

## Redescription of *Bodotria ovalis* (Cumacea: Bodotriidae) from Korea

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### ABSTRACT

A taxonomic study was carried out on the cumacean specimens collected from shallow coast of the Yellow Sea in Korea. As a result, *Bodotria ovalis* Gamô, 1965 is redescribed as new to Korean cumacean fauna based on the differences between ours and previous researchers' views on this species. *B. ovalis* rarely occurs in the coast of the Yellow Sea.

**Key words:** redescription, *Bodotria ovalis*, Bodotriidae, Cumacea, Korea

### INTRODUCTION

The genus *Bodotria* is reported 45 species over the world (Băcescu, 1988). Of these, five species have been recorded from Korean waters (Kang and Lee, 1995; Lee and Lee, 1997, 1999; Park et al., 1998). Among them, *Bodotria ovalis* Gamô, 1965 was recorded on the basis of the specimens from the Yellow Sea and the East China Sea by Liu and Liu (1990). After then, Park et al. (1998) reported this species from eastern part of the Yellow Sea by referring to the Liu and Liu's (1990) paper. However, their descriptions on *B. ovalis* were not coincided with Gamô's (1965) original description.

Through examination of the cumacean specimens collected from the shallow coast of the Yellow Sea in Korea from 1993 to 1998, we found *Bodotria ovalis* Gamô, 1965 coincided well with original description. Therefore, this species is redescribed as new to Korean cumacean fauna with differences between ours and previous authors' (Liu and Liu, 1990; Park et al., 1998) views on *B. ovalis*.

The specimens were fixed in 70-80% ethanol and dissected in glycerol on Cobb's aluminium hole slide. Drawings and measurements were performed with the aid of a drawing tube. Measurements for the body length (BL) were made from the anterior tip of carapace to the posterior end of the last abdominal segment and for each appendages were made along the mid-line of segment, exclusive of the inflated outer angle. All examined specimens were kept in the Depart-

ment of Biological Science, Dankook University.

### SYSTEMATIC ACCOUNTS

Order Cumacea Kröyer, 1846

Family Bodotriidae Scott, 1901

Subfamily Bodotriinae Hale, 1944

Genus *Bodotria* Goodsir, 1843

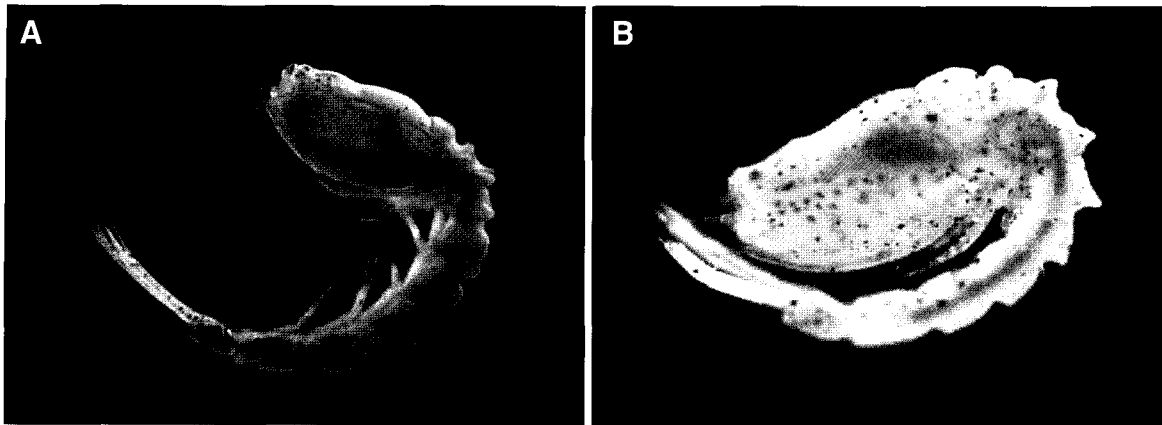
<sup>1</sup>\**Bodotria ovalis* Gamô, 1965 (Figs. 1-5)

*Bodotria ovalis* Gamô, 1965, p. 2, figs. 2-4; 1967, p. 138; 1968, p. 192, pl. 18, fig. 3; Băcescu, 1988, p. 43; Liu and Liu, 1990, p. 198, only of fig. 2 (young female).

*Material examined.* 2 ♀♀ (BL 3.2-3.5 mm), Sabsido I. (Boryeong-si), 9 May 1993 (B.J. Kang); 1 ♀ (BL 3.7 mm), Mallipo Beach (Taean-gun), 18 June 1997 (C.M. Lee); 1 ♀ (BL 3.4 mm), Yeongheungdo I. (Ongjin-gun), 4 June 1998 (C.M. Lee); 1 ♂ (BL 3.8 mm), 2 ♀♀ (BL 2.3-3.7 mm), Hakampo Beach (Taean-gun), 25 June 1998 (C.M. Lee); 1 ♀ (BL 2.3 mm), Sammok (Taean-gun), 25 June 1998 (C.M. Lee); 3 ♂♂ (BL 3.9-4.1 mm), Daecheongdo I. (Ongjin-gun), 10 Aug. 1998 (C.M. Lee and Y.H. Kim); 1 ♀ (BL 2.5 mm), Socheongdo I. (Ongjin-gun), 12 Aug. 1998 (C.M. Lee and Y.H. Kim).

*Description.* Marsupial female. Body length (Figs. 2A, B) about 3.7 mm, excluding uropods; its integument calcified and covered with minute netlike patterns. Carapace (Figs. 2A, B) slightly longer than 1/4 of body length, about 1.15 times as long as its depth, and 1.65 times as long as its width; posterior portions of both sides very expanded, almost

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**Fig. 1.** *Bodotria ovalis* Gamô, 1965. Specimens preserved in alcohol. A, habitus of male (BL 3.9 mm); B, habitus of young female (BL 2.5 mm).

triangular in dorsal view. Pair of dorso-lateral carinae well-developed, reaching posterior margin of carapace. Dorso-median carina well-marked over whole length of carapace. Antennal notch (Fig. 2A) prominent. Ocular lobe (Fig. 2B) subtriangular.

Thorax (Figs. 2A, B) about 0.95 times as long as carapace, about 1/4 of body length. First free thoracic segment very short, invisible from lateral view. Dorso-median carinae on third to fifth free thoracic segments prominently raised to rear (third segment most elevated). Dorso-lateral carinae well-marked on all free thoracic segments. Dorso-lateral margin of cephalothorax very expanded near middle portion and almost ovoid form in dorsal view. Thorax of young female (Fig. 1B) almost same as in adult female. Abdomen (Fig. 2A) slender, about 0.9 times as long as cephalothorax. Dorso-median carinae on first and second segments prominently raised as in thorax.

Third maxilliped (Fig. 2C): basis about twice as long as remaining articles combined, with several teeth near middle portion, and numerous hairs distally on inner and outer margins; outer corner very inflated, reaching about half length of merus, with 7 plumose setae; inner corner with 2 plumose setae.

First pereopod (Fig. 2D): basis about 1.25 times as long as remaining articles combined, with 1 plumose seta on outer corner and 1 long plumose seta on distal margin; carpus almost triangular form, about 1.6 times as long as propodus, with 3 short and 1 long simple setae on inner margin, and 2 short simple setae on outer margin.

Second pereopod (Fig. 2E): basis fused with ischium, about 1.4 times as long as remaining articles combined; inner margin with 5 plumose setae; outer margin with 1 sensory and 1 plumose setae distally.

Third pereopod (Fig. 3A): basis 1.35 times as long as

remaining articles combined.

Fourth pereopod (Fig. 3B): basis 1.15 times as long as remaining articles combined.

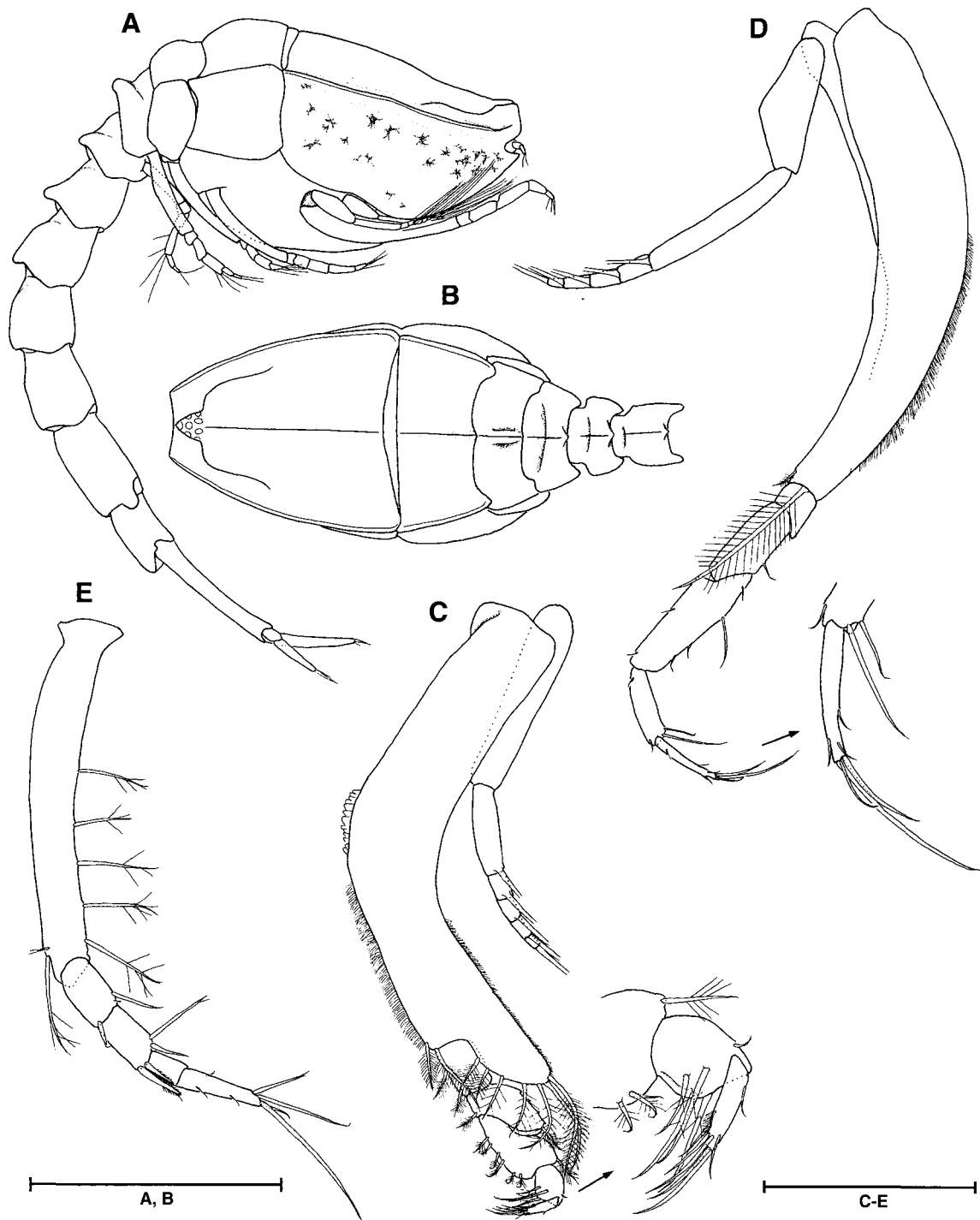
Fifth pereopod (Fig. 3C): basis 0.65 times as long as remaining articles combined.

Uropod (Fig. 3D): peduncle, about 1.9 times as long as last abdominal segment; inner margin serrated. Endopod unarticulated, slightly longer than half length of peduncle; inner margin serrated, with 6 spines; outer margin with 2 sensory setae; terminal margin with 2 spines (outer long and strong). Exopod biarticulated, slightly longer than endopod; second article with 4 inner plumose setae and 2 terminal setiform spines (inner long).

Adult male. Body length (Figs. 1A, 4A, B) about 3.8-4.1 mm, excluding uropods; its integument same as in female. Carapace (Figs. 4A, B) slightly shorter than 1/5 of body length, about 1.75 times as long as its depth, and about 1.4 times as long as its width; middle portions of both sides very ex-panded, almost ovoid form in dorsal view. Dorso-median carina and pair of dorso-lateral carinae well-developed as in female. Antennal notch (Fig. 4A) prominent. Ocular lobe (Fig. 4B) subtriangular. Antenna (Fig. 4A) long, reaching about 2/3 length of uropodal peduncle.

Thorax (Figs. 4A, B) 0.7 times as long as carapace, slightly shorter than 1/5 of body length. First free thoracic segment very short, invisible in lateral view. Dorso-median carinae on third to fifth free thoracic segments less raised to rear than ones of female (fourth one of them most elevated). Dorso-lateral carinae well-marked on all segments. Dorso-lateral carina well-marked on all free thoracic segments. Abdomen (Fig. 4A) plump, about 1.3 times as long as cephalothorax.

Third maxilliped (Fig. 4C): basis 1.9 times as long as remaining articles combined, with numerous hairs distally

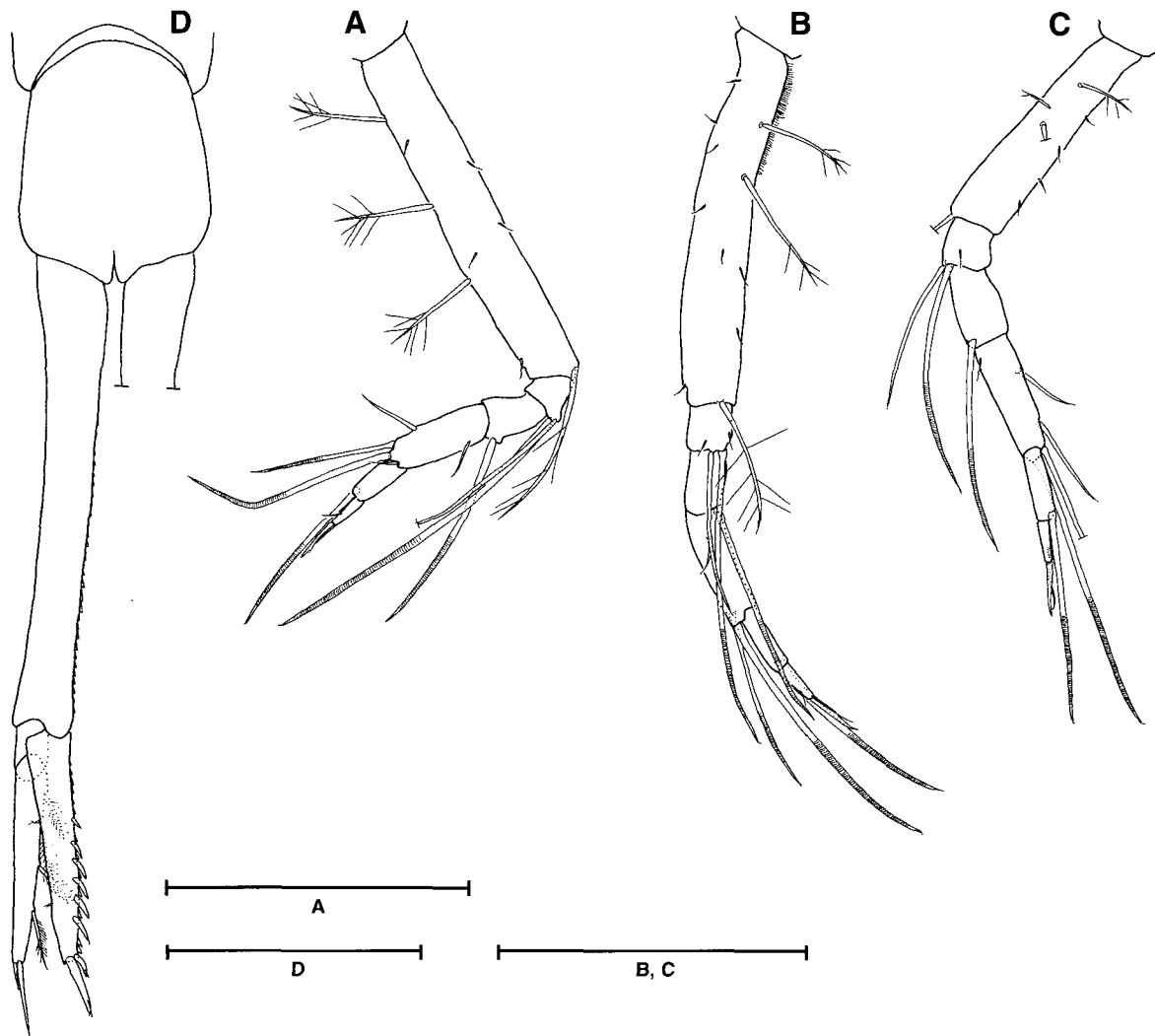


**Fig. 2.** *Bodotria ovalis* Gamô, 1965, marsupial female. A, habitus, lateral; B, cephalothorax, dorsal; C, third maxilliped; D, first pereopod; E, second pereopod. Scale bars=1 mm (A, B), 0.3 mm (C-E).

on inner and outer margins, respectively. Outer corner very inflated, extending beyond about half length of merus, with 6 plumose setae; inner corner with 1 plumose seta.

First pereopod (Fig. 4D): basis 1.4 times as long as remain-

ing articles combined, with 9 medial spines on inner margin; distal margin with 1 short and 1 long plumose setae. Carpus almost triangular form, with 4 short and 1 long simple setae on inner margin, and 2 short simple setae distally on outer



**Fig. 3.** *Bodotria ovalis* Gamô, 1965, marsupial female. A, third pereopod; B, fourth pereopod; C, fifth pereopod; D, uropod and last abdominal segment, dorsal. Scale bars=0.3 mm (A-D).

margin.

Second pereopod (Fig. 4E): basis fused with ischium, 1.15 times as long as remaining articles combined; inner and distal margins with 2 plumose setae, respectively.

Third pereopod (Fig. 5A): basis 1.4 times as long as remaining articles combined.

Fourth pereopod (Fig. 5B): basis 0.9 times as long as remaining articles combined.

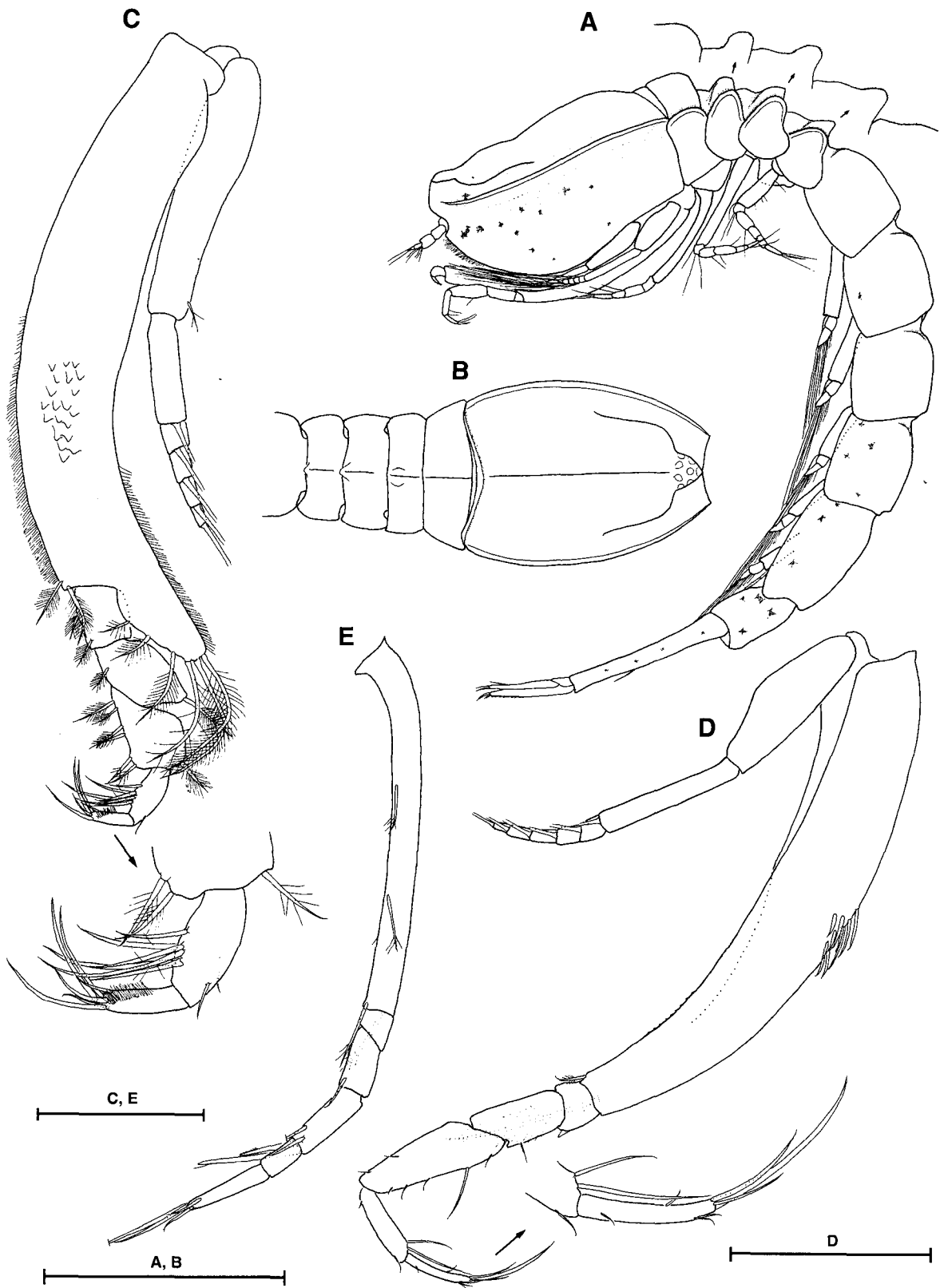
Fifth pereopod (Fig. 5C): basis 0.6 times as long as remaining articles combined.

First pleopod (Fig. 5D): basis about 2.2 times as long as outer ramus, with 5 plumose setae and 4 proximal simple setae bearing rounded tip. Outer ramus biarticulated. Inner ramus unarticulated, about 0.9 times as long as outer one, and with cudgel-shaped process on outer margin. Both rami

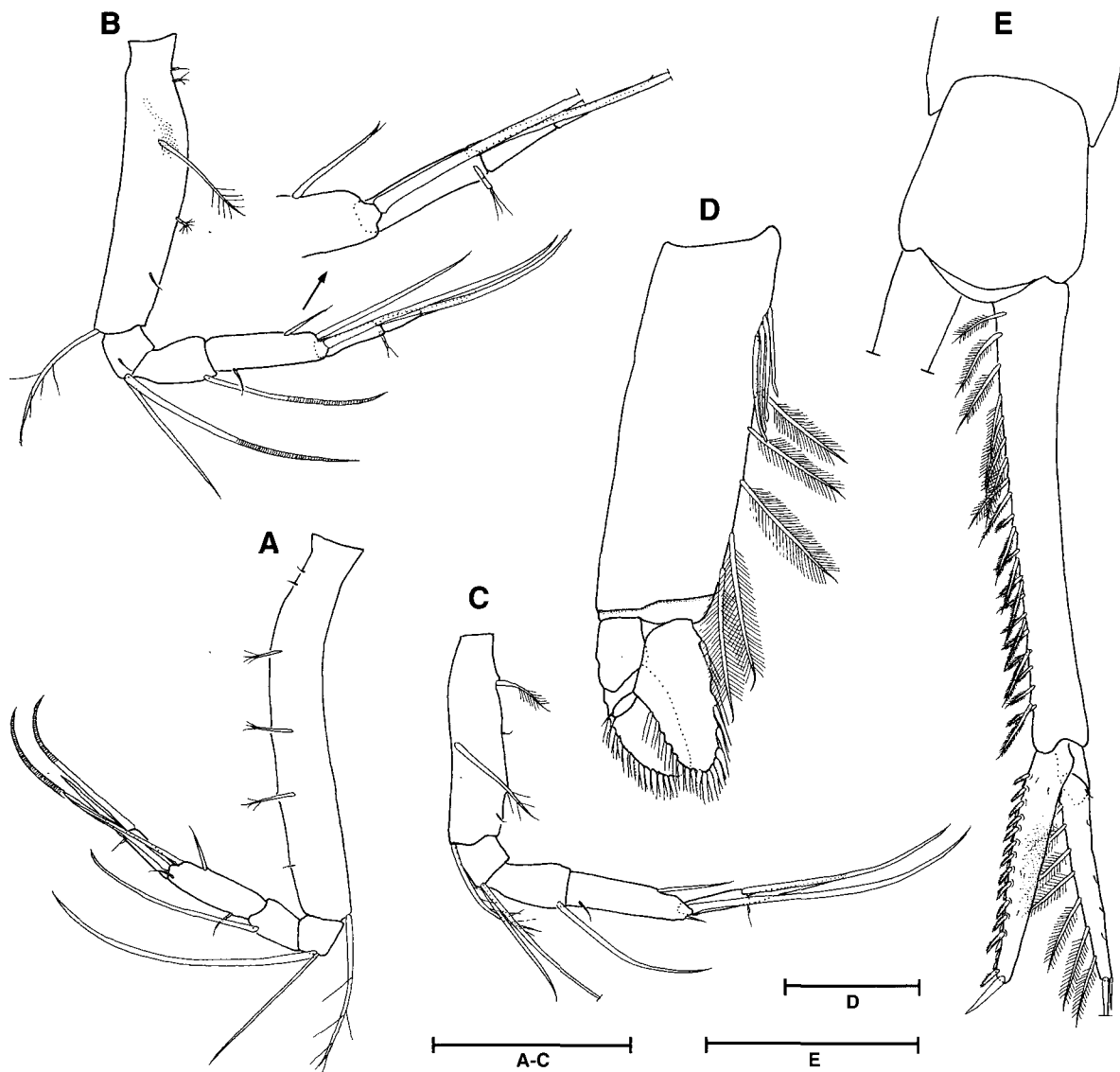
with numerous long plumose setae.

Uropod (Fig. 5E): peduncle strong, 2.2 times as long as last abdominal segment; inner margin serrated, with 8 plumose setae proximally, 7 pectinated setae and 10 pectinated setiform spines distally. Endopod unarticulated, slightly longer than 1/2 of peduncle; inner margin serrated, with 12 spines; terminal margin with 2 spines. Exopod biarticulated, subequal to endopod in length; second article with 7 inner plumose and 2 terminal setiform spines.

*Remarks.* *Bodotria ovalis* was originally described from Akkeshi Bay in Japan (Gamô, 1965). The species was recorded on the basis of the specimens from western part of the Yellow Sea and the East China Sea by Liu and Liu (1990) with taxonomic consideration that the processes of the dorsal median carinae of the thoracic and abdominal segments



**Fig. 4.** *Bodotria ovalis* Gamô, 1965, adult male. A, habitus, lateral; B, cephalothorax, dorsal; C, third maxilliped; D, first pereopod; E, second pereopod. Scale bars=1 mm (A, B), 0.3 mm (C-E).



**Fig. 5.** *Bodotria ovalis* Gamô, 1965, adult male. A, third pereopod; B, fourth pereopod; C, fifth pereopod; D, first pleopod; E, uropod and last abdominal segment, dorsal. Scale bars=0.2 mm (A-C), 0.1 mm (D), 0.3 mm (E).

were appeared at the young period, but disappeared as they are grown up and calcified. After then, Park et al. (1998) reported this species from the Yellow Sea in Korea (eastern part of the Yellow Sea) by referring to the Liu and Liu's (1990) paper. But, their descriptions on *B. ovalis* were not coincided with Gamô's (1965) original description except Liu and Liu's (1990) record on the young female. They might have overlooked the important diagnostic characteristics of the type specimens of *B. ovalis*. Because Gamô (1965) dealt with *B. ovalis*, as new species based on marsupium female and mature male specimens, in his original description and distinguished it from other congeners in having following some unique characteristics: 1) the dorsal

median carinae of the fourth and fifth free thoracic segments are prominently raised to rear while they aren't raised in Liu and Liu's (1990) (except the young female) and Park et al.'s (1998) adult specimens; 2) a pair of the dorso-lateral margins of the male carapace are expanded near central portion and almost ovoid in shape from upper view while they are expanded near anterior portion and almost rectangular in Park et al.'s (1998) adult male specimens; 3) the basis of the female third maxilliped has several teeth on the middle portion of the inner margin while they are absent in Liu and Liu's (1990) and Park et al.'s (1998) adult specimens; 4) the inner margin of the basis of the second pereopod has 4-5 plumose setae in female and 3-5 plumose setae in male while

it has no seta in Park et al.'s (1998) the female specimen and three plumose setae in the male specimen, and Liu and Liu (1990) didn't mention it. Therefore, Liu and Liu's (1990) adult male and female specimens except the young female specimen and Park et al.'s (1998) male and female specimens might be possible other species. It will be necessary to reexamine the their specimens. *B. ovalis* rarely occurs in the coast of the Yellow Sea.

*Distribution.* Korea (eastern part of the Yellow Sea), China (western part of the Yellow Sea), Japan (Akkeshi Bay).

## ACKNOWLEDGEMENTS

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