On the genus *Mesopontonia* Bruce, 1967 (Crustacea: Decapoda: Palaemonidae) in Korea, with the description of a new species

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Abstract

Mesopontonia verrucimanus and *Mesopontonia kimwoni* sp. nov. are recorded from high-latitude temperate waters in Munseom Islet, Jejudo Island, Republic of Korea, with both species collected on gorgonians and sponges by trimix diving between 50 and 75 m depth. *Mesopontonia kimwoni* sp. nov. is morphologically allied to *M. brevicarpus*, but can be distinguished by the cutting edges of the fingers of the first chela being entire. Significant morphological variation in the rostrum as well as the second pereiopods is documented in *M. verrucimanus*, although cytochrome *c* oxidase subunit I (COI) barcode analysis proves this to be infra-specific variation. A key to species of the genus *Mesopontonia* is provided.

Introduction

The deep-sea palaemonid shrimp fauna of the Indo-West Pacific is relatively well documented, with to date 23 genera and about 84 species recorded from depths of more than 100m by trawling and dredging (Bruce 1991; De Grave & Fransen 2011; Kou et al. 2016; Li et al. 2008; Marin & Chan 2014; Mitsuhashi & Chan 2006; Okuno 2017; Wang et al. 2015). Among them is the rarely recorded genus, *Mesopontonia* Bruce, 1967 which can be distinguished from related genera by the combination of the absence of both supraorbital and antennal teeth on the carapace, as well as the absence of an exopod on the third maxilliped (Bruce 1967; Bruce 1995; Chace & Bruce 1993).

The most recent classification of carideans by De Grave and Fransen (2011) listed six species in the genus, namely *M. gorgoniophila* Bruce, 1967 (type species), *M. gracilicarpus* Bruce, 1990, *M. brucei* Burukovsky, 1991, *M. monodactylus* Bruce, 1991, *M. verrucimanus* Bruce, 1996 and *M. brevicarpus* Li & Bruce, 2006. The type species was originally described from the

56   northern part of the South China Sea (Bruce, 1967), in association with two species of the
57   gorgonian genus *Melithaea* Milne Edwards, 1857 (Cnidaria: Octocorallia: Melithaeidae) in
58   depths of 117–183 m (Fig. 1A). Since then, it has been sparingly reported upon from New
59   Caledonia, the Philippines, and eastern Australia within depths of 130 to 270 m (Bruce 1979;
60   Bruce 1984; Bruce 1985; Bruce 1991). *Mesopontonia gracilicarpus* has been reported from New
61   Caledonia and the Chesterfield Islands in depths of 226–600 m (Bruce 1990; Bruce 1991; Li &
62   Bruce, 2006). The southwestern Indian Ocean species, *M. brucei* was recorded from depths of
63   415–460 m from about 850 km south of Madagascar (Burukovsky, 1991). *Mesopontonia*
64   *monodactylus* was described from the Loyalty Islands (Bruce 1990), associated with species of
65   the hexactinellid sponge genus *Pheronema* Leidy, 1868 (Porifera: Hexactinellida:
66   Pheronematidae) from 460 m (Bruce 1990); *M. verrucimanus* was reported from the Tanimbar
67   Islands, Indonesia in depths of 184–186 m (Bruce 1996). Finally, another western Indian Ocean
68   species, *M. brevicarpus* was recorded from off La Réunion from 270 m (Li & Bruce, 2006).
69   Jejudo Island, the largest island in Korea, is located about 80 km off the southwestern coast
70   of the mainland (Fig. 1B). In summer, the Tsushima current mixes with low-salinity, high-
71   turbidity waters from the Yangtze River to influence the environment around Jejudo Island. In
72   winter, the Yangtze River discharge reduces, resulting in a higher local salinity (Rebstock and
73   Kang, 2003; Lim et al. 2019). Munseom Islet (Fig. 1C) is located off the south coast of the main
74   island, and consists of volcanic rocks covered with rich invertebrate communities (Cho et al.
75   2014; Lutaenko et al. 2019; Lee et al. 2019), with a maximum depth of less than 75m. Thus far,
76   only five symbiotic palaemonid shrimps have been reported from the Jejudo Island area (Koo &
77   Kim 2003; Lee & Ko 2011; Lee & Ko 2014; Park et al. 2019a; Park et al. 2019b), although many
78   more remain unrecorded and will be covered in future contributions.
79   During a faunal survey for deep-water invertebrate species from previously unexplored
80   habitats around Jejudo Island in 2015–2020, numerous specimens of *Mesopontonia* were
81   collected from gorgonians and sponges by trimix SCUBA diving between 50–75 m depth.
82   Detailed examination of their morphology as well as a phylogenetic analysis including related
83   genera indicated that these belong to *M. verrucimanus* (new record for Korea) and an
84   undescribed species in the same genus, constituting the most northerly record for the genus, as
85   well as the first for temperate waters in the Western Pacific.
86   In this study, we thus describe both *Mesopontonia* species and present an identification key
87   for the genus *Mesopontonia*. To support systematic studies for deep-sea palaemonid shrimps,
88   molecular analyses and ecological information through direct observations are provided.
89

90   ## Materials & Methods
91   **Sample collection.** Specimens of *Mesopontonia* and other palaemonid shrimps were collected by
92   trimix diving at depths between 50–75 m around Munseom Islet, Jejudo Island, organized by
93   Seoul National University (SNU) and the National Institute of Biological Resources (NIBR)
94   during 2015–2020. Comparative material used in the phylogenetic part was collected by
95   conventional SCUBA diving at depths between 10–30 m in Korea (2018–2019), Palau (2019),

96   Philippines (2018–2019), and Taiwan (2016), organized by Academia Sinica, University of the
97   Philippines Visayas (UPV), Korea Institute of Ocean Science & Technology (KIOST), Marine
98   Biodiversity Institute of Korea (MABIK), and SNU. All specimens were collected together with
99   their host invertebrates and preserved in 80% ethanol. Specimens are deposited in the Marine
100   Arthropod depository Bank of Korea, Seoul National University, Seoul (MADBK), Seoul
101   National University, Seoul (SNU), National Institute of Biological Resources, Incheon (NIBR)
102   and the Zoological Collections of the Oxford University Museum of Natural History, Oxford
103   (OUMNH.ZC).
104   **Morphological examination.** Shrimps were isolated from the host invertebrate using forceps,
105   with their morphological characteristics observed using stereo microscopes (Leica M205C and
106   M125, Germany) and a light microscope (Olympus BX51, Japan). Digital illustrations were done
107   using a microscope digital camera (Leica MC170, Germany), Helicon focus software (Helicon
108   focus 7.5.6, Ukraine) and drawing tablet (Wacom Intuos Pro PTH-660, China) with Adobe
109   Illustrator software (Adobe Systems, USA), following Coleman (2006).
110   **Molecular data and phylogenetic analysis.** Molecular phylogenetic analyses were performed to
111   understand the phylogenetic position of the new species, as well as the genus more broadly. Two
112   species of *Mesopontonia* (*M. verrucimanus* and the new species) and 12 deep-sea species from
113   the genera *Altopontonia* Bruce, 1990*, Anchistioides* Paulson, 1875*, Bathymenes* Kou, Li &
114   Bruce, 2016*, Cuapetes* Clark, 1919*, Echinopericlimenes* Marin & Chan, 2014*, Lipkemenes* Bruce
115   & Okuno, 2010*, Palaemonella* Dana,1852*, Paraclimenes* Bruce, 1995*, Periclimenes* Costa, 1844
116   and *Thaumastocaris* Kemp, 1922 were selected as the ingroup. *Stenopus hispidus* (Olivier, 1811)
117   was used as an outgroup (Table 1). Total genomic DNA was extracted from eggs or pleopod
118   tissue using the QIAamp® DNA Micro Kit (QIAGEN, Hilden, Germany), following the
119   manufacturer's instructions. Partial sequences of the COI (~658bp) and 16S (~538bp) markers
120   were amplified via polymerase chain reaction (PCR) with the primers jgHCO2198/jgLCO1490
121   (Geller et al. 2013) and 16S-ar/16S-1472 (Crandall & Fitzpatrick 1996; Palumbi et al. 2002),
122   respectively. PCR reactions and sequence data analysis were performed following Park et al.
123   (2019a).
124   **Zoobank registration.** The electronic version of this article in Portable Document Format (PDF)
125   will represent a published work according to the International Commission on Zoological
126   Nomenclature (ICZN), and hence the new names contained in the electronic version are
127   effectively published under that Code from the electronic edition alone. This published work and
128   the nomenclatural acts it contains have been registered in ZooBank, the online registration
129   system for the ICZN. The ZooBank LSIDs (Life Science Identifiers) can be resolved and the
130   associated information viewed through any standard web browser by appending the LSID to the
131   prefix http://zoobank.org/. The LSID for this publication is:
132   urn:lsid:zoobank.org:pub:3CB43670-472F-49AE-80F2-EAE9597E12BD. The online version of
133   this work is archived and available from the following digital repositories: PeerJ, PubMed
134   Central and CLOCKSS.
135

136 **Results**

137 **Taxonomy**

138 Family Palaemonidae Rafinesque, 1815

139 Genus *Mesopontonia* Bruce, 1967

140 ***Mesopontonia verrucimanus* Bruce, 1996**

141 Figs. 2–7

142

143 *Mesopontonia verrucimanus* Bruce, 1996: 198, 216–218, figs. 8, 29c (type locality: Tanimbar

144 Islands, Indonesia, 7°59'S, 133°02'E, 184–186 m).

145 **Material examined.** 2 males, 2 females (pocl 2.0–2.5, R 1+7–8/0); Dec. 20, 2015; Munseom

146 Islet, Jejudo Island, Korea (33°13'36"N 126°34'9"E), 55 m, on *Raspailia* (*Raspaxilla*) *hirsuta*

147 Thiele, 1898, leg. JH Park (MADBK 120533_001); 2 males, 1 female (pocl 2.5, R 1+6–8/0);

148 Apr. 12, 2017; same location (33°13'39"N 126°34'7"E), 58 m, on *R.* (*R.*) *hirsuta*, leg. JH Park

149 (MADBK 120533_002); 1 male, 2 females (pocl 2.3–2.5, R 1+7–8/0–1); Apr. 12, 2017; same

150 location (33°13'39"N 126°34'7"E), 58 m, on *R.* (*R.*) *hirsuta*, leg. JH Park (OUMNH.ZC.2018-03-

151 04-06); 1 male, 4 females (pocl 2.5–3.5, R 1+7–8/0–1); May 30, 2017; same location

152 (33°13'36"N 126°34'9"E), 54 m, on *Ellisella* cf. *limbaughi* Bayer & Deichmann, 1960, leg. JH

153 Park (MADBK 120533_003); 1 male, 1 female (pocl 2.5, R 1+7–8/1); Jan. 18, 2018; same

154 location (33°13'36"N 126°34'9"E), 60m, on *E.* cf. *limbaughi*, leg. JH Park (MADBK

155 120533_004); 2 males, 3 females (pocl 2.0–2.5, R 1+7–8/0–1); Jan. 18, 2018; same location

156 (33°13'36"N 126°34'9"E), 60m, on *E.* cf. *limbaughi*, leg. JH Park (NIBRIV0000837760–

157 0000837764); 1 female (pocl 3.0, R 1+8/1); Mar. 31, 2018; same location (33°13'36"N

158 126°34'9"E), 60m, on *E.* cf. *limbaughi*, leg. JH Park (MADBK 120533_005); 1 male (pocl 2.6, R

159 1+8/0); Jun. 20, 2018; same location (33°13'31"N 126°34'11"E), 60m, on *E.* cf. *limbaughi*, leg.

160 JH Park (MADBK 120533_006); 1 male, 2 females (pocl 2.78–2.87, R 1+7–8/0–2); Jun. 20,

161 2018; same location (33°13'31"N 126°34'11"E), 60m, on *E.* cf. *limbaughi*, leg. JH Park

162 (NIBRIV0000837778–NIBRIV0000837780); 1 male, 1 female, 1 ovigerous female (pocl 2.67–

163 3.47, R 1+6–8/*0x1*); Jun. 21, 2018; same location (33°13'31"N 126°34'11"E), 55m, on *E.* cf.

164 *limbaughi*, leg. JH Park (NIBRIV0000862982–NIBRIV0000837784); 1 male (pocl 3.13, R

165 1+7/0); Sep. 12, 2018; same location (33°13'29"N 126°33'52"E), 60m, on *Myriopathes lata*

166 (Silberfeld, 1909), leg. JH Park (NIBRIV0000862987); 1 male (pocl 3.41, R 1+7/0); Sep. 13,

167 2018; same location (33°13'29"N 126°33'52"E), 60m, on *E.* cf. *limbaughi*, leg. JH Park

168 (NIBRIV0000862988); 2 ovigerous females (pocl 3.7–3.8, R 1+8–9/0); Sep. 13, 2018; same

169 location (33°13'29"N 126°33'52"E), 60m, on *Cirrhipathes* cf. *anguina* (Dana, 1846), leg. JH

170 Park (NIBRIV0000862989–0000837790); 2 males (pocl 3.2, R 1+8–9/0); Jul. 26, 2019; same

171 location (33°13'35"N 126°34'11"E), 60m, on *E.* cf. *limbaughi*, leg. JH Park

172 (NIBRIV0000862991–0000837792); 1 ovigerous female (pocl 3.4, R 1+9/1); Jul. 27, 2019; same

173 location (33°13'35"N 126°34'11"E), 55m, on *E.* cf. *limbaughi*, leg. JH Park

174 (NIBRIV0000862993); 1 female (pocl 1.5, R 1+7/0); Aug. 16, 2019; same location (33°13'41"N

175 126°34'6"E), 53m, on *C. anguina*, leg. JH Park (NIBRIV0000862995); 1 male, 3 females, 2

176   ovigerous females (pocl 1.5–3.7, R 1+8–9/0–1); Oct. 22, 2019; same location (33°13'37"N

177   126°34'11"E), 67m, on *E.* cf. *limbaughi*, leg. JH Park (NIBRIV0000862996–

178   NIBRIV0000863001); 2 males, 1 female (pocl 2.4–3.7, R 1+8–9/0–2); Jan. 15, 2020; same

179   location (33°13'34"N 126°33'45"E), 75m, on *E.* cf. *limbaughi*, leg. JH Park (MADBK

180   120533_007); 3 females (pocl 2.5–2.8, R 1+7–8/0); Jan. 15, 2020; same location (33°13'34"N

181   126°33'45"E), 75m, on *C. anguina*, leg. JH Park (SNU KR JH1100–1102); 1 male (pocl 2.5, R

182   2–8/1); Jan. 15, 2020; same location (33°13'34"N 126°33'45"E), 75m, on *Raspailia* sp., leg. JH

183   Park (SNU KR JH1095); 1 female (pocl 2.3, R 1–8/0); Jan. 15, 2020; same location (33°13'34"N

184   126°33'45"E), 75m, on *Raspailia* sp., leg. JH Park (SNU KR JH1096); 1 female (pocl 2.9, R 1–

185   9/0); Jan. 15, 2020; same location (33°13'34"N 126°33'45"E), 75m, on *C. anguina*, leg. JH Park

186   (SNU KR JH1104).

187   **Description of Korean specimens.** Body (Fig. 2) small-sized, subcylindrical form. Rostrum

188   (Figs. 2 and 3A–D) straight, horizontal, almost as long as pocl, reaching or overreaching distal

189   end of antennular peduncle, 6–9 dorsal teeth, spaced along entire length, 0–2 ventral teeth.

190   Carapace (Figs. 2 and 3A–D) smooth, glabrous, with epigastric tooth at anterior 0.3 of pocl;

191   without supraorbital and antennal teeth; inferior orbital angle produced; hepatic tooth large,

192   acute, extending to anterior margin of carapace; pterygostomial angle bluntly rounded.

193   Abdomen (Fig. 2) smooth; pleura of first five segments rounded; sixth pleura with pointed

194   posterolateral angle, posteroventral angle subacute.

195   Telson (Figs. 2 and 3E, F) about 0.75 of pocl, 4.0 times as long as proximal width; two pairs

196   of small dorsal spiniform setae at 0.4 and 0.65 of telson length respectively, with three pairs of

197   posterior spiniform setae, lateral pair shortest, medial pair long and stout.

198   Eye (Figs. 2 and 4A) with hemispherical cornea, dorsolaterally with nebenauge, diameter

199   about 0.20 of pocl.

200   Antennule (Figs. 2 and 4B) with proximal peduncle bearing distolateral tooth, with small

201   acute tooth at ventromedial margin; stylocerite narrow, bearing sharp point, reaching to 0.45

202   times of proximal segment; intermediate segment short, 0.4 times of proximal segment length,

203   0.8 of distal segment; upper flagellum biramous, proximal five segments fused, lower flagellum

204   slender, filiform.

205   Antenna (Figs. 2 and 4C) basicerite with sharp pointed distodorsal margin; ischiocerite and

206   merocerite unarmed; carpocerite reaching to about 0.4 of scaphocerite length; scaphocerite 4

207   times as long as maximal width, lateral margin rounded, medial margin convex, distolateral tooth

208   large, at 0.9 of lamella length.

209   Mouthparts typical for genus. Third maxilliped (Fig. 4D) without exopod, reaching to middle

210   of carpocerite; ultimate segment about 0.4 of antepenultimate segment length, tapering distally,

211   with transverse rows of setae; penultimate segment about 0.6 of antepenultimate segment length,

212   with sparsely row of long setae ventromedially; ischiomerus completely fused to basis,

213   antepenultimate segment feebly compressed distally, with long setae ventromedially; coxa with

214   rounded medial lobe, with rounded lateral plate.

215   First pereiopod (Figs. 2, 5A and 5B) reaching to distal end of scaphocerite; fingers about 0.81
216   of palm length, tips hooked, cutting edge entire, with transverse row of setae and group of
217   terminal setae; palm ventrolaterally with transverse row of serrulate setae; carpus 1.3 times
218   length of chela with row of serrulate setae along distomesial margin; merus as long as carpus;
219   ischium about 0.7 times length of merus; basis and coxa without special features.
220   Second pereiopods (Figs. 2A, 5C–G) well developed, dissimilar in shape, unequal in size.
221   Major second pereiopod (Fig. 5C–E) overreaching distal end of rostrum by middle of propodus;
222   chela about 0.63 of pocl, with group of terminal setae; fingers about 0.5 of palm length; dactylus
223   slender, about 3.6 times longer than proximal depth, distally curved with acute tip, proximally
224   with two acute teeth at 0.3 and 0.40, distally entire without dorsolateral flange; fixed finger with
225   acute tip, proximally with two small teeth at 0.2 and 0.3, distally entire; palm subcylindrical,
226   about 4.0 times longer than distal width, covered with minutely blunt tubercles and simple setae;
227   carpus about 0.45 of palm length, about 2 times longer than distal width; merus about 2.0 times
228   as long as carpus, as long as palm length, about 6.2 times longer than distal width; ischium as
229   long as carpus length, about 6.0 times longer than distal width; basis and coxa without special
230   features.
231   Minor second pereiopod (Fig. 5F, G) slightly overreaching distal end of scaphocerite; chela
232   about 0.4 of pocl, 0.7 of major chela length, with group of terminal setae; fingers about 0.7 of
233   palm length, distally curved with acute tips, cutting edge entire; palm subcylindrical, about 3
234   times longer than distal width, smooth slightly tapering proximally; carpus about 1.4 of palm
235   length, about 0.9 of chela length, about 5.6 times longer than distal width; merus about 1.1 times
236   as long as carpus length, about 7.8 times longer than distal width; ischium about 1.1 times as
237   long as merus length, about 7.8 times longer than distal width; basis and coxa without special
238   features.
239   Ambulatory pereiopods (Figs. 2 and 6) subequal in shape and size. Third pereiopod (Fig. 6A,
240   B) overreaching distal end of rostrum by distal end of propodus; dactylus about 0.26 of propodus
241   length, about 4.2 times longer than proximal width, not biunguiculate; propodus about 10 times
242   longer than distal width, ventral border with four distolateral spiniform setae including pair
243   distoventral one, with long setae distally, with distodorsal plumose setae and distal setae; carpus
244   about 0.54 times length of propodus, unarmed; merus as long as carpus length, unarmed; ischium
245   about 0.5 length of propodus, unarmed; basis and coxa without special features. Fourth and fifth
246   pereiopods (Fig. 6C–F) similar to third pereiopod.
247   Uropod (Figs. 2 and 3E) overreaching distal end of telson; exopod with distolateral tooth and
248   movable acute tooth.
249   **Variation.** Bruce (1996) described *Mesopontonia verrucimanus* based on a single specimen
250   (holotype), with nine dorsal teeth, unarmed ventrally and markedly unequal, dissimilar second
251   pereiopods. TheKorean specimens exhibit morphological variation in rostral dentition and the
252   major second pereiopod. The number of dorsal and ventral rostral teeth (Figs. 2 and 3A–D)
253   varies from 6–9 and 0–2 respectively. A single specimen (Fig. 3D) harbours two epigastric teeth
254   on the carapace. Several specimens (Fig. 2B) bear two symmetrical second pereiopods, which

255   are very similar to the minor second pereiopods in the original description and in other Korean
256   specimens (Fig 2A).
257   **Color in life.** Whole body and appendages almost transparent with scattered emerald green
258   chromatophores (Fig. 7); longitudinal pale red band along the ventral surface of the body from
259   the carapace to the fifth abdominal somite.
260   **Geographical distribution.** Presently known from the Tanimbar Islands (Indonesia) and Jejudo
261   Island (Republic of Korea) (Fig. 1).
262   **Habitat and host.** The present specimens were obtained from gorgonian and sponge colonies
263   below 50 m (Fig. 14A, B), with the deepest samples from 75 m depth. The present specimens
264   demonstrate a lack of host specificity and the species cannot be considered as restricted to
265   gorgonians, as previously postulated. Most specimens were collected on the orange colored sea
266   whip, *Ellisella* cf. *limbaughi* (Bayer & Deichmann 1960), with further specimens obtained on the
267   white colored gorgonian, *Cirrhipathes* cf. *anguina* (Dana, 1846), as well as the orange colored
268   sponge, *Raspailia* (*Raspaxilla*) *hirsuta* Thiele, 1898. A single specimen was collected on the
269   white colored antipatharian, *Myriopathes lata* (Silberfeld, 1909).
270   *Mesopontonia verrucimanus* can be immediately separated from most other species in the
271   genus which have a biunguiculate dactylus of ambulatory pereiopods, except *M. monodactylus*
272   with which it shares a non-biunguiculate dactylus. *M. monodactylus* differs from *M.*
273   *verrucimanus* primarily by having a distinct dorsolateral flange on the chela of the major second
274   pereiopod (Bruce 1991; Bruce 1996).
275
276   *Mesopontonia kimwoni* **sp. nov.**
277   urn:lsid:zoobank.org:act:BBA317A3-7140-4D97-BCF4-DB6EEF6617F5
278   Figs. 8–12
279
280   **Material examined.**
281   **Type material. *Holotype.*** 1 ovigerous female (pocl 2.5, R 1+8/2); Jun. 21, 2018; Munseom Islet,
282   Jejudo Island (33°13'31"N 126°34'11"E), 55m, on *Myriopathes lata* (Silberfeld, 1909), leg. JH
283   Park (NIBRIV0000862985). *Paratype.* 1 ovigerous female (pocl 2.8, R 1+8/2); Aug. 16, 2019;
284   same location (33°13'41"N 126°34'6"E), 53m, on *M. lata*, leg. JH Park (NIBRIV0000862994).
285   **Description.** Body (Fig. 8) small-sized, subcylindrical form. Rostrum (Figs. 8 and 9A) straight,
286   horizontal, almost as long as pocl, reaching or slightly beyond end of antennular peduncle, 8
287   dorsal teeth, along entire length, 2 subterminal ventral teeth.
288   Carapace (Fig. 8) smooth, glabrous, with epigastric tooth at anterior 0.3 of pocl; without
289   supraorbital and antennal teeth; inferior orbital angle produced; hepatic tooth large, acute,
290   extending to anterior margin of carapace; pterygostomial angle bluntly rounded.
291   Abdomen (Fig. 8) smooth; pleura of first five segments rounded; sixth pleura with pointed
292   posterolateral angle, posteroventral angle subacute.

293   Telson (Figs. 8 and 9D) 0.8 of pocl, 4.0 times as long as proximal width; two pairs of small
294   dorsal spiniform setae at 0.45 and 0.7 of telson length respectively, with three pairs of posterior
295   spiniform setae, lateral pair shortest, medial pair long and stout.
296   Eye (Figs. 8 and 9B–C) with hemispherical cornea, dorsolaterally with nebenauge, diameter
297   about 0.23 of pocl.
298   Antennule (Fig. 9B) with proximal peduncle bearing distolateral tooth, with small acute tooth
299   at ventromedial margin; stylocerite narrow, bearing sharp point, reaching to 0.45 times of
300   proximal segment; intermediate segment short, 0.3 times of proximal segment length, subequal
301   to distal segment; upper flagellum biramous, proximal four segments fused, lower flagellum
302   slender, filiform.
303   Antenna (Figs. 8 and 9B) basicerite with sharp pointed distodorsal margin; ischiocerite and
304   merocerite unarmed; carpocerite reaching to about 0.4 of scaphocerite length; scaphocerite 4
305   times as long as maximal width, lateral margin rounded, medial margin convex, distolateral tooth
306   large, at 0.9 of lamella length.
307   Mouthparts not dissected. Third maxilliped (Fig. 9F) without exopod, reaching to 0.7 of
308   carpocerite; ultimate segment about 0.35 of antepenultimate segment length, tapering distally,
309   with transverse rows of setae; penultimate segment about 0.7 of antepenultimate segment length,
310   with sparsely row of long setae ventromedially; ischiomerus completely fused to basis,
311   antepenultimate segment feebly compressed distally, with long setae ventromedially; coxa with
312   rounded medial lobe, with rounded lateral plate.
313   First pereiopod (Figs. 8 and 9A, B) overreaching distal end of scaphocerite; fingers about 0.6
314   of palm length, tips hooked, cutting edge entire, with transverse row of setae and group of
315   terminal setae; palm ventrolaterally with transverse row of serrulate setae; carpus 1.1 times
316   length of chela with row of serrulate setae along distomesial margin; merus 1.1 times length of
317   carpus; ischium about 0.5 times length of merus; basis and coxa without special features.
318   Second pereiopods (Figs. 8 and 10C–G) well developed, similar in shape, unequal in size. Major
319   second pereiopod (Fig. 10C–E) overreaching distal end of rostrum by middle of propodus; chela
320   about 1.3 times as long as pocl, with group of terminal setae; fingers about 0.4 of palm length;
321   dactylus slender, about 3.8 times longer than proximal depth, distally curved with acute tip,
322   proximally with two blunt teeth at proximal 0.3 and 0.4, distally entire without dorsolateral
323   flange; fixed finger with distally curved with acute tip, proximally with single acute tooth at 0.4,
324   distally entire; palm subcylindrical, about 4.2 times longer than distal width, covered with
325   minutely blunt tubercles and short simple setae; carpus about 0.4 of palm length, about 2.8 times
326   longer than distal width; merus about 2.1 times as long as carpus, about 0.8 of palm length, 7.0
327   times longer than distal width; ischium subequal to carpus length, about 7.0 times longer than
328   distal width; basis and coxa without special features.
329   Minor second pereiopod (Fig. 10F, G) overreaching distal end of rostrum by end of carpus;
330   chela about 0.7 of pocl, 0.7 of major chela length, with group of terminal setae; fingers about 0.7
331   of palm length, with distally curved with acute tips, cutting edge entire; palm subcylindrical,
332   about 3.75 times longer than distal width, smooth, slightly tapering proximally; carpus about 1.3

333   of palm length, about 0.75 of chela length, about 7.2 times longer than distal width; merus about
334   1.1 times as long as carpus length, about 9 times longer than distal width; ischium about 0.9 of
335   merus length, about 10 times longer than distal width; basis and coxa without special features.
336   Ambulatory pereiopods (Figs. 8 and 11) subequal in shape and size, only third pereiopod with
337   distodorsal plumose setae and distal serrulate setae on propodus. Third pereiopod (Fig. 11A, B)
338   overreaching distal end of rostrum by distal half of propodus; dactylus about 0.2 of propodus,
339   about 4 times longer than proximal width, about 0.65 of corpus length, biunguiculate; propodus
340   about 0.8 of pocl, 16 times longer than distal width, ventral border with four distolateral
341   spiniform setae including single distoventral one, with long setae distally; carpus about 0.4 times
342   length of propodus, unarmed; merus about 0.9 times length of propodus, unarmed; ischium about
343   0.5 length of propodus, unarmed; basis and coxa without special features.
344   Fourth pereiopod (Fig. 11C, D) with dactylus about 0.2 times length of propodus, about 4
345   times longer than proximal width, about 0.65 of corpus length, biunguiculate; propodus with four
346   distolateral spiniform setae including single distoventral one, with long simple setae distally;
347   carpus about 0.45 times length of propodus, unarmed; merus subequal to propodus length,
348   unarmed; ischium about 0.46 length of propodus; basis and coxa without special feature. Fifth
349   pereiopod (Fig. 11E) similar to fourth pereiopod.
350   Uropod (Figs. 11D) overreaching distal end of telson; exopod with distolateral tooth and
351   movable acute tooth.
352   **Etymology.** The specific name "kimwoni" is in honor of Dr. Kim, Won, professor in the School
353   of Biological Sciences, Seoul National University. He made a considerable contribution to the
354   systematics of Korean crustaceans.
355   **Color in life.** Whole body and appendages almost transparent (Figs. 12 and 13); longitudinal red
356   bands along the ventral surface of the body from antennular peduncle to the fifth abdominal
357   somite; tiny white and red chromatophore scattered along the dorsal surface of cornea of eyes,
358   proximal segment of antennular peduncle and abdomen.
359   **Type locality.** Munseom Islet, Jejudo Island, Korea
360   **Geographical distribution.** Presently only known for the type locality.
361   **Habitat.** The **t**wo specimens of *M. kimwoni* sp. nov. were collected from the gorgonian
362   antipatharian, *Myriopathes lata* (Silberfeld, 1909) in 53–55 m (Fig. 14C).
363   **Remarks.** Based on the presence of the biunguiculate dactyli of ambulatory pereiopods, the new
364   species is morphologically allied to four species: *M. brevicarpus* Li & Bruce, 2006*, M. brucei*
365   Burukovsky, 1991*, M. gorgoniophila* Bruce, 1967*,* and *M. gracilicarpus* Bruce, 1990; and can be
366   easily separated from the remaining two species in the genus (*M. monodactylus* Bruce, 1991, *M.*
367   *verrucimanus* Bruce, 1996) which have simple dactyli. The new species differs from *M.*
368   *gorgoniophila* by the straight distodorsal carina in the major second pereiopod (vs. oblique
369   distodorsal carina in *M. gorgoniophila*), with two teeth on the cutting edge of dacytlus of major
370   second pereiopod (vs. with single tooth in *M. gorgoniophila*), dorsolateral dactylar flange of
371   major second pereiopod absent (vs. present in *M. gorgoniophila*), as well as the proportions of
372   the carpus of the minor second pereiopod (about 1.3 time palm length in *M. kimwoni* **sp. nov.** vs.

373 about 0.8 in *M. gorgoniophila*). The new species differs from *M. gracilicarpus* primarily by the
374 relative short size of the carpus of the first pereiopods (about 1.1 times the chela length in *M.*
375 *kimwoni* **sp. nov.**, vs. about 1.4 in *M. gracilicarpus*), as well as the proportions of the carpus of
376 the minor second pereiopod (0.8 times chela length in *M. kimwoni* **sp. nov.** vs. about 1.5 in *M.*
377 *gracilicarpus*). The new species can be distinguished from *M. brucei* by the presence of a minute
378 tubercle on the chela of the major second pereiopod (vs. absent in *M. brucei*), relatively long
379 fingers of first pereiopod (about 0.6 of palm length in *M. kimwoni* **sp. nov.** vs. about 0.5 in *M.*
380 *brucei*), relatively short carpus of major second pereiopod (about 0.4 of the palm length in *M.*
381 *kimwoni* **sp. nov.** vs 0.6 in *M. brucei*) and the relatively long carpus of the minor second
382 pereiopod (about 1.3 times the palm length in *M. kimwoni* **sp. nov.** vs. about 0.9 in *M. brucei*).
383   *M. kimwoni* **sp. nov.**, appears most closely related to the west Indian species, *M. brevicarpus*,
384 sharing a similar rostral formulation, a tuberculate major second pereiopod chela, as well as the
385 ratio of the ambulatory pereiopods. Both species can be most easily distinguished on the basis of
386 the combination of the following characters, 1) fingers of first chela with entire cutting edge (vs.
387 fine pectinated serrations subapically on both fingers in *M. brevicarpus*); 2) hepatic tooth
388 reaching to the anterior margin of the carapace (vs. reaching or extending to anterior margin of
389 carapace in *M. brevicarpus*) and 3) the finger of minor chela being about 0.7 of the palm length
390 (vs. fingers subequal to palm in *M. brevicarpus*).
391   Bruce (1996) suggested two further new species may be present in the genus, one collected
392 from Indonesia (Bruce, 1996), as well as the juvenile specimen assigned to *M. gorgoniophila* in
393 Bruce (1985), both however were left unnamed. Given their incomplete or juvenile status these
394 taxa are not considered herein, but are unlikely to be the same species as *M. kimwoni*, as the
395 details of the first and second pereiopods are different.
396
397 **Molecular data analyses**
398 Fragments of 658 and 462 bp were obtained for the COI and 16S markers, respectively. The
399 multiple sequence alignment revealed that the K2P distance between the five specimens of *M.*
400 *verrucimanus* which showed minor morphological variations in the dentition of the rostrum and
401 proportions of the second pereiopods fall within an intraspecific range, being 0–0.5% (Table 2).
402 The intraspecific divergence between both specimens of *M. kimwoni* **sp. nov.** was higher at 1.1%
403 (Table 2).
404   To eludicate the phylogenetic position of the genus, an analysis was performed on 22
405 specimens of 16 species of 12 genera (Table 1). The ML and BI analyses showed the same
406 topology (Fig. 15), and the combined phylogenetic tree clearly demonstrated the monophyly of
407 *Mesopontonia* with high support values (BP =100, PP=100). Furthermore, their distant
408 relationship was supported by the K2P distance, which was 13.6% (Table 2).
409   From the concatenated tree in the present analysis,the genera *Mesopontonia* and
410 *Paraclimenes* are postulated to be sister taxa with high support values (BP=100, PP=92),
411 indicating that they are more genetically related to each other than the remaining analysed
412 genera, supported by morphological similarities.

413
Discussion

The present study explored the commensal palaemonid fauna of Jejudo Island, recording *Mesopontonia kimwoni* **sp. nov.** and *M. verrucimanus* at higher latitude temperate waters than the genus was previously known from. While the six species previously known in the genus had been reported from between 117 and 600 m depth by trawling and dredging (Bruce 1967; Bruce 1979; Bruce 1984; Bruce 1985; Bruce; 1990a; Bruce 1991; Bruce, 1996; Burukovsy, 1991; Li & Bruce, 2006), the present specimens were collected from shallower depths of less than 75 m. As they were directly collected with technical SCUBA diving equipment, more details are available on their habitat and ecology, whilst color patterns are recorded for the first time for the genus as a whole.

   Mesopontonia kimwoni **sp. nov.** can be distinguished from all other *Mesopontonia* species by the combination of the biunguiculate dactylus of the ambulatory pereiopods, the lack of a dorsolateral dactylar flange on the major second chela, the relatively long carpus of the minor second pereiopod and the entire cutting edge of fingers of first chela. Specimens of *M. verrucimanus* exhibited minor morphological variation in rostral dentition and proportions of the major second pereiopod, but all specimens are clearly conspecific.

   Due to its rarity, *Mesopontonia* had not been previously included in family level phylogenies (e.g. Kou et al. 2013; Gan et al. 2015; Horká et al. 2016), but is herein shown to be phylogenetically close to *Paraclimenes*. This is also supported by a relatively similar morphology with both antennal and supraorbital teeth being absent; and the epigastric and hepatic teeth being present. Nevertheless, *Paraclimenes* can be readily distinguished from *Mesopontonia* by the presence of a well-developed exopod on the third maxilliped (Bruce 1995).

Key to species of *Mesopontonia* Bruce, 1967 (Adapted from Bruce, 1996; Li & Bruce, 2006)
1. Dactylus of ambulatory pereiopods simple...2
– Dactylus of ambulatory pereiopods biunguiculate...3
2. Major second pereiopod with dorsolateral dactylar flange ....*M. monodactylus* Bruce, 1991
– Major second pereiopod without dorsolateral dactylar flange ......*M. verrucimanus* Bruce, 1996
3. Major second pereiopod with dorsolateral dactylar flange ....*M. gorgoniophila* Bruce, 1967
– Major second pereiopod without dorsolateral dactylar flange 4
4. Carpus of minor second pereiopod longer than chela ....*M. gracilicarpus* Bruce, 1990
– Carpus of minor second pereiopod shorter than chela 5
5. Carpus of minor second pereiopod shorter than palm ....*M. brucei* Burukovsky, 1991
– Carpus of minor second pereiopod longer than palm 6
6. Fingers of first chela with pectinated serrations, subapically..*M. brevicarpus* Li & Bruce, 2006
– Fingers of first chela with clear entire cutting edge; R. 1+8/2 ....*M. kimwoni* **sp. nov.**

Abbreviations used in text, tables and figures

453   **BI** Bayesian Inference
454   **BP** Maximum likelihood bootstrap percentage
455   **K2P** Kimura 2-parameter
456   **ML** Maximum likelihood
457   **POCL** postorbital carapace length
458   **PP** Bayesian posterior probabilities
459   **R** Rostrum formula; formulation of epigastric tooth and teeth on rostrum.
460

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473

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627 **Figure 1 Map of Indo West Pacific Ocean (IWP).** Map showing (A) distribution of *Mesopontonia*
628 species, (B) location of Jejudo Island, and (C) the type locality of *M. kimwoni* sp. nov.
629
630 **Figure 2 *Mesopontonia verrucimanus* Bruce, 1996, habitus, lateral view.** (A) Ovigerous female, pocl
631 3.7 mm (NIBRIV0000862989); (B) male, pocl 3.2 mm (NIBRIV0000862991).
632
633 **Figure 3 *Mesopontonia verrucimanus* Bruce, 1996.** (A) Frontal margin and rostrum, lateral view; (B, C)
634 same, lateral view; (D) same, lateral view; (E) telson and uropods, dorso-lateral view; (F) distal end of
635 telson, dorsal view. (A, E, F) Ovigerous female, pocl 3.8 mm (NIBRIV0000862990); (B) Male, pocl 2.7
636 mm (NIBRIV0000862982); (C) Female, 2.78 mm (NIBRIV0000862978); (D) Male, pocl 2.5 mm (SNU
637 KR JH1095).
638
639 **Figure 4 *Mesopontonia verrucimanus* Bruce, 1996.** (A) Left eye, dorsal view; (B) left antennule, dorsal
640 view; (C) left antenna, dorsal view; (D) left third maxilliped. (A–C) Ovigerous female, pocl 3.8 mm
641 (NIBRIV0000862990); (D) Ovigerous female, pocl 3.7 mm (NIBRIV0000862989).
642
643 **Figure 5 *Mesopontonia verrucimanus* Bruce, 1996, ovigerous female, pocl 3.7 mm**
644 **(NIBRIV0000862989)**. (A) Left first pereiopod. (B) same, chela; (C) major right second pereiopod; (D)
645 same, chela and carpus; (E) same, fingers; (F) minor left second pereiopod; (G) same, chela.
646
647 **Figure 6 *Mesopontonia verrucimanus* Bruce, 1996, ovigerous female, pocl 3.7 mm**
648 **(NIBRIV0000862989).** (A) Left third pereiopod; (B) same, dactylus and distal propodus; (C) left fourth
649 pereiopod; (D) same, dactylus and distal propodus; (E) left fifth pereiopod; (F) same, dactylus and distal
650 propodus.
651
652 **Figure 7 *Mesopontonia verrucimanus* Bruce, 1996 on *Ellisella limbaughi* Bayer & Deichmann, 1960**
653 **from Munseom Islet, Jejudo Island.** (A) Female specimen, pocl 2.5 mm (MADBK 120533_004); (B)
654 male specimens, pocl 3.0 mm (MADBK 120533_003). Photographic Credits: (A) Jin-Ho Park, (B) Jong
655 Moon Choi.
656
657 **Figure 8 *Mesopontonia kimwoni* sp. nov., habitus, lateral view.** Holotype, ovigerous female, pocl 2.5
658 mm (NIBRIV0000862985).
659
660 **Figure 9 *Mesopontonia kimwoni* sp. nov., ovigerous female pocl 2.5 mm (NIBRIV0000862985),**
661 **holotype.** (A) frontal margin and rostrum, lateral view; (B) frontal region, dorsal view; (C) left eye, dorsal
662 view; (D) left antenna, ventral view; (E) telson and uropod, dorsal view; (F) distal end of telson, dorsal
663 view; (G) left third maxilliped, mesial view.
664
665 **Figure 10 *Mesopontonia kimwoni* sp. nov., ovigerous female pocl 2.5 mm (NIBRIV0000862985),**
666 **holotype.** (A) left first pereiopod; (B) same, chela; (C) major right second pereiopod; (D) same, chela and
667 carpus; (E) same, fingers; (F) minor left second pereiopod; (G) same, chela.
668
669 **Figure 11 *Mesopontonia kimwoni* sp. nov., ovigerous female pocl 2.5 mm (NIBRIV0000862985),**
670 **holotype.** (A) left third pereiopod; (B) same, dactylus and distal propodus; (C) left fourth pereiopod; (D)
671 same, dactylus and distal propodus; (E) left fifth pereiopod.
672
673 **Figure 12 *Mesopontonia kimwoni* sp. nov. from Munseom Islet, Jejudo Island.** Holotype, ovigerous
674 female, pocl 2.5 mm (NIBRIV0000862985). Photographic credit: Jin-Ho Park.
675

676 **Figure 13 Artistic interpretation of *Mesopontonia kimwoni* sp. nov.** Holotype, ovigerous female, pocl
677 2.5 mm (NIBRIV0000862985). Painting by Kyoung Kim.
678
679 **Figure 14 Habitat and host of *Mesopontonia* from Munseom Islet, Jejudo Island, Korea.** Habitat and
680 host specimens of *M. verrucimanus* (A, B) and *M. kimwoni* sp. nov. (C). (A) host sea whip*, Ellisella* cf.
681 *limbaughi* and habitat in depth of 57 m; (B) host sponge *Raspailia (Raspaxilla) hirsuta* and habitat in
682 depth of 55 m; (C) host black coral *Myriopathes lata* and habitat in depth of 55m. Photographic Credits:
683 Jong Moon Choi.
684
685 **Figure 15 Phylogenetic tree obtained by the Maximum likelihood (ML) analysis based on the
686 combined dataset for COI and 16S sequences.** Numbers at nodes represent Maximum Likelihood
687 bootstrap percentage (above) and Bayesian posterior probabilities (below), numbers less than 75% are not
688 shown.
689
690 **Table 1:** Species used in the phylogenetic analysis with GenBank accession numbers and source. Used
691 symbols: N/A - not available.
692
693 **Table 2:** Pairwise distances of COI sequences and selected morphological characteristics for specimens
694 used in the analysis. (P2 - second pereiopods).
695

Species used in the phylogenetic analysis with GenBank accession numbers and source. Used symbols: N/A - not available.

1 **Table 1:**
2 Species used in the phylogenetic analysis with GenBank accession numbers and source. Used symbols: N/A - not available.

Species	Voucher ID	Location	GenBank accession number		Sources
			COI	16S	
Mesopontonia kimwoni **sp. nov.** (1)	NIBRIV0000862985	Korea	MT311866	MT311974	Present study
M. kimwoni **sp. nov.** (2)	NIBRIV0000862994	Korea	MT311865	MT311973	Present study
M. verrucimanus (1)	NIBRIV0000862999	Korea	MT311867	MT311975	Present study
M. verrucimanus (2)	NIBRIV0000862991	Korea	MT311868	MT311976	Present study
M. verrucimanus (3)	NIBRIV0000862990	Korea	MT311869	MT311977	Present study
M. verrucimanus (4)	SNU KR JH1095	Korea	MT311870	MT311978	Present study
M. verrucimanus (5)	MADBK 120533_007	Korea	MT311871	MT311979	Present study
Paraclimenes sp. (1)	SNU-KR_JH357	Korea	MT311872	MT311980	Present study
Paraclimenes sp. (2)	SNU-KR-JH466	Korea	MT311873	MT311981	Present study
Altopontonia disparostris	RMNH.CRUS.D.51028	Norfolk Ridge	KM921671	KU064797	Horká et al. 2016
Cuapetes tenuipes	UO V08-48	Vietnam	KU064965	KU064814	Horká et al. 2016
Palaemonella rotumana	MTQ W-33176	Australia	KR088755	KU064830	Horká et al. 2016
Anchistioides willeyi	SNU-Pal_Pal12	Palau	MT311864	MT311972	Present study
Lipkemenes lanipes	SNU-PH_PH99	Philippines	MT311863	MT311971	Present study
Thaumastocaris streptopus	SNU-TW_TW62	Taiwan	MT311862	MK602867	Present, Park et al. 2019
Bathymenes aleator	UO-948	Papua New Guinea	MK940921	MK940946	Ďuriš & Šobáňová 2020
Echinopericlimenes aurorae	UO-1057	Philippines	MK940923	MK940948	Ďuriš & Šobáňová 2020
Echinopericlimenes dentidactylus	UO-1059	Philippines	MK940930	MK940954	Ďuriš & Šobáňová 2020
Echinopericlimenes calcaratus	UO-960	Papua New Guinea	MK940925	MK940949	Ďuriš & Šobáňová 2020
Periclimenes laccadivensis	UO-881	Papua New Guinea	MK940931	MK940955	Ďuriš & Šobáňová 2020
Periclimenes uniunguiculatus	UO-586	Papua New Guinea	MK940932	MK940956	Ďuriš & Šobáňová 2020
Stenopus hispidus (outgroup)	UO V10-17	Vietnam	KJ690260	KU064859	Horká et al. 2016

Pairwise distances of COI sequences and selected morphological characteristics for specimens used in the analysis. (P2 - second pereiopods).

1 **Table 2:**
2 **Pairwise distances of COI sequences and selected morphological characteristics for specimens used in the analysis. (P2 -**
3 **second pereiopods).**

	Species	Rostral formula	Shape and size of P2	1	2	3	4	5	6
1	*M. kimwoni* **sp. nov.** (1)	1-8/2	Unequal and dissimilar						
2	*M. kimwoni* **sp. nov.** (2)	1-8/2	Unequal and dissimilar	0.011					
3	*M. verrucimanus* (1)	1-8/1	Unequal and dissimilar	0.142	0.1360				
4	*M. verrucimanus* (2)	1-8/0	Equal and similar	0.1380	0.1320	0.0030			
5	*M. verrucimanus* (3)	1-9/0	Unequal and dissimilar	0.1380	0.1320	0.0030	0.0000		
6	*M. verrucimanus* (4)	2-8/1	Unequal and dissimilar	0.1400	0.1340	0.0050	0.0020	0.0020	
7	*M. verrucimanus* (5)	1-9/2	Equal and similar	0.1380	0.1320	0.0030	0.0000	0.0000	0.0020

6

Figure 1

Map of Indo West Pacific Ocean (IWP).

Map showing (A) distribution of *Mesopontonia* species, (B) location of Jejudo Island, and (C)
the type locality of *M. kimwoni* sp. nov.

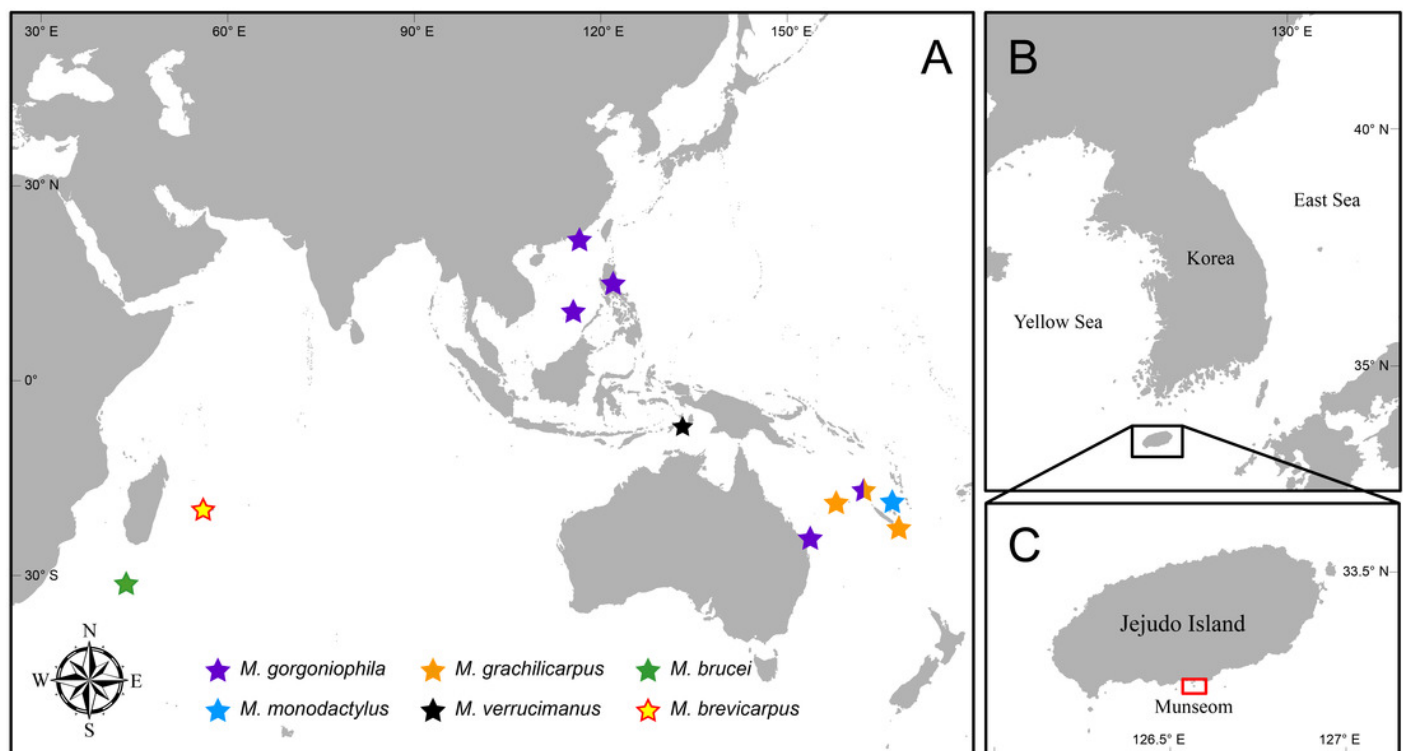



Figure 2

Mesopontonia verrucimanus Bruce, 1996, habitus, lateral view.

(A) Ovigerous female, pocl 3.7 mm (NIBRIV0000862989); (B) male, pocl 3.2 mm (NIBRIV0000862991).

A

A B
3.0 mm

B

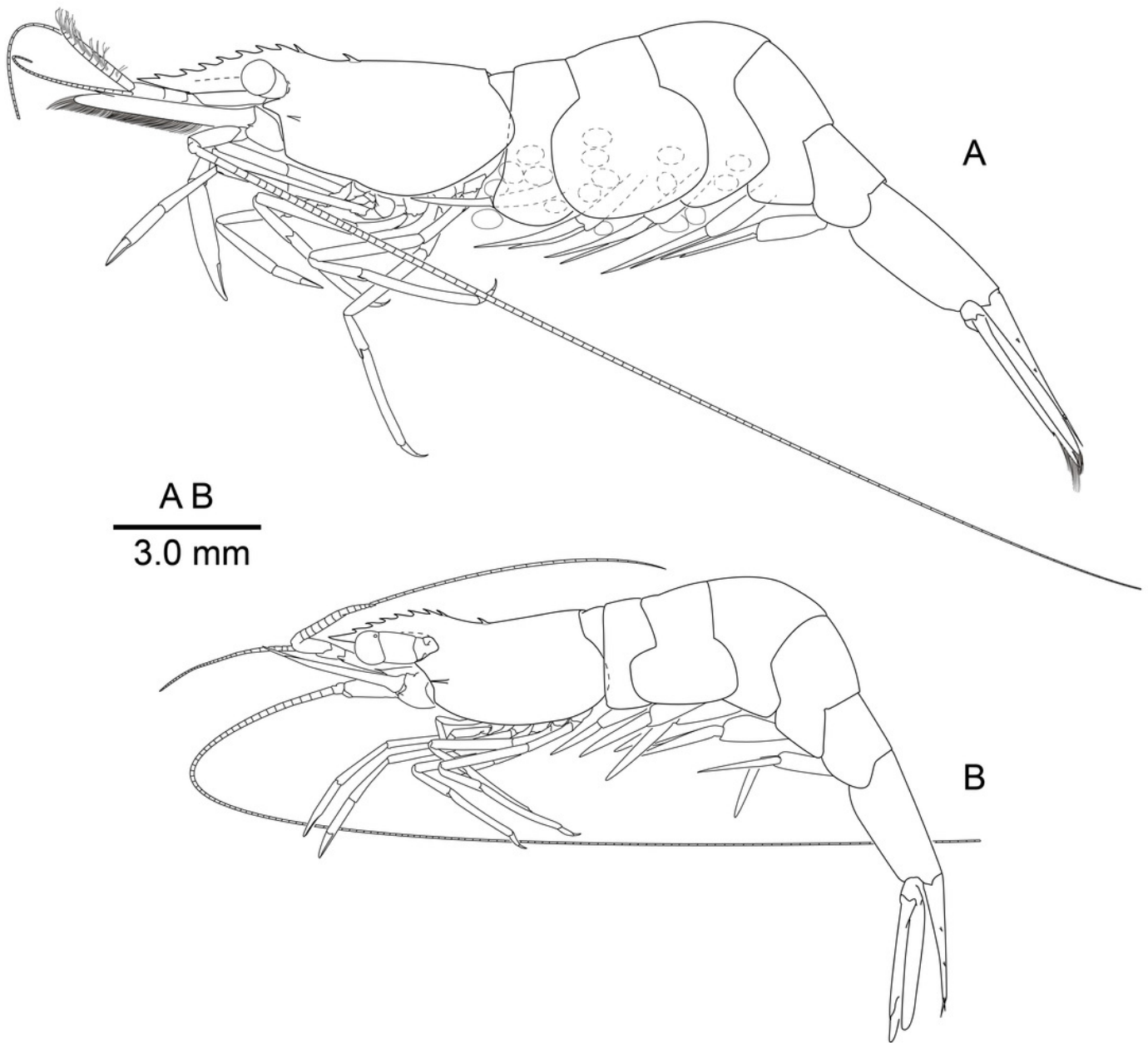
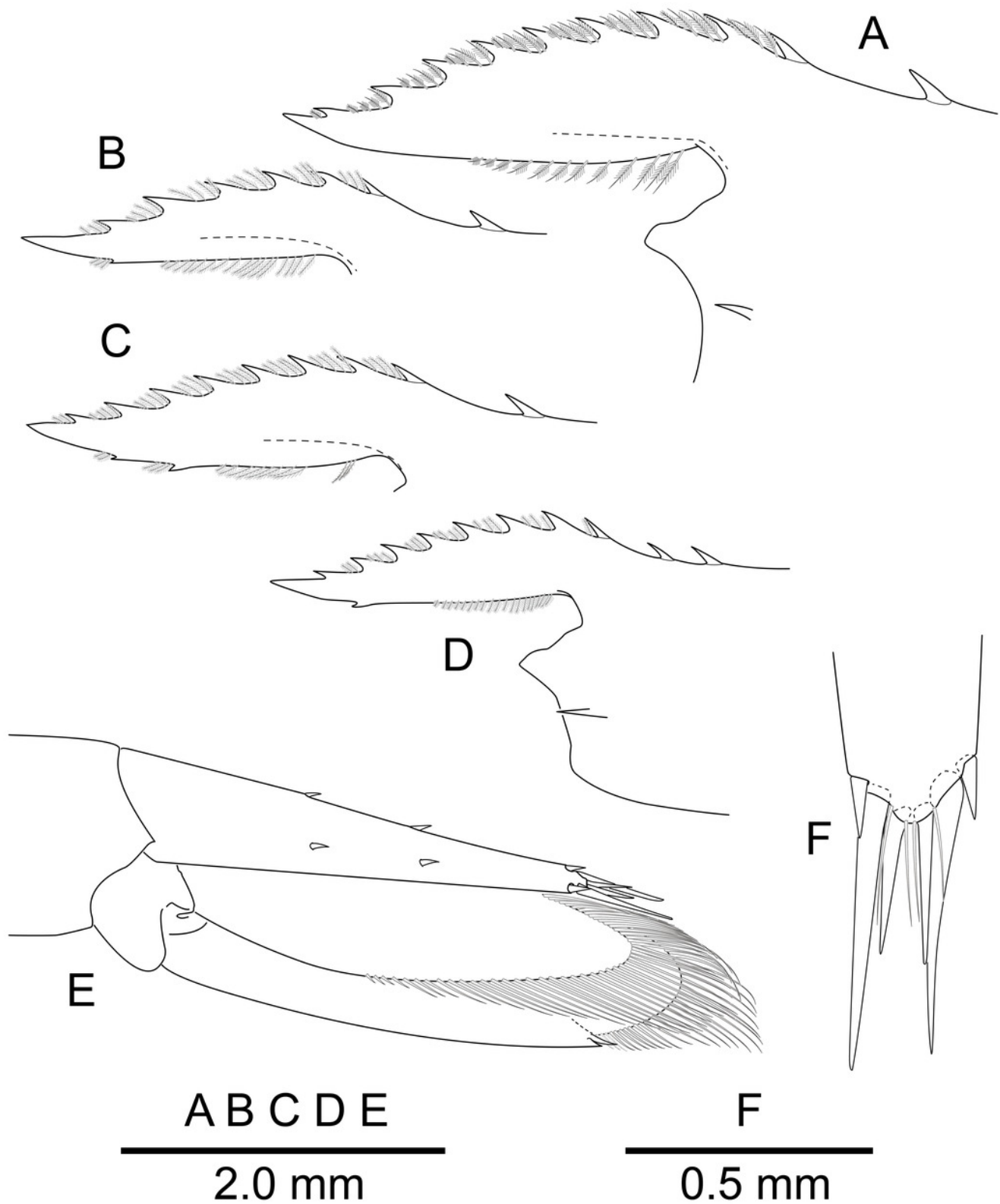



Figure 3

Mesopontonia verrucimanus Bruce, 1996.

(A) Frontal margin and rostrum, lateral view; (B, C) same, lateral view; (D) same, lateral view; (E) telson and uropods, dorso-lateral view; (F) distal end of telson, dorsal view. (A, E, F) Ovigerous female, pocl 3.8 mm (NIBRIV0000862990); (B) Male, pocl 2.7 mm (NIBRIV0000862982); (C) Female, 2.78 mm (NIBRIV0000862978); (D) Male, pocl 2.5 mm (SNU KR JH1095).

A B C D E

2.0 mm

F

0.5 mm

Figure 4

Mesopontonia verrucimanus Bruce, 1996.

(A) Left eye, dorsal view; (B) left antennule, dorsal view; (C) left antenna, dorsal view; (D) left third maxilliped. (A–C) Ovigerous female, pocl 3.8 mm (NIBRIV0000862990); (D) Ovigerous female, pocl 3.7 mm (NIBRIV0000862989).

Figure 5

Mesopontonia verrucimanus Bruce, 1996, ovigerous female, pocl 3.7 mm
(NIBRIV0000862989).

(A) Left first pereiopod. (B) same, chela; (C) major right second pereiopod; (D) same, chela
and carpus; (E) same, fingers; (F) minor left second pereiopod; (G) same, chela.

A C F

1.0 mm

B D G

1.0 mm

E

0.3 mm

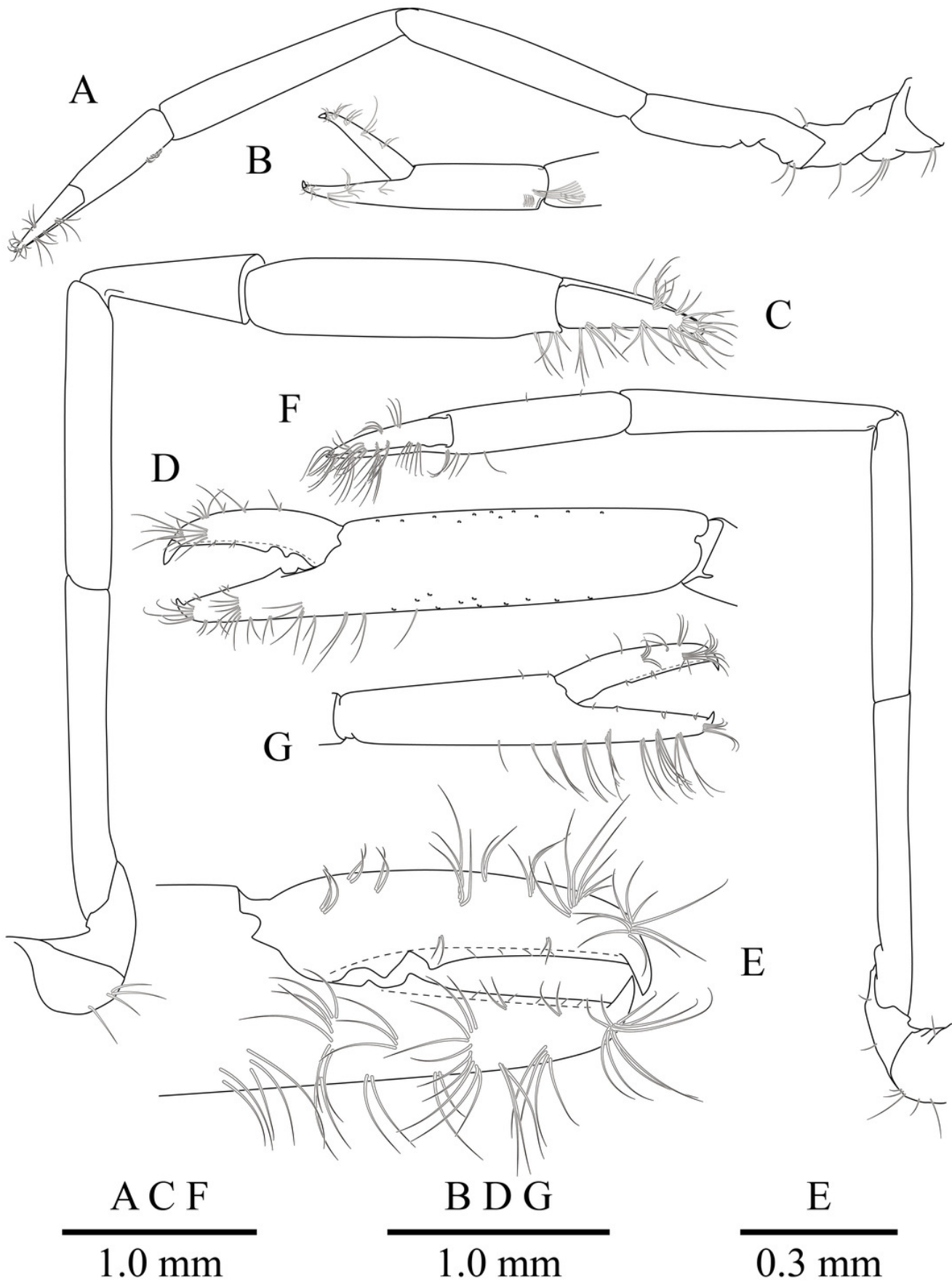



Figure 6

Mesopontonia verrucimanus Bruce, 1996, ovigerous female, pocl 3.7 mm
(NIBRIV0000862989).

(A) Left third pereiopod; (B) same, dactylus and distal propodus; (C) left fourth pereiopod; (D)
same, dactylus and distal propodus; (E) left fifth pereiopod; (F) same, dactylus and distal
propodus.

Figure 7

Mesopontonia verrucimanus Bruce, 1996 on *Ellisella limbaughi* Bayer & Deichmann, 1960 from Munseom Islet, Jejudo Island.

(A) Female specimen, pocl 2.5 mm (MADBK 120533_004); (B) male specimens, pocl 3.0 mm (MADBK 120533_003). Photographic Credits: (A) JH Park, (B) JM Choi.

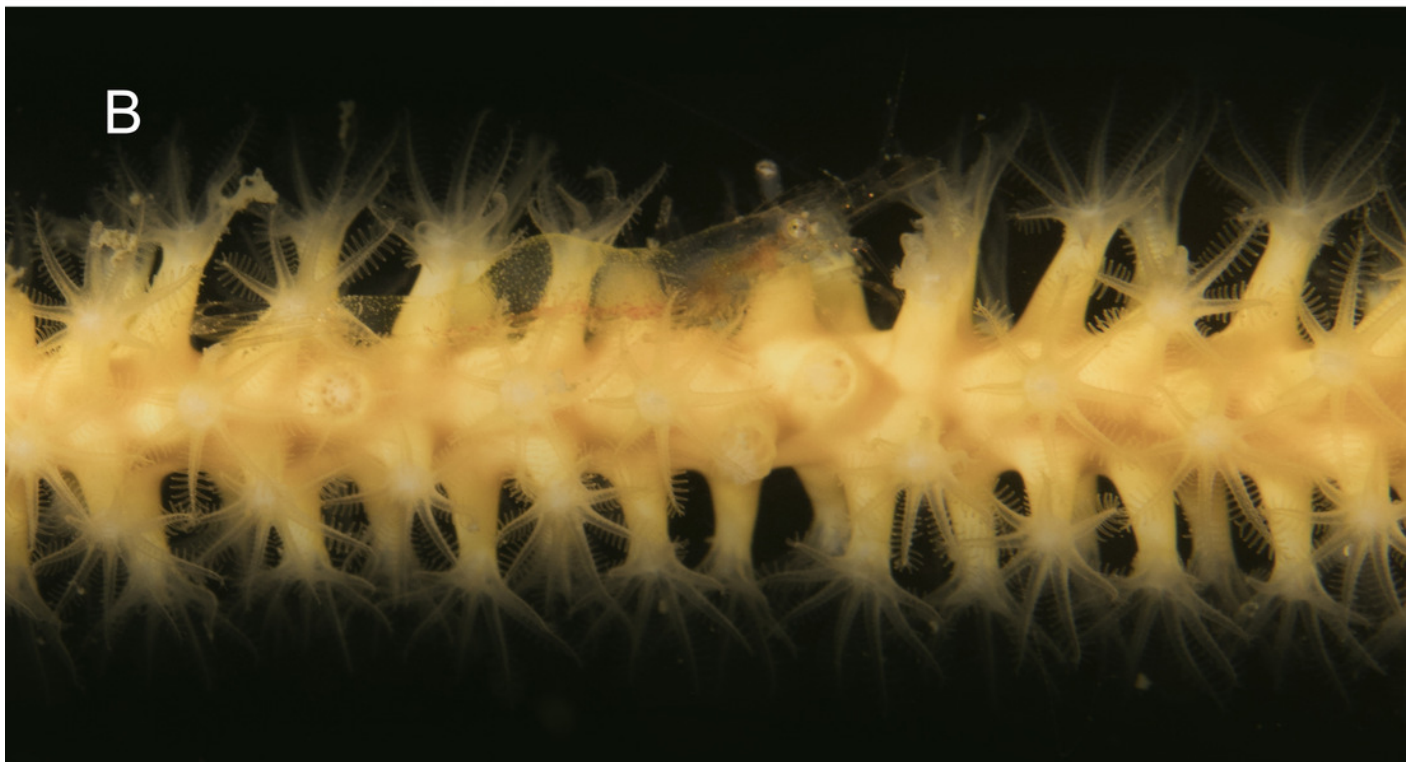



Figure 8

Mesopontonia kimwoni sp. nov., habitus, lateral view.

Holotype, ovigerous female, pocl 2.5 mm (NIBRIV0000862985).

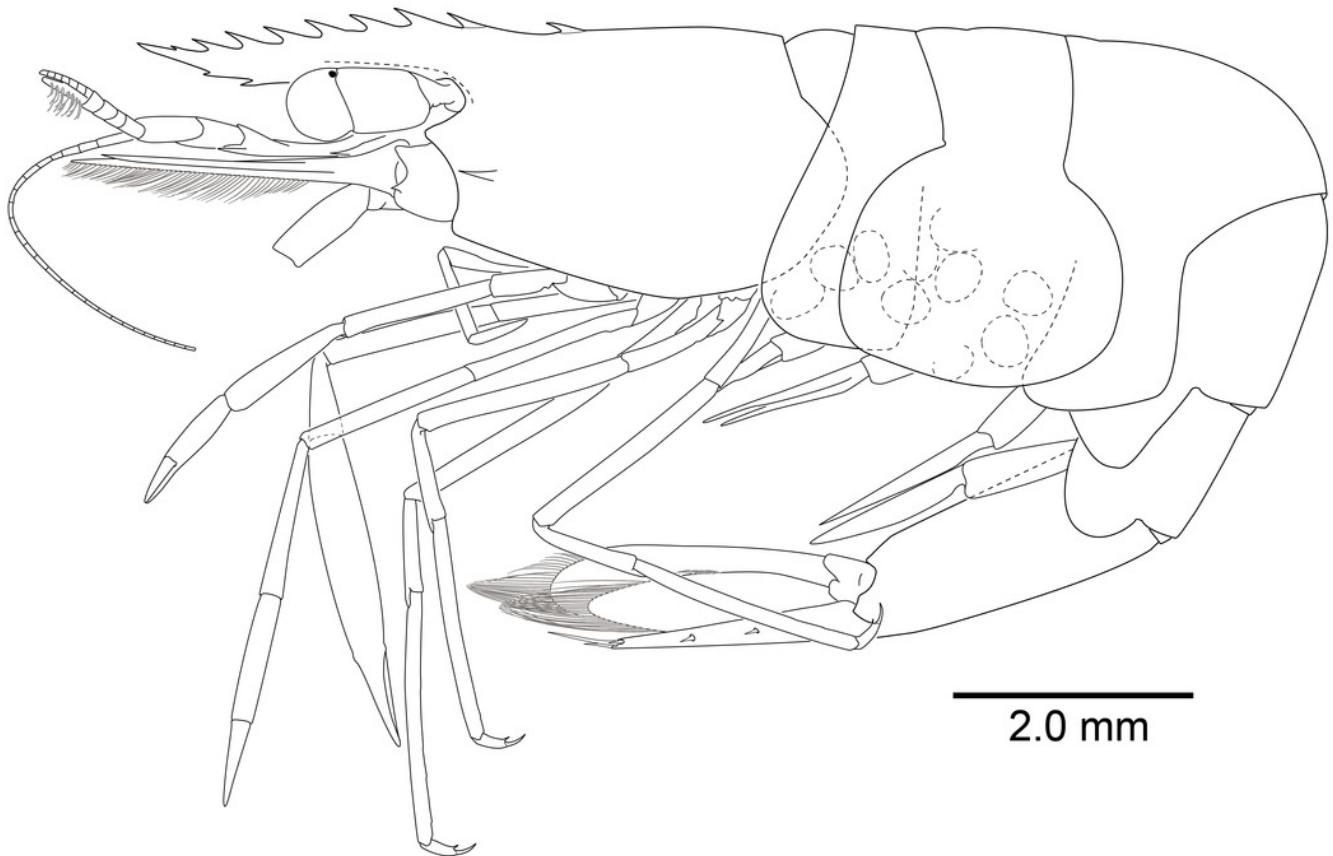



Figure 9

Mesopontonia kimwoni sp. nov., ovigerous female pocl 2.5 mm (NIBRIV0000862985), holotype.

(A) frontal margin and rostrum, lateral view; (B) frontal region, dorsal view; (C) left eye, dorsal view; (D) left antenna, ventral view; (E) telson and uropod, dorsal view; (F) distal end of telson, dorsal view; (G) left third maxilliped, mesial view.

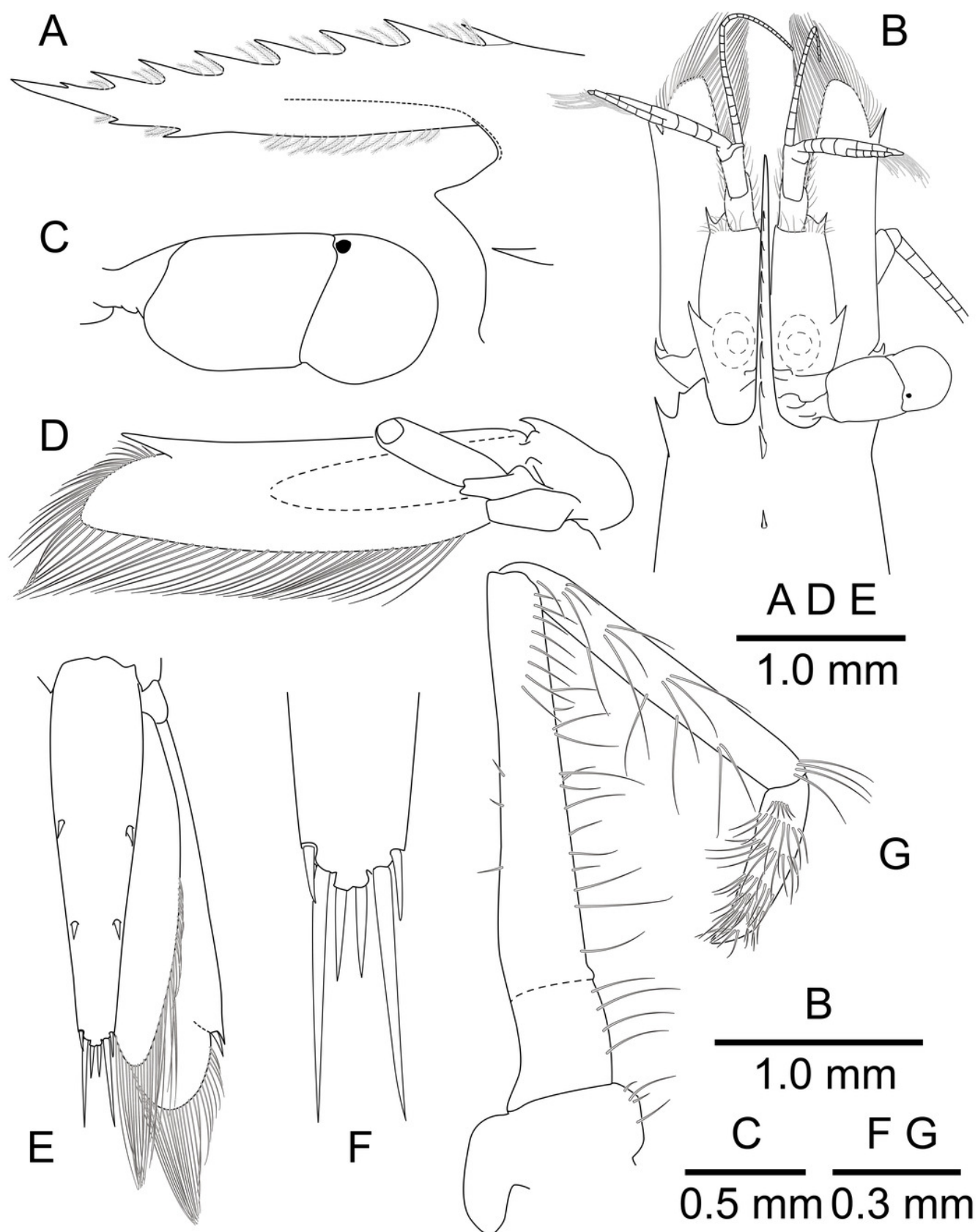



Figure 10

Mesopontonia kimwoni sp. nov., ovigerous female pocl 2.5 mm (NIBRIV0000862985), holotype.

(A) left first pereiopod; (B) same, chela; (C) major right second pereiopod; (D) same, chela and carpus; (E) same, fingers; (F) minor left second pereiopod; (G) same, chela.

A D G
————
1.0 mm

B E H
————
1.0 mm

F
————
0.3 mm

C
————
0.1 mm

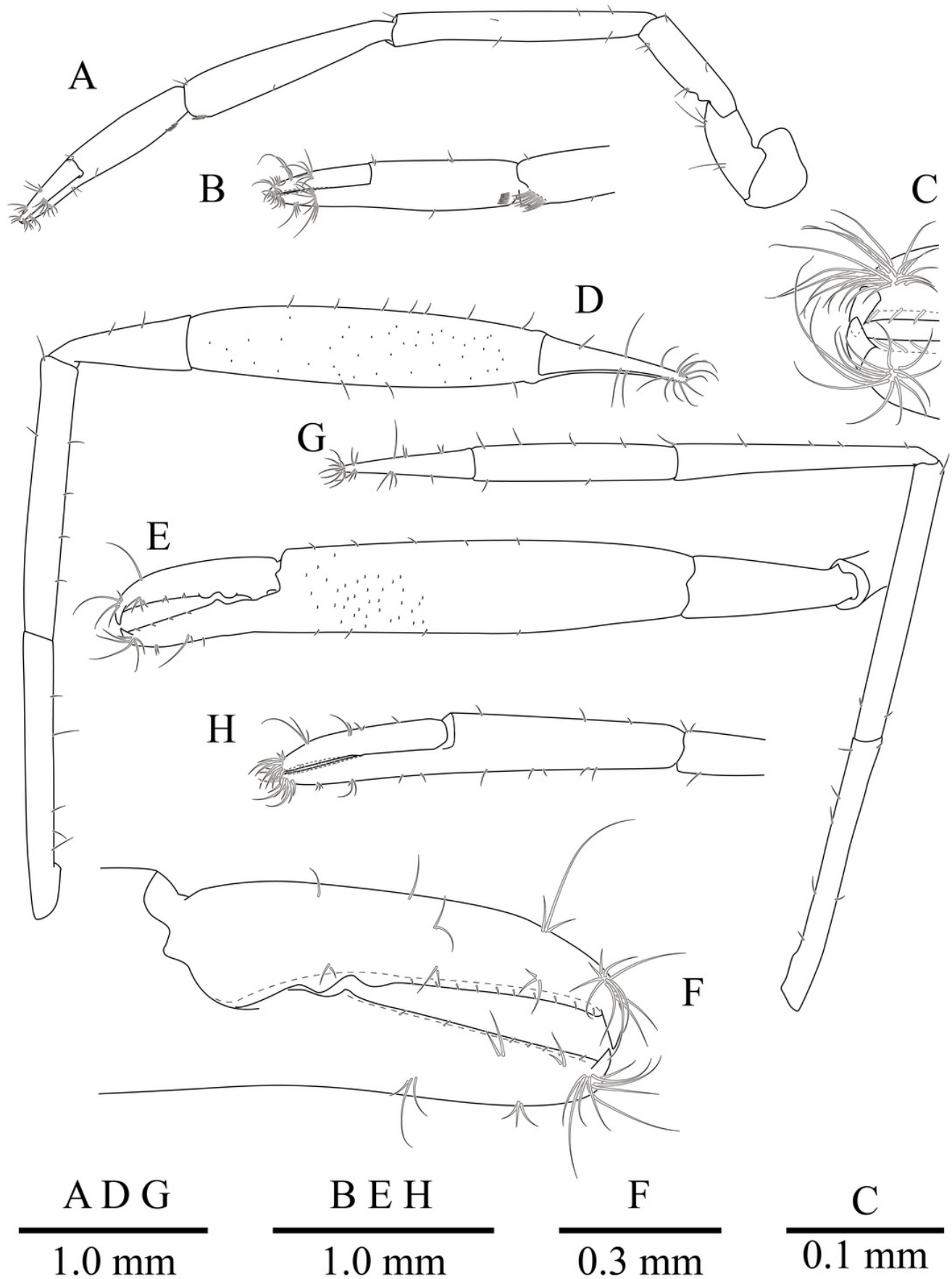



Figure 11

Mesopontonia kimwoni sp. nov., ovigerous female pocl 2.5 mm (NIBRIV0000862985), holotype.

(A) left third pereiopod; (B) same, dactylus and distal propodus; (C) left fourth pereiopod; (D) same, dactylus and distal propodus; (E) left fifth pereiopod.

Figure 12

Mesopontonia kimwoni sp. nov. from Munseom Islet, Jejudo Island.

Holotype, ovigerous female, pocl 2.5 mm (NIBRIV0000862985). Photographic credit: JH Park.

Figure 13

Artistic interpretation of *Mesopontonia kimwoni* sp. nov.

Holotype, ovigerous female, pocl 2.5 mm (NIBRIV0000862985). Painting by YK Kim.

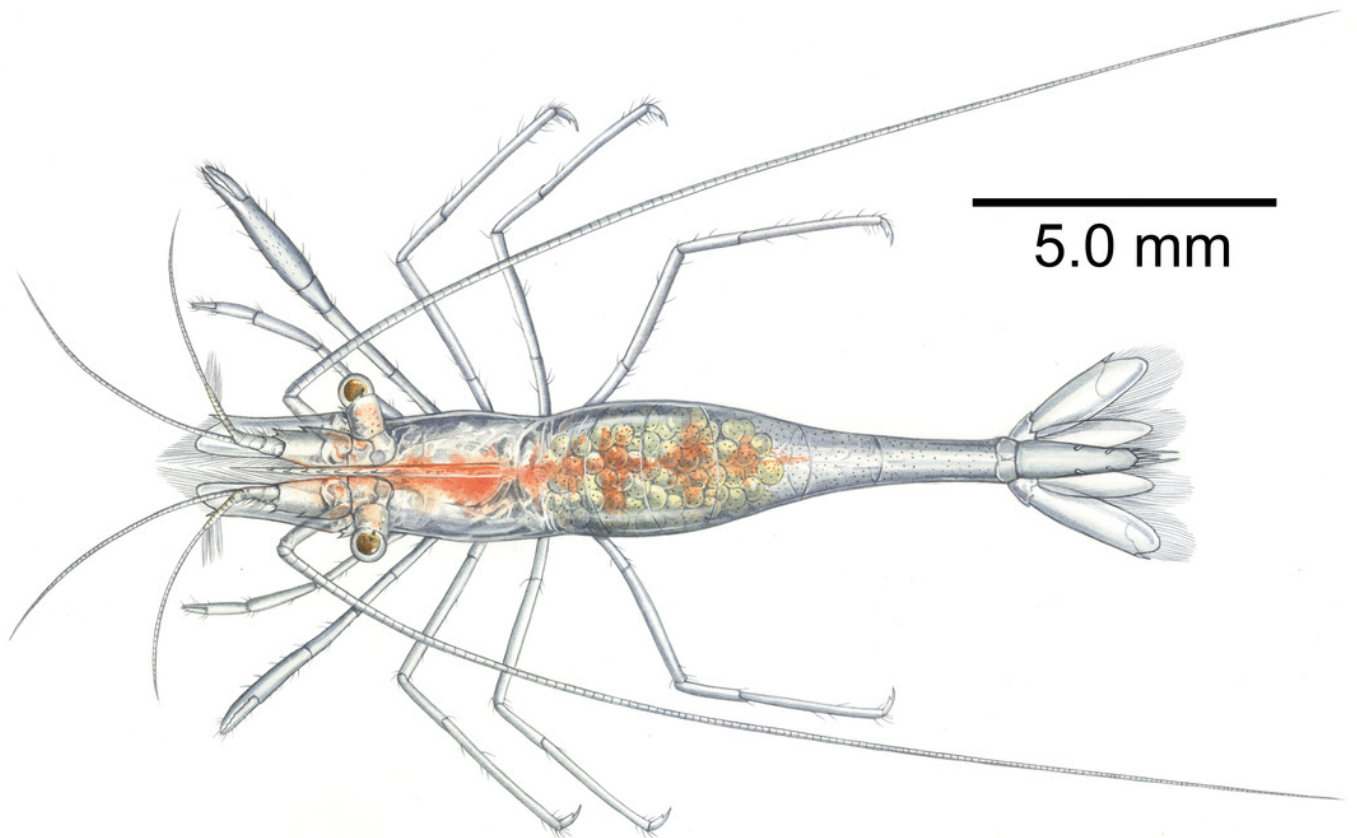



Figure 14

Habitat and host of *Mesopontonia* from Munseom Islet, Jejudo Island, Korea.

Habitat and host specimens of *M. verrucimanus* (A, B) and *M. kimwoni* **sp. nov.** (C). (A) host sea whip*, Ellisella* cf. *limbaughi* and habitat in depth of 57 m; (B) host sponge *Raspailia (Raspaxilla) hirsuta* and habitat in depth of 55 m; (C) host black coral *Myriopathes lata* and habitat in depth of 55m. Photographic Credits: JM Choi.

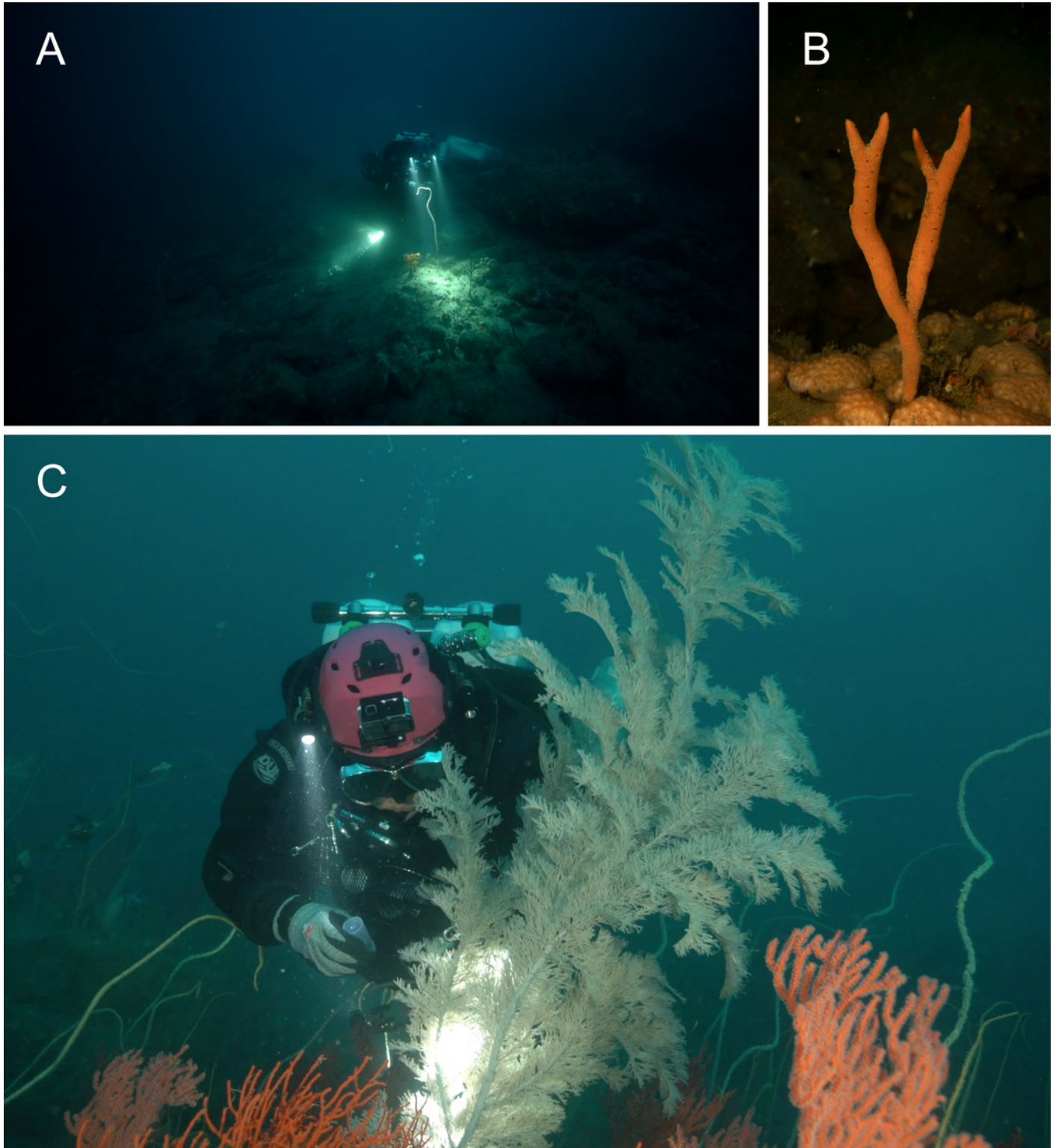



Figure 15

Phylogenetic tree obtained by the Maximum likelihood (ML) analysis based on the combined dataset for COI and 16S sequences.

Numbers at nodes represent Maximum Likelihood bootstrap percentage (above) and Bayesian posterior probabilities (below), numbers less than 75% are not shown.