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Three Species of the Genus *Melita* from Korea (Crustacea, Amphipoda, Melitidae)

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한국산 *Melita*속 옆새우류(갑각상강, 단각목) 3종

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적 요

동정에 혼란이 있었던 *Melita koreana* Stephensen와 *Melita rylovae* Bulycheva를 각각 다른 종으로 기재하고 한국 미기록종인 *Melita setiflagella* Yamato를 기재한다.

Key words: Amphipoda, *Melita*, Korea.

INTRODUCTION

A large genus *Melita* comprises about 61 species (Barnard and Barnard, 1983). These species of *Melita* live in marine, estuarine, anchialine, and freshwater habitats. *Melita koreana* Stephensen and *M. rylovae* Bulycheva have been reported from Korea(Kim and Kim, 1987; Choe and Kim, 1989). *M. koreana* was originally recorded from Makinoshima, Fuzan(Pusan) by Stephensen(1944). Nagata(1965) synonymized *M. rylovae* with *M. koreana* in the belief that *M. rylovae* was a fully mature form of *M. koreana*. Based on the examination of Japanese specimens, Yamato(1987) treated *M. koreana* and *M. rylovae* as separate

species. Therefore, the confusion has remained in the identification of these two species. In this paper we reexamine the taxonomic status of these two species, and describe one unrecorded species, *M. setiflagella*.

Materials are deposited in the Department of Molecular Biology, Seoul National University.

SYSTEMATIC ACCOUNT

Genus *Melita* Leach, 1814

Key to Korean Species of *Melita*

1. Outer ramus of uropod 3 biarticulate *M. rylovae*
Outer ramus of uropod 3 uniaarticulate 2
2. Article 6 of male gnathopod 2 ovoid in shape, slightly expanded ventrally; coxa 6 of female with a row of denticles *M. setiflagella*
Article 6 of male gnathopod 2 quadrate in shape; coxa 6 of female without a row of denticles ... *M. koreana*

1. *Melita koreana* Stephensen, 1944

(Fig. 1)

Melita koreana Stephensen, 1944 (pp. 39 - 44, figs. 6 - 8); Nagata, 1965 (pp. 292, 293) (in part); Kim and Kim, 1986 (p. 324); Kim and Kim, 1987 (pp. 12, 13, fig. 11) (in part); Yamato, 1987 (pp. 285 - 288, figs. 7 - 10).

Material examined: 16 ♂♂, 10 ♀♀, Songhori, May 2, 1990; 1, Mosŭlp'o, Jan. 17, 1985; 1♂, Shinch'on, Apr. 30, 1985; 10 ♀♀, Yoolp'o, May 8, 1985.

Description of male: Peduncular article 1 of antenna 1 with 3 or 4 spines along ventral margin; article 2 with a series of spines and setae along ventral margin and with a series of setae along dorsal margin; primary flagellum composed of about 26 segments; accessory flagellum composed of about 4 segments. Peduncular articles 4 and 5 of antenna 2 with groups of setae along ventral, dorsal, and inner surfaces; flagellum composed of about 9 segments.

Article 6 of gnathopod 1 slightly expanded and with 1 triangular lobe on dorsal margin distally; jointing part of this lobe and palmar margin excavate quadrately. Article 6 of gnathopod 2 subquadrate in shape and palmar margin with moderate spines.

Pereonites with smooth dorsal margins; urosomite 2 with 4 spines on dorsal margin distally. Outer ramus of uropod 3 uniaarticulate. Telson with 2 lobes bearing 2 groups of spines on inner and outer subapical margins.

Description of female: Dorsodistal lobe of coxa 6 curved ventrally, terminal part of this lobe slightly narrow and this lobe with 1 quadrate projection on terminal part.

Remarks: Our specimens agree well with the original description and figures of Stephensen (1944) in the following characters: the triangular dorsodistal lobe of article 6 of male gnathopod 1 and short lobe, narrow terminal part of this lobe in coxa 6 of female. The taxonomic treatment of Nagata (1965) regarding *M. rylovae* as a synonym of *M. koreana* was caused by the ignorance of characters, such as the shape of article 6 of male gnathopod 1, and of coxa 6 of the female and incorrect recognition that the following two characters were highly variable: the teeth on dorsal part of urosomite 2 and on posterior corner of epimeral plate 3. If narrow width of variation is given to these two species, the absence of tooth in dorsal part of urosomite 2 and in posterior corner of epimeral plate 3 may be available for characteristics of *M. koreana*.

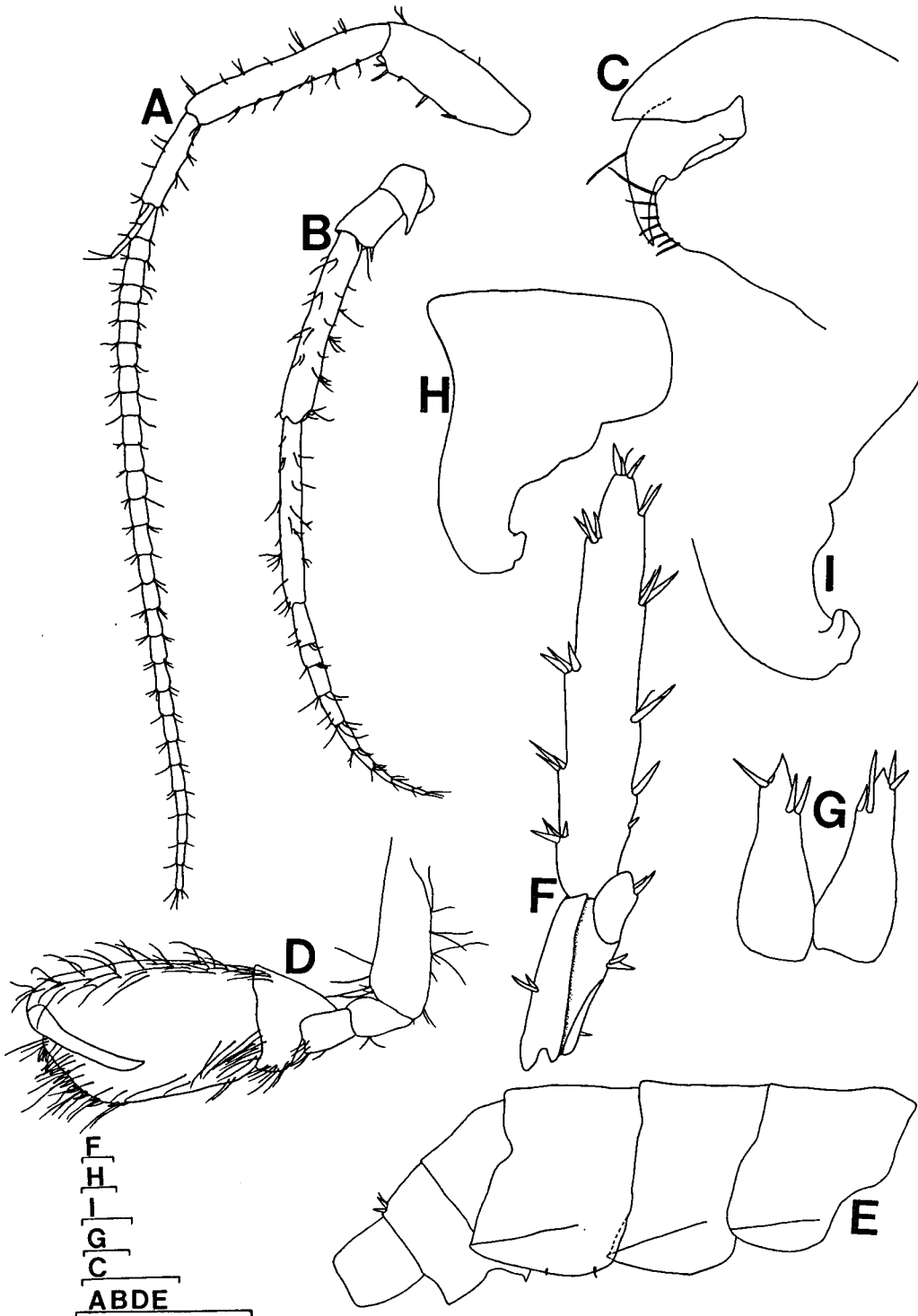


Fig. 1. *Melita koreana* Stephensen. Male (body length: 8.5mm). A, inner view of right antenna 1; B, inner view of right antenna 2; C, distal part of left gnathopod 1; D, inner view of right gnathopod 2; E, right pleonites and urosomites; F, right uropod 3; G, dorsal view of telson. Female (body length: 7mm). H, left coxa 6; I, distal part of left coxa 6. Scale bars: A, B, D, E = 1mm; C, F, I = 0.1mm.

Habitat: From muddy sand bottom.

Previous Records: Söngsanp'o, Udo Is., Sinch'ang, Mosülpo (Kim and Kim, 1987); Upper Ch'uja-do Is. (Kim and Kim, 1986), Fuzan (Pusan)(Stephensen, 1944).

Type Locality: Makinoshima, Fuzan(Pusan), Korea.

Distribution: Korea, Japan.

2. *Melita rylovae* Bulycheva, 1955

(Fig. 2)

Melita rylovae Bulycheva, 1955(pp. 201, 202, 204, fig. 5); Yamato, 1987(pp. 278 - 284, figs. 1-6); Choe and Kim, 1989(p.268).

Melita koreana: Nagata, 1965(pp. 292, 293) (in part); Kim and Kim, 1987(pp. 12, 13, fig. 11) [Not *Melita koreana* Stephensen, 1944] (in part).

Abludomelita rylovae: Karaman, 1981(p. 40).

Material examined: 7 ♂♂, Mangch'i, Göje Is, May 5, 1989; 10 ♂♂, 9 ♀♀, Ch'inri, Taehüksan Is., Aug. 24, 1987.

Description of male: Peduncular article 1 of antenna 1 with 4 spines along ventral margin; article 2 with a series of spines and setae along ventral margin; primary flagellum composed of about 40 segments; accessory flagellum composed of 4 segments. Peduncular article 4 of antenna 2 with groups of spines along dorsal margin, groups of setae on inner surface, and groups of spines and setae along ventral margin; flagellum composed of 14 segments.

Article 6 of gnathopod 1 with quadrate lobe on dorsal margin anteriorly, and this lobe with 2 tubercles and excavate inner surface; palmar margin with 4 stout spines on inner surface. Article 6 of gnathopod 2 subquadrate in shape; palmar margin with rather small spines.

Each of pleonites 1-3 with 2 teeth on subdorsal margin distally; urosomite 2 with 6 spines on dorsal margin distally.

Outer ramus of uropod 3 rather broad, biarticulate and article 2 very small. Telson with 2 lobes bearing spines on subapical, inner and outer lateral margins.

Description of female: Dorsodistal lobe of coxa 6 curved and stretched ventrally; terminal part of this lobe round.

Remarks: Nagata(1965) synonymized *Melita rylovae* with *M. koreana* based on the supposition that *M. rylovae* was a fully mature form of *M. koreana*. But, in the present materials the biarticulation of outer ramus of uropod 3(Fig. 2F) does not change through developmental stages. The present specimens agree with the figure of biarticulation of outer ramus of uropod 3 originally depicted by Bulycheva(1955). In addition to this characteristics, *M. rylovae* is distinguished from *M. koreana* by the stretched coxa 6 of the female, the more strong spinosity of telson, and the shape of article 6 of male gnathopod 1.

Habitat: Muddy sand bottom.

Previous Record: Oh Is, and Anma Is. (Choe and Kim, 1989).

Type locality: Pacific coast of Russian Republic.

Distribution: Korea, Pacific coast of Russian Republic, Japan.

3. *Melita setiflagella* Yamato, 1988

(Fig. 3)

Melita setiflagella Yamato, 1988(pp. 80 - 86, figs. 2-6).

Material examined: 29 ♂♂, 29 ♀♀, Noksan, Naktong Estuary, Jan. 17, 1987 (C. Y. Chang) ; 30 ♂♂,

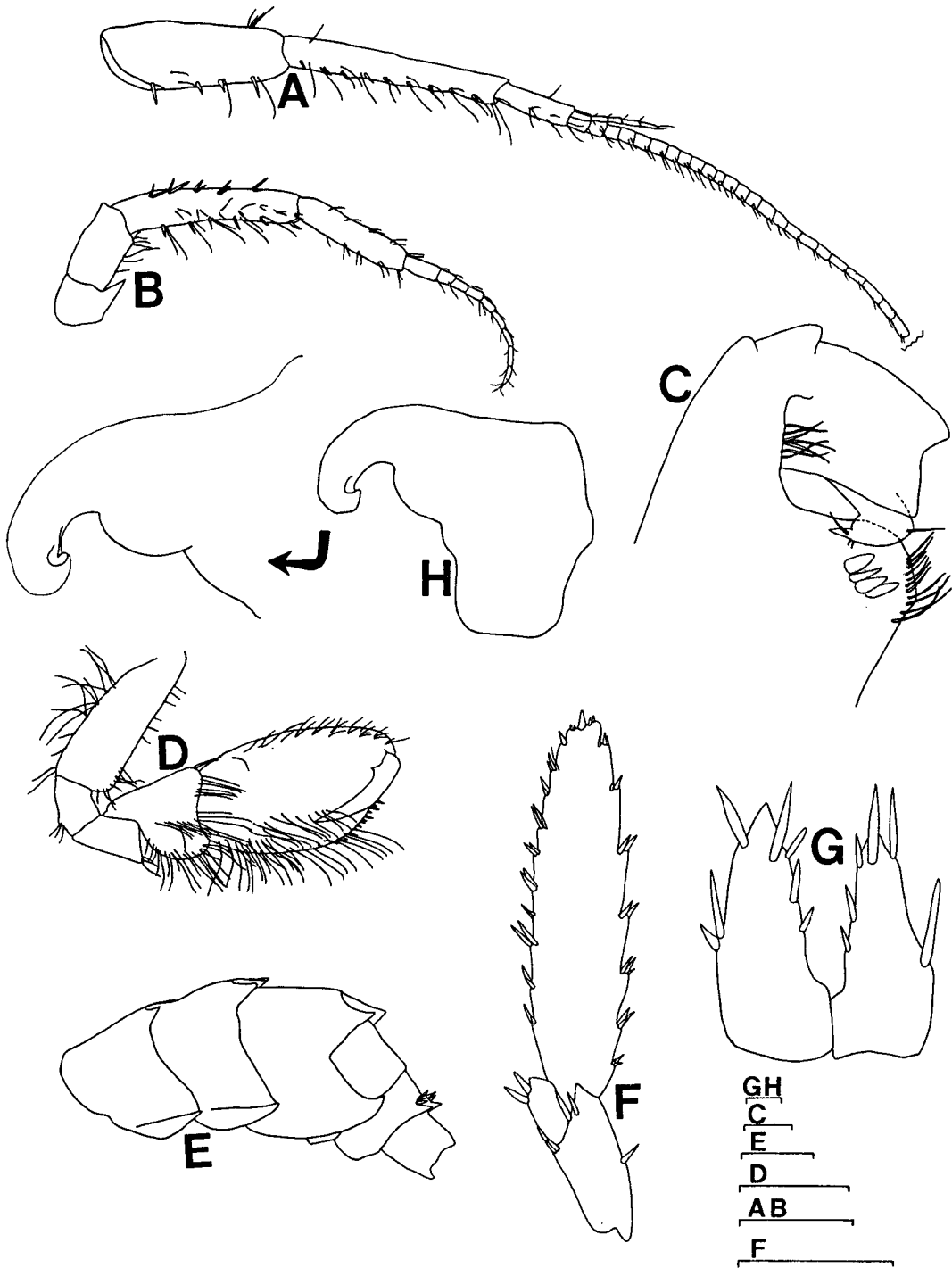


Fig. 2. *Melita rylovae* Bulycheva. Male(body length: 13mm). A, inner view of left antenna 1; B, inner view of left antenna 2; C, distal part of right gnathopod 1; D, inner view of left gnathopod 2; E, left pleonites and urosomites; F, left uropod 3; G, dorsal view of telson. Female(body length: 7mm). H, left coxa 6. Scale bars: C,G,H=0.1mm; A,B,D-F=1mm.

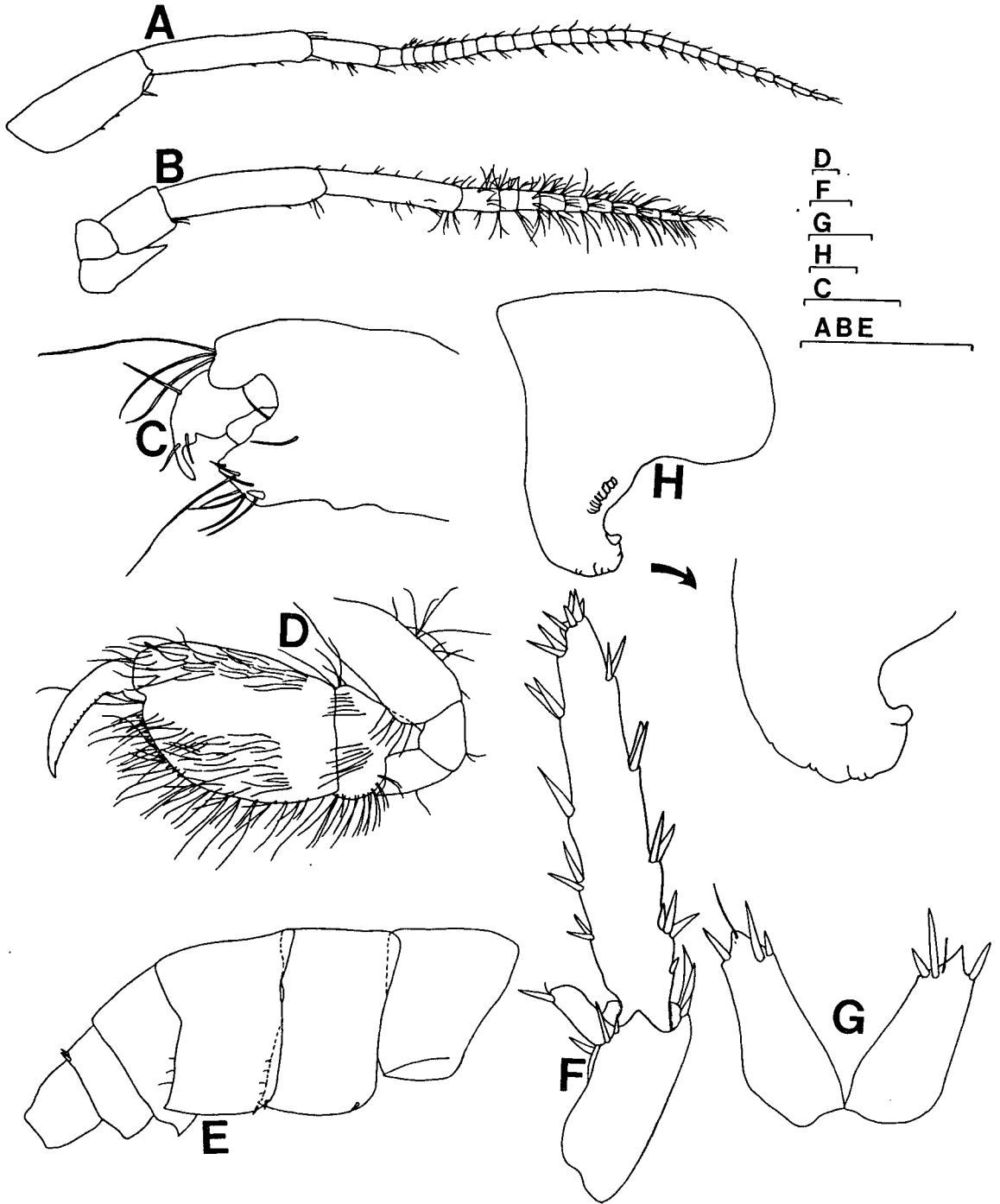


Fig. 3. *Melita setiflagella* Yamato. Male (body length: 8.2mm). A, outer view of right antenna 1; B, outer view of right antenna 2; C, distal part of left gnathopod 1; D, inner view of right gnathopod 2; E, right pleonites and urosomites; F, left uropod 3; G, dorsal view of telson. Female (body length: 6mm). H, left coxa 6. Scale bars: A, B, E = 1mm; C, D, F-H = 0.1mm.

10 ♀♀, Ch'inri, Tökjök Is, May 22, 1989; 5 ♂♂, 2 ♀♀, Söngsanp'o, Apr. 24, 1990 (H. S. Kim & G. S. Min).

Description of male: Peduncular article 1 of antenna 1 with 3 spines along ventral margin; primary flagellum composed of about 25 segments; accessory flagellum composed of 3 segments. Flagellum of antenna 2 densely setose, composed of about 10 segments.

Article 6 of gnathopod 1 with dorsal margin not produced distally; inner part of palmar margin with 1 protuberance at middle part; palmar margin with 1 small spine. Article 6 of gnathopod 2 ovoid in shape and slightly expanded ventrally.

Pereonites with smooth dorsal margins; urosomite 2 with 2 spines on dorsal margin distally. Outer ramus of uropod 3 slender, uniaarticulate. Telson with 2 lobes bearing 2 groups of spines on inner and outer subapical margins.

Description of female: Dorsodistal lobe of coxa 6 with hooked terminal part, and with a row of scalelike denticles on outer surface.

Remarks: This species differs from *Melita koreana* and *M. rylovae* by its densely setose antenna 2, ovoid article 6 of male gnathopod 2, and coxa 6 of the female bearing a row of scalelike denticles.

Habitat: Among barnacles, mussels or sandy mud bottom in brackish water zone.

Type Locality: The estuary of the mouth of Fujii - gawa River (34° 26' N, 133° 15' E).

Distribution: Korea, Japan.

ABSTRACT

A examination of the Korean specimens of *Melita koreana* Stephensen and *Melita rylovae* Bulycheva confirmed the validity of *M. rylovae*. These two species and *Melita setiflagella* Yamato, a newly recorded species from Korea, are described and illustrated.

REFERENCES

- Barnard, J. L. and C. M. Barnard, 1983. Freshwater Amphipoda of the world: I, Evolutionary patterns and II, Handbook and bibliography. pp. 1-830. Hayfield Associates, Mt. Vermon, Virginia.
- Bulycheva, A. I., 1955. Novye vidy bokoplavov (Amphipoda, Gammaridea) iz Japonskogo Morja. Akad. Nauk SSSR, Trudy Zool. Inst., **21**: 193-207 (In Russian).
- Choe, B. L. and Y. J. Kim, 1989. Marine invertebrate fauna of Anma Islands. Report on the Survey of Natural Environment in Korea. No. 9. The Anma Islands, pp. 239-375 (In Korean).
- Karaman, G., 1981. Redescription of *Melita planaterga* Kunkel, 1910 from Bermuda islands with revision of genera *Melita* Leach and *Abludomelita* n. gen. Poljoprivreda i Sumarstvo, **27**: 29-50.
- Kim, H. S. and C. B. Kim, 1987. Marine gammaridean Amphipoda (Crustacea) of Cheju Island and its adjacent waters, Korea. Korean J. Syst. Zool., **3**: 1-23.
- Kim, H. S. and I. H. Kim, 1986. Marine invertebrate fauna of Ch'ujado Islands. Report on the Survey of Natural Environment in Korea. No. 5. The Ch'ujado Islands, pp. 309-332 (In Korean).
- Nagata, K., 1965. Studies on marine gammaridean Amphipoda of the Seto Inland Sea. III. Publ. Seto Mar. Biol. Lab., **13**: 291-326.

- Stephensen, K., 1944. Some Japanese amphipods. Vidensk. Medd. Dansk Nat. Foren., **108**: 25-88.
- Yamato, S., 1987. Four intertidal species of the genus *Melita* (Crustacea: Amphipoda) from Japanese waters, including descriptions of two new species. Publ. Seto Mar. Biol. Lab., **32**: 275-302.
- Yamato, S., 1988. Two species of the genus *Melita* (Crustacea: Amphipoda) from brackish waters in Japan. Publ. Seto Mar. Biol. Lab., **33**: 79-95.

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