

Mysidacea (Crustacea) from the Korea Strait and Its Adjacent Waters

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Thirteen pelagic species of mysids, representing nine genera, are reported from the Korea Strait and its adjacent waters. Of these, seven species, *Doxomysis quadrispinosa*, *Meterythrops microphthalmus*, *Pleuerythrops secunda*, *Pseudanchialina pusilla*, *Siriella gracilis*, *S. okadai*, and *S. thompsoni*, are newly recorded from the Korean waters. A taxonomic key and illustrative figures are given.

Mysidacea is a group of important crustaceans in marine and freshwater ecosystems. Most species are omnivorous, feeding on terrigenous detritus, diatoms, or copepods in the coastal regions and consumed by the pelagic and demersal fish (Brown 1964, Mauchline 1982, Web et al., 1988).

Until now, the mysids have included approximately 1,000 species representing 158 genera in the world since Boas (1883) established the order Mysidacea. In the Korean waters, few systematic studies on mysids have been carried out.

li (1964) was the first to report on the Korean mysid fauna, describing 15 species of seven genera. Later researchers described seven species of *Acanthomysis* (Oh, 1981), four species of *Neomysis* (Yoo, 1985, Yoo and Choe, 1980, 1985), and five species of *Gastrosaccinae* (Ma, 1988). Recently, Jo and Ma (1996) reported 15 species representing four genera.

Consequently, 29 species of mysids representing eight genera from the Korean waters have been described: so far 13 species of *Acanthomysis*, four species of *Archaeomysis*, four species of *liella*, one species of *Inusitatomysis*, one species of *Mysidopsis*, five species of *Neomysis*, one species of *Paracanthomysis*, and one species of *Siriella*.

The present study redescribes 13 species of mysids collected from the Korea Strait and its adjacent waters.

Materials and Methods

Zooplankton samples were collected from the Korea Strait and its adjacent waters from October 1987 to June 1997 with a plankton net (Norpac net, 300 µm). Mysids were immediately fixed in 10% buffered formalin

solution. The total length was measured from the tip of rostrum to the end of telson. Illustrations were made with the aid of a camera lucida. Eggs and larvae in the brood pouch of females were counted to determine brood size.

Systematic Accounts

Key to the Mysidacea from the Korea Strait and its adjacent waters

1. Exopod of uropod with suture-----2
Exopod of uropod without suture-----5
2. Endopod of third thoracic limb normal-----3
Endopod of third thoracic limb extremely elongated
-----*Hemisiriella pulchra*
3. Apex of telson truncate-----*Siriella thompsoni*
Apex of telson rounded-----4
4. Lateral margin of telson with series of longer and shorter spines
-----*S. okadai*
Lateral margin of telson with slender spines
-----*S. gracilis*
5. Telson with cleft-----6
Telson entire-----10
6. Cleft of telson armed with a pair of plumose setae
-----7
Cleft of telson armed without plumose setae-----9
7. Cleft of telson naked-----*Promysis orientalis*
Cleft of telson armed with spines-----8
8. Proximal margin of telson naked

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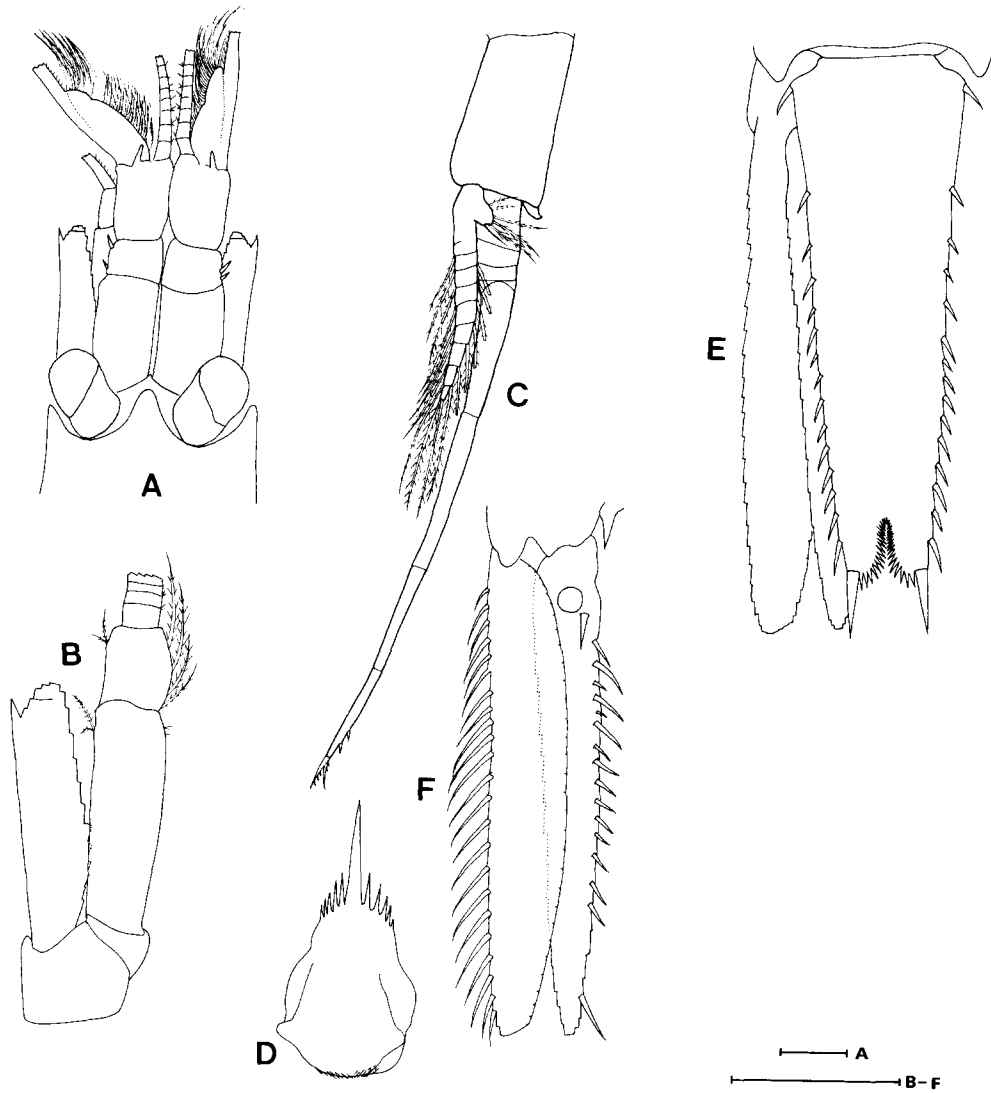


Fig. 1. *liella pelagicus* (li), adult male (12.0 mm). A, Anterior end. B, Antenna. C, Third pleopod. D, Labrum. E, Telson and uropod. F, Ventral part of uropod. Scale bars=0.4 mm.

- | | |
|--|---|
| ----- <i>Doxomysis quadrispinosa</i> | Endopod of uropod with spine row along inner margin----- <i>Meterythroptis microphthalmia</i> |
| Proximal margin of telson armed with spines | |
| ----- <i>D. sp.</i> | |
| 9. Exopod of uropod naked along outer margin | 12. Lateral margin of telson armed with series of small and large spines |
| ----- <i>Pseudanchialina pusilla</i> | ----- <i>Acanthomysis quadrispinosa</i> |
| Exopod of uropod armed with spinose setae along outer margin | Lateral margin of telson armed only with small spines----- <i>A. longirostris</i> |
| ----- <i>liella pelagicus</i> | |
| 10. Lateral margin of telson naked-----11 | |
| Lateral margin of telson armed with spines-----12 | |
| 11. Endopod of uropod without spine except statocyst region | |
| ----- <i>Pleurethyrops secunda</i> | |

Family Mysidae Dana, 1852
 Subfamily Gastrosaccinae Norman, 1892
 Genus *liella* Bacescu, 1968

liella pelagicus (li, 1964)
 (Fig. 1)

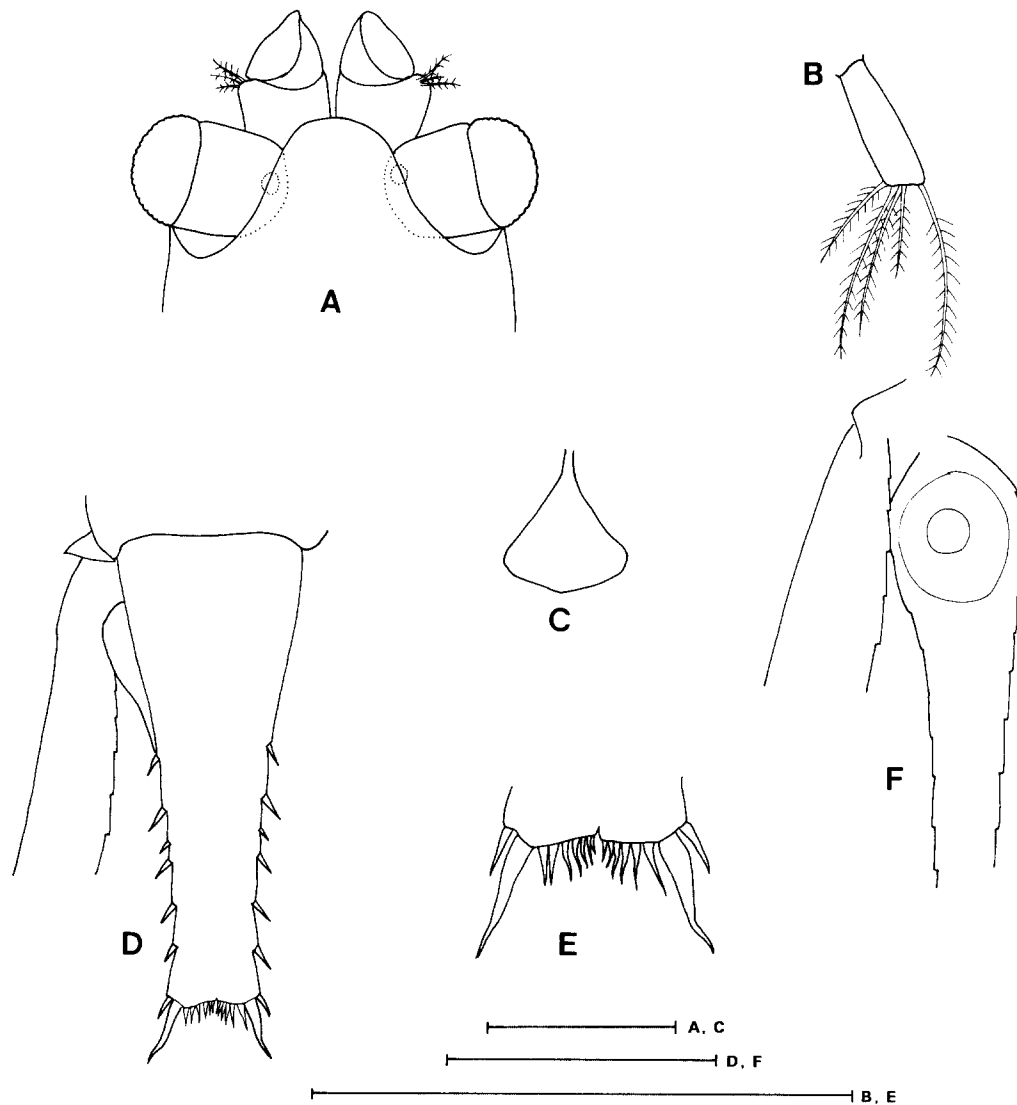


Fig. 2. *Pseudanchialina pusilla* (Sars), adult female (2.6 mm). A, Anterior end. B, First pleopod. C, Labrum. D, Telson and uropod. E, Distal part of telson. F, Ventral part of uropod. Scale bars=0.5 mm.

Gastrosaccus pelagicus li, 1964, p. 243, figs. 62, 63; Jo and Ma, 1996, p. 810, fig. 6.

liella pelagicus: Bacescu, 1968, p. 355.

Material examined: 1 ♂ (12.0 mm), 6 immature ♂♂ (3.6-6.8 mm), 6 immature ♀♀ (4.7-7.7 mm), south of Nohwado, Chonnam (34° 00' N, 126° 30' E), 18 Oct. 1987, plankton net.

Remarks: The present species closely resembles *I. kojimaensis* (li, 1964) but differs in the following points. (1) In the present species the endopod of third male pleopod is as long as the first segment of exopod, while in *I. kojimaensis* it is 0.7 times as long. (2) In the present species the endopod of uropod is armed with 17-24 spines, while in *I. kojimaensis* it is armed

with only 12 spines. (3) In the present species the rostral plate is narrower and larger than in *I. kojimaensis*. The present species is a pelagic form.

Distribution: Korea (Yellow Sea), China (East China Sea).

Genus *Pseudanchialina* Hansen, 1910
Pseudanchialina pusilla (Sars, 1883)
 (Fig. 2)

Promysis pusilla Sars, 1883, p. 42, No. 7, Forch. Vid. Selsk. Christiana, 7 (cited from Hansen, 1910).

Anchialus pusillus Sars, 1885, p. 200, pl. 35, figs. 19-20.

Pseudanchialina pusilla: Hansen, 1910, p. 60, pl. 8,

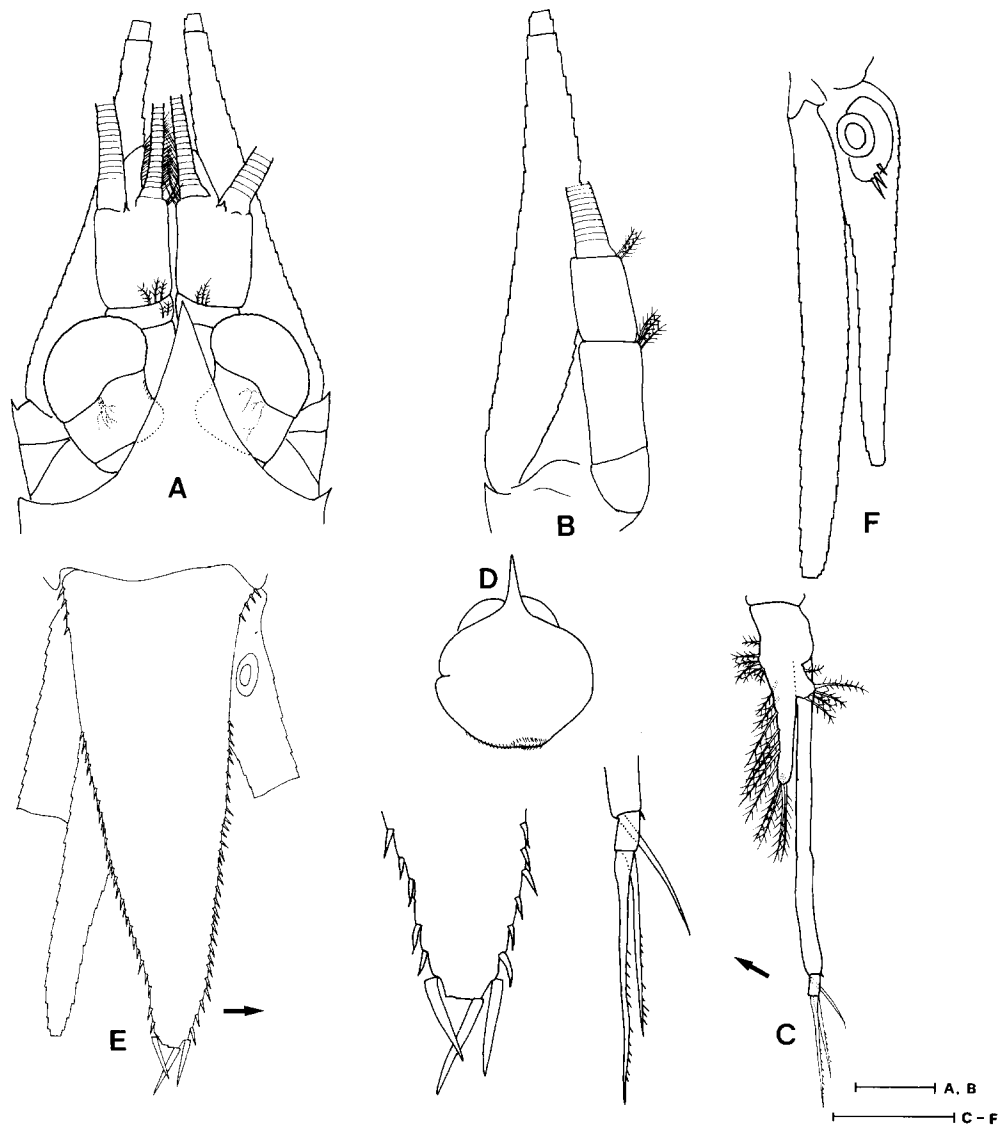


Fig. 3. *Acanthomysis longirostris* li, adult male (12.0 mm). A, Anterior end. B, Antenna. C, Fourth pleopod. D, Labrum. E, Telson and uropod. F, Ventral part of uropod. Scale bars=0.5 mm.

fig. 4a-c, pl. 9, fig. 1a-k; Pillai, 1957, p. 9, fig. IV. 1-6; Tattersall, 1960, p. 176, fig. 4A-C; Pillai, 1964, p. 21, fig. 12; Pillai, 1965, p. 1703, fig. 46; Mauchline and Murano, 1977, p. 72.

Material examined: 1 ♀ (2.6 mm), south-east of Cheju Is. (32°30'N, 128°00'E), 10 Aug. 1988, plankton net.

Remarks: *P. pusilla* is characterized by the shape and armature of the telson and uropod. Although a single specimen was available in the present study, it was easily distinguished from *P. pusilla*. *P. pusilla* is similar to *P. inermis* (Illig, 1906) in the cleft of telson. However, *P. pusilla* differs from *P. inermis* by the following points. (1) In *P. pusilla* the lateral margin of telson is armed with 6-9 spines, while in *P. inermis* it is armed with

3-7 spines. (2) In *p. pusilla* the endopod of uropod bears no spine, while *P. inermis* bears one spine on inner margin.

Distribution: East Indies and Bay of Bengal, Malacca Strait, South China Sea, Great Barrier Reef. The occurrence of the species recorded in the present study is the northern most distribution of this species.

Subfamily Mysinae Hansen, 1910
Genus *Acanthomysis* Czerniavsky, 1882
Acanthomysis longirostris li, 1936
(Fig. 3)

Acanthomysis longirostris li, 1936, p. 590, figs. 22-23; Banner, 1948, p. 86 (in key); Shen et al., 1989, p.

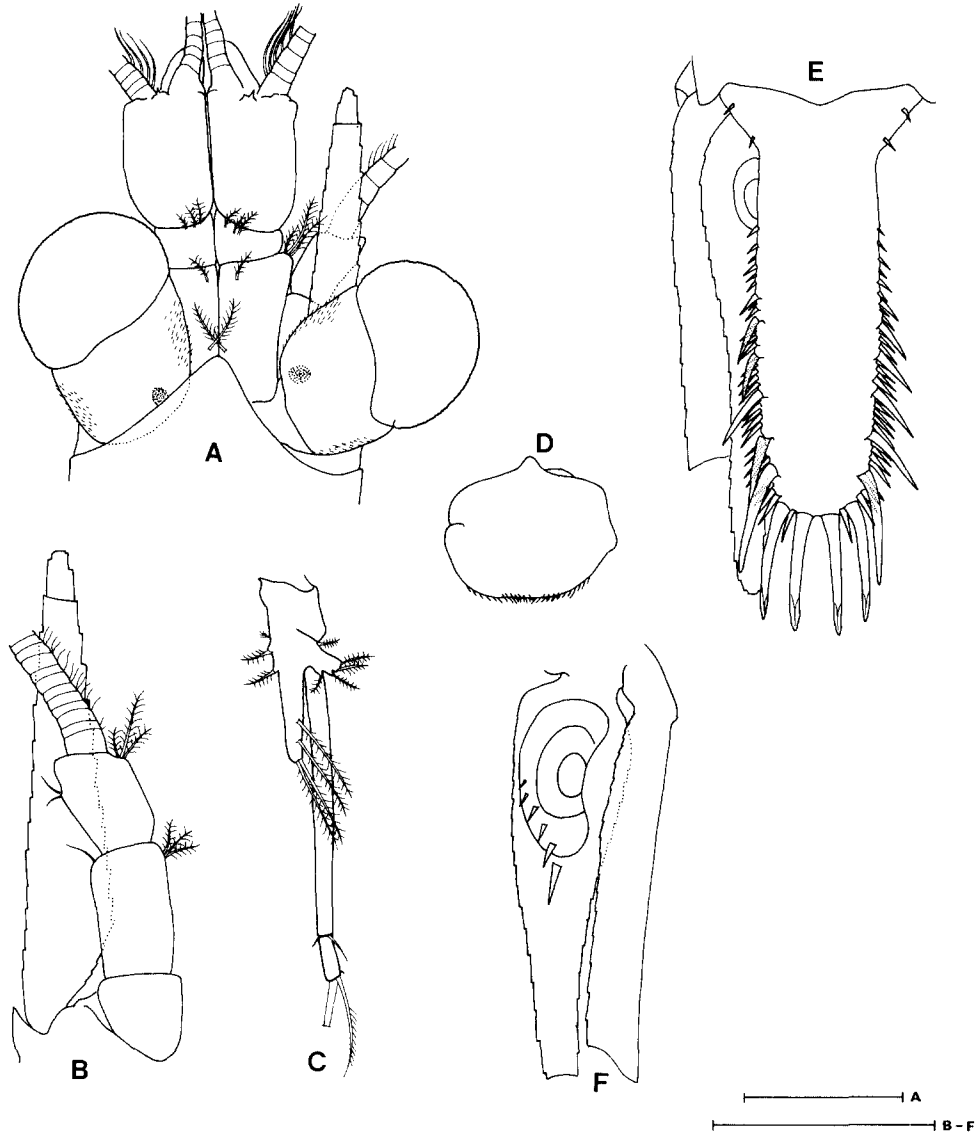


Fig. 4. *Acanthomysis quadrispinosa* Nouvel, adult male (7.2 mm). A, Anterior end. B, Antenna. C, Fourth pleopod. D, Labrum. E, Telson and uropod. F, Ventral part of uropod. Scale bars=0.5 mm.

219, fig. 15; Jo and Ma, 1996, p. 815, fig. 11.

Material examined: 1 ♂ (12 mm), 3 ♀♀ (11.5 mm), south of Cheju Is. (32°10'N, 127°30'E), 2 Nov. 1990, plankton net, collected from 90 m depth.

Remarks: The present species is very similar to *A. sinensis*, but differs from *A. sinensis* in the following points. (1) In *A. longirostris* the rostral plate is longer, and exceeds the distal end of the second segment of antennular peduncle, while in *A. sinensis* it does not reach even the distal end of the first segment. (2) In *A. longirostris* the apex of telson is narrowly truncate, while in *A. sinensis* it is broadly truncate. The present species is easily distinguished from other members of genus *Acanthomysis* in the rostral plate, armature of

telson and fourth male pleopod.

Distribution: Korea (Yellow Sea), Japan, China (North China coasts), East China Sea.

Acanthomysis quadrispinosa Nouvel, 1965
(Fig. 4)

Acanthomysis quadrispinosa Nouvel, 1965, p. 456, figs. 23-40; Liu and Wang, 1986, p. 191, fig. 17; Murano, 1991, p. 89, fig. 5.

Material examined: 3 ♂♂ (7.2-7.8 mm), 2 immature ♂♂ (5.0 mm), 2 ♀♀ (7.2 mm), south-east of Cheju Is. (33°30'N, 128°20'E), 14 Apr. 1994, plankton net.

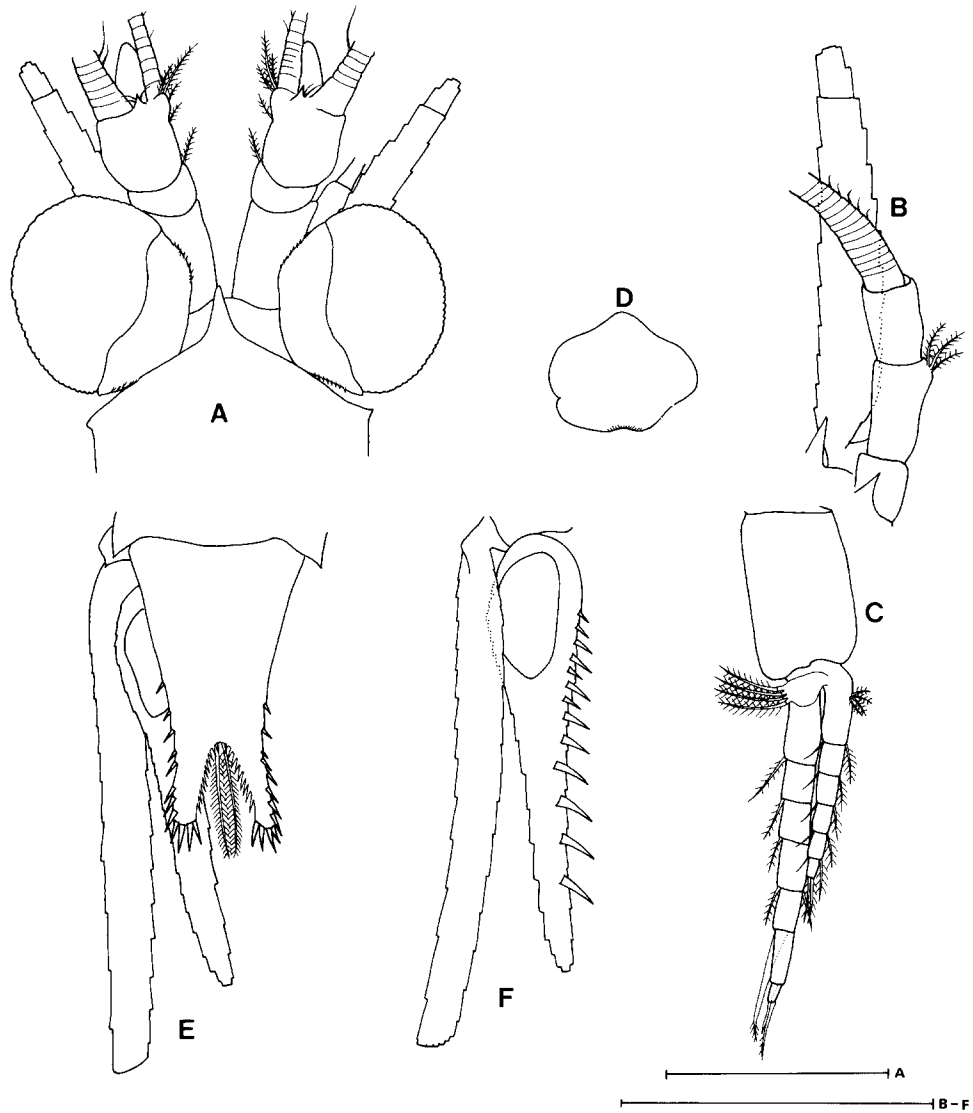


Fig. 5. *Doxomysis quadrispinosa* (Illig), adult male (4.4 mm). A, Anterior end. B, Antenna. C, Fourth pleopod. D, Labrum. E, Telson and uropod. F, Ventral part of uropod. Scale bars=0.5 mm.

Remarks: The present specimens agree well with the original description from Madagascar (Nouvel, 1965). *A. quadrispinosa* is characterized by the shape and armature of telson and the serrated inner margin of the second segment of mandibular palp, which make this species easily identified. The present species is newly reported from the Korean waters.

Distribution: Korea (south-east of Cheju Is.), Japan (Kyushu), Northern South China Sea, Madagascar.

Genus *Doxomysis* Hansen, 1912
Doxomysis quadrispinosa (Illig, 1906)
 (Fig. 5)

Mysis quadrispinosa Illig, 1906, p. 207, figs. 14A-B.

Doxomysis pelagica Hansen, 1912, p. 205, pl. 3, fig. 3a-g.

Doxomysis quadrispinosa: Illig, 1930, p. 480, figs. 163-166; Tattersall, 1951, p. 152; Gordan, 1957, p.

346; li, 1964, p. 385; Pillai, 1965, p. 1718, fig. 80; Taniguchi, 1976, p. 355, fig. 4; Mauchline and Murano, 1977, p. 53.

Material examined: 1 ♂ (4.4 mm), 2 ♀♀ (4.0, 4.4 mm), 9 Aug. 1988, south-east of Cheju Is. (32°30'N, 12°730'E), plankton net (0-50 m depth).

Remarks: *D. quadrispinosa* is related to *D. henseni* Colosi, 1920 and *D. microps* Colosi, 1920 by having

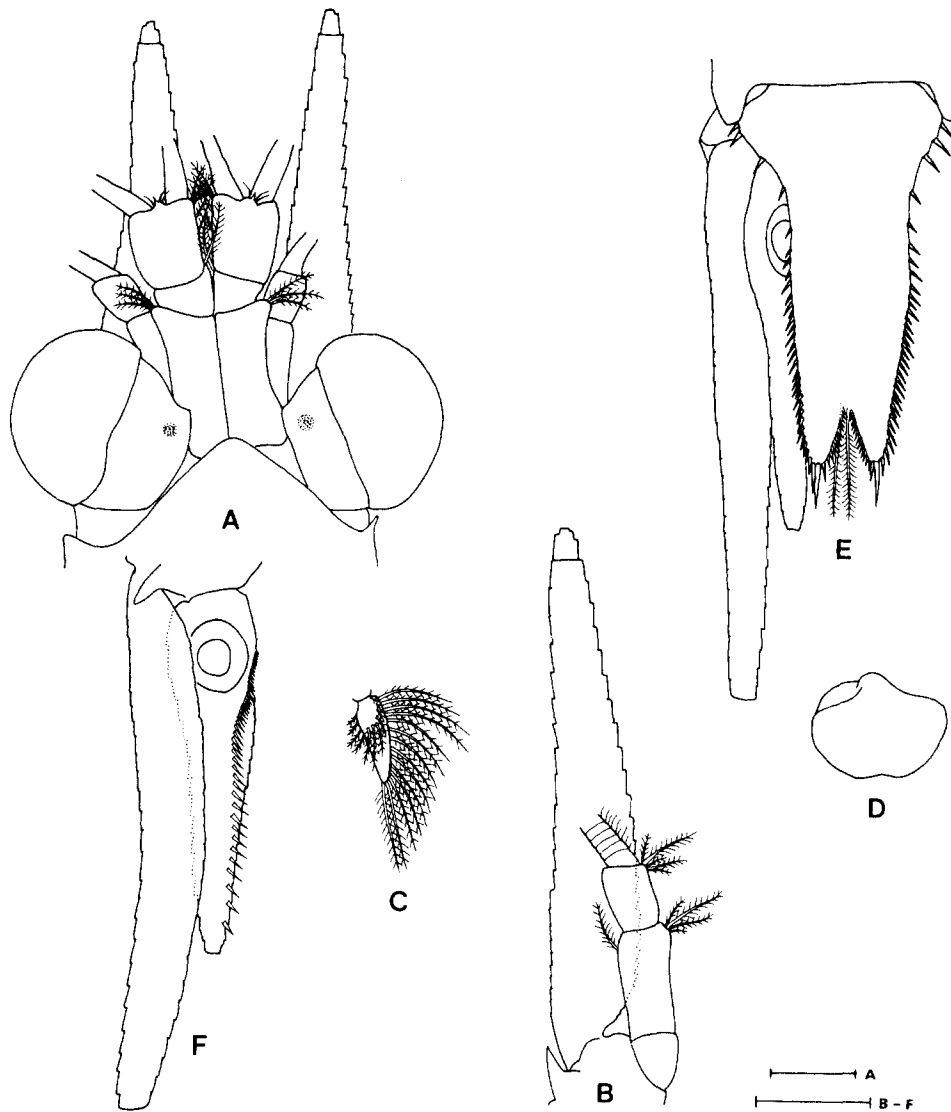


Fig. 6. *Doxomysis* sp., adult female (11.1 mm). A, Anterior end. B, Antenna. C, First pleopod. D, Labrum. E, Telson and uropod. F, Ventral part of uropod. Scale bars=0.5 mm.

telson armed with spines only on the distal half of lateral margin. In *D. quadrispinosa*, however, the rostral plate is narrowly pointed, while in *D. hanseni* the plate has a broad apex; in the specimens of the present study, the eyes are large and well-developed, while in *D. microps* the eyes are very small. *D. quadrispinosa* is newly reported from the Korean waters. It is an epipelagic form.

Distribution: Korea (south-east of Cheju Is.), Japan (Banda Sea), Tropical Indo-Pacific.

Doxomysis sp.
(Fig. 6)

Material examined: adult female (11.1 mm), south of

Goeje Is. (34°00'N, 128°30'E), 24 July 1988, Bongo net (330 µm).

Remarks: Only a single female specimen was available in the present study, and it is similar to *D. longiura* (Pillai, 1963), *D. littoralis* (Tattersall, 1922), and *D. spinata* (Murano, 1990) in the armature of telson spines. However, it differs from the related species in having a triangular cleft of telson, the apical spines of telson lobes of which the middle one is longest, and many more spines (up to 31 spines) on the lateral margin of telson. Although this species seems to be new, it will remain unnamed until more specimens are available.

Distribution: Korea (Korea Strait).

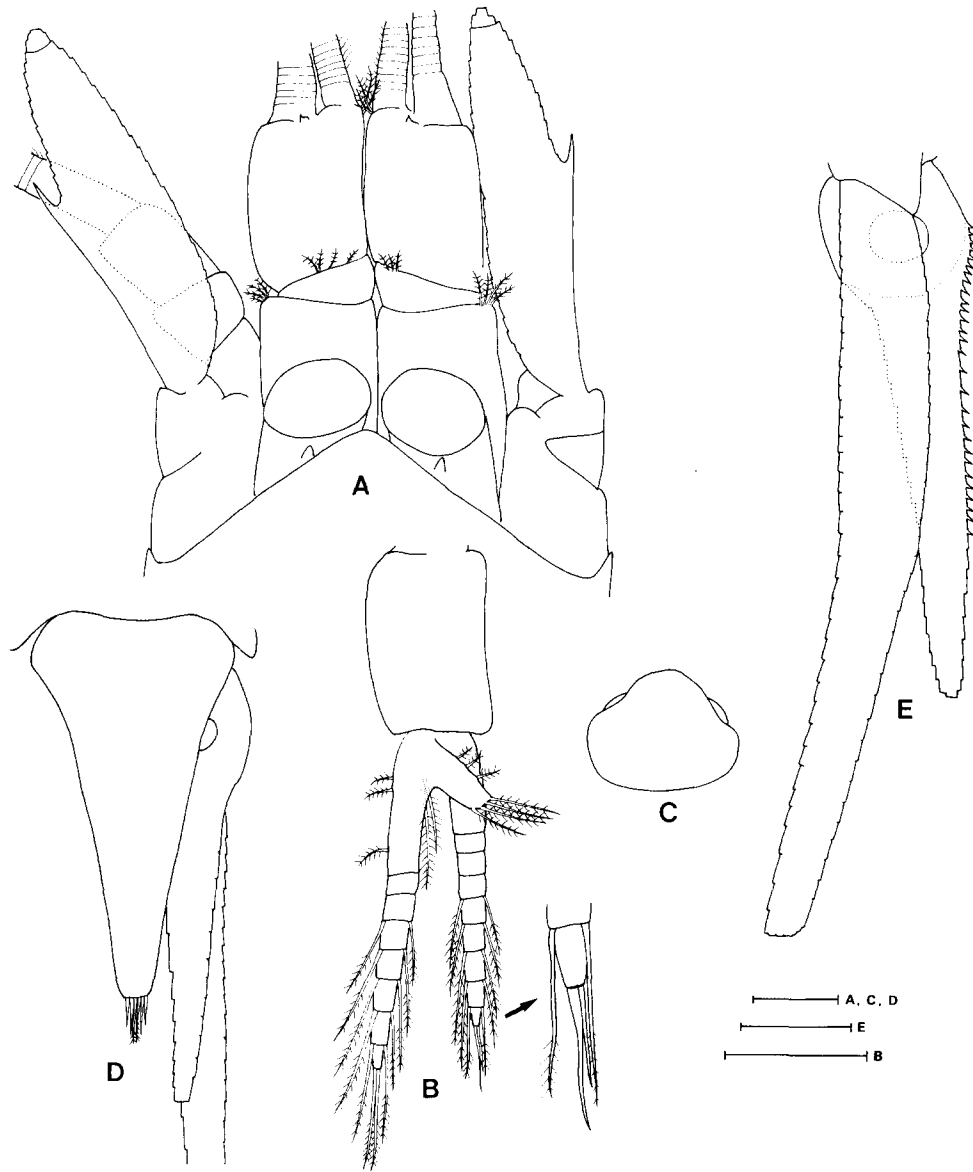


Fig. 7. *Meterythrops microphthalmus* Tattersall, adult male (16.0 mm). A, Anterior end. B, Fourth pleopod. C, Labrum. D, Telson and uropod. E, Ventral part of uropod. Scale bars=0.5 mm.

Genus *Meterythrops* Smith, 1879
Meterythrops microphthalmus Tattersall, 1951
 (Fig. 7)

Meterythrops microphthalmus Tattersall, 1951, p. 113, fig. 36; Gordan, 1957, p. 359; Ii, 1964, p. 319; Murano, 1977, p. 171, figs. 19-23; Mauchline and Murano, 1977, p. 64.

Material examined: 6 ♂♂ (16-20 mm), 12 immature ♂♂ (7-15 mm), 6 ♀♀ (20-20.5 mm), 11 immature ♀♀ (9-15 mm), 2 juveniles (6.5-8.5 mm), east of Pohang (36°00'N, 130°00'E), 18 May 1996, plankton net; 7 ♂♂ (20-23 mm), 6 immature ♂♂ (12-15.5 mm), 3 ovigerous ♀♀ (19-20 mm), 2 ♀♀ (20-20.5 mm), 7 immature ♀♀ (12-15.5 mm), 25 juveniles (7.5-8.5 mm), east of Pohang

(36°00'N, 130°00'E), 25 June 1997, plankton net.

Remarks: The specimens agree well with the original description (Tattersall, 1951), except the endopod of uropod. He described that it has no spine on the inner margin of the endopod of uropod. However, it seems that he overlooked a long series of spines on the endopod as noted by Murano (1977).

M. microphthalmus is related to *M. robusta* Smith, 1879. In the present species, however, the eyes are considerably smaller than in the latter species. *M. microphthalmus* is newly reported from the Korean waters.

Distribution: Korea (East Sea), East Japan (Pacific coast), Okhotsk Sea.

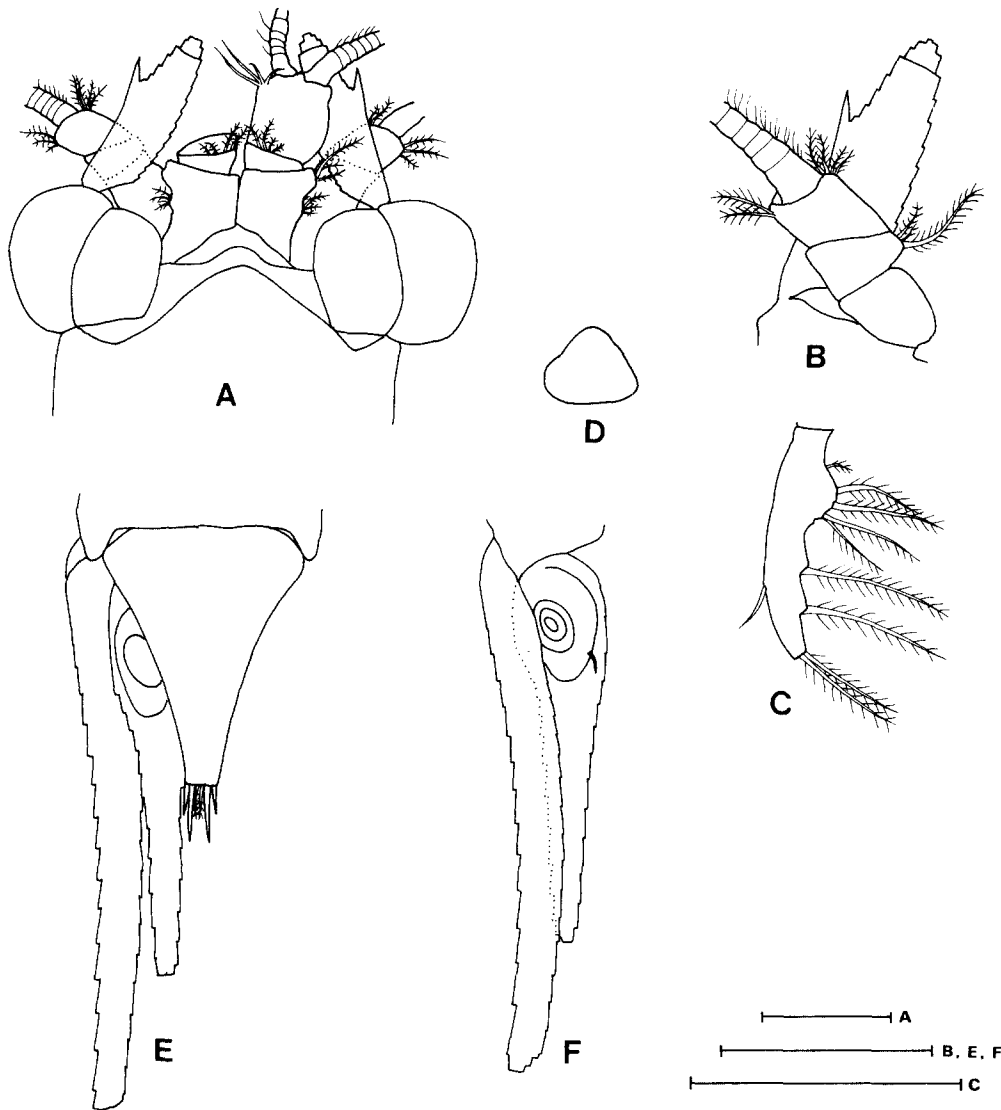


Fig. 8. *Pleurerythrops secunda* Murano, adult female (5.2 mm). A, Anterior end. B, Antenna. C, Third pleopod. D, Labrum. E, Telson and uropod. F, Ventral part of uropod. Scale bars=0.25 mm (C) and 0.5 mm (A, B, D, E, F).

Ecological notes: In summer, brood pouches of ovigerous females (19-20 mm in body length) carried 11-13 embryos per individual. *M. microphthalmus* is distributed from 500 m to 2000 m depth in the daytime and from surface to 1000 m depth at night, representing diel vertical migration between surface and deeper layers.

Genus *Pleurerythrops* Li, 1964
Pleurerythrops secunda Murano, 1970
 (Fig. 8)

Pleurerythrops secunda Murano, 1970, p. 257, figs. 23-35; Mauchline and Murano, 1977, p. 71; Murano, 1981, p. 269, fig. 5.

Material examined: 1 ♀ (5.2 mm), south of Geoje Is.

(34°00'N, 128°30'E), 31 July 1988, plankton net.

Remarks: A single female specimen which is available for the present study agrees well with the original description of *P. secunda* except the following characteristics. (1) In the present specimen the spine of outer margin of scale is located beyond the middle of the scale (up to proximal 2/3 margin), while in the original description it is located within the middle. (2) In the present specimen the endopod of uropod is armed with only one spine near statocyst, while in the original description it is armed with 6 or 7 spines.

Since Murano (1970) did not describe the antennal scale and uropod of female, it is difficult to conclude whether the difference between the two specimens resulted from being different sexes of the same species

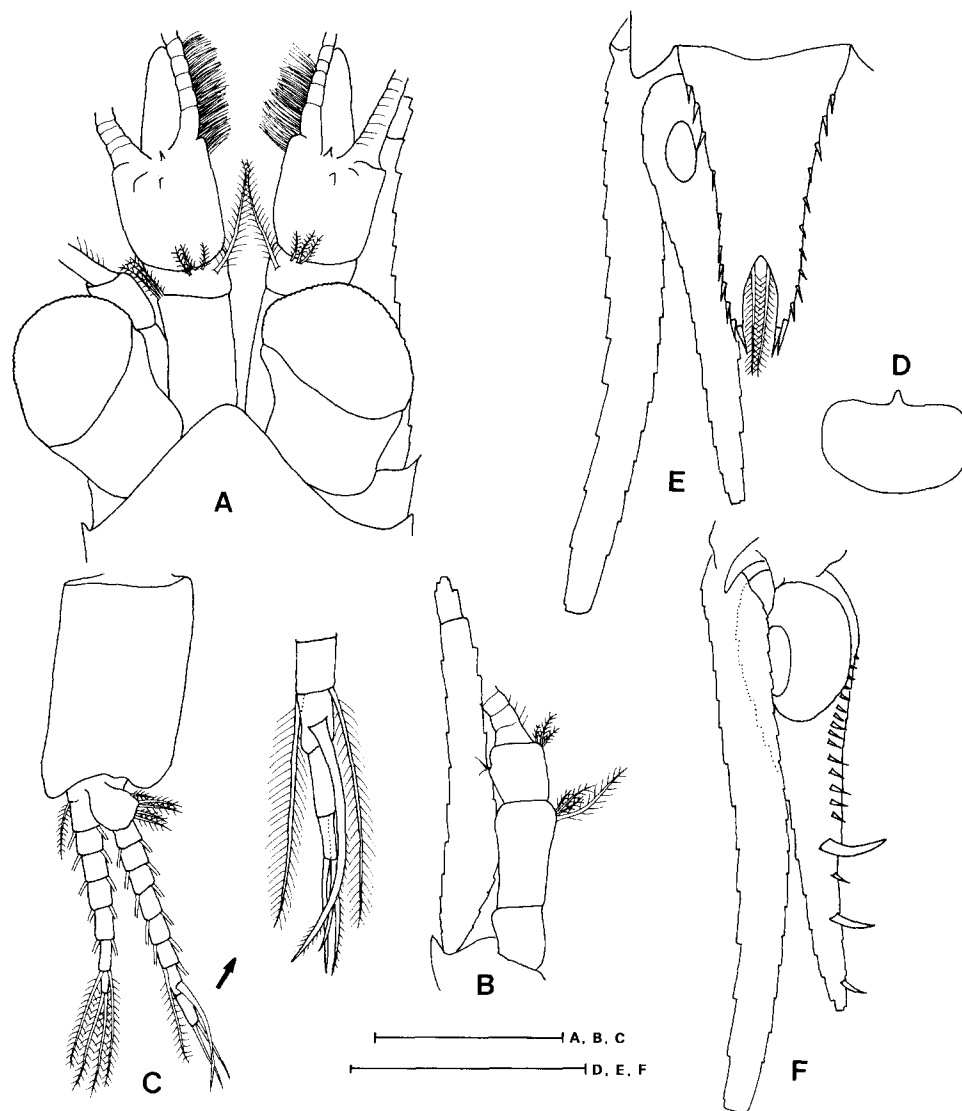


Fig. 9. *Promysis orientalis* Dana, adult male (5.0 mm). A, Anterior end. B, Antenna. C, Fourth pleopod. D, Labrum. E, Telson and uropod. F, Ventral part of uropod. Scale bars=0.5 mm.

or from being different species. For the present, the specimen of the present study would be identified as *P. secunda* until male specimens from the same locality are available.

P. secunda is similar to *P. inscita* (Ii, 1964) in the antennule and the antenna but they differ from each other in the armature of the telson apex. The present species is newly reported from the Korean waters.

Distribution: Korea (south of Goeje Is.), Eastern Japan, South China Sea.

Genus *Promysis* Dana, 1850
Promysis orientalis Dana, 1825
 (Fig. 9)

Promysis orientalis Dana, 1825 U.S. Explor. Exped., 13, p. 651, pt. 1 (cited from Ii, 1964); Ii, 1964, p. 392, fig. 99; Pillai, 1965, p. 1713, fig. 71; Tattersall, 1965, p. 90, fig. 5; Liu and Wang, 1986, p. 182, fig. 13.

Uromysis armata Hansen, 1910, p. 72, pl. 11, fig. 2a-n.

Material examined: 1 ♂ (5 mm), 4 ♀♀ (4.3-4.4 mm), east of Cheju Is. (33°30'N, 127°30'E), 18 Oct. 1987, plankton net.

Remarks: Hitherto, the genus *Promysis* includes only two species: *P. orientalis* and *P. atlantica* W. Tattersall, 1923.

P. orientalis differs from its related species in the following points. (1) In *P. orientalis* the lateral margin of telson is armed with spines from the base to the

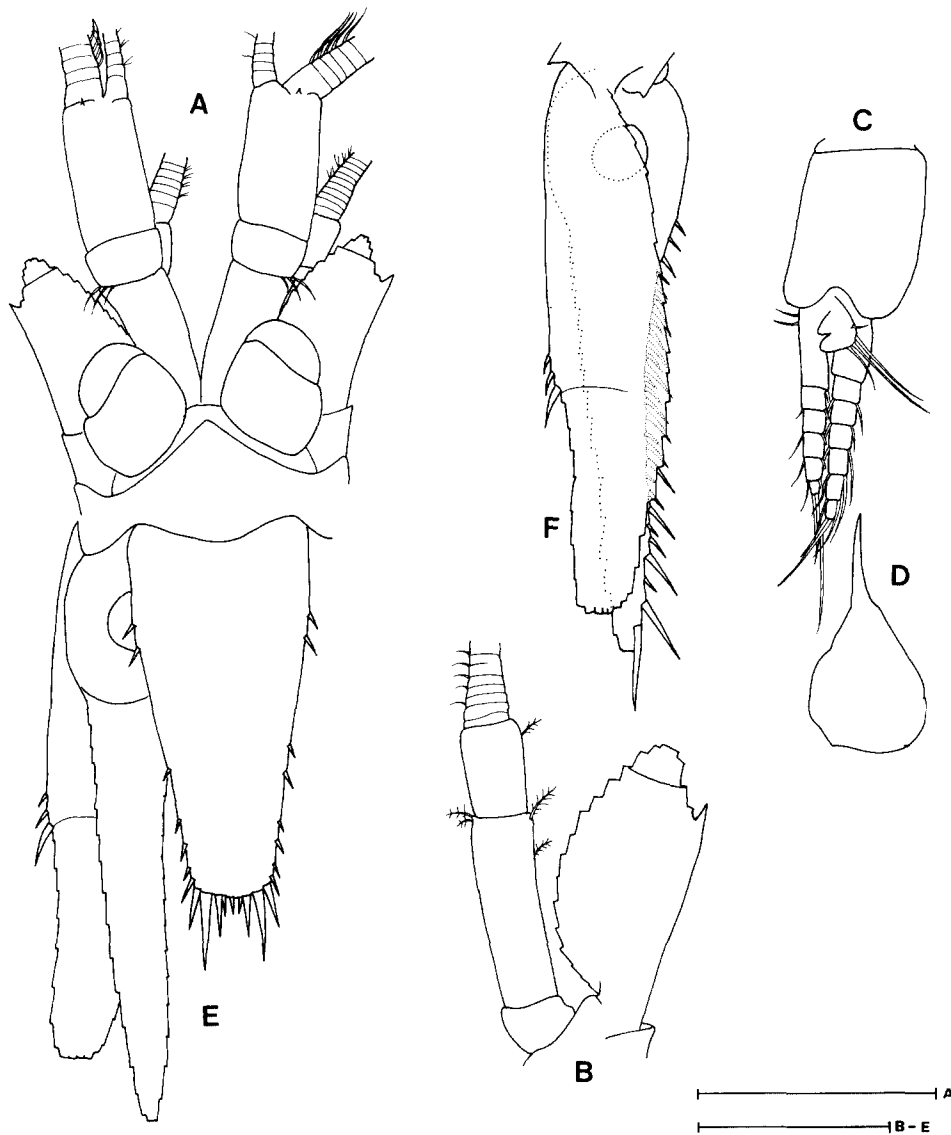


Fig. 10. *Hemisiriella pulchra* Hansen, adult male (4.2 mm). A, Anterior end. B, Antenna. C, Fourth pleopod. D, Labrum. E, Telson and uropod. F, Ventral part of uropod. Scale bars=0.25 mm (A) and 0.5 mm (B-F).

distal end, while it is armed with spines on the distal half part. (2) In *P. orientalis* there are 2 large spines on the distal half margin of endopod, but 2 long spines at the distal end in *P. atlantica*. (3) In *P. orientalis* the antennal scale outreaches the distal end of antennular peduncle, while it reaches the middle of the third segment of the peduncle. *P. orientalis* is a pelagic species.

Distribution: South and East China Seas, East Indies, Great Barrier Reef. The occurrence of the species recorded in the present study is the northern most distribution of this species.

Subfamily Siriellinae Norman, 1892
Genus *Hemisiriella* Hansen, 1910

Hemisiriella pulchra Hansen, 1910
(Fig. 10)

Hemisiriella pulchra Hansen, 1910, p. 46, pl. 5, fig. 5a-g, pl. 6, fig. 1a-p; Tattersall, 1936, p. 147; Gordan, 1957, p. 352; li, 1964, p. 152, figs. 40-41; Mauchline and Murano, 1977, p. 58.

Material examined: 1 immature ♂ (4.0 mm), 9 Aug. 1988, south-east of Cheju Is. (32°30'N, 127°30'E), plankton net (0-50 m depth).

Remarks: The present specimen agrees well with Hansen (1910) except the eye, the armatures of telson, exopod of uropod, and the pseudobranchial rami of male pleopods. These differences are, however,

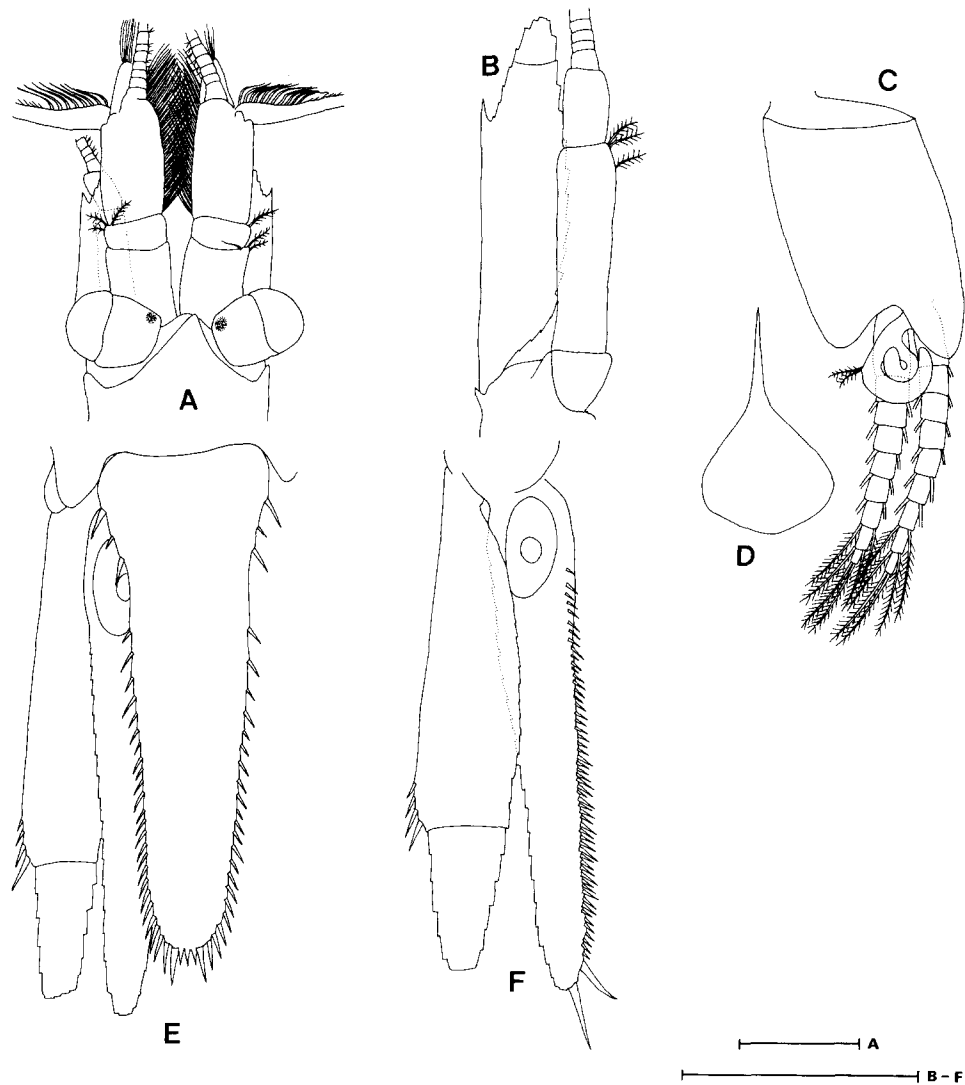


Fig. 11. *Siriella gracilis* Dana, adult male (6.3 mm). A, Anterior end. B, Antenna. C, Third pleopod. D, Labrum. E, Telson and uropod. F, Ventral part of uropod. Scale bars=0.5 mm.

attributable to the immaturity of the present specimen, which agrees well with li's young specimen (li, 1964).

H. pulchra is different from other related species by the armature and broad apex of telson. *H. pulchra* is related to *H. parva* Hansen, 1910. *H. pulchra*, however, differs from *H. parva* by having three pairs of spines on the telson apex. This species is an oceanic and pelagic form.

Distribution: East Indies, Australian Great Barrier Reef, South and East China Sea.

Genus *Siriella* Dana, 1850
Siriella gracilis Dana, 1852
 (Fig. 11)

Siriella gracilis Dana, 1852, U.S. Expl. Exped., 13, p. 685, pt. 1 (cited from Sars, 1885); Sars, 1885, p. 209, pl. 36, figs. 25-28; li, 1964, p. 72, fig. 16; Pillai, 1965, p. 1693, fig. 20; Mauchline and Murano, 1977, p. 76.

Material examined: A large number of males and females (up to 6.3 mm), south of Cheju Is. (32°10'N, 127°30'E), 2 Nov. 1990, plankton net; 1 ♂ (5.2 mm), 1 immature ♀ (3.6 mm), south-east of Cheju Is. (33°00'N, 126°30'E), 3 Nov. 1990, plankton net.

Remarks: *S. gracilis* clearly belongs to "the *thompsoni* group" in having spirally coiled pseudobranchial rami on the second to the fourth pleopods. *S. gracilis* is similar to *S. thompsoni* in the telson and the uropod.

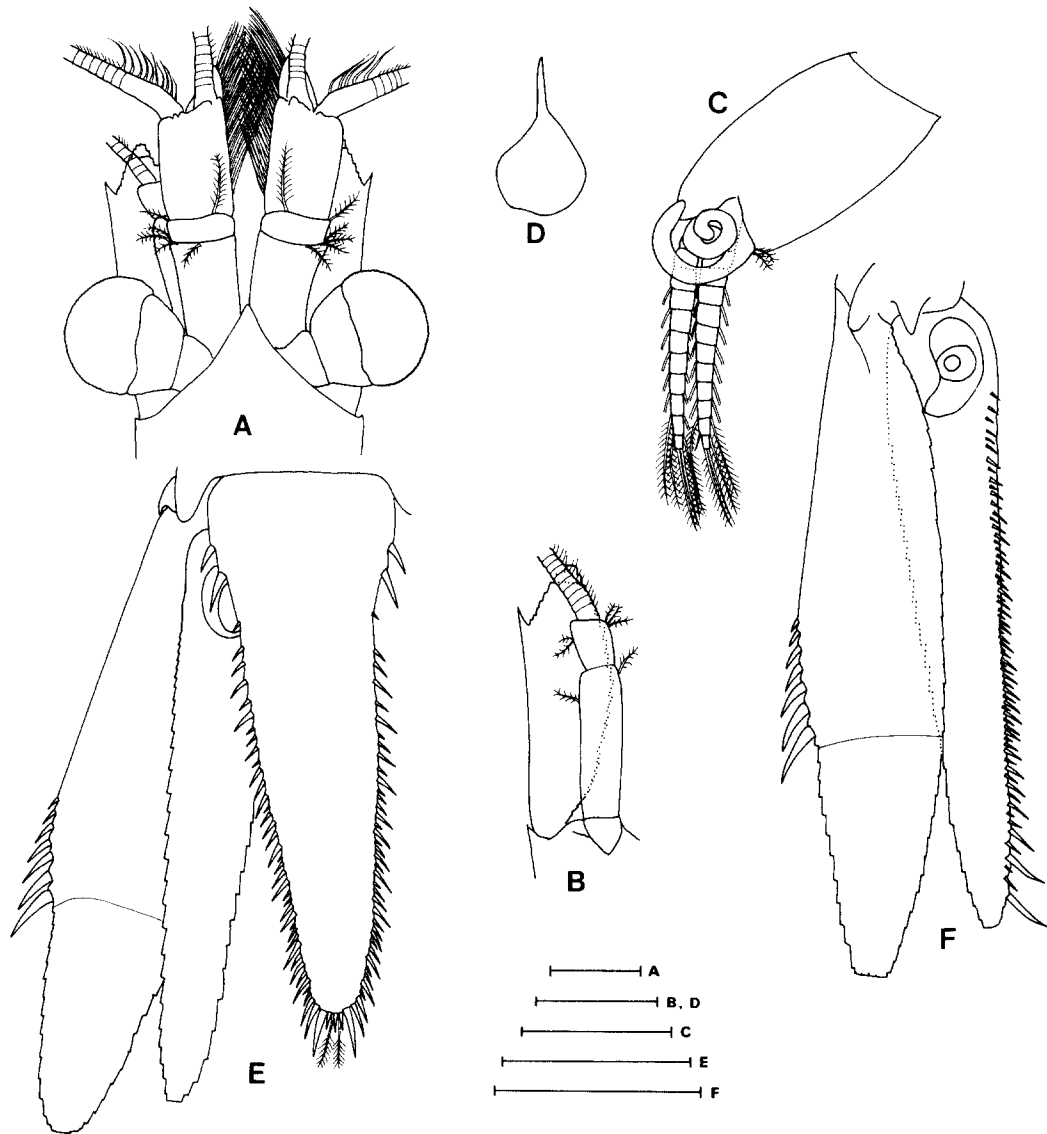


Fig. 12. *Siriella okadai* li, adult male (10.0 mm). A, Anterior end. B, Antenna. C, Fourth pleopod. D, Labrum. E, Telson and uropod. F, Ventral part of uropod. Scale bars=0.25 mm (C) and 0.5 mm (A, B, D, E, F).

However, the present species differs from *S. thompsoni* in the following points. (1) The cornea of eyes is small and as broad as the eyestalk, while it is well-developed and broader than the eyestalk in *S. thompsoni*. (2) Carapace has a shortly pointed apex of the anterior margin as opposed to a sharply elongated apex in *S. thompsoni*. (3) The antennal scale is ca. 1.1 times longer than the peduncle, while it is ca. 1.2 times longer in *S. thompsoni*. (4) The apex of the telson is rounded, while it is truncated in *S. thompsoni*.

Distribution: Pacific and Indian Ocean (Colombia, Galapagos, Peru, Hawaii, Red Sea, South China Sea, East of Japan, and India). The present occurrence is the first record from the Korean waters.

Ecological notes: A great number of *S. gracilis* were collected from the surface of the off-shore waters in the tropical and warm temperate areas.

Siriella okadai li, 1964
(Fig. 12)

Siriella okadai li, 1964, p. 99, fig. 24; Mauchline and Murano, 1977, p. 77.

Material examined. 2 ♂♂ (7.8, 10.0 mm), 6 ♀♀ (6.4-9.7 mm), east of Cheju Is. (33°30'N, 128°30'E), 13 March 1989, plankton net.

Remarks: The present species was newly recorded in

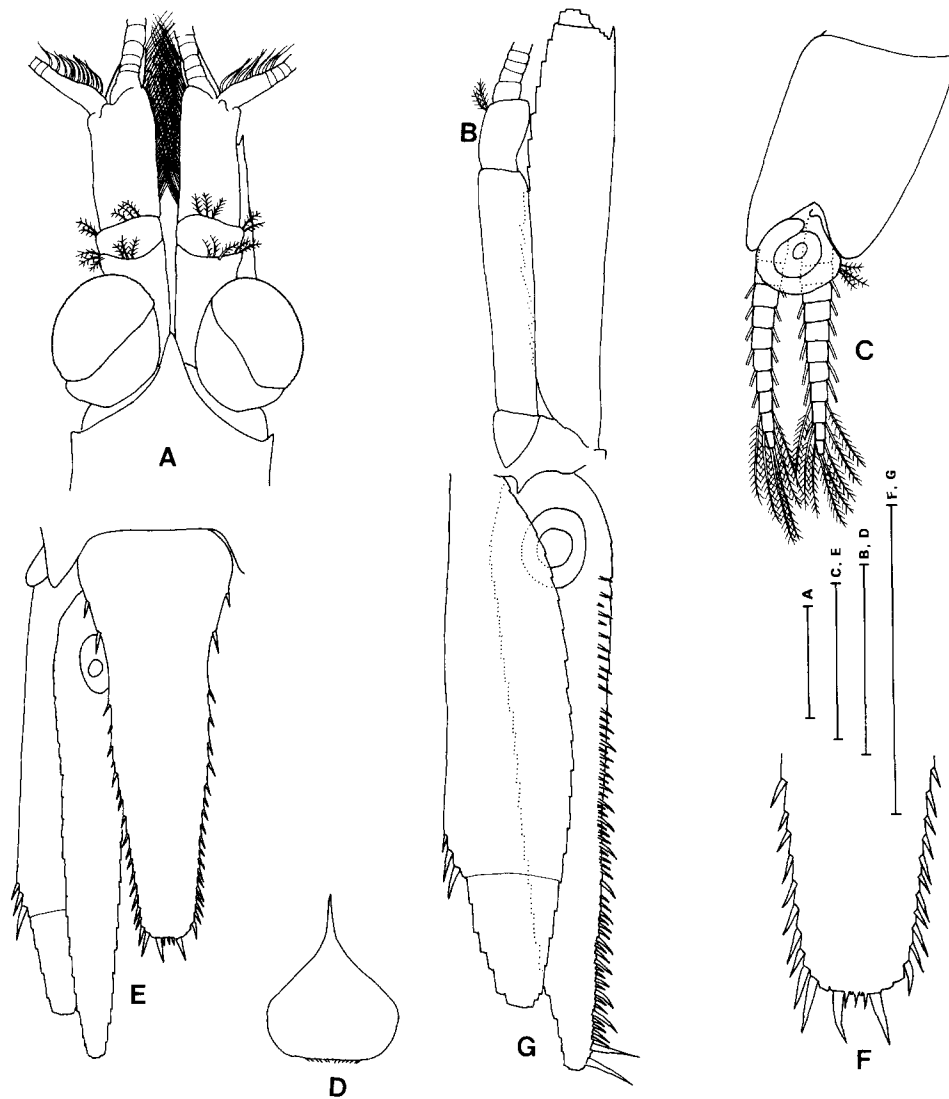


Fig. 13. *Siriella thompsoni* (M.-Edwards), adult male (8.0 mm). A, Anterior end. B, Antenna. C, Fourth pleopod. D, Labrum. E, Telson and uropod. F, Distal part of telson. G, Ventral part of uropod. Scale bars=0.5 mm.

the Korean waters, since *S. okadai* was described by li (1964) based on the specimens from Shizuoka, Japan. *S. okadai* is distinguishable from its related species, *S. japonica* li, 1964 by the armature of telson, which is a successive series of longer and shorter spines except two larger spines near the base along the lateral margin.

The present specimens agree well with the original description (li, 1964) except for having a small spine between two larger proximal spines and a successive series of longer and shorter spines. This difference might result from different developmental phase of the specimens. Its body length was 10.0 mm in the present study, and it was 7.5 mm in the original description of li (1964). The present species is a pelagic species

distributed from the shallow waters to the deep waters.

Distribution: Japan (Shizuoka), Korea (east of Cheju Is.). The present occurrence extends the geographical range beyond Japan (Shizuoka).

Siriella thompsoni (Milne-Edwards, 1837)
(Fig. 13)

Cynthia thompsonii Milne-Edwards, 1837, Hist. Nat., 2, p. 462 (cited from Sars, 1885).

Siriella thompsoni: Sars, 1885, p. 205, pl. 36, figs. 1-24; li, 1964, p. 62, figs. 14-15; Pillai, 1965, p. 1693, fig. 19; Mauchline and Murano, 1977, p. 77; Stuck, et al., 1979, p. 234, figs. 2f-4f.

Material examined: 1 ♂ (8.0 mm), 2 ♀♀ (7.0 mm), south of Cheju Is. (32°10'N, 128°00'E), 2 Nov. 1994, plankton net.

Remarks: *S. thompsoni* is similar to *S. gracilis* in the armature of the telson and uropod. However, *S. thompsoni* differs from *S. gracilis* by the truncate apex of telson, the sharply elongated rostral plate of carapace, and the well-developed eye. *S. thompsoni* is commonly collected from the surface in the off-shore waters.

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