

## A New Species of the Genus *Cymodoce* (Crustacea: Isopoda: Sphaeromatidae) from Tobishima, Yamagata Prefecture, in the Sea of Japan

Noboru NUNOMURA<sup>1\*</sup>

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### Abstract

A new species of the genus *Cymodoce gibberula* (Crustacea: Isopoda: Sphaeromatidae) is described based on specimens collected from Tobishima, Yamagata Prefecture, in eastern Honshu, Japan. The present new species is most closely allied to *Cymodoce japonica* (Richardson, 1906) and *Cymodoce acuta* (Richardson, 1904). However, it differs from them in the following features: (1) having a hemispheric dome in the midline of the posterior margin of the pleotelson, (2) a roubster process on the posterior margin of the pleotelson, (3) shorter penes, (4) a longer stylus on the second male pleopod, (5) blunt tips on both ramis of the uropod, and (6) numerous bosses on the exopod of the fifth pleopod. In addition to these, this species differs from *japonica* in having more numerous protuberances on the pleotelson, and from *acuta* in having fewer protuberances. Of these, the most remarkable difference is having a hemispheric dome in the midline of the posterior margin of the pleotelson. In general however, more than a few species furnished with this feature have been reported, mainly in the Indian Ocean. Among them, the present new species is most closely allied to *Cymodoce lirella* (Schotte & Kensley). On the other hand, it differs from *lirella* in the following features: (1) the presence of a transverse small dome in the anterior area of the pleotelson, (2) the entire tip of medial process on the pleotelson, (3) a shorter stylus on the second male pleopod, (4) the shape of the posterior margin of the pleonal somites, (5) longer penes, (6) less numerous flagellar segments on both antennae, and (7) a more acute tip on the frontal lamina.

**Key Words:** *Cymodoce gibberula*, Sphaeromatidae, Isopoda, new species, taxonomy

Hitherto, seventy-four species of the genus *Cymodoce* have been known in the world (Schotte *et al.* 1995 onward) including two species in Japan as valid (Shiino, 1957; Kim. and Kwon, 1985). Apart those, one undescribed species have been known from Tobishima, Yamagata Prefecture (Nunomura and Ikehara, 1985), but the some features were insufficient. Though no additional materials are placed at my disposal for this species, in the last decade, the knowledge of the genus has increased (for example, Schotte and Kensley, 2005. Khalaji-Pirbaolouty *et al.*, 2013). Recently I reexamined

these specimens. As a result, this species is proved to be a new to this field, therefore, I described it here as a new species, together with description of almost all appendages in detail. Incidentally, a new Japanese name was given for the species in the review of Japanese species of the genus *Cymodoce* (Nunomura and Shimomura, 2016). 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.

<sup>1</sup>Noto Marine Laboratory, Division of Marine Environmental Studies, Institute of Nature and Environmental Technology, Kanazawa University, 4-1 Mu, Ogi, Noto-cho, Ishikawa 927-0553, Japan

\*Author for correspondence

**Oder Isopoda**  
**Suborder Cymothoidea**  
**Family Sphaeromatidae**  
*Cymodoce gibberula* n.sp.

(Japanese name: Shirikobu-kotsubumushi)

*Cymodoce* sp. (aff. *acuta* Richardson) : Nunomura & Ikehara, 1985, p. 59, fig. 6.

*Material examined*: 4♂♂ (1♂ holotype, 13.0 mm in body length, 3♂♂ paratypes, 12.1-13.0mm in body

length), Tobishima, off Sakata-shi, Yamagata Prefecture, the Sea of Japan, 23, May 1984, coll. Masaki Sato. Holotype (TOYA Cr-23731) and 3 paratypes (TOYA Cr-23732~23734) deposited at Toyama Science Museum.

*Description of male*: Body (Fig. 1 A) ovate lanceolate, 2.4 times as long as wide. Color dull yellow in alcohol. Eyes mediocre in size, each with about 110 ommatidia. Dorsal surface rough, with many tubercles of variable size. First pereonal somite 1.5 times longer than

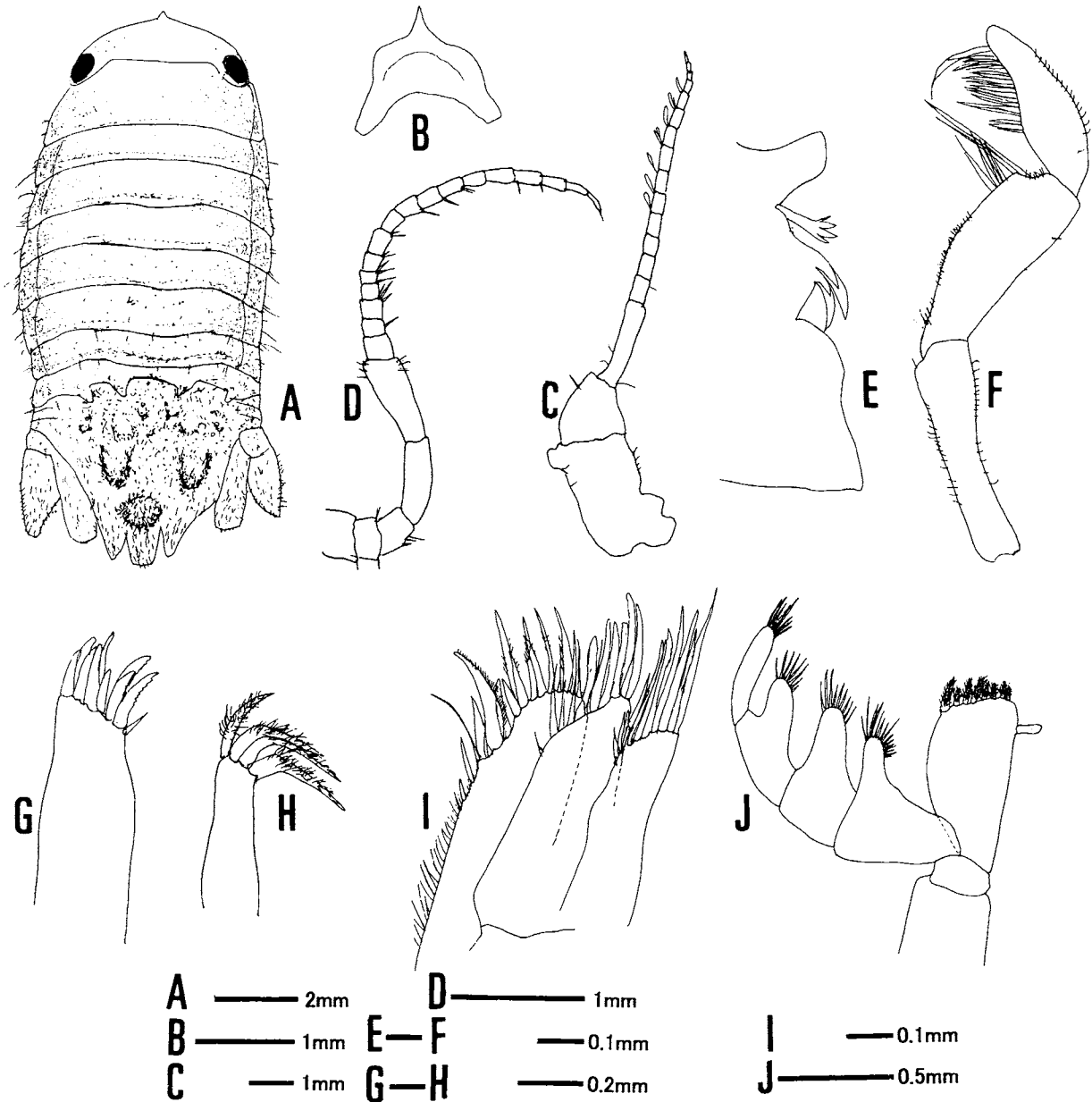


Fig. 1 *Cymodoce gibberula* n.sp.

A, Dorsal view; B, Frontal lamina; C, Antennule; D, Antenna; E, Right mandible, F, Mandibular palp of the same; G, Lateral endite of maxillula; H, Mesial endite of the same; I, Maxilla; J, Maxilliped; (A, C-J: Holotype male, B: Paratype male).

the second. Pereonal somites 2-7 subequal in length. Posterior margin of pereonites 6-7 with 4-6 rough setae. Pleonal somites 1-3 fused in medial part and suture line are visible only lateral part in dorsal view. Posterior part of pleonal somite indented with 2 pairs of extensions. Pleotelson with 2 pairs of small protuberances and a pair of large longitudinal protuberances. Medial protuberance of pleotelson with a hemispheric dome in midline of posterior margin of pleotelson. Apex of pleotelson clearly trilobed. Medial process a little longer than the others.

Penes (Fig. 2 H) paired and slender, each 7 times as long as basal width, and slightly tapers to a slightly rounded tip.

Frontal lamina (Fig. 1 B) with acute apex. Antennule (Fig. 1 C), reaching the posterior end of first pereonal somite, with 3 peduncular and 10-14 flagellar segments, distal ones with aesthetascs. Antenna, (Fig. 1 D) reaching the posterior margin of the second pereonal somite, with 5 peduncular and 17-18 flagellar segments.

Right mandible (Fig. 1 E): pars incisiva with a single cusp; lacinia mobilis slender and 4-toothed, 4 penicils, with processus molaris; palp (Fig. 1 F): with three-segmented: palpal segment 2 with 6 setae, segment 3 with about 16-18 setae. Left mandible with pars incisiva with 2 cusps, lacinia mobilis also with 2 cusps, and palp with three segmented: palpal segment 2 with 6 setae, segment 3 with about 14-15 setae. Maxillula: lateral endite (Fig. 1 G) with 10 teeth including 3 serrated, and mesial endite (Fig. 1 H) with 4 long plumose setae. Maxilla (Fig. 1 I): mesial endite with 7-15 setae including 7-8 serrated ones; middle endite with 11-12 setae and lateral endite with 11-13 setae. Maxilliped (Fig. 1 J): endite with a coupling hook of lateral margin and 8-9 plumose setae on distal margin; palp five-segmented: palpal segments 2-4 strongly protruded, each with 8-15 relatively long setae at the tip.

Pereopod 1 (Fig. 2 A): a little shorter than the succeeding ones: basis about 2.8 times as long as greatest width, with a seta at inner distal angle; ischium 0.8 times as long as basis, with 2 setae on outer margin; merus half as long as ischium, with 5 setae including trifurcated ones on inner margin and 2-3 long setae at outer distal angle; carpus triangular, with 3 setae and many short

setae on inner margin; propodus with 4 setae and many short setae on inner margin and 1-3 setae on outer distal angle; dactylus with a simple unguis.

Pereopod 2 (Fig. 2 B): basis about 3.2 times as long as greatest width, with 5 setae on outer margin; ischium with many short setae on inner margin, a seta on outer margin and a group of short setae on distal outer area, and a seta in the middle part of outer margin; merus 0.6 times as long as ischium, with 2 relatively long setae and many short setae on inner margin, and 3 setae on outer distal area; carpus as long as merus, with 2 long setae and many short setae on inner margin and 5-6 short setae on distal margin; propodus with 5-6 setae and many short setae on inner margin; dactylus with a simple unguis.

Pereopod 3 (Fig. 2 C): basis about 3 times as long as greatest width, with a seta at inner distal angle, and 2-3 setae on outer margin; ischium with 8-9 setae on distal half of inner margin; merus 0.6 times as long as ischium, with 2 long setae and many short setae on inner margin and 1-2 setae and many short setae at outer distal area; carpus with 2 setae and many short setae on inner margin; propodus with 3 setae and many short setae on inner margin and 3 setae at outer distal area; dactylus with a simple unguis.

Pereopod 4 (Fig. 2 D): basis about 3 times as long as greatest width; ischium a little shorter than basis, with many short setae on inner margin and a seta on outer margin; merus half as long as ischium, with 3 setae on inner margin and 4 setae at outer distal area; carpus with 3 setae on inner margin and 3 setae at outer distal area; propodus with 3 setae and many short setae on inner margin and 3 setae at outer distal area and 4-6 setae at outer distal angle; dactylus with a simple unguis.

Pereopod 5 (Fig. 2 E): basis about 2.9 times as long as greatest width, with a long seta at inner distal angle and many short setae on outer margin; ischium three-fourths as long as basis, with many short setae on inner margin and 4 setae on outer margin; merus half as long as ischium, with 2 setae on inner margin and many short setae and 4 setae at outer distal area; carpus with 4 setae and many short setae on inner margin, 2 setae on distal area and 3 setae at outer distal area; propodus with

3 setae and many short setae on inner margin, 5-6 setae at outer distal area; dactylus with a simple unguis.

Pereopod 6 (Fig. 2 F): basis about 3 times as long as greatest width, with a seta at inner distal angle; ischium with 4 setae on inner margin and 2 long setae on outer margin; merus 0.45 times as long as ischium, with 7-8 setae on inner margin and 2 long setae on outer distal

area; carpus with 7 setae and many short setae on inner margin and 10-12 setae around the distal margin; propodus with 3 setae and many short setae on inner margin and 2-3 setae on outer distal angle; dactylus with a simple unguis.

Pereopod 7 (Fig. 2 G) a little longer than the preceding ones: basis 4 times as long as greatest width,

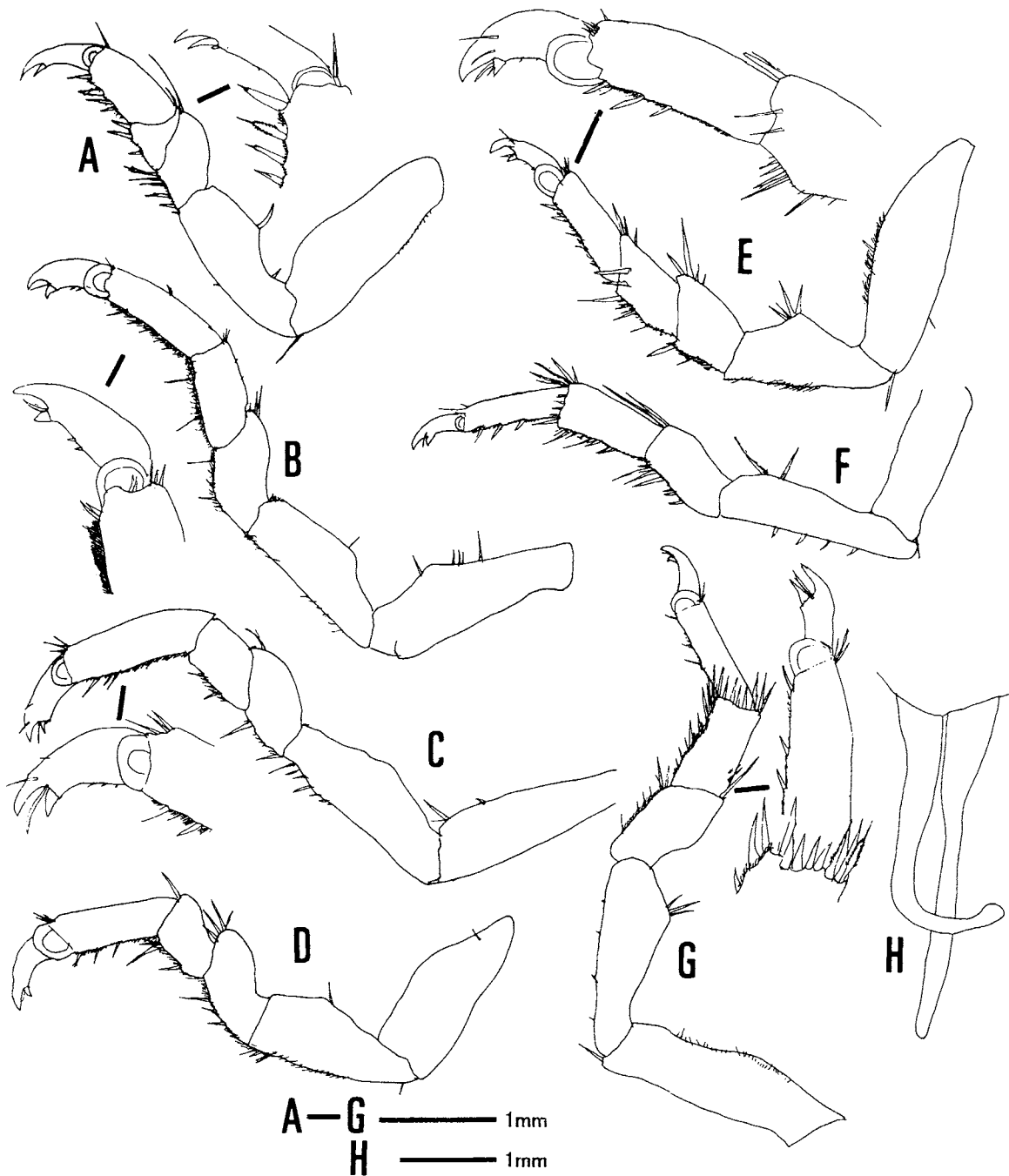


Fig. 2 *Cymodoce gibberula* n.sp.  
A-G, Pereopods 1-7; H, Penes. (All : Holotype male).

with a seta at inner distal angle and many short setae on outer margin; ischium with 4-5 short setae on inner margin and 3 setae on outer margin; merus half as long as ischium, with 7-8 setae on inner margin and many short setae on inner margin and a long seta at outer distal angle; carpus approximately as long as merus, with 8-10 relatively long setae on inner margin and 12-13 setae around distal margin; propodus with 3 setae and many short setae on inner margin and 3 setae at outer distal angle; dactylus with a simple unguis.

Pleopod 1 (Fig. 3 A): sympod with 2 coupling hooks on lateral margin; endopod with 15-17 plumose setae around the margin; exopod rectangular, with 35-40

plumose setae around the margin.

Pleopod 2 (Fig. 3 B): sympod with 2 or 3 coupling hooks lateral margin; endopod triangular, with 15 plumose setae around the margin; exopod rectangular, with 36-40 plumose setae around the margin; stylus long, extending beyond the tip of endopod, apical part somewhat thickened.

Pleopod 3 (Fig. 3 C and D): sympod with coupling 3 hooks lateral margin; endopod pentagonal, with 12-14 plumose setae on distal margin; exopod ellipsoid, with a transverse suture line and with 25-28 plumose setae on distal the margin.

Pleopod 4 (Fig. 3 E): endopod thickened, and apical

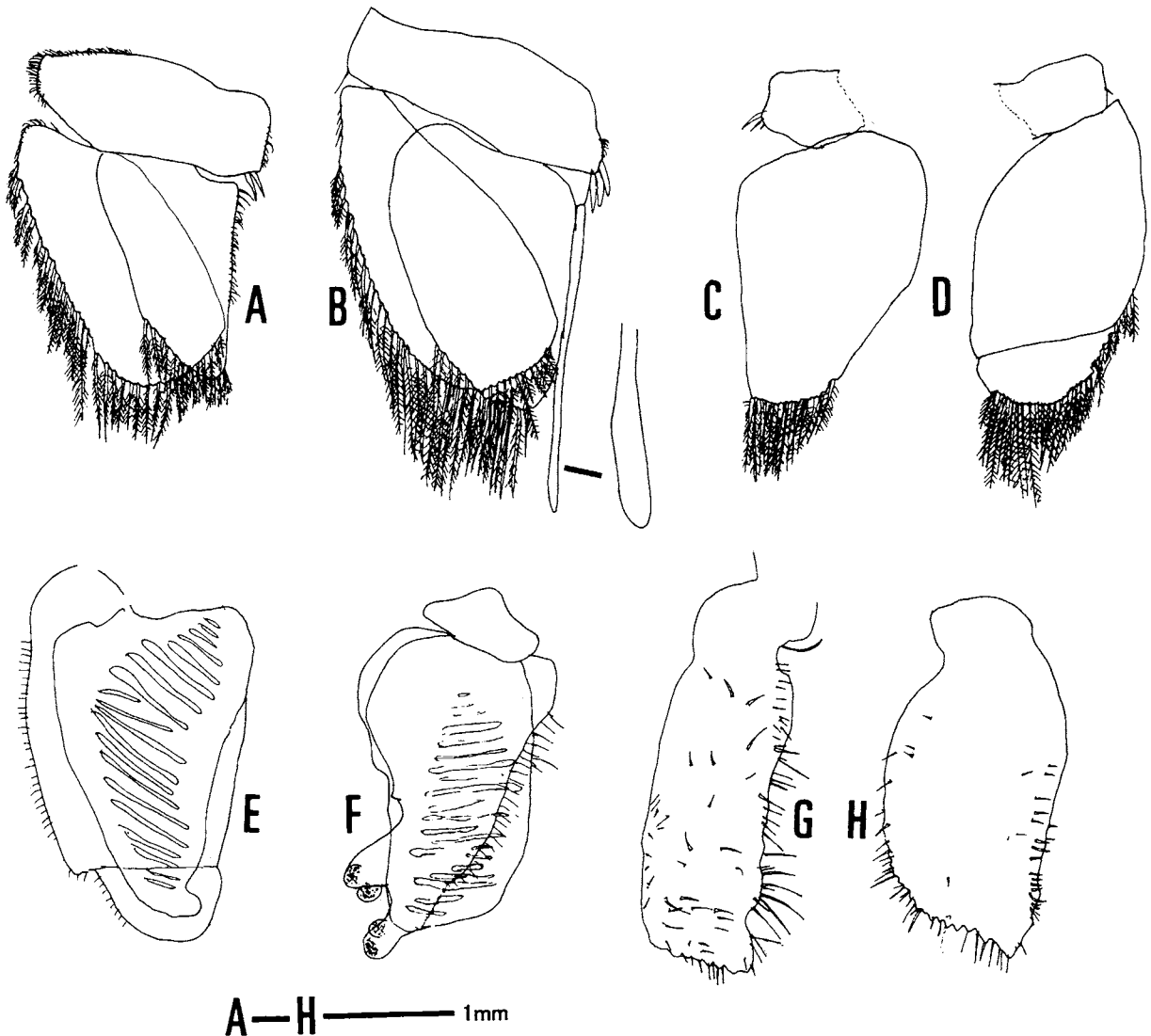


Fig. 3 *Cymodoce gibberula* n.sp.

A-B, Pleopods 1-2; C, Endopod of pleopod 3; D, Exopod of the same; E-F, Pleopods 4-5; G, Endopod of Uropod; H, Exopod of the same (All : Holotype male).

part curved with 2 bosses near the apical part; exopod with a transverse suture line and approximately 30-36 simple short setae on outer margin.

Pleopod 5 (Fig. 3 F): endopod thickened, and apical part curved; exopod with 4 bosses on apical area, and 22-26 simple short setae on outer margin.

Uropod: both rami angulate: endopod (Fig. 3 G) rectangular and distal margin sinuated, with angular tip and 15 setae around the margin; exopod (Fig. 3 H) sinuated on outer margin, tip slightly pointed, and with more than 40 setae around the margin.

Female is unknown.

Etymology: The species name “*gibberulus*” means “having a small hump” in Latin: this species bears a round but remarkable dome-like protuberance in the middle area just in front of the posterior end of pleotelson.

*Remarks* : The present new species is most closely allied to *Cymodoce japonica* Richardson, 1906, and *Cymodoce acuta* Richardson, 1904. However, it differs from them in the following features: (1) having hemispheric dome in midline of posterior margin of pleotelson, (2) robust process on posterior margin of pleotelson, (3) longer stylus of male second pleopod, (4) shorter penes, (5) blunt tip of both rami of uropod and (6) numerous bosses on exopod of fifth pleopod. In addition to these, the present new species differs from *japonica* in the following features: (1) far more small bosses on pleotelson and (2) shorter setae on pereopods. Meanwhile, it differs from *acuta* in the following features: (1) less numerous protuberances of pleotelson, (2) not protruded tip of uropodal exopod, (3) sparse setae around the margin of uropod and (4) more teeth on maxillula and maxilla.

Of these, the most remarkable difference is having a hemispheric dome in midline of posterior margin of pleotelson. In general, however, not a few species furnished with this feature have been reported mainly from the Indian Ocean. Among them, the present new species is most closely allied to *Cymodoce lirella* Schotte & Kensley, 2005. However it differs from *lirella* in the following features: (1) presence of transverse small dome in the anterior area of

pleotelson, (2) entire tip of medial process of posterior margin of pleotelson, (3) shorter stylus of male second pleopod, (4) shape of posterior margin of pleonal somites, especially acuter protrusion, (5) longer penes, (6) less numerous flagellar segments of both antenna, and (7) acuter tip of frontal lamina.

The present new species also slightly differs from *Cymodoce tribullis* Harrison and Holdich, 1984 in the following features: (1) shorter setae around the posterior part of body, (2) simple a pair of longitudinal process, whereas apically bifid in *tribullis*, (3) straight stylus of male second pleopod, (4) having a pair of simple large process, whereas bifid in *C. tribullis* and (5) rectangular rami of uropod, whereas acutely pointed process in *C. tribullis*.

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# 山形県飛島から発見されたニホンコツブムシ属 (甲殻類, 等脚目, コツブムシ科)の一新種

布村 昇<sup>1\*</sup>

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## 要 旨

日本海山形県飛島から発見されたニホンコツブムシ属(甲殻類, 等脚目, コツブムシ科)のシリコブコツブムシを新種 *Cymodoce gibberula* として記載した。本種は *Cymodoce japonica* Richardson, 1906 や *Cymodoce acuta* Richardson, 1904 と最も類似しているが, 腹尾節の後縁中央付近に1個の明瞭な突起があることをはじめ, その前方にも特徴的な突起があること, 腹尾節後端の3つの刺が太いこと, ペニスが短いこと, オスの第2腹肢内肢の交尾が長いこと, 第5腹肢外肢の刺が4個あること, 尾肢両肢の先端が尖らないことで区別できる。また, 腹尾節の背面の小突起が *japonica* より多く, *acuta* より少ない。

なお, インド洋からは腹尾節の後縁中央付近に突起のある種類が幾つか知られているが, そのうち *Cymodoce lirella* Schotte & Kensley, 2005 と共通点が多い。しかし, 腹節後縁の形態, 特に小さな突起の配列, オスの交尾針が短いペニスが長いこと, 先端が尖ること, 触角の鞭数が少ないことなどにより区別される。

キーワード: シリコブコツブムシ, コツブムシ科, 等脚目, 分類

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<sup>1</sup>金沢大学環日本海域環境研究センター海洋環境領域臨海実験施設 〒927-0553 石川県鳳珠郡能登町小木ム4-1  
\*連絡著者