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Amphipoda from the South Pacific: the Cook Islands

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ABSTRACT. Thirty species of gammaridean Amphipoda from 0 to 1.25 m depth are recorded from the Cook Islands. One species, *Colomastix murivai* n.sp., is new to science and is described and figured. *Periculodes aequimanus* (Kossmann), recorded for the first time from the Pacific, is also figured along with partial figures of four other species of taxonomic interest. The amphipod fauna of the Cook Islands is most closely similar to that of the Society Islands.

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Collections of gammaridean Amphipoda from 0 to 1.25 m depth were made by the writer in 1986 at Rarotonga in the Cook Islands. Two further samples from Rarotonga and one from Mangaia were also studied from the collections of the Smithsonian Institution, Washington D.C., through the kindness of Dr J.L. Barnard. There appear to be no previous records of marine gammaridean amphipods from the Cook Island archipelago.

Thirty species were recorded of which one, *Colomastix murivai* n.sp., is new to science and one, *Periculodes aequimanus* (Kossmann), is new to the Pacific. One species, *Elasmopus takamotus* Myers, was previously known only from Niue (Myers, 1986a).

The Cook Island amphipod fauna shows close affinity with that of the Society Islands to the east (Table 1), but also has a strong component in common with the islands of the Vanuatu–Tonga Island arc and affinity with the island of Niue. In contrast, only 23% of the Cook Island species recorded herein are known also from Hawaii and all of those except one, have wide Indo-Pacific distributions.

Even the exception, *Podocerus talegus* Barnard, is also known from Fiji and Micronesia.

Colomastix murivai n.sp., *Periculodes aequimanus* (Kossmann), previously unknown from the Pacific, and four other species, *Mallacoota nananui* Myers, *M. subcarinata* (Haswell), *Maera serrata* Schellenberg, and *Podocerus talegus* Barnard, are all described and figured. A list of all material studied in the present work is provided.

Abbreviations used in the figures are as follows: A2 – Antenna 2; Mxp – Maxilliped; P3-6 – Pereopods 3-6; G1, G2 – Gnathopods 1, 2; U1-3 – Uropods 1-3; T – Telson.

Colomastix murivai n.sp.

Fig. 1

Type material. HOLOTYPE, female, 2.1 mm, 7 slides. AM P39309, Rarotonga, 2.5 km south of Aorangi, in coral rubble from reef crest, 12 Nov. 1986.

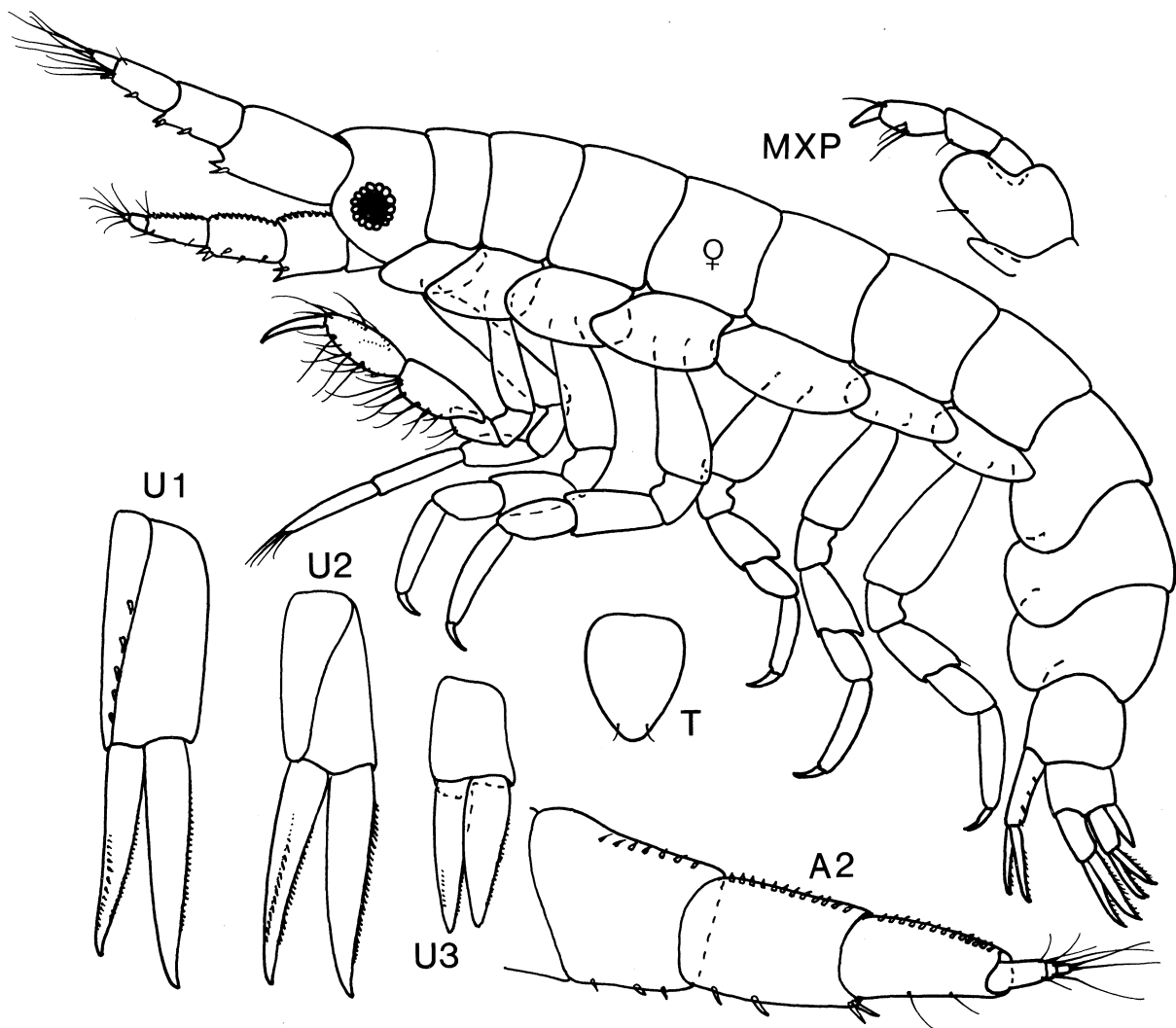


Fig.1. *Colomastix murivai* n.sp. Female, 2.1 mm, Rarotonga.

Description. Length 2.1 mm. Antenna 1 shorter than combined length of head and pereon segments 1–3, peduncular articles in the basi-distal ratio 9:5:5, articles 1 and 2 with strong posterodistal teeth. Antenna 2 shorter than antenna 1, peduncular article 3 with strong posterodistal tooth, peduncular articles 3–5 each with a dense row of short spines on the anterior margin. Maxilliped outer plate with posterior lobe broad, reaching midway along palp article 2. Gnathopod 1 of normal *Colomastix* form. Gnathopod 2 carpus and propodus subequal, propodus elongate-ovoid. Pereopods 3–7 unarmed. Epimera 1–3 rounded. Uropod 1 peduncle with spines on outer margin, outer ramus a little shorter than inner, inner ramus a little longer than peduncle. Uropod 2 peduncle unarmed, rami subequal and more than three quarters length of peduncle. Uropod 3 stout, rami subequal about one and a half times length of peduncle. Telson longer than broad with a pair of subdistal setae.

Remarks. *Colomastix murivai* n.sp. is very close to *C. truncatipes* Ledoyer (1979), but differs in several ways. Antenna 2 articles 3–5 each bears a dense row of small spines on the anterior margin, whereas in *C. truncatipes* the anterior margin of these articles lacks spines completely. The posterior lobe of the outer plate of the maxilliped is broader and extends further forward (to the midpoint of palp article 2) than in *C. truncatipes*. The peduncle of uropod 2 is fully three quarters the length of the rami whereas in *C. truncatipes* it is only a little over one half the length of the rami, and the telson bears subdistal setae, lacking in *C. truncatipes*.

Distribution. Currently known only from Rarotonga.

Etymology. Named after a river on Rarotonga which embouches near the type locality.

Periocolodes aequimanus (Kossman)

Fig. 2

Oedicerus aequimanus Kossman, 1880: 130, pl.13, figs 6–8.

Periocolodes aequimanus Schellenberg, 1928: 641, fig.200.

Remarks. The original description and figures of this species are very imprecise, but indicate very elongate, subequal, gnathopods 1 and 2. Schellenberg (1928) provides more detailed figures of the gnathopods of material from Suez which he identifies with *P. aequimanus* on the basis of locality (Schellenberg believed the type locality to be Suez) and length. The gnathopods figured by Schellenberg (1928) are much less elongate. Present material appears to be synonymous with that of Schellenberg (1928) and is attributed to Kossman's species even though that species remains equivocal. Should a second species be found in the Red Sea which more closely approximates *P. aequimanus* Kossman than Schellenberg's and present material, then a new taxon will be required for the latter two materials. *Periocolodes*

aequimenus mozambicus Ledoyer (1986) differs from the nominate form in its gnathopod 1 and 2 which are strongly dissimilar. Madagascan material probably requires specific status.

Mallacoota nananui Myers

Fig. 3

Mallacoota nananui Myers, 1985a: 121, fig.95.—Myers, 1986a: 277, fig.8.—Myers, 1986b: 1389, fig.8.

Remarks. Myers (1985) noted that this species may be synonymous with *M. subcarinatus* (Haswell) 'form 2' and doubted the possibility that *M. nananui* and *M. subcarinatus* could be polymorphs or age-related stages of a single species. Figures of gnathopod 2 of an adult and subadult male of *M. nananui* are provided here along with the same appendage of an adult *M. subcarinata*. There seems to be sufficient morphological differences to justify maintaining the two as distinct species unless breeding experiments prove otherwise. Material from the Cook Islands has the posterior margin of the propodus of the male gnathopod 2

Table 1. List of amphipods recorded from the Cook Islands, together with their occurrence in neighbouring island archipelagos (data from Barnard, 1970; Myers, 1985, 1986a, 1986b, 1988).

Fiji	Tonga	Niue	Cook Islands	Society Islands	Hawaii
			<i>Ronco sosa</i> Barnard	+	
			<i>Tethygeneia pacifica</i> (Schellenberg)	+	
+			<i>Gitanopsis tai</i> Myers	+	
+			<i>Paranamixis madagascariensis</i> Ledoyer	+	
			<i>Colomastix murivai</i> n.sp.		
	+		<i>Leucothoe hyhelia</i> Barnard		+
			<i>Periocolodes aequimanus</i> (Kossman)		
		+	<i>Hyale affinis</i> Chevreux	+	+
+			<i>Parambasia nui</i> Myers	+	
+			<i>Elasmopus seticarpus</i> Myers	+	
		+	<i>Elasmopus takamotus</i> Myers		
			<i>Maera lindsae</i> Myers	+	
+			<i>Maera octodens</i> Sivaprakasam	+	
+	+	+	<i>Maera pacifica</i> Schellenberg	+	+
+	+		<i>Maera serrata</i> Schellenberg	+	+
+			<i>Mallacoota insignis</i> (Chevreux)		
+	+	+	<i>Mallacoota nananui</i> Myers		
+		+	<i>Mallacoota subcarinata</i> (Haswell)		
+	+		<i>Parelmopus suensis</i> (Haswell)	+	
+		+	<i>Amphithoe ramondi</i> Audouin	+	
+	+		<i>Cymadusa brevidactyla</i> (Chevreux)	+	
+	+		<i>Cymadusa pilipes</i> (Ledoyer)	+	
+			<i>Pleonexes auriculata</i> Rabindranath	+	
+	+		<i>Paragrubia vorax</i> (Chevreux)	+	+
+			<i>Gammaropsis setifera</i> (Schellenberg)	+	
			<i>Jassa socia</i> Myers	+	
	+		<i>Bemlos dentischium</i> (Myers)	+	
+			<i>Globosolembos ovatus</i> Myers	+	
+		+	<i>Podocerus hanapepe</i> Barnard		+
+			<i>Podocerus talegus</i> Barnard		+

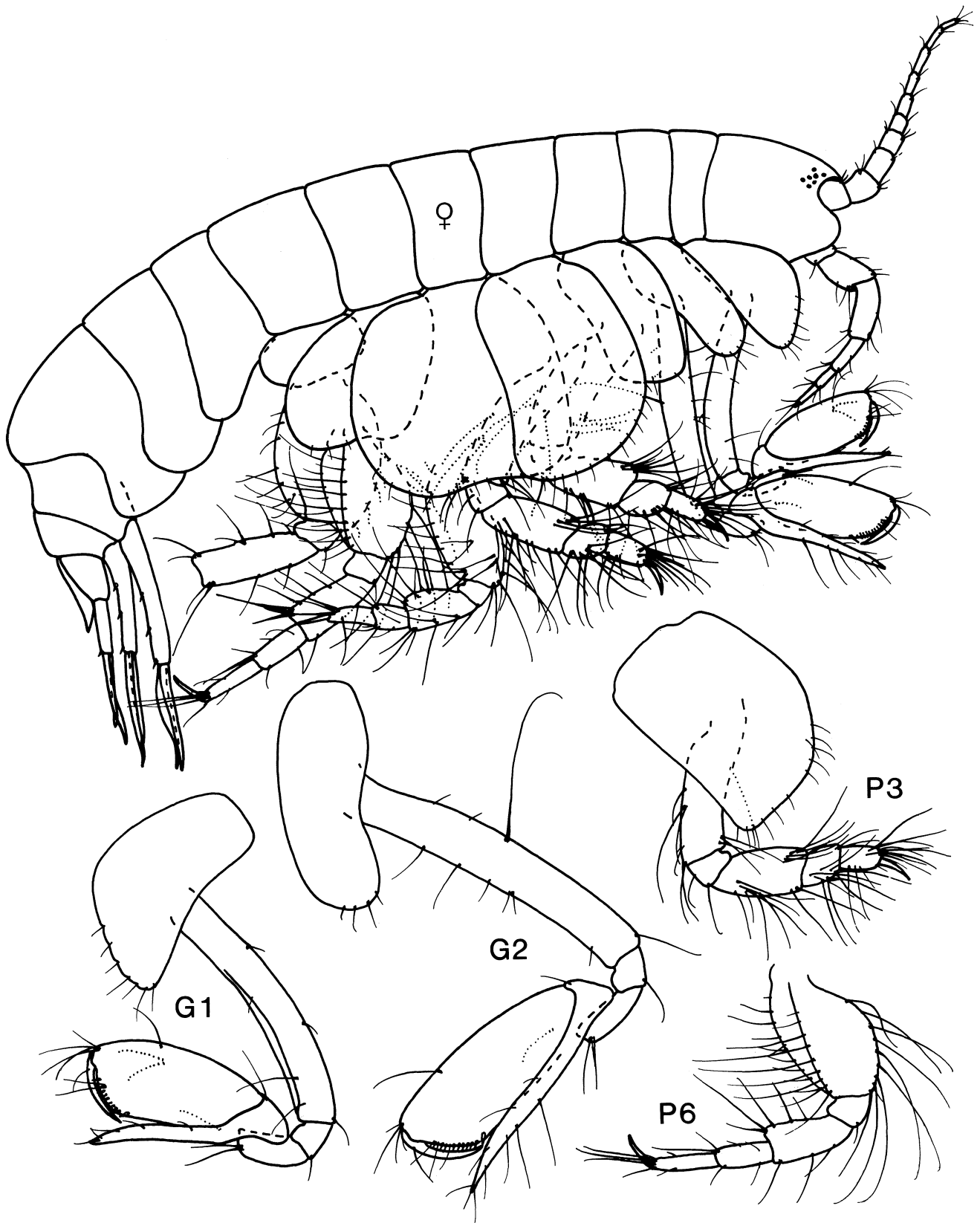


Fig.2. *Periculodes aequimanus* (Kossman). Female, 2.5 mm, Rarotonga.

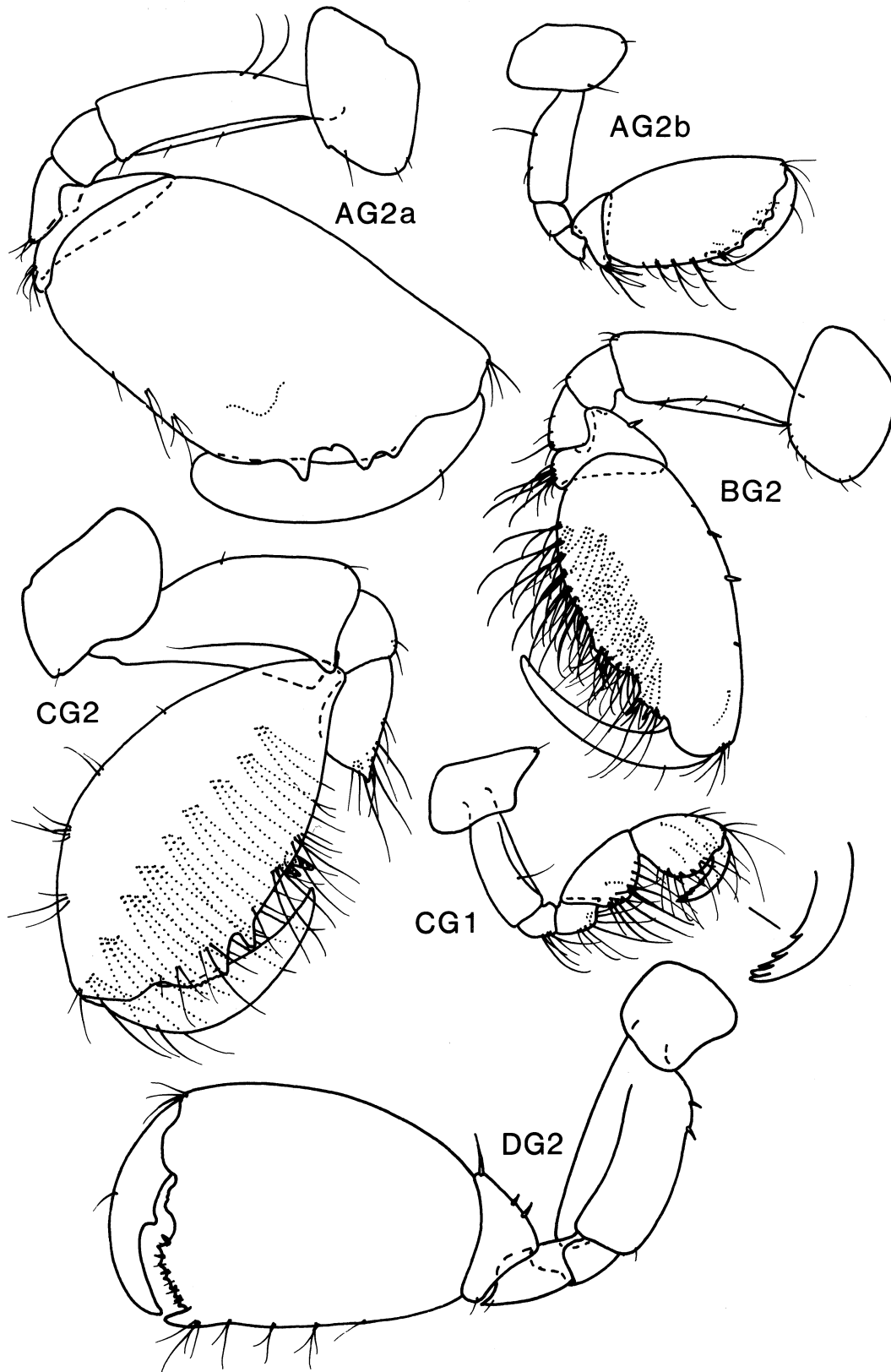


Fig.3. A. *Mallacoota nananui* Myers. a: male, 6.0 mm, Rarotonga; b: male, 3.7 mm, Rarotonga. B. *Mallacoota subcarinata* (Haswell). Male, 4.5 mm, Rarotonga. C. *Podocerus talegus talegus* Barnard. Male, Rarotonga. D. *Maera serrata* Schellenberg. Male, Rarotonga.

straight not sinuous and in this respect resembles *M. latidactyla* Ledoyer. The possibility that *M. nananui* is synonymous with *M. latidactyla* cannot be entirely discounted, but other differences outlined by Myers (1986a) suggest it is sensible to maintain *M. nananui* as distinct for the present.

***Maera serrata* Schellenberg**

Fig. 3

Maera inaequipes serrata Schellenberg, 1938: 41, fig.18.
Maera serrata.—Myers, 1985: 117, fig.92 (for full synonymy see Myers, 1985).

Remarks. As pointed out by Berents (1983), the palm of gnathopod 2 in *M. serrata* may show considerable variation. Present material has a much more pronounced dactylar acclivity than in Fijian material (Myers, 1985) but the opposing palmar sinus is shallow and rounded like specimens from Fiji and unlike material from Queensland (Berents, 1983). The male gnathopod 2 is figured here for future comparison with other materials.

***Podocerus talegus talegus* Barnard**

Fig. 3

Podocerus talegus Barnard, 1965: 544, fig.35.

Remarks. Present material most clearly resembles the nominate subspecies in the rather bulbous propodus of gnathopod 1 and in bearing spines on the posterior margin of the propodus of the male gnathopod 2 (a single spine figured though not described in the nominate subspecies).

The subspecies *P. talegus lawai* Barnard (1970) has a more slender gnathopod 1 propodus and lacks spines on the posterior margin of the male gnathopod 2 propodus. In the strongly toothed dactylus of gnathopod 1 present material resembles both *P. talegus lawai* and *P. talegus levuensis* Myers (1985). It differs from the latter subspecies, however, in lacking a medial tooth on the male gnathopod propodus which in *P. talegus levuensis* replaces the

marginal spines.

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Appendix 1

Station data.

- Stn 1. Rarotonga, 2.5 km south of Aorangi Village, south-west coast, 21°15.1'S 159°43.9'W, 12 Nov. 1986, *Turbinaria* from reef crest.
- Stn 2. Rarotonga, same locality and date, coral rubble from reef crest.
- Stn 3. Rarotonga, same locality and date, *Sargassum* from reef crest.
- Stn 4. Rarotonga, same locality and date, arborescent alga in lagoon.
- Stn 5. Rarotonga, same locality and date, *Padina* in lagoon.
- Stn 6. Rarotonga, near airport, north-west coast, 21°12.1'S 159°49.4'W, 14 Nov. 1986, *Padina* in lagoon.
- Stn 7. Rarotonga, same locality and date, *Sargassum* in lagoon.
- Stn 8. Rarotonga, same locality and date, *Turbinaria* in lagoon.
- Stn 9. Rarotonga, 1.5 km north of Matavera, north-east coast, 21°12.4'S 159°44.5'W, 15 Nov. 1986, *Sargassum* from wave-planated terrace.
- Stn 10. Rarotonga, 1 km north of Muri, 21°14.7'S 159°43.9'W, 15 Nov. 1986, coral rubble from sheltered lagoon inside motus.
- Stn 11. Rarotonga, same locality and date, *Amphiroa* from sheltered lagoon inside motus.
- Stn 12. Rarotonga, same locality and date, *Halimeda* from sheltered lagoon inside motus.
- Stn 13. Rarotonga, near Rarotongan Hotel, 21°15.1'S 159°48.4'W, 1 Aug. 1982, rubble and algae from back of barrier reef to 1.25 km, C.A. Child, USNM.
- Stn 14. Rarotonga, same locality, 2 Aug. 1982, scrapings from sand flats with coral heads and brown algae to 1.25 km, C.A. Child, USNM.
- Stn 15. Mangaia, Onekoa village landing, 21°54.3'S 157°58'W, 3 Aug. 1982, calcareous algae from tidal flats, less than 1 m, C.A. Child, USNM.

Appendix 2

Annotated list of species recorded from the Cook Islands.

Family	Species	Males	Females	Immature	Stn No.
EUSIRIDAE	<i>Ronco sosa</i> Barnard, 1965	1			3
	<i>Tethygeneia pacifica</i> (Schellenberg, 1938)	1			11
AMPHILOCHIDAE	<i>Gitanopsis tai</i> Myers, 1985	1	1		2
ANAMIXIDAE	<i>Paranamixis madagascariensis</i> Ledoyer, 1982 — Hyperadult " <i>Paranamixis</i> "	2			1
		1			12
	" <i>Leucothoides</i> "		2		1
			1		13
COLOMASTIGIDAE	<i>Colomastix murivai</i> n.sp. (7 slides)		1		2
LEUCOTHOIDAE	<i>Leucothoe hyhelia</i> Barnard	1	2		1
			1		2
			1		8

Appendix 2. cont'd.

Family	Species	Males	Females	Immature	Stn No.
OEDICEROTIDAE	<i>Periocolodes aequimanus</i> (Kossmann, 1880)		1		5
HYALIDAE	<i>Hyale affinis</i> Chevreux, 1907	10	25 1	1	1 2
LYSIANASSIDAE	<i>Parambasia nui</i> Myers, 1985		2 1		10 11
		3	3		13
		1	2		14
MELITIDAE	<i>Elasmopus seticarpus</i> Myers, 1985	1 1 3	2 1 3	1	3 5 10
	<i>Elasmopus takamotus</i> Myers, 1985	4	4	4	15
	<i>Maera lindsae</i> Myers, 1989		1		10
	<i>Maera octodens</i> Sivaprakasam, 1968	1 2	4 2		12 13
			1		14
	<i>Maera pacifica</i> Schellenberg, 1938	1 1 2	6 3 1	3	2 5 11
			2		15
	<i>Maera serrata</i> Schellenberg, 1938	3 1	5 1	2 1	1 6
			1		10
		7	9		11
		8	13		12
		1	1		14
	<i>Mallacoota insignis</i> (Chevreux, 1901)	1	1		3
	<i>Mallacoota subcarinata</i> (Haswell, 1880)	1	9		1
	<i>Mallacoota nananui</i> Myers, 1985	1 1 4 10 1 3 12 9 1 1	 1 7 18 4 13 12 11 3 6	10	1 3 4 5 6 10 11 12 13 14
	<i>Pareasmopus suensis</i> (Haswell, 1880)	4	3 1		5 12 13
AMPITHOIDAE	<i>Amphithoe ramondi</i> Audouin, 1826	1 1	 3 1		6 13 14
	<i>Cymadusa brevidactyla</i> (Chevreux, 1907)	5	2 5 3	4	1 5 6
		1	2		11
			4		13
	<i>Cymadusa pilipes</i> (Ledoyer, 1984)	1 1 1 14 4	3 1 8 48 8	1	1 3 4 10 12
	<i>Paragrubia vorax</i> Chevreux, 1901		1		2

Appendix 2. cont'd.

Family	Species	Males	Females	Immature	Stn No.
AMPITHOIDAE (cont'd)	<i>Pleonexes auriculata</i> Rabindranath, 1972	17	28		1
			3		2
		2	4		3
			2		4
		3	3	2	5
		1	11	1	6
ISAEIDAE	<i>Gammaropsis setifera</i> (Schellenberg, 1938)	6	13		13
		10	14		1
		2	1		3
ISCHYRODERIDAE	<i>Jassa lilipuna socia</i> Myers, 1989	24	36	19	8
		9	1		1
			1		2
		6	4		3
			1		4
			3		6
		2			10
3	2		11		
AORIDAE	<i>Bemlos dentischium taparum</i> Myers, 1985	1	3		1
				1	2
		1	1	4	4
		1			8
		4	9		12
		1	2		13
	<i>Globosolembos ovatus</i> Myers, 1985	2	5		10
		1	1		13
			1		14
PODOCERIDAE	<i>Podocerus hanapepe</i> Barnard, 1970 <i>Podocerus talegus lawai</i> Barnard, 1970	5	1		1
			1		2
		8	6		1
		1	2		2
		14	21	2	3
		6	6		4
			1		6
		2	6		8
2			13		