

Two New Records of the *Eocuma* Species (Crustacea, Cumacea, Bodotriidae) from Korea

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ABSTRACT

Two cumaceans species, *Eocuma amakusense* Gamô, 1967 and *E. latum* Calman, 1907, belonging to the family Bodotriidae are collected from the southern sea in Korea, and are redescribed. At the present, just one species belonging to the genus *Eocuma*, *E. cf. hilgendorfi* Marcusen, 1894 has been reported in Korea. Herein we add two *Eocuma* species to the Korean cumacean fauna and described them with full illustration contained new information of mouthparts. A key to the Korean *Eocuma* species is also provided.

Keywords: taxonomy, two new records, Korea

INTRODUCTION

The family Bodotriidae Scott, 1901 contains two subfamilies: Bodotriinae Hale, 1944 and Vaunthompsoniinae Hale, 1944. The subfamily Bodotriinae is composed of 14 genera and is characterized by lacking exopods on pereopods beyond the first pair and by with five pairs of pleopods in males of most genera (Lee et al., 2016; WoRMS, 2017). Among the 14 genera, the genus *Eocuma* Marcusen, 1894 is the fourth most speciose genera, following the genus *Bodotria* Goodsir, 1843, *Cyclaspis* Sars, 1865, and *Iphinoe* Bate, 1856. Diagnostic characteristics of the genus *Eocuma* are as follows: (1) carapace frequently with lateral horns and/or distinct lateral carinae, usually wider than deep; (2) first pereonite always invisible, second frequently fused with carapace; (3) maxilliped 3, distal prolongation large and stout, merus frequently expanded; (4) pereopod 1, basis distally produced beyond insertion of ischium; and (5) uropod, endopod uniaarticulate (Day, 1978). To date, 29 species are currently known in the genus *Eocuma* (WoRMS, 2017), of which only one species has been reported from Korea: *Eocuma cf. hilgendorfi* Marcusen, 1894 (Park et al., 1998). In this study, *E. amakusense* Gamô, 1967 and *E. latum* Calman, 1907 are described and illustrated containing the new information of mouthparts as new to the Korean cumacean fauna. A key to the Korean *Eocuma* species is also given.

MATERIALS AND METHODS

The specimens were collected mainly using a light-trap (Holmes and O'Connor, 1988; Kim, 1992) from shallow Korean waters, during the span of 1996–2012. The specimens were fixed in 70–80% ethanol and dissected in glycerol on Cobb's aluminum hole slides. Drawings and measurements were performed with the aid of a drawing tube under a stereomicroscope (Model SZX12; Olympus, Japan) and light microscope (Model BX51; Olympus, Japan). Body length was measured from the anterior tip of the carapace to the posterior end of the pleonite 6. Lengths of appendages were measured along the mid-line of each appendage, exclusive of the inflated outer angle. Photographs of the whole bodies were taken with a microscope equipped with a digital camera (eXcope T500; DIXI Science, Korea) and complemented with Helicon Focus software (Model Helicon Focus; Helicon Soft Ltd., Kharkov, Ukraine). Specimens were deposited at the National Institute of Biological Resources (NIBR), Incheon, Korea and Department of Biological Science, Dankook University (DKU), Cheonan, Korea.

SYSTEMATIC ACCOUNTS

Order Cumacea Kröyer, 1846

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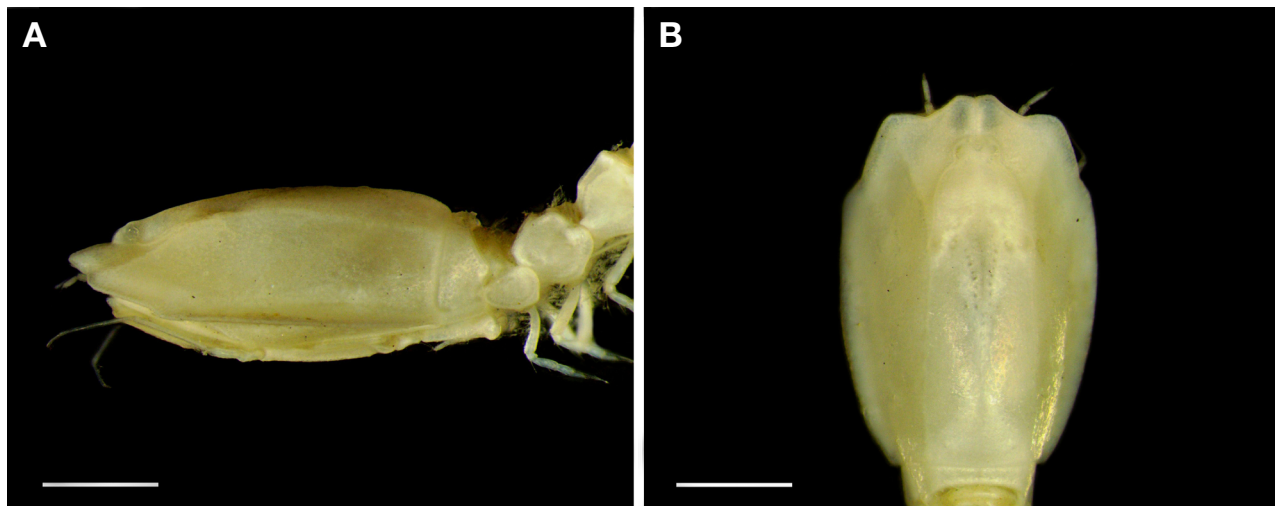


Fig. 1. *Eocuma amakusense* Gamô, 1967, male, 11.4 mm. A, Habitus, lateral view; B, Carapace, dorsal view. Scale bars: A, B=1.0 mm.

Family Bodotriidae Scott, 1901

Subfamily Bodotriinae Hale, 1944

¹*Genus *Eocuma* Marcusen, 1894

²**Eocuma amakusense* Gamô, 1967 (Figs. 1-4)

Eocuma amakusensis Gamô, 1967: 140, figs. 1, 2.

Material examined. 1♂, Korea: Jeollanam-do, Jangheung-gun, Hoejin-myeon, Deoksan-ri, Noryeok Port, 34°26'40.8" N, 126°57'53.1"E, 26 Jul 2012, Hong SS, Kim SH, cat no. DKUCUM 201702; 1♂, Gyeongsangnam-do, Geoje-si, Dongbu-myeon, Hakdong-ri, Gyochoon Breakwater, 34°46'37.2"N, 128°39'07.6"E, 22 Sep 2012, Hong SS, cat no. NIBR IV0000811882.

Description. Male (cat no. NIBRIV0000811882): body (Fig. 2A) about 11.4 mm long, excluding uropods. Carapace (Figs. 1B, 2A-C) more than 1/4 of body length, 1.41 times as long as its width; surface covered with minute shallow pits; lateral margins of carapace, pereon, and pleon lamellate rather opaque, beset with many short-striated textures; pseudostrum a little in advance of antero-lateral horns with round apices; lateral horns rounded; dorsal median carina extending from eye-lobe to posterior margin; a pair of dorso-lateral carinae well-marked from near apices of antero-lateral horns to near posterior margin, almost reaching end of posterior margin. Pereon (Fig. 2A, B) 0.59 times as long as carapace, about 1/6 of body length. Pleon (Fig. 2A) 1.31 times as long as cephalothorax with 5 pleopods; pleopods 3-articulated.

Antenna 1 (Fig. 2D), peduncle 3-articulated; article 1 sub-

equal to remaining articles combined, with numerous hair-like, 51 minute simple, and 3 complex pedunculated setae on ventral surface, numerous hair-like setae on dorsomedial surface; article 2 shorter than article 3, with 6 minute simple and 2 complex pedunculated setae; article 3 with 3 simple and 1 complex pedunculated setae; main flagellum 3-articulated, article 1 with 3 aesthetascs, article 2 with 1 aesthetasc, and article 3 with 1 long simple seta and 2 aesthetascs; accessory flagellum rudimentary, with 1 simple and 2 complex pedunculated setae.

Antenna 2 (Fig. 2E) extending beyond pleotelson; peduncle 5-articulated; article 1 with several hair-like and 1 plumose setae distally; article 2 with 2 plumose setae distally; articles 4-5 with numerous simple setae; article 4 with 8 complex pedunculated setae distally; article 5 with 3 complex pedunculated setae distally.

Right mandible (Fig. 2F) with row of several hair-like and 16 lifting setae; incisor with 3 teeth.

Left mandible (Fig. 2G) with row of 4 hair-like and 5 lifting setae; incisor with 4 teeth; lacinia mobilis with 3 teeth.

Maxilla 1 (Fig. 2H), outer endite with a row of 13 microserrate setae terminally, lateral margin with several hair-like and 1 simple setae, medial surface with tufts of setules, medial margin with several hair-like setae; inner endite with 1 serrate, 3 microserrate, and 2 bifid stout simple setae terminally, lateral and medial margins with several hair-like setae.

Maxilla 2 (Fig. 3A), broad endite with 1 plumose, numerous simple, 1 stout pappose, 7 microserrate, and 3 serrate setae and tufts of setules terminally, numerous tufts of setules on medial surface, 32 plumose and 3 microserrate se-

Korean name: ¹*납작올챙이새우속 (신칭), ²*민납작올챙이새우 (신칭)

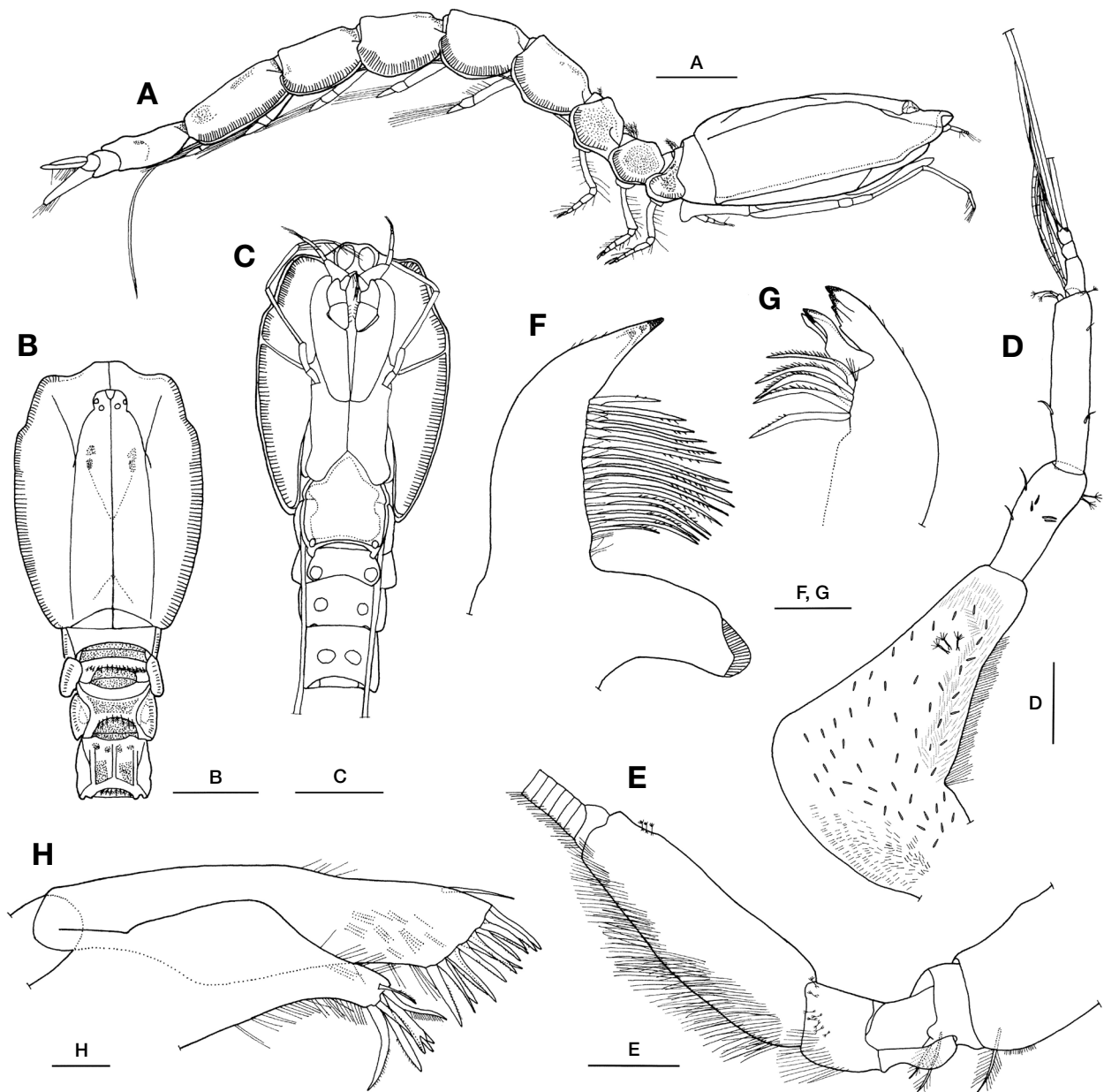


Fig. 2. *Eocuma amakusense* Gamô, 1967, male, 11.4 mm. A, Habitus, lateral view; B, Cephalothorax, dorsal view; C, Cephalothorax, ventral view; D, Antenna 1; E, Antenna 2; F, Right mandible; G, Left mandible; H, Maxilla 1. Scale bars: A-C=1.0 mm, D, F, G=0.1 mm, E=0.2 mm, H=0.05 mm.

tae, and tufts of setules medially; outer endite with 6 microserrate setae terminally; inner endite with 7 microserrate setae terminally.

Maxilliped 1 (Fig. 3B), basis produced distally as blunt lobe with 5 simple setae on surface, several hair-like setae laterally, 1 plumose seta and tufts of setules medially; ischium absent; merus with 1 plumose and 1 simple setae mediolaterally; carpus with 7 plumose, 10 simple, and 9 comb-

like setae medially, 2 plumose and 1 simple setae on lateral surface, 1 plumose and 1 small simple setae, and 1 setules laterally, numerous tufts of setules on medial surface; propodus with 9 simple and 2 microserrate setae mediolaterally, 2 small simple setae laterally, 3 long plumose setae distally; dactylus with 2 simple setae medially, 2 microserrate setae terminally.

Maxilliped 2 (Fig. 3C), basis with 1 small seta and tufts

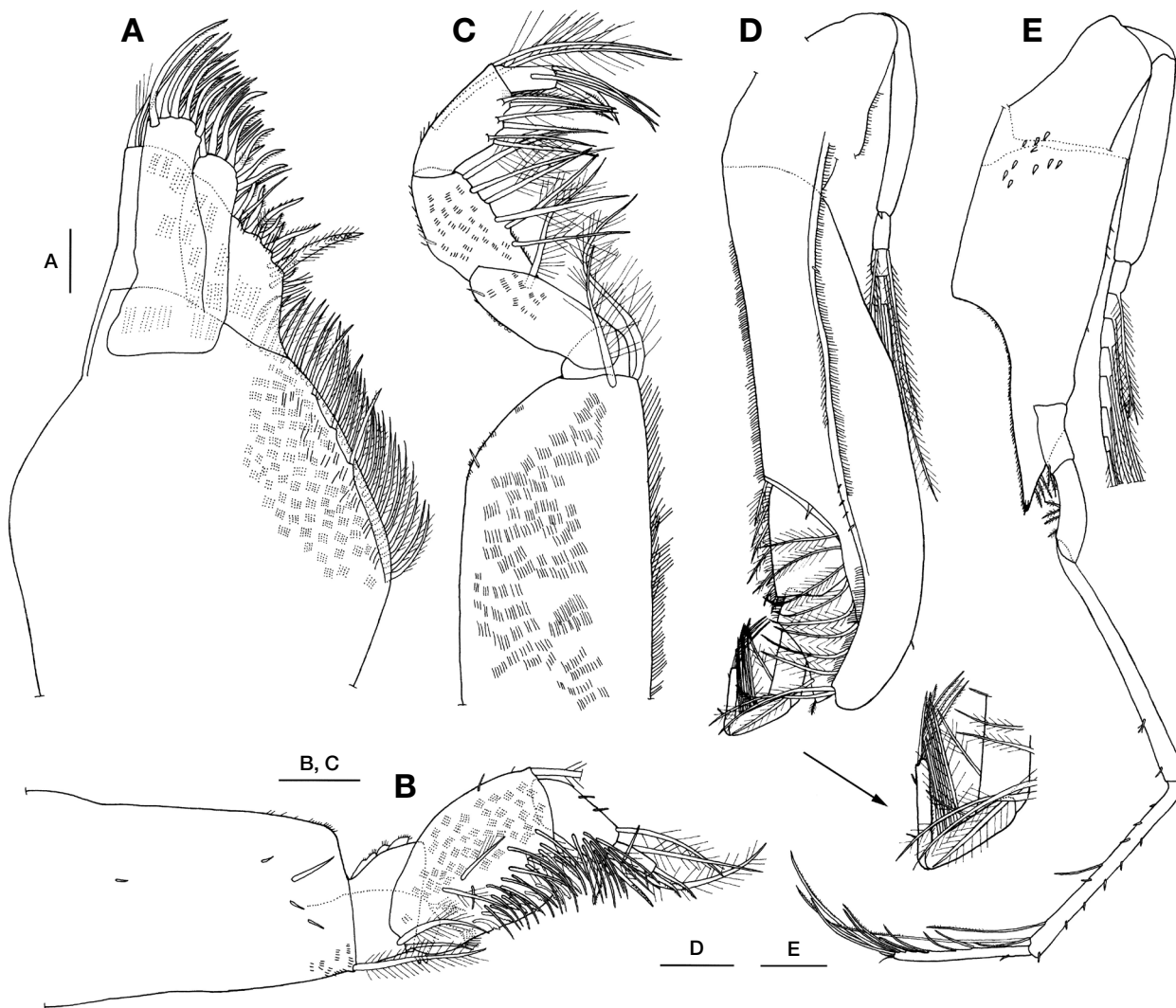


Fig. 3. *Eocuma amakusense* Gamô, 1967, male, 11.4 mm. A, Maxilla 2; B, Maxilliped 1; C, Maxilliped 2; D, Maxilliped 3; E, Pereopod 1. Scale bars: A=0.05 mm, B, C=0.1 mm, D, E=0.2 mm.

of setules laterodistally, numerous tufts of setules on lateral surface, hair-like setae medially, 2 long plumose setae distally; ischium short, unarmed; merus with 1 small simple seta and tufts of setules on lateral surface, 1 long plumose seta mediolaterally; carpus with 1 small simple seta and 7 setules laterally, tufts of setules on lateral surface, 6 long plumose setae and 8 setules medially; propodus with 2 long plumose setae and 4 setules laterally, 4 plumose, 2 microserrate, and 2 pappose setae medially; dactylus with 1 long simple seta on lateral surface, 2 microserrate and 2 long simple setae terminally.

Maxilliped 3 (Fig. 3D), basis partly broken, produced distally well beyond articulation of ischium and merus, with several hair-like, 1 plumose, 1 small simple, and 8 long

plumose setae medially, 2 long plumose setae mediolaterally, hair-like and 5 small setae on medial surface, hair-like setae lateroproximally, 1 small simple seta laterally; ischium with 6 plumose and hair-like setae medially; merus with several hair-like setae medially, 1 long plumose and 1 small plumose setae distally; carpus with 1 plumose seta medially; propodus with 6 plumose setae medially; dactylus with several hair-like setae medially, 2 small simple setae laterally, 6 microserrate setae terminally.

Pereopod 1 (Fig. 3E), basis partly broken, produced distally into pointed process, which has 1 small simple seta on tip, with hair-like setae medially, 10 small stout simple setae on ventral surface, 4 small simple setae laterally, 4 small plumose setae laterodistally; ischium with 1 small plumose

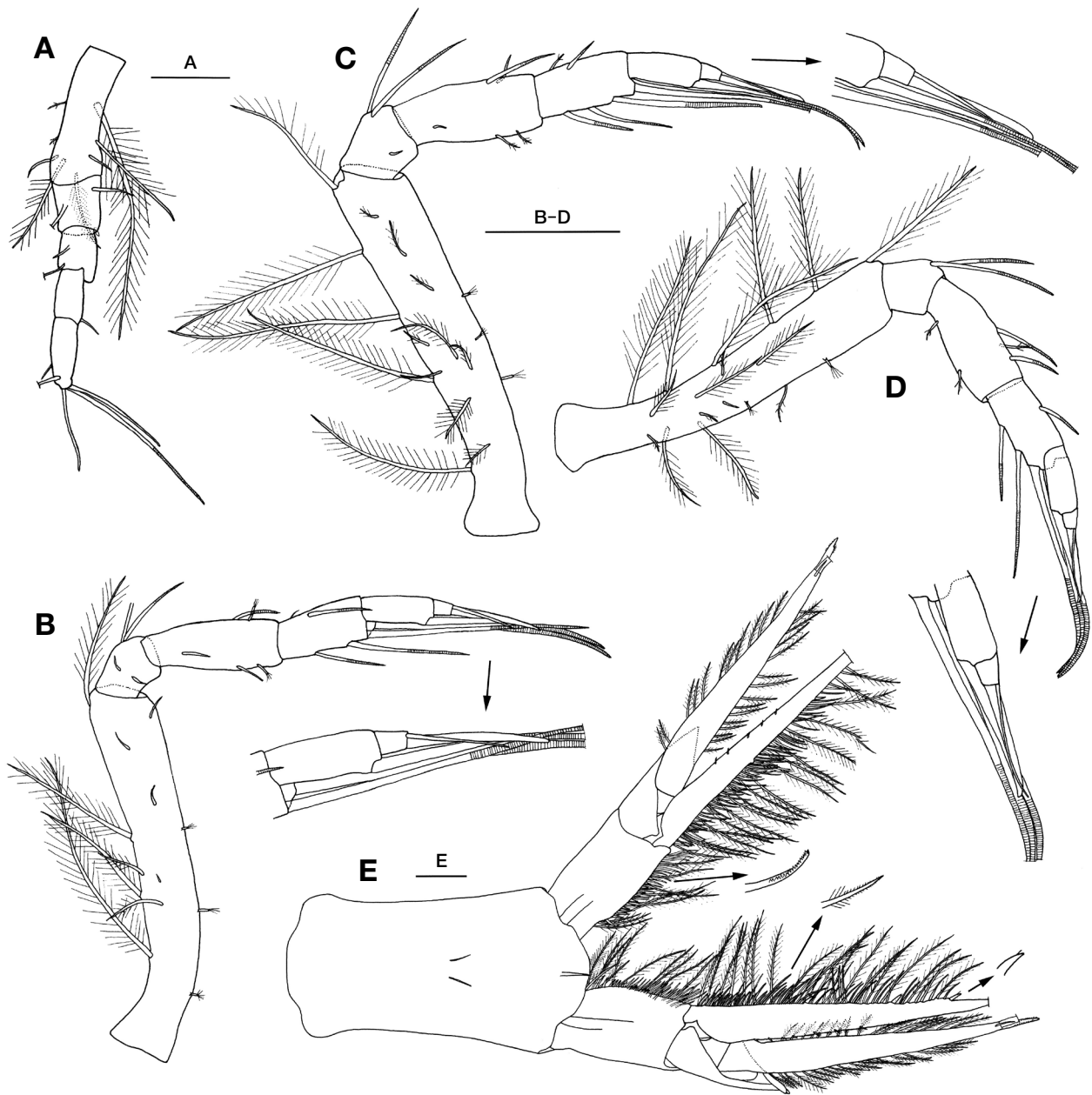


Fig. 4. *Eocuma amakusense* Gamô, 1967, male, 11.4 mm. A, Pereopod 2; B, Pereopod 3; C, Pereopod 4; D, Pereopod 5; E, Pleonite 6 and uropod. Scale bars: A=0.1 mm, B-E=0.2 mm.

seta medially; merus 1.64 times as long as ischium, with 4 small plumose setae medially; carpus 2.72 times as long as merus, with 1 small plumose and 1 small simple setae mediolaterally; propodus subequal to carpus, with 5 simple setae medially, 3 microserrate setae mediolaterally, 6 small simple setae laterally; dactylus 0.59 times as long as propodus, with 4 simple setae medially, 1 small simple seta lateroproximally, 3 microserrate, 3 simple, and 2 small simple setae termi-

nally.

Pereopod 2 (Fig. 4A) much smaller, basis shorter than remaining articles combined, with 1 long plumose, 1 plumose, and 1 simple setae anteriorly, 2 small plumose, 1 simple, and 1 plumose setae posteriorly, 1 plumose seta mediolaterally; ischium fused with basis; merus with 1 simple seta anteriorly, 1 simple seta posteriorly, protuberance mediolaterally; carpus 0.79 times as long as merus, with 2 simple setae pos-

teriorly; propodus 1.17 times as long as carpus, with 1 simple seta anterodistally; dactylus 1.37 times as long as propodus, with 2 simple setae posterodistally, 1 long annulate and 2 long simple setae terminally.

Pereopod 3 (Fig. 4B) slender, basis subequal to remaining articles combined, with 4 long plumose and 1 plumose setae anteriorly, 1 plumose, 1 small simple, and 2 simple setae on lateral surface, 3 complex pedunculated and 1 simple setae posteriorly; ischium with 2 annulate setae anteriorly, 2 simple setae on lateral surface; merus 2.33 times as long as ischium, with 1 annulate and 1 complex pedunculated setae anteriorly, 1 simple seta on lateral surface, 1 simple and 1 complex pedunculated setae posteriorly; carpus 0.65 times as long as merus, with 1 small simple and 1 annulate setae anteriorly, 2 annulate setae posteriorly, 2 long annulate setae posterodistally; propodus 0.81 times as long as carpus, with 1 long annulate seta posterodistally; dactylus 0.23 times as long as propodus, with 1 simple and 1 stout simple setae terminally.

Pereopod 4 (Fig. 4C), basis subequal to remaining articles combined, with 5 long plumose, 1 simple, and 1 small plumose setae anteriorly, 7 small plumose setae on lateral surface, 3 complex pedunculated setae posteriorly; ischium with 2 annulate setae anteriorly, 1 small simple seta on lateral surface; merus 2.33 times as long as ischium, with 1 annulate and 1 simple setae anteriorly, 1 small simple seta on lateral surface, 2 small plumose setae posteriorly; carpus 0.69 times as long as merus, with 1 small plumose and 1 small annulate setae anteriorly, 3 annulate setae posteriorly, 2 long annulate setae distally; propodus 0.76 times as long as carpus, with 1 long annulate seta posterodistally; dactylus 0.27 times as long as propodus, with 1 simple and 1 stout simple setae terminally.

Pereopod 5 (Fig. 4D), basis longer than remaining articles combined, with 6 long plumose setae anteriorly, 3 plumose and 1 small plumose setae on lateral surface, 2 plumose, 1 small simple, 3 small plumose, and 2 complex pedunculated setae posteriorly; ischium with 2 annulate setae anteriorly; merus 2.47 times as long as ischium, with 2 annulate and 1 small plumose setae anteriorly, 2 small plumose setae posteriorly; carpus 0.69 times as long as merus, with 1 annulate seta anteriorly, 2 annulate setae posteriorly, 2 long annulate setae distally; propodus 0.82 times as long as carpus, with 1 long annulate seta posterodistally; dactylus 0.24 times as long as propodus, with 1 simple and 1 stout simple setae terminally.

Uropod (Fig. 4E), peduncle 0.38 times as long as pleotelson, with 10–11 long plumose, 13–17 small simple, and numerous microsetae on medial margin, respectively;

endopod 1-articulated, with 2–3 small simple, 18 plumose, and numerous plumose-microsetate setae on medial margin, respectively, 5–7 small simple setae laterally; exopod 2-articulated, 3.36 times as long as uropodal peduncle, with 15–16 plumose setae medially, 11–18 plumose setae laterally, 1 simple seta distally.

Distribution. Korea (South Sea), Japan (Tomoe Bay).

Remarks. Korean specimens examined conform to the original description of Gamô (1967) with characteristics as follow: (1) length ratio of appendages such as antenna 1, pereopods 1–5, pleotelson, and uropod is subequal; (2) lateral margins of carapace, pereon, and pleon are lamellate rather opaque, beset with many short-striated textures; (3) patterns of the horn and carinae on carapace are similar; and (4) setae patterns of uropodal peduncle, endopod, and exopod are similar. However, several minor differences were also found between the Korean specimens and the original description: (1) antero-lateral and lateral horns of carapace are smooth, not protruding (vs. protruding); (2) pseudorostrum is flat (vs. protruding); (3) uropodal endopod with 5–7 small simple setae laterally (vs. without seta); and (4) some minor differences of setae patterns are also apparent in the antenna 1 and pereopods 1–5, but these differences maybe resulted from the different observation angle.

¹**Eocuma latum* Calman, 1907 (Figs. 5–7)

Eocuma lata Calman, 1907: 22, Pl. 6, figs. 7–12; Fage, 1945: 187, figs. 13–14; Zimmer, 1952: 14, figs. 16–23; Gamô, 1958: 381, fig. 1; 1963: 86, Pl. 14, fig. 14; 1967: 140; Radhadevi and Kurian, 1989: 7; Liu and Liu, 1990: 203, figs. 7–8.

Eocuma latum: Stebbing, 1913: 22; Kurian, 1951: 96; 1954: 285, fig. 3; Petrescu, 1998: 278, figs. 28–29.

Material examined. 1♂, Korea: Jeollanam-do, Gwangyang-si, Hwanggil-dong, Gwangyang Bay, 34°54'2.86"N, 127°39'46.70"E, 26 Mar 1996, Song BJ, cat no. NIBRIV 0000811883.

Description. Male (cat no. NIBRIV0000811883): body (Figs. 5A, 6A) about 10.7 mm long, excluding uropods. Carapace (Figs. 5B, 6A–C) more than 1/4 of body length, 1.20 times as long as width; anterior and lateral margins of carapace lamellate rather opaque, beset with many short striated textures; pseudorostrum a little in advance of rectangular antero-lateral horns with round apices; single pair of lateral horns forward; dorsal median carina extending from eye-lobe to posterior margin, dorso-median carina well-marked; a pair of dorso-lateral carinae well marked, almost reaching end of posterior margin. Pereon (Fig. 6A) 0.61 times as long

Korean name: ¹*옆빨납작을챙이새우(신칭)

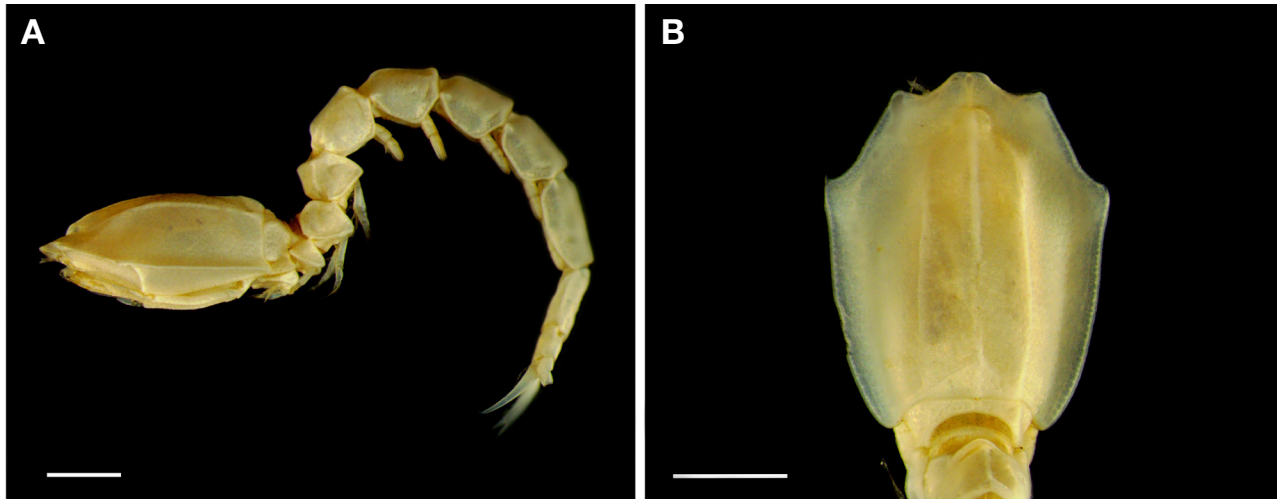


Fig. 5. *Eocuma latum* Calman, 1907, male, 10.7 mm. A, Habitus, lateral view; B, Carapace, dorsal view. Scale bars: A, B=1.0 mm.

as carapace, about 1/6 of body length. Pleon (Fig. 6A) 1.33 times as long as cephalothorax with 5 pleopods; pleopods 3-articulated.

Antenna 1 (Fig. 6D), peduncle 3-articulated; article 1 longer than remaining articles combined, with 12 simple and 1 complex pedunculated setae on ventral surface; article 2 shorter than article 3, with 1 plumose seta mediolaterally; article 3 with 2 long simple setae distally; main flagellum biarticulate, article 1 unarmed, article 2 with 3 simple setae and 2 aesthetascs; accessory flagellum rudimentary, with 2 simple setae.

Right mandible (Fig. 6E) with row of several hair-like and 13 lifting setae; incisor with 3 teeth.

Left mandible (Fig. 6F) with row of several hair-like and 12 lifting setae between lacinia mobilis and pars molaris; incisor with 4 teeth; lacinia mobilis with 3 teeth.

Maxilliped 1 (Fig. 6G), basis produced distally as blunt lobe, with 5 simple setae laterodistally, 5 small simple setae and tufts of setules on median surface, 1 long plumose seta mediolaterally; ischium absent; merus with 1 small simple seta on lateral surface, 1 plumose and 1 simple setae mediolaterally; carpus with 1 long plumose seta laterodistally, 8 simple, 2 plumose, 4 comb-like, 2 small plumose setae, and tufts of setules on lateral surface; propodus with 11 simple and 3 long plumose setae mediolaterally; dactylus with 2 microserrate setae terminally.

Maxilliped 2 (Fig. 6H), basis with several hair-like and 4 simple setae laterodistally, hair-like and 1 small simple setae on lateral surface, hair-like setae medially, 4 plumose setae mediolaterally; ischium short, unarmed; merus with 1 small simple and several hair-like setae laterally, tufts of setules on lateral surface, several hair-like setae medially; carpus

with 2 small simple setae laterally, tufts of setules on lateral surface, 8 plumose setae medially; propodus with 2 long plumose setae laterally, 12 plumose setae medially; dactylus with 1 long simple seta on lateral surface, 2 microserrate and 1 long simple setae terminally.

Maxilliped 3 (Fig. 7A), basis longer than remaining articles combined, produced distally well beyond articulation of ischium, with hair-like, 1 small simple, and 9 plumose setae medially, 2 long plumose setae mediolaterally, hair-like setae on medial surface; ischium with hair-like and 10 plumose setae medially; merus with hair-like, 1 small simple, and 1 plumose setae medially, 1 long plumose and 1 plumose setae distally; carpus with hair-like, 1 simple, and 1 plumose setae medially; propodus with 1 small simple and 7 long simple setae medially; dactylus with 3 microserrate and 3 long simple setae terminally.

Pereopod 1 (Fig. 7B), basis subequal to remaining articles combined, produced distally into pointed process, which has 1 small simple seta on tip, with several hair-like setae mediolaterally, small blunt simple setae on lateral surface; ischium short, unarmed; merus 2.20 times as long as ischium, unarmed; carpus 1.39 times as long as merus, with 1 small simple seta on medial surface; propodus 0.87 times as long as carpus, with 6 simple setae medially; dactylus subequal to propodus, with 8 simple setae medially, 1 small simple seta on lateral surface, 1 simple seta laterally, 4 simple setae terminally.

Pereopod 2 (Fig. 7C) much smaller, basis shorter than remaining articles combined, with 1 plumose seta posterodistally; ischium fused with basis; merus with 1 small simple and 1 small plumose setae anteriorly, 2 small plumose and 1 small simple setae posterodistally; carpus 0.63 times as

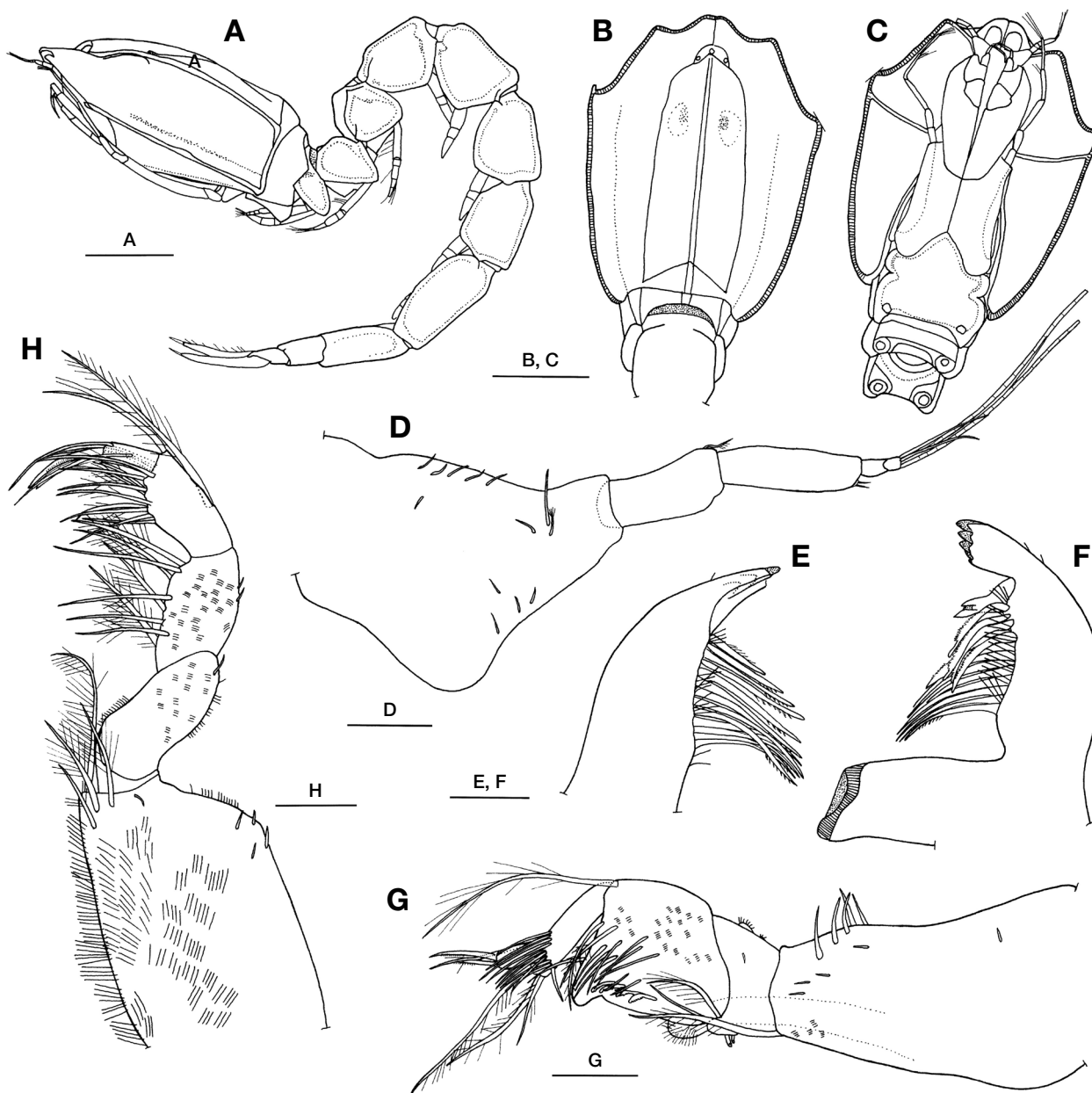


Fig. 6. *Eocuma latum* Calman, 1907, male, 10.7 mm. A, Habitus, lateral view; B, Cephalothorax, dorsal view; C, Cephalothorax, ventral view; D, Antenna 1; E, Right mandible; F, Left mandible; G, Maxilliped 1; H, Maxilliped 2. Scale bars: A-C=1.0 mm, D-H=0.1 mm.

long as merus, with 1 broken seta anterodistally; propodus 1.57 times as long as carpus, unarmed; dactylus subequal to propodus, with 5 simple setae terminally.

Pereopod 3 (Fig. 7D), basis shorter than remaining articles combined, with 1 small simple seta anteroproximally, 2 long plumose setae anteriorly; ischium with 2 annulate setae anteriorly; merus 2.05 times as long as ischium, with 1 annulate seta anterodistally; carpus 0.77 times as long as

merus, with 1 annulate seta anteriorly, 2 annulate setae mediolaterally, 2 long annulate setae posterodistally; propodus 0.80 times as long as carpus, with 1 long annulate seta mediolaterally; dactylus 0.33 times as long as propodus, with 1 simple and 1 stout simple setae terminally.

Pereopod 4 (Fig. 7E), basis shorter than remaining articles combined, with 6 small plumose and 3 long plumose setae anteriorly, 1 long plumose seta mediolaterally; ischium with

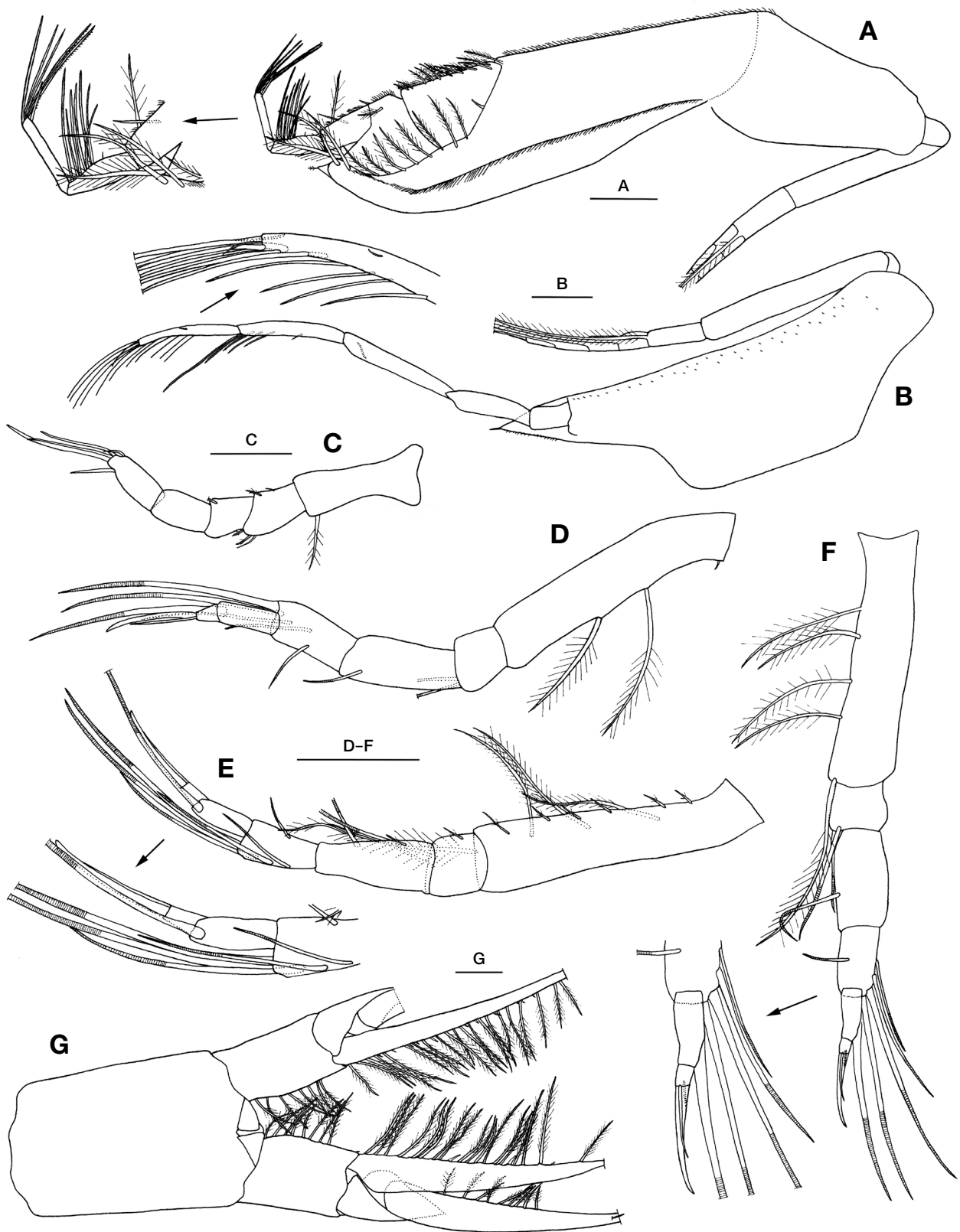


Fig. 7. *Eocuma latum* Calman, 1907, male, 10.7 mm. A, Maxilliped 3; B, Pereopod 1; C, Pereopod 2; D, Pereopod 3; E, Pereopod 4; F, Pereopod 5; G, Pleonite 6 and uropod. Scale bars: A, B, D-G=0.2 mm, C=0.1 mm.

1 small plumose seta anteriorly, 2 long annulate setae medi-odistally; merus 2.09 times as long as ischium, with 1 small plumose and 1 annulate setae anteriorly; carpus 0.65 times as long as merus, with 1 annulate seta anteriorly, 1 annulate and 2 long annulate setae posteriorly, 2 long annulate setae posterodistally; propodus 0.77 times as long as carpus, with 1 long annulate seta distally; dactylus 0.36 times as long as propodus, with 1 simple and 1 stout simple setae terminally.

Pereopod 5 (Fig. 7F), basis shorter than remaining articles combined, with 4 long plumose setae anteriorly, 1 long plumose seta anterodistally; ischium with 2 annulate setae anterodistally; merus 2.19 times as long as ischium, with 1 annulate seta anteriorly; carpus 0.74 times as long as merus, with 1 annulate seta anteriorly, 3 annulate setae posteriorly, 2 long annulate setae distally; propodus 0.73 times as long as carpus, with 1 long annulate seta posterodistally; dactylus 0.31 times as long as propodus, with 2 simple and 1 stout simple setae terminally.

Uropod (Fig. 7G), peduncle 0.38 times as long as pleotelson, with 8 plumose setae on medial margin, respectively, 1 small simple seta medioidistally; endopod 1-articulate, with 17–21 plumose and 3–11 small simple setae on medial margin, respectively; exopod 2-articulate, with 9 plumose setae medially, 1 simple seta distally.

Distribution. Korea (South Sea), Japan (Sagami Bay), Vietnam (Indo-China), Myanmar (Burma), India (Trivandrum), Thailand (Gulf of Thailand).

Remarks. Korean specimens are in good agreement with the previous descriptions of Fage (1945), Zimmer (1952), Gamô (1958, 1963), and Liu and Liu (1990), with respect to having the forward single pair of the lateral horns on the carapace. However, several minor differences were also found between our specimens and the previous descriptions: (1) antero-lateral horns on carapace are more rectangular and positioned anteriorly (vs. less rectangular and positioned posteriorly in Fage, 1945; Zimmer, 1952; Gamô, 1963); (2) the cavity between lateral horns and lateral margins of carapace is shallower and broader (vs. deep and narrow cavity in Fage, 1945; Zimmer, 1952; Gamô, 1958, 1963); (3) plumose setae between pereonites 2–5 are absent in dorsal view (vs. plumose setae present in Gamô, 1958); and (4) article 1 of antenna 1 is with 12 simple and 1 complex pedunculated setae on the ventral surface (vs. unarmed in Zimmer, 1952; Liu and Liu, 1990).

Key to the Korean *Eocuma* species (modified from Gamô, 1967)

- 1. Carapace, lateral horn obtuse and rounded *Eocuma amakusensis*
- Carapace, lateral horn prominent and acute..... 2
- 2. Carapace, antero-lateral horn separated from the lateral

- horn by a deep cavity *Eocuma cf. hilgendorfi*
- Carapace, antero-lateral horn separated from the lateral horn by a shallower cavity *Eocuma latum*

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