

Fauna of Caprellidae (Amphipoda) of Cheju Island and its Adjacent Waters, Korea

Lee, Kyung Sook

(Department of Biology, College of Natural Sciences and Engineerings, Dan Kook University,
Chungnam 333-180, Republic of Korea)

濟州島 海域의 바다대벌레類 (甲殼綱, 端脚目)

李 敬 淑

(단국대 이공대학 생물학과)

적 요

저자가 1987년 2월에서 7월 사이에 제주도 연안에서 채집한 바다대벌레과(Caprellidae)에 속하는 표본들과 1985년에 채집되어 단국대 생물학과에 보관되어있던 표본들을 대상으로 동정한 결과 5속 15종이 확인되었는데 이중 5속 5종은 한국 미기록 종이어서 새로이 기재하고 도판을 작성하였다. 이로써 Korean Straits를 제외한 한국연안에서 보고된 종은 모두 26종이 되었다.

Key words: Amphipoda, Caprellidae, Cheju Island, Korea.

INTRODUCTION

The members of family Caprellidae are free living on the various algae which are widely distributed at intertidal and/or subtidal zones. About 230 species are found in the world (McCain, 1970), of which only 21 species were reported from the Korean waters (Lee, 1986). Although Arimoto (1980) reported 13 species from the Korean Straits, Kim and Lee (1975, 1978) and Lee (1986) did not include them in the Korean fauna, as his collection sites were located rather far from the Korean coast.

The author carried out the study on the Cheju fauna of Caprellidae in 1987, and identified 15 species of 5 genera in total, of which 5 Caprellid species: *Caprella kominatoensis* Takeuchi, 1986, *Protomima imitatrix* Mayer, 1903, *Pseudorpotto fallax* Mayer, 1903, *Paraprotella prima* Mayer, 1903 and *Protella*

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gracilis Dana, 1853 are proved to be unrecorded ones in Korea. As the result, the Korean fauna of Caprellidae consist of 5 genera, 26 species.

MATERIALS AND METHODS

The materials examined include both the specimens obtained during the survey from February to July 1987 from the 16 localities in Cheju Island and the alcohol-preserved specimens collected in 1985 (Fig. 1). The collections were carried out at intertidal zone habitats. In addition to those collections, considerable specimens which were caught at 30-50m deep by fish nets were collected.

The materials were preserved in 95% alcohol until when examined. All specimens were examined with stereo-microscope and figures were made by using a drawing tube mounted on a stereoscope. The author followed Mayer (1903), Vassilenko (1974) and Arimoto (1976) for the identification of the specimens. The specimens examined are deposited in the Department of Biology, Dankook University.

SYSTEMATIC ACCOUNT

The following systematic account includes all the caprellid species which are identified in this study. The species marked with an asterisk (*) are unrecorded in Cheju Island and the ones with double asterisks (**) are newly known species from Korea. In "material examined", the collector's name is not given in case that the collector is the author herself.

Superclass Crustacea Pennant, 1777 갑각 상강
 Class Malacostraca Latreille, 1806 연갑 아강
 Subclass Eumalacostraca Grobben, 1892 진연갑 아강
 Order Amphipoda Latreille, 1816 단각 목

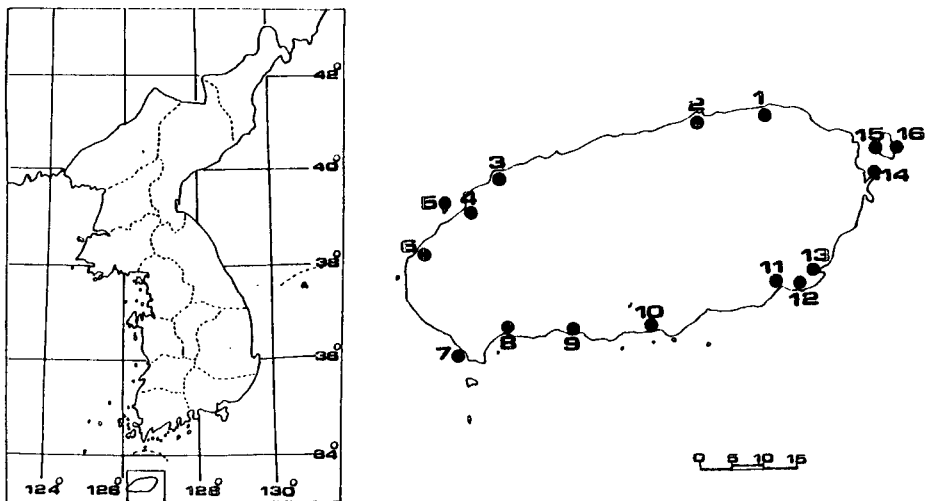


Fig. 1. The collection sites in Cheju Island.

1, Kümnyöng; 2, Choch'ön; 3, Aewol; 4, Hallim; 5, Piyang-do; 6, Shinch'ang; 7, Mostülp'o; 8, Hwasun; 9, Taep'o; 10, Sögwip'o; 11, T'osan 2-ri; 12, Sehwa; 13, P'yosön; 14, Söngsan; 15, Udo (Umokdong), 16, Udo (Piyangdong).

Suborder Caprellidae Leach, 1814 바다대벌레 아목

Family Caprellidae Leach, 1814 바다대벌레 과

Subfamily Caprellinae Leach, 1814 바다대벌레 아과

Genus *Caprella* Lamarck, 1801

1. *Caprella kominatoensis* Takeuchi, 1986**

(Fig. 2)

Caprella kominatoensis Takeuchi, 1986 (pp. 67-73, figs. 1-4).

Material examined: 1♂, Kūmnyōng, 29 April 1987, C.B. Kim; 1♂, 1♀, Sōgwip'o, 16 August 1985.

Diagnosis: Third peduncle of antenna 1 very short, pereopods 5-7 with proximal grasping spines.

Description: Length of male 6 mm. Body smooth. Pereonites II-IV subequal, almost a half of body length; 3rd peduncle very short. Propodus of pereopods 5-7 with proximal grasping spines. Gnathopod 2 attached to approximately middle of pereonite II; 2nd article short and propodus with a long spine at posterior margin. Gills slender and elliptical. Propodus of female gnathopod 2 with 2 additional subspines.

Remarks: This species is very similar to *C. decipiens* in many morphological characters; both species have very short 3rd peduncle of antenna 1. However *C. kominatoensis* is differentiated from *C. deci-*

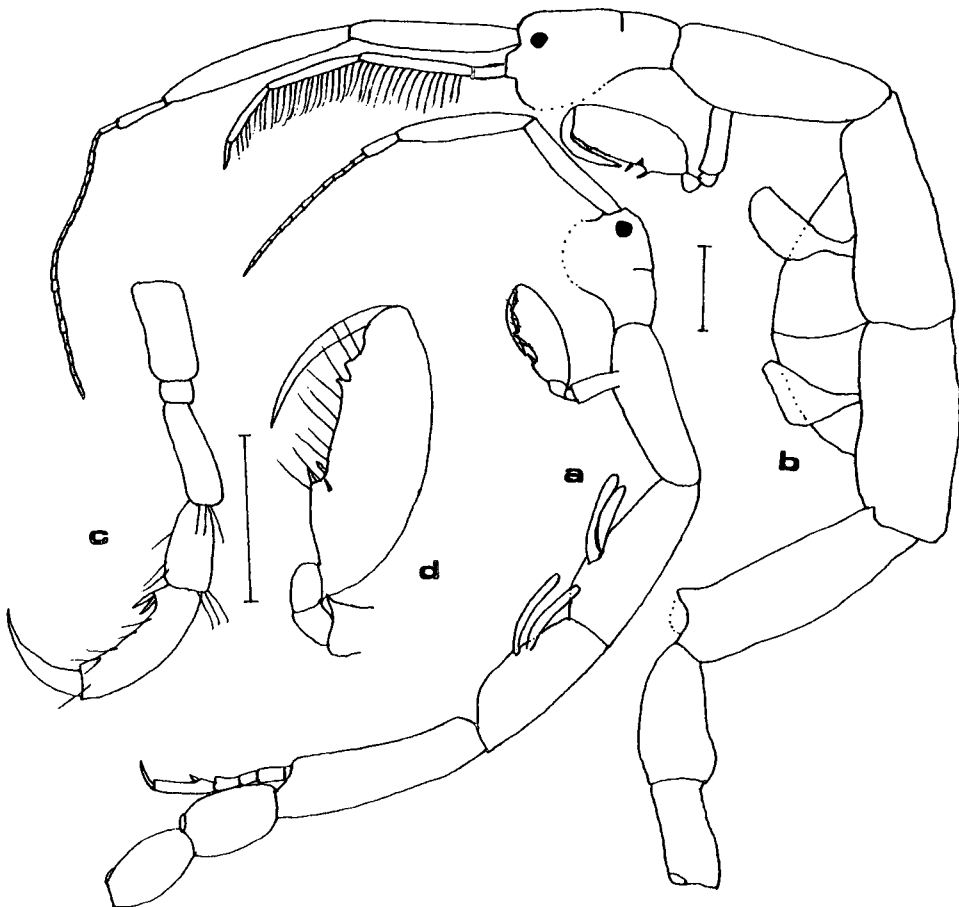


Fig. 2. *Caprella kominatoensis* Takeuchi, 1986

a, male; b, female; c, pereopod 7; d, gnathopod 2 of female. (scale=0.5 mm)

piens by having the proximal grasping spines on the propoduses of pereopods 5-7.

Distribution: Korea, Japan (Amatsu-Kominato; type locality).

2. *Caprella algaceus* Vassilenko, 1967*

Material examined: 3♂♂, 4♀♀, Söngsanp'o, 1 May 1987; 7♂♂, 3♀♀, T'osan 2-ri, 29 July 1987.

Distribution: Korea (East Sea, Yellow Sea), Possjet bay (type locality).

3. *Caprella andreae* Mayer, 1890*

Material examined: 17♂♂, 18♀♀, Taep'o, 15 January 1985 C.B. Kim; 50♂♂, 15♀♀, Kümnyöng, 24 February 1987, C.B. Kim.

Distribution: Korea (East Sea), 38° 10'N 64° 20'W (type locality), North Sea, Japan (Kyushu).

4. *Caprella californica* Stimpson, 1856*

Material examined: 10♂♂, Choch'ön, 31 July 1987.

Distribution: Korea (South Sea), U.S.A. (California, type locality), Japan.

5. *Caprella danilevskii* Czerniavski, 1868

Material examined: 2♂♂, 2♀♀, Sewha, 30 July 1987; 1♀, Sögwip'o, 23 April 1987.

Distribution: Korea (South Sea, East Sea, Yellow Sea), Black Sea (type locality), Australia, Japan.

6. *Caprella decipiens* Mayer, 1890*

Material examined: 1♂, 2♀♀, Kümnyöng, 29 April 1987, C.B. Kim; 1♂, Sögwip'o, 23 April 1987; 1♂, Taep'o, 15 January 1987, C.B. Kim.

Distribution: Korea (South Sea); Korean Straits (Kadsiyama, type locality), Japan.

7. *Caprella giganthochir* Mayer, 1903

Material examined: 15♂♂, Sögwip'o, 4 May 1987.

Distribution: Korea (South Sea), Japan (Enoura and Nagasaki, type locality).

8. *Caprella penantis* Leach, 1814

Material examined: 1♀, Kümnyöng, 27 April 1987, C.B. Kim; 6♂♂, 1♀, Choch'ön, 31 July 1987; 3♂♂, Mosülp'o, 16 August 1986.

Distribution: Korea (S. Sea, E. Sea, Y. Sea), England (Devonshire coast, type locality), U.S.A. (California), Japan.

9. *Caprella scaura* Templeton, 1836

Material examined: 2♂♂, 1♀, Hallim, 10 February 1987; 20♂♂, 10♀♀, Söngsanp'o, 27 April 1987; 1♂, 2♀♀, Sögwip'o, 4 May 1987; 21♂♂, 4♀♀, Choch'ön, 31 July 1987; 4♂♂, 7♀♀, Udo Umok-dong, 29 July 1987; 6♂♂, 6♀♀, Udo Piyang-dong, 30 July 1987; 8♂♂, 12 (4 ovig.)♀♀, Mosülp'o, 16 August 1985; 33♂♂, 27 (3 ovig.)♀♀, Hwasun, 1 May 1987, Y.H. Choi; 2♂♂, 2 (1 ovig.)♀♀, Piyangdo, 2 May 1985, C.Y. Chang; 8♂♂, 2♀♀, Aewol, 4 May 1987; 1♀, Shinch'ang, 2 May 1987; 1♂, 1♀, Sehwa, 30 July 1987.

Distribution: Korea (S. Sea, E. Sea, Y. Sea), Riviere Noire, Mauritius (type locality), Vladivostok,

Japan.

10. *Caprella simia* Mayer, 1903*

Material examined: 3♂♂, 3 (1 ovig.) ♀♀, Choch'ŏn, 31 July 1987.

Distribution: Korea (South Sea); Japan (Enoura and Nagasaki, type locality).

11. *Caprella verrucosa* Boeck, 1872*

Material examined: 1♂, Choch'ŏn, 31 July 1987.

Distribution: Korea (South Sea); U.S.A. (California, type locality); Japan.

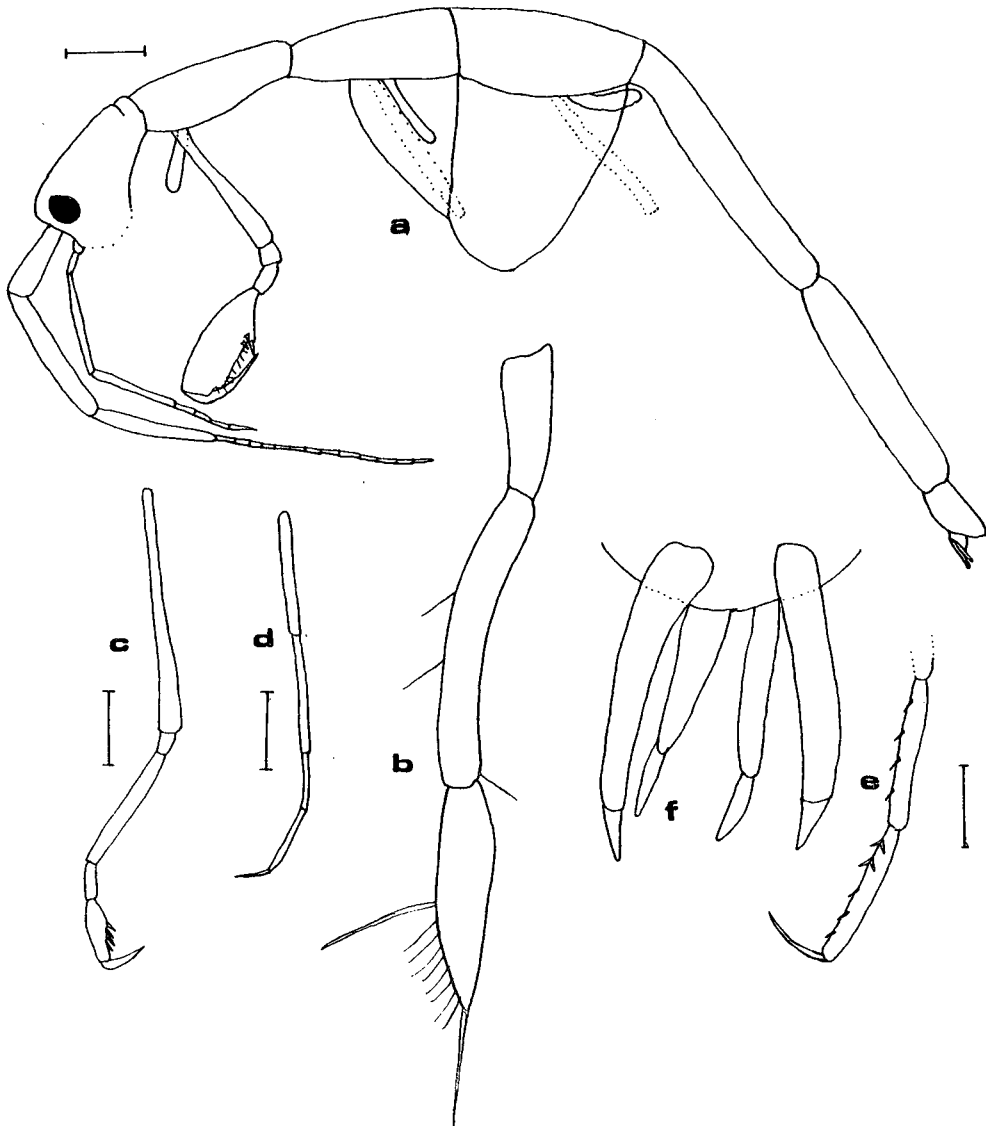


Fig. 3. *Protomima imitatrix* Mayer, 1903

a, female; b, mandibular palp; c, pereopod 4; d, pereopod 5; e, tip of pereopod 7; f, appendage of male abdomen. (scale = 0.5 mm)

Genus *Protomima* Mayer, 190312. *Protomima imitatrix* Mayer, 1903**

(Fig. 3)

Protomima imitatrix Mayer, 1903 (p. 22, pl. 6 figs. 10-11, pl. 9 fig. 56); Utinomi, 1947 (p. 69), 1968 (pp. 282-284, figs. 1-2); McCain, 1970 (p. 71); Arimoto, 1976 (pp. 31-33, figs. 11-12).

Material examined: 27♂♂, 2♀♀, Sŏgwip'o, 4 May 1987.

Diagnosis: Flagellum of antenna 2 with 4 segments. Gills present on pereonites II-IV. Abdomen with 2 pairs of large biarticulate appendages.

Description: Length of male 11 mm. Body smooth and slender. Head coalesced with pereonite I; pereonite I slightly shorter than pereonite II; Pereonites gradually increased in length from II to V; pereonite VI a little shorter than V; pereonite VII the shortest. Eye large and round. Length of antenna 1 about 5 mm, a little shorter than a half of body length; flagellum with 9-12 segments, a little shorter than the peduncle of antenna 1. Gnathopod 2 attached at front part of pereonite II; basis of gnathopod 2 approximately equal to pereonite II; propodus long and elliptical with a palmar spine and 2 subpalmar spines at base of palm. Pereopods 3, 4 well developed with 6 segments; segment

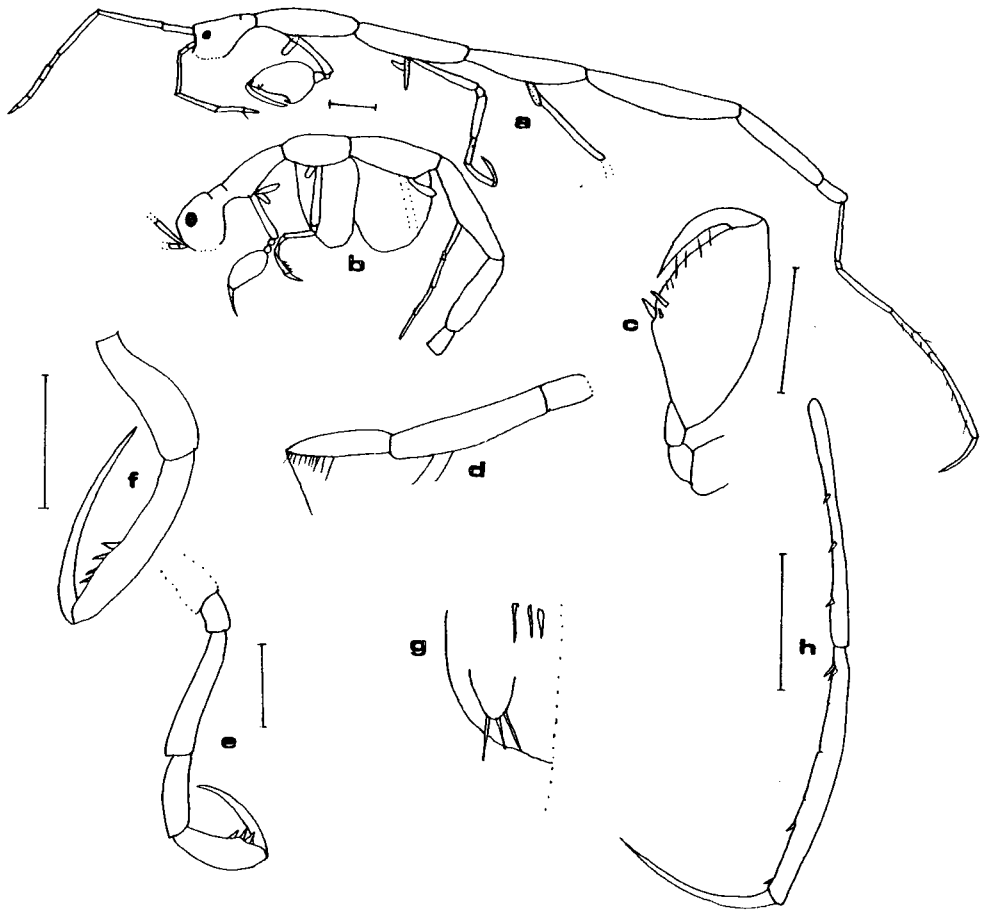


Fig. 4. *Pseudoproto fallax* Mayer, 1903

a, male; b, female; c, gnathopod 2 of male; d, mandibular palp; e, tip of pereopod 3; f, tip of pereopod 4; g, abdomen of male; h, tip of pereopod 7. (scale=0.5 mm)

1 the longest and approximately equal to its pereonite; propodus with 3-4 palmar spines and dactylus longer than a half of propodus. Pereopod 5 with 5 segments; segments 1 and 2 subequal and equal to its pereonite; segment 4 longer than segment 3; segment 5 shorter than a half segment 4; segments 5-6 of pereopods 6-7 with several spines on anterior margins; segment 1 of pereopod 6 subequal to pereonite VI and longer than that of pereopod 7. Gills on pereonite II smaller than those on pereonites III-IV. Mandibular palp 3 segmented; setal formula of terminal segment of palp 1-8-1 (whereas 1-7-1 in Mayer's report). Abdomen with 2 pairs of biarticulated appendages.

Distribution: Korea, Japan (Enoura, type locality).

Genus *Pseudoproto* Mayer, 1903

13. *Pseudoproto fallax* Mayer, 1903* (Fig. 4)

Pseudoproto fallax Mayer, 1903 (pp. 27-28, pl. 6 fig. 22, pl. 9 fig. 5, 52); Utinomi, 1947 (p. 69); McCain, 1970 (p. 75); Arimoto, 1976 (pp. 34-35, fig. 13).

Material examined: 15♂♂, Sŏgwip'o, 4 May 1987; 1♂, Choch'ŏn, 31 July 1987.

Diagnosis: Flagellum of antenna 2 with 2 segments. Gills on pereonites II-IV.

Description: Length of male 8.3 mm. Body smooth and slender. Head coalesced with pereonite I; its length shorter than pereonite II; pereonite II shorter than pereonite V; pereonite V and VI subequal. pereonite VII shortest. Length of antenna 1 with 5 segments, about 3 mm long, shorter than a half of body length and shorter than length of pereopod 7. Flagellum of antenna 2 with 2 segments, reached to the peduncle of antenna 1. Gnathopod 2 attached on nearly middle part of pereonite II, its basal segment shorter than propodus, which is oval, the length twice as long as broad. Palmar margin convex with a median palmar spine and two subspines. pereopods 3-4 with 6 segments, 3-4 spines on segment 5; segment 6 subequal to segment 5. Pereopod 5 with five segments. Pereopod 7 with 4-5 rows of spines at anterior margins of segments 4-5. Gills on pereonite II shorter than those of pereonites III-IV. Mandibular palp with 3 segments, a long seta and several setae on terminal segment. Abdominal appendages absent in male with only lobe structure and setae.

Distribution: Korean Straits (type locality), Thailand, Western Australia.

Genus *Paraprotella* Mayer, 1903

14. *Paraprotella prima* Mayer, 1903** (Fig. 5)

Paraprotella prima Mayer, 1903 (pp. 38-39, pl. 1 figs. 27-29 pl. 6 figs. 50-55, pl. 9 figs. 10, 34, 64-65); Utinomi, 1947 (p. 69); McCain, 1970 (p. 60); Arimoto, 1976 (pp. 40-41, fig. 16).

Material examined: 2♂♂, 2♀♀, Choch'ŏn, 4 May 1987; 2♂♂, 2♀♀, Sŏgwip'o, 6 August 1987.

Diagnosis: Several sharp spines on head and pereonites I-II. Flagellum antenna 2 with 2 segments. Pereopods 3-4 with 3 segments.

Description: Length of male 6.5 mm. Head with 2 sharp frontal spines and one small tubercle on base of antenna 1. Pereonite I coalesced with head, one sharp dorsal spine (small in some specimens) at middle of pereonite I and a small lateral spine. Pereonite II with 2 dorsal sharp spines at middle, a tooth at rear end and a latero-frontal, at which gnathopod 2 attached, a lateral spine at middle and a lateral spine at posterior end (without this spine in some cases). Pereonite III slightly longer than pereonite II and subequal to pereonite IV, with a latero-frontal spine each side (absent in some cases), with 2 mid-dorsal spines (or with a small tubercle) and a lateral spine at middle, where gills and pereopod III attached. Pereonite IV with a frontal and a mid spine (Fig. 5, b), or only one posterior spine (Fig. 5, a) each side laterally. Pereonite V the longest with a lateral spine at anterior part of each side.

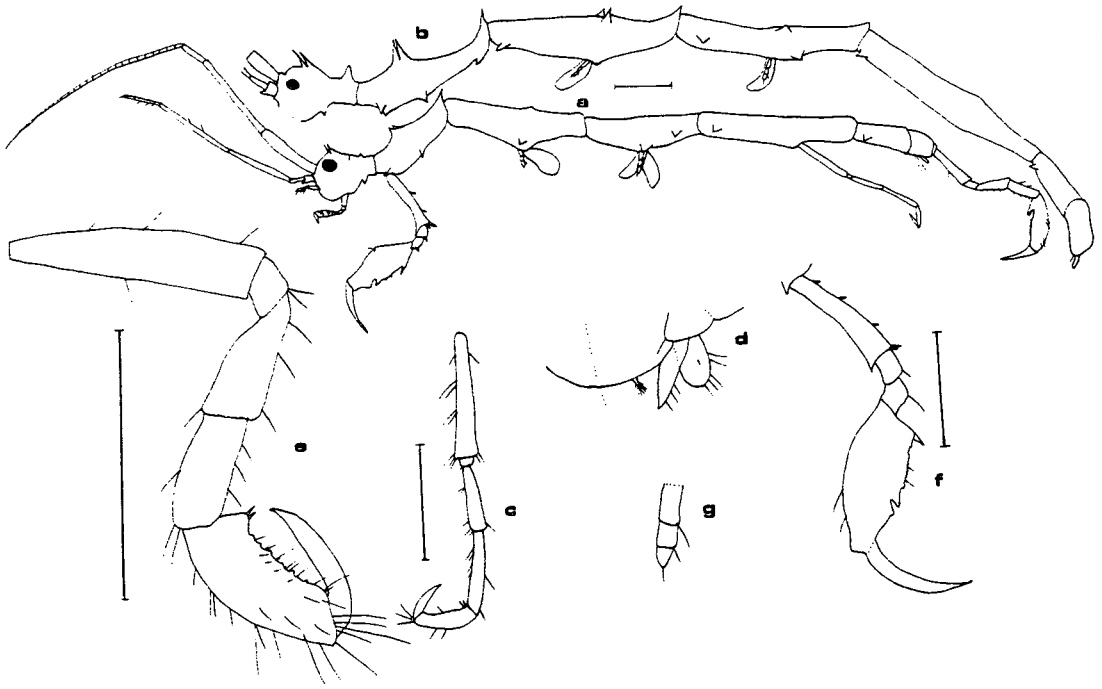


Fig. 5. *Paraprotella prima* Mayer, 1903

a, b, male; c, pereopod 5; d, appendage of abdomen of male; e, pereopod 7; f, gnathopod 2 of male; g, pereopod 3. (scale=0.5 mm)

Total length of pereonites VI and VII shorter than preonite II; Pereonite VI with a lateral spine on anterior part of each side. Antenna 1 subequal to half of body length, 2nd article of peduncle the longest. Antenna 2 longer than peduncle of antenna 1; flagellum with 2 segments; 1st article of peduncle with sharp projection on anterior margin; swimming setae absent. Gnathopod 2 attached on anterior part of pereonite II, 1st segment subequal to pereonite II with 3 spines on posterior margins; propodus large and twice as long as broad, poison tooth strong located distally, with a proximal grasping spine and 5 tubercles on posterior margin. Pereopods 3, 4 very small with 3 segments. Pereopod 5 with 6 segments, slender than pereopods 6, 7; its propodus with proximal grasping spines and several small teeth on anterior margin. Mandibular palp 3-segmented. Abdomen of male with a pair of appendages and a pair of lobes.

Distribution: Korean Straits, Singapore (type locality), Thailand, Japan (Nagasaki).

Genus *Protella* Dana, 1852

15. *Protella gracilis* Dana, 1853**

(Fig. 6)

Protella gracilis: Mayer, 1882 (pp. 31-32); Stebbing, 1888 (pp. 1245-1248); Mayer, 1890 (pp. 21-23, pl. 1 fig. 10-11, pl. 3 figs. 17-20, pl. 5 figs. 15-17, pl. 6 figs 6, 21); Mayer, 1903 (pp. 33-34); Hiro (Utinomi), 1937 (p. 311, pl. 22 Figs. 3-4); Utinomi, 1947 (p. 69); McCain, 1970 (pp. 69-70); Arimoto, 1976 (pp. 50-53, figs. 21-22); Arimoto, 1980 (p. 105).

Material examined: 3♂♂, 1♀, Choch'ŏn, 31 July 1987; 1♂, Mosŭlp'o, 16 August 1985; 3♂♂, 1♀, Sŏgwip'o, 16 August 1985.

Diagnosis: Antenna 2 with 2 segments; pereopods 3, 4 single segmented.

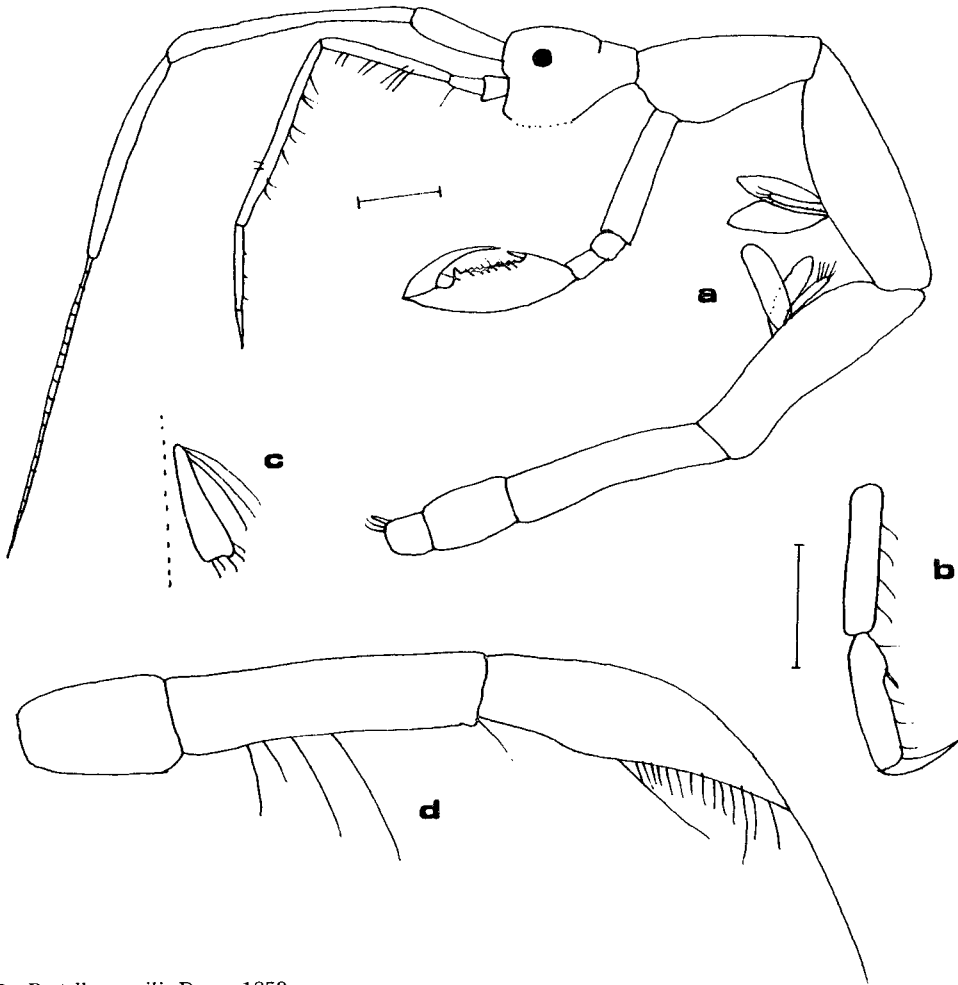


Fig. 6. *Protella gracilis* Dana, 1853

a, male; b, tip of pereopod 7; c, appendage of abdomen of male; d, mandibular palp. (scale=0.5mm)

Description: Body length of male 8 mm; head and body smooth. Pereonite I coalesced with head; Pereonite II slightly shorter than pereonite III; pereonite V subequal to pereonites III and IV; pereonite VI about one-third of V, and pereonite VII the shortest. Antenna 1 5.3 mm, longer than a half of body length; flagellum with 20 segments; peduncle very long; 1st article short; 2nd and 3rd articles subequal, 3 times as long as 1st article. Antenna 2 shorter than peduncle of antenna 1, its article 3 longer than articles 1 and 2 together; 4th article longer than 3rd, fringed with 3-5 rows of setae on posterior margins; flagellum 2-segmented, its 1st segment with 3-4 setae on posterior margin. Gnathopod 2 attached on anterior part of pereonite II, 1st segment subequal to its pereonite, propodus large and twice as long as broad; palmar spine located at base of palm; poison tooth small and situated at distal part of palm, but large and situated at middle in case of old specimens (Mayer, 1890, Taf. 3, fig. 17). Pereopods 3, 4 single-segmented, elongated and long, its length subequal to gill, slender than gill and with several setae on tip. Pereopods 5, 6 and 7 all 6-segmented with proximal grasping spines; segment 4 of pereopod 5 with several spinules on anterior margin. Gills elliptical. Abdomen of male with a pair of appendages and several long setae at base and several setae at tip of appendage. Man-

dibular palp 3-segmented; 2nd article with 4 long setae on posterior margin; setal formula of terminal segment I-X-Y-I.

Distribution: Korean Straits, Balabac Strait, Philippines (type locality), South part of Japan.

ABSTRACT

Fifteen caprellid species in 5 genera were identified during the study period from February to July, 1987 at 16 localities in Cheju Island and adjacent waters. Of which 5 species in 5 genera are newly reported from Korea: *Caprella kominatoensis* Takeuchi, 1986, *Protomima imitatrix* Mayer, 1903, *Pseudoproto fallax* Mayer, 1903, *Paraprotella prima* Mayer, 1903 and *Protella gracilis* Dana, 1853.

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