

Mysidacea (Crustacea) from the Sandy Beaches of the Eastern Coast of Korea with Four New Records in the Korean Waters

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Abstract – The present study reports mysids on sandy beaches along the eastern coast of Korea. Samples were collected with a dip net or a sled net in sandy shores in April 1995 and November 2006. 9 species representing five genera were identified from the present study. Of these, the genus *Nipponomysis* including *N. lingvura*, *N. ornata*, and *N. imparis*, and *Acanthomysis nakazatoi* were newly recorded from the Korean waters. Morphological descriptions and taxonomic key to species were given. The present study reports that 45 species belonging to 15 genera from the Korean waters have been recorded.

Key words – Mysidacea, mysids, sandy beach, taxonomy

1. Introduction

Several taxonomic studies on mysids from Korean waters were conducted. Ii (1964) reported 15 species belonging to seven genera. Seven species of *Acanthomysis* (Oh 1981), four species of *Neomysis* (Yoo 1985; Yoo and Choe 1985), five species of *Gastrosaccinae* (Ma 1988), and 15 species of four genera were described from the western coast of Korea (Jo and Ma 1996). Jo *et al.* (1998) stated 13 pelagic species of mysids from the Korea Strait and adjacent waters. 41 species of 14 genera from the Korean waters have been reported.

Few taxonomic studies on mysids have been conducted in the eastern coast of Korea, while most taxonomic studies in the Korean waters have been conducted in the western and southern coasts. The present study aims to report the mysids inhabiting sandy beaches along the eastern coast of Korea.

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2. Materials and Methods

Samples were collected with a dip net or a sled net on sandy beaches in April 1995 and November 2006 (Fig. 1). Mysids obtained were immediately fixed in 5% buffered formalin. Total lengths were measured from the tip of rostrum to the tip of telson. Morphological features were made with the aid of a camera lucida.

Systematic Accounts

Phylum Arthropoda

Class Crustacea Brönnich, 1772

Order Mysidacea Haworth, 1825

Family Mysidae Dana, 1850

Subfamily Gastrosaccinae Norman, 1892

Genus *Archaeomysis* Czerniavsky, 1882

(New Korean genus name: Yet-gon-jaeng-i-sok)

Archaeomysis grebnitzkii Czerniavsky, 1882

(New Korean species name: Buk-bang-yet-gon-jaeng-i)

Archaeomysis grebnitzkii Czerniavsky, 1882, 73-77, pl. 30, Figs. 19-20; Tattersall, 1951, 81-86, pl. 7, Figs. 21-22; Holmquist, 1975, 51-71, Figs. 1-4; Jo and Ma, 1996, 805-827, Fig. 2.

Material examined

8 adult ♂♂ (10.4-12.5 mm), 27 ovigerous ♀♀ (11.5-14.5 mm), Hwajinpo, Gangwon-do, 28 April 1995, sled net; 1 adult ♂ (11.5 mm), 3 ovigerous ♀♀ (11.8-13.5 mm), Mangsang, Gangwon-do, 28 April 1995, dip net; 3 ovigerous ♀♀ (12.5-12.8 mm), Jangho, Gangwon-do, 28 April 1995, dip

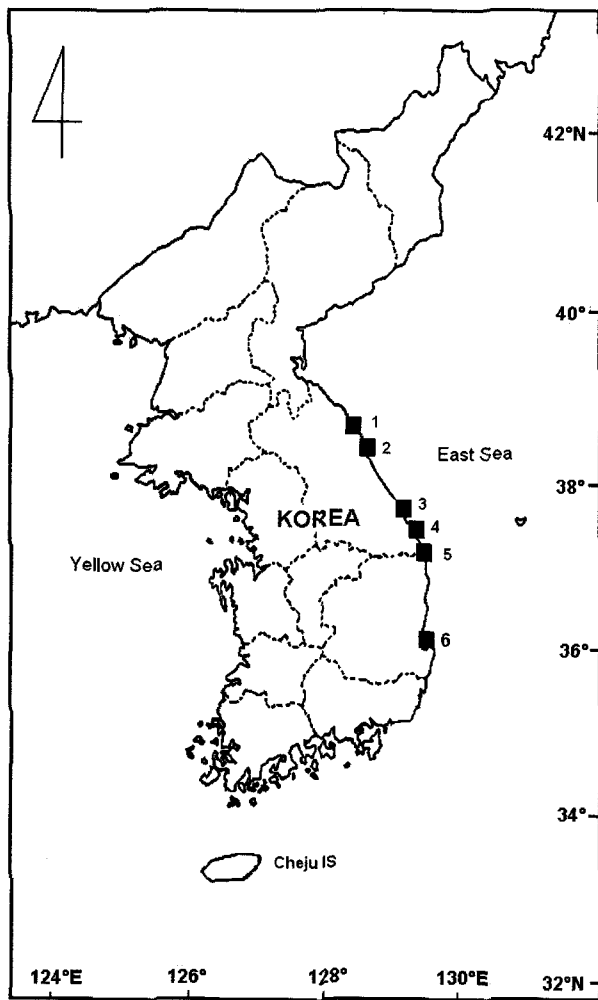


Fig. 1. A map showing collecting localities. 1, Sokcho; 2, Hwajinpo; 3, Mangsang; 4, Daejin; 5, Jangho; 6, Pohang.

net & sled net; 7 immature ♂♂ (6-7.5 mm), 12 immature ♀♀ (6-6.8 mm), 46 adult ♂♂ (10-13 mm), 25 adult ♀♀ (7-8.7 mm), 59 ovigerous ♀♀ (11.2-14.5 mm), Jangho, Gangwon-do, 4 November 2006, sled net.

Remarks

This species is very similar to *Archaeomysis japonica*, *A. kokuboi* and *A. vulgaris* but can be distinguished from them by

the characters of telson spine and the third pleopod in male (Table 1).

Distribution

Korea (the western and eastern coasts), the Bering Sea, the Pacific coasts of America.

Archaeomysis japonica Hanamura, Jo and Murano, 1996

(New Korean species name: Il-bon-yet-gon-jaeng-i)

Archaeomysis grebnitzkii Ii, 1964: 221-228, Figs. 55, 56; Jo and Ma, 1996, 805-827, Fig. 3.

Archaeomysis japonica Hanamura *et al.*, 1996, 553-566, Figs. 1-6.

Material examined

1 adult ♂ (13 mm), 5 ovigerous ♀♀ (12.7-13.5 mm), Hwajinpo, Gangwon-do, 28 April 1995, sled net; 1 adult ♀ (10 mm), Daejin, Gangwon-do, 4 November 2006, sled net.

Distribution

Korea (the western and eastern coasts), Japan.

Archaeomysis kokuboi Ii, 1964

(New Korean species name: Kokubo-yet-gon-jaeng-i)

Archaeomysis kokuboi Ii, 1964: 228-232, Figs. 57-58; Mauchline and Murano, 1977, 48.

Material examined

2 adult ♂♂ (9.4-11.9mm), Sokcho, Gangwon-do, 28 April 1995, sled net; 1 adult ♂ (10.5 mm), 2 ovigerous ♀♀ (10.8-12.5 mm), Mangsang, Gangwon-do, April 28, 1995, dip net & sled net; 1 adult ♀ (10 mm), 2 ovigerous ♀♀ (10-10.5 mm), Pohang, Gyeongsangbuk-do, 28 April 1995, sled net; 1 adult ♂ (8 mm), Mangsang, Gangwon-do, 4 November 2006, sled net; 14 adult ♂♂ (8.5-11.5 mm), 3 adult ♀♀ (8-8.5 mm), 17 ovigerous ♀♀ (11.2-12.5 mm), Jangho, Gangwon-do, 4 November 2006, sled net.

Table 1. Comparison of telson and male third pleopod between congeneric species of the genus *Archaeomysis*.

Species	Number of telson spines		Male third pleopod	
	Number of telson spines	Segmentation of endopod	Relative length of endopod to exopod	
<i>Archaeomysis grebnitzkii</i>	7	3 or 4	Endopod reaching exopodal pseudosegment 1	
<i>Archaeomysis japonica</i>	8	6 or 7	Endopod extending beyond exopodal pseudosegment 1	
<i>Archaeomysis kokuboi</i>	7, 8	Unsegmented	Endopod not reaching exopodal pseudosegment 1	
<i>Archaeomysis vulgaris</i>	8, 9 (rarely 10 or 11)	Unsegmented	Endopod outreaching slightly exopodal pseudosegment 1	

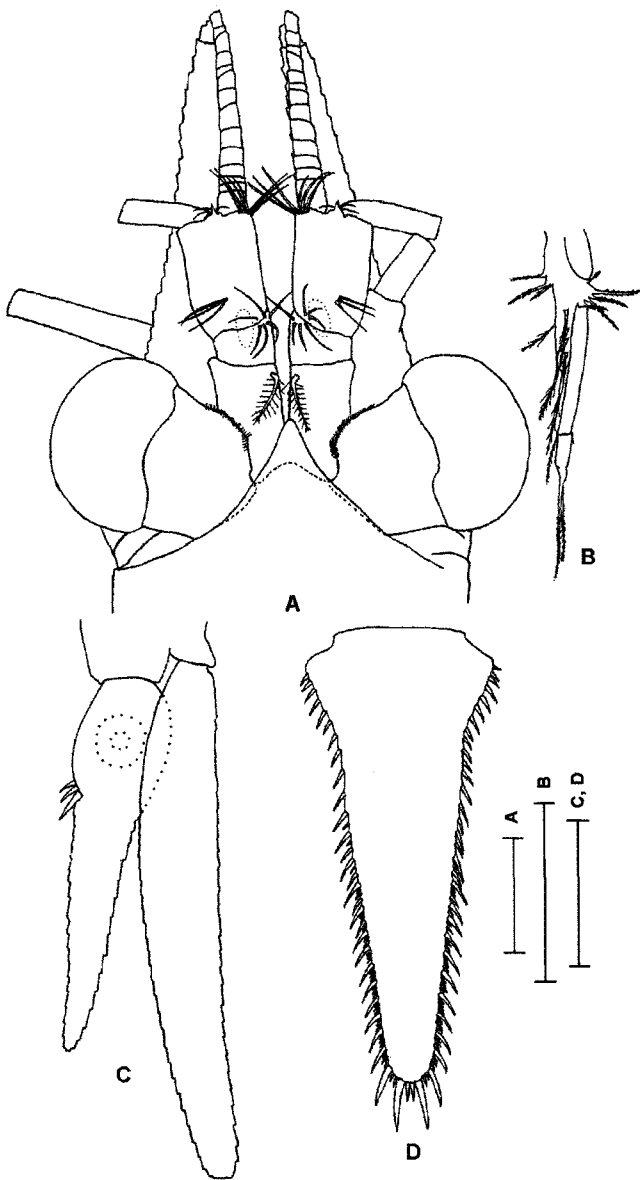


Fig. 2. *Acanthomysis nakazatoi*. Adult male (11.2 mm): A, anterior end; B, fourth pleopod; C, ventral part of uropod; D, telson. Scales, 0.5 mm.

Distribution

Korea (the western and eastern coasts), the Bering Sea, the Pacific coasts of America.

Genus *Acanthomysis* Czerniavsky, 1882

(New Korean genus name: Zan-gasi-gon-jaeng-i-sok)

Acanthomysis nakazatoi Ii, 1964 (Fig. 2)

(New Korean species name: Na-ka-za-to-zan-ga-si-gon-jaeng-i)

Acanthomysis nakazatoi Ii, 1964, 519-521, Fig. 135; Mauchline and Murano, 1977, 45, Table 1.

Material examined

1 adult ♀ (9.8 mm), Jangho, Gangwon-do, 28 April 1995, sled net; 2 immature ♂♂ (6.7 mm), 5 immature ♀♀ (6.4-7.5 mm), 1 adult ♂ (11.2 mm), 1 ovigerous ♀ (12 mm), Jangho, Gangwon-do, 4 November 2006, sled net.

Description

Carapace with anterior margin triangular and pointed. Cornea of eye wider than eye stalk. Antennular peduncle reaching about half of antennal scale. Antennal scale lanceolate, 2-segmented, with apex rounded. Male pleopod 4 biramous; exopod 2-segmented, extending backwards middle of the last abdominal somite, about 2 times longer than endopod. Telson long, gradually narrowing, about 2.4 times as long as broad at base; lateral margin armed with numerous spines, distal half margin with about 10 groups of spines consisting of long and short ones; apex with 2 pairs of spines consisting of small and large ones. Endopod of uropod armed with 3 spines near statocyst, about 0.75 as long as exopod.

Remarks

Korean specimens coincided with Ii (1964)'s original description for Japanese specimens except for minor differences: (1) in the present specimens, antennular peduncle reached about a half of antennal scale, while Ii (1964)'s specimens were longer than half of the scale; (2) in the armature of telson, Ii's specimens were armed with slightly more spines than the present specimens. *A. nakazatoi* is reported in Korea for the first time.

Distribution

Korea (the East Sea), Japan.

Genus *Neomysis* Czerniavsky, 1882

(New Korean genus name: Sae-gon-jaeng-i-sok)

Neomysis intermedia (Czerniavsky, 1882)

(New Korean species name: Nae-man-sae-gon-jaeng-i)
Heteromysis intermedia Czerniavsky, 1882, Czerniavsky, 1887, pl. 30, Figs. 25-27.

Neomysis mercedis Holmes, 1897, ser. 2 & 6: 199, pl. 19; Banner, 1948, 73, 75-77, pl. 2, Figs. 11 a-f.

Neomysis intermedia Zimmer, 1904, 469, Fig. 164; Nakazawa, 1910, 7: 247, Pt.4; Gordan, 1957, 368; Ii, 1964, 440-444, fig. 111.

Neomysis awatschensis Tattersall, 1921, 412-413, pl. 15, Figs. 1-4.

Paramysis intermedia Mauchline and Murano, 1977, 70.

Material examined

23 adult ♂♂ (11-14 mm), 88 ovigerous ♀♀ (11.2-14.5 mm), Hwajinpo, Gangwon-do, 28 April 1995, sled net.

Distribution

Korea (the East Sea), Japan, Sakhalin, Kurile Islands, Alaska, British Columbia, Asow Sea, Caspian Sea, Black Sea.

Genus *Nipponomysis* Takahashi and Murano, 1986
(New Korean genus name: Il-bon-gon-jaeng-i-sok)

Nipponomysis imparis Takahashi and Murano, 1986 (Fig. 3)

(New Korean species name: Jjak-teol-il-bon-gon-jaeng-i)

Nipponomysis imparis: Takahashi and Murano, 1986, 137-140, Figs. 16-17.

Material examined

1 ovigerous female (7.6 mm), Jangho, Gangwon-do, 28 April 1995, dip net; 1 adult male (7.4 mm), Jangho, Gangwon-do, 4 November 2006, sled net.

Description

Carapace with anterior margin triangular. Eye with cornea slightly wider than stalk, occupying less than half of eye. Antennal scale lanceolate, about 1.5 times longer than antennular peduncle, with obscure suture near apex, setose all round. Male pleopod 4 biramous; exopod, extending to middle of telson, 3-segmented, first segment almost 2 times as long as endopod, third segment about 0.75 times as long as second segment, terminating in 2 barbed setae of different length. Telson slightly elongate and triangular, 2 times longer than broad at base; lateral margin armed with 6 or 7 spines sparsely set at proximal 1/3 and with 8 or 9 groups of large and small spines at distal half; apex with 2 pairs of spines consisting of small and large ones. Endopod of uropod armed with about 20 spines increasing in length distally near statocyst, about 0.75 times as long as exopod.

Remarks

Korean specimens coincided well with Takahashi and Murano (1986)'s original description for Japanese specimens except for minor differences: (1) in Korean specimens, the first segment of exopod of male pleopod 4 was about 2 times as long as endopod, while in Japanese specimens it is about 2.6 times longer than endopod; (2) in the present specimens, the lateral margin of telson was armed with 8 or 9 groups of large and small spines at distal half, while in the Japanese specimen, it is armed with 9-13. *N. imparis* is reported in Korea for the first time.

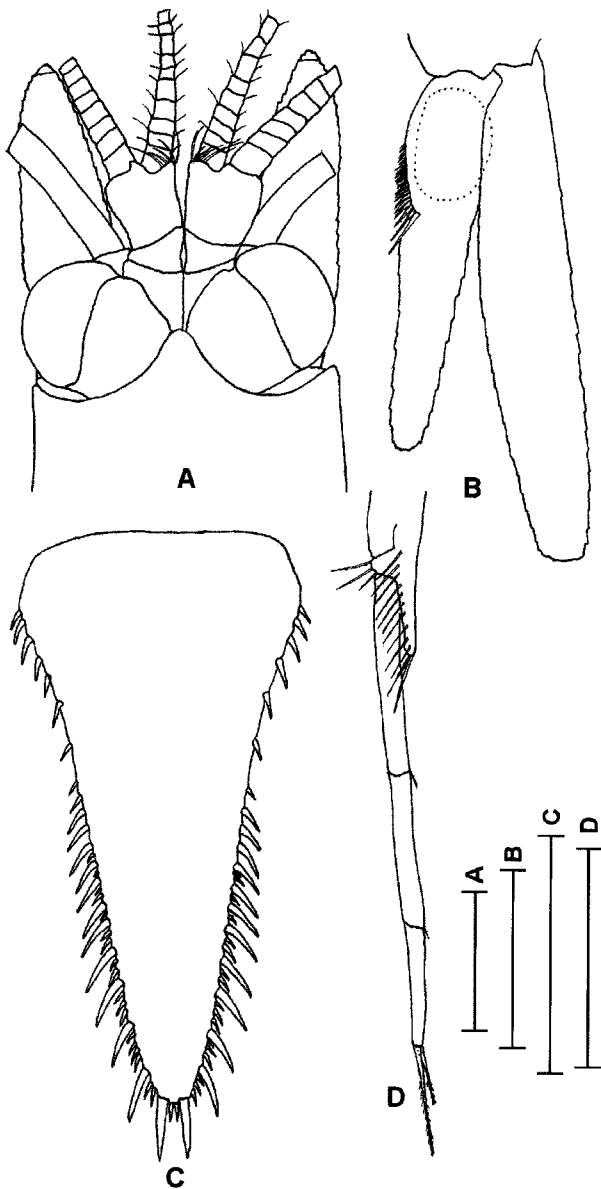


Fig. 3. *Nipponomysis imparis*. Adult female (7.6 mm) except D: A, anterior end; B, ventral part of uropod; C, telson; D, male fourth pleopod. Scales, 0.5 mm.

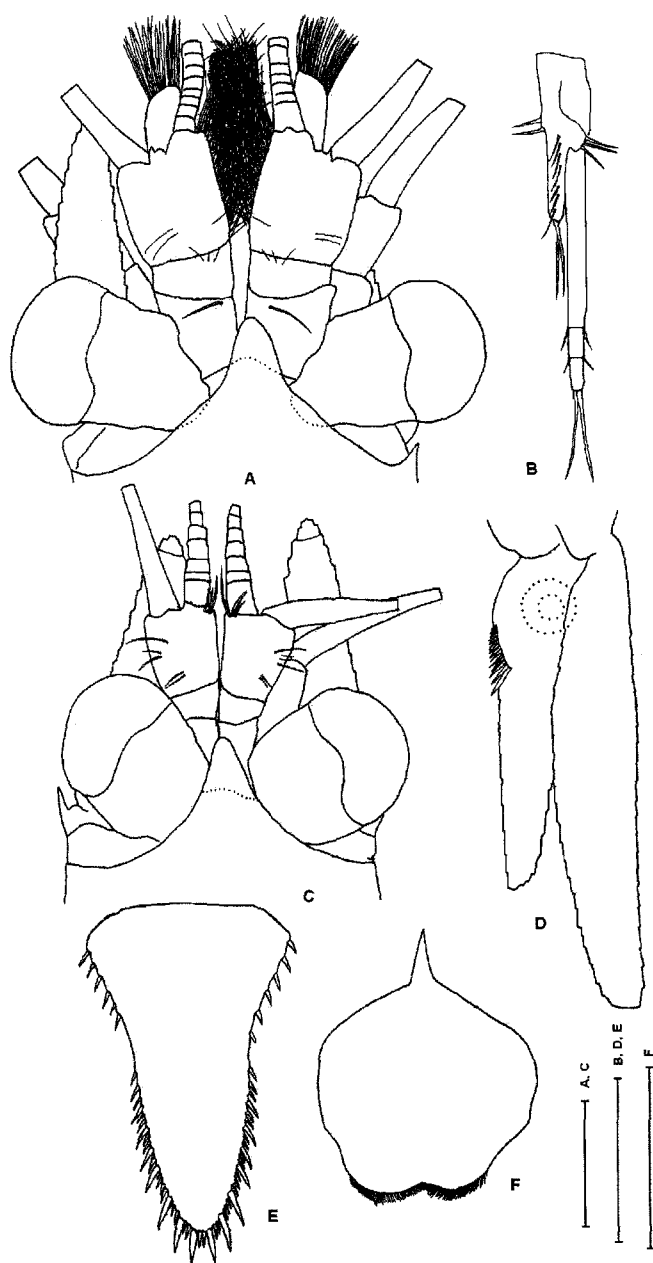


Fig. 4. *Nipponomysis lingvura*. Adult male (7.7 mm) except C: A, anterior end; B, fourth pleopod; D, ventral part of uropod; E, telson; F, labrum. Adult female (6.9 mm): C, anterior end. Scales, 0.5 mm.

Distribution

Korea (the East Sea), Japan.

Nipponomysis lingvura (Murano, 1977) (Fig. 4)

(New Korean species name: Hyeo-mo-yang-il-bon-gon-jaeng-i)

Proneomysis lingvura Murano, 1977, 233-236, Figs. 6-7; Mauchline and Murano, 1997, 72.

Nipponomysis lingvura Takahashi and Murano, 1986, 117, 136, Figs. 6A, 11C, 13D, 14I.

Material examined

1 adult ♂ (7.3 mm), Jangho, Gangwon-do, 28 April 1995, dip net; 2 immature ♂♂ (5.2-5.5 mm), 1 immature ♀ (5.2 mm), 3 adult ♀♀ (6.5-7.7 mm), 12 ovigerous ♀♀ (6.1-6.9 mm), Jangho, Gangwon-do, 4 November 2006, sled net.

Description

Carapace with rostral plate triangular. In male eye with cornea slightly wider than stalk, but in female as wide as stalk. Antennal scale lanceolate, with obscure suture near apex, setose all round, almost as long as antennular peduncle including sexual appendage in male; scale in female longer than antennular peduncle by one-third of the scale length. Labrum with robust median process. Male pleopod 4 biramous; exopod extending to middle of the last abdominal segment, 3-segmented, first segment almost 2.1 times as long as endopod; third segment as long as second one, terminating in 2 equal setae in length. Telson linguiform, about 1.6 times longer than broad at base; lateral proximal margin armed with 6 spines near base and distal half margin with many spines arranged in 6 or 7 groups of large and small spines; naked lateral margin inserted between two spine groups; apex with 2 pairs of spines consisting of small and large ones. Endopod of uropod armed with about 14 spines increasing in length distally near statocyst, about 0.7 times as long as exopod.

Remarks

Korean specimens coincided well with Murano (1977)'s original description and Takahashi & Murano (1986). This species is easily distinguished from other species in the genus by the following points: (1) telson with an unarmed portion between two spine groups on the lateral margin; (2) exopod of male pleopod 4 extending to the middle of the last abdominal segment, with the first segment almost 2 times as long as endopod, and with the third segment terminating in 2 equal setae in length. *N. lingvura* is reported in Korea for the first time.

Distribution

Korea (the East Sea), Japan.

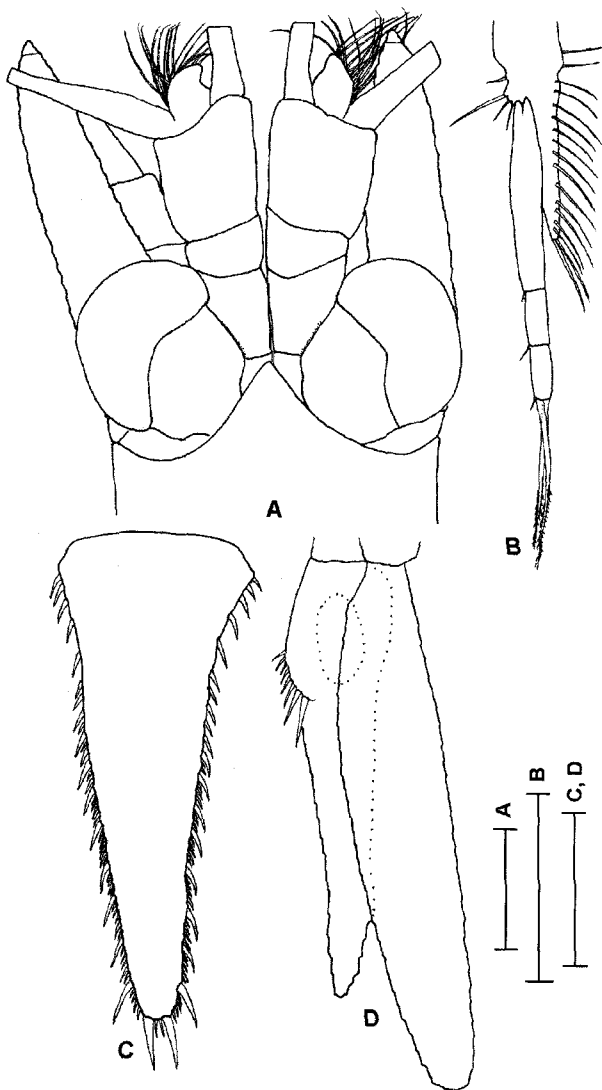


Fig. 5. *Nipponomysis ornata*. Adult male (11.5 mm): A, anterior end; B, fourth pleopod; C, telson; D, ventral part of uropod. Scales, 0.5 mm.

***Nipponomysis ornata* (Ii, 1964) (Fig. 5)**

(New Korean species name: Du-ga-si-il-bon-gon-jaeng-i)

Proneomysis ornata Ii, 1964: 538-540, Fig. 142; Mauchline and Murano, 1977, 72.

Nipponomysis ornata Takahashi and Murano, 1986, 115-144, Figs. 5, 11, 13, 14.

Material examined

1 adult ♂ (11.5 mm), Jangho, Gangwon-do, 28 April 1995, dip net.

Description

Carapace with rostral plate triangular, curving

downward. Eye with cornea wider than stalk. Antennal scale lanceolate, with obscure suture near apex, setose all round, slightly longer than antennular peduncle including sexual appendage in male. Male pleopod 4 biramous; exopod extending beyond posterior margin of the fifth abdominal segment, 3-segmented, first segment almost 1.2 times as long as endopod; third segment as long as second one, terminating in 2 unequal setae in length. Telson long, about 2.5 times longer than broad at base; lateral margin armed with many spines throughout the margin; distal two-thirds of the lateral margin densely armed with about 9 groups of spines consisting of 1 to 5 smaller spines between larger ones; the distalmost pair of spines abruptly long and stout, almost as large as apical stout spines; distal one-third of the margin with 7-10 strong spines widely spaced; apex with 2 pairs of spines consisting of small and large ones. Endopod of uropod armed with about 8 spines increasing in length distally near statocyst, about 0.8 times as long as exopod.

Remarks

Korean specimens coincided well with Ii (1964)'s original description and Takahashi and Murano (1986). This species is easily distinguished from *N. toriumi* by the following point: the lateral margin of telson armed with the distalmost pair of spines that are abruptly long and stout to be almost as large as apical stout spines. *N. ornata* is reported in Korea for the first time.

Distribution

Korea (the East Sea), Japan.

Subfamily Siriellinae Norman, 1892

Genus *Siriella* Dana, 1850

(New Korean genus name: Pyo-yeong-gon-jaeng-i-sok)

***Siriella okadai* Ii, 1964**

(New Korean species name: Okada-pyo-yeong-gon-jaeng-i)

Siriella okadai Ii, 1964, 99-102, Fig. 24; Mauchline and Murano, 1977, 77; Jo *et al.*, 1998, 33-47, Fig. 12.

Material examined

1 immature ♂ (4.5 mm), 6 immature ♀♀ (4.2-5.3 mm), 3 adult ♂♂ (6.5-8.1 mm), 4 adult ♀♀ (6.5-7.8 mm), Jangho, Gangwon-do, 4 November 2006, sled net.

Distribution

Korea (the East Sea, Cheju Island), Japan (Shizuoka). The present occurrence extends the northern limit of distribution to the East Sea of Korea.

Key to the Mysidacea from the sandy beaches of the eastern coast in Korea

1. Antennal scale with outer margin smooth.....2
-Antennal scale with outer margin setose.....5
2. Telson without cleft..... *Siriella okadai*
-Telson with cleft.....3
3. Male pleopod 4 with endopod unsegmented
.....*Archaeomysis kokuboi*
-Male pleopod 4 with endopod segmented.....4
4. Male pleopod 4 with endopod reaching pseudosegment 1 of exopod..... *Archaeomysis grebnitzkii*
-Male pleopod 4 with endopod extending beyond pseudosegment 1 of exopod
..... *Archaeomysis japonica*
5. Antennular scale with distal end sharply pointed
.....*Neomysis intermedia*
-Antennular scale with distal end rounded.....6
6. Male pleopod 4 with exopod 2-segmented
.....*Acanthomysis nakazatoi*
-Male pleopod 4 with exopod 3-segmented.....7
7. Male pleopod 4 with exopodal segment 1 shorter than the combined length of segments 2 and 3
.....*Nipponomysis imparis*
-Male pleopod 4 with exopodal segment 1 longer than the combined length of segments 2 and 3.....8
8. Telson with lateral margin armed with the distalmost pair of spines abruptly long and stout
..... *Nipponomysis ornata*
-Telson with lateral margin armed with the distalmost pair of spines almost the same as the other long spines in size
..... *Nipponomysis lingvura*

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