

INVERTEBRATE  
ZOOLOGY

***Munnogonium affinis* sp. n.: A New Species of Isopod  
(Asellota: Paramunnidae) from the Coast of Korea, Sea of Japan**

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**Abstract**—The new species *Munnogonium affinis* from the coast of Korea (the Sea of Japan) is described. This is the first record of the genus *Munnogonium* from the western Pacific. The new species differs considerably from the four eastern Pacific American species of this genus and is most similar to *M. maltinii* from the Mediterranean Sea.

**Keywords:** Paramunnidae, marine isopods, taxonomy, new species

In a small collection of meiobenthic isopods sampled by E.I. Shornikov off the coast of Korea (Sea of Japan), there were a few specimens of *Munnogonium* that we identified as a new species. This widely distributed genus, which comprises 10 species (see table), has not previously been recorded in the western Pacific. The type specimens are deposited in the Museum of the Institute of Marine Biology (Far East Division, Russian Academy of Sciences); the registration numbers are given in the text.

*Munnogonium* George et Strömberg, 1968

*M. affinis* sp. nov. Figs. 1–3

**Material.** Sea of Japan, Korea, Kyongbuk Province, Yongil Bay; Aug. 24, 1997; station 61; 36°06' N, 129°26' E; depth, 15.5 m; male 1.37 mm long, holotype no. 3515; female 1.27 mm long, allotype no. 3516; station 66; 36°04' N, 129°32' E; depth 25.5 m; 3 females (0.8, 0.95, 1.05 mm); Aug. 25, 1997; station 70; 35°59' N, 129°27' E; depth 20 m; *Phyllospadix* and algae; 2 females (1.2, 1.4 mm); 1 male (1.05 mm); paratype no. 3517.

**Description of holotype.** The body (Fig. 1a) is oval in form, flattened, length twice maximum width at pereonite 2. Cephalon with semicircular frontal margin, its length measures 0.7 times its width and 0.6 times the width of pereonite 3; eyestalks thin and long, extending laterally in central part of cephalon, directed slightly forward. Pereonite 1 slightly narrower than pereonite 2, but 1.6 times longer laterally. Pereonites 2–7 almost the same length, gradually tapering from pereonite 2 toward 7. Coxae rounded in all pereopods, easily visible in the dorsal view, each bearing a long whip-like sensory seta. Pleotelson rounded in form, nearly as long as wide, lateral margins bearing nine or ten large

teeth, posterior margin merged into rounded rectangular lobe. Pleotelson margins with long simple setae.

Antenna 1 (Fig. 1b) 0.4 times body length, with six articles. Articles 1 and 2 together are 0.6 times the total antenna length; article 1 length 3.3 times the width; article 2 slightly shorter and markedly narrower than article 1, with five thin distal setae; article 3 length 0.6 times the length and 0.6 times the width of article 2; three distal articles almost the same size, equal in width and half as long as article 3, bearing one simple distal seta; article 6 with long aesthetasc, two long and two short setae.

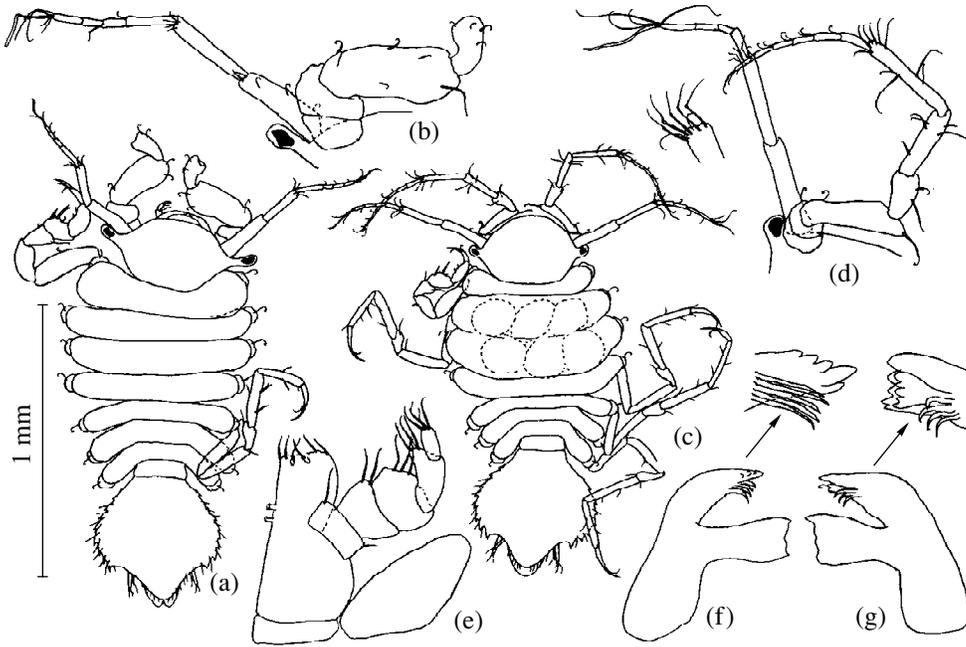
Antenna 2 (Fig. 1b) broken off, total length of the four preserved articles 1.5 times the length of articles 1 and 2 of antenna 1. First three articles thickened, nearly three times as wide as antenna 1 basal articles; article 3 1.6 times the length of articles 1 and 2 together, its length 2.5 times its width, distal half expanded medially; article 4 length 0.45 times article 3 length.

Mandibles (Figs. 1f, 1g): Incisor process with five cusps; cusps in left mandible arranged in an almost straight line; in right, second ventral cusp much longer than remaining cusps; row of spines on right mandible with five members and on left, with four members; lacinia mobilis of left mandible rosette-shaped, broadened distally, with five teeth almost reaching the cusps of the incisor process. Molar process of left mandible 1.3 times wider distally than that of right mandible.

Maxilla 1 (Fig. 2j): Inner lobe twice as narrow as outer lobe, with one short and three long pectinate distal setae; outer lobe bearing 12–13 spinelike setae.

Maxilla 2 (Fig. 2k): Outer lobe longest; medial and outer lobes with four distal setae; inner lobe equal in width to medial and outer lobes together, bearing ten distal setae.

Maxilliped (Fig. 1e): Basis with two coupling hooks; endite width 0.6 times the basis width; endite



**Fig. 1.** *Munnogonium affinis* sp. nov.: (a, b, e–g) male, holotype; (c, d) female, allotype: (a, c) general dorsal view; (b, d) left antennae, ventral view; (e) maxilliped; (f) right mandible; (g) left mandible. Scale is given for figures of external appearance of holotype and allotype.

distal margin bearing six setae. Palp inserting at midbasis; article 1 with one distomedial seta, equal in width to the endite; articles slightly broadening and lengthening from first toward third; article 3 with three setae on the truncate distomedial margin; article 4 1.2 times longer and 2 times narrower than article 3, with three setae on the small distomedial lobe; article 5 two times shorter than article 4, with four distal setae. Epipod slightly shorter than basis, 2 times longer than wide.

**Pereopod 1 (Fig. 3b):** The basis is the longest article, its length is 2.6 times its width; ischium 0.6 times the basis length, slightly narrower than the basis; the merus is 0.3 times the basis length, with one whiplike and one bifid distodorsal short seta and one distoventral seta; carpus slightly longer than the merus, with a trapezium form similar to that of the merus, and a few small, simple, and two stout spinelike unequally bifid setae on the distoventral margin; propodus equal in length and 0.7 times width of ischium, with thin ventral fringe of fine setae and larger simple setae; dactylus almost half as long and one third as wide as propodus; dorsal claw nearly as long as article.

Pereopods 2–7 are broken off, except for pereopod 5 (Fig. 2c), which is different from that of the female. Descriptions of pereopods 2–7 are given for the female allotype.

**Pleopod 1 (Figs. 2d, 2e)** large, its distal margins and lateral lobes projecting beyond pleotelson margins and visible in dorsal view *in situ*. Length 1.2 times the maximum width at lateral lobes and 2.2 times the proximal

width. Lobes inserting 0.6 times pleopod length from proximal margin, each bearing four simple distal setae.

**Pleopod 2 (Fig. 2f):** Protopod length 2.8 times width and 0.6 times length of pleopod 1, lateral margin with numerous setae; endopod inserting in central region of protopod, stylet length subequal to protopod length; exopod long, turned at an almost right angle.

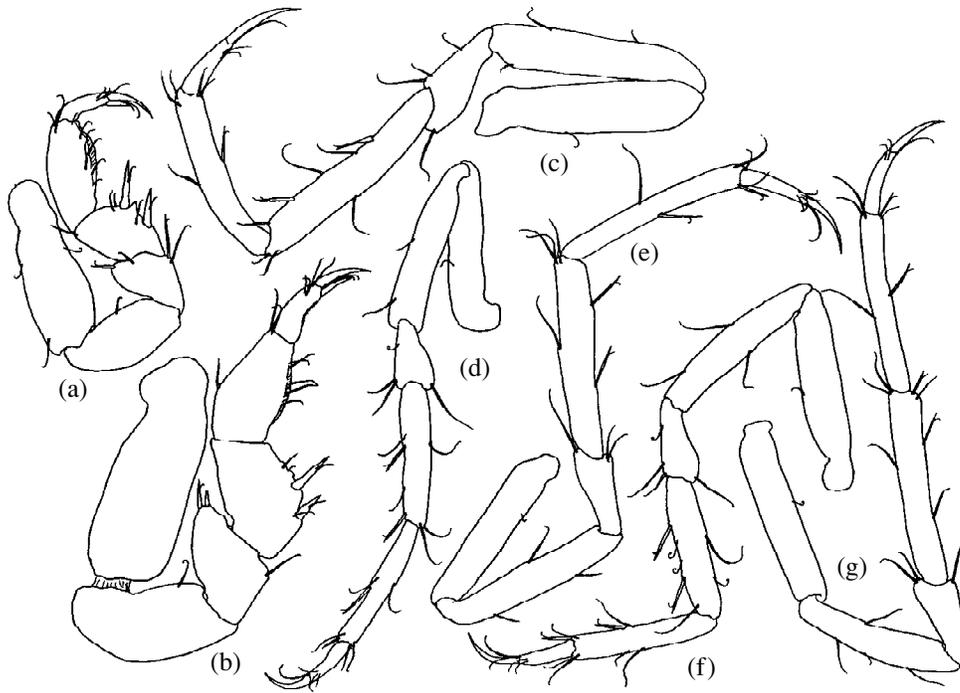
**Pleopod 3 (Fig. 2g):** Exopod with two articles; its width 0.8 times the endopod width, much longer than the endopod, bearing one distal seta.

**Pleopod 4 (Fig. 2h):** Exopod slightly shorter than endopod, pointed distally.

**Uropod (Fig. 2c):** Length 0.15 times the pleotelson length. Exopod 1.3 times longer and 1.6 times wider than endopod, bearing seven distal setae; endopod with two distal setae.

**Female, allotype.** Six eggs at developmental stage 1 (Fig. 1c). Body form similar to that of male, but body width greatest at pereonite 3; cephalon appreciably narrower than that of male (length to width ratio 0.6 for female and 0.8 for male), with shorter eyestalks (eye-stalk length to cephalon width between stalks 0.1 for female and 0.3 for male). Pereonite 1 shorter than pereonites 2 and 3, its length 0.7 times that of pereonite 2 along lateral margin.

**Antenna 1 of female (Fig. 1d)** similar to that of male, but article 1 thinner, length to width ratio 4 (3.3 for male); article 3 length 0.4 times article 2 length (0.6 for male), distal article equal in length to the two preceding articles together, in male 0.6 times their total length.



**Fig. 2.** *Munnogonium affinis* sp. nov.: (b, c) male, holotype; the rest—female, allotype: (a) pereopod 1, (b) pereopod 1, (c) pereopod 5, (d) pereopod 2, (e) pereopod 5, (f) pereopod 3, (g) pereopod 6.

Antenna 2 (Fig. 1d). Sexual dimorphism more apparent in the size and form of the three eyestalk articles of antenna 2: in the female, more than twice as narrow as in the male; article 2 somewhat narrower than article 1 (vice versa in male); article 3 has pointed distomedial lobe, bearing long seta, and article length 3.2 times its width; length of article 4 almost half that of article 3; article 5 is 1.6 times longer than article 4; article 6 is equal in length to article 3; length to width ratios in articles 4–6 of 1.8, 4.0, and 3.2, respectively.

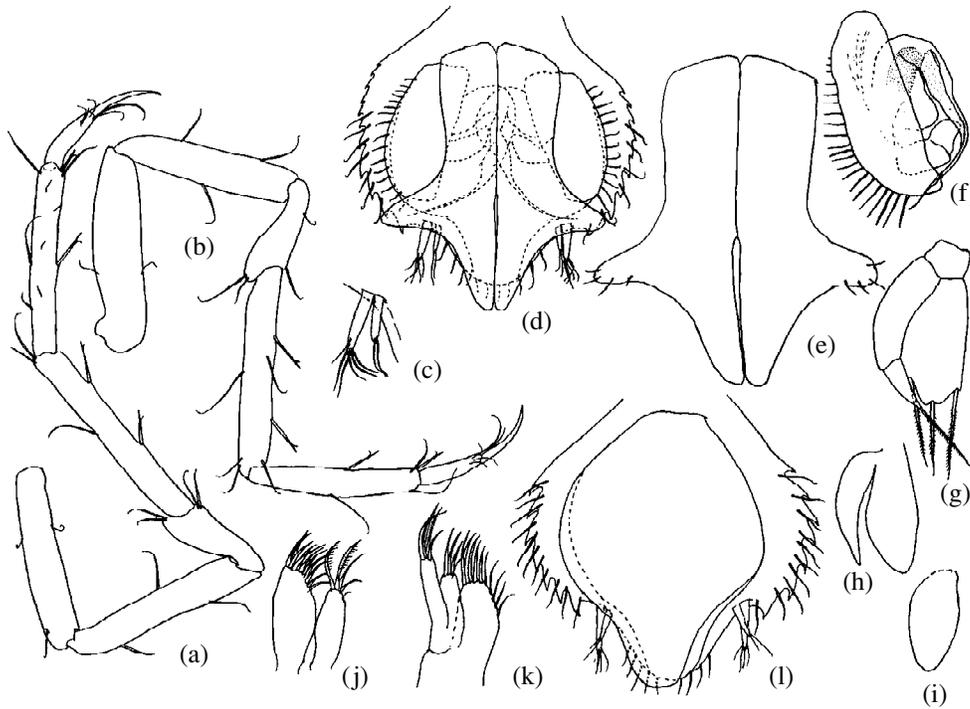
Pereopod 1 (Fig. 3a) markedly shorter and wider than the other pereopods, with same proportions as male, but smaller measurements relative to the rest of the body.

Pereopods 2–7 (Figs. 3d–3g; 2a, 2b) slightly lengthening from second toward seventh. Bases with 1 or 2 simple setae, basis length on average 1.5 times pereopod 1 basis length; ischia subequal to bases, each bearing one dorsal and two ventral setae; meri length on average 0.4 times ischia length, bearing one distodorsal and two distoventral setae; carpi 6 times as long as wide and slightly longer than ischia, lateral margins bearing one or two unequally bifurcate setae; propodi with two lateral unequally bifid setae; their length on average 6 times greater than their width; dactyli terminate in dorsal claw, which is only slightly shorter than the article; ventral claw transformed into seta.

Operculum (Fig. 2l): Length 1.3 times width; distal third pulled into narrow rounded lobe.

**Remarks.** To date, this genus has not been recorded from the western Pacific. The eastern Pacific species, similar to the North American species *M. tillerae* and *M. erratum* and the South American *M. globifrons* and *M. grande*, have an egg-shaped, elongated pleotelson with entire lateral margins and lack indentations anterior to the uropods, which are inserted dorsolaterally (see [2], Figs. 10, 11; [5], Fig. 1; [1], Figs. 1–32). *M. affinis* sp. nov. belongs to the other group, which includes the remaining species. They are all united on the basis of a similarly shaped pleotelson: it is broad and flat, with serrated lateral margins and deep notches for the uropods, which are inserted ventrally.

The new species is closest to *M. maltinii* (see [4], Figs. 2–6). The two species differ from the other species of the genus in their pronounced sexual dimorphism: the first three articles of antenna 2 are markedly thicker in males than in females. *M. affinis* sp. nov. is distinguishable from *M. maltinii* in that (1) pereopod 1 is shorter and wider than the others; its articles, basis, and especially merus are also wider (in *M. affinis* sp. nov., the length to width ratio is 2.6 for basis and 0.7–0.8 for the merus; in *M. maltinii*, it is 3.8 and 1.2, respectively); (2) in the male, pleopod 1 has longer and broader lateral lobes (with an equal length to proximal width ratio of 2.2, the ratio of the length to maximal width at the level of the lateral projections is 1.2 for the new species and 1.6 for *M. maltinii*); (3) the incisor processes of the right and left mandibles are more asymmetrical.



**Fig. 3.** *Munnogonium affinis* sp. nov.: (a, b, l) female, allotype; the rest—male, holotype: (a) pereopod 7, (b) pereopod 4, (c) uropod, (d) pleotelson (ventral view), (e–i) pleopods 1–5, (j) maxilla 1, (k) maxilla 2, (l) operculum.

The shape of the antenna 2 eyestalk articles of the female *M. affinis* sp. nov. is most similar to that of *M. Adenensis*: article 3 has the same triangular distomedial projection (see [3], Fig. 2), which is not found in other species. *M. affinis* sp. nov. is distinguishable from *M. adenensis* by the round coxae (in *M. Aden-*

*sis*, they are triangular), the longer cephalon with a semicircular frontal margin, and a different form of pereopod 1 and maxilliped palp.

**Etymology.** The Latin word *affinis* means “similar, related, or allied” and reflects the close morphological similarity of the new species with *M. maltinii*.

List of species of the genus *Munnogonium* (in brackets we give the genus to which the species was originally assigned)

Species	Location	Depth, m
<i>M. tillerae</i> (Menzies et Barnard, 1959)	California	183
[ <i>Austrosignum</i> ] type species = <i>M. valdronense</i> George et Strömberg, 1968	San Juan Archipelago, off Seattle, Washington State	6–50
<i>M. adenensis</i> Müller, 1991	Gulf of Aden	228–235
<i>M. affinis</i> sp. nov.	Sea of Japan, Korea	14.5–25.5
<i>M. erratum</i> (Schultz, 1964)	California	–
<i>M. globifrons</i> (Menzies, 1962)	Southern Chile	Intertidal
[ <i>Austrosignum</i> ]		
<i>M. grande</i> (Hodgson, 1910)	Southern Chile, Antarctic region	10–35
[ <i>Austrosignum</i> ]		
<i>M. maltini</i> (Schiecke et Fresi, 1972) [ <i>Austrosignum</i> ]	Bay of Naples, Mediterranean Sea	5–6
<i>M. polynesiensis</i> Müller, 1989	Society Islands, Polynesia, Pacific Ocean	1–2
<i>M. somersensis</i> Kensley, 1994	Bermuda Islands	Intertidal
<i>M. subtilis</i> Kensley, 1976	Amsterdam Islands, Indian Ocean	“
<i>M. wilsoni</i> Hooker, 1985	Gulf of Mexico, Florida, Middlegrounds	30

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