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Taxonomic revision of *Sauranthura* (Isopoda: Anthuroidea: Anthuridae), with the description of *Sauranthura liangaensis* sp. nov. from Surigao del Sur, Philippines

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ABSTRACT

We describe a new anthuroid isopod species *Sauranthura liangaensis* **sp. nov.** from Lianga, Surigao del Sur, Mindanao, Philippines, amend the diagnosis for *Sauranthura*, and synonymize *Sauranthura rapanui* with *Stygocyathura rapanuia*. The new species is distinguishable from the sole congener *Sauranthura goldmanorum* in having short rounded maxillipedal endite, trapezoidal and

ventrodistally protruded carpus of pereopod 1, and ventrodistal spiniform seta on carpus of pereopods 4–7. We also determined the partial sequences of 18S rRNA and 28S rRNA from the new species.

Zoobank (To the Editor: we will register this manuscript and the ZooBank ID upon acceptance of the manuscript.)

Key words. *Stygocyathura*, Crustacea, synonym, Western Pacific, taxonomy, tropical

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Introduction

Anthuroidea is a group of isopods characterized by having an elongate cylindrical body with a tailfan (Poore 2001). More than 600 species have been reported worldwide, with high abundance and diversity known in shallow waters of tropical regions (Poore and Bruce 2012). The Philippines, an archipelagic country in the tropics, has extensive coastlines and is known as the center of marine biodiversity (Carpenter and Springer 2005). The high diversity of anthuroids is expected in the country, however, there are only two previous papers dealing with them, which reported two species so far: *Colanthura kensleyi* Poore, 1984 known from Aliguay Island (erroneously referred to as Alibay Island in the original description; Poore 1984) and Little Santa Cruz Island near Mindanao; and *Stygocyathura filipinica* (Botosaneanu and Sket, 1999) known from a freshwater cave in Bohol Island in Visayas (Figure 1A; Poore 1984; Botosaneanu and Sket 1999).

Sauranthura Poore and Kensley, 1981 is one of the 26 anthurid genera characterized in having pleonites 1–5 together shorter than width, 3-articulate mandibular palp, and uniarticulate maxillipedal palp (Poore 2001, 2009; Chew et al. 2014). It currently contains two species. The type species *Sauranthura goldmanorum* Poore and Kensley, 1981 was described from Australia with the establishment of the genus (Poore and Kensley 1981). Poore (2001) observed additional *Sa. goldmanorum* specimens and amended its diagnosis. The second species *Sauranthura rapanui* Kensley, 2003 was described from Easter Island (Kensley 2003).

In this study, we describe a new *Sauranthura* species collected from shallow water in Lianga, Surigao del Sur, Mindanao, Philippines, amend the generic diagnosis, and synonymize *Sa. rapanui* with *Stygocyathura rapanuia* (Botosaneanu, 1987). We also determined the partial sequences of 18S rRNA (18S) and 28S rRNA (28S) from the new species.

Material and methods

Four individuals were collected at the subtidal zones in Lianga, Surigao del Sur, Mindanao, Philippines, on 18 March 2024 (Figure 1). Coral rubble covered with algae was collected by

SCUBA diving, and rinsed in tap water to remove the epibionts; the effluent was sieved through a 0.45 mm-mesh plankton net and anthuroids were picked from residue. Three were collected at 4–6 m depth in the Marine Protected Area (MPA) of Brgy. Ganayon (8°39'09.9"N 126°07'32.8"E) and one at 3–6 m depth of Brgy. Payasan (8°36'40.4"N 126°05'18.0"E) (Figure 1B). Collected individuals were photographed and then fixed and preserved in 80–99% ethanol. The methods used for dissection, preparation of slides, light microscopy, and drawing were as described in Shiraki et al. (2021). Ontogenetic staging follows Shiraki and Kakui (2024). Body length was measured from the tip of the anterolateral lobe of the head to the tip of the telson, and body width at the widest portion of pereonite 5. Measurements were made axially from digital images by using ImageJ (Schneider et al. 2012). The specimens examined have been deposited in the National Museum of the Philippines, Manila, Philippines (NMCR 99220 and NMCR 99223) or the Invertebrate Collection of the Hokkaido University Museum (ICHUM), Sapporo, Japan (ICHUM8983 and ICHUM8984). In accordance with Recommendation 50A of the ICZN Code (ICZN 1999), we designated a subset of authorship for our new scientific name because only two out of the authors are directly responsible for the name and its nomenclatural act.

Total DNA was extracted from a pereopod using a NucleoSpin Tissue XS Kit (Macherey–Nagel, Düren, Germany). Primers for the 18S and 28S used for PCR amplification and cycle sequencing were listed in Table 1. PCR conditions for 18S and 28S with KOD FX Neo (Toyobo Life Science, Osaka, Japan) were 94℃ for 2 min; 45 cycles of 98℃ for 10 s, 52℃ for 30 s and 68℃ for 75 s (18S) or 90 s (28S); and 68℃ for 3 min. All nucleotide sequences were determined by direct sequencing with a BigDye Terminator Kit ver. 3.1 and a 3730 Genetic Analyzer (Life Technologies, Carlsbad, USA). Determined sequences were deposited in the International Nucleotide Sequence Database (INSD) through the DNA Data Bank of Japan (DDBJ).

Taxonomy

Superfamily Anthuroidea Leach, 1814

Family Anthuridae Leach, 1814

Genus *Sauranthura* Poore and Kensley, 1981

Type species

Sauranthura goldmanorum Poore and Kensley, 1981.

Amended diagnosis

Body small, less than 4 mm. Head with dark-brown band-like pigmentation between eyes (non-males). Eyes present. Pleonites 1–5 fused, together shorter than wide (non-males). Mandible with 3-articulate palp. Maxillipedal palp articles 1–5 fused, uniarticulate.

Remarks

We added "Mandible with 3-articulate palp" to Poore's (2001) amended diagnosis as the state is crucial to differentiate *Sauranthura* from its sister genus *Pendanthura* Menzies and Glynn, 1968 with uniarticulate mandibular palp (Poore 2001; Chew et al. 2016).

Sauranthura isopods have a pleon shorter than wide (Poore and Kensley 1981, figure 5; Figure 3A; erroneously written as "longer than wide" in Poore' [2001] and Chew et al.'s [2014] generic keys). In Anthuridae, the short pleon is known in four genera of Clade 35 sensu Poore (2001), namely, *Cyathura* Norman and Stebbing, 1886, *Pendanthura*, *Sauranthura*, and *Stygocyathura*.

We synonymize *Sauranthura rapanui* Kensley, 2003 with *Stygocyathura rapanuia* (Botosaneanu, 1987). *Sauranthura rapanui* is undoubtedly a member of *Stygocyathura*, not *Sauranthura*, as it has the biarticulate maxillipedal palp, the smooth palmar margin of pereopod-1, the reduced pleopod-1 endopod, and no eyes (Poore 2001). This species has the small body size less than 4 mm, the tip of the slender pleotelson being concave, and the short uropodal endopod being as long as its width, all of which were observed in *St. rapanuia* (Botosaneanu 1987; Kensley 2003).

The type localities of the two nominal species are the same (Easter Island; Botosaneanu 1987; Kensley 2003). Given the above, we concluded that *Sa*. *rapanui* is a junior synonym of *St*. *rapanuia*. Kensley's (2003) specimens, dealt as non-ovigerous females in it, were 1.6–1.9 mm in length and lacked pereopod 7. Botosaneanu's (1987) specimens were 2.3–3.3 mm in length and possessed pereopod 7. These indicate that Kensley's (2003) specimens were manca specimens.

Species composition

Two species: *Sauranthura goldmanorum*; *Sa*. *liangaensis* **sp. nov.**

***Sauranthura liangaensis* Shiraki and Kakui, sp. nov.**

(Figures 2–8)

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Material examined

Holotype: NMCR 99220 (12 slides and 1 vial), ovigerous female, 3.71 mm, coral rubble covered with algae, 4–6 m depth, MPA of Brgy. Ganayon (8°39'09.9"N 126°07'32.8"E), Lianga, Surigao del Sur, Mindanao, Philippines, 18 March 2024. Allotype: NMCR 99223 (12 slides and 1 vial), subadult male, 2.98 mm, coral rubble covered with algae, 3–6 m depth, Brgy. Payasan (8°36'40.4"N 126°05'18.0"E), Lianga, Surigao del Sur, Mindanao, Philippines, 18 March 2024. Paratypes: ICHUM8983 (4 slides and 1 vial), ovigerous female, 3.20 mm; ICHUM8984 (2 slides and 1 vial), manca, 1.89 mm; collection data same as for holotype.

Diagnosis (non-males)

Maxillipedal endite short, rounded. Carpus of pereopod 1 trapezoidal, protruded ventrodistally. Carpi of pereopods 4–7 with ventrodistal spiniform seta.

149

150 ***Description of female based on holotype***

151 Body (Figures 2A, B, 3A, B) relatively slender, 7.94 times longer than wide, with several dark-
152 brown dots on pereonites 1–6 (Figures 2A, B, 3A, B). Head (Figure 3A) length 0.95 times head
153 width, with dark-brown band-like pigmentation between eyes; rostrum overreaching anterolateral
154 lobes; eyes dorsolateral, brown, small, length 0.06 times head length. Pereonites 1–7 (Figure 3A)
155 with length ratio 0.98:1.01:1.17:1.40:1.42:1.06:0.59 relative to head length. Pleonites 1–5 (Figure
156 3A) shorter than width, length 0.61 times width, segmented laterally but fused dorsally, with
157 dorsolateral sutures. Pleonite 6 distinct from telson dorsally, concave on mid-posterior edge. Telson
158 (Figure 5H) linguiform, with two indentations at apical edge, with two distal plumose sensory setae
159 and 16 simple setae; proximal part with two statocysts.

160 Antennula (Figure 3C) with three peduncular and three flagellar articles. Peduncular article
161 1 longest, with distal seta (tip broken); article 2 with four distal plumose sensory setae and distal
162 simple seta; article 3 with four distal simple setae. Flagellar article 1 with plumose sensory seta;
163 article 2 naked; article 3 with three aesthetascs and four distal simple setae.

164 Antenna (Figure 3D) with five peduncular articles and two flagellar articles. Peduncular
165 article 1 triangular, naked; article 2 covered with scale-like structures, with three simple setae;
166 article 3 covered with scale-like structures, with two inner distal simple setae; article 4 with two
167 distal plumose sensory setae and three distal simple setae; article 5 with five distal plumose sensory
168 setae and five distal simple setae. Flagellar article 1 with four simple setae; article 2 with numerous
169 simple setae.

170 Mandible (Figure 3E) with 3-articulate palp. Palp article 1 naked; article 2 longest, with
171 distal simple seta and marginal membrane-like process; article 3 with membrane-like process and
172 two distal spiniform setae. Incisor with three cusps. Lamina dentata with eight denticulations. Molar
173 round.

174 Maxilla (Figure 3F) slender, with six teeth.

Maxilliped (Figure 3G) with uniarticulate palp. Palp long and broad, with five distal long and six short simple setae. Endite short, rounded. Epipod round.

Pereopod 1 (Figure 4A) subchelate. Basis with three dorsal plumose sensory setae. Ischium with one dorsal and one ventral simple setae. Merus with two dorsal and one ventral simple setae and ventral seta (tip broken). Carpus trapezoidal, protruded ventrodistally, with three ventral simple setae. Propodus with two dorsal and one inner simple setae. Palm with projection in proximal half and weakly bilobed projection in distal half, with five spiniform setae and five simple setae. Dactylus with four inner scale-like structures and one ventral, two ventrodistal, and five inner simple setae. Unguis nearly as long as dactylus, naked.

Pereopod 2 (Figure 4B) narrower than pereopod 1. Basis with three dorsal plumose sensory setae and three simple setae. Ischium with two dorsal and three ventral simple setae. Merus with two dorsal and three ventral simple setae and ventral seta (tip broken). Carpus trapezoidal, with ventrodistal membrane-like process, ventrodistal spiniform seta with sensory bristle sensu Negoescu (1994), and four simple setae. Propodus with dorsodistal plumose sensory seta and three dorsal and six outer simple setae. Palm with membrane-like process, ventrodistal spiniform setae with sensory bristle, and four simple setae. Dactylus with ventral membrane-like process, ventrodistal spiniform seta, and one ventral, three outer, and six distal simple setae. Unguis about three-quarters dactylus length, naked.

Pereopod 3 (Figure 4C) similar to pereopod 2 except in numbers of plumose sensory setae and simple setae.

Pereopod 4 (Figure 4D) slightly narrower than pereopods 2 and 3. Basis with three dorsal plumose sensory setae and two simple setae. Ischium with one dorsal and three ventral simple setae. Merus with two dorsal and four ventral simple setae. Carpus trapezoidal, with three membrane-like processes, ventrodistal spiniform seta with sensory bristle, dorsal plumose sensory seta, and one dorsal and two ventral simple setae. Propodus with ventral membrane-like process on distal half, ventrodistal spiniform seta with sensory bristle, dorsodistal plumose sensory seta, and one dorsal

and three ventral simple setae. Dactylus with one ventral, three ventrodistal, and four outer simple setae. Unguis about two-thirds dactylus length, naked.

Pereopod 5 (Figure 4E) similar to pereopod 4 except in number of membrane-like processes, plumose sensory setae, and simple setae.

Pereopod 6 (Figure 4F) similar to pereopods 4 and 5 from basis to merus except in number of plumose sensory setae and simple setae. Distal portion from carpus to unguis lost.

Pereopod 7 (Figure 4G) longer than pereopods 4 and 5. Basis with two dorsal and two ventral simple setae. Ischium with three ventral simple setae. Merus with two dorsal and six ventral simple setae. Carpus trapezoidal, with three membrane-like processes, ventrodistal spiniform seta with sensory bristle, dorsal plumose sensory seta, and one dorsal and two ventral simple setae. Propodus with two ventral membrane-like processes, ventrodistal spiniform seta with sensory bristle, two ventrodistal three-prolonged spiniform setae, dorsodistal plumose sensory seta, and one dorsal and two ventral simple setae. Dactylus with one ventral, four ventrodistal, and four outer simple setae. Unguis about two-fifths dactylus length, naked.

Pleopod 1 (Figure 5A) operculiform, with protopod bearing outer plumose seta. Exopod with 29 plumose setae and distal simple seta. Endopod 0.97 times exopod length, with eight plumose setae.

Pleopods 2–5 (Figure 5B–E) similar. Protopods with zero or two inner hooks, zero or one outer plumose seta, and zero or one outer simple seta. Exopods 2–5 with slit in middle, zero or one outer short plumose seta, and eight, ten, ten, and nine distal plumose setae, respectively. Endopods 2–5 with six, seven, six, and seven distal plumose setae, respectively.

Uropod (Figure 5F, G) protopod triangular-prism-shaped, with five outer and one inner plumose setae and simple seta. Exopod (Figure 5F) narrow, 2.82 times longer than wide, with 42 plumose setae and 27 simple setae. Endopod (Figure 5G) oval, with eight plumose sensory setae and 43 simple setae.

Description of male based on allotype

Body (Figures 2E, 6A–E) relatively slender, 7.33 times longer than wide, with some branched amorphous pigmentations on head, pereonites, and pleon (Figures 2E, 6A–E). Head (Figure 6A) length 0.97 times head width; rostrum overreaching anterolateral lobes; eyes dorsolateral, dark-brown, large, length 0.35 times head length. Pereonites 1–7 (Figure 6A–D) with length ratio 1.04:1.02:1.01:1.06:0.96:0.85:0.48 relative to head length. Pleonites 1–5 (Figure 6D) roughly as long as width, length 1.04 times width, segmented laterally but fused dorsally. Pleonite 6 distinct from telson dorsally, concave on mid-posterior edge. Telson (Figure 8I) linguiform, with two small indentations at apical edge, with two distal plumose sensory setae and 16 simple setae at the edge and 15 dorsal simple setae; proximal part with two statocysts.

Antennula (Figure 6F) with three peduncular and six flagellar articles. Peduncular article 1 longest, with distal plumose sensory seta; article 2 with two distal plumose sensory setae and one distal simple setae; article 3 with distal simple seta and two distal setae (tip broken). Flagellar articles 1–4 naked; article 5 with aesthetasc; article 6 with two aesthetascs and two simple setae.

Antenna (Figure 6D) with five peduncular articles and three flagellar articles. Peduncular article 1 triangular, naked, covered with scale-like structures; article 2 covered with scale-like structures, with three simple setae; article 3 with two distal simple setae; article 4 with two distal plumose sensory setae, four distal simple setae, and seta (tip broken); article 5 with five distal plumose sensory setae and four distal simple setae. Flagellar articles 1–3 with several to numerous simple setae.

Mandible (Figure 6H) with 3-articulate palp. Palp article 1 naked; article 2 longest, with distal simple seta; article 3 with membrane-like process, two distal spiniform setae, and two distal simple setae. Incisor with three cusps. Lamina dentata with ten denticulations. Molar round.

Maxilla lost.

Maxilliped (Figure 6I) with uniarticulate palp. Palp long and broad, with 14 simple setae and seta (tip broken). Endite broad, length 0.63 times palp; tip not pointed. Epipod round.

Pereopod 1 (Figure 7A) subchelate. Basis with four dorsal plumose sensory setae and four simple setae. Ischium with one dorsal and one ventral simple setae. Merus with one dorsal and two ventral simple setae. Carpus trapezoidal, protruded ventrodistally, with three membrane-like processes and three ventral simple setae. Propodus with three dorsal, one inner, and two outer simple setae. Palm with projection in proximal half and weakly bilobed projection in distal half, with nine simple setae. Dactylus with one ventral, two ventrodistal, and four inner simple setae. Unguis as about three-fourth dactylus length, naked.

Pereopod 2 (Figure 7B) narrower than pereopod 1. Basis with two dorsal plumose sensory setae and four simple setae. Ischium with one dorsal and two ventral simple setae. Merus with two dorsal and seven ventral simple setae. Carpus trapezoidal, with three ventral membrane-like processes, ventrodistal spiniform seta with sensory bristle, and five simple setae. Propodus with dorsodistal plumose sensory seta and five dorsal and three outer simple setae. Palm with several membrane-like processes, ventrodistal spiniform setae with sensory bristle, and six simple setae. Dactylus with ventrodistal spiniform seta and one ventral, one dorsal, three outer, three inner, and three ventrodistal simple setae. Unguis about half dactylus length, naked.

Pereopod 3 (Figure 7C) similar to pereopod 2 except in numbers of membrane-like processes, plumose sensory setae, and simple setae.

Pereopod 4 (Figure 7D) slightly narrower than pereopods 2 and 3. Basis with three dorsal plumose sensory setae, two simple setae, and seta (tip broken). Ischium with one dorsal and four ventral simple setae. Merus with two dorsal and six ventral simple setae. Carpus trapezoidal, with two membrane-like processes, ventrodistal spiniform seta with sensory bristle, dorsal plumose sensory seta, and one dorsal and two ventral simple setae. Propodus with two ventral membrane-like processes, ventrodistal spiniform seta with sensory bristle, dorsodistal plumose sensory seta, and two dorsal and four ventral simple setae. Dactylus with one ventral, two ventrodistal, and four outer simple setae. Unguis about two-fifths dactylus length, naked.

Pereopods 5–7 (Figure 7E–G) similar to but longer than pereopod 4 except in number of

membrane-like processes, plumose sensory setae, and simple setae. Propodus of pereopod 7 with two ventrodistal three-prolonged spiniform setae.

Pleopod 1 (Figure 8A) operculiform, with protopod bearing four inner hooks and outer plumose seta. Exopod with 30 plumose setae and three simple setae on surface. Endopod 0.88 times exopod length, with ten plumose setae.

Pleopod 2 (Figure 8B) protopod with three inner hooks and outer simple seta. Exopod with 15 plumose setae. Endopod 1.09 times exopod length, with six plumose setae and appendix masculina (Figure 8B, C) overreaching distal margin of endopod and swollen distally.

Pleopods 3–5 (Figure 8D–F) similar. Protopods with two, three, and zero inner hooks, respectively and outer plumose seta. Exopods 3–5 with slit in middle and zero or one outer short simple seta; 13, twelve, and eleven distal plumose setae, respectively. Endopods 3–5 with seven, seven, and eight distal plumose setae, respectively.

Uropod (Figure 8G, H) protopod triangular-prism-shaped, with four outer and four inner plumose setae. Exopod (Figure 8G) narrow, 2.85 times longer than wide, with 43 plumose setae and 46 simple setae. Endopod (Figure 8H) oval, with six plumose sensory setae, 58 simple setae, and two setae (tip broken).

Colour

See the fourth paragraph of the Remarks for the species.

Size

2.98–3.71 mm in length in non-mancae. 1.89 mm in length in manca.

Distribution

The species is known from Lianga, Surigao del Sur, Mindanao, Philippines.

Habitat

Coral rubble covered with algae (Figure 1C, D).

Etymology

The specific name is an adjective referring to the type locality.

GenBank accession numbers

LC858703 for 18S (2111 bp) from holotype and LC858704–LC858706 for 28S (all 2513 bp) from NMCR 99220, ICHUM8983, and NMCR 99223, respectively. In BLAST searches (Altschul et al. 1990), the 18S sequence most similar to ours (LC858703) was from a paranthurid *Paranthura nigropunctata* (Lucas, 1846) (AF279598; identity score 95.78%, query cover 75%; Dreyer and Wägele 2002), and 28S (LC858704) was from an anthurid *Cyathura* sp. (KC428835; identity score 77.96%, query cover 72%; Hurt et al. 2013). Three 28S sequences showed 0.04% of genetic distance (p-distance). 28S sequences from two ovigerous females shared the haplotype and there is one nucleotide substitution between the sequences from subadult male and ovigerous females.

Remarks

Sauranthura liangaensis **sp. nov.** is distinguishable from the sole congeneric species *Sa. goldmanorum* in non-males having short rounded maxillipedal endite (long and narrowly tapering; character state of *Sa. goldmanorum* is in parentheses hereafter), trapezoidal and ventrodistally protruded carpus of pereopod 1 (rounded, not protruded), and ventrodistal spiniform seta on carpus of pereopods 4–7 (no spiniform seta) (Poore and Kensley 1981). These diagnostic characters of our new species are shared in one manca and two females we examined.

We concluded that our subadult male is conspecific with ovigerous females as their 28S sequences are highly similar (only one nucleotide substitution and 0.04% genetic distance in p-distance). Our subadult male shared the latter two diagnostic characters with non-male individuals:

ventrodistally protruded carpus of pereopod 1; and carpi of pereopods 4–7 each having ventrodistal spiniform seta. *Sauranthura liangaensis* **sp. nov.** showed following sexually dimorphic characters on (character state in parentheses, non-males vs. subadult male): the size of eyes (length 0.06–0.13 times head length vs. 0.35 times), the number of flagellar articles of antennule (three vs. six), the shape of maxillipedal endite (shorter than wide vs. longer than wide), the shape of pereopods 4–7 (narrower in subadult male), and the appendix masculina on pleopod 2 (absence vs. present).

The presence of ventrodistal spiniform seta on carpus of pereopods 4–7 in *Sa*. *liangaensis* **sp. nov.** contradicts one of the synapomorphies of Clade 35 sensu Poore (2001). Species of the four genera in Clade 35 lack the spiniform seta (Poore 2001). This study denies the character as a synapomorphy of Clade 35.

Poore (2001) mentioned that the pigmentation pattern is species-specific in *Sauranthura*. This study revealed that it is not species-specific. As seen in Figure 2, non-male specimens (two ovigerous females and one manca) shared dark-brown band-like pigmentation between eyes, but there are pigmentation differences on pereonites and pleon. On pereonites, holotype ovigerous female has several dot-like pigmentations, paratype ovigerous female has several relatively bigger amorphous pigmentations, and manca has no pigmentation. On pleon, both ovigerous females have amorphous pigmentation but manca has no pigmentation. The pattern in subadult male greatly differed from that of non-males. The former lacks band-like pigmentation between eyes but has some branched amorphous pigmentations on the head, pereonites, and pleon instead. The band-like pigmentation between eyes was observed in a manca of *Sa. goldmanorum*, too, suggesting non-males of *Sauranthura* may share this pattern.

We observed that live *Sa*. *liangaensis* **sp. nov.** individuals strongly grasped other anthuroids with the pereopods 1 when we are sorting isopods during the faunal survey. Anthuroids are assumed to be predators generally based on a few feeding observations (Poore and Bruce 2012). Although there is no feeding data on *Sauranthura* and we could not observe any predations by our new species, considering its aggressiveness, we speculate that the species is also predators and

attacks prey using the subchelate pereopods 1 like other anthurids (cf. Horikoshi 2012; observed for *Cyathura*).

This study reports the third anthuroid species from the Philippines following *C. kensleyi* and *St. filipinica* (Poore 1984; Botosaneanu and Sket 1999). The three species represent two families and three genera. Given the species numbers reported in other tropical areas, e.g., 15 species in the Fiji Islands (including unnamed species; Kensley 1979; Wägele et al. 1987; Negoescu 1999) and 24 species in Malaysia (Chew and Abdul Rahim 2020), it is likely that the above species number is a fraction of the actual anthuroid diversity in the Philippines, with many species remained undiscovered.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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463

464 **Figure legends**

465 **Figure 1.** Distribution of anthuroid species in the Philippines and sampling localities in this study.
466 A, map of the Philippines with the distributional records of anthuroid species, circle represents
467 *Stygocyathura filipinica* and triangles represent *Colanthura kensleyi*; B, sampling localities (MPA
468 of Brgy. Ganayon and Brgy. Payasan) in Lianga, Mindanao; C, D, the inhabiting environments of
469 *Sauranthura liangaensis* **sp. nov.** in Brgy. Ganayon and Brgy. Payasan, respectively.

470

471 **Figure 2.** *Sauranthura liangaensis* **sp. nov.**, fresh individuals. A, B, dorsal and lateral views of
472 holotype ovigerous female (NMCR 99220); C, dorsal view of ovigerous female (paratype
473 ICHUM8983); D, dorsal view of manca (ICHUM8984); E, dorsal view of allotype subadult male
474 (NMCR 99223). Scale bar = 1 mm.

475

476 **Figure 3.** *Sauranthura liangaensis* **sp. nov.**, holotype, ovigerous female, NMCR 99220. A, B, body,
477 dorsal and lateral views; C, left antennula; D, left antenna; E, right mandible; F, left maxilla; G, left
478 maxilliped. Scale bars = 1 mm (A, B); 100 μm (C–G).

479

480 **Figure 4.** *Sauranthura liangaensis* **sp. nov.**, holotype, ovigerous female, NMCR 99220. A–E, G,
481 left pereopods 1–5, 7; F, right pereopod 6 (from carpus to unguis lost). Scale bar = 100 μm.

482

483 **Figure 5.** *Sauranthura liangaensis* **sp. nov.**, holotype, ovigerous female, NMCR 99220. A–E, left
484 pleopods 1–5; F, right uropodal exopod; G, right uropodal endopod; H, telson. Scale bars = 100 μm.

485

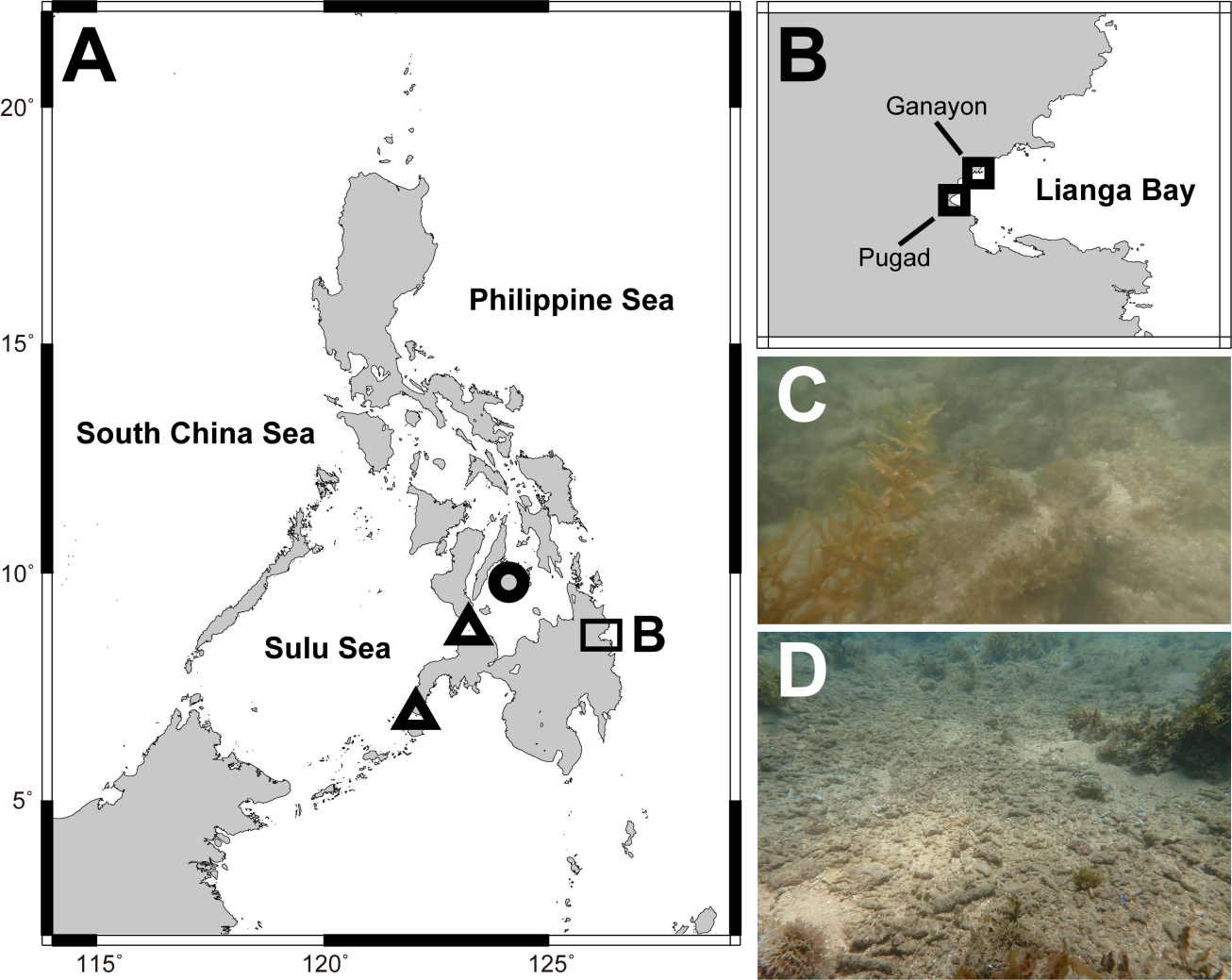
486 **Figure 6.** *Sauranthura liangaensis* **sp. nov.**, allotype, subadult male, NMCR 99223. A, head and
487 pereonite 1 in dorsal view; B, pereonites 2–4 in dorsal view; C, pereonites 5 and 6 in dorsal view;
488 D, pereonite 7 and pleon in dorsal view; E, body, lateral view; F, right antennula; G, right antenna;
489 H, left mandible; I, left maxilliped. Scale bars = 1 mm (A–E); 100 μm (F–I).

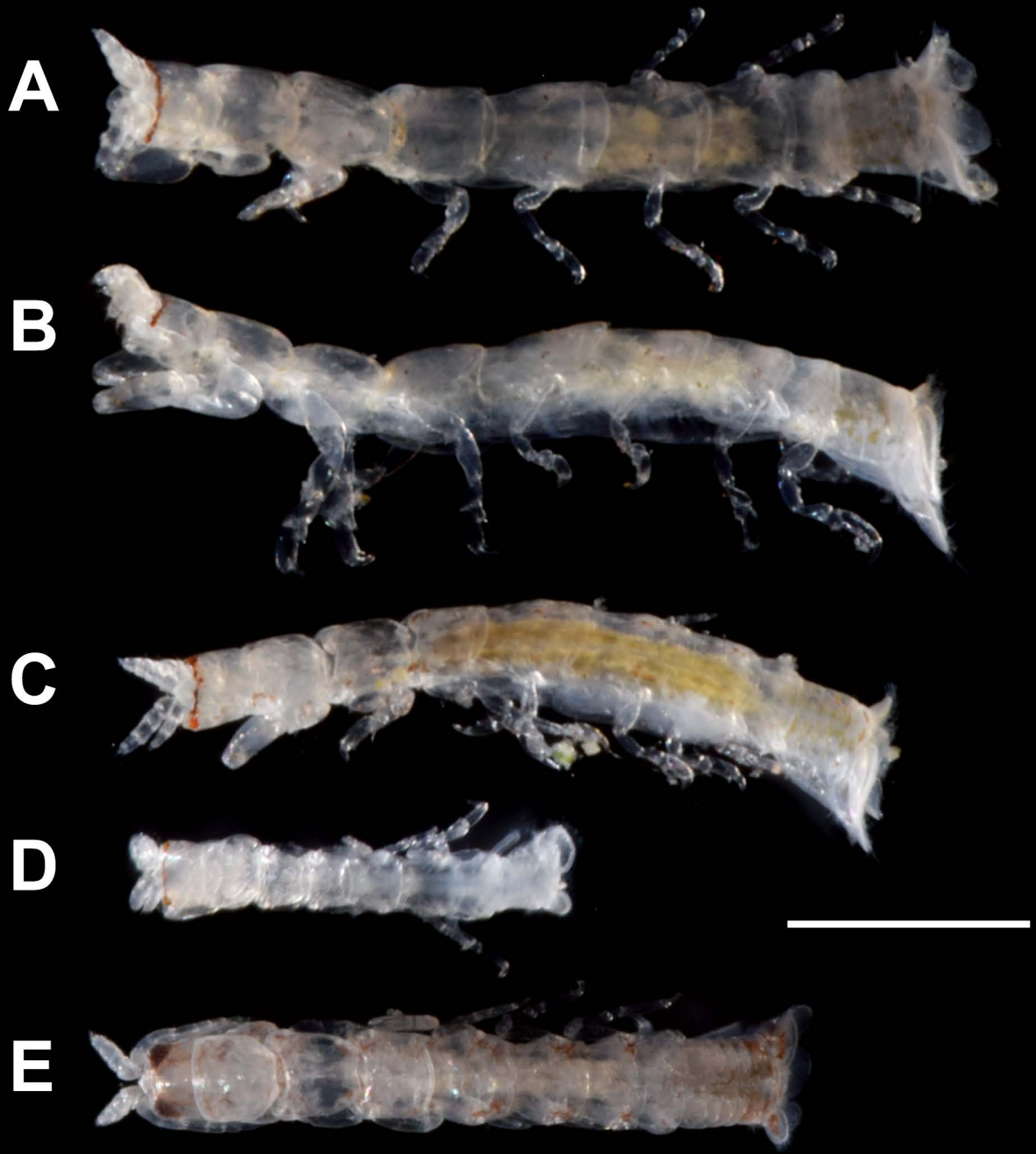
Figure 7. *Sauranthura liangaensis* **sp. nov.**, allotype, subadult male, NMCR 99223. A–G, left pereopods 1–7. Scale bar = 100 μm.

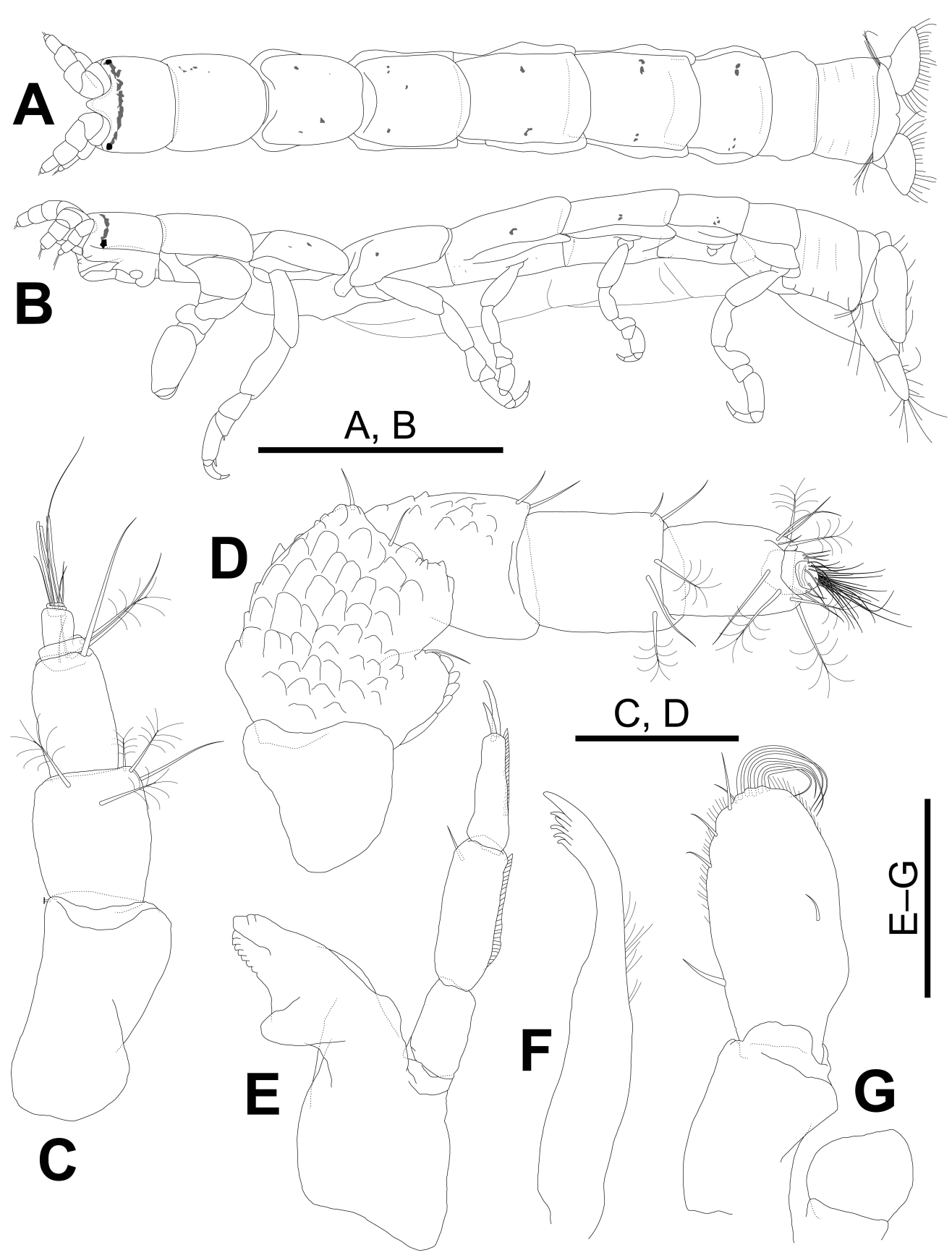
Figure 8. *Sauranthura liangaensis* **sp. nov.**, allotype, subadult male, NMCR 99223. A, B, D–F, left pleopods 1–5; C, appendix masculina on left pleopod 2; G, right uropodal exopod; H, right uropodal endopod; I, telson. Scale bars = 100 μm (A, B, D–I); 50 μm (C).

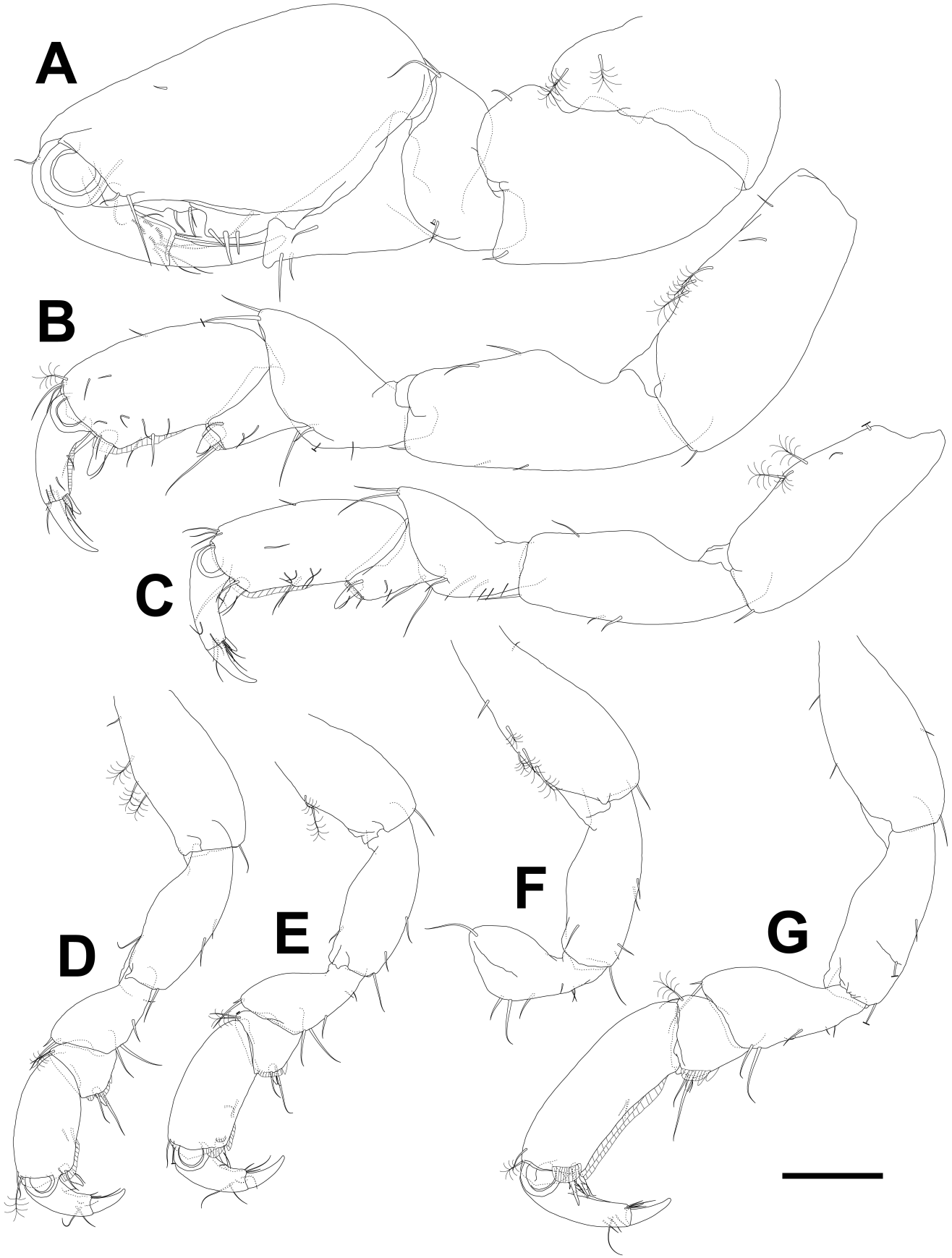
Table 1. List of primers used for PCR and cycle sequencing (CS).

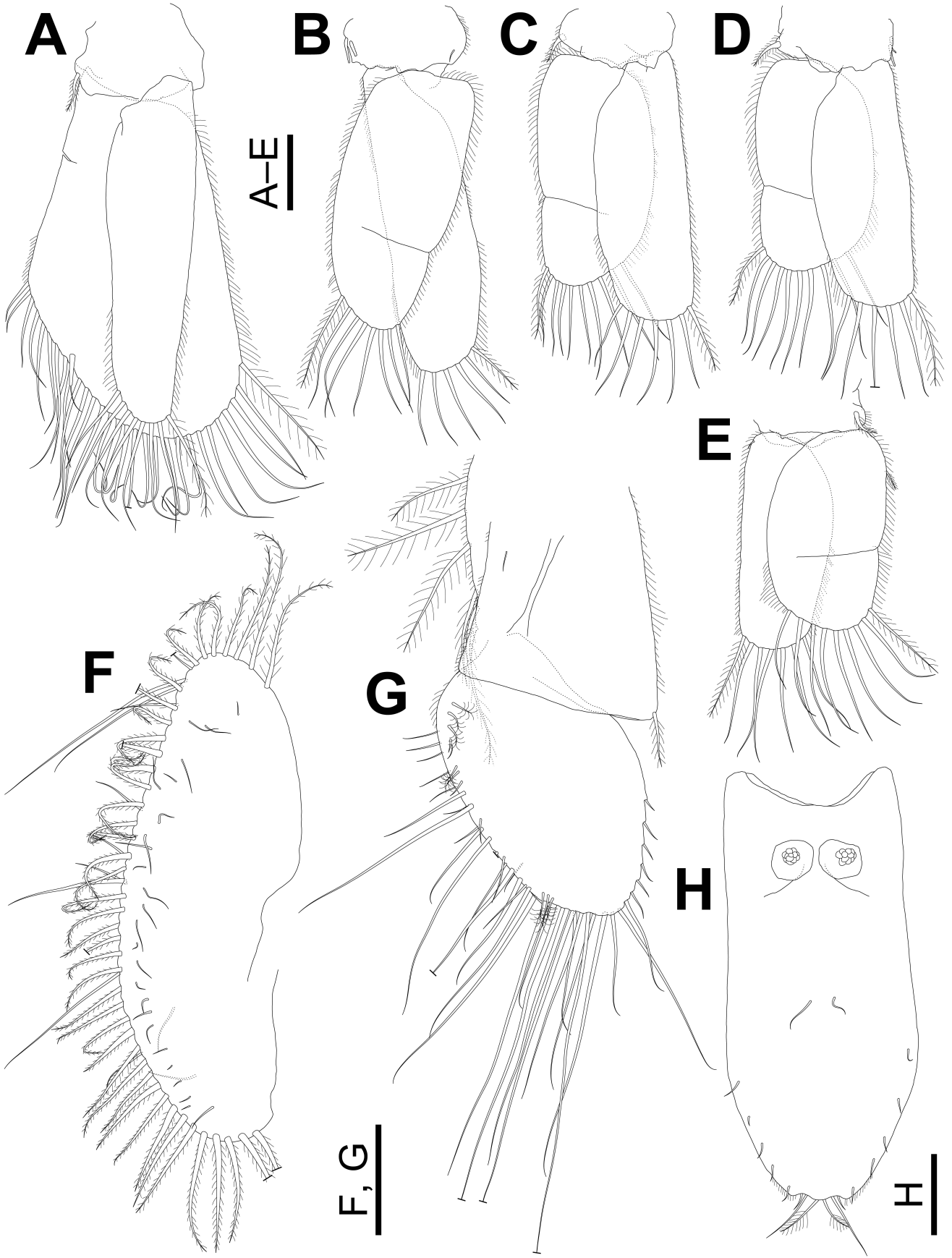
Gene	Primer	Sequence (5'→3')	Reaction	Direction	Reference
18S rRNA	18S-a1F	GGYGAAACCGYGAAWGGYTC	PCR	Forward	Kakui et al. (2011)
	18S-b3F	CCTGAGAAACGGCTACCACAT	CS	Forward	Kakui and Shimada (2017)
	18S-b4F	TGCGGTTAAAAAGCTCGTAGTTG	CS	Forward	Kakui et al. (2011)
	18S-b4R	TCCAACTACGAGCTTTTTAACC	CS	Reverse	Kakui et al. (2011)
	18S-b5F	GATCGAAGGCGATYAGATACC	CS	Forward	Kakui et al. (2021)
	18S-b6F	CCTGCGGCTTAATTTGACTC	CS	Forward	Kakui et al. (2011)
	18S-a6R	AACGGCCATGCACCAC	CS	Reverse	Kakui et al. (2011)
	18S-b8R	TCTAAGGGCATCACAGACCTG	CS	Reverse	Kakui et al. (2011)
	18S-b8F	GGTCTGTGATGCCCTTAGATG	CS	Forward	Kakui et al. (2011)
	18S-a9R	CCTTGTTACGACTTTTAGTTCC	PCR	Reverse	Kakui et al. (2011)
28S rRNA	LSUD1F	ACCCGCTGAATTTAAGCATA	PCR	Forward	Lenaers et al. (1989)
	28S-RD1.3f	GGATTCCCTYAGTAAGKGCG	CS	Forward	Drumm (2010)
	300F	CAAGTACCGTGAGGGAAAGTTG	CS	Forward	Lockyer et al. (2003)
	300R	CAACTTTCCCTCACGGTACTTG	CS	Reverse	Lockyer et al. (2003)
	900F	CCGTCTTGAAACACGGACCAAG	CS	Forward	Lockyer et al. (2003)
	28S_a3F	ACCCGAAAGATGGTGAWCTATG	CS	Forward	This study
	28S_a4F	ACGAGTTTCATCCTGTAAAGMKAATG	CS	Forward	This study
	28S_a6R	AGCCGAGTGCTTGCTACTAC	PCR	Reverse	This study

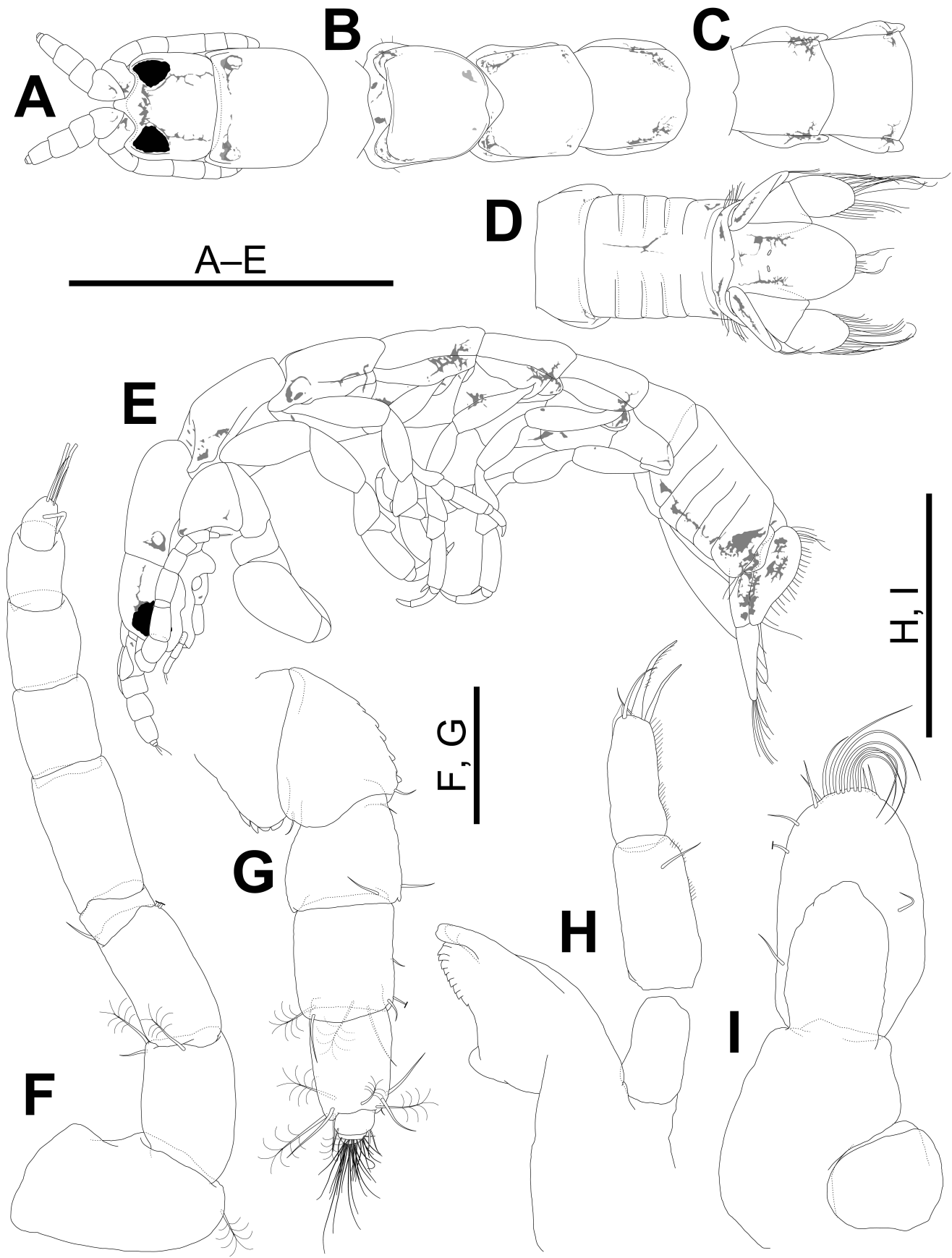

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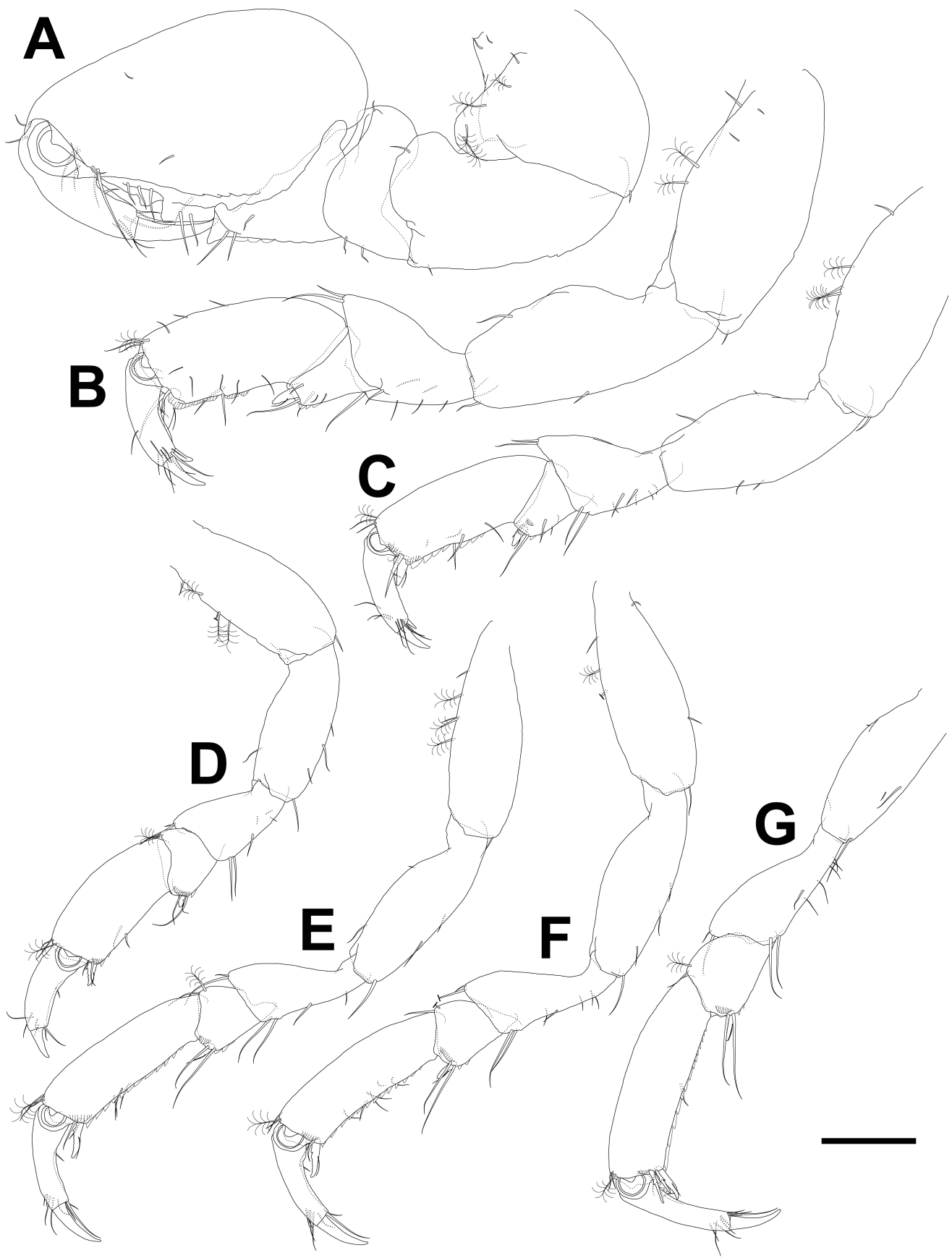

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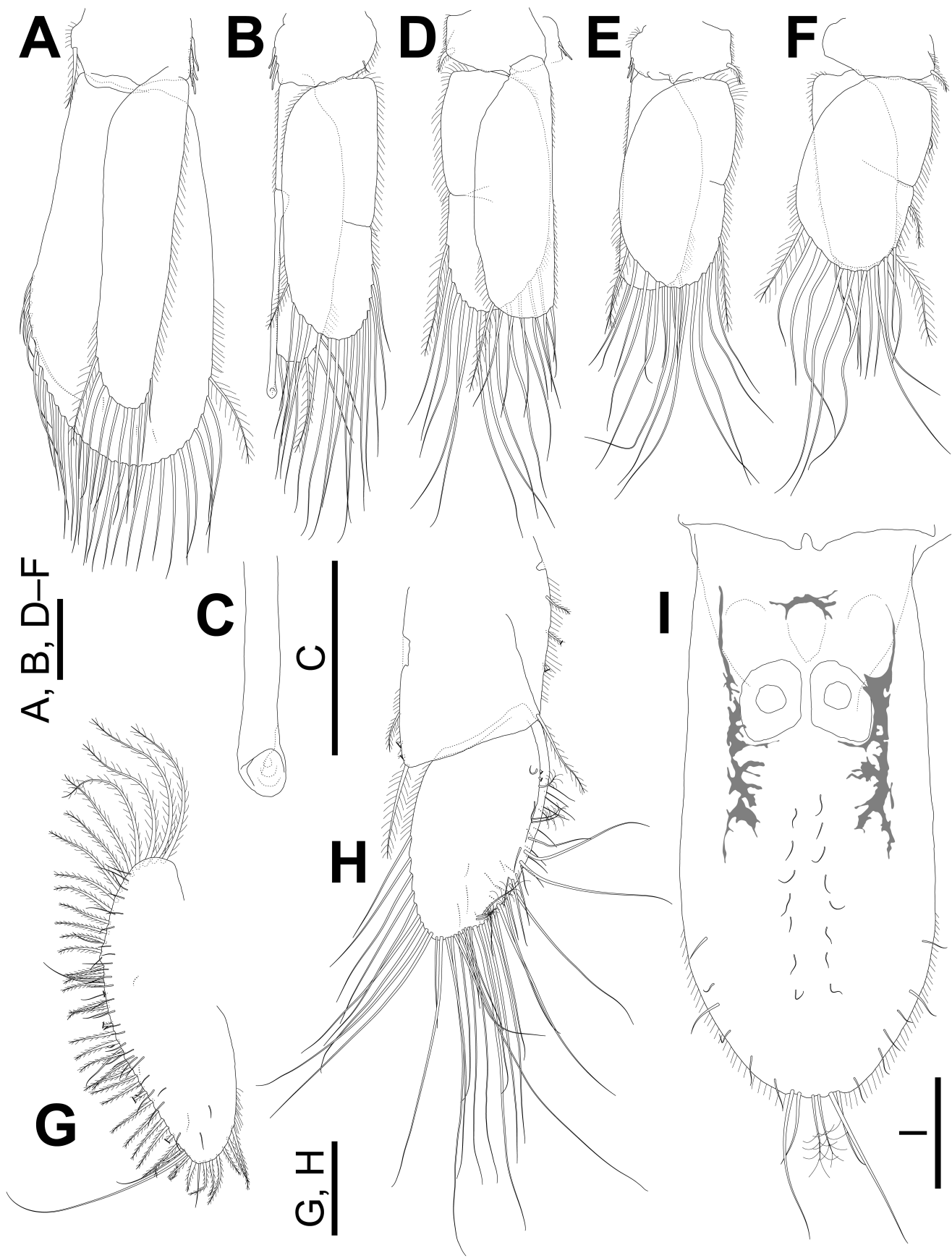

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