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The Amphipoda (Crustacea) of New Caledonia: Aoridae

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ABSTRACT. Fourteen species of Aoridae are recorded from New Caledonia. Seven species are described and figured in full, including one genus and five species new to science and two species presented in new nomenclatural combination. A further three species are partially figured. New Caledonia is shown to display Australian plate biogeographic relationships.

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Collections of marine amphipods were made by the writer, J.K. Lowry and I. Takeuchi in Grande Terre, New Caledonia, and in the Loyalty Islands during October and November, 1995. Fourteen species of Aoridae in seven genera were collected and are reported on here. Of these, one genus and four species are new to science. Six species are currently thought to be New Caledonian endemics.

Of the fourteen Aoridae reported from New Caledonia, seven are, as far as is currently known, endemic. This is more endemic aorids than has Fiji, 43% (Myers, 1985b), Madang Lagoon 30% (Myers, 1995), Samoa, 20% (Myers, 1997) or Tonga (Myers, 1986), which has no endemic aorids. New Caledonia and Fiji in addition to their high species endemicity, also each have an endemic aorid genus.

Seven New Caledonian species have extrinsic distributions, three, *Bemlos aequimanus*, *Bemlos waipio* and *Globosolembos excavatus* have wide Indo-Pacific distributions. Three species, *Bemlos tui*, *Bemlos saloteae*

and *Globosolembos lunatus* occur within the area bounded by Samoa and Tonga in the east and Papua New Guinea and eastern Australia in the west. *Xenocheira* sp. is reported from Australia but may be synonymous with *X. securati* recorded from Fiji and the Gambier archipelago.

With regard to the Aoridae, New Caledonia therefore shows rather typical Australian plate relationships, sharing taxa to the west with Australia and Papua New Guinea and to the north and east with islands on the Vanuatu-Tonga island arc.

The following abbreviations are used in the figures: A, antenna; Lb, labrum; Mx, maxilla; Md, mandible; Mxp, maxilliped; L, labium; G, gnathopod; P, pereopod; Ep, epimeron; U, uropod; T, telson. AM, Australian Museum, Sydney; NCL, New Caledonia; ORSTOM, Organisation de Recherche Scientifique Territoire Outre-Mer. All material is ultimately to be deposited in the Australian Museum. The type material is in the Australian Museum.

Systematics

Family Aoridae

Aora Krøyer

Aora aoriformis (Ledoyer) n.comb.

Figs. 1–2

Lembos aoriformis Ledoyer, 1984: 33, fig. 15.

Material examined. NCL-28 (3 ♂♂, 3 ♀♀), NCL-31 (1 ♀), NCL-95 (3 ♂♂, 6 ♀♀), NCL-97 (1 ♂), NCL-98 (10 ♂♂, 17 ♀♀), NCL-111 (4 ♂♂, 5 ♀♀), NCL-112 (2 ♀♀), NCL-113 (2 ♂♂, 3 ♀♀), NCL-116 (1 ♂, 8 ♀♀, 2 immature), NCL-128 (1 ♂, 2 ♀♀), NCL-129 (25 ♂♂, 34 ♀♀), NCL-130 (2 ♂♂, 13 ♀♀).

Description. Male and female to 3.5 mm. Male pereon segments lacking sternal processes. Head lateral lobes only moderately produced; eye relatively large, situated proximal to lobes; distoventral margin poorly recessed, shallow. Antenna 1 markedly longer than body; peduncular articles in the basi-distal length ratios 7:12:3; accessory flagellum well developed with 4 articles, the terminal article rudimentary, flagellum poorly setiferous, over twice length of peduncle, with about 33 articles, all except the most proximal with aesthetascs. Antenna 2 only moderately setiferous, less than half length of antenna 1; peduncular articles 4 and 5 subequal in length; flagellum subequal in length with peduncular article 5 with 7 articles, the terminal ones with strong setae. Mouthparts conforming to normal *Aora* structure; mandible palp article 3 subequal in length with article 2, slender, posterior margin convex with a few long marginal setae and an understorey of short setae. Male gnathopod 1 weakly setiferous; coxa strongly produced forward, subacute; basis elongate, anterior margin with strong acute or subacute medial spine; merus produced into acute ending tooth, shorter than and weakly deflected from the carpus; carpus subrectangular, parallel-sided; propodus subrectangular, subequal in width with carpus, palm obsolete; dactylus large, falcate, only a little shorter than propodus. Female gnathopod 1 coxa subrectangular deeper than broad; merus unproduced; carpus subtriangular, shorter than that of male; propodus and carpus subequal in length, palm very oblique defined by a stout seta; dactylus of moderate length, slightly overlapping palm. Male gnathopod 2 coxa subround; basis slender, anterior margin concave; carpus and propodus subequal in length, only moderately setiferous; propodus subrectangular, palm oblique, defined by a spine; dactylus fitting palm. Female gnathopod 2 coxa much larger than that of male; basis a little more slender than that of male, with anterior margin substraight; carpus a little shorter than propodus, subtriangular; propodus palm evenly convex, defined by a stout seta; dactylus short, fitting palm. Pereopods 5–7 in the length ratios 4:7:9; propodus posterior margin with stout setae distally. Epimera 2–3 each with a small distoventral tooth. Uropod 1 peduncle a little longer than outer ramus

and with strong distoventral spine about one third length of peduncle; outer ramus a little longer than inner; both rami with marginal stout setae. Uropod 2 peduncle shorter than inner ramus and with short triangular distoventral spine; inner ramus distinctly longer than outer; both rami with marginal stout setae. Uropod 3 rami longer than peduncle; rami subequal in length; outer ramus with slender distal setae, one marginal seta and with small second article; inner ramus with marginal stout seta and a slender distal seta. Telson dorsolateral crests each with three slender setae.

Remarks. This species is small and fragile. The large, pale eye allows separation of freshly preserved (in alcohol) specimens of this species from *A. spinimerus*, which is sometimes found in the same samples.

This species was originally assigned to the genus *Lembos* by Ledoyer (1984) based on the male gnathopod merus being shorter than the carpus, male coxa 1 being of the “*Lembos*” type, presumably referring to the forward produced, anterodistal margin and the mandibular palp being weakly falcate with a row of small setae. The shortened male gnathopod 1 merus is unusual in *Aora*, but occurs also in *A. spinicornis*, the acute coxa occurs in several *Aora* species e.g., *A. typica*, *A. hebes* and *A. spinicornis* and the mandible palp is similar to that of *A. hircosa*. In all respects this and the following species conform to the genus *Aora* Krøyer.

Habitat. Amongst *Padina*, *Sargassum*, seagrasses and coral rubble, 0–10 m.

Distribution. New Caledonian endemic.

Aora spinimerus (Ledoyer) n.comb.

Figs. 3–4

Lembos spinimerus Ledoyer, 1984: 37, fig. 17A.

Material examined. NCL-4 (1 ♂), NCL-15 (1 ♂), NCL-21 (6 ♂♂, 9 ♀♀), NCL-25 (4 ♂♂, 9 ♀♀, 1 immature), NCL-26 (3 ♀♀, 2 immature), NCL-28 (9 ♂♂, 16 ♀♀, 1 immature), NCL-29 (1 ♂, 2 ♀♀, 2 immature), NCL-33 (2 ♀♀), NCL-40 (2 ♀♀, 1 immature), NCL-47 (5 ♂♂, 6 ♀♀, 2 immature), NCL-49 (3 ♂♂, 1 ♀, 1 immature), NCL-60 (1 ♂, 3 ♀♀), NCL-63 (1 ♂), NCL-64 (1 ♂, 2 ♀♀), NCL-68 (2 ♀♀), NCL-79 (1 ♂, 2 ♀♀), NCL-98 (2 ♂♂, 4 ♀♀), NCL-110 (2 ♂♂), NCL-111 (3 ♂♂, 5 ♀♀), NCL-112 (1 ♀), NCL-116 (4 ♂♂, 11 ♀♀, 1 immature), NCL-128 (1 ♀), NCL-129 (6 ♂♂, 9 ♀♀), NCL-130 (4 ♂♂, 6 ♀♀), NCL-139 (12 ♂♂, 9 ♀♀, 3 immature), NCL-153 (3 ♂♂, 1 ♀), NCL-154 (1 ♂, 2 ♀♀, 1 immature), NCL-156 (1 ♂, 3 ♀♀), NCL-237 (7 ♀♀), NCL-246 (1 ♂, 3 ♀♀).

Description. Male and female to 5.5 mm. Male pereon segments lacking sternal processes. Head lateral lobes only moderately produced; eye moderately large situated proximal to lobes; distoventral margin poorly recessed, shallow. Antenna 1 a little shorter than body length; peduncular articles in the basi-distal length ratios 3:4:1;

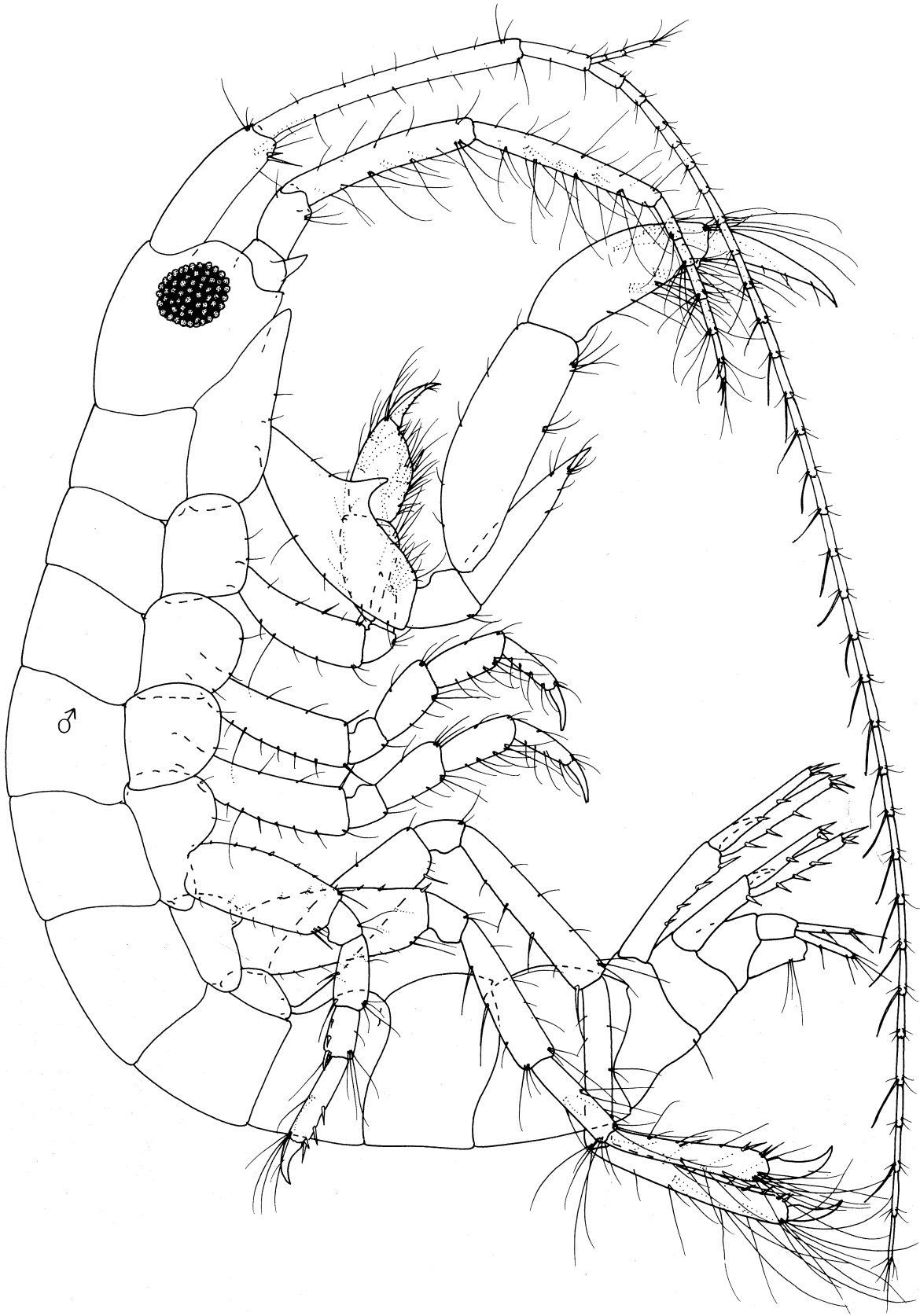


Figure 1. *Aora aoriformis* (Ledoyer). Off Ilot Maitre, Noumea Lagoon, New Caledonia, NCL-98.

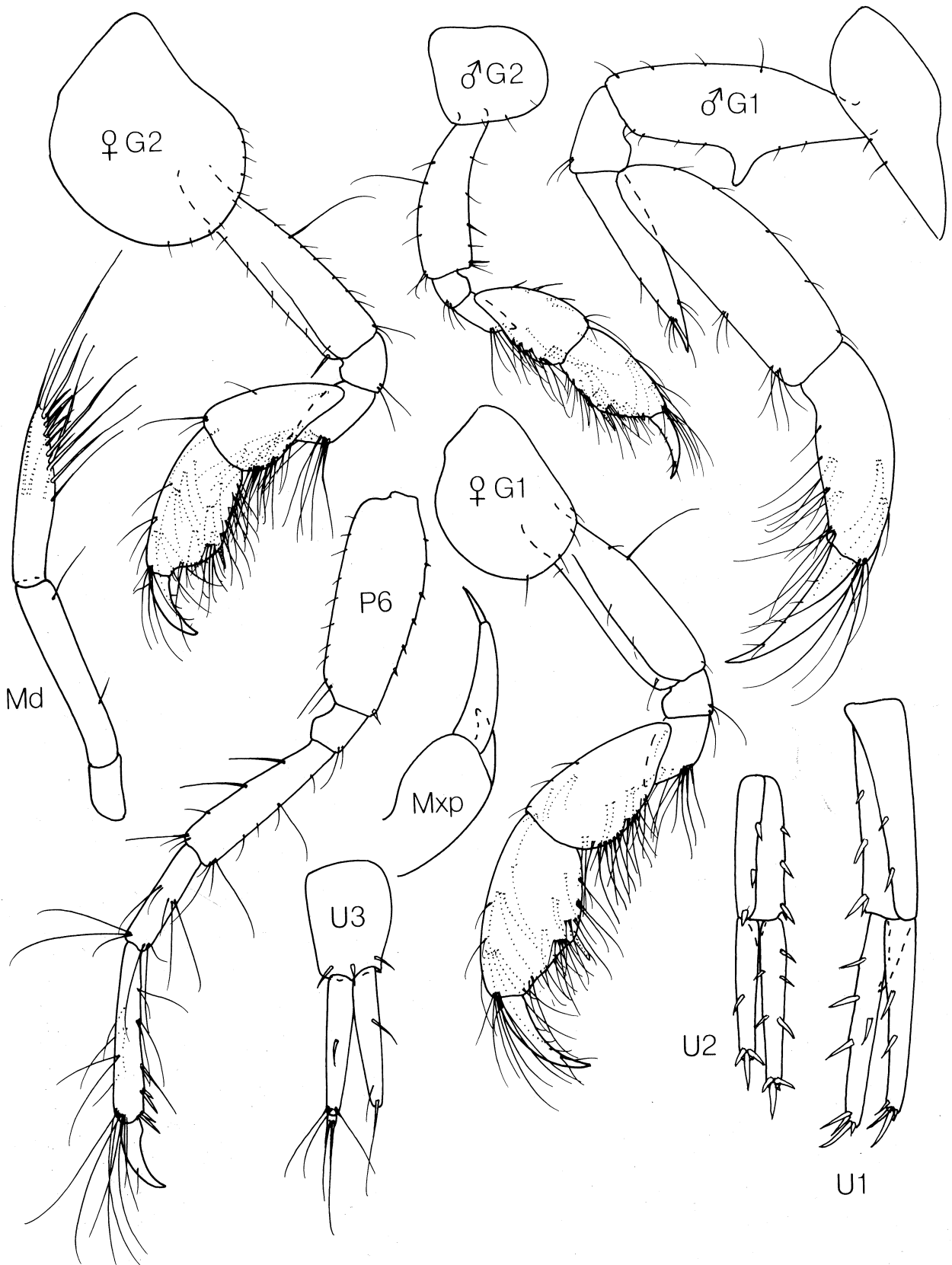


Figure 2. *Aora aoriformis* (Ledoyer). Off Ilot Maitre, Noumea Lagoon, New Caledonia, NCL-98.

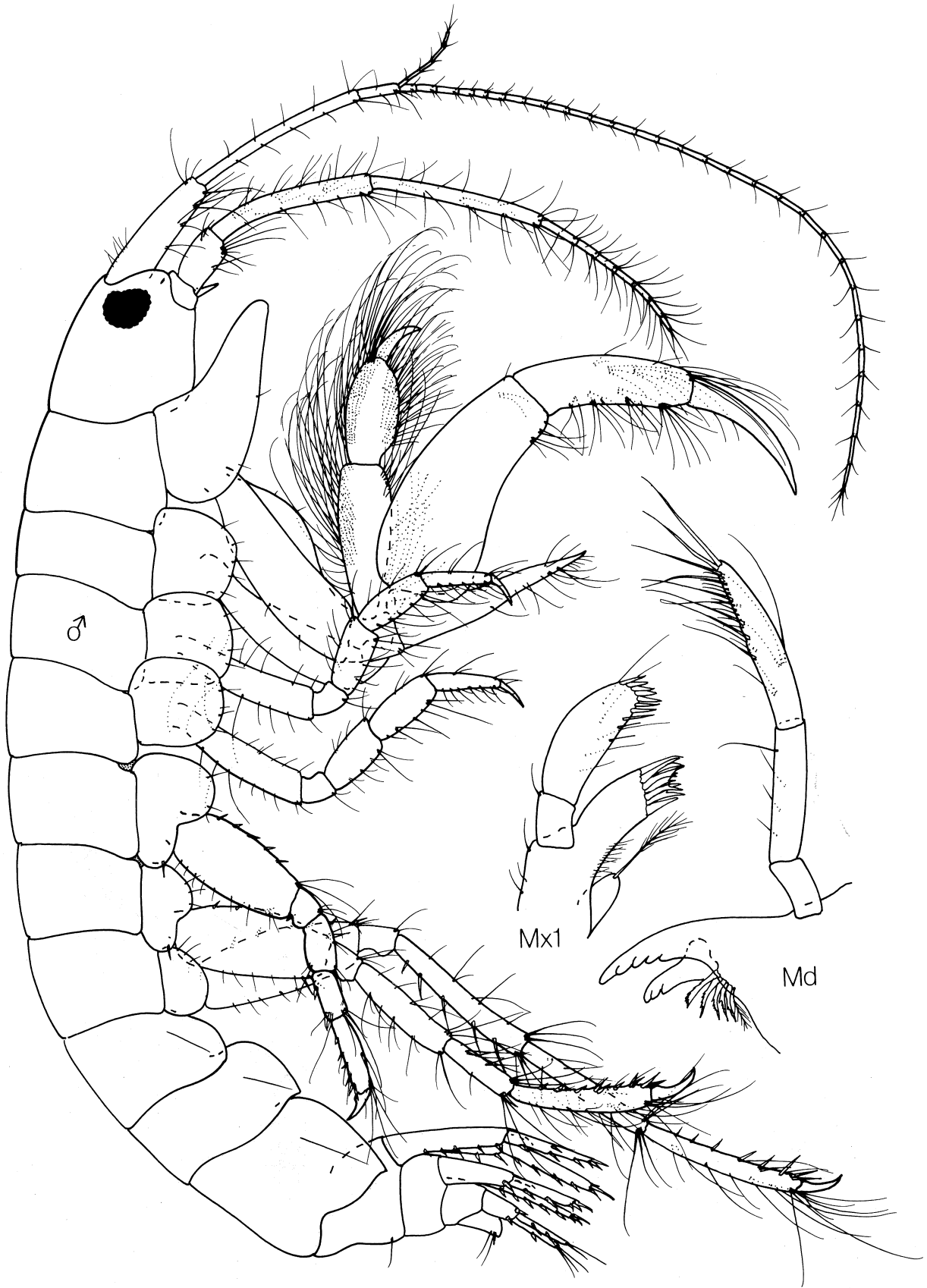


Figure 3. *Aora spinimerus* (Ledoyer). Between Ilot Maitre and Croissant reef, Noumea Lagoon, New Caledonia, NCL-28.

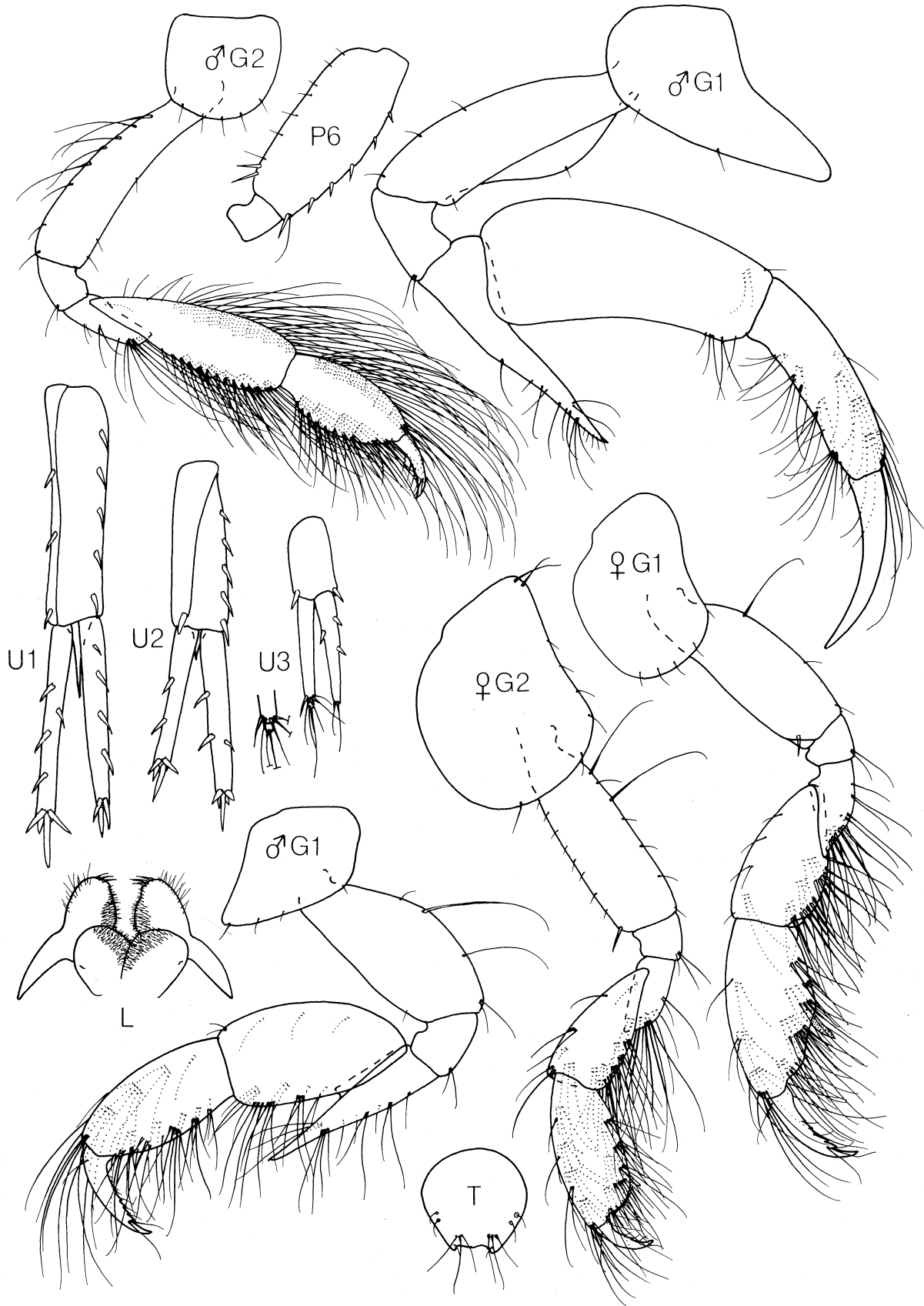


Figure 4. *Aora spinimerus* (Ledoyer). Between Ilot Maitre and Croissant reef, Noumea Lagoon, New Caledonia, NCL-28.

accessory flagellum well developed with six articles, the terminal article rudimentary; flagellum poorly setiferous, twice length of peduncle, with about 30 articles. Antenna 2 only moderately setiferous; two-thirds length of antenna 1; peduncular articles 4 and 5 subequal in length; flagellum subequal in length with peduncular article 5 with 7 articles, the terminal ones with strong setae. Mouthparts conforming to normal *Aora* structure, mandible palp article 3 longer than 2, slender, posterior margin substraight with a few long marginal setae and an understorey of short setae. Male gnathopod 1 weakly setiferous; coxa strongly produced forward, subacute; basis elongate, anterior margin with rounded flange; merus produced into acute ending tooth, shorter than and strongly deflected from the carpus; carpus subrectangular, broader proximally; propodus subrectangular but more slender than carpus, palm obsolete; dactylus large, falcate, only a little shorter than propodus. Female gnathopod 1 coxa subrectangular deeper than broad; merus unproduced; carpus subtriangular, shorter than that of male; propodus a little longer than carpus, palm very oblique defined by a stout seta; dactylus of moderate length, fitting palm. Male gnathopod 2 coxa subround; basis elongate and slender; carpus elongate over three times as long as broad, anterior margin with dense brush of long setae; propodus subovoid, about two thirds length of carpus, anterior margin with dense brush of long setae, palm oblique, scarcely distinct from posterior margin; dactylus short. Female gnathopod 2 coxa much larger and basis less slender, than that of male; carpus a little shorter than propodus, subtriangular; propodus palm evenly convex, defined by a stout seta; dactylus short, fitting palm. Pereopods 5–7 in the length ratios 6:9:12; propodus posterior margin with stout setae. Epimera 2–3 each with a small distoventral tooth. Uropod 1 peduncle a little longer than outer ramus and with strong distoventral spine a little less than one third length of peduncle; outer ramus a little longer than inner; both rami with marginal stout setae. Uropod 2 peduncle subequal in length with inner ramus and with short triangular distoventral spine; inner ramus distinctly longer than outer; both rami with marginal stout setae. Uropod 3 rami longer than peduncle; rami subequal in length; outer ramus with slender distal setae, but lacking marginal setae and with small second article; inner ramus with marginal stout setae and a pair of slender distal setae. Telson dorsolateral crests each with three slender setae.

Remarks. Adult material of this species was not available to Ledoyer (1984). It is therefore figured here and redescribed in more detail. This species is larger and more robust than the preceding species. For other separating characters see remarks on that species.

Habitat. Amongst *Padina*, *Sargassum*, large yellow sea fans, rubble and red algae and fine sand, 0–38 m.

Distribution. New Caledonian endemic.

Bemlos Shoemaker

Bemlos aequimanus (Schellenberg)

Lembos aequimanus Schellenberg, 1938: 76, fig. 39.–Barnard, 1965: 527, fig. 26.–Barnard, 1970: 72, figs. 36a–c.–Ledoyer, 1984: 31, fig. 14.–Myers, 1985c: 385, figs. 246–248.
Bemlos aequimanus.–Myers, 1988a: 188.–Myers, 1995: 30.

Material examined. NCL-2 (3 ♂♂, 5 ♀♀, 1 immature), NCL-7 (1 ♀, 1 immature), NCL-8 (2 ♂♂, 2 ♀♀), NCL-9 (1 ♂), NCL-10 (2 ♀♀), NCL-11 (1 ♂), NCL-12 (1 ♀), NCL-15 (10 ♂♂, 13 ♀♀, 2 immature), NCL-17 (8 ♂♂, 7 ♀♀), NCL-18 (6 ♂♂, 6 ♀♀, 2 immature), NCL-19 (11 ♂♂, 12 ♀♀, 3 immature), NCL-21 (3 ♂♂, 1 ♀, 1 immature), NCL-22 (4 ♂♂, 4 ♀♀, 3 immature), NCL-80 (2 ♂♂, 1 ♀, 2 immature), NCL-212 (1 ♀, 1 immature).

Remarks. New Caledonian material does not appear to differ significantly from that reported from other Pacific islands.

Habitat. Amongst sea grasses, red and brown algae, spherical rhodoliths and coral rubble, 0–2 m.

Distribution. Hawaii, Marshall Islands, Kiribati, Tonga, Western Samoa, Papua New Guinea, New Caledonia.

Bemlos waipio (Barnard)

Lembos processifer Barnard, 1965: 529, figs. 28g–m (not *Lembos processifer* Pirlot, 1938).
Lembos waipio Barnard, 1970: 85, figs. 44–45.–Myers, 1985c: 379, figs. 242–245.
? *Lembos waipio*.–Ledoyer, 1984: 37, fig. 17B.
Bemlos waipio.–Myers, 1988a: 189.–Myers, 1995: 30.

Material examined. NCL-2 (1 ♂), NCL-5 (1 ♂), NCL-22 (2 ♂♂, 3 ♀♀), NCL-29 (1 ♂), NCL-139 (1 ♂).

Remarks. This species occurs in an arc from Hawaii westwards through the Carolines to Papua New Guinea, Vanuatu and New Caledonia. It has not yet been found in the south Pacific (Fiji to Society Islands).

Habitat. Amongst red algae, *Sargassum*, epiphytes and coral rubble, 0–2 m.

Distribution. Hawaii, Caroline Islands, Vanuatu, Papua New Guinea, New Caledonia.

Bemlos tui (Myers)

Fig. 5b

Lembos tui Myers, 1985c: 398, figs. 255–258.
Bemlos tui.–Myers, 1995: 30, fig. 3.

Material examined. NCL-27 (3 ♂♂, 2 ♀♀).

Remarks. New Caledonian material differs from type material in the strong deflection of the robust posterodistal tooth of the male gnathopod 1 propodus. In other respects it closely resembles specimens from both Samoa and Papua New Guinea.

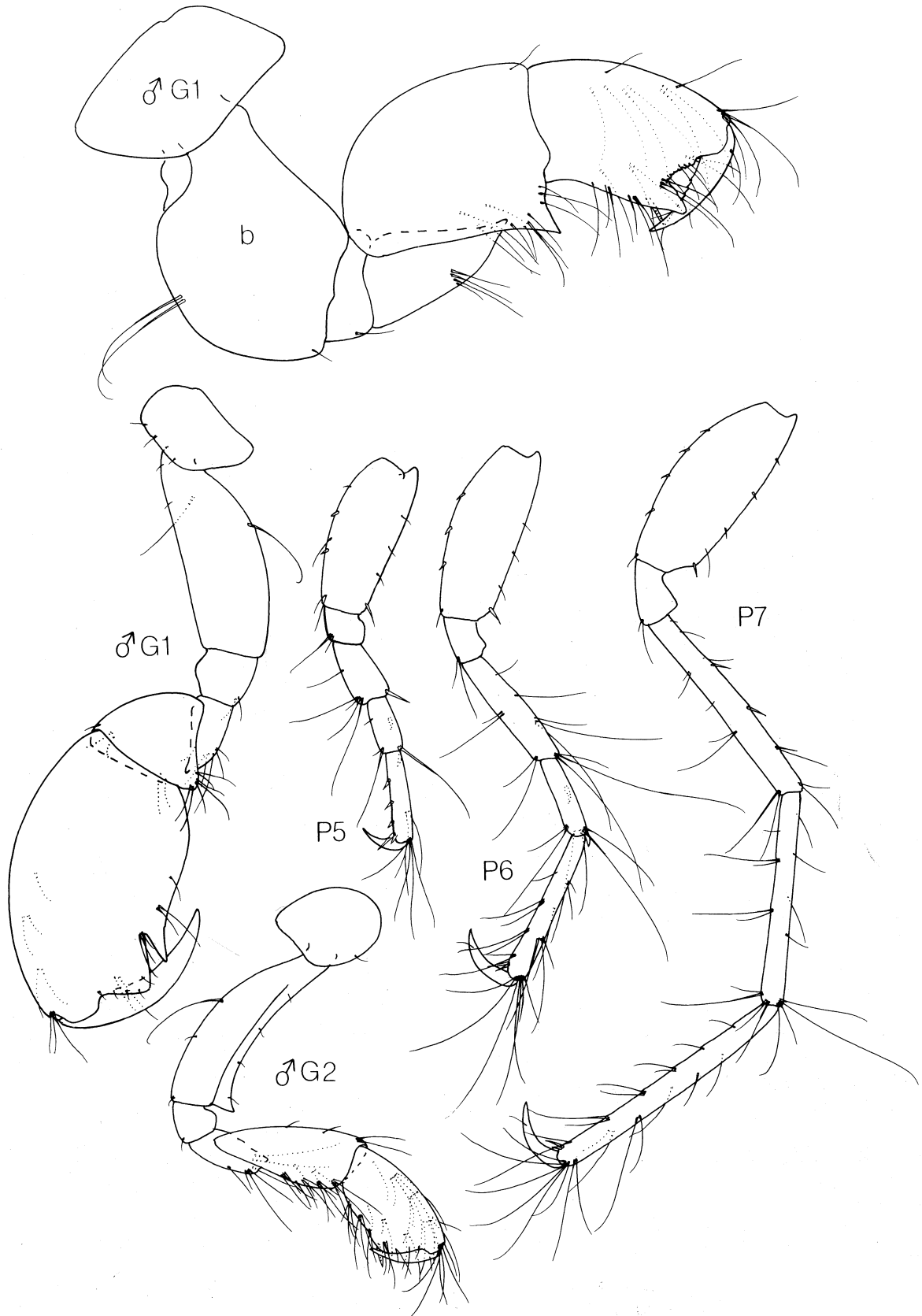


Figure 5. *Bemlos saloteae* (Myers). Pointe de Easo, Baie de Santal, Lifou, Loyalty Islands, NCL-235; *Bemlos tui* (Myers) (b) off Ilot Maitre, Noumea Lagoon, New Caledonia, NCL-27.

Habitat. In *Cymodocea* spp., 0.3 m.

Distribution. Western Samoa, Papua New Guinea, New Caledonia.

Bemlos saloteae (Myers, 1985c)

Fig. 5

Lembos saloteae Myers, 1985c: 373, figs. 238–241.—Myers, 1986: 271, 288.

Bemlos saloteae.—Myers, 1988a: 188.—Myers, 1988b: 284, figs. 15–16.

Material examined. NCL-231 (1 ♂, 1 ♀, 1 immature), NCL-234 (1 ♂), NCL-235 (2 ♂♂, 2 ♀♀), NCL-238 (1 ♀).

Remarks. Loyalty Island material is similar to that described from Tonga and Queensland except that the present material is of much more slender proportions, with elongate appendages, particularly pereopods 6 and 7.

Habitat. Amongst *Halimeda* and red algae, 2–18 m.

Distribution. Tonga, Queensland, Loyalty Islands.

Globosolembos Myers

Globosolembos excavatus (Myers)

Lembos excavatus Myers, 1975: 32, figs. 76–82.—Ledoyer, 1982: 218, figs. 104–105 (in part).

Lembos processifer.—Ledoyer, 1984: 35 (in part), fig. 16 (“forme 2”) (not *L. processifer* Pirlot, 1938: 330, figs. 147–149).

Lembos (Globosolembos) excavatus Myers, 1985a: 363, fig. 234. *Globosolembos excavatus*.—Myers, 1986: 285, figs. 11–12.—Myers, 1988b: 329.

Material examined. NCL-7 (1 ♂, 6 ♀♀), NCL-22 (1 ♂, 1 ♀), NCL-27 (1 ♀), NCL-139 (1 ♂, 1 ♀), NCL-199 (1 ♀), NCL-209 (1 ♂).

Habitat. In coral rubble, *Cymodocea* spp. and mixed algae, 0–27 m.

Distribution. East Africa, Madagascar, north-eastern Australia, New Caledonia, Tonga.

Globosolembos clavicornis n.sp.

Figs. 6–7

Type material. HOLOTYPE male, 2.5 mm, AM P52758, Grand Recif Mbere, 22°19.90'S 166°13.24'E, steep slope, coarse rubble, 10–12 m depth, J.K. Lowry, 21 November 1995, NCL-156. PARATYPES, 10 ♂♂, 9 ♀♀, 4 immature, AM P52759, NCL-156.

Diagnosis. Male 2.5 mm, female 2.8 mm. Male pereon lacking sternal processes. Head lateral lobes only moderately produced; eye moderately large situated

proximal to lobes; distoventral margin poorly recessed, moderately deep. Antenna 1 a little shorter than body length; peduncular articles in the basi-distal length ratios 7:9:3; articles 2–3 ventral margin with long stout setae; accessory flagellum composed of one long and one rudimentary terminal article; primary flagellum article 1 ventral margin with a few long stout setae, remaining articles poorly setiferous; flagellum longer than peduncle, with about 15 articles. Antenna 2 robust, subpediform, about one half length of antenna 1; peduncular articles 4 and 5 subequal in length, but article 4 distinctly broader, both articles strongly setiferous, the ventral margins with long, stout setae; flagellum shorter than peduncular article 5, with 6 articles, each with a long ventrodorsal strong seta. Mouthparts of typical *Globosolembos* structure; mandible palp article 3 shorter than 2, subovoid, posterior margin with a few long marginal setae and an understory of short, stout setae. Male gnathopod 1 weakly setiferous; coxa produced forward, rounded; basis stout, excavate on anterior outer face for reception of carpus when folded; carpus subtriangular, cup-shaped, about as broad as long; propodus subround, palm evenly convex, defined by an obtuse angle and a strong seta; dactylus strong, falcate. Female gnathopod 1 similar to that of male, but palm sinuous, produced into a right angle. Gnathopod 2 coxa subrectangular, rounded; basis elongate, anterior margin weakly concave; carpus subtriangular, nearly twice as long as broad; propodus subrectangular, subequal in length with carpus, palm oblique, evenly convex, defined by a stout seta; dactylus short. Pereopods 3–4 dactylus about two-thirds length of propodus. Pereopods 5–7 in the length ratios 3:4:6. Epimera posteroventral corner rounded; epimera 1–2 with a few plumose setae on the ventral margin. Uropod 1 peduncle longer than outer ramus and with strong distoventral spine, one half length of peduncle; inner ramus a little longer than outer, each ramus with a single marginal stout seta. Uropod 2 peduncle shorter than inner ramus and with strong distoventral spine, over one half length of peduncle; inner ramus distinctly longer than outer, each ramus with a single marginal stout seta. Uropod 3 rami very reduced and shorter than peduncle, subequal in length, lacking marginal setae, but with long terminal setae. Telson dorsolateral crests each with a pair of unequal slender setae.

Ovigerous females with 1–2 eggs.

Remarks. In its diminutive size, short article three of the mandibular palp and reduced uropod 3 rami, this species resembles *G. tiafaui* Myers from Western Samoa. It differs from that species and indeed from all other known *Globosolembos* species, by the strong stout setae on antenna 2.

Habitat. In coral rubble, 10–12 m.

Distribution. Known only from the type locality.

Etymology. From the Latin *clavus* = spike and *cornus* = horn, referring to the spiky appearance of antenna 2.

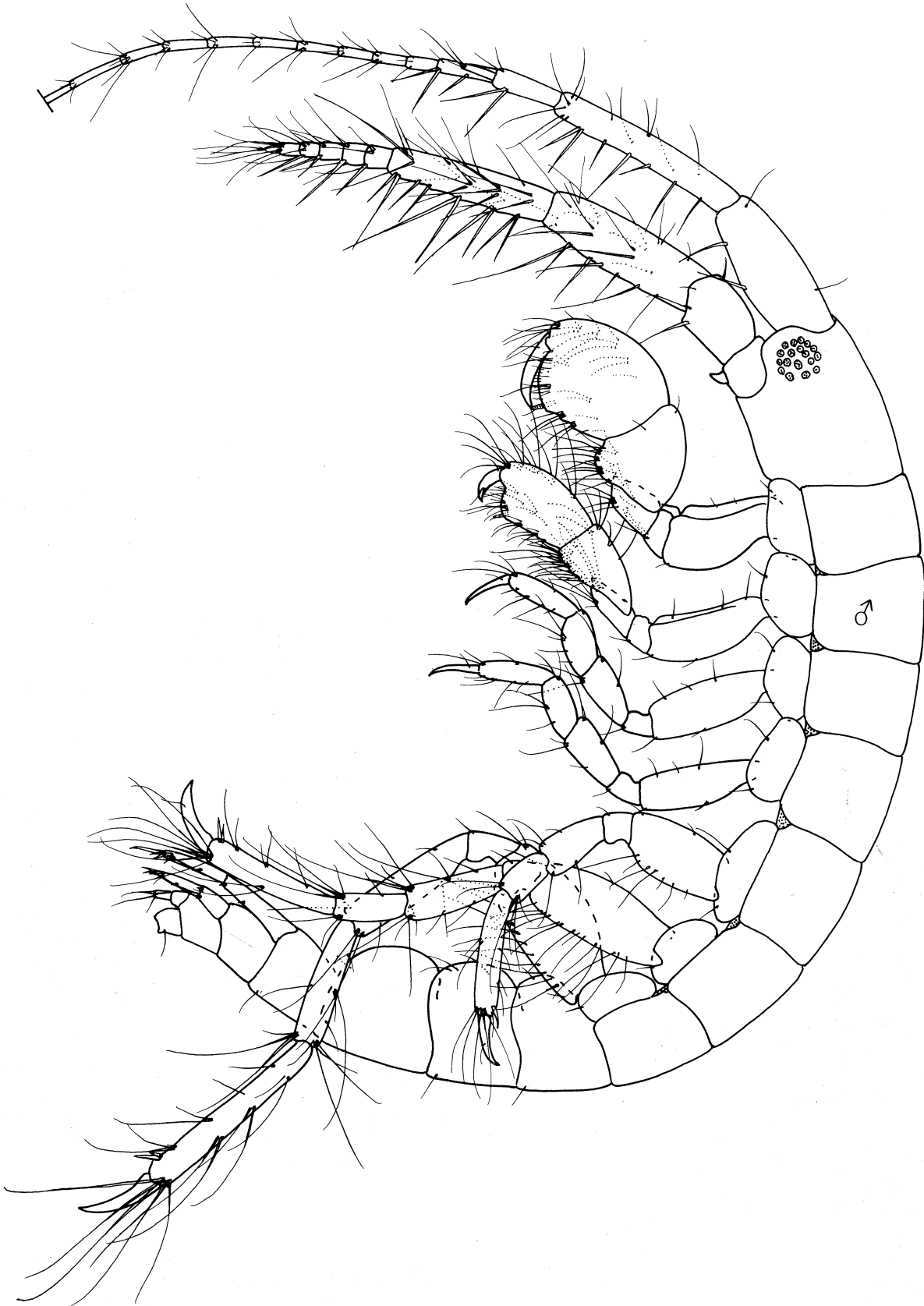


Figure 6. *Globosolembos clavicornis* n.sp. Grand Recif Mbere, Noumea Lagoon, New Caledonia, NCL-156.

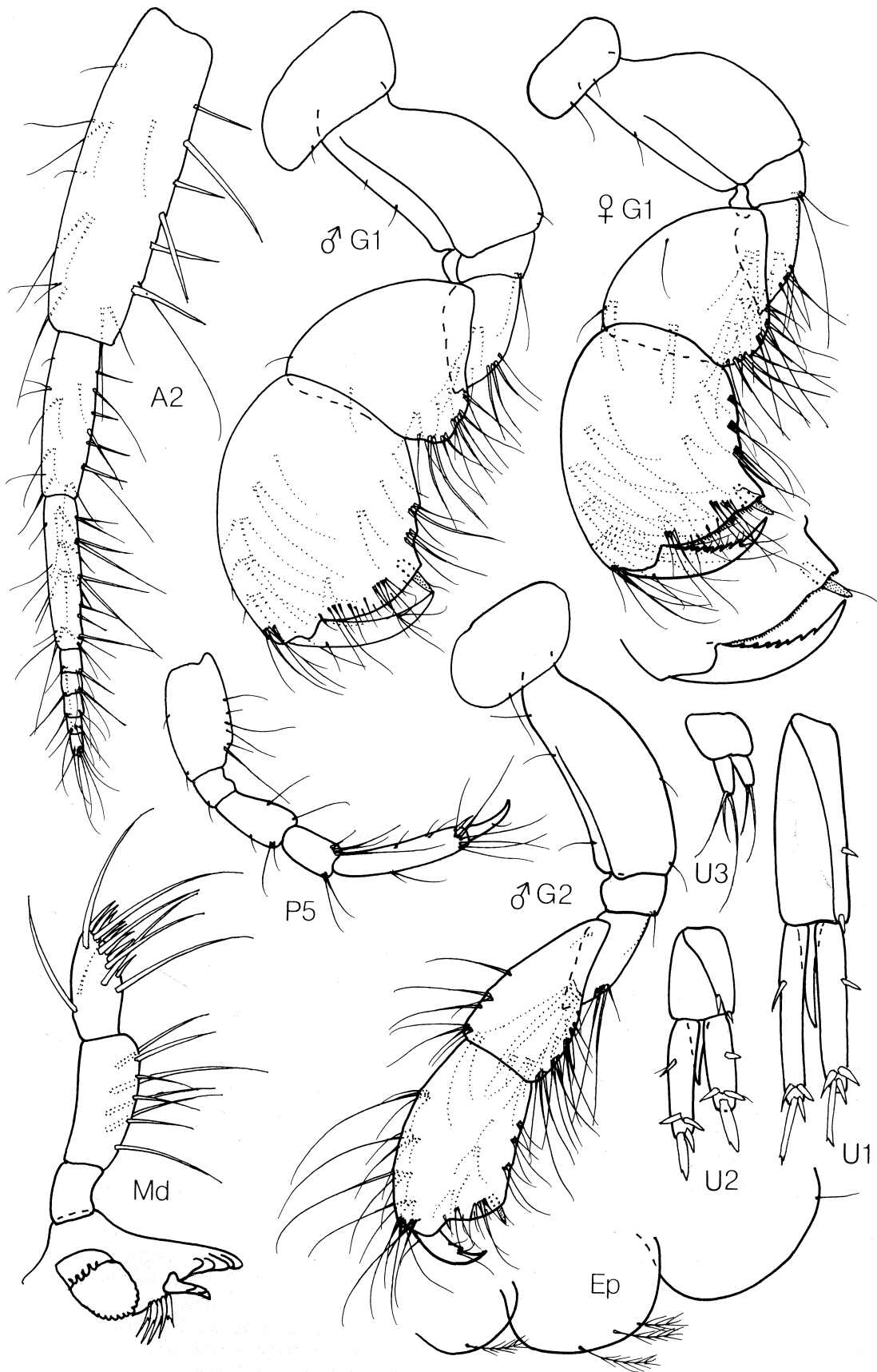


Figure 7. *Globosolembos clavicornis* n.sp. Grand Recif Mbere, Noumea Lagoon, New Caledonia, NCL-156.

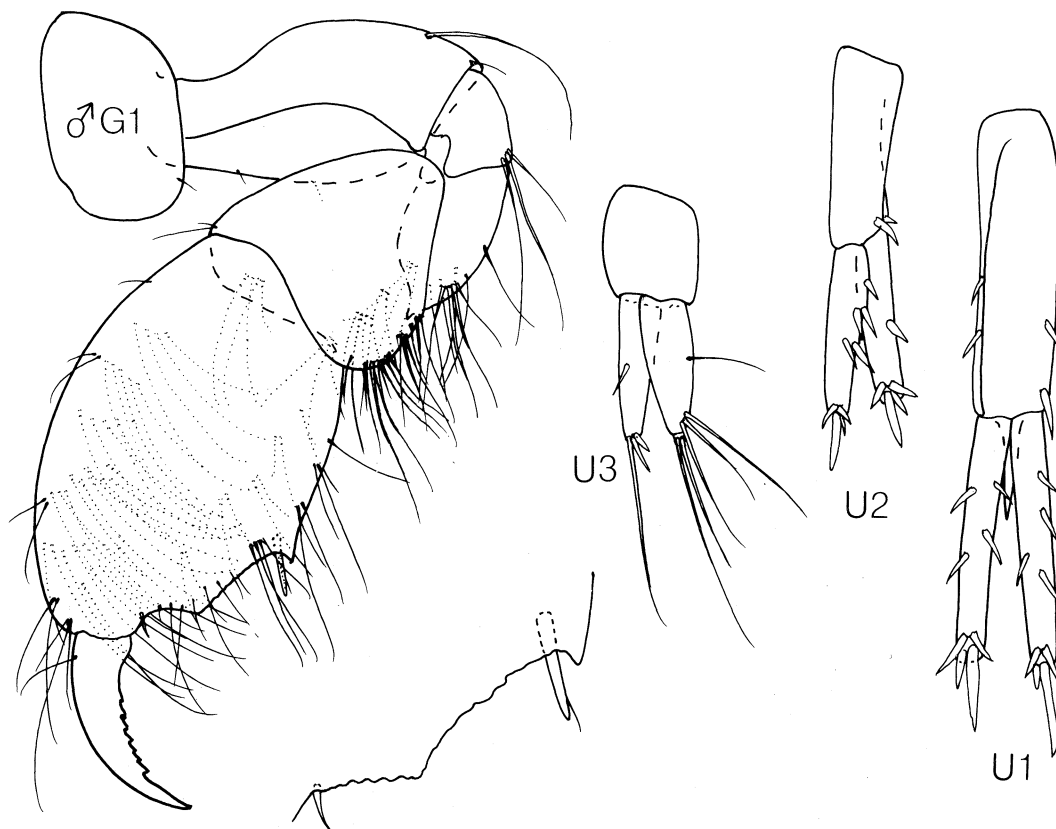


Figure 8. *Globosolembos lunatus* Myers. Grand Recif Mbere, Noumea Lagoon, New Caledonia, NCL-198.

Globosolembos lunatus Myers, 1988b

Fig. 8

Globosolembos lunatus Myers, 1988b: 329, figs. 55–56.

Material examined. NCL-35 (1 ♀), NCL-198 (1 ♂).

Remarks. Material agrees well with the original description of the species from Australia.

Habitat. Amongst *Halimeda* and dead *Acropora* with epiphytes, 20–35 m.

Distribution. Australia (Victoria) and New Caledonia.

Globosolembos forgesi n.sp.

Figs. 9–10

Type material. HOLOTYPE male, 4.0 mm, AM P52760, off Recif To, Passe de Boulari, 22°30.15'S 166°26.43'E, rocks encrusted with lithothamnia, 30 m, ORSTOM divers, 8 November 1995, NCL-45. PARATYPES, 2 ♀♀, AM P52761, NCL-45.

Diagnosis. In life: rear of each pereon segment with thin orange band. Margins of cephalon and base of antenna 1 article 1 also orange banded. Eye large, chocolate brown.

In alcohol (one week): white, eye colourless. Male 4.0 mm, female 4.5 mm. Head lateral lobes only moderately produced; eye moderately large; distoventral margin poorly

recessed, moderately deep. Antenna 1 peduncular article 1 longer than head; other articles missing in all specimens. Antenna 2 peduncular articles 4–5 and flagellum missing in all specimens. Mouthparts of typical *Globosolembos* structure; mandible palp article 3 longer than 2, posterior margin weakly falcate, with a few long marginal setae and an understory of short unequal sized setae. Male gnathopod 1 coxa produced forward, rounded; basis stout, excavate on anterior outer face for reception of carpus when folded, anterodistal margin of inner face produced into a rounded spur; carpus subtriangular, cup-shaped, broader than long; propodus subovoid, palm short, defined by a triangular process and lacking a stout seta, posterior margin medially with a strong forward directed spine; dactylus strong, falcate, opposable to medial spine. Female gnathopod 1 similar to that of male, but palm sinuous, produced into a triangular process and lacking a medial spine on the posterior margin. Gnathopod 2 coxa subrectangular, rounded; basis elongate, anterior margin weakly concave; carpus subtriangular, nearly twice as long as broad; propodus subrectangular, subequal in length with carpus, palm oblique, evenly convex; dactylus slightly overlapping palm. Pereopods 3–4 dactylus a little over half length of propodus. Pereopods 5–7 missing in all specimens. Epimera posteroventral corner rounded. Uropod 1 peduncle longer than outer ramus and with strong distoventral spine, less than one half length of peduncle; inner ramus a little longer than outer, each ramus with stout marginal setae. Uropod 2 peduncle shorter than

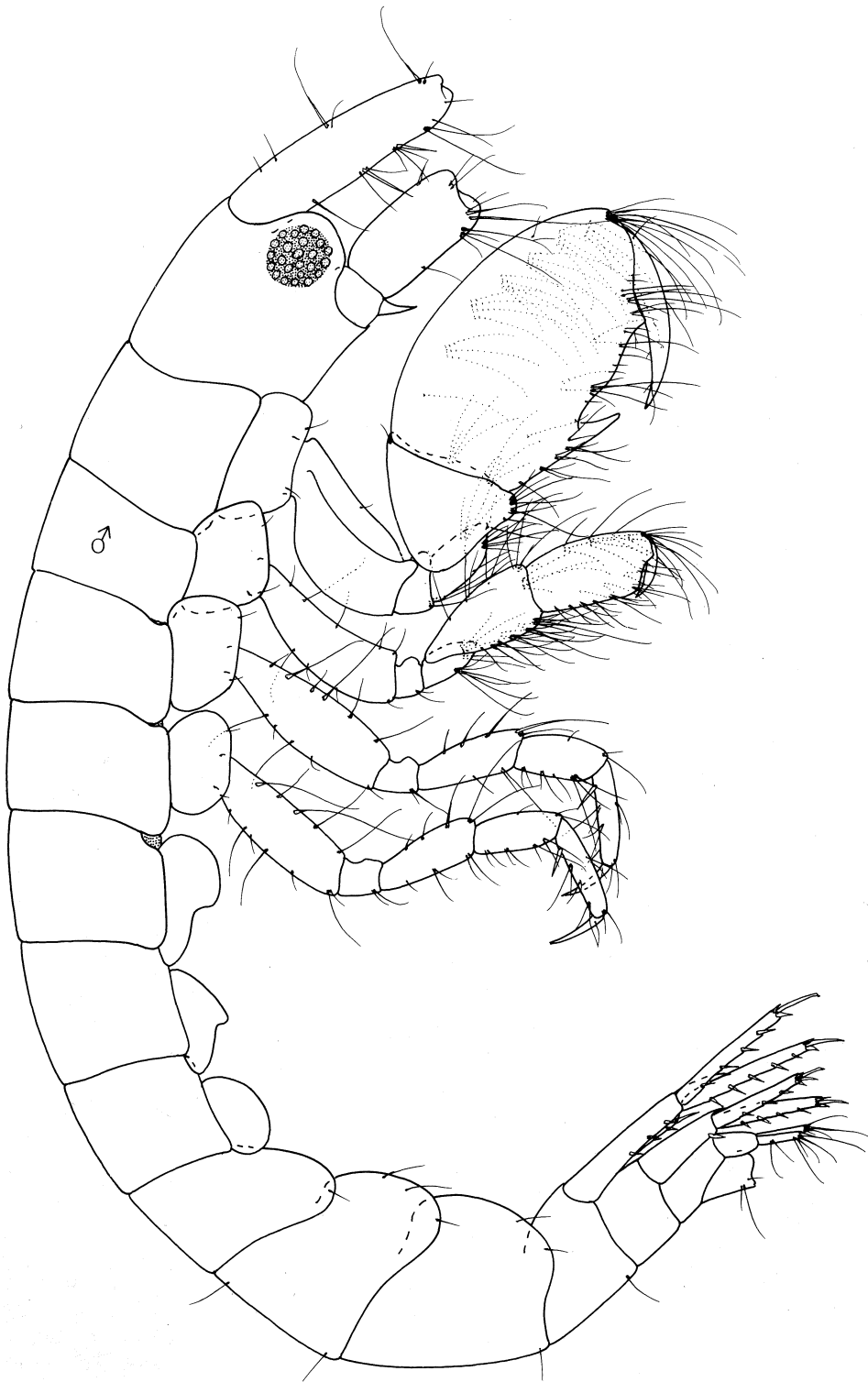


Figure 9. *Globosolembos forgesi* n.sp. Off Recif To, Passe de Boulari, Noumea Lagoon, New Caledonia, NCL-45.

inner ramus and with strong distoventral spine, less than one half length of peduncle; inner ramus longer than outer, both rami with many stout marginal setae. Uropod 3 rami longer than peduncle; inner ramus longer than outer, with two marginal strong setae; outer ramus with a small second article and a pair of long marginal setae;

both rami with long distal setae. Telson dorsolateral crests each with a pair of unequal slender setae.

Remarks. This species differs from most *Globosolembos* species in the strong posterior marginal spine on the male gnathopod 1 propodus. In this respect it resembles males

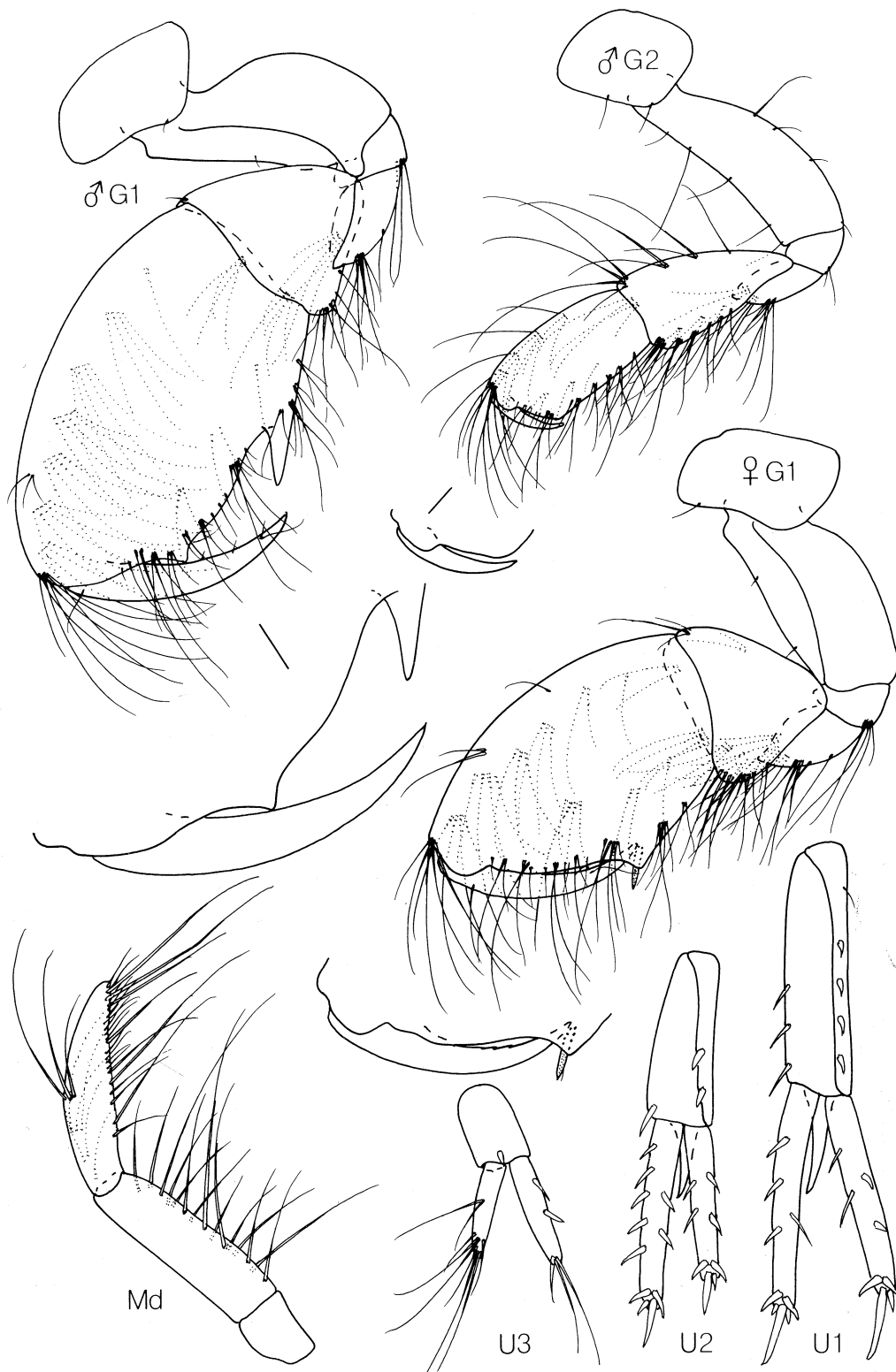


Figure 10. *Globosolembos forgesi* n.sp. Off Recif To, Passe de Boulari, Noumea Lagoon, New Caledonia, NCL-45.

of species in genera such as *Bemlos*, *Protolembos* and others. However, that this is a homoplasy can be seen by the weak sexual dimorphism of the gnathopoda and the mandible palp article 3 shape (elongate, weakly falcate)

and setation (unequal sized understory of short setae on posterior margin) which are diagnostic characters of *Globosolembos*. The male gnathopod 1 resembles that of *Globosolembos excavatus* in general shape, differing only

in the development of a medial tooth. In *Bemlos* and *Protolembos* the tooth develops in young males as a small excavation in the palm. This excavation deepens and in some species the tooth then migrates to a more medial position. Unfortunately juveniles of *G. forgesi* are not available for examination, but it is anticipated that the tooth may develop differently in this species, since it appears to be a secondary rather than primary feature.

Habitat. On rocks encrusted with lithothamnium, 30 m.

Distribution. Known only from the type locality.

Etymology. Named after the carcinologist Dr Bertrand Richer de Forges of ORSTOM.

Grandidierella Coutière

Grandidierella kanakensis n.sp.

Figs. 11–12

Type material. HOLOTYPE male 3.2 mm, AM P52762, off Ilot Maitre, 22°20.50'S 166°24.40'E, *Cymodocea*, 0.3 m, A.A. Myers, 6 November 1995, NCL-27.

Diagnosis. Male, 3.2 mm. Pereon lacking sternal processes. Head lateral lobes scarcely produced; eye moderately large; distoventral margin poorly recessed. Antenna 1 three quarters body length; peduncular articles in the basi-distal length ratios 7:9:3; accessory flagellum composed of a single article about one third length of flagellar article 1; flagellum longer than peduncle with 14 articles, the terminal article rudimentary, articles 4, 6 and 8–13 with aesthetascs. Antenna 2 robust, sub-pediform, subequal in length with antenna 1; peduncular articles 4 and 5 subequal; flagellum a little shorter than peduncular article 5, with 6 articles, articles 4–6 with stout ventral setae. Mouthparts not dissected. Male gnathopod 1 basis very enlarged, subovoid, weakly setiferous; carpus massive, subovoid, weakly setiferous, with a strong forward projecting spine on the inner face, close to the posteroproximal margin and with a similar strong spine on the posterodistal margin; propodus much less than half length and breadth of carpus, palm obsolescent; dactylus stout, three quarters length of propodus, ventral margin with three strong teeth. Gnathopod 2 basis flask-shaped, anterior margin with irregular flange; carpus subtriangular, anterior margin with a brush of very long setae; propodus subrectangular three quarters length of carpus, but less than half its width, palm oblique, weakly convex; dactylus strong, slightly overlapping palm. Pereopods 3–4 basis anterior margin weakly convex; dactylus a little shorter than propodus. Pereopods 5–7 in the length ratios 6:9:11; pereopod 7 basis posterior margin with a few long pectinate setae. Epimera 1–3 rounded, each with a small distoventral seta. Uropod 1 peduncle longer than rami, with a small interramal spine, one sixth length of peduncle; rami subequal. Uropod 2 peduncle shorter than rami, lacking an interramal spine; inner ramus longer than outer. Uropod 3 uniramous; peduncle short less than one quarter length of slender ramus. Telson dorsolateral crests each with a pair of unequal slender setae.

Female unknown.

Remarks. This species is similar to *G. bispinosa* Schellenberg, but differs in the structure of the male gnathopoda. Gnathopod 1 carpus has a strong posteroproximal spine and lacks a spine on the inner medial face and the stout dactylus bears very strong teeth. Gnathopod 2 has the carpus sub-triangular, the propodus only two thirds the length and two thirds the breadth of the carpus.

Ledoyer (1984) described a single male specimen of *Grandidierella* from the same locality and habitat as the present material, under the name *G. bispinosa* Schellenberg. He did not describe or figure a posteroproximal spine on the male gnathopod 1 carpus, or note deep toothing on the dactylus. In addition, the male gnathopod 2 is figured as subequal with the carpus and the carpus is sub-ovoid. Ledoyer's material was of a similar size to present material. Its synonymy remains unresolved.

Habitat. Amongst *Cymodocea* in 0.3 m.

Distribution. Known only from the type locality.

Etymology. After the country of origin—Kanak (New Caledonia).

Orstomia n.gen.

Diagnosis. Mandible palp article 3 shorter than article 2, falcate; labium mandibular projections elongate, acute; anterior coxae overlapping or contiguous, posterior coxae disjunct; male gnathopod 1 larger than gnathopod 2, carpocheate; male gnathopod 2 subcheate; pereopods 3–4 ordinary; epimeron 3 posterior margin rounded; urosomites 1–3 free; uropods 1–2 biramous, rami well developed; uropod 3 uniramous without hooks or denticles.

Included species. *Orstomia kanakia* (monotypy).

Etymology. After the Organisation de Recherche Scientifique Territoire Outre-Mer.

Orstomia kanakia n.sp.

Figs. 13–14

Type Material. HOLOTYPE male, 2.4 mm, AM P52763, outer face, Grand Recif Mbere, 22°19.90'S 166°13.24'E, human dredge on coarse carbonaceous sand bottom, 64 m, ORSTOM diver, P. Hamel, 23 November 1995, NCL-185. PARATYPES, NCL-185 (2 ♂♂, 2 ♀♀), AM P52764.

Diagnosis. Male and female to 2.5 mm. Male pereon segments 3–6 with sternal processes, spiniform on segments 3–4, laminar on segments 5–6. Head lateral lobes only moderately produced; eye large with only a few scattered ommatidia, situated proximal to the lobes; distoventral margin poorly recessed, shallow. Antenna 1 and 2 unknown. Labrum rounded, distally setose. Mandible molar triturative, spine row of four spines; palp article 3 shorter than article 2, falcate, distal half of posterior margin with a row of short setae bordered distally and proximally by a few long setae. Maxilla 1 inner plate with a single long seta; palp longer than outer plate with 6 distal stout setae. Maxilla 2 inner plate, inner face with oblique row

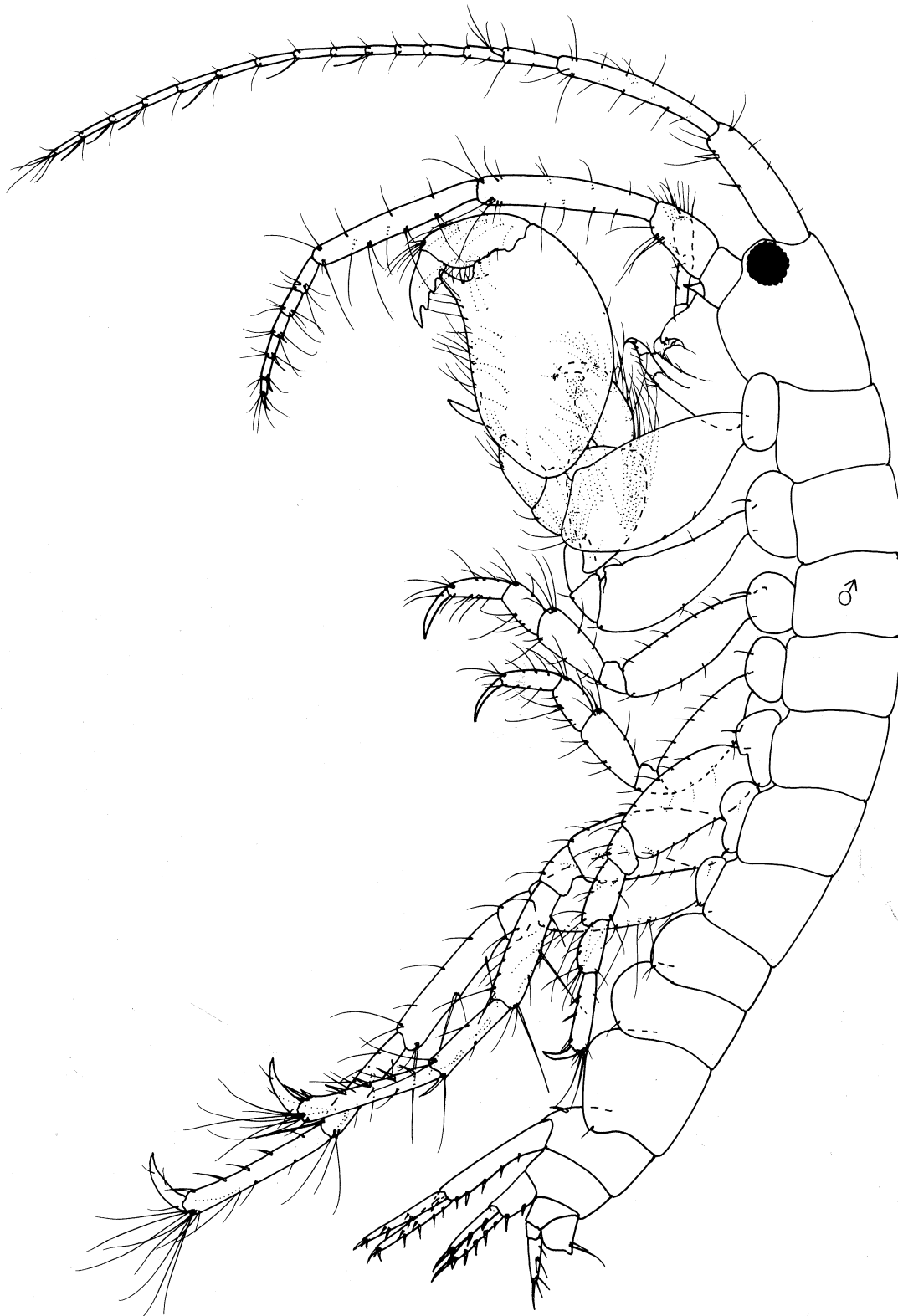


Figure 11. *Grandidierella kanakensis* n.sp. Off Ilot Maitre, Noumea Lagoon, New Caledonia, NCL-27.

of setae. Labium mandibular processes elongate, acute. Maxilliped palp of typical aorid form. Male gnathopod 1 weakly setiferous; coxa subsquare, anterodistal margin not produced; basis swollen, anterior margin excavate for reception of carpus when folded; carpus greatly enlarged,

subovoid, posterodistal margin produced into a triangular, forward projecting tooth; propodus one half length and less than one half breadth of carpus, posterior margin with strong, acute medial tooth, palm short, transverse; dactylus stout, three quarters length of propodus, posterior margin

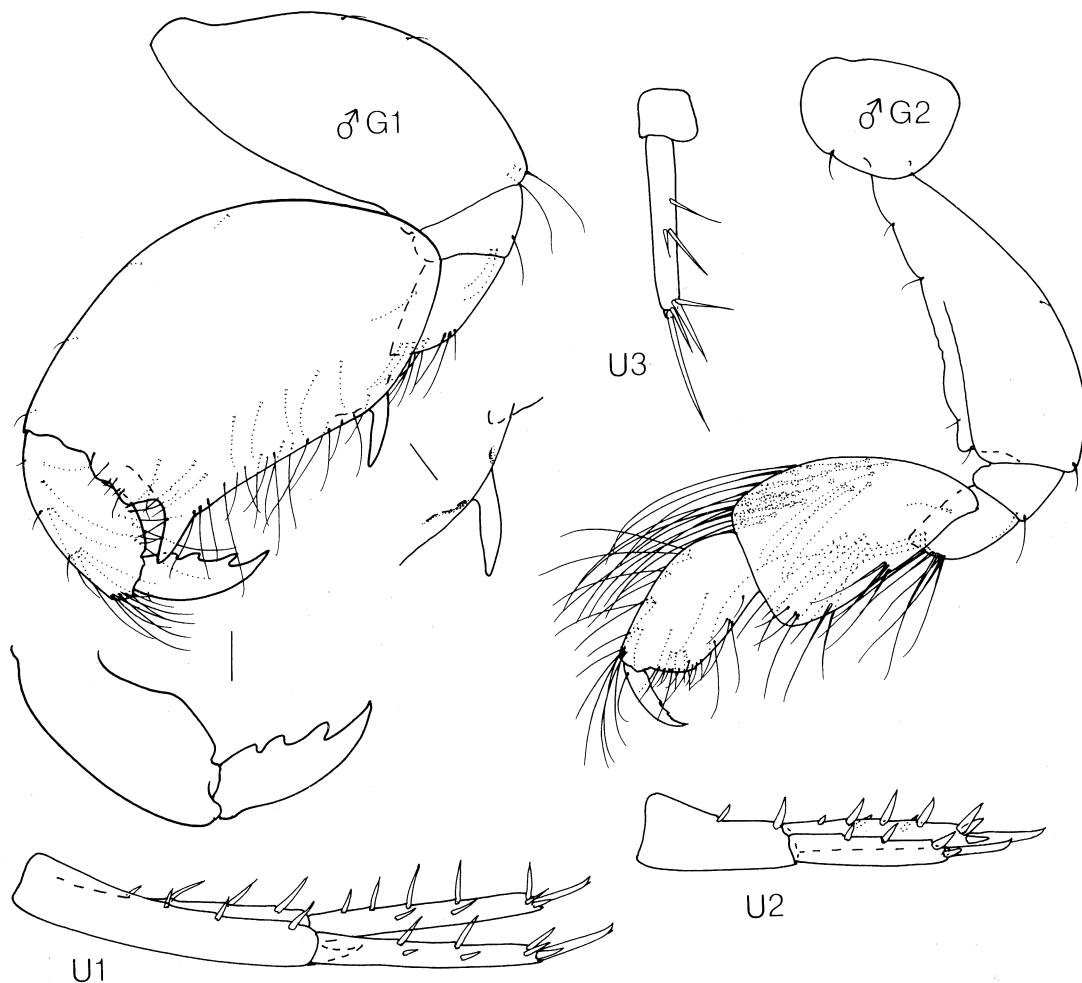


Figure 12. *Grandidierella kanakensis* n.sp. Off Ilot Maitre, Noumea Lagoon, New Caledonia, NCL-27.

with strong, subdistal spine. Female gnathopod 1 slender; coxa subrectangular; basis slender; carpus and propodus slender; propodus two thirds length of carpus, with small, acute palmar spine, proximal to which is a stout seta; dactylus stout, ventral margin with three spines. Male gnathopod 2 basis anterior margin strongly concave, posterior margin strongly convex; carpus slender, more than five times as long as broad; propodus a little narrower than and half length of carpus, palm oblique almost obsolescent, defined by a stout seta; dactylus short, stout, a little over half length of propodus. Female gnathopod 2 similar to that of male, but basis anterior and posterior margins substraight; carpus only a little over twice as long as broad. Pereopods 3–4 slender; dactylus half length of propodus. Pereopods 5–7 unknown. Epimera 1–3 rounded, each with a small posteroventral seta. Uropod 1 peduncle shorter than rami with a distoventral interramal spine about one third length of peduncle; rami slender, subequal, with a few stout marginal setae. Uropod 2 peduncle much shorter than rami, with a distoventral interramal spine about one half length of peduncle; rami slender, outer ramus the longer, with a few stout marginal setae. Uropod 3 uniramous, ramus one and one half times length of

peduncle, with four long distal setae, but lacking marginal setae. Telson with weak dorsolateral crests, each bearing a single long seta and three short setae.

Remarks. The falcate mandibular palp, maxilla 1 inner plate with single long seta and elongate, acute mandibular projections of the labium are all typical aorid mouthpart features. The enlarged, dominant gnathopod 1 and sternal processes of the male are also characteristic of aorids. In the carpochele male gnathopod 1 it resembles *Microdeutopus* and *Erichthonius* but differs from the former in its uniramous uropod 3 and from the latter in lacking a hooked uropod 3. It most closely resembles the north Atlantic genus *Chevreuxius* Bonnier, but differs in having a fully biramous uropod 2 and in having mandibular palp article 3 shorter than article 2 and falcate.

Habitat. On a sand bottom, 64 m depth.

Distribution. Known only from the type locality.

Etymology. After the Kanaks, the indigenous peoples of New Caledonia.

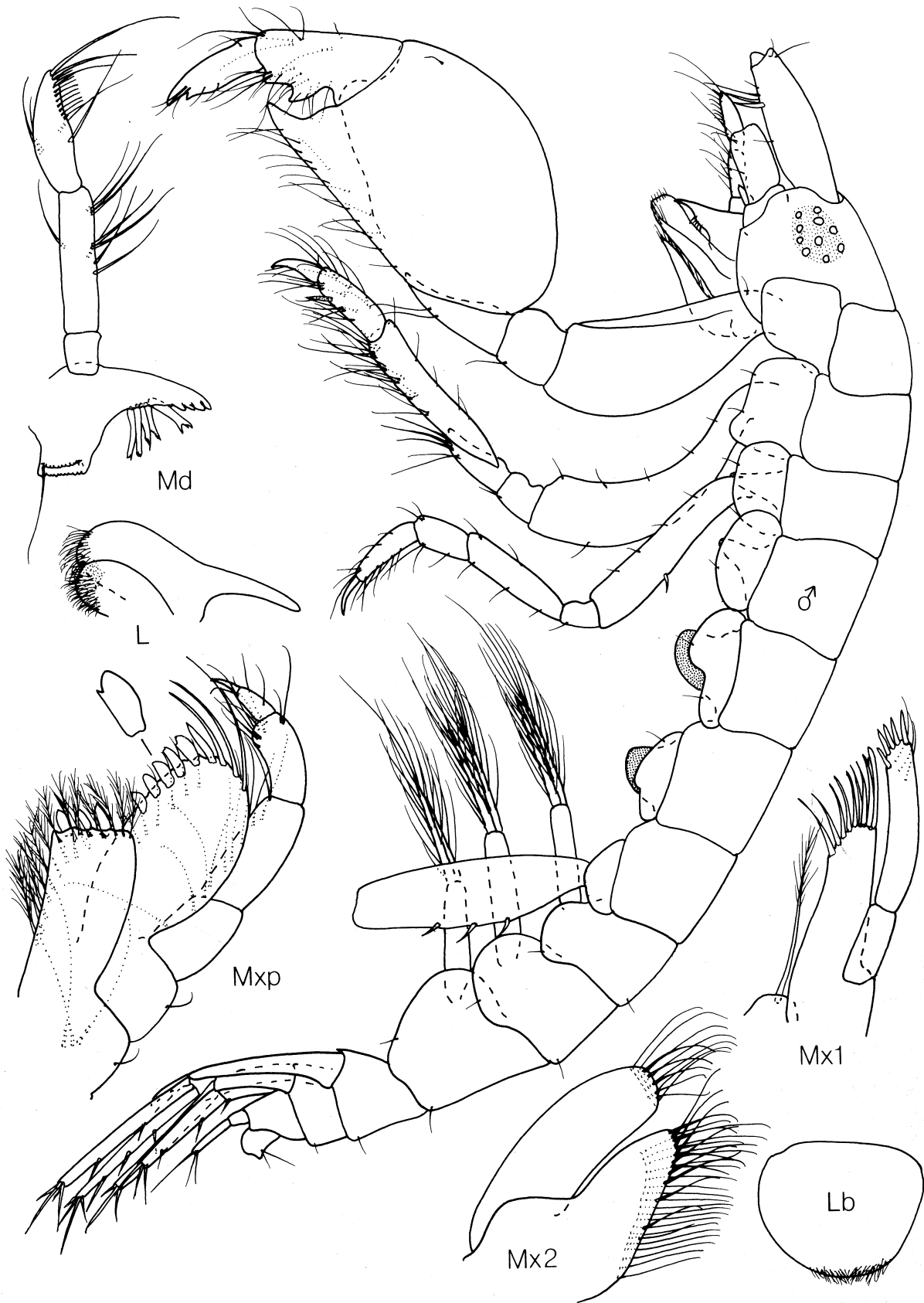


Figure 13. *Orstomia kanakia* n.sp. Outer face, Grand recif Mbere, Noumea Lagoon, New Caledonia, NCL-185.

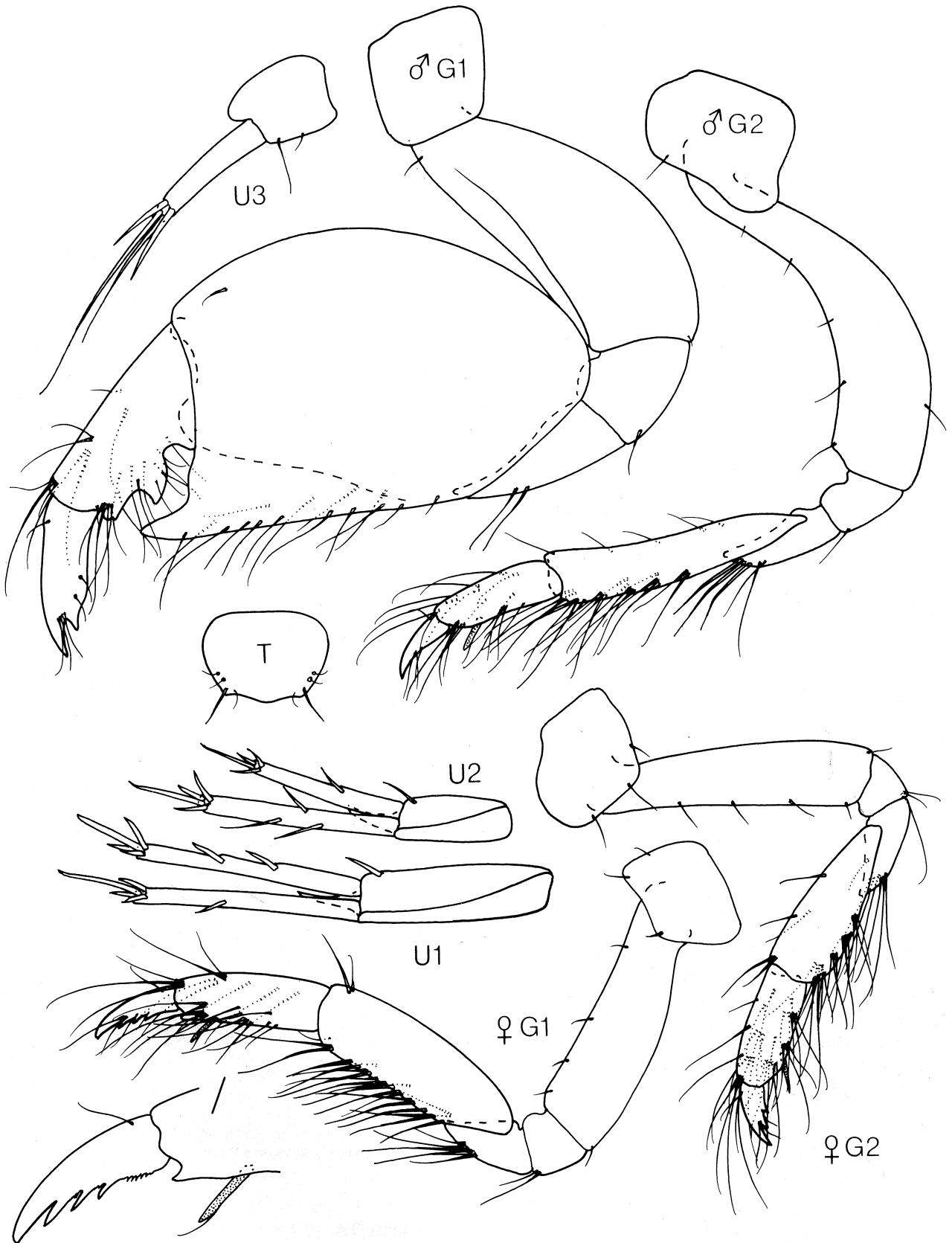


Figure 14. *Orstomia kanakia* n.sp. Outer face, Grand recif Mbere, Noumea Lagoon, New Caledonia, NCL-185.

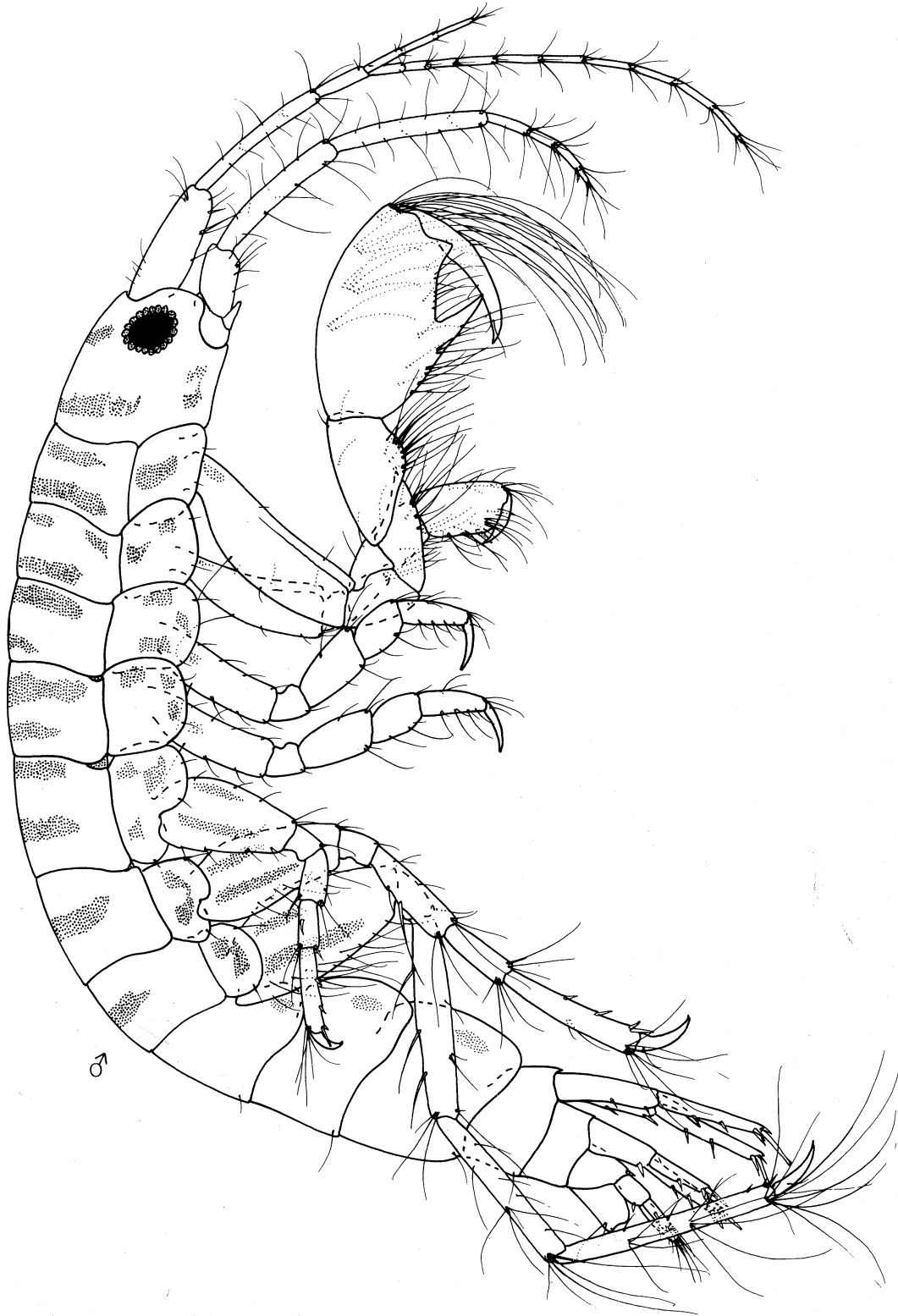


Figure 15. *Protolembos crouyensis* n.sp. Midway between Ilot des Goelands and Grand Recif d'Abore, Noumea Lagoon, New Caledonia, NCL-116.

Protolembos Myers

Protolembos crouyensis n.sp.

Figs. 15–16

Lembos sp. Ledoyer, 1984: 39, fig 13B.

Type material. HOLOTYPE male, 2.3 mm, AM P52765, midway between Ilot des Goelands and Grand Recif d'Abore, 22°24.10'S 166°20.90'E, *Halimeda* with small leaves, 10 m, ORSTOM divers, Pascal Hamel, 16 November 1995, NCL-116. PARATYPES, 3 ♂♂, 4 ♀♀, AM P52766, NCL-116.

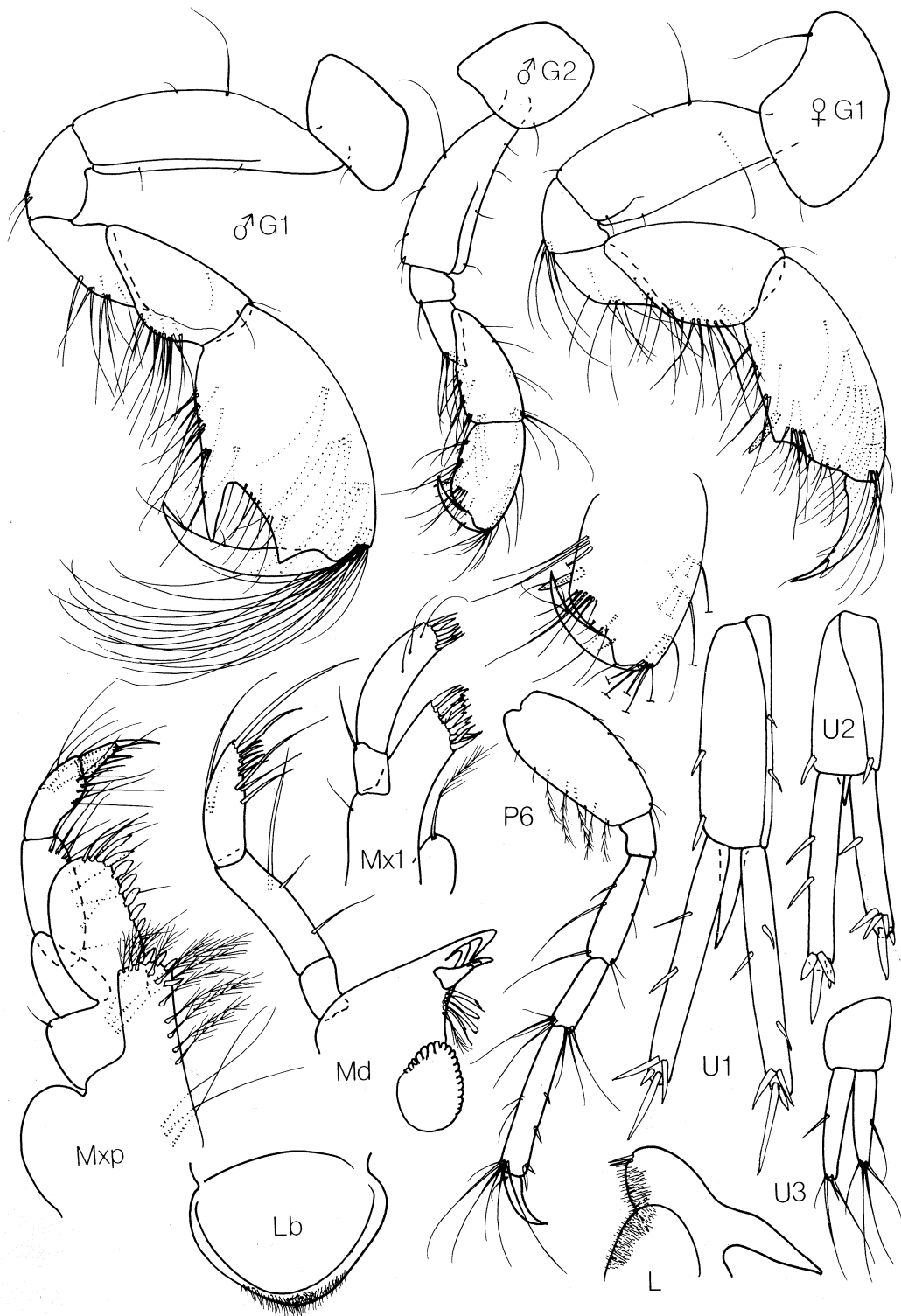


Figure 16. *Protolembos crouyensis* n.sp. Midway between Ilot des Goelands and Grand Recif d'Abore, Noumea Lagoon, New Caledonia, NCL-116.

Other material examined. NCL-68 (2 ♀♀), NCL-111 (2 ♂♂, 2 ♀♀).

Diagnosis. Body, especially pereon, epimera, coxae and pereopod 5–7 bases speckled with dark brown (in alcohol) pigment. Head lateral lobes only moderately produced; eye moderately large situated proximal to lobes;

distoventral margin poorly recessed, moderately deep. Antenna 1 about one half body length, weakly setiferous; peduncular articles in the basi-distal length ratios 12:14:5; accessory flagellum with 4 articles, the terminal article rudimentary; primary flagellum subequal in length with peduncle, with about 10 articles. Antenna 2 only moderately stout, about two thirds length of antenna 1,

weakly setiferous; peduncular articles 4 and 5 subequal in length; flagellum shorter than peduncular article 5, with 4 articles, articles 2–4 each with a ventrodistal strong seta. Mouthparts of typical *Protolembos* structure, but mandible palp article 3 a little shorter than article 2, subovoid, posterior margin with a few long marginal setae and an understory of short, equal length, stout setae. Maxilliped peduncle article 1 with rounded wing-like process on anterior margin. Male gnathopod 1, coxa produced forward, rounded; basis relatively slender; ischium and merus relatively long; carpus subtriangular, a little less than twice as long as broad; propodus large, one and one half times as long as broad, narrow proximally, broad distally, palm short transverse, ending in an acute point, followed by a deep triangular excavation, bordered by a strong, acute ending, posterior marginal tooth, inner face of anterior margin of propodus clothed distally in very long setae; dactylus strong, falcate, greatly overlapping palm and also overlapping marginal tooth. Female gnathopod 1 coxa subrectangular, deeper than broad; basis moderately stout; carpus triangular, about one and one half times as long as broad; propodus subrectangular, about twice as long as broad, palm oblique, sinuous, terminating in a right angle and defined by a stout seta; dactylus stout, overlapping palm. Gnathopod 2 coxa subrectangular, rounded; basis moderately stout, anterior margin weakly concave, carpus subtriangular, nearly twice as long as broad; propodus subrectangular, a little shorter than carpus, palm oblique, evenly convex, defined by a stout seta; dactylus overlapping palm. Pereopods 3–4 dactylus over two-thirds length of propodus. Pereopods 5–7 in the length ratios 6:9:14. Epimera posteroventral corner rounded. Uropod 1 peduncle shorter than outer ramus and with strong distoventral spine, less than half length of peduncle; rami subequal, each ramus with a few marginal stout setae. Uropod 2 peduncle shorter than inner ramus and with triangular distoventral spine, about one seventh length of peduncle; inner ramus distinctly longer than outer, with two marginal stout setae; outer ramus with one marginal stout seta. Uropod 3 rami longer than peduncle; inner ramus longer than outer, each ramus with a slender marginal seta and a group of long slender terminal setae; outer ramus lacking second article. Telson dorsolateral crests each with a pair of unequal slender setae.

Remarks. This species is closest to *P. kidoli* (Myers) from Tanzania and *P. murrarum* Myers from New South Wales, Australia. It differs from both these species in the weakly setiferous male gnathopod 2 and in the short article 3 of the mandible palp. It differs from *P. kidoli* also in the lack of a spine on the palm of the male gnathopod 2. In having article 3 of the mandible palp shorter than article 2 it resembles species of *Meridiolembos*, but those species lack a wing-like process on the anterior margin of article 1 of the maxilliped.

Habitat. Amongst *Halimeda*, *Sargassum* and fine red alga, 10–20 m.

Distribution. Not currently known outside New Caledonia.

Etymology. Named after the island of Crouy close to the type locality.

Xenocheira Chevreux

Xenocheira sp.

Xenocheira seurati Ledoyer, 1984, 41, fig. 19.

Xenocheira ?seurati Moore, 1988: 712, figs. 4–7.

Material examined. NCL-210 (3 ♂♂, 9 ♀♀, 2 immature), NCL-219 (5 ♀♀).

Remarks. Present material agrees well with that described by Moore from Western Australia and by Ledoyer (1984), from New Caledonia. *Xenocheira seurati* was originally described from the Gambier archipelago by Chevreux (1907, 1908). Moore (1988), examined type specimens of *X. seurati*, but in part due to the age of the material, was unable to convince himself that Australian and New Caledonian material was definitely conspecific with Gambier material. He listed several differences between his material and the types and noted the characteristic shape of the pereopod 5 basis, which is very apparent also in our material. Unfortunately type material is missing this appendage.

Schellenberg (1938) recorded a single female specimen, which he attributed to *Xenocheira seurati*, from Viti Levu, Fiji. As he provided neither description nor figures, this record remains enigmatic. For the present, we assign our material to the unnamed taxon from Australia and New Caledonia, whilst acknowledging that this taxon may later be shown to be synonymous with *X. seurati* Chevreux.

Lyons & Myers (1990) considered *Xenocheira* to be polyphyletic and transferred *X. fasciata* Haswell to *Bemlos* Shoemaker and *X. angusticarpa* Ledoyer to *Lembooides* Stebbing. Thus *Xenocheira* now includes 2–3 known species: *X. seurati* Chevreux, *X. ? seurati* and *X. pirloti* Moore.

Habitat. *Dictyota* on dead *Acropora* and soft mud, 20 m.

Distribution. Western Australia and New Caledonia.

Acknowledgments. I am grateful to Dr Bertrand Richer de Forges for all his help and hospitality in New Caledonia, and to all the ORSTOM staff, especially Jean-Louis Menou, Georges Bargibant, Pascal Hamel and Stéphane Bujan for their assistance in sample collection. The work forms part of a larger survey on the amphipods of New Caledonia carried out jointly with Drs Jim Lowry and Ichiro Tekeuchi. I thank them both for their comradeship during the field work.

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Station data

- NCL-2 Recif Ricaudy, New Caledonia, 22°18.23'S 166°26.15'E, *Padina*, 1.0 m, A.A. Myers, 30 October 1995.
- NCL-4 Recif Ricaudy, New Caledonia, 22°18.23'S 166°26.15'E, anastomosing red alga, 1.0 m, A.A. Myers, 30 October 1995.
- NCL-5 Recif Ricaudy, New Caledonia, 22°18.23'S 166°26.15'E, rocks covered with fine red algal felt, 0.1 m, A.A. Myers, 30 October 1995.
- NCL-7 Pointe Bagay, Anse Vata, New Caledonia, 22°18.23'S 166°26.15'E, coral rubble, 0.3 m, A.A. Myers, 31 October 1995.
- NCL-8 Pointe Bagay, Anse Vata, New Caledonia, 22°18.23'S 166°26.15'E, *Sargassum*, 0.3 m, A.A. Myers, 31 October 1995.
- NCL-9 Pointe Bagay, Anse Vata, New Caledonia, 22°18.23'S 166°26.15'E, brown branching alga among *Cymodocea*, 0.3 m, A.A. Myers, 31 October 1995.
- NCL-10 Pointe Bagay, Anse Vata, New Caledonia, 22°18.23'S 166°26.15'E, *Halimeda*, 0.3 m, A.A. Myers, 1 November 1995.
- NCL-11 Pointe Bagay, Anse Vata, New Caledonia, 22°18.23'S 166°26.15'E, coral rubble, 0.3 m, A.A. Myers, 1 November 1995.
- NCL-12 Pointe Bagay, Anse Vata, New Caledonia, 22°18.23'S 166°26.15'E, red coralline alga (tbi), 0.3 m, A.A. Myers, 1 November 1995.
- NCL-15 Pointe Bagay, Anse Vata, New Caledonia, 22°18.23'S 166°26.15'E, *Padina*, 0.3 m, A.A. Myers, 1 November 1995.
- NCL-17 Pointe Bagay, Anse Vata, New Caledonia, 22°18.23'S 166°26.15'E, *Syringodium*, 0.3 m, A.A. Myers, 2 November 1995.
- NCL-18 Pointe Bagay, Anse Vata, New Caledonia, 22°18.23'S 166°26.15'E, *Cymodocea*, 1.0 m, A.A. Myers, 2 November 1995.
- NCL-19 Recif Ricaudy, New Caledonia, 22°18.77'S 166°26.92'E, *Padina*, 0.5 m, A.A. Myers, 4 November 1995.
- NCL-21 Recif Ricaudy, New Caledonia, 22°18.77'S 166°26.92'E, *Sargassum*, 1.0 m, A.A. Myers, 4 November 1995.
- NCL-22 Recif Goro, New Caledonia, 22°19.23'S 167°00.65'E, coral rubble, 0.3 m, A.A. Myers, 5 November 1995.
- NCL-25 Recif Goro, New Caledonia, 22°19.23'S 166°00.65'E, *Padina* covered rocks, 0.3 m, A.A. Myers, 5 November 1995.
- NCL-26 Recif Goro, New Caledonia, 22°19.23'S 166°00.65'E, *Cymodocea*, 0.5 m, A.A. Myers, 5 November 1995.
- NCL-27 Ilot Maitre, 22°20.50'S 166°24.40'E, *Cymodocea*, 0.3 m, A.A. Myers, 6 November 1995.
- NCL-28 Between Ilot Maitre and Croissant reef, 22°19.70'S 166°23.30'E, New Caledonia, *Sargassum*, 10 m, I. Takeuchi, 6 November 1995.
- NCL-29 Recif Goro, New Caledonia, 22°19.23'S 166°00.65'E, *Sargassum*, 1.0 m, I. Takeuchi, 5 November 1995.
- NCL-31 Between Ilot Maitre and Croissant reef, New Caledonia, 22°19.70'S 166°23.30'E, *Halimeda*, 10 m, I. Takeuchi, 6 November 1995.
- NCL-33 Off Ilot Maitre, New Caledonia, 22°20.57'S 166°25.43'E, red alga, 23 m, ORSTOM divers, 7 November 1995.
- NCL-35 Off Ilot Maitre, New Caledonia, 22°20.57'S 166°25.43'E, dead *Acropora* with epiphytes, 20 m, ORSTOM divers, 7 November 1995.

- NCL-40 Off Ilot Maitre, New Caledonia, 22°20.57'S 166°25.43'E, dead coral, 20 m, ORSTOM divers, 7 November 1995.
- NCL-45 Off Recif To, Passe de Boulari, New Caledonia, 22°30.15'S 166°26.43'E, stones encrusted with *Lithothamnion*, 30 m, ORSTOM divers, 8 November 1995.
- NCL-47 Off Recif To, Passe de Boulari, New Caledonia, 22°30.15'S 166°26.43'E, coral rubble, 13 m, ORSTOM divers, 8 November 1995.
- NCL-49 Off Recif To, Passe de Boulari, New Caledonia, 22°30.15'S 166°26.43'E, green alga, 32 m, I. Takeuchi, 8 November 1995.
- NCL-60 Off Ilot Maitre, New Caledonia, 22°19.35'S 166°25.85'E, grey sponge, 20 m, I. Takeuchi, 10 November 1995.
- NCL-63 Off Ilot Maitre, New Caledonia, 22°19.35'S 166°25.85'E, large yellow sea fans, air lift sample, 21 m, J.K. Lowry, 10 November 1995.
- NCL-64 Off Ilot Maitre, New Caledonia, 22°19.35'S 166°25.85'E, large hard coral block and coarse sand, some algae, 21 m, J.K. Lowry, 10 November 1995.
- NCL-68 Between Isle Ngé and Sèche Croissant, New Caledonia, 22°19.41'S 166°20.89'E, *Sargassum*, 20 m, I. Takeuchi, 9 November 1995.
- NCL-79 Entrance of Baie de Citron, New Caledonia, 22°18.17'S 166°26.07'E, *Sargassum*, 1.5 m, I. Takeuchi, 13 November 1995.
- NCL-80 Entrance of Baie de Citron, New Caledonia, 22°18.17'S 166°26.07'E, red algae, 1.5 m, I. Takeuchi, 13 November 1995.
- NCL-95 Off Ilot Maitre, New Caledonia, 22°19.61'S 166°24.07'E, from leaf of Seagrass, 10.5 m, I. Takeuchi, 14 November 1995.
- NCL-97 Off Ilot Maitre, New Caledonia, 22°19.61'S 166°24.07'E, purple sponge, 10.5 m, ORSTOM divers (coll. Georges Bargibant), 14 November 1995.
- NCL-98 Off Ilot Maitre, New Caledonia, 22°19.61'S 166°24.07'E, *Padina*-type alga, 10.5 m, ORSTOM divers (coll. Georges Bargibant), 14 November 1995.
- NCL-110 Midway between Ilot des Goelands and Grand Recif d'Abore, New Caledonia, 22°24.10'S 166°20.90'E, fine red filamentous alga on fine white sand bottom, 10 m, J.K. Lowry, 16 November 1995.
- NCL-111 Midway between Ilot des Goelands and Grand Recif d'Abore, New Caledonia, 22°24.10'S 166°20.90'E, *Halimeda*, fine red alga, 10 m, J.K. Lowry, 16 November 1995.
- NCL-112 Midway between Ilot des Goelands and Grand Recif d'Abore, New Caledonia, 22°24.10'S 166°20.90'E, human dredge on fine sand with patches of algae (maybe bluegreen), 10 m, J.K. Lowry, 16 November 1995.
- NCL-113 Midway between Ilot des Goelands and Grand Recif d'Abore, New Caledonia, 22°24.10'S 166°20.90'E, coral rubble, 10 m, J.K. Lowry, 16 November 1995.
- NCL-116 Midway between Ilot des Goelands and Grand Recif d'Abore, New Caledonia, 22°24.10'S 166°20.90'E, *Halimeda* with small leaves, 10 m, ORSTOM divers, Pascal Hamel, 16 November 1995.
- NCL-128 Midway between Ilot des Goelands and Grand Recif d'Abore, New Caledonia, 22°24.10'S 166°20.90'E, white sands, hydroids and algae, 11 m, I. Takeuchi, 16 November 1995.
- NCL-129 Midway between Ilot des Goelands and Grand Recif d'Abore, New Caledonia, 22°24.10'S 166°20.90'E, white sands, *Halimeda*, 11 m, I. Takeuchi, 16 November 1995.
- NCL-130 Pointe Bagay, New Caledonia, 22°18.23'S 166°26.15'E, *Sargassum*, 0.5 m, I. Takeuchi, 18 November 1995.
- NCL-139 Poé Plage, New Caledonia, 21°36.41'S 165°22.73'E, 200 m off beach, mixed algae from rocks on white sand, 2 m, J.K. Lowry, 19 November 1995.
- NCL-153 Grand Recif Mbere, New Caledonia, 22°19.90'S 166°13.24'E, steep slope, rubble and red alga, 38 m, J.K. Lowry, 21 November 1995.
- NCL-154 Grand Recif Mbere, New Caledonia, 22°19.90'S 166°13.24'E, steep slope, coarse rubble, 12 to 25 m, J.K. Lowry, 21 November 1995.
- NCL-156 Grand Recif Mbere, New Caledonia, 22°19.90'S 166°13.24'E, coarse sand and rubble from gully, 10 to 12 m, J.K. Lowry, 21 November 1995.
- NCL-185 Outer face, Grand Recif Mbere, New Caledonia, 22°19.90'S 166°13.24'E, human dredge on coarse carbonaceous sand bottom, 64 m, ORSTOM diver, P. Hamel, 23 November 1995.
- NCL-198 Grand Recif Mbere, New Caledonia, 22°19.90'S 166°13.24'E, *Halimeda*, 35 m, J.K. Lowry, 22 November 1995.
- NCL-199 Grand Recif Mbere, New Caledonia, 22°19.90'S 166°13.24'E, red alga *Asparagopsis taxiformis*, 27 m, J.K. Lowry, 22 November 1995.
- NCL-209 Baie de St. Marie, New Caledonia, 22°18.05'S 166°28.13'E, thick coral rubble, J.K. Lowry, 13 m, 29 November 1995.
- NCL-210 Baie de St. Marie, New Caledonia, 22°18.05'S 166°28.13'E, dictyotalean growing on dead *Acropora*, 13 m, J.K. Lowry, 29 November 1995.
- NCL-212 Poé Plage, New Caledonia, 200 m off beach, *Sargassum*, 1–2 m, J.K. Lowry, 19 November 1995.
- NCL-219 Baie de Dumbéa, New Caledonia, 22°13.38'S 166°22.17'E, soft mud bottom with many small cones, 20 m, J.K. Lowry, 30 November 1995.
- NCL-231 Pointe de Easo (= Easho), Baie de Santal, Lifou Loyalty Islands, 20°47.27'S 167°07.34'E, near base of the steep coral reef, red alga, 12 m, I. Takeuchi, 27 November 1995.
- NCL-234 Dokin, north coast of Lifou, Loyalty Islands, 20°42.15'S 167°09.90'E, small spot on the surface of the coral reef, red alga, 2 m, I. Takeuchi, 28 November 1995.
- NCL-235 Pointe de Easo, Baie de Santal, Lifou, Loyalty Islands, 20°47.27'S 167°07.34'E, red alga and hydroids along the steep coral reef, 8–10 m, I. Takeuchi, 28 November 1995.
- NCL-237 Pointe de Easo (= Easho), Baie de Santal, Lifou, Loyalty Islands, 20°47.27'S 167°07.34'E, rock base near the seashore, *Sargassum*, 1 m, I. Takeuchi, 28 November 1995.
- NCL-238 Dozip (= Jozip), west coast of Lifou, Loyalty Islands, 20°56.30'S 167°20.85'E, near bottom of coral reef, *Halimeda*, 18 m, I. Takeuchi, 29 November 1995.
- NCL-246 Prony Bay, near village, southern New Caledonia, 10 m off from the coast, *Sargassum* sp. covered with red muds, 2 m deep, I. Takeuchi, 26 November 1995.

ORSTOM divers: Jean-Louis Menou, Georges Bargibant, Pascal Hamel and Stéphane Bujan.