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A New Species of the Genus *Gnorimosphaeroma* (Crustacea: Isopoda: Sphaeromatidae) from Brackish Waters in Nagasaki, Western Japan*

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長崎県雲仙市の土里川河口域から発見されたイソコツブムシ属（甲殻亜門：等脚目：コツブムシ科）の１新種

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長崎県国見町（現在は雲仙市）の土黒川河口の汽水域から発見されたイソコツブムシ属等脚目を新種 *Gnorimosphaeroma trigonocaudum* [和名：カドバリコツブムシ，新称] として記載した。本種は腹尾節後端が三角形であることから同属の他種と区別されるが，さらに比較的類似している *G. chinense* とは第2小顎の剛毛数が多いことからも区別される。

キーワード：等脚類、コツブムシ科、カドバリコツブムシ、新種、日本
Key words：Isopoda, Sphaeromatidae, *Gnorimosphaeroma*, new species, Japan

The genus *Gnorimosphaeroma* is characterized by having rami of pleopods 4-5, exopod of pleopods 3-4 biarticulate, evident but not markedly elongated penes, short first pleonal somite, a large second pleonal somite consisting of 2 incomplete suture lines and forming a pleotelson (digested from Menzies, 1954).

Twenty-four species of the genus *Gnorimosphaeroma* have been recorded from the marine, brackish and freshwater environments of West Pacific area and California USA. Among them, 21 species have been recorded from the various parts of Japan (Hoestlandt, 1975 Nunomura 1998, 1999, 2004, 2006, 2007), and its neighboring area (Shen, 1936; Kussakin, Kwon and Kim, 1987; Kwon and Kwon, 1985；Kim, and Kwon 1988).

Examination of a relatively large collection of *Gnorimosphaeroma* collected by Dr. Teruo Irie has revealed the existence of a distinctive undescribed species of the genus *Gnorimosphaeroma,* characterized by the squarish, instead of gently curved, posterior margin of the pleotelson. In this paper, this species is described as new on the basis of material from the estuary of Hijikuro River, Kunimi Town(present: Unzen City), Nagasaki Prefecture, under the name of *G. trigonocaudum.*

The type series is deposited as follows: Toyama Science Museum, Toyama (TOYA), the National Museum of Nature and Science, Tokyo (NSMT), Kitakyushu Museum of Natural History and Human History, Kitakyushu (KMNH), Osaka Museum of Natural History, Osaka (OMNH). Size of specimens is indicated by the body length (BL) measured from the midpoint of the anterior margin of the head to the midpoint of the posterior margin of the pleotelson.

Taxonomy

Gnorimosphaeroma trigonocaudum sp. nov.

(New Japanese name: Kadobari-kotsubumushi)

(Fig.1)

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*Contributions from the Toyama Science Museum, No.407

Material examined. Holotype: ♂ (BL 5.2mm, TOYA Cr-23279), mouth of Hijikuro River, Funazu, Taira-cho, Kunimi Town, Nagasaki Prefecture, 14 January 1962, coll. Teruo Irie. Allotype: ♀ (3.4 mm in body length, TOYA Cr-23280), same data as holotype. Paratypes: 10♂♂ (4.8-5.6 mm in body length), 4♀♀ (3.0-3.7 mm in body length), same data as holotype. Paratypes are deposited as follows: 3♂♂and 1♀ (NSMT-Cr 21258) at National Museum of Nature and Science, Tokyo; 2♂♂and 1♀ (OMNH Ar-8375); 2♂♂ (KMNH IVR-500,505 - 500,506) and 1♀ (KMNH IVR-500, 507). 3♂♂ (TOYA Cr-23281-23283) and 1♀ (YOYA Cr-23284) at Toyama Science Museum.

Description. Male. Body (Fig., 1A) 2.0 times as long as wide. Color white in alcohol. Eyes mediocre, each with 24 ommatidea. Posterior suture line on pleotelson longer than anterior one. Posterior margin of pleotelson triangular, with angle about 90° degrees.

Antennule (Fig.1B) with 7-segmented flagellum. Antennal flagellum (Fig.1C) with 10-12 segments. Frontal lamina (Fig. 1D) of cephalon triangular, clypeus (Fig. 1D) elliptical. Right mandible (Fig.1E) with incisor process 3-toothed, lacinia mobilis 2-toothed; molar process wide; palp 3-segmented, with 3 setae on segment 2 and 4 setae at tip of segment 3. Left mandible with incisor process 4-toothed, lacinia mobilis 3-toothed; molar process wide. Maxillula (Fig.1F) with mesial lobe bearing 3 plumose setae; lateral lobe with 11 setae including serrated ones. Maxilla (Fig. 1G) with 8 setae on mesial lobe; 4 setae on middle lobe and 3 setae on lateral lobes of the outer ramus. Maxilliped (Fig1H) with endite rectangular, bearing a coupling hook on lateral margin and 8-9 setae on distal margin; palp 5-segmented; segment 2 longest, with 6 setae on inner margin; segment 3 with 11-12 setae on inner margin; segment 4 with 5 setae on its inner margin and 1-2 setae at outer distal area, segment 5 tapering toward the tip, with 7-8 setae around the whole margin.

Pereopod 1 (Fig. 1I) with basis 3.6 times as long as wide, with 1 relatively long seta at inner distal angle; ischium 0.7 times as long as basis; merus half length of ischium, with 1 seta at inner distal angle; carpus triangular, with 3-4 setae on inner margin; propodus 0.7 times as long as basis, with 6-7 setae on inner margin.

Pereopod 2 (Fig.1J) with basis 3.7 times as long as wide, with 1 long seta at inner distal angle; ischium 0.6 times as long as basis, with 2 setae on outer margin; merus 0.55 times as long as ischium, with 2-3 setae on inner margin and 2 setae on distal outer angle; carpus 0.8 times as long as merus, with 2 setae on inner margin and 1 seta at outer distal angle; propodus 2.0 times longer than carpus, with 2 setae on inner margin and 1 seta at outer distal angle.

Pereopod 3 (Fig. 1K) longer than the previous two pairs, with basis 3.0 times as long as wide, with 1 seta at inner distal angle; ischium 0.7 times as long as basis, with 1 seta at inner distal angle; merus 0.8 times as long as ischium, with 2 setae on inner margin and 3 setae at outer distal angle; carpus as long as merus; propodus 1.2 times longer than carpus.

Pereopod 4 (Fig. 1L) with basis 3.9 time as long as wide; ischium 0.7 times as long as basis; merus 0.7times as long as ischium, with 2 setae on inner margin and 3 setae on outer margin; carpus as long as merus, with 2 setae on inner margin and 2-3 setae on outer distal area; propodus 1.4 longer than carpus, with 1 seta on inner margin.

Pereopod 5 (Fig. 1M) with basis 4.3 times as long as wide; ischium 0.7 times as long as basis; merus 0.6 times as long as ischium, with 3 setae at inner distal angle and outer distal angle respectively; carpus slightly longer than merus, with 7-8 setae on distal margin; propodus 1.5 times longer than merus.

Pereopod 6 (Fig. 1N): basis long, 5.5 times as long as wide with 1 seta at near inner distal angle; ischium 0.7 times as long as basis, merus 0.55 times as long as ischium, with 4-5 setae at outer inner distal angle; carpus as long as with a series of setae on inner margin; propodus 1.3 times longer than merus.

Pereopod7 (Fig.1O): basis 4.3 times as long as wide, with 1 seta at inner distal angle; ischium 0.7 times longer than basis; merus 0.6 times as long as ischium, with 1 seta at inner distal angle and 3-4 setae on outer distal angle; carpus a little longer than merus, with 4 setae on inner margin and 4-6 setae at distal margin; propodus 1.3 times longer than carpus, with 2 setae on inner margin and 2 setae on distal part of outer margin.

Penes (Fig.1P) paired, each 3 times as long as wide.

Pleopod 1 (Fig) with basis bearing 3 coupling hooks on lateral margin; endopod with 20-22 setae on margin; exopod with 18-20 setae on margin.

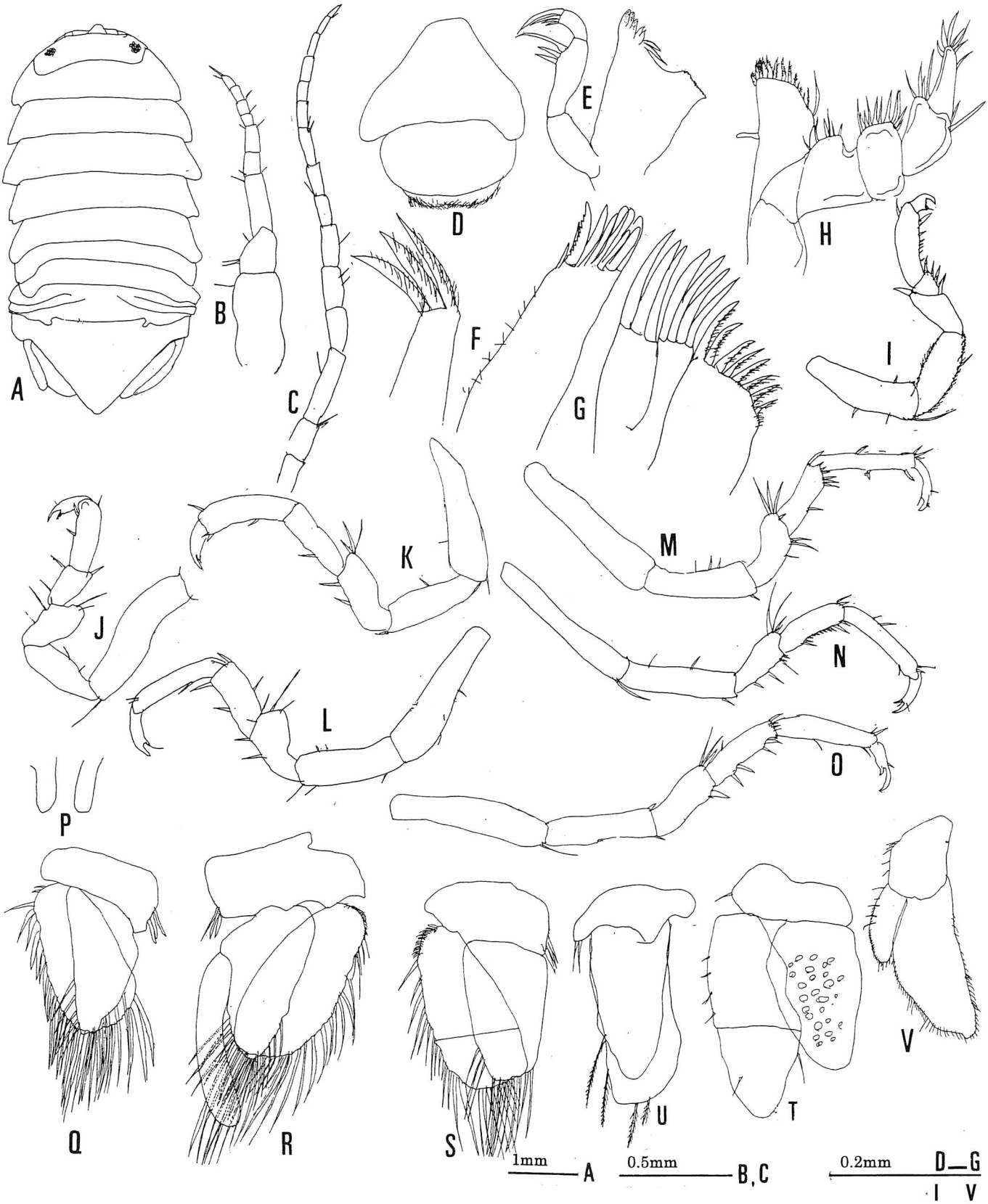

Fig.1. *Gnorimosphaeroma trigonocaudum* sp. nov. Holotype, male, TOYA Cr-23279.

A, habitus, dorsal view; B, left antennule, dorsal view; C, antenna, dorsal view; D, clypeus and frontal lamina, ventral view; E, right mandible, ventral view; F, left maxillula, ventral view; G, right maxilla, ventral view; H,left maxilliped, ventral view; I, left pereopod 1, fronal view; J-L, right pereopods 2-4, frontal view; M-O, left pereopods 5-7, fronal view; P, penes, ventral view; Q-U, left pleopods ventral view 1-5; V, left uropod, dorsal view (All, holotype male).

Pleopod 2 (Fig.1R) with basis bearing 3 coupling hooks on lateral margin; stylus club-shaped; endopod with 15-17 setae on margin exopod, with 12-13 setae on margin; exopod with about 30 setae on margin.

Pleopod 3 (Fig.1S) with basis bearing 3 coupling hooks on lateral margin; endopod with 14-15 setae on margin; exopod with a suture line and about 25 setae on margin.

Pleopod 4 (Fig.1T) with basis bearing 1 coupling hook on lateral margin; endopod lanceolate; exopod a suture line.

Pleopod 5 (Fig. 1U) with basis bearing 2 coupling hooks on lateral margin; endopod with 4 setae on margin; exopod with about 1 seta on margin.

Uropod (Fig. 1V) with basis almost squarish; endopod lanceolate, with numerous fine setae on both margins; exopod short, 45% as long as endopod.

Distribution and habitat. This new species occurs in brackish water of the estuary of mouth of Hjikuro-gawa River.

Etymology: The species name *"torigonocaudum "meaning* "triangular tail" refers to the triangular posterior margin of pleotelson of the new species. Gender of the genus neuter.

Remarks. The present new species is most closely allied to *G. chinese* shen, 1936 known from brackish waters in East Asia in having short exopod of uropod and few teeth of maxilla. However, the new species is separated from *G. chinense* by the following features; angular, posterior margin of the pleotelson, whereas round in *G. chinense;* presence of 9 setae on inner ramus of maxilla in *G. torigonocaudum,* whereas 4 in *G. chinense;* respectively, 4 and 3 setae on inner lobe and inner lobe of outer ramus of maxilla in *G. torigonocaudum*, whereas 3 and 2 in *G. chinense.*

Male specimens are larger than females (BL exceeding 4.8 mm in males, while less than 3.7 mm in females) in this new species. This suggests that the *G. trigonocaudum* might be a protandric hermaphrodite, as seen in *G. nacktongense* (Kwon, and Kim 1987) (cf. Fukuhara et al., 2000).

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