, with 1 isolated setule on tip of anterior border; propodus with 7 isolated setules + a small distal spine (length of longest propodal setules about 0.39 x as long as width of propodus) on posterior border; anterior border of propodus with 4 groups of 1 or 2 setules.

P5: coxa with posterior tooth; basis broad (1.52 x as long as wide), anteriorly and posteriorly distinctly convex (basis symmetrically elliptic); anterior border with small conical spines (distal angle with a long spine paired with a small conical spine), posterior border with 13 well developed (except the first two which are reduced) non-erect teeth, distal border rounded, produced into a regularly curved lobe; ischium with rather long spine on anterodistal corner; merus with 4 anterior pairs of well developed slender spines, with 3 well developed isolated spines (incl. apical spine) posteriorly; carpus with anterodistal and posterodistal groups of spines (not intermixed with setae) and no spines more proximally; carpus 0.69 x as long as merus; carpus + propodus 1.48 x as long as merus; propodus with 7 long slender anterior isolated spines on anterior border, and with 3 groups of 1 or 2 setae (incl. distal group) of very variable length on posterior border; apical group with 2 setae and not associated with a spine; dactylus slightly curved and stout, 0.32 x as long as propodus.

P6: coxa with small posterior tooth; basis broad (1.63 x as long as wide), anteriorly and posteriorly slightly convex (basis symmetrically elliptic); anterior border with small conical spines (distal angle with a long spine), posterior border with 13 normally developed non-erect teeth, distal border rounded, produced into a regularly curved lobe; merus with 4 anterior groups of 1 or 3 long slender spines, with 4 posterior groups of 1 or 2 long spines (incl. apical group); carpus with 3 anterior groups of 1 or 2 spines not associated with setae and posterodistal group of spines; carpus 0.69 x as long as merus; propodus with 6 long slender anterior isolated spines on anterior border, with 6 non distal posterior setae sometimes paired with a setule + pair of posterodistal spines not associated with setae (actually setae may have been rubbed off); dactylus weakly curved, slender, with tip entire, 0.33 x as long as propodus.

P7: coxa without posterior tooth; basis broad (1.43 x as long as wide), anteriorly and posteriorly distinctly convex (basis symmetrically elliptic), anterior border with small conical spines (distal angle with a very long and a rather long spines), posterior border with 12 normally developed non erect teeth, distal border rounded, produced into a regularly curved lobe; ischium

with long spine on anterodistal corner; merus with very long anterior and posterior spines; merus 3.84 x as long as wide and 0.90 x as long as basis; tip of P7 missing [according to CHEVREUX's drawing, carpus as long as merus; propodus of P7 much longer than propodus of more anterior pereopods; propodus with anterior spines and posterior long setae; dactylus straight, long and very slender, entire, 0.45 x as long as propodus].

Pleonite 1: posterodorsal area with 1 well developed tooth; Ep1 with well developed posteroventral tooth, with posterior border distinctly convex; anteriorly without setae.

Pleonite 2: posterodorsal area with 1 well developed tooth; Ep2 with small posteroventral tooth, with posterior border barely convex, without setae.

Pleonite 3: posterodorsal area without tooth or with trace of tooth (situation not clear, specimen not in very good condition); Ep3 with small posteroventral tooth followed upwards by a shallow notch, with posterior border straight.

Urosomite 1 posteriorly terminated in a small tooth pointing backwards; peduncle of U1 with 6 dorsolateral spines: 3 long ones followed by 2 short one and by strong distal one, with 1 distal dorsomedial spine; outer ramus with 2 small outer spines and no medial spines; inner ramus without spines on outer border and with 6 well developed stout spines on medial border.

Urosomite 2 with dorsal border posteriorly with trace of tooth; peduncle of U2 with 1 dorsolateral spine in distal position and 1 dorsomedial spine, also in distal position; outer ramus with 3 medium-sized stout outer spines and no medial spines; inner ramus with 1 small stout spine on outer border and 7 long stout spines on medial border.

Urosomite 3 without posterolateral tooth on each side, apparently without posterodorsal spines (they have possibly been rubbed off); U3 shorter than U1 and a bit shorter than U2; outer ramus and inner ramus of U3 equal, outer ramus without spines on outer border; inner ramus 1.17 x as long as peduncle, with 2 small spines on outer border and 3 rather large stout spines on medial border.

Telson: cleft to 0.80 of its length; medial tooth of each lobe reaching 0.29 of outer tooth; inter-teeth spine normally overreaching outer tooth by 0.59 of its length, 0.37 x as long as telson; medial apical teeth of telson with 1 well developed seta, outer apical teeth of telson with 3 to 4 well developed setae.

#### COLOUR PATTERN

Almost colourless, very vaguely pinkish, oral field

pale pink, eye red, viscera looking golden yellow by transparency (photograph taken by the author).

#### LENGTH

8 mm

#### TYPE

Type locality: Marguerite Bay, 200 m (CHEVREUX, 1913 as *L. consanguinea*). Geographical coordinates of Marguerite Bay: 68°30'S 068°30'W, fide ALBERTS (1995). The holotype was deposited at the MNHN (DE BROYER *et al.*, 2007) but it is now apparently lost (see remarks).

#### DISTRIBUTION

Both sides of Antarctic Peninsula: Marguerite Bay, 200 m (Chevreux, 1913 as *L. consanguinea*) and Dundee Island, 327-331 m (present material).

#### REMARKS

The holotype of *L. chevreuxi* was identified as *L. consanguinea* STEBBING, 1888 by CHEVREUX (1913), who gave a rather detailed and reasonably well illustrated description of his specimen. SCHELLENBERG (1931) pointed out that CHEVREUX's identification was erroneous and that it belonged to a new species, which he dedicated to the French carcinologist, without examining the type specimen. New specimens have never been recorded in subsequent literature and the species is presumably rare. The holotype of *L. chevreuxi* is probably lost. Indeed in an e-mail sent to the author on February 16th, 2007, Dr. Danièle DEFAYE states: «Nous n'avons retrouvé ni *Liljeborgia chevreuxi* SCHELLENBERG, 1931, ni *Liljeborgia consanguinea* STEBBING, 1888 qui ne sont pas présents dans les collections du MNHN, à mon grand regret pour votre travail.» During The ANT-XXIII-8 expedition, the present author collected a single specimen of a *Liljeborgia* species, which agrees rather well, albeit not perfectly, with CHEVREUX's (1913) account. The specimen is about the same size as CHEVREUX's specimen, and has been collected at similar depths and more or less in the same area (Antarctic Peninsula). CHEVREUX indicates the occurrence of a small tooth on the posterodorsal border of the third pleonite. In our specimen there is apparently no tooth at this position, but it must be pointed out that the condition of the specimen available was rather poor and that its pleonite

3 could be damaged. CHEVREUX (1913) also mentions the occurrence of a small posterodorsal tooth on the second urosomite, while there is only a trace of tooth in the available specimen. The description of CHEVREUX (1913) is possibly inexact on these points and it is also possible that these characters exhibit some intraspecific variations. If it appears afterwards that the specimen of CHEVREUX belongs to a species distinct from ours, there is however little doubt that the two species will prove to be very similar. So, for the time being, the most reasonable assumption is to consider the specimen examined as belonging to *L. chevreuxi*.

*L. chevreuxi* exhibits a close similarity with *L. cnephatis* n. sp., *L. pseudomacronyx* and *Liljeborgia* sp. 2 and these four species of the '*chevreuxi* complex' need a detailed comparison.

*L. cnephatis* n. sp. is an abyssal eyeless species; *L. sp. 2* is a bathyal species with imperfect but rather large eyes, *L. chevreuxi* and *L. pseudomacronyx* are shelf species with extremely large ommatidian eyes.

In *L. pseudomacronyx*, the epistome is more pointed than in other species.

In *L. chevreuxi* the outer plate of the maxilliped has 14 spines, in *L. pseudomacronyx* 10 spines and in *L. cnephatis* 6 spines (*L. sp. 2* has not been dissected).

In *L. chevreuxi*, *L. cnephatis* n. sp. and *L. sp. 2*, the three anterior coxae have a small anterior and posterior tooth or notch, whilst in *L. pseudomacronyx* these coxae only have a posterior tooth, but this tooth is unusually strong.

*L. cnephatis* n. sp. has no posterodorsal tooth on the first pleonite, whilst *L. sp. 2*, *L. chevreuxi* and *L. pseudomacronyx* do have one.

In *L. chevreuxi*, *L. cnephatis* n. sp. and *L. sp. 2*, there is very few or no spines on the medial side of the outer ramus of the first and second uropods, and on the outer side of the inner ramus of the same uropods; in *L. pseudomacronyx* these uropodal borders are furnished with numerous (albeit small) spines.

In *L. chevreuxi*, *L. cnephatis* n. sp. and *L. pseudomacronyx*, the proximal dorsolateral spines of the peduncle of the first uropod are long, whilst they are short in *L. sp. 2*; the size discrepancy between the proximal long spines and the distal short spines is abrupt in *L. pseudomacronyx*, whilst the size decreases gradually in *L. chevreuxi* and *L. cnephatis* n. sp.

In *L. chevreuxi*, *L. cnephatis* n. sp. and *L. pseudomacronyx*, the posterodorsal tooth of the second urosomite is absent or vestigial, whilst it is very distinct in *L. sp. 2*.

In *L. chevreuxi* and *L. pseudomacronyx* the two borders of the inner ramus of the third uropods are

furnished with numerous spines, whilst in *L. cnephatis* and *L. sp. 2* there is only one spine (on medial side).

In *L. cnephatis* n. sp. and *L. sp. 2*, the inter-teeth spine of each lobe of the telson is shorter than the apical teeth of the telson, whilst it is considerably longer than the apical teeth of the telson in *L. chevreuxi* and *L. pseudomacronyx*.

In *L. cnephatis* n. sp., there is only one seta at the tip of the lobes of the telson (on the outer tooth), in *L. sp. 2* there is apparently no setae, in *L. chevreuxi* there are several setae on the outer tooth and several on the medial tooth, in *L. pseudomacronyx* there is one seta on each tooth.

In *L. cnephatis* n. sp. and *L. sp. 2*, the medial tooth on each lobe of the telson is slightly longer than the outer tooth, in *L. pseudomacronyx* the medial tooth is slightly shorter or as long as the outer tooth, in *L. chevreuxi* the medial tooth is much shorter than the outer tooth.

Finally it must be pointed out that the four *Liljeborgia* species of the complex *chevreuxi* exhibit some similarities with *L. cryptothrix* n. sp. and *L. octodentata*, which have the same posterior ornamentation of the propodus of the third and fourth pereopods, i.e. reduced to setules. However *L. cryptothrix* n. sp. and *L. octodentata* have three small teeth on the posterodorsal border of the first and second pleonites, whilst the species of the group *chevreuxi* have only one (and none on the first pleonite of *L. cnephatis* n. sp.).

### *Liljeborgia cnephatis* n. sp.

(Figs 19-24)

#### MATERIAL

**ANT-XIX/3, ANDEEP I**, sta. 41-3, south of Drake Passage, 59°22.24'S 060°04.06'W to 59°22.40'S 060°03.99'W, 2372-2375 m, EBS-Epinet, 26.i.2002: 1 ♀, holotype (mounted on 15 slides in Euparal), leg. A. BRANDT, ZMH-41952

#### ETYMOLOGY

Κνέφας, -τό, Greek noun meaning darkness, evening dusk, twilight, here latinized as *cnephas*, -tis. The name, which is a genitive, alludes to the darkness of the abyss, which is the habitat of the species.

#### DESCRIPTION

Rostrum normally developed, acute, curving downwards.

Eye absent.

A1: major flagellum with 15 articles; accessory flagellum with 10 articles.

A2: article 4 of peduncle with long slender dorsal spines, without ventrolateral spines except a distal one; article 5 of peduncle and flagellum with strongly curved setae but without dorsomedial teeth and with only 1 ventrolateral spine (in distal position); flagellum with 13 articles, longer than fifth article of peduncle.

Epistome obtusely triangular in lateral view and protruding.

Md: left lacinia mobilis large and with anterior margin with 5 triangular teeth; right lacinia mobilis smaller with anterior margin finely and deeply denticulate and with one large lateral denticulate tooth; spines of incisor process slightly spinulose, ultimate one not much stouter than others; second article of palp stout, significantly longer than first and much longer than third (ratio length article one / article two = 0.75); article one 2.51 x as long as wide; article two with 4 distal setae and no setae more proximally, 4.01 x as long as wide; article three 3.00 x as long as wide, 0.54 x as long as article two.

Mx1: second article of palp with 3 setae on upper margin, 7 rather slender spines on distal margin, and about 5 facial setae; outer plate with 7 denticulate spines; inner plate with 1 well developed seta on tip.

Mx2: outer plate with 3 not very widely spaced setae on upper margin; setae of Mx2 slender and few in number.

Mxp: article one of palp without distal outer dorsal setae, article two without non distal setae on outer margin (and with only one distal seta); article three with 2 stout isolated slender setae on anterior border, article four (dactylus) rather slender, with anterior and posterior margins weakly curved and 0.91 x as long as article three; outer plate with only 6 widely spaced, slender spines on medial border, and about 10 spiniform medio-ventral setae at the same level as spines and more proximally; inner plate with 2 anterior spines (which are slender and normal-sized) and 5 marginal and submarginal strong setae.

Gn1: coxa 1 narrowly triangular (almost quadrate), with posterior border concave, with minute anterior and posterior notch; merus with 2 groups of setae, with distal tooth; carpus process with 3 groups of setae; tip of carpus reaching 0.28 of propodus, separated from propodal group of strong spines by distinct space; carpus without anterior setae; propodus 2.00 x as long as wide; group of spines on the proximal 0.41 of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth, with well developed hooked spines (on outer row),

which are rather normally spaced (25 hooked outer spines and no outer setae); dactylus with 2 teeth in very proximal position.

Gn2: coxa triangulo-elliptic, of normal width, with normally developed anterior and posterior tooth (these teeth are close to each other); merus with 3 groups of sparse setae, with distal tooth; carpus process with 5 well separated groups of setae; tip of carpus reaching 0.26 of propodus; propodus 2.16 x as long as wide; group of spines on the proximal 0.39 of propodus (most distal spine used as reference point); palm border regularly convex; medial setae of palm normal-sized, outer border of palm with 18 short hooked spines and 9 setae); dactylus 0.75 x as long as propodus, with 8 teeth spread on 0.6 of its length. Gn2 distinctly larger than Gn1; ratio length Gn2 / length Gn1: 1.33, surface of propodus of Gn2 / surface of propodus of Gn1: 1.68.

P3: coxa very narrow and elliptic with normally developed anterior and posterior tooth; anterior tooth of coxa very close to posterior tooth; merus 1.35 x as long as carpus (i.e. carpus not shortened) and 0.95 x as long as propodus (i.e. propodus not shortened); dactylus normally developed, not very slender and slightly curved, 0.58 x as long as carpus and 0.42 x as long as propodus; merus with 5 groups of 1 or 2 curved setules on posterior border, with 1 setule on middle of anterior border; carpus with a median curved setule followed by a long seta associated with a setule on posterior border, with 1 median setule on anterior border; propodus with 5 isolate setules followed by a pair of distal spinules (length of longest propodal setule about 0.28 x width of propodus) on posterior border; anterior border of propodus without setules.

P4: coxa rather narrow (1.34 x as long as wide), with anterior and posterior border parallel, with anterior border straight, with ventral border nearly straight, with posterior border straight, without anterior tooth or notch, with 4 posterior teeth; merus 1.40 x as long as carpus (i.e. carpus not shortened) and 0.96 x as long as propodus (i.e. propodus not shortened); dactylus normally developed, slender and moderately curved, 0.64 x as long as carpus and 0.43 x as long as propodus; merus with 5 isolate curved setules on posterior border, with 1 setule on middle of anterior border; carpus with 2 curved setules followed by a long seta associated with a setule on posterior border, without median setule on anterior border (just a distal tiny setule); propodus with 6 isolate setules followed by a pair of distal spinules (length of longest propodal setule about 0.38 x width of propodus) on posterior border; anterior border of propodus with 3 setules.

P5: basis asymmetrically elliptic and broad (1.60 x

as long as wide); anterior border with conical spines (distal angle with a medium-sized spine), posterior border with 14 teeth (which are normal-sized and separated from each other by a normal-sized space), distal border produced into a protruding, rounded toothless lobe; ischium with rather small spine on anterodistal corner; merus with small spines on anterior and posterior border; carpus 0.64 x as long as merus; carpus + propodus 1.34 x as long as merus; propodus with 3 rather short spines of normal stoutness paired with a tiny setule and a distal pair of spinules on anterior border, posterior border of propodus with an apical spinule and no other ornamentation; propodal apical tuft of setae absent; dactylus straight and slender, 0.43 x as long as propodus.

P6: basis asymmetrically elliptic and broad (1.62 x as long as wide); anterior border with conical spines (distal angle with a spinule), posterior border with 13 teeth in paratype, distal border produced into a protruding, rounded toothless lobe; ischium with rather small spine on anterodistal corner; merus with anterior and posterior small spines; carpus 0.69 x as long as merus; propodus with 5 isolated rather short spines of normal stoutness [proximal one rubbed off but former presence attested by a scar] on anterior border; anteromedial surface with 2 isolated long spiniform setae; posterior border of propodus with an apical spinule and a fairly long seta and no other ornamentation; dactylus straight and slender, 0.39 x as long as propodus.

P7: basis symmetrically elliptic and broad (1.30 x as long as wide), anterior border with conical spines (distal angle with long spine paired with a spinule), posterior border with 12 teeth, distal border produced into a protruding rounded toothless lobe; ischium with medium-sized spine on anterodistal corner; merus with long anterior and posterior spines; merus 3.25 x as long as wide and 0.76 x as long as basis; three distal articles missing.

Pleonite 1: posterodorsal area not produced into a tooth; Ep1 with small posteroventral tooth, with posterior border distinctly convex, without setae.

Pleonite 2: posterodorsal area produced into 1 small tooth; Ep2 with small posteroventral tooth, with posterior border barely convex.

Pleonite 3: posterodorsal area not produced into a tooth; Ep3 with small posteroventral tooth (unusually short), positioned well above the ventral margin, and followed upwards by a distinct notch, with posterior border straight and without setules.

Urosomite 1 with dorsal border rectilinear, with small posterodorsal tooth pointing backwards; ventrolateral border with 1 spine; peduncle of U1 with

6 dorsolateral spines which are regularly spaced: 1 short one followed by 2 or 3 long and slender ones, followed by 1 or 2 short ones, followed by 1 long and stout distal one, with 1 well developed dorsomedial distal spine; outer ramus with 1 or 2 very small outer spines and 1 even smaller medial spine; inner ramus with no spines on outer border and 4 well developed and rather stout spines on medial border.

Urosomite 2 with dorsal border rectilinear, without posterior tooth; peduncle of U2 with 1 dorsolateral and 1 dorsomedial distal spines (both stout and rather short); outer ramus with 3 small outer spines and no medial spines; inner ramus with 1 small spine on outer border and 4 well developed and rather stout spines on medial border.

Urosomite 3 without posterolateral tooth on each side, with pair of short posterodorsal spines; U3 shorter than U1 and a bit shorter than U2; outer and inner ramus of U3 equal, outer ramus of U3 without spines; inner ramus 1.36 x as long as peduncle, without spines on outer side, with 1 small spine on medial side.

Telson: cleft to 0.75 of its length; medial tooth of each lobe not especially long but slightly longer than outer tooth (about 1.30 x as long as outer tooth); inter-teeth spines about as long as outer teeth (hence shorter than medial teeth) and 0.065 as long as telson (i.e. the spine is extremely short); outer tooth of each telson lobe with one well developed seta; medial tooth of each telson lobe without seta.

#### SIZE

8 mm long.

#### DISTRIBUTION

Antarctica: south of Drake Passage, 59°23'S 060°04'W, 2372-2375 m.

#### REMARKS

*L. chevreuxi*, *L. cnephatis* n. sp., *L. pseudomacronyx* and *Liljeborgia* sp. 2 are very similar species. See the account of *L. chevreuxi* for a detailed comparison.

#### *Liljeborgia consanguinea* STEBBING, 1888 (Figs 25-32)

*Liljeborgia consanguinea* STEBBING, 1888: 980-984, pl. 91.

*Liljeborgia consanguinea* STEBBING, 1906: 232.

#### MATERIAL

**H.M.S. Challenger, sta. 149**, Iles Kerguelen, Baie Accessible, Anse Betsy [49°09'12"S 070°11'10"E fide DELÉPINE (1973)], 20 fathoms [depth given by STEBBING (1888) or 25 fathoms [depth written on microscope slides] (i.e. 37 or 46 m), volcanic mud, 09.i.1874: 1 ♀ (6 slides made by STEBBING + 1 tube in alcohol), here designed as lectotype, BMNH 1889.5.15.104; **H.M.S. Challenger, sta. 151**, Heard Isl., 52°59'30"S 073°33'30"E: 1 ♀ (2 slides in poor condition + 1 tube in alcohol), off Heard Isl., 137 m, volcanic mud, 07.ii.1874: 1 ♀, here designed as paralectotype, BMNH 1889.5.15.105; **KER82, sta. D16**, Iles Kerguelen, N of Ile de l'Antarès [49°14'34"S 069°13'40"E fide DELÉPINE (1973)], dredge, 50 m, 28.i.1982: 2 specimens (2 vials), leg. C. DE BROYER, RBINS, I.G. 26.597; **KER82, sta. D25 to D29**, Iles Kerguelen, south of Ile Suhm [49°29'50"S 070°09'33"E fide DELÉPINE (1973)], 30-50 m depth, red algae and *Aulacomya* mud, dredge, 10.ii.1982: 2 specimens, of which one has been dissected and mounted on 17 slides in Euparal, leg. C. DE BROYER, RBINS, I.G. 26.597; **KER82, sta. B30**, Iles Kerguelen, Fosse de Channer [49°22'57"S 070°11'17"E fide DELÉPINE (1973)], 100-105 m, fine grey mud, 23.ii.1982: 2 specimens (one large), leg. C. DE BROYER, RBINS, I.G. 26.597

#### DESCRIPTION

Rostrum pointed, narrow, with acute tip, of normal length.

No distinct eye in alcohol.

A1: major flagellum with 13 to 15 articles; accessory flagellum with 8 articles.

A2: article 4 of peduncle with long styliform dorsomedial and ventrolateral spines; article 5 with well developed dorsomedial and ventrolateral spines; flagellum with 11 to 12 articles, slightly longer than fifth article of peduncle.

Epistome slightly rounded in lateral view and scarcely protruding.

Md: left lacinia mobilis large and with anterior margin with 5 acutely triangular teeth; right lacinia mobilis almost as large as left one, with anterior margin minutely denticulate and one large conical lateral tooth; ultimate spine of incisor process not much stouter than others; article one and two of palp subequal (ratio length article one / article two = 1.12); article one 4.59 x as long as wide; article two with 2 distal/subdistal setae, 4.77 x as long as wide; article three 4.94 x as long as wide, 0.98 x as long as article two.

Mx1: second article of palp with 1 seta on upper margin, 7 short ventral and apical spines (proximal ones fairly slender, distal ones becoming stout), and about 5 facial setae; outer plate with 10 strongly denticulate spines; inner plate with a single seta.

Mx2: outer plate with 2 widely spaced strong setae on upper margin; setae stout and not very numerous.

Mxp: article one of palp with 1 medium-sized slender distal outer dorsal seta, article two without non distal setae on outer margin; article three with 2 to 3 isolated stout setae on anterior border, article four (dactylus) very stout, with anterior border weakly convex and posterior border straight, 0.89 x as long as article three; outer plate with 8 to 11 widely spaced, short and very stout spines on medial border, and about 8 spiniform medio-ventral setae at the same level as spines or more proximally; inner plate with 3 stout and well developed anterior spines and 4 spiniform setae.

Gn1: coxa triangular, of normal width, with posterior border distinctly concave, with small but well developed and acute posterior tooth, with small anterior tooth; merus with 3 groups of setae, with small acute distal tooth; carpus process with 7 groups of setae; tip of carpus reaching 0.20 of propodus, separated from propodal group of strong spines by very small space; propodus 2.12 (♂) or 2.22 (♀) x as long as wide; group of spines on the proximal 0.31 of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth, with hooked spines of outer row widely spaced (18 hooked outer spines in ♀; 17 hooked outer spines + 4 outer setae in ♂); dactylus with 2 to 3 teeth in ♀♀ and 3 in ♂♂; teeth restricted to proximal 0.2 of dactylus.

Gn2: coxa quadrato-elliptic, broad, with strong posterior tooth and small anterior tooth (teeth widely separated); merus with 4 loose groups of setae, with one small acute distal tooth; carpus process with 7 groups of setae; tip of carpus reaching 0.21 of propodus, reaching propodal group of strong spines; propodus 2.19 (♂) or 2.03 (♀) x as long as wide; group of spines on the proximal 0.32 (♂) or 0.35 (♀) of propodus (most distal spine used as reference point); palm border almost straight (scarcely convex), without teeth in ♀♀, with 7 small teeth in adult ♂ (most anterior tooth largest); setae of palm of normal length; dactylus long, especially in adult ♂, 0.77 (adult ♂) or 0.76 (♀) x as long as propodus; dactylus with 6 teeth in a ♀, 8 in two ♂♂ examined; dactylus toothed to 0.6 of its length. Gn2 significantly larger than Gn1; ratio length Gn2 / length Gn1: 1.58 (♂) or 1.47 (♀), surface of propodus of Gn2 / surface of propodus of Gn1: 2.46 (♂) or 2.29 (♀).

P3: coxa elliptic, of normal width with strong

posterior tooth and small anterior tooth (teeth widely separated); merus 1.63 x as long as carpus (i.e. carpus very short) and 1.12 x as long as propodus (i.e. propodus very short); dactylus very long, slender and strongly curved, 1.00 x as long as carpus and 0.68 x as long as propodus; merus with 3 thin and very long isolated setae + a pair of shorter distoventral setae on posterior border; carpus with 3 groups of thin and very long setae on posterior border and 2 isolated setules on anterior border; propodus with 4 groups of thin and very long setae + distal spinule (length of longest propodal setae about 2.45 x width of propodus) on posterior border; anterior border of propodus with 2 isolated setules and distal group of long setae.

P4: coxa neither especially broad or narrow (1.35 x as long as wide), with anterior and posterior border parallel, with ventral border slightly and regularly convex, with 4 strong and sharp teeth on posterior border, with 1 small anteroventral tooth; merus 1.73 x as long as carpus (i.e. carpus very short) and 1.26 x as long as propodus (i.e. propodus very short); dactylus very long, slender and strongly curved, 0.96 x as long as carpus and 0.67 x as long as propodus; merus with 3 thin and very long setae on posterior border; carpus with 3 groups of thin and very long setae on posterior border and 2 isolated setules on anterior border; propodus with 5 groups of thin and very long setae + distal spinule (length of longest propodal setae about 2.48 x width of propodus); anterior border of propodus with 2 isolated setules and distal group of long setae.

P5: coxa without posterior tooth; basis broad (1.63 x as long as wide), anteriorly strongly and regularly convex, posteriorly straight; anterior border with small conical spines (distal angle with a long spine paired with a small conical spine), posterior border with 9 well developed teeth, distal border produced into a protruding rounded toothless lobe; ischium with small spine paired with a spinule on anterodistal corner; merus with groups of well developed anterior and posterior spines; carpus with groups of articulate structures combining spines and long setae on anterior border, and no posterior ornamentation except distal group of spines; carpus 0.62 x as long as merus; carpus + propodus 1.14 x as long as merus; propodus with very long anterior spines, each paired with a long seta (4 groups of spine/seta); propodal apical tuft of setae very developed (consisting of many setae which are very long; there are no spines); dactylus slightly curved and slender, 0.43 x as long as propodus.

P6: coxa with small posterior notch; basis broad (1.73 x as long as wide), anteriorly strongly and regularly convex, posteriorly straight; anterior border

with small conical spines (distal angle with a long spine paired with a small conical spine), posterior border with 10 well developed teeth, distal border produced into a protruding rounded toothless lobe; ischium with medium-sized spine on anterodistal corner; merus with anterior and posterior groups of short spines; carpus with 3 groups of long slender spines on anterior border and no posterior spines (except apical group); carpus 0.73 x as long as merus; propodus with very long anterior spines, each paired with a long seta (4 spine/seta groups); dactylus straight and slender, 0.44 x as long as propodus; propodal apical tuft very developed (many very long setae).

P7: coxa without posterior tooth; basis broad (1.44 x as long as wide), anteriorly weakly convex, strongly and regularly convex; anterior border with small conical spines (distal angle with a long spine paired with a smaller one), posterior border with 11 well developed teeth, distal border produced into a protruding rounded toothless lobe; ischium with a medium-sized spine paired with a small spine on anterodistal corner; merus with long anterior and posterior spines; carpus with long anterior spines and short posterior spines + distal group of long spines; merus 3.20 x as long as wide and 0.70 x as long as basis; carpus 1.00 x as long as merus; propodus of P7 1.49 x as long as propodus of P6; propodus with 6 groups of long slender spines on anterior border (+ tip) and 3 groups of small spines (one associated with a seta) on medial border; dactylus straight, very long and narrow (styliform, apically hair-like), 0.83 x as long as propodus.

Pleonite 1: posterodorsal area produced into 1 large tooth; Ep1 with acute posteroventral tooth, with posterior border strongly convex, with 4 long and extremely thin setae on ventrolateral surface.

Pleonite 2: posterodorsal area produced into 1 large tooth; Ep2 with acute posteroventral tooth, with posterior border weakly convex, with 2 long and extremely thin setae on ventrolateral surface.

Pleonite 3: posterodorsal area produced into 1 small tooth; Ep3 with extremely large acute posteroventral tooth (of which the ventral margin convex nearly to the tip) a bit above the ventral margin, with posterior border very slightly convex on most of its length, very gently curving downwards to posteroventral tooth.

Urosomite 1 with dorsal border rectilinear in its posterior half, with large posterodorsal tooth pointing backwards; ventrolateral border with 2 spines; peduncle of U1 with 3 dorsolateral spines: 1 long fairly stout one on proximal 0.3 followed by 1 short fairly slender one on 0.6 of peduncle, and 1 long and stout distal one, with 6 to 7 dorsomedial spines: 5 to 6 stout and fairly large

spines on 0.6 of peduncle and 1 long and fairly stout distal spine; outer ramus with 2 well-developed outer spines and no medial spines; inner ramus with no spines on outer border and 1 to 2 well developed spines on medial border.

Urosomite 2 with dorsal border rectilinear, with large posterodorsal tooth pointing backwards; peduncle of U2 with 2 long dorsolateral spines: one on distal 0.7 and one near the tip in dissected specimen [a third spine in intermediate position in paralectotype from Heard island], with a single long dorsomedial spine in apical position [a second (small) spine present on middle of inner border in ♂ examined]; outer ramus with 2 well developed outer spines and no medial spines; inner ramus with no spines on outer border and 1 or 2 well developed spines on medial border.

Urosomite 3 posteriorly terminated in a well developed and sharp tooth pointing backwards, with pair of very small styliform spines (often difficult to see); outer ramus of U3 without spines; inner ramus without spines on outer side, with 2 medium-sized spines on medial side.

Telson: cleft to 0.57 of its length; medial tooth of each lobe reaching tip of outer tooth or nearly so; inter-teeth spine overreaching outer tooth by 0.33 of its length (coarse approximation), 0.27 x as long as telson; tip of telson lobes without setae.

#### LENGTH

Up to 13 mm (paralectotype from Heard Island)

#### TYPES

The female of the station 149 of the H.M.S. Challenger, sta. 149 (BMNH 1889.5.15.104), Iles Kerguelen, Baie Accessible, Anse Betsy, which was already illustrated by STEBBING (1888), is here designated as lectotype, in order to restrict the type locality of the species to Kerguelen. Illustrations complementary to those of STEBBING (1888) are given on fig. 31.

#### DISTRIBUTION

Iles Kerguelen (type locality) and Heard Island, 46 to 137 m.

#### REMARKS

The lectotype of *L. consanguinea* perfectly agrees with other specimens from Kerguelen collected since then. Discrepancies between STEBBING's (1888) illustrations

and the current account presumably are a result of inaccuracies in the original account of the species. The palp of the first maxilla has 2 dorsal setae in STEBBING's drawing, but the occasional occurrence of 2 setae is not uncommon in other species which have normally 1 seta. Actually the microscopical slide made by STEBBING is difficult to interpret because the specimen was about to moult and there is a superposition between the setae of the old and the new tegument. So it is not clear if there were really two setae. The dorsal setae of the penultimate article of the maxilliped looked paired in Stebbing's drawing. In reality only the two distal setae of his material are (sub-)paired. The third epimeral plates of STEBBING's specimens have an extremely large hooked posteroventral tooth, just like the specimens illustrated here.

STEBBING (1888) coined the name *consanguinea* because he considered his species as very close to the North European species *L. pallida* (BATE, 1857). However, *L. consanguinea* is morphologically distant from *L. pallida*. The later has been described with a reasonable precision by G.O. SARS (1890-1895).

*L. consanguinea* shares the occurrence of a posterodorsal tooth on the pleonite 3 with *L. abyssotypica* n. sp., *L. bythiana* n. sp., *L. permacra* n. sp., *L. rauscherti* n. sp. and perhaps *L. chevreuxi*, but otherwise it is not especially similar to these species. *L. consanguinea* exhibits more similarities with *L. homospora* n. sp., *L. polydeuces* n. sp., *L. quadridentata* and *L. quinquedentata*, which also have a broad sub-elliptic basis on the last three pereopods and very long setae on the posterior border of the propodus of the third and fourth pereopods. See key for differential characters.

There are several records of *L. consanguinea* from the Weddell Sea (provisional identifications made by M. RAUSCHERT on board of the R/V Polarstern) listed by DE BROYER *et al.* (2007). Part of these specimens have been examined by the present author and prove to be either *L. homospora* n. sp. or *L. polydeuces* n. sp. (see list of material of these species). In other words, there is so far no evidence that *L. consanguinea* occurs elsewhere than in the waters surrounding Kerguelen and Heard Island.

As already pointed out by SCHELLENBERG (1931), *L. consanguinea* from the Antarctic Peninsula described by CHEVREUX (1913) belongs to an unrelated species, *L. chevreuxi* Schellenberg, 1931. In the same vein, the meager description and illustrations of *L. consanguinea* from Commonwealth Bay by NICHOLS (1938) shows significant discrepancies with that species and his records is here excluded from the synonymy of *L. consanguinea*.

However it could belong to an undescribed species close to *L. consanguinea*. Records of *L. consanguinea* outside of the cold parts of the Austral hemisphere, such as STRAUSS (1909: western South Africa) are also very suspect. They are also possibly based on related, but undescribed species. Finally it should be pointed out that *L. consanguinea* exhibits distant similarities with the abyssal South Atlantic *L. zarica* BARNARD, 1962 (see BARNARD, 1962).

***Liljeborgia cryptothrix* n. sp.**  
(Figs 33-38)

*Liljeborgia kerguelensis* BELLAN-SANTINI & LEDOYER, 1974: 678, in part, not pl. 21.

MATERIAL

**KER82, sta. D5**, Passe de Buenos-Aires [49°33'13"S 69°53'20"E fide DELÉPINE (1973)] at the NW of Ilot de Glénan, 23 m, mud with sponge spicules on the border of the *Macrocystis* field, dredge, 19.i.1982: 2 paratypes (2 vials), leg. C. DE BROYER, RBINS, I.G. 26.597; **KER82, sta. D9**, between Port-aux-Français [49°21'10"S 70°13'03"E fide DELÉPINE (1973)] and Ilot Channer [49°22'57"S 070°11'17"E fide DELÉPINE (1973)], 30 m, mud, dredge, 28.i.1982: 1 paratype, leg. C. DE BROYER, RBINS, I.G. 26.597; **KER82, sta. D17**, N of Ile de l'Antarès [49°30'19"S 070°14'25"E fide DELÉPINE (1973)], 48 m, dredge, 28.i.1982: 1 paratype, leg. C. DE BROYER, RBINS, I.G. 26.597; **KER82, sta. D22**, south of Ile Suhm [49°29'50"S 070°09'33"E fide DELÉPINE (1973)], 30-50 m, muddy bottom with a lot of *Macrocystis*, 9.ii.1982: 4 paratypes (3 ♀♀ and 1 immature specimens, together with 1 *L. kerguelensis*), leg. C. DE BROYER, RBINS, I.G. 26.597; **KER82, sta. D25 to D29**, south of Ile Suhm [49°29'50"S 070°09'33"E fide DELÉPINE (1973)], 40-50 m, dredge, 10.ii.1982: 7 large specimens (of which one ovigerous ♀ is here designed as the holotype; it has been dissected, illustrated and mounted on 19 slides in Euparal; other specimens are paratypes) [these specimens were found together with 1 *L. consanguinea* and 1 *L. kerguelensis*], leg. C. DE BROYER, RBINS, I.G. 26.597; **KER82, sta. D38**, Passe de Buenos Aires [49°33'13"S 069°53'20"E fide DELÉPINE (1973)], mud, 01.ii.1982: 2 paratypes (2 vials), leg. C. DE BROYER, RBINS, I.G. 26.597; **BELLAN-SANTINI'S & LEDOYER'S material, sta. Ker B7**, NW of Golfe du Morbihan, sound N of Ile Australia [coordinates of Ile Australia: 49°28'S 069°53'E fide DELÉPINE (1973)], 24 m, black mud with H<sub>2</sub>S, sponge spicules, 28.ii.1970: 1 paratype, rec. ARNAUD,

(previously designated as a paratype of *L. kerguelensis* by BELLAN-SANTINI and LEDOYER (1974)), MCSN

#### ETYMOLOGY

*Cryptothrix* derives from the Greek adjective κρυπτος, which means 'hidden', and the Greek noun θρίξ, which means 'hair', alluding to the setules of the posterior border of the merus, carpus and propodus of the third and fourth pereopods, which are so small that they are barely discernible. The name is a noun in apposition.

#### DESCRIPTION

Rostrum of normal size, abruptly narrowing near tip, terminated in minute spiniform point.

Eye present, large, quadrato-elliptic, reddish in alcohol, ommatidia distinct in alcohol.

A1: major flagellum with 16 to 18 articles; accessory flagellum with 12 to 13 articles.

A2: article 4 of peduncle with long styliform dorsal spines and no ventrolateral spines; article 5 without dorsomedial spines and with only one (distal) ventrolateral spine; flagellum with 16 to 17 articles, slightly longer than fifth article of peduncle.

Epistome quadrate in lateral view and distinctly protruding.

Md: left lacinia mobilis large with anterior margin with 5 acutely triangular teeth; right lacinia mobilis much smaller than left one, with anterior margin minutely and irregularly denticulate and with one especially large lateral triangular tooth; spines of incisor process spinulose, ultimate spine of left Md extremely stout; article one and two of palp subequal (ratio length article one / article two = 0.93); article one 2.93 x as long as wide; article two with 3 distal setae and no setae more proximally, 3.92 x as long as wide; article three 3.58 x as long as wide, 0.72 x as long as article two.

Mx1: second article of palp with 3 setae on upper margin, 8 spines on ventral and apical margin, and 9 facial setae; outer plate with 8 almost smooth spines; inner plate with a single seta.

Mx2: outer plate with 3 widely spaced rather short setae on upper margin.

Mxp: article one of palp without distal outer dorsal setae, article two without non distal setae on outer margin; article three with 3 or 4 isolated slender setae on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins scarcely curved and 1.00 x as long as article three; outer plate with 6 to 7 long slender well spaced spines on medial border, and 9 to 11 rather stout medio-ventral setae at

the same level as spines or more proximally; inner plate with 3 slender and rather small anterior spines and 5 to 7 setae.

Gn1: coxa narrowly triangular, with posterior border weakly concave, with small posterior tooth and no anterior tooth or notch; merus with 3 groups of setae and with small acute distal tooth; carpus process with 5 groups of setae; tip of carpus reaching 0.24 of propodus, separated from propodal group of strong spines by small but significant space; propodus 2.0 x as long as wide; group of spines on the proximal 0.39 of propodus (most distal spine used as reference point); these spines are of normal size; palm border forming a regular curve, without teeth, with hooked spines of outer row not widely spaced (38 hooked outer spines and no outer setae); dactylus with 4 well developed teeth and trace of a fifth more proximal tooth, on proximal 0.2 of its length.

Gn2: coxa quadrato-elliptic with small posterior tooth and shallow anterior notch (tooth and notch widely separated); merus with 3 groups of setae with two small acute distal teeth; carpus process with 8 groups of setae; tip of carpus reaching 0.30 of propodus, reaching propodal group of strong spines; propodus 2.1 x as long as wide; group of spines on the proximal 0.32 of propodus (most distal spine used as reference point); these spines are of normal size; palm border forming a regular curve, without teeth, with hooked spines of outer row widely spaced (19 hooked outer spines + 10 outer setae); setae of medial row of palm of normal length; dactylus 0.76 x as long as propodus dactylus with 11 teeth, spread on 0.6 of its length. Gn2 distinctly larger than Gn1; ratio length Gn2 / length Gn1: 1.30, surface of propodus of Gn2 / surface of propodus of Gn1: 1.62.

P3: coxa narrowly elliptic with small posterior tooth and no anterior tooth or notch; merus 1.19 x as long as carpus and 0.80 x as long as propodus; dactylus long, slender and strongly curved, 0.70 x as long as carpus and 0.47 x as long as propodus; merus with 5 tiny setules on posterior border; carpus with 3 tiny setules and a distal group of 1 to 2 normally developed setae on posterior border, without setules on anterior border; propodus with 10 tiny setules (+ 1 distal spinule) on posterior border (length of propodal setules about 0.10 x width of propodus) and without distal group of setae on anterior border.

P4: coxa very narrow (1.58 x as long as wide), with anterior and posterior border parallel, with ventral border slightly and regularly convex, with two small but sharp teeth on posterior border, without anteroventral tooth; merus 1.25 x as long as carpus; dactylus long, slender and curved, 0.74 x as long as carpus and 0.48

x as long as propodus; merus with 2 tiny setules on posterior border; carpus with 1 tiny setule and a distal group of 1 to 2 normally developed setae on posterior border, propodus with 9 tiny setules (+ 1 distal spinule) on posterior border (length of longest propodal setules about 0.17 x width of propodus) without distal group of setae on anterior border, but with 2 isolated tiny setules on the anterior border itself.

P5: coxa with very blunt posterior tooth; basis symmetrically elliptic and broad (1.61 x as long as wide); anterior border with small conical spines (distal angle with a rather long spine paired with a small conical spine), posterior border with 11 well developed teeth, distal border produced into a not very protruding, rounded toothless lobe; ischium with rather small spine on anterodistal corner; merus with groups of short anterior and posterior spines; anterior border of carpus with 3 rather short spines of which two are paired with a long anterior seta + a fourth distal group of 2 spines, and no posterior ornamentation except distal group of spines; carpus 0.72 x as long as merus; carpus + propodus 1.41 x as long as merus; propodus with 4 regularly spaced very short unpaired anterior spines and with posteromedial long setae; propodal apical tuft of setae normally developed and consisting of fairly long setae and no spines; dactylus curved and stout, 0.28 x as long as propodus.

P6: coxa with very blunt posterior tooth; basis symmetrically elliptic and broad (1.60 x as long as wide); anterior border with small conical spines (distal angle with a rather long spine paired with a small conical spine), posterior border with 7 well developed teeth [illustrated holotype probably abnormal; usual number of teeth higher], distal border produced into a not very protruding, rounded toothless lobe; ischium with a small spine on anterodistal corner; merus with anterior and posterior groups of short spines; carpus with 3 anterior rather short spines associated with 1 to 2 long setae + fourth distal group of 3 spines; posterior border of carpus with no spines except apical group; carpus 0.72 x as long as merus; propodus with 7 very short unpaired anterior spines and long very slender posteromedial setae; propodal apical tuft of setae normally developed and consisting of fairly long setae and no spines; dactylus slightly curved and fairly stout, 0.27 x as long as propodus.

P7: coxa without posterior tooth; basis symmetrically elliptic and broad (1.37 x as long as wide); anterior border with small conical spines (distal angle with a long spine paired with a small conical spine), posterior border with 11 well developed teeth, distal border produced into a not very protruding, rounded toothless lobe; ischium

with a medium-sized spine paired with a spinule on anterodistal corner; merus with medium-sized anterior spines and long posterior spines; carpus with medium-sized anterior spines and short posterior spines + distal group of long spines; merus 3.69 x as long as wide and 0.81 x as long as basis; carpus 1.07 x as long as merus; propodus of P7 1.08 x as long as propodus of P6; propodus with 4 very short and fairly slender spines on anterior border and a variable number of long and very slender posteromedial setae, of which several are paired with a well developed spine (these spines are difficult to see due to their medial position); dactylus straight, long and narrow (styliform and becoming apically hair-like), 0.78 x as long as propodus.

Pleonite 1: posterodorsal area produced into 3 small teeth of which the median one is the longest; Ep1 with small acute posteroventral tooth, with posterior border strongly convex, without setae on ventrolateral surface.

Pleonite 2: posterodorsal area produced into 3 small teeth of which the median one is by far the longest; Ep2 with small acute posteroventral tooth, with posterior border weakly convex, without setae on ventrolateral surface.

Pleonite 3: posterodorsal area toothless, with shallow notch; Ep3 with small acute posteroventral tooth (of which the ventral margin is slightly concave) well above the ventral margin, with posterior border straight on most of its length, gently curving downwards to posteroventral tooth.

Urosomite 1 with dorsal border rectilinear, with small posterodorsal tooth pointing backwards; ventrolateral border with 1 to 2 spines; peduncle of U1 with 4 to 5 dorsolateral spines: 1 long slender one on proximal 0.3 followed by 2 or 3 short ones, and 1 long and stout distal one, with a single 1 dorsomedial spine (which is long and styliform) in distal position; outer ramus with 5 short outer spines and 2 to 3 short medial spines; inner ramus with 1 tiny spine on outer border (on distal 0.8) and 5 to 6 short spines on medial border.

Urosomite 2 with dorsal border rectilinear, with small posterodorsal tooth pointing backwards; peduncle of U2 with 2 long dorsolateral spines: one on distal 0.7 (sometimes lacking in immatures) and one near the tip, with 3 to 5 short and stout dorsomedial spines on distal half; outer ramus with 3 to 4 short outer spines and 1 short medial spine; inner ramus with 2 very small spines on outer border and 6 to 7 short spines on medial border.

Urosomite 3 without posterolateral tooth on each side, with a pair of small posterodorsal conical spines; U3 shorter than U1 and a bit shorter than U2; outer ramus and inner ramus of U3 subequal, outer ramus

of U3 without spines; inner ramus 1.49 x as long as peduncle, without spines on outer side, with 1 to 3 medium-sized spines on medial side.

Telson: cleft to 0.84 of its length; medial tooth of each lobe reaching 0.68 of outer tooth; inter-teeth spine overreaching outer tooth by 0.39 of its length (coarse approximation), 0.18 x as long as telson; medial lobes of telson with 1 tiny setule near tip.

#### LENGTH

10 mm.

#### DISTRIBUTION

Kerguelen Island, 23 to 48 m.

#### REMARKS

The three *Liljeborgia* known from the coastal waters of Kerguelen can be easily separated by a number of characters such as the ornamentation of the posterior border of the propodus of their third pereopods: tiny setules in *L. cryptothrix* n. sp., small conical spines in *L. kerguelensis*, and long setae in *L. consanguinea*. These three species have a very restricted distribution. *L. consanguinea* is also known from Heard Island (which is not very distant from Kerguelen), while the two others have only been recorded from Kerguelen. Many other amphipods of the Southern Ocean are only known from one or two islands (DE BROYER *et al.*, 2007) and such probable insular endemic species are probably very vulnerable to major environmental alterations. Antarctic and sub-Antarctic islands with a high level of endemism should be considered as areas of special concern for conservation issues.

The Antarctic and sub-Antarctic *Liljeborgia* with setules on the posterior border of the third and fourth pereopods can be divided in a *chevreuxi* complex (*L. chevreuxi*, *L. cnephatis* n. sp., *L. pseudomacronyx* and *Liljeborgia* sp. 2) which have 0 or 1 posterodorsal tooth on the first pleonite and one posterodorsal tooth on the second pleonite (see account of *L. chevreuxi* for more details), and a *octodentata* complex (*L. octodentata* and *L. cryptothrix* n. sp.) which have three small posterodorsal teeth on the first and second pleonites (see key)..

#### *Liljeborgia dubia* (HASWELL, 1879)

*Eusirus dubius* HASWELL, 1879: 331, pl. 20 fig. 3  
*Liljeborgia haswelli* STEBBING, 1888: 985, pl. 92  
*Liljeborgia dubia*; DE BROYER *et al.*, 2007: 112 (ubi syn.)

#### TYPES

Type locality: Tasmania (HASWELL, 1879). Type lost (LOWRY & STODDART, 2003).

#### ALLEGED DISTRIBUTION

SE Brazil (WAKABARA *et al.*, 1988), South Africa (GRIFFITHS, 1974, 1975), Indonesia (PIRLOT, 1936), S Australia (STEBBING, 1888), Tasmania (HASWELL, 1879), New Zealand (K.H. BARNARD, 1930), The Snares (CHILTON, 1909), Antarctica (WALKER, 1907).

#### (SUB)ANTARCTIC RECORDS

The Snares (48°02'S 166°35'E), in rock pools (CHILTON, 1909). Ross Sea, McMurdo Strait, R/V Discovery 1901-1904, Winter Quarters Bay, Cape Adare (WALKER, 1907).

#### REMARKS

A critical reading of the literature strongly suggests that records of *L. dubia* are based on a mixture of different species with 5 posterodorsal teeth on the first and second pleonites. BARNARD (1972) judiciously pointed out that 'the synonymy and references to this species are very dubious reflecting the specific name'. In any case, it is dubious that the Antarctic and sub-Antarctic records of *L. dubia* are based on correctly identified specimens, because the occurrence of a warm-temperate species in the icy waters of the Southern Ocean seems highly improbable. However it is not ruled out that these records are based on undescribed species related to *L. dubia*. *L. dubia* is morphologically similar to *L. prionota* n. sp. from Patagonia, but the first species has a posterodorsal tooth on the third pleonite (STEBBING, 1888 as *L. haswelli*), which is lacking in the later one.

#### *Liljeborgia eurycradus* THURSTON, 1974

(Figs 39-44)

*Liljeborgia eurycradus* THURSTON, 1974: 47, fig. 15-16

#### MATERIAL

**A.G. BENNETT's sta. AGB7**, Deception Isl., [no exact coordinates] from stomach of *Notothenia* caught at 5-7 fathoms, 22.i.1918: 1 ♂ paratype, about 28 mm long, leg. A.G. BENNETT, BMNH 1972.168.1; **A.G. BENNETT's sta. AGB10** (label inside the vial) or **AGB11** (THURSTON, 1974), South Georgia, no other

data: 1 ♂ holotype in alcohol (incl. the left appendages previously dissected by THURSTON), about 28 mm, leg. A.G. BENNETT, BMNH 1972.167.1

#### DESCRIPTION

Rostrum triangular with acute tip, very short, with ventral margin regularly concave.

Eye present, small, elliptic, ommatidia present but not very distinct; pigmentation fading completely in alcohol.

A1: major flagellum with 35 articles; accessory flagellum with 18 articles [according to THURSTON (1974); now tip flagella broken in holotype].

A2: article 4 of peduncle with stout and extremely short ventrolateral and dorsomedial spines; article 5 without dorsomedial and ventrolateral spines (only with setae); flagellum with 23 articles, slightly longer than fifth article of peduncle.

Epistome bluntly triangular, distinctly protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 rounded teeth; right lacinia mobilis much smaller than left one, with anterior margin smooth and with one large lateral triangular tooth; ultimate spine of incisor process of normal stoutness; spines of incisor process with large proximal spur; article one of palp slightly shorter than article two (ratio length article one / article two = 0.96); article one 5.75 x as long as wide; article two with 6 long setae on tip and one on distal 0.2, 7.20 x as long as wide; article three 5.73 x as long as wide, 0.77 x as long as article two.

Mx1: second article of palp with 7 setae on upper margin, 14 rather slender (especially the proximal ones) ventral and apical spines and 15 facial setae (facial setae unusually short); outer plate with 10 weakly denticulate spines; inner plate with a long seta and a short seta on tip.

Mx2: outer plate with about 8 setae on upper margin.

Mxp: article one of palp with 11 medium-sized distal outer dorsal setae, article two without non distal setae on outer margin; article three with 5 transverse rows of thin setae on anterior border; article four (dactylus) stout, with anterior and posterior margins weakly curved and 0.62 x as long as article three; outer plate with 16 short stout little-spaced spines on medial border and 9 slender medio-ventral setae at the same level as spines; inner plate with 3 stout and well developed anterior spines and 12 to 15 normally developed setae.

Gn1: coxa triangular and rather broad, with slightly concave posterior border, without teeth; merus with

about 5 groups of setae and small acute distal tooth; carpus process with about 10 groups of setae; tip of carpus reaching 0.30 of propodus, reaching propodal group of strong spines; propodus 1.97 x as long as wide; group of spines on the proximal 0.37 of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth, with hooked spines of outer row narrowly spaced (about 97 hooked spines and many long outer setae).

Gn2: coxa quadrato-elliptic with small posterior tooth and a weak anterior notch; merus with 4 groups of setae and with small acute distal tooth; carpus process with 12 groups of setae; tip of carpus reaching 0.24 of propodus, nearly reaching propodal group of strong spines in ♀; propodus 1.91 x as long as wide; group of spines on the proximal 0.34 of propodus (most distal spine used as reference point); palm border concave and distally produced into a large triangular tooth; setae of palm very long and very abundant, rendering the hooked spines very difficult to see; dactylus broad, with 14 teeth, of which the most distal ones overreaches the proximal half of the dactylus. Gn2 significantly larger than Gn1; ratio length Gn2 / length Gn1: 1.36, surface of propodus of Gn2 / surface of propodus of Gn1: 1.90.

P3: coxa triangulo-elliptic, broad, with shallow posterior notch and inconspicuous trace of anterior notch; merus very stout, 1.35 x as long as carpus and 1.18 x as long as propodus; dactylus very short, very stout with its dorsal border distinctly curved and its posterior border straight, 0.37 x as long as carpus and 0.32 x as long as propodus; posterior border of merus with 3 isolated short setae; anterior border of merus with median setule and distal well developed stout seta; carpus with 3 rather short isolated setae on posterior border; propodus with 9 well developed stout spines of which most are paired with a setule (length of longest propodal spines about 0.61 x width of propodus); anterior border of propodus with distal group of 2 very short setae and without setae in more proximal position.

P4: coxa broad (1.12 x as long as wide), with anterior and posterior border converging downwards, with ventral border weakly convex, with 2 weak notches on posterior border and no anterior tooth or notch; merus 1.29 x as long as carpus and 1.22 x as long as propodus; dactylus very short, very stout, with its dorsal border distinctly curved and its posterior border straight, 0.33 x as long as carpus and 0.30 x as long as propodus; posterior border of merus with 3 groups of 1 or 2 short setae; anterior border of merus with distal well developed stout seta; carpus with 5 groups of 1 to 3 short setae on posterior border; propodus with 8 groups

of articulate structures (7 proximal groups consisting of a well developed stout spine usually paired with a setule and 1 distal pair of shorter spines) (length of longest propodal spines about 0.56 x width of propodus); anterior border of propodus with 1 isolated distal very short seta and without setae in more proximal position.

P5: leg very stout; coxa with small posterior tooth; basis rather narrow (1.66 x as long as wide), anteriorly distinctly and regularly convex (maximal inflexion on the middle), posteriorly straight; anterior border with small conical spines (including on distal angle), posterior border with 10 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; ischium with small conical spine on anterodistal corner; merus with anterior and posterior groups of very short spines; carpus with 3 anterior groups of very short stout spines not intermixed with setae and no posterior spines (except apical group); carpus 0.65 x as long as merus; carpus + propodus 1.21 x as long as merus; propodus with 6 pairs of short stout spines on anterior border, with 7 groups of 1 to 3 rather short spines on posteromedial border, of which the distal and the penultimate ones are associated with 2 moderately long and moderately stout setae; dactylus distinctly curved, very stout, biunguiculate, 0.27 x as long as propodus.

P6: leg very stout; coxa without posterior tooth; basis narrow (1.74 x as long as wide), anteriorly weakly convex and posteriorly very weakly convex (almost straight); anterior border with small conical spines (including on distal angle), posterior border with 20 small teeth, distal border nearly straight (junction posterior/distal border forming an abrupt curve) and (almost) not produced into a lobe; ischium with small conical spine on anterodistal corner; merus with anterior and posterior groups of very small spines; carpus with anterior and posterior groups of very small spines (none associated with long slender setae); carpus 0.66 x as long as merus; propodus with 8 anterior groups of 1 or 2 short stout spines, and 7 posteromedial groups of 1 to 3 rather short spines associated with 2 to 4 moderately long and moderately stout setae (apical tuft included); dactylus distinctly curved, very stout, biunguiculate, 0.23 x as long as propodus.

P7: leg very stout; coxa without posterior tooth; basis very narrow (1.81 x as long as wide), anteriorly weakly convex and posteriorly straight; anterior border with small conical spines (including on distal angle), posterior border with 24 small teeth, distal border produced into a very low asymmetrical lobe; ischium with small conical spine on anterodistal corner; merus

and carpus with very short anterior and posterior spines; merus 3.98 x as long as wide and 0.96 x as long as basis; carpus 1.43 x as long as merus and 1.08 x as long as propodus; propodus of P7 1.43 x as long as propodus of P6; propodus with 8 anterior groups of 1 or 2 very short stout spines, and 6 posteromedial groups of 1 to 3 rather short spines, of which some are associated with 2 to 3 rather short and moderately stout setae (apical tuft included); dactylus distinctly curved, very stout, biunguiculate, 0.21 x as long as propodus.

Pleonite 1: posterodorsal area produced into 3 teeth (one rather small tooth flanked on each side by a much shorter one); Ep1 with well developed posteroventral tooth, with posterior border strongly convex; without setae.

Pleonite 2: posterodorsal area produced into 3 teeth (one small tooth flanked on each side by a much shorter one); Ep2 with well developed posteroventral tooth, with posterior border slightly convex.

Pleonite 3: posterodorsal area toothless; Ep3 with normally developed acute posteroventral tooth (of which the ventral margin is regularly and strongly convex), with posterior border straight on all its length and joining the posteroventral tooth after forming a deep notch.

Urosomite 1 with rather high (albeit not sigmoid) crest-like carina, posteriorly terminated in a strong posterodorsal tooth pointing obliquely upwards; ventrolateral border with 2 spines; peduncle of U1 with 6 dorsolateral spines: 5 regularly-spaced and short stout ones spread on all length of peduncle and a long and strong distal one, with 3 dorsomedial spines (which are slender and fairly short, including the distal one) regularly spaced all along distal 0.6; outer ramus with 9 short outer spines and 8 short medial spines; inner ramus with 5 short spines spread on distal 0.8 of outer border and 8 short spines on medial border.

Urosomite 2 with dorsal border with strong elevated posterior tooth pointing backwards; peduncle of U2 with 5 regularly-spaced short and stout dorsolateral spines, with 2 dorsomedial spines; outer ramus with 7 short outer spines and 5 short medial spines; inner ramus with 4 short spines on outer border and 8 well developed spines on medial border.

Urosomite 3 without posterolateral tooth on each side, without a pair of long posterodorsal styliform spines [both the holotype and the paratype have been examined and I could not see any trace of spine]; rami of U3 immensely enlarged and subelliptic; outer ramus of U3 0.86 x as long as inner ramus, with one group of 1 or 2 tiny outer spines, without medial spines; inner ramus 2.21 x as long as peduncle, with 1 or 2 tiny spines

on outer side, with 4 or 5 tiny spines on medial side.

Telson with outer margins straight and inner margins strongly convex, cleft to 0.69 of its length; outer and medial teeth of each lobe subequal; inter-teeth spine reaching half of teeth and only 0.037 x as long as telson; apical teeth of telson without setae.

#### LENGTH

28 mm.

#### DISTRIBUTION

South Georgia (type locality) and Deception Island.

#### BIOLOGICAL DATA

The paratype specimen was found in the stomach of a fish of the genus *Notothenia* caught at 5-7 fathoms (9-13 m).

#### REMARKS

Concerning the etymology of '*eurycradus*', THURSTON (1974) states "the name *L. eurycradus* is given in allusion to the distinctive broad rami of the third uropods", with no more detail. BARNARD & KARAMAN (1991), followed by DE BROYER *et al.* (2007) have adopted the alternative spelling *L. eurycrada*, without explaining the reason of this change. No Latin name matches *eurycradus*, which is obviously of Greek origin. The first part of the name (eury-) clearly derives from the adjective εὐρύς which is often used as a prefix (εὐρυ-) and which means broad. Two Greek nouns are potential candidates for a latinization as *cradus*: κράδος which is a disease of trees, and κράδη which means twig. The statement of THURSTON clearly indicates that *cradus* derives from κράδη, since the usual meaning of *ramus* is twig. However while κράδος might indeed be latinized as *cradus*, κράδη should have been latinized as *crada* (see GRENSTED, 1958). However, the International Code of Zoological Nomenclature (4th edition), art. 32.5.1 states that: "If there is in the original publication itself, without recourse to any external source of information, clear evidence of an inadvertent error, such as a lapsus calami or a copyist's or printer's error, it must be corrected. Incorrect transliteration or latinization, or use of an inappropriate connecting vowel, are not to be considered inadvertent errors." Hence the incorrect latinization cannot be invoked as an argument for modifying the spelling of the name. *Eurycradus* is clearly a noun in apposition and not an

adjective; hence it is invariable and the original spelling proposed by THURSTON (1974) has to be preserved.

THURSTON (1974) indicated that the station of the holotype is AGB11, but the label seen by the author gives AGB10.

It is noteworthy that two specimens of this large and highly characteristic species have been collected by the same person (A.G. BENNETT) off two widely separated islands and it was never found again. BENNETT found one specimen in the stomach of a fish. Nothing is known concerning the collecting circumstances of the second one but it seems not improbable that it also comes from the stomach of a vertebrate, since BENNETT was mostly studying large animals. Maybe the usual residence of species consists of habitats difficult to sample with traditional equipment (e.g. rock cracks). *L. eurycradus* is only known from males and it is likely that females exhibit some morphological differences. *L. eurycradus* (at least adult males of the species) can be distinguished at first glance from all other *Liljeborgia* species of the Southern Ocean except *L. rauscherti* n. sp. by the immensely enlarged elliptic rami of their third uropods. Its telson is unusual, with its very short median spine inserted between two larger subequal teeth and with the important convexity of the border of the medial border. Its extremely stout ambulatory pereopods are also remarkable.

#### *Liljeborgia georgiana* SCHELLENBERG, 1931 (Figs 45-53)

? *Liljeborgia dubia*; CHILTON, 1912: 203.

*Liljeborgia georgiana* SCHELLENBERG, 1931: 135, fig. 72.

*Liljeborgia longicornis*; K.H. BARNARD, 1932:142, in part, fig. 82 (?), not specimens from sta. 51 (presumably true *L. longicornis*)

? *Liljeborgia georgiana*; NICHOLLS, 1938: 86, fig. 46

*Liljeborgia georgiana*; BARNARD 1962: 1986 (character table)

*Liljeborgia cf georgiana*; BELLAN-SANTINI, 1972a: 193, pl. 15

*Liljeborgia georgiana*; HOLMAN & WATLING 1983: 234

*Liljeborgia macrodon*; REN & HUANG, 1991: 238-240, fig. 32

#### 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 small specimen, USNM 1027879; **R/V Eltanin, cruise 6, sta. 418**, Elephant Isl., 62°39'S 056°10'W, 311-426 m, 02.i.1963: 1 specimen, USNM; **R/V Eltanin, Cruise 17, sta. 1003**, Sample #: USARP/EL/17/1003/LGO, gear: Sampler – Multiple Plankton, Amundsen Sea, 68°05'S 126°47'W, 250-500 m depth, 07.iv.1965: 6 specimens, coll. Lamont-Doherty Geological Observatory, USNM 1100664; **R/V Eltanin, sta. 1870**, University of Southern California, Expedition USAP, gear: trawl-Blake, Cr. No.: 27, Ross Sea: Victoria Land, Cape Adare, south of Cape, Field No.: USARP/EL/27/1870/USC, Acc: 4046006, 71°17'S 171°33'E to 71°16'S 171°29'E, 659-714 m, 14.i.1967: 1 large specimen (pleonites 1-2 without dorsolateral teeth), USNM 1027875; **R/V Eltanin, sta. 2014**, University of Southern California, Expedition USAP, gear: grab camera, Cr. No.: 32, Ross Sea, Victoria Land, Field No.: USARP/EL32/2014/USC, Acc 404606, 73°59'S 171°22'E, 567 m, 14.i.1968: 1 specimen, USNM 1027873, previously identified as *Liljeborgia* sp. by Kathleen E. CONLAN; **ARC87, sta. CA 2**, King George Isl., Admiralty Bay, between Shag Point and Napier Rock, 62°08'S 058°27'W, 50 m, bottom with the kelp *Himantothallus grandifolius* (A. GEPP & E.S. GEPP) ZINOVA, Belgian AGT, 22.i.1987: 2 specimens, leg. C. DE BROYER, P. SCHALTIN, RBINS, I.G. 27.395; **ARC87, sta. CA 3**, King George Isl., Admiralty Bay, transect Shag Point - Polish Navy Point, 62°08'S 058°27'W, 80 m, Belgian AGT, 20.ii.1987: about 17 specimens (2 vials), leg. C. DE BROYER, P. SCHALTIN, RBINS, I.G. 27.395; **ARC87, sta. CA 4**, King George Isl., Admiralty Bay, Transect Shag Point - Polish Navy Point, Belgian AGT, 62°08'S 058°27'W, 50-60 m, 20.ii.1987: 1 adult ♂, leg. C. DE BROYER, P. SCHALTIN, RBINS, I.G. 27.395; **ARC87, sta. CA10**, King George Isl., Admiralty Bay, Transect Rakusa Point - direction Zigmund Bell (close to cape Hennequin), Belgian AGT, 62°08'S 058°27'W, 80 m, 20.ii.1987: 1 small specimen, leg. C. DE BROYER, P. SCHALTIN, RBINS, I.G. 27.395; **ARC87, sta. DP 2**, King George Isl., Admiralty Bay, in front of Copacabana, 'Polish trawl', 62°08'S 058°27'W, 20-30 m, 09.i.1987: 1 small specimen, leg. C. DE BROYER, P. SCHALTIN, RBINS, I.G. 27.395; **FER93, sta. CA 80**, King George Isl., Admiralty Bay, cove in front of Arctowski Station, 62°08'S 058°27'W, 75-80 m, Belgian AGT, 03.ii.1993: 2 specimens (2 vials), leg. C. DE BROYER & V. GOMES, RBINS, I.G. 31.067; **FER93, sta. CA 80 + sta. CA 81**, King George Isl., Admiralty Bay, cove in front of Arctowski Station, 62°08'S 058°27'W, 75-80 m, Belgian AGT, 03.ii.1993: 10 specimens, leg. C. DE BROYER & V. GOMES, RBINS, I.G. 31.067; **FER93, sta. CA 82 + sta. CA 83**, King George Isl., Admiralty Bay, Arctowski Cove (+/- transect 1), 62°08'S 058°27'W, 30 m, Belgian AGT, 04.ii.1993: 1 specimen, leg. C. DE BROYER & V. GOMES, RBINS, I.G. 31.067; **FER93, sta. CA 84**, King George Isl., Admiralty Bay, Arctowski Cove, 62°08'S 058°27'W, 150 m, Belgian AGT, 04.ii.1993: 4 specimens, leg. C. DE BROYER & V. GOMES, RBINS, I.G. 31.067; **FER93, CA 85**, King George Isl., Admiralty Bay, Arctowski Cove (+/- transect 1), 62°08'S 058°27'W, Belgian AGT, 80 m, 06.ii.1993: 1 specimen, leg. C. DE BROYER & V. GOMES, RBINS, I.G. 31.067; **ARC93, sta. CA 90**, King George Isl., Admiralty Bay, Arctowski Cove, 062°09'S 058°28'W, 80 m, Belgian AGT, 12.iii.1993: 1 ovigerous ♀, leg. J. SICINSKI, RBINS, I.G. 31.066; **ARC93, sta. CA 93**, King George Isl., Admiralty Bay, 62°08'S 058°27'W, 50-60 m, Belgian AGT, 28.iv.1993: 1 specimen, leg. J. SICINSKI, RBINS, I.G. 31.066; **ARC93, sta. CA 105**, King George Isl., Admiralty Bay, 62°08'S 058°27'W, 80 m, Belgian AGT, 03.x.1993: 1 specimen, leg. J. SICINSKI, RBINS, I.G. 31.066; **ARC93, sta. CA107**, King George Isl., Admiralty Bay, Halfmoon Cove, 62°08'S 058°27'W, 70-90 m, Belgian AGT, 09.x.1993: 5 small specimens (3 vials), leg. J. SICINSKI, RBINS, I.G. 31.066; **ARC94, St CA 113 (= CA 51)**, King George Isl., Admiralty Bay, in front of Arctowski Cove, 62°08'S 058°27'W, 80 m, Belgian AGT, 13.xii.1993: 2 specimens, leg. C. DE BROYER & K. JAŹDŹEWSKI, RBINS, I.G. 31.065; **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: 23 specimens (in 10 different vials), leg. C. DE BROYER, RBINS, I.G. 27.497; **ANT-VII/4, EPOS leg 3, sta. 275**, E Weddell Sea, 71°39.5'S 012°34.7'W to 71°39.0'S 012°11.7'W, 301-330 m, AGT (haul 19), 15.ii.1989: 1 specimen, leg. C. DE BROYER, RBINS, I.G. 27.497; **ANT-VII/4, EPOS leg 3, sta. 289**, E Weddell Sea, 71°12.0'S 013°27.9'W to 71°14.2'S 013°36.0'W, 672-677 m, AGT (haul 23), 19.ii.1989: 6 specimens, leg. C. DE BROYER, RBINS, I.G. 27.497; **ANT-VII/4, EPOS leg 3, sta. 293**, E Weddell Sea, 71°06.2'S 012°53.8'W to 71°05.7'S 012°58.4'W, 771-793 m, GSN (haul 15), 20.ii.1989: about 20 specimens (4 vials; one ♂ dissected and mounted on 16 slides in Euparal), leg. C. DE BROYER, RBINS, I.G. 27.497; **ANT-XIII/3, EASIZ I, sta. 25**, E Weddell Sea, 71°23.00'S 014°19.80'W to 71°23.00'S 014°19.40'W, 615-634 m, AGT, 23.ii.1996: 1 ♂, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **ANT-XV/3, EASIZ II, sta. 44**, E Weddell Sea, 70°51.8'S

- 010°34.0'W to 70°51.9'S 010°33.8'W, 227-229 m, AGT, 30.i.1998: 3 specimens, leg. C. DE BROYER & Y. SCAILTEUR, RBINS, I.G. 27.497; **ANT-XV/3, EASIZ II, sta. 49**, E Weddell Sea, 70°52.0'S 010°27.3'W to 70°51.9'S 010°26.8'W, 255-261 m, AGT, 30.i.1998: 6 specimens (2 vials), leg. C. DE BROYER & Y. SCAILTEUR, RBINS, I.G. 27.497; **ANT-XV/3, EASIZ II, sta. 50**, E Weddell Sea, 70°51.7'S 010°26.1'W to 70°51.6'S 010°24.3'W, 267-282 m, RD, 30.i.1998: 1 specimen, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **ANT-XV/3, EASIZ II, station unavailable**, specimen kept in aquarium, 07.ii.1998: 1 specimen, leg. C. DE BROYER & Y. SCAILTEUR, RBINS, I.G. 27.497; **ANT-XV/3, EASIZ II, sta. 154**, E Weddell Sea, 74°38.7'S 026°59.3'W to 74°39.2'S 027°01.2'W, 569-583 m, GSN, 11.ii.1998: 7 specimens, leg. C. DE BROYER & Y. SCAILTEUR, RBINS, I.G. 27.497; **ANT-XIX/3, ANDEEP I, station unavailable**, February 2002, near King George Isl., bottom trawl, stomach content of *Gobionotothen gibberifrons* (LÖNNBERG, 1905) (450 mm long): about 10 specimens, leg. C. DE BROYER, P. DAUBY & F. NYSSSEN, RBINS, I.G. 31.073; **ANT-XIX/3, ANDEEP I, sta. 52-1**, Elephant Isl., 61°20.76'S 055°13.80'W to 61°20.60'S 055°10.57'W, 264-270m, GSN, 31.i.2002: 1 adult ♂ (eye red in alcohol), leg. C. DE BROYER, P. DAUBY & F. NYSSSEN, RBINS, I.G. 31.073; **ANT-XIX/3, ANDEEP I, sta. 127-1**, Elephant Isl., 62°42.74'S 055°22.18'W to 62°43.78'S 055°20.09'W, 204-294m, GSN, 21.ii.2002: 1 specimen, leg. C. DE BROYER, P. DAUBY & F. NYSSSEN, RBINS, I.G. 31.073; **ANT-XXI-2, BENDEX, sta. 19**, Bouvetøya, 54°30.09'S 03°14.13'E to 54°30.01'S 03°13.97'E, 247-260 m, AGT, 24.xi.2003, absolute alcohol: 3 specimens, leg. C. DE BROYER & F. NYSSSEN, RBINS, I.G. 31.072; **ANT-XXI-2, BENDEX, sta. 121**, E Weddell Sea, 70°50.08'S 010°35.54'W to 70°50.08'S 010°34.76'W, 268-274 m, AGT, 11.xii.2003, absolute alcohol: 1 specimen, leg. C. DE BROYER & F. NYSSSEN, RBINS, I.G. 31.072; **ANT-XXI/2, BENDEX, sta. 276**, E Weddell Sea, 71°06.44'S 011°27.76'W to 71°06.64'S 011°27.28'W, 268-277m, AGT, 28.xii.2003: 1 small specimen, leg. C. DE BROYER & F. NYSSSEN, RBINS, I.G. 31.072; **ANT-XXI/2, BENDEX, sta. 279**, E Weddell Sea, 70°24.1'S 007°52.2'W, 1136 m, Amphipod Trap, 28.ii.2003, absolute alcohol: 1 specimen, leg. C. DE BROYER & F. NYSSSEN, RBINS, I.G. 31.072; **ANT-XXI/2, BENDEX, sta. 281**, E Weddell Sea, 71°07.32'S 011°28.45'W to 71°07.32'S 011°28.45'W, 29.xii.2003, RD, 82 m: 1 juvenile, leg. M. RAUSCHERT, I.G. 31.068; **ANT-XXI/2, BENDEX, sta. 283**, E Weddell Sea, 72°32.39'S 017°59.34'W 72°32.45'S 017°59.37'W, 542-554m, EBS, 30.xii.2003: 1 large specimen, leg. C. DE BROYER & F. NYSSSEN, RBINS, I.G. 31.072; **ANT-XXII/3, ANDEEP III, sta. 74-6**, E Weddell Sea, 71°18.35'S 013°57.71'W to 71°18.28'S 13°57.31'W, 1030-1040 m, EBS-Epinet, 20.ii.2005: 2 specimens, leg. A. BRANDT, ZMH-41953; **ANT-XXII/3, ANDEEP III, sta. 133-2**, Elephant Isl., 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: several specimens, leg. A. BRANDT, ZMH-41954; **ANT-XXII/3, ANDEEP III, sta. 133-2**, Elephant Isl., 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 specimen, leg. A. BRANDT, ZMH-41954; **ANT-XXIII/8, sta. 605-3**, Elephant Isl., 61°20.33'S 055°31.53'W to 61°20.35'S 055°30.18'W, 137-154 m, AGT, 20.xii.2006: 10 juveniles, original fixation alcohol 70, leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.071; **ANT-XXIII/8, sta. 605-5**, Elephant Isl., 61°20.27'S 055°30.92'W to 61°20.37'S 055°28.99'W, 152-153 m, AGT, 20.xii.2006, fixation in absolute alcohol: 1 specimen, leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.071; **ANT-XXIII/8, sta. 614-3+4+5**, Elephant Isl., 60°52.37'S 055°29.80'W to 60°52.71'S 055°27.83'W, 248-265 m, AGT + RD, 21.xii.2006: about 10 fine specimens originally fixed in alcohol 70%, a few in absolute alcohol and about 20 originally fixed in formalin (2 vials), one specimen photographed, leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.071; **ANT-XXIII/8, sta. 654-6**, Elephant Isl., 61°23.35'S 056°04.89'W to 61°23.35'S 056°04.89'W, 341-342 m, AGT, 29.xii.2006, fixation absolute alcohol: 1 specimen (photographed), leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.071; **ANT XXIII/8, sta. 702-9**, W Weddell Sea, Larsen B, core-station South, 65°57.85'S 060°28.42'W to 65°57.42'S 060°28.12'W, 215-221 m, AGT, 12.i.2007, original fixation some specimens with absolute alcohol and others with formalin: more than 5 specimens (specimens with purple gnathopods; one photographed), leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.071; **ANT-XXIII/8, sta. 721-2**, W Weddell Sea, Larsen B, core-station South, 65°55.41'S 060°34.01'W to 65°55.79'S 060°33.96'W, 295-299 m, AGT, 20.i.2007, original fixation with formalin: 1 adult with purple gnathopods, leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.071; **ANT-XXIII/8, sta. 725-10**, W Weddell Sea, Larsen A, core-station South, 64°55.89'S 060°40.06'W to 64°55.92'S 060°40.31'W, 189-192 m, RD, 22.i.2008, original fixation with formalin: 1 large adult, 1 small and 5 juveniles (specimens with purple gnathopods; specimens photographed), leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.071; **ANT-XXIII/8, sta. 726-1**, W Weddell Sea, Snow Hill Isl. (Seymour Isl.), 64°30.86'S 056°40.23'W to 64°31.16'S

056°40.51'W, 197-199 m, RD, 23.i.2008, first fixation with formalin: 1 specimen with brown gnathopods (photographed), leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.071; **R/V Tangaora, sta. TAN0402/108**, Ross Sea, 71.2718°S 170.5997°E to 71.2773°S 170.6152°E, 400-405 m, 18.ii.2004, absolute alcohol: 5 specimens, NIWA catalog 20411.

#### DESCRIPTION

Rostrum triangular with acute tip, of normal length.

Eye present, small, elliptic, ommatidia present but not very distinct; pigmentation fading completely in alcohol.

A1: major flagellum with 39 articles in ♂ and 35 in ♀; accessory flagellum with 19 articles in ♂ and 11 in ♀.

A2: article 4 of peduncle with short stout ventrolateral and dorsomedial spines; article 5 without dorsomedial spines, with only 1 ventrolateral spine (in apical position); flagellum with 13 articles in ♂ and 24 articles in ♀, slightly shorter (♂) or slightly longer (♀) than fifth article of peduncle.

Epistome rounded, slightly protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 rounded teeth; right lacinia mobilis much smaller than left one, with anterior margin minutely denticulate 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 = 0.97); article one 4.29 x as long as wide; article two with 3 long setae on tip and none more proximally, 5.64 x as long as wide; article three 4.35 x as long as wide, 0.69 x as long as article two.

Mx1: second article of palp with 9 setae on upper margin, 14 slender spines on ventral and apical margin and 17 facial setae; outer plate with 10 strongly denticulate spines; inner plate with a single seta.

Mx2: outer plate with about 17 short and medium-sized setae on upper margin.

Mxp: article one of palp with 11 to 13 well developed distal outer dorsal setae, article two without non distal setae on outer margin; article three with 5 transverse rows of 3 to 7 thin setae on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins strongly curved and 0.61 x as long as article three; outer plate with 18 little-spaced spines on medial border (these spines are short and stout except the distal ones which are longer; the most distal spine is distally strongly curved), and about 9 slender medio-ventral setae at the same level as spines; inner plate

with 4 stout and well developed anterior spines and 18 normally developed setae.

Gn1: coxa broadly triangular, with slightly concave posterior border, with small posterior (and often anterior) tooth; merus with about 5 groups of setae and small acute distal tooth; carpus process with 8 to 10 groups of setae, tip of carpus reaching 0.17-0.19 of propodus, not reaching or almost reaching propodal group of strong spines; propodus 1.65 (♂) or 1.66 (♀) x as long as wide; group of spines on the proximal 0.29 of propodus (most distal spine used as reference point); one of these spines is rather long; palm border forming a regular curve, without teeth, with hooked spines of outer row narrowly spaced (87 hooked outer spines, and 9 outer setae or straight slender spines in ♀); dactylus with 11 teeth (♂) or 8 teeth (♀); dactylus toothed to 0.3 of its length.

Gn2: coxa triangulo-elliptic with small posterior and often anterior tooth (the 2 teeth are rather distant); merus with 5 groups of setae and with small acute distal tooth; carpus process with 10 to 11 groups of setae; tip of carpus reaching 0.17 (♂) or 0.25 (♀) of propodus, reaching propodal group of strong spines in ♀ (the group of spines may be lacking in adult ♂♂); propodus 1.71 (♀) or 1.91 (♂) x as long as wide; group of spines on the proximal 0.27 of propodus of ♀ only (most distal spine used as reference point); one of these spines is rather long; palm border curved and convex in ♀ but almost straight (very weakly concave) in ♂, without teeth; setae of palm of normal length, with hooked spines of outer row narrowly spaced (69 hooked spines and many long outer setae in ♂ and 22 setae in ♀♀; the setae extremely numerous in ♂♂); anteromedial surface of palm covered by woolly setae in adult ♂; dactylus of normal width, with 19 (♂) or 14 (♀) teeth; dactylus toothed to 0.6 of its length. Gn2 larger than Gn1; ratio length Gn2 / length Gn1: 1.47 (♂) or 1.23 (♀), surface of propodus of Gn2 / surface of propodus of Gn1: 1.95 (♂) or 1.47 (♀).

P3: coxa elliptic, of normal width, with tiny posterior tooth and no anterior tooth; merus 1.50 x as long as carpus and 1.04 x as long as propodus; dactylus not very long, stout with its two borders slightly curved, 0.54 x as long as carpus and 0.41 x as long as propodus; posterior border of merus with 3 isolated short setiform spines; carpus with 3 well developed setiform spines (of which 2 are paired with 1 setule) on posterior border; propodus with 9 groups of spines (1 short setiform spine followed by 7 long setiform spines associated with 1 or 2 short stouter spines followed by a distal pair of very short spines) (length of longest propodal spines about 1.0 x width of propodus); anterior border of propodus

with distal group of 4 well developed setae but without setae in more proximal position.

P4: coxa very broad (1.17 x as long as wide), with anterior and posterior border parallel, with ventral border distinctly convex, with 2 or 3 normally developed teeth on posterior border and 1 (exceptionally 2) normally developed anteroventral teeth; merus 1.45 x as long as carpus and 1.11 x as long as propodus; dactylus not very long, stout with its two borders slightly curved, 0.56 to 0.60 x as long as carpus and 0.43 to 0.49 x as long as propodus; posterior border of merus with 1 rather short setiform spine; carpus with 3 well developed setiform spines (each paired with 1 setule) on posterior border; propodus with 9 groups of spines (7 consisting of a long setiform spine associated with 1 or 2 short stouter spines and 2 isolated short stout spines) (length of longest propodal setae about 0.72 to 1.00 x width of propodus); anterior border of propodus with distal group of 3 to 4 well developed setae but without setae in more proximal position.

P5: coxa with tiny blunt posterior tooth; basis narrow (1.90 x as long as wide), anteriorly distinctly and regularly convex (maximal inflexion on the middle), posteriorly straight; anterior border with small conical spines (distal angle with a pair of small conical spines), posterior border with 13 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; ischium with small conical spine on anterodistal corner; merus with anterior and posterior groups of very short spines; carpus with 4 anterior groups of short slender spines not intermixed with setae and no posterior spines (except apical group); carpus 0.68 x as long as merus; carpus + propodus 1.30 x as long as merus; propodus with 8 pairs of short stout spines and no groups of long slender setae (except apical group); propodal apical tuft of setae well developed and consisting of stout setae; dactylus distinctly curved and fairly stout, 0.28 x as long as propodus.

P6: coxa with small posterior tooth; basis very narrow (1.85 x as long as wide), anteriorly convex and posteriorly straight; anterior border with small conical spines (distal angle with a pair of small conical spines), posterior border with 15 distinct teeth (posterodistal angle not included), distal border straight (junction posterior/distal border forming a square angle) and not produced into a lobe; ischium with small conical spine on anterodistal corner; merus with anterior and posterior groups of small spines; carpus with anterior and posterior groups of small spines (none associated with long slender setae); carpus 0.68 x as long as merus;

propodus with 9 anterior groups of 1 or 2 short stout spines, and 3 posterior tufts of fairly long and rather slender setae (apical tuft not considered) [most setae rubbed off on illustrated specimen but insertion scars well distinct (and illustrated)]; propodal apical tuft of setae poorly developed; dactylus weakly curved and fairly stout, 0.26 x as long as propodus.

P7: coxa without posterior tooth; basis very narrow (1.67 to 1.75 x as long as wide), anteriorly weakly convex and posteriorly very slightly concave; anterior border with small conical spines (distal angle with a small spine), posterior border with 10 to 12 distinct teeth (posterodistal angle not included), distal border straight (junction posterior/distal border forming an acute angle, i.e. a tooth) and not produced into a lobe; ischium with small conical spine on anterodistal corner; merus and carpus with rather short anterior and posterior spines; merus 5.69 x as long as wide and 1.25 x as long as basis; carpus 0.94 x as long as merus; propodus of P7 1.95 x as long as propodus of P6; propodus with 13 anterior groups of 1 or 3 short stout spines, and 5 posteromedial groups of 1-2 short spines associated with 1 rather long and not very slender seta (apical tuft not considered); propodal apical tuft of setae not very developed (but can be more developed than in illustrated specimen); dactylus posteriorly weakly curved and anteriorly straight, distally notched, fairly stout, short, 0.17 x as long as propodus.

Pleonite 1: posterodorsal area produced into 1 large tooth, or 1 large tooth + a pair of minute lateral teeth; Ep1 with well developed posteroventral tooth, with posterior border slightly convex; without setae.

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

Pleonite 3: posterodorsal area toothless and deeply notched; Ep3 with well developed acute posteroventral tooth (of which the ventral margin is regularly and strongly convex), with posterior border straight on all its length and joining the posteroventral tooth after forming a deep notch.

Urosomite 1 with high sigmoid crest-like carina, posteriorly terminated in a strong posterodorsal tooth pointing obliquely upwards; ventrolateral border with 2 to 3 spines; peduncle of U1 with 9 to 11 dorsolateral spines: 8 to 10 regularly-spaced and short slender ones spread on all length of peduncle and a long and strong distal one, with 6 dorsomedial spines (which are slender and fairly short, including the distal one) regularly spaced all along distal 0.8; outer ramus with 10 to 13 short outer spines and 10 to 13 short medial spines;

inner ramus with 6 short spines spread on distal 0.7 of outer border and 12 short spines on medial border.

Urosomite 2 with dorsal border forming a large triangular tooth pointing obliquely upwards; peduncle of U2 with 6 to 8 regularly-spaced and short dorsolateral spines, with 3 dorsomedial spines; outer ramus with 9 to 10 short outer spines and 6 short medial spines; inner ramus with 7 short spines on outer border and 10 well developed spines on medial border.

Urosomite 3 with well developed posterolateral tooth on each side, with a pair of long posterodorsal styliform spines; outer ramus of U3 with 3 short outer spines, without medial spines; inner ramus with 4 to 5 short and rather stout spines on outer border, with 5 to 6 short and stout spines on medial border.

Telson: cleft to 0.73 of its length; medial tooth of each lobe reaching 0.27 of outer tooth; inter-teeth spine overreaching outer tooth by 0.077 of its length, 0.22 x as long as telson; apical teeth of telson without setae.

#### COLOUR PATTERN

Body and most appendages orange-coloured; gnathopods and mouthparts either orange-coloured or purplish pink; eyes red or reddish (photographs made by the present author). In a given sample, all specimens had either orange-coloured gnathopods or purplish pink gnathopods.

#### LENGTH

27 mm.

#### TYPES

Type-locality: South Georgia, Cumberland Bay, 75 m depth, T = + 1.5°C (SCHELLENBERG, 1931). The type specimens were supposed to be in the NRS, Stockholm (DE BROYER *et al.*, 2008). However they were not sent to me with the other type specimens of that museum and they could well be lost.

#### DISTRIBUTION

South Georgia, South Orkney Islands, Bouvetøya, South Shetlands, Antarctic Peninsula, Weddell Sea, Adélie Coast, Ross Sea, Amundsen Sea (DE BROYER *et al.*, 2007; present material); 15 m (BELLAN-SANTINI, 1972a) to 1579-1584 m (present data).

#### BIOLOGICAL DATA

Sometimes found in the holdfasts of kelp of the genus *Himantothallus* (BELLAN-SANTINI, 1972b, as *Phyllogigas*). In aquaria, *L. georgiana* occupies a shelter but refuses any food item (DAUBY *et al.*, 2001). In the digestive tract of *L. georgiana*, the following items have been found: crustacean fragments (copepods, euphausiids, amphipods), polychaete remains (Fabriciidae, Phyllodocidae, Terebellidae), cnidarian fragments, sponge spicules and sand grains (DAUBY *et al.*, 2001). These authors consider that euphausiids and some worms consumed by *L. georgiana* are too big to be prey items and assume that the species could be an occasional scavenger. *L. georgiana* has been found in the stomach content of fishes: *Gobionotothen gibberifrons* (LÖNNBERG, 1905) (present data), *Trematonus bernacchii* BOULENGER, 1902, *T. hansonii* BOULENGER, 1902 and *Notothenia coriiceps neglecta* NYBELIN, 1951 (see BELLAN-SANTINI, 1972b).

#### REMARKS

*L. georgiana* is a large species and the most common *Liljeborgia* from the Antarctic shelf. So it is no surprise that it has been frequently recorded in literature. In the waters surrounding Marion Island (North of the Antarctic convergence), *L. georgiana* is replaced by a very closely related species: *L. nesiotica* n. sp. A related but smaller and more slender species, *L. semperhiemalis* n. sp. has been found in a few high Antarctic stations of the Eastern Weddell Sea, i.e. sympatrically with *L. georgiana*. See the respective accounts on *L. nesiotica* n. sp. and *L. semperhiemalis* n. sp. for a comparison with *L. georgiana*. In the past, *L. georgiana* has sometimes been confused with *L. longicornis*. However the first species is Antarctic, whilst the second is Patagonian, with no overlap in distribution. See account of *L. longicornis* for a comparison between the two species.

*L. georgiana* also exhibits a remarkable similarity with *L. fissicornis* M. SARS, 1858 and 3 other related undescribed species from Scandinavia (D'UDEKEM D'ACÓZ & VADER, in prep.). However, unlike *L. georgiana* and other related species from the Antarctic and sub-Antarctic shelf (*L. semperhiemalis* n. sp., *L. longicornis*, etc), the Scandinavian species (including the coastal ones) show no trace of eyes in life condition. It is here hypothesized that the group of species including *L. georgiana* and *L. fissicornis* originated on the continental shelf of the cold parts of the southern hemisphere, that some species adapted to the abyss where eyes degenerated, migrated northwards through

the cold abyssal waters and reached the continental shelf in Arctic and sub-Arctic regions where the water was cold enough, and where the ability to regenerate visual organs was lost.

***Liljeborgia georgiensis* K.H. BARNARD, 1932**

(Figs 54-59)

*Liljeborgia kinahani* var. *georgiensis* K.H. BARNARD, 1932: 142, fig. 81b

**MATERIAL**

**Discovery Exp., sta. 145**, South Georgia, Stromness Harbour [54°09'S 036°41'W fide ALBERTS (1995)], small beam trawl, 26-35 m, weedy ground, 07.i.1927: 1 ♀ holotype, BMNH 1936.11.2.1278; **26th Soviet Antarctic Exp., sta. 26/46**, B 341, King George Isl., Fildes Strait [62°14'S 059°00'W fide ALBERTS (1995)], 5-8 m, from plants, 28.i.1982: 1 specimen, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **30th Soviet Antarctic Exp., sta. 30/39** [Vial labeled as "II 629, p. 34", King George Isl., Steinbucht, Höhlenbewuchs, 10 m, 08.i.1986], Maxwell Bay [62°15'S 058°51'W fide ALBERTS (1995)], rocky bay, lower side of stones, 10 m, SCUBA diving, 08.i.1986: 3 adults and 11 juveniles (largest ones about 10 mm) (one ♀ dissected and mounted on 8 slides in Euparal), leg. M. RAUSCHERT, RBINS, I.G. 31.068.

**DESCRIPTION**

Rostrum pointed, broadly triangular with acute tip, short.

Eye present, medium-sized, quadrato-elliptic, ommatidia present, well distinct; pigmentation persisting in alcohol.

A1: major flagellum with 17 articles; accessory flagellum with 12 articles.

A2: article 4 of peduncle with large slender dorsomedial and ventrolateral spines; article 5 without small dorsomedial spines, with 1 small ventrolateral spine (in apical position); flagellum with 15 articles.

Epistome rounded and very protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 rounded teeth; right lacinia mobilis much smaller than left one, with anterior margin regularly denticulate and with one large triangular tooth (which is itself denticulate); spines of incisor process spinulose, anterior spines stout; article one of palp slightly shorter than article two (ratio length article one / article two

= 0.94); article one 3.33 x as long as wide; article two with 4 distal setae and no setae more proximally, 4.44 x as long as wide; article three 4.45 x as long as wide, 0.81 x as long as article two.

Mx1: second article of palp with 3 setae on upper margin, 7 short and rather stout spines on ventral and apical margin, and 4 well developed facial setae; outer plate with 7 denticulate spines; inner plate with 1 apical seta.

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

Mxp: article one of palp without distal outer dorsal setae, article two without non distal setae on outer margin; article three with 3 isolated setae on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins strongly curved and 0.77 x as long as article three; outer plate with 10 to 11 rather long and well spaced spines (proximal ones very slender, distal ones becoming moderately stout) on medial border, and 8 to 9 slender medio-ventral setae at the same level as spines or more proximally; inner plate with 2 slender and not very long spines and 6 stout rather short setae.

Gn1: coxa triangular, narrow, without posterior and anterior tooth or notch; merus with 6 groups of setae and with small acute distal tooth; carpus process with 7 groups of setae, tip of carpus reaching 0.22 of propodus, separated from propodal group of strong spines by significant space; propodus 2.2 x as long as wide; group of spines on the proximal 0.37 of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth, with hooked spines of outer row not widely spaced (47 hooked outer spines + 1 outer seta); dactylus with 7 well developed teeth; dactylus toothed to 0.3 of its length.

Gn2: coxa quadrato-elliptic without posterior and anterior tooth or notch; merus with 4 groups of setae with 2 small acute distal teeth; carpus process with 8 groups of setae; tip of carpus reaching 0.25 of propodus, not reaching propodal group of strong spines; propodus 2.1 x as long as wide; group of spines on the proximal 0.33 of propodus (most distal spine used as reference point); palm border forming a regular curve, with hooked spines of outer row widely spaced (21 hooked outer spines + 26 long outer setae); dactylus 0.76 (♀) x as long as propodus, with 16 teeth; dactylus toothed to 0.85 of its length. Gn2 distinctly larger than Gn1; ratio length Gn2 / length Gn1: 1.31 (♀), surface of propodus of Gn2 / surface of propodus of Gn1: 1.79 (♀).

P3: coxa elliptic, narrow, without posterior and anterior tooth or notch; merus 1.24 x as long as carpus and 0.96 x as long as propodus; dactylus short, stout,

with anterior border distinctly curved, with posterior border slightly curved, 0.39 x as long as carpus and 0.29 x as long as propodus; merus with 5 tiny setules on posterior border; posterior border of carpus with 5 setules followed by a cluster consisting 1 normally developed seta + 1 long slender spine + 2 short setules; anterior border of carpus with 3 isolated short setules followed by a distal group of 2 setules; propodus with 11 large and stout isolated spines on posterior border (length of longest propodal spines about 0.45 x width of propodus), without setules on anterior border except a small distal one.

P4: coxa of normal width (1.35 x as long as wide), with anterior and posterior borders slightly converging downwards, with ventral border strongly and regularly convex, without teeth on posterior border, without anteroventral tooth; merus 1.46 x as long as carpus; dactylus short, stout, with anterior and posterior border nearly straight, 0.41 x as long as carpus and 0.31 x as long as propodus; merus with 6 tiny setules on posterior border; carpus with 4 setules followed by a cluster consisting 1 normally developed seta plus 2 short setules; anterior border of carpus with 1 median and 1 distal short setules; propodus with 11 large and stout isolated spines on posterior border (length of longest propodal spines about 0.33 x width of propodus), with 2 very tiny setules on anterior border, one of them being in distal position.

P5: coxa with minute notch; basis symmetrically elliptic and broad (1.47 x as long as wide); anterior border with small conical spines (distal angle with very long and very slender spine), posterior border with 11 well developed teeth, distal border produced into a weakly protruding, rounded toothless lobe; ischium with long very slender spine on anterodistal corner; merus with groups of long anterior spines and normally developed posterior spines; carpus with 3 anterior groups of spines of various length, not intermixed with setae, and no posterior spines (except apical group); carpus 0.61 x as long as merus; propodus with 9 regularly spaced long and stout spines, each paired with a setule; posterior border of propodus with 3 groups of 1-2 long and stout setae (of which two are paired with a small spine + propodal dorso-apical group consisting of 2 well developed spines and 2 long setae; dactylus curved and stout, 0.17 x as long as propodus.

P6: coxa with small posterior tooth; basis symmetrically elliptic and broad (1.56 x as long as wide); anterior border with small conical spines (distal angle with very long and very slender spine paired with a small conical spine), posterior border with 11 well developed teeth, distal border produced into a weakly

protruding, rounded toothless lobe; merus with groups of long anterior spines and normally developed posterior spines; anterior border of carpus with 3 long very slender spines (one paired with a short spine) + a distal group of several long spines; no posterior spines (except apical group); carpus 0.67 x as long as merus; carpus + propodus 1.37 x as long as merus; propodus with 10 unpaired long, fairly slender spines on anterior border, and 3 isolated non-distal, long slender setae on posterior border; propodal dorso-apical tuft of setae consisting of 1 long seta associated with 2 spines; dactylus curved and fairly stout, 0.18 x as long as propodus.

P7: coxa without posterior tooth; basis symmetrically elliptic and broad (1.36 x as long as wide); anterior border with small conical spines (distal angle with pair of small spines), posterior border with 9 well developed teeth, distal border produced into a weakly protruding, rounded toothless lobe; ischium with long spine on anterodistal corner; merus with long slender anterior and posterior spines; merus 2.86 x as long as wide and 0.71 x as long as basis; anterior border of carpus with 4 groups of long spines; posterior border of carpus with 1 median isolated long spine and 1 distal group of long spines; carpus and merus subequal; propodus of P7 1.42 x as long as propodus of P6; anterior border of propodus with 8 groups of 1 or 2 long slender spines; posteromedial border of propodus with 7 non distal long spines (proximal one rubbed off, leaving just a scar) of which several are associated with long setae, and posterodistal group consisting of 2 long setae and 2 well developed spines; dactylus almost straight and very short, 0.18 x as long as propodus.

Pleonite 1: posterodorsal area produced into 3 small equal teeth; Ep1 with small acute posteroventral tooth, with posterior border strongly convex, without setae on ventrolateral surface.

Pleonite 2: posterodorsal area produced into 3 small equal teeth; Ep2 with large blunt posteroventral tooth, with posterior border distinctly convex, without setae on ventrolateral surface..

Pleonite 3: posterodorsal area toothless; Ep3 with well developed acute posteroventral tooth (of which the ventral margin is convex), with posterior border straight on most of its length, abruptly curving downwards to posteroventral teeth.

Urosomite 1 with dorsal border rectilinear, with small posterodorsal tooth pointing backwards; ventrolateral border with 1 spine; peduncle of U1 with 5 to 6 dorsolateral spines: 2 to 3 long slender spines on proximal 0.5 followed by 1 to 3 short ones, and 1 long and stout distal one, with a single 1 dorsomedial spine (which is slender and long) in distal position; outer

ramus with 4 to 6 short outer spines and 3 to 5 short medial; inner ramus with 2 to 3 short spines on outer border and 5 to 7 short spines on medial border.

Urosomite 2 with dorsal border rectilinear, with small posterodorsal tooth pointing backwards; peduncle of U2 with 3 dorsolateral spines: 2 very long slender spines on distal 0.8, and 1 normal-sized stout distal spine; with 4 dorsomedial spines (3 proximal ones short); outer ramus with 3 to 4 short outer spines and 2 medial spines; inner ramus with 2 to 4 short spines on outer border and 6 to 9 well developed spines on medial border.

Urosomite 3 without posterolateral tooth on each side, with a pair of medium-sized posterodorsal spines; U3 shorter than U1 and a bit shorter than U2; outer ramus and inner ramus of U3 subequal; outer ramus of U3 with 3 to 4 very short spines; inner ramus 1.35 x as long as peduncle, with 1 to 2 small spines on outer side, with 3 to 4 long spines on medial side.

Telson: cleft to 0.82 of its length; medial and outer teeth of each lobe subequal; inter-teeth spine overreaching outer tooth by 0.39 of its length, 0.17 x as long as telson; tip of telson with one or several short setae.

#### LENGTH

About 15 mm.

#### DISTRIBUTION

South Georgia (type locality) and King George Island. 5-8 m to 26-35 m.

#### REMARKS

The name *georgiensis* was introduced as a variety name. However it is an available name because it has been introduced before 1961 (International Code of Zoological Nomenclature, 4th edition, art. 45.6.4).

*Liljeborgia kinahani* var. *georgiensis* K.H. BARNARD, 1932 was described with a minimalist and uninformative diagnosis, and a figure of the epistome in lateral view (K.H. BARNARD, 1932). The head of the holotype is presumably lost since it was not present in the vial sent on loan by the Natural History Museum, London. The remaining parts of the specimen were however in reasonably good condition, allowing for adequate illustrations of most parts of the specimen. The description of the holotype has been completed by the study of specimens from King George Island.

Any comparison between the low Antarctic *L. georgiensis* and the North Atlantic species *L. kinahani*

(BATE, 1862) is irrelevant. Indeed, despite the statements of K.H. BARNARD (1932), *L. georgiensis* has no real affinities with *L. kinahani*, a species which has been described and illustrated with a reasonable accuracy by G.O. SARS (1890-1895) and LINCOLN (1979). On the other hand, K.H. BARNARD (1932) was correct when he noted similarities between *L. georgiensis* and *L. octodentata* SCHELLENBERG, 1931 (under the name of *L. kinahani* var. *falklandica* K.H. BARNARD, 1932). However the two species are only superficially similar and can be easily separated by several characters such as the ornamentation of the posterior border of the propodus of the third and fourth pereopods (small spines in *L. georgiensis* and setules in *L. octodentata*). Actually the closest known relative of *L. georgiensis* is probably *L. kerguelensis*, which has also small spines on the posterior border of the propodus of the third and fourth pereopods. However the last three pereopods of *L. kerguelensis* have a narrower basis and its seventh pereopod has a narrower merus and a much longer dactylus. Furthermore *L. kerguelensis* has one posterodorsal tooth on the first two pleonites, whilst *L. georgiensis* has three. Interestingly *L. georgiensis* and *L. kerguelensis* are also close to the New Zealand species *L. aequabilis* sensu HURLEY, 1954 and *L. akaroica* HURLEY, 1954, as described by HURLEY (1954), and the Australian species *L. polonius* HUGHES & LOWRY, 2006, as described by HUGHES & LOWRY (2006).

#### *Liljeborgia homospora* n. sp.

(Figs 60-66)

#### MATERIAL

**R/V Eltanin, cruise 6, sta. 412**, South Shetland Isl., 62°06'S 056°00'W, 1180 m, 01.i.1963: about 15 fine specimens (paratypes) including adult ♂♂, USNM; **ANT-XIII/3, EASIZ I, sta. 39/31**, E Weddell Sea, NE of Cape Norvegia, 70°32.60'S 010°55.80'W to 70°33.00'S 011°01.40'W, 1641-1660 m or 70°30.90'S 010°44.20'W to 70°31.70'S 010°51.20'W, 1586-1666 m, RD [two dredging operations at the "station 39/32"], 02.iii.1996: 1 ♀ paratype, leg. M. RAUSCHERT [previously identified by M. RAUSCHERT as *L. consanguinea*], RBINS, I.G. 31.068; **ANT-XIII/3, EASIZ I, sta. 39/30**, E Weddell Sea, 70°05.30'S 008°20.00'W, 2315-2334 m, RD and/or AGT, 01.iii.1996: about 13 specimens (paratypes) coloured, apparently with Black Chlorazol (of which 1 has been mounted by M. RAUSCHERT on 2 slides in polyvinyl lactophenol), previously identified as *L. consanguinea* by M. RAUSCHERT, leg. M. RAUSCHERT,

RBINS, I.G. 31.068; **ANT-XIX/4, ANDEEP II, sta. 131-3**, W Weddell Sea, 65°19.83'S 051°31.62'W to 65°19.95'S 051°31.41'W, 3049-3050 m, EBS, 05.iii.2002: 1 small and 5 juveniles (paratypes), leg. A. BRANDT, ZMH-41955; **ANT-XIX/4, ANDEEP II, sta. 131-3**, W Weddell Sea, 65°19.83'S 051°31.62'W to 65°19.95'S 051°31.41'W, 3050 m, EBS-Epinet, 05.iii.2002: 1 ♂ and 10 juveniles (paratypes), leg. A. BRANDT, ZMH-41955; **ANT-XIX/4, ANDEEP II**, labeled as 'sta. 140-9, EBS-Supranet' but it is obviously **sta. 140-8** since the EBS sample of the station 140 is 140-8, South Sandwich Isl., 58°15.98'S 024°53.72'W to 58°16.13'S 024°53.87'W, 2947-2970 m, 22.iii.2002: 1 ♀ paratype, leg. A. BRANDT, ZMH-41956; **ANT-XXI/2, BENDEX, sta. 109**, E Weddell Sea, 70°47.88'S 011°21.56'W to 70°47.88'S 011°24.13'W, 1488-1525 m, AGT, 10.xii.2003: 1 ovigerous ♀ (paratype), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **ANT-XXII/3, ANDEEP III**, labeled as 'EBS 78-9 Epinet' [obviously **sta. 78-10** since the EBS sample of the station 78 is 78-10], E Weddell Sea, 71°09.39'S 013°59.30'W to 71°09.36'S 013°58.81'W, 2147-2156 m, 21.ii.2005: about 10 specimens including holotype ♂ (most large and intact, and with ♂♂; ♂ holotype dissected and mounted on 3 slides in Euparal), leg. A. BRANDT, ZMH-41957; **ANT-XXII/3, ANDEEP III**, labeled as 'EBS 78-9 Supranet' [obviously **sta. 78-10** since the EBS sample of the station 78 is 78-10], E Weddell Sea, 71°09.39'S 013°59.30'W to 71°09.36'S 013°58.81'W, 2147-2156 m, 21.ii.2005: 8 specimens (paratypes) (most are large and intact; incl. ♂♂), leg. A. BRANDT, ZMH-41958; **ANT-XXII/3, ANDEEP III, sta. 80-9**, E Weddell Sea, 70°39.07'S 14°42.36'W to 70°39.22'S 014°43.39'W, 3102-3103 m, EBS, 23.ii.2005: 2 ♀♀ (paratypes) (smaller one: P7 intact), leg. A. BRANDT, ZMH-41959; **ANT-XXII/3, ANDEEP III, sta. 81-8**, E Weddell Sea, 70°32.02'S 014°35.05'W to 70°32.19'S 14°35.13'W, 4385-4392 m, EBS-Epinet, 24.ii.2005: 1 ♀ paratype, leg. A. BRANDT, ZMH-41960; **ANT-XXII/3, ANDEEP III, sta. 121-7**, NW Weddell Sea, 63°34.92'S 050°41.97'W to 63°34.65'S 50°41.68'W, 2616-2617 m, AGT, 14.iii.2005: 1 adult ♂ with very long setae on Gn2 (9 mm), 1 adult ♀ (with 2 teeth on Gn1), 2 juveniles, leg. A. BRANDT, ZMH-41961; **ANT-XXII/3, ANDEEP III**, labeled as "sta. 121-11, EBS", [obviously **sta. 121-10** since the EBS sample of the station 121 is 121-10], position of sta. 121-10, NW Weddell Sea: 63°37.73'S 050°38.09'W to 63°37.55'S 50°38.37'W, 2659-2663 m, 15.iii.2005: 3 adults and 8 juveniles (2 vials) (one adult 7 mm long ♀ was intact; it has been dissected and mounted on 17 slides in Euparal) and 3 juveniles (undissected specimens = paratypes),

leg. A. BRANDT, ZMH-41962; **ANT-XXII/3, ANDEEP III**, labeled as "EBS 121-11-S" [obviously **sta. 121-10** (Supranet) since the EBS sample of the station 121 is 121-10], position of sta. 121-10: NW Weddell Sea, 63°37.73'S 050°38.09'W to 63°37.55'S 50°38.37'W, 2659-2663 m, 15.iii.2005: 1 small specimen and 1 juvenile (paratypes), leg. A. BRANDT, ZMH-41962; **ANT-XXII/3, ANDEEP III, sta. 150-6**, NW Weddell Sea, 61°48.70'S 047°28.04'W to 61°48.57'S 047°28.19'W, 1993-1996 m, EBS-Epinet, 20.iii.2005: 9 adult ♀♀ and 2 juveniles (2 vials) (paratypes), leg. A. BRANDT, ZMH-41963; **ANT-XXII/3, ANDEEP III, sta. 150-6**, NW Weddell Sea, 61°48.70'S 047°28.04'W to 61°48.57'S 047°28.19'W, 1993-1996 m, EBS-Supranet, 20.iii.2005: 1 small ♀ (paratypes), leg. A. BRANDT, ZMH-41964.

#### ETYMOLOGY

The name derives from the Greek adjective ὁμόσπορος (= of the same kindred), which is here latinized as *homosporus*, *-a*, *-um*. This adjective has a meaning similar to *consanguineus*, and has been coined because the new species is more or less related to *Liljeborgia consanguinea* STEBBING, 1888 and because the species from that group are morphologically very close.

#### DESCRIPTION

Rostrum pointed, narrow, with acute tip, rather long.

Eye absent.

A1: major flagellum with 11 articles; accessory flagellum with 8 articles.

A2: article 4 of peduncle with very strong dorsomedial and strong ventrolateral spines; article 5 with very strong dorsomedial and long slender ventrolateral spines; flagellum with 11 articles, slightly but distinctly longer than article 5 of peduncle.

Epistome rounded in lateral view and not very protruding.

Md: left lacinia mobilis large and with anterior margin with 5 acutely triangular teeth; right lacinia mobilis much smaller with anterior margin minutely denticulate and one large lateral tooth; ultimate spine of incisor process not much stouter than others; articles one and two of palp subequal (ratio length article one / article two = 0.93); article one 4.52 x as long as wide; article two with 2 distal/subdistal setae, 4.98 x as long as wide; article three 4.40 x as long as wide, 0.65 x as long as article two.

Mx1: second article of palp with 1 seta on upper margin, 5 spines on ventral and apical margin, and

4 facial setae; outer plate with 9 strongly denticulate spines; inner plate with a single seta.

Mx2: outer plate with 2 fairly widely spaced strong setae on upper margin; setae of Mx2 stout and not numerous.

Mxp: article one of palp with 2 medium-sized slender distal outer dorsal setae, article two with 1 non distal seta on outer margin; article three with 3 isolated stout setae on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins strongly curved and 0.79 x as long as article three; outer plate with 9 widely spaced, very stout spines on medial border, and 5 slender medio-ventral setae at the same level as spines; inner plate with 2 to 3 very stout anterior spines and 5 spiniform setae.

Gn1: coxa narrowly triangular, with posterior border barely concave, with small but well developed and acute posterior tooth, with small anterior tooth; merus with 2 groups of setae and with small acute distal tooth; carpus process with 4 groups of setae; tip of carpus reaching 0.25 (♂) or 0.20 (♀) of propodus, reaching or almost reaching propodal group of strong spines; propodus 2.10 (♂) or 1.97 (♀) x as long as wide; group of spines on the proximal 0.33 of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth, with hooked spines of outer row widely spaced (19 hooked outer spines and 0 to 1 outer seta); dactylus with 0 to 4 teeth (number of teeth increasing with size of specimen).

Gn2: coxa quadrato-elliptic with well developed posterior tooth and small anterior tooth (the two teeth are very distant from each other); merus with sparse setae, with one small acute distal tooth; carpus process with 6 to 8 well separated groups of setae on ventral border; tip of carpus reaching 0.29 to 0.30 of propodus, reaching propodal group of strong spines in ♀ but not in ♂; propodus 2.26 (♂) or 2.08 (♀) x as long as wide; group of spines on the proximal 0.48 (♂) or 0.36 (♀) of propodus (most distal spine used as reference point); palm border denticulate in ♂, regularly convex in ♀; with hooked spines of outer row few in number and widely spaced (♂ with 6 hooked outer spines + 25 extremely long thin outer setae on palm and behind palm; ♀ with 10 hooked outer spines + 3 very long outer setae); dactylus rather short in ♂, normal in ♀, 0.66 (adult ♂) or 0.74 (♀) x as long as propodus, with 8 (♂) or 7 (♀) teeth and toothed to 0.6 of its length. Gn2 considerably larger than Gn1; ratio length Gn2 / length Gn1: 1.81 (♂) or 1.45 (♀), surface of propodus of Gn2 / surface of propodus of Gn1: 3.14 (♂) or 2.04 (♀).

P3: coxa narrowly elliptic with well developed posterior tooth and small anterior tooth (the two teeth

are very distant from each other); merus 1.54 x as long as carpus (i.e. carpus short) and 1.19 x as long as propodus (i.e. propodus very short); dactylus very long, slender and strongly curved, 0.90 x as long as carpus and 0.67 x as long as propodus; merus with 2 short and thin setae on posterior border; carpus with 2 groups of thin and very long setae on posterior border; propodus with 4 groups of thin and very long setae + 1 distal spinule (length of longest propodal setae about 1.87 x width of propodus) on posterior border and with distal group of long setae on anterior border.

P4: coxa broad (1.18 x as long as wide), with anterior and posterior border slightly diverging downwards, with ventral border slightly and regularly convex, with 4 strong and sharp teeth on posterior border, with 1 small anteroventral tooth; merus 1.59 x as long as carpus (i.e. carpus short); dactylus very long, slender and strongly curved, 1.01 x as long as carpus and 0.76 x as long as propodus; merus with 3 short and thin setae on posterior border; carpus with 2 groups of thin and very long setae on posterior border; propodus with 4 groups of thin and very long setae + 1 distal spinule (length of longest propodal setae about 2.78 x width of propodus) and a single distal spinule on posterior border and with distal group of long setae on anterior border.

P5: coxa without posterior tooth; basis broad (1.45 x as long as wide), anteriorly strongly and regularly convex, posteriorly nearly straight; anterior border with small conical spines (distal angle with a fairly long spine paired with a small conical spine), posterior border with 8 well developed teeth, distal border produced into a not very protruding, rounded toothless lobe; ischium with a pair of spinules on anterodistal corner; merus with groups of well developed anterior spines (no posterior spines); carpus with groups of articulate structures including spines only (except distal group which combines spines and a seta), and no posterior ornamentation except distal group of spines; carpus 0.61 x as long as merus; propodus with very long anterior spines, each paired with a long seta (3 spine/seta group) on outer surface and one long seta on anterior border; propodal apical tuft of setae very developed (consisting of many setae which are very long and a few short slender spines); dactylus slightly curved and slender, 0.46 x as long as propodus.

P6: coxa with tiny posterior tooth; basis broad (1.48 x as long as wide), anteriorly strongly and regularly convex, posteriorly weakly convex; anterior border with small conical spines (distal angle with a fairly long spine paired with a small conical spine), posterior border with 10 well developed teeth, distal border produced into a not very protruding, rounded toothless

lobe; merus with anterior groups of long spines and posterior groups of short spines; carpus with 4 groups of long slender spines on anterior border and no posterior spines (except apical group); carpus 0.69 x as long as merus; carpus + propodus 1.13 x as long as merus; propodus with 2 very long anterior spines and long very slender posterior setae (paired or not with spines); dactylus slightly curved and slender, 0.43 x as long as propodus; propodal apical tuft very developed (many setae which are very long).

P7: coxa without posterior tooth; basis broad (1.27 to 1.35 x as long as wide), anteriorly and posteriorly strongly convex; anterior border with small conical spines (distal angle with a fairly long spine paired with a small conical spine), posterior border with 9 to 11 well developed teeth, distal border produced into a not very protruding, rounded toothless lobe; ischium with a medium-sized and a small spine on anterodistal corner; merus with long anterior and posterior spines; merus 3.21 (♀) to 3.97 (♂) x as long as wide and 0.75 (♀) to 0.81 (♂) x as long as basis; carpus with long anterior and posterior spines + distal group of long spines; carpus 0.97 x as long as merus; propodus of P7 1.53 x as long as propodus of P6; propodus with 4 groups of long slender spines on anterior border and 4 groups of spines and setae (tip included) on posterior border; dactylus straight, very long and narrow (styliform and becoming distally hair-like), 1.23 x as long as propodus.

Pleonite 1: posterodorsal area produced into 1 small tooth; Ep1 with normally developed and acute posteroventral tooth, with posterior border strongly convex, with 4 long and extremely thin setae on ventrolateral surface.

Pleonite 2: posterodorsal area produced into 1 small tooth; Ep2 with small acute posteroventral tooth, with posterior border straight on most of its length.

Pleonite 3: posterodorsal area not produced into a tooth; Ep3 with very small posteroventral tooth, with posterior border distinctly convex on most of its length.

Urosomite 1 with dorsal border rectilinear in its posterior half, with small posterodorsal tooth pointing backwards; ventrolateral border with 2 spines; peduncle of U1 with 3 dorsolateral spines: 1 very long slender one on proximal 0.4 followed by 1 short fairly slender one on 0.5 of peduncle, and 1 long and stout distal one, with 5 dorsomedial spines: 4 medium-sized spines on 0.6 of peduncle and 1 long and fairly stout distal spine; outer ramus with 2 well-developed outer spines and no medial spines; inner ramus with no spines on outer border and 3 well developed spines on medial border.

Urosomite 2 with dorsal border rectilinear, with small

posterodorsal tooth pointing backwards; peduncle of U2 with 2 long dorsolateral spines: one on distal 0.7 and one near the tip, with a single long dorsomedial spines in apical position; outer ramus with 2 well developed outer spines and no medial spines; inner ramus with no spines on outer border and 2 well developed spines on medial border.

Urosomite 3 with small posterolateral tooth on each side, with pair of long slender posterodorsal spines; U3 much shorter than U1 and a bit shorter than U2; outer ramus and inner ramus of U3 subequal, outer ramus of U3 without spines; inner ramus 1.13 x as long as peduncle, with 1 to 4 medium-sized spines on outer side, with 2 to 3 medium-sized spines on medial side.

Telson: cleft to 0.69 of its length; medial tooth of each lobe long but not reaching tip of outer tooth; inter-teeth spine overreaching outer tooth by 0.49 of its length, 0.29 x as long as telson; tip of telson lobes without setae, but with a pair of setae on 0.6 of left side.

#### COLOUR PATTERN

Translucent and colourless except for some part of the head, thorax and gnathopods, which are very slightly tinged with pinkish; oral field slightly more pink; the viscera appear as pale brownish yellow by transparency; there are no distinct eyes on the photograph, but the picture is not clear enough to ascertain the complete absence of eyes (photograph by M. RAUSCHERT, station ANT-XXI/2 sta. 109).

#### LENGTH

About 8 mm.

#### DISTRIBUTION

Eastern and Western Weddell Sea, 1180 to 4385-4392 m..

#### REMARKS

Besides material clearly belonging to *L. homospora* n. sp., a number of deep-sea samples (not listed here) include specimens slightly departing from the characters of the species. Further studies are necessary to ascertain their real identity. *Liljeborgia homospora* n. sp. is fairly close to *L. consanguinea* (differences indicated in the account of that species), very close to *L. quinquedentata*, and even closer to *L. barnhami* HURLEY, 1954, *L. quadridentata* and *L. polydeuces* n. sp. *L. homospora* n. sp. is a species from the continental slope and the abyssal plain, whilst the

other species are apparently restricted to the continental shelf. *L. homospora* n. sp. is the only species which has the dactylus of the seventh pereopod longer than the propodus. However this character is of little use since the tip of the dactylus is often broken or the three distal articles of the propodus can be missing. In *L. quinquedentata*, the basis of the last three pereopods is narrower with more posterior teeth and these teeth are stronger than in *L. homospora* n. sp. In reality, there is probably little risk of confusion, because *L. quinquedentata* is endemic to (the shelf of) Patagonia and *L. homospora* n. sp. is presumably restricted to true Antarctic (deep) waters. The morphology of the chela of the second gnathopod of *L. homospora* n. sp. is quite distinct from that of *L. polydeuces* n. sp. and *L. quadridentata*. Unfortunately males are less common than females, which exhibit very little interspecific differences. The best distinctive feature for females is provided by the third uropod; in *L. homospora* n. sp. the rami are slightly longer than the peduncle, whilst they are distinctly shorter in *L. polydeuces* n. sp. and *L. quadridentata*. Finally, it must be pointed out that *L. homospora* n. sp. present similarities with the poorly known New Zealand species *L. barnhami* HURLEY, 1954 (see HURLEY, 1954). *L. barnhami* has a stronger posteroventral tooth on the third epimeral plate, more setae on the anterior border of the merus, carpus and propodus of the fourth pereopod, and more teeth (17 instead of 9-11) on the posterior border of the basis of the seventh pereopod than *L. homospora* n. sp.

*Liljeborgia kerguelensis* BELLAN-SANTINI &  
LEDOYER, 1974  
(Figs 67-73)

*Liljeborgia kerguelensis* BELLAN-SANTINI & LEDOYER, 1974: 678, in part, pl. 21.

MATERIAL

**BELLAN-SANTINI'S & LEDOYER'S material, sta. D54**, Ile Kerguelen, center south of Golfe du Morbihan, Plateau du Four [49°29'25"S 070°07'41"E fide DELÉPINE (1973)], 15 m, fine mud with pebbles and algae, holdfasts of *Macrocystis pyrifera* (L.) C. AGARDH, 28.ii.1966: holotype (♂ according to BELLAN-SANTINI & LEDOYER, 1974), MCSN slides 4628, 4629, 4630; **BELLAN-SANTINI'S & LEDOYER'S material, sta. D54**, Kerguelen: 1 small mature and 2 juveniles (paratypes) in alcohol, MCSN; **KER82, sta. 82-D8?**, N of Ilot Boyle [49°29'48"S 070°12'05"E fide DELÉPINE (1973)], 48 m, dredge, fine mud, 19.i.1982: 1 specimen, leg. C. DE BROYER, RBINS, I.G. 26.597; **KER82, sta. 82-**

**D22**, south of Ile Suhm [49°29'50"S 070°09'33"E fide DELÉPINE (1973)], 30-50 m, muddy bottom with a lot of *Macrocystis*, 9.ii.1982: 1 ♀ (dissected and mounted on 20 slides in Euparal), leg. C. DE BROYER, RBINS, I.G. 26.597; **KER82, sta. 82-D25 to 82-D29**, south of Ile Suhm [49°29'50"S 070°09'33"E fide DELÉPINE (1973)], 30-50 m depth, red algae and *Aulacomya* mud, dredge, 10.ii.1982: 1 specimen, leg. C. DE BROYER, RBINS, I.G. 26.597

DESCRIPTION

Rostrum triangular, rather broad, short, terminated in spiniform point.

Eye present but scarcely distinct in alcohol, fairly large, quadrato-elliptic, ommatidia not distinct in alcohol.

A1: major flagellum with 25 articles; accessory flagellum with 15 articles.

A2: article 4 of peduncle with moderately long styliform dorsal spines and strong ventrolateral setae; article 5 without dorsomedial spines and with 2 long very narrow ventrolateral distal spines; flagellum with 25 articles, slightly longer than fifth article of peduncle.

Epistome rounded in lateral view and distinctly protruding.

Md: left lacinia mobilis large and with anterior margin with 5 bluntly triangular teeth; right lacinia mobilis much smaller, with anterior margin minutely but fairly regularly denticulate, without large lateral (which is itself denticulate) teeth; spines of incisor process stout and minutely denticulate; article one and two of palp subequal (ratio length article one / article two = 0.96); article one 2.80 x as long as wide; article two with setae only on tip, 3.59 x as long as wide; article three 5.15 x as long as wide, 1.03 x as long as article two.

Mx1: second article of palp with 3 setae on upper margin, 8 spines on ventral and apical margin, and 9 facial setae; outer plate with 8 barely denticulate spines; inner plate with two setae on tip (one long and one very short).

Mx2: outer plate with 5 widely spaced strong setae on upper margin.

Mxp: article one of palp without distal outer dorsal setae, article two without non distal setae on outer margin; article three with 4 isolated stout setae on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins strongly curved and 0.85 x as long as article three; outer plate with 12 very long and very slender spines (except a

few shorter stouter ones) on medial border, and about 2 slender medio-ventral setae at the same level as spines; inner plate with 3 slender and not very long anterior spines and 11 to 12 spiniform setae.

Gn1: coxa narrowly triangular with small weak posterior notch and no anterior tooth; merus with 4 groups of setae and with small acute distal tooth; carpus process with 6 groups of setae; tip of carpus reaching 0.29 of propodus, separated from propodal group of strong spines by small but significant space; propodus 2.1 x as long as wide; group of spines on the proximal 0.41 of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth, with hooked spines of outer row narrowly spaced (50 outer hooked spines and no outer setae); dactylus with 7 teeth; dactylus toothed to 0.3 of its length.

Gn2: coxa quadrato-elliptic with small posterior notch and shallow anterior notch; merus with 3 groups of setae with two small acute distal teeth; carpus process with 11 groups of setae; tip of carpus reaching 0.24 of propodus, reaching propodal group of strong spines; propodus 2.3 x as long as wide; group of spines on the proximal 0.31 of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth with hooked spines of outer row rather widely spaced (22 outer hooked spines and 17 outer setae); setae of palm of normal length; dactylus 0.71 x as long as propodus, with 15 teeth spread on 0.85 of length of dactylus. Gn2 significantly larger than Gn1; ratio length Gn2 / length Gn1: 1.29 (♀), surface of propodus of Gn2 / surface of propodus of Gn1: 1.60 (♀).

P3: coxa narrowly elliptic with 1 small posterior notch followed by 2 shallow notches on ventral margin; merus 1.25 x as long as carpus and 0.80 x as long as propodus; dactylus long, slender and curved, 0.54 x as long as carpus and 0.35 x as long as propodus; merus with 6 tiny setules on posterior border; carpus with 3 tiny setules and a distal group of 2 setae (of which one is normally developed) on posterior border, propodus with 12 small but well developed spines on posterior border (length of propodal spines about 0.37 x width of propodus) and 2 tiny setules on anterior border.

P4: coxa narrow (1.46 x as long as wide), with anterior and posterior border nearly parallel, with ventral border slightly and regularly convex, with two weak notches on posterior border; merus 1.27 x as long as carpus; dactylus long, slender and slightly curved, 0.48 x as long as carpus and 0.33 x as long as propodus; merus without setae on posterior border; carpus with 2 groups of setae on posterior border, propodus with 11 small but well developed spines on posterior border (length of propodal spines about 0.46 x width of

propodus) and with very weakly developed distal group of setae on anterior border.

P5: coxa without posterior tooth; basis symmetrically elliptic but not very broad (1.70 x as long as wide); anterior border with small conical spines (distal angle with a very long and very slender spine), posterior border with 9 normally developed teeth, distal border produced into a not very protruding, rounded toothless lobe; merus and carpus with groups of long anterior and short posterior spines; carpus 0.71 x as long as merus; carpus + propodus 1.47 x as long as merus; propodus with 6 short anterior spines or group of spines (one spine associated with a long thin seta); propodal apical tuft of setae normally developed and consisting of short spines and fairly long setae; dactylus weakly curved and stout, 0.19 x as long as propodus.

P6: coxa without posterior tooth; basis symmetrically elliptic but not very broad (1.72 x as long as wide); anterior border with small conical spines (distal angle with a very long and very slender spine), posterior border with 12 normally developed teeth, distal border produced into a rounded toothless lobe; ischium with long slender spine on anterodistal corner; merus with anterior groups of long and posterior group of short spines; carpus with anterior groups of long spines and no posterior spines (except apical group); carpus 0.73 x as long as merus; propodus with well developed stout paired anterior spines and long isolated very slender posterior setae; dactylus slightly curved, and stout, 0.27 x as long as propodus.

P7: coxa without posterior tooth; basis symmetrically elliptic but not very broad (1.53 x as long as wide); anterior border with small conical spines (distal angle with a long slender spine paired with a small conical spine), posterior border with 13 normally developed teeth, distal border produced into a not very protruding, rounded toothless lobe; ischium with long slender spine paired with a small spine on anterodistal corner; merus with long anterior and posterior spines; merus 4.15 x as long as wide and 0.86 x as long as basis; carpus with long anterior spines and long posterior setae + distal group of long spines; carpus 0.96 x as long as merus; propodus of P7 1.37 x as long as propodus of P6; propodus with 7 to 8 groups of fairly long slender paired spines on anterior border and long and 6 groups of very slender setae of which 5 are associated with a long spine) on posteromedial surface; dactylus straight, long and narrow (styliiform but not becoming apically hair-like), 0.36-0.47 x as long as propodus.

Pleonite 1: posterodorsal area produced into 1 small tooth; Ep1 with acute posteroventral tooth, with posterior border strongly convex; without setae on

ventrolateral surface.

Pleonite 2: posterodorsal area produced into 1 small tooth; Ep2 with acute posteroventral tooth, with posterior border weakly convex; without setae on ventrolateral surface.

Pleonite 3: posterodorsal area toothless; Ep3 with small acute posteroventral tooth (of which the ventral margin is regularly convex) slightly above the ventral margin, with posterior border straight on nearly all its length, curving downwards near posteroventral tooth.

Urosomite 1 with dorsal border rectilinear, with small posterodorsal tooth pointing backwards; ventrolateral border with 1 spine; peduncle of U1 with 6 dorsolateral spines: 5 styliform spines on the median third (of which the second and the third are extremely long) and 1 long and stout distal one, with a single dorsomedial spine (which is long and styliform) in distal position; outer ramus with 4 short outer spines and 0 medial spines; inner ramus with no spines on outer border and 4 short spines on medial border.

Urosomite 2 with dorsal border rectilinear, with small posterodorsal tooth pointing backwards; peduncle of U2 with 1 fairly long dorsolateral spines near the tip, with 4 short and stout dorsomedial spines on distal third; outer ramus with 2 to 3 short outer spines and no medial spine; inner ramus with 3 spines on outer border and 8 stout short spines on medial border.

Urosomite 3 without posterolateral tooth on each side, with a pair of small posterodorsal conical spines; U3 much shorter than U1 and a bit shorter than U2; outer ramus and inner ramus of U3 subequal; outer ramus of U3 with 2 short spinules on outer side and none on medial side; inner ramus of U3 1.37 x as long as peduncle, with 2 short spines on outer side, with 4 long stout spines on medial side.

Telson: cleft to 0.78 of its length; medial tooth of each lobe reaching about tip of outer tooth; inter-teeth spine overreaching outer tooth by 0.65 of its length (coarse approximation), 0.26 x as long as telson; apical teeth of telson lobes with a about 5 small setae.

#### LENGTH

Up to 11 mm.

#### DISTRIBUTION

Iles Kerguelen, 15 to 48 m.

#### REMARKS

BELLAN-SANTINI & LEDOYER (1974) stated that the

holotype of *L. kerguelensis* is a male. Certainly, it has no oostegites, but it is also much smaller than the female illustrated in full in the present paper. Thus it should be considered as an immature specimen of uncertain sex. The type series of *L. kerguelensis* is composite because one of the paratypes examined is clearly a *L. cryptothrix* n. sp. *L. kerguelensis* is closely related to *L. georgiensis* (see account of that species for a comparison).

#### *Liljeborgia longicornis* (SCHELLENBERG, 1931)

(Figs 74-80)

*Liljeborgiella longicornis* SCHELLENBERG, 1931: 137, fig. 73

*Liljeborgia longicornis*; K.H. BARNARD, 1932: 143, in part (Falkland specimens only), not fig. 82 (= *L. georgiana*)

Not *Liljeborgia longicornis*; BELLAN-SANTINI & LEDOYER, 1987: 402-403, fig. 19c (= *L. nesiotica* n. sp.).

#### MATERIAL

**R/V Albatross, sta. 2776**, middle of Estrecho de Magallanes, 52°41'00"S 069°55'30"W, 38 m depth, 18.i.1888: 1 mature ♂ about 16 mm (mouthparts dissected and mounted on 1 slide in Euparal), USNM 1100663; **R/V Eltanin, sta. 976**, University of Southern California, gear: trawl-Blake, Exped.: USAP, Cr. No.: 11, Field No.: USARP/EL/11/976/USC, Acc: 404606, Argentina, Estrecho de Magallanes, 52°35'S 065°08'W to 52°35'S 065°08'W, 128 m, 13.ii.1964: 1 large ♂ (about 20 mm), USNM 1027874; **R/V Eltanin, sta. 974**, University of Southern California, gear: trawl-otter benthic, Exped.: USAP, Cr. No.: 11, Field No.: USARP/EL/11/974/USC, Acc: 404606, Argentina, Tierra del Fuego, Cabo San Diego; north of Cape, 52°32'S 064°57'W to 53°34'S 064°55'W, 119-124 m, 12.ii.1964: 1 ♀ (about 18 mm) (found together with 4 *L. octodentata*), USNM 1027872; **R/V William Scoresby, sta. 97**, South Atlantic Ocean, East Falkland Isl., Port Stanley [51°42'S 057°51'W fide www.geonames.org/consulted on 29.iv.2008], 15-18 m, 20.iii.1927: 1 small specimen (found together with 1 *Liljeborgia* sp. and 3 *L. octodentata*), coll. W. SCHMITT, Acc. 097902, USNM 1100661; **MAG94, sta. 813**, Estrecho de Magallanes, Laredo, 52°57.5'S 070°41.0'W, 90 m, RD, 18.x.1994: 2 specimens, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 929**, Estrecho de Magallanes, Laredo, 52°57.9'S 070°25.7 W, 45 m, multicorer, 28.x.1994: 1 ♀ about 15 mm long, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 930**, Estrecho de Magallanes, Laredo, 52°57.5'S 070°25.8'W, 45 m, RD, 28.x.1994: 8

specimens (found together with 1 *L. octodentata*), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 955**, Estrecho de Magallanes, Paso Ancho, 52°59.7'S 070°32.8'W to 52°59.8'S 070°32.9'W, 70-80 m, RD, 31.x.1994: 1 adult and 5 juveniles, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 966**, Estrecho de Magallanes, Laredo, 52°57.9'S 70°46.9'W, 13 m, RD, 31.x.1994: 12 specimens (2 vials), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1119**, Canal Beagle, Italia, 54°56.0'S 069°14.3'W, 208 m, RD, 06.xi.1994: 5 small specimens and about 20 juveniles (not every juvenile checked), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **CIMAR Fiordo 3, sta. 1**, Boca Oriental, Estrecho de Magallanes, 52°27.4'S 068°35.0'W, 70 m, sand gravel, 06.x.1997: 1 adult ♂ and 1 ovigerous ♀ [dorsolateral teeth of pleonites 1-2 somewhat shorter than medio-dorsal one], leg. M. RAUSCHERT, RBINS, I.G. 31.068; **CIMAR Fiordo 3, sta. 2**, Bahía Posesión, 52°19.4'S 069°12.2'W, 40 m, mud, 06.x.1997: 13 specimens (including ovigerous ♀♀; mottled colour pattern still distinct after 10 years in formalin) (2 vials), leg. M. RAUSCHERT, RBINS, I.G. 31.068

#### DESCRIPTION

Rostrum broadly triangular, dorsally slightly convex, ventrally nearly straight, distally acute.

Eye present, medium-sized, elliptic, ommatidia indistinct in alcohol, even after a century of preservation.

A1: major flagellum with 26 articles; accessory flagellum with 14 articles.

A2: article 4 of peduncle with short stout dorsal and ventrolateral spines; article 5 without dorsomedial spines, with one ventrolateral spine in apical position; flagellum with 28 articles.

Epistome barely protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 bluntly triangular teeth; right lacinia mobilis distinctly smaller and with anterior margin almost smooth and with one outer large triangular lateral tooth; ultimate spine of incisor process slender; article one and two of palp subequal (ratio length article one / article two = 0.94); article one 3.66 x as long as wide; article two with 3 long setae on tip and a shorter one on the distal 0.6, 4.71 x as long as wide; article three 4.50 x as long as wide, 0.72 x as long as article two.

Mx1: second article of palp with 5 hooked setae on upper margin, 10 to 12 spines on ventral and apical margin (proximal ones very slender, distal ones slender) and 12 facial hooked setae; outer plate with 10 denticulate spines; inner plate with a single seta.

Mx2: outer plate with about 6 strong hooked setae on upper margin; inner plate with a high number of hooked setae.

Mxp: article one of palp with 7 distal outer dorsal setae, article two with 6 non distal setae on outer margin; article three with 5 transverse rows of thin setae on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins strongly curved and 0.63 x as long as article three; outer plate with 10 normally spaced spines of normal length and stoutness on medial border, and 15 slender hooked medio-ventral setae at the same level as spines or more proximally; inner plate with 3 stout and well developed anterior spines and 15 strong but non-spiniform setae.

Gn1: coxa broadly triangular, with strongly concave posterior border, with blunt posterior tooth and no anterior tooth; merus with about 4 well separated groups of setae and small acute distal tooth; carpus process with about 9 groups of setae; tip of carpus reaching 0.32 of propodus, not reaching propodal group of strong spines; propodus 1.93 x as long as wide; group of spines on the proximal 0.39 of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth, with hooked spines of outer row narrowly spaced (68 hooked outer spines); dactylus with 11 teeth.

Gn2: coxa triangulo-elliptic with small posterior tooth, without anterior notch; merus with 4 well separated groups of setae with small acute distal tooth; carpus process with 10 groups of setae; tip of carpus reaching 0.20 (♂) or 0.25 (♀) of propodus, reaching propodal group of strong spines; propodus 1.93 (♂) or 1.85 (♀) x as long as wide; group of spines on the proximal 0.31 (♂ and ♀) of propodus (most distal spine used as reference point); palm border nearly straight in ♂♂, regularly convex in ♀♀, without teeth; setae of palm of normal length (64 hooked outer spines and 19 outer setae in ♀); dactylus especially broad in ♂, with 20 (♀) to 23 (♂) teeth and toothed nearly to the tip.

P3: coxa elliptic with small but distinct anterior and posterior teeth; merus 1.43 x as long as carpus and 1.05 x as long as propodus; dactylus normal-sized, stout and dorsally curved, 0.65 x as long as carpus and 0.51 x as long as propodus; merus with 6 long setae on posterior border; carpus with 9 long (some paired) setae on posterior border; propodus with 11 groups of articulate structures on posterior border including 1 mid-sized slender spine and/or a long seta (length of longest propodal setae about 2.6 x width of propodus) and with distal group of about 4 well developed setae on anterior border.

P4: coxa fairly broad (1.32 x as long as wide),

with anterior and posterior border slightly converging downwards, with ventral border distinctly and regularly convex, with 2 small teeth on posterior border and no anteroventral tooth or notch; merus 1.36 x as long as carpus; dactylus long, fairly slender and slightly curved, 0.58 x as long as carpus and 0.47 x as long as propodus; merus with 6 groups of 1-2 setae (with at least one long seta) on posterior border; carpus with 5 groups of 1-2 setae (with at least one long seta) on posterior border; propodus with 10 groups of articulate structures on posterior border including 1 mid-sized slender spine and/or a long seta (length of longest propodal setae about 2.2 x width of propodus) and with distal group of about 5 well developed setae on anterior border.

P5: coxa without notch in examined specimen; basis fairly narrow (1.57 x as long as wide), anteriorly distinctly and regularly convex, posteriorly straight; anterior border with small conical spines (including on distal corner), posterior border with 14 normally developed teeth, distal border straight (junction posterior/distal border forming a rounded square angle) and not produced into a lobe; merus with anterior and posterior groups of short spines; carpus with 6 anterior groups of short spines intermixed with setae and no posterior spines (except apical group); carpus 0.75 x as long as merus; propodus with 7 short outer spines or pairs of spines and 7 groups of anteromedial long setae; propodal apical tuft of setae well developed and consisting of slender setae; dactylus straight and stout, 0.28 x as long as propodus.

P6: coxa without posterior tooth in examined specimen; basis fairly narrow (1.76 x as long as wide), anteriorly distinctly convex, posteriorly straight; anterior border with small conical spines (including on distal corner), posterior border with 17 normally developed teeth, distal border straight (junction posterior/distal border forming a sharp square angle) and not produced into a lobe; ischium with small conical spine on anterodistal corner; merus and carpus with anterior groups of normal-sized spines and posterior groups of short spines (anterior groups of carpus also including long slender setae); carpus 0.70 x as long as merus; propodus with 8 pairs of small outer spines and a fairly high number of long very slender posterior setae; propodal apical tuft of setae well developed; dactylus straight and stout, 0.26 x as long as propodus.

P7: coxa without posterior tooth; basis fairly narrow (1.59 to 1.68 x as long as wide), anteriorly slightly convex, posteriorly straight; anterior border with small conical spines (a pair of small conical spines on distal corner), posterior border with 20 normally developed teeth, distal border straight (junction posterior/distal

border forming a sharp square angle) and not produced into a lobe; merus and carpus with medium-sized anterior and posterior spines; carpus 0.90 x as long as merus; merus 6.50 to 6.58 x as long as wide and 1.11 to 1.22 x as long as basis; propodus of P7 1.57 x as long as propodus of P6; propodus with 11 groups of 1 or 3 medium-sized stout spines, and 6 posteromedial groups of 1-2 long spines associated with 1 or 2 rather long and not very slender setae (apical tuft not considered); dactylus posteriorly weakly curved and anteriorly nearly straight, distally notched, fairly stout, short, 0.19 x as long as propodus.

Pleonite 1: posterodorsal area produced into 3 large subequal or not very unequal teeth; Ep1 with sharp well developed posteroventral tooth, with posterior border weakly convex; without setae on ventrolateral surface.

Pleonite 2: posterodorsal area produced into 3 large subequal or not very unequal teeth; Ep2 with well developed acute posteroventral tooth, with posterior border weakly convex; without setae on ventrolateral surface.

Pleonite 3: posterodorsal area toothless; Ep3 with fairly large acute posteroventral tooth (of which the ventral margin is regularly convex), with posterior border straight on most of its length, fairly abruptly curving downwards to posteroventral tooth.

Urosomite 1 with low sigmoid crest-like carina, posteriorly terminated in a strong posterodorsal tooth pointing obliquely upwards; ventrolateral border with 3 spines; peduncle of U1 with 9 dorsolateral spines: 8 regularly-spaced and medium-sized ones on all length and a long and stout distal one, with 4 dorsomedial spines (which are fairly long) regularly spaced all along distal 0.8; outer ramus with 10 short outer spines and 8 short medial spines; inner ramus with 8 short spines spread all along the outer border and 8 short spines on medial border.

Urosomite 2 with dorsal border forming a large triangular tooth pointing obliquely upwards; peduncle of U2 with 7 regularly spaced and medium-sized dorsolateral spines, with 3 dorsomedial spines of increasing length on distal 0.5; outer ramus with 7 well developed outer spines and no medial spines (several specimens checked); inner ramus with 6 short spines on outer border and 7 well developed spines on medial border.

Urosomite 3 with well developed posterolateral tooth on each side, with a pair of well developed posterodorsal styliform spines; U3 distinctly shorter than U1 and almost as long as U2; outer ramus and inner ramus of U3 subequal; outer ramus of U3 with 3 pairs of outer spines, without medial spines; inner ramus 1.37 x

as long as peduncle, with 7 spines on outer side, with 7 long spines on medial side.

Telson: cleft to 0.83 of its length; medial tooth of each lobe reaching 0.52 of outer tooth; inter-teeth spine overreaching outer tooth by 0.20 of its length, 0.23 x as long as telson; apical teeth of telson without setae.

#### COLOUR PATTERN

Photograph by M. RAUSCHERT of a specimen labeled as 'VG2 Sta. 5': eye red; body and appendages with red mottling on a whitish background; basis, merus and carpus of P5-P7 with proximal and distal red mark, propodus of P6-P7 with faint distal reddish mark. Specimens from the CIMAR Fiordo 3 cruise, sta. 2 preserved 10 years in formalin: eye dark red; very pigmented red mark on antero-dorsal part of head + rostrum; body segments and coxae of pereopods with coarse red mottling; dactylus and anterior part of palm of Gn1-2 with longitudinal red mark; basis; merus of P5-P7 with proximal and distal red mark; carpus of P5-P6 with distal red mark.

#### LENGTH

20 mm.

#### TYPES

The type material of SCHELLENBERG (1931) consisted of 3 specimens collected in different Patagonian Atlantic localities: a male collected at 43°S 060°W, a male collected at 49°35'S 064°43'W, and an ovigerous female collected at 44°14'S 061°23'W. DE BROYER *et al.* (2007) stated that SCHELLENBERG (1931) considered the second station as the type locality. However SCHELLENBERG (1931) designated neither holotype nor type locality. So, no type locality has been validly designated so far. No action will be taken here without a direct examination of the type specimens. SCHELLENBERG presumably deposited the type series at the NRS, Stockholm but Karin SINDEMARK KRONSTEDT (e-mail of August 2nd, 2007) informed the present author that the specimens of *Liljeborgia longicornis* could not be found in the collections of the NRS, having looked for the types in the records of the Museum, and in the type and main collection with no more success. Thus they are considered lost.

#### DISTRIBUTION

Patagonia, Falkland Islands, 13 to 128 m.

#### BIOLOGICAL DATA

SCHELLENBERG (1931) indicates that he found a long piece of polychaete in the stomach of a specimen.

#### REMARKS

The original description of *L. longicornis* (SCHELLENBERG, 1931) is somewhat misleading. It indicates that the first two pleonites are posterodorsally tridentate but says nothing about the relative size of these teeth (this character was not illustrated). In the original description of the closely related species *L. georgiana* SCHELLENBERG, 1931, SCHELLENBERG (1931) indicates that the first two pleonites have a single posterodorsal tooth. The examination of further specimens of *L. georgiana*, which is very common in Antarctic waters, has shown that this species has either a single posterodorsal tooth on the first two pleonites or a large tooth flanked by a tiny tooth on one side or on each side (HOLMAN & WATLING, 1983; personal observations). Some authors erroneously interpreted such *L. georgiana* specimens with dorsolateral denticules as *L. longicornis* (e.g. K.H. BARNARD, 1932). The Patagonian and Falkland specimens of *L. longicornis* examined by me (hence from the same region as the syntypes) have 3 subequal or moderately unequal teeth on the first two pleonites, i.e. a character state never observed in the considerable material of Antarctic *L. georgiana* which I have examined. K.H. BARNARD (1932) also indicated similar differences between his '*L. longicornis*' from Falkland Islands and those from Antarctic waters. This strongly suggests that the Falkland specimens of K.H. Barnard were really *L. longicornis*, whilst his specimens collected beyond the Antarctic convergence were actually *L. georgiana*. Besides the tooth pattern of the first and second pleonite, there are other differences between *L. longicornis* and *L. georgiana*. *L. longicornis* has a large number of hooked setae on its mouthparts, whilst *L. georgiana* has non-hooked setae at the same positions. The outer border of the second article of the palp of the maxilliped has several non-distal setae in *L. longicornis* but none in *L. georgiana*. *L. longicornis* has more slender and less numerous spines on the outer plate of the maxilliped than in *L. georgiana*. At equal size, the number of teeth on the dactylus of the gnathopods is higher in *L. longicornis* than in *L. georgiana*. The dactylus of the second gnathopod in male *L. longicornis* is unusually stout and strongly arched proximally, whilst it has a normal shape in male *L. georgiana*. The setae on the posterior border of the third and fourth pereopods are more numerous

and longer in *L. longicornis* than in *L. georgiana*. The posterior border of the basis of the last three pereopods has more teeth in *L. longicornis* than in *L. georgiana*. The posterodistal angle of the basis of the seventh pereopod forms a small rounded angle in *L. longicornis*, whilst it is produced into a tooth in *L. georgiana*. The posteromedial spines of the propodus of the seventh pereopod are much longer in *L. longicornis* than in *L. georgiana*. The outer ramus of the second uropod has no spines on the medial side in *L. longicornis*, while there are several ones in *L. georgiana*. Finally, *L. longicornis* is marbled with red on a pale background, whilst *L. georgiana* has a plain orange colour.

*L. longicornis* also presents distant similarities with the sympatric species *L. macrodon* and *L. prionota* n. sp. *L. macrodon* has a broader basis with much stronger teeth on the last three pereopods. *L. prionota* n. sp. has 5 (sometimes 7) teeth on the posterodorsal border of the first and second pleonites, whilst *L. longicornis* has 3 teeth.

***Liljeborgia macrodon* SCHELLENBERG, 1931**

(Figs 81-88)

*Liljeborgia macrodon* SCHELLENBERG, 1931: 133, fig. 71

Not *Liljeborgia macrodon*; REN & HUANG, 1991: 238, fig. 32 (= *L. georgiana* SCHELLENBERG, 1931)

**MATERIAL**

**Nordenskjölds Exp., sta. 626**, Patagonia Archipelago, Bahía Inútil [exact coordinates unavailable], 36-55 m, 23.i.1896, shell debris: 1 ♂ about 11 mm, SMNH type 734 (here designed as lectotype); **Nordenskjölds Exp.**, no station number on label [but it can be deduced from other data that it is the **station 44**], Patagonia, Canal Magdalena, Isla Clarence, Puerto Hope, 54°08'S 071°01'E, 30.iv.1896, 11-18 m depth, rocks with algae: 1 ovigerous ♀ about 9 mm and 1 juvenile, SMNH type 733 (here designed as paralectotypes); **MAG94, sta. 963**, Estrecho de Magallanes, Laredo, 52°57.9'S 070°43.5'W, 38 m, RD, 31.x.1994: 2 juveniles (found with *L. octodentata*), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 966**, Estrecho de Magallanes, Laredo, 52°57.9'S 070°46.9'W, 13 m, RD, 31.x.1994: about 7 small specimens (some very small other amphipods possibly remains in the vial), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1165**, Paso Goree, 55°18.6'S 067°08.5'W, 42 m, multigrab, 11.xi.1994: 1 juvenile (very typical), found together with about 30 *L. octodentata* (1 adult ♂ dissected and

mounted on 11 slides in Euparal; 1 ♀ dissected and mounted on 4 slides in Euparal), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1176**, Punta Rico, 55°07.3'S 066°53.0'W, 25 m, rests of hydroids in the vial, RD, 12.xi.1994: about 30 specimens of various sizes (2 vials), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1216**, SE Isla Picton, 55°07.2'S 066°40.2'W, 67 m, RD, 15.xi.1994: 1 ovigerous ♀ (very typical) and 1 ♂, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1223**, SE Isla Picton, 55°07.4'S 066°44.6'W, 38 m, AGT, 15.xi.1994: 4 adults and 1 juvenile [found with about 13 *L. octodentata*] (2 vials), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **CIMAR Fiordo 3, sta. 28A**, Estrecho de Magallanes, 11 m, 13.x.1997: 2 (sub)adults and 4 juveniles (found with 1 *L. octodentata*), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **CIMAR Fiordo 3, sta. 41**, Canal Beagle, Puerto Williams, 54°53.8'S 067°34.5'W, 35 m, 12.x.1997: about 42 specimens (2 vials), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **CIMAR Fiordo 3, sta. 42**, Isla Lennox, Paso Richmond, 55°11.5'S 066°46.3'W, 52 m, 12.x.1997: 7 specimens, leg. M. RAUSCHERT, RBINS, I.G. 31.068

**DESCRIPTION**

Rostrum triangular with acute tip, with upper margin very convex, rather short.

Eye present, rather small, broadly elliptic, ommatidia present but not very distinct; some pigmentation persisting in alcohol.

A1: major flagellum with 21 articles; accessory flagellum with 12 articles.

A2: article 4 of peduncle with short dorsomedial spines of normal stoutness and a few normally developed ventrolateral spines; article 5 without dorsomedial and ventrolateral spines (only with setae); flagellum with 14 articles.

Epistome barely rounded, not protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 rounded teeth; right lacinia mobilis slightly smaller than left one, with anterior margin weakly and irregularly denticulate, with stout strongly denticulate lateral tooth; distal spines of incisor process stout and spinulose; article one of palp distinctly shorter than article two (ratio length article one / article two = 0.71); article one 3.69 x as long as wide; article two without 2 setae in distal position, 6.07 x as long as wide; article three 4.31 x as long as wide, 0.60 x as long as article two.

Mx1: second article of palp with 3 setae on upper

margin, 7 rather stout spines on ventral and apical margin (proximal ones a bit more slender) and 7 well developed facial setae; outer plate with 9 very strongly denticulate spines; inner plate with 1 seta on tip.

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

Mxp: article one of palp with 3 distal outer dorsal setae, article two without non distal setae on outer margin; article three with 4 groups of setae (of which 2 or 3 consists of transverse rows of setae) on anterior border, article four (dactylus) stout with anterior margin distinctly curved and posterior margins weakly curved and 0.71 x as long as article three; outer plate with 8 short stout normally spaced spines on medial border, and about 8 strong medio-ventral setae at the same level as spines or behind; inner plate with 4 well developed anterior spines and 7 not very long, but very stout (spiniform) setae.

Gn1 (♂): coxa triangular, with weakly concave posterior border, with small posterior and with or without anterior tooth; merus with 3 groups of setae and acute distal tooth; carpus process with about 7 groups of setae, tip of carpus reaching 0.27 of propodus, not reaching propodal group of strong spines; propodus 1.89 x as long as wide; group of spines on the proximal 0.38 of propodus (most distal spine used as point of reference); one of these spines is rather long; palm border forming a regular curve and without teeth; palm with hooked spines of outer row narrowly spaced (39 hooked outer spines + 5 rather short outer setae); dactylus with 4 to 5 teeth; dactylar teeth restricted to proximal 0.3 of dactylus.

Gn2 (♂): coxa triangulo-elliptic, broad, anteriorly very convex and posteriorly nearly straight, with small posterior and anterior tooth or notch; merus with 2 groups of setae and with distal tooth; carpus process with 9 groups of setae; tip of carpus reaching 0.22 to 0.29 of propodus, almost reaching propodal group of strong spines; propodus 1.85 to 1.91 x as long as wide; group of spines on the proximal 0.38 to 0.44 of propodus (most distal spine used as point of reference); one of these spines is rather long; palm border distinctly convex and smooth in both sexes, with hooked spines of outer row rather well spaced (33 to 47 hooked outer spines + 9 to 16 long outer setae); dactylus proximally rather stout, 0.72 to 0.74 x as long as propodus, with 9 to 11 teeth and toothed to 0.7 or 0.8 of its length. Gn2 significantly larger than Gn1; ratio length Gn2 / length Gn1: 1.53, surface of propodus of Gn2 / surface of propodus of Gn1: 2.37.

P3: coxa elliptic, narrow, with faint posterior and anterior tooth; merus 1.28 x as long as carpus and 0.87

x as long as propodus; dactylus not very long, stout, with anterior border slightly curved, 0.72 x as long as carpus and 0.50 x as long as propodus; posterior border of merus with 2 isolated well developed strong setae; carpus with 3 groups of 1-2 well developed strong setae on posterior border, with 1 isolated setule on tip of anterior border; propodus with 6 groups of 1-2 medium-sized strong setae, and pair of small slender distal spines (length of longest propodal setae about 1.63 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 4 long setae and no setae or setules in more proximal position.

P4: coxa of normal width (1.30 x as long as wide), with anterior and posterior borders parallel, with ventral border almost straight, with 3 well developed teeth or notches on posterior border and 1 normally developed anteroventral tooth; merus 1.20 x as long as carpus and 0.87 x as long as propodus; dactylus not very long, stout, with anterior border slightly curved, 0.68 x as long as carpus and 0.49 x as long as propodus; posterior border of merus with 2 isolated well developed strong setae; carpus with 3 groups of 1-2 well developed strong setae on posterior border, with 1 isolated setule on tip of anterior border; propodus with 6 groups of 1-2 medium-sized strong setae, and pair of small slender distal spines (length of longest propodal setae about 1.16 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 3 long setae and no setae or setules in more proximal position.

P5: basis rather broad (1.64 x as long as wide), anteriorly distinctly convex on its proximal 0.5 and straight more distally, posteriorly slightly convex; anterior border with small conical spines (distal angle with 1 conical spine barely longer than the more proximal ones), posterior border with 10 to 11 extremely strong (deeply cut) but not erect teeth in adults (juvenile with 9 teeth almost as strong as in adults), distal border straight (junction posterior/distal border forming a blunt square angle) and not produced into a lobe; merus with anterior groups of spines of increasing size towards tip (but none very long), with anterior groups of small (except longer distal one) spines; carpus with 4 anterior groups of medium-sized spines intermixed with setae and no posterior spines (except apical group); carpus 0.62 x as long as merus; carpus + propodus 1.17 x as long as merus; propodus with 5 groups of 1 or 2 well developed stout spines on anterior border and a few setae on posterior border; propodal apical tuft of setae poorly developed and apparently not associated with spines, consisting of rather short slender setae; dactylus almost straight and rather stout, 0.25 x as long as propodus.

P6: basis rather broad (1.63 x as long as wide), anterior border weakly and regularly convex, posterior border barely convex; anterior border with small conical spines (distal angle with 1 conical spine somewhat longer than the more proximal ones), posterior border with 12 extremely strong (deeply cut) but not erect teeth in adults, distal border straight (junction posterior/distal border forming a blunt square angle) and not produced into a lobe; merus with anterior groups of long spines and posterior groups of small (long on distal group) spines; carpus with anterior and posterior groups of long spines (one associated with 1 seta); carpus 0.70 x as long as merus; propodus with 4 groups of 1 or 2 well developed spines (some associated with a short seta), and 5 groups of posterior setae (including apical tuft); apical tuft of setae poorly developed and apparently not associated with spines; dactylus barely curved, stout, with tip entire, 0.25 x as long as propodus.

P7: coxa without posterior tooth; basis broad (1.41 x as long as wide), anteriorly slightly convex and posteriorly nearly straight; anterior border with small conical spines (distal angle with pair of 1 or 2 conical spines of which one is twice longer than the more proximal ones), posterior border with 9 to 11 extremely strong (deeply cut) but not erect teeth in adults (juvenile with 7 teeth almost as strong as in adults), distal border straight (junction posterior/distal border forming a blunt square angle) and not produced into a lobe; merus and carpus with long slender anterior and posterior spines; merus 4.04 x as long as wide and 1.08 x as long as basis; carpus 0.86 x as long as merus; propodus of P7 1.51 x as long as propodus of P6; propodus with 6 anterior isolated small slender spines, and 7 isolated (distal group forming a pair) posteromedial spines, which are associated with a tuft of long slender setae; propodal apical tuft of setae well developed; dactylus almost straight and stout, apically notched, 0.22 x as long as propodus.

Pleonite 1: posterodorsal area with 3 teeth (a medium-sized posteromedian tooth flanked by a pair of small posterolateral ones); Ep1 with well developed acute posteroventral tooth, with posterior border strongly convex; without setae.

Pleonite 2: posterodorsal area with 3 small teeth (posterolateral ones much shorter than posteromedian); Ep2 with very strong posteroventral tooth, with posterior border distinctly convex.

Pleonite 3: posterodorsal area without tooth; Ep3 with large posteroventral tooth followed upwards by a notch, with posterior border almost straight.

Urosomite 1 with moderately low crest-like carina, posteriorly terminated in a well developed and sharp

tooth pointing obliquely upwards; ventrolateral border with 2 spines; peduncle of U1 with 6 dorsolateral spines: 5 well developed slender ones spread on all length of peduncle and a long and strong distal one, with 4 well developed stout dorsomedial spines regularly spaced all its length; outer ramus with 4 to 5 small outer spines and 2 to 4 small medial spines; inner ramus with 2 to 3 small spines on outer border and with 4 to 5 normally developed spines on medial border.

Urosomite 2 with dorsal border posteriorly terminated in a well developed and sharp tooth pointing obliquely backwards; peduncle of U2 with 3 regularly-spaced and dorsolateral spines, with 2 dorsomedial spines; outer ramus with 4 to 5 normally developed outer spines and 2 medial spines; inner ramus with 3 short spines on outer border and 4 well developed spines on medial border.

Urosomite 3 with well developed posterolateral tooth on each side, with a pair of very long posterodorsal styliform spines; U3 much shorter than U1 and slightly shorter than U2; outer ramus of U3 equal to inner ramus, with 2 small spines on outer border; inner ramus 1.73 x as long as peduncle, with 3 small spines on outer border, with 4 long spines on medial border.

Telson: cleft to 0.74 of its length; medial tooth of each lobe reaching 0.33 of outer tooth; inter-teeth spine very long, overreaching outer tooth by about 0.43 of its length, 0.47 x as long as telson; apical teeth of telson without setae.

#### LENGTH

11 mm.

#### TYPES

All the type specimens come from Patagonia. The finest one, which is an 11 mm long adult male (Nordenskjöld's Exp., sta. 626, Patagonia Archipelago, Bahía Inútil, SMNH type 734) is here designated as lectotype and is illustrated in detail (figs 81-84).

#### DISTRIBUTION

Patagonia, 11 to 67 m.

#### BIOLOGICAL DATA

The stomach content of the dissected specimen has been examined. It consisted of a yellowish brown semi-transparent aggregate of tiny granulations (sometimes vaguely polyhedral), possibly of an algal nature. It also

included a foraminifer and a tiny fragment of sheet-like tissue with large polygonal cells, which could be a fragment of alga.

#### REMARKS

The '*L. macrodon*' of REN & HUANG (1991) is beyond doubt a *L. georgiana*. The real identity of the juvenile '*L. macrodon*' of HOLMAN & WATLING (1983: 234, fig. 15-16) collected at 263 m depth is not clear. It looks similar to genuine juvenile *L. macrodon* examined by the present author, except for the teeth of the basis of the posterior pereopods which look unusually short.

#### *Liljeborgia nesiotica* n. sp. (Figs 89-93)

*Liljeborgia longicornis*; BELLAN-SANTINI & LEDOYER, 1987: 402-403, fig. 19C

#### MATERIAL

**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, previously labeled as *Liljeborgia pseudomacronyx* (see remarks), 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 (slides in Faure's liquid made by Bellan-Santini and/or Ledoyer).

#### ETYMOLOGY

From the Greek adjective νησιωτικός, meaning insular, which is here latinized as *nesioticus*, *-a*, *-um*. This name has been coined because the species is a sub-Antarctic insular relative of the truly Antarctic species *L. georgiana*.

#### DESCRIPTION

Rostrum triangular with acute tip, of normal length.

Eye present, small, elliptic, not dark in alcohol, ommatidia present but not very distinct.

A1: major flagellum with 22 articles in mature

♀; accessory flagellum with 12 articles in mature ♀ (number reduced in juveniles).

A2: article 4 of peduncle with well developed stout ventrolateral and dorsomedial spines; article 5 without spines; flagellum with 13 articles in immature ♀.

Epistome anteriorly weakly convex, not protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 rounded teeth; article one of palp slightly shorter than article two (ratio length article one / article two = 0.94); article one 4.0 x as long as wide; article two with 3 long setae on tip and none on lateral borders, 5.25 x as long as wide; article three 4.38 x as long as wide, 0.66 x as long as article two.

Mxp: article one of palp with 5 well developed outer dorsal setae, article two without non distal setae on outer margin; article three with 5 transverse rows of 1 to 2 thin setae on anterior border, article four (dactylus) stout, with anterior and posterior margins weakly curved and 0.68 x as long as article three; outer plate with 11 short, stout, normally spaced spines on medial border, and 5 strong medio-ventral setae at the same level as spines; inner plate with 3 stout and well developed anterior spines and 7 to 8 strong setae (the proximo-medial one is strongly pappose).

Gn1: coxa triangular and not especially broad, with distinctly concave posterior border, with small posterior (and often anterior) tooth; merus with about 3 groups of setae and small acute distal tooth; carpus process with 7 groups of setae, tip of carpus reaching 0.20 of propodus, not reaching propodal group of strong spines; propodus 1.91 (mature ♀), 1.96 (mature ♂) x as long as wide; group of spines on the proximal 0.38 of propodus in mature ♀ (most distal spine used as reference point); one of these spines is rather long; palm border forming a regular curve, without teeth, with hooked spines of outer row narrowly spaced (55 to 56 hooked outer spines; and in addition 18 outer setae in adult ♂); dactylus with 3 teeth in adult ♂♂ and ♀♀, sometimes toothless in juveniles.

Gn2: coxa triangulo-elliptic with small posterior and anterior tooth (teeth separated by large space); merus with 4 groups of setae and with small acute distal tooth; carpus process with 8 groups of setae; tip of carpus reaching 0.21 of propodus, not reaching propodal group of strong spines in ♀ (the group of spines is not lacking in adult ♂♂); propodus 1.79 (mature ♀) or 1.85 (♂) x as long as wide; group of spines on the proximal 0.34 of adult ♂♂ and ♀♀ (point of emergence on outer side of most distal spine used as reference point); one of these spines is rather long; palm border curved and regularly convex in ♀, weakly convex in adult ♂, without teeth;

setae of palm of normal length, with hooked spines of outer row narrowly spaced (43 hooked spines in mature ♀; with very numerous long slender outer setae in mature ♂); dactylus of normal width, with 9 (mature ♂ and ♀) or 8 (immature ♀) teeth and toothed on proximal half. Gn2 significantly larger than Gn1; ratio length Gn2 / length Gn1: 1.30 (♂) or 1.18 (♀), surface of propodus of Gn2 / surface of propodus of Gn1: 1.76 (♂) or 1.45 (♀).

P3: coxa elliptic, narrow, with small posterior and anterior tooth or notch; merus 1.21 x as long as carpus and 0.92 x as long as propodus; dactylus not very long, rather stout with its two borders slightly curved, 0.47 x as long as carpus and 0.36 x as long as propodus; posterior border of merus with 3 isolated setae; carpus with 3 well developed stout setae on posterior border; propodus with 7 groups of articulate structures (6 unpaired spines which are sometimes associated with a short slender seta and 1 distal pair of spines) (length of longest propodal spines about 0.74 x width of propodus); anterior border of propodus with distal strong seta paired with a setule but without setae in more proximal position.

P4: coxa slender (1.35 x as long as wide), with anterior and posterior border converging downwards, with ventral border distinctly convex, with trace of 3 notches on posterior border and 1 very small anteroventral teeth; merus 1.21 x as long as carpus and 0.91 x as long as propodus; dactylus not very long, rather stout with its two borders slightly curved, 0.46 x as long as carpus and 0.33 x as long as propodus; posterior border of merus with 2 isolated setae; carpus with 3 stout setae on posterior border; propodus with 7 groups of articulate structures (6 unpaired spines which are sometimes associated with a short slender seta and 1 distal pair of spines) (length of longest propodal spines about 0.85 x width of propodus); anterior border of propodus with distal strong seta but without setae in more proximal position.

P5: coxa with tiny blunt posterior tooth; basis fairly narrow but (symmetrically) elliptic (1.65 x as long as wide), anteriorly distinctly and regularly convex (maximal inflexion on the middle), posteriorly convex; anterior border with small conical spines (distal angle with pair of conical spines), posterior border with 12 normal-sized, curved, non-erect teeth, distal border rounded (junction posterior/distal border forming a rather abrupt curve) and produced into a weak lobe; ischium with small conical spine on anterodistal corner; merus with anterior and posterior groups of very short spines; carpus with 3 anterior groups of normally developed spines (one group including 1 seta) and no

posterior spines (except apical group); carpus 0.68 x as long as merus; propodus with 5 groups of 1 or 2 well developed stout spines and no groups of long slender setae (except apical group); propodal apical tuft of setae well developed and consisting of stout setae; dactylus distinctly curved and fairly stout, 0.33 x as long as propodus.

P6: coxa without small posterior tooth; basis narrow (1.74 x as long as wide), anteriorly convex and posteriorly almost straight (slightly convex); anterior border with conical spines; (distal angle with a small conical spine), posterior border with 17 to 19 normal-sized, non-erect teeth, distal border straight (junction posterior/distal border forming an abrupt curve) and not produced into a lobe; ischium with small conical spine on anterodistal corner; merus with anterior and posterior groups of small spines; carpus with anterior groups of long spines (some associated with setae) and posterior groups of small spines; carpus 0.70 x as long as merus; propodus with 7 anterior groups of 1 or 2 short stout spines, and 5 posterior tufts of fairly long and rather slender setae (apical tuft not considered); propodal apical tuft of setae well developed and including a spine; dactylus weakly curved and stout, with distal notch, 0.18 x as long as propodus.

P7: coxa without posterior tooth; basis fairly narrow (1.58 x as long as wide), anteriorly weakly convex and posteriorly straight; anterior border with conical spines, posterior border with 18 to 19 normal-sized, normal-sized teeth, distal border straight (junction posterior/distal border forming an abrupt curve) and not produced into a lobe; ischium with rather long spine on anterodistal corner; merus with long anterior spines, 3.70 x as long as wide and 0.85 x as long as basis; rest of P7 missing.

Pleonite 1: posterodorsal area produced into 1 large tooth flanked on each side by a much smaller one; Ep1 with normally developed posteroventral tooth, with posterior border slightly convex; without setae.

Pleonite 2: posterodorsal area produced into 1 large tooth flanked on each side by a much smaller one; Ep2 with well developed sharp posteroventral tooth, with posterior border slightly convex.

Pleonite 3: posterodorsal area toothless and deeply notched; Ep3 with strong acute posteroventral tooth (of which the ventral margin is regularly convex), with posterior border straight on all its length and joining the posteroventral tooth after forming a deep notch (of which the upper side presents a denticule).

Urosomite 1 with low non-sigmoid crest-like carina, posteriorly terminated in a strong posterodorsal tooth pointing obliquely upwards; ventrolateral border with 2

to 3 spines; peduncle of U1 with 7 dorsolateral spines: 6 regularly-spaced and medium-sized ones spread on all length of peduncle and a long and strong distal one, with 2 or 3 medium-sized dorsomedial spines; outer ramus with 4 to 8 short outer spines and 3 to 5 short medial spines; inner ramus with 3 to 4 short spines on outer border and 5 to 7 well developed spines on medial border.

Urosomite 2 with dorsal border posteriorly terminated in a tooth pointing backwards; peduncle of U2 with 4 regularly spaced and medium-sized dorsolateral spines, with 3 dorsomedial spines; outer ramus with 4 to 5 short to well developed outer spines and 2 to 4 short spines; inner ramus with 2 to 3 short spines on outer border and 4 to 5 well developed spines on medial border.

Urosomite 3 with posterolateral tooth on each side, with a pair of long posterodorsal styliform spines; U3 shorter than U1 and slightly shorter than U2; outer ramus and inner ramus of U3 subequal, outer ramus of U3 with 1 to 3 groups of 1 to 2 short outer spines, without medial spines; inner ramus 1.36 x as long as peduncle with 2 to 3 short and rather stout spines on outer side, with 3 to 5 short and stout spines on medial side.

Telson: cleft to 0.69 of its length; medial tooth of each lobe reaching 0.30 of outer tooth; inter-teeth spine overreaching outer tooth by 0.44 of its length, 0.45 x as long as telson; each lobe of telson with a dorsal seta close to insertion of spine.

#### LENGTH

Up to 14 mm (BELLAN-SANTINI & LEDOYER, 1987, as *L. longicornis*).

#### DISTRIBUTION

Marion Island, 31 to 110 m (BELLAN-SANTINI & LEDOYER, 1987, as *L. longicornis*).

#### REMARKS

The account by BELLAN-SANTINI & LEDOYER (1987) indicates that the authors found two species of *Liljeborgia* at the same BB125 station. They identified one as *L. pseudomacronyx* BELLAN-SANTINI & LEDOYER, 1987 and the other as *L. longicornis* (SCHELLENBERG, 1931). The examination of the material preserved at the Museum of Verona clearly indicates that they have put the label of *L. pseudomacronyx* in the vial of their '*L. longicornis*' and vice versa.

*L. longicornis*, which is a larger species restricted to the Magellanic area, can be easily separated from *L. nesiotica* by the relative size of the posterodorsal teeth of its first two pleonites. The submedian teeth are as long or moderately shorter than the median one in *L. longicornis*, whilst they are much shorter in *L. nesiotica* n. sp.

*L. nesiotica* n. sp. is actually much closer to the New Zealand species *L. hansonii* HURLEY, 1954 and the Antarctic species *L. georgiana* SCHELLENBERG, 1931. The account of *L. hansonii* by HURLEY (1954) is incomplete but it appears that this species has a more elliptic basis on the last three pereopods than *L. nesiotica* n. sp. An adequate comparison between *L. nesiotica* n. sp. and *L. georgiana* is difficult because some characters are size-dependent and the first species is much smaller than the second one. However, it is believed that the following differences are significant or probably significant.

In *L. nesiotica* n. sp., the propodus of the first gnathopod is 1.91-1.96 x as long as wide, whilst it is 1.66 x as long as wide in *L. georgiana*. In *L. nesiotica* n. sp., the propodus of the third and fourth pereopods has posterior spines isolated or paired with a small and thin seta (apical group excepted, where there is a pair of spines), while in *L. georgiana*, most groups includes two spines (1 long and 1 short). In *L. nesiotica* n. sp., the basis of the fifth pereopod is elliptic, whilst it is rectangular in *L. georgiana*. In *L. nesiotica* n. sp. the posterodistal angle of the basis of the seventh pereopod is bluntly angular, whilst in *L. georgiana* it is produced into a tooth. The basis of the last three pereopods is broader in *L. nesiotica* n. sp. than in *L. georgiana*, with the posterior teeth more deeply cut and more numerous on the seventh pereopod (18 to 19 vs. 10 to 12). In *L. nesiotica* n. sp., the merus of the seventh pereopod is 3.70 x as long as wide and 0.85 x as long as basis, whilst it is 5.69 x as long as wide and 1.25 x as long as basis in *L. georgiana*. In *L. nesiotica* n. sp., the spines of the first uropods are as a rule longer than in *L. georgiana* (they are also less numerous but this character is probably size-dependent). In *L. nesiotica* n. sp., the apical spine of each telson lobes overreaches the outer tooth by 0.44 of its length and are 0.45 x as long as telson; on the other hand in *L. georgiana* the apical just overreach the spines and is only 0.22 x as long as telson. Finally, *L. nesiotica* n. sp. reaches at most 14 mm, whilst *L. georgiana* can reach 27 mm.

***Liljeborgia octodentata* SCHELLENBERG, 1931**

(Figs 94-103)

*Liljeborgia octodentata* SCHELLENBERG, 1931: 129, fig. 68*Liljeborgia kinahani* var. *falklandica* K.H. BARNARD, 1932: 142, fig. 81c-d

## MATERIAL

**Eugenia Exp. 1851-53, sta. 1879-81**, Chile, Estrecho de Magallanes, 53°00'S 072°00'W: 1 large ♀, about 12 mm, SMNH type 6886; **Nordenskjölds Exp., sta. Río Córdor, Puerto Soffia (Chile)**, 54°12'S, 91 m, dead shells at the bottom with large ascidians and sponges, trawling, 26.ii.1896: 2 adults (presumably ♀♀), SMNH type 6893; **Nordenskjölds Exp., no station number**, Chile, Porvenir [exact coordinates unavailable], 18 m, corals and algae: 1 ♂ (here designed as paralectotype), SMNH type 6891; **Nordenskjölds Exp., sta. 387**, Chile, Patagonia, Estrecho de Magallanes, Punta Arenas [53°09'S 070°55'W according to ANONYMOUS (1967)], dead shell bottom, no depth, 05.xii.1895: 2 ♀♀ (one here designed as lectotype of *L. octodentata*), SMNH type 6888; **Nordenskjölds Exp., sta. 447**, Chile, Patagonia, Estrecho de Magallanes, Punta Arenas [53°09'S 070°55'W according to ANONYMOUS (1967)], 27 m, 14.xii.1895: 1 ovigerous ♀ (here designed as paralectotype), SMNH type 6889; **Nordenskjölds Exp., sta. 604**, Argentina, Patagonia, Río Seco [exact coordinates unavailable]: 3 specimens (here designed as paralectotypes), SMNH 6892; **Nordenskjölds Exp., sta. 629**, Chile, Patagonia Archipelago, Bahía Inútil [exact coordinates unavailable], 36-55 m, 23.i.1895: a 12 mm long specimen (here designed as paralectotype), SMNH-type-6890; **Nordenskjölds Exp., sta. 1005**, South America, Patagonia, Banco Marta [52°49'S 070°32'W according to ANONYMOUS (1967)], 182 m, stones and pebbles, hydroids and bryozoans abundant: 1 small specimen (here designed as paralectotype), SMNH type 6894; **Swedish S. Polar Exp., sta. 49**, Falkland Isl., Berkeley Strait, 51°35'S 057°56'W, 25-30 m, shells, stones: 2 ovigerous ♀♀ (here designed as paralectotypes), SMNH-type-667; **Swedish S. Polar Exp., sta. 54**, Falkland Isl., Stanley Harbour, 51°42'S 057°50'W, 10 m, mud with shells: 1 specimen (here designed as paralectotype), SMNH-type-6895; **Swedish S. Polar Exp., sta. 56**, Falkland Isl., Halbmarie Harbour, 52°90'S 060°33'W, 15 m, sand with algae: 2 juveniles (here designed as paralectotypes), SMNH type 6896; **Swedish S. Polar Exp., sta. 60**, South America, Argentina, Patagonia Archipelago, East of

Tierra del Fuego, 55°10'S 066°15'W, 100 m, broken shells: 1 specimen (here designed as paralectotype), SMNH-type-6897; **Discovery Exp., sta. 57**, Falkland East Falkland Isl., Port William [coordinates: 51°41'S 057°48'W fide www.geonames.org/ consulted on 24.iii.2008], small beam trawl and tow net attached to the trawl, 15 m, 16.v.1926: 1 specimen, which is the holotype of *L. kinahani* var. *falklandica* (presumably ♂ since it has no oostegites), in mediocre condition (obviously dried out and rehydrated), BMNH 1936.11.2.12.79; **R/V William Scoresby, sta. 97**, East Falkland Isl., Port Stanley [coordinates: 51°42'S 057°51'W fide www.geonames.org/ consulted on 24.iii.2008], 15-18 m, 20.iii.1927: 3 specimens (found together with 1 *L. longicornis* and 1 *Liljeborgia* sp.), coll. W. SCHMITT, Acc. 097902, USNM 1100661; **R/V Eltanin, cruise 5, sta. 219-33**, 115 m, 55°47'S 066°24'W (i.e. near Cabo de Hornos), 23.ix.1962: 7 specimens, USNM; **R/V Eltanin, sta. 740**, University of Southern California, gear: trawl-Blake, Exped.: USAP, Cr. No.: 9, Field No.: USARP/HE/9/740/USC, Acc: 404606, Argentina, Tierra del Fuego, Drake Passage, Cabo de Hornos, 56°06'S 066°19'W to 56°07'S 066°30'W, 384-494 m, 18.ix.1963: 1 small specimen, USNM 1086235; **R/V Eltanin, sta. 974**, University of Southern California, gear: trawl-Blake, Exped.: USAP, Cr. No.: 11, Field No.: USARP/EL/11/977/USC, Acc: 404606, Argentina; between Tierra del Fuego and Falkland Isl., 52°32'S 063°53'W to 52°32'S 063°53'W, 229 m, 13.ii.1964: 1 specimen missing its posterior pereopods, USNM 1086236; **R/V Eltanin, sta. 974**, University of Southern California, gear: trawl-otter benthic, Exped.: USAP, Cr. No.: 11, Field No.: USARP/EL/11/974/USC, Acc: 404606, Argentina, Tierra del Fuego, Cabo San Diego; north of Cape, 52°32'S 064°57'W to 53°34'S 064°55'W, 119-124 m, 12.ii.1964: 4 fine specimens (found together with one *L. longicornis*), USNM 1027872; **MAG94, sta. 805**, Estrecho de Magallanes, Laredo, 52°57.9'S 070°47.2'W to 52°57.8'S 070°46.4'W, 14 m, AGT, 17.x.1994: 1 ovigerous ♀, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 887**, Estrecho de Magallanes, Bahía Voces, 53°42.2'S 070°57.2'W, 100 m, RD, 26.x.1994: 2 adults and 1 juvenile (2 vials), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 920/924**, Estrecho de Magallanes, Gente Grande, 52°57'S 070°18'W, 20 m, 28.x.1994: 1 specimen, leg. M. RAUSCHERT [previously labeled as *L. quadridentata*], RBINS, I.G. 31.068; **MAG94, sta. 929**, Estrecho de Magallanes, Laredo, 52°57.9'S 070°25.7'W, 45 m, 28.x.1994: 1 specimen, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 930**, Estrecho de Magallanes, Laredo,

52°57.5'S 070°25.8'W, 40 m, 28.x.1994: 2 specimens [one with dactylus of P7 intact] (2 vials), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 960**, Estrecho de Magallanes, Laredo, 52°57.9'S 070°43.4'W to 52°58.2'S 070°43.7'W, 35-36 m, AGT, 31.x.1994: 1 specimen, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 963**, Estrecho de Magallanes, Laredo, 52°57.9'S 070°43.5'W, 38 m, RD, 31.x.1994: 1 adult ♂ and 2 juveniles (found with 2 juvenile *L. macrodon*), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1083**, Canal Beagle, Romanche, 54°53.1'S 069°30.5'W, 62 m, RD, 05.i.1994: 1 juvenile, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1149**, Bahía Oglander, 55°09.2'S 067°01.6'W, 15 m, AGT, 8.xi.1994: 2 fine specimens, leg. C. De Broyer, RBINS, I.G. 31.068; **MAG94, sta. 1165**, Paso Goree, 55°18.6'S 067°08.5'W, 42 m, multigrab, 11.xi.1994: about 30 fine specimens, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1192**, Isla Picton, 55°06.7'S 067°01.6'W, 40-55 m, RD, 13.xi.1994: 12 specimens (2 vials), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1204**, Isla Wollaston, 55°38.4'S 067°12.4'W, 40 m, RD, 14.xi.1994: 9 fine specimens (2 vials), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1216**, SE Isla Picton, 55°07.2'S 066°40.2'W, 67 m, RD, 15.xi.1994: 1 adult and 1 juvenile, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1221**, SE Isla Picton, 55°07.6'S 066°44.6'W, 33 m, RD, 15.xi.1994: 7 specimens, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1223**, SE Isla Picton, 55°07.4'S 066°44.6'W, 35 m, RD, 15.xi.1994: about 18 specimens (3 vials) (found with 5 *L. macrodon*), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **CIMAR Fiordo 3, sta. 3**, Estrecho de Magallanes (Primera Angostura), 52°38.6'S 069°46.48'W, 24 m, sand gravel, RD, 07.x.1997: 6 specimens, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **CIMAR Fiordo 3, sta. 28A**, Estrecho de Magallanes, 11 m, 13.x.1997: 1 specimen (found with 6 *L. macrodon*), leg. M. RAUSCHERT, RBINS, I.G. 31.068.

#### DESCRIPTION

Eye present, very large and black (pigmentation persisting even after a long preservation in alcohol), quadrate or rounded, ommatidia very distinct in alcohol.

A1: major flagellum with 15 to 21 articles; accessory flagellum with 12 to 16 articles.

A2: article 4 of peduncle with well developed ventrolateral spines; article 5 without dorsomedial spines, with only one ventrolateral spine in apical

position; flagellum with 17 articles.

Epistome rounded and somewhat protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 6 rounded teeth (2 specimens checked); right lacinia mobilis smaller than left one, with anterior margin minutely denticulate and with one especially large lateral triangular tooth; spines of incisor process weakly spinulose; article one of palp distinctly shorter than article two (ratio length article one / article two = 0.75); article one 2.48 x as long as wide; article two with 8 distal/subdistal setae and no setae more proximally, 3.11 x as long as wide; article three 2.43 x as long as wide, 0.52 x as long as article two.

Mx1: second article of palp with 3 setae on upper margin, 10 slender spines on ventral and apical margin, and 8 well developed facial setae; outer plate with 7 nearly smooth spines; inner plate with 2 apical setae (1 long and 1 very short).

Mx2: outer plate with 5 well developed setae on upper margin; setae of Mx2 slender and not very numerous.

Mxp: article one of palp without distal outer dorsal setae, article two without non distal setae on outer margin; article three with 5 setae on anterior border (2 are forming a loose pair, the rest are isolated) or 3 isolated setae, article four (dactylus) rather slender, with anterior and posterior margins strongly curved and 0.76 x as long as article three; outer plate with 9 to 14 quite widely spaced spines (long very slender spines mixed with shorter less slender ones), and 6 to 9 long slender medioventral setae at the same level as spines or more proximally; inner plate with 2 slender anterior spines and 8 to 9 normally developed setae.

Gn1: coxa triangular, not especially broad, with posterior notch, without anterior tooth or notch; merus with 4 groups of setae and with small acute distal tooth; carpus process with 4 to 6 groups of setae, tip of carpus reaching 0.28 (♂) or 0.34 to 0.37 (♀♀) of propodus, separated from propodal group of strong spines by distinct space; propodus 2.30 (♂) or 2.12 (♀) x as long as wide; group of long spines on the proximal 0.37 (♂) or 0.38 (♀) of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth, with hooked spines of outer row not widely spaced (37 (♂) or 27 (♀) hooked outer spines and no outer setae); dactylus with 13 (♂) to 9 to 10 (♀) well developed teeth (dactylus toothed to 0.6 of its length).

Gn2: coxa triangulo-elliptic, broad, with small posterior and anterior notch (the two notches are very distant from each other); merus with 3 groups of setae,

and with acute distal tooth; carpus process with 6 to 8 groups of setae; tip of carpus reaching 0.28 (♂) or 0.32 (♀) of propodus, not reaching propodal group of strong spines in ♂, reaching propodal group of strong spines in ♀; chela with significant sexual dimorphism; distinct concavity on anterior border of propodus just behind the palm in ♂ (not in ♀); propodus 2.06 (adult ♂) or 2.12 (♀) x as long as wide; group of spines on the proximal 0.38 (♂) and 0.34 (♀) of propodus (most distal spine used as point of reference); in ♂ palm border distinctly convex and distally weakly crenulated, in ♀ palm border distinctly convex and smooth; palm with hooked spines of outer row rather well spaced (19 hooked outer spines + 43 very long outer setae in ♂; 21 hooked outer spines + 8 not very long setae in ♀); dactylus, 0.65 (adult ♂) or 0.75 (♀) x as long as propodus, with 16 (♂) and 14 (♀♀) teeth and toothed to 0.7 to 0.8 of its length. Gn2 significantly larger than Gn1; ratio length Gn2 / length Gn1: 1.55 in ♂ and 1.31 in ♀, surface of propodus of Gn2 / surface of propodus of Gn1: 2.56 in ♂ and 1.72 in ♀.

P3: coxa elliptic and narrow with small posterior tooth and small anterior notch (tooth and notch close to each other); merus 1.26 to 1.31 x as long as carpus and 0.83 to 0.87 x as long as propodus; dactylus fairly short, stout, with anterior border distinctly curved, with posterior border nearly straight, 0.53 to 0.61 x as long as carpus and 0.36 to 0.41 x as long as propodus; merus with 1 setule on posterior border (in apical position); posterior border of carpus with 3 setules + a distal well developed seta; anterior border of carpus with 1 setule in distal position; propodus with 9 to 12 setules + 1 distal spine on posterior border (length of longest propodal setules about 0.22 x width of propodus), with 4 isolated setules on anterior border (distal one included).

P4: coxa of normal width (1.34 x as long as wide), with anterior and posterior borders almost parallel, with ventral border weakly convex, with 3 teeth on posterior border, without anteroventral tooth but instead with a small medioventral notch at the point of insertion of a long seta; merus 1.31 x as long as carpus; dactylus fairly short, stout, with anterior and posterior border nearly straight, 0.47 x as long as carpus and 0.35 x as long as propodus; merus with 1 tiny setule on posterior border; carpus with 2 setules followed by a well developed distal seta; propodus with 11 setules + 1 distal spine on posterior border (length of longest propodal spines about 0.22 x width of propodus), without setules on anterior border except a tiny one in distal position.

P5: coxa without notch; basis symmetrically elliptic and broad (1.51 x as long as wide); anterior border with conical spines (distal angle with a long spine),

posterior border with 13 well developed teeth, distal border produced into a fairly protruding, rounded lobe; ischium with long spine (which can be paired with a medium-sized one) on anterodistal corner; merus with groups of short anterior and posterior spines and; anterior border of carpus with small spines, some associated with very long setae long setae and distal group of spines; carpus 0.66 to 0.82 x as long as merus; carpus + propodus 1.41 x as long as merus; propodus with 8 to 11 regularly spaced long and stout spines; posterior border of propodus with long setae + propodal dorsoapical group consisting of 1 to 2 small spines and several well developed setae; dactylus slightly curved and stout, 0.19 to 0.28 x as long as propodus.

P6: coxa with small posterior tooth; basis symmetrically elliptic and broad (1.53 x as long as broad); anterior border with conical spines (distal angle with a long spine), posterior border with 15 to 16 well developed teeth, distal border produced into a fairly protruding, rounded lobe; ischium with long spine on anterodistal corner; merus with groups of long anterior spines and normally developed posterior spines; anterior border of carpus with long setae and distal group of spines; no posterior spines (except apical group); carpus 0.68 to 0.70 x as long as merus; anterior border of propodus with 8 to 10 long spines (isolated or sometimes paired with a tiny setule), of which the 4 proximal ones are slender and the 6 distal ones are stout; posterior border of propodus with many long slender setae; dactylus stout and slightly curved, 0.21 to 0.23 x as long as propodus.

P7: basis asymmetrically elliptic and very broad (1.36 x as long as broad); anterior border with conical spines (distal angle with 1 or 2 long spines), posterior border with 16 to 18 strong erect teeth, distal border produced into a fairly protruding, rounded toothless lobe; ischium with long spine (which can be paired with a medium-sized one) on anterodistal corner; merus with normal-sized slender anterior and posterior spines; merus 5.44 x as long as wide and 0.88 x as long as basis; carpus 1.02 x as long as merus; propodus of P7 1.39 x as long as propodus of P6; propodus with 10 anterior groups of slender and rather long spines, and 9 isolated (except apical: group of 2 or 3 spines) rather long posterior spines; dactylus straight, medium-sized, slender and, entire, 0.31 x as long as propodus.

Pleonite 1: posterodorsal area produced into 3 small (but not minute) equal or moderately unequal teeth.

Pleonite 2: posterodorsal area produced into 3 small (but not minute) equal or moderately unequal teeth; Ep2 with normally developed acute posteroventral tooth, with posterior border weakly convex, without setae on

ventrolateral surface.

Pleonite 3: posterodorsal area toothless; Ep3 with normally developed acute posteroventral tooth (of which the ventral margin is convex), with posterior border straight on most of its length, curving downwards to form a shallow notch before posteroventral teeth; posteroventral tooth medium-sized.

Urosomite 1 with dorsal border rectilinear, with small posterodorsal tooth pointing backwards; ventrolateral border with 2 spines; peduncle of U1 with 7 to 8 dorsolateral spines: 2 to 4 long slender proximal teeth followed by short stout spines and stout distal one, with a single 1 dorsomedial spine in distal position; outer ramus with 5 to 7 short outer spines and 3 to 4 short medial; inner ramus with 2 to 4 short spines on outer border and 7 well developed stout spines on medial border.

Urosomite 2 with dorsal border rectilinear, with small posterodorsal tooth pointing backwards; peduncle of U2 with a single, normal-sized dorsolateral spine in distal position; with 1 normal-sized stout dorsomedial spine in distal position; outer ramus with 4 to 5 well developed outer spines and 2 short medial spines; inner ramus with 3 small spines on outer border and 6 to 7 long and stout spines on medial border.

Urosomite 3 without posterolateral tooth on each side, with a pair of small to minute posterodorsal spines; U3 shorter than U1 and a bit shorter than U2; outer ramus and inner ramus of U3 subequal; outer ramus of U3 with 1 to 2 very short spines; inner ramus 1.11 to 1.42 x as long as peduncle, with 2 to 3 small stout spines on outer side, with 2 to 3 long and stout spines on medial side.

Telson: cleft to 0.71 of its length; medial tooth of each lobe overreaching outer tooth by 1.43; inter-teeth spine normally overreaching outer tooth by 0.68 of its length, 0.22 x as long as telson; tip of lobes of telson with 1 to 2 very short setae on medial tooth, with 3 short setae on outer tooth.

#### LENGTH

12 mm.

#### TYPES

An ovigerous female from Punta Arenas, Nordenskjölds Exp., sta. 387, 53°09'S 070°55'W (SMNH-type-6888) and illustrated on the figures 94-95, is here designed as the lectotype of *L. octodentata*. The holotype of *L. kinahani* var. *falklandica* has been collected at East Falkland Island, Port William, 51°41'S

057°48'W (registration number at the NHM: BMNH 1936.11.2.12.79).

#### DISTRIBUTION

Magellanic area, Falkland Islands; 15 m to 384-494 m.

#### REMARKS

From a direct comparison between the types of *L. octodentata* SCHELLENBERG, 1931 and *L. kinahani* var. *falklandica* K.H. BARNARD, 1932, it can be concluded that they belong to the same species. The name *octodentata* has precedence over *falklandica* because it was described one year earlier than *L. kinahani* var. *falklandica*. The specimen of K.H. BARNARD (1932) has an unusually high number of long spines on the peduncle of the first right uropod (the left uropod is damaged), but otherwise it completely falls into the range of variation for *L. octodentata*. Other specimens from the Falkland Islands are absolutely identical with Patagonian ones.

The identity of *Liljeborgia octodentata* of HOLMAN & WATLING (1983: 236, fig. 17-18) is problematic because it has only short spines on the dorsolateral border of the peduncle of the first uropod. However in other respects, it agrees well with our material and it may be an abnormal specimen.

Any comparison between the sub-Antarctic *L. octodentata* and the North European species *L. kinahani* (BATE, 1862) is irrelevant. Indeed, despite the statements of K.H. BARNARD (1932), his '*L. kinahani* var. *falklandica*' has no real affinities with *L. kinahani*, a species which has been described and illustrated with a reasonable precision by G.O. SARS (1890-1895) and LINCOLN (1979). Similarly, '*L. kinahani* var. *georgiensis* K.H. BARNARD, 1932' is clearly distinct from '*L. kinahani* var. *falklandica*' of the same author. Indeed the first species has small spines on the posterior border of the propodus of its pereopods 3 and 4, whilst the second one has setules instead. Actually the closest known relative of *L. octodentata* is probably *L. cryptothrix* n. sp. from Kerguelen. See account of that species for a detailed comparison.

#### *Liljeborgia permacra* n. sp. (Figs 104-109)

#### MATERIAL

ANT-XIX-3, ANDEEP I, south of Drake Passage, sta. 129-2, 59°52.21'S 059°58.75'W to 59°52.15'S 059°59.03'W, 3622-3643 m, EBS, supranet: 1 presumed

♂ (no oostegites) specimen (holotype), mounted on 11 slides in Euparal, leg. A. BRANDT, ZMH-41965

#### ETYMOLOGY

*Permacer*, *-cra*, *-crum*: Latin adjective meaning very thin. The name alludes to the very narrow basis of its posterior pereopods.

#### DESCRIPTION

Rostrum very short, broadly triangular and terminated in a small acute tooth.

Eye absent.

A1: major flagellum with 30 articles; accessory flagellum distally broken with 9 articles remaining on the holotype.

A2: article 4 of peduncle with short stout dorsomedial and ventrolateral spines; article 5 with tiny dorsomedial spines, with only one (slender) ventrolateral spine (in apical position); flagellum with 14 articles, shorter than fifth article of peduncle.

Epistome straight in lateral view and not protruding.

Md: left lacinia mobilis large and with anterior margin with 5 short rounded teeth; right lacinia mobilis distinctly smaller with anterior margin minutely denticulate and with one slender and very long lateral tooth (which is itself denticulate); all spines of incisor process very stout and minutely denticulate; second article of palp very long and narrow, considerably longer than first and third (ratio length article one / article two = 0.59 to 0.61); article one 4.27 to 4.30 x as long as wide; article two with 2 setae on tip and no setae more proximally, 7.30 to 8.11 x as long as wide; article three 3.63 to 4.00 x as long as wide, 0.40 to 0.44 x as long as article two.

Mx1: second article of palp with 3 setae on upper margin, 5 long and slender spines on ventral and apical margin, and 6 facial setae; outer plate with 9 to 10 denticulate spines; inner plate with a single seta.

Mx2: outer plate with 3 widely spaced setae on upper margin.

Mxp: article one of palp with 7 well developed distal outer setae, article two without non distal setae on outer margin; article three with 2 transverse groups of 3 strong setae on anterior border, article four (dactylus) broken; outer plate with 11 to 12 well spaced stout and short spines on medial border, and with 5 to 7 strong medioventral setae at the same level as spines; inner plate with 3 stout and well developed anterior spines and 7 stout and not very long setae.

Gn1: coxae damaged, triangular, with posterior border straight, with scarcely distinct anterior and posterior notch; merus with 3 groups of setae, with distal tooth; carpus process with 5 more or less separated groups of setae; tip of carpus reaching 0.20 of propodus, separated from propodal group of strong spines by distinct but short space; propodus 1.77 x as long as wide; group of spines on the proximal 0.35 of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth, with well developed hooked spines (on outer row), which are narrowly spaced (51 hooked outer spines + 2 outer setae); dactylus without teeth.

Gn2: coxa quadrato-elliptic and very broad with small anterior and posterior notch; merus with 4 groups of sparse setae, with distal tooth; carpus process with 8 well separated groups of setae; tip of carpus lobe blunt; propodus 1.81 x as long as wide; group of spines on the proximal 0.36 of propodus (most distal spine used as reference point); palm border regularly convex; medial setae of palm short; outer border of palm with 44 well developed hooked spines + 8 outer setae; dactylus with 3 teeth on proximal 0.3. Gn2 significantly larger than Gn1; ratio length Gn2 / length Gn1: 1.43; surface of propodus of Gn2 / surface of propodus of Gn1: 2.03.

P3: coxa very broad and quadrato-elliptic with small anterior and posterior notch; merus 1.42 x as long as carpus (i.e. carpus not shortened) and 0.98 x as long as propodus (i.e. propodus not shortened); dactylus well developed, slender and strongly curved, 0.63 x as long as carpus and 0.45 x as long as propodus; merus with 2 isolated setules on 0.25 and 0.6 of posterior border, not followed by a distal seta, with 1 setule on middle of anterior border; carpus with 2 isolated stout setules followed by a small distal spine on posterior border; propodus with 5 isolated setules followed by a pair of distal spinules (length of longest propodal setules about 0.34 x width of propodus) on posterior border; anterior border of propodus without setae except long strong distal spine associated with 2 normal-sized setae.

P4: coxa extremely broad (0.87 x as long as wide), with anterior and posterior border so curved that character states 'parallel' and 'diverging' cannot be applied, with anterior border distinctly convex, with ventral border distinctly and regularly convex, with posterior border strongly convex and without angular discontinuities, with 1 tiny anteroventral and 1 tiny posteroventral teeth, but no other teeth; merus 1.43 x as long as carpus (i.e. carpus not shortened) and 1.00 x as long as propodus (i.e. propodus not shortened); dactylus well developed, slender and strongly curved, 0.73 x as long as carpus and 0.50 x as long as propodus; merus

with 1 setule on 0.25 of posterior border, not followed by a short distal seta; carpus with 3 isolated stout setules followed by a pair of short setae on posterior border; propodus with 5 isolated setules followed by a pair of distal spinules (length of longest propodal setules about 0.39 x width of propodus) on posterior border; anterior border of propodus with 1 isolated setule and with long and strong distal spine associated with 1 setule.

P5: coxa with small posterior tooth; basis quadrate (nearly symmetrical) and extremely narrow (2.84 x as long as wide); anterior border with small conical spines (distal angle with a medium-sized spine), posterior border with only 7 teeth (which are extremely small and widely separated from each other), distal border produced into a non-protruding (scarcely developed), rounded toothless lobe; ischium with pair of small conical spines on anterodistal corner; merus with very small spine on 0.8 and tip of anterior border, and with very small spine on tip of posterior border (i.e. spination very reduced); carpus 0.59 x as long as merus; carpus + propodus 1.23 x as long as merus; propodus with anterior long slender spines (but without setae), which can be isolated or associated in pairs (4 groups of spines); propodal apical tuft of setae absent (but 1 small spine instead); dactylus slightly curved and slender, 0.37 x as long as propodus.

P6: coxa with small posterior tooth; basis symmetrically quadrate and extremely narrow (2.77 x as long as wide); anterior border with small conical spines (distal angle with a rather long spine), posterior border with 8 teeth (which are extremely small and widely separated from each other), distal border produced into a non-protruding (scarcely developed), rounded toothless lobe; ischium with pair of small conical spines on anterodistal corner; merus with isolated anterior small spines and posterior isolated very short spines; three distal articles missing.

P7: coxa without posterior tooth; leg missing.

Pleonite 1: posterodorsal area produced into 1 small tooth; Ep1 with small posteroventral tooth, with posterior border strongly convex, without setae.

Pleonite 2: posterodorsal area produced into 1 small tooth; Ep2 with posteroventral corner broken, with posterior border distinctly convex.

Pleonite 3: posterodorsal area produced into 1 small tooth; Ep3 with very short blunt posteroventral tooth, positioned at the same level as ventral margin, with posterior border convex and without setules.

Urosomite 1 with dorsal border rectilinear in its posterior half, with strong posterodorsal tooth pointing backwards and slightly upwards; ventrolateral border with 3 spines; peduncle of U1, with distal outer tooth

unusually short, with 5 dorsolateral spines: 4 widely spaced very short ones + 1 long and stout distal one, with 4 small (including the distal one) dorsomedial spines; outer ramus with 10 small outer spines and 5 small medial spines; inner ramus with 4 small spines on outer border and 7 well developed spines on medial border.

Urosomite 2 with dorsal border with slight angular concavity, with strong posterodorsal tooth pointing upwards; U2 broken.

Urosomite 3 without posterolateral tooth on each side, with no distinct spines (but they could have been rubbed off); U3 much shorter than U1; outer ramus and inner ramus of U3 subequal; peduncle of U3 with 3 groups of medial spines; outer ramus of U3 without outer spines, with 3 small medial spines; inner ramus 1.41 x as long as peduncle, with 4 small spines on outer side, with 7 small spines on medial side.

Telson: cleft to 0.59 of its length; medial tooth of each lobe reaching about 0.50-0.68 of outer tooth; inter-teeth spines broken near the base; tip of telson lobes without setae.

#### SIZE

9 mm

#### DISTRIBUTION

Antarctica: south of Drake Passage, 59°52'S 059°50'W, 3622-3643 m.

#### REMARKS

The holotype and unique specimen of *Liljeborgia permacra* n. sp. lacks the distal half of its sixth pereopods, its complete seventh pereopods and its second uropods. Furthermore it has suffered some other damages here and there. However I think that the species is sufficiently characteristic to be named without too serious risks of confusion with new species to be discovered in the future.

*L. permacra* n. sp. has no close affinities with other Antarctic *Liljeborgia*, except perhaps *Liljeborgia* sp. 1, which is only known by half a specimen (see account of *Liljeborgia* sp. 1) and is only vaguely similar to *L. abyssotypica* n. sp. and *L. bythiana* n. sp. (see key). On the other hand *L. permacra* n. sp. exhibits obvious affinities with the abyssal Indo-pacific species *L. mojada* BARNARD, 1961 and *L. mozambica* LEDOYER, 1986. The following important differences have been noticed. In *L. mojada*, the major flagellum of the first

antenna reaches the basis of the fifth article of the peduncle of the second antenna, whilst it overreaches the tip of the fifth article in *L. permacra* n. sp. *L. mojada* has 1 tooth on the dactylus of the second gnathopod, whilst *L. permacra* n. sp. has 3. The basis of the fifth pereopod is significantly broader and more elliptic in *L. mojada* than in *L. permacra* n. sp. The third pleonite has no posterodorsal tooth in *L. mojada*, whilst such a tooth is present in *L. permacra* n. sp. The spines of both sides of the peduncle of the first uropods are more numerous, longer and more slender in *L. mojada* than in *L. permacra* n. sp. The telson is more deeply cleft and has more asymmetrical teeth at the tip of its lobe in *L. mojada* than in *L. permacra* n. sp.

*L. mozambica* has no teeth on the dactylus of the second gnathopod, while *L. permacra* has three. The propodus of pereopod 3 has much longer posterior setae in *L. mozambica* than in *L. permacra* n. sp. The bases of the fifth and sixth pereopods are even narrower in *L. mozambica* than in *L. permacra* n. sp. The spines of both sides of the peduncle of the first uropod are more numerous, longer and more slender in *L. mozambica* than in *L. permacra* n. sp. The telson has more asymmetrical teeth at the tip of its lobe in *L. mojada* than in *L. permacra* n. sp.; its lobes are separated by a wide sinus in *L. mojada*, while they are in contact with each other for almost all their length in *L. permacra* n. sp.

### *Liljeborgia polydeuces* n. sp.

(Figs 110-116)

*Liljeborgia* cf. *quinquedentata*; HOLMAN & WATLING, 1983: 239, figs 19-21

*Liljeborgia quadridentata*; D'UDEKEM D'ACCOZ & ROBERT, 2008: 54 (list)

#### MATERIAL

**R/V Eltanin, sta. 410**, University of Southern California, gear: trawl – Blake, Exped.: USAP, Cr. No.: 6, Field No.: USARP/EL/6/410/USC, Acc: 404606, Elephant Isl., 61°18'S 056°09'W to 61°29'S 056°10'W, 220-240 m, 31.xii.1962: 1 ♂ and 2 ♀♀ (paratypes) previously identified as *L. quinquedentata*, USNM 1086238; **ANT-XIII/3**, **EASIZ I, sta. 39/5A**, E Weddell Sea, 71°40.50'S 012°44.60'W to 71°40.40'S 012°44.30'W, 229 m, 06.ii.1996: 2 ♀♀ (paratypes) (previously mixed with a juvenile *L. group georgiana* and identified as *L. consanguinea*), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **ANT-XV/3**, **EASIZ II, sta. 206**, E Weddell Sea, 71°00.4'S 011°42.6'W to 71°00.7'S

011°42.5'W, 594-602 m, AGT, 18.ii.1998: 1 paratype, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **ANT-XV/3**, **EASIZ II, sta. 337**, King George Isl., 61°34.1'S 058°13.2'W to 61°34.0'S 058°12.8'W, 403-407 m, RD, 19.iii.1998: 1 ♂, 1 ♀, 1 immature (paratypes), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **ANT-XXIII/8**, **sta. 605-3**, Elephant Isl., 61°20.33'S 055°31.53'W to 61°20.35'S 055°30.18'W, 137-154 m, AGT, 20.xii.2006, original fixation probably alcohol 70%: 1 adult ♂ (paratype), leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.070; **ANT-XXIII/8**, **sta. 614-3+4+5**, Elephant Isl., 60°52.37'S 055°29.80'W to 60°52.71'S 055°27.83'W, 248-265 m, AGT + RD, 21.xii.2006, original fixation probably with alcohol 70%: about 10 specimens, amongst which large ♂♂ (1 ♂ holotype and 9 paratypes; 1 ♀ paratype dissected and mounted on 14 slides in Euparal), leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.070; **ANT-XXIII/8**, **sta. 624-3**, Elephant Isl., 61°00.23'S 055°58.53'W to 61°00.76'S 055°59.20'W, 287-319 m, AGT + RD, 23.xii.2006, original fixation with alcohol 70%: 15 paratypes, leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.070; **ANT-XXIII/8**, **sta. 642-1**, Elephant Isl., 61°04.38'S 055°59.81'W to 61°04.27'S 055°58.88'W, 254 m, AGT, 26.xii.2006, original fixation alcohol 70%: 1 ♀ with dactylus of P7 intact (paratype), leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.070; **ANT-XXIII/8**, **sta. 642-2**, Elephant Isl., 61°04.28'S 055°58.93'W to 61°04.24'S 055°59.27'W, 255-257 m, RD, 26.xii.2006, original fixation alcohol 70%, photographs (♂ and ♀): 5 specimens (paratypes), leg. C. D'UDEKEM & H. ROBERT, ZMH-41969; **ANT-XXIII/8**, **sta. 654-6**, Elephant Isl., 61°22.80'S 056°03.84'W to 61°23.35'S 056°04.89'W, 341-342 m, AGT, 29.xii.2006, original fixation alcohol 70%, photo: 1 huge adult ♂ (21 mm long; photographed) and 1 ♀ specimen (P7 dactylus intact) (paratypes), leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.070; **ANT-XXIII/8**, **sta. 680-5**, King George Isl., 62°23.37'S 061°25.58'W to 62°22.75'S 061°25.97'W, 324-349 m, AGT, original fixation alcohol 70% 03.i.2007: 2 specimens (paratypes), leg. C. D'UDEKEM & H. ROBERT, I.G. 31.070; **ANT-XXIII/8**, **sta. 726-4**, NW Weddell Sea, Snow Hill Isl. (Seymour Isl.), AGT, 64°37.83'S 056°42.10'W to 64°38.03'S 056°42.57'W, 292 m, original fixation formalin, photographed 23.i.2007: 1 ♀ (paratype), leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.070

#### ETYMOLOGY

In the Greek mythology, Πολυδεύκης (here latinized as *Polydeuces*) or *Pollux* is the twin brother of Κίστωρ

(or *Castor*). The name, which is a noun in apposition, alludes to the close morphological similarity between the new species and *L. quadridentata* SCHELLENBERG, 1931.

#### DESCRIPTION

Rostrum pointed, narrow, with lower margin concave, with acute tip, of normal length.

Eye present, rather large, elliptic to slightly reniform, ommatidia present, large, well distinct; pigmentation reduced in alcohol.

A1: major flagellum with 17 articles; accessory flagellum with 8 articles.

A2: article 4 of peduncle with well developed stout dorsomedial and ventrolateral spines; article 5 with dorsomedial and ventrolateral spines; flagellum with 13 articles.

Epistome barely rounded, not protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 triangular teeth; right lacinia mobilis much smaller than left one, with anterior margin deeply denticulate and with one large lateral triangular tooth; spines of incisor process stout and not spinulose; article one of palp slightly shorter than article two (ratio length article one / article two = 0.91); article one 5.00 x as long as wide; article two with 2 distal/subdistal setae and one median seta, 4.93 x as long as wide; article three 5.19 x as long as wide, 0.66 x as long as article two.

Mx1: second article of palp with 1 seta on upper margin, 7 stout spines on ventral and apical margin and 5 long facial setae; outer plate with 10 denticulate spines; inner plate with 1 long seta on tip.

Mx2: outer plate with 1 well developed seta on upper margin; setae of Mx2 not very numerous, of normal slenderness.

Mxp: article one of palp with 2 rather small and slender distal outer setae, article two with 2 non distal setae on outer margin; article three with 3 isolated slender setae on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins strongly curved and 0.78 x as long as article three; outer plate with 10 short and stout, well spaced spines on medial border, and about 13 slender medioventral setae at the same level as spines or behind; inner plate with 3 well developed anterior spines and 8 very stout but not very long setae.

Gn1: coxa sexually dimorphic, narrowly triangular in ♀, forming a bent rectangle in ♂, with distinctly concave posterior border, with small posterior and anterior tooth; merus with 2 groups of setae and strong

acute distal tooth; carpus process with about 7 to 8 groups of setae, tip of carpus reaching 0.34 (♂) or 0.24 (♀) of propodus, not reaching propodal group of strong spines; chela sexually dimorphic in ornamentation but not in shape; propodus 2.05 (♂) or 2.07 (♀) x as long as wide; group of spines on the proximal 0.44 (♂) or 0.36 (♀) of propodus (most distal spine used as point of reference); these spines are medium-sized; palm border forming a regular curve and without teeth; palm with hooked spines of outer row well spaced (♂ with 25 hooked outer spines + 9 extremely long outer setae arising from outer surface above the row of hooked spines; ♀ with 30 hooked outer spines and no outer setae); dactylus with 6 (♂) or 4 (♀) teeth; dactylar teeth not reaching half of dactylus length.

Gn2: coxa quadrato-elliptic, very broad (slightly broader in ♂ than in ♀), anteriorly distinctly convex in both sexes, and posteriorly weakly convex in ♂ and more or less straight in ♀, with small posterior and anterior tooth; merus with 3 or 4 groups of few sparse setae, and with acute distal tooth; carpus process with 11 (♂) or 9 (♀) groups of setae; tip of carpus reaching 0.30 (♂) or 0.33 (♀) of propodus, far from reaching propodal group of strong spines in ♂, almost reaching propodal group of strong spines in ♀; in ♂ distal spine not reaching tip of dactylus when the chela is closed; chela with considerable sexual dimorphism; propodus 2.02 (♂) or 2.23 (♀) x as long as wide; group of spines on the proximal 0.62 (♂) or 0.41 (♀) of propodus (most distal spine used as point of reference); these spines are well separated from each other, and very stout in ♂♂; in ♂ palm border slightly to distinctly concave, with 3 very blunt teeth (most proximal one sometimes vaguely bicuspid) on proximal third, with distal protrusion proximally prolonged by small blunt tooth, this protrusion is followed by a deep notch, palm with many long setae and about 4 tiny spinules; in ♀ palm border distinctly convex and smooth, with hooked spines of outer row rather well spaced (16 hooked outer spines + 8 normally developed outer setae); dactylus very short and stout in ♂, normal in ♀, 0.50 (♂) or 0.69 (♀) x as long as propodus, with 8 to 9 (♂♂) or 10 (♀) teeth and toothed to 0.7 to 0.8 of its length. In ♂ propodus of Gn2 considerably longer than propodus of Gn1, in ♀ significantly longer than Gn1; ratio length Gn2 / length Gn1: 1.91 in ♂, 1.37 in ♀; surface of propodus of Gn2 / surface of propodus of Gn1: 3.68 (♂) or 1.80 (♀).

P3: coxa triangulo-elliptic, of normal width, with well developed posterior and anterior tooth; merus 1.74 x as long as carpus and 1.27 x as long as propodus; dactylus long (and longer in juveniles than in adults), slender, with its anterior and posterior borders distinctly

curved, 0.74 x as long as carpus in adult (0.83 in 9 mm long juvenile) and 0.54 x as long as propodus in adult (0.67 in 9 mm long juvenile); posterior border of merus with 4 groups of 1 or 2 medium-sized thin setae; carpus with 4 (2 in juvenile) groups of 1-2 well developed slender setae (distal group including an extremely long seta) on posterior border, with 1 isolated setule on tip of anterior border; propodus with 6 (less in juveniles) groups of 1-3 very long slender setae, with small isolated distal spine (length of longest propodal setae about 2.51 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 4 well developed setae and 3 isolated setules in more proximal position.

P4: coxa of normal width (1.29 x as long as wide), with anterior and posterior border parallel, with ventral border distinctly convex, with 4 medium-sized teeth on posterior border and 1 normally developed anteroventral tooth; merus 1.74 x as long as carpus and 1.30 x as long as propodus; dactylus long (and longer in juveniles than in adults), slender, with its anterior and posterior borders distinctly curved, 0.76 x as long as carpus and 0.57 x as long as propodus; posterior border of merus with 4 groups of 1 or 2 medium-sized thin setae; carpus with 4 groups of 1-2 long to very long slender setae (distal group including an extremely long seta) on posterior border, with 1 isolated setule on tip of anterior border; propodus with 7 groups of 1-3 very long slender setae, with isolated distal spine (length of longest propodal setae about 1.77 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 3 well developed setae.

P5: basis broad (1.52 x as long as wide), anteriorly very strongly and regularly convex, posteriorly straight; anterior border with small conical spines (distal angle with a very long and a short spines), posterior border with 13 rather small non-erect teeth, distal border rounded (junction posterior/distal border forming a regular curve) and produced into a lobe; ischium with a medium-sized and a short spines on anterodistal corner; merus with 4 anterior groups of small (distal group = medium-sized) slender spines, without posterior groups of spine (except an apical group of small spines; many specimens checked); carpus with 2 anterior groups of medium-sized spines not intermixed with setae and no posterior spines (except apical group); carpus 0.46 x as long as merus; carpus + propodus 0.88 x as long as merus; propodus with 2 groups of 1 or 2 very long slender spines on anterior border and no spines or setae on posterior border except propodal apical tuft (the later consisting of 1 slender medium-sized spine and 4 long setae); dactylus distinctly curved and very slender, 0.40

x as long as propodus.

P6: basis broad (1.61 x as long as wide), anteriorly strongly and regularly convex, posteriorly straight; anterior border with small conical spines (distal angle with a very long and a short spines), posterior border with 11 rather small non-erect teeth, distal border rounded (junction posterior/distal border forming a regular curve) and produced into a lobe; ischium with a long and a short spines on anterodistal corner; merus with anterior and posterior groups of well developed spines; carpus with anterior groups of long spines (only distal one associated with a seta), without posterior groups of spine (except an apical group of medium-sized spines); carpus 0.67 x as long as merus; propodus with 4 anterior groups of 1 or 2 medium-sized very narrow spines (some associated with a thin seta), and some posterior setae; apical tuft of setae well developed and not associated with spines; dactylus distinctly curved, slender, with tip entire, 0.30 x as long as propodus.

P7: basis broad (1.31 x as long as wide), anteriorly strongly and regularly convex, posteriorly very strongly convex (basis symmetrically elliptic), anterior border with small conical spines (distal angle with a very long and a short spines), posterior border with 12 medium-sized teeth, distal border rounded (junction posterior/distal border forming a regular curve) and produced into a lobe; ischium with a long and a short spine on anterodistal corner; merus and carpus with long slender anterior and posterior spines; merus 3.19 x as long as wide and 0.80 x as long as basis; carpus 0.97 x as long as merus; propodus of P7 1.53 x as long as propodus of P6; propodus with 5 anterior pairs of long slender spines, and 4 isolated posteromedial spines, which are associated with a tuft of long slender setae (distal cluster forming the propodal apical tuft of setae, which is well developed); dactylus straight, long and very slender, entire, 0.75 x as long as propodus.

Pleonite 1: posterodorsal area usually toothless (sometimes with trace of tooth) in adults, often with small tooth in juveniles; Ep1 with normally developed posteroventral tooth, with posterior border distinctly convex; anteriorly with some very thin setae.

Pleonite 2: posterodorsal area with 3 small teeth of which the median one is much longer than the posteromedian ones; Ep2 with well developed posteroventral tooth, with posterior border slightly convex, with anterior very thin seta.

Pleonite 3: posterodorsal area without tooth; Ep3 with small posteroventral tooth curving upwards, not followed upwards by a real notch, with posterior border distinctly convex.

Urosomite 1 posteriorly terminated in a well

developed and sharp tooth pointing backwards; ventrolateral border with 3 spines; peduncle of U1 with 3 or 4 dorsolateral spines: 1 long one immediately followed by 1 medium-sized one on the middle, sometimes a smaller one at 0.7, and a long and strong distal one, with 6 or 7 rather small dorsomedial spines regularly spaced all its length; outer ramus with 2 short slender outer spines and no medial spines; inner ramus without spines on outer border and with 4 medium-sized spines on medial border.

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

Urosomite 3 with more or less blunt posterolateral tooth on each side, with a pair of medium-sized posterodorsal spines; U3 shorter than U1 and U2; outer ramus and inner ramus of U3 subequal, outer ramus without spines on outer border; inner ramus 0.75 (♂) or 0.89 (♀) x as long as peduncle, with 5 (♂) or 1 (♀) well developed spines on outer border, with 2 (♂) or 3 (♀) well developed spines on medial border.

Telson: cleft to 0.73 of its length; medial tooth of each lobe reaching 0.67 of outer tooth; inter-teeth spine normally overreaching outer tooth by about 0.39 of its length, 0.23 x as long as telson; apical teeth of telson without setae.

#### COLOUR PATTERN

Partly colourless and partly tinged of pale orange colour; eyes pale orange-coloured to pale yellowish (colour description based on specimens photographed by the author).

#### LENGTH

Up to 21 mm (males), usually not exceeding 16 mm.

#### DISTRIBUTION

Elephant Island (type locality), King George Island, Northwestern Weddell Sea, Eastern Weddell Sea; 137-154 m to 594-602 m.

#### REMARKS

*L. polydeuces* n. sp. is extremely close to *L. quadridentata*,

but after a careful comparative examination, some specific differences were encountered. The two crucial differences are: (1) the palm of the second gnathopod of all male *L. polydeuces* n. sp. examined has less and smaller (blunter) teeth than the male lectotype of *L. quadridentata* (the shape of the palm is also different); and (2) in *L. polydeuces* n. sp. the merus of the fifth pereopod has no spines on its posterior border except a distal group while in *L. quadridentata* there are 1 or 2 isolated spines on the posterior border in addition to the distal group. There are also smaller differences. The dactylus of the second gnathopod has more teeth in *L. polydeuces* n. sp. than in *L. quadridentata*; in the first species it does not reach the distal propodal tooth when the chela is closed, while it reaches it in the second species. The dactylus of the third and fourth pereopods are slightly shorter in *L. polydeuces* n. sp. than in *L. quadridentata* (this character is however partly size-dependent and should be considered with caution). Mature *L. polydeuces* n. sp. have no tooth or only a trace of tooth on the posterodorsal border of the first pleonite and 3 teeth on the posterodorsal border of the second pleonite. *L. quadridentata* has 1 tooth on the posterodorsal border of the first and the second pleonite. However young *L. polydeuces* n. sp. may have one tooth on the first pleonite; hence this character should also be used with caution. In *L. polydeuces* n. sp. there is also a greater size difference between the fifth, sixth and seventh pereopods than in *L. quadridentata*. At least in the specimens examined under a high magnification, the anterodistal corner of the basis and ischium of the last 3 pereopods has a long spine paired with a small spine in *L. polydeuces* n. sp. and a very long isolated spine in *L. quadridentata*. When additional specimens of *L. quadridentata* from the type locality (South Georgia) become available, the variability of these characters should be carefully examined.

#### *Liljeborgia prionota* n. sp.

(Figs 117-123)

#### MATERIAL

**MAG84, sta. 960**, Estrecho de Magallanes, Laredo, 52°57.9'S 070°43.4'W to 52°58.2'S 070°43.7'W, 35-36 m, AGT, 31.x.1994: 1 specimen (paratype; somewhat damaged), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG84, sta. 963**, Estrecho de Magallanes, Laredo 52°57.9'S 070°43.5'W, 38 m, RD, 31.x.1994: 3 specimens (paratypes), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **CIMAR Fiordo 3, sta. 2**, Estrecho de Magallanes, Bahía Posesión, 52°19.4'S 069°12.2'W, 40 m, mud, 06.x.1997: about 40 adults (2 vials) (♀

holotype mounted on 12 slides in Euparal; other specimens = paratypes), said to have been photographed and previously identified by M. RAUSCHERT as *L. falklandica* (found with 13 *L. longicornis*), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **CIMAR Fiordo 3, sta. 3**, Estrecho de Magallanes (Primera Angostura), 52°38.6'S 069°46.48'W, 24 m, sand gravel, RD, 07.x.1997: 1 large adult and about 7 young ones (paratypes; one ♂ partly dissected with removed pieces mounted on 2 slides in Euparal) (found with 6 *L. octodentata*), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **CIMAR Fiordo 3, sta. 4**, Estrecho de Magallanes (Segunda Angostura), 52°41.1'S 070°10.2'W, 41 m, sand gravel, 07.x.1997: about 10 specimens, leg. M. RAUSCHERT, RBINS, I.G. 31.068

#### ETYMOLOGY

*Prionotus*, -a, -um, latinization of the Greek adjective *πριονωτος*, which means serrated. The name alludes to the unusually large number of posterodorsal teeth on the first and second pleonites and on the dactylus of the gnathopods.

#### DESCRIPTION

Rostrum triangular with acute tip, of normal length.

Eye present, rather small, broadly elliptic, ommatidia present and very distinct; strong pigmentation persisting in alcohol (eye remaining very red after several years in formalin).

A1: major flagellum with 27 articles; accessory flagellum with 13 articles.

A2: article 4 of peduncle with well developed dorsomedial spines of normal stoutness and a few normally developed ventrolateral spines; article 5 without dorsomedial and ventrolateral spines (only with setae); flagellum with 22 articles.

Epistome rounded, slightly protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 bluntly triangular teeth; right lacinia mobilis distinctly smaller than left one, with anterior margin weakly denticulate, intimately associated with the most distal spine of the incisor process; spines of incisor process (including the most distal one) rather slender and spinulose; article one of palp as long as article two (ratio length article one / article two = 1.00); article one 4.00 x as long as wide; article two without any setae, 5.09 x as long as wide; article three 5.13 x as long as wide, 1.10 x as long as article two.

Mx1: second article of palp with 3 unusually long

setae on upper margin, 13 spines on ventral and apical margin (proximal ones slender, becoming gradually stouter but even the most distal ones are not very stout) and 11 long facial setae; outer plate with 10 denticulate spines; inner plate with 2 setae on tip (one long and one small).

Mx2: outer plate with about 2 well developed setae on upper margin; all setae of Mx2 slender.

Mxp: article one of palp with 5 long and strong distal outer setae, article two with 5 non distal setae on outer margin; article three with 4 transverse rows of 1 to 3 rather slender setae on anterior border, article four (dactylus) very slender with anterior and posterior margins strongly curved and 0.62 x as long as article three; outer plate with 14 very long, rather slender and normally spaced spines on medial border, and about 10 slender medio-ventral setae at the same level as spines; inner plate with 2 or 3 well developed anterior spines and at least 12 strong setae.

Gn1: coxa narrowly triangular, with distinctly concave posterior border, with small posterior and tiny anterior tooth; basis with anterodistal angle slightly protruding in ♂, but normal in ♀; merus with 3 to 4 groups of setae and small acute distal tooth; carpus process with about 7 to 10 groups of setae, tip of carpus reaching 0.27 (♂) or 0.32 (♀) of propodus, not reaching propodal group of strong spines; chela strongly sexually dimorphic; propodus 1.71 (♂) or 1.88 (♀) x as long as wide; group of spines on the proximal 0.44 (♂) or 0.31 (♀) of propodus (most distal spine used as point of reference); these spines are unusually short; palm border of ♂ with proximal smooth convexity and distal bluntly crenulated convexity separated by median concavity; palm border of ♀ forming a regular curve and without teeth; palm with hooked spines of outer row narrowly spaced (♂ with 44 hooked outer spines + 4 short outer setae; ♀ with 34 hooked outer spines + 4 short outer setae); dactylus proximally strongly arched in ♂, of normal morphology in ♀; dactylus with 22 teeth in ♂ (proximal ones very sigmoid), 18 to 23 teeth of normal shape in ♀♀; dactylar teeth spread over almost entire length.

Gn2: coxa quadrato-elliptic, broad, anteriorly very convex and posteriorly straight, with small posterior and anterior blunt notch widely separated from each other; basis with anterodistal angle very pointed in ♂, slightly pointed in ♀; merus with few sparse setae, at most forming pairs or triplets and with small acute distal tooth; carpus process with 11 (♂) or 9 (♀) groups of setae; tip of carpus reaching 0.33 (♂) or 0.32 (♀) of propodus, almost reaching propodal group of strong spines; chela with weak sexual dimorphism; propodus

1.88 (♂) or 2.12 (♀) x as long as wide; group of spines on the proximal 0.42 (♂) or 0.36 (♀) of propodus (most distal spine used as point of reference); these spines are unusually short; palm border strongly convex and smooth in both sexes, with hooked spines of outer row rather well spaced (♂ with 31 hooked outer spines + 6 outer setae; ♀♀ with 27 hooked outer spines + 5 outer setae); dactylus of normal width, 0.69 (♂) or 0.75 (♀) x as long as propodus, with 25 (♂) or 22 to 27 (♀♀) teeth spread over entire length. In ♂ propodus of Gn2 equal to propodus of Gn1, in ♀ slightly longer than Gn1; ratio length Gn2 / length Gn1: 1.05 in ♂, 1.22 in ♀; surface of propodus of Gn2 / surface of propodus of Gn1: 1.03 (♂) or 1.39 (♀).

P3: coxa quadrato-elliptic, broad, with faint posterior and anterior notch widely separated from each other; merus 1.29 x as long as carpus and 0.97 x as long as propodus; dactylus not very long, stout, slightly curved, 0.50 x as long as carpus and 0.38 x as long as propodus; merus unusually stout; posterior border of merus with 4 isolated very thin setae (of which one is well developed); carpus with 3 groups of 1-4 slender setae (at least 1 fairly long in each group) on posterior border, with 1 isolated setule on tip of anterior border; propodus with 8 groups of 1-3 moderately stout and moderately long setae, without isolated distal spine (length of longest propodal setae about 0.8 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 3 well developed setae and no setae or setules in more proximal position.

P4: coxa very broad (1.1 x as long as wide), with anterior and posterior border converging downwards, with ventral border weakly convex, with 4 well developed teeth on posterior border and 1 normally developed anteroventral tooth; merus 1.31 x as long as carpus and 0.99 x as long as propodus; dactylus not very long, stout, slightly curved, 0.54 x as long as carpus and 0.41 x as long as propodus; merus unusually stout; posterior border of merus with 4 groups of 1 or 4 very thin setae (one well developed seta per group); carpus with 3 groups of 1-3 slender setae (at least 1 fairly long per group) on posterior border, with 1 isolated setule on tip of anterior border; propodus with 7 groups of 1-3 moderately stout and moderately long setae, without isolated distal spine on posterior border (length of longest propodal setae about 0.8 x as long as width of propodus); anterior border of propodus with distal group of 3 well developed setae and no setae or setules in more proximal position.

P5: coxa without posterior tooth; basis narrow (1.91 x as long as wide) and narrowing towards tip, anteriorly distinctly convex on its proximal 0.3 and straight more

distally, posteriorly straight; anterior border with small conical spines (distal angle with pair of small conical spines), posterior border with 15 normally developed non-erect teeth, distal border straight (junction posterior/distal border forming an abrupt curve) and not produced into a lobe; merus with anterior and posterior groups of long slender spines; carpus with 3 anterior groups of long slender spines not intermixed with setae and no posterior spines (except apical group); carpus 0.72 x as long as merus; carpus + propodus 1.46 x as long as merus; propodus with 5 pairs of well developed stout spines on anterior border and 6 groups of spines and/or setae on posterior border; propodal apical tuft of setae well developed, consisting of rather short slender setae and associated with pair of spines; dactylus slightly curved, stout and very short, 0.17 x as long as propodus.

P6: coxa without posterior tooth; basis very narrow (1.82 x as long as wide) and narrowing towards tip, anteriorly distinctly convex on its proximal 0.3 and straight more distally, posteriorly straight; anterior border with small conical spines (distal angle with pair of small conical spines), posterior border with 14 normally developed non-erect teeth, distal border straight (junction posterior/distal border forming a blunt square angle) and not produced into a lobe; merus with anterior and posterior groups of long slender spines; carpus with anterior and posterior groups of long spines (none associated with setae); carpus 0.60 x as long as merus; propodus with 7 pairs of well developed stout spines (sometimes one pair reduced to a single spine), and 5 groups of posterior setae; apical tuft of setae well developed and associated with a pair of spines; dactylus weakly curved, stout, with tip bifid, 0.19 x as long as propodus.

P7: coxa without posterior tooth; basis very narrow (1.48 x as long as wide) and narrowing towards tip, anteriorly and posteriorly straight; anterior border with small conical spines (distal angle with pair of small conical spines), posterior border with 12 distinct teeth, distal border straight (junction posterior/distal border forming a blunt square angle) and not produced into a lobe; merus and carpus with long slender anterior and posterior spines; merus 4.88 x as long as wide and 1.09 x as long as basis; carpus 0.78 x as long as merus; propodus of P7 1.31 x as long as propodus of P6; propodus with 7 anterior groups of 2 (sometimes 1) short slender spines, and 6 isolated (distal group forming a pair) posteromedial spines, which are associated with a tuft of long slender setae; propodal apical tuft of setae well developed; dactylus slightly curved and stout, bifid, 0.27 x as long as propodus.

Pleonite 1: posterodorsal area with 5 strong teeth; Ep1 with well developed posteroventral tooth and with a second tooth above, with posterior border strongly convex; without setae.

Pleonite 2: posterodorsal area with 5 (sometimes 7) strong teeth; Ep2 with well developed posteroventral tooth and with a second tooth above, with posterior border distinctly convex.

Pleonite 3: posterodorsal area without tooth; Ep3 with rather well developed sharp posteroventral tooth followed upwards by a notch and a smaller tooth, with posterior border straight.

Urosomite 1 with moderately low crest-like carina, posteriorly terminated in a well developed and sharp tooth pointing obliquely upwards; ventrolateral border with 1 spine; peduncle of U1 with 6 dorsolateral spines: 5 normally developed stout ones spread on all length of peduncle and a long and strong distal one, with 5 normally developed stout dorsomedial spines regularly spaced all its length; outer ramus with 6 short outer spines and 3 small medial spines; inner ramus with 2 small spines on outer border and with 6 normally developed spines on medial border.

Urosomite 2 with dorsal border posteriorly terminated in a well developed and sharp tooth pointing obliquely upwards; peduncle of U2 with 4 regularly-spaced and short dorsolateral spines, with 2 dorsomedial spines; outer ramus with 3 normally developed outer spines and no medial spines; inner ramus with 4 very short spines on outer border and 5 well developed spines on medial border.

Urosomite 3 with small posterolateral tooth on each side, with a pair of moderately long posterodorsal styliform spines; U3 shorter than U1 and about as long as U2; outer ramus of U3 equal to inner ramus, with 3 small spines on outer border; inner ramus 1.48 x as long as peduncle, with 5 small spines on outer border, with 6 normally developed spines on medial border.

Telson: cleft to 0.74 of its length; medial tooth of each lobe reaching 0.47 of outer tooth; inter-teeth spine normally overreaching outer tooth by about 0.20 of its length (but sometimes shorter than outer tooth), 0.3 x as long as telson or less; apical teeth of telson without setae (but tiny setule may be present in the inter-teeth notch).

#### LENGTH

18 mm.

#### DISTRIBUTION

Patagonia; 24 to 41 m.

#### REMARKS

*L. prionota* n. sp. is similar to *L. dubia* (HASWELL, 1879), a species described from Tasmania (HASWELL, 1879). The two species normally have 5 posterodorsal teeth on the first two pleonites, but *L. dubia* also has a posterodorsal tooth on the third pleonite, which is lacking in *L. prionota* n. sp. STEBBING (1888) has given informative illustrations of *L. dubia* under the name *L. haswelli* STEBBING, 1888. So far *L. prionota* n. sp. is the only known *Liljeborgia* species, in which the sexual dimorphism is more important in the first gnathopod than in the second gnathopod and in which the two gnathopods are subequal in size in adult male. In the *Liljeborgia* from New Zealand identified as *L. dubia* by K.H. BARNARD (1930: 365, fig. 35) and in '*L. dubia*' from Indonesia (PIRLOT, 1936: 300, fig. 125), it is the second gnathopod which is the most deeply modified in males, as in all other known *Liljeborgia* species. Besides *L. prionota* n. sp. and *L. dubia* sensu lato, there is a third *Liljeborgia* species with 5 posterodorsal teeth on the first two pleonites: *L. hwanghaensis* KIM & KIM, 1990. The second gnathopod of the male of this Korean species is larger than the first one, as in other *Liljeborgia* species (KIM & KIM, 1990).

#### *Liljeborgia proxima* Chevreux, 1907

*Liljeborgia proxima* CHEVREUX, 1907a: 413

*Liljeborgia proxima*; CHEVREUX, 1907b: 475, figs 4-5

*Liljeborgia proxima*; DE BROYER *et al.*, 2007: 114 (ubi syn.)

#### ALLEGED DISTRIBUTION

Gambier Archipelago (type locality); Marshall Islands; South Africa; Iles Kerguelen (DE BROYER *et al.*, 2007).

#### SUBANTARCTIC RECORD

Iles Kerguelen (TRUCHOT, 1974).

#### REMARKS

The occurrence of the tropical species *L. proxima* in the icy waters surrounding Kerguelen seems highly improbable. Three *Liljeborgia* species are known to occur off Kerguelen: *L. consanguinea*, *L. cryptothrix* n. sp. and *L. kerguelensis*. It is likely that TRUCHOT's (1974) record is based on one of them.

*Liljeborgia pseudomacronyx* BELLAN-SANTINI &  
LEDOYER, 1987  
(Figs 124-129)

*Liljeborgia pseudomacronyx* BELLAN-SANTINI &  
LEDOYER, 1987: 403, fig. 10

MATERIAL

**R/V Marion Dufresne, cruise MD 08, sta. 13 CP85**, Marion Isl., 46°56.3'S 037°55.6'E, 120 m, trawl (chalut à perche), 25.iii.1976: ♂ holotype, MCSN, slides 3305 and 3306 (presumably mounted with Faure's liquid); **R/V Marion Dufresne, cruise MD 08, sta. 22 BB125**, Marion Isl., 46°52.4'S 037°51.9'E, grab (benne Okean), 30 m, sand, 26.iii.1976: 7 paratypes, MCSN; **R/V Marion Dufresne, cruise MD 08, sta. 34 BB168**, Marion Isl., 46°50.2'S 037°51.2'E, grab (benne Okean), 110 m, compact mud, 29.iii.1976: about 30 paratypes, MCSN (1 ♂ and 1 ♀ dissected by the present author and mounted in Euparal, respectively 10 and 9 slides)

DESCRIPTION

Rostrum triangular, acute, narrow, pointing downwards (transition between dorsal border of head and rostrum very abrupt).

Eye present, large, elliptic to subquadrate, ommatidia very distinct in alcohol.

A1: major flagellum with 23 articles; accessory flagellum with 12 articles.

A2: article 4 of peduncle with long styliform dorsomedial spines and ventrolateral strong setae; article 5 without dorsomedial spines, with one (apical) ventrolateral spine; flagellum with 21 articles.

Epistome sharply triangular in lateral view and very protruding.

Md: left lacinia mobilis large and with 5 blunt teeth on anterior margin; right lacinia mobilis distinctly smaller with anterior margin minutely and irregularly denticulate, and with one large lateral tooth; spines of incisor process distinctly denticulate, ultimate spine rather stout; article one of palp slightly shorter than article two (ratio length article one / article two = 0.73); article one 3.30 x as long as wide; article two with 1 seta on middle of anterior border and about 4 setae on tip and near tip, 4.74 x as long as wide; article three 3.08 x as long as wide, only 0.44 x as long as article two.

Mx1: second article of palp with 3 setae on upper margin, 7 to 8 spines on ventral and apical margin, and 7 to 8 facial setae; outer plate with 7 distinctly denticulate spines; inner plate with long seta on tip (sometimes with

a second, short seta).

Mx2: outer plate with setae of upper margin not widely spaced and not distinguishable from setae of distal margin (the two groups are completely merging together).

Mxp: article one of palp without distal outer setae, article two without non distal setae on outer margin; article three with 4 isolated setae on anterior border, article four (dactylus) slender, with anterior and posterior margins distinctly curved and 0.78 x as long as article three; outer plate with 10 normally spaced slender rather long spines on medial border, and 9 curved spiniform medio-ventral setae at the same level as spines or more proximally; inner plate with 2 well developed slender anterior spines and 6 stout setae.

Gn1: coxa triangular, of normal development with small posterior tooth and no anterior tooth or notch; merus with 4 groups of setae and with small acute distal tooth; carpus process with 5 groups of setae, tip of carpus reaching 0.29 of propodus, separated from propodal group of strong spines by small space; propodus 2.3 x as long as wide; group of spines on the proximal 0.39 of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth, with hooked spines of outer row not widely spaced (43 hooked outer spines and no outer setae); dactylus with 5 to 6 well developed teeth; dactylar teeth not reaching 0.3 of dactylus.

Gn2: coxa quadrato-elliptic with strong posterior tooth and no anterior tooth or notch; merus with 3 groups of setae with one small acute distal tooth; carpus process with 9 groups of setae; tip of carpus reaching 0.32 of propodus, reaching propodal group of strong spines; propodus 2.3 x as long as wide; group of spines on the proximal 0.30 of propodus (most distal spine used as reference point); palm border forming a regular curve, with minute crenulations on distal 0.15 (in both sexes), with hooked spines of outer row rather well spaced (24 hooked outer spines + 24 very long outer setae); dactylus of normal size, 0.73 x as long as propodus; setae of palm long (longer than in most *Liljeborgia* species); dactylus with 12 to 13 teeth; dactylar teeth reaching 0.8 of dactylus. Gn2 significantly larger than Gn1; ratio length Gn2 / length Gn1: 1.42 in ♂, surface of propodus of Gn2 / surface of propodus of Gn1: 2.04 (♂).

P3: coxa elliptic, rather narrow, with very strong hooked posterior tooth and no anterior tooth or notch; merus 1.29 x as long as carpus and 0.97 x as long as propodus; dactylus fairly long, fairly slender, with anterior border slightly curved, with posterior border nearly straight, 0.56 x as long as carpus and 0.41 x as

long as propodus; merus with 3 tiny setules on posterior border; carpus with 3 tiny setules and 1 normally developed seta paired with a setule on posterior border, with 3 setules on anterior border; propodus with 10 tiny stout setules and a short distal spine on posterior border (length of propodal spinules about 0.18 x width of propodus), with 7 very tiny setules on anterior border, one of them being in distal position (no well developed setae on tip of anterior border).

P4: coxa of normal width (1.47 x as long as wide), with anterior and posterior border parallel, with ventral border slightly and regularly convex, with two small but sharp teeth on posterior border, without anteroventral tooth; merus 1.25 x as long as carpus; dactylus fairly long, fairly slender, with anterior border slightly curved, with posterior border nearly straight, 0.59 x as long as carpus and 0.41 x as long as propodus; merus without setules on posterior border; carpus with 2 tiny setules and a distal normally developed seta on posterior border, propodus with 11 tiny stout setules and a short distal spine on posterior border (length of propodal spinules about 0.29 x width of propodus), with 5 very tiny setules on anterior border, one of them being in distal position (no well developed setae on tip of anterior border).

P5: coxa with very blunt small tooth; basis asymmetrically elliptic and moderately broad (1.69 x as long as wide); anterior border with conical spines (distal angle with a long spine), posterior border with 10 normally developed teeth, distal border produced into a not very protruding, rounded toothless lobe; ischium with long spine on anterodistal corner; merus with groups of normally developed anterior spines and short posterior spines; carpus with 3 anterior groups of spines of various length, not intermixed with setae, and no posterior spines (except apical group); carpus 0.66 x as long as merus; carpus + propodus 1.44 x as long as merus; propodus with 8 regularly spaced short paired or isolated anterior spines; posterior border of propodus with one long, not very thin seta on distal 0.6; propodal apical tuft of setae with one seta and one slender spine; dactylus curved and stout, 0.33 x as long as propodus.

P6: coxa without posterior tooth; basis asymmetrically elliptic and moderately broad (1.64 x as long as wide); anterior border with conical spines, posterior border with 6 to 9 teeth, distal border produced into a protruding, rounded toothless lobe; ischium with long or medium-sized spine on anterodistal corner; merus with anterior and posterior groups of well developed slender spines; carpus with 4 isolated long spines on anterior border and no posterior spines (except apical group); carpus 0.69 x as long as merus; propodus with

6 pairs of slender spines consisting of a long and a very short one on anterior border, and 8 groups (2 rubbed off in illustrated specimen) of 1 to 3 long, not very slender setae on posterior border; propodal apical tuft of setae consisting of 3 very long setae not differing from other posterior setae, not associated with 2 tiny spinules; dactylus slightly curved and fairly stout, 0.30 x as long as propodus.

P7: coxa without posterior tooth; basis asymmetrically elliptic and rather broad (1.45 x as long as wide); anterior border with conical spines, posterior border with 10 well developed teeth, distal border produced into a protruding, rounded toothless lobe; ischium with 1 medium-sized and 2 short spines on anterodistal corner; merus with long slender anterior and posterior spines; merus 3.88 x as long as wide and 0.97 x as long as basis; last 3 articles lacking in all specimens examined [the dactylus is supposed to be short and curved as in P5 and P6 since BELLAN-SANTINI & LEDOYER (1987: 403) state "P5 à P7 de même structure"; this statement needs confirmation]

Pleonite 1: posterodorsal area produced into a small single tooth; Ep1 with acute tiny posteroventral tooth, with posterior border strongly convex, without setae on ventrolateral surface.

Pleonite 2: posterodorsal area produced into a small single tooth; Ep2 with very small acute posteroventral tooth, with posterior border weakly convex, without setae on ventrolateral surface.

Pleonite 3: posterodorsal area toothless; Ep3 with small acute posteroventral tooth (of which the ventral margin is convex) followed upwards by a second shorter very blunt tooth, with posterior border straight on most of its length, abruptly curving downwards to posteroventral teeth.

Urosomite 1 with dorsal border rectilinear, with very small posterodorsal tooth pointing backwards; ventrolateral border with 1 to 2 spines; peduncle of U1 with 5 dorsolateral spines: 1 or 2 very long and very slender spine(s) on proximal 0.4 followed by 2 or 3 very short ones, and 1 long and stout distal one, with a single 1 dorsomedial (distal) spine (which is stout and not very long) in distal position; outer ramus with 4 short outer spines and 3 short medial spines in dissected paratype (I did not manage to see them on the microscopical preparation of the holotype); inner ramus with 4 short spines on outer border and 7 to 8 well developed spines on medial border.

Urosomite 2 with dorsal border rectilinear, without posterodorsal tooth; peduncle of U2 with 1-2 dorsolateral spines: 0 to 1 tiny slender spine on distal 0.8, and 1 very long (albeit not always as long as in

illustrated specimen) spine on tip, with 1 short stout dorsomedial spine on tip; outer ramus with 6 to 7 short outer spines and 2 short medial spines; inner ramus with 3 to 4 spines on outer border and 6 to 7 well developed spines on medial border.

Urosomite 3 with a pair of very small posterodorsal conical spines; U3 much shorter than U1 and U2; outer ramus of U3 with 1 tiny spine close to tip; inner ramus 1.17 x as long as peduncle, with 4 small spines on outer side, with 4 well developed spines on medial side.

Telson: cleft to 0.72 or 0.74 of its length; medial tooth of each lobe almost reaching outer tooth; inter-teeth spine overreaching outer tooth by 0.59 of its length, 0.28 x as long as telson; each lobe with 1 short and very slender seta.

#### LENGTH

Up to 10 mm.

#### TYPES

Type locality: Marion Island. Type deposition: MCSN, Verona (including holotype) and SAM, Cape Town.

#### DISTRIBUTION

Marion Island. Between 30 and 120 m.

#### REMARKS

*L. pseudomacronyx* belongs to the “*chevreuxi* complex”. See account of *L. chevreuxi* for a comparison of known Antarctic and sub-Antarctic species of that group. Despite its name, *L. pseudomacronyx* is not especially close to the North European species *L. macronyx* G.O. SARS, 1894, which has a much longer dactylus on the last three pereopods.

#### *Liljeborgia quadridentata* SCHELLENBERG, 1931

(Figs 130-135)

*Liljeborgia quadridentata* SCHELLENBERG, 1931: 130, fig. 69

#### MATERIAL

**Swedish S. Polar Exp., sta. 24**, South Georgia, Cumberland Bay, outside Pot Cove (“Grytviken, ausserhalb der Kochtopfbucht”), 54°22'S 036°27'W, 95 m, clay, 20.v.1902: 1 ovigerous ♀ (here designed as paralectotype) and a juvenile (here designed as

paralectotype), SMNH type 741; **Swedish S. Polar Exp., sta. 34**, South Georgia, mouth of Cumberland Bay, 54°11'S 036°S18'W, 252-310 m, gray clay, some stones, bottom temperature = +1.45°C, 05.vi.1902: 1 mature ♀ (here designed as paralectotype), SMNH type 6885; **Swedish S. Polar Exp., sta. 30**, South Georgia, Moraine Fjord, 54°24'S 036°26'W, 125 m, mud with some stones, bottom temperature = -0.25°C, 26.v.1902: 1 ♂ (here designed as lectotype), SMNH type 743

#### DESCRIPTION

Rostrum pointed, narrow, with lower margin concave, with acute tip, of normal length.

Eye present, rather large, elliptic to slightly reniform, ommatidia present, large, well distinct; pigmentation reduced in alcohol.

A1: major flagellum with 13 articles; accessory flagellum with 8 articles.

A2: article 4 of peduncle with long dorsomedial and ventrolateral spines; article 5 with well developed dorsomedial and long ventrolateral spines; flagellum with 9 articles.

Mxp: article two with 1 non distal seta on outer margin; article three with 2 isolated slender setae on anterior border.

Gn1: coxa forming a bent rectangle in ♂, with small posterior tooth and no anterior tooth; in ♂ palm with several extremely long outer setae arising from outer surface above the edge (just like in *L. polydeuces* n. sp.) [character not illustrated because it was impossible to make drawings of the Gn1 without dissection].

Gn2: coxa quadrato-elliptic, very broad, with small posterior and anterior tooth; merus with acute distal tooth; carpus process with about 8 groups of setae; tip of carpus reaching 0.26 (♂) or 0.25 (♀) of propodus, very far from reaching propodal group of strong spines in ♂, reaching propodal group of strong spines in ♀; in ♂ distal spine reaching tip of dactylus when the chela is closed; chela with considerable sexual dimorphism; propodus 2.29 (♂) or 2.24 (♀) x as long as wide; group of spines on the proximal 0.55 (♂) or 0.36 (♀) of propodus (most distal spine used as point of reference); these spines are well separated from each other, and very stout in ♂; in ♂ palm border convex in proximal half and concave in distal half, with 5 teeth spread on proximal half, i.e. the convex part of palm (4 proximal teeth triangular and distal tooth blunt; no teeth are bicuspid), distal part of palm forming a protrusion prolonged by 2 blunt teeth, this protrusion being followed by a deep notch; in ♀ palm border distinctly convex and smooth, with hooked spines of outer row rather well spaced (13

hooked outer spines + 7 well developed outer setae); dactylus short and stout in ♂, normal in ♀, 0.59 (♂) or 0.75 (♀) x as long as propodus, with 4 (♂) or 5 (♀) teeth and toothed to less than half of its length. In ♂ propodus of Gn2 considerably longer than propodus of Gn1; in ♀ significantly longer than Gn1.

P3: coxa quadrato-elliptic, of normal width, with well developed posterior and anterior tooth; merus 1.55 x as long as carpus and 1.04 x as long as propodus; dactylus very long, slender, with its anterior and posterior borders distinctly curved, 0.90 to 1.07 x as long as carpus and 0.70 to 0.72 x as long as propodus; posterior border of merus with 3 short thin setae; carpus with 2 or 3 pairs of setae on posterior border (each pair with one seta much longer than the other; size of setae increasing towards tip; large seta of distal group extremely long), with 1 isolated setule on tip of anterior border and sometimes a second setule behind; propodus with 4 to 5 groups of 1-3 very to extremely long slender setae, with pair of small distal spines (length of longest propodal setae about 1.57 to 3.72 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 6 long thin setae and sometimes 2 isolated setules in more proximal position.

P4: coxa of normal width (1.20 x as long as wide), with anterior and posterior border almost parallel (faintly diverging downwards), with ventral border distinctly convex, with 3 well developed teeth on posterior border and 1 normally developed anteroventral tooth; merus 1.60 (adult) and 1.53 (juvenile) x as long as carpus and 1.22 (adult) and 1.05 (juvenile) x as long as propodus; dactylus long, slender, with its anterior and posterior borders distinctly curved, 0.93 (adult) and 0.94 (juvenile) x as long as carpus and 0.70 (adult) and 0.64 (juvenile) x as long as propodus; posterior border of merus with 3 thin setae of variable length; carpus with 2 groups of 1-3 long to very long slender setae on posterior border, with 1 isolated setule on tip of anterior border; propodus with 5 groups of 1-2 very long slender setae, with small distal spine (length of longest propodal setae about 1.83 to 3.80 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 2 to 5 well developed setae and with or without 1 isolated setule in more proximal position.

P5: basis broad (1.50 to 1.55 x as long as wide), anteriorly very strongly and regularly convex, posteriorly straight or weakly convex; anterior border with small conical spines (distal angle with an isolated extremely long spine), distal border rounded (junction posterior/distal border forming a regular curve) and produced into a lobe; a strong spine can be present on anterodistal corner of ischium; merus with 3 to 6 anterior groups

of small to medium-sized slender spines, with 2 to 3 posterior groups of spines (apical group of small spines + 1 or 2 isolated spines behind in all type specimens); carpus with 3 anterior groups of medium-sized spines of which the distal one is intermixed with long setae, and no posterior spines (except apical group); carpus 0.53 x as long as merus; carpus + propodus 1.01 x as long as merus; propodus with 2 long slender spines paired with a long seta on anterior border and no spines or setae on posterior border except propodal apical tuft (the later consisting of 5 very long setae); dactylus distinctly curved and very slender, 0.30 x as long as propodus.

P6: basis broad (1.49 to 1.62 x as long as wide), anteriorly strongly and regularly convex, posteriorly straight or weakly convex; anterior border with small conical spines (distal angle with a very long isolated spine), posterior border with 10 to 11 medium-sized non-erect teeth, distal border rounded (junction posterior/distal border forming a regular curve) and produced into a lobe; ischium with a long isolated spine on anterodistal corner; merus with anterior and posterior groups of well developed spines; carpus with 3 anterior groups of long spines (the two distal groups are associated with setae), with 2 posterior isolated spines (median small spine followed by large distal spine); carpus 1.04 x as long as merus; propodus with 2 medium-sized narrow spines (each paired with a thin seta), and some posterior setae; apical tuft of setae well developed and not associated with spines; dactylus distinctly curved, slender, with tip entire, 0.30 x as long as propodus.

P7: basis broad (1.40 to 1.43 x as long as wide), anteriorly strongly and regularly convex, posteriorly very strongly convex (basis symmetrically elliptic), anterior border with small conical spines (distal angle with a very long isolated spine), posterior border with 10 to 12 medium-sized teeth, distal border rounded (junction posterior/distal border forming a regular curve) and produced into a lobe; ischium with a long isolated spine on anterodistal corner; merus and carpus with long slender anterior and posterior spines; merus 3.11 to 3.77 x as long as wide and 0.71 x as long as basis; carpus 0.97 (♂) or 0.80 (♀) x as long as merus; propodus of P7 1.13 x as long as propodus of P6; propodus with 2 anterior groups of 1 or 2 long slender spines, and 3 isolated posteromedial spines, which are associated with a tuft of long slender setae (distal cluster forming the propodal apical tuft of setae, which is well developed); dactylus straight, long and very slender; in 4 specimens the dactylus is missing, and in the 5th specimen it is broken far from its tip and the remaining part is 0.56 x as long as propodus.

Pleonite 1: posterodorsal area with a small tooth; Ep1 with normally developed posteroventral tooth, with posterior border distinctly convex; anteriorly with some very thin setae.

Pleonite 2: posterodorsal area with a small tooth; Ep2 with well developed posteroventral tooth, with posterior border slightly convex, with 2 anterior very thin setae.

Pleonite 3: posterodorsal area without tooth; Ep3 with rather strong posteroventral tooth curving upwards followed upwards by a shallow notch, with posterior border convex or straight.

Urosomite 1 posteriorly terminated in a well developed and sharp tooth pointing backwards; ventrolateral border with 2 spines; peduncle of U1 with 3 dorsolateral spines: 1 long on the middle immediately followed by 1 medium-sized one, and strong distal one, with 5 well developed dorsomedial spines regularly spaced all its length; outer ramus with 2 very short slender outer spines and no medial spines; inner ramus without spines on outer border and with 3 well developed 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, with 1 dorsomedial spine (in distal position); outer ramus with 2 rather long outer spines and no medial spines; inner ramus without spines on outer border and 2 rather long spines on medial border.

Urosomite 3 with or without posterolateral tooth on each side, with a pair of rather long posterodorsal spines; U3 shorter than U1 and about as long as U2; outer ramus of U3 slightly shorter than inner ramus, outer ramus without spines on outer border; inner ramus 0.92 to 0.98 x as long as peduncle, with 0 to 1 developed spine on outer border, with 2 or 3 well developed spines on medial border.

Telson: cleft to 0.73 of its length; medial tooth of each lobe reaching 0.65 to 0.85 of outer tooth (very imprecise estimation); inter-teeth spine overreaching outer tooth by about 0.5 of its length, about 0.3 x as long as telson; apical teeth of telson without setae.

#### LENGTH

10 mm.

#### TYPES

All the type specimens come from South Georgia. The finest one, which is an adult male from the Swedish S. Polar Exp., sta. 30 (SMNH type 743) is here designed as

lectotype and it is illustrated in detail (figs 133-134). It has been decided to designate this specimen as lectotype because it is the only male available, and its second gnathopod exhibits significant differences with the closely related species *L. polydeuces* n. sp. The second gnathopod of the two species are similar in females.

#### DISTRIBUTION

South Georgia; 95 to 252-310 m.

#### REMARKS

*L. quadridentata* is only known from the type series from South Georgia. It is extremely close to *L. polydeuces* n. sp., which is a common species found further south in the Atlantic sector of Antarctica. The differences between the two species are discussed in the section on *L. polydeuces* n. sp.

#### *Liljeborgia quinquedentata* SCHELLENBERG, 1931 (Figs 136-143)

*Liljeborgia quinquedentata* SCHELLENBERG, 1931: 132, fig. 70

Not *Liljeborgia* cf. *quinquedentata* HOLMAN & WATLING, 1983: 239, figs 19-21 (= *L. polydeuces* n. sp.)

Not *Liljeborgia quinquedentata* WAKABARA *et al.*, 1988: 3-5, fig. 2a-e (South East Brazil; presumably a new species, unrelated to *L. quinquedentata*)

#### MATERIAL

**Swedish S. Polar Exp., sta. 41**, Falkland Isl., Berkeley Sound, Port Louis, 51°33'S 058°09'W, 2-4 m, mud and gravel, 23.vii.1902: 1 very small juvenile, here designed as paralectotype, SMNH Type 6884; **Swedish S. Polar Exp., sta. 42**, Falkland Isl., Port Louis, 51°33'S 058°09'W, 8 m, mud with shells, 26.vii.1902: 1 ♂, 1 ♀ and 2 immatures (the ♀ is here designed as lectotype and the other specimens as paralectotypes), SMNH Type 742; **MAG94, sta. 813**, Estrecho de Magallanes, Laredo, 52°57.5'S 070°41.0'W, 90 m, RD, 17.x.1994: 1 damaged specimen, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **MAG94, sta. 1210**, off Islas Barnevelt, 55°48.0'S 066°58.6'W, 60 m, RD, 14.xi.1994: 4 specimens, leg. M. RAUSCHERT, RBINS, I.G. 31.068

#### DESCRIPTION

Rostrum pointed, narrow, with acute tip, rather long.

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

A1: major flagellum with 18 articles; accessory flagellum with 9 articles.

A2: article 4 of peduncle with large stout dorsomedial and ventrolateral spines; article 5 with small dorsomedial and strong ventrolateral spines; flagellum with 14 articles.

Epistome barely rounded, not protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 narrow triangular teeth with blunt tip; right lacinia mobilis smaller than left one, with anterior margin minutely denticulate and with one especially large lateral triangular tooth; spines of incisor process spinulose, proximally expanded but apically acute; article one of palp much shorter than article two (ratio length article one / article two = 0.61); article one 3.44 x as long as wide; article two with 2 distal/subdistal setae and no setae more proximally, 6.57 x as long as wide; article three 6.60 x as long as wide, 0.75 x as long as article two.

Mx1: second article of palp with 2 setae on upper margin, 7 spines on ventral and apical margin (proximal spines very slender; spines becoming gradually stouter towards tip, but even those of the tip remain rather slender), and 5 well developed facial setae; outer plate with 11 strongly denticulate spines; inner plate with 5 marginal setae in adult dissected (3 in juvenile dissected; 4 in adult examined by Schellenberg (1931)).

Mx2: outer plate with 3 well developed setae on upper margin; setae of Mx2 slender and not very numerous.

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 to 3 isolated slender setae on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins strongly curved and 0.88 x as long as article three; outer plate with 13 short stout (especially the proximal ones), moderately spaced spines on medial border, and about 6 slender medio-ventral setae at the same level as spines; inner plate with 3 stout and well developed anterior spines and 12 to 13 normally developed setae.

Mxp of juvenile: see fig. 143.

Gn1: coxa broadly triangular, with barely concave posterior border, with small posterior tooth and minute anterior tooth or no anterior tooth; merus with 3 groups of setae and small acute distal tooth; carpus process unusually short, with 5 groups of setae, tip of carpus reaching 0.21 of propodus, far from reaching propodal

group of strong spines; propodus 2.03 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; palm border forming a regular curve and without teeth; palm with hooked spines of outer row well spaced (20 hooked outer spines + 1 long proximal outer seta); dactylus with 5 to 6 teeth; dactylar teeth reaching half of dactylus length.

Gn2: coxa triangulo-elliptic, broad, with small posterior and anterior notch (the two notches are very 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 0.23 (♂) or 0.27 (♀) of propodus, not reaching propodal group of strong spines in ♀ (in adult ♂ spines absent or not visible in outer view); chela with some sexual dimorphism; propodus 2.43 (adult ♂) or 2.03 (♀) x as long as wide; group of spines on the proximal 0.34 (♀) of propodus (most distal spine used as point of reference); these spines are unusually small; in ♂ palm border weakly convex, vaguely crenulated in adult, distinctly denticulate in juvenile, with distal large blunt tooth; palm with many 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 + 16 very long outer setae); dactylus long, especially in adult ♂, 0.78 (adult ♂) or 0.75 (♀) x as long as propodus, with 9 (♀♀) teeth and toothed to 0.8 of its length. In both sexes propodus of Gn2 considerably longer than propodus of Gn1, ratio length Gn2 / length Gn1: 1.55 in ♀; surface of propodus of Gn2 / surface of propodus of Gn1: 2.21 (♀).

Gn1-2 of ♂ juvenile: see fig. 143.

P3: coxa elliptic, narrow, with well developed posterior tooth and distinct or shallow anterior notch (tooth and notch very close to each other); merus 1.42 x as long as carpus and 0.95 x as long as propodus; dactylus rather long, rather slender, with its anterior and posterior borders distinctly curved, 0.84 x as long as carpus and 0.56 x as long as propodus; posterior border of merus with 3 well developed isolated long thin setae; carpus with 2 groups of 1-3 slender setae (each group with 1 long seta) on posterior border, with 1 or 2 isolated setules on anterior border; propodus with 3 groups of 1-2 very long slender setae, with small distal spine (length of longest propodal setae about 3.10 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 4 setae (of which 3 are well developed) and 3 isolated setules in more proximal position.

P4: coxa of normal width (1.29 x as long as wide), with anterior and posterior border parallel, with ventral

border distinctly convex, with 2 to 3 medium-sized teeth on posterior border and minute anteroventral tooth (or none at all); merus 1.52 x as long as carpus and 1.02 x as long as propodus; dactylus rather long, rather slender, with its anterior and posterior borders distinctly curved, 0.88 x as long as carpus and 0.59 x as long as propodus; posterior border of merus with 3 well developed isolated long thin setae; carpus with 2 isolated long setae on posterior border, with 1 isolated setule on anterior border; propodus with 3 groups of 2 very long slender setae, with pair of small distal spine (length of longest propodal setae about 2.77 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 3 well developed setae, and 2 isolated setules more proximally.

P5: basis fairly broad (1.81 x as long as wide), anteriorly strongly and regularly convex, posteriorly nearly straight; anterior border with small conical spines (distal angle with a medium-sized spine paired with a spinule), posterior border with 14 normally developed (except the first two which are very reduced) non-erect teeth, distal border rounded, produced into a regularly curved lobe; ischium with spinule on anterodistal corner; merus with 4 anterior groups of 1 or 2 slender spines of increasing length towards tip (very short becoming rather long), with 2 posterior groups of 1 or 2 small spines (incl. apical group); carpus with 2 anterior groups of medium-sized spines (distal intermixed with long and strong setae) and no posterior spines (except apical group); carpus 0.67 x as long as merus; carpus + propodus 1.36 x as long as merus; propodus with 2 pairs of slender spines (1 medium-sized spine + 1 very long setiform spine) on anterior border and no spines or setae on posterior border except propodal apical tuft (the later consisting of 8 long stout setae not associated to a spine); dactylus slightly curved and slender, 0.33 x as long as propodus.

P6: basis fairly broad (1.86 x as long as wide), anteriorly strongly and regularly convex, posteriorly straight; anterior border with small conical spines (distal angle with a medium-sized spine), posterior border with 13 normally developed non-erect teeth, distal border rounded, produced into a regularly curved lobe; merus with 5 anterior groups of 1 or 2 slender spines of increasing length towards tip (very short becoming rather long), with 3 posterior groups of 1 or 2 small spines (incl. apical group); carpus with 1 anterior median spinule and 1 anteroventral group of large slender spines not associated with setae; carpus 0.68 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 2 spinules; dactylus slightly curved, slender, with tip entire, 0.35 x as long as propodus.

P7: basis broad (1.49 x as long as wide), anteriorly strongly and regularly convex, distinctly convex (basis symmetrically elliptic), anterior border with small conical spines (distal angle with a medium-sized spine paired with a spinule), posterior border with 20 normally developed (except the first two which are very reduced) semi-erect teeth, distal border rounded, produced into a regularly curved lobe; ischium with spinule on anterodistal corner; merus and carpus with slender medium-sized anterior and posterior spines; merus 3.90 x as long as wide and 0.78 x as long as basis; carpus 1.00 x as long as merus; propodus of P7 1.28 x as long as propodus of P6; propodus with 4 anterior groups of very slender medium-sized spines, and 5 groups of 1-3 posterior spines of very variable length; dactylus straight, long and very slender, entire, 0.82 x as long as propodus.

Pleonite 1: posterodorsal area usually toothless (sometimes with trace of tooth; Ep1 with normally developed posteroventral tooth, with posterior border distinctly convex; anteriorly with some very thin setae.

Pleonite 2: posterodorsal area with 3 small teeth of which the median one is much longer than the posteromedian ones; Ep2 with rather well developed posteroventral tooth, with posterior border barely convex, with some anterior very thin setae.

Pleonite 3: posterodorsal area without tooth; Ep3 with normally developed posteroventral tooth followed upwards by a notch, with posterior border distinctly convex.

Urosomite 1 posteriorly terminated in a well developed and sharp tooth pointing backwards; ventrolateral border with 3 spines; peduncle of U1 with 3 dorsolateral spines: 1 long immediately followed by 1 medium-sized on the middle, and a long and strong distal one, with 6 rather small dorsomedial spines (5 regularly spaced on the proximal 0.7 followed by a long empty space and then a distal spine); outer ramus with 2 tiny outer spines and no medial spines; inner ramus without spines on outer border and with 2 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 to 3 slender dorsolateral spines on distal half, with 1 to 2 dorsomedial spines; outer ramus with 2 to 3 medium-sized outer spines and no medial spines; inner ramus without spines on outer border and 2 long slender spines on medial border.

Urosomite 3 without posterolateral tooth on each

side, with a pair of very short posterodorsal spines; U3 shorter than U1 and a bit shorter than U2; outer ramus and inner ramus of U3 subequal, outer ramus with 2 small spines on outer border; inner ramus 1.21 x as long as peduncle, with 2 small spines on outer border and 2 well developed slender spines on medial border.

Telson: cleft to 0.71 of its length; medial tooth of each lobe reaching 0.73 of outer tooth; inter-teeth spine normally overreaching outer tooth by 0.66 of its length, 0.36 x as long as telson; medial apical teeth of telson with 1 very short seta.

#### LENGTH

12 mm.

#### TYPES

All the type specimens come from the Falkland Islands. The finest specimen, which is a female from the station Swedish S. Polar Exp., sta. 42, Falkland Isl., Port Louis, 51°33'S 058°09'W (SMNH Type 6884) is here designated as lectotype. It is illustrated on figs 136-140.

#### DISTRIBUTION

Patagonia and Falkland Islands (type locality); 2-4 to 90 m depth.

#### REMARKS

Brazilian material identified as *L. quinquedentata* by WAKABARA *et al.* (1988) probably belongs to a different species, but the illustrations provided by these authors are difficult to interpret. Material reported as *Liljeborgia cf. quinquedentata* from the South Shetlands by HOLMAN & WATLING (1983) actually belongs to *L. polydeuces* n. sp. Few *Liljeborgia* species have multiple setae on the inner plate of the first maxilla. This is the case in *L. quinquedentata*, *L. rauscherti* n. sp. and the species identified as *L. aequabilis* STEBBING, 1888 by PIRLOT (1936).

#### *Liljeborgia rauscherti* n. sp. (Figs 144-149)

#### MATERIAL

ANT-XIII/3, EASIZ I, sta. 39/01, E Weddell Sea, 71°04.10'S 011°25.50'W to 71°02.10'S 011°19.30'W, 462-481 m, GSN, 05.ii.1996: 1 adult ♂ (paratype), 26

mm, leg. M. RAUSCHERT, RBINS, I.G. 31.068; ANT-XIII/3, EASIZ I, sta. 39/29, E Weddell Sea, 71°31.40'S 012°25.60'W to 71°31.00'S 012°26.70'W, 503-518 m, RD, 28.ii.1996: 1 adult ♂ (holotype), 26 mm long [dissected on one side and these parts mounted on 2 slides in polyvinyl lactophenol], leg. M. RAUSCHERT, RBINS, I.G. 31.068

#### ETYMOLOGY

The species is dedicated to Martin RAUSCHERT (AWI), who collected the species and recognized it as new. The name is a genitive.

#### DESCRIPTION

Rostrum pointed, narrow, with lower margin strongly concave, with acute tip, rather long.

Eye apparently absent (no eye distinct in alcohol).

A1: major flagellum with 38 articles; accessory flagellum with 17 articles.

A2: article 4 of peduncle with slender well developed ventrolateral and dorsomedial spines; article 5 with small dorsomedial and well developed ventrolateral spines; flagellum with 26 articles.

Epistome not protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 rounded teeth; right lacinia mobilis smaller than left one, with anterior margin coarsely denticulate and with one large lateral triangular tooth; ultimate spine of incisor process slender; article one of palp almost as long as article two (ratio length article one / article two = 0.93); article one 4.11 x as long as wide; article two with long setae all along its distal 0.65, 5.33 x as long as wide; article three 4.42 x as long as wide, 0.66 x as long as article two.

Mx1: second article of palp with 4 setae on upper margin, 10 spines on ventral and apical margin (3 proximal ones slender, 7 distal ones short and stout) and 11 facial setae; outer plate with 9 nearly smooth spines; inner plate with 6 setae.

Mx2: outer plate with about 7 medium-sized setae on upper margin; all setae of Mx2 slender.

Mxp: article one of palp with 7 distal outer setae, article two with 1 non distal seta on outer margin; article three with 5 transverse rows of 1 to 4 slender setae on anterior border, article four (dactylus) fairly slender with anterior and posterior margins strongly curved and 0.79 x as long as article three; outer plate with 23 little-spaced spines on medial border (proximal ones short and stout, becoming longer and more slender distally), and 6 slender medio-ventral setae at the same level as

spines; inner plate with 7 well developed anterior spines and at least 8 marginal and submarginal strong, not very long setae (due to the inadequate orientation of the inner plate on the microscopical slide it was not possible to see and to draw all setae).

Gn1: coxa triangular, with distinctly concave posterior border, with small posterior and anterior tooth; merus with about 5 groups of setae and small acute distal tooth; carpus process with about 20 groups of setae, tip of carpus reaching 0.30 of propodus, reaching propodal group of strong spines; propodus 2.17 x as long as wide; group of spines on the proximal 0.35 of propodus (most distal spine used as point of reference); none of these spines is unusually long; palm border forming a regular curve, without teeth, with hooked spines of outer row narrowly spaced (50 hooked outer spines + 11 outer setae or straight slender spines); dactylus with 6 teeth.

Gn2: coxa quadrato-elliptic, very broad, anteriorly very convex and posteriorly straight, with small posterior and anterior blunt tooth; merus with 3 groups of setae and with small acute distal tooth; carpus process with 18 groups of setae; tip of carpus reaching 0.27 of propodus, reaching propodal group of strong spines; propodus 2.10 x as long as wide; group of spines on the proximal 0.39 of propodus (most distal spine used as point of reference); none of these spines is unusually long; palm border barely convex, bluntly crenulated on almost all its length, with hooked spines of outer row rather well spaced (25 hooked outer spines + 20 outer setae); dactylus of normal width, 0.71 x as long as propodus, with 10 teeth and toothed to 0.8 of its length. In ♂♂ propodus of Gn2 much larger than propodus of Gn1; ratio length Gn2 / length Gn1: 1.59; surface of propodus of Gn2 / surface of propodus of Gn1: 2.60.

P3: coxa anteriorly very convex and posteriorly straight, very broad, with normally developed posterior and anterior tooth; merus 1.71 x as long as carpus and 1.37 x as long as propodus; dactylus not very long, moderately narrow, with its two borders distinctly curved, 0.53 x as long as carpus and 0.43 x as long as propodus; posterior border of merus with 5 groups of 1 or 2 setules or short slender setae; carpus with 3 pairs of not very long, slender setae on posterior border, with 3 isolated setules on anterior border; propodus with 5 groups of 2-4 slender and moderately long setae + 1 small isolated distal spine (length of longest propodal setae about 1.5 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 8 well developed slender and with 4 isolated setules in more proximal position.

P4: coxa very broad (1.0 x as long as wide), with anterior and posterior border slightly converging

downwards, with ventral border barely convex (almost straight), with 3 well developed teeth on posterior border and 1 normally developed anteroventral tooth; merus 1.73 x as long as carpus and 1.40 x as long as propodus; dactylus not very long, moderately narrow, with its two borders distinctly curved, 0.57 x as long as carpus and 0.46 x as long as propodus; posterior border of merus with 4 groups of 1 or 2 setules or short slender setae; carpus with 3 pairs of not very long, slender setae on posterior border, with 3 isolated setules on anterior border; propodus with 5 groups of 2-3 slender and moderately long setae + 1 isolated distal spine (length of longest propodal setae about 1.6 x as long as width of propodus) on posterior border; anterior border of propodus with distal group of 5 well developed slender setae and with 4 isolated setules in more proximal position.

P5: coxa without posterior tooth; basis narrow (2.13 x as long as wide), anteriorly distinctly and regularly convex (maximal inflexion before the middle), posteriorly straight, anterior border with small conical spines (distal angle with pair of small conical spines), posterior border with 14 rather strong non-erect teeth, distal border straight (junction posterior/distal border forming a rather abrupt curve) and not produced into a lobe; merus with anterior and posterior groups of very short spines; carpus with 2 anterior groups of short slender spines not intermixed with setae and no posterior spines (except apical group); carpus 0.47 x as long as merus; carpus + propodus 0.84 x as long as merus; propodus with at least 2 short slender spines (probably more than 2; some probably rubbed off in illustrated specimen) and no groups of long slender setae (except apical group); propodal apical tuft of setae well developed and consisting of rather short slender setae; dactylus distinctly curved and fairly stout, 0.23 x as long as propodus.

P6: coxa with trace of small posterior tooth; basis very narrow (2.14 x as long as wide), anteriorly convex and posteriorly straight, anterior border with small conical spines (distal angle with pair of spines: a small conical one and a less small one), posterior border with 13 strong teeth, distal border straight (junction posterior/distal border forming a square angle) and not produced into a lobe; merus with anterior and posterior groups of very short spines; carpus with anterior and posterior groups of very short spines (none associated with long slender setae); carpus 0.59 x as long as merus; propodus with 5 small slender spines (sometimes associated with a short seta), and no posterior setae; apical tuft of setae apparently absent (but may well have been rubbed off in examined specimen); dactylus distinctly curved and

fairly slender, 0.24 x as long as propodus.

P7: coxa with blunt posterior tooth; basis very narrow (1.78 x as long as wide), anteriorly and posteriorly straight, anterior border with small conical spines (distal angle with pair of spines: a small conical one and a medium-sized one), posterior border with 12 distinct teeth, distal border straight (junction posterior/distal border forming a square angle) and not produced into a lobe; merus and carpus with rather short anterior and posterior spines; merus 5.52 x as long as wide and 0.95 x as long as basis; carpus 0.90 x as long as merus; propodus of P7 1.86 x as long as propodus of P6; propodus with 5 anterior groups of 1 or 2 short slender spines, and 4 isolated short slender posteromedial spines, which are not associated with setae; propodal apical tuft of setae absent; dactylus straight and narrow, not notched, 0.36 x as long as propodus.

Pleonite 1: posterodorsal area with tiny (scarcely distinct) tooth; Ep1 with small posteroventral tooth, with posterior border distinctly convex; without setae.

Pleonite 2: posterodorsal area produced into 1 large tooth; Ep2 with rather large sharp posteroventral tooth, with posterior border distinctly convex.

Pleonite 3: posterodorsal area produced into a small tooth; Ep3 with strong posteroventral tooth (of which the ventral margin is weakly convex), with posterior border distinctly convex and joining the posteroventral tooth after forming a distinct notch.

Urosomite 1 with moderately high crest-like carina, posteriorly terminated in a strong posterodorsal tooth pointing obliquely upwards; ventrolateral border with 1 spine; peduncle of U1 with 6 dorsolateral spines: 5 normally developed stout ones spread on all length of peduncle and a long and strong distal one, with 5 normally developed stout dorsomedial spines regularly spaced on all its length; outer ramus with 2 rather short outer spines and no medial spines; inner ramus without spine on outer border and with 9 rather short spines on medial border.

Urosomite 2 with dorsal border forming a large triangular tooth pointing posteriorly; peduncle of U2 with 4 regularly-spaced and short dorsolateral spines, with 4 dorsomedial spines; outer ramus with 3 short outer spines and no medial spines; inner ramus without spines on outer border and 6 rather short spines on medial border.

Urosomite 3 with small posterolateral tooth on each side, with a pair of small posterodorsal styliform spines; U3 longer than U1 and much longer than U2; outer ramus of U3 less than half as long as inner ramus without spines; inner ramus 2.45 x as long as peduncle, without spines on outer border, with 5 very short slender

spines on medial border.

Telson: cleft to 0.68 of its length; medial tooth of each lobe reaching 0.18 of outer tooth; inter-teeth spine distinctly shorter than outer tooth, 0.079 x as long as telson; apical teeth of telson without setae.

#### LENGTH

26 mm.

#### DISTRIBUTION

Eastern Sea of Weddell; 462-481 m to 503-518 m.

#### REMARKS

*L. rauscherti* n. sp. is a highly distinctive species. The strong asymmetry of the rami of its third uropod is remarkable.

#### *Liljeborgia semperhiemalis* n. sp.

(Figs 150-155)

*Liljeborgia* sp. 1 D'UDEKEM D'ACUZ & ROBERT, 2008: 54 (list)

#### MATERIAL

**ANT-XIII/3, EASIZ I, sta. 39/32**, E Weddell Sea, 70°28.80'S 008°15.10'W to 70°28.80'S 008°15.10'W, 286-283 m, RD, 04.iii.1996: 1 adult and 4 juveniles (paratypes) [last 3 articles of P5-P7 lacking in adult], previously identified as *L. consanguinea* by M. RAUSCHERT, leg. M. RAUSCHERT, RBINS, I.G. 31.068; **ANT-XXI/2, BENDEX, sta. 324-1**, E Weddell Sea, 72°54.52'S 019°47.74'W to 72°54.55'S 019°47.30'W, 647-694 m, RD, 03.i.2004: 1 specimen (paratype), leg. M. RAUSCHERT, RBINS, I.G. 31.068; **ANT-XXIII/8, sta. 603-5**, E Weddell Sea, Atka Bay, 70°30.99'S 008°48.08'W to 70°30.40'S 008°48.13'W, 274-297 m, AGT hauled up full of hexactinellid sponges, sponge spicules and erect bryozoans, 07.xii.2006: 11 adults, of which some have been photographed on board [1 holotype dissected and mounted on 17 slides in Euparal + 10 paratypes], leg. C. D'UDEKEM & H. ROBERT, RBINS, I.G. 31.069; **ANT-XXIII/8, sta. 603-5**: 1 paratype, leg. C. D'UDEKEM & H. ROBERT, ZMH-41968

#### ETYMOLOGY

*Semperhiemalis*, *-is*, *-e*, is an adjective formed in

combining the Latin adverb '*semper*', here used as a prefix (as it is the case in words like *sempervivus*) and the Latin adjective '*hiemalis*'. '*Semper*' means 'always' and '*hiemalis*' means 'related to winter'. The name alludes to the affinities of the species for the highest Antarctic latitudes, i.e. the realm of the eternal winter.

#### DESCRIPTION

Rostrum triangular with acute tip, of normal length, with dorsal margin regularly convex and ventral margin regularly concave.

Eye present, small, elliptic, ommatidia present but not very distinct.

A1: major flagellum with 29 articles; accessory flagellum with 13 (♀) or 14 (♂) articles.

A2: article 4 of peduncle with well developed slender ventrolateral spines and fairly short slender dorsomedial spines; article 5 without dorsomedial and without ventrolateral spines; flagellum with 18 (♂) to 21 (♀) articles, slightly longer than fifth article of peduncle.

Epistome rounded, depressed forward, not protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 6 rounded teeth; right lacinia mobilis almost as large as left one, with anterior margin weakly sinuate and with one large lateral triangular tooth; ultimate spine of incisor process rather stout; article one of palp slightly shorter than article two (ratio length article one / article two = 0.84); article one 3.50 x as long as wide; article two with 3 long setae on tip and two on the distal third, 4.88 x as long as wide; article three 4.62 x as long as wide, 0.81 x as long as article two.

Mx1: second article of palp with 7 setae on upper margin, 8 rather slender spines on ventral and apical margin and 11 facial setae; outer plate with 10 denticulate spines; inner plate with a single seta.

Mx2: outer plate with about 6 short setae on upper margin.

Mxp: article one of palp with 5 well developed distal outer setae, article two without non distal setae on outer margin; article three with 4 transverse rows of 2 to 5 thin setae on anterior border, article four (dactylus) of normal stoutness, with anterior and posterior margins weakly curved and 0.73 x as long as article three; outer plate with 16 medium-sized and stout, little-spaced spines on medial border (the most distal spine is slightly denticulate), and 15 slender medioventral setae at the same level as spines or more proximally; inner plate with 3 large and stout anterior spines and 15 strong setae.

Gn1: coxa broadly triangular, with barely concave posterior border, with small anterior and posterior tooth; merus with about 3 groups of setae and small acute distal tooth (distal one not strongly curved); carpus process with about 5 groups of setae; tip of carpus reaching 0.22 of propodus, not reaching propodal group of strong spines; propodus 1.85 x as long as wide; group of spines on the proximal 0.41 of propodus (most distal spine used as reference point); one of these spines is especially long; palm border forming a regular curve, without teeth, with hooked spines of outer row narrowly spaced (65 hooked outer spines + 12 outer setae); dactylus with 6 teeth on proximal 0.3.

Gn2: coxa quadrato-elliptic with small anterior and posterior tooth; merus with 4 groups of setae and with small acute distal tooth; carpus process with 10 groups of setae; tip of carpus reaching 0.21 of propodus, reaching propodal group of strong spines; propodus 1.87 x as long as wide; group of spines on the proximal 0.37 of propodus (most distal spine used as reference point); one of these spines is especially long; palm border curved and convex (also in ♂♂), without teeth; setae of palm long, with hooked spines of outer row narrowly spaced (43 hooked spines and many long outer setae in ♂); dactylus of normal width, with 10 teeth and toothed to all its proximal half. Gn2 distinctly larger than Gn1; ratio length Gn2 / length Gn1: 1.38, surface of propodus of Gn2 / surface of propodus of Gn1: 1.89 (♂).

P3: coxa elliptic, narrow, with small anterior and posterior teeth; merus 1.38 x as long as carpus and 1.02 x as long as propodus; dactylus long, slender, with its two borders slightly curved, 0.61 x as long as carpus and 0.47 x as long as propodus; posterior border of merus with 3 very long setiform spines of which two are paired with a short seta; carpus with 6 long setae (3 groups of 1 to 3 long setae) on posterior border; propodus with 9 groups of one mid-sized and one long spine (proximal group with only one spine) (length of longest propodal setae about 1.4 x width of propodus); anterior border of propodus with distal group of 4 well developed setae and with a well developed seta on 0.8 (rubbed off on illustrated leg; only insertion scar distinct).

P4: coxa very broad (1.12 x as long as wide), with anterior and posterior border parallel, with ventral border weakly convex, with 2 strong teeth on posterior border and a well developed anteroventral tooth; merus 1.38 x as long as carpus; dactylus long, fairly slender, with its two borders slightly curved, 0.61 x as long as carpus and 0.45 x as long as propodus; posterior border of merus with 1 very long setiform spine paired with a short seta; carpus with 6 long setae (3 groups of 1 to 3 long setae) on posterior border; propodus with 9 groups

of 1 mid-sized and one long spine (proximal group with only one spine; distal group with 3 spines) (length of longest propodal setae about 1.3 x width of propodus); anterior border of propodus with distal group of 4 well developed setae and with two well developed isolated setae on 0.45 and 0.75.

P5: coxa with small posterior tooth; basis very narrow (2.37 x as long as wide), anteriorly distinctly but not regularly convex (maximal inflexion on proximal third), posteriorly straight; anterior border with small conical spines (including on distal angle), posterior border with 13 distinct teeth, distal border straight (junction posterior/distal border forming a square angle) and not produced into a lobe; ischium with small spinule on anterodistal corner; merus with anterior and posterior groups of short spines; carpus with 4 anterior groups of long slender spines intermixed with setae and no posterior spines (except apical group); carpus 0.72 x as long as merus; propodus with 6 pairs of long spines and 6 groups of long slender setae (propodal group not included); propodal apical tuft of setae well developed and consisting of slender setae; dactylus weakly curved and fairly stout, 0.35 x as long as propodus.

P6: coxa with small posterior tooth; basis very narrow (2.39 x as long as wide), anteriorly and posteriorly straight; anterior border with small conical spines (pair of small conical spines on distal angle), posterior border with 12 distinct teeth, distal border straight (junction posterior/distal border forming a square angle) and not produced into a lobe; ischium with small spinule on anterodistal corner; merus with anterior and posterior groups of normal-sized spines; carpus with anterior and posterior groups of long spines (two anterior groups of carpus also including one long slender seta); carpus 0.83 x as long as merus; carpus + propodus 1.38 x as long as merus; propodus with 7 anterior groups of 3 long slender spines + 1 isolated small distal spine, and 5 posterior tufts of long slender setae (apical tuft not considered); propodal apical tuft of setae well developed; dactylus almost straight and fairly stout, 0.29 x as long as propodus.

P7: coxa with posterior tooth; basis very narrow (2.17 x as long as wide), anteriorly and posteriorly straight; anterior border with small conical spines (including on distal angle), posterior border with 12 distinct teeth, distal border straight (junction posterior/distal border forming a square angle) and not produced into a lobe; ischium with small spinule on anterodistal corner; merus and carpus with well developed anterior and posterior spines; merus 5.16 x as long as wide and 1.16 x as long as basis; carpus 1.03 x as long as merus; propodus of P7 1.61 x as long as propodus of

P6; propodus with 12 anterior groups of 2 to 3 long slender spines + 1 isolated smaller distal spine, and 10 posterior groups of setae (apical tuft not considered) (all including a short setule and most including too one or several long setae); propodal apical tuft of setae well developed (but most setae rubbed off on illustrated leg); dactylus straight, fairly stout and short, 0.25 x as long as propodus.

Pleonite 1: posterodorsal area produced into 3 teeth (median one large, lateral rather much smaller); Ep1 with normally developed sharp posteroventral tooth, with posterior border distinctly convex; without setae on ventrolateral surface but with anteromedial long setae and with one posterior setule.

Pleonite 2: posterodorsal area produced into 3 teeth (median one large, lateral rather much smaller); Ep2 with well developed sharp posteroventral tooth, with posterior border distinctly convex; without setae on ventrolateral surface but with one posterior setule.

Pleonite 3: posterodorsal area toothless; Ep3 with very large acute posteroventral tooth (of which the ventral margin is regularly and strongly convex), with posterior border straight on all its length and joining the posteroventral tooth without forming a notch.

Urosomite 1 with high sigmoid crest-like carina, posteriorly terminated in a strong posterodorsal tooth pointing obliquely upwards; ventrolateral border with 2 spines; peduncle of U1 with 5 dorsolateral spines: 4 not very regularly-spaced, short slender ones on median 0.6 and a long followed by strong distal one, with 3 dorsomedial spines (which are slender and fairly short, including the distal one) regularly spaced all along distal 0.7; outer ramus with 10 medium-sized outer spines and 9 short medial spines; inner ramus with 7 short spines spread all along the outer border and 10 slender and fairly long spines on medial border.

Urosomite 2 with dorsal border forming a large triangular tooth pointing obliquely upwards; peduncle of U2 with 4 regularly-spaced and fairly long slender outer dorsal spines, with 1 inner distal dorsal spine; outer ramus with 8 long and slender outer spines and 5 normal-sized medial spines; inner ramus with 6 short spines on outer border and 9 well developed spines on medial border.

Urosomite 3 with small sharp tooth on each side, with a pair of very long posterodorsal styliform spines; U3 shorter than U1 and a bit shorter than U2; outer ramus and inner ramus of U3 subequal, outer ramus of U3 with 4 long outer spines, without medial spines; inner ramus 1.09 x as long as peduncle, with 5 fairly long slender spines on outer side, with 6 very long slender spines on medial side.

Telson: cleft to 0.67 of its length; medial tooth of each lobe reaching 0.40 of outer tooth; inter-teeth spine overreaching outer tooth by 0.41 of its length, 0.36 x as long as telson; apical teeth of telson without setae (but there is a tiny pappose seta near the margin of the cleft of each lobe).

#### COLOUR PATTERN

Colour pattern uniform; body and legs pale pinkish; oral field pink; eyes red (photographs made by the author).

#### LENGTH

14 mm.

#### DISTRIBUTION

Eastern Weddell Sea. Found in 3 stations at 274-297 m, 286-283 m and 647-694 m.

#### BIOLOGICAL DATA

The specimens of the station ANT-XXIII/8 – sta. 603-5 were found on a bottom very rich in epifauna (bryozoans and sponges) and with a very high diversity in amphipods, e.g. 10 spp. of Iphimediidae (D'UDEKEM D'ACOZ & ROBERT, 2008). Sessile ciliates were found in large number on the gills of the holotype.

#### REMARKS

*Liljeborgia semperhiemalis* n. sp. is close to *L. georgiana* and the two species may have been confused in the past. However *L. semperhiemalis* n. sp. is obviously much rarer and/or less widespread. *L. semperhiemalis* n. sp. is smaller than *L. georgiana* (14 vs. 27 mm) and the following size-independent differences have been observed. The third and fourth pereopods have longer spines/setae in *L. semperhiemalis* n. sp. than in *L. georgiana*. The last three pereopods are more setose, have longer spines and a more slender basis in *L. semperhiemalis* n. sp. than in *L. georgiana*. The size difference between the propodus of the sixth and seventh pereopods is less important in *L. semperhiemalis* n. sp. than in *L. georgiana*. The posteroventral tooth of the third epimeral plate is much stronger in *L. semperhiemalis* n. sp. than in *L. georgiana*. The spines of rami of the uropods are longer in *L. semperhiemalis* n. sp. than in *L. georgiana*. Finally, the terminal spines of the lobes of the telson are longer in *L. semperhiemalis* than in *L. georgiana*.

### *Liljeborgia* sp. 1 (Figs 156-158)

#### MATERIAL

ANT-XXII/3, ANDEEP III, sta. 142-5, W Weddell Sea, 62°11.21'S 049°29.40'W to 62°11.24'S 049°29.68'W, 3405-3408 m, EBS-Epinet, 18.iii.2005: anterior half of a specimen (sex unknown, no oostegites), dissected and mounted on 7 slides in Euparal, leg. A. BRANDT, ZMH-41966

#### DESCRIPTION

Eye absent.

A1: major flagellum with 12 articles; accessory flagellum with 7 articles.

A2: article 4 of peduncle with short stout dorsomedial spines and ventrolateral spines consisting only of a distal pair (1 short stout spine associated with a long slender spine); article 5 without dorsomedial and without ventrolateral spines; flagellum with 9 articles, slightly shorter than fifth article of peduncle.

Epistome large, rounded, depressed forward, barely protruding in lateral view.

Md: left lacinia mobilis large with anterior margin with 5 rounded teeth; right lacinia mobilis almost as large as left one, with anterior margin with 8 small rounded teeth and with one large lateral tooth which is itself adorned with strong granulations; ultimate spine of incisor process rather stout; article one of palp slightly shorter than article two (ratio length article one / article two = 0.92); article one 3.05 x as long as wide; article two with 1 long seta on tip, 3.76 x as long as wide; article three 3.71 x as long as wide, 0.81 x as long as article two, with 3 distal setae and no lateral setae.

Mx1: second article of palp with 2 setae on upper margin, 6 long and slender spines on ventral and apical margin and 5 facial setae; outer plate with 10 strongly denticulate spines; inner plate with a single seta.

Mx2: outer plate with 3 short setae on upper margin.

Mxp: article one of palp with 3 well developed stout distal outer setae, article two without non distal setae on outer margin; article three with 2 pairs of dorsomedial setae on anterior border, article four (dactylus) stout, with anterior margin distinctly convex, with posterior margins weakly concave and 0.72 as long as article three; outer plate with 8 widely spaced and rather stout spines on medial border, and 6 fairly stout medio-ventral setae at the same level as spines or more proximally; inner plates with 3 long and rather slender anterior spines and 5 marginal and submarginal very strong setae (the

proximo-medial one is strongly pappose).

Gn1: coxa broadly triangular, with barely concave posterior border, with small anterior and posterior tooth; merus with about 2 groups of setae and small acute distal tooth; carpus process with about 4 groups of setae; tip of carpus reaching 0.22 of propodus, not reaching propodal group of strong spines; propodus 1.82 x as long as wide; group of spines on the proximal 0.28 of propodus (most distal spine used as reference point); one of these spines is especially long; palm border forming a regular curve, without teeth, with hooked spines of outer row normally spaced (25 hooked outer spines + 1 short outer proximal seta); dactylus with 1 tooth.

Gn2: coxa elliptic with small anterior and posterior tooth; merus with 3 well separated groups of setae and with small acute distal tooth; carpus process with 5 well separated groups of setae; tip of carpus reaching 0.21 of propodus, not reaching propodal group of strong spines; propodus 1.62 x as long as wide; group of spines on the proximal 0.40 of propodus (most distal spine used as reference point); one of these spines is especially long; palm border curved and convex, without teeth; setae of palm of normal length, with hooked spines of outer row normally spaced (26 hooked spines and 6 outer setae); dactylus of normal width, with 4 teeth.

P3: coxa elliptic, narrow, with small anterior and posterior teeth; merus 1.43 x as long as carpus and 0.96 x as long as propodus; dactylus long, slender, with its two borders slightly curved, 0.76 x as long as carpus and 0.50 x as long as propodus; posterior border of merus with 2 isolated short thin setae; carpus with 2 long slender spines, of which one is on the middle of the border and the second is in distal position and is associated with a setule; propodus with 5 groups of articulate structures on posterior border: 2 short spines followed by 2 fairly short spines associated with a tiny setule followed by a pair of short spines; anterior border of propodus with a distal group of articulate structures consisting of 2 long spiniform setae and 1 setule.

Rest of body lost.

#### LENGTH

Probably about 10 mm.

#### DISTRIBUTION

Western Weddell Sea, 62°11'S 049°30'W, 3405-3408 m.

#### REMARKS

*Liljeborgia* sp. 1 is only known by the anterior half of

a unique specimen; hence not enough to name it. The occurrence of paired dorsal setae on the third article of the palp of the maxilliped and the very broad propodus of its gnathopods suggests a close relationship with *L. georgiana* (SCHELLENBERG, 1931) and *L. semperhiemalis* n. sp. However these species have a more developed ornamentation on the posterior border of the propodus of the third pereopod. *Liljeborgia* sp. 1 has also similarities with *L. permacra* n. sp. but it has setules instead of spines on the posterior border of the propodus of the third and fourth pereopods, dorsomedial spines on the fifth article of the peduncle of the first antenna and it has much broader coxae 2 and 3 than *Liljeborgia* sp. 1.

### *Liljeborgia* sp. 2

(Figs 159-160)

#### MATERIAL

**ANT-XIX/4, ANDEEP II, sta. 143-1**, South Sandwich Isl., 58°44.69'S 025°10.27'W to 58°44.49'S 025°10.47'W, 774-756 m, EBS-Supranet, 25.iii.2002: 1 ♂ and 2 juveniles (of which the largest is a ♀ with buds of oostegites), leg. A. BRANDT, ZMH-41967

#### DESCRIPTION

Eye present, medium-sized, weakly pigmented in alcohol, with incompletely developed ommatidia.

A1: major flagellum with 17 articles; accessory flagellum with 10 articles.

A2: article 4 of peduncle with long slender dorsal and ventrolateral spines; article 5 without dorsomedial and without ventrolateral spines; article 5 of peduncle and flagellum with strongly curved setae; flagellum with 13 articles, about as long as fifth article of peduncle.

Epistome obtusely triangular in lateral view and protruding.

Md: palp with short and stout articles.

Mxp: third article of palp with 2 or 3 isolated strong dorsal setae on upper margin; inner plates with 2 anterior spines (which are slender and normal-sized).

Gn1: coxa narrowly triangular (almost quadrate), with posterior border concave, with minute anterior notch and small posterior tooth; merus with 2 groups of setae, with distal tooth; carpus process with 4 groups of setae; propodus 2.08 x as long as wide; group of spines on the proximal 0.34 of propodus (most distal spine used as reference point); palm border forming a regular curve, without teeth, with well developed hooked spines (on outer row), which are rather normally spaced (34 hooked outer spines and no outer setae); dactylus

with 3 teeth.

Gn2: coxa with well normally developed anterior and posterior tooth (the two teeth are well separated from each other); merus with 4 groups of sparse setae, with distal tooth; carpus process with 7 well separated groups of setae; propodus 2.00 x as long as wide; group of spines on the proximal 0.33 of propodus (most distal spine used as reference point); palm border regularly convex; medial setae of palm rather long but not very long, outer border of palm with 20 short hooked spines and 10 setae; dactylus with 9 teeth.

P3: coxa very narrow and elliptic with well developed anterior and posterior tooth; anterior tooth of coxa very close to posterior tooth; merus 1.36 x as long as carpus (i.e. carpus not shortened) and 0.97 x as long as propodus (i.e. propodus not shortened); dactylus normally developed, not very slender and barely curved, 0.63 x as long as carpus and 0.45 x as long as propodus; merus with 2 setules on posterior border, with 1 setule on middle of anterior border; carpus with 3 curved setules followed by a long seta on posterior border, without setule on anterior border; propodus with 6 isolated curved setules followed by a pair of distal spinules (length of longest propodal setule about 0.25 x width of propodus) on posterior border; anterior border of propodus without setules.

P4: coxa rather narrow (1.33 x as long as wide), with anterior and posterior border parallel, with anterior border more or less straight, with ventral border slightly convex, with posterior border straight, without shallow anterior notch, with 3 posterior teeth; merus 1.33 x as long as carpus (i.e. carpus not shortened) and 0.97 x as long as propodus (i.e. propodus not shortened); dactylus normally developed, not very slender and barely curved, 0.66 x as long as carpus and 0.47 x as long as propodus; merus with 3 isolated curved setules on posterior border, with 1 setule on middle of anterior border; carpus with 4 curved setules on posterior border, without median setule on anterior border (just a distal tiny setule); propodus with 6 isolated setules followed by a pair of distal spinules (length of longest propodal setule about 0.28 x width of propodus) on posterior border; anterior border of propodus with 2 setules of which one is apical.

P5-P7 missing.

Pleonite 1: posterodorsal area produced into a well developed tooth; Ep1 with well developed posteroventral tooth, with posterior border weakly convex, without setae.

Pleonite 2: posterodorsal area produced into a well developed tooth; Ep2 with normally developed posteroventral tooth, with posterior border barely

convex.

Pleonite 3: posterodorsal area not produced into a tooth; Ep3 with small posteroventral tooth, positioned above the ventral margin, followed upwards by a distinct notch, with posterior border straight (except for a second, shallow notch), oblique and with or without a setule in the shallow notch.

Urosomite 1 with dorsal border rectilinear, with small posterodorsal tooth pointing backwards; ventrolateral border with 1 or 2 spines; peduncle of U1 with 5 dorsolateral spines which are regularly spaced: 4 short and of normal stoutness ones, followed by 1 long and stout distal one, with 1 well developed dorsomedial distal spine; outer ramus with 3 small outer spines and no medial spine; inner ramus with 2 spines on outer border and 4 well developed and rather stout spines on medial border.

Urosomite 2 with dorsal border rectilinear, with small posterodorsal tooth pointing backwards; peduncle of U2 with 1 dorsolateral distal and 1 dorsomedial distal spines (both stout and rather short); outer ramus with 3 normally developed and rather stout outer spines and no medial spines; inner ramus with 1 small spine on outer border and 4 well developed and rather stout spines on medial border.

Urosomite 3 without posterolateral tooth on each side, with pair of short posterodorsal spines; posterolateral lobes without tooth; U3 much shorter than U1, slightly shorter than U2; outer ramus of U3 without spines; inner ramus slightly longer than peduncle, without spines on outer side, with 1 small spine on medial side.

Telson: medial tooth of each lobe not especially long but slightly longer than outer tooth; inter-teeth spines about as long as outer teeth (hence shorter than medial teeth); outer tooth of each telson lobe apparently without seta (but it cannot be possible to be conclusive without dissection).

#### SIZE

7.5 mm.

#### DISTRIBUTION

South Sandwich Islands, 58°45'S 025°11'W, 774-756 m.

#### REMARKS

*Liljeborgia* sp. 2 is extremely similar to *L. cnephatis* n. sp. but lives in shallower waters (ca 760 m vs. ca 2370 m). See account of *L. chevreuxi* for a comparison

between them and other species of the “*chevreuxi* complex”. All the specimens of *Liljeborgia* sp. 2 examined had lost their last three pairs of pereopods, thus not allowing an adequate study of the species and the author refrains from giving it a name in such conditions.

#### KEY TO *LILJEBORGIA* SPECIES OF THE SOUTHERN OCEAN

A key to the currently described *Liljeborgia* of the Southern Ocean south of 40°S (Tasmania and New Zealand excluded) is given below. A substantial number of additional species probably remains to be described and this key will certainly have to be upgraded in the future. So, biologists using this key for identifying their material should always keep in mind that the species they have in hand can be a new species, even if it matches a species included in this key. Finally, it must be borne in mind that very little is known about the variability of the species. So, there is no doubt that some specimens of named species will exhibit character states slightly departing from the indications of the key.

- 1.- Peduncle of U1 with only 1 ventromedial spine (in apical position); article 1 of palp of Mxp without distal outer setae; posterior border of propodus of P3-P4 with setules or small conical spines; basis of P5-P7 always broad (1.65 x as long as wide or broader) and more or less elliptic; anteromedial border of article 5 of A2 without spines; urosomite 3 without posterolateral tooth (*Liljeborgia* group 1).....2
- Peduncle of U1 with several ventromedial spines; article 1 of palp of Mxp with distal outer setae; posterior border of propodus of P3-P4 with setules, strong spines or long setae [if setules, then basis of P5-6-7 about 2.8 x as long as wide]; basis of P5-P7 variable in shape; anteromedial border of article 5 of A2 with or without spines; urosomite 3 with or without posterolateral tooth (*Liljeborgia* group 2).....9
- 2.- Posterior border of propodus of P3-P4 with small conical spines .....3
- Posterior border of P3-P4 with setules .....4
- 3.- Pleonites 1-2 with 1 small posterodorsal tooth .....  
*L. kerguelensis* BELLAN-SANTINI & LEDOYER, 1974
- Pleonites 1-2 with 3 small posterodorsal teeth .....  
..... *L. georgiensis* K.H. BARNARD, 1932
- 4.- Pleonites 1-2 each with 3 small teeth.....5
- Pleonite 1-2 each with 0-1 tooth ..... 6
- 5.- Dactylus of the P7 is 0.3 x as long as the propodus; spines of the rami of U1-2-3 large and very stout; Patagonian species .....*L. octodentata* SCHELLENBERG, 1931
- Dactylus of the P7 is 0.8 x as long as the propodus; spines of the rami of U1-2-3 small and rather slender; Kerguelen species ..... *L. cryptothrix* n. sp.
- 6.- Apical spine of telson lobes much longer than apical teeth .....7
- Apical spine of telson shorter than apical teeth..... 8
- 7.- Epistome bluntly triangular in lateral view. Coxae 1-3 with small anterior and posterior tooth or notch; Antarctic species .....  
.....*L. chevreuxi* SCHELLENBERG, 1931
- Epistome acutely triangular in lateral view. Coxae 1-3 with posterior tooth only (but it is very strong); species from Marion Island ..... *L. pseudo-macronyx* BELLAN-SANTINI & LEDOYER, 1987
- 8.- Pleonites 1 and 2 with small posterodorsal tooth .....  
..... *L. cnephatis* n. sp.
- Pleonite 1 without posterodorsal tooth; pleonite 2 with posterodorsal tooth ..... *Liljeborgia* sp. 2
- 9.- First dorsolateral spine of peduncle of U1 long and significantly longer than next one; posterior border of carpus and propodus of P3-P4 with very long slender setae; basis of P5-P7 broadly elliptic..... 10
- All non-distal dorsal spines of peduncle of U1 regular-sized (except distal one which is larger); ornamentation of posterior border of carpus and propodus of P3-P4 variable; basis of P5-P7 narrowly elliptic to (sub)quadrate .....14
- 10.- Pleonite 3 without posterodorsal tooth; posterodorsal teeth/tooth of pleonites 1-2 (if any) small; Ep3 with posterolateral tooth of normal size; first ventrolateral spine of peduncle of U1 large and followed by shorter one after a very short space . .....11
- Pleonite 3 with posterodorsal tooth; posterodorsal teeth/tooth of pleonites 1-2 large; Ep3 with extremely large posterolateral tooth. First ventrolateral spine of peduncle of U1 large but separated from next (shorter) spine by long space .....  
..... *L. consanguinea* STEBBING, 1888
- 11.- Teeth or notches of coxa 2 and 3 very distant from each other. Basis of P7 with 9 to 12 teeth on posterior border. Inner plate of Mx1 with 1

- well developed seta and sometimes 1 additional much shorter accessory seta. In adult males, dactylus of Gn2 normally developed or short. Antarctic species ..... 12
- Teeth or notches of coxa 2 and 3 very close to each other. Basis of P7 with about 20 teeth on posterior border. Inner plate of Mx1 with about five setae. In adult males dactylus of Gn2 normally developed. Patagonian species .....  
.....*L. quinquedentata* SCHELLENBERG, 1931
- 12.- Rami of U3 shorter than peduncle. Dactylus of P7 0.8 x as long as propodus. In adult male dactylus of Gn2 about 0.50-0.59 x as long as propodus. Shelf species .....13
- Rami of U3 longer than peduncle. Dactylus of P7 1.2 x as long as propodus. In adult male dactylus of Gn2 about 0.66 x as long as propodus. Deep sea species ...  
.....*L. homospora* n. sp.
- 13.- Merus of P5 with 1 or 2 spines on posterior border in addition to distal spine. In male palm of Gn2 proximally convex and with five triangular teeth on this convexity. In male dactylus reaching distal spine of propodus when the chela is closed. Pleonites 1 and 2 each with one small posterodorsal tooth.....*L. quadridentata* SCHELLENBERG, 1931
- Merus of P5 with no spines on posterior border (distal spine excepted). In male palm of Gn2 proximally concave and with three very blunt proximal teeth. In male dactylus not reaching distal spine of propodus when the chela is closed. In adults pleonite 1 without posterodorsal tooth or only with trace of tooth (a tooth may be present in juveniles); pleonite 2 with three small posterodorsal teeth .....*L. polydeuces* n. sp.
- 14.- Pleonites 1 and 2 with no more than three posterodorsal teeth.....15
- Pleonites 1 and 2 with five (sometimes seven) posterodorsal teeth.....*L. prionotan*. sp.
- 15.- Inner ramus of U3 0.85 to 1.00 x as long as outer ramus. Pleonites 1 and 2 with similar-sized posterodorsal tooth. Inner plate of Mx1 with one long seta (sometimes paired with much smaller accessory seta) .....16
- Inner ramus of U3 half as long as outer ramus. Pleonite 2 with strong posterodorsal tooth but pleonite 1 only with trace of tooth. Inner plate of Mx1 with about five setae ..... *L. rauscherti* n. sp.
- 16.- Posterior border of propodus of P3-P4 with small spines .....17
- Posterior border of propodus of P3-P4 with long setae or large spines .....18
- 17.- Dactylus of P3 very stout and very short (0.35 x as long as carpus); walking pereopods extremely stout; shallow water species .....*L. eurycradus* THURSTON, 1974
- Dactylus of P3 slender and long (0.75 x as long as carpus); walking pereopods slender; deep sea species .....*Liljeborgia* sp. 1
- 18.- Pleonite 3 with small posterodorsal tooth ..... 19
- Pleonite 3 without posterodorsal tooth ..... 21
- 19.- Posterior border of propodus of P3-P4 with very long slender setae (some forming groups) ..... 20
- Posterior border of propodus of P3-P4 with setules ...  
..... *L. permacra* n. sp.
- 20.- Medial tooth of telson lobes slightly shorter than outer tooth and inter-teeth spine considerably longer than teeth. Ep3 with very small tooth. Posterodorsal tooth of pleonites 1-2 and urosomites 1-2 strong. Urosomite 3 with pair of long posterodorsal spines .....  
..... *L. abyssotypica* n. sp.
- Medial tooth of telson lobes much shorter than outer tooth and inter-teeth spine shorter than teeth. Ep3 with strong tooth. Posterodorsal tooth of pleonites 1-2 and urosomites 1-2 small. Urosomite 3 with pair of rather small posterodorsal spines .....*L. bythiana* n. sp.
- 21.- Posterior border of basis of P5-P7 with small teeth .....22
- Posterior border of basis of P5-P7 with very large sharp teeth ..... *L. macrodon* SCHELLENBERG, 1931
- 22.- Pleonites 1-2 either with one posterodorsal tooth or with three posterodorsal teeth of which the median one is considerably longer than the posterolateral ones. Species not occurring in Patagonia and Falkland Islands .....23
- Pleonites 1-2 with three subequal or moderately unequal teeth. Marbled colour pattern. Species from Patagonia and Falkland Islands .....  
..... *L. longicornis* (SCHELLENBERG, 1931)
- 23.- Ep3 with normally developed tooth followed upwards by a small notch. Basis of P5-

- P6 1.65-1.90 x as long as wide; basis of P7 1.60-1.80 x as long as wide. Anterior border of propodus of P5-P6-P7 with small spines ..... 24
- Ep3 with very strong tooth not followed upwards by notch. Basis of P5-P6 2.40 x as long as wide; basis of P7 2.20 x as long as wide. Anterior border of propodus of P5-P6-P7 with long spines. Uniform colour pattern .....  
..... *L. semperhiemalis* n. sp.
- 24.- Posterodistal angle of basis of P7 forming an abrupt curve; posterior border of basis of P7 with 18-19 teeth. Merus of P7 3.70 x as long as wide and 0.85 x as long as basis. Basis of P5 symmetrically elliptic (with posterior border convex). Propodus of Gn1 1.90-1.95 x as long as wide. Posterodorsal spines of urosomite 3 and spines of telson very long. Colour pattern unknown .....  
..... *L. nesiotica* n. sp.
- Posterolateral angle of basis of P7 produced into a small tooth; posterior border of basis of P7 with 10-12 teeth. Merus of P7 5.69 x as long as wide and 1.25 x as long as basis. Basis of P5 symmetrically subquadrate, with anterior border convex and posterior border straight. Propodus of Gn1 1.65 x as long as wide. Posterodorsal spines of urosomite 3 and spines of telson well developed but not unusually long. Uniform colour pattern .....  
..... *L. georgiana* (SCHELLENBERG, 1931)

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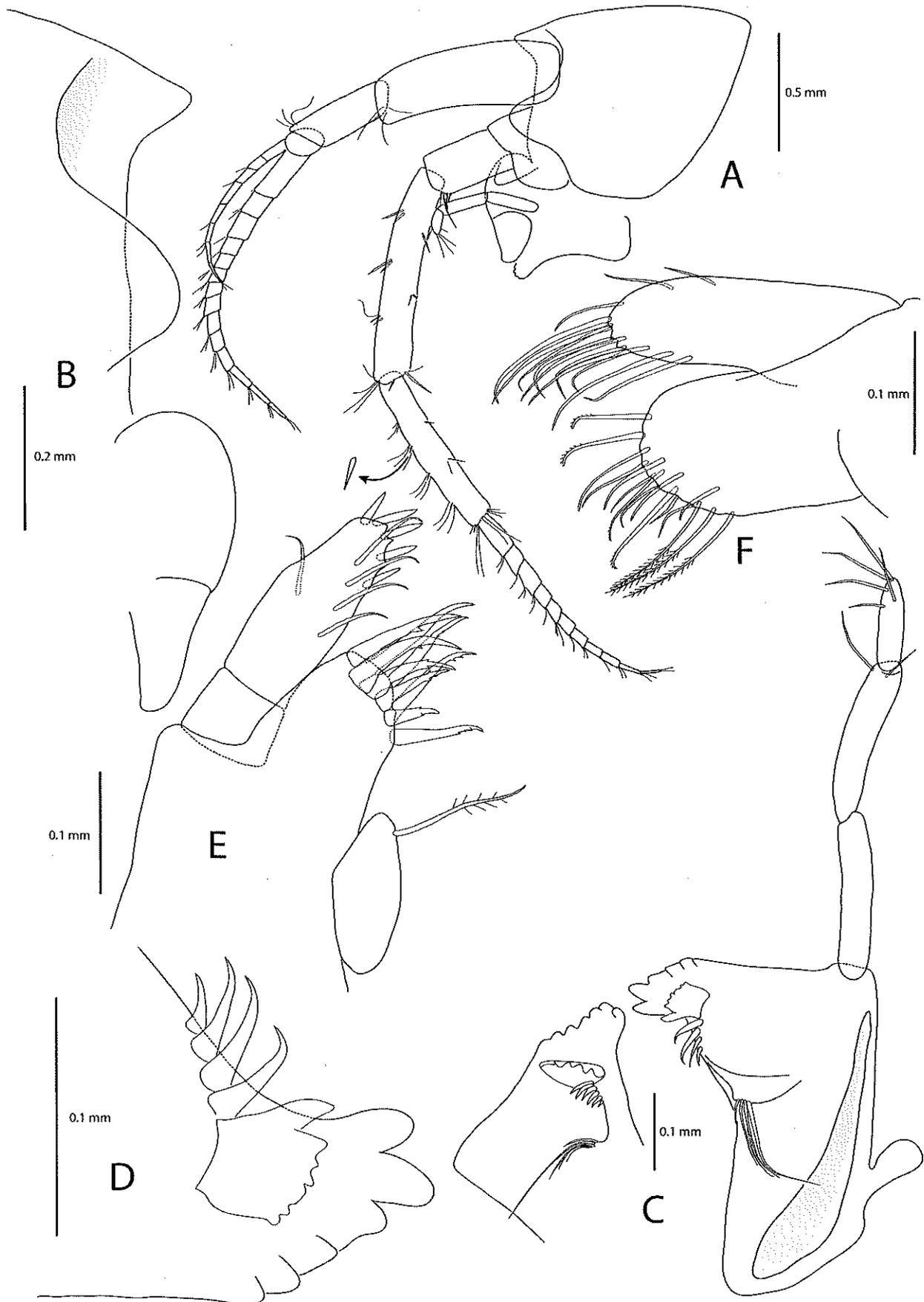


Fig. 1. *Liljeborgia abyssotypica* n. sp., holotype, presumably male, off SE Tasmania, R/V Eltanin sta. 38-11GR34. A, head with left antennae; B, anterior part of head + epistome; C, left and right Md; D, tip of right Md; E, right Mx1; F, left Mx2.

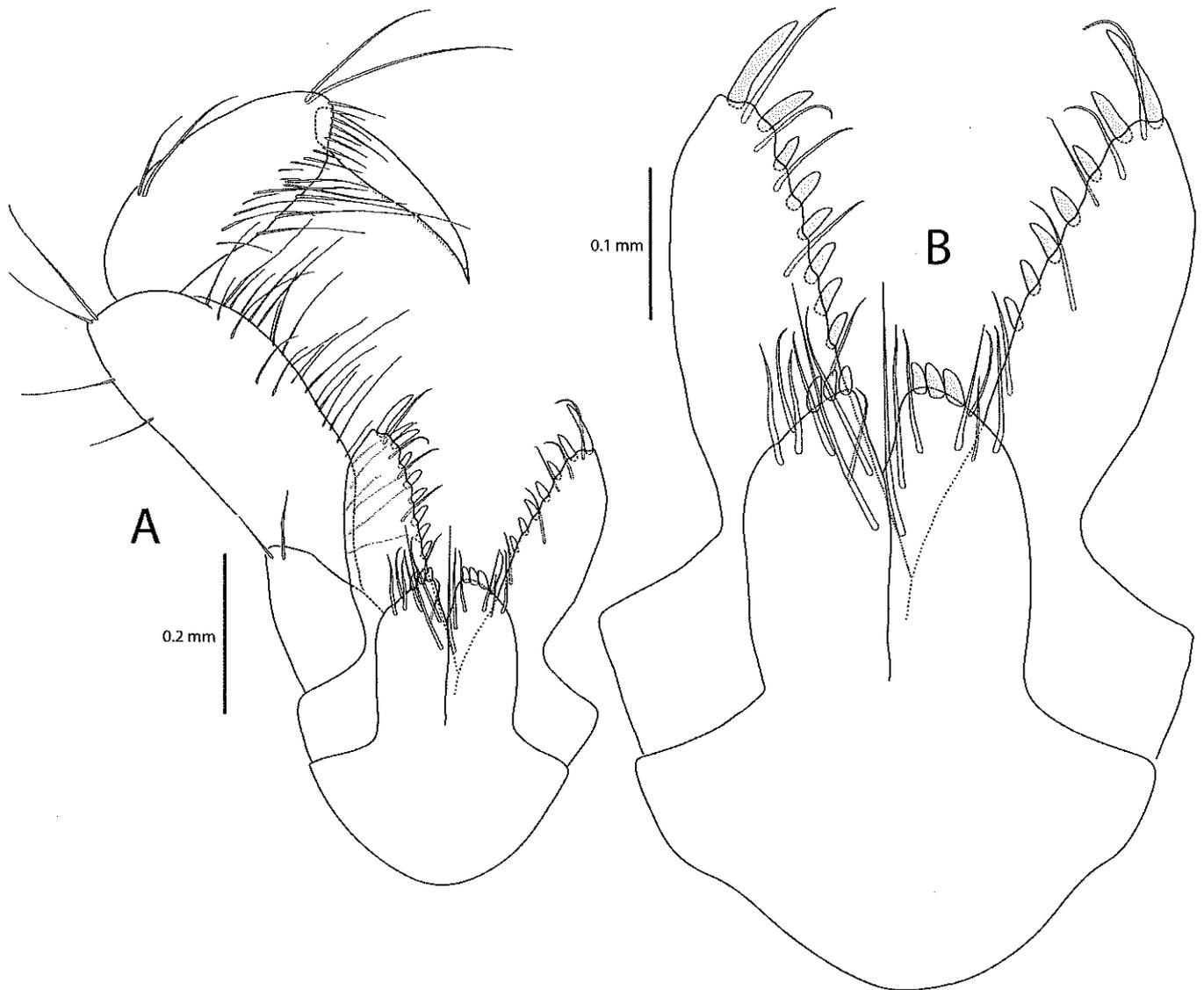


Fig. 2. *Liljeborgia abyssotypica* n. sp., holotype, presumably male, off SE Tasmania, R/V Eltanin sta. 38-11GR34. A, Mxp; B, plates of Mxp.

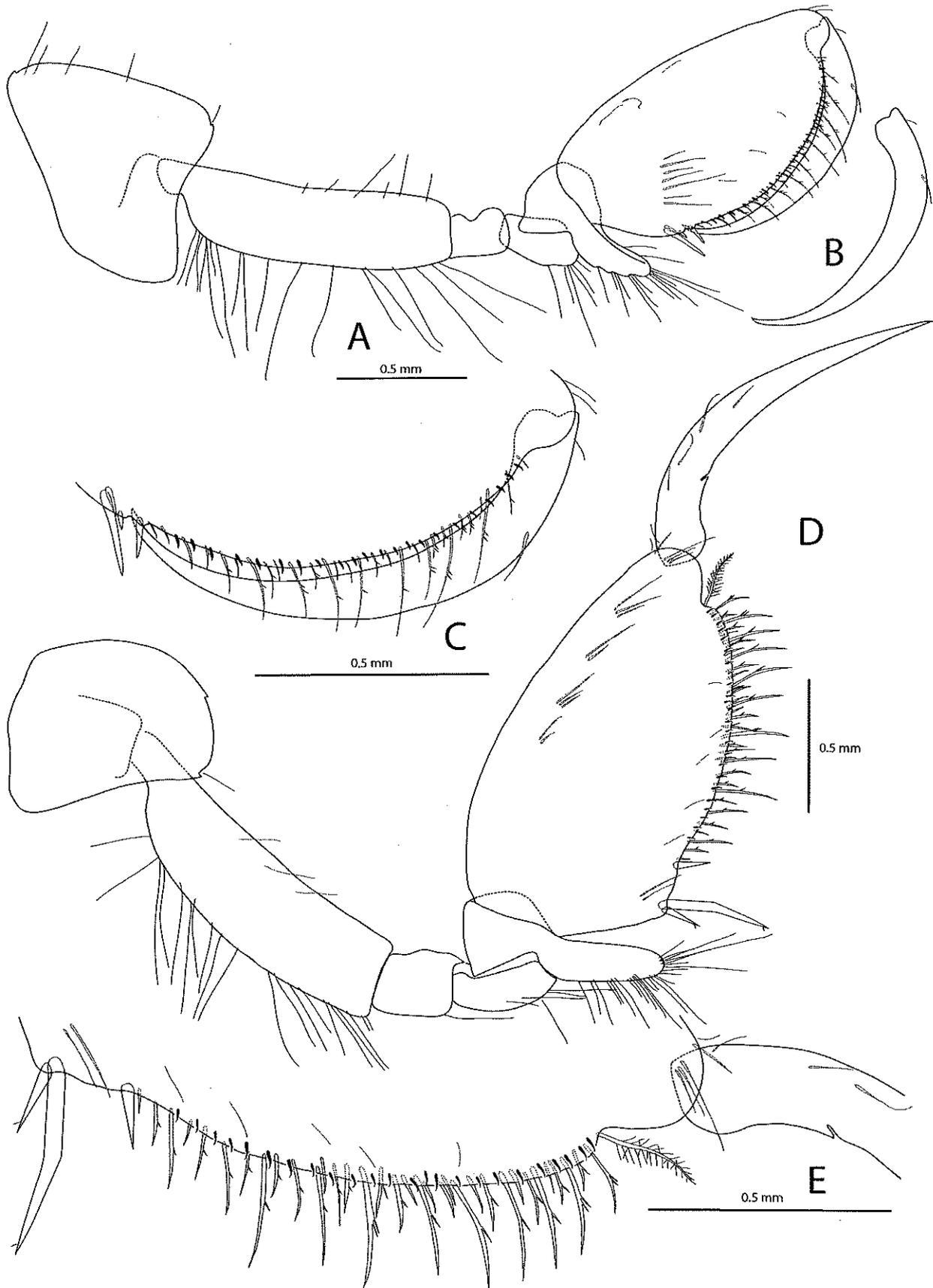


Fig. 3. *Liljeborgia abyssotypica* n. sp., holotype, presumably male, off SE Tasmania, R/V Eltanin sta. 38-11GR34. A, right Gn1; B, dactylus of right Gn1; C, palm of right Gn1; D, right Gn2; E, palm of right Gn2.

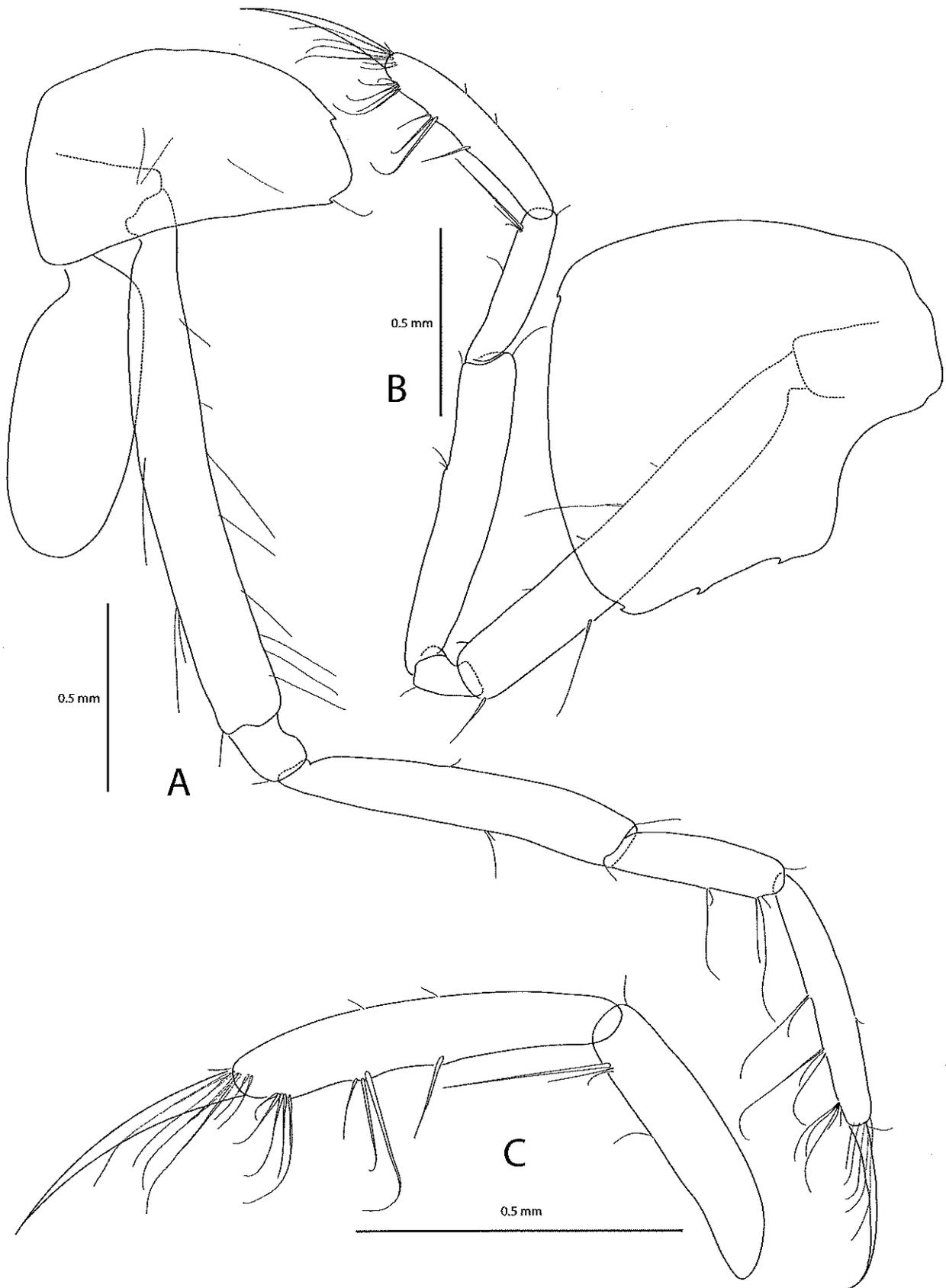


Fig. 4. *Liljeborgia abyssotypica* n. sp., holotype, presumably male, off SE Tasmania, R/V Eltanin sta. 38-11GR34. A, right P3; B, left P4; C, tip of right P4.

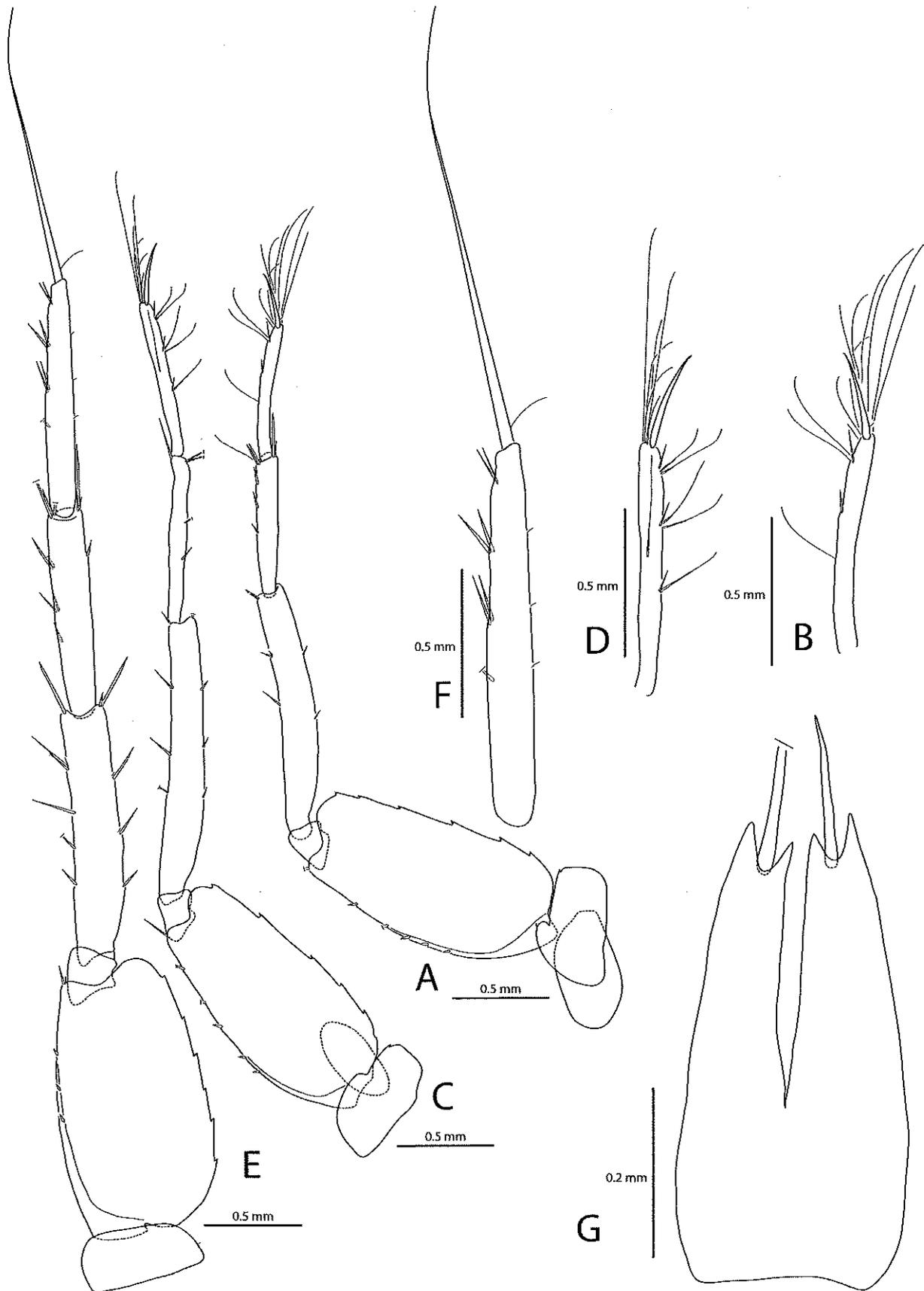


Fig. 5. *Liljeborgia abyssotypica* n. sp., holotype, presumably male, off SE Tasmania, R/V Eltanin sta. 38-11GR34. A, right P5; B, tip of right P5; C, right P6; D, tip of right P6; E, right P7; F, tip of right P7; G, telson.

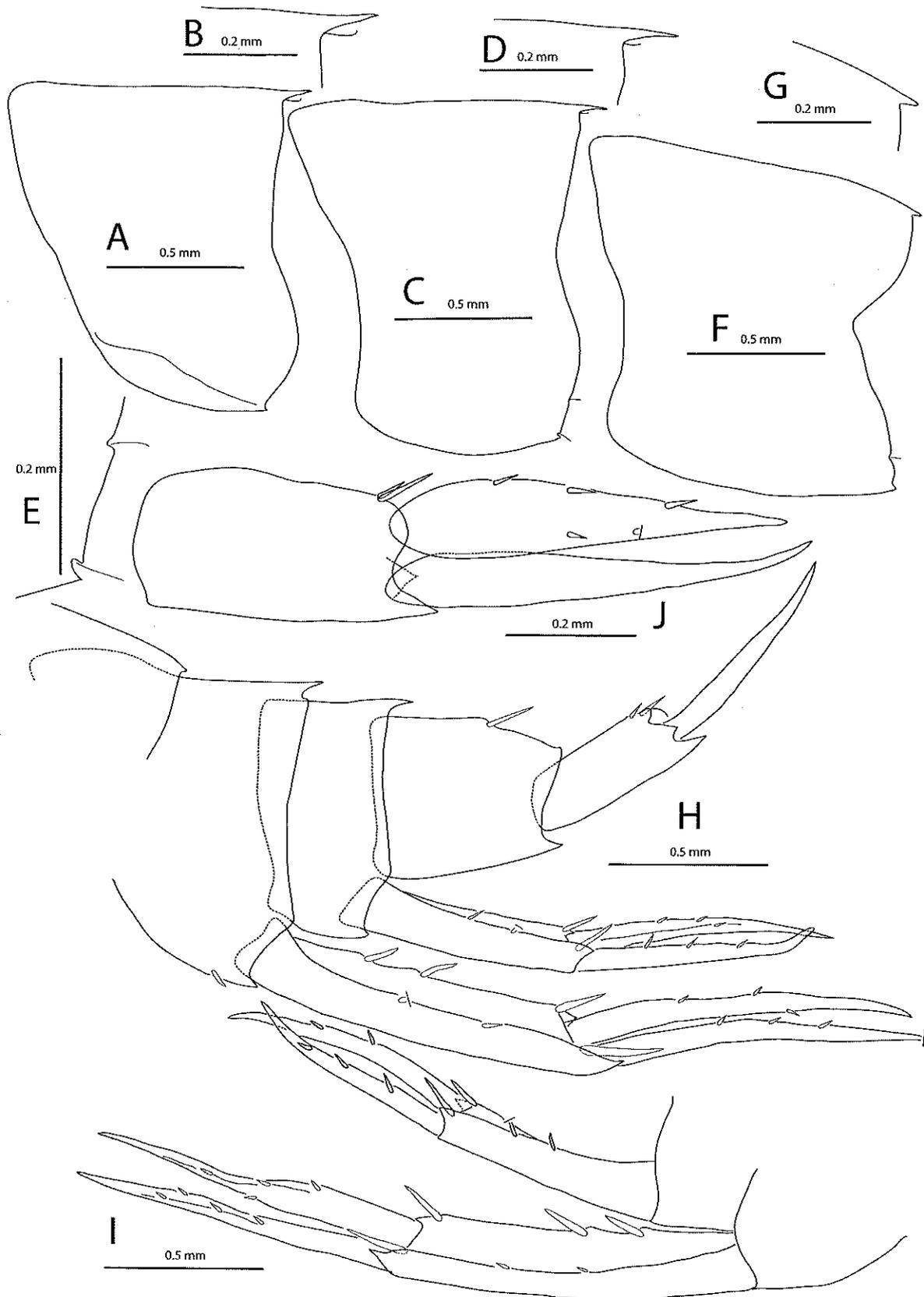


Fig. 6. *Liljeborgia abyssotypica* n. sp., holotype, presumably male, off SE Tasmania, R/V Eltanin sta. 38-11GR34. A, pleonite 1; B, posterodorsal border of pleonite 1 in lateral view; C, pleonite 2; D, posterodorsal border of pleonite 2 in lateral view; E, posteroventral corner of Ep2; F, pleonite 3; G, posterodorsal border of pleonite 3 in lateral view; H, urosome (left side); I, right U1 and U2; J, left U3.

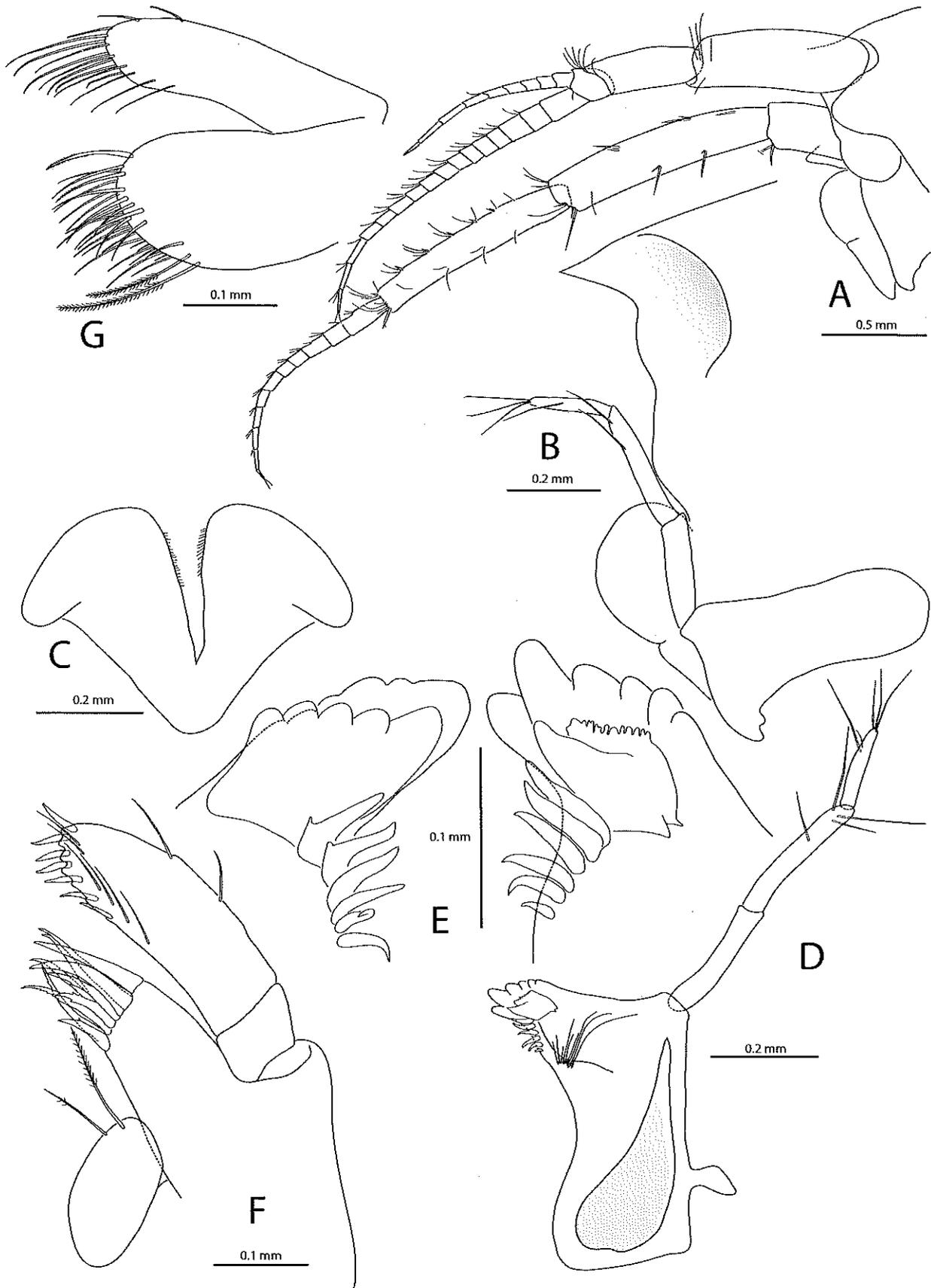


Fig. 7. *Liljeborgia bythiana* n. sp., holotype, presumably male, Western Weddell Sea, ANDEEP II, ANT XIX/4, sta. 131-3. A, head with left antennae; B, anterior part of head + epistome and left Md; C, lower lip; D, right Md; E, tip of left and right Md; F, left Mx1; G, left Mx2.

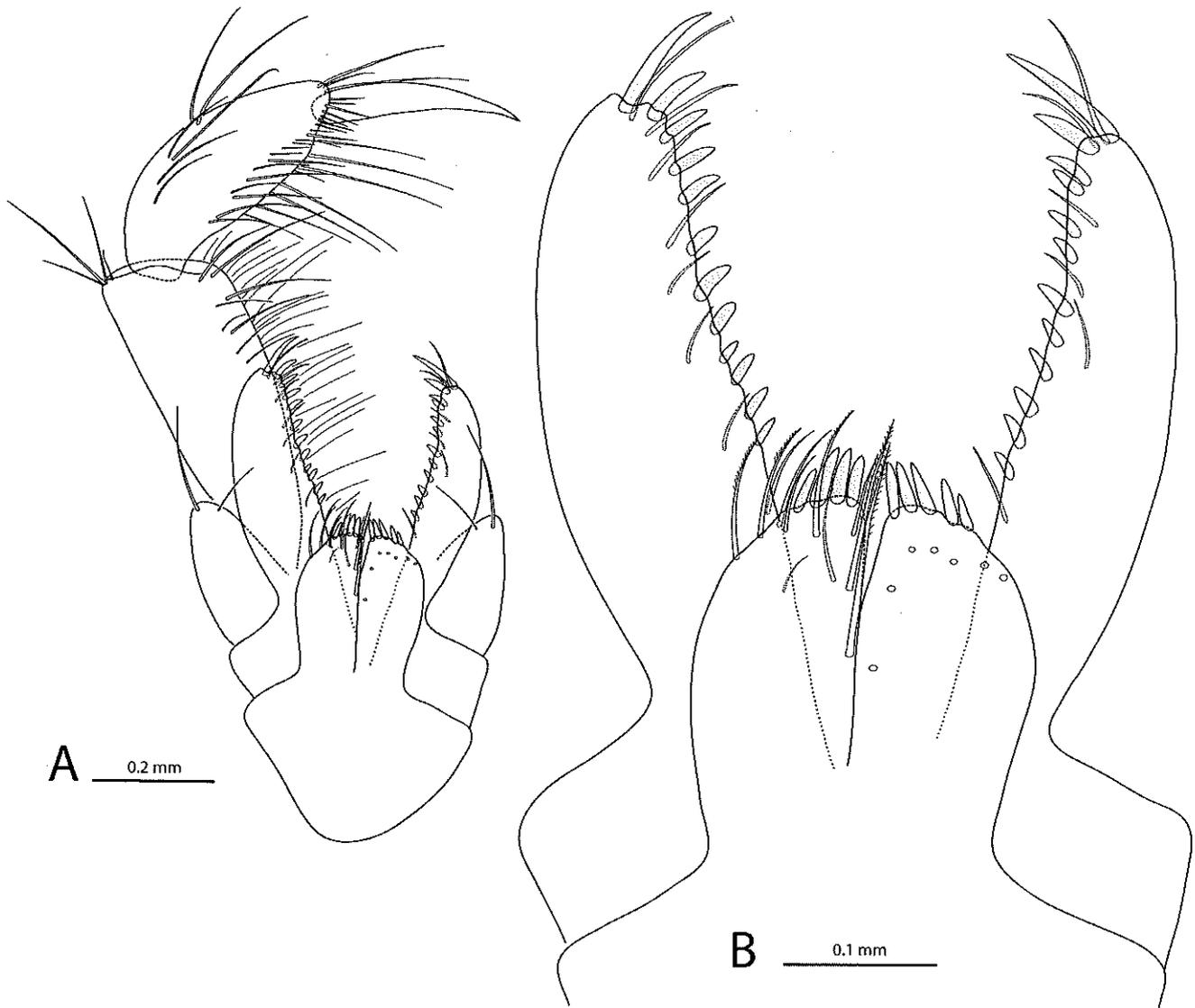


Fig. 8. *Liljeborgia bythiana* n. sp., holotype, presumably male, Western Weddell Sea, ANDEEP II, ANT XIX/4, sta. 131-3. A, Mxp; B, plates of Mxp.

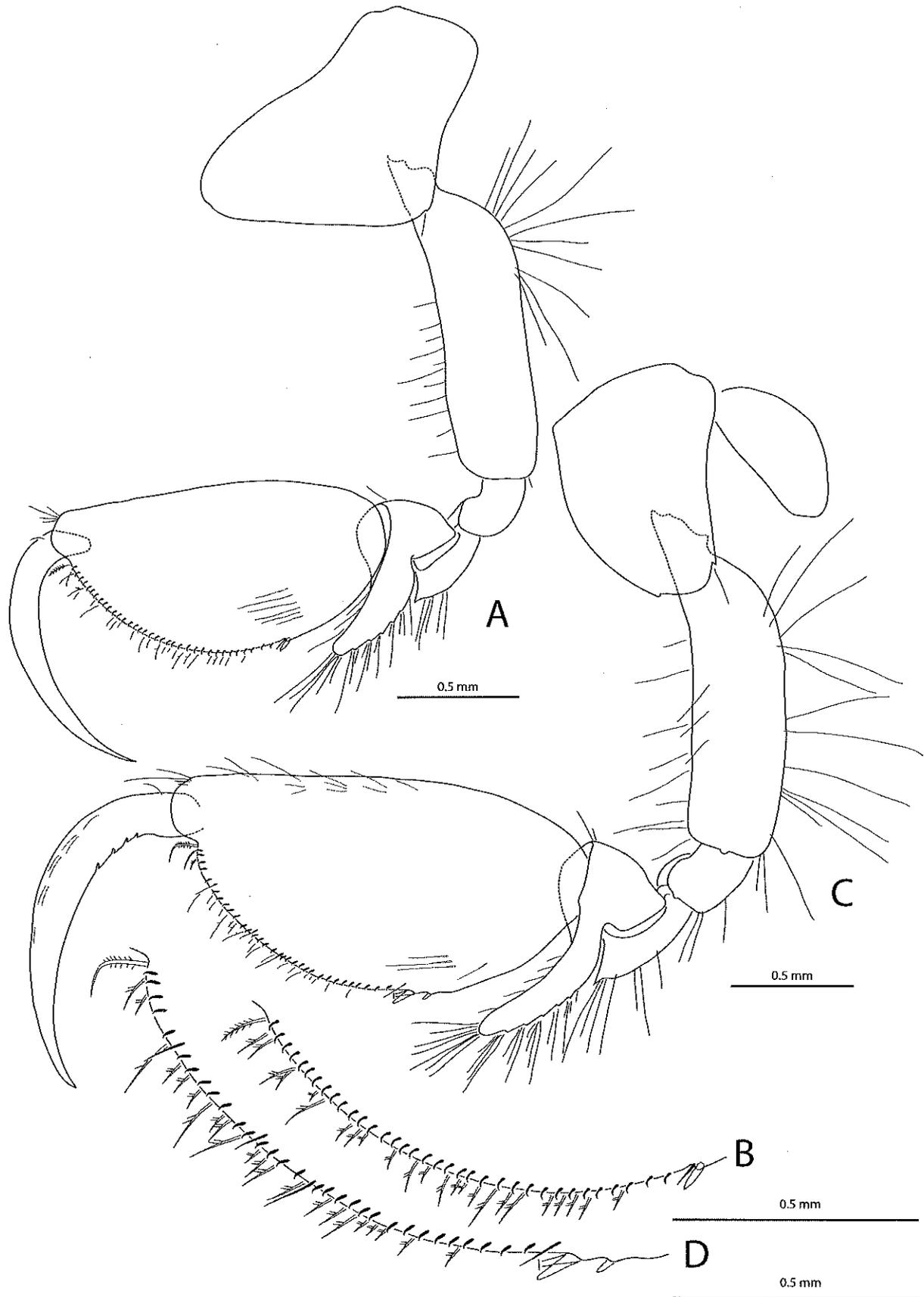


Fig. 9. *Liljeborgia bythiana* n. sp., holotype, presumably male, Western Weddell Sea, ANDEEP II, ANT XIX/4, sta. 131-3. A, left Gn1; B, palm of left Gn1; C, left Gn2; D, palm of left Gn2.

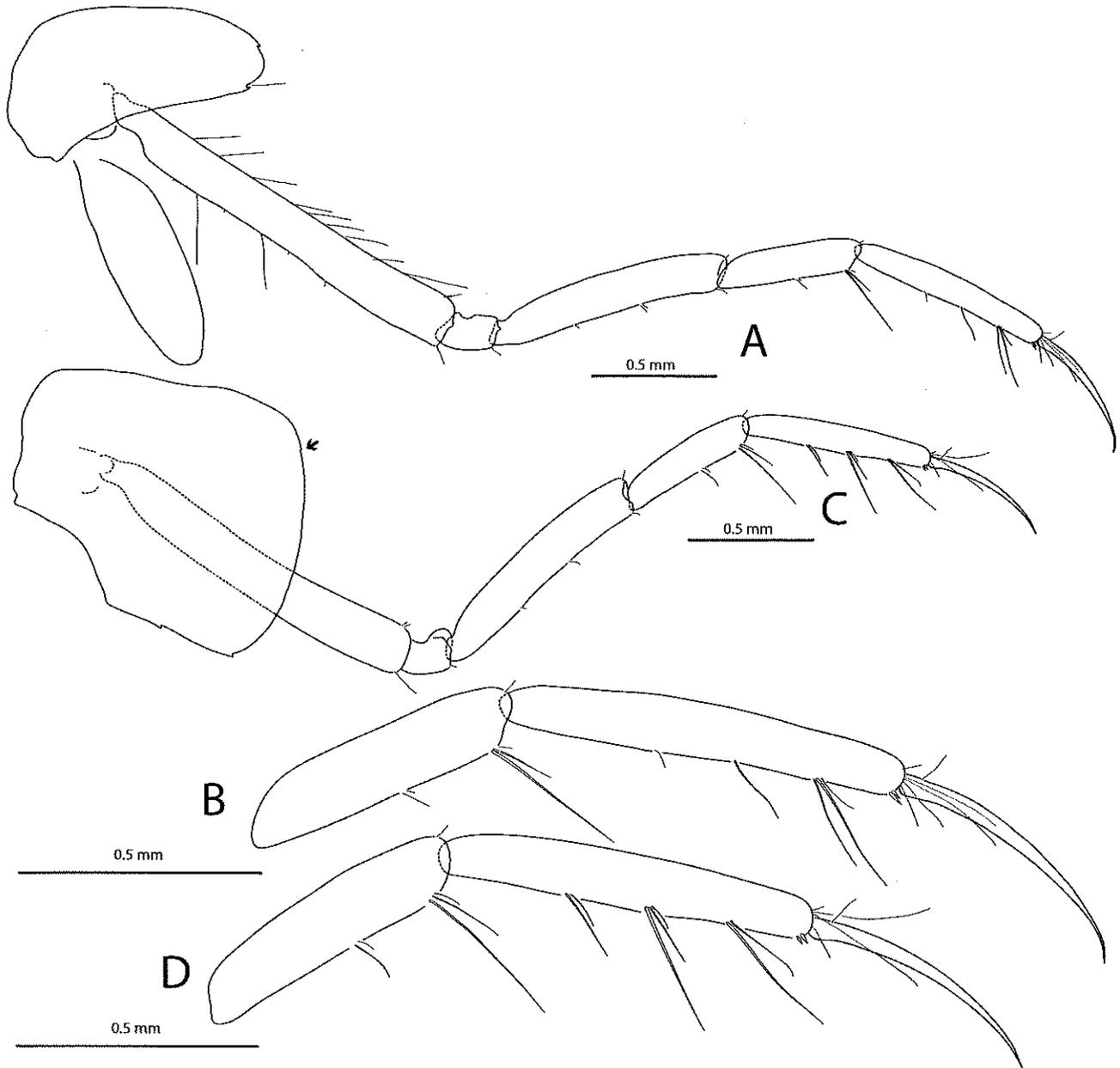


Fig. 10. *Liljeborgia bythiana* n. sp., holotype, presumably male, Western Weddell Sea, ANDEEP II, ANT XIX/4, sta. 131-3. A, right P3; B, tip of right P3; C, right P4; D, tip of right P4.

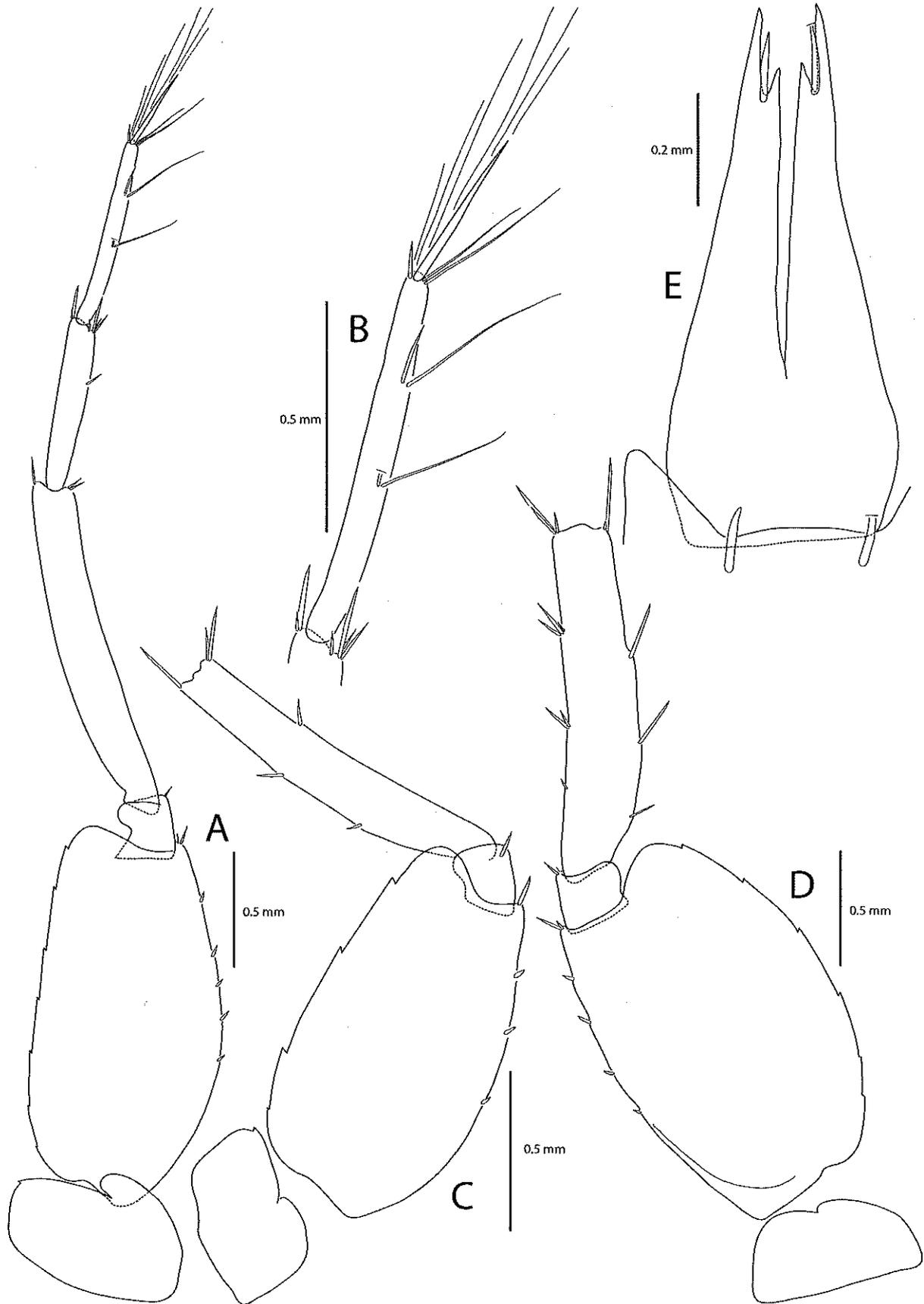


Fig. 11. *Liljeborgia bythiana* n. sp., A, B, D, E, holotype, presumably male; C, paratype, presumably male, Western Weddell Sea, ANDEEP II, ANT XIX/4, sta. 131-3. A, left P5; B, tip of left P5; C, left P6; D, right P7; E, telson.

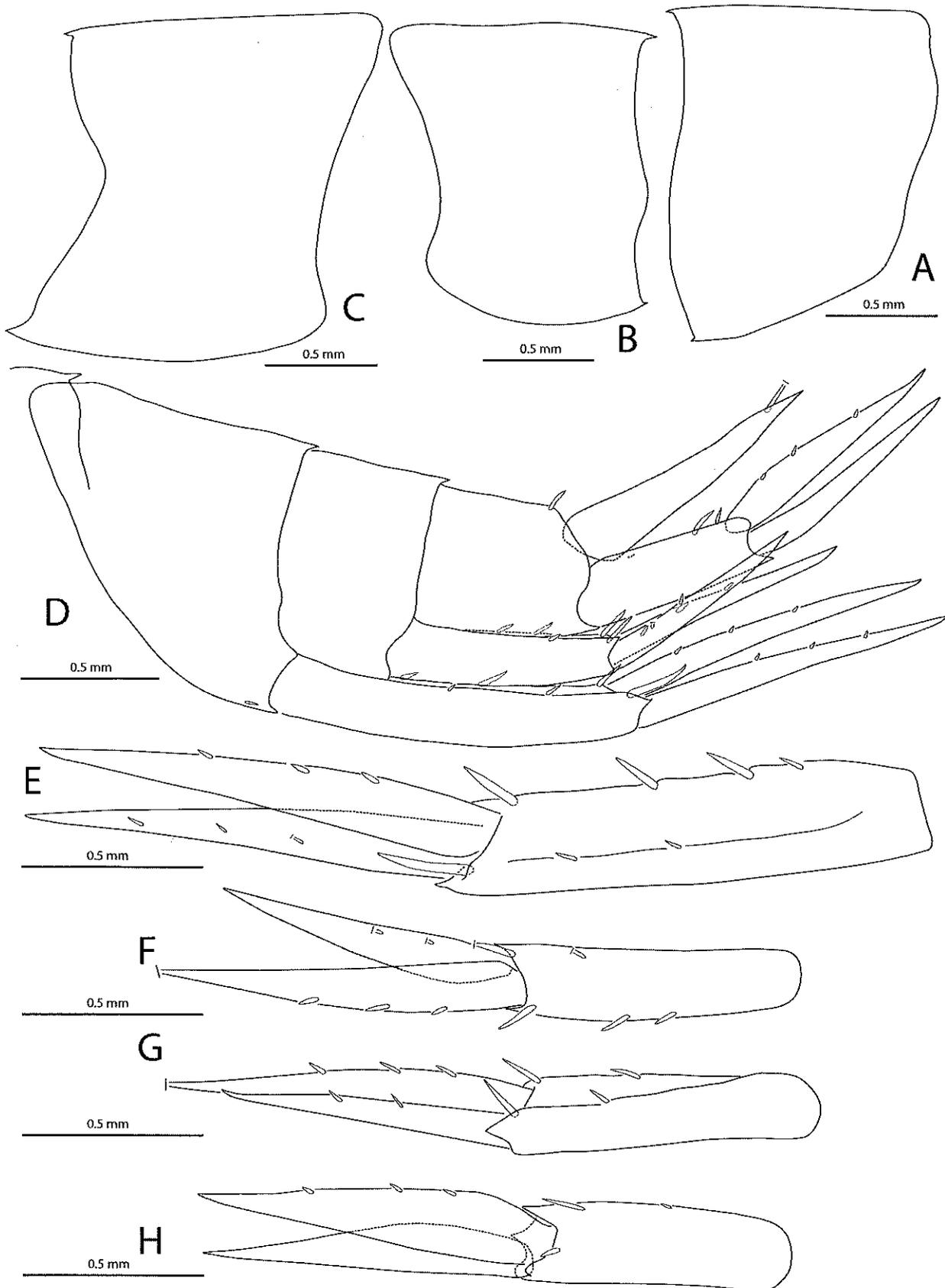


Fig. 12. *Liljeborgia bythiana* n. sp., holotype, presumably male, Western Weddell Sea, ANDEEP II, ANT XIX/4, sta. 131-3. A, pleonite 1 (right side); B, pleonite 2 (left side); C, pleonite 3 (right side); D, urosome (left side); E, right U1; F, left U2; G, right U2; H, right U3.

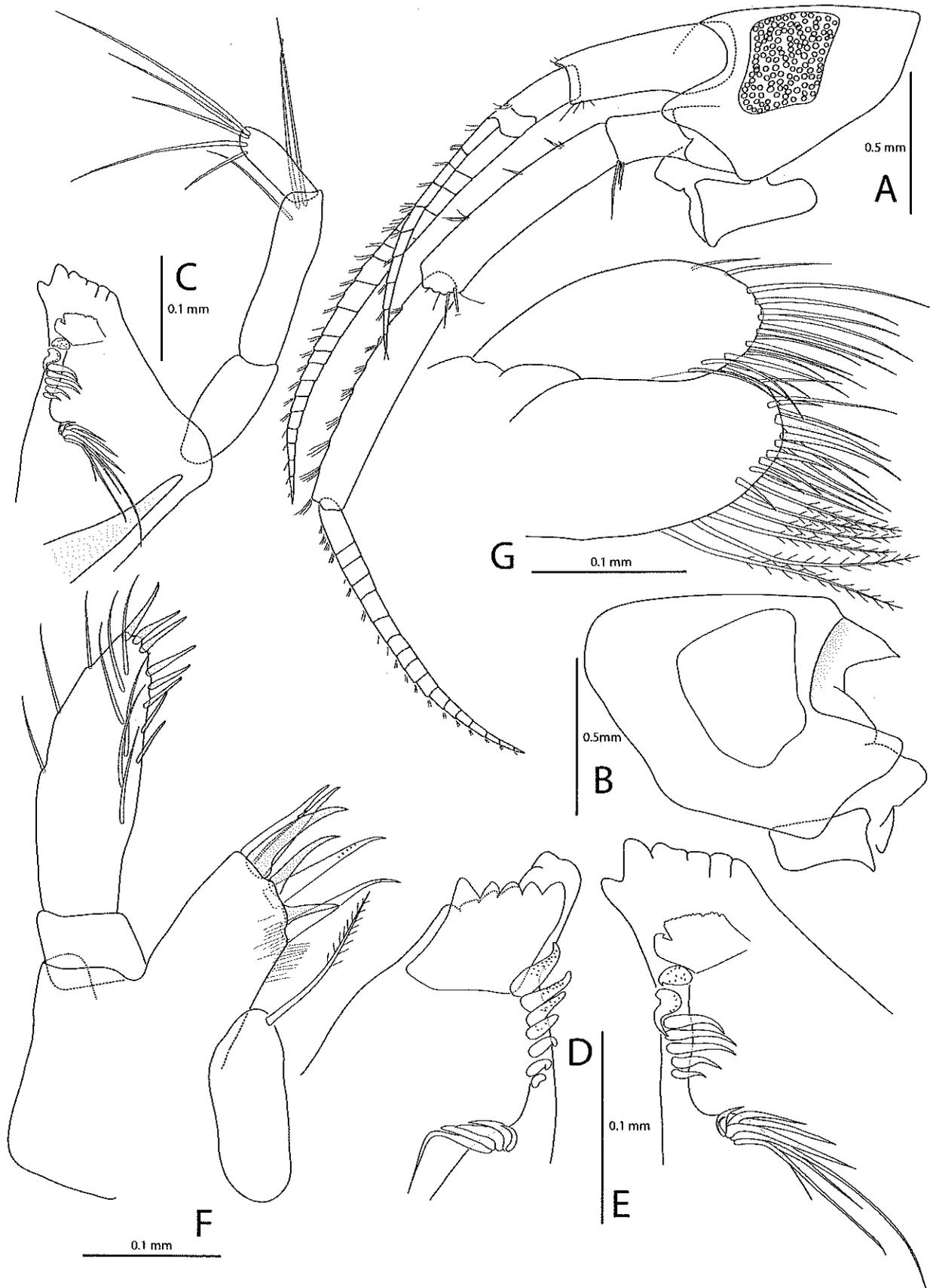


Fig. 13. *Liljeborgia chevreuxi* SCHELLENBERG, 1931, ovigerous female, Dundee Island, ANT XXIII-8, sta. 728-2. A, head with antennae; B, head + complex epistome + upper lip, right Md in lateral view; C, right Md; D, tip of left Md; E, tip of right Md; F, right Mx1; G, right Mx2.

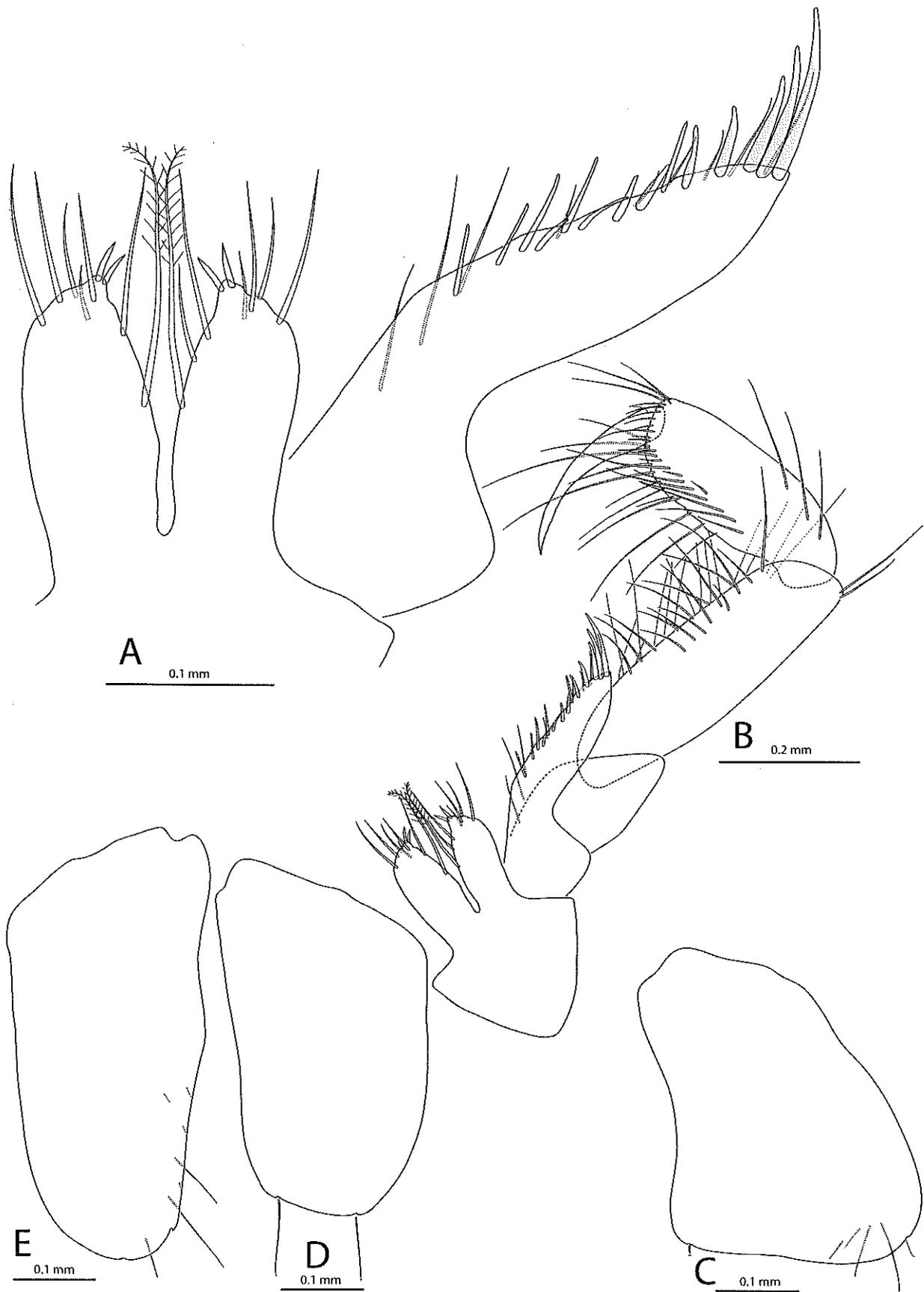


Fig. 14. *Liljeborgia chevreuxi* SCHELLENBERG, 1931, ovigerous female, Dundee Island, ANT XXIII-8, sta. 728-2. A, Mxp plates; B, Mxp; C, right coxa 1; D, right coxa 2; E, left coxa 3.



Fig. 15. *Liljeborgia chevreuxi* SCHELLENBERG, 1931, ovigerous female, Dundee Island, ANT XXIII-8, sta. 728-2. A, left Gn1; B, left Gn2.

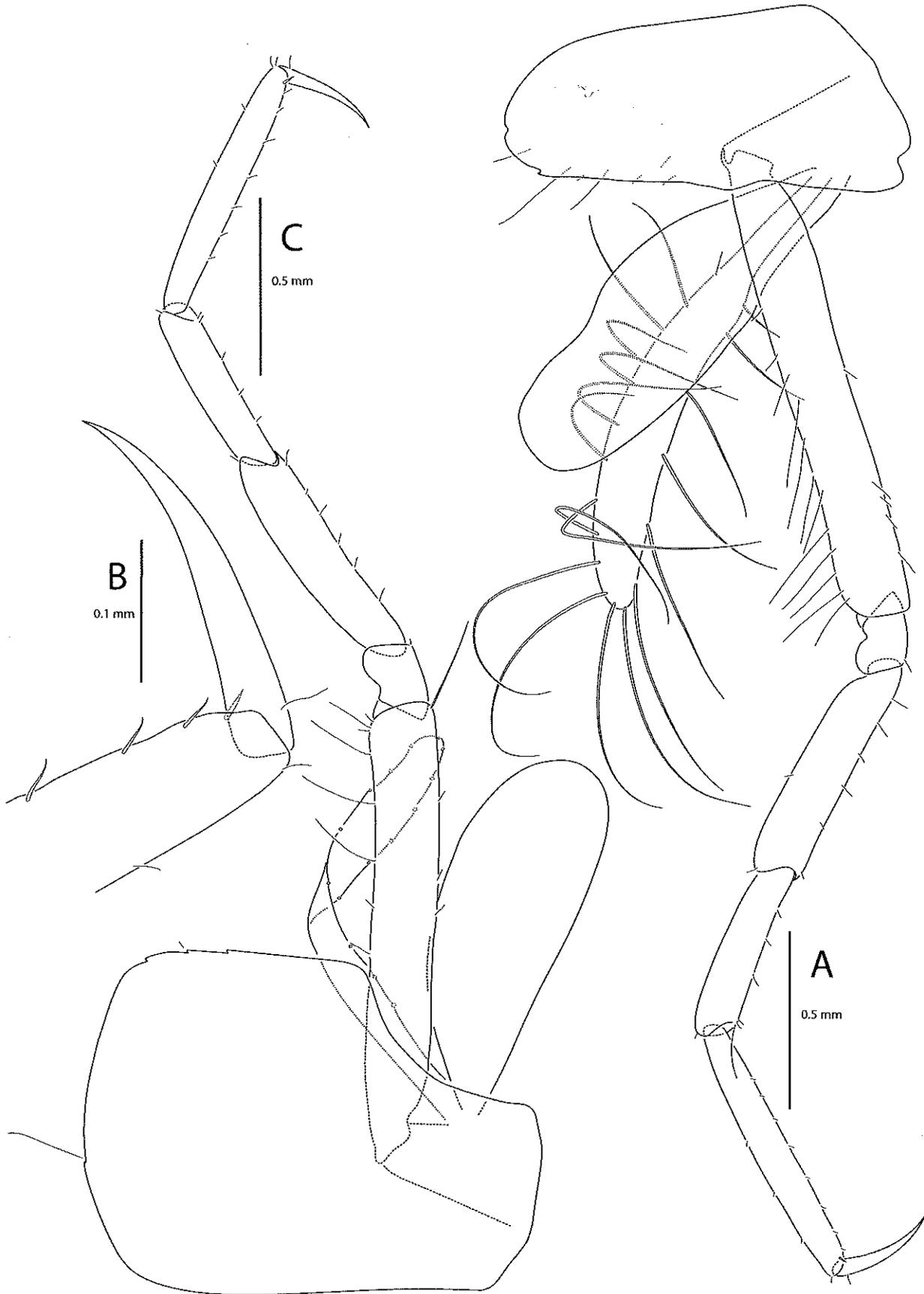


Fig. 16. *Liljeborgia chevreuxi* SCHELLENBERG, 1931, ovigerous female, Dundee Island, ANT XXIII-8, sta. 728-2. A, left P3; B, tip of left P3; C, right P4.

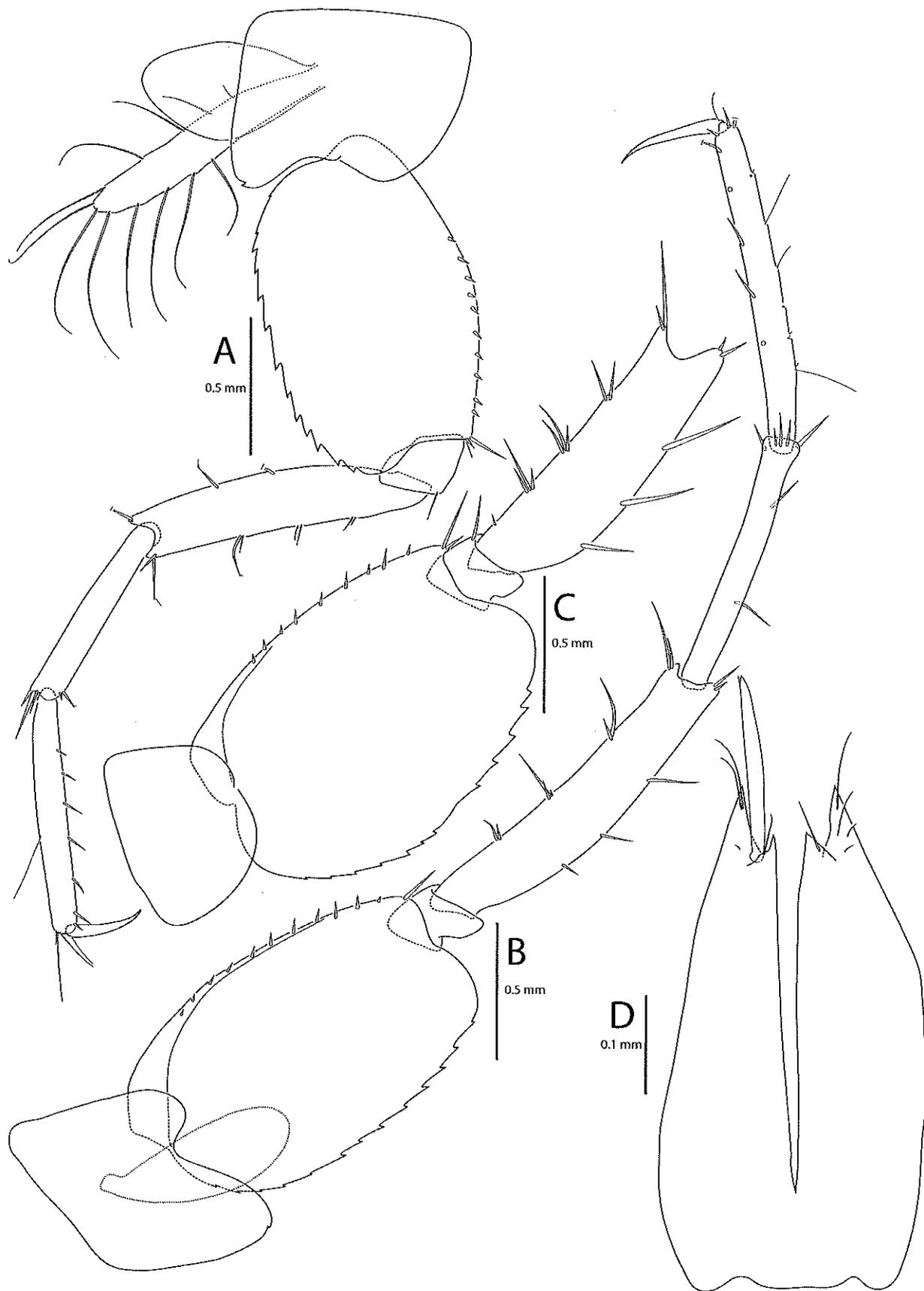


Fig. 17. *Liljeborgia chevreuxi* SCHELLENBERG, 1931, ovigerous female, Dundee Island, ANT XXIII-8, sta. 728-2. A, right P5; B, right P6; C, right P7; D, telson.

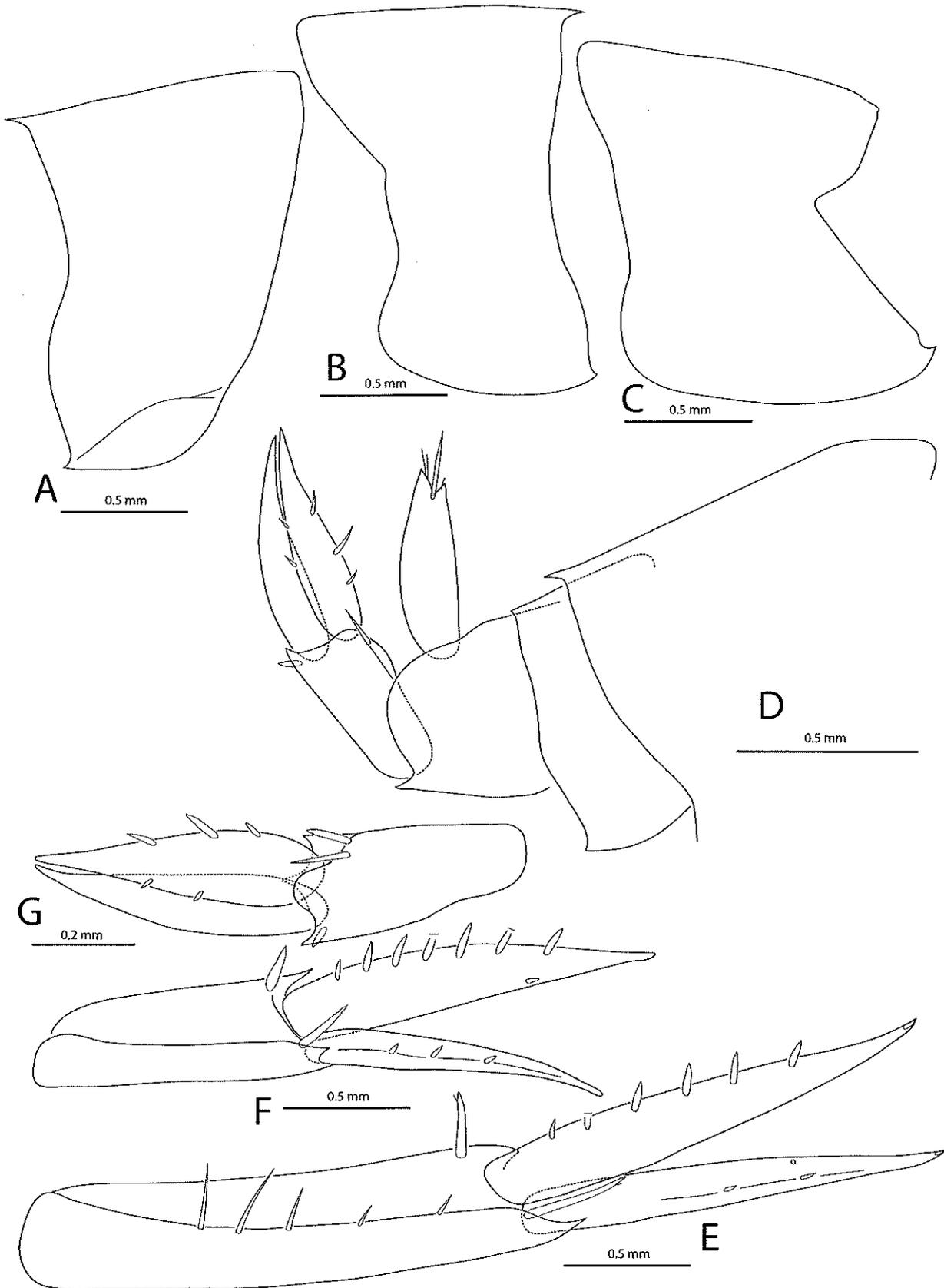


Fig. 18. *Liljeborgia chevreuxi* SCHELLENBERG, 1931, ovigerous female, Dundee Island, ANT XXIII-8, sta. 728-2. A, right Ep1; B, left Ep2; C, left Ep3; D, urosome; E, left U1; F, left U2; G, left U3.

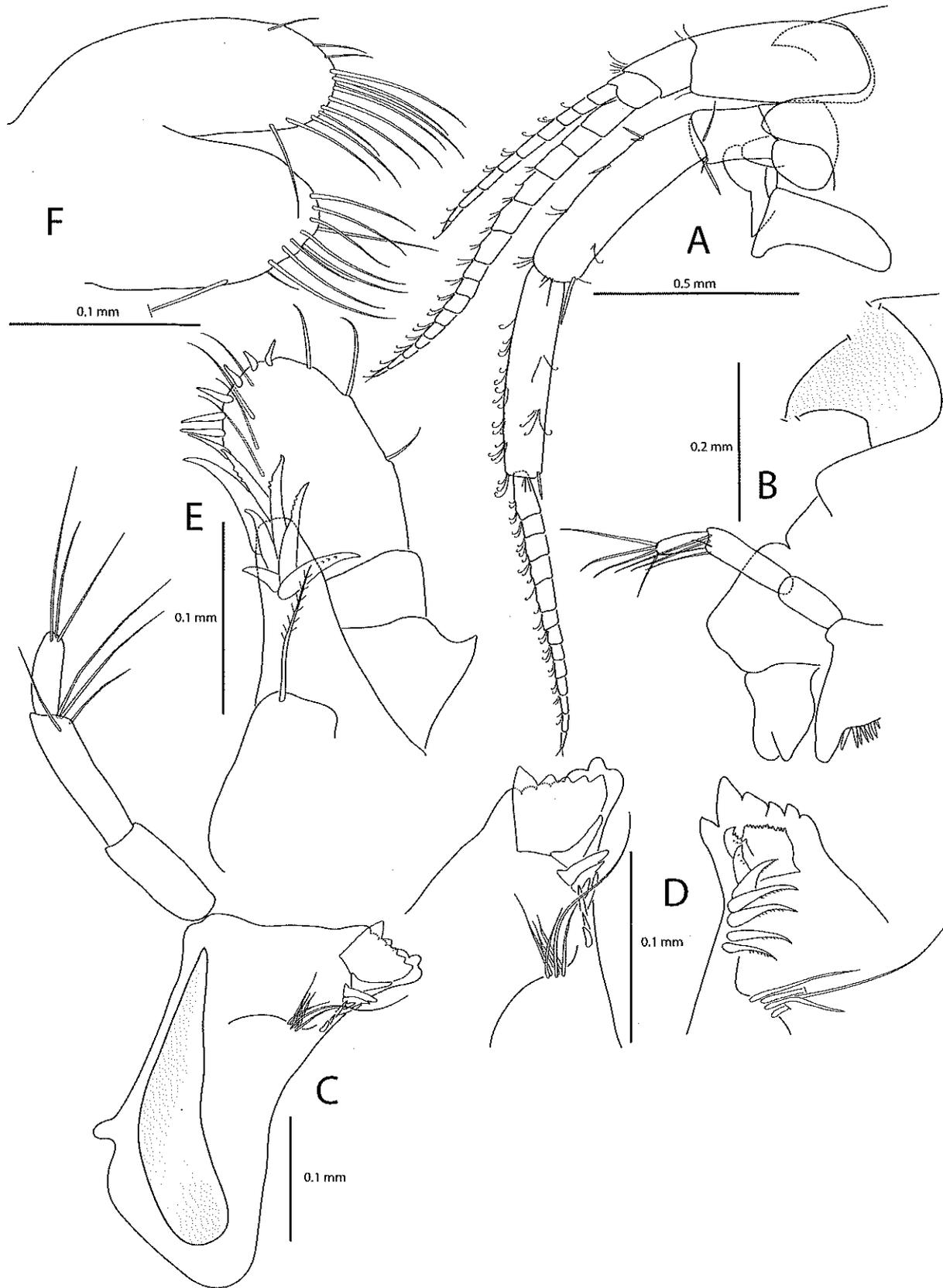


Fig. 19. *Liljeborgia cnephatis* n. sp., holotype, ovigerous female, South of Drake Passage, ANT XIX-3, ANDEEP I, sta. 41-3. A, head with antennae; B, anterior part of head; C, left Md; D tip of left and right Md; E, right Mx1; F, right Mx2.

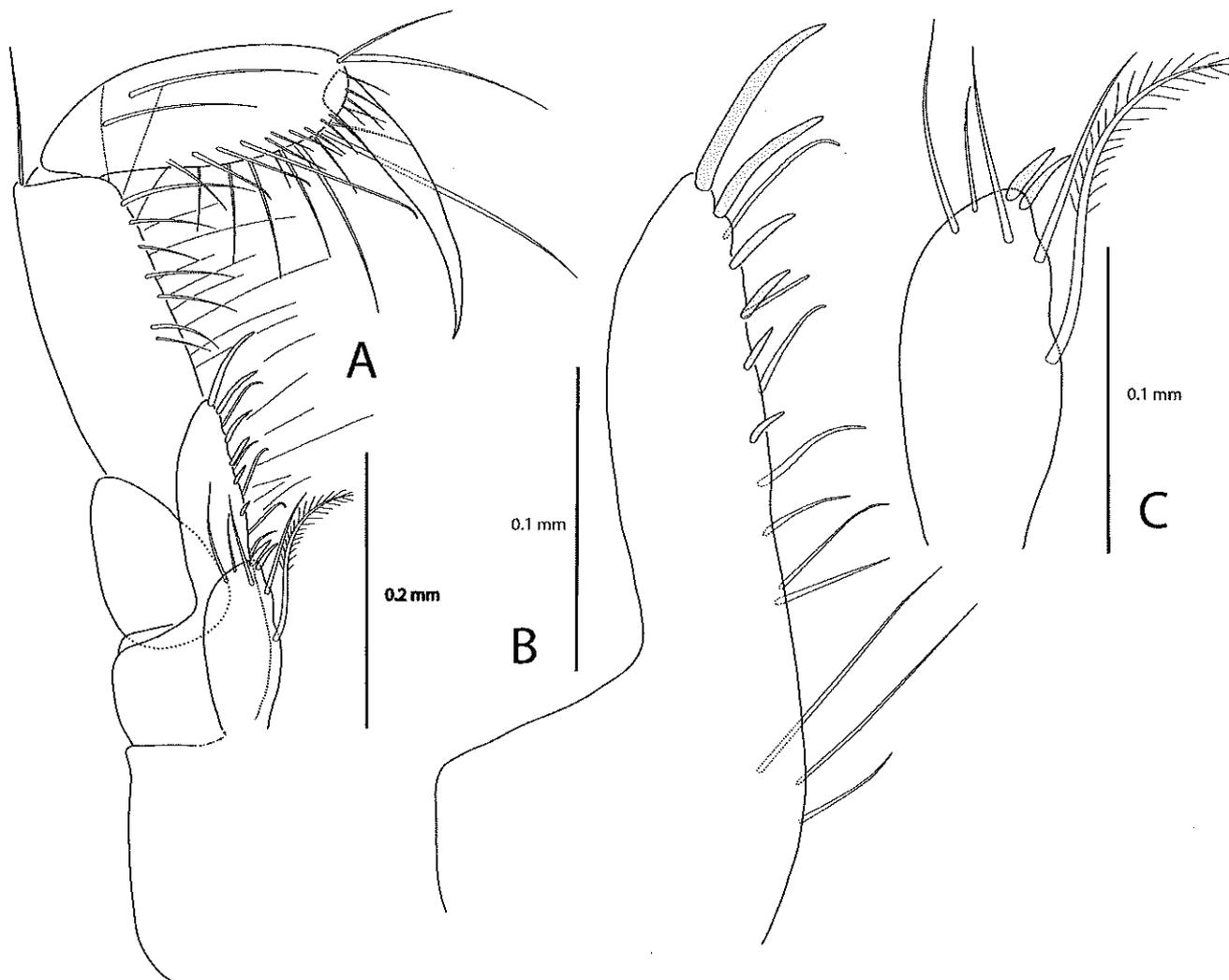


Fig. 20. *Liljeborgia cnephatis* n. sp., holotype, ovigerous female, South of Drake Passage a, ANT XIX-3, ANDEEP I, sta. 41-3.  
A, left Mxp; B, outer plate of left Mxp; C, inner plate of left Mxp.

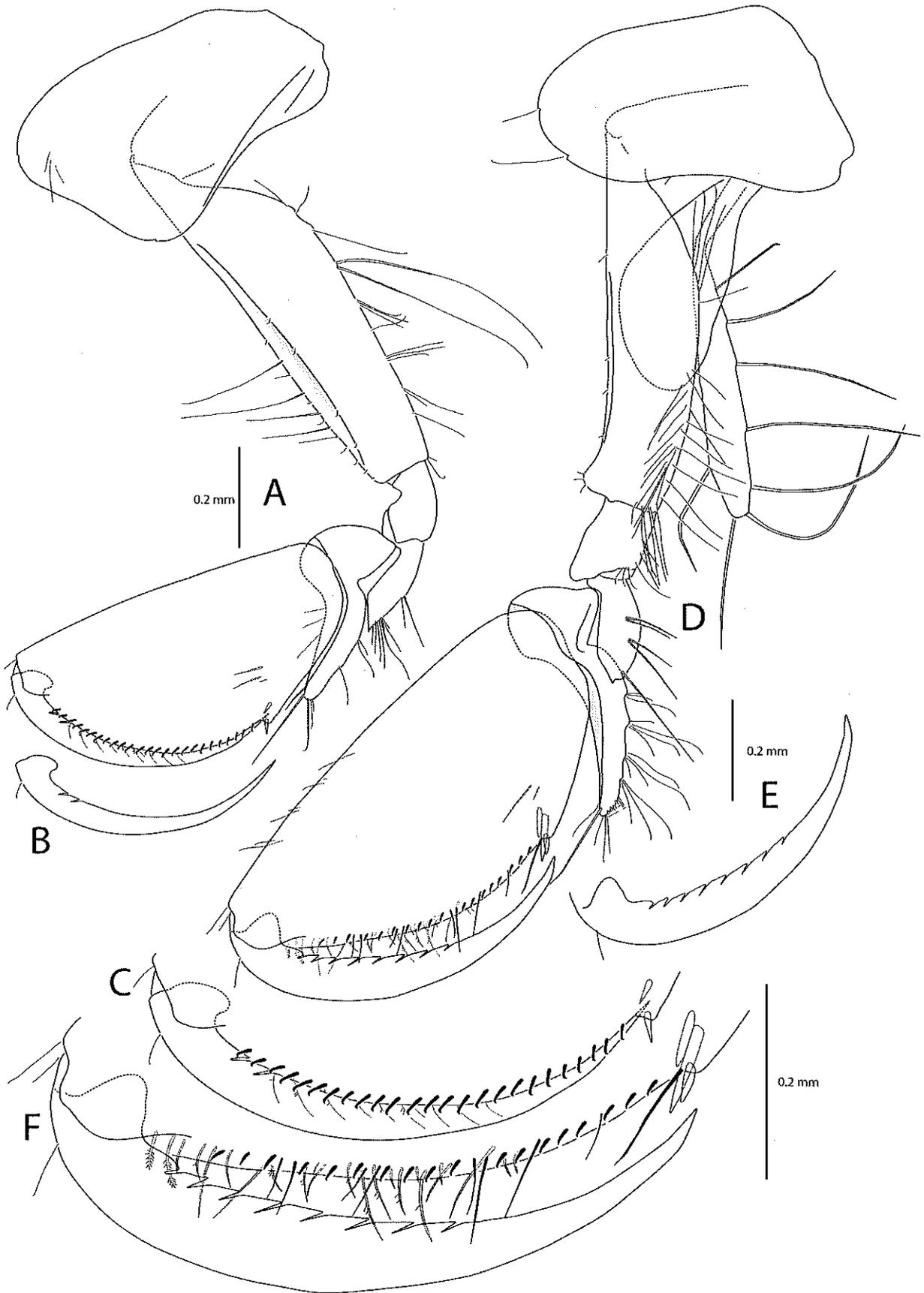


Fig. 21. *Liljeborgia cnephatis* n. sp., holotype, ovigerous female, South of Drake Passage, ANT XIX-3, ANDEEP I, sta. 41-3. A, left Gn1; B, dactylus of left Gn1; C, palm of left Gn1; D, left Gn2; E, dactylus of left Gn2; F, palm of left Gn2.

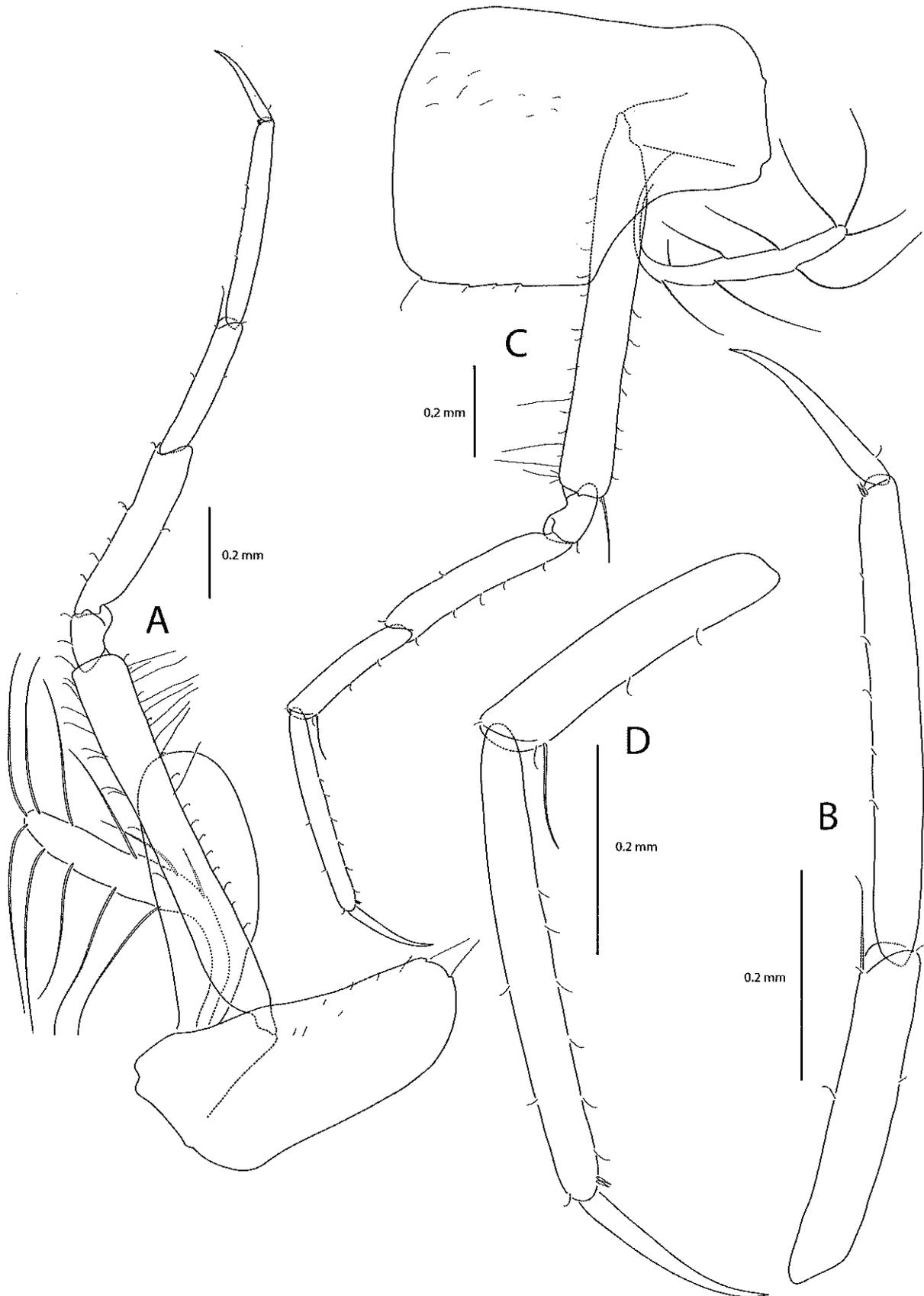


Fig. 22. *Liljeborgia cnephatis* n. sp., holotype, ovigerous female, South of Drake Passage, ANT XIX-3, ANDEEP I, sta. 41-3.  
A, left P3; B, tip of left P3; C, left P4; D, tip of left P4.

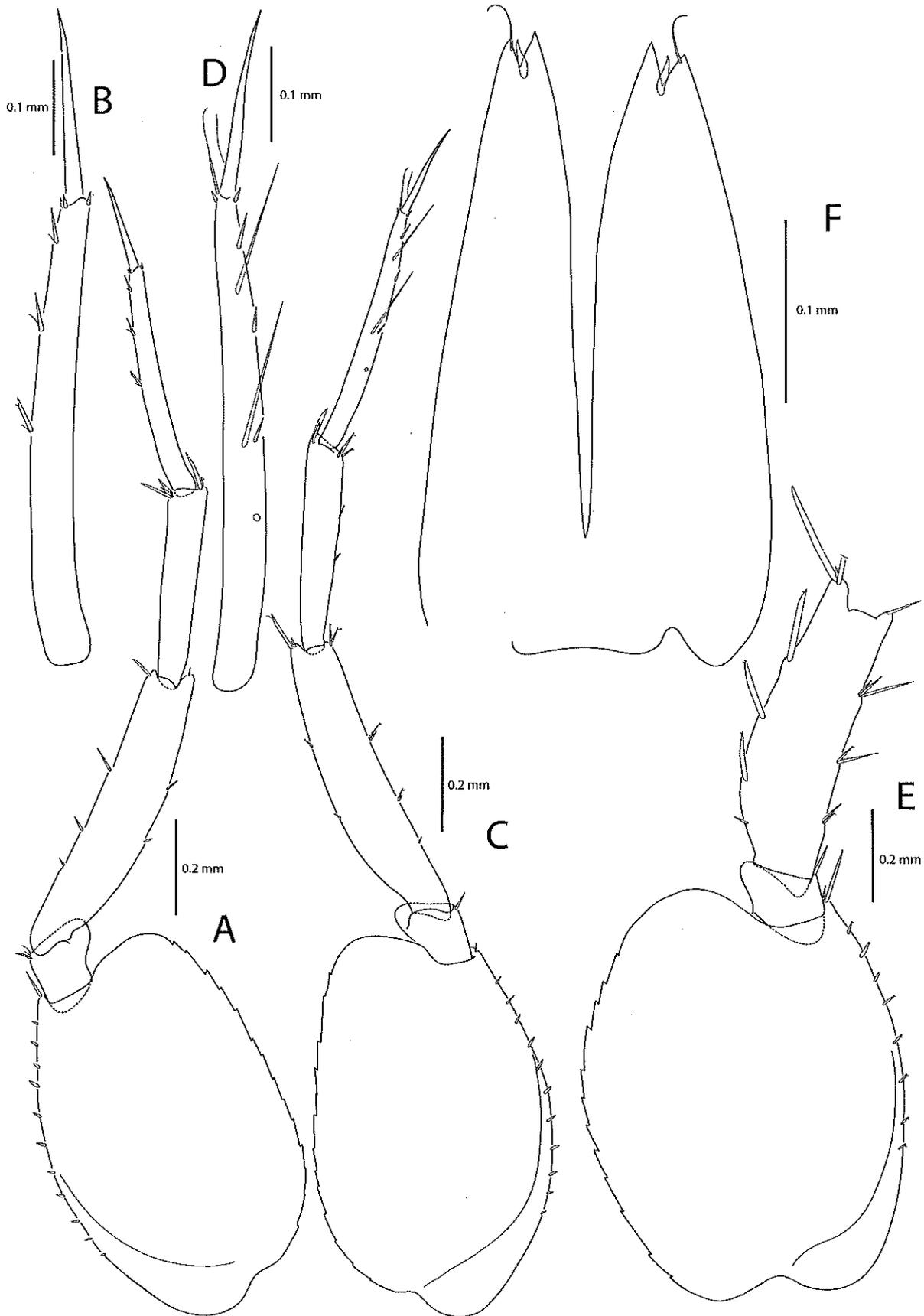


Fig. 23. *Liljeborgia cnephatis* n. sp., holotype, ovigerous female, South of Drake Passage, ANT XIX-3, ANDEEP I, sta. 41-3. A, right P5; B, tip of right P5; C, left P6; D, tip of left P6; E, left P7; F, telson.

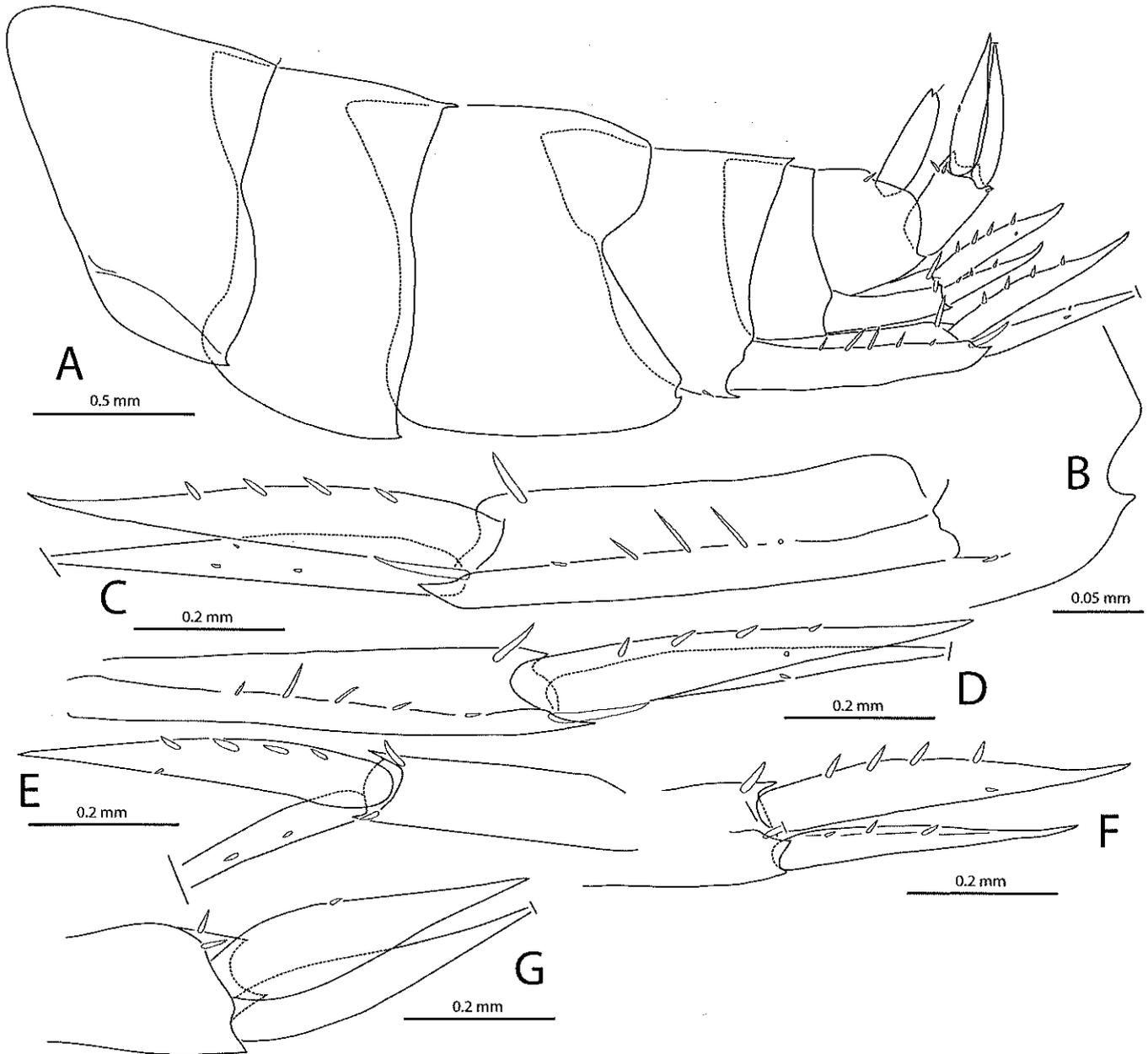


Fig. 24. *Liljeborgia cnephatis* n. sp., holotype, ovigerous female, South of Drake Passage, ANT XIX-3, ANDEEP I, sta. 41-3. A, pleon (left side); B, posteroventral corner of Ep3; C, right U1; D, left U1; E, right U2; F, left U2; G, left U3.

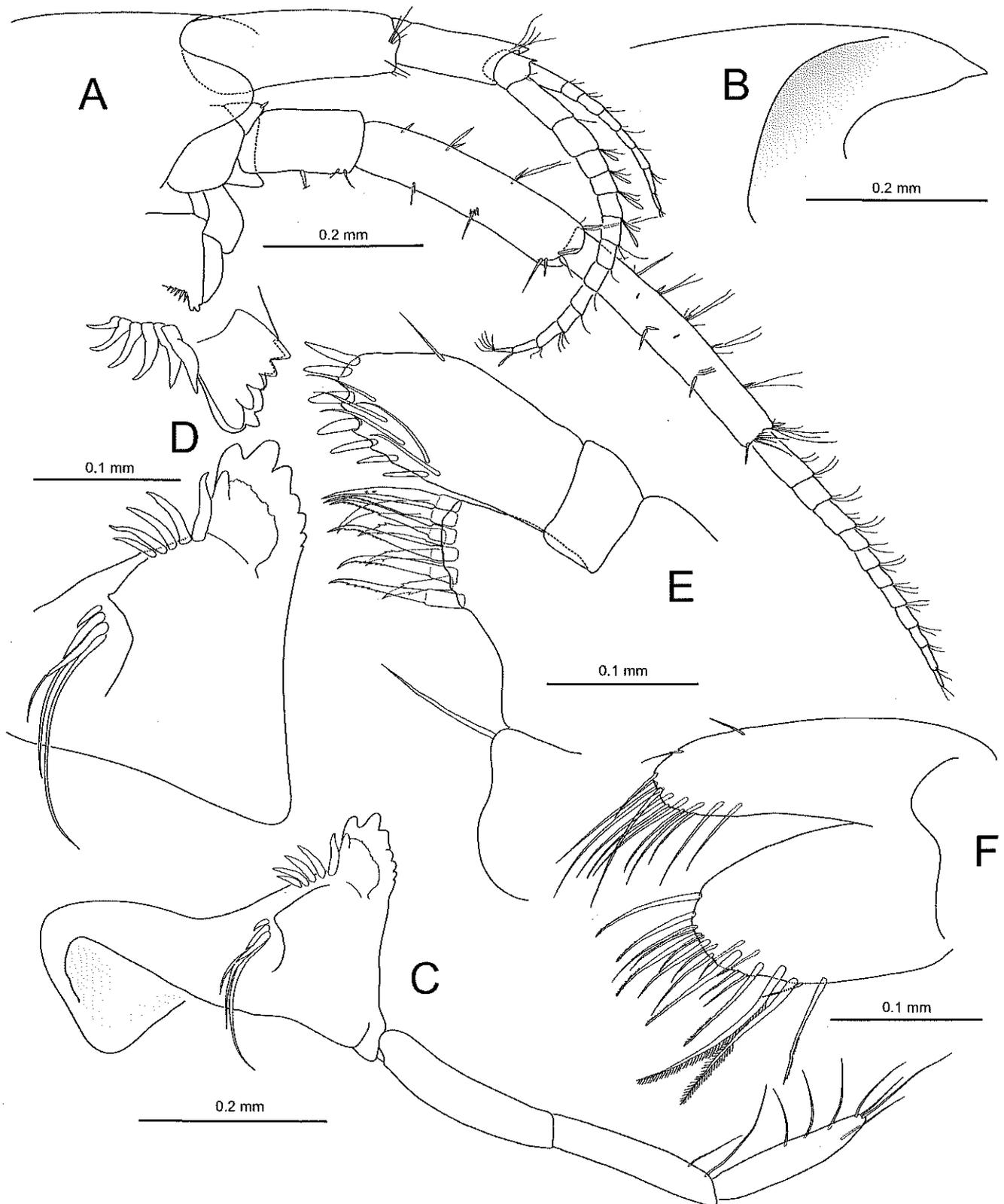


Fig. 25. *Liljeborgia consanguinea* STEBBING, 1888, immature female, Iles Kerguelen, Ker 82, sta. 25 to 29. A, head, right A1, right A2, complex epistome + upper lip, right Md in lateral view; B, rostrum; C, right Md; D, right and left Md (details); E, left Mx1; F, right Mx2.

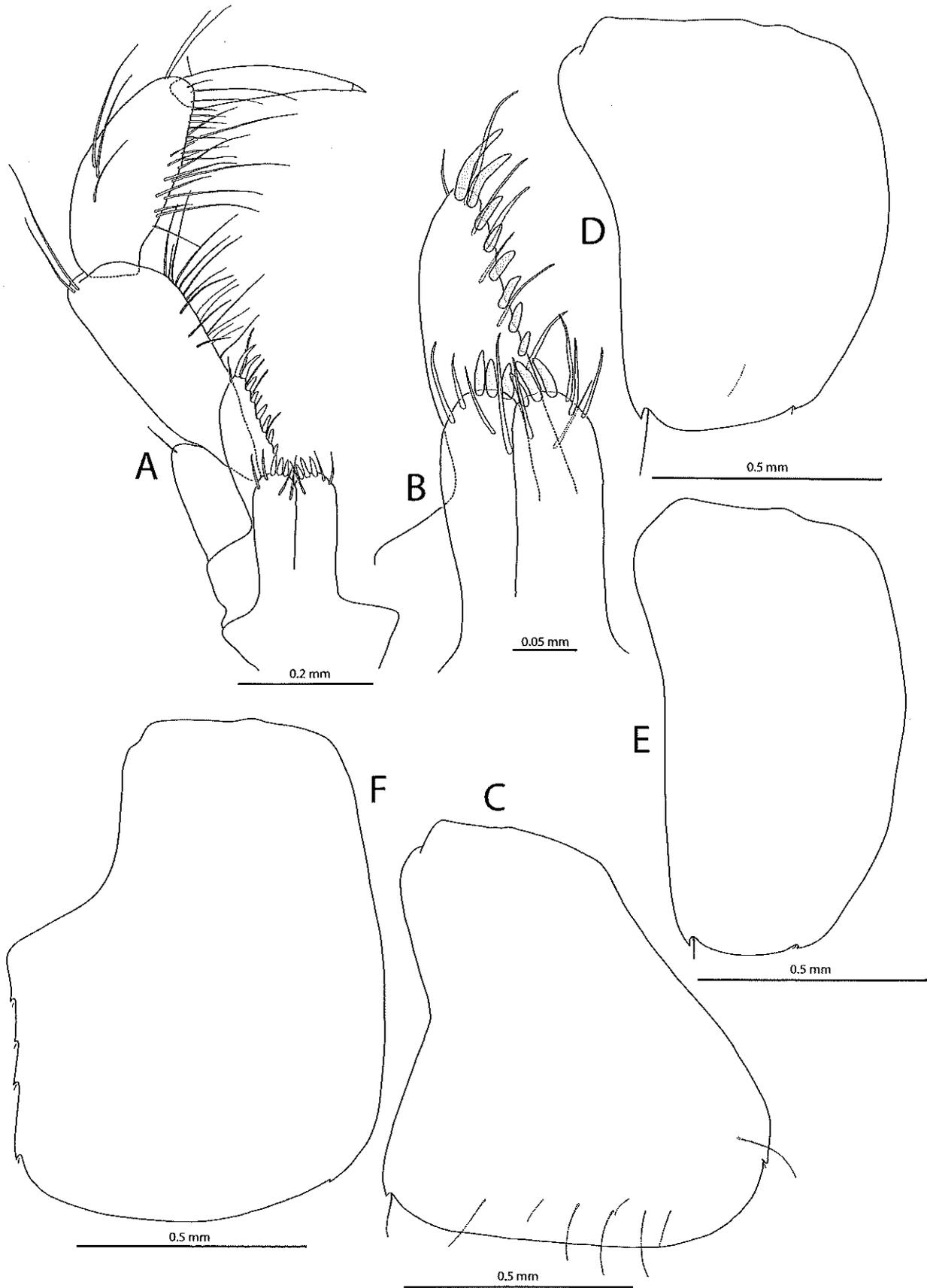


Fig. 26. *Liljeborgia consanguinea* STEBBING, 1888, immature female, Iles Kerguelen, Ker 82, sta. 25 to 29. A, Mxp; B, plates of Mxp; C, right coxa 1; D, right coxa 2; E, right coxa 3; F, right coxa 4.

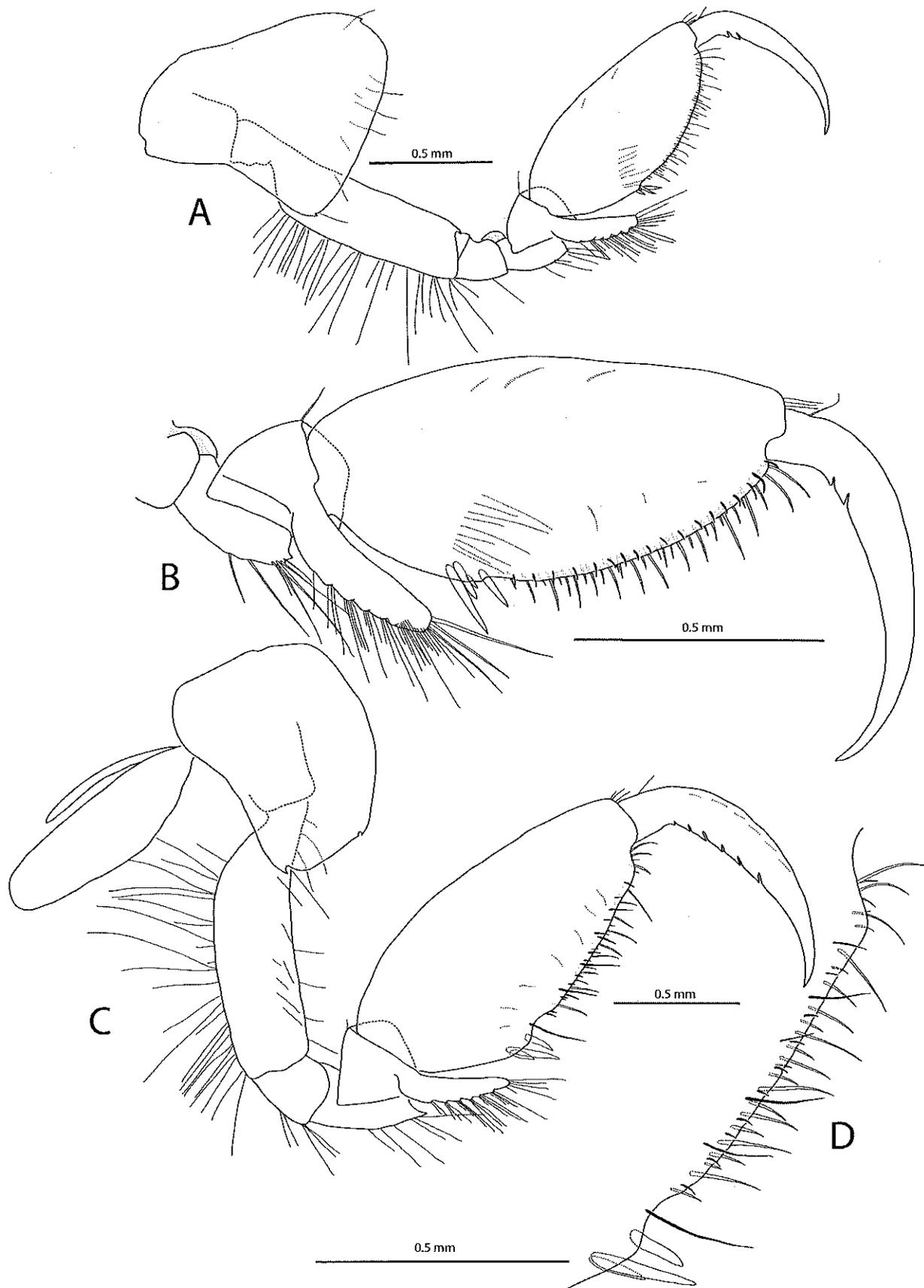


Fig. 27. *Liljeborgia consanguinea* STEBBING, 1888, immature female, Iles Kerguelen, Ker 82, sta. 25 to 29. A, right Gn1; B, chela of right Gn1; C, right Gn2; D, palm of right Gn2.

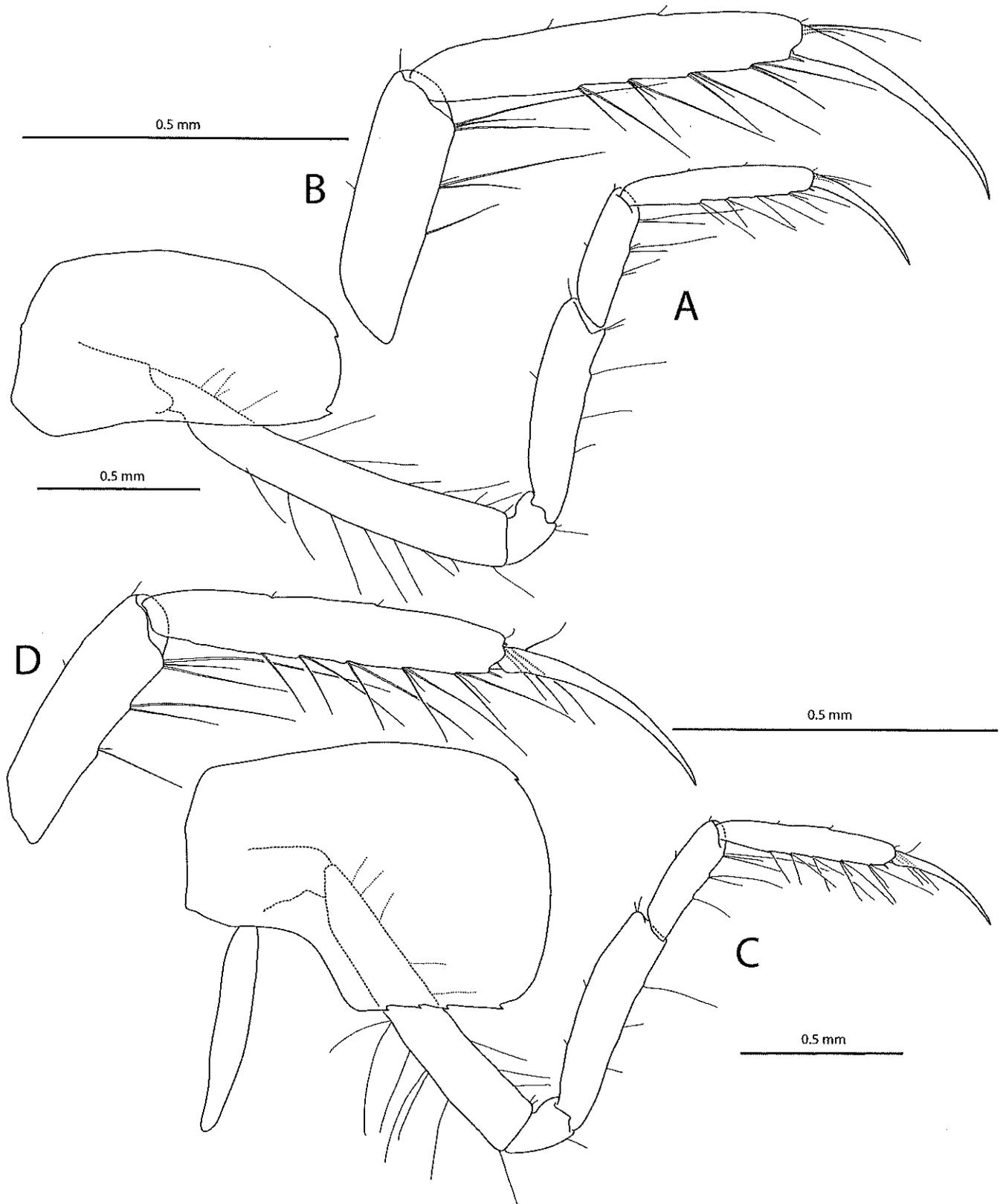


Fig. 28. *Liljeborgia consanguinea* STEBBING, 1888, immature female, Iles Kerguelen, Ker 82, sta. 25 to 29. A, right P3; B, tip of right P3; C, right P4; D, tip of right P4.

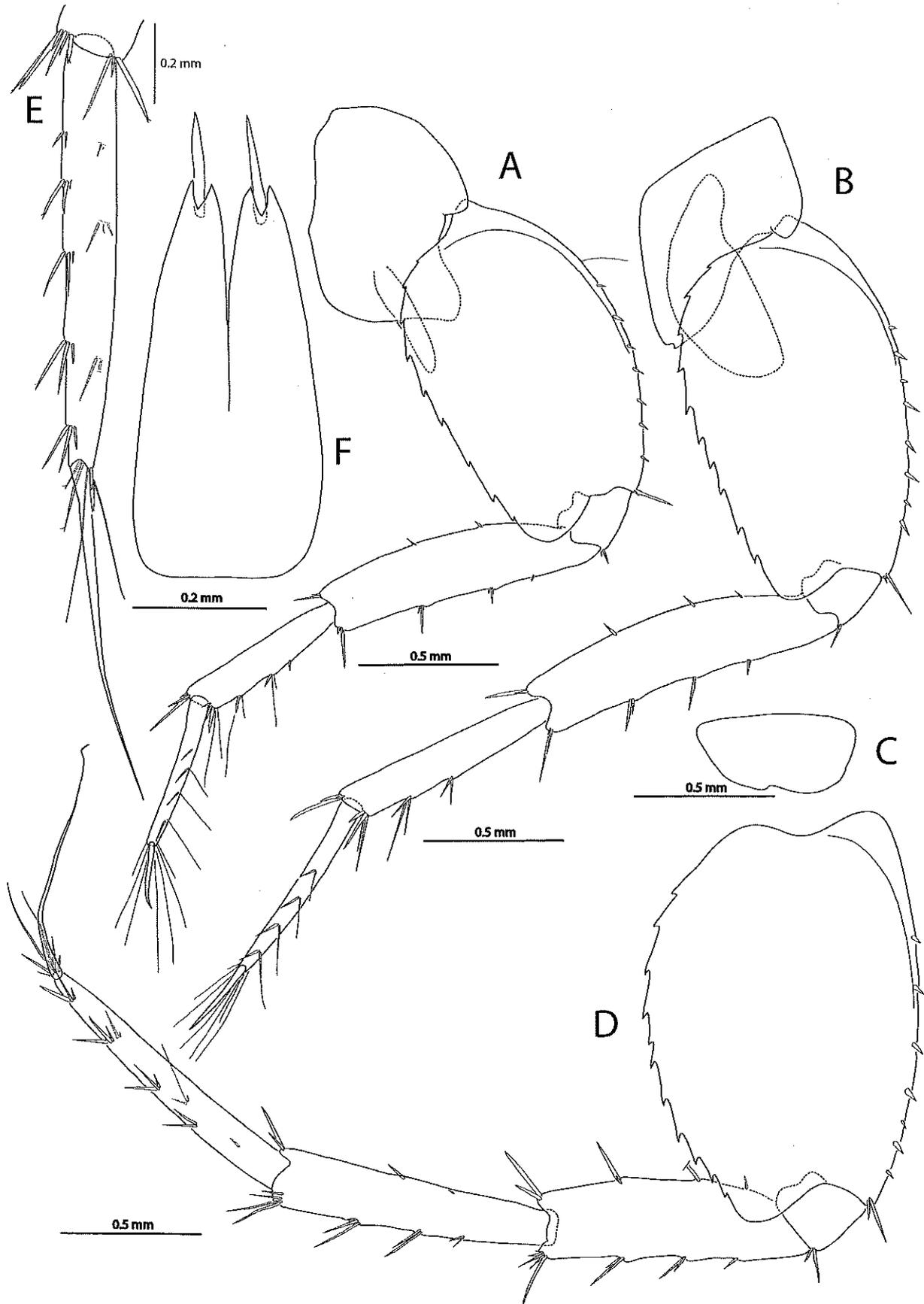


Fig. 29. *Liljeborgia consanguinea* STEBBING, 1888, immature female, Iles Kerguelen, Ker 82, sta. 25 to 29. A, right P5; B, right P6; C, coxa of left P7; D, right P7; E, tip of left P7; F, telson.

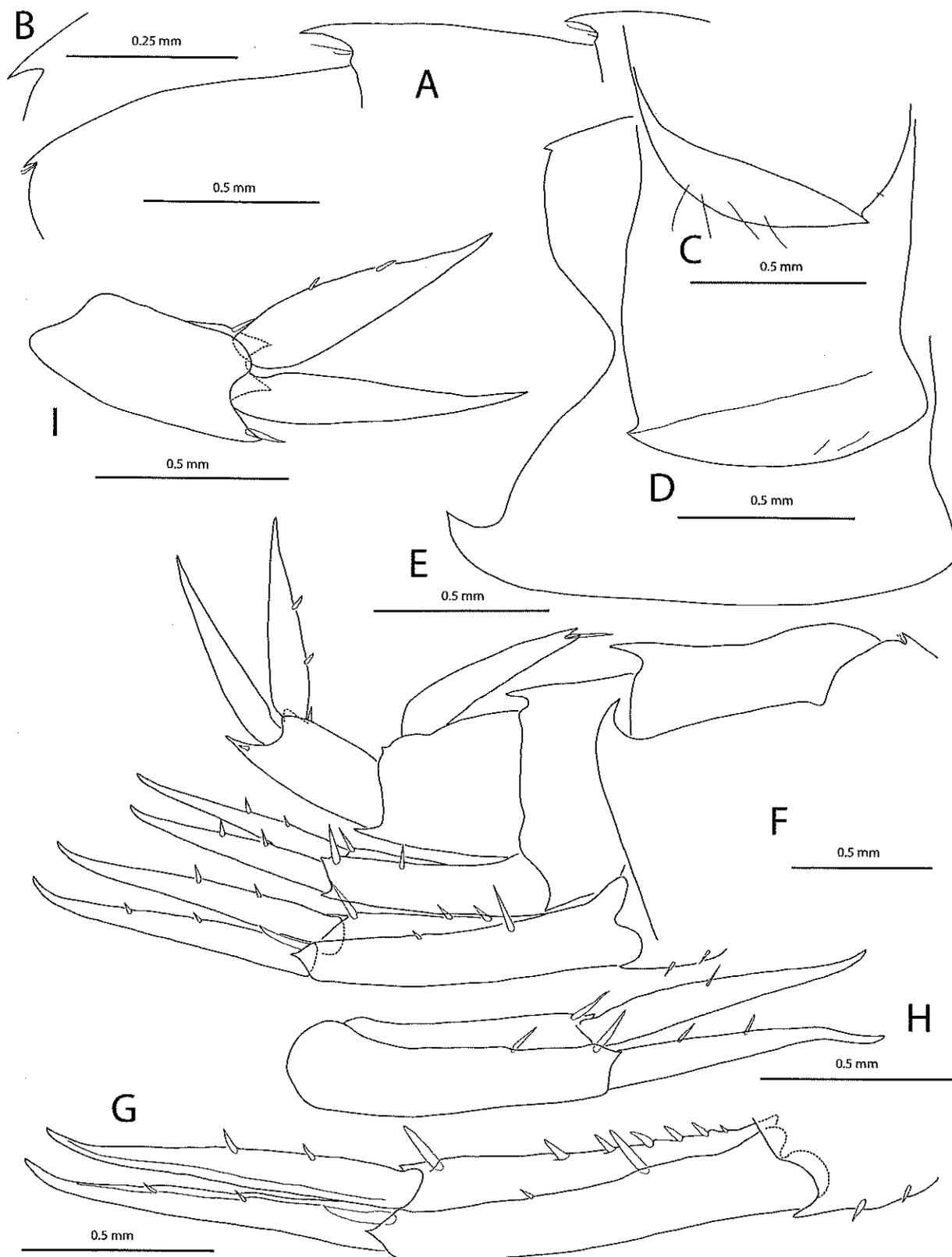


Fig. 30. *Liljeborgia consanguinea* STEBBING, 1888, immature female, Iles Kerguelen, Ker 82, sta. 25 to 29. A, dorsal border of pleonites 1 to 3; B, detail of posterodorsal tip of pleonite 3; C, left Ep1; D, right Ep2; E, right pleonite 3 and Ep3; F, urosome + posterior part of pleonite 3 (right side); G, right U1; H, left U2; I, left U3.

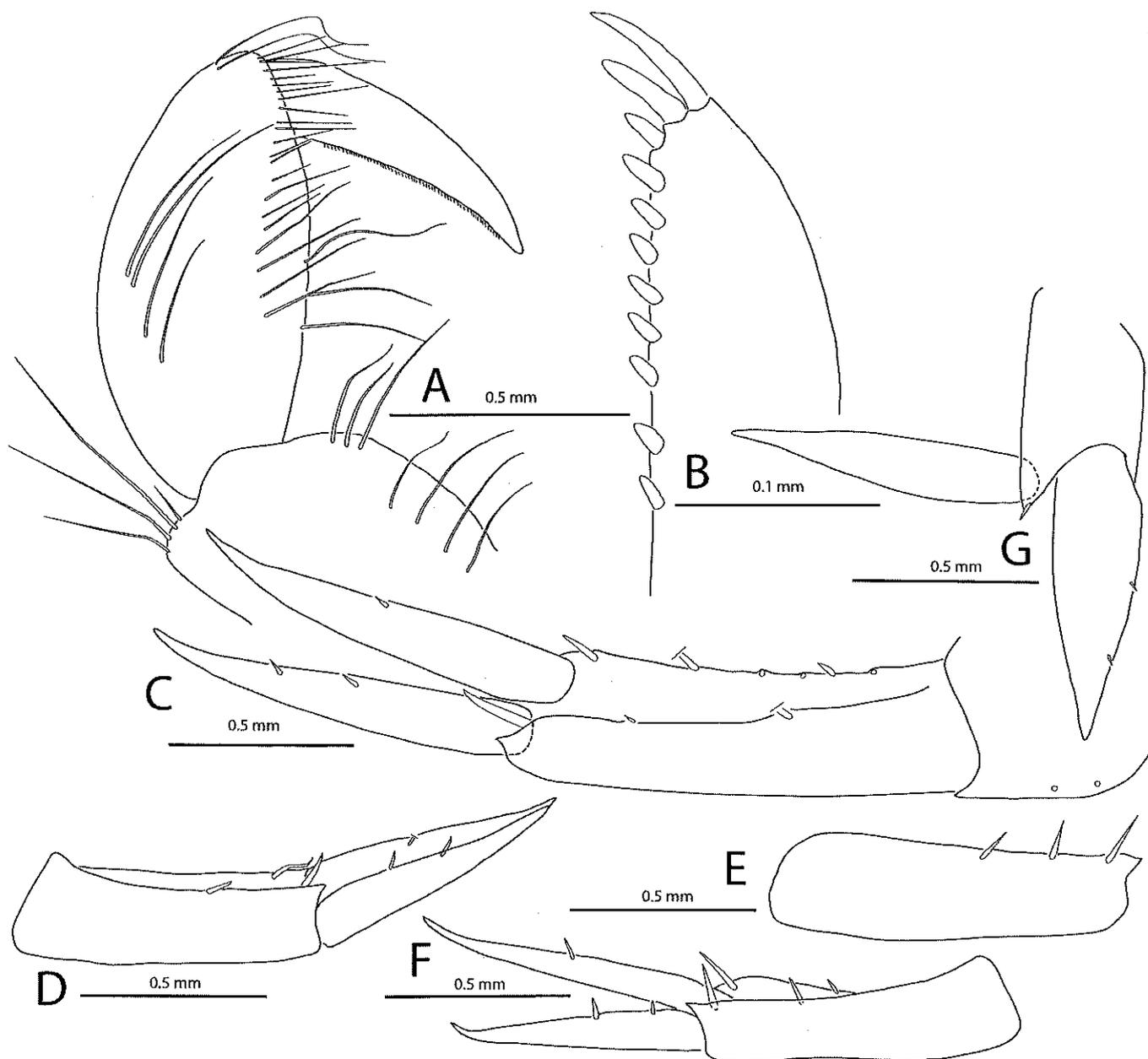


Fig. 31. *Liljeborgia consanguinea* STEBBING, 1888. A, B, C, D, G, female, lectotype, Iles Kerguelen, Baie Accessible, Challenger sta. 149; E, female, paralectotype, Heard Island, Challenger sta. 151; F, male, Iles Kerguelen, Ker 82-30. A, palp of left Mxp; B, outer plate of left Mxp (ventral view); C, right U1; D, left U2; E, peduncle of left U2 (only the spines of outer side are visible); F, right U2.

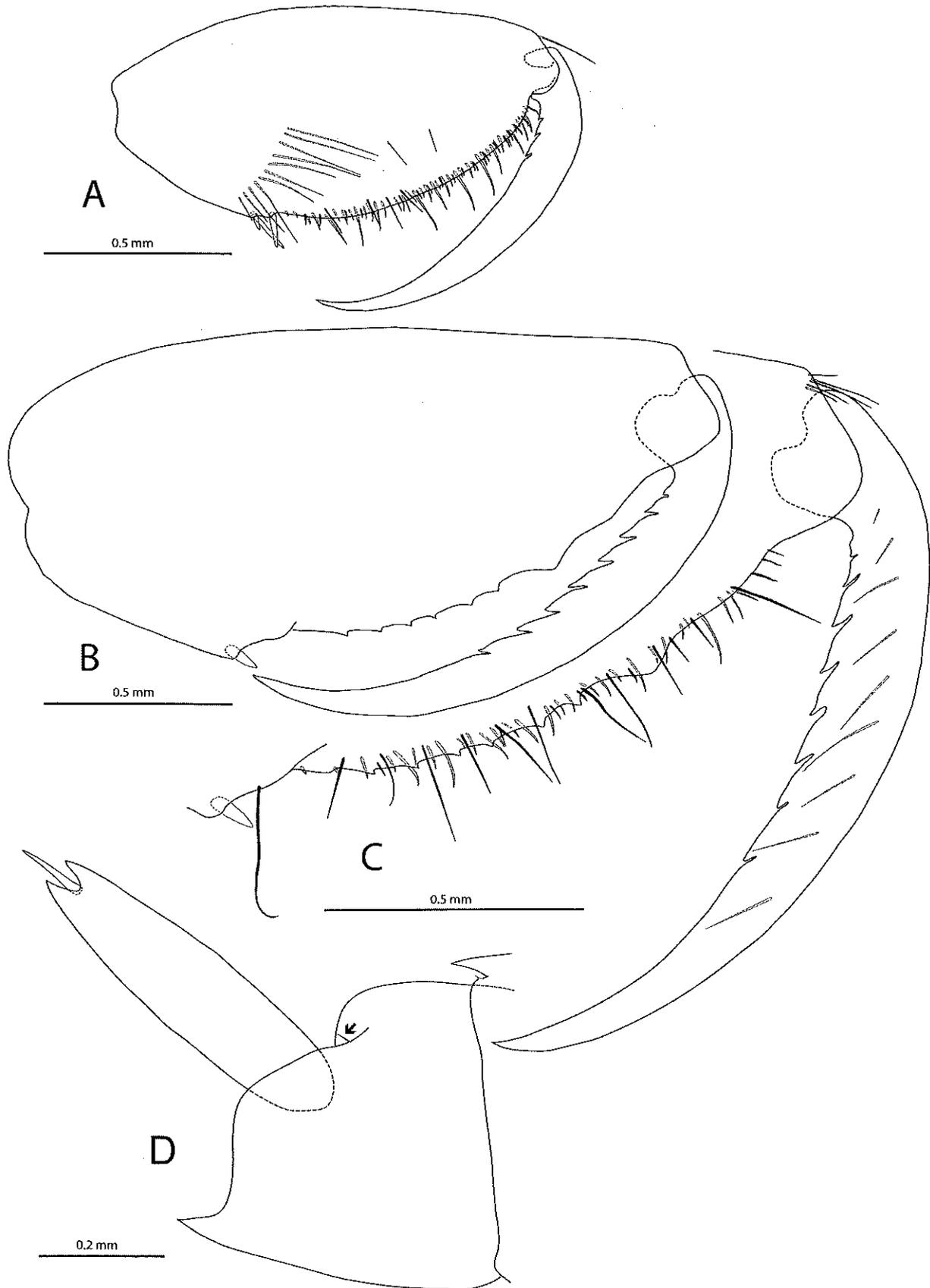


Fig. 32. *Liljeborgia consanguinea* STEBBING, 1888, male, Iles Kerguelen, A-C, Ker 82-30; D, Ker 82-16. A, chela of right Gn1; B, chela of right Gn2 (setae not shown); C, detail of right Gn2; D, distal part of urosomite 2 + urosomite 3 + telson.

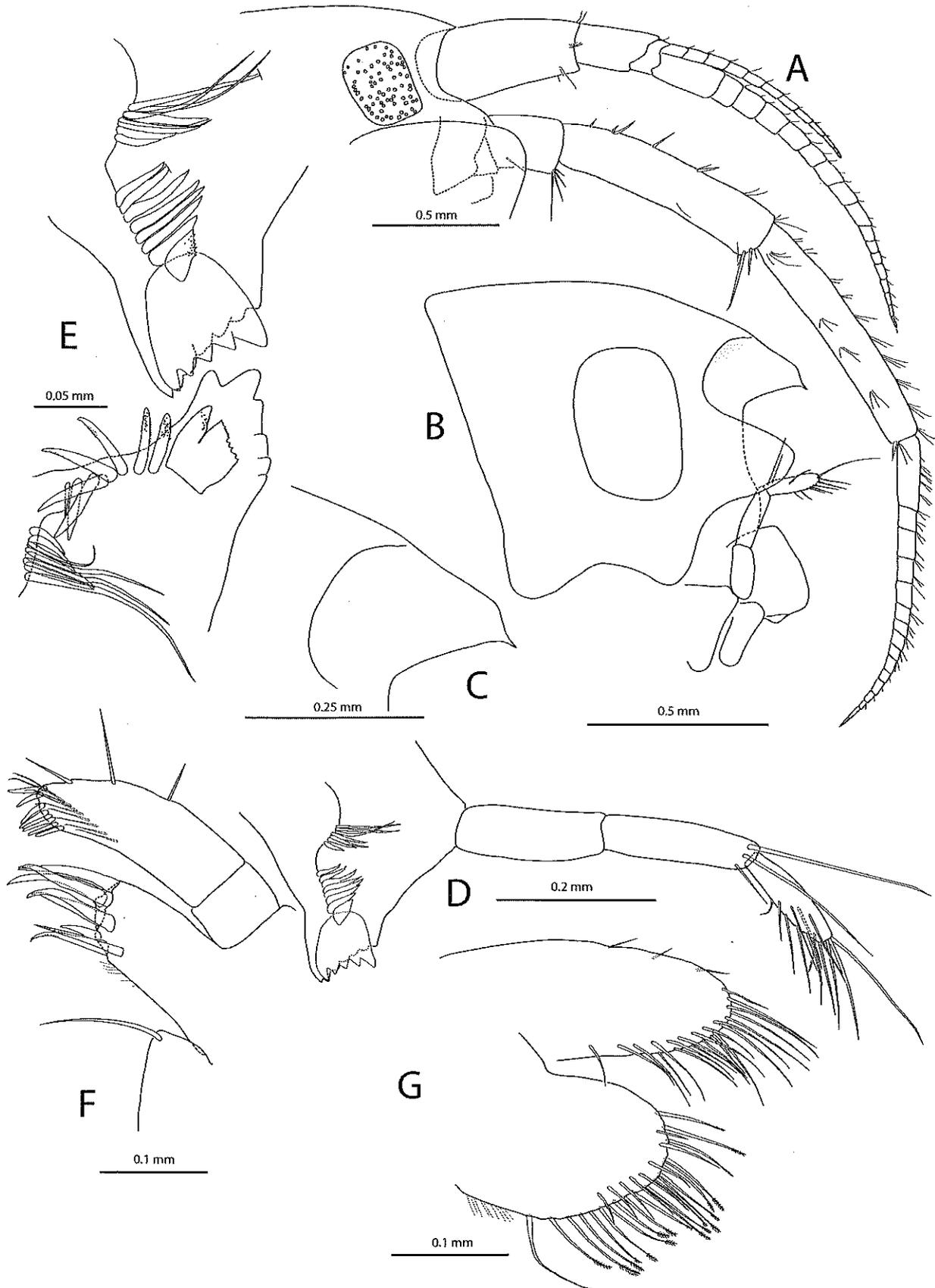


Fig. 33. *Liljeborgia cryptothrix* n. sp., mature female, holotype, Iles Kerguelen, Ker 82, sta. 25 to 29. A, head, right A1, right A2; B, head, with epistome and right Md in lateral view; C, rostrum; D, left Md; E, right and left Md (details); F, right Mx1; G, right Mx2.

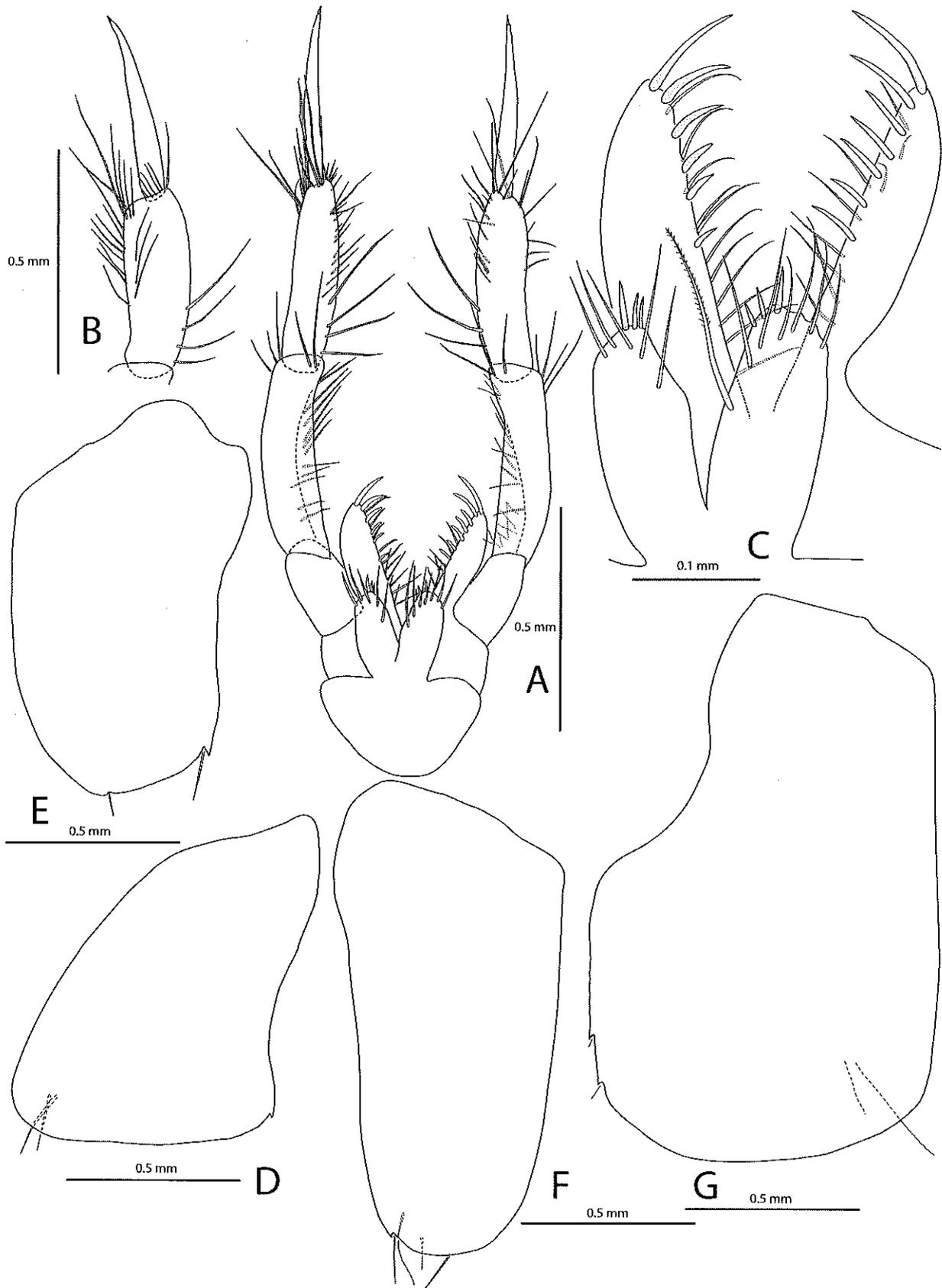


Fig. 34. *Liljeborgia cryptothrix* n. sp., mature female, holotype, Iles Kerguelen, Ker 82, sta. 25 to 29. A, Mxp; B, palp of left Mxp (lateral view); C, plates of Mxp; D, left coxa 1; E, left coxa 2; F, right coxa 3; G, right coxa 4.

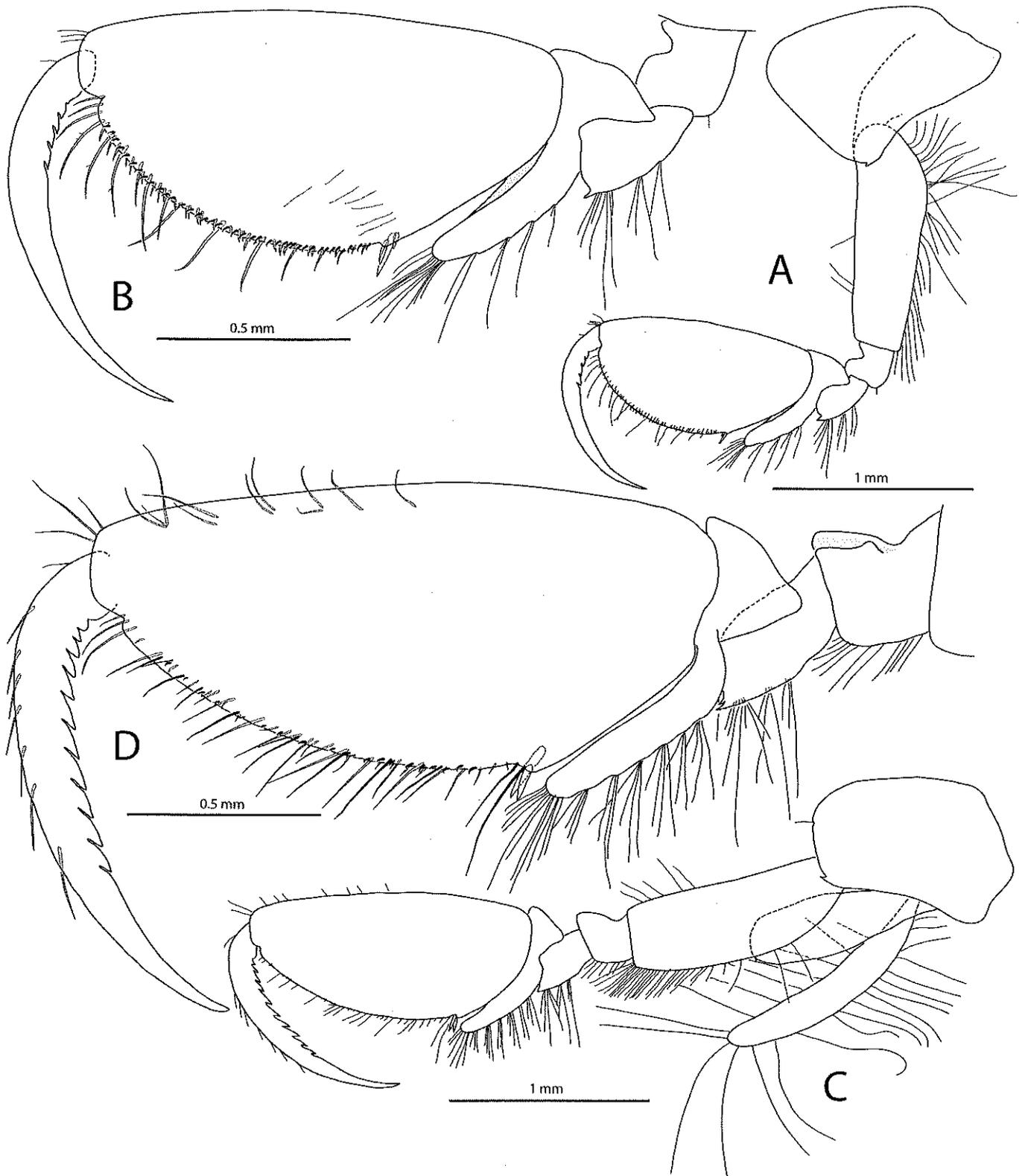


Fig. 35. *Liljeborgia cryptothrix* n. sp., mature female, holotype, Iles Kerguelen, Ker 82, sta. 25 to 29. A, left Gn1; B, chela of left Gn1; C, left Gn2; D, chela of left Gn2.

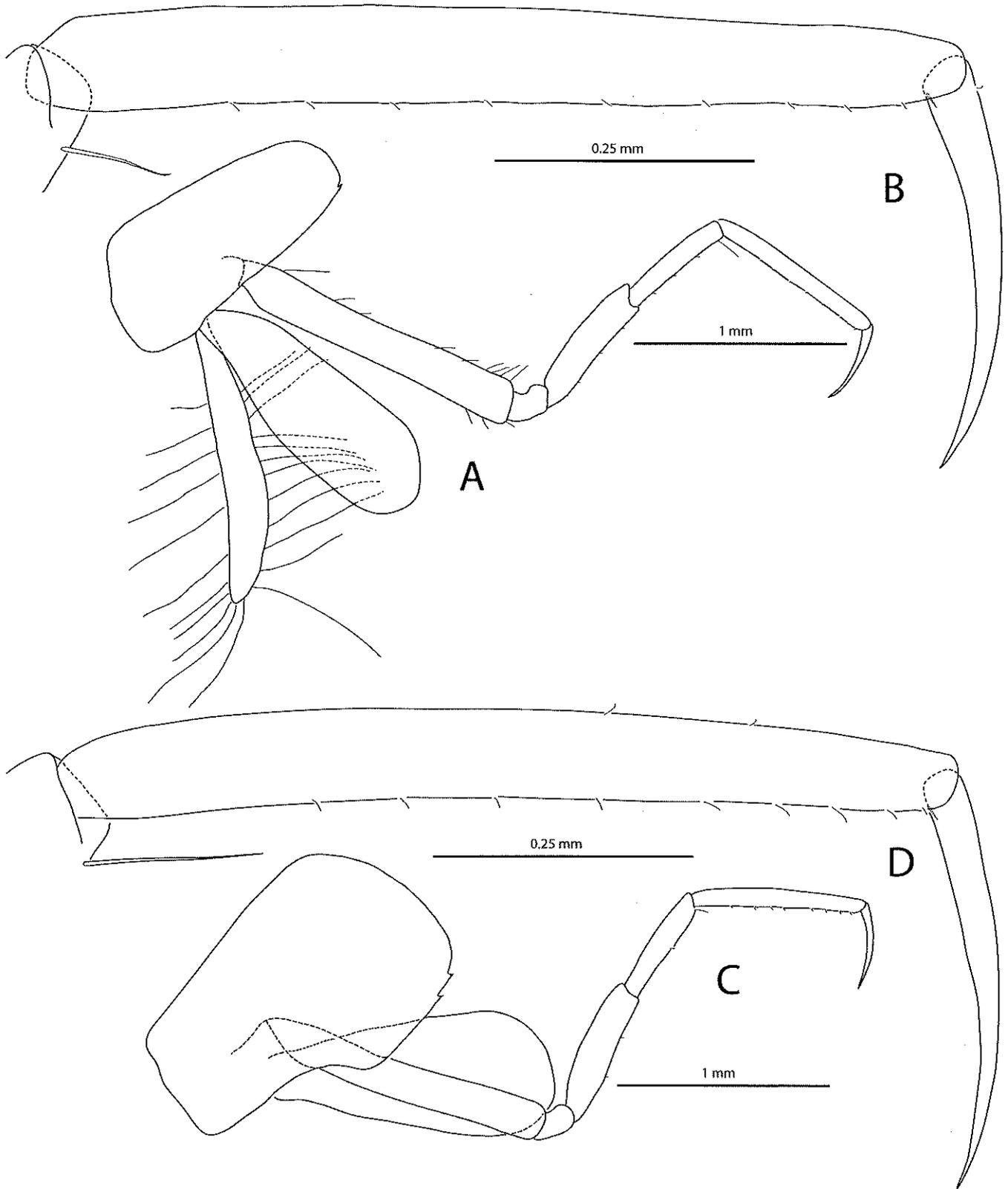


Fig. 36. *Liljeborgia cryptothrix* n. sp., mature female, holotype, Iles Kerguelen, Ker 82, sta. 25 to 29. A, right P3; B, tip of right P3; C, right P4; D, tip of right P4.

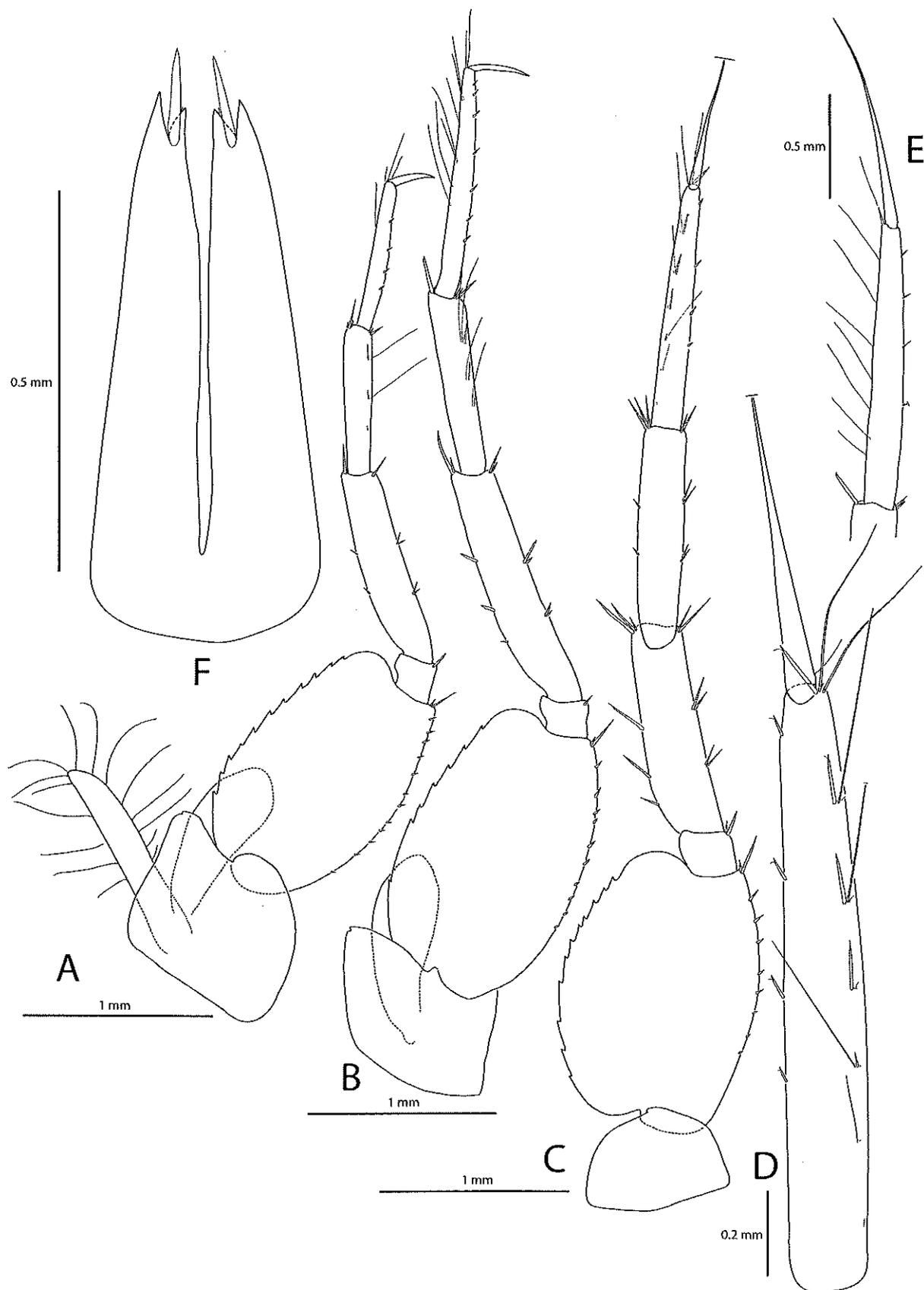


Fig. 37. *Liljeborgia cryptothrix* n. sp., mature females, Iles Kerguelen. A, B, C, D, F, holotype, Ker 82, sta. 25 to 29; E, Ker 82 sta. 22. A, left P5; B, left P6; C, left P7; D, tip of left P7 (medial view); E, tip of left P7 (outer view; medial ornamentation not shown); F, telson.

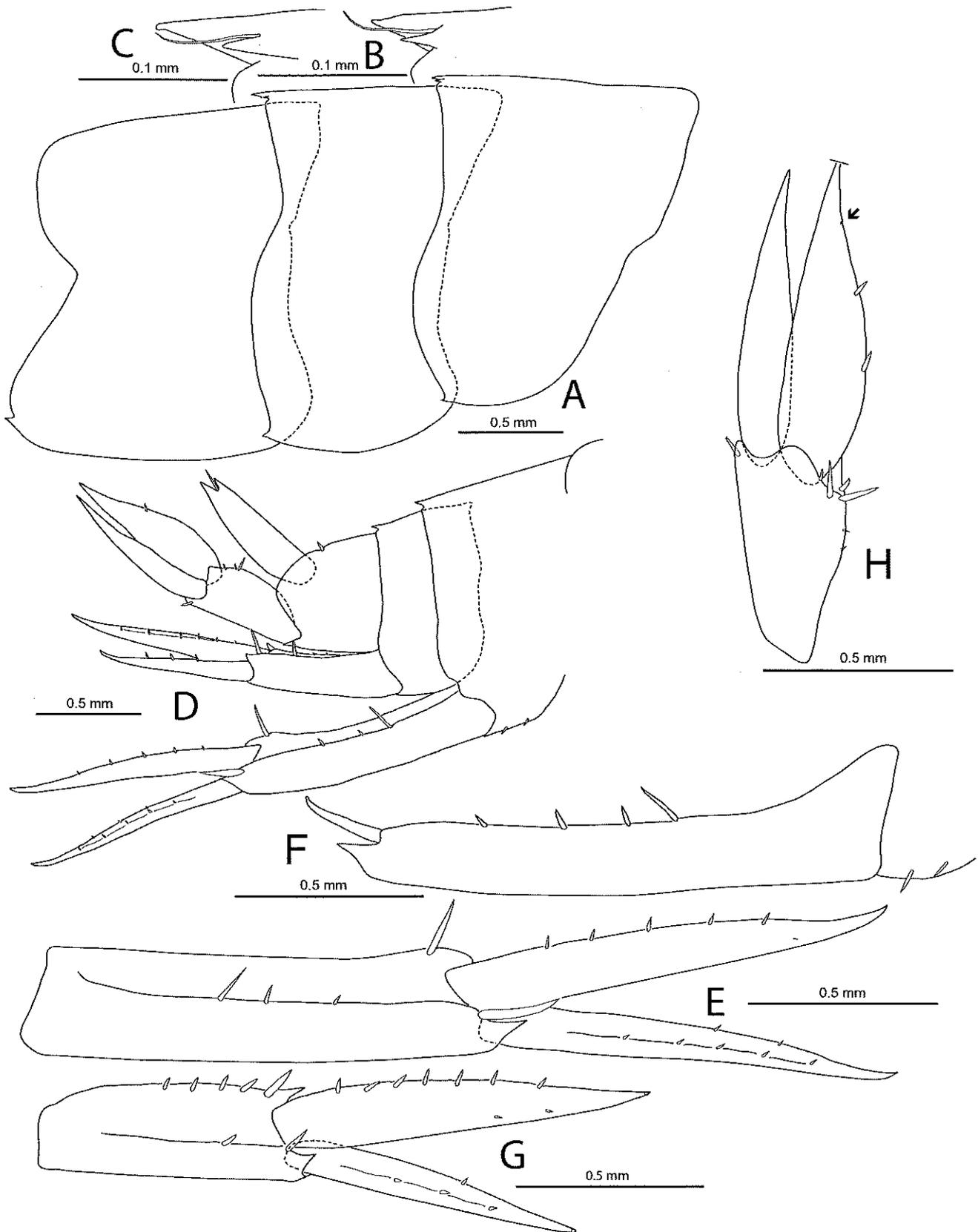


Fig. 38. *Liljeborgia cryptothrix* n. sp., mature females, Iles Kerguelen. A, B, C, D, E, G, holotype, Ker 82, sta. 25 to 29; F, H, Ker 82 sta. 22. A, pleonites 1 to 3; B, posterodorsal border of pleonite 1 in lateral view; C, posterodorsal border of pleonite 2 in lateral view; D, urosome (right side); E, left U1; F, outer border of peduncle of right U1; G, left U2; H, right U3.

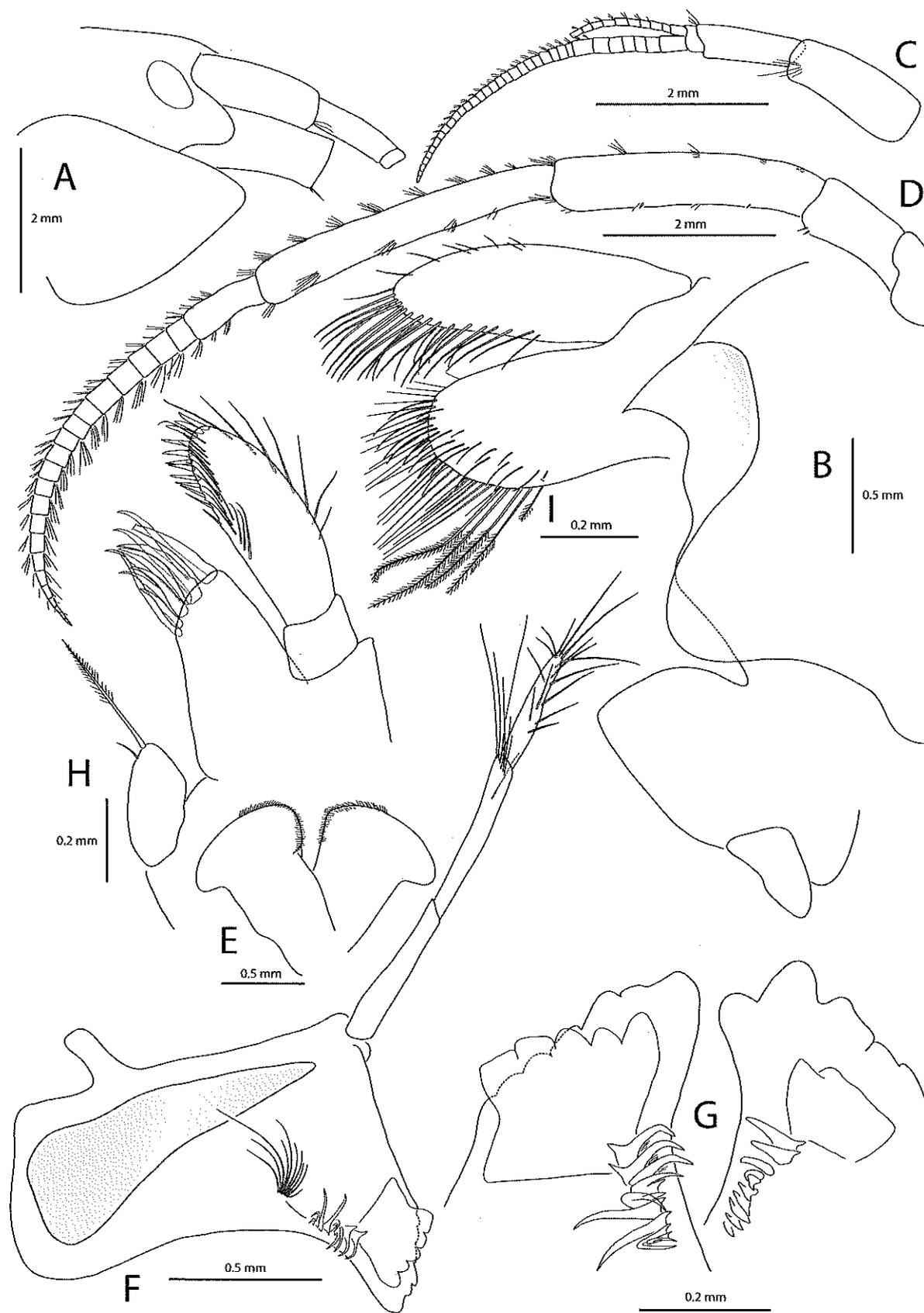


Fig. 39. *Liljeborgia eurycradus* THURSTON, 1974, adult males. A, paratype, Deception Island; B-I, holotype, South Georgia. A, Head; B, anterior part of head and epistome; C, left A1 (tip of both flagella missing); D, left A2; E, lower lip; F, left Md; G, tip of left and right Md; H, left Mx1; I, left Mx2.

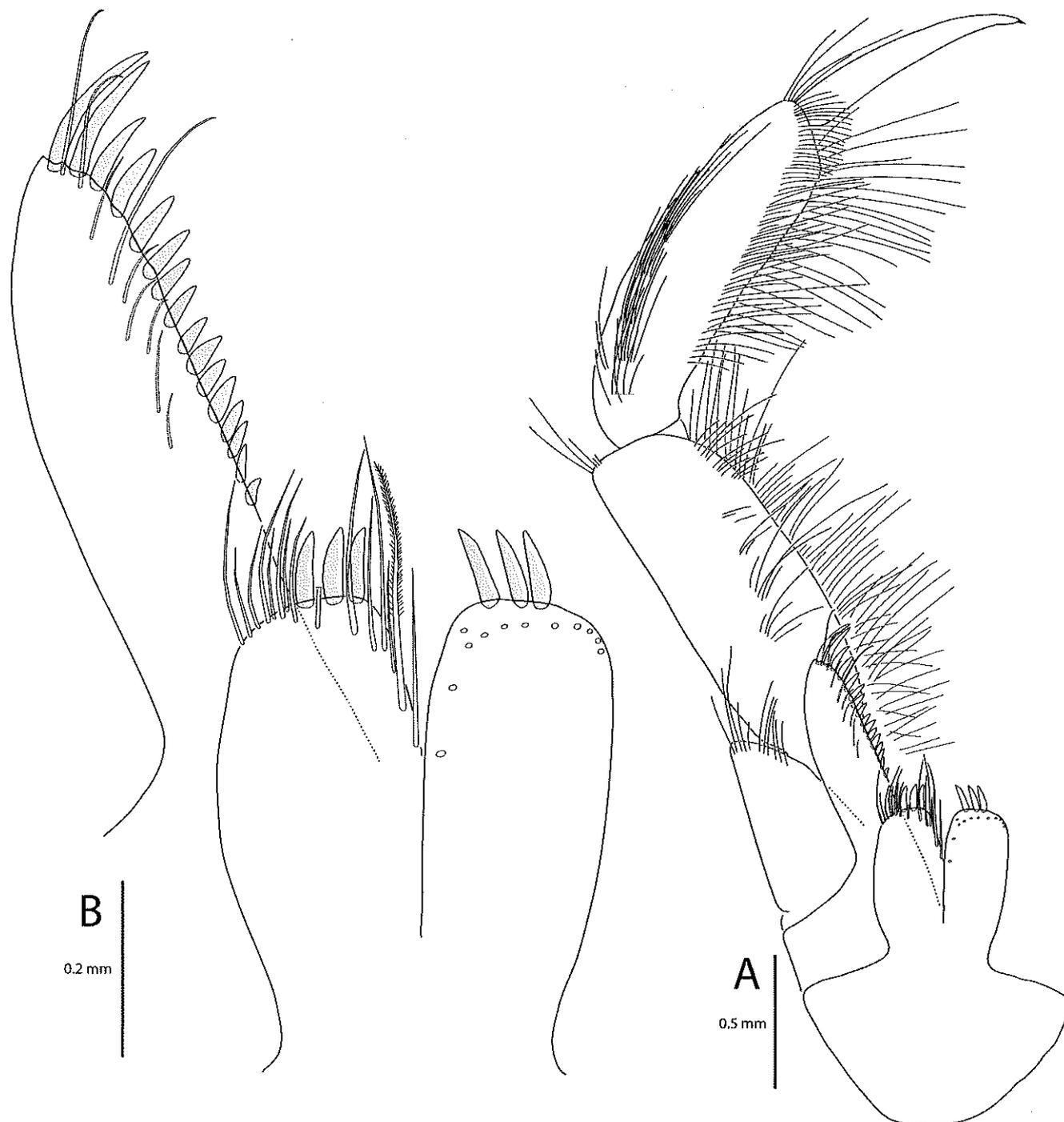


Fig. 40. *Liljeborgia euryradus* THURSTON, 1974, holotype, adult male, South Georgia. A, Mxp; B, plates of Mxp.

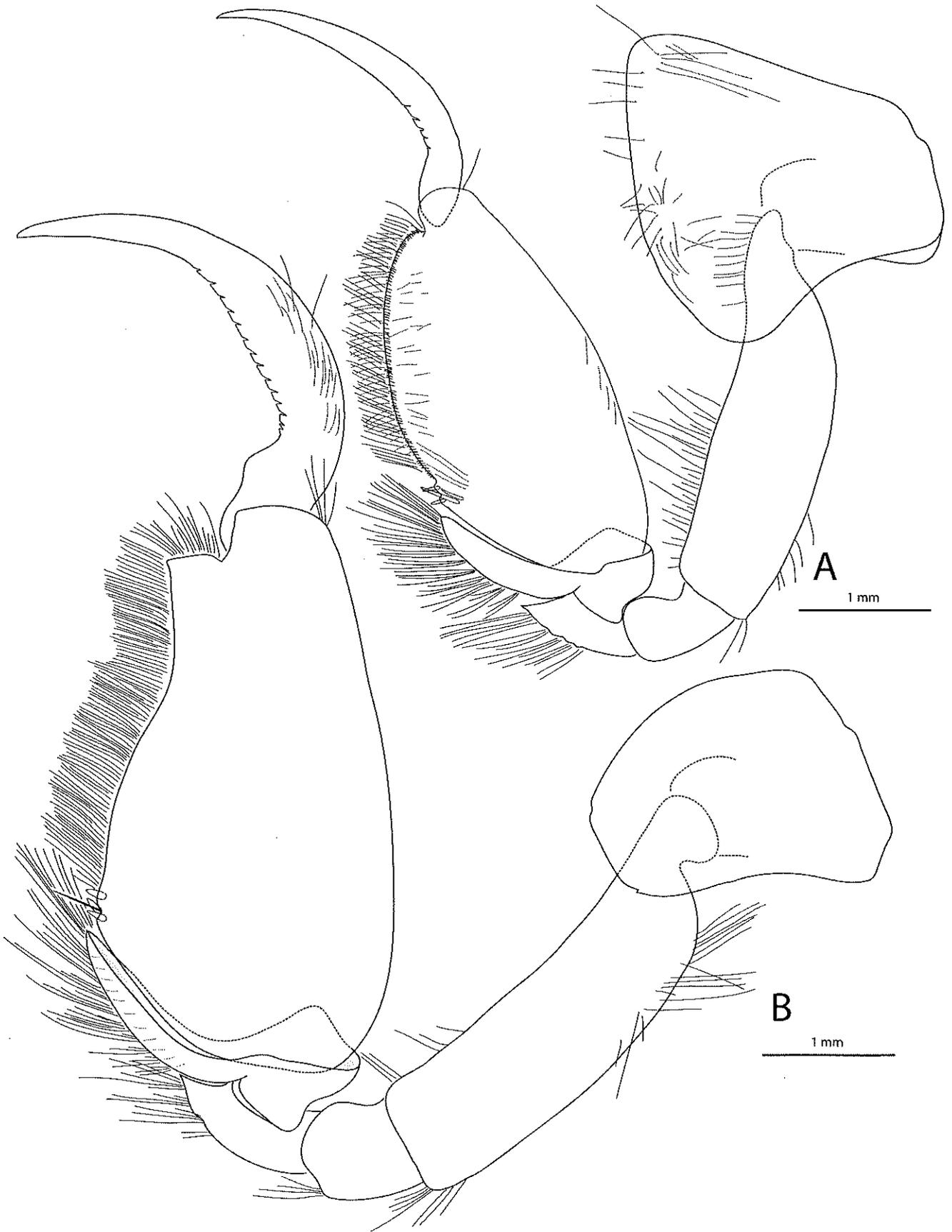


Fig. 41. *Liljeborgia eurycradus* THURSTON, 1974, holotype, adult male, South Georgia. A, left Gn1; B, left Gn2.

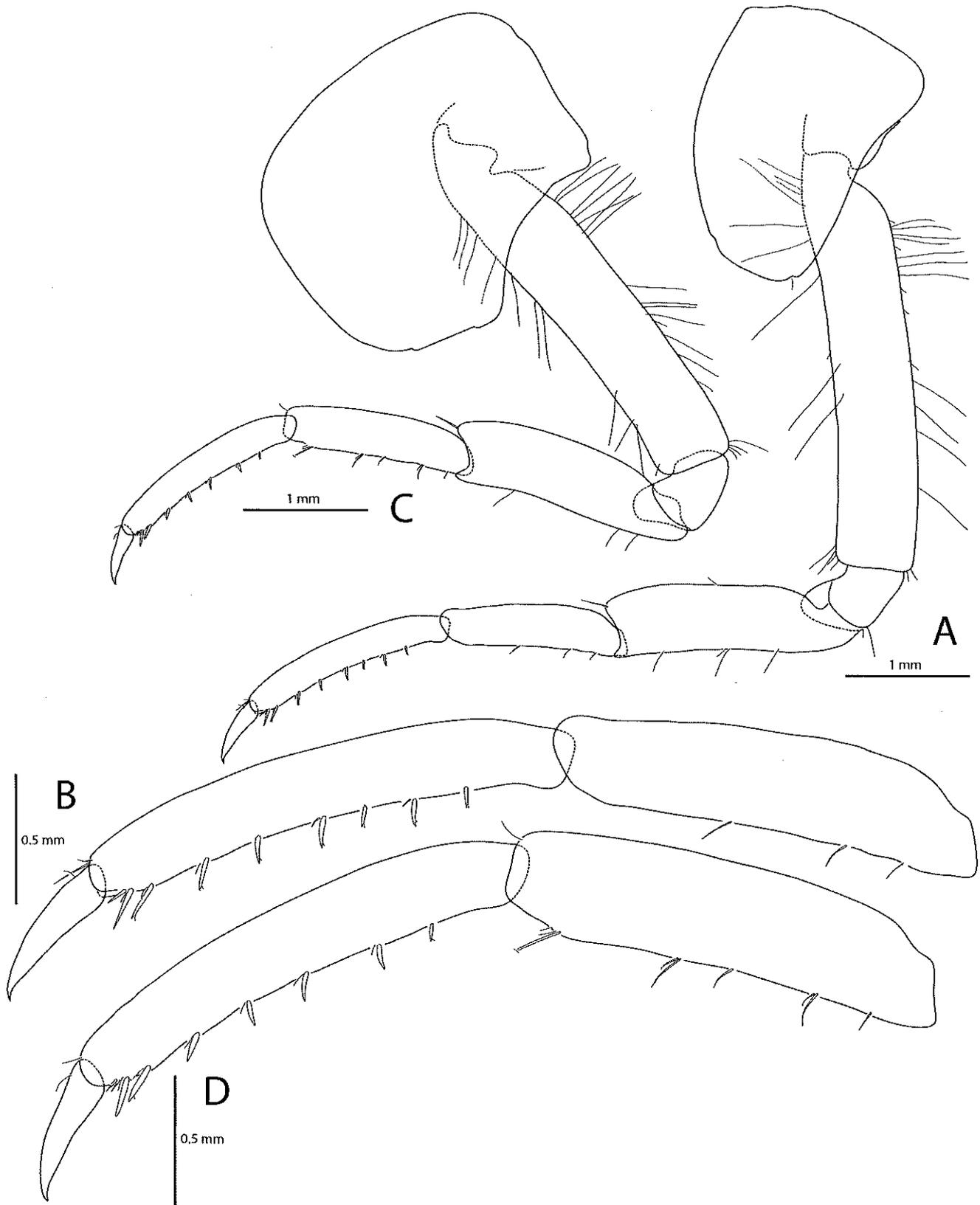


Fig. 42. *Liljeborgia eurycradus* THURSTON, 1974, holotype, adult male, South Georgia. A, left P3; B, tip of left P3; C, left P4; D, tip of left P4.

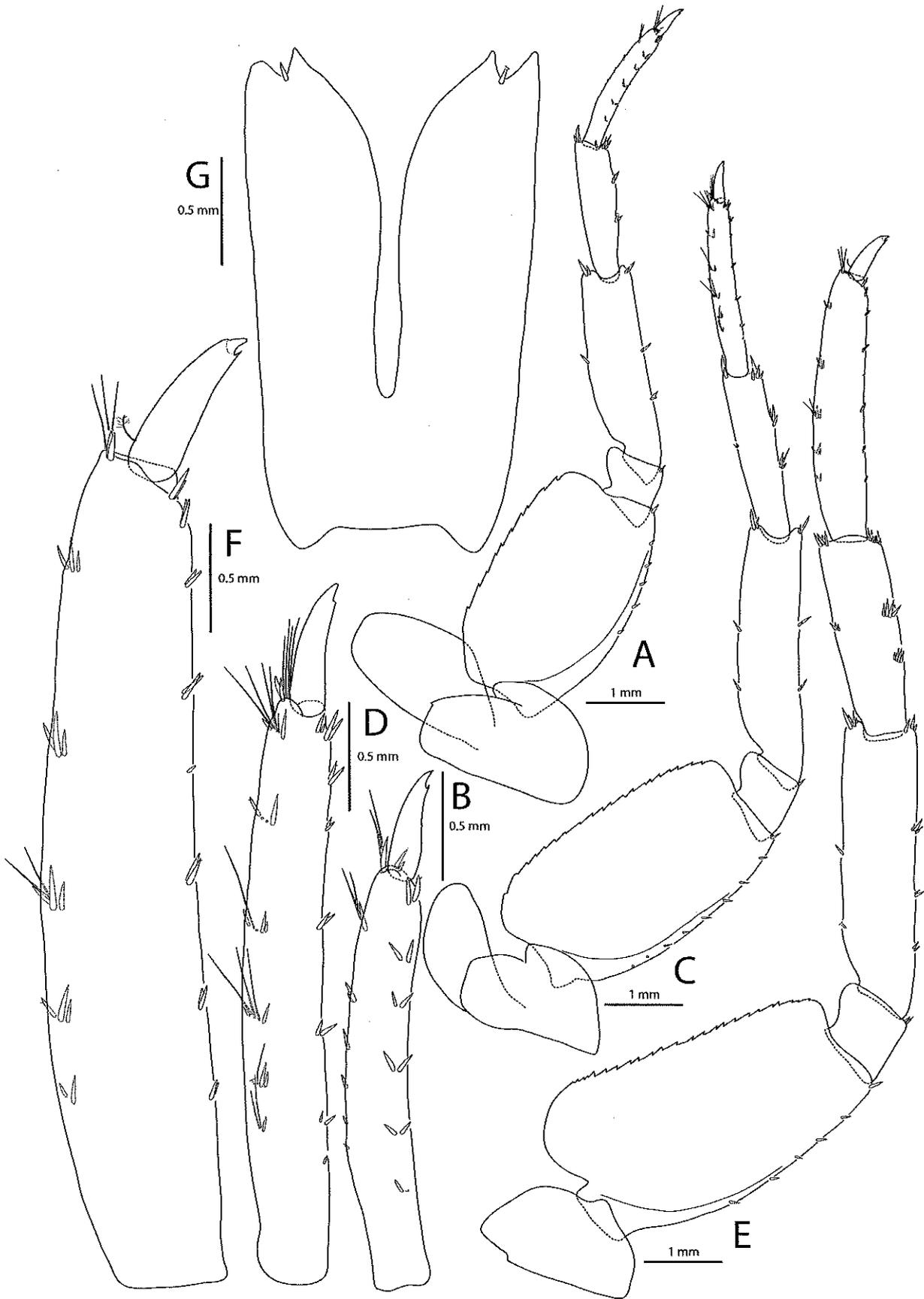


Fig. 43. *Liljeborgia eurycradus* THURSTON, 1974, holotype, adult male, South Georgia. A, left P5; B, tip of left P5; C, left P6; D, tip of left P6; E, left P7; F, tip of left P7; G, telson.

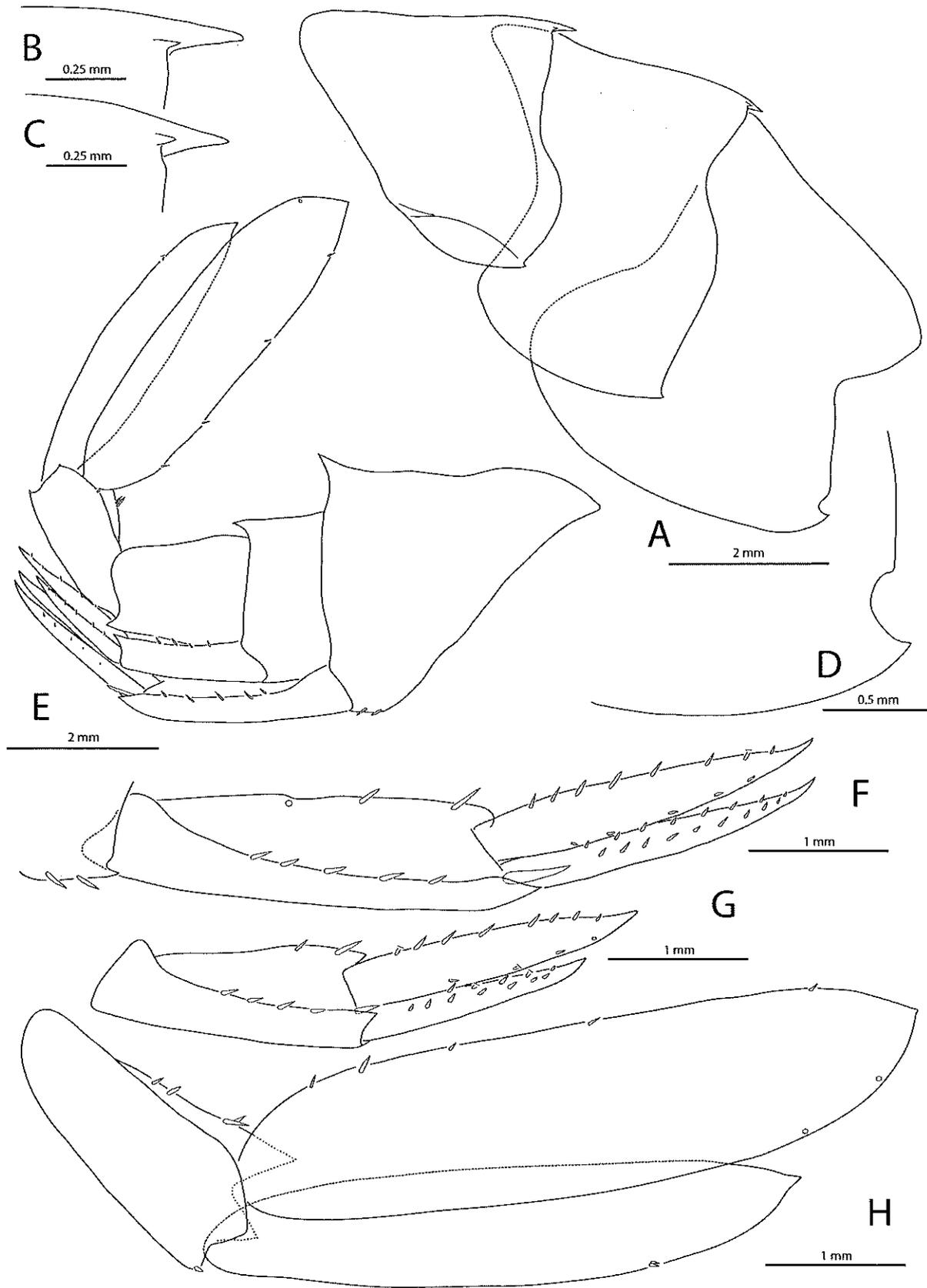


Fig. 44. *Liljeborgia eurycradus* THURSTON, 1974, adult males. A, B, C, E, F, G, H, holotype, South Georgia; D, paratype, Deception Island. A, pleonites; B, posterodorsal border of pleonite 1 in lateral view; C, posterodorsal border of pleonite 2 in lateral view; D, posteroventral corner of Ep3; E, urosome; F, left U1; G, left U2; H, left U3.

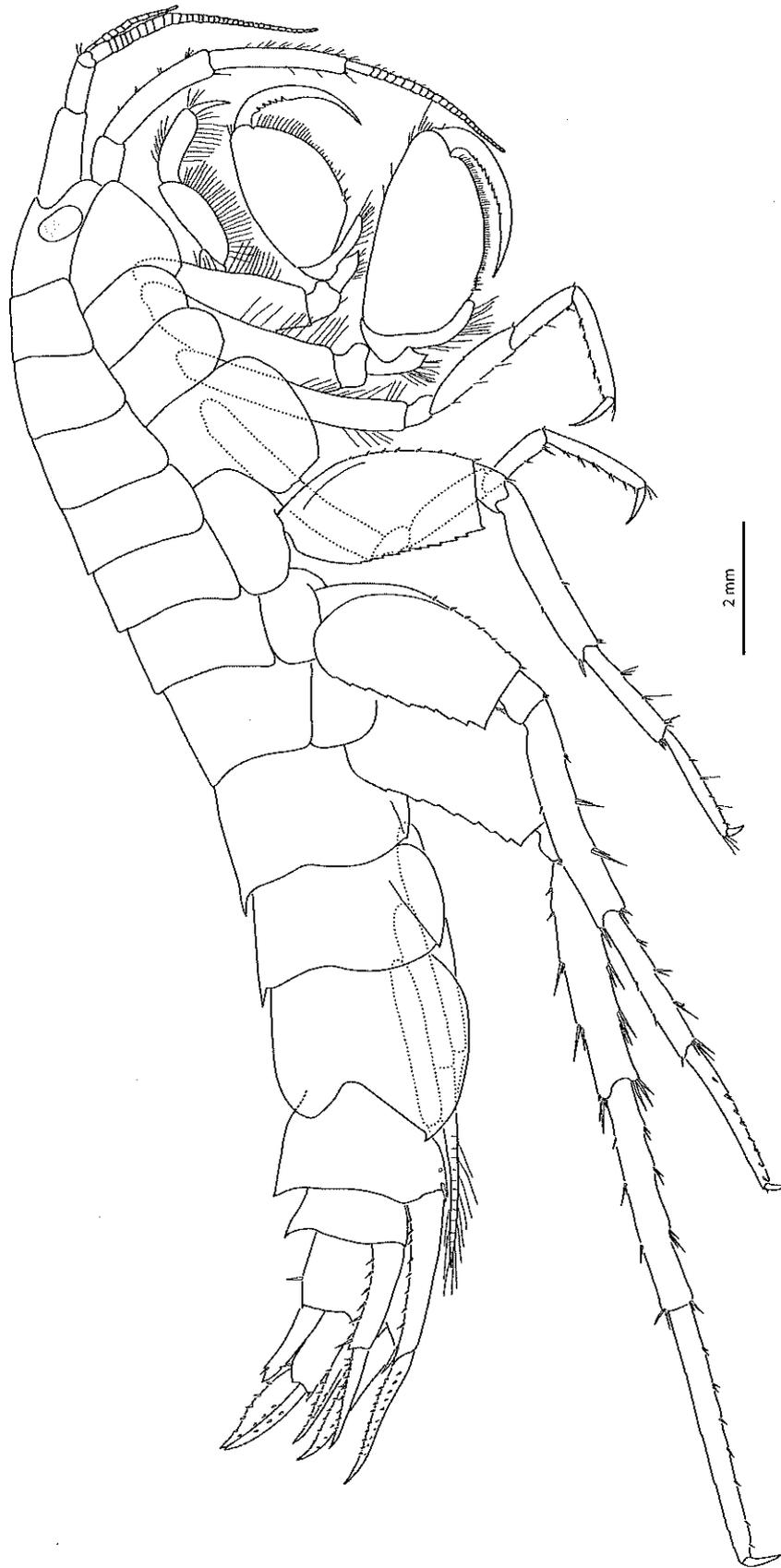


Fig. 45. *Liljeborgia georgiana* SCHELLENBERG, 1931, adult female in lateral view, Eastern Weddell Sea, EPOS, sta. 245, 500 m depth.

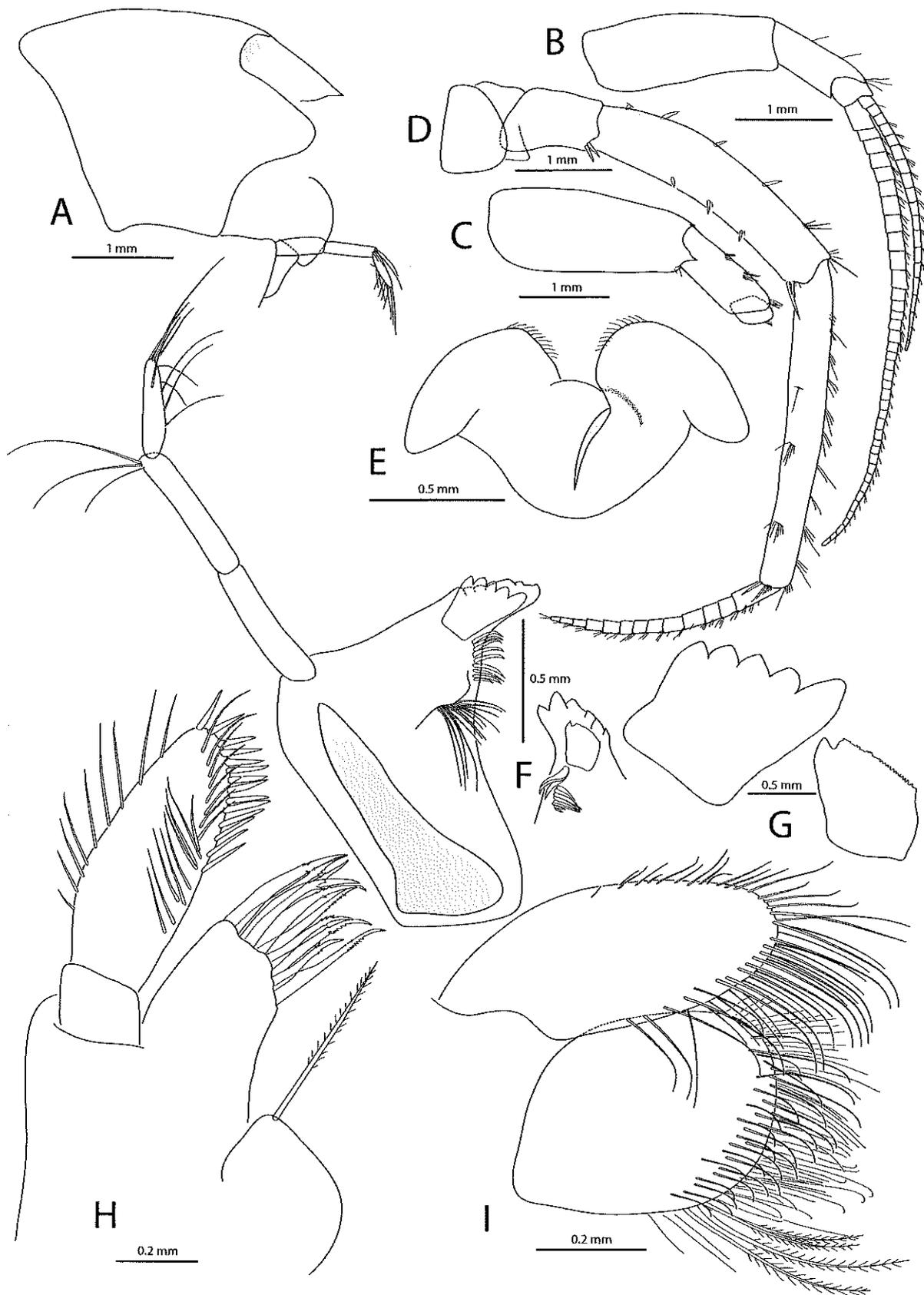


Fig. 46. *Liljeborgia georgiana* SCHELLENBERG, 1931, Eastern Weddell Sea, EPOS, sta. 293, 771-793 m depth. A, B, C, D, F, G, H, I, adult male; E, adult female. A, head with epistome and right Md; B, right A1; C, peduncle of left A1 in medial view; D, right A2; E, lower lip; F, left and right Md; G, laciniae mobilis of left and right Md; H, right Mx1; I, right Mx2.

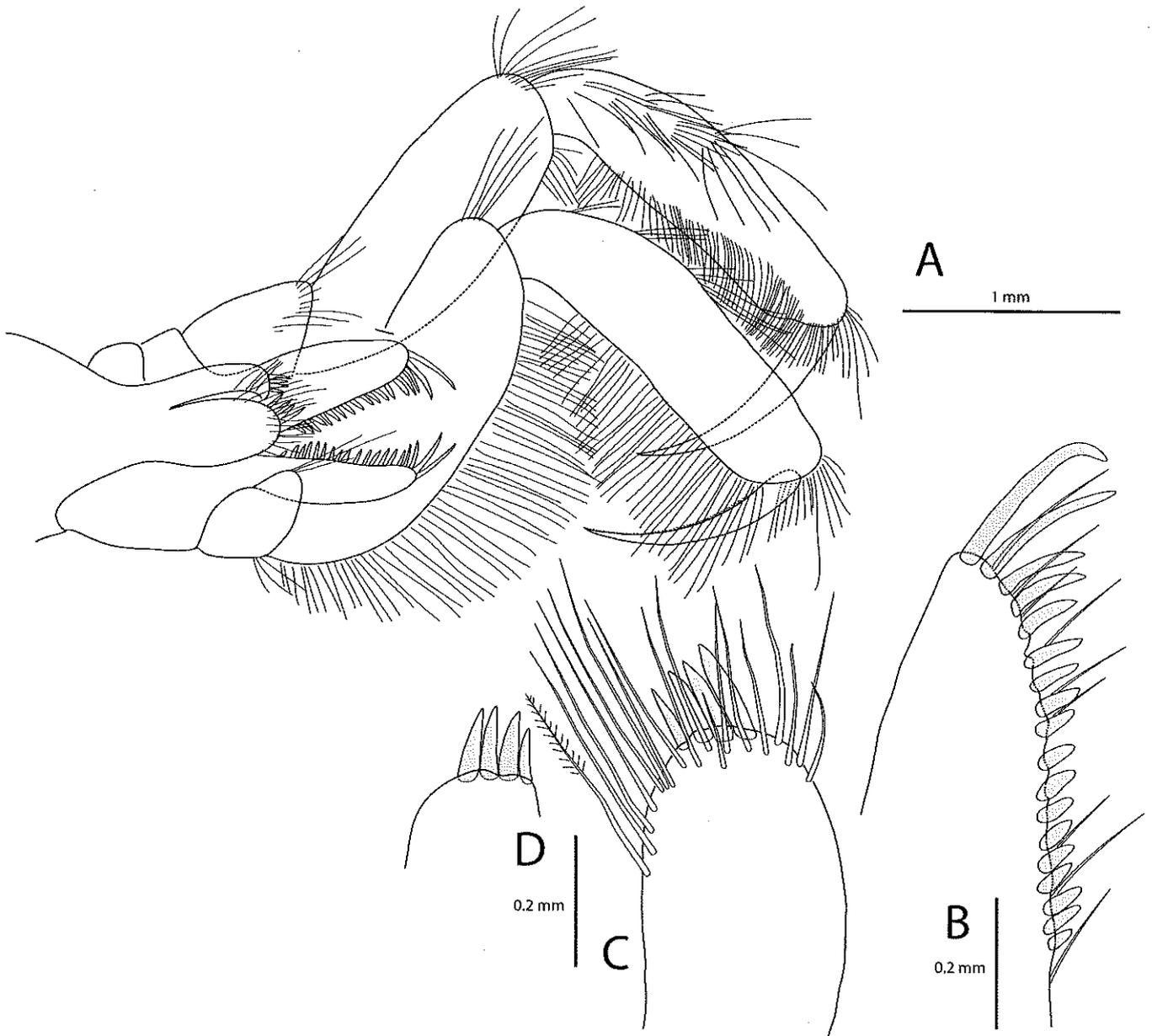


Fig. 47. *Liljeborgia georgiana* SCHELLENBERG, 1931, adult male, Eastern Weddell Sea, EPOS, sta. 293, 771-793 m depth. A, Mxp; B, left outer plate of Mxp; C, right inner plate of Mxp; D, left inner plate of Mxp (setae not shown).

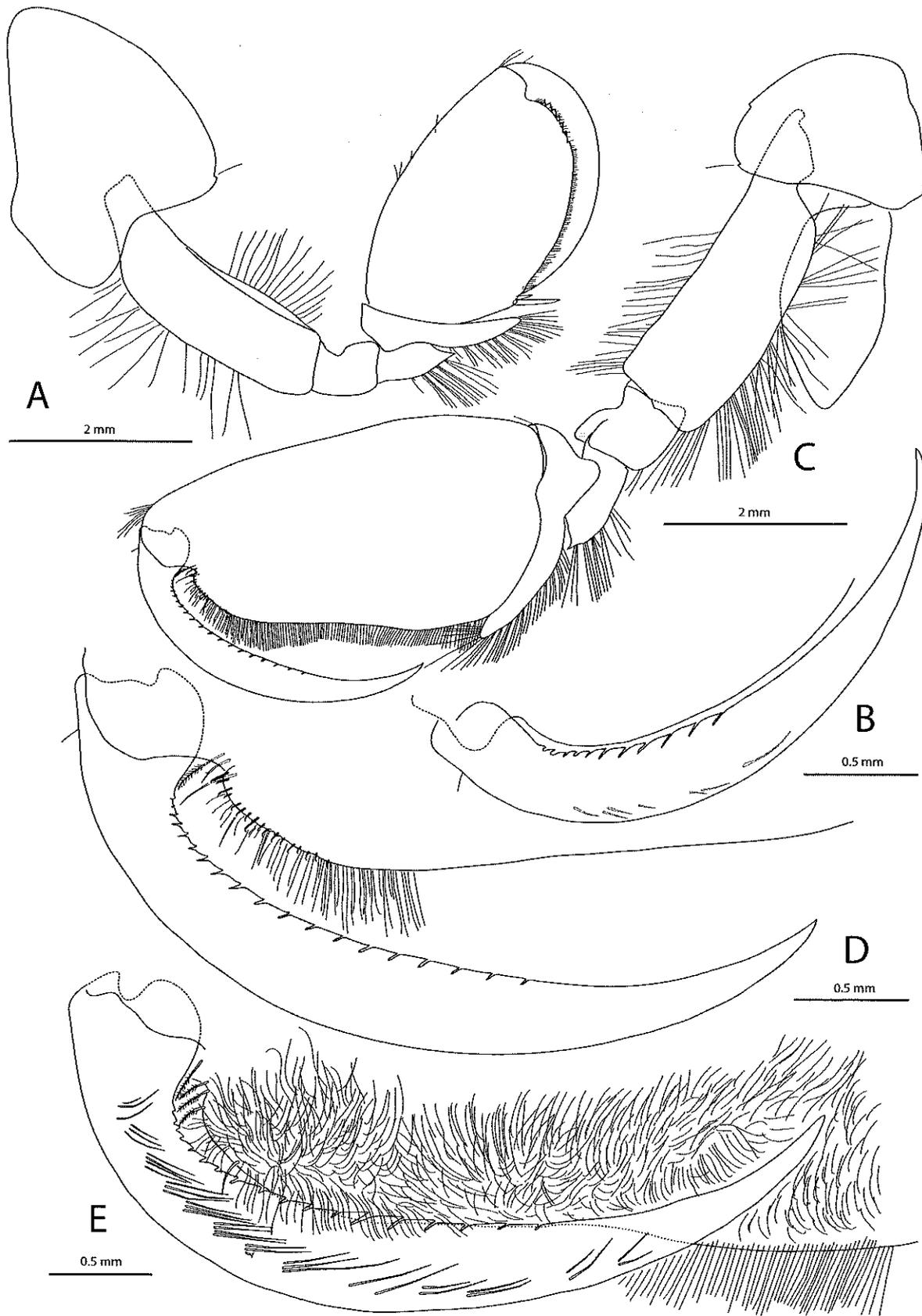


Fig. 48. *Liljeborgia georgiana* SCHELLENBERG, 1931, adult male, Eastern Weddell Sea, EPOS, sta. 293, 771-793 m depth. A, right Gn1; B, dactylus of left Gn1; C, left Gn2; D, dactylus of left Gn2; E, dactylus and palm of right Gn2 in medial view.

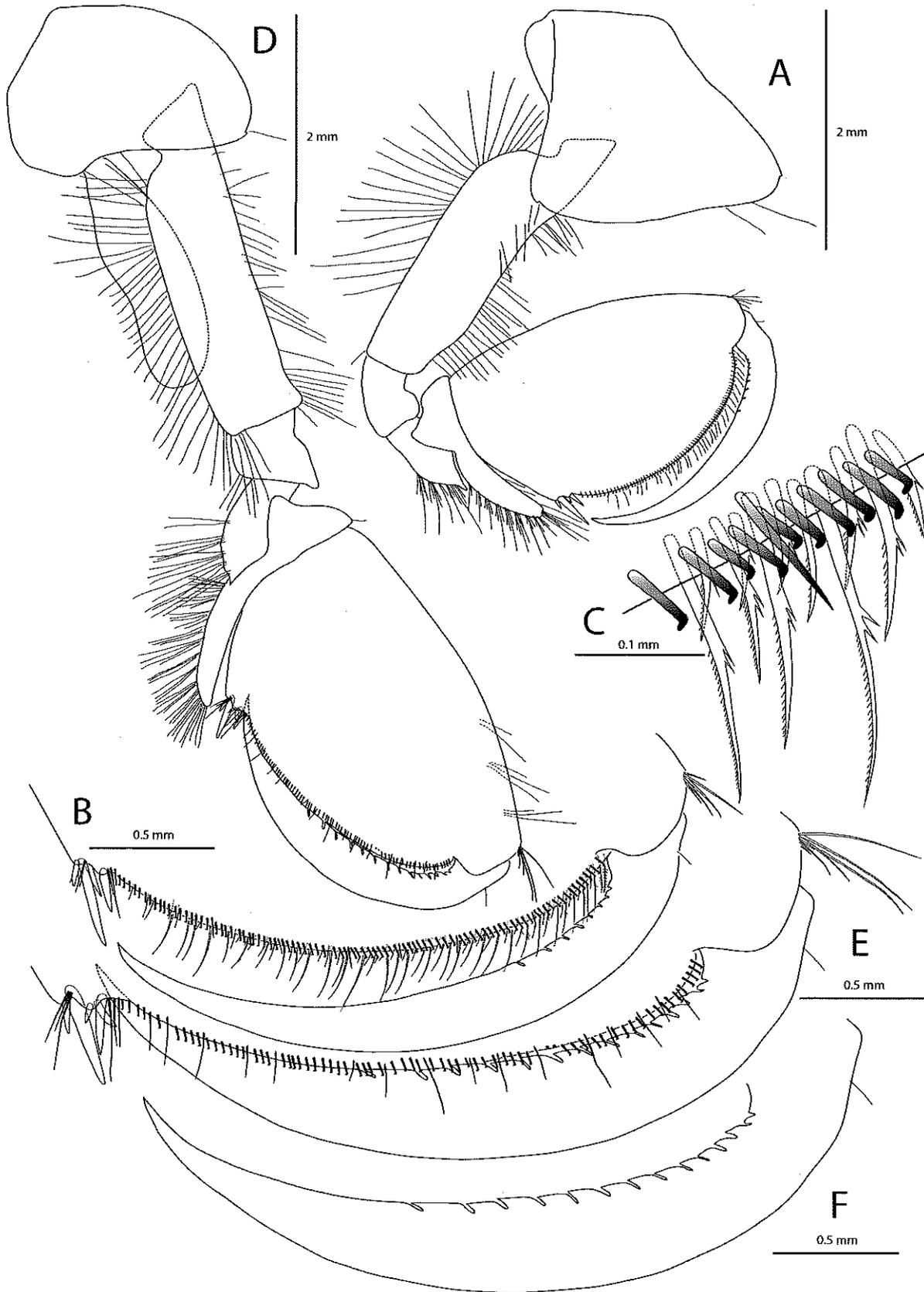


Fig. 49. *Liljeborgia georgiana* SCHELLENBERG, 1931, adult female, Eastern Weddell Sea, EPOS, sta. 293, 771-793 m depth. A, right Gn1; B, dactylus and palm of right Gn1; C, detail of palm of right Gn1; D, right Gn2; E, dactylus and palm of right Gn2; F, dactylus of right Gn2.

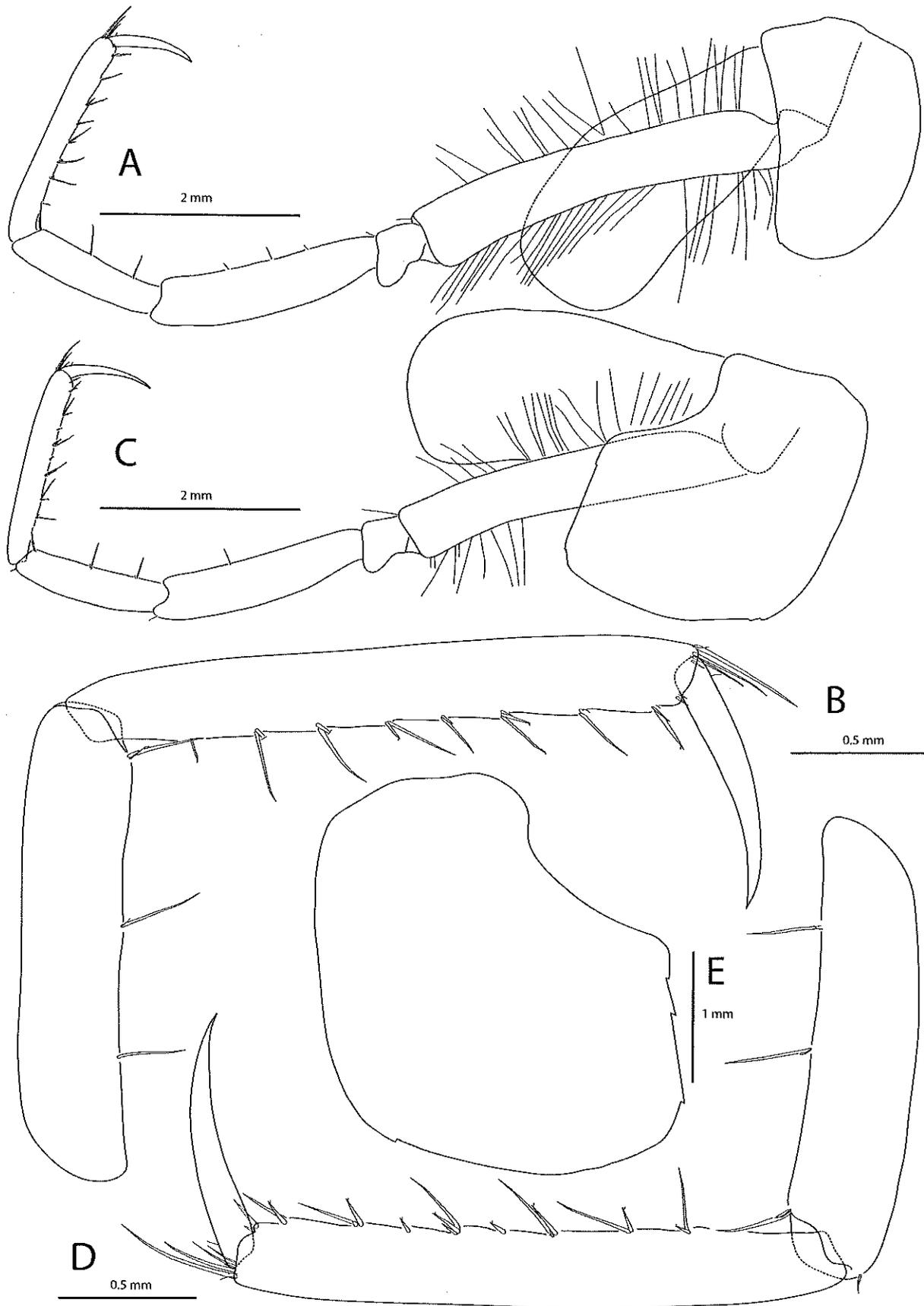


Fig. 50. *Liljeborgia georgiana* SCHELLENBERG, 1931, adult male, Eastern Weddell Sea, EPOS, sta. 293, 771-793 m depth. A, right P3; B, tip of right P3; C, right P4; D, tip of right P4; E, left coxa 4.

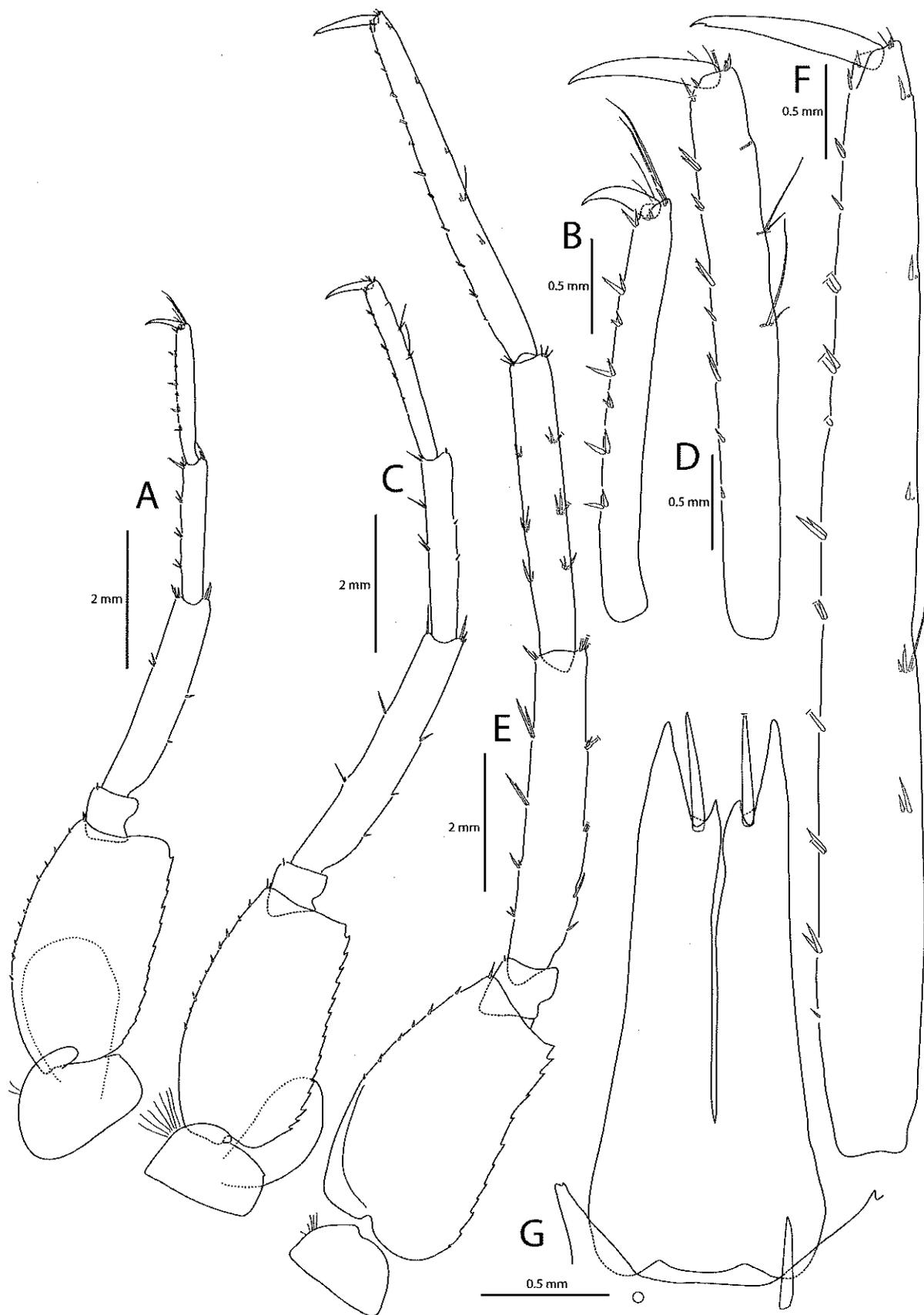


Fig. 51. *Liljeborgia georgiana* SCHELLENBERG, 1931, adult male, Eastern Weddell Sea, EPOS, sta. 293, 771-793 m depth. A, right P5; B, tip of right P5; C, right P6; D, tip of right P6; E, right P7; F, tip of right P7; G, telson and posterodorsal border of third urosomite.

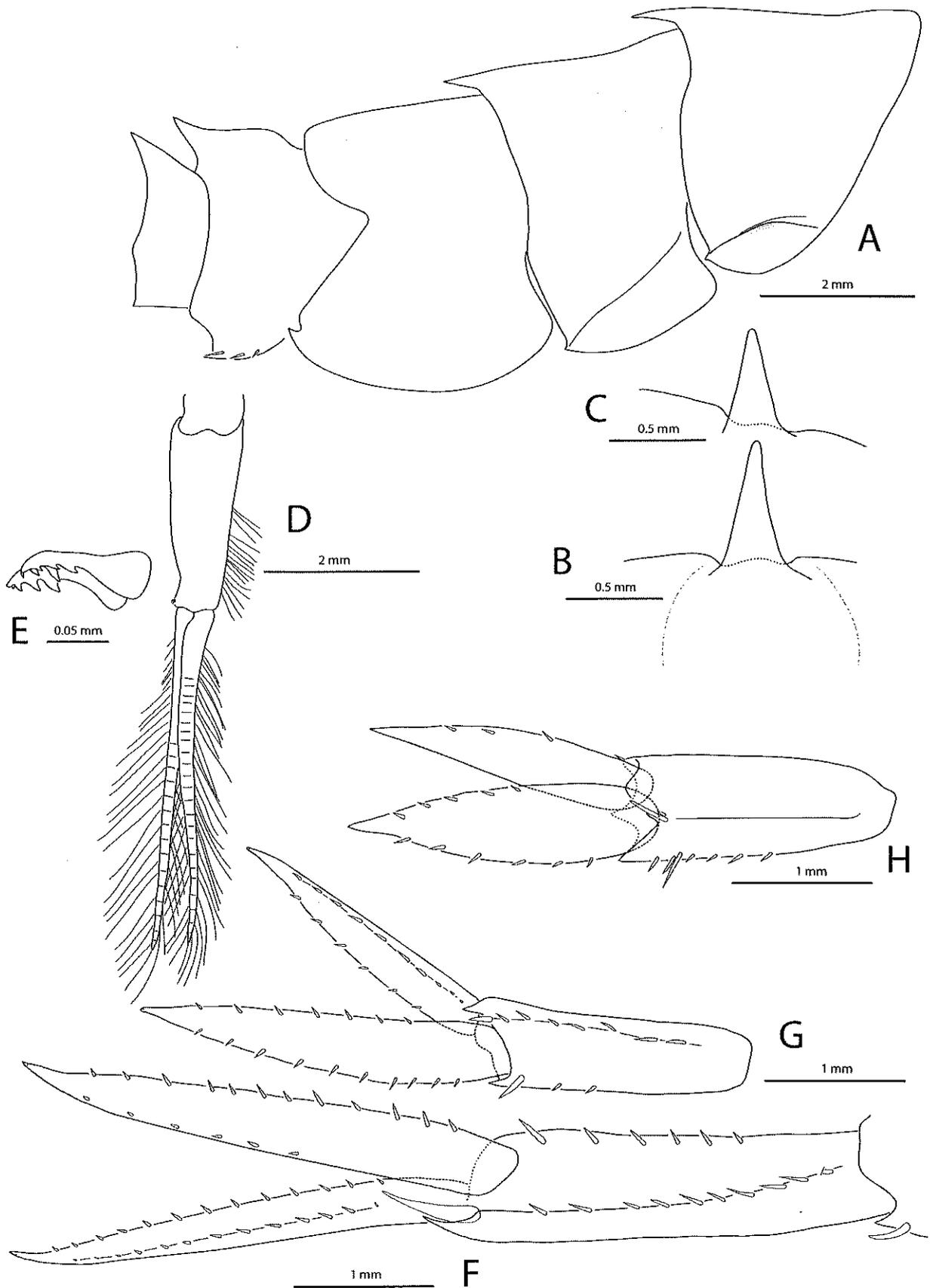


Fig. 52. *Liljeborgia georgiana* SCHELLENBERG, 1931, adult male, Eastern Weddell Sea, EPOS, sta. 293, 771-793 m depth. A, pleosome + urosomites 1-2; B, posterodorsal border of urosomite 1; C, posterodorsal border of urosomite 2; D, right pleopod 3; E, coupling hooks of right pleopod 3; F, right U1; G, left U2; H, left U3.

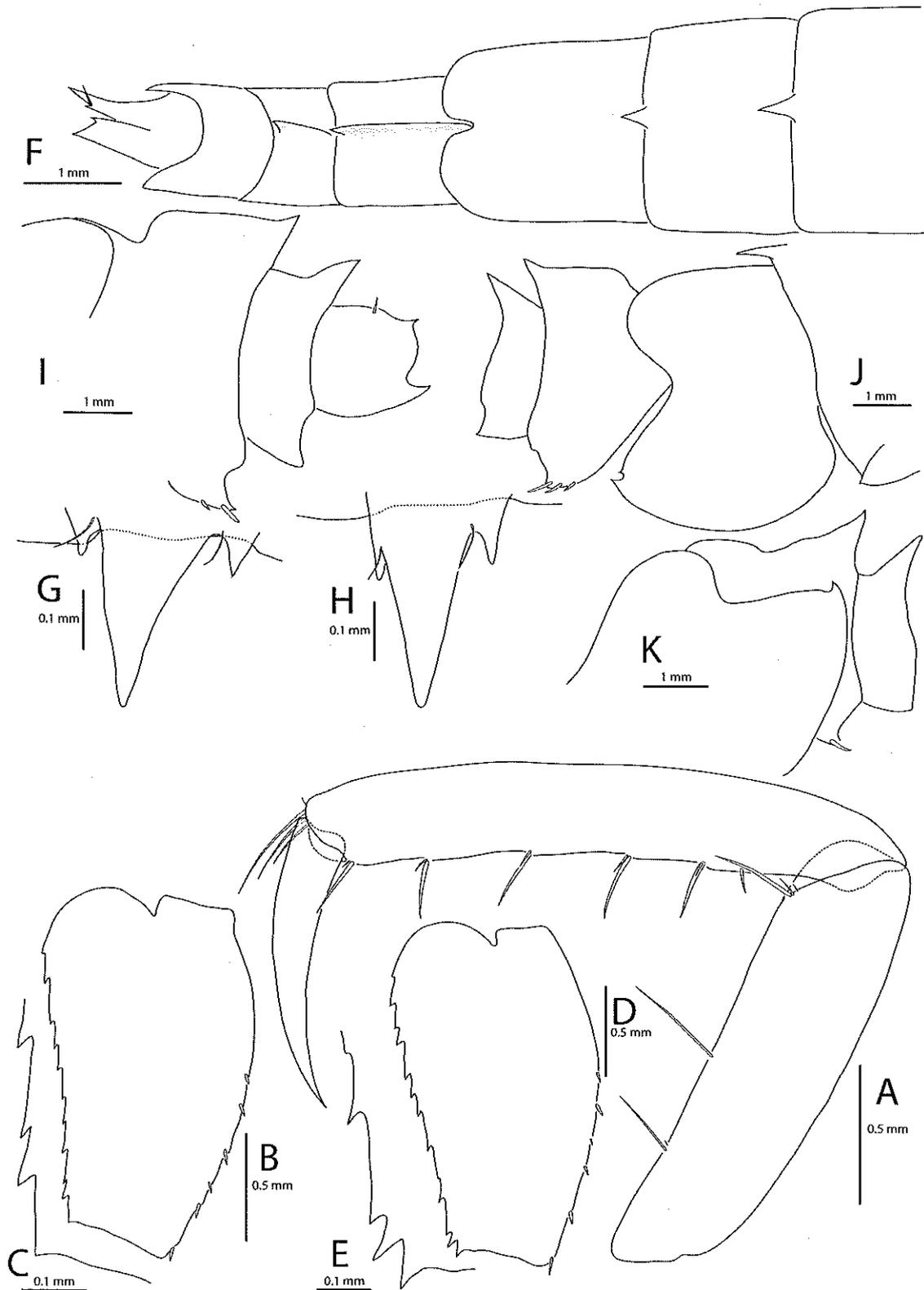


Fig. 53. *Liljeborgia georgiana* SCHELLENBERG, 1931. A, I, male, Elephant Island, Ant XXIII-8, sta. 614-3+4+5, 248-265 m; B, C, F, ovigerous female, Eastern Weddell Sea, EPOS, sta. 245, 500 m; D, E, male, EPOS, sta. 245, 500 m; G, H, immature male, King George Island, ARC93, sta. CA107, 70-90 m; J, sex not recorded, Easiz II, sta. 049, 255-261 m; K, sex not recorded, Eastern Weddell Sea, EPOS, sta. 293, 771-793 m. A, tip of left P4; B, basis of left P7; C, posterodistal corner of the same; D, basis of right P7; E, posterodistal corner of the same; F, pleon in dorsal view; G, posterodorsal border of pleonite 1; H, posterodorsal border of pleonite 2; I, J, K, posterior part of body in lateral view.

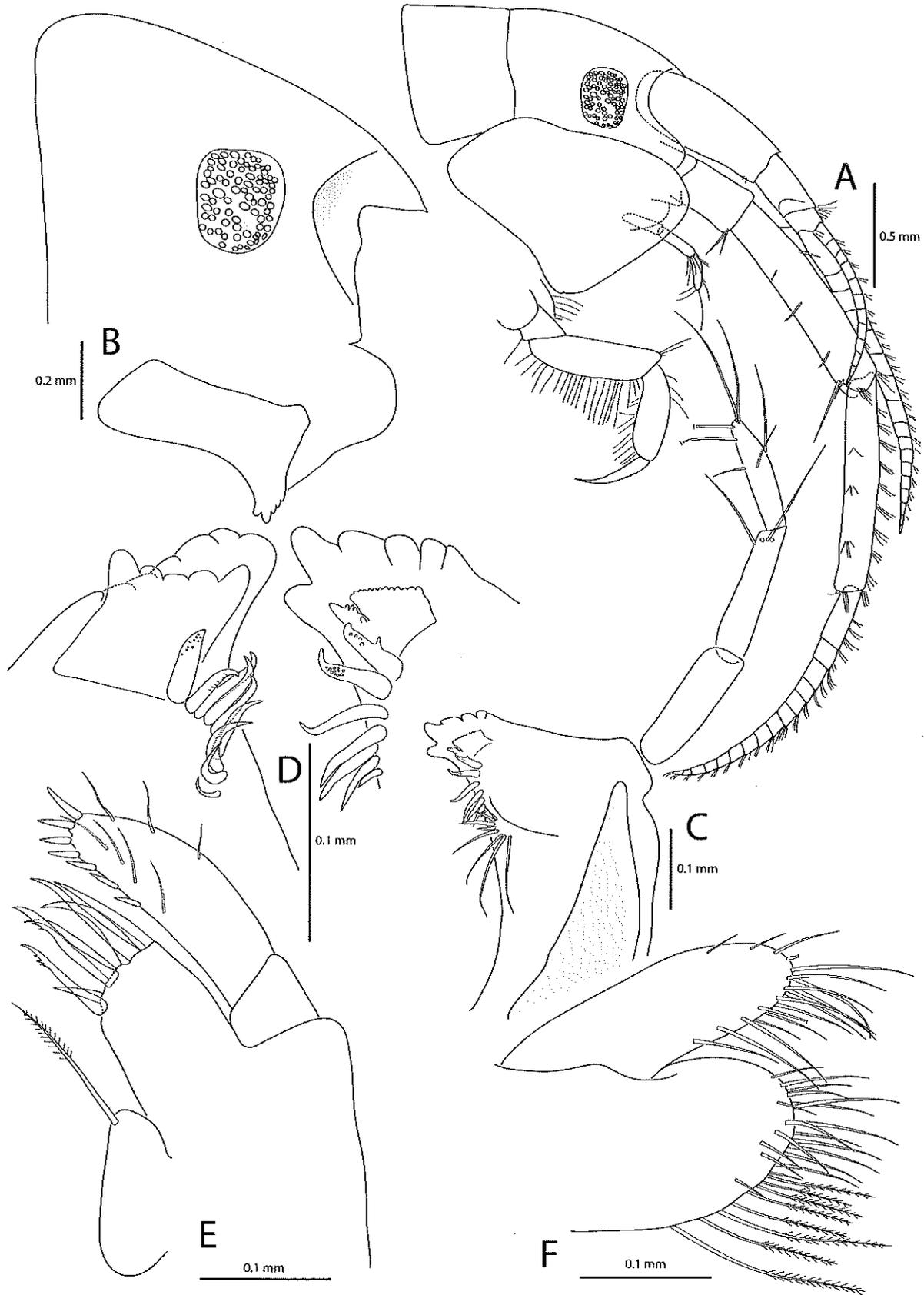


Fig. 54. *Liljeborgia georgiensis* K.H. BARNARD, 1932, mature female, King George Island, 30th Soviet Antarctic Exp. sta. 30/39. A, head and surrounding appendages; B, head and epistome; C, right Md; D, tip of left and right Md; E, right Mx1; F, right Mx2.

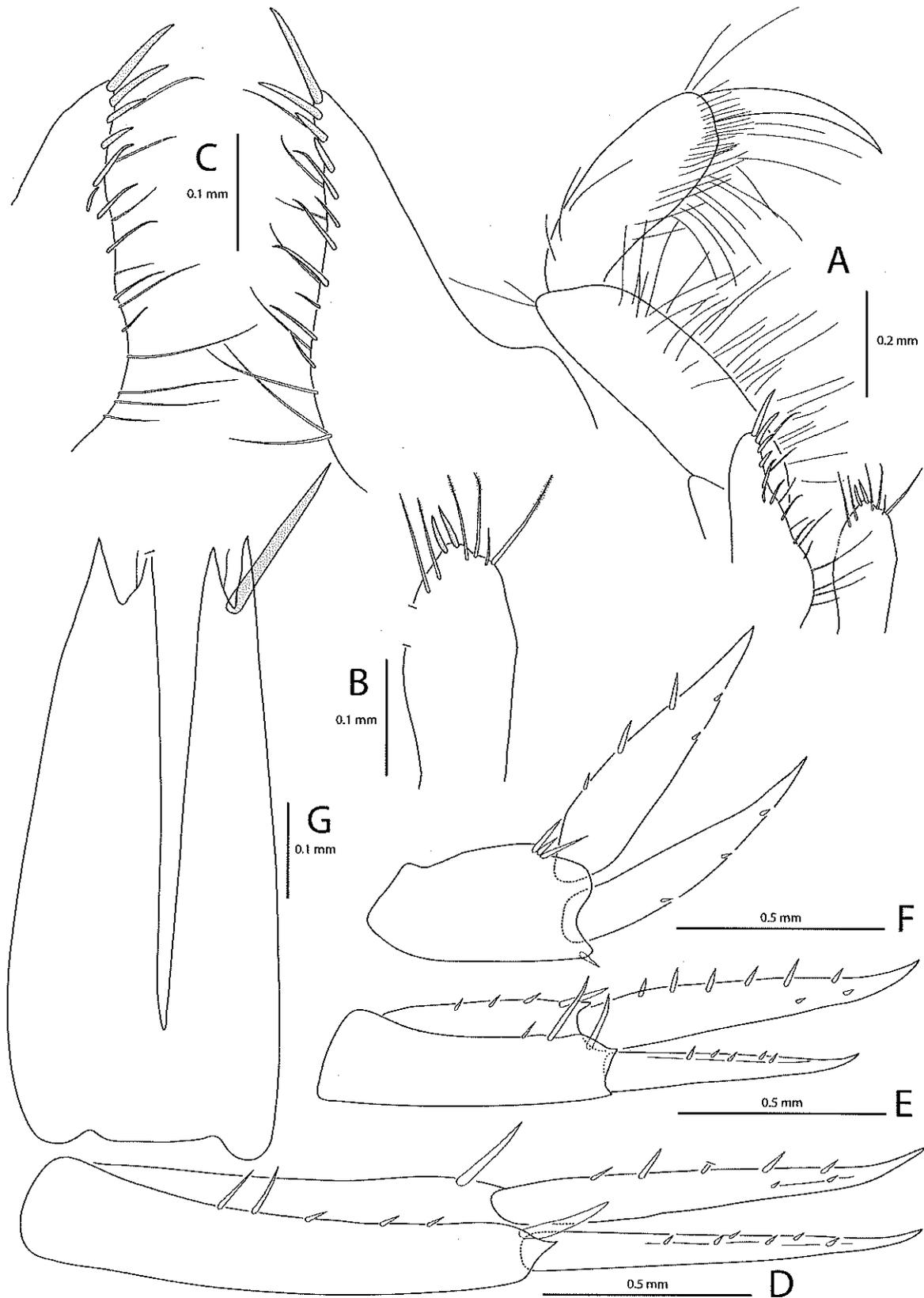


Fig. 55. *Liljeborgia georgiensis* K.H. BARNARD, 1932, mature female, King George Island, 30th Soviet Antarctic Exp. sta. 30/39. A, Mxp; B, right inner plate of Mxp; C, left and right outer plate of Mxp; D, left U1; E, left U2; F, left U3; G, telson.

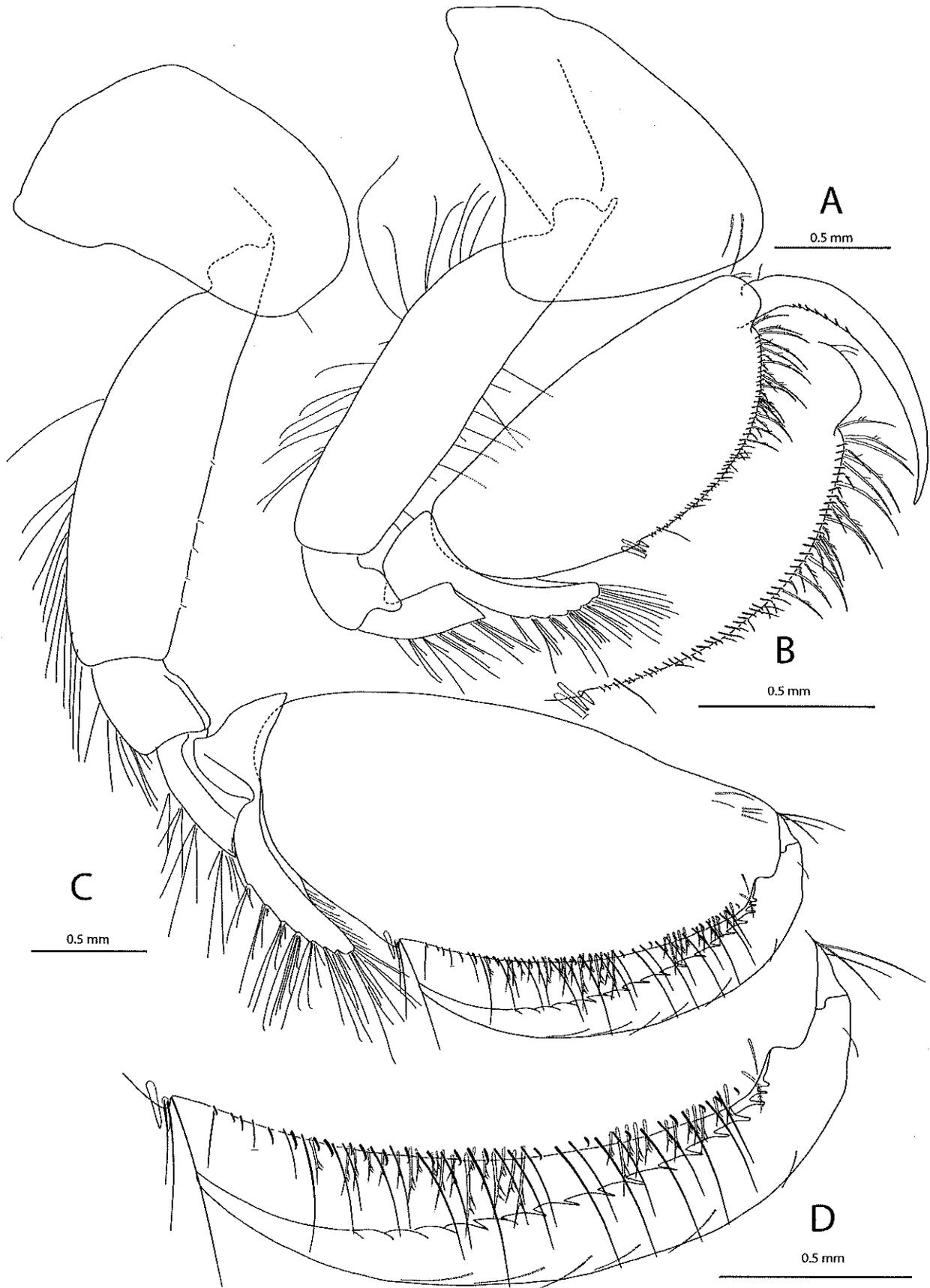


Fig. 56. *Liljeborgia georgiensis* K.H. BARNARD, 1932, holotype, adult female, South Georgia, Discovery Exp. sta. 145. A, right Gn1; B, palm of right Gn1; C, right Gn2; D, chela of right Gn2 (detail).

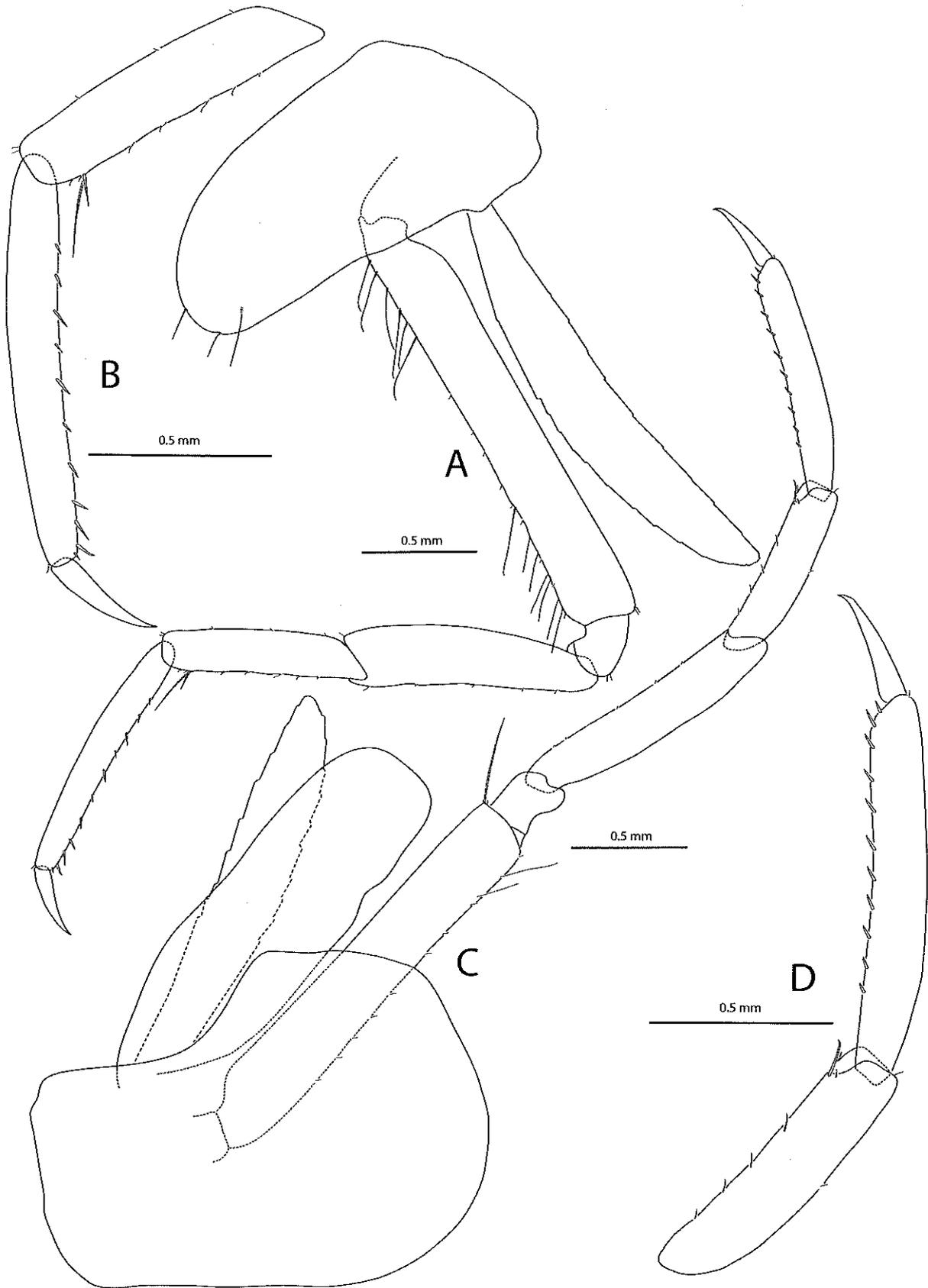


Fig. 57. *Liljeborgia georgiensis* K.H. BARNARD, 1932, holotype, adult female, South Georgia, Discovery Exp. sta. 145. A, left P3; B, tip of left P3; C, left P4; D, tip of left P4.

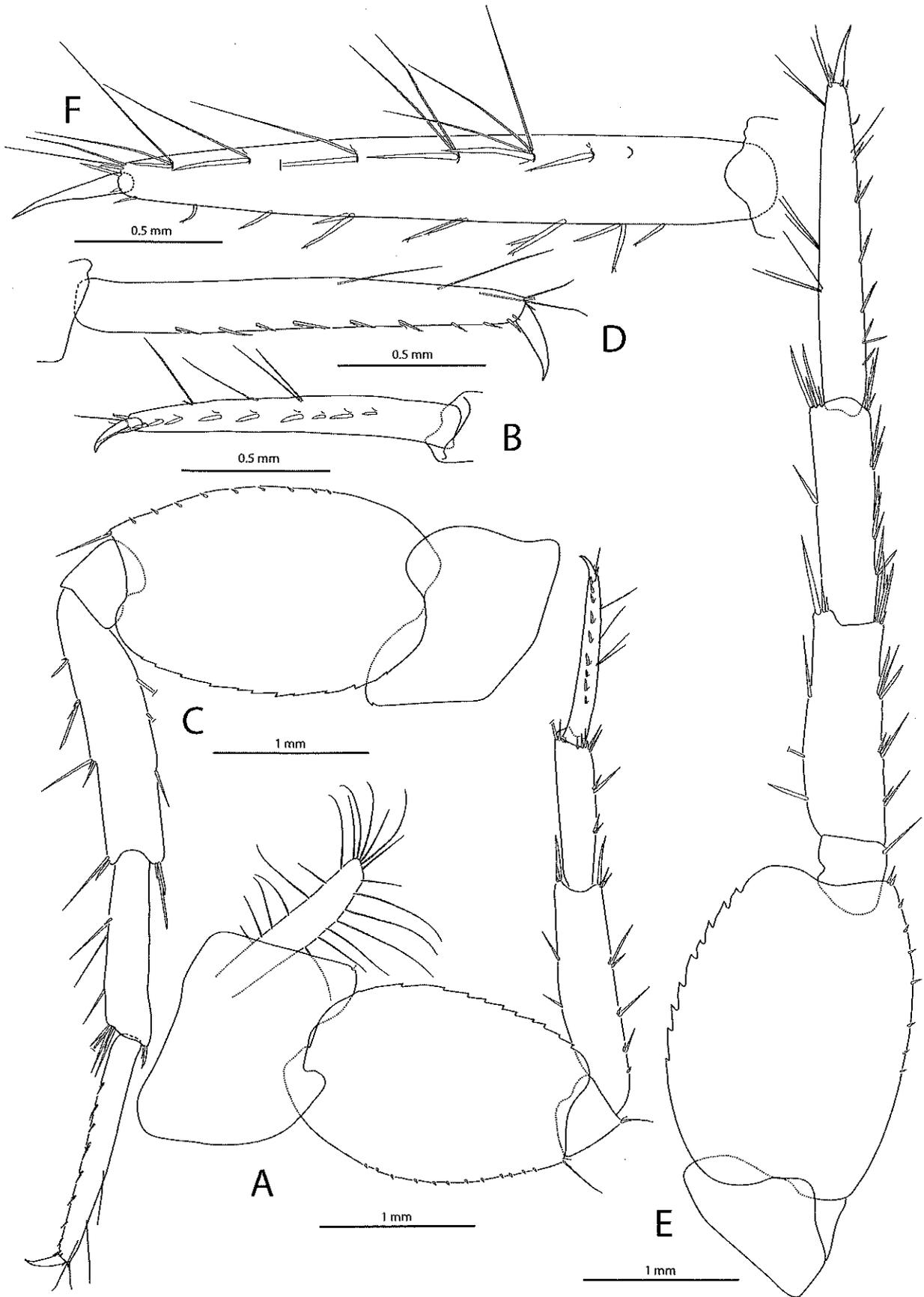


Fig. 58. *Liljeborgia georgiensis* K.H. BARNARD, 1932, holotype, adult female, South Georgia, Discovery Exp. sta. 145. A, left P5; B, tip of left P5 (outer view); C, left P6; D, tip of left P6 (outer view); E, left P7; F, tip of left P7 (medial view).

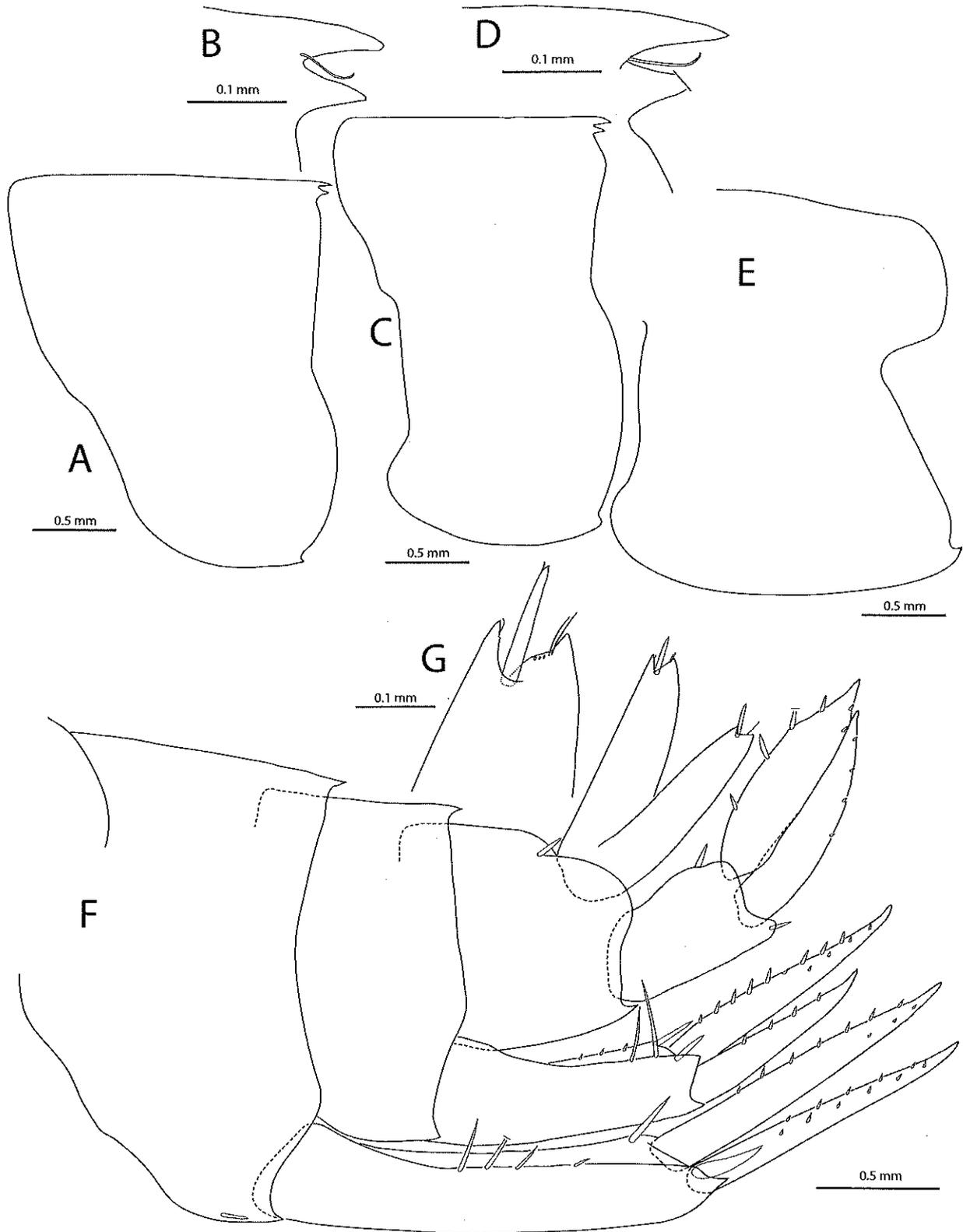


Fig. 59. *Liljeborgia georgiensis* K.H. BARNARD, 1932, holotype, adult female, South Georgia, Discovery Exp. sta. 145. A, pleonite 1 (left side); B, posterodorsal border of pleonite 1 in lateral view; C, pleonite 2 (left side); D, posterodorsal border of pleonite 2 in lateral view; E, pleonite 3 (left side); F, urosome (left side); G, tip of right lobe of telson in ventral view.

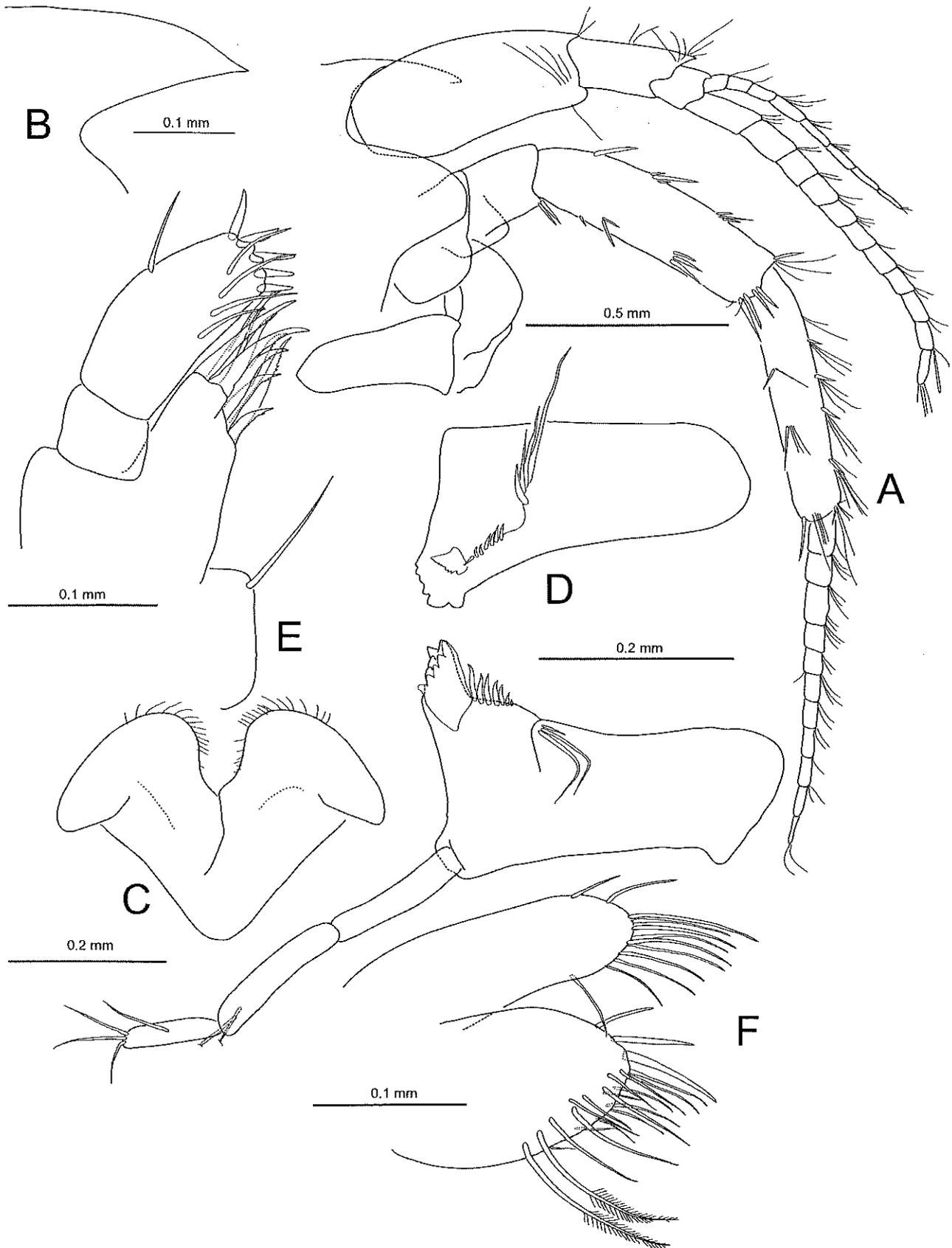


Fig. 60. *Liljeborgia homospora* n. sp., paratype, female, Western Weddell Sea, ANT XXII-3, ANDEEP III, sta. 121-10. A, head, right A1, right A2, complex epistome + upper lip, right Md in lateral view; B, rostrum; C, lower lip; D, left and right Md, E, right Mx1; F, right Mx2.

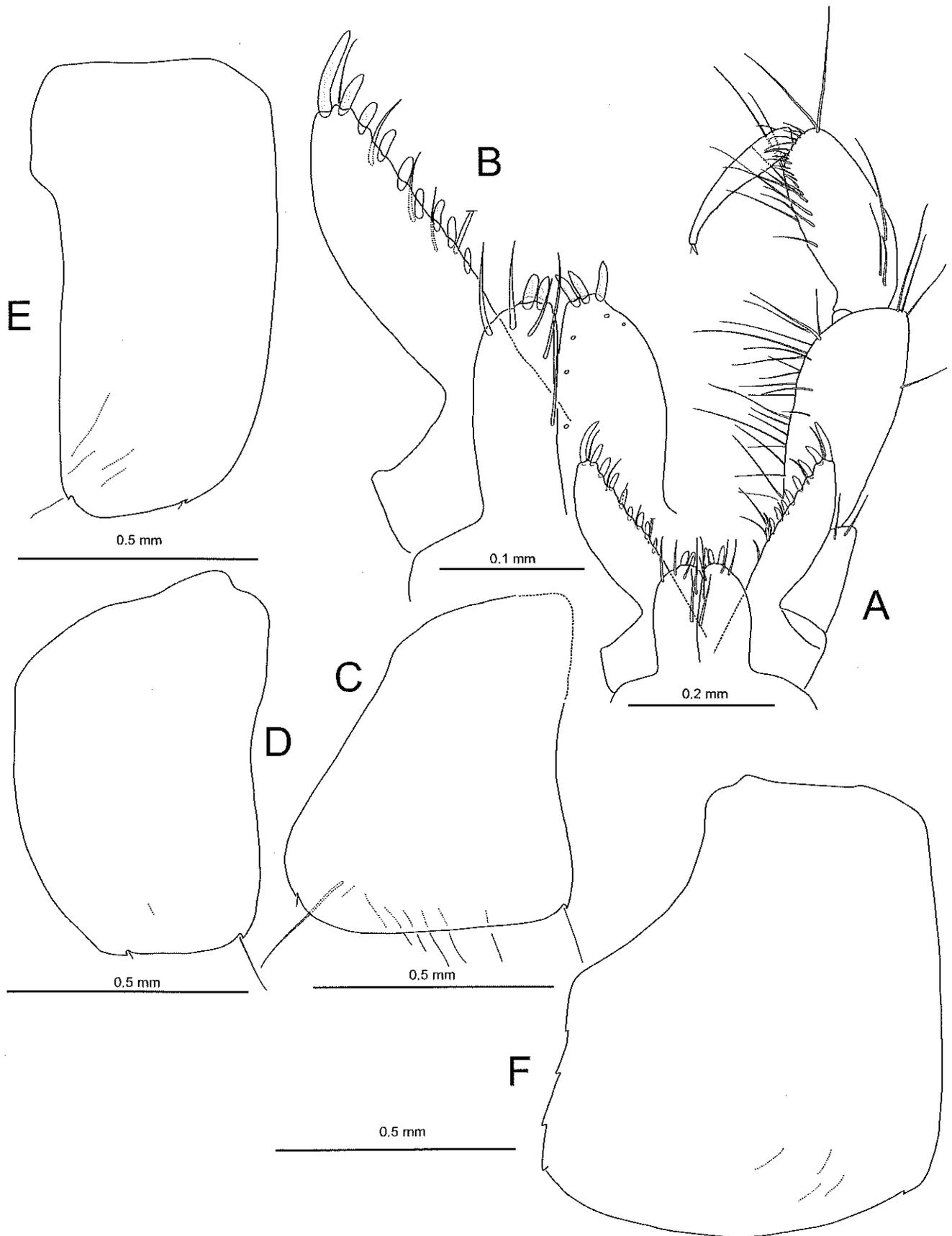


Fig. 61. *Liljeborgia homospora* n. sp., paratype, female, Western Weddell Sea, ANT XXII-3, ANDEEP III, sta. 121-10. A, Mxp; B, plates of Mxp; C, left coxa 1; D, left coxa 2; E, right coxa 3; F, right coxa 4.

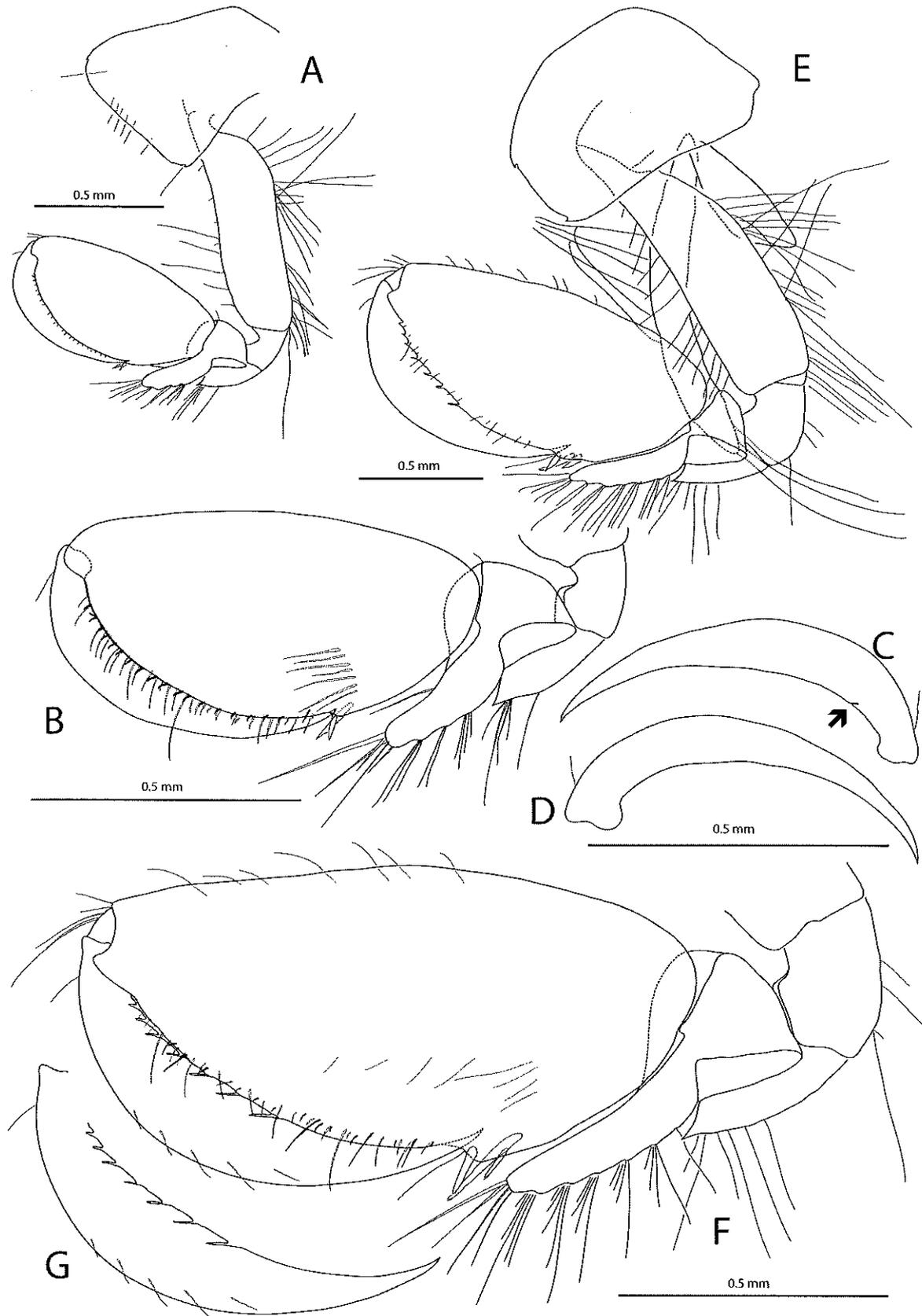


Fig. 62. *Liljeborgia homospora* n. sp., paratype, female, Western Weddell Sea, ANT XXII-3, ANDEEP III, sta. 121-10. A, left Gn1; B, chela of left Gn1; C, dactylus of left Gn1; D, dactylus of right Gn1 (same scale bar as for C); E, left Gn2; F, chela of left Gn2; G, dactylus of left Gn2.

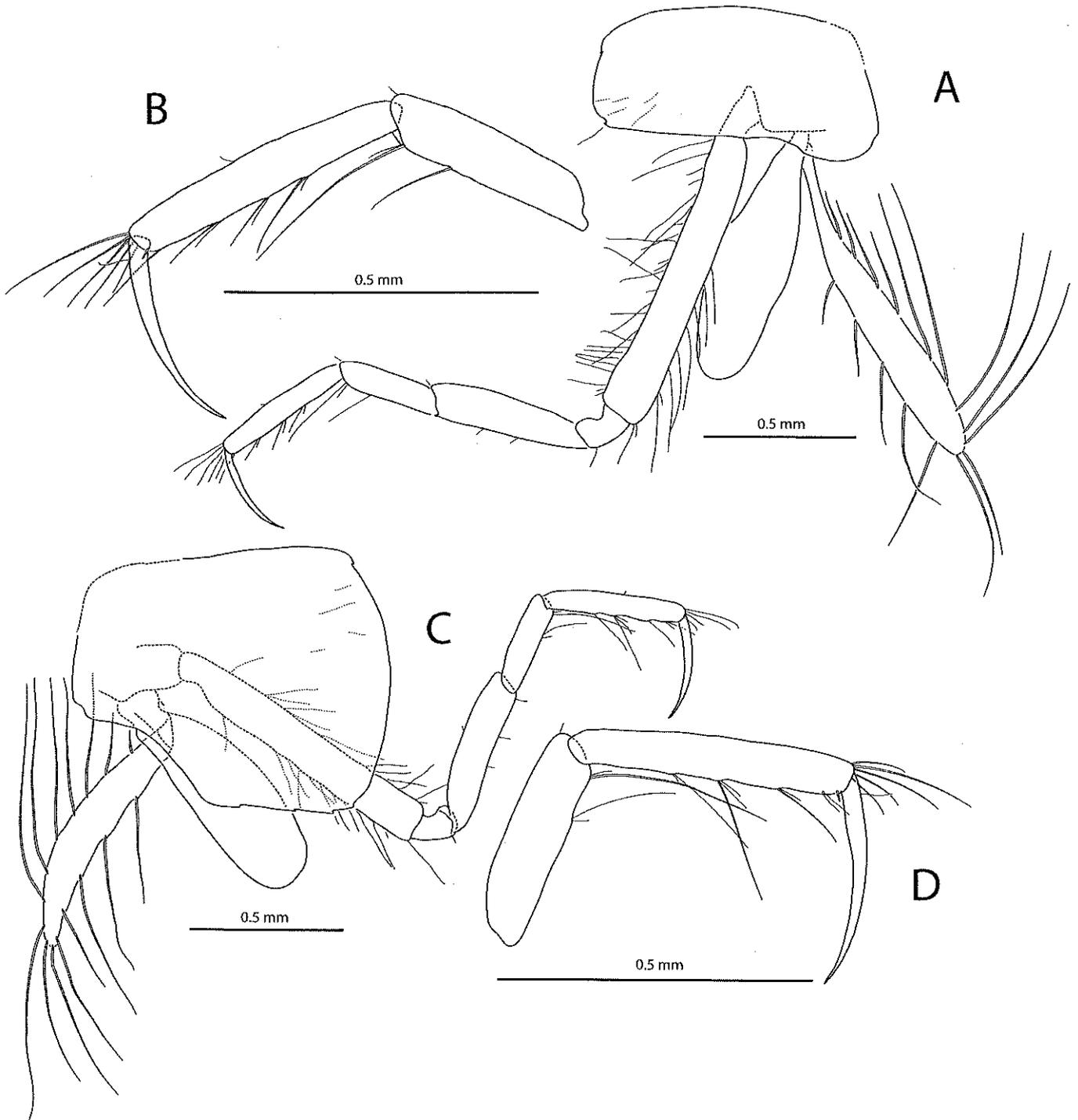


Fig. 63. *Liljeborgia homospora* n. sp., paratype, female, Western Weddell Sea, ANT XXII-3, ANDEEP III, sta. 121-10. A, left P3, B, tip of left P3; C, right P4; D, tip of right P4.

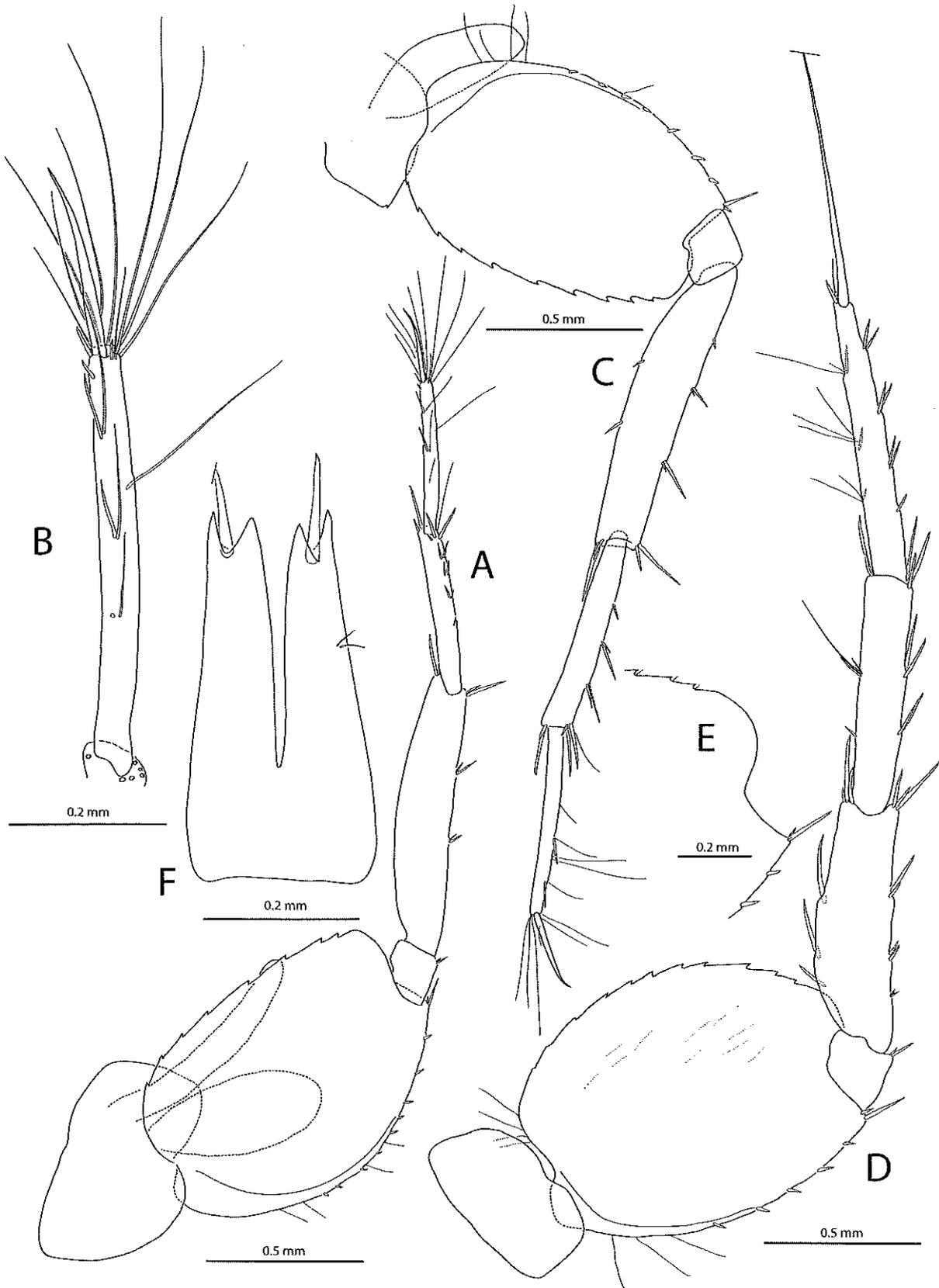


Fig. 64. *Liljeborgia homospora* n. sp., paratype, female, Western Weddell Sea, ANT XXII-3, ANDEEP III, sta. 121-10. A, left P5; B, tip of left P5; C, right P6; D, left P7; E, tip of basis of left P7; F, telson.

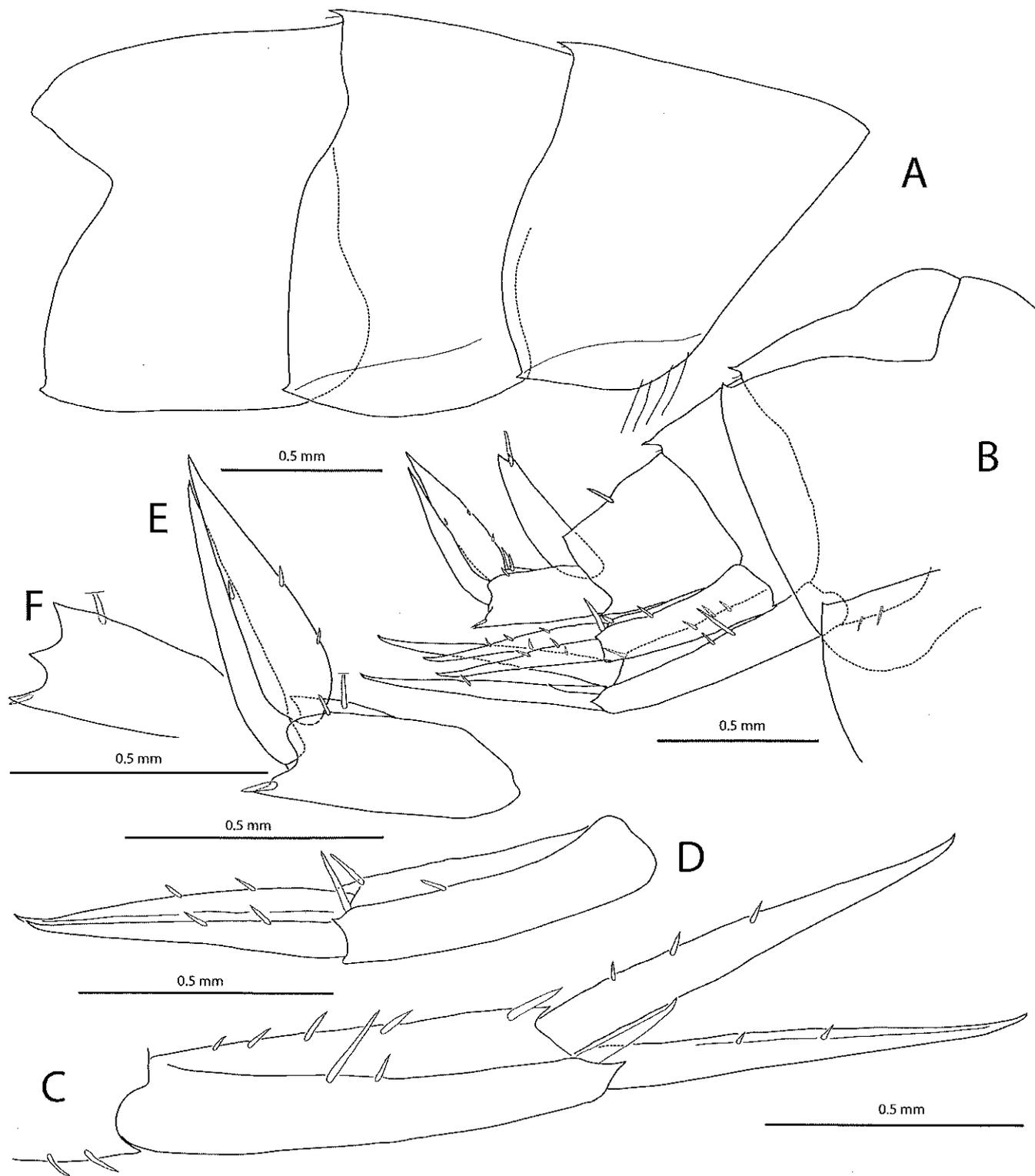


Fig. 65. *Liljeborgia homospora* n. sp., paratype, female, Western Weddell Sea, ANT XXII-3, ANDEEP III, sta. 121-10. A, pleonites 1-3; B, posterior part of body; C, left U1 and posteroventral corner of urosomite 1; D, right U2; E, right U3 in dorsal view; F, peduncle of left U3 in ventral view.

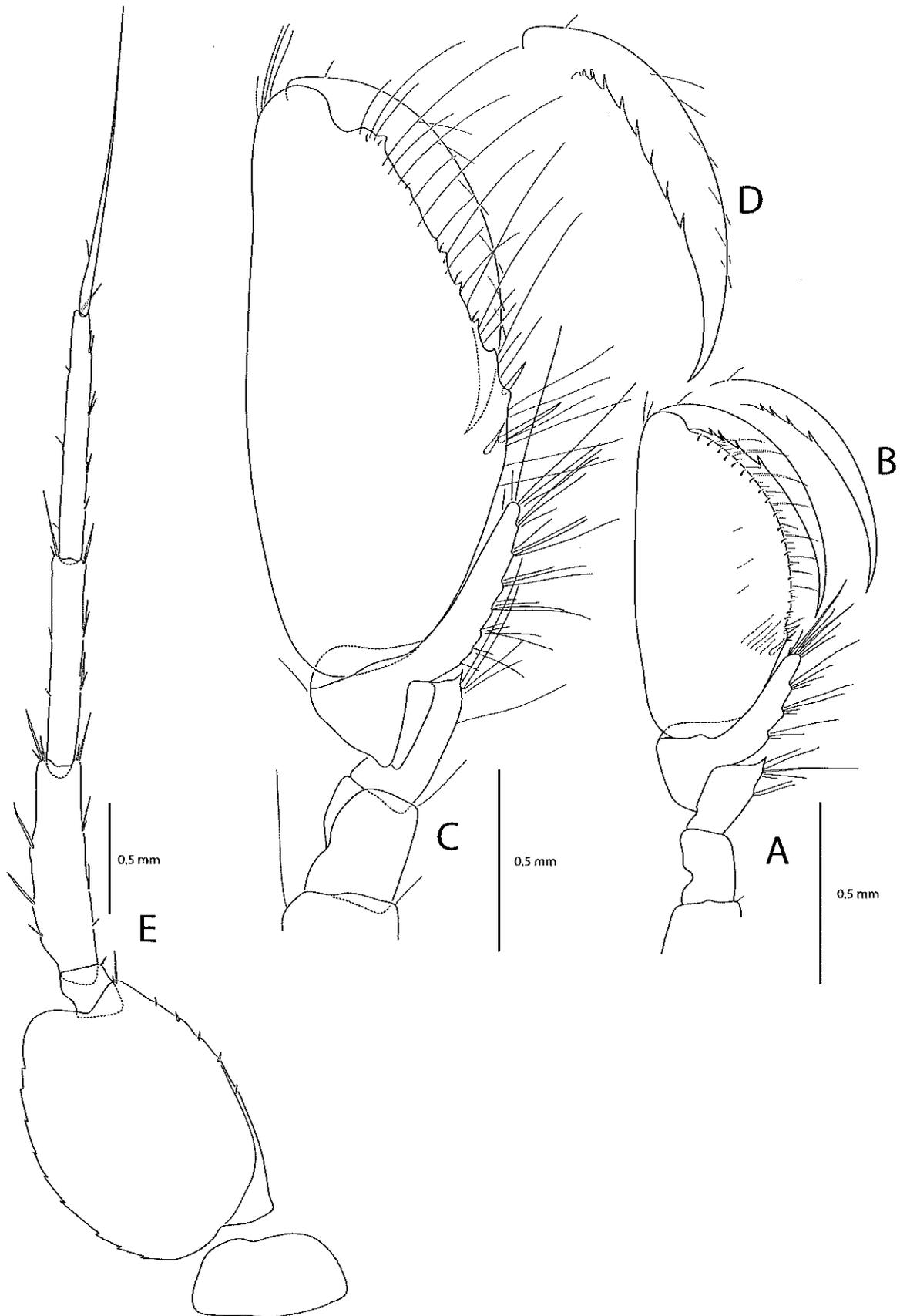


Fig. 66. *Liljeborgia homospora* n. sp., males; A-D, holotype; E, paratype, Eastern Weddell Sea, ANT XXII-3, ANDEEP III, sta. 78-10. A, right Gn1; B, dactylus of right Gn1; C, right Gn2; D, dactylus of right Gn2; E, left P7 (dactylus intact).

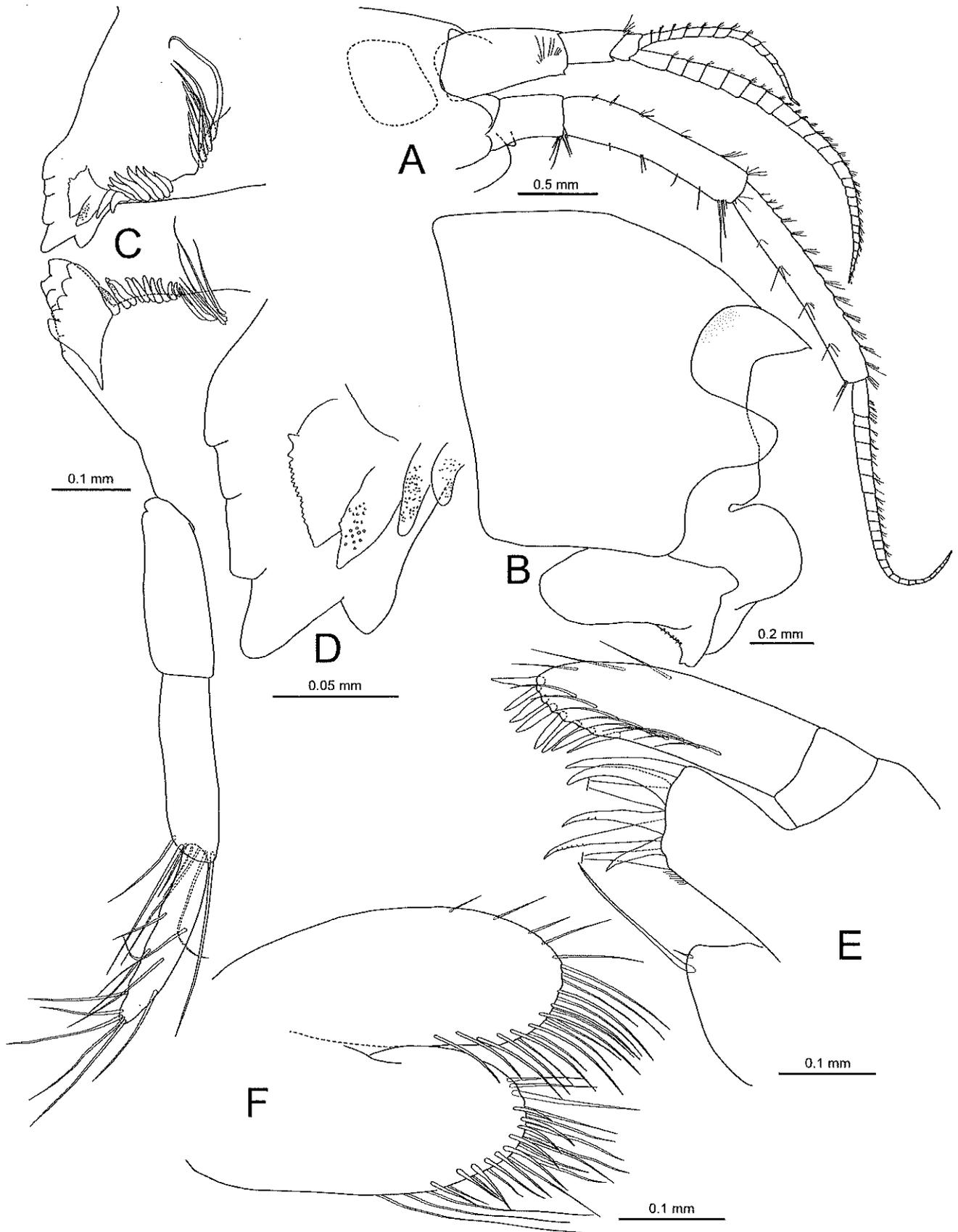


Fig. 67. *Liljeborgia kerguelensis* BELLAN-SANTINI & LEDOYER, 1974, mature female, Iles Kerguelen, Ker 82, sta. 22. A, head, right A1, right A2; B, head, with epistome and right Md in lateral view; C, right and left Md; D, right Md (details); E, left Mx1; F, right Mx2.

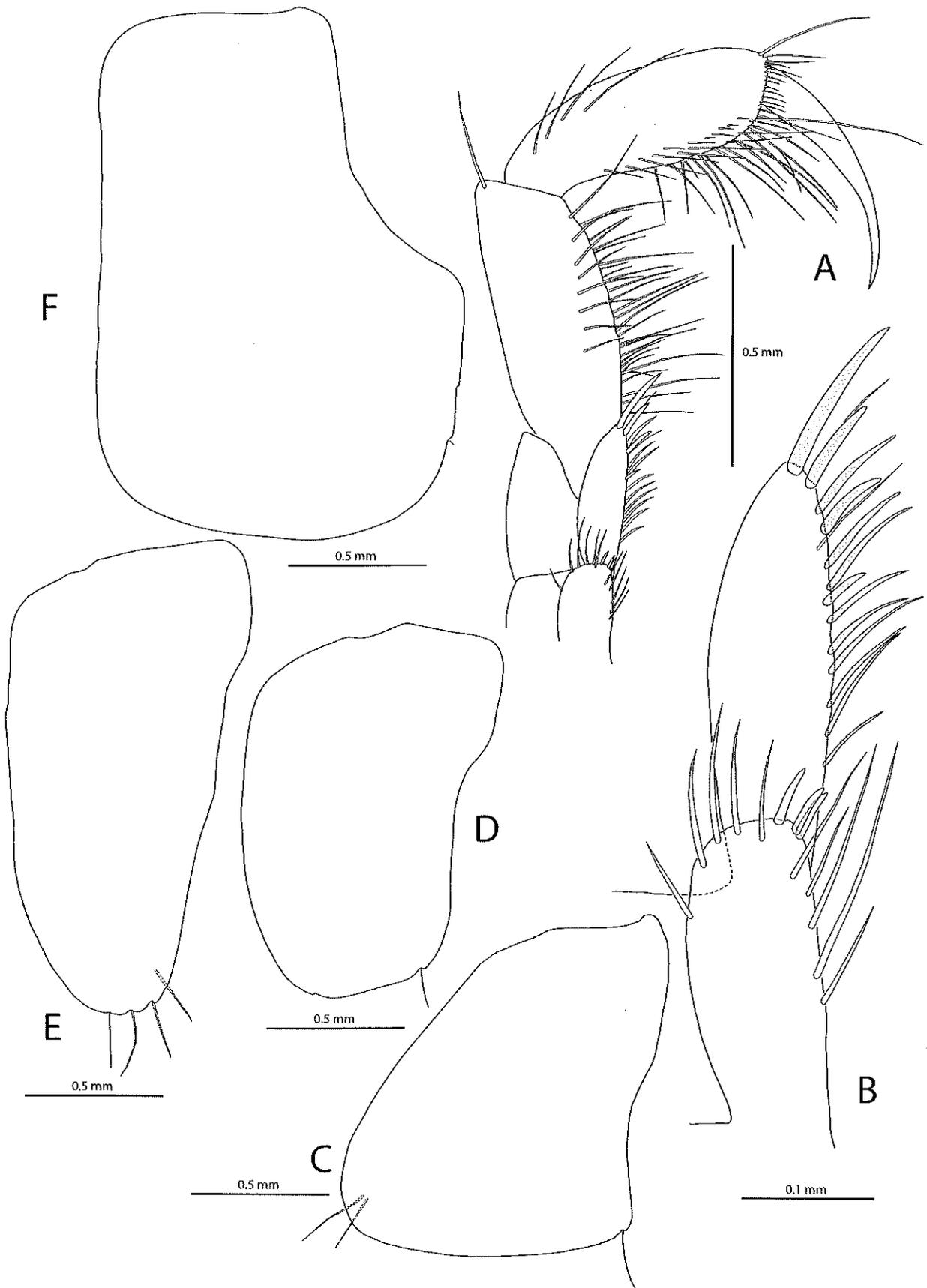


Fig. 68. *Liljeborgia kerguelensis* BELLAN-SANTINI & LEDOYER, 1974, mature female, Iles Kerguelen, Ker 82, sta. 22. A, left Mxp; B, left plates of Mxp; C, left coxa 1; D, left coxa 2; E, left coxa 3; F, left coxa 4.

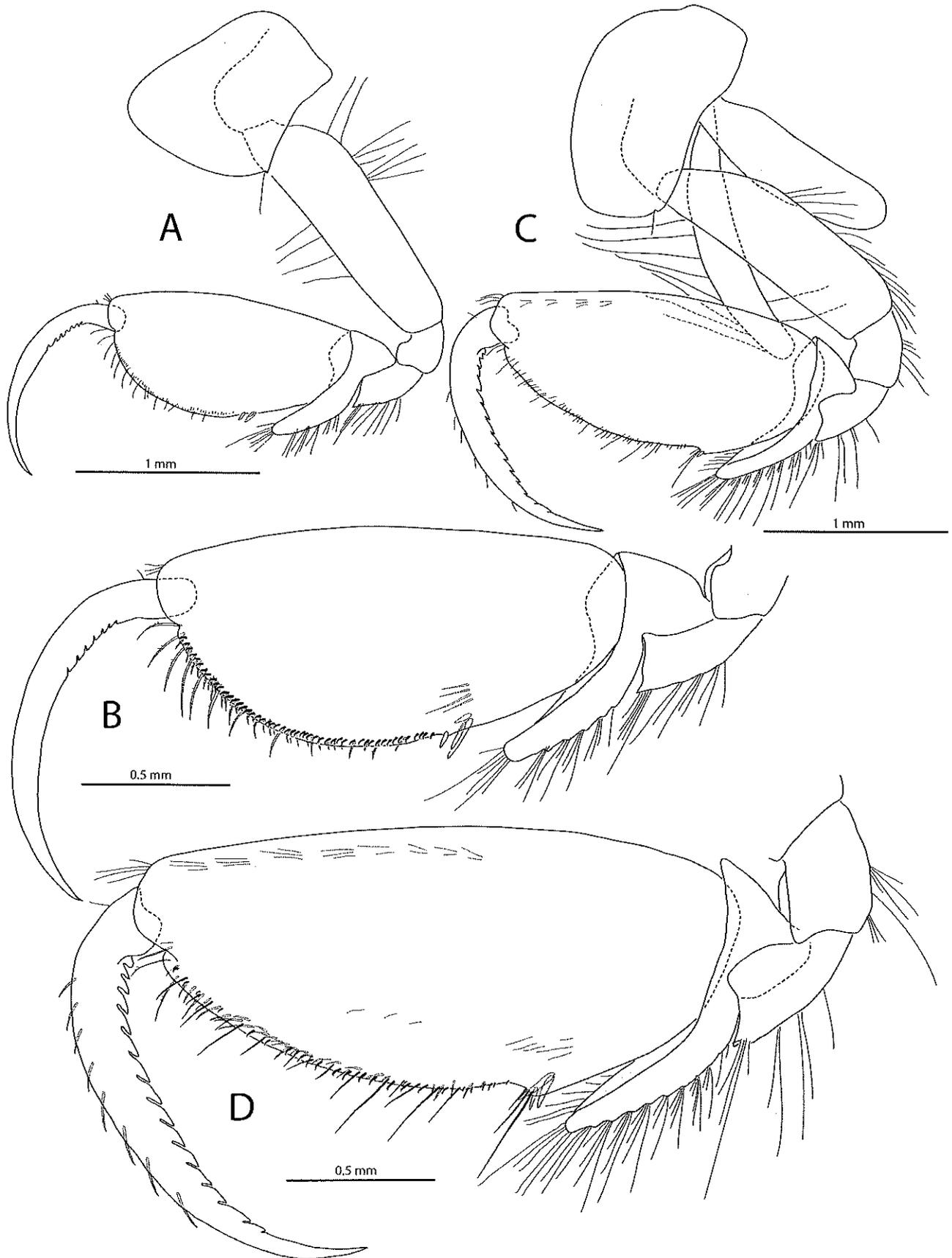


Fig. 69. *Liljeborgia kerguelensis* BELLAN-SANTINI & LEDOYER, 1974, mature female, Iles Kerguelen, Ker 82, sta. 22. A, left Gn1; B, chela of left Gn1; C, left Gn2; D, chela of left Gn2.

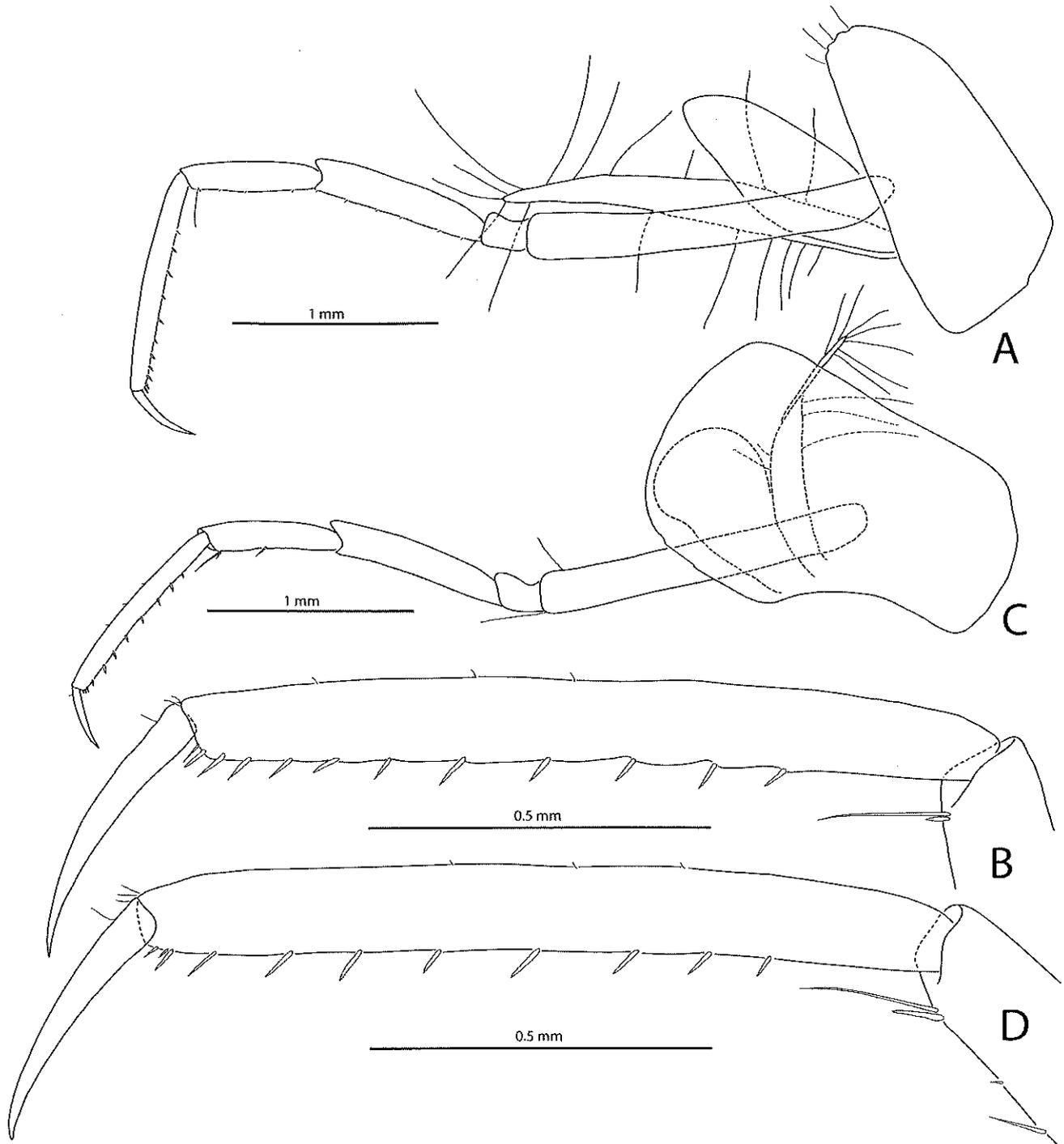


Fig. 70. *Liljeborgia kerguelensis* BELLAN-SANTINI & LEDOYER, 1974, mature female, Iles Kerguelen, Ker 82, sta. 22. A, left P3; B, tip of right P3; C, left P4; D, tip of left P4.

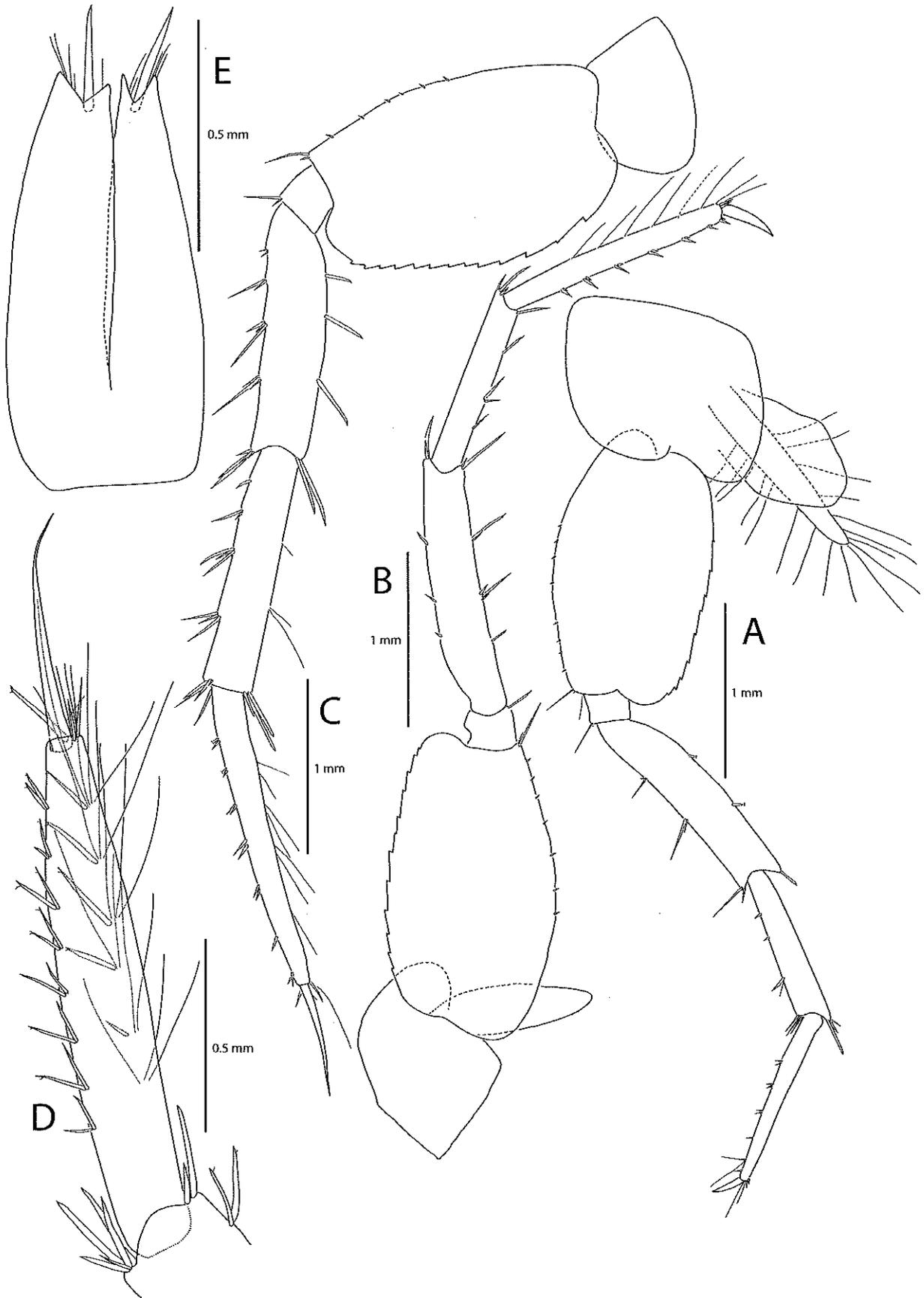


Fig. 71. *Liljeborgia kerguelensis* BELLAN-SANTINI & LEDOYER, 1974, mature female, holotype, Iles Kerguelen, Ker 82, sta. 22. A, left P5; B, right P6; C, left P7; D, tip of right P7; E, telson.

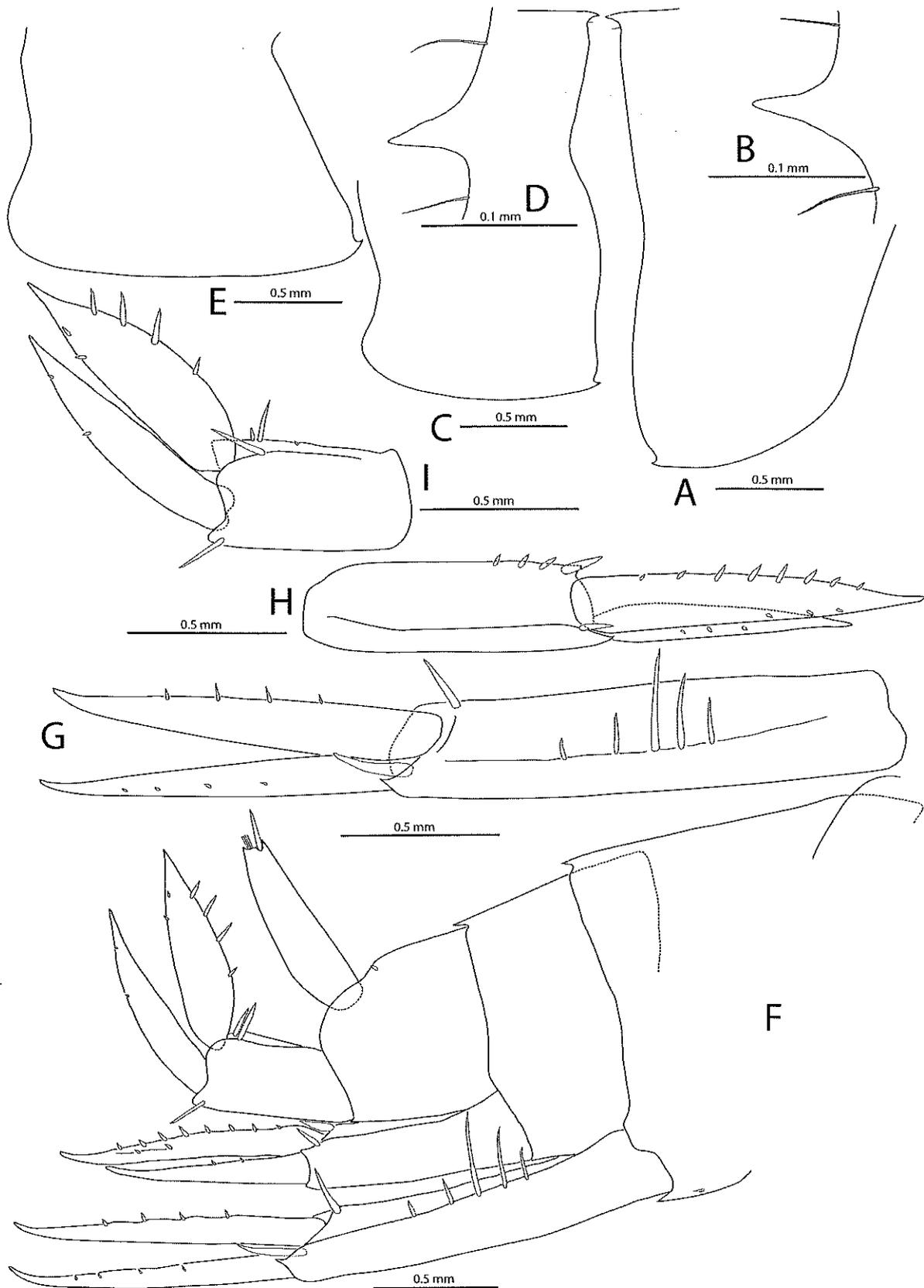


Fig. 72. *Liljeborgia kerguelensis* BELLAN-SANTINI & LEDOYER, 1974, mature female, Iles Kerguelen, Ker 82, sta. 22. A, pleonite 1 (right side); B, posterodorsal border of pleonite 1 (in dorsal view); C, pleonite 2 (left side); D, posterodorsal border of pleonite 2 (in dorsal view); E, right Ep3; F, urosome (right side); G, right U1; H, left U2; I, right U3.

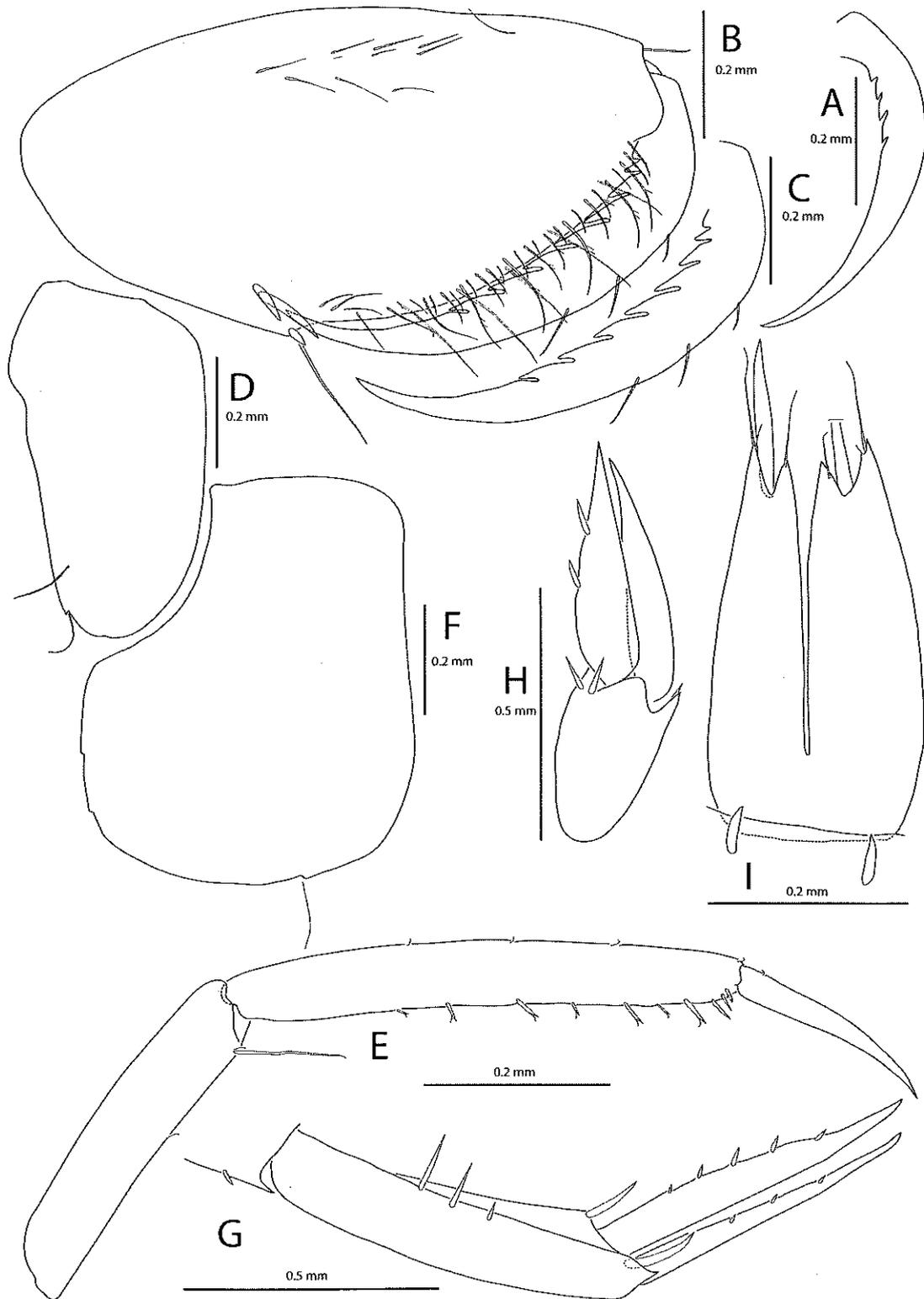


Fig. 73. *Liljeborgia kerguelensis* BELLAN-SANTINI & LEDOYER, 1974, holotype, male (according to Bellan-Santini & Ledoyer, 1974), Iles Kerguelen, sta. B54, MCSN slides 4629 & 4630. A, dactylus of left Gn1; B, chela of left Gn2 (medial view); C, dactylus of left Gn2; D, right coxa 3; E, tip of right P3; F, right coxa 4; G, left U1 (orientation of appendage and spines modified: the uropod was overturned and the spines of the peduncle were not pointing upwards); H, left U3; I, telson and posterodorsal border of urosomite 3.

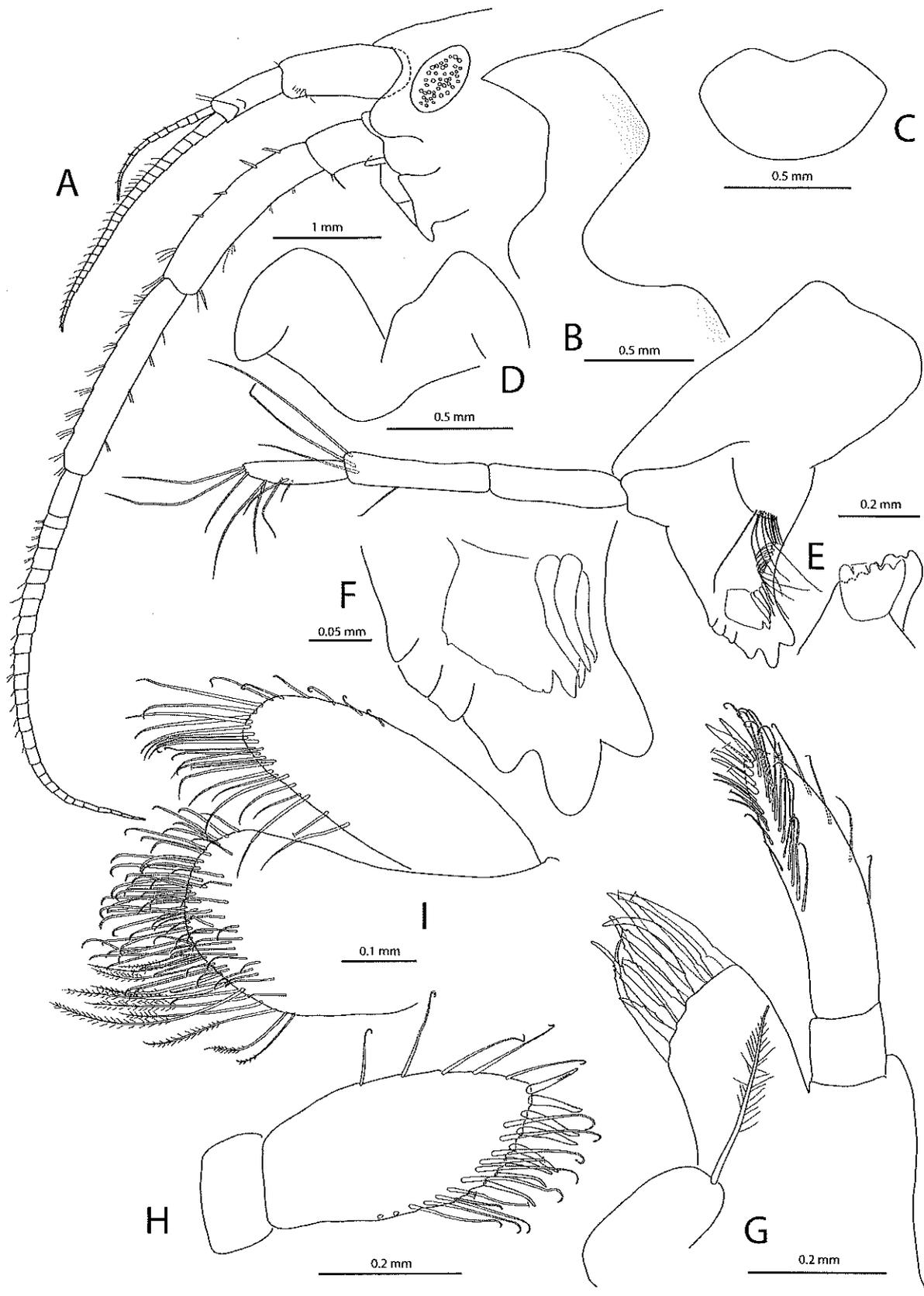


Fig. 74. *Liljeborgia longicornis* (SCHELLENBERG, 1931), adult male, Estrecho de Magallanes, R/V Albatross, Sta. 2776, USNM 1100663. A, head, left A1, left A2, epistome; B, anterior part of head; C, upper lip; D, lower lip; E, right and left Md; F, tip of right Md; G, left Mx1 (palp in oblique view); H, palp of right Mx1 (in flattened position); I, left Mx2.

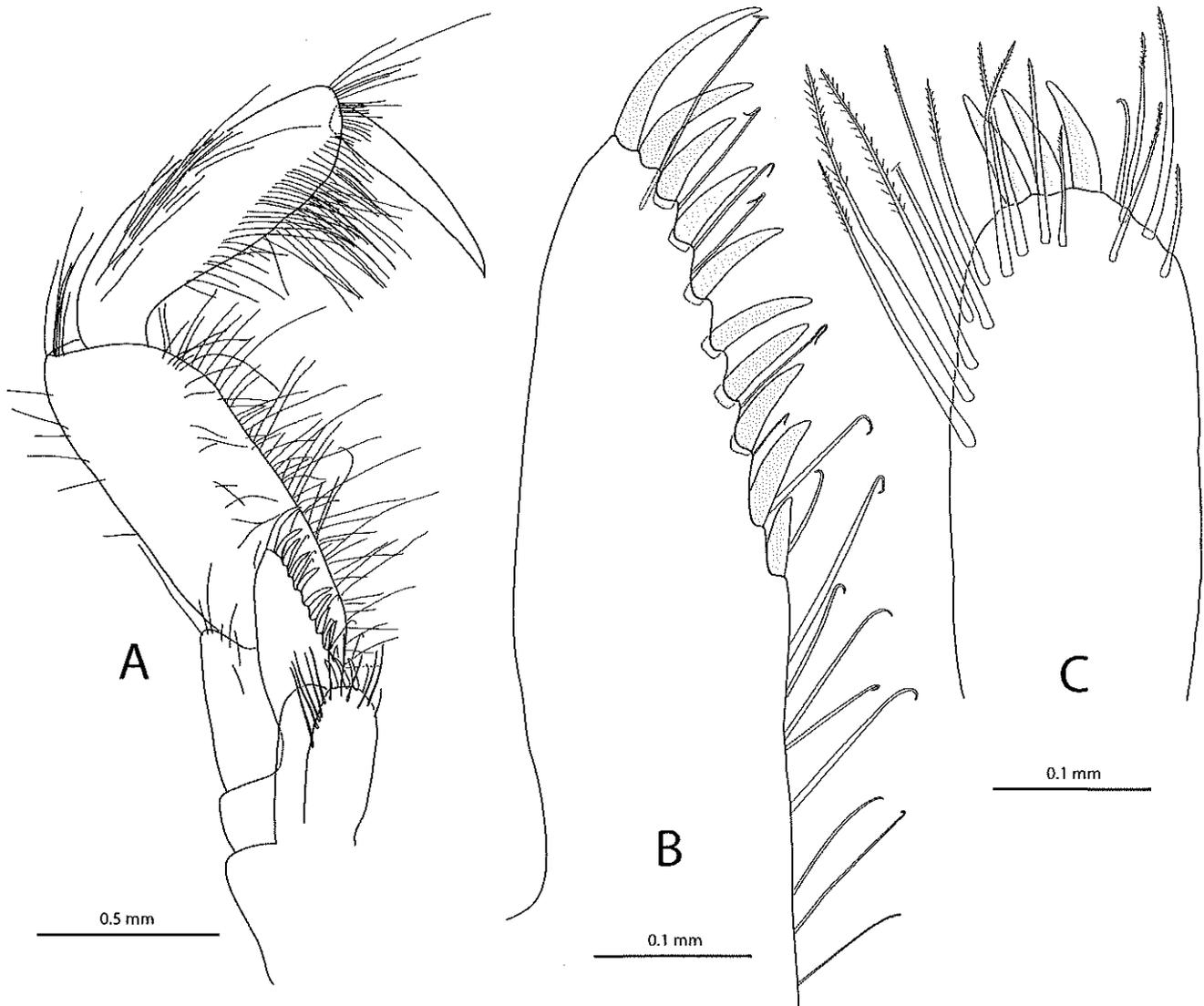


Fig. 75. *Liljeborgia longicornis* (SCHELLENBERG, 1931), adult male, Estrecho de Magallanes, R/V Albatross, Sta. 2776, USNM 1100663. A, Mxp (spines and setae of left inner plate not shown); B, left outer plate of Mxp; C, right inner plate of Mxp.

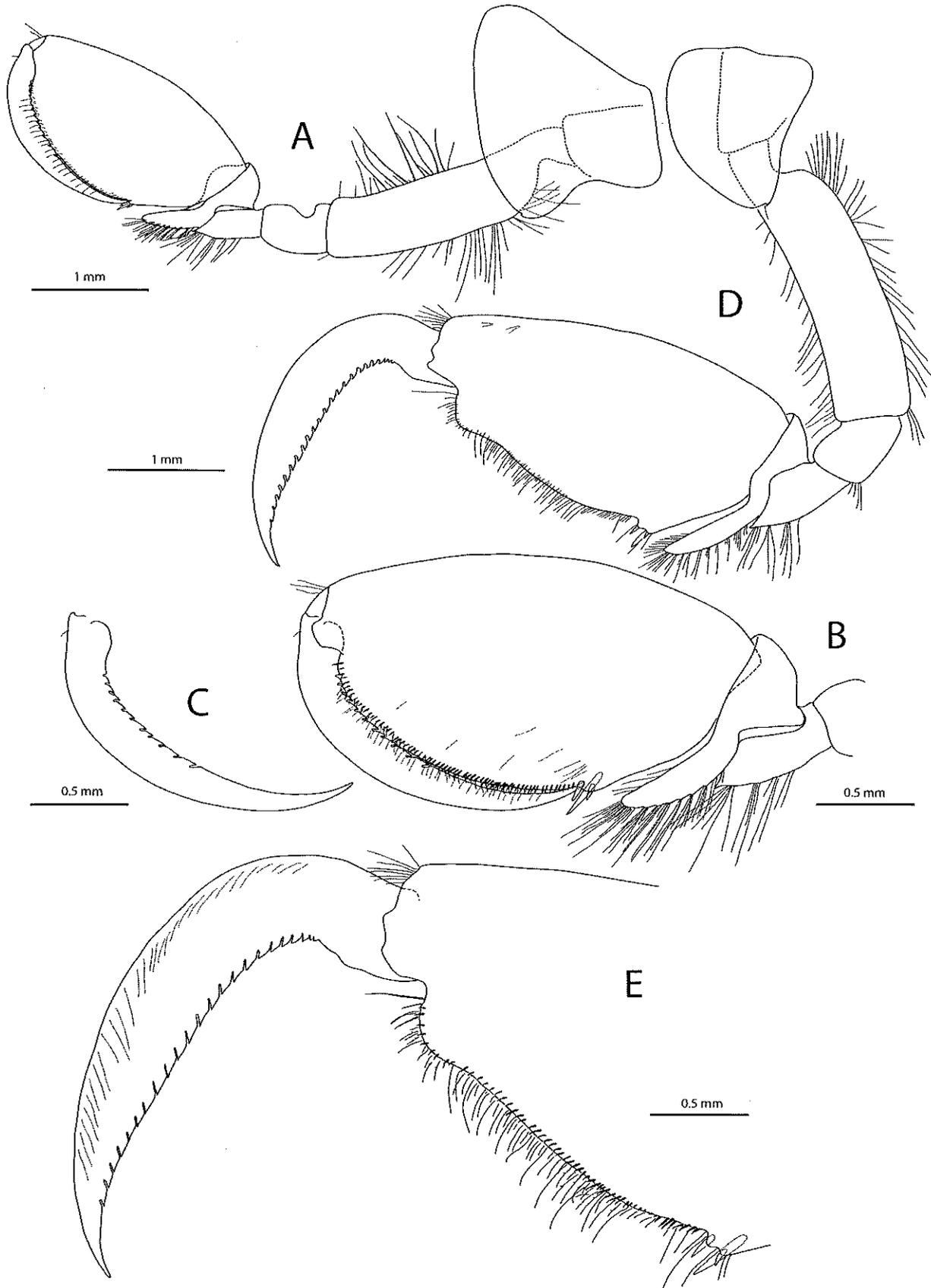


Fig. 76. *Liljeborgia longicornis* (SCHELLENBERG, 1931), adult male, Estrecho de Magallanes, R/V Albatross, Sta. 2776, USNM 1100663. A, left Gn1; B, chela of left Gn1; C, dactylus of left Gn1; D, left Gn2; E, chela of left Gn2.

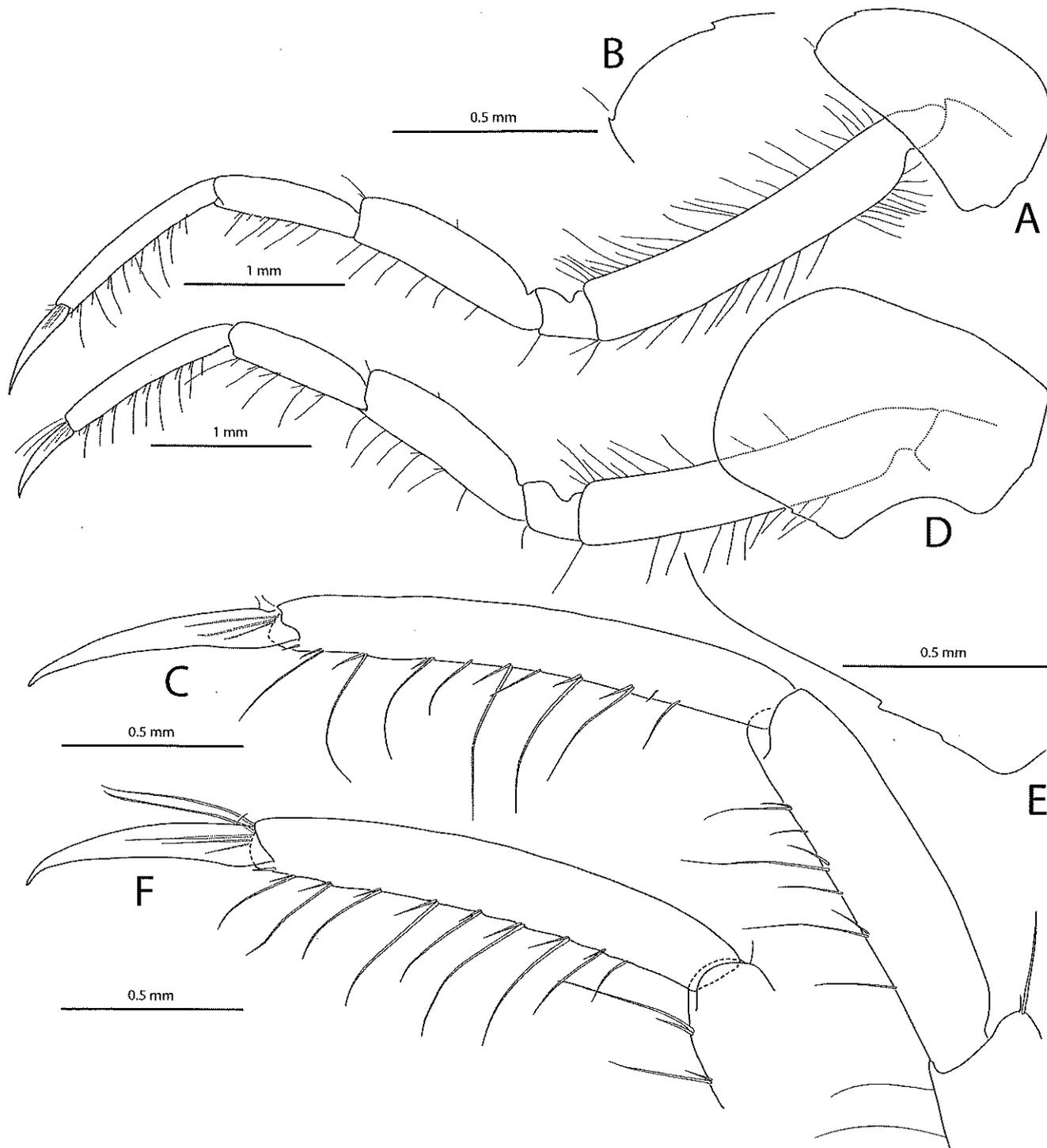


Fig. 77. *Liljeborgia longicornis* (SCHELLENBERG, 1931), adult male, Estrecho de Magallanes, R/V Albatross, Sta. 2776, USNM 1100663. A, left P3; B, tip of left Coxa 3; C, tip of left P3; D, left P4; E, posterior border of left Coxa 4; F, tip of left P4.

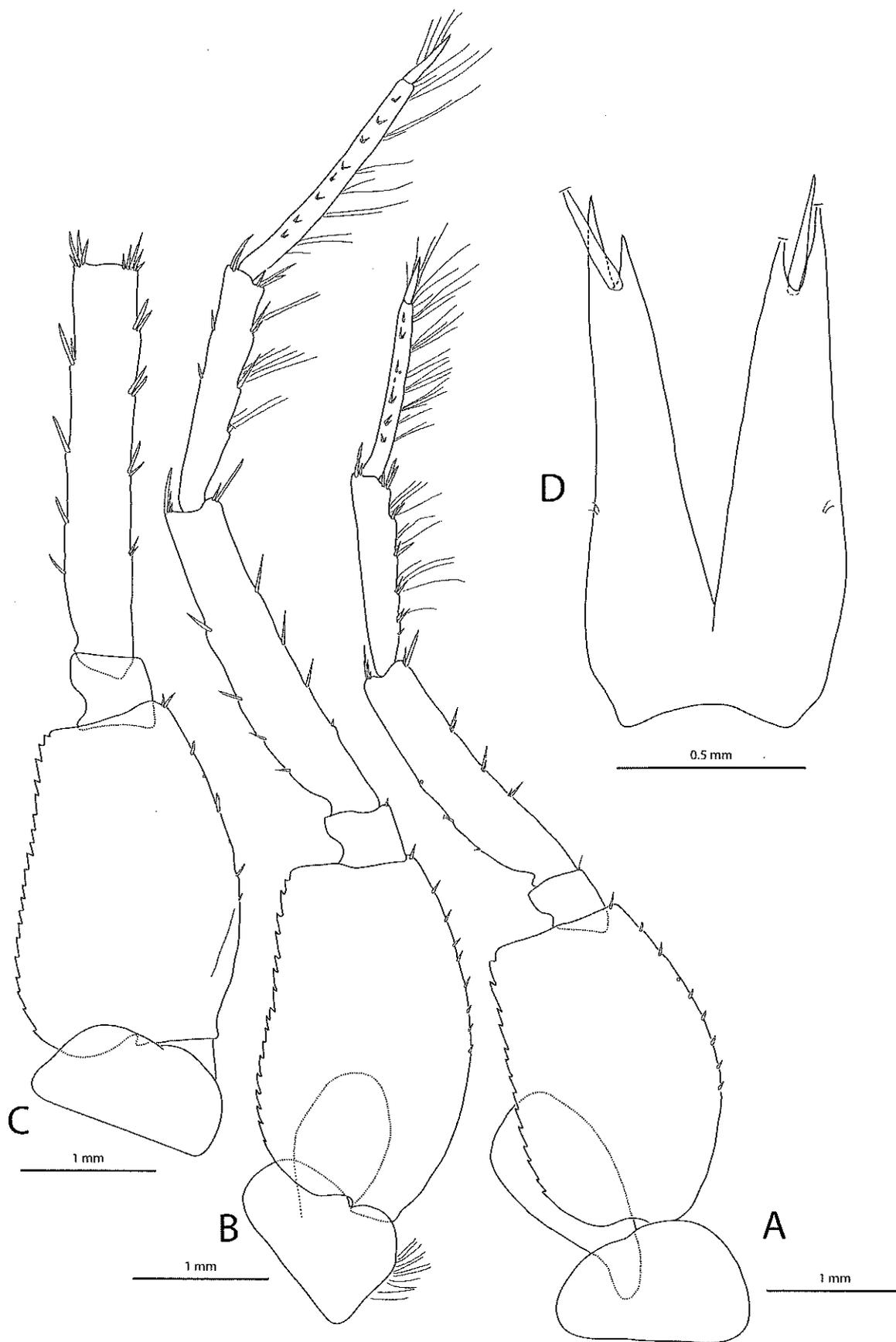


Fig. 78. *Liljeborgia longicornis* (SCHELLENBERG, 1931), adult male, Estrecho de Magallanes, R/V Albatross, Sta. 2776, USNM 1100663. A, left P5; B, left P6; C, left P7 (tip missing); D, telson.

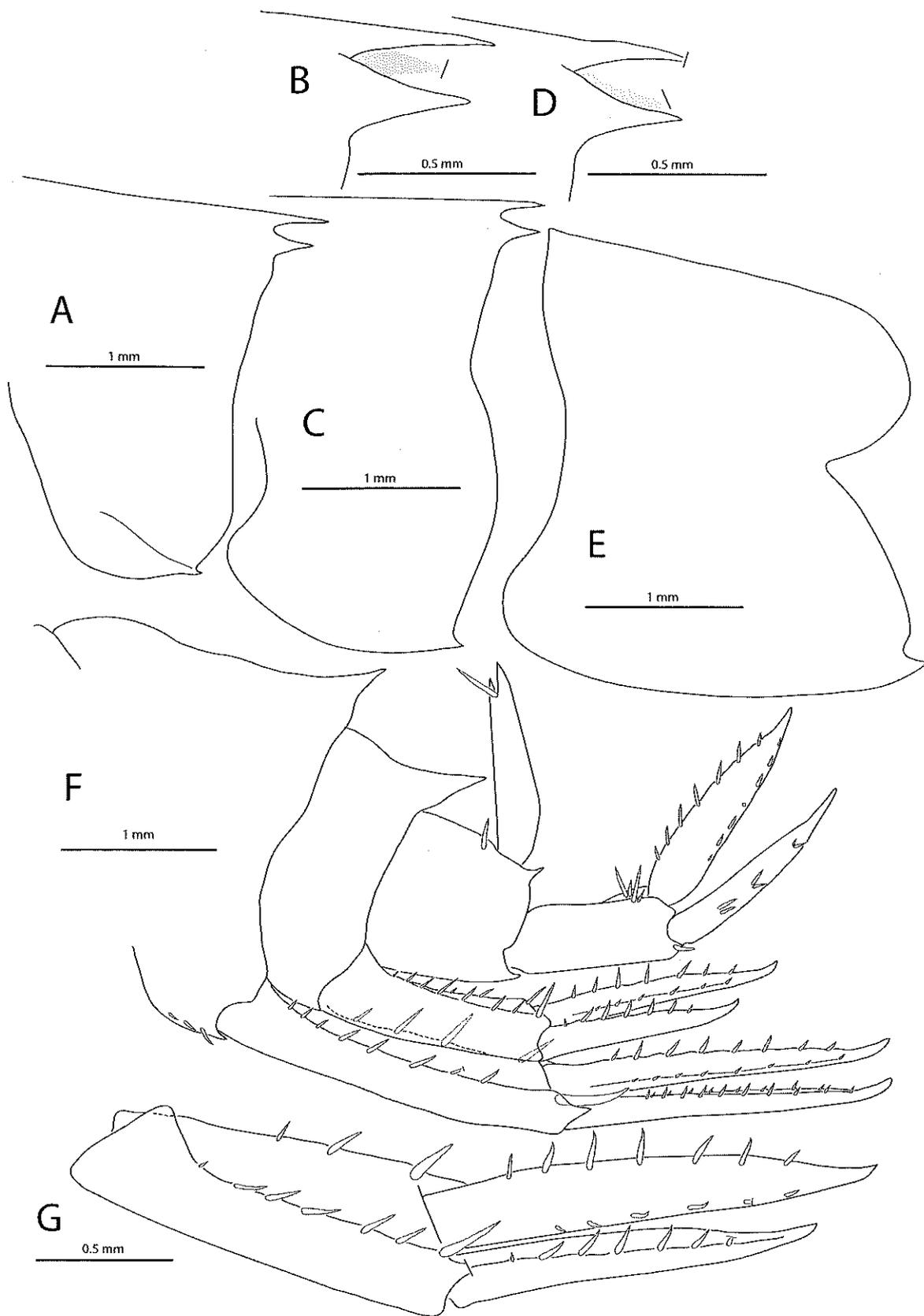


Fig. 79. *Liljeborgia longicornis* (SCHELLENBERG, 1931), adult male, Estrecho de Magallanes, R/V Albatross, Sta. 2776, USNM 1100663. A, pleonite 1 (left side); B, posterodorsal area of pleonite 1 in lateral view; C, pleonite 2 (left side); D, posterodorsal area of pleonite 2 in lateral view; E, pleonite 3 (left side); F, urosome (left side); G, left U2.

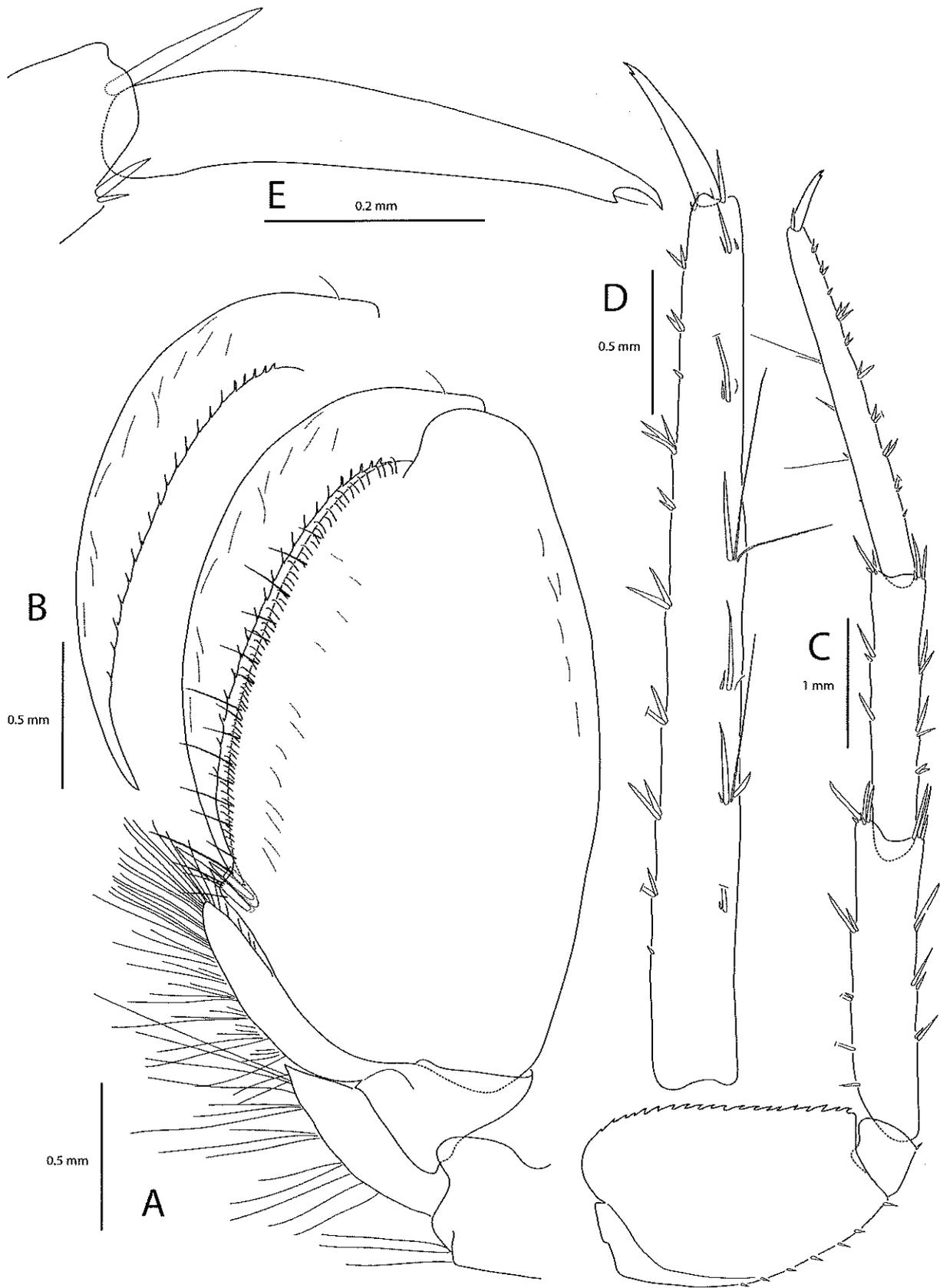


Fig. 80. *Liljeborgia longicornis* (SCHELLENBERG, 1931), adult female, MAG94, sta. 929. A, left Gn2; B, dactylus of left Gn2; C, left P7; D, tip of left P7 (medial side); E, dactylus of left P7.

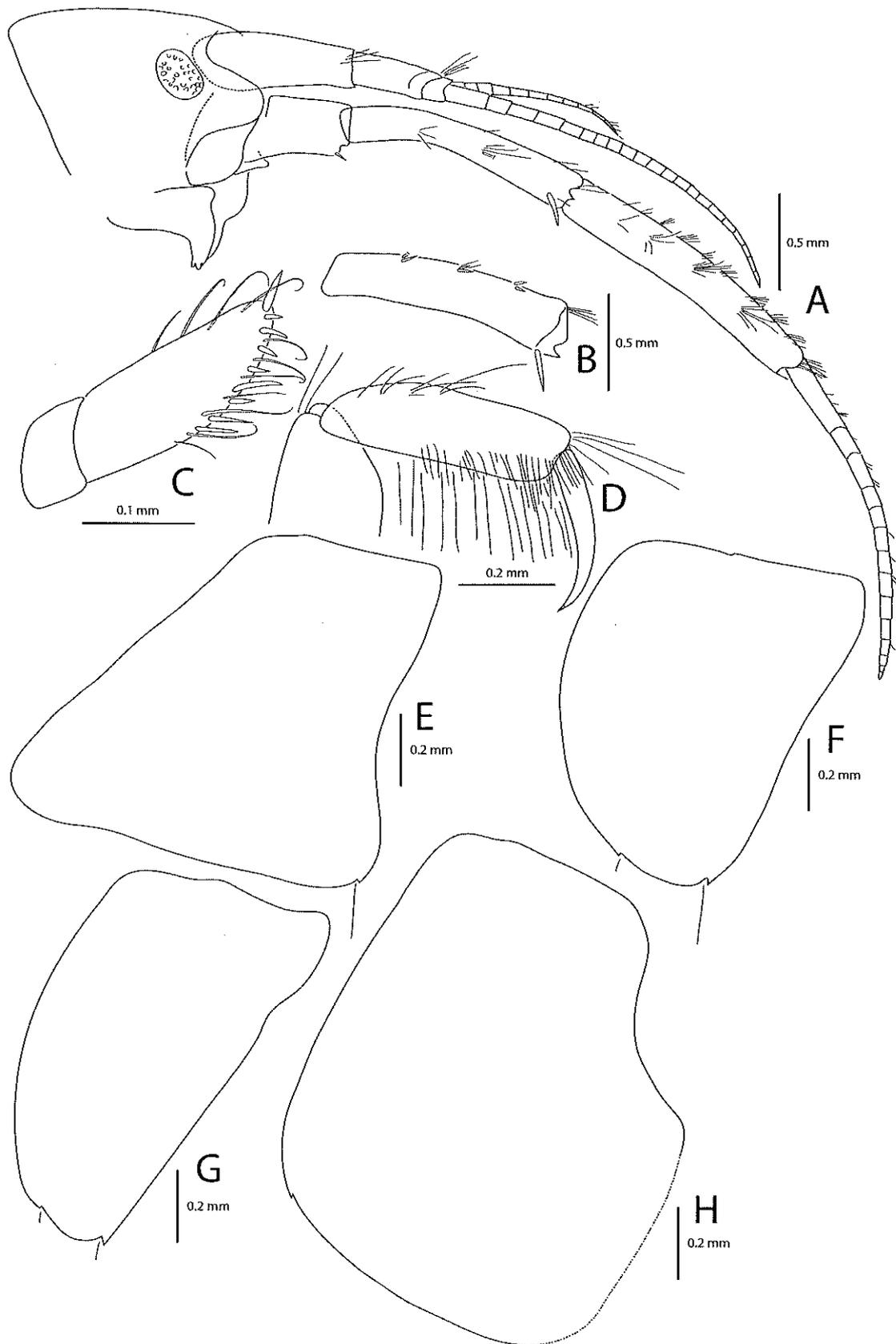


Fig. 81. *Liljeborgia macrodon* (SCHELLENBERG, 1931), adult male, lectotype, Patagonia, Bahía Inútil, Nordenskjöld's Exp., sta. 626. A, head with antennae; B, article 4 (medial side) of left A2; C, palp of right Mx1; D, tip of palp of left Mxp; E, left coxa 1; F, left coxa 2; G, left coxa 3; H, left coxa 4.

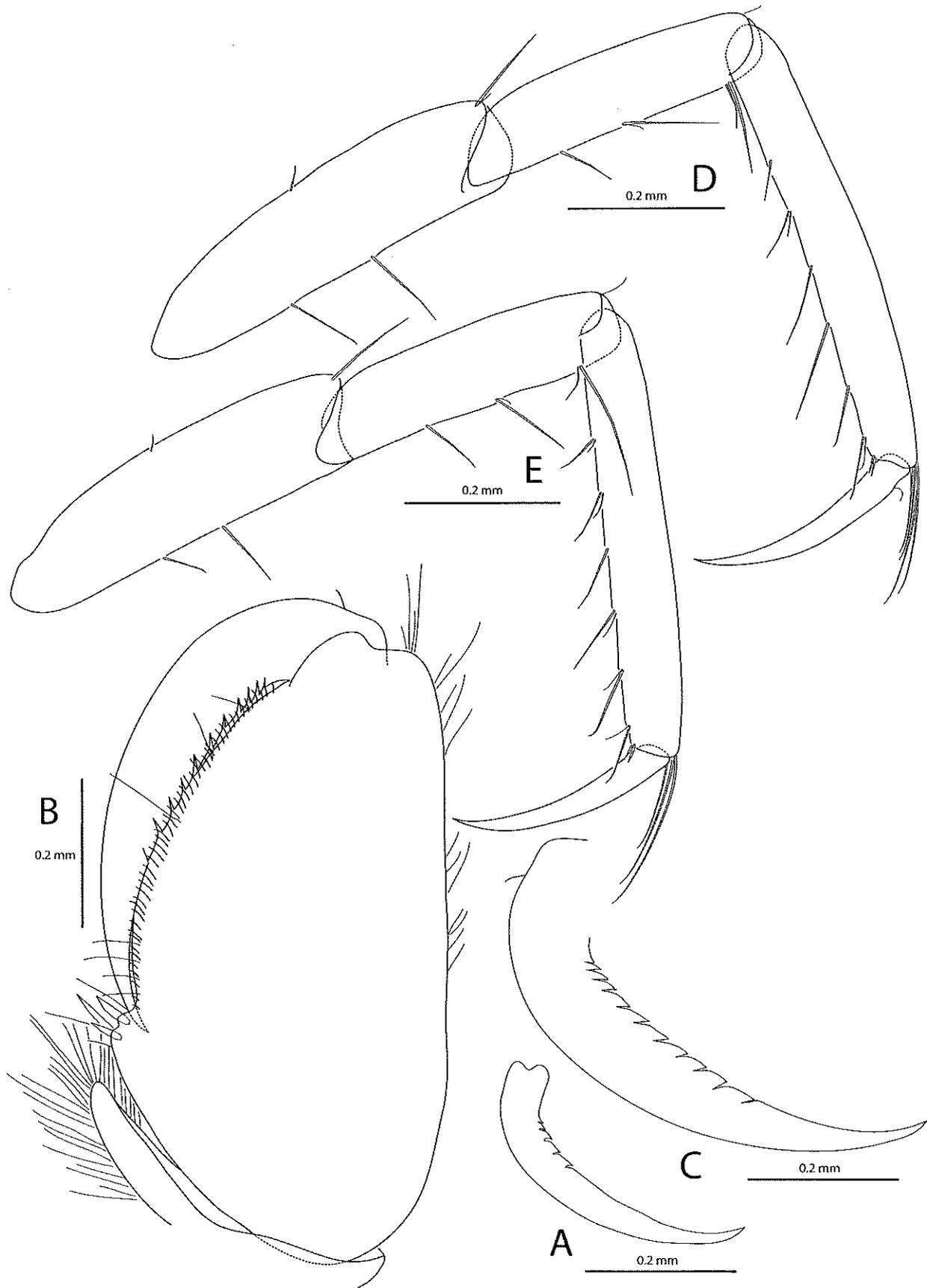


Fig. 82. *Liljeborgia macrodon* (SCHELLENBERG, 1931), adult male, lectotype, Patagonia, Bahía Inútil, Nordenskjöld's Exp., sta. 626. A, dactylus of left Gn1; B, left Gn2; C, dactylus of left Gn2; D, tip of right P3; E, tip of right P4.

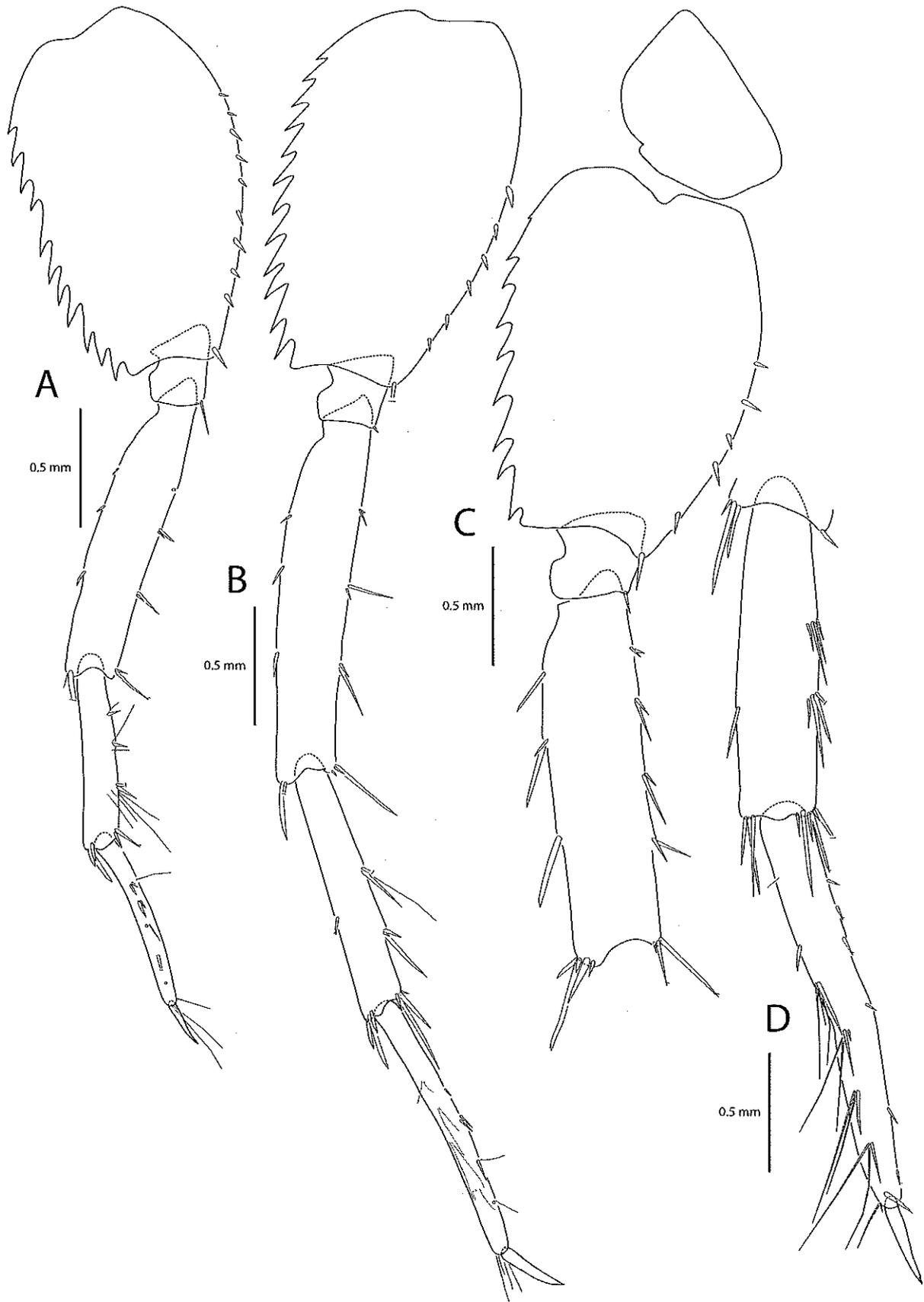


Fig. 83. *Liljeborgia macrodon* (SCHELLENBERG, 1931), adult male, lectotype, Patagonia, Bahía Inútil, Nordenskjölds Exp., sta. 626. A, right P5; B, right P6; C, proximal part of right P7; D, distal part of left P7 (medial view).

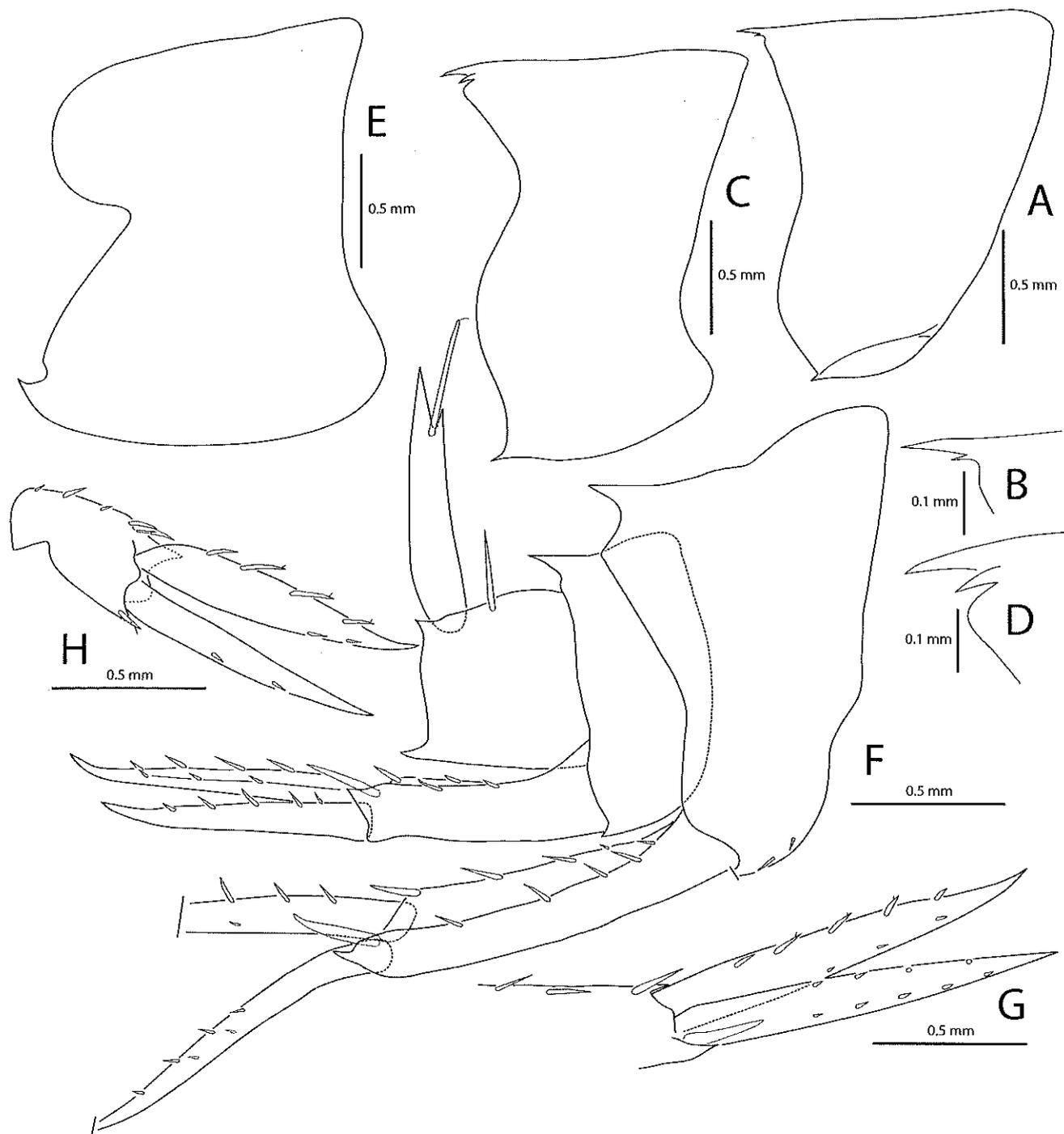


Fig. 84. *Liljeborgia macrodon* (SCHELLENBERG, 1931), adult male, lectotype, Patagonia, Bahía Inútil, Nordenskjölds Exp., sta. 626. A, Pleonite 1; B, posterodorsal area of pleonite 1 in lateral view; C, Pleonite 2; D, posterodorsal area of pleonite 2 in lateral view; E, pleonite 3; F, urosome (left side); G, tip of left U1; H, left U3.

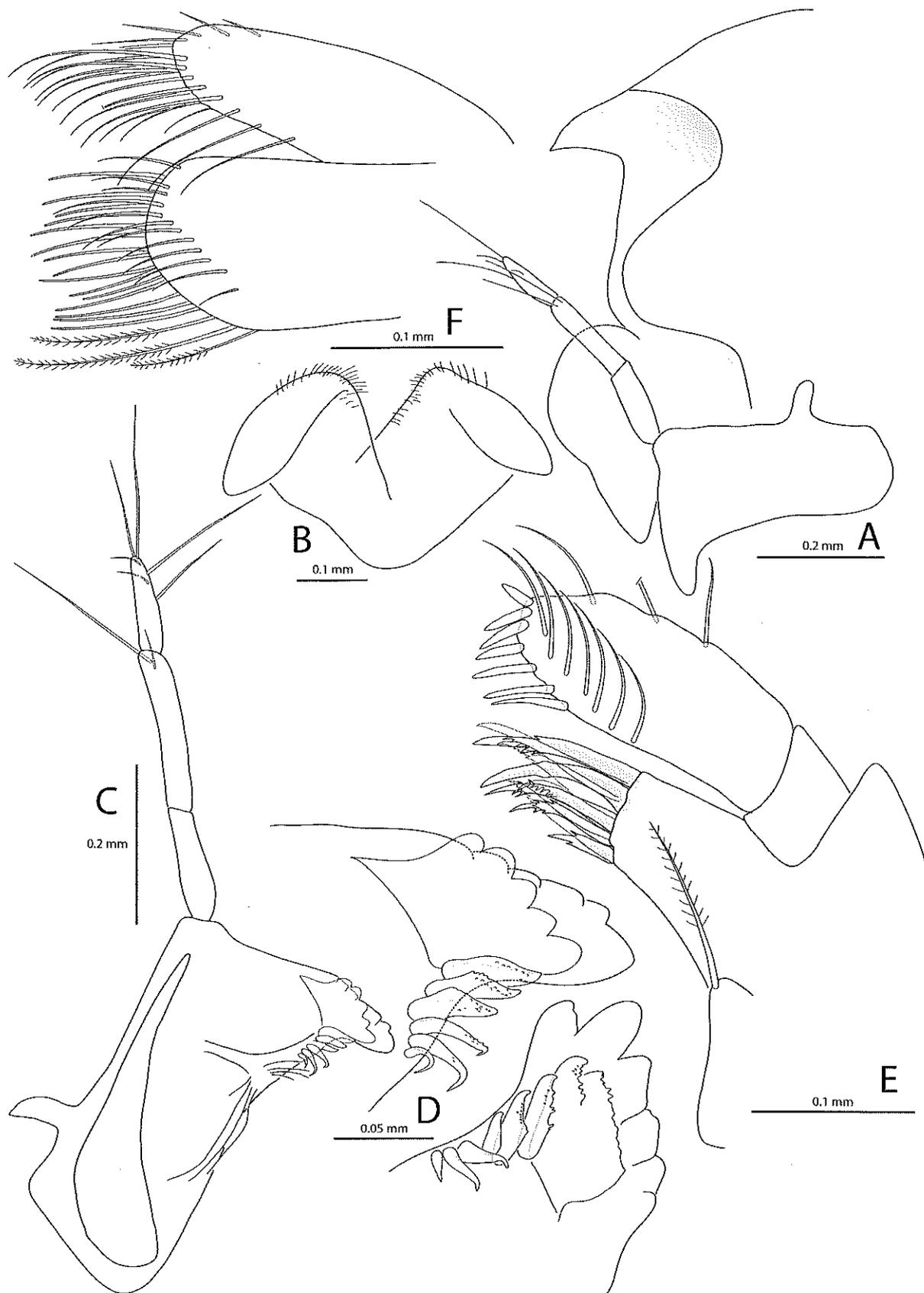


Fig. 85. *Liljeborgia macrodon* (SCHELLENBERG, 1931), S of Tierra del Fuego, Punta Rico, MAG94, sta. 1176. A, F, ovigerous female; B-E, adult male. A, anterior part of head and surrounding structures; B, lower lip; C, left Md; D, tip of left and right Md; E, left Mx1; F, left Mx1.

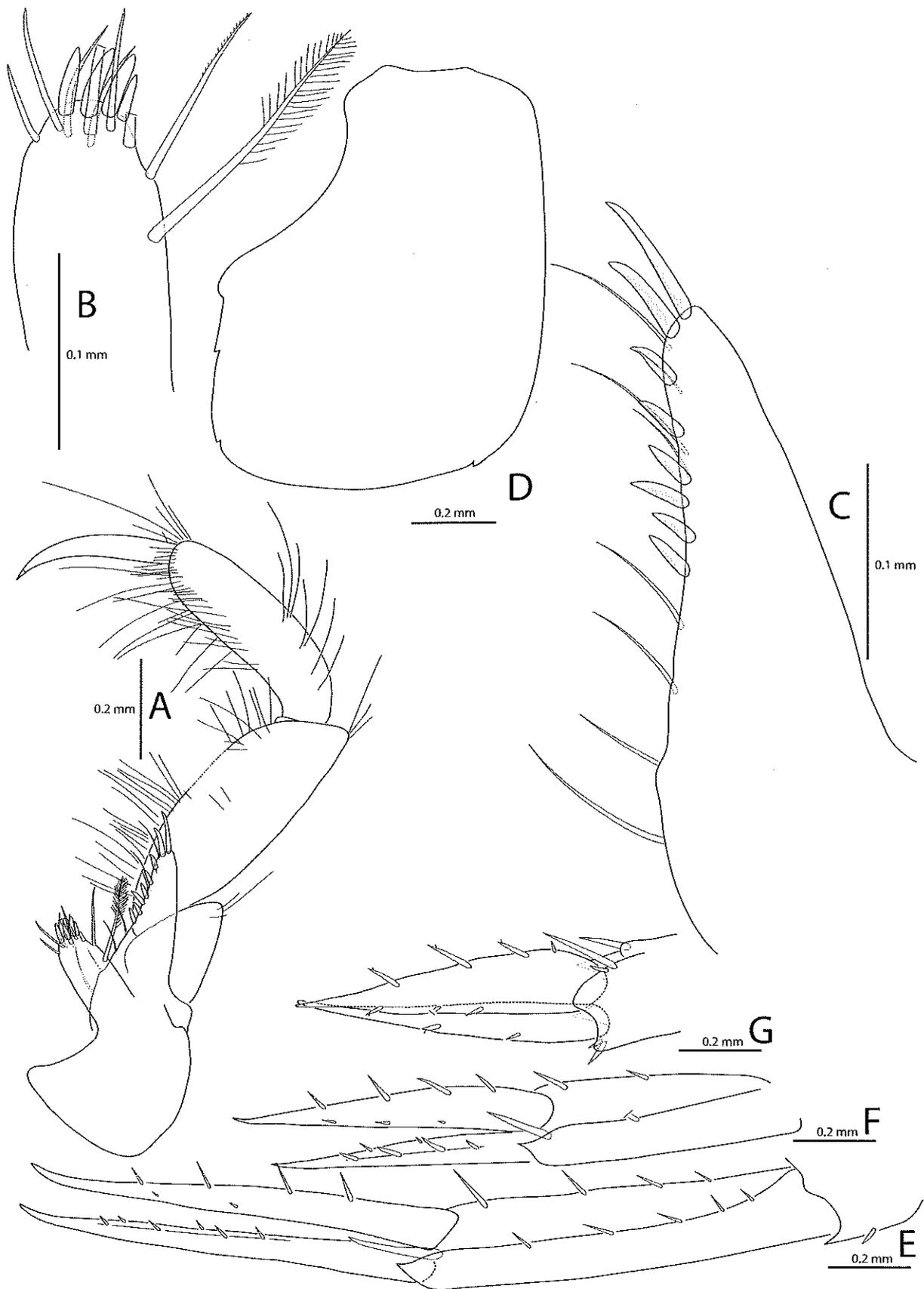


Fig. 86. *Liljeborgia macrodon* (SCHELLENBERG, 1931), S of Tierra del Fuego, Punta Rico, MAG94, sta. 1176, adult male. A, Mxp; B, left inner plate of Mxp; C, right inner plate of Mxp; D, right coxa 4; E, right U1; F, right U2; G, right U3.



Fig. 87. *Liljeborgia macrodon* (SCHELLENBERG, 1931), S of Tierra del Fuego, Punta Rico, sta. 1176, adult male. A, right Gn1; B, right Gn2.

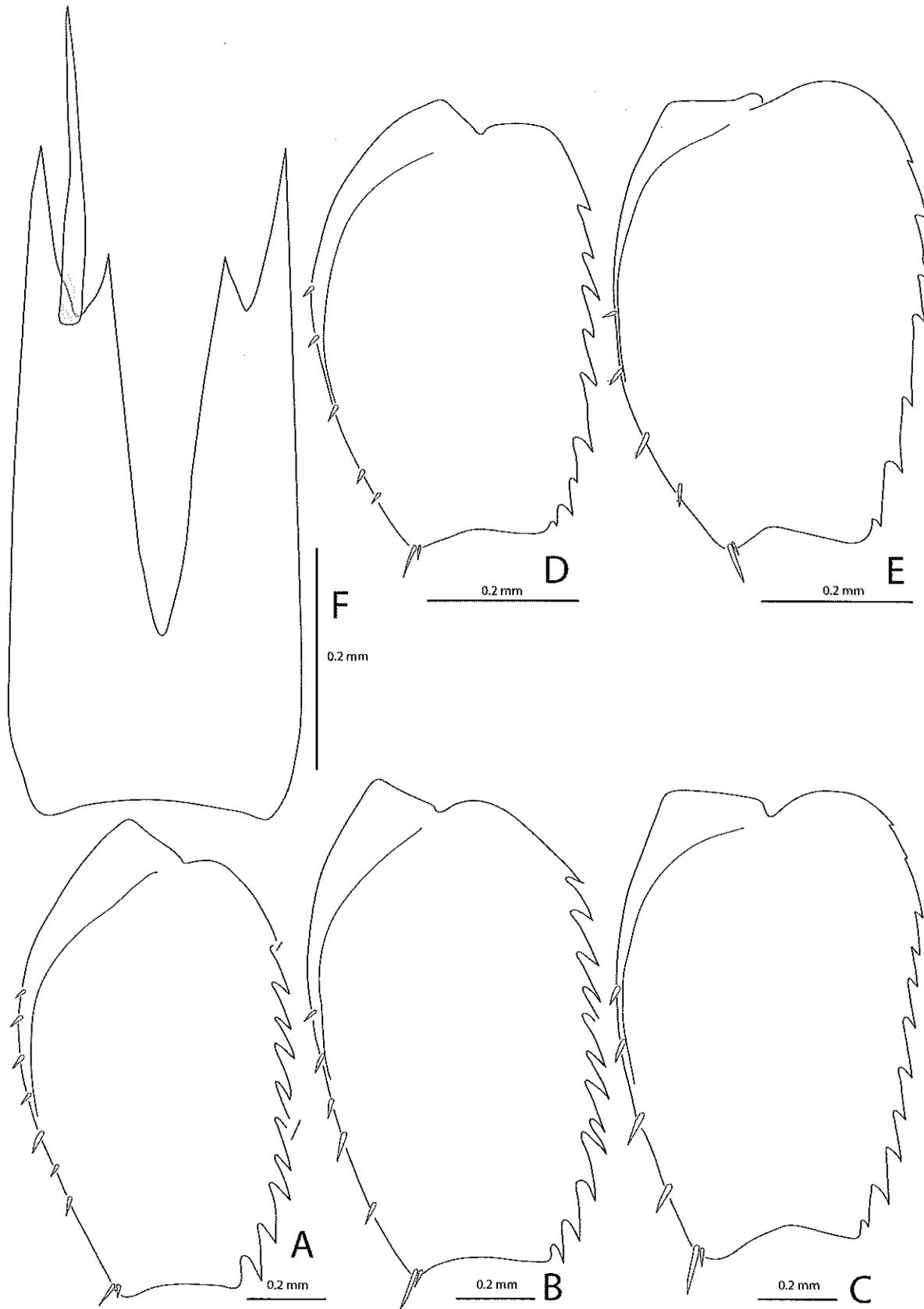


Fig. 88. *Liljeborgia macrodon* (SCHELLENBERG, 1931), S of Tierra del Fuego, Punta Rico, MAG94, sta. 1176. A-C, F, adult male; D, E, juvenile (4 mm). A, right basis 5 (inverted drawing); B, left basis 6; C, left basis 7; D, left basis 5 (juvenile); E, left basis 7 (juvenile); F, telson.

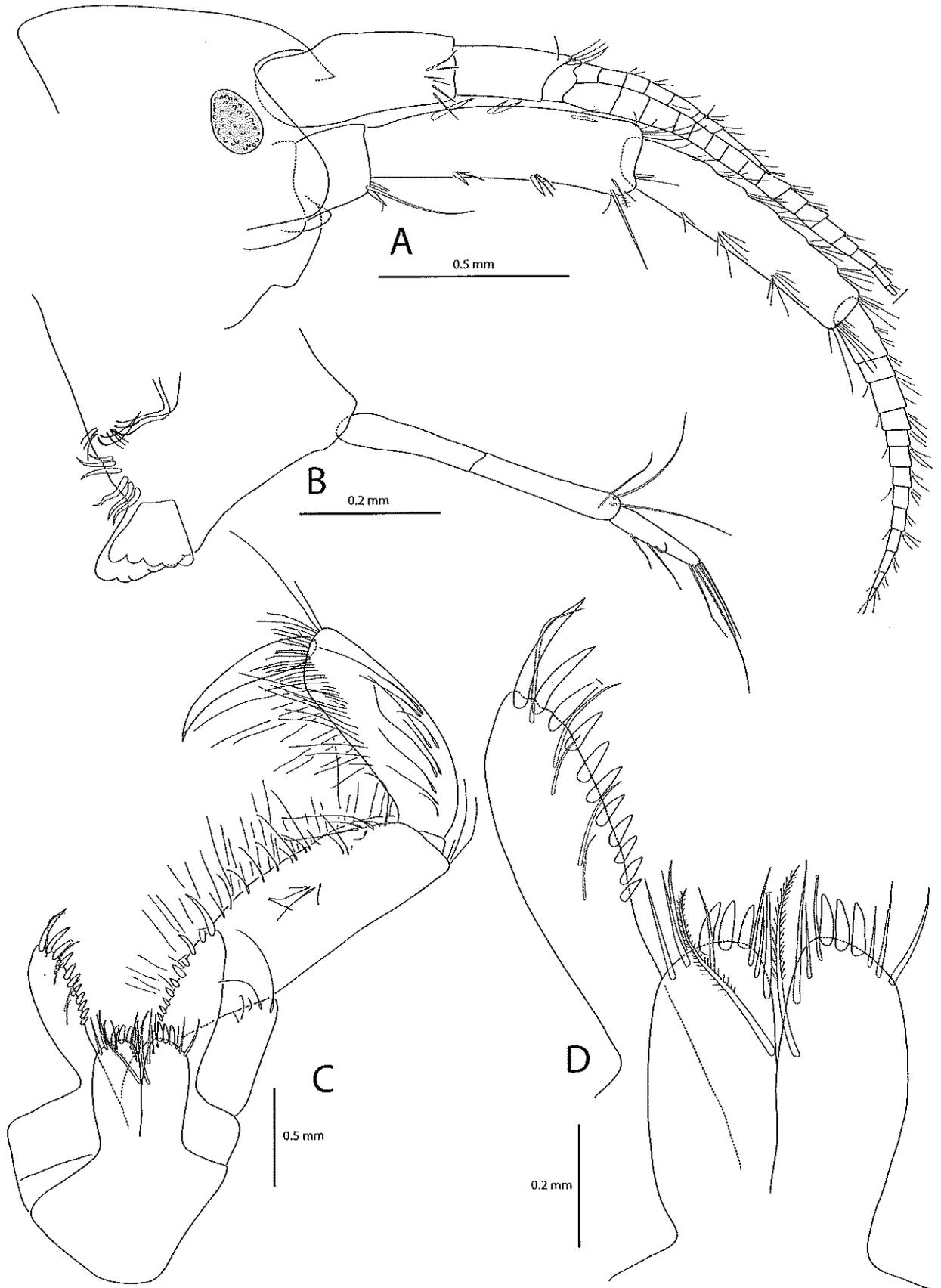


Fig. 89. *Liljeborgia nesiotica* n. sp., Marion Island; A, holotype, immature female, sta. 22 BB 125; B-D, paratype, mature female, sta. 33 DC 164. A, head with antennae; B, left Md; C, Mxp; D, plates of Mxp.

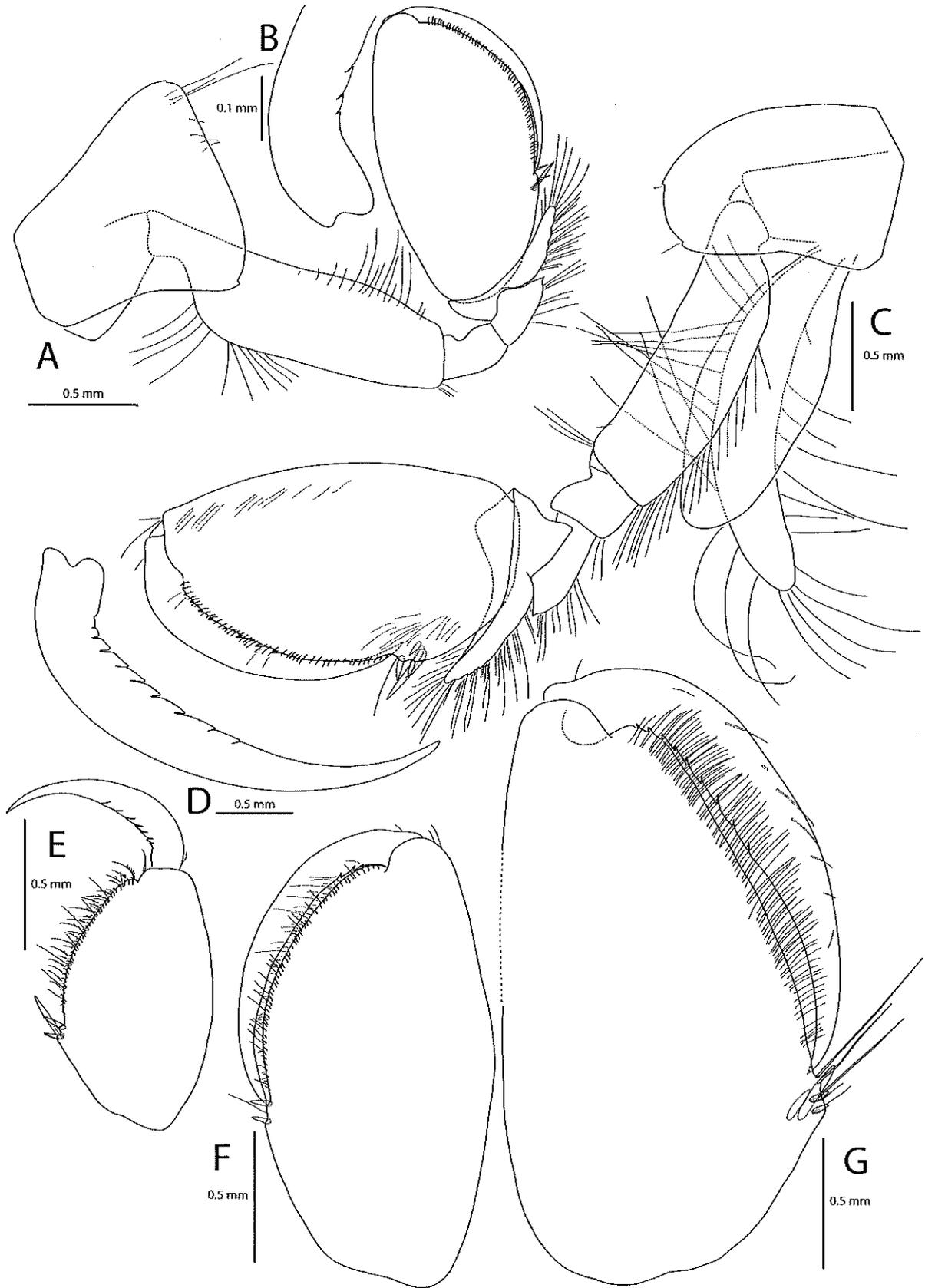


Fig. 90. *Liljeborgia nesiotica* n. sp., Marion Island; A-D, mature female and F-G, mature male, sta. 33 DC 164 (paratypes); E, immature female, sta. 22 BB 125 (paratype). A, right Gn1; B, proximal part of dactylus of right Gn1; C, left Gn2; D, dactylus of left Gn2; E, chela of left Gn2; F, chela of left Gn1; G, chela of right Gn2.

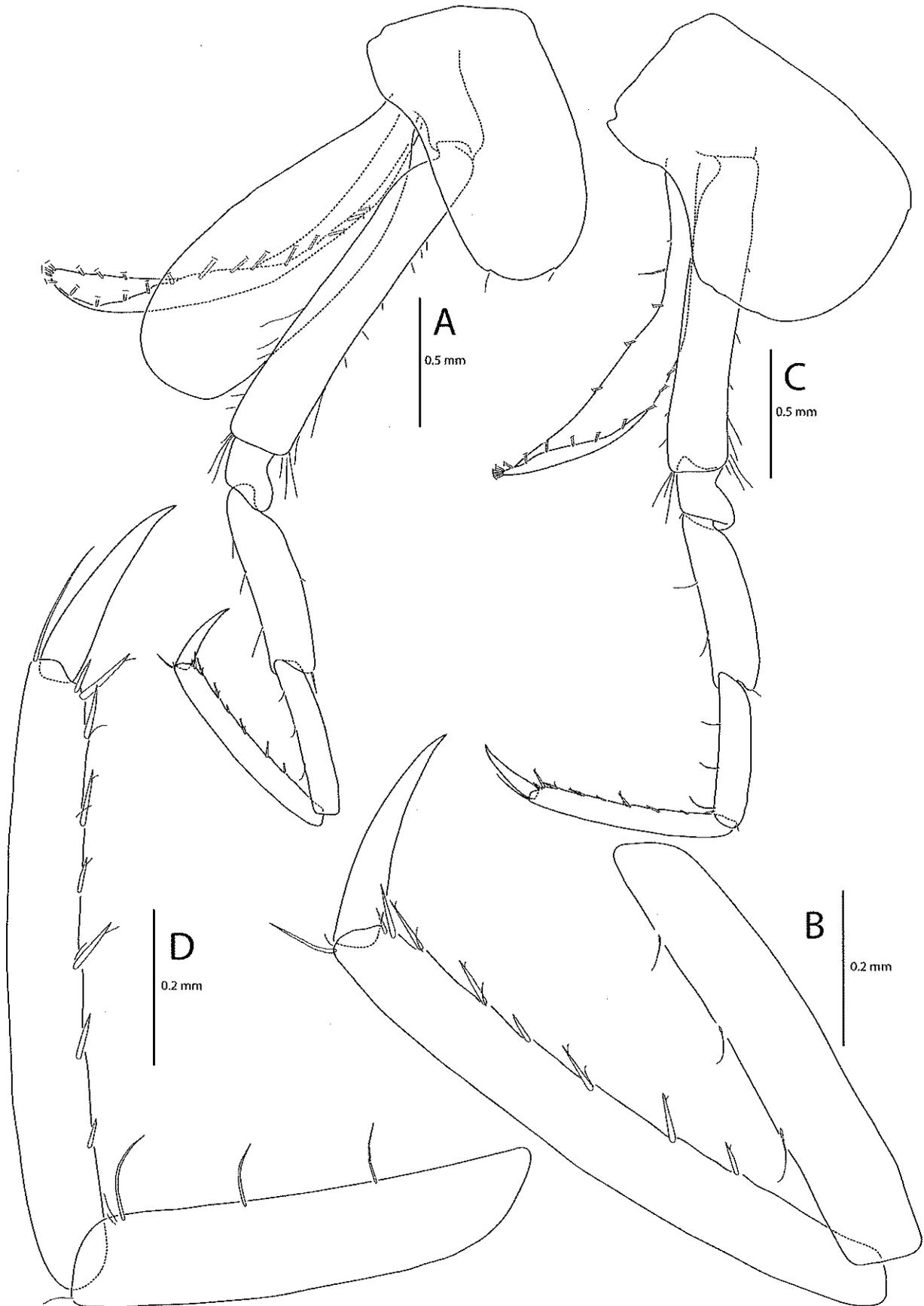


Fig. 91. *Liljeborgia nesiotica* n. sp., Marion Island; mature female, sta. 33 DC 164 (paratype). A, right P3; B, tip of right P3; C, right P4; D, tip of right P4.

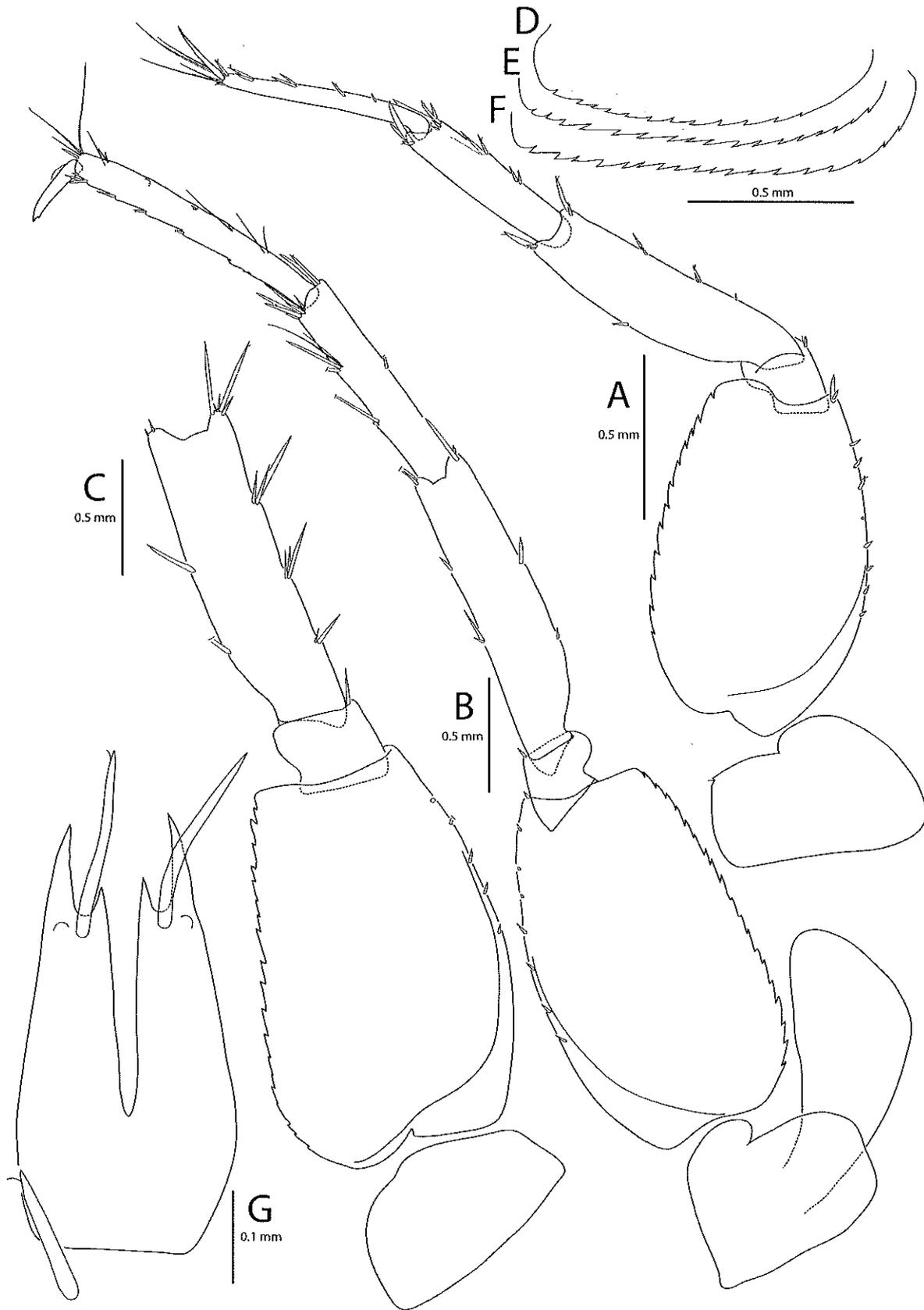


Fig. 92. *Liljeborgia nesiotica* n. sp., Marion Island; A, D, E, F, holotype, immature female, sta. 22 BB 125; B-C, paratype, mature female, sta. 33 DC 164. A, left P5; B, right P6; C, left P7; D, posterior border of basis of left P5; E, posterior border of basis of left P6; F, posterior border of basis of left P7; G, telson.

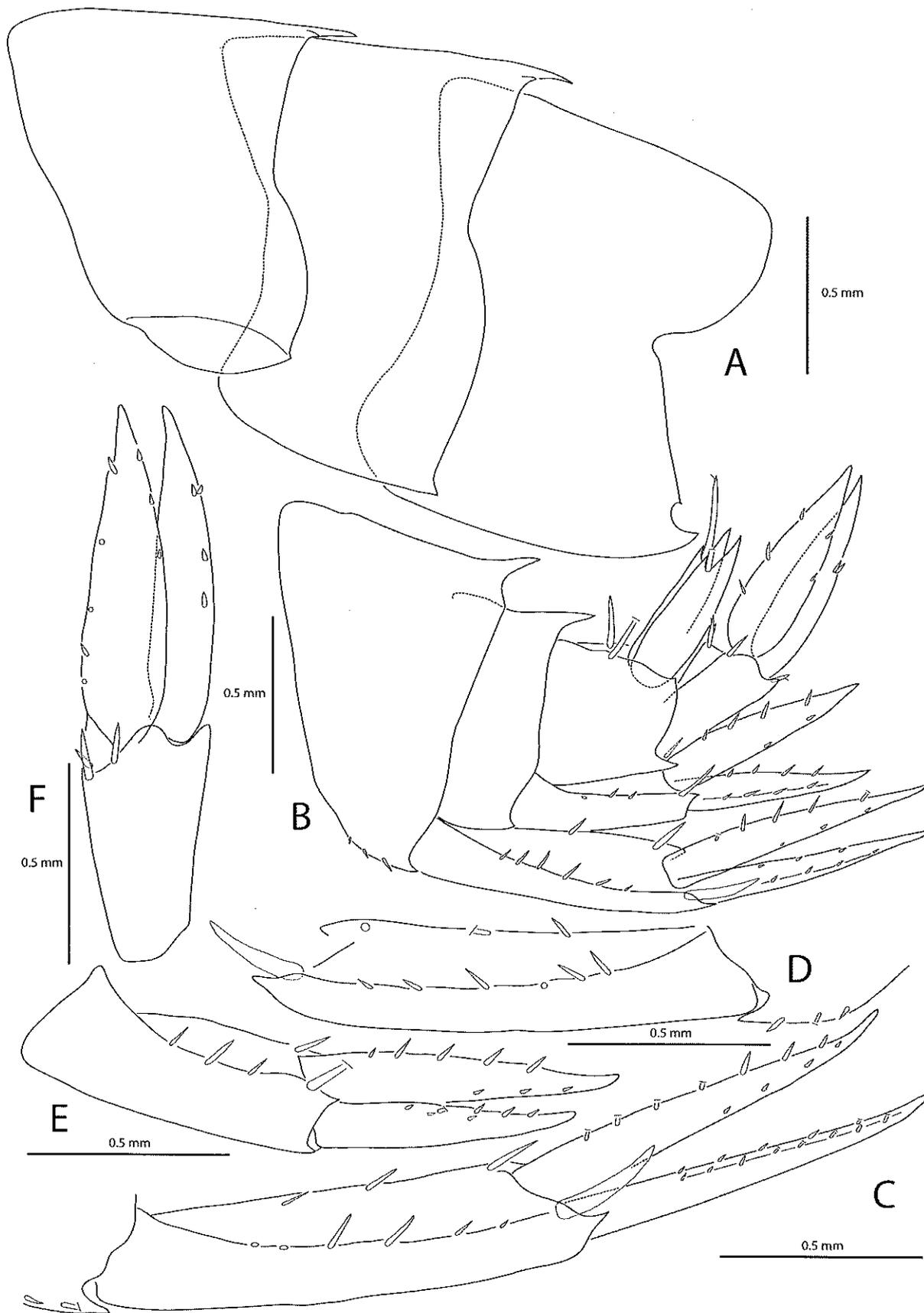


Fig. 93. *Liljeborgia nesiotica* n. sp., Marion Island; A, B, holotype, immature female, sta. 22 BB 125; C-F, mature female, sta. 33 DC 164. A, pleosome; B, urosome; C, left U1; D, peduncle of right U1; E, left U2; F, left U3

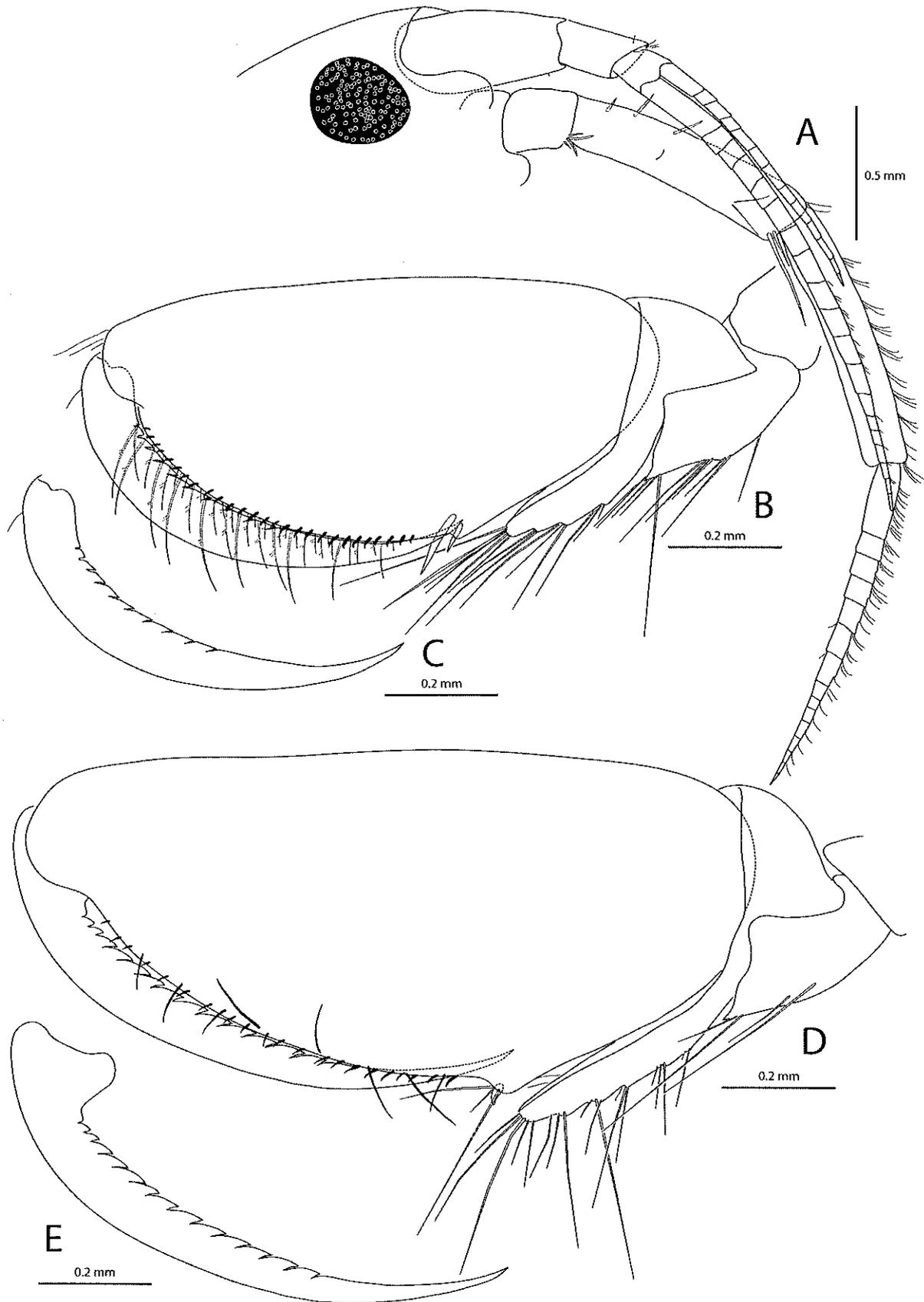


Fig. 94. *Liljeborgia octodentata* SCHELLENBERG, 1931, female lectotype, Estrecho de Magallanes, Punta Arenas (Nordenskjöld's Exp. sta. 387). A, head with antennae; B, left Gn1; C, dactylus of left Gn1; D, left Gn2; E, dactylus of left Gn2.

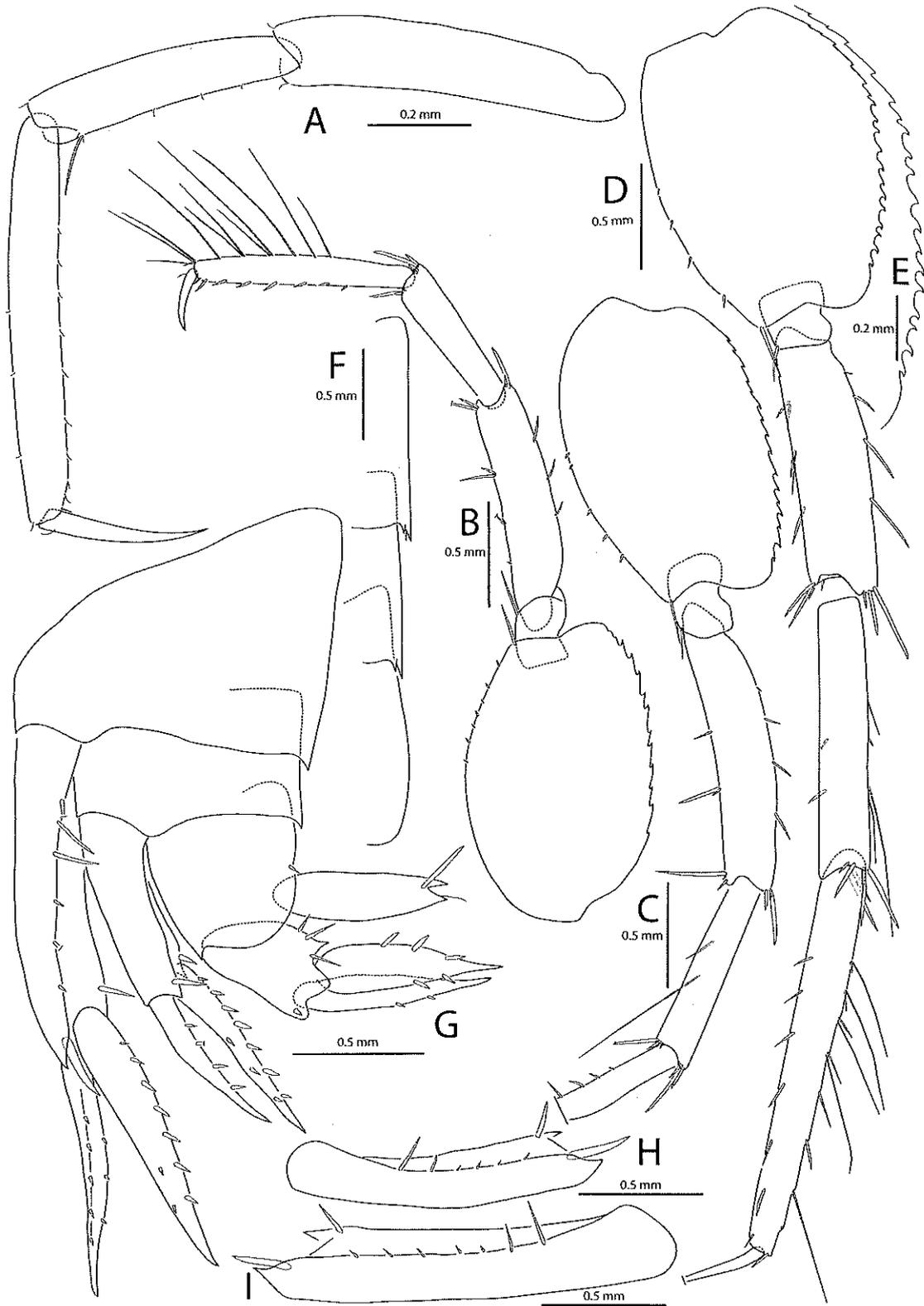


Fig. 95. *Liljeborgia octodentata* SCHELLENBERG, 1931, A-G, female lectotype, Estrecho de Magallanes, Punta Arenas (Nordenskjöld's Exp. sta. 387); H, female paralectotype, Punta Arenas (Nordenskjöld's Exp. sta. 447); I, ovigerous female paralectotype, Falkland Islands (Swedish South Polar Exp. 1901-03, sta. 49). A left P3; B, right P5; C, left P6; D, left P7; E, posterior border of basis of left P7; F, dorsal border of pleonites 1-3; G, urosome; H, peduncle of left U1; I, peduncle of right U1.

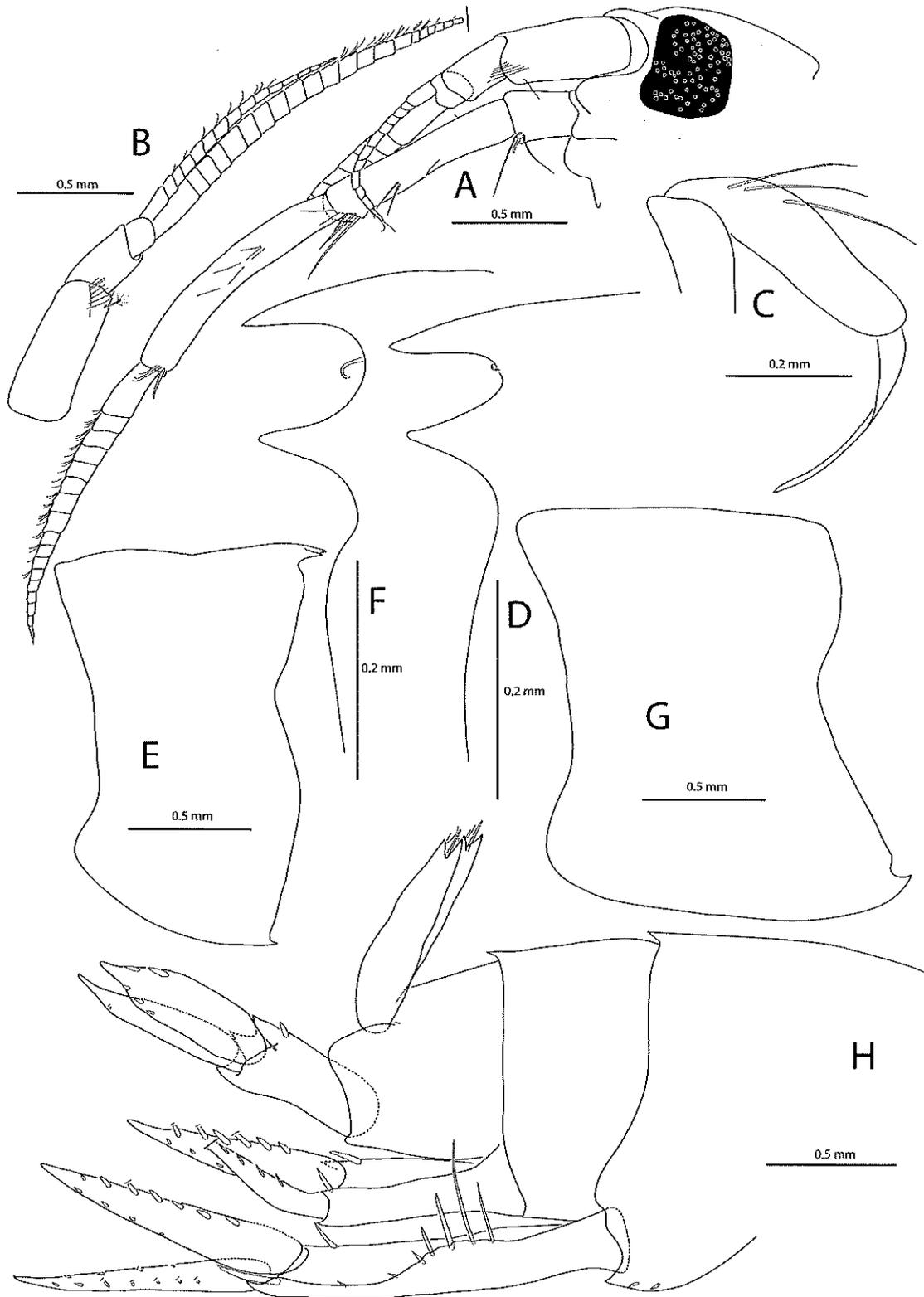


Fig. 96. *Liljeborgia octodentata* SCHELLENBERG, 1931: holotype of *Liljeborgia falklandica* K.H. BARNARD, 1932, presumably male (no oostegites), Falkland Islands, Discovery sta. 57. A, head, left antennae, epistome and upper lip in lateral view; B, right A1; C, right palp of Mxp (badly distorted); D, posterodorsal area of pleonite 1 in lateral (right) view; E, pleonite 2 (left side); F, posterodorsal area of pleonite 2 in lateral (right) view; G, pleonite 3 (right side); H, urosome (right side).



Fig. 97. *Liljeborgia octodentata* SCHELLENBERG, 1931: holotype of *Liljeborgia falklandica* K.H. BARNARD, 1932, presumably male (no oostegites), Falkland Islands, Discovery sta. 57. A, right Gn1 (badly distorted); B, palm of right Gn1; C, right Gn2 (badly distorted).

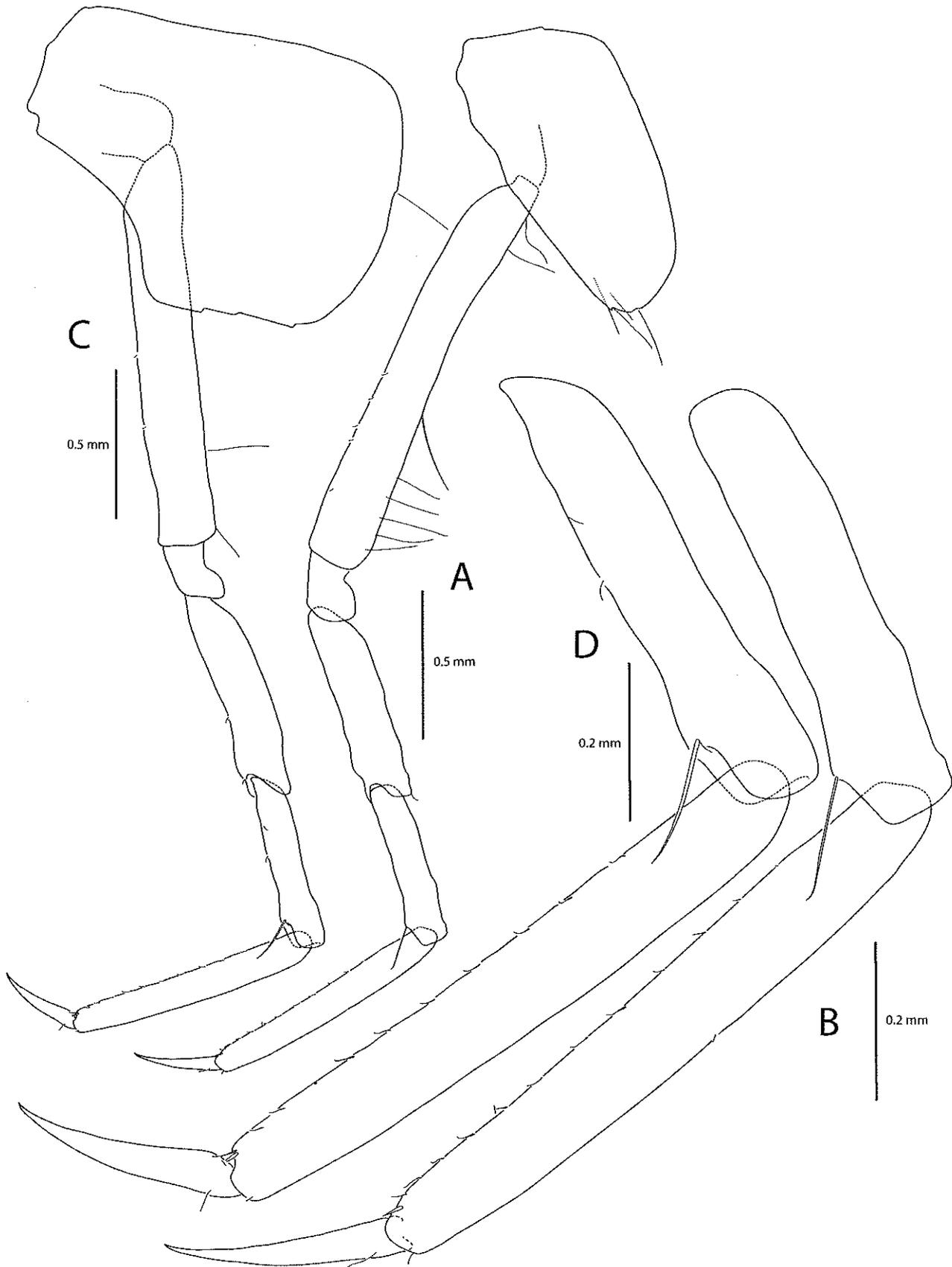


Fig. 98. *Liljeborgia octodentata* SCHELLENBERG, 1931: holotype of *Liljeborgia falklandica* K.H. BARNARD, 1932, presumably male (no oostegites), Falkland Islands, Discovery sta. 57. A, right P3; B, tip of right P3; C, right P4; D, tip of right P4.

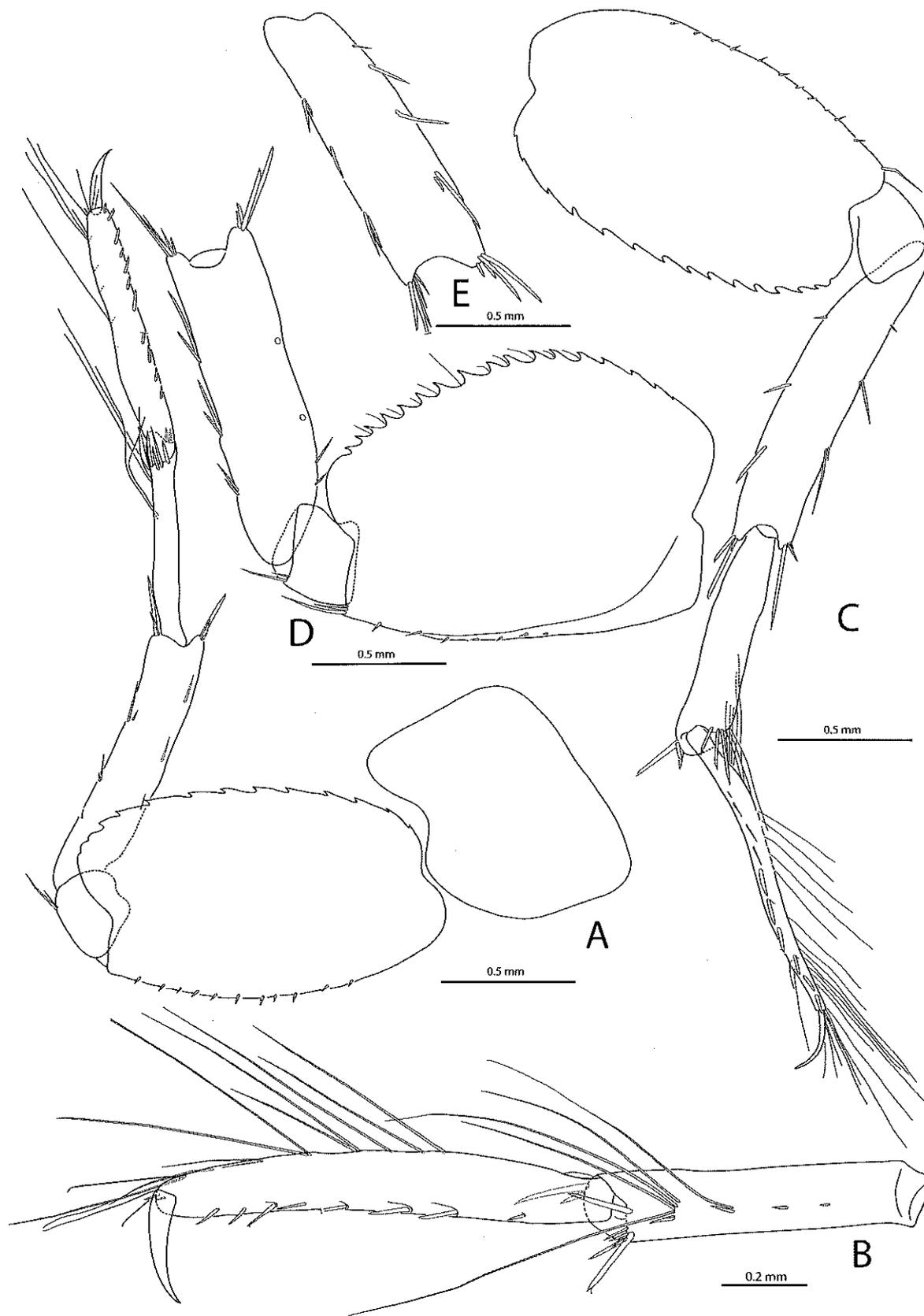


Fig. 99. *Liljeborgia octodentata* SCHELLENBERG, 1931: holotype of *Liljeborgia falklandica* K.H. BARNARD, 1932, presumably male (no oostegites), Falkland Islands, Discovery sta. 57. A, right P5; B, tip of left P5; C, right P6; D, right P7, E, merus of left P7.

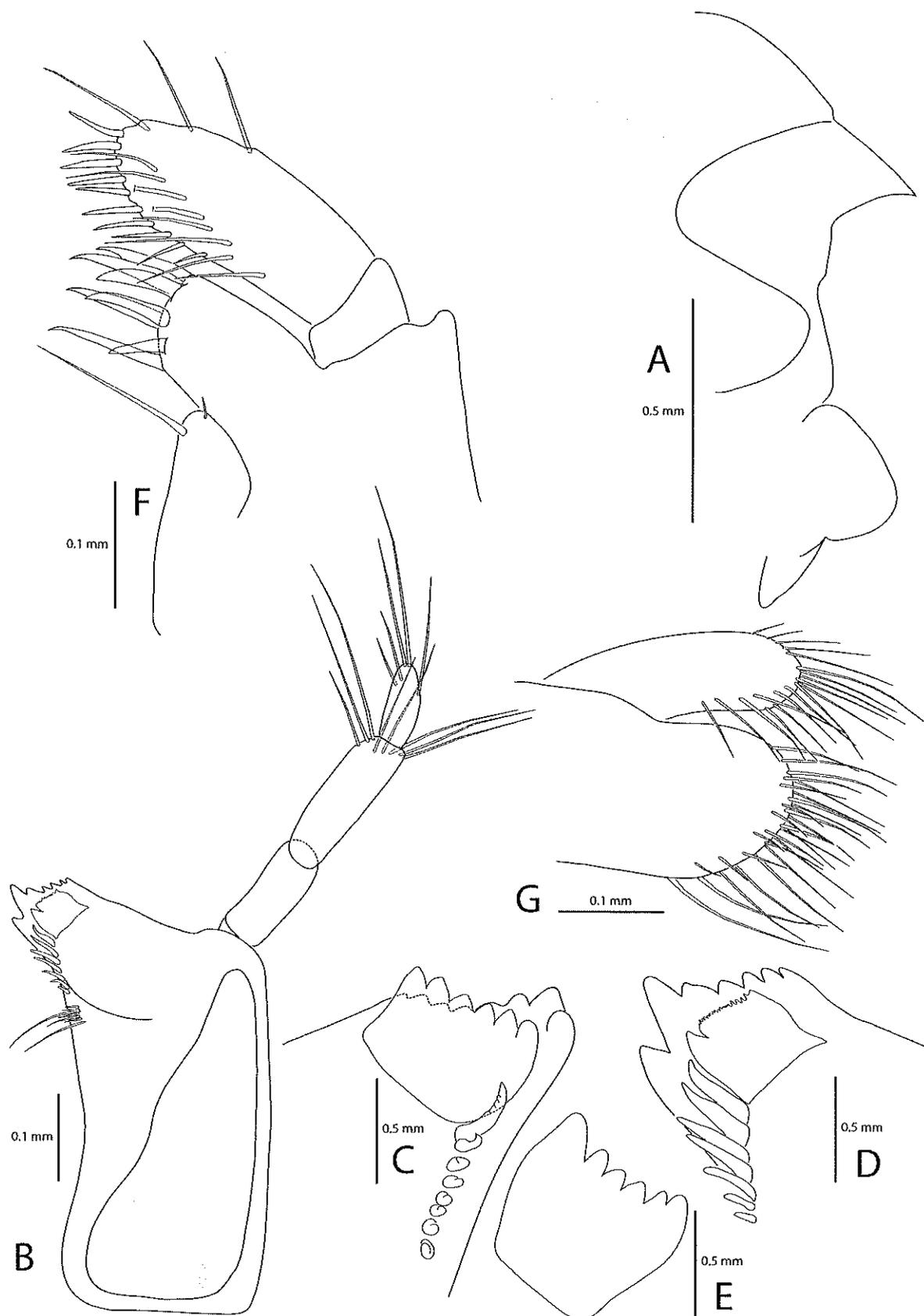


Fig. 100. *Liljeborgia octodentata* SCHELLENBERG, 1931, Tierra del Fuego, Paso Goree, MAG94, sta. 1165; A, E, G, male; B, C, D, F, female. A, anterior part of head and epistome; B, right Md, C, tip of left Md; D, tip of right Md; E, lacinia mobilis of left Md; F, left Mx1; G, right Mx2.

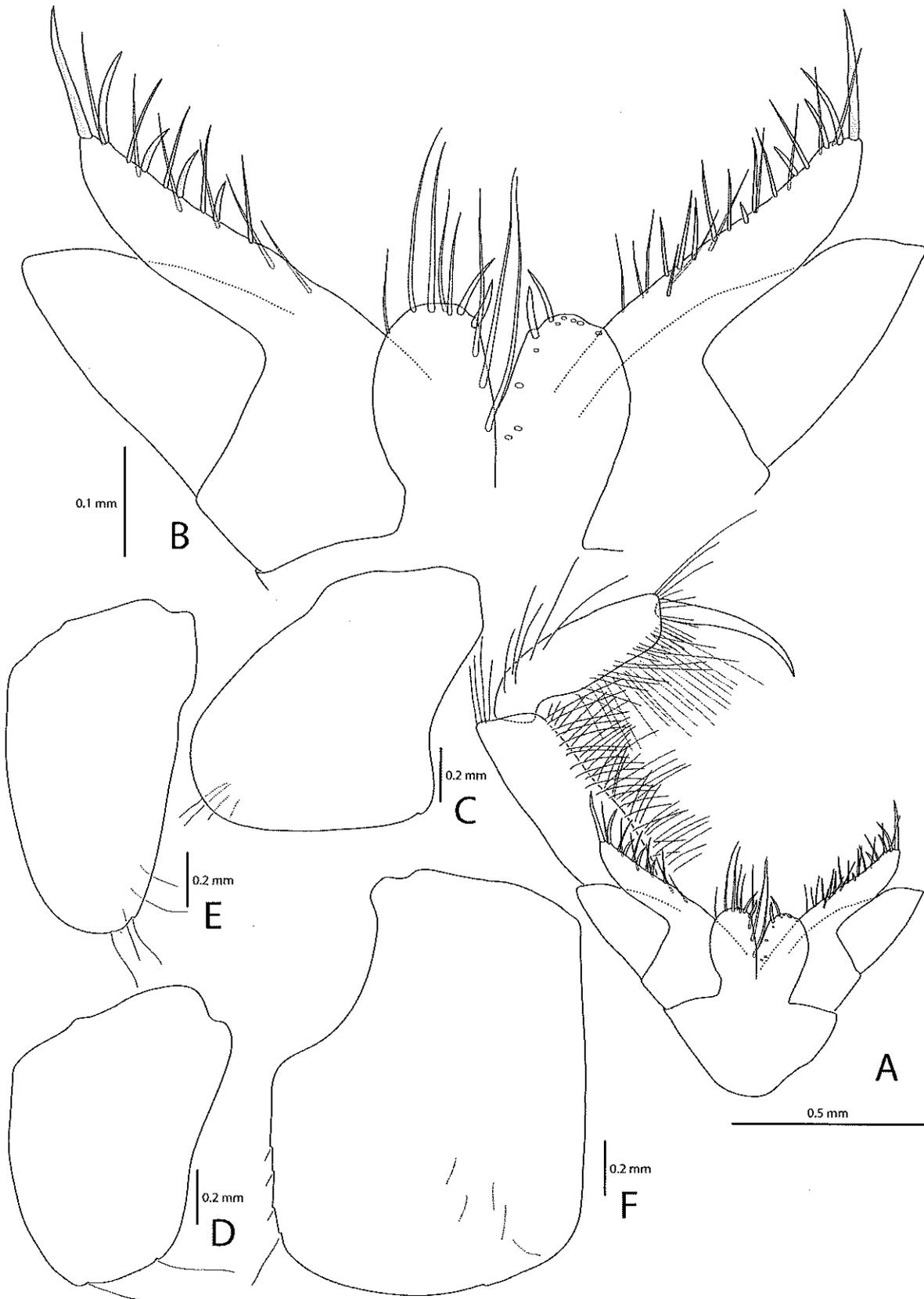


Fig. 101. *Liljeborgia octodentata* SCHELLENBERG, 1931, male, Tierra del Fuego, Paso Gorec, MAG94, sta. 1165. A, Mxp; B, plates of Mxp; C, left coxa 1; D, left coxa 2; E, left Coxa 3; F, right coxa 4.

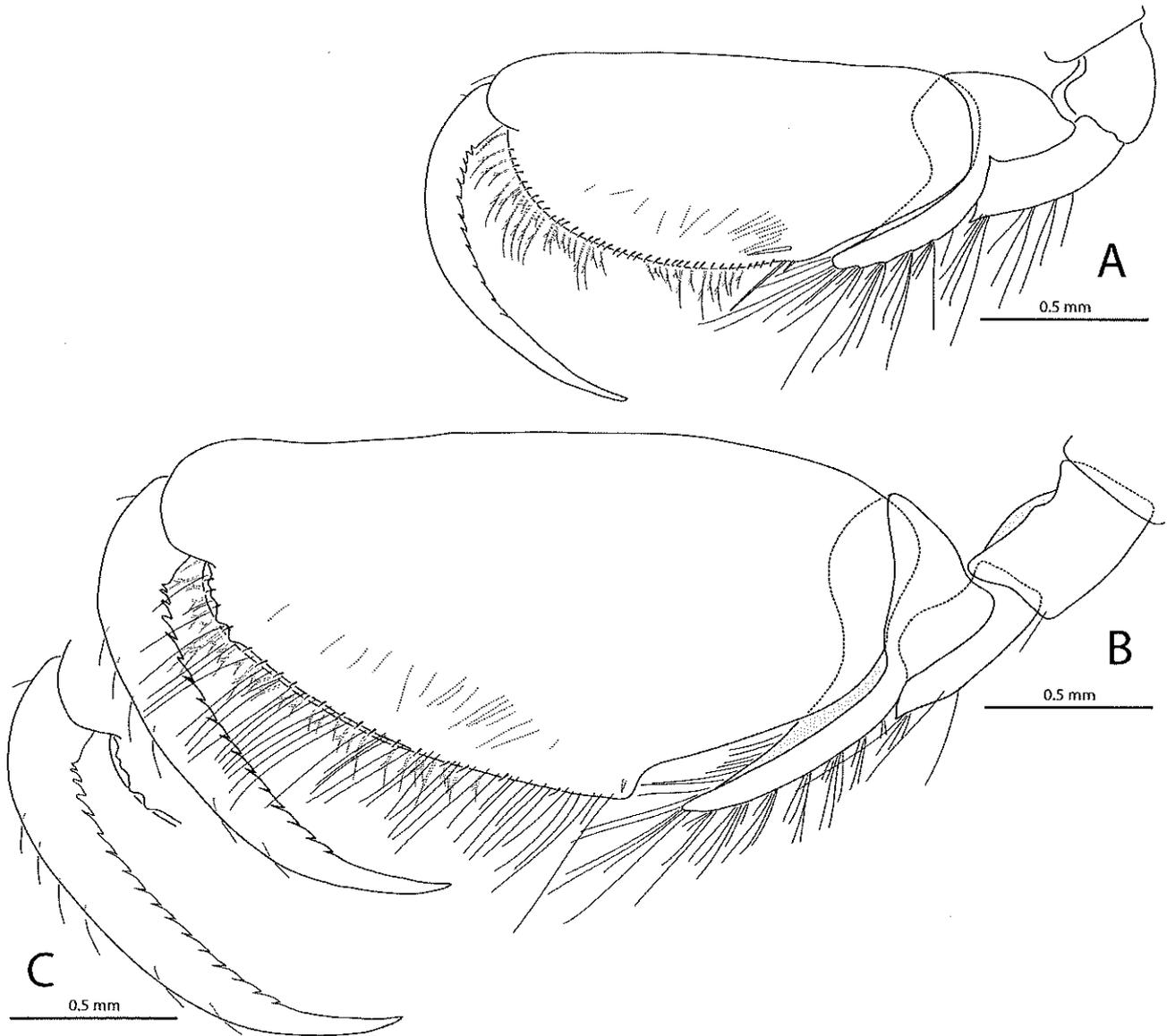


Fig. 102. *Liljeborgia octodentata* Schellenberg, 1931, male, Tierra del Fuego, Paso Goree, MAG94, sta. 1165. A, left Gn1; B, left Gn2; C, dactylus of left Gn2.

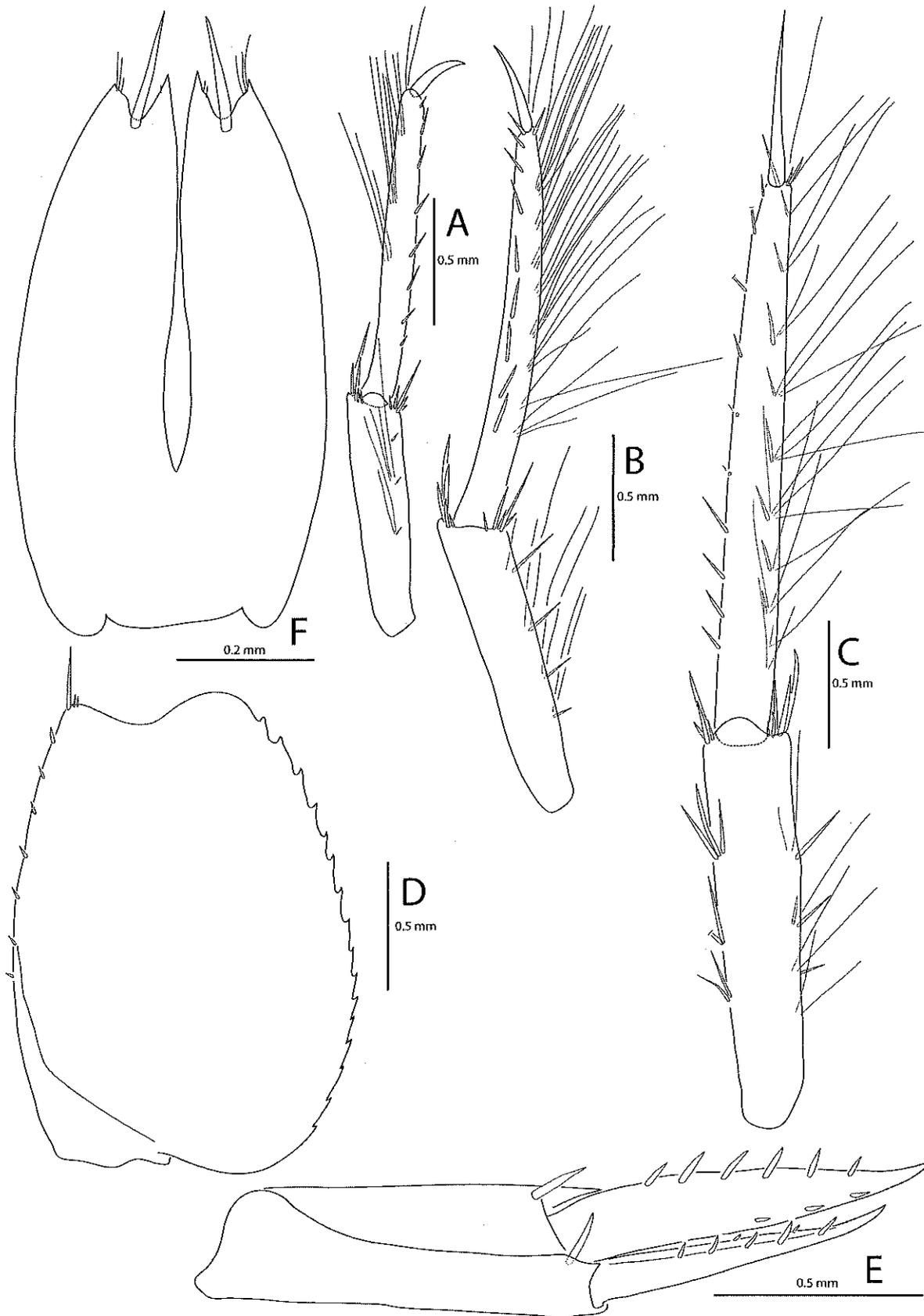


Fig. 103. *Liljeborgia octodentata* SCHELLENBERG, 1931, male, Tierra del Fuego, Paso Goree, MAG94, sta. 1165. A, tip of left P5; B, tip of left P6; C, tip of right P7; D, basis of right P7; E, left U2, F, telson.

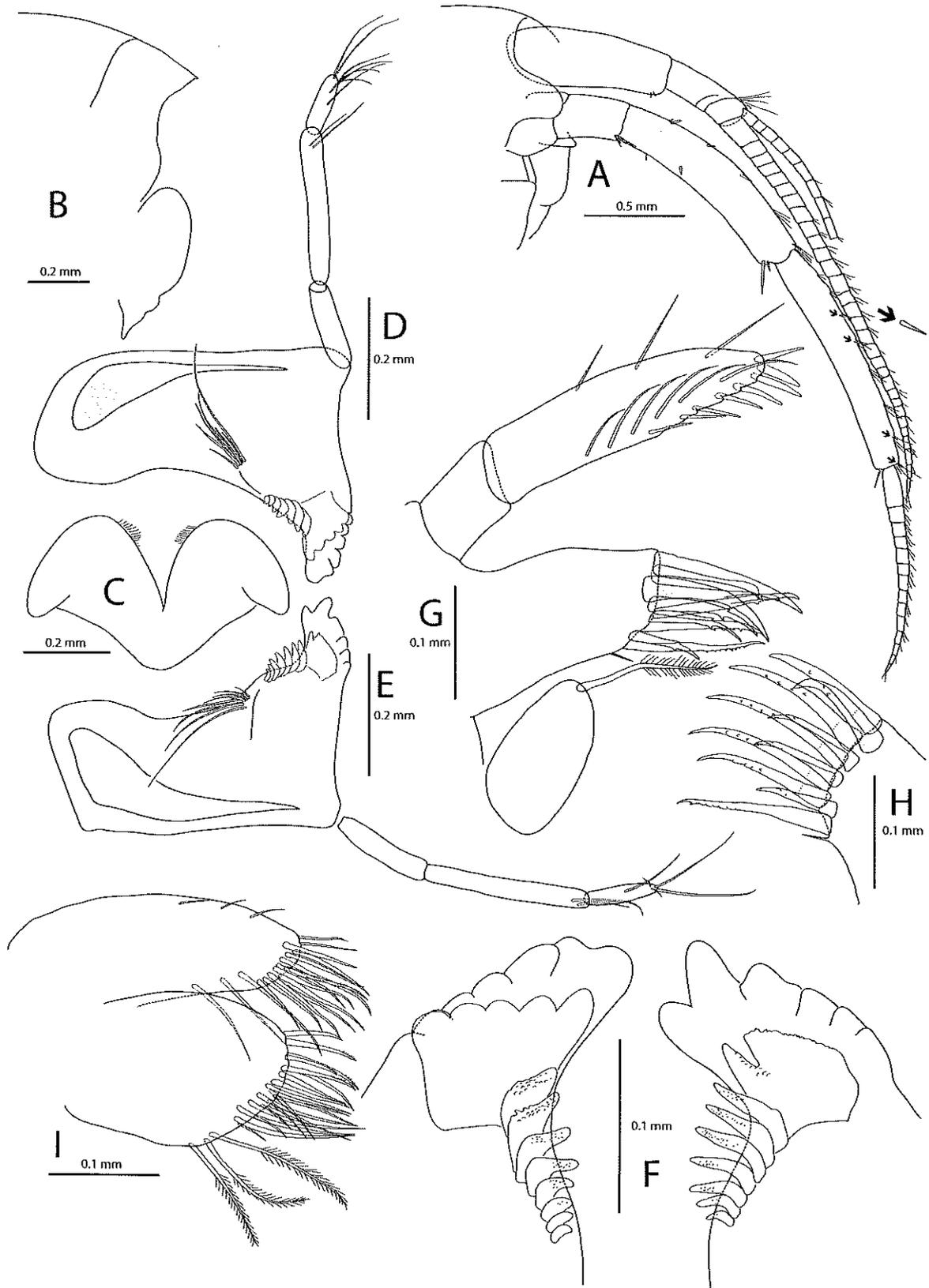


Fig. 104. *Liljeborgia permacra* n. sp., holotype, presumably male, South of Drake Passage, ANT XIX-3, ANDEEP I, sta. 129-2. A, head with right antennae; B, anterior part of head + epistome; C, lower lip; D, left Md; E, right Md; F, tip of left and right Md; G, right Mx1; H, tip of left Mx1; I, right Mx2.

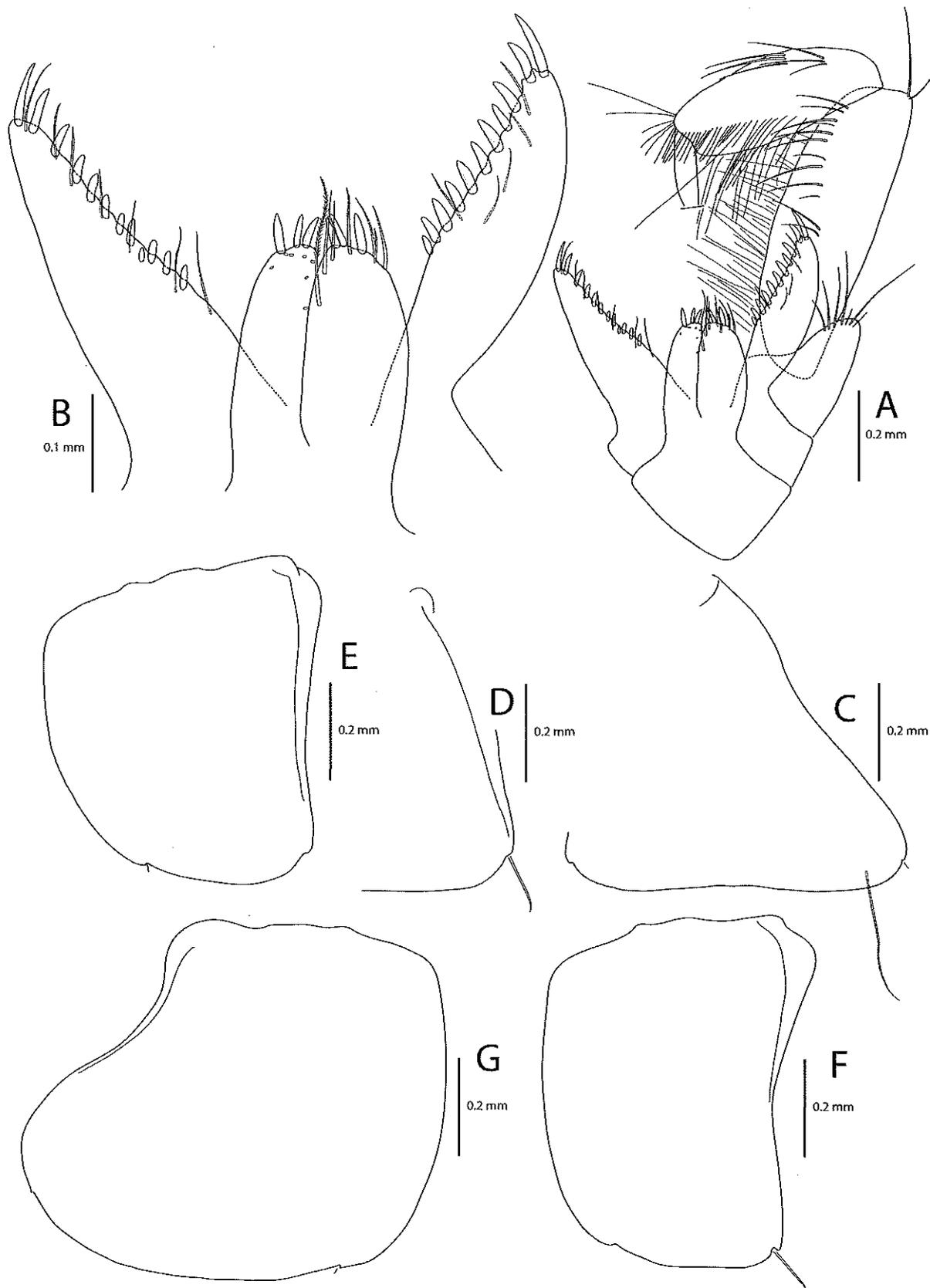


Fig. 105. *Liljeborgia permacra* n. sp., holotype, presumably male, South of Drake Passage, ANT XIX-3, ANDEEP I, sta. 129-2. A, Mxp; B, plates of Mxp; C, right coxa 1; D, left coxa 1; E, left coxa 2; F, left coxa 3; G, right coxa 4.

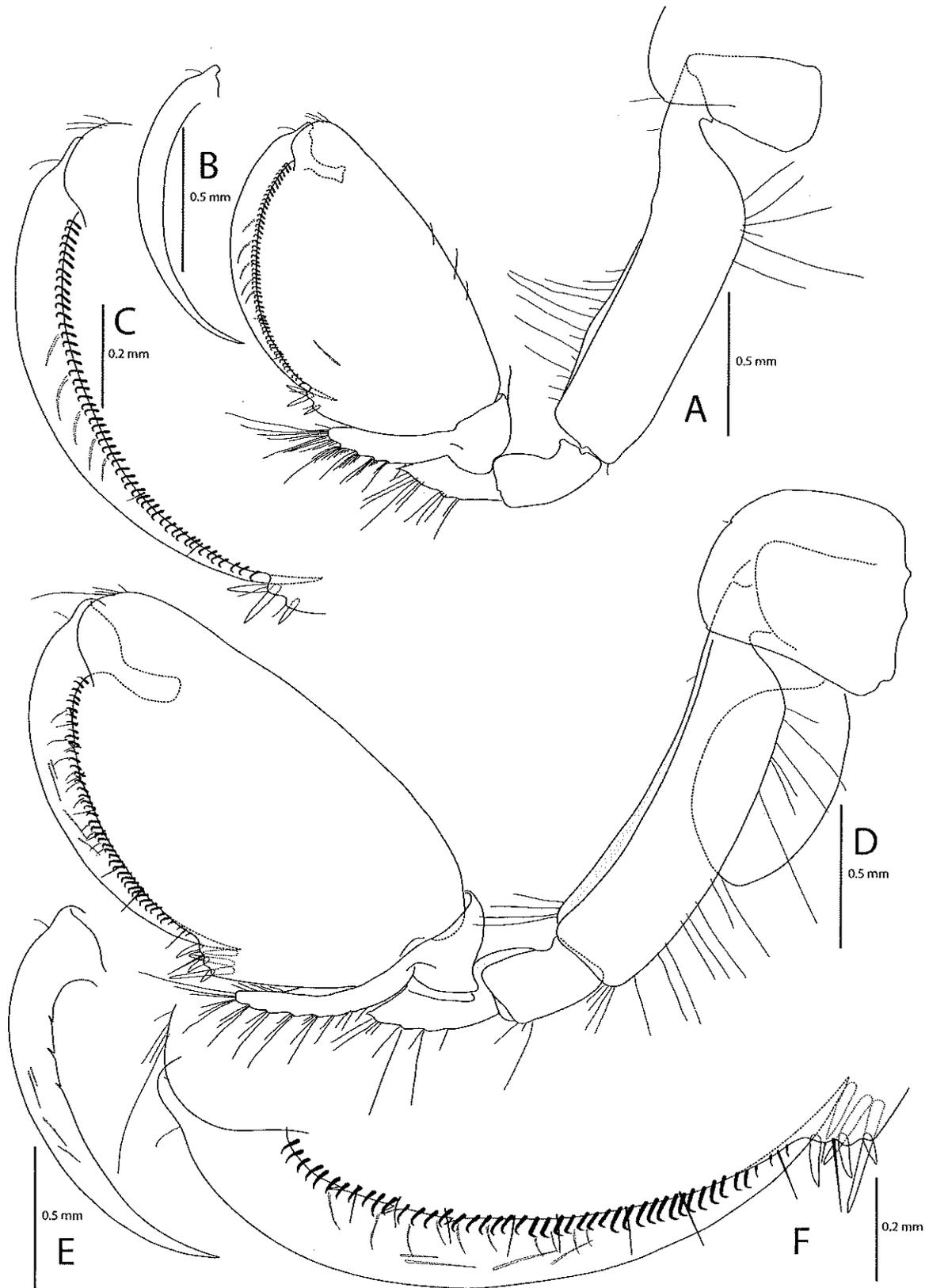


Fig. 106. *Liljeborgia permacra* n. sp., holotype, presumably male, South of Drake Passage, ANT XIX-3, ANDEEP I, sta. 129-2. A, left Gn1; B, dactylus of left Gn1; C, palm of left Gn1; D, left Gn2; E, dactylus of left Gn2; F, palm of left Gn2.

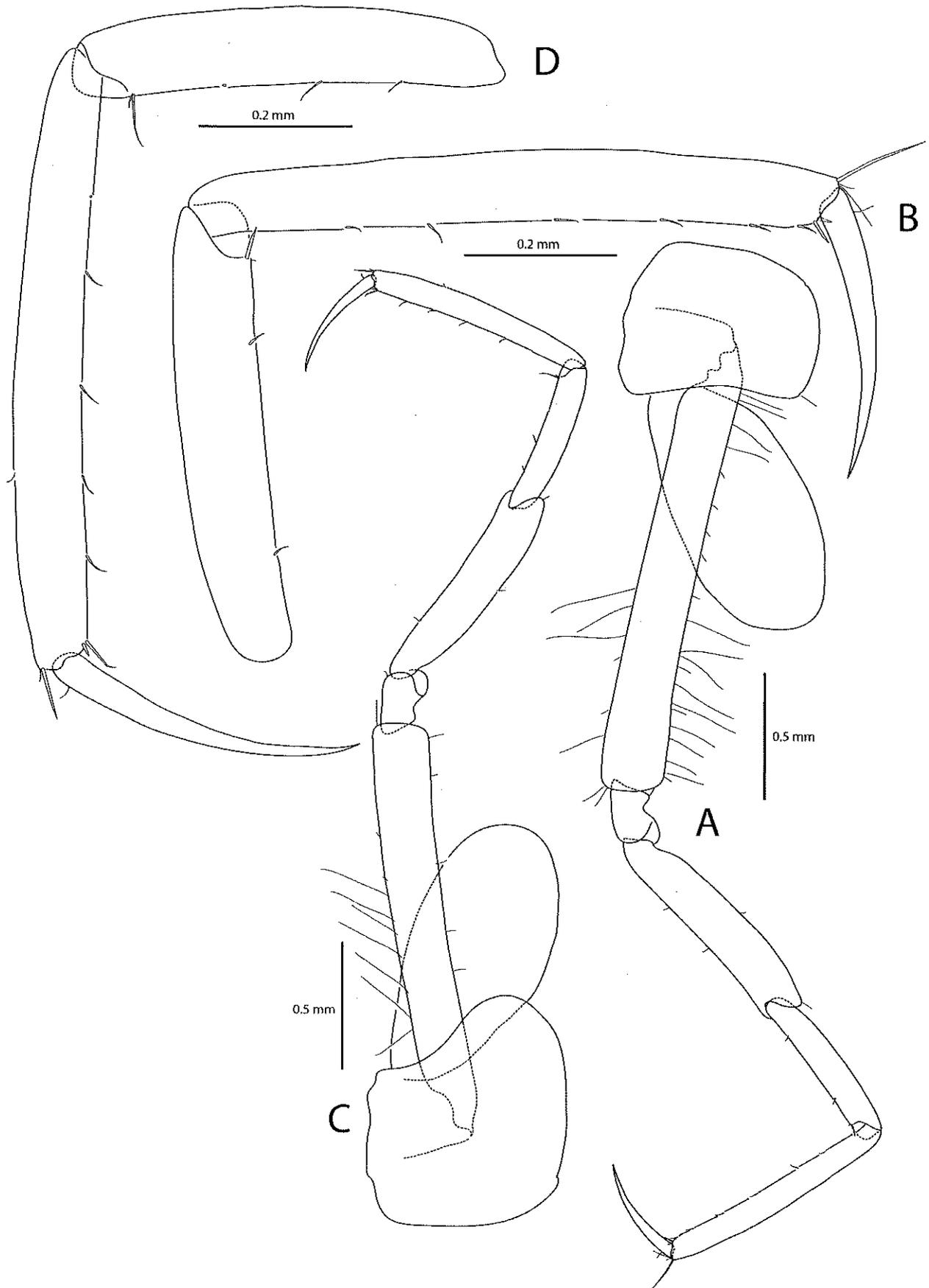


Fig. 107. *Liljeborgia permacra* n. sp., holotype, presumably male, South of Drake Passage, ANT XIX-3, ANDEEP I, sta. 129-2. A, right P3; B, tip of right P3; C, left P4; D, tip of left P4.

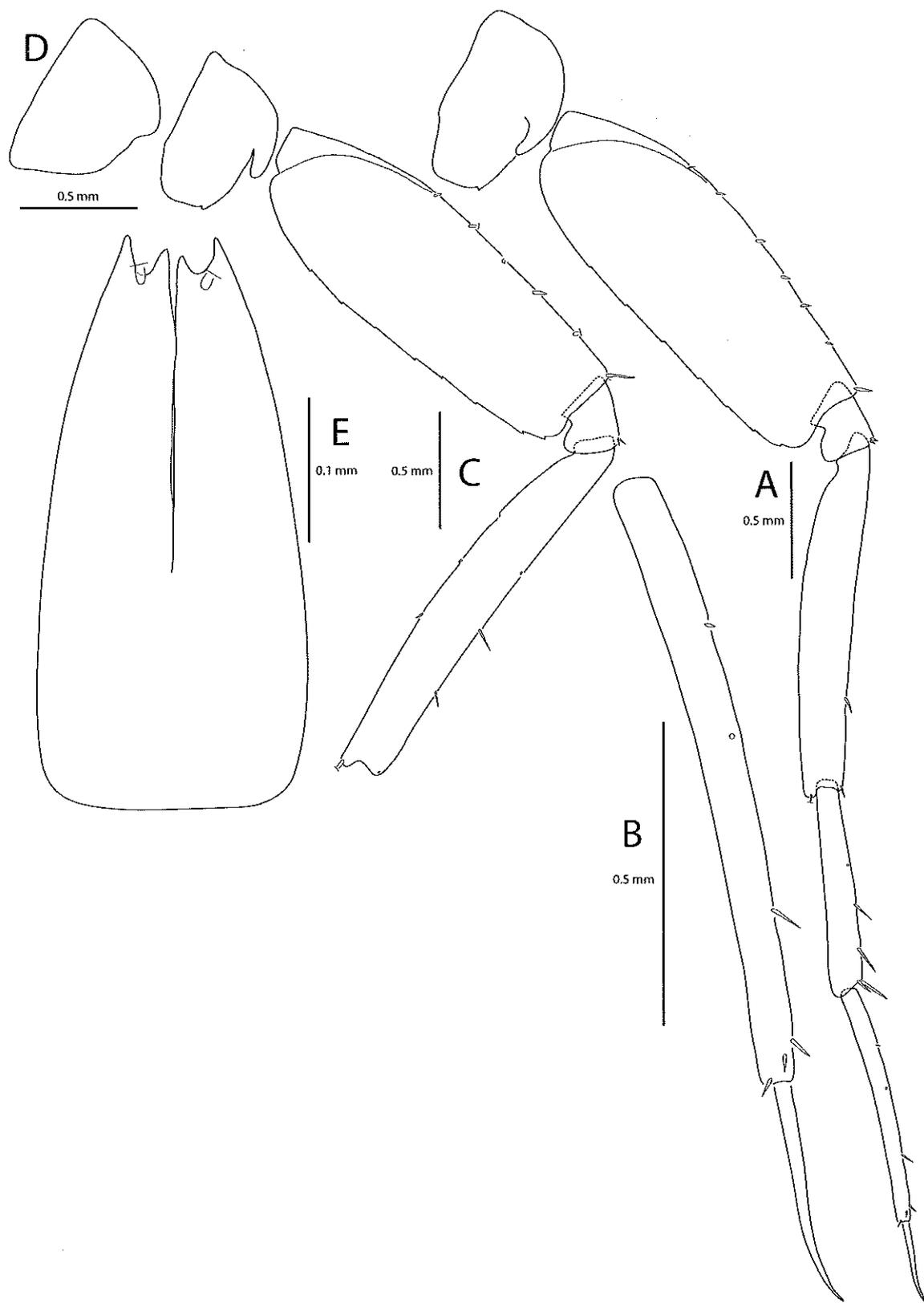


Fig. 108. *Liljeborgia permacra* n. sp., holotype, presumably male, South of Drake Passage, ANT XIX-3, ANDEEP I, PS 61, sta. 129-2. A, right P5; B, tip of right P5; C, right P6; D, coxa 7; E, telson.

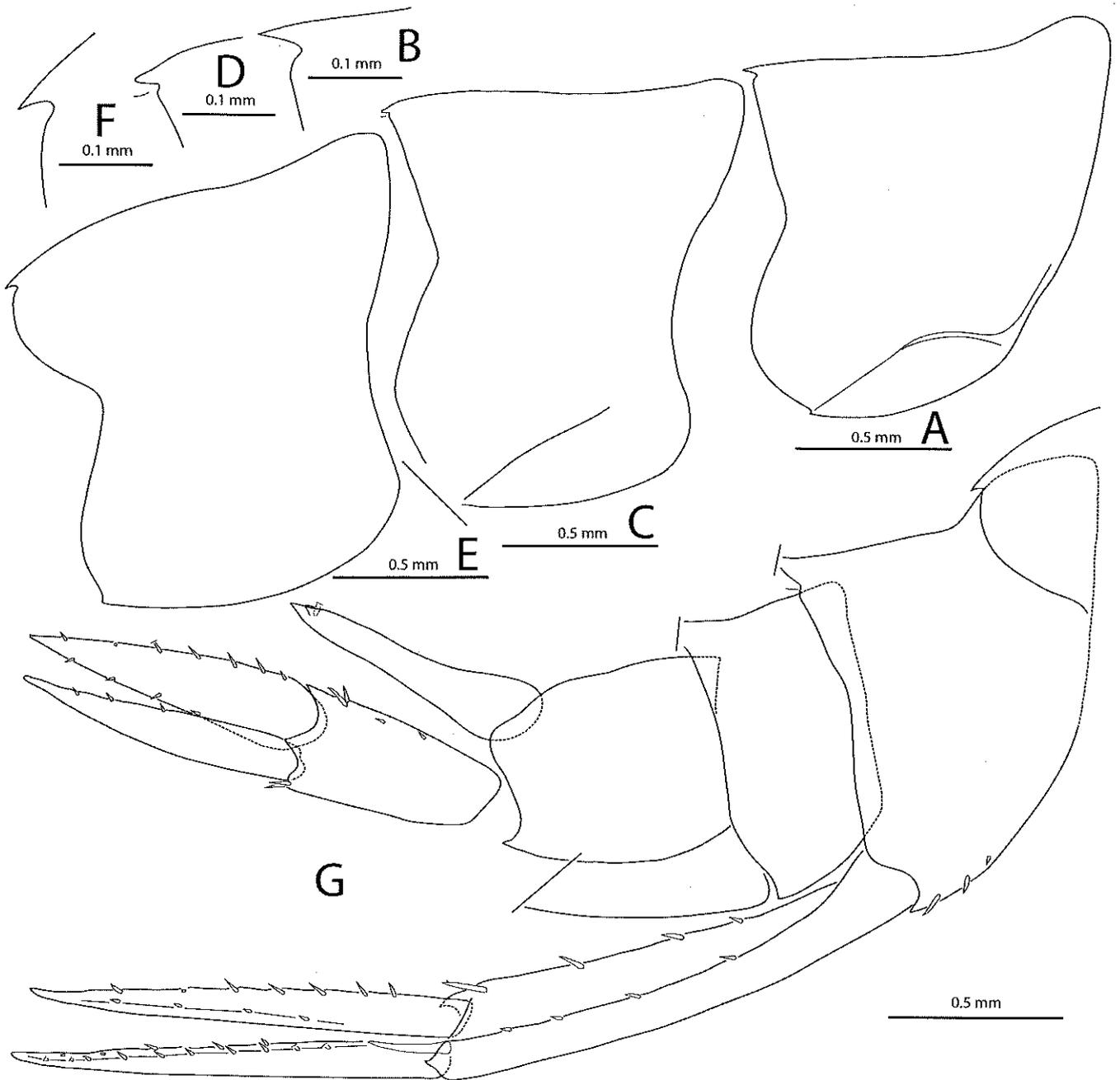


Fig. 109. *Liljeborgia permacra* n. sp., holotype, presumably male, South of Drake Passage, ANT XIX/3, ANDEEP I, sta. 129-2. A, pleonite 1; B, posterodorsal area of pleonite 1 in lateral view; C, pleonite 2; D, posterodorsal area of pleonite 2 in lateral view; E, pleonite 3; F, posterodorsal area of pleonite 3 in lateral view; G, urosome (right side).

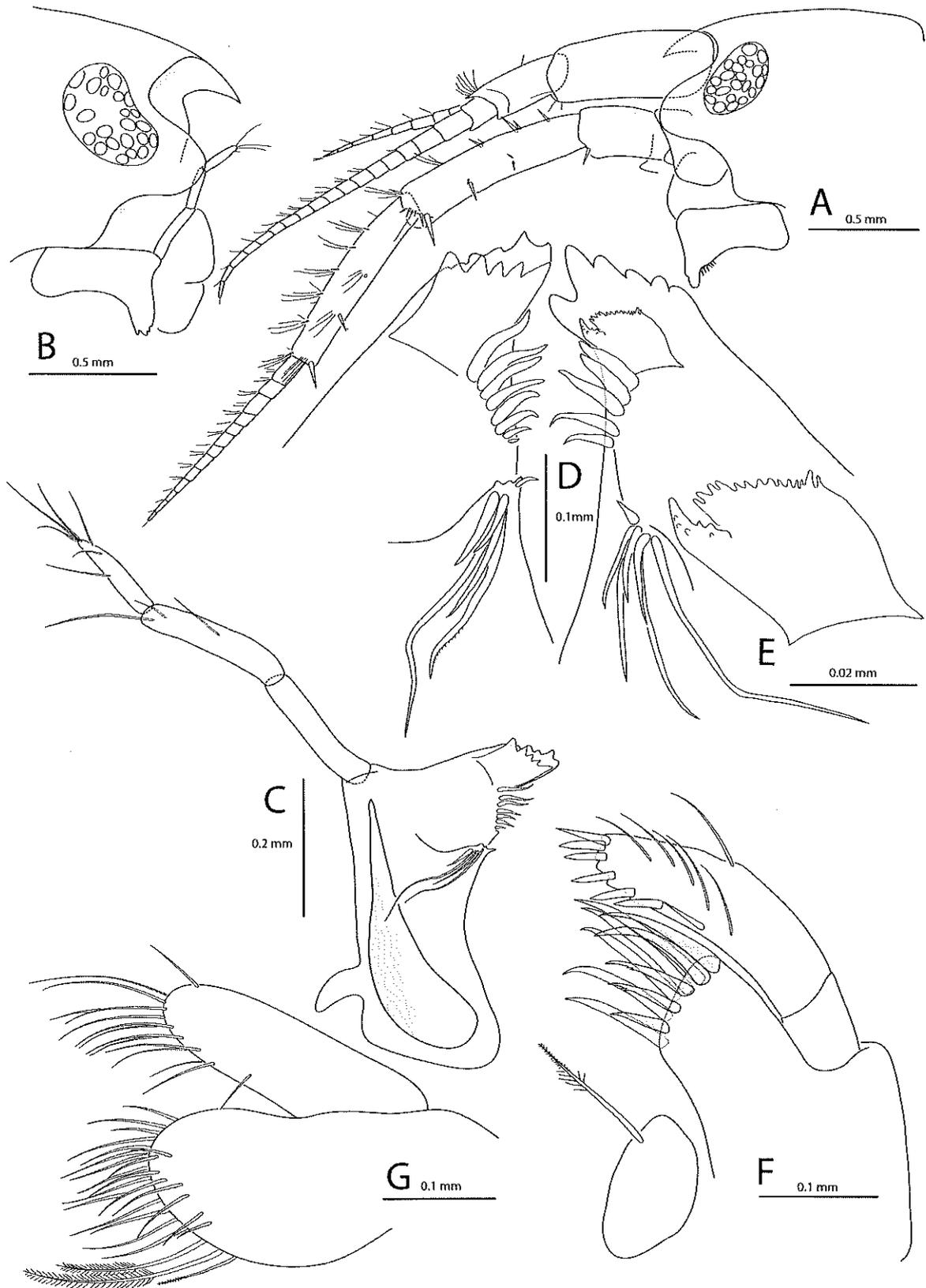


Fig. 110. *Liljeborgia polydeuces* n. sp., female paratype, 13 mm, Elephant Island, ANT XXIII/8, sta. 614/2+3+4. A, head and antennae; B, head and epistome; C, left Md; D, tip of left and right Md; E, right lacinia mobilis; F, left Mx1; G, left Mx2.

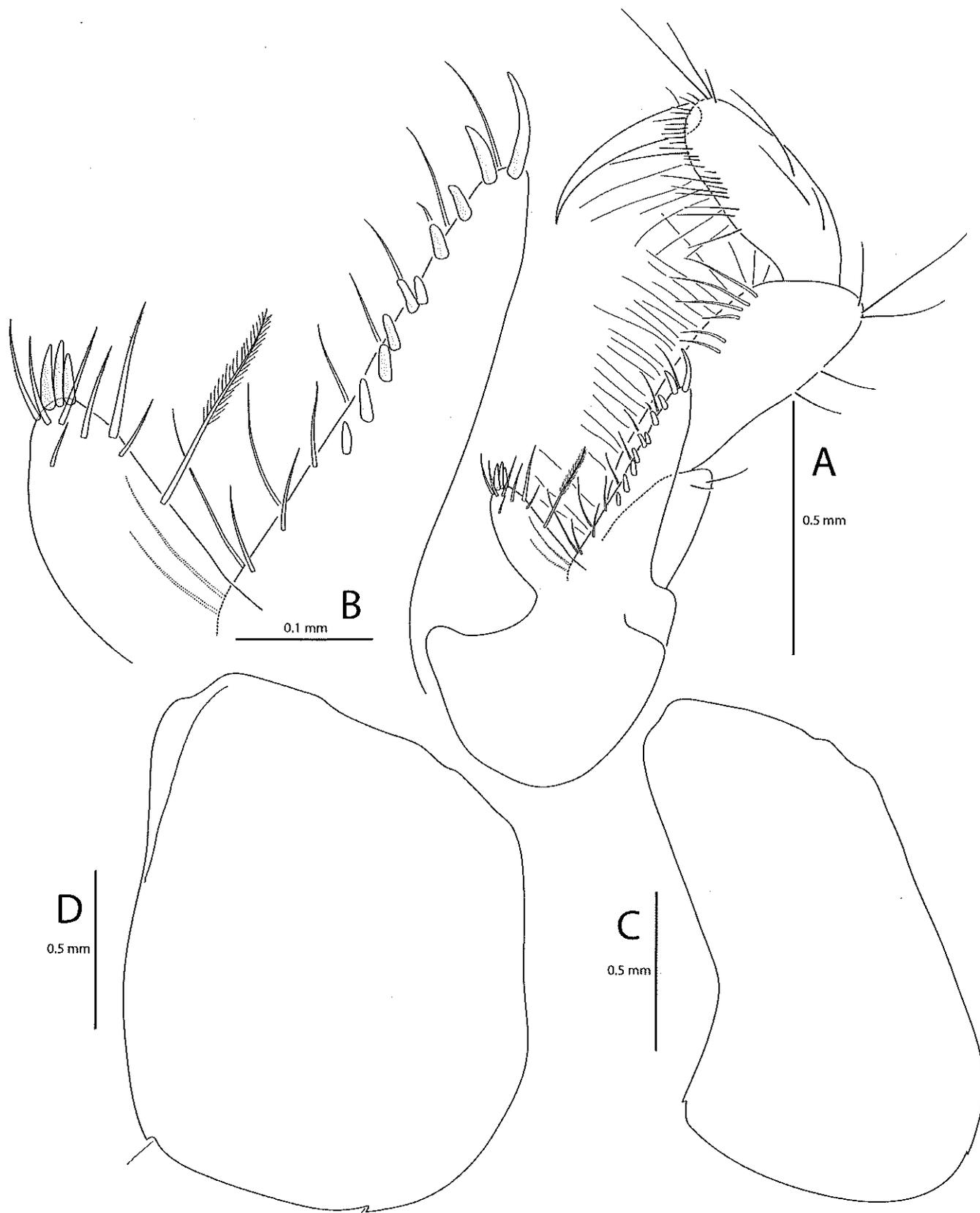


Fig. 111. *Liljeborgia polydeuces* n. sp., ANT XXIII/8, Elephant Island, sta. 614/2+3+4. A, B, female paratype, 13 mm; C, D, male holotype, 16 mm. A, Mxp; B, left inner plate and right outer plate of Mxp; C, right coxa 1; D, right coxa 2.

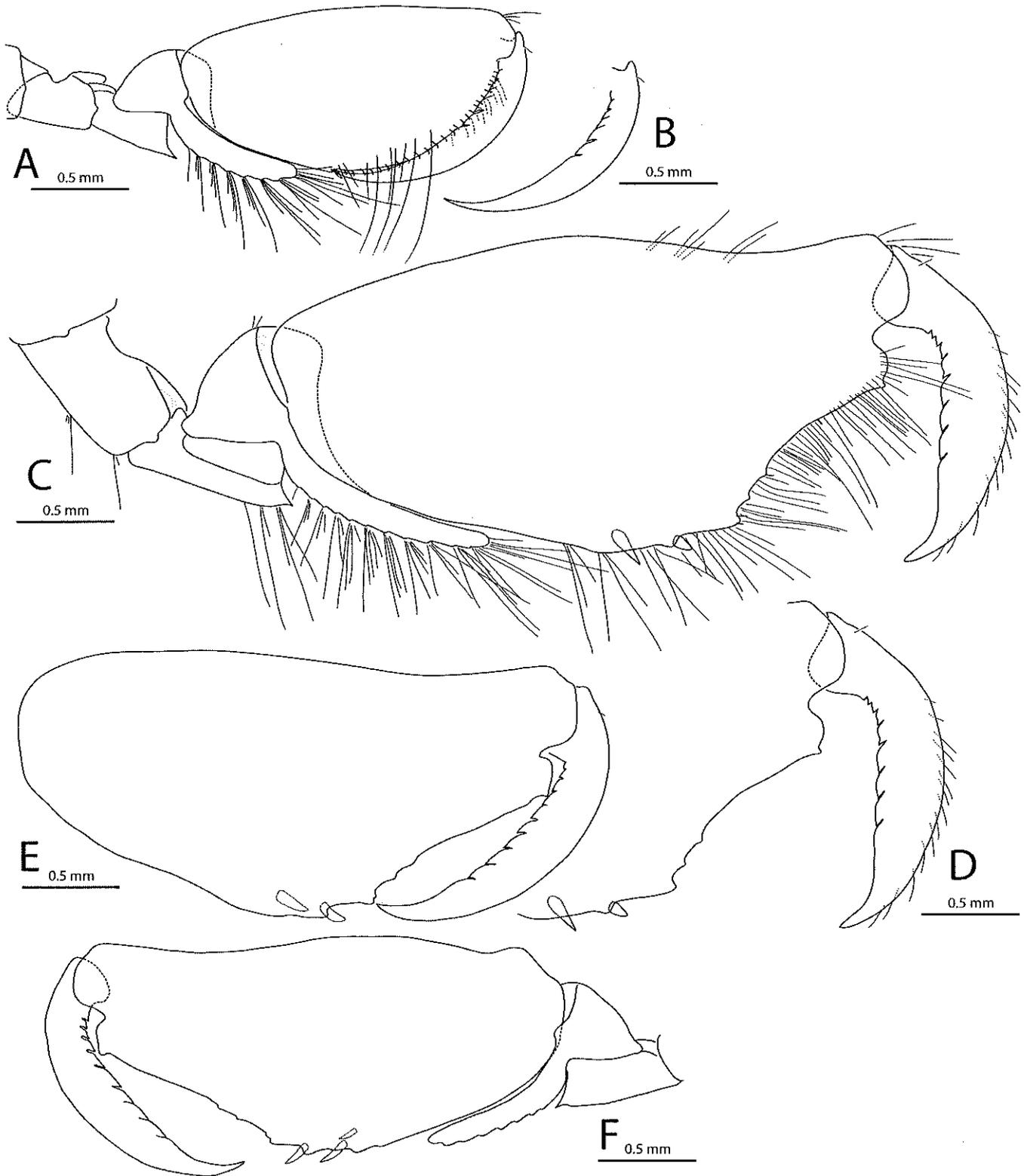


Fig. 112. *Liljeborgia polydeuces* n. sp., males, Elephant Island, A-D, holotype, 16 mm, ANT XXIII-8, sta. 614/2+3+4; E, paratype, 12 mm, ANT XXIII-8, sta. 605-3; F, paratype, 11 mm, ANT XXIII/8, sta. 624-3. A, right Gn1; B, dactylus of right Gn1; C, right Gn2; D, dactylus and palm of right Gn2; E, F, right Gn2 (setae not shown).

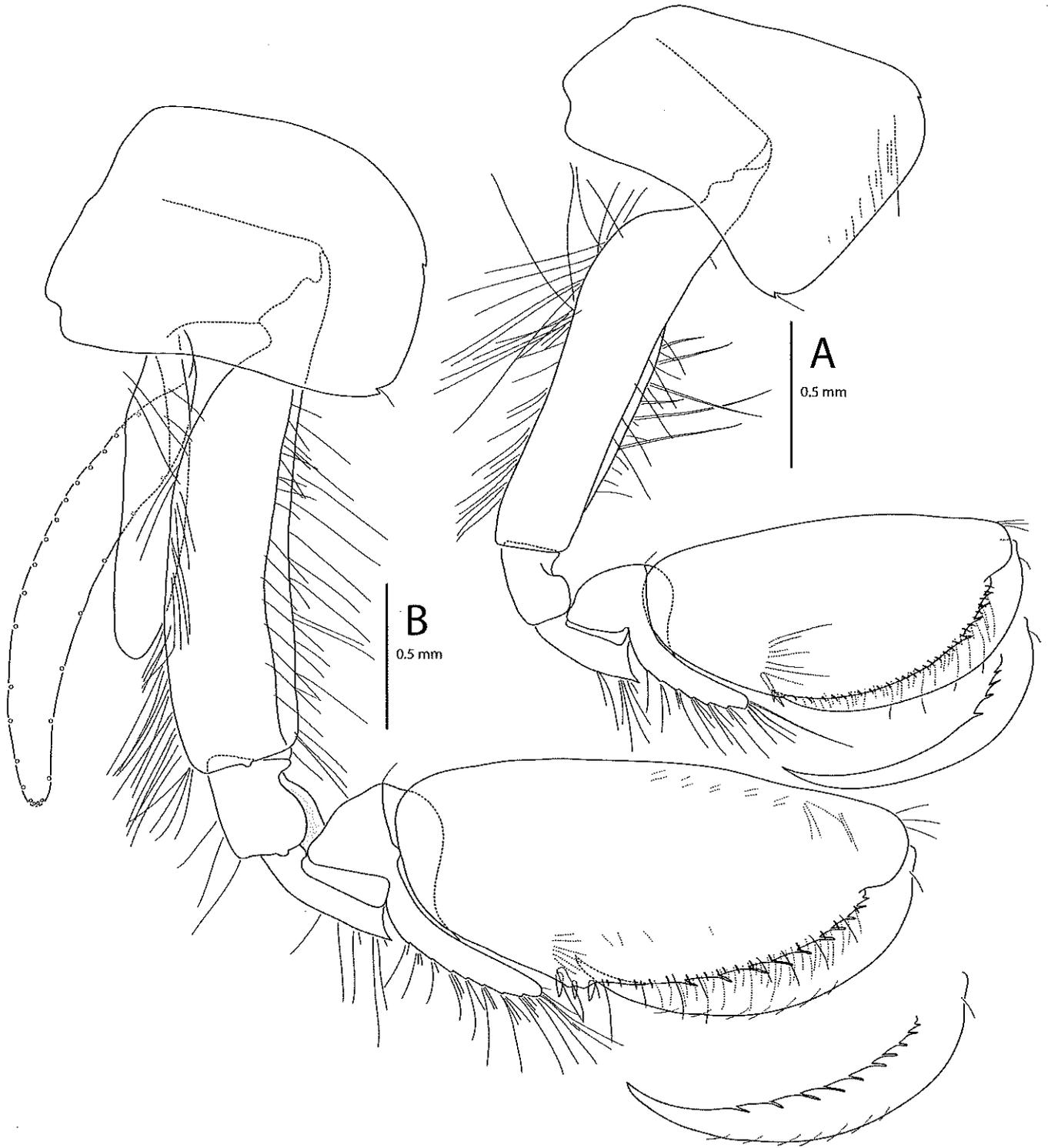


Fig. 113. *Liljeborgia polydeuces* n. sp., female paratype, 13 mm, Elephant Island, ANT XXIII/8, sta. 614/2+3+4. A, right Gn1; B, right Gn2.

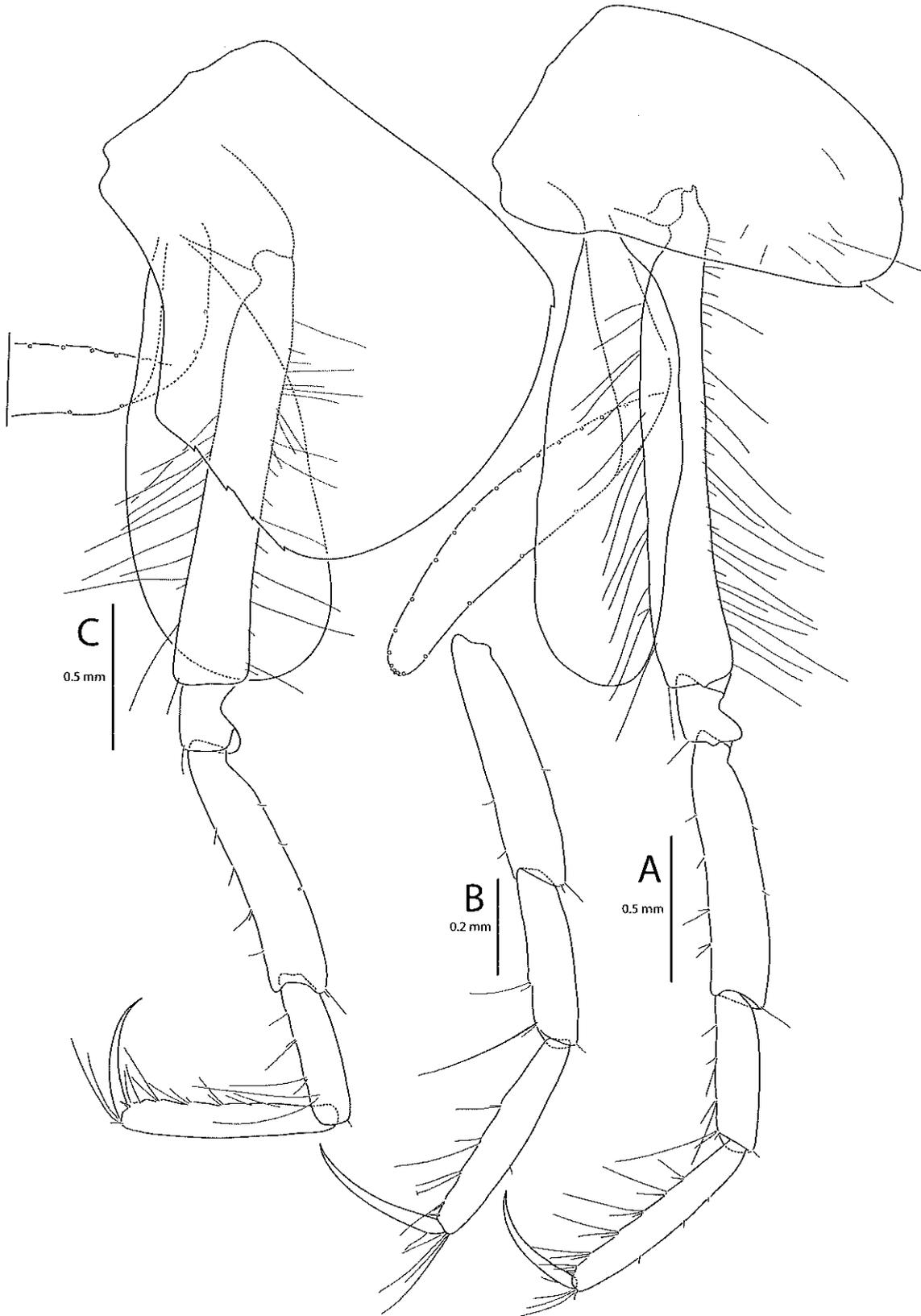


Fig. 114. *Liljeborgia polydeuces* n. sp., paratypes (A, D, adult female, 13 mm; B, immature, 9 mm), Elephant Island, ANT XXIII/8, sta. 614/2+3+4. A, right P3; B, tip of left P3; C, right P4.

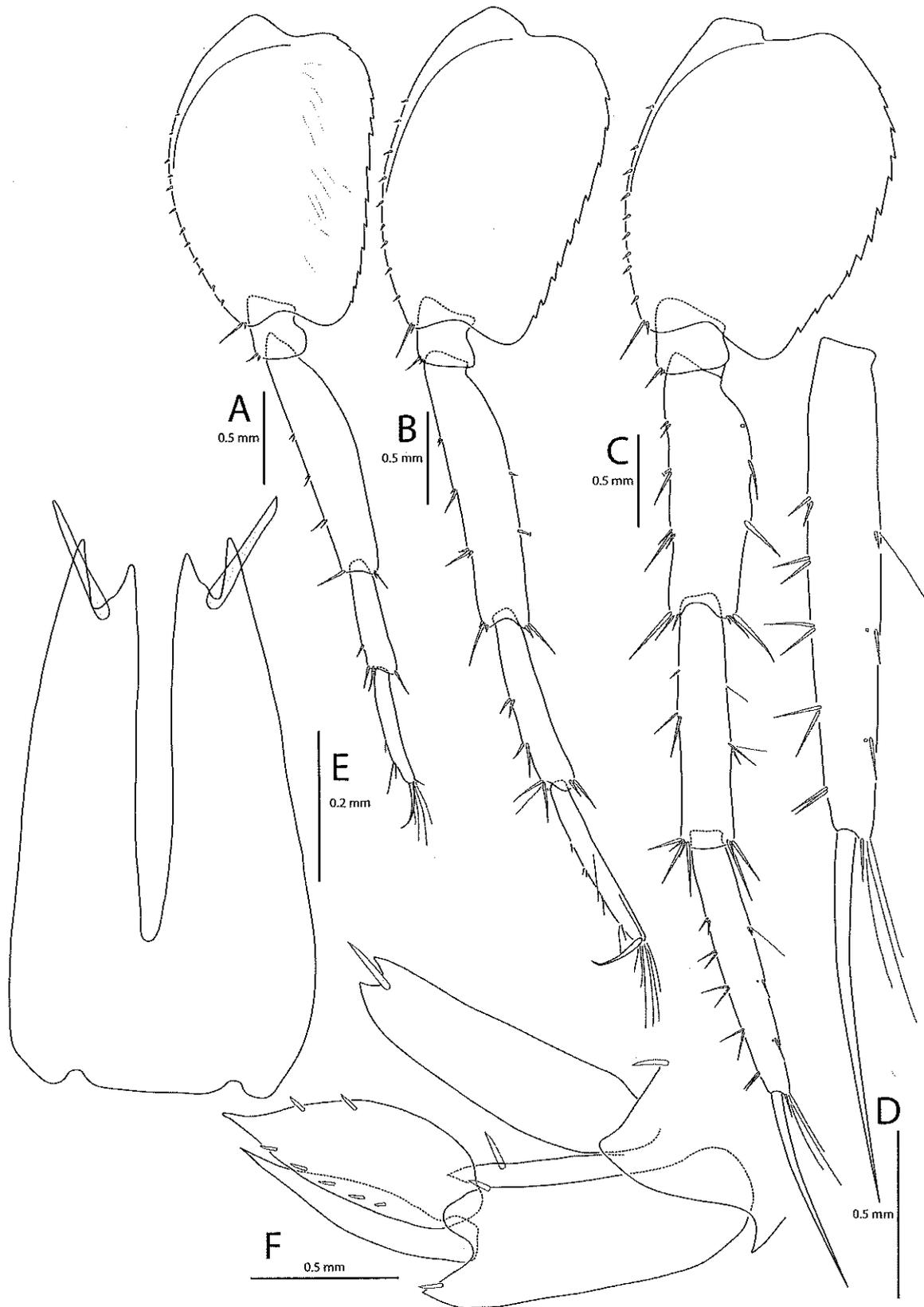


Fig. 115. *Liljeborgia polydeuces* n. sp., Elephant Island, A-E, female paratype, ANT XXIII/8, sta. 614/2+3+4, 13 mm; F, male, male paratype, 11 mm, ANT XXIII-8, sta. 605-3. A, left P5; B, left P6; C, right P7; D, tip of right P7; E, telson; F, tip of urosome with telson and right U3 in lateral view.

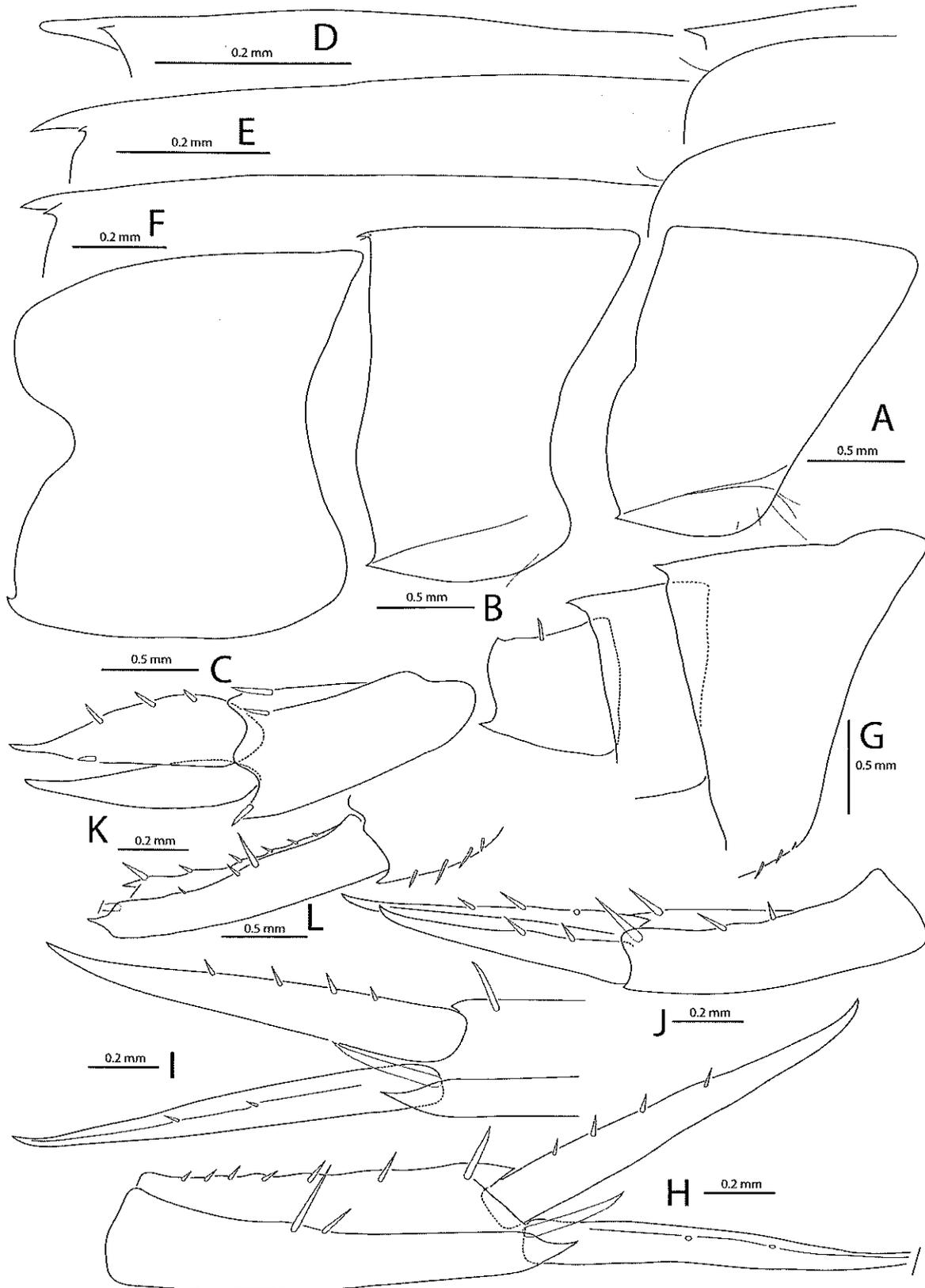


Fig. 116. *Liljeborgia polydeuces* n. sp., Elephant Island, A-C, G-K, female paratype, ANT XXIII/8, sta. 614/2+3+4, 13 mm, E, smaller female paratype, same station; F, male holotype, 16 mm; D, juvenile paratype, 8.5 mm, Ant XXIII-8, sta. 680-5; L, large male, ANT XXIII-8, sta. 614-3+4+5. A, Ep1; B, Ep2; C, Ep3; D-F, dorsal part of pleonites 1 and 2 in lateral view; G, urosome; H, left U1; I, tip of right U1; J, right U2; K, right U3; L, right U1.

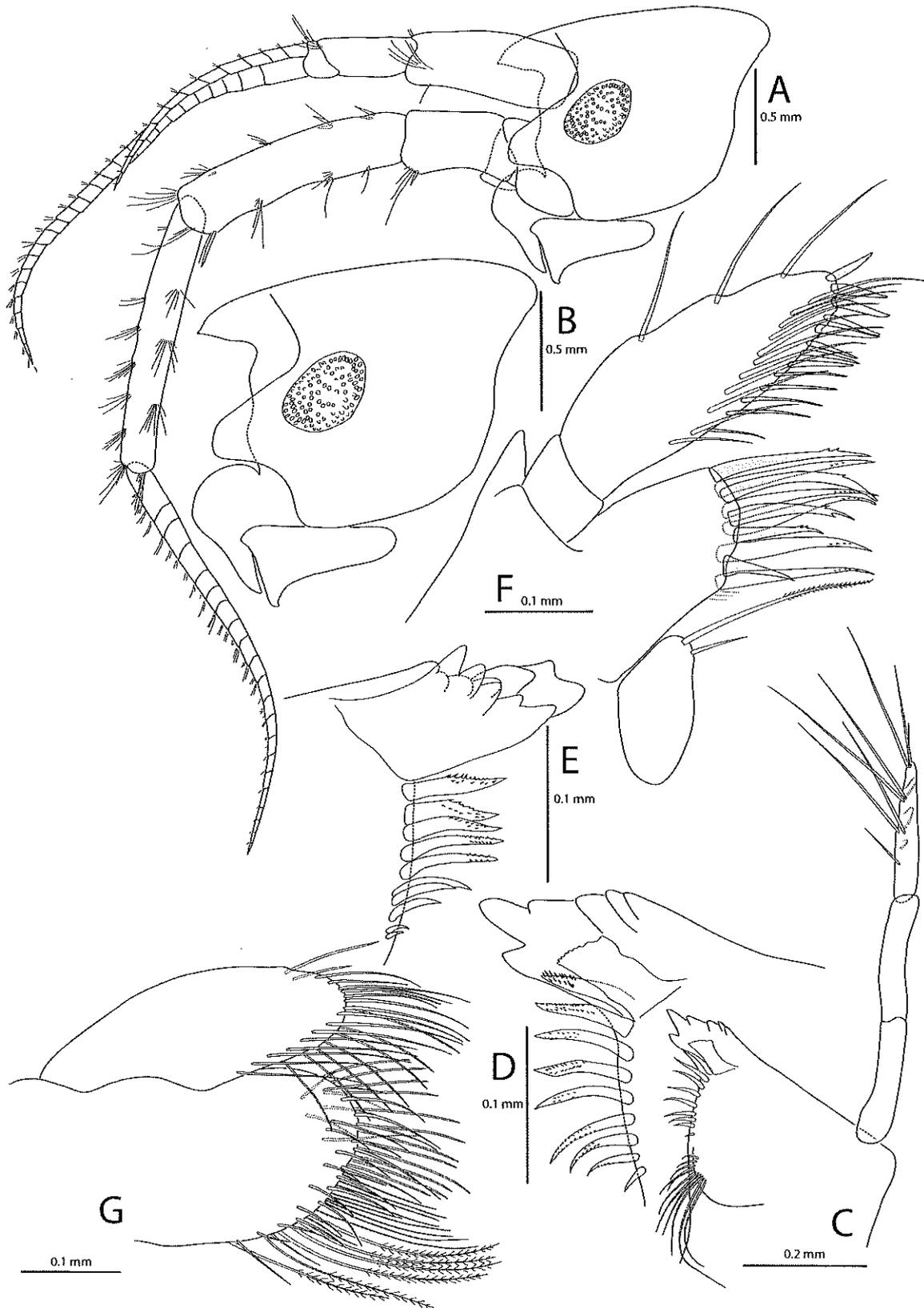


Fig. 117. *Liljeborgia prionota* n. sp., Estrecho de Magallanes, Bahía Posesión, Cimar Fiordo 3, sta. 2, female, holotype. A, head and antennae; B, head and epistome; C, right Md; D, tip of right Md; E, tip of left Md; F, right Mx1; G, right Mx2.

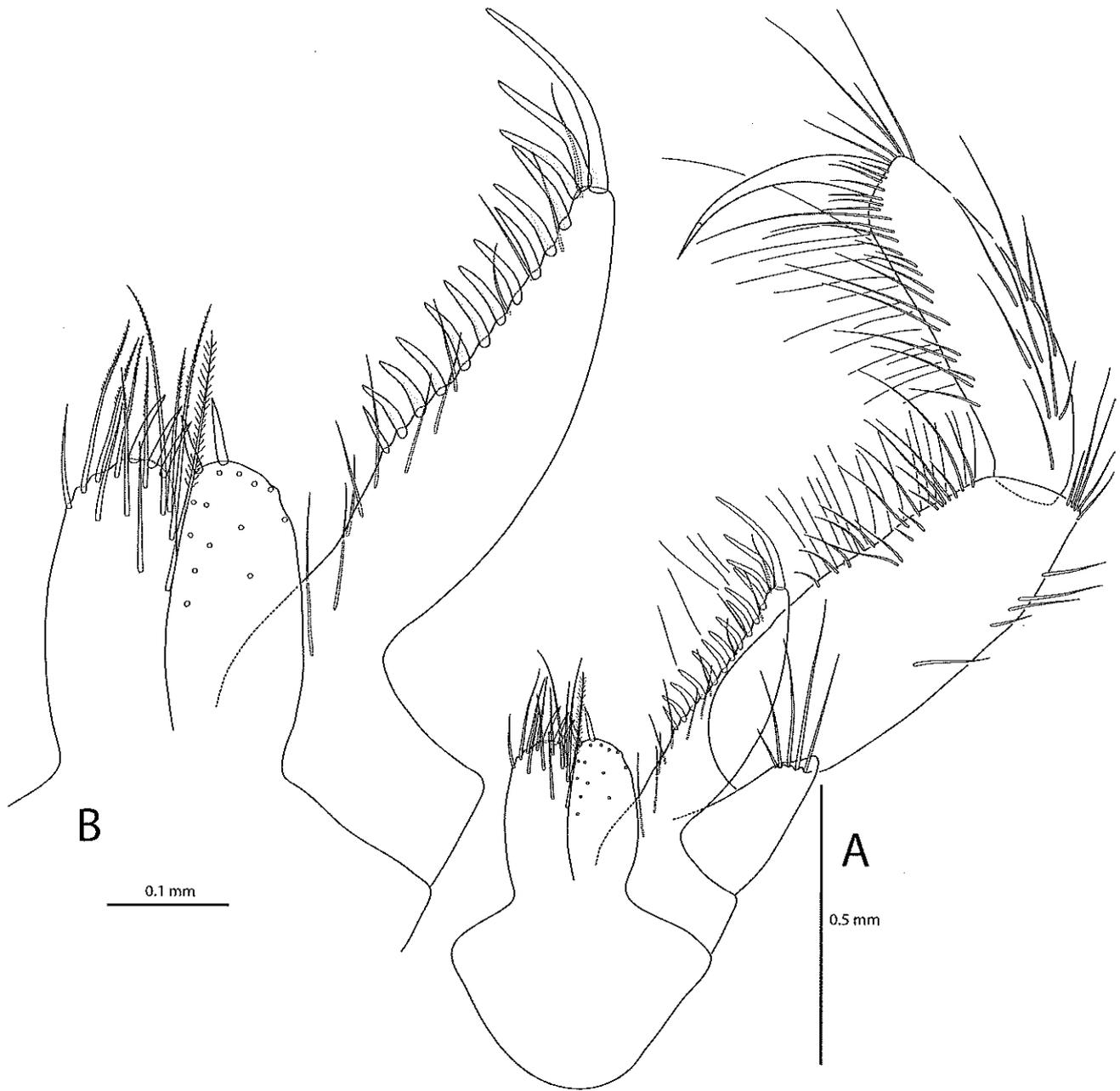


Fig. 118. *Liljeborgia prionota* n. sp., Estrecho de Magallanes, Bahía Posesión, Cimar Fiordo 3, sta. 2, female, holotype. A, Mxp; B, Mxp plates (setae of right inner plate indicated by their point of insertion).

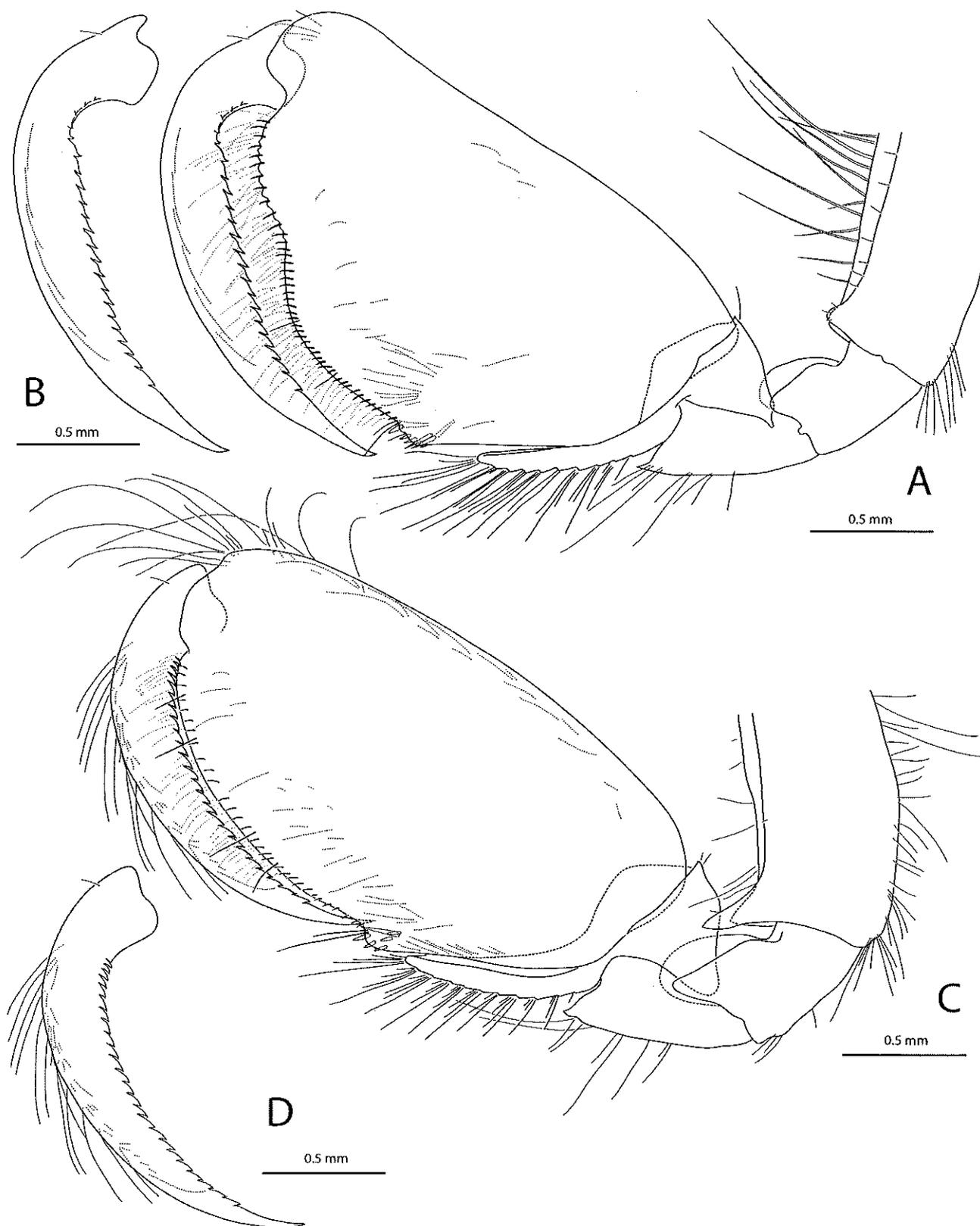


Fig. 119. *Liljeborgia prionota* n. sp., Estrecho de Magallanes, Bahía Posesión, Cimar Fiordo 3, sta. 3, male, paratype. A, left Gn1; B, dactylus of left Gn1; C, left Gn2; D, dactylus of left Gn2.

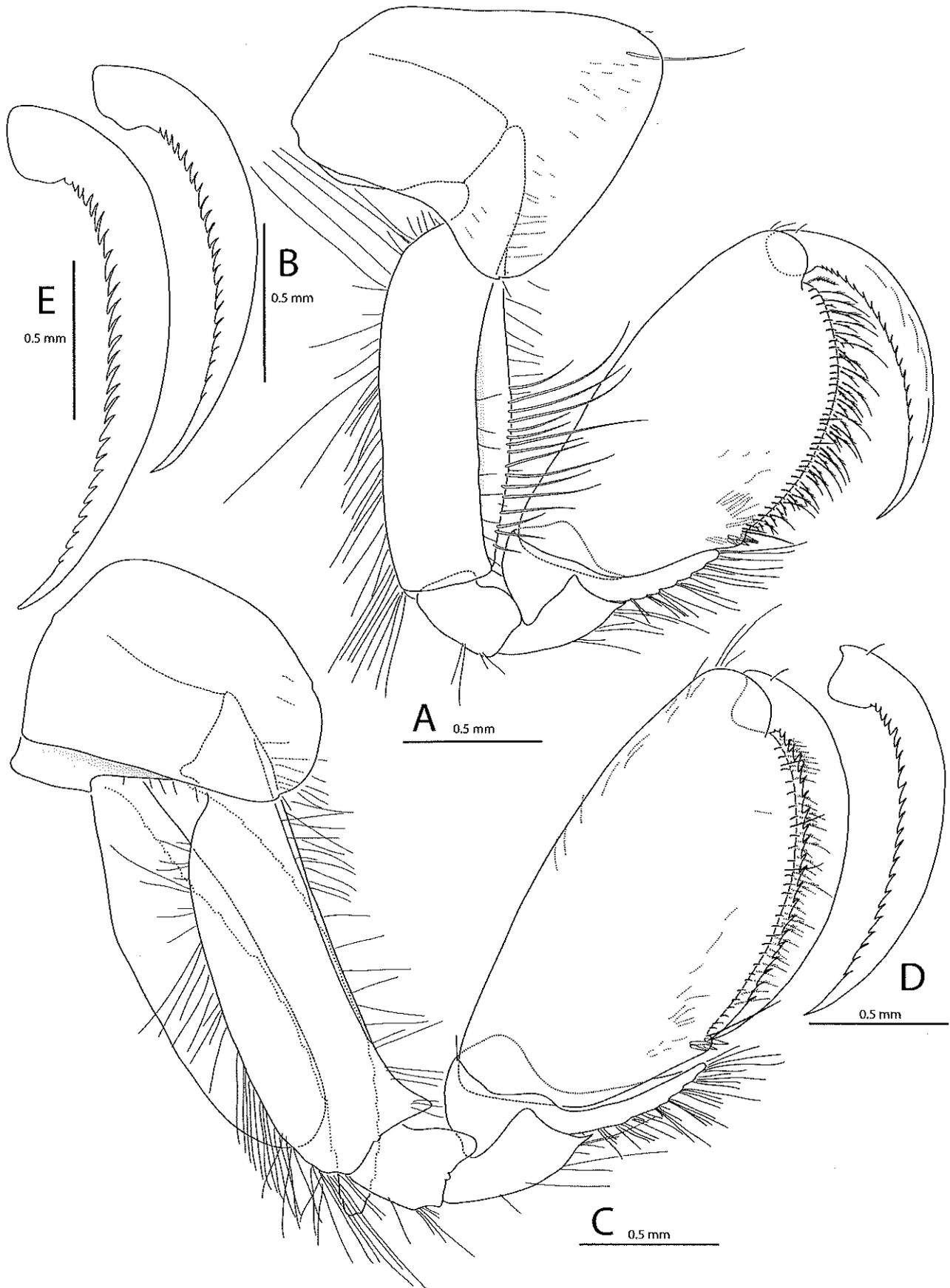


Fig. 120. *Liljeborgia prionota* n. sp., Estrecho de Magallanes, Bahía Posesión, Cimar Fiordo 3, sta. 2, females, A, C, D, holotype; B, E, paratype. A, right Gn1; B, dactylus of right Gn1; C, Gn2; D, E, dactylus of right Gn2.

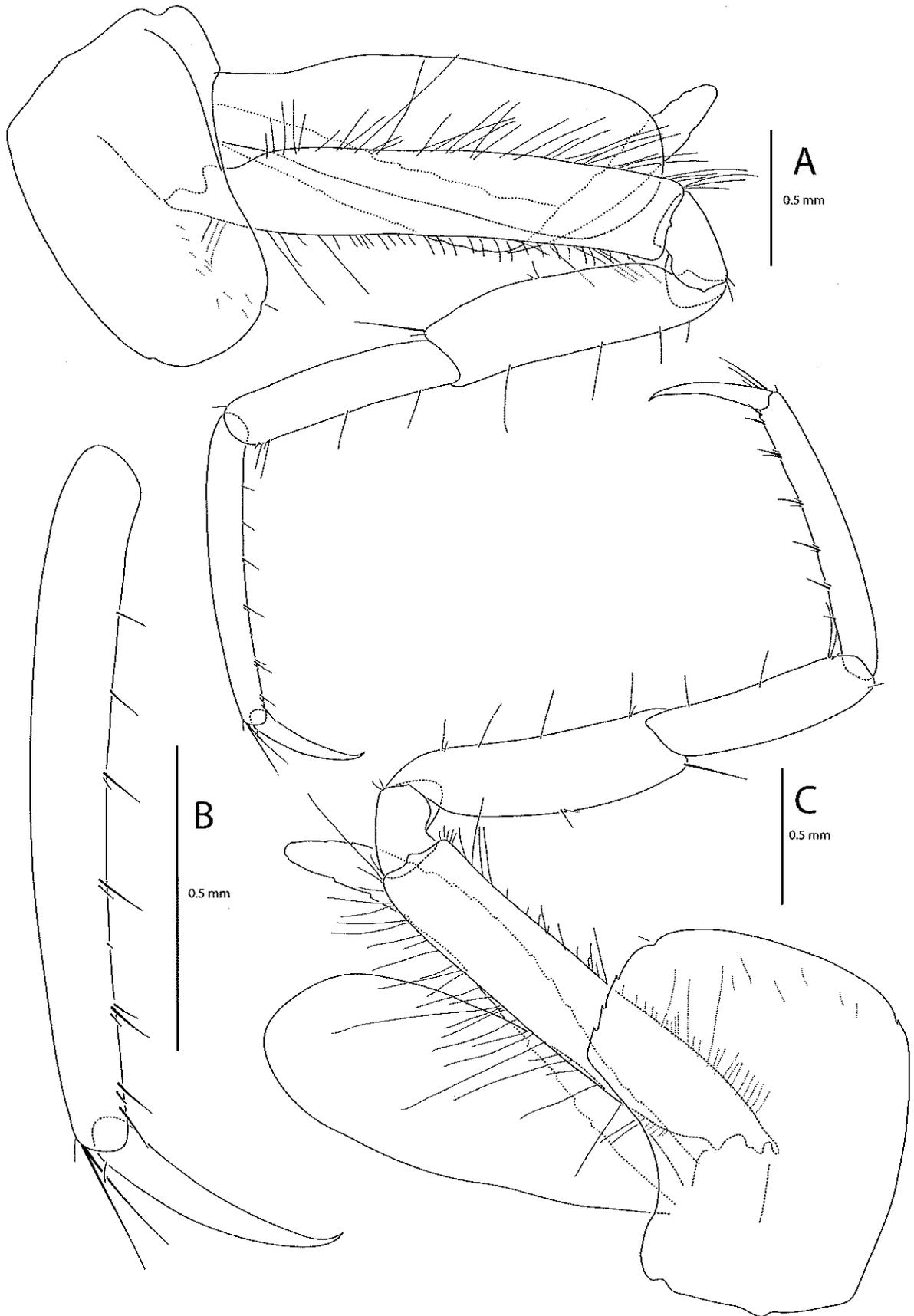


Fig. 121. *Liljeborgia prionota* n. sp., Estrecho de Magallanes, Bahía Posesión, Cimar Fiordo 3, sta. 2, female, holotype. A, left P3; B, tip of left P3; C, left P4.

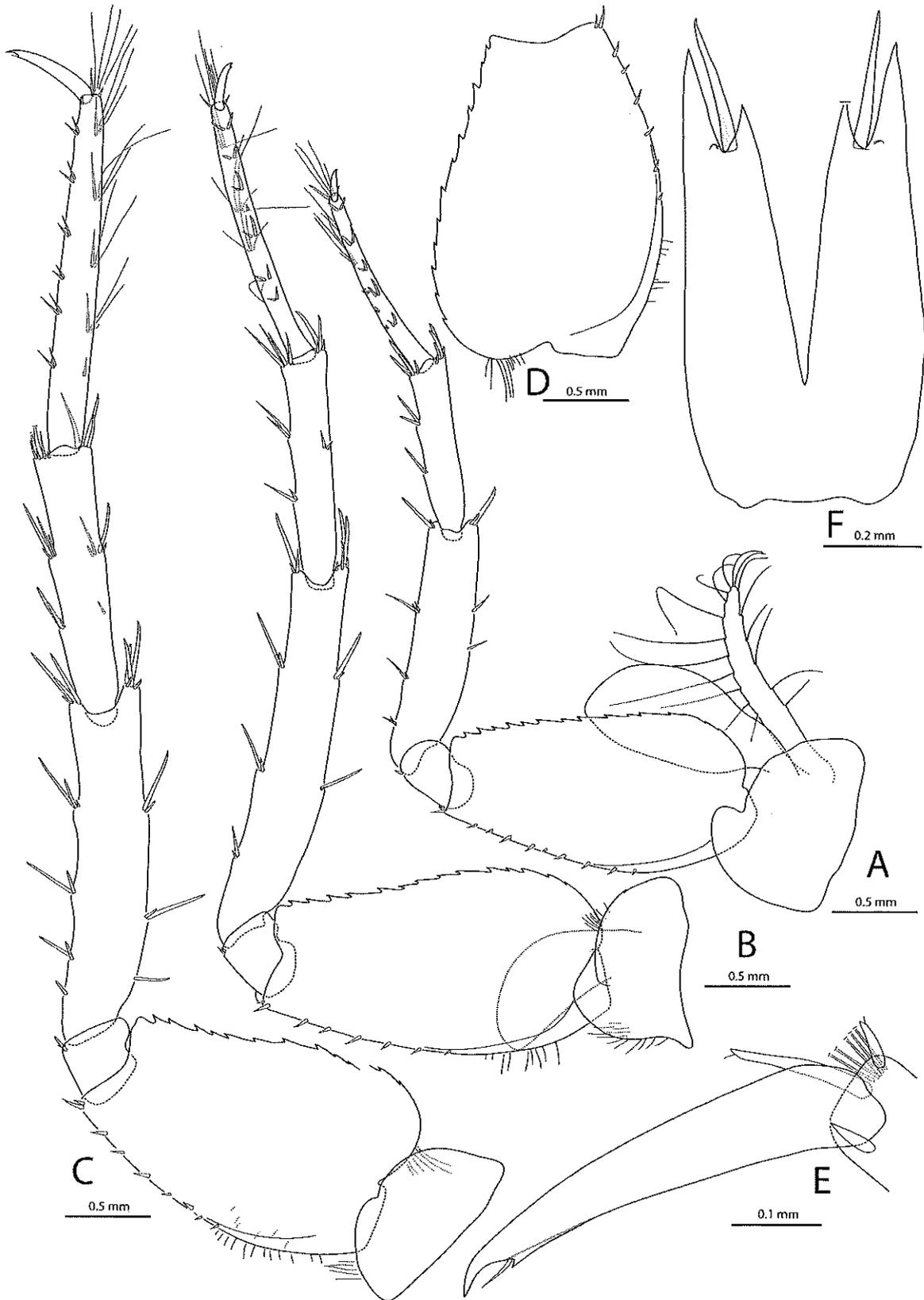


Fig. 122. *Liljeborgia prionota* n. sp., Estrecho de Magallanes, Bahía Posesión, Cimar Fiordo 3, sta. 2, female, holotype. A, left P5; B, left P6; C, left P7; D, basis of right P7; E, dactylus of left P7; F, telson.

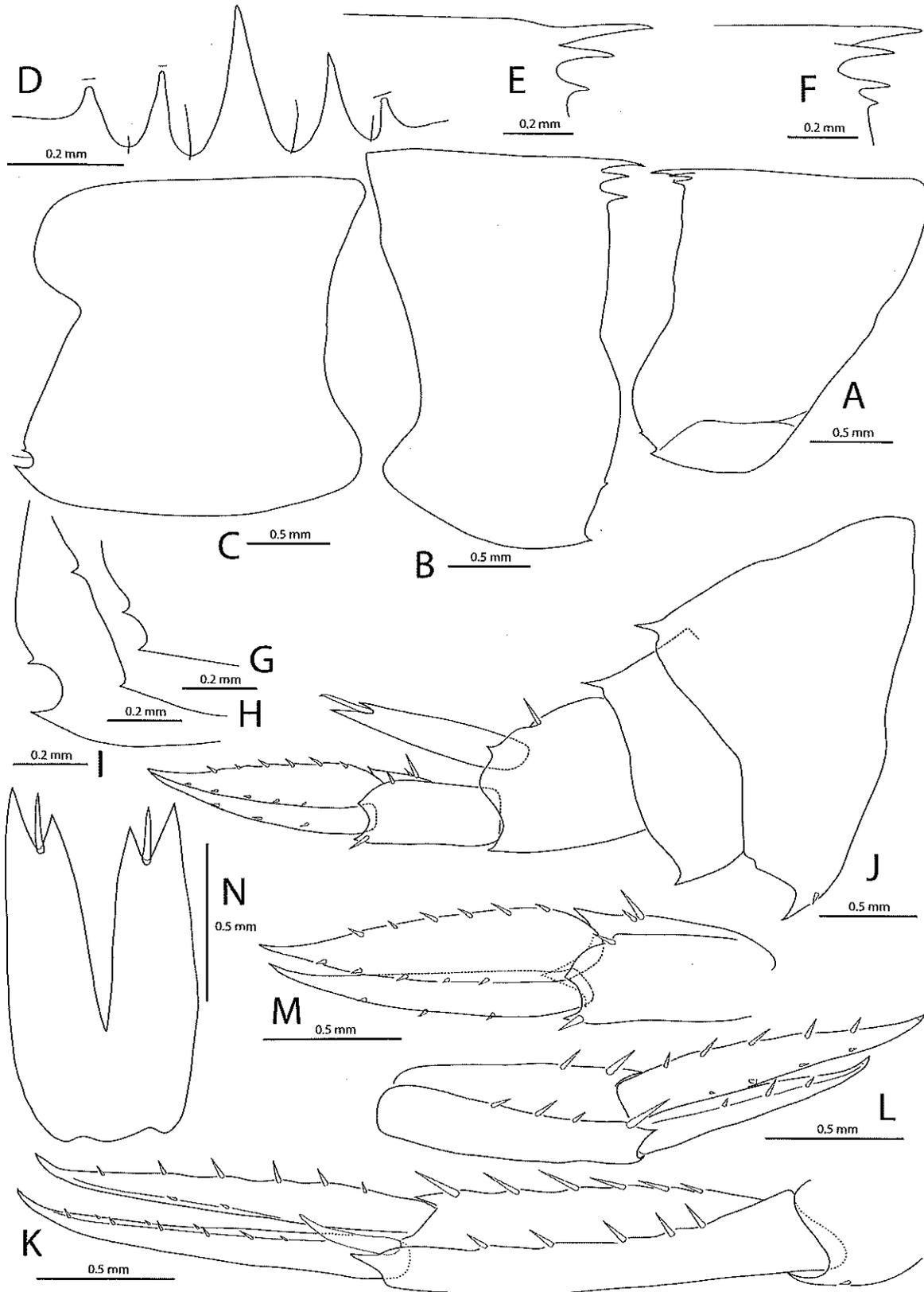


Fig. 123. *Liljeborgia prionota* n. sp., Estrecho de Magallanes, Bahía Posesión, A-M, Cimar Fiordo 3, sta. 2; N, male, Cimar Fiordo 3, sta. 3; A-D, J-M, female, holotype; E-I, female, paratype; N, male, paratype. A, left Ep1; B, right Ep2; C, left Ep3; D, posterodorsal border of pleonite 1 in dorsal view; E, posterodorsal area of pleonite 1 in lateral view; F, posterodorsal area of pleonite 2 in lateral view; G, posteroventral corner of Ep1; H, posteroventral corner of Ep2; I, posteroventral corner of Ep3; J, urosome; K, right U1; L, left U2; M, right U3; N, telson (spines unusually short).

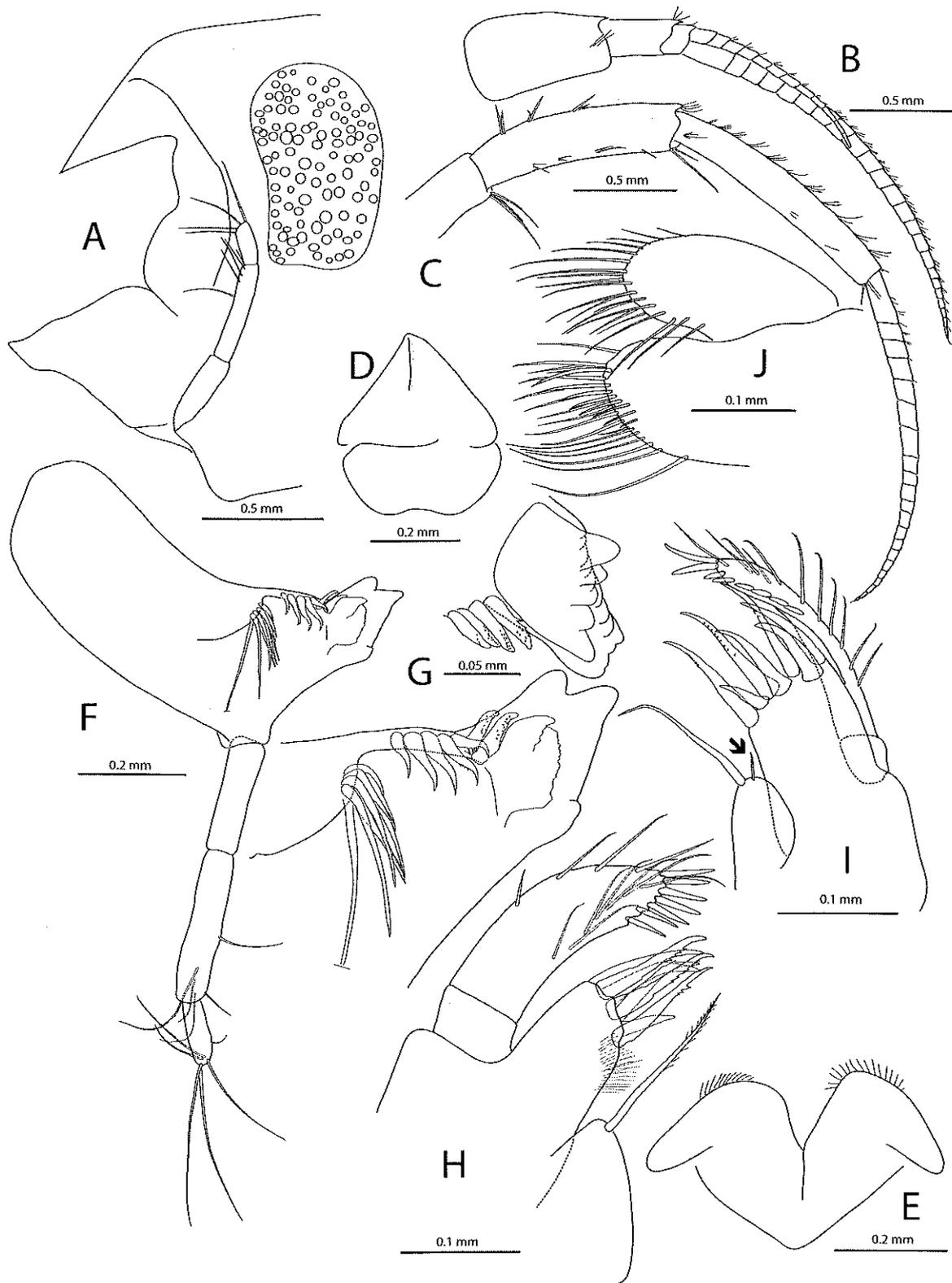


Fig. 124. *Liljeborgia pseudomacronyx* BELLAN-SANTINI & LEDOYER, 1987, Marion Island. B, C, D, holotype, allegedly male, MD08 sta. 13 CP85; H, J, paratype 1, presumably male, MD08 sta. BB168; A, E, F, G, I, paratype 2, female, MD 08 sta. BB168. A, anterior part of head with epistome and left Md in lateral view; B, right A1; C, right A2; D, complex epistome + upper lip in frontal view; E, lower lip; F, right Md; G, tip of left and right Md; H, left Mx1 in medial view; I, left Mx1 in outer view, J, left Mx2.

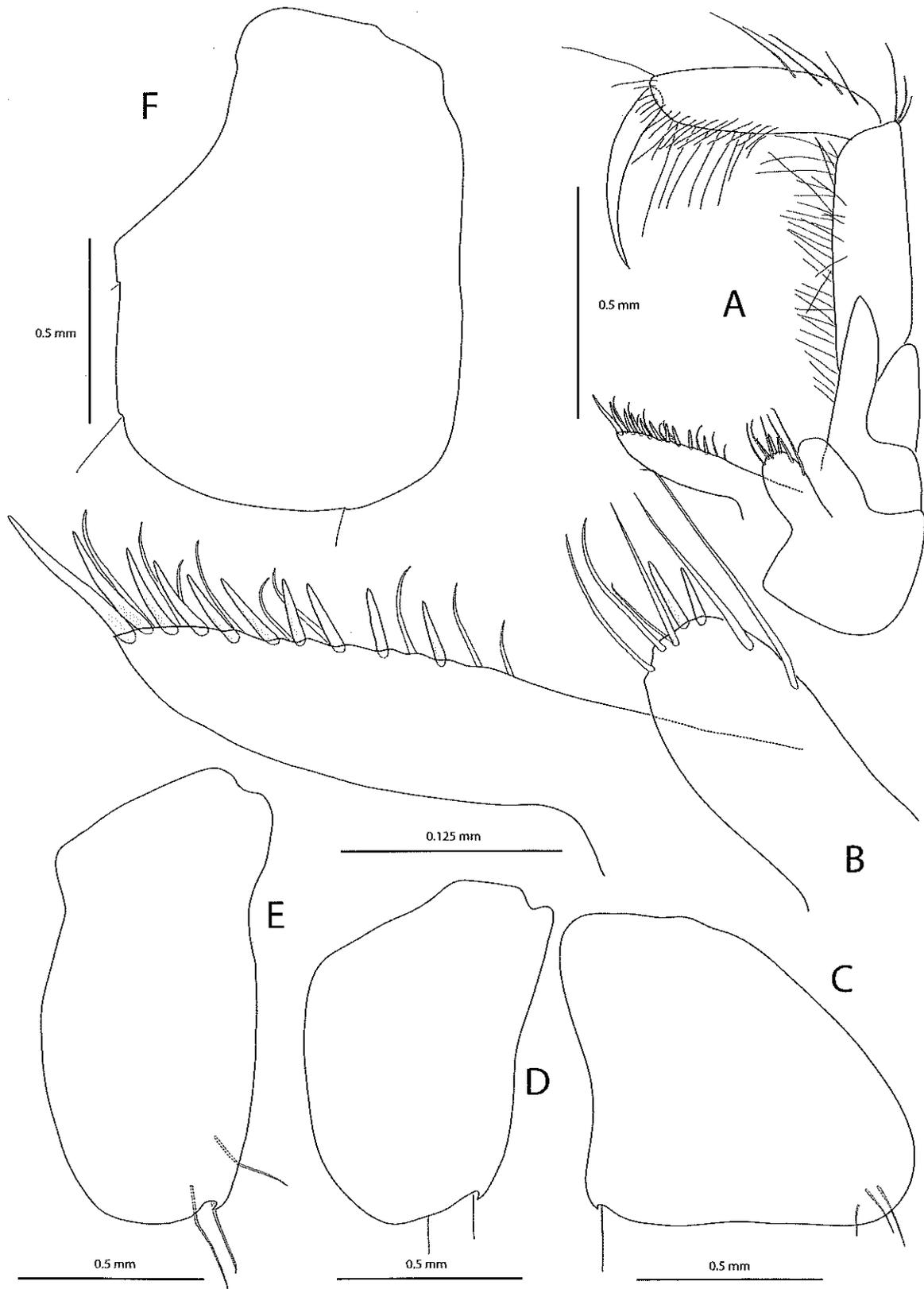


Fig. 125. *Liljeborgia pseudomacronyx* BELLAN-SANTINI & LEDOYER, 1987, presumably males, Marion Island, A, B, D, holotype, MD08 sta. 13 CP85, C, E, F; paratype 1, MD 08 sta. BB168. A, Mxp (spines and setae not shown on right plates); B, left plates of Mxp; C, right coxa I; D, left coxa 2; E, left coxa 3; F, right coxa 4.

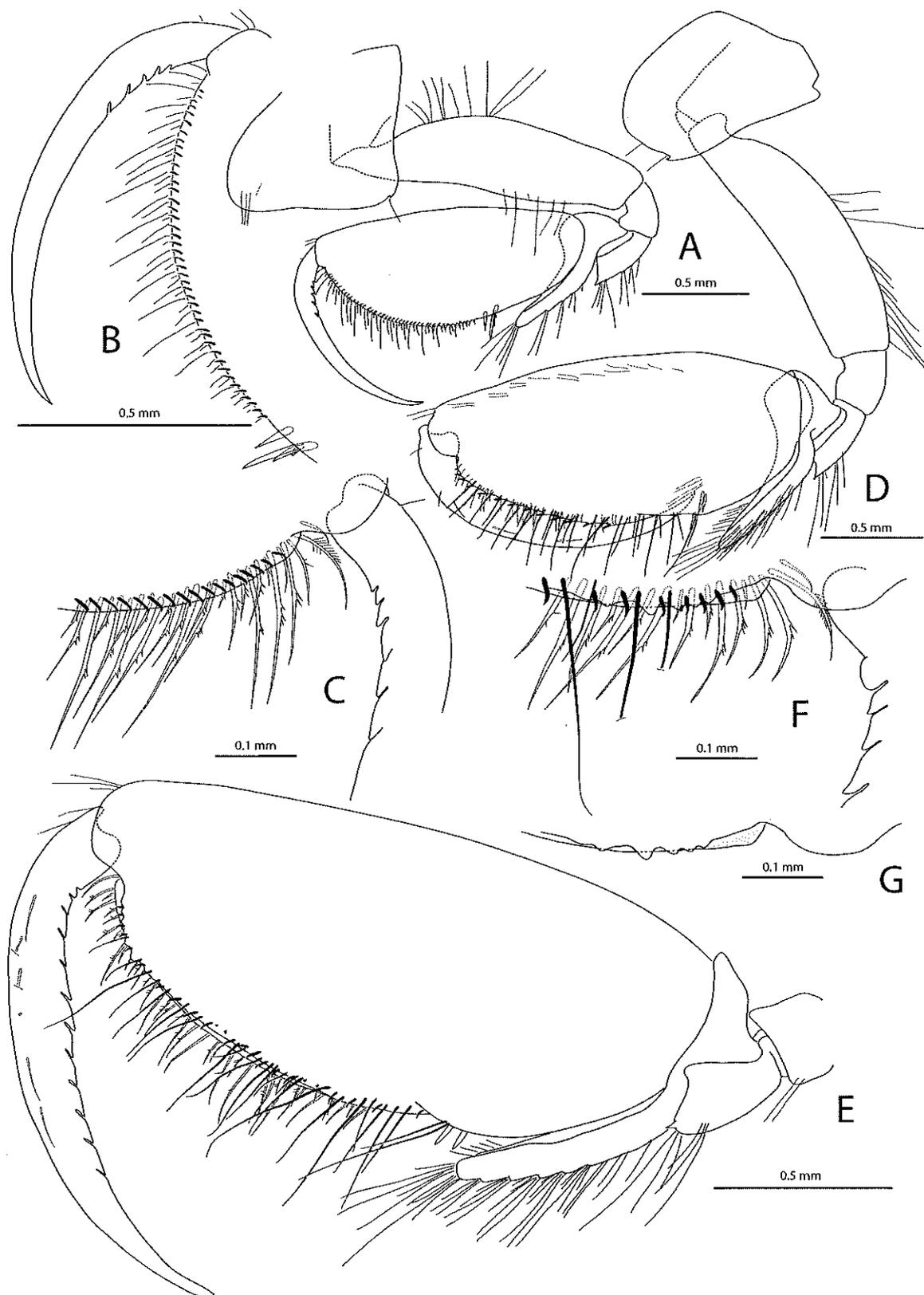


Fig. 126. *Liljeborgia pseudomacronyx* BELLAN-SANTINI & LEDOYER, 1987, presumably males, Marion Island. A, B, D, holotype, MD08 sta. 13 CP85; C, E, F, G, paratype 1, MD 08 sta. BB168. A, left Gn1; B, chela of left Gn1; C, chela of right Gn1 (detail); D, left Gn2; E, chela of left Gn2; F, chela of right Gn2 (detail); G, borders of palm (anterior part) of chela of right Gn2.

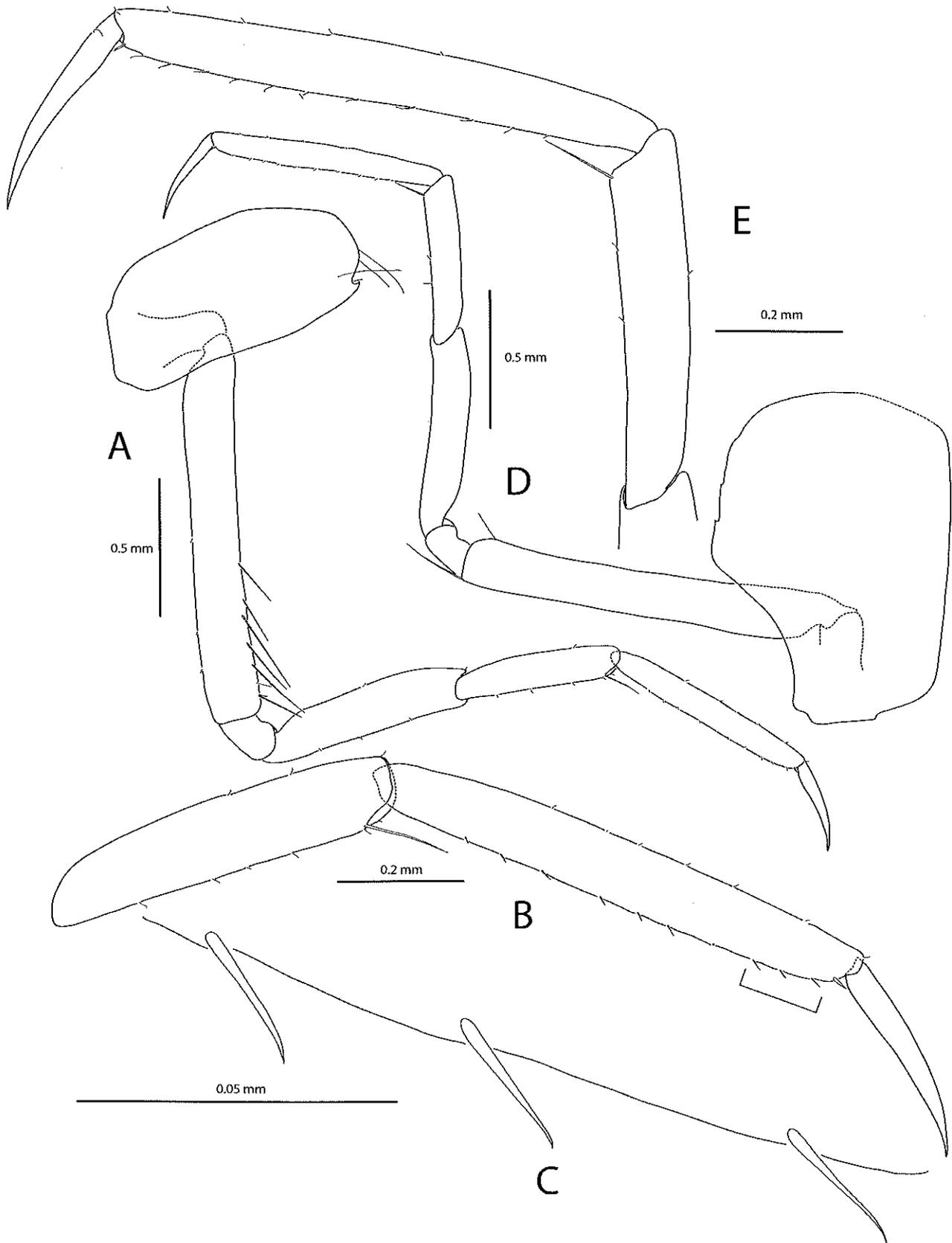


Fig. 127. *Liljeborgia pseudomacronyx* BELLAN-SANTINI & LEDOYER, 1987, presumably males, Marion Island. A, B, C, paratype 1, MD 08 sta. BB168; D, E, holotype, MD08 sta. 13 CP85, A, right P3; B, tip of right P3; C, posterior spines of propodus of right P3; D, left P4; E, tip of right P4.

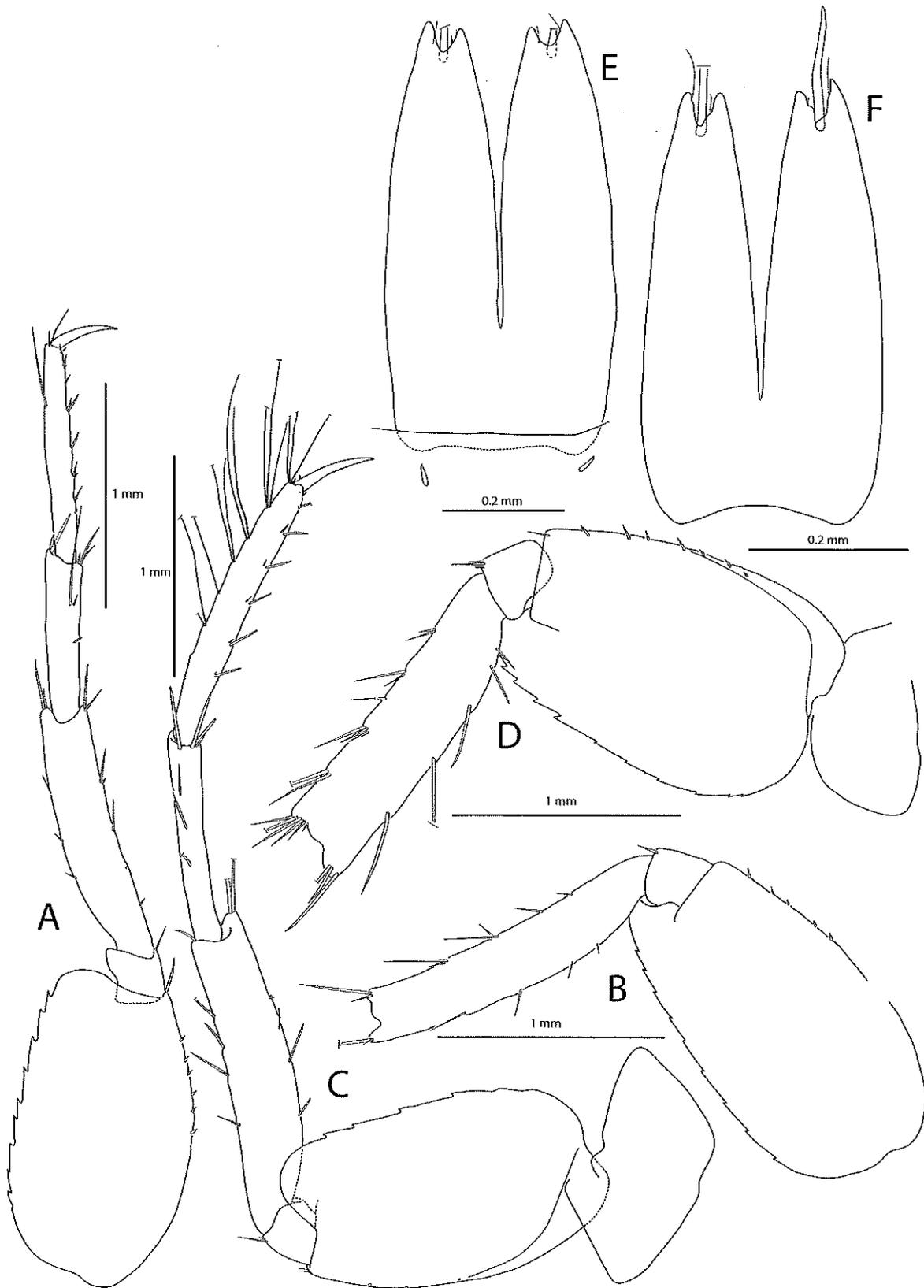


Fig. 128. *Liljeborgia pseudomacronyx* BELLAN-SANTINI & LEDOYER, 1987, Marion Island. A, B, E, holotype, allegedly male, MD08 sta. 13 CP85; C, paratype 1, presumably male (no oostegites), MD08 sta. BB168; F, paratype 2, female, MD08 sta. BB168 A, left P5; B, left P6 (incomplete); C, right P6; D, left P7 (incomplete); E, telson and posterodorsal spines of urosomite 3; F, telson.

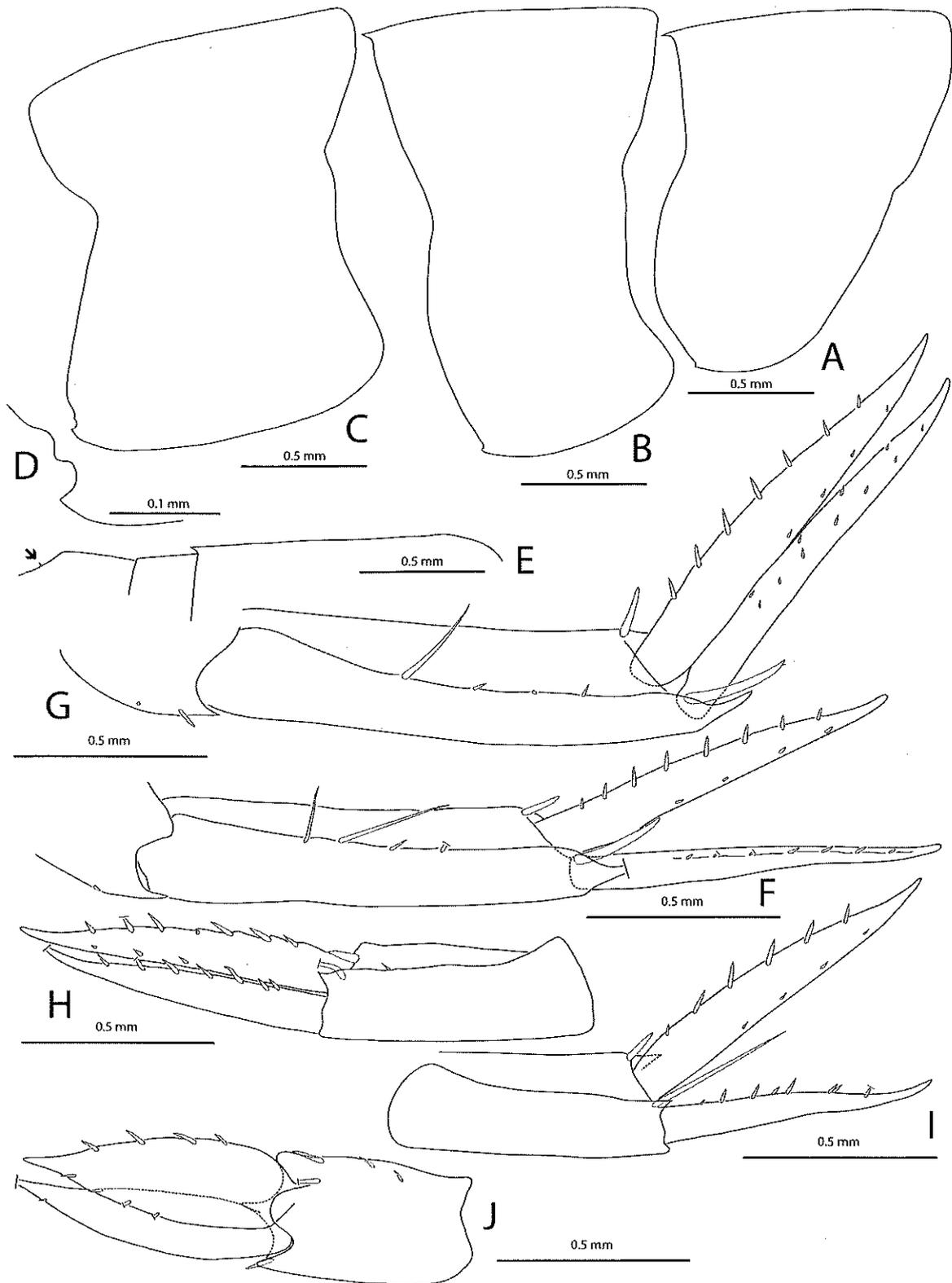


Fig. 129. *Liljeborgia pseudomacronyx* BELLAN-SANTINI & LEDOYER, 1987, presumably males, Marion Island. A, B, C, D, E, G, I, paratype 1, MD08 sta. BB168; F, H, J, holotype, MD08 sta. 13 CP85. A, pleonite 1; B, pleonite 2; C, pleonite 3; D, posteroventral corner of pleonite 3; E, dorsal part of urosome in lateral view; F, G, left U1; H, right U2; I, left U2; J, right U3.

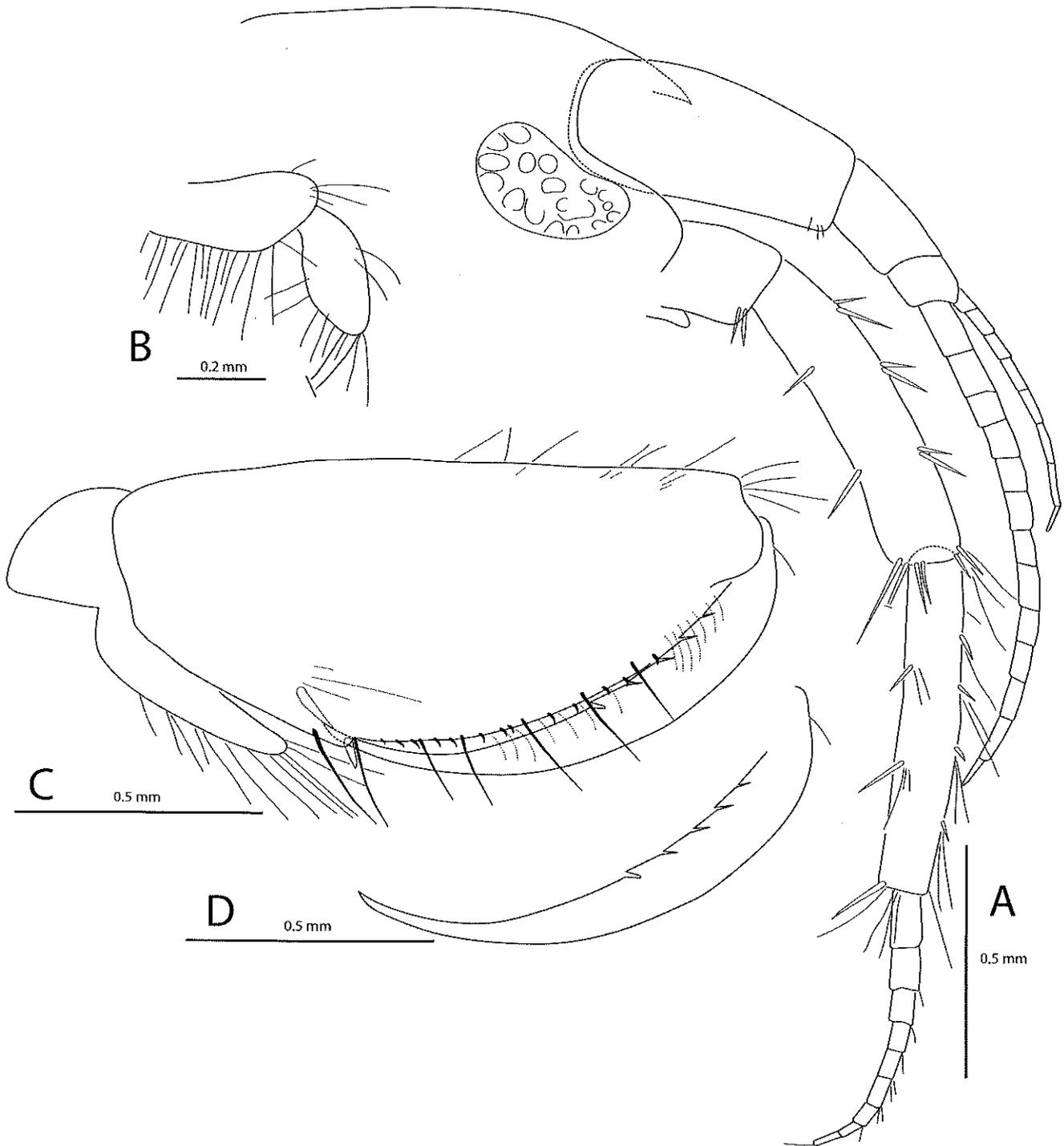


Fig. 130. *Liljeborgia quadridentata* SCHELLENBERG, 1931, female paralectotype. South Georgia, Swedish South Polar Exp., sta. 24. A, head with antennae; B, palp of right Mxp; C, right Gn2; D, dactylus of right Gn2.

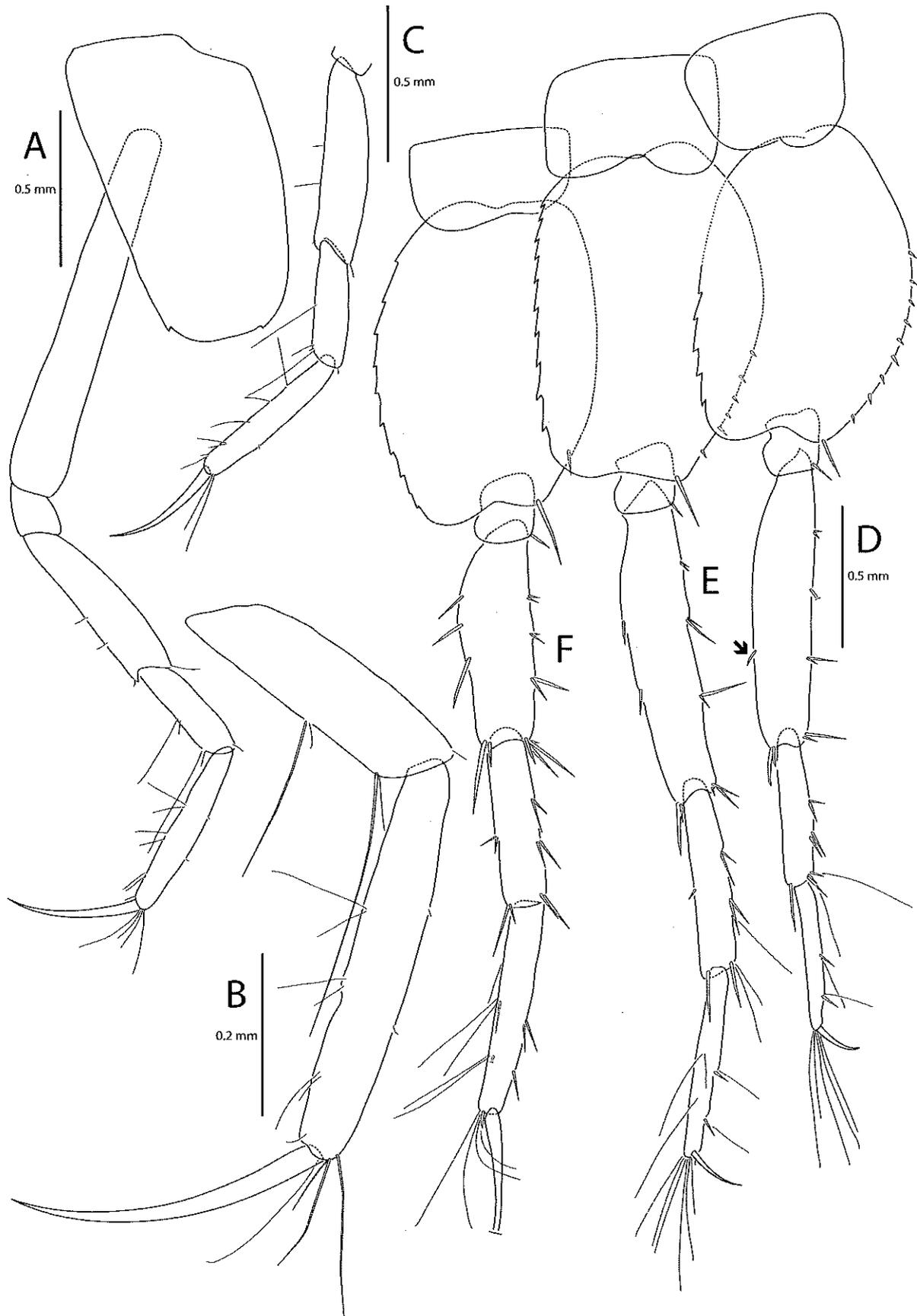


Fig. 131. *Liljeborgia quadridentata* SCHELLENBERG, 1931, female paralectotype. South Georgia, Swedish South Polar Exp., sta. 24. A, right P3; B, tip of right P3; C, right P4; D, right P5; E, right P6; F, right P7.

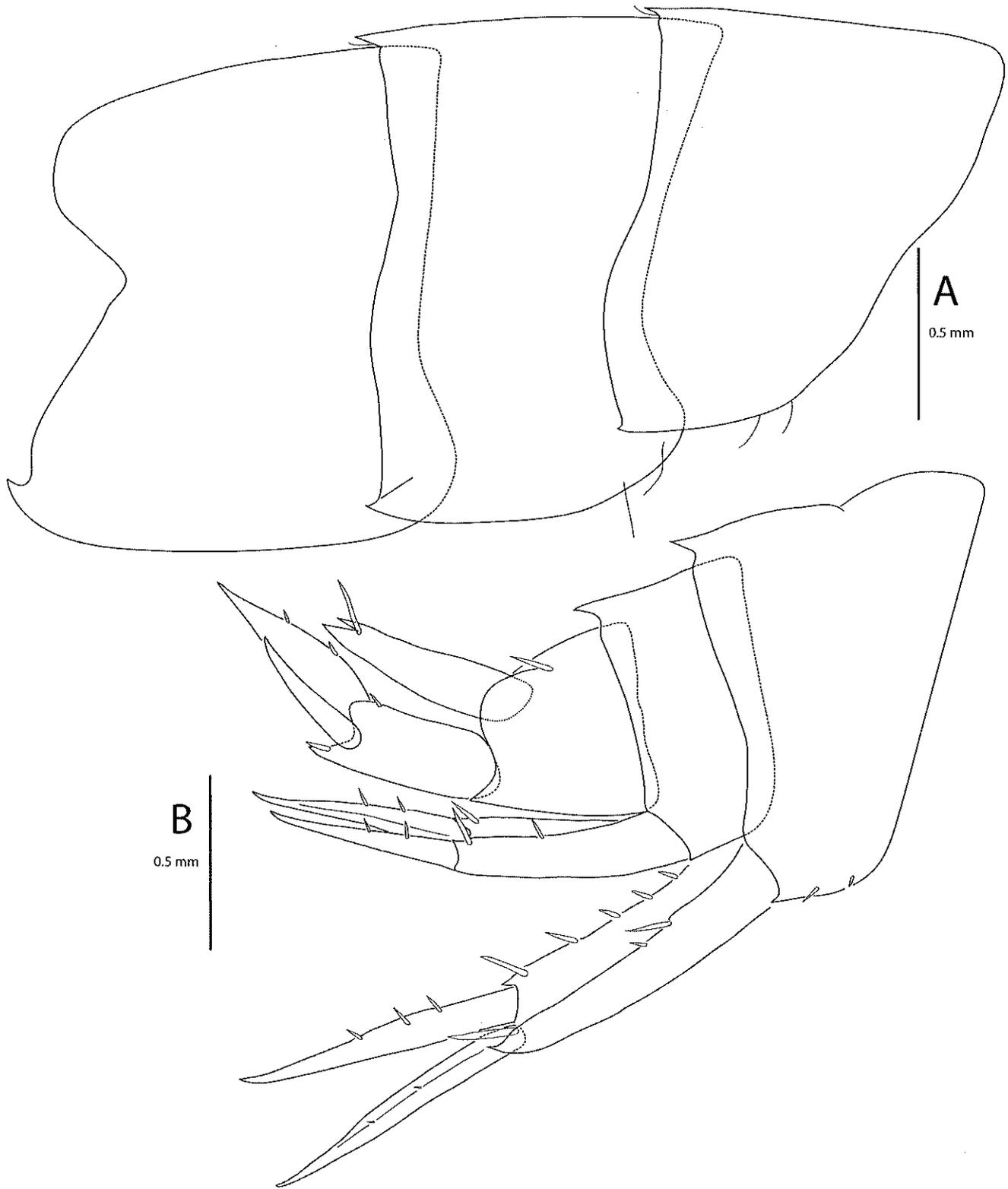


Fig. 132. *Liljeborgia quadridentata* SCHELLENBERG, 1931, female paralectotype. South Georgia, Swedish South Polar Exp., sta. 24. A, pleonites 1-3; B, urosome.

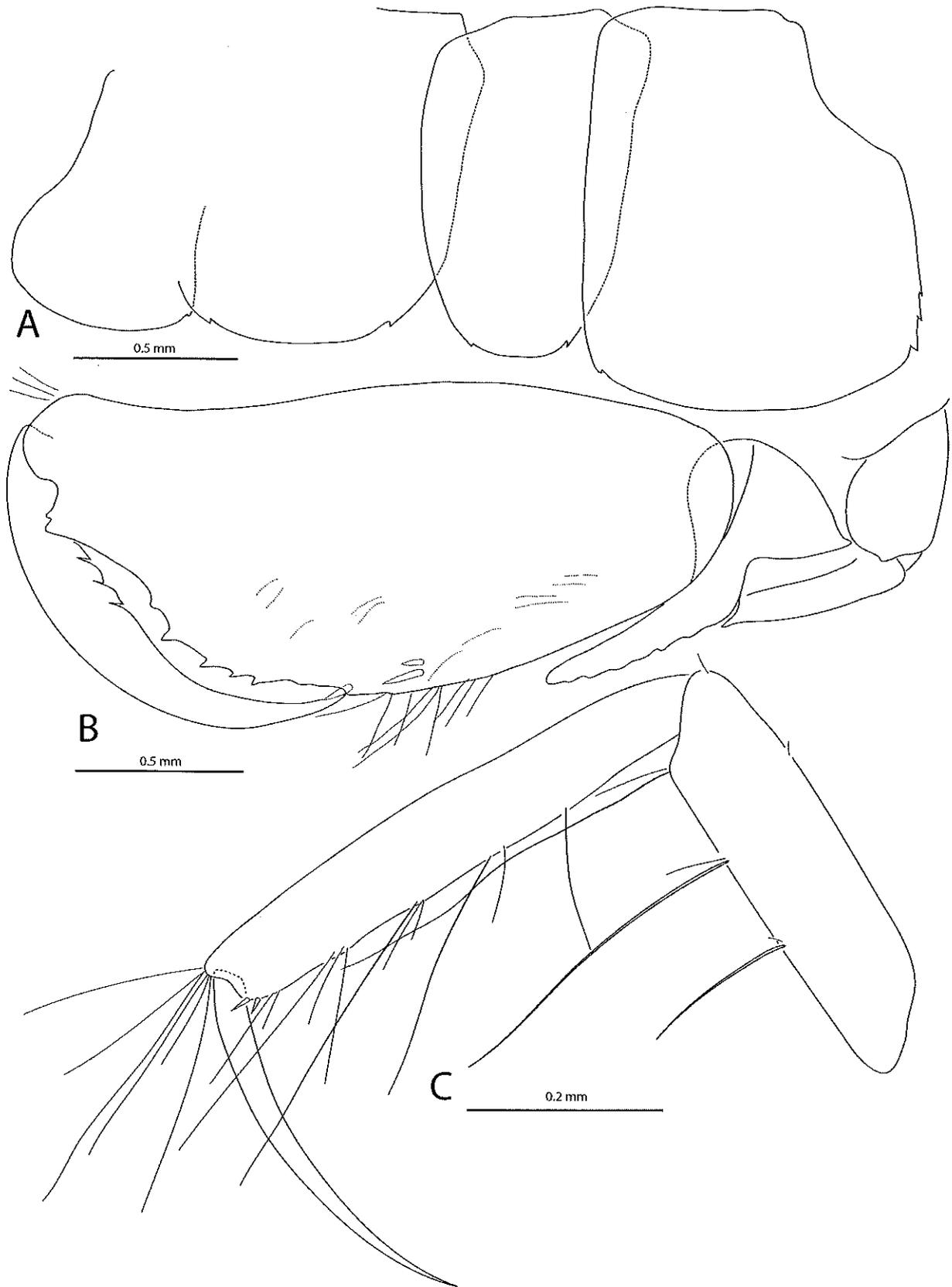


Fig. 133. *Liljeborgia quadridentata* SCHELLENBERG, 1931, male, lectotype. South Georgia, Swedish South Polar Exp., sta. 30. A, left coxae 1-4; B, left Gn2; C, left P3.

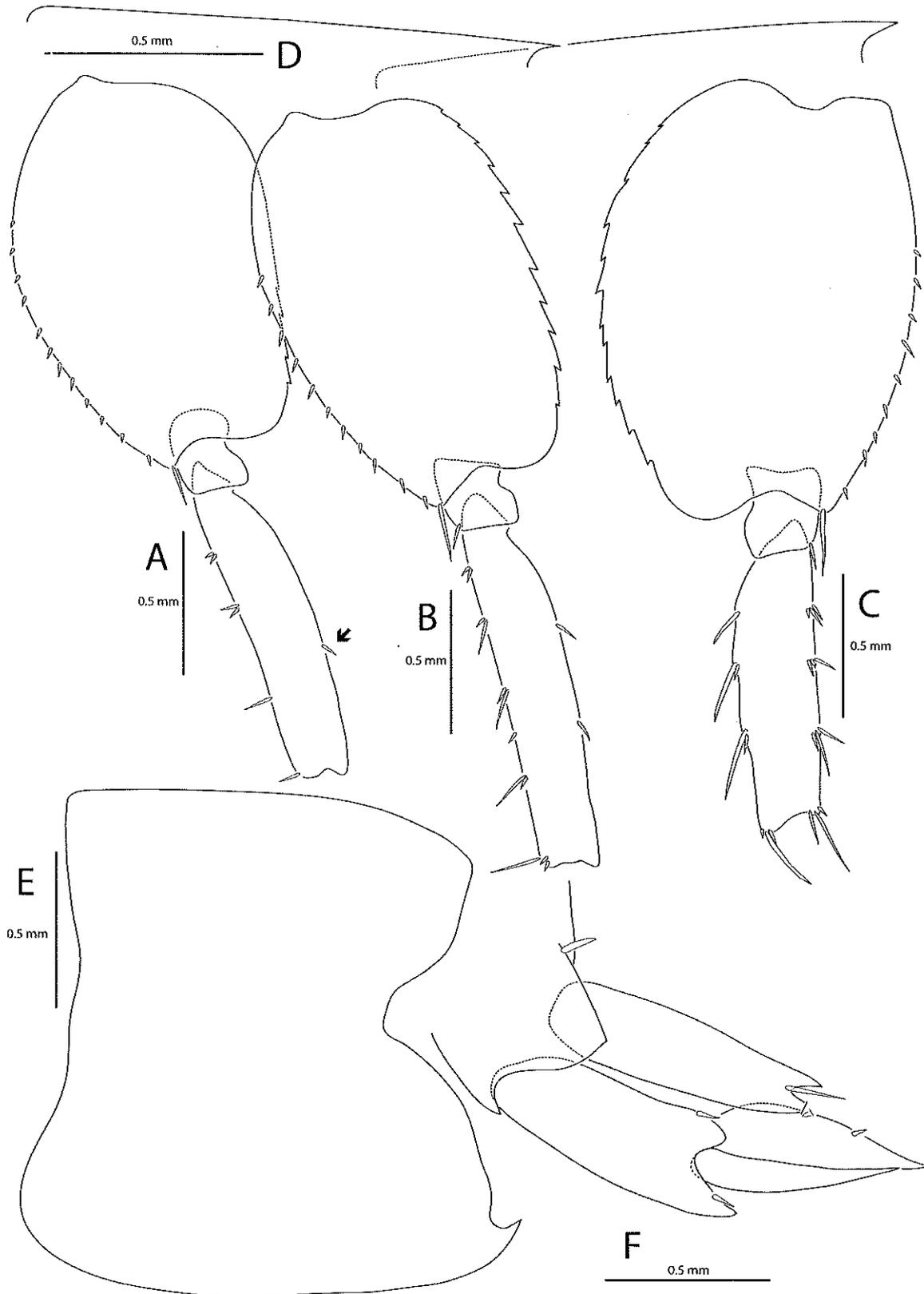


Fig. 134. *Liljeborgia quadridentata* SCHELLENBERG, 1931, male, lectotype. South Georgia, Swedish South Polar Exp., sta. 30. A, left P5; B, left P6; C, right P7; D, dorsal border of pleonites 1 and 2 in lateral view; E, Ep3; F, urosomite 3 with telson and left U3.

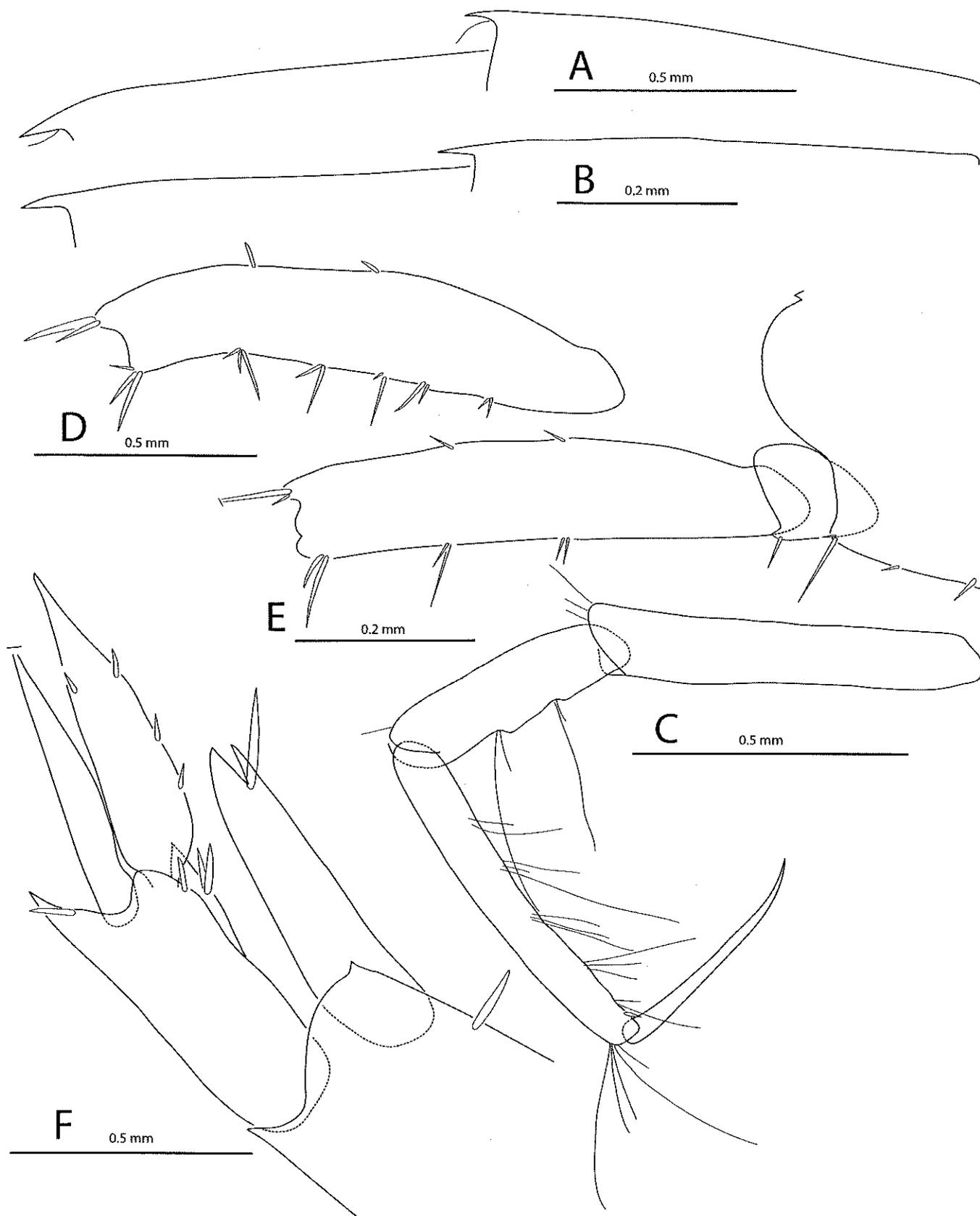


Fig. 135. *Liljeborgia quadridentata* SCHELLENBERG, 1931, paralectotypes, South Georgia, Swedish South Polar Exp. A, C, D, F, mature female, sta. 34; B, E, juvenile, sta 124. A, B, dorsal border of pleonites 1 and 2 in lateral view; C, tip of left P4; D, merus of right P5; E, merus, ischium and tip of basis of right P5; F, urosomite 3 with telson and right U3.

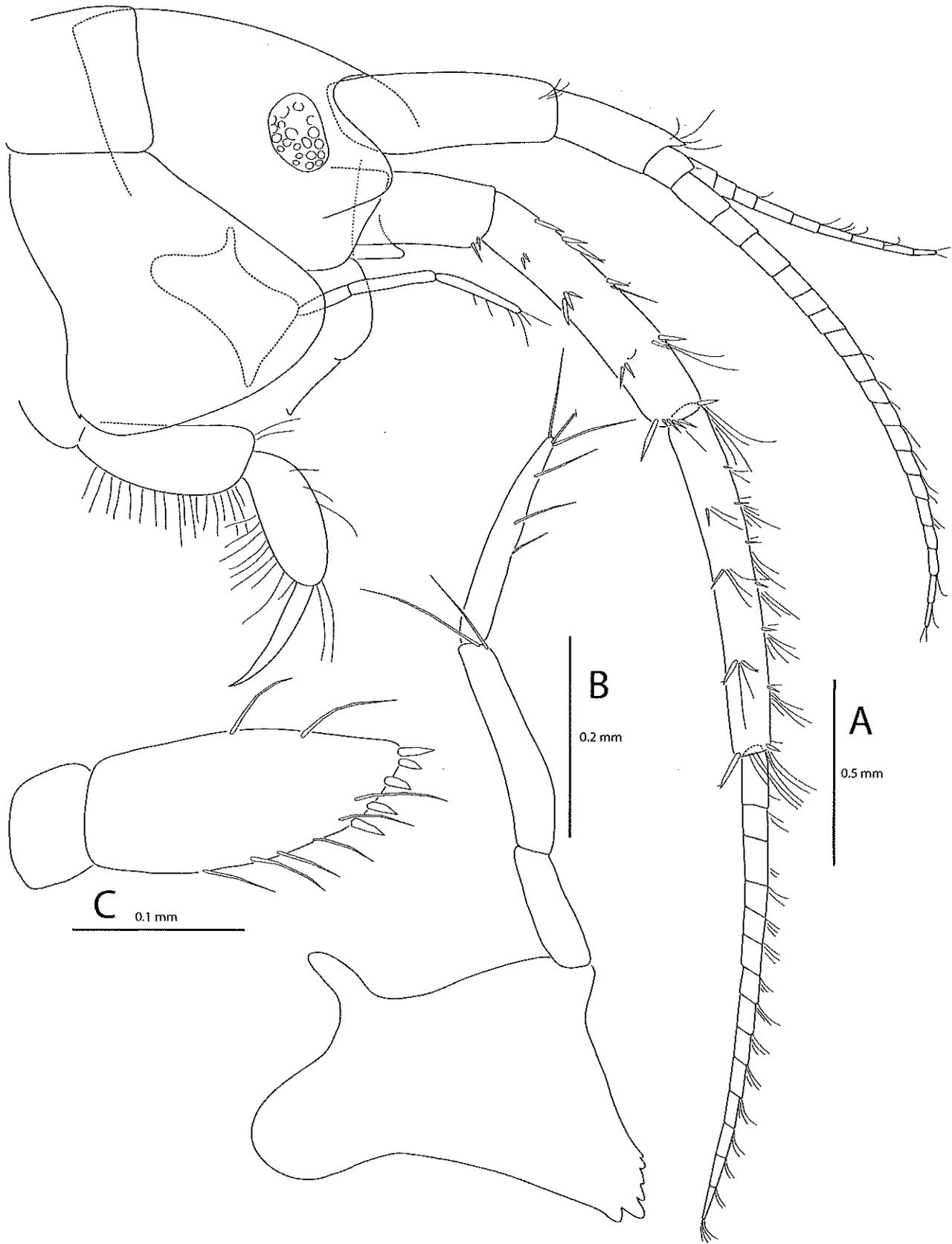


Fig. 136. *Liljeborgia quinquedentata* SCHELLENBERG, 1931, female lectotype, Falkland Islands, Swedish South Polar Exp., sta. 42. A, head and anterior appendages; B, right Md; C, palp of left Mx1.

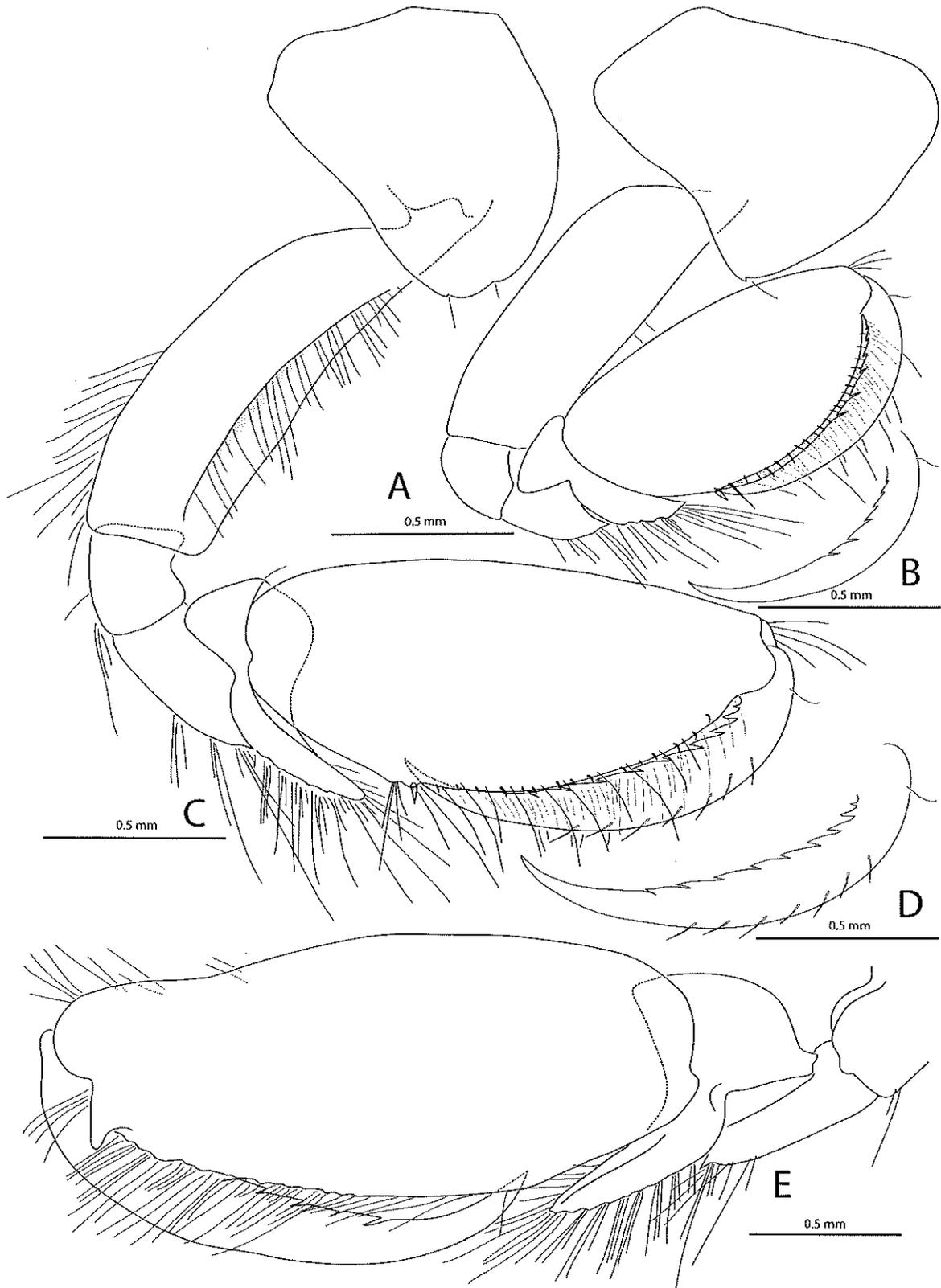


Fig. 137. *Liljeborgia quinquedentata* SCHELLENBERG, 1931, Falkland Islands, Swedish South Polar Exp., sta. 42. A-D, female lectotype; E, male paralectotype. A, right Gn1; B, dactylus of right Gn1; C, Gn2; D, dactylus of right Gn2; E, left Gn2.

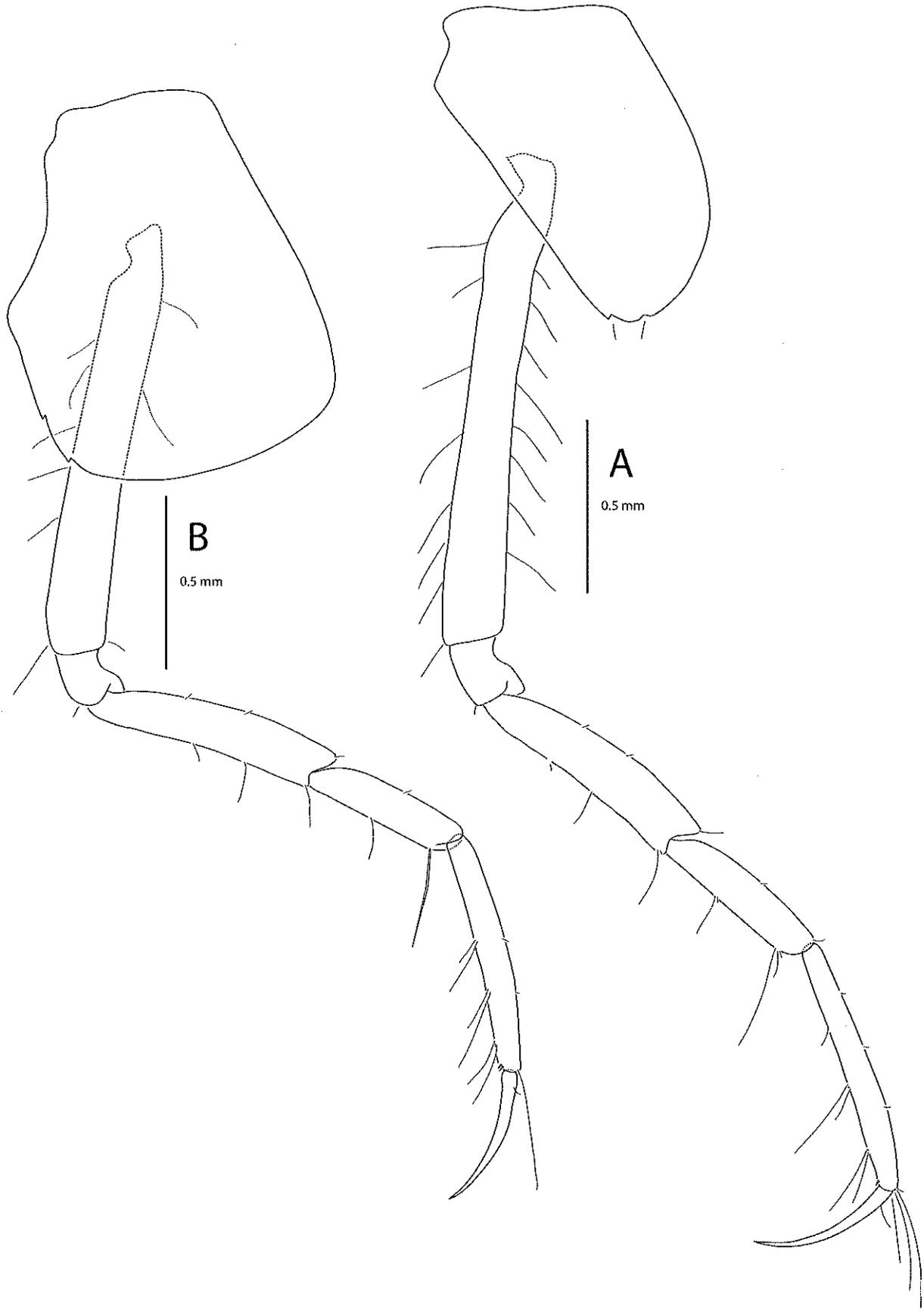


Fig. 138. *Liljeborgia quinquedentata* SCHELLENBERG, 1931, female lectotype, Falkland Islands, Swedish South Polar Exp., sta. 42. A, right P3; B, right P4.

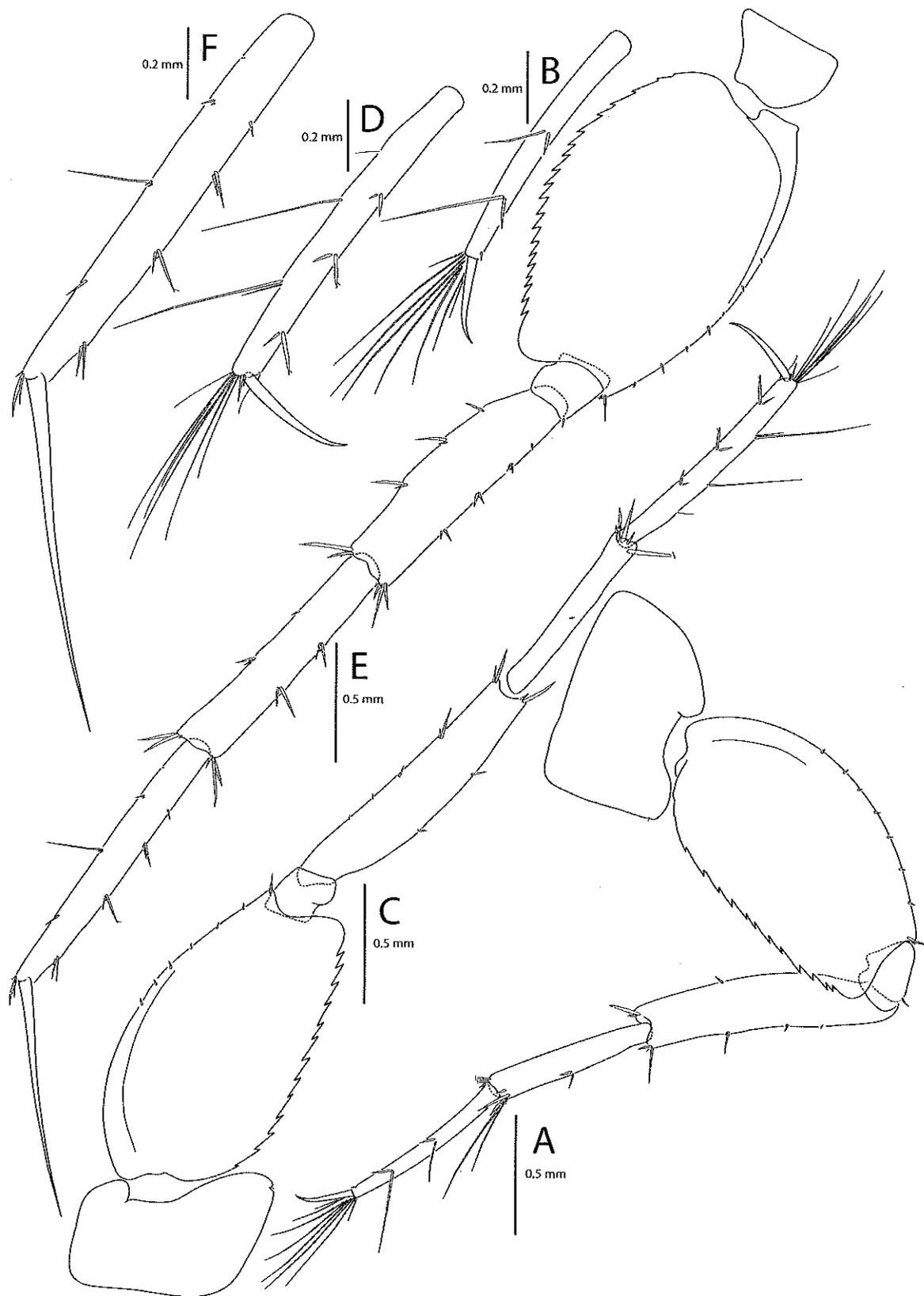


Fig. 139. *Liljeborgia quinquedentata* SCHELLENBERG, 1931, female lectotype, Falkland Islands, Swedish South Polar Exp., sta. 42. A, right P5; B, tip of right P5 (inverted drawing); C, right P6; D, tip of right P6; E, right P7; F, tip of right P7.

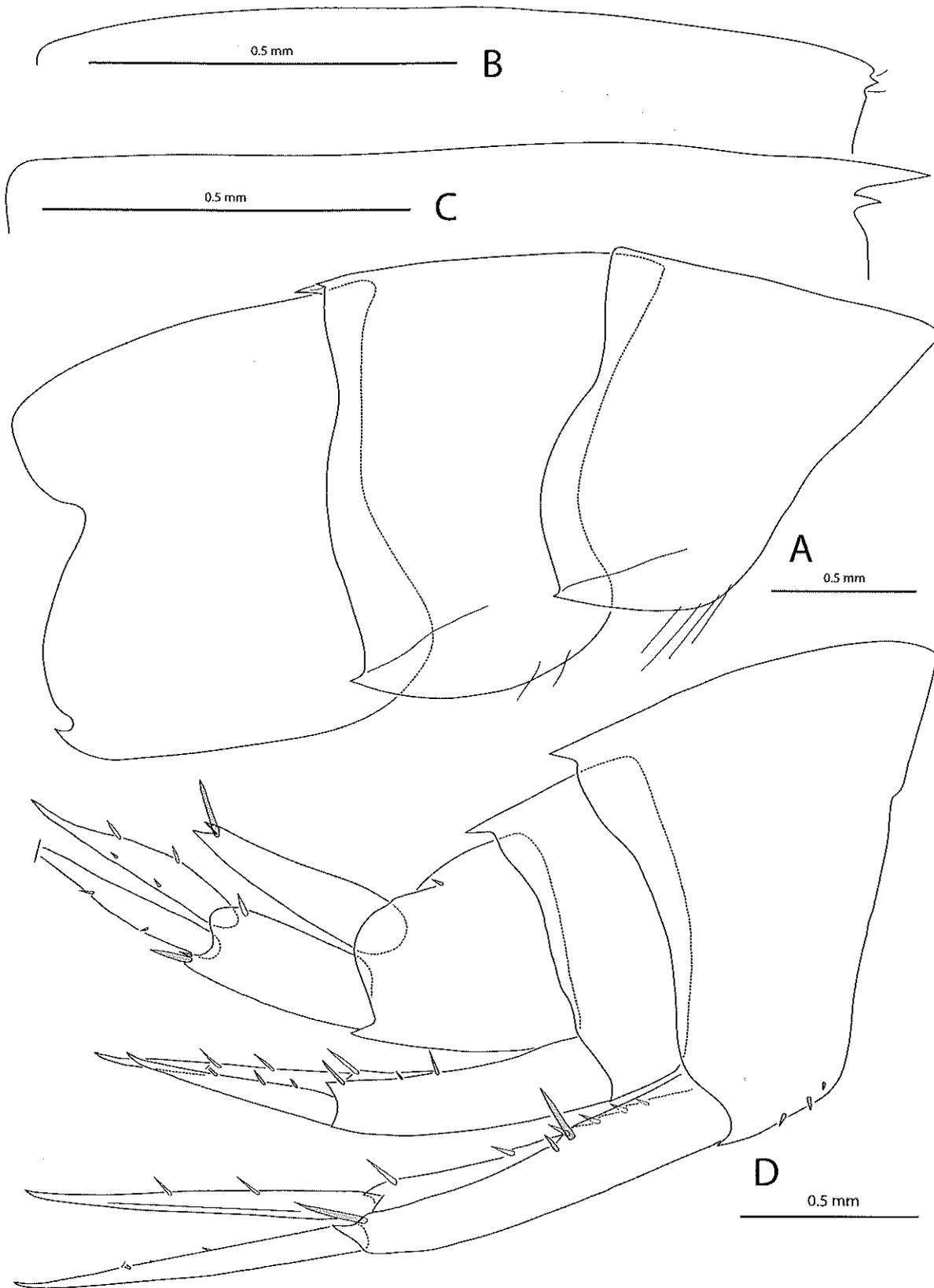


Fig. 140. *Liljeborgia quinquedentata* SCHELLENBERG, 1931, Falkland Islands, Swedish South Polar Exp., sta. 42. A, D, female lectotype; B, C, male paralectotype. A, pleonites; B, dorsal part of pleonite 1 (tilted so that the posterior tooth and its two lateral notches are distinct); C, dorsal part of first pleonite 2 (lateral view); D, urosome.

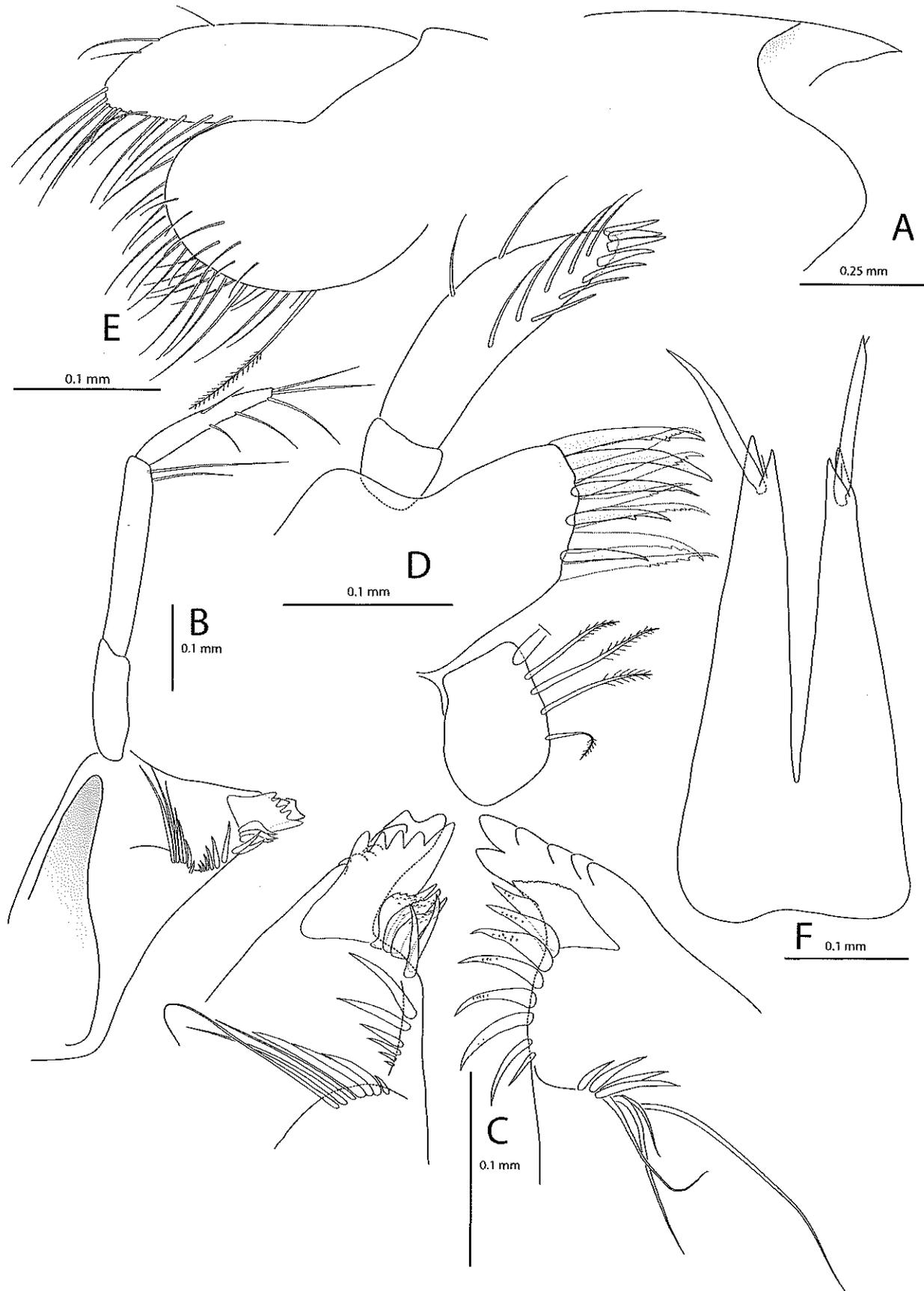


Fig. 141. *Liljeborgia quinquedentata* SCHELLENBERG, 1931, adult female, Cabo de Hornos, off Islas Barnevelt, MAG94, sta. 1210. A, anterior part of head; B, left Md; C, tip of left and right Md; D, right Mx1; E, left Mx2; F, telson.

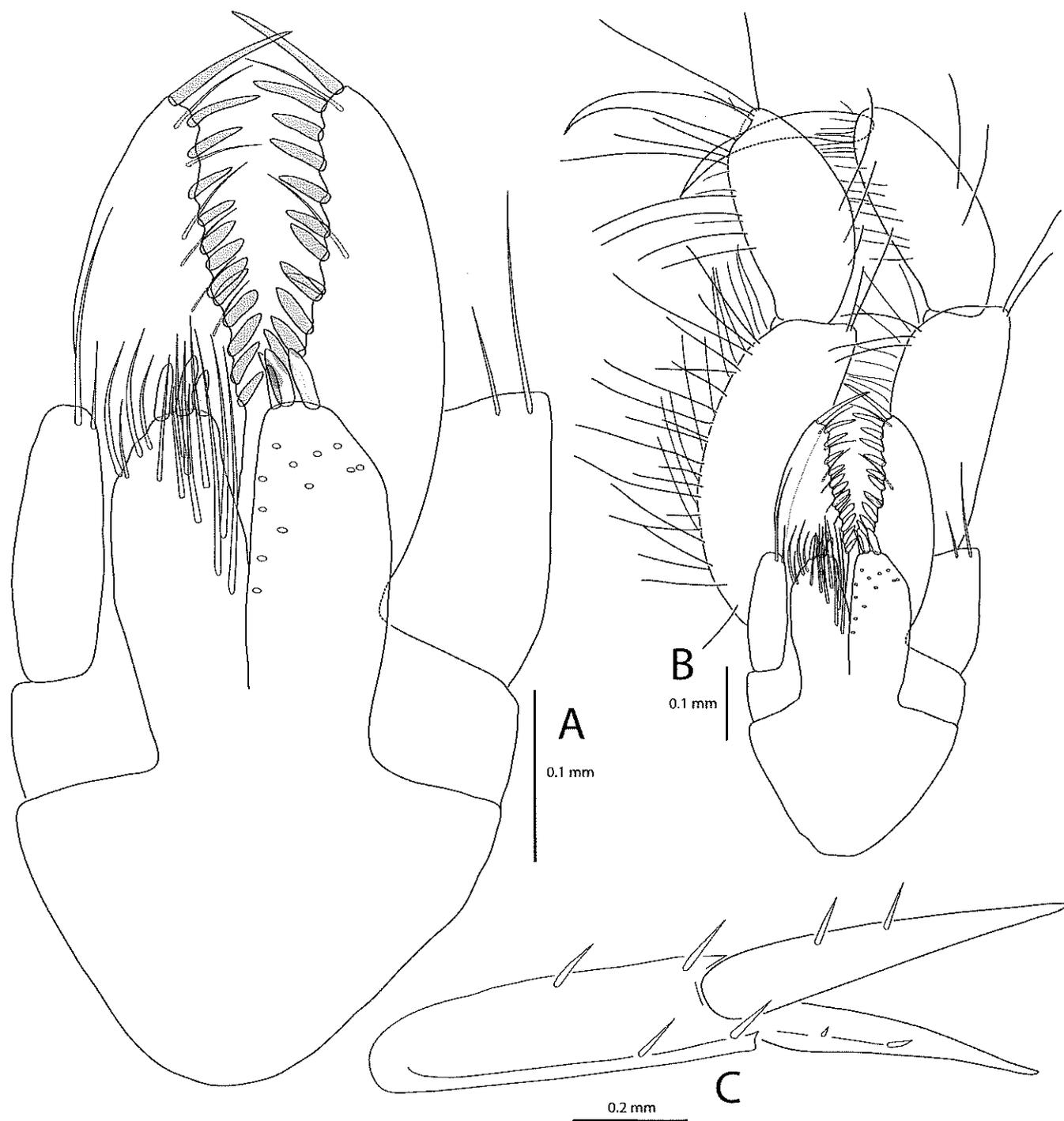


Fig. 142. *Liljeborgia quinquedentata* SCHELLENBERG, 1931, adult female, Cabo de Hornos, off Islas Barnevelt, MAG94, sta. 1210. A, proximal part of Mxp; B, Mxp; C, left U2.

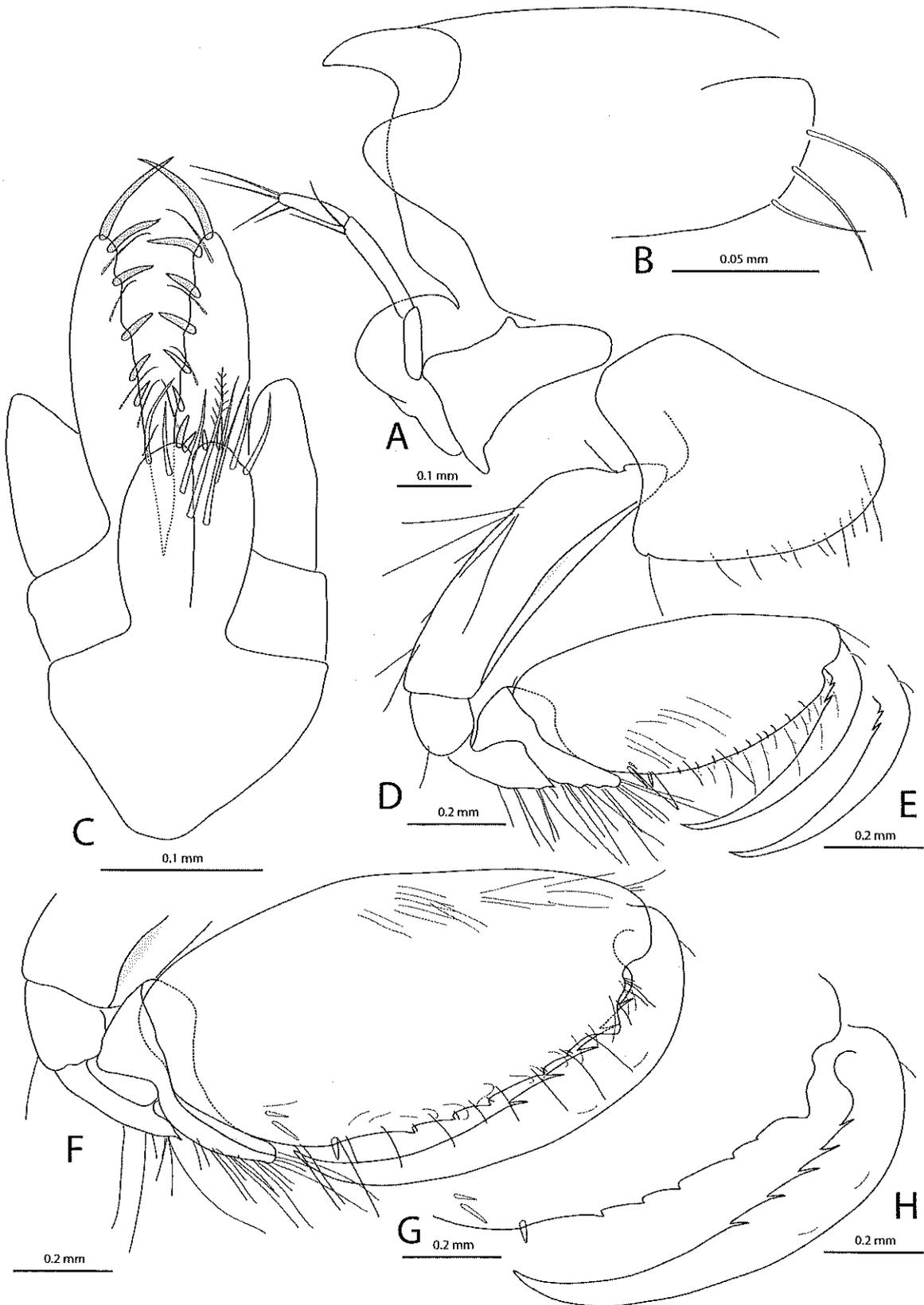


Fig. 143. *Liljeborgia quinquedentata* SCHELLENBERG, 1931, small male (6 mm), Cabo de Hornos, off Islas Barnevelt, MAG94, sta. 1210. A, head with epistome and Md; B, inner plate of left Mx1; C, proximal part of Mxp; D, right Gn1; E, dactylus of right Gn1; F, right Gn2; G, palm of right Gn2; H, dactylus of right Gn2.

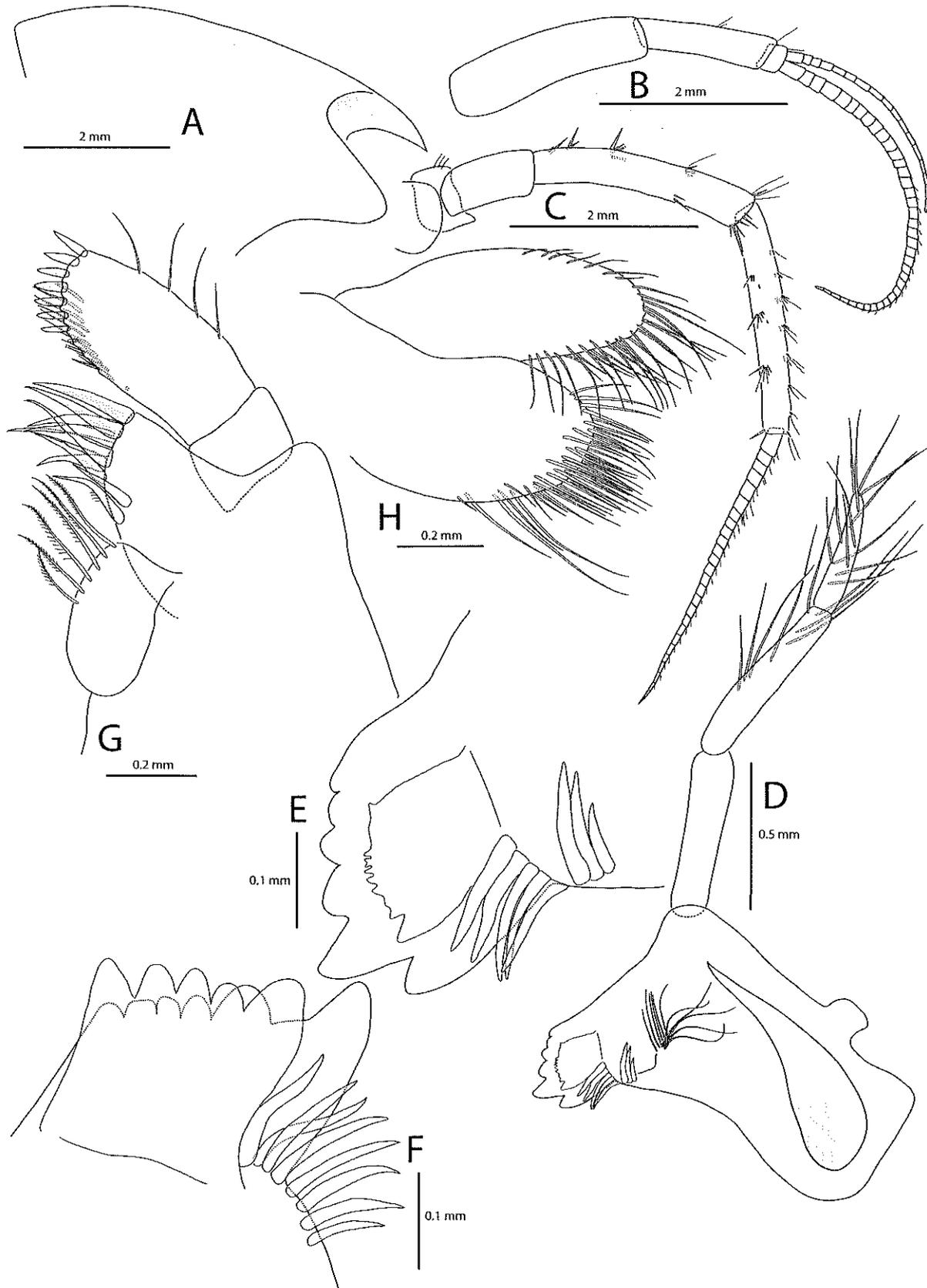


Fig. 144. *Liljeborgia rauscherti* n. sp., male holotype. Eastern Weddell Sea, ANT XIII-3, sta. 29/39. A, head; B, right A1; C, right A2; D, right Md; E, tip of right Md; F, tip of left Md; G, right Mx1; H, right Mx2.

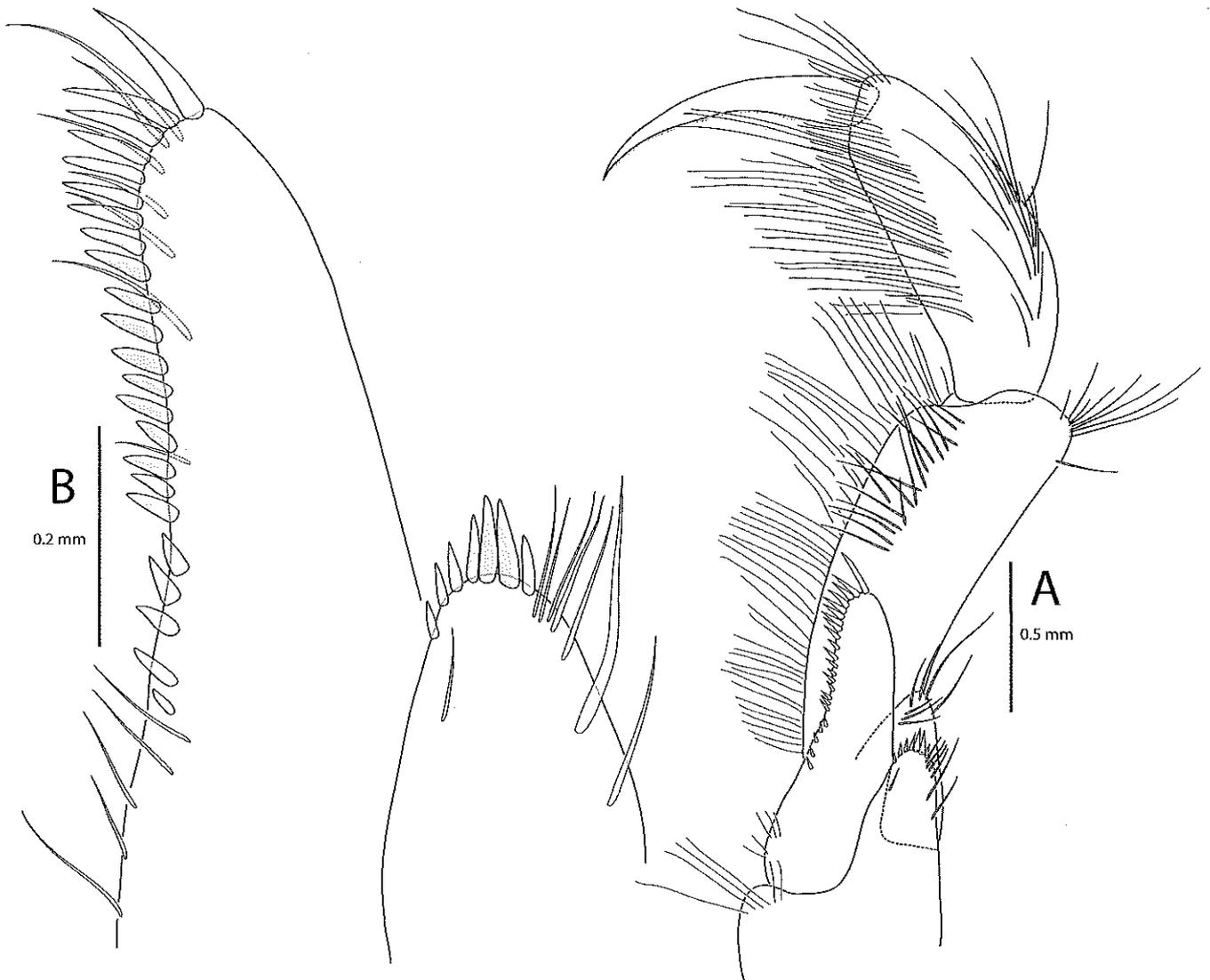


Fig. 145. *Liljeborgia rauscherti* n. sp., male holotype. Eastern Weddell Sea, ANT XIII-3, sta. 29/39. A, right Mxp; B, plates of right Mxp (the inner plate is overturned on the microscopical preparation and it was not possible to draw adequately all the setae).

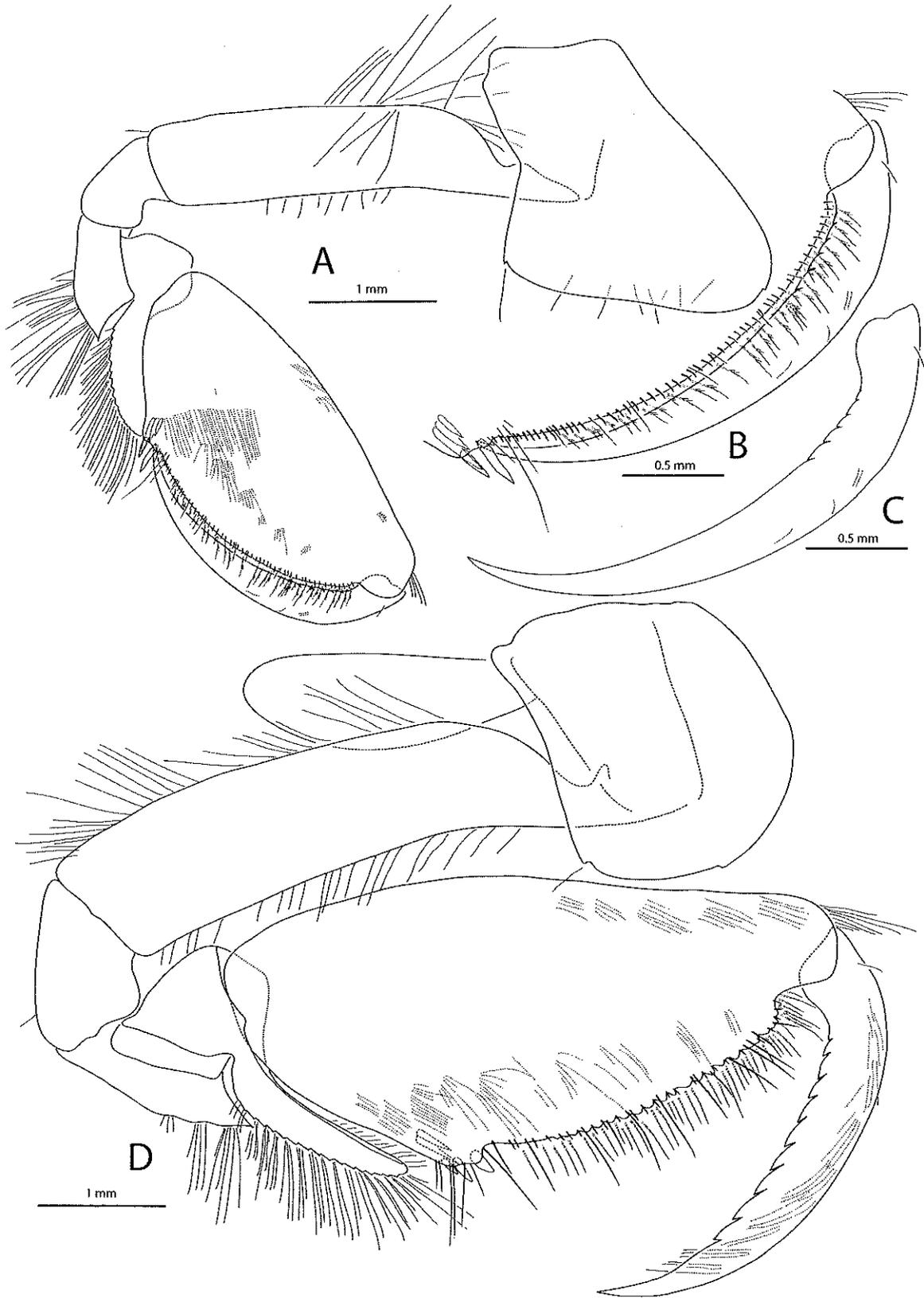


Fig. 146. *Liljeborgia rauscherti* n. sp., male holotype. Eastern Weddell Sea, ANT XIII-3, sta. 29/39. A, right Gn1; B, palm of right Gn1; C, dactylus of right Gn1; D, right Gn2.

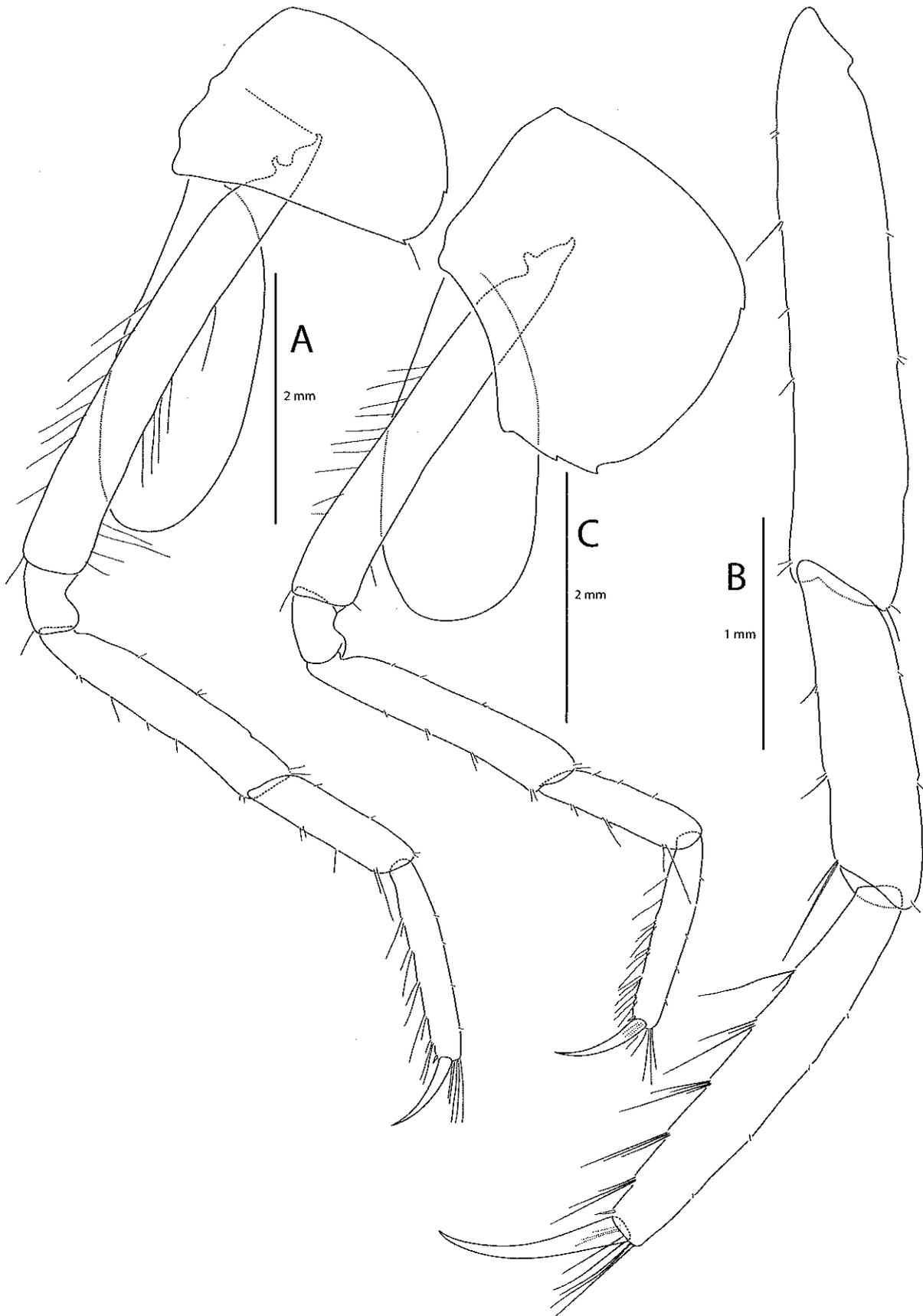


Fig. 147. *Liljeborgia rauscherti* n. sp., male holotype. Eastern Weddell Sea, ANT XIII-3, sta. 29/39. A, right P3; B, tip of right P3; C, right P4.

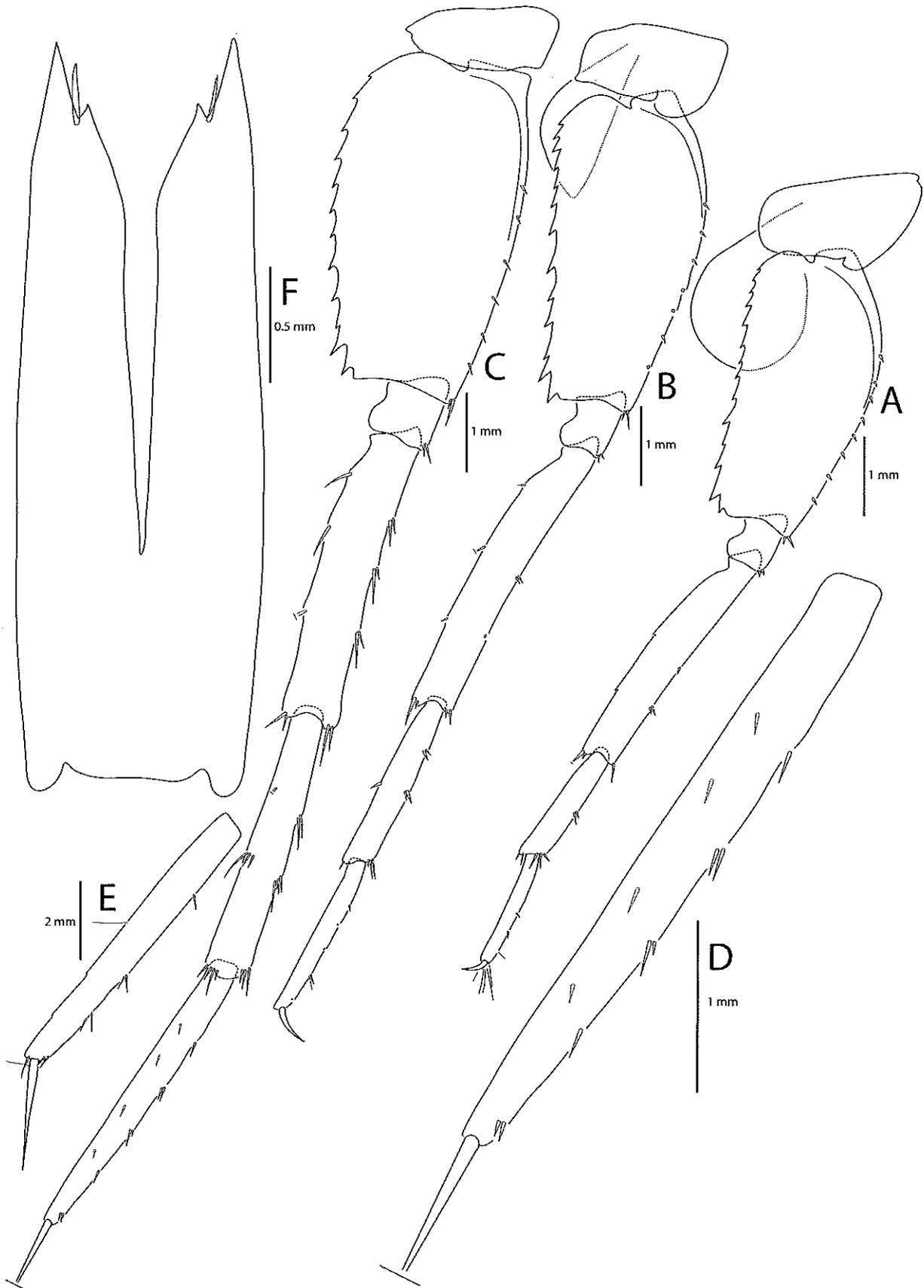


Fig. 148. *Liljeborgia rauscherti* n. sp., A-D, F, male holotype. Eastern Weddell Sea, ANT XIII-3, sta. 29/39; E, male paratype, ANT XIII/3, sta. 39/01. A, right P5; B, right P6; C, right P7; D, E, tip of right P7; F, telson.

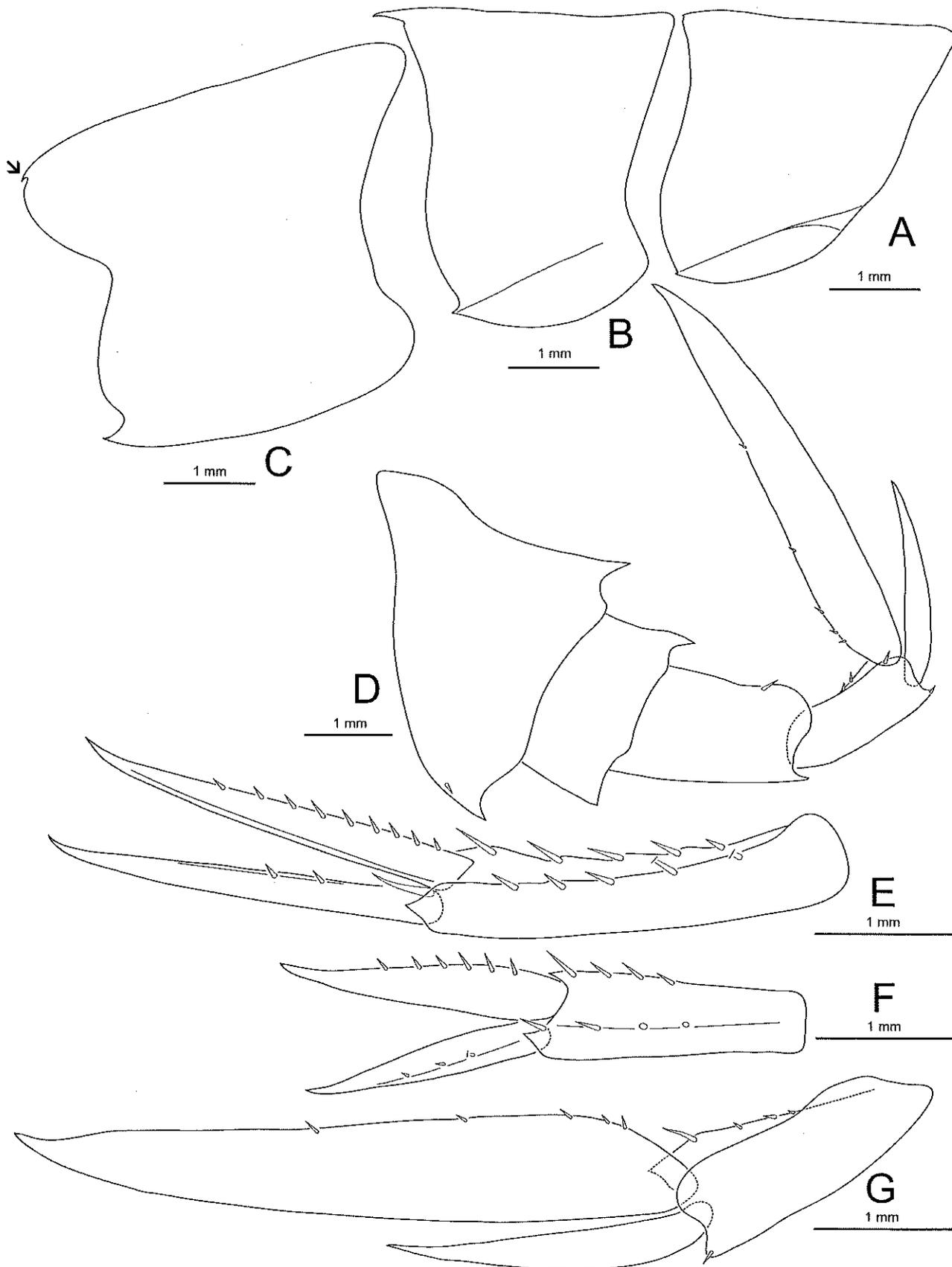


Fig. 149. *Liljeborgia rauscherti* n. sp., male holotype. Eastern Weddell Sea, ANT XIII-3, sta. 29/39. A, Ep1; B, Ep2; C, Ep3; D, urosome; E, right U1; F, right U2; G, right U3.

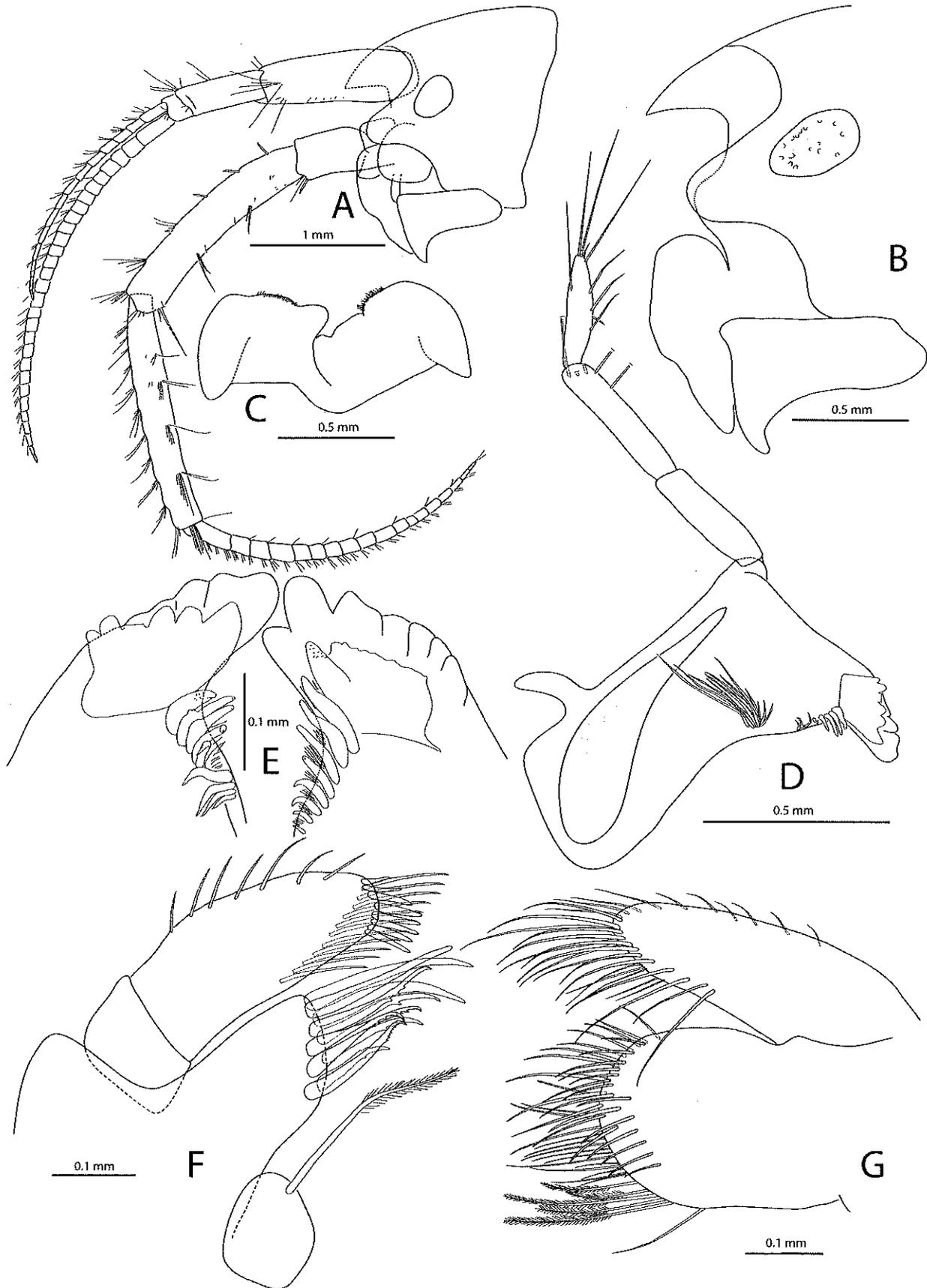


Fig. 150. *Liljeborgia semperhiemalis* n. sp., male, holotype, Eastern Weddell Sea, Atka Bay, ANT XXIII-8, sta. 603-5. A, head and antennae; B, anterior part of head with epistome and left Md in lateral view; C, lower lip; D, left Md; E, tip of left and right Md; F, left Mx1; G, left Mx2.

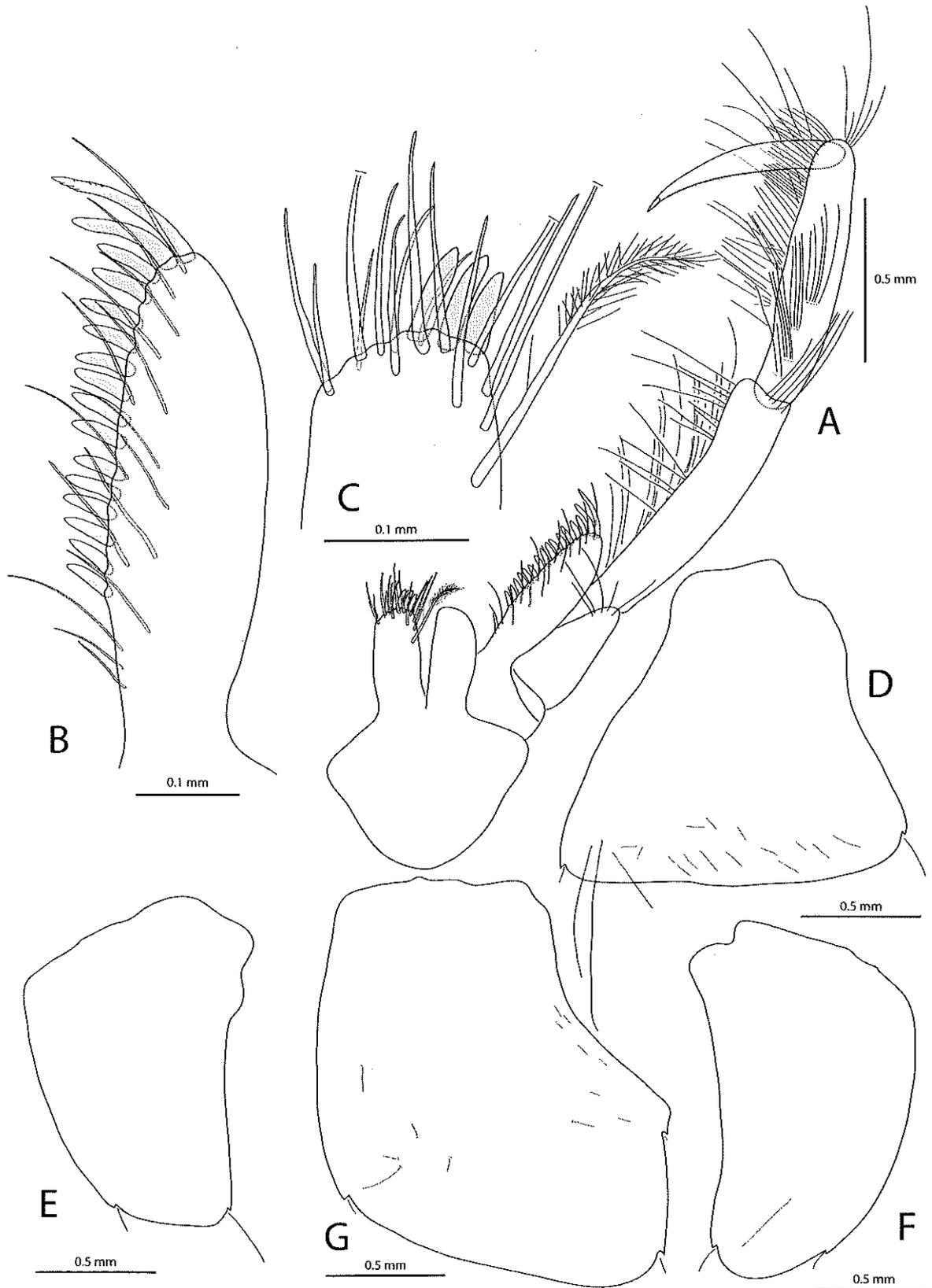


Fig. 151. *Liljeborgia semperhiemalis* n. sp., male, holotype, Eastern Weddell Sea, Atka Bay, ANT XXIII-8, sta. 603-5. A, Mxp (spines and setae not shown on right inner plate); B, right inner plate of Mxp; C, left inner plate of Mxp; D, left coxa 1; E, left coxa 2; F, right coxa 3; G, left coxa 4.

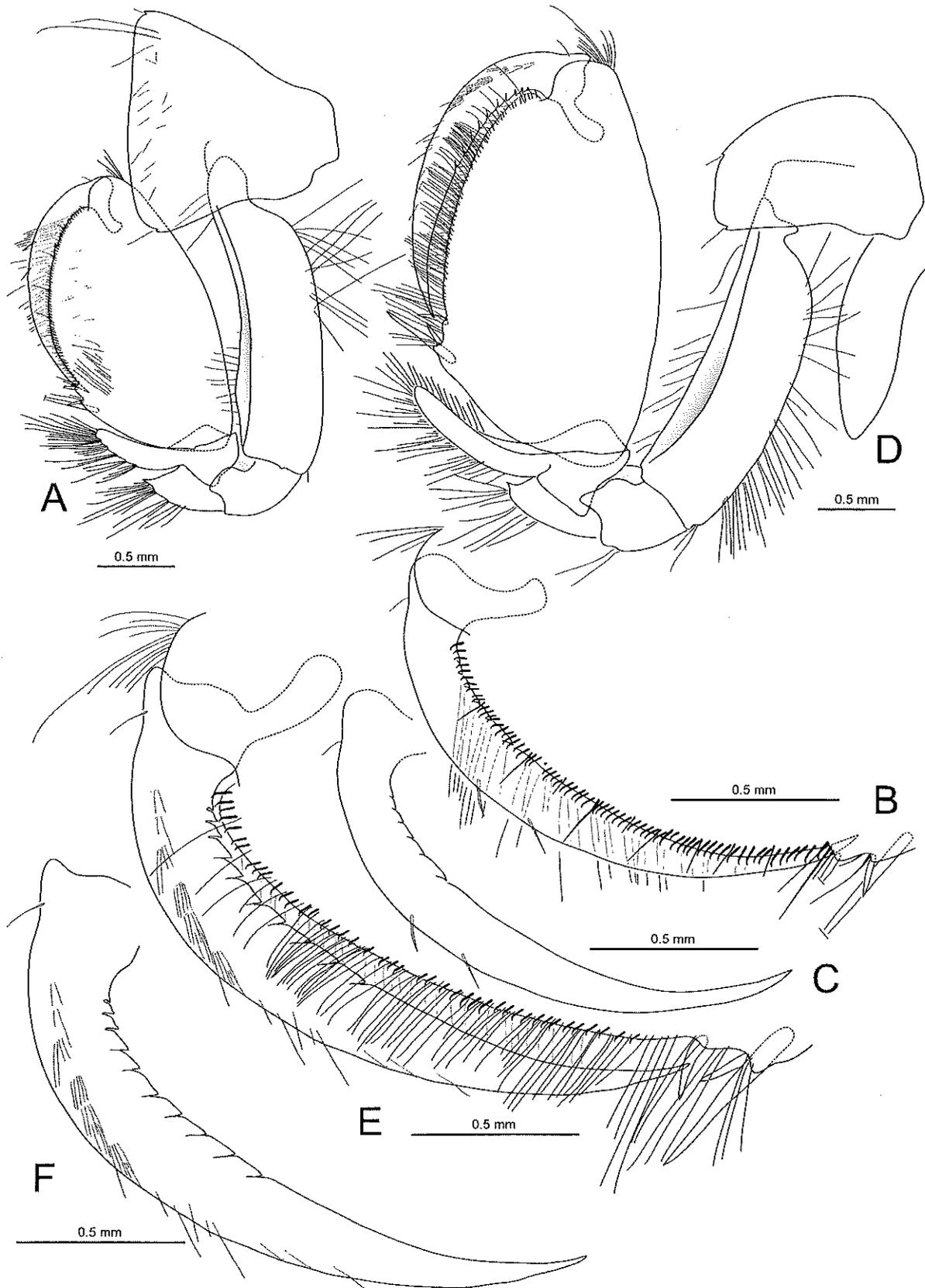


Fig. 152. *Liljeborgia semperhiemalis* n. sp., male, holotype, Eastern Weddell Sea, Atka Bay, ANT XXIII-8, sta. 603-5. A, left Gn1; B, palm of left Gn1; C, dactylus of left Gn1; D, left Gn2; E, palm of left Gn2; F, dactylus of left Gn2.

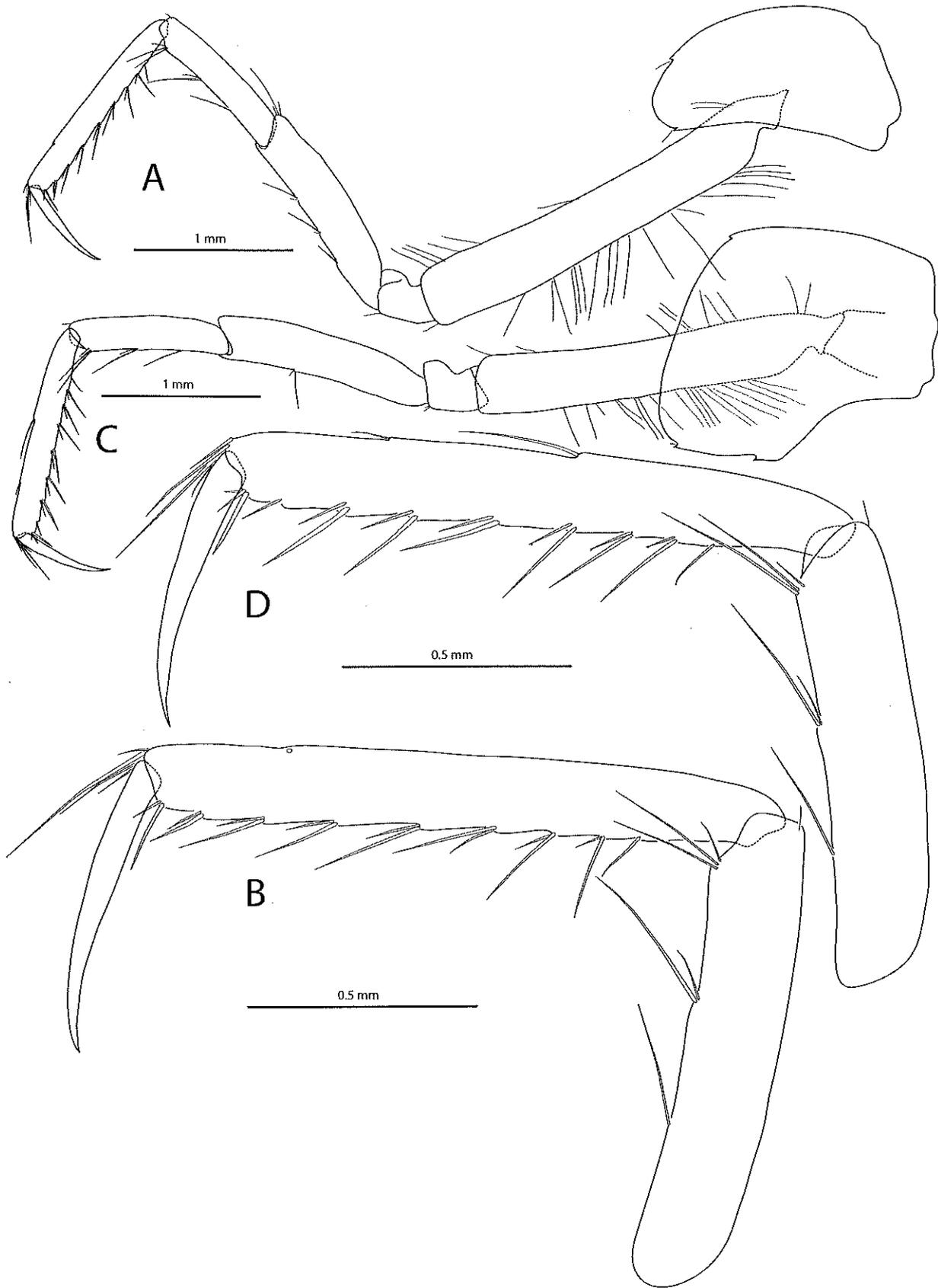


Fig. 153. *Liljeborgia semperhiemalis* n. sp., male, holotype, Eastern Weddell Sea, Atka Bay, ANT XXIII-8, sta. 603-5. A, left P3; B, tip of left P3; C, left P4; D, tip of left P4.

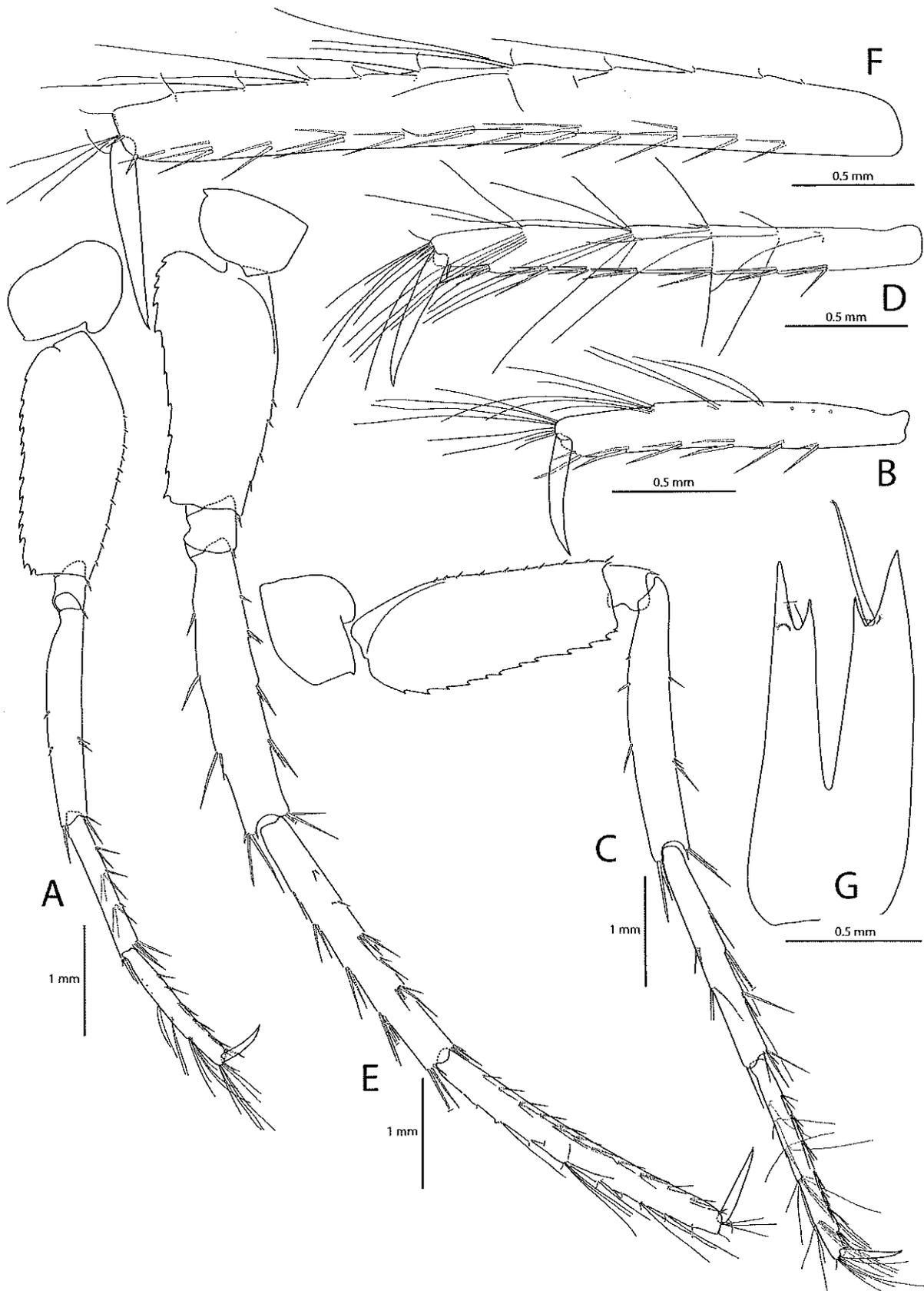


Fig. 154. *Liljeborgia semperhiemalis* n. sp., male, holotype, Eastern Weddell Sea, Atka Bay, ANT XXIII-8, sta. 603-5. A, left P5; B, tip of left P5; C, left P6; D, tip of left P6; E, left P7; F, tip of left P7; G, telson.

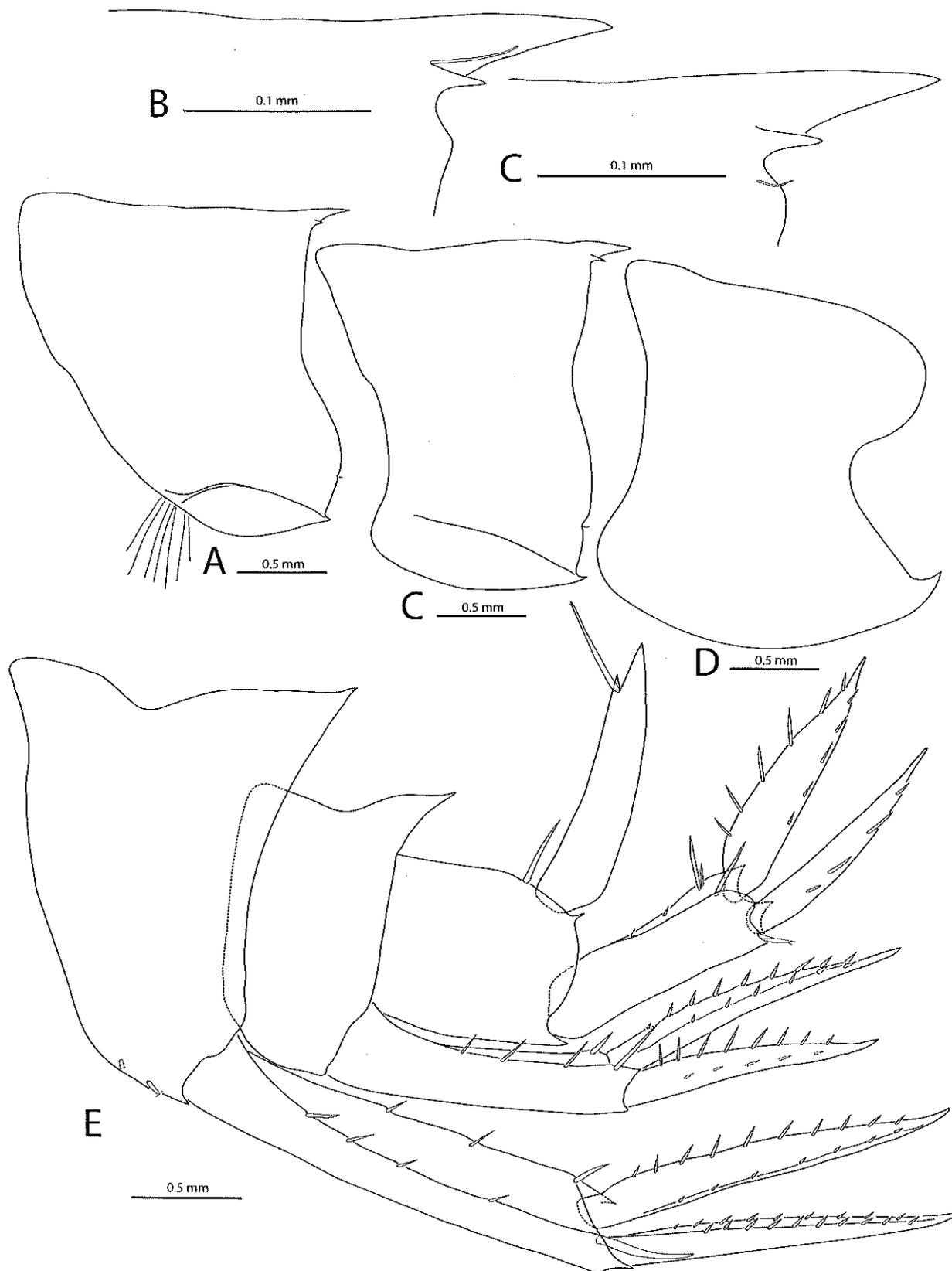


Fig. 155. *Liljeborgia semperhiemalis* n. sp., male, holotype, Eastern Weddell Sea, Atka Bay, ANT XXIII-8, sta. 603-5. A, pleonite 1; B, posterodorsal part of pleonite 1; C, pleonite 2; C, posterodorsal part of pleonite 2; D, pleonite 3; E, urosome.

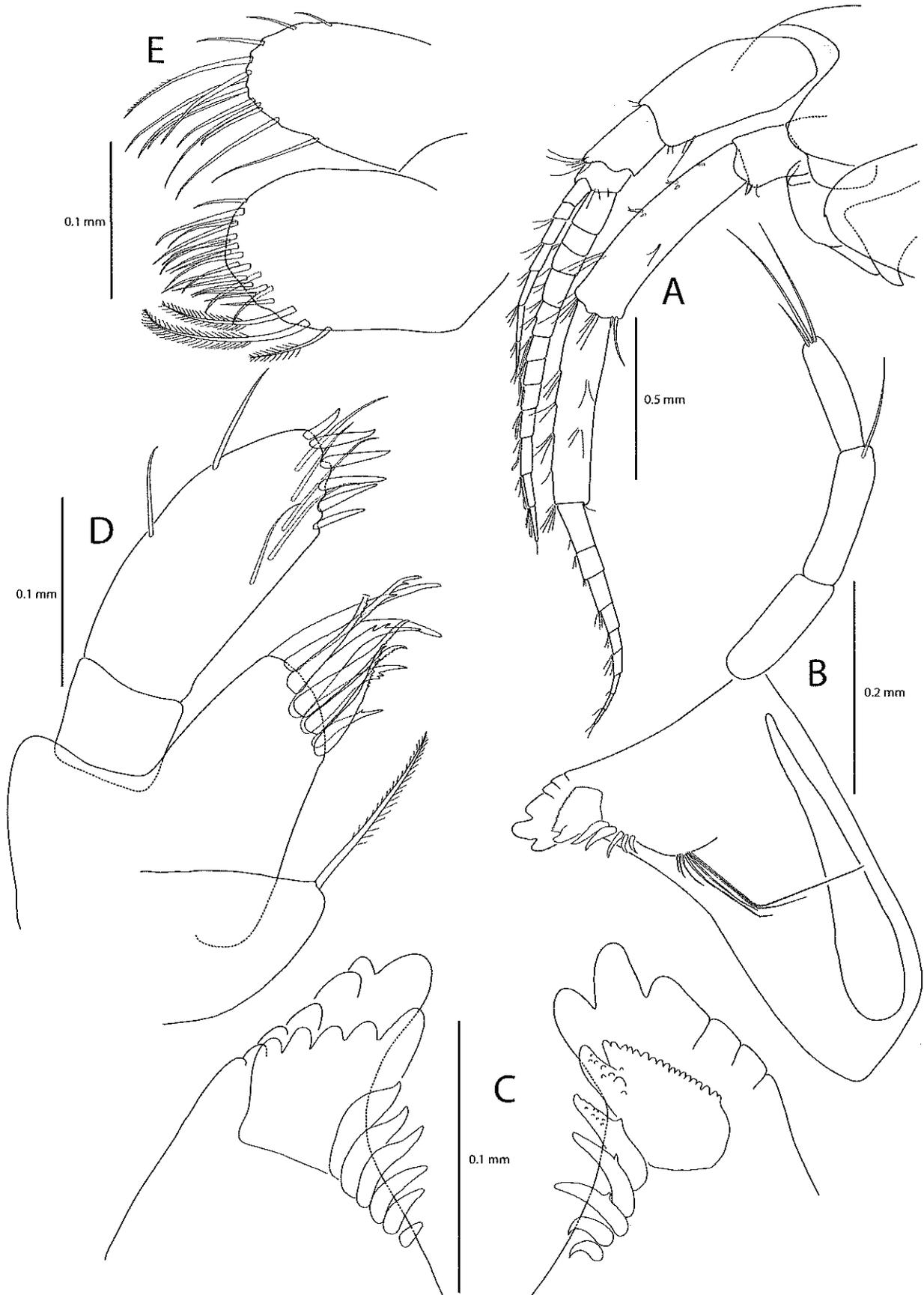


Fig. 156. *Liljeborgia* sp. 1, Western Weddell Sea, ANT XXII/3, ANDEEP III, sta. 142-5. A, head and antennae; B, right Md; C, tip of left and right Md; D, left Mx1; E, right Mx2.

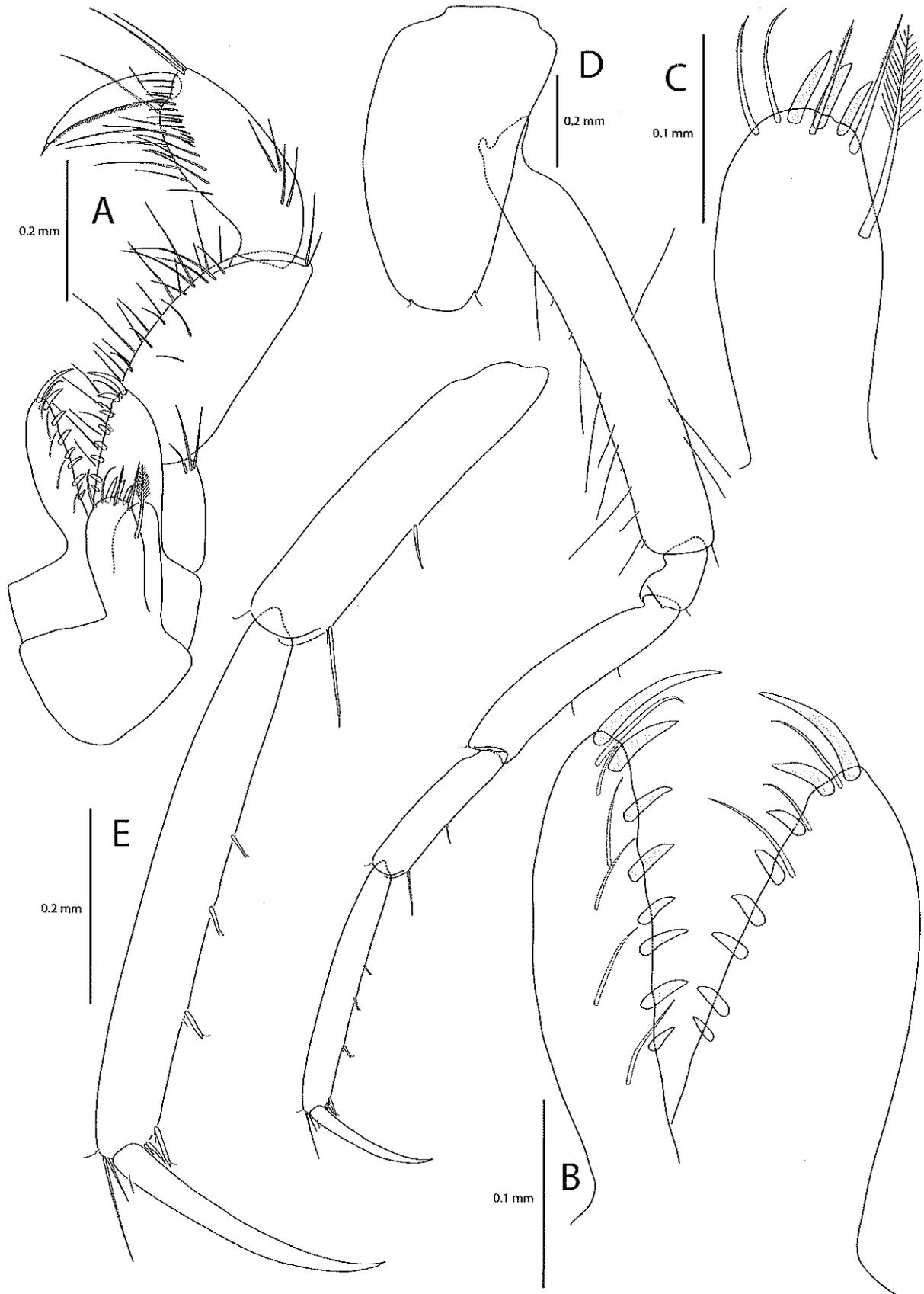


Fig. 157. *Liljeborgia* sp. 1, Western Weddell Sea, ANT XXII/3, ANDEEP III, sta. 142-5. A, Mxp; B, outer plates of Mxp; C, left inner plate of Mxp; D, left P3; E, tip of left P3.

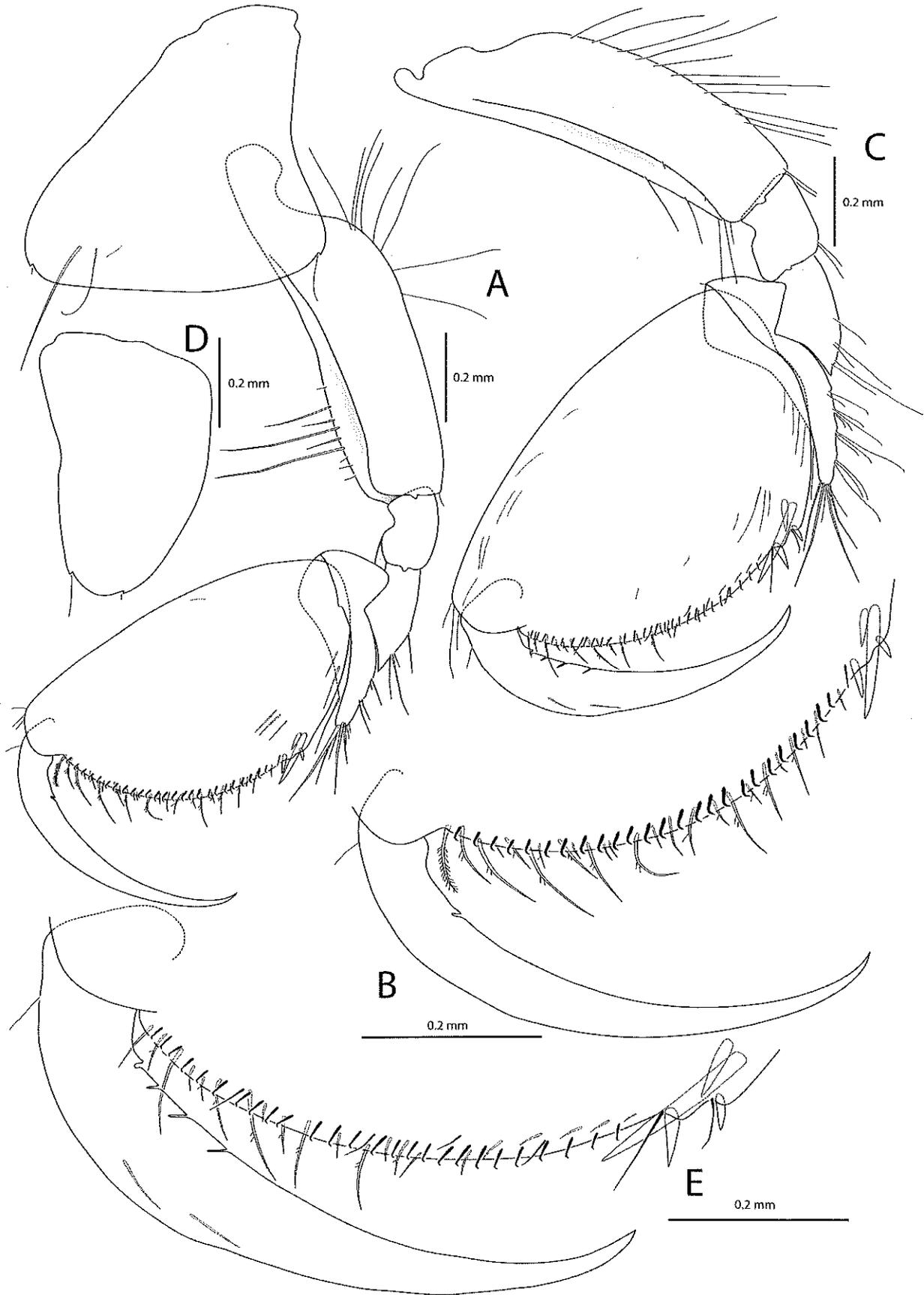


Fig. 158. *Liljeborgia* sp. 1, Western Weddell Sea, ANT XXII/3, ANDEEP III, sta. 142-5. A, left Gn1; B, palm and dactylus of left Gn1; C, left Gn2; D, right coxa 2; E, palm and dactylus of left Gn2.

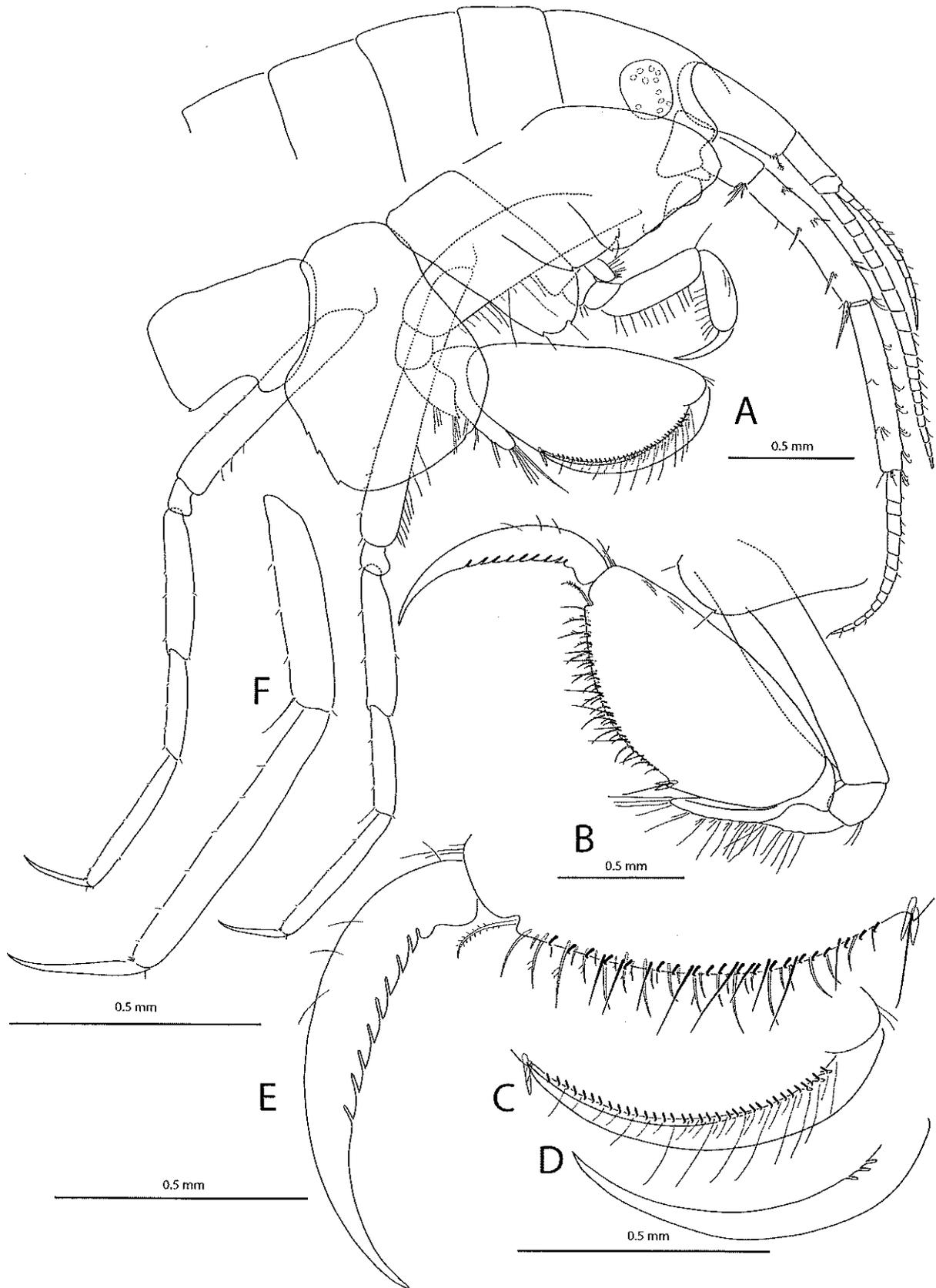


Fig. 159. *Liljeborgia* sp. 2, male, South Sandwich Islands, ANT XIX-4, ANDEEP II, sta. 143-1. A, anterior part of body (right side) with Gn1, P3 and P4; B, left Gn2; C, palm of right Gn1; D, dactylus of right Gn1; E, palm of left Gn2; F, tip of right P3.

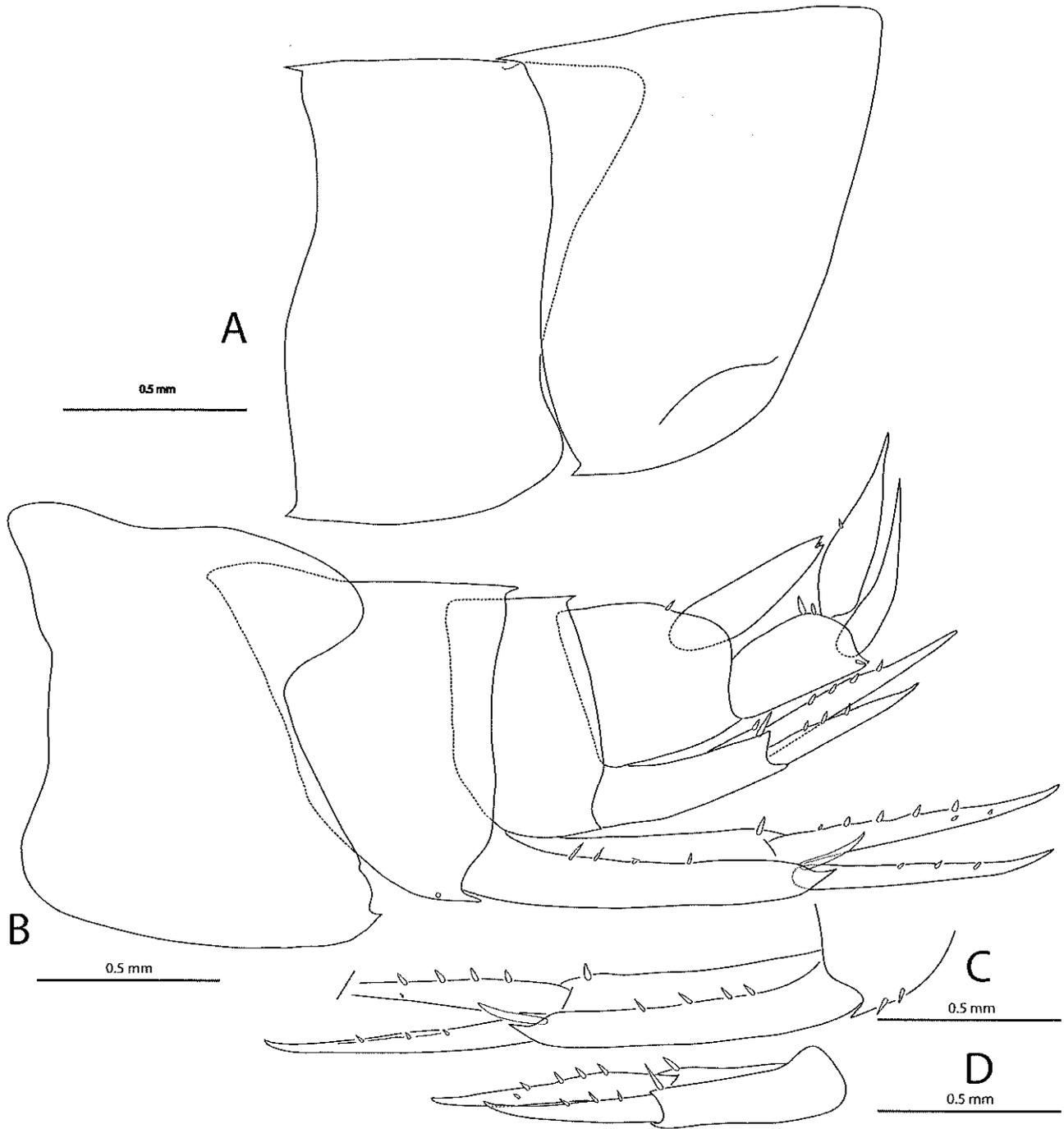


Fig. 160. *Liljeborgia* sp. 2, male, South Sandwich Islands, ANT XIX-4, ANDEEP II, sta. 143-1. A, pleonites 1 and 2 (right side); B, urosome + pleonite 3 (left side); C, right U1; D, right U2.