

Oahutanais makalii, a new genus and species of colletteid tanaidacean (Crustacea, Peracarida) from shelf-waters off Hawaii, with a taxonomic key

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Abstract

Received 3 July 2015
Accepted 5 October 2015
Published 8 January 2016

Academic editor:
Michael Ohl

Key Words

Tanaidacea
Colletteidae
Oahutanais makalii
new species
Pacific Ocean
taxonomy

A new colletteid tanaidacean, *Oahutanais makalii* **gen. et sp. n.**, is described from Hawaiian coastal waters at depths ranging from 19 to 102 m. The new taxon is tentatively designated as a new genus, although it displays many features in common with the genus *Leptognathiella*. The new species is distinguished from the morphologically similar tanaidomorphans by having (1) a small body, less than 1.0 mm (reproductively active specimens), (2) a maxillule with two bifid spiniform setae; (3) a maxilliped palp article-2 with geniculate, finely pectinate spiniform seta on sub-distal inner margin, (4) a cheliped attachment ventrally via sclerite not connected to the carapace, and (5) the pereopods 1 to 6 with ischial seta shorter than the merus. A key to the five extant genera of Colletteidae in the North Pacific Ocean is presented herein.

Resumen

Un nuevo tanaidáceo, *Oahutanais makalii* **gen. et sp. n.**, es descrito de las aguas costeras Hawaianas a un rango de profundidad de 19 a 102. La nueva especie es tentativamente designada como un nuevo género, aunque presenta muchas características en común con el género *Leptognathiella*. La nueva especie puede ser distinguida de especies morfológicamente similares por tener (1) cuerpo pequeño, menor a un 1.0 mm (especímenes reproductivamente activos), (2) maxílula con dos setas espiniformes bifidas, (3) margen interno subdistal del segundo artejo del palpo del maxillípodo con una seta espiniforme doblada y finamente pectinada, (4) quelípodo adjunto ventralmente por medio del esclerito no conectado al caparazón, and (5) isquio de los pereiópodos 1 al 6 con una seta más corta que el mero. Una clave es presentada para separar los cinco géneros de la familia Colletteidae presentes en el norte del océano Pacífico.

Introduction

The Tanaidacean fauna from the Hawaiian Islands has received little attention so far. Recently, David and Heard (2015) described a new metapseudid, *Cryptapseudes lerory* David & Heard, 2015 from Niihau Island. They

presented a detailed list on the current status of twelve species of tanaidaceans previously reported from the Hawaiian archipelago. A small, blind undescribed genus and species of tanaidacean belonging to the family Colletteidae Larsen & Wilson, 2002 was repeatedly collected throughout two decades of annual-US-EPA-man-

dated-benthic-community-monitoring at four Honolulu wastewater treatment plant outfalls (Fig. 1).

The family Colletteidae was erected during a phylogenetic revision of the superfamily Paratanaoidea Lang, 1949 to accommodate genera not assigned to any family, most being anarthurids (*sensu* Guțu and Sieg 1999) and leptognathiids: nevertheless, the systematic support for creating this family was admittedly weak (Larsen and Wilson 2002: 215) and incomplete (Larsen 2005; Bird and Larsen 2009). After thirteen years, the family currently holds 15 genera, which have been reported from the North and South Pacific Ocean, North and South Atlantic Ocean, Gulf of Mexico, Indian Ocean, Arctic Ocean and Antarctic Ocean (Table 1). The description of this new Hawaiian genus and species as well as an identification key to the five extant genera of Colletteidae in the North Pacific Ocean is presented here.

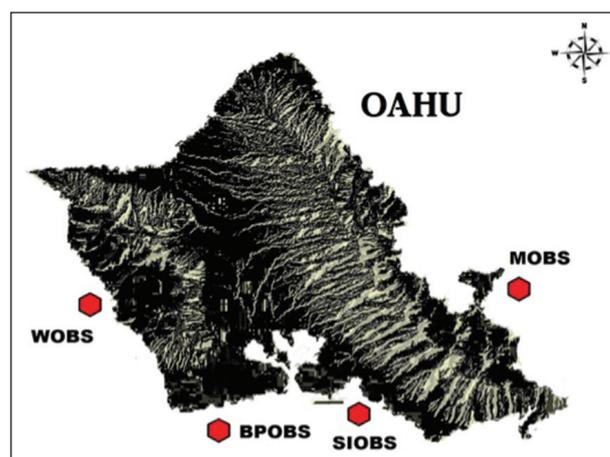


Figure 1. Map of study area, indicating the sampling stations where *Oahutanais makalii* gen. et sp. n., were found.

Table 1. Listing of the 16 currently recognized genera within the family Colletteidae, including information on distribution and depth range. NW = northwest; NE = northeast; SW = southwest; SE = southeast; and GoM = Gulf of Mexico.

Genus	Geographical area	Depth range (m)
<i>Bascestus</i> Błażewicz-Paszkowycz & Bamber, 2012	SW Pacific (Tasmania Sea)	37–49
<i>Caudalonga</i> Larsen, 2005	NW Atlantic (GoM)	625
<i>Cetiopyge</i> Larsen & Heard, 2002	NW Atlantic (GoM)	213–2060
<i>Cheliasetosatanais</i> Larsen & Araújo-Silva, 2014	North Equatorial Pacific	4259–4261
<i>Collettea</i> Lang, 1973	NW and North Equatorial Pacific; NE Atlantic and GoM; SW Indian Ocean; Arctic and Antarctic Ocean	291–6142
<i>Filitanais</i> Kudinova-Pasternak, 1973	NW and NE Pacific; NW and SE Atlantic, and GoM; SE Indian Ocean; Arctic and Antarctic Ocean	1070–6109
<i>Haplocope</i> Sars, 1882	NE Atlantic	22–1632
<i>Isopodidus</i> Larsen & Heard, 2002	NW Atlantic (GoM)	860–983
<i>Leptognathiella</i> Hansen, 1913	NE Atlantic	213–4822
<i>Leptognathiopsis</i> Holdich & Bird, 1986	NE Atlantic	22–5622
<i>Macrinella</i> Lang, 1971	NE Atlantic	1870
<i>Nematotanais</i> Bird & Holdich, 1985	NE Atlantic	1378–1510
<i>Nippognathiopsis</i> Błażewicz-Paszkowycz, Bamber & Józwiak, 2013	NW Pacific (Japan)	517–521
<i>Oahutanais</i> gen. n.	North Central Pacific (Hawaii)	19–102
<i>Pseudoleptognathia</i> Sieg, 1986	Arctic Ocean	70–106
<i>Subulella</i> Holdich & Bird, 1986	Atlantic Ocean	12–2610

Materials and methods

Bulk sediment collections were made by divers or with benthic grabs, depending upon depth, sieved through 0.5 mm screens and preserved in 10% buffered formalin.

Specimens were dissected under an Olympus ZS-16 stereomicroscope. Appendages were mounted on glass slides in glycerine and observed with an Olympus BX41 microscope, and drawings were made with a camera Lucida. Additional material was examined under the Hitachi S-4800 Scanning Electron Microscope (SEM) at the Pacific Biosciences Research Center (PBRC) Biological

Electron Microscope Facility (BEMF). Illustrations were prepared with Adobe Illustrator CS6 Extended.

Type material has been deposited in the National Museum of Natural History, Smithsonian Institution, Washington DC, (USNM), Gulf Coast Research Laboratory Museum, Ocean Springs, Mississippi MS, (GCRL), and the Bernice Pauahi Bishop Museum (BPBM), Honolulu Hawaii. All measurements are in millimetres (mm). Total body length (TL) is measured from the tip of the rostrum to the end or tip of the telson. Terminology used in this description follows that of Larsen (2003). In our description the total length of the dactylus includes the unguis.

Systematics

Order Tanaidacea Dana, 1849

Suborder Tanaidomorpha Sieg, 1980

Superfamily Paratanaoidea Lang, 1949

Family Colletteidae Larsen & Wilson, 2002

Oahutanais gen. n.

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Generic diagnosis. *Female*: Small, 0.8–0.9 mm, slender body, parallel-sided. Carapace extending laterally to cover (dorsally) the cheliped attachments. Carapace not connected with the cheliped sclerites. Pereonites wider than long. Antennule with four articles and minute terminal segment, shorter than carapace, article-2 with dorsal symmetric projection overlapping basal part of article-3, terminal segment minute and covered by article-4 (only visible with scanning electron microscope image). Antenna with six articles. Labium without distolateral spines. Maxillule with seven distal spiniform setae (two bifid); maxillipedal palp article-2 with geniculate, finely-pectinate spiniform seta on distal inner margin (serrations visible at magnification 100×). Cheliped attached via sclerite just anterior to the posterior margin of the cephalothorax, very close to the midventral line. Pereopods 1 to 6 attached ventrally. Pereopods 1–3 relatively slender; ischial seta shorter than merus. Pereopods 4–6 not stouter than pereopods 1–3; ischial setae shorter than merus. Pleopods absent in females. Uropods longer than pleotelson; basal article shorter than pleotelson, without distal apophyses; exopod uni-articulated, slightly longer than endopod article-1.

Male unknown.

Type species. *Oahutanais makalii* sp. n.

Etymology. Named after “O’ahu Island”, where the material used in this study was collected, plus suffix - tanaid.

Gender. Masculine.

Distribution. Hawaii Islands at depths ranging from 19 to 102 meters.

Remarks. The family Colletteidae has been considered as polyphyletic (Larsen and Wilson 2002; Błażewicz-Paszkowycz and Poore 2008; Błażewicz-Paszkowycz et al. 2013) and it is currently composed of 15 genera (WoRMS); unfortunately, most of the genera included within this diverse family need revision (e.g. *Leptognathiella* Hansen, 1913 and *Filitanais* Kudinova-Pasternak, 1973). The females of *Oahutanais* gen. n. can be identified by having a small body (less than 1 mm in length of reproductively active specimens), cheliped attached just anterior to the posterior margin

of the cephalothorax, very close to the midventral line, not in contact with carapace lateral margin, and pereopods 1 to 6 attached ventrally. *Oahutanais* gen. n. appears to be most closely related to the genera, *Leptognathiella* Bird and Holdich, 1984 from the Atlantic or Gulf of México (Larsen 2005; Larsen et al. 2006), *Leptognathiopsis* Holdich & Bird, 1986 from the North Atlantic (Holdich and Bird 1986), and several species of *Leptognathia* G.O. Sars, 1882 *sensu stricto* (see Larsen and Shimomura 2007: 12) in having pereonites wider than long, pointed molars, females without pleopods (only in some species of *Leptognathiella* and *Leptognathia*), and uropod structure. However, the *Oahutanais* can be distinguished from the Atlantic species of *Leptognathiopsis* and *Leptognathiella* by having 1) the maxillipedal palp article-2 with geniculate, finely pectinate spiniform seta on sub-distal margin, 2) pereopods 1–3 with basis slender, and 3) pereopod ischial setae shorter than merus.

The new genus also shows similarities with the monotypic genus *Nippognathiopsis* Błażewicz-Paszkowycz, Bamber & Józwiak, 2013, recently described from 517–1356 m in waters off Japan. However, *Oahutanais* can be differentiated by 1) its pereonites are wider than long, 2) the antennal article-1 is longer than the distal three articles and minute terminal segment combined (shorter in *Nippognathiopsis*), 3) the maxillipedal endites have a medial small process (two oval tubercles in *Nippognathiopsis*), 4) the maxillipedal palp article-2 has a geniculate, finely pectinate spiniform seta on the sub-distal margin, and 5) pereopods 1–6 are slender. Although the presence of the geniculate, finely pectinate spiniform seta in the maxillipedal palp article-2 separates *Oahutanais* from the other genera within the family Colletteidae, it is possible that this spiniform seta has been overlooked in the original description of *Nippognathiopsis*, as well as in other colletteids due to their small overall size. Unfortunately, no information is available on the form of the cheliped attachment in *Nippognathiopsis*.

Bird and Larsen (2009) mentioned that this character, the cheliped-cephalothorax attachment position, is an important feature that has been overlooked or has not been recorded or illustrated by many authors, even today. So far within the family Colletteidae, only Błażewicz-Paszkowycz and Bamber (2012) and this study have included detailed information and illustrations showing the real point of insertion of the cheliped and how far it is located from pereonite-1. Thus, *Oahutanais* can be separated from *Bascestus* Błażewicz-Paszkowycz & Bamber, 2012 by having 1) the cheliped attached just anterior to the posterior margin of the cephalothorax (more anterior in *Bascestus*), 2) females without pleopods (pleopods present in *Bascestus*), and 3) exopod uni-articulated (bi-articulated in *Bascestus*).

The ventral cheliped attachment without contact with the carapace lateral margin (Fig. 8B–C) is an interesting

and rare character among tanaidomorphans, and it has so far only been recorded from another colletteid, *Isopodius* Larsen & Heard, 2002, but this highly modified genus differs in many other aspects from *Oahutanais*.

***Oahutanais makalii* sp. n.**

<http://zoobank.org/934BF56A-4CE7-40FE-B1DC-1F93E8EDD24B>

Figures 2–8

Type material. *Holotype* Adult ♀, length 0.9 mm, (USMN 1283305), BPOBS Station (Stn) HB4-R1 (21° 16' 47.7"N – 158° 01' 38.1"W), depth 62 m, substrata: “predominantly fine and medium sand”, coll. by City and County of Honolulu Oceanographic Team, March 2013.

Paratypes. Four ♀♀ (USMN 1283306); four ♀♀ (GCRL 06534); and six ♀♀ (BPBM 2015.097; four on SEM stubs and two in alcohol), SIOBS Stn D3A (21° 16' 55.3"N – 157° 53' 49.9"W), depth 49 m, substrata “primarily coarse sediment including shell fragments”, coll. by City and County of Honolulu Oceanographic Team, October 2014. Additional specimens from the type locality are in the collection of the authors.

Other material examined. Thirteen ♀♀, one ovigerous ♀, two ♀♀ with remains of marsupium, SIOBS Stn D3A (21° 16' 55.3"N – 157° 53' 49.9"W), depth 49 m, substrata “primarily coarse sediment including shell fragments”, coll. by City and County of Honolulu Oceanographic Team, October 2014; 27 specimens (spec), MOBS Stn D (21° 25' 32.3"N – 157° 42' 53.6"W), depth 30 m, October 2013; two spec, SIOBS Stn C1A (21° 17' 38.3"N – 157° 55' 28.3"W), depth 19.2 m, October 2014; one spec, SIOBS Stn C5A (21° 16' 53.9"N – 157° 51' 25.4"W), depth 20.1 m, October 2014; two spec, SIOBS Stn D1 (21° 17' 23.2"N – 157° 55' 29.8"W), depth 49.1 m, October 2014; three spec, SIOBS Stn D2 (21° 16' 55.2"N – 157° 54' 36.3"W), depth 56.4 m, October 2014; 40 spec, SIOBS Stn D3A (21° 16' 55.9"N – 157° 53' 48.8"W), depth 50 m, October 2014; 16 spec, SIOBS Stn D5 (21° 16' 36.8"N – 157° 51' 33.9"W) depth 52.1 m, October 2014; eight spec, SIOBS – Stn D6 (21° 16' 02.5"N – 157° 50' 46.4"W) depth 50.0 m, October 2014; two spec, SIOBS Stn E1 (21° 17' 09.5"N – 157° 55' 32.2"W), depth 102.4 m, October 2014; 49 spec, SIOBS Stn E3 (21° 16' 42.9"N – 157° 53' 49.5"W), depth 84.4 m, October 2014; three spec, SIOBS Stn E5 (21° 16' 22.5"N – 157° 51' 40.3"W) 101.5 m, October 2014; four spec, SIOBS Stn E6 (21° 15' 51.1"N – 157° 50' 57.2"W) depth 102.4 m, October 2014; 7 spec, WOBStn Z (21° 25' 38.8"N – 158° 11' 48.1"W) depth 29.3 m, October 2014.

Diagnosis. As the generic diagnosis above.

Etymology. The species name, *makali'i*, is Hawaiian for tiny or minute and reflects both where the material used in this study was collected and its small size relative to other tanaidaceans within this benthic community.

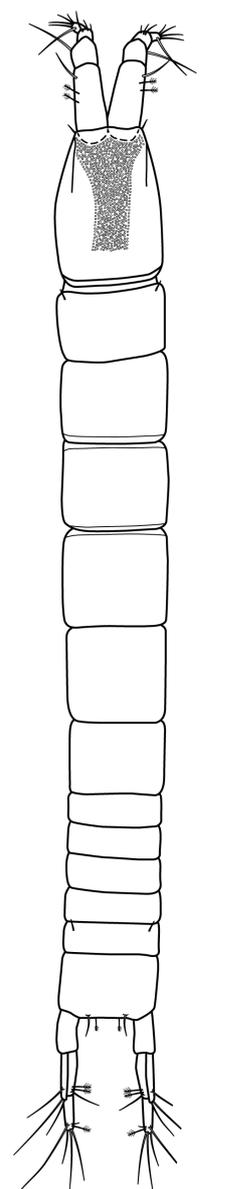


Figure 2. *Oahutanais makalii* gen. et sp. n., holotype female: dorsal view. Scale bar: 0.5 mm.

Type locality. Off Barbers Point Oahu, BPOBS study area (21° 16' 47.7"N – 158° 01' 38.1"W), Hawaii, May 2013.

Description. Based in holotype female, length 0.9 mm (USMN 1283305).

Body (Fig. 2) length about 0.9 mm, about 8.6 times width.

Cephalothorax (Figs 2, 6A–B) about 15% of TL, slightly longer than first two pereonites combined, about 1.5 times longer than wide, oval shape (Fig. 6B); with distolateral seta. Eye-lobes absent.

Pereon (Fig. 2): about 60% of TL; pereonites 1–3 and 6 sub-rectangular, wider than long; pereonites 4–5 quadrate.

Pleon (Figs 2, 7A): about 20% of TL; combined length of pleonites 1 to 5 slightly shorter to that of pereonites 5 and 6 combined; all pleonites subequal, much wider than long; pereonite-1 with two simple setae distally.

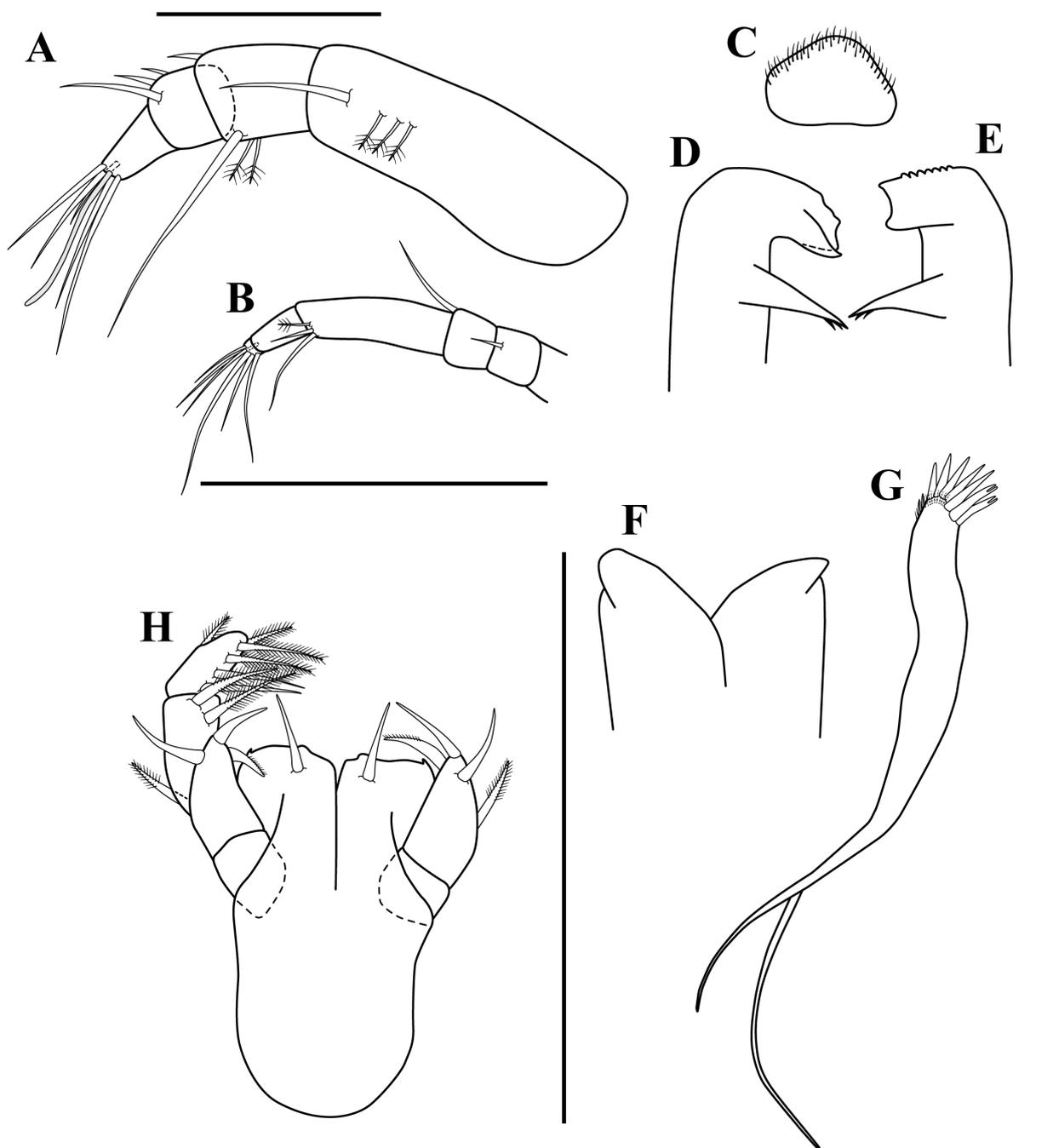


Figure 3. *Oahutanais makalii* gen. et sp. n., holotype female: **A** antennule, lateral view; **B** antenna, lateral view; **C** labrum; **D** left mandible; **E** right mandible; **F** labium; **G** maxillule; **H** maxilliped. Scale bars: 0.1 mm.

Pleotelson (Figs 2, 5B) about 5% of TL, same length of pleonites 5 and 6 combined; sub-rectangular, with two broom setae and two simple setae, apex blunt; pleonite-5 with two simple setae distally.

Antennule (Figs 3A, 6A–B): slightly longer than 2/3 length of cephalothorax. Article-1 about 3.1 times longer than wide, longer than distal three articles, with three setulose setae and one simple seta along lateral margin. Article-2 about 1.1 times longer than wide, with distodorsal simple seta; with two setulose setae and one long (longer than articles 2 to 4 combined) simple seta on distoventral

margin. Article-3 about 1.5 times wider than long, with two simple setae dorsally and one simple seta lateral. Article-4 about 1.4 times longer than wide, with four simple setae of different length. Terminal segment minute and covered by article-4, with one seta and one aesthetasc (only visible with SEM images) (Fig. 6B).

Antenna (Figs 3B, 6B): article-1 short, asetose. Article-2 about 1.2 times wider than long, with distolateral short seta. Article-3 about 1.3 times wider than long, with distodorsal long simple seta. Article-4 about 3.0 times longer than wide, longer than articles 2 and 3 combined,

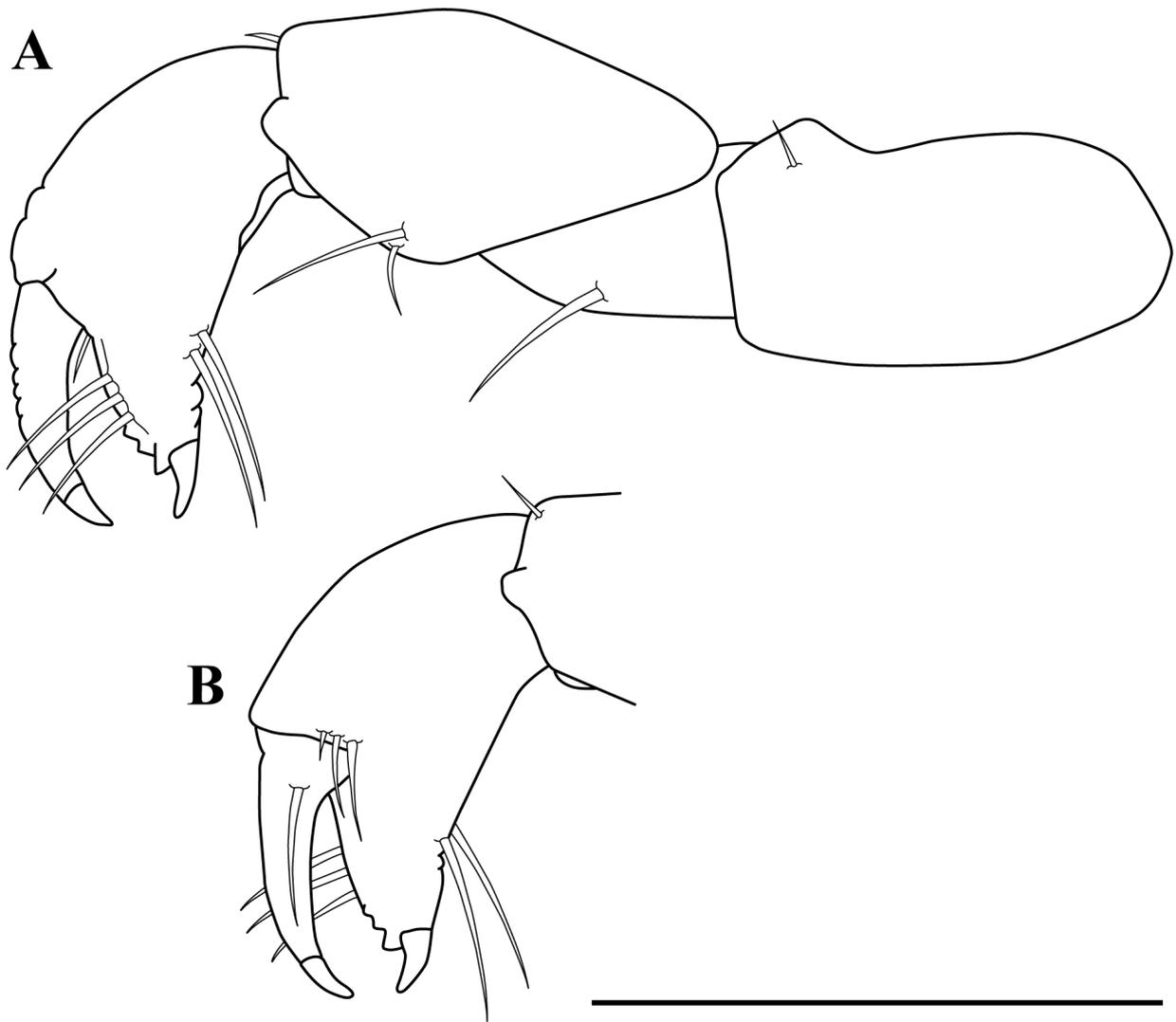


Figure 4. *Oahutanais makalii* gen. et sp. n., holotype female: **A** left cheliped, lateral view; **B** left chela, inner view. Scale bar: 0.1 mm.

with one setulose seta and two simple setae on distoventral setae margin. Article-5 about 2.0 times longer than wide, with one simple seta on distolateral margin. Article-6 minute, with five simple setae of unequal length.

Mouthparts: Labrum (Figs 3C, 7A): hood-shaped and finely setose. Mandibles (Fig. 3D–E): left mandible, incisor with two to three uneven denticles; lacinia mobilis narrow, apparently smooth (Fig. 3D). Right mandible incisor with broad and crenulate upper margin (Fig. 3E). Molar process pointed, with small distoventral spines (Fig. 3D–E). Labium (Figs 3F, 6B, 7A): bilobed with distolateral processes. Maxillule (Figs 3G, 6B, 7A): endite with seven distal spiniform setae (two bifid), two sub-distal simple setae, and cluster of setules on distal margin; palp bearing two long terminal setae of unequal length. Maxilla: not recovered.

Maxilliped (Figs 3H, 7A): basis fused, apparently asetose. Endites unfused, with one simple seta and medial small process, outer margin with small spine. Palp: Arti-

cle-1 asetose. Article-2 with setulose seta on outer margin, inner sub-distal margin with two simple setae and geniculate, finely-pectinate spiniform seta (serrations visible at magnification 100x). Article-3 with two setulose setae on inner margin. Article-4 with subdistal setulose setae and cluster of setules on outer margin (Fig. 7A), inner and distal margin with five setulose setae.

Epignath: not recovered.

Cheliped: (Figs 4A–B, 6A–C, 8): cheliped attached just anterior to the posterior margin of cephalothorax and very close to the midventral line, via sclerite (Figs 6B–C, 8). Basis about 1.9 times longer than wide, with subdistal short seta. Merus triangular, with simple seta on ventral margin. Carpus about 1.8 times longer than wide, anterior margin with distodorsal seta; ventral margin with two simple setae of different length. Propodus about 1.4 times longer than wide, with small simple seta near insertion of dactylus. Fixed finger with crenulated ventral margin, with two ventral setae and three simple

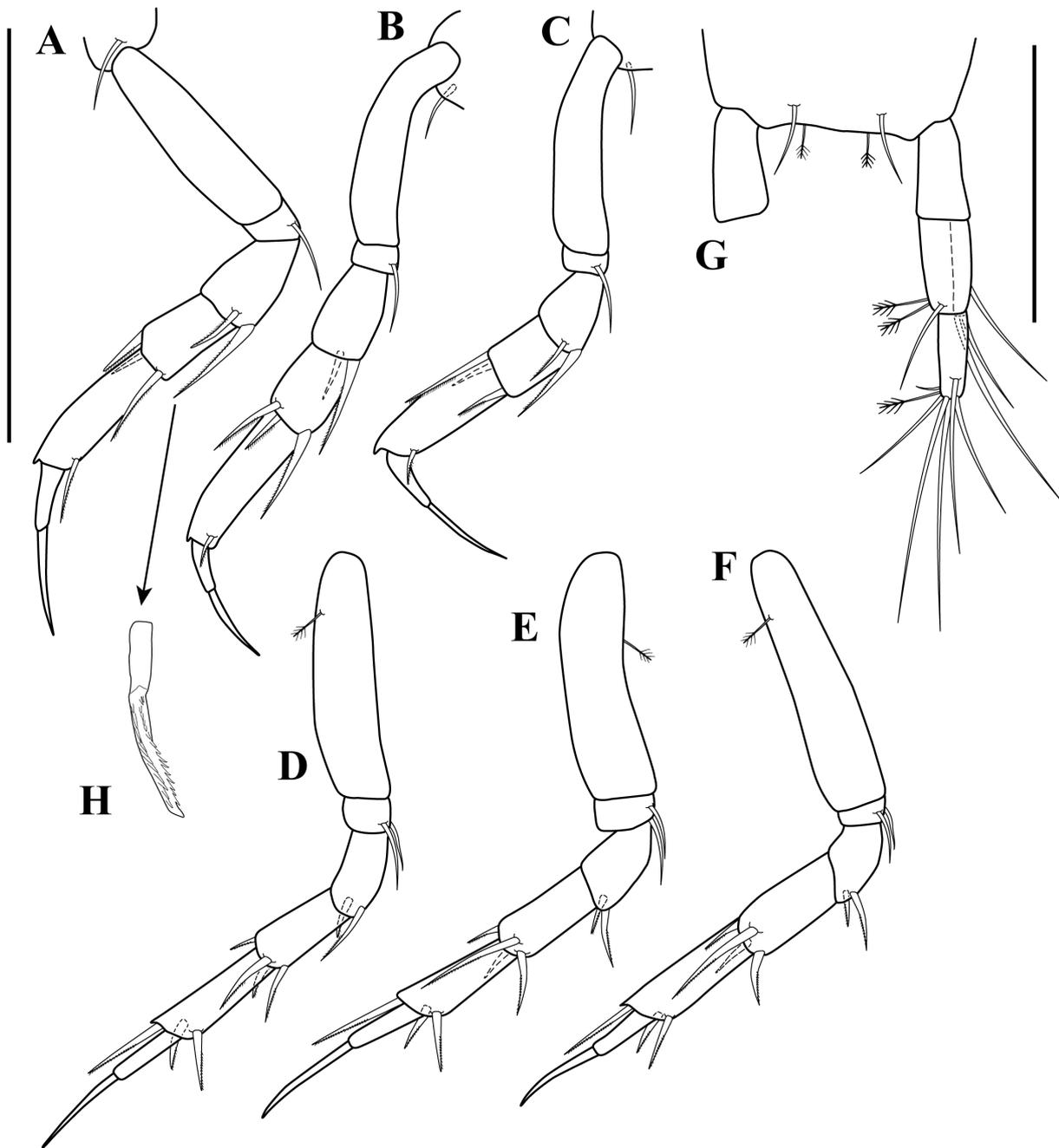


Figure 5. *Oahutanaia makalii* gen. et sp. n., holotype female: **A** pereopod-1; **B** pereopod-2; **C** pereopod-3; **D** pereopod-4; **E** pereopod-5; **F** pereopod-6; **G** uropod; **H** pectinate seta. Scale bars: 0.1 mm.

setae on outer incisive margin, with two to three sharp denticles on inner margin. Inner surface (Fig. 4B) with three short simple setae (one distinctly longest) at articulation with dactylus. Dactylus with long simple proximal seta on inner side.

Pereopod-1 (Figs 5A, 8): attached ventrally, coxa with simple seta on anterodistal margin. Basis about 4.0 times longer than wide, asetose. Ischium wider than long, with simple seta shorter than merus. Merus about 1.5 times longer than wide, with two distoventral pectinate setae (Fig. 5H) (one short and one robust, just longer than car-

pus). Carpus about 1.7 times longer than wide; two pectinate distodorsal setae and one robust pectinate distoventral seta (Fig. 5D). Propodus about 3.1 times longer than wide; distodorsal margin with spine-like apophysis; distoventral margin with one pectinate subdistal seta. Dactylus elongate, together with unguis longer than propodus, dactylus shorter than unguis.

Pereopod-2 (Fig. 5B): similar to pereopod-1, except basis and propodus longer. Propodus with ventrodorsal pectinate small seta. Dactylus and unguis shorter than propodus.

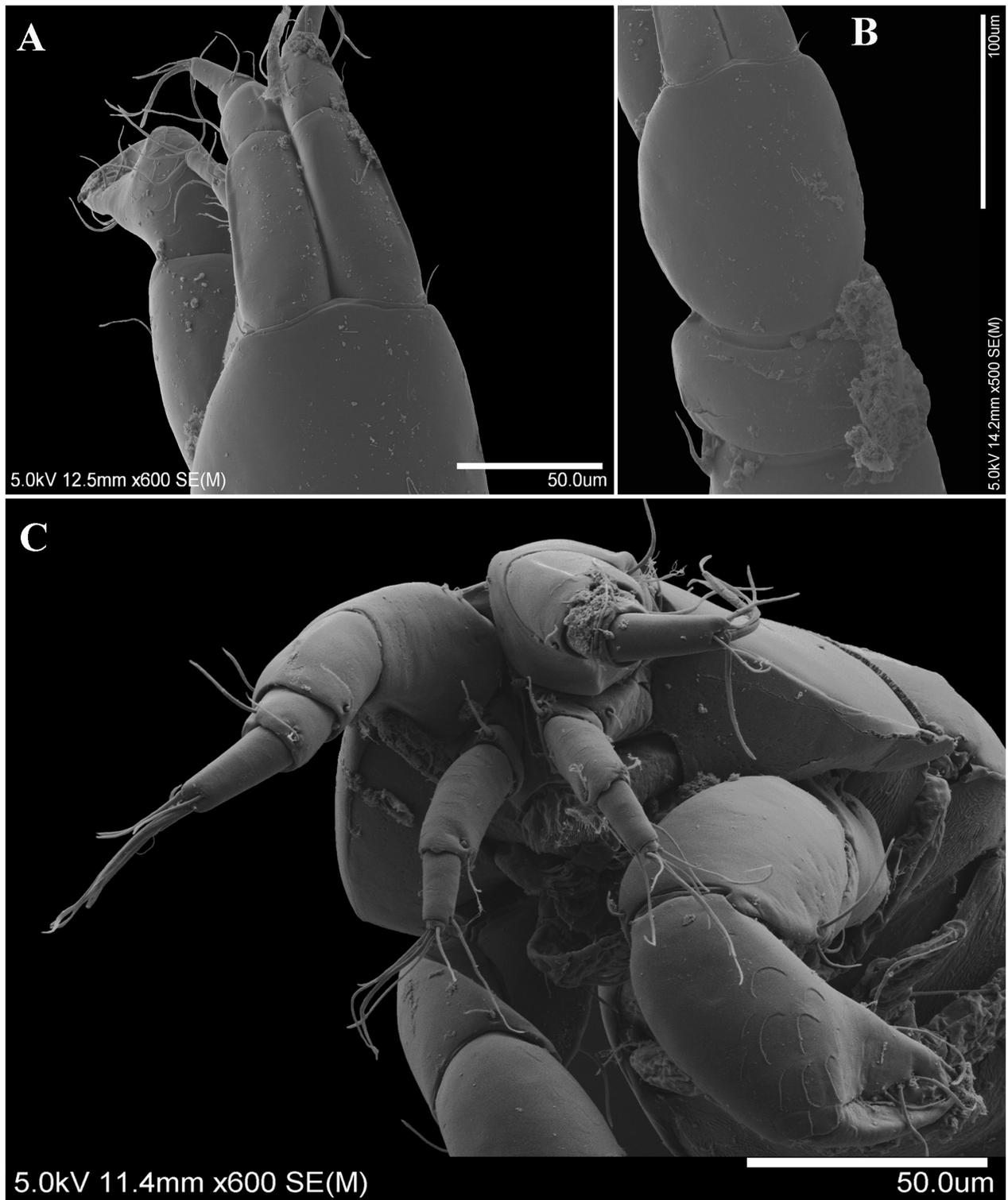


Figure 6. *Oahutanaïs makalii* gen. et sp. n., paratype female (SEM images): **A** enlargement of anterior end showing part of the carapace, antennules, and carpus to dactylus of left cheliped, dorsal view; **B** enlargement of the cephalothorax and pereonites-1; **C** enlargement of anterior part showing how the carapace covers the antennules, antennae, mouthparts, and left cheliped, ventral view.

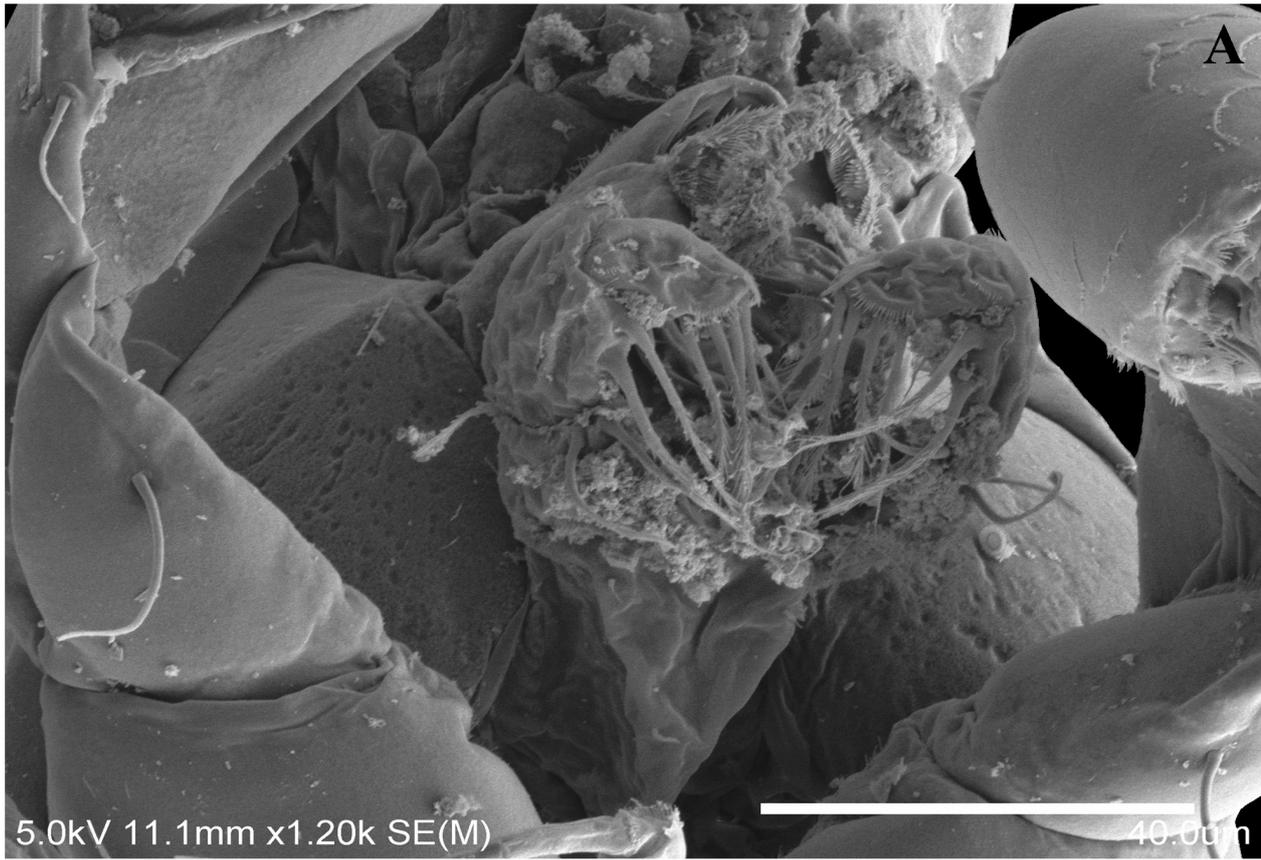


Figure 7. *Oahutanais makalii* gen. et sp. n., paratype female (SEM images): **A** enlargement of mouthparts; **B** enlargement of posterior end showing pleonites 1 to 5, pleotelson, and uropods.

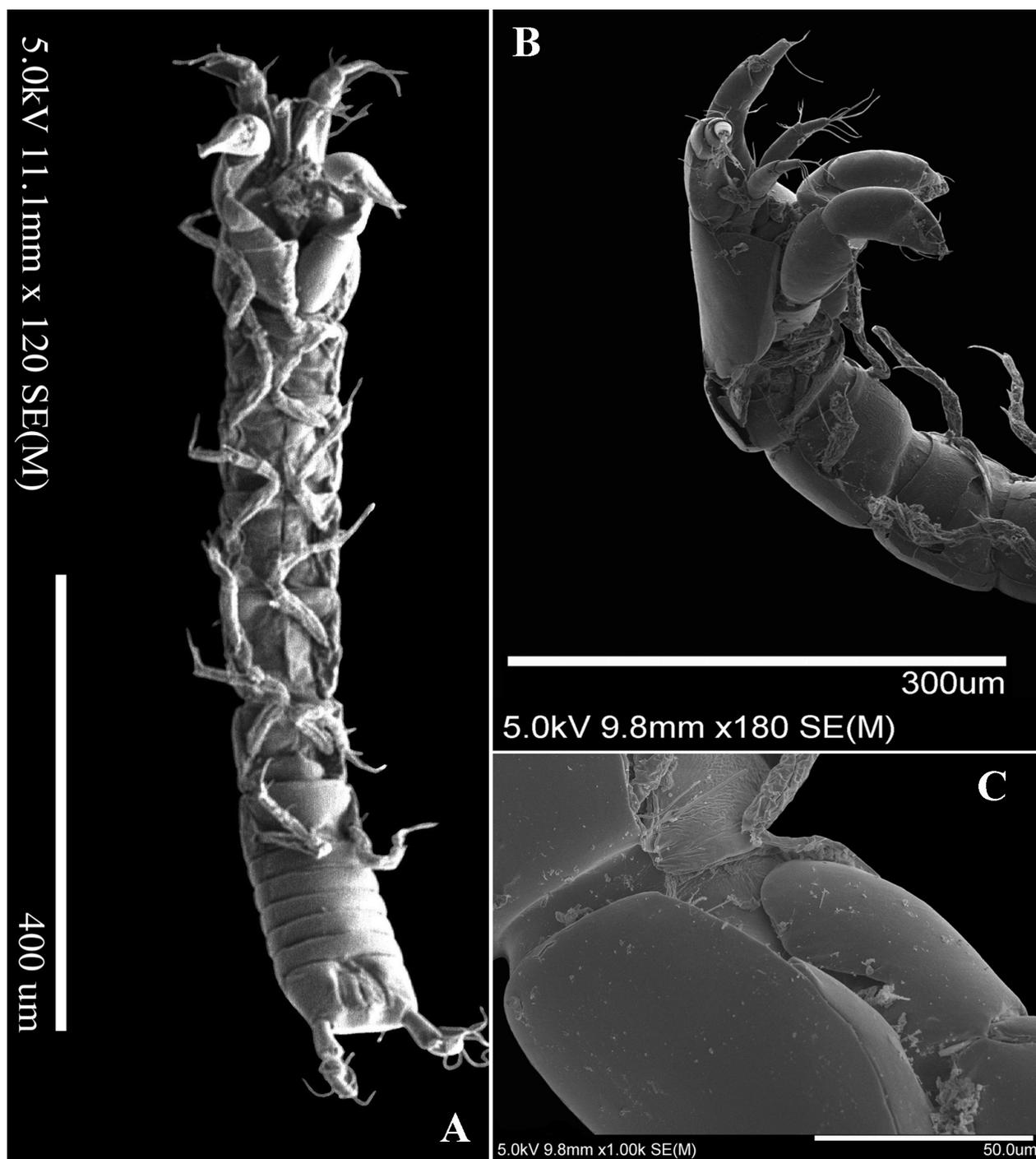


Figure 8. *Oahutanais makalii* gen. et sp. n., paratype female (SEM images): **A** ventral view of habitus; **B** enlargement of mid-anterior part of habitus, lateral view; **C** enlargement of union of cephalothorax and pereonite-1.

Pereopod-3 (Fig. 5C): similar in form to pereopod-2, except shorter than other five pereopods.

Pereopod-4 (Figs 5D, 8): attached ventrally, basis about 4.0 times longer than wide, with setulose seta on proximal dorsal margin. Ischium wider than long with two simple setae of unequal length on posterior margin, long seta shorter than merus. Merus about 2.0 times longer than wide, with two distoventral pectinate setae. Carpus about 2.0 times longer than wide, with

four pectinate setae of unequal length. Propodus about 3.5 times longer than wide; distodorsal margin with long pectinate setae, reaching beyond the dactylus; distoventral margin with two pectinate setae. Dactylus and unguis longer than propodus, dactylus shorter than unguis.

Pereopod-5 (Fig. 5E): Similar to pereopod-4, except carpus and dactylus longer. Basis with setulose seta on mid-ventral margin.

Pereopod-6 (Fig. 5F): similar to pereopod-5, except basis, carpus, and propodus slightly longer; ischium, merus, and dactylus shorter.

Pleopods: Absent. (Fig. 7B)

Uropod (Figs 5G, 7B): biramous, twice as long as pleotelson, but half as long as entire pleon. Basal article shorter than pleotelson, without distal apophyses. Exopod uni-articulate, slightly longer than endopod article-1, with simple seta on mid-lateral? margin, and two simple distal setae (one longer). Endopod biarticulate, article-1 with three setae (two setulose and one simple) on subdistal inner margin; article-2 with subdistal simple lateral seta, with one setulose and five (four long and one short) simple setae distally.

Male. Unknown.

Ovigerous female. As above. When embryos were present, six (smaller embryos) was the most observed; typically only three or fewer were present.

Remarks. Among the family Colletteidae, *Oahutanais makalii* sp. n. shows some similarities with *Cetiopyge mira* Larsen and Heard, 2002, *Isopodidus janum* Larsen and Heard, 2002, and *Collettea minima* Hansen, 1913 (see Larsen 2000) in having the unusual presence of bifurcate spiniform terminal setae on the maxillule endite; however, the presence of this kind of setae has also been reported in some species of other families such as the Tanaellidae Larsen & Wilson, 2002 (*Arthrura andriashevi* Kudinova-Pasternak, 1966), Cryptocopidae Sieg, 1977 (*Curtichelia expressa* Kudinova-Pasternak, 1987), and Paratanaoidea *incertae sedis* (*Parafilitanais mexicanus* Larsen, 2002). Larsen and Heard (2002) suggested that this setal character could have a wider occurrence in the deep-sea species, since it has only been reported in specimens collected in deep waters. Our results indicated that the presence of these unusual setae is not restricted to deep-sea Tanaidacea, since *Oahutanais makalii* was found in shallow waters (<105 m).

Key to the genera of Colletteidae in the North Pacific Ocean (females only)

- 1 Pleotelson terminating in a dorsal plate covering the uropods..... 2
- Pleonites not terminating in a dorsal plate covering the uropods..... 3
- 2 Pleonites almost as long as individual pereonites and pleotelson *Filitanais* [western and eastern North Pacific]
- Pleonites not as long as individual pereonites and pleotelson..... *Collettea* [western North Pacific]
- 3 Propodus of pereopod-6 with three distodorsal spiniform seta..... *Cheliasetosatanais* [equatorial North Pacific]
- Propodus of pereopod-6 with one distodorsal spiniform seta..... 4
- 4 Antennal article-1 longer than distal three articles. Maxilliped endites with medial small process *Oahutanais* gen. n. [north Central Pacific]
- Antennal article-1 shorter than distal three articles. Endites with two oval tubercles *Nippognathiopsis* [western North Pacific]

Remarks on ecology. A complete description of the surrounding benthic communities at these four study areas is beyond the scope of this paper, although the following observations are offered. *Oahutanais makalii* occurs from 19 to 102 m. A single specimen per replicate correlated to a minimum density of 220 ind.m². The maximum density for this species observed at any station was 5,070 ind.m²; far below densities recorded for the most abundant small crustaceans (over 50,000 ind.m²). No associated tubes were observed with the specimens.

Acknowledgments

Processing, sorting, preliminary identification and enumeration for all specimens described herein was supported by the City and County of Honolulu, Department of Environmental Services contract SC-ENV-1200115 to the Water Resources Research Center University of Hawaii (WJC). AGM-N and KL were not supported by any funding grant. The invaluable assistance in preparation and examination of the SEM material by Tina M. (Weatherby) Carvalho, (PBRC-BEMF) is gratefully acknowledged. We wish to express our gratitude to Graham Bird for his comments and suggestions on the early version

of this paper. We are most grateful for the helpful and constructive criticism provided by the three anonymous reviews. We take full responsibility for any differing systematic or taxonomic interpretations.

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