

## Two New Mysids of the Tribe Erythropini (Crustacea, Mysidacea, Mysidae) from Central Japan

Manuel Rafael Bravo<sup>1</sup> and Masaaki Murano<sup>2</sup>

<sup>1</sup>Vázquez López, 45, 2<sup>o</sup> izquierda, 21001 Huelva, Spain

<sup>2</sup>Institute of Environmental Ecology, METOCEAN Co. Ltd., Riemon 1334–5, Ooigawa-cho, Shida-gun, Shizuoka, 421–02 Japan

**Abstract** Two new species of the tribe Erythropini, Mysidacea, *Gibberythrops longicauda* and *Nakazawaia secunda*, are described from Japanese waters. *G. longicauda* is distinguished from the three known species of the genus by the pair of shorter spines on the apex of telson and the larger number of spines on the endopod of uropod. *N. secunda* is easily distinguished from the type species by the telson with spines not occupying the whole margin, and therefore the generic diagnosis of *Nakazawaia* is amended. A key for the identification of the species of *Gibberythrops* is also included.

**Key words:** Mysidae, *Gibberythrops*, *Nakazawaia*, new species, Japan.

### Introduction

A series of near-bottom plankton samplings using a sledge-net have been carried out in Sagami Bay and Tateyama Bay in the Pacific coast of central Japan by the research and training ship “Seiyo Maru” of the Tokyo University of Fisheries. During the cruises about 80 species of mysids including a number of undescribed species were found so far and some of them were already reported by us (Bravo & Murano, 1996 a, b, c). In the present paper we describe two new species of the tribe Erythropini. The type specimens are deposited in the National Science Museum, Tokyo (NSMT).

### Systematics

#### Genus *Gibberythrops* Illig, 1930

*Gibberythrops* Illig, 1930: 431. — W. M. Tattersall, 1939: 244. — O. S. Tattersall, 1955: 115. — Ii, 1964: 333–335. — Pillai, 1965: 1708. — Murano, 1981: 271–272.

*EOerythrops* Murano, 1969: 207–210; 1976: 19.

**Diagnosis.** Eyes well developed, not compressed dorso-ventrally. Thorax without sternal processes. Pleopods in male biramous and natatory; 1st pair with unsegmented endopod; pseudobranchial processes slender; in female uniramous, reduced to unsegmented small plates. Telson elongate triangular; apex narrow,

with pair of median plumose setae between pair of long spines; lateral margins armed on distal half with small spines, which increase in length distally. Female with 2 pairs of oostegites.

*Type species.* *Gibberythrops acanthura* (Illig, 1906).

*Remarks.* The genus *Gibberythrops* was instituted by Illig (1930) for the reception of *Parerythrops acanthura*, which was established by himself (1906) for a specimen from the Indian Ocean. Later, Coifmann (1937) transferred it to the genus *Erythrops* but *Gibberythrops* was remained as a subgenus. Due to the lack of sternal processes in the thorax and different shapes of the eyes and telson, W. M. Tattersall (1939) allocated the species again in *Gibberythrops* which recovered its generic status. At the same time, he added *Erythrops brevisquamosa* established by Illig (1906) to the *Gibberythrops*. Later, Murano (1981) instituted a new genus, *Illigiella*, for the reception of the species *Gibberythrops brevisquamosa* of Tattersall, based on the telson differences. W. M. Tattersall (1936) established the species *Meterythrops stephensoni* for a material from the Great Barrier Reef. Murano (1969) described *Euerythrops typicus* from Japanese waters as a new genus and a new species, and later he (1976) added *E. amamiensis*, also from Japanese waters, to that genus, although the latter was a synonym of *M. stephensoni* (Murano, 1981). Finally, Murano (1981) transferred *M. stephensoni* and *E. typicus* to the genus *Gibberythrops*.

At present, the genus includes four species and they are identifiable as follows (modified from Murano 1981):

1. Apex of antennal scale extending far beyond terminal spine of outer margin. .... 2
- Apex of antennal scale not extending beyond terminal spine of outer margin. .... 3
2. Cornea as wide as eyestalk. Telson with 4–5 spines on distal 0.3 of lateral margin. .... *G. acanthura* (Illig, 1906)
- Cornea wider than stalk. Telson with 15–18 spines on distal 0.3 of lateral margin. .... *G. longicauda* n. sp.
3. Antennal scale nearly 5 times as long as broad; outer margin nearly straight. Telson elongate-triangular, with spines on distal half of lateral margin. ... *G. typicus* (Murano, 1969)
- Antennal scale about 6 times as long as broad; outer margin curved outwardly. Telson elongate-linguiform, with spines on distal 0.4 of lateral margin. .... *G. stephensoni* (W. M. Tattersall, 1936)

### *Gibberythrops longicauda* sp. nov.

(Figs. 1–2)

*Type specimens.* Holotype (NSMT-Cr 12012), adult male 9.1 mm; allotype

(NSMT-Cr 12013), ovigerous female 9.1 mm; paratypes (NSMT-Cr 12014), 2 adult females (up to 9.1 mm), 2 adult males (up to 9.5 mm), 2 juveniles (up to 4.2 mm); 7 Aug. 1995, Sagami Bay ( $34^{\circ}44.0'N$ ,  $139^{\circ}04.0'E$ ), 350 m, sledge net.

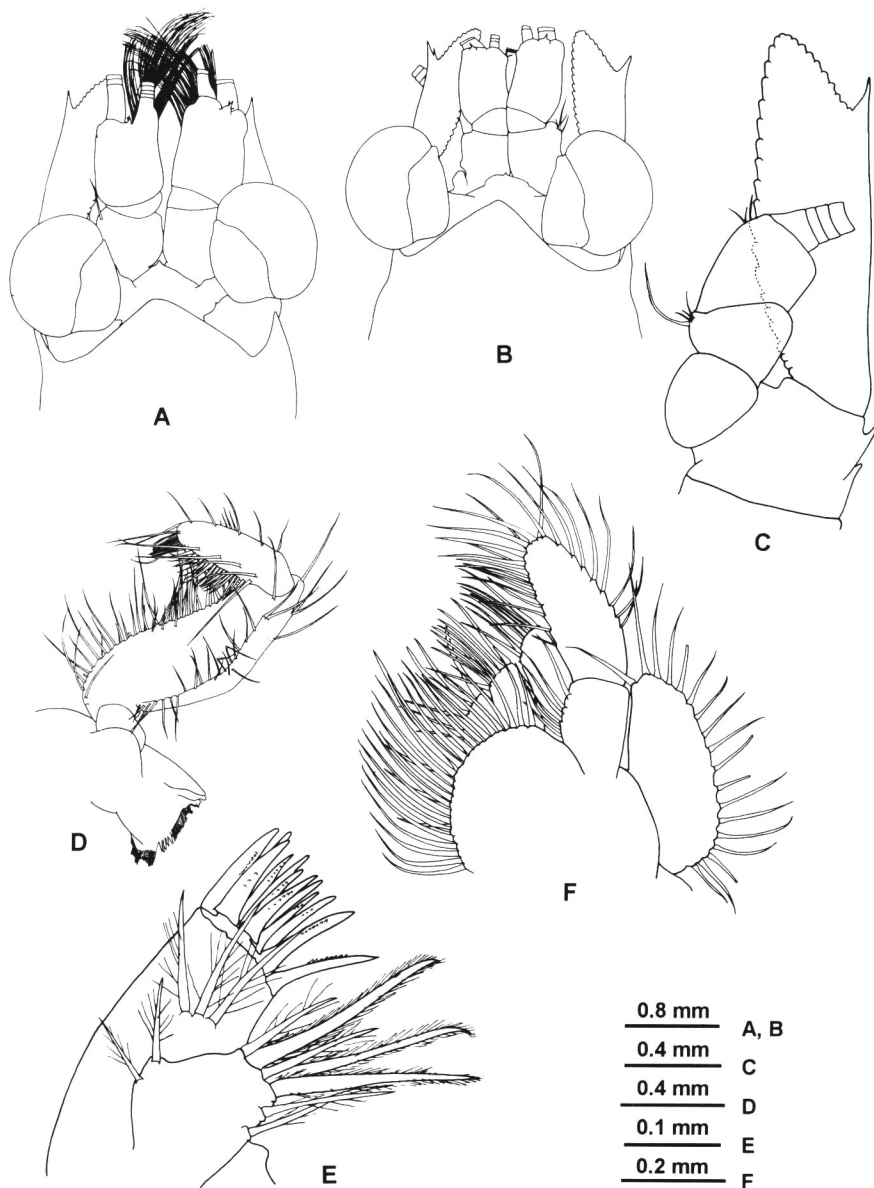


Fig. 1. *Gibberythrops longicauda* sp. nov. A, C–F, Holotype; B, allotype. A, Anterior part of male in dorsal view; B, anterior part of female in dorsal view; C, antenna; D, mandible; E, maxillule; F, maxilla.

*Other material.* 1 adult female (damaged), 2 Aug. 1995, Sagami Bay ( $34^{\circ}45.3'N$ ,  $139^{\circ}11.2'E$ ), 415 m, sledge net.

*Body length.* Adult males up to 9.5 mm, adult females up to 9.1 mm.

*Etymology.* Derived from the long telson.

*Description.* Body robust. Carapace, frontal margin produced into blunt, short rostrum, leaving completely eyes uncovered (Fig. 1 A–B); antero-lateral angle rounded; posterior margin emarginate, leaving 8th and distal part of 7th thoracic somites exposed dorsally.

Eye large, well-developed, globular, reaching 2nd segment of antennular peduncle; cornea not dorso-ventrally compressed, much wider than eyestalk; eyestalk without ocular papilla (Fig. 1 A–B).

Antennular peduncle 3-segmented, more robust in male than in female; 3rd segment longest, longer than combined length of 1st and 2nd in male, about same length in female; 2nd segment shortest (Fig. 1 A–B). Processus masculinus hirsute (Fig. 1 A).

Antennal scale rather short, extending beyond distal margin of antennular peduncle, about 3.3 times as long as broad; outer margin naked, ending in strong spine which is much shorter than apical lobe of scale, in female the strong spine directed outward, sometimes provided with smaller secondary spine in inner side (Fig. 1 B); apical lobe large, in male about 0.2 of scale length (Fig. 1 C), in female about 0.3, distal suture absent. Antennal peduncle composed of 3 subequal segments, 2nd and 3rd segments separated by oblique articulation; sympod with spine on outer side (Fig. 1 C).

Labrum symmetrical, as wide as long, without frontal spiniform process. Mandibular palp robust, 3-segmented, 1st segment shortest, 2nd segment almost twice longer than 3rd; outer side of 2 distal segments densely setose (Fig. 1 D). Maxillule with outer lobe with 12 spines and 3 setae, spines with small spinules on margins; inner lobe with 9 setae, apical 3 of which are large and plumose (Fig. 1 E). Maxilla with distal segment of endopod narrow, about 2.2 times longer than wide, setose except proximal margins; proximal segment with 6 setae on inner margin; exopod with 17 setae on margin (Fig. 1 F).

Sternal processes absent. Endopod of 1st thoracopod short and robust, with small setose lobe on basis; preischium and ischium about same in length, merus longer than carpopropodus, dactylus shortest, with strong claw (Fig. 2 A). Endopod of 2nd thoracopod slender, preischium and dactylus shortest, merus longest, carpopropodus shorter than merus, with distal half slightly enlarged, dactylus with strong claw (Fig. 2 B). Endopods of 3rd–8th thoracopods slenderer than that of 2nd, preischium and dactylus shortest, merus longest, propodus separated by oblique articulation from carpus, longer than carpus, divided into 2 subsegments by slightly oblique articulation, proximal subsegment longer than distal one, dactylus with strong claw (Fig. 2 C). Exopods 9-segmented in 1st pair,

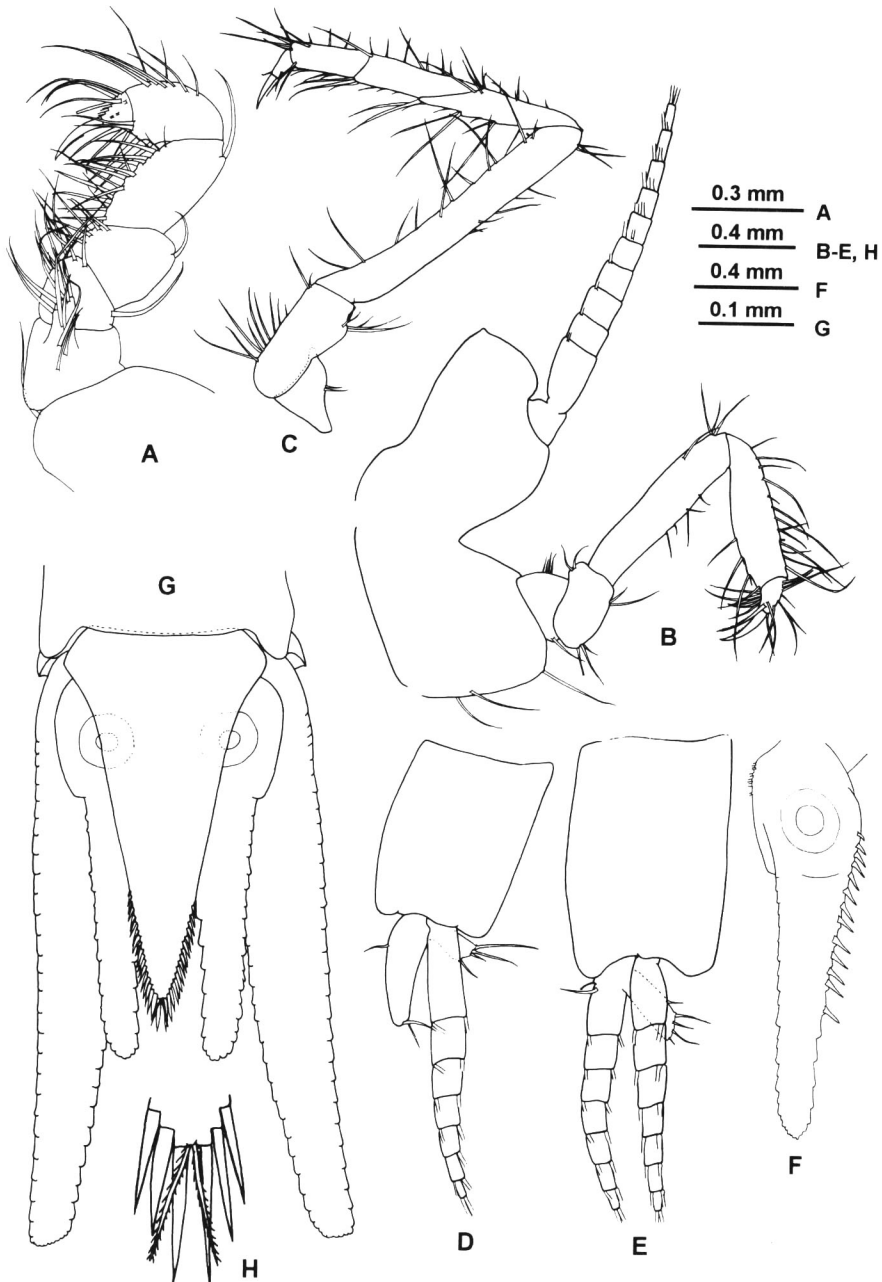


Fig. 2. *Gibberythrops longicauda* sp. nov. A-E, Holotype; F-H, allotype. A, Endopod of 1st thoracopod; B, 2nd thoracopod; C, endopod of 3rd thoracopod; D, 1st male pleopod; E, 4th male pleopod; F, endopod of uropod; G, uropod and telson; H, apical part of telson.

10-segmented in 2nd-8th pairs; distal outer corner of basal plate with blunt process (Fig. 2 B).

Sixth pleonite nearly 1.5 times longer than 5th.

Pleopods in male biramous and natatory, endopod and exopod equal in length, 7-segmented except endopod of 1st pair unsegmented (Fig. 2 D), without modified setae, pseudobranchial process slender (Fig. 2 D-E). Pleopods in female uniramous and rudimentary.

Endopod of uropod slightly longer than telson, with about 13 spines on inner margin from statocyst region to distal 0.3 (Fig. 2 F-G); exopod long, slightly curved outward, about 1.6 times as long as telson (Fig. 2 G).

Telson elongate triangular, 1.8 times as long as broad, becoming narrower abruptly in proximal part, then tapering to narrow apex; lateral margin armed on distal 0.3 with about 15-18 spines which increase in length distally (Fig. 2 G); apex with pair of spines being longest among marginal spines and 2 median plumose setae (Fig. 2 G-H).

*Remarks.* The present new species resembles *Gibberythrops acanthura* (Illig, 1906) in the apex of antennal scale extending far beyond the spine marking the end of the naked outer margin, but the two species are distinguished by the number of lateral spines of the telson, 4-5 in *G. acanthura* against 15-18 in the new species. *Gibberythrops longicauda* also resembles *G. typicus* in the shape of telson and the number of its marginal spines, and in the male pleopods with both rami of about the same length and without modified setae. However, they are easily distinguished by the number of spines on the endopod of uropod, 5 in *G. typicus* against 13 in the new species, and by the antennal scale, larger in *G. typicus* than in the present new species. The new species is distinguished from *Gibberythrops stephensoni* by the antennal scale, which is about 3.3 times as long as broad in the new species whereas about 6 times as long as broad in *G. stephensoni*, and by the shape of the telson, which is elongate-triangular in the new species against elongate-linguiform in *G. stephensoni*. All the three known species of the genus are also differentiable from the new species by the two characters in the latter species, the shorter apical pair of spines on the telson and the larger number of spines on the endopod of uropod.

#### Genus *Nakazawaia* Murano, 1981

*Nakazawaia* Murano, 1981: 293.

*Diagnosis.* Eyes functionally normal, not depressed. Antennal peduncle with 3rd segment in a different plane from 2nd. Pleopods of male well developed, biramous, both rami multi-segmented except endopod of 1st pair unsegmented; endopod of 4th pair with modified setae on penultimate and antepenultimate

segments; 2nd–5th pairs with accessory lobe on the pseudobranchial lobe. Telson triangular, with lateral margins armed with spines; apex narrowly truncate, with long spine at each corner and 2–3 spines between them; without pair of plumose setae.

*Type species.* *Nakazawaia japonica* Murano, 1981.

*Remarks.* The present genus was instituted by Murano (1981) for the reception of *Nakazawaia japonica* which was collected from East China Sea and Suruga Bay. The genus *Nakazawaia* is easily distinguished from other genera within the tribe Erythropini by the male pleopods having the accessory lobe on pseudobranchial lobes of the posterior four pairs and the endopod of 4th pair with modified setae. Nevertheless, the present genus is allied to *Pteromysis* and *Holmesiella* in the oblique connection between the 2nd and 3rd segments of the antennal peduncle, but in the latter two genera the modified seta of the endopod of 4th male pleopod is present on only the ultimate segment, whereas it occurs on both the penultimate and antepenultimate segments in *Nakazawaia*.

*Nakazawaia secunda* sp. nov.

(Figs. 3–4)

*Type specimens.* Holotype (NSMT-Cr 12015), adult male 9.4 mm (damaged); allotype (NSMT-Cr 12016), adult female 9.5 mm; paratypes (NSMT-Cr 12017), 5 immature males (up to 8.6 mm), 6 adult females (up to 9 mm); 7 Aug. 1995, Sagami Bay (34°44.0'N, 139°04.0'E), 350 m, sledge net.

*Other material.* 4 adult males (up to 11.1 mm), 2 immature males (up to 8.7 mm), 16 Nov. 1995, Tateyama Bay (34°59.7'N, 139°47.0'E), 343 m, sledge net. 1 immature female (5.4 mm), 16 Nov. 1995, Tateyama Bay (34°59.4'N, 139°46.8'E), 140 m, sledge net.

*Body length.* Adult males up to 9.4 mm, adult females up to 11.1 mm.

*Etymology.* Because it is the second species for the genus.

*Description.* Body robust. Frontal margin of carapace produced into broadly rounded rostrum, not extending to base of antennular peduncles, leaving eyes uncovered (Fig. 3 A–B); antero-lateral corner of carapace rounded; posterior margin emarginate, leaving 8th thoracic somite exposed dorsally.

Eye well developed, reaching base of 3rd segment of antennular peduncle, cornea large, globular, occupying almost whole eye, much wider than stalk (Fig. 3 A–B).

Antennular peduncle more robust in male than in female, 3-segmented, 1st segment with outer distal corner produced and setose; in male 1st segment about same in length as 3rd which is as long as wide, 2nd segment shortest, processus masculinus well developed (Fig. 3 B); in female 1st segment longer than combined length of 2nd and 3rd, 2nd segment shortest, 3rd segment longer than wide

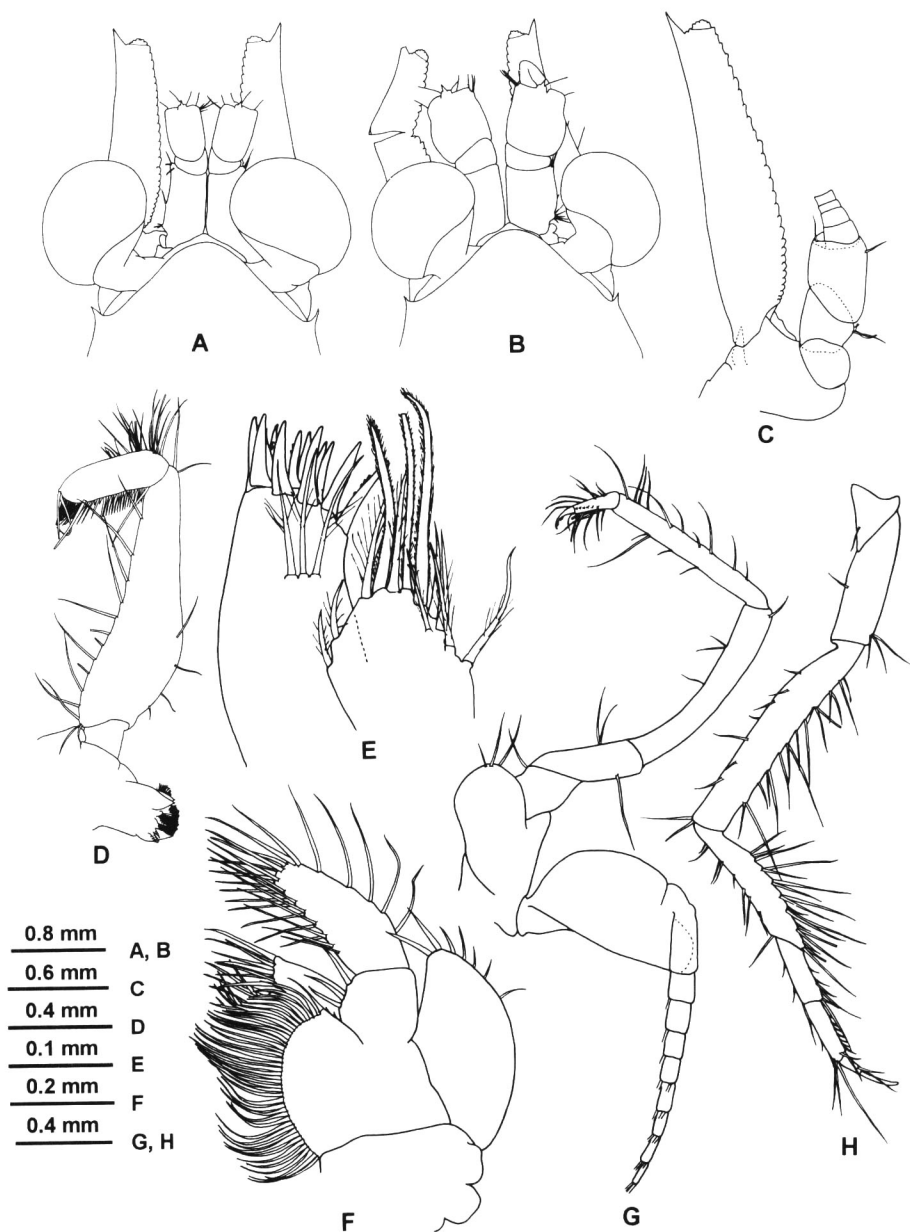


Fig. 3. *Nakazawaia secunda* sp. nov. A, Allotype; B, a paratype, immature male; C-H, holotype. A, Anterior part of female in dorsal view; B, anterior part of male in dorsal view; C, antenna; D, mandible; E, maxillule; F, maxilla; G, 2nd thoracopod; H, endopod of 7th thoracopod.

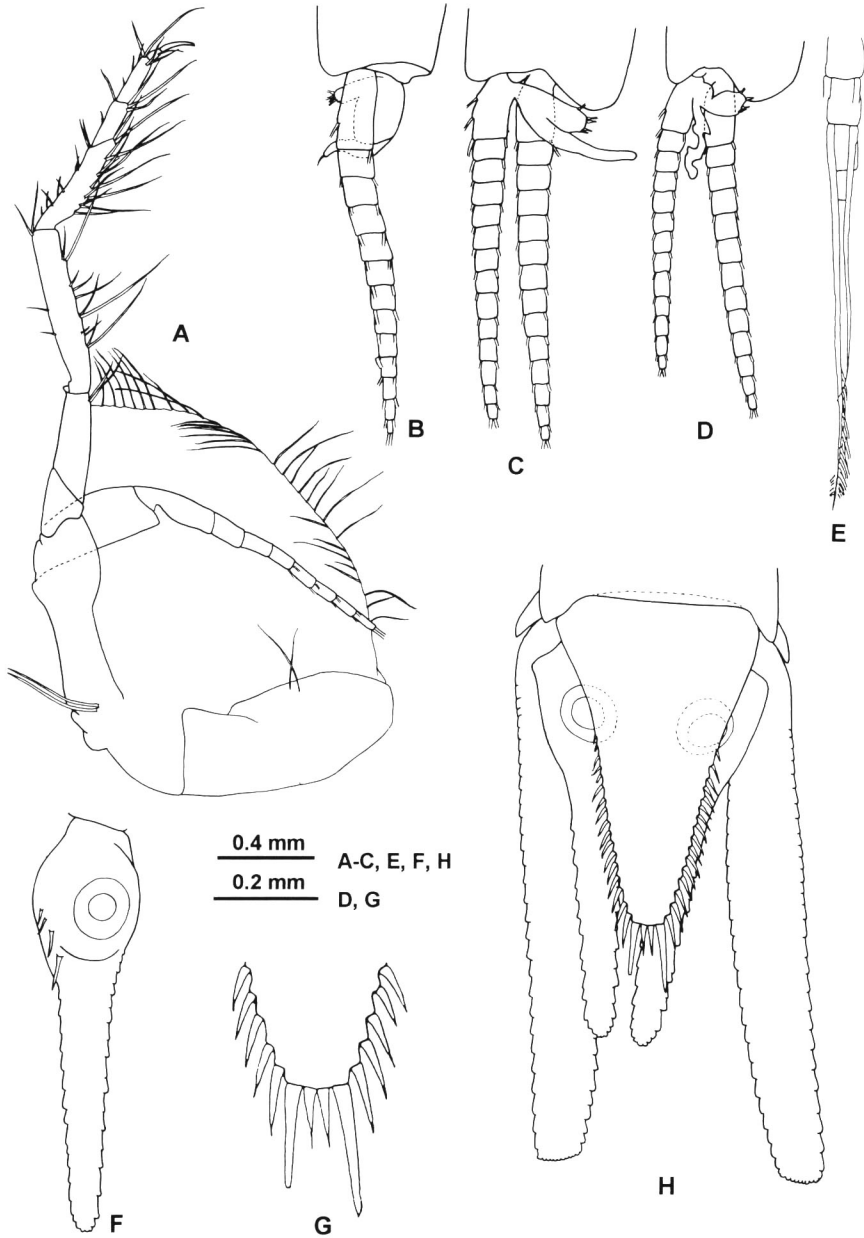


Fig. 4. *Nakazawaia secunda* sp. nov. A, A paratype, adult female; B-H, holotype. A, Eighth thoracopod with oostegite; B, 1st male pleopod; C, 3rd male pleopod; D, 5th male pleopod; E, distal part of endopod of 4th male pleopod; F, endopod of uropod; G, apical part of telson; H, uropod and telson.

(Fig. 3 A).

Antennal scale long, about 4.4 times as long as broad, overreaching anten-nular peduncle for about 0.25 of its length in male and 0.3 in female; outer margin concave in distal half, naked, ending in spine which extends beyond apex of scale; apical lobe short, with distinct suture (Fig. 3 C). Antennal peduncle short, extending to proximal 3rd of antennal scale, 3-segmented, 3rd segment connected with 2nd segment in different plane, as long as combined length of preceding ones; outer corner of sympod with one spine (Fig. 3 C).

Labrum symmetrical without frontal spiniform process. Mandibular palp slender, 3-segmented, 1st segment shortest, 2nd segment nearly 2.5 times as long as 3rd (Fig. 3 D). Maxillule with outer lobe with 11 spines and 3 setae, spines with small spinules on margins; inner lobe with 10 setae, apical 3 of which are large and plumose (Fig. 3 E). Maxilla as that of *Nakazawaia japonica* but exopod armed with 7 setae on distal half of lateral margin (Fig. 3 F).

Endopod of 1st thoracopod as that of *Nakazawaia japonica*. Endopod of 2nd thoracopod slender, carpopropodus slightly shorter than merus (Fig. 3 G). Endopods of 3rd to 7th thoracopods slender, merus about 1.7 times longer than ischium, carpus subequal in length to propodus, propodus divided into 2 subseg-ments of subequal length, dactylus with slender claw (Fig. 3 H); endopod of 8th thoracopod shorter than those of 3rd–7th thoracopods, merus slightly longer than ischium (Fig. 4 A). Exopods 8-segmented in 1st and 8th pairs (Fig. 4 A), 9-segmented in 2nd–7th pairs (Fig. 3 G); distal outer corner of basal plate without spiniform process.

Sixth pleonite about 1.7 times as long as 5th.

Pleopods in male biramous and natatory, 1st pair with unsegmented endopod and 13-segmented exopod (Fig. 4 B), 2nd–4th pleopods with endopod shorter than exopod, both rami 14-segmented (Fig. 4 C), 4th pleopod with endopod armed on outer distal end of antepenultimate segment with long seta furnished with fine short setae on its distal 0.3; setae of penultimate and ultimate segments lost for damage (Fig. 4 E), 5th pleopod with both rami 13-segmented (Fig. 4 D); pseudobranchial lobe on 2nd–5th pleopods with long, thin accessory lobe (Fig. 4 C–D). Female pleopods uniramous and rudimentary.

Endopod of uropod extending beyond apex of telson for 0.3 of its length, with 4–5 spines on ventral side near inner margin of statocyst region (Fig. 4 F, H); exopod long, overreaching telson for 0.43 of its length (Fig. 4 H).

Telson triangular with narrow truncate apex, as long as 6th pleonite and nearly 1.6 times as long as broad at base; lateral margin slightly concave, armed on distal 0.7 with about 17 short spines, of which those on distal 0.3 increase in length distally (Fig. 4 H). Apex armed with 2 pairs of spines, outer pair more than twice as long as inner, without plumose setae (Fig. 4 G).

*Remarks.* The new species is closely related to the only known species of

Table 1. Morphological differences between *Nakazawaia japonica* Murano, 1981 and *Nakazawaia secunda* sp. nov.

|                                                  | <i>Nakazawaia japonica</i> Murano, 1981       | <i>Nakazawaia secunda</i> sp. nov.                  |
|--------------------------------------------------|-----------------------------------------------|-----------------------------------------------------|
| Eye                                              | Smaller                                       | Larger                                              |
| 3rd segment of antennular peduncle               | Wider than long                               | Longer than wide in female, as long as wide in male |
| Terminal spine of outer margin of antennal scale | About same length as apical lobe of scale     | Much longer than apical lobe of scale               |
| 2nd segment of mandibular palp                   | About 3 times longer than 3rd segment         | Nearly 2.5 times longer than 3rd segment            |
| Exopod of maxilla                                | With 3 setae                                  | With 7 setae                                        |
| Merus of endopod of 2nd thoracopod               | About the same length as carpopropodus        | Longer than carpopropodus                           |
| Basal plate of exopods of thoracopods            | With spiniform process on distal outer corner | Without such process                                |
| Endopod of uropod                                | With 3 spines                                 | With 4–5 spines                                     |
| Telson                                           | Shorter. Spines on whole lateral margin       | Longer. Spines on distal 0.7 of lateral margin      |

the genus *Nakazawaia*, *N. japonica*, but easily distinguished from the latter species by the telson with spines on distal 0.7 of the lateral margin; in *N. japonica* the lateral margin is armed with spines throughout. Morphological differences between the two species are summarized in Table 1.

### Acknowledgments

One of the authors, MB, wishes to extend his most sincere thanks to the Ministry of Education, Science, Sports and Culture of Japan for granting to him the opportunity, by means of a fellowship, of carrying out the present study.

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