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Two new species of *Cerapus* from Samoa and Fiji (Crustacea: Amphipoda: Ischyroceridae).

J.K. LOWRY,
The Australian Museum, P.O. Box A285, Sydney South, NSW 2000, Australia.

ABSTRACT. *Cerapus oceanicus* and *C. pacificus* are described from Samoa and Fiji. They are distinguished from other species in the *Cerapus* group mainly on the morphology of the second gnathopods. A discussion of genera in the *Cerapus* group indicates that *Runanga* and *Baracuma* may be based on gradational characters.

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Keywords: Amphipoda, Ischyroceridae, *Cerapus*, west-Pacific, taxonomy.

There are now three closely related genera in the *Cerapus* group: *Cerapus* Say (1817), *Runanga* Barnard (1961) and *Baracuma* Barnard & Drummond (1982). These genera are extremely similar in morphology and share several highly apomorphic characters, particularly peraeopod 5, uropods 1 to 3 and the telson. As Barnard & Drummond (1982) pointed out, an unequivocal diagnosis of *Cerapus* is difficult because the type specimen of *C. tubularis* Say (type-species of the genus) is lost. *Runanga* was established for species with a scale-like accessory flagellum and progressively reduced pleopods. The male has never been described. *Baracuma* was established for species with irregularly shaped coxae 1 to 4, apically narrowed and poorly cleft telson, an elongate fifth peraeonite and coxa in adult females and a ventral keel on peraeonite 2 in adult males.

Some of the characters used to distinguish *Runanga* and *Baracuma* appear to be gradational. The elongation of the fifth peraeonite and coxa in adult females also occurs in *Runanga coxalis* Barnard, *Cerapus benthophilis* Thomas & Heard, and both species described here. The shape of the telson in *C. benthophilus* and *B. alquirta* Barnard & Drummond is very similar, but the cleft is deeper in *C. benthophilus*. In the new species described here both have apically narrowed telsons but one is notched and the other is cleft to the base. All of these species have some degree of progressively reduced pleopods and all have some degree of irregularly shaped coxae 1 to 4. The peculiar antennal character mentioned by Barnard & Drummond (1982) to distinguish *C. crassicornis* Bate from *Baracuma* helps to define a coldwater group of *Cerapus* species discussed by Lowry (1981).

Runanga is thus distinguished by its vestigial accessory flagellum and *Baracuma* by the ventral keel on peraeonite 2 of the adult male. The new species described here have neither of these characters. I am therefore placing them in the broadly defined genus *Cerapus*. There are many *Cerapus*-like species in the South Pacific and Indian Oceans awaiting description. Their description will probably help to make generic definitions much clearer.

Cerapus oceanicus n.sp.

Figs 1-5

Type material. HOLOTYPE, male, 6.1 mm AM P34734; allotype, 5.3 mm, AM P34735; 13 males, 15 females and juvenile paratypes AM P34736-P34740; Apia, Upolu, Western Samoa, 13°48'S 171°44'W, collected in the lagoon, living on the seagrass, *Halodule* sp., 0.5 m depth, A.A. Myers.

Diagnosis. Rostrum acute, ⅓ length of peduncular article 1. Gnathopod 2 of adult male, palm of article 5 with an inner tooth, article 5 twice as long as broad and slightly expanded posterodistally, dactyl crenulate along posterior margin. Coxa 3 with sinusoid anteroventral margin. Coxa 4 with a subquadrate lobe anteriorly. Peraeopod 4, article 2 as long as articles 3 to 7 combined. Peraeopod 6, setae on posterodistal corner of article 5 longer than articles 6 and 7 combined. Peraeopod 7, elongate setae on antero- and posterodistal corners of article 5. Telson cleft to base.

Description. Holotype male, 6.1 mm. *Head*: rostrum acute, elongate, about ⅓ length of peduncular article 1; lateral cephalic lobes with subacute anteroventral corners. Body elongate, cylindrical, mottled brown throughout, peraeonites 5 and 6 longest, subequal in length.

Antenna 1 well developed, setose, about ½ length of body; peduncular articles 1 and 2 subequal in length and slightly shorter than article 3, article 1 expanded

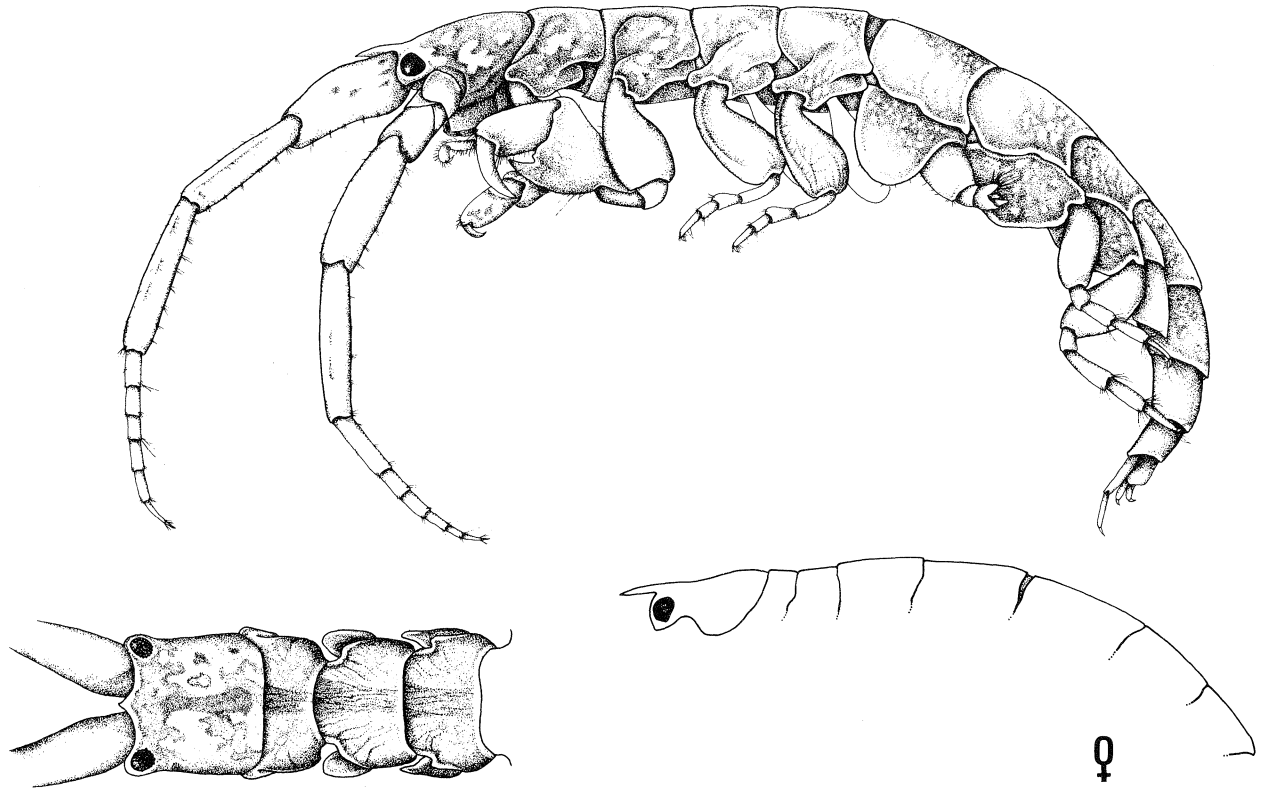

Fig. 1. *Cerapus oceanicus* n.sp., paratype, male, 6.8 mm, AM P39736; allotype, female, 5.3 mm, AM P34735; Apia, Upolu, Western Samoa.

posteroproximally; flagellum nearly ⅓ length of peduncle, 7-articulate, seventh article with 2 strong spines. *Antenna 2* well developed, setose, slightly longer than antenna 1, fifth peduncular article longer than fourth; flagellum 4-articulate, nearly ⅓ length of peduncle, article 1 about as long as following 3 articles combined, ultimate article with 2 well developed spines.

Mandible: incisor with 6 teeth; lacinia mobilis multidentate and curved back over itself; 3 accessory spines present; molar triturating, molar flake present; palp elongate, slender, article 2 slightly longer than article 3 with 3 median setae and 1 lateral seta, article 3 with about 15 medial to apical setae. *Maxilla 1*: inner plate not known; outer plate with 10 spine-teeth; palp with 6 apical spines and 5 subapical setae. *Maxilla 2*: outer plate broader than inner plate, both apically setose and inner plate with setae along medial margin. *Maxilliped*: inner plate subquadrate with 3 stout terminal spines and plumose setae along medial and terminal margins; outer plate with 10 strong teeth along medial margin and 3 stout apical setae; palp article 2 longest with a clump of distomedial setae, article 3 setose distally, article 4 with strong terminal spine.

Gnathopod 1 subchelate; article 5 with lobate posterior margin bearing setae; article 6 about 1.5 times as long as broad, anterior margin with 5 rows of setae, palm extremely oblique, setose; dactyl well developed, closing along entire palm. *Gnathopod 2* carpochelate; article 5 extremely enlarged, triangular in shape and nearly 2.5 times as long as broad, posterodistal margin setose, palm with a large outer tooth and a smaller inner tooth; article 6 twice as long as wide, slightly expanded posterodistally; dactyl nearly as long as article 6, setose along crenulate posterior margin and closing along entire margin of large outer tooth of article 5.

Peraeopod 3: coxa 3 times as broad as deep, anteroventral margin sinusoid; article 2 about 1.8 times as long as broad and about as long as articles 3 to 7 combined. *Peraeopod 4* similar to peraeopod 3 except coxa about twice as broad as deep and anteroventral margin forming a subquadrate lobe. *Peraeopod 5* short, stout; coxa about 1.3 times as broad as deep, with a large anteroventral lobe and a small posteroventral lobe; article 2 about as broad as long; article 4, posterior lobe with 6 long plumose setae and several short setae; article 5 smaller than article 4, posterior lobe covered in minute denticles and 1 plumose seta; dactyl uncinate with 1 large recurved spine and 2 small recurved spines. *Peraeopod 6* slender, slightly longer than peraeopod 5; article 5 with a group of long posterodistal setae; dactyl uncinate with 1 large and 2 small recurved spines. *Peraeopod 7* similar to peraeopod 6 except article 5 with anterodistal and posterodistal clumps of long setae.

Pleopods 1 - 3 decreasing in size. Pleopod 3 with inner ramus small, about ½ length of outer ramus. *Uropod 1* biramous; peduncle slightly more than 3 times as long as broad with a fan of short spines along distal margin; outer ramus ¾ length of peduncle, lateral

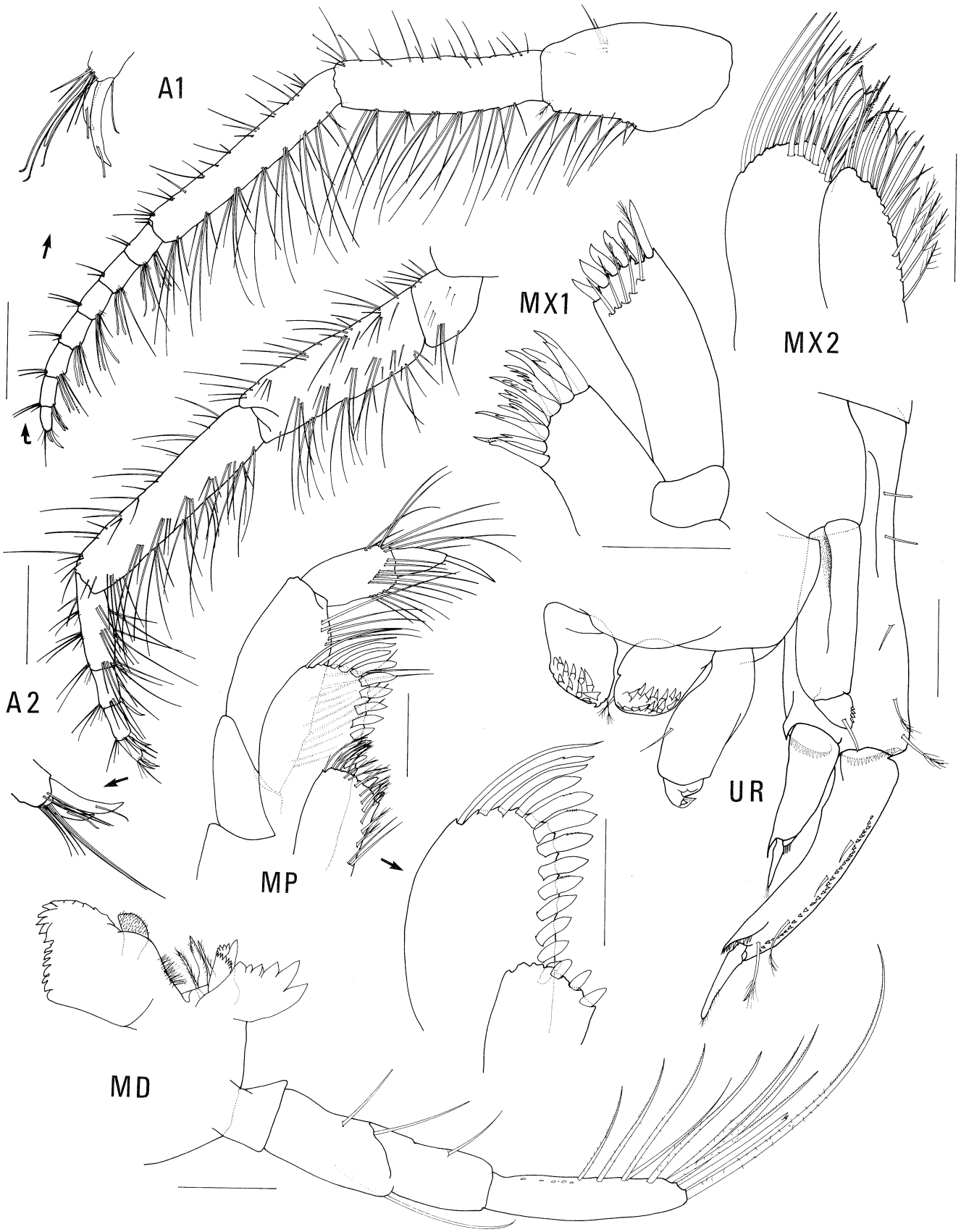

Fig. 2. *Cerapus oceanicus* n.sp., holotype, male, 6.1 mm, AM P34734; Apia, Upolu, Western Samoa. Scales represent 0.1 mm.

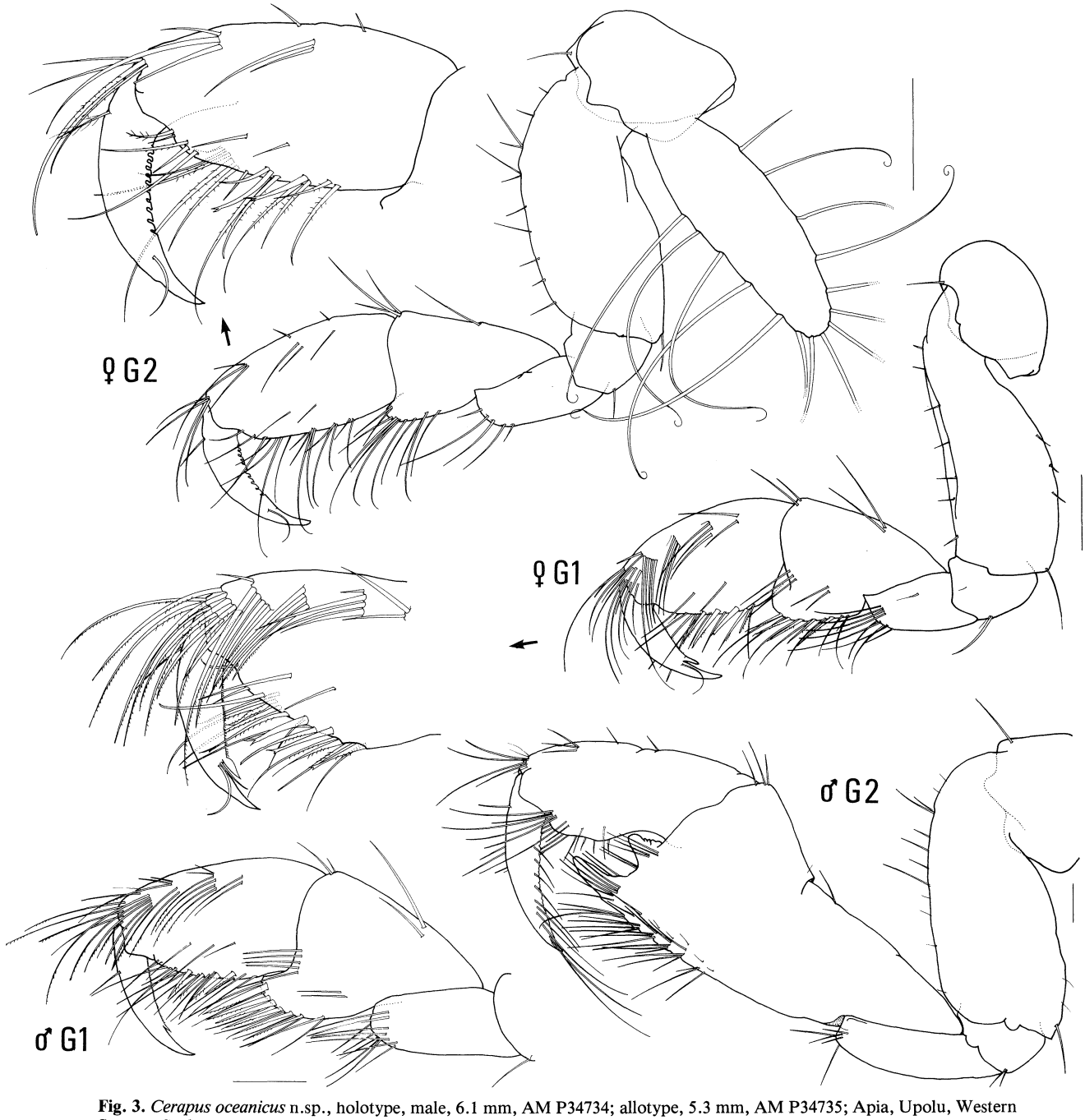

Fig. 3. *Cerapus oceanicus* n.sp., holotype, male, 6.1 mm, AM P34734; allotype, 5.3 mm, AM P34735; Apia, Upolu, Western Samoa. Scales represent 0.1 mm.

margin with a row of minute denticles and short setae and a large terminal spine partially surrounded by a collar of short spines; inner ramus nearly ½ length of outer ramus with a collar of short spines partially surrounding large terminal spine. *Uropod 2* uniramous, extending to distal margin of the peduncle of uropod 1; ramus very small, with a small patch of minute lateral spines and a small terminal seta. *Uropod 3* uniramous; peduncle 2.5 times as long as broad; ramus very small, biuncinate. *Telson* completely cleft, each lobe with 2 rows of 7 recurved spines.

Female paratype 5.3 mm. Similar to male except in the following ways. Gnathopod 2 subchelate, slightly larger than gnathopod 1; article 5 smaller than article 6, posteriorly lobate, setose; article 6 twice as long as broad, palm setose, extremely oblique; dactyl well developed, posterior margin crenulate.

Juvenile males 5.0 mm in length already have article 5 of gnathopod 2 enlarged, but only slightly longer than broad and the inner tooth of the palm is present. A juvenile 6.0 mm long has article 5 nearly 1.5 times as long as broad and the inner tooth of the palm is slightly better developed. In adults 6.1 mm long article 5 has become nearly 2.5 times as long as broad and the inner

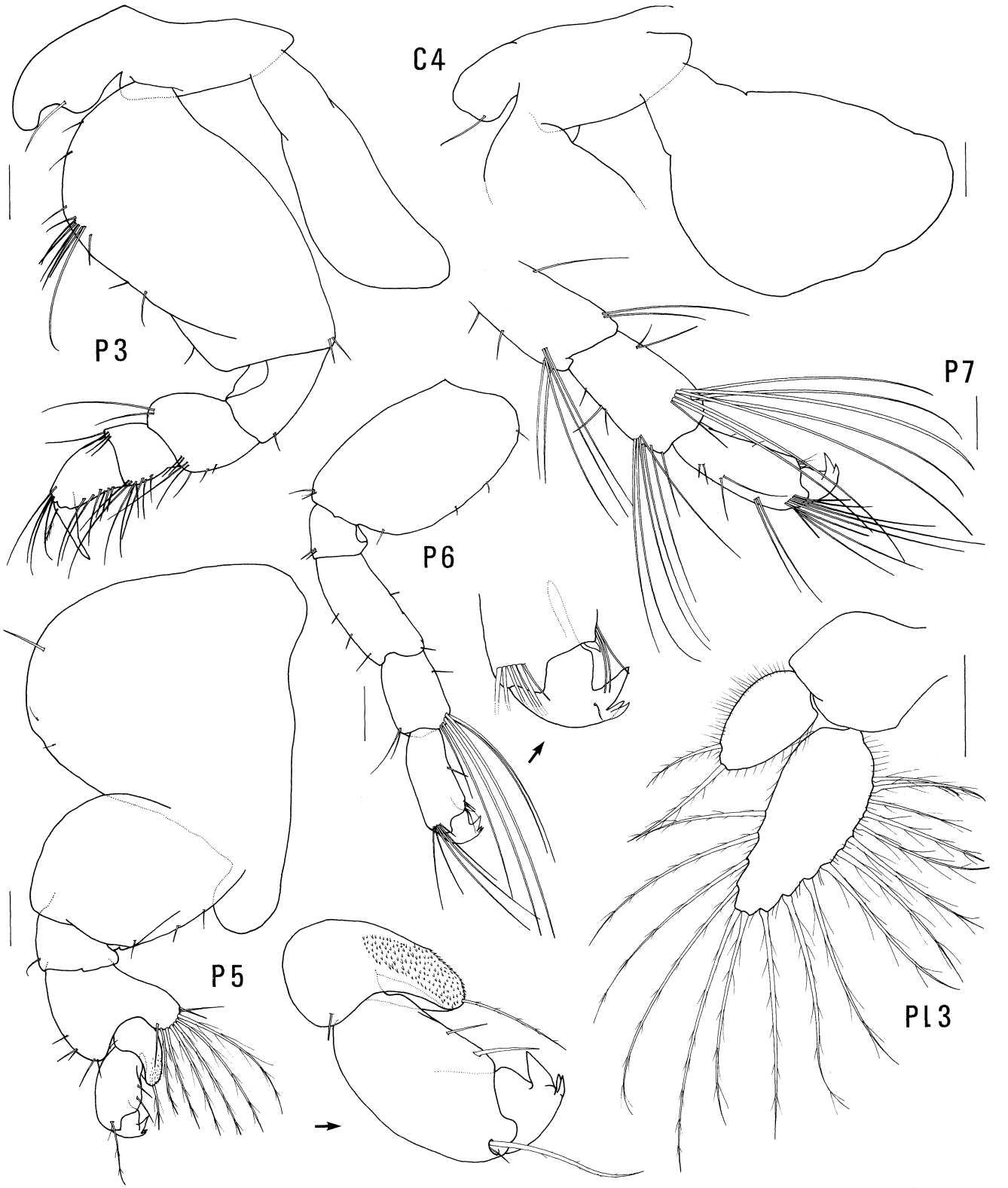

Fig. 4. *Cerapus oceanicus* n.sp., holotype, male, 6.1 mm, AM P34734; Apia, Upolu, Western Samoa. Scales represent 0.1 mm.

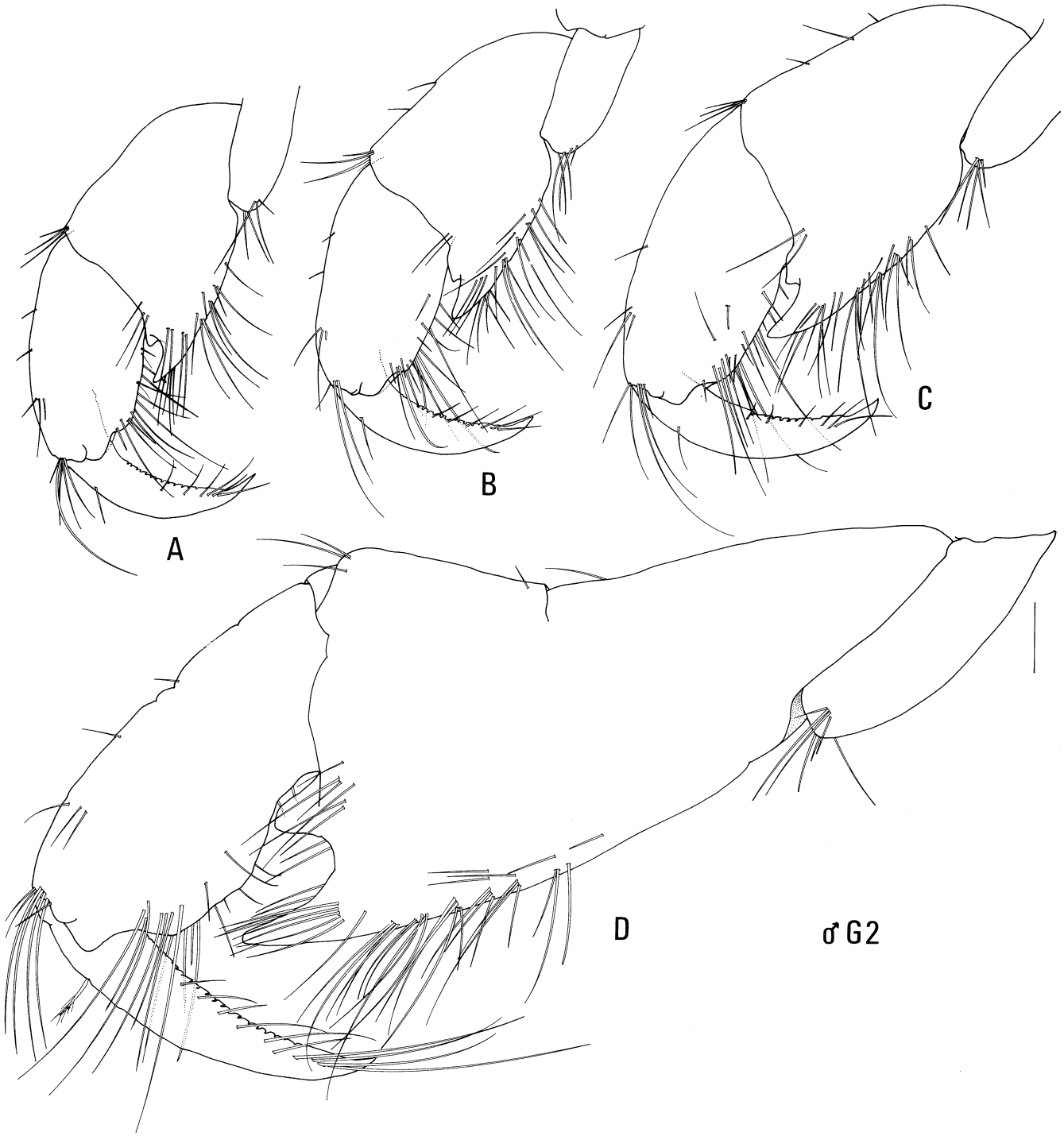

Fig. 5. *Cerapus oceanicus* n.sp.; **A,** paratype, male, 5.0 mm, AM P34737; **B,** paratype, male, 5.3 mm, AM P34738; **C,** paratype, male, 6.0 mm, AM P34737; **D,** holotype, male, 6.1 mm, AM P34734.

tooth of the palm is well developed. In this species the development of gnathopod 2 is not complicated. As it increases in size the only allometric growth occurs in the elongation of article 5.

Remarks. *Cerapus oceanicus* differs from all described species in having the telson cleft to the base. It is very similar to *C. calamicola* (Giles, 1885) in the shape of gnathopod 2 in the mature male. Both species have an extremely long carpus with a well developed inner tooth on the palm, both have a short broad propodus which is expanded distally and both have a crenulate posterior margin on the dactyl. But *C. calamicola* has a very short, blunt rostrum, a shallow cleft on the telson, different length ratios between articles 2 and 3 of the mandibular palp, and setae all along the posterior margin of the carpus of gnathopod 2. In Giles' (1885) drawing of the whole animal, peraeopods 6 and 7 appear to be quite large. *Cerapus oceanicus* is easily distinguished from *C. pacificus* by gnathopod 2 which does not have an inner tooth on the palm and which has a long slender propodus. In addition, the rostrum of *C. pacificus* is very short, the telson has a shallow cleft and the antennae are more slender. *Baracuma alquirta* Barnard & Drummond is distinguished from *C. oceanicus* by its short rostrum, shallow cleft telson and small second articles on peraeopod 4.

Cerapus oceanicus is currently known only from the Samoan Islands living on the seagrass, *Halodule* sp., on shallow reef flats.

Cerapus pacificus n.sp.

Figs 6–10

Type material. HOLOTYPE, male, 6.2 mm, AM P34724; allotype, 5.5 mm, AM P34725; 8 males, 20 females and juvenile paratypes AM P34726-P34733; Nasese, Viti Levu, Fiji, 16°33'S 179°47'E, collected by A.A. Myers, 7 September 1979, from the reef flat, living on the seagrass *Syringodium isoetifolium*.

Diagnosis. Rostrum acute, very short, length of peduncular article 1. Gnathopod 2 of adult male, palm of article 5 lacking inner tooth; article 5, 5 times as long as broad, dactyl not crenulate along posterior margin. Coxae 3 and 4 with produced subquadrate anterior lobe. Peraeopod 4, article 2 as long as articles 3 to 7 combined. Peraeopod 6, setae on posteroventral corner of article 5 slightly longer than articles 6 and 7 combined. Peraeopod 7, elongate setae on antero- and posterodistal corners of article 5. Telson cleft about ¼ length.

Description. Holotype male, 6.2 mm long. *Head*: rostrum acute, very short; lateral cephalic lobe with anteroventral corner rounded. Body elongate, cylindrical, head and peraeonite 1 mottled brown; peraeonite 2 in adult male longest segment, in adult female peraeonite 5 longest segment.

Antenna 1 well developed, setose, about slightly more than half body length; peduncular articles 2 and 3 subequal in length and slightly longer than article 1; article 1 expanded posterodistally; flagellum ½ length of peduncle, with 5 articles, fourth and fifth articles with stray spines. *Antenna 2* well developed and slightly longer than antenna 1, fifth peduncular article longer than fourth; flagellum 5-articulate, nearly ½ length of peduncle, article 1 as long as remaining articles; penultimate article with a long and a short strong spine, ultimate article vestigial.

Mandible: incisor with 5 teeth; lacinia mobilis multidentate and curved back over itself; 4 accessory spines present; molar triturating, molar flake absent; palp elongate, slender, article 2 slightly shorter than article 3 with at least 5 medial setae, article 3 with about 18 medial to apical setae. *Maxilla 1*: inner plate not known; outer plate with 9 spine-teeth; palp with 7 apical spines and 5 subapical setae. *Maxilla 2*: outer plate

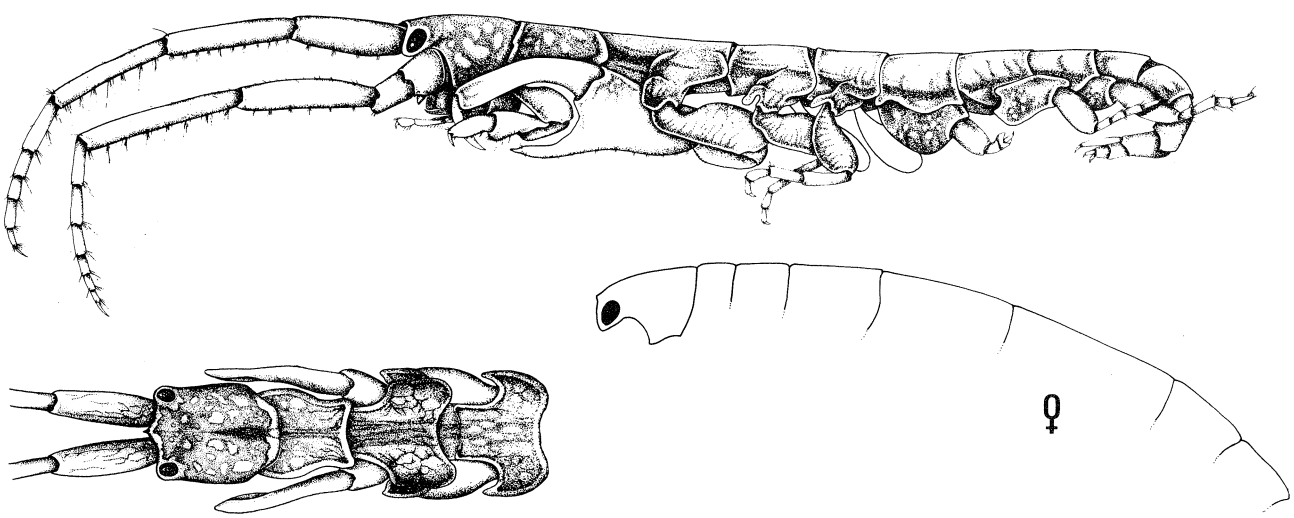

Fig. 6. *Cerapus pacificus* n.sp., paratype, male, 6.2 mm, AM P34726; allotype, female, 5.5 mm, AM P34725; Nasese, Viti Levu, Fiji.

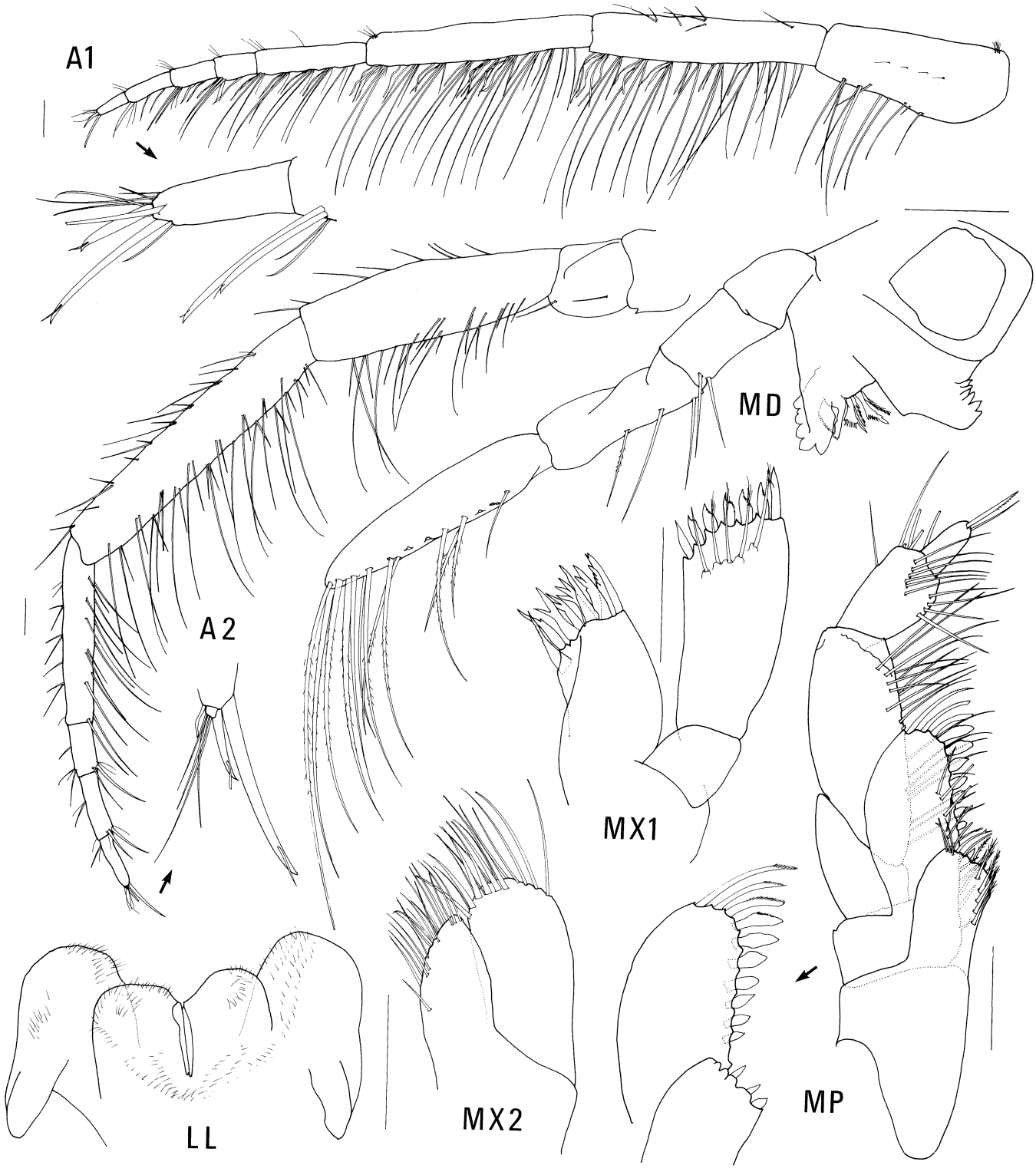

Fig. 7. *Cerapus pacificus* n.sp., holotype, male, 6.2 mm, AM P34724; Nasese, Viti Levu, Fiji. Scales represent 0.1 mm.

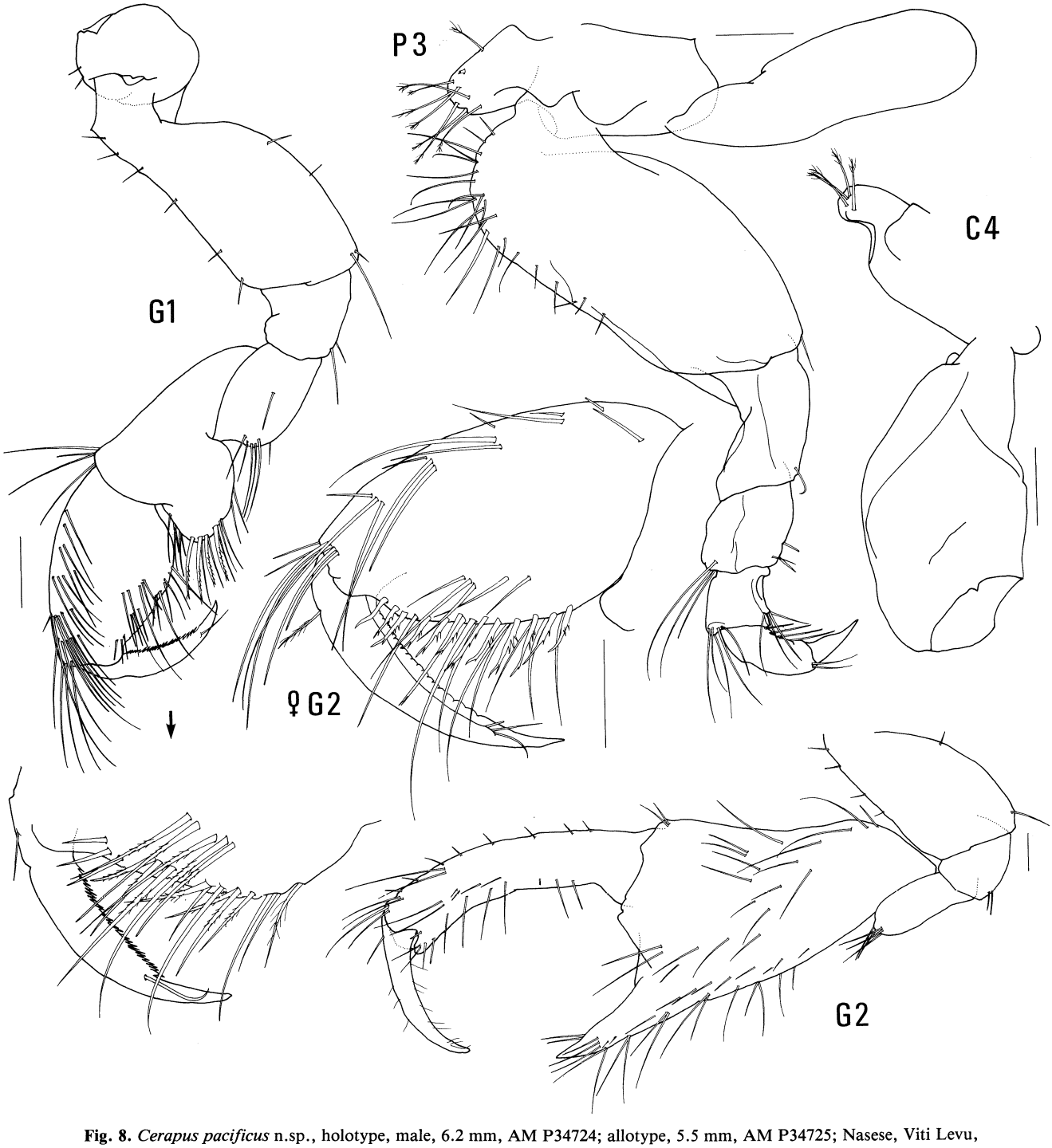

Fig. 8. *Cerapus pacificus* n.sp., holotype, male, 6.2 mm, AM P34724; allotype, 5.5 mm, AM P34725; Nasese, Viti Levu, Fiji. Scales represent 0.1 mm.

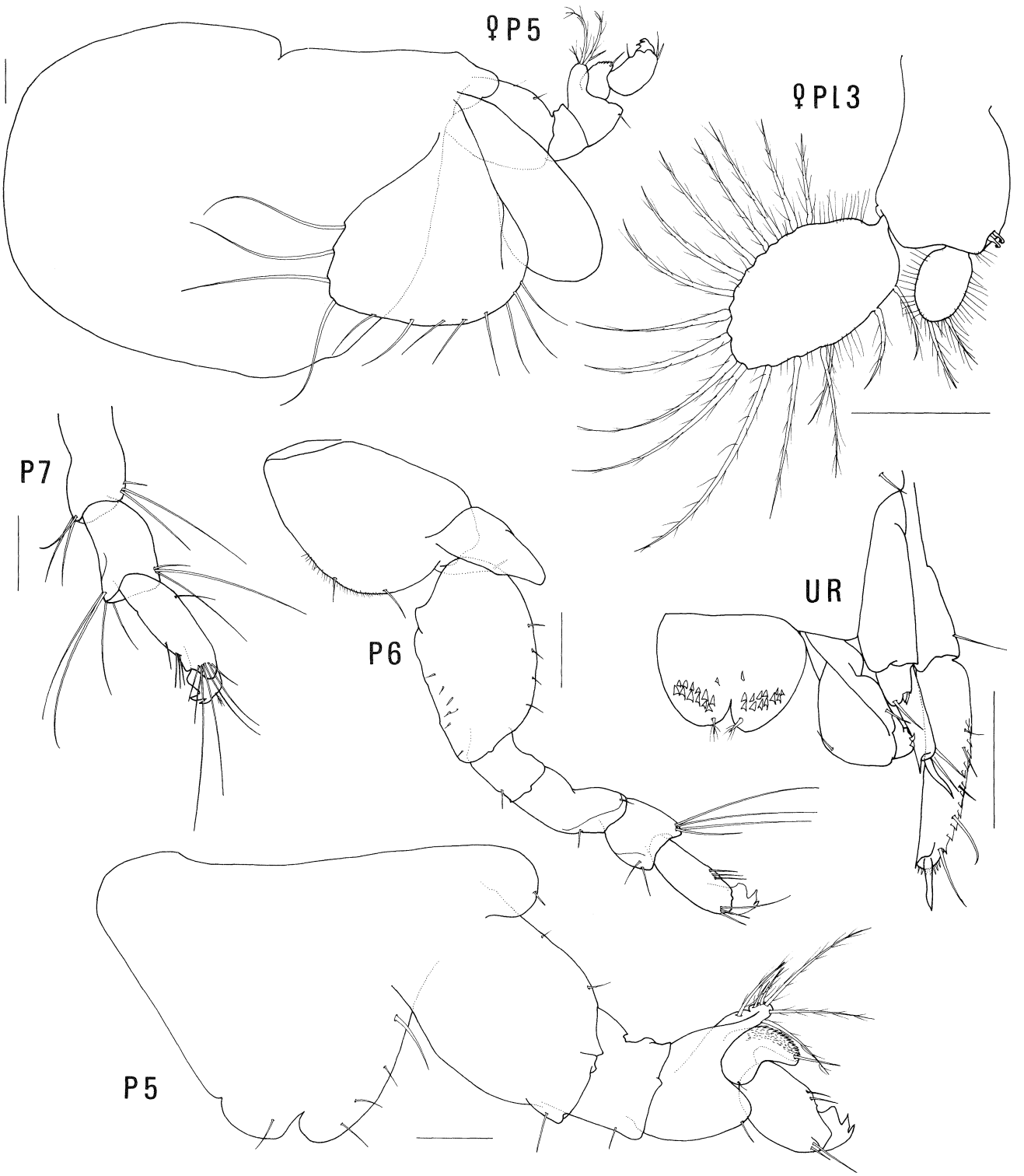

Fig. 9. *Cerapus pacificus* n.sp., holotype, male, 6.2 mm, AM P34724; allotype, 5.5 mm, AM P34725; Nasese, Viti Levu, Fiji. Scales represent 0.1 mm.

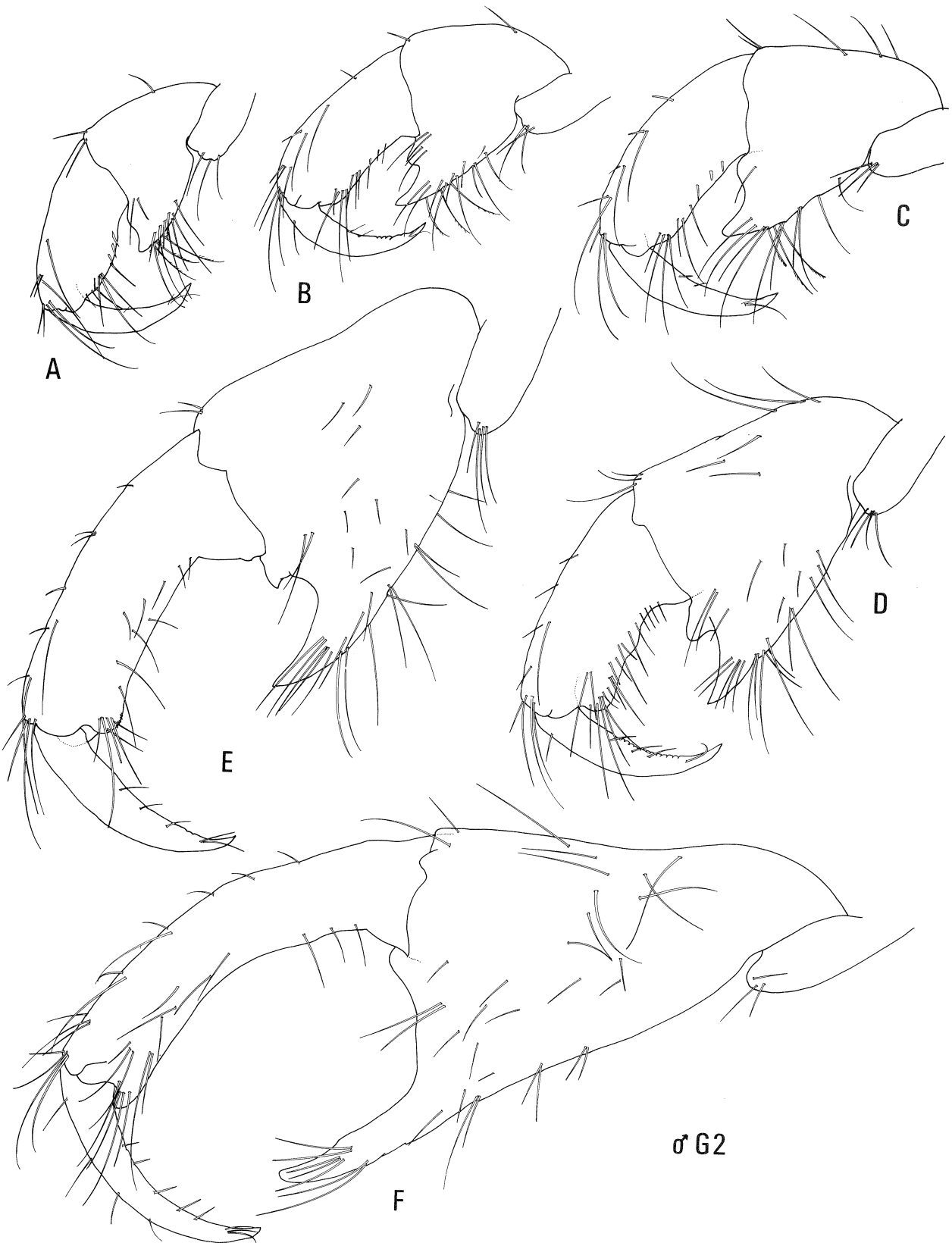

Fig. 10. *Cerapus pacificus* n.sp.; **A,** paratype, male, 3.5 mm, AM P34727; **B,** paratype, male, 4.1 mm, AM P34728; **C,** paratype male, 4.4 mm, AM P34729; **D,** paratype, male, 4.9 mm, AM P34730; **E,** paratype, male, 5.0 mm, AM P34731; **F,** paratype male, 5.2 mm, AM P34732; Nasese, Viti Levu, Fiji. Scale represents 0.1 mm.

broader than inner plate, both apically setose and inner plate setose along medial margin. *Maxilliped*: inner plate subquadrate with 3 stout spines and plumose setae along medial and terminal margins; outer plate with 8 strong teeth along medial margin and 2 stout apical setae; palp article 2 longest with a row of distomedial setae, article 3 setose distally, article 4 with a slender terminal spine.

Gnathopod 1 subchelate, article 5 with lobate posterior margin bearing setae; article 6, 1.5 times as long as broad, anterior margin with 6 rows of setae; palm oblique, setose; dactyl well developed, closing along entire palm. *Gnathopod 2* carpochelate; article 4 extremely enlarged, triangular in shape and twice as long as broad, posterior margin sparsely setose, palm with large outer tooth, inner tooth lacking; article 6, 5 times as long as broad; dactyl slightly more than half length of article 6, sparsely setose along posterior margin.

Peraeopod 3: coxa 2.25 times as broad as deep, forming a subquadrate lobe anteriorly; article 2 about 2.1 times as long as broad and slightly less than the length of articles 3 to 7 combined. *Peraeopod 4* similar to peraeopod 3 except coxa about 2.75 times as broad as deep and anterior lobe rounded. *Peraeopod 5* short, stout; coxa subtriangular in shape and 1.5 times as broad as deep with a large anteroventral lobe and a small posterior lobe; article 2 nearly 1.4 times as long as broad; article 4, posterior lobe with 3 long and 3 short plumose setae; article 5 smaller than article 4, posterior lobe covered in minute denticles and one seta; dactyl uncinate, with 2 recurved teeth. *Peraeopod 6* slender, about as long as peraeopod 5; article 5 with a group of long posterodistal setae; dactyl uncinate with 2 small recurved teeth. *Peraeopod 7* similar to peraeopod 6 except article 5 with anterodistal and posterodistal clumps of long setae.

Pleopods 1 - 3 decreasing in size, pleopod 3 with inner ramus small, 0.37 times length of outer ramus. *Uropod 1* biramous; peduncle 2.8 times as long as broad, with a fan of small spines along distal margin; outer ramus 0.8 times as long as peduncle, lateral margin with a row of minute denticles and setae, a large terminal spine partially surrounded by a collar of small spines; inner ramus ½ length of outer ramus. *Uropod 2* uniramous, extending nearly halfway along inner ramus of uropod 1; ramus small with 2 small subterminal spines and 1 terminal seta. *Uropod 3* uniramous; peduncle about 2.5 times as long as broad; ramus very small with 2 minute recurved hooks. *Telson* slightly broader than long, cleft about ¼, each lobe with 2 rows of about 6 recurved spines and a small apical plumose seta.

Female paratype 5.5 mm long. Similar to the male except: gnathopod 2 subchelate; article 5 smaller than article 6; article 6 about 1.5 times as long as broad, palm setose and extremely oblique; dactyl well developed, closing along entire margin of palm, posterior margin slightly crenulate.

In juvenile males 3.5 mm in length the fifth article of gnathopod 2 has begun to broaden and a small palm is evident. In juveniles 4.1 mm long an inner and outer tooth has formed on the palm and the inner tooth remains in individuals up to 5.0 mm long. The outer tooth continues to elongate until in fully grown adult males it is ¾ the length of the dactyl. The propodus continues to lengthen with growth but does not broaden appreciably.

Remarks. *Cerapus pacificus* is easily distinguished from its nearest relatives, *C. calamicola* and *C. oceanicus,* by the lack of an inner tooth on the palm of gnathopod 2 in adult males. This character and the lack of a ventral keel on peraeonite 2 distinguish *C. pacificus* from *Baracuma alquirta*.

Cerapus pacificus is known at present only from the shallow reef flats in Suva Bay, Fiji where it lives among the seagrass, *Syringodium isoetifolium*.

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