

Three New Genera and Species of Siphonostomatoid Copepods (Crustacea) Associated with Sponges from Samar Island in the Philippines, with a Proposal of a New Family

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ABSTRACT

Three new genera and species of siphonostomatoid copepods are described as associates of sponges from shallow water of Samar Island in the Philippines: *Samarus filipes* n. gen., n. sp., *Paurocheres dentatus* n. gen., n. sp., and *Platymyzon umbonatum* n. gen., n. sp. A new family Samarusidae is proposed to accommodate *Samarus* n. gen. which has rudimentary legs 1–5 represented only by filiform setae. *Paurocheres* n. gen. is characterized by 2-segmented endopod of leg 4 and reduced setation of legs, and *Platymyzon* n. gen. by missing of mandibular gnathobase.

Keywords: Samarusidae n. fam., three new genera, *Samarus*, *Paurocheres*, *Platymyzon*, sponge hosts

INTRODUCTION

Siphonostomatoid copepods associated with invertebrates are small copepod, mostly less than 2 mm in length (Humes, 1997a). Although sponges in the tropical Indo-Pacific harbor numerous siphonostomatoid copepods (Humes, 1996), perhaps Lee and Kim (2017) was the only record on the copepods associated with sponges from the Philippines. They redescribed *Doropontius denticornis* Thompson and Scott, 1903 and described five new species from Bohol Island in the Philippines, as follows: *Andapontius granulatus*, *Holobinus angustus*, *Dermatomyzon boxshalli*, *Entomopsyllus brevicaudatus*, and *Paralepeopsyllus leei*.

Samar Island is the third largest island of the Philippines, located in eastern Visayas. In February, 2017 SCUBA divers of the Korea Institute of Ocean Science and Technology (KIOST) made a field survey at the southeastern coast of Samar Island to collect sponges for the purpose of a biochemical research. The copepod material studied in the present paper were obtained as by-catches of these sponge samples.

MATERIALS AND METHODS

Studied copepod material was obtained from washings of mixed species of sponges. These sponge hosts were collected by SCUBA divers of KIOST in the depth of 15–25 m on February 24, 2017. For microscopic study selected copepod specimens were dissected in lactic acid and observed using the reversed slide method (Humes and Gooding, 1964). All drawings were made with the aid of a drawing attachment equipped on the microscope. Type specimens have been deposited in the Marine Biodiversity Institute of Korea (MABIK), Seocheon, Korea. In the descriptions body lengths were measured from the anterior apex of the cephalothorax to the posterior margin of the caudal rami, excluding the caudal setae. In the formula for the armature of legs 1–4 Roman numerals indicate spines and Arabic numerals represent setae.

SYSTEMATIC ACCOUNTS

Order Siphonostomatoida Thorell, 1859

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Samarusidae n. fam.

Diagnosis. As for the type genus.

Type genus. *Samarus* n. gen.

***Samarus* n. gen.**

Diagnosis. Body virgate and obscurely segmented. Prosome-urosome division indistinct. Prosome consisting of cephalothorax and free fourth pedigerous somite. Cephalothorax incorporating first to third pedigerous somites. Urosome 5-segmented, with 3 free abdominal somites in both sexes. Antennule 17-segmented in female and 15-segmented in male. Antenna consisting of syncoxa, basis, 1-segmented small exopod bearing 3 setae, and 3-segmented endopod; terminal endopodal segment tipped with claw. Oral cone short but well-developed. Mandible consisting of styliform gnathobase and palp bearing 2 setae distally. Maxillule bilobed; both lobes setiferous. Maxilla consisting of syncoxa and claw-like basis. Maxilliped arising from well-developed pedestal and consisting of syncoxa, basis, and 3-segmented endopod. Legs 1–5 extremely reduced, represented only by setae. Leg 6 represented by 1 small spinule and 1 seta in female and 3 setae in male.

Type species. *Samarus filipes* n. sp.

Etymology. The generic name *Samarus* is derived from Samar Island where the type locality is located. Gender is masculine.

Remarks. The characteristic body form of the new genus superficially reminds us of the Taeniacanthidae in the order Cyclopoida. However, in having a well-developed oral cone and a mandible with a styliform coxal gnathobase, *Samarus* n. gen. apparently belongs to the order Siphonostomatoida, as defined by Huys and Boxshall (1991) and Boxshall and Halsey (2004) in the keys to copepod orders. Within the Siphonostomatoida, *Samarus* n. gen. seems to be related to the family Asterocheridae in having the antennule with as many as 17 segments in the female, the antenna with a small exopod and a 3-segmented endopod, the mandible with a styliform gnathobase and a 2-segmented palp, and the 5-segmented maxilliped.

Many genera of the Asterocheridae are characterized by the reduction of the segmentation and setation of swimming legs. The reduction of the leg segmentation occurs generally from posterior to anterior legs and is thus common in leg 4 but rare in anterior legs (Boxshall, 1990; Lee and Kim, 2017). Although several genera exhibit the reduction of the segmentation in legs 1 and 2, as in *Meandromyzon* Stock 1989, *Tuphacheres* Stock 1965, *Cystomyzon* Stock 1981, and *Holobius* Lee and Kim 2017, all of these and other genera in the Asterocheridae retain at least 2-segmented exopod

and endopod in legs 1 and 2.

With the asterocherid forms of antenna and mouthparts, but with the extreme reduction in all swimming legs which are represented only by setae, *Samarus* n. gen. cannot be placed in the Asterocheridae or any of other known families of the Siphonostomatoida. Therefore the establishment of a new family is needed to accommodate *Samarus* n. gen.

***Samarus filipes* n. sp. (Figs. 1–3)**

Material examined. 7♀♀ 3♂♂ from washings of unidentified sponges collected by SCUBA in 15–25 m, Samar Island (11°15'07.31"N, 125°34'04.78"E) in the Philippines, 24 Feb 2017, collected by Park SI. Holotype (♀, MABIK CR00243556) and paratypes (4♀♀, 2♂♂, MABIK CR 00243557) have been deposited in MABIK, Seocheon, Korea. Dissected paratypes (2♀♀, 1♂♂) are retained in the collection of the junior author.

Female. Body (Fig. 1A) virgate and slightly depressed, with well-developed exoskeleton and inconspicuous prosome-urosome division. Length 943 µm. Prosome consisting of cephalothorax and fourth pedigerous somite. Cephalothorax formed by complete fusion of cephalosome and first to third pedigerous somites, not flexible. Cephalosomal region circular, disk-shaped, 227 × 248 µm, with anterior rostral prominence. Dorsal posterior border of cephalosomal region discernible only by sclerotization bands. Metasomal region (Fig. 1C) with parallel lateral margins. Fused first to third pedigerous somites 136 × 168 µm, without any indication of articulation or constriction. Fourth pedigerous somite 100 × 175 µm, faintly articulated from anterior metasomal region. Urosome (Fig. 1B) 5-segmented. Fifth pedigerous somite 84 × 153 µm, only slightly narrower than fourth pedigerous somite. Genital double-somite 109 × 150 µm, broadening posteriorly, with pair of nipple-shaped processes dorsally near posterior boundary; genital apertures (Fig. 1B, F) large and located dorsolaterally. First to third free abdominal somites 47 × 100, 55 × 73, and 82 × 58 µm, respectively, with angularly produced posterolateral corners. Anal somite without anal operculum. Caudal rami divergent; each ramus (Fig. 1D) gradually narrowing distally, 115 × 23 µm, 5.0 times as long as wide, with 1 minute setule (rudiment of seta I) and 5 naked setae; seta III located close to seta II on outer margin of caudal ramus; seta IV largest, stiff, and 169 µm long; seta V absent.

Rostrum as anterior prominence of cephalothorax. Antennule (Fig. 2A) slender, 198 µm long, and 17-segmented, but articulations incomplete between third and eighth segments; armature formula 1, 2, 2, 2, 2, 2, 2, 2, 7, 2, 2, 4, 2, 2, 2, 1, and 13 + aesthetasc; all of setae naked; aesthetasc on terminal segment as long as distal 5 segments combined. Antenna

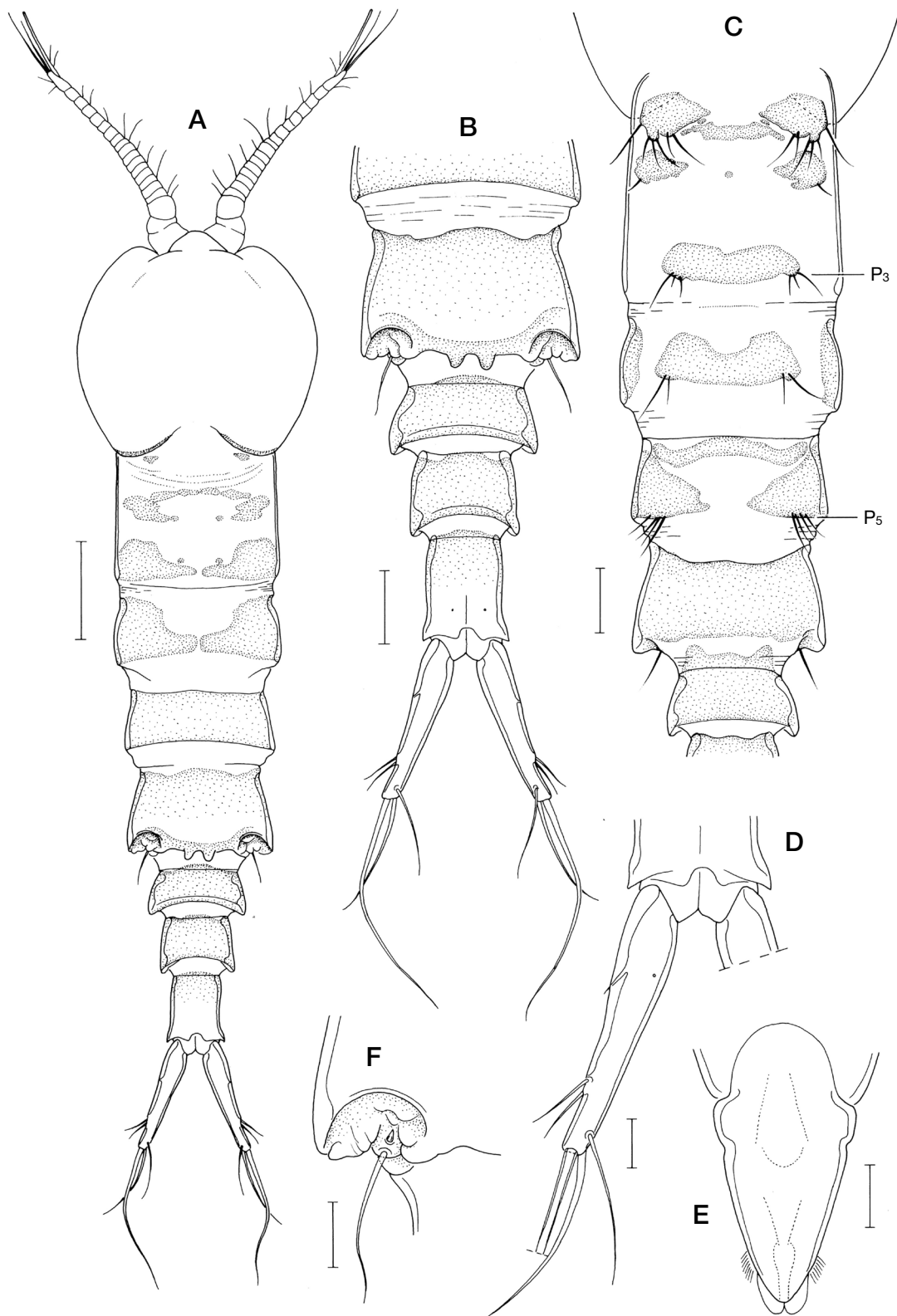


Fig. 1. *Samarus filipes* n. gen., n. sp., female. A, Habitus, dorsal; B, Urosome, dorsal; C, Metasome to first free abdominal somite, ventral (P3 and P5 indicate legs 3 and 5, respectively); D, Left caudal ramus, dorsal; E, Oral cone, anterior; F, Genital aperture, dorsal. Scale bars: A=0.1 mm, B, C=0.05 mm, D-F=0.02 mm.

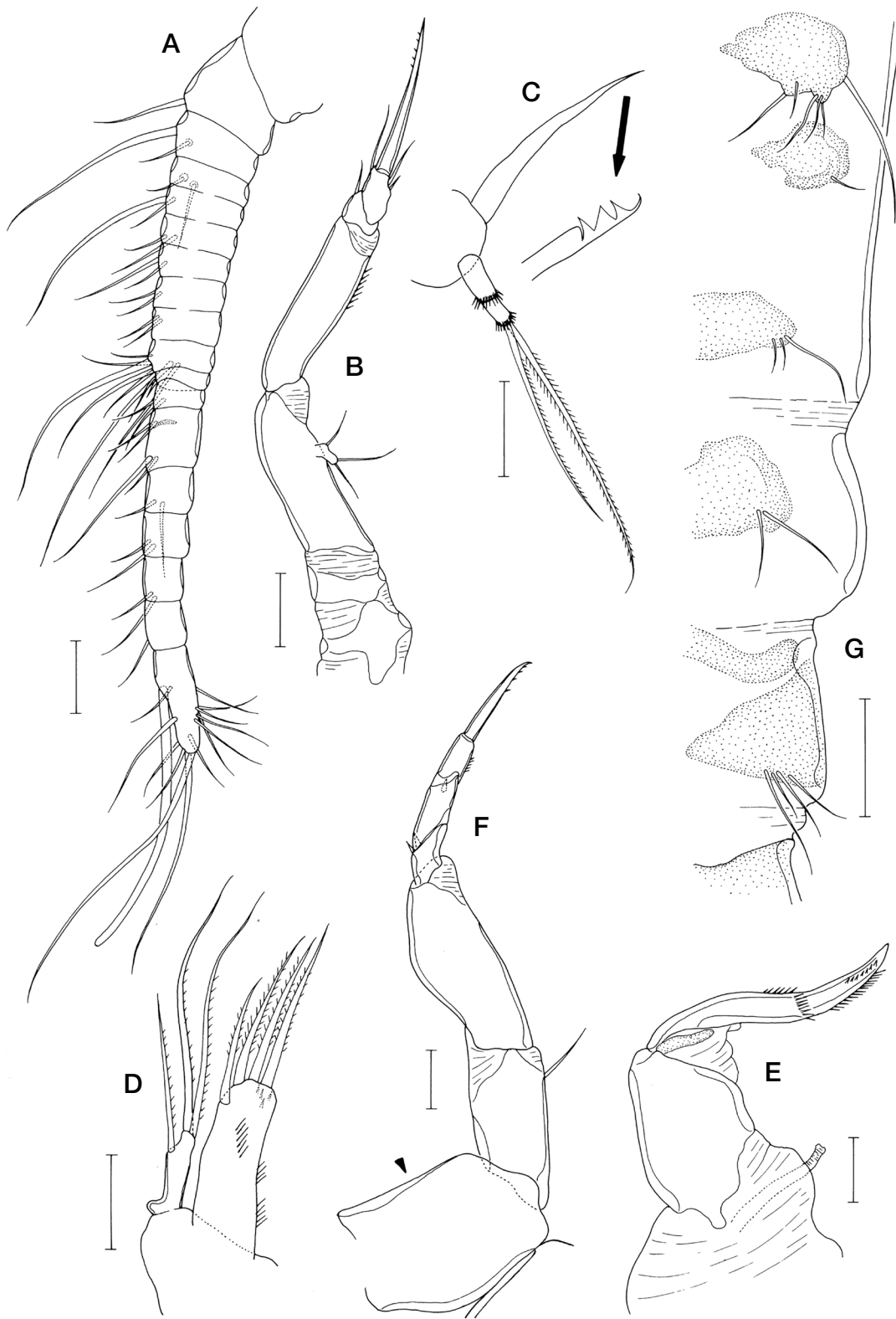


Fig. 2. *Samarus filipes* n. gen., n. sp., female. A, Antennule; B, Antenna; C, Mandible; D, Maxillule; E, Maxilla; F, Maxilliped, including pedestal (indicated by arrowhead); G, Legs 1-6. Scale bars: A-F=0.02 mm, G=0.05 mm.

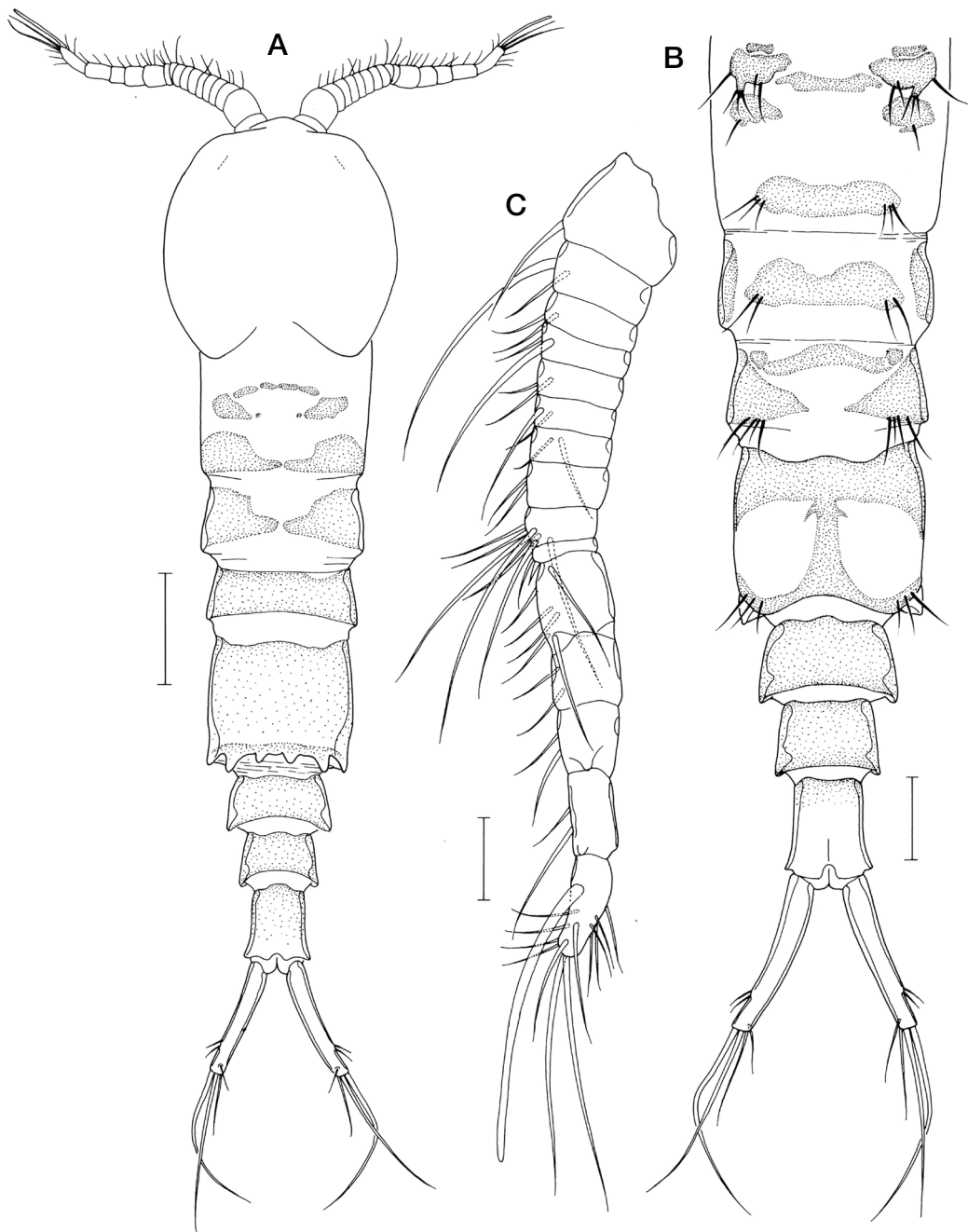


Fig. 3. *Samarus filipes* n. gen., n. sp., male. A, Habitus, dorsal; B, Metasome and urosome, ventral; C, Antennule. Scale bars: A=0.1 mm, B=0.05 mm, C=0.02 mm.

(Fig. 2B) consisting of syncoxa, basis, exopod, and endopod. Syncoxa unarmed, divisible into poorly defined pre-coxal and coxal regions, each region recognizable by sclerotizations and wrinkles between them. Basis 45 μ m long. Exopod small, directed proximally, not articulated from basis, longer than wide, with 3 (2 distal and 1 lateral) small setae. Endopod 3-segmented; first segment 50 μ m long, with sev-

eral minute spinules on distal half of outer margin; second segment short, with 1 inner seta distally; third segment with 1 straight spine (44 μ m long) and 3 setae.

Oral cone (Fig. 1E) short, directed ventrally, about 90×45 μ m, nearly evenly tapering, with pair of membranous lobes distally and several minute setules subdistally on lateral margins. Mandible (Fig. 2C) consisting of stylet and palp;

stylet 72 μm long, distally thin, with 3 denticles; palp 2-segmented, 25 μm long; segments subequal in length, spinulose distally; distal segment with 2 long pinnate setae, longer seta 90 μm long and shorter one 66 μm long. Maxillule (Fig. 2D) bilobed; inner lobe about $36 \times 14 \mu\text{m}$, armed with 3 distal and 1 subdistal setae, and ornamented with several longitudinal rows of setules on lateral surfaces; outer lobe about $18 \times 5 \mu\text{m}$ with protuberance proximally and armed with 2 distal and 1 subdistal setae. Maxilla (Fig. 2E) consisting of syncoxa and basis; syncoxa broad, proximally with short, flexible tube of maxillary gland; basis slender, forming claw, with spinules on distal half. Maxilliped (Fig. 2F) arising from well-developed pedestal (indicated by arrowhead) and consisting of syncoxa, basis, and 3-segmented endopod; pedestal broad but completely fused to ventral surface of body; syncoxa $45 \times 25 \mu\text{m}$, with 1 inner seta subdistally; basis $64 \times 27 \mu\text{m}$, unarmed, with convex outer margin and nearly straight inner margin; endopod slender, with 2 and 1 small setae respectively on first and second segments; third segment terminated by claw of 34 μm long, with few spinules on inner margin.

Legs 1–5 (Fig. 1C) represented only by small filiform setae arising from sclerotized regions (Fig. 2G), with consistent number of setae: 6, 1, 3, 2, and 4 for legs 1–5, respectively. Leg 6 (Fig. 1F) represented by 1 small spinule and 1 naked seta in genital aperture.

Male. Body (Fig. 3A) hardly distinguishable from that of female. Length 784 μm . Prosome segmented as in female. Cephalosomal region $195 \times 191 \mu\text{m}$. Fused first to third pedigerous somites $102 \times 139 \mu\text{m}$. Fourth pedigerous somite $68 \times 132 \mu\text{m}$. Urosome (Fig. 3A, B) segmented as in female. Fifth pedigerous somite $59 \times 123 \mu\text{m}$. Genital double-somite $114 \times 117 \mu\text{m}$, with 2 pairs of nipple-shaped dorsodistal processes; genital operculum obscure. Three free abdominal somites 50×85 , 45×63 , and $61 \times 53 \mu\text{m}$, respectively. Caudal ramus $100 \times 17 \mu\text{m}$, 5.88 times as long as wide, with almost parallel lateral margins and 6 setae (setae II–VII).

Rostrum as weak anterior prominence of cephalothorax. Antennule (Fig. 3C) 198 μm long and 15-segmented; armature formula 1, 2, 2, 2, 2, 2, 2, 7, 2, 6, 2, 2, 2, and 13 + aesthetasc. Antenna as in female.

Oral cone, mandible, maxillule, maxilla, and maxilliped as in female.

Legs 1–5 (Fig. 3B) also as in female, each with same number of setae as those of female. Leg 6 represented by 3 setae on each posteroventral corner on lateral sides.

Etymology. The specific name *filipes* is a combination of Latin words *fil* (= a thread) and *pes* (= a foot), alluding to the legs represented by the thread-like setae.

Remarks. In some of observed specimens the urosome were slightly arched ventrally, but all of the specimens had

a straight body in dorsal and ventral views. The female and male are easily differentiable from one another by the number of the dorsodistal processes on the genital double-somite, two in the female and four in the male.

Family Asterocheridae Giesbrecht, 1899

Paurocheres n. gen.

Diagnosis. Female: Body cyclopiform, with 4-segmented prosome and 4-segmented urosome. Antennule 20-segmented, with aesthetasc on 18th segment. Antenna with small, 1-segmented exopod; endopod 3-segmented, with stout, spiniform claw distally. Oral cone short. Mandible consisting of styloform gnathobase and 1-segmented palp tipped with 2 setae. Maxillule with 4 setae on both inner and outer lobes. Maxilla consisting of syncoxa and claw-like basis. Maxilliped consisting of syncoxa, basis and 3-segmented endopod bearing terminal claw. Legs 1–4 biramous, with 3-segmented rami in legs 1–3, but with 3-segmented exopod and 2-segmented endopod in leg 4; setation reduced. Inner seta absent on coxa of legs 1–4. Armature formula for exopod of legs 1–4: I-0; I-0; III, 2, 0 (leg 1) and I-0; I-1; III, I, 1 (legs 2–4). Armature formula for endopod of legs 1–4: 0-1; 0-1; 0, 2, 0 (legs 1 and 2), 0-1; 0-0; 0, I, 0 (leg 3), and 0-1; 0, I, 0 (leg 4). Leg 5 with free exopod bearing 3 setae.

Type species. *Paurocheres dentatus* n. sp.

Etymology. The generic name *Paurocheres* is a combination of the Greek *paur* (= small) and *-cheres*, the ending of many genera of the family Asterocheridae. It alludes to the relatively small body size of the type species. Gender is masculine.

Remarks. The segmentation and setation of swimming legs are important characters in the current taxonomy of the Asterocheridae. The 2-segmented condition of the endopod of leg 4, as in *Paurocheres* n. gen., is expressed in five known genera. Conspicuous characters separating them from *Paurocheres* n. gen. are as follows:

Discopontius Nicholls, 1944: The body is subcircular and the setations of swimming legs are more developed than those of *Paurocheres* n. gen., for example, the second endopodal segment of legs 1–3 is armed with 2 setae (Nicholls, 1944).

Peltozymon Stock, 1975: The second pedigerous somite is expanded, the antenna lacks an exopod, and the endopod of leg 3 is 2-segmented (Stock, 1975).

Stenomyzon Kim, 2010: The mandible consists only of a palp, without a gnathobase, all of exopodal segments of legs 1–4 have inner setae, the terminal endopodal segment of legs 1 and 2 is armed with 6 setae, and the terminal endopodal segment of legs 3 and 4 is armed with 2 setae (Kim,

2010).

Siphonopontius Malt, 1991: The body is remarkably small, 0.36 mm long in the female, the third exopodal segment of legs 1–4 is armed with 4 setae, and the second endopodal segment of leg 4 is armed with 3 elements (Malt, 1991).

Tondua Humes, 1997: The body is broadened, the antenna also lacks an exopod, and the exopod of leg 4 is 2-segmented. This genus was originally placed in the Coralliomyzontidae (Humes, 1997b).

Paurocheres n. sp. shows a remarkable reduction in the numbers of armature elements on swimming legs. Boxshall (1990) recorded similar reductions of the leg armature in the genera *Sinopontius* Boxshall, 1990, *Inermocheres* Boxshall, 1990, *Indomyzon* Ummerkuty, 1966, and *Psilomyzon* Stock, 1965. But the detail of the armature reduction of *Paurocheres* n. gen. is very different from those of the four genera, for example, all of the first endopodal segments of the swimming legs are armed with an inner seta in contrast to the missing of this seta in all swimming legs of *Psilomyzon*, *Sinopontius* and *Inermocheres* and in leg 4 in *Indomyzon* (Stock, 1965; Ummerkuty, 1966; Boxshall, 1990).

***Paurocheres dentatus* n. sp. (Figs. 4, 5)**

Material examined. 9♀♀ from washings of sponges collected by SCUBA in 15–25 m, Samar Island (11°15'07.31"N, 125°34'04.78"E) in the Philippines, 24 Feb 2017, collected by Park SI. Holotype (♀, MABIK CR00243558) and paratypes (6♀♀, MABIK CR00243559) have been deposited in MABIK, Seocheon, Korea. Dissected paratypes (2♀♀) are retained in the collection of the junior author.

Female. Body (Fig. 4A) small and narrow. Length 510 µm. Prosome oval, 277 µm long, consisting of cephalothorax and 3 metasomites. Cephalothorax 173 × 168 µm, much longer than 3 metasomites combined, with angular posterolateral corners. Three metasomites 48 × 138, 34 × 118, and 20 × 91 µm, respectively, with round lateral margins. Urosome (Fig. 4B) dorsoventrally flattened and 4-segmented. Fifth pedigerous somite 72 µm wide. Genital double-somite broad, 86 × 100 µm with convex lateral margins and tooth-like process at middle of lateral margins; genital apertures located dorsally slightly anterior to middle of double-somite. First free abdominal somite 45 × 55 µm. Anal somite 23 × 39 µm, much smaller than first free abdominal somite, and broadening distally. Caudal ramus (Fig. 4C) 36 × 19 µm, 1.89 times as long as wide, gradually broadening distally, with 6 short, naked setae; largest 2 mid-terminal setae 55 µm (seta IV) and 53 µm (seta V) long.

Rostrum as inverted triangle and well-sclerotized. Antennule (Fig. 4D) 186 µm long, longer than cephalothorax, and 20-segmented; armature formula 1, 2, 1, 2, 2, 2, 2, 2,

6, 2, 2, 2, 1, 2, 2, 2, 1, 1 + aesthetasc, 2, and 10; all of setae naked. Antenna (Fig. 4E) consisting of precoxa, coxa, basis, exopod, and 3-segmented endopod. Precoxa and coxa indistinctly defined between them. Basis 42 µm long, with longitudinal row of fine spinules. Exopod small, 7 × 4 µm, with 2 small setae apically. First endopodal segment 30 µm long, with fine setules on outer margin. Second endopodal segment short, with 1 small, spiniform seta distally. Third endopodal segment distally with 2 setae and 1 stout spine (20 µm long) bearing several spinules distally.

Oral cone (Fig. 4F) short, 75 × 35 µm, widest at 0.4 region. Mandible (Fig. 4G) consisting of stylet and palp; stylet 65 µm long, distally thin and knife-shaped, without denticles; palp 1-segmented, slender, 31 µm long, with 2 setae apically of 58 and 31 µm long. Maxillule (Fig. 4H) bilobed; small outer lobe with 3 naked and 1 minute setae distally; inner lobe about twice as long as outer lobe, with spinules and setules on inner margin and 4 bluntly tipped, pinnate setae of equal length; stout, conical tubercle present at proximal region (coxal region) of maxillule. Maxilla (Fig. 4I) consisting of syncoxa and slender basis; proximal region of syncoxa with tubular extension of maxillary gland; basis claw-like, with rows of spinules along distal third. Maxilliped (Fig. 5A) 5-segmented, consisting of syncoxa, basis, and 3-segmented endopod; syncoxa with 1 minute seta at subdistal area of inner margin; basis unarmed; endopod with 2, 2, and 1 setae on first to third segments, respectively; terminal claw 27 µm long, slightly curved, with several spinules on concave inner margin.

Legs 1–4 (Fig. 5B–E) biramous; coxa without inner seta; first exopodal segment without inner seta. Legs 1–3 with 3-segmented rami and large spinules on distal margin of intercoxal plate. Inner and outer distal corners of first endopodal segment of leg 1 rounded, but those of legs 2–4 with spiniform process. Second endopodal segment of legs 1–3 with 1 pointed process at inner distal corner and 2 large, spiniform processes at outer distal corner. Outer and inner distal corners of third endopodal segment of leg 1–3 with pointed process; additional spiniform process present on outer margin in legs 1 and 2. Inner distal seta on basis of leg 1 large and pinnate along proximal third. Leg 4 with 3-segmented exopod and 2-segmented endopod; intercoxal plate smooth. Armature formula for legs 1–4 as follows:

	Coxa	Basis	Exopod	Endopod
Leg 1:	0-0	1-1	I-0; I-0; III, 2, 0	0-1; 0-1; 0, 2, 0
Leg 2:	0-0	1-0	I-0; I-1; III, I, 1	0-1; 0-1; 0, 2, 0
Leg 3:	0-0	1-0	I-0; I-1; III, I, 1	0-1; 0-0; 0, I, 0
Leg 4:	0-0	1-0	I-0; I-1; III, I, 1	0-1; 0, I, 0

Leg 5 consisting of lateral seta on fifth pedigerous somite and free exopod; exopod (Fig. 5F) 27 × 13 µm, 2.08

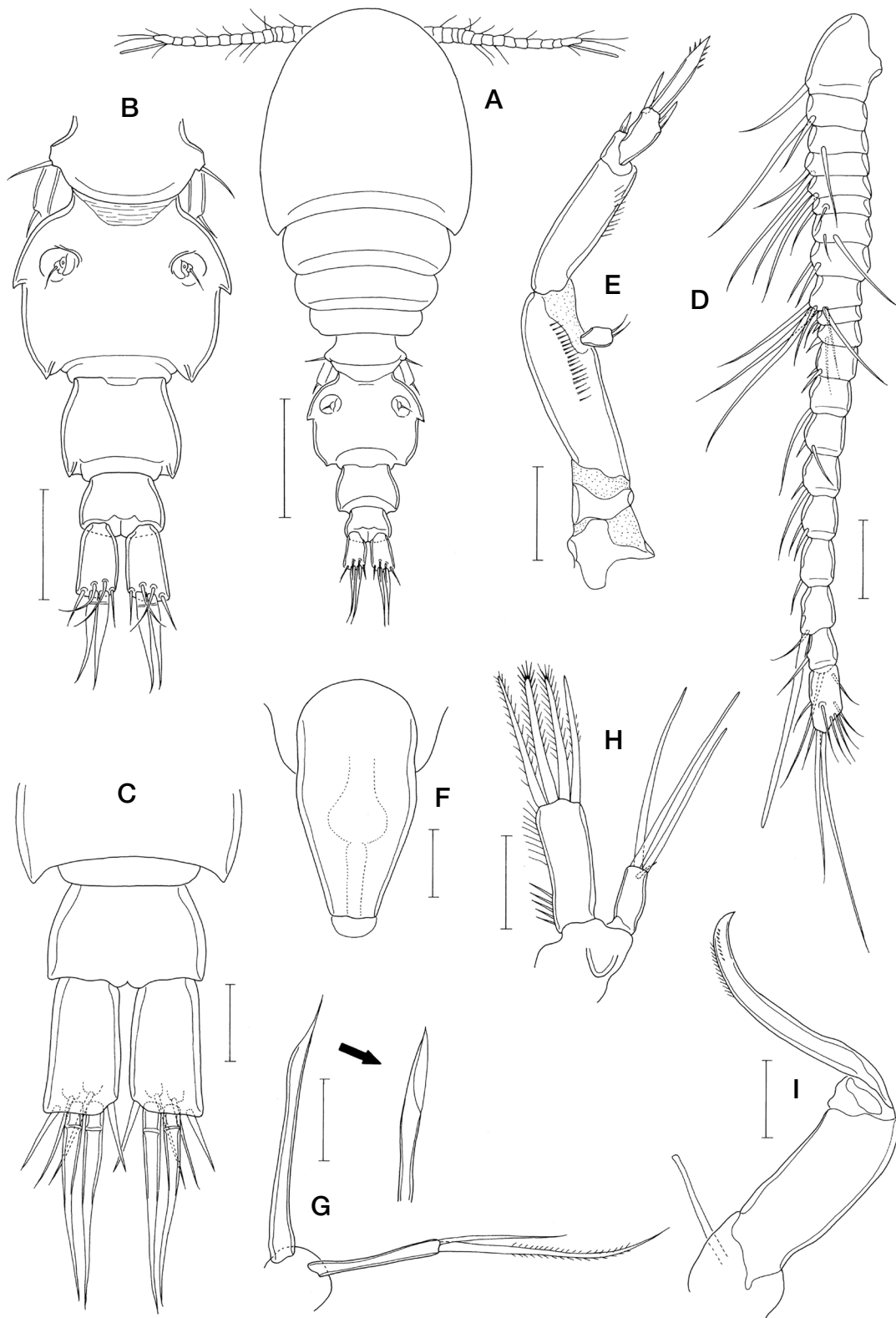


Fig. 4. *Paurocheres dentatus* n. gen., n. sp., female. A, Habitus, dorsal; B, Urosome, dorsal; C, Distal part of abdomen, ventral; D, Antennule; E, Antenna; F, Oral cone; G, Mandible; H, Maxillule; I, Maxilla. Scale bars: A=0.1 mm, B=0.05 mm, C-I=0.02 mm.

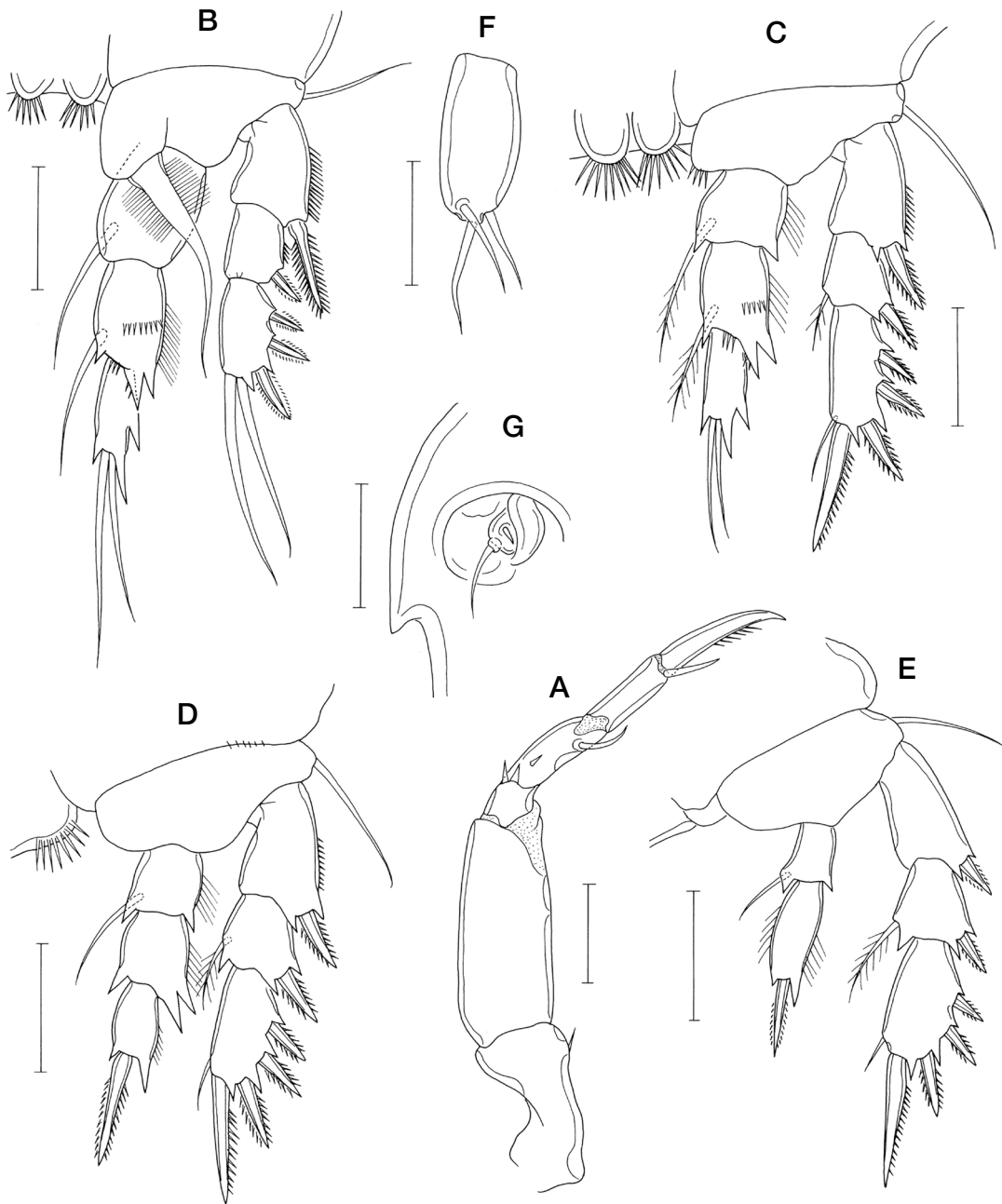


Fig. 5. *Paurocheres dentatus* n. gen., n. sp., female. A, Maxilliped; B, Leg 1; C, Leg 2; D, Leg 3; E, Leg 4; F, Exopod of leg 5; G, Genital aperture. Scale bars: A-G=0.02 mm.

times as long as wide, with naked distal setae, all of these setae shorter than exopod. Leg 6 (Fig. 5G) represented by 1 spinule and 1 seta on genital operculum.

Male. Unknown.

Etymology. The specific name *dentatus* is derived from the Latin *dentat* (= toothed), alluding to the tooth-like process on the lateral margins of the genital double-somite.

***Platymyzon* n. gen.**

Diagnosis. Female: Body flattened, with broad prosome and small urosome. Urosome 4-segmented. Caudal ramus with 6 setae. Antennule 20-segmented, with aesthetasc on antepenultimate segment. Antenna consisting of 1-segmented, elongate exopod and 3-segmented endopod. Oral siphon

elongate and flexible. Mandible consisting of 2-segmented palp tipped with 2 setae, lacking gnathobase. Maxillule bilobed, with 4 setae on each inner and outer lobe. Maxilla consisting of unarmed syncoxa and claw-like basis. Maxilliped 6-segmented, including 4-segmented endopod, terminally with claw. Legs 1–4 biramous, with 3-segmented rami. Legs 1–3 with inner seta on coxa, but this seta absent in leg 4. Number of armature elements on legs 1–4 as in the genus *Asterocheres*.

Type species. *Platymyzon umbonatum* n. sp.

Etymology. The generic name is a combination of the Greek *plat* (= flat) and *-myzon*, the ending of many genera of the family Asterocheridae. Gender is neuter.

Remarks. The missing of a gnathobase on the mandible seems to be the most significant distinguishing feature of *Platymyzon* n. gen. In the Asterocheridae this feature was known previously only in the genus *Stenomyzon* Kim, 2010 which was recorded from the Caribbean Sea (Kim, 2010). Otherwise, *Platymyzon* n. gen. is not confusable with *Stenomyzon*, because (1) the body is narrow in *Stenomyzon* but broad in *Platymyzon*; (2) *Stenomyzon* has a short oral cone but *Platymyzon* has an elongate, tubular oral siphon; (3) the endopod of leg 4 is 2-segmented in *Stenomyzon* but 3-segmented in *Platymyzon*, and (4) the setations of swimming legs are reduced in *Stenomyzon*, for example, an inner seta is missing on the coxa of legs 1–3, but present in *Platymyzon*. These differences seem justify the establishment of the new genus *Platymyzon*.

Although the mandible is unknown in *Australomyzon* Nicholls, 1944, *Discopontius* Nicholls, 1944, and *Paracontiphorus* Eiselt, 1961, these genera can be differentiated from *Platymyzon* n. gen. by their diagnostic features, as follows: *Australomyzon* has a 5-segmented urosome in the female (Nicholls, 1944); *Discopontius* has a 2-segmented endopod of leg 4 (Nicholls, 1944); and *Paracontiphorus* has a 8- or 9-segmented antennule in the female and 5 setae on the exopod of leg 5 (Eiselt, 1961).

***Platymyzon umbonatum* n. sp. (Figs. 6, 7)**

Material examined. 4♀♀ from washings of sponges collected by SCUBA in 15–25 m, Samar Island (11°15'07.31"N, 125°34'04.78"E) in the Philippines, 24 Feb 2017, collected by Park SI. Holotype (♀, MABIK CR00243560) and paratypes (2♀♀, MABIK CR00243561) have been deposited in MABIK, Seocheon, Korea. Dissected paratype (1♀) is retained in the collection of the junior author.

Female. Body (Fig. 6A) flattened, with broad prosome and small urosome. Length 732 µm. Prosome 560 µm long; greatest width 502 µm. Cephalothorax and second and third pedigerous somites with pointed posterolateral corners.

Cephalothorax 385 µm long. Second to fourth pedigerous somites 61 × 418, 73 × 375, and 40 × 175 µm, respectively. Fourth pedigerous somite much narrower than third pedigerous somite, with large, conical tubercle dorsally. Urosome (Fig. 6B) 4-segmented. Fifth pedigerous somite 87 µm wide, with tapering lateral margins. Genital double-somite 78 × 107 µm, much wider than long, with narrowed posterior quarter, 19 spinules on lateral margin near genital aperture (Fig. 7G), anterior 13 of them longer and posterior 6 shorter; genital aperture located dorsally in middle of double-somite. Two free abdominal somite 32 × 49 and 39 × 43 µm, respectively. Anal somite with spinules along posteroventral margin (Fig. 6C). Caudal ramus 17 × 19 µm, slightly wider than long, with 6 setae and spinules along posteroventral margin.

Rostrum absent. Antennule (Fig. 6D) slender, 320 µm long, and 20-segmented; second to sixth segments incompletely articulated from one another; each segment with 2 setae, except for ninth segment with 7 setae, antepenultimate segment with 2 setae plus aesthetasc, and terminal segment with 11 setae; about half of setae on first to ninth segments pinnate, other setae naked. Antenna (Fig. 6E) slender, with unarmed syncoxa; basis 62 µm long, with fine, comb-like spinules on outer surface. Exopod slender, 31 × 3.7 µm, about 8 times as long as wide, with 1 proximal and 2 distal, thin setae. Endopod 3-segmented; first segment 58 µm long, unarmed but with setules on outer margin; short second segment with 1 small seta distally; third segment with 1 spine and 2 setae and with setules on outer margin; terminal spine slender, 55 µm long.

Oral siphon (Fig. 6F) elongate, 297 µm long, extending to intercoxal plate of leg 4. Mandible (Fig. 6G) consisting only of palp, without coxal gnathobase. Palp thin and 2-segmented; proximal segment 79 µm long; distal segment 29 µm long, with 2 apical setae, larger seta 167 µm long and pinnate, smaller seta 57 µm long and naked. Maxillule (Fig. 6H) bilobed; outer lobe 26 × 6 µm, with 3 equally long and 1 shorter setae; inner lobe 50 × 16 µm, narrowing distally, with 3 unequal and 1 small setae and longitudinal row of spinules along distal third. Maxilla (Fig. 6I) consisting syncoxa and basis; syncoxa with slender tubular extension of maxillary gland at base; basis as slender, strongly recurved claw bearing articulation distally. Maxilliped (Fig. 7A) 6-segmented; syncoxa with 1 small seta at inner subdistal region and minute spinules at outer distal region; basis 100 × 33 µm, unarmed, with parallel inner and outer margins; endopod 4-segmented, with 2, 1, 1, and 1 setae on first to fourth segments, respectively; terminal claw 56 µm long, 1.75 times as long as last endopodal segment; last endopodal segment and terminal claw with minute spinules along inner margin.

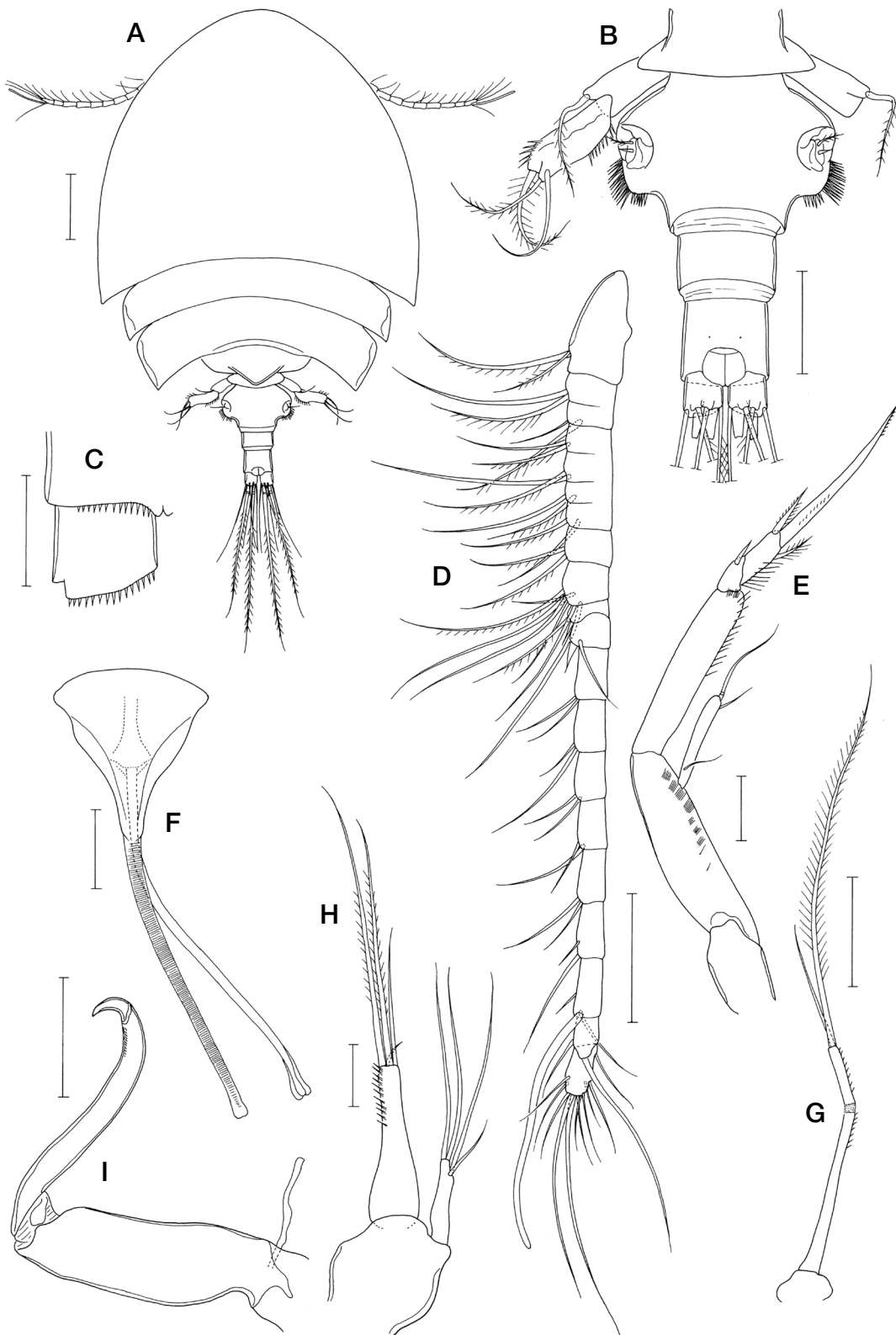


Fig. 6. *Platymyzon umbonatum* n. gen., n. sp., female. A, Habitus, dorsal; B, Urosome, dorsal; C, Caudal ramus, ventral; D, Antennule; E, Antenna; F, Oral siphon; G, Mandible; H, Maxillule; I, Maxilla. Scale bars: A=0.1 mm, B, D, F, G, I=0.05 mm, C, E, H=0.02 mm.

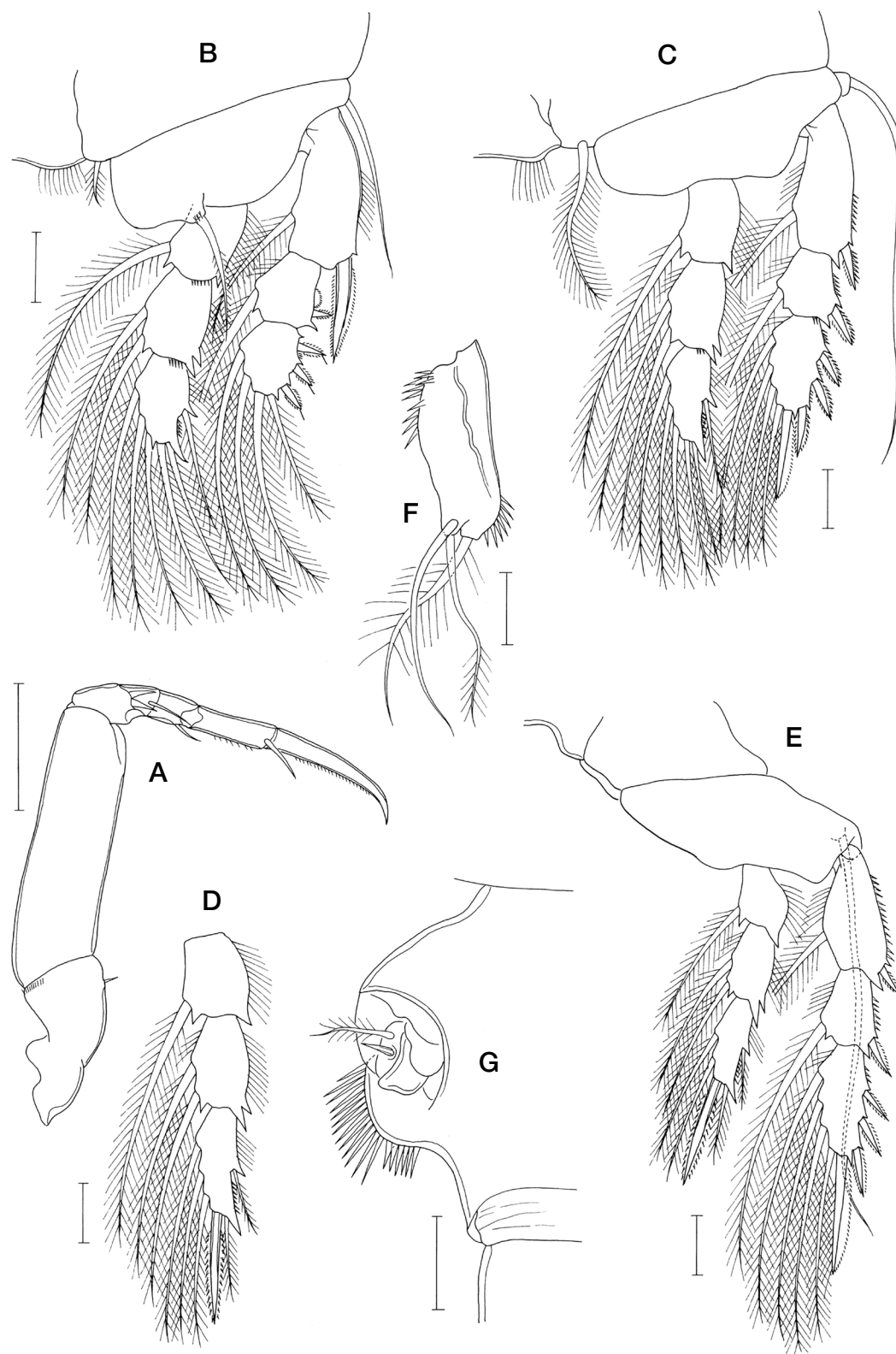


Fig. 7. *Platymyzon umbonatum* n. gen., n. sp., female. A, Maxilliped; B, Leg 1; C, Leg 2; D, Endopod of leg 3; E, Leg 4; F, Exopod of leg 5; G, Left side of genital double-somite, dorsal. Scale bars: A=0.05 mm, B-G=0.02 mm.

Legs 1–4 biramous, with 3-segmented rami. Legs 1–3 with inner seta on coxa (Fig. 7B, C), but leg 4 lacking this seta (Fig. 7E). Outer seta on basis of legs 2–4 large, longer than exopod. Inner seta on coxa and outer seta on basis of leg 1 smaller than those of legs 2 and 3. Second endopodal segment of legs 1–4 with bicuspid outer distal corner. Armature formula for legs 1–4 as follows:

	Coxa	Basis	Exopod	Endopod
Leg 1:	0-1	1-1	I-1; I-1; III, 1, 3	0-1; 0-2; 1, 2, 3
Leg 2:	0-1	1-0	I-1; I-1; III, I, 4	0-1; 0-2; 1, 2, 3
Leg 3:	0-1	1-0	I-1; I-1; III, I, 4	0-1; 0-2; 1, 1+I, 3
Leg 4:	0-0	1-0	I-1; I-1; III, I, 4	0-1; 0-2; 1, 1+I, 2

Leg 5 consisting (Fig. 6B) of protopod and free exopod. Protopod fused with fifth pedigerous somite, but well-developed, longer than wide, with 1 outer distal seta. Exopod (Fig. 7F) $55 \times 21 \mu\text{m}$, armed with 2 pinnate and 1 naked, equally long setae, and with winding longitudinal ridge on dorsal surface, and patch of spinules at outer distal and inner proximal regions. Leg 6 (Fig. 7G) represented by 1 spinule and 1 pinnate seta on genital operculum.

Male. Unknown.

Etymology. The specific name *umbonatum* is derived from the Latin *umbo* (= a projecting knob), alluding to the dorsal tubercle on the fourth pedigerous somite.

Remarks. The ridge on the dorsal surface of the exopod of leg 5 is a diagnostic character of *Platymyzon umbonatum* n. sp., considering that within the Asterocheridae this character was reported only in *Parasterocheles cristatus* Humes, 1996 (see Humes, 1996).

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