

## New Records of Hippolytid Shrimps, *Lebbeus speciosus* and *Lebbeus comanthi* (Crustacea: Decapoda: Caridea) from the East Sea, Korea

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### ABSTRACT

Two species of the hippolytid shrimps, *Lebbeus speciosus* and *Lebbeus comanthi*, are described and illustrated for the first time in Korea. They were collected from the East Sea. *Lebbeus speciosus* was found in a scallop farm of Jumunjin, Gangneung, and *L. comanthi* associated with crinoids, was found in Gampo, Gyeongju. The difference between these two related species is in the number of dorsal teeth of the rostrum, five teeth in *L. speciosus* and a single tooth in *L. comanthi*. The Korean *Lebbeus* species has increased to 6 species by the present report. They are *L. grandimana*, *L. polaris*, *L. unalaskensis*, *L. groenlandicus*, *L. speciosus*, and *L. comanthi*.

**Keywords:** Caridea, hippolytid shrimp, *Lebbeus speciosus*, *Lebbeus comanthi*, East Sea, Korea

### INTRODUCTION

The hippolytid genus *Lebbeus* currently contains 61 species in the world (De Grave and Fransen, 2011; Komai, 2011; Komai et al., 2012; Nye et al., 2012), of which only four species have been reported from Korean waters (see The Korean Society of Systematic Zoology, 1997; Cha et al., 2001; Kim et al., 2007, 2010): *Lebbeus groenlandicus* (Fabricius, 1775), *L. grandimana* (Brashnikov, 1907), *L. unalaskensis* (Rathbun, 1902), and *L. polaris* (Sabine, 1824). Two species of hippolytid shrimps collected in a scallop farm of Jumunjin, Gangneung, and in Gampo, Gyeongju, by SCUBA diving to a depth of approximately 15 m, were identified as *Lebbeus speciosus* (Urita, 1942) and *Lebbeus comanthi* Hayashi and Okuno, 1997, respectively. They are described and illustrated in the present study.

Postorbital carapace length is abbreviated as "CL". It is used as an indication of the size of the specimen, and is measured from the posterior margin of the orbit to the posterior mid-dorsal margin of the carapace. All specimens were preserved in 95% ethanol. Materials examined in this study are

deposited in the second author's collection of Silla University, Busan.

### SYSTEMATIC ACCOUNTS

Order Decapoda Latreille, 1803  
Family Hippolytidae Bate, 1888  
Genus *Lebbeus* White, 1847

#### <sup>1</sup>*Lebbeus speciosus* (Urita, 1942) (Figs. 1–3)

*Spirontocaris makarofi speciosa* Urita, 1942: 19, fig. 4.

*Lebbeus possjeticus* Kobjakova, 1967: 235, fig. 4; Wicksten and Méndez, 1982: 118.

*Lebbeus speciosus*: Miyake, 1982: 53, Pl. 18, fig. 2; Hayashi, 1992: 132, figs. 13, 14; Minemizu, 2000: 98; Wicksten, 2011: 103; De Grave and Fransen, 2011: 426 (list).

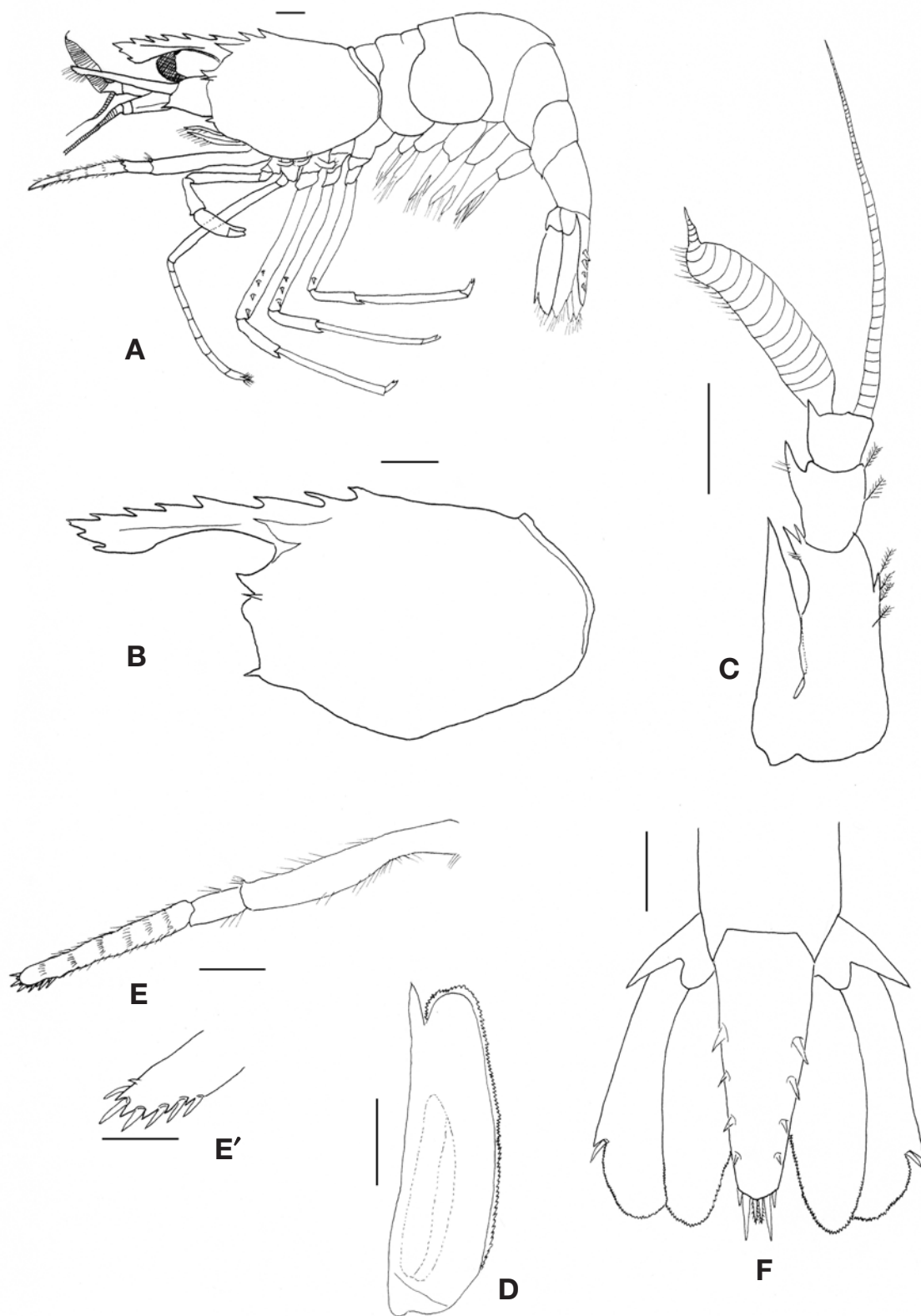
**Material examined.** 1 ♂ (CL 5.9 mm), Korea: Jumunjin, Gangneung, 31 Mar 2011, Lee SH, scallop farm.

**Description.** Small-sized body. Rostrum (Fig. 1A, B) straight,

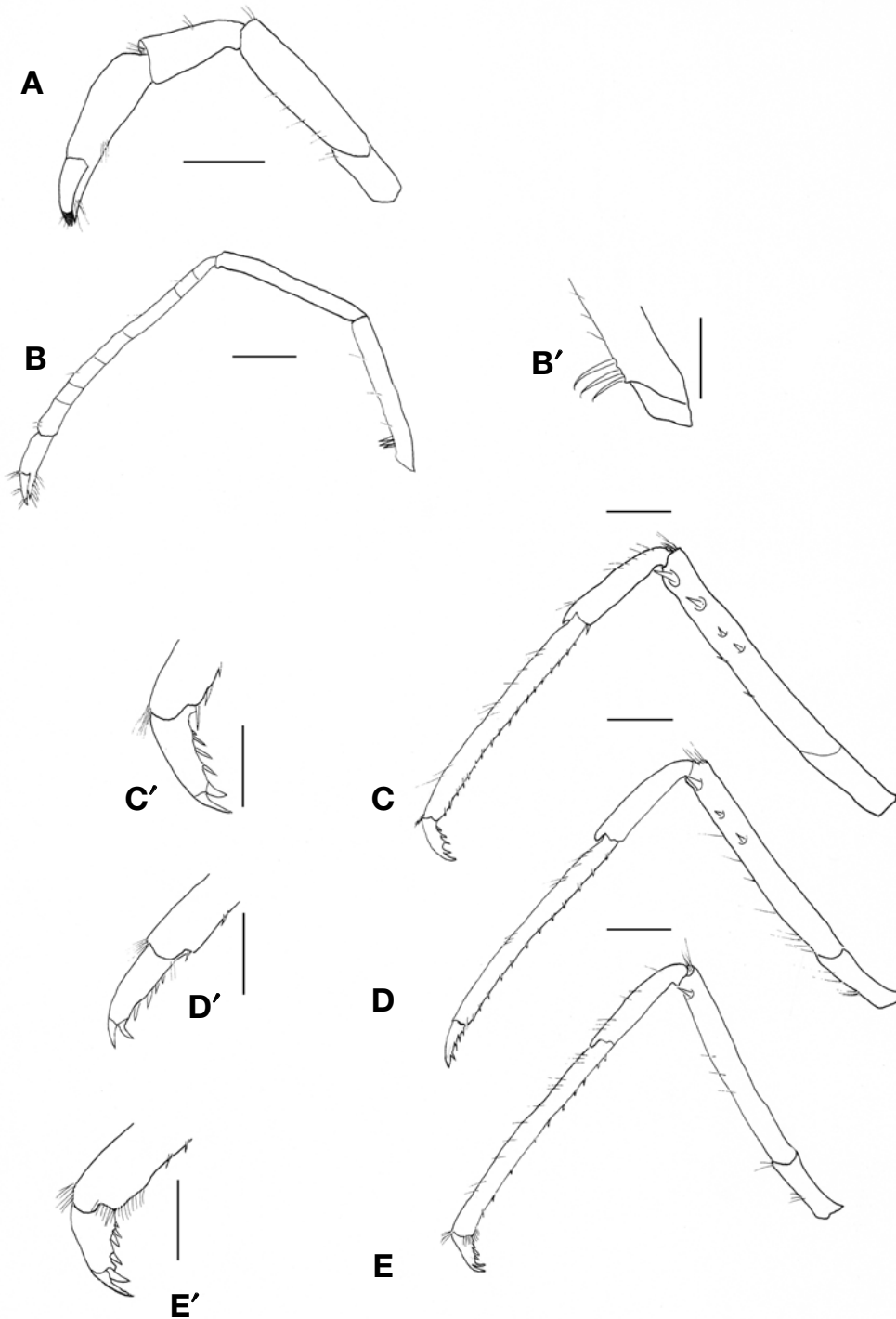
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**Fig. 1.** *Lebbeus speciosus*, male (postorbital carapace length 5.9 mm). A, Habitus, lateral; B, Carapace, lateral; C, Left antennule, dorsal; D, Left scaphocerite, dorsal; E, Left third maxilliped, lateral; E', Left third maxilliped, distal segment; F, Telson, dorsal. Scale bars: A-F=1 mm, E'=0.5 mm.



**Fig. 2.** *Lebbeus speciosus*, male (postorbital carapace length 5.9 mm). A, Left First pereopod, lateral; B, Left Second pereopod, lateral; B', Setae on ischium of second pereopod, proximal; C, Left Third pereopod, lateral; C', Same, Dactylus; D, Left Fourth pereopod, lateral; D', Same, Dactylus; E, Left fifth pereopod, lateral; E', Same, Dactylus. Scale bars: A–E=1 mm, B'–E'=0.5 mm.

exceeding distal margin of antennular peduncle, with 5 dorsal, 2 ventral teeth distally. Carapace (Fig. 1A, B) not carinate on mid-dorsal line, with 2 teeth on anterior one-thirds;

supraorbital spine well-developed; antennal and pterygostomial spines acutely pointed. Abdomen (Fig. 1A) smooth dorsally; pleura of first and third somites rounded ventrally, those



**Fig. 3.** *Lebbeus speciosus*, male (postorbital carapace length 5.9 mm).

of fourth and fifth somites pointed posteroventrally. Telson (Fig. 1A, F) 1.4 times as long as sixth abdominal somite, with 4 pairs of spines dorsolaterally; posterior margin with 3 pairs of unequally-sized spines. Eyes (Fig. 1A) cylindrical; eyes-talk slightly longer than cornea. Antennular peduncle (Fig. 1C) short; first segment with 3 (1 sub-medially, 2 distolaterally) spines; stylocerite slightly exceeding distal margin of first segment; second segment twice as long as third one, with strong lateral spine on subdistal margin; third segment with smaller spine distolaterally; outer flagellum swollen, inner flagellum slender. Antennal scaphocerite (Fig. 1D) 3.0 times as long as broad; outer spine reaching distal margin of lamella. Third maxilliped (Fig. 1E, E') long, exceeding antennal scaphocerite; distal segment 3.4 times as long as subdistal segment, with rows of transverse setae, with 12 (6 movable, 6 immovable) spinules near apex. First pereopod (Figs. 1A, 2A) moderately stout, reaching distal margin of antennal scaphocerite. Second pereopod (Figs. 1A, 2B, B') slender, exceeding distal margin of antennal scaphocerite; ischium with 3 stiff setae proximally; carpus 7-articulated; chela small. Third pereopod (Figs. 1A, 2C, C') exceeding distal margin of antennal scaphocerite; merus with 4 spines. Fourth pereopod (Figs. 1A, 2D, D') reaching beyond antennal scaphocerite by length of dactylus; merus with 3 spines. Fifth pereopod (Figs. 1A, 2E, E') slightly shorter than fourth pereopod; merus with 1 subterminal spine. Dactyli of last three pereopods

(Fig. 2C'–E') terminating in 2 claws, each with 4 spines on posterior margin.

**Color.** Body semitransparent, with red bands. White bands prominent on telson. Pale blue bands on abdomen. Pereopods with red and white bands (Fig. 3).

**Distribution.** Japan, Sakhalin, Siberia, Bering Island, California (Wicksten, 2011), and now Korea.

**Remarks.** This specimen generally agrees well with the description of Hayashi (1992), however, it slightly differs by having a rostrum with 2 ventral teeth, not 3 ventral teeth. This difference is maybe due to the much smaller size of our specimen (CL 5.9 mm) compared with that of Hayashi (CL 7.0 mm).

<sup>1</sup>\**Lebbeus comanthi* Hayashi and Okuno, 1997

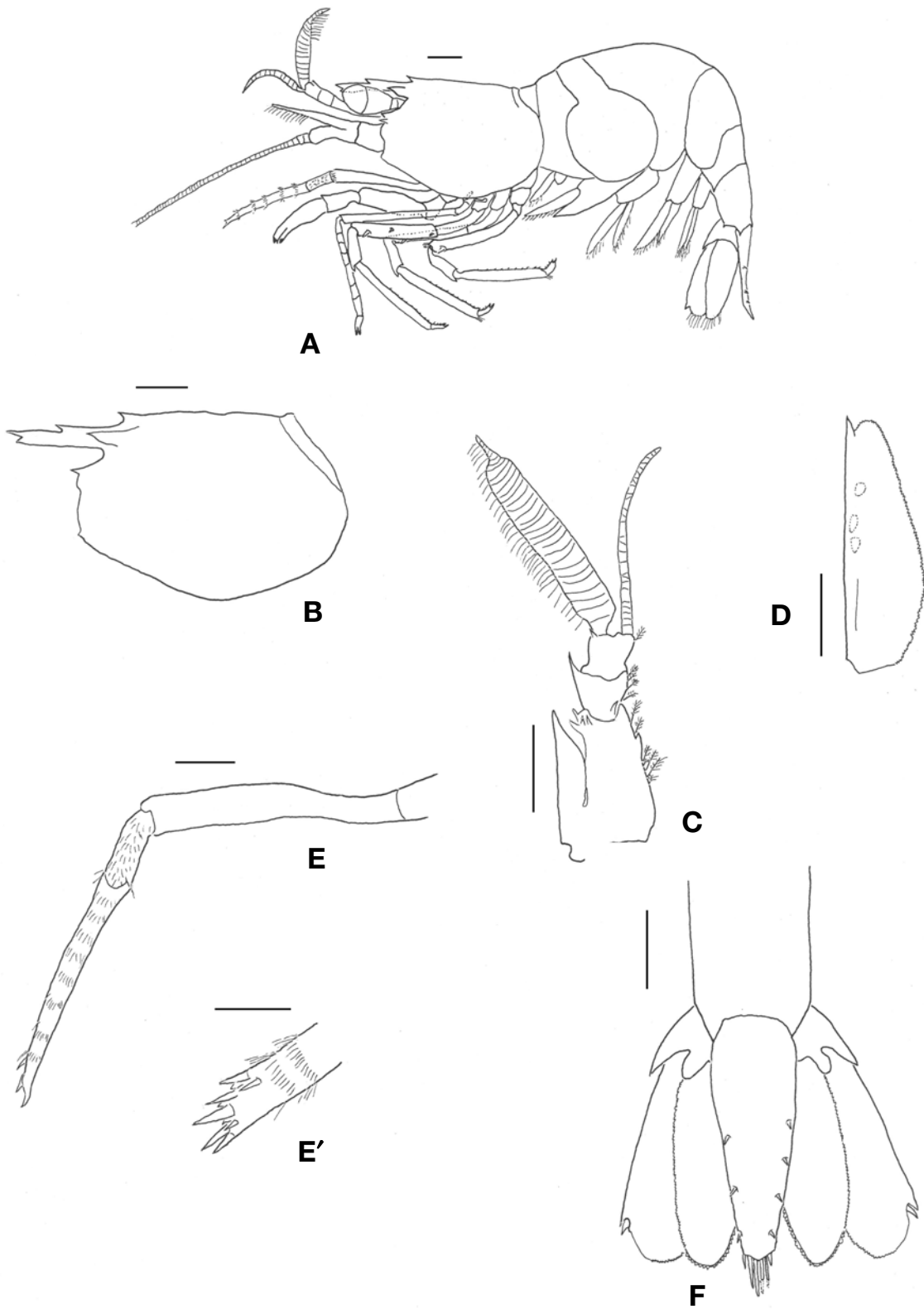
(Figs. 4–6)

*Lebbeus comanthi* Hayashi and Okuno, 1997: 49, figs. 1–4; Minemizu, 2000: 96; De Grave and Franssen, 2011: 424 (list).

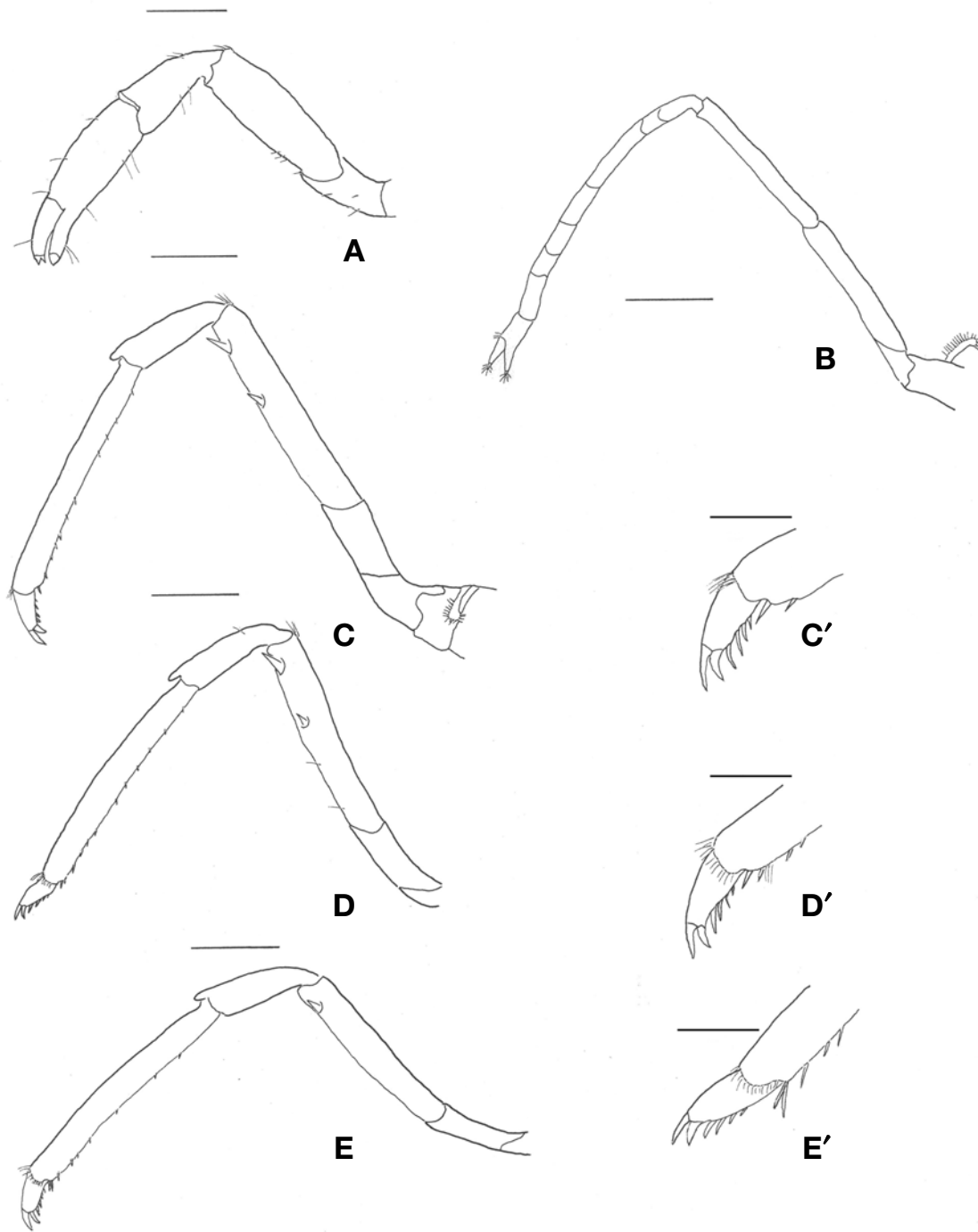
**Material examined.** 1 ♀ (CL 4.9 mm), Korea: Gampo, Gyeongju, 30 May 2012, Lee SH, by SCUBA diving to a depth of 15 m.

**Description.** Small-sized body. Rostrum (Fig. 4A, B) straight, not exceeding distal margin of first segment of antennular peduncle, with dorsal tooth medially, ventral tooth distally; apex acutely pointed. Carapace (Fig. 4A, B) smooth, with

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**Fig. 4.** *Lebbeus comanthi*, female (postorbital carapace length 4.9 mm). A, Habitus, lateral; B, Carapace, lateral; C, Left antennule, dorsal; D, Left scaphocerite, dorsal; E, Left third maxilliped, lateral; E', Left third maxilliped, distal segment; F, Telson, dorsal. Scale bars: A–F=1 mm, E'=0.5 mm.



**Fig. 5.** *Lebbeus comanthi*, female (postorbital carapace length 4.9 mm). A, Left first pereopod, lateral; B, Left second pereopod, lateral; C, Left third pereopod, lateral; C', Same, dactylus; D, Left fourth pereopod, lateral; D', Same, dactylus; E, Left fifth pereopod, lateral; E', Same, dactylus. Scale bars: A–E=1 mm, C'–E'=0.5 mm.

tooth dorsoanteriorly; supraorbital spine strong, well-developed; antennal spine small, acutely pointed; pterygostomial spine minute. Abdomen (Fig. 4A) smooth dorsally; pleura of

first four somites rounded ventrally; pleuron of fifth somite pointed posteroventrally; sixth abdominal somite 1.6 times as long as fifth somite. Telson (Fig. 4F) 1.5 times as long as



Fig. 6. *Lebbeus comanthi*, female (postorbital carapace length 4.9 mm).

sixth somite, with 3 or 4 spines dorsolaterally; posterior margin with 3 pairs of unequally-sized spines. Eyes (Fig. 4A) cylindrical; eyestalk as long as cornea. Antennular peduncle (Fig. 4C) short; first segment with 5 (1 sub-medially, 4 distolaterally) spines; stylocerite reaching distal margin of first segment; second segment as long as third one, with strong spine distolaterally; third segment with small spine distolaterally; outer flagellum swollen, inner flagellum slender. Antennal scaphocerite (Fig. 4D) 3.1 times as long as broad; outer spine exceeding distal margin of lamella. Third maxilliped (Fig. 4A, E, E') long, exceeding antennal scaphocerite; distal segment 3.0 times as long as subdistal segment, with rows of transverse setae, with 10 (7 movable, 3 immovable) spinules near apex. First pereopod (Figs. 4A, 5A) moderately stout, reaching distal margin of antennal scaphocerite. Second pereopod (Figs. 4A, 5B) slender, exceeding distal margin of antennal scaphocerite; merus unarmed; carpus 7-articulated; chela small. Third pereopod (Figs. 4A, 5C, C') exceeding distal margin of antennal scaphocerite by length of dactylus; merus with 2 spines. Fourth pereopod (Figs. 4A, 5D, D') reaching distal margin of antennal scaphocerite, merus with 2 spines. Fifth pereopod (Figs. 4A, 5E, E') as long as fourth pereopod; merus with 1 spine. First three pereopods with epipods; dactyli of last three pereopods (Fig. 5C'-E') terminating in 2 claws, each with 4 spines on posterior margin.

**Color.** Body semitransparent; red and yellow bands obliquely on carapace, longitudinally on abdomen. Pereopods and

pleopods red (Fig. 6).

**Distribution.** Japan (Hayashi and Okuno, 1997) and now Korea.

**Remarks.** This specimen generally agrees well with the original description of Hayashi and Okuno (1997). However, it slightly differs from the Hayashi and Okuno's specimen in that a pleuron of the fourth abdominal somite is rounded posteriorly. The shape of the fourth abdominal somite has been considered to be a diagnostic character in species of *Lebbeus* (Hayashi, 1992; Fransen, 1997; Komai, 2001). Recently, this character was found to be variable in Taiwan species of *Lebbeus* (Chang et al., 2010).

Currently, six *Lebbeus* species have been recorded from Korean waters. They can be divided into two groups: 1) the first group is *L. grandimana*, *L. polaris*, and *L. unalaskensis*, having the first two pereopods with epipods, and 2) the second group is *L. groenlandicus*, *L. speciosus*, and *L. comanthi*, having the first three pereopods with epipods. In the second group, the pleuron of the abdominal somite is acutely toothed ventrally in *L. groenlandicus*, while it is rounded or slightly pointed posteroventrally in *L. speciosus* and *L. comanthi*. The difference between *L. speciosus* and *L. comanthi* is in number of the dorsal teeth of the rostrum, five teeth in the former and a single tooth in the latter. *L. comanthi* is the only *Lebbeus* shrimp having a symbiotic relationship with crinoids in the region.

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