

Short notes and reviews

***Anchimolgus gratus* n. sp. (Copepoda: Poecilostomatoida: Anchimolgidae), associated with the scleractinian coral *Lithactinia novaehiberniae* in New Caledonia**

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Keywords: Copepoda, Poecilostomatoida, *Anchimolgus*, associate, scleractinian coral, New Caledonia

**Abstract**

*Anchimolgus gratus* n. sp., associated with the fungiid coral *Lithactinia novaehiberniae* Lesson, 1831 in New Caledonia, is distinguished from its congeners (except *A. pandus* Humes, 1978) by the formula III,I,5 on the third segment of the exopod of leg 4. The new species differs from *A. pandus* which is much smaller and in which the female genital double-somite is as long as wide.

**Introduction**

The copepod genus *Anchimolgus* Humes & Stock, 1972, is widespread in the tropical Indo-Pacific from Madagascar to the Moluccas and New Caledonia. Twenty species are known to be associated with various Scleractinia (*Acrhelia*, *Echinopora*, *Favia*, *Fungia*, *Galaxea*, *Goniopora*, *Herpolitha*, *Parahalomitra*, *Polyphyllia*, and *Porites*), and one species with a corallimorpharian (*Pseudocorynactis*).

In this paper, a new species of *Anchimolgus* is described from a rarely collected, shallow-water reef coral, *Lithactinia novaehiberniae* Lesson, 1831, whose distribution, according to Lamberts (1984), is "limited to a relatively small area in the southwest Pacific" (Solomon Islands, New Caledonia, Fiji, Tonga, and American Samoa). *Lithactinia* was synonymized with *Polyphyllia* by Veron & Pichon (1979), but recognized as a valid genus by Lamberts (1984).

**Materials and methods**

The coral was isolated in seawater in a plastic bag immediately after collection. On board ship, sufficient 95% ethanol was added to make approximately a 5% solution. In this the coral was thoroughly soaked and rinsed. The water was then passed through a fine net (120 holes per 2.5 cm) and the copepods recovered from the sediment retained in the net.

All figures were drawn with the aid of a camera lucida.

**Taxonomic part**

Poecilostomatoida Thorell, 1859  
Anchimolgidae Humes & Boxshall, 1996  
*Anchimolgus* Humes & Stock, 1972

***Anchimolgus gratus* n. sp.**  
(Figs. 1a-e, 2a-h, 3a-h, 4a-i)

Type material.— Eight ♀♀, five ♂♂ from one *Lithactinia novaehiberniae* Lesson, in a depth of 20 cm, reef at eastern end of Ile Maître, near Noumea, New Caledonia, 22°20'35"S, 166°25'10"E, 31 July 1971. Holotype ♀ (ZMA Co. 202018a), allotype ♂ (ZMA Co. 202018b), and 7 paratypes (5 ♀♀, 2 ♂♂) (ZMA Co. 202018c) deposited in the Zoölogisch Museum, Amsterdam. Remaining paratypes (dissected) in the collection of the author.

Female.— Body (Fig. 1a) with moderately wide prosome. Average length (not including setae on caudal rami) 1.85 mm (1.74–1.98 mm) and greatest width 0.75 mm (0.68–0.79 mm), based on 8 specimens in lactic acid. Epimera of metasomal somites rounded posteriorly. Ratio of length to

width of prosome 1.58 : 1 mm. Ratio of length of prosome to that of urosome 1.55 : 1.

Somite bearing leg 5 (Fig. 1b) 125 × 297 µm. Genital double-somite in dorsal view 253 × 324 µm, broader than long, ratio 0.78 : 1; in lateral view (Fig. 1c) slender 242 × 109 µm. Sides of double-somite slightly irregular in anterior five-sixths, abruptly narrowed and parallel in posterior sixth. Genital areas located dorsolaterally in posterior half of double-somite, each area with 2 very unequal setae 77 µm and 18 µm long (Fig. 1b, d). Three postgenital somites from anterior to posterior 75 × 133, 70 × 130, and 117 × 145 µm.

Caudal ramus (Fig. 1e) unornamented, 117 × 65 µm, ratio 1.8 : 1. Outer lateral seta 275 µm, dorsal seta 94 µm, outermost terminal seta 220 µm, innermost terminal seta 385 µm, and 2 median terminal setae 715 µm (outer) and 770 µm (inner), all with lateral setules.

Body surface without visible sensilla.

Egg sac not seen.

Rostrum (Fig. 2a) broadly rounded postero-ventrally. Antennule (Fig. 2b) 682 µm long. Lengths of its 7 segments (measured along their posterior nonsetiferous margins): 65 (104 µm along anterior margin), 234, 44, 136, 83, 62, and 35 µm, respectively. Armature: 4, 13, 6, 3, 4 + 1 aesthetasc, 2 + 1 aesthetasc, and 7 + 1 aesthetasc. All setae smooth. Antenna (Fig. 2c) 4-segmented, armature 1, 1, 3, and 1 claw. Third segment 99 µm, fourth segment 34 µm, and claw (Fig. 2d) 63 µm.

Labrum (Fig. 2e) with 2 broad posteroventral lobes. Mandible (Fig. 2f) with proximal part having 2 small digitiform processes on convex side and 2 lobes bearing marginal spinules on concave side. Lash with few long setules proximally on outer side and short bilateral barbs distally. Paragnath a small lobe. Maxillule (Fig. 2g) a slender lobe with 4 setae. Maxilla (Fig. 2h) 2-segmented, first segment unarmed, second segment with outer and inner seta, and lash with setules along convex side, proximalmost setule stouter than others. Maxillipede (Fig. 3a) 3-segmented, with 2 setae on second segment; third segment also with 2 setae and terminating in small recurved tip.

Ventral area between maxillipedes and first pair of legs (Fig. 3b) not protuberant.

Legs 1–4 (Fig. 3c–f) with 3-segmented rami, ex-

cept 2-segmented endopod in leg 4. Formula for armature (Roman numerals indicating spines, Arabic numerals representing setae) as follows:

P <sub>1</sub>	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,4
			enp 0-1;	0-1;	I,5
P <sub>2</sub>	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,5
			enp 0-1;	0-2;	I,II,3
P <sub>3</sub>	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,5
			enp 0-1;	0-2;	I,II,2
P <sub>4</sub>	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,5
			enp 0-1;	II	

Coxa of leg 1 with slight protuberance on outer posterior surface (Fig. 3c). Leg 4 with inner seta on coxa 13 µm; exopod 217 µm long, endopod (Fig. 3g) with first segment 36 × 34 µm, its inner plumose seta 65 µm; second segment 68 × 26 µm, its 2 terminal barbed spines 56 and 100 µm (outer spine slightly bulbous proximally). Both endopodal segments with outer marginal hairlike setules.

Leg 5 (Fig. 3h) with free segment 148 × 49 µm, ratio 3 : 1. Two terminal setae 135 and 200 µm. Seta on body near insertion of free segment 65 µm. Free segment ornamented on outer side with small spinules.

Leg 6 represented by 2 unequal setae on genital area (Fig. 1d).

Color of living specimens in transmitted light opaque gray, eye red.

Male.— Body (Fig. 4a) with prosome more slender than in female. Average length 1.42 mm (1.35–1.52 mm) and greatest width 0.53 mm (0.50–0.56 mm), based on 4 specimens. Ratio of length to width of prosome 1.76 : 1. Ratio of length of prosome to that of urosome 1.26 : 1.

Somite bearing leg 5 (Fig. 4b) 65 × 192 µm. Genital somite in dorsal view quadrate, 330 × 335 µm with rounded sides; in lateral view (Fig. 4c) slender. Length of genital somite 363 µm including leg 6. Four postgenital somites from anterior to posterior 44 × 99, 47 × 99, 34 × 99, and 48 × 117 µm.

Caudal ramus (Fig. 4b) resembling that of female, but smaller, 94 × 52 µm, ratio 1.8 : 1.

Rostrum like that of female. Antennule similar to that of female but with 3 additional aesthetascs (at points indicated by dots in Fig. 2b). Antenna (Fig. 4d) resembling that of female, but having

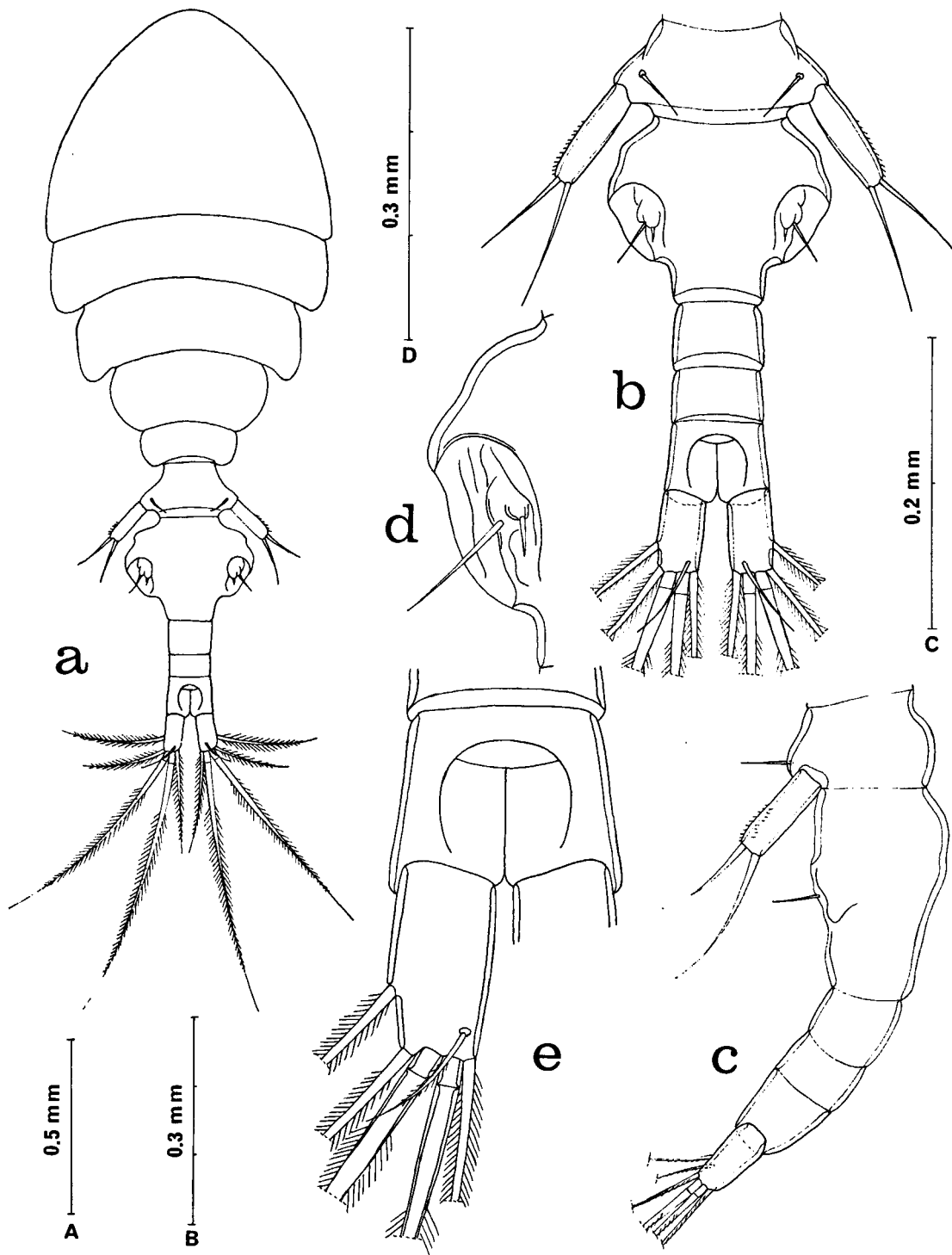


Fig. 1. *Anchimolgus gratus* n. gen., n. sp., ♀ : a, habitus, dorsal (scale A); b, urosome, dorsal (B); c, urosome, lateral (B); d, genital area, dorsal (C); e, anal somite and caudal ramus, dorsal (D).

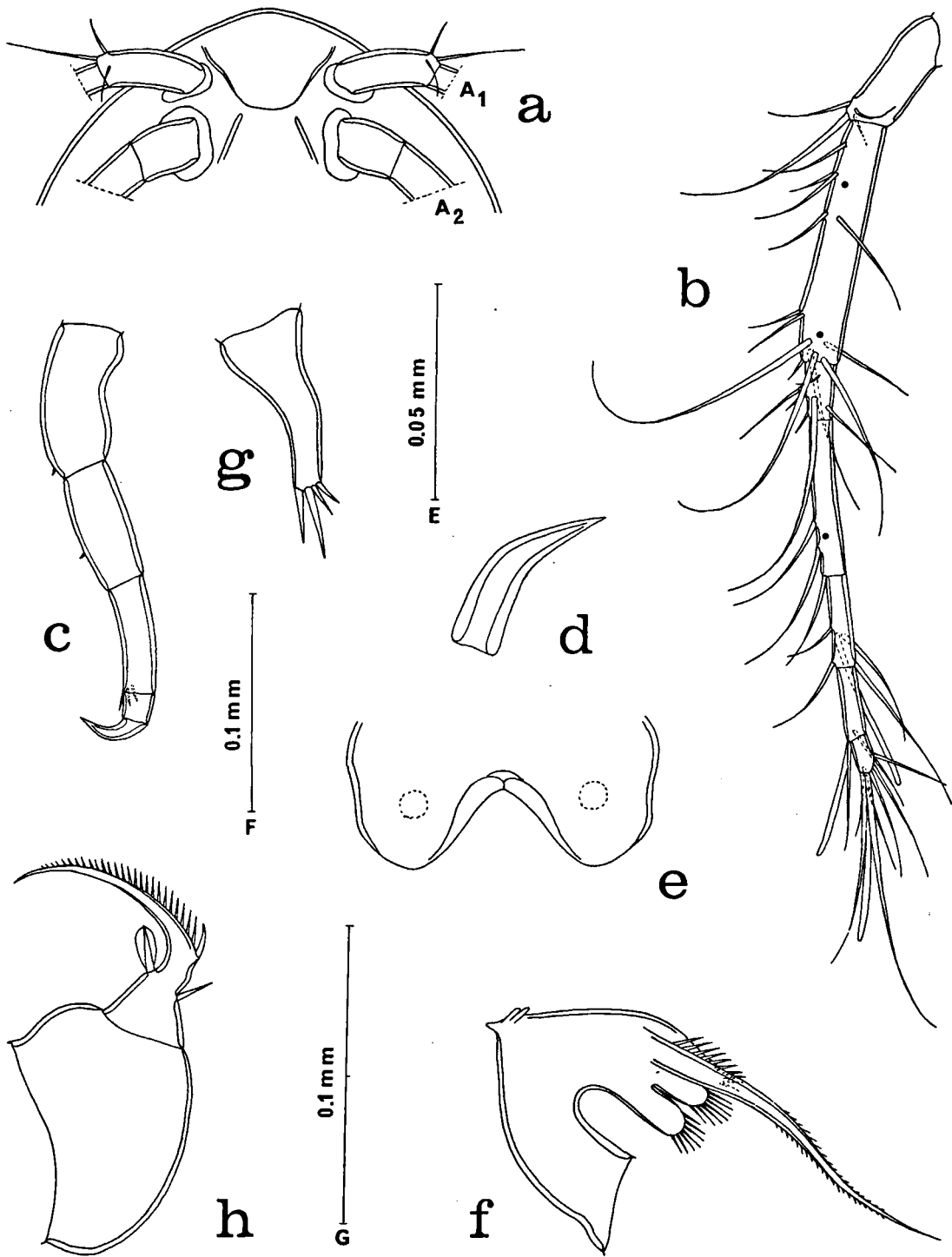


Fig. 2. *Anchimolgus gratus* n. gen., n. sp., ♀: a, rostrum, ventral (scale B); b, antennule, with three dots indicating positions of aesthetascs in male, dorsal (D); c, antenna, antero-inner (D); d, claw on antenna, antero-inner (E); e, labrum, with broken lines showing position of paragnaths, ventral (F); f, mandible, posterior (G); g, maxillule, posterior (G); h, maxilla, anterior (F).

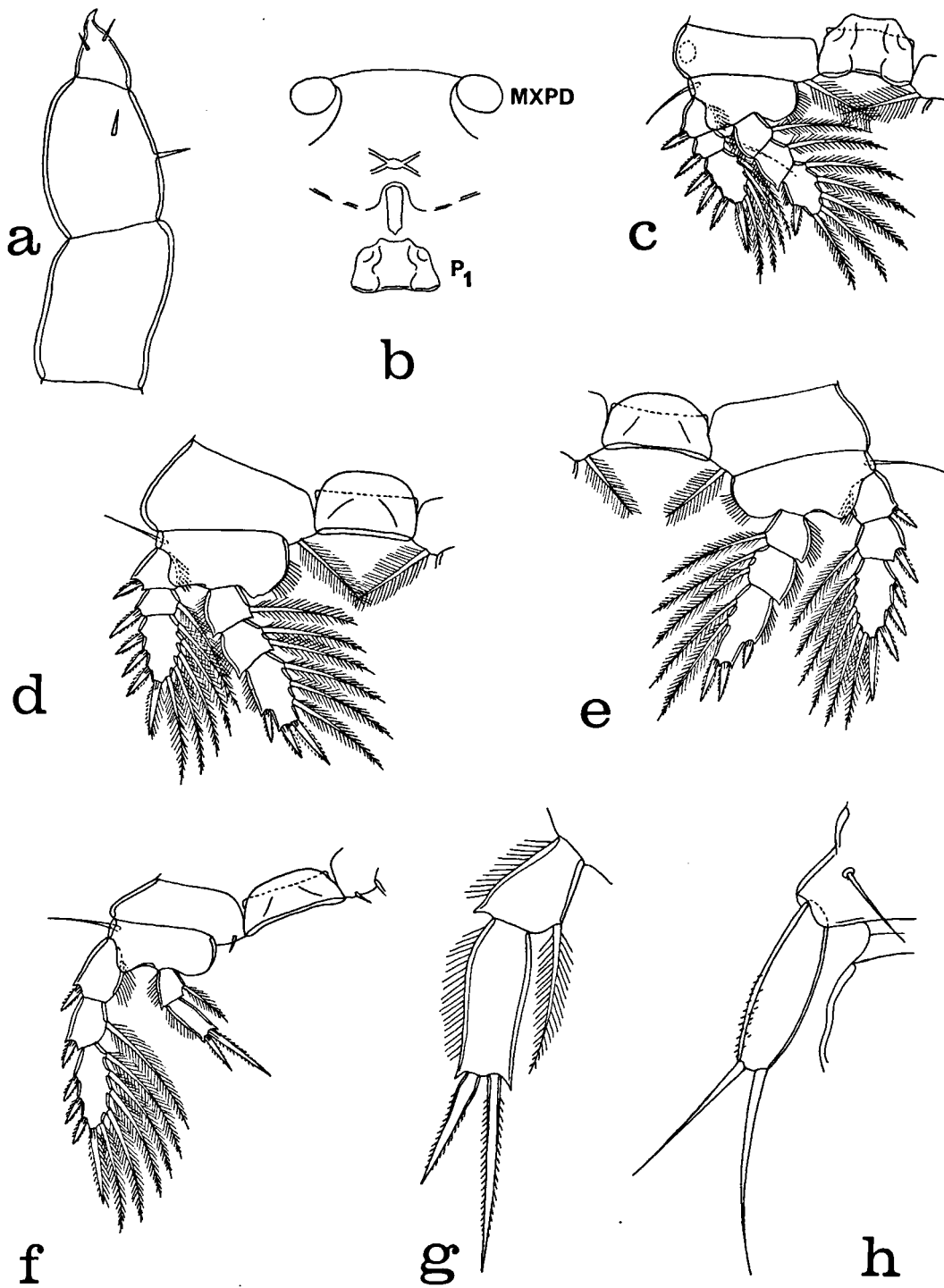


Fig. 3. *Anchimolgus gratus* n. gen., n. sp., ♀ : a, maxillipede, postero-inner (scale F); b, area between maxillipedes and first pair of legs, ventral (B); c, leg 1 and intercoxal plate, anterior (B); d, leg 2 and intercoxal plate, anterior (B); e, leg 3 and intercoxal plate, anterior (B); f, leg 4 and intercoxal plate, anterior (B); g, endopod of leg 4, anterior (F); h, leg 5, dorsal (D).

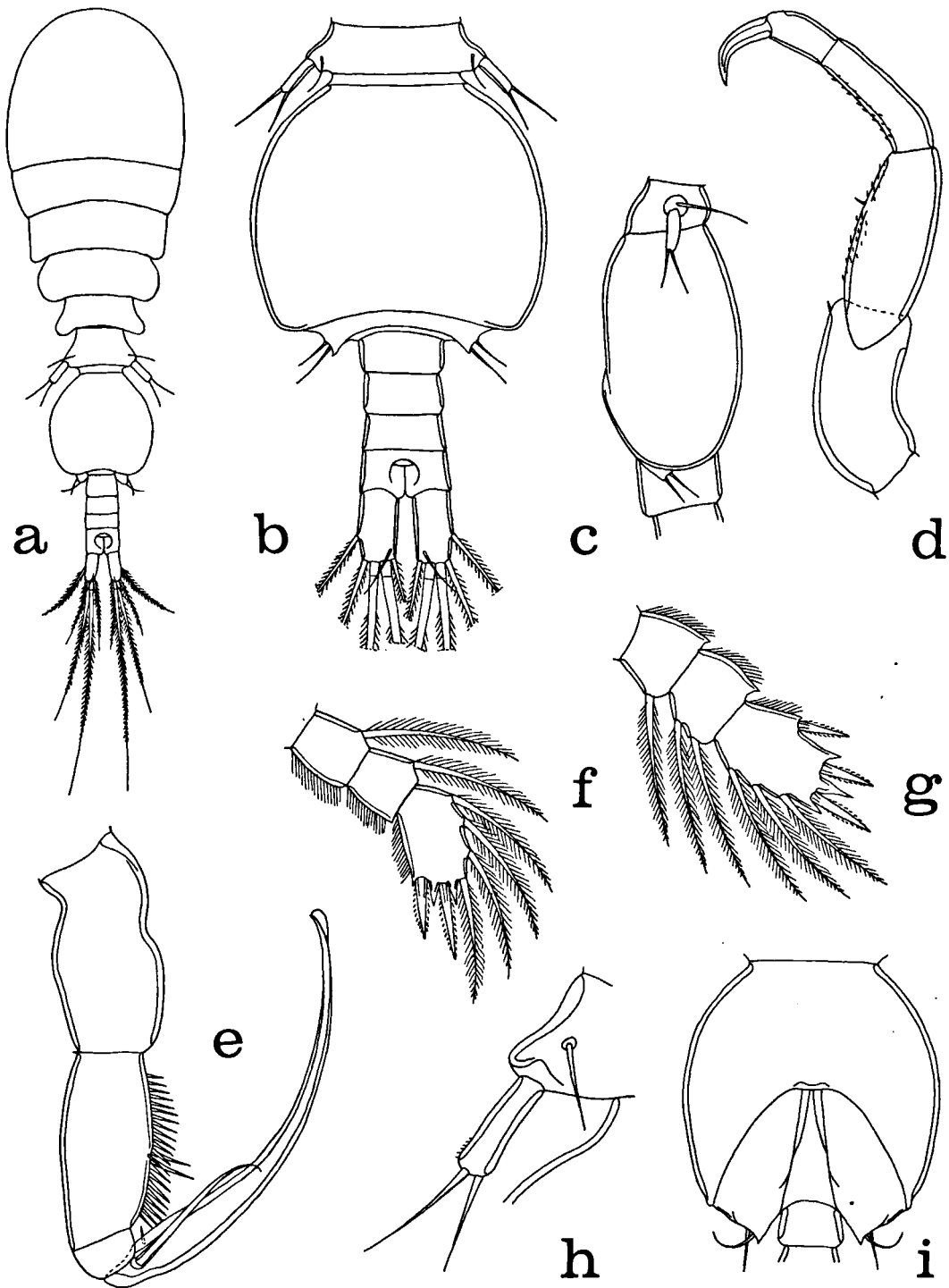


Fig. 4. *Anchimolgus gratus* n. gen., n. sp., ♂: a, habitus, dorsal (scale A); b, urosome, dorsal (B); c, somite bearing leg 5, genital somite, and first postgenital somite, lateral (B); d, antenna, antero-inner (C); e, maxillipede, inner (C); f, endopod of leg 1, anterior (C); g, endopod of leg 2, anterior (C); h, leg 5, dorsal (F); i, genital somite and first postgenital somite, ventral (B).

small spines along inner surface of second and third segments. Third segment 83  $\mu\text{m}$  long, fourth segment 46  $\mu\text{m}$ . Claw 45  $\mu\text{m}$ .

Labrum, mandible, paragnath, maxillule, and maxilla like those of female. Maxillipede (Fig. 4e) 4-segmented, assuming claw to represent fourth segment. Second segment with 2 setae and row of setules. Claw 255  $\mu\text{m}$  (260  $\mu\text{m}$  including terminal lamella), armed proximally with 2 very unequal setae, longer seta with recurved tip.

Ventral area between maxillipedes and first pair of legs as in female.

Leg 1 with armature of endopod 0-1; 0-1; I,I,4 (Fig. 4f). Leg 2 with third endopodal segment having enlarged median terminal spiniform process (Fig. 4g). Otherwise legs 1-4 like those of female.

Leg 5 (Fig. 4h) with free segment 52  $\mu\text{m}$  long, more slender than in female. Least width 13  $\mu\text{m}$ , greatest width 15  $\mu\text{m}$  (ratio of length to width 3.36 : 1).

Leg 6 (Fig. 4i) represented by posteroventral flap on genital somite bearing 2 setae.

Color as in female.

**Etymology.**— The specific name *gratus* (Latin), meaning pleasing, alludes to the graceful body form.

**Remarks.**— Twenty-one species, including the new species described above, are placed in the genus *Anchimoligus* (see key provided by Humes, 1996). Twelve species may be readily distinguished from *Anchimoligus gratus* by having the female genital double-somite distinctly longer than wide: *A. abbreviatus* Humes, 1991, *A. compressus* Humes, 1996, *A. convexus* Humes, 1978, *A. exsertus* Humes, 1991, *A. latens* Humes, 1978, *A. moluccanus* Humes, 1996, *A. nasutus* Humes, 1996, *A. notatus* Humes, 1978, *A. orectus* Humes, 1978, *A. prolixipes* Humes & Ho, 1968, *A. tenaus* Humes, 1991, and *A. tener* Humes, 1973. Selected characters of the remaining eight species distinguish them from the new species. In *A. digitatus* Humes & Ho, 1968, *A. gigas* Humes, 1995, and *A. mimeticus* Humes, 1995, the ratio of length to width of the caudal ramus is more than 3 : 1. In *A. conformatus* Humes, 1995, the free segment of leg 5 has a length to width ratio of 5.2 : 1. In *A. punctilis*

Humes, 1978, and *A. cuneatus* Stock, 1990, the free segment of leg 5 has a proximal inner expansion. In *A. pandus* Humes, 1978, the genital double-somite is as long as wide. In *A. breviaricus* Humes, 1995, the female is unknown. However, the body length of the male is 1.09 mm (1.07–1.13 mm), distinctly less than in *A. gratus*, and the formula for the third segment of the exopod of leg 4 is II,I,5, rather than III,I,5 as in the new species.

In untransformed lichomolgoid copepods the number of spines on the third segment of the exopod of leg 4 is either II,I,5 or III,I,5. This feature was used as a criterion by Humes & Stock (1983) when they separated *Doridicola* Leydig, 1853, with II,I,5, from *Critomoligus* Humes & Stock, 1972, with III,I,5. Several genera as presently conceived contain species with both II,I,5 and III,I,5, for example, *Panjakus* Humes & Stock, 1973, and *Odontomoligus* Humes & Stock, 1973. In *Anchimoligus*, 19 species are armed with II,I,5 on the third segment of the exopod of leg 4, but *A. pandus* Humes, 1978, and the new species *A. gratus* have III,I,5. The significance of this difference in spination is not known.

The genus *Anchimoligus*, restricted to the Indo-Pacific (Madagascar, Great Barrier Reef, Flores Sea, Moluccas, New Caledonia), contains 20 species associated with scleractinian corals (*Acrhelia*, *Echinopora*, *Fungia*, *Galaxea*, *Goniopora*, *Herpolitha*, *Lithactinia*, *Parahalomitra*, *Polyphyllia*, *Porites*) (Humes, 1973, 1978, 1991, 1995, 1996; Humes & Ho, 1968). One species, *A. cuneatus*, lives with a corallimorpharian (*Pseudocorynactis*) in the Flores Sea, Indonesia (Stock, 1990).

## Acknowledgements

I thank the staff at the Centre ORSTOM de Nouméa for their generous assistance. The late Dr. John W. Wells, Cornell University, identified the coral. This work was supported by grants (GB-8381X and BSR 8-21979) from the National Science Foundation of the United States.

The copepods were collected by the author during the *Alpha Helix* East Asian Bioluminescence Expedition (1975), which was supported by the National Science Foundation under grants OFS 74 01830 and OFS 74 0288 to the Scripps Institution of Oceanography and grant BMS 74 23242 to the University of California, Santa Barbara.

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Received: 18 April 1996