Bulletin of the Toyama Science Museum No. 40, pp. 19－36 ; (2016)

# Marine isopod crustaceans collected from Shijiki Bay, Western Japan (3) Anthuroidea *

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## 長崎県志々伎湾産等脚目甲殻類(3)ウミナナフシ上科

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1977年と1984年に長崎県平戸市志々伎湾において東幹夫博士（調査当時は長崎大学教授）が底生生物の生態学的調査をされた際に採取された等脚目甲殻類標本を順次研究し，Nunomura（2008，2012）を公表したが，その続報として志々伎湾の等脚目甲殻類で最も普遍的かつ多数出現した動物群であるウオノエ亜目ウミナナフシ上科の結果を報告する．本研究の結果，9種を確認し8種の種名決定をした．うち3種は新種であることが判明し，それぞれ*Mesanthura saikaiensis* n.sp.〔サイカイモヨウウミナナフシ，新称〕，*Amakusanthura hiradoensis* n.sp.〔ヒラドヒゲナガウミナナフシ，新称〕，*Colanthura angularis* n.sp.〔カドバリアシタラズウミナナフシ，新称〕として記載した．なお，3種のホロタイプは富山市科学博物館に保管されている．

**キーワード**：等脚目，ウミナナフシ，志々伎湾，分類学，新種
**Key words**：Isopoda, Anthuroidea, Shijiki Bay, taxonomy, new species

Dr. Mikio Azuma, Professor Emeritus of Nagasaki University collected many specimens of marine organisms from Shijiki Bay, Hirado Island, Nagasaki Prefecture, western Japan. I could have a chance to examine this relatively big amount of isopod specimens. Succeeding to the previous papers (Nunomura, 2008, 2012), I will report on the superfamily Anthuroidea, they proved to include 9 species and three of them were proved to be new to science.

The type materials are deposited in Toyama Science Museum, Toyama (TOYA) and Human History, Kitakyushu (KMNH). 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. I observed and drew the appendages in glycerol, some without dissection, only stretching outsides.

### Order Isopoda
### Suborder Cymothoida
### Family Anthuridae
### *Mesanthura saikaiensis* n.sp.
### (Japanese name: Saikai-moyou-uminanafushi, new)
### (Fig. 1)

*Material examined*: 9♀♀ (1♀holotype, 8.3mm in body length and 8♀♀paratypes, 4.3-8.2mm in body length), Shijiki Bay (St. 50) 8m depth, gravel sand, 1977, coll. Mikio Azuma. Type series is deposited as follows: Holotype

＊Contributions from Toyama Science Museum, No. 491

(TOYA Cr-23653) and 4 paratypes (TOYA Cr 23654-23657) at Toyama Science Museum and 3 paratypes (KMNH IvR 500869-500871) at Kitakyushu Museum of Natural History and Human History, Kitakyushu.

Other specimens:3♀♀, Shijiki Bay (St. 2) 44m depth, gravel sand, June 12, 1977, coll. Mikio Azuma; 3♀♀,Shijiki Bay (St. 9) 7m depth, sand, June 12, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 11) 31m depth, sand, June 12, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 13) 35m depth, sand, 13, June 1977, coll. Mikio Azuma; 4♀♀, Shijiki Bay (St. 16) 28m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 18) 24m depth, sand, June 13, 1977, coll. Mikio Azuma; 7♀♀, Shijiki Bay, (St. 7) 22m depth, sand, June 12, 1977, coll. Mikio Azuma; 5♀♀, Shijiki Bay (St. 31) 18m depth, sand, June 13, 1977, coll. Mikio Azuma.

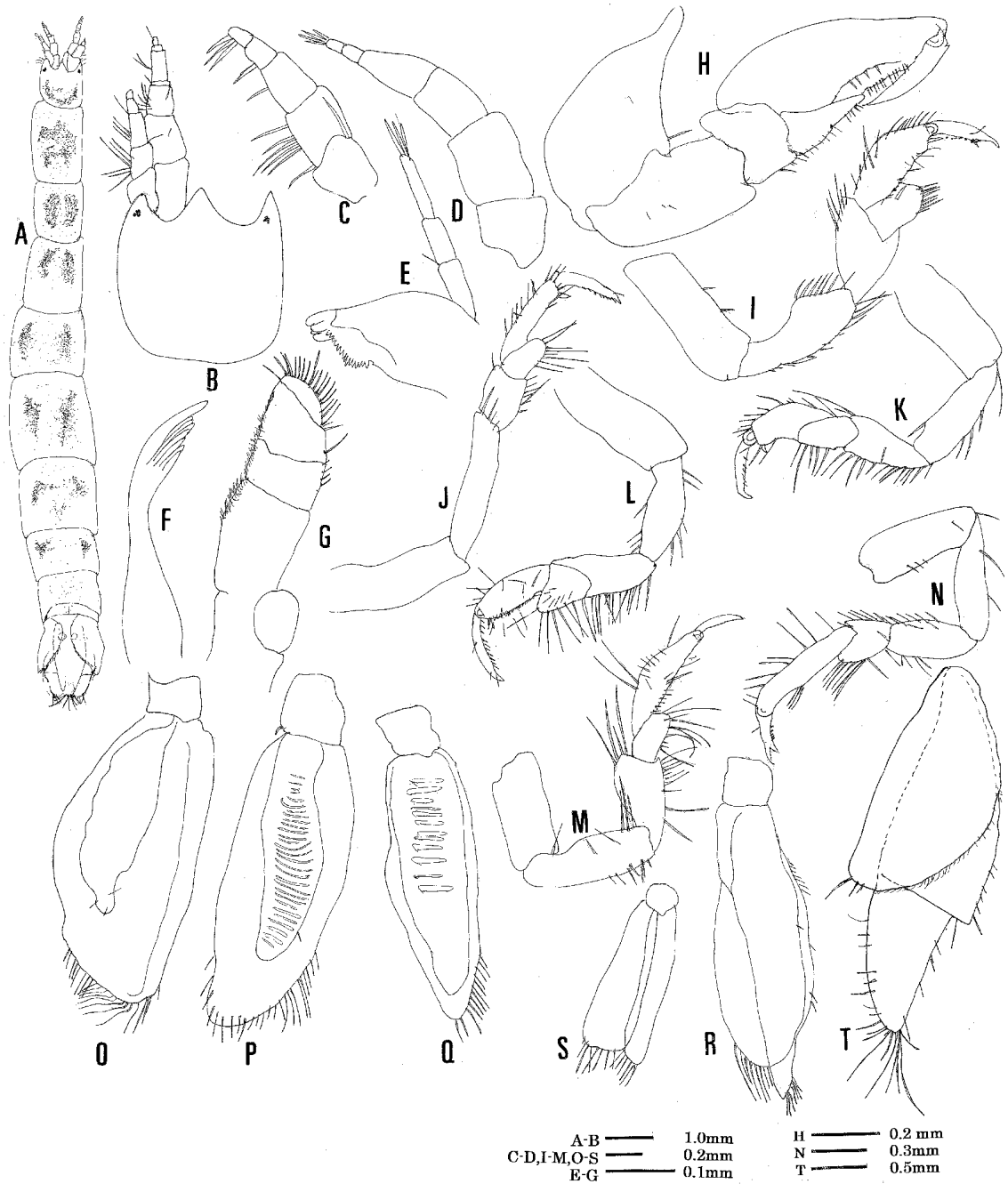


**Fig. 1** ***Mesanthura saikaiensis*** **n. sp.**

A, Dorsal view; B, Cephalon; C, Antennule; D, Antennae; E, Mandible; F, Maxillula; G, Maxilliped; H, Pereopod 1; I, Pereopod 2; J, Pereopod 3; K, Pereopod 4; L, Pereopod 5; M, Pereopod 6; N, Pereopod 7; O-S, Pleopods 1-5; T, Uropod. (All: female holotype).

*Description*: Body (Fig. 1 A) 8.5 times as long as wide; lateral margin from cephalon to pleon almost parallel, but pereonites 5-6 only slightly wider than other part. Cephalon (Fig. 1B) almost as long as wide; frontal border with acute both anterolateral angles and a medial process. Eyes small, consisting of 56 ommatidea, only traces were recognized in alcohol specimens. Mutual length of seven pereonal somites is sub-equal in length, but seventh is half as long as sixth. Pleonites 1-5 fused, together with as long as pereonite 7. Pleotelson lanceolate, with a pair of relatively big statocysts on basal area of dorsal surface and a tuft of setae at the tip.

Antennule (Fig. 1C) with 3 peduncular and 2 flagellar segments, each flagellar segment with 1-5 aesthetascs on lateral margin. Antenna (Fig. 1D) slightly longer than antennule, with 5 peduncular and a flagellar segment, bearing 4 setae at the tip. Mandible (Fig. 1E): pars incisiva 4-toothed, lamina dentate, with 15-16 teeth; palp-3 segmented; terminal segment with 3 setae at the tip. Maxillula (Fig. 1F) with a large tooth and 7-8 small teeth. Maxilliped (Fig. 1G) with 3-segmented palp; terminal segment round, with 17-18 setae; endite lacking.

Pereopod 1 subchelate (Fig.1 H): basis triangular and basal part narrow: ischium triangular, 0.8 times as long as basis; merus 0.2 times length of ischium, 0.6 times as long as wide, with fine setae on inner margin; carpus narrow and triangular, with a dozen setae on inner margin and 4 setae on lateral surface along the inner margin; propodus stouter than those of the subsequent pairs, but relatively slender than those of other species of the genus, inner margin not stepped or toothed; dactylus short, 0.4 times as long as propodus.

Pereopods 2-7 ambulatory. Pereopod 2 (Fig. 1I): basis rectangular, with 2 setae on distal margin; ischium with both margins; merus spreading towards the tip, with 5 setae on outer margin; carpus round; propodus not subchelate, with more than a dozen seta on outer margin; dactylus with several short denticles on inner margin.

Pereopod 3 (Fig. 1J): basis rectangular; ischium a little shorter than basis, with 4 setae on distal margin; merus one-third as long as ischium, with 6-7 setae on inner margin; carpus round, with 7-8 setae on distal margin; propodus as long as merus, with 12 setae on outer side; dactylus with several short denticles on inner margin.

Pereopod 4 (Fig. 1K): basis rectangular; ischium a little shorter than basis, with 4 setae on inner margin; merus a little shorter than ischium, with 6-7 setae on inner margin; carpus small, with 7-8 setae; propodus relatively short, with 3 setae on inner margin and 10 setae on outer margin; dactylus with several short denticles on inner margin.

Pereopod 5 (Fig. 1L): basis rectangular; ischium with 4-5 setae on both margins; merus with about a dozen relatively long setae on inner margin; carpus as long as wide, with about 7-8 relatively long setae on inner margin; propodus rectangular; dactylus with several short denticles on inner margin.

Pereopod 6 (Fig. 1M): basis rectangular; ischium with 7-8 setae on both sides; merus 1.9 times as long as wide, with more than 10 setae on inner area and 5 long setae on distal outer area; carpus rectangular, with more than 10 setae on inner margin; propodus with several setae including 3 longer ones on outer margin on outer margin; dactylus 0.4 times as long as propodus.

Pereopod 7 (Fig. 1N): basis rectangular, with a seta at inner distal angle and 3-4 setae on outer side; ischium a little shorter than basis, with 23 setae on inner margin; merus two-thirds as long as wide, with 5 setae on inner margin and 6-7 setae on outer margin; carpus 0.8 times as long as merus, with 13 setae on inner margin and 10 setae on outer margin; propodus with 9 setae on outer margin and a group of 3 setae in the middle part of inner margin; dactylus 0.3 time as long as propodus.

Pleopod 1 (Fig. 1O): basis rectangular; endopod narrow-lanceolate; exopod operculiform, with 21-22 setae on distal area.

Pleopod 2 (Fig. 1P): basis almost square; endopod a little longer than endopod, with 23-24 setae around the margin.

Pleopod 3 (Fig. 1Q): basis square; endopod narrow lanceolate, 3.8 times as long as wide; exopod a little wide, with 23-24 setae around the margin.

Pleopod 4 (Fig. 1R): basis almost square; both rami narrow lanceolate, 4.2 times as long as wide; exopod with 8-9 setae near the distal area.

Pleopod 5 (Fig. 1S) smaller the preceding ones: basis square; both rami rectangular also smaller than the preceding ones.

Uropod (Fig. 1T): basis rectangular, twice as long as wide, with some relatively long setae; endopod almost triangular, tip truncated at the tip, with a tuft of setae; exopod rounded, with relatively more than 45 setae on outer margin.

Male unknown.

Etymology : "Saikai" is a name of a national park: Shijiki Bay is located within the Saikai National Park.

*Remarks*: Hitherto 45 species of the genus *Mesanthura* have been known as valid (Schotte, et al. 1995 onwards). The present new species is peculiar in having very small eyes. It is most closely allied to *Mesanthura decorata* Menzies and Glynn, reported from Puerto Rico in having central area free of pigments on pereonal somites. The present species show differs from *decorata* in the following features: (1) smaller eyes, (2) deeply pronounced anterior margin of cephalon, (3) shorter body, (4) lack of obvious step on inerter margin of pereopod 1, (5) less pronounced exopod of uropod and (6) lack of sensory setae on pereopod 7.

In Japan, four species have been reported from the Japanese coasts (Nunomura 1977, 1985, 1983, 2006). But the present new species is separately from them in the following features: (1) smaller eyes, (2) deeply pronounced anterior margin of cephalon, (3) color pattern without sharp outlines, (4) lack of obvious step on inerter margin of pereopod 1 and (5) shorter body.

## *Amakusanthura hiradoensis* n.sp.

**(Japanese name: Hirado-higenaga-uminanafushi, new)**

**(Fig. 2)**

*Material examined*: 1♂(holotype, 10.0mm in body length) and 5♀♀(paratypes, 6.2-7.8mm in body length), Shijiki Bay (St. 39) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 3♂♂(paratypes, 5.5-6.9 mm in body length) and 4♀♀ (1♀allotype, 6.7mm in body length and 3♀♀(paratypes, 6.3-10.5mm in body length), Shijiki Bay (St. 44) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 2♂♂(paratypes, 6.2-7.8mm in body length) Shijiki Bay (St. 37) 20m depth, sand, May 12, 1984, coll, Mikio Azuma; 4♂♂(paratypes, 5.5-6.9 mm in body length) 8♀♀ (paratypes up to 10.5mm in body length), Shijiki Bay (St. 44) 12m depth, sand, 3 June 1977, coll. Mikio Azuma; 2♂♂(paratypes, 5.0-7.5 mm in body length), Shijiki Bay (St. 45) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 3♂♂(paratypes, 5.5-6.4mm in body length), Shijiki Bay (St. 51) 6m depth, sandy gravel, May 12, 1984, coll. Mikio Azuma. Body length will be omitted after the following data: 1♂(paratype), Shijiki Bay (St. 19) 20m depth, sand, June 13, 1977, coll. Mikio Azuma; 2♂♂(paratypes), Shijiki Bay (St. 34) 16m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♂ 8♀♀(paratypes), Shijiki Bay (St. 36) 18m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♂, 2♀♀(paratypes), Shijiki Bay (St. 42) 8m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♂, 5♀♀(paratypes), Shijiki Bay (St. 43) 9m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♂, Shijiki Bay (St. 44) 12m depth, sand, 3 June 1977, coll. Mikio Azuma; 4♀♀, Shijiki Bay, (St. 45) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 3♂♂4♀♀ (paratypes), Shijiki Bay (St. 50) 8m depth, gravel sand, May 12, coll. Mikio Azuma;. 1♀(paratypes), Shijiki Bay (St. 51) 6m depth, sandy gravel, May 12, 1984, coll. Mikio Azuma. Type series is deposited as follows: Holotype (TOYA-Cr 23658) and allotype (TOYA Cr 23677) and 30 paratypes (TOYA Cr 23659-23666, 23668-23676, 23678-23686, 23697-23730) at Toyama Science Museum and 7 paratypes (KMNH IvR 500872-500878), Kitakyushu Museum of Natural History and Human History, Kitakyushu.

Other specimens : 2♀♀, Shijiki Bay (St. 1) 41m depth, sandy gravel, June 12, 1977, coll. Mikio Azuma;1♀, Shijiki Bay (St. 2) 44m depth, gravel sand, June 12, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 3) 35mm depth, sand, May 10, 1984, coll. Mikio Azuma; 1♂, Shijiki Bay (St. 4) 31m depth, sand, June 12, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 5) 33m depth, sand, June 12, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 7) 22m depth, sand, June 12, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 8) 16m depth, sand, June 12, 1977, coll. Mikio Azuma; 3♀♀, Shijiki Bay (St. 9) 27m depth, sand, June 12, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 11) 31m depth, sand,

June 12, 1977, coll. Mikio Azuma; 1♂, Shijiki Bay (St. 13) 35m depth, sand, 11 June 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 16) 28m depth, sand, May 11, 1984 ,coll. Mikio Azuma; 1♀, Shijiki Bay (St. 17) 26m depth, sand, May 11, 1984, coll. Mikio Azuma; 1♂, Shijiki Bay (St. 18) 24m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 19) 20m depth, sand, June 13, 1977, coll. Mikio Azuma; 3♀♀, Shijiki Bay (St. 20) 22m depth, sand, May 11, 1984,coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 21) 25m depth, sand, May 11, 1984, coll. Mikio Azuma; 10♀♀, Shijiki Bay (St. 22) 25m depth, sand, June 13, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 23) 23m depth, sand, May 11, 1984, coll. Mikio Azuma; 18♀♀, Shijiki Bay (St. 24) 18m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 25) 23m depth, sand, June 13, 1977, coll. Miki Azuma; 2♀♀, Shijiki Bay (St. 28) 13m depth, sand, May 11, 1984, coll. Mikio Azuma; 4♂♂5♀♀, Shijiki Bay (St. 31) 18m depth, sand, May 12, 1984, coll. Mikio Azuma;, 2♀♀, Shijiki Bay (St. 32) 21m depth, sand, May 12, 1984, coll. Mikio Azuma; 19♀♀, Shijiki Bay (St. 32) 21m depth, sand, June 13, 1977, coll. Mikio Azuma; 2♂♂, Shijiki Bay (St. 32) 21m depth, sand, May 12, 1984, coll. Mikio Azuma; 8♀♀, Shijiki Bay (St. 34) 16m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 34) 16m depth, sand, June 13, 1977, coll. Mikio Azuma; 4♀♀, Shijiki Bay (St. 35) 8m depth, sand, May 12, 1984, coll. Mikio Azuma; 2♂♂, Shijiki Bay (St. 37) 20m depth, sand, May 12, 1984, coll. Mikio Azuma; 6♀♀, Shijiki Bay (St. 37) 20m depth, sand, May 12, 1984, coll. Mikio Azuma; 4♀♀, Shijiki Bay (St. 38) 18m depth, sand, May 12, 1984, coll. Mikio Azuma; 12♀♀Shijiki Bay (St. 38) 18m depth, sand, June 13, 1977, coll. Mikio Azuma; 2♂♂6♀♀, Shijiki Bay (St. 38) 18m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♂, Shijiki Bay (St. 39) 12m depth, sand, June 13, 1977, coll. Mikio Azuma; 2♂♂2♀♀, Shijiki Bay (St. 40) 8m depth, gravery sand, May 12, 1984, coll. Mikio Azuma; 1♂10♀♀, Shijiki Bay (St. 40) 8m depth, gravel sand, June 13, 1977, coll. Mikio Azuma; 5♀♀, Shijiki Bay (St. 43) 9m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♂1♀, Shijiki Bay (St. 44) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 3♀♀, Shijiki Bay (St. 45) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♂3♀♀, Shijiki Bay (St. 47) 8m depth, sand, May 12, 1984, coll. Mikio Azuma; 5♂♂8♀♀, Shijiki Bay (St. 48) 11m depth, sand, May 12, 1984, coll. Mikio Azuma; 6♀♀, Shijiki Bay (St. 49) 8m depth, sand, June 13, 1977, coll. Mikio Azuma; 4♀♀, Shijiki Bay (St. 49) 8m depth, sand, May 12, 1984, coll. Mikio Auma; 3♀♀, Shijiki Bay (St. 50) 8m depth, gravel sand, June 13 1977, coll. Mikio Azuma.

*Description of male*: Body (Fig. 2A) 11.5 times as long as wide. Color white in alcohol. Cephalon (Fig. 2B) long and rectangular; antero-lateral margins weakly protruded: frontal border with a low round on medial area. Relative length of cephalon and seven pereonal somites is 2: 2: 3: 3: 4: 3: 3: 2. Pleonal somites 1.5 times as long as wide, 1-5 sutures lines completed. Eyes big, composed of 22-26 ommatidea each ommatidium scattered separately. Dorsal pit not observed. Pleon 1.8 times longer than pereonal somite 7. Pleotelson lanceolate, with a pair of statocysts on mid-lateral ridge.

Antennule (Fig. 2C) with 3 peduncular and 17-18 flagellar segments distal, 7-8 segments with much bristle. Antenna (Fig. 2D) with 5 peduncular and 5 flagellar segments, terminal four segments very short.

Mandible (Fig. 2E): pars incisiva weakly three-toothed; lamina dentate, with 3-4 teeth; palp 3-segmented; second segment with a long seta; terminal segment with 2 setae. Maxillula (Fig. 2G) with a bigger tooth and 6 smaller teeth on the terminal margin. Maxilliped (Fig. 2H) with 3-segmented palp, without endite; terminal segment smaller than the basic ones, with 4-5 setae.

Pereopod 1 (Fig. 2H) subchelate: basis triangular; ischium as long as basis, with 2 setae inner distal angle; merus short, half as long as width; carpus triangular, with 8 setae on inner angle of lateral margin; propodus relatively slender, with a row of 14-15 setae on inner margin and subpalmer row of about 11 setae on inner proximal side; dactylus about half as long as propodus.

Pereopods 2 (Fig. 2I) slenderer than peropod1: basis rectangular; ischium rectangular, with 3 setae on inner margin; merus as long as ischium; carpus 0.7 times as long as merus, with 4 setae; propodus rectangular, with 3-4 setae on inner margin; dactylus about half as long as propodus.

Pereopods 3 (Fig. 2J) similar to pereopod 2, but propodus slenderer than that of pereopod 2, with 5 sensory setaeon inner margin; dactylus two-thirds as long as propodus.

Pereopods 4-7 (Fig. 2K-N) similar in shape: basis and ischium slender, 3 times as long as wide, with 2-3

setae on inner margin and distal margins; merus 2.2 times as long as wide; carpus pentagonal, with a stout setae on margin; propodus with a stout seta at inner distal area and a few of setae on inner margin; dactylus about half as long as propodus.

Pleopod 1 (Fig. 2O): basis trapezoidal; endopod lanceolate; exopod elliptical.

Pleopod 2 (Fig. 2P): basis rectangular; endopod lanceolate, appendix masculina as long as endopod, with a pointed tip; exopod lanceolate, with 22 plumose setae.

Uropod (Fig. 2Q and R): basis twice as long as wide, with 3 setae near distal part of both margins; endopod as long as basis and gradually tapering toward the tip; exopod 1.3 times as long as basis, bearing more than 40 setae on the margin.

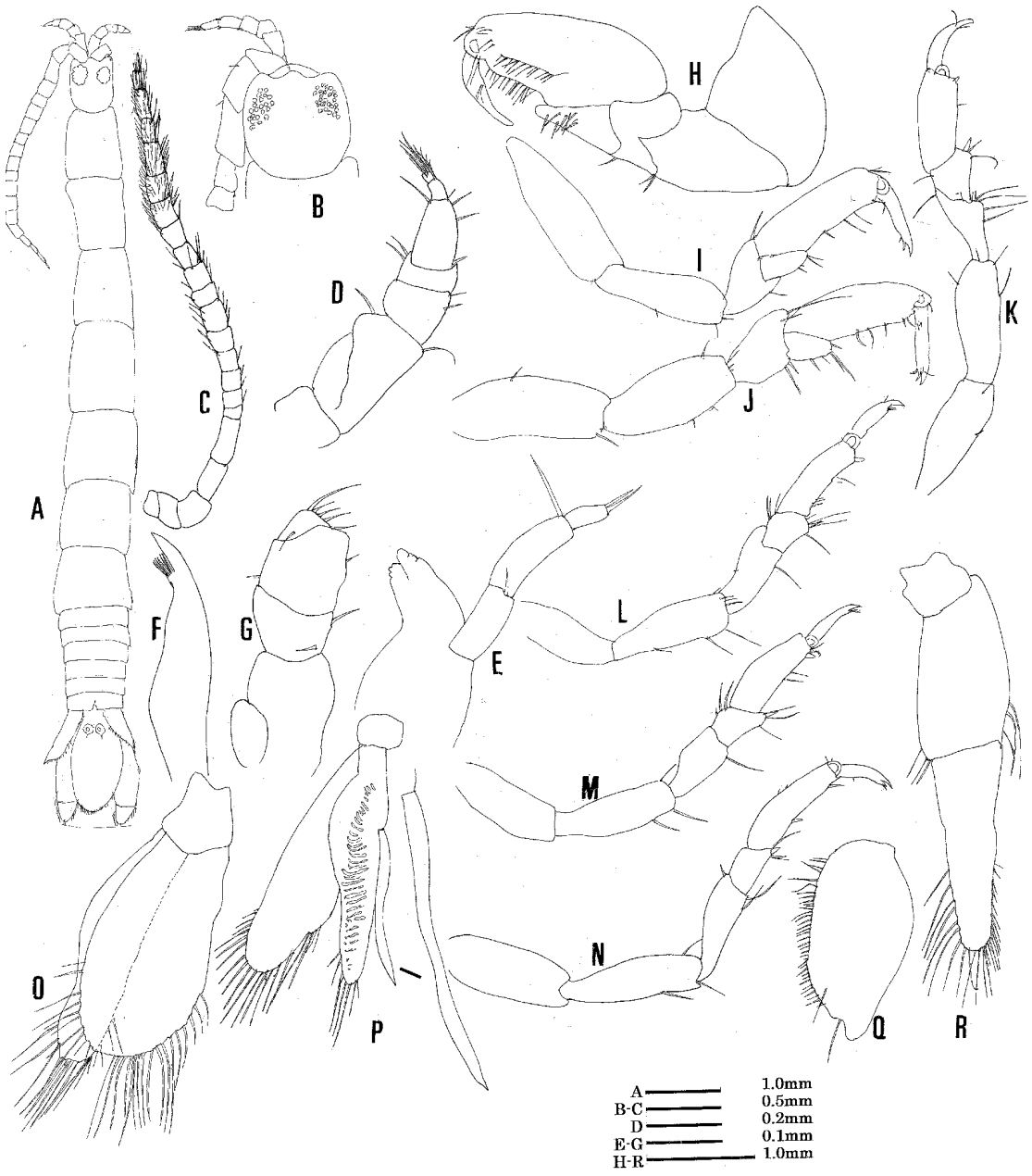


**Fig. 2** ***Amakusanthura hiradoensis*** **n. sp.**

A, Dorsal view of whole body; B, Dorsal view of cephalon; C, Antennule; D, Antennae; E, Mandible; F, Maxillula; G, Maxilliped; H-N, Pereopods 1-7; O, Pleopod 1; P, Pleopod 2; Q, Exopod of uropod; R, basis and endopod of the same (All: male holotype).

*Description of female*: The longest dissected individual (Fig. 3A) is 7.7 mm in length. Eyes relatively small, composed of 20-22 ommatidea, but indistinct in alcohol specimens.

Mutual length of seven pereonal somites: Pleon1.2 times as long as the each pleonal somite. Pleotelson (Fig. 3O) lanceolate, with a pair of statocysts, and a tuft of setae at the tip.

Antennule (Fig. 3B) with 3 peduncular and 2 slender flagellar segments. Antenna (Fig. 3C) with 5 peduncular and 5-6 flagellar segments, except the most basal one vestigial.

Mandible (Fig. 3D): pars incisiva with three teeth, lamina with 3 teeth; palp-3 segmented; second segment with a long and another seta; terminal segment with 3 setae at the tip. Maxillula (Fig 3E), with a larger tooth and 6 smaller teeth. Maxilliped (Fig. 3F) endite lacking, with 3-segmented palp; terminal segment small and with 3 setae on margin.

Pereopod 1 (Fig. 3G): basis triangular; ischium rectangular, with a seta at inner distal area and on outer margin; merus short, 0.55 times as long as wide; carpus narrow triangular; propodus with a row of setae; dactylus 0.25 times as long as propodus.

Pereopod 2 (Fig. 3H): basis 2.6 times as long as wide; ischium as long as basis; merus half as long as ischium; carpus narrow triangular, with 7-8 setae on inner margin ; propodus with 2 groups of setae on inner margin; dactylus 0.3 times as long as propodus.

Pereopod 3 (Fig. 3I) similar to pereopod 2, but with fewer setae on carpus and propodus.

Pereopods 4-7 (Fig. 3J-K): basis with a seta at inner distal angle; ischium a little longer than basis; merus two-thirds as long as ischium; carpus trapezoidal; propodus 1.8 times as long as carpus, with 4-5 setae on inner margin; dactylus half-length of propodus.

Pleopod 1 (Fig. 3L): basis rectangular; endopod narrow; exopod wider than endopod and tongue-shaped, with more than 27 aesthetascs.

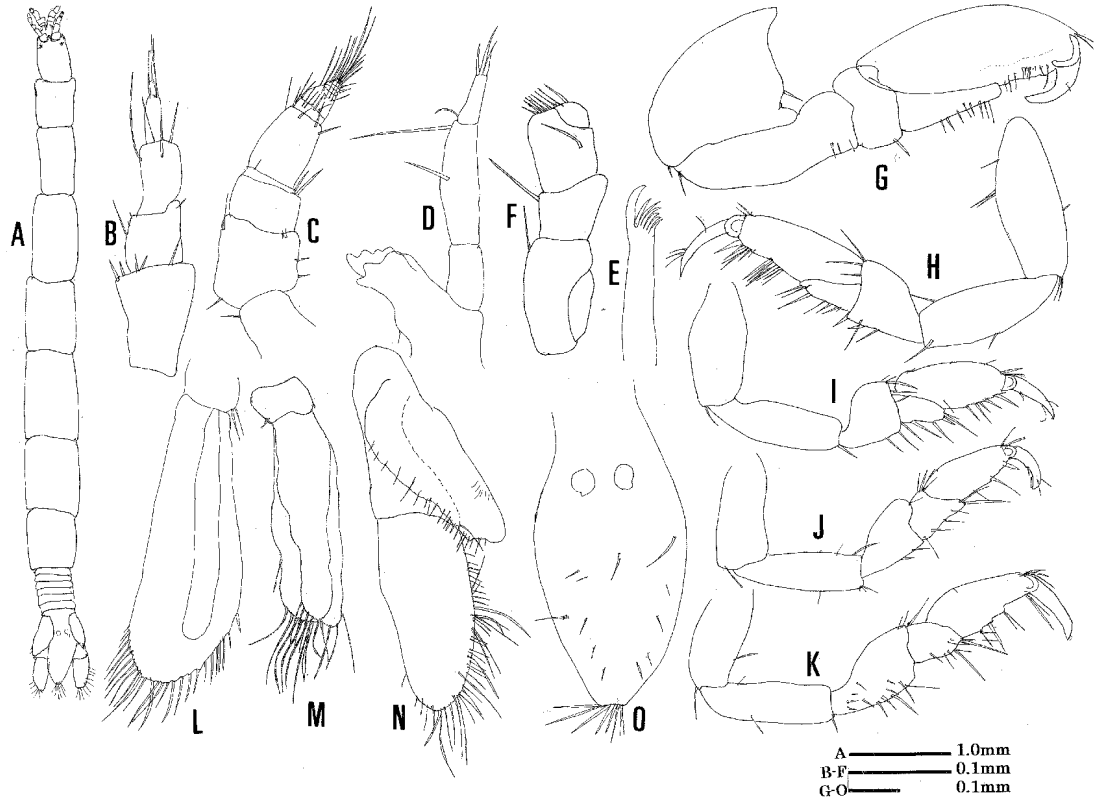


**Fig. 3** ***Amakusanthura hiradoensis*** **n. sp.**

A, Dorsal view; B, Antennule; C, Antennae; D, Mandible; E, Maxillula; F, Maxilliped; G-I, Pereopods 1-3; J, Pereopod 5; K, Pereopod 7; L-M, Pleopd 1-3; N, Pleotelson; O, Uropod(All: female allotype).

Pleopod 2(Fig. 3M): basis both rami lanceolate, with about 10 setae around the margin.

Uropod (Fig. 3N): basis rectangular; endopod a little longer than basis, with 50 setae; exopod with sinuate margin and more than 20 setae.

Etymology: Hirado is a name of an island where type localilty is included.

*Remarks*: Both sexes are different in having big eyes in male, whereas very small eyes in female. But I can't help but think in resembling other features and occurring in many stations, often relatively in high density. Hitherto 43 species of the genus have been known as valid (Schotte, *et, al.* 1995 onwards, Nunomura 2016), especially, in Japan, four species have been reported from the Japanese coasts (Nunomura, 1979, 1992, 2004, 2016). Among them, the present new species is most closely allied to *Amakusanthura aokii*, Nunomura 2004, reported from Izu Peninsula, but the former is separated from the latter in the following features: (1) bigger eye in male; this species occupies more than 50% of width of cephalon whereas less than 40% in *aokii*, (2) less numerous setae on pereopods 2-7, (3) absence of long seta on inner margin of propodus, (4) less numerous flagellar segments, antennule, (5) acuter tip of appendix masculina, (6) acuter apical part of appendix masculina, (7) indistinct dorsal pits and (8) shorter merus. The present new species is also allied to *Amakusanthura hibbertia* Poore and Lew Ton in having a big eyes but the former differs from the latter: (1) perfectly separated pleonal segments, (2) absence of step on inner side of propodus of pereopod 1, (3) shorter projection of anterior margin of cephalon, (4) numerous flagellar segments and (5) wider pleotelson.

### *Cyathura muromiensis* Nunomura, 1974
### (Japanese name: Muromi-suna-uminanafushi)

*Cyathura muromiensis* Nunomura, 1974 p. 13, figs. 1-2.

*Material examined*: 6♀♀, Shijiki Bay (St. 36) 18m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♂, Shijiki Bay (St. 37) 20m depth, sand, June 13, 1977, coll. Mikio Azuma.

### *Cyathura kikuchii* Nunomura, 1977
### (Japanese name: Kikuchi-suna-uminanafushi)
### (Fig. 4)

Cyathura kikuchii Nunomura 1977, p. 73, figs. 2-3.

*Material examined*: 1♂ (11.0mm in body length) 11♀♀ (up to 11.5 mm), Shijiki Bay (St. 37) 20m depth, sand, May 12, 1984, coll. Mikio Azuma, 2♀♀, Shijiki Bay (St. 4) 31m depth, sand, May 10, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 5) 33m depth, sand, May 10, 1984, coll. Mikio Azuma; 3♀♀, Shijiki Bay (St. 5) 33m depth, sand, June 12, 1977, coll. Mikio Azuma; 10♀♀, Shijiki Bay (St. 6) 31m depth, sand, May 10, 1984, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 9) 27m depth, sand, June 12, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 10) 31m depth, sand, May 10, 1984, coll. Mikio Azuma; 3♀♀, Shijiki Bay (St. 10) 31m depth, sand, June 12, 1977,coll. Mikio Azuma; 1♀, Shijiki Bay (St. 12) 30m depth, sand, May 10, 1984, coll. Mikio Azuma; 5♀♀, Shijiki Bay (St. 14) 32m depth, sand, June 12, 1977, coll. Mikio Azuma; 4♀♀, Shijiki Bay (St. 15) 31m depth, sand, June 13, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 16) 28m depth, sand, May 11, 1984, coll. Mikio Azuma; 3♀♀, Shijiki Bay (St. 16) 28m depth, sand, May 11, 1984, coll. Mikio Azuma; 4♀♀, Shijiki Bay (St. 17) 26m depth, sand, June 13, 1977, coll. Mikio Azuma 1♀, Shijiki Bay (St. 18) 24m depth sand, June 13, 1977, coll. Mikio Azuma; 7♀♀, Shijiki Bay (St. 22) 25m depth, sand, June 13, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 24) 18m depth, sand, May 11, 1984, coll. Mikio Azuma; 38♀♀, Shijiki Bay (St. 25) 23m depth, sand, May 11, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 27) 17m depth, sand, June 13, 1977, coll. Mikio Azuma; 7♀♀, Shijiki Bay (St. 31) 18m depth, sand, May 12, 1984, coll. Mikio Azuma; 4♀♀, Shijiki Bay (St. 31) 18m depth, sand, June 13, 1977, coll. Mikio Azuma; 7♀♀, Shijiki Bay (St. 32) 21m depth, sand, May 12, 1984, coll. Mikio Azuma; 47♀♀, Shijiki Bay (St. 32) 21m depth, sand, May 12, 1984, coll. Mikio Azuma; 16♀♀, Shijiki Bay (St. 33) 22m depth, sand, May 12 ,1984, coll. Mikio Azuma; 41♀♀, Shijiki Bay (St. 34) 16m depth, sand, May 12, 1984, coll. Mikio Azuma; 7♀♀, Shijiki Bay (St. 35) 8m depth, sand,

June 13, 1977, coll. Mikio Azuma; 5♀♀, Shijiki Bay (St. 36) 18m depth, sand, June 13, 1977, coll. Mikio Azuma; 11♀♀, Shijiki Bay (St. 37) 20m depth, sand, May 12, 1984, coll. Mikio Azuma; 14♀♀, Shijiki Bay (St. 38) 18m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 38) 18m depth, sand, June 13, 1977, coll. Mikio Azuma; 5♀♀, Shijiki Bay (St. 39) 12m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 41) 5m depth, muddy sand, June 13, 1977, coll. Mikio Azuma; 4♀♀, Shijiki Bay (St. 42) 8m depth, sand, June 13, 1977, coll. Mikio Azuma; 10♀♀, Shijiki Bay (St. 43) 9m depth, sand, May 12, 1984, coll. Mikio Azuma; 9♀♀, Shijiki Bay (St. 44) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 44) 12m depth, sand, June 1977, coll. Mikio Azuma; 15♀♀, Shijiki Bay (St. 45) 12m depth, sand, June 13, 1977, coll. Mikio Azuma; 7♀♀, Shijiki Bay (St. 45) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 4♀♀, Shijiki Bay (St. 46) 6m depth, sand, May 12, 1984, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 47) 8m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 47) 8m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 48) 11m depth, sand, June 13, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 50) 8m depth, gravel sand, May 12, 1984, coll. Mikio Azuma; 2♀♀, Shijiki Bay, off IIdaura, June 22, 1986, coll. Mikio Azuma.

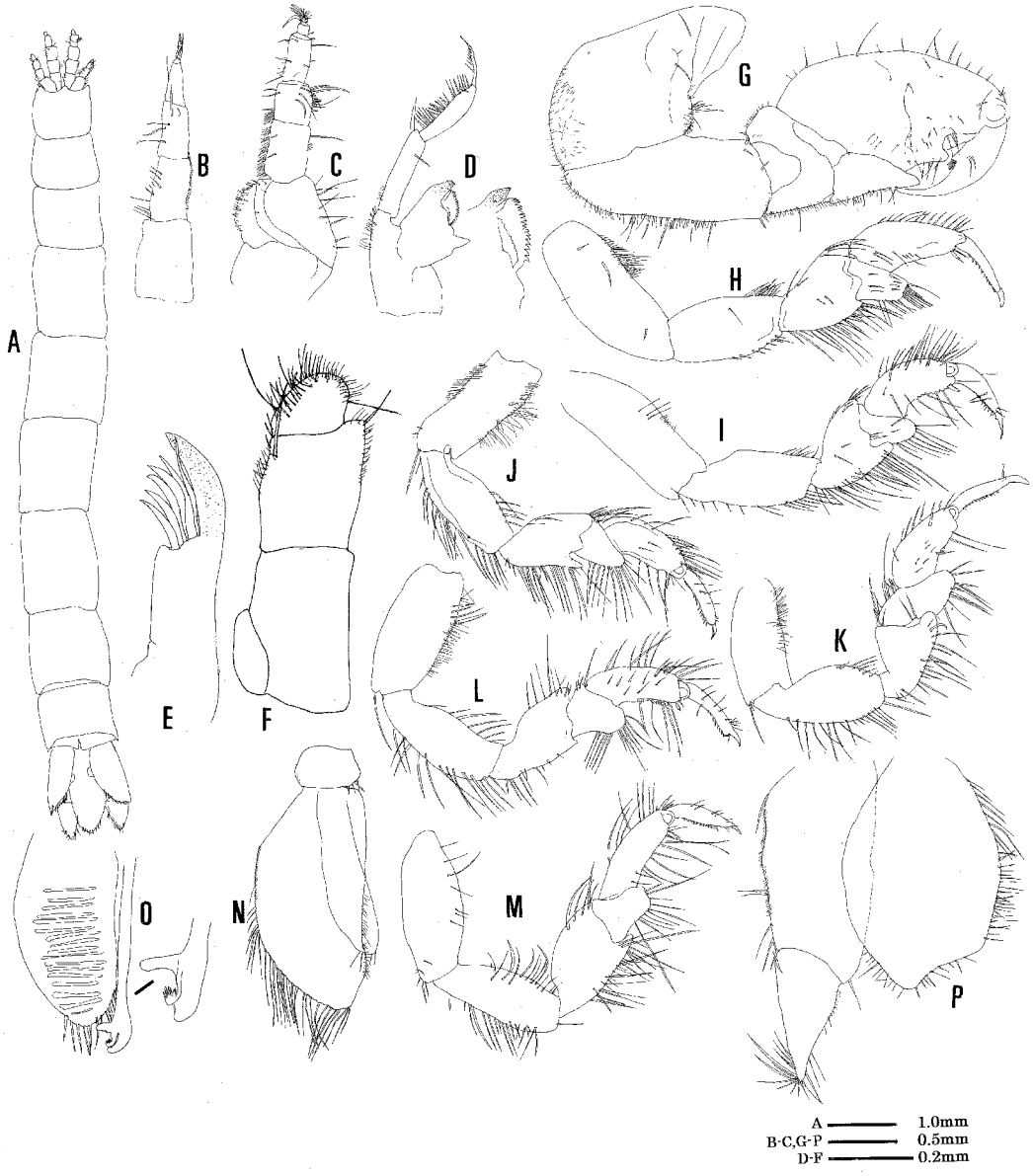


**Fig. 4** ***Cyathura kikuchii*** **Nunomura, 1977**

A, Dorsal view; B, Antennule; C, Antennae; D, Mandible; E, Maxillula; F. Maxilliped; G-M, Pereopods 1-7; N, Pleopod 1; O, Pleopod 2; P, Uropod (All: male).

*Description*: Body up to 11mm in body length, about 10 times as long as wide (Fig. 4A). Cephalon as long as wide; frontal border of cephalon with a weak projection and anterolateral projections. Mutual length cephalon, seven pereonal somite and pleotelson 011is 2: 2: 3: 4: 4: 4: 4: 3: 2: 3. Pleotelson lanceolate, with a pair of statocysts.

Antennule (Fig. 4B) composed of 3 peduncular segments and 2 flagellar segments, terminal one is minute. Antenna (Fig. 4C), a little longer than antennule, composed of 5 peduncular segments and 6 short flagellar segments.

Mandible (Fig. 4 D), with 16 teeth on lamina dentata; terminal palpal segment with 22-23 setae on the terminal palpal segment. Maxillula (Fig.4 E) with a large tooth and 16 small teeth. Maxilliped (Fig. 4F) with 2-segmented palp; palpal segment 2 with 2 relatively long setae and many shorter ones, terminal segment round, with many setae; endite lacking.

Pereopod 1 (Fig. 4G) subchelate: basis with many setae on outer margin; ischium rectangular and a little shorter than basis, with many setae on inner margin; merus, with many setae on inner margin; carpus triangular, with many setae on inner margin; propodus stout without a remarkable step on inner margin; dactylus 0.4 time as long as propodus, with a tuft of relatively short setae in the middle area on inner margins.

Pereopods 2-7 ambulatory and each with much long setae on inner margin. Pereopods 2 (Fig. 4H): basis much short setae on outer margin; ischium three-fourths as long as basis, with relatively long setae on distal half of both margins; merus with long setae in inner side; carpus trapezoid, with more than 15 setae.

Pereopods 3 (Fig. 4I): similar to pereopod 2, but with less short setae on outer margin of basis and with more setae on outer side of propodus.

Pereopod 4 (Fig. 4J) similar to pereopod 2, but basis and ischium with more setae on side of inner.

Pereopod 5 (Fig. 4K) and pereopod 6 (Fig. 4L) similar each other, with less numerous setae on inner side of basis and ischium than pereopod 4.

Pereopod 7 (Fig. 4M) similar to pereopod 6, but with setae, only less numerous on outer area of basis.

Pleopod 1 (Fig. 4N): basis rectangular; endopod slender; exopod wide and a lanceolate, with more than 30 setae around the margin.

Pleopod 2 of male (Fig. 4O): short apical area of appendix masculina suppressing branches with widened bifurcate apex.

Uropod (Fig. 4P): basis twice as long as wide, endopod triangular, apex with a dozen or more setae; exopod broad-lanceolate, with a very shallow with more than 50 setae around the margin.

*Remarks*: Though 30 species have been known and five species have been reported from the Sea of Japan (Nunomura 1976, 1977, 2001, 2006) Nunomura and Hagino, 2000), but the present materials were identical with *Cyathura kikuchii* Nunomura, 1977, described from Amakusa in shape. But there are some differences in some features: (1) shorter apical area of appendix masculina on specimens of male second pleopod, (2) more setose setae on pereopods, (3) more setae on the terminal palpal segment mandible, (4) longer teeth of maxillula, (5) acuter tip of endopod of uropod and (6) longer but less numerous setae on apical part of uropod. I think that these differences are considered to be due to developmental stage of other variation. The present specimens may be more mature stage then holotipe. Though a big amount of sample had been collected but almost all the specimens were female. All the samplings had been carried out in May or June, and male individuals maybe appears in other season, perhaps in winter.

## Family Paranthuridae

### *Colanthura angularis* n.sp.

**(Japanese name: Kadobari-ahitarazu-uminanafushi, new)**

**(Fig. 5)**

*Material examined*: 1 ♂ (3.8 mm in length), Shijiki Bay (St. 1) 41m depth, sandy gravel, June 12, 1977, coll. Mikio Azuma. Holotype (TOYA C- 23667) is deposited at Toyama Science Museum.

*Description*: Body (Fig. 5A) relatively short, 9.6 times as long as wide. Color pale yellow in alcohol. Body

surface bearing tiny scales. Cephalon (Fig. 5B) : antero-lateral margin protruded. Frontal border of cephalon. Mutual length of first to sixth pereonal somites 2: 4: 3: 2: 2: 2.

Pereonal somite 7 very small. Pleonal somites barrel-shaped and each separated first pleopod longer than the second. Pleotelson broad lanceolate, with many setae on distal area.

Antennule (Fig. 5D) composed of 3 peduncular and 4 flagellar segments. Antenna (Fig. 5E) composed of 5 peduncular and 5-6 short flagellar segments.

Mandible (Fig. 5F) reduced, without palp. Maxillula (Fig. 5G) long, with 9-10 saw-like teeth. Maxilliped (Fig. 5H) slender composed a big single segment and an additional tiny segment.

Pereopod 1 subchelate (Fig. 5I): basis rectangular; ischium a little shorter than basis; merus short triangular, 0.2 times as long as wide ; carpus with 4 setae at the tip; propodus with 8-9 curved setae and a series of more than a dozen on inner proximal surface; dactylus 0.6 times as long as propodus.

Pereopod 2 (Fig. 5J) subchelate, but slightly slenderer than pereopod 1: basis 3 times as long as wide; ischium a little shorter than basis; merus triangular; carpus triangular, with a seta in the inner distal angle; propodus less expanded than that of pereopod 1, with 6 sensory setae; dactylus 0.6 times as long as propodus.

Pereopod 3 (Fig. 5K), similar to pereopod 2, but propodus with only 5 sensory setae on inner margin.

Pereopods 4-6 ambulatory. Pereopods 4-5(Fig. 5L): basis and ischium oblong; merus long, 0.6 times as long as ischium; carpus as long as merus, with 2 sensory setae and 2-3 setae on inner margin; propodus with a sensory setae; dactylus 0.4 times as long as propodus.

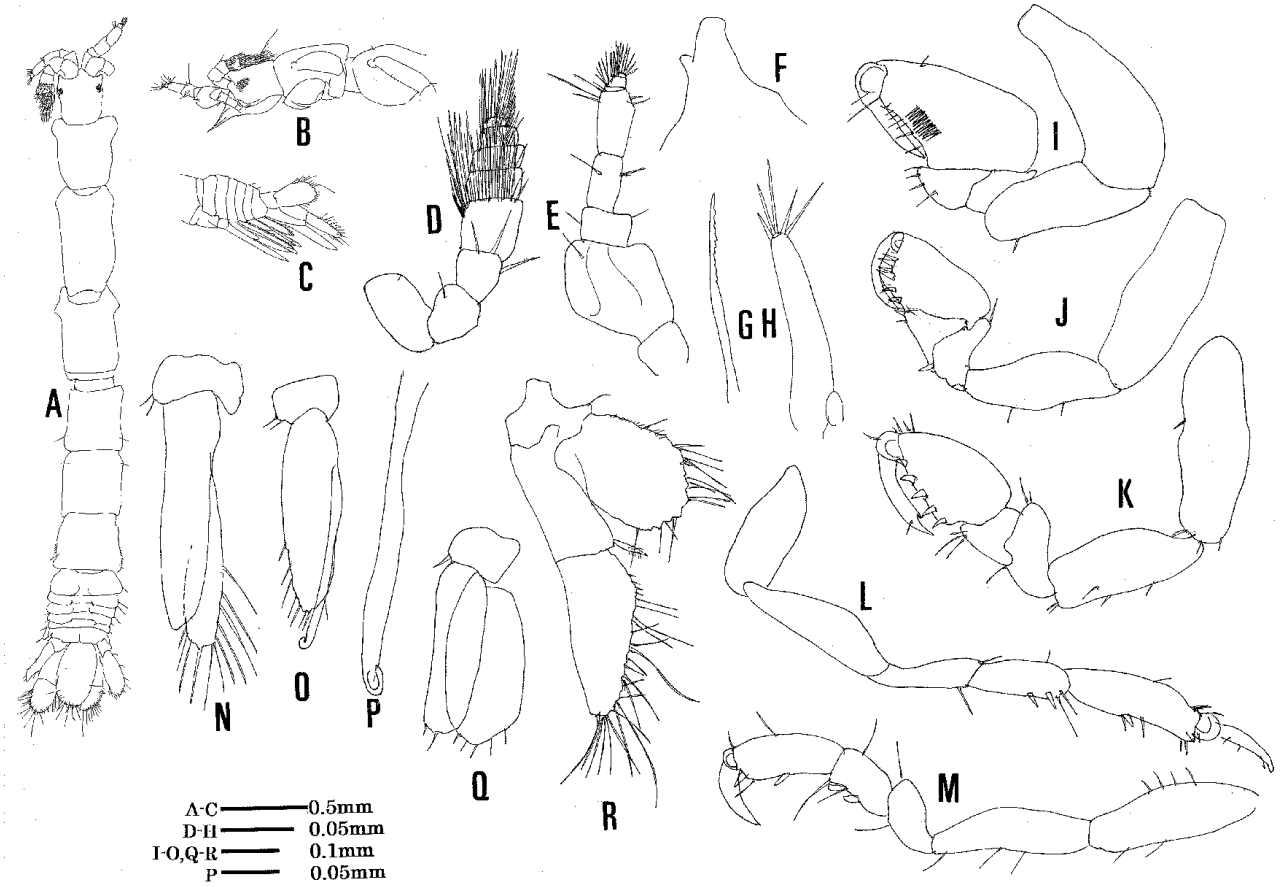


**Fig. 5** ***Colanthura angularis*** **n.sp.**

A, Dorsal view; B, Lateral view of anterior part; C, Lateral view of anterior part; D, Antennule; E, Antenna; F, Mandible; G, Maxillula; H, Maxilliped; I-K, Pereopods 1-3; L-M, Pereopods 5-6; N, Pleopod 1; O, Pleopod 2; Q, Stylet of the same; R, Uropod (All: male holotype).

Pereopod 6 (Fig. 5M): basis with 2 setae on inner margin and 4 setae of outer margin; ischium with 3 setae on inner margin merus half as long as ischium; carpus almost as long as merus, with 2 stout sensory setae; propodus with a seta and 2 sensory setae on inner margin; dactylus two-thirds as long as propodus.

Pereopod 7 lacking.

Pleopod 1 (Fig. 5N): basis rectangular; endopod lanceolate, 5 times as long as wide; exopod slightly longer than endopod, with 11 setae.

Pleopod 2 (Fig. 5O): basis rectangular; endopod lanceolate, with 8 setae around the margin: appendix masculina exceeds the tip of endopod, epical area rounded (Fig. 5P).

Pleopods 3-5(Fig. 5Q): basis rectangular; both rami lanceolate.

Uropod (Fig. 5R): basis rectangular, with a plumose seta at outer distal angle: endopod oval and a little longer than basis, with 30 setae around the margin; exopod oval, with sinuate margin.

Etymology: "angularis" means "angular" in Latin. The present new species has relatively angular anterolateral margin of pereonal somites 1-3.

*Remarks*: Hitherto 10 species have been recorded as valid, among them. The present new species is most closely allied to *Colanthura pigmentata* Kensley, 1980, especially in having additional tiny terminal segment and wider first pleonal somite and recurved tip of male appendix masculina on pleopod 2 and presence of 11-12 sensory setae on inner proximal surface.

But the former is separated from the latter in the following features:(1) more strongly protruded anterolateral angular and medial projection, (2) angular anterolateral angle of pereonal somites 1-3, (3) longer uropodal endopod, (4) numerous dentation on maxillula, (5) more strongly setose uropod, (6) slenderer propodus of pereopod 1 and (7) shorter propodus of sixth pereopod.

In Japan, two species of this genus have been reported from the Japanese coasts (Nunomura 1975, 1993). This species is also allied to *Colanthura setouchiensis* Nunomura(1993) reported from Seto Inland Sea, but, the former is separated from the latter in the following features: (1) absence of having additional tiny terminal segment, (2) not recurved tip of male appendix masculina on pleopod 2, (3) more strongly protruded anterolateral angular and medial projection, (4) longer uropodal endopod, (5) longer teeth on maxillula, (6) more strongly setose uropod, (7) slenderer propodus of pereopod 1 and (8) more angular anterolateral angle of pereonal somites 1-3.

### *Paranthura lineata* Nunomura, 1977
### (Japanese name: Kuroobi-uminanafushi)

*Paranthura lineata* Nunomura, 1977, p. 87, fig. 13 (Tomioka Bay, 30m deep).

*Material examined*: 1♀, Shijiki Bay, off IIdaura, June 22, 1986, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 13) 35m depth, sand, May 10, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 18) 24m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 36) 18m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 44) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 4♀♀, Shijiki Bay (St. 50) 8m depth, gravery sand, 3 June 1977, coll. Mikio Azuma.

### *Paranthura japonica* Richardson, 1909
### (Japanese name: Yamato-uminanafushi)

*Paranthura japonica* Richardson 1909, p. 77, figs. 4-5.

*Material examined*: 1♀, Shijiki Bay (St. 1) 41m depth, sandy gravel, June 12, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 3) 35mm depth, sand, May 10, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 8) 16m depth, sand, June 12, 1977, coll, Mikio Azuma; 1♀, Shijiki Bay (St. 21) 25m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 22) 25m depth, sand, May 11, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 24) 18m depth, sand, May 11, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 26) 21m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♂1♀, Shijiki Bay (St. 27) 17m depth, sand, June 13, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 31) 18m depth, sand, June 13, 1977,

coll. Mikio Azuma; 1♀, Shijiki Bay (St. 35) 8m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 36) 18m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♂, Shijiki Bay (St. 45) 12m depth, sand, May 12, 1984, coll. Mikio Azuma.

## *Paranthura alba* Nunomura, 1977
## (Japanese name: Shiro-uminanafushi)
## (Fig. 6)

*Paranthura alba* Nunomura 1977, p. 84, figs. 10-12.

*Illustrated specimen*: 1♀(13.5 mm body length), Shijiki Bay (St. 36) 18m depth, sand, May 12, 1984, coll. Mikio Azuma.

*Other specimens*: 1♀, Shijiki Bay, (St. 3) 35mm depth, sand, May 10, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay, (St. 15) 31m depth, sand, May 11, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay, (St. 50) 8m depth, gravery sand, May 12, 1984, coll. Mikio Azuma.

*Description*: Body (Fig. 6A) 13.3 times as long as wide. Color white. Cephalon 1.4 times as long as wide; frontal border of cephalon strongly protruded. Eyes mediocre in size composed 23 ommatidia. Mutual length of pereonal somite is 7: 10: 10: 10: 10: 7: 4. All the pleonal somites completed, 1.5 times longer than pereonal somite 7.

Antennule (Fig. 6B) with 3 peduncular and 5 flagellar segments. Antenna (Fig. 6C) with 5 peduncular and a flagellar segments, with many setae in distal area.

Mandible (Fig. 6D): pars incisiva acute; palp-3 segmented, terminal segment with 9-10 relatively short setae. Maxillula (Fig. 6E) with a large tooth and 15-17 small teeth. Maxilliped (Fig. 6F) with a single palp; basis palpal segment with 7-8 setae; endite lacking.

Pereopod 1 (Fig. 6G) subchelate: ischium rectangular; merus half-length of width as long as wide, with a few of setae on outer margins; carpus triangular, with a group of setae on distal area on inner margin; propodus with a series of setae; dactylus unguis.

Pereopod 2 (Fig. 6H): basis with 2 short setae at inner distal angle and a seta on outer margin; ischium three-fourths as long as basis; merus with a long seta on inner margin and outer distal angles; carpus triangular, with 4 setae on outer distal area; propodus with 8 sensory setae on and many setae inner margin; dactylus 0.55 times as long as propodus.

Pereopod 3 (Fig. 6I): basis with 2 setae at inner distal angle; ischium as long as basis; merus 0.4 times as long as ischium, with a long seta on inner margin and outer distal angular; carpus triangular, with 2 setae on outer distal area; propodus stout, but narrower than the second, with 8 sensory setae on inner margin; dactylus half as long as propodus.

Pereopods 4-7 ambulatory (Fig. 6J): basis about three times as long as wide; ischium three-fourths as long as basis; merus with 3-4 long setae at inner distal area; carpus times as long as merus, with more than twelve setae and on inner margin; propodus times as long as merus, with 3 sensory setae and 5-6 ordinary ones on inner margin; dactylus as long as propodus.

Pereopod 7 (Fig. 6K) longer than the preceding ones: basis with 7-8 setae on lateral surface of distal half; ischium as long as basis; merus two-thirds as long as ischium; carpus a little shorter than merus, with setae propodus1.5 times longer than merus, with 2 stout setae; dactylus two-thirds as long as propodus.

Pleopod 1 (Fig. 6L): basis rectangular; exopod operculiform, slightly longer than endopod; endopod narrow 0.85 times longer than exopod.

Pleopod 2 (Fig. 6M): basis rectangular; both rami lanceolate, each with about a dozen setae around the margin.

Pleopods 3-5 (Fig. 6N): both rami lanceolate.

Uropod (Fig. 6N): basis 1.6 times as long as wide; endopod round, 0.6 times as long as basis, with many setae around the margin; exopod triangular, with sinuate margin.

*Remarks*: The present specimens agree with the original description (Nunomura, 1977), but the present specimens

differ from the original description the following features: (1) bigger eyes with more ommatidea, (2) wider propodus of pereopod 1 to 3, (3) more setae of mandibular palpal segment 3, (4) longer propodus and merus of pereopod 7 and (5) numerous setae on both rami of uopodod.

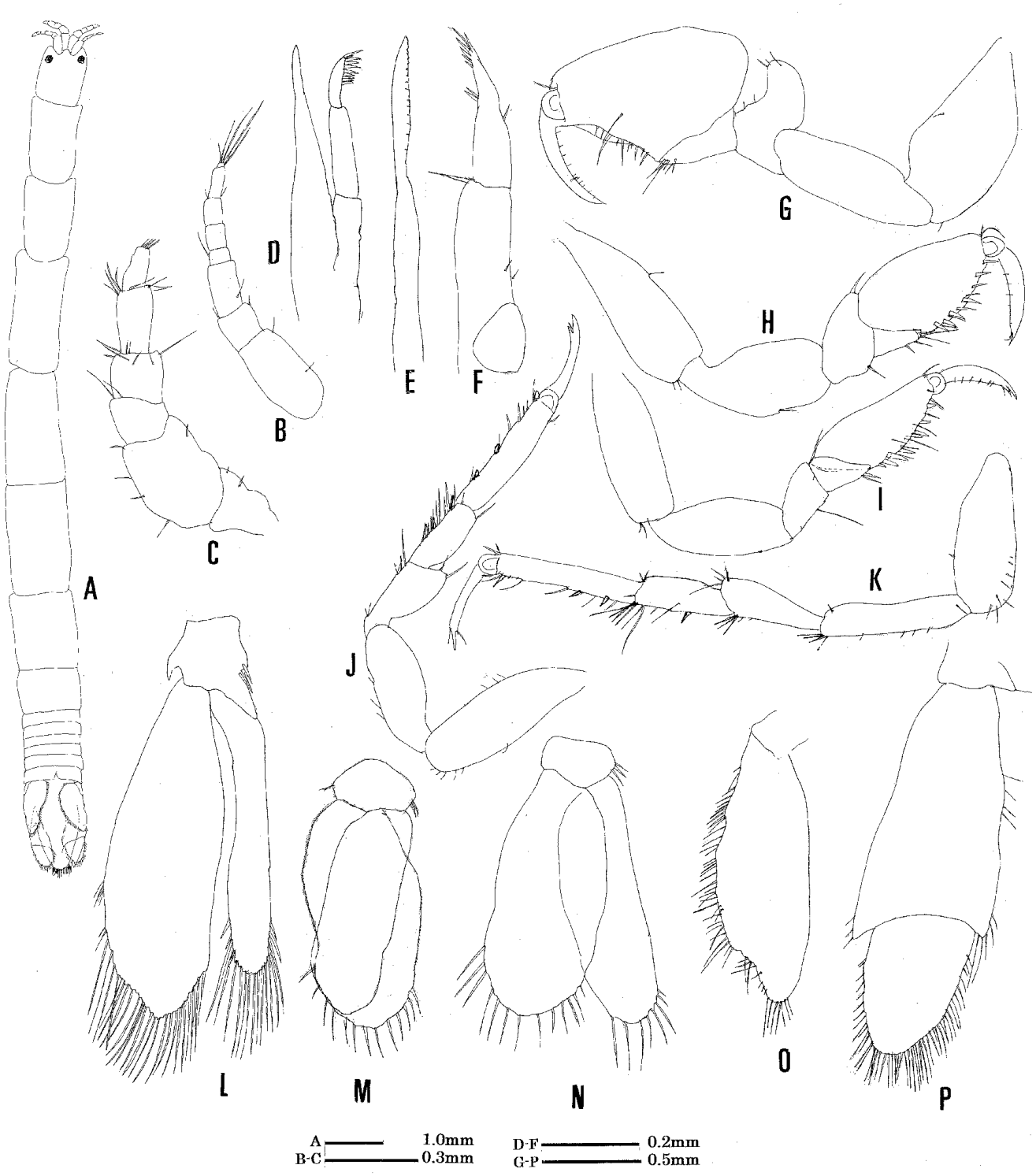


**Fig. 6** ***Paranthura alba*** **Nunomura, 1977**

A, Dorsal view; B, Antennule; C, Antennae; D, Mandible; E, Maxillula; G-I, Pereopods 1-3; J, Pereopod 5; K, Pereopod 7; L, Pleopod 1; N, Uropod; O, Pleotelson (All: female).

## *Paranthura* sp.

**(Fig. 7)**

*Illustrated specimen*: 1♀(9.2mm in body length), Shijiki Bay (St. 47) 8m depth, sand, May 12, 1984, coll. Mikio Azuma.

*Other specimens*: 1♀, Shijiki Bay (St. 2) 44m depth, graver sand, June 12, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 5) 33m depth, sand, June 12, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 5) 33m depth, sand, May 10, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 6) 31m depths and, June 12, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 12) 30m depth, sand, June 12, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 14) 32m depth, sand, May 10, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 19) 20m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 21) 25m depth, sand, May 11, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 22) 25m depth, sand, May 11, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 23) 23m depth, sand, June 13, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 25) 23m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 26) 21m depth, sand, May 11, 1984, coll. Mikio Azuma; 5♀♀, Shijiki Bay (St. 34) 16m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 37) 20m depth, sand, May 12, 1984,coll. Mikio Azuma; 3♀♀, Shijiki Bay (St. 37) 20m depth, sand, June 13, 1977, coll. Mikio Azuma; 2♀♀, Shijiki Bay (St. 38) 18m depth, sand, June 13, 1977, coll. Mikio Azuma; 6♀♀, Shijiki Bay (St. 38) 18m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 39) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 5♀♀, Shijiki Bay (St. 39) 12m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 40) 8m depth, gravery sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 40) 8m depth, gravery sand, May 12, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 44) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 45) 12m depth, sand, May 12, 1984, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 47) 8m depth, sand, May 12, 1984, coll. Mikio Azuma; 4♀♀, Shijiki Bay (St. 50) 8m depth, gravery and, May 12, 1984, coll. Mikio Azuma; 7♀♀, Shijiki Bay (St. 42) 8m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 44) 12m depth, sand, June 13, 1977, coll. Mikio Azuma; 6♀♀, Shijiki Bay (St. 47) 8m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 49) 8m depth, sand, June 13, 1977, coll. Mikio Azuma; 1♀, Shijiki Bay (St. 50) 8m depth, gravery sand, June 13, 1977, coll. Mikio Azuma.

*Description*: Body (Fig. 7A) 11.5 times as long as wide. Color white. Cephalon 1.4 times as long as wide; frontal border of cephalon strongly protruded. Eyes mediocre in size composed 15-17 ommatidia. Mutual length of pereonal somite is 2: 2: 3: 3: 3: 3: 2. Pleonal somites completed, 1.2 times longer than the pereonal somite 7. Pleon segments separated perfectly and each segment equal in length. Pleotelson relatively long, with 7-10 setae along lateral margin and a tuft of setae at the tip.

Antennule (Fig. 7B) with 3 peduncular and 5 flagellar segments. Antenna (Fig. 5C) with 5 peduncular and 6 flagellar segments, with many setae in distal area.

Mandible (Fig. 7D): pars incisiva acute; palp-3 segmented; terminal segment with 11 relatively short setae. Maxillula (Fig. 7E) with a large tooth and 11-12 small teeth. Maxilliped (Fig. 7F) with a single palp; basis palpal segment with 5-6 setae; endite lacking.

Pereopod 1 (Fig. 7G) subchelate: basis with many setae on outer margin; ischium as long as basis; merus as long as wide, with a few of setae on both margins; carpus triangular, 6-7 setae on inner margin; propodus stout, 1.6 times as long as wide, with slightly protruded inner distal angle, a series of setae; dactylus 0.55 times as long as propodus.

Pereopod 2 (Fig. 7H) subchelate, but a little slender than paeropods1: basis with 2 setae at inner distal angle and a seta on outer margin; ischium a little longer than basis merus with a long seta on inner margin and outer distal angles; carpus triangular, with 2 setae on outer distal area; propodus, 3.3 times as long as wide, with 7 sensory setae on and many setae inner margin; dactylus half as long as propodus.

Pereopod 3 (Fig. 7I) subchelate, but a little slenderer than pereopod 1: basis 3 times as long as wide; ischium a little shorter than basis, with 2 setae at inner distal angle; merus with a long seta on inner margin and outer distal angle; carpus triangular, with 2 setae on outer distal area; propodus stout but narrower than the second, with

8 sensory setae on inner margin; dactylus half as long as propodus.

Pereopods 4-7 (Fig. 7J-L) ambulatory, but a little longer than those of *Paranthura japonica*.

Pleopod 1 (Fig. 7M): basis rectangular; exopod operculiform, slightly longer than endopod; endopod narrow.

Uropod (Fig. 7N): basis rectangular, 2.1 times as long as wide; endopod round, 2.3 times as long as basis, with many setae around the margin; exopod triangular, with sinuate inner margin.

The present species is most closely allies to *Paranthura alba* Nunomura 1977, but differs in the following features: (1) more flagellar segment of both antennae, (2) stouter propodus of pereopod 1, (3) less numerous teeth of maxillula, (4) more setae on third mandibular palpal segment, (5) more setae on pereopods, (6) more setose and angular tip of uropod and (7) bigger eyes.

The present species are also allied to *Paranthura japonica* Richardson but the following differences are recognized: (1) complete demarcation of pleonal somites, (2) narrower pleotelson, (3) numerous flagellar segments of antenna, (4) less numerous spines on inner margin of pleopod 2, (5) triangular exopod of uropod, (6) less numerous saw-like teeth on maxillula, (7) narrower propodus and ischium of pereopods 6-7, (8) longer ischium of pereopods 6-7 and (9) more strongly sinuate uropod. As only 4 female specimens were available to me, I refrained to establish a new species.

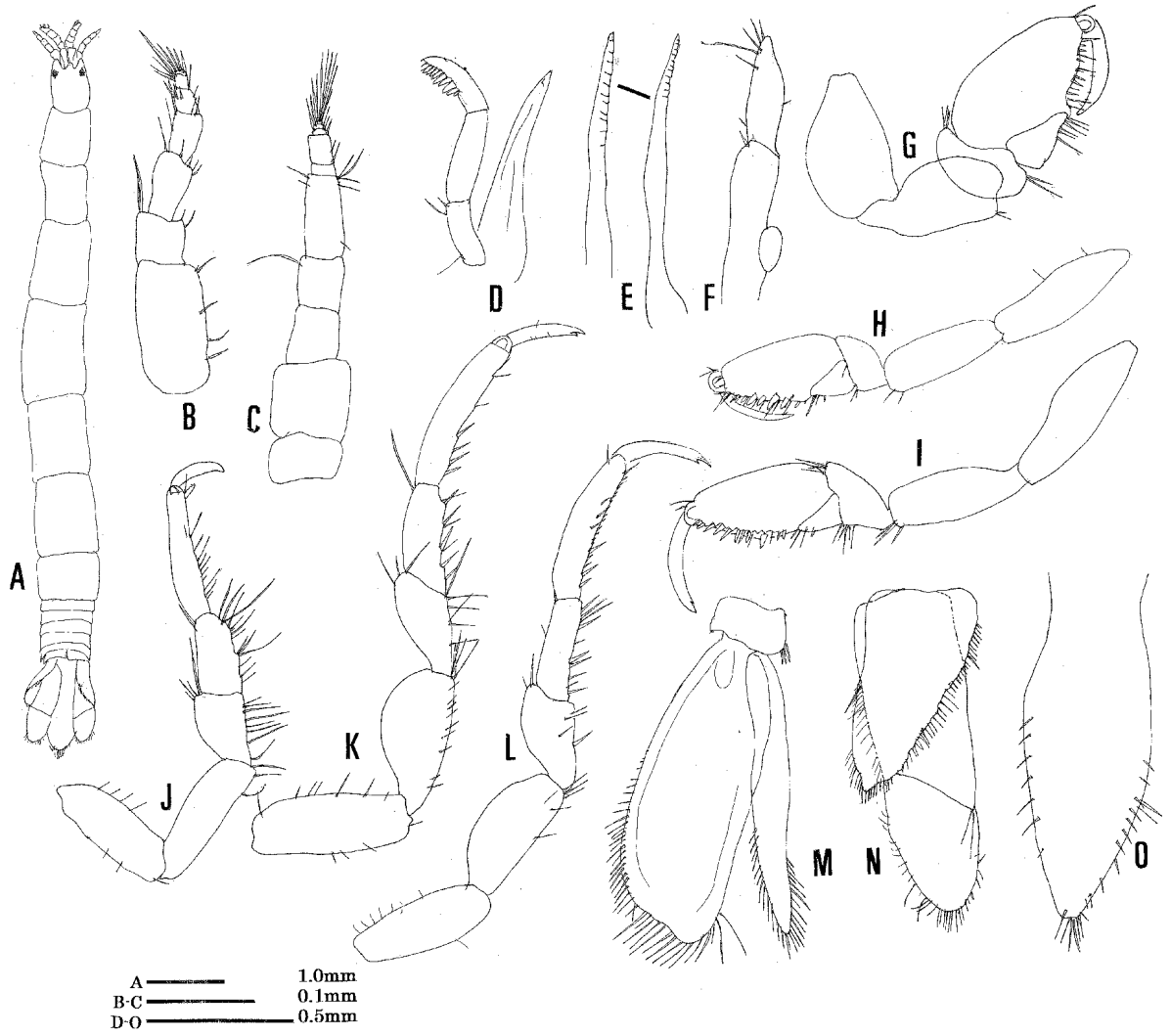


**Fig. 7 *Paranthura* sp.**

A, Dorsal view; B, Antennule; C, Antennae; D, Mandible; E, Maxillula; F, Maxilla; G-I; Pereopods 1-3; K-L, Pereopods 6-7; M, Pleopod 1, N, Uropod; O, Pleotelson (All: female).

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