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TWO NEW CAPRELLIDEAN (N. GEN.) AND KNOWN GAMMARIDEAN AMPHIPODS (CRUSTACEA) COLLECTED FROM A SPONGE IN NOUMEA, NEW CALEDONIA.

AKIRA HIRAYAMA
Biological Laboratory, Department of Liberal Arts, Asia University, 5-24-10 Sakai, Musashino-shi, Tokyo 180, JAPAN.

ABSTRACT

Colomastix lunalilo J.L. Barnard and a new genus of caprellid amphipod were collected from a sponge, *Siphonochalina* sp., in Noumea, New Caledonia. *Colomastix lunalilo* is redescribed on the basis of mature specimens because only small and immature specimens have been previously observed. The new caprellid amphipod belongs to the subfamily Protellinae McCain and is clearly distinguished from other genera of this subfamily by a combination of unilobate abdomen with biarticulate abdominal appendages, of which the distal article is remarkably reduced, and uniarticulate pereopods 3-4.

KEYWORDS: Crustacea, Amphipoda, *Colomastix lunalilo*, *Paradicaprella brucei* gen. et sp. nov., New Caledonia.

INTRODUCTION

Some amphipod specimens were collected by A.J. Bruce from a sponge, *Siphonochalina* sp., in Noumea, New Caledonia, in 1978, and consisted of two species, *Colomastix lunalilo* J.L. Barnard, 1979 (Barnard 1970) and a new caprellid species. *Colomastix lunalilo* has been recorded from coral, algae and other hosts in the tropical zone of the Indian and Pacific Oceans (Barnard 1970; Ledoyer 1978, 1979, 1982; Myers 1985). However, the previous specimens, including the type specimen, were all immature (shorter than 2.0 mm). On the other hand, the present specimens of this species are mature (10.2 mm - 4.0 mm), and morphological variations, which I consider due to growth, are observed between the previous and the present specimens. Therefore, I have redescribed *C. lunalilo* here on the basis of the present mature male and female specimens.

The new caprellid species clearly belongs to the subfamily Protellinae McCain (McCain 1970) with the following morphological characters: 1) mandible with molar process and palp; 2) pereonites 3-4 present but reduced; 3) abdomen of single reduced segment. However, the abdomen of the male in the caprellid species is unique in this subfamily, with the distal segment of biarticulate appendages remarkably reduced and with an unilobe (maybe completely fused). I erect a new genus on the basis of these characters and discuss the relationships between the new genus and six other closely related genera, *Deutella* Mayer, 1890, *Luconacia* Mayer, 1903, *Monoliropus* Mayer, 1903, *Pseudoprotella* Mayer, 1890, *Triantella* Mayer, 1903 and *Triliropus* Mayer, 1903.

All the specimens are deposited in the collection of the Northern Territory Museum of Arts and Sciences, Darwin (NTM).

SYSTEMATICS

Order Amphipoda
Suborder Gammaridea
Family Colomastigidae
***Colomastix lunalilo* J.L. Barnard**
(Figs 1-3)

Colomastix lunalilo J.L. Barnard, 1970:96, 100, figs 51-52; Barnard 1971:55, figs 24-25;

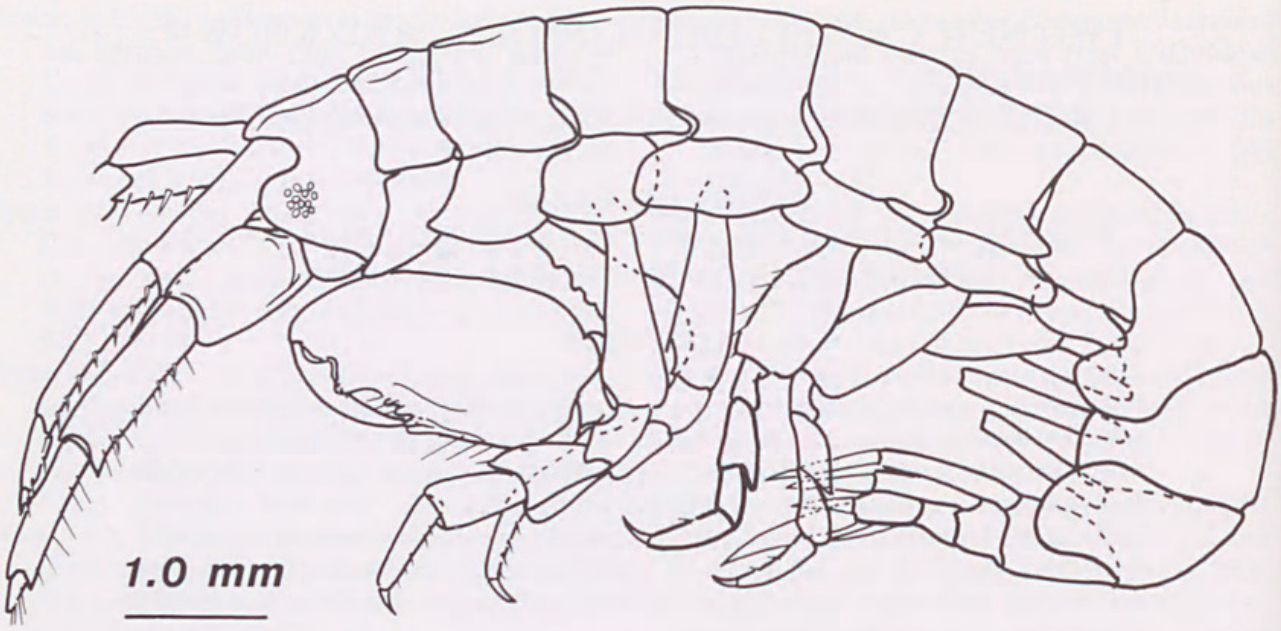

Fig. 1. *Colomastix lunalilo* J.L. Barnard. Male (no. 1, 10.2 mm).

Ledoyer 1978: 233, fig. 15; Ledoyer 1979:26, fig. 9; Ledoyer 1982:156-158, fig. 54; Myers 1985:56, fig. 57.

Material examined. NTM Cr.006944: Ilôt Maitae, Noumea, New Caledonia. Stn. 203 (N.C. Amph. 1); male, nos. 1-3 (10.2 mm, 4.4 mm, 4.2 mm); female, nos. 4-6 (5.2 mm, 4.4 mm, 4.0 mm); collected from a sponge, *Siphonochalina* sp., by A.J. Bruce on 3 October 1978. A part of no. 1 (male) and no. 4 (female) are mounted on glass slides in gum-chloral medium.

Description of male (no. 1, 10.2 mm). **Body**. Head broadly even and slightly concave dorsally; rostrum broad, central projection small, acute; anterocephalic lobe rounded, with eyes; anteroventral projection extending to midlength of peduncular article 1 of antenna 1, triangular, slender. At least pereonites 1-3 slightly ridged dorsally. Pleonal epimera 1-3 rounded. Gills present on pereonites 2-6.

Antennae. Subequal in length. Antenna 1: peduncular articles 1-3 in length ratios 8:9:4, acutely produced distoventrally; accessory flagellum absent; flagellum 3-articulate, proximal article projecting remarkably as hood-like process far beyond following articles. Antenna 2: peduncular articles 3-5 projecting acutely on both lateral ends of ventral side, length ratios almost 3:4:3; flagellum 2- or 3-articulate, both lateral projections reaching to ends of following articles.

Mouthparts. Upper and lower lips unknown (maybe absent). Maxilla 1: inner plate rather small, pubescent; outer plate broad, provided with 5 small conical teeth and one inner-distal cusp; palp 1-articulate, with 4 apical setae. Maxilla 2: both inner and outer plates coalesced at base, setose. Mandibles similar, consisting of broad and quadrate plate and comb-like process, proximal tooth broadest, others slender. Maxilliped: inner plates completely fused, small; outer plates rectangular, with 2 small setae distally, distal end projecting; palp 4-articulate, penultimate article medially swollen, pubescent, with pair of setae at midlength.

Gnathopods. Gnathopod 1: coxa produced anteroventrally, lacking nipple-like anterior point; length ratios of segments from basis to propod almost 8:5:5:7:3; dactyl unknown (maybe absent), replaced by 6 finely pinnate setae. Gnathopod 2: coxa rectangular, with blunt nipple-like anterior point; anterior margin of basis tuberous; carpus provided with anterior lobe medially setose; palm oblique, defined by pair of cusps, with 2 teeth and distal triangular process; dactyl falcate, with blunt projection near base of grasping margin.

Pereopods 3-7. Homopodous except for coxae and basis; coxae 3-7 lacking nipple-like anterior point; basis of pereopods 3-4 slender, of pereopods 5-7 with thin hind plate; propod with 2 or 3 spines, without locking spines.

Pleopods. Peduncle stout, twice as long as rami, with 2 coupling spines on pleopod 1 and 1 spine on pleopods 2-3; rami broad, short, 4- or 5-articulate; swimming setae long.

Uropods. Uropod 1 extending slightly beyond uropod 2: rami equal in length, finely

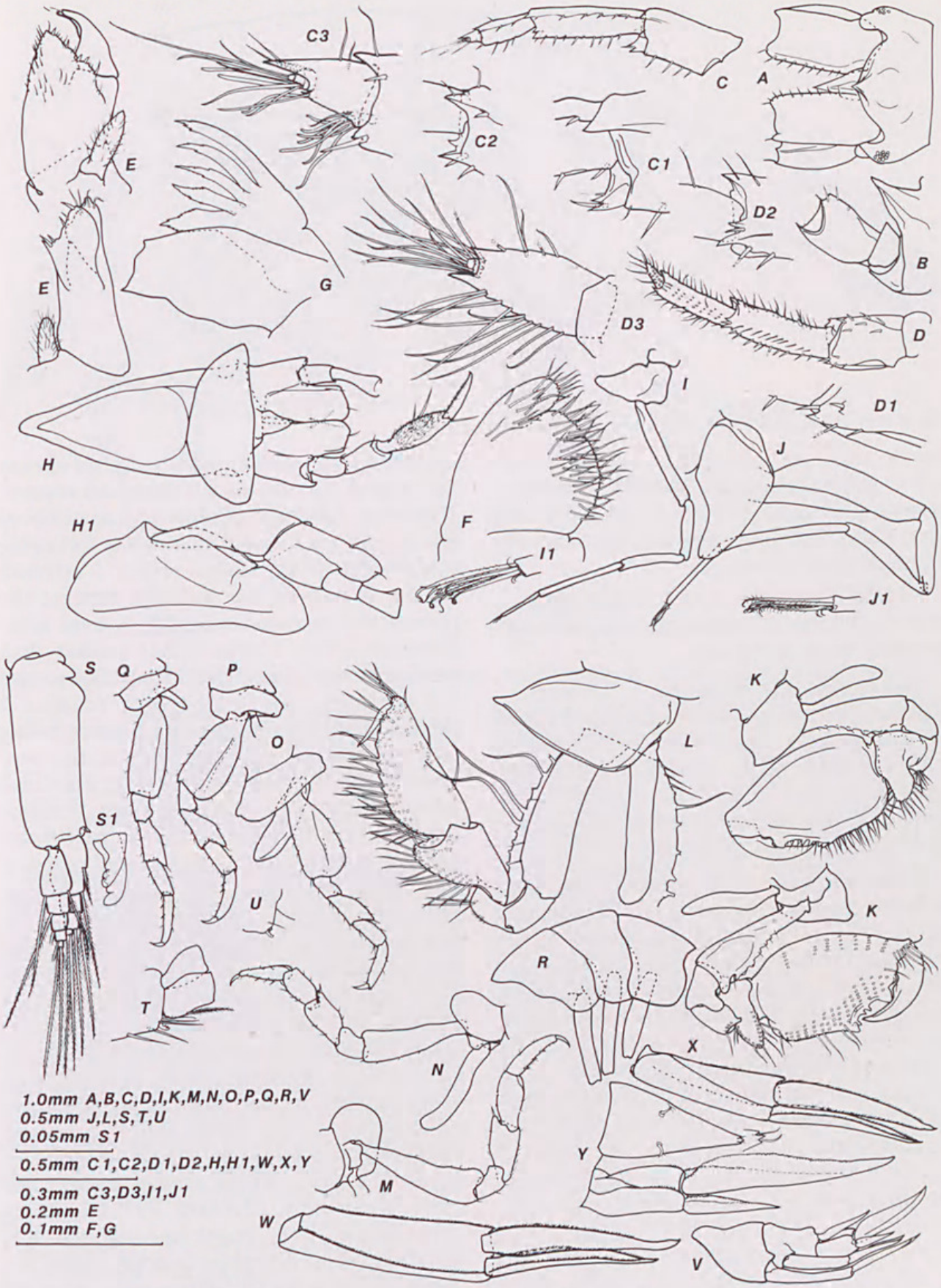

Fig. 2. *Colomastix lunalilo* J.L. Barnard. Male (no. 1, 10.2 mm) and female (no. 4, 5.2 mm: J, J1 and L). **A**, Head. **B**, Anteroventral projection of head. **C, C1, C2, C3**, Antenna 1, peduncular articles 1-2 and flagellum. **D, D1, D2, D3**, Antenna 2, peduncular articles 1-2 and flagellum. **E**, Maxilla 1. **F**, Maxilla 2. **G**, Mandible. **H, H1**, Maxilliped in dorsal and ventral views. **I, I1**, Male gnathopod 1 and distal part of propod. **J, J1**, Female gnathopod 1 and distal part of propod. **K**, Male gnathopod 2. **L**, Female gnathopod 2. **M**, Pereopod 3. **N**, Pereopod 4. **O**, Pereopod 5. **P**, Pereopod 6. **Q**, Pereopod 7. **R**. Pleon. **S, S1**, Pleopod 1 and coupling spines. **T, U**, Coupling spine of pleopods 2-3. **V**, Urosome. **W**, Uropod 1. **X**, Uropod 2. **Y**, Uropod 3 and telson.

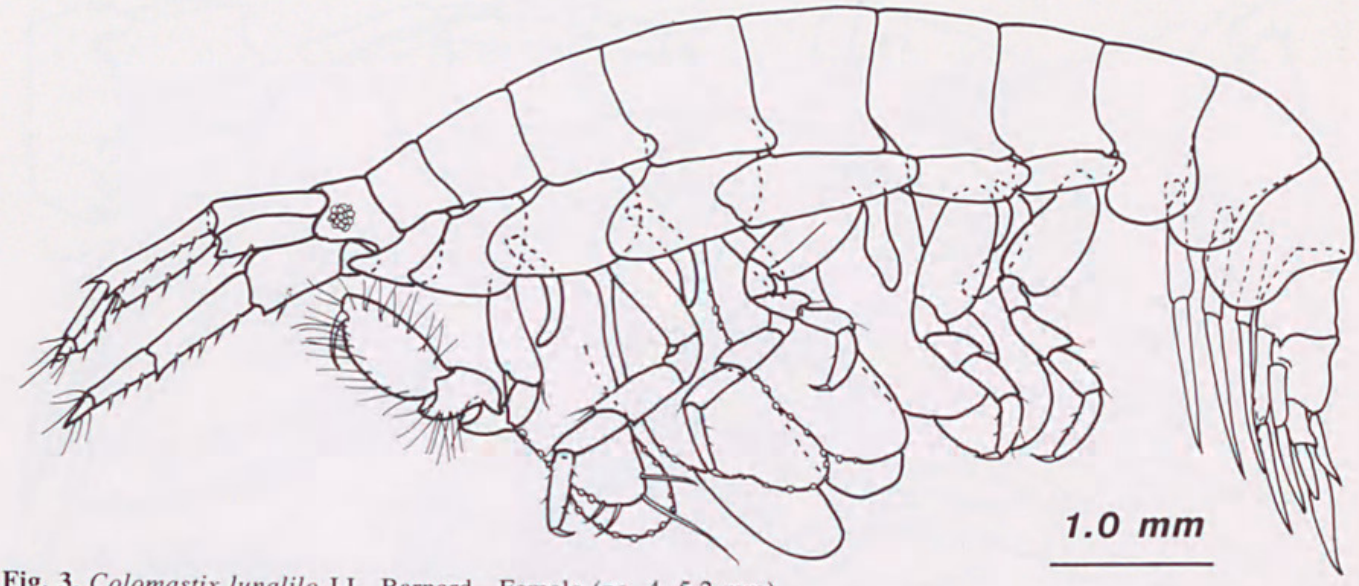

Fig. 3. *Colomastix lunalilo* J.L. Barnard. Female (no. 4, 5.2 mm).

serrate marginally. Uropod 2 similar to uropod 1, peduncle shorter. Uropod 3 distinctly extending beyond uropod 1; peduncle and outer ramus slightly shorter than half the length of inner ramus.

Telson. Triangular, slender with 2 opposing penicillate setae at midlength, apex with apicomedial tooth and 2 setae.

Description of female (no. 4, 5.2 mm). Gnathopod 1: length ratios of segments from basis to propod almost 6:10:8:7:12; propod with 4 pinnate setae. Gnathopod 2: length ratios of carpus, propod and dactyl 7:12:4; propod gently rounded, setose posteriorly, palm undefined; dactyl slender.

Remarks. *Colomastix lunalilo* has been recorded from the Hawaiian Islands (Barnard 1979, 1971), Madagascar (Ledoyer 1979), Mauritius (Ledoyer 1978) and Viti Levu, Fiji (Myers 1985), in the tropical zone of the Indian and Pacific Oceans, and is easily distinguished from the other colomastigids by the following morphological characters: 1) in antenna 1, the first article of flagellum extends remarkably beyond the following articles; 2) in gnathopod 2 of the male, the dactyl is shorter than half the length of the propod; 3) the inner plates of the maxilliped are completely fused; 4) the outer ramus of uropod 3 is shorter than half the length of the inner ramus; 5) the telson is triangular and slender. These specific characters suggest that the present specimens are *C. lunalilo*. However, all the specimens collected from the above localities and previously described are small (less than 2.0 mm) and may be immature (see the gnathopod 2), whereas the present specimens are large (10.2 mm to 4.0 mm) and mature. Therefore, although allometric variations of this species are not well known, the following morphological variations, which I estimate are due to growth, are observed between the present and previous material: **1,** eyes large (Barnard 1970; Myers 1985) (rather than medium or small in the new material); **2,** coxae 1-5 (Barnard 1970) or at least coxae 1-2 (Myers 1985) have nipple-like anterior points (absent from coxae 1 and 3-5 in the new material); **3,** in gnathopod 2 of the male, the palm is defined by large (Barnard 1970) or small (Myers 1985) cusps (in the new material, this is defined by a pair of small cusps, in addition to two teeth), the dactyl is slightly geniculate near the apex (not geniculate in the new material); **4,** in gnathopod 1, the propod and carpus are subequal in length (Barnard 1970; Ledoyer 1982; Myers 1985), (in the new material, the propod of the male is as long as the carpus and 0.75 times that of the female; **5,** in uropod 3, the outer ramus is about 0.25 times as long as the inner ramus (Barnard 1970; Ledoyer 1982; Myers 1985) (in the new material, it is nearly equal to half the length of the inner ramus); **6,** the head is smooth and rounded dorsally (Barnard 1970; Ledoyer 1982; Myers 1985) (in the new material, it is broadly even and slightly concave dorsally); **7,** the telson lacks penicillate setae (Barnard 1970; Ledoyer 1982; Myers 1985), the apex is truncate and serrate (Barnard 1970) (in the present material, it is provided with opposing penicillate setae midmarginally, and the apex has an apicomedial tooth).

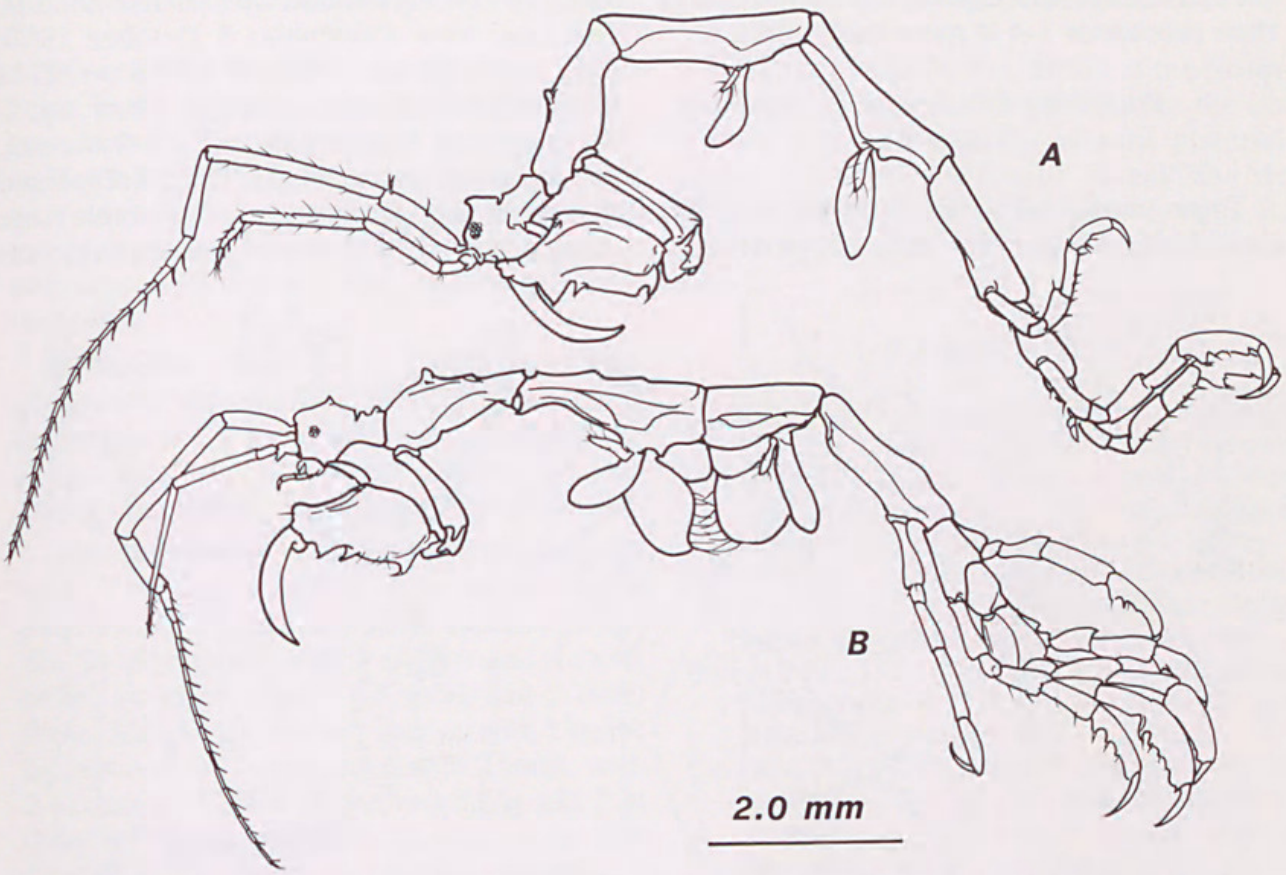

Fig. 4. *Paradicaprella brucei* gen. et sp. nov. **A**, Holotype, male, 10.4mm. **B**, Paratype no 3, female, 9.6 mm.

Suborder Caprellidea
Family Caprellidae
Subfamily Protellinae

Paradicaprella gen. nov.

Diagnosis. Antenna 2 lacking swimming setae; flagellum 2-articulate. Mandibular palp 3-articulate, not reduced, setae formula for ultimate article 1 - x (plumose setae) - 1; molar process developed. Inner lobe of maxilliped medium but smaller than outer lobe; both lobes less setose. Pereopod 5 6-articulate, inserted near posterodistal end of pereonite 5. Abdomen of male with single lobe and pair of biarticulate appendages, terminal article of appendages reduced; in female, without appendages. Gills present on pereonites 3-4.

Type species. *Paradicaprella brucei* sp. nov.

Etymology. A compound word is derived from "*Paradi-*" = paradise, an allusion to New Caledonia, and *caprella*. The gender is feminine.

Remarks. The new genus *Paradicaprella* is closely related to six other genera in the subfamily Protellinae: *Deutella* Mayer, 1890 (Cavedini 1981; Laubitz 1970; Mayer 1903; McCain 1968), *Luconacia* Mayer, 1903 (Laubitz 1972; Mayer 1903; McCain 1968), *Monoliropus* Mayer, 1903 (Arimoto 1976; Griffiths 1973; Mayer 1903; Sivaprakasam 1967), *Pseudoprotella* Mayer, 1890 (Sars 1895; Chevreux and Fage 1925; Schellenberg 1942; Vassilenko 1974), *Triantella* Mayer, 1903 (Mayer 1903; Schellenberg 1931) and *Triliropus* Mayer, 1903 (Arimoto 1976; Mayer 1903). This group of genera has the following characters: pereopod 5 6-articulate, inserted near posterodistal end of pereonite 5; pereronites 6-7 free; 3-articulate mandibular palp not reduced; abdomen of male with one pair of appendages (McCain 1970). However, *Paradicaprella* distinctly differs from these six genera in the abdomen of the male which has one lobe and the ultimate article of the male's abdominal appendages is greatly reduced. Paired lobes are present in these six genera, and perhaps in the whole subfamily. In *Monoliropus* and *Luconacia*, the ultimate article of the abdominal appendages is not reduced as observed in the new genus; the other four genera have uniarticulate appendages. Further, *Paradicaprella*, *Triliropus* and *Monoliropus* have unisegmented pereopods 3-4, and these pereopods of the other genera

are biarticulate although the ultimate article of their pereopods 3-4 is remarkably reduced.

Paradicaprella brucei sp. nov.
(Figs 4-5)

Type material. HOLOTYPE - NTM Cr.006946: Male, 10.4 mm, taken from a sponge, *Siphonochalina* sp., in Ilôt Maitae, Noumea, New Caledonia; 3 October 1978; coll. A.J. Bruce. PARATYPES - NTM Cr.006947: Two males (no. 1, 8.3 mm; no. 2, 8.1 mm) and one female (no. 3, 9.6 mm), collected with the holotype. The holotype and a part of the paratype no. 3 (female) are mounted on glass slides in gum-chloral me-

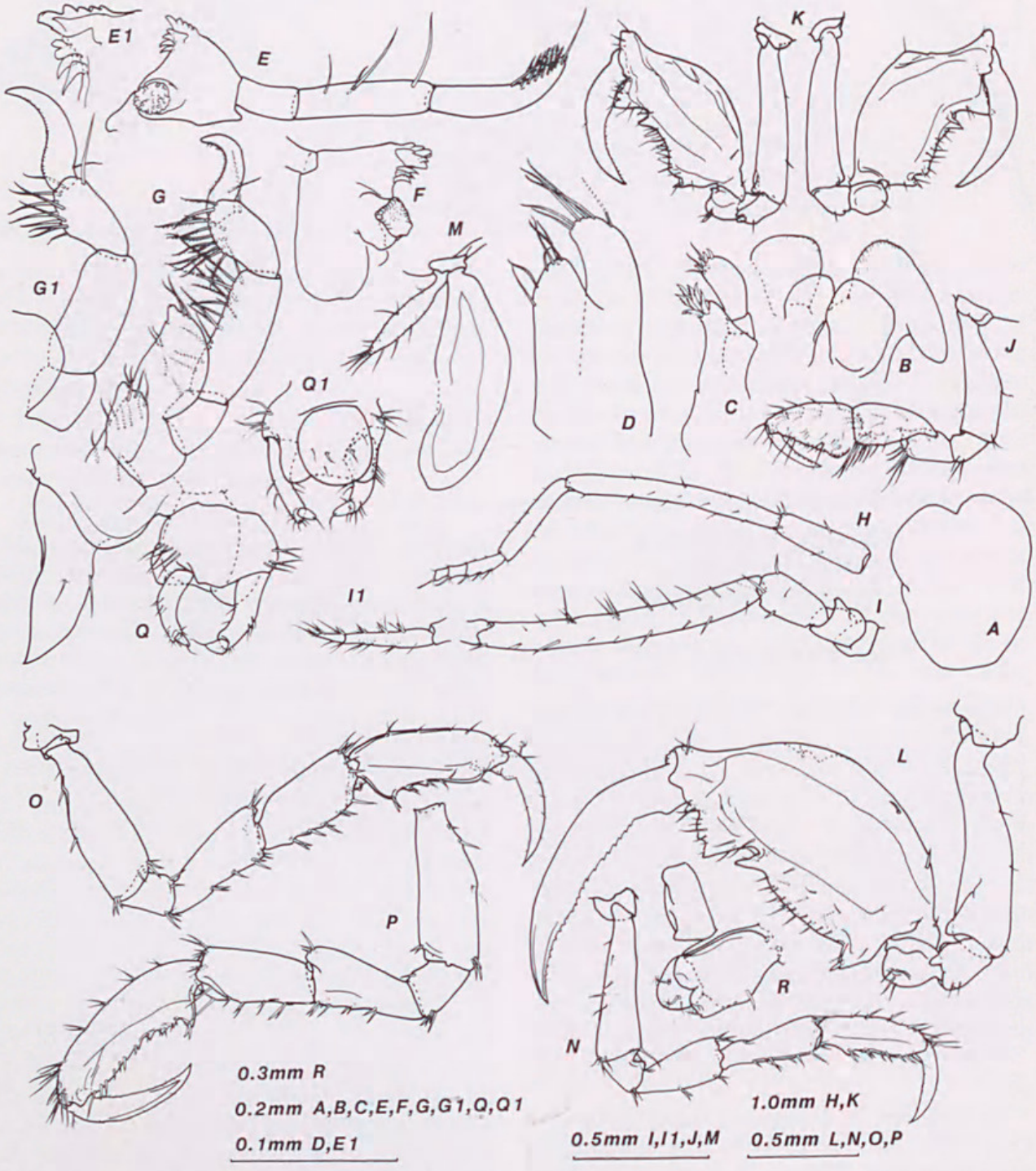

Fig. 5. *Paradicaprella brucei* gen. et sp. nov., male holotype (10.4 mm) and female paratype no. 3 (9.6 mm: L and R). **A**, Upper lip. **B**, Lower lip. **C**, Maxilla 1. **D**, Maxilla 2. **E**, **E1**, One mandible. **F**, the other mandible. **G**, **G1**, Maxilliped and palp. **H**, Antenna 1. **I**, **I1**, Antenna 2 and flagellum. **J**, Male gnathopod 1. **K**, Male gnathopod 2. **L**, Female gnathopod 2 (Para. 3). **M**, Pereopod 3. **N**, Pereopod 5. **O**, Pereopod 6. **P**, Pereopod 7. **Q**, Male pleon and penis in ventral view. **Q1**, Male pleon in dorsal view. **R**, Female pleon in ventral view (para. 3).

dium. Collection number: Stn. 203 (NC Amph. 2).

Description of the male holotype (10.4 mm). **Body**. Head armed with triangular process dorsally. Length ratios of pereonites 1-7 9:33:42:39:32:18:8. Pereonite 2 armed with pair of tubecles dorsomedially. Abdominal appendages not lobate, biarticulate, terminal segment with apical seta; abdominal lobe unilobate.

Antennae. Antenna 1: length ratios of peduncular articles 5:11:5; flagellum as long as peduncle, with aesthetascs. Antenna 2: length ratios of peduncular articles 4-5 and flagellum 20:25:8; flagellum 2-articulate.

Mouthparts. Maxilla 1: outer plate armed with 7 tooth-like spines; ultimate article of palp with 4 spines and 3 setae apically. Maxilla 2: inner plate with 5 (right) and 7 (left) setae; outer plate with 6 (right) and 7 (left) setae. Mandibles similar; incisor with 5 teeth; lacinia mobilis ornamented with 2 teeth; with 2 accessory blades in one mandible and 3 in the other; palp 3-articulate, middle article with 4 setae, setal formula for ultimate article 1 - 7 (plumose) - 1. Maxilliped: inner plate medium in size, with 3 apical setae; outer plate with 2 apical setae; palp rather slender, 4-articulate, penultimate article geniculate, pubescent on grasping margin.

Gnathopods. Gnathopod 1: propod as long as carpus, triangular, palm defined by spine and serrate margin. Gnathopod 2: carpus coalescent with propod; propod swollen, flattened or slightly concave on half of dorsal margin extending to well developed distal projection; palm gently curved, almost reaching base, defined by small protrusion with palmar spine, distal triangular process well developed, following poison tooth; dactyl reaching palmar protrusion when closed, provided with numerous pits on grasping margin.

Pereopods. Pereopods 3-4 1-articulate, with 4 setae distally. Pereopods 5-7 homopodous, becoming longer; propod with palmar protrusion armed with pair of spines, palm spinose; dactyl reaching palmar protrusion when closed.

Description of the female paratype no. 3 (9.6 mm). Small dorsal projection on head. Gnathopods 1-2 similar to those of male except distal dorsodistal process small. Abdomen without appendages.

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