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A New Species of the Genus *Gnorimosphaeroma* (Crustacea, Isopoda) from Hahajima, Bonin Islands, southern Japan*

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小笠原諸島母島の淡水域から発見されたイソコツブムシ属の１新種

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小笠原諸島母島の淡水域から発見されたイソコツブムシ属の 1 種を新種 *Gnorimosphaeroma boninense*（和名:オガサワラコツブムシ：新称）として記載した。本種は日本各地の潮間帯に分布する*G.hoestlandti* Kim&Kwon,1985と最も類似し，特に第 1 胸肢腕節と前節に 2 叉した剛毛を持つことや第 2 胸肢前節基部の内側が膨らんでいることなどの共通点を持つが, (1) 第 1 胸肢腕節後縁の剛毛数が少ないこと, (2) 第 1 触角の鞭節数が少ないこと, (3) 腹肢の剛毛が少ないこと, (4) 第 7 胸肢腕節に多くの剛毛を持つことなどの点で区別される。

本新種は韓国やわが国では和歌山県から知られている*G.anchialos* Jang & Kwon,1993とも類似するが, (1) 第 1 胸肢腕節と前節に 2 叉した剛毛を持つこと, (2) 第 2 胸肢前節基部の内側が膨らんでいること, (3) 第 2 小顎上の剛毛数が多いこと, (4) 大顎鬚の剛毛数がより多いこと, (5) 第 2 触角の鞭数が多いこと, (6) 顎脚の交尾鉤が 1 本しかないこと, (7) 尾肢外肢が比較的長いこと, (8) 第 7 胸肢腕節に多くの剛毛を持つことなどの点で区別される。

また，小笠原諸島の岩石海岸潮間帯から知られている*G.albicauda* Nunomura, 2005とは, (1) 腹尾節が白っぽくないこと, (2) 腹部の縫合線のうち前方のものが後方のものより長いこと, (3) 第 1 胸脚長節外側の剛毛数が少ないこと, (4) 第 1 胸脚および第 2 胸脚の一部に 2 叉する剛毛を持つこと, (5) 目が小さく, それを構成する個眼が少ないこと, (6) 両触角の鞭節数が多いこと, (7) 生殖突起が長いことならびに (8) 第 2 胸脚前節内縁基部は膨らむことなどで区別される。

本種のホロタイプは富山市科学文化センター（TOYA　Cr-13146）で保管される。

Key words：*Gnorimosphaeroma,* new species, Bonin Islands, freshwater, Crustacea, Isopoda

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During a survey on freshwater shrimps on Hahajima, Bonin Islands, the junior author happened to find many small flabelliferan isopods in small streams. He collected some specimens and sent them to the senior author. At closer examinations of the senior author, they probed to represent a new species.

Hitherto, sixteen species of the genus *Gnorimosphaeroma* have been recorded in Japan, and six freshwater species have been recorded mainly from the areas facing the Sea of Japan (Hoestlandt,1968, Hoestlandt,1969, Hoestlandt, 1975, Nunomura,1998, Nunomura,1999, Nunomura,2004) and four species from Korea (Kim and Kwon,1985, Kwon,1990, Kim and Kwon,1993, Yun,1982) and species from Russia (Kussakin,1979). It is the first record from freshwater of Bonin Islands. The holotype and a part of paratypes deposited at the Toyama Science Museum. Other paratypes are deposited at Osaka Museum of Natural History and Natural Science Museum,Tokyo.

Gnorimosphaeroma boninense Nunomura, n . sp.

(Jap.name:Ogasawara-kotsubumushi, new)

(Figs. 1-2)

Description : Body ovate, 1.9 times as longs as wide. Color brackish. Surface smooth. Coxal plates distinct on pereopods 2-7. Eyes mediocre in size and each eye composed of about 36-37 ommatidia. Lateral angle subparallel. Anterior suture line longer than posterior one (Fig.1J) Posterior margin of pleotelson slightly rounded.

Antennule (Fig.1B), reaching posterior half of cephalosome, consists of 2 peduncular segments and 8-9 flagellar segments. Antenna (Fig.1C), reaching the middle area of second pereonal somite, consists of 5 peduncular segments and 14 flagellar segments.

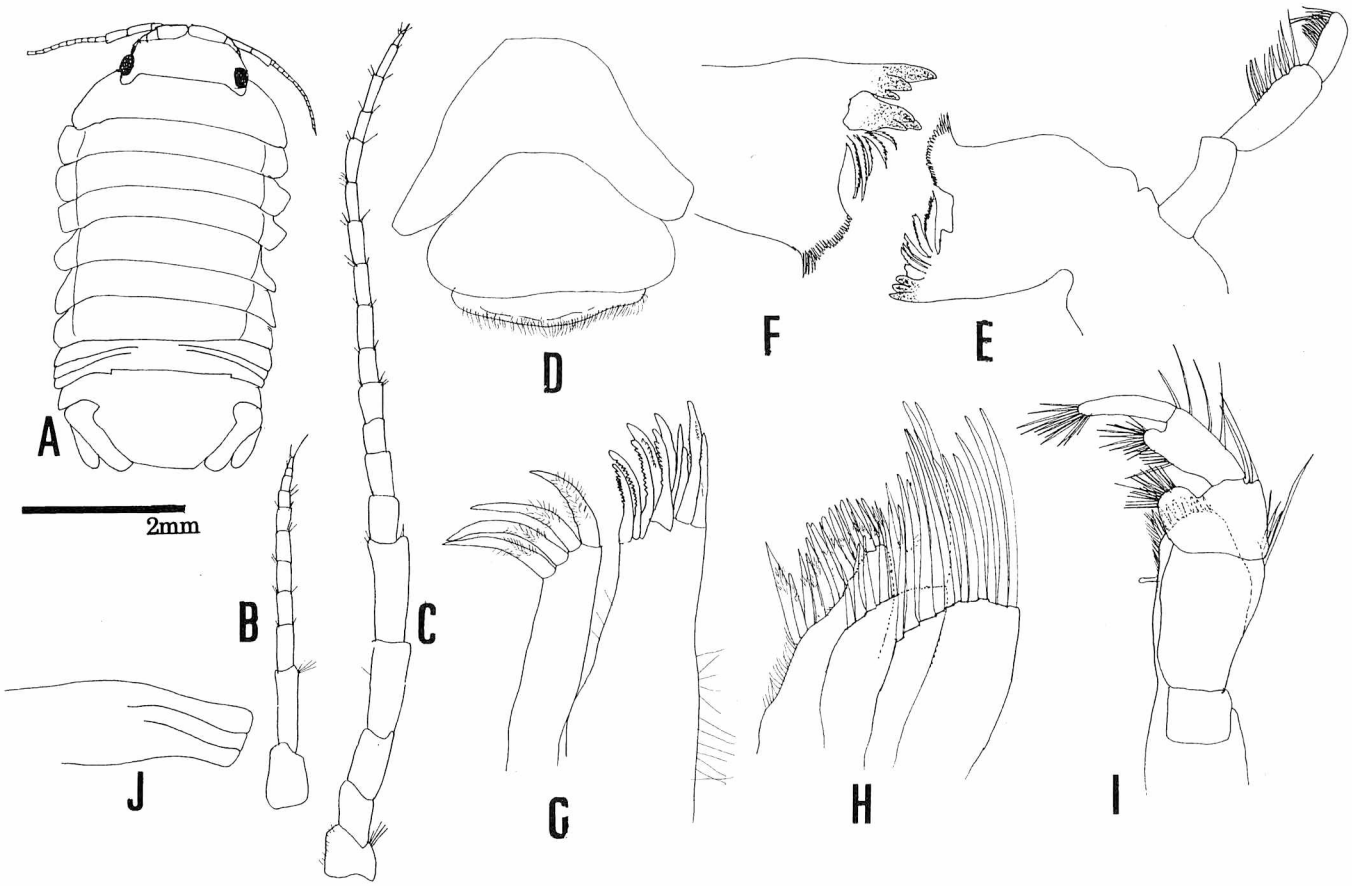

Fig.1 ***Gnorimosphaeroma boninense*** **Nunomura, n. sp.**
A,Dorsal view; B,Antennule; C,Antenna; D,Clypeus, Frontal lamina and labrum; E,Right mandible; F,Apical part of left mandible; G,Maxillula; H,Maxilla; I,Maxilliped. J,Suture lines of pleonal somites (All: holotype male).

Right mandible (Fig.1E): pars incisiva 3-headed; lacinia mobilis 3-headed but not chitinized; 5-6 setae; processus molaris wide; palpal segment 2 with 11 setae, palpal segment 3 with 14 setae. Left mandible: pars incisiva 3-headed; lacinia mobilis 3-headed and chitinized; 5 setae; processus molaris wide,palp as in right mandible. Maxillula (Fig. 1G) with endopod bearing 4 pectinated setae; exopod bearing 10 setae, 8 of the pectinated type. Maxilla (Fig. 1H) with endopod bearing 17 plumose setae; inner ramus of exopod with 11-13 setae and outer ramus of the same with 12 setae. Maxilliped (Fig.1I): endite with a coupling hook on lateral margin and 8-10 plumose setae on distal area. Palpal segment 1 square; segment 2 with 4 setae on inner margin but no seta on outer margin; segment 3 with 15 setae on inner margin 2 longer setae on outer margin; segment 4 with 17-18 setae on inner margin and 4 setae outer distal angle; segment 5 narrow, with 10-11 setae around the margin.

Pereopod 1(Fig.2 A and B): basis rectangular, 2.3 times as long as wide bearing a seta at inner distal angle and 2 relatively short setae on outer distal area; ischium almost as long as basis, with much hair on inner margin and 5 short

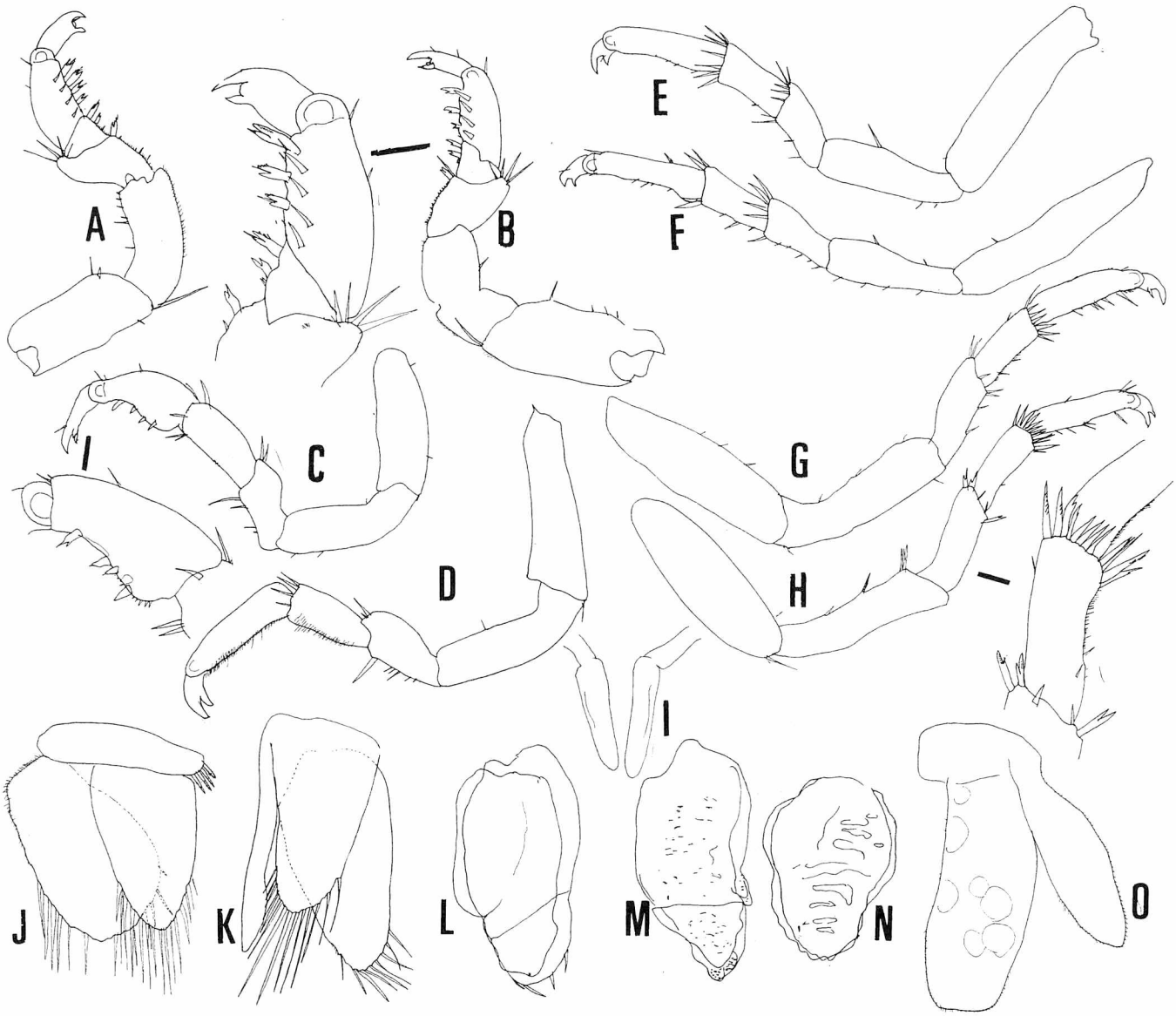

Fig.2 ***Gnorimosphaeroma boninense*** **Nunomura, n. sp.**
A and B, Peroepod 1; C-H, Pereopods 2-7; I, Penes; J-N, Pleopods 1-5;O,Uropod (All:Holotype male).

setae on outer margin; merus triangular, half the length of ischium, with a stout seta and much hair on inner margin and 4 setae at outer distal angle; carpus triangular, with 2 stout bifid setae on inner distal angle; propodus with 4 bifid and 5 simple setae near the inner distal angle.

Pereopod 2(Fig. 2C): basis rectangular, 2.5 times as long as wide, with a seta at inner distal angle; ischium as long as basis; merus half the length of ischium, with 4 setae on inner margin in and 2 setae on outer distal area; .carpus a little longer than merus, with a stout seta inner distal angle and 4 setae at outer distal angle; propodus a little swollen in basal half, with 4 stout setae on inner margin and the outer distal angle; dactylus bifid.

Pereopod 3(Fig. 2D): basis rectangular, 3.5 times as long as wide, with a seta at inner distal angle; ischium a little shorter than basis; merus less than half the length of ischium, with 2 setae on outer distal angle and a 5 to 6 setae on inner margin including a stronger one; carpus as long as merus, with many short setae on inner distal area and 4 setae at outer distal area; propodus 1.5 times longer than carpus, with many short setae on inner distal areas; dactylus bifid.

Pereopod 4(Fig.2E): basis rectangular 3.8 times as long as wide; ischium 65% as long as basis, with a seta on outer margin; merus a little shorter than half the length of ischium, with 5 setae outer distal area and 2 setae at inner margin ; carpus a little longer than merus, with 7-8 setae on distal angle; propodus twice longer than carpus; dactylus bifid.

Pereopod 5(Fig.2F): basis rectangular, 4.8 times as long as wide; ischium 65 %as long as basis; merus half the length of ischium, with 5 setae on distal angle; carpus as long as merus, with 2 setae on inner distal angle and at outer distal angle; propodus twice longer than carpus, with a slightly swollen at inner basal area and 2 setae at outer distal angles; dactylus bifid

Pereopod 6(Fig.2G) :basis oblong, 3.7 times as long as wide; ischium 4/5 as long as basis, with 2 or 3 setae on both margins; merus half length of ischium, with 5 setae on distal margin and 2 setae on inner margin; carpus a little shorter than merus, with 6-7 setae and 2-3 setae on inner margin propodus 1.2 times longer than carpus, with 5-6 setae on inner margin on inner margin; dactylus bifid.

Pereopod 7(Fig. 2H):basis oblong, 3.3 times as long as wide, with a seta at inner distal angle; ischium 85 % as long as basis, 3groups of 1-3 setae on outer margin; merus 3/5 as long as ischium, with 3 stout bifid setae on distal margin and ; carpus a little shorter than merus, with 12 setae including 6 bifid ones on distal margin; propodus 1.4 times longer than carpus, with 5 setae on inner margin; dactylus bifid.

Penes (Fig.2I) paired, each 5-6 times as long as wide.

Pleopod 1(Fig. 2J) :basis with 4 setae; endopod with 20-25 setae; exopod with about 16-17 setae around the margin.

Pleopod 2(Fig.2K): basis with 2 coupling hooks; endopod, stylus incompletely separated from the main part, with 16-17 setae around the margin, main part with about 25 setae around the margin; exopod with 9 to ten setae. lanceolate wit 42-46 setae.

Pleopod 3(Fig. 2L): endopod with 4 setae; exopod smaller than endopod; exopod with 34-37 setae.

Pleopod 4(Fig.2M): basis with 2 coupling hooks; endopod with setae; exopod with 1 or 2 setae.

Pleopod 5(Fig.2N): both rami lanceolate, with sinuate margin.

Uropod (Fig.2 O): basis rectangular; endopod rectangular 2.4 times as long as wide; exopod small and 83-85% as long as endopod.

Female: Differs only from male in sexual characters.

Etymology : Bonin is an English name of Ogasawara Islands, type locality.

Remarks: The present species is most closely allied to *G.hoestlandti* Kim and Kwon,1985, the commonest species in Japanese water, but the former is separated from the latter in the following features; (1)less numerous setae on posterior margin on carpus of pereopod 1, (2) less numerous flagellum of antennule, (3) less numerous setae on

pleopods and (4) numerous setae on distal margin of 7th pereopod. The present new species is also allied to *G.anchialos,* reported from Korea and Japan especially in the number of setae on merus of pereopod 1, but the former is separated from the latter in the following features: (1) presence of bifurcated setae on carpus and propodus of pereopod 1, (2) protruded basal area of propodus of pereopod 2, (3) numerous setae on maxilla (4) numerous palpal setae on mandible, (5) numerous flagellar segments of antennae, (6) single coupling hooks on endite of maxillae, (7) longer exopod of uropod and (8) numerous setae on the distal end of carpus of pereopod 7.

The present new species is separated from the sea shore species of the Bonin Islands, *G. albicauda* Nunomura in the following features the posterior one: (1) blackish body color of posterior part of body, (2) longer anterior suture line of pleonal somite than the posterior one, (3) less numerous setae on merus of propodus of pereopod, (4) presence of bifurcated setae on propodus and carpus of pereopod 1, (5) smaller eyes and less numerous ommatidia, (6) numerous flagella of both antennae, (7) longer penes and (8) presence of swollen area of propodus. One possibility is to assume that this species has evolved form the *hoestlandti*- like ancestor.

Ecology: The habitat of the present new species found at the upper stream of some of which blocked by concreat dams. Eenvironmental condition was as follows:

Conductivity: 248-291 μs/cm
PH: 7.33-7.51
Water temperature:15.2-16.4℃

Material examined; 6 ♂♂ (1♂ holotype, 5.1 mm in body length and 5♂♂ paratypes, 4.4～5.7 mm in body length) and 10♀♀ (1♀, allotype, 5.5mm in body length and 9♀♀paratypes, 2.8～ 5.6 mm in body length). Small valley of Chibusayama-dam, Hahajima Island, Bonin Islands. 25-26, Feb. 2000, coll. Kiyoshi Satake.

Type series is deposited as follows: Holotype (TOYA Cr-13146) and allotype 5 (TOYA Cr-13147) and 5 paratypes (TOYA Cr -13148～13152) are at the Toyama Science Museum 4 paratypes (OMNH Ar-7143～7146) , at the Osaka Museum of Natural History; 3 paratypes (NSMT Cr-16626) at the National Science Museum, Tokyo.

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