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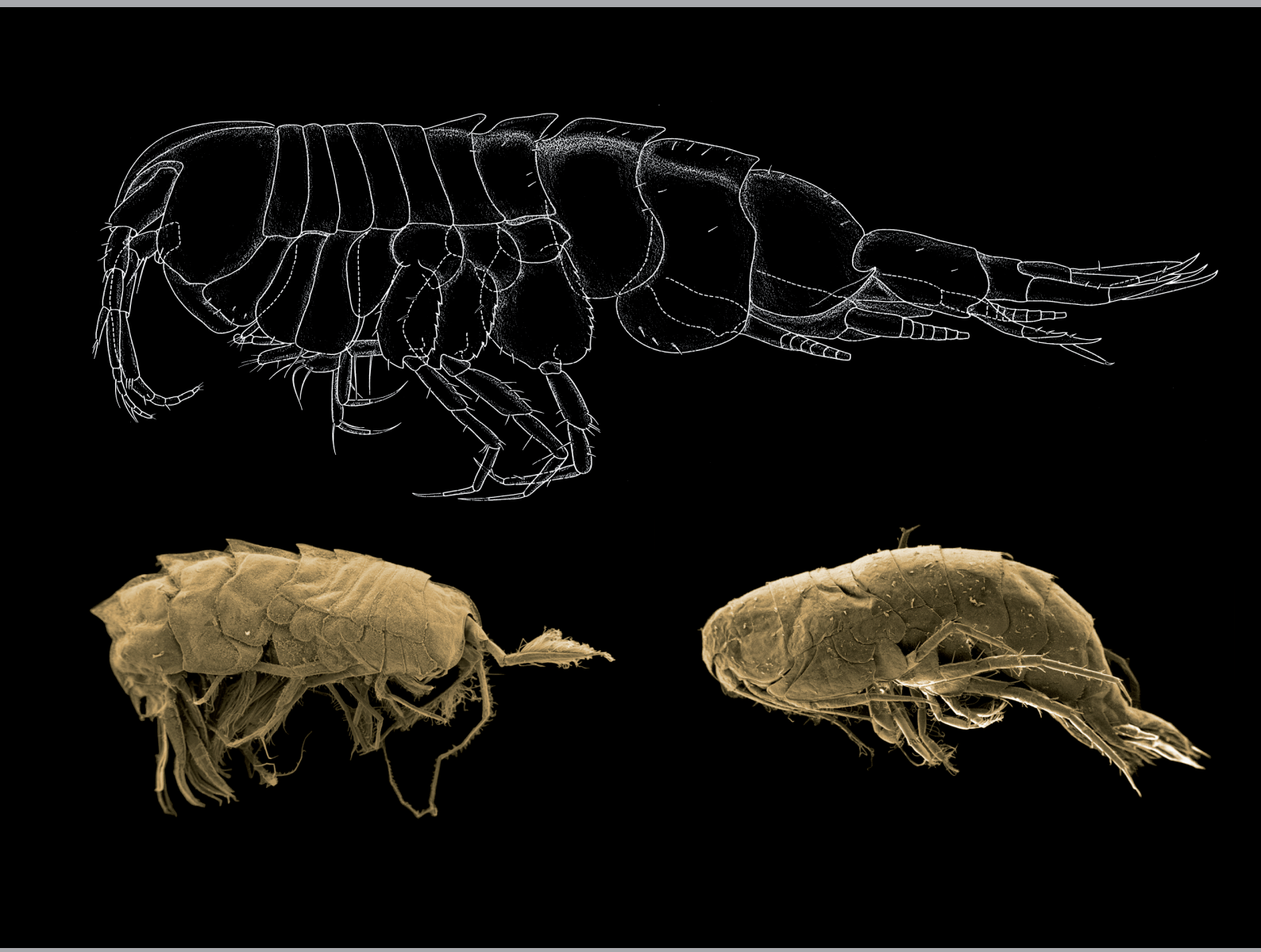

The Marine Fauna of New Zealand and the Ross Sea:

Amphipoda, Synopiidae (Crustacea)

Anne-Nina Lörz & Charles Oliver Coleman

NIWA Biodiversity Memoir 127

COVER PHOTO

The drawing is of *Syrrhoites ebberae* n. sp., holotype, female, lateral view, 2.5 mm long. The left scanning electron microscope image is a male of *Syrrhoites hannahae* n. sp., the bottom right amphipod is *Syrrhoe* cf. *affinis* Chevreux, 1908. These three specimens were collected on the Chatham Rise, east of New Zealand, at 420–650 m depth.

NATIONAL INSTITUTE OF
WATER AND ATMOSPHERIC RESEARCH (NIWA)

The Marine Fauna of New Zealand and the Ross Sea:

Amphipoda, Synopiidae (Crustacea)

Anne-Nina Lörz[1] & Charles Oliver Coleman[2]

[1]National Centre for Marine Biodiversity & Biosecurity,
National Institute of Water and Atmospheric Research,
Private Bag 14901, Wellington 6021, New Zealand
(Anne-Nina.Loerz@niwa.co.nz)

[2]Museum für Naturkunde,
Leibniz-Institut für Evolutions- und Biodiversitätsforschung,
Invalidenstraße 43, 10115 Berlin, Germany
(oliver.coleman@mfn-berlin.de)

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Frontispiece. *Syrrhoites octodenta* n. sp., NIWA 84622, photographed after preservation.

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The Marine Fauna of New Zealand and the Ross Sea:

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[1]National Centre for Marine Biodiversity & Biosecurity,
National Institute of Water and Atmospheric Research,
Private Bag 14901, Wellington 6021, New Zealand
(Anne-Nina.Loerz@niwa.co.nz)

[2]Museum für Naturkunde,
Leibniz-Institut für Evolutions- und Biodiversitätsforschung,
Invalidenstraße 43, 10115 Berlin, Germany
(oliver.coleman@mfn-berlin.de)

ABSTRACT

The amphipod family Synopiidae of the New Zealand Exclusive Economic Zone (EEZ) and the Ross Sea is monographed. Previously only one species of Synopiidae, *Syrrhoe* cf. *affinis*, has been formally recorded from the New Zealand EEZ and two species from the Ross Sea, *Syrrhoe tuberculata* Dahl, 1954 and *Syrrhoites anaticauda* K.H. Barnard, 1930.

Thirteen of the 17 species of Synopiidae described in detail in this monograph are new to science. Eleven species from five genera are from the New Zealand EEZ and six species belonging to four genera are from the Ross Sea. The genus *Austrosyrrhoe* K.H. Barnard, 1925 is represented by one species new to science from the Chatham Rise, east of New Zealand, *Austrosyrrhoe kathleenae* **n. sp.** The genus *Bruzelia* Boeck, 1871 is represented by three species new to science, all from the Chatham Rise: *Bruzelia erikae* **n. sp.**, *B. junkeri* **n. sp.**, *B. vogeli* **n. sp.** The genus *Ileraustroe* J.L. Barnard, 1972 now comprises three species, and the New Zealand species new to science, *Ileraustroe neumannae* **n. sp.**, was collected on the Chatham Rise and the Challenger Plateau, east and west of New Zealand. The genus *Pseudotiron* Chevreux, 1895 is recorded for the first time in Antarctica, where it is represented by *Pseudotiron livingstonae* **n. sp.** in abyssal depth of the Ross Sea. The genus *Syrrhoe* Goës, 1866 is represented by *Syrrhoe* cf. *affinis* Chevreux, 1908 and *S. sadiae* **n. sp.** from New Zealand waters and by *S.* cf. *oluta* J.L. Barnard, 1972 and *S. kareenae* **n. sp.** from the western Ross Sea. The genus *Syrrhoites* Sars, 1895 is represented by four new species from New Zealand waters: *Syrrhoites ebberae* **n. sp.**, *S. hannahae* **n. sp.**, *S. octodentata* **n. sp.**, and *S. renatae* **n. sp.**, and two species from the Ross Sea *S. anaticauda*, K.H. Barnard, 1930 and *S. bowdeni* **n. sp.** The species *Tiron antarcticus* K.H. Barnard, 1932, which has been recorded previously from the Weddell Sea and the Bransfield Strait, is here represented by new records for the Ross Sea.

Dichotomous keys to world genera and species of Synopiidae are provided; an interactive identification key of Synopiidae can be found at http://amphipod.dnsalias.net.

Keywords: Crustacea, Amphipoda, Synopiidae, *Austrosyrrhoe, Bruzelia, Ileraustroe, Pseudotiron, Syrrhoe, Syrrhoites, Tiron*, taxonomy, systematics, new species, biodiversity, New Zealand, Antarctica, Ross Sea.

INTRODUCTION

Amphipoda are amongst the most omnipresent crustaceans, living in marine, freshwater and terrestrial habitats, ranging from the deepest ocean depth to high mountains. Amphipoda comprise all feeding forms: grazers, filter feeders, scavengers, predators, epibionts on whales and are even known as top-predators in deep sea trenches (Jamieson *et al.* 2012, Lörz 2010). Amphipods are the main food item for many species of fish (e.g. Conell *et al.* 2010, Rosecchi *et al.* 1988), sea birds (e.g. Cherel *et al.* 2002) and even mammals (Oliver & Slattery 1985).

New Zealand and the Ross Sea have a high diversity of marine habitats, including seamounts, cold seeps, hot vents, abyssal plains, canyons, troughs and trenches. The deep-sea amphipod fauna of New Zealand and the Ross Sea is not well studied taxonomically, though the fauna of New Zealand and the Southern Ocean is known to be abundant and diverse (e.g. De Broyer *et al.* 2007; Gordon *et al.* 2010; Knox *et al.* 2012). For a history of amphipod research in New Zealand see the New Zealand Biodiversity Inventory (Webber *et al.* 2010). With about 10 000 amphipod species known worldwide, around 450 species are known from New Zealand waters.

The Synopiidae are a common deep-sea family reported from all oceans of the world (J.L. Barnard 1972). Taxonomically Synopiidae are very difficult to diagnose: "The characters of this family are so subtle that they are practically indefinable, yet taxonomists have little trouble in recognizing a synopiid." (J.L. Barnard 1969).

A synopiid can be identified by the massive head with a downturned rostrum, simple to sub-chelate gnathopods, and elongate telson, always longer than the peduncle of uropod 1. Part of the species have a characteristic so-called pelagont arrangement of pereopod coxae 3 and 4. Here coxa 3 is very large and the much shorter posteriorly curved coxa 4 is adapted in a posterobasal excavation of coxa 3.

The first species of what we classify today as Synopiidae Dana, 1853 were in the genus *Synopia* (in a subfamily Synopiinae Dana, 1853). Following this Stebbing (1906) listed two species of *Synopia* Dana, 1852 in Synopiidae and established the family Tironidae to include *Bruzelia* (two species), *Tiron* (one species), *Syrrhoites* (three species), *Syrrhoe* (three species) and *Pseudotiron* (one species). The Tironidae was based on the taxon Syrrhoinae Boeck, 1871, together with the genera *Argissa* Boeck, 1871 and *Astyra* Boeck, 1871 that are today in separate families Argissidae Walker, 1904 and Stilipedidae Holmes, 1908.

The families Synopiidae and Tironidae were synonymised by J.L. Barnard (1964) based on similarities of the short 3rd mandibular article, head, eyes, accessory flagellum and gnathopods.

The synopiids, listed as 12 species in Stebbing (1906), expanded to 69 species with Barnard's (1972) revision of the family. Presently the Synopiidae comprise 96 species in 18 genera (World Register of Marine Species, WoRMS, accessed March 2013). Surprisingly, only one species has been formally recorded from the New Zealand EEZ. *Syrrhoites* cf. *affinis*, was noted by Barnard (1961) with a question mark, because Barnard doubted whether the specimens caught during the Danish Galathea Expedition in the Tasman Sea in 610 m depth could be the same species as described by Chevreux (1908) from the North Atlantic off Morocco in 460–888 m. While eight species of Synopiidae were known from the Southern Ocean, only two were recorded from the Ross Sea (De Broyer *et al.* 2007).

The present monograph describes 11 species belonging to five genera of Synopiidae of the New Zealand EEZ and six species belonging to four genera of Synopiidae from the Ross Sea. Thirteen of the 17 species described in detail are new to science.

Taxa treated in this monograph were collected on the shelf of New Zealand and Antarctica (200–1200 m), and two species were collected in the abyssal Ross Sea (3200 m), see Fig. 1.

Small meshed nets were deployed for collecting benthic organisms for the first time in New Zealand deep-sea waters during the Ocean Survey 2020 expeditions to the Chatham Rise and the Challenger Plateau in 2007 and the western Ross Sea in 2008. Historically, in most collections synopiids are damaged due to their brittle cuticle and appendages and antennae are typically broken off. Synopiidae are frail and often very small organisms, with an almost translucent appearance (see Frontispiece). Furthermore, Synopiidae are taxonomically challenging because of their sexual dimorphism. Most samples examined here were collected with an epibenthic sledge with a half millimetre mesh size by the design of Brenke (2005). The preservation of the specimens is extraordinarily good. This implies that further taxonomic treatment of fragile, small deep-sea taxa of several crustacean orders, especially Isopoda, Cumacea and Tanaidacea is awaiting excellent material.

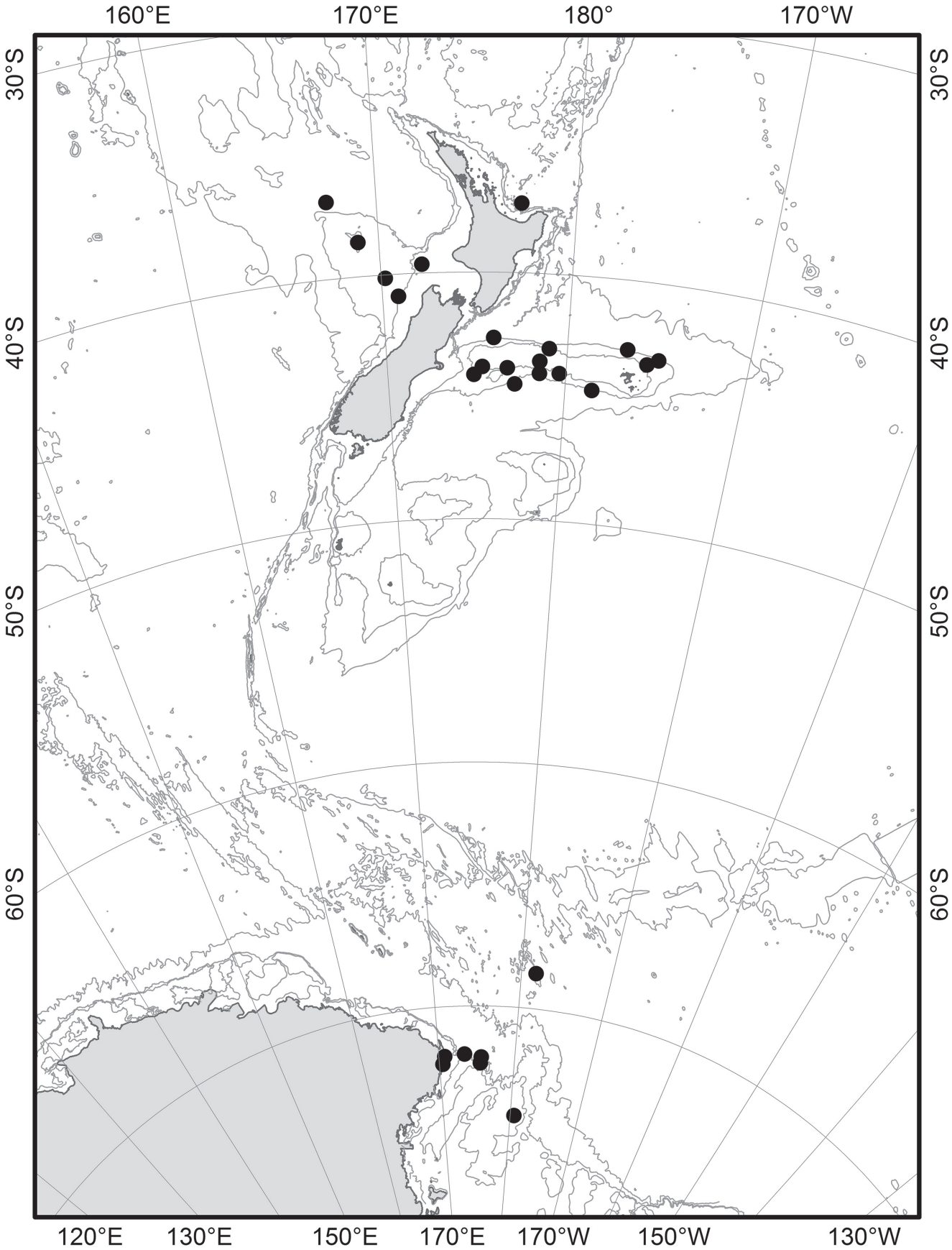


Figure 1. New Zealand and Ross Sea distribution of Synopiidae. The lines show the 500 m, 1000 m and 3000 m depth contours.

MATERIAL AND METHODS

The majority of the material was collected during the Ocean Survey 2020 expeditions with RV *Tangaroa* to the Chatham Rise, the Challenger Plateau and the western Ross Sea by means of a Brenke epibenthic sledge (Brenke 2005). The material was sorted on board, then fixed in 96% ethanol and later transferred into 70% ethanol. The material is deposited in the NIWA Marine Invertebrate Collection (NIC) in Wellington, New Zealand. Specimens of *Syrrhoe affinis* were borrowed from Le Muséum National d'Histoire Naturelle, Paris, France.

For study the specimens were transferred on a cavity slide into glycerol. Specimens were then dissected under a stereomicroscope (Leica MZ9.5, in Wellington and a Leica M205 C, in Berlin) using forceps and a dissecting tool especially made for the small sized animals: we inserted a thin minutia insect needle in the tip of a glass pasteur pipette and filled the tip with fast drying glue (see Fig. 2). It is important that only a small part of the needle protrudes from the opening of the pipette as otherwise it is not stiff enough and will bend during the dissection. Mouthparts and appendages were temporarily mounted in glycerol on slides for microscopic examination and drawing. Appendages were later mounted as permanent slides with Euparal, or transferred into small glass microvials. Microvials were stoppered with a cotton ball wrapped in Japan paper to avoid the appendages being entangled in the cotton fibres.

Drawings of habitus and appendages were made using a camera lucida attached to a compound microscope (Zeiss Axioskop 2 plus, in Wellington and Leica DMLB, in Berlin). Pencil drawings were scanned, digitally inked and arranged to plates using the methods described in Coleman (2003, 2009).

The specimens were measured along the dorsal outline of the animals from the tip of the rostrum to the end of the telson. For terms used for all body parts and their positions, see Fig. 3.

For scanning electron microscope (SEM) imaging the specimens and appendages were dehydrated through a graduated ethanol series and lastly acetone, critical-point dried, mounted on stubs, coated with gold–palladium and investigated via a SEM LEO1525. The distribution maps were created by ArcGIS.

The text for species descriptions was generated with the software packages DELTA (Dallwitz 1993 onwards) and open-DELTA following the instructions of Coleman *et al.* (2010). Our work is based on a DELTA database given to us by L.E. Hughes (Australian Museum, Sydney) which we extended with new taxa, characters and new character states.

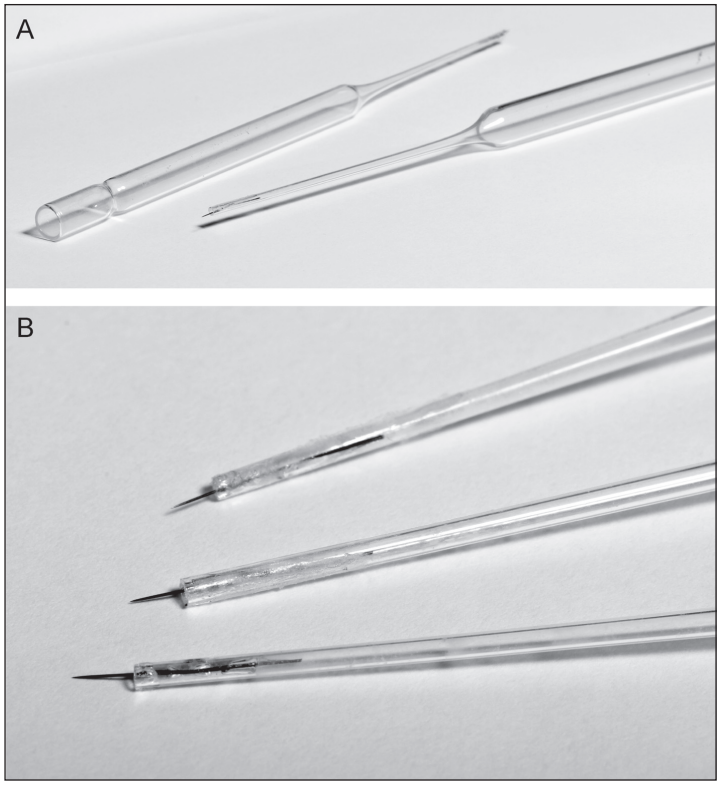
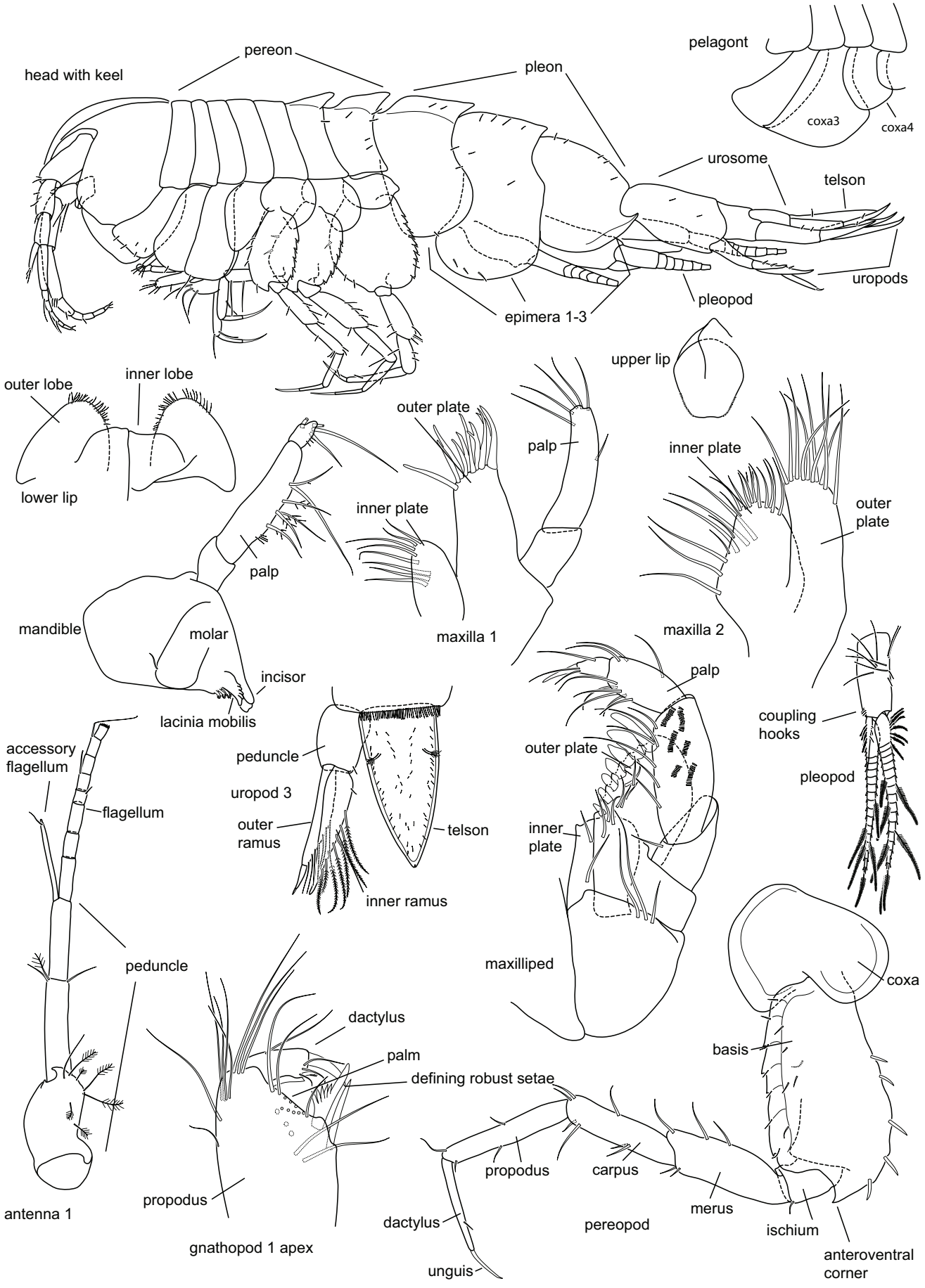


Figure 2. A dissection tool created for small Synopiidae: a thin minutia needle in the tip of a glass Pasteur pipette, the tip filled with fast drying glue.

Figure 3 (*opposite*). Terms and positions of synopiid Amphipoda used in descriptions.



For interactive identification we created data files that are located on a server on the internet. These can be accessed using the module Intkey from the DELTA package. The instructions to access the interactive identification keys are as follows: DELTA must be installed first. There are two DELTA versions available:

1. the original DELTA package can be found here – http://delta-intkey.com/www/programs.htm, but there may be problems running it under Windows 7 64 bit, and
2. the newer, modern open-source version open-DELTA (https://code.google.com/p/open-delta/), which also supports Linux and MacOS.

We created a starter file "syno.ink", which can be downloaded from http://amphipod.dnsalias.net. The starter "syno-ink" must be downloaded by "right-click save as" on your computer (e.g. on your desktop or download folder). When you later click on this starter file (syno.ink), Intkey will automatically start and load the required files from our server. An introduction into the use of DELTA is given in Coleman *et al.* (2010).

TAXONOMY

SYNOPIIDAE Dana, 1853
(amended after Ruffo, 1993)

DIAGNOSIS**:** Body dorsally toothed or smooth, urosomites free. Head with strong recurved rostrum, or galeate or with plough-shaped protuberance; pereonites sometimes with sternal hooks in males. Antenna 1 and 2 well developed, accessory flagellum present. Mouthparts basic, molar present, triturative or not, often extremely developed dominating mandible, mandibular palp 3-articulate or absent. Lower lip with inner lobes. Maxilla 1 with 2-articulate palp. Maxilliped normal, palp 4-articulate. Coxae 1–3 long, narrow or distally expanded, coxa 3–4 variable. Gnathopods simple or subchelate, linear, carpus elongated. Pereopods 3–4 normal. Uropods 1–3 biramous, lanceolate. Telson very long (except in *Synopia*), entire or incised. Coxal gills on pereonites 2–6, oostegites on pereonites 2–5. Usual male sexual dimorphism: antenna 1 shortened peduncular article 3, elongated first flagellar article with dense setation; accessory flagellum elongate; antenna 2 flagellum elongate. Urosomite 2 bearing pointed posteromarginal tooth, urosomite 3 posterior margin with fringe of setae.

GENERIC COMPOSITION:*

***Austrosyrrhoe* K.H. Barnard, 1925**
***Bruzelia* Boeck, 1871**
Bruzeliopsis Chevreux, 1911
Garosyrrhoe J.L. Barnard, 1964
***Ileraustroe* J.L. Barnard, 1969**
Jeddo J.L. Barnard, 1962a
Latacunga J.L. Barnard, 1972
Metatiron Rabindranath, 1972
Priscosyrrhoe J.L. Barnard, 1972
***Pseudotiron* Chevreux, 1895**
Stephobruzelia J.L. Barnard, 1969
Synopia Dana, 1852
***Syrrhoe* Goës, 1866**
***Syrrhoites* Sars, 1895**
Telsosynopia G. Karaman, 1986
***Tiron* Lilljeborg, 1865**

* The genera treated in this memoir are printed in bold.

KEY TO GENERA OF SYNOPIIDAE,
AMENDED AFTER BARNARD & KARAMAN, 1991

1. Telson and peduncle of uropod 3 very short and subequal in length, mandibular palp extremely stout ..... *Synopia*

   Telson elongate, exceeding peduncle of uropod 3 even when peduncle elongate, mandibular palp not extremely stout or absent 2

2. Gnathopods simple 3

   One or both gnathopods subchelate, with definite corner or defining robust seta 6

3. Rostrum with blunt apex, eyes absent 4

   Rostrum with sharp apex 5

4. Eyes absent, cleft telson ..... ***Pseudotiron***
   Eyes present, telson entire ..... *Telsosynopia*

5. Pleonites 1–3 crenulate ..... ***Tiron***

   Pleonites 1–3 each with 1 dorsal tooth ... *Metatiron*

6. Palm of gnathopods transverse or nearly so 7

   Palm of gnathopods oblique 8

7. Coxae 3–4 pelagont ..... ***Syrrhoe***

   Coxae 3–4 not pelagont ..... *Garosyrrhoe*

8. Mandibular molar of normal size, occasionally smooth and minutely fuzzy but usually triturative and generally columnar or subcolumnar, body of mandible stout but not extraordinarily bulky or subglobular, palp relatively strong 9

   Mandibular molar very large and smooth, minutely setulose or fuzzy, molar completely dominating mandible, body of mandible bulky, subglobular, together with molar often dwarfing palp (exceptions in *Ileraustroe* and *Jeddo*) 10

9. Telson very long and narrow, entire (female) or slightly cleft (male) ..... *Priscosyrrhoe*

   Telson of medium length, broad, cleft about halfway ..... ***Austrosyrrhoe***

10. Coxae 3–4 strongly pelagont 11

    Coxae 3–4 weakly or not pelagont 13

11. Mandibular palp absent ..... *Jeddo*

    Mandibular palp present 12

12. Antenna 1 with apicodorsal tooth on article 1, telson entire or apical cleft vestigial ..... *Bruzeliopsis*

    Antenna 1 lacking apicodorsal tooth on article 1, telson cleft ..... ***Ileraustroe***

13. Telson cleft one third or more 14

    Telson entire or bearing minute incision 15

14. Gnathopod 1–2 propodus palms with 1–2 serrate robust setae, coxa 1 narrow and tapering distally ..... *Latacunga*

    Gnathopod 1–2 propodus palms with 1–2 simple spines, coxa 1 not tapering ..... ***Syrrhoites***

15. Gnathopod 1–2 propodus palms with 1–2 serrate robust setae ..... ***Bruzelia***

    Gnathopod 1–2 propodus palms with about 4 simple robust setae ..... *Stephobruzelia*

Austrosyrrhoe K.H. Barnard, 1925 (amended after J.L. Barnard, 1972)

Austrosyrrhoe K.H. Barnard, 1925: 354; — J.L. Barnard, 1964: 26; — J.L. Barnard, 1969: 458; — J.L. Barnard, 1972: 16; — Barnard & Karaman, 1991: 709

DIAGNOSIS**:** Head not protuberant, lateral cephalic lobe not sharp; eyes absent; molar of medium size and not dominating mandible, weakly to strongly triturative; antenna 1 peduncle articles 1–2 either basic or article 2 elongate; coxa 1 apically rounded; coxae 3–4 not pelagont or weakly so; gnathopods typically subchelate, palms acute and bearing one serrate robust seta and one prominent additional robust seta; dactylus of gnathopod 2 normal; pereopods 5–7 elongate, dactyli elongate, article 2 of pereopod 7 expanded, rounded or truncate ventrally; pleonites 1–3 lateral margin not serrate; uropod 3 not grossly exceeding uropods 1–2, peduncle elongate; telson of medium length and cleft halfway.

TYPE-SPECIES: *Austrosyrrhoe crassipes* K.H. Barnard, 1925

SPECIES COMPOSITION:

Austrosyrrhoe crassipes K.H. Barnard, 1925
***Austrosyrrhoe kathleenae* n. sp.**
Austrosyrrhoe fimbriatus (Stebbing & Robertson, 1891)
Austrosyrrhoe rinconis J.L. Barnard, 1967
Austrosyrrhoe septentrionalis Stephensen, 1931

KEY TO THE SPECIES OF *AUSTROSYRRHOE*

1. Gnathopod 1 carpus ovoid.....2

   Gnathopod 1 carpus subrectangular 3

2. Coxa 1 widened below, produced anteriorly subacutly produced; pleonite 3 dorsally with tooth.... ..... *A. fimbriatus*

   Coxa 1 rounded anterodistally; pleonite 3 dorsally smooth.....*A. crassipes*

3. Gnathopod 1 propodus subquadrate .... *A. septentrionalis*

   Gnathopod 1 propodus subrectangular.....4

4. Pleonite 3 dorsally smooth.....***A. kathleenae* n. sp.**

   Pleonite 3 with dorsal posteromarginal acute process.....*A. rinconis*

Austrosyrrhoe kathleenae n. sp. (Figs 4–8)

TYPE MATERIAL: NIWA 71920, female holotype; NIWA 84572, 8 female paratypes.

TYPE LOCALITY: NIWA 71920 TAN0705/99, 10/04/2007, -44.56067 -178.47620, -44.55917 -178.48300, Brenke sledge, 1076–1103 m; paratypes same locality as holotype.

MATERIAL EXAMINED: NIWA 31797, 1 specimen, same locality as holotype; NIWA 84565, 6 specimens, NIWA 84730, 2 specimens, NIWA 84569, 2 specimens, TAN0705/049, 06/04/2007, -44.4862 177.1413, -44.4842 177.1462, Brenke sledge, 1235–1239 m; NIWA 84579, 27 specimens, TAN0705/160, 16/04/2007, -42.78200 -176.71520, -42.78167 -176.70420, Brenke sledge, 1023–1026 m; NIWA 84757, 1 specimen, TAN0707/051, 30/05/2007, -36.9202 167.5302, -36.9120 167.5325, 1207–1213m.

ETYMOLOGY: This species is named for Kathleen O´Shaughnessy in acknowledgement of her tremendous help in sourcing rare historic scientific literature.

DESCRIPTION BASED ON: Female (holotype), 5 mm.

HEAD: *Head* not protuberant, without dorsal keel. *Eyes* absent. *Rostrum* short, reaching half the length of article 1 of peduncle antenna 1, apically acute. Lateral cephalic lobe present, apically rounded or apically subacute. *Antenna 1* peduncle article 1 not elongate; article 2 without distomedial tooth, subequal to article 1; article 3 shorter than article 1 and 2; accessory flagellum 2 articulate, subequal in length to 3rd peduncular article, as long as first flagellar article, 2nd accessory flagellar article less than a quarter length of 1st accessory flagellar article; primary flagellum shorter than pereon, 8-articulate, 1st flagellar article elongate but not bordered with aesthetascs. *Antenna 2* shorter than body; flagellum 6-articulate. *Mandibular palp* article 2 with many slender setae; article 3 shorter than half the length of article 2, article 3 with long slender setae considerably longer than those of article 2, article 3 with more than 2 slender apical setae. Mandibular incisor smooth: left lacinia mobilis slender and smooth; accessory setal row absent; molar greatly enlarged, forming 50 percent of mandibular surface, not triturative. *Maxilla 1* inner plate with 7 plumose setae; outer plate with 10 apical robust setae, bifurcate setae absent; palp article 2 outer margin smooth, setae confined to apex. *Maxilla 2* outer plate shorter than inner plate; inner plate width more than 1.3 x outer plate. *Maxilliped* outer plate subequal in width to second palp article, medially with inflated wide, flame-shaped robust setae; palp article 2 twice the length of article 3; palp article 3 subrectangular.

PEREON: Pereon dorsally, dorsolaterally and laterally smooth. *Pereonite 7* without carination; posterior margin mid-dorsally smooth, not produced; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* subchelate; coxa not tapering distally, anterodistal margin not produced; basis longer than carpus; carpus subrectangular with serrate setae along posterior margin; propodus palm oblique, defined by 1 serrate and 1 smooth robust seta. *Gnathopod 2* subchelate; coxa not distally tapering; basis longer than carpus; propodus palm oblique, defined by 1 serrate robust seta; dactylus well developed. *Pereopod 3* coxa anterodistal lobe present, produced acute, posterodistal lobe present, rounded, less than half the depth of the coxa, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subrectangular, half as long as merus; dactylus weakly curved. *Pereopods 3–4* coxa pelagont. *Pereopod 4* coxa lobate, shorter than coxa 3, posterior margin weakly lobate; ischium subrectangular, half as long as merus; dactylus weakly curved. *Pereopods 5–7* coxa smooth; basis posterior margin serrate, anterodistal corner weakly produced, acute. *Pereopod 5* basis subrectangular, not expanded, posterodistal lobe weakly developed, posterodistal lobe not extending past ischium. *Pereopod 7* basis ovate, posterodistal lobe well developed, rounded, posterodistal lobe extending below ischium.

PLEON: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin smooth. *Pleonite 1* carinate, posterior margin mid-dorsally strongly produced. *Pleonite 2* carinate, posterior margin mid-dorsally strongly produced. *Pleonite 3* without carination, posterior margin mid-dorsally not produced, posterodorsal margin smooth. *Epimeron 1* posterior margin smooth, posterodistal corner rounded. *Epimeron 2* posterior margin smooth, posterodistal corner subacute. *Epimeron 3* posterior margin smooth, ventral margin smooth;

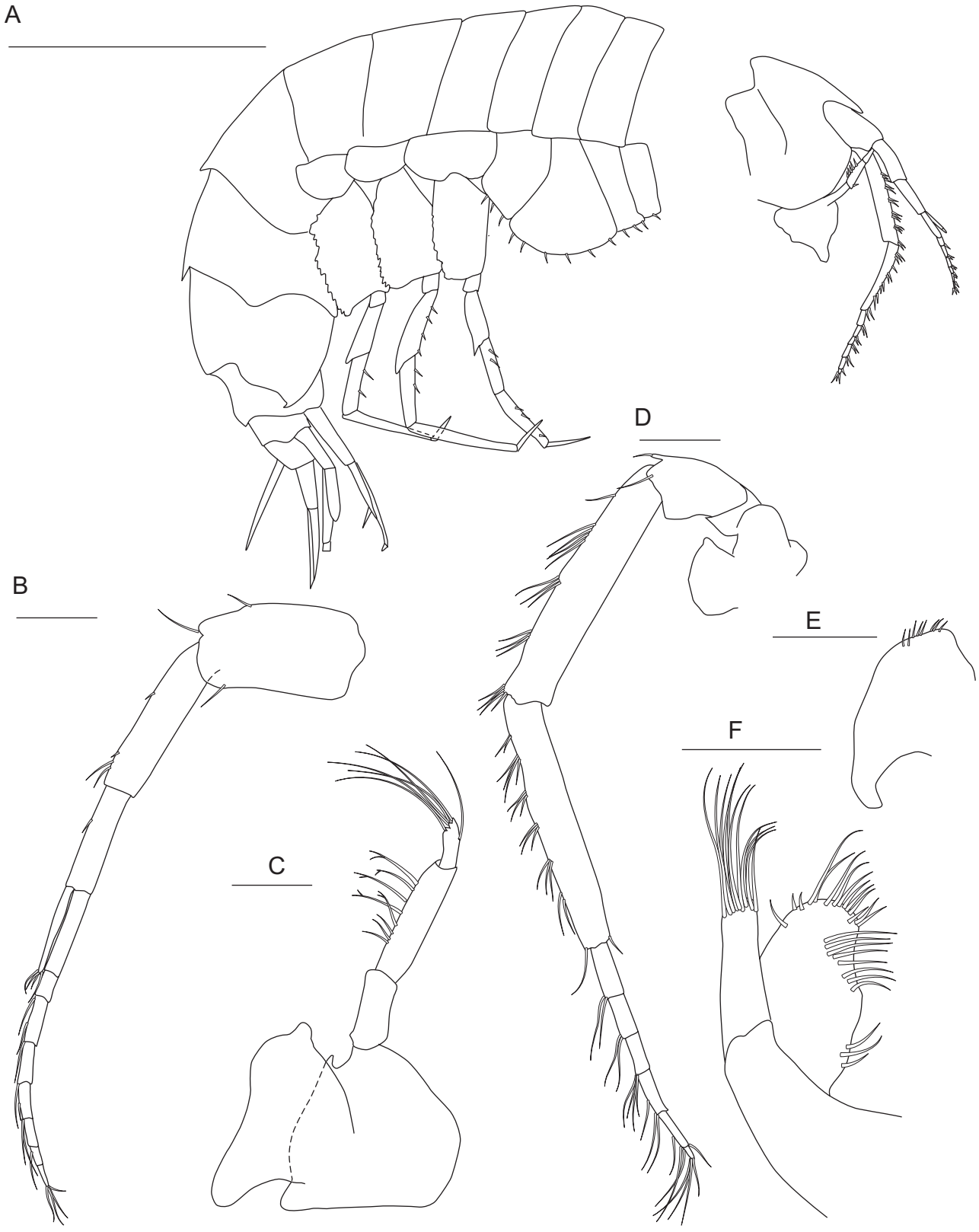


Figure 4 A–F. *Austrosyrrhoe kathleenae* n. sp., female holotype, 5 mm, NIWA 71920. A) habitus; B) antenna 1; C) mandible; D) antenna 2; E) lower lip; F) maxilla 1. Scale bars: A = 1mm; B–F = 100 μm.

Figure 5 A–D. *Austrosyrrhoe kathleenae* n. sp., female holotype, 5 mm, NIWA 71920. A) maxilliped; B) gnathopod 1; C) gnathopod 2; D) pereopod 3. Scale bars: A–D = 100 µm.

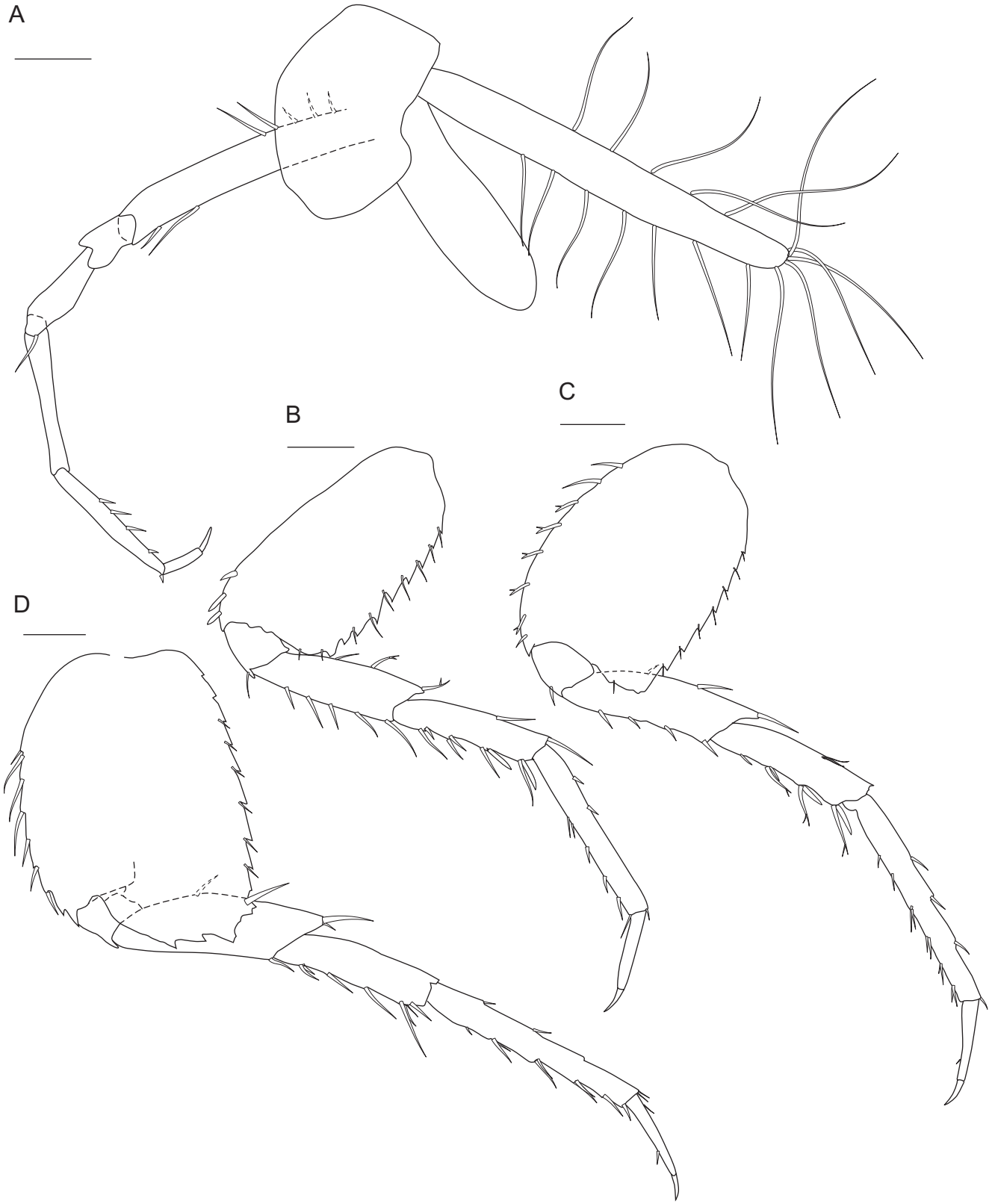


Figure 6 A–E. *Austrosyrrhoe kathleenae* n. sp., female holotype, 5 mm, NIWA 71920. A) pereopod 4; B) pereopod 5; C) pereopod 6; D) pereopod 7. Scale bars: A–D = 100 µm.

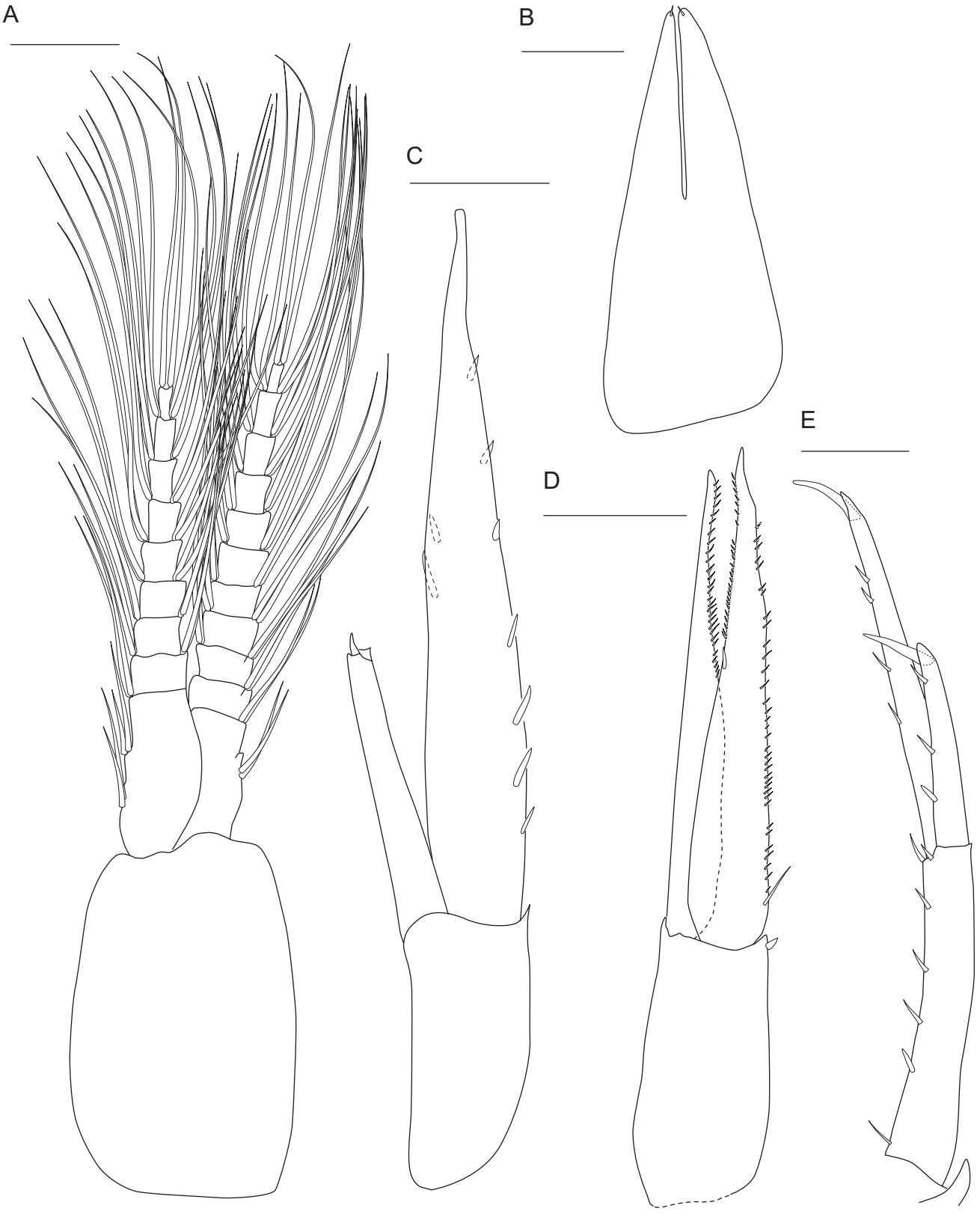


Figure 7 A–E. *Austrosyrrhoe kathleenae* n. sp., female holotype, 5 mm, NIWA 71920. A) pleopod 1; B) telson; C) uropod 2; D) uropod 3; E) uropod 1. Scale bars: A–E = 100 μm.

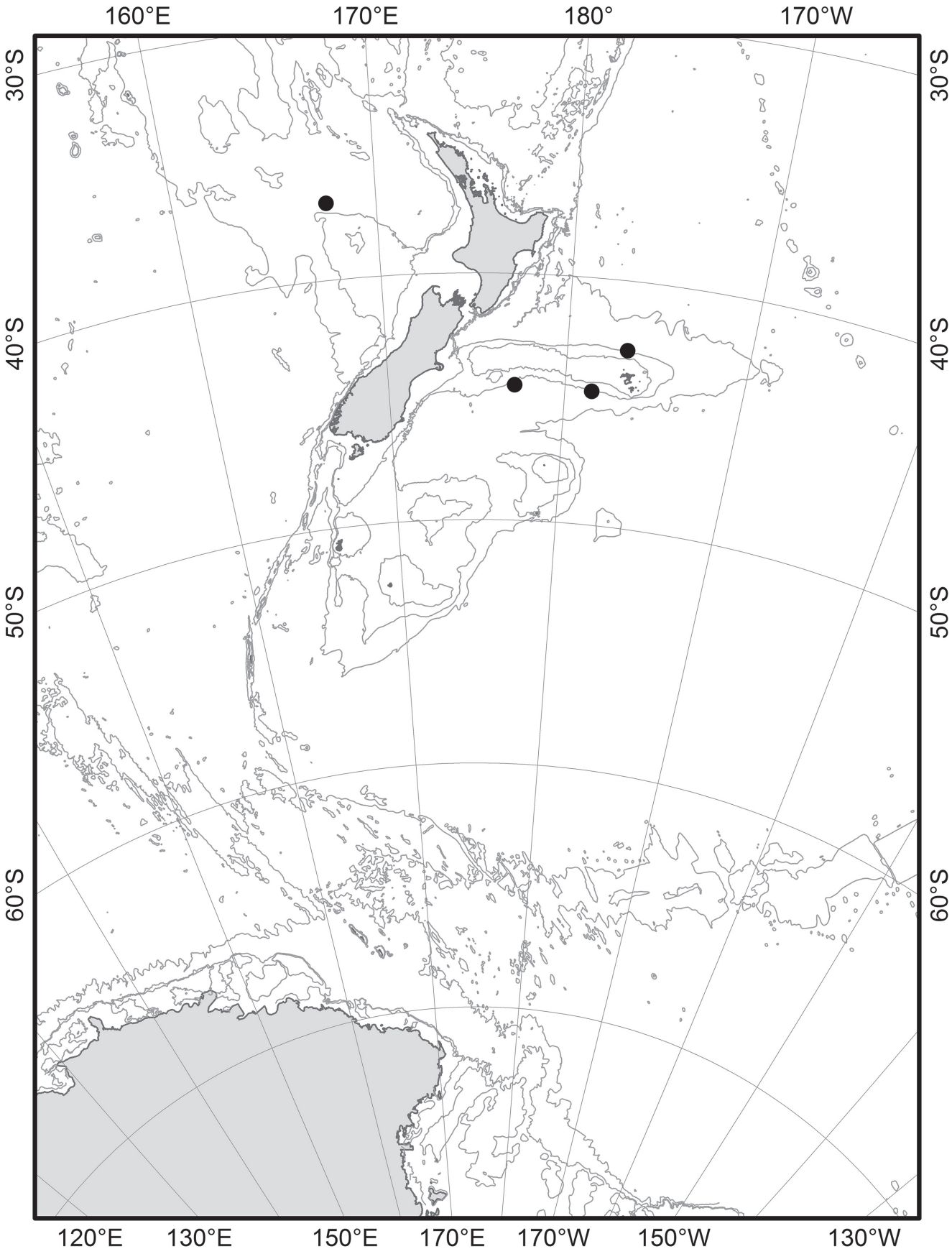


Figure 8. Distribution map of *Austrosyrrhoe kathleenae* n. sp.

posterodistal tooth acute. *Urosomite 1* carinate, with single acute tooth. *Urosomite 2–3* mid-dorsal posterior margin smooth. *Uropod 1* peduncle without distal process; inner ramus subequal to peduncle; apical robust setae on tip of both rami present (conspicuous). *Uropod 2* apical robust setae on tip of outer ramus present. *Uropod 3* not exceeding uropods 1–2 length; peduncle long (at least 2 × breadth). *Telson* much longer than uropod 3 peduncle, less than 3 × as long as wide; with no setae along the lateral margin, with single pair of apical slender setae; cleft about half the telson length.

Distribution: New Zealand, Chatham Rise, Challenger Plateau, 1076–1239 m.

Remarks: *Austrosyrrhoe kathleenae* n. sp. can be distinguished from *Austrosyrrhoe crassipes* K.H. Barnard, 1925, *Austrosyrrhoe fimbriatus* (Stebbing & Robertson, 1891) and *Austrosyrrhoe rinconis* J.L. Barnard, 1967 by the shape of the first gnathopod; the carpus of gnathopod 1 is not expanded in the new species. The slender carpus of the first gnathopod is a character shared with *Austrosyrrhoe septentrionalis* Stephensen, 1931, but *A. kathleenae* n. sp. can be distinguished from the latter by an extended lobe of basis pereopod 7, extending to the ischium. An additional separating character is found in gnathopod 2, the ratio of propodus to carpus is 1:1.5 in the new species and 1:2 in *A. septentrionalis*. While *A. kathleenae* n. sp. has a smooth dorsal posterior margin of metasomal segment 3, *A. rinconis* bears a short spine.

This is the fifth species in the genus *Austrosyrrhoe* and the first record from New Zealand waters.

Bruzelia Boeck, 1871 (amended after J.L. Barnard, 1972)

Bruzelia Boeck, 1871: 149; — G.O. Sars, 1895: 394; — Stebbing, 1906: 274; — J.L. Barnard, 1969: 459; – J.L. Barnard, 1972: 17; — Barnard & Karaman, 1991: 711; — Ruffo, 1993: 709

Diagnosis: Head not protuberant, except in type species, lateral cephalic lobe not sharp; eyes absent; antenna 1 articles 1–2 either basic or article 2 elongate; molar greatly enlarged, dominating mandible, not triturative; mouthparts basic; coxa 1 ordinary; coxae 3–4 not pelagont, coxa 3 not strongly expanded distally except for acute anteroventral cusp and not posteriorly excavate, coxa 4 variable in size and shape, drawn out posteriormarginally (rarely weak); gnathopods typically subchelate, palms acute, defined by 1 serrate and 1 smooth robust seta; dactylus of gnathopod 2 normal; pereopods 5–7 weakly to strongly elongate, dactyli weakly elongate; pleonites 1–3 lateral margin not serrate; uropod 3 not exceeding uropods 1–2; telson elongate, always entire or minutely incised.

Type-species: *Bruzelia typica* Boeck, 1871

Species composition:

Bruzelia ascua J.L. Barnard, 1966
Bruzelia australis Stebbing, 1910
Bruzelia diodon K.H. Barnard, 1916
***Bruzelia erikae* n. sp.**
Bruzelia guayacura J.L. Barnard, 1972
Bruzelia inlex J.L. Barnard, 1967
***Bruzelia junkeri* n. sp.**
Bruzelia pericu J.L. Barnard, 1972
Bruzelia popolocan J.L. Barnard, 1972
Bruzelia poton J.L. Barnard, 1972
Bruzelia tuberculata Sars, 1882
Bruzelia typica Boeck, 1871
***Bruzelia vogeli* n. sp.**

Key to the species of ***Bruzelia***, amended after Barnard, 1972

1. Pereonites 2–7 with distinct dorsal teeth 2

   Only a few posterior segments of pereon with distinct teeth or teeth absent 4

2. Pereon and pleon with lateral teeth below dorsal teeth ..... *B. ascua*

   Pereon sometimes with lateral bulges just above coxae but subsidiary teeth otherwise absent 3

3. Article 1 of antenna 1 with small cusp; pleonites 1–2 with lateral carina; dorsal teeth large and sharp ... . *B. australis*

   Article 1 of antenna 1 lacking cusp; no lateral carina on pleonites 1–2; dorsal teeth large and sharp..... ..... *B. guayacura*

   Article 1 of antenna 1 lacking cusp; pleonites 1–2 with lateral carina; dorsal teeth forming low crests.....*B. tuberculata*

4. Pereonite 7 with small dorsal tooth 5

   Pereonite 7 without dorsal teeth 6

5. Pereonite 3 lacking dorsal tooth.....11

   Pereonite 3 with strong dorsal tooth ....***B. junkeri* n. sp**.

6. Coxa 4 posteromarginally straight with lobe; article 2 of pereopod 7 basis large, apically expanded and truncate ventrally ..... *B. popolocan*

   Coxa 4 with narrow posteromarginal lobe; basis of pereopod 7 ovatorectangular.....7

7. Pleonites 1–3 with weak dorsal rugosities, no teeth 8

   One or more of pleonites 1–3 with dorsal tooth ..9

8. Rostrum long and pointed, coxa 3 drawn out anterodistally into rounded process ..***B. erikae* n. sp.**

   Rostrum short and blunt, coxa 3 drawn out into pointed anterodistal tooth..... *B. pericu*

9. Pleonite 3 with tooth 10

   Pleonite 3 lacking tooth, pleonites 1–2 and 5 with small dorsal tooth..... *B. inlex*

10. Only pleonite 3 with large dorsal tooth, other pleonites smooth ..... *B. typica*

    Pleonites 1 and 3 with dorsal tooth.....
    .....***B. vogeli* n. sp.**

11. Palm of gnathopods 1–2 bearing one robust seta, pleonites 2 and 5 with dorsal tooth..... *B. poton*

    Palm of gnathopods 1–2 bearing 2 robust setae, pleonites 2 and 5 smooth..... *B. diodon*

***Bruzelia erikae* n. sp.** (Figs 9–14)

TYPE MATERIAL: NIWA 70369, male holotype; NIWA 70370, female paratype.

TYPE LOCALITY: NIWA 70369, TAN0705/285, 27/04/2007, -43.79666 175.31582, -43.80450 175.31483, Brenke sledge, 418–422 m.

MATERIAL EXAMINED: NIWA 70370, paratype, female, same locality as holotype; NIWA 84620,TAN0705/255, 24/04/2007, -43.52966 178.50483, -43.53633 178.51184, Brenke sledge, 346–346 m.

ETYMOLOGY: This species is named for Erika Mackay to thank her for her arty support over many years, illustrating amphipods.

DESCRIPTION BASED ON: Male holotype, NIWA 70369, 6.1 mm.

HEAD: *Head* not protuberant, without dorsal keel. *Eyes* absent. *Rostrum* long, longer than half the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe absent. *Antenna 1* much shorter than antennae 2, less than half length, peduncle article 1 not elongate; article 2 without distomedial tooth, shorter than article 1; article 3 shorter than article 1 and 2; accessory flagellum longer than 3rd peduncular article, accessory flagellum shorter than first flagellar article, accessory flagellum 2nd article subequal to 1st accessory flagellar article; 1st flagellar article elongate and bordered with aesthetascs (callynophore); flagellum shorter than pereon, 8-articulate. *Antenna 2* longer than body; flagellum 12-articulate. *Mandibular palp* article 2 with many slender setae; article 3 shorter than half the length of article 2, article 3 with long slender setae considerably longer than those of article 2, article 3 with more than 2 slender apical setae. Mandibular incisor dentate; left lacinia mobilis wide and multidentate; molar greatly enlarged, ¾ of mandibular surface, smooth, not triturative. *Maxilla 1* inner plate with 9 plumose setae; outer plate with 11 apical robust setae including bifurcate seta; palp article 2 outer margin smooth, slender setae confined to apex. *Maxilla 2* inner plate width about 1.2 × outer plate. *Maxilliped* inner plate without nodular setae; outer plate 1.3 × wider than second palp article, outer plate with simple medial robust setae; palp article 2 length 1.4 × article 3; palp article 3 subrectangular.

PEREON dorsally, dorsolaterally and laterally smooth. *Pereonite 7* without carination; posterior margin mid-dorsally smooth, not produced; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* nearly rectipalmate; coxa not tapering distally, anterodistal margin not produced; basis longer than carpus; carpus subrectangular; carpus posterior margin with serrate setae; propodus palm oblique, propodus palm defined by 1 serrate robust seta and 1 smooth robust seta. *Gnathopod 2* nearly rectipalmate; coxa not distally tapering; basis about as long as carpus; carpus posterior margin lined with serrate setae; propodus palm oblique or transverse, propodus palm defined by 1 serrate robust seta and 1 additional robust seta; dactylus of gnathopod 2 well developed, unguis short, extending as 0.4 × dactylus length. *Pereopod 3* coxa anterodistal lobe present, subacutly produced, posterodistal lobe absent, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subrectangular, half as long as merus; dactylus weakly curved. Pereopod 3–4 coxa not pelagont. *Pereopod 4* coxa subequal to coxa 3, subrectangular, posterior margin not lobate; ischium subrectangular, half as long as merus; dactylus weakly curved. Pereopod 5–7 basis anterodistal corner weakly produced, acute, posterior margin broadly serrate. *Pereopod 5* basis subrectangular, not expanded, posterodistal lobe well developed, rounded, posterodistal lobe extending along 0.5 × length of ischium. *Pereopod 7* basis subrectangular, posterodistal lobe well developed, rounded, extending below ischium.

PLEON: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin not serrate. Pleonites 1–3 without carination, posterior margin mid-dorsally not produced, posterodorsal margin smooth. *Epimeron 1* posterior margin smooth, posterodistal corner rounded. *Epimeron 2* posterior margin smooth, posterodistal corner tooth acute. *Epimeron 3* posterior margin smooth, ventral margin serration absent; posterodistal tooth subacute. *Urosomite 1* mid-dorsal posterior margin smooth, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior

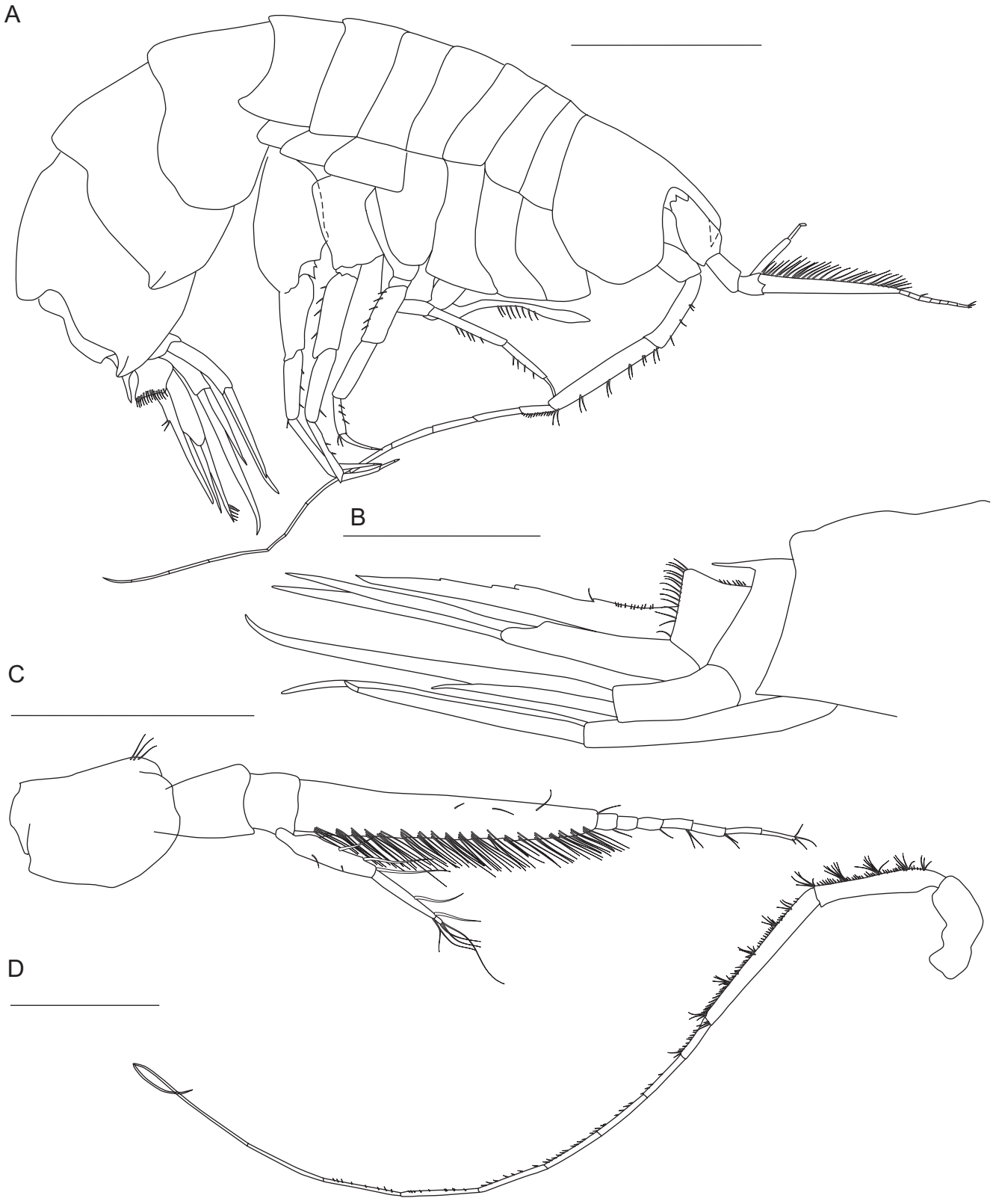


Figure 9 A–D. *Bruzelia erikae* n. sp., male holotype, 6.1 mm, NIWA 70369. A) habitus; B) urosome; C) antenna 1; D) antenna 2. Scale bars: A = 1 mm; B–D = 500 µm.

Figure 10 A–F. *Bruzelia erikae* n. sp., male holotype, 6.1 mm, NIWA 70369. A) maxilla 1; B) maxilla 2; C) lower lip; D) maxilliped; E) mandible; F) mandible. Scale bars: A–F = 100 µm.

Figure 11 A–D. *Bruzelia erikae* n. sp., male holotype, 6.1 mm, NIWA 70369. A) left gnathopod 1; B) right gnathopod 2; C) right gnathopod 1; D) pereopod 3. Scale bars: A–D = 100 µm.

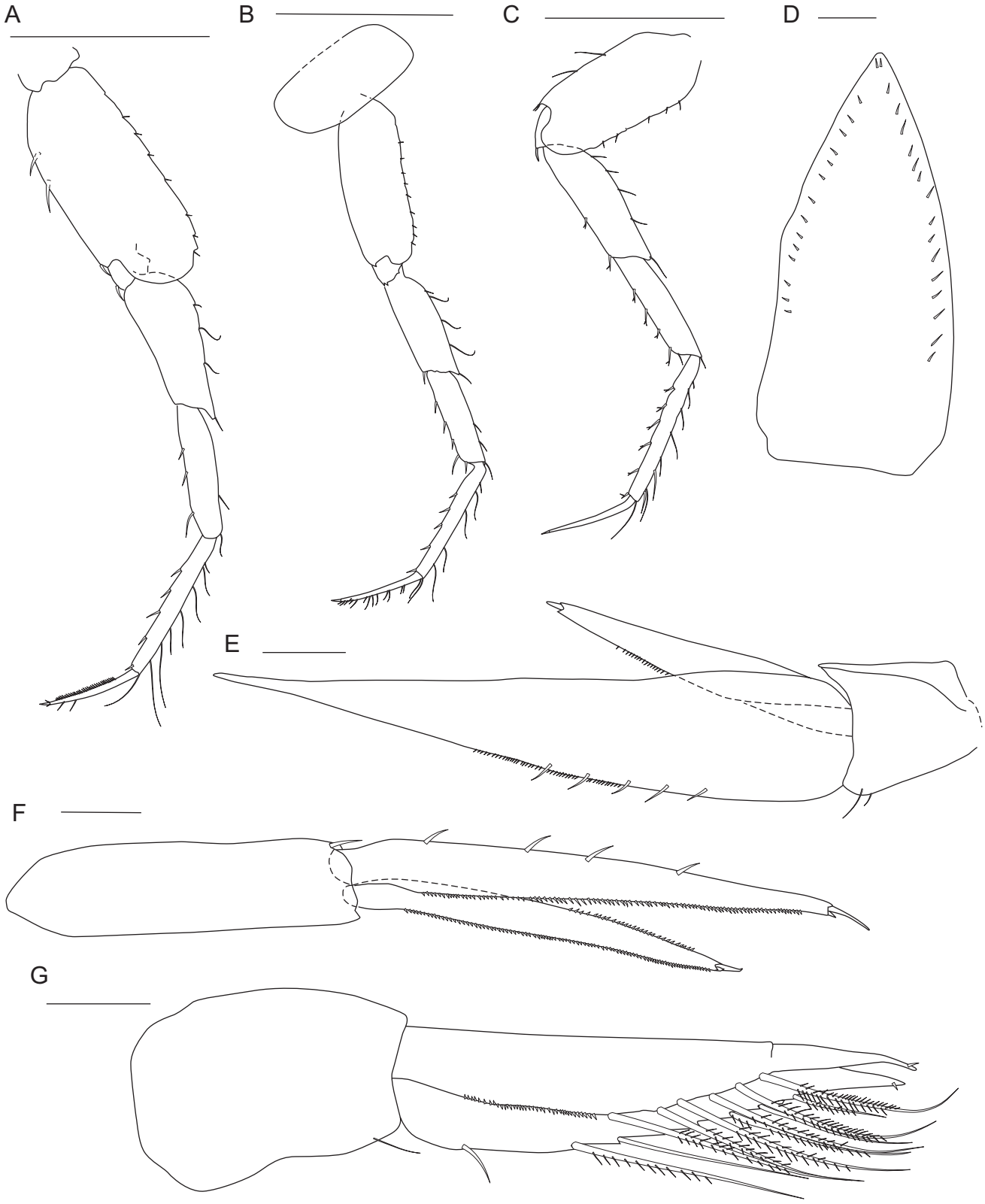


Figure 12 A–G. *Bruzelia erikae* n. sp., male holotype, 6.1 mm, NIWA 70369. A) pereopod 7; B) pereopod 6; C) pereopod 5; D) telson; E) uropod 2; F) uropod 1; G) uropod 3. Scale bars: A–C = 500 µm; D–G =100 µm.

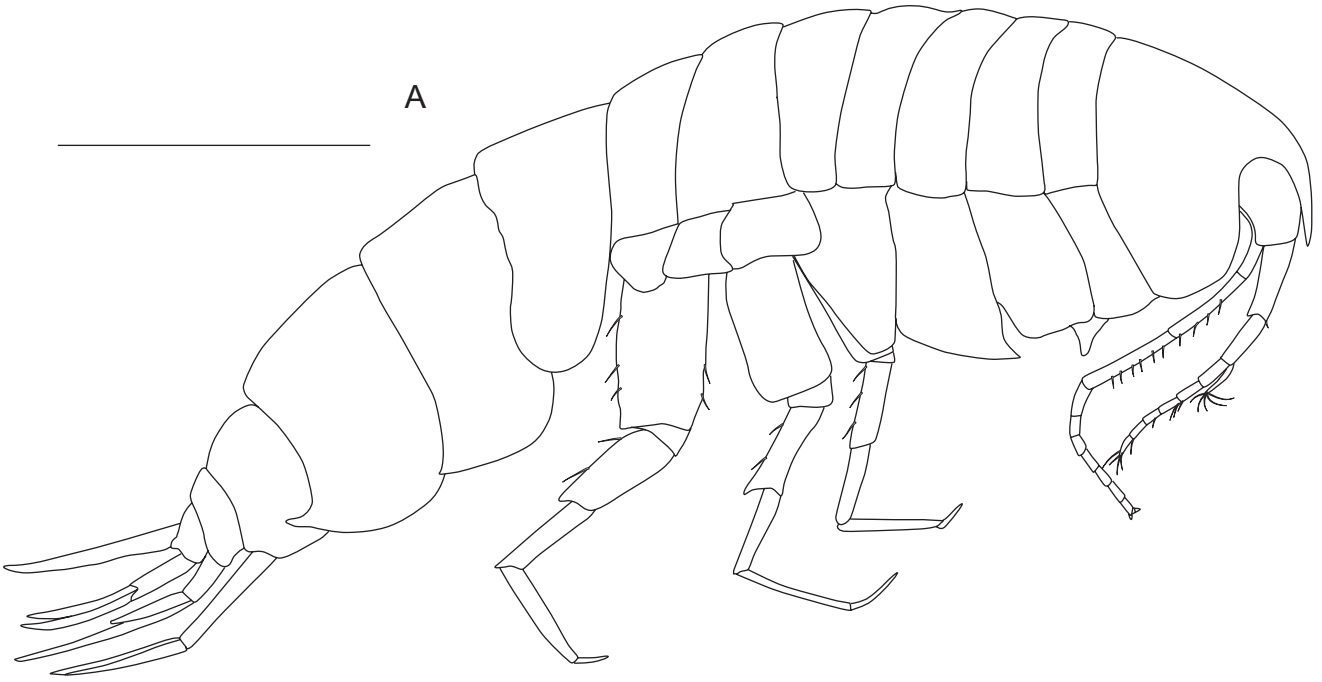


Figure 13 A. *Bruzelia erikae* n. sp., female paratype, NIWA 70370. A) habitus. Scale bar: 1 mm.

margin with long tooth reaching more than half length of urosomite 3. *Urosomite 3* dorsal and posterior margin with fringe of slender setae. *Uropod 1* peduncle without distal process; inner ramus longer than peduncle; apical robust setae on tip of both rami present. *Uropod 2* apical robust setae on tip of outer ramus present. *Uropod 3* length not exceeding uropods 1–2; peduncle short (less than 2 × breadth). *Telson* entire; longer than uropod 3 peduncle, less than 3 × as long as wide; setae lining lateral margin, apical margin subacute, without apical slender setae.

Sexual dimorphic female of *Bruzelia erikae* n. sp.

DESCRIPTION BASED ON: Female (paratype), 5.1 mm.

HEAD: *Antenna 1* accessory flagellum subequal to 3rd peduncular article and as long as first flagellar article; flagellum 6-articulate. Antenna 1 1st flagellar article similar sized to 2nd flagellar article. *Antenna 2* shorter than body.

PLEON: *Urosomite 2* mid-dorsal posterior margin smooth. *Urosomite 3* mid-dorsal posterior margin smooth.

DISTRIBUTION: New Zealand, Chatham Rise, 346–422 m.

Remarks: *Bruzelia erikae* n. sp. has a smooth pereon, like the similar species *Bruzelia inlex* J.L. Barnard, 1967 but has a bumpy dorsal pereon outline and mid-dorsal teeth on pereonite 7 and pleonite 1–2. The new species *Bruzelia erikae* has a slender subrectangular carpus on gnathopod 1, whereas *B. inlex* has an ovoid carpus. The male sexual dimorphic characters including the arrangement of a spine on urosomite 2 and a posterior row of short setae on the posterior margin of urosomite are similar to *B. typica* and *B. junkeri* n. sp. It is most likely that these sexual dimorphic characters are also expressed in other species of *Bruzelia*. This characteristic spine and fringe arrangement on urosomites 2–3 also occurs in males of the genera *Syrrhoites* and *Ileraustroe*. *Bruzelia erikae* n. sp. differs from the other two New Zealand species in the genus *B. junkeri* n. sp. and *B. vogeli* n. sp. in the smooth dorsal margins of pereonite 7 to pleonite 3.

Bruzelia junkeri n. sp. (Figs 15–20)

TYPE MATERIAL: NIWA 84623, male holotype; NIWA 24591, 2 female paratypes.

TYPE LOCALITY: NIWA 84623, TAN0707/105, 05/06/2007, -40.1277 170.2140, -40.1352 170.2090, Brenke sledge, 803–805 m.

MATERIAL EXAMINED: NIWA 24591, 2 female paratypes, same locality as holotype.

ETYMOLOGY: Named for Stephan Junker, Managing Director of the Museum für Naturkunde Berlin, for his enormous effort to restructure the museum.

DESCRIPTION BASED ON: Male (holotype), 6 mm.

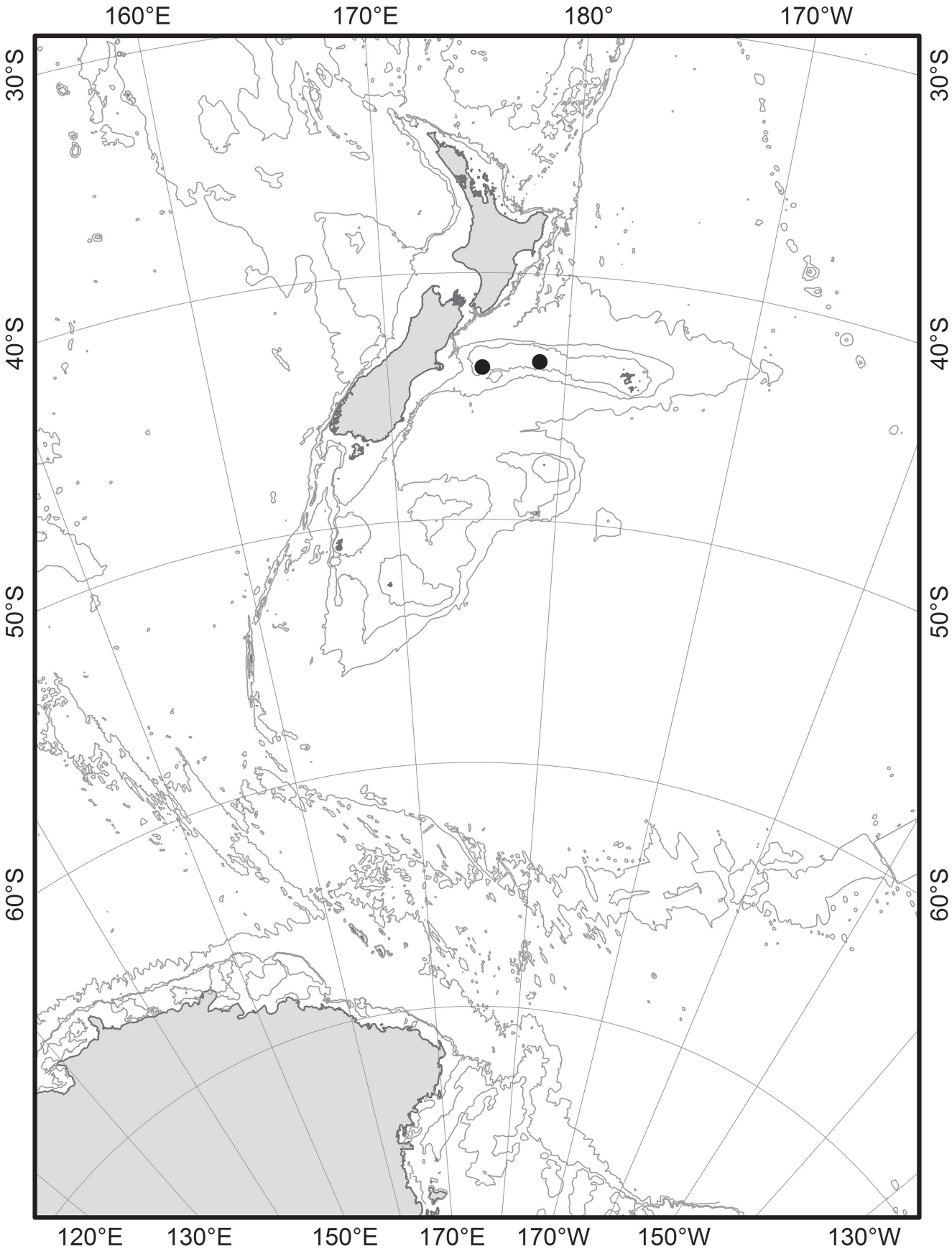


Figure 14. Distribution map of *Bruzelia erikae* n. sp.

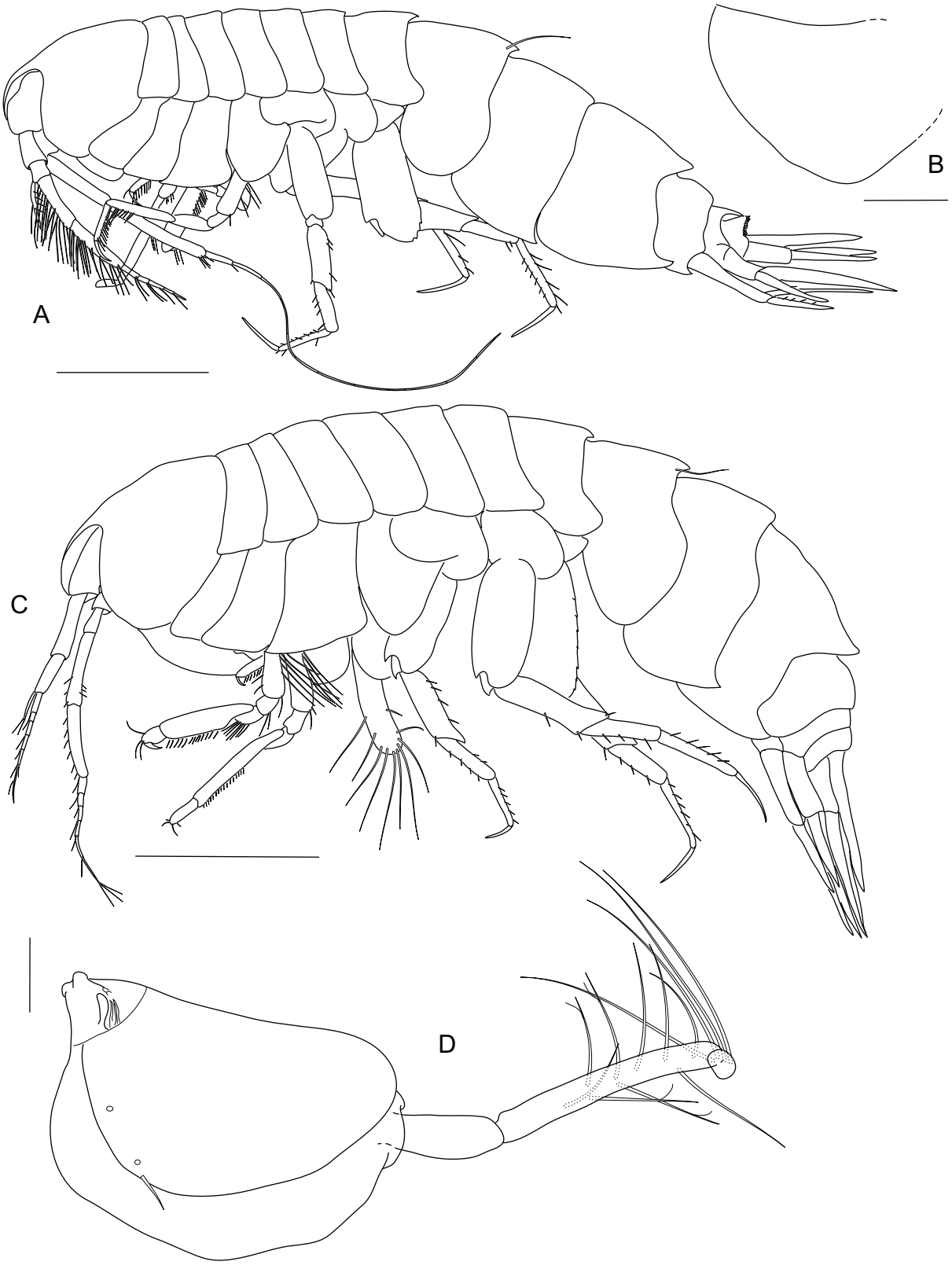


Figure 15 A–D. *Bruzelia junkeri* n. sp., except for C: male holotype, 6 mm, NIWA 84623. A) habitus, male holotype; B) upper lip; C) habitus, female paratype, NIWA 24591; D) mandible. Scale bars: A, C = 1 mm; B = 200 µm; D = 100 µm.

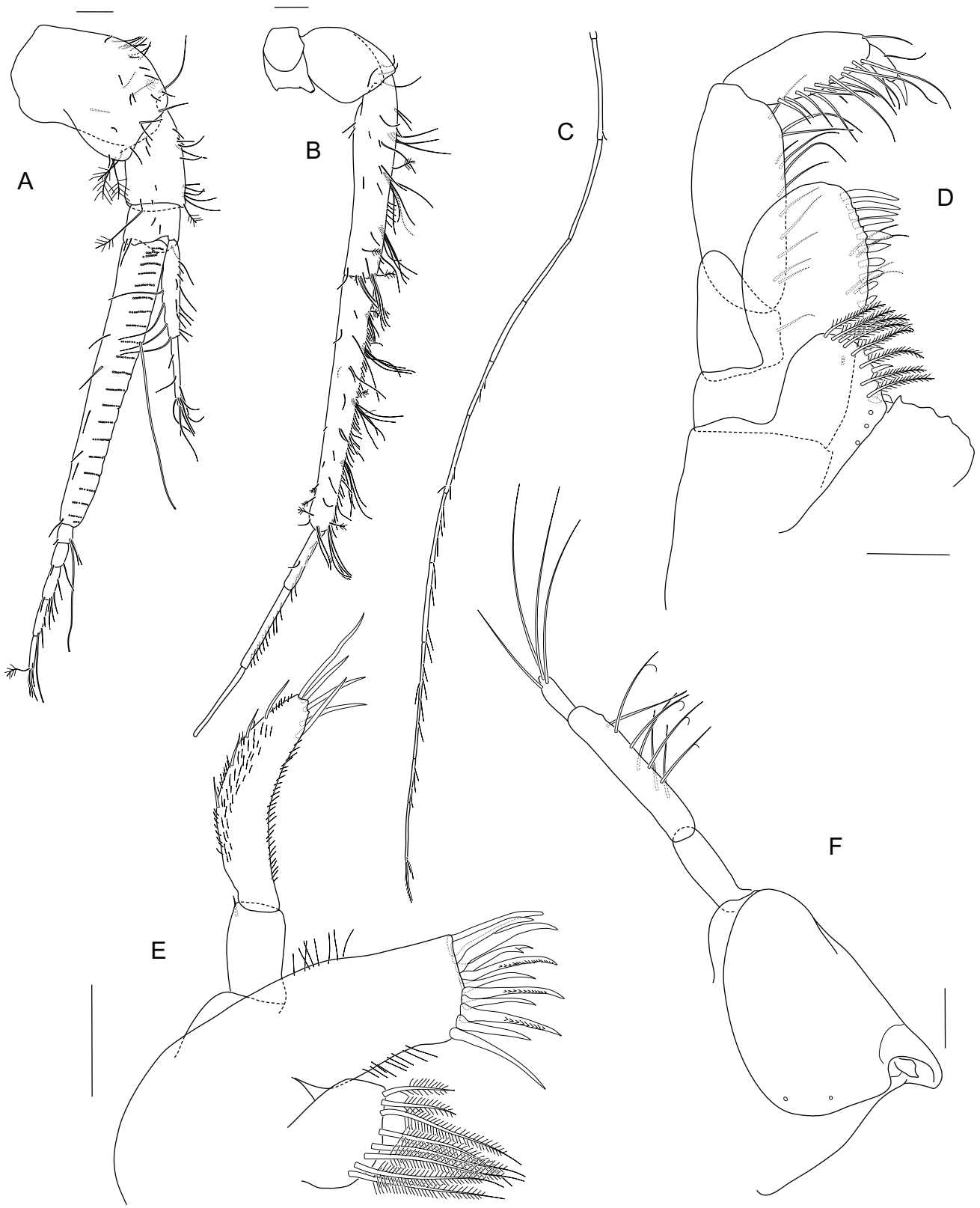


Figure 16 A–F. *Bruzelia junkeri* n. sp., male holotype, 6 mm, NIWA 84623. A) antenna 1; B) antenna 2; C) flagellum of antenna 2; D) left maxilliped; E) maxilla 1; F) left mandible. Scale bars: A–F = 100 µm.

Figure 17 A–D. *Bruzelia junkeri* n. sp., male holotype, 6 mm, NIWA 84623. A) maxilla 2; B) apex of gnathopod 1; C) gnathopod 1; D) pereopod 3. Scale bars: A–D = 100 μm.

Figure 18 A–D. *Bruzelia junkeri* n. sp., male holotype, 6 mm, NIWA 84623. A) gnathopod 2; B) pereopod 4; C) pereopod 5; D) pereopod 6. Scale bars: A–D = 100 μm.

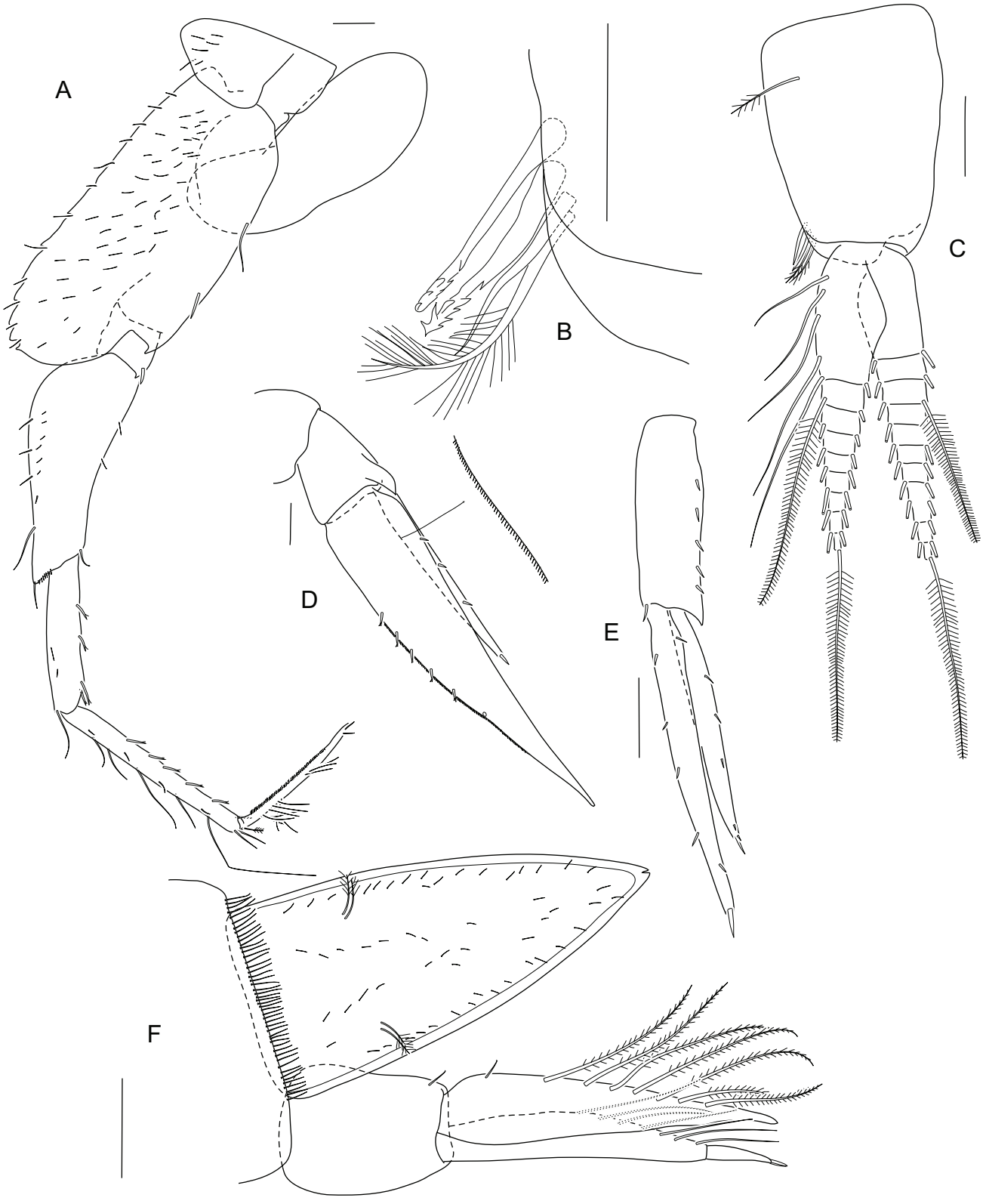


Figure 19 A–F. *Bruzelia junkeri* n. sp., male holotype, 6 mm, NIWA 84623. A) pereopod 7; B) coupling hooks of pleopod 1; C) pleopod 1; D) uropod 2; E) uropod 1; F) telson and uropod 3. Scale bars: A, B, D = 100 µm; C, E, F = 200 µm.

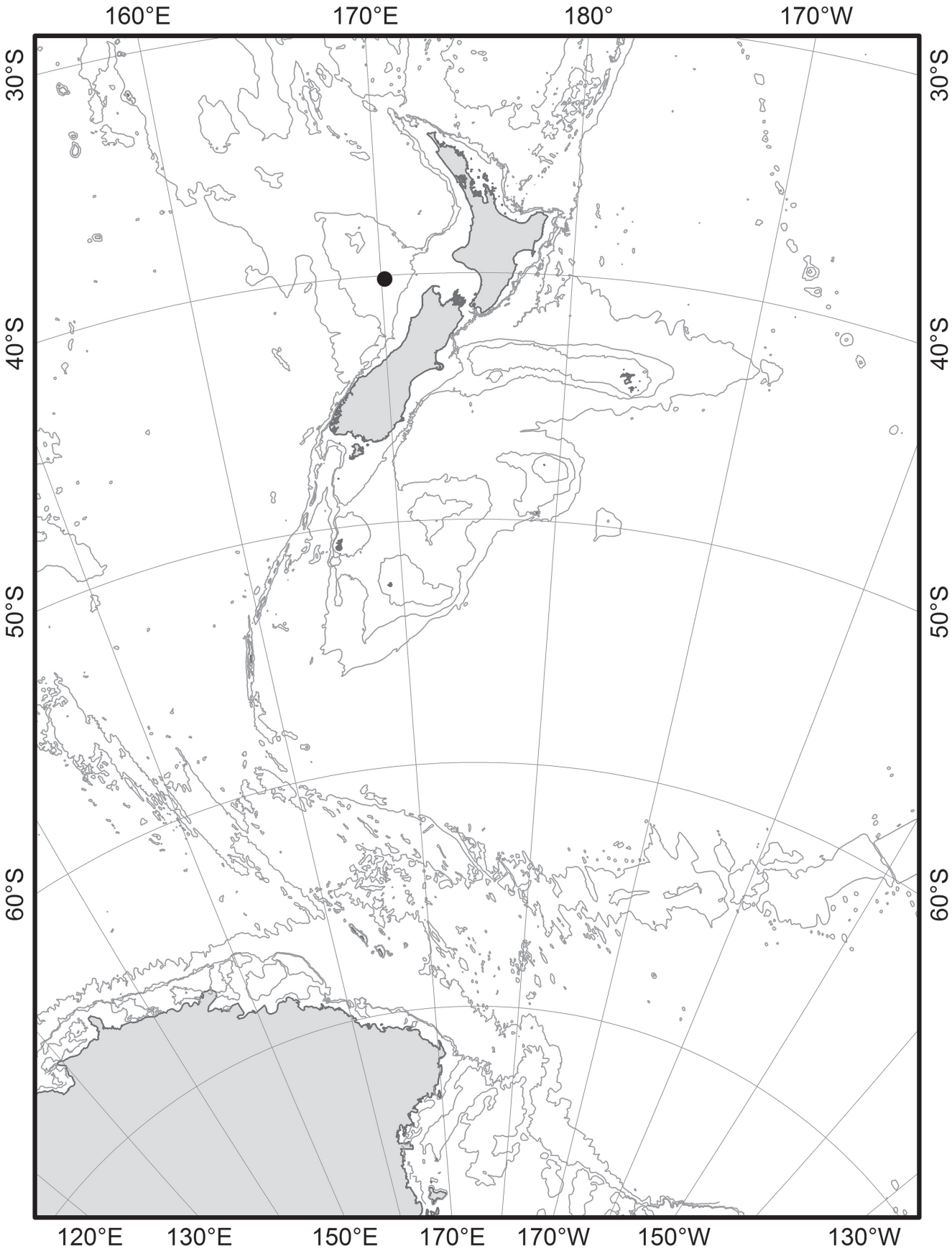


Figure 20. Distribution map of *Bruzelia junkeri* n. sp.

HEAD: *Head* not protuberant, without dorsal keel. *Eyes* absent. *Rostrum* long, more than half the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe absent. *Antenna 1* article 1 not elongate, without distal tooth. Antenna 1 article 2 without distomedial tooth. Antenna 1 article 2 shorter than article 1; article 3 shorter than article 1 and shorter than article 2; accessory flagellum shorter than 3rd peduncular article, longer than first flagellar article; accessory flagellum 2nd article subequal to 1st accessory flagellar article; 1st flagellar article elongate and bordered with aesthetascs (callynophore); flagellum longer than pereon, 6-articulate. *Antenna 2* extending 4/4 of body length; flagellum 15-articulate. *Mandibular palp* article 2 with many slender setae; article 3 length 0.2 times article 2, article 3 with long slender setae considerably longer than those of article 2, article 3 with more than 2 slender apical setae. Mandibular incisor smooth; left lacinia mobilis wide and multidentate; accessory setal row not present; molar greatly enlarged, not triturative. *Maxilla 1* inner plate with 8 plumose setae; outer plate with 11 apical robust setae, bifurcate setae present; palp article 2 outer margin with setae and with apical and marginal setation. *Maxilla 2* outer plate subequal to inner plate, or shorter than inner plate; inner plate width more than 1.3 × outer plate. *Maxilliped* inner plate with broad robust nodular setae distally; outer plate 1.3 × wider than second palp article, outer plate medially with tapering robust setae; palp article 2 1.4 × the length of article 3; palp article 3 subrectangular.

PEREON: Carina starting on pereonite 7; additional small mid-dorsal hump prior to posterior margin absent; pereonites dorsolaterally and laterally smooth. *Pereonite* 6–7 without lateral ridge. *Pereonite 7* with small carination; posterior margin mid-dorsally smooth, with short point; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner rounded. *Gnathopod 1* subchelate; coxa distally expanded, anterodistal margin produced, rounded; basis longer than subrectangular carpus; the latter with serrate setae along the posterior margin; propodus palm oblique, defined by 1 serrate robust seta and 1 additional smooth robust seta. *Gnathopod 2* subchelate; coxa not distally tapering; basis longer than carpus; carpus serrate setae along the posterior margin present; propodus palm oblique, defined by 1 serrate robust seta and 1 additional robust seta; dactylus of gnathopod 2 well developed, unguis short, less than or subequal to length of dactylus. *Pereopod 3* coxa anterodistally produced acute, posterodistal lobe absent, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subrectangular, half as long as merus; dactylus weakly curved. Pereopod 3–4 coxa not pelagont. *Pereopod 4* coxa subequal to coxa 3, ventral margin rounded, posterior margin with medium developed lobe; ischium subrectangular, half as long as merus; dactylus weakly curved. *Pereopod 5–7* coxa smooth; basis anterodistal corner produced as a recurved hook, posterior margin weakly serrate. *Pereopod 5* basis subrectangular, not expanded, posterodistal lobe well developed, rounded, not extending past ischium. *Pereopod 7* basis subrectangular, posterodistal lobe well developed, rounded, extending below ischium; merus with proximal posterior swelling.

PLEON: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin not serrate. *Pleonite 1* without carination, posterior margin mid-dorsally with short point. *Pleonite 2* without carination, posterior margin mid-dorsally not produced. *Pleonite 3* carinate, posterior margin mid-dorsally strongly produced, posterodorsal margin not serrate. *Epimeron 1* posterior margin smooth, posterodistal corner rounded. *Epimeron 2* posterior margin smooth, posterodistal corner acutely produced. *Epimeron 3* posterior margin smooth, ventral margin serration absent; posterodistal tooth acute. *Urosomite 1* mid-dorsal posterior margin smooth, no posterolateral hook pointing upwards. *Urosomite 2* mid-dorsal posterior margin with long tooth reaching more than half length of urosomite 3. *Urosomite 3* mid-dorsally produced and posterior margin with fringe of setae. *Uropod 1* peduncle with short distal process; inner ramus longer than peduncle; apical robust setae on tip of both rami present. *Uropod 2* apical robust setae on tip of outer ramus present. *Uropod 3* length not exceeding uropods 1–2; peduncle short (less than 2 × breadth); outer ramus with second article apically. *Telson* entire; much longer than uropod 3 peduncle; less than 3 × as long as wide; without lateral setae, apical margin minutely notched, without apical slender setae.

Sexual dimorphic female of *Bruzelia junkeri* n. sp.

DESCRIPTION BASED ON: Female (paratypes).

HEAD: *Rostrum* reaching end of article 1 of antenna 1. *Antenna 1* article 2 subequal to article 1; accessory flagellum shorter than 3rd peduncular article, surpassing second flagellar article; 1st flagellar article similar sized to 2nd flagellar article; flagellum shorter than pereon, 7-articulate. *Antenna 2* flagellum 6-articulate.

PLEON: *Urosomite 2* mid-dorsal posterior margin unproduced, smooth. *Urosomite 3* mid-dorsal posterior margin smooth, without setae.

DISTRIBUTION: Only known from type locality. New Zealand, Challenger Plateau, 803–805 m.

REMARKS: *Bruzelia junkeri* n. sp. resembles *B. diodon* and *B. poton* as all three species have a mid-dorsal tooth on the posterior margin of pereonite 7 and pleonite

1. However, *B. junkeri* n. sp. has an additional strong mid-dorsal process on pleonite 3 which is absent in the latter species. In *B. junkeri* n. sp., coxa 4 is nearly as long as coxa 3, whereas in *B. diodon,* coxa 4 is significantly shorter than coxa 3, and the anteroventral corner of coxa 3 appears to be more acute in the new species, whereas it is rather angular shaped in *B. poton* and *B. diodon*. *Bruzelia junkeri* n. sp. differs from the two New Zealand *Bruzelia* species, *B. erikae* n. sp. and *B. vogeli* n. sp., by having mid-dorsal teeth on pereonite 7 and pleonite 3. For the sexual dimorphism see remarks in *Bruzelia erikae* n. sp.

Bruzelia vogeli n. sp. (Figs 21–26)

TYPE MATERIAL: NIWA 80919, female holotype; NIWA 76154, female paratype.

TYPE LOCALITY: NIWA 80919, TAN0705/276, 26/04/2007, -42.6213 175.9225, -42.6203 175.9335, 1194–1199 m.

MATERIAL EXAMINED: NIWA 76154, 1 female paratype, same locality as holotype.

ETYMOLOGY: Named to honour Prof. Dr Johannes Vogel, General Director of the Museum für Naturkunde Berlin. Prof. Vogel's devotion to biodiversity research and taxonomy is greatly advancing the Museum für Naturkunde.

DESCRIPTION BASED ON: Female (holotype), 5.5 mm.

HEAD: *Head* not protuberant, with dorsal keel. *Eyes* absent. *Rostrum* extending to half of the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe absent. *Antenna 1* article 1 not elongate; article 2 without distomedial tooth, 2 shorter than article 1; article 3 shorter than article 1, shorter than article 2; accessory flagellum shorter than 3rd peduncular article, shorter than first flagellar article, accessory flagellum 2 articulate, 2nd article minute; 1st flagellar article similar sized to 2nd flagellar article; flagellum shorter than pereon, 6-articulate. *Antenna 2* shorter than body 0.2 × length of pereon; flagellum 5-articulate. *Mandibular palp* article 2 with many slender setae; article 3 shorter than half the length of article 2, article 3 with long slender setae considerably longer than those of article 2, with more than 2 slender apical setae. Mandibular incisor smooth; left lacinia mobilis broad, multidentate, right lacinia mobilis narrower; accessory setal row absent; molar greatly enlarged, smooth, not triturative. *Maxilla 1* inner plate with 7 plumose setae; outer plate with 10 apical robust setae, bifurcate setae present; palp article 2 outer margin with setae and with apical and medial setation. *Maxilla 2* inner plate width more than 1.3 × outer plate; outer plate more narrow than inner plate. *Maxilliped* inner plate without nodular setae; outer plate 1.3 × wider than second palp article, outer plate medially with inflated wide, lanceolate robust setae; palp article 2 1.4 × the length of article 3; palp article 3 subrectangular.

PEREON: Pereonites dorsally, dorsolaterally and laterally smooth. Pereonite *7* posterolateral corner rounded. *Gnathopod 1* subchelate; coxa not tapering distally, anterodistal margin not produced; basis longer than carpus; carpus subrectangular, with plumose setae along the posterior margin; propodus palm oblique, defined by 1 serrate robust seta and 1 additional smooth robust seta. *Gnathopod 2* subchelate; coxa not distally tapering; basis shorter than carpus; carpus serrate setae along the posterior margin absent; propodus palm oblique, defined by 1 serrate robust seta and 1 additional robust seta; dactylus of gnathopod 2 well developed, unguis short, less than or subequal to length of dactylus. *Pereopod 3* coxa anterodistal corner, acutely produced, posterodistal lobe present, less than half the depth of the coxa, corner rounded, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subrectangular, half as long as merus; dactylus weakly curved. Pereopod 3–4 coxa not pelagont. *Pereopod 4* coxa shorter than coxa 3, subtriangular, posterior margin with well-developed lobe; ischium subrectangular, half as long as merus; dactylus weakly curved. *Pereopod 5–7* coxa smooth; basis anterodistal corner produced as a recurved hook, posterior margin serrate. *Pereopod 5* basis subrectangular, not expanded, posterodistal lobe well developed, rounded, posterodistal lobe not extending past ischium. Pereopod 7 merus without proximal posterior swelling. *Pereopod 7* basis subrectangular, posterodistal lobe well developed, rounded, posterodistal lobe extending below ischium.

PLEON: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin not serrate. *Pleonite 1* without carination, posterior margin mid-dorsally with short point. *Pleonite 2* without carination, posterior margin mid-dorsally not produced. *Pleonite 3* without carination, posterior margin mid-dorsally with short point (angular), posterodorsal margin smooth. *Epimeron 1* posterior margin smooth, posterodistal corner rounded. *Epimeron 2* posterior margin smooth, posterodistal corner acute. *Epimeron 3* posterior margin smooth, ventral margin smooth; posterodistal tooth acute. *Urosomite 1* mid-dorsal posterior margin smooth, posteroventral margin with rounded protrusion. *Urosomites 2–3* mid-dorsal posterior margin smooth. *Uropod 1* peduncle with short distal process; inner ramus longer than peduncle; apical robust setae on tip of both rami present. *Uropod 2* apical robust setae on tip of outer ramus present. *Uropod 3* length not exceeding uropods 1–2; peduncle short (less than 2 × breadth); outer ramus without apical second article. *Telson* entire, 3 × length of uropod 3 peduncle, less than 3 × as long as wide; with no setae along the lateral margin, apical margin subacute, without apical slender setae.

Figure 21 A–F. *Bruzelia vogeli* n. sp., female holotype, 5.5 mm, NIWA 80919. A) rostrum; B) habitus; C) antenna 1; D) upper lip; E) antenna 2; F) left maxilliped, setae omitted. Scale bars: A, B, D, F = 200 μm; C, E = 100 μm.

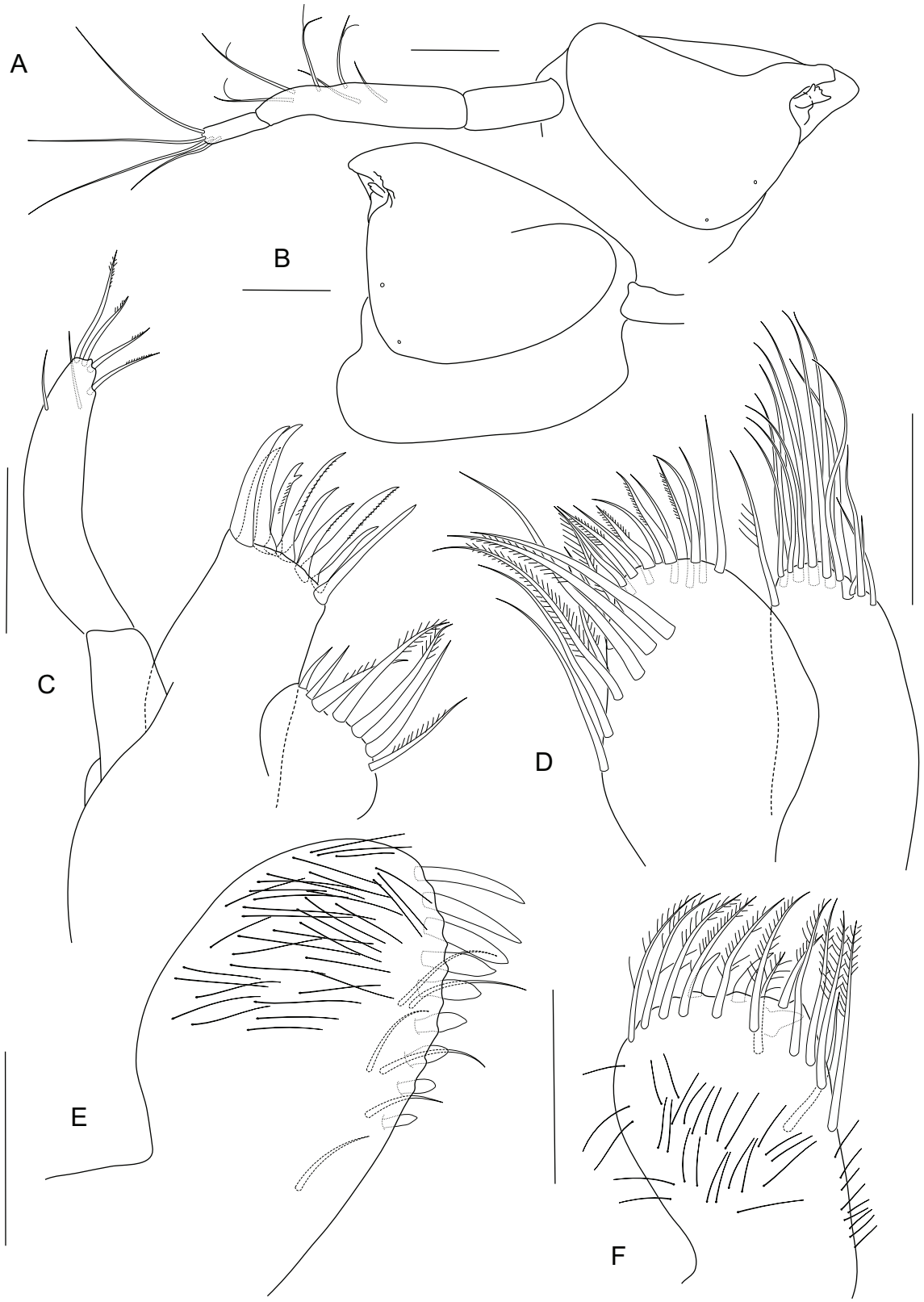


Figure 22 A–F. *Bruzelia vogeli* n. sp., female holotype, 5.5 mm, NIWA 80919. A) left mandible; B) right mandible; C) maxilla 1; D) maxilla 2; E) outer plate of maxilliped; F) inner plate of maxilliped. Scale bars: A–F = 100 µm.

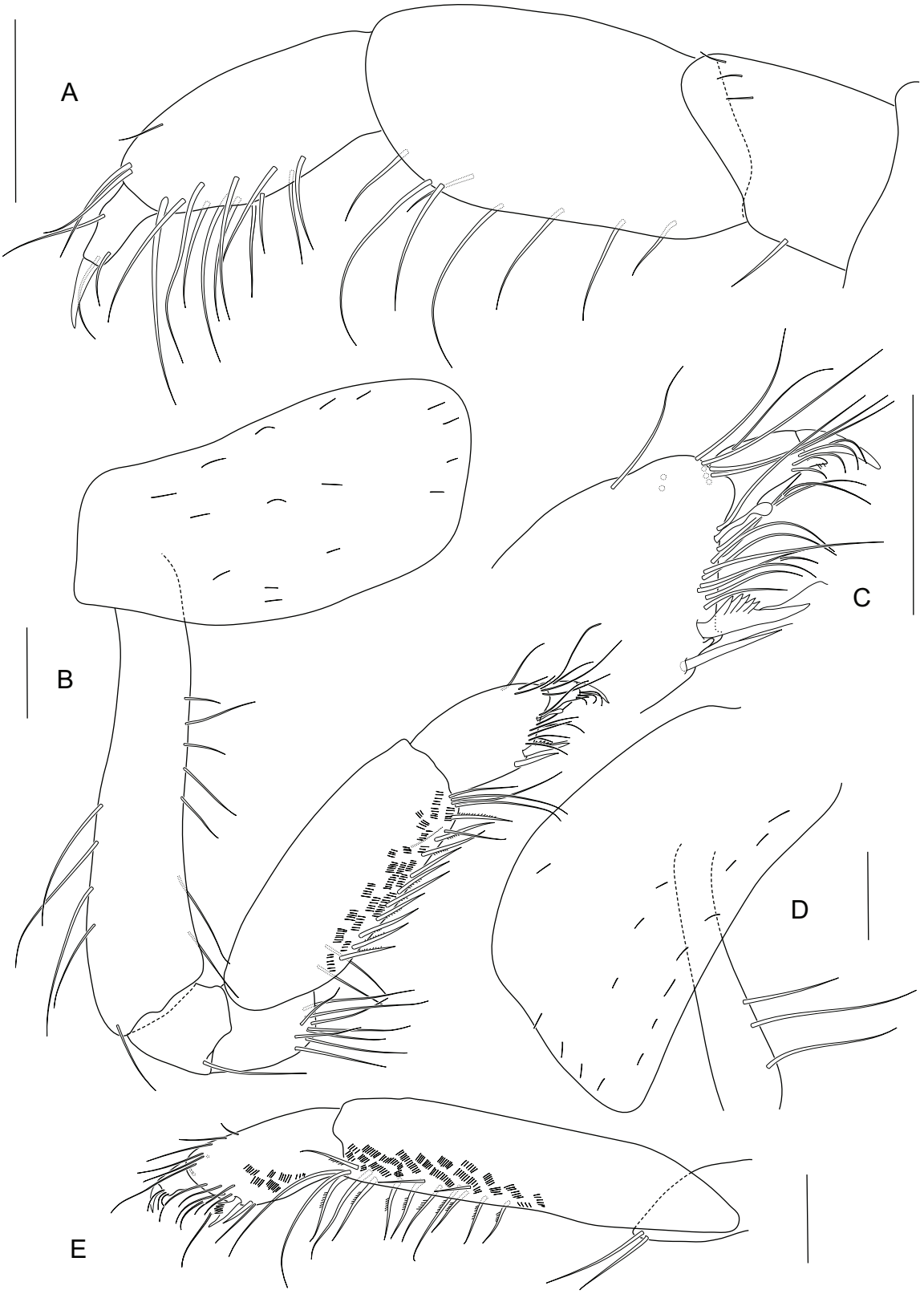


Figure 23 A–E. *Bruzelia vogeli* n. sp., female holotype, 5.5 mm, NIWA 80919. A) palp of maxilliped; B) gnathopod 1; C) apex of gnathopod 1; D) coxa of gnathopod 2; E) merus to dactylus of gnathopod 1. Scale bars: A–E = 100 µm.

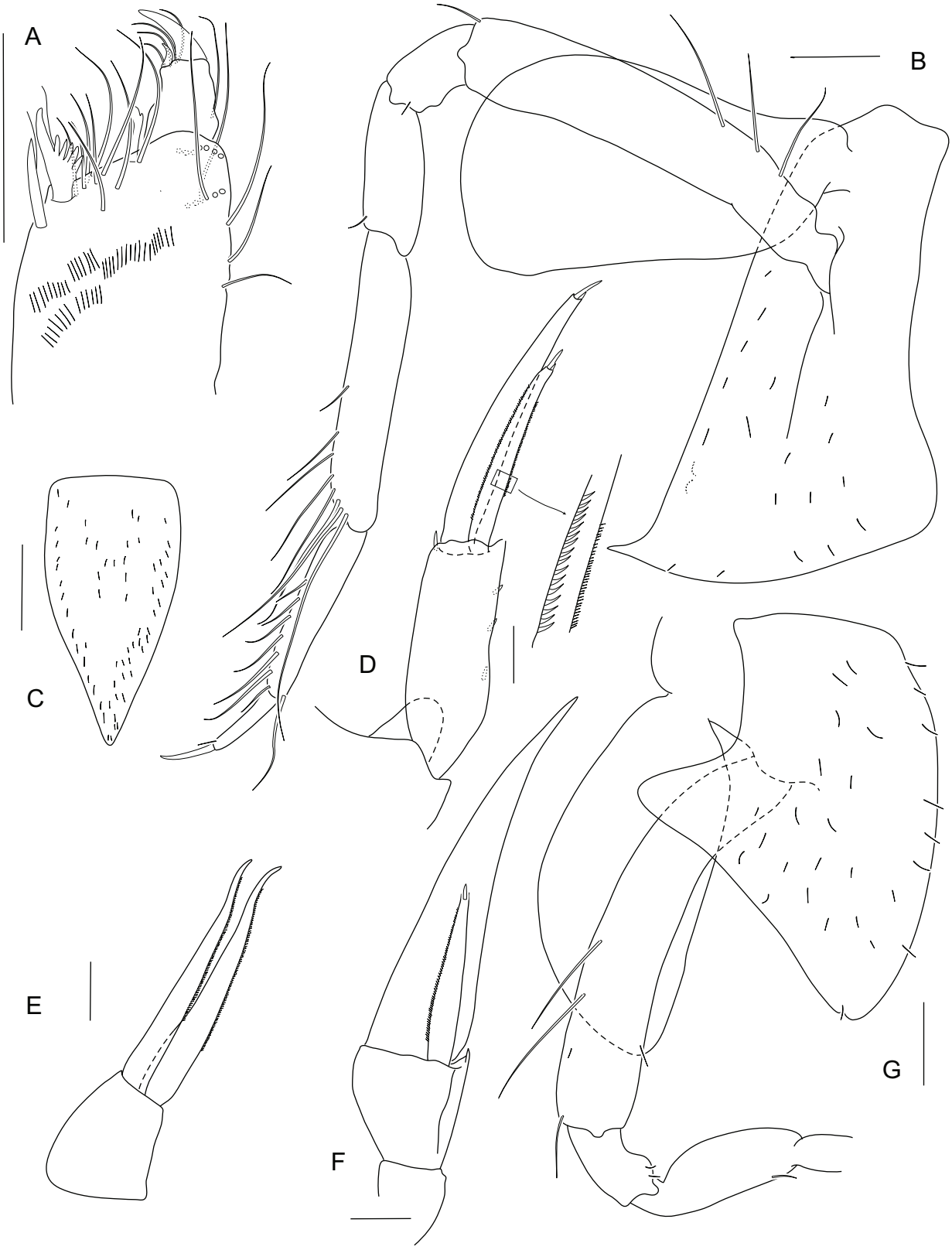


Figure 24 A–G. *Bruzelia vogeli* n. sp., female holotype, 5.5 mm, NIWA 80919. A) apex of gnathopod 2; B) pereopod 3; C) telson; D) uropod 1; E) uropod 3; F) uropod 2; G) pereopod 4. Scale bars: A, B, D–G = 100 μm; C = 200 μm.

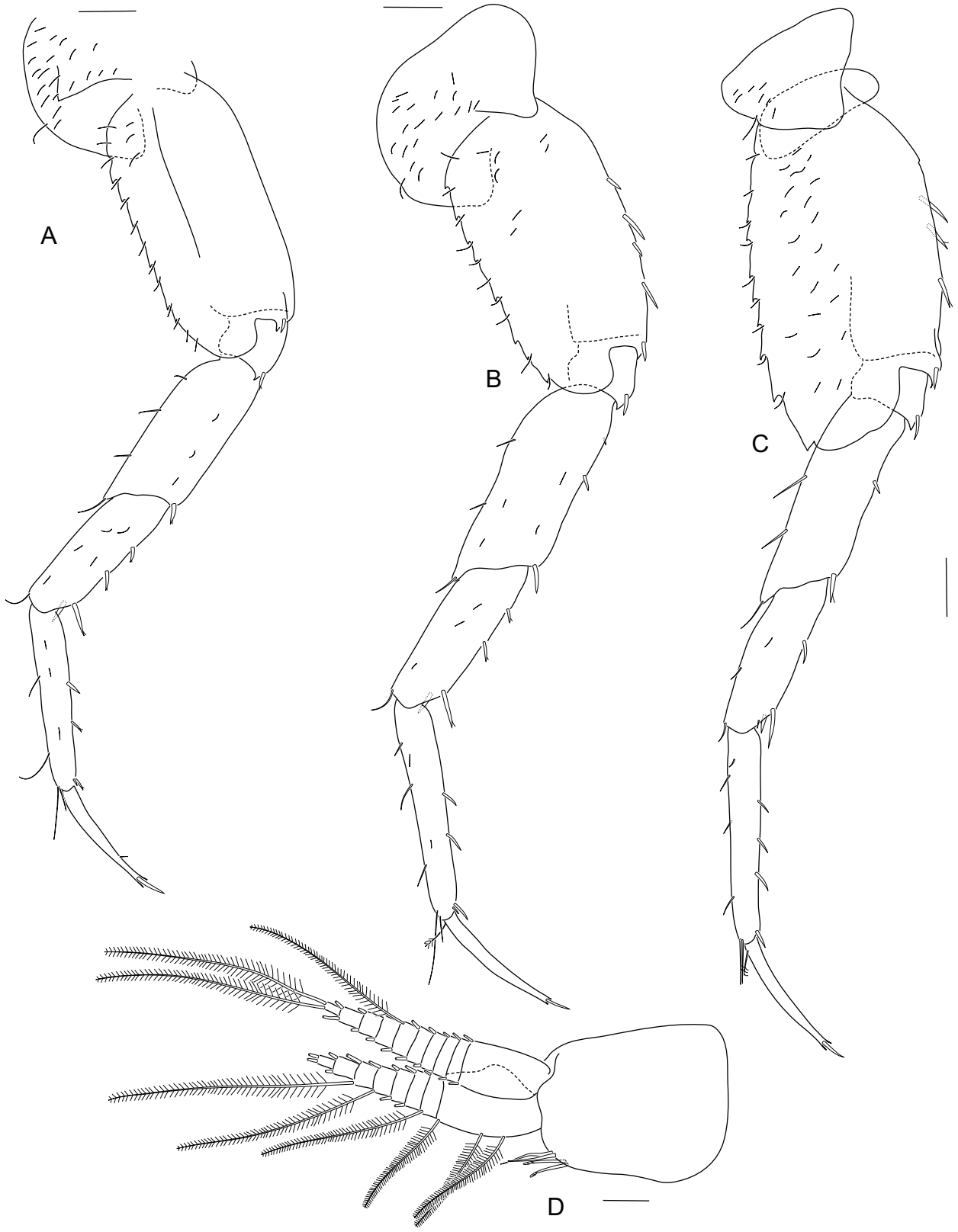


Figure 25 A–D. *Bruzelia vogeli* n. sp., female holotype, 5.5 mm, NIWA 80919. A) pereopod 5; B) pereopod 6; C) pereopod 7; D) pleopod 1. Scale bars: A–D = 100 μm.

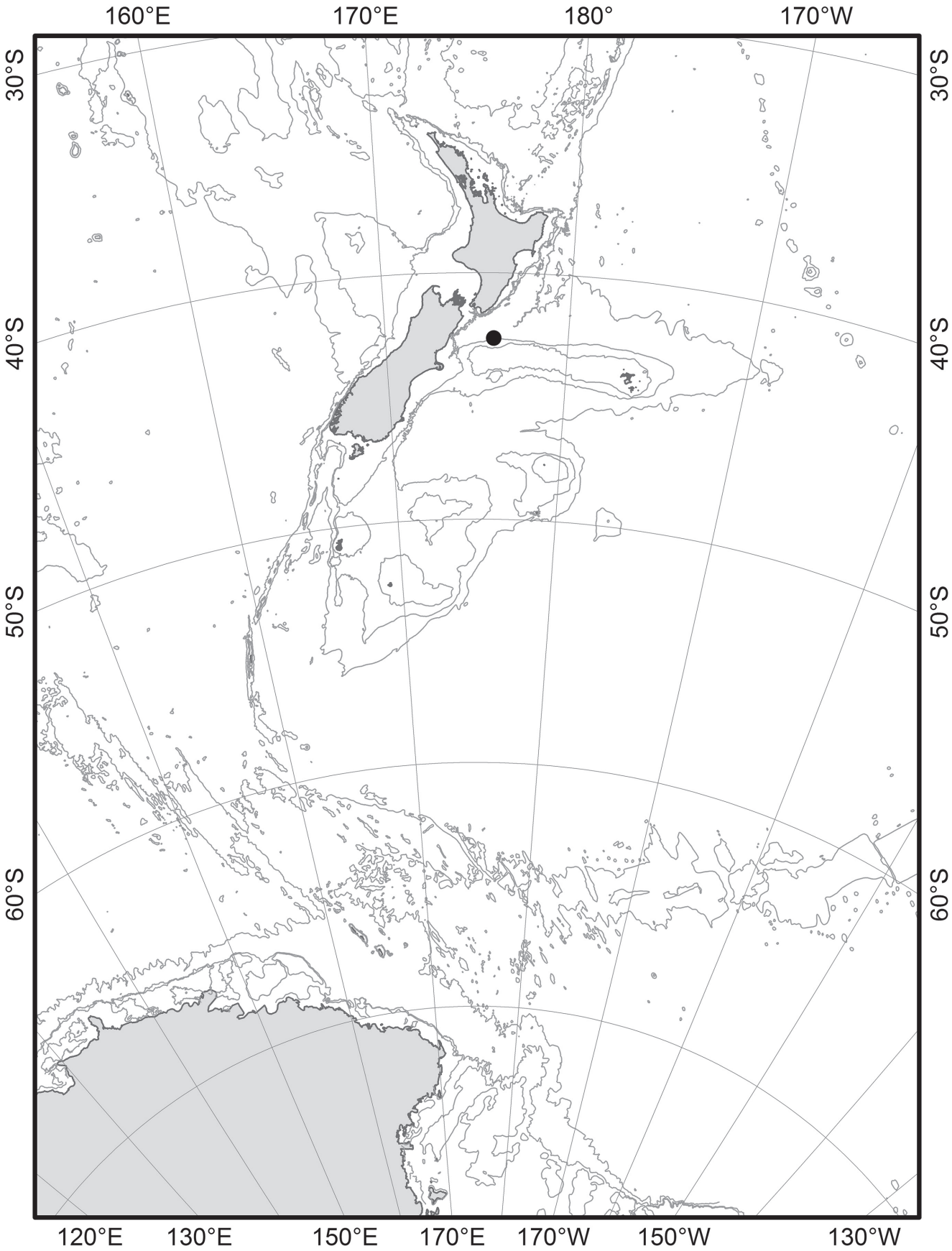


Figure 26. Distribution map of *Bruzelia vogeli* n. sp.

DISTRIBUTION: Only known from type locality. New Zealand, Chatham Rise, 1194–1199 m.

REMARKS: *Bruzelia vogeli* n. sp. is most similar to *B. junkeri* n. sp. This species, however, differs from *B. junkeri* n. sp. in having an unproduced dorsal margin of pereonite 7, and coxa 4 is distally subacute (v. ventrally rounded). See also remarks for *B. erikae* n. sp.

Ileraustroe J.L. Barnard, 1969 (amended after J.L. Barnard, 1972)

Ileraustroe — J.L. Barnard, 1969: 460; — J.L. Barnard, 1972: 34; — Barnard & Karaman, 1991: 713

DIAGNOSIS**:** Head not protuberant, lateral cephalic lobe absent; eyes absent; molar slightly enlarged, smooth or weakly triturative; mouthparts basic; antenna 1 article 1 basic, article 2 slightly elongate; coxa 1 ordinary; coxae 3–4 pelagont, coxa 3 expanded distally and posterodorsal margin excavate, coxa 4 small; gnathopods typically subchelate, palms acute, defined by 1–3 serrate and usually one simple robust seta; dactylus of gnathopod 2 normal; pereopods 5–7 elongate, dactyli elongate, basis pereopod 7 expanded and serrate posteromarginally, subtruncate posteroventrally (except rounded in *I. torpens*); pleonites 1–3 lateral margin not serrate; uropod 3 not exceeding uropods 1–2, peduncle elongate; telson minutely cleft.

TYPE-SPECIES: *Austrosyrrhoe ilergetes* J.L. Barnard, 1964

SPECIES COMPOSITION:
Ileraustroe ilergetes (Barnard, 1964)
***Ileraustroe neumannae* n. sp.**
Ileraustroe torpens (J.L. Barnard, 1962a)

KEY TO THE SPECIES OF ***ILERAUSTROE***

1. Coxa 3 anteroventral corner with acute point.....2

   Coxa 3 anteroventrally rounded ..... *I. torpens*

2. Carinae starting on pereonite 7; ovate carpus of gnathopod 1 ..... ***I. neumannae* n. sp.**

   Carinae absent on pereon and pleonites; subrectangular carpus of gnathopod 1..... *I. ilergetes*

Ileraustroe neumannae n. sp. (Figs 27–37)

TYPE MATERIAL: NIWA 80273, male holotype; NIWA 80267, 1 female paratype.

TYPE LOCALITY: NIWA 80273, TAN0705/160, 16/04/2007, -42.78200 -176.71520, -42.78167 -176.7042, 1023–1026 m.

MATERIAL EXAMINED: NIWA 80267, 1 female paratype, TAN0705/99, 10/04/2007, -44.56067 –178.47620, –44.55917 -178.48300, 1076–1103 m; NIWA 80271, 1 male, NIWA 84751, 13 females, 4 males, NIWA 80269, 1 female, NIWA 76153, 2 females, TAN0705/276, 26/04/2007, -42.62133 175.92250, -42.62033 175.93350, 1194–1199 m; NIWA 80266, 4 females, NIWA 31812, 2 females, NIWA 84577, 35 specimens, NIWA 80272, 3 males, NIWA 80268, 2 males, 1 female, TAN0705/160, 16/04/2007, -42.78200 -176.71520, -42.78167 -176.70420, 1023–1026 m; NIWA 80270, 1 female, TAN0705/136, 14/04/2007 -43.29033 -175.55220, -43.2933 -175.56300, 638–644 m; NIWA 84731, 2 females, NIWA 84562, 10 females, 1 male, NIWA 84563, 2 females, 1 male, TAN0705/049, 06/04/2007, -44.4862 177.1413, -44.4842 177.1462, Brenke sledge, 1235–1239 m; NIWA 84640, 1 male, TAN0707/051, 30/05/2007, -36.9202 167.5302, -36.9120 167.5325, Brenke sledge, 1207–1213 m.

ETYMOLOGY: This species is named for Mrs Monika Neumann, to thank her for all the great work she did for the Museum für Naturkunde in Berlin.

DESCRIPTION BASED ON: Male (holotype), 5.5 mm.

HEAD: *Head* not protuberant, without dorsal keel. *Eyes* absent. *Rostrum* longer than half the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe absent. *Antenna 1* article 1 not elongate; article 2 without distomedial tooth, subequal to article 1; article 3 shorter than article 1; article 3 shorter than article 2; accessory flagellum longer than 3rd peduncular article and shorter than first flagellar article, accessory flagellum 2nd article about half the length of 1st accessory flagellum article; 1st flagellar article elongate and bordered with aesthetascs (callynophore); flagellum 0.4 × pereon, 7-articulate. *Antenna 2* longer than body; flagellum 13-articulate. *Mandibular palp* article 2 with many slender setae; article 3 shorter than half the length of article 2, article 3 with long slender setae considerably longer than those of article 2 and with more than 2 slender apical setae. Mandibular incisor dentate; left lacinia mobilis wide and dentate; accessory setal row with 2 serrate short setae; molar greatly enlarged, not triturative. *Maxilla 1* inner plate with 7 plumose setae; outer plate with 9 apical robust setae; outer plate bifurcate setae absent; palp article 2 outer margin smooth, palp article 2 setae confined to apex. *Maxilla 2* outer plate length shorter than inner plate; inner plate width more than 1.3 × outer plate. *Maxilliped* inner plate with nodular setae distally; outer plate more than 1.5 × wider than second palp article and medially with simple robust, weakly inflated setae; palp article 2 about twice the length of article 3; palp article 3 subrectangular.

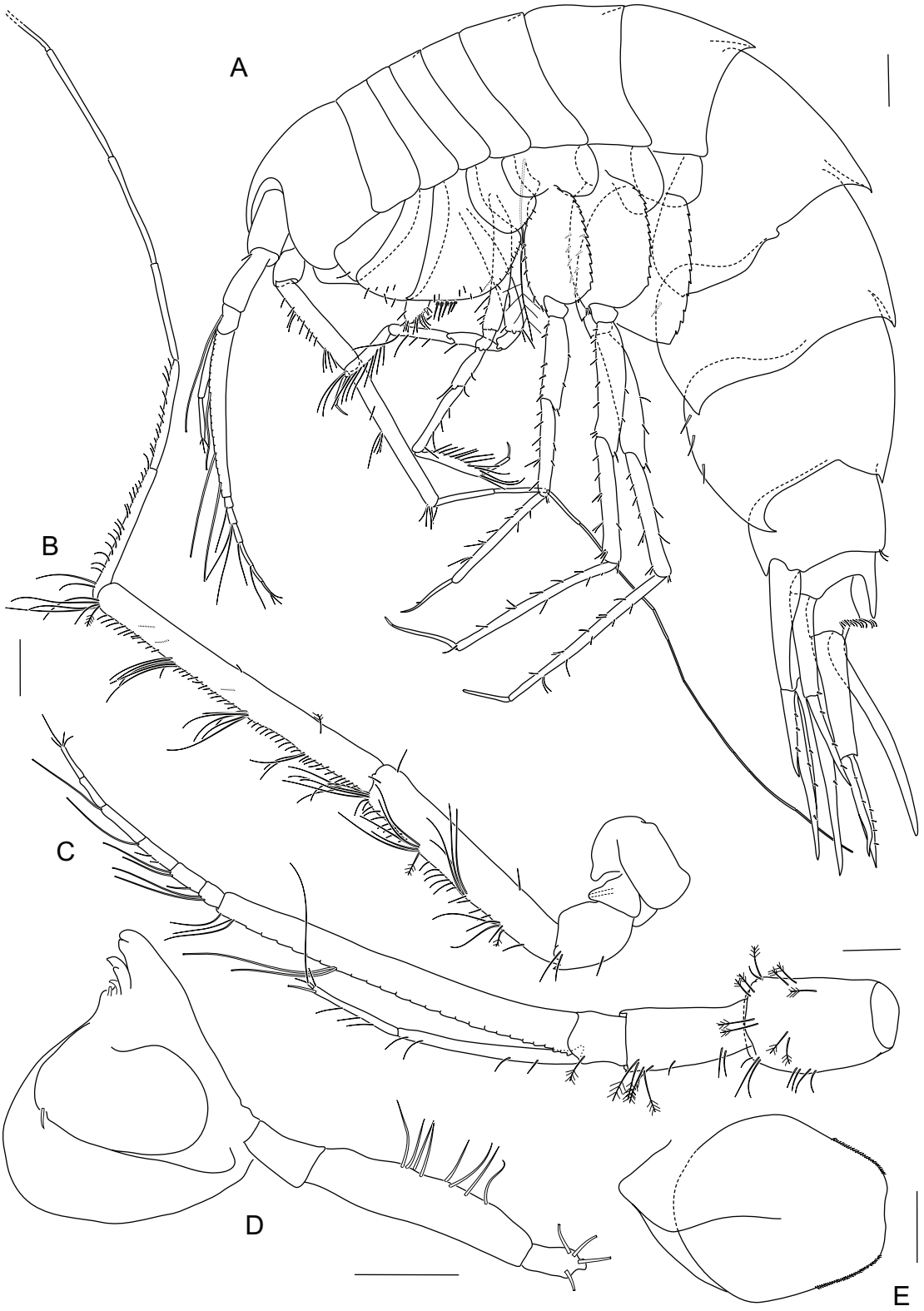


Figure 27 A–E. *Ileraustroe neumannae* n. sp., male holotype, 5.5 mm, NIWA 80273. A) habitus; B) antenna 2; C) antenna 1; D) mandible; E) upper lip, apex is directing right. Scale bars: A = 200 µm. B–E = 100 µm.

Figure 28 A–G. *Ileraustroe neumannae* n. sp., male holotype, 5.5 mm, NIWA 80273. A) lower lip; B) maxilla 2; C) inner plate of maxilliped; D) maxilla 1; E) outline of maxilliped, setae omitted; F) outer plate of maxilliped; G) palp of maxilliped. Scale bars: A–G 100 µm.

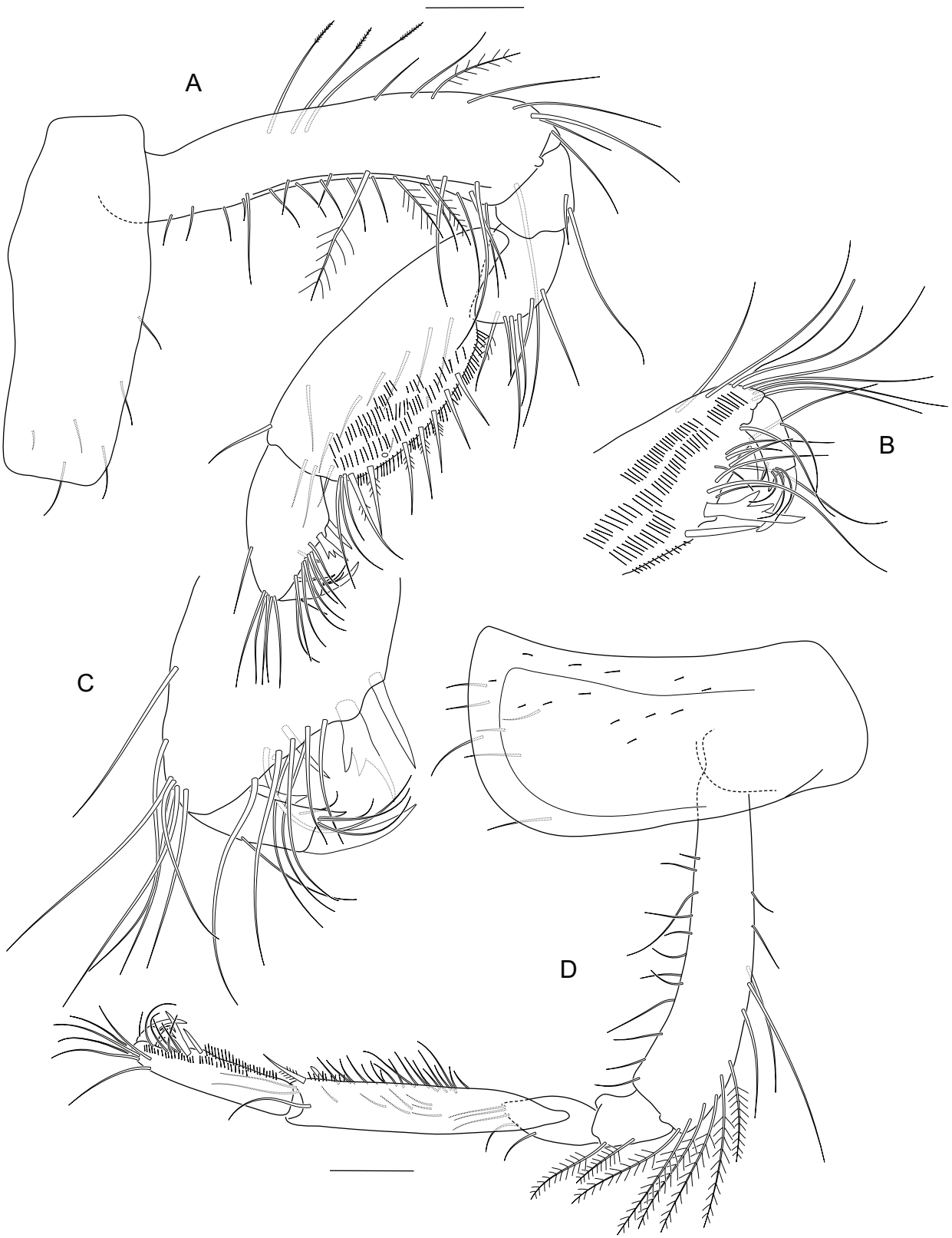


Figure 29 A–D. *Ileraustroe neumannae* n. sp., male holotype, 5.5 mm, NIWA 80273. A) gnathopod 1; B) apex of gnathopod 2; C) apex of gnathopod 1; D) gnathopod 2. Scale bars: A, D = 100 µm.

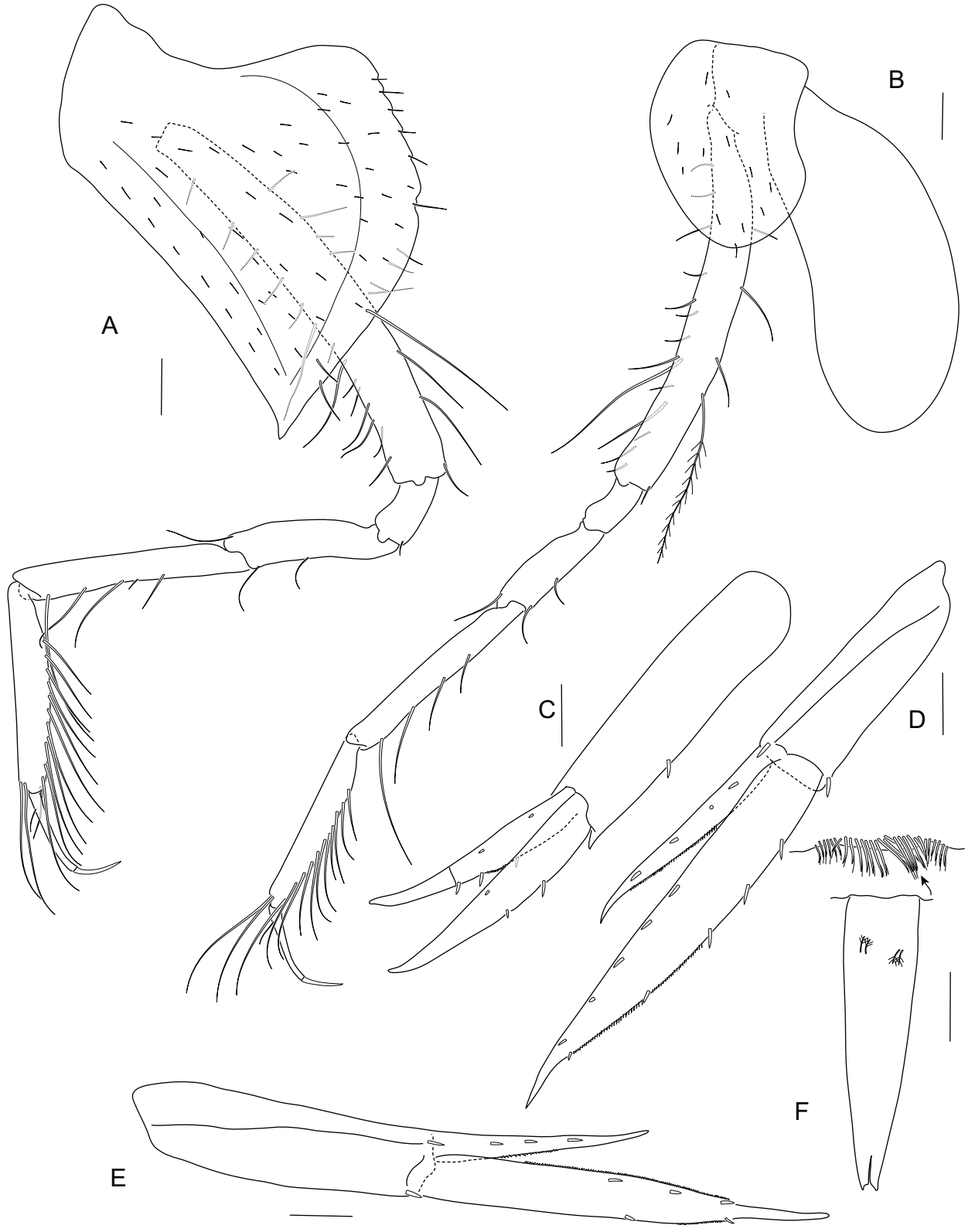


Figure 30 A–E. *Ileraustroe neumannae* n. sp., male holotype, 5.5 mm, NIWA 80273. A) pereopod 3; B) pereopod 4; C) uropod 3; D) uropod 2; E) uropod 1; F) telson. Scale bars: A, B = 200 µm; C–F = 100 µm.

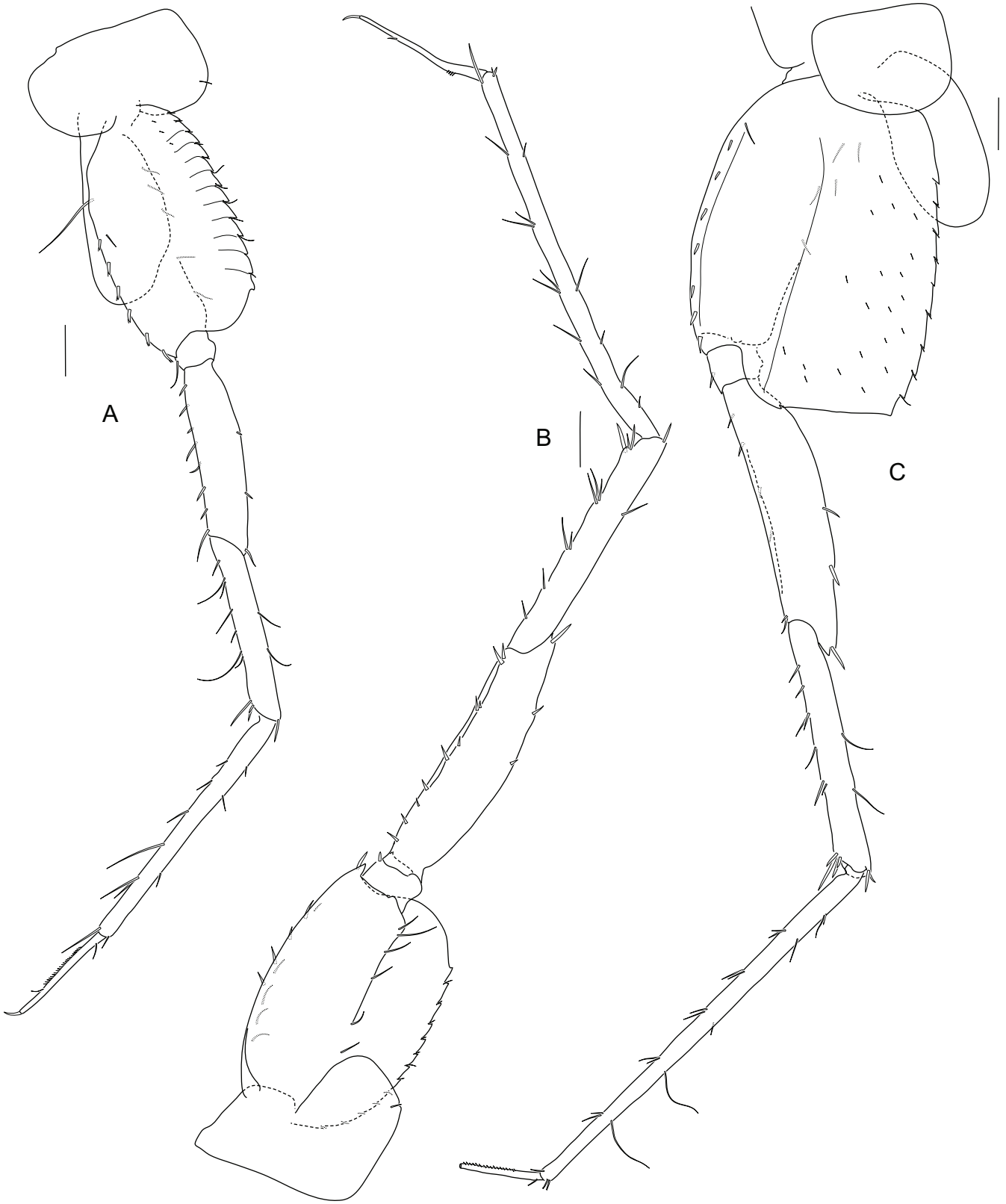


Figure 31 A–C. *Ileraustroe neumannae* n. sp., male holotype, 5.5 mm, NIWA 80273. A) pereopod 5; B) pereopod 6; C) pereopod 7. Scale bars: A–C = 100 μm.

Figure 32 A–G. *Ileraustroe neumannae* n. sp., female paratype, 4 mm, NIWA 80267. A) habitus; B) upper lip; C) antenna 1; D) antenna 2; E) mandible; F) maxilla 2; G) lower lip. Scale bars: A = 200 µm; B–G = 100 µm.

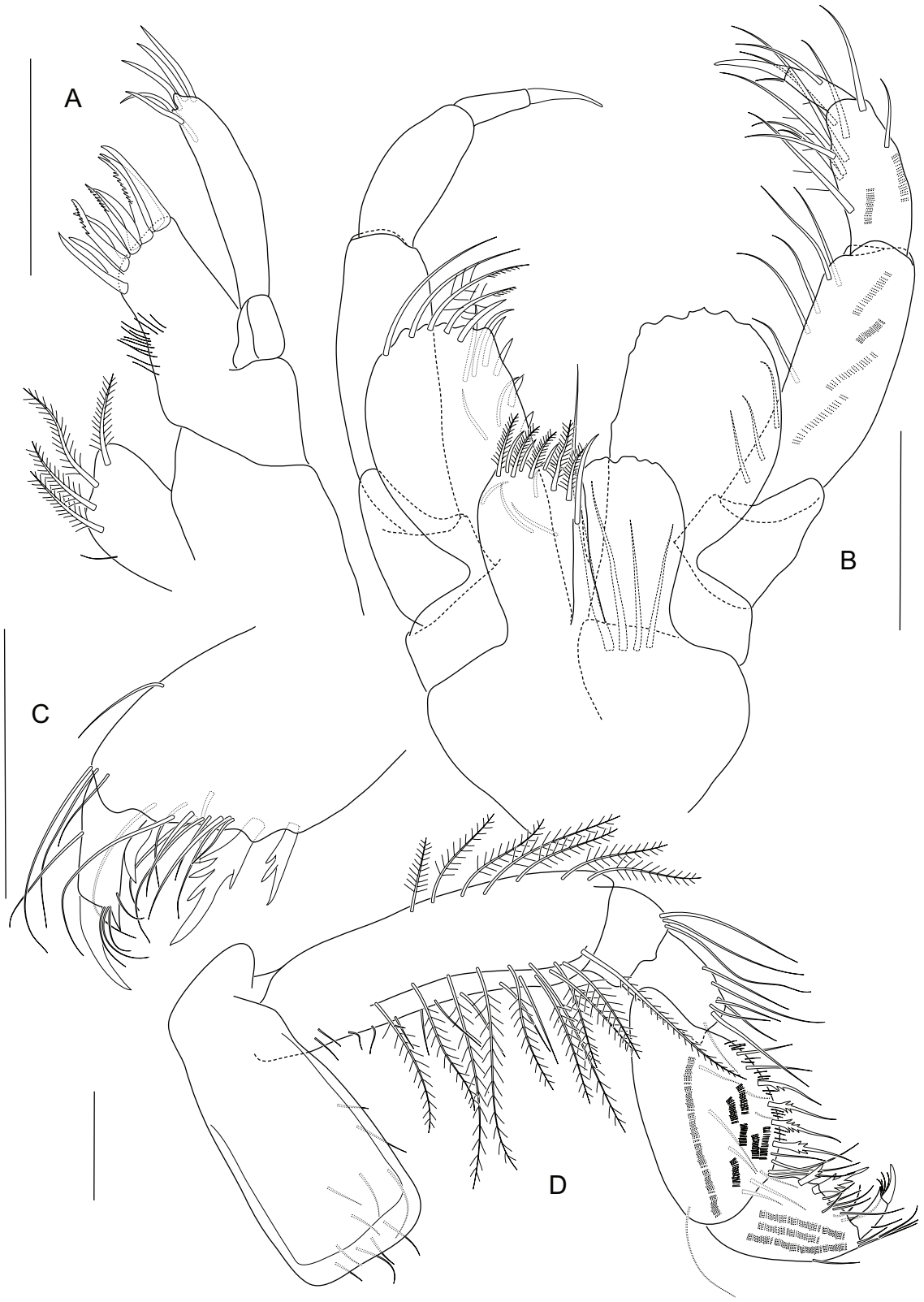


Figure 33 A–D. *Ileraustroe neumannae* n. sp., female paratype, 4 mm, NIWA 80267. A) maxilla 1; B) maxilliped, setation of left palp omitted; C) apex of gnathopod 1; D) gnathopod 1. Scale bars: A–D = 100 µm.

Figure 34 A–C. *Ileraustroe neumannae* n. sp., female paratype, 4 mm, NIWA 80267. A) gnathopod 2; B) apex of gnathopod 2; C) pereopod 3. Scale bars: A–C = 100 μm.

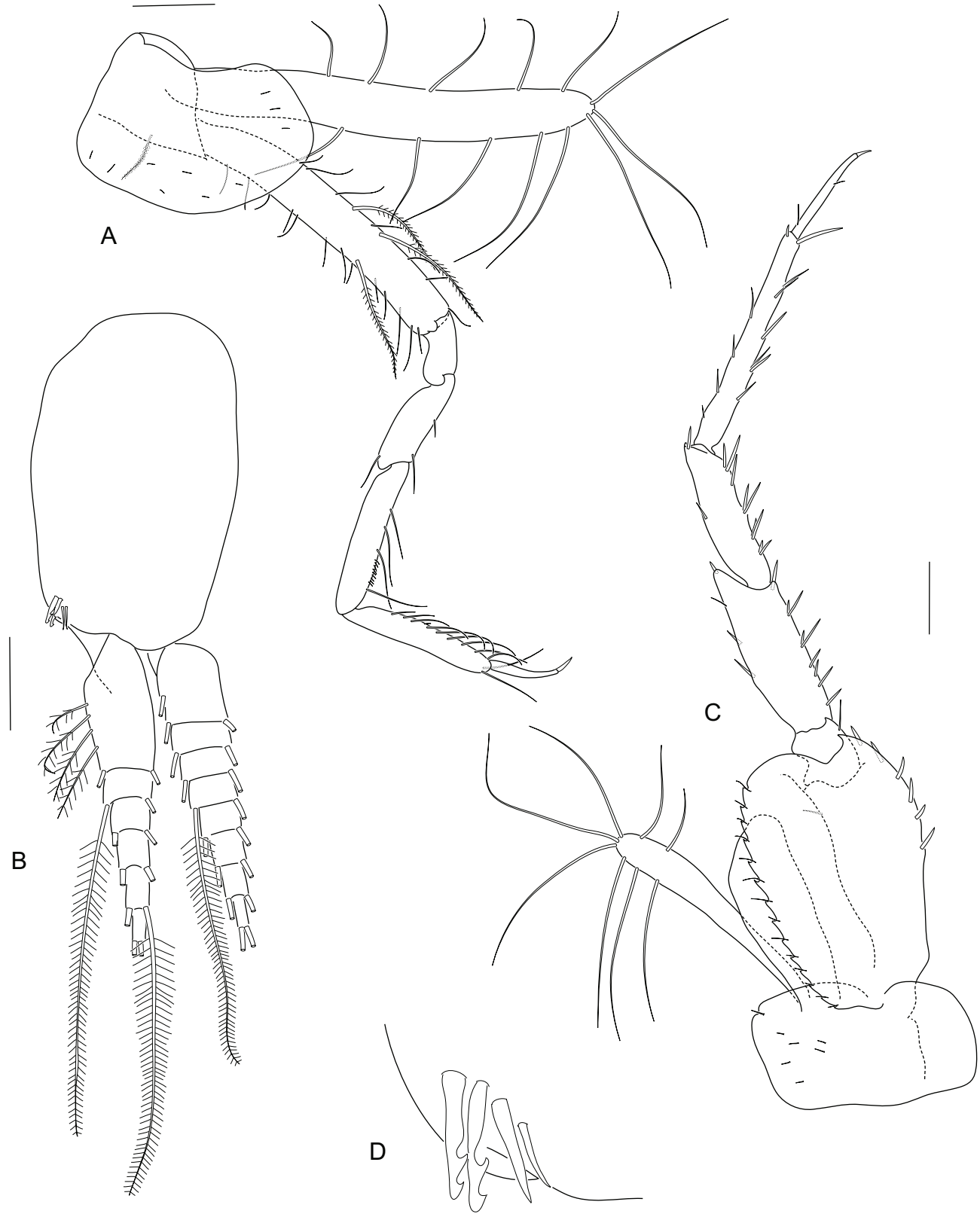


Figure 35 A–D. *Ileraustroe neumannae* n. sp., female paratype, 4 mm, NIWA 80267. A) pereopod 4; B) pleopod 1; C) pereopod 5; D) coupling hook of pleopod 1. Scale bars: A–C = 100 μm.

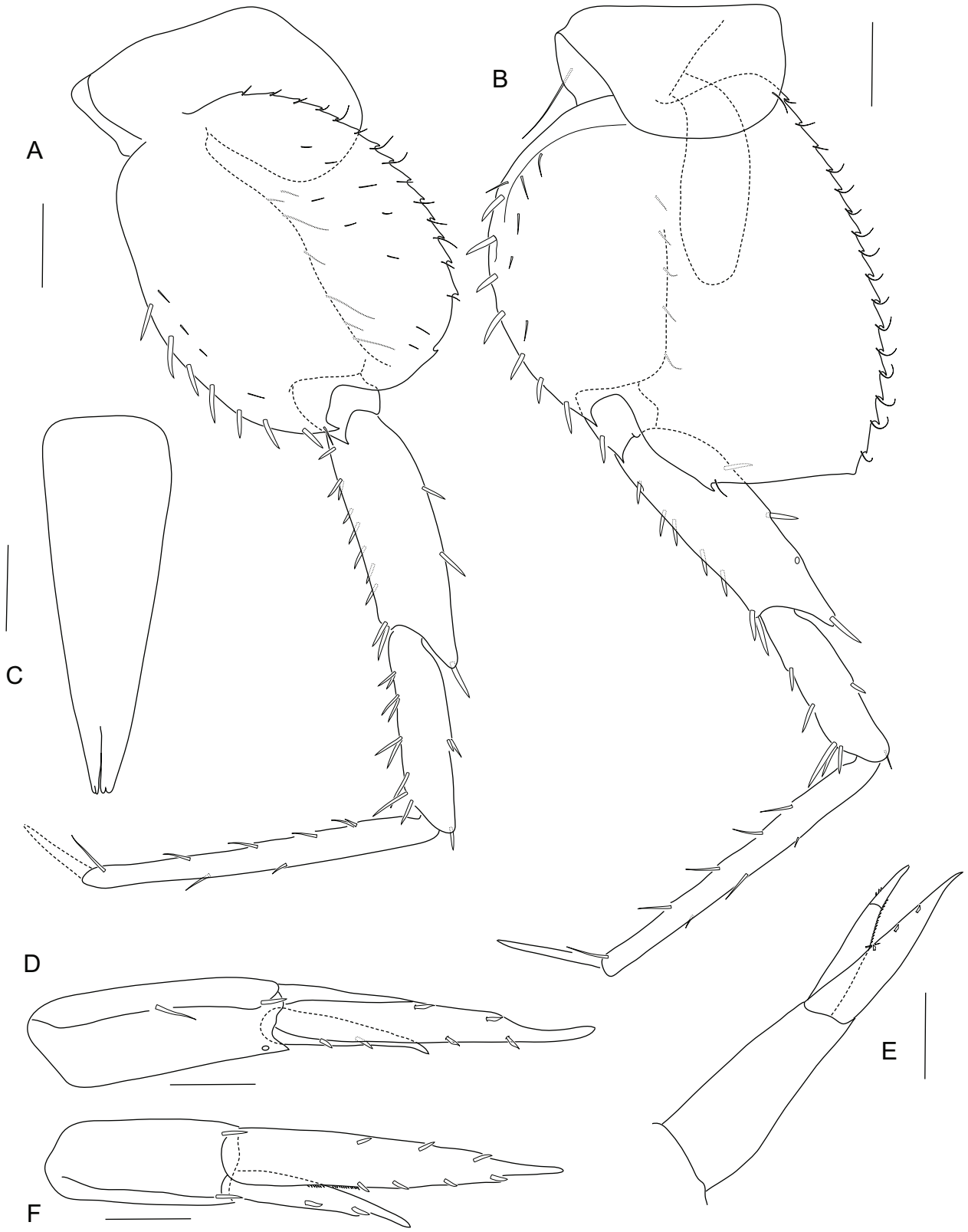


Figure 36 A–F. *Ileraustroe neumannae* n. sp., female, paratype 4 mm, NIWA 80267. A) pereopod 6; B) pereopod 7; C) telson; D) uropod 1; E) uropod 3; F) uropod 2. Scale bars. A–F = 100 μm.

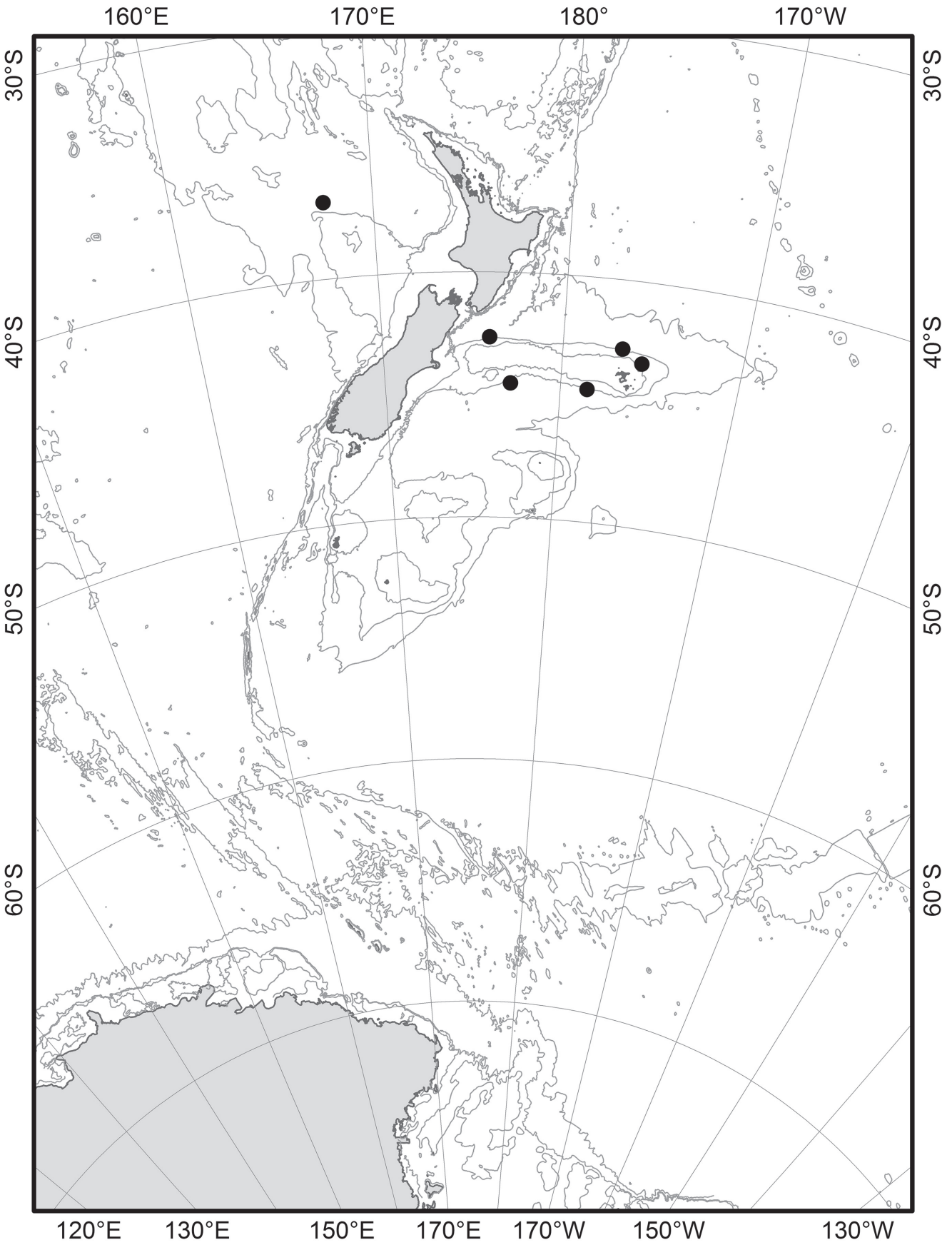


Figure 37. Distribution map of *Ileraustroe neumannae* n. sp.

PEREON: Carina starting on pereonite 7, but with an indication of a dorsal keel starting at pereonite 1; pereon dorsolaterally smooth; pereonites laterally smooth. *Pereonite 7* carinate; posterior margin mid-dorsally not serrate, with short point; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* subchelate; coxa not tapering distally, anterodistal margin not produced; basis longer than carpus; carpus ovoid, with serrate setae along the posterior margin; propodus palm oblique, defined by 1 serrate robust seta and with 1 additional smooth robust seta. *Gnathopod 2* subchelate; coxa not distally tapering; basis longer than carpus; carpus serrate setae along the posterior margin present (one seta present); propodus palm oblique, defined by 1 serrate robust setae and 1 additional robust seta; dactylus of gnathopod 2 well developed, unguis subequal to dactylus length. *Pereopod 3* coxa anterodistal lobe present, acutely produced, posterodistal lobe present, rounded, more than half the depth of the coxa, posterodistal margin broadly serrate; basis width subequal to breadth of ischium; ischium subrectangular, half as long as merus; dactylus strongly curved. Pereopod 3–4 coxa pelagont. *Pereopod 4* coxa shorter than coxa 3, lobate in shape, posterior margin with medium developed lobe; ischium subrectangular, half as long as merus; dactylus strongly curved. Pereopod 5–7 basis anterodistal corner weakly produced, acute, posterior margin serrate. *Pereopod 5* basis subrectangular, not expanded, posterodistal lobe weakly developed, posterodistal lobe not extending past ischium. *Pereopod 7* basis ovate, posterodistal lobe well developed, oblique, posterodistal lobe extending below ischium.

PLEON: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin not serrate. *Pleonite 1* carinate, posterior margin mid-dorsally with short point; lateral margin with small bulge. *Pleonite 2* carinate, posterior margin mid-dorsally with short point. *Pleonite 3* carinate, posterior margin mid-dorsally with short point, posterodorsal margin not serrate. *Epimeron 1* posterior margin smooth, posterodistal corner subacute. *Epimeron 2* posterior margin smooth, posterodistal corner acute. *Epimeron 3* posterior margin smooth, ventral margin serration absent; posterodistal tooth acute. *Urosomite 1* mid-dorsal posterior margin smooth, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin with long tooth reaching more than half length of urosomite 3. *Urosomite 3* mid-dorsal posterior margin with fringe of setae. *Uropod 1* peduncle without distal process; inner ramus longer than peduncle; apical robust setae on tip of both rami absent. *Uropod 2* apical robust setae on tip of outer ramus absent. *Uropod 3* length not exceeding uropods 1–2; peduncle long (at least 2 × breadth); outer ramus with second article apically. *Telson* much longer than uropod 3 peduncle, narrow, 4.2 × as long as wide; without lateral margin or apical slender setae; weakly cleft 10% of length.

Sexual dimorphic female of *Ileraustroe neumannae* n. sp.

DESCRIPTION BASED ON: Female (paratype), 4 mm.

HEAD: *Rostrum* reaching half the length of article 1 of antenna 1. *Antenna 1* article 2 longer than article 1; accessory flagellum subequal to 3rd peduncular article, accessory flagellum as long as first flagellar article, accessory flagellum 2nd article less than a quarter length of 1st accessory flagellar article; 1st flagellar article similar sized to 2nd flagellar article. *Antenna 2* shorter than body; flagellum 5-articulate. Mandibular palp article 3 with slender setae subequal in length to those of article 2; accessory setal row with 3 small, rounded, serrate setae. *Maxilla 1* inner plate with 4 plumose setae. *Maxilliped* inner plate without nodular setae; outer plate medially with simple robust setae.

PEREON: *Gnathopod 1* palm with 2 serrate robust setae; carpus serrate setae along the posterior margin present. *Gnathopod 2* palm with 1–3 defining serrate setae, robust smooth setae absent.

PLEON: *Urosomite 3* mid-dorsal posterior margin smooth.

DISTRIBUTION: New Zealand, Chatham Rise and Challenger Plateau, 638–1199 m.

REMARKS: The genera *Ileraustroe* and *Austrosyrrhoe* are morphologically very similar. They can be distinguished by the shape of the telson, which is long, narrow and sparsely cleft in *Ileraustroe*, whereas *Austrosyrrhoe* has a broad, deeply cleft telson. *Ileraustroe neumannae* n. sp. can be separated from *Ileraustroe ilergetes* (J.L. Barnard, 1964) and *Ileraustroe torpens* (J.L. Barnard, 1962a) by the carinae pattern. Males of *Ileraustroe torpens* have a smooth pereon and pleon; with only urosomite 2 bearing a tooth, whereas males of *I. neumannae* n. sp. have a carina starting on pereonite 7 until metasomal segment 3. Male specimens of *I. ilergetes* have not been described, except for a subspecies *Ileraustroe ilergetes inconstans* Barnard, 1967, which bears minute processes on pereonite 7 and metasomal segments 1–3. The females of *I. neumannae* n. sp. have an ovate carpus of gnathopod 1, whereas *I. ilergetes* and *I. torpens* have subrectangular gnathopod 1 carpus. The females of *I. neumannae* n. sp. have 1–3 defining serrate robust seta(e) like setae on the palm of gnathopod 2, compared to only 1 serrate robust seta and 1 smooth robust seta in *I. ilergetes* and 2 serrate spines in *I. torpens*. Epimeron 3 has an acutely drawn out posteroventral process in *I. neumannae* n. sp.

whereas in *I. ilergetes* it bears an apical notch. The posteroventral corner of *I. torpens* is less produced, more angular and also without notch.

Pseudotiron Chevreux, 1895 (amended after J.L. Barnard, 1972)

Pseudotiron Chevreux, 1895: 166-170; — Stebbing, 1906: 284; — J.L. Barnard, 1969: 461 — J.L. Barnard, 1972: 44; — Barnard & Karaman, 1991: 716

DIAGNOSIS**:** Head protuberant or not, lateral cephalic lobe absent; eyes absent; molar of medium size, columnar and triturative; mouthparts basic; antenna 1 articles 1 and 2 basic or elongate; coxa 1 ordinary; coxae 3–4 pelagont except in *P. coas*; gnathopods simple, lacking distinctive robust setae; dactylus of gnathopod 2 normal; pereopods 5–7 typically elongate but short in *P. coas;* basis of pereopod 7 typically rounded posteroventrally or slightly truncate; pleonites 1–3 typically serrate dorsally but apparently smooth in *P. golens*; urosomite 3 elongate; uropod 3 greatly exceeding apices of uropods 1–2, peduncle short; telson elongate, deeply cleft.

TYPE-SPECIES: *Pseudotiron bouvieri* Chevreux, 1895

SPECIES COMPOSITION:

Pseudotiron bouvieri Chevreux, 1895
Pseudotiron coas J.L. Barnard, 1967
Pseudotiron golens J.L. Barnard, 1962a
***Pseudotiron livingstonae* n. sp.**
Pseudotiron longicaudatus Pirlot, 1934
Pseudotiron pervicax J.L. Barnard, 1967

KEY TO THE SPECIES OF ***PSEUDOTIRON***, AMENDED AFTER BARNARD 1972

1. Dactyls of pereopods 6–7 elongate, scarcely curved, posteroventral corner of basis on pereopod 7 softly quadrate 5

   Dactyls of pereopods 6–7 short, curved, claw-shaped, posteroventral corner of basis on pereopod 7 rounded.....2

2. Coxa 3 small, rectangular, and scarcely excavate posteriorly .....*P. coas*

   Coxa 3 large, trapezoidal to L-shaped, posteriorly excavate.....3

3. Coxa 3 with well-developed posterior lobe, "L-shaped" ..... *P. bouvieri*

   Coxa 3 with sweeping posterodorsal curve 4

4. Posteroventral angle of coxa 3 softly quadrate, posteroventral tail of coxa 4 as long as basal portion, anterior margin of coxa 1 straight, uropod 1 reaching end of uropod 2 .....*P. pervicax*

   Posteroventral angle of coxa 3 rounded, posteroventral tail of coxa 4 twice as long as base, anterior margin of coxa 1 concave, uropod 1 reaching less than halfway along rami of uropod 2..... *P. golens*

5. Head strongly protuberant .....*P. longicaudatus*

   Head weakly protuberant ... ***P. livingstonae* n. sp.**

Pseudotiron livingstonae n. sp. (Figs 38–42)

TYPE MATERIAL: NIWA 77187, female holotype.

TYPE LOCALITY: NIWA 77187, TAN0802/135, 22/02/2008, -72.07300 175.58550, -72.07950 175.58316, Brenke sledge, 1645–1629 m.

ETYMOLOGY: Dr Mary Livingston from the former Ministry of Fisheries is thanked for her professional support of the Oceans 2020 programmes, especially the International Polar Year (IPY) expedition.

DESCRIPTION BASED ON: Female (holotype), 11.5 mm.

HEAD: *Head* weakly protuberant, without dorsal keel. *Eyes* absent. *Rostrum* short, minute, apically acute. Lateral cephalic lobe absent. *Antenna 1* article 1 elongate; article 2 without distomedial tooth; article 2 shorter than article 1; article 3 subequal to article 1; article 3 longer than article 2. Antenna 1 accessory flagellum shorter than 3rd peduncular article, as long as first flagellar article, 2nd article less than a quarter length of 1st accessory flagellar article. Antenna flagellum 16-articulate, 1st flagellar shorter than pereon;. Antenna 1 1st flagellar article similar sized to 2nd flagellar article. *Antenna 2* shorter than body; flagellum 17-articulate. *Mandibular palp* present, but damaged. Mandibular incisor multidentate. Left lacinia mobilis wide and multidentate. Mandible accessory setal row with 11 serrate setae; molar stout, columnar, triturative. *Maxilla 1* inner plate with 12 plumose setae; outer plate with 10 apical robust setae; bifurcate setae present; palp article 2 broad, length 3 × width, slender setae confined to apex, without robust setae. *Maxilla 2* outer plate subequal to inner plate; inner plate width more than 1.3 × outer plate. *Maxilliped* inner plate with nodular setae distally; outer plate more than 1.5 × wider than second palp article, medially with inflated wide, lanceolate robust setae; palp article 2 1.4 × the length of article 3; palp subrectangular article 3.

PEREON: Pereonites dorsally, dorsolaterally and laterally smooth. *Gnathopod 1* simple; coxa not tapering distally, anterodistal margin not produced; basis longer than subrectangular carpus; carpus; carpus with

Figure 38 A–D. *Pseudotiron livingstonae* n. sp., female holotype, 11.5 mm, NIWA 77187. A) habitus; B) maxilliped; C) head; D) maxilla 1. Scale bars: A = 1 mm; B, D = 100 µm, C = 500 µm.

Figure 39 A–F. *Pseudotiron livingstonae* n. sp., female holotype, 11.5 mm, NIWA 77187. A) mandible; B) mandible; C) lower lip; D) maxilla 2; E) gnathopod 1; F) gnathopod 2. Scale bars: A–D = 100 µm; E, F = 500 µm.

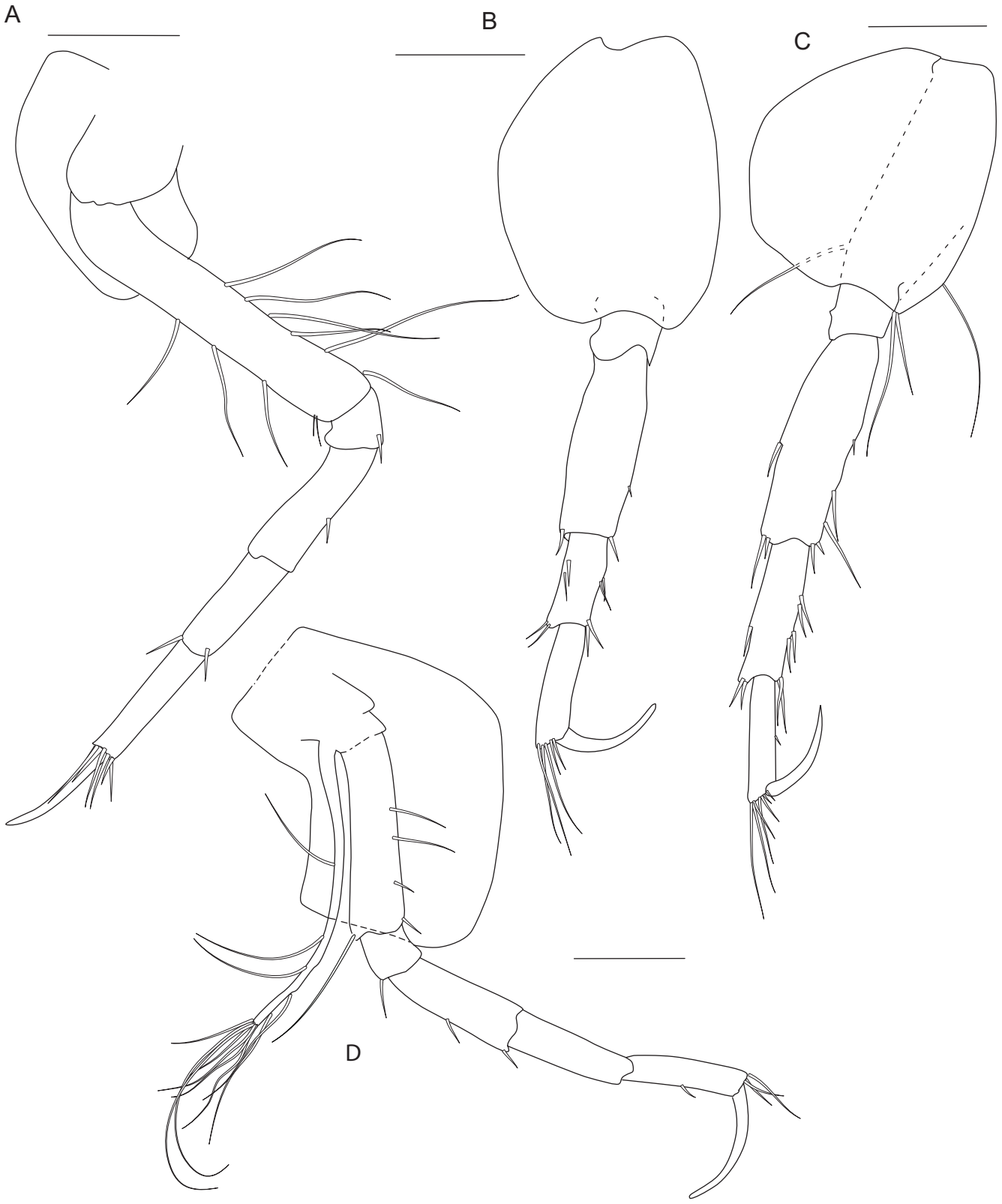


Figure 40 A–D. *Pseudotiron livingstonae* n. sp., female holotype, 11.5 mm, NIWA 77187. A) pereopod 4; B) pereopod 5; C) pereopod 6; D) pereopod 3. Scale bars: A–D = 500 µm.

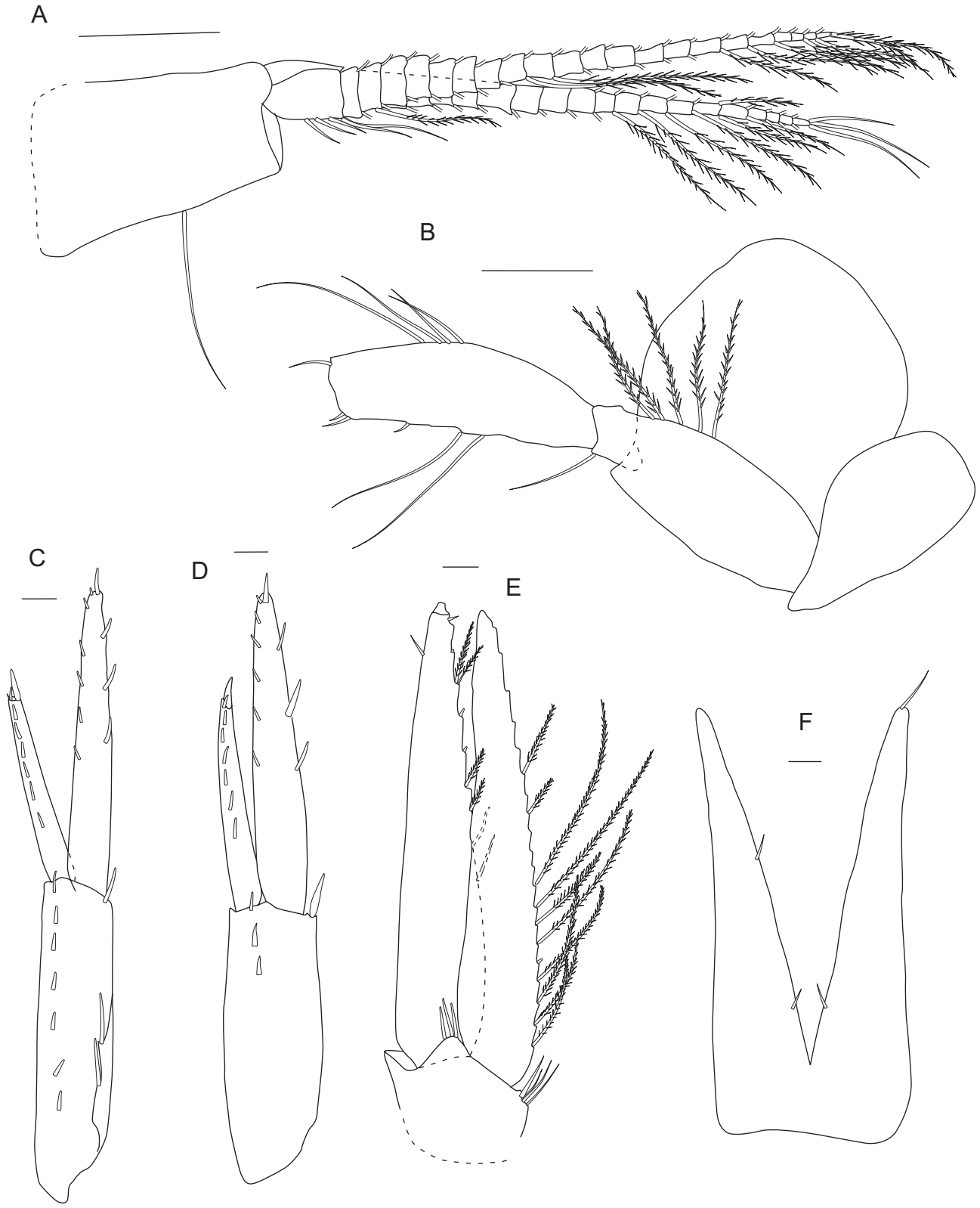


Figure 41 A–F. *Pseudotiron livingstonae* n. sp., female holotype, 11.5 mm, NIWA 77187. A) pleopod 1; B) pereopod 7; C) uropod 1; D) uropod 2; E) uropod 3; F) telson. Scale bars: A, B = 500 μm, C–F = 100 μm.

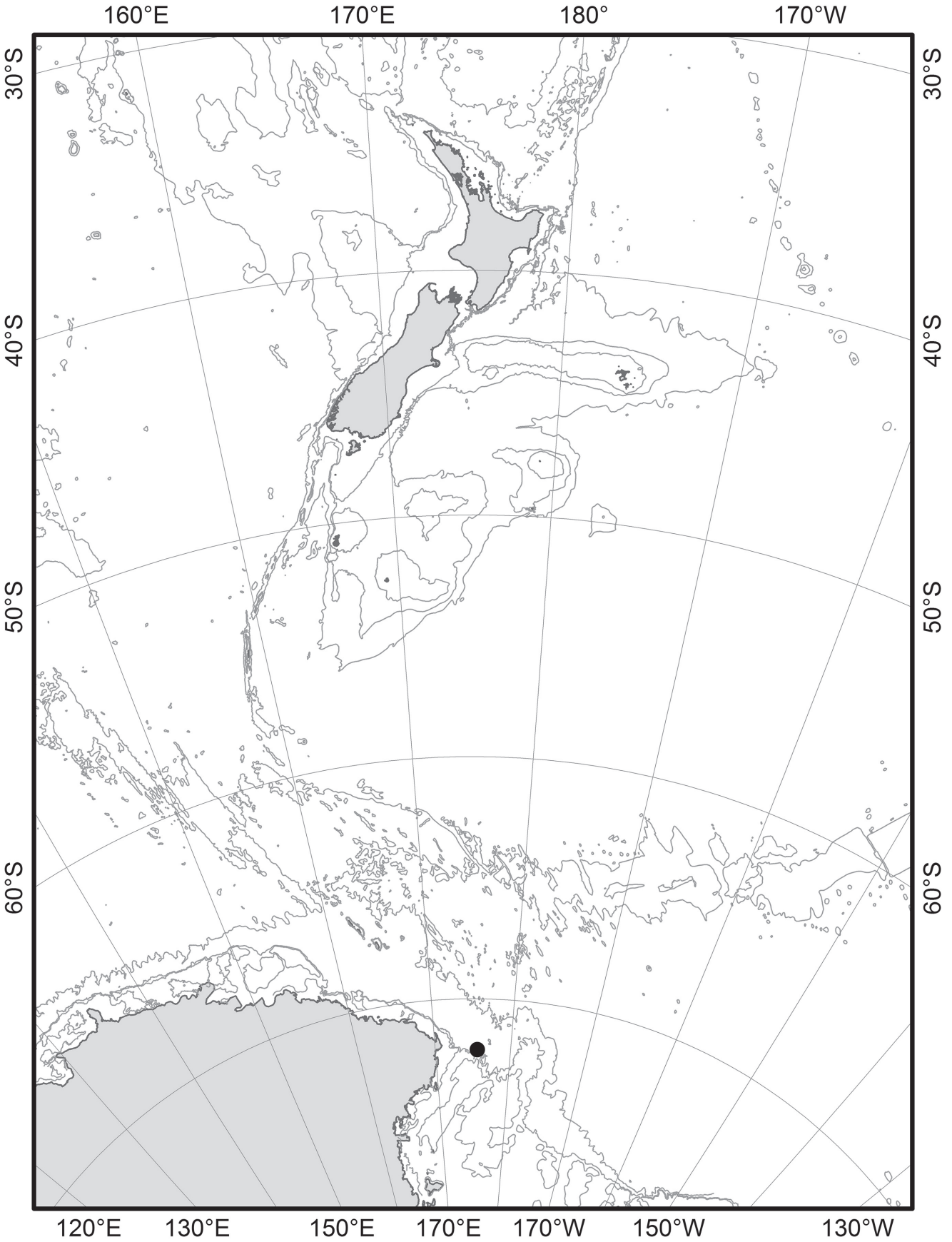


Figure 42. Distribution map of *Pseudotiron livingstonae* n. sp.

serrate setae along the posterior margin; without palm, robust smooth setae absent. *Gnathopod 2* simple; coxa not distally tapering; basis longer than carpus; carpus serrate setae along the posterior margin present; palm robust smooth setae absent; dactylus well developed, unguis short, one third length of dactylus. *Pereopod 3* coxa anterodistal lobe absent, posterodistal lobe present, oblique, two thirds the depth of the coxa, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subquadrate, a quarter of merus length; dactylus strongly curved. Pereopod 3–4 coxa pelagont. *Pereopod 4* coxa shorter than coxa 3, lobate in shape, posterior margin with well developed lobe; ischium subquadrate, a quarter of merus length; dactylus strongly curved. *Pereopod 5–7* coxa smooth; basis anterodistal corner not produced, posterior margin smooth; dactylus length 0.75 × propodus. *Pereopod 5* basis subovoid, expanded, posterodistal lobe weakly developed. *Pereopod 7* basis ovate, expanded posterodistal lobe, rounded, not extending below ischium.

Pleon: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin minutely serrate. *Pleonite 1* without carination, posterior margin mid-dorsally with short point. *Pleonite 2* without carination, posterior margin mid-dorsally with short point. *Pleonite 3* without carination, posterior margin with mid-dorsally tooth and minutely serrate margin. *Epimeron 1* posterior margin smooth, posterodistal corner rounded. *Epimera 2–3* posterior margin smooth, ventral margin serration absent; posterodistal tooth subacute. *Urosomite 1* mid-dorsal posterior margin serrate, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin with small tooth. *Urosomite 3* mid-dorsal posterior margin smooth. *Uropod 1* peduncle without distal process; inner ramus subequal to peduncle; apical robust setae on tip of both rami present. *Uropod 2* apical robust setae on tip of outer ramus present. *Uropod 3* length greatly exceeding length of uropods 1–2; peduncle short (less than 2 × breadth); outer ramus with small second article apically. *Telson* much longer than uropod 3 peduncle, less than 3 × as long as wide; no setae along the lateral margin, with single pair of apical slender setae, deeply v–shaped excavate, cleft more than 90%.

Distribution: Only known from type locality. Antarctic, Ross Sea, 1645–1629 m.

Remarks: Apart from *Pseudotiron livingstonae* n. sp. the only other species of this genus with a non–protuberant head are *Pseudotiron coas* J.L. Barnard, 1967 and *Pseudotiron pervicax* J.L. Barnard, 1967. Unlike the new species described herein, *P. pervicax* has a narrow coxa 3 whereas in *P. livingstonae* it is L–shaped, similar to *Pseudotiron bouvieri* (Chevreux, 1895). *Pseudotiron livingstonae* n. sp. differs from *P. coas* by the following characters: the acute rostrum, strongly setose gnathopods 1–2 and long, slender, curved dactyli of pereopods 5–7. This is the first record of *Pseudotiron* in Antarctic waters.

Syrrhoe Goës, 1866
(amended after J.L. Barnard, 1972)

Syrrhoe Goës, 1866: 527; — Stebbing, 1906: 281-282; — J.L. Barnard, 1969: 462; — J.L. Barnard, 1972: 52; — Barnard & Karaman, 1991: 717

Diagnosis**:** Head protuberant or not, lateral cephalic lobe rounded to acute; molar not enlarged, weakly triturative; mouthparts basic; antenna 1 article 1 bearing large distally curved tooth, peduncle slightly elongate (female); coxa 1 ordinary or enlarged; coxae 3–4 pelagont; gnathopods with transverse or subtransverse palms bearing enlarged serrate defining robust seta; dactylus of gnathopod 2 normal; pereopods 5–7 elongate, dactyli elongate, basis heavily serrate or not, basis of pereopod 7 typically rounded posteroventrally but in few species becoming truncate; pleonites 1–3 typically serrate dorsally and laterally but often smooth or bearing single dorsal tooth, uropod 3 peduncle short (except *S. nodulosa*); telson elongate, deeply cleft.

Type-species: *Syrrhoe crenulata* Goës, 1866

Species composition:

***Syrrhoe affinis* Chevreux, 1908**
Syrrhoe angulipes Ledoyer, 1977
Syrrhoe crenulata Goës, 1866
***Syrrhoe kareenae* n. sp.**
Syrrhoe longifrons Shoemaker, 1964
Syrrhoe nodulosa K.H. Barnard, 1932
***Syrrhoe oluta* J.L. Barnard, 1972**
Syrrhoe papyracea Stebbing, 1888
Syrrhoe petitaserrata Hughes, 2009
Syrrhoe psychrophila Monod, 1926
***Syrrhoe sadiae* n. sp.**
Syrrhoe semiserrata Stebbing, 1888
Syrrhoe serrima J.L. Barnard, 1972
Syrrhoe tuberculata Dahl, 1954

KEY TO THE SPECIES OF *SYRRHOE*, AMENDED AFTER BARNARD 1972

1. Head extended as a forehead, forming protrusive appearance....2

   Head with anterodorsal margin curving hemispherically, dorsal and anterior margins of head nearly perpendicular....4

2. Coxa 1 broad, distal margin about twice as broad as proximal margin ....***S. oluta***

   Coxa 1 not broad, anterior and posterior margins nearly parallel 3

3. Telson of medium length and cleft halfway.... ....*S. papyracea*

   Telson long and cleft about three-fourths of its length....*S. longifrons*

4. Pereonite 7 and pleonites 1–3 each with middorsal nodule in addition to posterodorsal carinal tooth, pereonites 6–7 each with lateral nodulocarina or teeth 12

   Supernumerary nodules absent 5

5. Pleonites 1–2 with strong serrations on posterodorsal and posterolateral margins, no distinct middle teeth 6

   Pleonites 1–2 with one distinct posterodorsal tooth and few or no rudimentary serrations or widely separated teeth....8

6. Posterior margin of pleonite 3 including both epimera fully serrate .... *S. crenulata*

   Posterior margin of pleonite 3 with gap in serrations represented by a smooth margin on each posterodorsal epimeron 7

7. Coxa 1 and 2 more than twice as long as wide..... ....***S. affinis***

   Coxa 1 and 2 subquadrate....*S. psychrophila*

8. Coxa 1 distally expanded, coxa 2 distally tapering *S. serrima*

   Coxae 1 and 2 evenly extended....9

9. Carpus of gnathopod 2 as long as basis....10

   Carpus of gnathopod 2 shorter than basis.... ....*S. petitaserrata*

10. Pereonite 7 and pleonite 1–3 longitudinally bicarinate....*S. tuberculata*

    Pereonite 7 and pleonite 1–3 not longitudinally bicarinate 1

11. Basis of pereopod 7 posteroventral corner acutely drawn out, article 3 of maxillipedal palp ovoid ....*S. semiserrata*

    Basis of pereopod 7 posteroventral corner rounded, article 3 of maxillipedal palp slender ..*S. angulipes*

12. Strongly pointed carinae on pleonites 1–3 and pointed dorsolateral tooth on pleonite 1..... ....***S. sadiae* n. sp.**

    Carinae of pleonites 1-3 posteriorly excavate and serrate, no dorsolateral tooth on pleonite 1.....13

13. Rostrum ventrally blunt, coxa 3 wider than long . ....***S. kareenae* n. sp.**

    Rostrum ventrally pointed, coxa 3 as long as wide ....*S. nodulosa*

Syrrhoe cf. ***affinis*** Chevreux, 1908

(Figs 43–48, 102–111)

Syrrhoe affinis Chevreux 1908: p. 7, fig. 4; –– Sexton, 1911: 202, pl. 3, fig. 1–8; –– Chevreux 1919: 574; –– Chevreux 1927: 86, pl. 7, fig. 27; –– Chevreux 1935: 98, pl. 13, fig. 7; –– J.L. Barnard 1972: 53; –– Ledoyer, 1977: 411, fig. 30; –– G. Karaman 1986: 136, figs 8–10; fig. 11, 1–2; –– Ruffo, 1993: 715, fig. 492
Syrrhoe (?) *affinis* J.L. Barnard, 1961: 80, fig. 49

MATERIAL EXAMINED: NIWA 80335, 1 ovigerous female (illustrated specimen), TAN0705/276, 26/04/2007, -42.62133 175.92250, -42.62033 175.93350, 194–1199 m; NIWA 69852, 1 female, TAN0705/285, 27/04/2007, -43.79666 175.31582, -43.80450 175.31483, 418–422 m; NIWA 69853, 1 female; NIWA 76150, 1 female; NIWA 31828, 1 juvenile, NIWA 31830, 3 females, 2 juveniles, NIWA 43678, 1 ovigerous female, NIWA 84599, 2 specimens, NIWA 84616, 1 specimen, TAN0705/255, 24/04/2007, -43.52966 178.50483, -43.53633 178.511840, 346 m; NIWA 76151, 3 females, NIWA 31833, 7 specimens, NIWA 43680,1 female, NIWA 80264, 7 females, TAN0705/276, 26/04/2007, -42.62133 175.92250, -42.62033 175.93350, 1194–1199 m; NIWA 80829, 1 female, 1 juv., NIWA 31823, 1 female, NIWA 31825, 3 females, 1 male, NIWA 31825, 1 specimen, NIWA 84593, 17 specimens, TAN0705/251, 24/04/2007, -42.995834 178.99566, -42.99100 179.00517, 520–530 m; NIWA 80263, 5 females, NIWA 80265, 2 females, NIWA 80261, 1 female, TAN0705/160, 16/04/2007, -42.78200 -176.71520, -42.7816700000 -176.704200, 1023–1026 m; NIWA 80262, 1 juv., NIWA 31834, 2 specimens, NIWA 31835, 6 specimens, NIWA 31836, 17 adult specimens, 31 juveniles, NIWA 43683, 4 females, 1 male, NIWA 84624, 11 specimens, NIWA 84629, 30 specimens, TAN0705/285, 27/04/2007, -43.79666 175.31582, -43.80450, 175.31483, 418–422 m; NIWA 31788, 1 female, TAN0705/65, 07/04/2007, -44.01616

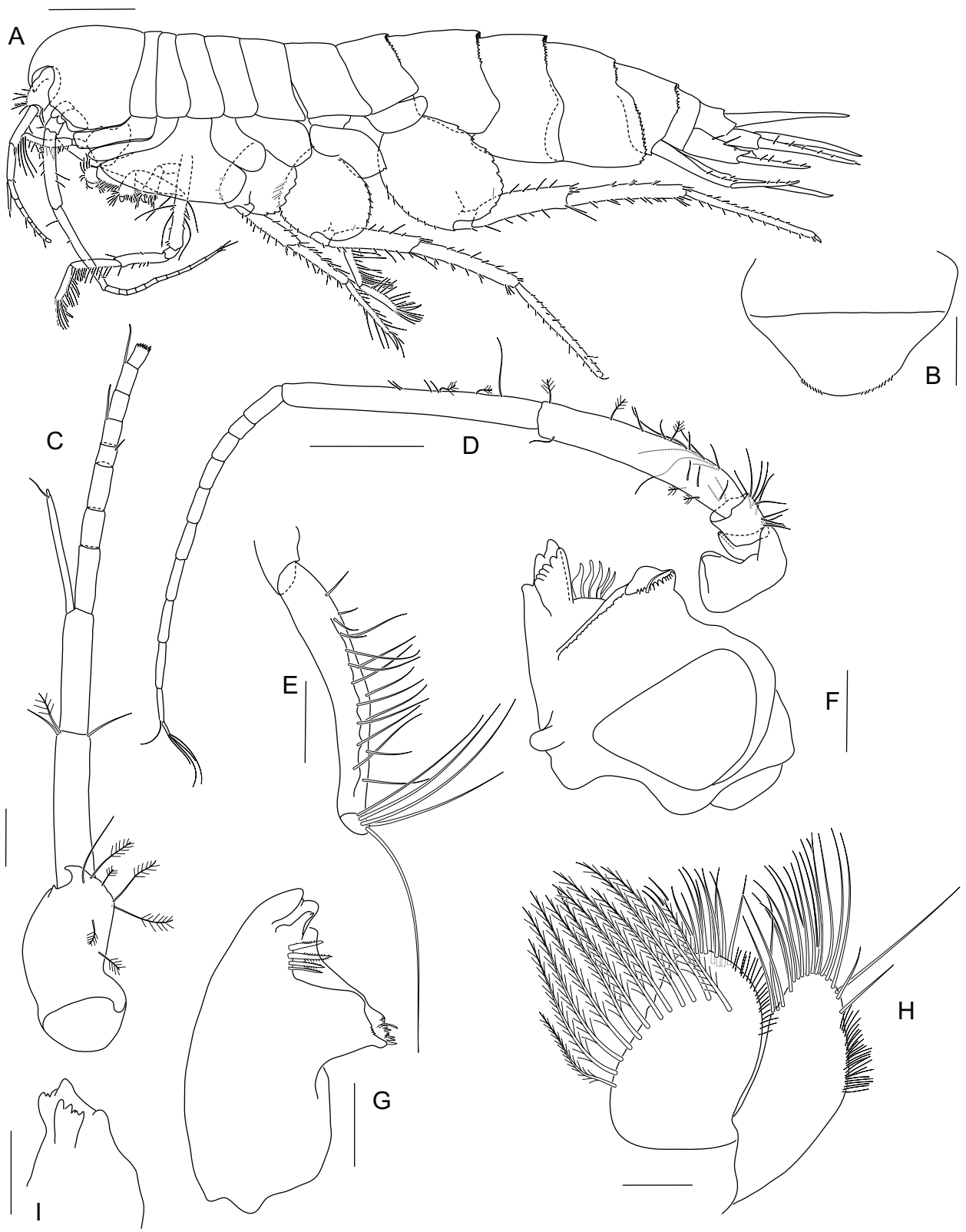


Figure 43 A–I. *Syrrhoe* cf. *affinis*, female, 10 mm, NIWA 80335. A) habitus; B) labrum; C) antenna 1; D) antenna 2; E) mandible palp; F) left mandible; G) right mandible; H) maxilla 2; I) incisor and lacinia mobilis of right mandible. Scale bars: A = 1 mm; D = 500 μm; B, C, E, F, G, I = 200 μm; H = 100 μm.

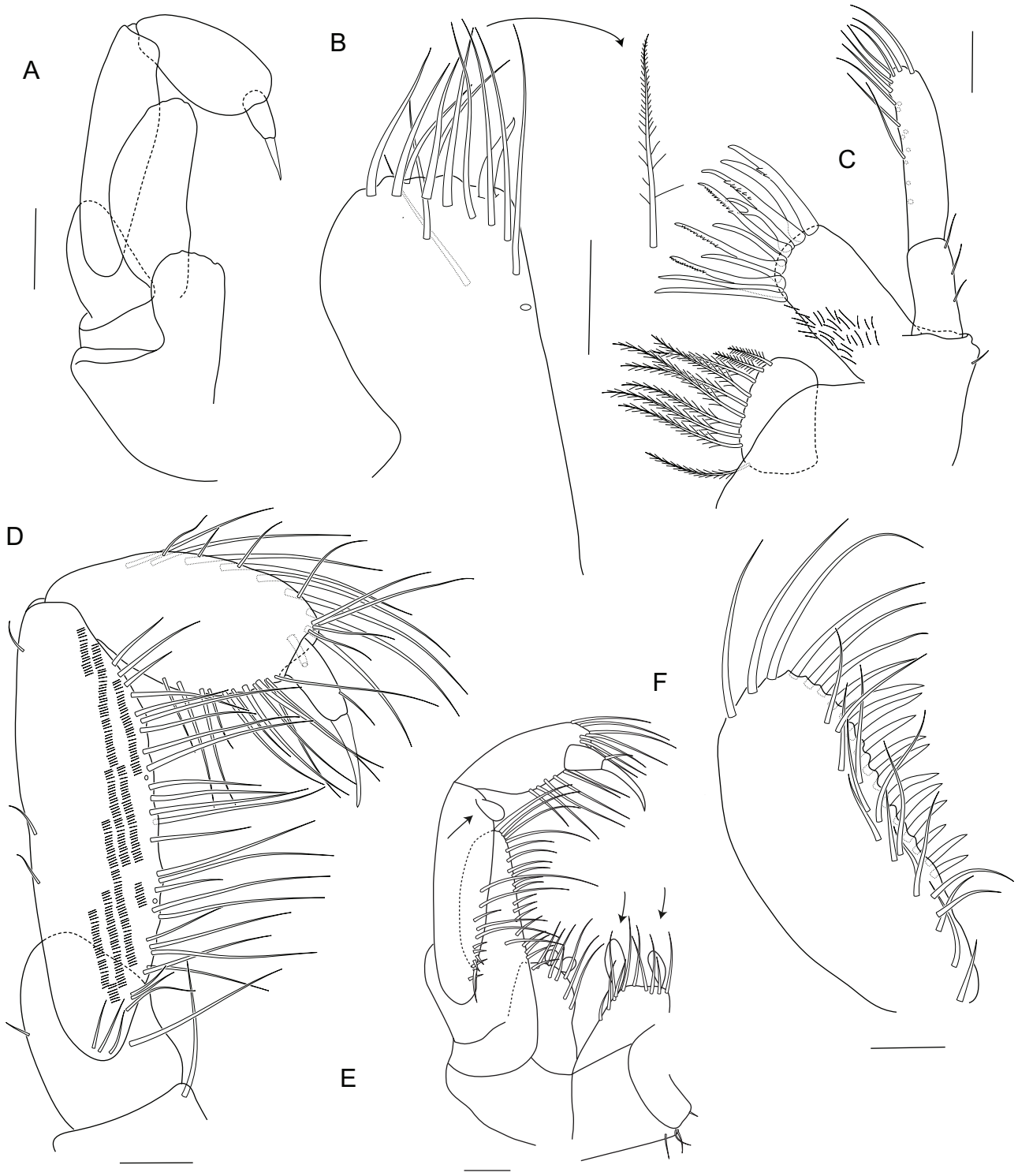


Figure 44 A–D, F. *Syrrhoe* cf. *affinis*, female, 10 mm, NIWA 80335. **E.** *Syrrhoe* cf. *affinis* NIWA 69852. A) outline of left side of maxilliped, setae omitted; B) inner plate of maxilliped; C) maxilla 1; D) outer plate of maxilliped; E) maxilliped with epibionts, Protozoa; F) maxilliped palp. Scale bars: A = 200 μm; B–F = 100 μm.

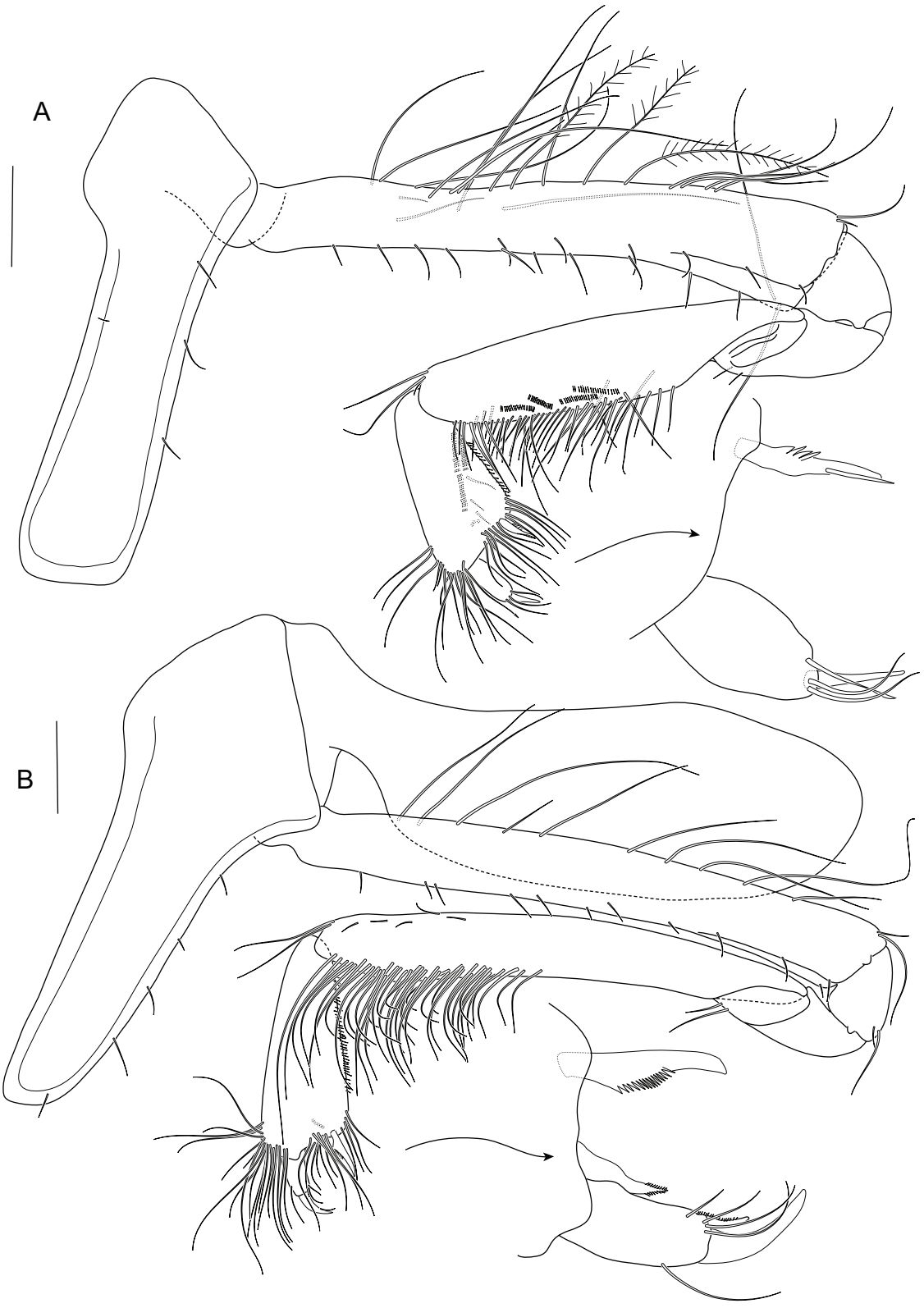


Figure 45 A–B. *Syrrhoe* cf. *affinis*, female, 10 mm, NIWA 80335. A) gnathopod 1; B) gnathopod 2. Scale bars: A, B = 200 μm.

Figure 46 A–C. *Syrrhoe* cf. *affinis*, female, 10 mm, NIWA 80335. A) pereopod 3; B) pereopod 4; C) pereopod 5. Scale bars: A–C = 500 µm.

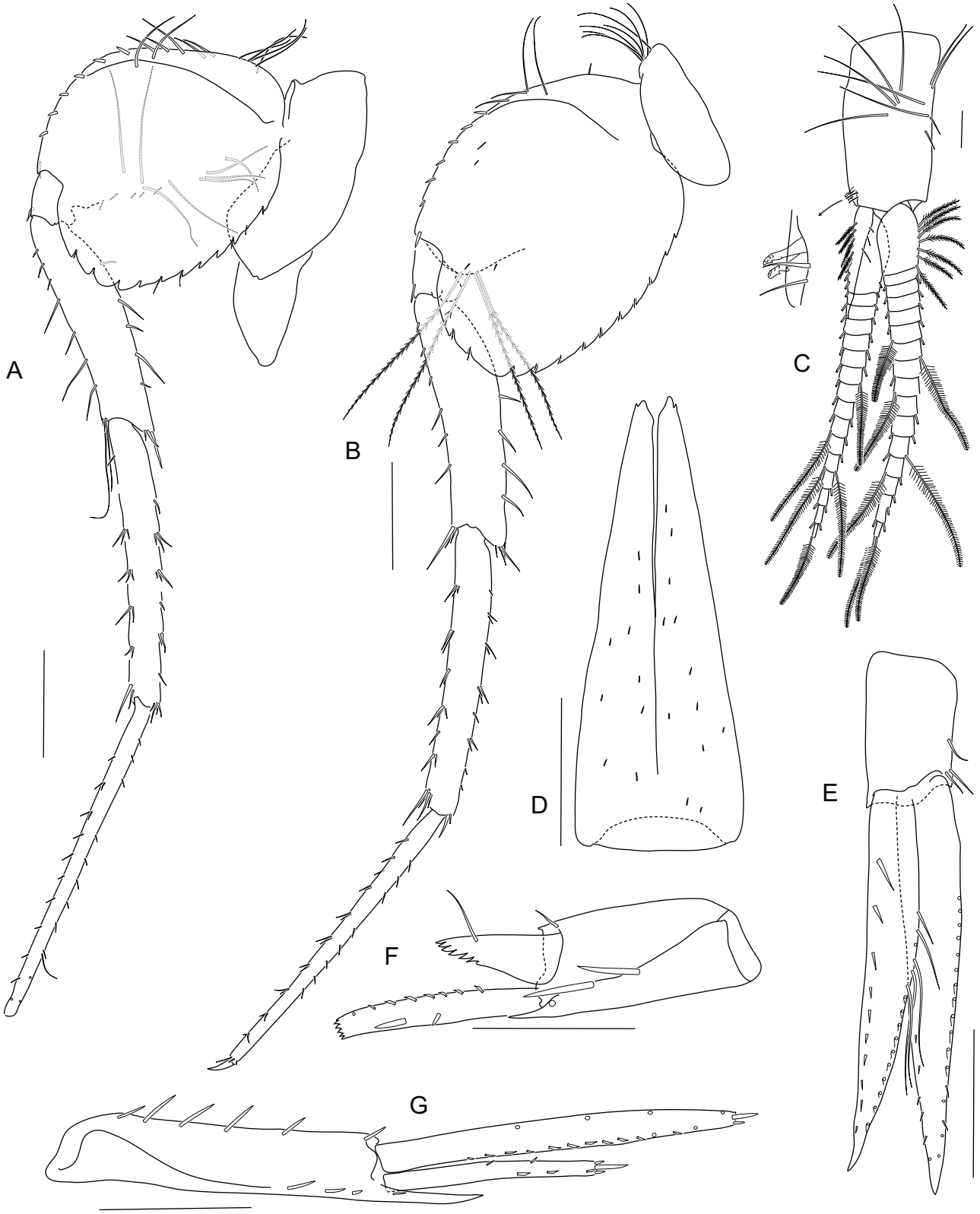


Figure 47 A–G. *Syrrhoe* cf. *affinis*, female, 10 mm, NIWA 80335. A) pereopod 6; B) pereopod 7; C) pleopod 1; D) telson; E) uropod 3; F) uropod 2; G) uropod 1. Scale bars: A, B, D–G = 500 µm; C = 200 µm.

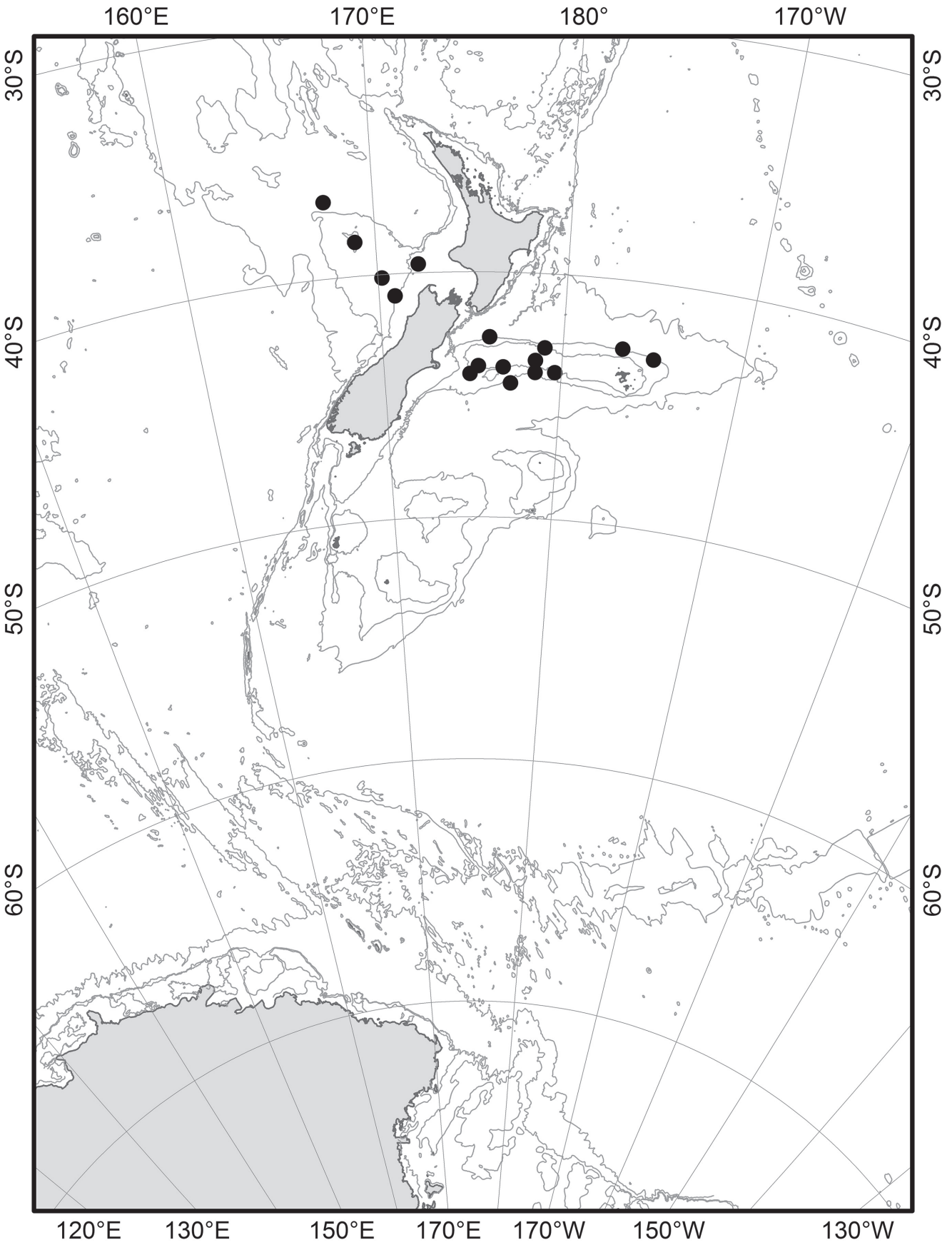


Figure 48. Distribution map of recently collected *Syrrhoe* cf. *affinis*.

178.52099, -44.01433 178.51750, 769–771 m; NIWA 31768, 1 female, TAN0705/024, 04/04/2007, -44.1208 174.8432, -44.1242 174.8448, 512–513 m; NIWA 31775, 5 specimens, NIWA 31776, 2 males, 10 females (4 ovigerous), 5 specimens, 2 juveniles, NIWA 31779, 5 specimens, NIWA 31780, 1 female, NIWA 84564, 6 females, 1 male, TAN0705/041, 05/04/2007, -43.8363 176.7092, -43.8330 176.7127, 478–479 m; NIWA 31784, 1 male, 1 female, NIWA 31785, 9 specimens, NIWA 84568, 1 male, 2 juveniles, TAN0705/049, 06/04/2007, -44.4862 177.1413, -44.4842 177.1462, 1235–1239 m; NIWA 31793, 11 specimens, NIWA 31794, 1 male, 3 females, NIWA 31795, 1 juvenile, TAN0705/083, 09/04/2007, -43.9790 179.6298, -43.9850 179.6218, 529–530 m; NIWA 31801, 1 ovigerous female, TAN0705/127, 13/04/2007, -43.0650 -174.93250, -43.07317 -174.93480, 933–940 m; NIWA 31803, 2 females, TAN0705/136, 14/04/2007, -43.2903 184.4478, -43.2933 184.4370, 638–644 m; NIWA 31814, 2 specimens; NIWA 31815, 36 specimens; NIWA 31816, 1 male, 1 female, 2 juveniles, NIWA 84587, 7 specimens, NIWA 84590, 1 juvenile, TAN0705/178, 18/04/2007, -43.5212 181.3797, -43.5228 181.3685, 424–425 m; NIWA 31848, 1 female, TAN0707/051, 30/05/2007, -36.9202 167.5302, -36.9120 167.5325, 1207–1213 m; NIWA 31858, 1 female, NIWA 31860, 2 females, TAN0707/105, 05/06/2007, -40.1277 170.2140, -40.1352 170.2090, 803–805 m; NIWA 31862, 2 males, 4 females; NIWA 84643, 10 juveniles, NIWA 84645, 1 male, 1 female, TAN0707/119, 06/06/2007, -40.8800 170.8555, -40.8883 170.8565, 529–534 m; NIWA 31866, 2 males, 2 females, NIWA 31868, 8 females, 1 male, NIWA 84646, 20 specimens, TAN0707/139, 07/06/2007, -39.6373 172.1532, -39.6457 172.1522, 264–266 m.

SEM STUDS: NIWA 69745, 69746, 69747, 69748, 69749, NIWA 69751, TAN0705/285, 27/04/2007, –43.79666 175.31582, -43.80450, 175.31483, 418–422 m; NIWA 69750, TAN0705/160, 16/04/2007, -42.78200 -176.71520, -42.78167 -176.70420, 1023–1026 m; NIWA 69750, TAN0705/160, 16/04/2007, -42.78200 -176.71520, -42.78167 -176.70420, 1023–1026 m; NIWA 69751, TAN0705/285, 27/04/2007, -43.79666 175.31582, -43.80450, 175.31483, 418–422 m.

ADDITIONAL MATERIAL EXAMINED FROM THE EASTERN ATLANTIC: MNHN–1U–2009–453, 1 male, 3 females, Talisman Expedition 1883, st 88, off Marocco (Western–Sahara), 21.96667 -19.86667, 888 m, det. Chevreux; MNHN–1U–2009–452, 20+ males and females, Talisman Expedition 1883, st 89, off Marocco (Western–Sahara), 21.88333 -27.6667, 655 m, det. Chevreux; MNHN–1U–2009–454, 1 female, Travailleur Expedition 1882, st 25, off Portugal, 36.1 -11.51667, 460 m, det. Chevreux.

DESCRIPTION BASED ON: Female, 10 mm.

HEAD: *Head* not protuberant, without dorsal keel. *Eyes* present, (outlines visible in some specimens but pigments washed out). *Rostrum* short, reaching half the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe present, truncate. *Antenna 1* article 1 not elongate, with a curved tooth distomarginally; article 2 without distomedial tooth, subequal to article 1; article 3 subequal to article 1, shorter than article 2; accessory flagellum subequal to 3rd peduncular article, surpassing second flagellar article, 2nd article less than a quarter length of 1st accessory flagellar article; flagellum shorter than pereon, damaged (with more than 8 articles). *Antenna 2* shorter than body; flagellum 11-articulate, ¼ pereon length. *Mandibular palp* article 2 with many slender setae; article 3 shorter than half the length of article 2, article 3 with long slender setae considerably longer than those of article 2, with 5 slender apical setae. Mandibular incisor multidentate; left lacinia mobilis wide and multidentate; accessory setal row with 5 weakly serrate setae; molar small, columnar, weakly triturative. *Maxilla 1* inner plate with 10 plumose setae; outer plate with 11 apical robust setae; bifurcate setae present; palp article 2 outer margin smooth, with apical and medial setation. *Maxilla 2* outer plate longer than inner plate; inner plate width about 1.2 × outer plate. *Maxilliped* inner plate without nodular setae; outer plate medially with simple robust setae; palp article 2 1.7 × the length of article 3; palp article 3 inflated.

PEREON: Pereonites dorsally, dorsolaterally and laterally smooth. *Pereonite 7* without carination; posterior margin mid-dorsally serrate, with short point; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* nearly rectipalmate; coxa not tapering distally, apex strongly directed anteriorly; basis longer than carpus; carpus subrectangular, with smooth setae along the posterior margin; propodus palm transverse, defined by 1 serrate robust seta. *Gnathopod 2* nearly rectipalmate; coxa distally tapering; basis longer than carpus; carpus serrate setae along the posterior margin absent; propodus palm nearly oblique, defined by 1 serrate robust setae; dactylus of gnathopod 2 well developed, unguis short, less than or subequal to length of dactylus. *Pereopod 3* coxa anterodistal lobe present, obliquely produced, posterodistal lobe present, truncate, half the depth of the coxa, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subquadrate, a quarter of merus length; dactylus weakly curved. Pereopod 3–4 coxa pelagont. *Pereopod 4* coxa shorter than coxa 3, lobate in shape, posterior margin with well-developed lobe; ischium subquadrate, a quarter of merus length; dactylus weakly curved. Pereopod 5–7 basis anterodistal corner weakly produced, posterior margin serrate. *Pereopod 5* basis subovoid, expanded, posterodistal lobe weakly developed, not extending past ischium. *Pereopod 7*

basis ovate, with long plumose setae of medial surface posterodistal lobe well developed, rounded, extending below ischium.

PLEON: Pleonites 1–2 posterodorsal margin serrate. *Pleonite 1* without carination, posterior margin mid-dorsally with short point. *Pleonite 2* without carination, posterior margin mid-dorsally with short point. *Pleonite 3* without carination, posterior margin mid-dorsally not produced, margin serrate. *Epimeron 1* posterior margin smooth, posterodistal corner truncate. *Epimeron 2* posterior margin smooth, posterodistal corner subquadrate. *Epimeron 3* posterior margin serrate, postero-ventral corner subquadrate. *Urosomite 1* mid-dorsal posterior margin serrate, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin smooth. *Urosomite 3* mid-dorsal posterior margin smooth. *Uropod 1* peduncle with long distal process, at least a third of length of outer ramus; inner ramus longer than peduncle; apical robust setae on tip of both rami present. *Uropod 2* apical robust setae on tip of outer ramus present. *Uropod 3* length not exceeding uropods 1–2. *Telson* almost as long as uropod 3 peduncle, 3 × as long as wide; with no setae along the lateral margin, without apical slender setae; lobes abutting, deeply cleft, more than 66%.

DISTRIBUTION: New Zealand, Chatham Rise, Challenger Plateau, Tasman Sea, 418–610 m; Atlantic Ocean, off Morocco, 460–888 m; Mediterranean Sea, 180–360 m.

REMARKS: *Syrrhoe affinis* has a non-carinate body cuticle. The posterior margins of pereonite 7 and pleonite 1–2 are dorsally serrate, in the larger specimens there is a mid-dorsal long thin process (see Figs 102, 108). We illustrated this morphological variant which occurs in males as well as females and is not correlated with area or depth of sampling. We have considered sympatric speciation occuring, but have taken the conservative approach of treating the morphological differences as intraspecific variation.

This species was previously recorded by J.L. Barnard (1961) from New Zealand waters, the only synopiid species from New Zealand prior to this publication. Barnard placed a question mark before the species name, as he doubted that a species originally described from the Atlantic coast off Morocco would occur in New Zealand waters. We share this hesitation but could not detect any morphological differences in the material from Chevreux. Preserved specimens appear to have no eyes; there is not a trace of pigments but in some specimens the outlines of eyes are visible.

Syrrhoe kareenae n. sp. (Figs 49–54)

TYPE MATERIAL: NIWA 76609, female holotype; NIWA 77391, female paratype.

TYPE LOCALITY: NIWA 76609, TAN0802/135, 22/02/2008, -72.07300 175.58550, -72.07950 175.58317, Brenke sledge, 1645–1629 m.

MATERIAL EXAMINED: NIWA 77391, paratype, same locality as holotype.

ETYMOLOGY: This species is named in honor of Dr Kareen Schnabel, for her outstanding achievements as Collection Manager of the Marine Invertebrate Collection housed at NIWA Greta Point.

DESCRIPTION BASED ON: Female (holotype), 9 mm.

HEAD: *Head* not protuberant, without dorsal keel. *Eyes* absent. *Rostrum* long, curved, longer than half the length of article 1 of antenna 1; apically blunt (truncate). Lateral cephalic lobe present, rounded. *Antenna 1* article 1 not elongate, with a distal curved tooth; article 2 without distomedial tooth, longer than article 1; article 3 shorter than article 1 and 2. Antenna 1 accessory flagellum longer than 3rd peduncular article, surpassing second flagellar article (reaching), accessory flagellum 2nd article less than a quarter length of 1st accessory flagellar article. Antenna 1 flagellum shorter than pereon; flagellum 17-articulate. Antenna 1 1st flagellar article elongate but not bordered with aesthetascs. *Antenna 2* shorter than body; flagellum 11-articulate. *Mandibular palp* article 2 with many slender setae; article 3 shorter than half the length of article 2 (knob-like), with 4 long slender setae considerably longer than those of article 2. Mandibular incisor multidentate; left lacinia mobilis wide and multidentate; accessory setal row with 4 serrate setae; molar small, triturative, columnar. *Maxilla 1* inner plate with more than 10 plumose setae; outer plate with 10 apical robust setae; bifurcate setae present; palp article 2 outer margin smooth, with apical and medial setation. Maxilla 2 inner plate width more than 1.3 × outer plate. *Maxilliped* inner plate with nodular setae distally; outer plate 1.3 × wider than second palp article, medially with inflated wide, lanceolate robust setae; palp article 2 1.7 × the length of article 3; palp article 3 inflated.

PEREON: Pereonites 1–3 smooth, pereonites 4–7 with carina; additional small mid-dorsal hump prior to posterior margin on pereonite 7; pereonites dorsolaterally and laterally smooth. *Pereonite 7* carinate; posterior margin mid-dorsally serrate, excavate; additional small mid-dorsal hump prior to posterior margin present; posterolateral corner acutely produced (also on pereonite 6). *Gnathopod 1* rectipalmate; coxa not tapering distally, anterodistal margin weakly produced; basis longer than carpus; carpus subrectangular (slightly

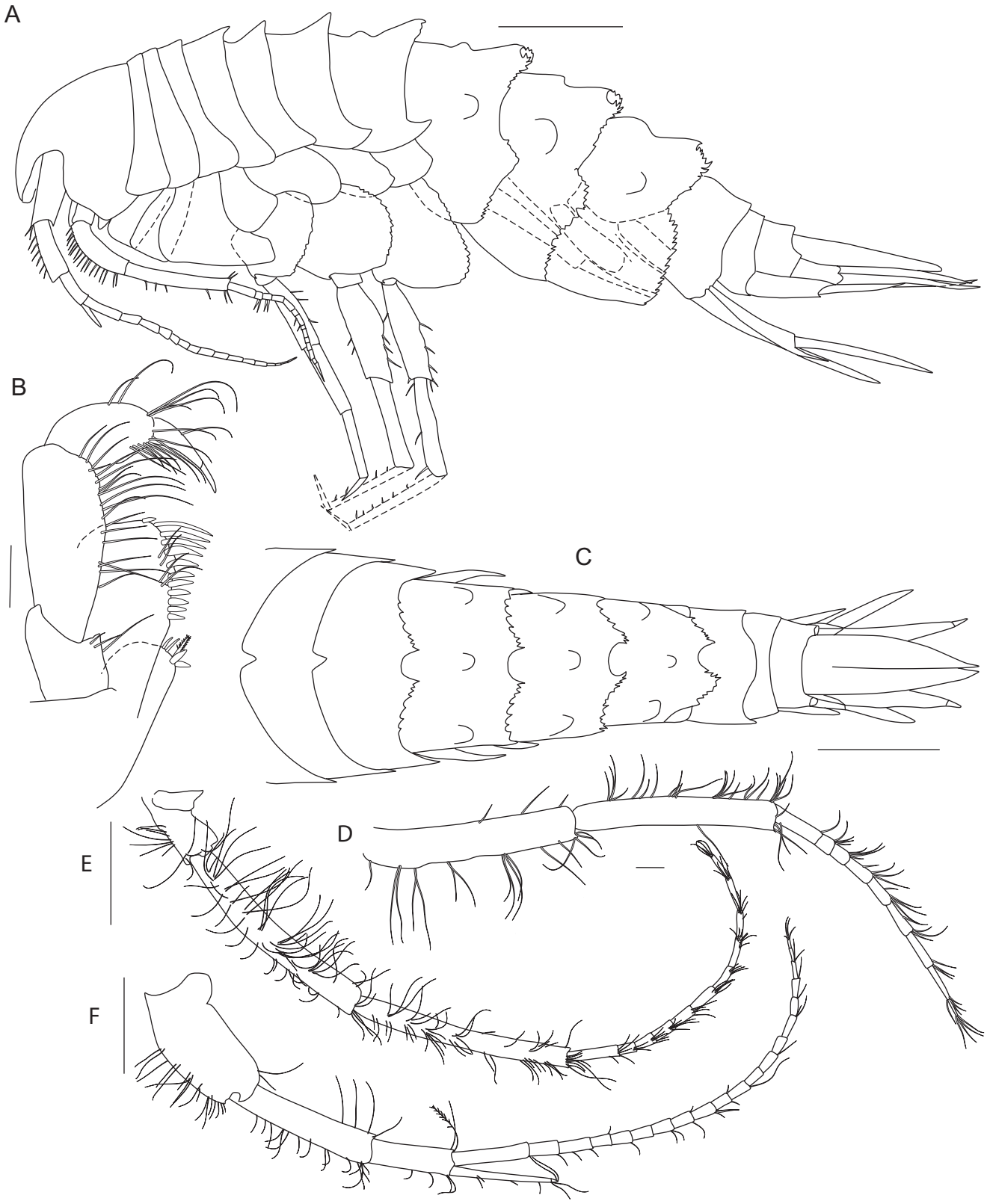


Figure 49 A–D. *Syrrhoe kareenae* n. sp., female holotype, 9.0 mm, NIWA 76609. **E–F** *Syrrhoe kareenae* n. sp., female paratype, NIWA 77391. A) habitus; B) maxilliped; C) habitus dorsal; D) antenna 2; E) antenna 2; F) antenna 1. Scale bars: A, C = 1 mm; B, D = 100 µm; E, F = 500 µm.

Figure 50 A–D. *Syrrhoe kareenae* n. sp., female holotype, 9.0 mm, NIWA 76609. A) lower lip; B) upper lip; C) mandible; D) mandible. Scale bars A–D = 100 µm.

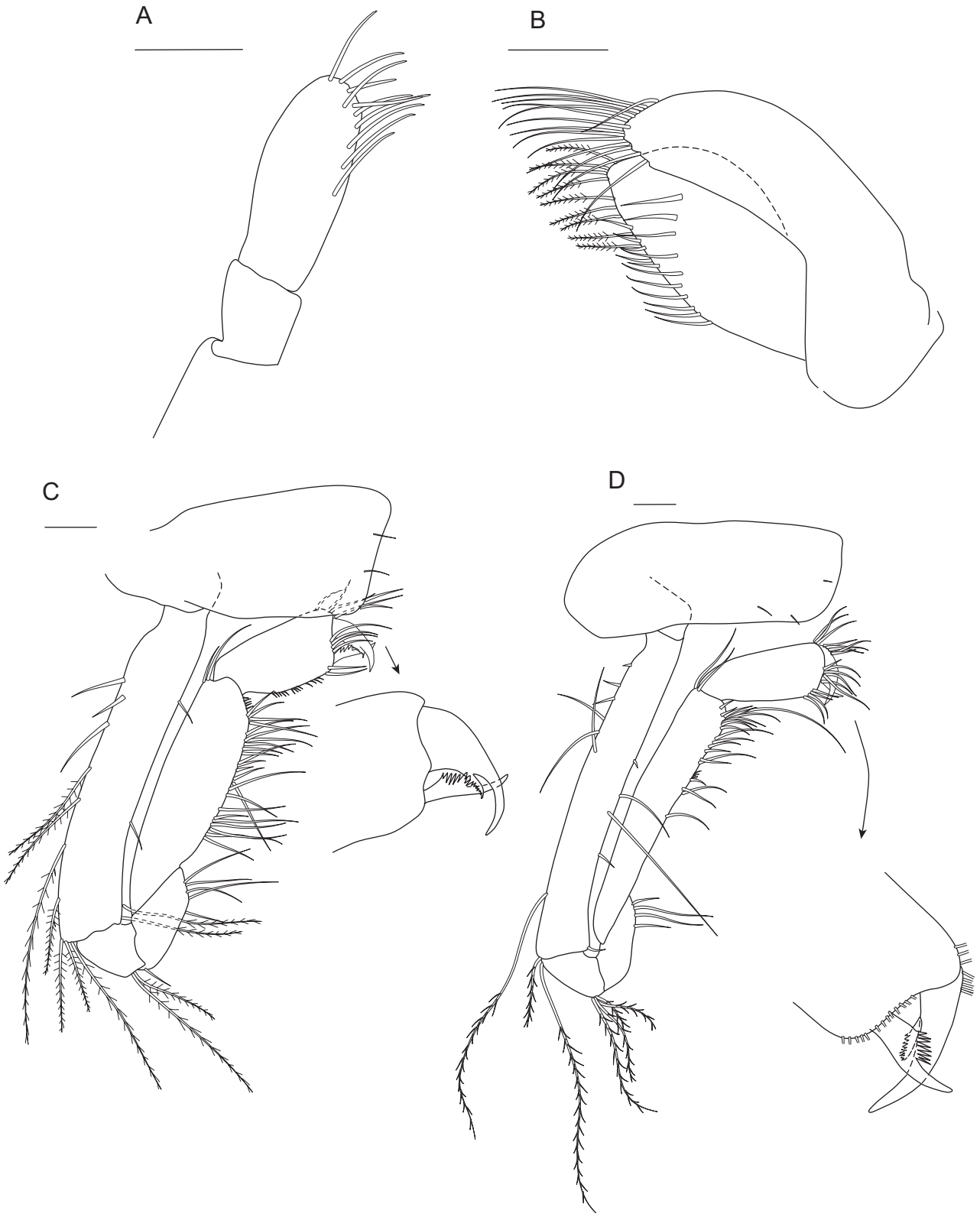


Figure 51 A–D. *Syrrhoe kareenae* n. sp., female holotype, 9.0 mm, NIWA 76609. A) maxilla 1 palp; B) maxilla 2; C) gnathopod 1; D) gnathopod 2. Scale bars A–D = 100 μm.

Figure 52 A–D. *Syrrhoe kareenae* n. sp., female holotype, 9.0 mm, NIWA 76609. A) pereopod 3; B) pereopod 4; C) pereopod 5; D) pereopod 6. Scale bars A–D = 100 µm.

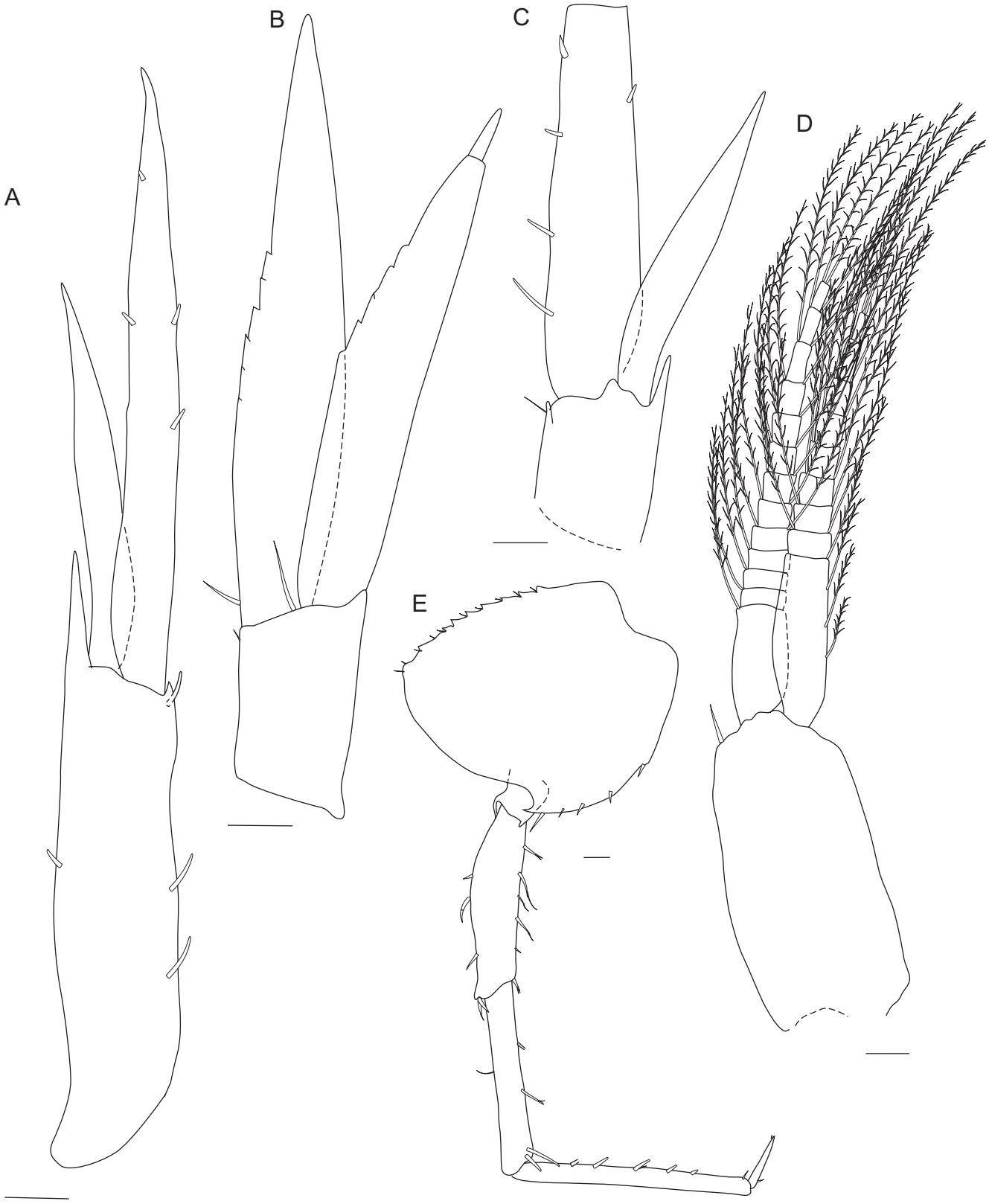


Figure 53 A–E. *Syrrhoe kareenae* n. sp., female holotype, 9.0 mm, NIWA 76609. A) uropod 1; B) uropod 3; C) uropod 2; D) pleopod 2; E) pereopod 7. Scale bars A–E = 100 µm.

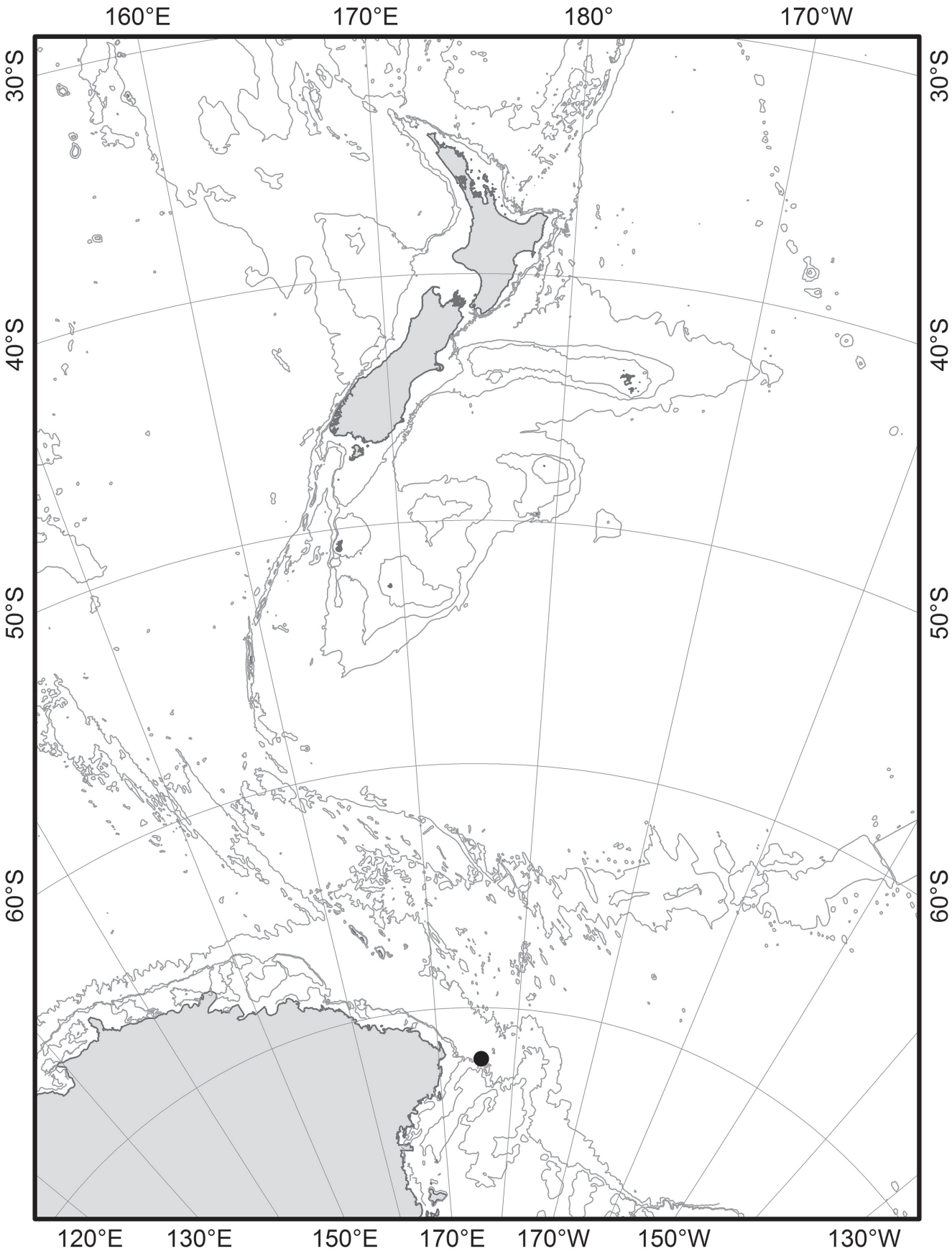


Figure 54. Distribution map of *Syrrhoe kareenae* n. sp.

expanded), with smooth setae along the posterior margin; propodus palm transverse, defined by 1 serrate robust seta, additional smooth robust smooth setae absent; dactylus extending beyond palm margin, posterior margin with accessory spine minutely serrate. *Gnathopod 2* rectipalmate; coxa not distally tapering; basis longer than carpus; carpus serrate setae along the posterior margin absent; propodus palm transverse, defined by 1 serrate robust seta, additional smooth robust smooth setae absent; dactylus well developed. *Pereopod 3* coxa anterodistal lobe present, produced rounded, posterodistal lobe present, rounded, half the depth of the coxa, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subrectangular, half as long as merus; dactylus weakly curved. Pereopod 3–4 coxa pelagont. *Pereopod 4* coxa shorter than coxa 3, lobate in shape, posterior margin weakly lobate; ischium subrectangular, half as long as merus; dactylus weakly curved. *Pereopod 5–7* coxa smooth. Pereopod 5–7 basis anterodistal corner produced as a recurved hook, posterior margin serrate. *Pereopod 5* basis subovoid, expanded, posterodistal lobe well developed, rounded, not extending past ischium. *Pereopod 7* basis ovate, posterodistal lobe well developed, rounded, not extending below ischium.

Pleon: *Pleonites* 1–3 with lateral rounded protrusions. Pleonites 1–3 posterodorsal margin serrate. *Pleonites 1–3* carinate, posterior margin mid-dorsally excavate, posterodorsal margin serrate. *Epimeron 1* posterior margin serrate, posterodistal corner rounded. *Epimeron 2* posterior margin serrate. *Epimeron 3* posterior margin and dorsally of posteroventral corner serrate, ventral margin serration absent; posterodistal tooth subacute. *Urosomite 1* mid-dorsal posterior margin smooth, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin smooth. *Urosomite 3* mid-dorsal posterior margin smooth. *Uropod 1* peduncle with long distal process, at least a third of length of outer ramus; inner ramus longer than peduncle; apical robust setae on tip of both rami absent. *Uropod 3* length not exceeding uropods 1–2; peduncle short (less than 2 × breadth). *Telson* much longer than uropod 3 peduncle, more than 3 × as long as wide, cleft more than 66%.

Distribution: Only known from type locality. Antarctica, Ross Sea, 1629–1645 m.

Remarks: *Syrrhoe kareenae* n. sp. is very similar to *Syrrhoe tuberculata* Dahl, 1954, originally described from the Ross Sea. It differs from *S. tuberculata* in: the strongly curved rostrum (v. straight); the longer than wide ischium of pereopods 3–4 (v. wider than long); the anteroventral angles of the basis of pereopods 5–7 which are produced as recurved hooks (v. straight processes); the posteroventral margins of pereopod 5–7 basis weakly convex (v. straight) and a serrate posterior margin of epimeron 1 (v. having only 2 teeth). Another species that is very similar to *S. kareenae* n. sp. is *Syrrhoe nodulosa* K.H. Barnard, 1932. Both species have a curved rostrum, but this is pointed in *S. nodulosa* (see Ruffo 1949) and epimeron 1 is serrate.

In *S. nodulosa* (see Coleman, 2000) coxa 3 is narrower, posteromarginally rounded and the propodus of gnathopod 1 in proportion to the basis is relatively short in comparison to *S. kareenae* n. sp.

Syrrhoe cf. ***oluta*** J.L. Barnard, 1972 (Figs 55–60)

Syrrhoe oluta J.L. Barnard, 1972: 54, figs 24–28

Material examined: 1 male, NIWA 45814, TAN0802/18, 01/03/2008, -68.55216 -178.37200 -68.56066 -178.35316, Brenke Sledge, 3212–3204 m.

Description based on: Male, 10.5 mm.

Head: *Head* not protuberant, without dorsal keel. *Eyes* absent. *Rostrum* short, reaching half the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe present as a short protrusion, apically rounded. *Antenna 1* article 1 elongate, with a distal curved tooth; article 2 with distomedial tooth, subequal to article 1; article 3 shorter than article 1 and shorter than article 2; accessory flagellum longer than 3rd peduncular article, subequal to 1st accessory flagellar article; 1st flagellar article elongate but not bordered with aesthetascs; flagellum shorter than pereon, 17-articulate. *Antenna 2* shorter than body; flagellum 25-articulate. *Mandibular palp* article 2 with many slender setae; article 3 with long slender setae considerably longer than those of article 2, article 3 with more than 2 slender apical setae. Mandibular incisor multidentate; left lacinia mobilis wide and multidentate; accessory setal row with 3 slender serrate setae; molar small, triturative, columnar. *Maxilla 1* inner plate with more than 12 plumose setae; outer plate with 11 apical robust setae; palp article 2 outer margin smooth, with apical and medial setation. *Maxilla 2* outer plate subequal to inner plate; inner plate width more than 1.3 × outer plate. *Maxilliped* inner plate without nodular setae; outer plate 1.3 × wider than second palp article, medially with simple robust setae; palp article 2 1.7 × the length of article 3; palp article 3 inflated.

Pereon: Pereonites dorsally smooth, dorsolaterally and laterally smooth. *Pereonite* 6–7 without lateral ridge. *Pereonite 7* without carination; posterior margin mid-dorsally smooth, not produced; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* rectipalmate; coxa distally expanded, anterodistal margin produced acute; basis longer than carpus; carpus subrectangular, with smooth setae along the

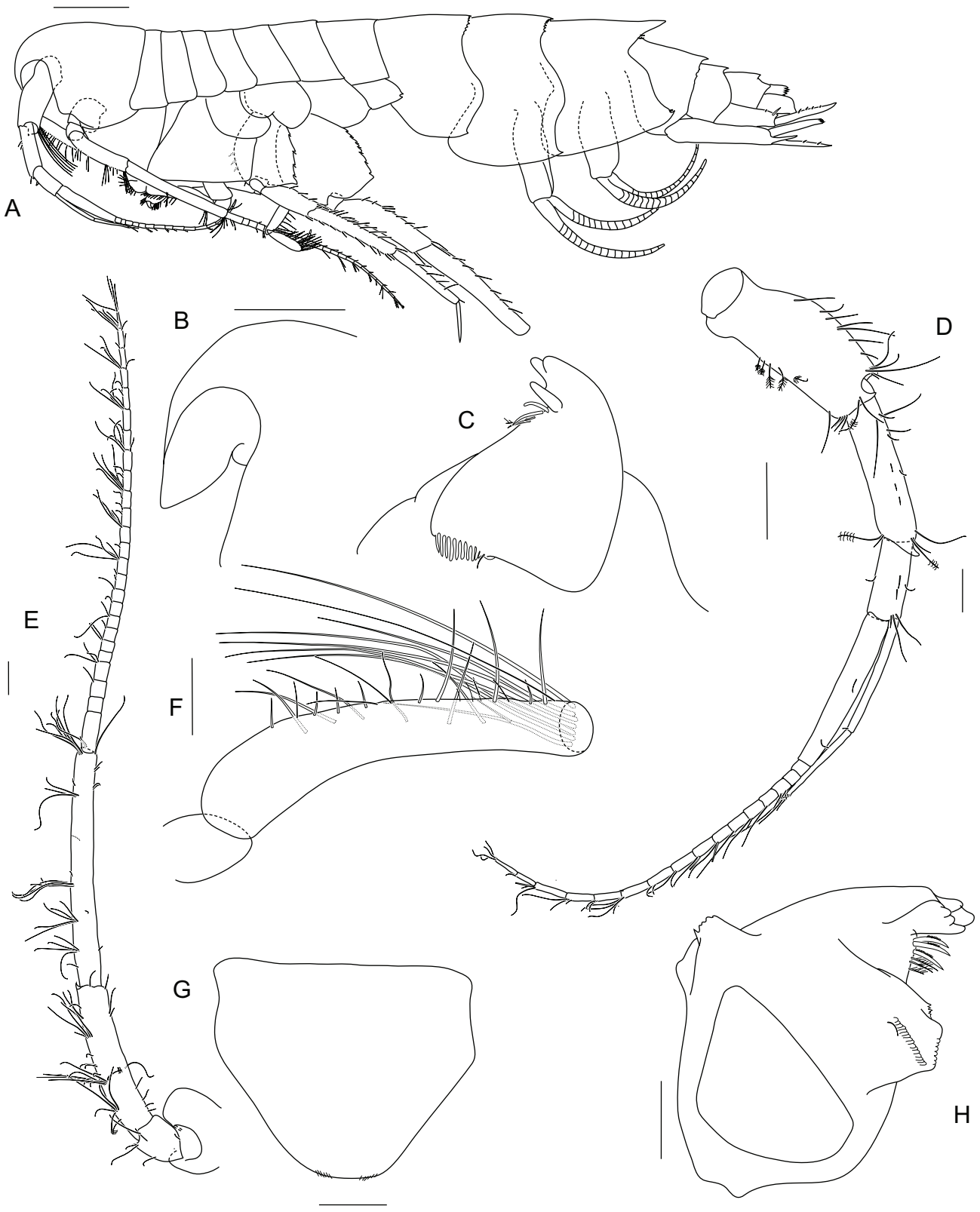


Figure 55 A–H. *Syrrhoe* cf. *oluta*, male, 10.5 mm, NIWA 45814. A) habitus; B) rostrum; C) right mandible; D) antenna 1; E) antenna 2; F) mandible palp; G) Upper lip; H) left mandible. Scale bars: A = 1 mm; B = 500 µm. C–H = 200 µm.

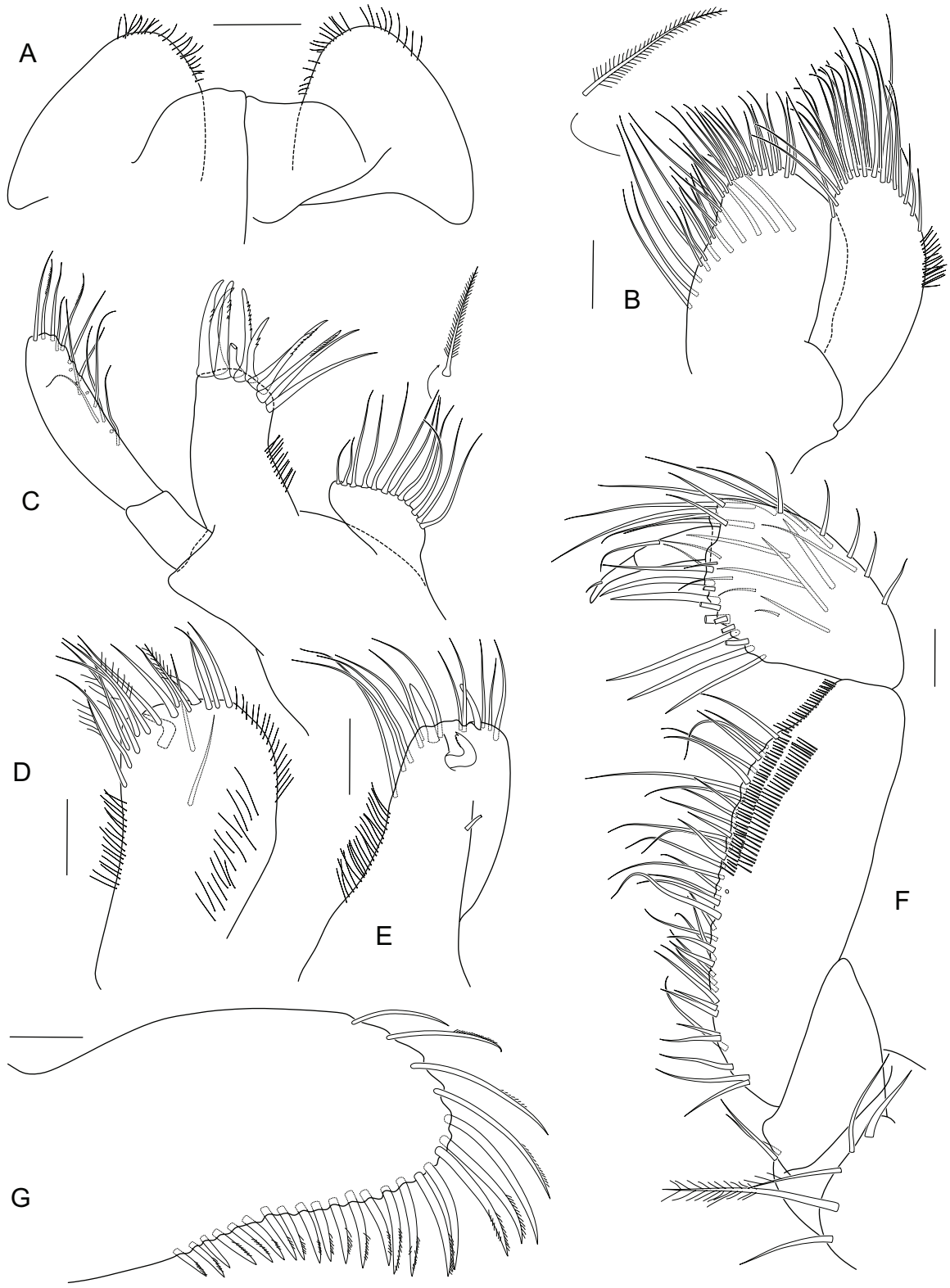


Figure 56 A–G. *Syrrhoe* cf. *oluta*, male, 10.5 mm, NIWA 45814. A) lower lip; B) maxilla 2; C) maxilla 1; D, E) maxilliped inner plate; F) maxilliped palp; G) maxilliped outer plate. Scale bars: A = 200 µm; B–G = 100 µm.

Figure 57 A–E. *Syrrhoe* cf. *oluta*, male, 10.5 mm, NIWA 45814. A) gnathopod 1; B) carpus of gnathopod 1; C) propodus and dactylus of gnathopod 1; D) gnathopod 2; E) propodus and dactylus of gnathopod 2. Scale bars: A, B, D = 200 μm; C, E = 100 μm.

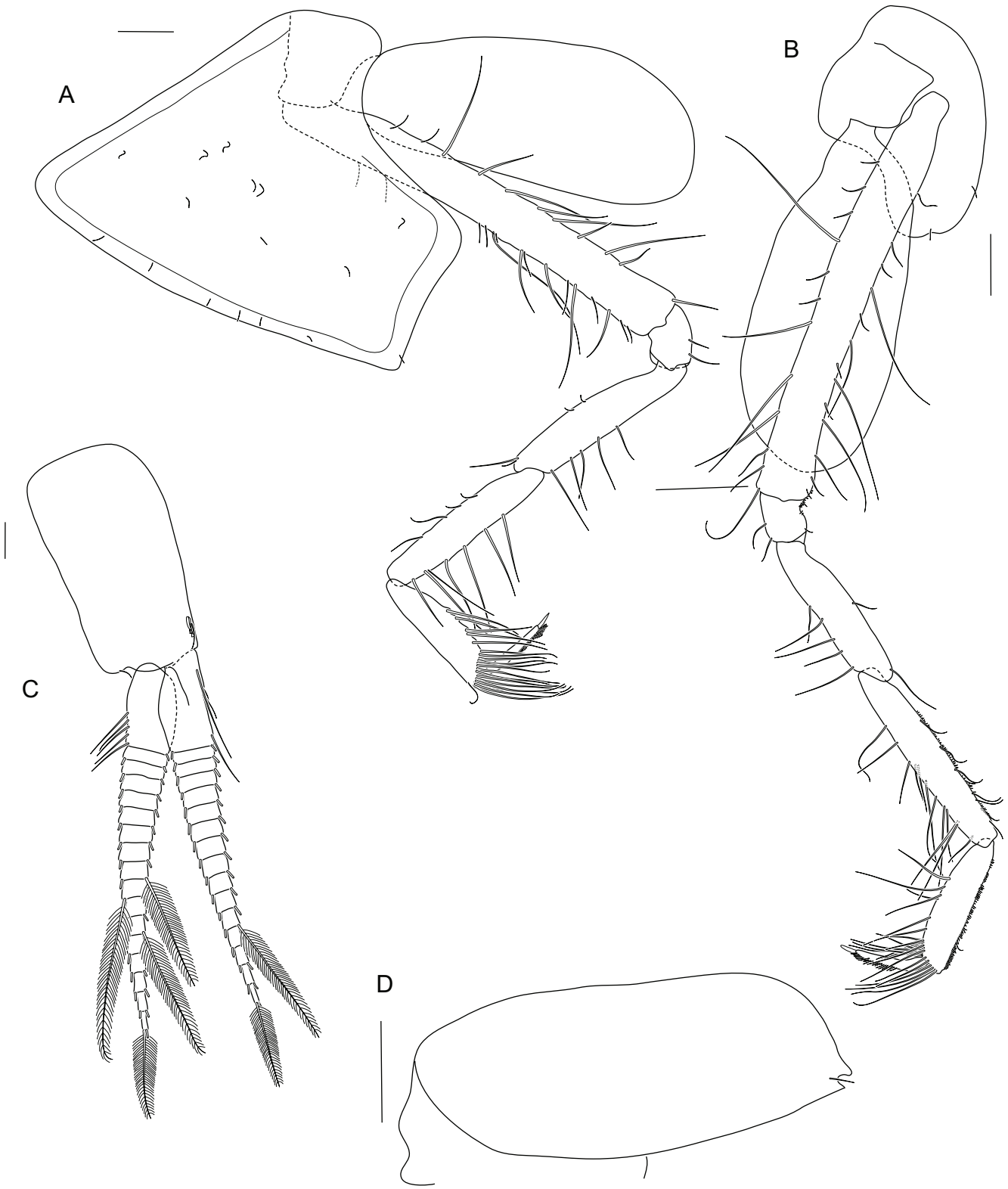


Figure 58 A–D. *Syrrhoe* cf. *oluta*, male, 10.5 mm, NIWA 45814. A) pereopod 3; B) pereopod 4; C) pleopod 1; D) pereopod 7 coxa. Scale bars: A–D = 200 µm.

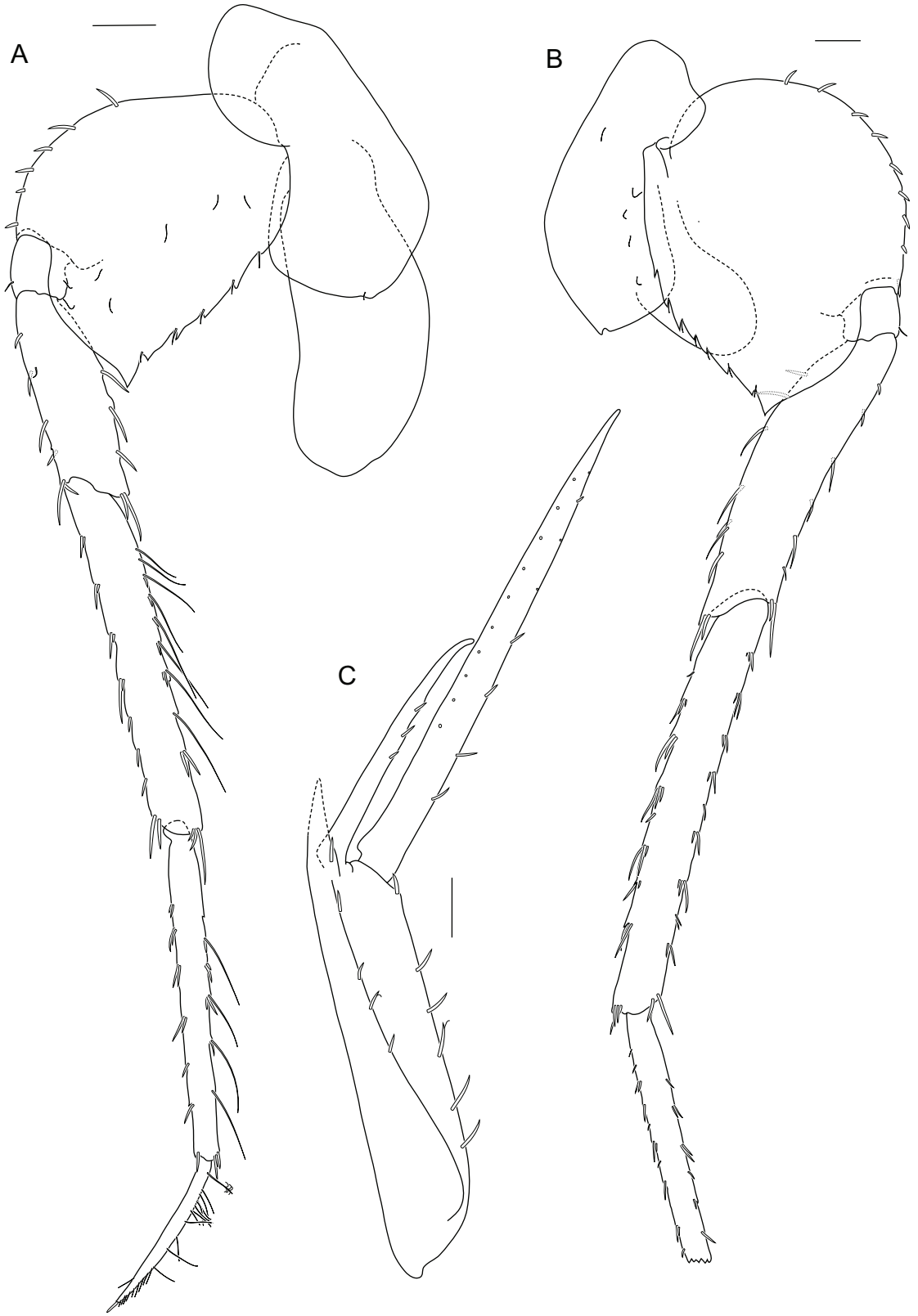


Figure 59 A–C. *Syrrhoe* cf. *oluta*, male, 10.5 mm, NIWA 45814. A) pereopod 5; B) pereopod 6; C) uropod 1. Scale bars: A–C = 200 µm.

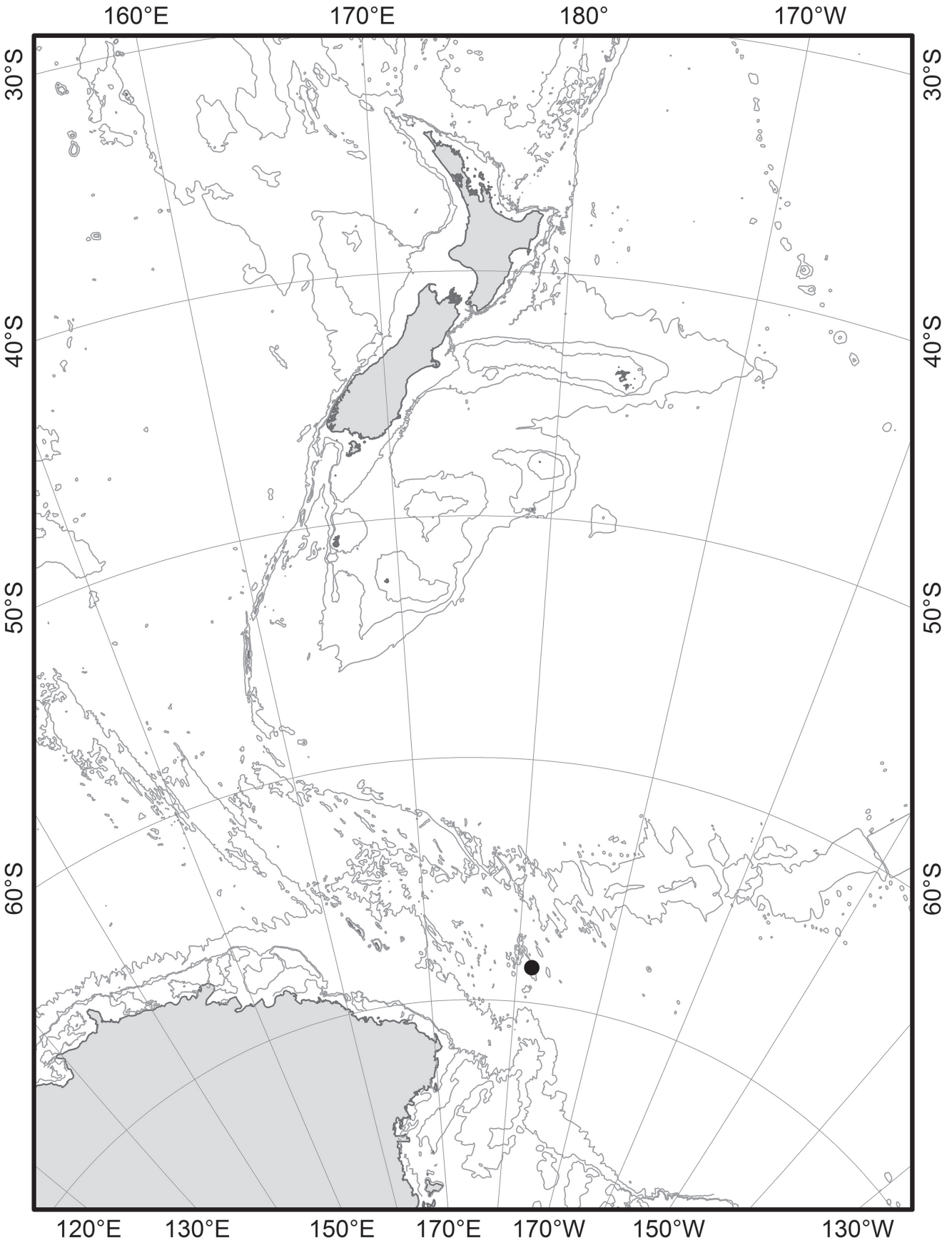


Figure 60. Distribution map of *Syrrhoe* cf. o*luta* recently collected in the Southern Ocean.

posterior margin; propodus palm transverse, defined by 1 serrate robust seta and 1 additional smooth robust seta. *Gnathopod 2* rectipalmate; coxa distally tapering; basis longer than carpus; carpus serrate setae along the posterior margin confined to distal end; propodus palm oblique, defined by 1 serrate robust setae and 1 robust seta; dactylus of gnathopod 2 well developed, unguis short, less than or subequal to length of dactylus. *Pereopod 3* coxa anterodistal lobe present, obliquely produced, posterodistal lobe present, truncate, greater than half the depth of the coxa, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subquadrate, a quarter of merus length; dactylus simple to weakly curved. Pereopod 3–4 coxa pelagont. *Pereopod 4* coxa shorter than coxa 3, lobate in shape, posterior margin with well developed lobe; ischium subquadrate, a quarter of merus length; dactylus weakly curved. *Pereopod 5–7* coxa smooth, posterior lobe notched; basis anterodistal corner weakly produced, pointed, posterior margin serrate. *Pereopod 5* basis subovoid, expanded, posterodistal lobe well developed, acute, not extending past ischium.

Pleon: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin serrate. *Pleonite 1* without carination, posterior margin mid-dorsally not produced. *Pleonite 2* without carination, posterior margin mid-dorsally not produced. *Pleonite 3* carinate, posterior margin mid-dorsally strongly produced, posterodorsal margin smooth. *Epimeron 1* posterodistal corner acute. *Epimeron 2* posterior margin smooth, posterodistal corner produced acute. *Epimeron 3* posterior and ventral margin smooth; posterodistal tooth acute, posterodistal corner with notch. *Urosomite 1* mid-dorsal posterior margin serrate and with short tooth, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin with small tooth. *Urosomite 3* mid-dorsal posterior margin with pointed tooth. *Uropod 1* peduncle with long distal process, at least a third of length of outer ramus; apical robust setae on tip of both rami absent. *Uropod 2* apical robust setae on tip of outer ramus absent. Uropod 3 and telson missing.

Distribution: Oregon to Colombia, 2798–3251 m (J.L. Barnard, 1972); Antarctica, Ross Sea, 3204–3212 m (this study).

Remarks: *Syrrhoe* cf. *oluta* from the abyssal Ross Sea differs from the type description of specimens collected off Pacific Colombia (5 -79.0667, 3023–3251 m) in following minute morphological characters: head not protuberant (v. slightly protuberant in the type material); dorsal serration of pleonite 1–2 and urosomite 1 (v. unserrated in the type material); the small mid-dorsal teeth on pleonite 1 and 2 are less expressed in the Ross Sea material; coxa 7 with a minute posteroventral notch (v. pointed in the original description). This variation is considered to be intraspecific for this widely distributed deep oceanic species.

Syrrhoe sadiae n. sp. (Figs 61–65)

Type material: NIWA 19589, female holotype.

Type locality: NIWA 19589, TAN0413/58, 11/11/2004, -37.21466 177.23815, 770 m.

Material examined: NIWA 19589, TAN 0413/58, 770 m, Nukuhou Seamount, hydrothermally active.

Etymology: This species is named for Sadie Mills, the Assistant Collection Manager of the NIWA Marine Invertebrate Collection, in gratitude to her dedication and friendly competence curating the collection.

Description based on: Female (holotype), 8.5 mm.

Head: *Head* not protuberant, without dorsal keel. *Eyes* absent. *Rostrum* long, reaching half the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe present, apically oblique. *Antenna 1* article 1 not elongate, with a distal curved tooth. Antenna 1 article 2 without distomedial tooth, shorter than article 1; article 3 shorter than article 1, subequal to article 2. Antenna 1 accessory flagellum longer than 3rd peduncular article, as long as first flagellar article, accessory flagellum 2nd article longer than 1st accessory flagellar article. Antenna 1 flagellum shorter than pereon; flagellum 11-articulate. Antenna 1 1st flagellar article elongate but not bordered with aesthetascs. *Mandibular palp* article 2 without or few setae; article 3 longer than article 2, with more than 2 slender apical setae. Mandibular incisor dentate; left lacinia mobilis wide, multidentate; mandible accessory setal row with 3 serrate setae); molar greatly enlarged, not triturative. *Maxilla 1* inner plate with 10 plumose setae; outer plate with 10 apical robust setae, bifurcate setae absent; palp article 2 outer margin smooth, setae confined to apex. *Maxilla 2* outer plate subequal to inner plate; inner plate width more than 1.3 × outer plate. *Maxilliped* inner plate with nodular setae distally; outer plate more than 1.5 × wider than second palp article, medially with simple robust setae (wide); palp article 2 1.7 × the length of article 3; palp article 3 subrectangular.

Pereon: Pereonites 1–4 smooth, pereonite 5 with small tooth, pereonites 6–7 with carina; additional small mid-dorsal hump prior to posterior margin absent; pereon dorsolaterally with processes on pereonite 6–7. *Pereonite 5–7* lateral surface smooth (but dorsolateral pointed protrusions present on pereonite 6 and 7). Pereonite *7* carinate; posterior margin mid-dorsally broadly serrate, strongly produced; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* rectipalmate; coxa not tapering distally,

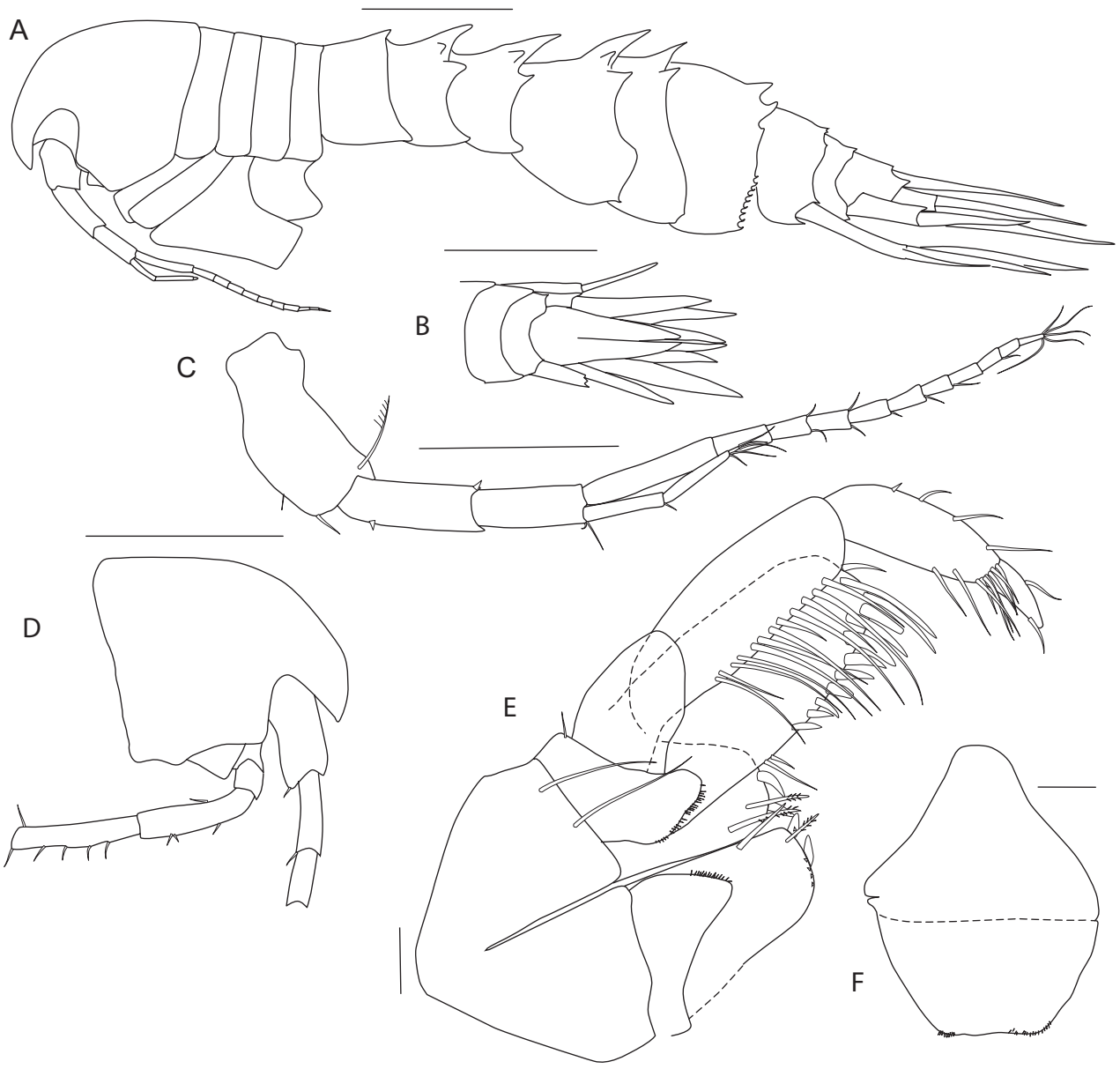


Figure 61 A–F. *Syrrhoe sadiae* n. sp., female holotype, 8.5 mm, NIWA 19589. A) habitus; B) urosome dorsal view; C) antenna 1; D) head; E) maxilliped; F) upper lip. Scale bars: A, B = 1 mm, C–F = 100 μm.

anterodistal margin not produced; basis longer than carpus; carpus subrectangular, with smooth setae along the posterior margin; propodus palm transverse, defined by 1 serrate robust setae; palm robust smooth setae absent. *Gnathopod 2* rectipalmate; coxa not distally tapering; basis longer than carpus; carpus serrate setae along the posterior margin confined to distal end; propodus palm transverse, defined by 1 serrate robust seta; palm robust smooth setae absent; dactylus of gnathopod 2 well developed, unguis short, less than or subequal to length of dactylus. *Pereopod 3* coxa anterodistal lobe present, produced, rounded, posterodistal lobe present, truncate, greater than half the depth of the coxa, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subrectangular, half as long as merus. Pereopod 3–4 coxa pelagont. *Pereopod 4* coxa shorter than coxa 3, lobate in shape, posterior margin with medium developed lobe. *Pereopod 5–7* coxa smooth. Pereopod 5–7 basis anterodistal corner produced as a recurved hook. *Pereopod 6* basis subovoid, expanded, posterodistal lobe absent.

Pleon: *Pleonites* 1–3 without lateral ridges, posterodorsal margin broadly serrate. *Pleonite 1* carinate, posterior margin mid-dorsally strongly produced. *Pleonite 2* carinate, posterior margin mid-dorsally with short point. *Pleonite 3* carinate, posterior margin broadly

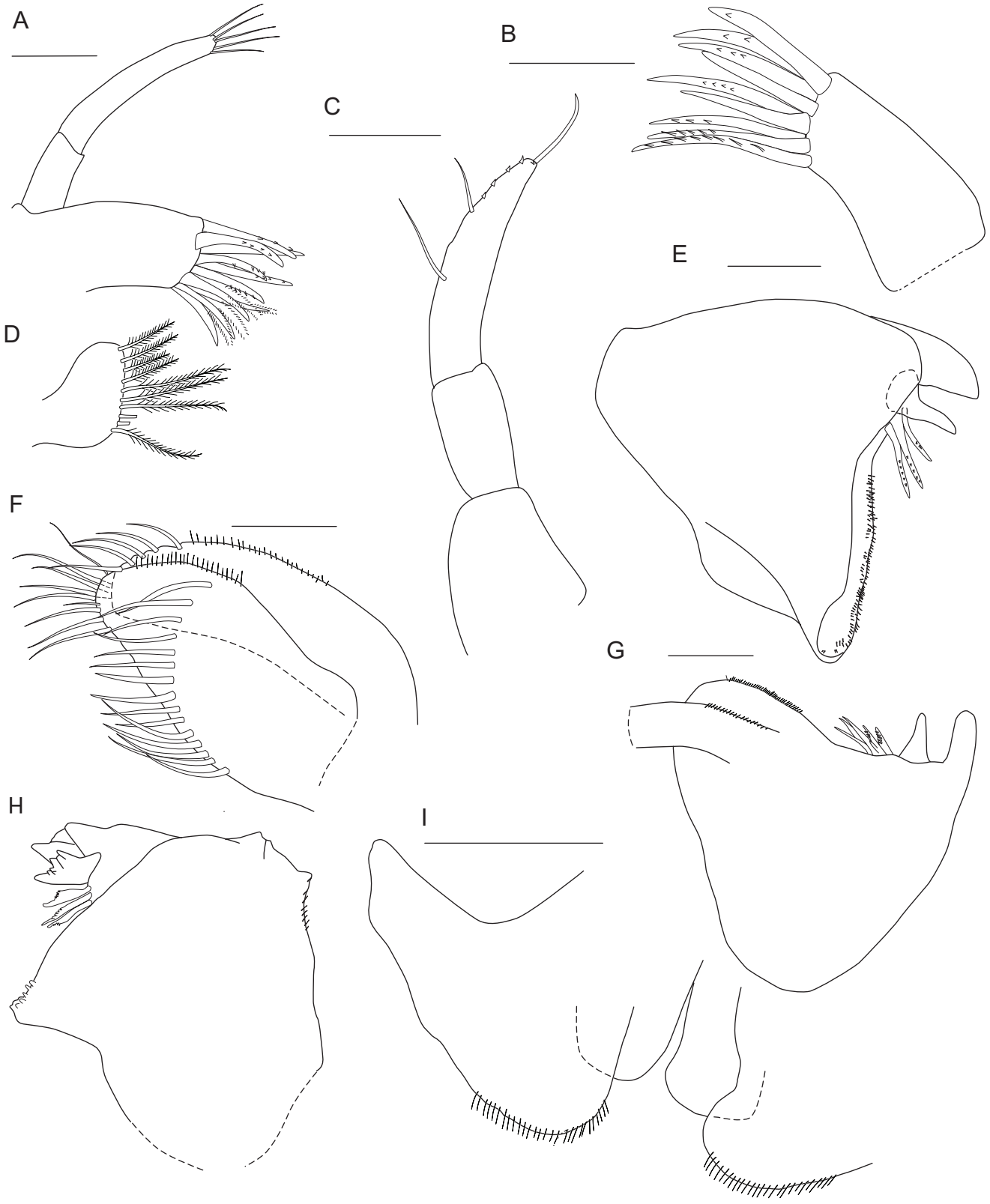


Figure 62 A–I. *Syrrhoe sadiae* n. sp., female holotype, 8.5 mm, NIWA 19589. A) maxilla 1; B) outer plate maxilla 1; C) palp; D) inner plate maxilla 1; E) mandible; F) maxilla 2; G) mandible; H) mandible; I) lower lip. Scale bars: A–I = 100 µm.

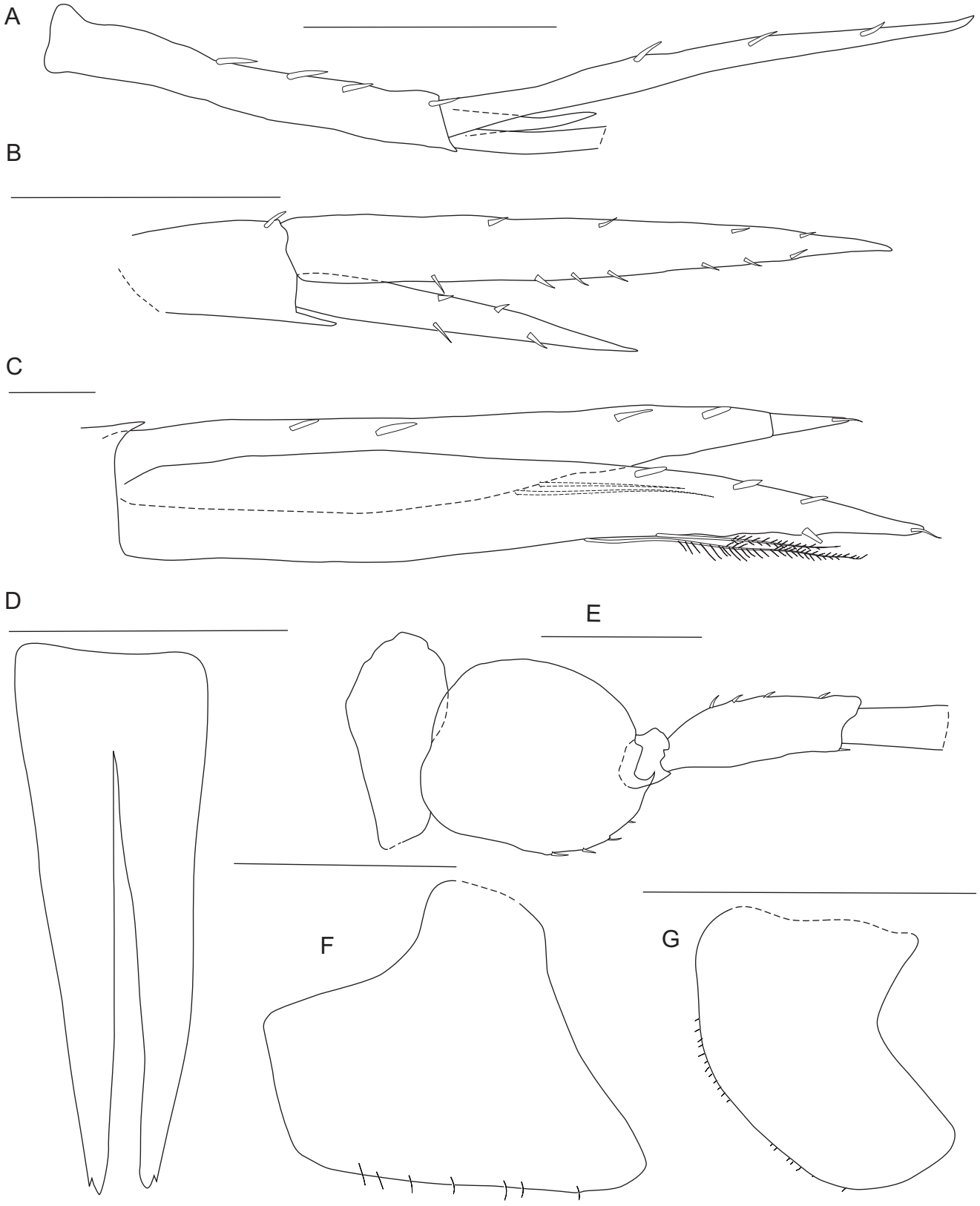


Figure 63 A–G. *Syrrhoe sadiae* n. sp., female holotype, 8.5 mm, NIWA 19589. A) uropod 1; B) uropod 2; C) uropod 3; D) telson; E) pereopod 6; F) coxa 3; G) coxa 4. Scale bars: A–G = 1 mm.

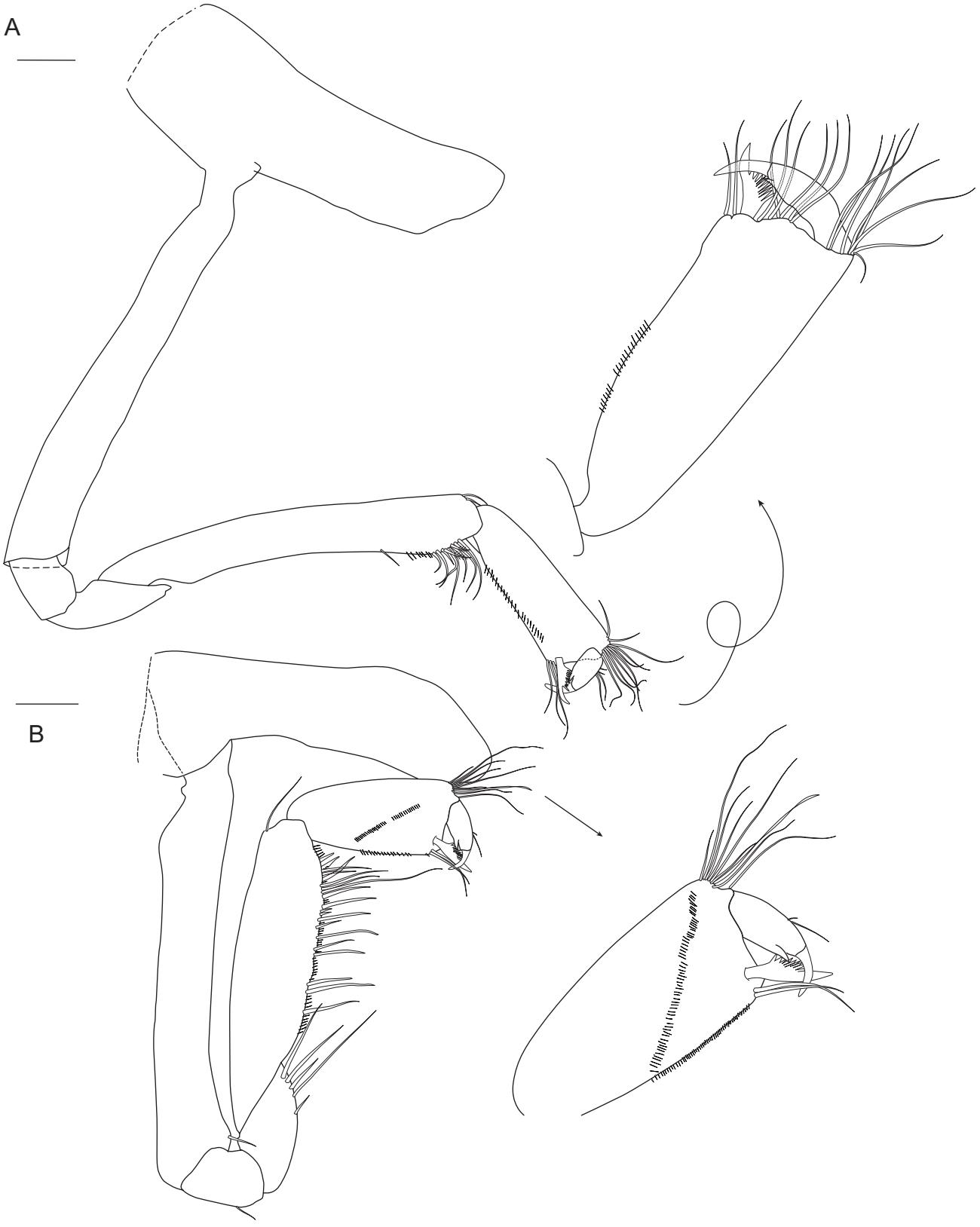


Figure 64 A–B. *Syrrhoe sadiae* n. sp., female holotype, 8.5 mm, NIWA 19589. A) gnathopod 2; B) gnathopod 1. Scale bars: A, B = 100 µm.

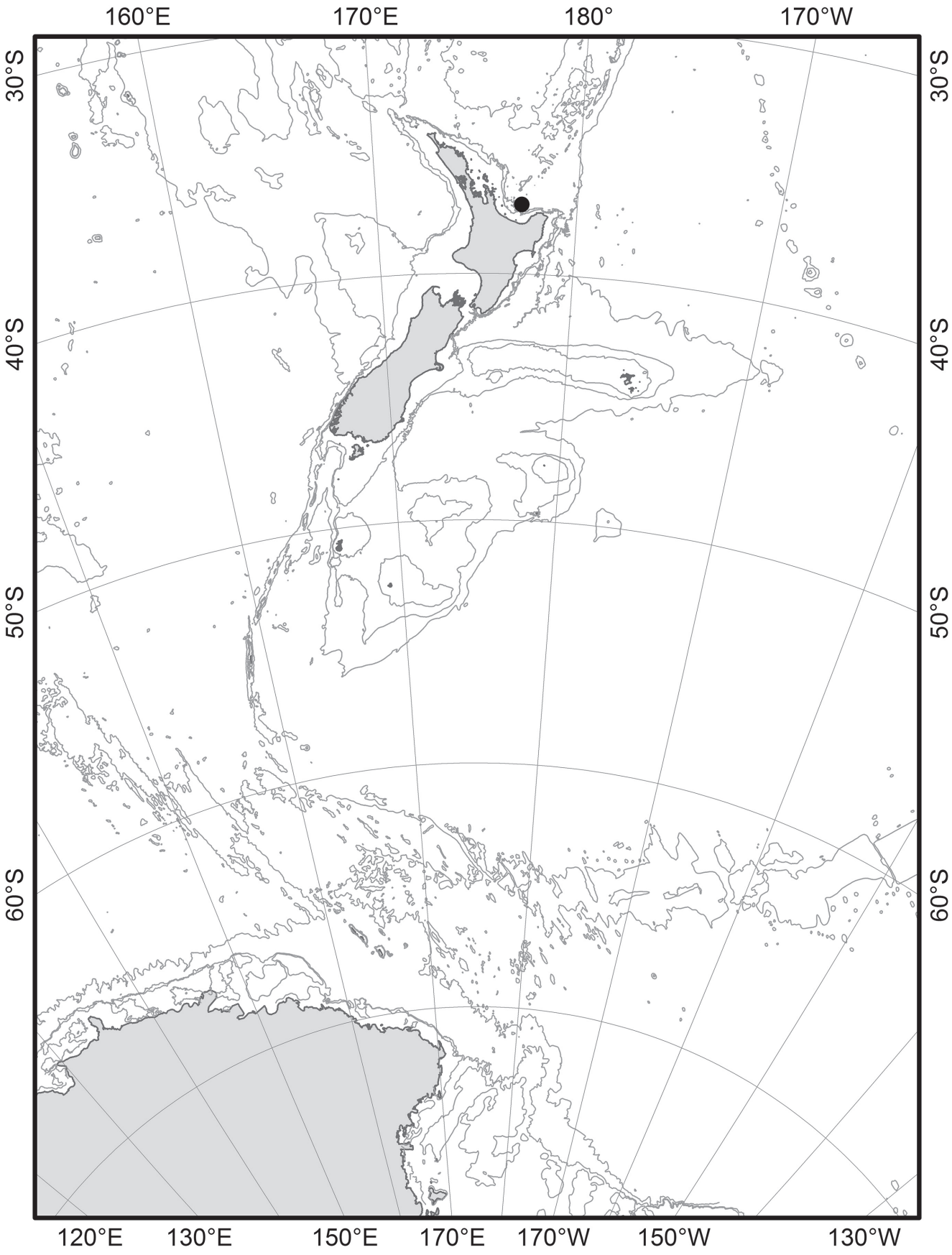


Figure 65. Distribution map of *Syrrhoe sadiae* n. sp.

serrate, mid-dorsally with short point. Epimeron 1 posterodistal corner acute. *Epimeron 2* posterior margin smooth, posterodistal corner truncate. *Epimeron 3* posterior margin serrate, serration confined to posteroventral corner; posterodistal tooth unproduced. *Urosomite 1* mid-dorsal posterior margin with short tooth, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin with small tooth. *Urosomite 3* mid-dorsal posterior margin smooth. *Uropod 1* peduncle with long distal process, at least a third of length of outer ramus; inner ramus subequal to peduncle; apical robust setae on tip of both rami absent. *Uropod 2* apical robust setae on tip of outer ramus absent. *Uropod 3* length not exceeding uropods 1–2. *Telson* much longer than uropod 3 peduncle, more than 3 × as long as wide, no setae along the lateral margin, with single pair of apical slender setae; lobes divergent with narrow v-shape excavation, cleft more than 66%.

DISTRIBUTION: Only known from type locality. New Zealand, Nukuhou seamount (hydrothermally active), 770 m.

REMARKS: *Syrrhoe sadiae* n. sp. is the only synopiid with long dorsal and lateral processes on pereonites 6–7 and pleonites 1–3.

Syrrhoites Sars, 1895
(amended after J.L. Barnard, 1972)

Syrrhoites Sars, 1895: 391–392; — Stebbing, 1906: 279; — J.L. Barnard, 1969: 462; — J.L. Barnard, 1972: 64; — Barnard & Karaman, 1991: 717
Kindia J.L. Barnard, 1962a: 57

Diagnosis**:** Head not protuberant, sometimes with middorsal keel, lateral cephalic lobe not sharp; eyes absent; molar greatly enlarged, not triturative; mouthparts basic; antenna 1 articles 1–2 basic, article 1 with small medioterminal tooth; coxa 1 ordinary or distally expanded; coxae 3–4 not pelagont, coxa 3 rectangular, sometimes distally expanded, coxa 4 shorter or nearly as long as 3; gnathopods simple to subchelate, palms acute, defined by 1–2 robust setae but majority of species with palms obsolescent though distinguished by robust seta(e); dactylus of gnathopod 2 normal; pereopods 5–7 elongate, dactyls elongate, basis of pereopod 7 posteriorly serrate and rounded, ventrally usually rounded; pleonites 1–3 not serrate posteromarginally; uropod 3 not greatly exceeding other uropods, peduncle elongate; telson elongate and deeply cleft.

TYPE-SPECIES: *Bruzelia serrata* Sars, 1879

SPECIES COMPOSITION:

***Syrrhoites anaticauda* K.H. Barnard, 1930**
Syrrhoites barnardi Karaman, 1986
***Syrrhoites bowdeni* n. sp.**
Syrrhoites capricornia Bellan-Santini, 1985
Syrrhoites cohasseta J.L. Barnard, 1967
Syrrhoites columbiae J.L. Barnard, 1972
Syrrhoites cornuta Bellan-Santini, 1985
Syrrhoites cu J.L. Barnard, 1972
Syrrhoites dulcis J.L. Barnard, 1967
***Syrrhoites ebberae* n. sp.**
***Syrrhoites hannahae* n. sp.**
Syrrhoites levis (Boeck, 1871)
Syrrhoites lorida (J.L. Barnard, 1962a)
***Syrrhoites octodentata* n. sp.**
Syrrhoites pacifica Nagata, 1965
Syrrhoites pantasma J.L. Barnard, 1972
Syrrhoites pusilla Enequist, 1949
Syrrhoites redox J.L. Barnard, 1967
***Syrrhoites renatae* n. sp.**
Syrrhoites serrata (Sars, 1879)
Syrrhoites silex J.L. Barnard, 1967
Syrrhoites sorpresa (J.L. Barnard, 1962a)
Syrrhoites tenella K.H. Barnard, 1925
Syrrhoites terceris J.L. Barnard, 1964
Syrrhoites trux J.L. Barnard, 1967
Syrrhoites walkeri Bonnier, 1896

KEY TO THE SPECIES OF ***SYRRHOITES***, AMENDED AFTER BARNARD 1972

1. Pleonite 3 dorsally bidentate longitudinally or sinuous 2

   Pleonite 3 dorsally straight from lateral view, not bidentate nor sinuous dorsally 6

2. Rostrum extended beyond article 1 of antenna 1 3

   Rostrum not extended beyond article 1 of antenna 1 4

3. Coxa 4 about half the length of coxa 3, epimeral plate 2 strongly produced ventrally ..... *S. capricornia*

   Coxa 4 longer than half the length of coxa 3, epimeral plate 2 as long as epimeral plate 3 ..... ***S. hannahae* n. sp.**

4. Pleonites 1–3 with strongly bidentate carinae ..... *S. serrata*

   Pleonites 1–2 without bidendate carinae 5

5. Gnathopod 2 carpus elongate, as long as basis..... *S. pacifica*

   Gnathopod 2 carpus shorter than basis ..... *S. cornuta*

6. Urosomite 2 dorsally smooth.....7

   Urosomite 2 with dorsal tooth.....10

7. Rostrum extending beyond article 1 of antenna 1. ..... ***S. ebberae* n. sp.**

   Rostrum shorter than article 1 of antenna 1 8

8. Urosomite 1 carinate .....*S. tenella*

   Urosomite 1 smooth 9

9. Coxa 1 anteroventrally produced into a lobe..... .....***S. renatae* n. sp.**

   Coxa 1 anteromarginally not produced *S. sorpresa*

10. Epimeron 2 rounded posteroventrally, smooth 11

    Epimeron 2 quadrate or produced with posteroventral tooth 13

11. Epimeron 3 produced posteroventrally without tooth.....*S. walkeri*

    Epimeron 3 with distinct small posteroventral tooth.....12

12. Pereonite 2 with well developed carina and teeth ..... *S. lorida*

    Pereonites 1–5 smooth, pereonites 6–7 with well developed carinae .....*S. cohasseta*

13. Peduncle of uropods 1–2 lacking distolateral tooth or extension 14

    Peduncle of uropods 1–2 bearing distolateral tooth or extension 18

14. Pereonite 5–6 dorsally smooth 15

    Pereonite 5–6 dorsally carinate.....16

15. Coxa 3 posteroventral lobe present, basis of pereopod 7 not extended over ischium..... .....***S. bowdeni* n. sp.**

    Coxa 3 posterior margin straight, basis of pereopod 7 with strong ventral lobe .....*S. barnardi*

16. Rostrum elongate, exceeding distal margin of article 1 of antenna 1 ..... ***S. octodentata* n. sp.**

    Rostrum not exceeding distal margin of article 1 of antenna 1.....17

17. Telson cleft less than halfway .....*S. redox*

    Telson cleft more than halfway .....*S. terceris*

18. Epimeron 3 lacking posteroventral tooth... *S. trux*

    Epimeron 3 bearing posteroventral tooth.....19

19. Tooth of epimeron 3 long and serrate ventrally.... ..... ***S. anaticauda***

    Tooth of epimeron 3 short and smooth.....20

20. Rostrum very long and deflexed .... *Syrrhoites* species A (in J.L. Barnard, 1972) .....and *S. pusilla*

    Rostrum of medium length and subhorizontally extended.....21

21. Gnathopods 1–2 propodus palms each with two defining robust setae.....22

    Gnathopods 1–2 propodus palms each with one defining robust seta.....23

22. Epimeron 3 posterior margin strongly serrate, article 2 of pereopod 7 evenly rounded posteroventrally and heavily serrate, distolateral process on peduncles of uropods 1–2 well developed..... ..... *S. columbiae*

    Serrations on epimeron 3 small or absent, article 2 of pereopod 7 truncate posteroventrally, posterior serrations small, distolateral process on peduncles of uropods 1–2 weak.....*S. pantasma*

23. Epimeron 2 with straight posterior margin and quadrate posteroventral corner.....*S. cu*

    Epimeron 2 with sinuous posterior margin and tooth at posteroventral corner 24

24. Epimeron 3 with straight ventral margin and long posterior margin bearing 2 serrations, article 5 of pereopods 3–4 with few short posterior setae, article 5 of gnathopod 2 scarcely elongate..... *S. silex*

    Epimeron 3 with bevelled ventral margin and very short posterior margin lacking serrations, article 5 of pereopods 3–4 with numerous long posterior setae and spines, article 5 of gnathopod 2 elongate 25

25. Rostrum subhorizontally extended, telson cleft halfway, dorsal teeth on body small, article 2 of pereopod 7 widely expanded ventrally, uropods 1–2 with distolateral tooth on peduncle....*S. dulcis*

    Rostrum strongly deflexed, telson cleft more than halfway, dorsal teeth on body very large, article 2 of pereopod 7 narrowing ventrally, uropods 1–2 lacking distolateral tooth on peduncle..... ..... *Syrrhoites* species A (in J.L. Barnard, 1972)

Syrrhoites anaticauda K.H. Barnard, 1930 (Figs 66–70)

Syrrhoites anaticauda K.H. Barnard, 1930: 367–369, fig. 37; – K.H. Barnard, 1932: 151–152, fig. 89; – J.L. Barnard, 1972: 65

TYPE LOCALITY: McMurdo Sound, Antarctica, 205 m.

MATERIAL EXAMINED. NIWA 20872, 1 female, TAN0402/66, 13/02/2004, -72.3:416 170.47732, Van Veen grab, 280 m; NIWA 17885, 1 female, TAN0402/139, 26/02/2004, -72.0140 170.7758, 236 m; NIWA 18633, A0528; 2 female, 07/02/1960, -74.38333 -179.43333, 270 m.

DESCRIPTION BASED ON: Female, 11.5 mm.

HEAD: *Head* not protuberant, with dorsal keel. *Eyes* absent. *Rostrum* long, longer than the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe absent. *Antenna 1* article 1 not elongate; article 2 without distomedial tooth, 2 shorter than article 1; article 3 shorter than article 1 and 2; accessory flagellum shorter than 3rd peduncular article, as long as first flagellar article, accessory flagellum 2nd article less than a quarter length of 1st accessory flagellar article; 1st flagellar article similar sized to 2nd flagellar article; flagellum shorter than pereon, 9-articulate. *Antenna 2* shorter than body; flagellum 7-articulate. *Mandibular palp* article 2 without or few setae; article 3 shorter than half the length of article 2, article 3 with long slender setae considerably longer than those of article 2, article 3 with 2 plumose apical setae. Mandibular incisor smooth (and narrow); left lacinia mobilis slender and smooth; mandible accessory setal row not present; molar greatly enlarged, not triturative. Maxilla 1 outer plate with 11 apical robust setae; bifurcate setae present; palp article 2 outer margin smooth, setae confined to apex. *Maxilliped* inner plate with nodular setae distally; outer plate more than 1.5 × wider than second palp article, medially with inflated wide, lanceolate robust setae; palp article 2 1.4 × the length of article 3; palp article 3 subrectangular.

PEREON: Carina starting on pereonite 2; additional small mid-dorsal hump prior to posterior margin on pereonite 4. *Pereonite 5–7* lateral surface with protrusions. Pereonite *7* carinate; posterior margin mid-dorsally smooth, strongly produced with additional small tooth on both sides; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* subchelate; coxa not tapering distally, anterodistal margin subacutely produced; basis longer than subrectangular carpus; carpus with serrate setae along the posterior margin; propodus palm oblique; palm with 3 smooth robust setae. *Gnathopod 2* subchelate; coxa not distally tapering; basis longer than carpus; carpus serrate setae along the posterior margin absent; propodus palm oblique, defined by 4 smooth robust setae; dactylus of gnathopod 2 well developed, unguis subequal to dactylus length. *Pereopod 3* coxa anterodistal lobe absent, posterodistal lobe absent, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subrectangular, half as long as merus; dactylus weakly curved. Pereopod 3–4 coxa not pelagont. *Pereopod 4* coxa subequal to coxa 3, lobate in shape, posterior margin with medium developed lobe; ischium subrectangular, half as long as merus; dactylus weakly curved. *Pereopod 5–7* coxa with a prominent protrusion. Pereopod 5–7 basis anterodistal corner produced as a recurved hook, posterior margin strongly serrate (sometimes 2 microtrichs in a notch). *Pereopod 5* basis subrectangular, not expanded, posterodistal lobe weakly developed, not extending past ischium. *Pereopod 7* basis ovate, posterodistal lobe well developed, rounded, extending below ischium.

PLEON: *Pleonites* 1–3 with lateral ridges. Pleonites 1–2 posterodorsal margin not serrate. *Pleonite 1* carinate, posterior margin mid-dorsally strongly produced. *Pleonite 2* carinate, posterior margin mid-dorsally with short point. *Pleonite 3* carinate, posterior margin mid-dorsally pointed and curved upwards, posterodorsal margin smooth. *Epimeron 1* posterior margin smooth, posterodistal corner rounded. *Epimeron 2* posterior margin smooth, posterodistal corner produced acute. *Epimeron 3* posterior margin smooth, ventral margin serration present; posterodistal tooth acute. *Urosomite 1* mid-dorsal posterior margin smooth, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin smooth. *Urosomite 3* mid-dorsal posterior margin smooth. *Uropod 1* peduncle with long distal process, at least a third of length of outer ramus; inner ramus longer than peduncle; apical robust setae on tip of both rami present. *Uropod 2* apical robust setae on tip of outer ramus present. *Uropod 3* length not exceeding uropods 1–2; peduncle short (less than 2 × breadth). *Telson* much longer than uropod 3 peduncle, less than 3 × as long as wide, setae lining lateral margin, with single pair of apical slender setae; cleft less than 30%.

DISTRIBUTION: Antarctica, Ross Sea (type locality), Bransfield Strait, South Shetland Islands and the Weddell Sea, depth range 200–620 m.

REMARKS: This characteristic species has been recorded from the Ross Sea (type locality), Bransfield Strait, South Shetland Islands and the Weddell Sea. Here we present the first detailed illustrations of all appendages.

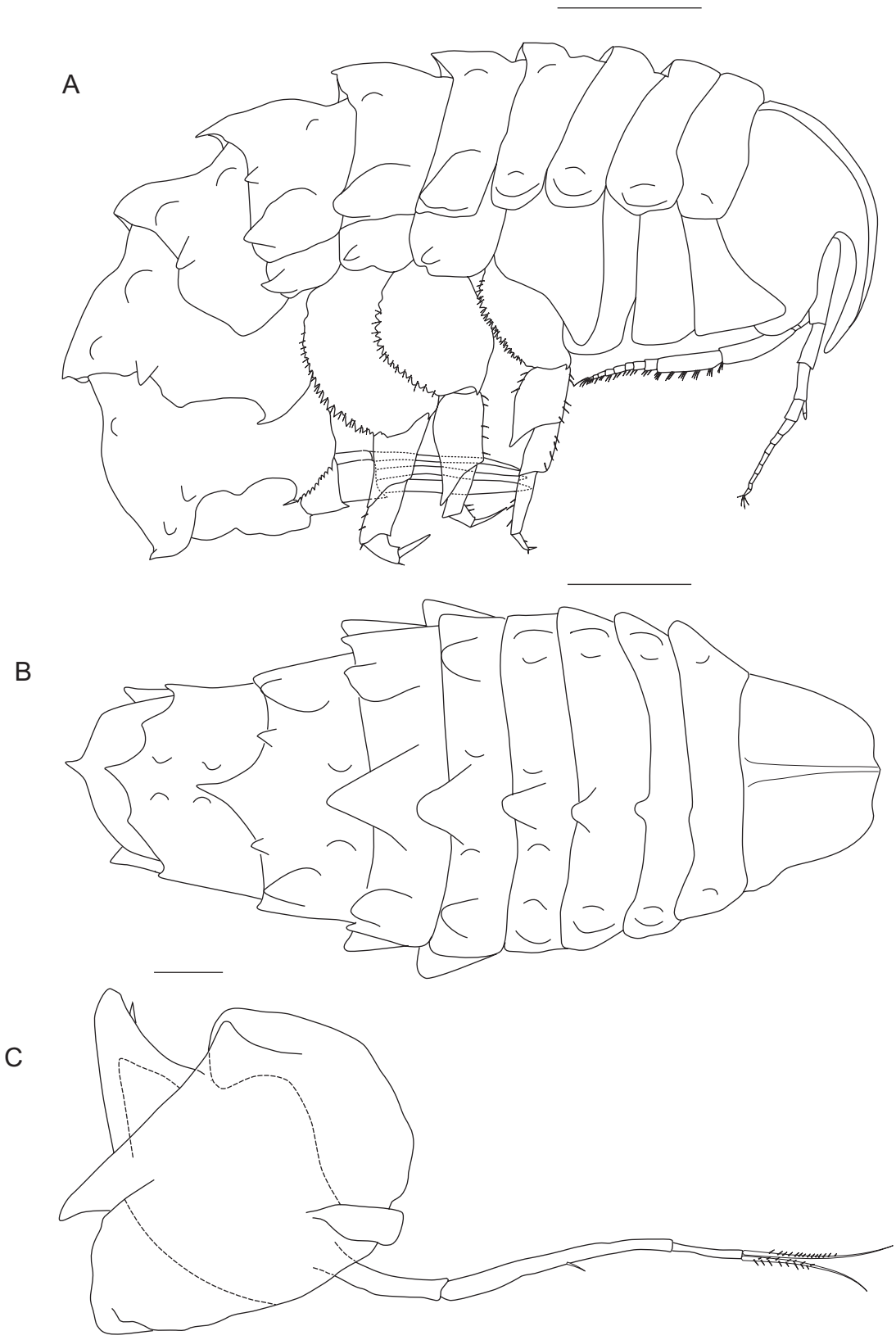


Figure 66 A–C. *Syrrhoites anaticauda* K.H. Barnard, 1930, female, 11.5 mm, NIWA 20872. A) habitus lateral; B) habitus dorsal; C) mandible. Scale bars: A, B = 1 mm, C = 100 μm.

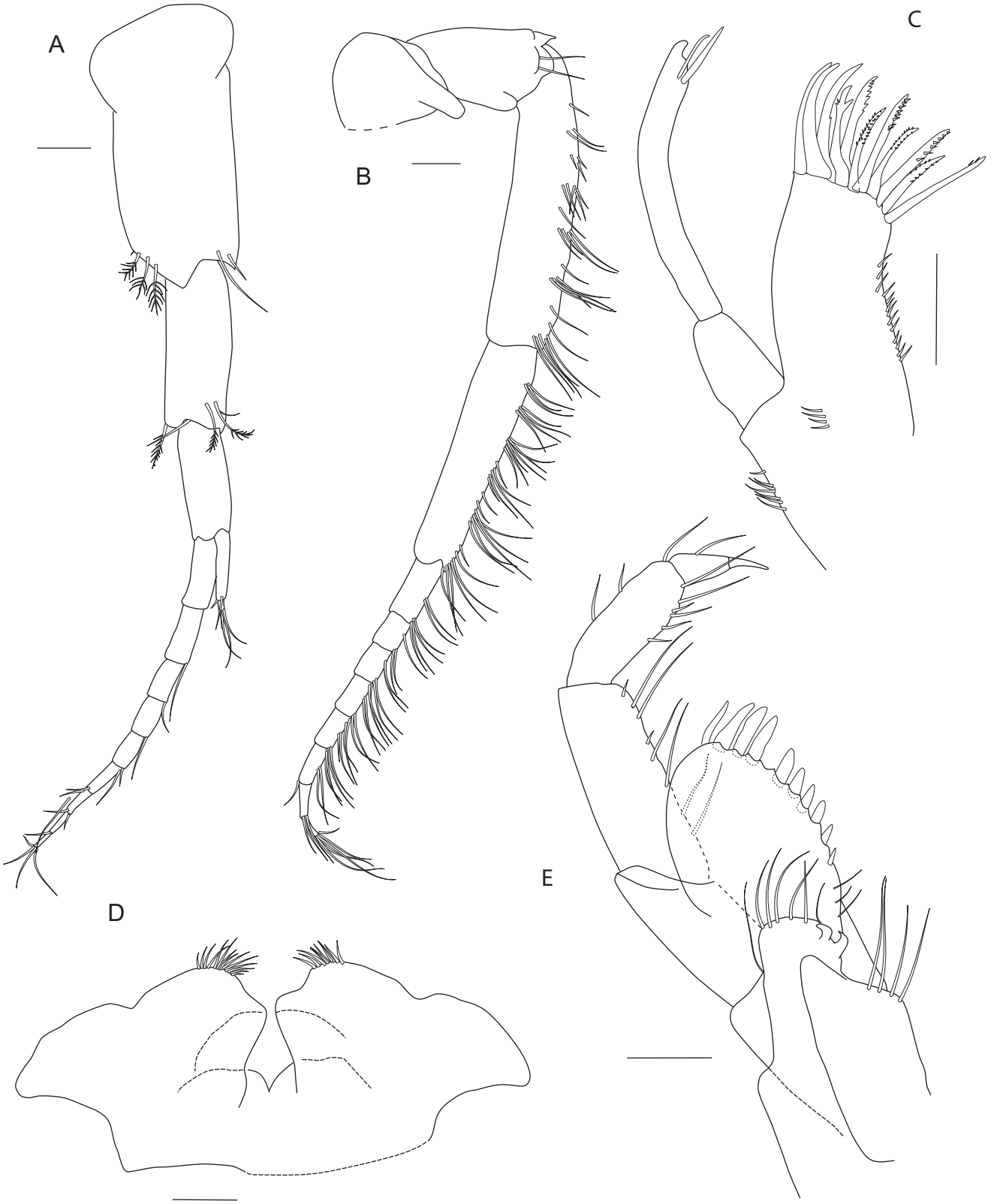


Figure 67 A–E. *Syrrhoites anaticauda* K.H. Barnard, 1930, female, 11.5 mm, NIWA 20872. A) antenna 1; B) antenna 2; C) maxilla 1; D) lower lip; E) maxilliped. Scale bars: A–E = 100 µm.

Figure 68 A–E. *Syrrhoites anaticauda* K.H. Barnard, 1930, female, 11.5 mm, NIWA 20872. A) gnathopod 1; B) gnathopod 2; C) pereopod 3; D) coxa 3; E) pereopod 4. Scale bars: A–E = 100 μm.

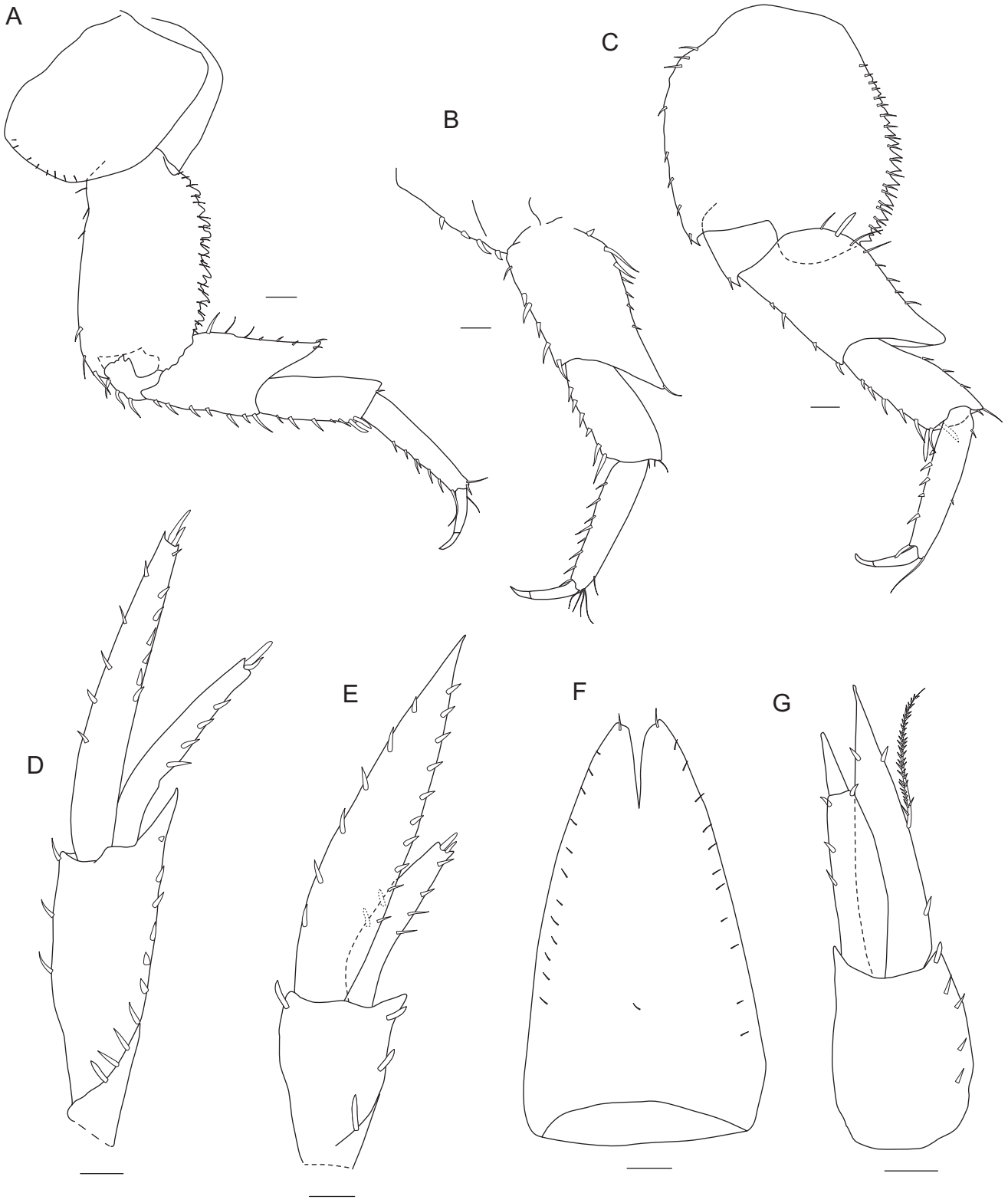


Figure 69 A–G. *Syrrhoites anaticauda* K.H. Barnard, 1930, female, 11.5 mm, NIWA 20872. A) pereopod 5; B) pereopod 6; C) pereopod 7; D) uropod 1; E) uropod 2; F) telson; G) uropod 3. Scale bars: A–G = 100 µm.

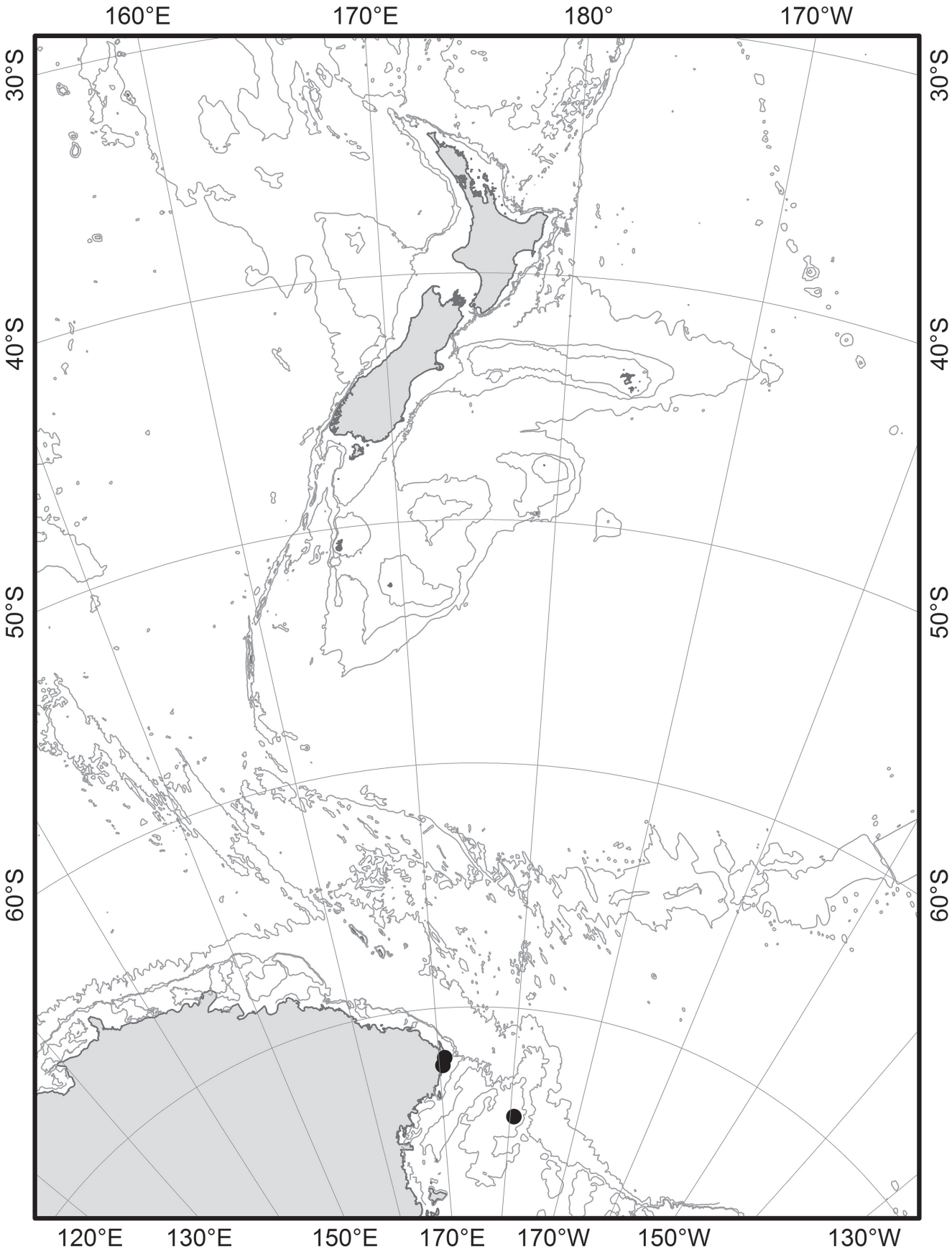


Figure 70. Distribution map of investigated or recently collected *Syrrhoites anaticauda* K.H. Barnard, 1930.

Syrrhoites bowdeni n. sp. (Figs 71–76)

TYPE MATERIAL: NIWA 42782, female holotype.

TYPE LOCALITY: NIWA 42782, TAN0802/188, 01/03/2008, -68.55216 -178.37200, -68.56066 -178.35316, Brenke sledge, 3212–3204 m.

MATERIAL EXAMINED: NIWA 42780, 3 specimens, TAN 0802/127, 21/02/2008, -72.3168 175.47383, -72.31666 175.48233, Brenke sledge, 952–979 m.

ETYMOLOGY: This species is named for Dr David Bowden in acknowledgment of his remarkable contribution to the Ross Sea voyage during which the specimens were collected.

DESCRIPTION BASED ON: Female (holotype), 7 mm.

HEAD: *Head* not protuberant. *Eyes* absent. *Rostrum* short, reaching half the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe present, apically oblique. *Antenna 1* article 1 not elongate, with a distal curved tooth; article 2 without distomedial tooth, subequal to article 1; article 3 shorter than articles 1 and 2; accessory flagellum subequal to 3rd peduncular article, as long as first flagellar article, 2nd article less than a quarter length of 1st accessory flagellar article; 1st flagellar article similar sized to 2nd flagellar article; flagellum shorter than pereon, 6-articulate. *Antenna 2* shorter than body; flagellum 5-articulate. *Mandibular palp* article 2 without or few setae; article 3 half the length of article 2, article 3 with slender setae subequal in length to those from article 2, with more than 2 slender apical setae. Mandibular incisor smooth; left lacinia mobilis slender and smooth; accessory setal row not present; molar greatly enlarged, not triturative. *Maxilla 1* inner plate with 4 long and 4 short plumose setae; outer plate with 11 apical robust setae, bifurcate setae present; palp article 2 outer margin smooth, setae confined to apex. *Maxilla 2* outer plate subequal to inner plate; inner plate width more than 1.3 × outer plate. *Maxilliped* inner plate without nodular setae; outer plate more than 1.5 × wider than second palp article, medially with inflated wide, lanceolate robust setae; palp article 2 about twice the length of article 3; palp article 3 subrectangular.

PEREON: Carina starting on pereonite 7; additional small mid-dorsal hump prior to posterior margin absent; pereonites dorsolaterally and laterally smooth. *Pereonite 7* carinate; posterior margin mid-dorsally smooth, strongly produced; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* simple; coxa not tapering distally, anterodistal margin not produced; basis longer than carpus; carpus with smooth setae along the posterior margin; subchelate; propodus palm oblique, defined by 1 serrate robust setae; robust smooth setae absent. *Gnathopod 2* simple; coxa not distally tapering; basis longer than carpus; carpus serrate setae along the posterior margin absent; palm smooth robust setae absent; dactylus of gnathopod 2 well developed, unguis long, greater than length of dactylus. *Pereopod 3* coxa anterodistal lobe present, acutely produced, posterodistal lobe present, rounded, less than half the depth of the coxa, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subquadrate, a quarter of merus length; dactylus straight. Pereopod 3–4 coxa pelagont. *Pereopod 4* coxa shorter than coxa 3, lobate in shape, posterior margin weakly lobate; ischium subrectangular, half as long as merus; dactylus very weakly curved. *Pereopod 5–7* coxa smooth, basis anterodistal corner weakly produced, pointed, posterior margin serrate. *Pereopod 5* basis subrectangular, not expanded, posterodistal lobe well developed, rounded, not extending past ischium. *Pereopod 6–7* basis ovate, posterodistal lobe well developed, rounded, not extending below ischium.

PLEON: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin with one small prominent tooth (pleonite 3 also bearing similar tooth). *Pleonite 1* without carination, posterior margin mid-dorsally strongly produced. *Pleonite 2* without carination, posterior margin mid-dorsally strongly produced. *Pleonite 3* without carination, posterior margin mid-dorsally strongly produced, posterodorsal margin smooth. *Epimeron 1* posterior margin smooth, posterodistal corner rounded. *Epimeron 2* posterior margin smooth, posterodistal corner subacute. *Epimeron 3* posterior margin smooth, ventral margin serration absent; posterodistal tooth acute. *Urosomite 1* mid-dorsal posterior margin with short tooth, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin with small tooth. *Urosomite 3* mid-dorsal posterior margin smooth. *Uropod 1* peduncle without distal process; inner ramus subequal to peduncle; apical robust setae on tip of both rami present. *Uropod 2* apical robust setae on tip of outer ramus present. *Uropod 3* length not exceeding uropods 1–2; peduncle long (at least 2 × breadth); outer ramus without apical article. *Telson* much longer than uropod 3 peduncle, about 3 × as long as wide. Telson with no setae along the lateral margin, with single pair of apical slender setae, lobes abutting, lobes apically rounded, cleft 0.4 × telson length.

DISTRIBUTION: Antarctica, Ross Sea, 952–3204 m.

REMARKS: The generic placement of this species was difficult, because it shares characters of the genera *Austrosyrrhoe* and *Syrrhoites*. The new species has slightly pelagont coxae 3–4, as known from *Austrosyrrhoe* and nearly simple gnathopods as characteristic for *Syrrhoites*. *Austrosyrrhoe* species have oblique palms on both gnathopods whereas in *Syrrhoites* the

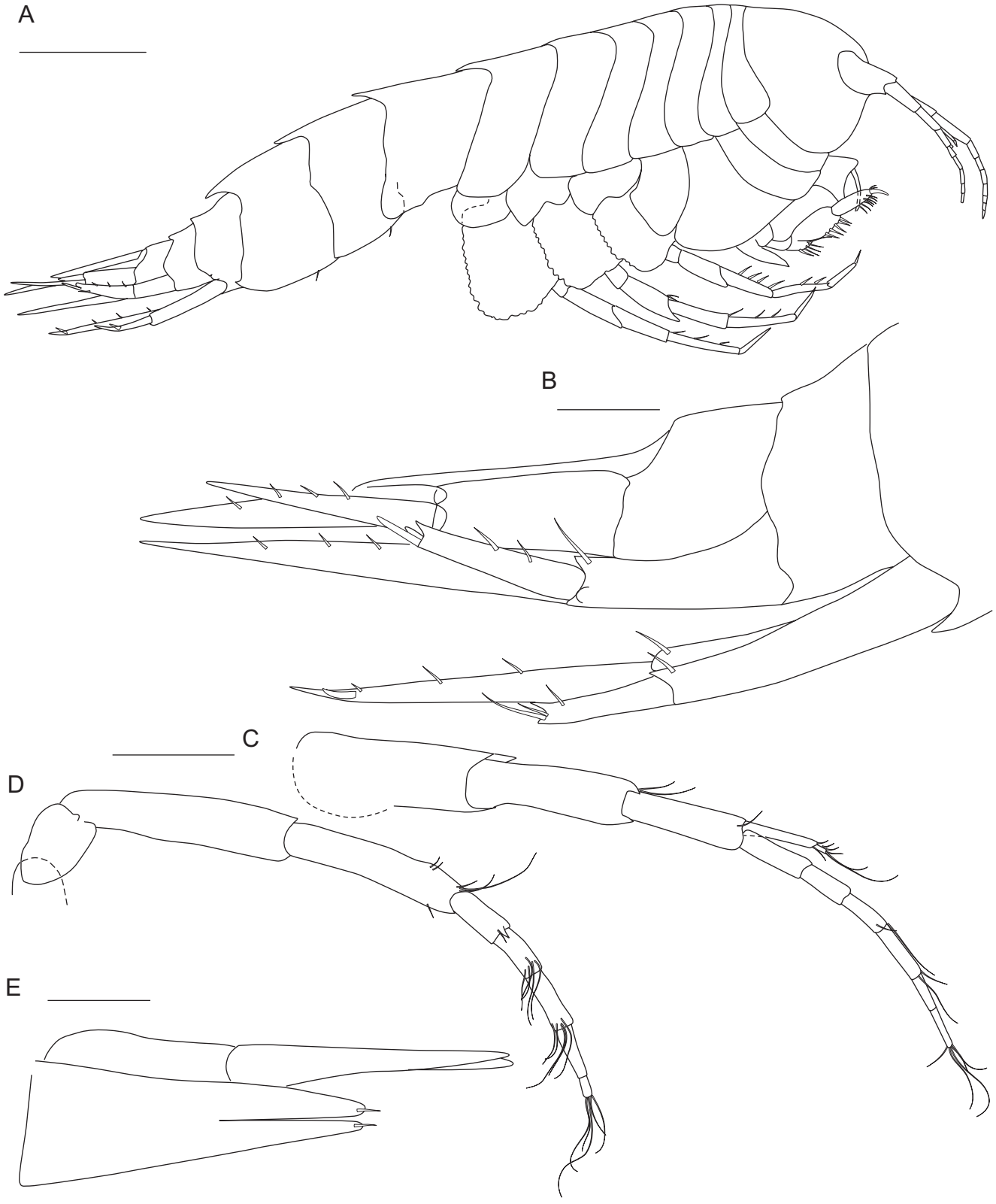


Figure 71 A–E. *Syrrhoites bowdeni* n. sp., female holotype, 7.0 mm, NIWA 42782. A) habitus; B) urosome; C) antenna 1; B) antenna 2; E) telson and uropod 3. Scale bars: A = 500 µm, B–E = 100 µm.

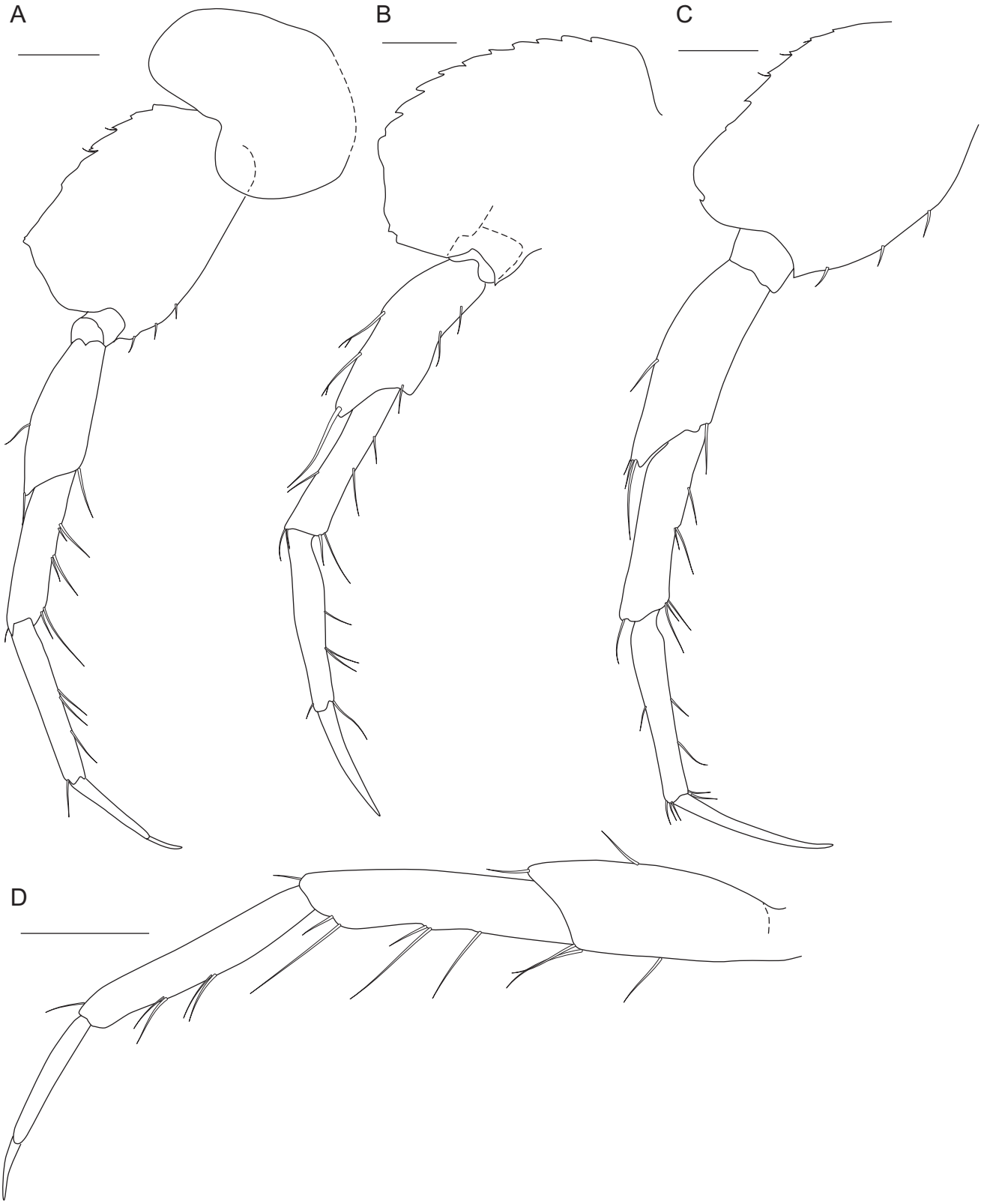


Figure 72 A–D. *Syrrhoites bowdeni* n. sp., female holotype, 7.0 mm, NIWA 42782. A) pereopod 5; B) pereopod 7; C) pereopod 6; D) pereopod 4. Scale bars: A–D = 100 μm.

Figure 73 A–C. *Syrrhoites bowdeni* n. sp., female holotype, 7.0 mm, NIWA 42782. A) maxilla 1; B) plates and palp of maxilla 1; C) pereopod 3. Scale bars: A–C = 100 μm.

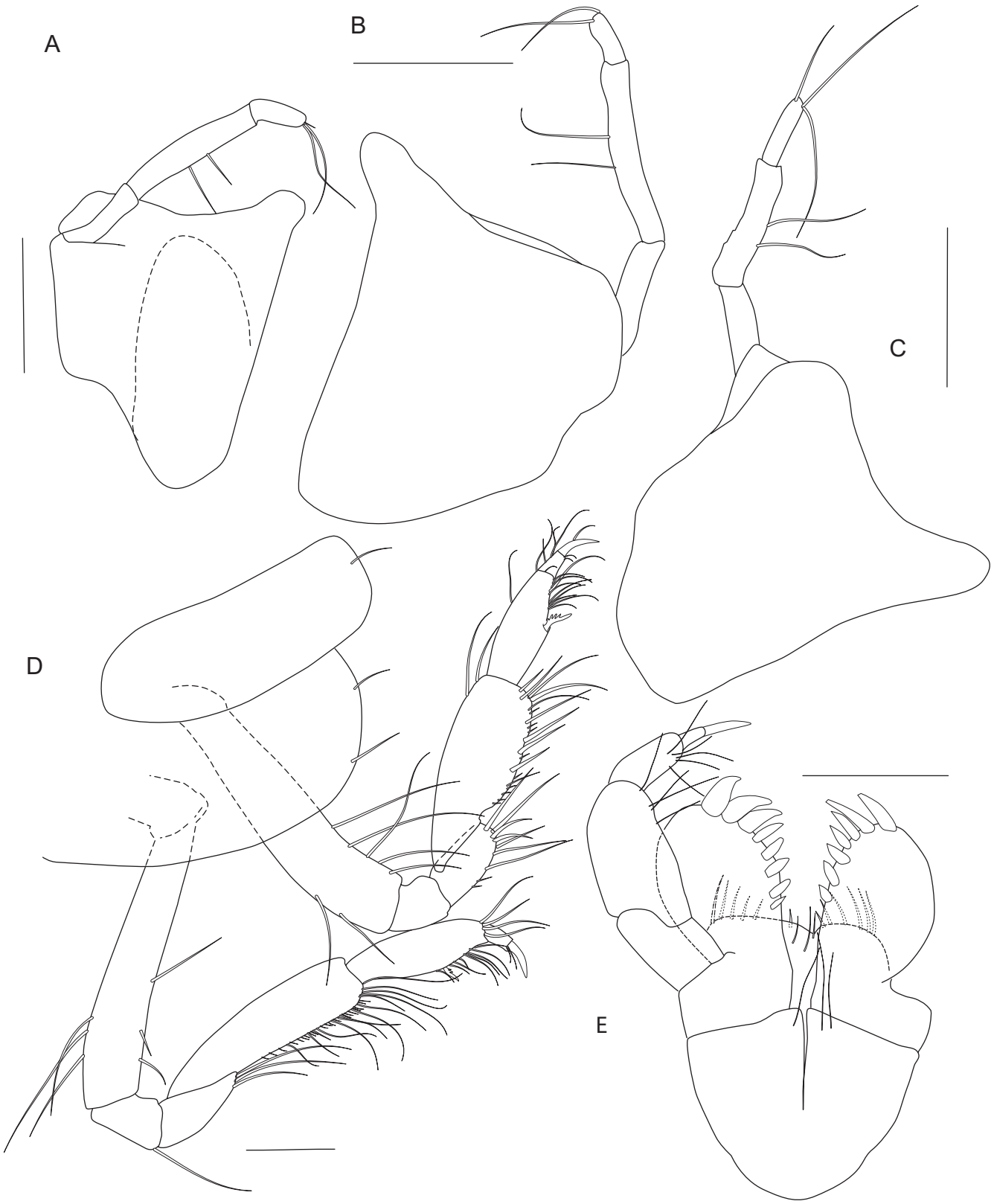


Figure 74 A–E. *Syrrhoites bowdeni* n. sp., female holotype, 7.0 mm, NIWA 42782. A) mandible; B) mandible; C) mandible; D) gnathopods 1 and 2; E) maxilliped. Scale bars: A–E = 100 µm.

Figure 75 A–B. *Syrrhoites bowdeni* n. sp., female holotype, 7.0 mm, NIWA 42782. A) gnathopod 1; B) antenna 2. Scale bars: A–B = 100 µm.

gnathopods are rather simple, the palm is only defined by a serrate robust seta. Contrasting *Austrosyrrhoe* species *Syrrhoites bowdeni* n. sp. has a long slender telson (v. wide). *Syrrhoites bowdeni* n. sp. has characteristic shallow dorsal processes from pereonite 7 to pleonite 3 and an elongated slim telson. This is the second record of a species from the genus *Syrrhoites* from the Ross Sea. Previously the two known *Syrrhoites* species from Antarctic waters were *S. sorpresa* (J.L. Barnard, 1962a) and *S. anaticauda*; these latter species differ from *S. bowdeni* n. sp. by the more elevated dorsal carinae.

Syrrhoites ebberae n. sp. (Figs 77–81)

TYPE MATERIAL: NIWA 80260, female holotype; NIWA 80259, female paratype; NIWA 76152, 4 female paratypes.

TYPE LOCALITY: NIWA 80260, holotype, TAN0705/136, 14/04/2007, -43.29033 -175.55220, -43.29333 -175.56300, Brenke sledge, 638–644 m; NIWA 80259, paratype, same locality as holotype; NIWA 76152, 4 female paratypes, TAN0705/251, 24/04/2007, -42.995834 178.99566, -42.99100 179.00517, Brenke sledge, 520–530 m.

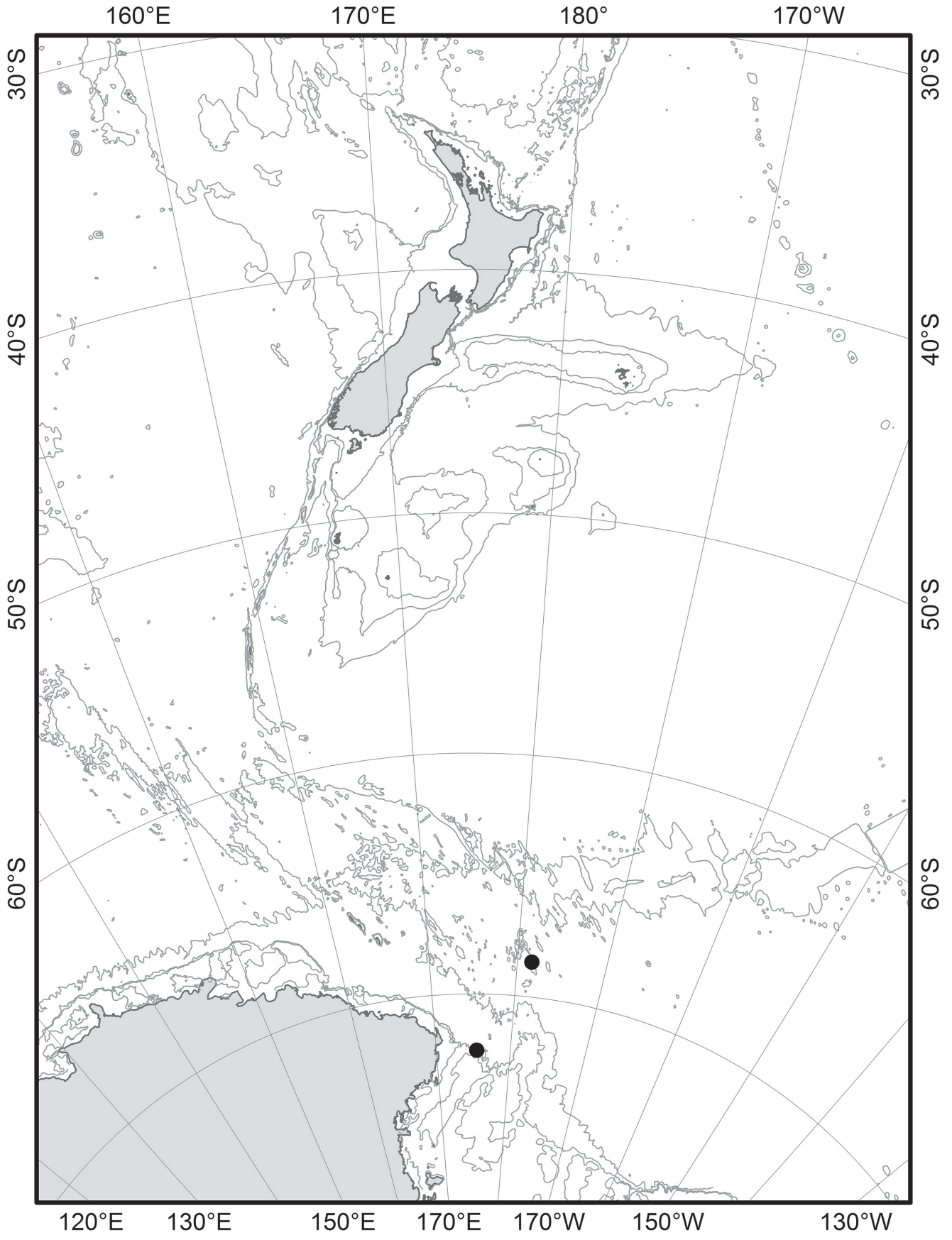


Figure 76. Distribution map of *Syrrhoites bowdeni* n. sp.

Material examined. NIWA 31769, 1 specimen, TAN0705/024, 04/04/2007, -44.1208 174.8432, -44.1242 174.8448, Brenke sledge, 512–513 m; NIWA 84735, 1 female, TAN0705/065, 07/04/2007, -44.016166 178.52099, -44.014331 178.51750, Brenke sledge, 769–771 m; NIWA 84589, 3 females, TAN0705/178, 18/04/2007, -43.5212 181.3797, -43.522 181.3685, Brenke sledge, 424–425 m; NIWA 84573, 2 males, NIWA 84576, 2 specimens, same locality as holotype; NIWA 84582, 2 specimens, TAN0705/160, 16/04/2007, -42.7820 -176.71520, -42.78167 -176.70420, 1023–1026 m; NIWA 84594, 1 female, NIWA 84596, 1 female, TAN0705/251, 24/04/2007, -42.9958 178.9957, -42.9910 179.0052, Brenke sledge, 520–530 m; NIWA 84600, 1 specimen, NIWA 84618, 1 female, TAN0705/255, 24/04/2007, -43.52966 178.50483, -43.53633 178.51184, Brenke sledge, 346–346 m; NIWA 84627, 1 specimen, NIWA 84630, 6 specimens, TAN0705/285, 27/04/2007, 43.79666 175.31582, -43.80450 175.31483, Brenke sledge, 418–422 m.

ETYMOLOGY: This species is named for Mrs Petra Ebber, the secretary of the collection department of the Museum of Natural History in Berlin, to thank her for her outstanding dedication to her profession.

DESCRIPTION BASED ON: Female (holotype), 2.5 mm.

HEAD: *Head* not protuberant, with dorsal keel. *Eyes* absent. *Rostrum* long, longer than half the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe absent. *Antenna 1* subequal in length to antenna 2; article 1 not elongate, with a distal curved tooth; article 2 without distomedial tooth, shorter than article 1; article 3 shorter than article 1, shorter than article 2; accessory flagellum subequal to 3rd peduncular article, shorter than first flagellar article, 2nd article less than a quarter length of 1st accessory flagellar article; 1st flagellar article similar sized to 2nd flagellar article; flagellum shorter than pereon, 7-articulate. *Antenna 2* shorter than body; flagellum 5-articulate. *Mandibular palp* article 2 without or few setae; article 3 longer than half the length of article 2, article 3 with long slender setae considerably longer than those of article 2, with more than 2 slender apical setae. Mandibular incisor smooth; left lacinia mobilis slender and with minor dentation; accessory setal row with 1 simple seta; molar greatly enlarged, not triturative. *Maxilla 1* inner plate with 8 plumose setae; outer plate with 10 apical robust setae; with bifurcate setae; palp article 2 outer margin with setae, with apical and medial setae. *Maxilla 2* outer plate longer than inner plate; inner plate width more than 1.3 × outer plate. *Maxilliped* inner plate with nodular setae distally; outer plate 1.3 × wider than second palp article, medially with inflated wide, lanceolate robust setae; palp article 2 about twice the length of article 3; palp article 3 subrectangular.

PEREON: Carina starting on pereonite 6; additional small mid-dorsal hump prior to posterior margin absent on pereonites; pereon dorsolaterally smooth; pereonites laterally smooth. *Pereonite 7* carinate; posterior margin mid-dorsally smooth, strongly produced; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* subchelate to simple; coxa not tapering distally, anterodistal margin weakly produced; basis longer than ovoid carpus; carpus with serrate setae along the posterior margin; palm extremely acute with 1 smooth robust seta. *Gnathopod 2* subchelate to simple; coxa not distally tapering; basis longer than carpus; carpus serrate setae along the posterior margin present; palm with 1 robust seta; dactylus of gnathopod 2 well developed, unguis subequal to dactylus length. *Pereopod 3* coxa anterodistal and posterodistal lobe absent, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subrectangular, half as long as merus; dactylus strongly curved. Pereopod 3–4 coxa not pelagont. *Pereopod 4* coxa shorter than coxa 3 (about half the length), subtriangular, posterior margin weakly lobate; ischium subrectangular, half as long as merus; dactylus strongly curved. Pereopod 5–7 basis anterodistal corner weakly produced, pointed, posterior margin serrate. *Pereopod 5* basis subrectangular, not expanded, posterodistal lobe weakly developed, not extending past ischium. *Pereopod 7* basis ovate, posterodistal lobe well developed, rounded, not extending below ischium.

PLEON: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin not serrate. *Pleonite 1* carinate, posterior margin mid-dorsally strongly produced. *Pleonite 2* carinate, posterior margin mid-dorsally with short point. *Pleonite 3* without carination, posterior margin mid-dorsally not produced, smooth. *Epimeron 1* posterior margin smooth, posterodistal corner rounded. *Epimeron 2* posterior margin smooth, posterodistal corner rounded. *Epimeron 3* posterior margin smooth, ventral margin serration absent; posterodistal tooth acute, recurved. *Urosomite 1* mid-dorsal posterior margin smooth, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin smooth. *Urosomite 3* mid-dorsal posterior margin smooth. *Uropod 1* peduncle with long distal process, at least a third of length of outer ramus; inner ramus subequal to peduncle; apical robust setae on tip of both rami absent (only on inner ramus). *Uropod 2* apical robust setae on tip of outer ramus absent. *Uropod 3* length not exceeding uropods 1–2; peduncle long (at least 2 × breadth). *Telson* much longer than uropod 3 peduncle, less than 3 × as long as wide, cleft half the length; lobes abutting, apical notched, with no setae along the lateral margin, with single pair of apical slender setae.

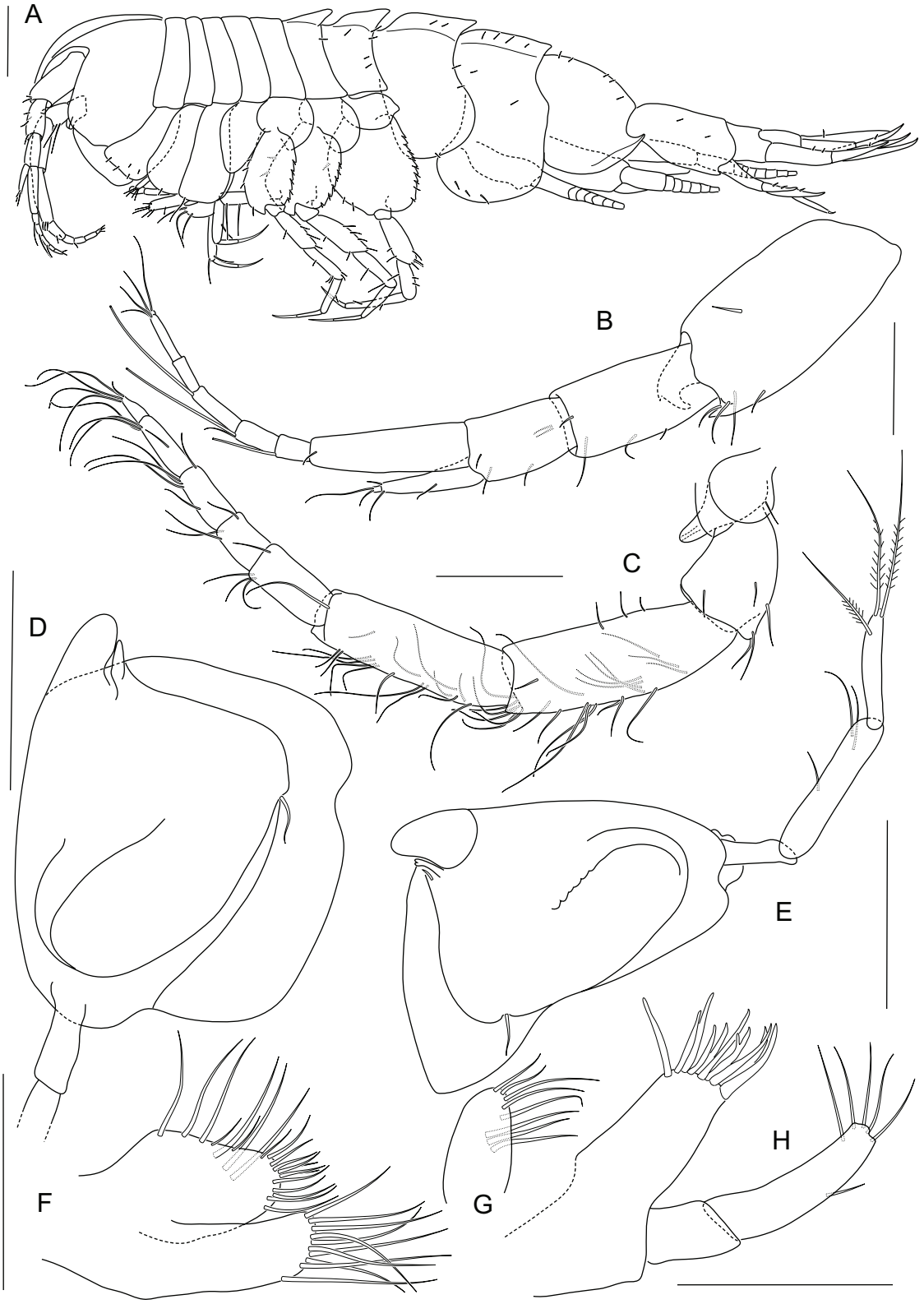


Figure 77 A–H. *Syrrhoites ebberae* n. sp., female holotype, 2.5 mm, NIWA 80260. A) habitus; B) antenna 1; C) antenna 2; D) left mandible; E) right mandible; F) maxilla 2; G) inner plate of maxilla 1; H) maxilla 1. Scale bars: A = 200 µm; B–H = 100 µm.

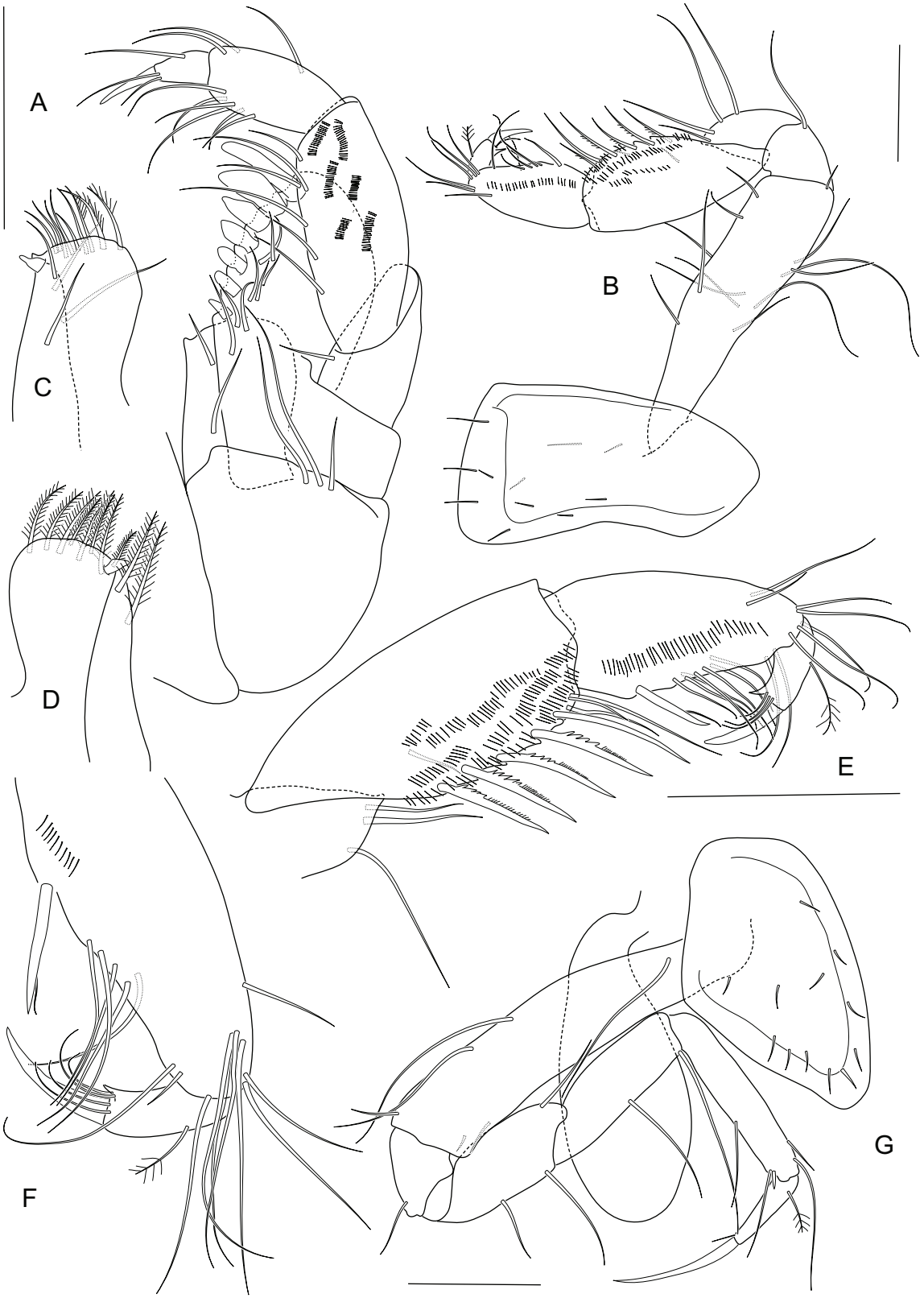


Figure 78 A–G. *Syrrhoites ebberae* n. sp., female holotype, 2.5 mm, NIWA 80260. A) maxilliped, left half; B) gnathopod 1; C, D) inner plate of maxilliped; E) carpus to dacytus of gnathopod 1; F) propodus and dactylus of gnathopod 2; G) pereopod 4. Scale bars: A–G = 100 μm.

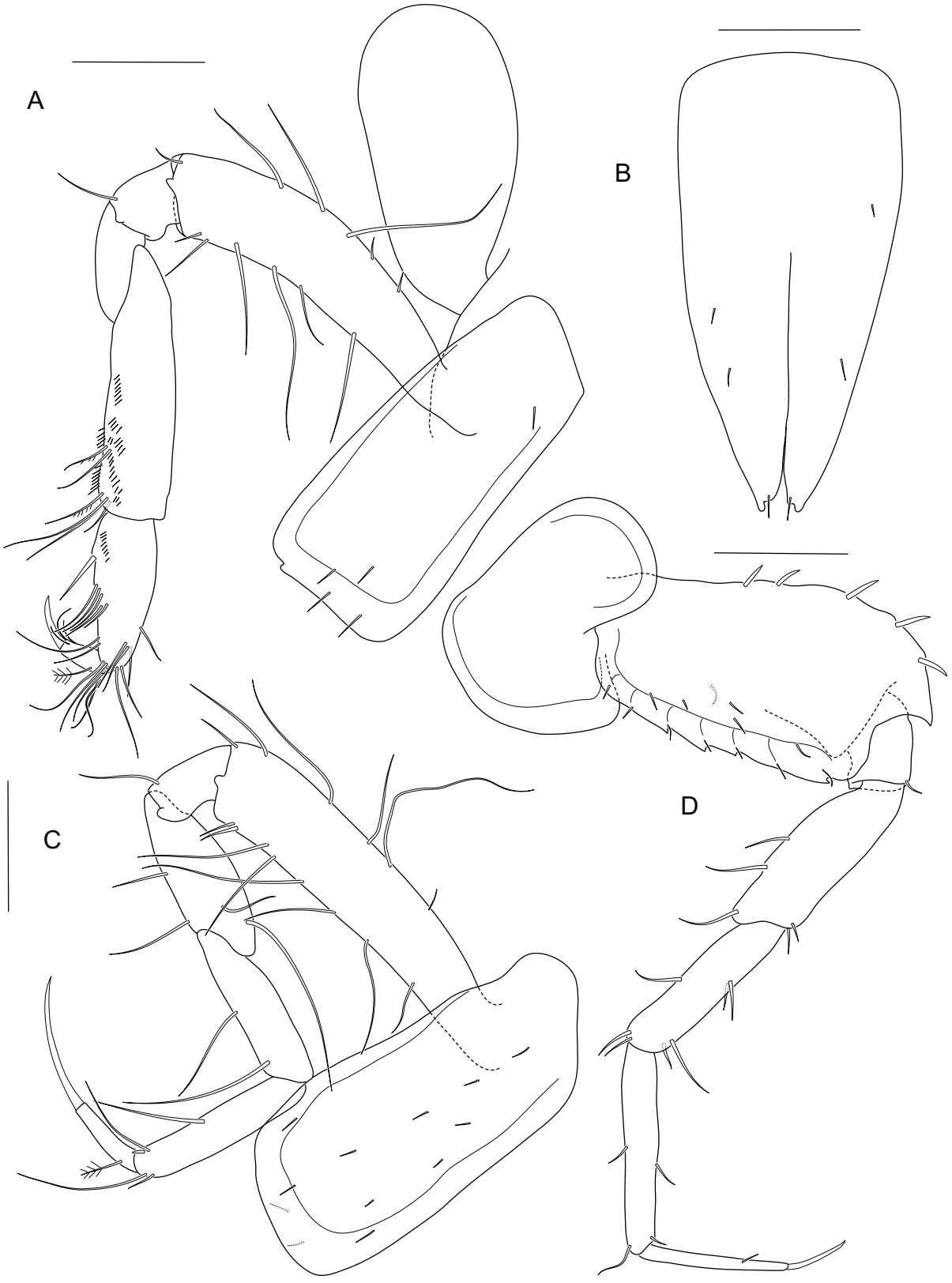


Figure 79 A–D. *Syrrhoites ebberae* n. sp., female holotype, 2.5 mm, NIWA 80260. A) gnathopod 2; B) telson; C) pereopod 3; D) pereopod 5. Scale bars: A–D = 100 μm.

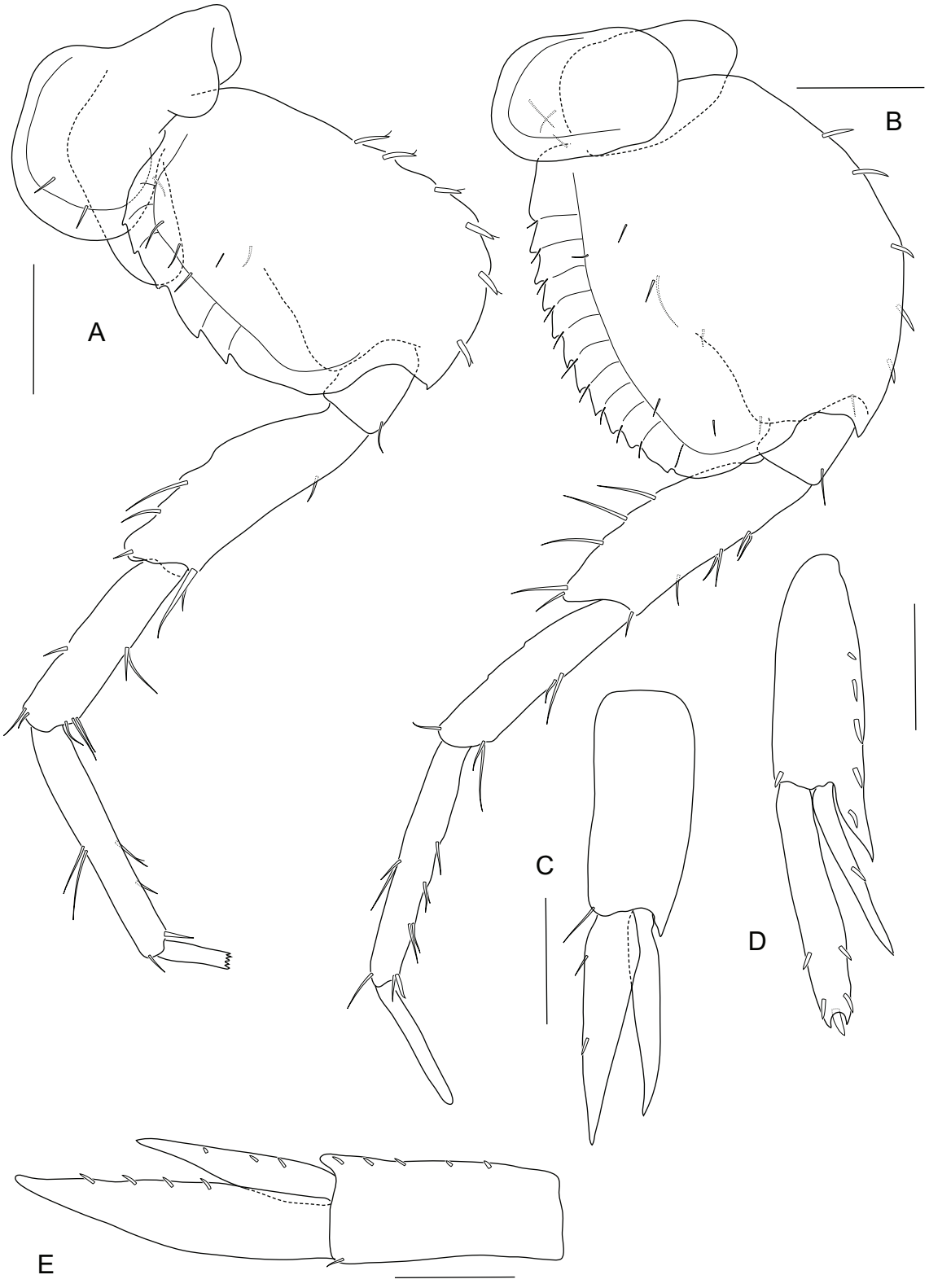


Figure 80 A–E. *Syrrhoites ebberae* n. sp., female holotype, 2.5 mm, NIWA 80260. A) pereopod 6; B) pereopod 7; C) uropod 3; D) uropod 1; E) uropod 2. Scale bars: A–E = 100 µm.

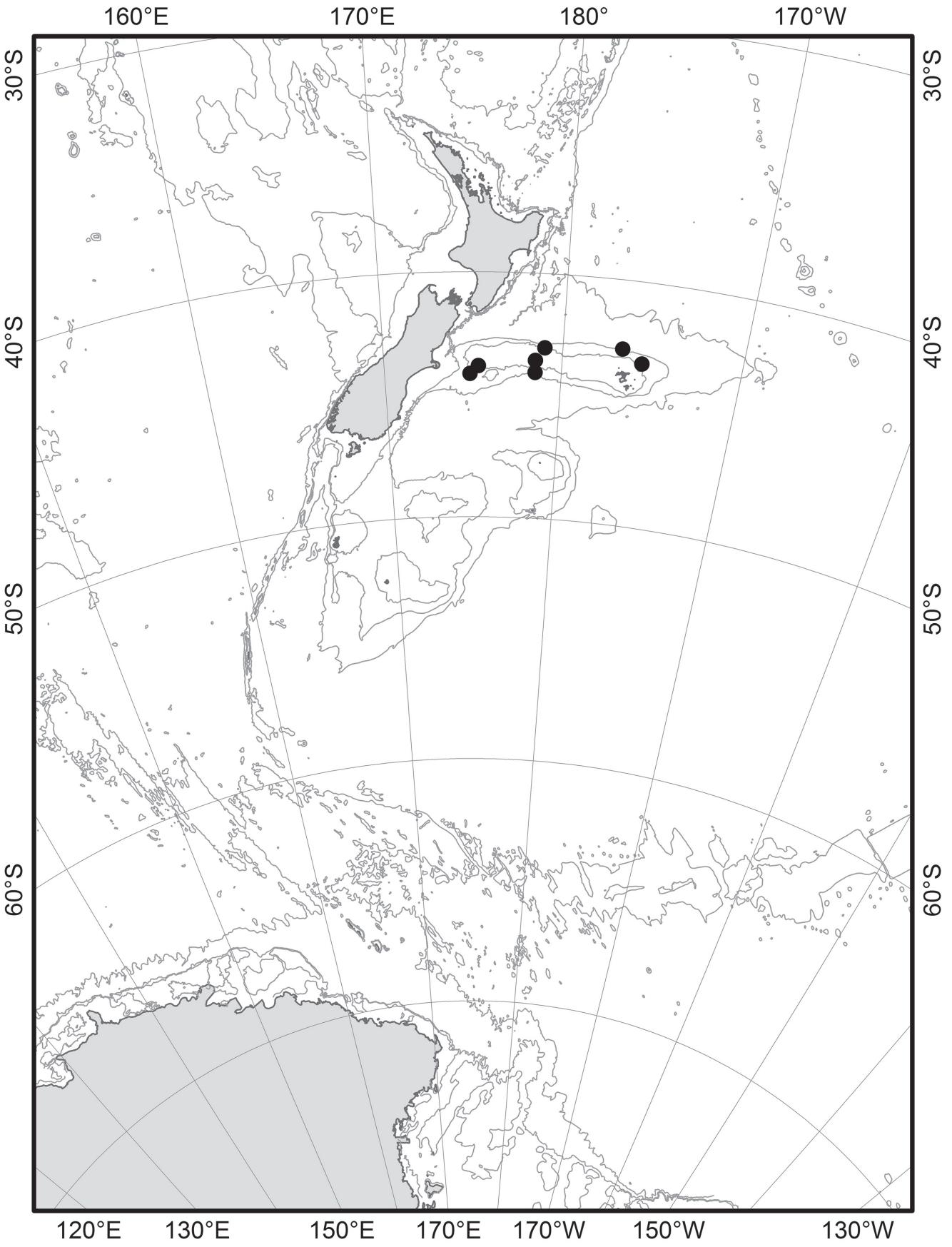


Figure 81. Distribution map of *Syrrhoites ebberae* n. sp.

DISTRIBUTION: New Zealand, Chatham Rise, 346–1026 m.

REMARKS: From the first impression *S. ebberae* n. sp. resembles *S. octodentata* n. sp.; however, *S. ebberae* n. sp. has 4 distinct dorsal carinae, beginning on pereonite 6 and a dorsally smooth pleonite 3 and urosome, whereas *S. octodentata* (nomen est omen) has 8 carinate dorsal teeth beginning at pereonite 6 to urosomite 3. The combination of the characters: 4 strong dorsal projections, an elongated rostrum reaching beyond article 1 of antenna 1 and coxa 4 considerably shorter than coxa 4 make this species unique amongst the *Syrrhoites*.

Syrrhoites hannahae n. sp. (Figs 82–85, 112–121)

TYPE MATERIAL: NIWA 70875, male holotype; NIWA 70888, female paratype.

TYPE LOCALITY: NIWA 70875, TAN0705/285, 27/04/2007, -43.79666 175.31582, -43.80450 175.31483, 418–422 m; NIWA 70888, same locality as holotype.

MATERIAL EXAMINED: NIWA 84617, 4 specimens, TAN0705/255, 24/04/2007, -43.52966 178.50483, -43.53633 178.51184, Brenke sledge, 346–346 m; NIWA 84748, 2 males, TAN0705/178, 18/04/2007, -43.5212 181.3797, -43.5228 181.3685, Brenke sledge, 424–425 m; NIWA 84615, 2 males, 1 female, 4 juveniles, TAN0705/255, 24/04/2007, -43.52966 178.50483, -43.53633 178.51184, Brenke sledge, 346–346m; NIWA 84647, 4 specimens, TAN0707/139, 07/06/2007, -39.6373 172.1532, -39.6457 172.1522, Brenke sledge, 264–266 m.

SEM STUDS: males NIWA. 69752, 69753; females NIWA 69754, 69755, 69756, TAN0705/285, 27/04/2007, -43.79666 175.31582, -43.80450, 175.31483, 418–422 m.

ETYMOLOGY: This species is named for Hannah Russel to thank her for her tremendous help organizing obscure scientific literature.

DESCRIPTION BASED ON: Male (holotype), 5.2 mm.

HEAD: *Head* not protuberant, with dorsal keel. *Eyes* absent. *Rostrum* long, longer than the length of article 1 of antenna 1, apically acute (and very narrow). Lateral cephalic lobe absent. *Antenna 1* article 1 not elongate, with a distal curved tooth; article 2 without distomedial tooth, shorter than articles 1 and 2; article 3 shorter than article 2. Antenna 1 accessory flagellum longer than 3rd peduncular article, accessory flagellum shorter than first flagellar article, accessory flagellum 2nd article subequal to 1st accessory flagellar article. Antenna 1 flagellum shorter than pereon; flagellum 8-articulate. Antenna 1 1st flagellar article elongate and bordered with aesthetascs (callynophore). *Antenna 2* longer than body; flagellum 15-articulate. *Mandibular palp* article 2 without or few setae; article 3 shorter than half the length of article 2, with slender setae subequal in length to those from article 2, with 1 short apical seta. Mandibular incisor smooth; accessory setal row not present; molar greatly enlarged, not triturative. Maxilla 1 inner plate with 7 plumose setae; outer plate with 7 apical robust setae (9 on left maxilla 1); 3 bifurcate setae present; palp article 2 with marginal and apical setae. *Maxilla 2* outer plate shorter than inner plate; inner plate width about 1.2 × outer plate. *Maxilliped* inner plate without nodular setae; outer plate more than 1.5 × wider than second palp article, medially with inflated wide, lanceolate robust setae; palp article 2 1.4 × the length of article 3; palp article 3 subrectangular.

PEREON: Carina starting on pereonite 4; additional small mid-dorsal hump prior to posterior margin absent; pereon dorsolaterally smooth; pereonites laterally smooth. *Pereonite 7* carinate; posterior margin mid-dorsally smooth, strongly produced; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* subchelate; coxa not tapering distally, anterodistal margin weakly produced; basis longer than carpus; carpus subrectangular, with smooth setae along the posterior margin (double setulated); propodus palm oblique, palm defined by simple smooth robust seta, with 1 smooth robust seta. *Gnathopod 2* subchelate; coxa not distally tapering; basis longer than carpus; carpus serrate setae along the posterior margin absent; propodus palm oblique, defined by smooth robust setae, with 1 robust seta; dactylus of gnathopod 2 well developed, unguis subequal to dactylus length. *Pereopod 3* coxa anterodistal lobe absent, posterodistal lobe absent, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subrectangular, half as long as merus; dactylus weakly curved. Pereopod 3–4 coxa not pelagont. *Pereopod 4* coxa subequal to coxa 3, subtriangular, posterior margin not lobate; ischium subrectangular, half as long as merus; dactylus weakly curved. Pereopod 5–7 basis anterodistal corner weakly produced, pointed, posterior margin serrate. *Pereopod 5* basis subrectangular, not expanded, posterodistal lobe weakly developed, not extending past ischium. *Pereopod 7* basis ovate, posterodistal lobe weakly developed, extending below ischium.

PLEON: *Pleonites* 1–3 with lateral ridges. Pleonites 1–2 posterodorsal margin not serrate. *Pleonite 1* carinate, posterior margin mid-dorsally strongly produced. *Pleonite 2* carinate, posterior margin mid-dorsally strongly produced. *Pleonite 3* carinate, posterior margin mid-dorsally strongly produced, posterodorsal margin smooth. *Epimeron 1* posterior margin acutely produced at mid-margin, posterodistal corner rounded. *Epimeron 2* posterior margin smooth, posterodistal corner rounded. *Epimeron 3* posterior margin smooth,

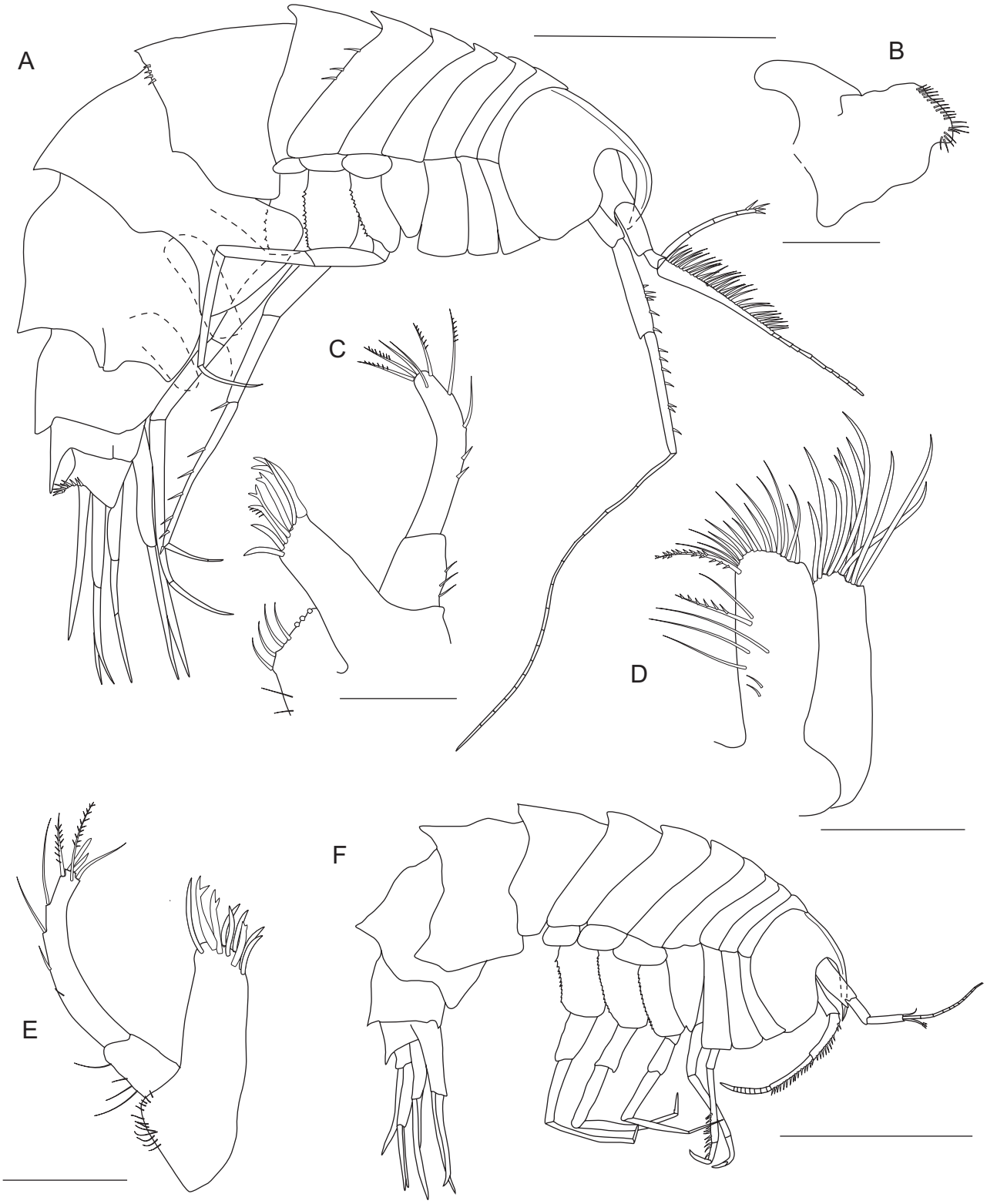


Figure 82 A– E. *Syrrhoites hannahae* n. sp., male holotype, 5.2 mm, NIWA 70875; **F.** paratype female, 4.2 mm, NIWA 70888. A) habitus; B) lower lip; C) maxilla 1; D) maxilla 2; E) maxilla 1; F) habitus. Scale bars: A, F = 1 mm, B–E = 100 μm.

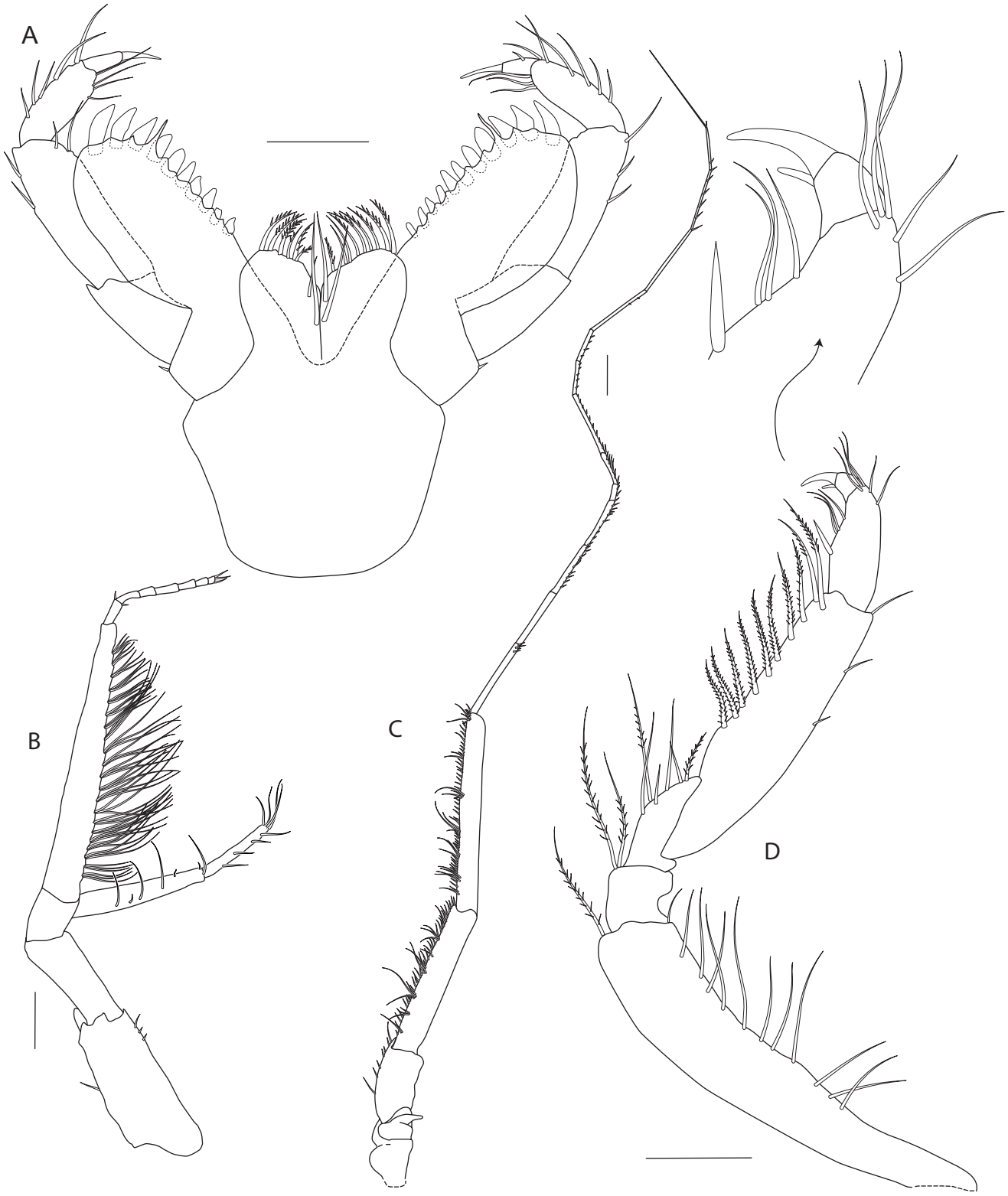


Figure 83 A–D. *Syrrhoites hannahae* n. sp., male holotype, 5.2 mm, NIWA 70875. A) maxilliped; B) antenna 1; C) antenna 2; D) gnathopod 1. Scale bars: A–D = 100 µm.

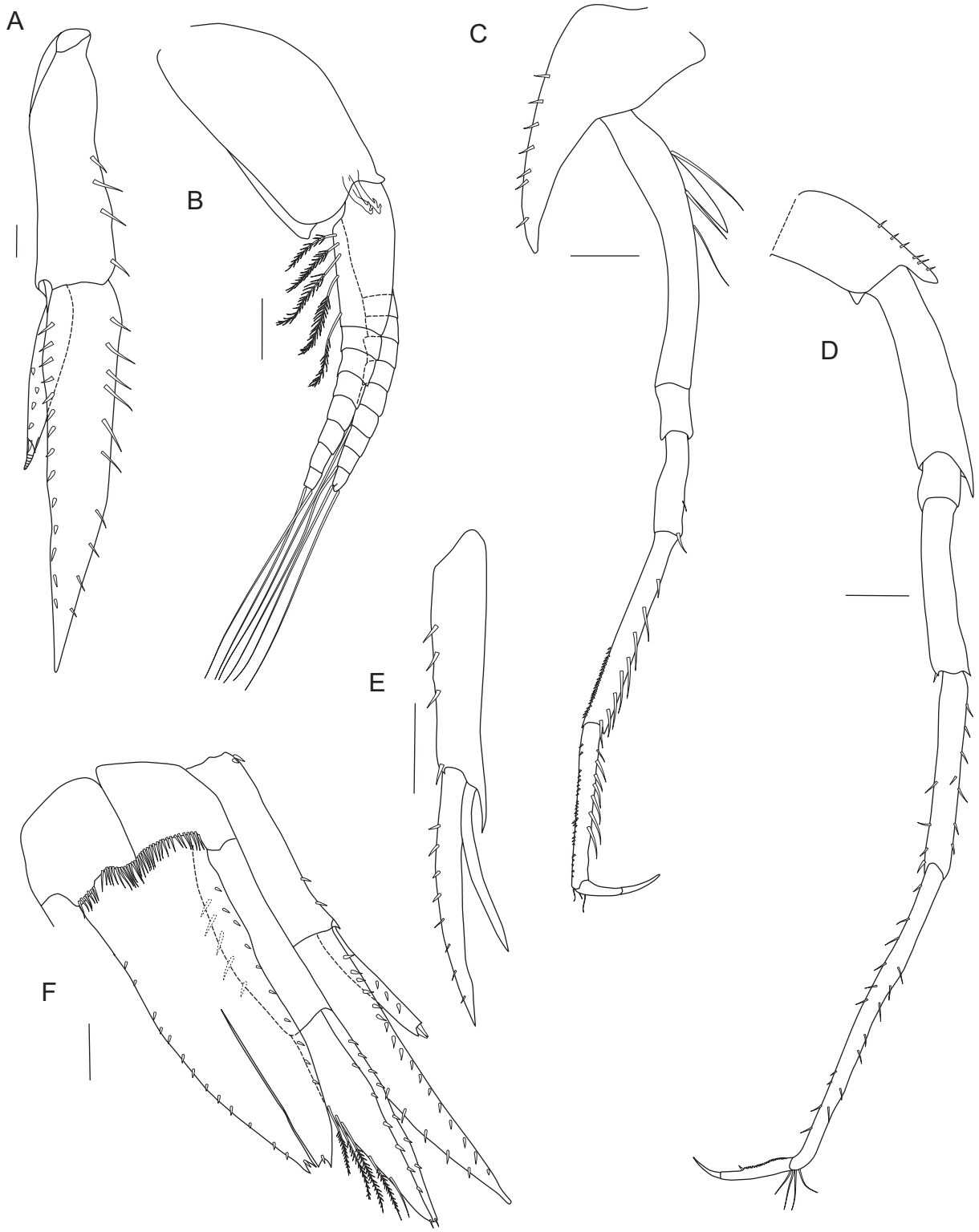


Figure 84 A–F. *Syrrhoites hannahae* n. sp., male holotype, 5.2 mm, NIWA 70875. A) uropod 2; B) pleopod 2; C) pereopod 4; D) pereopod 5; E) uropod 1; F) telson, third and second uropod. Scale bars: A–F = 100 μm.

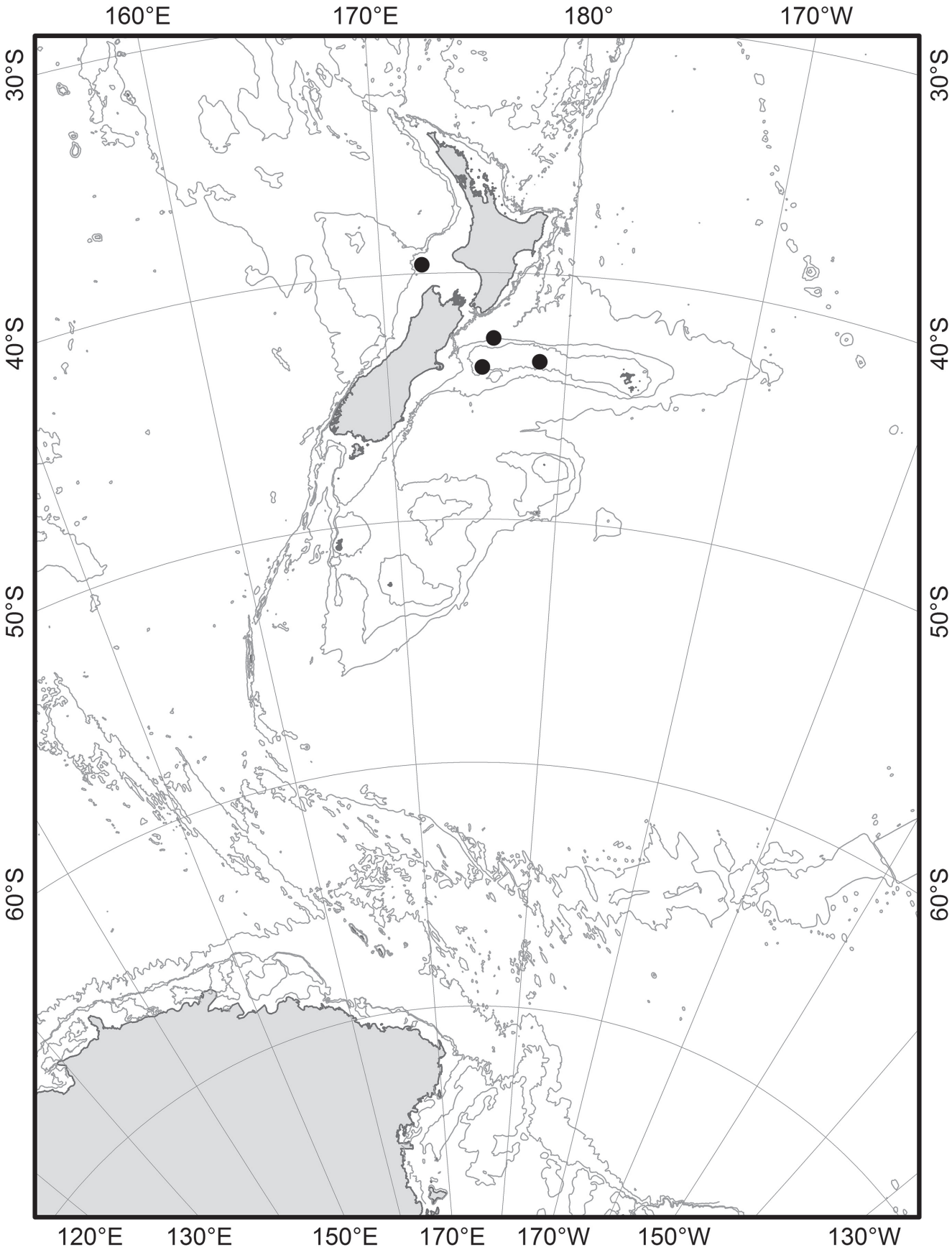


Figure 85. Distribution map of *Syrrhoites hannahae* n. sp.

ventral margin serration absent; posterodistal tooth acute. *Urosomite 1* mid-dorsal posterior margin with long tooth, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin with long tooth reaching more than half length of urosomite 3. *Urosomite 3* mid-dorsal posterior margin with fringe of setae. *Uropod 1* peduncle with long distal process, at least a third of length of outer ramus; inner ramus subequal to peduncle; apical robust setae on tip of both rami present. *Uropod 2* apical robust setae on tip of outer ramus present. *Uropod 3* length not exceeding uropods 1–2; peduncle long (at least 2 × breadth). *Telson* much longer than uropod 3 peduncle, about 3 × as long as wide; setae lining lateral margin, with single pair of apical slender setae, cleft, 50%.

Sexual dimorphic female of *Syrrhoites hannahae* n. sp.

DESCRIPTION BASED ON: NIWA 70888, female (paratype), 4.2 mm.

HEAD: *Antenna 1* article 1 without a distal tooth; article 3 longer than article 2. Antenna 1 accessory flagellum as long as first flagellar article, 2nd article less than a quarter length of 1st accessory flagellar article; 1st flagellar article elongate but not bordered with aesthetascs; flagellum 7-articulate. *Antenna 2* shorter than body; flagellum 5-articulate.

PLEON: *Urosomite 1* mid-dorsal posterior margin with short tooth. *Urosomite 3* mid-dorsal posterior margin smooth.

DISTRIBUTION: New Zealand, Chatham Rise and Challenger Plateau, 264–422 m.

REMARKS: *Syrrhoites hannahae* n. sp. is most similar to *Syrrhoites cornuta* Bellan–Santini, 1985, *Syrrhoites cu* J.L. Barnard, 1972, *Syrrhoites pacifica* Nagata, 1965 and *Syrrhoites silex* J.L. Barnard, 1967. It differs from these four species in having an elongated rostrum reaching beyond the first article of antenna 1. Furthermore the combination of the following characters is unique to *S. hannahae* n. sp. within the genus *Syrrhoites*: coxa 4 shorter than 3; telson nearly 3 × as long as wide and carinae starting on pereonite 5. SEM pictures reveal dense minute setae covering the entire body cuticle, giving a fur-like appearance (Fig. 113 B).

Syrrhoites octodentata n. sp.

(Frontispiece, Figs 86–90)

TYPE MATERIAL: NIWA 76149, female holotype.

TYPE LOCALITY: NIWA 76149, TAN 0705/49, 06/04/2007, -44.48616 177.14132, -44.48416 177.14616, 1235–1239 m.

MATERIAL EXAMINED: NIWA 80258, 1 female, TAN0705/160,16/04/2007, -42.78200 -176.71520, -42.78167 -176.70420, 1023–1026; NIWA 84588, 2 males, TAN0705/178, 18/04/2007, -43.5212 181.3797, -43.5228 181.3685, Brenke sledge, 424–425 m; NIWA 84622, 2 females, NIWA 84753, 13 females, 3 males, TAN0705/276, 26/04/2007, -42.6213 175.9225, -42.6203 175.9335, 1194–1199 m; NIWA 84633, 1 juvenile, TAN0705/285, 27/04/2007, -43.7966 175.31582, -43.80450 175.31483, Brenke sledge, 418–422 m; NIWA 84756, 1 male, TAN0707/051, 30/05/2007, -36.9202, 167.5302; -36.9120 167.5325, 1207–1213 m.

ETYMOLOGY: *Syrrhoites octodentata* n. sp. is named for its eight prominent dorsal protrusions.

DESCRIPTION BASED ON: Female (holotype), 6 mm.

HEAD: *Head* not protuberant, with dorsal keel. *Eyes* absent. *Rostrum* long, longer than the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe absent. *Antenna 1* article 1 not elongate, with a distal curved tooth; article 2 without distomedial tooth; subequal to article 1; article 3 shorter than articles 1and 2. Antenna 1 accessory flagellum subequal to 3rd peduncular article, as long as first flagellar article, 2nd article less than a quarter length of 1st accessory flagellar article. Antenna 1 1st flagellar article elongate but not bordered with aesthetascs; flagellum shorter than pereon, 9-articulate. *Antenna 2* shorter than body; flagellum 7-articulate. *Mandibular palp* article 2 with many slender setae; article 3 shorter than half the length of article 2, article 3 with long slender setae considerably longer than those of article 2, article 3 with more than 2 slender apical setae. Mandibular incisor smooth (and narrow); left lacinia mobilis slender and smooth; mandible accessory setal row not present; molar greatly enlarged, not triturative. *Maxilliped* inner plate without nodular setae; outer plate more than 1.5 × wider than second palp article, medially with inflated wide, lanceolate robust setae; palp article 2 about twice the length of article 3; palp article 3 subrectangular.

PEREON: Carina starting on pereonite 6; additional small mid-dorsal hump prior to posterior margin absent on pereon; pereonites dorsolaterally and laterally smooth. *Pereonite 7* carinate; posterior margin mid-dorsally smooth, strongly produced; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* nearly simple; coxa not tapering distally, anterodistal margin weakly produced; basis longer than subrectangular carpus; carpus with serrate setae along the posterior margin; propodus palm acute, defined by 1 serrate robust seta, additional robust smooth setae absent. *Gnathopod 2* nearly simple; coxa not distally tapering; basis about as long as carpus; propodus palm acute, defined by 1 smooth robust seta; dactylus of gnathopod

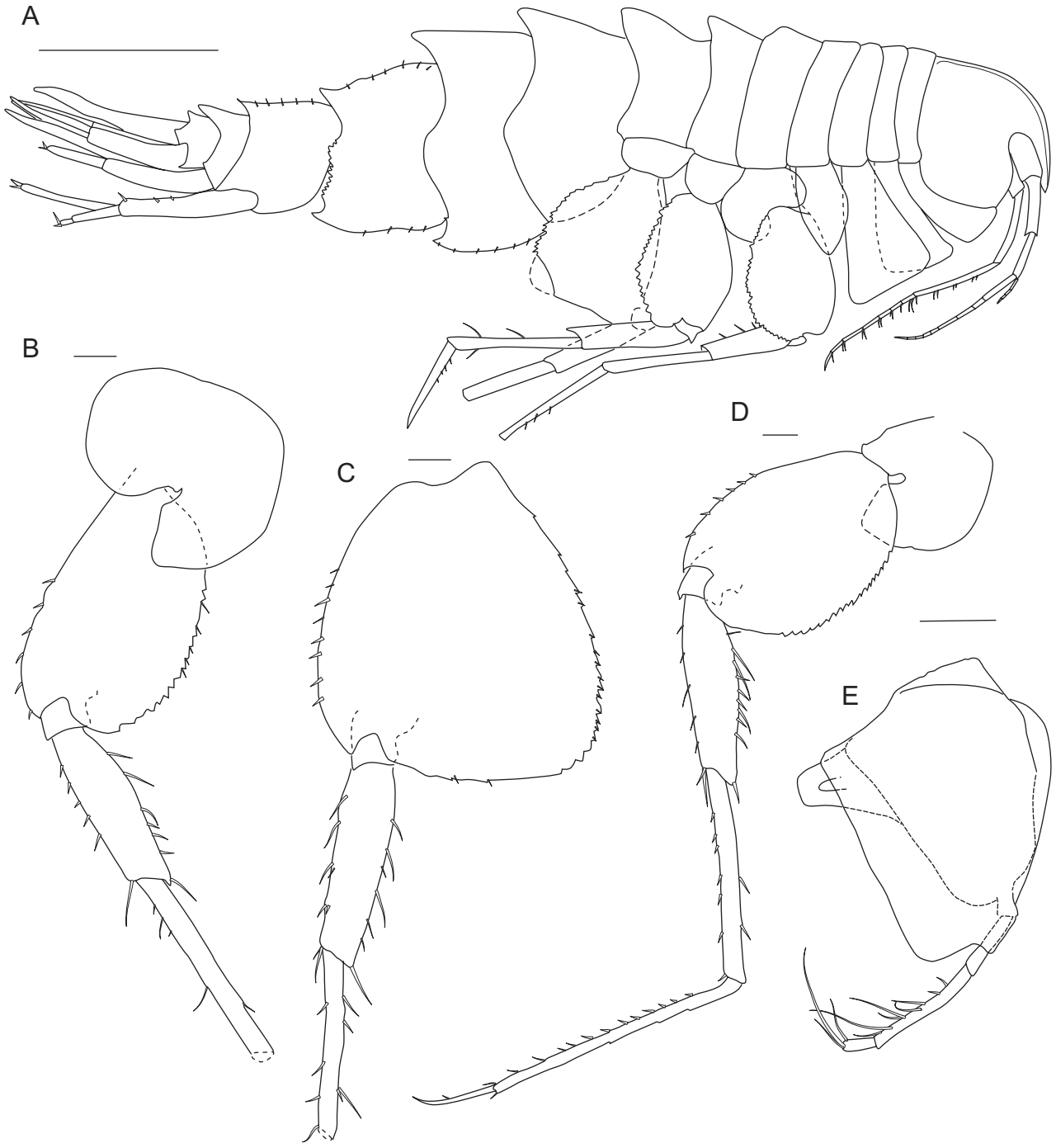


Figure 86 A–E. *Syrrhoites octodentata* n. sp., female holotype, 6.0 mm, NIWA 76149. A) habitus; B) pereopod 5; C) pereopod 7; D) pereopod 6; E) mandible. Scale bars: A = 1 mm, B–E = 100 μm.

2 well developed, unguis subequal to dactylus length. *Pereopod 3* coxa anterodistal lobe present, rounded, posterodistal lobe present, rounded, half the depth of the coxa, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subquadrate, a quarter of merus length; dactylus weakly curved. Pereopod 3–4 coxa not pelagont. *Pereopod 4* coxa shorter than coxa 3, subtriangular, posterior margin weakly lobate; ischium subquadrate, a quarter of merus length; dactylus weakly curved. *Pereopod 5–7* coxa smooth; basis anterodistal corner weakly produced, pointed, posterior margin serrate. *Pereopod 5* basis subovoid, not expanded, posterodistal lobe well developed, rounded, extending below ischium. *Pereopod 7* basis ovate, posterodistal lobe well developed, rounded.

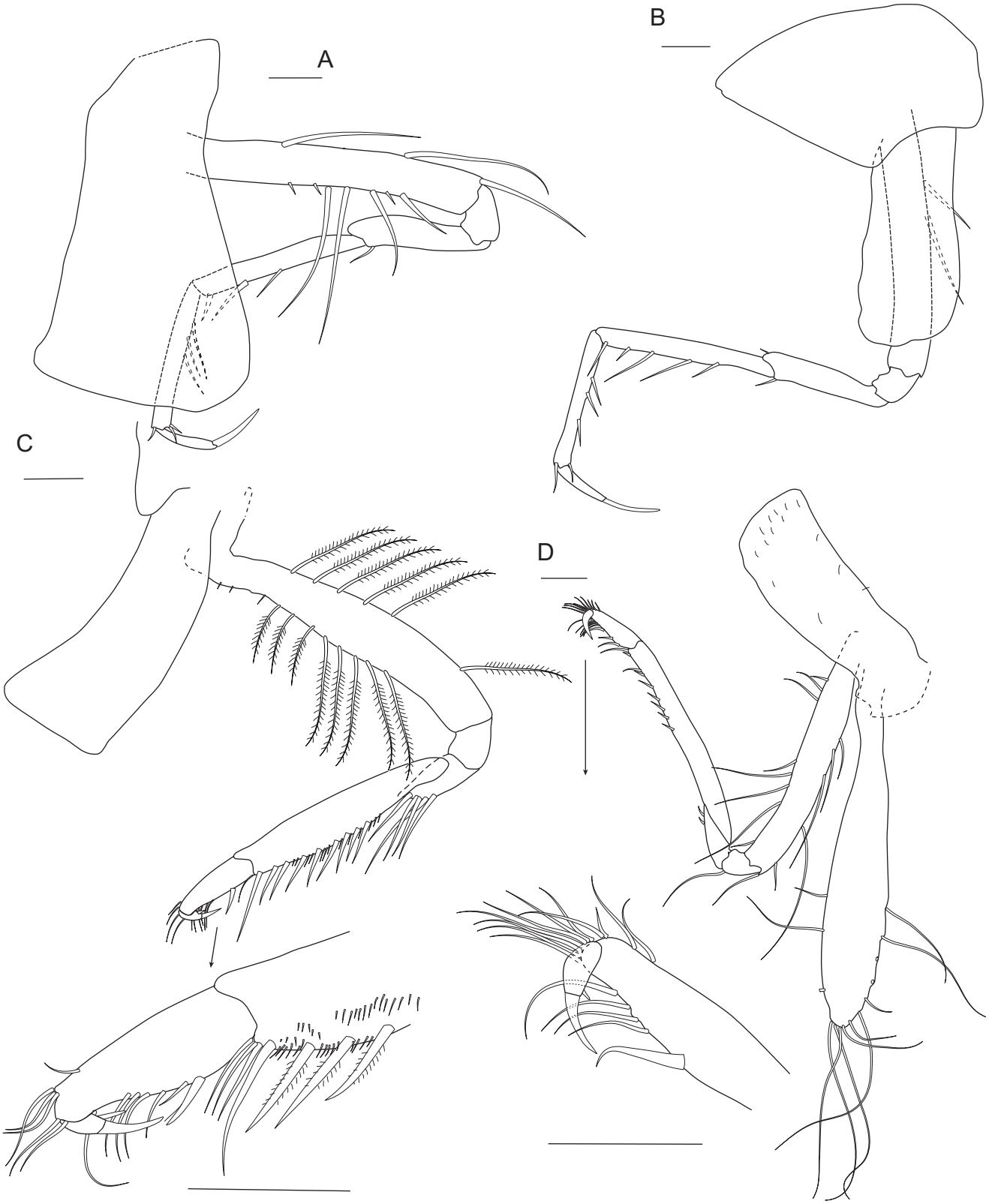


Figure 87 A–D. *Syrrhoites octodentata* n. sp., female holotype, 6.0 mm, NIWA 76149. A) pereopod 3; B) pereopod 4; C) gnathopod 1; D) gnathopod 2. Scale bars: A–D = 100 µm.

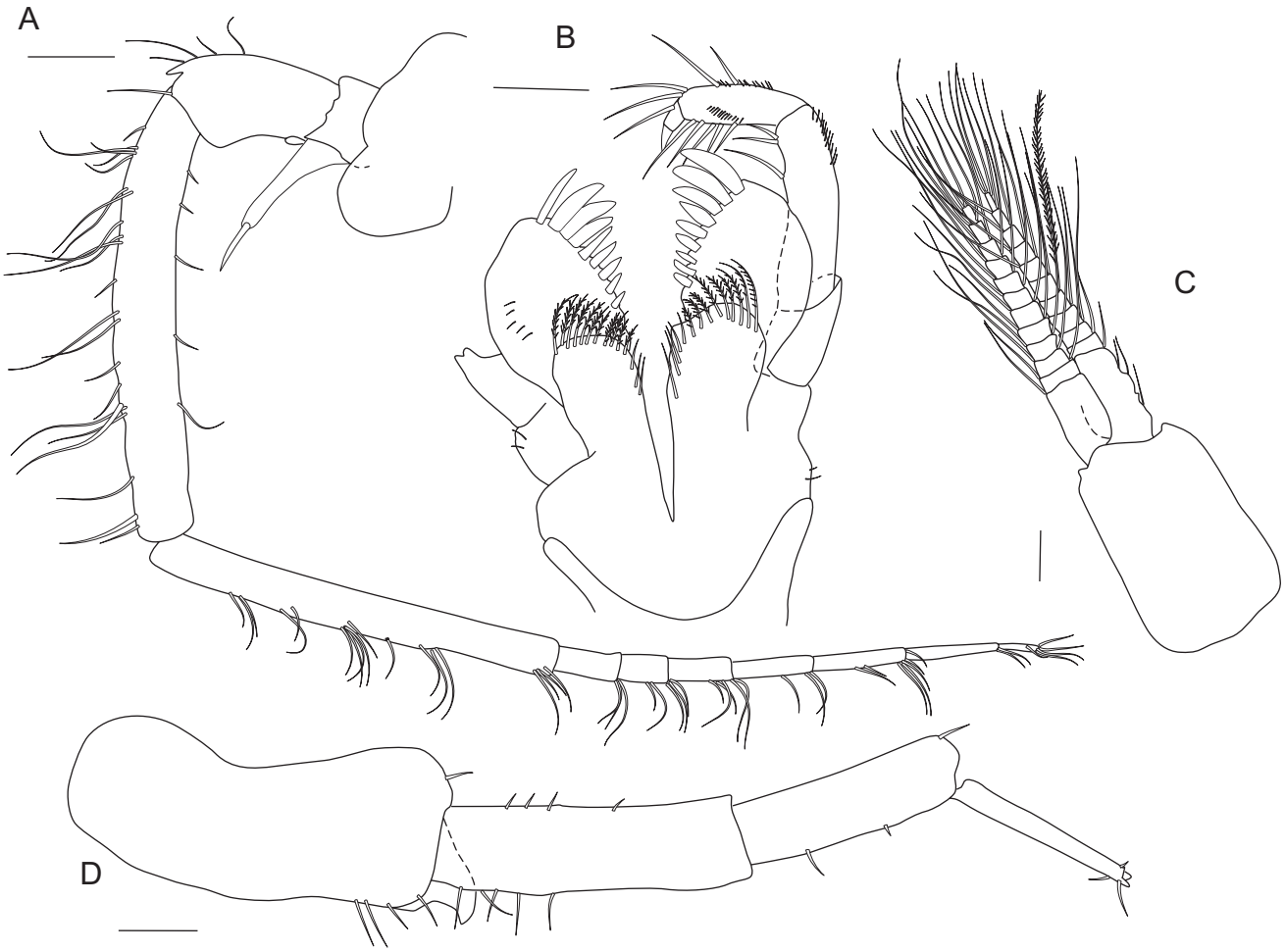


Figure 88 A–D. *Syrrhoites octodentata* n. sp., female holotype, 6.0 mm, NIWA 76149. A) antenna 2; B) maxilliped; C) pleopod 1; D) antenna 1. Scale bars: A–D = 100 μm.

PLEON: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin not serrate. *Pleonite 1* carinate, posterior margin mid-dorsally strongly produced. *Pleonite 2* carinate, posterior margin mid-dorsally strongly produced. *Pleonite 3* carinate, posterior margin mid-dorsally strongly produced, posterodorsal margin smooth. *Epimeron 1* posterior margin smooth, posterodistal corner rounded. *Epimeron 2* posterior margin smooth, posterodistal corner acute. *Epimeron 3* posterior margin serrate, dorsally of posteroventral corner, ventral margin serration absent; posterodistal tooth acute. *Urosomite 1* mid-dorsal posterior margin with long tooth, posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin with long tooth reaching more than half length of urosomite 3. *Urosomite 3* mid-dorsal posterior margin with pointed tooth. *Uropod 1* peduncle without distal process; inner ramus shorter than peduncle; apical robust setae on tip of both rami present. *Uropod 2* apical robust setae on tip of outer ramus present. *Uropod 3* length not exceeding uropods 1–2; peduncle long (at least 2 × breadth); outer ramus with second article apically. *Telson* much longer than uropod 3 peduncle, less than 3 × as long as wide; cleft half the length, telsonic lobes abutting, lobes apically rounded, setae lining lateral margin, without apical slender setae.

DISTRIBUTION: New Zealand, Chatham Rise and Challenger Plateau, 418–1239 m.

REMARKS: *Syrrhoites redox* J.L. Barnard, 1961 and *Syrrhoites silex* J.L. Barnard, 1967 also have eight dorsal protrusions, these are far less pronounced than in *S. octodentata* n. sp. From these similar species *S. octodentata* n. sp. further differs in the expanded basis of pereopod 7 and the elongated rostrum reaching beyond article 1 of antenna 1. It differs from *Syrrhoites hannahae* n. sp., also collected on the Chatham Rise (New Zealand), in the shorter coxa 4 and wider pereopod basis 5–7 as well as the telson, which is more ovoid shaped, whereas in *S. hannahae* n. sp. it is triangular elongated.

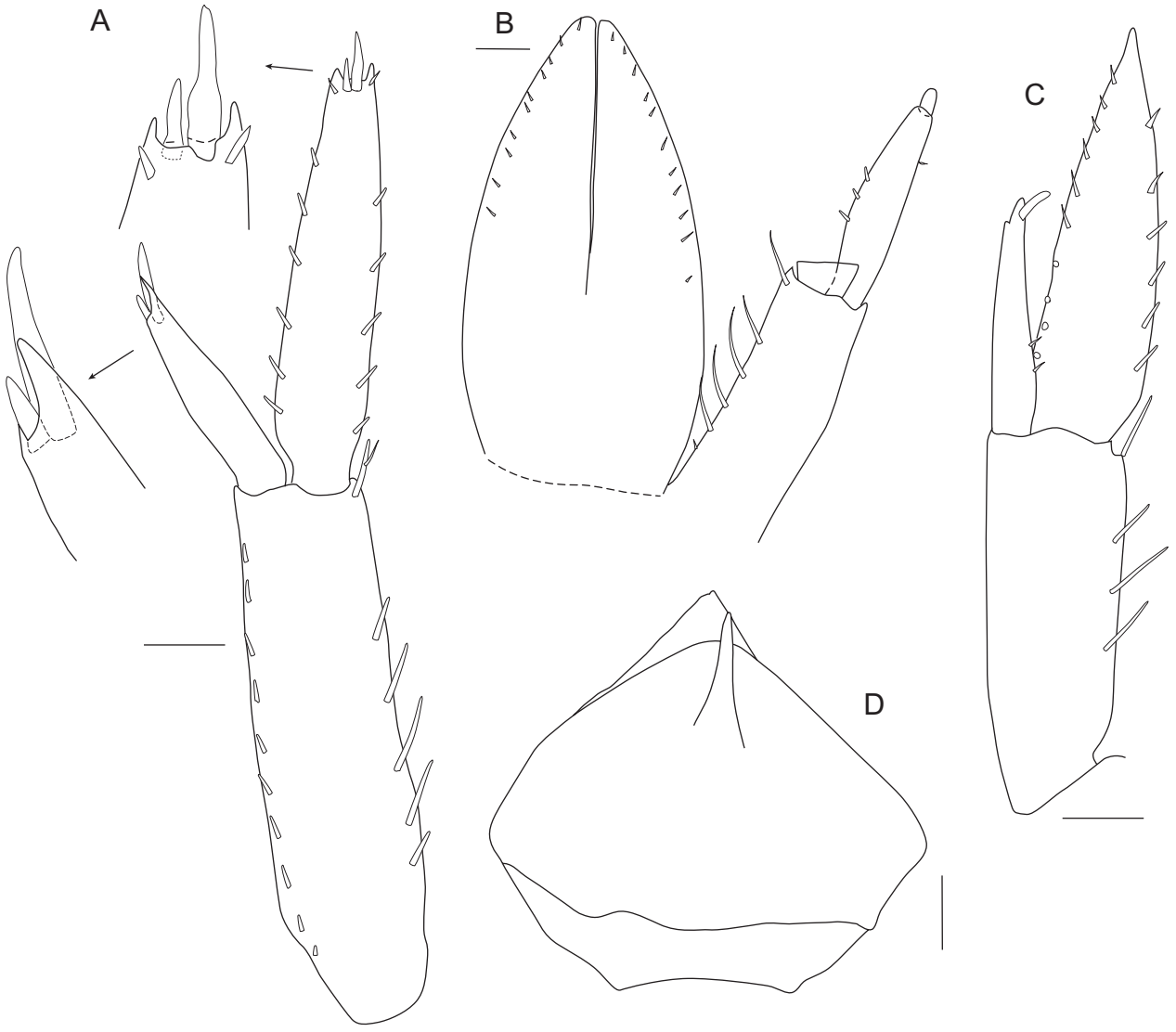


Figure 89 A–D. *Syrrhoites octodentata* n. sp., female holotype, 6.0 mm, NIWA 76149. A) uropod 1; B) telson and uropod 3; C) uropod 2; D) upper lip. Scale bars: A–D = 100 μm.

Syrrhoites renatae n. sp. (Figs 91–95)

TYPE MATERIAL: NIWA 76290, female holotype, with 5 eggs.

TYPE LOCALITY: NIWA 76290, TAN0705/127, 13/04/2007, -43.06500 -174.93250, -43.07317 -174.93480, Brenke sledge, 933–940 m.

MATERIAL EXAMINED: NIWA 84581, 2 specimens; NIWA 84586, 2 specimens, TAN0705/160, 16/04/2007, -42.78200 -76.71520, -42.78167 -176.70420, Brenke sledge, 1023–1026 m.

ETYMOLOGY: This species is named in gratitude to Ms Renate Walter from the Zoological Institute and Museum Hamburg, Germany, for her assistance with the scanning electron microscope.

DESCRIPTION BASED ON: Female (holotype), 5 mm.

HEAD: *Head* not protuberant, with dorsal keel. *Eyes* absent. *Rostrum* long, longer than half the length of article 1 of antenna 1, apically acute. Lateral cephalic lobe absent. *Antenna 1* article 1 elongate, with a short distal curved tooth; article 2 without distomedial tooth, shorter than article 1; article 3 shorter than article 1 and shorter than article 2. Antenna 1 accessory flagellum shorter than 3rd peduncular article, as long as first flagellar article; accessory flagellum 2nd article less than a quarter length of 1st accessory flagellar article; 1st flagellar article elongate but not bordered with aesthetascs; flagellum shorter than pereon, 7–8-articulate. *Antenna 2* shorter than body; flagellum 6-articulate. *Mandibular palp* article 2 without or few setae; article 3 half the length of article 2, with slender setae subequal in length to those from article 2 and with 2 plumose

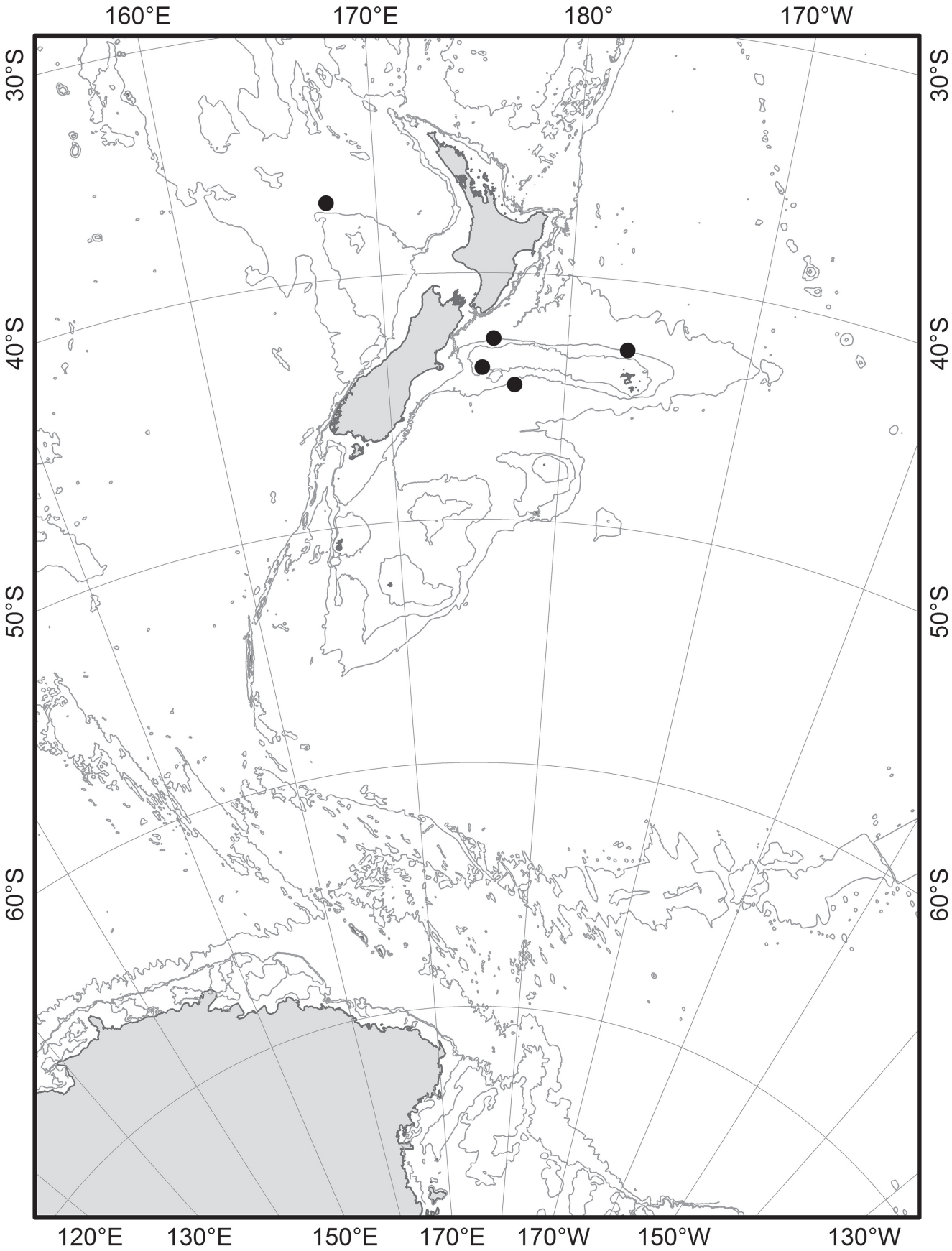


Figure 90. Distribution map of *Syrrhoites octodentata* n. sp.

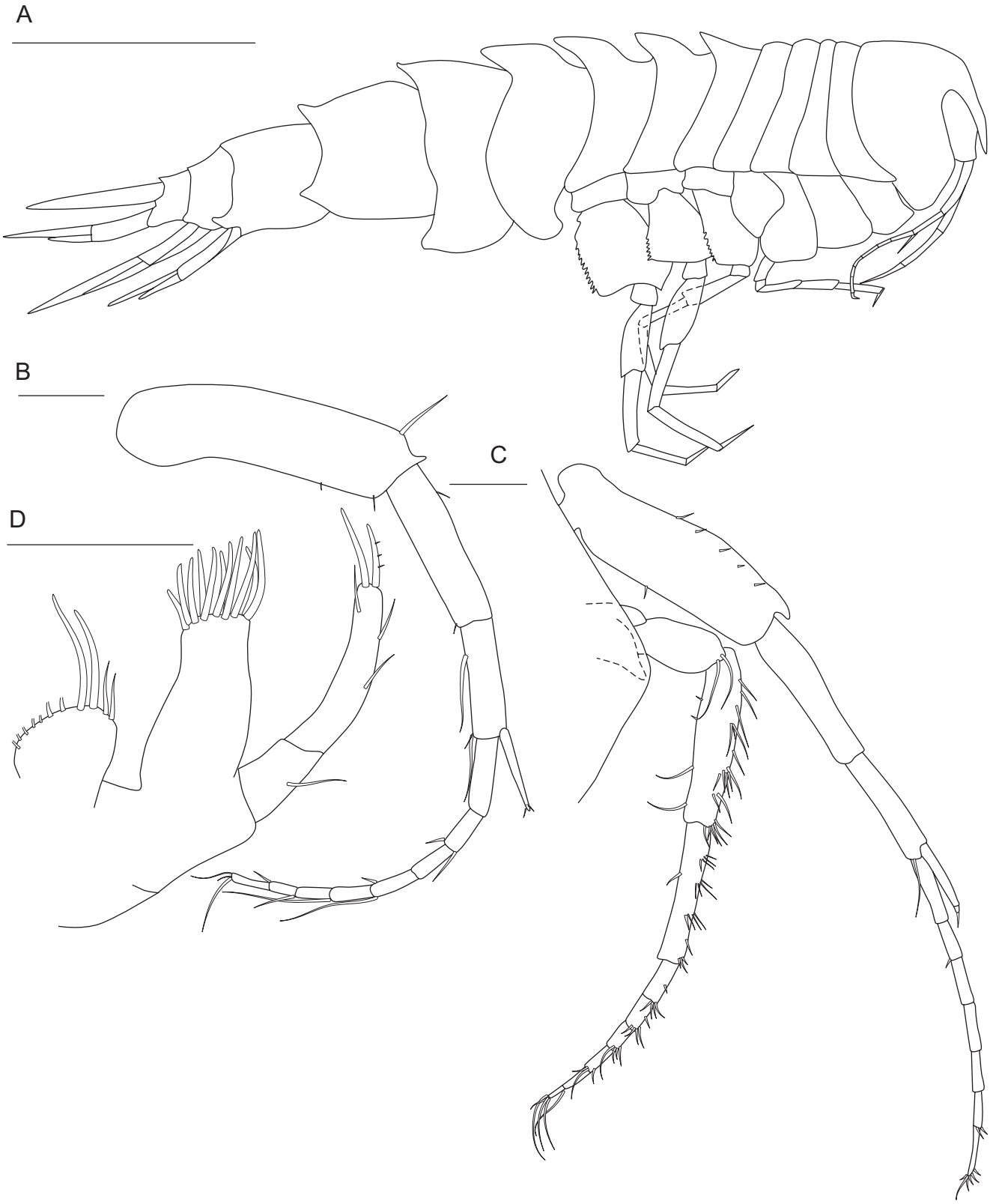


Figure 91 A–D. *Syrrhoites renatae* n. sp., female holotype, 5.0 mm, NIWA 76290. A) habitus; B) antenna 1; C) antenna 1 and 2; D) maxilla 1. Scale bars: A = 1 mm, B–D = 100 μm.

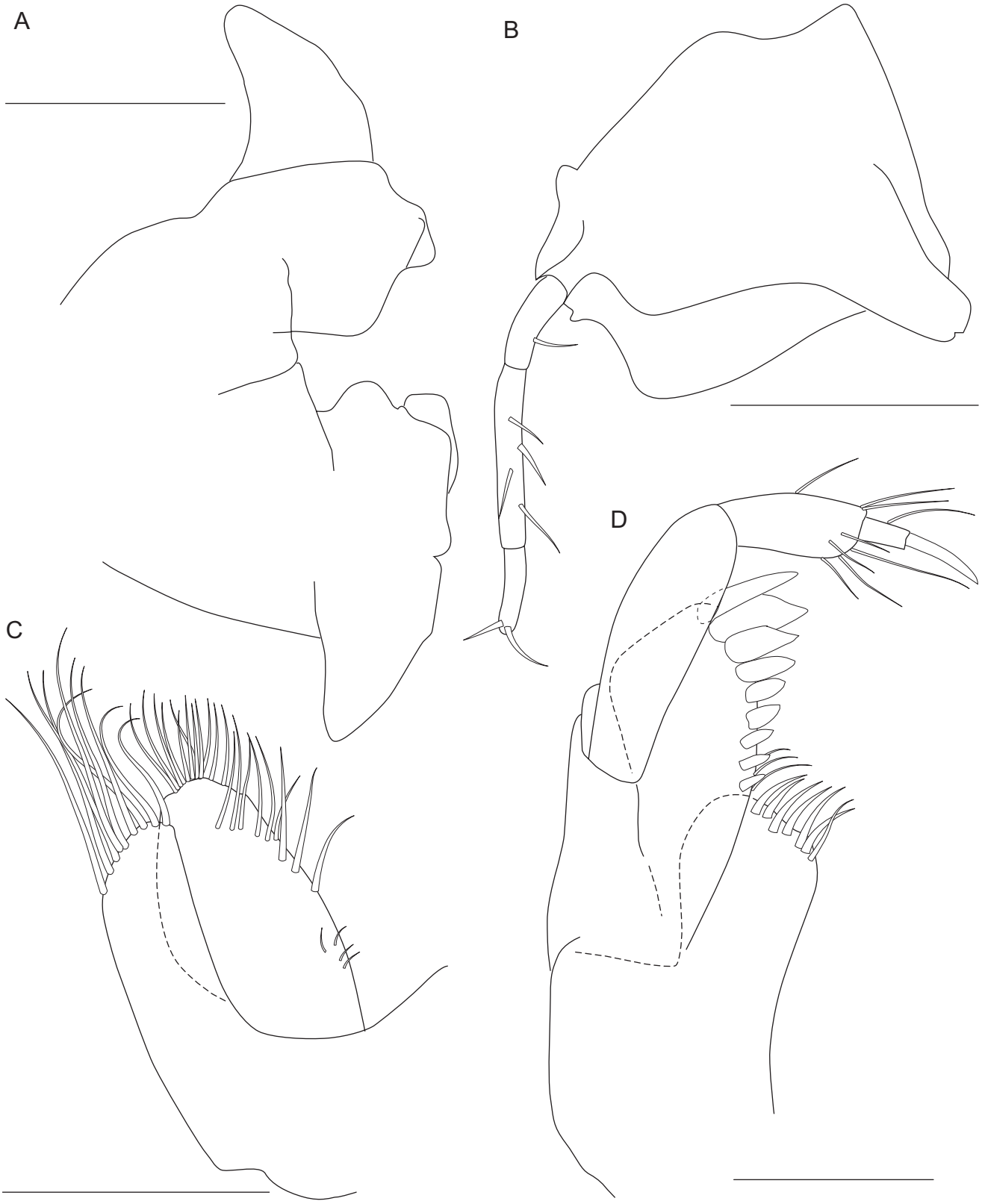


Figure 92 A–D. *Syrrhoites renatae* n. sp., female holotype, 5.0 mm, NIWA 76290. A) lower lip; B) mandible; C) maxilla 2; D) maxilliped. Scale bars: A–D = 100 µm.

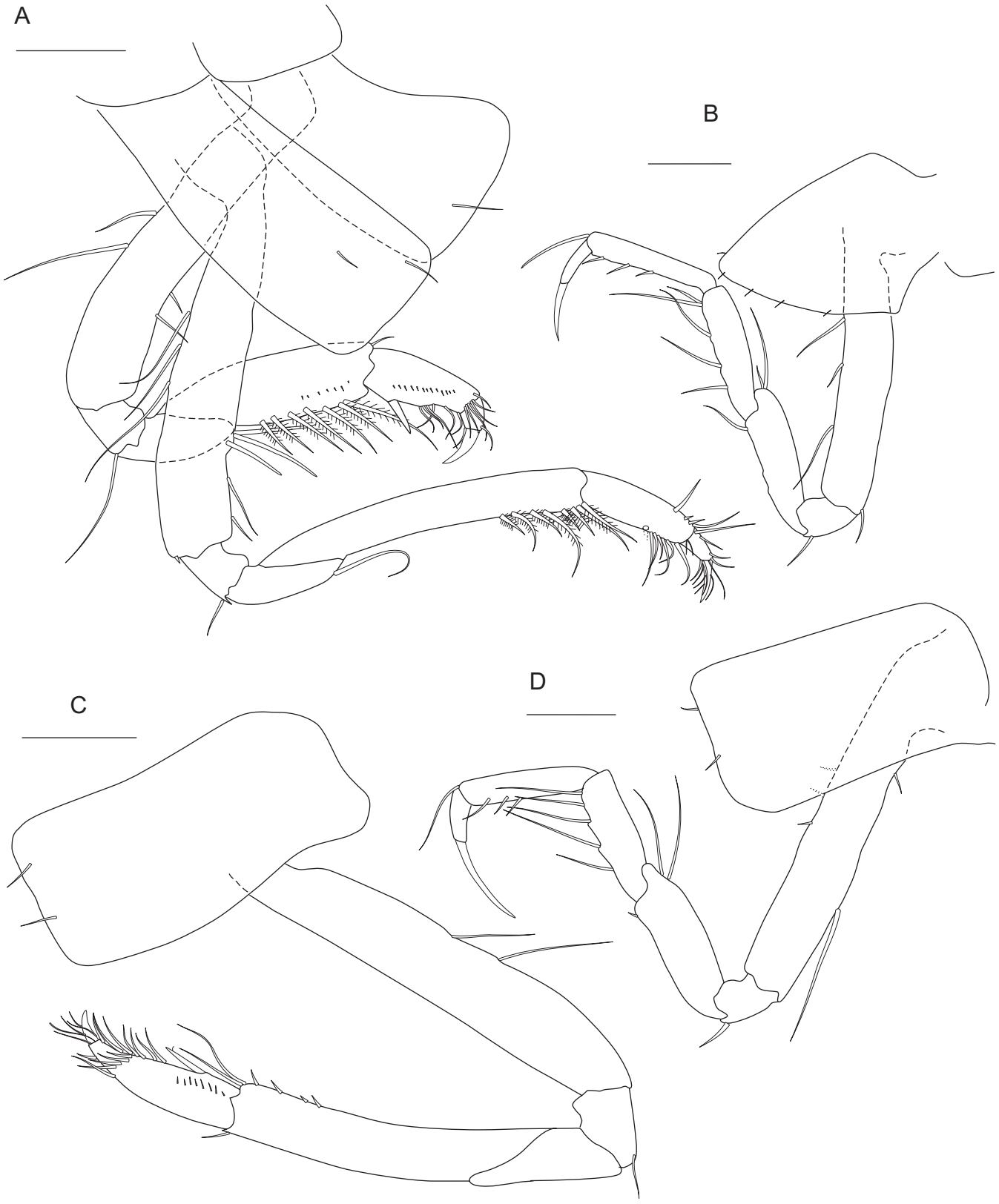


Figure 93 A–D. *Syrrhoites renatae* n. sp., female holotype, 5.0 mm, NIWA 76290. A) gnathopods 1 and 2; B) gnathopod 4; C) left gnathopod 2; D) gnathopod 3. Scale bars: A–D = 100 μm.

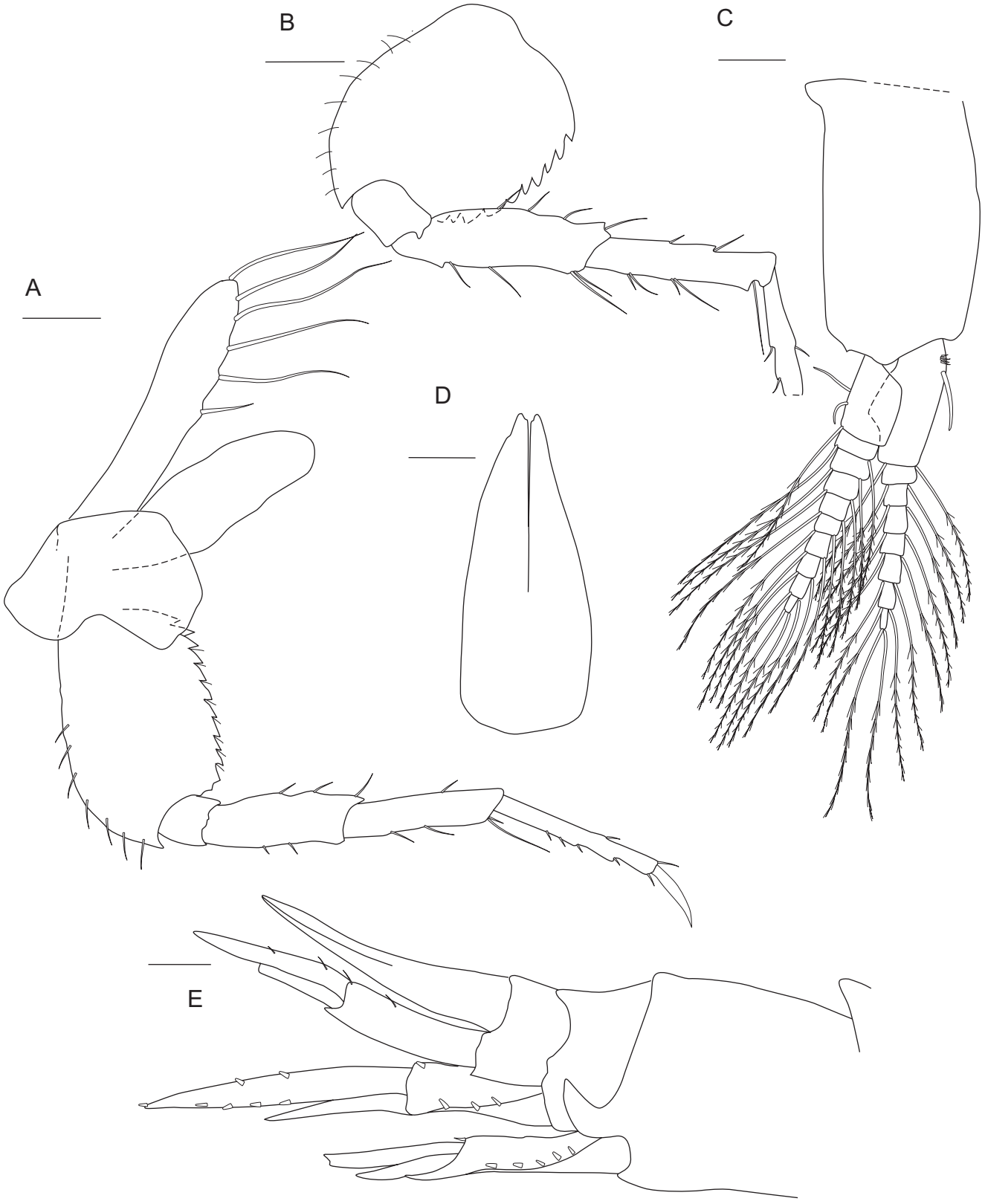


Figure 94 A–E. *Syrrhoites renatae* n. sp., female holotype, 5.0 mm, NIWA 76290. A) pereopod 5; B) pereopod 6; C) pleopod 1; D) telson; E) urosome. Scale bars: A–E = 100 μm.

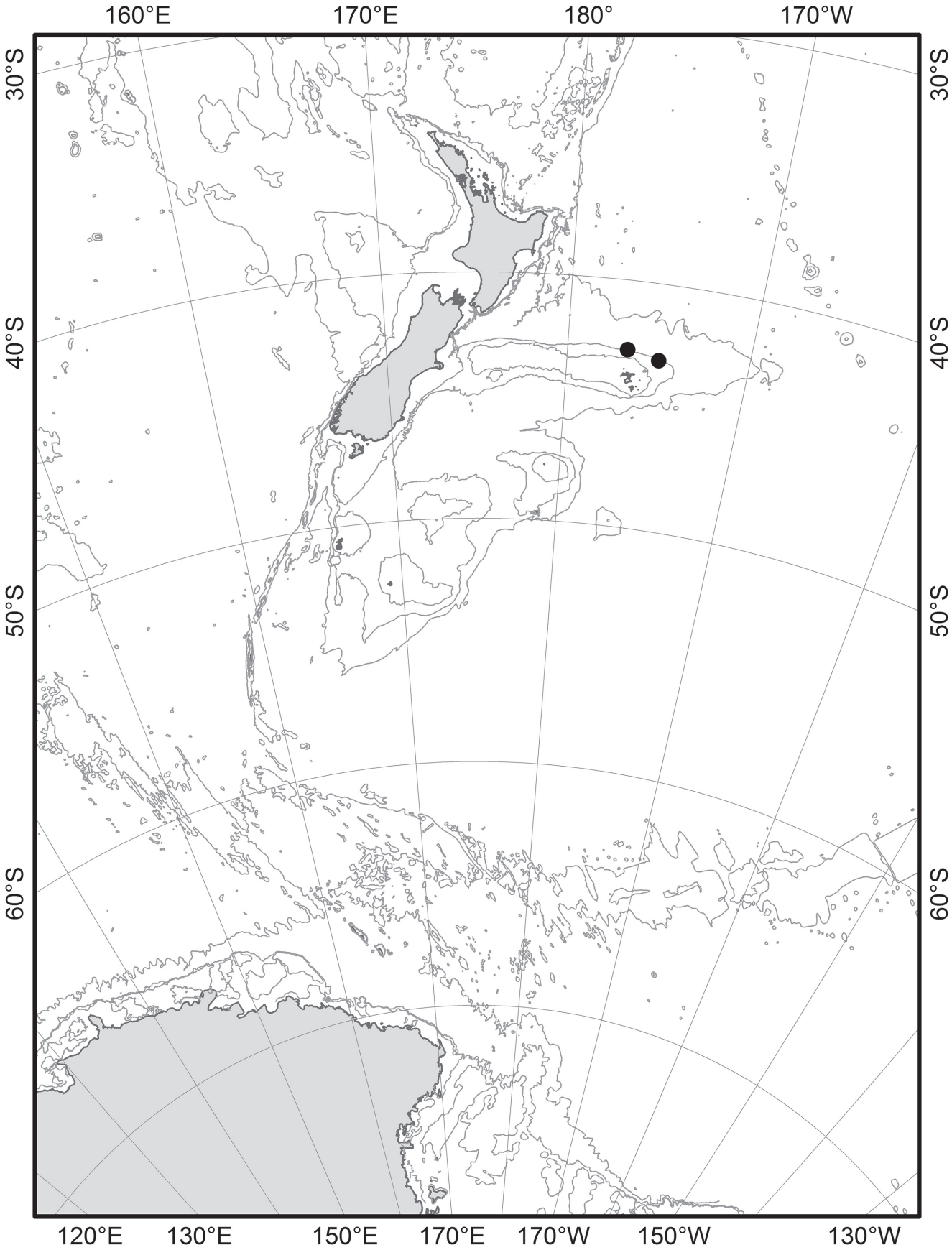


Figure 95. Distribution map of *Syrrhoites renatae* n. sp.

apical setae. Mandibular incisor smooth; left lacinia mobilis slender; accessory setal row absent; molar greatly enlarged, not triturative. *Maxilla 1* inner plate with 11 plumose setae; outer plate with 11 apical robust setae, without bifurcate setae; palp article 2 apically and on outer margin with setae. *Maxilla 2* outer plate shorter than inner plate; inner plate width more than 1.3 × outer plate. *Maxilliped* inner plate without nodular setae; outer plate more than 1.5 × wider than second palp article, medially with inflated wide, lanceolate robust setae; palp article 2 about twice the length of article 3; palp article 3 subrectangular.

Pereon: Carina starting on pereonite 5; additional small mid-dorsal hump prior to posterior margin absent on pereon; pereonites dorsolaterally and laterally smooth. *Pereonite 7* carinate; posterior margin mid-dorsally not serrate, strongly produced; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* subchelate; coxa not tapering distally, anterodistal margin produced rounded, basis longer than carpus; carpus subrectangular; propodus palm oblique, propodus palm defined by simple 1 smooth robust seta. *Gnathopod 2* subchelate to simple; coxa not distally tapering; basis longer than carpus; propodus palm oblique, defined by 1 smooth robust seta; dactylus of gnathopod 2 well developed, unguis subequal to dactylus length. *Pereopod 3* coxa anterodistal lobe absent, posterodistal lobe absent, posterodistal margin smooth; basis width subequal to breadth of ischium; ischium subquadrate, a quarter of merus length; dactylus weakly curved. Pereopod 3–4 coxa not pelagont. *Pereopod 4* coxa shorter than coxa 3, subtriangular, posterior margin weakly lobate; ischium subquadrate, a quarter of merus length; dactylus weakly curved. *Pereopod 5–7* coxa smooth; basis anterodistal corner weakly produced, pointed, posterior margin serrate. *Pereopod 5* basis subrectangular, not expanded, posterodistal lobe weakly developed, not extending past ischium. *Pereopod 7* basis ovate, posterodistal lobe well developed, rounded, not extending below ischium.

Pleon: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin not serrate. *Pleonite 1* carinate, posterior margin mid-dorsally strongly produced. *Pleonite 2* carinate, posterior margin mid-dorsally strongly produced. *Pleonite 3* carinate, posterior margin mid-dorsally strongly produced, smooth. *Epimeron 1* posterior margin smooth, posterodistal corner rounded. *Epimeron 2* posterior margin smooth, posterodistal corner subacute. *Epimeron 3* posterior margin smooth, ventral margin serration absent; posterodistal tooth acute. *Urosomite 1* mid-dorsal posterior margin smooth, posterolateral hook pointing upwards present. *Urosomite 2* mid-dorsal posterior margin smooth. *Urosomite 3* mid-dorsal posterior margin smooth. *Uropod 1* peduncle with long distal process, at least a third of length of outer ramus; inner ramus subequal to peduncle; apical robust setae on tip of both rami absent. *Uropod 2* apical robust setae on tip of outer ramus absent. *Uropod 3* length not exceeding uropods 1–2; peduncle long (at least 2 × breadth). *Telson* less than 3 × as long as wide; with no setae along the lateral margin, without apical slender setae, cleft half the length.

Distribution: New Zealand, Chatham Rise, 933–940 m.

Remarks: *Syrrhoites renatae* n. sp. resembles *S. ebberae* n. sp. and *S. octodentata* n. sp., but it has six strong dorsal carinate projections, starting on pereonite 5 to pleonite 3; contrasting 4 processes in *S. ebberae* n. sp. and 8 processes in *S. octodentata* n. sp. *Syrrhoites renatae* n. sp. has a more narrow basis on pereopod 7 than *S. octodentata* n. sp. Furthermore *S. renatae* n. sp. differs from the other New Zealand *Syrrhoites* species by the upward pointing tooth on the posterior margin of urosomite 1. *Syrrhoites renatae* n. sp. strongly resembles *Syrrhoites sorpresa* (J.L. Barnard, 1962a), but *S. renatae* n. sp. has an anteroventrally produced lobe on coxa 1 (v. straight anterior margin), coxa 4 is shorter than coxa 3 (v. equally long) and the mid-dorsal posterior margin of urosomite 1 is smooth (v. with posteromarginal tooth).

Tiron Lilljeborg, 1865

Tiron Lilljeborg, 1865: 19; — Stebbing, 1906: 275; — J.L. Barnard, 1969: 463; — J.L. Barnard, 1972: 83; — Lincoln, 1979: 400; — Barnard & Karaman, 1991: 717

Tessarops Norman, 1868: 412 [homonym, Arachnida]

Diagnosis (amended after J.L. Barnard, 1972): Head sometimes protuberant, lateral cephalic lobe sharp or rounded; eyes present and accessory eyes usually present; molar of medium size, strongly projecting, columnar and triturative; antenna 1 articles 1–2 not elongate; coxa 1 ordinary (enlarged in *T. galeatus*), coxae 3–4 not pelagont or weakly so, coxa 3 softly rectangular, posterior margin almost parallel with anterior margin and not strongly excavate; coxa 4 shape variable, almost as long as coxa 3; gnathopods simple, lacking distinct robust setae; dactylus of gnathopod 2 normal; pereopods 5–7 very short, dactyls typically very short, clawlike and bearing large seta in inner curvature, but occasionally dactyls slightly elongate and poorly armed; basis of pereopod 7 posteroventrally rounded; pleonites 1–3 typically serrate dorsally but apparently smooth in some species; uropod 3 greatly exceeding apices of uropods 1–2, (except in *T. brevidactylus*), peduncle short; telson elongate, deeply cleft.

Type-species: *Lysianassa spinifera* Stimpson (1853) (= *T. acanthurus* Lilljeborg, 1865, see Sars, 1895).

SPECIES COMPOSITION:
Tiron altifrons Reid, 1951
***Tiron antarcticus* K.H. Barnard, 1932**
Tiron australis Stebbing, 1908
Tiron bellairsi Just, 1981
Tiron biocellatus J.L. Barnard, 1962b
Tiron galeatus Hirayama, 1988
Tiron intermedius Reid, 1951
Tiron ovatibasis Hirayama, 1988
Tiron spiniferus (Stimpson, 1853)
Tiron thompsoni Walker, 1904
Tiron triocellatus Goeke, 1982
Tiron tropakis J.L. Barnard, 1972

KEY TO THE SPECIES OF ***TIRON***, AMENDED AFTER JAŻDŻEWSKI 1990

1. Pereopods 3–7 with stubby dactyls 2

   Pereopods 3–7 with ordinary or short, claw-shaped dactyls 10

2. Mandibular palp present.....3

   Mandibular palp absent 4

3. Rami of uropod 3 pointed; outer plate of maxilliped normal, ovate 8

   Rami of uropod 3 truncate; outer plate of maxilliped with apical excavation guarded by falcate wings.. ..... *T. thompsoni*

4. Telson with at least several subapical robust setae 5

   Telson lacking subapical robust setae 7

5. Dorsal margins of pleonites 1–3 each with pointed process.....6

   Dorsal margins of pleonites 1–3 crenulate, posterior margin of basis of pereopod 7 with setules .... *T. tropakis*

6. Basis of pereopod 5 broadly expanding, oval..... ..... *T. ovatibasis*
   Basis of pereopod 5 not expanded..... *T. galeatus*

7. Palp of maxilla 1 slender, much shorter than outer plate; apical robust setae of uropod 3 exopodite long, nearly one-half of this article length..... .....*T. bellairsi*

   Palp of maxilla 1 stout, longer than outer plate; apical robust setae of uropod 3 exopodite short, many times shorter than this article length..... ..... *T. triocellatus*

8. Medial robust setae rows of telson absent..... .....*T. altifrons*

   Medial robust setae rows of telson present 9

9. Basis of pereopods 6 and 7 with posterior submarginal row of long, plumose setae .....*T. intermedius*

   Basis of pereopods 6 and 7 lacking special row of setae ..... *T. australis*

10. Posterior margin of basis of pereopod 7 crenulate and setulose.....11

    Posterior margin of basis of pereopod 7 smooth... ..... *T. spiniferus*

11. Telson lobes with row of small robust setae; article 2 of mandibular palp with several long setae .... ***T. antarcticus***

    Telson lobes with at most one subapical robust seta; article 2 of mandibular palp lacking setae..... ..... *T. biocellatus*

Tiron cf. ***antarcticus*** K.H. Barnard, 1932 (Figs 96–101)

Tiron antarcticus K.H. Barnard, 1932: 148–149, fig. 86; – Jażdżewski, 1990: 110–114, figs 1–5

TYPE LOCALITY: Bransfield Strait, 200 m.

MATERIAL EXAMINED: NIWA 76575, 1 female, TAN0802/147, 23/02/2008, -71.95033 173.39950, -71.95350 173.39250, Brenke sledge, 1610–1551 m.

DESCRIPTION BASED ON: Female, 8.2 mm.

HEAD: *Head* not protuberant, without dorsal keel. *Eyes* present; ommatidia scattered. *Rostrum* short, minute, apically acute. Lateral cephalic lobe present. *Antenna 1* article 1 not elongate; article 2 without distomedial tooth, subequal to article 1; article 3 shorter than article 1, shorter than article 2. Antenna 1 accessory flagellum longer than 3rd peduncular article, surpassing fourth flagellar article, 2nd article subequal to 1st accessory flagellar article. Antenna 1 flagellum shorter than pereon; flagellum 14-articulate. Antenna 1 1st flagellar article similar sized to 2nd flagellar article. *Antenna 2* shorter than body; flagellum 13-articulate. *Mandibular palp* article 2 with many slender setae; article 3 shorter than half the length of article 2, with slender setae subequal in length to those from article 2, with more than 2 slender apical setae. Mandibular incisor dentate: left lacinia mobilis wide and multidentate; accessory setal row with 11 serrate setae; molar medium, triturative, columnar. *Maxilla 1* inner plate with more than 10 plumose setae; outer plate with 8 apical robust setae, bifurcate setae absent; palp article 2 outer margin smooth, setae confined to apex. *Maxilla 2* outer plate subequal to inner plate; inner plate width more than 1.3 × outer plate. *Maxilliped* inner plate with nodular setae distally; outer plate more than 1.5 × wider than second palp article, medially with inflated wide,

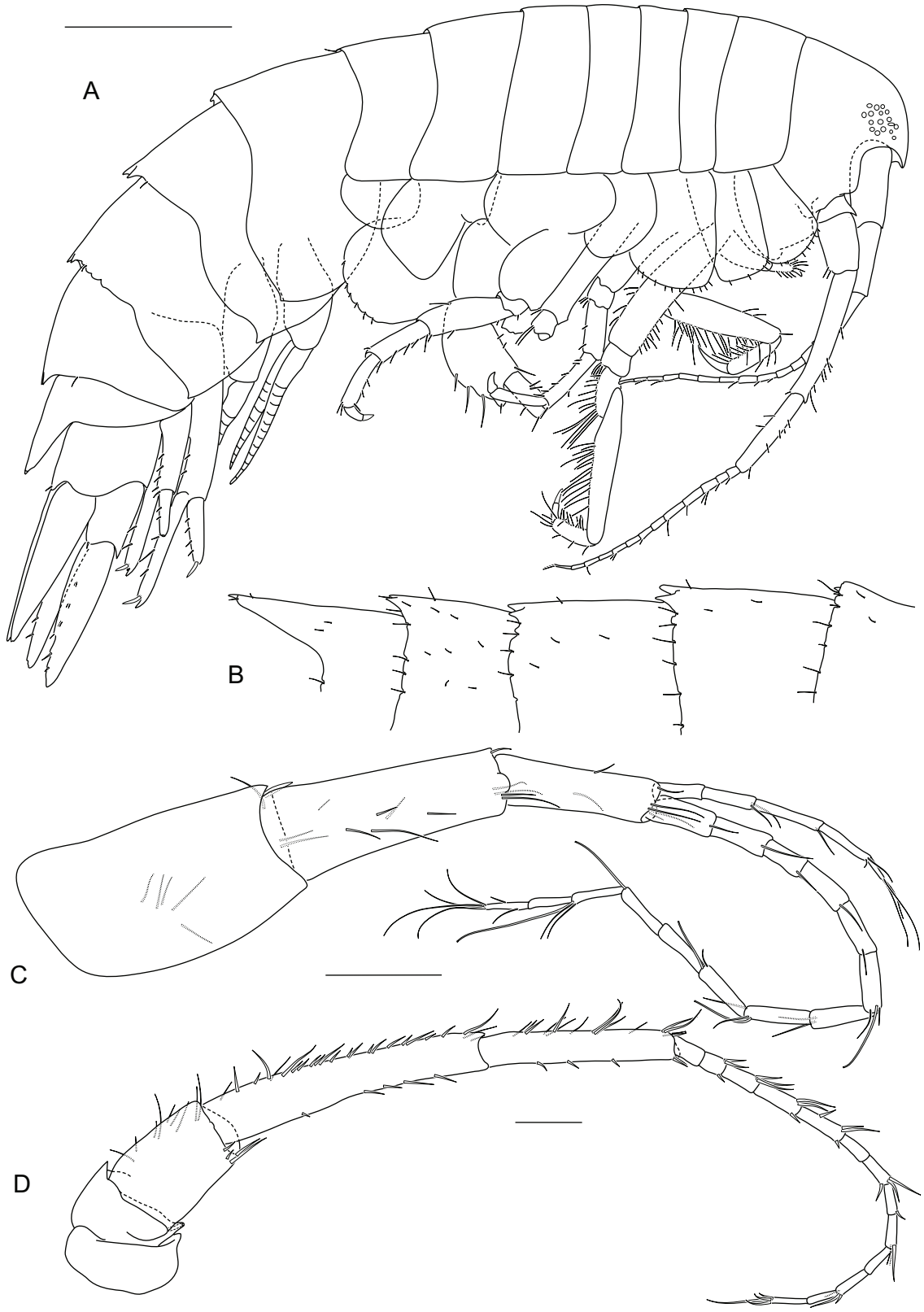


Figure 96 A–D. *Tiron* cf. *antarcticus*, female, 8.2 mm, NIWA 76575. A) habitus; B) pleonites 1–3 and urosomites 1–2; C) antenna 1; D) antenna 2. Scale bars: A = 1 mm; C, D = 100 μm.

Figure 97 A–D. *Tiron* cf. *antarcticus*, female, 8.2 mm, NIWA 76575. A) left mandible; B) maxilla 2; C) right mandible; D) maxilla 1. Scale bars: A–D = 100 µm.

Figure 98 A–E. *Tiron* cf. *antarcticus*, female, 8.2 mm, NIWA 76575. A) outline of one side of maxillipeds, setae omitted. B) gnathopod 1; C) maxilliped palp; D) inner plate of maxilliped; E) outer plate of maxilliped. Scale bars: A, B = 100 μm; C–E = 50 μm.

Figure 99 A–D. *Tiron* cf. *antarcticus*, female, 8.2 mm, NIWA 76575. A) gnathopod 2; B) uropod 1; C) pereopod 3; D) pereopod 4. Scale bars: A–D = 100 μm.

Figure 100 A–F. *Tiron* cf. *antarcticus*, female, 8.2 mm, NIWA 76575. A) pereopod 5; B) pereopod 6; C) pereopod 7; D) telson; E) uropod 3; F) uropod 2. Scale bars: A–F = 100 μm.

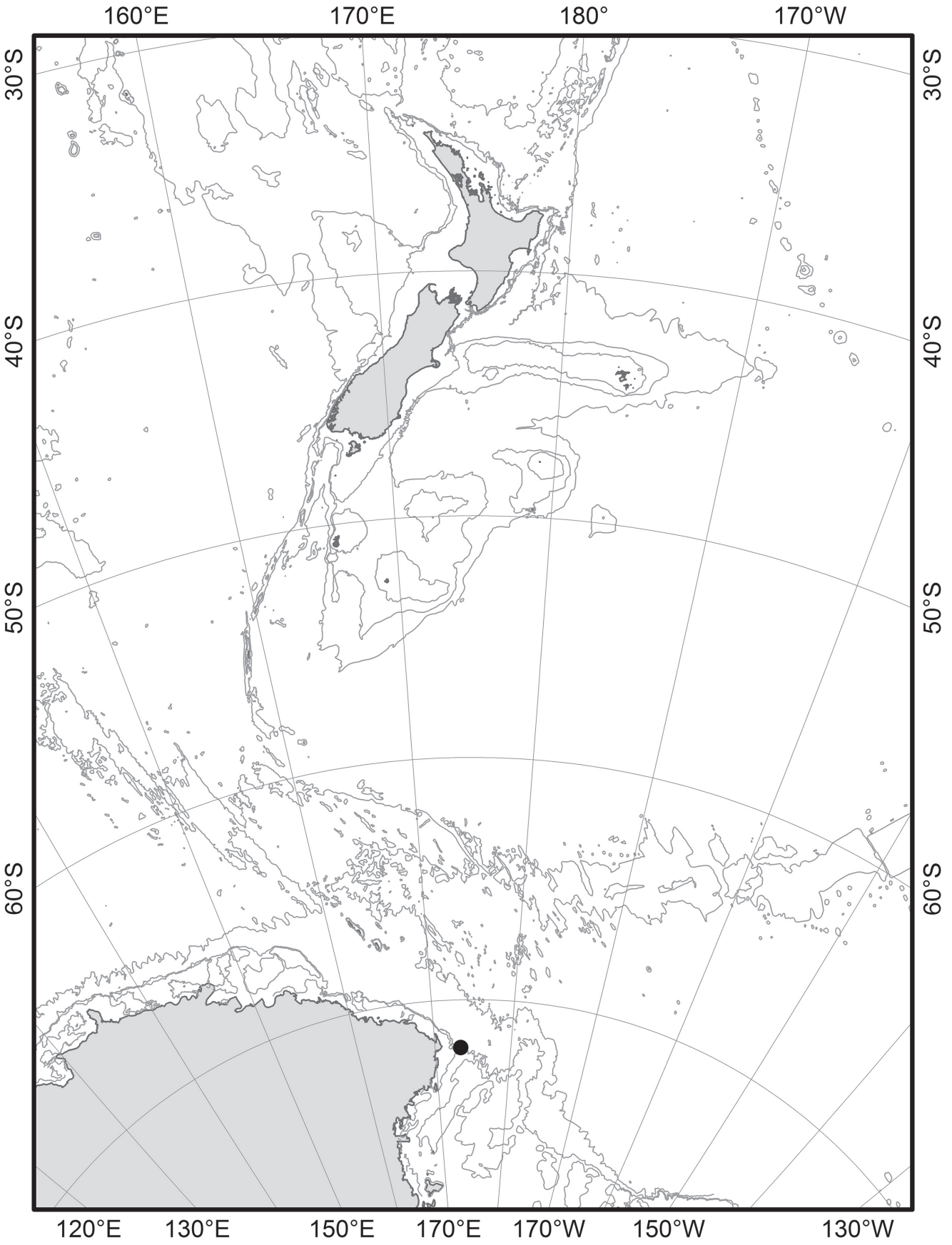


Figure 101. Distribution map of *Tiron* cf. *antarcticus* specimens examined from the Ross Sea.

lanceolate robust setae; palp article 2 1.7 × the length of article 3; palp article 3 subrectangular.

PEREON: Pereon dorsally, dorsolaterally and laterally smooth. *Pereonite 7* carinate; posterior margin mid-dorsally inconspicuously crenulate, not produced; additional small mid-dorsal hump prior to posterior margin absent; posterolateral corner angular and not produced. *Gnathopod 1* simple; coxa not tapering distally, anterodistal margin not produced; basis about as long as carpus; carpus subrectangular, with smooth setae along the posterior margin; robust smooth setae on palm absent. *Gnathopod 2* simple; coxa not tapering distally; basis about as long as carpus; carpus serrate setae along the posterior margin absent; robust smooth setae on palm absent; dactylus well developed, unguis subequal to dactylus length. *Pereopod 3* coxa anterodistal lobe absent, posterodistal lobe present, rounded, less than half the depth of the coxa, posterodistal margin scalloped; basis width subequal to breadth of ischium; ischium subquadrate, a quarter of merus length; dactylus strongly curved. Pereopod 3–4 coxa weakly pelagont. *Pereopod 4* coxa shorter than coxa 3, lobate in shape, posterior margin weakly lobate; ischium subquadrate, a quarter of merus length. *Pereopod 5–7* coxa crenulate posteromarginally; basis anterodistal corner not produced, posterior margin smooth (except for basis of pereopod 7). *Pereopod 5* basis subovoid, expanded, posterodistal lobe weakly developed, posterodistal lobe not extending past ischium. *Pereopod 7* basis ovate, crenulate posteromarginally, posterodistal lobe well developed, rounded, not extending below ischium.

PLEON: *Pleonites* 1–3 without lateral ridges. Pleonites 1–2 posterodorsal margin minutely serrate and dorsally bicarinate. *Pleonite 1* carinate, posterior margin mid-dorsally excavate. *Pleonite 2* carinate, posterior margin mid-dorsally excavate. *Pleonite 3* bicarinate, posterodorsal margin minutely serrate. *Epimeron 1* posterior margin smooth, posterodistal corner subacute. *Epimeron 2* posterior margin smooth, posterodistal tooth acute. *Epimeron 3* posterior margin smooth, ventral margin serration absent; posterodistal tooth acute. *Urosomite 1* mid-dorsal posterior margin with long projection (with small distal notch), posterolateral hook pointing upwards absent. *Urosomite 2* mid-dorsal posterior margin with long tooth reaching more than half length of urosomite 3. *Urosomite 3* mid-dorsal posterior margin with pointed tooth. *Uropod 1* peduncle without distal process; inner ramus shorter than peduncle; apical robust setae on tip of both rami present. *Uropod 2* apical robust setae on tip of outer ramus present. *Uropod 3* length greatly exceeding length of uropods 1–2; peduncle short (less than 2 × breadth). *Telson* cleft, more than 66%; much longer than uropod 3 peduncle, less than 3 × as long as wide; robust setae lining lateral margin, without apical slender setae.

REMARKS: *Tiron antarcticus* K.H. Barnard, 1932 (see also Jażdżewski 1990) has been recorded in the Bransfield Strait (type locality), South Georgia and the Weddell Sea, in 130–1586 m depth. The single specimen collected in the Ross Sea at 1551–1610 m differs only in minute morphological characters from the type specimen, including: 8 robust setae on the outer plate of maxilla 1 (v. 9); basis of pereopod 6 has the widest point in the middle (v. widest point ventral point of the basis); telson longer than urosomites 1–2 (v. equally long).

SCANNING ELECTRON MICROSCOPE IMAGES

Syrrhoe **cf.** *affinis*

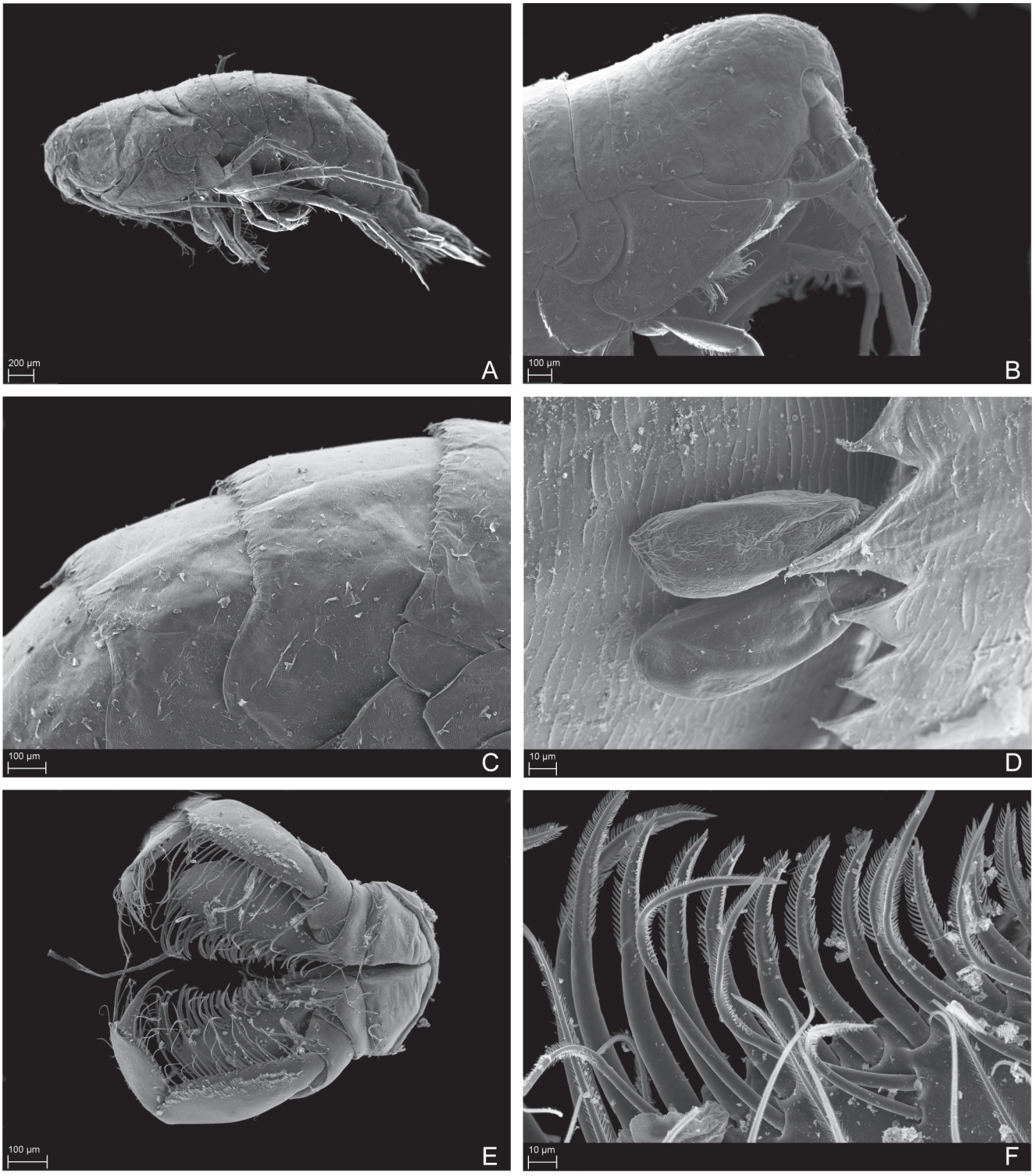


Figure 102 A–F. *Syrrhoe* cf. *affinis*. A) NIWA 69747, habitus; B) NIWA 69747, head; C) NIWA 69746, dorsolateral view of pereonite 7, pleonites 1 and 2; D) NIWA 69747, parasites on dorsal segmental margin; E) NIWA 69749, maxilliped; F) NIWA 69749, details of maxillipedal outer plate.

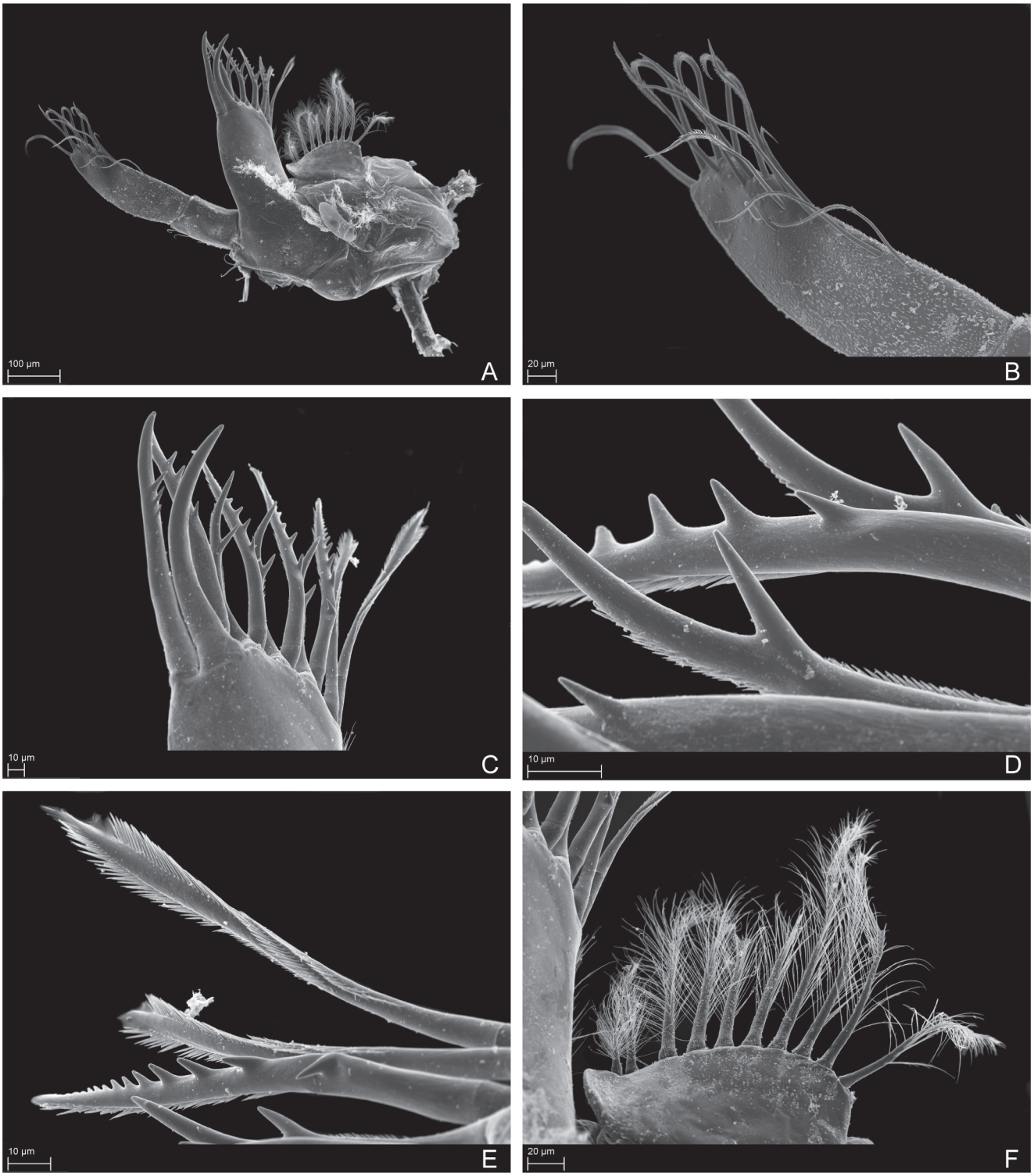


Figure 103 A–F. *Syrrhoe* cf. *affinis*. A) NIWA 69749, maxilla 1; B) NIWA 69749, second article of maxilla 1 palp; C) NIWA 69749, outer plate maxilla 1; D) NIWA 69749, robust setae on outer plate of maxilla 1; E) NIWA 69749, robust setae on outer plate of maxilla 1; F) NIWA 69749, inner plate of maxilla 1.

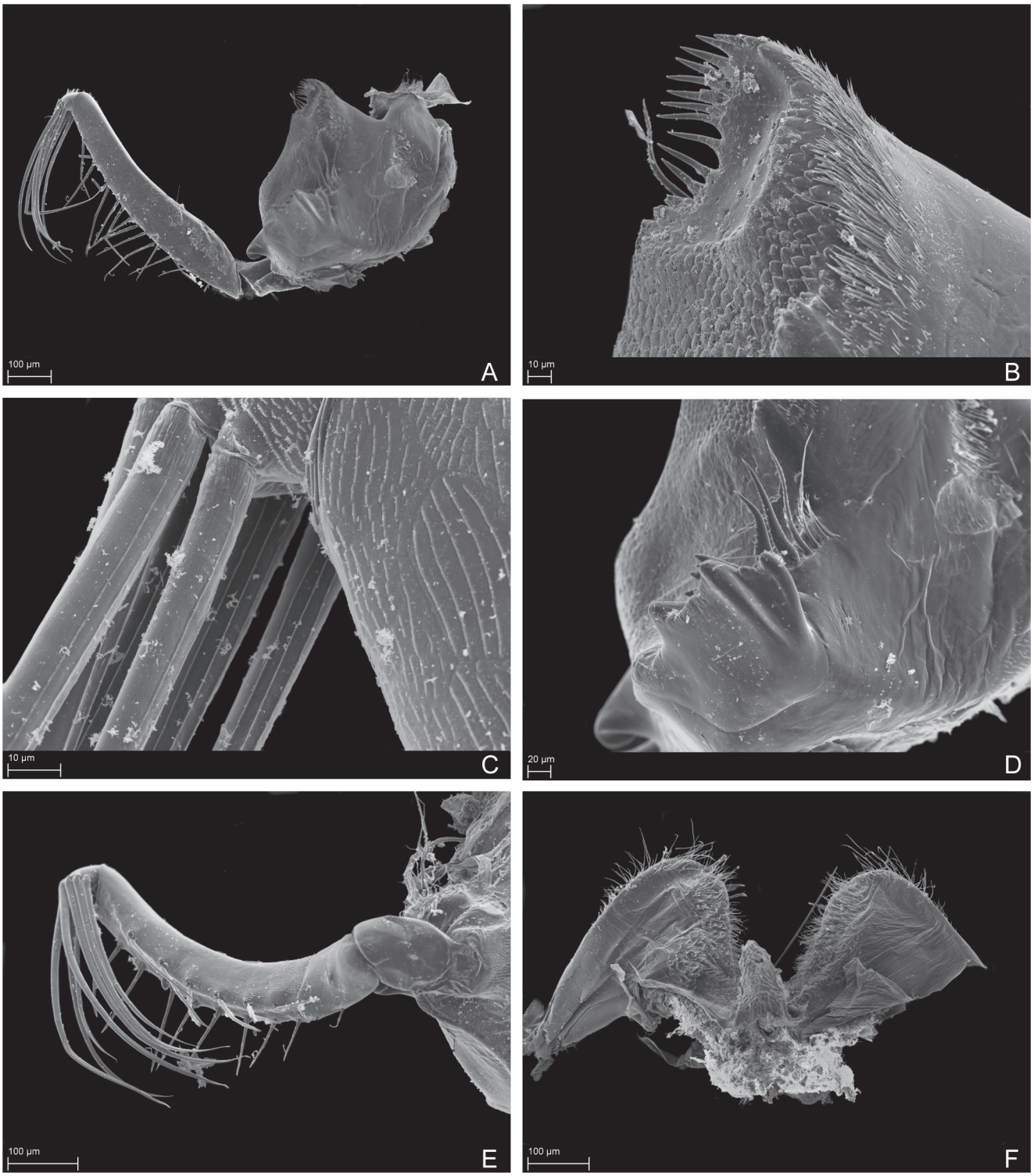


Figure 104 A–F. *Syrrhoe* cf. *affinis*. A) NIWA 69749, left mandible; B) NIWA 69749, molar (detail of A); C) NIWA 69749, apex of mandibular palp (detail of A); D) NIWA 69749, incisor and lacinia mobilis of left mandible (detail of A); E) NIWA 69749, mandibular palp of right mandible; F) NIWA 69749, lower lip.

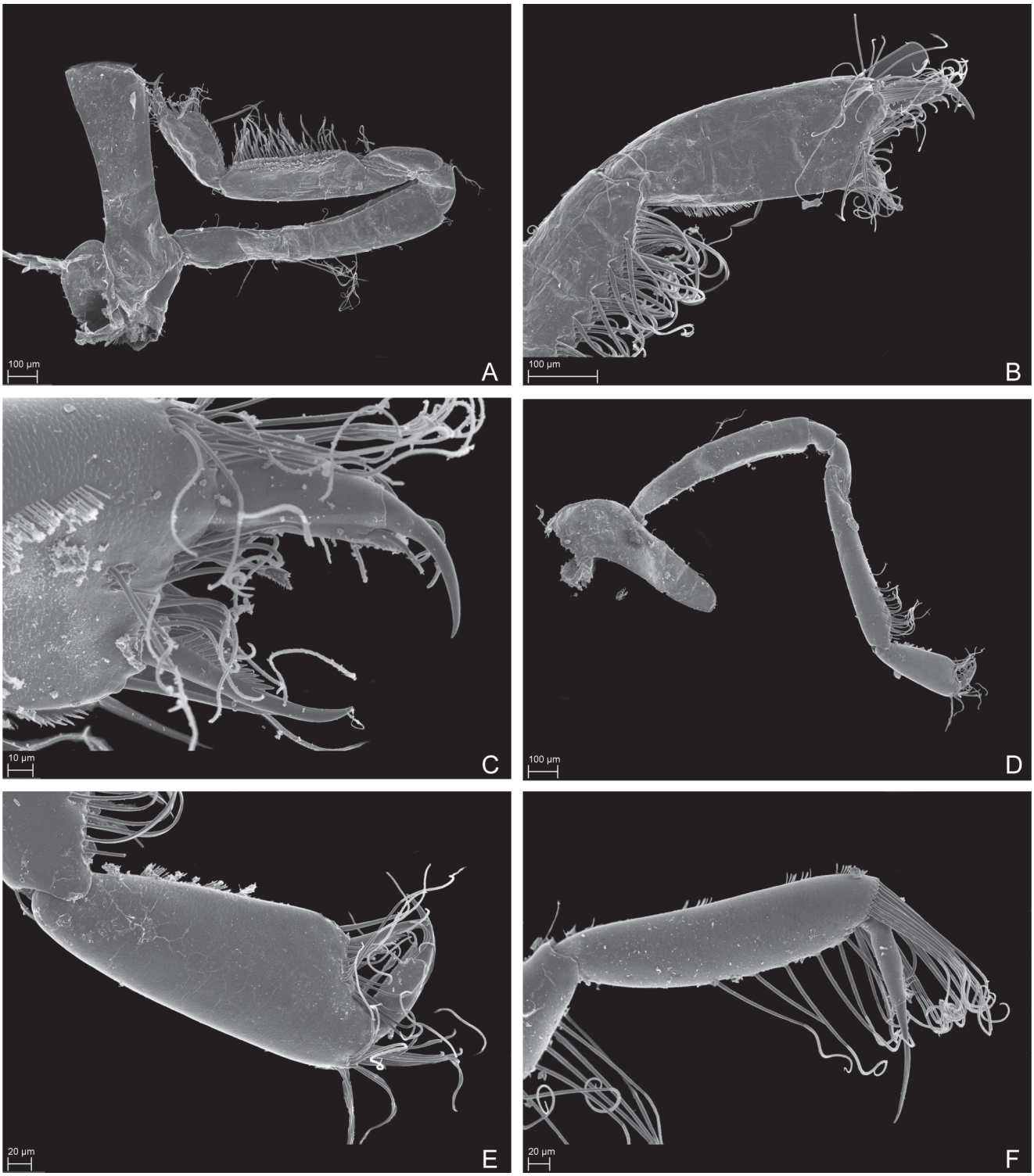


Figure 105 A–F. *Syrrhoe* cf. *affinis*. A) NIWA 69745, gnathopod 1; B) NIWA 69745, propodus and dactylus (detail of A); C) NIWA 69745, palm and dactylus of gnathopod 1 (detail of A); D) NIWA 69748, gnathopod 2; E) NIWA 69748, propodus and dactylus of gnathopod 2 (detail of D); F) NIWA 69749, propodus dactylus of pereopod 3.

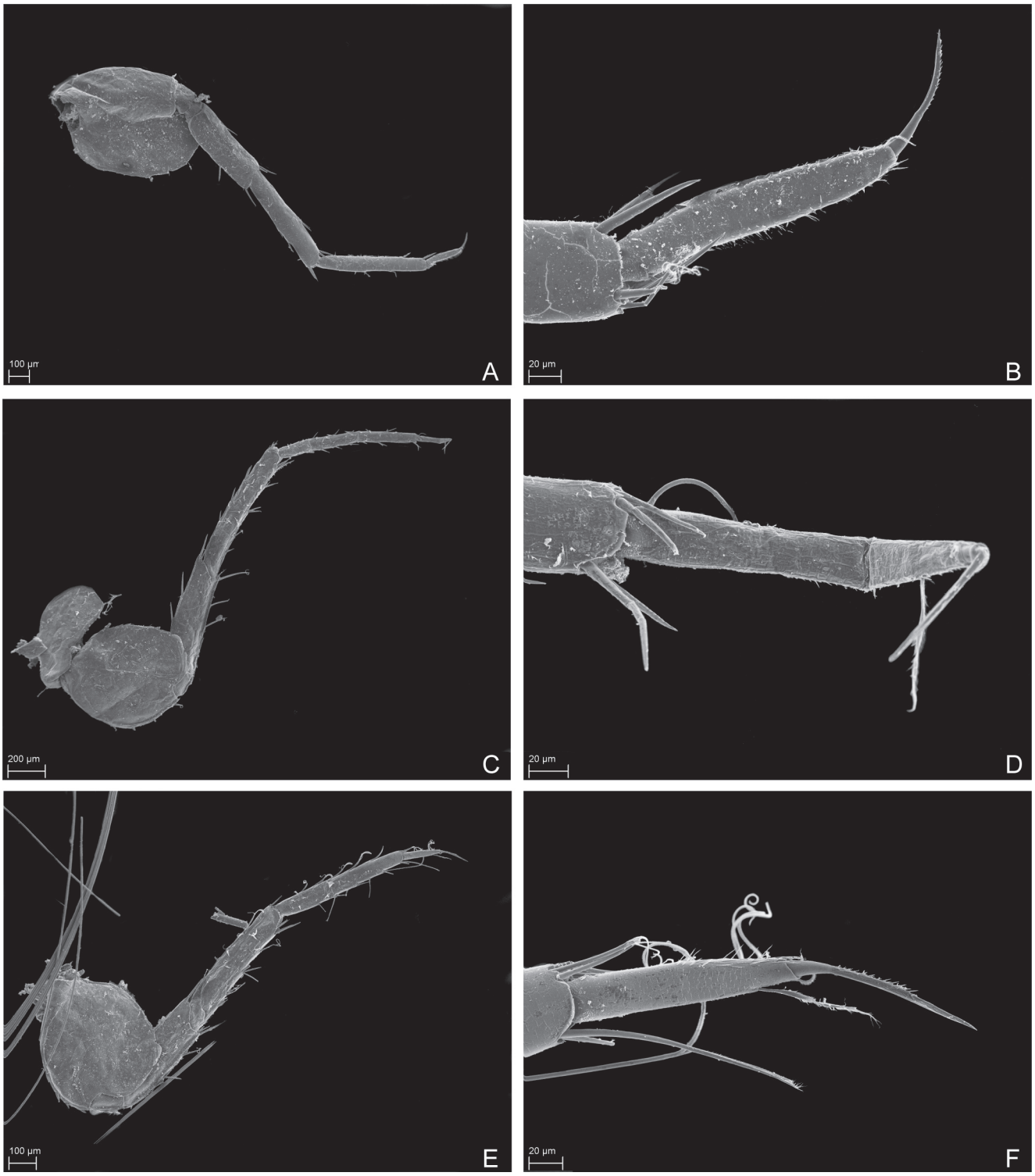


Figure 106 A–F. *Syrrhoe* cf. *affinis*. A) NIWA 69748, pereopod 7, coxa missing; B) NIWA 69748, dactylus of pereopod 7 (detail of A); C) NIWA 69748, pereopod 6; D) NIWA 69748, dactylus pereopod 6 (detail of C); E) NIWA 69748, pereopod 5, coxa missing; F) NIWA 69748, dactylus pereopod 5 (detail of E).

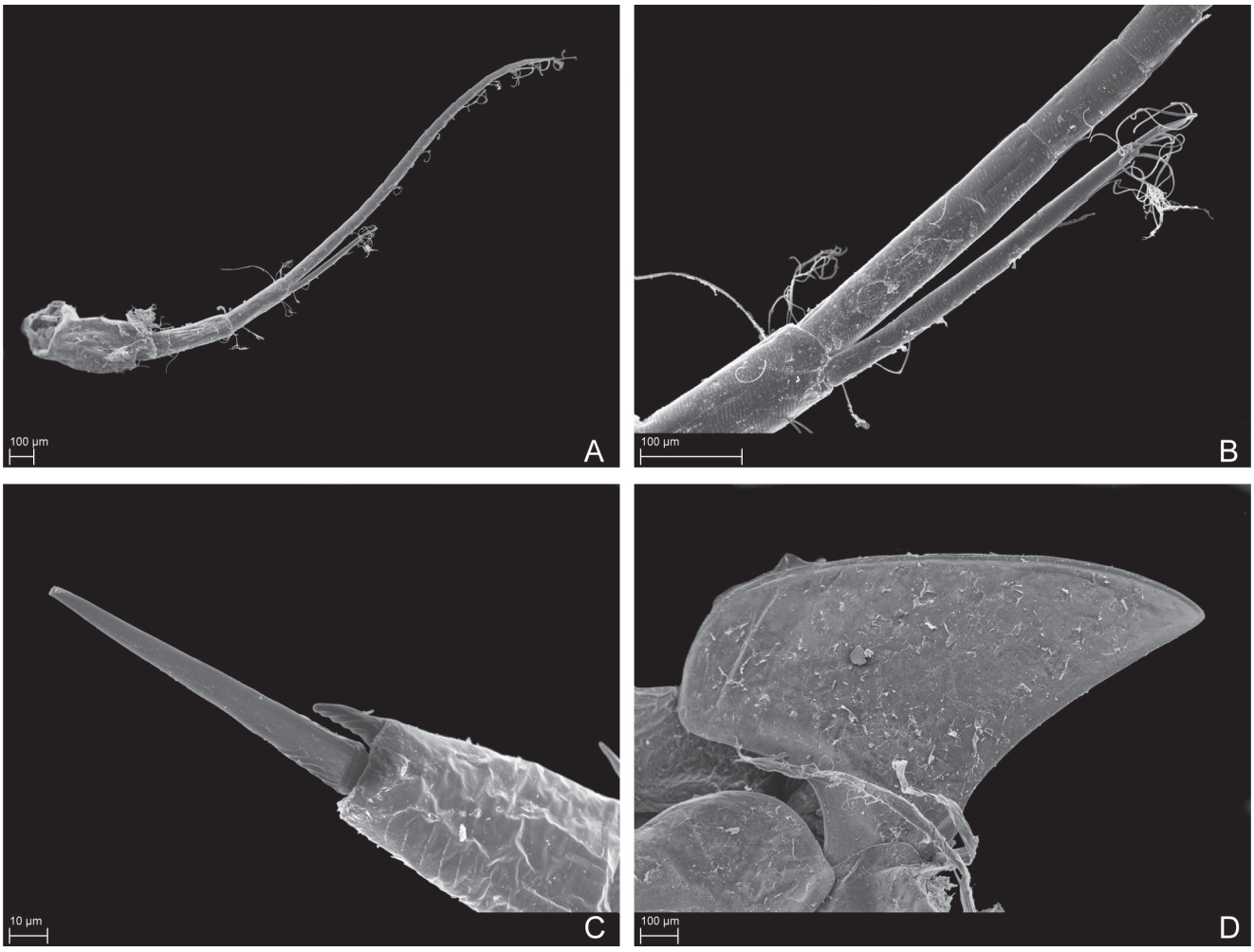


Figure 107 A–D. *Syrrhoe* cf. *affinis*. A) NIWA 69749, antenna 1; B) NIWA 69749, accessory flagellum of antenna 1; C) NIWA 69748, apex of ramus of uropod 2; D) NIWA 69749, coxa of pereopod 3.

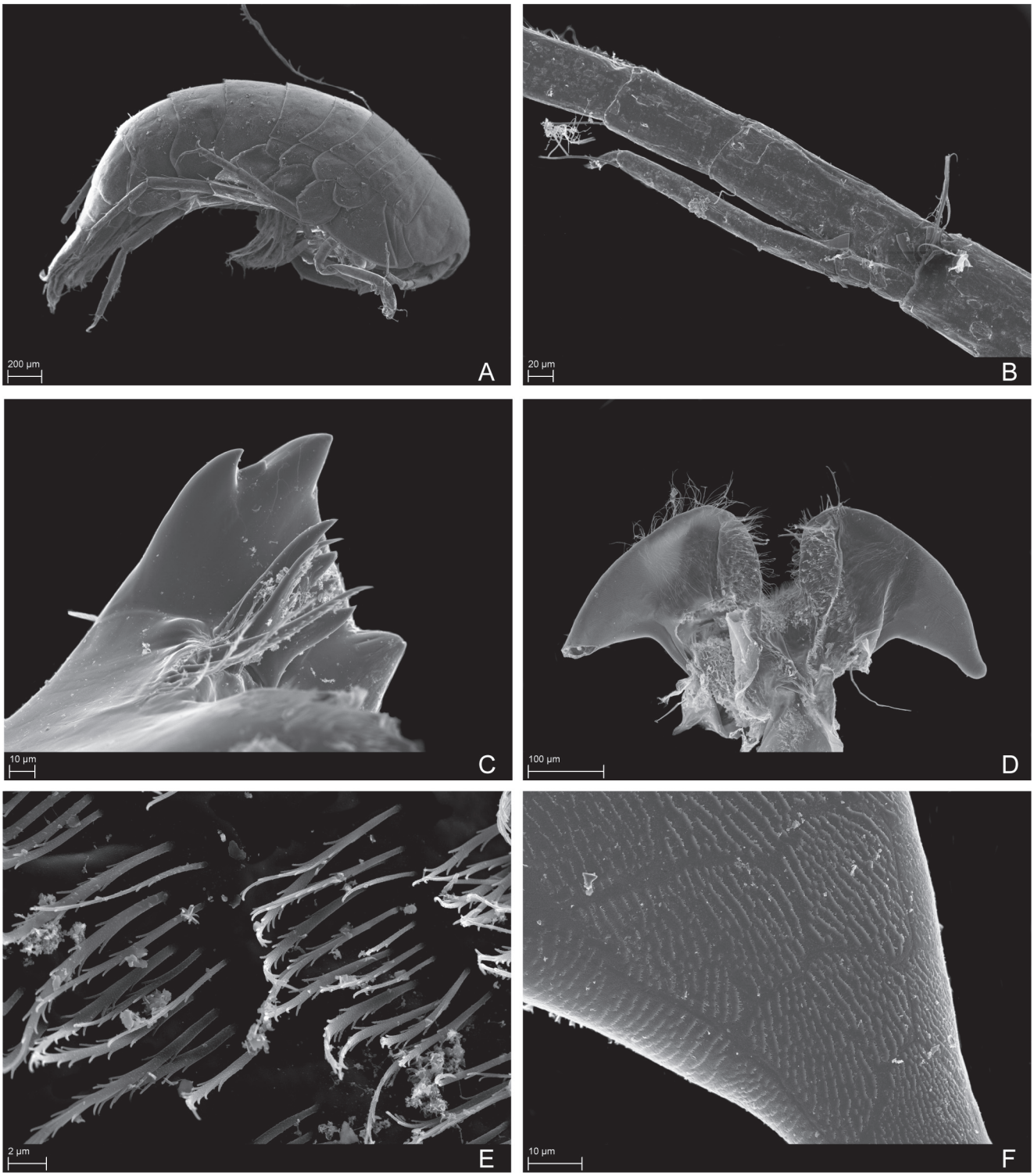


Figure 108 A–F. *Syrrhoe* cf. *affinis*. A) NIWA 69751, habitus; B) NIWA 69750, accessory flagellum of antenna 1; C) NIWA 69750, incisor, lacinia mobilis and accessory setal row of mandible; D) NIWA 69750, lower lip; E) NIWA 69750, surface setulation of lower lip (detail of D); F) NIWA 69750, surface of mandibular lobe of lower lip (detail of D).

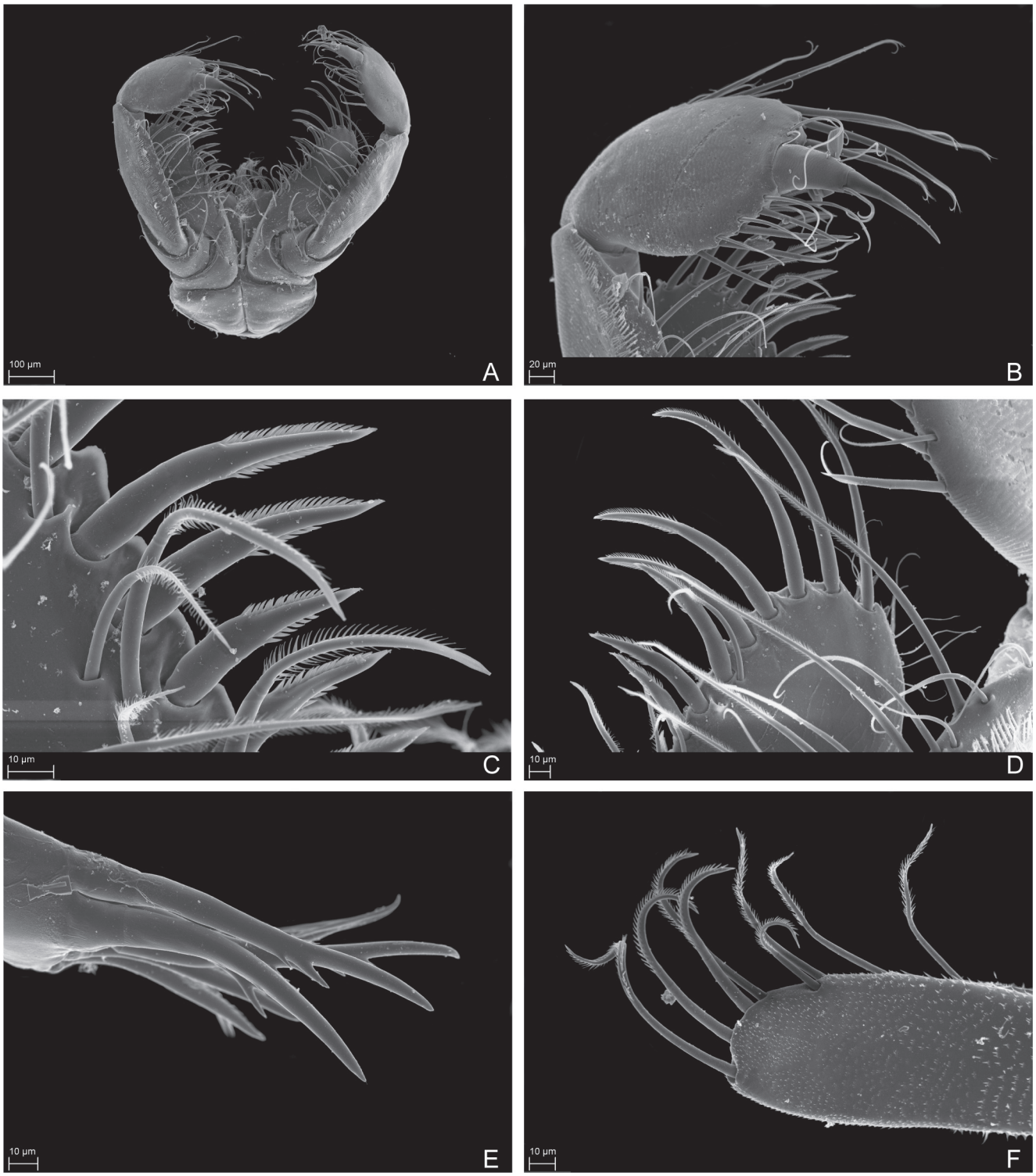


Figure 109 A–F. *Syrrhoe* cf. *affinis*. A) NIWA 69750, maxilliped; B) NIWA 69750, articles 3 and 4 of maxillipedal palp; C) NIWA 69750, setae on maxillipedal outer plate; D) NIWA 69750, setae on maxillipedal outer plate; E) NIWA 69750, outer plate of maxilla 1; F) NIWA 69750, apex of palp of maxilla 1.

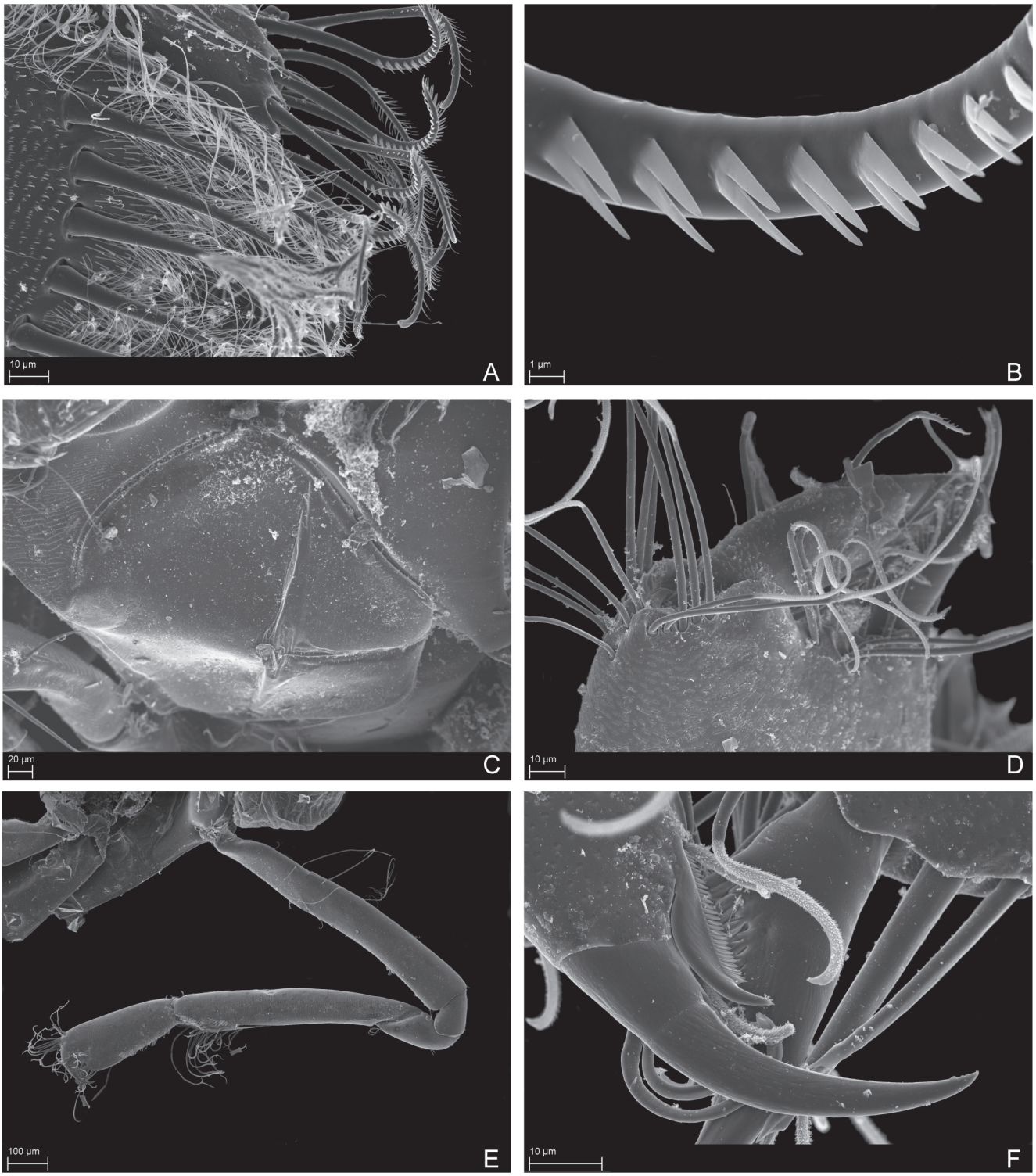


Figure 110 A–F. *Syrrhoe* cf. *affinis*. A) NIWA 69750, setae on apical margin of maxilla 2; B) NIWA 69750, fine structure of seta of maxilla 2 (detail of A); C) NIWA 69750, upper lip; D) NIWA 69750, palm of gnathopod 2; E) NIWA 69750, gnathopod 2; F) NIWA 69750, dactylus of gnathopod 2 (detail of E).

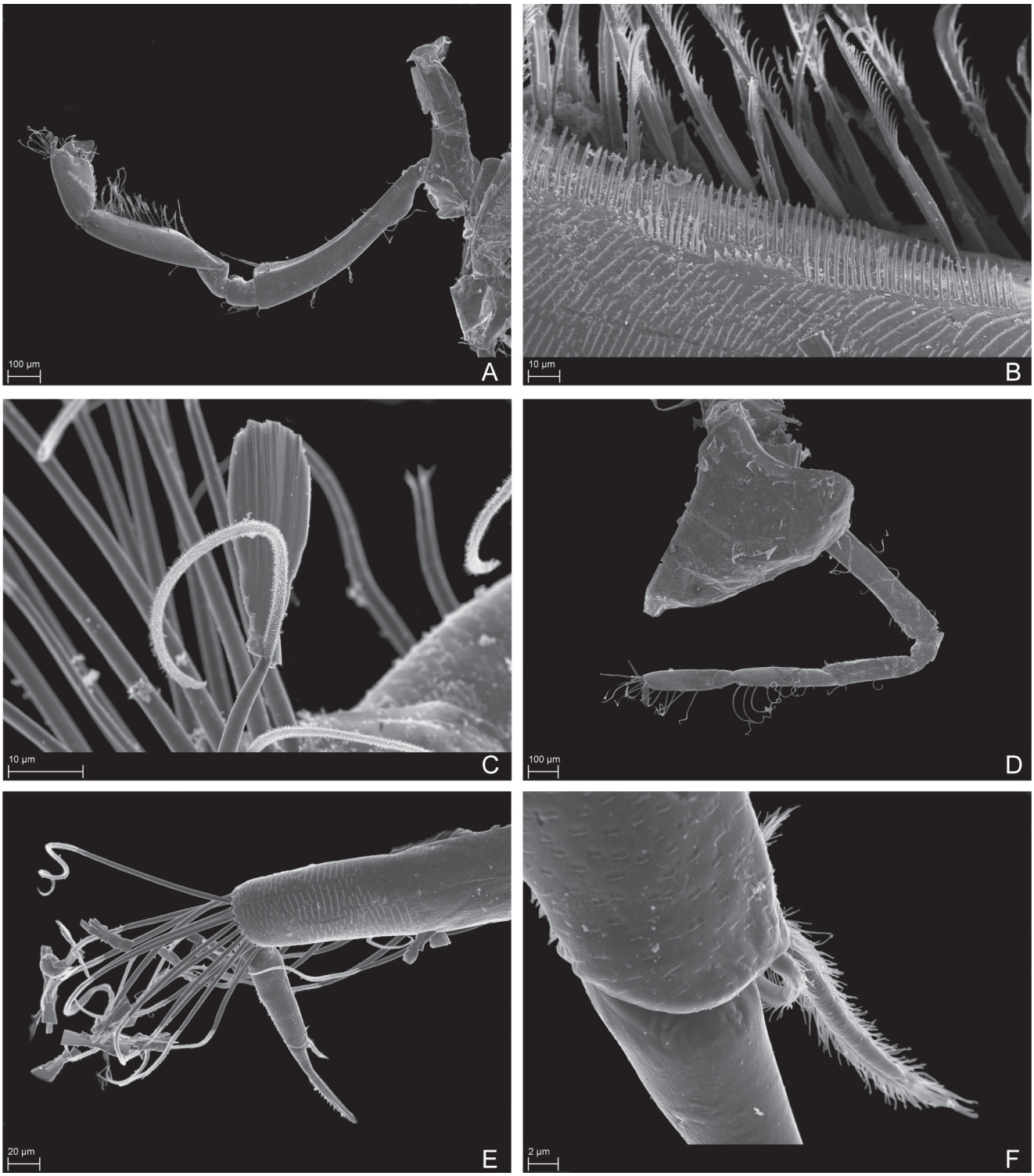


Figure 111 A–F. *Syrrhoe* cf. *affinis*. A) NIWA 69750, gnathopod 1; B) NIWA 69750, detail from propodus of gnathopod 1 (detail of A); C) NIWA 69750, setae of gnathopod 1 (detail of A); D) NIWA 69750, preopod 3; E) NIWA 69750, propodus, and dactylus of pereopod 3; F) NIWA 69750, setae at the basis of unguis of pereopod 3 dactylus (detail of E).

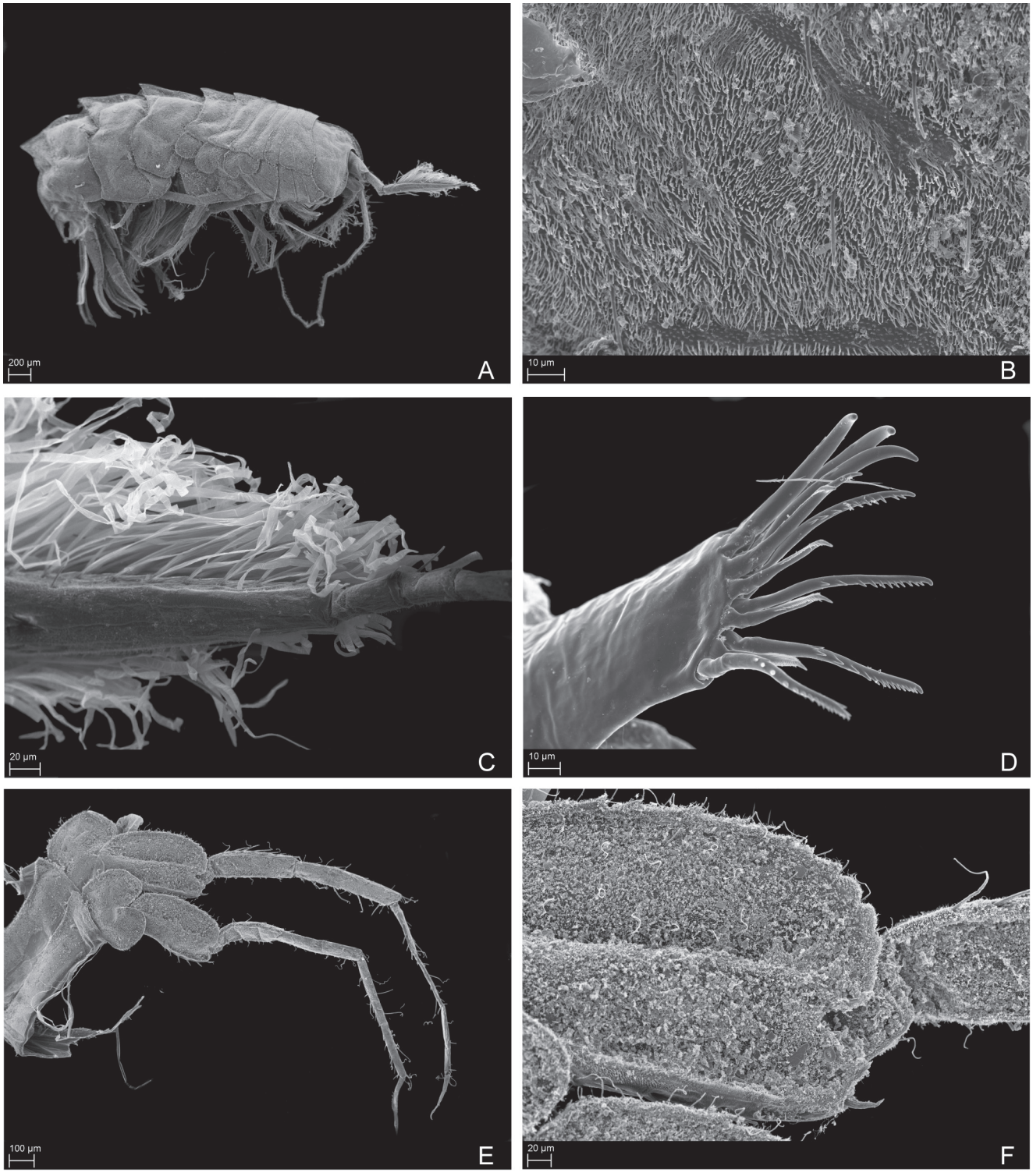


Figure 112 A–F. *Syrrhoites hannahae* n. sp., male. A) NIWA 69752, habitus; B) NIWA 69752, example of microtrich surface cover, here on pereopod coxa 4; C) NIWA 69752, setation on antenna 1 flagellar article 1; D) NIWA 69753, maxilla 1 outer plate; E) NIWA 69753, pereopods 5 and 6; F) NIWA 69753, basis of pereopod 6.

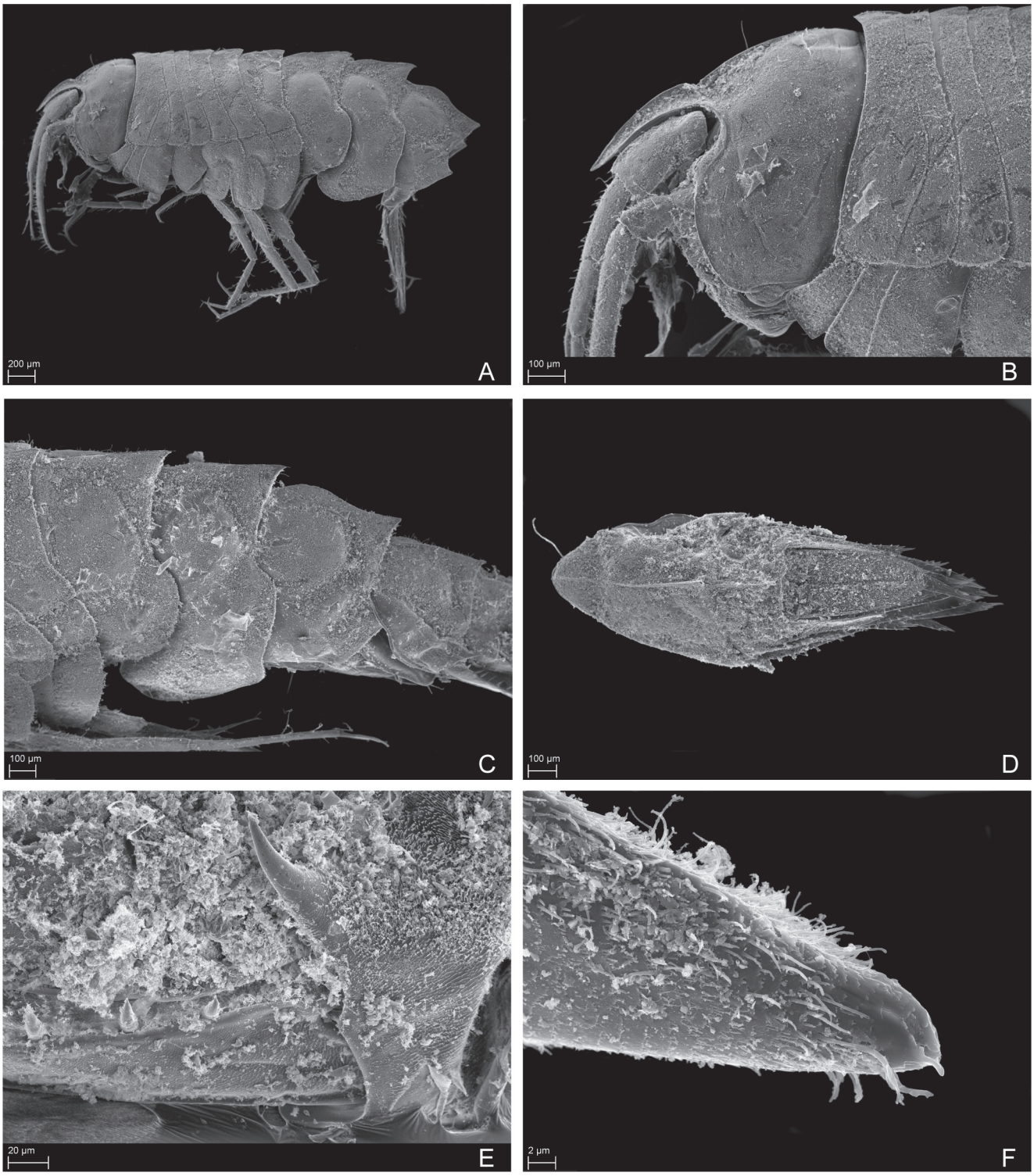


Figure 113 A–F. *Syrrhoites hannahae* n. sp., female. A) NIWA 69755, habitus, ursosome missing; B) NIWA 69755, head; C) NIWA 69756, pleonites 1–3, urosomite 1; D) NIWA 69755, dorsal view of urosome and telson; E) NIWA 69755, lateral spine at urosomite 1; F) NIWA 69754, tip of rostrum.

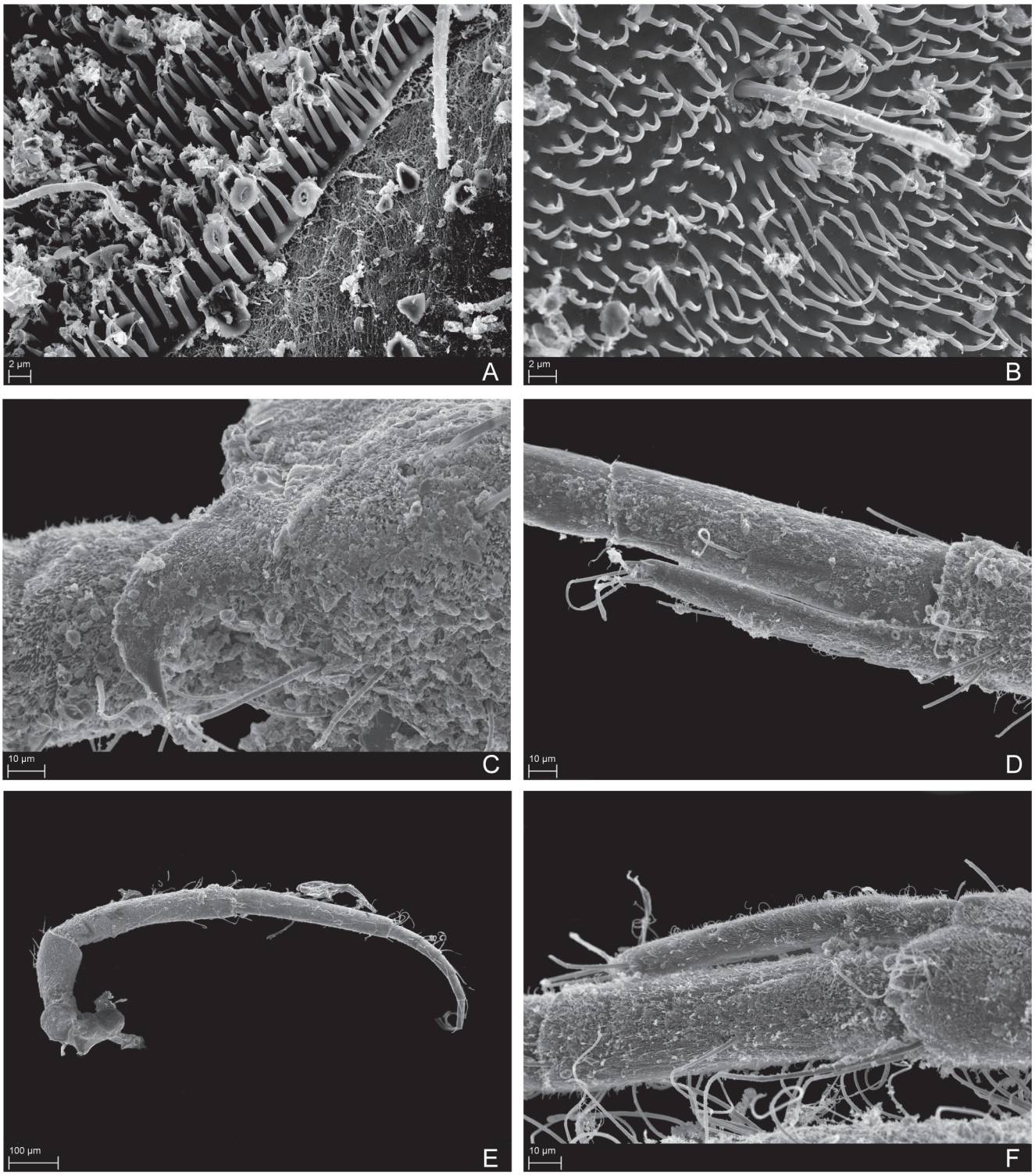


Figure 114 A–F. *Syrrhoites hannahae* n. sp., female. A) NIWA 69756, microtrich surface cover on pereonite 7; B) NIWA 69755, microtrich surface cover on pereonite 5; C) NIWA 69754, mediodistal hook-like process on first peduncular article of antenna 1; D) NIWA 69754, accessory flagellum of antenna 1; E) NIWA 69754, antenna 2; F) NIWA 69755, accessory flagellum of antenna 1.

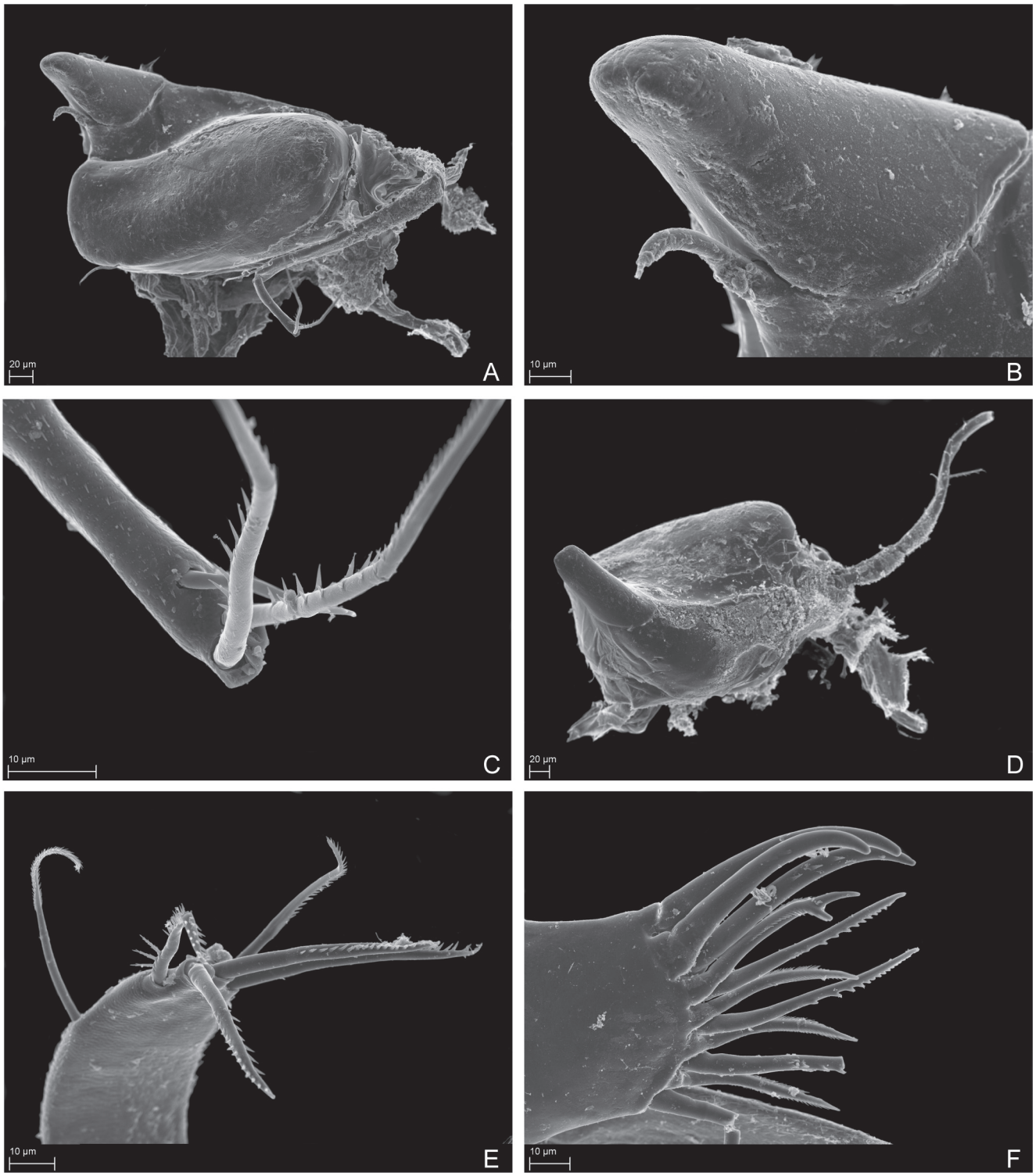


Figure 115 A–F. *Syrrhoites hannahae* n. sp., female. A) NIWA 69755, right mandible; B) NIWA 69755, incisor (detail of A); C) NIWA 69755, third article of mandibular palp; D) NIWA 69754, mandible; E) NIWA 69754, apex of palp of maxilla 1; F) NIWA 69754, outer plate of maxilla 1.

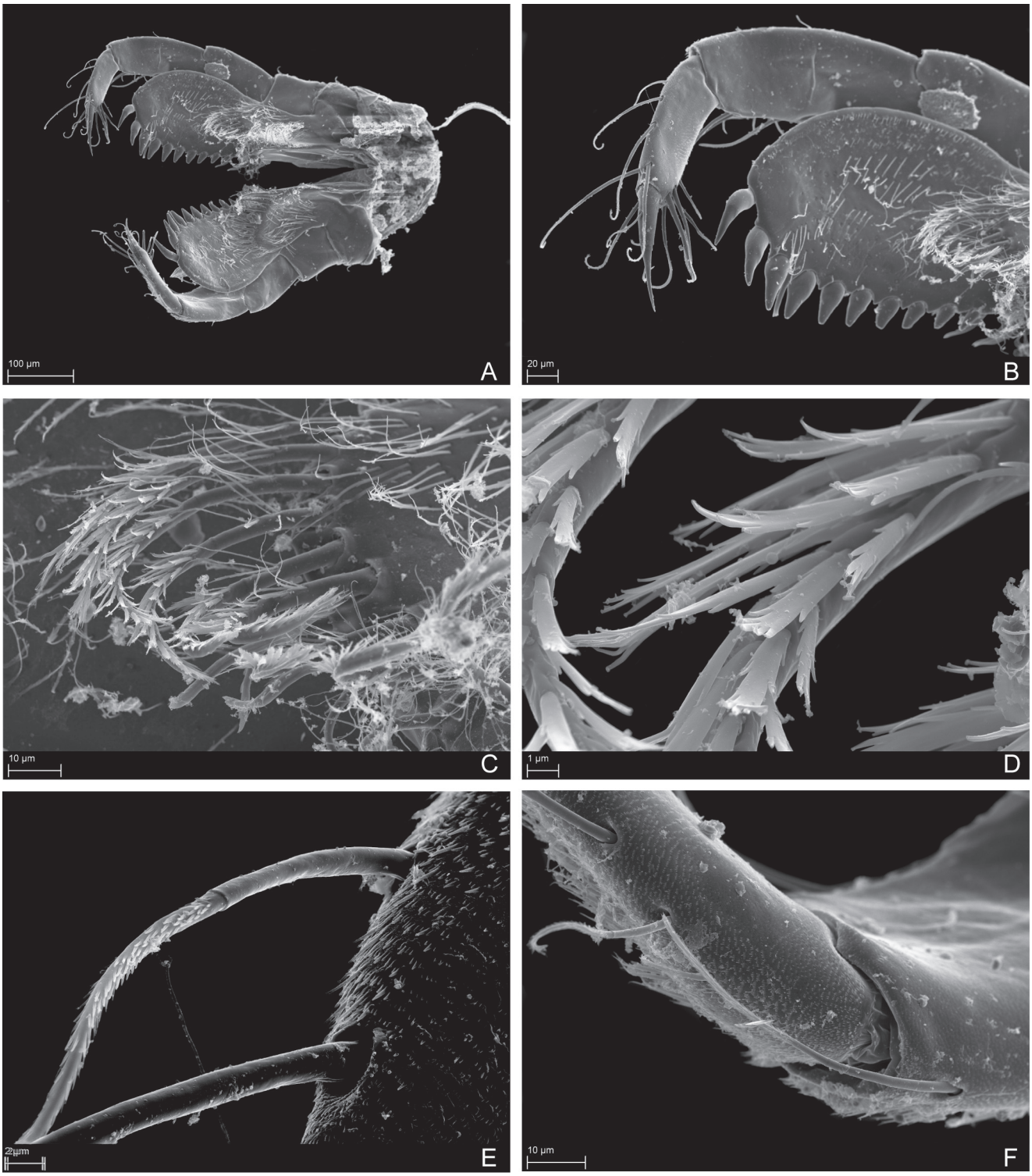


Figure 116 A–F. *Syrrhoites hannahae* n. sp., female. A) NIWA 69755, maxilliped, anterior face; B) NIWA 69755, maxillipedal palp and outer plate; C) NIWA 69755, row of setae on inner face of outer plate of maxilliped; D) NIWA 69755, fine structure of setae (detail of C); E) NIWA 69755, setae on fourth article of maxillipedal palp; F) NIWA 69755, anterior face of maxillipedal palp, the margin showing the lateral side bearing dense cover of small setae.

Figure 117 A–F. *Syrrhoites hannahae* n. sp., female. A) NIWA 69754, half of maxilliped, posterior face; B) NIWA 69755, setae on posterior face of maxillipedal basis; C) NIWA 69754, apex of maxillipedal palp; D) NIWA 69754, seta on posterior face of article 3 of maxillipedal palp (detail of C); E) NIWA 69755, gnathopod 1; F) NIWA 69755, propodus and dactylus of gnathopod 1 (detail of E).

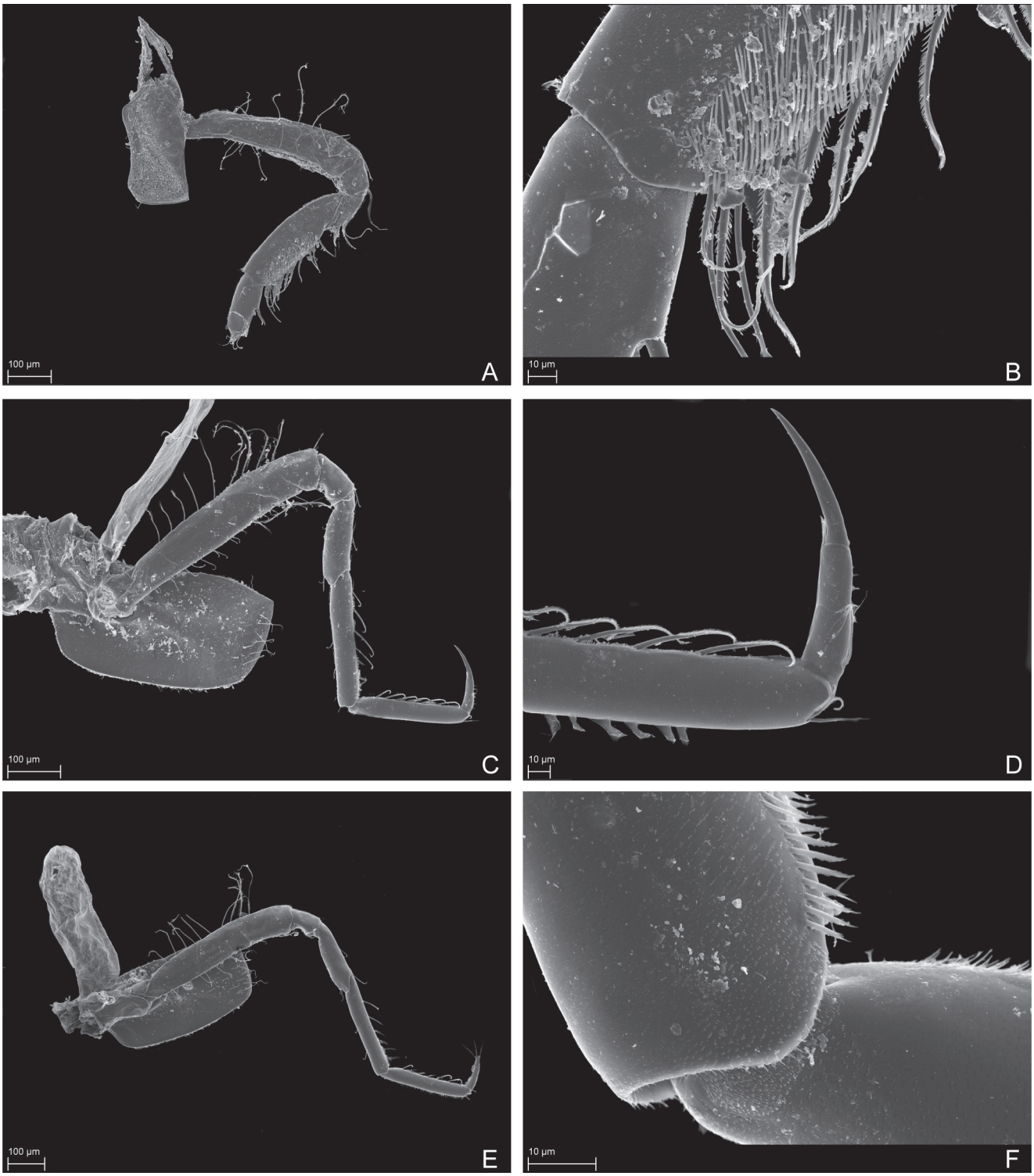


Figure 118 A–F. *Syrrhoites hannahae* n. sp., female. A) NIWA 69754, gnathopod 2; B) NIWA 69754, gnathopod 2, posterodistal region of carpus (detail of A); C) NIWA 69754, pereopod 3; D) NIWA 69754, dactylus of pereopod 3 (detail of C); E) NIWA 69755, pereopod 3; F) NIWA 69755, carpus-propodus joint (detail of E).

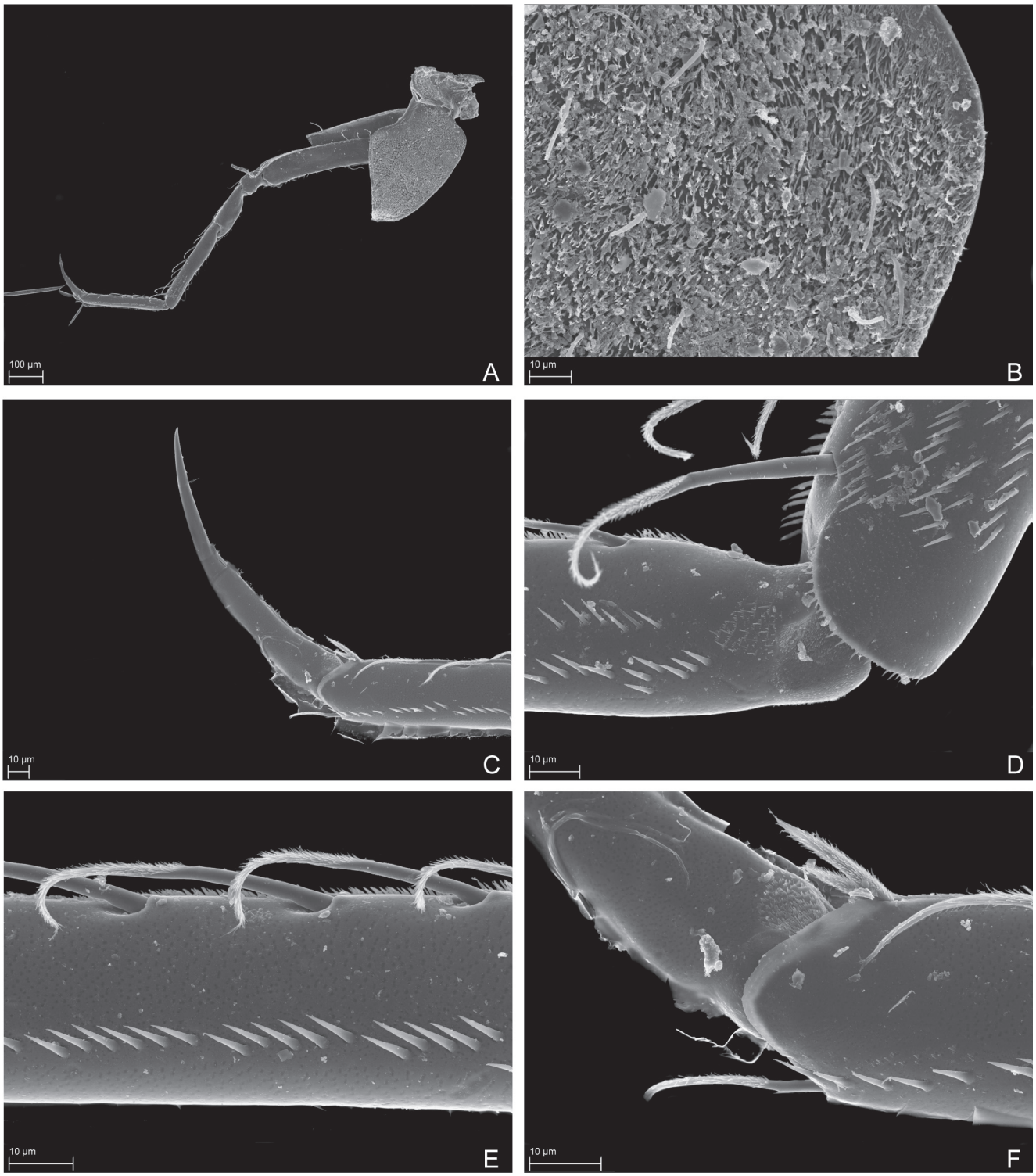


Figure 119 A–F. *Syrrhoites hannahae* n. sp., female. A) NIWA 69754, pereopod 4; B) NIWA 69754, surface microtrich cover and small setae on pereopod 4 coxa; C) NIWA 69754, dactylus of pereopod 4; D) NIWA 69754, carpus-propodus joint; E) NIWA 69754, propodus detail of pereopod 4; F) NIWA 69754, propodus-dactylus joint of pereopod 4.

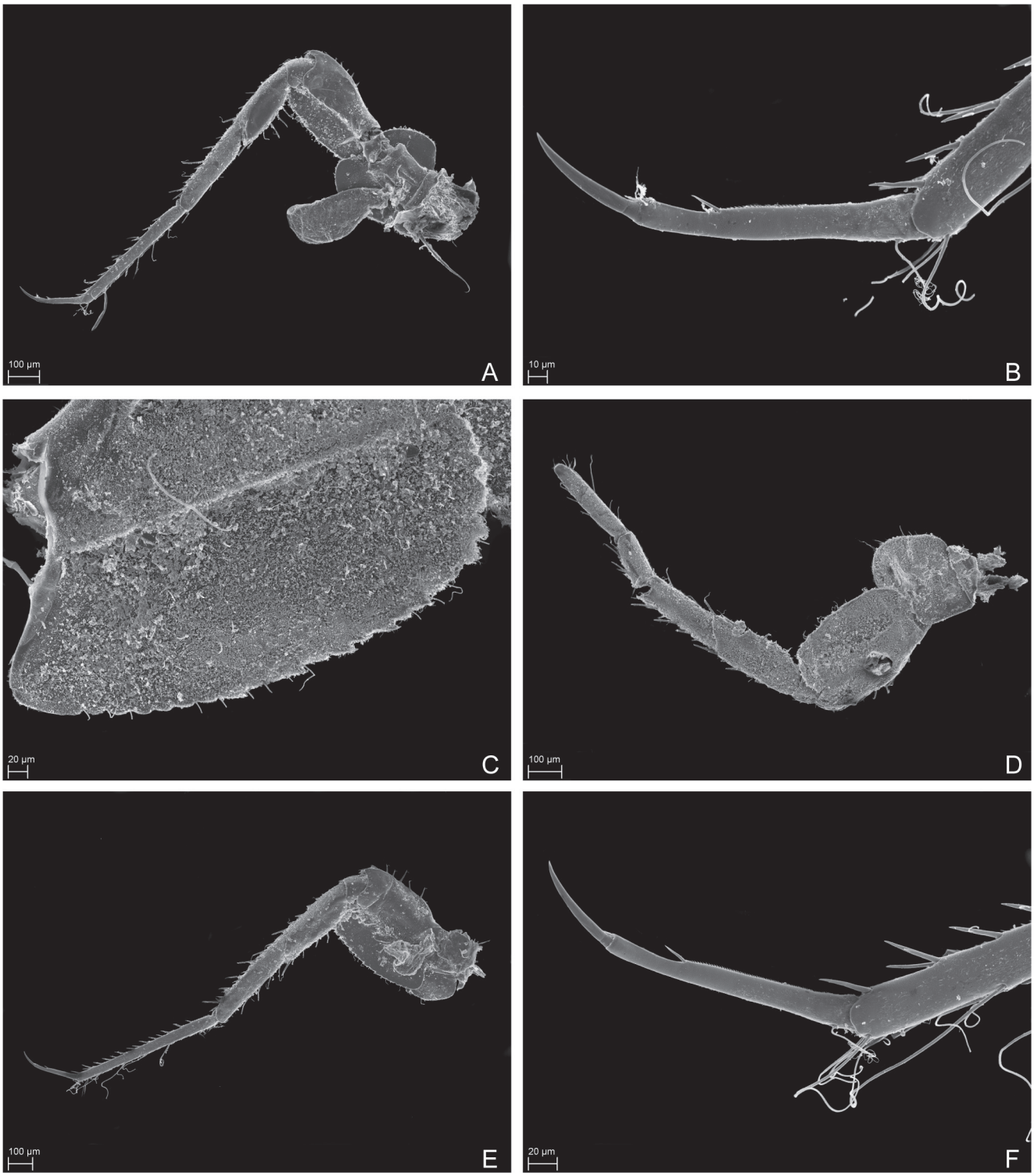


Figure 120 A–F. *Syrrhoites hannahae* n. sp., female. A) NIWA 69754, pereopod 5; B) NIWA 69754, dactylus of pereopod 5 (detail of A); C) NIWA 69755, basis of pereopod 5; D) NIWA 69754, pereopod 6; E) NIWA 69754, pereopod 7; F) NIWA 69754, dactylus of pereopod 7 (detail of E).

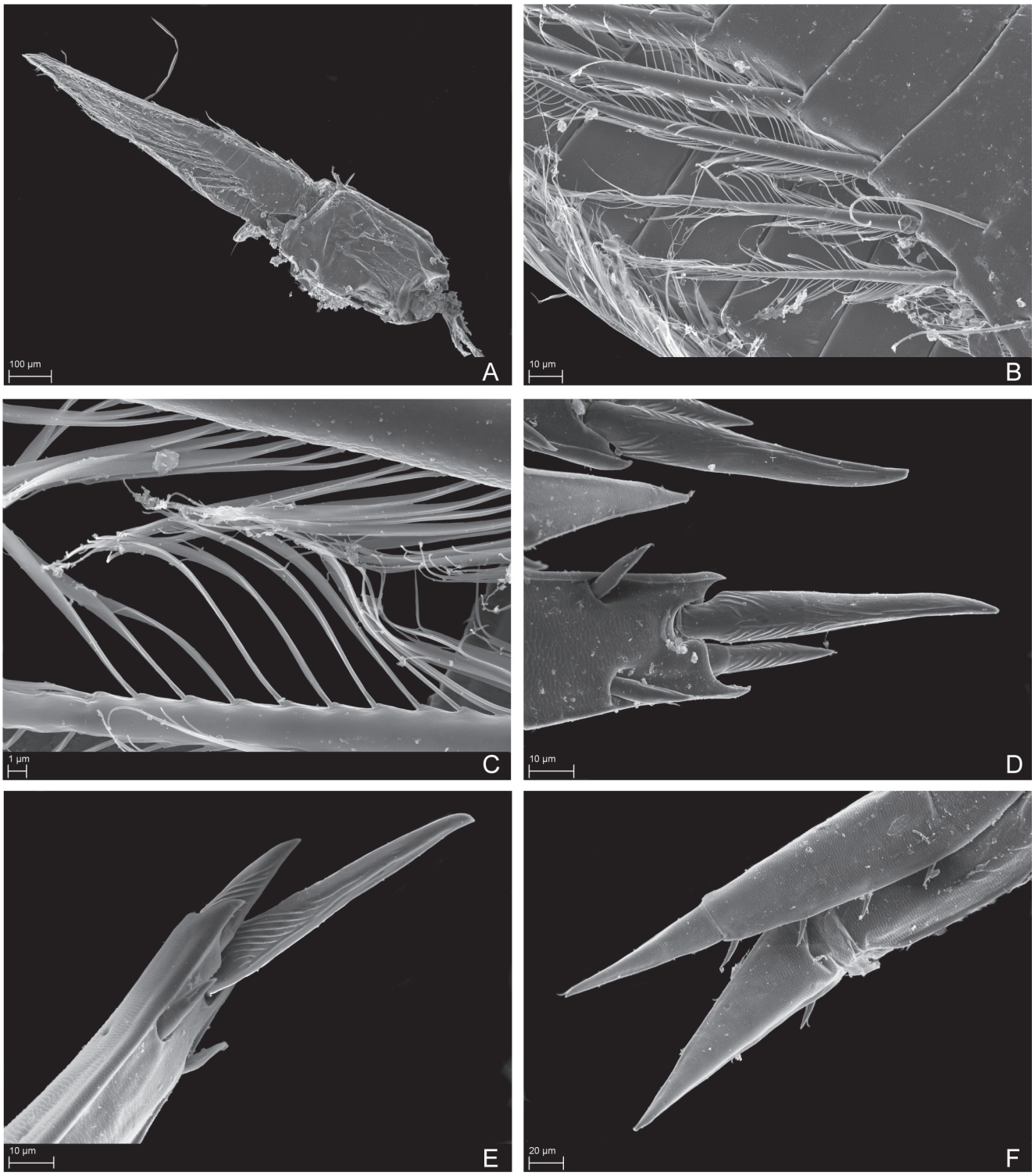


Figure 121 A–F. *Syrrhoites hannahae* n. sp., female. A) NIWA 69754, pleopod 2; B) setation of rami (detail of A); C) fine structure of setae of pleopod rami (detail of B); D) NIWA 69755, apex of uropod 2 outer ramus; E) NIWA 69754, lateral view of outer ramus of uropod 2; F) NIWA 69754, uropod 3.

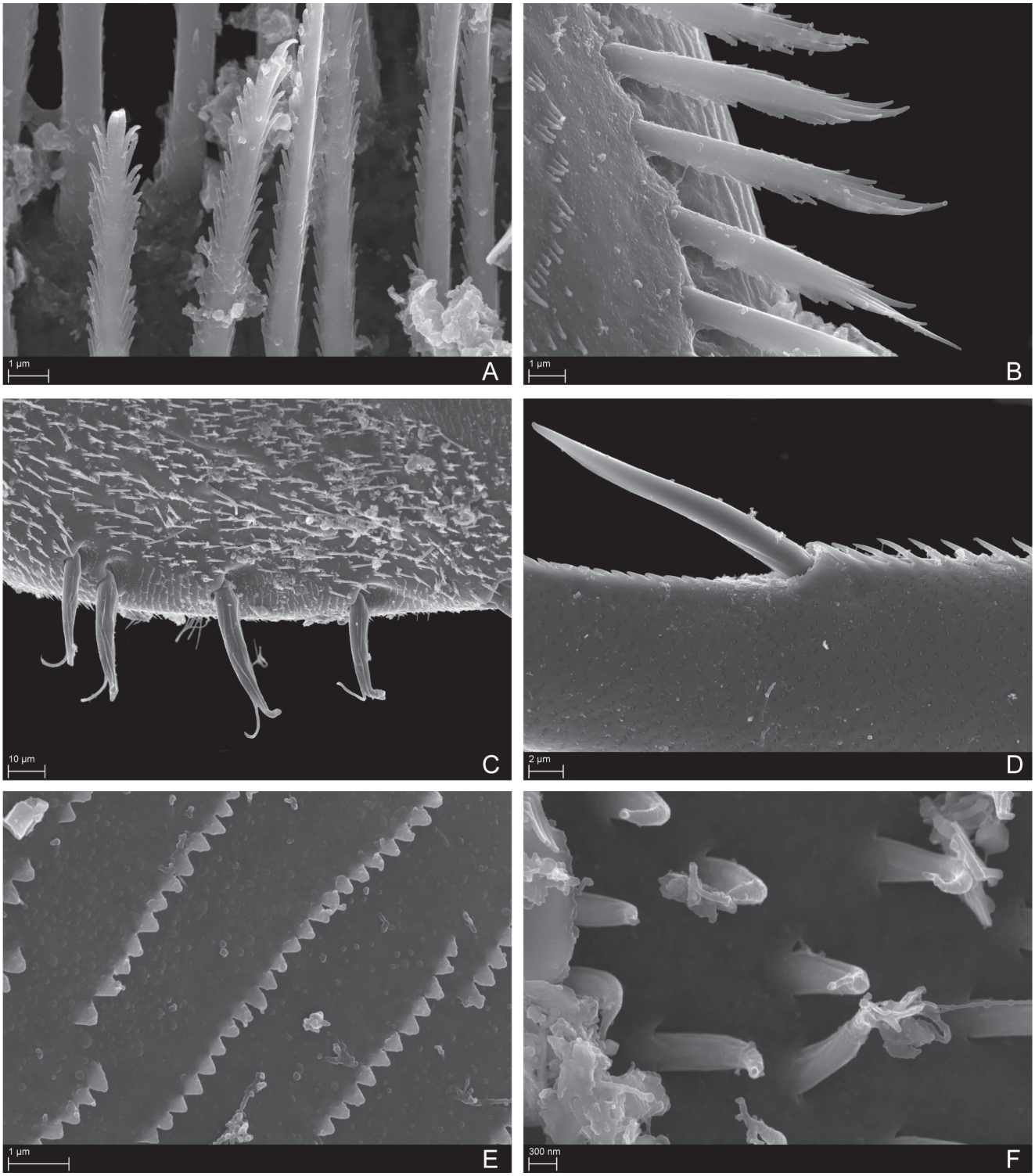


Figure 122 A–F. Examples of setae of various taxa. A) NIWA 69754, on carpus of gnathopod 2; B) NIWA 69755, on carpus of pereopod 3; C) NIWA 69755, on the anterior margin basis of pereopod 6; D) NIWA 69754, on dactylus of pereopod 7; E) NIWA 69754, on peduncle of uropod 3; F) NIWA 69755, on telson.

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TAXONOMIC INDEX

Principal taxonomic account is in bold font; species illustrations in bold italic.