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## Shallow-water, Coral Reef and Mangrove Amphipoda (Gammaridea) of Fiji

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**ABSTRACT.** Eighty species of marine gammaridean Amphipoda are currently known from Fiji. During a three month period in late 1979, 77 species were collected, and these are described and figured. Keys for the identification of all known Fijian species are included.

Fiji appears to share most of its taxa with Hawaii, Indonesia and the Indian Ocean, and few with eastern Polynesia, but this may reflect collecting intensity. Few taxa are shared with New Zealand. Forty percent of Fijian taxa are new to science. Forty-one percent of taxa are currently of endemic status but this figure will undoubtedly be lowered when more Indo-Pacific island groups are explored. Fiji is characterised by a higher percentage of domicolous forms than any other well studied island group. The results of a quantitative survey of amphipods on a transect across a fringing reef in south Viti Levu are given.

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**KEYWORDS:** Amphipoda, marine, taxonomy, Fiji.

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Taxonomic literature on the gammaridean amphipods of Central Pacific tropics is sparse, as indeed it is for the entire Indo-Pacific tropics (see review by Barnard, 1976). The most comprehensive studies of Pacific amphipods are those of Barnard (1955, 1970 and 1971) from Hawaii, but other important works are those of Chevreux (1908) from French Polynesia, Barnard (1965) from Micronesia, and Dana (1853) and Schellenberg (1938) from a wide range of Pacific localities. The only records of marine amphipods from the Fijian islands are those of Dana (1853) who recorded three species, two of which, *Gammarus fuegiensis* and *G. tenellus*, are too poorly described to be referred to any known species, and Schellenberg (1938) who recorded 17 species, four of which (*Elasmopus dentiferus* Schellenberg, *E. gracilis* Schellenberg, *E. rapax* Costa and *Lembos aequimanus* Schellenberg) remain doubtful records.\*

With the establishment of the University of the South Pacific on Viti Levu, Fiji, and in particular, the University Department of Marine Resources, increasing ecological works on the coral reefs and mangroves of the region are to be expected. Such works cannot successfully be carried out until knowledge of the fauna is given a sound taxonomic basis. The present work is

intended to provide a guide to the gammaridean amphipods of Fijian coral reefs and mangroves. The material upon which this work is based was collected during a three month period from August to October 1979. Further collecting would undoubtedly result in the discovery of additional species, particularly those living in specialised habitats. Such collecting would, however, bring diminishing returns, and the present guide should form a practical basis for the identification of at least most of the commonly encountered species, and hopefully encourage work on this important group of marine organisms which contribute to many coral reef and mangrove energy budgets. Whilst collecting was restricted to Viti Levu in the Fijian archipelago, the guide should prove generally applicable throughout the Fijian islands and near Pacific islands.

#### Materials and Methods

Samples of algae, corals, coral rocks, coral debris, sponges, zoanths etc. were obtained by wading or snorkling in shallow water. Samples were placed in buckets containing sea water to which had been added minute quantities of formaldehyde. The samples were agitated, and the material settling out was sieved through fine mesh screens. Algal etc. samples were also examined by hand for species such as *Podocerus* which do not readily release their grip on the substrate. Immediately on return to the laboratory, the amphipods were picked out under a high power stereoscopic microscope and preserved in 70% alcohol. Prior to preservation, notes were made whenever possible on the

\* *Elasmopus gracilis* and *L. aequimanus* were represented only by females from Fiji. *Elasmopus dentiferus* was described and figured by Schellenberg from Kiribati and, in the light of the high diversity of this genus in the tropics, the Fijian record requires confirmation. *Elasmopus rapax* is taxonomically problematical; Schellenberg's material may be referable to *E. molokai* Barnard.

colour patterns exhibited by the amphipods, as these can be useful for rapid sorting by ecologists in the field (although some species occur in several morphs). It was assumed that the minute quantities of formaldehyde used (as an irritant to cause the amphipods to release their grip on the substratum) would not markedly affect colour patterns.

Quantitative samples were collected by removing algae, zoanthids etc. from three replicate  $\frac{1}{10}$ m<sup>2</sup> areas at each site and extracting the amphipods by the above method. Areal quantification is not completely satisfactory, but neither are dry weight nor wet weight methods (see Myers & Southgate, 1980).

The stations at which each species occurred are listed in material examined. The stations are listed in the appendix. A map of the collecting sites is given in Figure 1.

#### Abbreviations Used in Figures

A	Antenna (1-2)
a f	Accessory flagellum
C	Coxa (1-7)
Ep	Epimeron (1-3)
G	Gnathopod (1-2)
H	Hyperadul

Hd	Head
Ip	Inner plate
L	Labium
Lb	Labrum
lt	left
LM	lacinia mobilis
Md	Mandible
Mx	Maxilla (1-2)
Mxp	Maxilliped
P	Pereopod (3-7)
p	palp
P1p	Pleopod
r	right
st	Sternal processes
T	Telson
U	Uropod (1-3)
Us	Urosome

#### Identification

Identification is facilitated by dismembering a specimen under a stereoscopic microscope, and mounting the appendages on temporary or permanent slide mounts. The most satisfactory procedure is to remove antennae and pereopods from one side only,

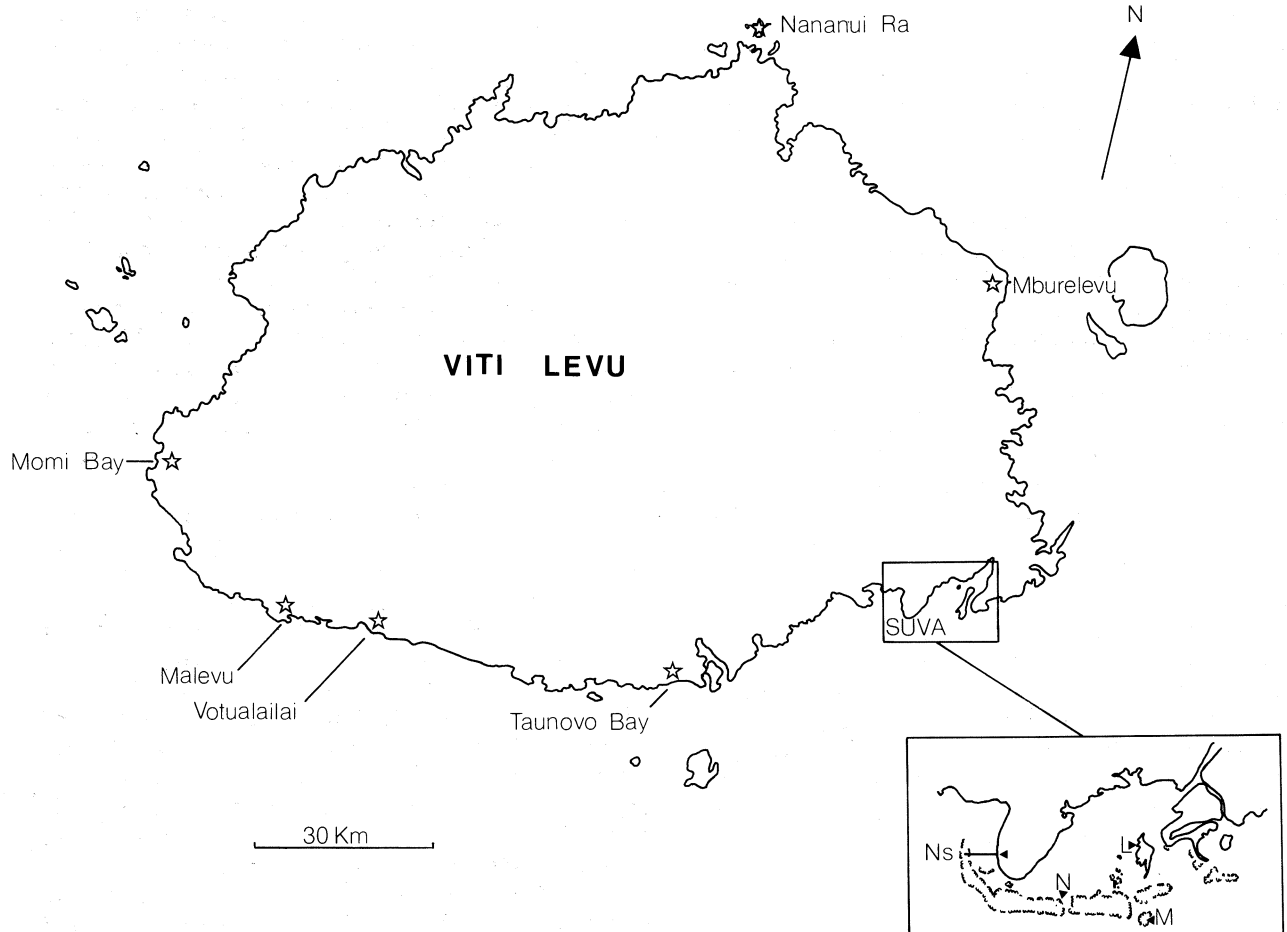


Fig. 1. Map of Viti Levu with locations of collecting sites. Ns = Nase, N = Nukumbutho Island, M = Makuluva Island, L = Laucala Island.

mount them on a microscope slide and then remove the mouthparts and urosome as units and dissect each *in situ* on a microscope slide. The carcass can then be mounted on a cavity slide. It may be necessary to remove the pleopods in order readily to observe the epimera. Temporary mounts can be made using glycerine, or alternatively permanent mounts can be made using Faure's liquid (in which specimens can be placed directly from 70% alcohol without the need for dehydration).

Once familiarised with the species, identification is generally possible without dissection, by reference to one or more key characters observed by manipulation of the specimen under the stereoscopic microscope. Dissection, however, is strongly recommended for initial identification, since it is easy to misinterpret characters when they are viewed from different angles.

The terminology used in the present work is illustrated in Figure 2. In particular it should be noted that pereopods are numbered 1–7, with gnathopods 1–2 being considered modified pereopods. In some works (e.g. Barnard, 1965, 1970a, 1970b), gnathopods 1–2 are followed by pereopods labelled 1–5. Thus, pereopod 7 in the present terminology is equivalent to pereopod 5 in some other works. Where ratios are quoted (e.g. mandible palp, antennal peduncles) the sequence is always basidistal.

Keys have been designed to facilitate the identification of Fijian taxa and are not necessarily applicable to taxa of worldwide origin. Genera not yet recorded from Fiji but which, due to their occurrence in adjacent regions, might be expected to occur there, are included in the keys in parenthesis.

Long descriptions of the species have been avoided in favour of clear diagrams and brief descriptions. However, the taxonomy of marine gammaridean amphipoda of the Indo-Pacific tropics is so poorly known that it is felt that, in addition to its primary aim as an identification guide to amphipods for ecologists working in the Central Pacific, the work should also contribute to the body of taxonomic knowledge on Indo-Pacific amphipods. To this end, the descriptions have been expanded rather more than would have been the case were tropical amphipod taxonomy on a sounder footing.

Families have been arranged in an alphabetical sequence rather than a phyletic one for two reasons. Firstly, because this may be more useful for ecologists unfamiliar with amphipod taxonomy and secondly, because of the considerable controversies currently existing concerning amphipod phylogeny. Lengths given for all species are the maximum recorded in Fiji.

Representative material of most species is deposited in the Australian Museum (AM). All other material is in the collection of the author (AC).

### Biogeography

The known geographical relationships of Fijian taxa with those of other areas in the broad Indo-Pacific

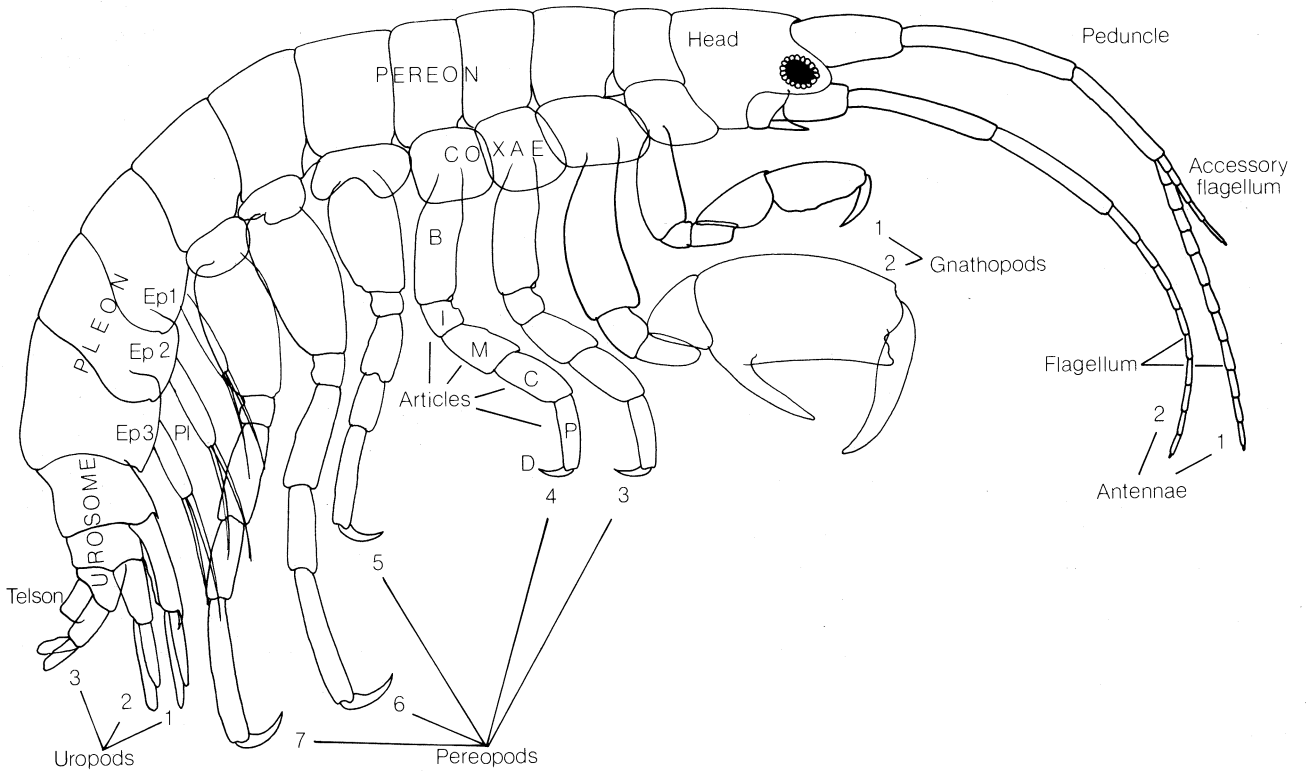
tropics is shown in Figure 3. Each line joins conspecific or closely related taxa in the different regions. Fiji apparently shares most of its taxa with Hawaii in Northern Polynesia, with Indonesia and with the Indian Ocean, and relatively few with eastern Polynesia and Australia. This, however, is probably an artifact of collecting intensity, since the former regions have been relatively well studied (Barnard, 1955, 1965, 1970; Ledoyer, 1967a, b, 1972, 1973, 1978, 1979a, b) whereas Eastern Polynesia and tropical Australia have been little studied. To the south, New Zealand has been fairly well studied (Barnard, 1972a; Chilton, 1915; Hurley, 1954a, b, c, d, 1955, 1957) and shows only a small element of Fijian taxa.

The situation has changed little since Barnard's (1976) review of Amphipoda from the Indo-Pacific tropics, and little can, as yet, be said about the geographical affinities of amphipods across the broad Indo-Pacific. Many species currently known from isolated localities may ultimately prove to be pan-Pacific or even pan-tropical. Species such as *Pleonexes kaneohe*, *Colomastix lunailo*, *Podocerus hanapepe* and *Gamaropsis pokipoki* currently known from Hawaii, Fiji and Madagascar only, may be examples of such.

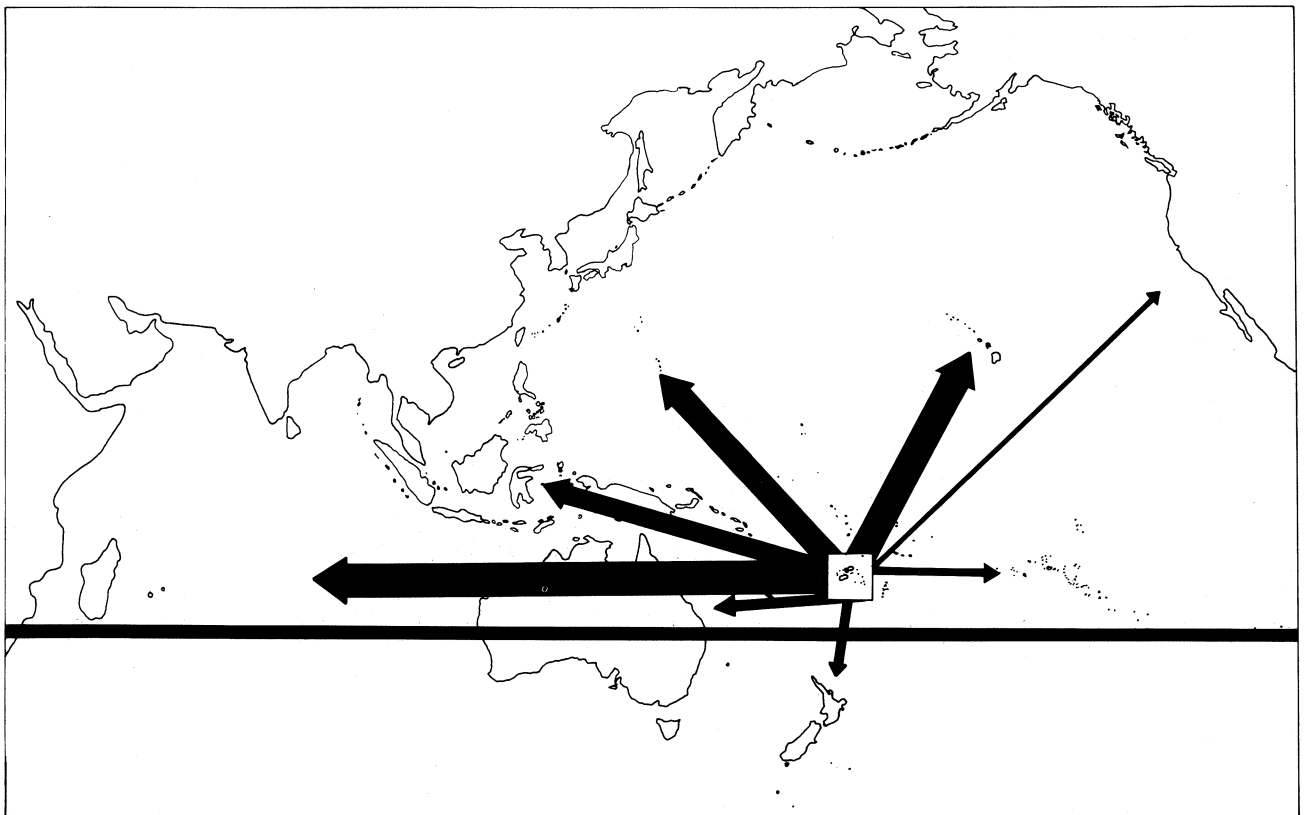
As gammaridean amphipods exhibit benthic recruitment, they may prove useful tools in the formulation of theories on the evolution of the Pacific when their distribution is considered in the light of known tectonic and eustatic events. The Fijian plateau is thought to have been formed by volcanism associated with a transform fault which separated what is now Vanuatu from Tonga, the Vanuatu–Tonga island arcs having been continuous in the early Tertiary. The western part of the Fijian plateau has probably been created within the last 10 m.yr., and the Lau ridge separated from the Tonga ridge during the last 5 m.yr. Viti Levu is the oldest island in the group, and is dated Upper Eocene. Work in progress by the author on amphipods from Tonga, Vanuatu and the younger (Pliocene) Western Samoa, may facilitate a better understanding of amphipod geographical relationships in the Central Pacific.

Forty percent of Fijian taxa are classified in the present work as endemic, but undoubtedly further collecting elsewhere will considerably reduce the number. By comparison, about half the species described from Hawaii by Barnard (1970) were at that time thought to be endemic to those islands. Several of these have since been described from elsewhere (principally from the Indian Ocean—a reflection of taxonomic effort in this region) and four species are herein recorded for the first time outside Hawaii: *Amphilochus menehune*, *Amphithoe kava* (= *A. ramondi* in Barnard), *Elasmopus molokai* and *Stenothoe kaia* (= *S. valida* in Barnard).

An island archipelago may encourage the development of sibling species in benthic-recruiting peracarids, which, through the lack of a pelagic dispersal phase, have lessened gene exchange between isolated populations. Gene exchange rates will fluctuate,



**Fig. 2.** Gammaridean amphipod illustrating terminology used in present work. B = basipodite, I = ischiopodite, M = merus, C = carpus, P = propodus, D = dactylus, Ep = epimera, PI = pleopod.



**Fig. 3.** Indo-Pacific affinities of Fijian amphipods.

particularly in relation to events such as eustatic changes in sea-level and lithospheric crustal movements, so that populations which have established genetic isolating mechanisms, will, when again becoming sympatric, coexist by niche shift and resource partitioning, as sibling species. Examples of this from Fiji may be the sibling species pairs *Hyale galateae* and *H. chevreuxi*, and *Mallacoota subcarinata* and *M. nananui*.

Island faunas are characterised by species flocks resulting from adaptive radiation of few primary colonisers. Because of their benthic recruitment, gammaridean amphipods are, theoretically, poor dispersers, so one might expect to find explosive radiation in island, shallow-water amphipod faunas (as in Baikal and Titicaca amphipods). This, however, is not the case in those Indo-Pacific islands so far studied which, although having a depauperate fauna, have a family and species composition comparable to that of tropical continental regions. Explosive radiation like that seen in the Phoxocephalidae of S.E. Australia is notably lacking in tropical islands (Table 1). Only Aoridae and Hyalidae in Hawaii, and Leucothoidae in Mauritius may be cited as groups exhibiting hyper-radiation in islands. Clearly, either benthic, shallow-

water amphipods have greater powers of dispersal than might be expected or one must search for vicariance patterns based on a better understanding of Pacific tectonic history.

### Ecology

Whilst the taxonomy of tropical Indo-Pacific amphipods is poorly known, even less is known of their ecology. Most of what is stated in the literature is inferred by extrapolation from what is known about congeners in temperate waters. The majority of gammaridean amphipods are detritivores, either nestling free in anastomoses or living in self-constructed domiciles in similar situations. A number live in fine sediments and, while few of these have been studied in the tropics, they are perhaps the best ecologically studied temperate amphipods. A few species are inquilinous or commensal with sponges, corals, polyzoans, zoanthids etc. and a very few are raptors, scavengers or lignivores. The frequency of these ecological groups in Fiji is compared with that of three other Indo-Pacific islands or island archipelagos in Table 2. Fiji shares with the Moluccas and Mauritius a dominance of domicoles

**Table 1.** Numbers of marine amphipod species per family recorded from five islands or island archipelagos in the Indo-Pacific tropics. Numbers in italics represent notable high diversity or notable paucity.

Families	Fiji (Dana 1853, Schellenberg 1938 and herein)	Hawaii (Barnard 1955, 1970, 1977, Myers 1970)	Moluccas (Ledoyer 1979)	Mauritius (Ledoyer 1978)	Ifaluk Atoll (Caroline Islands) (Barnard 1965)
Acanthonotozomatidae	0	0	0	2	0
Ampeliscidae	2	1	1	1	0
Amphilochidae	5	6	2	5	0
Amphithoidae	11	11	6	7	2
Anamixidae	1	1	1	3	2
Aoridae	7	16	4	5	3
Biancolinidae	1	1	1	1	0
Cheluridae	0	1	0	0	0
Colomastigidae	1	4	1	2	1
Coroppiidae	1	3	0	0	0
Dexaminidae	1	2	3	3	1
Dulichiiidae	3	4	2	3	1
Eophliantidae	1	0	0	1	0
Eusiridae	1	5	1	1	1
Hyalidae	5	10	2	1	1
Isaeidae	10	10	3	8	3
Ischyroceridae	2	7	1	5	0
Leucothoidae	3	3	1	9	3
Liljeborgidae	0	2	0	2	0
Lysianassidae	2	1	1	4	1
Melitidae	18	28	4	19	15
Neomegamphopidae	0	1	0	0	0
Ochlesidae	0	1	0	0	0
Oedicerotidae	0	1	0	1	0
Paracalliopidae	1	0	0	0	0
Phliantidae	1	1	1	1	0
Phoxocephalidae	1	1	0	1	0
Pleustidae	0	2	0	1	0
Sebidae	0	1	0	2	0
Stenothoidae	1	5	0	1	0
Synoppiidae	0	0	0	0	1
Talitridae	1	0	4	0	0
TOTAL:	80	129	40	88	35



whereas, in Hawaii, nestlers dominate. Fiji and Hawaii appear to have a paucity of inquilines. Sampling effort, however, was doubtfully comparable in the studies from which the data are extracted, and inferences must therefore be treated with caution.

A little-studied biotope on coral reefs is dead coral rubble, which is one of the richest biotopes for amphipods in tropical regions. In temperate regions, shell gravel and maerl constitute a similar biotope and are similarly rich in amphipods (see Myers & McGrath, 1983). Of the 80 species of amphipods recorded from Fiji, 43 have been recorded from coral rubble. Table 3 lists the dominant species of this biotope together with species so far known only from this biotope. The characteristic amphipod fauna of the mangroves and *Syringodium* meadows is also given in Table 3.

A quantitative survey was carried out on the fringing reef at Votualilai (Fig. 4). A transect 630 metres in length was set up from the outer reef slope, across the reef crest and over the reef flat to the shoreward margin. Stations (I-VII) were established in seven distinct zones (A-G) across the reef. Three  $\frac{1}{10}$ m<sup>2</sup> quadrats were sampled at each site, and the numbers/m<sup>2</sup> of each amphipod species recorded at each site are given in Table 4. Of the seven zones, zone C was the most heterogeneous and station 5 cannot, therefore, be considered truly representative of the entire zone. Each of the zones A-B and D-G were relatively homogeneous, and the data from stations in these zones are probably more representative of amphipod assemblages there.

**Table 2.** % frequency of ecological groups of amphipods in four Indopacific islands and island archipelagos.

Classification	Hawaii (Barnard 1970, 1977)	Fiji	Moluccas (Ledoyer 1979)	Mauritius (Ledoyer 1978)
Nestling	40	33	31	31
Domicolous	35	43	38	33
Inquilinous	9	8	15	17
Inquilinous nestlers	11	12	8	10
Lignivorous	2	3	3	4
Others	3	1	5	5

**Table 3.** Amphipod species associated with three major biotypes in Fiji. I, dominant species (those in parenthesis are eurytopic). II, rare species currently known only from listed biotope.

Coral rubble	<i>Syringodium</i>	Mangroves
I	I	I
( <i>Aorchoides dilatata</i> ) ( <i>Cymadusa lunata</i> ) <i>Gammaropsis togoensis</i> <i>Globosolembos ovatus</i> ( <i>Maera pacifica</i> ) <i>Paradexamine rewa</i> ( <i>Paragrubia vorax</i> )	<i>Cerapus pacificus</i> <i>Cymadusa imbroglio</i> <i>Gammaropsis togoensis</i> <i>Grandidierella bispinosa</i> <i>Paracalliope mapela</i>	<i>Grandidierella bispinosa</i> <i>Melita zeylanica</i> <i>Paracalliope karitane</i> <i>Parhyale hawaiiensis</i>
II	II	II
<i>Ampelisca pygmaea</i> <i>Amphithoe hirsuta</i> <i>Chevalia aviculae</i> <i>Gammaropsis pokipoki</i> <i>Gammaropsis setifera</i> <i>Gitana bilobata</i> <i>Maera octodens</i>	<i>Grandidierella teres</i>	<i>Corophium</i> sp.

Some species range widely over the reef, e.g. *Pleonexes kaneohe navosa* and *Cymadusa lunata*: others are restricted to single stations or have a limited range over contiguous zones. Investigation is required to decide whether zonation is due to physical factors such as wave crash, turbulence, siltation etc. or to biotic interactions such as plant/animal substrate availability or interspecific competition. Zone D (station IV), dominated by *Turbinaria*, was the most diverse with 13 amphipod species recorded. It also supported the highest density of amphipods (Table 4). The genera *Elasmopus* and *Hyale* occurred mainly on the wave-influenced outer reef whilst the domicolous genus *Amphithoe* was restricted to the sheltered reef flat. The relative dominance of each amphipod family at each station is given in Table 5. The wave-swept reef front is dominated by melitids, but the *Sargassum*-clothed reef crest is dominated by amphithoids and, to a lesser extent, hyalids; melitids, by contrast, are very poorly represented. This latter frequency distribution also holds true for the *Turbinaria* zone immediately behind the reef crest. These frontal zones exhibit the highest diversity of amphipods. The reef flat and nearshore zones are dominated by either melitids or amphithoids or are codominated by both, but diversity is low and dominance is generally dictated by high abundance of single species.

### Systematical Procedure

Descriptions vary in their content from family to family as a result of differences in the state of knowledge of the taxa and the differing emphasis placed on character states by specialists in family groups. Within families, an attempt has been made to maintain descriptive uniformity. Taxonomic treatise generally include long descriptions, often supplemented by brief diagnoses. Good figures 'speak volumes' and the inclusion of figures of entire animals should greatly help the non-specialist in amphipods. Standard diagnoses, on the other hand, are rather too brief, except where a faunule is very well known and, hence, new taxa are unlikely to be found in quantity. The strategy used

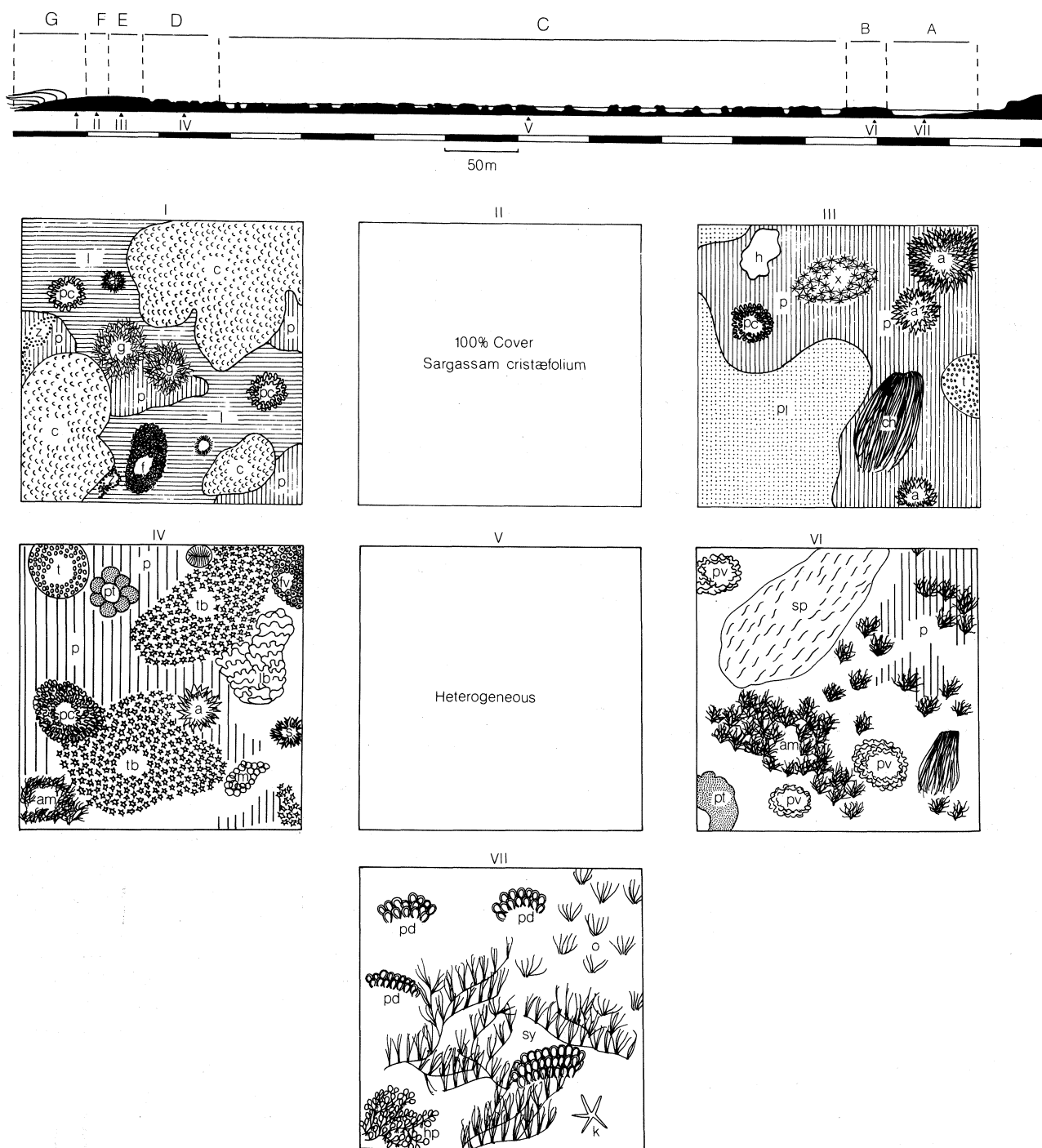


Fig. 4. Transect across fringing reef at Votualailai, south Viti Levu. For details see text. a = *Acropora* sp., am = *Amphiroa* sp., C = *Caulerpa peltata*, ch = *Chlorodesmis* sp., f = *Favia fava*, fv = *Favites* sp., g = *Galaxea fascicularis*, h = halichondrine sponges, hp = *Halophila ovalis*, k = *Linkia laevigata*, l = *Lithophyllum* sp., lb = *Lobophyton* sp., m = *Halimeda opuntia*, o = *Ophiocolina scolopendrina*, p = *Porolithon* sp., pc = *Pocillopora verrucosa*, pd = *Padina* sp., pl = *Palythoa* sp., pt = *Porites* sp., pv = *Pavona* sp., s = *Seriatopora caliendrum*, sp = grey leathery sponge, sy = *Syringodium isoetifolium*, t = *Tubipora musica*, tb = *Turbinaria turbinata*, x = *Xenia* sp., z = *Zoanthus* sp.

herein is, therefore, to include short descriptions to facilitate the slotting-in of newly discovered taxa in Fiji, and also to provide sufficient information on Fijian taxa to enable taxonomists in the general Indo-Pacific arena to compare extrinsic taxa with those in Fiji.

The names of new taxa proposed in the work are

variously derived. In some cases they are adjectival, but often stand as nouns based on Fijian places or regions, or at least have Fijian roots. They are chosen partly for euphonious reasons and partly to avoid homonyms when future phylogenetic studies dictate classificatory upheaval.

**Table 4.** N<sup>o</sup>/m<sup>2</sup> amphipods collected from stations 1-7 (zones G-A) at Votualailai fringing reef (see Fig. 4).

Species	Stations						
	7	6	5	4	3	2	1
<i>Elasmopus lapu</i>							540
<i>Lelehua malevua</i>							350
<i>Paragrubia vorax</i>							30
<i>Elasmopus spinidactylus</i>				20		7	1470
<i>Podocerus hanapepe</i>					10	180	180
<i>Maera pacifica</i>				20		3	120
<i>Amphilocheus menehune</i>				40		30	30
<i>Hyalae galataeae distorta</i>				1570		230	70
<i>Pleonexes kaneohe navosa</i>	73	17	87	1440	40	230	630
<i>Peramphithoe orientalis</i>				27		300	
<i>Stenothoe kaia</i>				50		60	
<i>Biancolina algicola</i>				10		10	
<i>Cymadusa lunata</i>	630	420	203	150		20	
<i>Amphithoe kuala</i>				23			
<i>Maera serrata</i>				10			
<i>Amphithoe kava</i>	3	27	37	463			
<i>Mallacoota insignis</i>		760	27	33			

**Table 4.** Continued.

Species	Stations						
	7	6	5	4	3	2	1
<i>Maera quadrimana</i>		880	310				
<i>Podocerus talegus levuensis</i>		180					
<i>Pereionotus alaniphlias</i>	80						
TOTAL:	786	2284	664	3856	50	1070	3420

**Table 5.** % dominance of families of gammarideans at seven stations at Votualailai reef (see Fig. 4).

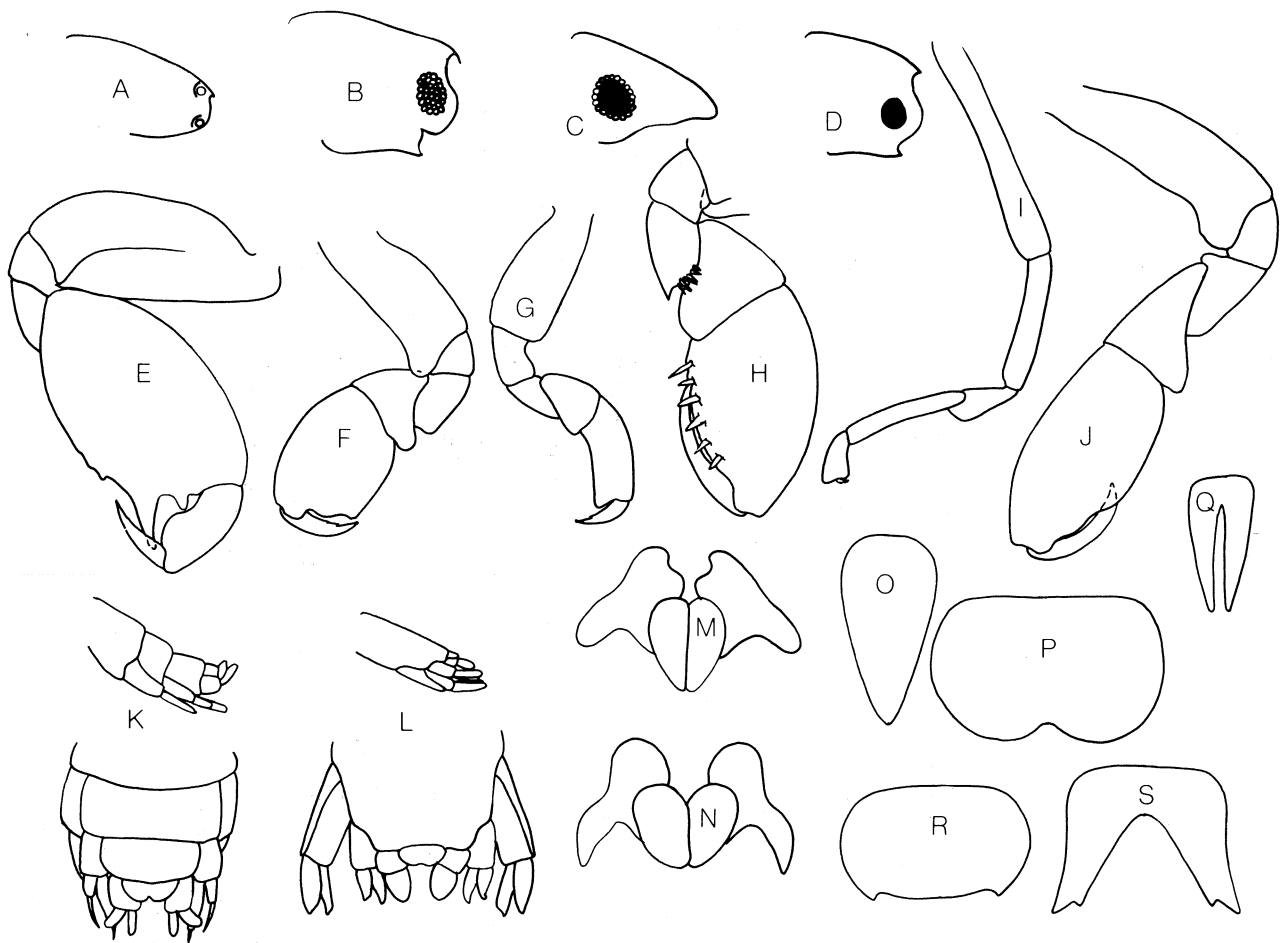
Families	Stations						
	1	2	3	4	5	6	7
Amphithoidae	19	52	80	55	49	20	90
Dulichidae	5	17	20	0	0	8	0
Hyalidae	12	21	0	41	0	0	0
Melitidae	63	1	0	2	51	72	0
Phliantidae	0	0	0	0	0	0	10

**Key to Families of Fijian Gammaridea**

Fig. 5

1. Eyes composed of two pairs of cuticular lenses. . . . . Ampeliscidae
- Eyes composed of one, rarely two pairs of ommatidial lenses. . . . . 2
2. Telson entire, emarginate or notched. . . . . 3
- Telson cleft. . . . . 22
3. Coxa 1 much smaller (both shallower and narrower) than coxa 2, or absent. . . . . 4
- Coxa 1 not markedly smaller than coxa 2. . . . . 7
4. Coxa 4 enormous, sheild-like, not excavate posteriorly. . . . . Stenothoidae
- Coxa 4 variable, if large then excavate posteriorly. . . . . 5
5. Gnathopod 1 carpochele or absent. . . . . Anamixidae
- Gnathopod 1 subchele. . . . . 6
6. Gnathopod 1 propodus broad, longer than carpus. . . . . Amphilocheidae
- Gnathopod 1 propodus narrow, shorter than or subequal to carpus. . . . . (Ochlesidae)
7. Gnathopod 2 ischium, very elongate. . . . . Lysianassidae
- Gnathopod 2 ischium not very elongate. . . . . 8
8. Telson plate-like. . . . . 9
- Telson fleshy, dorsoventrally thickened. . . . . 14
9. Gnathopod 1 carpochele. . . . . Leucothoidae
- Gnathopod 1 subchele. . . . . 10
10. Gnathopod 1 extremely elongate; dactylus absent. . . . . Colomastigidae
- Gnathopod 1 not extremely elongate; dactylus present. . . . . 11
11. Pereopod 7 very elongate; dactylus straight. . . . . 12
- Pereopod 7 not very elongate; dactylus unguiform. . . . . 13
12. Urosomites 2-3 fused. . . . . Paracalliopidae
- Urosomites 2-3 free. . . . . (Oedicerotidae)

13. Antenna 1 much shorter than peduncle of antenna 2. . . . . Talitridae  
 —Antenna 1 much longer than peduncle of antenna 2. . . . . (Pleustidae)
14. Urosomites 1-2 or 1-3 fused. . . . . 15  
 —Urosomites freely articulating. . . . . 17
15. Uropods 1 and 2 radically dissimilar. . . . . (Cheluridae)  
 —Uropods 1 and 2 similar. . . . . 16
16. Urosomites 1 and 2 fused. . . . . Isaeidae (*Chevalia*)  
 —Urosomites 1-3 fused. . . . . Corophiidae
17. Urosomite 1 elongate, more than twice length of urosomite 2. . . . . Dulichiidae  
 —Urosomite 1 not elongate, less than twice length of urosomite 2. . . . . 18
18. Gnathopods slender, parachelate. . . . . Biancolinidae  
 —Gnathopod 1 or 2, or both enlarged, complexly subchelate. . . . . 19
19. Uropod 3 biramous; rami with toothed tips or denticles or recurved spines. . . . . 20  
 —Uropod 3 biramous or uniramous; rami without hooked tips or denticles or  
 recurved spines. . . . . 21
20. Labium, anterior lobes notched or medially excavate. . . . . Amphithoidae  
 —Labium, anterior lobes unnotched or unexcavate. . . . . Ischyroceridae
21. Eye lobes strongly produced; head deeply recessed at insertion point of  
 antenna 2. . . . . Isaeidae  
 —Eye lobes not strongly produced; head only moderately recessed at insertion  
 point of antenna 2. . . . . Aoridae
22. Body dorsally depressed but not cylindrical; at least anterior coxae splayed  
 . . . . . Phliantidae  
 —Body not markedly dorsally depressed, but may be cylindrical; coxae not  
 splayed. . . . . 23
23. Head elongate with overhanging rostrum; pereopod 7 shorter than pereopod  
 6. . . . . Phoxocephalidae  
 —Head not elongate with, at most, a small rostrum; pereopod 7 longer than  
 pereopod 6. . . . . 24
24. Gnathopods 1-2 with large, subsimilar raptorial propodus. . . . . 25  
 —Gnathopods 1-2 feeble or, if enlarged, gnathopod 2 distinctly larger than  
 gnathopod 1. . . . . 26
25. Accessory flagellum vestigial; gnathopod palms with simple spines. . . . . Eusiridae  
 —Accessory flagellum with multi-articulate flagellum; gnathopod palms with  
 spines of more than one kind, some complexly branched. . . . . (Liljeborgiidae)
26. Body subcylindrical. . . . . Eophliantidae  
 —Body not subcylindrical. . . . . 27
27. Uropod 3 uniramous. . . . . Hyalidae  
 —Uropod 3 biramous. . . . . 28
28. Urosomites 2 and 3 coalesced. . . . . Dexaminidae  
 —Urosomites 2 and 3 freely articulating. . . . . Melitidae



**Fig. 5.** Terminology used in family key. A-D, heads: A, with cuticular eyes; B, with ommatideal eyes; C, with rostrum; D, without rostrum. E-J, gnathopods: E, carpochebate; F, subchebate; G, parachebate; H, raptorial; I, with elongate ischium; J, with normal ischium. K-L, urosomes: K, articulated; L, fused. M-N, labium: M, outer plate excavate; N, outer plate unexcavate. O-S, telsons: O, entire; P, notched; Q, cleft; R, emarginate; S, cleft and divergent.

## SYSTEMATIC SECTION

### Family Ampeliscidae

Ampeliscids are characterised by the elongate head bearing two pairs of small corneal lenses, coalesced urosome segments 2 and 3 and characteristic pereopods 6 and 7, pereopod 7 being shorter than 6 and of different morphology.

Ampeliscidae are tube-building amphipods found on sand and mud bottoms. They are therefore only rarely collected on coral reefs, usually on reef flats among phanerogams. Only one genus and two species are recorded from Fiji, but the family might be expected to be more diverse in sandy biotopes not systematically sampled in the present work.

### Key to Species of *Ampelisca*

1. Pereopod 7 propodus ovoid; dactylus swollen basally, slender distally; large species (to 6 mm). . . . . *A. melanesiensis*
- Pereopod 7 propodus parallel-sided; dactylus subovoid; small species (to 2.5 mm). . . . . *A. pygmaea*

### *Ampelisca melanesiensis* n.sp.

Fig. 6

*Ampelisca australis*.—Schellenberg, 1938:6, fig. 2 (not *A. australis* Haswell, 1879: 257, pl. 9 fig. 1).

**Type-material.** HOLOTYPE, ♀, 4.0 mm, AM P35173, 3 ♀

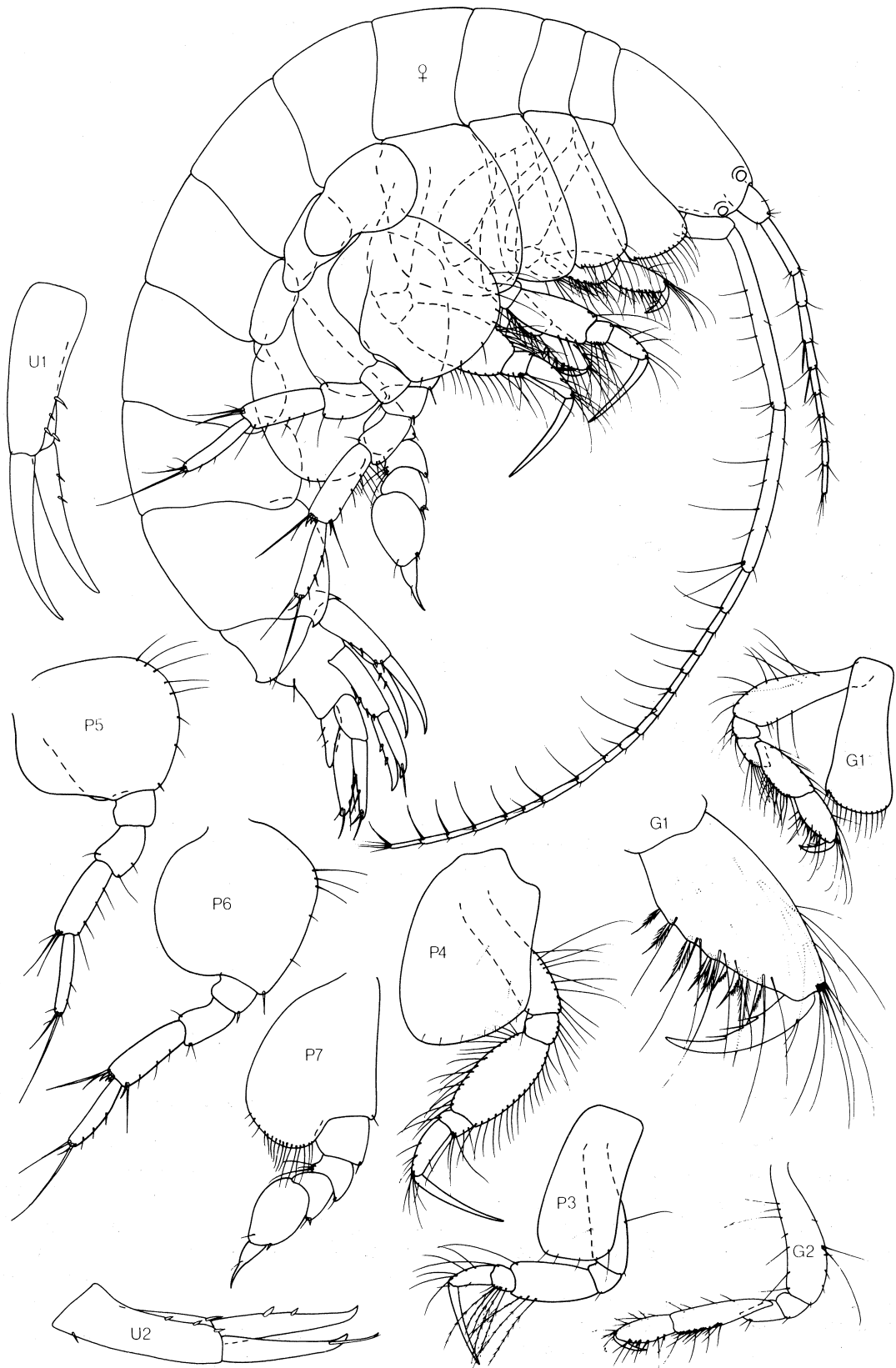


Fig. 6. *Ampelisca melanesiensis* n. sp., ♀ 6.0 mm, Suva Point.

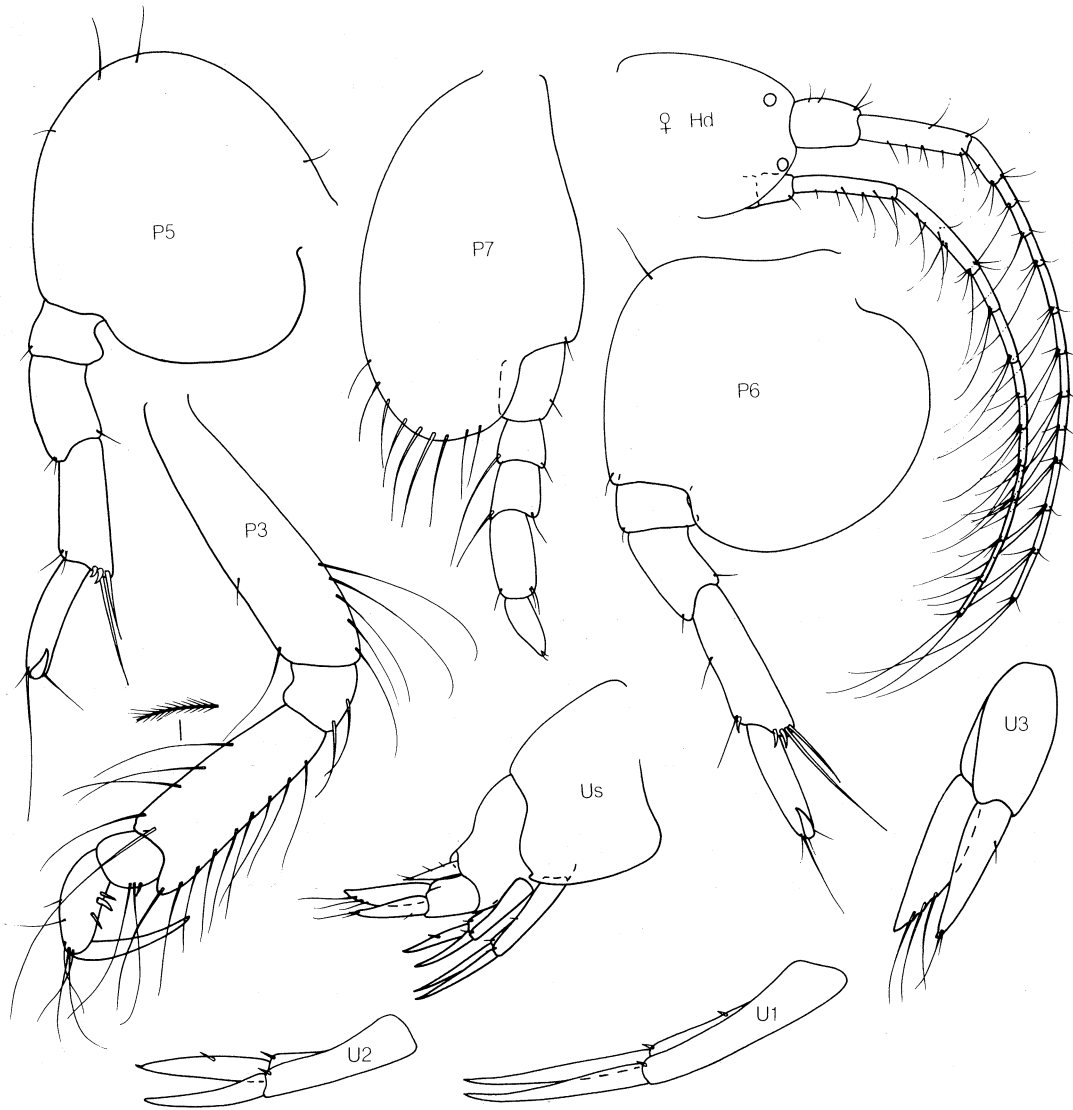


Fig. 7. *Ampelisca pygmaea* Schellenberg, ♀ 2.5 mm, Mburelevu.

PARATYPES, AM P35174, 2 ♂ PARATYPES AC, Suva Point, Viti Levu, Fiji, 29 August 1979, stn 36, in *Halophila ovata* growing on sand among *Rhizophora stylosa* at seaward fringe of mangals.

**Additional material examined.** Stn 33 (2)AC; stn 37 (1)AM P35357; stn 48 (1)AC.

**Description.** Length, 6.0 mm. Head obliquely truncate, 2 pairs of corneal lenses. Antenna 1 in female shorter and in male longer than peduncle of antenna 2; flagellum in female with 7–8 articles, in male with up to 14 articles. Antenna 2 in female shorter than body, in male as long as body; flagellum in female with 16–17 articles, in male with up to 30 articles. Gnathopod 1, propodus subovoid. Gnathopod 2, pereopods 3–4 typical. Pereopods 5 and 6, basis dilated. Pereopod 7, basis dilated with lobe not extending beyond distal margin of ischium; propodus expanded, ovoid; dactylus swollen basally, very narrow distally. Urosome segment

1, dorsal margin with shallow excavation and distal elevation, triangular (when viewed laterally) in female, truncated in male. Epimeron 3 with distinct, acute, posterodistal tooth. Uropod 1, peduncle subequal to rami, outer ramus lacking spines. Uropod 2, peduncle subequal to inner ramus, inner ramus with marginal spines, outer ramus with single, long, subterminal spine. Uropod 3, rami with slender spines.

**Remarks.** *Ampelisca melanesiensis* is close to *A. monodi* Ledoyer (1979), but differs in the shape of the basis of pereopod 7. It is readily distinguished from *A. pygmaea* by the shape of the propodus and dactylus of pereopod 7.

**Fijian localities.** Mbau (Schellenberg, 1938), Suva, Mburelevu, Nananui Ra.

**Distribution.** Fiji, Bismark Archipelago.

**Habitat.** Builds tubes in sandy or sandy mud substrates.

*Ampelisca pygmaea* Schellenberg

Fig. 7

*Ampelisca pygmaea* Schellenberg, 1938: 10, fig. 4.**Material examined.** Stn 35 (1)AC.

**Description** (female). Length, 2.5 mm. Head obliquely truncate; 2 pairs of corneal lenses. Antennae 1 and 2 subequal, about half body length. Antenna 1, flagellum with 12 articles. Antenna 2, flagellum with 10 articles. Gnathopods typical. Pereopod 3, merus parallel-sided; propodus posterior margin with 3 stout spines. Pereopods 5–6, basis dilated. Pereopod 7, basis dilated with lobe extending a little beyond margin of ischium; propodus parallel-sided; dactylus swollen, sub-ovoid. Urosome segment 1, dorsal margin evenly convex. Epimeron 3 with distinct, acute, postero-distal tooth. Uropod 1, peduncle a little longer than rami, which lack spines. Uropod 2, peduncle distinctly longer

than rami, inner ramus with one marginal spine. Uropod 3, rami with long setae.

Male unknown.

**Remarks.** This species is readily distinguished from *A. melanesiensis* by the parallel-sided propodus and subovoid dactylus of pereopod 7. It is also very much smaller (2.5 mm). In view of the high diversity of this genus and the great uniformity of the species, the allocation of material from Mauritius (Ledoyer, 1978) to this species must remain questionable. Mauritius material differs somewhat from *A. pygmaea* in the shape of the basis of pereopod 7, the shape of epimeron 3, and in having many more articles to both antennae.

**Type-locality.** Mbau, Viti Levu, Fiji.**Fijian locality.** Mburelevu.**Distribution.** Fiji.**Habitat.** Among coral rubble.**Family Amphilochidae**

Amphilochids are very small amphipods, in Fiji ranging from 0.9 mm to 3.2 mm. Characteristic features are: a reduced coxa 1 and sometimes also coxa 2, enlarged coxa 4 and sometimes enormously enlarged coxa 3, biramous uropod 3 with very elongate peduncle, short uropod 2 (by comparison with uropods 1 and 3), and not least by a conspicuous rostrum.

Leucothoids and anamixids, which resemble amphilochids in many ways, differ in the very different structure of the gnathopods and, in the case of *Paranamixis*, in lacking gnathopod 1. Cyproidean amphilochids (*Moolapheonoides*), on account of their enormously enlarged coxae 3–4, resemble Stenothoidae but can be distinguished by their biramous uropod 3.

The ecology of amphilochids is little known, but they appear to be 'slime-lappers'. Barnard (1970) has suggested the possibility that they feed on mucous exuded by madreporarian corals.

**Key to Genera**

1. Coxae 3–5 immensely enlarged with contiguous margins scarcely overlapping; coxae 1–2 vestigial. . . . . *Moolapheonoides*
- Coxae 3–4 not immensely enlarged, with contiguous margins overlapping; coxae 1–2 normal. . . . . 2
2. Mandibular molar weakly tritulative, conical; maxilla 1, palps 1–2 articulate. . . . . *Amphilochus*
- Mandibular molar strongly tritulative, cushion-shaped; maxilla 1, palp with one article. . . . . 3
3. Gnathopod 2 small, nearly simple. . . . . *Gitana*
- Gnathopod 2 large, subchelate. . . . . *Gitanopsis*

*Amphilochus menehune* Barnard

Fig. 8

*Amphilochus menehune* Barnard, 1970: 33, figs 5, 6.

**Material examined.** Stn 6 (4)AM P3536; stn 9 (1)AM P35313; stn 12 (2)AC; stn 13 (3)AC; stn 14 (1)AC; stn 27 (1)AC; stn 30 (2)AM P35348; stn 36 (2)AC; stn 41 (10)AC; stn 53 (8)AC.

**Description.** Length, 3.2 mm. Colour, highly variable, often white, or white with brown chromatophores, occasionally rusty brown on pereon, coxae, gnathopods and anterior pereopods. Head with lateral cephalic lobe rounded. Mandible molar weakly tritulative, conical; palp with three articles. Maxilliped

palp stout. Maxilla 1, palp composed of two articles. Antenna 1 extending only a little beyond peduncle of antenna 2. Gnathopod 1, coxa small with distal notch; carpus with lobe at posterodistal corner reaching about half way along posterior margin of propodus; palm of propodus strongly serrulate. Gnathopod 2, carpus with long, slender lobe at posterodistal corner, reaching along almost entire length of posterior margin of propodus; anterodistal margin of propodus obtuse, palm strongly serrulate; dactylus slender, posterior margin pectinate. Pereopods 3–7 slender, dactylus simple. Uropod 2, outer ramus a little more than half length of peduncle. Telson apically rounded.



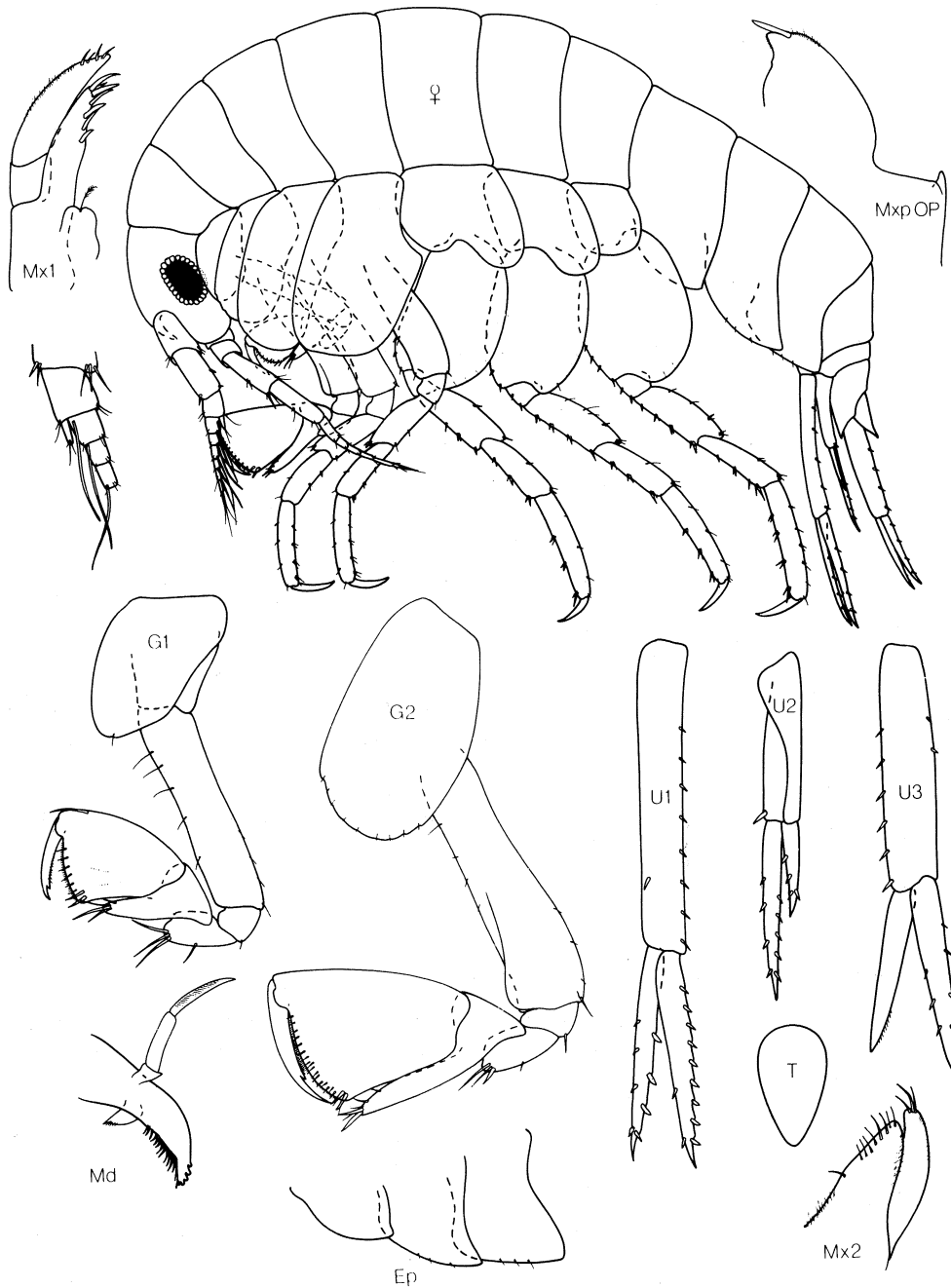


Fig. 8. *Amphilocheus menehune* Barnard, ♀ 3.1 mm, Nananui Ra.

**Remarks.** This species is very close to *Gitanogeiton tropicus* Rabindranath (1972a) from which it differs in having a 2-articulate maxilla 1 palp. The genus *Amphilocheus* might be expected to be more diverse in Fiji, and further species may be found in specialised habitats. Material of this genus should therefore be scrutinised carefully.

**Type-locality.** Off Ewa Beach, Oahu, Hawaii.

**Fijian localities.** Votualilai, Nukumbutho Island, Nananui Ra, Taunovo Bay, Suva.

**Distribution.** Fiji, Hawaii.

**Habitat.** Amongst *Sargassum cristaefolium*, *Turbinaria*, *Halimeda*, *Syringodium*, sponges and *Pocillopora*.

**Key to Species of *Gitana***

1. Posterodistal margin of pereon segment 7 produced into a rounded lobe on each side; pereopods 3-7 normal. . . . . *G. bilobata*
- Posterodistal margin of pereon segment 7 unproduced; pereopods 3-7 very elongate and slender. . . . . *G. gracilis*

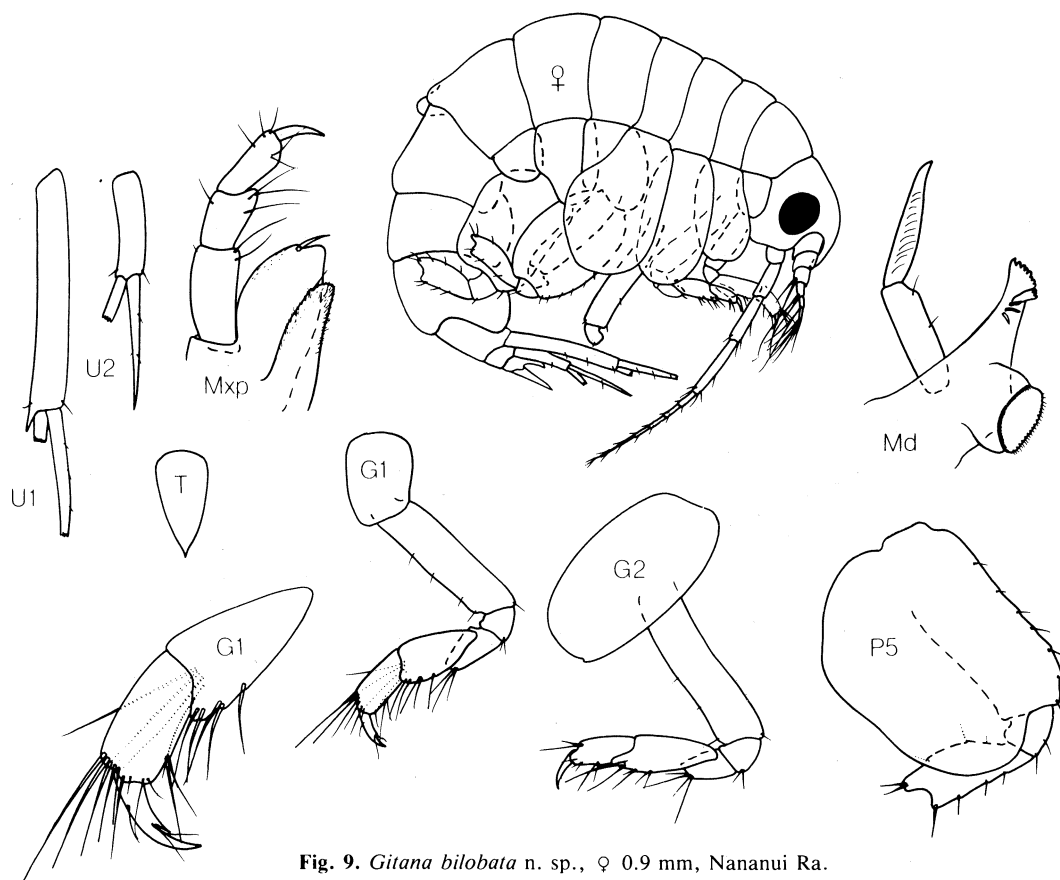


Fig. 9. *Gitana bilobata* n. sp., ♀ 0.9 mm, Nananui Ra.

***Gitana bilobata* n.sp.**

Fig. 9

**Type-material.** HOLOTYPE, ♀, 0.9 mm, AM P35173, Nananui Ra, Viti Levu, Fiji, 7 October 1979, stn 55, in coral rubble from lagoon.

**Description.** Length, ♀ ovigerous 0.9 mm. Colour, white. Head with lateral cephalic lobe weakly angular. Pereon segments 6 and 7 swollen; posterodorsal margin of pereon segment 7 produced into a rounded lobe on each side. Mandibular molar strongly triturtative; palp with 2 articles. Maxilliped palp slender; article 1 the longest. Antenna 1, peduncular articles 1-3 of almost equal length; flagellum subequal to peduncle with numerous long aesthetascs; antenna 1 much shorter than peduncle of antenna 2. Gnathopod 1, carpus a little longer than propodus, produced into a weak posterodistal lobe; propodus slender, palm almost obsolete. Gnathopod 2, carpus much longer than propodus, produced into a posterodistal lobe reaching along one-third length of posterior margin of propodus; propodus slender, palm scarcely distinct. Pereopod 5, basis subrectangular, lobe on posterior margin smoothly rounded. Pereopod 6, basis with very well developed flange on posterior margin. Pereopods 3, 4 and 7 missing; pereopods 5 and 6 broken at merus. Uropods

1-2 damaged; uropod 3 missing. Telson apically acute.

**Remarks.** This species agrees well with the description of *G. liliuokalaniae* Barnard from Hawaii. Barnard, however, makes no mention of the peculiarly bilobed dorsal margin of pereon segment 7. Both Barnard's species and the present one are represented by single specimens and are, for the moment, considered distinct from one another.

**Fijian locality.** Nananui Ra.

**Distribution.** Fiji.

**Habitat.** Interstitial among coral rubble.

***Gitana gracilis* n.sp.**

Fig. 10

**Type-material.** HOLOTYPE, ♀, 1.5 mm, AM P35175, 1 ♂ PARATYPE, AC, Taunovo Bay, Viti Levu, Fiji, 21 August 1979, stn 27, *Syringodium isoetifolium* on reef flat.

**Additional material examined.** Stn 29 (1)AC; stn 53 (1)AC.

**Description.** Length, 1.5 mm. Colour, white. Head with lateral cephalic lobe weakly angular. Mandibular molar strongly triturtative; palp with 2 articles. Maxilliped palp slender, article 3 the longest. Antenna 1, articles 1-2 swollen, flagellum shorter than peduncle, with numerous long aesthetascs; antenna 1 shorter than

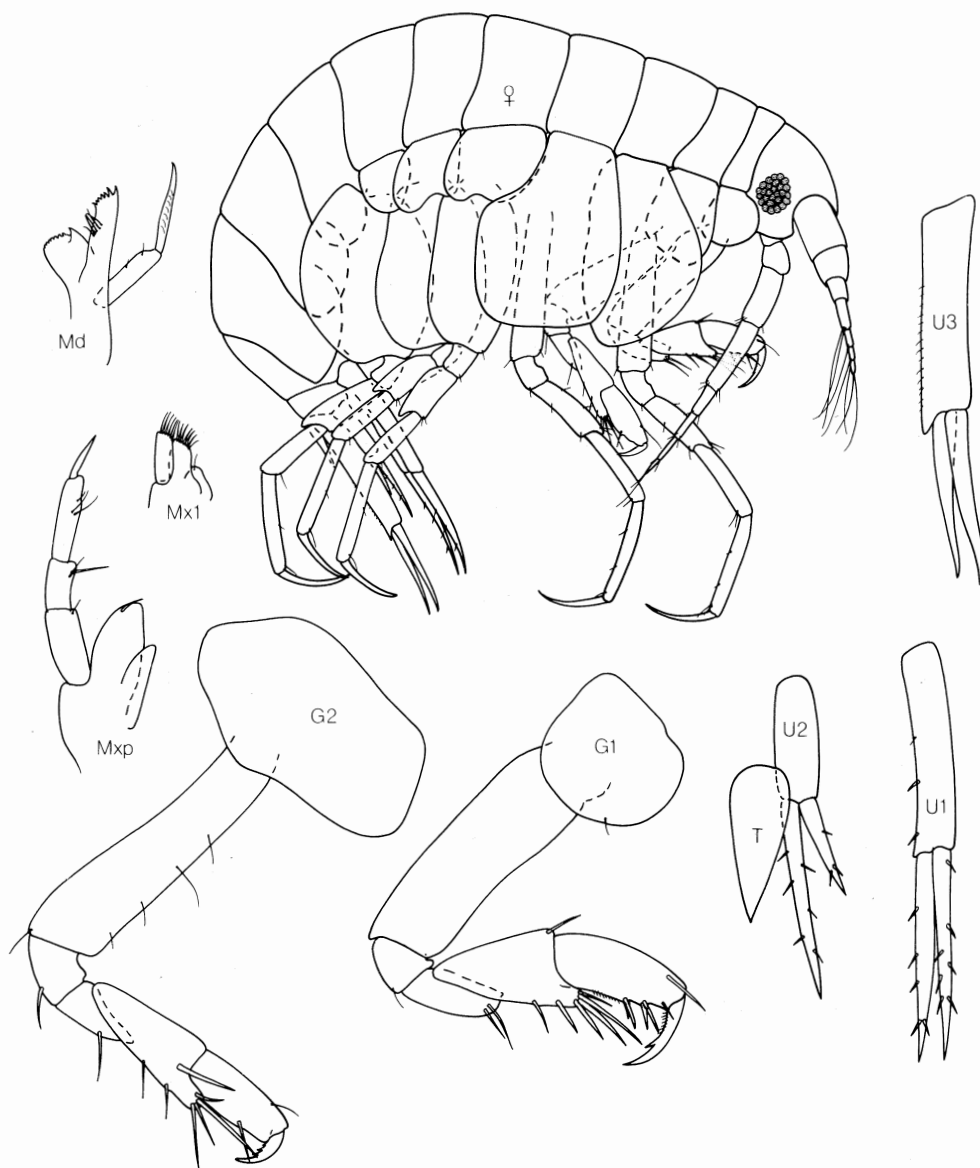


Fig. 10. *Gitana gracilis* n. sp., ♀ 1.3 mm, Taunovo Bay.

peduncle of antenna 2. Gnathopod 1, carpus only a little shorter than propodus, produced into a weak posterodistal lobe; propodus slender, palm almost obsolete. Gnathopod 2, carpus slightly longer than propodus, produced into a posterodistal lobe reaching along one-third length of posterior margin of propodus; propodus slender, palm short but distinct. Pereopods 3–7 very elongate and slender. Pereopod 5, basis subrectangular. Pereopod 6, basis with well developed flange on posterior margin, its margin approximately straight. Pereopod 7 with well developed, strongly convex flange on posterior margin. Uropod 2, outer ramus about three-quarters length of peduncle. Telson apically acute.

**Remarks.** This species is readily distinguished from *G. bilobata* by its smooth pereon segments and long slender pereopods. *Gitana* is principally an arctic-boreal genus, being known from the Pacific (outside Fiji) by

only two other species: *G. calitemplado* Barnard from California, and *G. liliuokalaniae* Barnard from Hawaii. *Gitana gracilis* differs from both these species in the elongate pereopods 3–7, and from *G. calitemplado* by the elongate carpus of gnathopods 1–2.

**Fijian localities.** Taunovo Bay, Nananui Ra.

**Distribution.** Fiji.

**Habitat.** Amongst coral debris, *Halimeda* and *Syringodium*.

#### *Gitanopsis tai* n.sp.

Fig. 11

**Type-material.** HOLOTYPE, ♂, 1.7 mm, AM P35177, 3 ♂ 5 ♀ PARATYPES, AM P35178, 3 ♂ 11 ♀ PARATYPES, AC, Makuluva Island, Viti Levu, Fiji, 13 August 1979, stn 26, coral debris from reef crest.

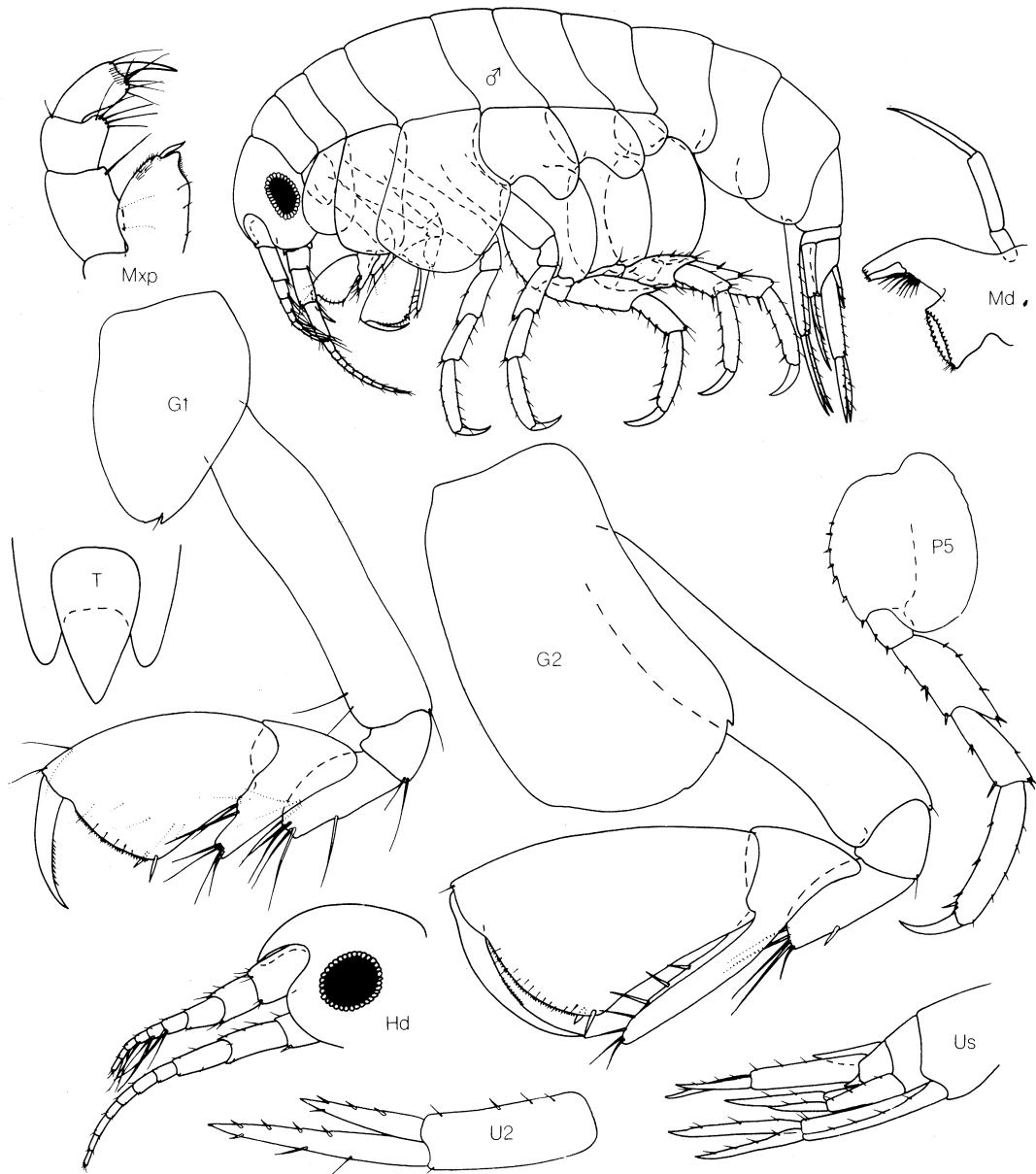


Fig. 11. *Gitanopsis tai* n. sp., ♂ 2.5 mm, Makuluva Island.

**Additional material examined.** Stn 21 (2)AC; stn 23 (1)AC; stn 27 (1)AC; stn 48 (1)AC.

**Description.** Length, 2.5 mm. Head with lateral lobe rounded. Mandibular molar strongly tritritative, cushion-shaped; palp with three articles. Maxilliped stout. Antenna 1 extending only a little beyond peduncle of antenna 2. Gnathopod 1, coxa small, with distal notch; carpus with lobe at posterodistal corner reaching about half way along posterior margin of propodus. Gnathopod 2, carpus with long, slender lobe at posterodistal corner reaching along entire length of posterior margin of propodus; anterodistal margin of propodus obtuse; dactylus slender, posterior margin medially pectinate; coxa, propodus ratio 4:3. Pereopods 3-7 slender; dactylus simple. Epimera 1-3 rounded.

Uropod 2, outer ramus two-thirds length of peduncle. Telson apically subacute, over half length of peduncle of uropod 3.

**Remarks.** As the only known Fijian member of the genus, this species can readily be identified by the combination of generic characters given in the key to genera (contiguous coxae, strongly tritritative molar, 1-articulate maxilla 1 palp and large subchelate gnathopod 2).

*Gitanopsis tai* closely resembles *G. pusilla* Barnard, but differs in the longer telson (over half length of uropod 3 peduncle in *G. tai* but less than half length of uropod 3 peduncle in *G. pusilla*). *Gitanopsis pusilla* is known only from South Africa and the South Atlantic islands. *Gitanopsis tai* also resembles the more widely

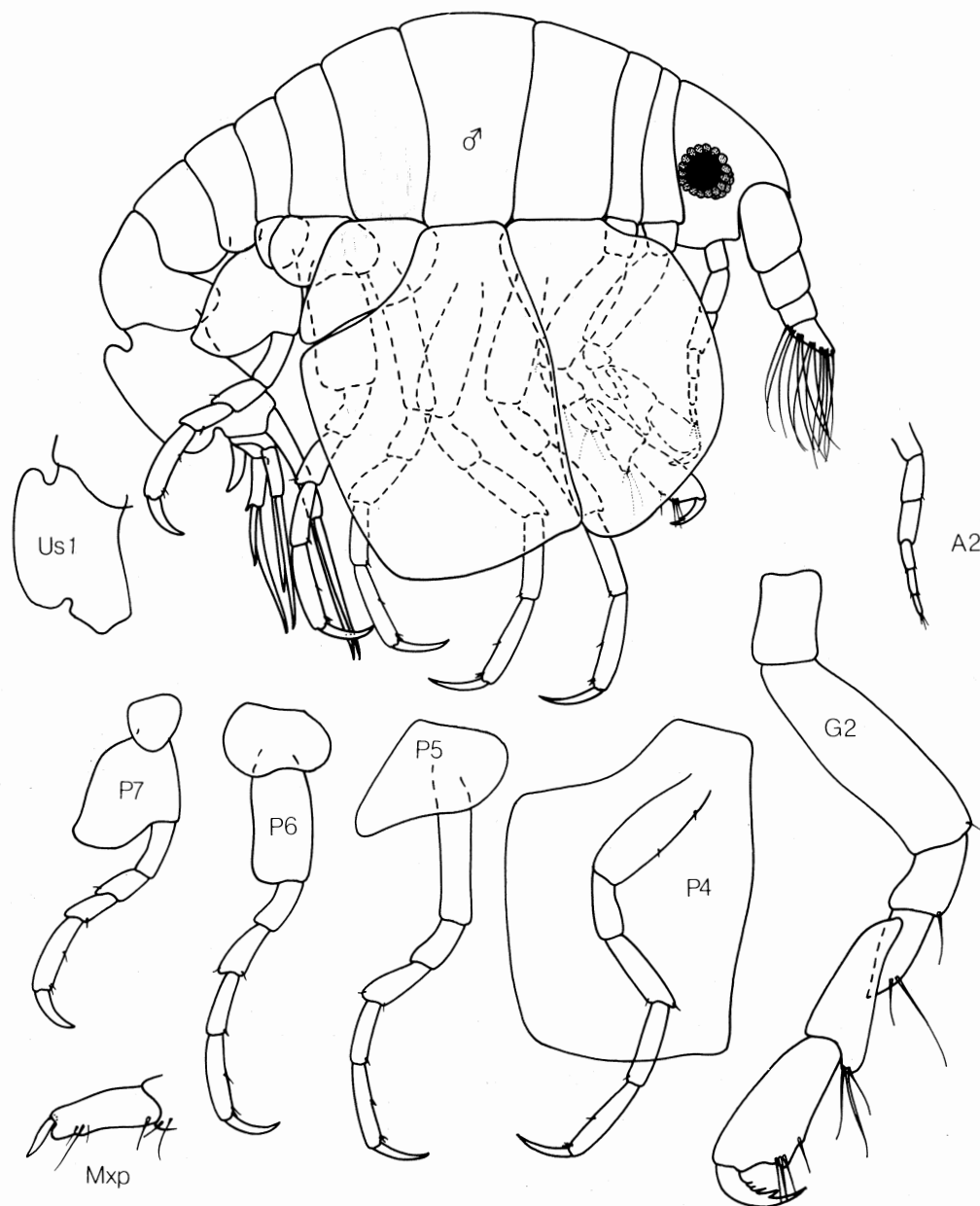


Fig. 12. *Moolapheonoides coccoo serua* n. sp., ♂ 1.2 mm, Mburelevu.

distributed Indo-Pacific species *G. pele*, but differs in the much larger propodus of gnathopod 2 (three-quarters length of coxa 2 in *G. tai* but much less than half length of coxa 2 in *G. pele*).

**Fijian localities.** Malevu, Taunovo Bay, Makuluva Island, Nananui Ra.

**Distribution.** Fiji.

**Habitat.** Amongst *Sargassum*, *Syringodium*, mixed red algae and coral debris.

***Moolapheonoides coccoo serua* n. subsp.**

Fig. 12

**Type-material.** HOLOTYPE, 1.2 mm, AM P35179, Mburelevu, Viti Levu, Fiji, 25 August 1979, stn 31, in living *Acropora* sp. on reef flat.

**Description.** Length, 1.2 mm. Colour, whitish. Head with lateral cephalic lobe narrow, unevenly truncatoconcave. Antennae 1 and 2 subequal in length. Antenna 1 stout; flagellum with numerous aesthetascs. Antenna 2 slender. Gnathopod 1 a little smaller than gnathopod 2. Gnathopod 2, propodus palm unevenly excavate, with a defining process, three defining setae and a further posterior marginal seta; dactylus strongly toothed on posterior margin. Pereopods 3-4, basis with few short setae on anterior margin. Pereopod 7, basis with well developed posterior flange, broadest distally. Pereopods 5-7, ischium elongate. Urosomite 1 with truncatoconvex keel.

**Remarks.** Fijian material differs from the nominate form (*M. coccoo* Barnard, 1974) in the weakly

setiferous pereopods 3-4 (equals pereopods 1-2 in Barnard's terminology) and in the slightly different shape of the pereopod 7 basis. At present this is the only known cyproidean amphilochid from Fijian waters and is thus easily recognisable.

**Fijian locality.** Mburelevu.

**Distribution.** Fiji. Nominata subsp. Hawaii (Barnard, 1974: 8, fig. 4).

**Habitat.** Amongst *Acropora*.

### Family Amphithoidae\*

Amphithoids are corophioidean amphipods and consequently have a fleshy telson and glandular pereopods 3-4. They are characterised by a notched or excavate anterior margin on the labium outer plate, and by a pair (in Fijian species) of recurved spines on the uropod 3 outer ramus. The rami of uropod 3 are shorter than the peduncle and tend to be subovoid in shape. They resemble ischyrocerids in the hooked uropod 3, but in that family the rami are more elongate and have only a single hook or a curved distal end with tiny denticles.

Almost all amphithoids build parchment tubes among algae or phanerogams. Some of the largest Fijian amphipods belong in this family (notably *Cymadusa*). The genera *Amphithoe* and *Cymadusa* are artificially separated on a single character: the presence or absence of an accessory flagellum. There seems to be no valid phylogenetic reason for such a division, but as it is at present universally used, it is retained here.

### Key to Genera

1. Gnathopod 1 larger than gnathopod 2 in both sexes. . . . . *Paragrubia*  
 — Gnathopod 1 smaller than or equal to gnathopod 2 in both sexes. . . . . 2
2. Antenna 1 with accessory flagellum. . . . . *Cymadusa*  
 — Antenna 1 lacking accessory flagellum. . . . . 3
3. ♂ gnathopod 2, propodus with well developed tooth on posterior margin.  
 . . . . . *Amphithoe*  
 — ♂ gnathopod 2, propodus lacking tooth. . . . . 4
4. Gnathopod 1, palm transverse. . . . . *Peramphithoe*  
 — Gnathopod 1, palm oblique. . . . . *Pleonexes*

### Key to Species of *Amphithoe*

1. ♂ gnathopod 2, basis with long setae on anterior margin; length of propodus equals 5 times length of carpus. . . . . *A. hirsuta*  
 — ♂ gnathopod 2, basis lacking long setae on anterior margin; length of propodus equals 2 times or less length of carpus. . . . . 3
2. Antenna 2, flagellum shorter than peduncular article 5; pereopods 5-6 with characteristic blunt, striate locking spines (fig. 15). . . . . *A. kava*  
 — Antenna 2, flagellum much longer than peduncular article 5; pereopods 5-6 with simple, acute locking spines. . . . . 4
3. ♂ gnathopod 2, propodus anterodistal margin markedly swollen, posterior margin with short, rounded tooth separated from palm by broad, triangular excavation; pereopods 3-4, article 5 elongate, 2 times as long as broad.  
 . . . . . *A. ramondi*  
 — ♂ gnathopod 2, propodus anterodistal margin not markedly swollen, posterior margin with long, acute, or truncate tooth, separated from palm by narrow incision; pereopods 3-4, article 5 short, length equal to breadth.  
 . . . . . *A. kuala*

\* Following Krapp-Schickel, 1978, the philologically better spelling, '*Amphithoe*', is preferred to the commonly used spelling, '*Ampithoe*'.

*Amphithoe hirsuta* Ledoyer

Figs 13–14

*Amphithoe pollex hirsutus* Ledoyer, 1978: 220, fig. 8.**Material examined.** Stn 26 (1)AM P35333, (8)AC.

**Description.** Length, 2.5 mm. Antenna 2 slender, rather short, strongly setose; flagellum longer than very abbreviated peduncle. Mandibular palp articles in the ratios 9:18:7; article 3 rod-shaped with three terminal setae. Gnathopod 1, basis with anterodistal lobe; carpus posterodistal margin scarcely produced, evenly rounded; propodus subrectangular, one and a half times length of carpus and about one and a half times as long as broad, palm evenly rounded. Male gnathopod 2, basis slender, almost three times as long as broad, anterior margin straight or weakly convex with a series of very long setae; ischium elongate; carpus extremely reduced; propodus five times length of carpus, posterior distal margin produced into a very long, inward curved, acute tooth, separated from the almost obsolete palm by a deep, triangular excavation, anterior margin of propodus and posterior margin of tooth with very long setae; dactylus falciform about half length of propodus. Female gnathopod 2, propodus slightly less than twice length of carpus and one and a half times longer than broad, palm oblique, evenly convex; dactylus slightly overlapping palm. Pereopods 3–4, articles 5 and 6 subequal. Pereopod 5, basis about as broad as long. Pereopods 5–7, propodus with three spines, the central one recurved. Uropod 1, peduncle with stout, spine-like distoventral interramal process. Uropod 2 with vestigial interramal process. Uropod 3, outer ramus with proximal spine, only moderately recurved. Telson apically pointed.

**Remarks.** *Amphithoe hirsuta* can scarcely be confused with any other currently known Fijian species. The species was first described by Ledoyer from Mauritius but allocated to a subspecies of *A. pollex* Kunkel. It differs from that species in rather a large number of characters, notably: antenna 2 has peduncular articles 3–4 short, and hence antenna 2 shorter than 1 in *A. hirsuta*, whereas in *A. pollex*, peduncular articles 3–4 are elongate and hence antenna 2 is longer than antenna 1; gnathopod 1 in the male of *A. hirsuta* bears long setae on the anterior margin of the basis, but no such setae occur in *A. pollex*; uropod 1, peduncle bears a strong distoventral interramal process in *A. hirsuta* which is lacking in *A. pollex*. There seems little doubt that *A. hirsuta* requires specific rank.

**Type-locality.** Trou aux Biches reef, Mauritius.**Fijian locality.** Makuluva Island.**Distribution.** Mauritius, Fiji.**Habitat.** Among coral debris on reef crest.*Amphithoe kava* n.sp.

Fig. 15

*Amphithoe ramondi*.—Barnard, 1970: 50, figs 18–19 (not *Amphithoe ramondi* Audouin, 1826: 93).**Type-material.** HOLOTYPE, ♂, 3.5 mm, AM P35180, 10 ♀ PARATYPES AM P35181, Taunovo Bay, Viti Levu, Fiji, 21 August 1979, stn 28, mixed algae from reef flat.**Additional material examined.** Stn 5 (4)AC; stn 6 (2)AC; stn 13 (8)AM P35318; stn 14 (2)AC; stn 22 (1)AC; stn 24 (5)AC; stn 29 (20)AC; stn 30 (6)AC; stn 41 (2)AC; stn 45 (37)AC.

**Description.** Length, 5.0 mm. Body with deep, chocolate brown pigment, sometimes dense on coxae, bases of pereopods and epimera 1–3. Antenna 2 rather short and stout, moderately setose; flagellum shorter than peduncular article 5. Mandibular palp articles in the ratios 2:5:3, article 3 parallel-sided with about 7 terminal and sub-terminal setae. Male gnathopod 1, basis with well developed, rounded, anterodistal lobe; carpus anterior margin with proximal spine, posterior distal margin rounded but not very strongly produced; propodus one and a half times length of carpus and less than twice as long as broad, approximately parallel-sided, with evenly rounded palm. Male gnathopod 2, basis with strongly developed anterodistal lobe bearing three stout spines; propodus about twice length of carpus, posterior margin produced into a short, truncated, thumb-like process separated from the very oblique palm by a very narrow cleft, anterior margin strongly setose and swollen distally; dactylus short and stout, opposable to 'thumb'. Female gnathopod 2, propodus twice length of carpus, less than one and a half times as long as broad, palm sinuous, proximally convex, distally concave; dactylus fitting palm. Pereopods 3–4 stout, article 5 short. Pereopod 5, basis broader than long due to great development of posterior flange; propodus palm with a pair of blunt, distal, striate locking spines, one of which is recurved, and additionally one large and one small spine. Uropod 1, peduncle with broadly rounded distoventral interramal process. Uropod 2 with vestigial, triangular, interramal process. Uropod 3, outer ramus with proximal spine very strongly recurved. Telson apically rounded.

**Remarks.** The only similar species in Fiji are *A. ramondi* (for distinguishing features, see that species) and *A. kuala* from which *A. kava* differs in the shape of the merus, carpus and propodus of gnathopod 1, the much shorter, blunter process on the posterior margin of the male gnathopod 2 propodus, the much shorter flagellum of antenna 2, the presence of a well developed interramal process on uropod 1, the shorter article 5 of pereopods 3–4, the different configuration of locking spines on the palm of pereopods 5–7 and in several other minor characters.

Fijian material appears to be identical with that described by Barnard (1970) from Hawaii under the name *A. ramondi* Audouin. The male gnathopod 2 of *A. kava* closely resembles that of *A. riedli* from the Mediterranean, but that species differs in the structure of gnathopod 1, the female gnathopod 2 and uropod 3.

**Fijian localities.** Taunovo Bay, Momi Bay, Votualailai, Makuluva Island, Malevu, Nukumbutho Island, Nasese.

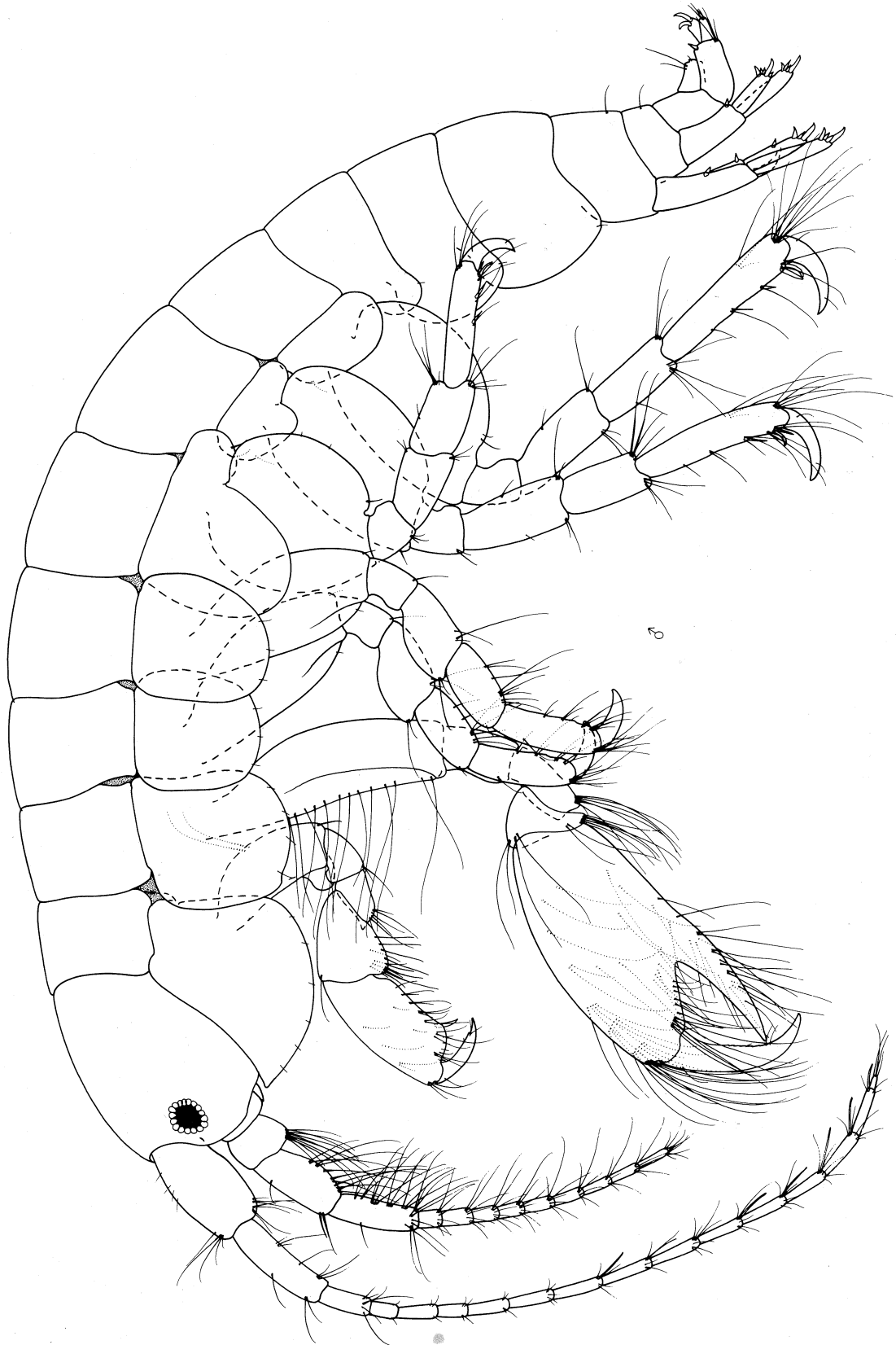


Fig. 13. *Amphithoe hirsuta* Ledoyer, ♂ 2.5 mm, Makuluva Island.



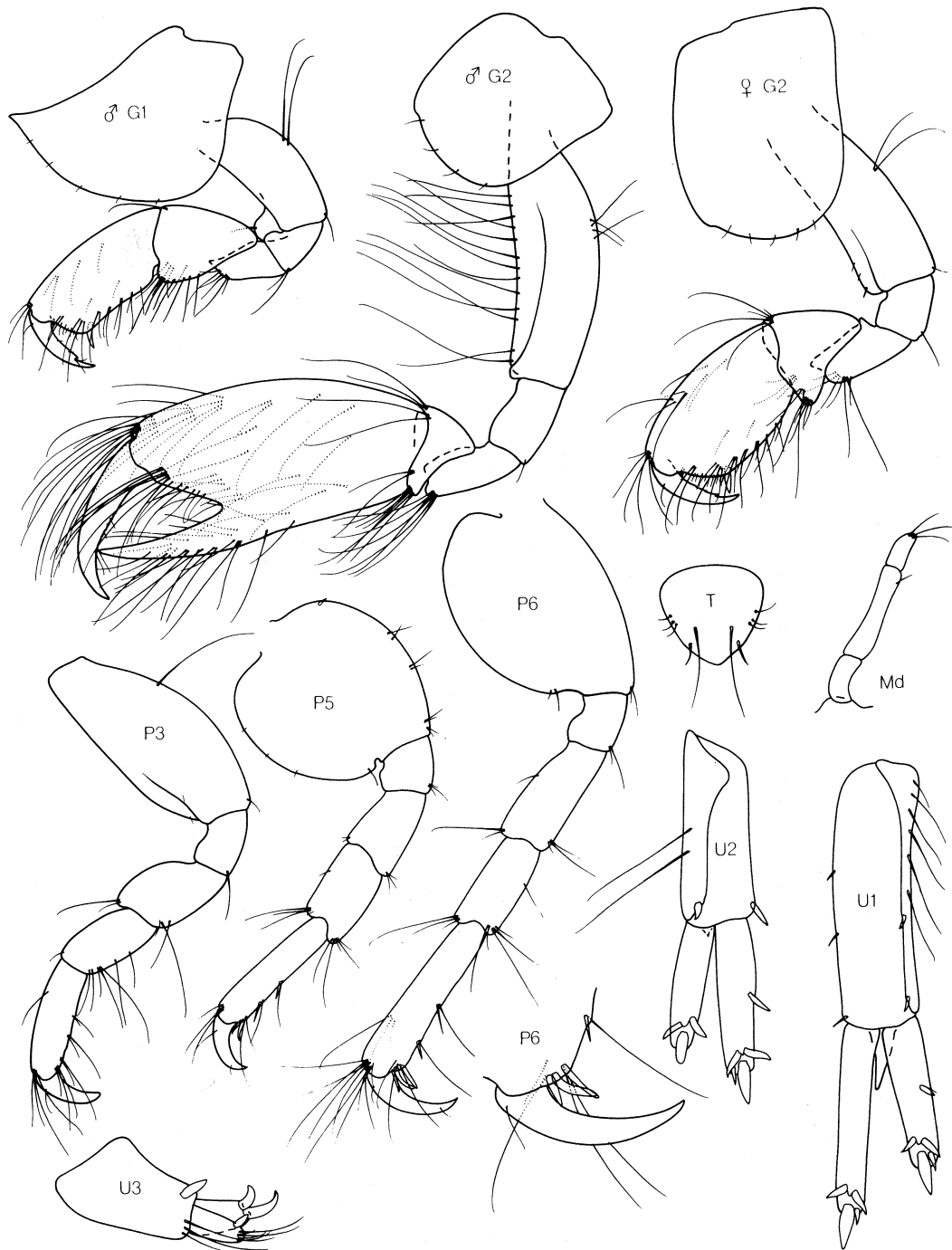


Fig. 14. *Amphithoe hirsuta* Ledoyer, ♂ 2.5 mm, ♀ 2.4 mm, Makuluva Island.

**Distribution.** Fiji, Hawaii.

**Habitat.** Amongst red algae, *Halimeda*, *Turbinaria*, sponges, *Pocillopora* and coral debris.

*Amphithoe kuala* n.sp.

Fig. 16

**Type-material.** HOLOTYPE, ♂, 7.5 mm, AM P35182, 1 ♂ 4 ♀ 1 juvenile PARATYPES AM P35183, Nukumbutho reef,

Viti Levu, Fiji, 8 August 1979, stn 8, mixed algae from reef crest.

**Additional material examined.** Stn 45 (2)AC.

**Description.** Length, 8.0 mm. Body speckled with deep, red-brown pigment; eye red. Antenna 2 long and relatively slender, moderately setiferous; flagellum longer than combined length of peduncular articles 4 and 5. Mandibular palp, article ratios 4:8:7, article 3 parallel-sided with about 13 terminal and posterior marginal setae. Male gnathopod 1, basis with well

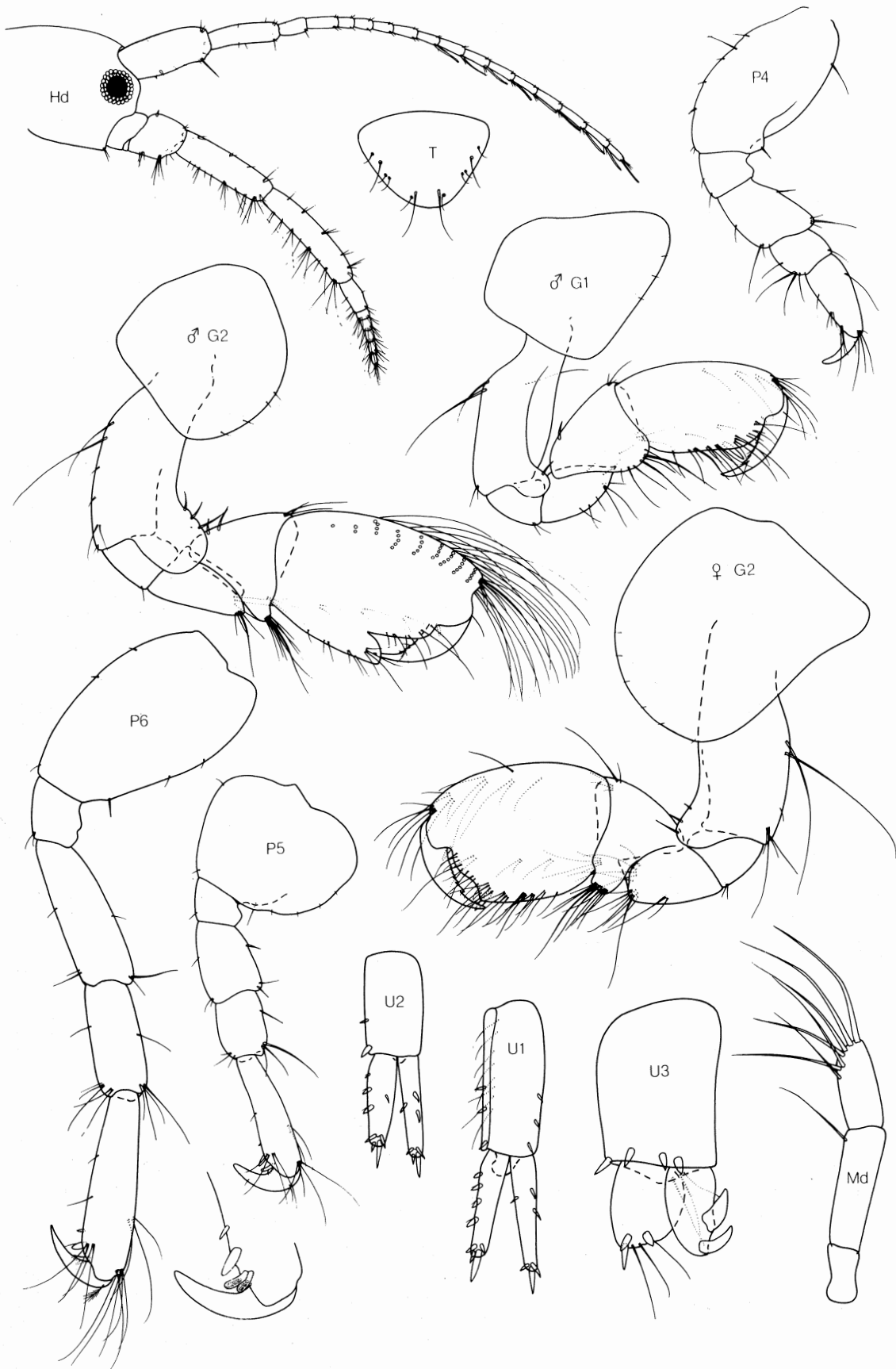


Fig. 15. *Amphithoe kava* n. sp., ♂ 4.8 mm, ♀ 5.0 mm, Taunovo Bay. U3 figured 2 X mag. of U1 and U2.

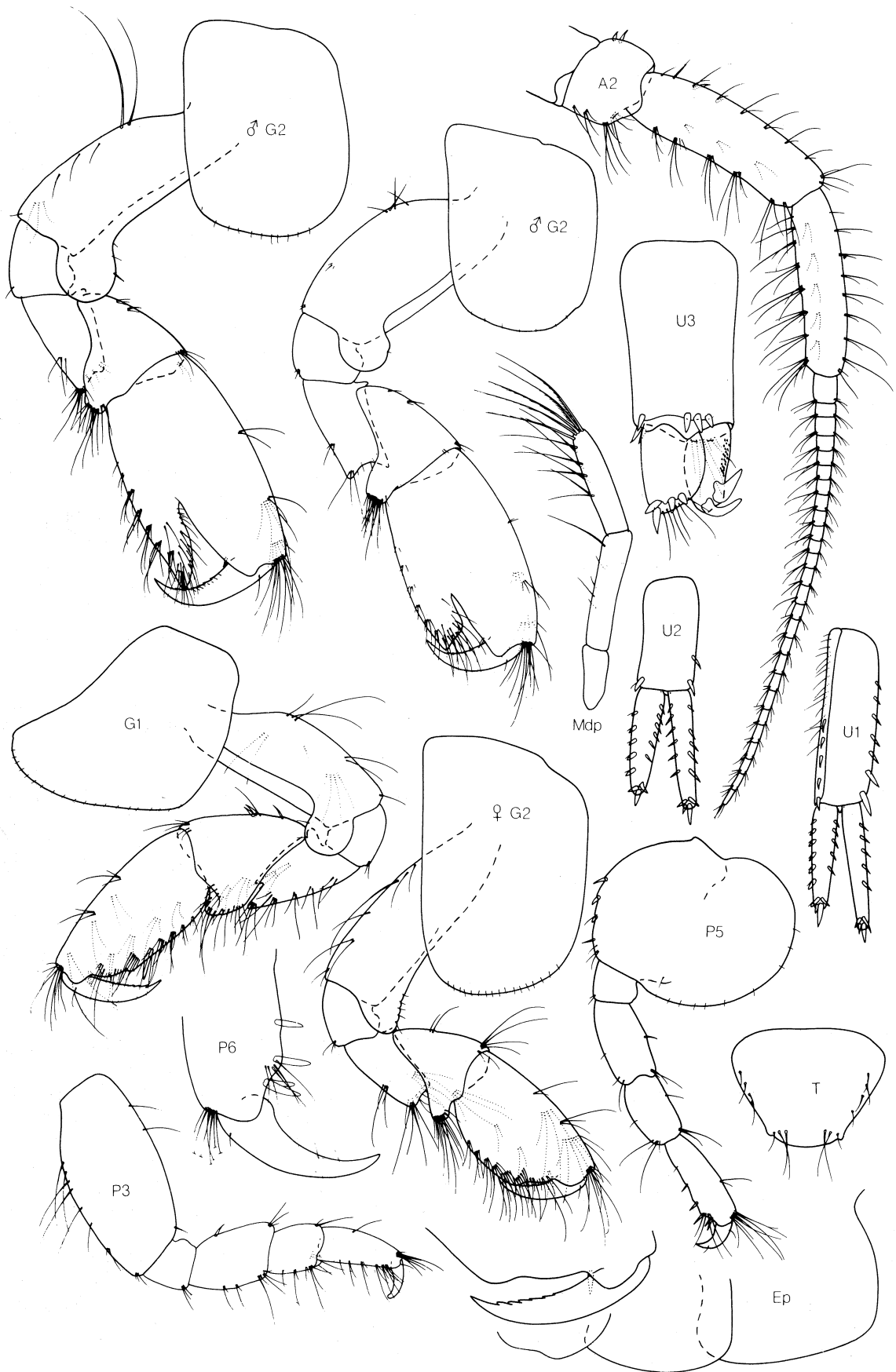


Fig. 16. *Amphithoe kuala* n. sp., ♂ 8.0 mm, ♀ 5.0 mm, Taunovo Bay. U3 figured 2 X mag. of U1 and U2.

developed, rounded anterodistal lobe; carpus anterior margin with proximal spines, posterior distal margin rounded, strongly produced; propodus one and a half times length of carpus and twice as long as broad, narrowing distally with slightly sinuous palm. Male gnathopod 2, basis with strongly developed anterodistal lobe; propodus almost twice length of carpus and almost twice as long as broad, posterior margin produced into a stout, truncated or pointed, strongly setose process, separated from the very oblique palm by a narrow cleft, anterior margin weakly convex and only moderately setiferous; dactylus falciform. Female gnathopod 2, basis with anterodistal lobe crenulate; propodus almost twice length of carpus, subovoid, palm sinuous, proximally convex, distally concave; dactylus slightly overlapping palm. Pereopods 3–4 stout, article 5 short. Pereopod 5, basis much broader than long due to great development of posterior flange, posterior margin with strong spines; propodus palm with simple spines. Uropod 1, peduncle with short, triangular distoventral interramal process. Uropod 2 with vestigial interramal process. Uropod 3, outer ramus with proximal spine very strongly recurved. Telson apically rounded.

**Remarks.** Similar species in Fiji: *A. kava* and *A. ramondi*. *Amphithoe kuala* is readily distinguished from *A. kava* by the long flagellum of antenna 2, the poorly setiferous anterior margin of male gnathopod 2 propodus, and the lack of striate locking spines on the palm of pereopods 5–7. From *A. ramondi* it can be distinguished by the long flagellum of antenna 2, the unswollen anterodistal margin of the male gnathopod 2 propodus, and by the short article 5 of pereopods 3–4.

*Amphithoe kuala* is very similar to *A. akuolaka* Barnard from Hawaii. It differs from that species, however, in the unnotched epimera, strongly recurved spines on uropod 3 outer ramus, presence of spines on the posterior margin of the pereopod 5 basis, short article 5 of pereopods 3–4, presence of setae on the posterior margin of the mandibular palp article 3, and in the more slender tooth on the male gnathopod 2 propodus.

**Fiji localities.** Nukumbutho Island, Votualailai.

**Distribution.** Fiji.

**Habitat.** Amongst algae on reef crest.

### *Amphithoe ramondi* Audouin

Fig. 17

*Amphithoe ramondi* Audouin, 1826: 93.—Krapp-Schickel, 1978: 1, figs 1–2.

*Amphithoe ramondi*.—Barnard, 1965: 25, figs 15–16.

**Material examined.** Stn 49 (52)AC; stn 50 (7)AM P35363.

**Description.** Length, 6.0 mm. Antenna 2 short and stout, setose; flagellum longer than peduncular article 5 with about 12 articles. Mandibular palp articles in the ratios 2:7:6, article 3 parallel-sided. Gnathopod 1, basis with well developed, rounded anterodistal lobe; carpus anterior margin with two strong spines, posterior distal margin strongly produced, angular; propodus about one

and a half times length of carpus and twice as long as broad, approximately parallel-sided, with evenly rounded palm. Male gnathopod 2, basis with strongly developed anterodistal lobe bearing three stout spines; propodus about one and a half times length of carpus, posterior margin produced into a short, truncated, thumb-like process separated from a very oblique palm by a wide, round-bottomed excavation, anterior margin strongly setose and swollen distally; dactylus relatively short and stout, opposable to 'thumb'. Female gnathopod 2, propodus about one and a half times length of carpus and less than one and a half times as long as broad, palm weakly sinuous; dactylus fitting palm. Pereopods 3–4 moderately stout, article 5 of moderate length. Pereopod 5 about as broad as long, propodus palm with a distal pair of straight spines and a further more proximal spine. Uropod 1–2 peduncle lacking interramal process. Uropod 3, outer ramus with proximal spine very strongly recurved. Telson apically concave.

**Remarks.** *Amphithoe ramondi* is similar to *A. kava* but differs from that species in a number of ways. The flagellum of antenna 2 is much longer than peduncular article 5, the male gnathopod 1 carpus is produced at the posterodistal corner into a triangular process, the process on the posterior margin of the male gnathopod 2 carpus is separated from the palm by a round-bottomed excavation, pereopod 3–4 article 5 is normal (not shortened), pereopods 5–7 propodus palm lacks recurved, striate, locking spines, and uropod 1 peduncle lacks an interramal process. *Amphithoe ramondi* is said to be circumtropical and has been described and figured from many parts of the world (K.H. Barnard, 1916; J.L. Barnard, 1965, 1979; Krapp-Schickel, 1978; Ledoyer, 1972; Rabindranath, 1972b; Schellenberg, 1928; Sivaprakasam, 1970a and others). There are, however, significant differences between the various materials described by these authors, suggesting that *A. ramondi* actually represents a species complex. Unfortunately, the name *A. ramondi* Audouin is based on a female specimen, further complicating the problem of which of the materials actually represents the species. The species described by Barnard (1970) from Hawaii under the name *A. ramondi* is synonymous with *A. kava* n.sp. described herein, whilst *A. waialua* Barnard (1970) scarcely differs from the material described by Krapp-Schickel (1978) from the Mediterranean, under the name *A. ramondi*. Material from India attributed to *A. ramondi* by Rabindranath (1972b) differs not only from Hawaiian and Fijian material, but also from Mediterranean material, in a number of important characters. Clearly the identity of the species in the *A. ramondi* complex will not be elucidated without detailed study of material of diverse origin. For the moment, present material which closely resembles Mediterranean material (adjacent to the type-locality) is allocated to *A. ramondi*.

**Type-locality.** Egypt.

**Fijian locality.** Nananui Ra.

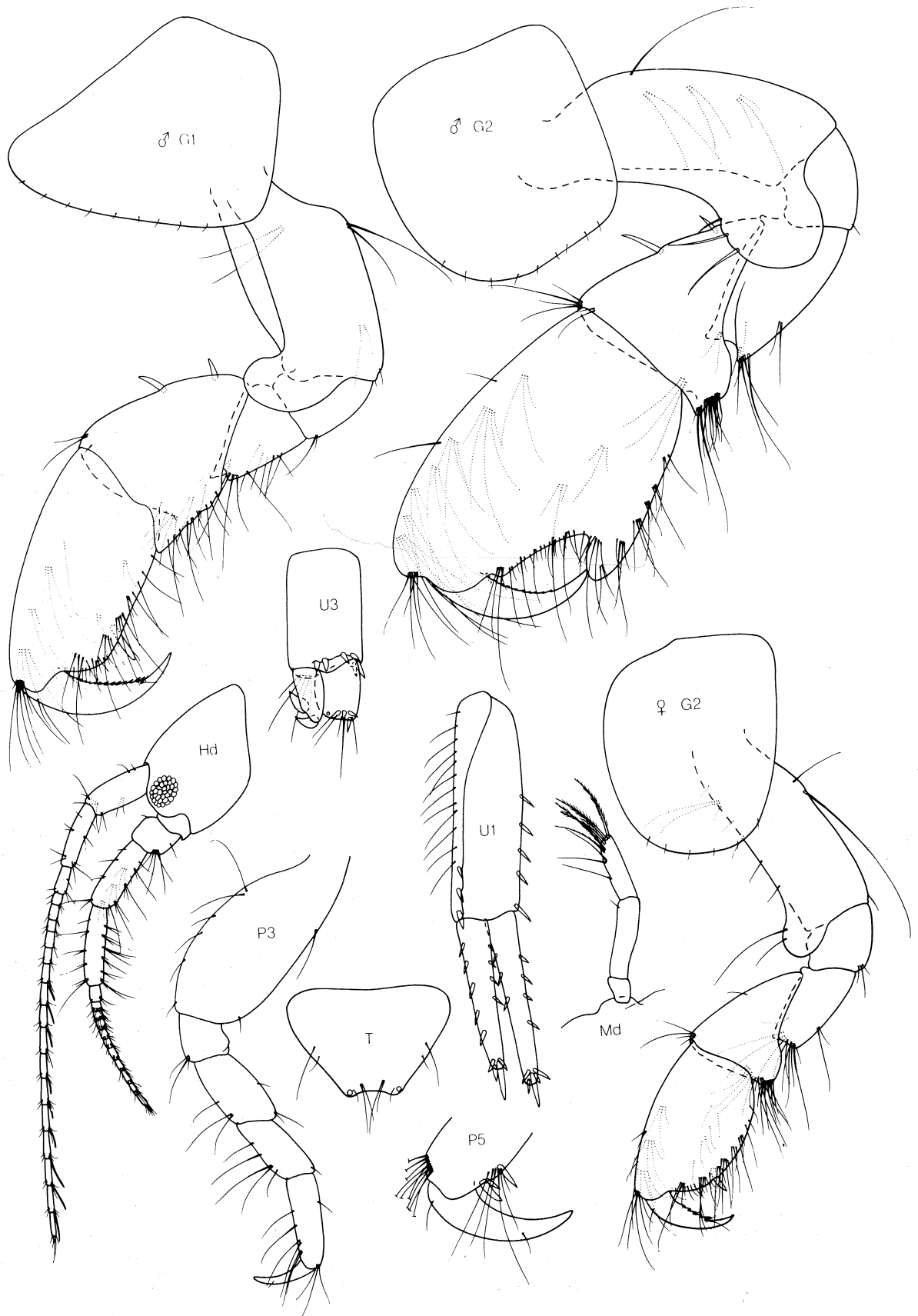


Fig. 17. *Amphithoe ramondi* Audouin, ♂ 5.6 mm, ♀ 6.0 mm, Nananui Ra.

**Distribution.** Not clear due to confusion with other species, but said to be cosmopolitan in tropical and warm temperature waters.

**Habitat.** Amongst living and dead coral.

#### Key to Species of *Cymadusa*

1. ♂ gnathopod 1, carpus much shorter than propodus, propodus with proximal, thumb-like process; ♂ gnathopod 2, carpus and propodus anterior margin densely setose. . . . . *C. lunata*  
 — ♂ gnathopod 1, carpus equal to or longer than propodus, lacking process; ♂ gnathopod 2, carpus and propodus anterior margin weakly setiferous. . . . . 2
2. ♂ gnathopod 1, propodus palm evenly convex; ♂ gnathopod 2, dactylus short and bifid. . . . . *C. brevidactyla*  
 — ♂ gnathopod 1, propodus palm sinuous; ♂ gnathopod 2, dactylus elongate, falciform, simple. . . . . *C. imbroglia*

#### *Cymadusa brevidactyla* (Chevreux) Figs 18–19

*Grubia brevidactyla* Chevreux, 1907: 417.—Chevreux, 1908: 517, figs 30–32.—Schellenberg, 1937: 87.

*Ampithoe cavimana* Sivaprakasam, 1970b: 65, fig. 1.—Ledoyer, 1979a: 144, fig. 5.—Ledoyer, 1979b: 17, figs 4–5.

*Ampithoe kergueleni*.—Rabindranath, 1972b: 166, figs 3–4.

*Cymadusa brevidactyla*.—Ledoyer, 1978: 223, fig. 11.

**Material examined.** Stn 24 (2)AM P35330.

**Description.** Length, 12 mm. Colour, (in alcohol) body whitish, with numerous brown blotches. Antenna 1 elongate, slender, weakly setiferous; accessory flagellum distinct, 1-articulate. Antenna 2 slender. Male gnathopod 1, coxa strongly produced forward, anterior margin evenly convex; merus with rounded anterodistal lobe; carpus posterior margin straight, crenulate; propodus shorter than carpus, subovoid, posterior margin evenly convex, continuous with palm which is defined by a spine. Female gnathopod 1, coxa quite strongly produced anteriorly, anterior margin weakly concave; merus with small anterodistal knob; propodus much longer than carpus, subovoid, posterior margin evenly convex, continuous with palm which is defined by a spine. Male gnathopod 2, coxa deeper than broad; basis with well developed anterodistal flange; carpus short, cup-shaped; propodus about three times length of carpus, posterodistal margin with deep excavation which forms a right angle on the mediobasal margin, palm very reduced, oblique; dactylus very short, becoming bifid at tip, due to rounded posterodistal lobe. Female gnathopod 2, propodus longer than carpus, palm sinuous, defined by a spine; dactylus scarcely

overlapping palm. Pereopods 5–7 with straight, unstriated, locking spines on propodus. Uropod 1, peduncle with strong, acute, distoventral interramal process. Uropod 2, peduncle with short, triangular interramal process. Uropod 3, outer ramus with moderately recurved proximal spine.

**Remarks.** This species agrees perfectly with the descriptions of *Ampithoe cavimana* Sivaprakasam and *A. kergueleni* Rabindranath except in the presence of an accessory flagellum, a character perhaps overlooked by these authors. It also agrees very well with the description of *Grubia brevidactyla* Chevreux, allowing for the rather immature appearance of the male gnathopod 2 of that author's material, probably due to the small size of his specimens (6.0 mm). The structure of the male gnathopod 2 immediately distinguishes this species from the other known Fijian species.

**Type-locality.** Gambier Archipelago.

**Fijian locality.** Makuluva Island.

**Distribution.** Fiji, Gambier Archipelago, Tuamotu Archipelago, India, Madagascar, Indonesia, Mauritius.

**Habitat.** Among *Amphiroa* on reef flat.

#### *Cymadusa imbroglia* Rabindranath Figs 20–21

*Cymadusa imbroglia* Rabindranath, 1972b: 175, fig. 9.

**Material examined.** Stn 3 (3)AM P35301; stn 33 (10)AM P35353; stn 34 (2)AM P35355; stn 42 (7)AC; stn 51 (2)AC.

**Description.** Length, 15 mm. Colour, dirty white with numerous brown blotches often joined to form a reticulate pattern on head and body. Antenna 1 elongate, slender, weakly setiferous about two-thirds body length; accessory flagellum distinct, 1-articulate. Antenna 2 elongate, subequal in length to antenna 1. Male gnathopod 1, coxa strongly produced forward, anterior margin more or less straight; merus with subacute anterodistal lobe; carpus elongate subequal in length to propodus; palm of propodus weakly excavate, defined by a spine; dactylus overlapping palm. Male gnathopod 2, coxa deeper than broad; basis with well developed anterodistal flange; carpus short, cup-shaped; propodus slightly over two times as long as carpus but only a little longer than broad, palm well defined (in juveniles, sinuous; in adults crenulate with deep round-bottomed proximal and distal excavations; in hyperadults with a high, median, rounded lobe); dactylus falcate, fitting palm and lacking accessory teeth or denticles. Female gnathopod 2, propodus nearly twice as long as broad, palm sinuous, defined by a spine. Pereopods 5–7 with straight, unstriated locking spines on propodus. Uropod 1, peduncle with strong, acute, distoventral interramal process. Uropod 2, peduncle with weak, triangular interramal process. Uropod 3, outer ramus with moderately recurved proximal spine.

**Remarks.** The characteristic shape of the male gnathopod 2 propodus serves to distinguish this species from all other Fijian *Cymadusa*. This species shows

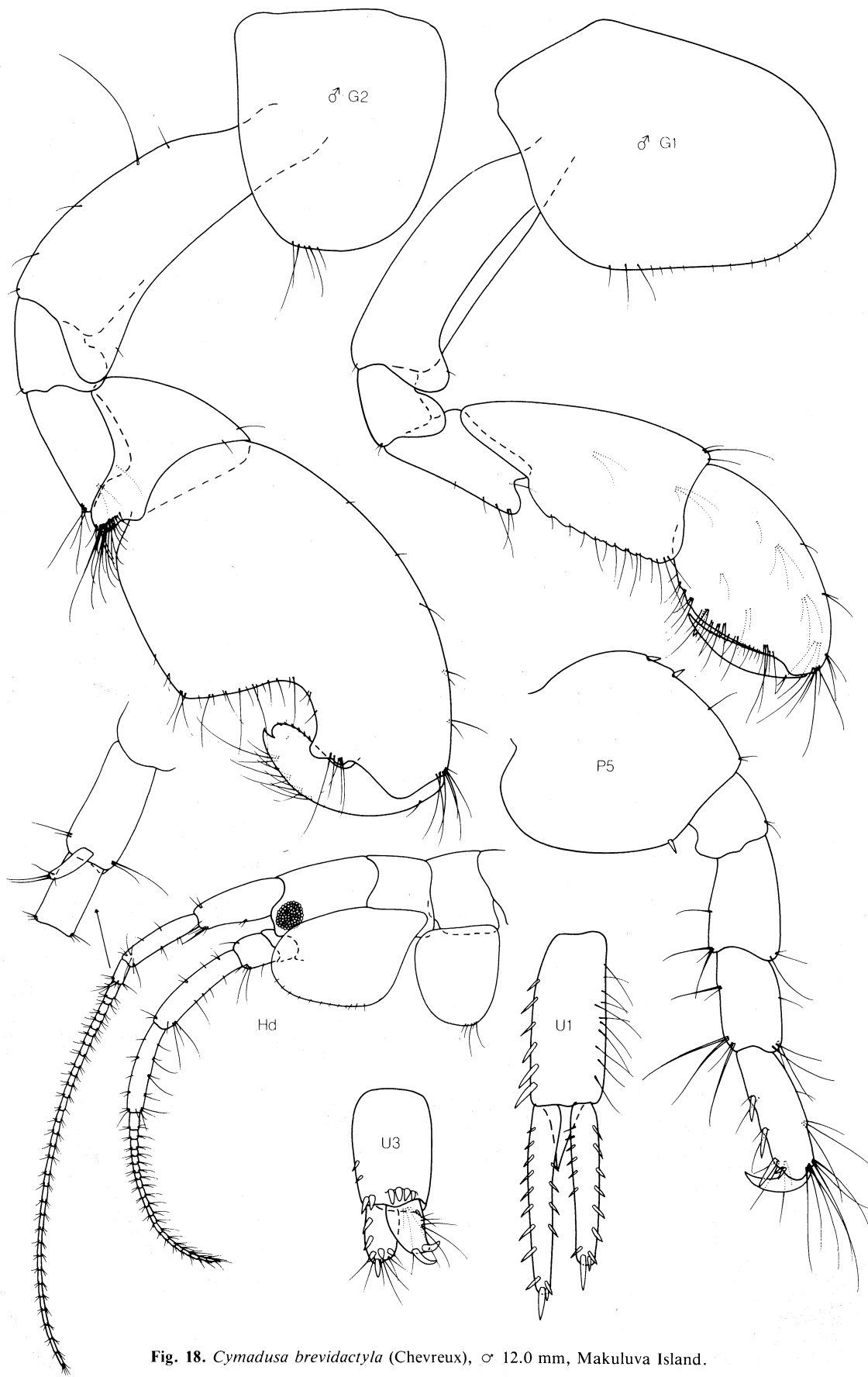


Fig. 18. *Cymadusa brevidactyla* (Chevreux), ♂ 12.0 mm, Makuluva Island.

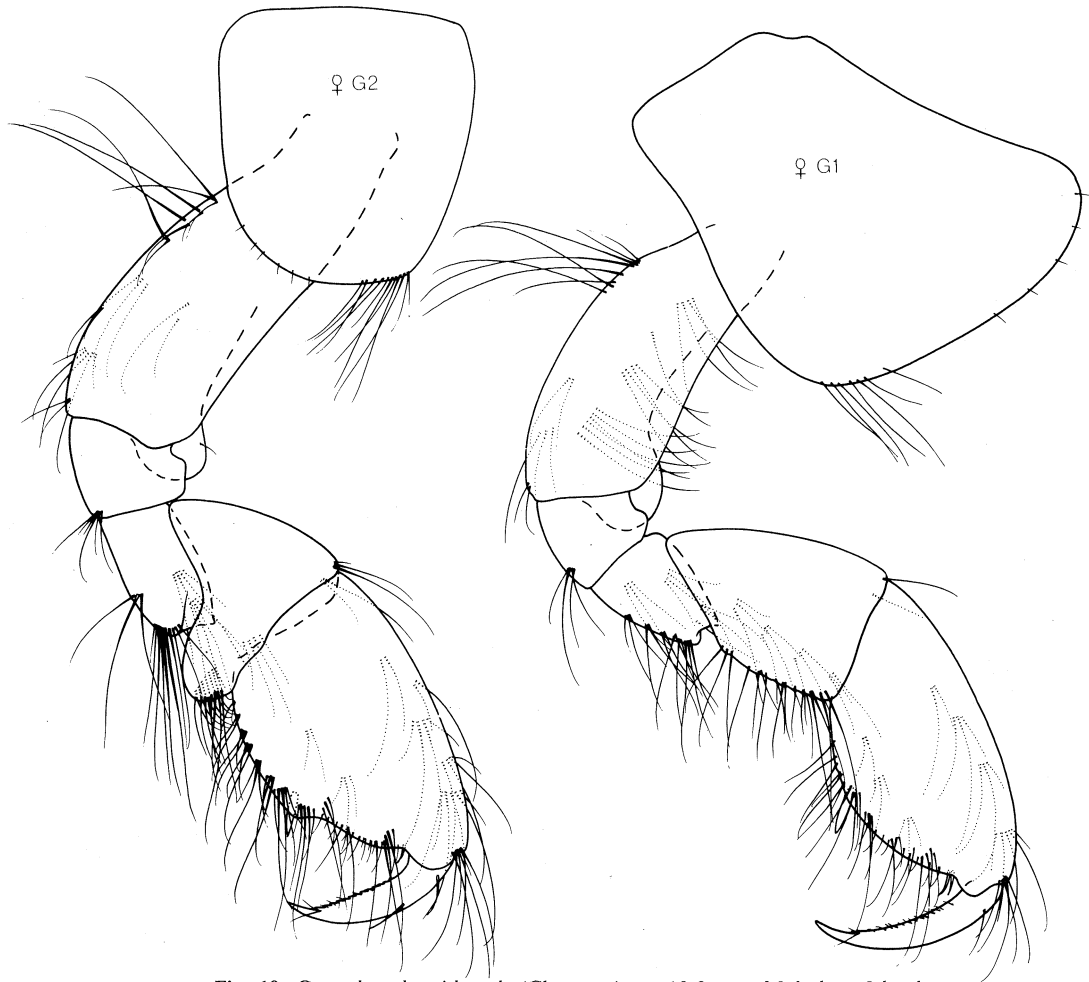


Fig. 19. *Cymadusa brevidactyla* (Chevreux), ♀ 10.0 mm, Makuluva Island.

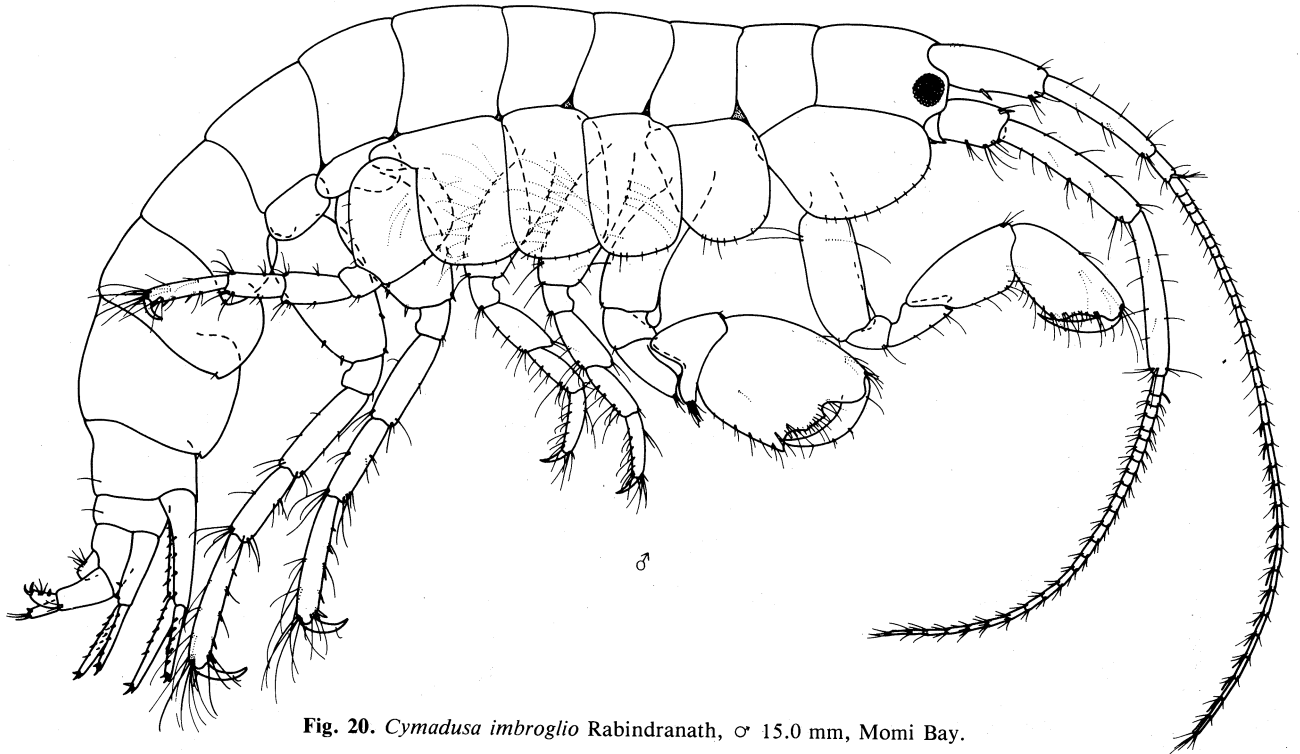


Fig. 20. *Cymadusa imbroglio* Rabindranath, ♂ 15.0 mm, Momi Bay.



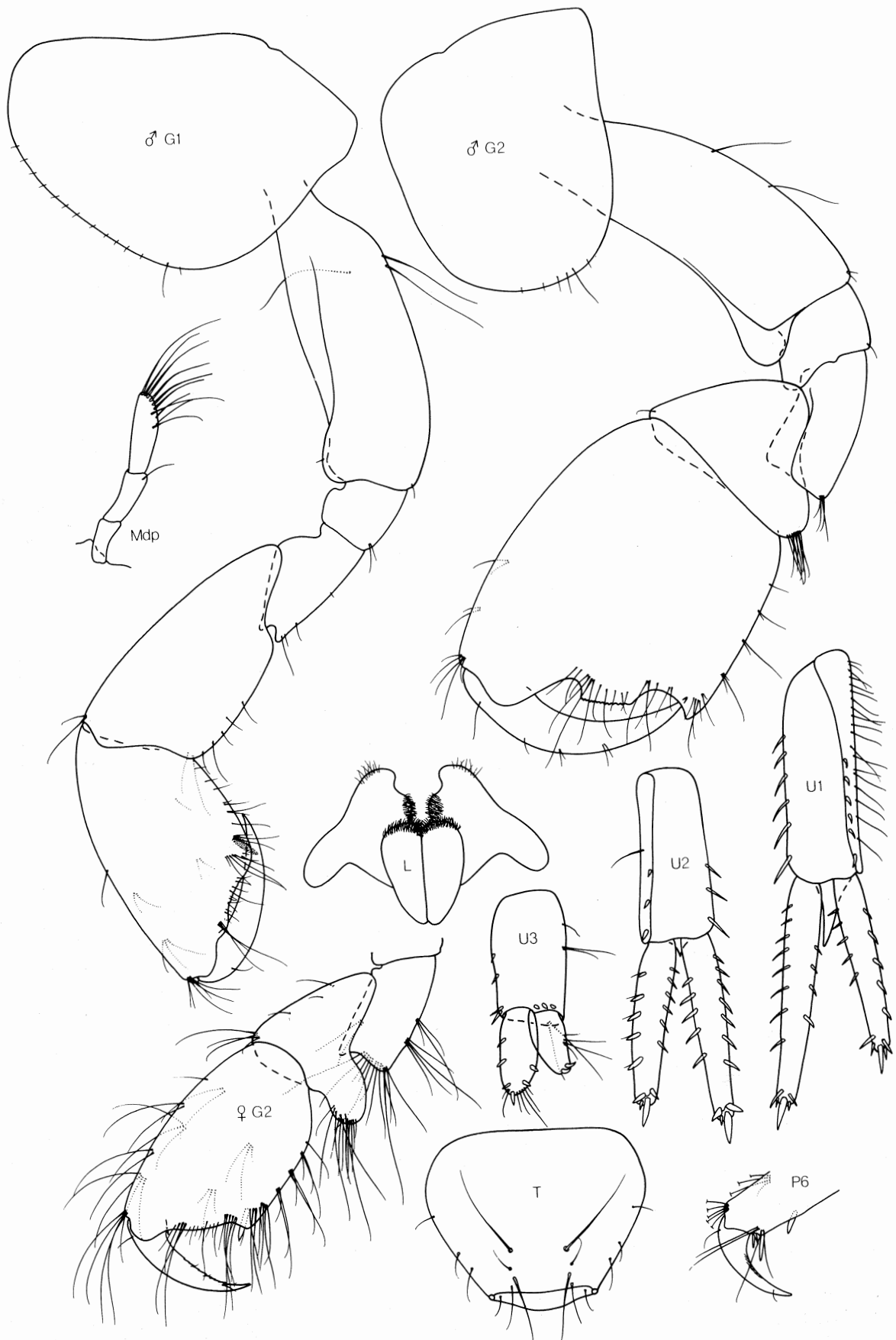


Fig. 21. *Cymadusa imbroglia* Rabindranath, ♂ 15.0 mm, ♀ 14.0 mm, Momi Bay.

certain similarities to *Grubia microphthalmalma* Chevreux (1901), and may be synonymous with that species. However, *G. microphthalmalma* is known only from females and its true allocation must, at present, remain uncertain.

**Type-locality.** Manoli Island, Gulf of Mannar, India.

**Fijian localities.** Momi Bay, Nasese, Mburelevu, Nananui Ra.

**Distribution.** Fiji, India.

**Habitat.** Amongst algae and phanerogams.

*Cymadusa lunata* n.sp.

Figs 22–23

**Type-material.** HOLOTYPE, ♂, 5.2 mm, AM P35184, 14 ♀ 28 ♀ 10 juveniles PARATYPES, AM P35185, Malevu, Viti Levu, Fiji, 11 August 1979, stn 22, *Turbinaria turbinata* from behind reef crest.

**Additional material examined.** Stn 5 (19)AC; stn 6 (20)AC; stn 9 (1)AC; stn 11 (3)AC; stn 13 (1)AC; stn 16 (15)AM P35321; stn 18 (10)AM P35322; stn 20 (1)AC; stn 31 (11)AC; stn 35 (22)AC; stn 40 (25)AC; stn 44 (17)AC; stn 45 (12)AC; stn 46 (2)AC.

**Description.** Length, 6.5 mm. Body creamy orange; eye pink; in alcohol, body white; eye clear. Antenna 1 elongate, weakly setiferous; flagellum over twice length of peduncle; accessory flagellum vestigial, composed of a single cone-shaped article tipped with two setae. Antenna 2 a little over half length of antenna 1; peduncular article 4 a little longer than 5; flagellum longer than peduncle. Mandibular palp, article ratios 3:3:4, article 3 with about 7 long distal setae. Labium outer plate with nipple-like protrusion on anterior margin. Male gnathopod 1, coxa deeper than broad, wider distally; basis with well developed, rounded anterodistal flange; carpus short, triangular; propodus a little less than twice length of carpus with very deep posterodistal excavation, palm almost obsolete; dactylus stout, toothed on the posterior margin. Female gnathopod 1, coxa very similar to that of the male; carpus of moderate size; propodus about one and a half times length of carpus, subovoid, palm evenly convex, defined by a spine. Male gnathopod 2, coxa deeper than broad; basis with very large, rounded, anterodistal flange; carpus triangular; propodus about one and a half times length of carpus with deep posterodistal excavation similar to but smaller than that of gnathopod 1, anterior margins of carpus and propodus densely setose. Female gnathopod 2, propodus one and a half times length of carpus, palm sinuous, defined by a spine. Pereopods 5–7 propodus posterodistal margin with straight, unstriated locking spines. Uropod 1, peduncle with strong, acute, distoventral interramal process. Uropod 2, peduncle with short, triangular interramal process. Uropod 3, outer ramus, outer margin with

numerous small denticles, proximal (of two) distal spine weakly recurved.

**Remarks.** The highly characteristic male gnathopoda preclude the possibility of this species being confused with any other currently known Fijian amphipod.

**Fijian localities.** Momi Bay, Malevu, Votualailai, Nukumbutho Island, Suva barrier reef, Mburelevu, Nananui Ra.

**Distribution.** Fiji.

**Habitat.** Amongst algae, zoanthids, living and dead coral, coral rubble.

*Paragrubia vorax* Chevreux

Figs 24–25

*Paragrubia vorax* Chevreux, 1901: 427, figs 50–55.—Barnard, 1955: 31, fig. 17.—Barnard, 1965: 541, fig. 33.—Ledoyer, 1967a: 135, fig. 23.—Ledoyer, 1972: 185, Pl. 13.—Ruffo, 1969: 63.—Barnard, 1970: 61, fig. 32.—Ledoyer, 1978: 228.

**Material examined.** Stn 7 (3) AM P35310; stn 8 (5)AC; stn 11 (12)AM P35316; stn 14 (2)AC; stn 20 (9)AC; stn 22 (1)AM P35373; stn 24 (1)AC; stn 26 (8)AM P35338; stn 28 (2)AC; stn 40 (6)AC; stn 47 (1)AC.

**Description.** Length, 10.0 mm. Body pale pink; eye red. Antenna 1 elongate and slender, weakly setiferous, a little over half body length; accessory flagellum 4-articulate. Antenna 2 elongate, a little shorter than antenna 1; flagellum longer than combined length of peduncular articles 4 and 5 with about 25 articles. Male gnathopod 1 enlarged, coxa with anterodistal margin somewhat produced forward, subacute; basis with strong anterodistal lobe; propodus twice length of carpus, subquadrangular with oblique, weakly concave palm; dactylus stout, fitting palm. Female gnathopod 1 scarcely enlarged, propodus only a little larger than carpus, subovoid. Gnathopod 2, coxa deeper than broad; basis with anterodistal lobe; propodus longer than carpus, palm oblique; dactylus fitting palm. Epimera 1–3 with small posterodistal tooth. Uropod 1, peduncle with stout interramal spiniform process over two-thirds length of peduncle. Uropod 2, peduncle with small triangular interramal process. Uropod 3, outer ramus with recurved proximal spine.

**Remarks.** This is the only amphithoid in which the male gnathopod 1 is enlarged so that it exceeds gnathopod 2 in size. In its large size and presence of an accessory flagellum, it resembles species of *Cymadusa*.

**Type-locality.** Mahé, Seychelles.

**Fijian localities.** Momi Bay, Malevu, Votualailai, Taunovo Bay, Makuluva Island, Nukumbutho Island, Suva.

**Distribution.** Indo-Pacific.

**Habitat.** Amongst algae (*Caulerpa*, *Gelidiella*, *Amphiroa*, *Gigartina*, *Turbinaria*), sponges, zoanthids and coral debris.

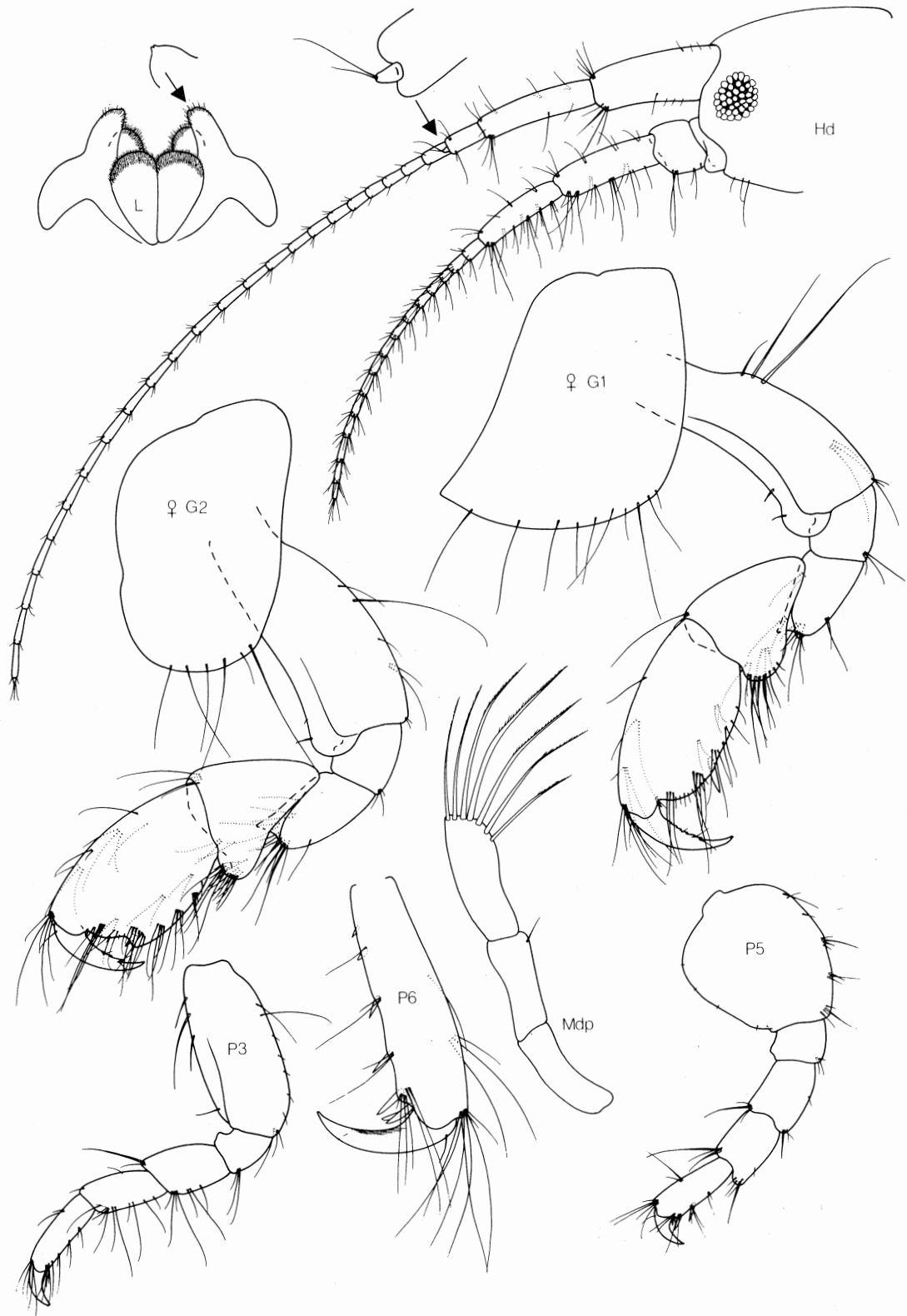


Fig. 22. *Cymadusa lunata* n. sp., ♂ 6.5 mm, ♀ 6.0 mm, Votualailai.

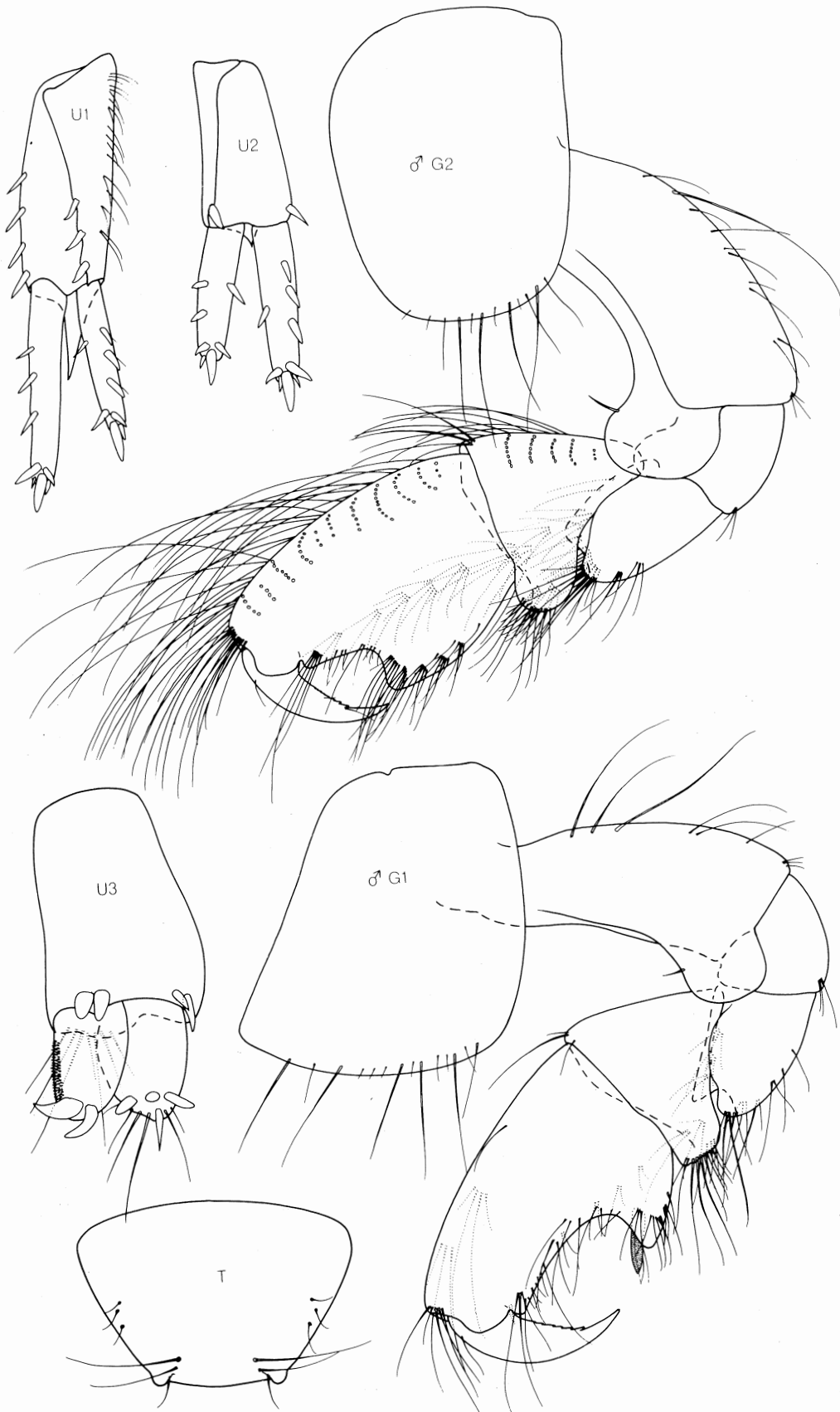


Fig. 23. *Cymadusa lunata* n. sp., ♂ 6.5 mm, Votualailai. U3 figured 2 X mag. of U1 and U2.

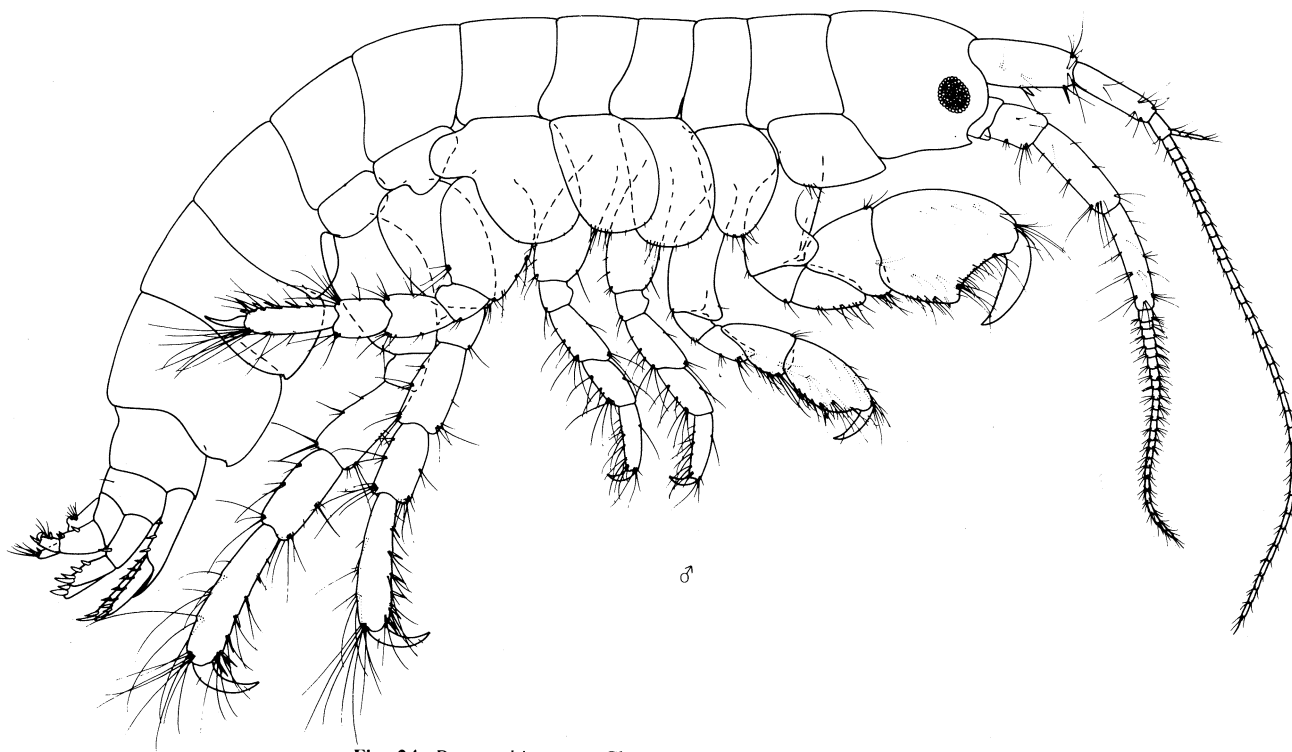


Fig. 24. *Paragrubia vorax* Chevreux, ♂ 9.0 mm, Makuluva Island.

*Peramphithoe orientalis* (Dana)

Fig. 26

*Amphithoe orientalis* Dana, 1853: 937, pl. 64, fig. 2.  
*Amphithoe orientalis*.—Barnard, 1955: 26, fig. 14.—Barnard, 1970: 50, fig. 17.—Hirayama, 1983: 116, fig. 23.  
*Peramphithoe orientalis*.—Conlon & Bousfield, 1982: 60.

**Material examined.** Stn 9 (4)AC; stn 12 (98)AC; stn 13 (6)AM P35319; stn 21 (39)AC, (8)AM P35327; stn 46 (27)AC.

**Description.** Length, 8.0 mm. Body pale cream; eye bright red, turning clear in alcohol. Antenna 1 elongate, slender; flagellum over three times length of peduncle. Antenna 2 slender; flagellum subequal to peduncle. Mandibular palp, articles in the ratios 9:9:5, article 3 rod-shaped with a pair of unequal, terminal setae. Gnathopod 1, propodus longer than carpus, posterior margin weakly concave, palm almost transverse, evenly rounded. Male gnathopod 2, carpus extremely reduced; propodus nearly six times length of carpus, narrowing distally, posterior margin weakly convex, minutely ridged and produced distally into a rounded lobe; dactylus enormous, falciform, reaching merus when in closed position. Female gnathopod 2, propodus one and a half times length of carpus, parallel-sided, palm distinct; dactylus overlapping palm. Pereopods 3–4, basis elongate ovoid. Pereopod 5, basis expanded, almost as broad as long. Pereopods 5–7 with unstriated locking spines. Uropod 1, peduncle with stout, acute, distoventral interramal process. Uropod 2 with short, triangular interramal process. Uropod 3, outer ramus with proximal spine strongly recurved. Telson apically rounded with subdistal knob-like processes.

**Remarks.** In the male, the enormous falciform dactylus of gnathopod 2 serves to identify this species, although the condition is approached by *A. kaneohe navosa*.

**Key to Species of *Pleonexes***

1. Pereopods 5–7, palm with unstriated locking spines; ♂ gnathopod 2 propodus broadly subtriangular. . . . . *P. kulafi*

—Pereopods 5–7, palm with recurved, striate locking spines, ♂ gnathopod 2 propodus elongate, subovoid. . . . .  
 . . . . . *P. kaneohe navosa*

***Pleonexes kaneohe navosa* n.subsp.**

Figs 27–28

**Type-material.** HOLOTYPE, ♂, 4.5 mm, AM P35186, 37 ♂ 84 ♀ 3 juveniles PARATYPES, AM P35187, Nukumbutho reef, Viti Levu, Fiji, 8 August 1979, stn 6, *Turbinaria turbinata* from reef crest.

**Additional material examined.** Stn 5 (2)AC; stn 7 (19)AC; stn 8 (4)AC; stn 13 (29)AC; stn 14 (2)AC; stn 16 (15)AC; stn 17 (1)AC; stn 20 (2)AC; stn 22 (50)AC; stn 23 (18)AC; stn 24 (35)AC; stn 25 (19)AC; stn 30 (3)AC; stn 34 (8)AC; stn 41 (22)AC; stn 42 (12)AC; stn 45 (140)AC; stn 46 (15)AC.

**Description.** Length, 5 mm. Body pale orange-brown; eye bright red surrounded by a row of clear ommatidia; in alcohol, body white; eye black. Antenna 1, flagellum over twice length of peduncle. Antenna 2 sexually dimorphic; in male subequal to antenna 1 due to elongation of peduncle; flagellum a little over half length of peduncle; in female, about two-thirds length of

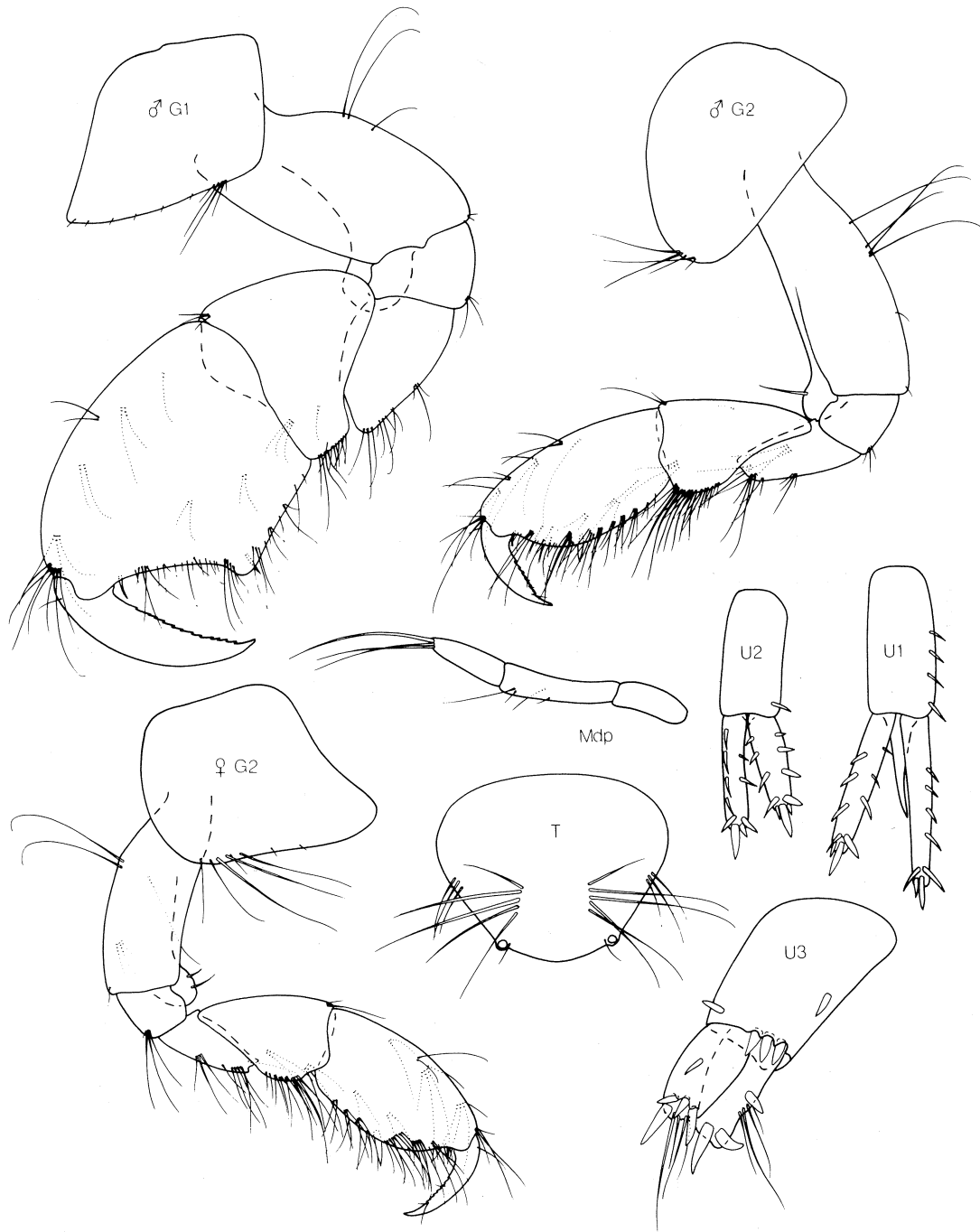


Fig. 25. *Paragrubia vorax* Chevreux, ♂ 9.0 mm, ♀ 8.5 mm, Makuluva Island. U3 figured 2 X mag. of U1 and U2.

antenna 1. Mandibular palp, articles in the ratios 5:9:6, article 3 rod-shaped with a pair of unequal, terminal setae. Gnathopod 1, propodus longer than carpus, posterior margin convex, palm indistinct but delimited by spine. Male gnathopod 2, basis with well developed anterodistal lobe; carpus elongate, longer than broad; propodus scarcely twice length of carpus, palm sinuous; dactylus strongly falcate, about half length of propodus, overlapping inner face of propodus when in closed position, anterior distal margin of propodus with long setae. Female gnathopod 2, carpus sub-triangular;

propodus one and a half times length of carpus, subovoid, palm indistinct, delimited by a spine. Pereopod 5, basis broader than long, anterior proximal margin with stout spines. Pereopods 5-7 with strongly recurved, striate locking spines. Uropod 1, peduncle with strong, blunt, distoventral interramal process. Uropod 2 lacking interramal process. Uropod 3, outer ramus with recurved proximal spine. Telson apically rounded.

**Remarks.** The sexually dimorphic antennae, and elongate carpus and propodus of the male gnathopod

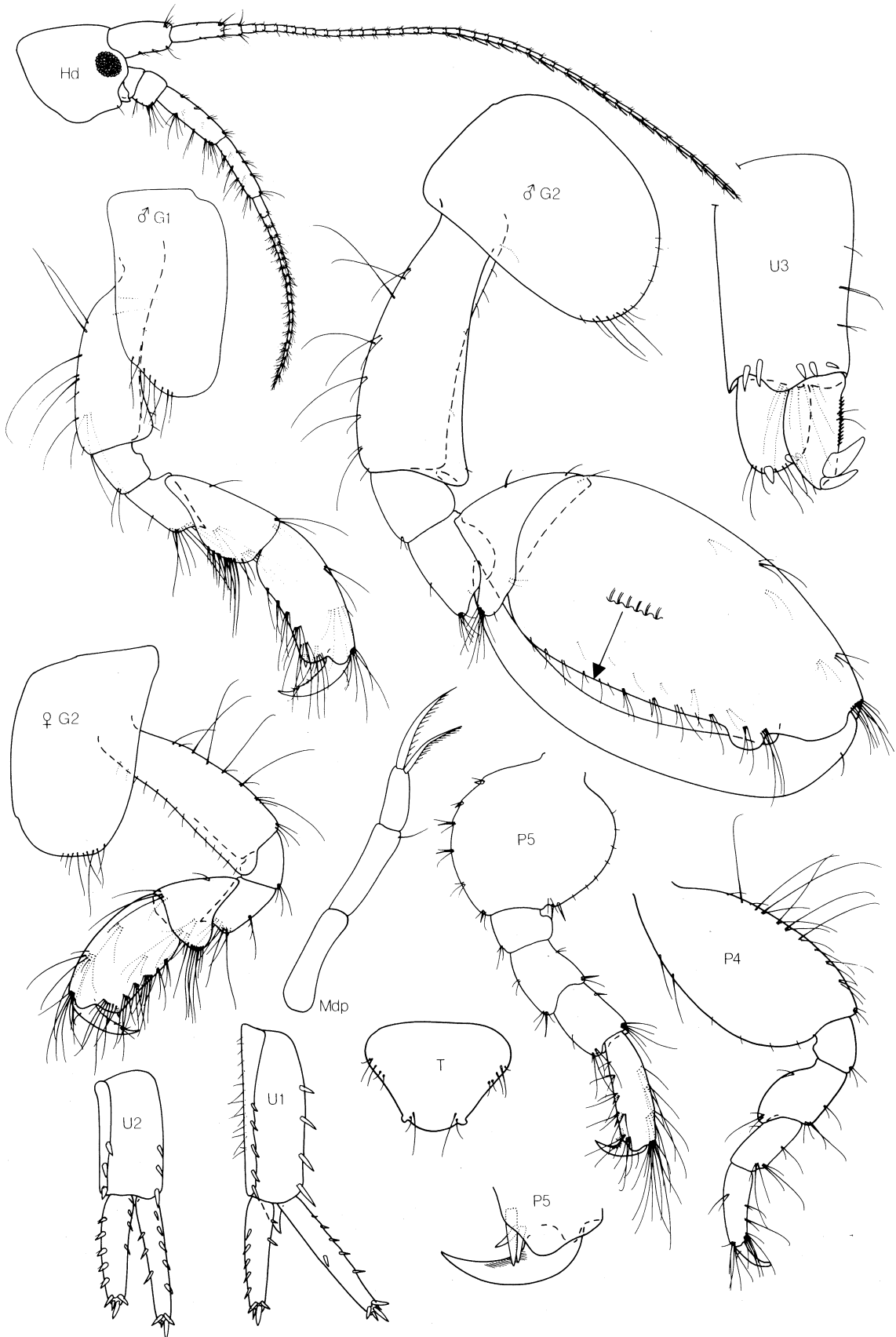


Fig. 26. *Peramphithoe orientalis* (Dana), ♂ 8.0 mm, ♀ 6.0 mm, Votualailai. U3 figured 2 X mag. of U1 and U2.

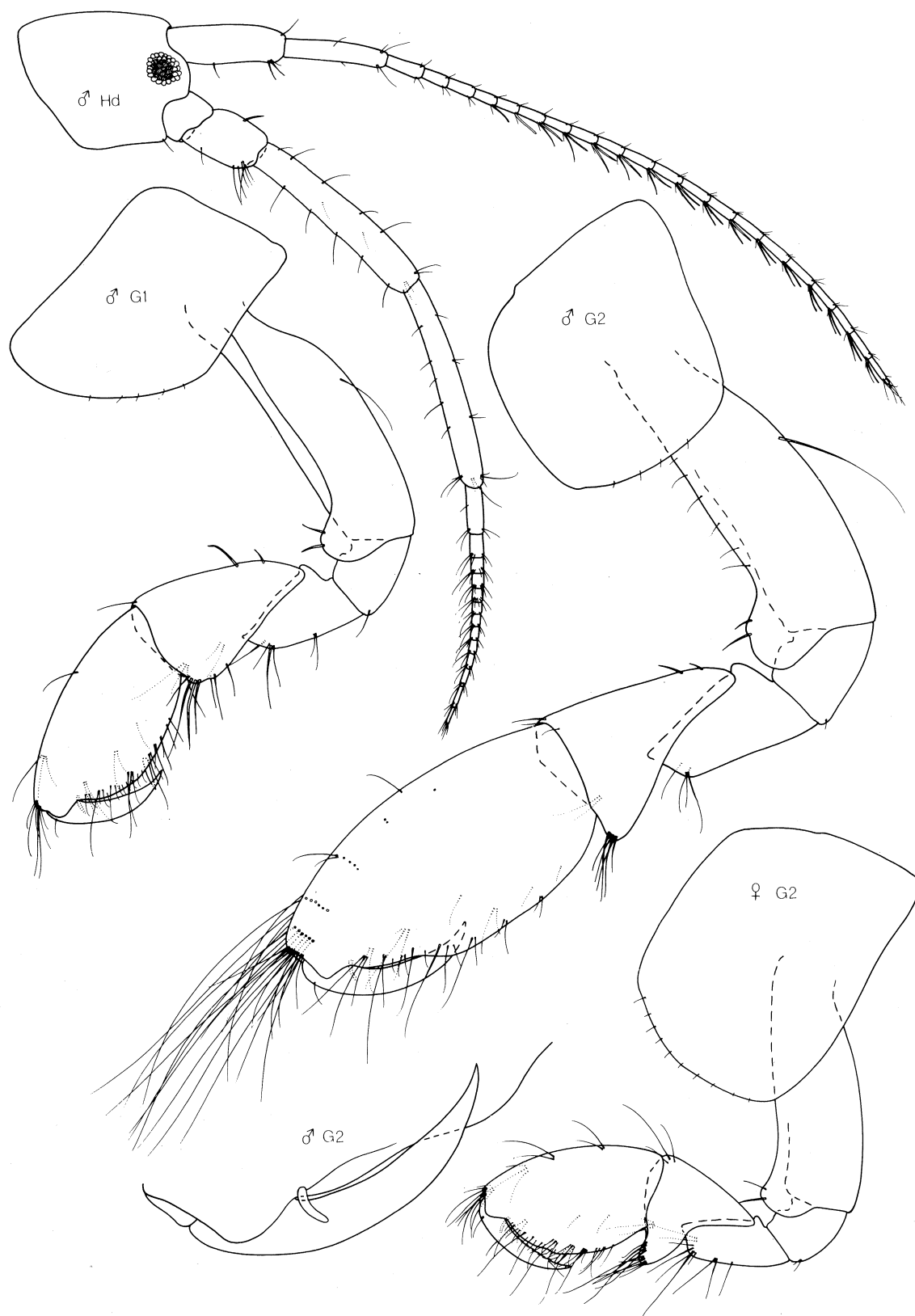


Fig. 27. *Pleonexes kaneohe navosa* n. subsp., ♂ 5.0 mm, ♀ 5.0 mm, Nukumbutho Island.



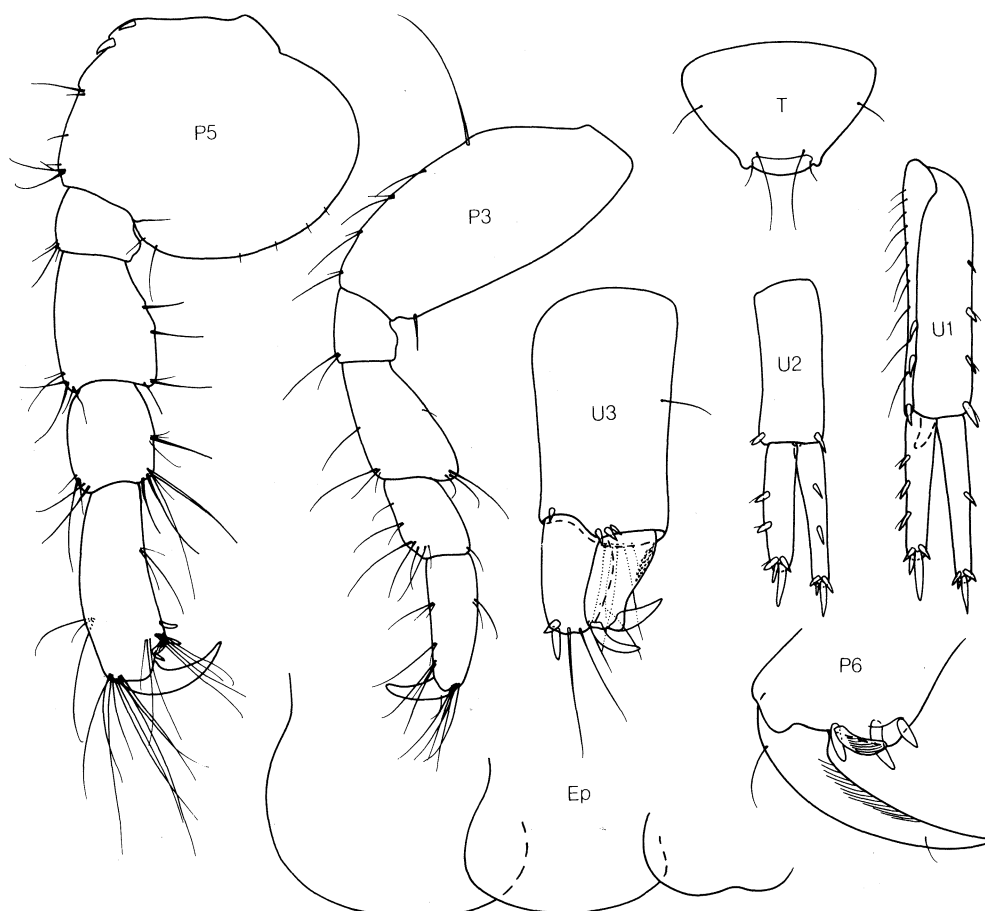


Fig. 28. *Pleonexes kaneohe navosa* n. subsp., ♂ 5.0 mm, Nukumbutho Island. U3 figured 2 X mag. of U1 and U2.

2 serve to distinguish this species. *Pleonexes kaneohe navosa* differs from the nominate form in the more elongate carpus of the male gnathopod 2, and in the presence of stout spines on the anterior margin of the basis of pereopod 5.

**Fijian localities.** Momi Bay, Malevu, Votualailai, Taunovo Bay, Nukumbutho Island, Makuluva Island, Mburelevu.

**Distribution.** Fiji. Nominate subsp. Hawaii (Barnard, 1970: 44, figs 14–16, 241), ?Madagascar (Ledoyer, 1972: 180, pl. 8; Ledoyer, 1979b: 17, fig. 6).

**Habitat.** In algae, coral and coral rubble.

### *Pleonexes kulafi* Barnard

Fig. 29

*Pleonexes* (?) species Barnard, 1965: 542, fig. 34.

*Ampithoe kulafi* Barnard, 1970: 1 & 50.—Sivaprakasam, 1970b: 77, fig. 6.

*Ampithoe kulafi*.—Ledoyer, 1973: 26, Pl. 1.—Ledoyer, 1979a: 146, fig. 31.

*Pleonexes kulafi*.—Conlon, 1982: 2020.

**Material examined.** Stn 8 (5)AC; stn 24 (3)AM P35328; stn 28 (32)AC, (28)AM P35343; stn 29 (3)AC; stn 34 (1)AC.

**Description.** Length, 4.5 mm. Colour (in alcohol),

body with discrete brown spots especially laterally on coxae and bases of pereopods; eye brown. Antenna 2 slender, moderately setose; flagellum longer than peduncle. Mandibular palp, articles in the ratios 5:8:7, article 3 rod-shaped with a pair of unequal, terminal setae. Gnathopod 1, basis with small anterodistal lobe; propodus longer than carpus, posterior margin evenly rounded, palm continuous with convexity of posterior margin, but defined by spine. Male gnathopod 2, basis with strongly developed crenulate flange on anterior margin bearing several spiniform setae; propodus four times length of carpus which is extremely reduced, palm very long, weakly sinuous, posterior margin almost straight, propodus thus broadly subtriangular, narrowest proximally; dactylus very long and falcate, when closed, overlapping posterior margin of propodus. Female gnathopod 2, propodus one and a half times length of carpus and about one and a half times as long as broad, widest medially, palm and posterior margin evenly convex. Pereopod 5, basis a little longer than broad. Pereopods 5–7, palm with two well separated, unstriated spines. Epimera 1–3 rounded. Uropod 1, peduncle with truncate distoventral interramal process. Uropod 2 with vestigial interramal process. Uropod 3, outer ramus with proximal spine strongly recurved. Telson apically rounded.

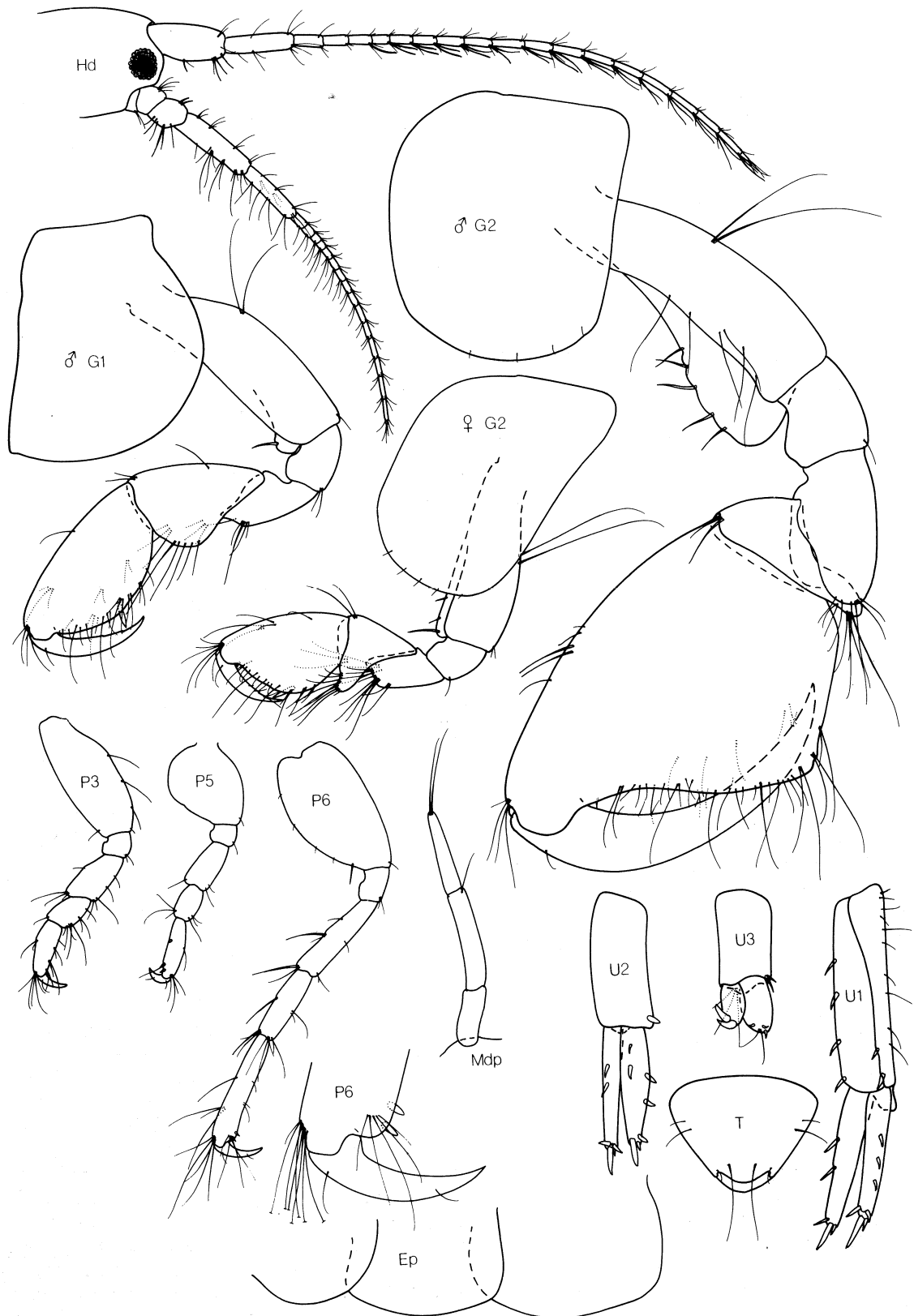


Fig. 29. *Pleonexes kulafi* (Barnard), ♂ 4.5 mm, ♀ 4.0 mm, Taunovo Bay.

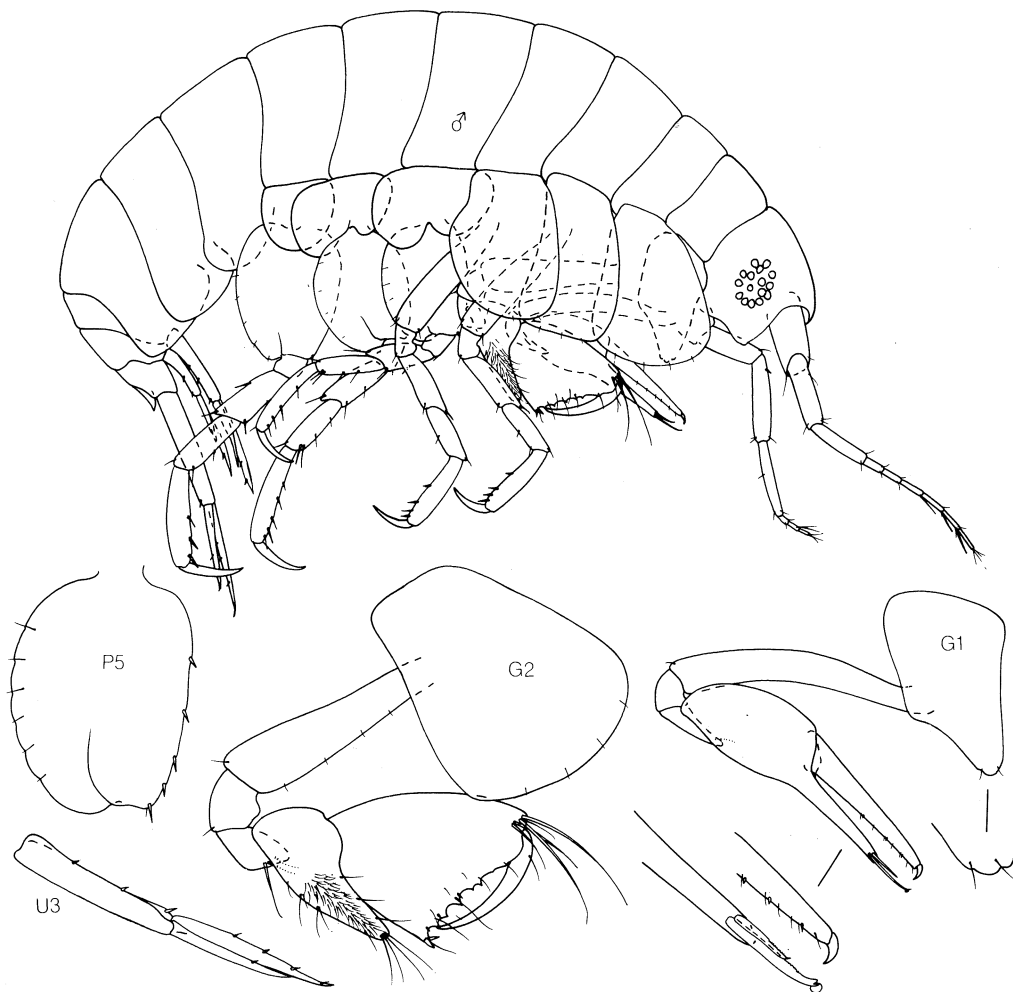


Fig. 30. *Paranamixis madagascarensis* Ledoyer (*Leucothoides* form), ♂ 2.0 mm.

**Remarks.** The broadly sub-triangular propodus with overlapping dactylus of the male gnathopod 2 immediately distinguishes this species from all Fijian *Amphithoidae*. The shape of the female gnathopod 2 propodus (see Fig. 29), the rod-shaped mandibular palp article 3 and truncate interramal process of uropod 1 should suffice, when taken together, to distinguish the female from other Fijian species of *Amphithoidae*.

**Type-locality.** Ifaluk Atoll, Caroline Islands.

**Fijian localities.** Makuluva Island, Taunovo Bay, Mburelevu.

**Distribution.** Caroline Islands, Fiji, Indonesia, India, Madagascar.

**Habitat.** Amongst algae (*Sargassum*, *Turbinaria*, *Amphiroa*) and coral rubble.

#### Family Anamixidae

Anamixids are leucothoid-like amphipods with a curious life history. Sexually mature populations were, until recently, classified with the Leucothoidae under the generic name *Leucothoides* and were distinguished from other leucothoid genera by the presence of a 1-articulate mandibular palp and small partially

concealed coxa 1. It is now known (Thomas & Barnard, 1983) that a small percentage of males (but apparently not females) undergo a moult to form hyperadults which lose their mandibles and maxillae, and sometimes also (*Paranamixis*) gnathopod 1. These hyperadults were previously placed alone in the family Anamixidae.

Anamixids are commensals known to be associated with calcareous sponges, tunicates and possibly other sedentary organisms. Only one species is known from Fiji.

#### *Paranamixis madagascarensis* Ledoyer

Figs 30–31

*Paranamixis bocki*.—Ledoyer, 1967: 125, fig. 5c.—Ledoyer, 1978: 231, fig. 14. (not *P. bocki* Schellenberg, 1938: 24, fig. 14).

*Paranamixis madagascarensis* Ledoyer, 1982: 141, fig. 49.

**Material examined.** Stn 2 (1)AC; stn 17 (1)AC; stn 18 (2)AC; stn 20 (6)AM P35323; stn 22 (4)AC; stn 27 (2)AC; stn 29 (1)AM P35347; stn 30 (1)AM P35349; stn 31 (2)AC; stn 35 (1)AC; stn 41 (1)AC; stn 48 (1)AM P35361; stn 49 (1)AC; stn 52 (1)AC; stn 53 *Paranamixis* form (4)AC, (3)AM P35366, *Leucothoides* form (16)AC, (5)AM P35367; stn 54 (1)AC; stn 55 (3)AC.

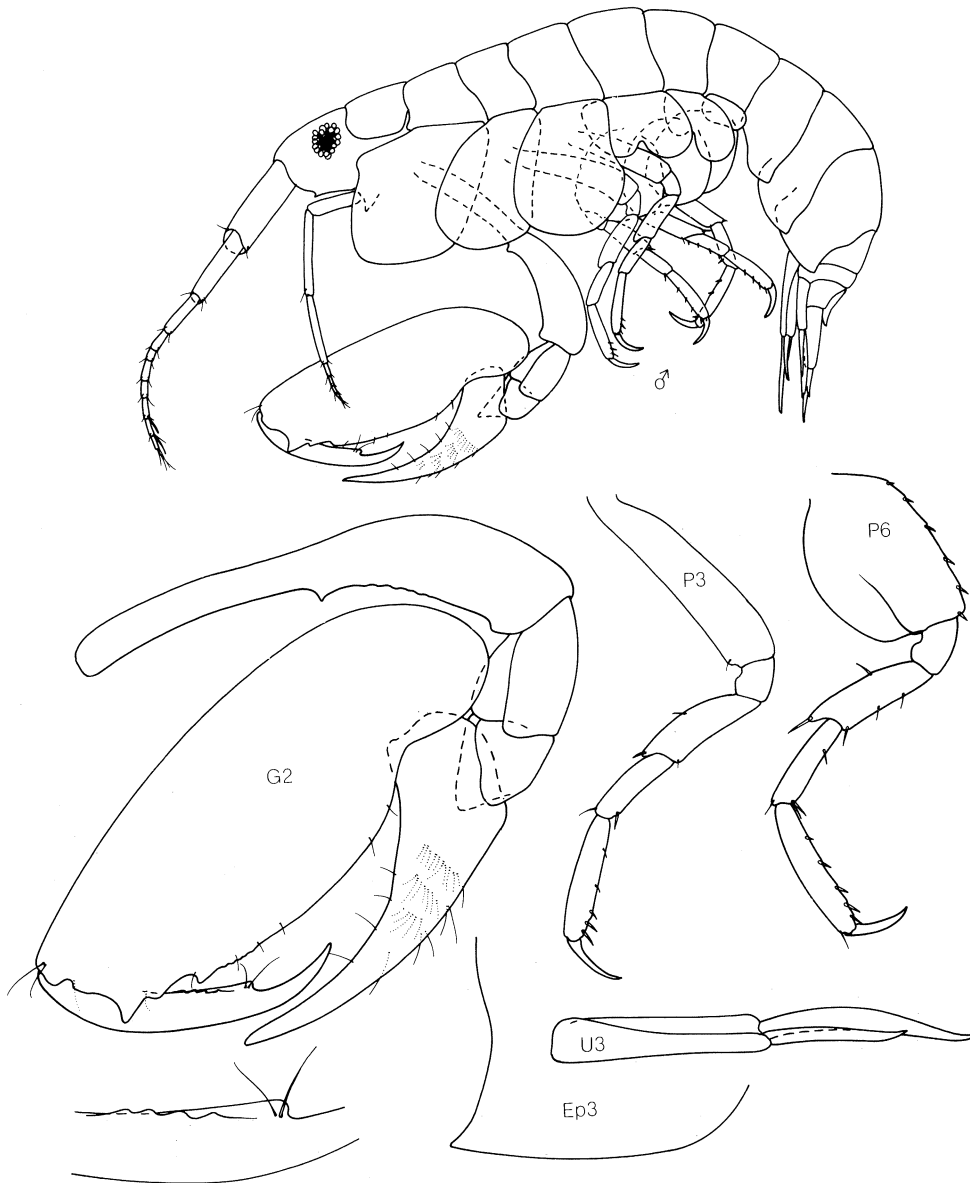


Fig. 31. *Paranamixis madagascarensis* Ledoyer (*Paranamixis* form), ♂ 2.8 mm, Nananui Ra.

**Description.** 'Leucothoides' form: Length, 2.2 mm. Head with anteroventral corner angular. Gnathopod 1, coxa not covering anteroventral corner of head, anterior margin almost straight, anterodistal margin with two apical setae; carpus and propodus forming carpochele; prolongation of carpus about two-thirds length of propodus, with two immersed spines, outer spine longer and extending just beyond tip of propodus which bears a small dactylus; opposing margins of carpus and propodus minutely serrate. Gnathopod 2, carpus with posterodistal extension; propodus wider distally, palm scalloped, defined by a tooth bearing two small spines; dactylus shorter than palm. Pereopods 3-4, propodus posterior margin with three distal spines and one medial spine. Pereopod 5, basis posterior margin very weakly scalloped, with deeply inserted, extremely fine setae. Pereopod 7 basis relatively broad. Uropod 3 greatly

elongated, inner ramus equal in length to peduncle; outer ramus shorter than inner.

'*Paranamixis*' form: Length, 2.8 mm. Head with anteroventral corner produced into an acute tooth. Gnathopod 1 entirely absent. Gnathopod 2, coxa enlarged with anteroproximal bulge; basis proximal half slender, distal half stouter, anterior margin with medial acute tooth and crenulate, concave distal portion; carpus and propodus forming chelate structure; propodus elongate, ovoid, posterodistal margin with 2-3 teeth.

**Remarks.** The 'Leucothoides' stage of this species which includes both males and females is readily distinguished from *Leucothoe* and *Leucothoella* species by the shape of the gnathopod 2 propodus, by the presence of basally immersed spines on the carpal prolongation of gnathopod 1 and by the fact that coxa 1 is almost entirely concealed by coxa 2. It is also

characterised by a 1-articulate mandibular palp. The 'Paranamixis' stage is a hyperadult male form, no females having ever been described. This stage, which lacks gnathopod 1 and has a highly characteristic gnathopod 2, could scarcely be confused with any other Fijian amphipod.

Unequivocal assignment of a 'Leucothoides' stage to an *Anamixis* or *Paranamixis* stage is only possible by means of laboratory rearing. In the present work, only one 'Leucothoides' stage and one 'Paranamixis' stage have been found, on two occasions in the same samples. Pending rearing experiments, it seems reasonable to assume that both are forms of a single species.

*Paranamixis madagascarensis* differs from its closest relative, *P. indicus* Sivaprakasam, in lacking anteroproximal teeth on coxa 2, the presence of a medial tooth and distal crenulations on the anterior margin of the gnathopod 2 basis, and in the elongate, oval shape

and palmar tooth configuration of the gnathopod 2 propodus. It differs from *P. aberro* Hirayama (1983) in the quite different shape of the head and coxa 2. The 'Leucothoides' stage very closely resembles *L. torrida* Barnard, but the opposing margins of the gnathopod 1 carpus and propodus are not so markedly serrate, and pereopod 7 basis is broad and minutely scalloped.

**Type-locality.** Tulear, Madagascar.

**Fijian localities.** Momi Bay, Malevu, Votualailai, Taunovo Bay, Nasese, Suva barrier reef, Mburelevu, Nananui Ra.

**Distribution.** Fiji, Madagascar.

**Habitat.** This species has been taken in samples from a wide variety of substrates, viz. *Sargassum*, *Turbinaria*, *Gelidiella*, *Halimeda*, *Amphiroa*, *Syringodium*, *Pocillipora*, *Acropora* and coral rubble. The anamixids are considered to be inquilines, and the true associations of *P. madagascarensis* are therefore not clear.

### Family Aoridae

Aorids are corophioidean amphipods and, consequently, have a fleshy telson and glandular pereopods 3–5. Generally (and in all known Fijian species) the male gnathopod 1 and, occasionally, gnathopod 2 is enlarged. The head is only moderately recessed at insertion of antenna 2 (cf. Isaeidae) except where the excavation is to allow the accommodation of an enlarged antenna 2. Uropod 3 rarely projects beyond uropods 1 and 2 and the rami always have simple terminal spines (cf. Amphithoidae and Ischyroceridae).

Amphipods of this family are fragile and often autotomise appendages (except gnathopods) in the collecting process.

Like other corophioids, aorids build tubes attached to a variety of substrates, but may also line existing holes with parchment-like material spun from glands in pereopods 3–4.

### Key to Genera

1. Uropod 3 uniramous. . . . . *Grandidierella*  
 —Uropod 3 biramous. . . . . 2
2. Gnathopod 2 slender, anterior margin of basis, merus, carpus and propodus with numerous long, pectinate setae. . . . . *Xenocheira*  
 —Gnathopod 2 stout, if slender, anterior margins of podomeres lacking long setae, or at most long setae restricted to carpus and propodus. . . . . 3
3. Male gnathopod 1 and 2 with enlarged carpus. . . . . *Aorella*  
 —Male gnathopod 1 with enlarged propodus, gnathopod 2 with neither carpus nor propodus enlarged. . . . . 4
4. Gnathopod 1, both sexes with enlarged, rounded propodus lacking teeth. . . . . *Globosolembos*  
 —Gnathopod 1 male, propodus subrectangular with distinct posterodistal tooth, gnathopod 1 female, weakly enlarged. . . . . *Lembos*

#### *Aorella multiplex* Myers

Figs 32–33

*Aorella multiplex* Myers, 1981b: 57–59, figs 1–2.

**Material examined.** Stn 6 (1)AC; stn 9 (5)AC; stn 24 (94)AC, (71)AM P35329; stn 25 (1)AC; stn 27 (1)AC; stn 28 (4)AC.

**Description.** Length, 4.5 mm. Head with distoventral corner strongly produced; ocular lobes evenly rounded.

Male pereon segment 3 with strong, acute, mid-ventral sternal process. Antenna 1 longer than antenna 2 with well developed accessory flagellum. Male antenna 2, article 3 stout, lower distal corner produced on outer face into an elongate triangular process which extends proximally as a flange; article 4 stout, swollen medially. Female antenna 2 normal. Male gnathopod 1, basis slender; merus greatly elongated, appressed to posterior

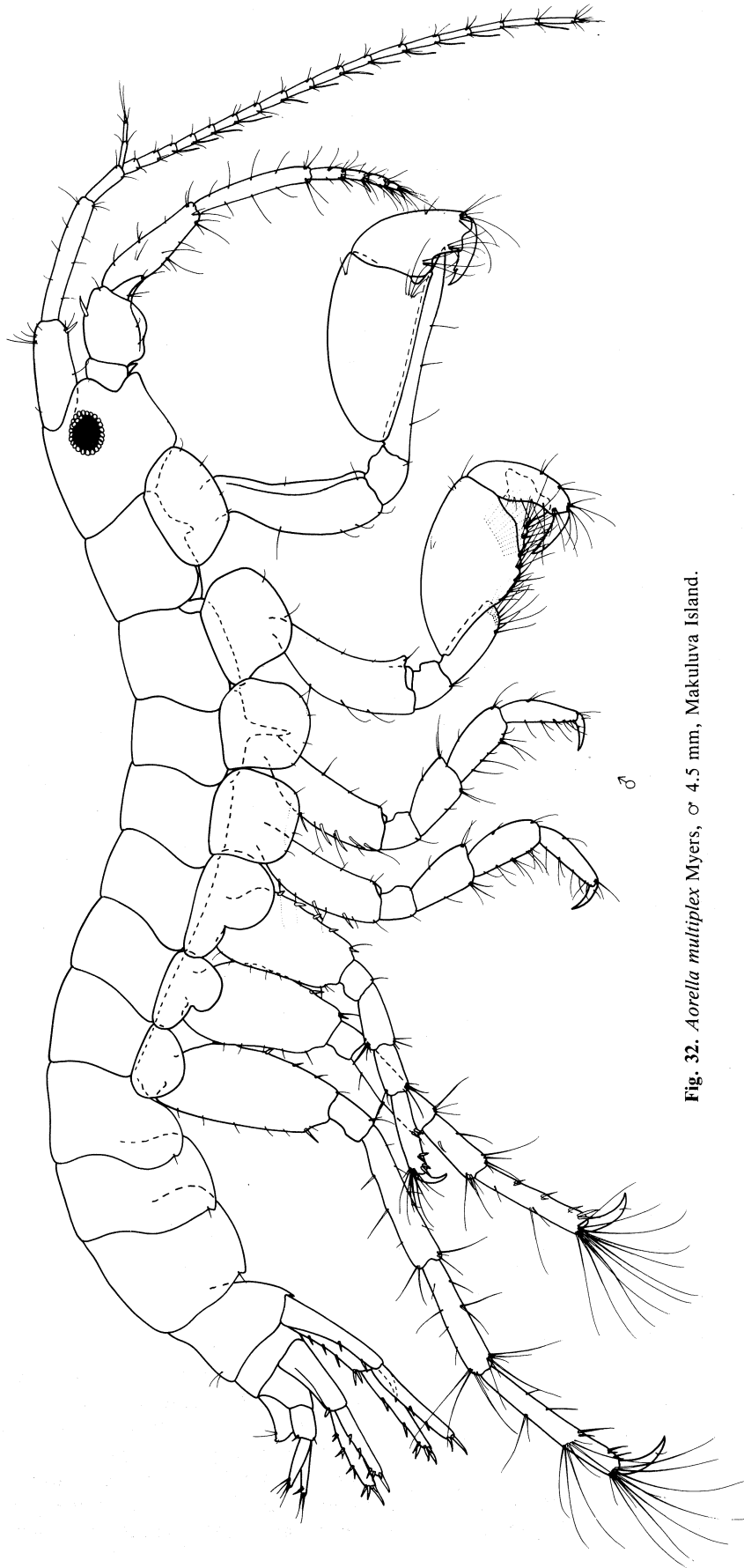


Fig. 32. *Aorella multiplex* Myers, ♂ 4.5 mm, Makuluva Island.

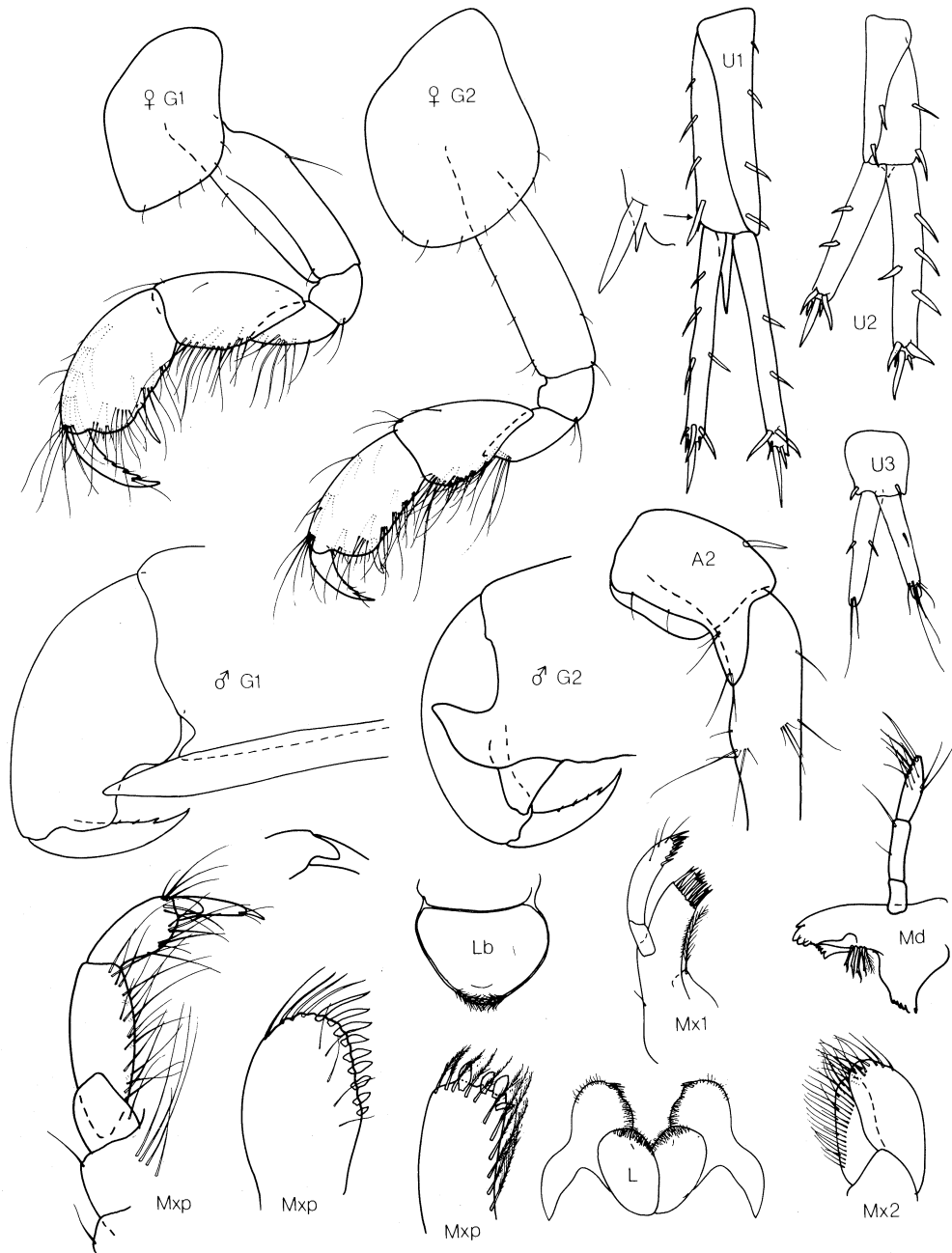


Fig. 33. *Aorella multiplex* Myers, ♂ 4.5 mm, ♀ 4.2 mm, Makuluva Island.

margin of carpus, produced distally into an acute tooth; carpus greatly enlarged, the posterodistal margin produced into a short tooth, fused to the anterior margin of the meral tooth. Female gnathopod 1, propodus a little longer than carpus; merus and carpus lacking teeth. Male gnathopod 2, basis anterior margin concave, produced distally into a triangular tooth;

carpus massive, posterior distal margin produced on inner face into a bilobed tooth; propodus slender, posterior margin concave. Female gnathopod 2 similar to gnathopod 1 but a little smaller. Epimera 1–3 each with a small tooth at the lower posterior corner. Uropod 1 with strong interramal process. Uropod 2 with vestigial interramal process. Uropod 3, inner ramus a little longer

than outer and longer than peduncle; outer ramus with small second article. Oviparous female with about 10 eggs.

**Remarks.** Males are instantly recognisable by the structure of the enlarged gnathopoda. Females are typical aorid and thus distinguished with difficulty from females of other aorid species.

**Type-locality.** Makuluva Island, Viti Levu, Fiji.

**Fijian localities.** Makuluva Island, Nukumbutho Island, Taunovo Bay.

**Distribution.** Not yet reported from outside Fiji.

**Habitat.** Among *Amphiroa*, *Halimeda*, *Turbinaria* and, less frequently, in phanerogams (*Syringodium*).

### *Globosolembos ovatus* Myers

Figs 34–35

*Lembos* (*Globosolembos*) *ovatus* Myers, 1985a:354, figs 228–230.

**Material examined.** Stn 2 (2)AC; stn 5 (1)AC; stn 18 (4)AC; stn 27 (1)AM P35519 (8)AC; stn 30 (1)AC; stn 35 (5)AC.

**Description.** Length, 4.0 mm. Pereon segments 2–4 (rarely 1–5) with numerous, irregular red-brown pigment spots extending over tergum and on to coxae 2–4. Eye with dark-brown central core surrounded by clear ommatidia. Head with lateroventral corner very strongly produced, acute. Male pereon segments 2–5 with midventral sternal processes. Antenna 1, flagellum twice length of peduncle with up to 25 articles; accessory flagellum with three articles. Antenna 2 stout, flagellum shorter than fifth peduncular article. Mandible palp, article 3 strongly falcate. Male gnathopod 1, coxa shallow; basis enlarged, anterior margin weakly convex; carpus short, subtriangular; propodus almost twice length of carpus, broadest subdistally, inner face of anterior margin strongly setose, palm very oblique, evenly rounded, defined by a rounded prominence bearing a spine; dactylus strongly curved, fitting palm. Female gnathopod 1, similar to that of male but propodus a little less well developed, palm less oblique. Male gnathopod 2, coxa subquadrangular; basis anterior margin straight or weakly concave; carpus and propodus subequal and densely setose on anterior margin. Female gnathopod 2 like that of male but less setose. Epimera 1–3 rounded. Uropods 1–2 with interramal spiniform process. Uropod 3, outer ramus shorter than inner, lacking a second article.

**Remarks.** Readily distinguished from all other Fijian aorids by the enlarged subovoid propodus of gnathopod 1 in both sexes. The differences between this species and the closely related *G. leapakahi* (Barnard), have been reviewed by Myers (1985a).

**Type-locality.** Taunovo Bay, Viti Levu, Fiji.

**Fijian localities.** Taunovo Bay, Nasese, Suva barrier reef, Nukumbutho Island, Mburelevu.

**Distribution.** Fiji, Western Samoa, Vanuatu.

**Habitat.** Almost exclusively among coral rubble, rarely on living coral and phanerogams. Not recorded from algae.

### Key to Species of *Grandidierella*

1. Male gnathopod 2, carpus three times as long as broad; female gnathopod 1, carpus with posterodistal tooth. . . . . *G. perlata*  
— Male gnathopod 2, carpus less than twice as long as broad; female gnathopod 1, carpus lacking tooth. . . . . 2
2. Uropod 3 with terminal setae, but lacking marginal spines or setae; male gnathopod 2, carpus anterior margin weakly setiferous. . . . . *G. teres*  
— Uropod 3 with both terminal and marginal setae; male gnathopod 2, carpus anterior margin strongly setose. . . . . *G. bispinosa*

### *Grandidierella bispinosa* Schellenberg

Figs 36–37

*Grandidierella bispinosa* Schellenberg, 1938: 92, fig. 47.— Bousfield, 1971: 265, fig. 6.— Ledoyer, 1979a: 152, fig. 7.— Myers, 1981: 214, figs 1–2.

**Material examined.** Stn 3 (1)AC; stn 33 (4)AM P35351; stn 36 (7)AC; stn 42 (1)AC; stn 56 (2)AM P35371; stn 53 (23)AC.

**Description.** Length, 4.3 mm. Body whitish, mottled with brown; coxae 1–5 with brownish central blotch; antennae peduncular articles brown proximally, white distally. Head with distoventral corner weakly produced; ocular lobes evenly rounded. Antenna 1 longer than 2; accessory flagellum composed of one long and one vestigial article. Male gnathopod 1, carpus broadly ovoid, with strong posterodistal tooth and smaller, rounded, distal tooth, posterior margin with several smaller teeth or irregularities, outer face with additional tooth (not readily seen without manipulation of the specimen); propodus posterior margin concave proximally, convex distally; dactylus posterior margin weakly toothed. Female gnathopod 1 weakly developed; carpus and propodus subequal; carpus without teeth. Male gnathopod 2, basis anterior margin crenulate; carpus enlarged, anterior margin with numerous long setae; propodus slender, approximately parallel-sided, anterior margin with numerous long setae. Female gnathopod 2 similar to gnathopod 1 but carpus and propodus more slender. Uropod 1 with strong interramal process. Uropod 2 lacking an interramal process. Uropod 3, ramus lateral margins with strong spines.

**Remarks.** As in most aorids, the structure of the male gnathopoda is an immediate recognition character. Females (in Fiji) can be distinguished from *G. teres* by the spinose uropod 3 and multiarticulate antennae, and from *G. perlata* by the absence of a tooth on gnathopod 1 carpus.

**Type-locality.** Ralum, Bismark Archipelago.

**Fijian localities.** Suva, Laucala Island, Mburelevu, Momi Bay.



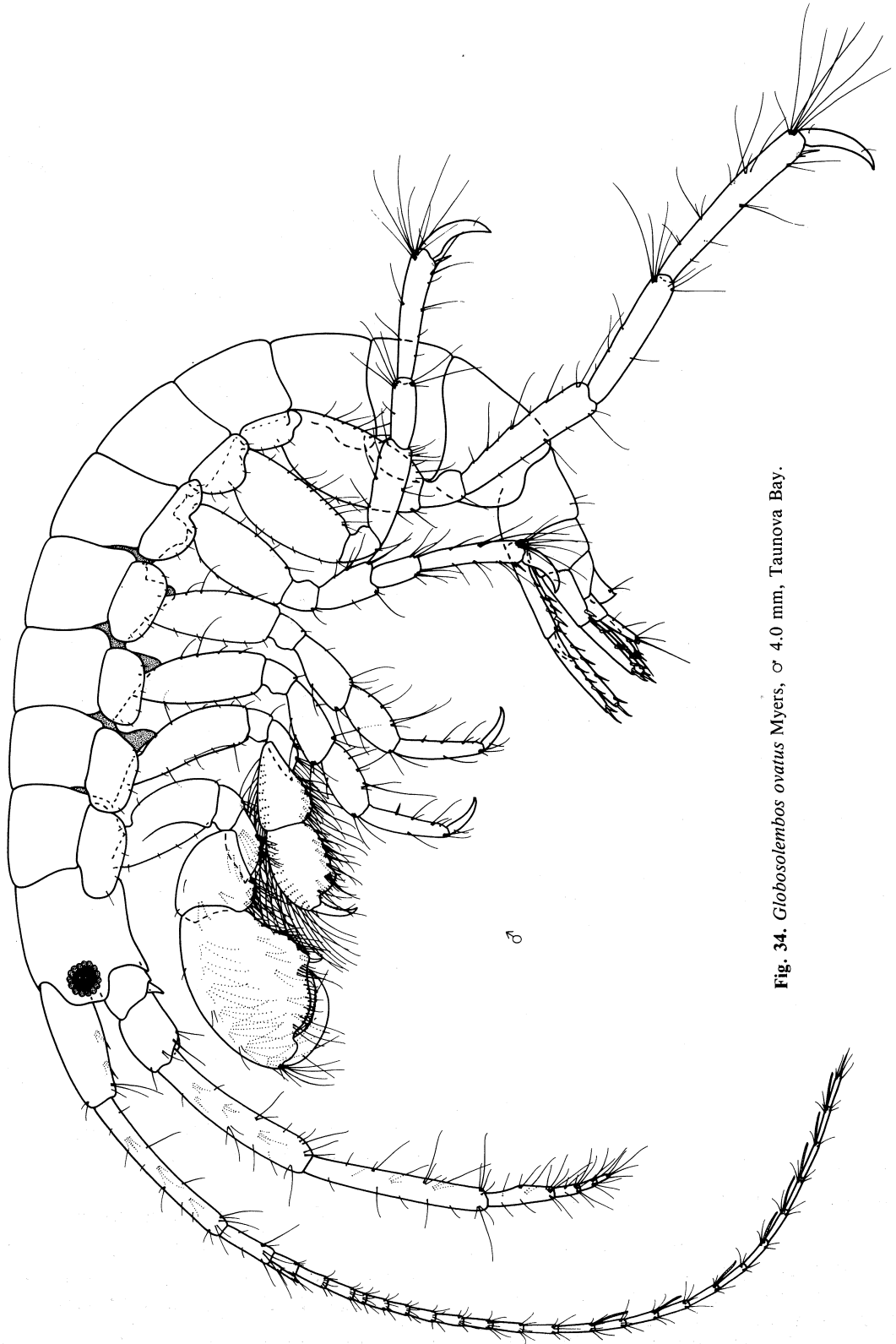


Fig. 34. *Globosolembos ovatus* Myers, ♂ 4.0 mm, Taunova Bay.

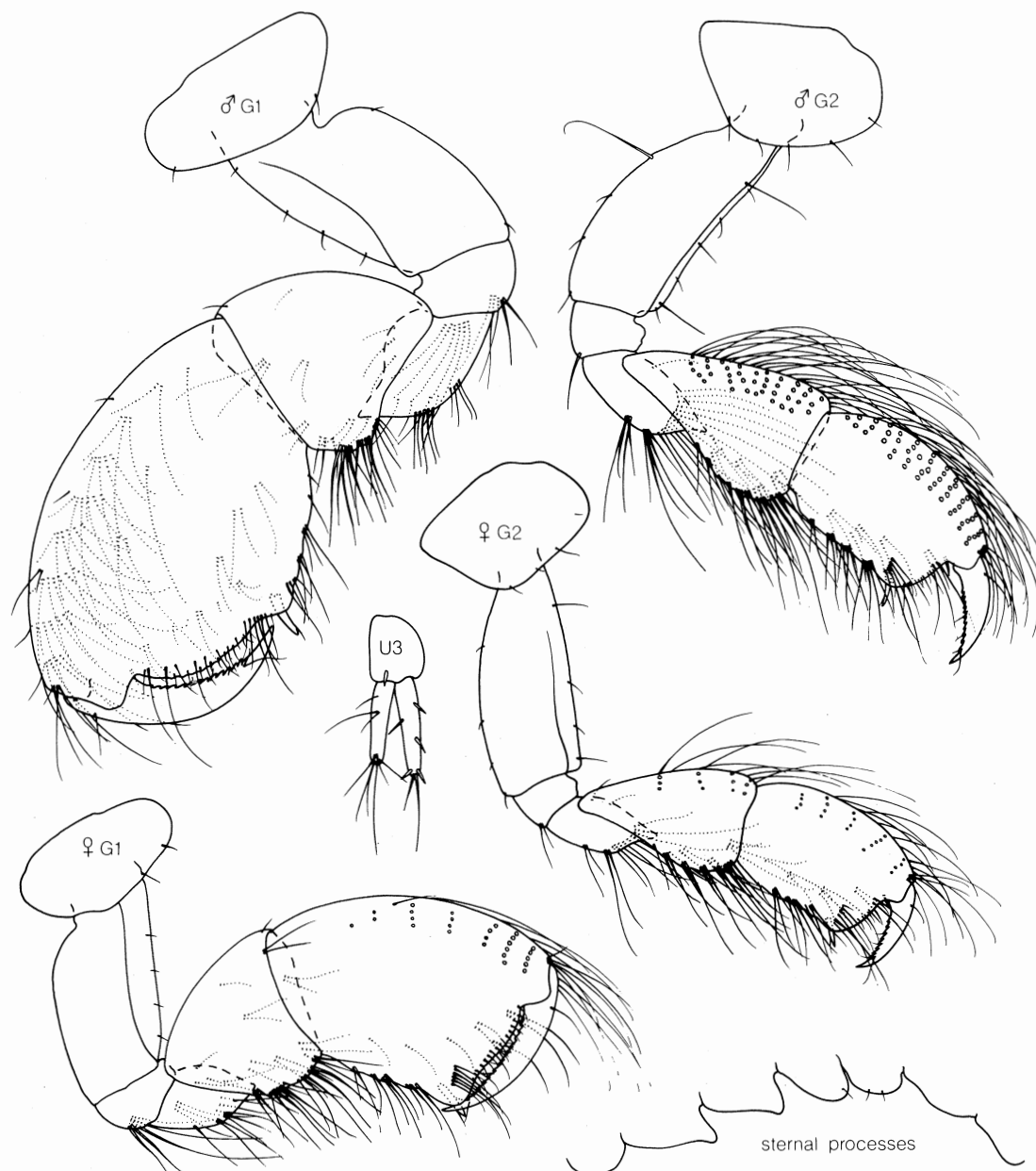


Fig. 35. *Globosolembos ovatus* Myers, ♂ 4.0 mm, ♀ 4.0 mm, Taunovo Bay.

**Distribution.** Indonesia and Melanesia.

**Habitat.** In mangrove litter and among phanerogams (*Syringodium*, *Halophila*).

*Grandidierella perlata* Schellenberg

*Grandidierella perlata* Schellenberg, 1938: 91, fig. 46.—  
Myers, 1970: 141.

**Remarks.** This species differs from other known Fijian species in the genus by the proportions of the podomeres of the male gnathopoda. In gnathopod 1, the propodus is broad and over two-thirds the length of the carpus, and in gnathopod 2, the carpus is elongate and three times as long as broad. The female can be distinguished by the presence of a posterodistal tooth

on the carpus of gnathopod 1.

*Grandidierella perlata* was not represented in the present collections.

**Type-locality.** Mbau, Viti Levu, Fiji.

**Distribution.** Fiji, Marianas.

*Grandidierella teres* Myers

Fig. 38

*Grandidierella teres* Myers, 1981: 215–218, fig. 3.

**Material examined.** Stn 27 (1)AM P35339.

**Description.** Length, 2.8 mm. Eggs vivid emerald green. Head with distoventral corner scarcely produced; ocular lobes evenly rounded. Antenna 1 longer than 2;

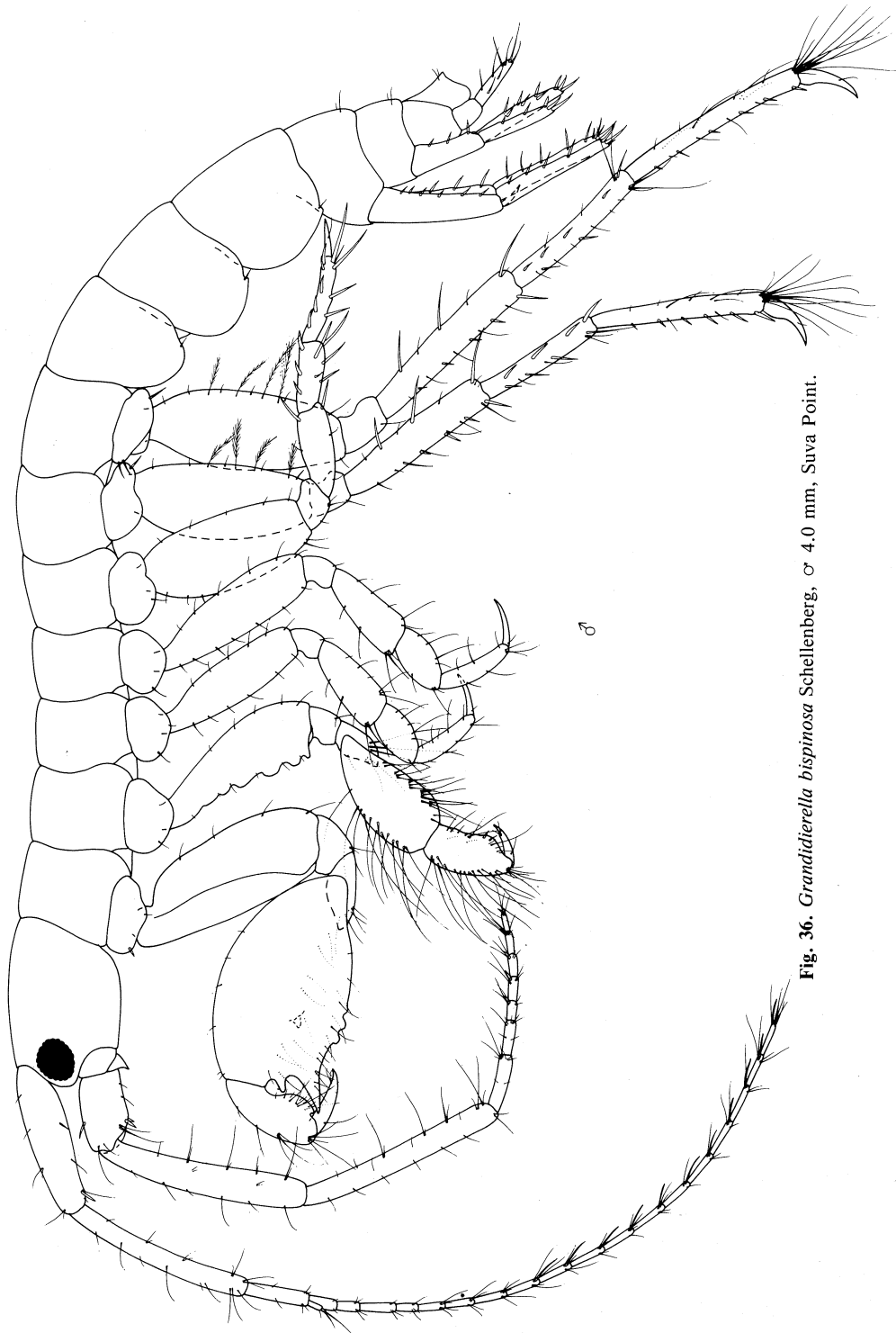


Fig. 36. *Grandidierella bispinosa* Schellenberg, ♂ 4.0 mm, Suva Point.

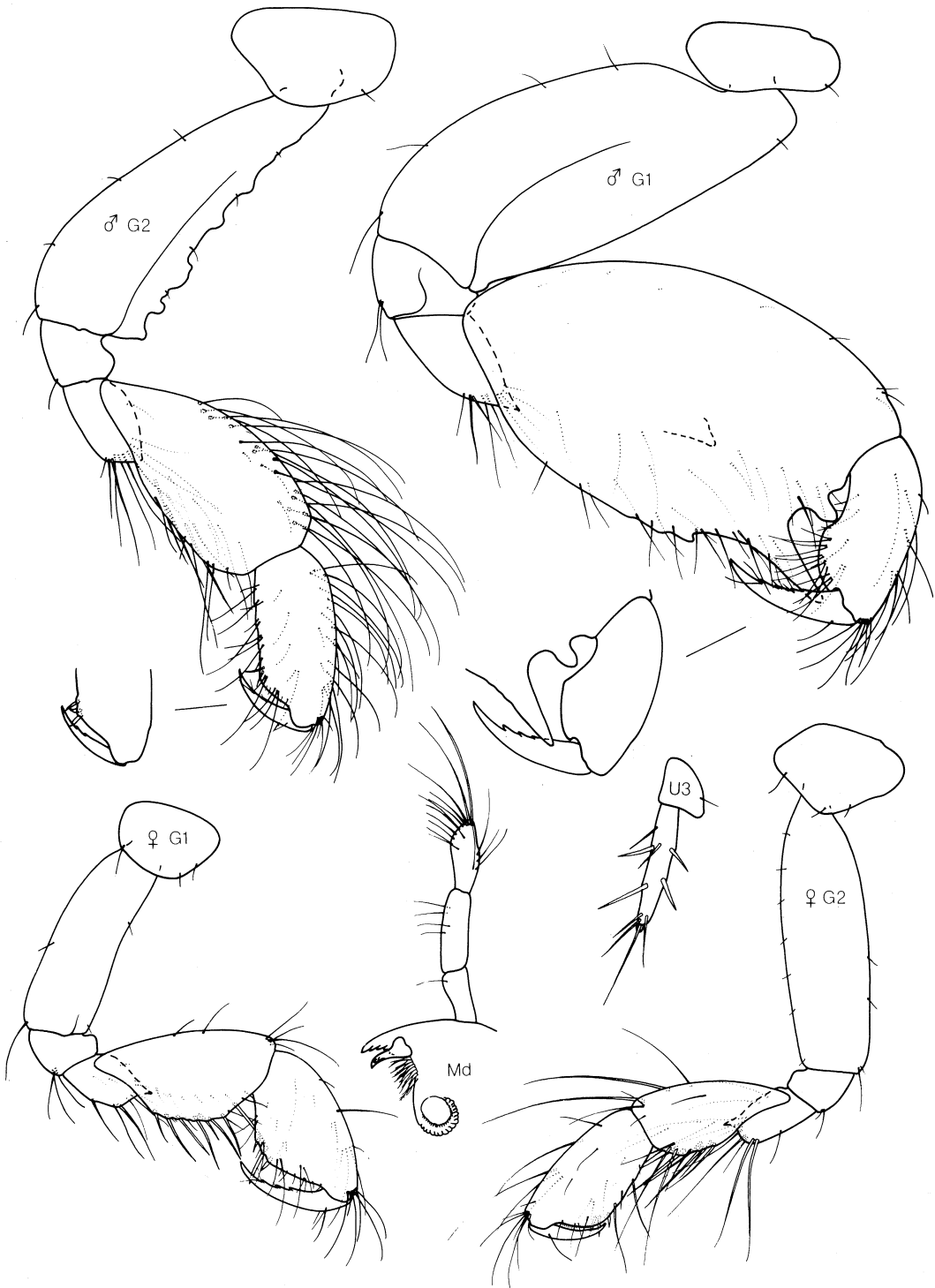


Fig. 37. *Grandidierella bispinosa* Schellenberg, ♂ 4.0 mm, ♀ 3.8 mm, Suva Point.

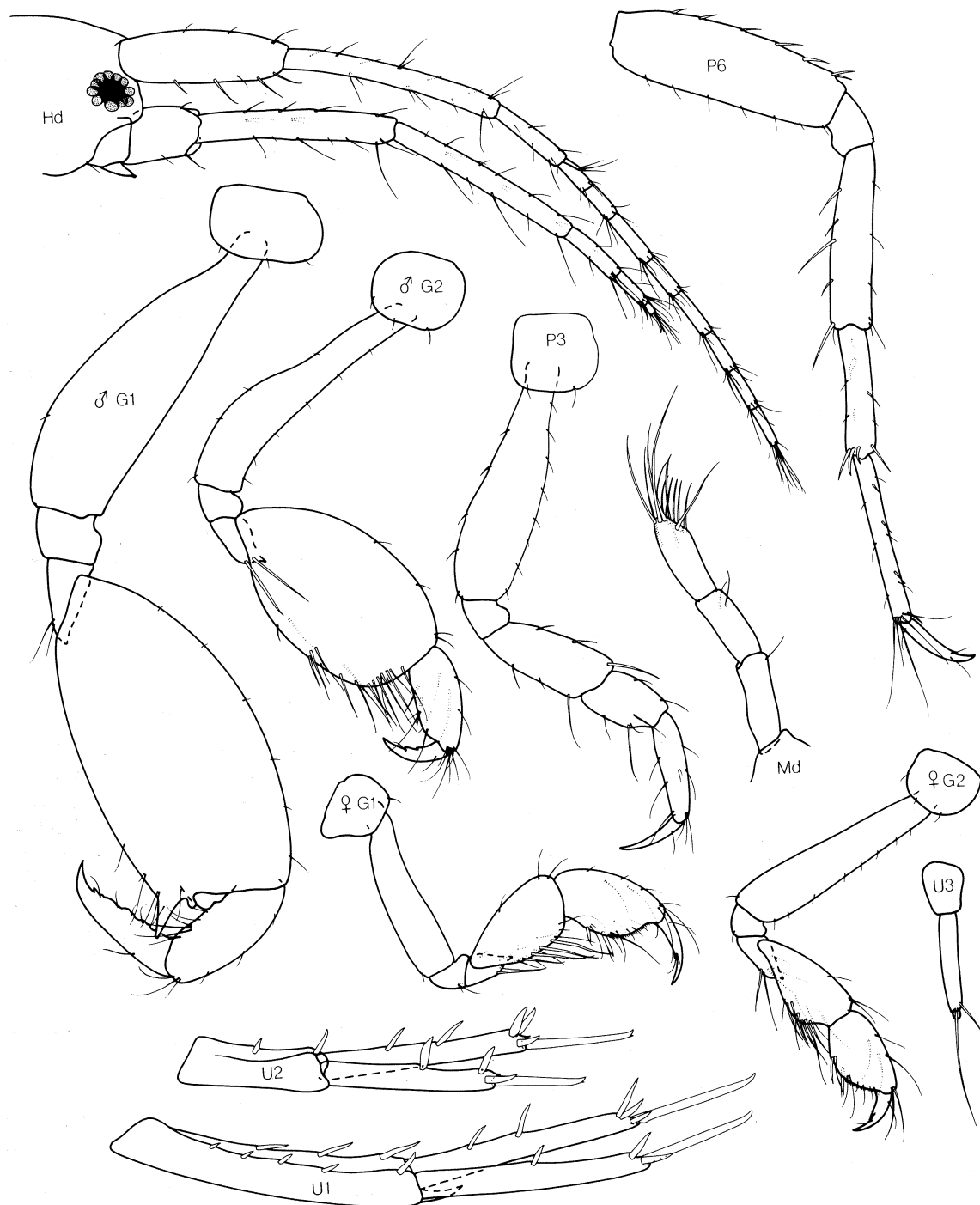


Fig. 38. *Grandidierella teres* Myers, ♂ 2.8 mm, ♀ 2.5 mm, Taunovo Bay.

accessory flagellum composed of one long and one vestigial article. Male gnathopod 1, basis elongate, flask-shaped; merus short, subtriangular; carpus subovoid, produced at the posterodistal corner into a strong, acute, outwardly deflected tooth at the base of which, on the distal margin, is a small rounded tooth, and on the inner face of the distal margin, a rounded, slightly indented flange; propodus almost parallel-sided; dactylus stout, strongly hooked at the tip and with an irregular

posterior margin. Female gnathopod 1 weakly developed; carpus and propodus subequal, carpus without teeth. Male gnathopod 2, basis extremely slender, especially proximally; carpus enlarged, subovoid, the distal margin very broad; propodus about one-third breadth of carpus. Female gnathopod 2 similar to gnathopod 1 but very slightly smaller. Uropod 1 with short interramal process. Uropod 2 lacking an interramal process. Uropod 3 slender, ramus twice

length of peduncle, lacking marginal spines and bearing a small second article.

**Remarks.** The slender basis and swollen carpus of the male gnathopod 2 immediately distinguishes this species from other Fijian *Grandidierella*. Females can be recognised by the non-spinose uropod 3 (cf. *G. bispinosa*) and by the lack of a carpal tooth on gnathopod 1 (cf. *G. perlata*).

**Type-locality.** Taunovo Bay, Viti Levu, Fiji.

**Fijian locality.** Taunovo Bay.

**Distribution.** Not yet reported from outside Fiji.

**Habitat.** Among *Syringodium*.

*Lembos virgus* Myers

Fig. 39

*Lembos virgus* Myers, 1985b:390, figs 249–252.

**Material examined.** Stn 53 (1)AC; stn 55 (1)AC.

**Description.** Length, 5.3 mm. Pereon segments 3–5 with large, reddish-brown blotch on dorsum. Head with lateroventral corner moderately strongly produced, acute. Pereon segments 3–4 with midventral sternal processes. Antenna 1 unknown. Antenna 2 moderately slender; flagellum equal in length to fifth peduncular article. Mandible palp, article 3 with posterior margin almost straight. Male gnathopod 1, coxa anterodistal corner weakly produced; basis enlarged, anterior margin straight or weakly concave, posterior margin strongly convex, with ‘brush’ of very long setae medially; merus posterodistal margin produced into a long, slender, curved tooth; carpus short, subrectangular; propodus very narrow proximally, widest medioproximally, a little less than three times length of carpus, palm short, crenulate, separated from a stout, subacute posterodistal tooth by a deep, narrow, round-bottomed sinus; dactylus stout, falciform, swollen medially, without accessory teeth. Male gnathopod 2, coxa inner face with long, truncate process at junction of basis with coxa; basis anterior margin weakly concave and sinuous, produced distally into a distinct rounded tooth; carpus slender, anterior margin weakly setiferous or asetiferous; propodus shorter than carpus. Epimera 1–3 rounded, but epimera 1–2 with small posterodistal tooth. Uropods 1–2 with interramal spiniform process. Uropod 3, outer ramus shorter than inner with a small second article.

Female unknown.

**Remarks.** This species could scarcely be confused with any other aorid. The meral tooth and the brush of setae on the basis of gnathopod 1, when taken in combination with the truncate coxal process of gnathopod 2, distinguish this species from males of all other known Aoridae.

**Type-locality.** Nananui Ra, Viti Levu Fiji.

**Fijian locality.** Nananui Ra.

**Distribution.** Fiji. Schellenberg (1938) recorded *L. aequimanus* from Suva, but his material consisted of a single female. In the light of the high diversity of this

genus in tropical seas, and the great difficulty in identifying *Lembos* species from female specimens some doubt must be cast on his identification unless corroborative material becomes available. Dana (1853) described *Lembos fuegiensis* and *L. tenellus* (as *Gammarus fuegiensis* and *G. tenellus*) from Fiji, but his descriptions and figures are so inexact that it is not possible to determine to what species he was referring. Unfortunately, Dana’s type-material was destroyed in the Chicago fire of 1871, precluding any establishment of his species.

**Habitat.** Among *Halimeda* and coral rubble.

*Xenocheira seurati* Chevreux

*Xenocheira seurati* Chevreux, 1908: 510, figs 26–28.—Schellenberg, 1938: 86.

**Remarks.** This species is immediately identifiable by the structure of gnathopod 2 which is elongate, slender and bears very long, pectinate setae on the anterior margin of the basis, merus, carpus and propodus. This is clearly an adaptation to filter feeding.

*Xenocheira seurati* was not represented in the present collections.

**Type-locality.** Mangareva Island, Gambier Archipelago.

**Distribution.** Gambier, Fiji.

Family Biancolinidae

Biancolinids are small, cylindrical-bodied amphipods, with a depressed, globose head, biramous uropod 3 and pleopods with unexpanded uropod 3. They resemble eophilantids as a result of their similar lignivorous habits. They differ, however, in the short carpus of gnathopods 1–2, elongate pereopods 5–7, unexpanded pleopod peduncles and biramous uropod 3, as well as certain differences in mouthpart morphology.

*Biancolina algicola* Della Valle

Fig. 40

*Biancolina algicola* Della Valle, 1893: 562, pl. 3 fig. 11, pl. 32 figs 38–53.—Ruffo, 1982: 162, fig. 108.

*Biancolina cuniculus* (partim) Stebbing, 1906: 647.—Gurjanova, 1951: 904, fig. 627.

*Biancolina mauihina* Barnard, 1970: 103, figs 57–58.—Ledoyer, 1979a: 160, fig. 10. (not *Biancolina mauihina* Ledoyer, 1978: 264, fig. 5).

**Material examined.** Stn 4 (1)AM P35302; stn 13 (1)AC; stn 14 (1)AC; stn 34 (2)AC.

**Description.** Length, 1.3 mm. Body cylindrical, head globose. Eye small, composed of few ommatidia. Antenna 1, article 1 geniculate; flagellum elongate with 10 articles. Antenna 2 short but relatively slender; flagellum with three articles. Mandible lacking palp. Maxilliped inner plate shorter than outer, terminal article of palp short and stout. Maxilla 1, inner plate short, with single seta. Gnathopods 1 and 2 subsimilar, parachelate; carpus much shorter than propodus; dactylus greatly overlapping palm. Pereopods 5–7 elongate; basis evenly expanded. Epimera 1–3 rounded.

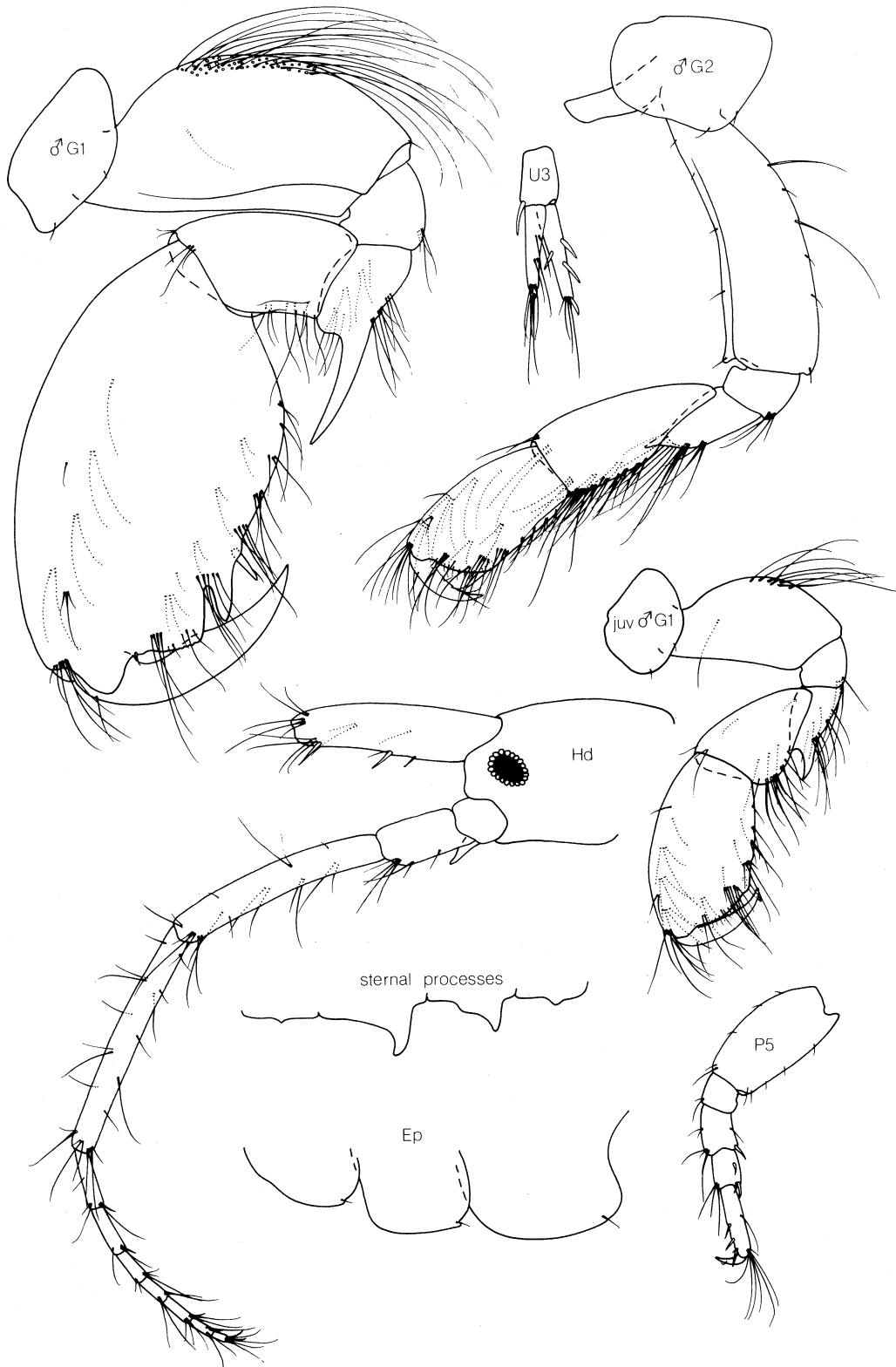


Fig. 39. *Lembos virgus* Myers, ♂ 5.3 mm, Nananui Ra.

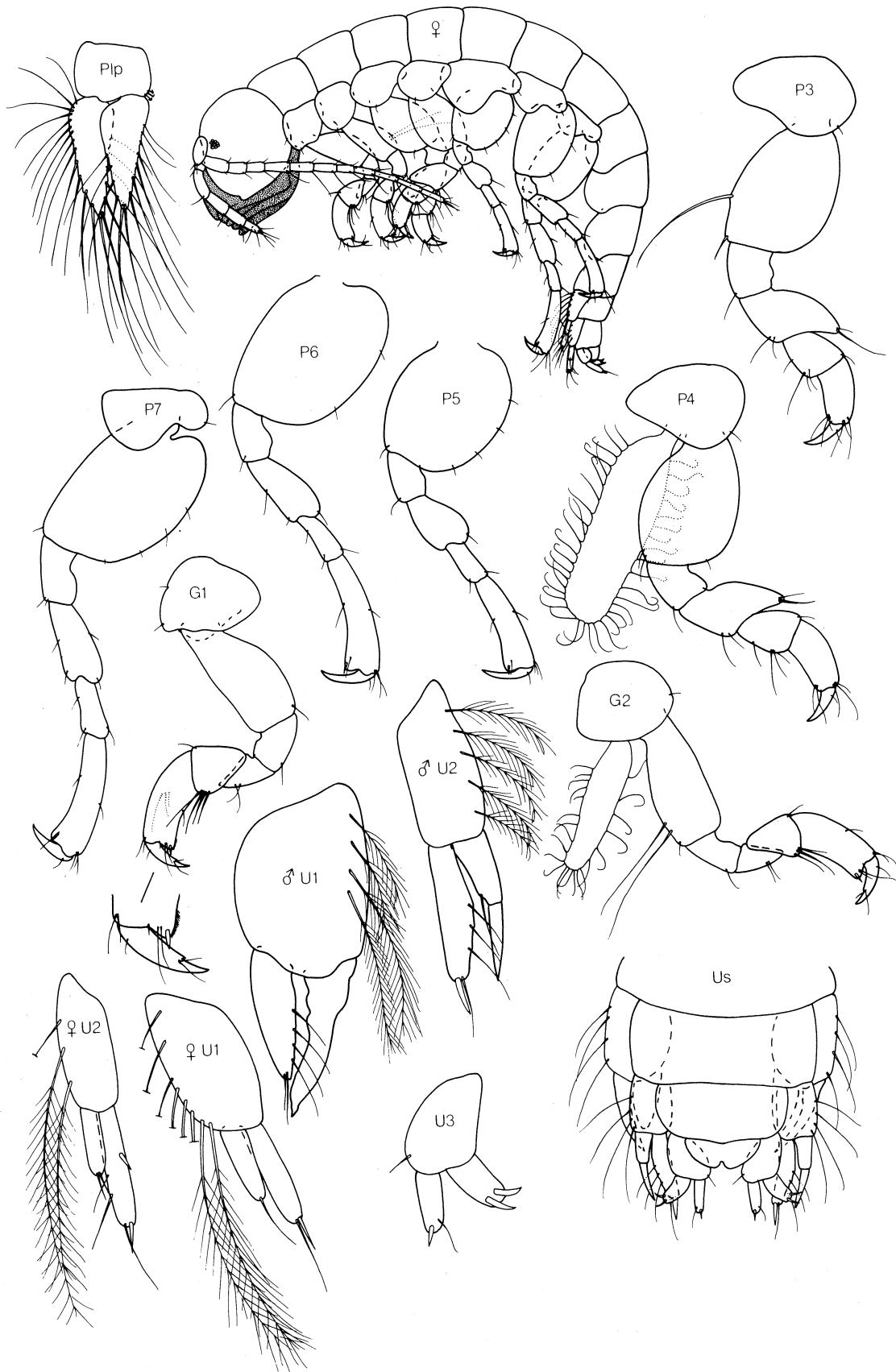


Fig. 40. *Biancolina algicola* Della Valle, ♂ 1.1 mm, ♀ 1.3 mm, Votualailai.



Pleopod peduncles not expanded, rami subequal. Uropods 1–3 biramous. Uropods 1–2, peduncles with plumose setae, ♀ outer ramus much shorter than inner, ♂ outer ramus longer than inner, irregularly contorted and terminating acutely. Uropod 2, outer ramus apparently articulate. Uropod 3 (both sexes), outer ramus broader than inner but subequal in length and with two terminal spines. Telson terminally notched.

**Remarks.** *Biancolina algicola* superficially resembles *Bircenna dronga* (Eophliantidae), but is easily distinguished by the elongate antenna 1, parachelate pereopods 5–7, biramous uropod 3 and weakly cleft telson.

**Type-locality.** Napoli, Italy.

**Fijian localities.** Votualailai, Nasese, Mburelevu.

**Distribution.** Fiji, Hawaii, Moluccas, Mediterranean.

**Habitat.** Amongst brown algae (*Sargassum*, *Turbinaria*) in the stems of which it is assumed to bore.

#### Family Colomastigidae

Colomastigids have a cylindrical body with very shallow coxae, short antennal flagella and (in Fijian species) elongate and slender gnathopod 1 with distal brush setae. Gnathopod 2 in the male is enlarged and subchelate. Maxillipeds are thin, like those of leucothoids and stenothoids, and the mandible lacks palp and incisor. Colomastigids are inquilines, especially in sponges, or nestlers in coral rubble, or occasionally algae.

#### *Colomastix lunalilo* Barnard

Fig. 41

*Colomastix lunalilo* Barnard, 1970: 96, figs 51–52.

**Material examined.** Stn 4 (2)AM P35303; stn 40 (1)AC.

**Description.** Head with conical anterior keel between bases of antenna 1. Eyes large, round. Antenna 2, peduncular articles 1 and 2 stout, article 1 slightly the longer; article 3 about half length of article 2, all peduncular articles ventrally spinose; flagellum 2-articulate, article 2 vestigial. Antenna 2 subequal in length to antenna 1; flagellum 2-articulate. Gnathopod 1, coxa with nipple-like anterior projection, all other articles extremely elongate; propodus with long distal setae; dactylus absent (or indistinguishable from setae). Male gnathopod 2, coxa with nipple-like anterior projection; basis flask-shaped; propodus over twice length of carpus, subovoid, palm short, crenulate, defined by a small cusp. Female gnathopod 2, basis slender, parallel-sided; propodus a little longer than carpus, palm oblique. Epimera 1–3 broadly rounded. Uropods 1–2 extending equally, rami all subequal. Uropod 3 extending beyond uropods 1–2, outer ramus about one-third length of inner ramus. Telson triangular, extending a little beyond peduncle of uropod 3.

**Remarks.** The characteristic body form and elongate gnathopod 1 serve to distinguish this, the only known

Fijian species of the genus, from all other Fijian amphipods.

**Type-locality.** Kaneohe Bay, Oahu, Hawaii.

**Fijian localities.** Momi Bay, Nasese.

**Distribution.** Hawaii, Fiji, Madagascar.

**Habitat.** Among coral rubble, corals, coralline algae and *Sargassum*.

#### Family Corophiidae

Corophiids are characterised by a fleshy telson and glandular pereopods 3–4, and by dorsoventral depression of the urosome and subpediform antenna 2. They resemble podocerids from which they differ in their relatively short urosomite 1. The only known Fijian species has all urosomite segments coalesced, and uropods 1–2 inserted ventrally. Corophiids are tube-dwelling detritivores which feed by scraping surface deposits with their stout antenna 2, and/or by filtering the water which passes through their tube with long setae, principally on gnathopod 2.

#### *Corophium* sp.

Fig. 42

**Material examined.** Stn 36 (1)AC.

**Description.** Length, 2.5 mm. Rostrum short, triangular. Antenna 1, peduncle article ratios 14:10:5, article 1 lower margin with four spines, the most proximal spine recurved, inner medial face with three spines; flagellum distinctly shorter than peduncle, with 6 articles. Female antenna 2, article 4 with three unpaired spines; article 5 with two unpaired spines. Urosome segments fused together. Uropod 1, peduncle with triangular interramal process, rami subequal. Uropod 2, inner ramus longer and more slender than outer. Uropod 3, ramus subovoid.

Male not yet collected in Fiji.

**Remarks.** The single female specimen cannot be identified with certainty in the absence of male specimens. It most closely resembles *C. uenoi* Stephensen. It is also similar to *C. bonnelli* and *G. pseudacherusicum*, but differs from both in the presence of unpaired spines on article 4 of the antenna 2.

**Fijian locality.** Suva.

**Habitat.** In mangrove litter.

#### Family Dexaminidae

Dexaminids are characterised by coalesced urosome segments 2–3, or 1–3, small subchelate gnathopods, weakly to strongly cleft, unfleshy telson and pereopod 7 not longer or, at most, only very slightly longer than pereopod 6. The body frequently possesses dorsal teeth. They are easily distinguished from ampeliscids by their ommatideal eyes; from Colomastigidae by the lateral body compression and the presence of a subchelate gnathopod 1.

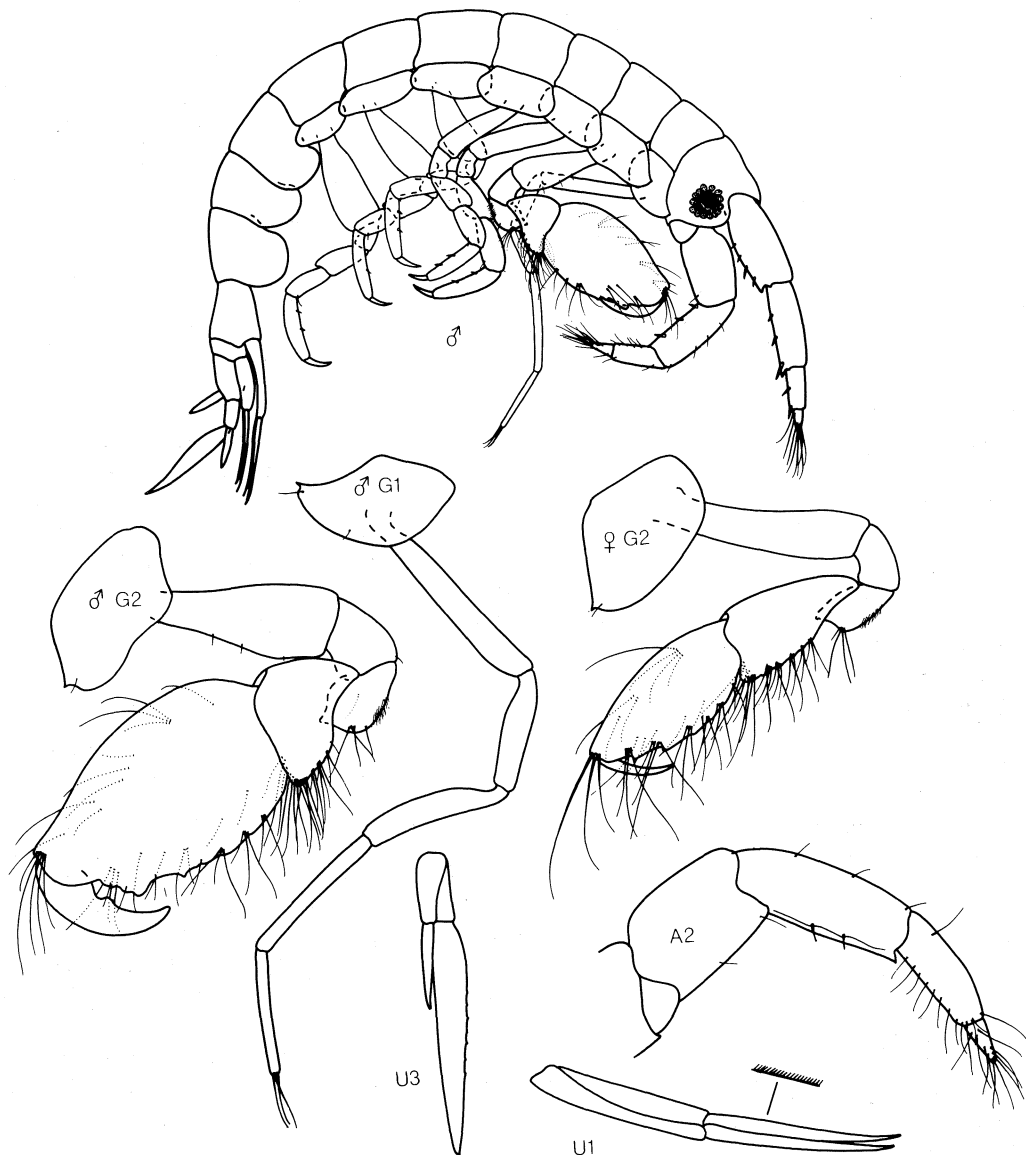


Fig. 41. *Colomastix lunalilo* Barnard, ♂ 1.8 mm, ♀ 1.6 mm, Nasese.

*Paradexamine rewa* n.sp.

Fig. 43

**Type-material.** HOLOTYPE, ♂, 3.0 mm, AM P35188, 3 ♂ 19 ♀ PARATYPES AM P35189, Momi Bay, Viti Levu, Fiji, 7 September 1979, stn 41, *Amphiroa* sp. on sand flat, mid-shore.

**Additional material examined.** Stn 1 (3)AC; stn 4 (2)AC; stn 5 (1)AC; stn 18 (2)AC; stn 19 (1)AC; stn 27 (3)AC; stn 30 (1)AC; stn 35 (2)AM P35356; stn 40 (15)AC; stn 48 (1)AC; stn 49 (6)AC; stn 54 (2)AC; stn 55 (3)AC.

**Description.** Length, 3.0 mm. Lateral cephalic lobe with sharp anterior cusp in female, rounded in male. Rostrum short. Eye in female large, in male enormous. Antenna 1, peduncular article ratios 5:8:2 in female, 2:3:1 in male; flagellum over twice length of peduncle in female, one and a half times length of peduncle in

male. Antenna 2 in female slender; flagellum one and a half times length of peduncle. Antenna 2 in male with peduncular article 4 stout with dense cover of fine setae on anterior margin; flagellum one and a half times length of peduncle. Right mandible with 2 spines; left mandible with 3 spines. Maxilla 1, palp small with two terminal setae. Maxilla 2, inner plate very small. Labium outer plate anterior margin with two acute processes. Maxilliped outer plate large, rounded. Gnathopods 1 and 2 slender, propodus three-quarters length of carpus, palm oblique. Pereopod 5, basis with rounded posterior lobe. Pereopod 6 posterior margin with toothed posteroproximal lobe. Pereopod 7, basis posterior margin strongly toothed. Epimera 1-3 lacking spines but with strong, acute posterodistal tooth; pleonite 1 with single dorsal tooth. Pleonites 2-3 with sharp dorsal tooth and sharp tooth on each side. Pleonite 4 with

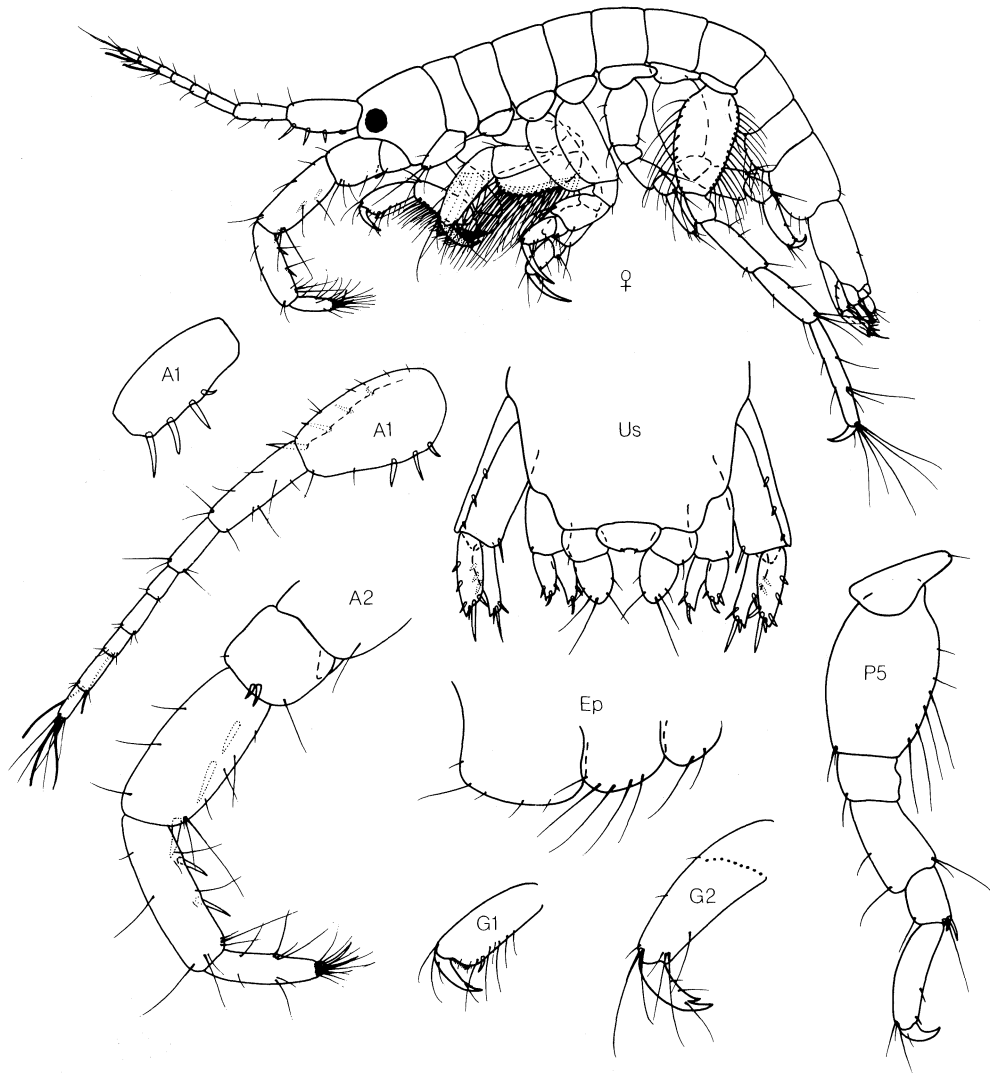


Fig. 42. *Corophium* sp. ♀ 2.5 mm, Suva.

sharp, subprostrate dorsal tooth with spine on each side. Pleonites 5–6 fused, with two dorsolateral spines on each side. Telson long, deeply incised, apices with 11–12 serrations, one main spine in notch space, lateral margins of each lobe with about 4 long spines.

**Remarks.** This is the only known *Paradexamine* species from Fiji. It is close to *P. micronesica* and *P. linga*, but differs from both in the short inner plate of maxilla 2, the expanded outer plate of the maxilliped, the absence of spines on the epimera, the absence of a dorsal tooth on pleonite 6 and the length of the spines on the telson. In the structure of the maxilliped and maxilla 1 it resembles *P. alkoomie*, but differs from that species in numerous other ways.

**Fijian localities.** Momi Bay, Taunovo Bay, Nasese, Suva barrier reef, Nukumbutho Island, Mburelevu, Nananui Ra.

**Distribution.** Fiji.

**Habitat.** Among coral rubble, corals (*Pocillopora*,

*Tubipora*), *Halimeda*, *Amphiroa*, *Sargassum* and *Syringodium*.

#### Family Dulichiidae

Dulichiids are similar to isaeids but lack glandular pereopods and are dorsoventrally flattened with elongate urosomite 1. Uropod 3 is reduced, consisting of a small ramus, partially concealed by the telson, and lacking rami. Uropod 1 is markedly longer than uropod 2. Fragile amphipods, they often lack antennae and pereopods in collections, but can be identified by their gnathopods. The genus *Podocerus* is in need of revision. Little is known concerning intraspecific variation, but some characters, such as body carination, may be subject to considerable variation (Pirlot, 1938). Early descriptions of species were often incomplete and some more recent identifications have been based on assumptions that materials were identical with incomplete and imprecise original descriptions.

In Fiji, one genus, *Podocerus*, and three species are known.

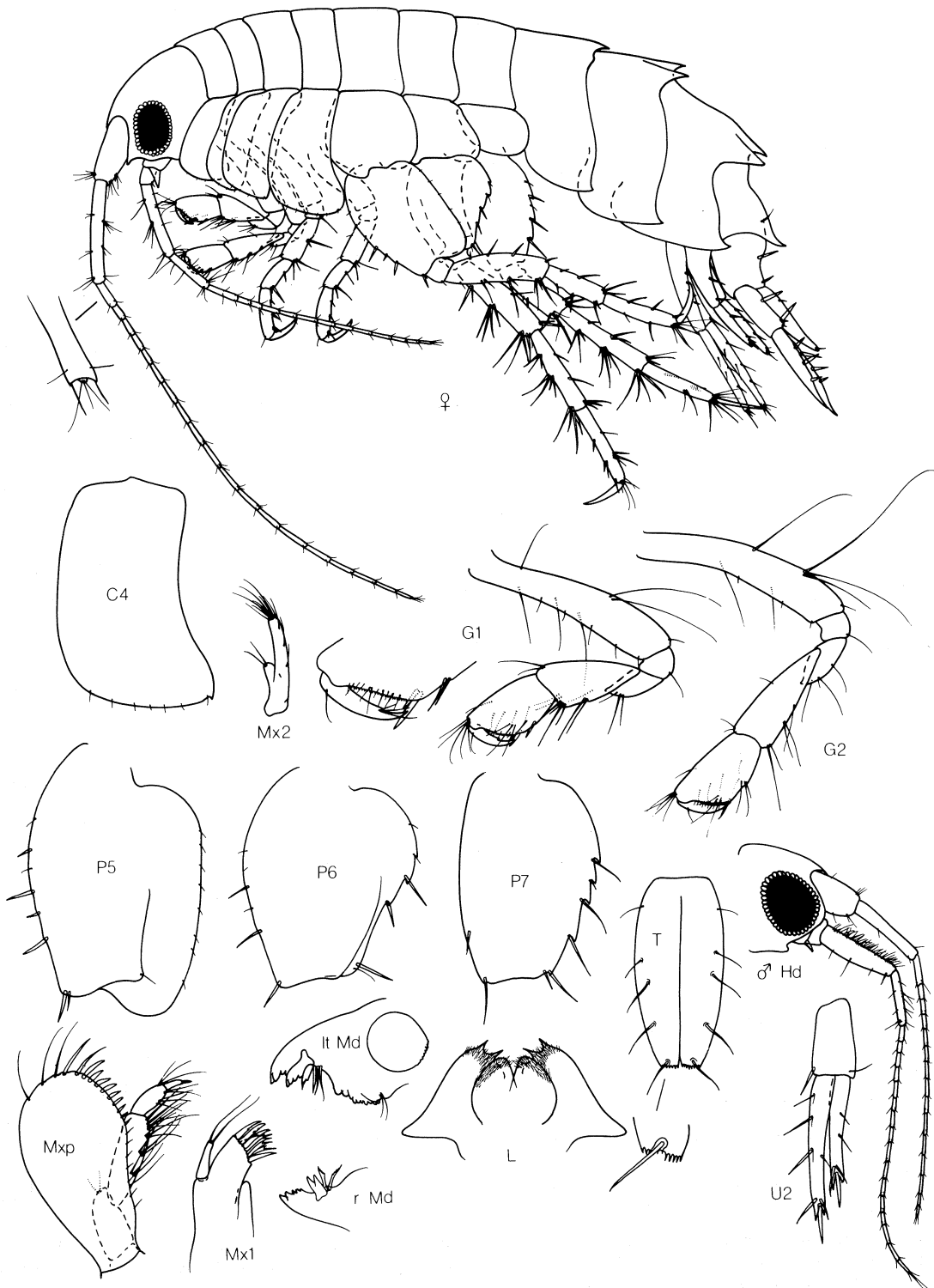


Fig. 43. *Paradexamine rewa* n. sp., ♂ 2.7 mm, ♀ 3.0 mm.

### Key to Species of *Podocerus*

1. Antenna 2 short, stout; ♂ gnathopod 2 merus elongate, triangular, acute.  
..... *P. hanapepe*
- Antenna 2 elongate, slender; ♂ gnathopod 2 merus short, rectangular, at most with one small tooth. .... 2
2. Pereon segments 4–7, pleonites 1–2, with bunches of dorsal setae; gnathopod 1, dactylus strongly toothed; ♂ gnathopod 2 with numerous pectinate setae. .... *P. talegus levuensis*
- Pereon segments and pleonites without bunches of setae; gnathopod 1, dactylus very weakly toothed; ♂ gnathopod 2 poorly setiferous. .... *P. crenulatus*

### *Podocerus crenulatus* n.sp.

Fig. 44

**Type-material.** HOLOTYPE, ♂, 2.7 mm, AM P35190, 2 ♂ 2 ♀ PARATYPES AM P35191, Momi Bay, Viti Levu, Fiji, 7 September 1979, stn 41, *Amphiroa* sp. on sand flat, mid-shore.

**Additional material examined.** Stn 1 (1)AC; stn 27 (1)AC; stn 29 (1)AC.

**Description.** Length, 2.7 mm. Lateral cephalic lobes rounded; lateral ocular bulges of medium extent. Pereon segment 6 with dorsal rounded tooth. Pereon segment 7 and pleon segments 1–2 with dorsal rounded tooth and paired dorsolateral lobes, the shape and size of the dorsal teeth varying somewhat between individuals. Antenna 1 slender, peduncular article ratios 5:12:11; accessory flagellum small, 2-articulate; primary flagellum longer than peduncular article 3 with 4–5 articles. Antenna 2 extremely elongate, longer than body length; peduncular article 4 swollen mediodistally; article 5 one and a half times length of article 4; flagellum less than half length of peduncular article 5 with 3–4 articles. Gnathopod 1, coxa extended forward, acute; propodus broadest medioproximally, palm oblique. Male gnathopod 2, coxa distally bilobed; basis flask-shaped with anterodistal rounded lobe; carpus small, subtriangular; propodus enlarged, subovoid, palm and posterior margin confluent, strongly crenulate with stout proximal tooth flanked by two spines and stout mediodistal tooth separated by a sinus from the palm remnant; dactylus large, opposable to proximal tooth of propodus. Female gnathopod 2, propodus similar to that of male but broader and shorter, palm sinuous and crenulate, lacking mediodistal tooth and sinus. Pereopods 3–7, basis very short but relatively slender. Uropod 1 elongate, peduncle lacking interramal process; inner ramus longer than outer. Uropod 2, peduncle short, inner ramus much longer and stouter than outer. Uropod 3 very small, lacking rami and spines. Telson subtriangular, bearing a distal knob armed with two stout, long spines.

**Remarks.** This species resembles *Podocerus inconspicuuum* (Stebbing) but differs in the more oblique palm of gnathopod 1 and different configuration of the gnathopod 2 palm (*P. inconspicuuum* Stebbing is based on female specimens). It also differs from that species in possessing dorsal body teeth, but Pirlot (1938) has shown this character to be variable. *Podocerus inconspicuuum* Pirlot is doubtfully conspecific with Stebbing's species and differs from present material in the elongated carpus of gnathopod 2 in both sexes, and in the differing palmar configuration of the male gnathopod 2. *Podocerus crenulatus* differs from *P. cristatus* Chilton and *P. talegus* Barnard in lacking an acute distal tooth on the merus of the male gnathopod 2 and in the presence of a proximal defining tooth on the posterior margin of the propodus of that appendage. It lacks the interramal process on the uropod 1 of *P. talegus* and possesses a crenulate posterior margin on the propodus of gnathopod 2 in both sexes, not seen in *P. cristatus*. *Podocerus crenulatus* is probably closest to *P. fulanus* Barnard, but that species has an interramal process on uropod 1, a shorter male gnathopod 2 dactylus and a more slender gnathopod 1 propodus.

**Fijian localities.** Momi Bay, Taunovo Bay, Nasese.

**Distribution.** Fiji.

**Habitat.** Among *Amphiroa*, *Halimeda*, *Syringodium* and coral rubble on reef flat.

### *Podocerus hanapepe* Barnard

Figs 45–46

*Podocerus hanapepe* Barnard, 1970: 240, figs 158–159.—Ledoyer, 1972: 266, pl. 73.

**Material examined.** Stn 7 (20)AC; stn 8 (25)AM P35312; stn 12 (41)AM P35317; stn 21 (119)AC; stn 26 (2)AC; stn 46 (11)AC; stn 47 (5)AC.

**Description.** Length, 4.5 mm. Head extended quadrately forward; lateral ocular bulges of medium extent. Antennae short, densely setose on posterior margin. Antenna 1, accessory flagellum very small, 1-articulate; primary flagellum subequal to peduncular article 3. Antenna 2, flagellum shorter than peduncular article 5, 3-articulate. Gnathopod 1, coxa strongly extended forward, acute; propodus triangular, expanded distally, palm transverse; dactylus fitting palm. Male gnathopod 2, coxa broader than deep; basis with flanges on inner and outer face of anterior margin; merus elongate, acute, in hyperadults opposable to dactylus; propodus subovoid, palm with medial crenulate lobe separated from dactylus hinge by a deep sinus, and from a posterodistal subacute tooth by a further deep, narrow sinus; dactylus very stout, greatly overlapping palm and, in subadults, opposable to a small posterior marginal medial tooth (which becomes obsolete in hyperadults). Female gnathopod 2, merus broadly triangular; propodus triangular, distally expanded, palm oblique, evenly convex, defined by a small tooth and two spines; dactylus stout, fitting palm. Pereopods 3–7, basis very short and stout. Pereopod 5, basis posterior margin with flanges on inner and outer

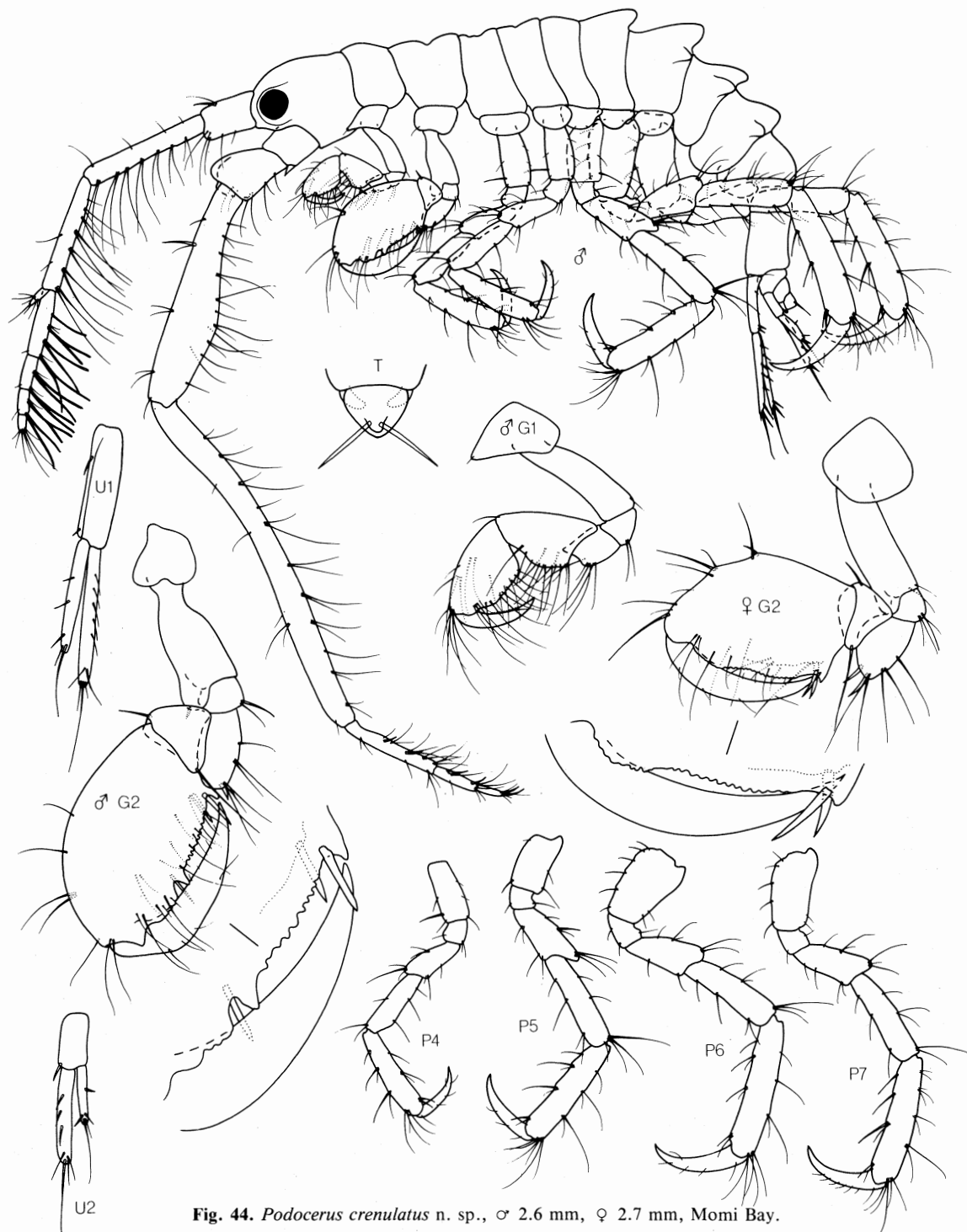


Fig. 44. *Podocerus crenulatus* n. sp., ♂ 2.6 mm, ♀ 2.7 mm, Momi Bay.

face. Pereopods 6–7, basis with single flange. Epimera 1–3 evenly rounded. Uropod 1 elongate, inner ramus longer than outer. Uropod 2 very stout, inner ramus longer and stouter than outer. Uropod 3 very short, lacking rami, with stout distal spine and two subapical spines. Telson subcircular bearing a distal knob armed with two stout, long spines.

**Remarks.** This species is readily distinguished from other Fijian species by its stout antennae. It differs from both *P. crenulatus* and *P. talegus* (as identified herein)

by its lack of body carination, and also from *P. talegus* by the poorly setiferous male gnathopod 2.

**Type-locality.** Waikiki Beach, Oahu, Hawaii.

**Fijian localities.** Malevu, Votualailai, Nukumbutho Island, Makuluva Island.

**Distribution.** Hawaii, Madagascar, Fiji.

**Habitat.** Amongst red algae, *Halimeda*, *Sargassum* and coral debris on the reef crest in regions of strong current.

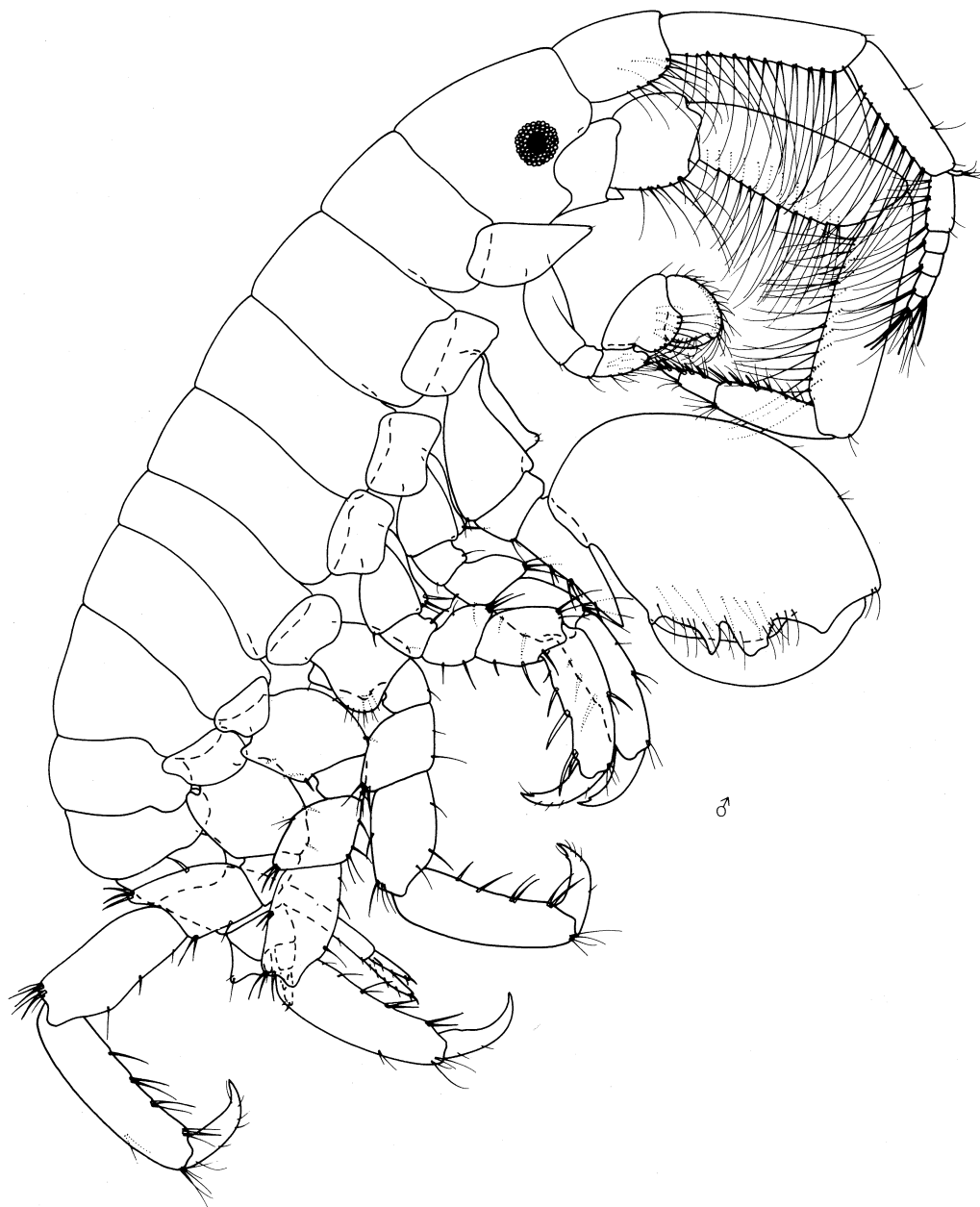


Fig. 45. *Podocerus hanapepe* Barnard, ♂ 4.5 mm, Malevu.

***Podocerus talegus levuensis* n.subsp.**

Fig. 47

**Type-material.** HOLOTYPE, ♂, 3.5 mm, AM P35192, 1 ♀ 1 ♀ PARATYPES AM P35193, Votualailai, Viti Levu, Fiji, 9 August 1979, stn 17, coral rubble in centre of reef flat.

**Additional material examined.** Stn 6 (2)AC; stn 14 (1)AC; stn 24 (1)AC; stn 26 (3)AC; stn 44 (8)AC.

**Description.** Length, 3.5 mm. Lateral cephalic lobes rounded; lateral ocular bulges strongly developed. Pereon segments 4–7 and pleon segments 1–2 with bunches of dorsoposterior setae. Antenna 1 moderately slender, strongly setose; primary flagellum shorter than peduncle; accessory flagellum with one very long and

one short article. Antenna 2 stout, peduncular article 5 very elongate; flagellum much shorter than peduncular article 5. Gnathopod 1, coxa deeper than broad, not markedly extended forward; propodus subovoid, palm evenly convex and minutely denticulate; dactylus posterodistal margin with about 7 very long slender teeth. Male gnathopod 2, coxa distinctly bilobed; basis very broad distally; merus with strong, acute posterodistal tooth; carpus small, subtriangular; propodus enlarged, subovoid, palm with proximal raised crenate process separated from dactylus hinge by sinus and from two posterodistal teeth by a further sinus, posterior margin with a median tooth; dactylus stout, curved, opposable to posterior margin of

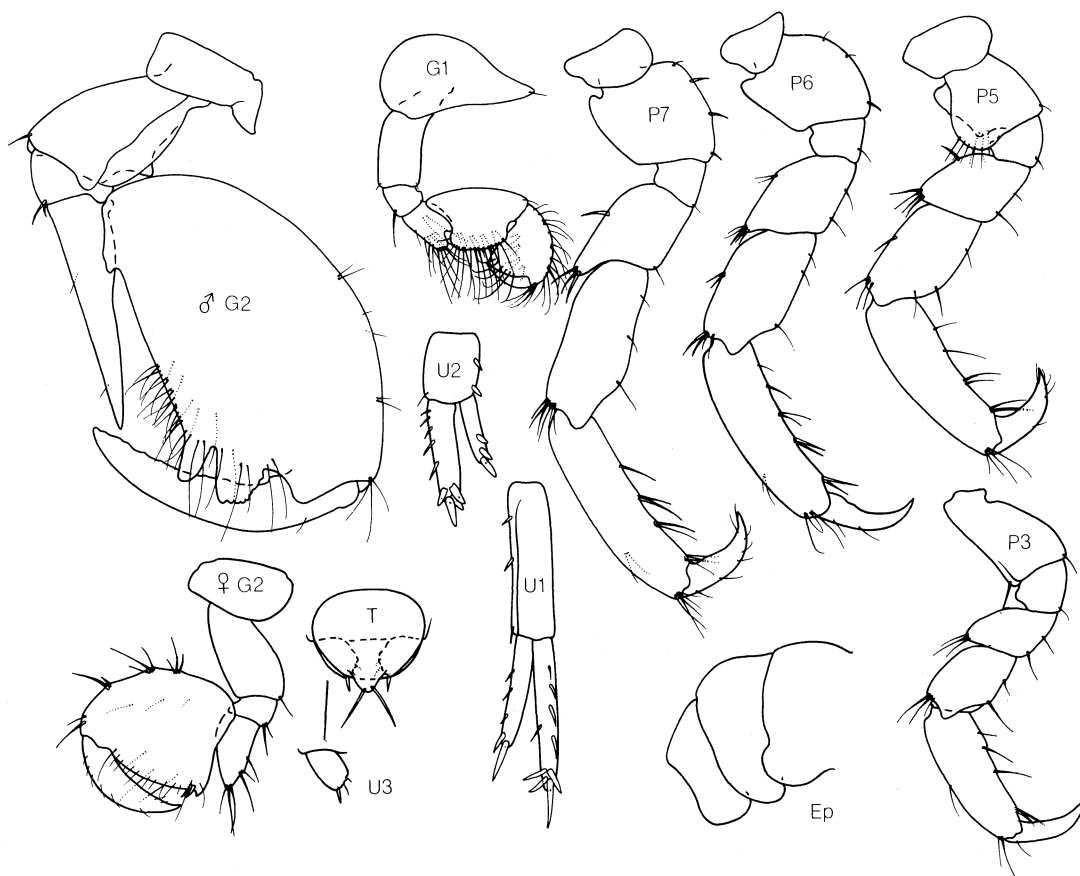


Fig. 46. *Podocerus hanapepe* Barnard, ♂ 4.5 mm, ♀ 4.2 mm, Malevu.

propodus anterior to the median tooth. Pereon segments 4–7 and pleon segments 1–2 with bunches of dorsoposterior setae. Female gnathopod 2, merus with minute posterodistal tooth; propodus palm and distal portion of posterior margin minutely denticulate, proximal portion with small protrubence bearing a strong spine, distal to which is a further spine; dactylus stout, opposable to proximal spines. Pereopods 5–7, basis short and stout. Pereopod 5, basis posterior margin with flanges on inner and outer face. Pereopods 6–7, basis with single flange. Epimera 1–3 evenly rounded. Uropod 1 elongate, inner ramus much longer than outer. Uropod 2, peduncle short, inner ramus much longer than outer. Uropod 3 very small, lacking rami, with stout distal spine and two subapical spines. Telson subcircular, bearing a distal knob armed with two stout, long spines.

**Remarks.** *Podocerus talegus* is distinguished from *P. hanapepe* and *P. crenulatus* by the following characters: male gnathopod 2 setose, dorsum of pereon segments 4–7 and pleonites 1–2 with bunches of setae, dactylus of gnathopod 1 strongly toothed. The bulging eye lobes and the shape of the male gnathopod 2 are also very characteristic.

Fijian material closely resembles the nominate subspecies (Barnard, 1965) and the subspecies *P. talegus lawai* Barnard (1970), but differs from both in the

presence of an additional median tooth on the posterior margin of the male gnathopod 2 propodus.

**Fijian localities.** Votualailai, Makuluva Island, Nukumbutho Island.

**Distribution.** Fiji. Other subspecies: Caroline Islands, Hawaii.

**Habitat.** Amongst *Turbinaria*, *Amphiroa*, sponges and coral debris.

#### Family Eophliantidae

Eophliantids are small, cylindrical-bodied amphipods with depressed, globose heads, parachelate gnathopods, uniramous uropod 3 and pleopods with expanded peduncles. They resemble biancolinids but differ in the long carpus of gnathopods 1–2, relatively short pereopods 5–7, expanded pleopod peduncles and uniramous uropod 3. Like the biancolinids they are lignivorous, boring into the stems of algae.

#### *Bircenna dronga* n.sp.

Fig. 48

**Type-material.** HOLOTYPE, ♀, 2.0 mm, AM P35194; 1 ♂ 2 ♀ PARATYPES AM P35195, Makuluva Island, Viti Levu, Fiji, 13 August 1979, stn 23, mixed red algae from leeward side of reef flat.



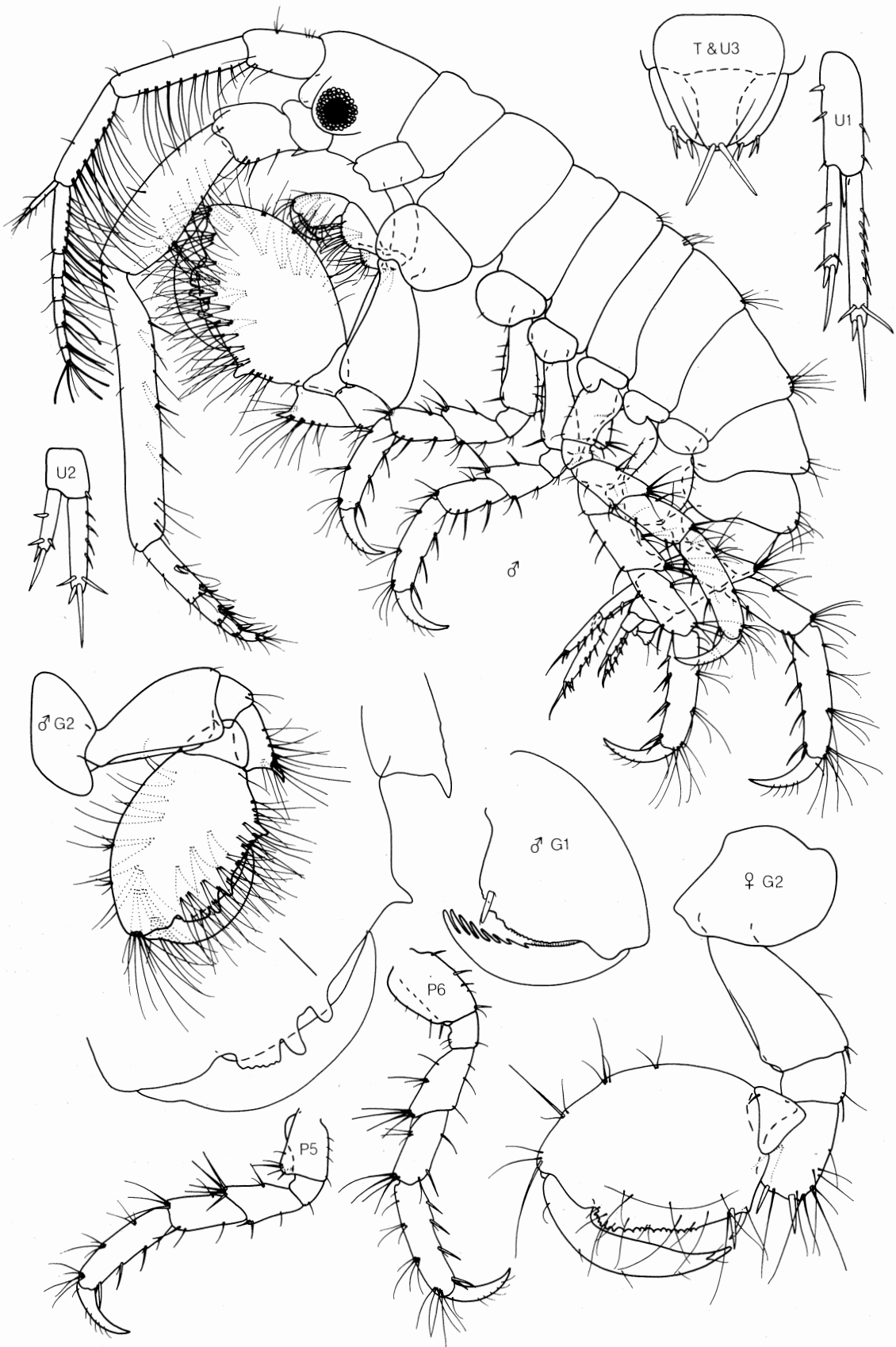


Fig. 47. *Podocerus talegus levuensis* n. sp., ♂ 3.4 mm, ♀ 3.3 mm, Votualailai.

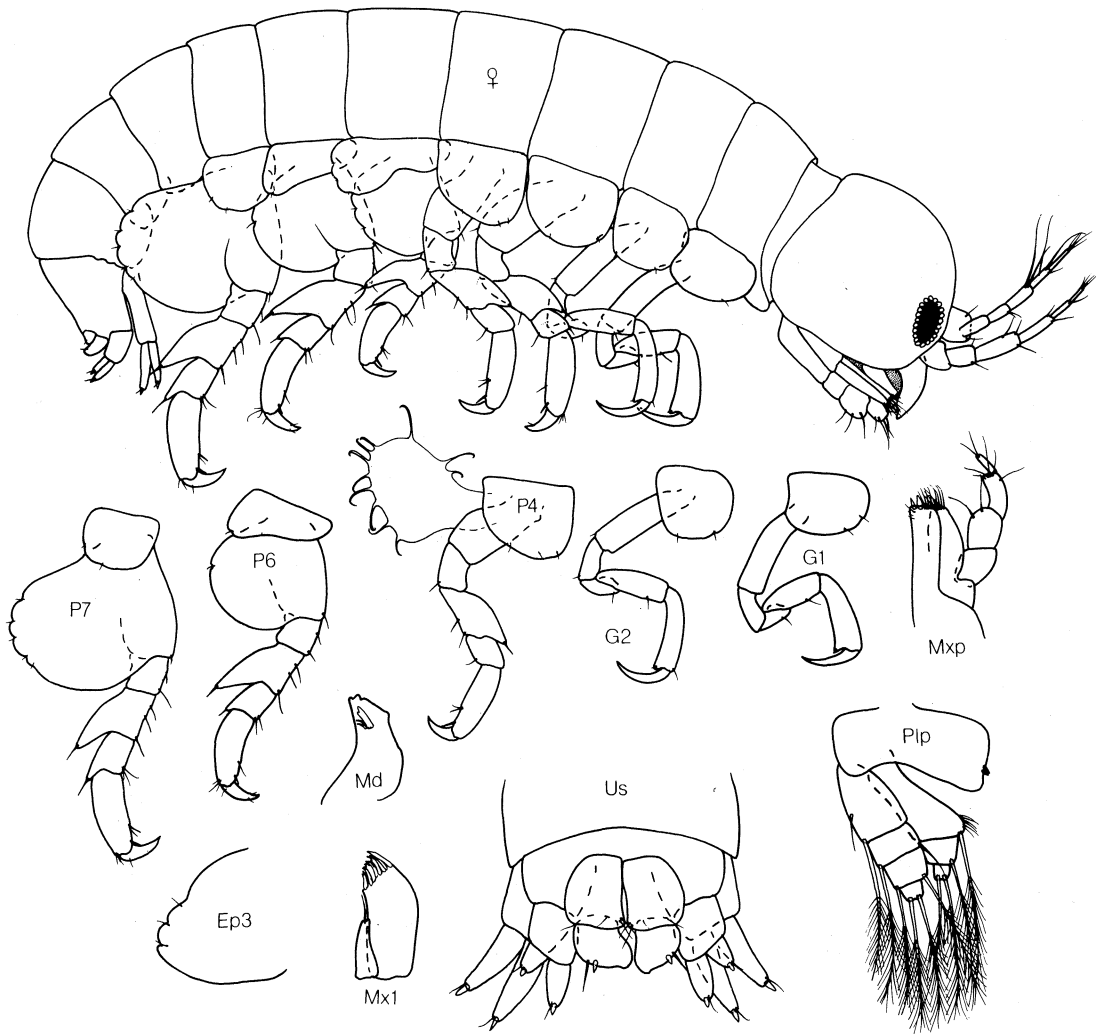


Fig. 48. *Bircenna dronga* n. sp., ♀ 2.0 mm, Makuluva Island.

**Additional material examined.** Stn 20 (2)AC; stn 29 (1)AC; stn 41 (2)AC.

**Description.** Length, 2.0 mm. Body cylindrical; head globose, depressed. Eye round with dark central core surrounded by clear ommatidea. Mandible lacking palp. Maxilliped inner and outer plates subequal; terminal article of palp very slender. Maxilla 1 inner plate elongate with one terminal seta. Antennae 1 and 2 subequal. Antenna 1, peduncular article 1 enlarged; flagellum 3-articulate. Antenna 2, flagellum with three articles. Gnathopods 1 and 2 subsimilar, parachelate; carpus elongate, a little shorter than propodus; dactylus greatly overlapping the short palm. Pereopods 5-7 relatively short; basis with strongly developed flange on posterior margin, especially well developed and crenulate on pereopod 7. Epimeron 3 posterior margin crenulate. Pleopod peduncles with greatly expanded inner margin, rami subequal. Uropods 1-2 biramous. Uropod 1, outer ramus very slightly shorter than inner. Uropod 2, outer ramus half length of inner. Uropod 3 uniramous, ramus expanded, as broad as long. Telson cleft to base.

**Remarks.** *Bircenna dronga* could only be confused with *Biancolina algicola* (Biancolinidae) which has a similar cylindrical body shape. It is easily separated, however, by the short, stout antennae, subchelate pereopods 5-7, uniramous uropod 3 and completely cleft telson. It is very similar to *Bircenna ignea* Nicholls (1939) but differs in the short outer ramus of uropod 2, crenulate posterior margin of epimeron 3 and of pereopod 7 basis, evenly convex basis of pereopod 5, rounded coxa 1 and very elongate propodus of gnathopods 1-2.

**Fijian localities.** Momi Bay, Malevu, Taunovo Bay, Makuluva Island.

**Distribution.** Fiji.

**Habitat.** Amongst red algae, in the stems of which it is assumed to bore.

#### Family Eusiridae

Eusirids are characterised by their large eyes, large subchelate and subsimilar gnathopods, powerful pleon, cleft telson, strong raptorial maxilliped palp, and

lanceolate uropods.

Some species are often taken in hypoplankton hauls and are also attracted to lights.

*Eusiroides diplonyx* Walker

Figs 49–50

*Eusiroides diplonyx* Walker, 1909: 333, pl. 4 fig. 22.—Pirlot, 1936: 302, figs 126–128.—Schellenberg, 1938: 35.—Barnard, 1970: 109, figs 59–61.—Ledoyer, 1972: 205, pls 28–29.—Ledoyer, 1978: 266.—Ledoyer, 1979b: 60.

**Material examined.** Stn 7 (1)AM P35308.

**Description.** Length, 6.0 mm. Head with curved rostrum. Eye enormous, subreniform. Antenna 1, peduncle short and stout; flagellum twice length of peduncle, with about 35 articles; accessory flagellum small, 1-articulate. Antenna 2 stout; flagellum equal in length to combined length of peduncular articles 4 and 5. Mandible palp, article 3 very slender. Maxilla 1, inner plate enlarged. Maxilliped palp raptorial. Gnathopod 1, coxa strongly produced forward, rounded. Gnathopods 1 and 2 subsimilar; merus with distal tooth;

carpus short, subtriangular; propodus subovoid, palm oblique, posterior margin with about six strong spines; dactylus three-quarters length of propodus. Coxa 4 posteriorly excavate. Pereopods 3–4, propodus with stout, round-ended locking spine. Pereopods 5–7 stout, spinose. Pereopods 6–7 subequal in length. Epimera 1–2 with single posterodistal tooth. Epimeron 3 posteriorly serrate. Uropod 3 lanceolate and foliaceous. Telson deeply cleft, each tip bifid with a fine seta inserted between the bifurcations.

**Remarks.** The large reniform eye and subsimilar raptorial gnathopoda immediately distinguish this species from all other known Fijian amphipods.

**Type-locality.** Coetivy, Seychelles.

**Fijian locality.** Nukumbutho Island.

**Distribution.** Seychelles, Indonesia (Solor), Kiribati, Hawaii, Madagascar, Mauritius.

**Habitat.** An epipelagic amphipod which may nestle temporarily in a variety of anastomoses and crevices. Only a single specimen recorded to date from Fiji, in *Gigartina* from rim of surge channel on reef front.

### Family Hyalidae

Hyalids are stout-bodied amphipods with moderately to strongly subchelate, unequal, strongly sexually dimorphic gnathopoda. Coxae 1–4 are deep; antenna 1 lacks an accessory flagellum and exceeds in length antenna 2; pereopods 3–7 propodus often possess characteristic locking spines; uropod 3 is generally uniramous and the telsonic lobes are usually separated at the base. Hyalids can be distinguished from stenothoids by the quadrate anterior coxae and 1-articulate uropod 3 ramus, and from sebids (not so far recorded from Fiji) by the free urosomites 2–3, lack of an accessory flagellum, and subchelate gnathopoda.

Hyalids are relatively large amphipods, generally associated with brown (occasionally red) algae.

### Key to Genera

1. Uropod 3 with small, scale-like inner ramus. . . . . *Parhyale*  
 —Uropod 3 lacking inner ramus. . . . . 2
2. ♂ maxilliped, article 4 without long, whip-like terminal seta; ♂ gnathopod 2, propodus palm long, simple, weakly delimited from posterior margin, dactylus elongate. . . . . *Hyale*  
 —♂ maxilliped, article 4 with long, whip-like terminal seta; ♂ gnathopod 2, propodus palm short, complexly excavate, strongly delimited from posterior margin, dactylus short. . . . . *Lelehua*

### Key to Species of *Hyale*

1. ♂ gnathopod 2, propodus posterior margin clothed in long, fine setae and a few spines. . . . . 2  
 —♂ gnathopod 2, propodus posterior margin with two rows of spines but no setae. . . . . *H. maroubrae*
2. ♂ gnathopod 1, propodus greatly broadened subdistally, narrowing abruptly distally (Fig. 53); dactylus stout proximally, slender distally. . . . . *H. galatae distorta*  
 —♂ gnathopod 1, propodus not as above. . . . . *H. chevreuxi*

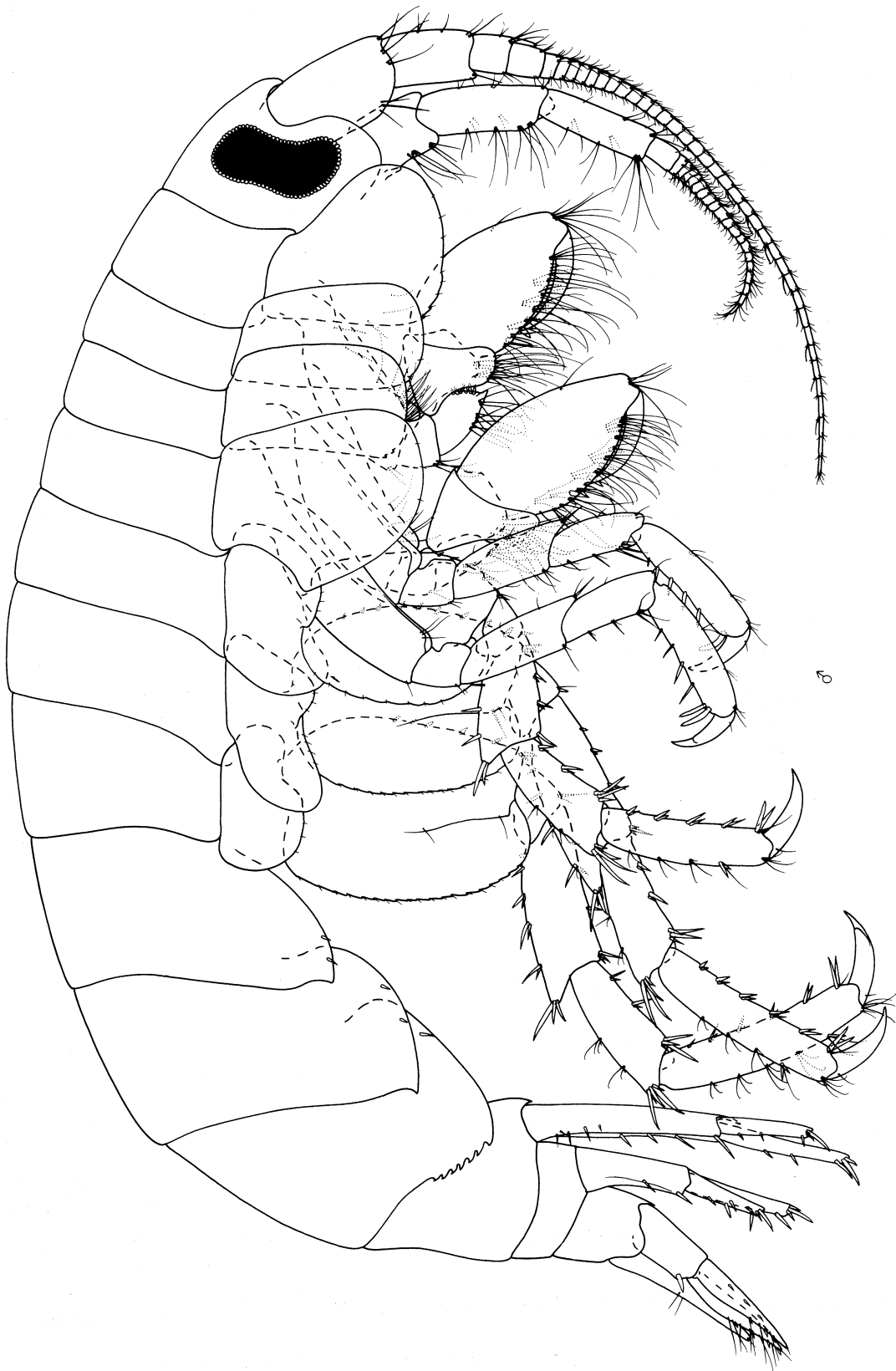


Fig. 49. *Eusiroides diplonyx* Walker, ♂ 6.0 mm, Nukumbutho Island.

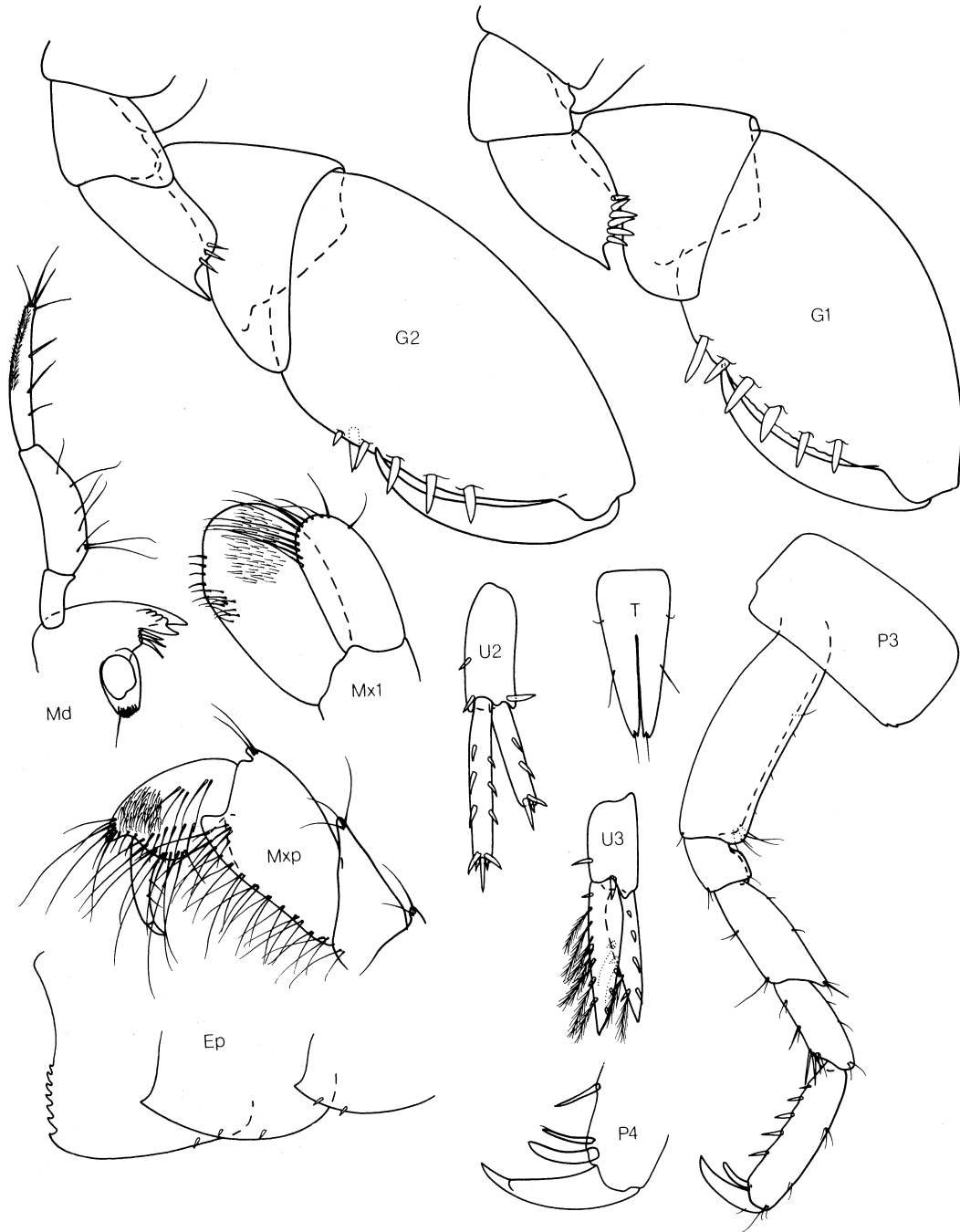


Fig. 50. *Eusiroides diplonyx* Walker, ♂ 6.0 mm, Nukumbutho Island.

*Hyale chevreuxi* Barnard

Fig. 51

*Hyale macrodactylus* Chevreux, 1901: 397, figs 13–14 (not *H. macrodactylus* Stebbing, 1899).—Walker, 1909: 337.

*Hyale chevreuxi* Barnard, 1916: 235.—Schellenberg, 1938: 68, fig. 35a.—Barnard, 1965: 519, fig. 21.

**Material examined.** Stn 7 (1)AC; stn 26 (11)AM P35516; stn 36 (49)AC.

**Description.** Length, 6.0 mm. Antenna 1 a little less than two-thirds length of antenna 1, flagellum with

about 16 articles. Antenna 2, flagellum with about 32 articles. Male gnathopod 1, merus without distinct tooth; carpus short, less than half length of propodus; propodus anterior margin smoothly convex, palm defined by a large rounded process; dactylus weakly falcate, opposable to a small spine inserted at distal base of palmar process. Female gnathopod 1, propodus elongate, over twice as long as broad; dactylus slender, slightly overlapping palm. Male gnathopod 2, propodus massive, broader proximally, posterior margin concave and sinuous, produced distally into a truncate process

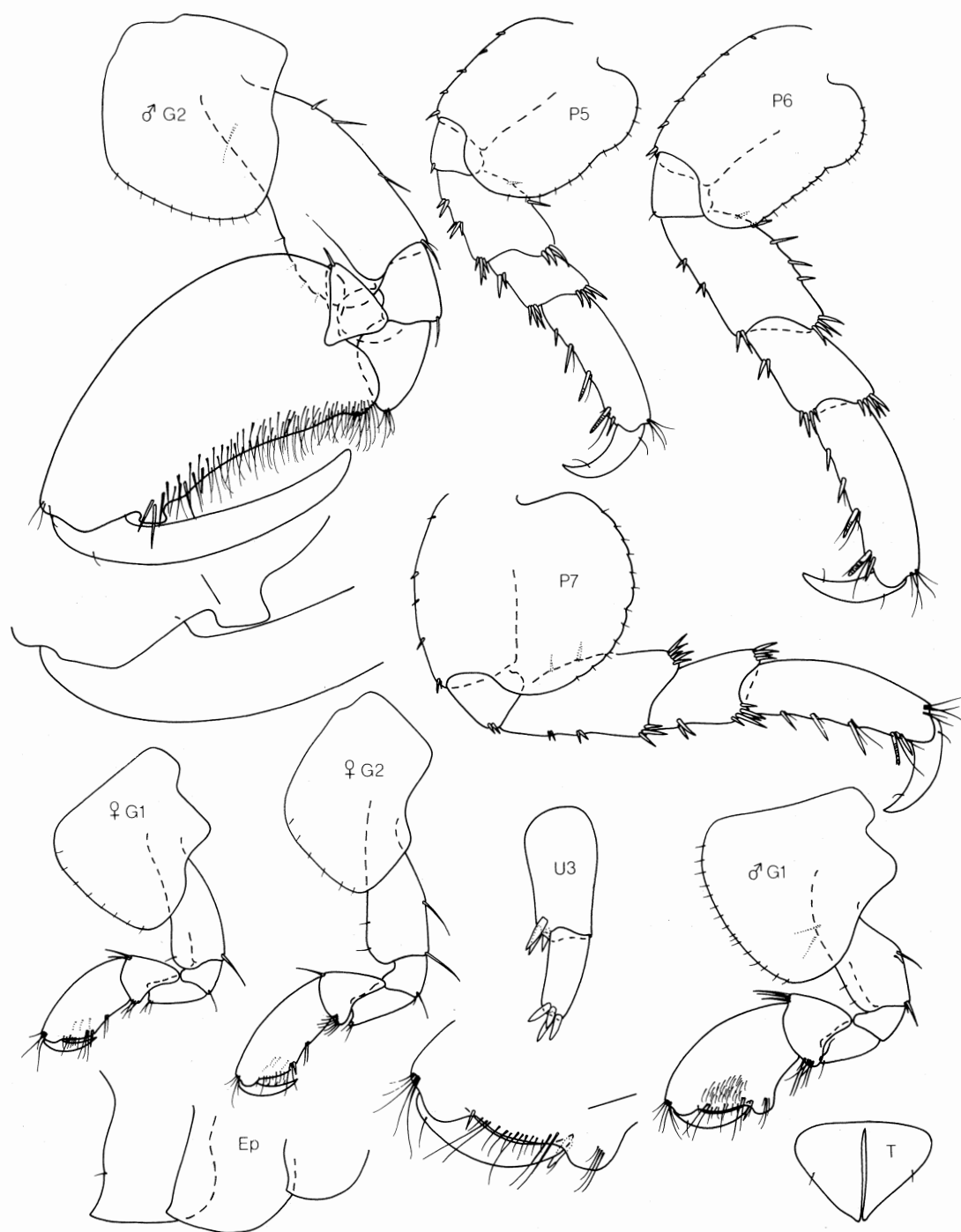


Fig. 51. *Hyale chevreuxi* Barnard, ♂ 6.0 mm, ♀ 5.0 mm, Makuluva Island.

representing a remnant of the palm, clothed throughout its length in long fine setae and with a small proximal spine and a few slender distal spines; dactylus long, falciform, opposable to proximal end of propodus. Female gnathopod 2 similar to gnathopod 1 but propodus longer. Pereopods 3-4, propodus with simple locking spines. Pereopods 5-7, basis posterior margin crenulate. Pereopod 5, basis posterior margin with proximal and distal convex lobes separated by shallow depression. Pereopod 6, basis posterior margin with

proximal convex lobe, separated from straight distal portion by shallow depression. Pereopod 7, basis posterior margin evenly convex. Pereopods 5-7, propodus with striate locking spines. Epimeron 3, posterior margin sinuous, smooth, posterodistal corner subacute. Uropod 3, peduncle longer than ramus. Telsonic lobes distally acute.

**Remarks.** The truncate palmar process of the male gnathopod 2 and the evenly convex anterior margin of the male gnathopod 1 propodus distinguish this species

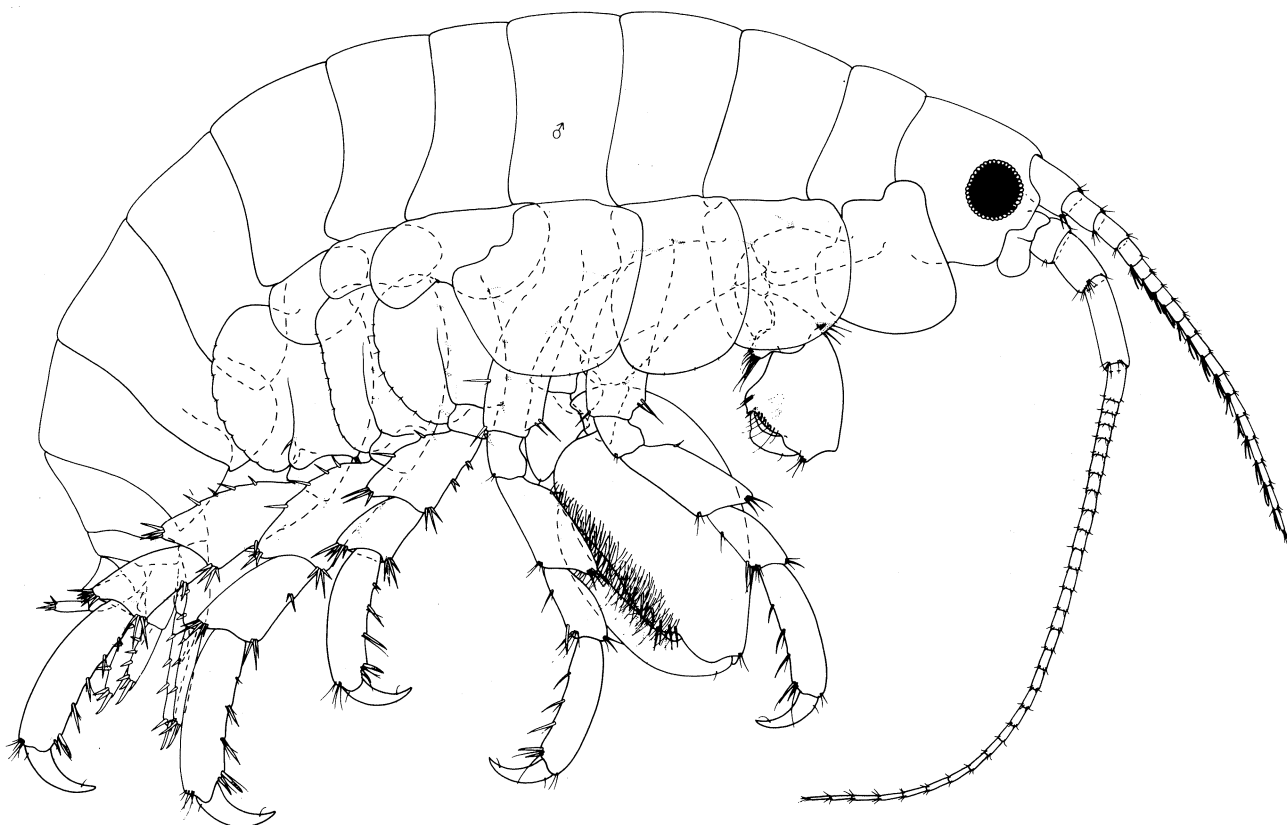


Fig. 52. *Hyale galateae distorta* n. subsp., ♂ 6.5 mm, Votualailai.

from the closely related *H. galateae distorta*. Females are not readily identified, but the longer uropod 3 peduncle and acute telsonic lobes aid in the separation of *H. chevreuxi* females from those of *H. galateae distorta*. *Hyale maroubrae* is superficially similar but lacks setae on the male gnathopod 2 and has a very different male gnathopod 1.

**Type-locality.** Seychelles.

**Fijian localities.** Nukumbutho Island, Makuluva Island.

**Distribution.** Seychelles, Chagos Archipelago, Kiribati, Fiji, ?Marshall Islands.

**Habitat.** On exposed reef crests among coral debris, and in a surge channel among *Gigartina*.

***Hyale galateae distorta* n.subsp.**

Figs 52–53

**Type-material.** HOLOTYPE, ♂, 6.5 mm, AM P35196, 20 ♂ 14 ♀ PARATYPES AM P35197, 17 ♂ 10 ♀ 5 juvenile PARATYPES AC, Malevu, Viti Levu, Fiji, 11 August 1979, stn 21, *Sargassum cristaefolium* from reef crest.

**Additional material examined.** Stn 7 (41)AM P35309; stn 8 (28)AC; stn 12 (102)AC; stn 13 (210)AC; stn 22 (1)AC; stn 45 (157)AC; stn 46 (23)AC; stn 47 (7)AC; stn 48 (6)AC.

**Description.** Length, 6.5 mm. Antenna 1 a little less than two-thirds length of antenna 2; flagellum with about 16 articles. Antenna 2, flagellum with about 30 articles. Male gnathopod 1, merus with small posterodistal tooth; carpus short, less than half length of propodus; propodus greatly broadened subdistally, narrowing abruptly distally, resulting in characteristic ‘humps’ on both anterior and posterior margins (in some specimens the anterior margin becomes grossly expanded); dactylus stout proximally, but slender distally due to abrupt subdistal narrowing. Female gnathopod 1, propodus elongate, over twice as long as broad; dactylus slender, slightly overlapping palm. Male gnathopod 2, propodus massive, pyriform, palm evenly convex, posterior margin medially concave, clothed in long, fine setae and with a single, stout proximal spine and a group of slender spines distally; dactylus long, falciform, opposable to proximal end of propodus. Female gnathopod 2 similar to gnathopod 1 but propodus longer. Pereopods 3–4, propodus with simple locking spines. Pereopods 5–7, basis posterior margin crenulate. Pereopods 5 and 7, basis posterior margin convex. Pereopod 6, basis posterior margin straight or weakly concave. Pereopods 5–7, propodus with striate locking spines. Epimeron 3 posterior margin smooth.

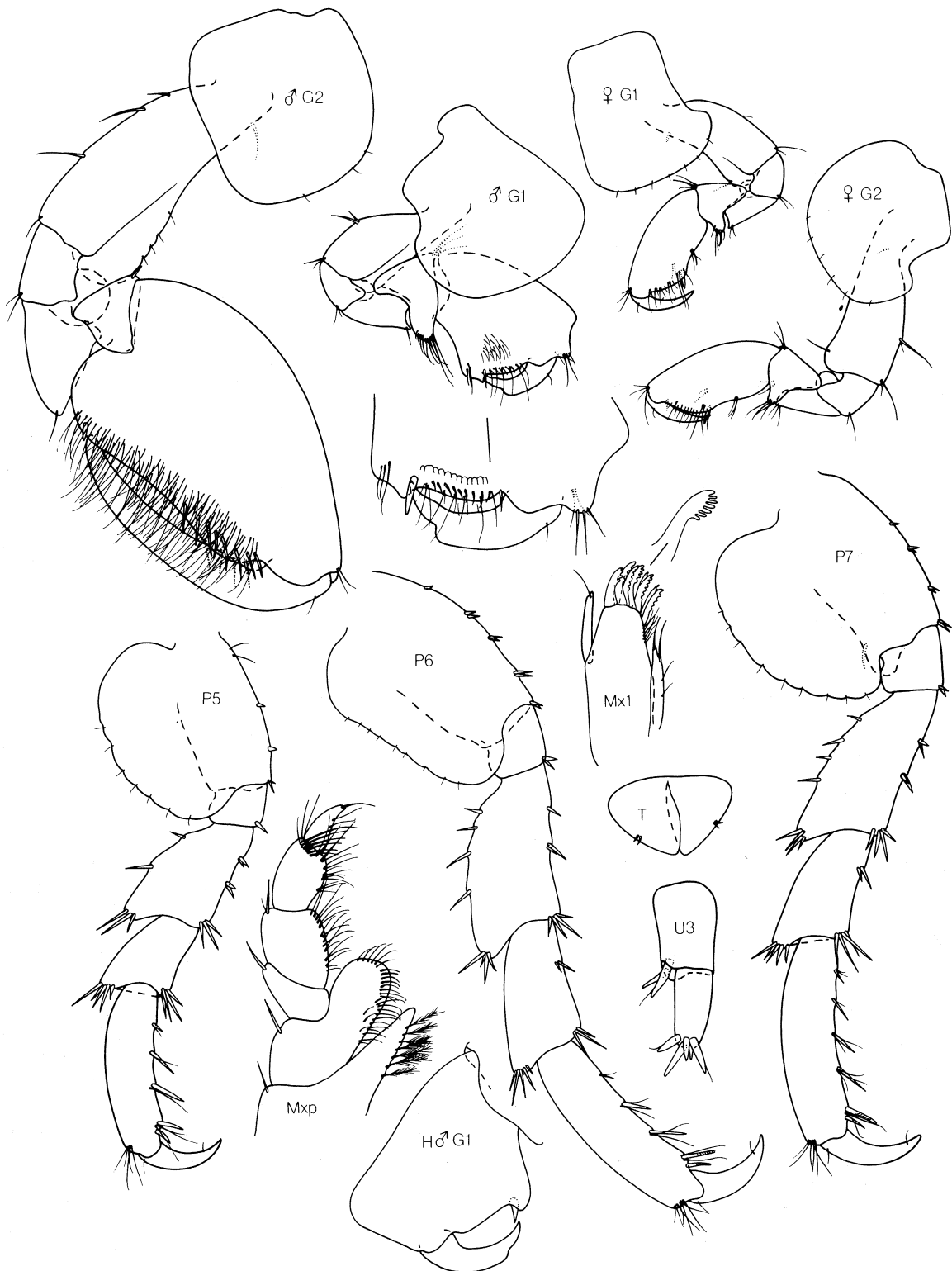


Fig. 53. *Hyale galateae distorta* n. subsp., ♂ 6.5 mm, ♀ 6.0 mm, Votualailai.

Uropod 3, peduncle and ramus subequal in length. Telsonic lobes distally subacute.

**Remarks.** This species resembles *H. chevreuxi*, but differs in the humped anterior margin of the male gnathopod 1 propodus and in the smoothly rounded,

unproduced palm of the male gnathopod 1 propodus.

*Hyale galateae distorta* differs from *H. galateae galateae* Stebbing (1899) in the peculiar constricted distal portion of the male gnathopod 1 dactylus and in the subdistal (rather than medial) position of the 'hump'



on the anterior margin of the male gnathopod 2 propodus.

**Fijian localities.** Malevu, Votualailai, Nukumbutho Island, Nananui Ra.

**Distribution.** Fiji.

**Habitat.** Amongst *Sargassum* and *Turbinaria* and occasionally in red algae and *Halimeda*.

*Hyale maroubrae* Stebbing

Fig. 54

*Hyale maroubrae* Stebbing, 1899: 405, pl. 32C.—Stebbing, 1906: 563.—Barnard, 1916: 229.—Sheard, 1937: 26.—Ruffo, 1950: 56.—Hurley, 1957: 913, figs 51–71.

**Material examined.** Stn 1 (2)AM P35517, (4)AC.

**Description.** Length, 4.5 mm. Antenna 1 a little over half length of antenna 2; flagellum with about 9 articles. Antenna 2, flagellum with about 16 articles. Male gnathopod 1, merus large; carpus and propodus subequal; propodus subrectangular, palm protruberant, minutely multiple lobate; dactylus short, overlapping inner face of palm. Female gnathopod 1, propodus elongate, over twice as long as broad; dactylus slender, slightly overlapping palm. Male gnathopod 2, propodus massive, pyriform, palm almost obsolete, posterior margin sinuous, lacking setae, but with two rows of stout spines; dactylus weakly curved, opposable to proximal end of propodus. Female gnathopod 2 similar to gnathopod 1, but dactylus stouter, fitting palm. Pereopods 3–7, propodus with large, spatulate, striate locking spines. Pereopods 5–7, basis posterior margin crenulate. Pereopods 5 and 7, basis posterior margin convex. Pereopod 6, basis posterior margin straight. Epimeron 3, posterior margin almost straight. Uropod 3, peduncle distinctly longer than ramus. Telsonic lobes distally acute.

**Remarks.** The peculiar form of the male gnathopod 1 is diagnostic. In addition, the generally similar species *H. galateae distorta* and *H. chevreuxi* have numerous fine setae on the posterior margin of the male gnathopod 2 propodus. Females may be distinguished from those of *H. galateae distorta* and *H. chevreuxi* by the spatulate locking spines on pereopods 3–7.

**Type-locality.** Maroubra Bay, near Sydney, Australia.

**Fijian locality.** Nasese.

**Distribution.** South Africa, South-east Australia, New Zealand, Lord Howe Island, Fiji.

**Habitat.** Among *Halimeda*.

*Lelehua malevua* n.sp.

Fig. 55

**Type-material.** HOLOTYPE, ♂, 4.5 mm, AM P35198, 12 ♂ 10 ♀ PARATYPES AM P35199, Malevu, Viti Levu, Fiji, 11 August 1979, stn 20, *Gelidiella* sp. from reef flat.

**Additional material examined.** Stn 5 (26)AM P35305; stn 7 (18)AC; stn 9 (1)AC; stn 24 (8)AC; stn 47 (35)AC; stn 48 (3)AC; stn 52 (4)AC; stn 54 (1)AC; stn 55 (2)AC.

**Description.** Length, 4.5 mm. Body cream; eye reddish brown. Antenna 1 a little over two-thirds length of antenna 2; flagellum with about 11 articles. Antenna 2, flagellum with about 17 articles. Male maxilliped palp, article 4 with long, whip-like terminal seta. Male gnathopod 1, merus untoothed; carpus two-thirds length of propodus, with strong anterodistal spine; propodus subrectangular; dactylus large, falcate, greatly overlapping palm. Female gnathopod 1 similar to that of male but propodus very elongate, over twice as long as broad; dactylus short, stout, fitting palm. Male gnathopod 2, basis anterior distal margin expanded, crenulate; propodus massive, palm complexly excavate, the excavation bordered by a series of stout spines; dactylus short, stout, falcate, fitting into excavation inside defining tooth. Female gnathopod 2 similar to gnathopod 1, but propodus even longer. Pereopods 3–4 with simple locking spines. Pereopods 5–7, basis posterior margin crenulate; propodus with simple locking spines. Epimeron 3, posterior margin weakly scalloped. Uropod 3, peduncle one and a half times length of ramus. Telsonic lobes distally subacute.

**Remarks.** The male gnathopod 2 with its complexly excavated palm bordered by spines is quite unlike that of any other Fijian hyalid. The long, whip-like seta on article 4 of the male maxilliped palp is a generic character separating *Lelehua* from *Hyale*.

*Lelehua malevua* superficially resembles *L. waimea* from Hawaii, but differs in a number of important ways, notably in the crenulate anterior margin of the male gnathopod 2 basis, the relatively weakly expanded merus of pereopods 5–6, the scalloped posterior margin of epimeron 3 and the relatively elongate uropod 3 ramus. In addition, the female gnathopoda are more slender in *L. malevua*.

**Fijian localities.** Malevu, Votualailai, Nukumbutho Island, Makuluva Island, Nananui Ra.

**Distribution.** Fiji.

**Habitat.** Among *Sargassum*, *Caulerpa*, *Halimeda*, *Amphiroa*, *Gelidiella*, *Gigartina*, sponges and coral rubble.

*Parhyale hawaiiensis* (Dana)

Fig. 56

*Allorchestes hawaiiensis* Dana, 1853: 900, pl. 61 fig. 5.—Bate, 1862: 47, pl. 8 fig. 1.

*Hyale brevipes* Chevreux, 1901: 400, figs 15–18.—Walker, 1909: 337.—Chilton, 1921b: 545, fig. 9.—Chilton, 1925: 536.—Schellenberg, 1928: 658.—Barnard, 1935: 292.

*Hyale nilssoni*.—Walker, 1904: 238.—Walker, 1905: 925, fig. 140.

*Hyale hawaiiensis*.—Stebbing, 1906: 573.—Schellenberg, 1938: 66, fig. 34.—Ruffo, 1950: 57.

?*Parhyale inyacka* Barnard, 1916: 233, pl. 38 fig. 4.

*Parhyale hawaiiensis*.—Shoemaker, 1956: 349, figs 3–4.—Ruffo, 1959: 17.—Barnard, 1965: 521, fig. 24.—Ruffo, 1969: 38.—Olerod, 1970: 388.—Sivaprakasam, 1970: 560, fig. 5.—Barnard, 1971: 131, figs 65–68.—Ledoyer, 1979a: 176.

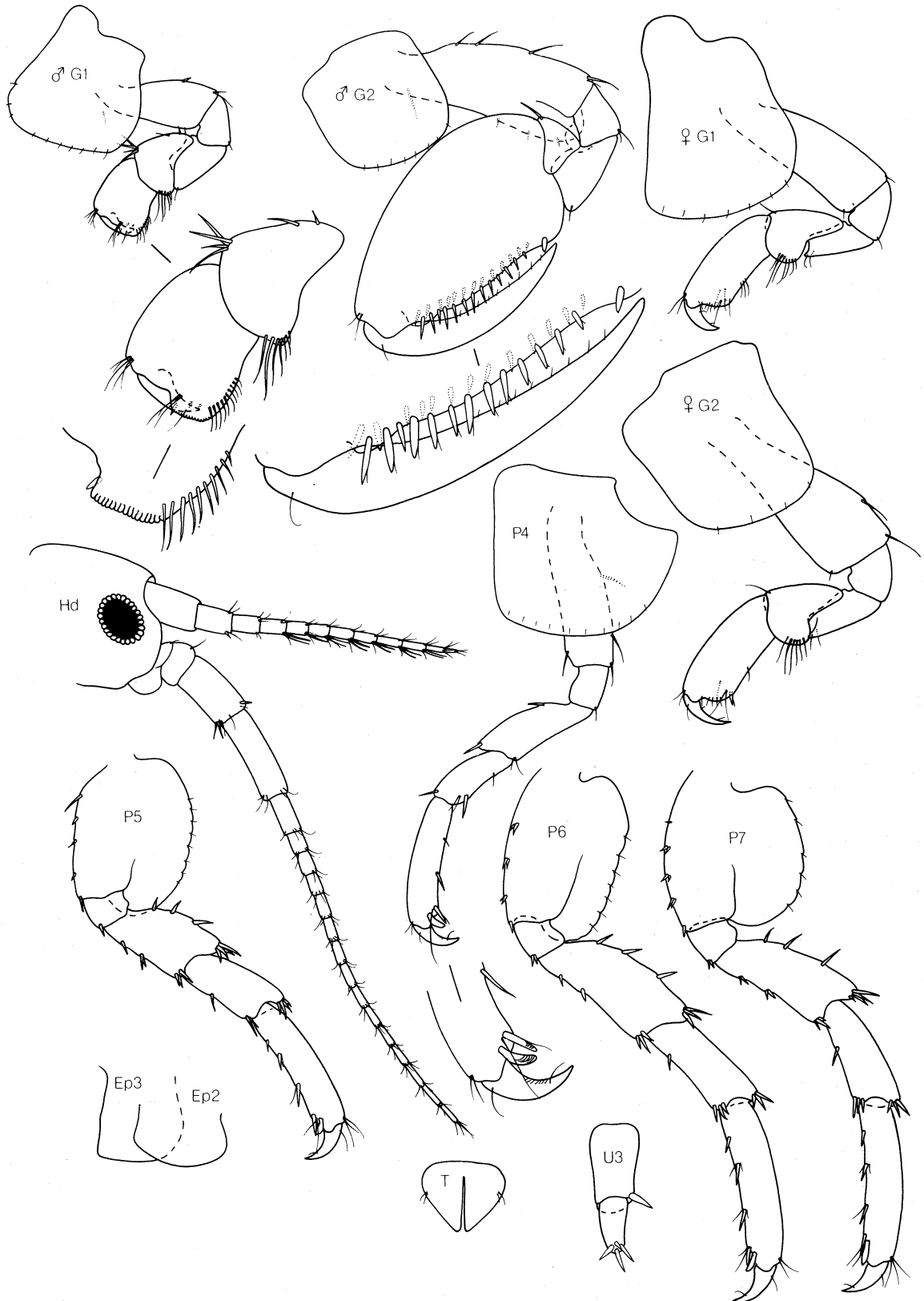


Fig. 54. *Hyale maroubrae* Stebbing, ♂ 4.5 mm, ♀ 4.0 mm, Nasese.

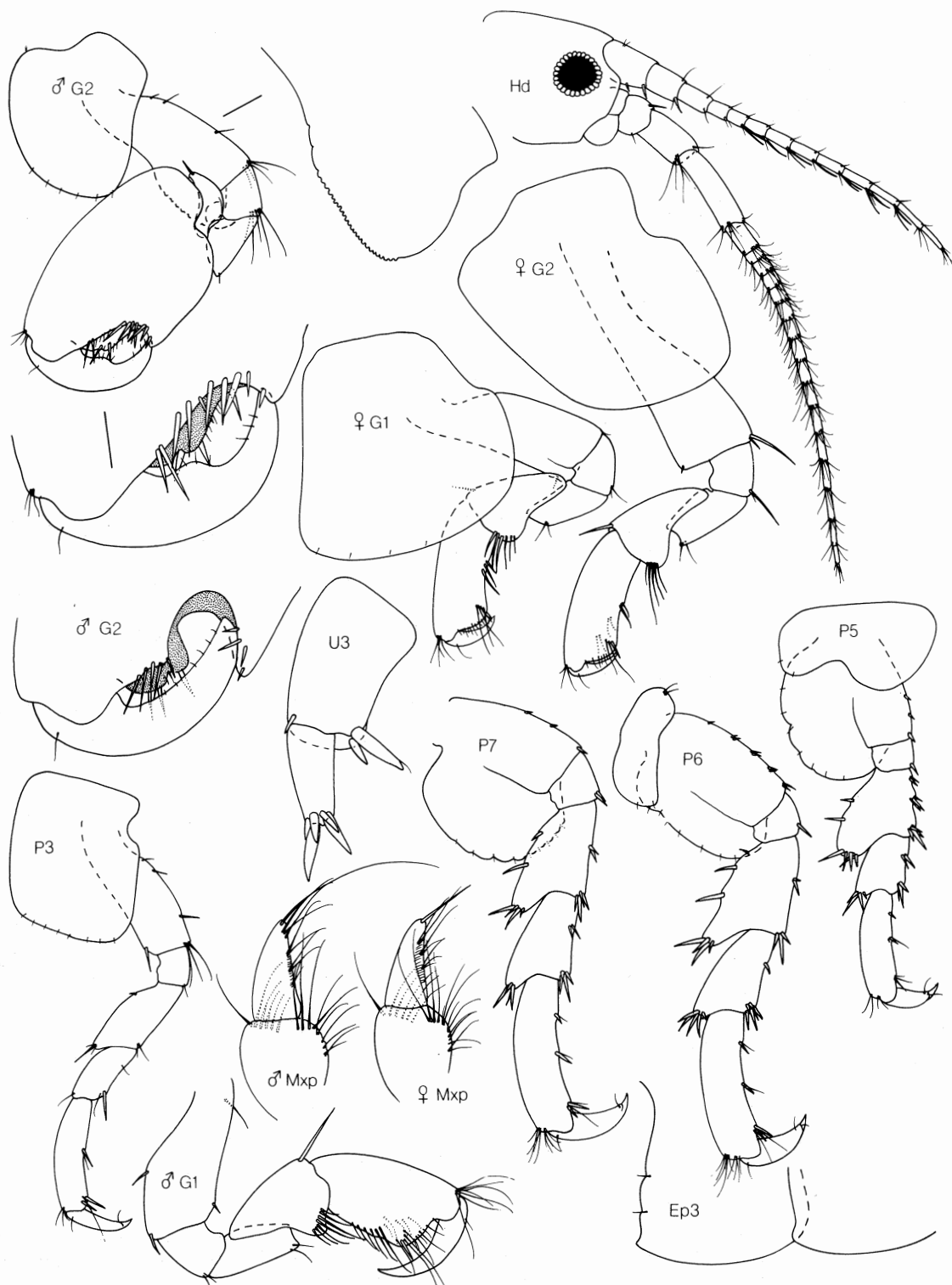


Fig. 55. *Lelehua malevua* n. sp., ♂ 4.5 mm, ♀ 4.5 mm, Malevu.

**Material examined.** Stn 37 (1)AC; stn 56 (4)AM P35518, (7)AC.

**Description.** Length, 8.0 mm. Antenna 1 about half length of antenna 2; flagellum with about 14 articles. Antenna 2, flagellum with about 26 articles. Male

gnathopod 1, merus with slight posterodistal protrusion; propodus scarcely longer than carpus, broader distally; dactylus fitting palm. Female gnathopod 1 similar to that of male. Male gnathopod 2, basis with rounded anterodistal tooth; propodus massive, subovoid, palm

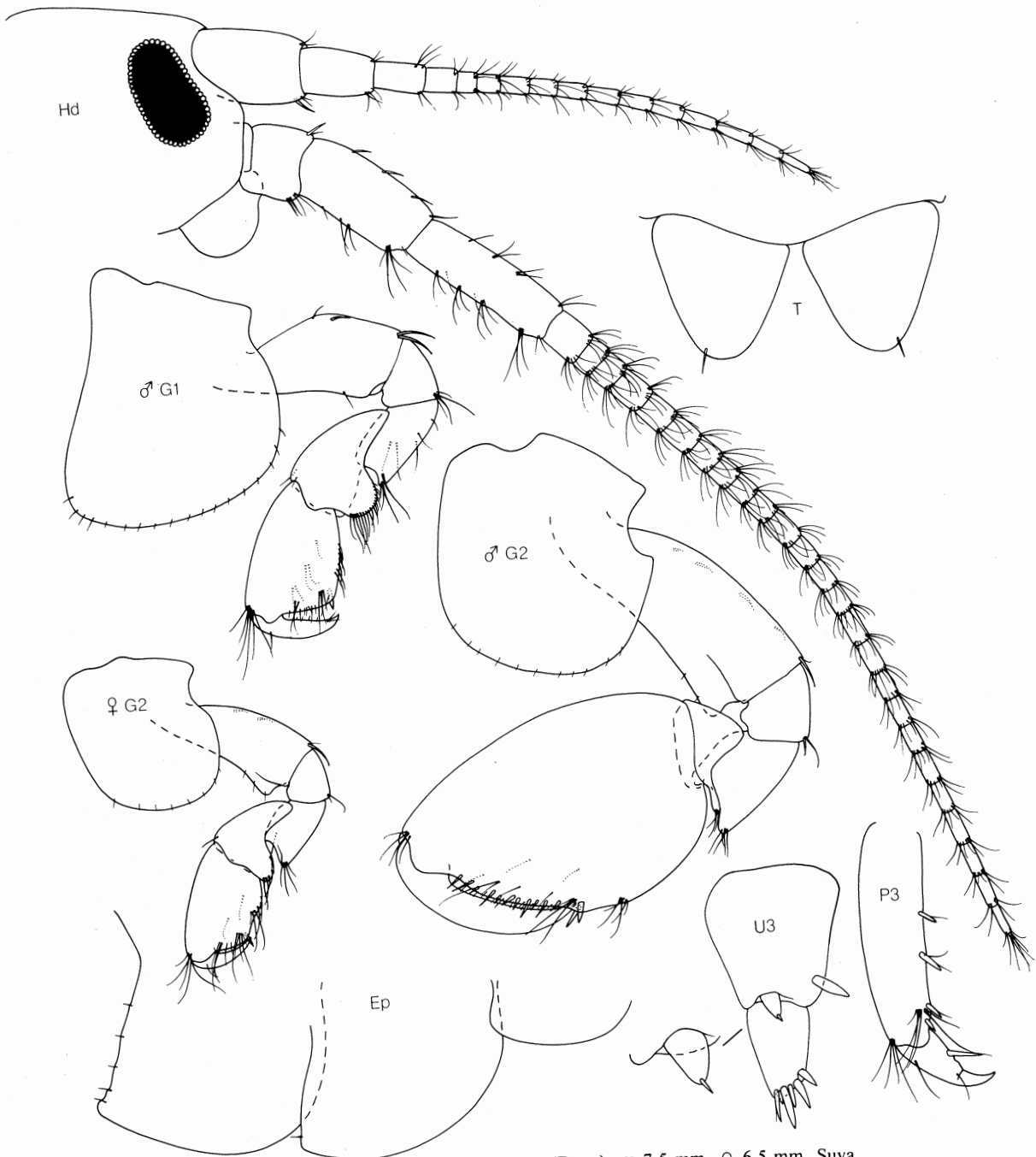


Fig. 56. *Parhyale hawaiiensis* (Dana), ♂ 7.5 mm, ♀ 6.5 mm, Suva.

evenly convex, equal in length to posterior margin and delimited by a small protrusion bearing two spines, palm beset with small spines; dactylus fitting palm. Female gnathopod 2 similar to gnathopod 1, but propodus larger. Pereopods 3-4, propodus with simple locking spines. Pereopods 5-7, basis posterior margin weakly serrate; propodus with simple locking spines. Epimeron 3 posterior margin almost straight with a few small setae, and small posterodistal tooth. Uropod 3, outer ramus shorter than peduncle, inner ramus small, sometimes almost scale-like. Telsonic lobes rounded.

**Remarks.** The extreme reduction of the inner ramus

of uropod 3 is a generic character. In all other currently known Fijian hyalids, except *L. malevua*, the palm of the male gnathopod 2 propodus is much longer than the posterior margin. *Lelehua malevua* is easily distinguished from *P. hawaiiensis* by the complexly excavate palmar region of the male gnathopod 2.

**Type-locality.** Maui, Hawaii.

**Fijian locality.** Suva.

**Distribution.** Said to be circumtropical in shallow water, but a species complex may be involved.

**Habitat.** In mangrove litter.

### Family Isaeidae

Isaeids are slender-bodied amphipods, although the coxae may be deep and shield-like (*Photis*). The head is always deeply recessed below the ocular lobe and both pairs of antennae are slender and often setose. Like all corophioideans, they possess a fleshy, dorsoventrally thickened telson and glandular pereopods 3–4. Males possess an enlarged gnathopod 2 (c.f. Aoridae).

Isaeids are fragile and often autotomise appendages (except gnathopods) during the collecting process.

### Key to Genera

1. Uropod 3, inner ramus half, or less, as long as outer ramus; coxae 1–4 deep. . . . . *Photis*  
 — Uropod 3, inner ramus as long as, or longer than, outer ramus; coxae 1–4 relatively shallow. . . . . 2
2. Pleonites 4 and 5 coalesced; accessory flagellum composed of one long and one rudimentary article. . . . . *Chevalia*  
 — Pleonites 4 and 5 free; accessory flagellum composed of two or more well defined articles. . . . . 3
3. ♂ gnathopod 1, basis with strong convex anterior flange; pereon segment 2 with strong, spine-like sternal process. . . . . *Aorchoides*  
 — ♂ gnathopod 1, basis lacking anterior flange; pereon lacking sternal processes. . . . . *Gammaropsis*

#### *Aorchoides dilatata* Ledoyer

Figs 57–58

*Aorchoides dilatata* Ledoyer, 1972: 191, pl. 15.

?*Gammaropsis haleiwa* Barnard, 1970: 178, fig. 115.

**Material examined.** Stn 2 (2)AM P35300; stn 16 (2)AC; stn 27 (10)AC; stn 29 (4)AC; stn 30 (1)AC; stn 32 (1)AC; stn 34 (5)AC; stn 35 (4)AC; stn 41 (2)AC.

**Description.** Length, 3.5 mm. Ocular lobes elongate. Eye large, round, entirely situated in ocular lobe. Male pereon segment 2 with strong, spine-like sternal process. Antennae extremely delicate and slender. Antenna 1, primary flagellum a little longer than peduncle, with about 14 articles; accessory flagellum with 5 articles. Antenna 2 shorter than antenna 1; flagellum shorter than combined length of peduncular articles 4 and 5. Maxilla 1, inner plate with single long, terminal seta and numerous small lateral setae. Mandible palp, article 2 longer than article 3, article 3 distally unexpanded. Maxilliped palp, article 3 with distal process. Male gnathopod 1, basis with enormously developed convex flange on anterior margin; propodus subovoid, longer than carpus, palm very oblique; dactylus slender. Female gnathopod 1 similar to that of male but basis lacking anterior flange. Male gnathopod 2, coxa large, subrectangular; basis stout; carpus triangular; propodus posterior margin with proximal slender tooth separated from the very oblique palm by a round-bottomed depression which is bordered on its anterior margin by a stout spine; dactylus slender. Female gnathopod 2 similar to gnathopod 1 but carpus shorter; propodus subovoid, longer than carpus. Epimera 1–3 rounded.

Epimeron 2 with ventral setae. Uropods 1–2, peduncle with interramal spiniform process. Uropod 3, peduncle short, rami elongate; outer ramus one and a half times length of peduncle and with a small second article bearing a pair of long setae; inner ramus a little shorter than outer ramus with two terminal spines.

**Remarks.** The characteristic male gnathopoda immediately distinguish this species from currently known Fijian isaeids. Females can be identified by the short uropod 3 peduncle and elongate, sparsely setiferous antennae.

**Type-locality.** Tulear, Madagascar.

**Fijian localities.** Momi Bay, Votualailai, Taunovo Bay, Nasesse, Mburelevu.

**Distribution.** Madagascar, Fiji, ?Hawaii.

**Habitat.** Amongst *Sargassum*, *Halimeda*, *Amphiroa*, *Padina*, *Syringodium*, crustose corallines, *Pocillopora* and coral debris.

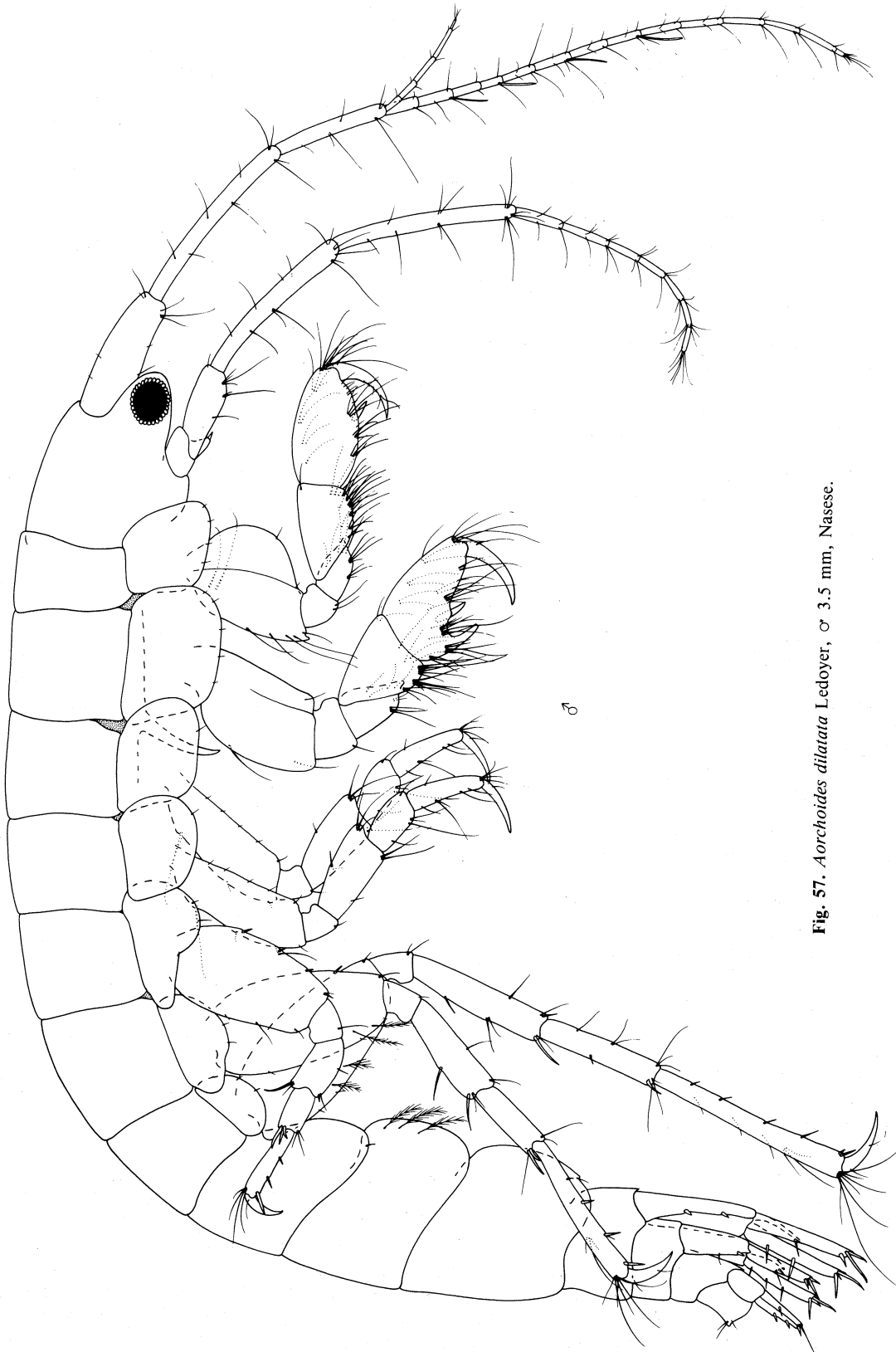
#### *Chevalia aviculae* Walker

Fig. 59

*Chevalia aviculae* Walker, 1904: 288, pl. 7 fig. 50, pl. 8 fig. 50.—Barnard, 1962: 17, fig. 5.—Ledoyer, 1967: 133, fig. 19.—Barnard, 1970: 166, fig. 107.—Ledoyer, 1972: 233, pl. 53B.—Ledoyer, 1979b: 28.

**Material examined.** Stn 26 (2)AM P35336, (3)AC.

**Description.** Length, 3.0 mm. Body somewhat depressed. Coxae small; coxae 5–7 widely separated. Ocular lobes weakly produced, eye small, round. Antenna 1, peduncular article 1 longer than 3; primary flagellum shorter than peduncle, with 6–7 articles;



♂

Fig. 57. *Aorchooides dilatata* Ledoyer, ♂ 3.5 mm, Nasese.

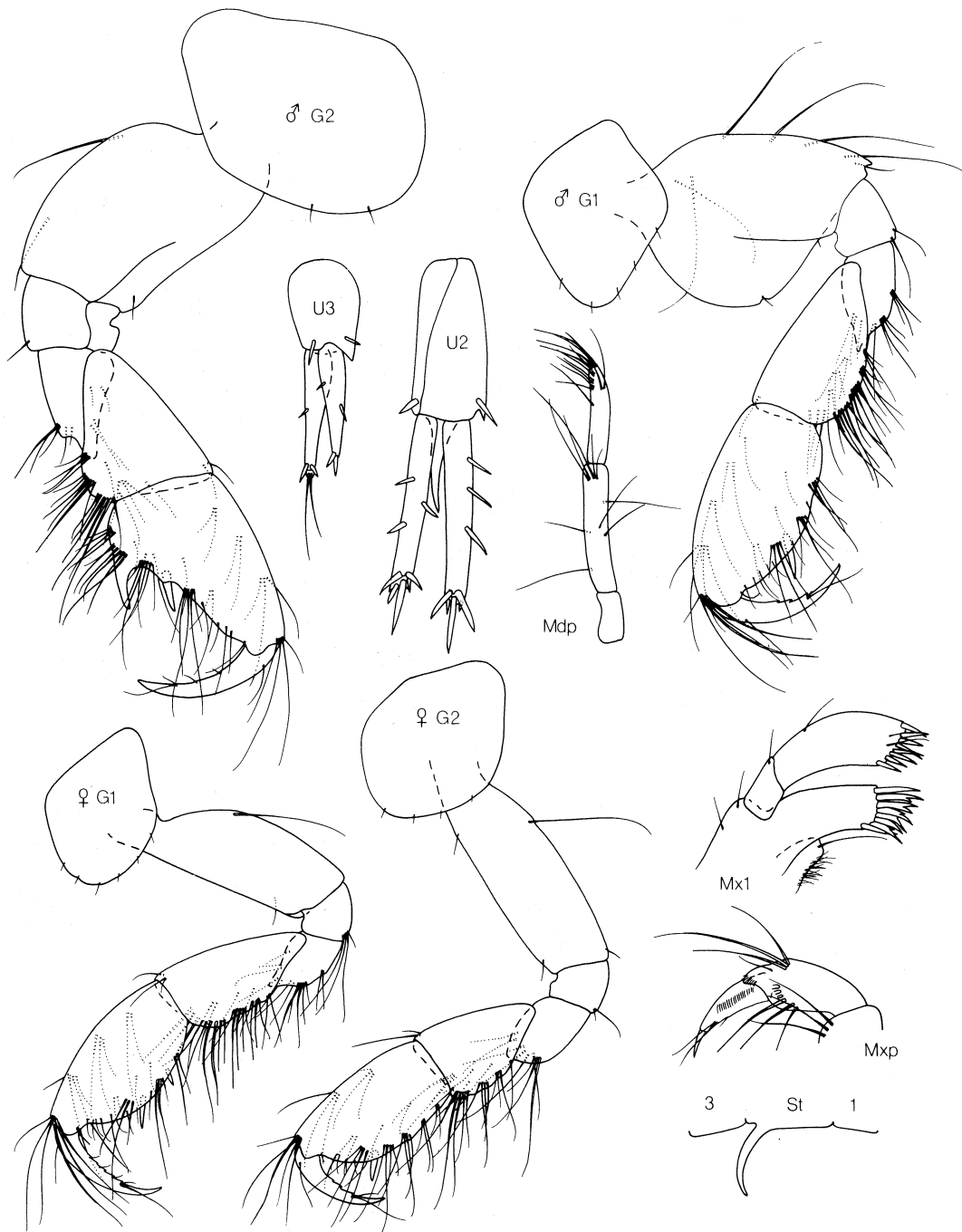


Fig. 58. *Aorchoides dilatata* Ledoyer, ♂ 3.5 mm, ♀ 3.2 mm, Nasese.

accessory flagellum with one long and one vestigial article. Antenna 2 subequal in length to antenna 1; flagellum only a little shorter than combined length of peduncular articles 4 and 5. Gnathopod 1 slender, carpus longer than propodus, palm oblique, evenly continuous with posterior margin. Gnathopod 2, coxa variable, anterior margin straight or produced anterodistally; carpus large, cup-shaped; propodus twice length of carpus, subrectangular, palm irregular, sinuous, defined by a blunt tooth forming almost a right-angle with the posterior margin; dactylus stout,

fitting palm, posterior margin with proximal hump. Pereopods 5-7, dactylus bifid. Pereopod 7, basis posterior margin crenulate, with strong posterodistal protrusion. Epimera 1-3 rounded. Urosome segments 1-2 fused. Uropods 1-2 lacking interrampal process. Uropod 1, inner ramus longer than outer, with outer proximal margin strongly toothed. Uropod 2, inner ramus longer than outer and devoid of spines or teeth. Uropod 3, rami subequal in length but outer ramus stouter. Telsonic crests with long setae.

**Remarks.** The depressed body, small discontinuous

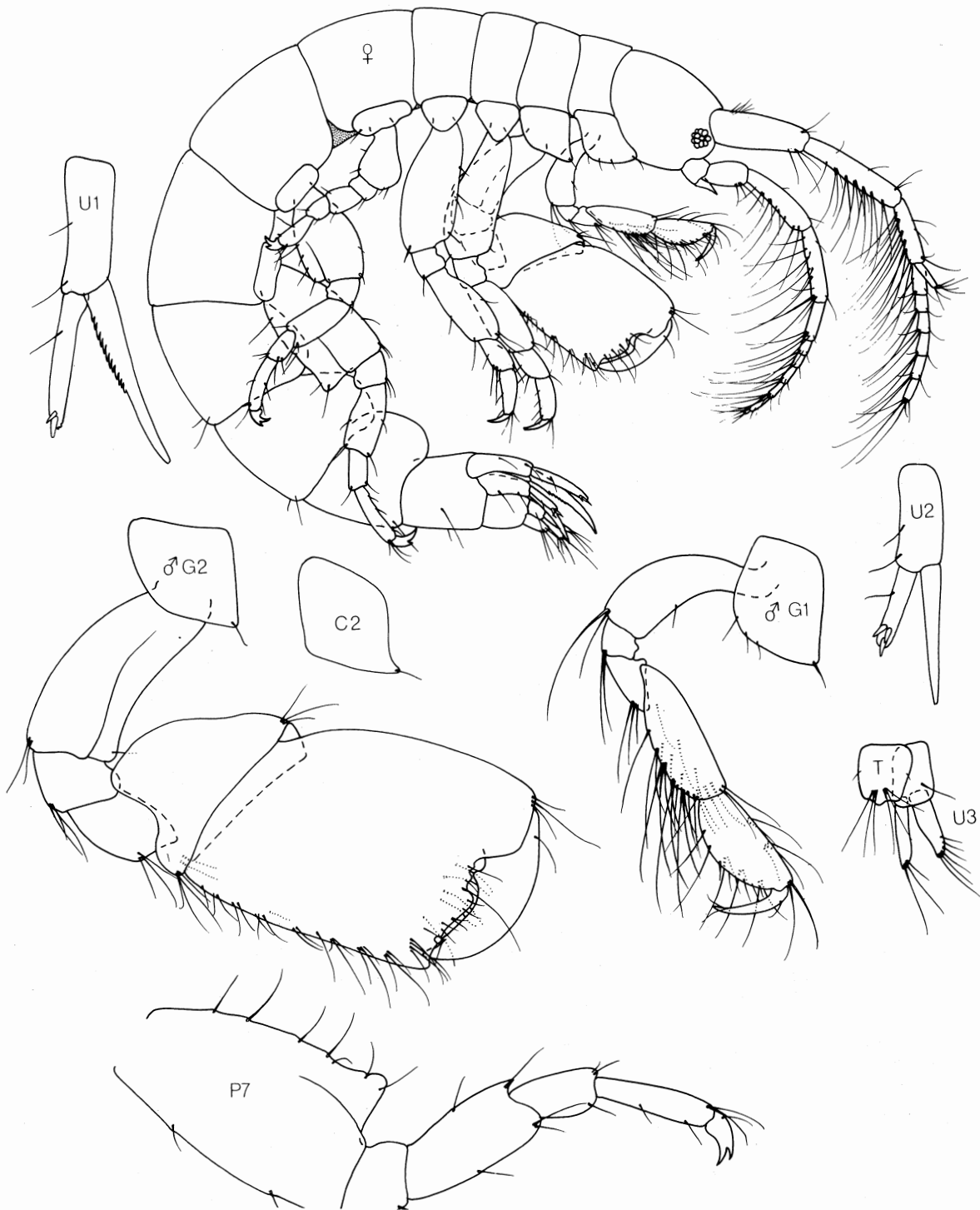


Fig. 59. *Chevalia aviculae* Walker, ♂ 2.8 mm, ♀ 3.0 mm, Makuluva Island.

coxae and fused urosome segments 1–2 distinguish this species from other Fijian isaeids. It superficially resembles a corophiid in these respects, but antenna 2, gnathopod 2 and the uropods serve to distinguish it from the single known Fijian corophiid.

**Type-locality.** East Cheval and Muttuvaratu paars, Sri Lanka.

**Fijian locality.** Makuluva Island.

**Distribution.** Circumtropical.

**Habitat.** Among coral debris.



Key to Species of *Gammaropsis*

1. Eye round, becoming lageniform in hyperadults, with stray ommatidea, yellow in life, clear in alcohol. . . . . 2  
 — Eye round or reniform, discrete, without stray ommatidea, brown or black in life, in alcohol a black central core surrounded by clear ommatidea. . . . . 3
2. Uropod 1, peduncle interramal process three-fifths length of outer ramus; ♀ gnathopod 2 palm with defining tooth. . . . . *G. pacifica*  
 — Uropod 1, peduncle interramal process three-quarters length of outer ramus; ♀ gnathopod 2 palm lacking defining tooth. . . . . *G. atlantica*
3. Gnathopod 2 similar in both sexes, strongly setose, carpus anterior margin with stout spine. . . . . *G. setifera*  
 — Gnathopod 2 sexually dimorphic, greatly enlarged in ♂, weakly enlarged in ♀, in both sexes weakly setiferous, carpus anterior margin lacking short spines. . . . . 4
4. Antennae strongly setose. . . . . 5  
 — Antennae weakly setiferous. . . . . *G. togoensis*
5. Accessory flagellum multiarticulate; ♂ gnathopod 2, propodus with long proximal tooth on posterior margin. . . . . *G. digitata*  
 — Accessory flagellum 3-articulate; ♂ gnathopod 2, propodus lacking proximal tooth on posterior margin. . . . . *G. pokipoki*

*Gammaropsis atlantica* Stebbing

Fig. 60

*Gammaropsis atlantica* Stebbing, 1888: 1101, pl. 114.—Ruffo, 1969: 43, fig. 13.—Barnard, 1970: 174, figs 111–113.—Ledoyer, 1972: 239, pls 51–53.—Griffiths, 1973: 288.—Griffiths, 1974: 244.—Ledoyer, 1978: 241, fig. 17.—Ledoyer, 1979b: 33, figs 13–15.

*Gammaropsis zeylanicus* Walker, 1904: 282, pl. 6 fig. 41.—Walker, 1909: 339.

*Gammaropsis gardineri* Walker, 1905: 929, pl. 88 figs 11–14, 16–17.

*Eurystheus atlanticus*.—Stebbing, 1906: 611.—Stebbing, 1908: 86, pl. 40b.—Stebbing, 1910a: 461.—Stebbing 1910b: 614, 648.—Chilton, 1921a: 81.—Tattersall, 1922: 10, pl. 1 figs 17–20.—Schellenberg, 1926: 375.—Hale, 1927: 315.—Chevreux, 1927: 110.—Hale, 1929: 223, fig. 220.—Chevreux, 1935: 126.—Barnard, 1937: 164.—Pirlot, 1938: 345.—Reid, 1951: 258.—Pillai, 1957: 56, fig. 14.—Ruffo, 1959: 19.

**Material examined.** Stn 31 (1)AC; stn 35 (1)AC; stn 40 (4)AM P35359; stn 53 (1)AC.

**Description.** Length, 5.0 mm. Eye yellow (clear in alcohol); ocular lobes strongly produced; eye lageniform in hyperadults, often with stray ommatidea. Antenna 1, flagellum shorter than peduncle; accessory flagellum with four articles. Antenna 2 shorter than antenna 1; flagellum shorter than combined length of peduncular article 4 and 5. Male gnathopod 1 weak; propodus a little longer than carpus. Female gnathopod 1 similar to that of male, but more setose. Male gnathopod 2, basis stout; carpus short, cup-shaped; propodus massive, subrectangular, palm bilobed, separated from a short posterodistal tooth by a deep excavation at the base of which is a strong spine; dactylus stout,

opposable to posterodistal tooth of propodus. Female gnathopod 2 similar to that of male but less massive, palm evenly convex, defined by a small but distinct posterodistal tooth. Epimera 1–3 rounded but with posterodistal notch into which is inserted a small seta. Uropod 1, peduncle with a strong interramal spiniform process, two-thirds length of peduncle. Uropod 3, peduncle and outer ramus subequal in length; outer ramus longer and stouter than inner, with a small second article. Telsonic crests with spines and setae.

**Remarks.** This species and *G. pacifica* are readily distinguished from other Fijian *Gammaropsis* by the yellow (clear in alcohol) eye which becomes lageniform in shape in hyperadults. Female *G. atlantica* differ from those of *G. pacifica* by the toothed propodus of gnathopod 2. Male *G. pacifica* are not yet described from Fiji.

**Type-locality.** Off St Vincent, Cape Verde Islands.

**Fijian localities.** Momi Bay, Mburelevu, Nananui Ra.

**Distribution.** Circumtropical.

**Habitat.** Among coral rubble, *Acropora* and *Halimeda*.

*Gammaropsis digitata* (Schellenberg)

Figs 61–62

*Eurystheus digitatus* Schellenberg, 1938: 84, fig. 44.—Barnard, 1965: 535, fig. 30.—Barnard, 1970: 178, fig. 114.—Sivaprakasam, 1970a: 570, fig. 10.

**Material examined.** Stn 5 (11)AC; stn 6 (13)AM P35307; stn 7 (1)AC; stn 9 (51)AC; stn 10 (9)AC; stn 18 (1)AC; stn 24 (2)AC; stn 27 (6)AC; stn 28 (24)AM P35342; stn 53 (4)AC.

**Description.** Length, 4.5 mm. Eye red in life, black in alcohol; ocular lobes strongly produced; eye round.

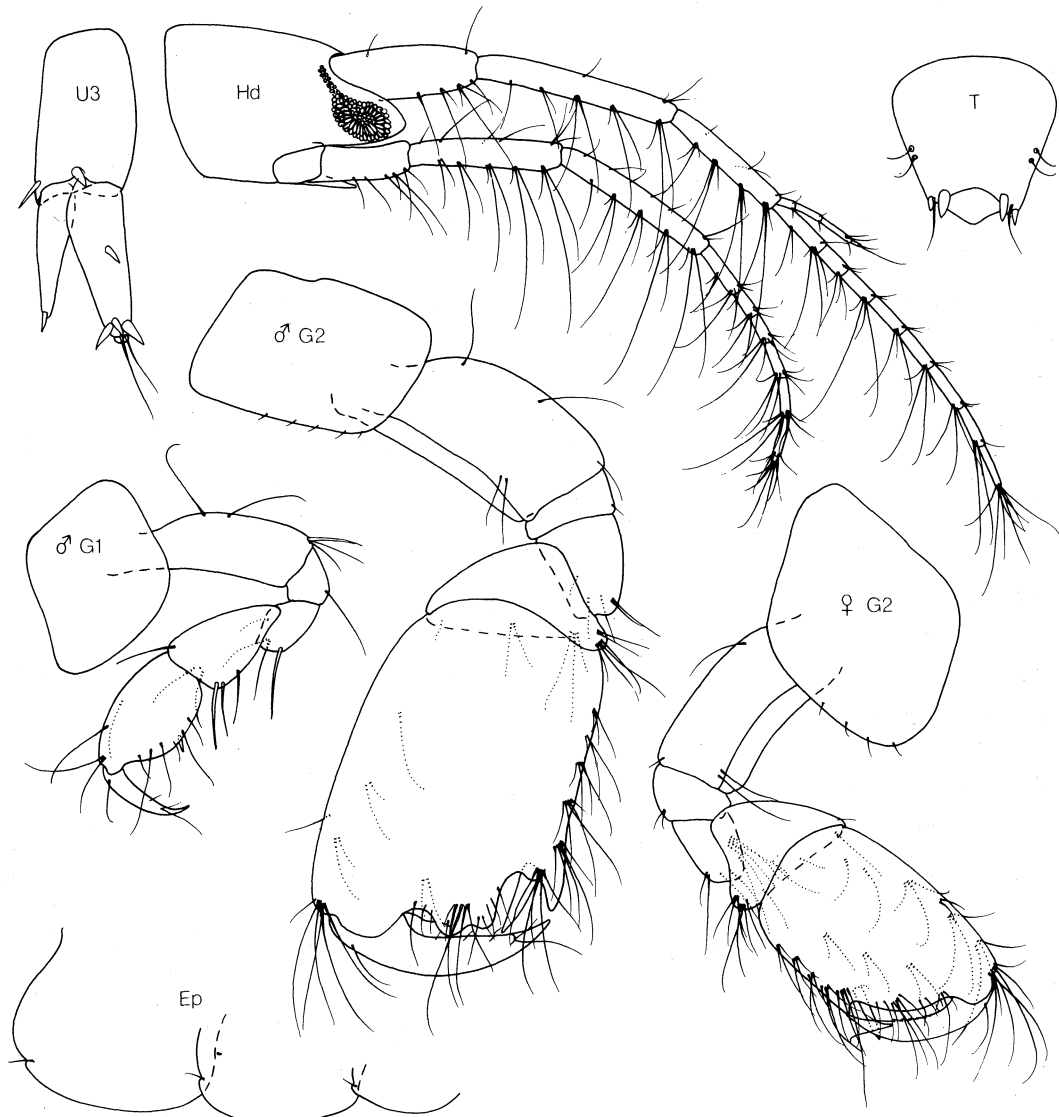


Fig. 60. *Gammaropsis atlantica* Stebbing, ♂ 5.0 mm, ♀ 5.0 mm, Momi Bay.

Antenna 1, peduncular article 1 shorter than article 3; primary flagellum shorter than peduncle with 11–12 articles; accessory flagellum with about 6 articles. Antenna 2 subequal in length to antenna 1; flagellum only a little shorter than combined length of peduncular articles 4 and 5. Male gnathopod 1, propodus scarcely longer than carpus, palm almost straight, very oblique, defined by a weak protrusion bearing a spine. Female gnathopod 1 with smoothly convex palm. Male gnathopod 2, carpus very short, cup-shaped; propodus massive, in hyperadults posterior margin with a long, slender proximal tooth and a short, stout, irregular distal protrusion forming a short, transverse palm; dactylus massive, greatly overlapping palm; in juveniles the propodal tooth is distal in position and migrates through successive moults to its hyperadult position. Female gnathopod 2 with slender propodus, palm oblique, evenly convex and weakly crenulate, defined by a small hump bearing a spine. Epimera 1–3 with small posterodistal tooth. Uropod 1 with stout

interramal spiniform process. Uropod 2 lacking interramal process. Uropod 3, rami subequal in length to peduncle, outer ramus lacking a second article. Telsonic crests each with a stout spine and a fine seta.

**Remarks.** Hyperadult males are readily distinguished from other Fijian *Gammaropsis* by the long proximal tooth of the gnathopod 2 propodus. *Aorchoides dilatata* has a superficially similar gnathopod 2, but in that species the carpus is much longer, and the flanged basis of gnathopod 1 is diagnostic. Subadult *G. digitata* appear rather different in the structure of the male gnathopod 2 but the propodal tooth is still quite different from that of any other Fijian species in the genus.

**Type-locality.** Nui, Tarawa.

**Fijian localities.** Taunovo Bay, Nukumbutho Island, Makuluva Island, Suva barrier reef, Nananui Ra.

**Distribution.** India, Tarawa, Kiribati, Micronesia, Hawaii, Fiji.

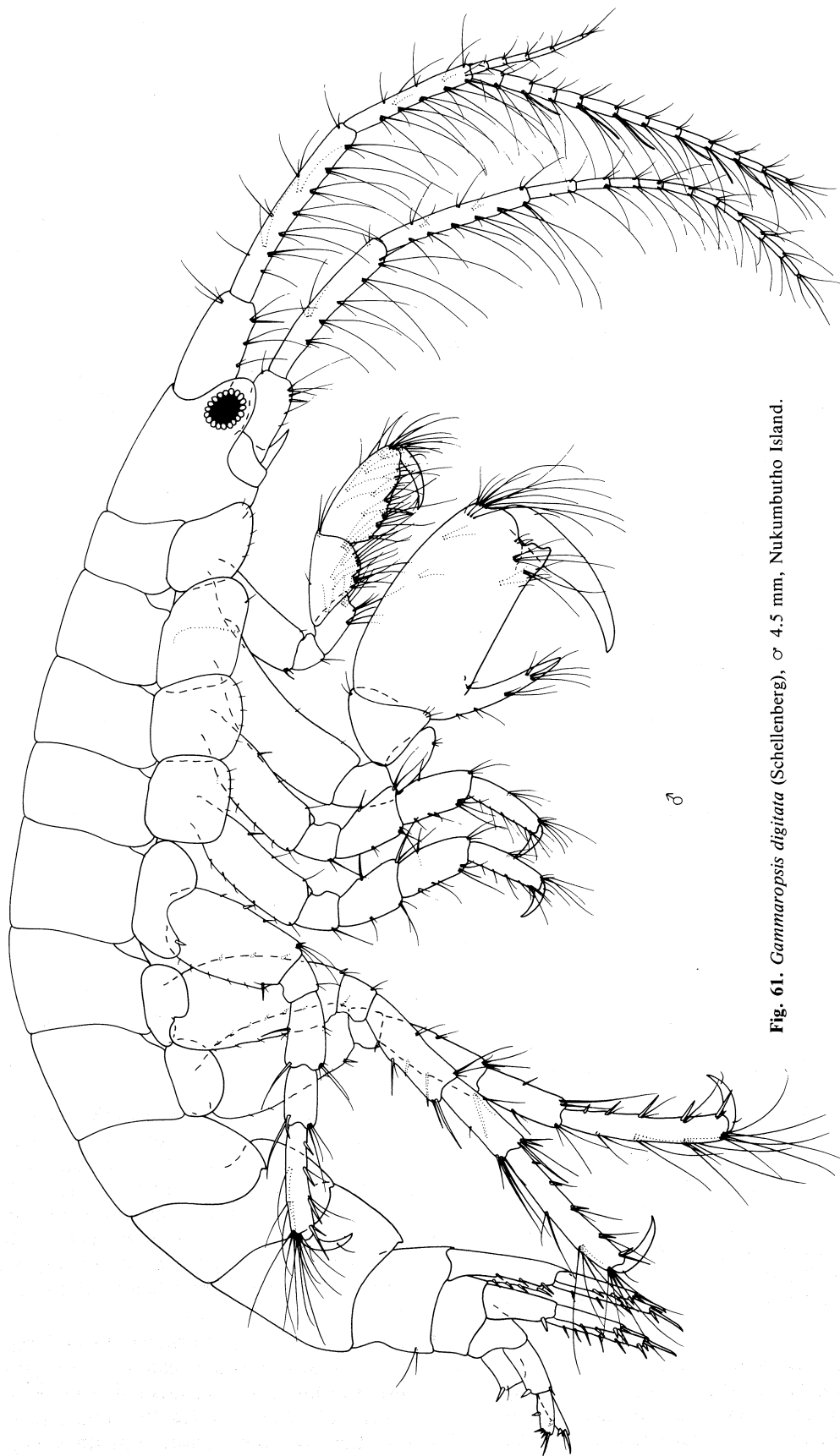


Fig. 61. *Gammaropsis digitata* (Schellenberg), ♂ 4.5 mm, Nukumbutho Island.

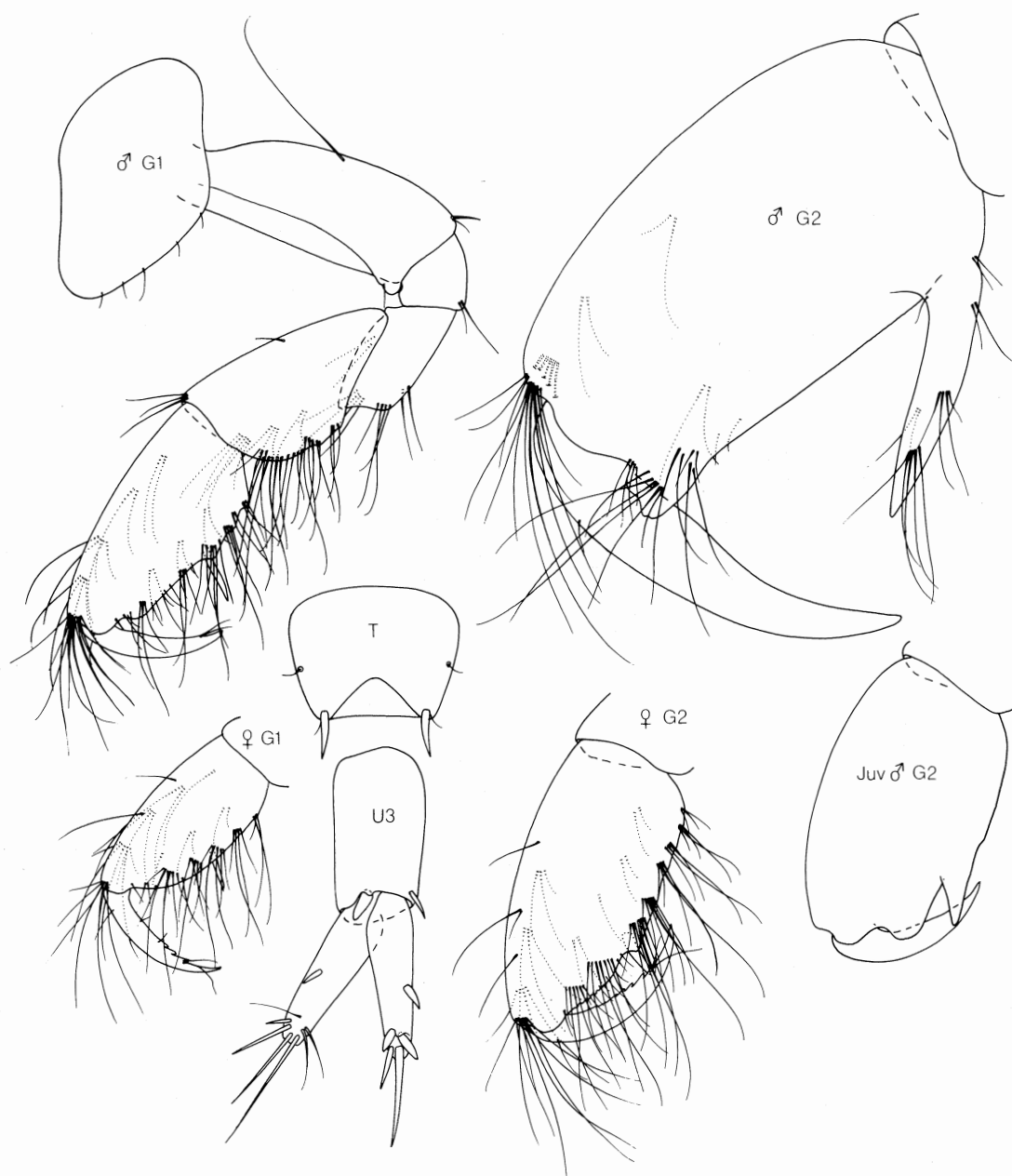


Fig. 62. *Gammaropsis digitata* (Schellenberg), ♂ 4.5 mm, ♀ 4.0 mm, Nukumbutho Island.

**Habitat.** Amongst *Turbinaria*, *Amphiroa*, *Gigartina*, *Halimeda*, *Syringodium*, sponges and coral rubble.

*Gammaropsis pacifica* (Schellenberg)

Fig. 63

*Eurystheus pacificus* Schellenberg, 1938: 80, fig. 42.—  
Barnard, 1965: 536, fig. 31.

**Material examined.** Stn 9 (1)AC; stn 10 (2)AC; stn 27 (3)AM  
P35341.

**Description.** Length, 5.0 mm. Ocular lobes elongate. Eye large, lageniform, composed of large numbers of ommatidia. Antenna 1, primary flagellum shorter than peduncle; accessory flagellum multiarticulate. Antenna 2 shorter than antenna 1; flagellum shorter than

combined length of peduncular articles 4 and 5. Female gnathopod 1, propodus a little longer than carpus. Female gnathopod 2, basis stout; carpus short, cup-shaped; propodus one and a half times length of carpus, palm very oblique, evenly continuous with posterior margin. Epimera 1-3 rounded but with small posteroventral notch. Uropod 1 with strong interramal spiniform process about half length of inner ramus.

Male not collected in Fiji.

**Remarks.** This species is problematical. Schellenberg (1938) described males and females from Tarawa and the Marshall Islands, but females only from Kiribati and Fiji. Barnard (1965) recorded 16 females from Ifaluk Atoll, in the Caroline Islands, but no males. In the present work, six females were found, but no males.

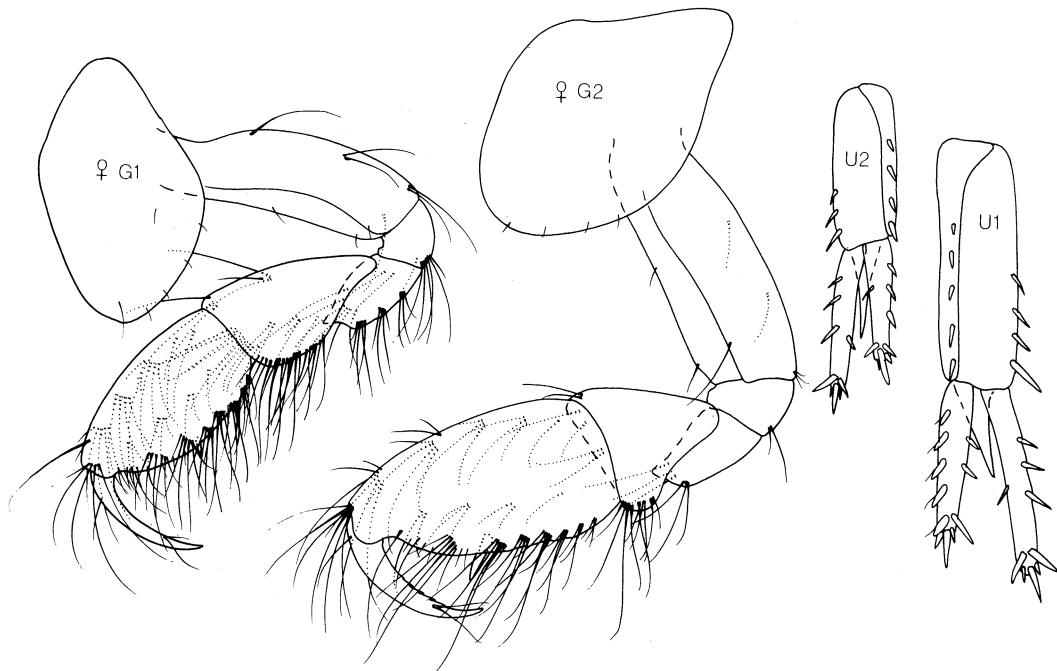


Fig. 63. *Gammaropsis pacifica* (Schellenberg), ♀ 5.0mm, Taunovo Bay.

Females differ from those of *G. atlantica* only in the untoothed propodus of gnathopod 2 and the shorter interrampal process of uropod 1.

**Type-locality.** Suva, Viti Levu, Fiji (♀ syntypes), Aitinglablab, Marshall Islands (♂ syntype).

**Fijian localities.** Taunovo Bay, Nukumbutho Island.

**Distribution.** Tarawa, Kiribati, Marshall Islands, Nauru, Caroline Islands, Fiji.

**Habitat.** Among sponges, *Halimeda* and *Syringodium*.

*Gammaropsis pokipoki* Barnard

Fig. 64

*Gammaropsis pokipoki* Barnard, 1970: 185, figs 119–120.—Ledoyer, 1978: 248, fig. 20.

**Material examined.** Stn 26 (1)AM P35334, (2)AC.

**Description.** Length, 2.1 mm. Ocular lobes moderately strongly produced. Eye round. Antenna 1, peduncular article 1 shorter than 3; primary flagellum much shorter than peduncle, with 7–8 articles; accessory flagellum with 3 articles, the terminal article rudimentary. Antenna 2 subequal in length to antenna 1; flagellum shorter than combined length of peduncular articles 4 and 5. Male gnathopod 1, carpus and propodus subequal. Male gnathopod 2, carpus short, cup-shaped; propodus subrectangular, palm with shallow, rounded excavation and defined by a spine; dactylus slightly overlapping palm. Epimera 1–3 rounded. Epimera 2–3 with posteroventral notch bearing a seta. Uropod 1 with strong interrampal spiniform process. Uropod 2 lacking an interrampal process. Uropod 3 rami only a little longer than peduncle; outer ramus with small second article. Telsonic crests with both spines and setae.

Female not collected in Fiji.

**Remarks.** The form of the male gnathopod 2 distinguishes this species from all other Fijian *Gammaropsis*. Fijian material agrees well with the description and figures of Barnard (1970) but the male gnathopod 2 has a shorter carpus, the excavation in the palm is less distinct and is not bounded distally and proximally by distinct teeth as in Hawaiian material, and the antennae are distinctly more robust.

**Type-locality.** Off Barber's Point, Oahu, Hawaii.

**Fijian locality.** Makuluva Island.

**Distribution.** Hawaii, Fiji, Mauritius.

**Habitat.** Among coral debris.

*Gammaropsis setifera* (Schellenberg)

Fig. 65

*Eurystheus setiferus* Schellenberg, 1938: 82, fig. 43.

**Material examined.** Stn 26 (6)AM P35335, (11)AC.

**Description.** Length, 5.0 mm. Ocular lobes moderately strongly produced. Eye subround. Antenna 1, peduncular article 1 longer than 3; primary flagellum much shorter than peduncle with 11–12 articles; accessory flagellum with about 6 articles. Antenna 2 subequal in length to antenna 1; flagellum shorter than combined length of peduncular articles 4 and 5. Male gnathopod 1, propodus longer than carpus; carpus anterior margin with short spines; propodus palmar margin sinuous; dactylus overlapping palm. Female gnathopod 1 similar to that of male, but palm evenly rounded. Gnathopod 2 similar in both sexes; carpus short, cup-shaped, anterior margin with three very strong spines; propodus twice length of carpus, palm with medial and defining tooth, the latter with a stout spine inserted near its base; anterior margins of carpus

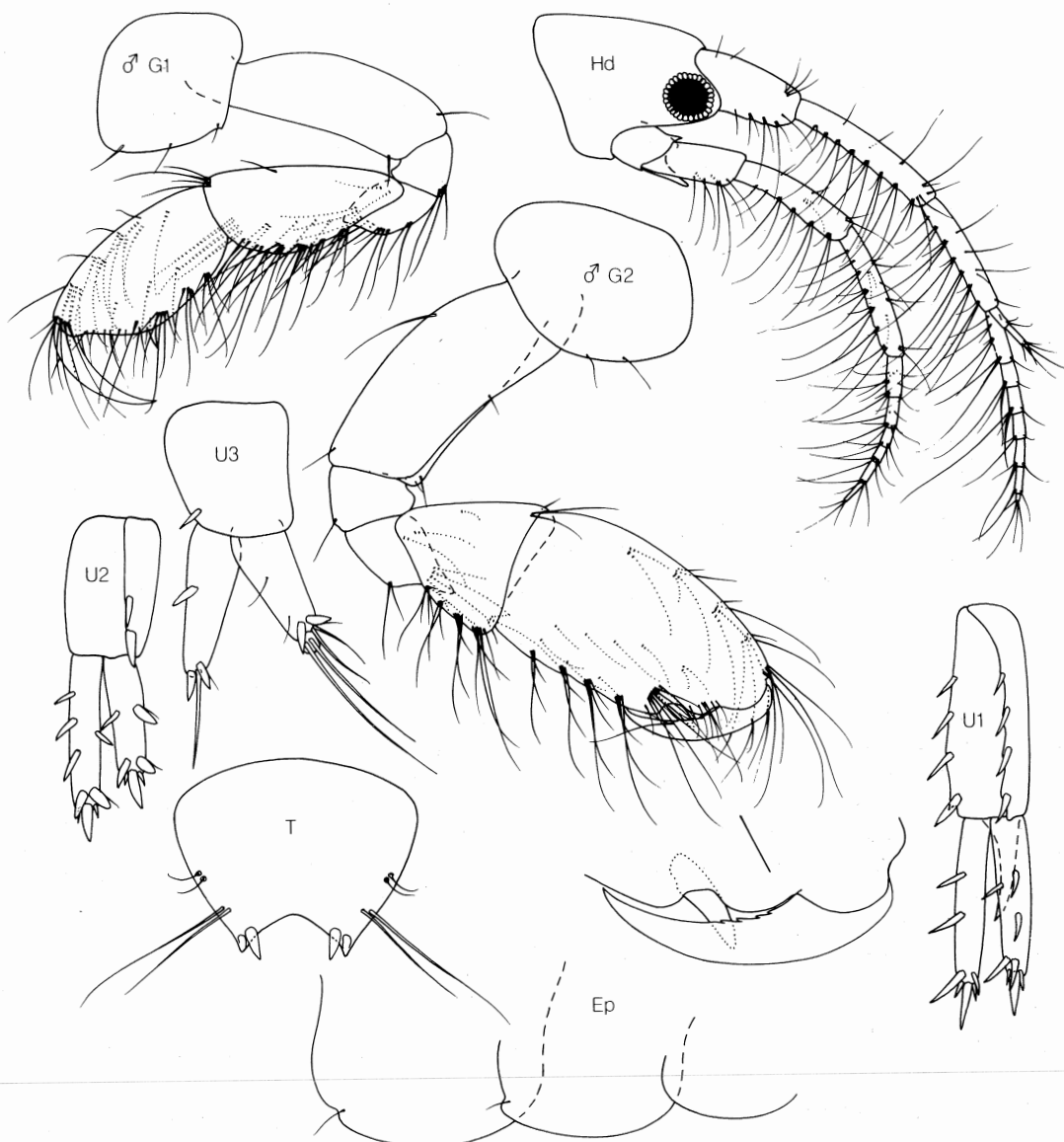


Fig. 64. *Gammaropsis pokipoki* Barnard, ♂ 2.1 mm, Makuluva Island. U3 figured 2 X mag. of U1 and U2.

tooth. Uropod 1, peduncle with stout interramal spiniform process. Uropod 2, peduncle with short, triangular interramal process. Uropod 3, rami subequal in length to peduncle. Outer ramus with small second article. Telsonic crests each with a stout spine.

**Remarks.** The highly setose gnathopod 2 in both sexes of this species distinguishes it from other Fijian *Gammaropsis*.

**Type-locality.** Aranuka, Kiribati.

**Fijian locality.** Makuluva Island.

**Distribution.** Kiribati, Fiji.

**Habitat.** Among coral debris.

*Gammaropsis togoensis* (Schellenberg)

Fig. 66

*Eurystheus togoensis* Schellenberg, 1925: 177, fig. 23.—Schellenberg, 1939: 136, fig. 29.—Sivaprakasam, 1968c: 283.

*Gammaropsis togoensis*.—Krapp-Schickel & Myers, 1979: 459, figs 12-13.

**Material examined.** Stn 3 (3)AC; stn 17 (1)AC; stn 27 (25)AC; stn 29 (6)AM P35346, (4)AC; stn 30 (4)AC; stn 31 (4)AC; stn 33 (1)AC; Stn 40 (8)AM P35358.

**Description.** Length, 4.0 mm. Ocular lobes strongly produced. Eye round, antennae relatively short and sparsely setiferous. Antenna 1, primary flagellum shorter than peduncle with about 6 articles; accessory flagellum composed of one long and one rudimentary terminal article. Antenna 2, flagellum shorter than combined length of peduncular article 4 and 5 with about 6 articles. Male gnathopod 1, basis swollen distally; propodus longer than carpus, palm sinuous. Female gnathopod 1, basis not swollen distally; propodus scarcely longer than carpus, palm very and propodus and outer medial face of basis clothed in long, fine setae. Epimera 1-3 with small posterodistal

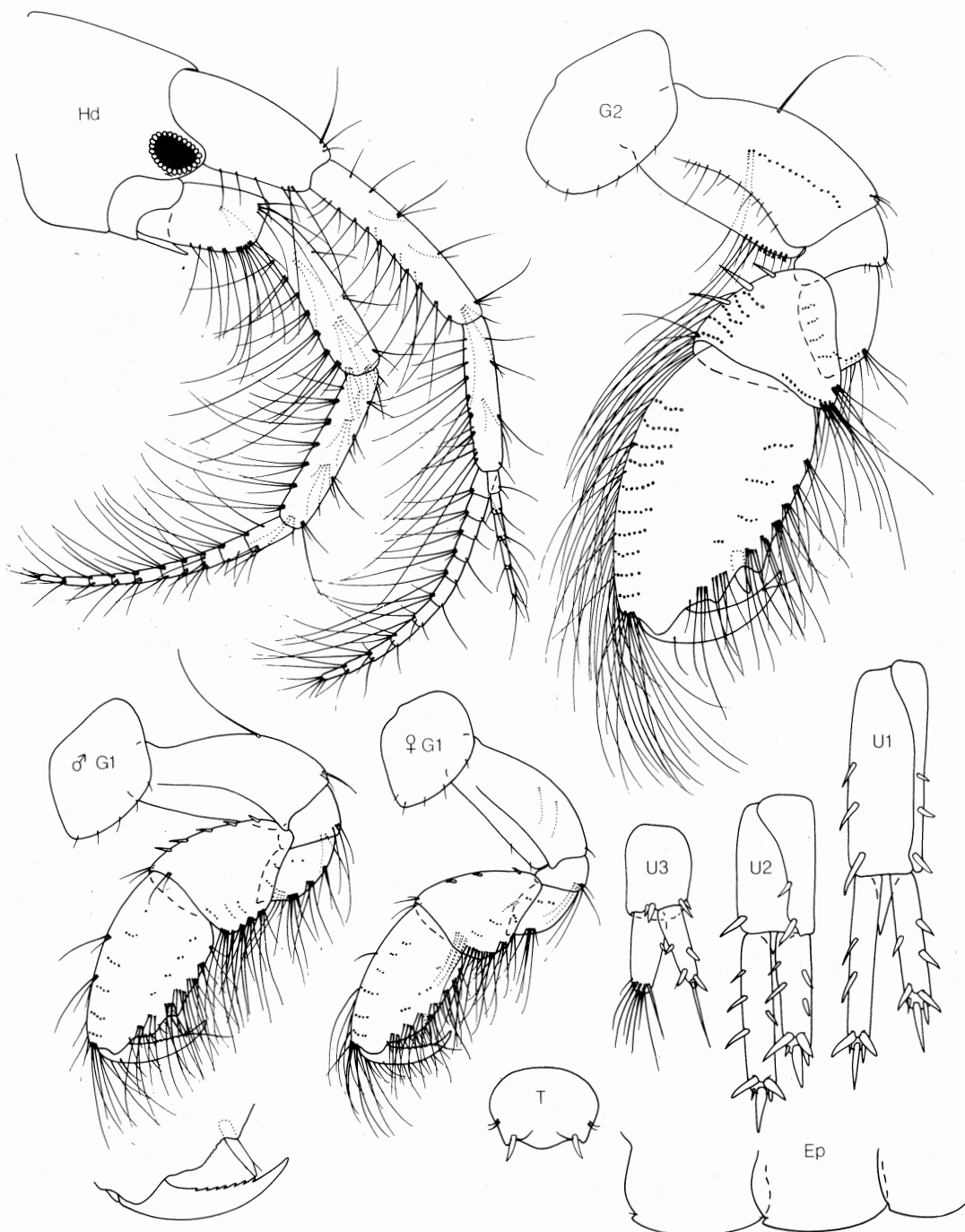


Fig. 65. *Gammaropsis setifera* (Schellenberg), ♂ 5.0 mm, ♀ 5.0 mm, Makuluva Island.

oblique, evenly convex. Male gnathopod 2, basis stout, anterior margin with long setae; carpus very reduced; propodus six times or more length of carpus, palm crenulate, subadults with propodus parallel-sided, posterior margin with a subdistal truncate tooth; hyperadults with propodus pyriform, posterior margin swollen proximally, subdistal tooth obsolescent; dactylus in subadults short, weakly falcate, in hyperadults longer, strongly curved, overlapping inner face of posterior margin of propodus. Female gnathopod 2, propodus longer than carpus, parallel-

sided, palm oblique, evenly convex. Epimera 1-3 rounded, with small posterodistal notch bearing a fine seta. Uropod 2 with strong interramal process three-quarters length of outer ramus; inner ramus distinctly longer than outer. Uropod 3, peduncle subequal in length to outer ramus; outer ramus longer and stouter than inner, with a small second article.

**Remarks.** The short, weakly setiferous antennae and characteristic male gnathopoda are sufficient to distinguish this species from other Fijian *Gammaropsis*.

**Type-locality.** Togo, West Africa.

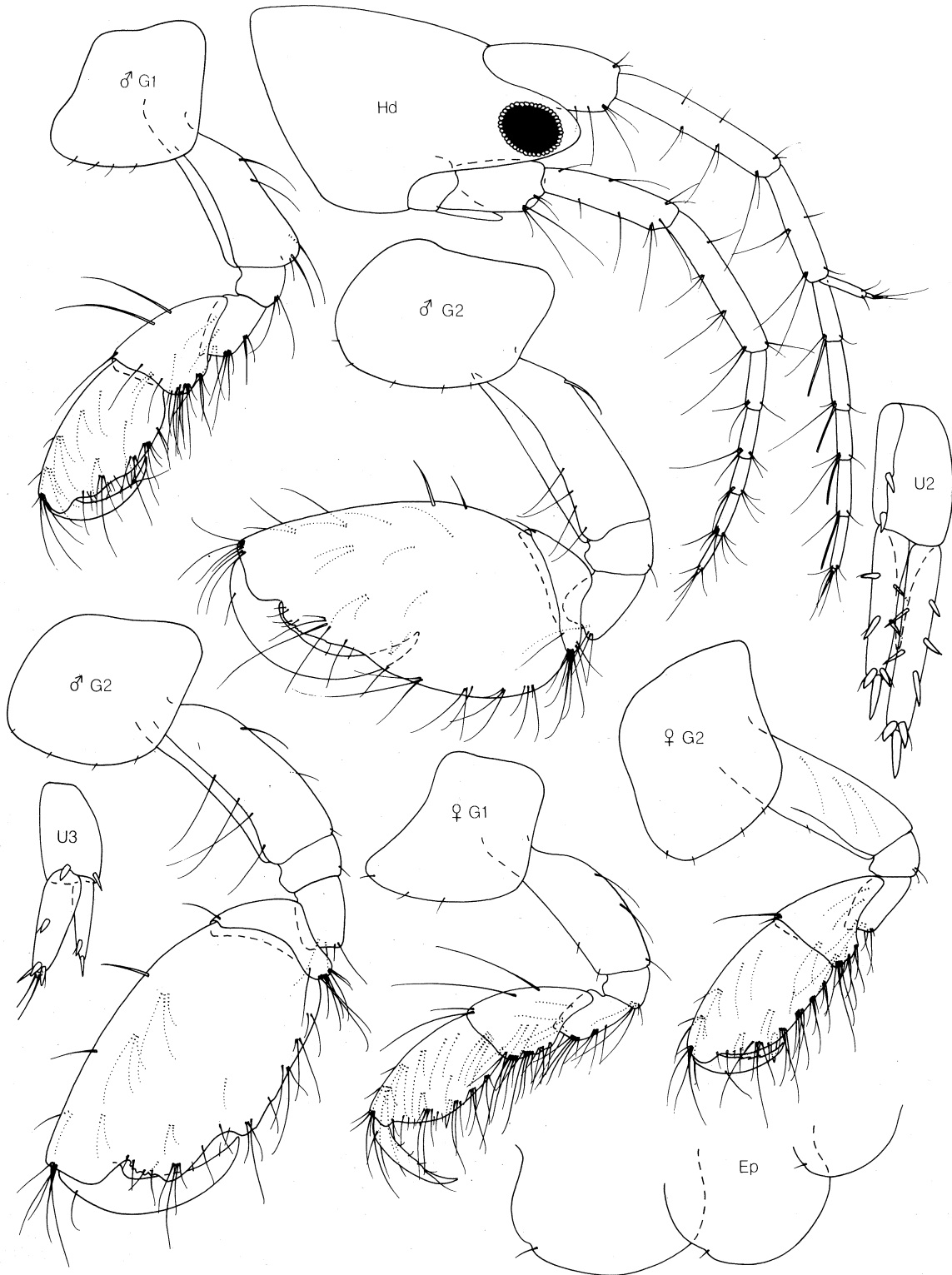


Fig. 66. *Gammaropsis togoensis* (Schellenberg), ♂ 4.0 mm, ♀ 3.5 mm, Taunovo Bay.



**Fijian localities.** Momi Bay, Votualailai, Taunovo Bay, Mburelevu, Nananui Ra.

**Distribution.** West Africa, India, Mediterranean, Fiji.

**Habitat.** Among *Acropora*, *Pocillopora*, dead coral rubble and *Syringodium*.

#### Key to Species of *Photis*

1. Pereopod 3, merus anterior margin clothed in long setae; uropod 1, peduncle 1 ½ times as long as outer ramus; epimeron 3 subquadrate. . . . . *P. pirloti*
- Pereopod 3, merus anterior margin with only a few long setae; uropod 1, peduncle 1 ¼ times as long as outer ramus; epimeron 3 round. . . . . *P. kapapa*

#### *Photis kapapa* Barnard

Fig. 67

*Photis kapapa* Barnard, 1970: 192, figs 124, 125.

?*Photis kapapa*.—Griffiths, 1973: 299, fig. 8.—Ledoyer, 1979b: 45, fig. 23II.

**Material examined.** Stn 27 (4)AC; stn 29 (4)AM P35345.

**Description.** Length, 3.0 mm. Ocular lobes strongly produced. Eye small, round. Antennae delicate. Antenna 1, peduncular article 1 scarcely longer than 3; primary flagellum a little shorter than peduncle, with 5–6 articles; accessory flagellum absent. Antenna 2 subequal in length to antenna 1. Flagellum subequal in length to combined length of peduncular articles 4 and 5, with 5–6 articles. Gnathopod 1, carpus and propodus subequal, palm oblique, weakly convex, three times length of posterior margin, faintly delimited by weak hump; dactylus slender, fitting palm. Male gnathopod 2, basis stout with strong anterodistal lobe bearing an oblique row of stridulating ridges; carpus relatively stout, cup-shaped; propodus twice length of carpus, palm oblique with small distal process and strong, thumb-like proximal tooth; dactylus slender, curved, shorter than palm. Female gnathopod 2 smaller than that of male; propodus palm sinuous; dactylus fitting palm. Epimera 1–3 rounded. Uropod 1, inner ramus longer than outer and shorter than peduncle. Uropod 2, inner ramus longer than outer and subequal in length to peduncle. Uropod 3, outer ramus longer than peduncle; inner ramus one-quarter length of outer. Telson with distal triangular process.

**Remarks.** *Photis kapapa* is similar to *P. pirloti* but has less pronounced head lobes, smaller eyes, shallower coxae, shorter uropod peduncles, rounded epimeron 3, and lacks the dense setation on pereopod 3 merus. Fijian material agrees well with Hawaiian material but has a longer uropod 3 outer ramus and a distal triangular process on the telson.

**Type-locality.** Off Ewa beach, Oahu, Hawaii.

**Fijian locality.** Taunovo Bay.

**Distribution.** Hawaii, Fiji, ?South Africa, ?Madagascar.

**Habitat.** Among *Syringodium* and coral debris.

#### *Photis pirloti* n.sp.

Fig. 68

*Photis* sp. Pirlot, 1938: 337, figs 151–153.

**Type-material.** HOLOTYPE, ♀, 2.7 mm, AM P35200, Nananui Ra, Viti Levu, Fiji, 7 October 1979, stn 54, dead *Acropora* fingers with epiphytes.

**Description.** Length, 2.7 mm. Ocular lobes very strongly produced. Eye relatively large, round, a dark central core surrounded by clear ommatidea. Antennae missing. Female gnathopod 2, coxa over two-thirds as broad as long; carpus triangular; propodus twice length of carpus, palm excavate; dactylus overlapping palm. Pereopod 3, merus anterior margin clothed in long setae; dactylus three-quarters length of propodus. Epimeron 3 posterodistal margin subquadrate. Uropod 1, inner ramus longer than outer and less than two-thirds length of peduncle. Uropod 3, inner ramus longer than outer and subequal in length to peduncle. Telson with distal sub-triangular process.

Male unknown in Fiji.

**Remarks.** This species differs from *P. kapapa* in the more elongate head lobes with larger eye, deeper coxae, more elongate uropod peduncles, subquadrate epimeron 3 and strongly setose merus of pereopod 3. It is very close to *P. longicaudata* (Bate & Westwood, 1862) but differs in the subquadrate epimeron 3, in the presence of long setae over almost the entire anterior margin of the merus of pereopod 3, the much longer dactyls of pereopods 3–4, and the more elongate telson which terminates in a subtriangular process. Fijian material appears to be identical with that described by Pirlot (1938) from Celebes.

**Fijian locality.** Nananui Ra.

**Distribution.** Fiji, Celebes.

**Habitat.** Among dead *Acropora*.

#### Family Ischyroceridae

Ischyrocerids are tubicolous (corophioidean) amphipods which closely resemble isaeids. Typically, they can be distinguished from isaeids by the presence of apical hooks or apicolateral denticles on the outer ramus of uropod 3, and by the elongate peduncle and short rami of that appendage. Unfortunately, both known Fijian species are atypical in these respects. In *Ventojassa ventosa* and *Cerapus pacificus* the rami (*V. ventosa*) or ramus (*C. pacificus*) are (is) only slightly shorter than the peduncle, and the outer (or only) ramus is very weakly hooked. *Cerapus pacificus* is unmistakable, but suspected *Ventojassa ventosa* should be compared with Isaeidae. Ventojassids build fixed tubes, but cerapids build tubes reminiscent of caddis flies (Trichoptera) which they carry around with them.

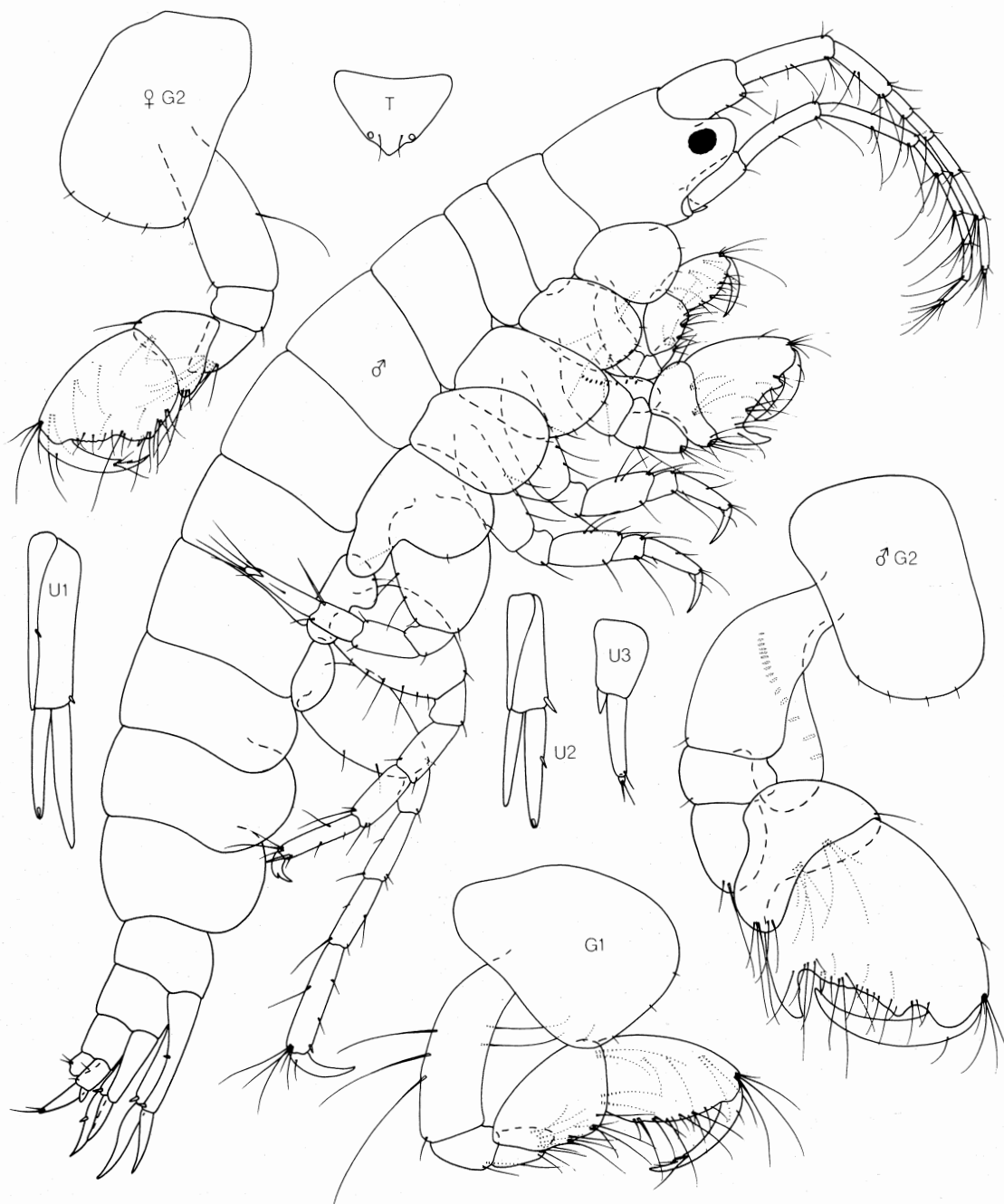


Fig. 67. *Photis kapapa* Barnard, ♂ 2.8 mm, ♀ 2.5 mm, Taunovo Bay.

**Key to Genera**

- 1. Body markedly dorsoventrally depressed; uropod 3 uniramous; ♂ gnathopod 2 carpochelate; habitation tube mobile. .... *Cerapus*
- Body not markedly dorsoventrally depressed; uropod 3 biramous; ♂ gnathopod 2 subchelate; habitation tube affixed to substratum. .... *Ventojassa*

***Cerapus pacificus* Lowry**

Fig. 69

*Cerapus pacificus* Lowry, 1985: 163-168, figs 6-10.

**Material examined.** Stn 3 (66)AC; stn 5 (1)AC.

**Description.** Length, 5.0 mm. Head deeply recessed for reception of antenna 2. Antenna 1, peduncle elongate; peduncular article 3 a little longer than article 1; flagellum much shorter than peduncle, with 5-6

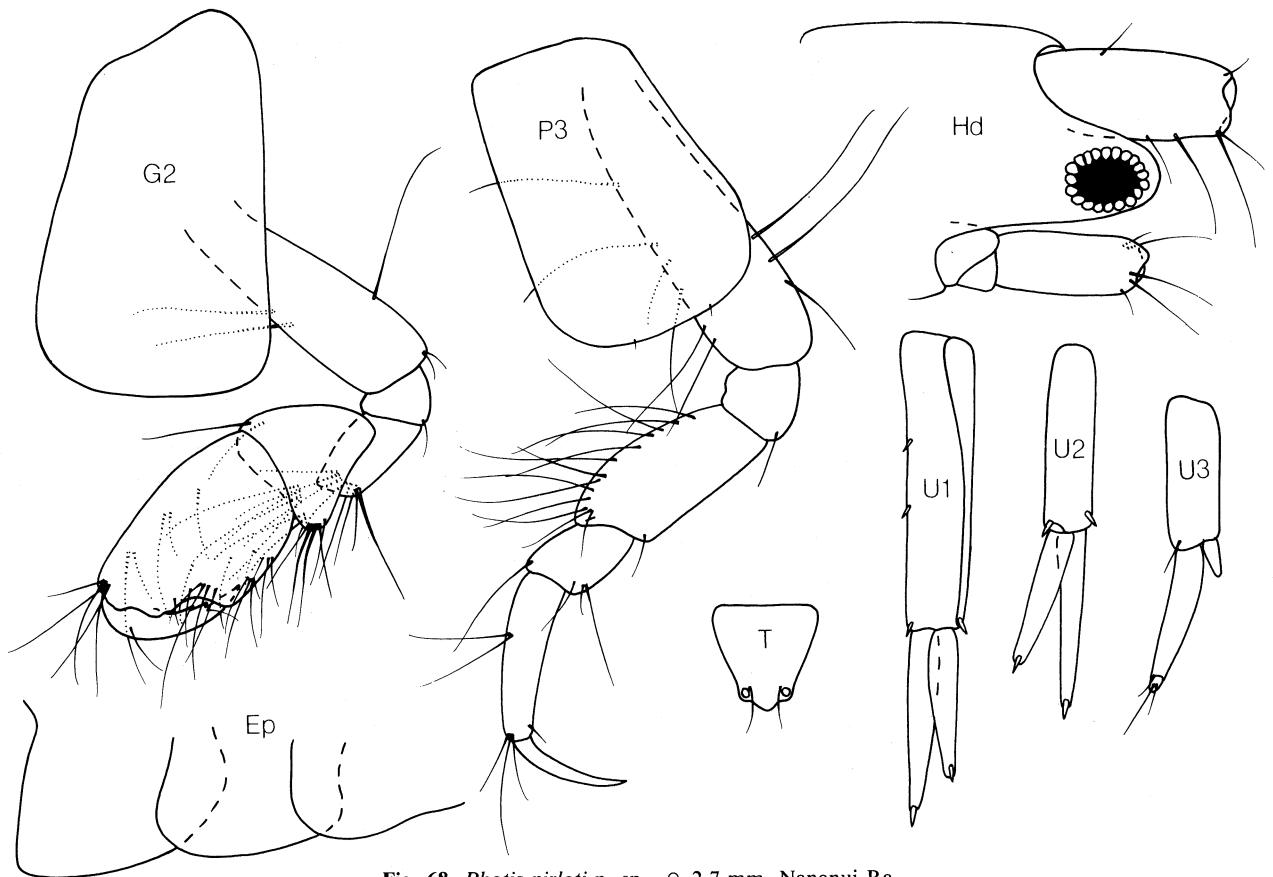


Fig. 68. *Photis pirloti* n. sp., ♀ 2.7 mm, Nananui Ra.

articles. Antenna 2 subequal in length to antenna 1; peduncular article 5 longer than article 4; flagellum with 6–7 articles. Gnathopod 1 small, carpus and propodus subequal, palm of propodus oblique, evenly continuous with posterior margin. Male gnathopod 2, basis distally broad; carpus enlarged, subtriangular, the posterodistal margin produced into a strong, inwardly curved tooth over one-third length of carpus; propodus elongate, slender, about five times as long as broad; dactylus elongate, over half length of propodus. Female gnathopod 2 much smaller than that of male; carpus relatively short, the posterodistal margin produced into a rounded lobe; propodus one and a half times length of carpus, palm very oblique, evenly continuous with posterior margin; dactylus stout, only a little shorter than propodus. Pereopod 5 short, basis broad quadrate; dactylus strongly hooked. Epimera 1–3, posterior margin irregularly rounded. Uropod 1 biramous, the outer ramus much the longer. Uropod 2 uniramous, ramus reduced, scarcely one-quarter length of peduncle. Uropod 3, peduncle subovoid, ramus rudimentary with weak distal hooks. Telson fully cleft, each lobe with two rows of recurved hook-like spines.

**Remarks.** This species is readily recognised in life by the caddis-like tube which it carries around, leaving only its head and antennae visible. When out of its tube it is easily identified by its elongate, dorsoventrally depressed body, elongate antennae, and large

carpochele male gnathopods. The only similar genera are *Siphonoectes* and *Erichthonius* (not recorded from Fijian waters).

**Type-locality.** Nasese, Viti Levu, Fiji.

**Fijian localities.** Nasese, Nukumbutho Reef.

**Distribution.** Fiji.

**Habitat.** Clinging to leaves of *Syringodium*, rarely in coral debris.

### *Ventojassa ventosa* (Barnard)

Fig. 70

*Eurystheus ventosa* Barnard, 1962: 20, figs 6–7.

*Ventojassa ventosa* Barnard, 1970: 205, figs 133–134.—

Ledoyer, 1972: 244, pl. 57.—Ledoyer, 1978: 291.—

Ledoyer, 1979b: 99, fig. 61(1).

**Material examined.** Stn 10 (1)AM P35315, (1)AC; stn 18 (1)AC.

**Description.** Length, 1.5 mm. Head lobes moderately produced. Antenna 1 setose, peduncular article 3 longer than article 1; flagellum much shorter than peduncle, with 8 articles; accessory flagellum with one long and one vestigial article. Antenna 2 setose, subequal in length to antenna 1, peduncular articles 4 and 5 subequal; flagellum with 4–5 articles. Gnathopod 1 slender, carpus a little longer than propodus; palm of propodus oblique, evenly continuous with posterior

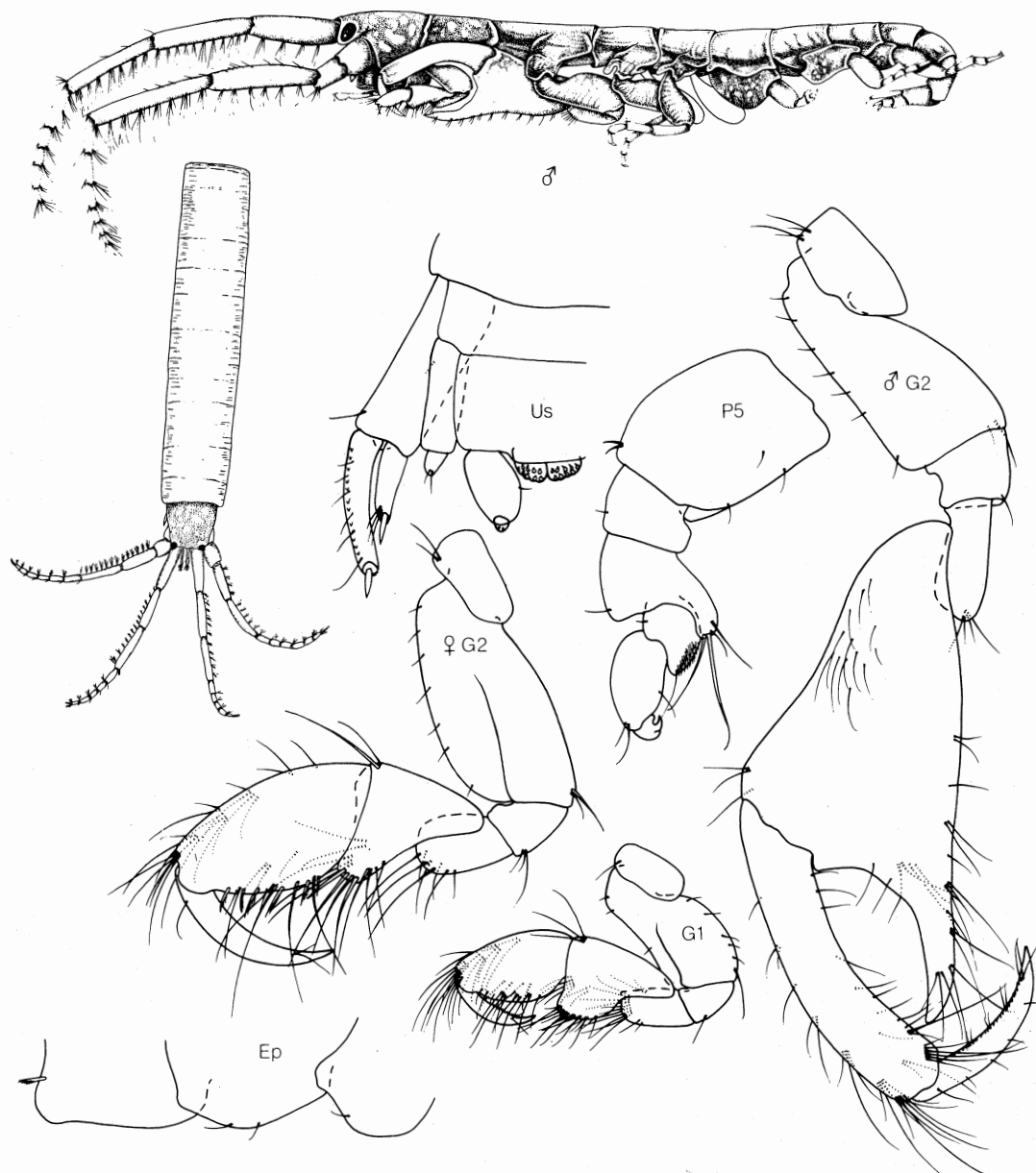


Fig. 69. *Cerapus pacificus* Lowry, ♂ 5.0 mm, ♀ 5.0 mm, Nasese (including animal in domicile).

margin. Gnathopod 2, basis with strong anterodistal lobe; carpus short, cup-shaped; propodus large, palm short, proximally transverse, with deep, irregular posterodistal excavation bearing two strong spines; dactylus stout, fitting palm. Pereopod 5, basis with posteroproximal lobe. Epimera 1-3 rounded. Uropods 1-2, peduncle with strong interramal spiniform process. Uropod 3, peduncle elongate, scarcely one and a half times length of outer ramus which terminates in a single hook. Telson with each crest bearing a small, distal, hook-like process.

**Remarks.** This species is easily mistaken for an isaeid, but no other known Fijian amphipod has a male gnathopod 2 quite like that of *V. ventosa*. The uropod 3, whilst less distinctive than that of many ischyrocerids,

is sufficiently distinctive to distinguish *V. ventosa* from known Fijian isaeids.

It is not certain that Fijian material is conspecific with Mexican *V. ventosa*. Uropod 2 peduncle possesses an interramal process (absent in Mexican material), the telson is considerably less spinous, the accessory flagellum is composed of only two articles (the second vestigial) and the shape of the male gnathopod 2 is somewhat different. Hawaiian material, however, described under the name *V. ventosa* by Barnard (1970) is much more similar to Fijian specimens. The problem will only be solved by recourse to more extensive material.

**Type-locality.** Corona del Mar, Southern California, Mexico.

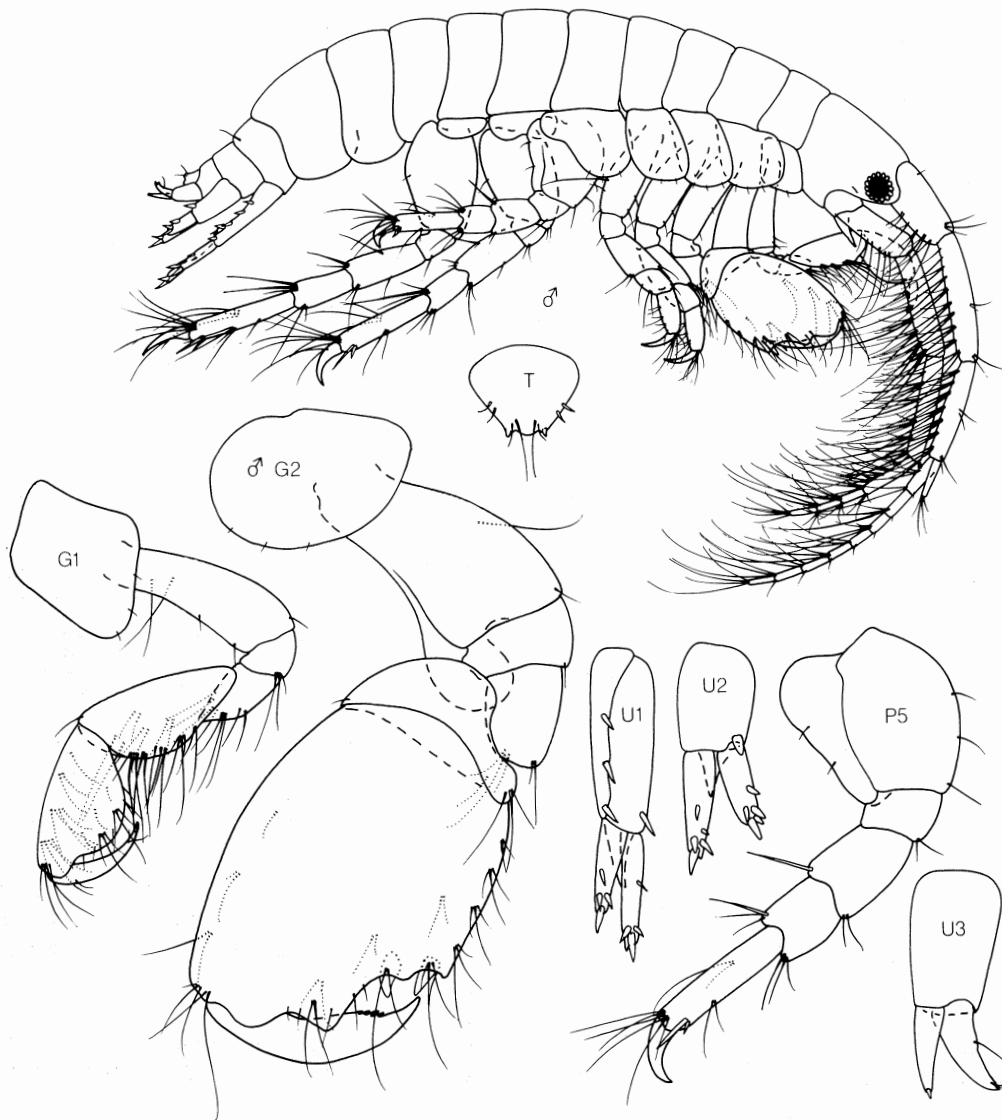


Fig. 70. *Ventojassa ventosa* (Barnard), ♂ 1.5 mm, ♀ 1.3 mm, Nukumbutho Reef.

**Fijian localities.** Suva barrier reef, Nukumbutho Reef.

**Distribution.** Mexico, Hawaii, Fiji, Madagascar, Mauritius.

**Habitat.** Among sponges and coral rubble.

**Key to Genera**

- 1. Coxae 1-4 shallow, broader than deep; coxae 1-2 acute. . . . . *Leucothoella*
- Coxae 1-4 deeper than broad, rounded. *Leucothoe*

**Key to Species of *Leucothoe***

- 1. Gnathopod 1 dactylus more than one-third length of propodus. . . . . *L. diemenensis*
- Gnathopod 1 dactylus less than one-sixth length of propodus. . . . . *L. gavalis*

***Leucothoe diemenensis* Haswell**

Figs 71-72

*Leucothoe diemenensis* Haswell, 1880c: 262, pl. 9 fig. 5.—Barnard, 1974: 94.

**Material examined.** Stn 6 (1)AC; stn 7 (1)AC; stn 8 (5)AM P35311; stn 10 (2)AC; stn 12 (1)AC; stn 26 (15)AC; stn 28

**Family Leucothoidae**

Leucothoids have a very characteristic gnathopod 1 which is strongly carpochele with a long slender propodus. Only anamixids have a similar gnathopod 1, but have a different gnathopod 2, and 1-articulate mandibular palp (leucothoids have a 3-articulate palp). Uropod 3 is elongate, uropod 2 shortened.

Leucothoids are inquilines associated with sessile invertebrates.

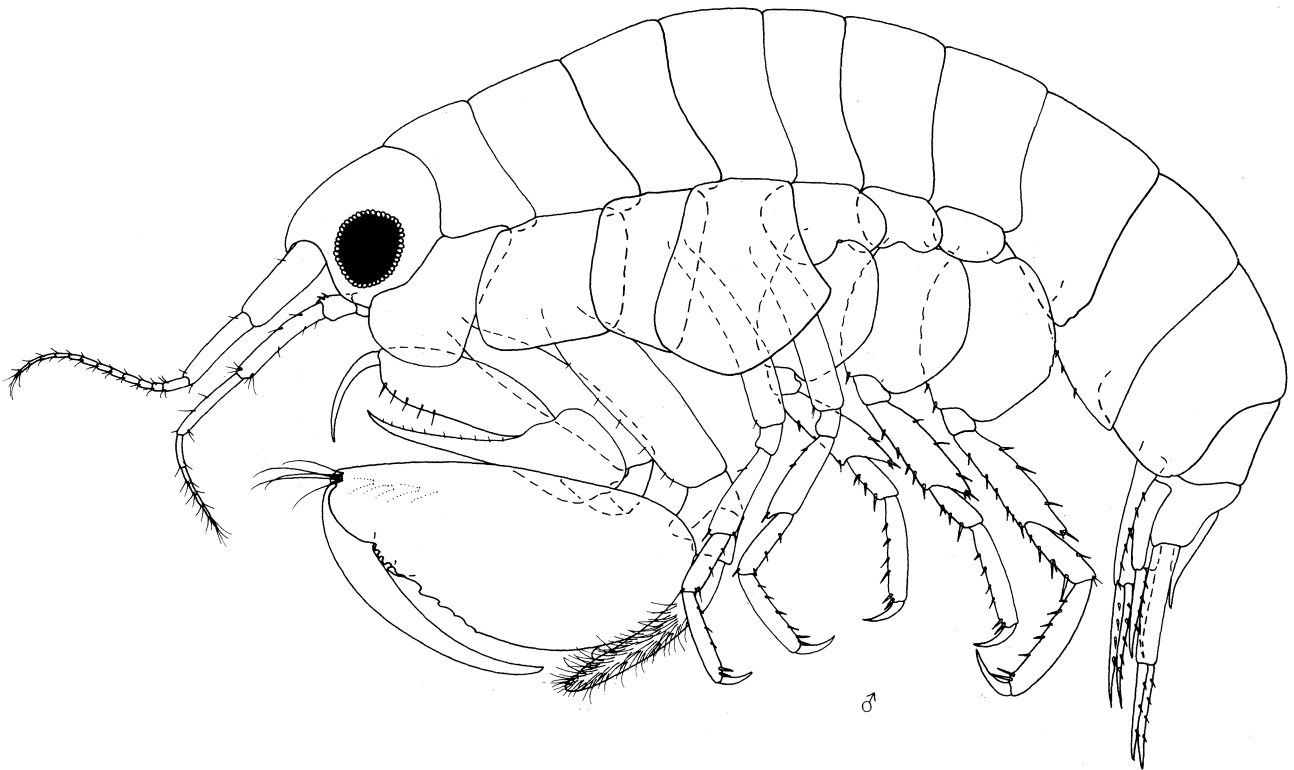


Fig. 71. *Leucothoe diemenensis* Haswell, ♂ 5.0 mm, Makuluva Island.

(3)AM P35344; stn 30 (1)AC; stn 31 (1)AM P35350; stn 34 (1)AM P35354; stn 35 (2)AC; stn 40 (3)AC; stn 48 (1)AC; stn 50 (3)AC; stn 53 (5)AM P35373; stn 54 (1)AC.

**Description.** Length, 5.5 mm. Eye very large. Antenna 1 slender, peduncular article 3 one-third length of article 2; flagellum shorter than peduncle, with 12 articles; accessory flagellum vestigial. Antenna 2 very slender; flagellum only a little longer than peduncular article 5. Gnathopod 1, coxa anterodistally produced; carpal process almost reaching end of propodus; dactylus elongate. Male gnathopod 2, carpus distally bifid; propodus palm oblique, irregularly crenulate, with 2–3 small distal lobes and a larger subdistal submarginal lobe; dactylus large, falciform. Female gnathopod 2 similar to that of male, but smaller and with less pronounced distal lobes on posterior margin. Coxa 3, distal margin straight, sloping downwards towards posterior. Epimeron 1, posterodistal corner with 3–4 small rounded lobes. Epimeron 2, posterodistal corner acute, distal margin with 3 spines. Epimeron 3, posterodistal corner with 2–3 small rounded lobes. Uropod 3, rami sub-equal, shorter than peduncle. Telson narrow and elongate, distally with small central nipple and strong lateral teeth.

**Remarks.** This species differs markedly from the only other known Fijian species (*L. gavialis*) in the stouter gnathopod 1 with elongate dactylus, longer and more slender antennae, and sloping distal margin of coxa 3. Other differences include the shape of the epimera and more ovoid gnathopod 2 propodus.

*Leucothoe diemenensis* resembles *L. commensalis*, but differs primarily in the shape of coxa 3, in the bifid distal end of the gnathopod 2 carpus, and in the shape of the epimera.

**Type-locality.** Tasmania.

**Fijian localities.** Momi Bay, Votualailai, Taunovo Bay, Nukumbutho Island, Makuluva Island, Mburelevu, Nananui Ra.

**Distribution.** Tasmania, Fiji.

**Habitat.** Amongst *Sargassum*, *Turbinaria*, *Halimeda*, red algae, sponges, living *Pocillopora* and *Acropora*, and coral rubble.

*Leucothoe gavialis* n.sp.

Fig. 73

**Type-material.** HOLOTYPE, ♂, 1.5 mm, AM P35201, Nananui Ra, Viti Levu, Fiji, 6 October 1979, stn 52, sponges from lagoon.

**Description.** Length, 1.5 mm. Eye large. Antenna 1 relatively short, peduncular article 3 three-quarters length of article 1; flagellum much less than half length of peduncle, with 6 articles; accessory flagellum with one small article. Antenna 2 shorter but of similar build to antenna 1; flagellum shorter than peduncular article 5, with 6 articles. Gnathopod 1, coxa weakly produced anterodistally; carpal process extremely long and slender, distally falciform, and longer than propodus; dactylus short. Male gnathopod 2, carpus distally simple; propodus elongate oval, proximally narrow, palm oblique, scalloped; dactylus elongate and slender.

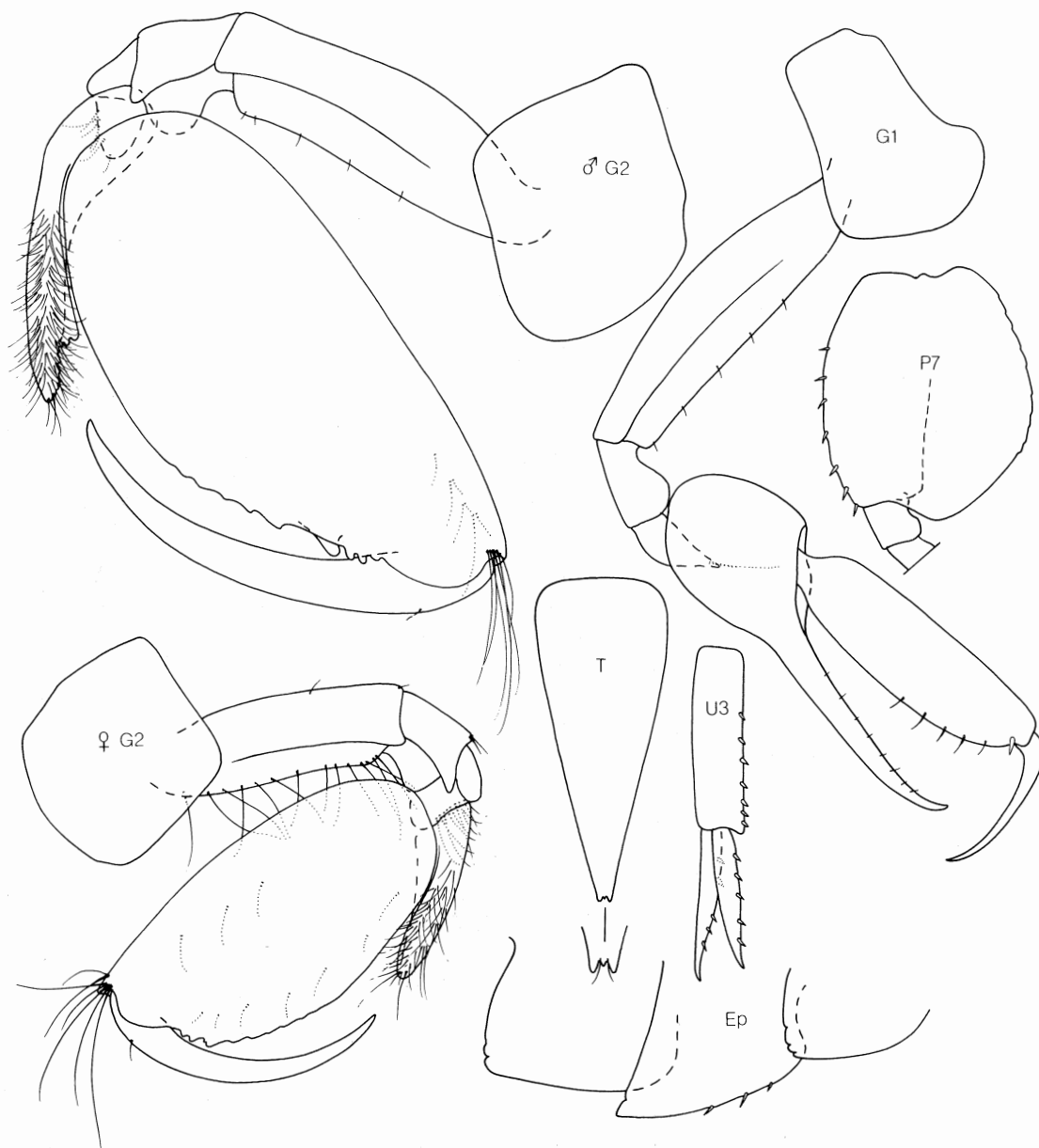


Fig. 72. *Leucothoe diemenensis* Haswell, ♂ 5.0 mm, ♀ 4.5 mm, Makuluva Island.

Coxa 3 subrectangular. Epimera 1-2 rounded. Epimeron 3, posterior margin weakly sinuous. Uropod 1-3 elongate. Uropod 3, inner ramus slightly longer than outer and nearly twice length of peduncle. Telson elongate, terminally blunt.

**Remarks.** *Leucothoe gavalis* is readily distinguished from *L. diemenensis* by its short antennae, slender gnathopod 1 with short dactylus, subrectangular coxa 3, rounded epimeron 2 and basally constricted gnathopod 2 propodus. In the very short dactylus of gnathopod 1, this species resembles *L. alata* Barnard, *L. lihue* Barnard and *L. minima* Schellenberg. It differs markedly from all these species, however, in the extraordinarily elongate gnathopod 1 carpal process and propodus.

**Fijian locality.** Nananui Ra.

**Distribution.** Fiji.

**Habitat.** From sponges in a lagoon.

#### *Leucothoella bannwarthi* Schellenberg

Figs 74-75

*Leucothoella bannwarthi* Schellenberg, 1928: 638, fig. 199.—Barnard, 1937: 153.—Schellenberg, 1938: 26.—Barnard, 1965: 492, fig. 7.—Ledoyer, 1967a: 127, fig. 5A.—Ledoyer, 1978: 300.—Ledoyer, 1979b: 107, fig. 68(1).

**Material examined.** Stn 1 (1)AM P35299; stn 10 (1)AC; stn 40 (1)AC; stn 53 (5)AC, (2)AM P35368; stn 55 (1)AC.

**Description.** Length, 2.2 mm. Eye of moderate size, round. Antennae slender. Antenna 1, peduncular article 3 half length of article 1; flagellum less than half length

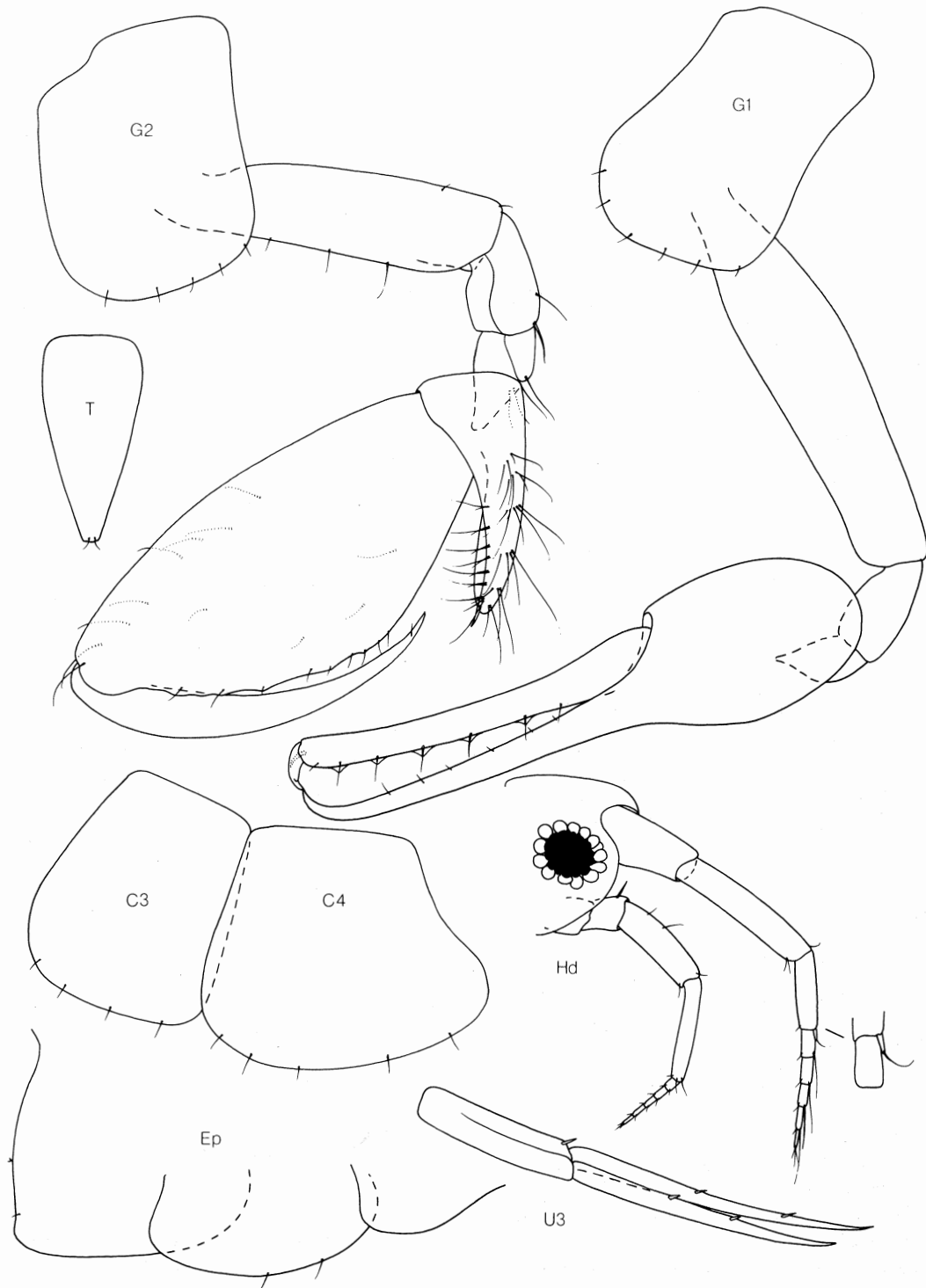


Fig. 73. *Leucothoe gavialis* n. sp., ♂ 1.5 mm, Nananui Ra.

of peduncle, with 6 articles. Antenna 2 shorter than peduncular article 5, with 5 articles. Gnathopod 1, coxa 1 anterior margin scalloped, anterodistal corner acute; carpus almost round, with very elongate and slender process equal in length to propodus and curved at the distal extremity; propodus five times as long as

dactylus slender, a little less than half length of propodus. Gnathopod 2, coxa almost twice as long as broad, anterior margin toothed, anterodistal corner drawn out into an acute tooth; carpus elongate, equal in length to posterior margin of propodus and with a subdistal spine; propodus less than twice as long as



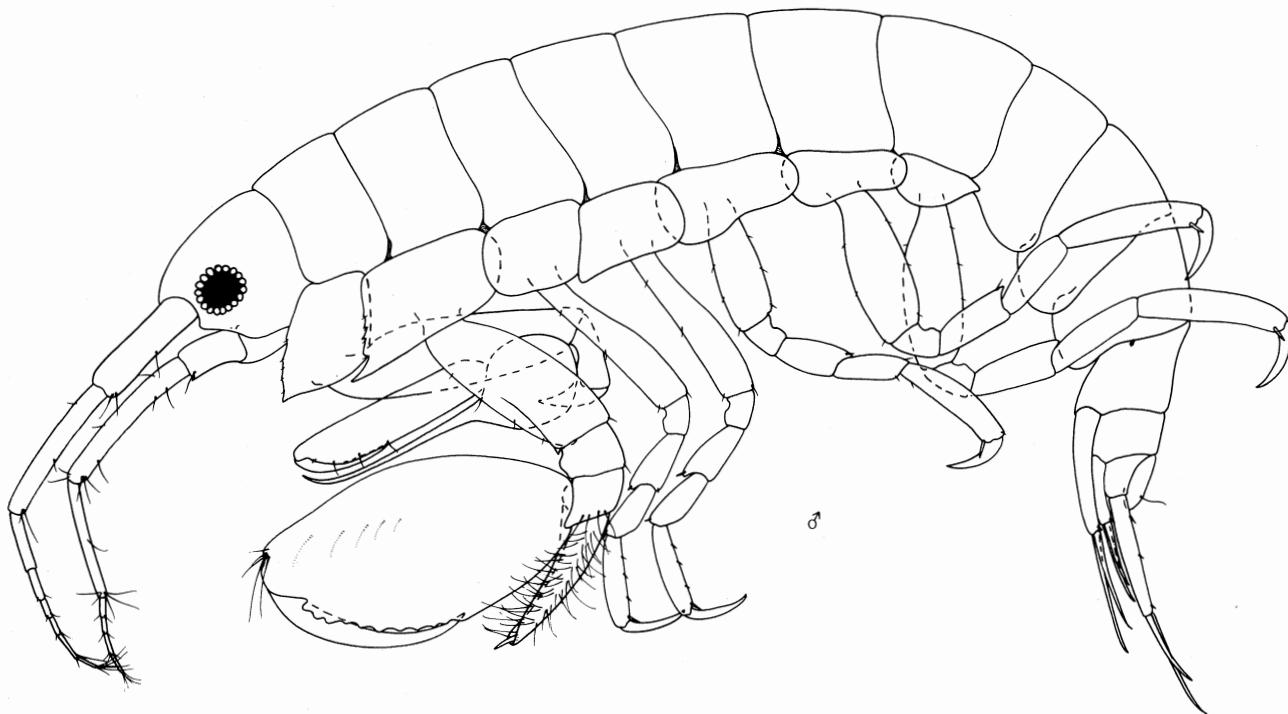


Fig. 74. *Leucothoella bannwarthi* Schellenberg, ♂ 2.1 mm, Nananui Ra.

broad, palm oblique, regularly scalloped with two or three strong distal lobes; dactylus curved, relatively stout, fitting palm. Coxa 4 with anterodistal margin produced into a downward-facing triangular process. Epimera 1–3 rounded. Uropods slender. Uropod 3, inner ramus markedly longer than outer and subequal in length to peduncle. Telson relatively broad, distally rounded but with distinct shoulders.

**Remarks.** This species is instantly recognised by the shallow, toothed coxae. It is very similar to *L. gracilis* (Haswell) (see Barnard, 1974) but differs in the more elongate propodus of gnathopod 1 (length equals 4 times breadth in *L. gracilis*) and much longer uropod 3 rami (inner ramus only three-fifths length of peduncle in *L. gracilis*). It differs also in lacking dorsal medial setae on the telson, and in having a shorter mandible palp article 3.

**Type-locality.** Suez Canal.

**Fijian localities.** Momi Bay, Nasese, Nukumbutho Island, Nananui Ra.

**Distribution.** Suez Canal, Red Sea, Madagascar, Mauritius, Philippines, Caroline Islands, Marshall Islands, Fiji.

**Habitat.** Among *Halimeda* and sponges, and in coral rubble.

#### Family Lysianassidae

Lysianassids are stout-bodied amphipods with large coxae and a hard shiny cuticle. Antenna 1 is short, and the peduncular articles are very short and partially telescoped. Gnathopod 2 is diagnostic, the ischium is

elongate, the carpus and propodus bear dense brushes of short, stiff setae and the propodus is mitten-shaped.

Lysianassids are generally scavengers or ectoparasites. Two species are currently known from Fiji but others will doubtless be added to the list.

#### Key to Genera

1. Uropod 2 inner ramus with subdistal constriction; antenna 1 geniculate between peduncular articles 1 and 2; antenna 2 not, or only weakly sexually dimorphic, much less than one-quarter body length in male. . . . . *Parambasia*
- Uropod 2 inner ramus unconstricted; antenna 1 not geniculate; antenna 2 strongly sexually dimorphic, over half body length in male. . . . . *Parawaldeckia*

#### *Parambasia nui* n.sp.

Fig. 76

**Type-material.** HOLOTYPE, ♀, 1.6 mm, AM P35202, 1 ♂ PARATYPE AC, Nananui Ra, Viti Levu, Fiji, 7 October 1979, stn 53, *Halimeda* in lagoon.

**Additional material examined.** Stn 18 (1)AC; stn 49 (1)AC.

**Description.** Length, ♂ 3.0 mm, ♀ 2.0 mm. Male with strong black pigment (which does not fade in

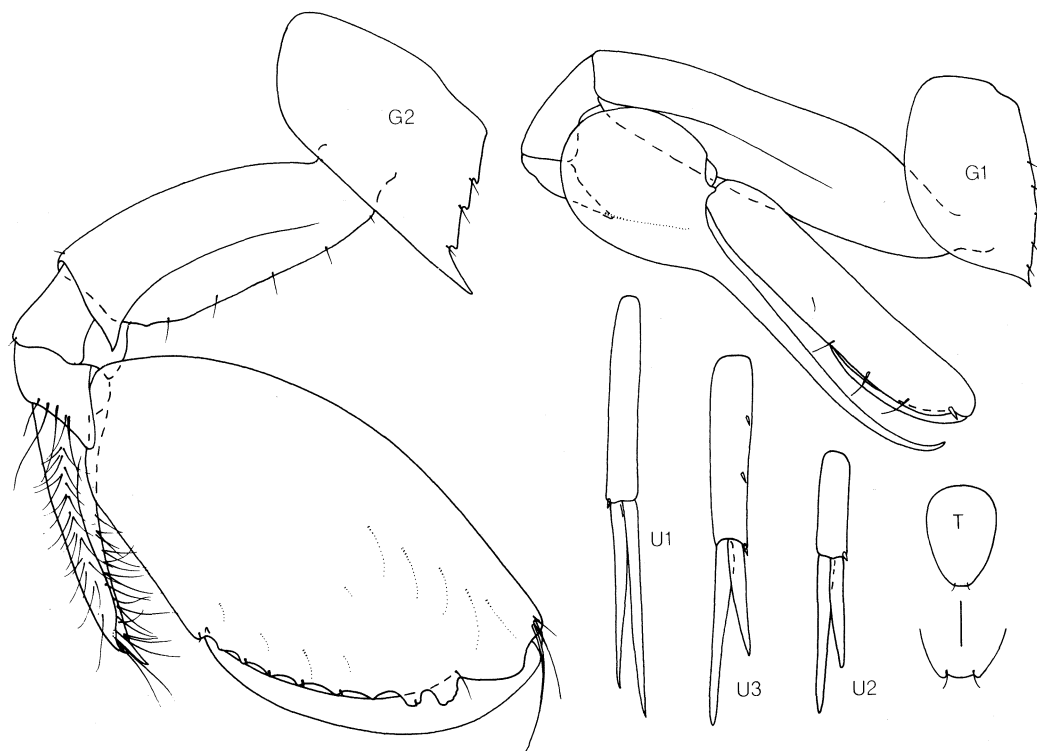


Fig. 75. *Leucothoella bannwarthi* Schellenberg, ♂ 2.2 mm, Nananui Ra.

alcohol) on head, antenna 1 peduncular article 1, pereon segments 1, 4, 5 and 6, and diffuse grey markings on pereon segments 2-3 and coxae 1-6. Female with diffuse grey pigment on head, pereon and coxae. Antenna 1 short, thin, geniculate between peduncular articles 1 and 2; flagellum larger than peduncle, with 10 articles; accessory flagellum 3-articulate. Antenna 2 a little shorter than antenna 1, geniculate between peduncular articles 3 and 4; flagellum with 8 articles. Mandible palp, article 3 strongly falcate. Male gnathopod 1, carpus and propodus subequal, palm oblique, defined by a spine and distinct from posterior margin; dactylus short, stout, fitting palm. Female gnathopod 1, carpus elongate; propodus very elongate, one and a third times length of carpus, palm very oblique, not delimited from posterior margin. Gnathopod 2 elongate with long ischium (i.e. of typical lysianassid form). Pereopod 5, basis grossly expanded, anterior margin strongly setose. Pereopod 7, basis with strong posterodistal lobe. Epimeron 3, posterodistal margin subquadrate. Uropod 2, outer ramus longer than inner ramus with strong subdistal constriction. Uropod 3, rami unequal. Telson initially narrow with central rounded lobe bordered by blunt shoulders and a pair of setae.

**Remarks.** *Parambasia nui* is readily distinguished from *Parawaldeckia lowryi*, by the geniculate antenna 1, elongate flagellum of antenna 1, relatively short antenna 2, constricted inner ramus of uropod 2, subquadrate epimeron 3, smooth posterior margin of pereopod 7, distally narrow telson, and by its striking colour pattern (especially in the male which does not fade in alcohol).

*Parambasia nui* differs from the type-species of the genus *P. forbesii* Walker & Scott (who described the female only) in the concave anterior margin of the basis, longer carpus, weakly subchelate propodus of gnathopod 1, more slender carpus of gnathopod 2 in which the posterior margin is almost straight, and in having more articles to the antennal flagella. *Parambasia nui* differs from the only other known member of the genus (*P. rossii* Stephensen) (see also Lowry & Stoddart, 1983) in the shape of mandibular palp article 3 which is slender and relatively straight, with a distal 'wrinkle' giving the appearance of an extra article in *P. rossii*, but short and strongly falcate in *P. nui*. It differs also in the shape of gnathopod 2 which is much more slender and elongate in *P. nui*. This is especially true of the carpus which is about eight times as long as broad in *P. nui* but only about two and a half times as long as broad in *P. rossii*. It differs in the shape of pereopod 5 basis which is much broader in *P. nui*, and finally in the shape of the telson which narrows strongly distally, with a small medial hump bordered by rounded 'shoulders' in *P. nui*, but is broad and evenly convex in *P. rossii*.

**Fijian localities.** Suva barrier reef, Nananui Ra.

**Distribution.** Fiji.

**Habitat.** Among *Halimeda* and coral rubble.

***Parawaldeckia lowryi* n.sp.**

Figs 77-78

**Type-material.** HOLOTYPE, ♂, 4.2 mm, AM P35203, 10 ♀ PARATYPES AM P35204, 1 ♂ 1 ♀ PARATYPES AC, Momi

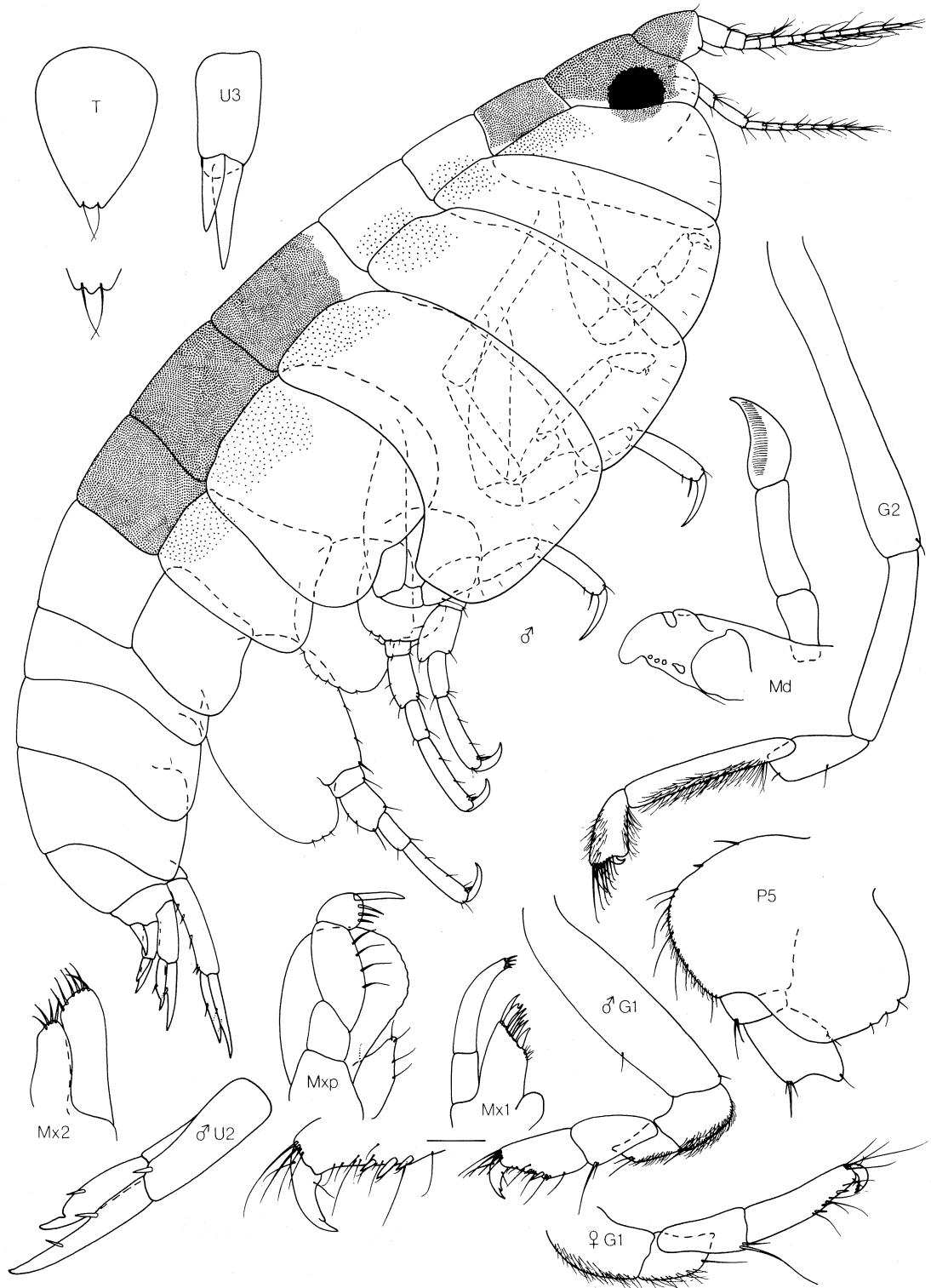


Fig. 76. *Parambasia nui* n. sp., ♂ 3.0 mm, ♀ 3.5 mm, Nananui Ra.

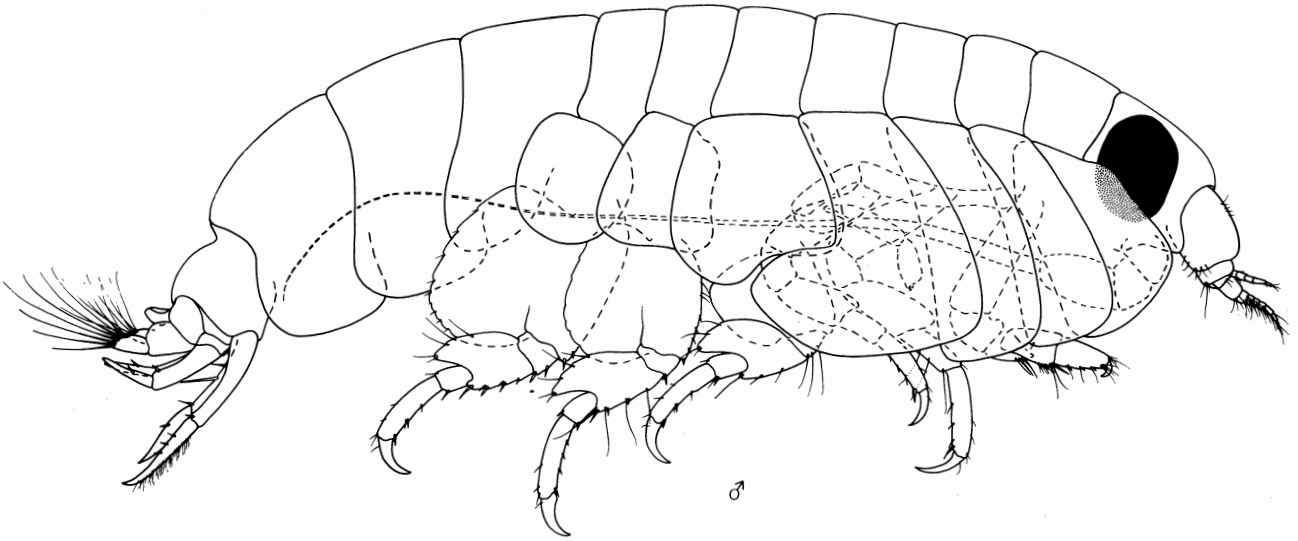


Fig. 77. *Parawaldeckia lowryi* n. sp., ♂ 4.0 mm, Momi Bay.

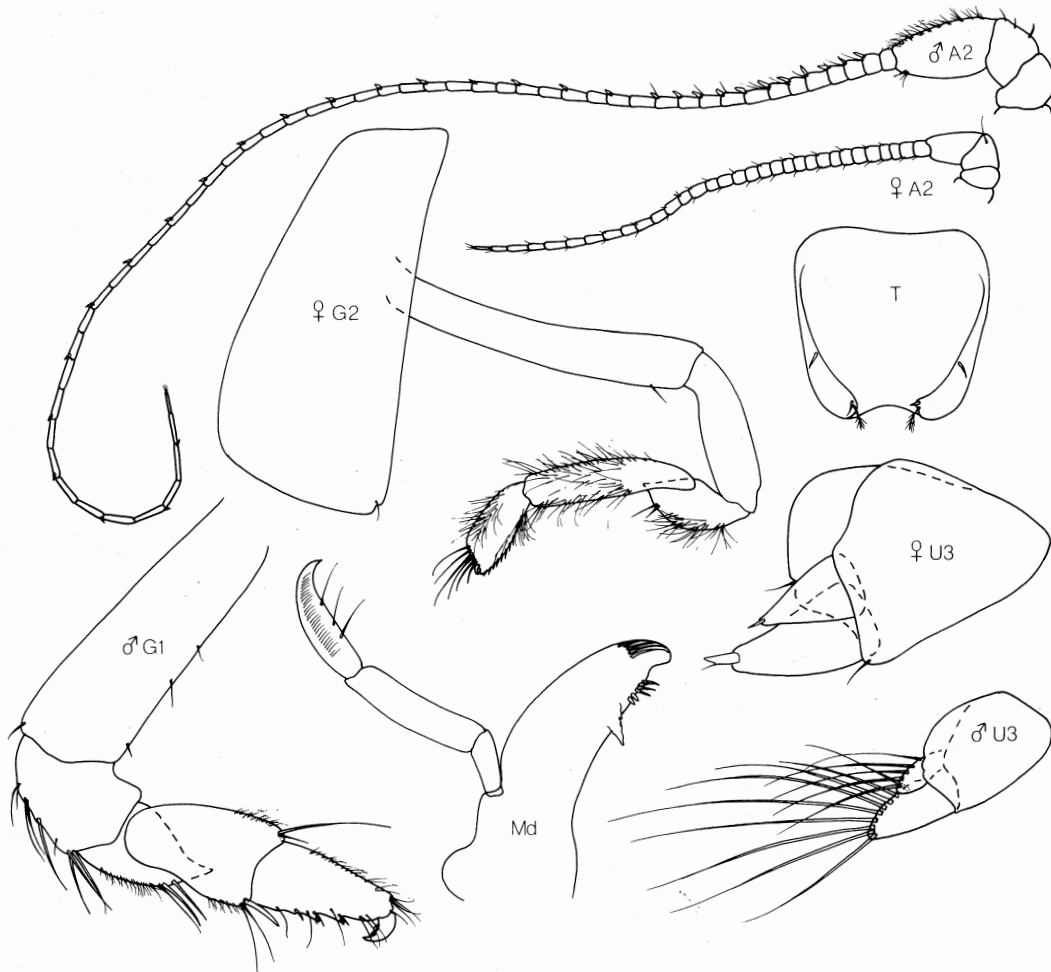


Fig. 78. *Parawaldeckia lowryi* n. sp., ♂ 4.0 mm, ♀ 4.0 mm, Momi Bay.

Bay, Viti Levu, Fiji, 7 September 1979, stn 40, coral debris, mainly *Acropora* fragments at reef edge.

**Additional material examined.** Stn 5 (1)AM P35304; stn 41 (10)AC; stn 50 (1)AC.

**Description.** Length, 4.2 mm. Male eye enlarged, covering most of the head; female eye of medium size. Antenna 1 short, article 1 of peduncle not produced dorsodistally over article 2; article 3 of peduncle telescoped into article 2; flagellum equal in length to peduncle, with 8–9 articles, accessory flagellum 5-articulate. Male antenna 2, peduncular article 5 enlarged, twice as long as broad; flagellum almost equals body length, with 52 articles, most articles with calceoli. Female antenna 2 about one-third body length; flagellum with 31 articles. Mandibular palp, article ratios 8:16:14; article 3 strongly falcate, terminally acute, without terminal setae. Gnathopod 1, carpus and propodus subequal. Gnathopod 2, coxa twice as long as broad; carpus and propodus densely setose. Pereopod 5, basis grossly expanded, broader than long. Pereopod 7, basis a little broader than long, posterior margin crenulate. Epimeron 3 evenly rounded. Male uropod 1, outer ramus outer margin finely setose. Female uropod 1, outer ramus asetiferous. Male uropod 3, peduncle with strong expansion on inner face, outer ramus one and a half times length of inner ramus, both rami with long plumose setae on inner margin. Female uropod 3, peduncle more expanded than that of male; outer ramus with strong distal spine, rami lacking long setae. Telson subsquare, with furled lateral margins, distally concave.

**Remarks.** *Parawaldeckia lowryi* is readily distinguished from the only other currently known Fijian lysianassid, *Parambasia nui*, by the ungeniculate antenna 1, the relative lengths of the flagella of both antennae, unstricted uropod 2 inner ramus, evenly

rounded epimeron 3, broad pereopod 7 basis with crenulate posterior margin, subsquare telson, and not least by its lack of distinctive colour pattern.

*Parawaldeckia lowryi* appears to be closest to *P. dabita* Lowry & Stoddart (1983), but differs in the much longer flagellum of the female antenna 2, acutely falcate and longer palp article 3 of the mandible (which also lacks terminal setae), longer peduncle of uropod 2, longer inner ramus of uropod 3 in the female, and shorter inner ramus of uropod 3 in the male, and the somewhat different shape of the pereopod 7 basis.

**Fijian localities.** Momi Bay, Nukumbutho Island, Nananui Ra.

**Distribution.** Fiji.

**Habitat.** Amongst *Amphiroa* on sand flat, and in coral rubble and living hexacorals.

**Etymology.** This species is named in honour of Dr J.K. Lowry, Australian Museum, Sydney, in recognition of his work on this genus.

#### Family Melitidae

Melitids often show marked sexual dimorphism in the gnathopoda. In both sexes, but particularly in males, gnathopod 2 is markedly larger than gnathopod 1. In some respects they resemble corophioideans but differ in having a non-fleshy telson which is cleft either partially or to the base. In addition, most, though not all Fijian melitids are characterised by a strong notch on the head below the ocular lobes. The peduncle of uropod 3 is short and stout, but in those melitids with elongate uropod 3 rami, this appendage is frequently lost in preserved material. An accessory flagellum is always present.

Melitids are, in the main, detritivorous nestlers in algae, corals, coral rubble etc.

#### Key to Genera

1. Two pairs of ommatideal eyes. . . . . *Quadrivisio*  
—One pair of ommatideal eyes. . . . . 2
2. Uropod 3 with one or both rami greatly elongated, twice or more length of peduncle. . . . . 3  
—Uropod 3, both rami much less than twice length of peduncle. . . . . 4
3. Uropod 3 with rami subequal; mandibular palp, article 3 very short (half or less length of article 2). . . . . *Ceradocus*  
—Uropod 3 with inner ramus very reduced; mandibular palp, article 3 subequal in length or a little shorter than article 2. . . . . *Melita*
4. Urosomite 1 with pair of dorsal teeth. . . . . 5  
—Urosomite 1 lacking dorsal teeth. . . . . 6
5. Epimeron 3 not serrate on lower margin posteriorly. . . . . *Mallacoota*  
—Epimeron 3 serrate on lower margin posteriorly. . . . . *Parelasmosopus*
6. Mandibular palp, article 3 falcate. . . . . *Elasmosopus*  
—Mandibular palp, article 3 rod-shaped. . . . . *Maera*

*Ceradocus rubromaculatus* (Stimpson)

Figs 79–80

*Gammarus rubromaculatus* Stimpson, 1885: 394.*Moera rubromaculata*.—Haswell, 1880c: 267, pl. 10 fig. 4.*Ceradocus rubromaculatus*.—Della Valle, 1893: 720 (partim).—Schellenberg, 1938: 63.—Ledoyer, 1967b: 39, pl. 14. —Barnard, 1972: 220, fig. 129.*Ceradocus* (*Denticeradocus*) *rubromaculatus*.—Sheard, 1939: 280, fig. 2.**Material examined.** Stn 48 (2)AC; stn 51 (1)AM P35364.

**Description.** Length, 8.0 mm. Head with subocular notch. Eye subround. Antenna 1 slender, peduncular article 3 very short, one-fifth or less length of article 2; accessory flagellum multiarticulate. Gnathopod 1, coxa anterodistal margin strongly produced forward, acute; carpus and propodus subequal; palm of propodus oblique, almost straight, defined by a tiny tooth and a spine; dactylus fitting palm. Male gnathopod 2, coxa unproduced; merus posterodistal margin produced into an acute tooth; propodus twice length of carpus, palm oblique, minutely crenulate, defined by a weak tooth and a spine; dactylus fitting palm. Pereopods 5–7, basis

posterior margin strongly serrate, posterodistal corner extended into an acute tooth. Pleonites 1–3 with about 20 equal-sized dorsolateral teeth, without a median gap. Urosomite 1 with about 8 dorsolateral equal-sized teeth. Urosomite 2 with 3 dorsolateral teeth. Epimera 1–2 with 5–6 teeth or scallops on posterior margin. Epimeron 3 with about 10 posterodistal teeth. Uropod 3 biramous, rami subequal, twice length of peduncle. Telson apices simple, acute, each lobe bearing a single sub-apical spine.

**Remarks.** The very long, subequal uropod 3 rami, and multi-toothed pleonites and epimera, distinguish this species from all other Fijian melitids. Present material differs from Australian material in the presence of only a single spine on each telsonic apex.

**Type-locality.** Port Jackson (Sydney Harbour), Australia.

**Fijian locality.** Nananui Ra.

**Distribution.** Australia, New Zealand, Philippines, Indonesia, Solomon Islands, Marshall Islands, Fiji, Tuamotu Archipelago.

**Habitat.** Amongst *Sargassum* and *Padina* in lagoon.

**Key to Species of *Elasmopus***

1. Uropod 3, rami much longer than peduncle, rami not markedly different in length. . . . . 2
- Uropod 3, rami subequal in length to, or only a little longer than peduncle, inner ramus much shorter than outer. . . . . 4
2. Coxa 1 acute; pereopods 5–7, basis posterior margin castellate; ♂ gnathopod 2, propodus posterodistal margin with few spines. . . . . *E. pseudaffinis*
- Coxa 1 rounded; pereopods 5–7, basis posterior margin weakly serrate; ♂ gnathopod 2, propodus posterodistal margin with many spines. . . . . 3
3. ♂ gnathopod 2, carpus anterior margin with brush of long setae. . . . . *E. seticarpus*
- ♂ gnathopod 2, carpus anterior margin without brush of long setae. . . . . *E. spinimanus*
4. Dactylus of pereopods 5–7 with row of nipples on posterior margin; ♀ gnathopod 2, propodus greatly enlarged. . . . . *E. spinidactylus*
- Dactylus of pereopod 5–7 lacking nipples on posterior margin; ♀ gnathopod 2, propodus not greatly enlarged. . . . . 5
5. Pereopod 7, basis posterior margin castellate; ♂ gnathopod 2, propodus with dense brush of long setae on posterior margin. . . . . *E. lapu*
- Pereopod 7, basis posterior margin weakly serrate; ♂ gnathopod 2, propodus posterior margin weakly setiferous. . . . . *E. molokai*

***Elasmopus lapu* n.sp.**

Fig. 81

**Type-material.** HOLOTYPE, ♂, 5.5 mm, AM P35205, 25 ♂ 22 ♀ PARATYPES AM P35206, Malevu, Viti Levu, Fiji, 11 August 1979, stn 20, *Gelidiella* sp. from reef flat.

**Additional material examined.** Stn 7 (15)AC; stn 11 (6)AC; stn 17 (2)AC; stn 20 (48)AC; stn 24 (6)AC; stn 26 (15)AC.

**Description.** Length, 5.5 mm. Head with subocular notch. Eye round with dark central core. Antennae

relatively setose. Antenna 1, primary flagellum with about 20 articles; accessory flagellum composed of one long and one rudimentary terminal article. Gnathopod 1, coxa subquadrangular, scarcely produced anterodistally, lower margin with numerous very long setae; propodus distinctly longer than carpus. Male gnathopod 2, coxa lower margin with very long setae; basis short; carpus very short, cup-shaped; propodus over four times length of carpus, broader proximally,

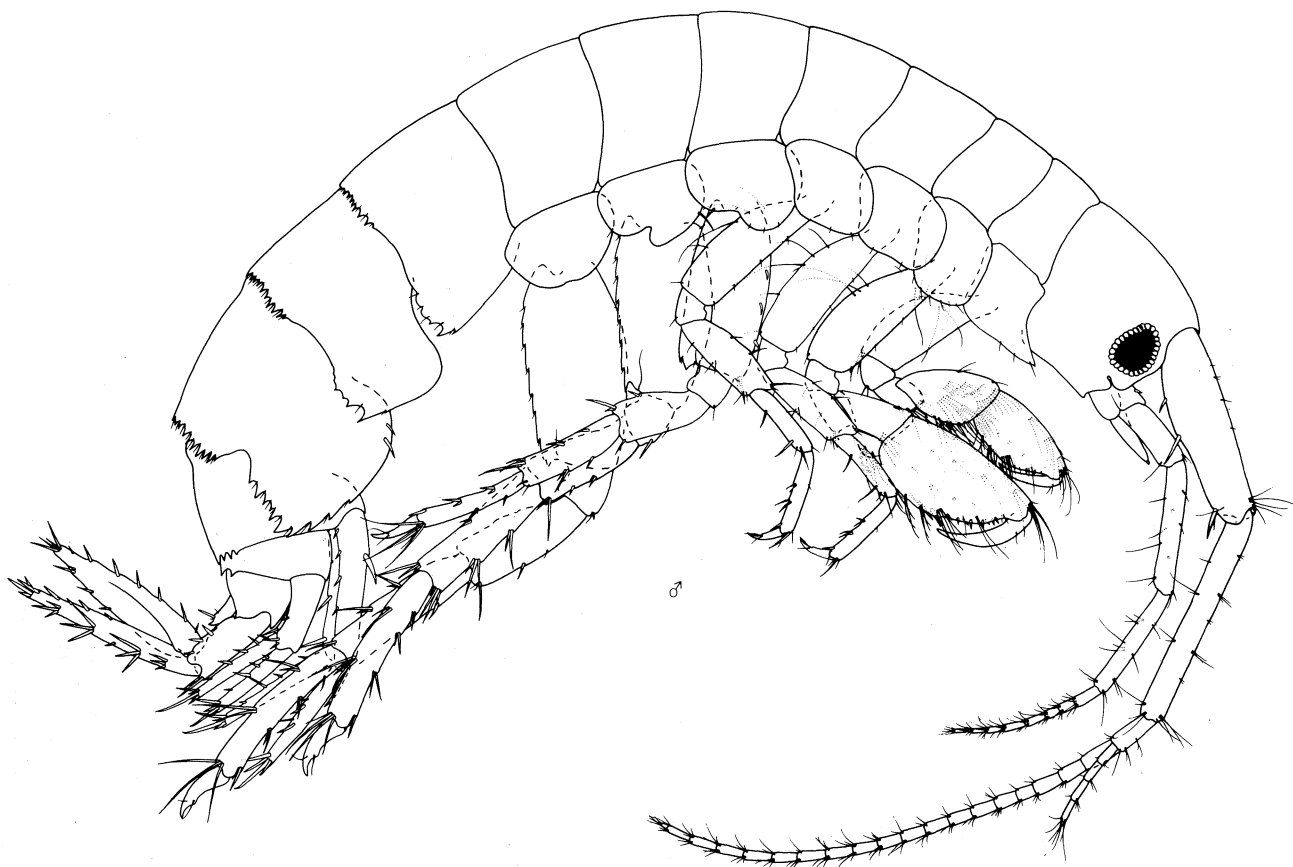


Fig. 79. *Ceradocus rubromaculatus* (Stimpson), ♂ 8.0 mm, Nananui Ra.

posterior margin evenly convex, protruding palm almost transverse, posterior margin with long setae, longest proximally, reducing in length sequentially, distalwards, but ceasing some distance before the overhanging palm; dactylus falcate, about half length of propodus. Female gnathopod 2, palm weakly concave. Pereopods 5–6, basis posterior margin irregular and weakly serrate. Pereopod 7, basis posterior margin strongly castellate. Epimeron 3, posterior margin almost straight with a few fine setae, ventral margin with a few spines. Uropod 3, inner ramus about two-thirds breadth and two-thirds length of outer ramus. Telson short, apices broadly sinuous, with a pair of stout, long, subapical spines and a small additional spine, on each lobe.

**Remarks.** This species is readily distinguished from other known Fijian species by the strongly setose posterior margin of the male gnathopod 2 propodus, and castellate posterior margin of pereopod 7. *Elasmopus pseudaffinis* also has a castellate pereopod 7 basis, but that species differs in the long, weakly setiferous antenna 1; strongly produced, acute, male coxa 1; and long, subequal uropod 3 rami as well as in several other ways.

*Elasmopus lapu* is very similar to *E. yunde* Barnard from Western Australia, but differs in totally lacking the dense border of long setae on the anterior margin of the gnathopod 1 carpus and propodus of that species.

In addition, in *E. lapu* the proximal setae on the posterior margin of the propodus of the male gnathopod 2 are very long, while the distal setae are very short. In *E. yunde*, the setae on the male gnathopod 2 propodus are not graded in a proximal–distal reduction series and extend right up to the base of the palmar overhang. It differs from *E. crenulatus* Berents (1983) in lacking strong crenulations on the posterior margin of pereopod 6 basis, the presence of long setae on the lower margin of the male coxae 1 and 2, the more spinose uropod 3 rami, and the less setose propodus of the female gnathopod 2.

**Fijian localities.** Malevu, Votualailai, Nukumbutho Island, Makuluva Island.

**Distribution.** Fiji.

**Habitat.** Among coral rubble, *Gigartina*, *Amphiroa*, *Gelidiella* and zoanthids.

#### *Elasmopus molokai* Barnard

Fig. 82

*Elasmopus molokai* Barnard, 1970: 120, figs 71–72.

**Material examined.** Stn 40 (7)AC; stn 53 (40)AM P35369; stn 55 (5)AC.

**Description.** Length, 5.0 mm. Head with subocular notch. Eye round with dark central core but ommatidia discernible throughout. Antennae only moderately

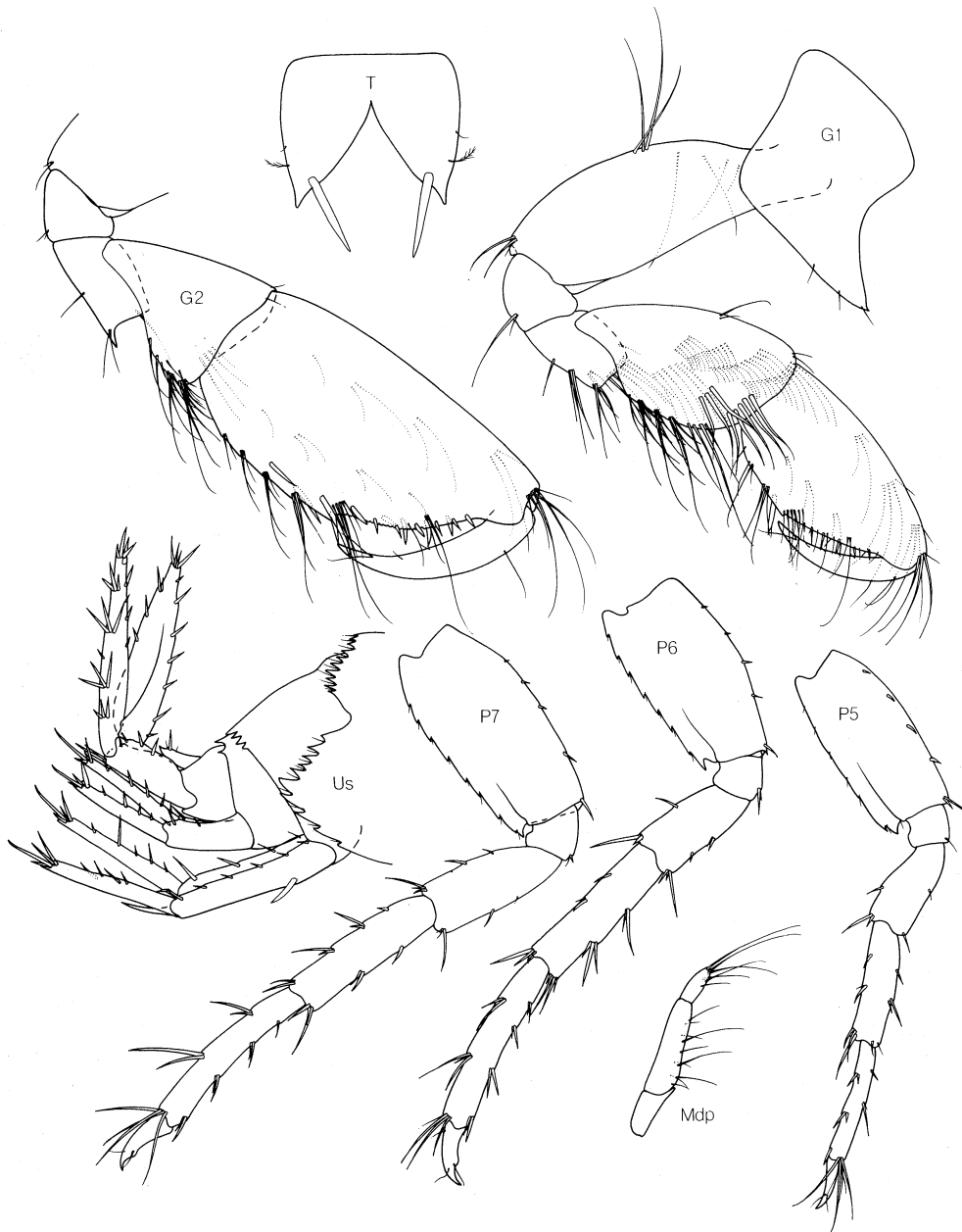


Fig. 80. *Ceradocus rubromaculatus* (Stimpson), ♂ 8.0 mm, Nananiu Ra.

setiferous. Antenna 1, primary flagellum with about 15 articles; accessory flagellum composed of one long and one rudimentary terminal article. Gnathopod 1, coxa strongly produced anterodistally, obtuse, with a few long marginal setae; propodus only a little longer than carpus. Male gnathopod 2, basis with strong anterodistal lobe bearing setae but no spines; ischium with strong anterodistal lobe; carpus short, cup-shaped; propodus four times length of carpus, subrectangular, posterior margin with strong, shallow, mediodistal excavation defined by a stout proximal tooth, a further strong tooth at the proximal end of the excavation is sometimes present, palm crenulate, defined by a spine; dactylus falcate in juveniles, becoming adze shaped in

hyperadults. Female gnathopod 2, palm evenly convex. Pereopods 3-4, propodus with stout, but unstriated locking spine with additional spine in tandem. Pereopod 6, basis subrectangular, with weakly serrate posterior margin and evenly rounded posterodistal margin. Pereopod 7, basis posterior margin evenly convex, weakly serrate. Epimera 2-3 with ventral spines, some of which are paired. Epimeron 3 posterodistal margin serrate. Uropod 3, inner ramus about as broad as, and three-quarters length of outer ramus. Telson short, apices broadly sinuous with a pair of unequal, stout subapical spines on each lobe.

**Remarks.** The only species which superficially resembles *E. molokai* in Fiji, is *E. pseudaffinis* and that



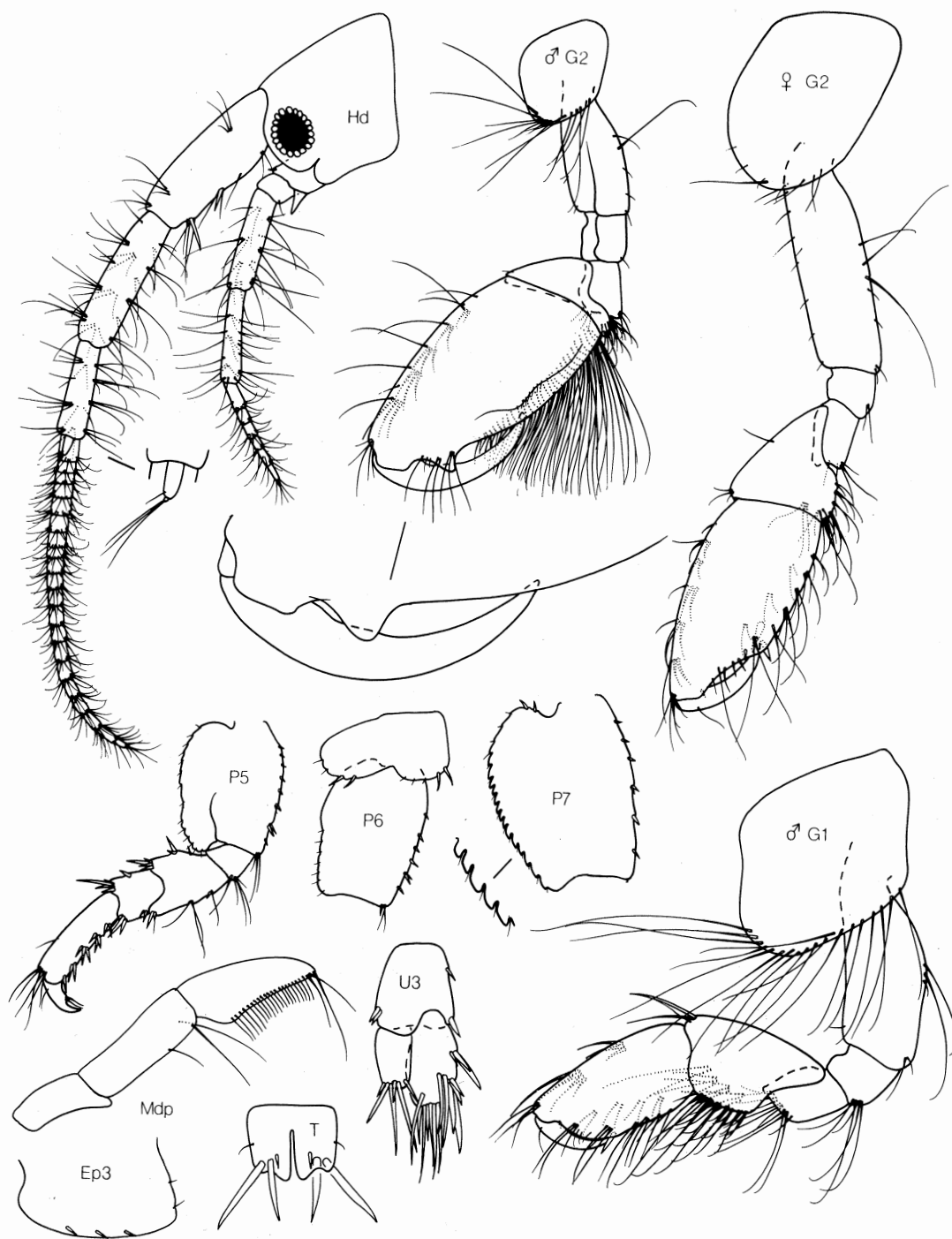


Fig. 81. *Elasmopus lapu* n. sp., ♂ 5.0 mm, ♀ 5.0 mm, Malevu.  
Complete ♂ G2 figured ½ mag. of ♂ G1.

species differs in the much longer flagellum of antenna 1, the subequal uropod 3 rami, the castellate posterior margin of pereopods 5-7 basis, the acute anterodistal corner of the gnathopod 1 coxa, and the acute posterodistal tooth on the merus of the male gnathopod 2.

Fijian material agrees quite well with the original description given by Barnard (1970) except that Hawaiian *E. molokai* always lack a central tooth in the mediodistal excavation of the posterior margin of the

male gnathopod 2 propodus. This tooth may or may not be present in Fijian material. In this respect, Fijian material resembles *E. hooheno* Barnard, but differs from that species in the pronounced lobation of the male gnathopod 2 basis and ischium, the lack of spines on the male gnathopod 2 basis and in the simple locking spines of pereopods 3 and 4 propodus (striate and sabre-shaped in *E. hooheno*). *Elasmopus molokai pilosus* Ledoyer (1978) is doubtfully attributable to this species.

**Type-locality.** Off Barbers Point, Oahu, Hawaii.

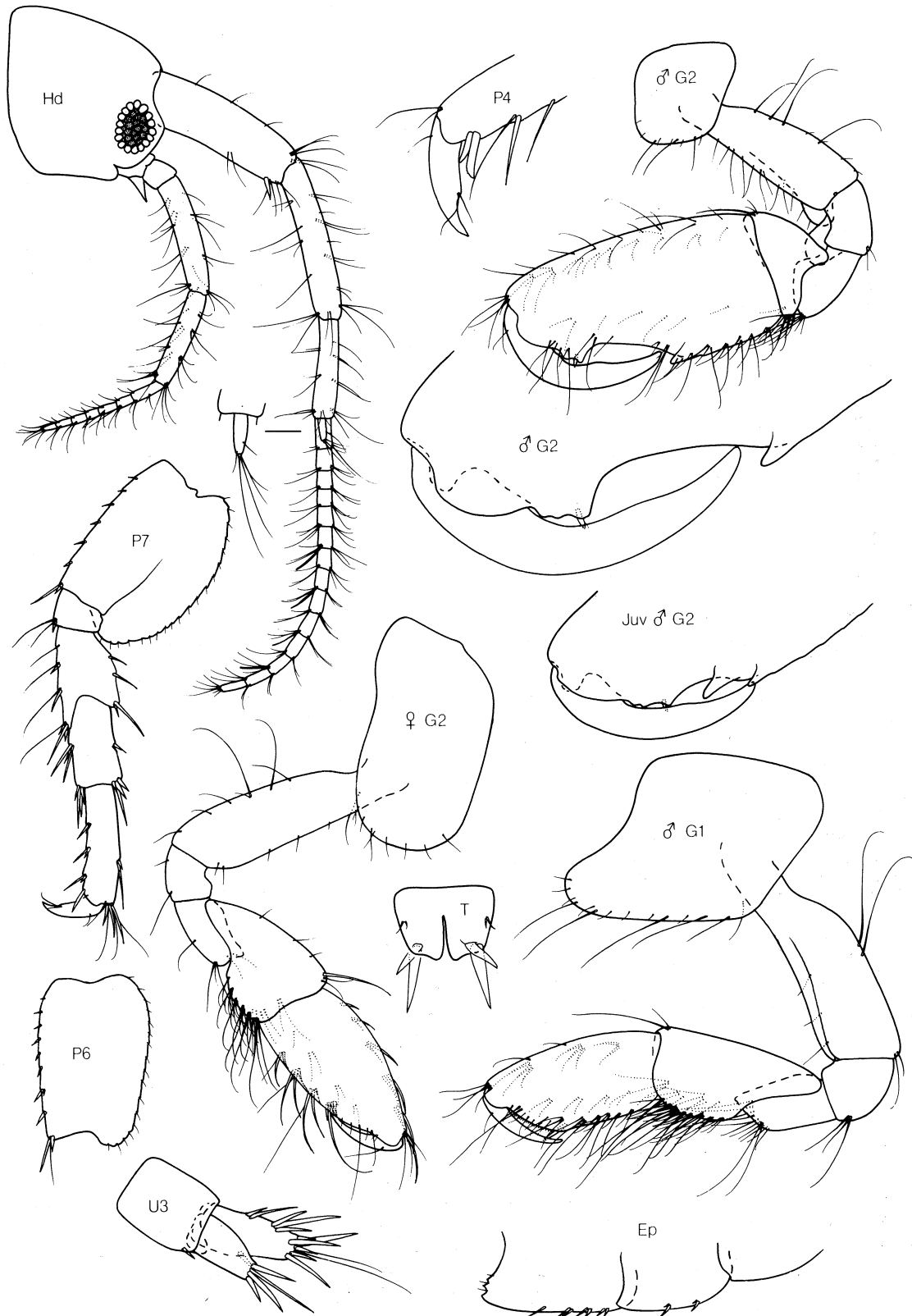


Fig. 82. *Elasmopus molokai* Barnard, ♂ 5.0 mm, ♀ 5.0 mm, Nananoi Ra. Complete ♂ G2 figured ½ X mag. of G1.

**Fijian locality.** Momi Bay, Nananui Ra.

**Distribution.** Fiji, Hawaii.

**Habitat.** Among coral debris and *Halimeda*.

*Elasmopus pseudaffinis* Schellenberg

Fig. 83

*Elasmopus pseudaffinis* Schellenberg, 1938: 53, fig. 25.—  
Ledoyer, 1978 (in part): 273, fig. 29B.

not *E. pseudaffinis*.—Barnard, 1965: 501, figs 12–13.—  
Ledoyer, 1972: 219, pls 38, 39.—Ledoyer, 1978 (in part):  
273, fig. 29A.—Berents, 1983: 118, figs 15–16.

**Material examined.** Stn 51 (1)AC.

**Description.** Length, 6.0 mm. Body whitish, banded and speckled with purple-black; eye clear, strongly speckled with purple-black. Head with subocular notch. Eye subround. Antenna 1 elongate; flagellum with about 30 articles. Antennae 1 and 2 weakly setiferous; accessory flagellum multiarticulate. Gnathopod 1, coxa anterodistal corner strongly produced forward, acute; carpus distinctly longer than propodus. Male gnathopod 2, coxa with three strong spines on posterior margin; basis and ischium with acute anterodistal tooth; merus with strong, acute, posterodistal tooth; carpus short, anterior margin spinose, propodus three times length of carpus, anterior margin almost straight, posterior margin weakly convex, palm almost obsolete, bearing two very strong spines, posterodistal margin with two submarginal processes, the more proximal subtriangular, not overlapping posterior margin, the more distal truncate and overlapping the posterior margin; dactylus curved, about half length of propodus. Pereopods 5–7, posterior margin of basis castellate. Epimeron 3 with strong posterodistal notch and a few ventral spines. Uropod 3, rami elongate and subequal. Telson relatively elongate, apices sinuous but with distinct tooth on inner margin, and with 4 stout spines on each lobe.

Female not yet collected in Fiji.

**Remarks.** The elongate antennae, multiarticulate accessory flagellum, acute coxa 1 and presence of spines on the male coxa 2 serve to distinguish this species from other Fijian *Elasmopus* species. It superficially resembles *E. spinimanus*, but that species has a non-acute coxa 1, a spinous palm on the male gnathopod 2 and non-castellate pereopod 5–7 basis. It also resembles *E. molokai* from which it differs in numerous details — see the identification notes relating to that species.

Ledoyer (1978) described two forms of *E. pseudaffinis*, from Madagascar and Mauritius, based on coxa 1; form 'A' having a rounded anteroventral corner and no posteroproximal spines, form 'B' having, like Fijian material, an acute anteroventral corner and posteroproximal spines. Berents (1983) figures material, from Lizard Island, N.E. Australia, which agrees with form 'A' of Ledoyer. Her material also has the posterior margin of epimeron 3 swept back to a single acute tooth,

whereas in both Fijian and Schellenberg's (1938) material there is a small sinus or notch on epimeron 3. In addition, the dactylus of the male gnathopod 2 in Lizard Island material is adze-shaped, as it is in Micronesian material (Barnard, 1965) which in other respects is also referable to Ledoyer's form 'A'. There seems good reason to suspect the presence of two sibling species masquerading under the name *E. pseudaffinis*. *Elasmopus pseudaffinis* Schellenberg appears to be synonymous with Ledoyer's form 'B' and with Fijian material. Form 'A' of Ledoyer and the species described by Barnard (1965) and Berents (1983) may represent a second, undescribed species.

**Type-locality.** Aranuka, Kiribati.

**Fijian locality.** Nananui Ra.

**Distribution.** Madagascar, Mauritius, Caroline Islands, Marshall Islands, Kiribati, Fiji.

**Habitat.** Amongst *Padina* in sheltered lagoon.

*Elasmopus seticarpus* n.sp.

Figs 84–85

**Type-material.** HOLOTYPE, ♂, 6.0 mm, AM P35207, 12 ♂  
16 ♀ PARATYPES AM P35208, Nukumbutho Reef, Viti Levu,  
Fiji, 8 August 1979, stn 9, *Halimeda opuntia* from reef flat.

**Additional material examined.** Stn 5 (6)AC; stn 23 (5)AC;  
stn 24 (9)AM P35331; stn 40 (2)AC.

**Description.** Length, 7.5 mm. Body translucent white; eye black. Head with subocular notch. Eye subround with dark central core. Antennae moderately setiferous. Antenna 1, primary flagellum with about 25 articles; accessory flagellum composed of three articles, the terminal article rudimentary. Gnathopod 1, coxa scarcely produced anterodistally; carpus slightly longer than propodus. Male gnathopod 2, carpus about as long as broad, anterior margin with a dense brush of long setae; propodus pyriform, distally narrow, posterior margin evenly convex, palm very oblique and indistinguishable from posterior margin, inner face of posterodistal margin with a row of stout spines; dactylus about two-thirds length of propodus, closing over inner face of propodus, opposable to spine row. Female gnathopod 2, propodus longer than carpus, palm very oblique. Pereopods 5–7, basis posterior margin serrate. Epimeron 3, posterodistal corner with rounded excavation between two small acute teeth, lower margin with spines. Uropod 3, rami elongate, outer ramus slightly the longer. Telson elongate, apices bifid, acute, each lobe with two stout, short spines.

**Remarks.** The strongly setose anterior margin of the carpus of gnathopod 2 distinguishes the male of this species from all other Fijian *Elasmopus* spp. *Elasmopus seticarpus* n. sp. resembles *E. dentiferus* Schellenberg (1938), but that species has a strongly serrate posterodistal margin on the propodus of the male gnathopod 2. It also closely resembles *E. spinicarpus* Berents (1983) but differs from that species in the much longer setae on the anterior margin of the male gnathopod 2 carpus, the strongly notched epimeron 3

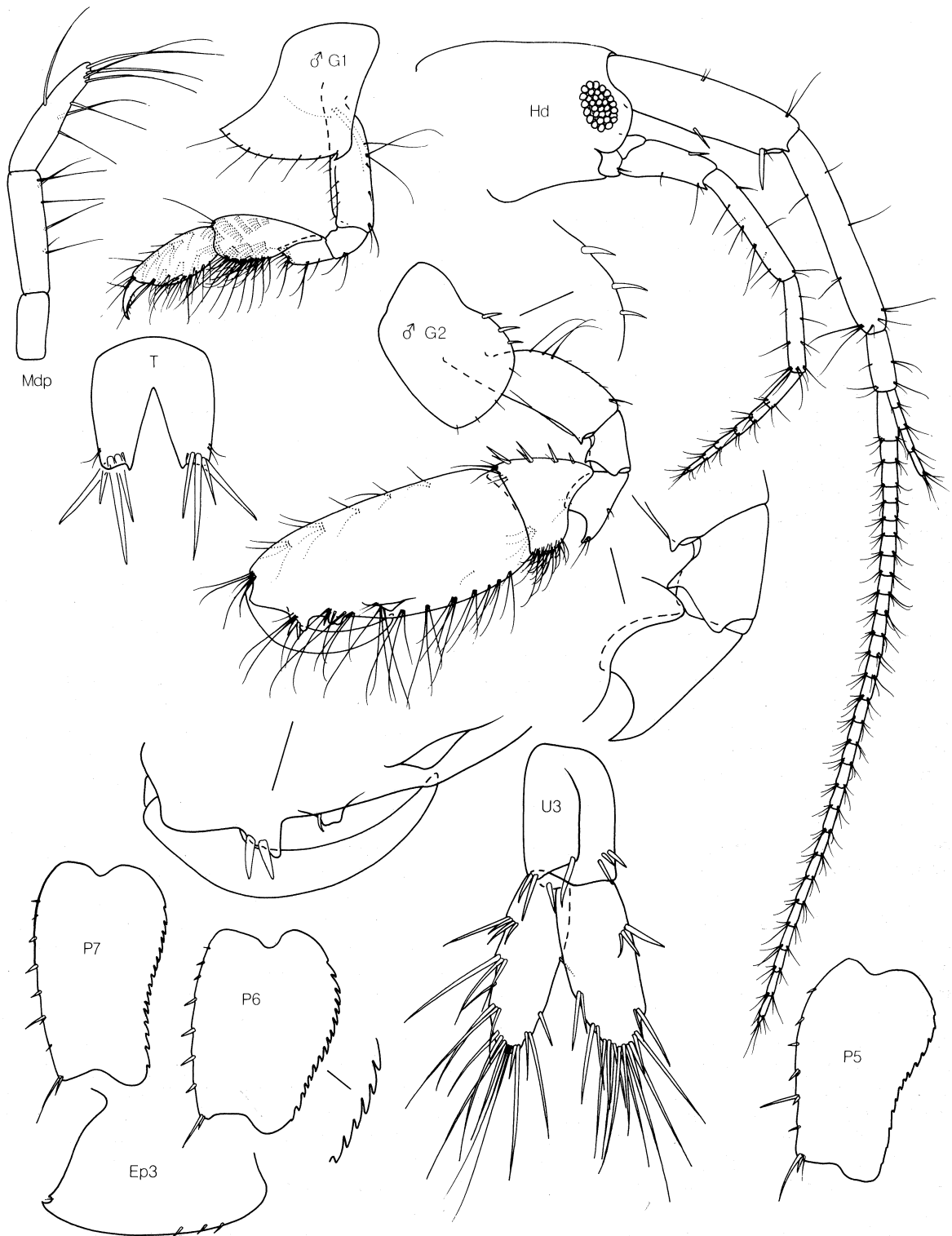


Fig. 83. *Elasmopus pseudaffinis* Schellenberg ♂ 6.0 mm, Nananui Ra.

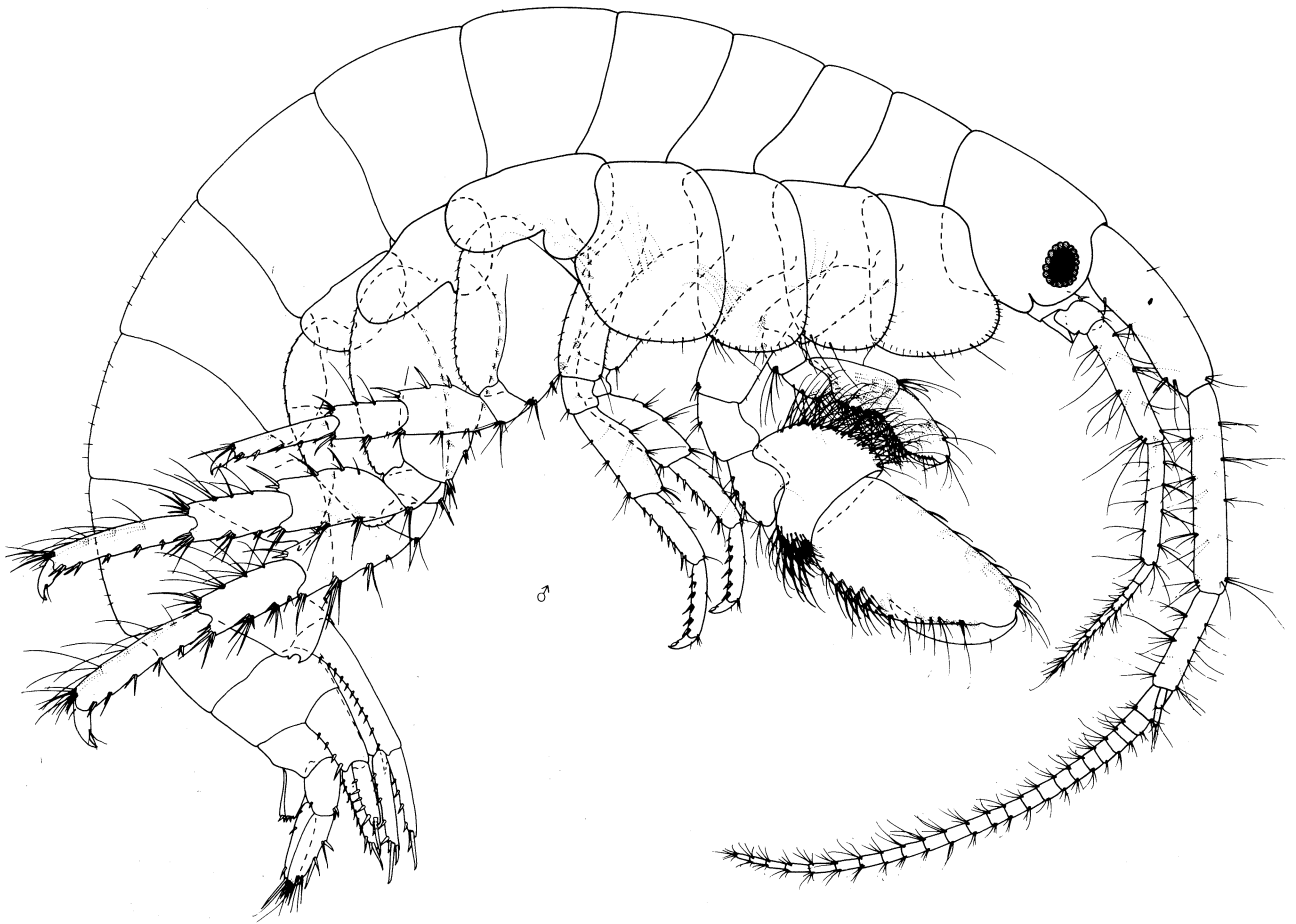


Fig. 84. *Elasmopus seticarpus* n. sp., ♂ 7.5 mm, Makuluva Island.

posterodistal corner, and markedly less falcate mandibular palp article 3.

**Fijian localities.** Momi Bay, Makuluva Island, Nukumbutho Island.

**Distribution.** Fiji.

**Habitat.** Amongst red algae, *Halimeda* and dead coral rubble.

*Elasmopus spinidactylus* Chevreux

Fig. 86

*Elasmopus spinidactylus* Chevreux, 1908: 486, figs 9–10.—Walker, 1909: 336.—Schellenberg, 1938: 55.—Shoemaker, 1942: 13.—Barnard, 1965: 504.—Barnard, 1970: 136, figs 81–82.

**Material examined.** Stn 7 (19)AC; stn 11 (3)AC; stn 15 (1)AC; stn 21 (3)AC; stn 26 (27)AM P35337, (36)AC.

**Description.** Length, 7.0 mm. Head with subocular notch. Eye round with dark central core. Gnathopod 1, coxa weakly produced anteriorly with a few long marginal setae; propodus distinctly longer than carpus, palm with two rows of stout spines. Male gnathopod 2, propodus six times length of very reduced carpus, subovoid, posterior margin produced distally into an outwardly deflected, flat-topped, obtuse process, palm

short, oblique, weakly crenulate, with a row of stout spines on inner and outer face; dactylus three-quarters length of propodus, closing over inner face of propodus. Female gnathopod 2 similar to that of the male, but lacking the posterodistal process, posterior margin sinuous, palm oblique, distinctly crenulate, with spines on inner and outer face. Pereopod 6, basis posterior margin straight or weakly concave, produced posterodistally into a triangular tooth. Pereopod 7, basis posterior margin convex, crenulate. Pereopods 5–7, dactylus posterior margin produced into a series of nipple-like projections. Epimeron 3 with weak posterodistal tooth and weakly serrate posterior margin. Uropod 3, inner ramus two-thirds length and two-thirds width of outer ramus. Telson short, apices broadly sinuous with three stout subapical spines on each lobe.

**Remarks.** This is the only Fijian species of *Elasmopus* in which the female gnathopod 2 is enlarged and broadly similar to that of the male. The shape of gnathopod 2, in both sexes, together with the form of the dactyls of pereopods 5–7 are diagnostic.

**Type-locality.** Makapou Island, Gambier Archipelago.

**Fijian localities.** Malevu, Votualailai, Nukumbutho Island, Makuluva Island.

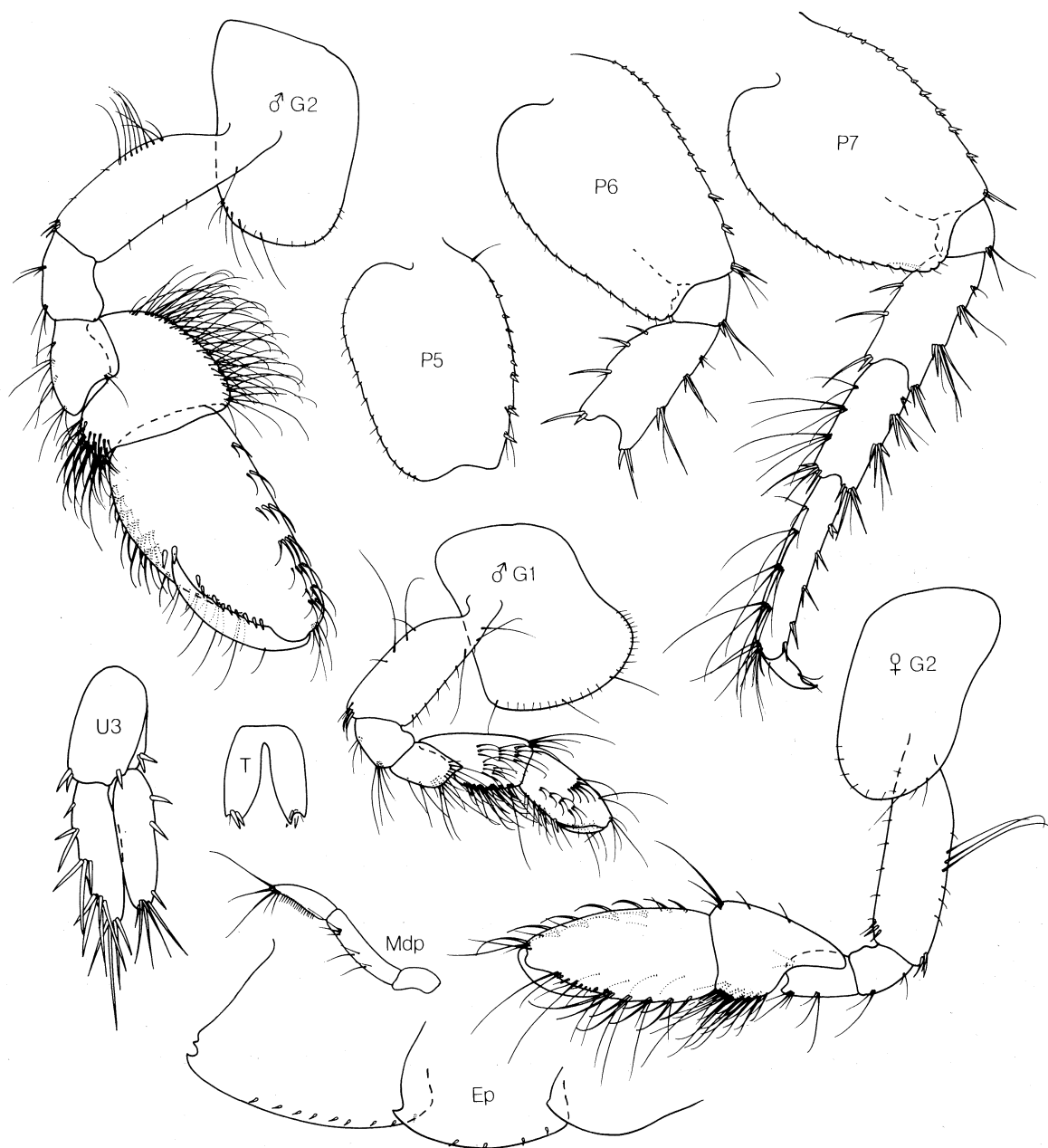


Fig. 85. *Elasmopus seticarpus* n. sp., ♂ 7.5 mm, ♀ 7.0 mm, Makuluva Island.

**Distribution.** Chagos Archipelago, Micronesia, Melanesia, Polynesia, Venezuela.

**Habitat.** On reef crest amongst *Caulerpa*, *Sargassum*, *Turbinaria*, *Gigartina* and coral debris. Also amongst zoanthids on reef flat.

*Elasmopus spinimanus* Walker

Fig. 87

*Elasmopus spinimanus* Walker, 1904: 277, pl. 5 fig. 36.—Pirlot, 1936: 313.—Schellenberg, 1938: 55.

**Material examined.** Stn 12 (2)AC.

**Description.** Length, 6.5 mm. Head with subocular notch. Gnathopod 1, coxa anterodistal corner

moderately produced, rounded; carpus distinctly longer than propodus. Male gnathopod 2, basis slender; merus posterodistal corner produced into an acute tooth; carpus short, cup-shaped; propodus over three times length of carpus, anterior margin relatively straight (but strongly convex proximally), posterior margin evenly convex, palm sinuous, palm and posterodistal margin with two rows (one on either face) of stout spines, but few setae; dactylus curved, a little over half length of propodus. Female gnathopod 2, propodus about one and a half times length of carpus, palm very oblique, defined by a stout spine. Pereopods 3–7, propodus with simple locking spines in tandem. Pereopods 5–7, basis with posterior margin weakly serrate. Epimeron 3 with weak posterodistal tooth. Uropod 3, rami elongate,

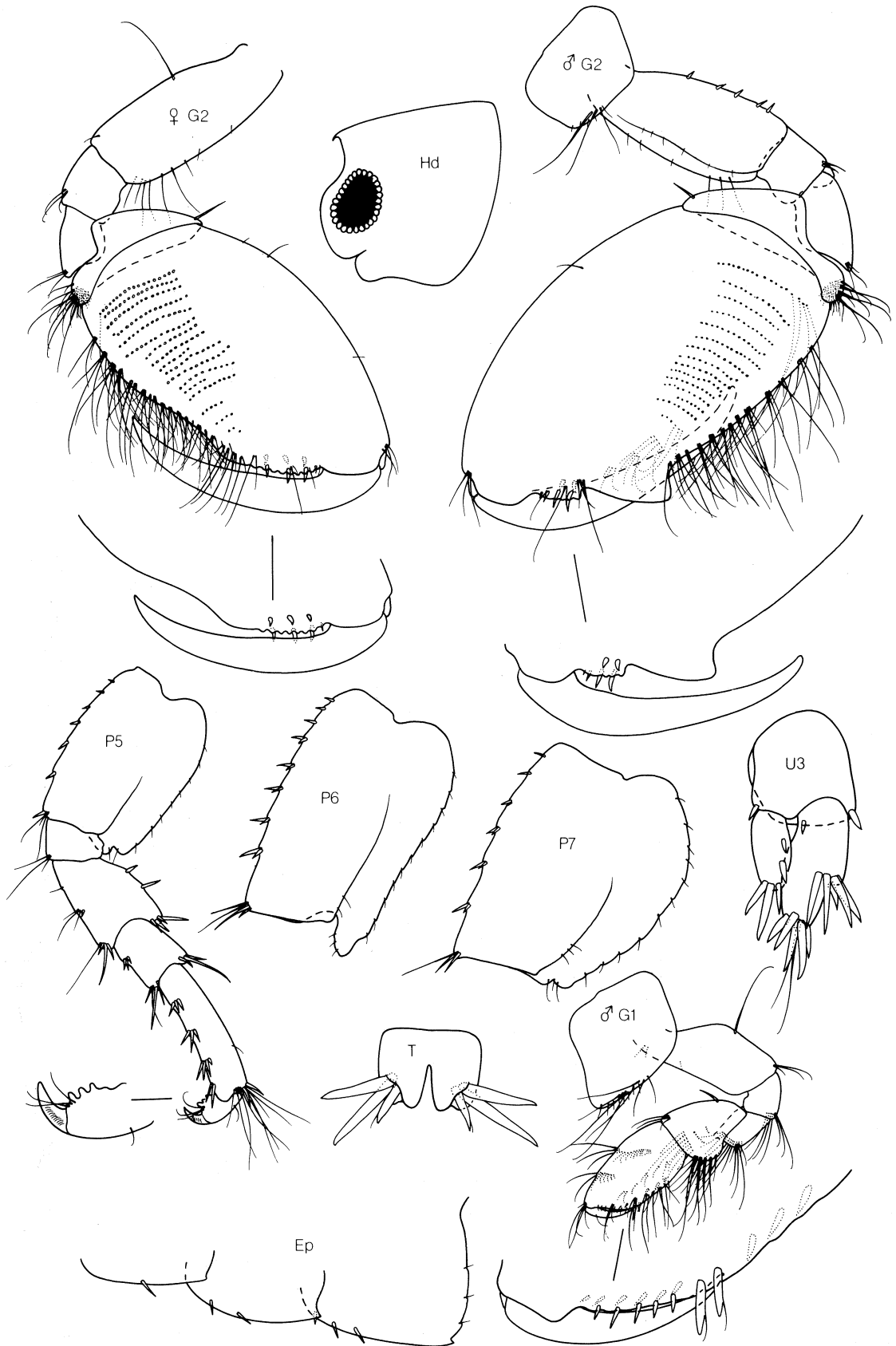


Fig. 86. *Elasmopus spinidactylus* Chevreux, ♂ 7.0 mm, ♀ 7.0 mm, Makuluva Island.

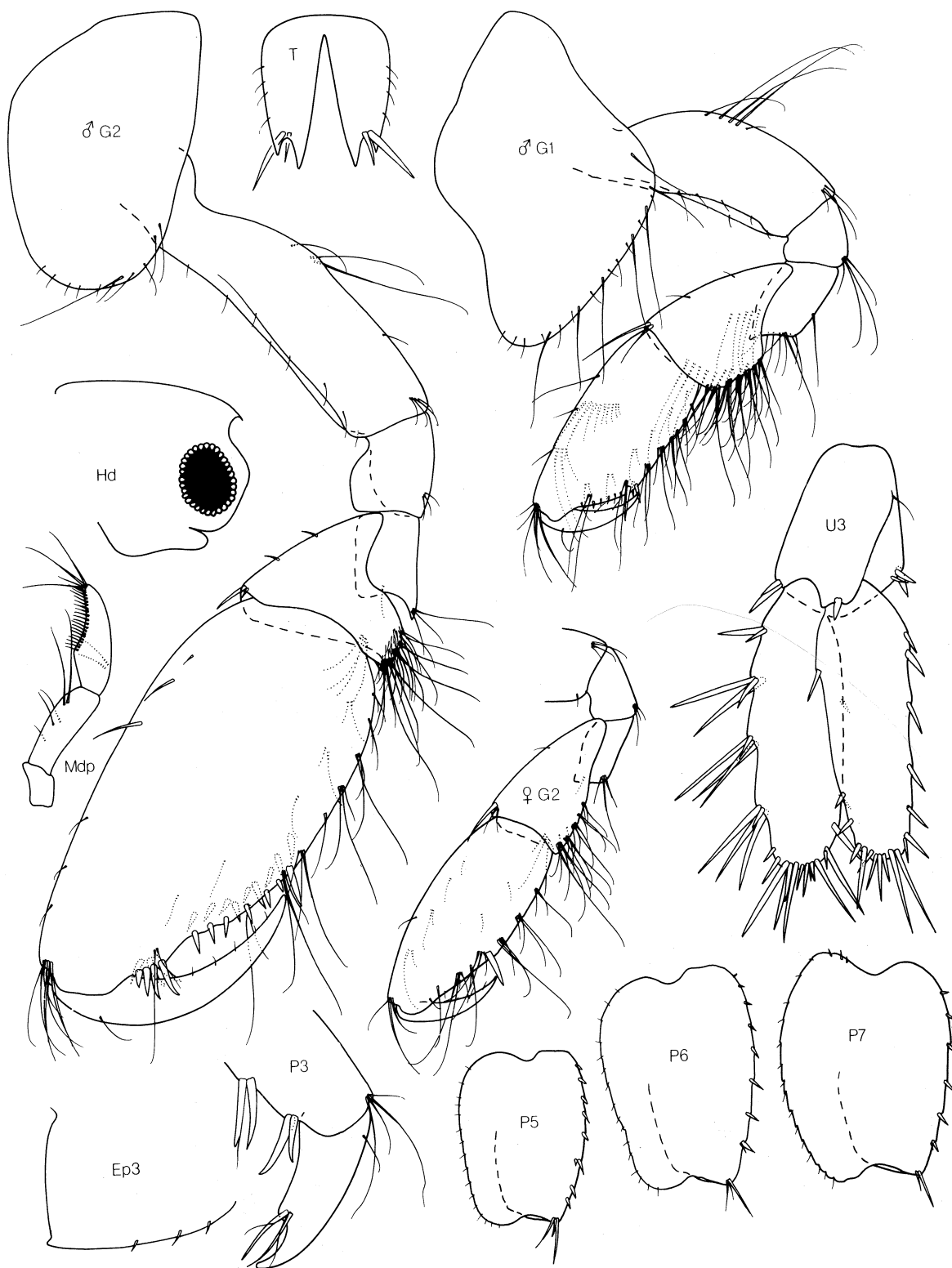


Fig. 87. *Elasmopus spinimanus* Walker, ♂ 6.0 mm, ♀ 5.0 mm, Votualailai.



almost twice length of peduncle, subequal, terminal spines relatively short. Telson relatively elongate, apices bifid, each bifurcation acute, the inner the longer, each lobe with two unequal stout spines.

**Remarks.** The male of this species is characterised by the double row of spines on the posterodistal margin of the propodus of gnathopod 2. A similar spinous palm occurs in *E. seticarpus*, but that species has an enlarged carpus with a strongly setose anterior margin. Fijian

material agrees well with the original description of the species, although Walker's material has a more pyriform propodus on the male gnathopod 2.

**Type-locality.** Galle, Sri Lanka.

**Fijian locality.** Votualailai.

**Distribution.** Sri Lanka, Celebes and Banda Sea, Kiribati, Fiji.

**Habitat.** Amongst *Sargassum* on reef crest.

**Key to Species of *Maera***

- 1. Epimeron 3, posterior margin not dentate, but with single posterodistal tooth. . . . . 2
- Epimeron 3, posterior margin strongly dentate. . . . . 3
- 2. Pereopods 6–7, basis posterior margin evenly rounded; ♂ gnathopod 2, palm with two deep excavations. . . . . *M. pacifica*
- Pereopods 6–7, basis posterior margin almost straight, with quadrate posterior corner; ♂ gnathopod 2, palm with three deep excavations. . . . . *M. quadrimana*
- 3. Head with notch below ocular lobe; ♂ left and right gnathopod 2 dissimilar. . . . . *M. octodens*
- Head lacking notch below ocular lobe; ♂ left and right gnathopod 2 similar. . . . . *M. serrata*

***Maera octodens* Sivaprakasam**

Fig. 88

*Maera octodens* Sivaprakasam, 1968a: 36, fig. 2.—Surya Rao, 1972: 196.—Ledoyer, 1978: 278, fig. 31.—Ledoyer, 1979b: 80, fig. 45.—Berents, 1983: 128, fig. 22.

**Material examined.** Stn 40 (1)AC.

**Description.** Length, 4.0 mm. Head with subocular notch. Eye subround. Mandibular palp, article 3 rod-shaped, subequal to article 2. Antenna 1 only moderately setiferous, peduncle and primary flagellum subequal in length; accessory flagellum 4-articulate. Antenna 2 weakly setiferous; flagellum longer than peduncular article 5. Gnathopod 1, carpus anterior margin lacking subdistal excavation. Male gnathopod 2 on one side enormously enlarged; carpus very reduced; propodus subovoid, palm with 7–8 strong teeth; dactylus blunt, broader distally, the tip fitting into a small cavity on inner face of propodus; other gnathopod 2 elongate, much smaller, with very oblique and untoothed palm (left gnathopod enlarged in single Fijian specimen, but this is not always the case in other areas). Female unknown in Fiji. Pereopods 6–7, basis slender, posterior margin weakly toothed. Epimera 1–2 with small posterior tooth above which, on the posterior margin, is a further scarcely discernible tooth. Epimeron 3, posterior margin with 5 strong teeth. Uropod 3 lost in Fijian specimen. Telson deeply, but not fully cleft, with strongly fixed medial gap, lobes narrow, apices bifid, inner bifurcation subacute, outer bifurcation acute, each lobe with one strong spine and one seta, the spine shorter than the length of the telson.

**Remarks.** The notched head, acute coxa 1, toothed epimeron 3 and dimorphic male gnathopod 2 serve to distinguish this species from the other three Fijian species. It also resembles *Ceradocus rubromaculatus*, but that species has all epimera strongly toothed on the posterior margin, as well as a dorsally serrate pleon, weakly developed gnathopod 2 in the male, and a very short article 3 on the mandibular palp. The presence of a cheek notch suggests that this species should be placed in the genus *Linguimaera* Pirlot (1936), however, due to doubts about Pirlot's identification of *M. othonides* Walker (cited by Pirlot as the type-species of the genus), the validity of that genus remains questionable and may need to be considered by the I.C.Z.N. under article 70a of the *Code* (see also Barnard, 1972).

**Type-locality.** East coast of India.

**Fijian locality.** Momi Bay.

**Distribution.** India, Madagascar, Mauritius, Marshall Islands, Fiji, N.E. Australia.

**Habitat.** Among coral debris.

***Maera pacifica* Schellenberg**

Figs 89–90

*Maera pacifica* Schellenberg, 1938: 42, figs 19–20.—Barnard, 1965: 511.—Sivaprakasam, 1966: 101.—Ruffo, 1969: 26.—Sivaprakasam, 1970a: 35.—Barnard, 1970: 150, figs 92–93.—Ledoyer, 1972: 227, pls 43–44.—Ledoyer, 1978: 278.

**Material examined.** Stn 5 (7)AC; stn 7 (33)AC; stn 8 (19)AC; stn 9 (1)AC; stn 11 (1)AC; stn 17 (1)AC; stn 18 (7)AC; stn 19 (1)AC; stn 20 (30)AC, (35)AM P35325; stn 21 (1)AC; stn 26 (8)AC; stn 27 (21)AM P35340; stn 30 (1)AC; stn 35 (5)AC; stn 40 (8)AC; stn 52 (2)AC.

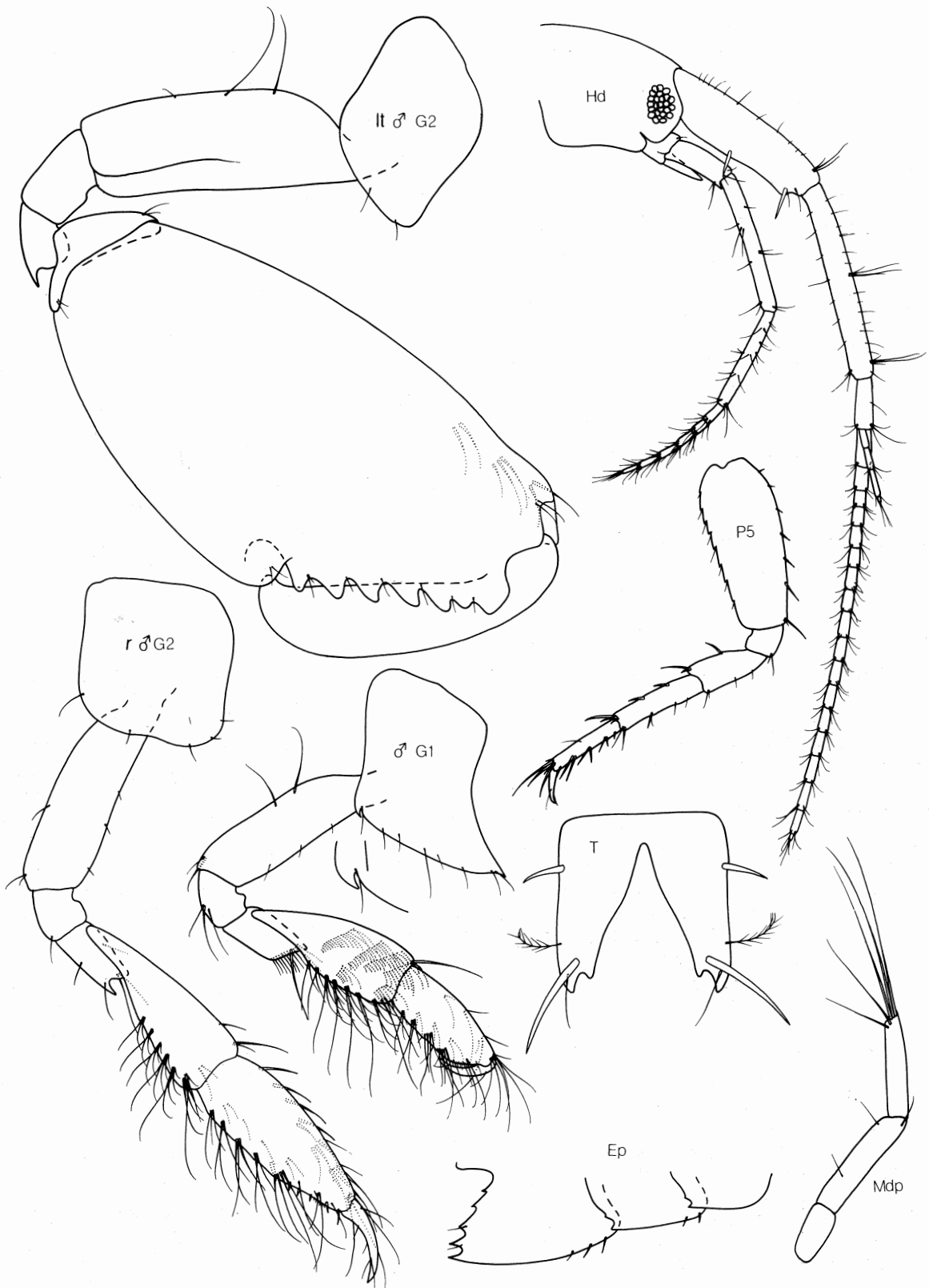


Fig. 88. *Maera octodens* Sivaprakasam, ♂ 4.0 mm, Momi Bay.

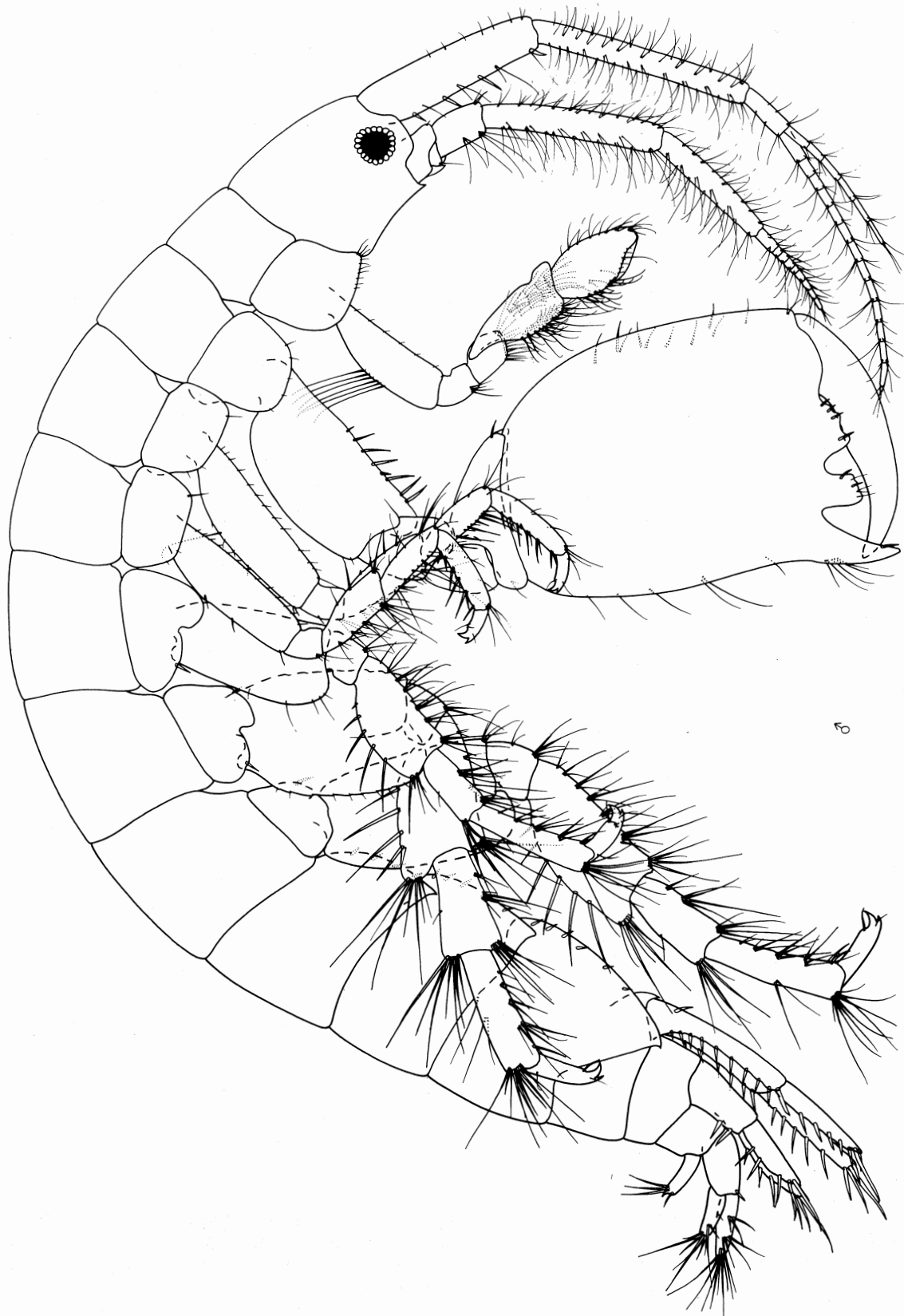


Fig. 89. *Maera pacifica* Schellenberg, ♂ 6.0 mm, Malevu.

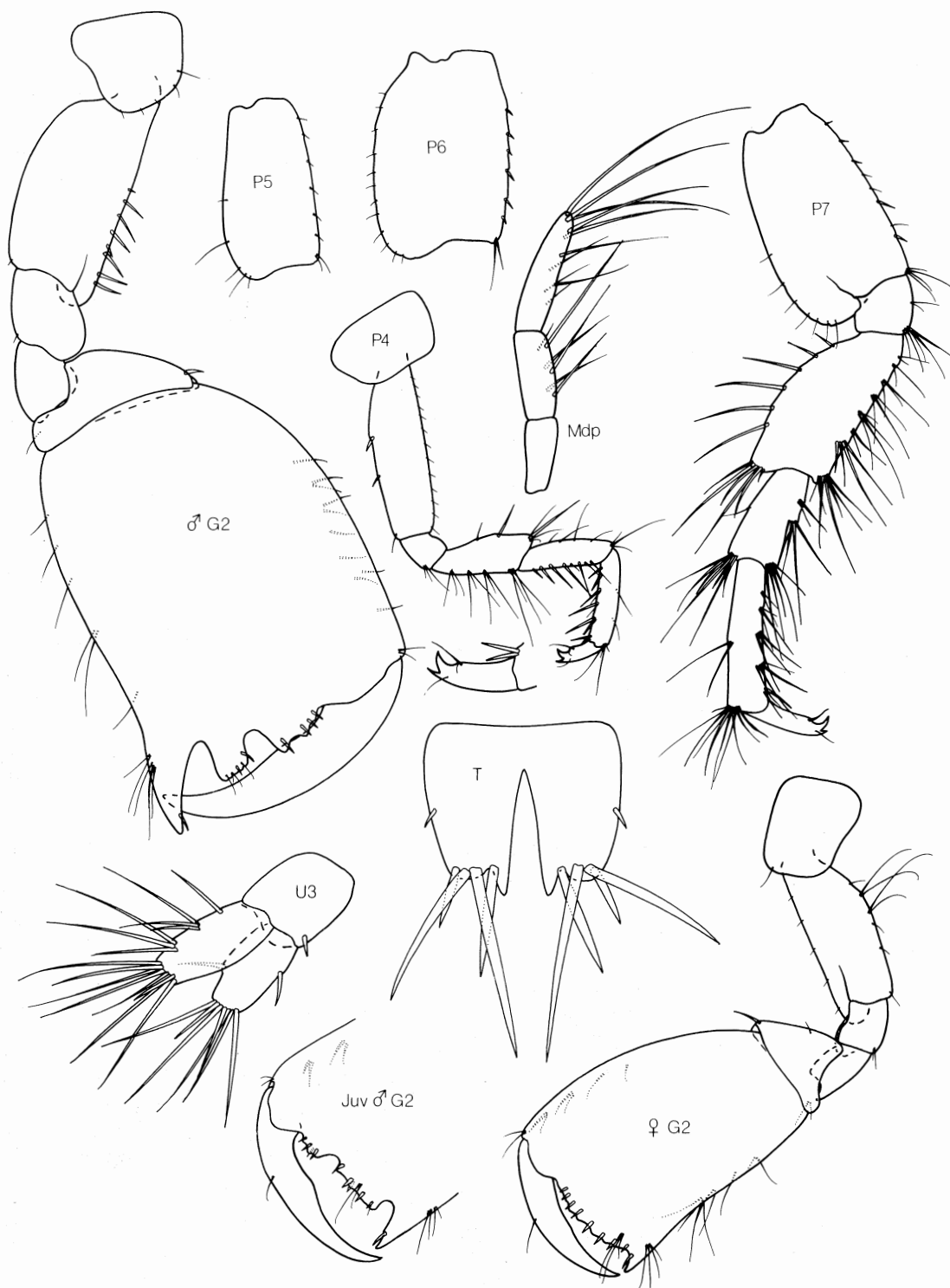


Fig. 90. *Maera pacifica* Schellenberg, ♂ 6.0 mm, ♀ 5.5 mm, Malevu.

**Description.** Length, 6.0 mm. Head lacking subocular notch. Eye subround. Mandibular palp, article 3 rod-shaped, longer than article 2. Antenna 1 moderately setose; primary flagellum shorter than peduncle; accessory flagellum 7-articulate. Antenna 2 moderately setose; flagellum shorter than peduncular article 5.

Gnathopod 1, carpus anterior margin with subdistal excavation. Male gnathopod 2 massive; basis anterior margin with several spines; carpus very reduced, cup-shaped; propodus subquadrangular, palm transverse with two deep excavations separating a distal acute tooth from a medial, flat-topped (but weakly scalloped)

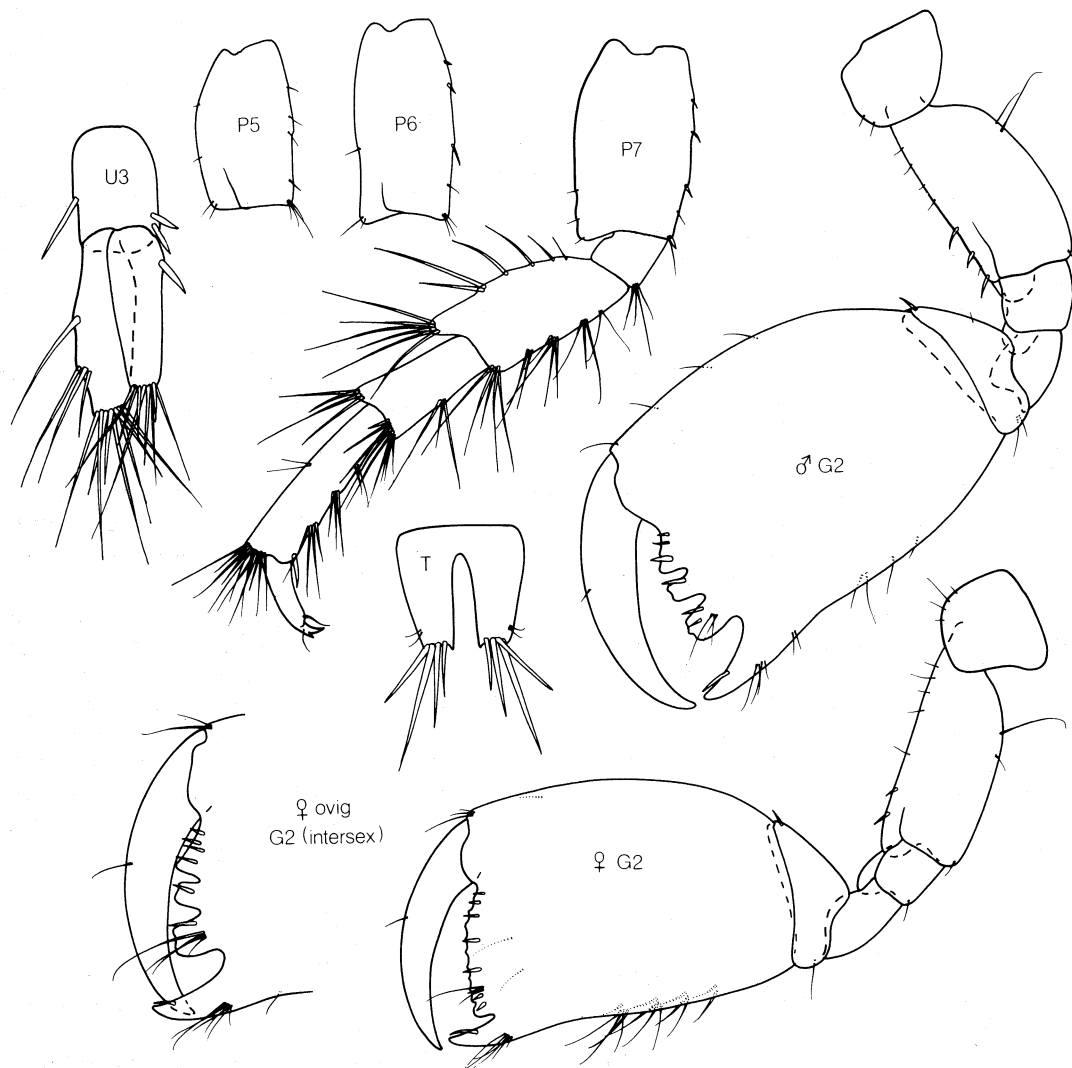


Fig. 91. *Maera quadrimana* (Dana), ♂ 6.5 mm, ♀ 5.5 mm, Taunovo Bay.

process. Female gnathopod 2 less massive than that of male; basis lacking spines on anterior margin; propodus palm scalloped, terminating in a small tooth separated from the remainder of the palm by a weak, rounded depression, but lacking excavations. Pereopods 6-7, basis posterior margin weakly serrate, evenly rounded. Epimera 1-3, posterodistal corner with small tooth. Uropod 3, rami short and stout, outer ramus the longer. Telson deeply but not fully cleft, with strongly fixed medial gap, lobes broad, apices bifid, inner bifurcation acute, outer bifurcation rounded, each lobe with 3-5 stout spines, at least one of which exceeds the length of the telson.

**Remarks.** This species can be separated most readily from its closest relative, *M. quadrimana*, by the evenly rounded posterior margin of pereopods 6-7. In the male, the palm of gnathopod 2 has two excavations (three in *M. quadrimana*) and in the female the palm of gnathopod 2 has a much weaker defining tooth than does that of *M. quadrimana*. It is readily distinguished from *M. serrata* and *M. octodens* by the lack of strong

teeth on the posterior margin of epimeron 3.

**Type-locality.** Makin, Kiribati.

**Fijian localities.** Momi Bay, Malevu, Votualailai, Taunovo Bay, Suva barrier reef, Nukumbutho Island, Makuluva Island, Mburelevu, Nananui Ra.

**Distribution.** Red Sea, Madagascar, India, Mauritius, Caroline Islands, Marshall Islands, Kiribati, Fiji, Hawaii.

**Habitat.** Among algae (*Gelidiella*, *Sargassum*, *Halimeda*, *Gigartina*), *Syringodium*, *Pocillopora*, *Tubipora*, sponges, zoanthids and coral rubble.

*Maera quadrimana* (Dana)

Fig. 91

*Gammarus quadrimanus* Dana, 1853: 955, pl. 65 fig. 9.

*Maera quadrimana*.—Schellenberg, 1938: 45, figs 21-22.—Barnard, 1955: 13.—Nayar, 1959: 23, fig. 6-15.—Barnard, 1965: 511, fig. 17.—Sivaprakasam, 1966: 101.—Ruffo, 1969: 25.—Sivaprakasam, 1968a: 35.—Barnard, 1970: 152, fig. 94-95.—Ledoyer, 1972: 229, pl. 45.—Ledoyer, 1978: 279.—Ortiz, 1978: 8.—Berents, 1983: 128, fig. 22.

**Material examined.** Stn 5 (5)AC; stn 28 (48)AC; stn 30 (3)AC; stn 40 (10)AC; stn 41 (2)AC; stn 52 (13)AM P35365.

**Description.** Length, 7.0 mm. Head lacking subocular notch. Eye subround. Mandibular palp, article 3 rod-shaped, longer than article 2. Antenna 1 moderately setose; primary flagellum shorter than peduncle; accessory flagellum 7-articulate. Antenna 2 moderately setose; flagellum shorter than peduncular article 5. Gnathopod 1, carpus anterior margin with subdistal excavation. Male gnathopod 2 massive, basis anterior margin with several spines; carpus very reduced, cup-shaped; propodus subquadrangular, palm transverse with three deep excavations separating a distal acute tooth from two medial flat-topped processes. Female gnathopod 2 less massive than that of male; basis lacking spines on anterior margin, propodus palm scalloped, terminating in a strong tooth, separated from the remainder of the palm by a distinct, narrow excavation. Ovigerous females with male-type gnathopoda (intersexes) are quite frequent. Pereopods 6-7, basis posterior margin weakly serrate, almost straight, with quadrate posterior distal corner. Epimera 1-3, posterodistal corner with small tooth. Uropod 3, rami relatively long, outer ramus the longer. Telson deeply but not fully cleft, with strongly fixed medial gap, lobes broad, apices bifid, inner bifurcation acute, outer bifurcation rounded, each lobe with 3-5 spines, at least one of which equals or exceeds length of telson.

**Remarks.** This species can be distinguished from *M. pacifica* by the shape of the basis of pereopods 6-7 which is subrectangular with straight posterior margin and quadrate distal end in *M. quadrimana*, but evenly convex in *M. pacifica*. For other differences see under identification notes for *M. pacifica*. *Maera quadrimana* differs from both *M. serrata* and *M. octodens* by the untoothed posterior margin of epimeron 3.

**Type-locality.** Fiji.

**Fijian localities.** Momi Bay, Taunovo Bay, Nukumbutho Island, Nananui Ra.

**Distribution.** Red Sea, Madagascar, India, Mauritius, Caroline Islands, Marshall Islands, Kiribati, Fiji, Hawaii, N.E. Australia, Cuba.

**Habitat.** Amongst red algae, sponges, *Pocillopora* and coral debris.

*Maera serrata* Schellenberg

Fig. 92

*Maera inaequipes serrata* Schellenberg, 1938: 41, fig. 18.—Barnard, 1965: 510.—Ledoyer, 1967a: 127, fig. 9.—Sivaprakasam, 1966: 100.

*Maera serrata*.—Sivaprakasam, 1968a: 35.—Ruffo, 1969: 25.—Barnard, 1970: 155, figs 96-97.—Ledoyer, 1972: 229, pl. 46.—Griffiths, 1973: 286.—Ledoyer, 1978: 279.—Berents, 1983: 131, fig. 24.

**Material examined.** Stn 53 (2)AM P35514, (3)AC; stn 55 (1)AC.

**Description.** Length, 5.0 mm. Head lacking subocular notch. Eye subround. Mandibular palp, article 3 rod-

shaped, longer than article 2. Antenna 1 moderately setose; primary flagellum shorter than peduncle; accessory flagellum 6-articulate. Antenna 2 moderately setose; flagellum shorter than peduncular article 5. Gnathopod 1, carpus anterior margin with subdistal excavation. Male gnathopod 2 enlarged; basis anterior margin lacking spines; carpus very reduced, cup-shaped; propodus subquadrangular, palm transverse, scalloped with shallow medial depression and with distal tooth separated from remainder of palm by distinctly V-shaped excavation. Female gnathopod 2 similar to that of male but lacking medial palmar depression. Pereopods 6-7, basis posterior margin strongly toothed, weakly convex. Epimera 1-2 with minute posterodistal tooth. Epimeron 3, posterior margin with 6-7 strong teeth. Uropod 3, rami elongate, outer ramus slightly the longer. Telson deeply, but not fully cleft, with strongly fixed medial gap, lobes narrow, apices bifid, both bifurcations acute, each lobe with 3 spines, none of which is longer than the telson.

**Remarks.** The strongly toothed bases of pereopods 5-7, and posterior margin of epimeron 3, together with the relatively weakly developed male gnathopod 2 readily distinguish this species from either *M. pacifica* or *M. quadrimana*. The telsonic lobes are also much narrower in *M. serrata* than in either of the latter two species. *Maera serrata* is easily distinguished from *M. octodens* by the absence of a subocular notch on the head, and in the male by the symmetrical development of the second pair of gnathopods.

**Type-locality.** Apamama, Kiribati.

**Fijian locality.** Nananui Ra.

**Distribution.** Red Sea, Madagascar, South Africa, India, Mauritius, Caroline Islands, Marshall Islands, Kiribati, Fiji, Hawaii, N.E. Australia.

**Habitat.** Among *Halimeda* and coral rubble.

**Key to Species of *Mallacoota***

1. Pereopod 7, merus broader than long; ♂ gnathopod 2, dactylus over two-thirds length of propodus. . . . . *M. insignis*  
—Pereopod 7, merus longer than broad; ♂ gnathopod 2, dactylus less than two-thirds length of propodus. . . . . 2
2. ♂ gnathopod 2, propodus weakly setiferous, posterior margin sinuous, dactylus broad and blunt; telsonic lobes acute. . . . . *M. nananui*  
—♂ gnathopod 2, propodus strongly setiferous, posterior margin convex, dactylus relatively slender, adze-shaped; telsonic lobes blunt. . . . . *M. subcarinata*

*Mallacoota insignis* (Chevreux)

Figs 93-94

*Elasmopus insignis* Chevreux, 1901: 406, figs 24-31.—Walker, 1909: 336.

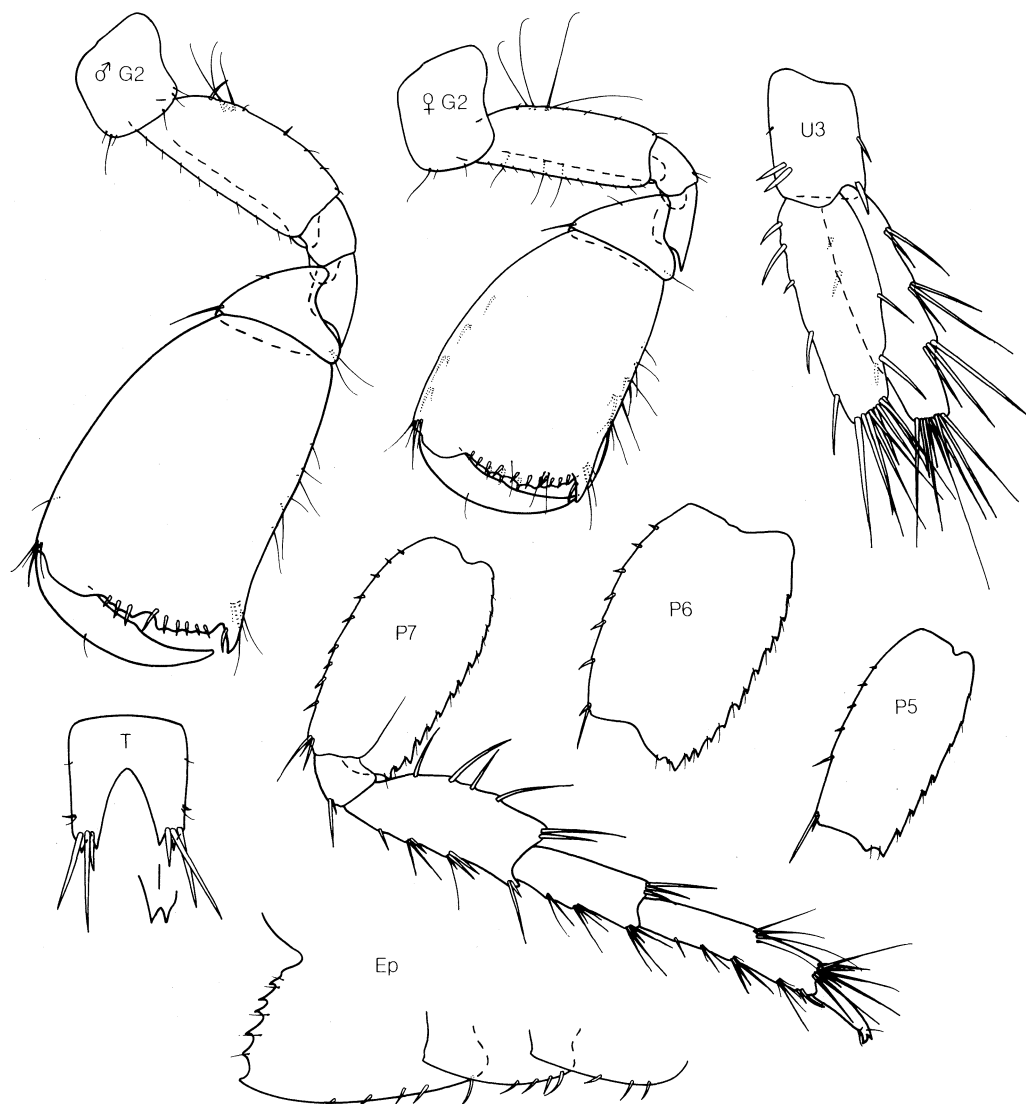


Fig. 92. *Maera serrata* Schellenberg, ♂ 5.0 mm, ♀ 5.0 mm, Nananui Ra.

*Elasmopus indicus* Pirlot, 1936: 326.

*Elasmopus indicus* Pirlot, 1936: 326.

*Maera insignis*, Schellenberg, 1938: 50, fig. 24.—Barnard, 1955: 23.—Barnard, 1970: 147, fig. 89.

*Mallacoota insignis* Barnard, 1972b: 244.—Ledoyer, 1972: 223, pl. 41–42.—Ledoyer, 1978: 281, fig. 31.—Ledoyer, 1979b: 82.

**Material examined.** Stn 7 (24)AC; stn 8 (12)AC; stn 9 (7)AC; stn 13 (4)AC; stn 14 (1)AC; stn 16 (4)AC; stn 17 (2)AC; stn 20 (46)AM P35326; stn 24 (1)AC; stn 31 (1)AC; stn 35 (4)AC; stn 41 (13)AM P35360.

**Description.** Length, 8.0 mm. Body cream, speckled with red-brown; eye black. Head with notch below cephalic lobe. Eye subround. Antenna 1 stout; primary flagellum longer than peduncle; accessory flagellum 2 or 3-articulate, the terminal article vestigial. Antenna 2 slender. Mandibular palp slender, article 3 rod-shaped, shorter than article 2 with two terminal setae. Gnathopod 1 small, subchelate. Male gnathopod 2 massive; propodus elongate, posterior margin

irregularly toothed, somewhat variable in form, inner medial face of propodus with bunches of very long setae, posterior margin moderately setose; dactylus large, curved, but not adze-shaped, sometimes opposable to tooth on proximal margin of propodus. Female gnathopod 2, propodus slender, subovoid, longer than carpus, palm very oblique; dactylus small, fitting palm. Pereopods 6–7 with merus and carpus enormously expanded with numerous spine-setae. Epimera 1–3 each with small posterodistal tooth. Urosomite 1 with a pair of strong dorsal teeth. Telson apices bifid, outer bifurcation acute, each lobe with one stout spine and two slender spine-setae.

**Remarks.** This species is similar to *M. subcarinata*, but differs in the grossly expanded merus and carpus of pereopods 6 and 7, and in the male, in the evenly curved dactylus of gnathopod 2. It differs from *M. nananui* also in the structure of pereopods 6 and 7, and in the weakly toothed epimeron 3 and telson. The male

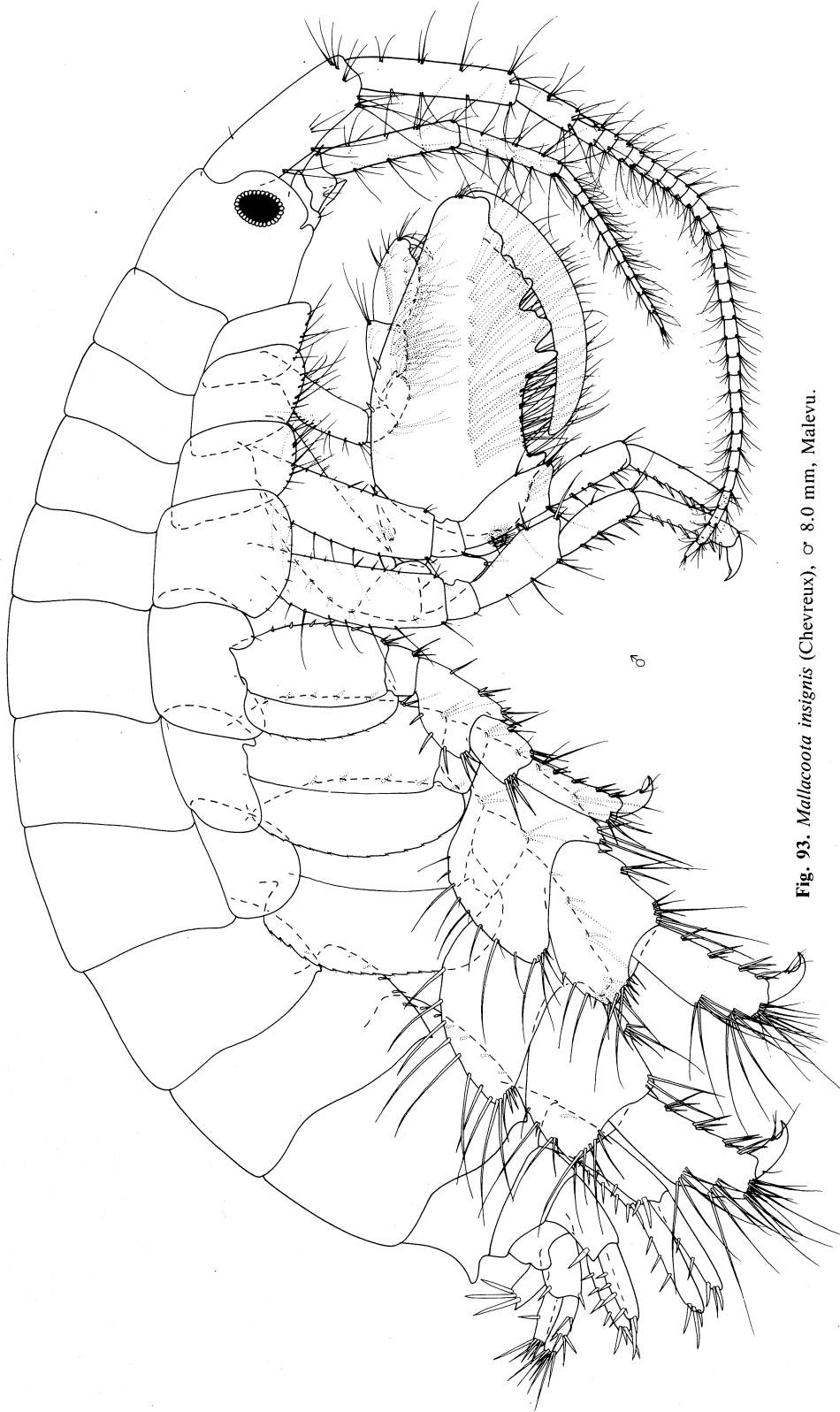


Fig. 93. *Mallacocta insignis* (Chevreux), ♂ 8.0 mm, Malevu.



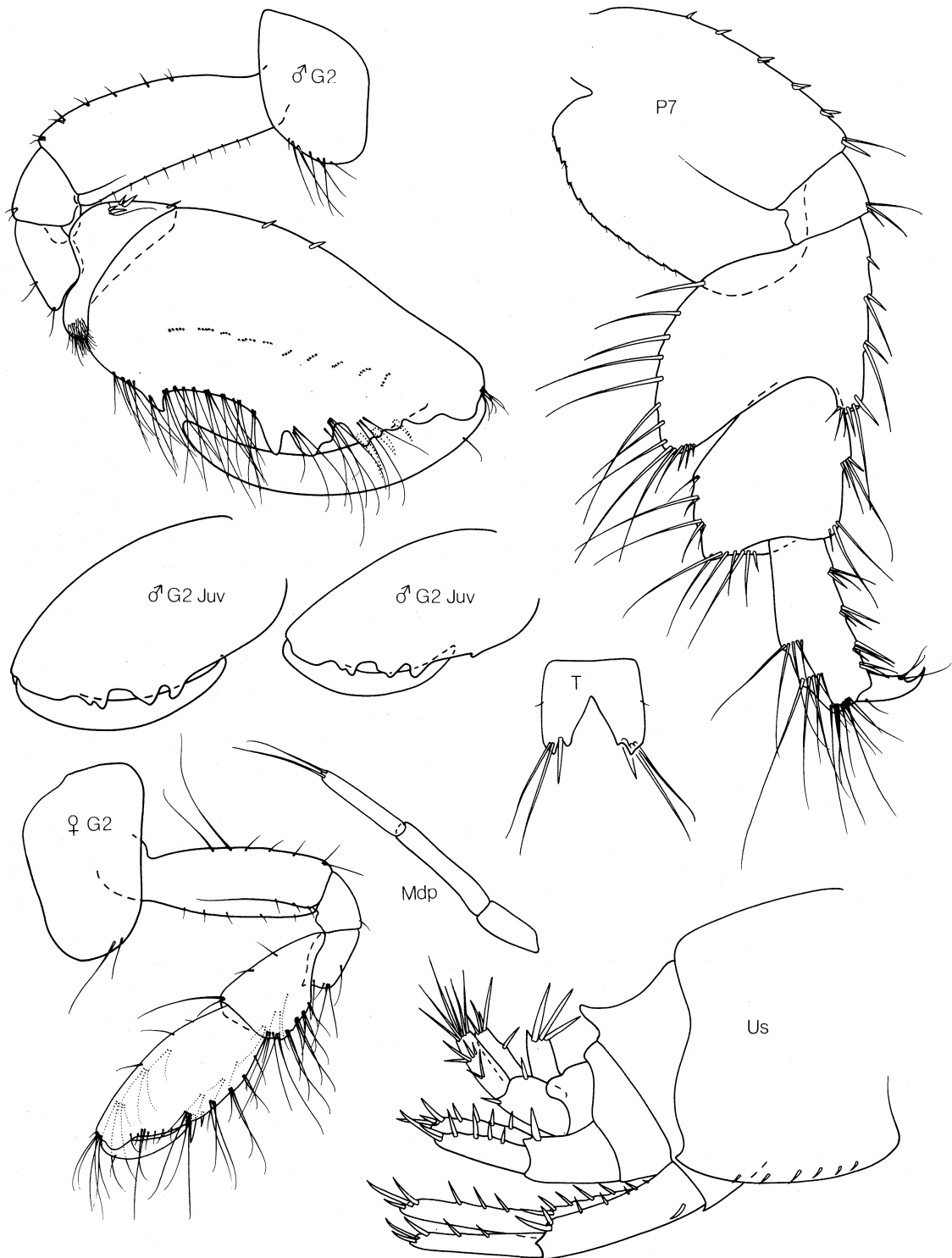


Fig. 94. *Mallacoota insignis* (Chevreux), ♂ 8.0 mm, ♀ 8.0 mm, Malevu.

gnathopod 2 of *M. nananui* is quite different. See also discussion in identification notes of *M. subcarinata*.

**Type-locality.** Mahé, Seychelles.

**Fijian localities.** Momi Bay, Malevu, Votualailai, Nukumbutho Island, Makuluva Island, Mburelevu.

**Distribution.** Seychelles, Indonesia (Molo), Kiribati,

Tarawa, Fiji, Hawaii, Philippines, Mauritius, Madagascar.

**Habitat.** Amongst algae (*Halimeda*, *Turbinaria*, *Gigartina*, *Amphiroa*, *Gelidiella*, *Padina*), sponges, *Acropora* and coral rubble.

*Mallacoota nananui* n.sp.

Fig. 95

?*Elasmopus subcarinatus*.—Chilton, 1915 (in part): 325, fig. 5.

?*Mallacoota subcarinata*.—Barnard, 1972a: 114, figs 59–60.

**Type-material.** HOLOTYPE, ♂, 5.7 mm, AM P35209, 7 ♂ 15 ♀ PARATYPES AM P35210, 4 ♀ PARATYPES AC, Nananui Ra, Viti Levu, Fiji, 7 October 1979, stn 53, *Halimeda* in lagoon.

**Additional material examined.** Stn 28 (5)AC.

**Description.** Length, 8.0 mm. Head with notch below cephalic lobe, eye subround. Antenna 1 stout; primary flagellum longer than peduncle; accessory flagellum 3-articulate, article 3 vestigial. Antenna 2 slender. Mandibular palp slender; article 3 rod-shaped, longer than article 2, with two terminal setae. Gnathopod 1 small, subchelate. Male gnathopod 2 massive; carpus extremely reduced; propodus posterior margin strongly sinuous, palm with rounded proximal tooth but lacking distal teeth, inner medial face of propodus with very few short setae, posterior margin also with very few short setae; dactylus truncate, broadest distally. Female gnathopod 2, propodus slender, subovoid, longer than carpus, palm very oblique; dactylus small, fitting palm. Pereopods 6–7, merus and carpus normal, with numerous spine-setae. Epimeron 3 with strong, curved posterodistal tooth. Urosomite 1 with a pair of strong dorsal teeth. Telson apices bifid, each bifurcation acute and each lobe with three long spines and one short spine.

**Remarks.** This species may be synonymous with *Elasmopus subcarinatus*, Chilton (1915) 'form 2'. It differs from *M. subcarinata*, as identified herein, in having the male gnathopod 2 propodus poorly setiferous, with a sinuous posterior margin, weakly toothed palm and strongly spatulate dactylus. It also differs in the toothed coxae 1–2. It is difficult to conceive of one type of gnathopod (*M. subcarinata*) transferring to the other (*M. nananui*) and no intermediates have been found in Fiji, nor have populations containing both types of male been discovered, as might be expected were polymorphy involved. See also remarks under identification notes of *M. subcarinata*.

**Fijian locality.** Nananui Ra, Taunovo Bay.

**Distribution.** Fiji, ?New Zealand and Australia.

**Habitat.** Amongst *Halimeda* and red algae.

*Mallacoota subcarinata* (Haswell)

Fig. 96

*Megamoera subcarinata* Haswell, 1880: 335, pl. 21 fig. 4.—Chilton, 1885: 1039.

*Elasmopus subcarinatus*.—Stebbing, 1888: 1019.—Walker, 1904: 275, pl. 5 fig. 34.—Walker, 1909: 335.—Pirlot, 1936: 317, figs 136–145.—Chilton, 1915 (in part): 321, figs 1–4.

*Maera subcarinata*.—Barnard, 1940: 460.—Nayar, 1967: 149.

*Mallacoota subcarinata*.—Barnard, 1972b: 247, figs 144–145.—Ledoyer, 1978: 281, fig. 32.

**Material examined.** Stn 23 (8)AC; stn 50 (11)AM P35362; stn 51 (1)AC; stn 55 (11)AC.

**Description.** Length, 8.0 mm. Head with notch below cephalic lobe. Eye subround. Antenna 1 stout; primary flagellum longer than peduncle; accessory flagellum 2-articulate, article 2 vestigial. Antenna 2 slender. Mandibular palp slender, article 3 rod-shaped, longer than article 2 with two terminal setae; gnathopod 1 small, subchelate. Male gnathopod 2 massive; propodus elongate, subovoid, posterior margin irregularly toothed, somewhat variable in form, inner medial face of propodus with bunches of very long setae, posterior margin very setose; dactylus adze-shaped, posterior proximal margin crenulate, opposable to tooth, or weak process on posterior margin of propodus. Female gnathopod 2, propodus slender, subovoid, longer than carpus, palm very oblique; dactylus small, fitting palm. Pereopods 6–7, merus and carpus only moderately expanded with numerous spine-setae. Epimeron 3 sometimes quadrate, sometimes drawn out into an acute tooth. Urosomite 1 with a pair of strong dorsal teeth. Telson with blunt apices, each lobe with three stout spines.

**Remarks.** This species resembles *M. insignis* but does not have the massively expanded merus and carpus on pereopods 6 and 7 of that species. In addition, the telson bears three stout spines on each apex, not one spine and two spine-setae as in *M. insignis*. In the male, gnathopod 2 is more setose and the dactylus is adze-shaped. It differs from *M. nananui* in the quite different male gnathopod 2.

Considerable geographical variation appears to exist in the *M. insignis*–*M. subcarinata*–*M. nananui* group of species. Material attributed to *M. subcarinata* by Barnard (1972a) from New Zealand, and by Barnard (1972b) from Australia has a strongly toothed epimeron 3. Australian material has a male gnathopod 2 which is strongly setose as in Fijian material of *M. subcarinata*, but New Zealand material has a weakly setiferous male gnathopod 2 like that of *M. nananui*. New Zealand material also resembles *M. nananui* in the truncated dactylus of the male gnathopod 2. However, that appendage in New Zealand material has a strongly toothed palm. The grossly expanded merus and carpus of pereopods 6–7 seem to be a consistent character of *M. insignis* throughout its range, and the adze-shaped dactylus of the male gnathopod 2 seems to be a feature of hyperadult *M. subcarinata*. In his key to the 'bicarinate species of *Ifalukia*, *Mallacoota* and *Pareasmopus*' (Barnard, 1972b: 241), *M. insignis* is separated from *M. subcarinata* on the structure of the mandible palp. *Mallacoota insignis* is characterised by palp article 3 being longer than article 2 and bearing only two setae. *Mallacoota subcarinata* has palp article 3 either shorter or longer than article 2 (appearing twice in the key) but if longer, then with more than two setae. Fijian material never has more than two setae on palp article three in any of the species, and article 3 is longer than 2 in *M. subcarinata* and *M. nananui*, and shorter

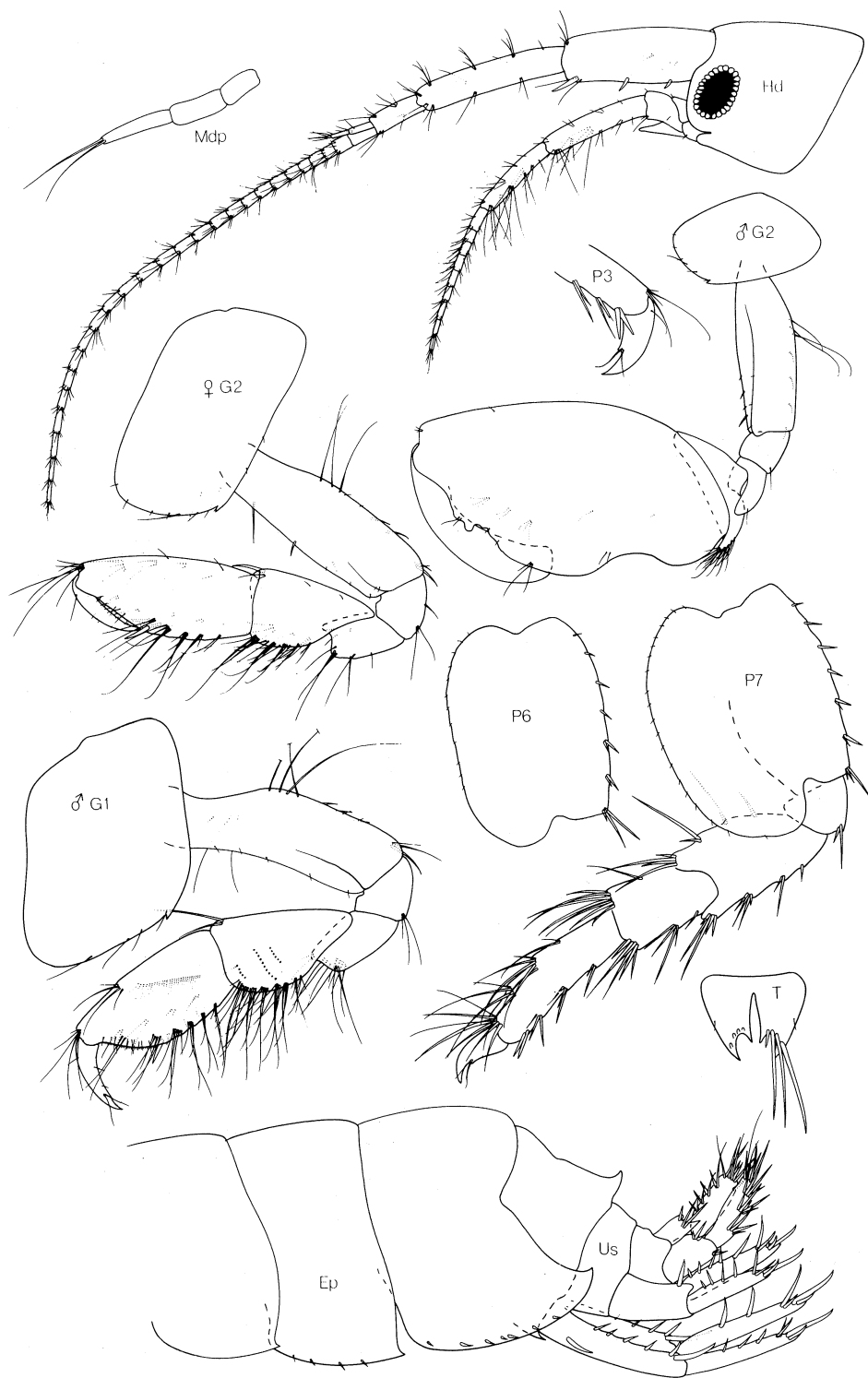


Fig. 95. *Mallacoota nananui* n. sp., ♂ 8.0 mm, ♀ 7.0 mm, Nananui Ra. ♂ G2 figured ½ mag. of ♂ G1.

than article 2 in *M. insignis*. Clearly, this group of species requires an in-depth study and the problem will not be resolved until much more material from a wide range of localities is available.

**Type-locality.** Port Jackson, Australia.

**Fijian locality.** Makuluva Island, Nananui Ra.

**Distribution.** South Africa, Sri Lanka, Mauritius, Australia, New Zealand, Indonesia, Fiji, Subantarctica.

**Habitat.** Among mixed red algae, *Padina*, living coral and dead coral rubble.

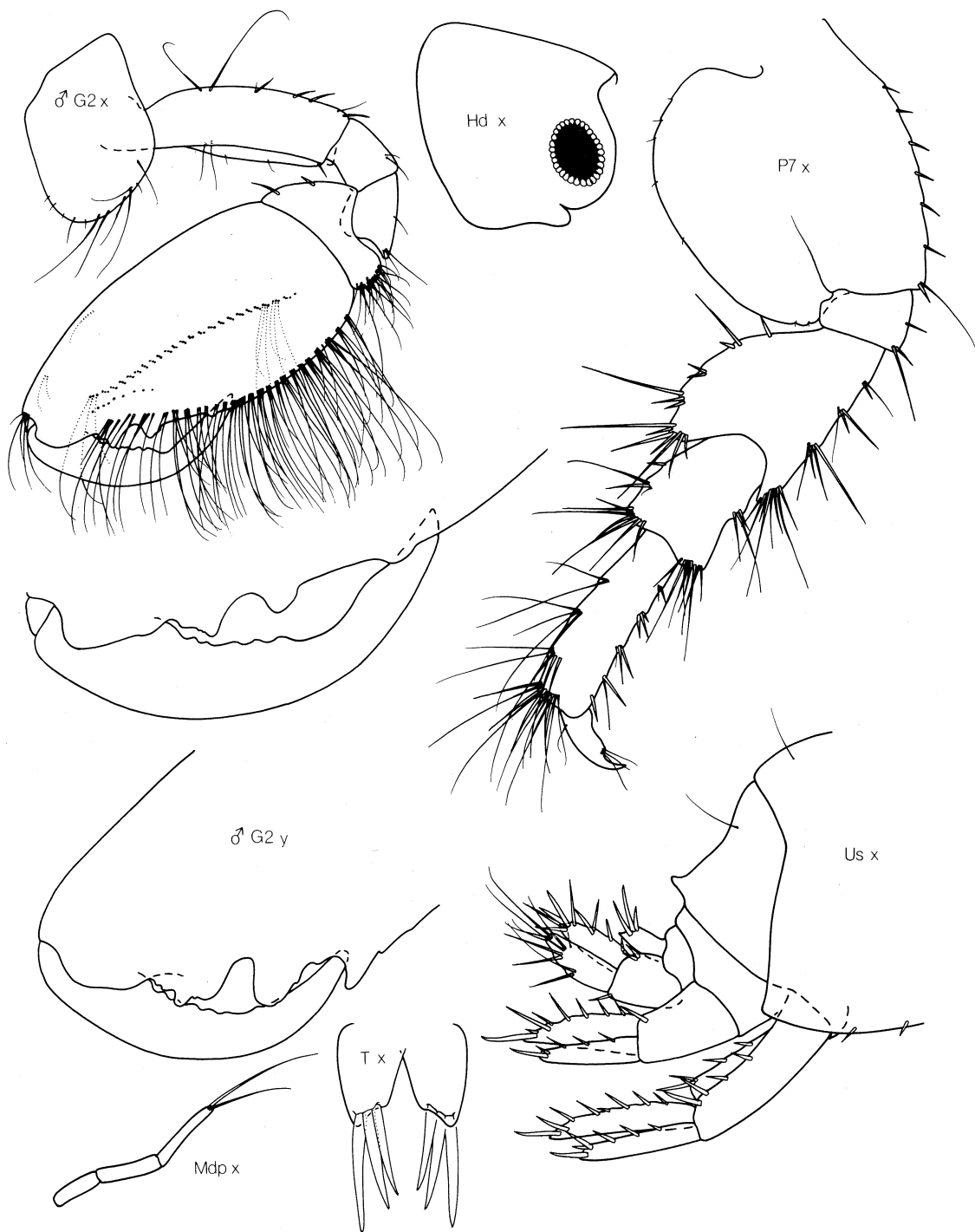


Fig. 96. *Mallacoota subcarinata* (Haswell), x ♂ 7.5 mm, Makuluva Island, y ♂ 6.5 mm, Nananui Ra.

**Key to Species of *Melita***

- 1. Urosomite 1 with acute dorsal tooth; ♂ gnathopod 1 with unproduced palm. .... *M. simplex*
- Urosomite 1 lacking tooth; ♂ gnathopod 1 with palm produced into a rounded lobe. .... *M. zeylanica*

***Melita simplex* n.sp.**

Fig. 97

**Type-material.** HOLOTYPE, ♂, 4.0 mm, AM P35211, 2 ♀ PARATYPES AM P35212, 1 ♂ 1 ♀ PARATYPES AC, Makuluva Island, Viti Levu, Fiji, 13 August 1979, stn 25, filamentous green alga from leeward side of reef flat.

**Description.** Length, 5.0 mm. Head lacking subocular

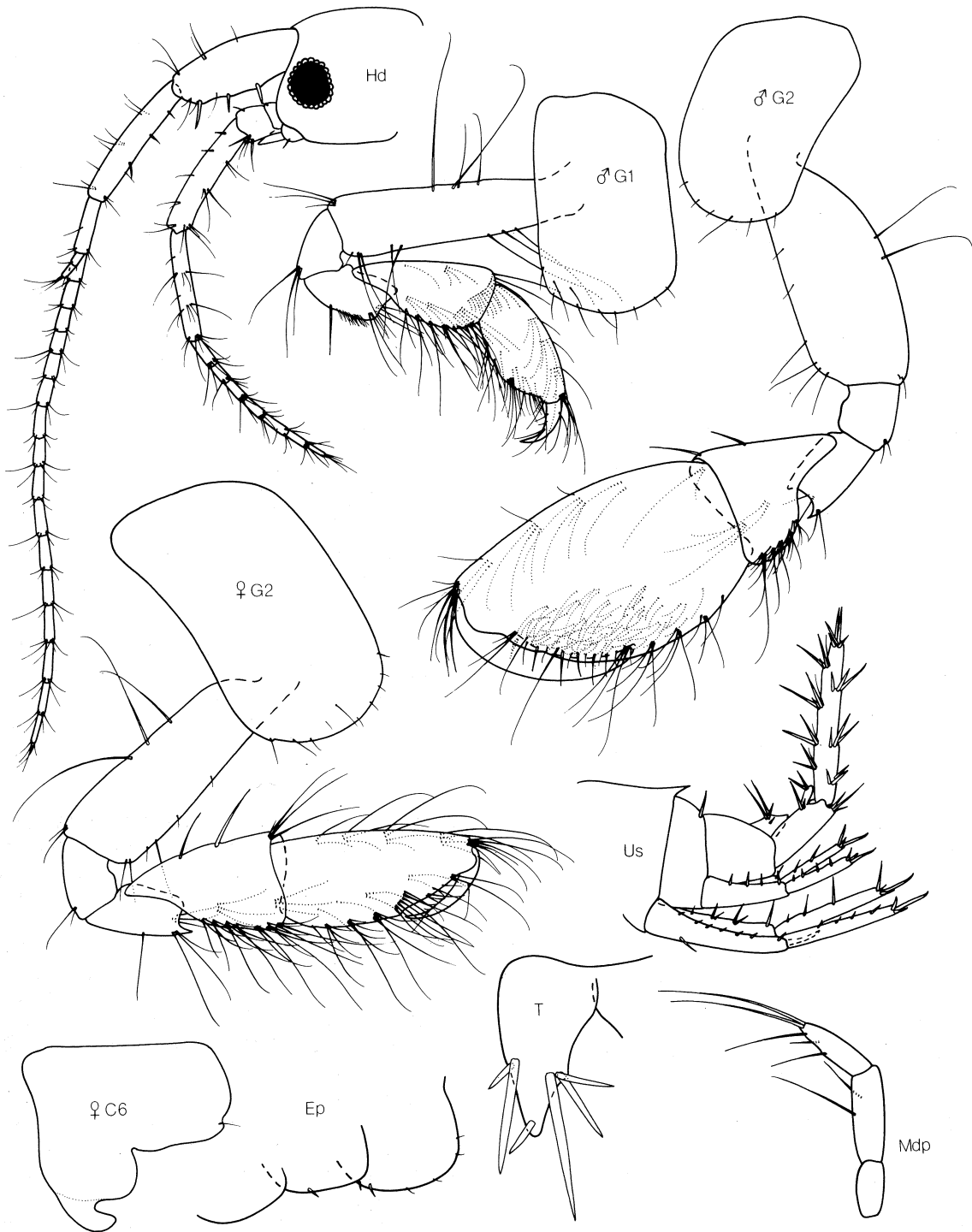


Fig. 97. *Melita simplex* n. sp., ♂ 4.0 mm, ♀ 5.0 mm, Makuluva Island.

notch. Eye subround. Antenna 1, accessory flagellum composed of two subequal articles and a rudimentary terminal article. Gnathopod 1, coxa deeper than broad, unproduced, rounded; propodus scarcely shorter than carpus, nonaberrant, with normal oblique palm; dactylus slender, fitting palm. Male gnathopod 2, merus with posterodistal, acute tooth; propodus enlarged, subovoid, about twice length of carpus, setose on inner face of posterodistal region, palm sinuous; dactylus

opposable distally to inner face of posterior palmar margin. Female gnathopod 2 similar to that of male, but carpus and propodus more elongate and slender; propodus longer than carpus, palm very oblique; dactylus slender, fitting palm. Female coxa 6 with curved, finger-like ventral extension. Pereopods 5-7, basis posterior margin serrate. Urosomite 1 with acute dorsal tooth. Urosomite 2 with one spine on each side. Epimera 1-3 rounded. Epimera 2-3 with spines on lower

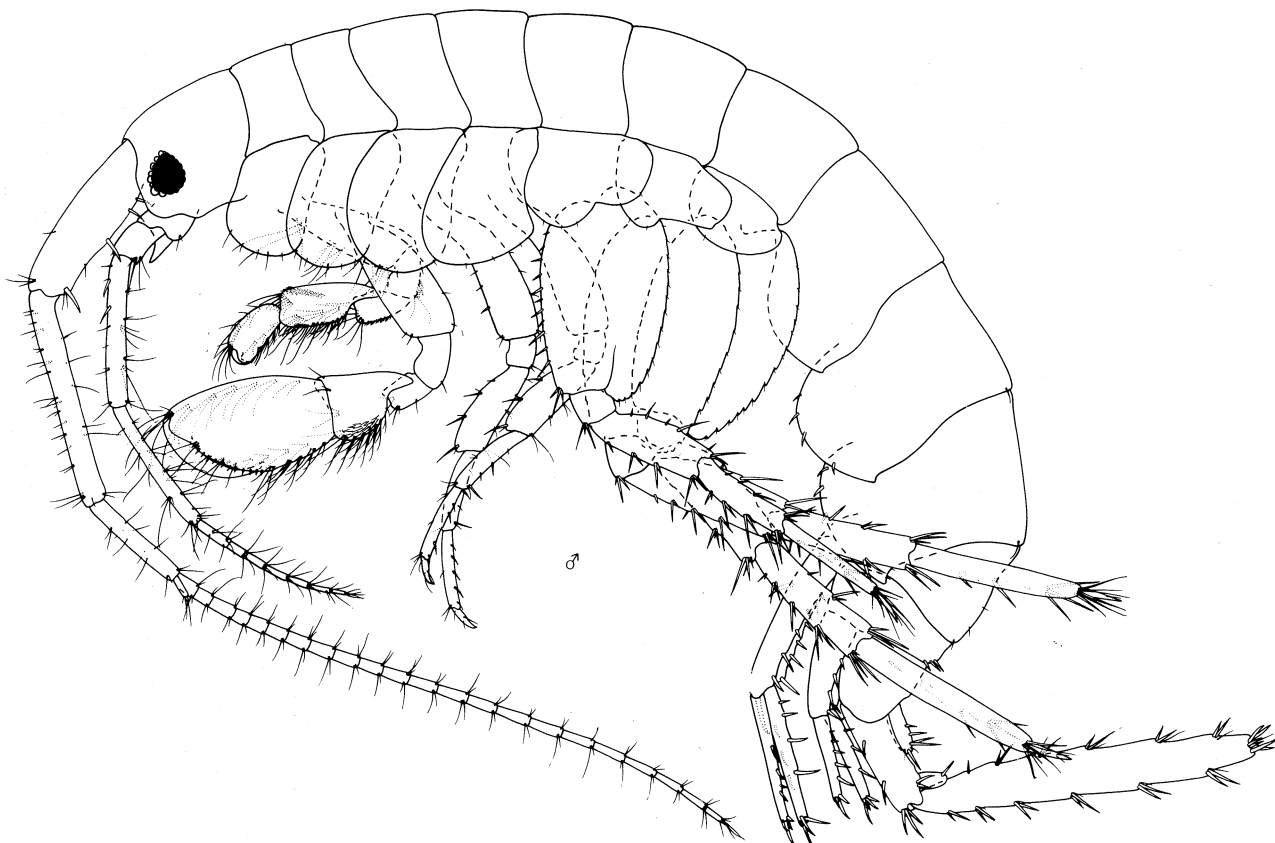


Fig. 98. *Melita zeylanica* Stebbing, ♂ 5.0 mm, Laucala Island.

margin. Uropod 3 biramous, the outer ramus emensely elongate, 1-articulate, the inner ramus rudimentary, tipped with two spines. Telson apices rounded, each lobe with two spines on outer margin, three spines on a medial hump on the inner margin and one distal spine.

**Remarks.** *Melita simplex* differs from *M. zeylanica* in its non-aberrant gnathopod 1 propodus and toothed urosomite 1. It resembles *M. celericula* Croker (1971) from the Marshall Islands, but that species has a 'melitoid' gnathopod 1 propodus and acute, ventrally serrate epimera.

**Fijian locality.** Makuluva Island.

**Distribution.** Fiji.

**Habitat.** Amongst green filamentous algae on sheltered reef flat.

*Melita zeylanica* Stebbing

Figs 98–99

*Melita zeylanica* Stebbing, 1904: 22, pl. 5.—Barnard, 1940: 455.—Sivaprakasam, 1966: 112, fig. 12.

**Material examined.** Stn 36 (1)AC; stn 37 (3)AC; stn 56 (3)AC; stn 57 (5)AM P35372, (7)AC.

**Description.** Length, 5.5 mm. Head lacking subocular notch. Eye subround. Antenna 1 slender; accessory flagellum composed of one long and one rudimentary article. Gnathopod 1, coxa deeper than broad, unproduced, rounded; carpus much longer than

propodus; palm of propodus produced forward into a rounded lobe, tipped with a row of short recurved spines; dactylus short, strongly hooked, fitting palm. Male gnathopod 2, propodus twice length of carpus, palm evenly, but weakly convex with about 12 small, evenly spaced spines; dactylus fitting palm but opposed distally to inner face of posterior palmar margin. Female gnathopod 2 similar to that of male, but propodus much shorter and narrower, only a little longer than carpus. Female coxa 6 with curved, finger-like ventral extension. Pereopods 5–7, basis posterior margin serrate. Urosomite 2 with 3–4 dorsolateral spines on each side. Epimera 1–3 with small posterodistal tooth. Epimera 2–3, lower margin with spines. Uropod 3 biramous, the outer ramus emensely elongate, 1-articulate, the inner ramus rudimentary, tipped by a single spine. Telson apices truncate, each lobe with two distal spines, two subdistal spines and two marginal spines.

**Remarks.** The immensely elongate uropod 3 outer ramus and rudimentary inner ramus immediately distinguish *Melita* from other melitid taxa in Fiji. *Eriopisa* and *Eriopisella* which have not been recorded from Fiji, but may yet be found there, have a similarly elongate uropod 3 outer ramus, but in these genera the outer ramus is 2-articulate. *Netamelita* has a uropod 3 like *Melita* but has so far been recorded only from California. *Melita zeylanica* can be distinguished from *Melita simplex* by its aberrant 'melitoid' gnathopod 1

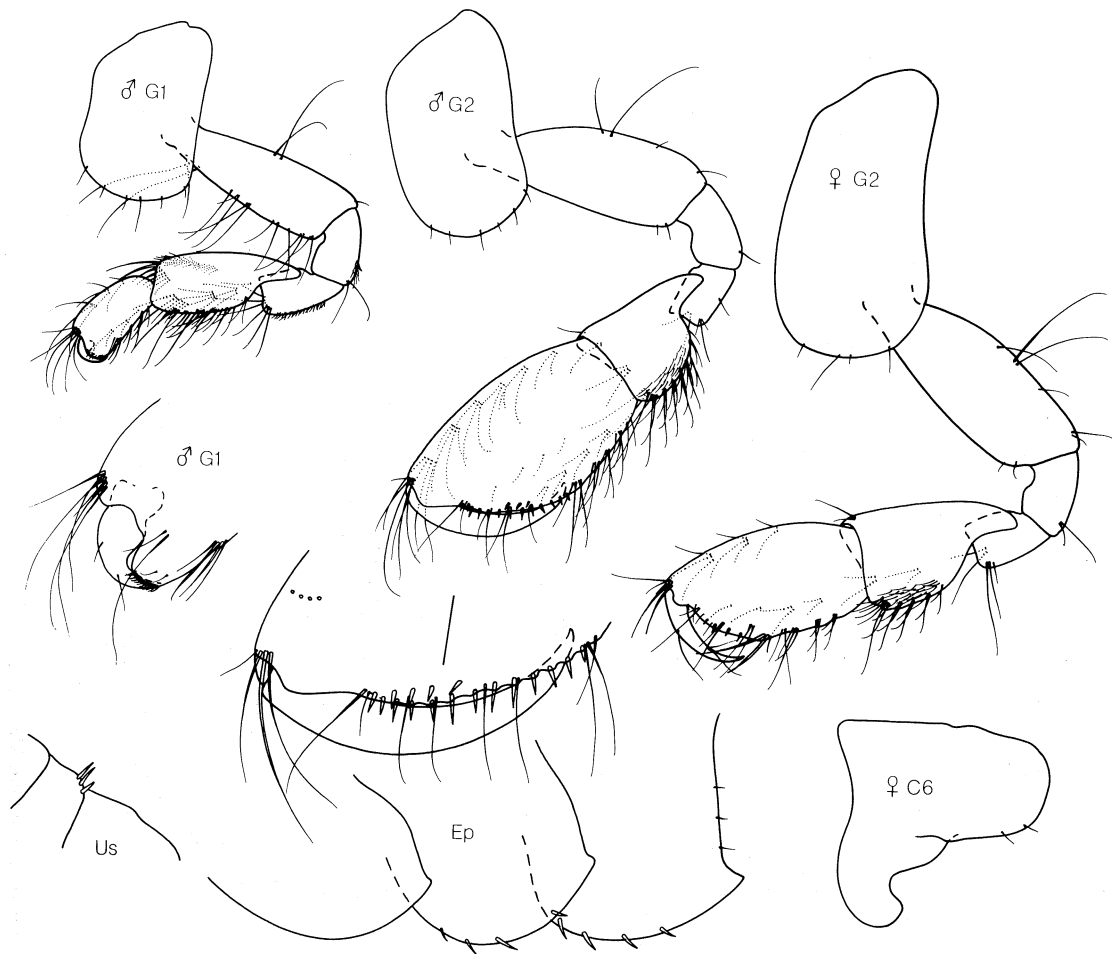


Fig. 99. *Melita zeylanica* Stebbing, ♂ 5.0 mm, ♀ 5.5 mm, Laucala Island.

propodus, and lack of pleonal tooth.

Fijian material does not seem to differ significantly from Stebbing's original description. Barnard (1972: 238) writes "Stebbing did not report a slit on the head, but he may have overlooked it". Present material has no sub-ocular slit. *Melita mangrovi* Oliveira (1953) scarcely differs from *M. zeylanica* and may be a synonym.

**Type-locality.** Lake Negombo, Sri Lanka.

**Fijian locality.** Suva, Laucala Island.

**Distribution.** Ceylon, India, S. Africa, Fiji.

**Habitat.** In mangrove litter.

***Pareiasmopus suensis* (Haswell)**

Figs 100-101

*Megamoera suensis* Haswell, 1880a: 335, pl. 21 fig. 5.

*Pareiasmopus suensis*.—Barnard, 1974: 143.—Berents, 1983: 138, figs 28-29.

**Material examined.** Stn 18 (1)AC; stn 20 (5)AM P35324; stn 40 (1)AC; stn 48 (11)AC.

**Description.** Length, ♂ 6.0 mm, ♀ 5.0 mm. Body white, blotched and banded with brown or orange-brown; eye black. Head with subocular notch. Eye

subround. Mandible palp, article 3 longer than 2. Antenna 1, accessory flagellum with three articles, the terminal article rudimentary. Gnathopod 1, coxa distal margin strongly toothed, anterodistal corner acute. Male gnathopod 2, coxa distal margin weakly toothed; merus with strong, acute posterodistal tooth; carpus small, cup-shaped, propodus almost four times length of carpus, broader distally, palm irregularly crenulate with posterodistal excavation, proximal portion of palm with several pairs of spines; dactylus stout. Female gnathopod 2, coxa almost twice as deep as broad; propodus extremely elongate and slender, almost four times as long as broad, and much longer than carpus, palm very oblique. Pereopods 5-7, basis posterior margin strongly toothed or scalloped. Pereon segment 7 and pleonites 1-2 each with a pair of distal teeth dorsally. Urosomite 1 also with a pair of teeth. Epimera 1-2 posterodistal corner drawn out into a long, acute tooth. Epimeron 3, posterodistal corner with four recurved, acute teeth. Uropod 3, rami distinctly longer than peduncle and subequal. Telson with apices bifid, both bifurcations acute, the outer the longer, each lobe with about 5 spines.

**Remarks.** This species can be distinguished from other melitids by the paired dorsal body teeth on pereon

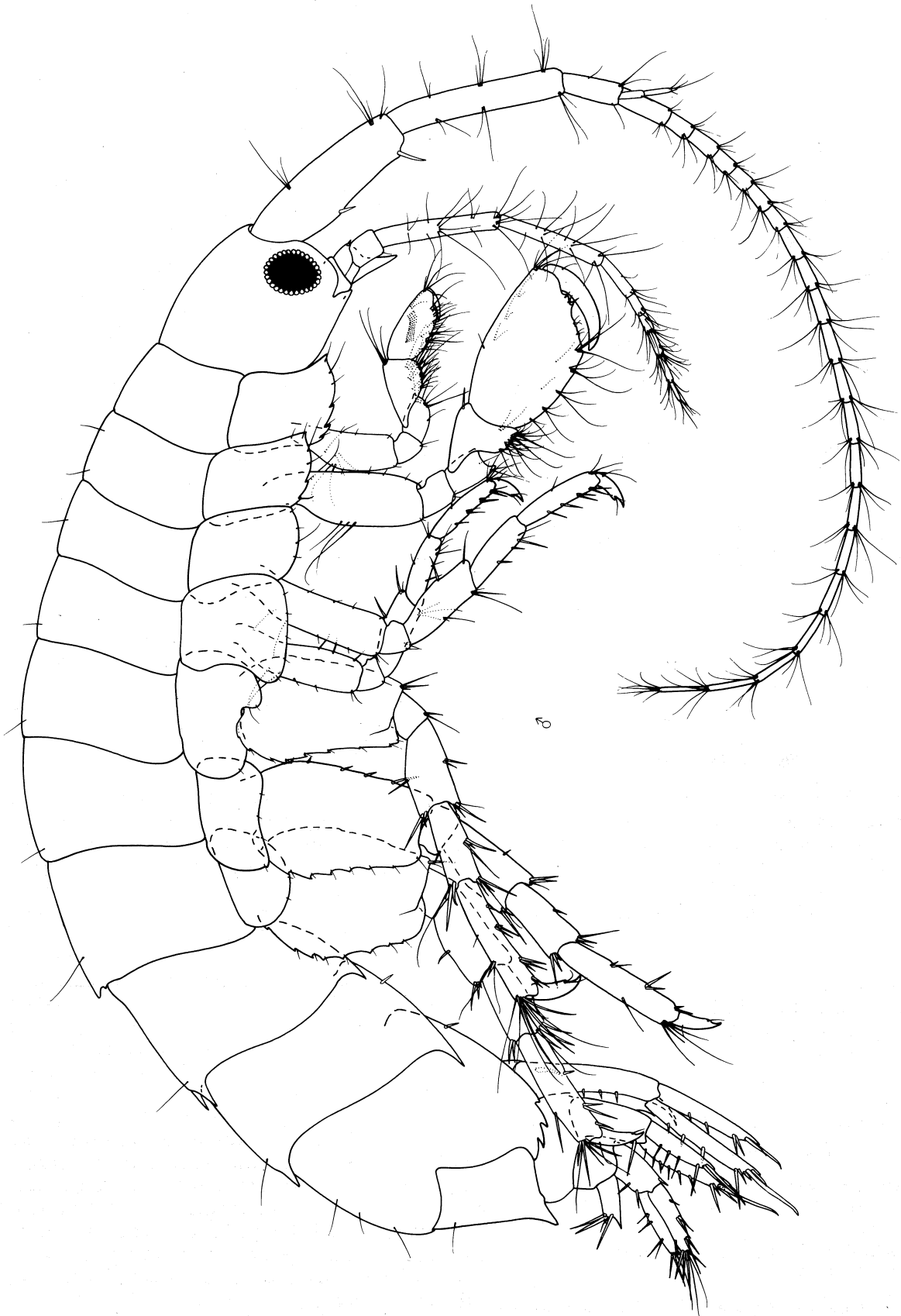


Fig. 100. *Parelasmopus suensis* (Haswell), ♂ 6.0 mm, Malevu.



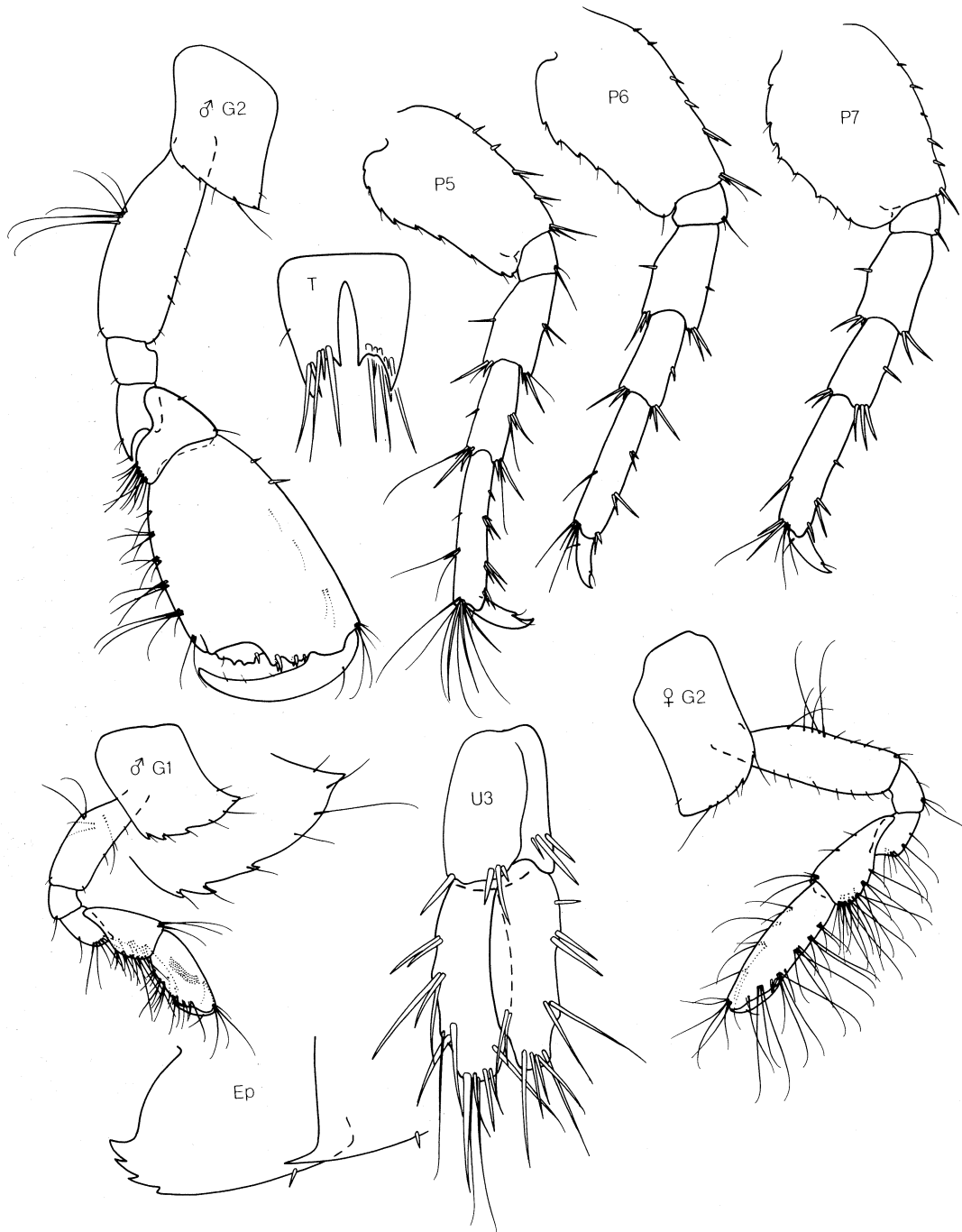


Fig. 101. *Parelasmopus suensis* (Haswell), ♂ 6.0 mm, ♀ 5.0 mm, Malevu.

segment 7, pleonites 1–2 and urosomite 1, and by the posterodistal teeth on epimeron 3. Some species of *Mallacoota* have similar body tooth configurations but lack multiple teeth on epimeron 3. *Ceradocus* has multiple teeth on epimeron 3 but also has multiple small teeth on epimera 1–2 and pleonites 1–3 as well as a very short mandible palp article 3. *Maera* species have the teeth on epimeron 3 restricted to the posterior margin when present, and also lack body teeth. Some doubt exists concerning the identity of *P. soluensis* (Dana), *P.*

*soluensis* of Stebbing, *P. albidus* (Dana) and *P. setiger* Chevreux which have been synonymised in various combinations in the literature. The problem is aggravated by the fact that the original description of *P. soluensis* (Dana, 1853) is based on a female. Dana's (1853) figures are imprecise, but clearly indicate the absence of dorsal teeth on pereonite 7. Stebbing's figures and description agree with Fijian material in the presence of paired dorsal teeth on pereonite 7. However, Fijian material differs from Stebbing's material in the

acute posterodistal corner of coxa 1 and in having only four teeth (as opposed to 5–6, including the prime tooth) on epimeron 3. *Pareiasmopus setiger* differs from Fijian material in the more strongly developed dorsal body teeth, less strongly toothed coxa 1 and heavily setose pereopods 5–7. *Pareiasmopus albidus* lacks teeth on pereonite 7 and has a weakly serrate posterior margin on the basis on pereopods 5–7. The problem of the identity of these taxa cannot yet be solved. Fijian material agrees well with the lectotype of *P. suensis* as figured by Berents (1983) and is here attributed to that species.

**Type-locality.** Sue Island, Torres Strait.

**Fijian localities.** Momi Bay, Malevu, Suva Barrier reef, Nananui Ra.

**Distribution.** Fiji, N. Australia.

**Habitat.** Among *Sargassum*, *Gelidiella* and coral rubble.

#### ?*Quadrivisio bousfieldi* Karaman & Barnard

*Quadrivisio bousfieldi* Karaman & Barnard, 1977: 154.

*Quadrivisio bengalensis*.—Bousfield, 1971: 260, figs 3–4.

?*Quadrivisio bengalensis*.—Schellenberg, 1938: 63.

not *Quadrivisio bengalensis* Stebbing, 1907: 159, pl. 7.

**Remarks.** The presence of two pairs of ommatideal eyes immediately distinguishes this genus, of which only one species is recorded from Fiji, from all other Fijian taxa. Note, however, that ampeliscids have two pairs of corneal lenses. It resembles *Ceradocus* in other respects, but has weakly toothed epimera and an asetiferous mandible palp with article 3 the longest.

*Quadrivisio* is not represented in the present collections but was reported by Schellenberg (1938) from Mbau, Viti Levu, under the name *Q. bengalensis* Stebbing. No figures were provided by Schellenberg and the description is minimal, so it is not clear to what species he was referring. A revision by Karaman & Barnard (1977) transferred *Q. bengalensis* Bousfield (not Stebbing) to a new species *Q. bousfieldi*. It thus appears that *Q. bengalensis* is probably restricted to India, and that Schellenberg's material may be attributable to *Q. bousfieldi*.

**Type-locality.** Manus Island, Bismarck Archipelago.

**Distribution.** Bismarck Archipelago, ?Fiji.

#### Family Paracalliopiidae

Paracalliopiids show relationships with eusruids, pontogeneiids, calliopiids and oedicerotids but can be distinguished from all these families by the fused urosomites 2 and 3. In the male, the gnathopods are enlarged, gnathopod 2 the larger, in the female the gnathopods are feeble and subsimilar. Pereopod 7 is very elongate with long, straight (non-unguiform) setose dactylus. The telson is laminar and entire.

Paracalliopiids are euryhaline, occurring in freshwaters, brackish waters and littoral marine biotopes.

#### *Paracalliope mapela* n.sp.

Fig. 102

**Type-material.** HOLOTYPE, ♂, 3.5 mm, AM P35213, 15 ♀ 7 ♀ PARATYPES AM P35214, 40 ♂ 8 ♀ PARATYPES AC, Suva Point, Viti Levu, Fiji, 29 August 1979, stn 36, in *Halophila ovata* growing on sand among *Rhizophora stylosa* at seaward fringe of mangals.

**Additional material examined.** Stn 33 (13)AM P35352; stn 37 (1)AC; stn 38 (5)AC; stn 42 (1)AC; stn 56 (8)AC.

**Description.** Length, 3.5 mm. Head with lateral lobe acute. Eye large, round. Antenna 1 less than half body length; primary flagellum nearly twice length of peduncle; accessory flagellum minute. Antenna 2 longer than antenna 1; flagellum twice length of peduncle. Mandible palp stout, article ratios 2:4:5. Maxilla without apical cusp. Male gnathopod 1, propodus one and a half times length of carpus, palm oblique, weakly sinuous. Female gnathopod 1, coxa lower margin irregular, toothed; propodus only a little longer than carpus, palm short; dactylus greatly overlapping palm. Male gnathopod 2, propodus twice length of carpus, palm sinuous with strong defining hump bearing numerous stout spines. Female gnathopod 2, coxa elongate, otherwise similar to gnathopod 1. Pereopod 7 elongate, two-thirds body length; dactylus straight, not unguiform, almost equal in length to propodus, with distal cluster of very long setae. Urosomites 2–3 fused. Uropods 1–3, rami slender, terminating acutely. Uropod 1, outer ramus a little shorter than inner. Uropod 2, outer ramus much shorter than inner. Uropod 3, rami subequal; all uropod rami with very few spines. Telson subround.

**Remarks.** The elongate pereopod 7 immediately distinguishes this species from any other currently known Fijian amphipod. *Paracalliope mapela* is similar to *P. karitane* Barnard and *P. novaecaledoniae* Ruffo & Paiotta, but differs markedly in the form of the female gnathopoda; coxa 1 is subrectangular, produced acutely at the posterodistal corner and irregularly toothed along the lower margin in *P. mapela*, whereas it is evenly rounded, unproduced and untoothed in *P. karitane* and *P. novaecaledoniae*; coxa 2 is elongate, narrowing distally in *P. mapela*, but relatively broad and parallel-sided in *P. karitane* and *P. novaecaledoniae*. The basis of both pairs of gnathopoda is extremely long and slender in *P. mapela*, but relatively short in *P. karitane*. Finally, the propodus of the female gnathopod 1 and 2 is parallel-sided, and the dactyl is elongate, greatly overlapping the palm, in *P. mapela*, whereas in *P. karitane* and *P. novaecaledoniae* the propodus is apically widened and the dactyl is short and fits the palm. It differs, also, in both sexes in the weakly spinous uropods and weakly setiferous inner plate of maxilla 1.

**Fijian locality.** Momi Bay, Suva, Mburelevu.

**Distribution.** Fiji.

**Habitat.** Among mangrove litter, and in *Syringodium* on reef flats.

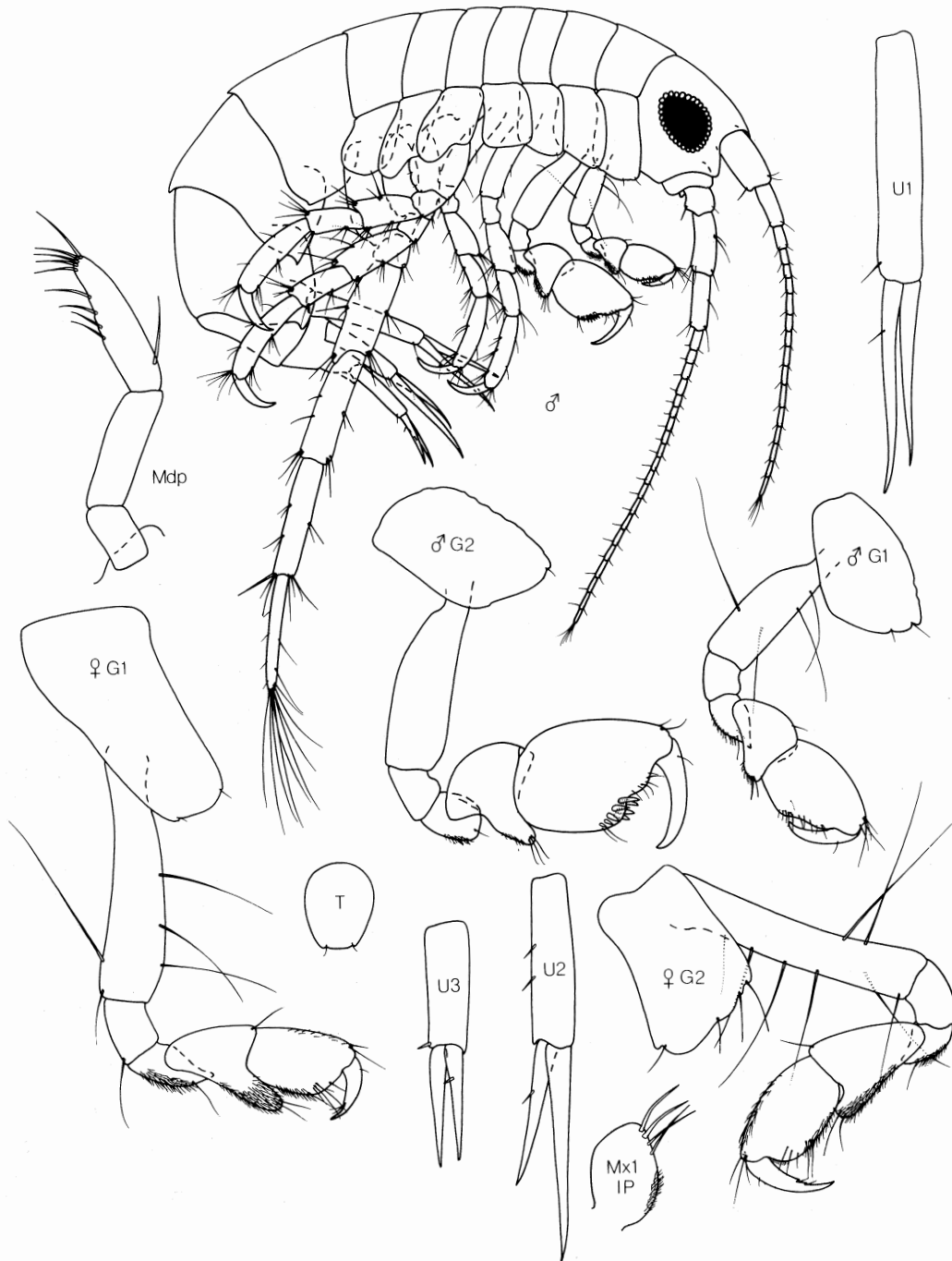


Fig. 102. *Paracalliope mapela* n. sp., ♂ 3.0 mm, ♀ 3.5 mm, Suva.

#### Family Phliantidae

Phliantids are instantly recognisable by their broad, rugose, dome-shaped bodies and splayed coxae. The urosome is small and carried flexed beneath the body. Mandibles lack palps and the maxilliped has only three articles. Gnathopods are simple and resemble other pereopods. The juveniles are rather different, being subcylindrical and eopliantid-like, but the urosome is diagnostic.

Phliantids are lignivores, often feeding on the woody stipes of algae.

#### *Pereionotus alaniphlias* (Barnard)

Fig. 103

*Palinnotus alaniphlias* Barnard, 1970: 227, figs 148–150.  
*Pereionotus alaniphlias*. Ledoyer, 1978: 309; 1979b: 122, fig. 78.

**Material examined.** Stn 43 (4)AM P35515, (8)AC.

**Description.** Length, 3.5 mm. Colour, pale orange-brown mottled with red-brown; eye plum red (eye black in alcohol). Body depressed; coxae strongly splayed. Pereon segments 1–7 and pleon segments 1–2 with dorsal

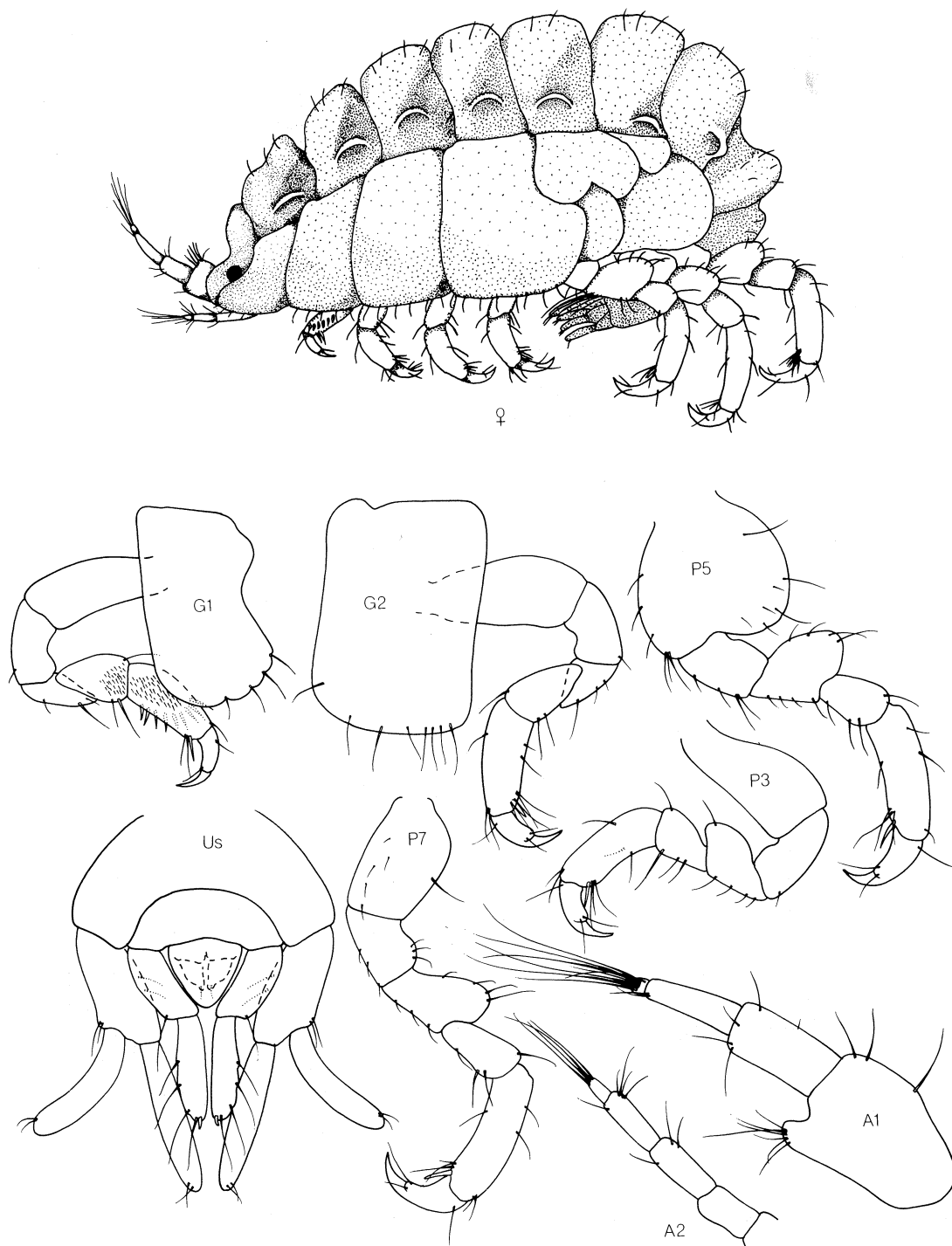


Fig. 103. *Pereionotus alaniphlias* (Barnard), ♀ 3.0 mm, Votualailai.

carina. Pereonites 1-7 with lateral ridges just above coxae. Eye small. Antenna 1, peduncle article 1 with distal bulge on outer margin; flagellum composed of one rudimentary article. Antenna 2 slender, shorter than antenna 1. Gnathopods 1-2 subequal. Gnathopod 1, propodus inner face with oblique row of asparagoid spines. Pereopod 5, basis with large convex flange on posterior margin. Pereopod 7, basis ovatoquadrate.

Uropod 1 biramous, outer ramus outwardly curved. Uropod 2 uniramous, ramus with distal spine and long marginal setae. Uropod 3 consisting of a small peduncle, lacking rami, concealed below telson in dorsal view. Telson entire, subtriangular.

**Remarks.** The isopod-like shape, i.e. dorsoventrally depressed and almost oval in dorsal view, is unmistakable.

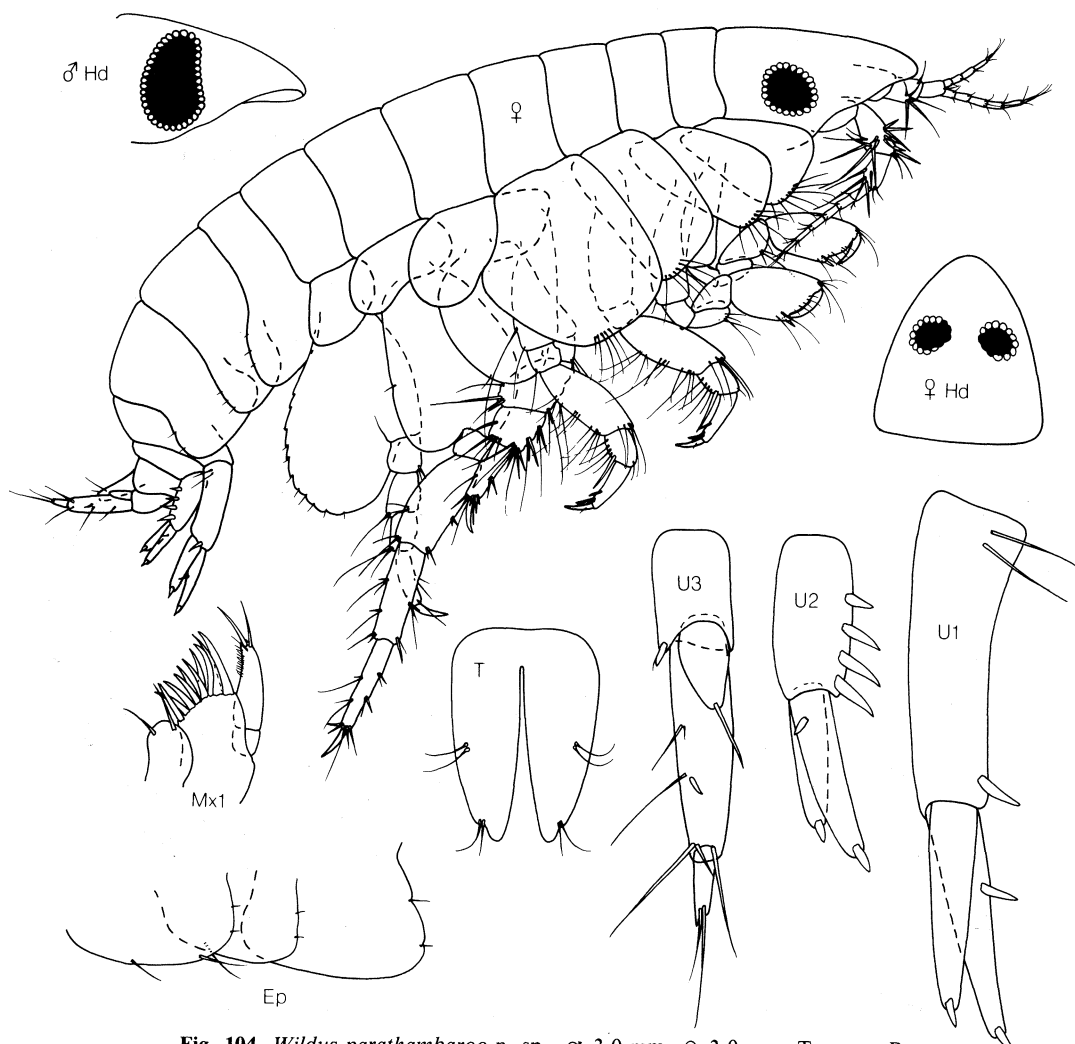


Fig. 104. *Wildus parathambaroo* n. sp., ♂ 3.0 mm, ♀ 3.0 mm, Taunovo Bay.

**Type-locality.** Waikiki beach, Oahu, Hawaii.

**Fijian locality.** Votualailai.

**Distribution.** Fiji, Hawaii, Madagascar.

**Habitat.** Among *Padina*, landward margin of reef-flat.

#### Family Phoxocephalidae

Phoxocephalids have a characteristic hood-like rostrum, elongate pereopod 6 and short pereopod 7 with an expanded basis. Antennae 1-2 and pereopods 3-4 are spinose or setose.

Phoxocephalids are typical soft-sediment burrowers. Soft sediments were not systematically sampled in the current work, and this family and other families of burrowers such as the Haustoriidae and Ampeliscidae will probably prove to be more diverse in Fiji when such sediments are adequately explored.

#### *Wildus parathambaroo* n.sp.

Figs 104-105

**Type-material.** HOLOTYPE, ♂, 2.9 mm, AM P35215, 1 ♀

PARATYPE AM P35216, Taunovo Bay, Viti Levu, Fiji, 21 August 1979, stn 27, *Syringodium isoetifolium* on reef flat.

**Additional material examined.** Stn 28 (1)AC; stn 29 (1)AC; stn 40 (2)AC.

**Description.** Length, 3.0 mm. Head with hood-like rostrum. Female eye large; male eye enormous. Antennal peduncles spinous. Antenna 1, accessory flagellum with 5 articles. Mandibular palp thin, article 3 with 6 distal setae. Gnathopod palms oblique; propodus of gnathopod 1 more slender than that of gnathopod 2; carpus of gnathopod 1 elongate; of gnathopod 2 short. Pereopods 3-4, propodus with paired palmar spines three-quarters length of dactylus. Pereopods 5-7 short. Pereopod 7, basis length-width ratio equals 9:7; posterior margin with strong posterodistal lobe. Epimera 1-3 with rounded quadrate posteroventral corners. Epimeron 3 somewhat bulging with two posterior marginal setae. Uropod 1, peduncle with paired proximal setae and 1-2 distal spines; outer ramus with single medial spine. Uropod 2, peduncle with 4 spines. Uropod 3, inner ramus one-third length of outer ramus; outer ramus with elongate second article one quarter length of primary article. Telson with lobes

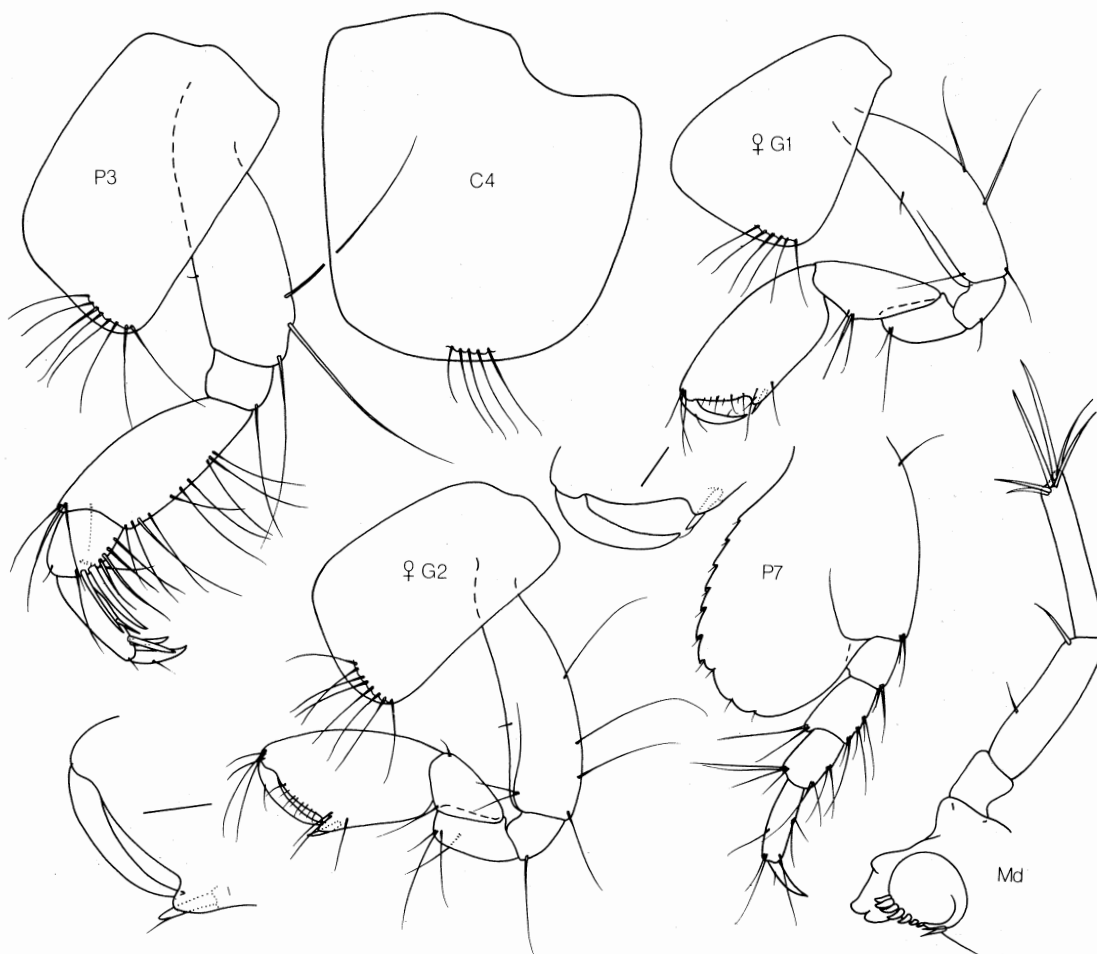


Fig. 105. *Wildus parathambaroo* n. sp., ♂ 3.0 mm, ♀ 3.0 mm, Taunovo Bay.

apically rounded, each with distolateral notch bearing two setae, and a pair of mediolateral setae.

**Remarks.** *Wildus parathambaroo* is very closely related to *W. thambaroo* (Barnard 1978) from Australia, but differs in several respects: coxa 4 bears a group of 4–5 long ventral setae; pereopod 7, basis posterior margin is more strongly toothed; epimeron 3, posteroventral corner is more rounded; each telsonic lobe bears a pair of subdistal setae and no spine.

**Fijian locality.** Momi Bay, Taunovo Bay.

**Distribution.** Fiji.

**Habitat.** Among red algae, *Syringodium*, and coral debris.

#### Family Stenothoidae

Stenothoids are small amphipods with very enlarged coxa 2–4. Coxa 4 is especially large and shield-like and lacks a posterior excavation. Coxa 1 is reduced and generally partially hidden by coxa 2. Uropod 2 is characteristic in having two articles to the single ramus. Stenothoids resemble amphilochids but are readily distinguishable by the 2-articulate uropod 3 ramus.

Stenothoids are often associated with cnidarians, but

the single known Fijian species is found widely among algae (possibly with epizoitic hydroids), sponges and coral rubble.

#### *Stenothoe kaia* n.sp.

Figs 106–107

*Stenothoe ?valida* Barnard, 1970: 250, fig. 165.

**Type-material.** HOLOTYPE, ♂, 3.5 mm, AM P35217, 10 ♂ 15 ♀ PARATYPES AM P35218, Votualailai, Viti Levu, Fiji, 9 August 1979, stn 13, *Turbinaria turbinata* from shoreward side of reef crest.

**Additional material examined.** Stn 7 (2)AC; stn 10 (3)AM P35314; stn 12 (6)AC; stn 21 (4)AC; stn 26 (11)AC.

**Description.** Length, 4.2 mm. Body white, eye black. Head lateral lobes rounded. Eye large, round. Antenna 1 over half body length. Antenna 2 scarcely longer than antenna 1. Male gnathopod 2, coxa excavate posterodistally; propodus elongate, posterior margin weakly concave, produced distally into an acute tooth, separated from the short transverse palm by a narrow but deep cleft; dactylus elongate, reaching to the proximal end of the propodus. Female gnathopod 2,

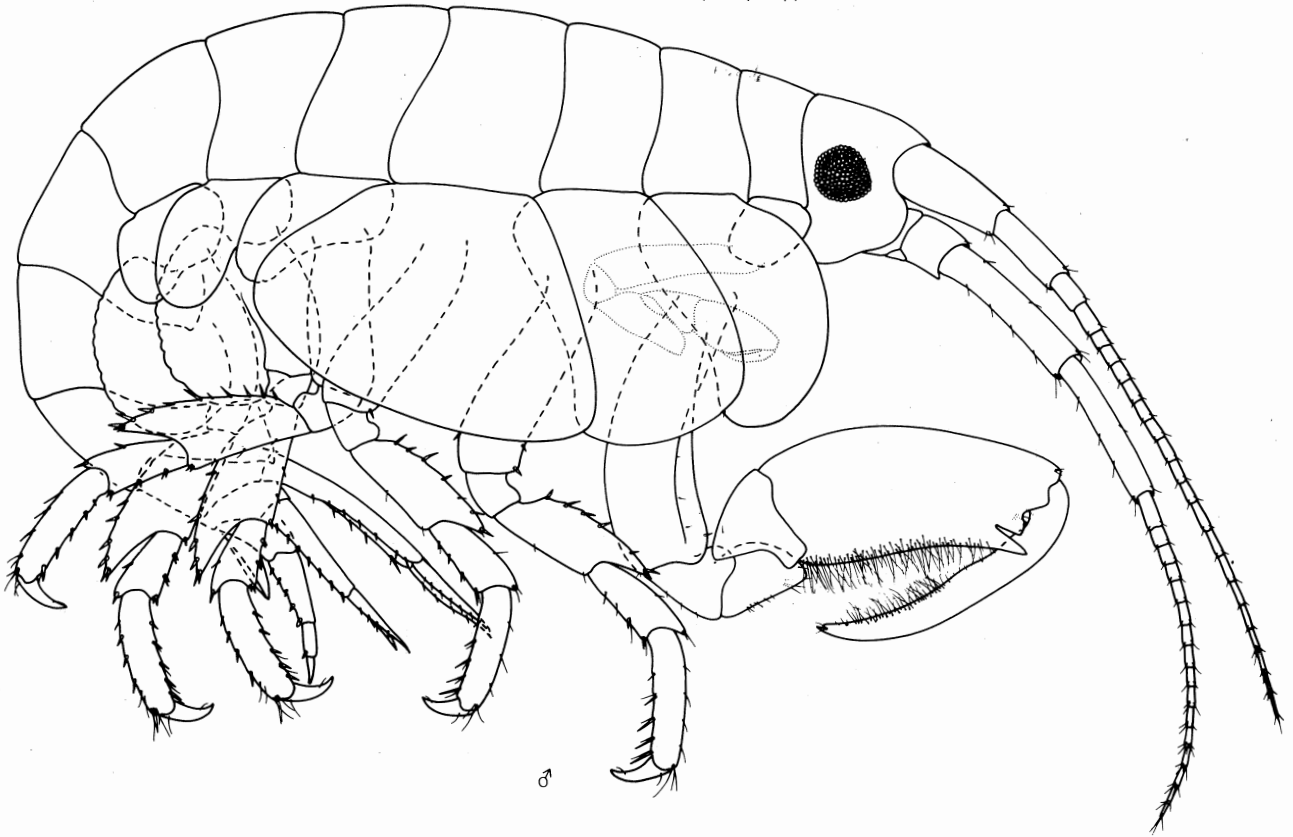


Fig. 106. *Stenothoe kaia* n. sp., ♂ 4.0 mm, Votualailai.

coxa not excavate posterodistally, at most weakly concave; propodus elongate, posterior margin convex with small mediobasal triangular tooth; dactylus elongate, shorter than propodus, opposable to 3–4 stout spines on posterior proximal margin of propodus. Coxa 3 approximately parallel-sided, convex anteriorly, concave posteriorly. Coxa 4 greatly enlarged, shield-like. Pereopods 5–7, merus slender. Epimeron 3 with small, subacute posterodistal tooth. Uropod 3, peduncle and ramus subequal; article 2 of ramus about one and a quarter times length of article 1.

**Remarks.** *Stenothoe kaia* is similar to *S. valida*, but differs in a number of significant ways. In *S. valida*, coxa 3 is subtriangular, not parallel-sided, male gnathopod 2 propodus has a rounded, incurved posterodistal tooth, not an acute straight tooth as in *S. kaia*, the female gnathopod 2 propodus lacks defining spines, and pereopods 5–7 have a short, stout merus. Uropod 3 ramus has article 2 shorter than article 1 in *S. valida* but longer than article 1 in *S. kaia*.

**Fijian localities.** Malevu, Votualailai, Nukumbutho Island, Makuluva Island.

**Distribution.** Hawaii, Fiji.

**Habitat.** Among *Sargassum*, *Turbinaria*, *Gigartina*, sponges and coral debris.

#### Family Talitridae

Talitrids are smooth-bodied, stout amphipods with very short antenna 1 and generally elongate (and often sexually dimorphic) antenna 2. Gnathopods are dissimilar and generally strongly sexually dimorphic,

gnathopod 1 weakly subchelate or simple, gnathopod 2 minutely subchelate or chelate, propodus mitten-shaped in females. The pereopods are spinose, slender, often cuspidactylate. Uropod 3 is uniramous, and the telsonic lobes are variously fused, with apical and sometimes dorsal spines.

Talitrids occur on sandy beaches ('sand-hoppers'), among coastal litter ('beach-fleas'), in salt marshes and mangrove swamps, and in fully terrestrial habitats ('land-hoppers').

No talitrids have, as yet, been recorded from Fijian mangals, and a single species of 'beach-flea' is described here. Although not considered here, a terrestrial species, *Orchestia floresiana vitilevana* Barnard (1960) has been recorded from forest at Nandarivatu, Viti Levu.

#### *Platorchestia platensis* (Krøyer)

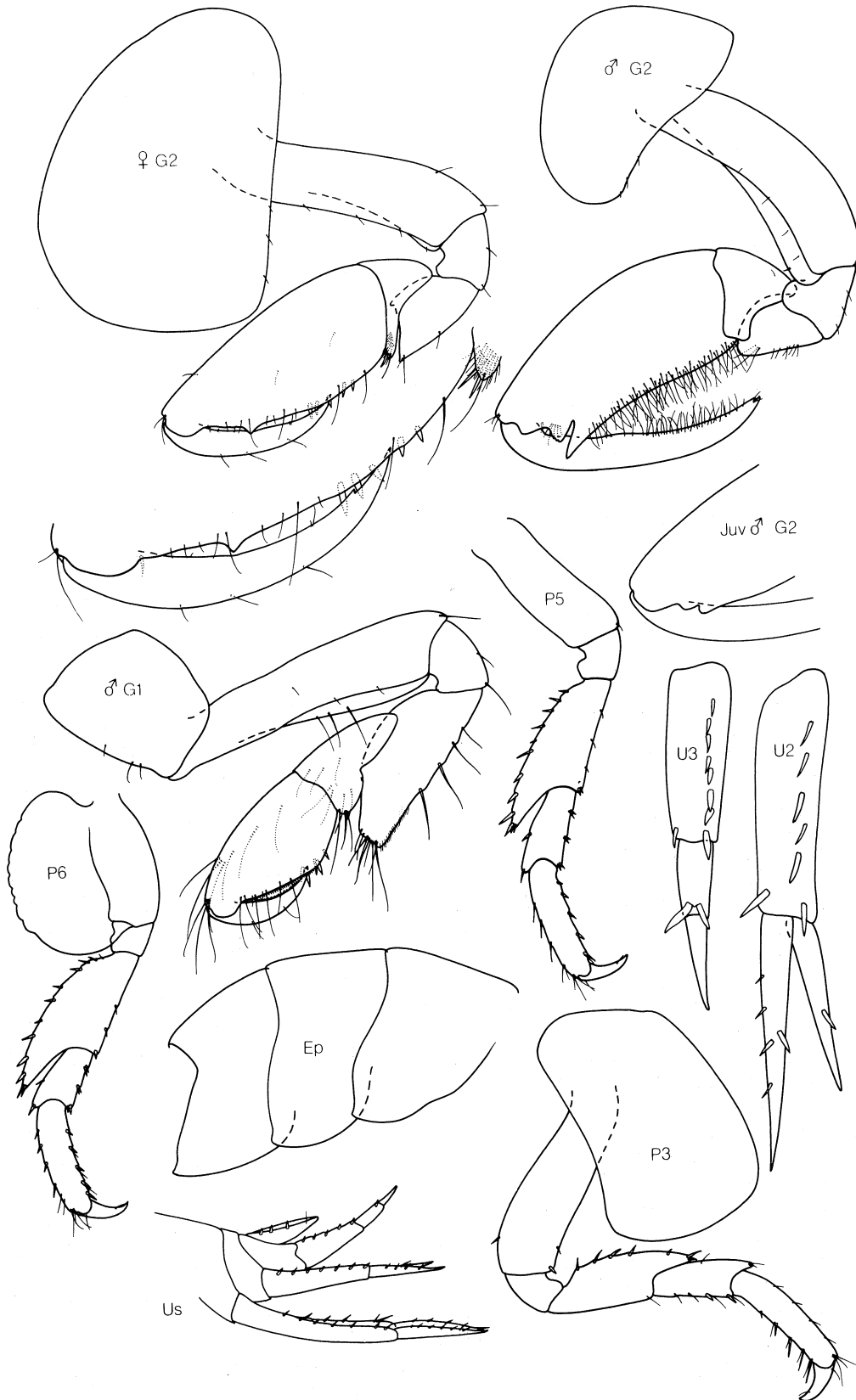
Figs 108–109

*Orchestia platensis* Krøyer, 1945: 304, pl. 2 fig. 2.—Stebbing, 1906: 540.—Shoemaker, 1920: 377.—Chilton, 1921b: 538, fig. 7.—Chevreux & Fage, 1925: 276, fig. 287.—Iwasa, 1939: 257, pl. 9 figs 1–3.—Stephensen, 1944: 57, figs 15–16.—Gurjanova, 1951: 807, fig. 562.—Bulycheva, 1957: 159, fig. 57.—Morino, 1975: 172, figs 1–3.—Morino, 1981: 1, figs 1–3.

*Platorchestia platensis* Bousfield, 1982: 26.

**Material examined.** Stn 39 (3)AM P35513, (6)AC.

**Description.** Length, 15 mm. Antenna 1 short, not reaching end of peduncular article 4 of antenna 2. Male antenna 2, peduncular articles 4 and 5 swollen. Female



**Fig. 107.** *Stenothoe kaia* n. sp., ♂ 4.0 mm, ♀ 4.5 mm, Votualailai. ♂ U2 figured ½ mag. of ♂ G1.



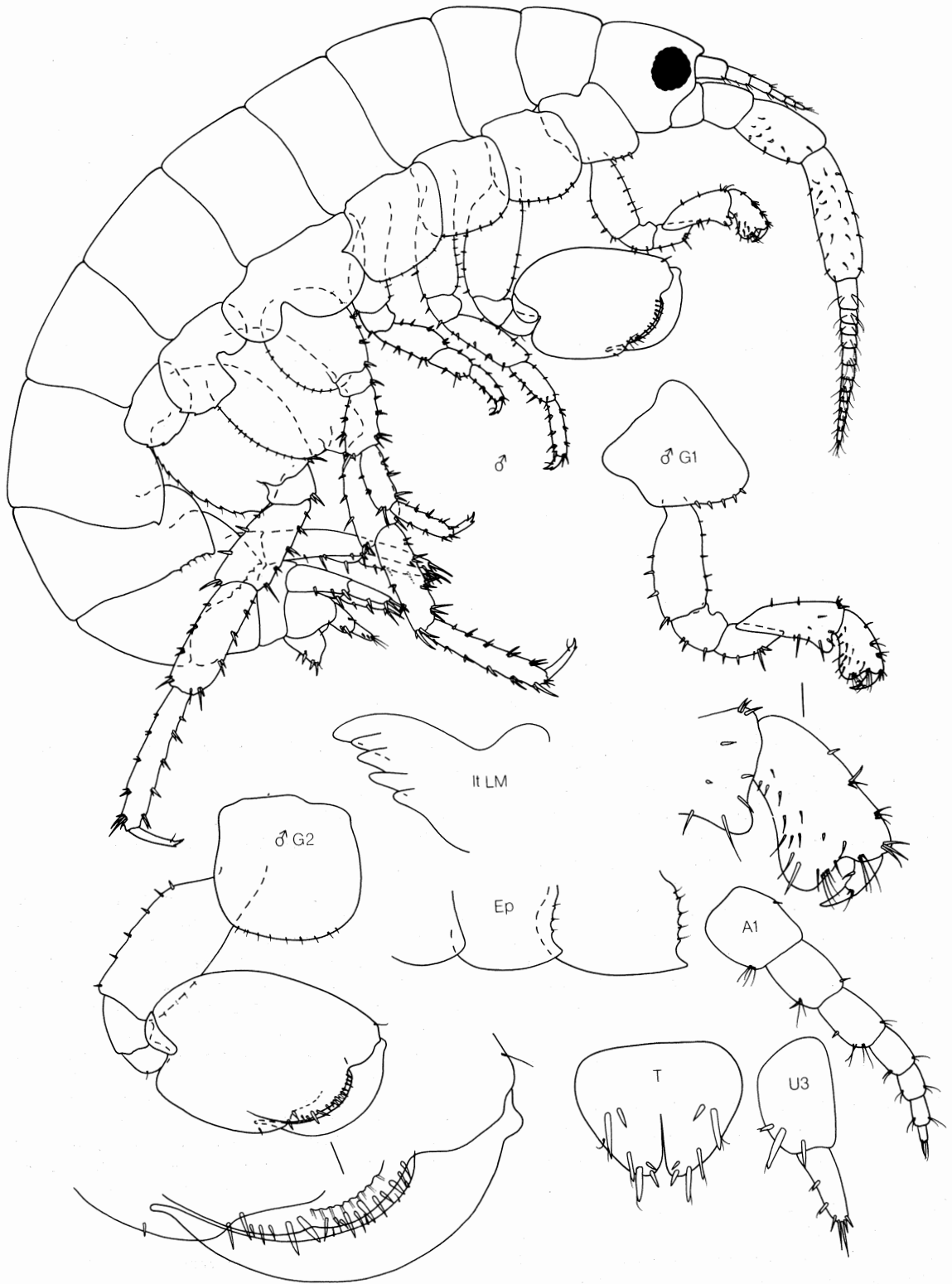


Fig. 108. *Platorchestia platensis* (Krøyer),  $\sigma$  15 mm, Nasese.

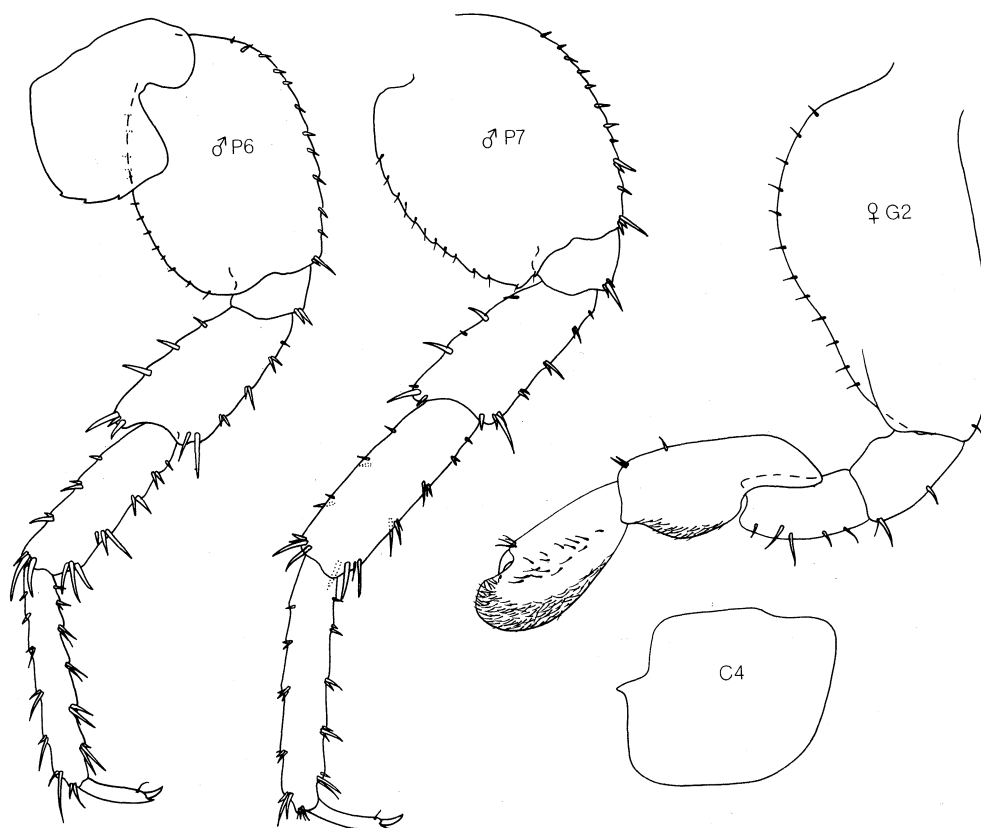


Fig. 109. *Platorchestia platensis* (Krøyer), ♂ 15 mm, ♀ 12 mm, Nasese.

antenna 2, peduncular articles 4 and 5 stout, but not swollen as in male; flagellum with 12–16 articles. Mandible left lacinia mobilis 5-dentate. Male gnathopod 1 subchelate; carpus posterodistal margin produced into a rounded lobe; propodus subtriangular, palm transverse, produced into a flat-topped lobe. Female gnathopod 1, carpus and propodus slender, palm oblique. Male gnathopod 2, carpus very small, cup-shaped; propodus massive, palm strongly spinose, weakly bilobed; dactylus strongly curved, fitting palm, and with small spatulate distal end. Female gnathopod 2, basis expanded anteroproximally; carpus and propodus slender, subequal; propodus mitten-shaped; dactylus minute. Coxa 4 with acute tooth on posterior margin. Pereopods 3–7 cuspidactylate. Epimera 2–3, posterior margin serrate and with posterodistal tooth. Uropod 3 uniramous, peduncle longer than ramus. Telson cleft half way to base, lobes rounded and spinose.

**Remarks.** *Platorchestia platensis* differs from its congeners by the poorly inflated uropod 3 peduncle which is subequal to the rami, and in the presence of a depression in the palm of gnathopod 2 into which the dactylus fits. Further marine talitrids may be discovered in Fiji, and attention should be paid to sexual dimorphism and the structure of the male gnathopod 2 when comparing materials. It should also be noted that a terrestrial species of talitrid, *Orchestia floresiana vitilevana*, is known from Fiji.

**Type-locality.** Rio de la Plata, near Montevideo, Uruguay.

**Fijian locality.** Nasese.

**Distribution.** Almost cosmopolitan.

**Habitat.** Among strand-like beach debris.

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Finally, and not least, I wish to record my debt of gratitude to Mr and Mrs N. Gardiner for providing both accommodation and transport, for without their generosity none of this work would have been possible.

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#### \*Addendum

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## APPENDIX

## Station Data (for locations see Fig. 1)

**Stn 1.** Nasese, near Suva, 7 August 1979. *Halimeda opuntia* from shoreward margin of inner moat: *Amphithoe kava*, *Paranamixis madagascarensis* (1 ♂ *Paranamixis*, 1 ♀ *Leucothoides*), *Aorchoides dilatata*, *Hyale maroubrae*, *Leucothoella banwarthi*, *Paradexamine rewa*, *Podocerus crenulatus*.

**Stn 2.** Nasese, near Suva, 7 August 1979. Coral rubble from shoreward margins of inner moat: *Aorchoides dilatata*, *Globosolembos ovatus*, *Paranamixis madagascarensis* (1 ♂ *Leucothoides*).

**Stn 3.** Nasese, near Suva, 7 August 1979. *Syringodium isoetifolium* from shoreward margin of inner moat: *Cerapus pacificus*, *Cymadusa imbroglia*, *Gammaropsis togoensis*, *Grandidierella bispinosa*.

**Stn 4.** Nasese, near Suva, 7 August 1979. *Sargassum cristaeifolium* from shoreward margin of inner moat: *Biancolina algicola*, *Colomastix lunililo*, *Paradexamine rewa*.

**Stn 5.** Nukumbutho reef, 8 August 1979. Coral rubble from reef flat: *Amphithoe kava*, *Cerapus pacificus*, *Cymadusa lunata*, *Elasmopus seticarpus*, *Gammaropsis digitata*, *Globosolembos ovatus*, *Lelehua malevua*, *Parawaldeckia lowryi*, *Maera pacifica*, *Maera quadrimana*, *Paradexamine rewa*, *Paragrubia vorax*, *Pleonexes kaneohe navosa*.

**Stn 6.** Nukumbutho reef, 8 August 1979. *Turbinaria turbinata* from reef crest: *Amphilochus menehune*, *Amphithoe kava*, *Aorella multiplex*, *Cymadusa lunata*, *Gammaropsis digitata*, *Leucothoe diemenensis*, *Pleonexes kaneohe navosa*, *Podocerus talegus levuensis*.

**Stn 7.** Nukumbutho reef, 8 August 1979. *Gigartina* sp. from sides of surge channel on seaward margin of reef crest: *Elasmopus lapu*, *Elasmopus spinidactylus*, *Eusiroides diplonyx*, *Gammaropsis digitata*, *Hyale chevreuxi*, *Hyale galataeae distorta*, *Lelehua malevua*, *Leucothoe diemenensis*, *Maera pacifica*, *Mallacoota insignis*, *Paragrubia vorax*, *Pleonexes kaneohe navosa*, *Podocerus hanapepe*, *Stenothoe kaia*.

**Stn 8.** Nukumbutho reef, 8 August 1979. Mixed red algae from reef crest: *Amphithoe kuala*, *Hyale galataeae distorta*, *Leucothoe diemenensis*, *Maera pacifica*, *Mallacoota insignis*, *Paragrubia vorax*, *Pleonexes kaneohe navosa*, *Pleonexes kulafi*, *Podocerus hanapepe*.

**Stn 9.** Nukumbutho reef, 8 August 1979. *Halimeda opuntia* from reef flat: *Amphilochus menehune*, *Aorella multiplex*, *Cymadusa lunata*, *Elasmopus seticarpus*, *Gammaropsis digitata*, *Gammaropsis pacifica*, *Lelehua malevua*, *Maera pacifica*, *Mallacoota insignis*, *Peramphithoe orientalis*.

**Stn 10.** Nukumbutho reef, 8 August 1979. Sponges from reef flat: *Gammaropsis digitata*, *Gammaropsis pacifica*, *Leucothoe diemenensis*, *Leucothoella banwarthi*, *Stenothoe kaia*, *Ventojassa ventosa*.

**Stn 11.** Nukumbutho reef, 8 August 1979. Zoanths from reef flat: *Cymadusa lunata*, *Elasmopus lapu*, *Elasmopus spinidactylus*, *Maera pacifica*, *Paragrubia vorax*.

**Stn 12.** Votualailai, 9 August 1979. *Sargassum cristaeifolium* from reef crest: *Amphilochus menehune*, *Elasmopus spinimanus*, *Hyale galataeae distorta*, *Leucothoe diemenensis*, *Peramphithoe orientalis*, *Podocerus hanapepe*, *Stenothoe kaia*.

**Stn 13.** Votualailai, 9 August 1979. *Turbinaria turbinata* from shoreward side of reef crest: *Amphilochus menehune*, *Amphithoe kava*, *Biancolina algicola*, *Cymadusa lunata*, *Hyale galataeae distorta*, *Mallacoota insignis*, *Peramphithoe orientalis*, *Pleonexes kaneohe navosa*, *Stenothoe kaia*.

**Stn 14.** Votualailai, 9 August 1979. Mixed sponges from reef flat: *Amphilochus menehune*, *Amphithoe kava*, *Biancolina algicola*, *Mallacoota insignis*, *Paragrubia vorax*, *Pleonexes kaneohe navosa*, *Podocerus talegus levuensis*.

**Stn 15.** Votualailai, 9 August 1979. *Caulerpa peltata* from seaward slope of reef crest: *Elasmopus spinidactylus*.

**Stn 16.** Votualailai, 9 August 1979. *Padina* sp. from shoreward margin of reef flat: *Aorchoides dilatata*, *Cymadusa lunata*, *Mallacoota insignis*, *Pleonexes kaneohe navosa*.

**Stn 17.** Votualailai, 9 August 1979. Coral rubble in centre of reef flat: *Elasmopus lapu*, *Gammaropsis togoensis*, *Maera pacifica*, *Mallacoota insignis*, *Paranamixis madagascarensis* (*Paranamixis* form), *Pleonexes kaneohe navosa*, *Podocerus talegus levuensis*.

**Stn 18.** Suva barrier reef, 10 August 1979. Coral rubble from reef flat: *Cymadusa lunata*, *Gammaropsis digitata*, *Globosolembos ovatus*, *Maera pacifica*, *Paradexamine rewa*, *Parambasia nui*, *Paranamixis madagascarensis* (*Leucothoides*), *Parelasmpopus suensis*, *Ventojassa ventosa*.

**Stn 19.** Suva barrier reef, 10 August 1979. Dead *Tubipora musica* from reef flat: *Paradexamine rewa*, *Maera pacifica*.

**Stn 20.** Malevu, 11 August 1979. *Gelidiella* sp. from reef flat: *Bircenna dronga*, *Cymadusa lunata*, *Elasmopus lapu*, *Lelehua malevua*, *Maera pacifica*, *Mallacoota insignis*, *Paragrubia vorax*, *Paranamixis madagascarensis* (*Leucothoides*), *Parelasmpopus suensis*, *Pleonexes kaneohe navosa*.

**Stn 21.** Malevu, 11 August 1979. *Sargassum cristaeifolium* from reef crest: *Elasmopus spinidactylus*, *Gitanopsis tai*, *Hyale galataeae distorta*, *Maera pacifica*, *Peramphithoe orientalis*, *Podocerus hanapepe*, *Stenothoe kaia*.

**Stn 22.** Malevu, 11 August 1979. *Turbinaria turbinata* from behind reef crest: *Amphithoe kava*, *Cymadusa lunata*, *Hyale galataeae distorta*, *Paragrubia vorax*, *Paranamixis madagascarensis* (*Leucothoides*), *Pleonexes kaneohe navosa*.

**Stn 23.** Makuluva Island, 13 August 1979. Mixed red algae from leeward side of reef flat: *Bircenna dronga*, *Elasmopus seticarpus*, *Gitanopsis tai*, *Mallacoota subcarinata*, *Pleonexes kaneohe navosa*.

**Stn 24.** Makuluva Island, 13 August 1979. *Amphiroa* sp. from leeward side of reef flat: *Amphithoe kava*, *Aorella multiplex*, *Cymadusa brevidactyla*, *Elasmopus lapu*, *Elasmopus seticarpus*, *Gammaropsis digitata*, *Lelehua malevua*, *Mallacoota insignis*, *Paragrubia vorax*, *Pleonexes kaneohe navosa*, *Pleonexes kulafi*, *Podocerus talegus levuensis*.

**Stn 25.** Makuluva Island, 13 August 1979. Filamentous green alga from leeward side of reef flat: *Aorella multiplex*, *Melita simplex*, *Pleonexes kaneohe navosa*.

**Stn 26.** Makuluva Island, 13 August 1979. Coral debris from reef crest: *Amphithoe hirsuta*, *Chevalia aviculae*, *Elasmopus lapu*, *Elasmopus spinidactylus*, *Gammaropsis pokipoki*, *Gammaropsis setifera*, *Gitanopsis tai*, *Hyale chevreuxi*, *Leucothoe diemenensis*, *Maera pacifica*, *Paragrubia vorax*, *Podocerus hanapepe*, *Podocerus talegus levuensis*, *Stenothoe kaia*.

**Stn 27.** Taunovo Bay, 21 August 1979. *Syringodium isoetifolium* on reef flat: *Amphilochus menehune*, *Aorchoides dilatata*, *Aorella multiplex*, *Gammaropsis digitata*, *Gammaropsis pacifica*, *Gammaropsis togoensis*, *Gitana gracilis*, *Gitanopsis tai*, *Globosolembos ovatus*, *Grandidierella teres*, *Maera pacifica*, *Paradexamine rewa*, *Paranamixis*

*madagascarensis* (*Leucothoides*), *Photis kapapa*, *Podocerus crenulatus*, *Wildus parathambaroo*.

**Stn 28.** Taunovo Bay, 21 August 1979. Mixed red algae from reef flat: *Amphithoe kava*, *Aorella multiplex*, *Gammaropsis digitata*, *Leucothoe diemenensis*, *Maera quadrimana*, *Mallacoota nananui*, *Paragrubia vorax*, *Pleonexes kulafi*, *Wildus parathambaroo*.

**Stn 29.** Taunovo Bay, 21 August 1979. Dead coral debris from reef flat: *Amphithoe kava*, *Aorchoides dilatata*, *Bircenna dronga*, *Gammaropsis togoensis*, *Gitana gracilis*, *Paranamixis madagascarensis* (*Leucothoides*), *Photis kapapa*, *Pleonexes kulafi*, *Podocerus crenulatus*, *Wildus parathambaroo*.

**Stn 30.** Taunovo Bay, 21 August 1979. Living *Pocillopora* sp. from reef flat: *Amphilochus menehune*, *Amphithoe kava*, *Aorchoides dilatata*, *Gammaropsis togoensis*, *Globosolembos ovatus*, *Leucothoe diemenensis*, *Maera pacifica*, *Maera quadrimana*, *Paradexamine rewa*, *Paranamixis madagascarensis* (*Leucothoides*), *Pleonexes kaneohe navosa*.

**Stn 31.** Mburelevu, 25 August 1979. Living *Acropora* sp. on reef flat: *Cymadusa lunata*, *Gammaropsis atlantica*, *Gammaropsis togoensis*, *Leucothoe diemenensis*, *Mallacoota insignis*, *Moolapheonoides coccoo serua*, *Paranamixis madagascarensis* (*Paranamixis* form).

**Stn 32.** Mburelevu, 25 August 1979. Crustose coralline alga from reef flat: *Aorchoides dilatata*.

**Stn 33.** Mburelevu, 25 August 1979. *Syringodium isoetifolium* from reef flat: *Ampelisca melanesiensis*, *Cymadusa imbroglio*, *Gammaropsis togoensis*, *Grandidierella bispinosa*, *Paracalliope mapela*.

**Stn 34.** Mburelevu, 25 August 1979. Various algae including *Turbinaria turbinata* and *Sargassum* sp.: *Aorchoides dilatata*, *Biancolina algicola*, *Cymadusa imbroglio*, *Leucothoe diemenensis*, *Pleonexes kaneohe navosa*, *Pleonexes kulafi*.

**Stn 35.** Mburelevu, 25 August 1979. Coral rubble from reef flat: *Ampelisca pygmaea*, *Aorchoides dilatata*, *Cymadusa lunata*, *Gammaropsis atlantica*, *Globosolembos ovatus*, *Leucothoe diemenensis*, *Maera pacifica*, *Mallacoota insignis*, *Paradexamine rewa*, *Paranamixis madagascarensis* (*Leucothoides*).

**Stn 36.** Suva Point, 29 August 1979. In *Halophila ovata* growing on sand among *Rhizophora stylosa* at seaward fringe of mangals: *Ampelisca melanesiensis*, *Amphilochus menehune*, *Corophium* sp., *Grandidierella bispinosa*, *Melita zeylanica*, *Paracalliope mapela*.

**Stn 37.** Suva Point, 29 August 1979. Mangals. Debris from around roots of *Rhizophora stylosa*: *Ampelisca melanesiensis*, *Melita zeylanica*, *Paracalliope mapela*, *Parahyale hawaiiensis*.

**Stn 38.** Suva Point, 29 August 1979. Mangrove debris from gully at centre of swamp: *Paracalliope mapela*.

**Stn 39.** Nasese, 4 September 1979. Beach debris at H.W.S.: *Platorchestia platensis*.

**Stn 40.** Momi Bay, 7 September 1979. Coral debris, mainly *Acropora* fragments at reef edge: *Colomastix lunailo*, *Cymadusa lunata*, *Elasmopus molokai*, *Elasmopus seticarpus*, *Gammaropsis atlantica*, *Gammaropsis togoensis*, *Leucothoe diemenensis*, *Leucothoella banwarthi*, *Maera octodens*, *Maera pacifica*, *Maera quadrimana*, *Paradexamine rewa*, *Paragrubia vorax*, *Parawaldeckia lowryi*, *Parelasomopus suensis*, *Wildus parathambaroo*.

**Stn 41.** Momi Bay, 7 September 1979. *Amphiroa* sp. on sand flat, mid-shore: *Amphilochus menehune*, *Amphithoe kava*, *Aorchoides dilatata*, *Bircenna dronga*, *Maera quadrimana*, *Mallacoota insignis*, *Paradexamine rewa*, *Paranamixis madagascarensis* (*Leucothoides*), *Parawaldeckia lowryi*,

*Pleonexes kaneohe navosa*, *Podocerus crenulatus*.

**Stn 42.** Momi Bay, 7 September 1979. *Syringodium isoetifolium* from reef flat: *Cymadusa imbroglio*, *Grandidierella bispinosa*, *Paracalliope mapela*, *Pleonexes kaneohe navosa*.

**Stn 43.** Votualailai, 8 September 1979. *Padina* sp. from landward margin of reef flat: *Pereionotus alaniphlias*.

**Stn 44.** Votualailai, 8 September 1979. *Amphiroa* sp. from 'rapids' on reef flat: *Cymadusa lunata*, *Podocerus talegus levuensis*.

**Stn 45.** Votualailai, 8 September 1979. *Turbinaria turbinata* from landward side of reef crest: *Amphithoe kava*, *Amphithoe kuala*, *Biancolina algicola*, *Cymadusa lunata*, *Hyale galateae distorta*, *Pleonexes kaneohe navosa*.

**Stn 46.** Votualailai, 8 September 1979. *Sargassum cristaeifolium* from reef crest: *Cymadusa lunata*, *Hyale galateae distorta*, *Peramphithoe orientalis*, *Pleonexes kaneohe navosa*, *Podocerus hanapepe*.

**Stn 47.** Votualailai, 8 September 1979. *Caulerpa peltata* from seaward slope of reef crest: *Hyale galateae distorta*, *Lelehua malevua*, *Paragrubia vorax*, *Pleonexes kaneohe navosa*, *Podocerus hanapepe*.

**Stn 48.** Nananui Ra, 6 October 1979. *Sargassum* sp. from lagoon: *Ampelisca melanesiensis*, *Ceradocus rubromaculatus*, *Cymadusa lunata*, *Gitanoopsis tai*, *Hyale galateae distorta*, *Lelehua malevua*, *Leucothoe diemenensis*, *Paradexamine rewa*, *Paranamixis madagascarensis* (*Leucothoides*), *Parelasomopus suensis*.

**Stn 49.** Nananui Ra, 6 October 1979. Coral debris from lagoon: *Amphithoe ramondi*, *Paradexamine rewa*, *Parambasia nui*, *Paranamixis madagascarensis* (*Leucothoides*).

**Stn 50.** Nananui Ra, 6 October 1979. Living hexacorals: *Amphithoe ramondi*, *Cymadusa lunata*, *Leucothoe diemenensis*, *Mallacoota subcarinata*, *Parawaldeckia lowryi*.

**Stn 51.** Nananui Ra, 6 October 1979. *Padina* sp. from lagoon: *Ceradocus rubromaculatus*, *Cymadusa imbroglio*, *Cymadusa lunata*, *Elasmopus pseudaffinis*, *Mallacoota subcarinata*.

**Stn 52.** Nananui Ra, 6 October 1979. Sponges from lagoon: *Leucothoe gavialis*, *Lelehua malevua*, *Maera pacifica*, *Maera quadrimana*, *Paranamixis madagascarensis* (*Leucothoides*).

**Stn 53.** Nananui Ra, 7 October 1979, *Halimeda* in lagoon: *Amphilochus menehune*, *Cymadusa lunata*, *Elasmopus molokai*, *Gammaropsis atlantica*, *Gammaropsis digitata*, *Gitana gracilis*, *Lembos virgus*, *Leucothoe diemenensis*, *Leucothoella banwarthi*, *Maera serrata*, *Mallacoota nananui*, *Parambasia nui*, *Paranamixis madagascarensis* (*Paranamixis* form 7♂, *Leucothoides* 12♂ 9♀).

**Stn 54.** Nananui Ra, 7 October 1979. Dead *Acropora* fingers with epiphytes: *Leucothoe diemenensis*, *Lelehua malevua*, *Paradexamine rewa*, *Paranamixis madagascarensis* (*Leucothoides*), *Photis pirloti*.

**Stn 55.** Nananui Ra, 7 October 1979. Coral rubble from lagoon: *Elasmopus molokai*, *Gitana bilobata*, *Lelehua malevua*, *Lembos virgus*, *Leucothoella banwarthi*, *Maera serrata*, *Mallacoota subcarinata*, *Paradexamine rewa*, *Paranamixis madagascarensis* (1♂ *Paranamixis* form, 2♂ *Leucothoides*).

**Stn 56.** Suva Point, 10 October 1979. Mangrove litter: *Grandidierella bispinosa*, *Melita zeylanica*, *Paracalliope mapela*, *Parahyale hawaiiensis*.

**Stn 57.** Laucala Island, 16 October 1979. Mangrove litter: *Grandidierella bispinosa*, *Melita zeylanica*.